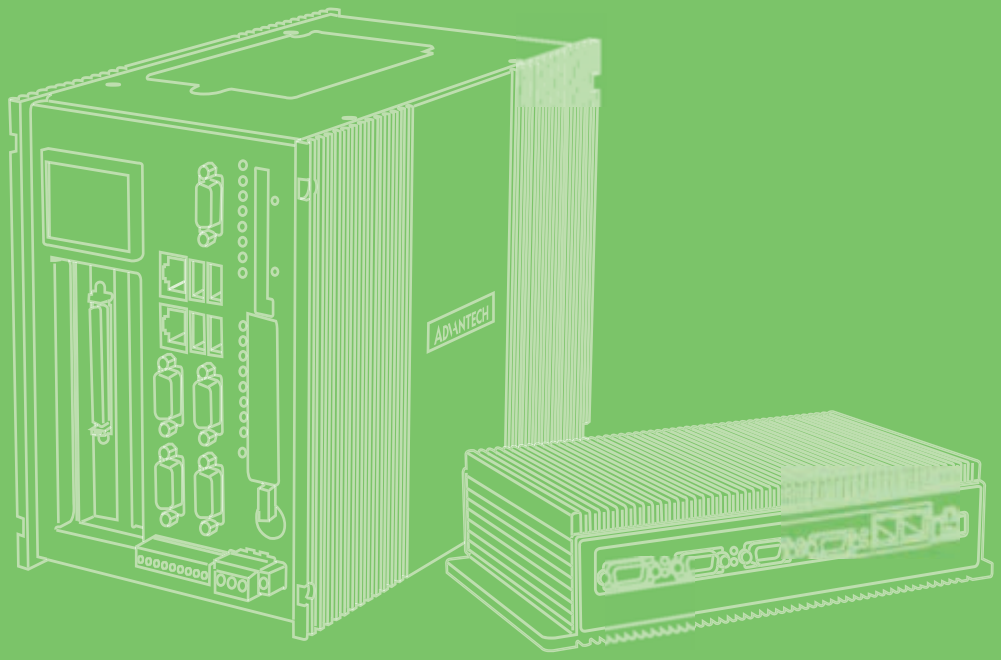
User Manual



UNO-2484G V2 電腦

Intel® Core™ i Standard-Size Automation Computer with 1 x GbE, 3 x 2.5 GbE, 2 x mPCIe, 1 x M.2 B-key, 1 x M.2 M-key, 1 x HDMI, 1 x DP, 1 x USB2.0, 3 x USB 3.2, 1 x USB TypeC, and 4 x COM

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Acknowledgments

Support

For more information on this and other Advantech products, please visit our website at http://www.advantech.com

For technical support services, please visit our support website at http://support.advantech.com/

This manual applies to the following models:

UNO-2484G V2	UNO2484GB3312202-T	UNO2484GB5312604-T
UNO-2484G-BC21AE	UNO2484GB3312203-T	UNO2484GB5312605-T
UNO-2484G-B331AE	UNO2484GB3312204-T	UNO2484GB7312201-T
UNO-2484G-B531AE	UNO2484GB3312301-T	UNO2484GB7312202-T
UNO-2484G-B731AE	UNO2484GB3312302-T	UNO2484GB7312203-T
UNO-2484G-BC21AU	UNO2484GB3312303-T	UNO2484GB7312204-T
UNO-2484G-B331AU	UNO2484GB3312304-T	UNO2484GB7312205-T
UNO-2484G-B531AU	UNO2484GB3312401-T	UNO2484GB7312301-T
UNO-2484G-B731AU	UNO2484GB3312402-T	UNO2484GB7312302-T
UNO2484GBC212201-T	UNO2484GB3312403-T	UNO2484GB7312303-T
UNO2484GBC212202-T	UNO2484GB3312404-T	UNO2484GB7312304-T
UNO2484GBC212203-T	UNO2484GB3312501-T	UNO2484GB7312305-T
UNO2484GBC212204-T	UNO2484GB3312502-T	UNO2484GB7312306-T
UNO2484GBC212205-T	UNO2484GB3312503-T	UNO2484GB7312401-T
UNO2484GBC212206-T	UNO2484GB3312504-T	UNO2484GB7312402-T
UNO2484GBC212301-T	UNO2484GB3312601-T	UNO2484GB7312403-T
UNO2484GBC212302-T	UNO2484GB3312602-T	UNO2484GB7312404-T
UNO2484GBC212303-T	UNO2484GB3312603-T	UNO2484GB7312405-T
UNO2484GBC212304-T	UNO2484GB3312604-T	UNO2484GB7312501-T
UNO2484GBC212305-T	UNO2484GB5312201-T	UNO2484GB7312502-T
UNO2484GBC212306-T	UNO2484GB5312202-T	UNO2484GB7312503-T

Part No. 2004248401 Edition 1

August 2023

UNO2484GBC212401-T	UNO2484GB5312203-T	UNO2484GB7312504-T
UNO2484GBC212402-T	UNO2484GB5312204-T	UNO2484GB7312505-T
UNO2484GBC212403-T	UNO2484GB5312301-T	UNO2484GB7312601-T
UNO2484GBC212404-T	UNO2484GB5312302-T	UNO2484GB7312602-T
UNO2484GBC212405-T	UNO2484GB5312303-T	UNO2484GB7312603-T
UNO2484GBC212501-T	UNO2484GB5312304-T	UNO2484GB7312604-T
UNO2484GBC212502-T	UNO2484GB5312401-T	UNO2484GB7312701-T
UNO2484GBC212503-T	UNO2484GB5312402-T	UNO2484GB7312702-T
UNO2484GBC212504-T	UNO2484GB5312403-T	UNO2484GBC212505-T
UNO2484GB5312404-T	UNO2484GBC212601-T	UNO2484GB5312501-T
UNO2484GBC212602-T	UNO2484GB5312502-T	UNO2484GBC212603-T
UNO2484GB5312503-T	UNO2484GBC212604-T	UNO2484GB5312504-T
UNO2484GBC212701-T	UNO2484GB5312601-T	UNO2484GBC212702-T
UNO2484GB5312602-T	UNO2484GB3312201-T	UNO2484GB5312603-T

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 will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

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 displayed 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 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 a 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 clearly 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. Please 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 caused by electrostatic discharge (ESD) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

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 this event, users are required to correct the interference at their own expense.

警告使用者

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 website at www.advantech.com/support to obtain the latest product information.
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 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 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 the 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.

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. 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 from transient overvoltage.
12. Never pour 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 any of the following occurs, have the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated the equipment.
    - The equipment has been exposed to moisture.
    - The equipment is malfunctioning, or does not operate according to the user manual.
    - The equipment has been dropped and damaged.
    - The equipment shows obvious signs of breakage.
15. Do not leave the equipment in an environment with a storage temperature of below -40° C (-40° F) or above 85° C (185° F) as this may damage the components. The equipment should be kept in a controlled environment.
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.
17. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
18. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet. The power outlet socket should have a grounded connection.
19. For use in pollution free environments and indoor use.
20. This equipment is not suitable for use in locations where children are likely to be present.
21. If the equipment is used in a manner not specified by the Advantech, the protection provided by the equipment may be impaired.
22. The equipment contains no user-serviceable parts. Do not open, Return to manufacturer for servicing.
23. Do not block air ventilation holes.

24. This is open type equipment and should be installed in a suitable enclosure.
25. Restricted Access Area: The equipment should only be installed in a Restricted Access Area.
26. This product is intended to be supplied by an UL certified power supply or dc source with SELV output, rated 10 Vdc, 7.7A minimum and Tma 40 degree. If you need further assistance, please contact Advantech for further information.
27. 26.This product is intended to be supplied by an UL Listed power supply suitable for use at Tma 60° C min. whose output meets ES1 (or SELV) is rated: (1) 10-36Vdc, 7.65A-2.12A min. (DC IN), if need further assistance, please contact Advantech for further information.

Caution: Hot surface. Do not touch for Top Heatsink.

DISCLAIMER: These instructions are provided according to IEC 704-1 standards. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Consignes de sécurité

1. Lire attentivement les instructions de sécurité.
2. Conserver ce manuel pour utilisation ultérieure,
3. Débranchez cet équipement de toute prise secteur avant le nettoyer. Utilisez seulement un chiffon humide. N'utilisez pas de détergent liquide ou pulvérisé pour le nettoyage.
4. Gardez cet équipement à l'abri de l'humidité.
5. Placez cet équipement sur une surface fiable pendant l'installation. Le faire ou bien le laisser tomber peut causer des dégâts.
6. Les ouvertures sur l'enceinte servent à la convection de l'air. Protégez l'équipement contre surchauffe. NE COUVREZ PAS LES OUVERTURES.
7. Assurez-vous que la tension de la source d'alimentation est correcte avant de connecter l'équipement à une prise de courant. La prise de courant doit avoir une connexion à la terre.
8. Placez le câble d'alimentation de manière à ce que personne ne puisse marcher dessus. Ne placez rien sur le câble d'alimentation.
9. Toutes les mises en garde et tous les avertissements sur l'équipement doivent être notés.
10. Si l'équipement n'est pas utilisé pendant une longue période, débranchez-le de la source d'alimentation pour éviter tout endommagement dû à une surtension transitoire.
11. Ne jamais verser de liquide dans une ouverture. Cela pourrait provoquer un incendie ou un choc électrique.
12. N'ouvrez jamais l'équipement. Pour des raisons de sécurité, l'équipement doit être ouvert uniquement par du personnel qualifié.
13. Si l'une des situations suivantes se présente, faites vérifier l'équipement par le personnel de service:
    - un liquide a pénétré dans l'équipment.
    - L'équipement a été exposé à l'humidité.
    - L'équipement ne fonctionne pas bien, ou vous ne pouvez pas le faire fonctionner selon le manuel de l'utilisateur.
    - L'équipement ne fonctionne pas bien, ou vous ne pouvez pas le faire fonctionner selon le manuel d'utilisation.

– L'équipement est tombé et endommagé.
– L'équipement présente des signes évidents de rupture.

14. NE LAISSEZ PAS CET ÉQUIPEMENT DANS UN ENVIRONNEMENT OU LA TEMPÉRATURE DE STOCKAGE PEUT ÊTRE INFÉRIEURE À -40° C (-40° F) OU BIEN SUPÉRIEURE À 85° C (185° F). CECI POURRAIT ENDOMMAGER L'EQUIPEMENT. L'ÉQUIPEMENT DEVRAIT ÊTRE DANS UN ENVIRONNEMENT CONTRÔLÉ.
15. Ce produit est destiné à être alimenté par une source d'alimentation certifiée UL ou par une source cc convenant à une utilisation à une température minimale de 40 degrés Celsius, dont la sortie est conforme à la norme SELV et dont la puissance nominale est de 10 Vdc, 7.7 A, en cas de besoin. contactez Advantech pour plus d'informations.
16. Pour une utilisation dans des environnements non polluant et à l'intérieur.
17. C'est appareil ne doit pas être utilisé dans des endroits où se trouvent des enfants.
18. Si l'équipement est utilisé d'une manière non spécifiée par le fabricant, la protection fournie par l'équipement peut être altéré.
19. L'équipement ne contient aucune pièce réparable par l'utilisateur. Ne pas ouvrir, retourner au fabricant pour réparation.
20. Ne bloquez pas les ou es de ventilation.
21. Il s'agit d'un équipement de type ouvert et doit être installé dans un boîtier approprié.

Attention: Surface chaude, ne pas toucher pour le dissipateur thermique supérieur.

22. **ATTENTION:** Danger d'explosion si la batterie est mal remplace. Remplacer unique- ment par le meme type ou equivalent recommandé par le fabricant. Jeter les piles usagées selon les instructions du fabricant.

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，請確認拔除電源線。請勿使用液體或去污噴霧劑清洗設備。
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. 請勿在潮濕環境中試用設備。
6. 請在安裝前確保設備放置在可靠的平面上，意外摔落可能會導致設備損壞。
7. 設備機殼的開孔適用於空氣對，從而防止設備過熱。請勿覆蓋開孔。
8. 當您連接設備到電源插座前，請確認電源插座的電壓符合要求。
9. 請將電源線佈置在人們不易絆倒的位置，請勿在電源線上覆蓋任何雜物。
10. 請注意設備上所有的警告標示。
11. 如果長時間不使用設備，請拔除與電源插座的連結，避免設備被超標的電壓波動損壞。
12. 請勿讓任何液體流入通風口，以免引起火灾或短路。
13. 請勿自行打開設備。為了確保您的安全，請透過經認證的工程師來打開設備。
14. 如遇下列情況，請由專業人員維修：
    - 電源線或插頭損壞；
    - 設備內部有液體流入；

- 設備曾暴露在過度潮濕環境中使用；
- 設備無法正常工作，或您無法透過用戶手冊來正常工作；
- 設備摔落或損壞；
- 設備有明顯外觀損；

15. 請勿將設備儲存在超出建議溫度範圍的環境，即不要低於 -40° C（-40° F）或高於 85° C（185° F），否則可能會造成設備損壞。
16. 注意：若電池更換不正確，將有爆炸危險。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 規定，操作員所在位置音量不可高於 70 分貝。
18. 限制區域：請勿將設備安裝於限制區域使用。
19. 免責聲明：請安全訓示符合 IEC 704 - 1 要求。研華公司對其內容之準確性不承擔任何法律責任。
20. 消费者若使用电源适配器供电，则应购买配套使用获得 CCC 认证并满足标准要求的电源适配器。

警告：機殼高溫。請勿在使用過程中觸碰上方散熱鰭片。

Contents

Chapter 1

Overview

This chapter provides an overview of UNO-2484G V2 specifications.

- Introduction
- Safety Precautions
- Accessories

1.1 Introduction

The UNO-2484G V2 is an embedded hardware-ready platform capable of shortening development time. The system offers a wide range of networking interfaces to satisfy the various needs of different applications. Equipped with the 11th Intel® Core™ i processor, and 4GB or 8GB DDR4 RAM. It supports wide temperature range operation (-20 ~ 60°C/-4 ~ 140°F) and ample I/O - including 1 x GbE, 3 x 2.5 GbE, 2 x mPCIe, 1 x M.2 B-key, 1 x M.2 M-key, 1 x HDMI, 1 x DP, 1 x USB2.0, 3 x USB 3.2, 1 x USB TypeC, and 4 x COM. It also supports 2 x Mini PCIe slot (PCIe/USB2.0 signal) to enable expansion. An optional 2nd stack extension kit supports 2 x iDoor modules, such as industrial Fieldbus, as well as I/O and peripheral modules.

The UNO-2484G V2 also has one M.2 B key, one M.2 M key for convenient expansion. This allows the UNO-2484G V2 to be integrated with high speed Wi-Fi 6, 5G, and NVMe SSD for high data-transmission efficiency With support for multiple drivers and operating systems, including Windows 10, and Linux, users can easily integrate applications on application-ready platforms in order to offer versatile functions for diverse requirements.

1.2 Safety Precautions

Below are a few safety precautions for preventing injury when making connections. In most cases, users can use a standard cable for connection.

Warning! *Always disconnect the power cord from the chassis before manual handling. Do not make any configuration changes when the power is on. The sudden rush of power can damage sensitive electronic components. Only experienced electronics personnel should open the chassis.*

Warning! *Toujours à la terre pour éliminer toute charge d'électricité statique avant toucher UNO-2484G V2. Appareils électroniques modernes sont très sensi- bles à charges d'électricité statique. Utilisez un bracelet antistatique à tout moment. Placez tous composants électroniques sur une surface antistatique ou dans un statique-sac blindé.*

Caution! *Always ground yourself to remove any static electric charge before touching UNO-2484G V2. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag.*

Caution! *Toujours débrancher le cordon d'alimentation de votre boîtier lorsque vous êtes travailler. Ne branchez pas lorsque l'appareil est allumé. Un afflux soudain de puissance peut endommager les composants électroniques sensibles. Seulement connu personnel de l'électronique devraient ouvrir le châssis.*

1.3 Packing List

Please refer to below packing list:

- UNO-2484G V2
- 1 x plug-in block for power wiring
- Simplified Chinese manual
- Quick Start Guide
- Warranty card
- Thermal pad M.2 M key module: 1990038768N010
- Thermal pad M.2 B key module: 1990038769N010

If anything is missing or damaged, contact your distributor or sales representative immediately.

1.4 Hardware Specifications

1.4.1 General

Table 1.1: General	
Dimensions (W x D x H)	40 x 140 x 200 mm (1.57 x 5.51 x 7.87 in)
Weight (Net)	3kg (6.61lbs)
Mounting	Stand/Wall mount
Power Requirement	10 - 36VDC
Power Consumption	30.2W (typical), 80W (Max)

1.4.2 System Hardware

Table 1.2: System Hardware	
BIOS	AMI EFI X64
Watchdog Timer	Programmable 255 levels timer interval, from 1 to 255 sec
Hardware Security	TPM 2.0
Processor	Intel Celeron® 6305E 1.8GHz, or CoreTM i3-1115G4E 2.2GHz/ i5-1145G7E 1.5GHz/i7-1185G7E 1.8GHz
Memory	8GB DDR4 3200MHz SO-DIMM (Up to 64GB)
Graphics Engine	Intel® Iris® Xe Graphics
Ethernet	Intel® Ethernet Controller i219/i226-LM, IEEE1588/802.1AS 803.3az
LED Indicators	1 x Power, and 1 x Battery, and 1 x SATA
Expansion	1 x M.2 B key slot (USB Signal for 3042/3052 LTE/5G Module, SATA Signal for storage) 1 x 2.5" SSD SATA drive bay (support SSD/HDD height up to 9.5mm) 1 x M.2 M key (PCIex4) 2 x mPCIe slot (PCIe, USB2.0 Signal)

1.4.3 I/O Interfaces

Table 1.3: I/O Interfaces	
LAN Ports	3 x RJ45, 10/100/1000/2500 Mbps 1 x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000BASE-T Fast Ethernet
USB Ports	3x USB 3.2 Gen2, 1x USB2.0, 1 x USB TypeC
Displays	1x HDMI1.4 (3840x2160@30Hz),1 x DP1.4a (4096x2304@60Hz)
Power Connector	1 x 2 pin terminal block

1.4.4 Environment

Table 1.4: I/O Interfaces	
Operating Temperature*	-20 ~ 60°C (-4 ~ 140°F) @5~85% RH with 0.7 m/s airflow
Storage Temperature	-40 ~ 85°C (-40 ~ 185°F)
Relative Humidity	10~95% RH @ 40° C/104° F, non-condensing
Shock Protection	Operating, IEC 60068-2-27, 50G, half sine, 11ms
Vibration Protection	Operating, IEC 60068-2-64, 2Grms, random, 5 ~500Hz, 1hr/ axis (SSD)
Ingress Protection	IP20

1.4.5 Certification

Table 1.5: Certification	
Certification	CE, FCC, UL, CCC, BSMI

1.4.6 Extension Kit (Optional)

UNO-2484G V2 features a modularized design. Advantech offers two optional 2nd stack extension kits for users to expand the functionality using an Advantech iDoor module.

1.5 Dimensions

40 x 140 x 200 mm (2.76 x 5.51 x 7.87 in)

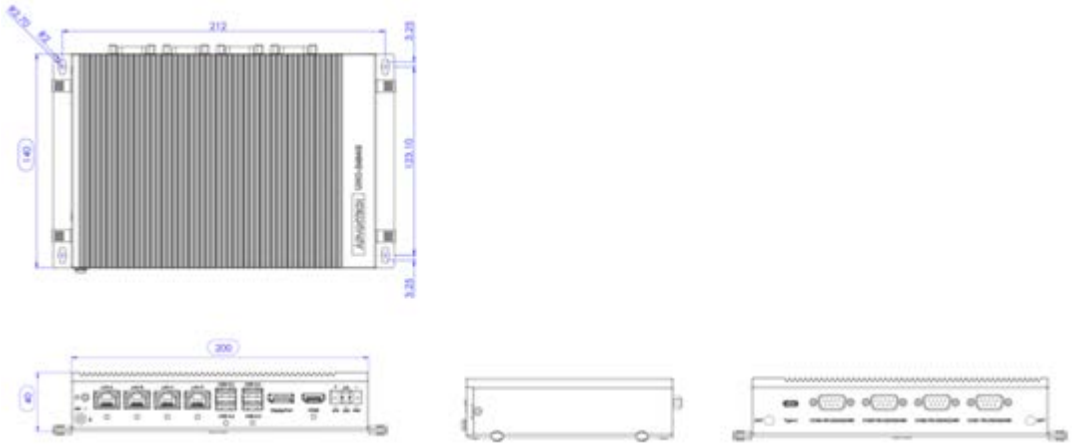


Figure 1.1 UNO-2484G V2 Dimensions

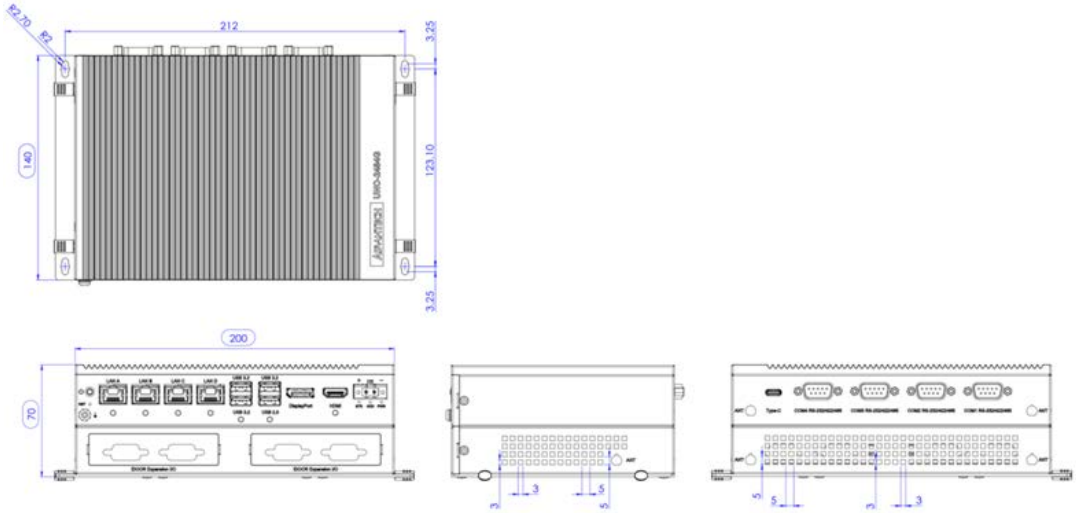


Figure 1.2 UNO-2484G V2 Dimensions (with optional extension kit)

Chapter 2

Hardware Functionality

This chapter explains how to setup the UNO-2484G V2's hardware functions, including connecting peripherals and setting switches and indicators.

- Introduction
- UNO-2484G V2 Interface
- LAN/Ethernet Connector
- Power Connector
- USB Connector
- RTC Battery
- Power Button/Power Management
- Reset Button
- PCI Express Mini Card Socket

2.1 Introduction

The following diagram demonstrates the location of UNO-2484G V2's motherboard and extension kit's internal/external connectors.

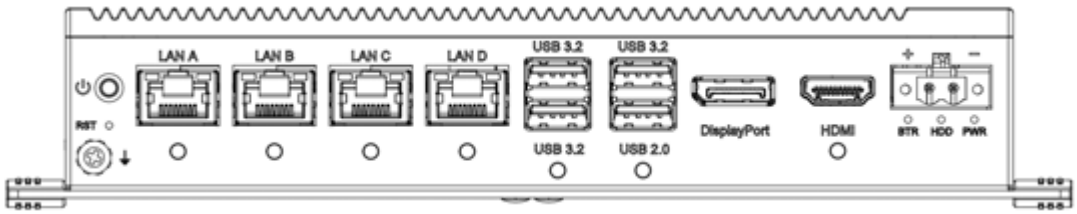


Figure 2.1 Front Panel of UNO-2484G V2

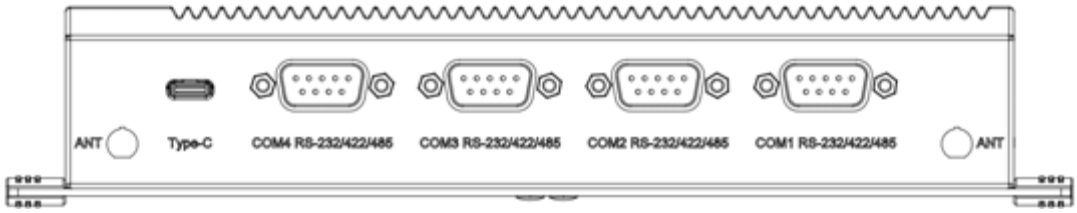


Figure 2.2 Rear Panel of UNO-2484G V2

2.2 Serial Communication Ports

The UNO-2484G V2 is equipped with four standard COM serial communication ports – COM1, COM2, COM3, and COM4. The port settings can be adjusted from the BIOS menu. Drivers are installed automatically during OS installation.

2.2.1 COM Port Interfaces (COM1, COM2, COM3, COM4)

The UNO-2484G V2 features four RS-232/422/485 ports (DB9, 50 ~ 115.2 kbps). The default setting for COM1 ~ 4 is RS-232. These settings can be adjusted in the BIOS menu. (Please refer to User Manual- Appendix A.10 for RS232/422/485 settings).

2.2.2 Power Connector

UNO-2484G V2 comes with a Phoenix connector that carries 10 - 36 V_{DC} external power input, and features reversed wiring protection. Therefore, the system will not accrue damage from reversed polarity of ground lines and power lines. (Please refer to User Manual - Appendix A.1 for pin assignments)

2.2.3 LAN: Ethernet Connector

UNO-2484G V2 is equipped with two Gigabit LAN controllers. An Intel® i219-LM/ Ethernet controller that complies with IEEE 802.3 10/100/1000 Mbps and three Intel® i226-LM/Ethernet controller that complies with IEEE 802.3 10/100/1000/2500 Mbps are used as the controller chip. The Ethernet port is a standard RJ-45 jack. Additionally, LED indicators are provided on the front of the device to indicate the system's Link (off/green/ orange) and Active (green) status. (Please refer to User Manual-Appendix A.2 for pin assignments.)1=-0.

2.2.4 USB Connector

UNO-2484G V2 features 3 x USB ports for Rev. 3.2 specifications and 1 x USB 2.0port. The USB connectors support plug-and-play and hot-swap-ping functionality for external devices. Additionally, this can be enabled/disabled in the BIOS menu. (Please refer to User Manual- Appendix A.3 for pin assignments.)

2.2.5 HDMI Connector

The UNO-2484G V2 provides 1 x HDMI 1.4 connector for a high resolution interface, 3840 x 2160 @30Hz. (Please refer to User Manual- Appendix A.4 for pin assignments.

2.2.6 DP Connector

The UNO-2372G V2 provides 1 x DP 1.4a connector for a high resolution interface, 4096x2304@60Hz. (Please refer to User Manual- Appendix A.4 for pin assignments.)

2.2.7 RTC Battery

The UNO-2484G V2 is equipped with an RTC battery to ensure that the system clock and BIOS settings are retained after power disconnections.

- **Type:** BR2032
- **Output Voltage:** 3 V_{DC}

2.2.8 Power Button/Power Management

Press the “PWR” button to power on/off the UNO-2484G V2 (ATX type). The system can be configured to AT mode by adjusting the onboard switch to automatically turn the system on when there is power input. (Refer to Appendix A.2 for more information.)

2.2.9 Reset Button

Press the “Reset” button to activate the hardware reset function.

2.2.10 mPCIe Connector

The UNO-2484G V2 supports 2x mPCI Express mini card sockets. The mPCIE1 and mPCIE2 interface is provided to support various mPCIe extension modules for diverse applications. The UNO-2484G V2 double-stack model also supports the integration of iDoor modules (e.g., DI/O, COM, industrial fieldbus, etc.) via the MINI1 interface.

2.2.11 M.2 B-key Connector

There is one M.2 B Key connector for M.2 cards, labeled “M2_B1” on the mother board. This M.2 interface is USB3.0 signal. It supports the installation of M.2 3042/3052 module (w/ USB 3.0 Signal), and supports SATA signal for storage module.

(Please refer to user manual Appendix A.7 for pin assignments.)

Note! *In addition to the M.2 B key (M2_B1) socket, the system features a micro SIM slot for supporting 5G/LTE function. However, users are required to install a 5G/LTE M.2 B key module to enable this function.*

2.2.12 M.2 M-key Connector

There is one M.2 M Key connector for M.2 cards, labeled “NVME1” on the mother board. This M.2 M key interface is a PCIex4 signal. it supports the installation of M.2 2280 storage module.

2.2.13 Nano SIM Slot

There’s one Nano SIM slot for supporting LTE function, labeled “CN10” on board. In addition to install SIM card on “SIM1”, users are required to install a LTE Module on “M2_B1” M.2 B Key to enable the functionality.

2.2.14 LED Indicators

Three LEDs indicate the status of the system’s power and RTC battery.

- **PWR (Power):** Green indicates “normal” and orange indicates “standby”.

This product offers two antenna mounting holes covered by pre-cut holes for users to install an antenna kit for LTE or wireless functions.

2.3 Base Unit’s Internal Connectors

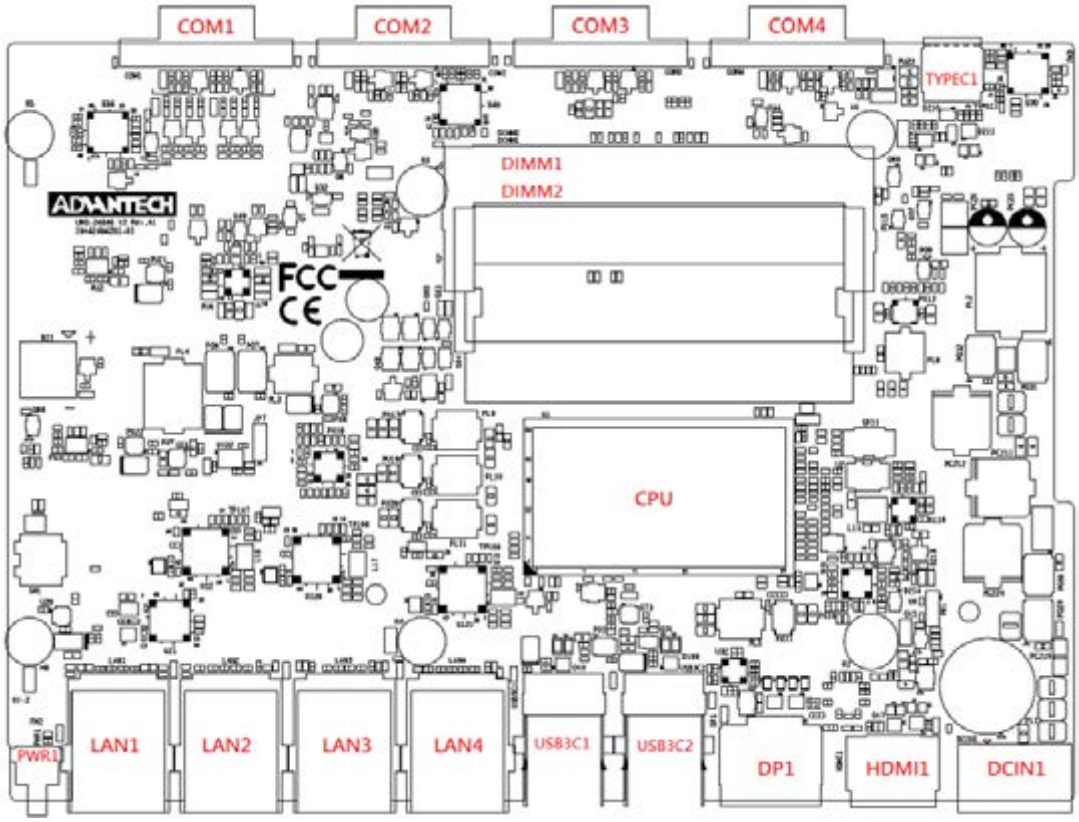


Figure 2.3 Diagram of Connector Locations on UNO-2484G V2 (Top Side)

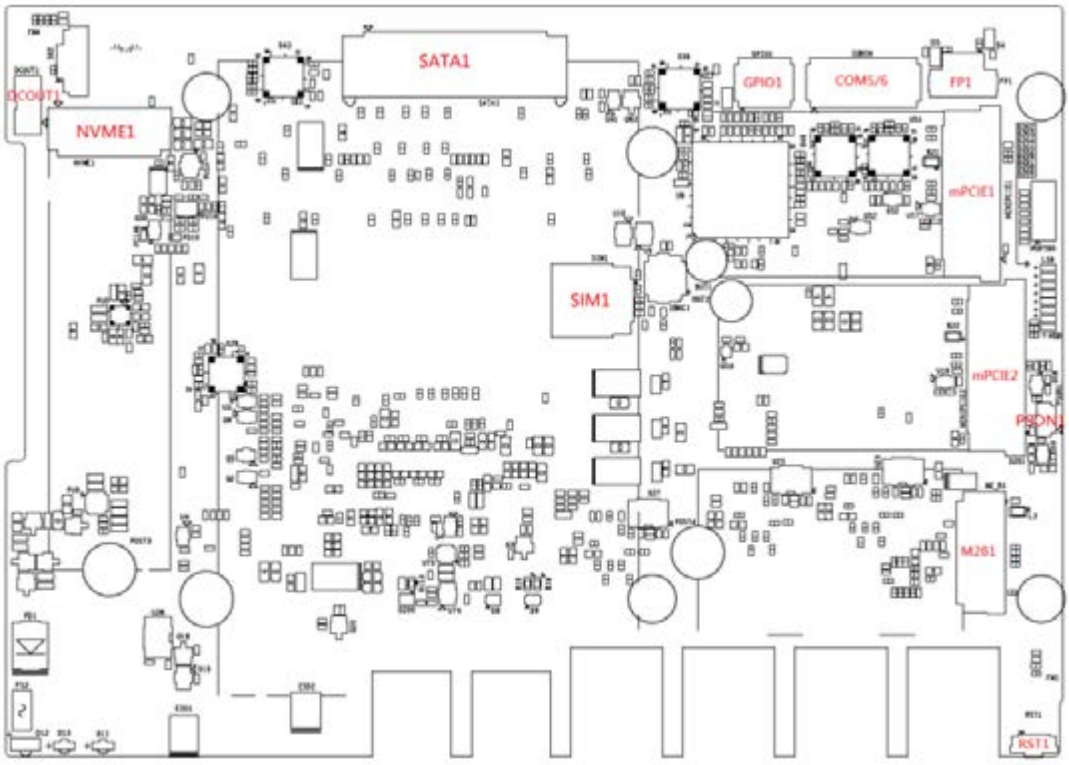


Figure 2.4 Diagram of Key Components Location on UNO-2484G V2 (Bottom Side

Table 2.1: Connectors and Jumpers

Category	Label	Function
External	DCIN1	Power-in connector
	HDMI1	HDMI connector
	DP1	DisplayPort connector
	TYPEC1	TYPE-C connector
	USB3C1	USB 3.2 x2 Connector
	USB3C2	USB 3.2+2.0 Connector
	LAN1	LANA Connector
	LAN2	LANB Connector
	LAN3	LANC Connector
	LAN4	LAND Connector
	PWR	Power button
	RST	Reset button
	COM1	Serial port connector
	COM2	Serial port connector
	COM3	Serial port connector
	COM4	Serial port connector

Table 2.1: Connectors and Jumpers		
Internal	COM56	Serial port pin header
	MPCIE1	MiniPCIe Connector
	MPCIE2	MiniPCIe Connector
	NVME1	M.2 M key for 2280 Connector
	M2_B1	M.2 B key for 2242/3052 Connector
	GPIO1	GPIO interface
	SIM1	Nano SIM slot for M2_B1
	PSON1	AT/ ATX setting

Chapter 3

Initial Setup

This chapter explains the process for initializing the UNO-2484G V2.

- Chassis Grounding
- Connect the Power Supply
- Open/Close the Rear Cover
- Hard Disk Installation
- Extension Kit Installation

3.1 Chassis Grounding

The UNO-2484G V2 provides adequate EMI protection and a stable grounding base. Moreover, an easy-to-connect chassis grounding point is also provided.

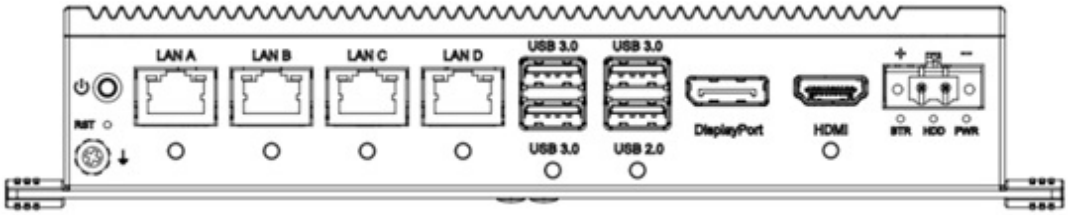


Figure 3.1 Chassis Grounding Connection

Cabinet/rack system Installation:

1. Connect the cabinet/Rack system to the earth/ground.
2. Install the UNO device into the cabinet/Rack system without I/O or power cables.

System Wiring:

1. Connect the cabinet/rack system to the earth/ground.
2. Ensure that all cabinets/rack system have been grounded together.
3. Connect the ground of the power supply to the cabinet/rack system.
4. Connect the ground pin of UNO device to the cabinet/rack system.

3.2 Connect the Power Supply

The UNO-2484G V2 is intended to be supplied by an approved power adapter or DC power source. This adapter is rated at 10 - 36dc, and has a Tmax of 60° C (140° F). If you need further assistance or information, please contact Advantech.

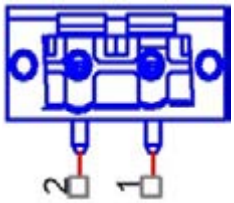
Note! *It is recommended to choose a 60W adapter when selected iDoor expansion module (e.g. PCM-24R2PE) is installed. Recommended PN: 96PSA-A120W19T2-3.*

Follow these instructions:

1. Insert the positive and negative wires into the V+ and V- contacts on the terminal block connector.
2. Tighten the wire-clamp screws to prevent the DC wires from coming loose.

Take the following guidelines into consideration before wiring the device:

1. The terminal block is suitable for 14-24 AWG (8A). The torque value is 7.0 lb-in, pitch 5.08mm. Use copper conductors only.
2. The temperature rating of the input connection cable should be higher than 105° C (221° F).

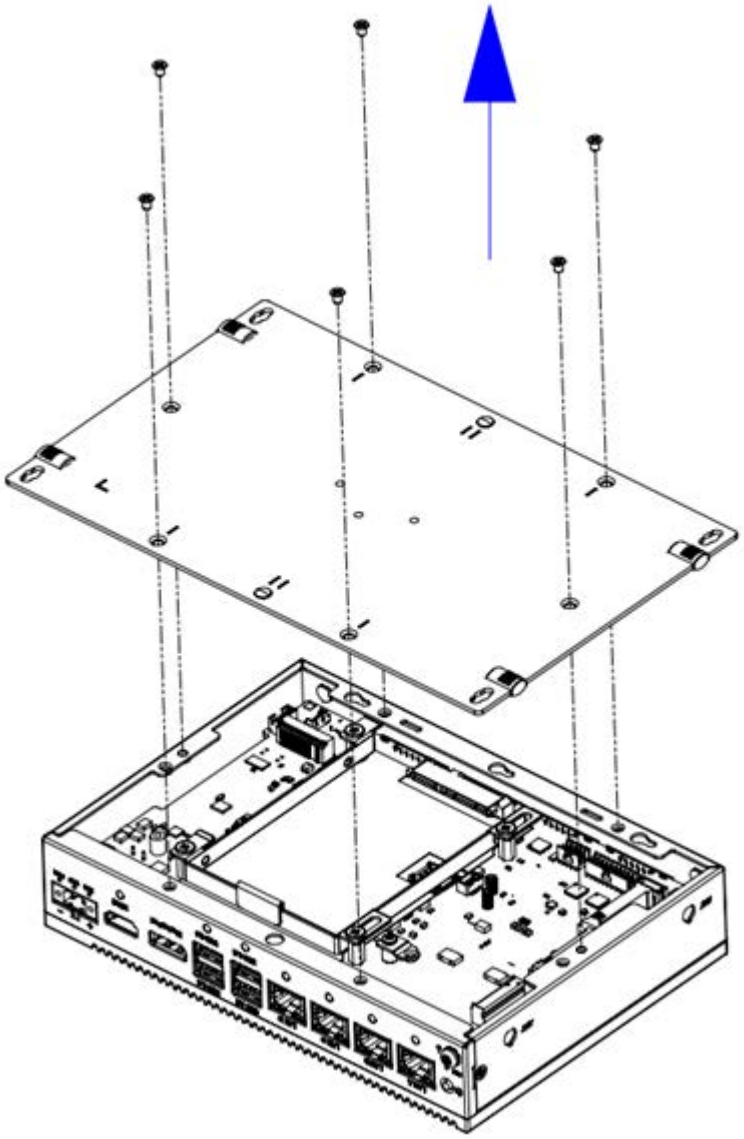


3.3 Open/Close the Rear Cover

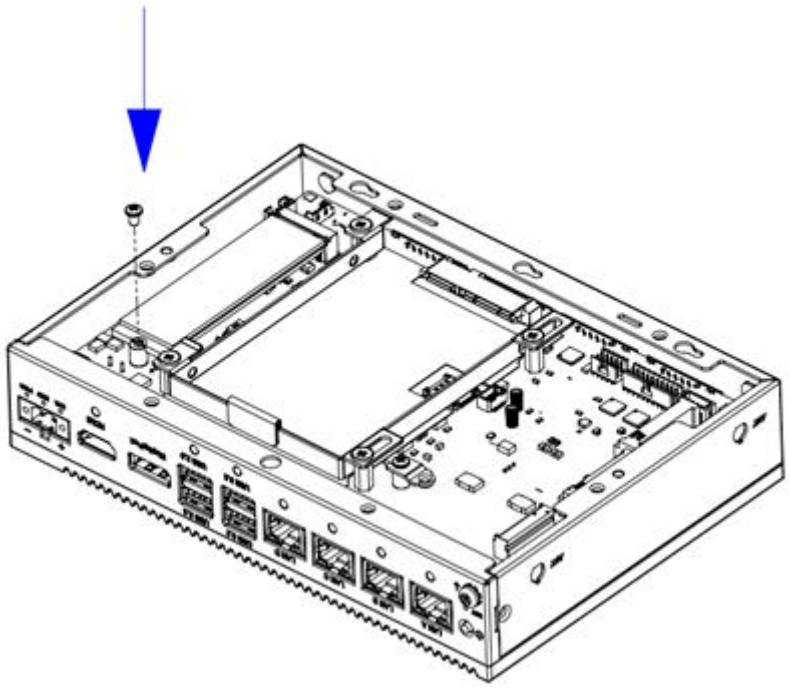
The rear cover can be opened in order to install a mPCIe/ NVME/ M.2 module, SSD, or HDD, or to adjust the switch settings.

3.3.1 Installing NVME Module

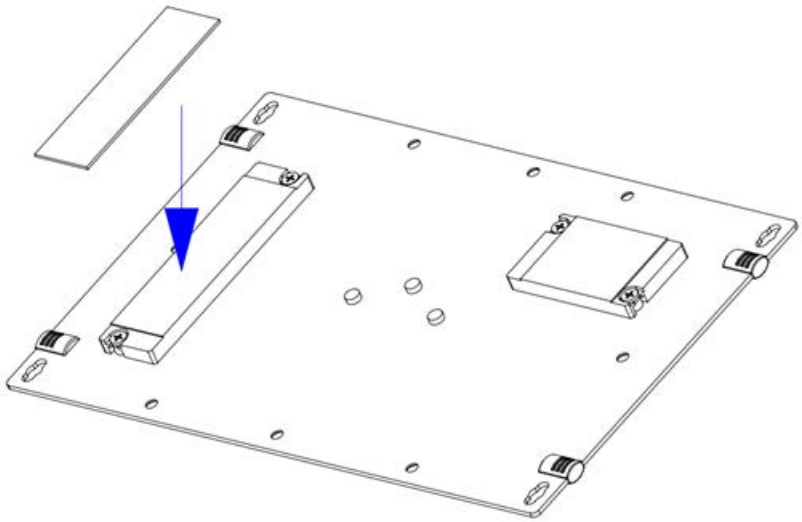
1. Remove the six screws (PN:1930001361*6pcs) on the rear cover.



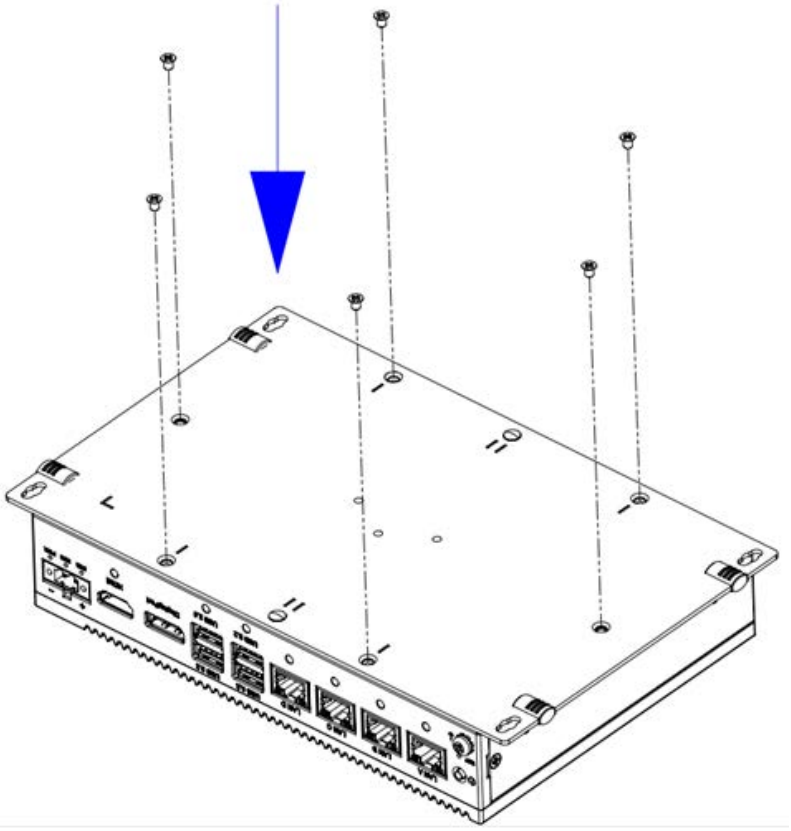
2. Insert NVME card at the location: “NVME1” and secure it with the provided screw (PN: 19350304A0*1pcs).



3. Paste the thermal pad (PN: 1990038768N010*1pcs) on the Aluminum block from the accessory bag.

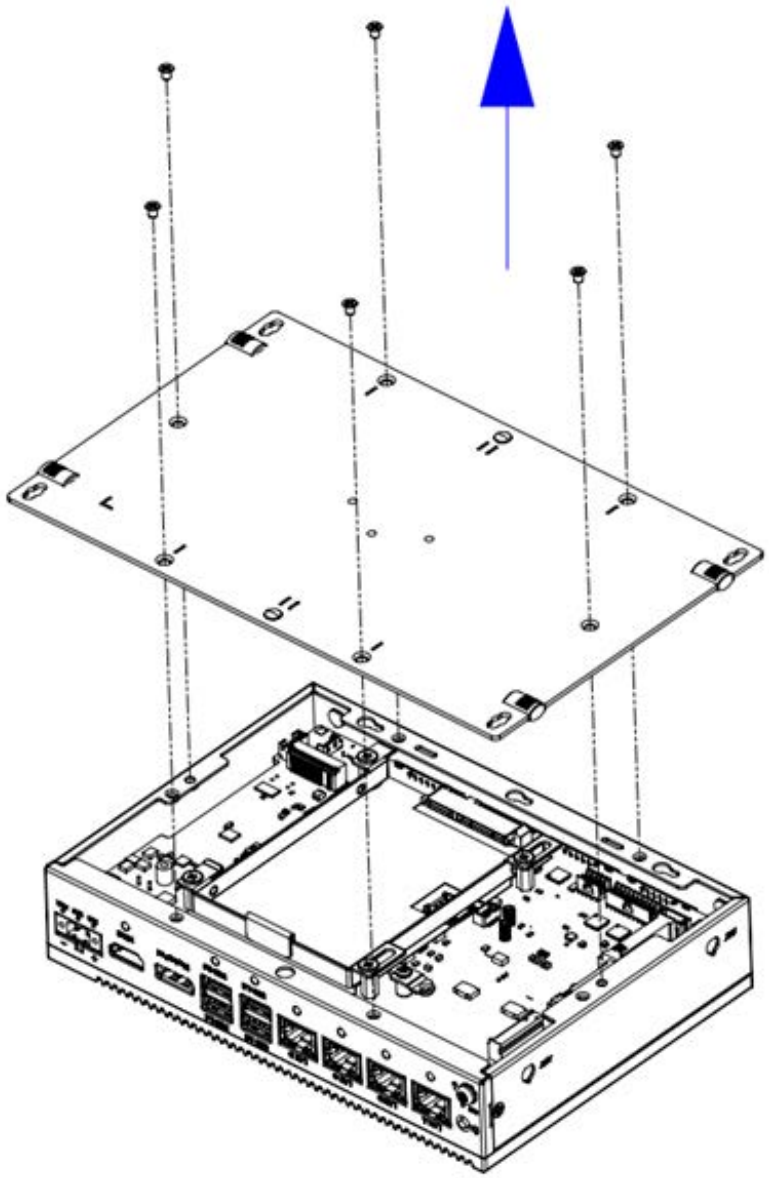


4. Close the rear cover and re-attach the six screws (PN:1930001361*6pcs) back.

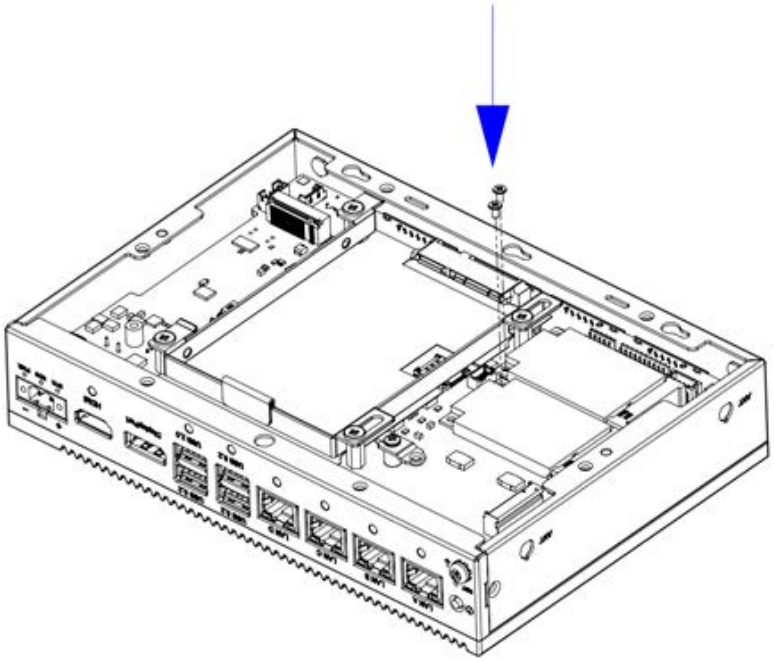


3.3.2 Installing miniPCIe Module

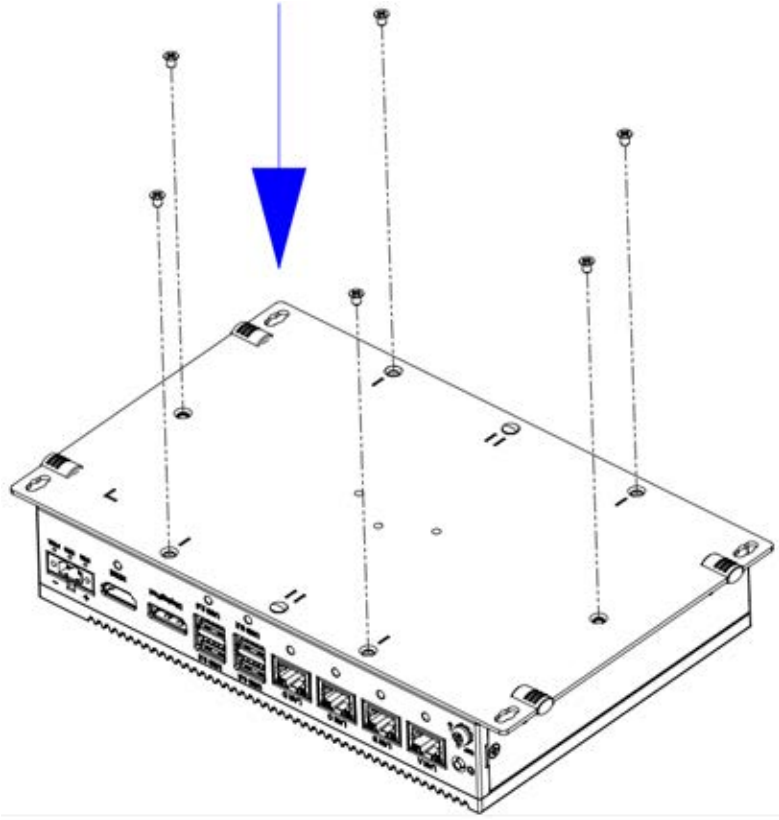
1. Remove the six screws (PN:1930001361*6pcs) on the rear cover.



2. Insert miniPCIe card at the location: “mPCIE1” or “mPCIE2” and secure it with the provided screw (PN: 1930000198*1pcs).

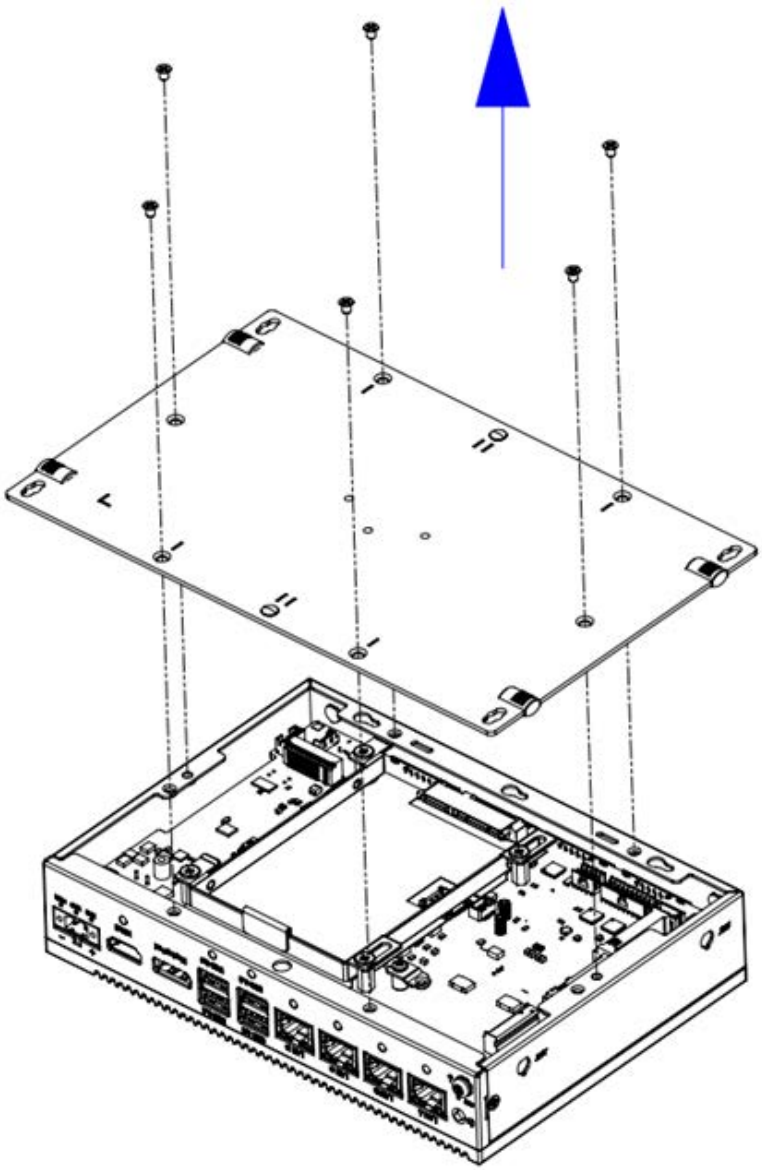


3. Close the rear cover and re-attach the six screws back (PN:1930001361*6pcs).

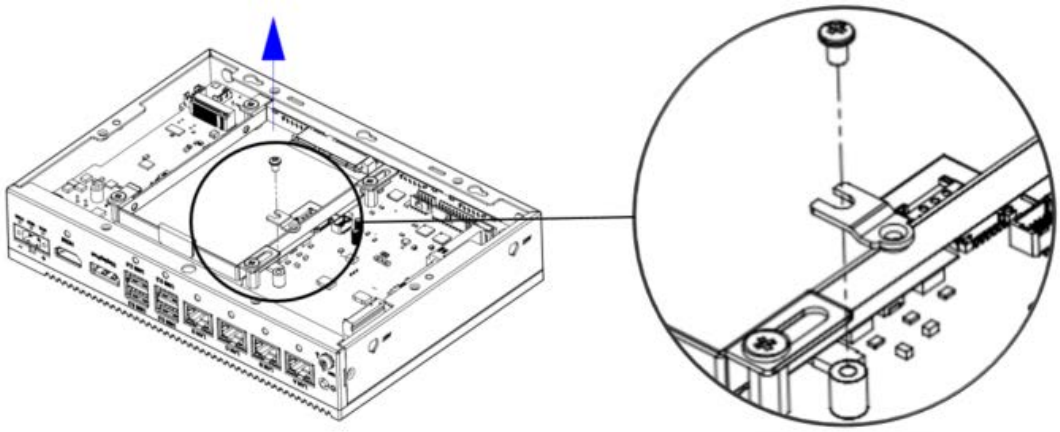


3.3.3 Installing M.2 B Key Module

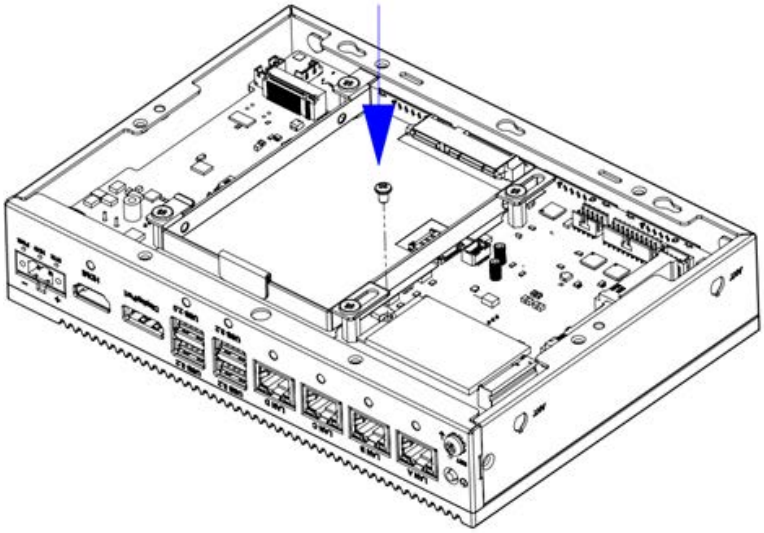
1. Remove the six screws (PN:1930001361*6pcs) on the rear cover.



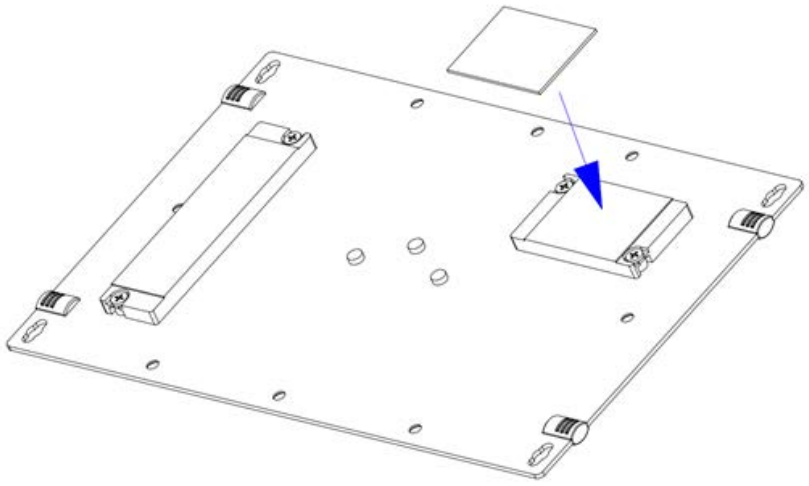
2. Remove the pre-assy iron part (PN:1960102502T000*1pcs) and the screw. (PN:19350304A0*1pcs)



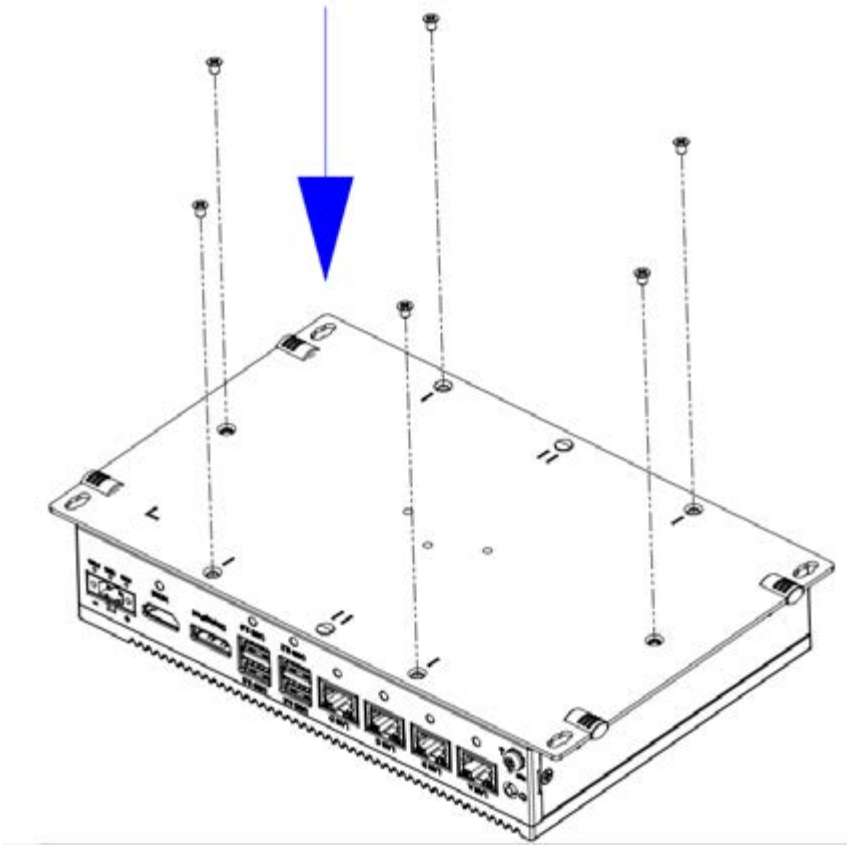
3. Insert the M.2 2252 module and secure it with the provided screw (PN: 19350304A0*1pcs).



4. Paste the thermal pad (PN: 1990038769N010*1pcs), on the Aluminum block from the accessory bag.

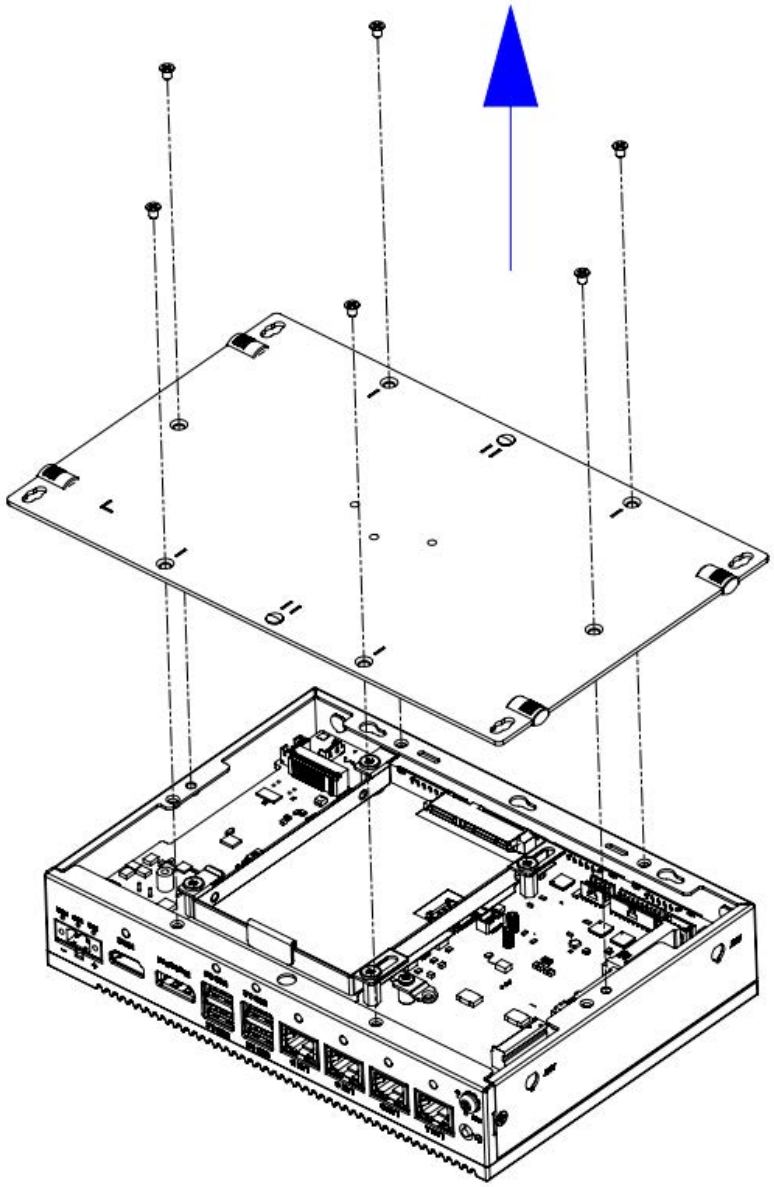


5. Close the rear cover and re-attach the six screws back (PN:1930001361*6pcs).

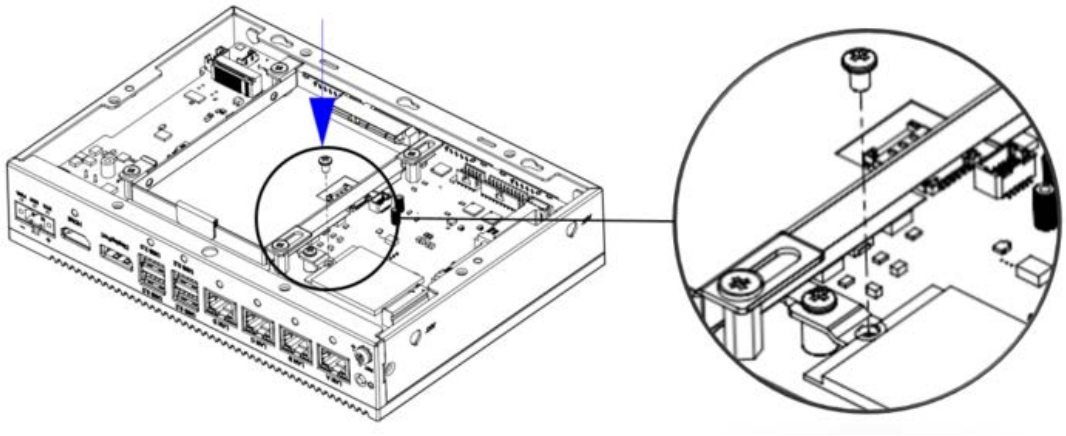


3.3.4 Installing M.2 B key 2242 Module

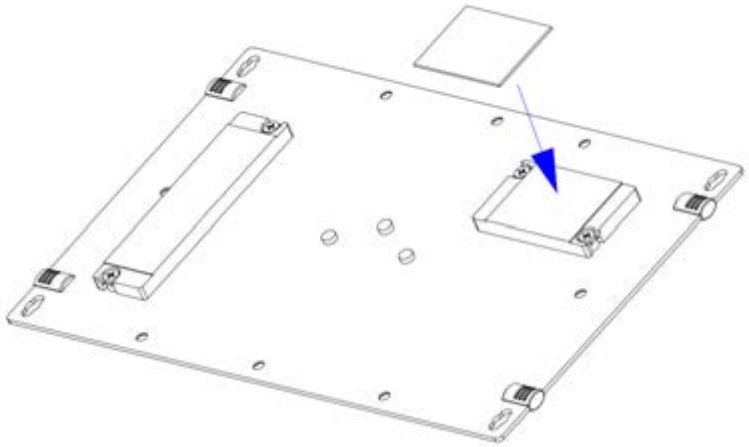
1. Remove the six screws (PN:1930001361*6pcs) on the rear cover.



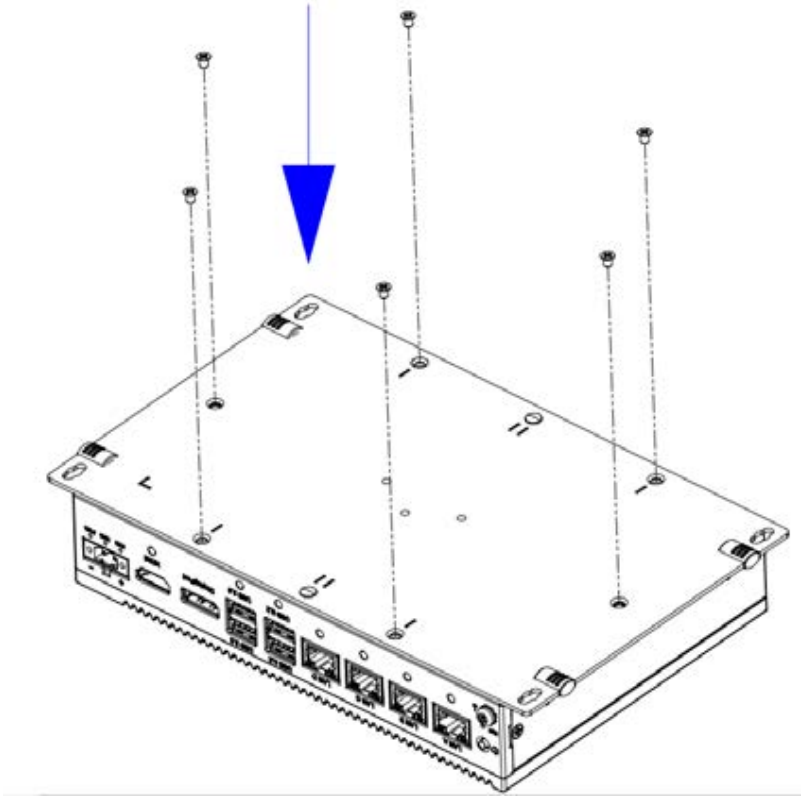
2. Insert the M.2 2242 module and secure it with the provided screw (PN: 19350304A0*1pcs).



3. Paste the thermal pad (PN: 1990038769N010*1pcs), on the Aluminum block from the accessory bag.

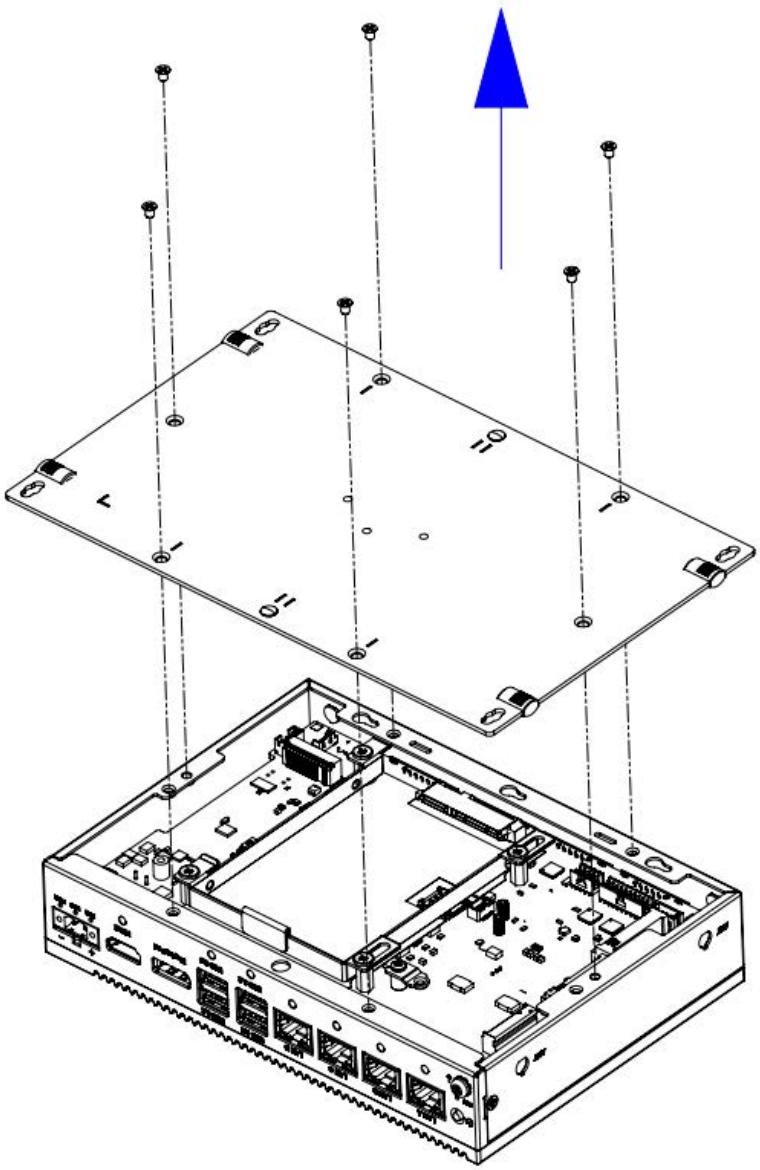


4. Close the rear cover and re-attach the six screws back (PN:1930001361*6pcs).

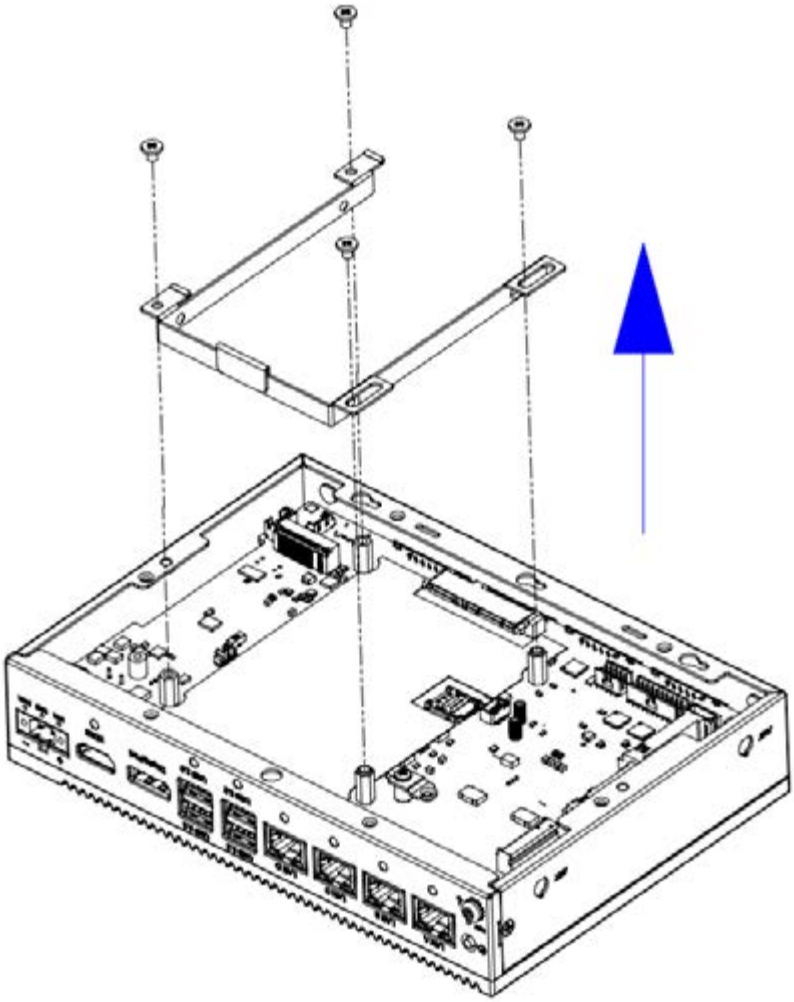


3.3.5 Installing 2.5” SSD Module

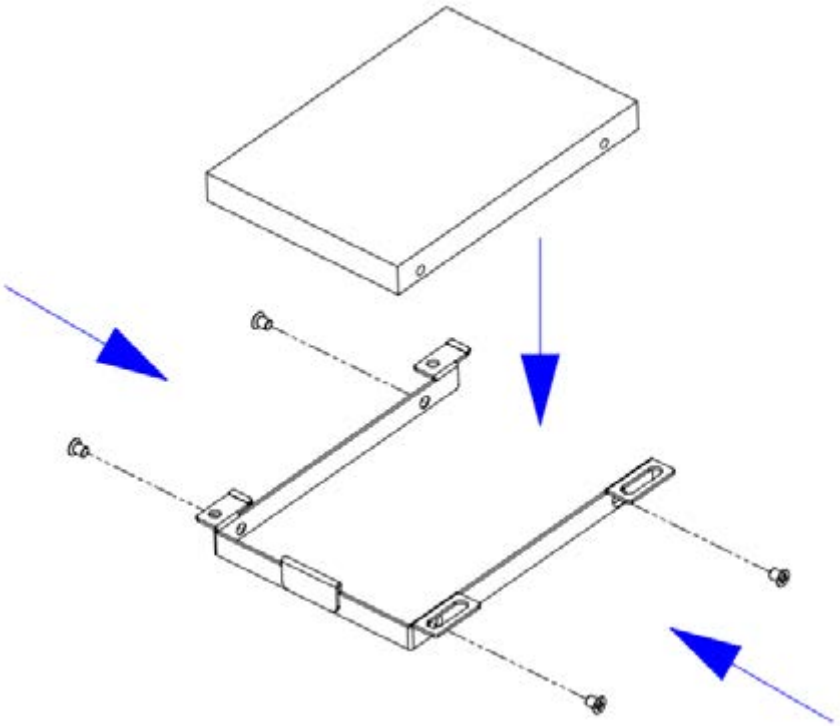
1. Remove the six screws (PN:1930001361*6pcs) on the rear cover.



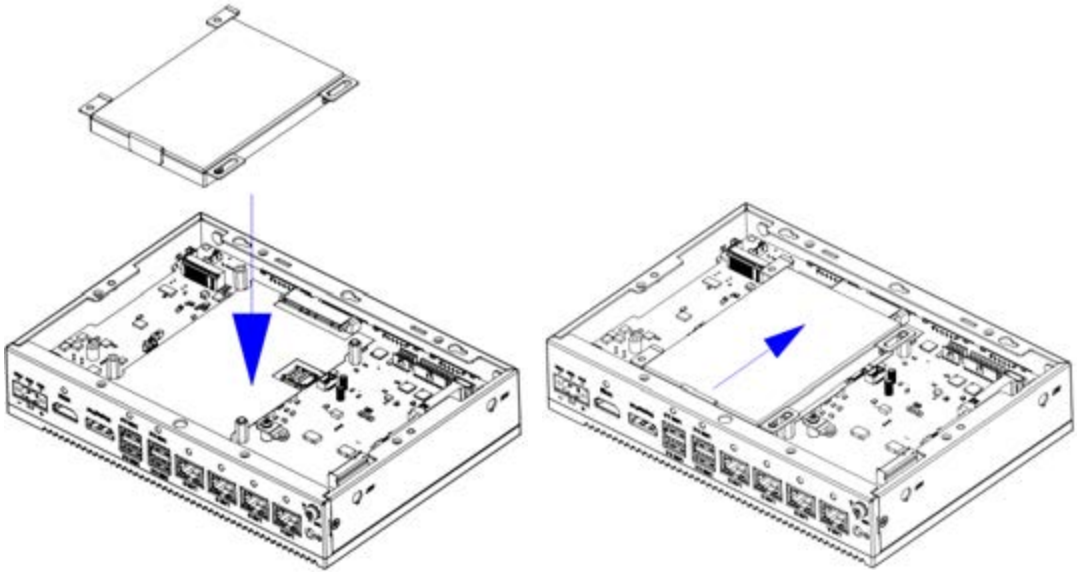
2. Remove SSD bracket (PN:1960084377N000*1pcs) and screws (PN:1930008481*4pcs).



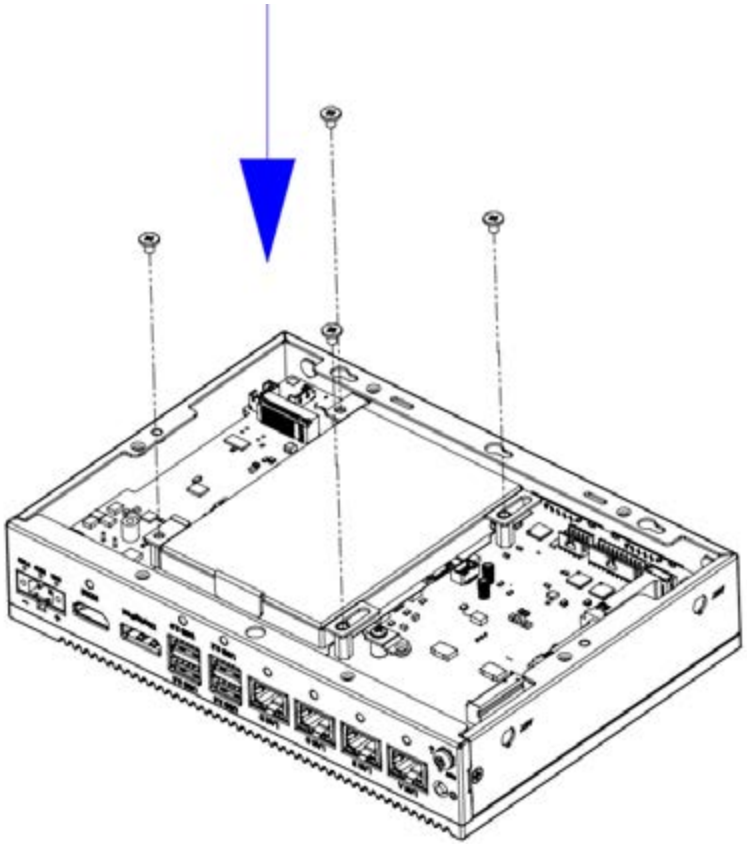
3. Assemble the SSD on the bracket with screws (PN:1930001361*4pcs).



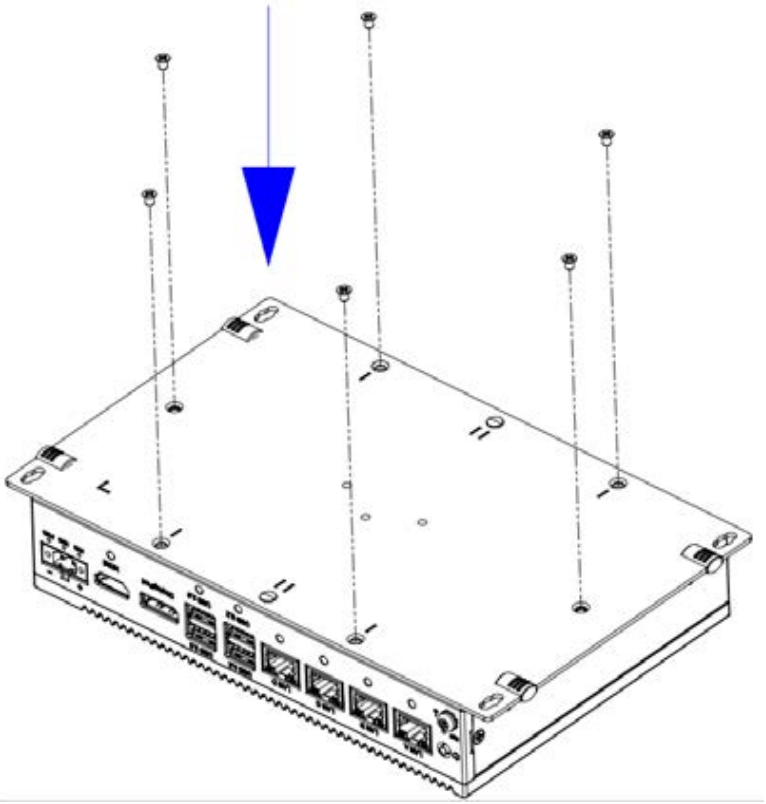
4. Assemble the SSD with bracket on the system slide rail.



5. Re-attach the SSD bracket with screws (PN:1930008481*4pcs).

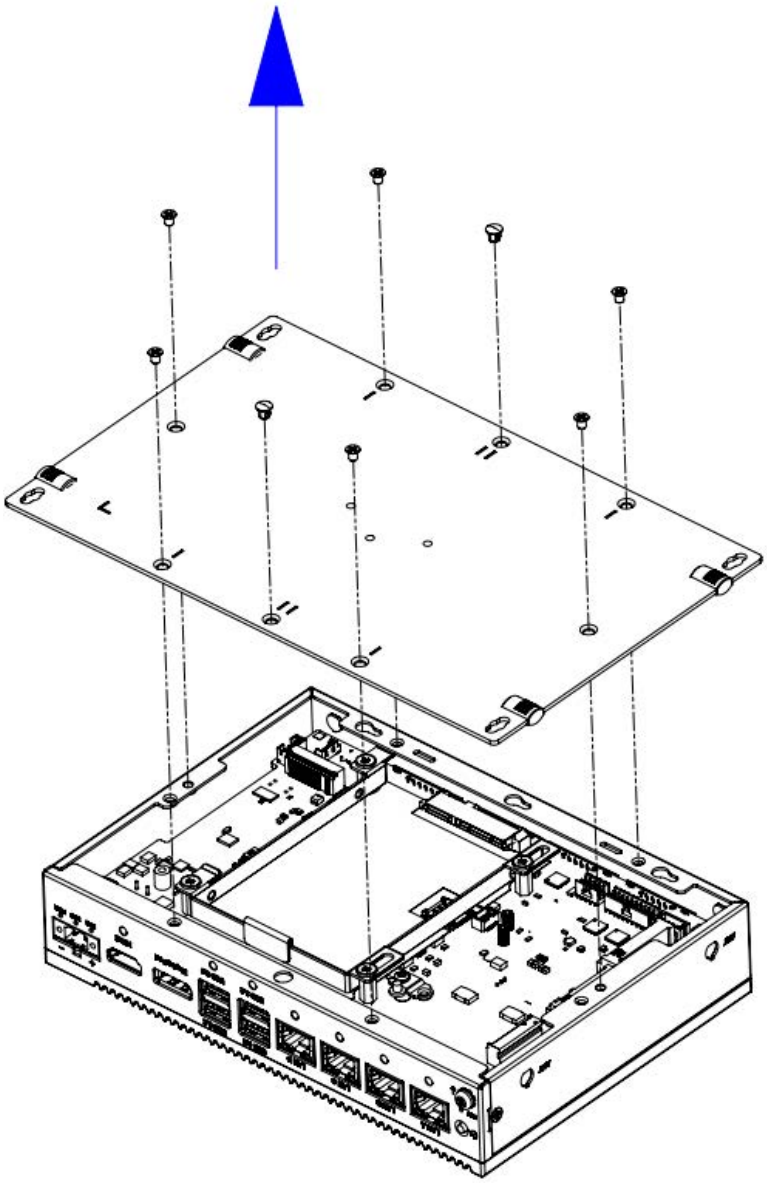


6. Close the rear cover and re-attach the six screws back (PN:1930001361*6pcs).

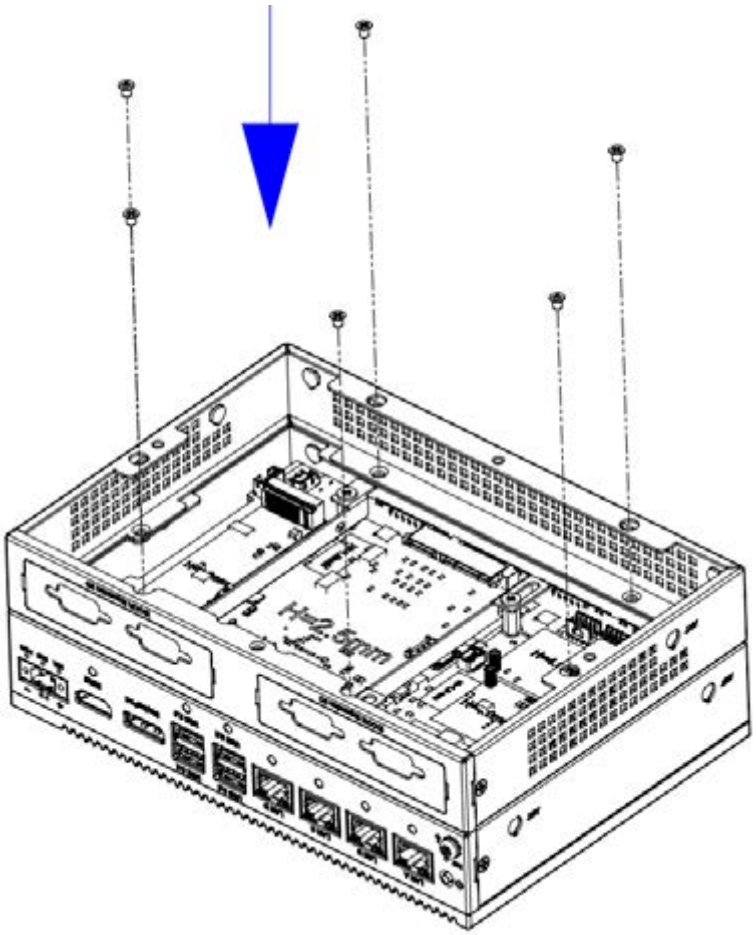


3.3.6 Installing Expansion Kit

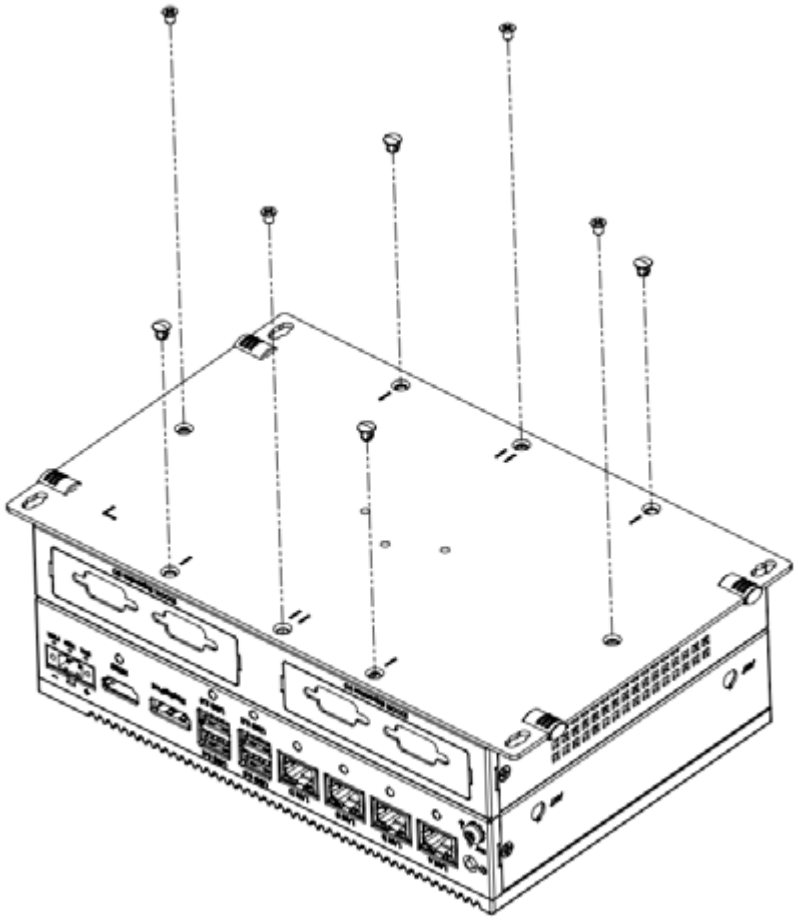
1. Remove the six screws (PN:1930001361*6pcs) and the rubbers (PN:1990038767S000*2pcs) on the rear cover.



2. Assemble the second stack with screws (PN:1930001361*6pcs).



3. Close the rear cover and re-attach the six screws (PN:1930001361*6pcs) and the rubbers (PN:1990038767S000*4pcs).



Chapter 4

BIOS Operations

4.1 Introduction

With the AMI BIOS Setup Utility, you can modify BIOS settings and control the specific features of your computer. The Setup Utility uses a number of menus for making changes and turning the specific features on or off. This chapter describes the basic navigation of the UNO-2484G V2 setup screens

Figure 4.1 Main setup screen

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in the NVRAM area so it retains the setup information when the power is turned off.

4.2 Entering BIOS Setup

Press <Del> to enter AMI BIOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

When users first enter the BIOS Setup Utility, they enter the Main setup screen. Users can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options described in this section. The Main BIOS Setup screen is shown below.

4.2.1 Main Menu

Press <Del> to enter AMI BIOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

Figure 4.2 Main setup screen

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 be. The right frame displays the key legend.

The key legend above 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**
  End user can use System time/System date options to change the system time and date. Highlight System Time or System Date using the keys. Enter new values through the keyboard, press the key or the 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 UNO-2484G 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 CPU configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens are shown below. The sub menus are described on the following pages

Figure 4.3 Advanced BIOS features setup screen

4.2.2.1 CPU Configuration

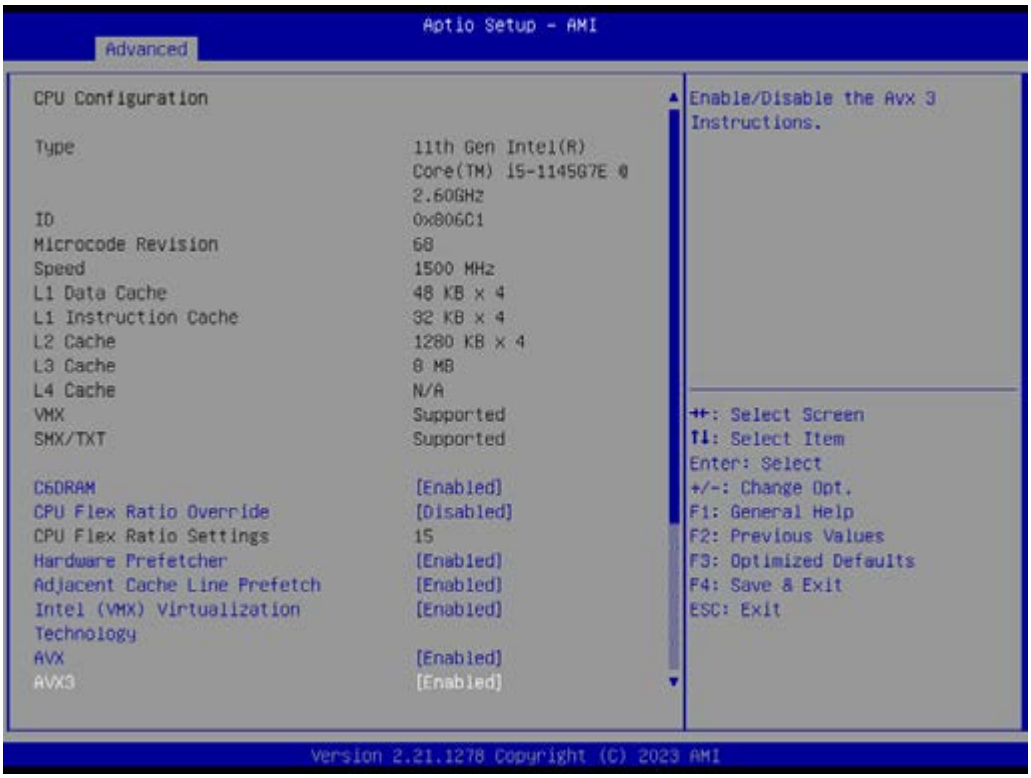


Figure 4.4 CPU configuration - 1

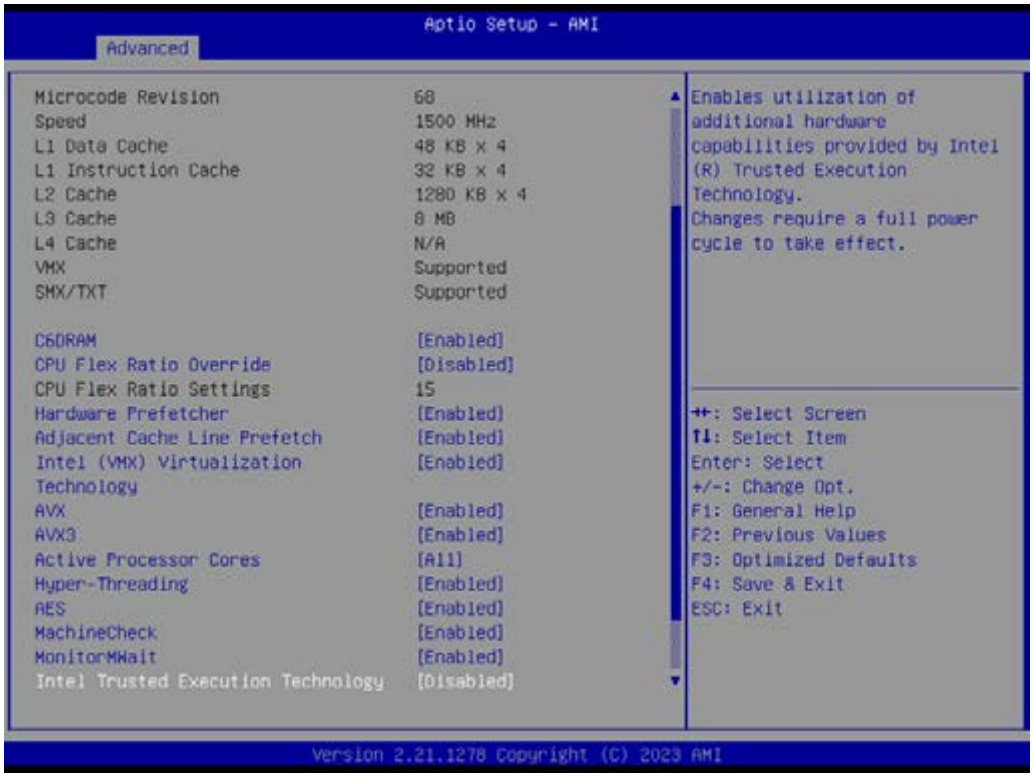


Figure 4.5 CPU configuration - 2

- **C6DRAM**
  To enable or disable moving DRAM contents to PRM memory when CPU is under C6 state.
- **CPU Flex Ration Override**
  To enable or disable CPU Flex Ration Override
- **CPU Flex Ratio Settings**
  To enable or disable CPU Flex Ration Setting change.
- **Hardware Prefetcher**
  Hardware Prefetcher is to turn on or off the NLC streamer prefetcher.
- **Adjacent Cache Line Prefetch**
  To turn on or off prefetching of adjacent cache lines.
- **Intel (VHX) Virtualization Technology**
  This feature is used to Enable or Disable VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
- **AVX**
  To enable or disable the AVX instructions.
- **AVX3**
  To enable or disable the AVX instructions.
- **Hyper-Threading**
  To enable or disable the Hyper-Threading Technology.
- **AES**
  To enable or disable AES (Advanced Encryption Standard).
- **MachineCheck**
  To enable or disable Machine Check.
- **MonitorMWait**
  To enable or disable Monitor Wait.
- **Intel Trusted Execution Technology**
  To enable or disable utilization of additional hardware capabilities provided by Intel® Trusted Execution Technology. Changes require a full power cycle to take effect.

4.2.2.2 Power & Performance

Figure 4.6 Power & Performance-1

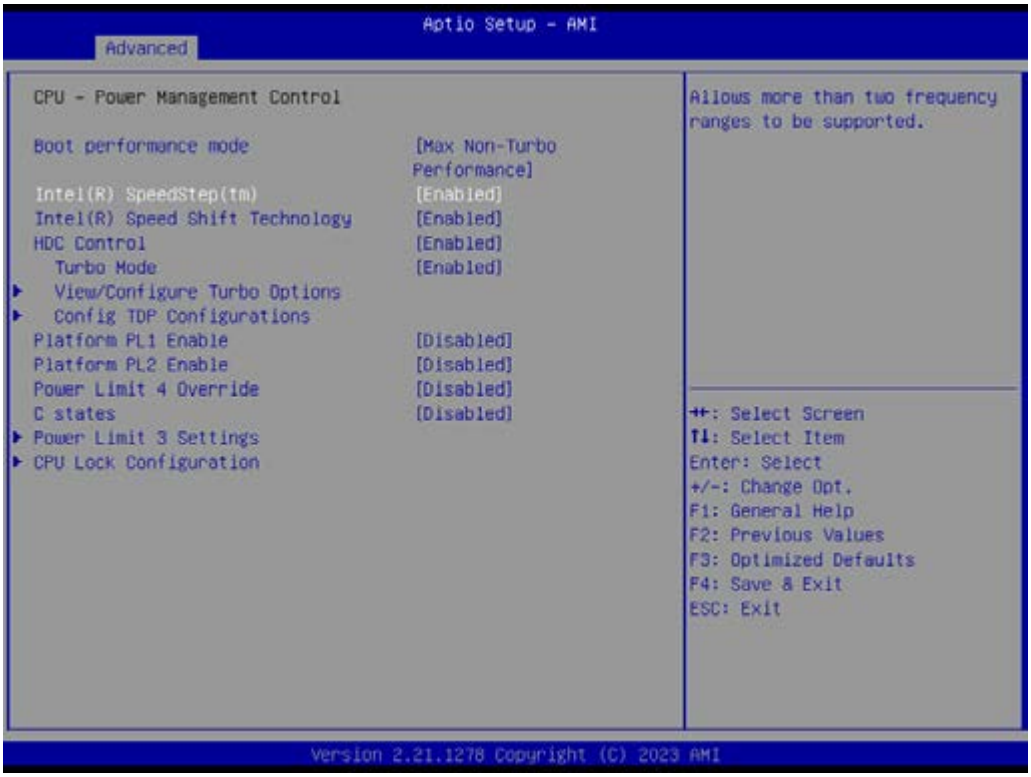


Figure 4.7 CPU - Power Management Control-1

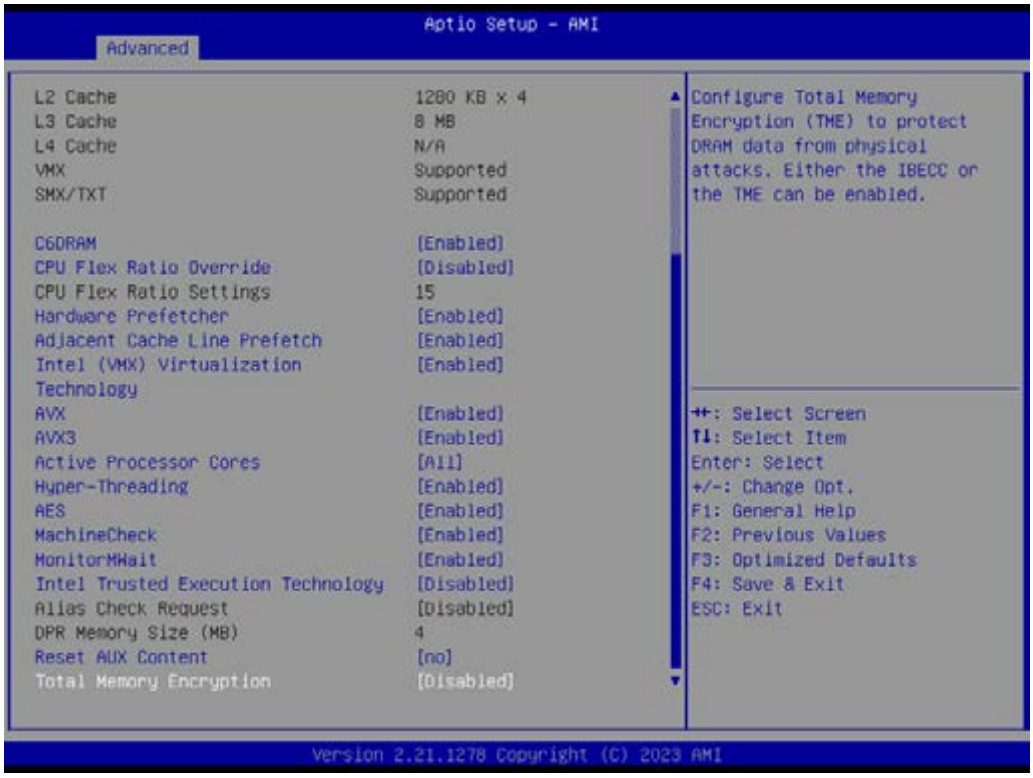


Figure 4.8 CPU - Power Management Control-2

■ CPU Power Management Control

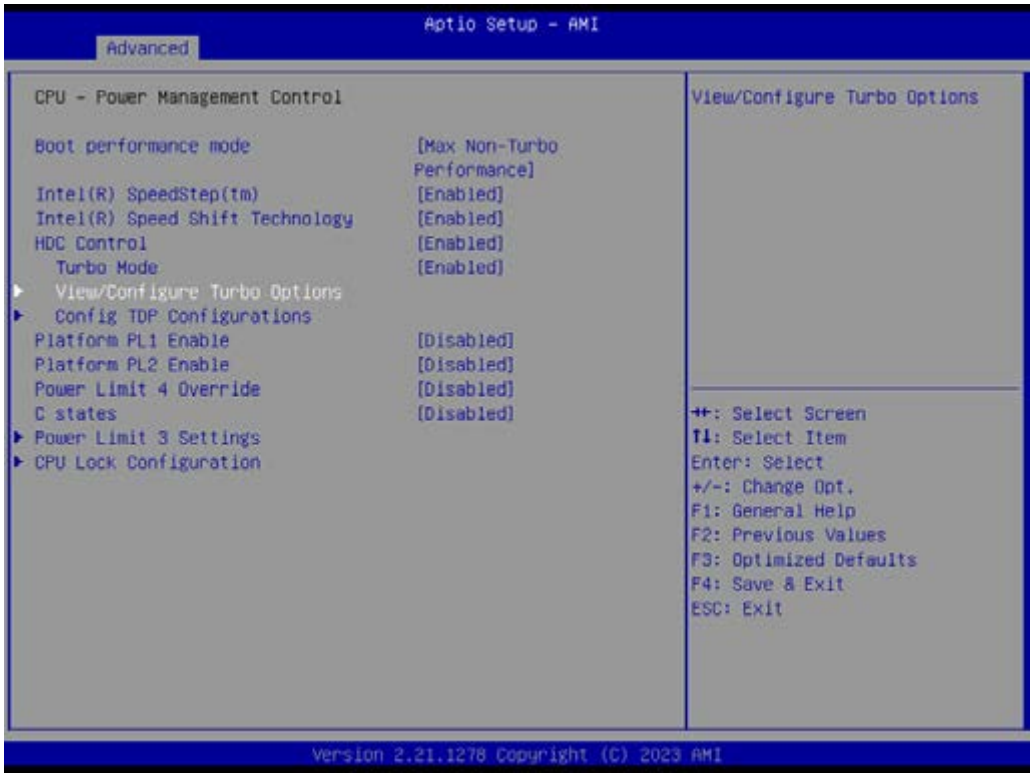


Figure 4.9 View/configure Turbo option -1

– **Intel(R) Speedstep(tm)**
Allows more than two frequency ranges to be supported.

- **Intel(R) Speed Shift Technology**
  To enable or disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-state.
- **HDC Control**
  This option allows HDC configuration.
  Disabled: Disable HDC.
  Enabled: Can be enabled by OS if OS native support is available.
  Turbo mode.

■ **View/ Configure Turbo option**

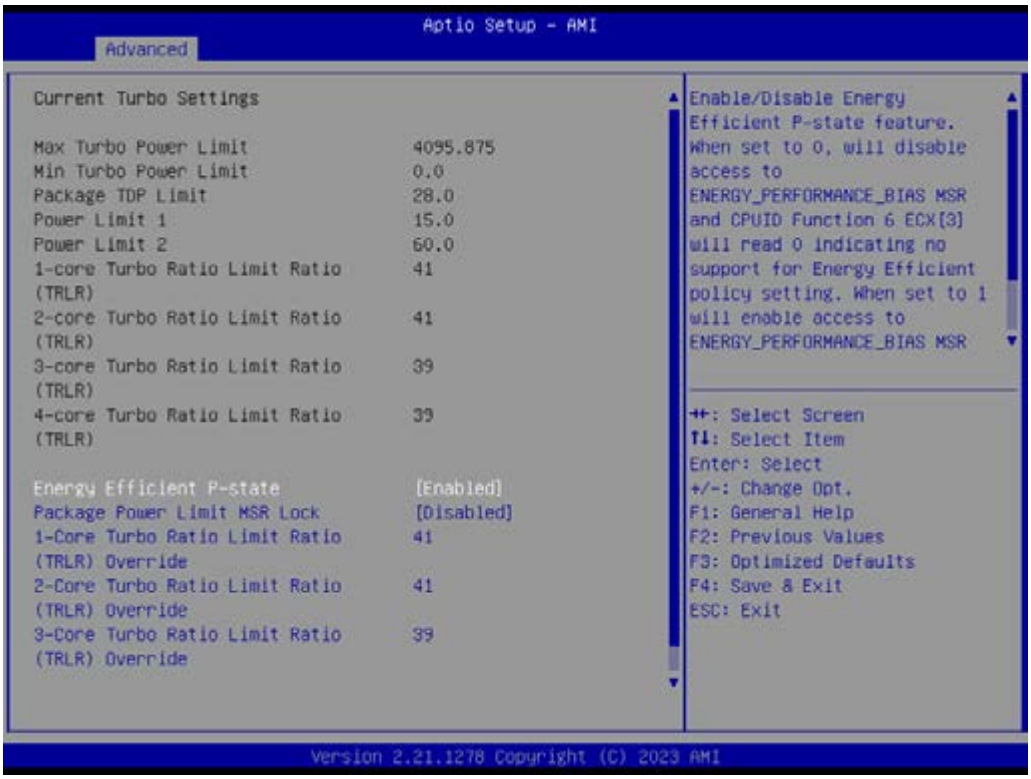


Figure 4.10 View/configure Turbo option -2

- **Energy Efficient P-state**
  Enable/ Disable Energy Efficient P-state feature. When set to 0, will disable access to ENERGY_PERFORMANCE_BIAS MSR and CPUID Function 6 ECX[3] will read 0 indicating no support for Energy Efficient policy setting. When set to 1, will enable access to ENERGY_PERFORMANCE_BIAS MSR.
- **Package Power Limit MSR Lock**
  Enable/ Disable locking of Package Power Limit settings. When enabled, PACKAGE_POWER_LIMIT MSR will be locked and a reset will be required to unlock the register.
- **1/2/3/4-Core Turbo Limit Ratio (TRLR) Override**
  x-core Turbo Ratio Limit Ratio (TRLR) with range of MAX Non-Turbo Ratio up to 120. This x-Core Turbo Ratio Limit Must be greater than to equal to other Turbo Core Ratio Limit.
- **Energy Efficient Turbo**
  Enable/ Disable Energy Efficient Turbo feature. This feature will opportunistically lower the turbo frequency to increase efficiency. Recommended only to disable in overclocking situations where turbo frequency must remain constant. Otherwise, leave enabled.

Config TDP Configurations

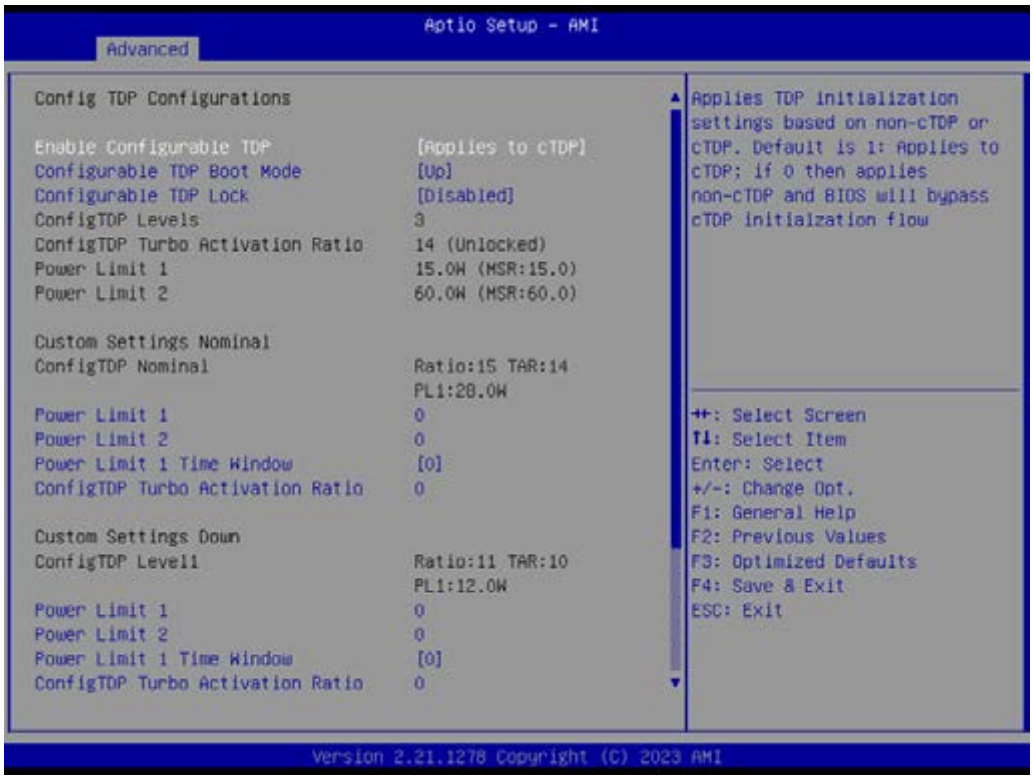


Figure 4.11 Config TDP Configurations

- **Enable Configurable TDP**
  Applies TDP initialization settings based on non-cTDP or cTDP. Default is 1: Applies to cTDP; if 0 then applies non-cTDP and BIOS will bypass cTDP initialztion flow.
- **Configurable TDP Boot Mode**
  Configurable TDP Mode as Nominal/Up/Down/Deactivation option will set MSR to Nominal and HMIO to Zero.
- **Configurable TDP Lock**
  Configurable TDP Mode Lock set the Lock bits on TURBO_ACTIVATION_RATIO and CONFIG_TDP_CONTROL. Note: When CTDP Lock is enabled Custom ConfigTDP Count will be forced to 1 and Custom ConfigTDP Boot Index will be forced to 0.
- **Power Limit 1**
  Power Limit 1 in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0= no custom override. For 12.50W, enter 12500. Overclocking SKU: Value must be between Max and Min Power Limits (specified by PACKAGE_POWER_SKU_MSR). Other SKUs: This value must be between Min Power Limit and TDP Limit.
- **Power Limit 2**
  Power Limit 2 in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0= no custom override. For 12.50W, enter 12500. Processor applies control policies such that the package power does not exceed this limit.
- **ConfigTDP Turbo Activation Ratio**
  Custom value for Turbo Activation Ratio. Needs to be configured with valid values from LFM to Max Turbo. 0 means don’t use custom value.

- **Power Limit 1 Time Window**
  Power Limit 1 Time Window value in seconds. The value may vary from 0 to 128. 0 = default value (28 sec for Mobile and 8 sec for Desktop). Defines time window which TDP value should be maintained.
- **ConfigTDP Turbo Activation Ratio**
  Custom value for Turbo Activation Ratio. Needs to be configured with valid values from LFM to Max Turbo. 0 means don't use custom value.

- **Platform PL1 Enable**
  Enable/Disable Platform Power Limit 1 programming. If this option is enabled, it activates the PL1 value to be used by the processor to limit the average power of given time window.
- **Platform PL2 Enable**
  Enable/Disable Platform Power Limit 2 programming. If this option is disabled, BIOS will program the default values for platform Power Limit 2.
- **Power Limit 4 Override**
  Enable/Disable Platform Power Limit 4 override. If this option is disabled, BIOS will leave the default values for platform Power Limit 4.
- **C States**
  Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
- **Power Limit 3 Settings**
  Power Limit 3 settings
- **Power Limit 3 Override**
  Enable/Disable Power Limit 3 Override. If this option is disabled, BIOS will leave the hardware default values for Power Limit 3 and Power Limit 3 Time Window.
- **CPU Lock Configuration**
  CPU Lock Configuration.
  - **CFG Lock**
  - **Overclocking Lock**
    Enable/Disable Overclocking Lock (BIT 20) in FLEX_RATIO (194) MSR.
- **GT – Power Management Control**

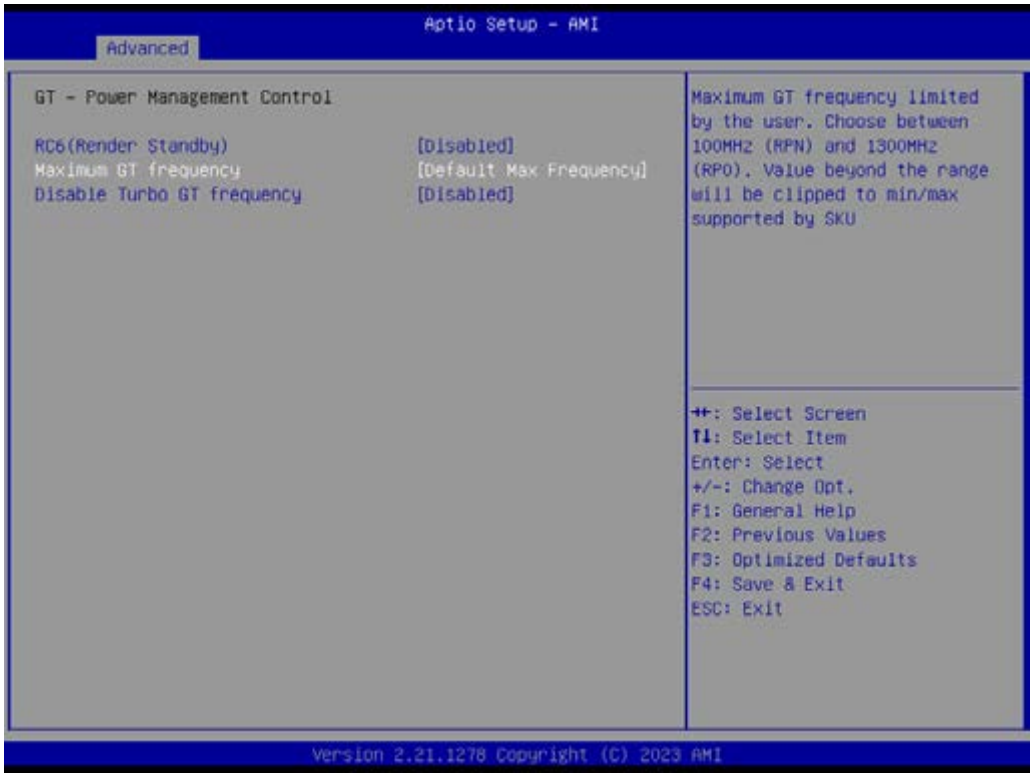


Figure 4.12 GT – Power Management Control

– **Maximum GT Frequency**
Maximum GT frequency limited by the user. Choose between 100MHz (RPN) and 1300MHz (RPO). Value beyond the range will be clipped to min/max supported by SKU.

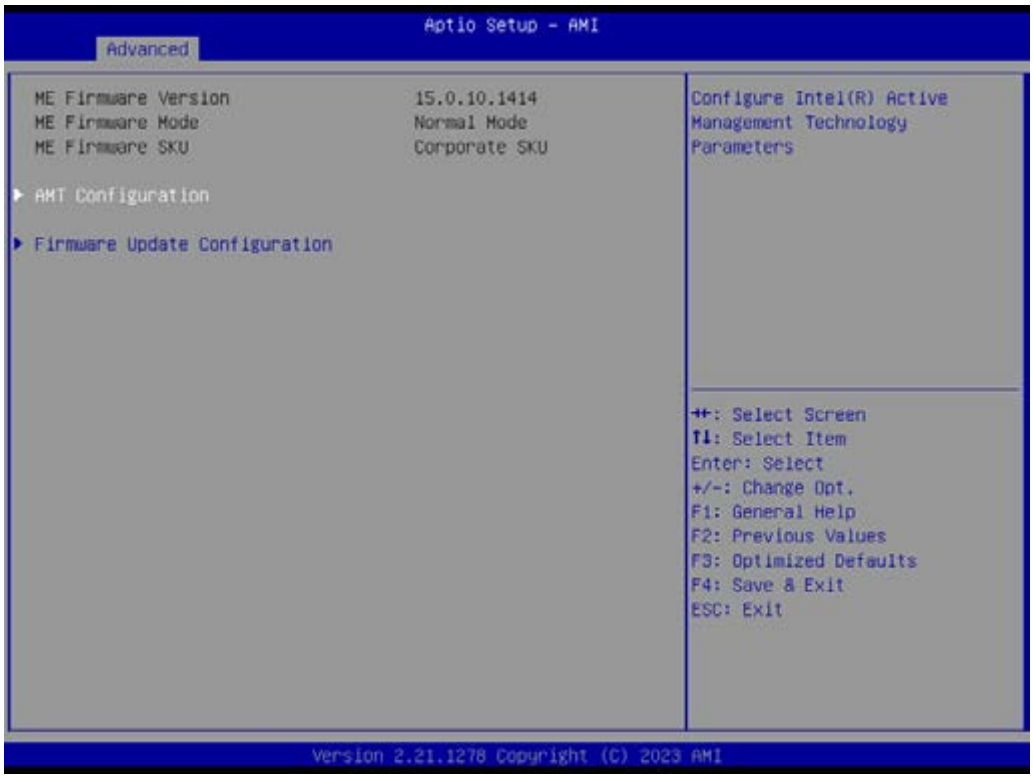


Figure 4.13 Disable Turbo GT Frequency

- **Disable Turbo GT Frequency**
  Enabled: Disables Turbo GT frequency is not limited.
  - **AMT Configuration**
    Configure Intel® Active Management Technology Parameters.
  - **Firmware Update Configuration**

4.2.2.3 PCH-FW Configuration

Figure 4.14 PCH-FW Configuration -1

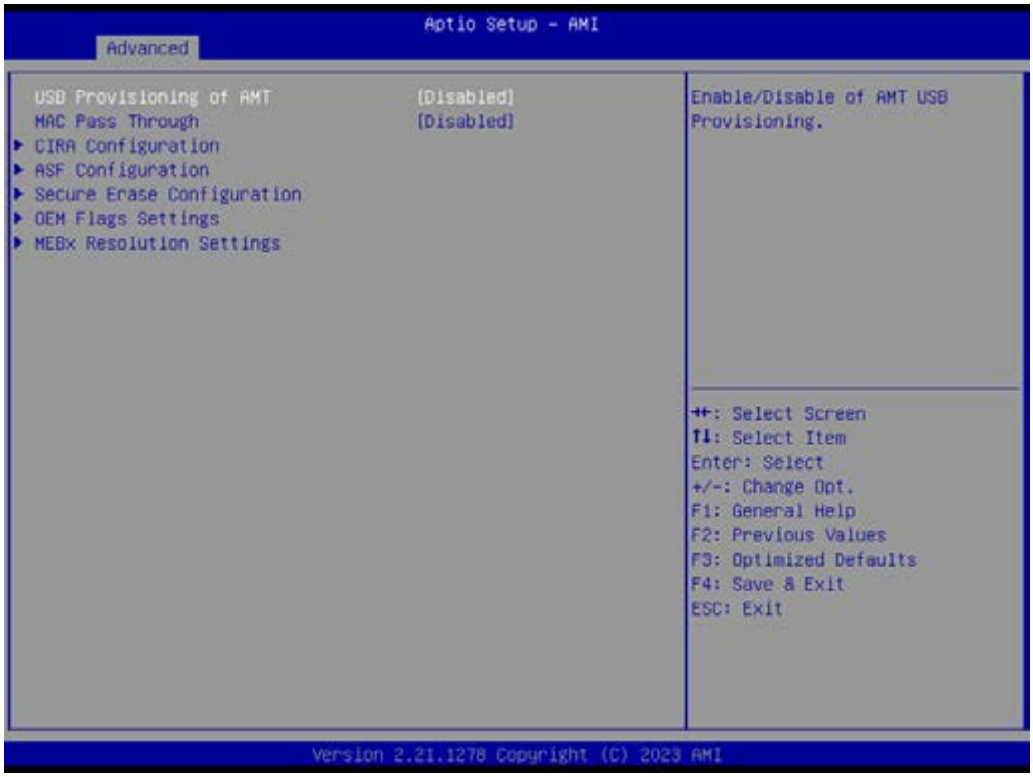


Figure 4.15 PCH-FW Configuration - 2

- **USB Provisioning of AMT**
  Enable/Disable of ANT USB Provisioning.
- **MAC Pass Through**
  Enable/Disable MAC Pass Through function.

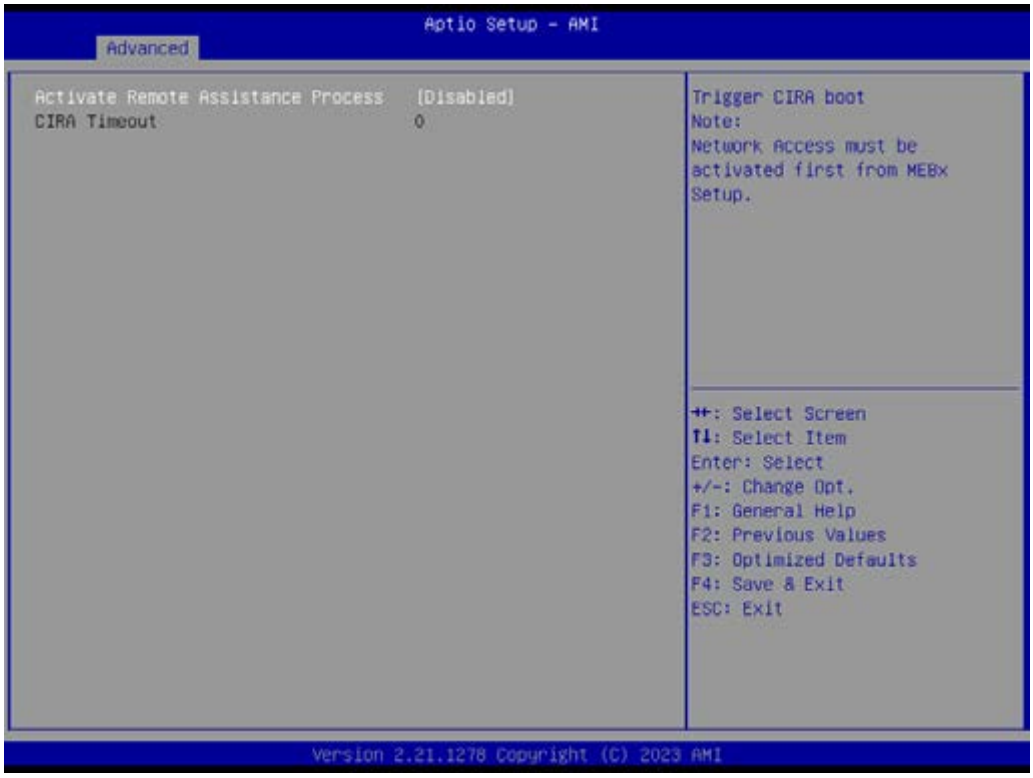


Figure 4.16 CIRA Configuration

- **CIRA Configuration**
  Configure Remote Assistance Process parameters.
  - Active Remote Assistance Process
  - Trigger CIRA boot
  - Note: Network Access must be activated first from MEBx Setup.
- **ASF Configuration**
  Configure Alert Standard Format parameters.

Figure 4.17 ASF Configuration

- **PET Progress**
  Enable/Disable PET Events Progress to receive PET events.
- **WatchDog**
  Enable/Disable WatchDog Timer.
- **ASF Sensor Table**
  Adds ASF Sensor Table int ASF ACPI Table.

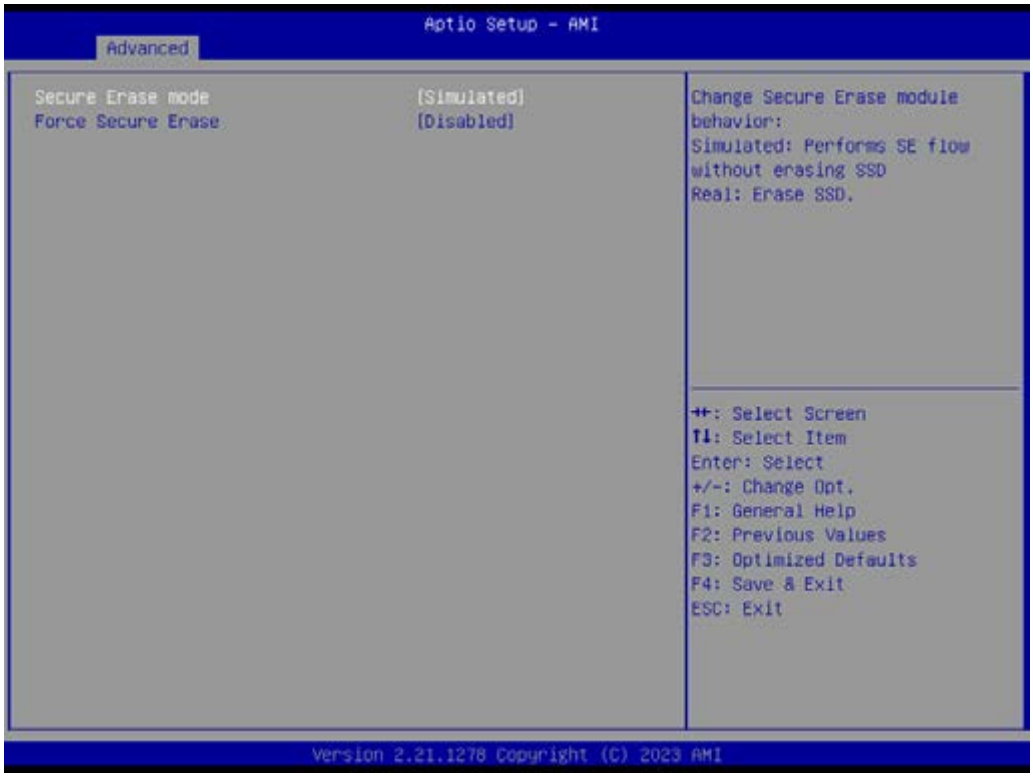


Figure 4.18 Secure Erase configuration

- **Secure Erase Configuration**
  Secure Erase configuration menu.
  - **Secure Erase mode**
    Change Secure Erase module behavior: Simulated: Performs SE flow without erasing SSD. Real: Erase SSD.
  - **Force Secure Erase**
    Force Secure Erase on next boot.

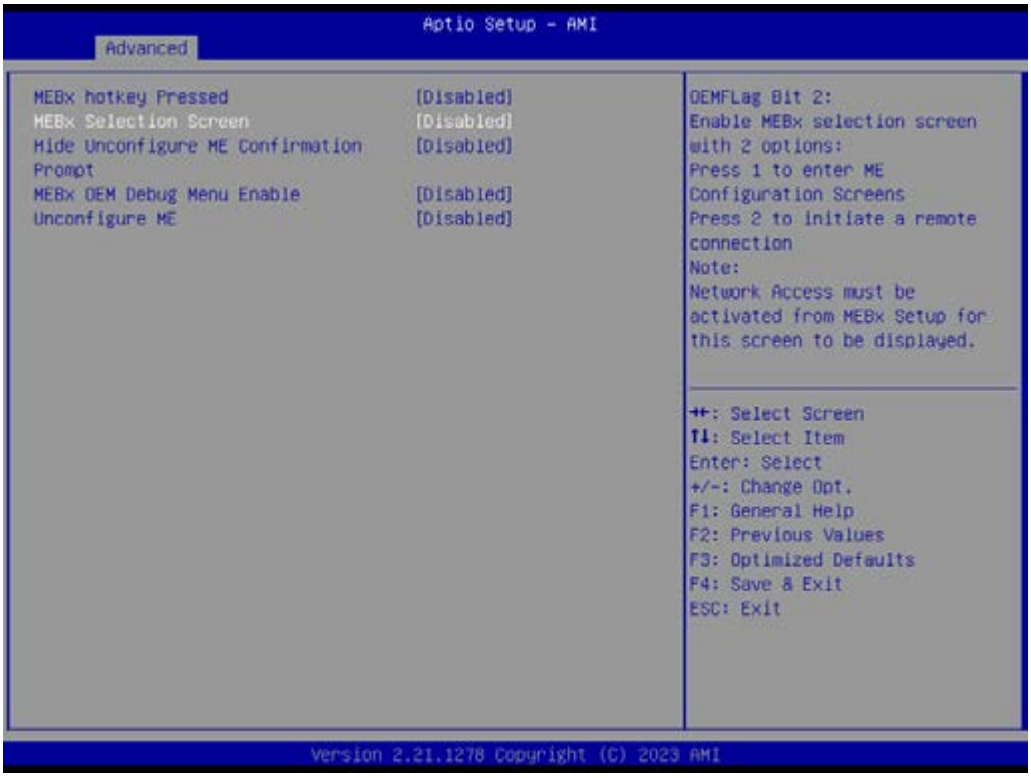


Figure 4.19 OEM Flags Settings

- **OEM Flags Settings**
  Configure OEM flags.
  - **MEBx Hotkey Pressed**
  - **MEBx Selection Screen**
    OEMFlag Bit 2: Enable MEBx selection screen with 2 options: press 1 to enter ME Configuration Screens.
    Press 2 to initiate a remote connection.
    Note: Network Access must be activated from MEBx Setup for this screen to be displayed.
  - **Hide Unconfigure ME Configuration**
    OEMFlag Bit 6: Hide Unconfigure ME configuration prompt when attempting ME unconfiguration.
  - **MEBx OEM Debug Menu Enable**
    OEMFlag Bit 14: Enable OEM debug menu in MEBx.
  - **Unconfigure ME**
    OEMFlag Bit 15: Unconfigure ME with resetting MEBx password to default.
- **MEBx Resolution Settings**
  Resolution settings for MEBx display modes.

Figure 4.20 MEBx Resolution settings

- **Non-UI Mode Resolution**
  Resolution for non-UI text mode.
- **UI Mode Resolution**
  Resolution for UI text mode.
- **Graphics Mode Resolution**
  Resolution for graphic mode.

Figure 4.21 Firmware Update Configuration-1

Figure 4.22 Firmware Update Configuration-2

- **Firmware Update Configuration**
  Configure Management Engine Technology Parameters.
  - **Me FW Image Re-Flash**
    Enable/ Disable ME FW Image Re-Flash function.

– **FW Update**
Enable/ Disable ME FW Image update function.

■ **Trusted Computing**

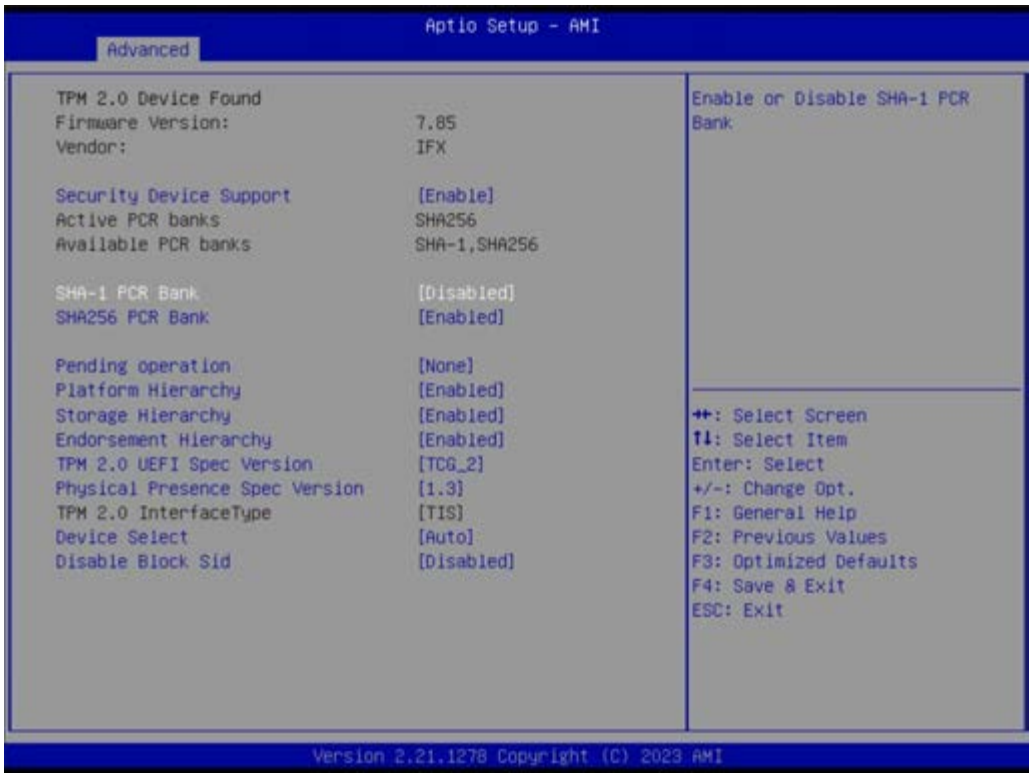


Figure 4.23 Trusted Computing-2

– **SHA-1 PCR Bank**
Enable or Disable SHA-1 PCR Bank.

– **SHA256 PCB Bank**
Enable or Disable SHA-256 PCR Bank.

– **Pending Operation**
Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change state of Security Device.

– **Platform Hierarchy**
Enable or Disable Platform Hierarchy.

– **Storage Hierarchy**
Enable or Disable Storage Hierarchy.

– **Endorsement Hierarchy**
Enable or Disable Endorsement Hierarchy.

– **TPM 2.0 UEFI SPEC Version**
Select the TCG2 Spec Version Support.
TCG_1_2: The compatible mode for Win8/Win10
TCG_2: Supports new TCG2 protocol and event format for Win10 or later.

– **Physical Presence Spec Version**
Select to tell OS to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.

– **Device Select**
TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

– **Disable Block Sid**
Override to allow SID authentication in TCG Storage device.

Figure 4.24 ACPI Setting -1

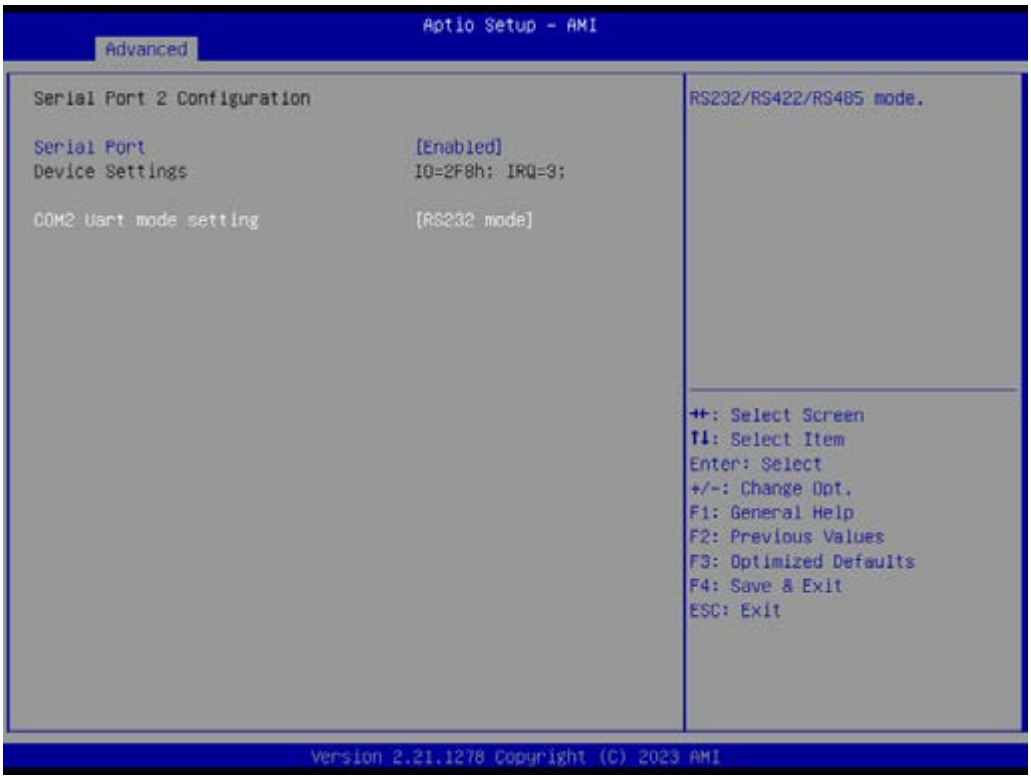


Figure 4.25 ACPI Setting - 2

- **ACPI Settings**
  System ACPI Parameters.
  - **Serial Port 2 Configuration**
    - ►**COM2 Uart mode setting**
      RS232/RS22/RS485 mode.

– **Enable ACPI Auto Configuration**
  Default is disabled.
– **Enable Hibernation**
  Enable or disable System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
– **ACPI Sleep State**
  Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

■ **NCT61260 Super IO Configuration**

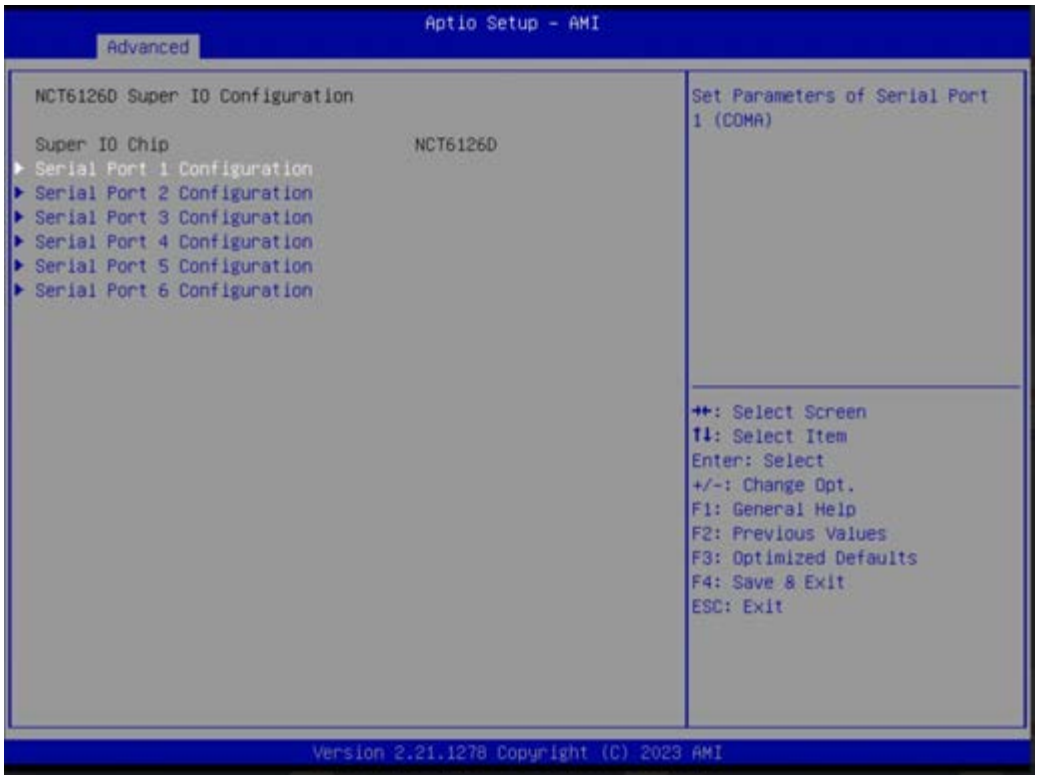


Figure 4.26 NCT61260 Super IO Configuration

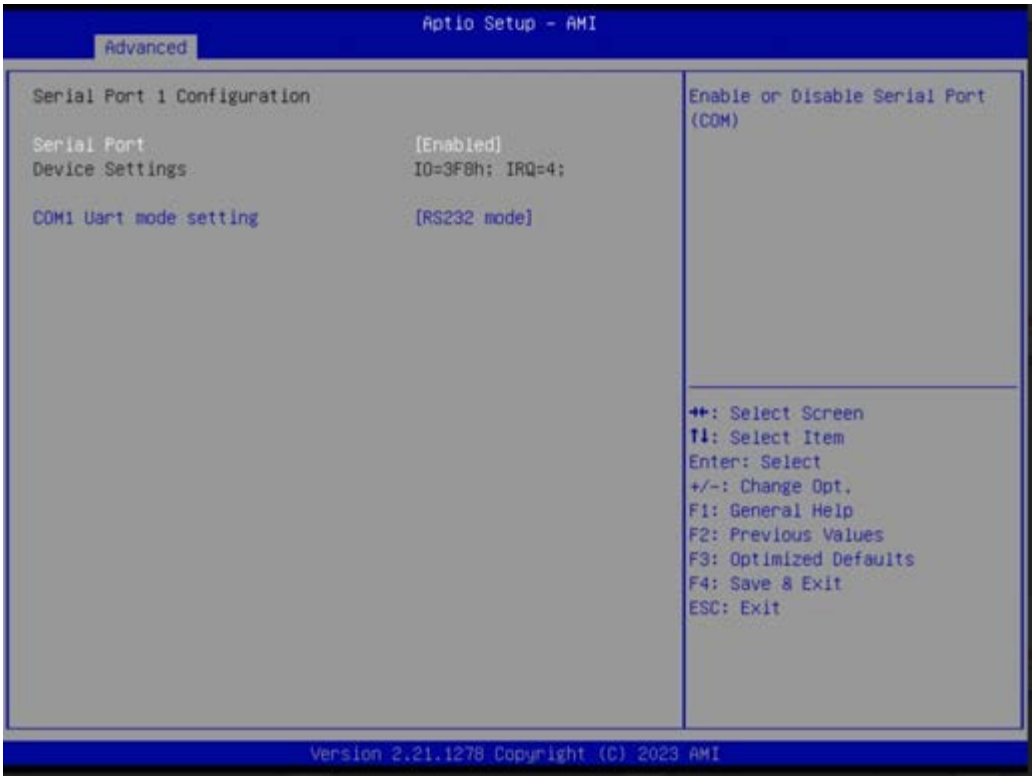


Figure 4.27 NCT61260 Super IO Configuration

- **Super IO Chip NCT61260**
- **Serial Port 1 Configuration**
  Set Parameters of Serial Port 1 (COMA).
  - ►**Serial Port**
    Enable or Disable Serial Port (COM).
  - ► **COM1 Uart mode setting**
    RS232/ RS422/ RS485 mode.
- **Serial Port 2 Configuration**
  Set Parameters of Serial Port 2 (COMB).
  - ►**Serial Port**
    Enable or Disable Serial Port (COM).
  - ►**COM2 Uart mode setting**
    RS232/ RS422/ RS485 mode.
- **Serial Port 3 Configuration**
  Set Parameters of Serial Port 3 (COMC).
  - ►**Serial Port**
    Enable or Disable Serial Port (COM).
  - ►**COM3 Uart mode setting**
    RS232/ RS422/ RS485 mode.
- **Serial Port 4 Configuration**
  Set Parameters of Serial Port 4 (COMD).
  - ►**Serial Port**
    Enable or Disable Serial Port (COM).
  - ►**COM1 Uart mode setting**
    RS232/ RS422/ RS485 mode.
- **Serial Port 5 Configuration**
  Set Parameters of Serial Port 5 (COME).

►**Serial Port**
Enable or Disable Serial Port (COM).

– **Serial Port 6 Configuration**
Set Parameters of Serial Port 6 (COMF).

►**Serial Port**
Enable or Disable Serial Port (COM).

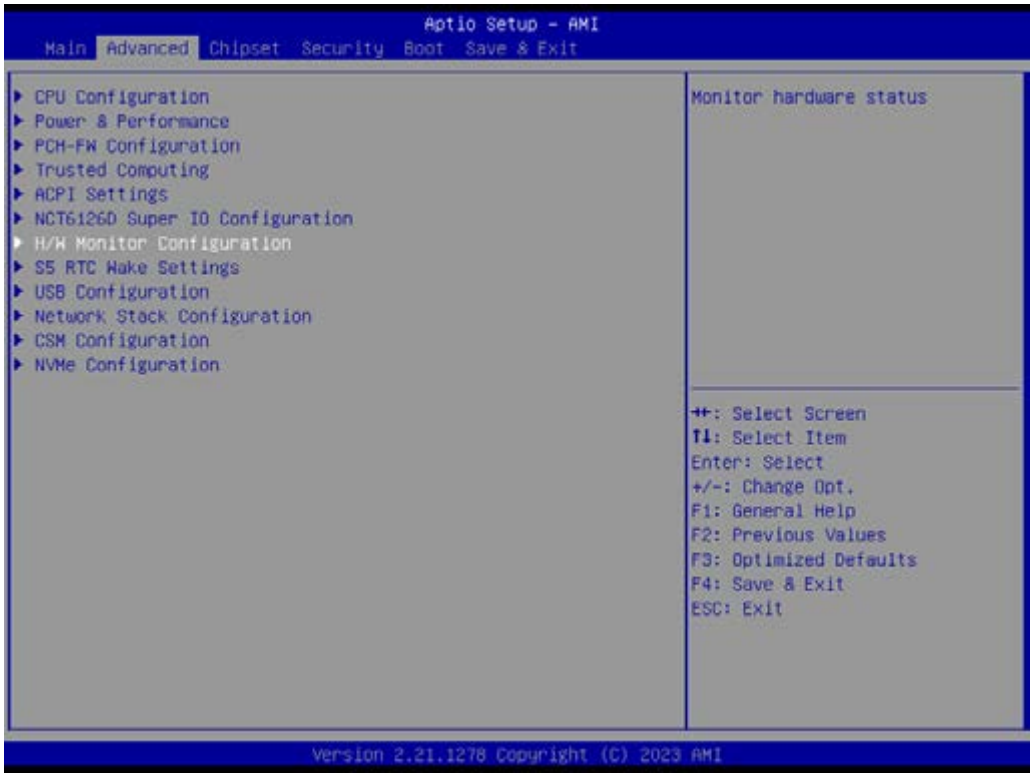


Figure 4.28 H/W Monitor Configuration-1

■ **H/W Monitor Configuration**
Monitor hardware status.

– **PC Health Status**

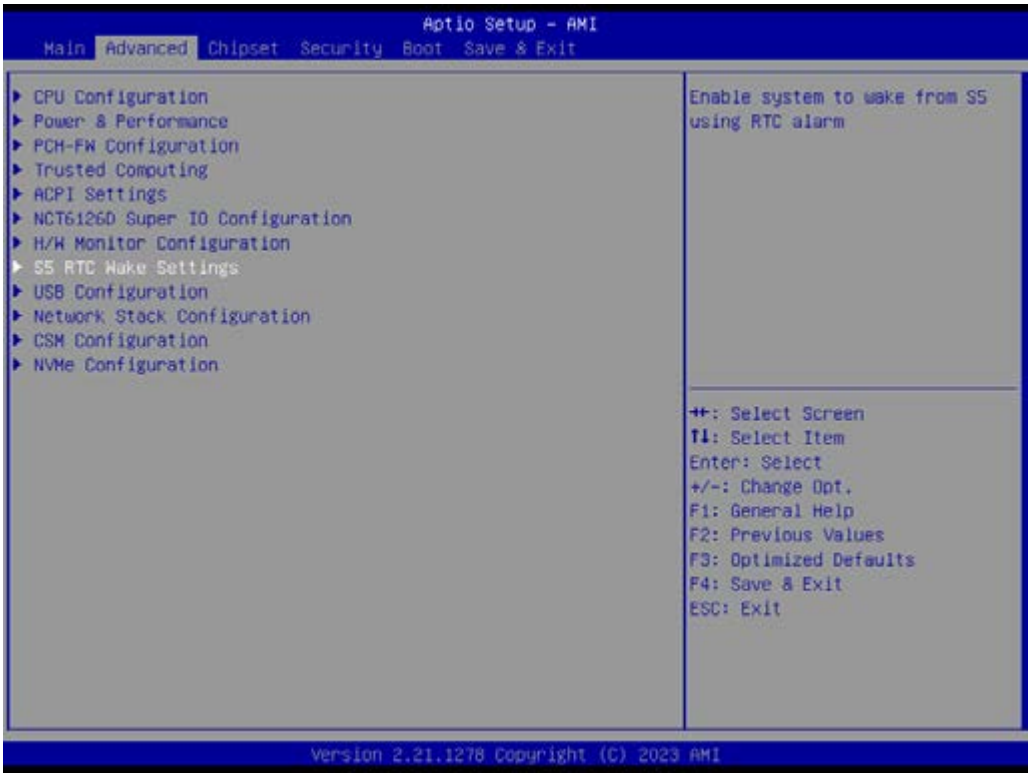


Figure 4.29 S5 RTC Make Settings -1

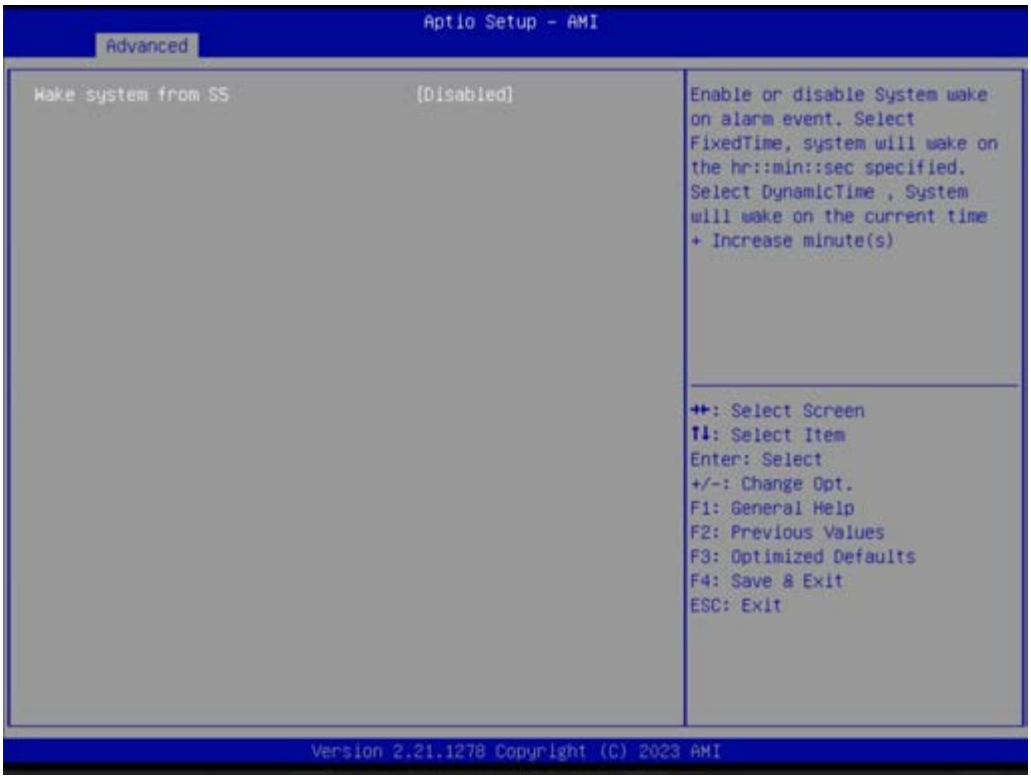


Figure 4.30 S5 RTC Make Settings -2

- **S5 RTC Make Settings**
  Enable system to wake from S5 using RTC alarm
  - **Wake System from S5**
    Enable or disable System wake on alarm event. Select FixedTime, system

will wake on the hr::min::sec specified. Select DynamicTime, System will wake on current time + Increase minute(s).

Figure 4.31 USB Configuration -1

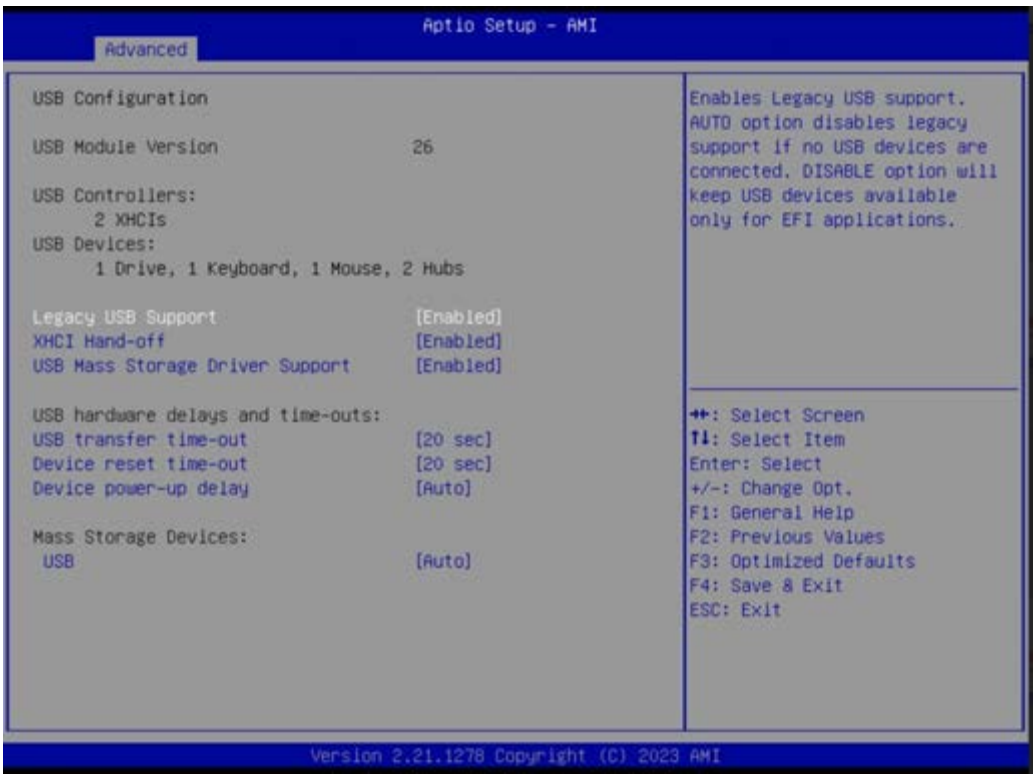


Figure 4.32 USB Configuration-2

- **USB Configuration**
  USB Configuration Parameters.

- **Legacy USB Support**
  Enable Legacy USB Support. AUTO option disable legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
- **XHCI Hand-off**
- This is a workaround for OS 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.
- **USB hardware delays and time-outs**
- **USB transfer time-out**
  The time-out value for Control, Bulk, and Interrupt transfers.
- **Device power-up delay**
  Maximum time the device will take before it properly reports itself to the Host Controller. “Auto” uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from descriptor.
- **Mass Storage Devices: USB**
  Mass storage device emulation type. “AUTO” enumerates devices according to their media format. Optical drives are emulated as “CDROM”, drives with no media will be emulated according to a drive type.

Figure 4.33 Network Stack Configuration - 1

Figure 4.34 Network Stack Configuration - 2

- **Network Stack Configuration**
  Network Stack Settings.
  - **Network Stack**
    Enable/ Disable UEFI Network Stack
  - **IPv4 PXE Support**
    Enable/ Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
  - **IPv4 HTTP Support**
    Enable/ Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available
  - **IPv6 PXE Support**
    Enable/ Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
  - **IPv6 HTTP Support**
    Enable/ Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.
  - **PXE Boot Wait Time**
    Wait time in seconds to press ECS key to abort the PXE boot. Use either +/- or numeric keys to set the values.
  - **Media Detect Count**
    Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

Figure 4.35 CSM Configuration – 1

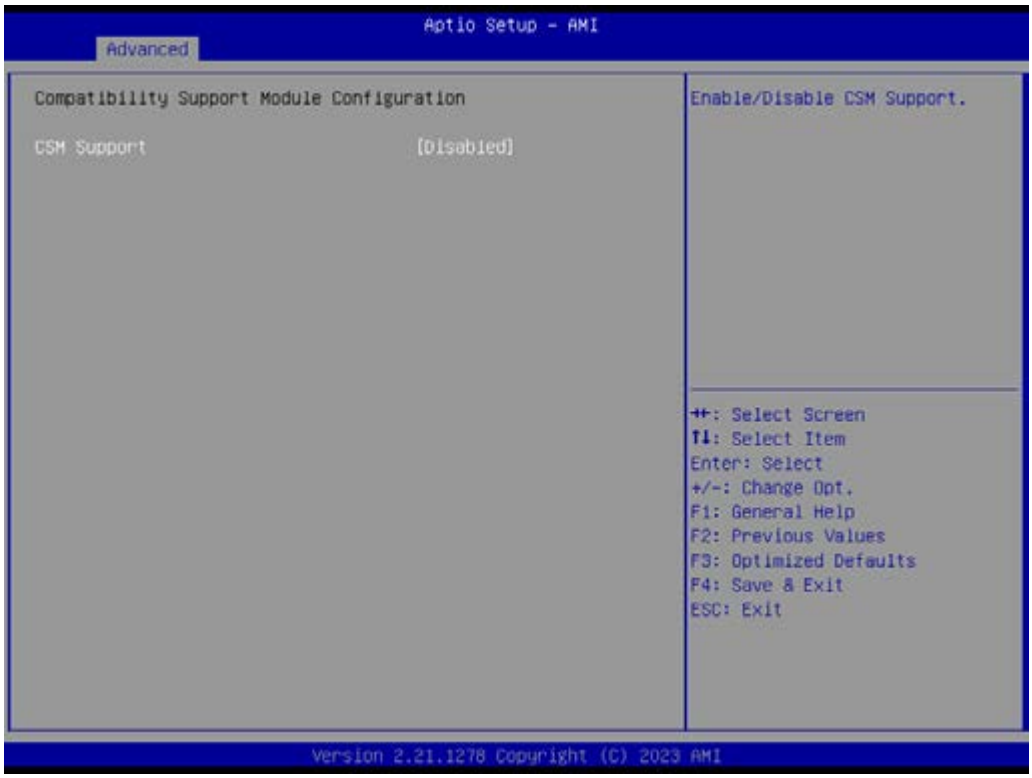


Figure 4.36 CSM Configuration - 2

- **CSM configuration**
  CSM Configuration:
  Enable/ Disable, Option ROM execution settings, etc.
  - **CSM Support**
    Enable/ Disable CSM Support.

Figure 4.37 NVMe Configuration -1

Figure 4.38 NVMe Configuration-2

- **NVMe Configuration**
  NVMe Device Option Settings.

4.3 Chipset

Figure 4.39 Chipset

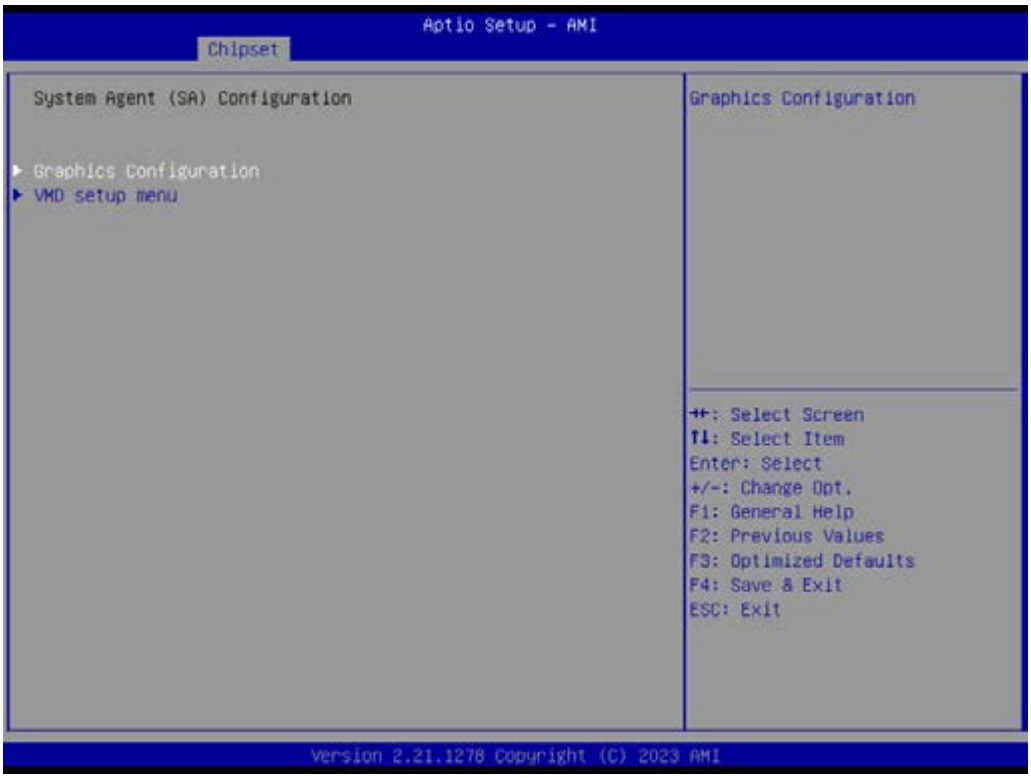


Figure 4.40 System agent (SA) configuration - 1

- **System Agent (SA) Configuration**
  System Agent (SA) Parameters.

Figure 4.41 System agent (SA) Configuration - 2

- **Graphics Configuration**
  Graphics Configuration.
  - **Primary Display**
    Select which of IGFX/PEG/PCI Graphics device should be Primary Display.

Figure 4.42 VMD setup menu

- **VMD setup menu**
  VMD configuration settings.
  - **Enable VHD controller**
    Enable/ disable to VMD controller.

Figure 4.43 System Agent (SA) Configuration - 3

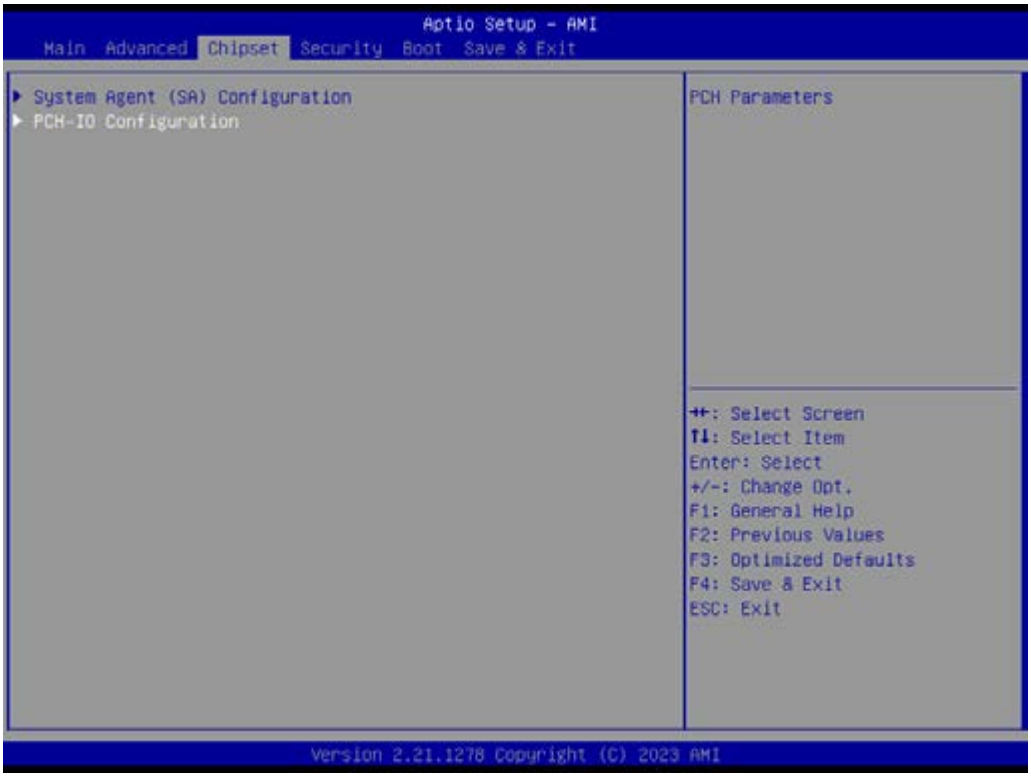


Figure 4.44 PCH-IO Configuration - 1

- **PCH-IO Configuration**
  PCH Parameters.

Figure 4.45 PCH-IO Configuration – 2

- **PCI Express Configuration**
  PCI Express Configuration settings.

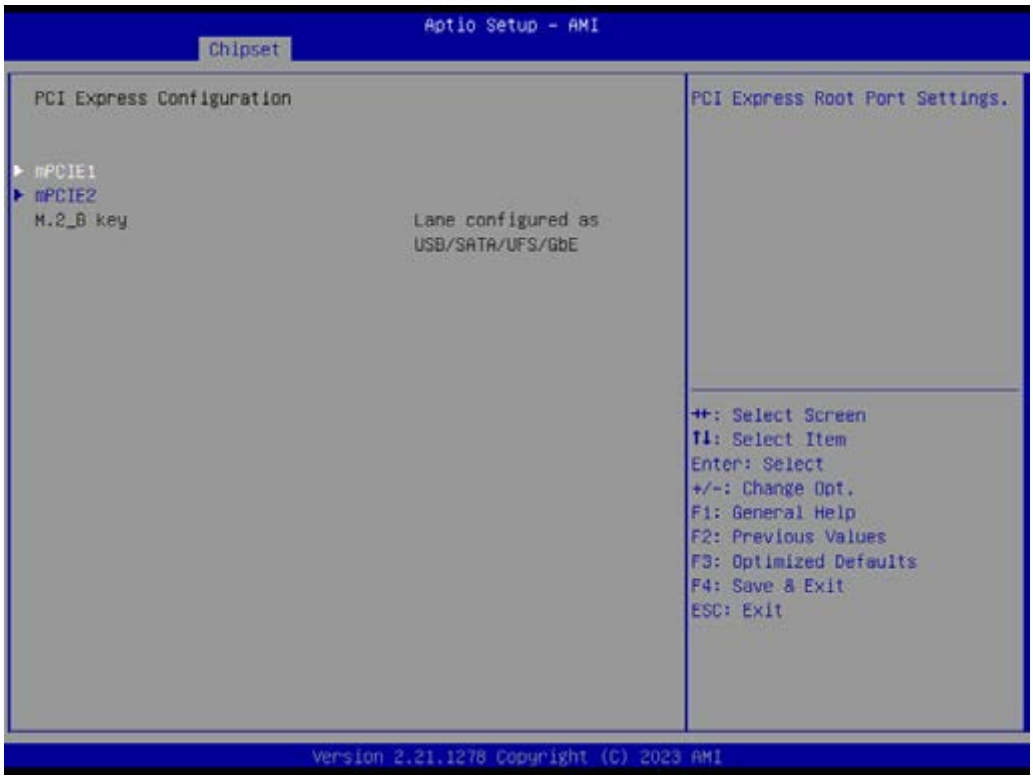


Figure 4.46 PCH-IO Configuration – 3

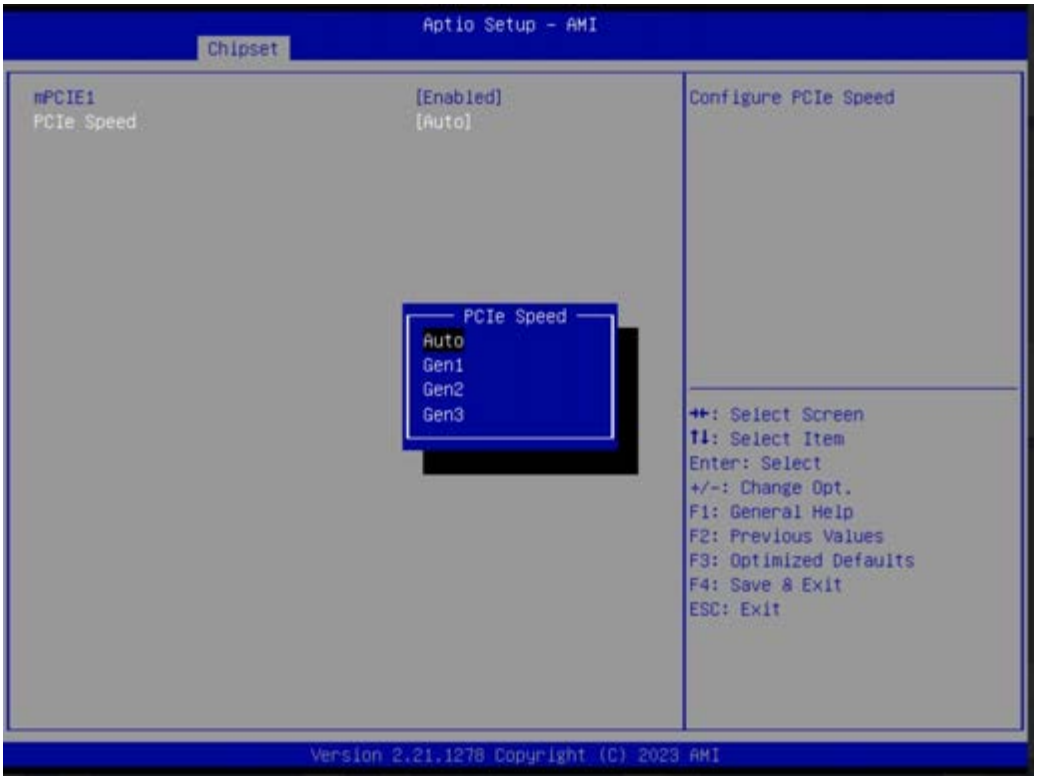


Figure 4.47 PCH-IO Configuration - 4

- **mPCIE1:** Control the PCI Express Root Port.
  PCIe speed: Configure PCIe Speed.
- **mPCIE2:** Control the PCI Express Root Port.
  PCIe speed: Configure PCIe Speed.

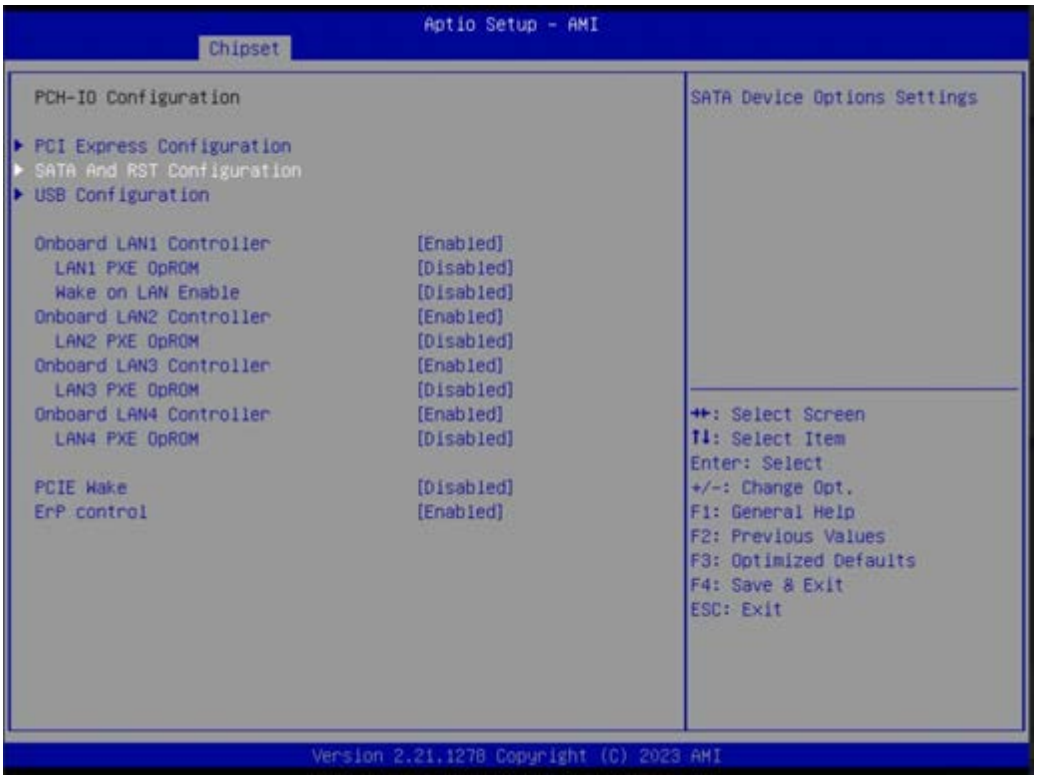


Figure 4.48 PCH-IO Configuration - 5

- **SATA and RST Configuration**
  SATA Device Options Settings.
  - **SATA Controller(s)**
    Enable/ Disable SATA Device.
  - **SATA Mode Selection**
    Determines how SATA controller(s) operate.
  - **SATA Controller Speed**
    Indicates the maximum speed the SATA controller can support.
  - **Topology**
    Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
  - **Port 0**
    Enable or Disable SATA Port.
  - **Hot Plug**
    Designated this port as Hot Pluggable.
  - **External**
    Marks this port as external.
  - **Spin Up Device**
    If enabled for any of ports Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
  - **SATA Device Type**
    Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
  - **SATA Port 0 DevSip**
    Enable/ Disable SATA Port 0 DevSip. For DevSip to work, both hard drive and SATA port need to support DevSip function, otherwise an unexpected behavior might happen. Please check board design before enabling it.
  - **DITO Configuration**
    Enable/ Disable DITO Configuration.
- **USB Configuration**
  USB Configuration settings.

- **USB PD0 Programming**
  Select “Enabled” if Port Disable Override functionality is used.
- **USB Overcurrent**
  Select “Disabled” for pin-based debug. If pin-based debug is enabled but USB overcurrent is not disabled, USB DbC does not work.
- **USB Overcurrent Lock**
  Select “Enabled” if Overcurrent functionality is used. Enabling this will make xHCI controller consume the Overcurrent mapping data.
- **USB Port Disable Override**
  Selectively Enable/ Disable the corresponding USB port from reporting a Device Connection to the controller.

- **Onboard LAN1 Controller**
  Select to Enable or Disable Onboard LAN1 Controller.
  LAN1 PXE OpROM: Enable or disable boot option for LAN1 Controller.
  Wake on LAN Enable: Enable or disable integrated LAN to wake the system.
- **Onboard LAN2 Controller**
  Enable or disable boot option for LAN2 Controller.
  LAN2 PXE OpROM: Enable or disable boot option for LAN2 Controller
- Onboard LAN3 Controller
  Select to enable or disable Onboard LAN3 controller.
  LAN3 PXE OpROM: Enable or Disable Onboard LAN3 Controller
- Onboard LAN4 Controller
  Enable or Disable Onboard LAN4 Controller
  LAN4 PXE OpROM: Enable or Disable boot option for LAN4 Controller
- **PCIE Wake**
- **ErP Control**
  Enable/Disable ErP function.

4.4 Security

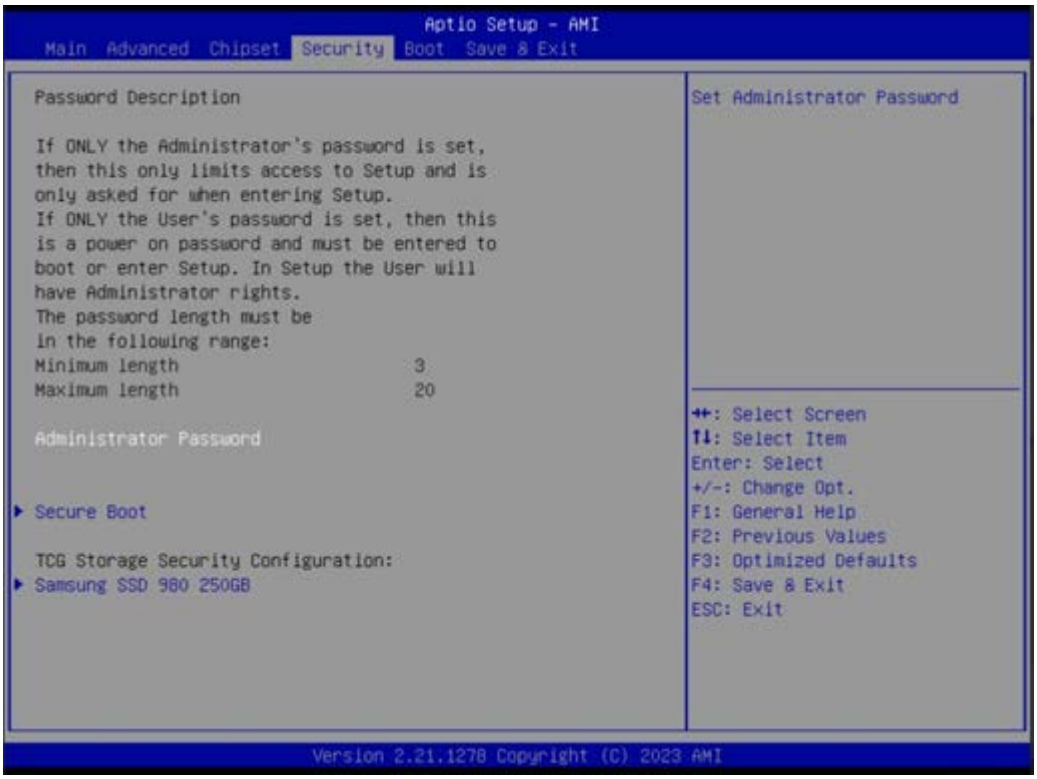


Figure 4.49 Security

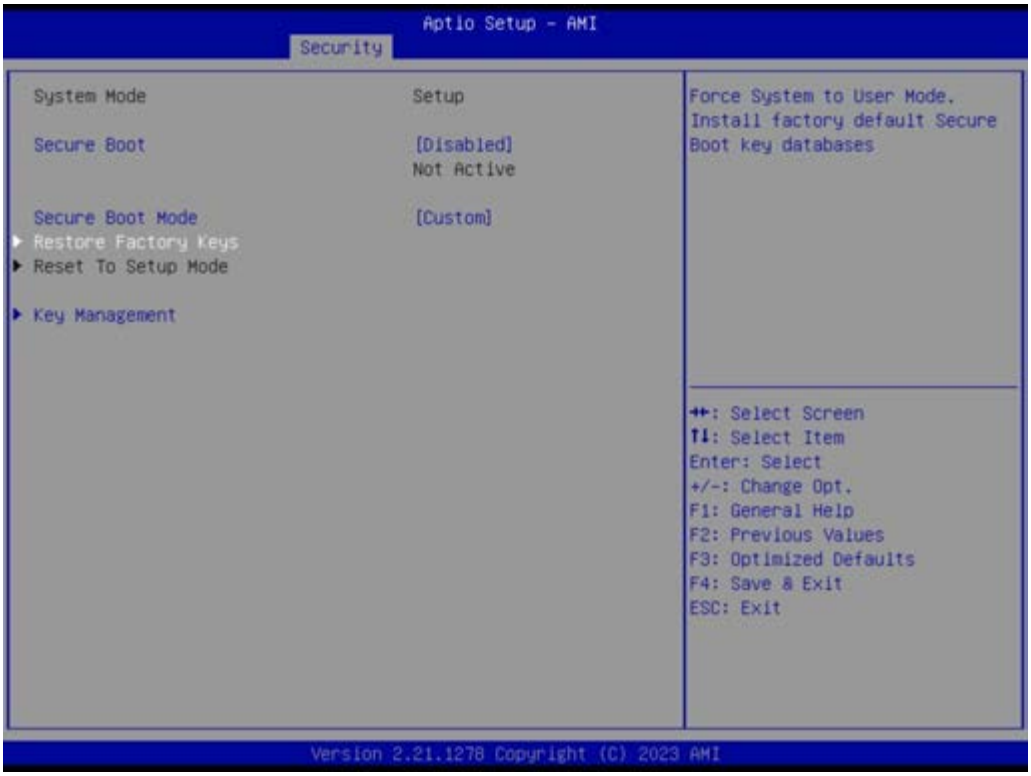


Figure 4.50 Secure Boot - 1

- **Administrator Password**
  Set Administrator Password.

- **Security Boot**
  Secure Boot feature is Active if Secure Boot is Enabled. Platform Key (PK) s enrolled and the System is in User mode. The mode change requires platform reset.
- **Secure Boot Mode**
  Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.
  - **Restore Factory Keys**
    Force System to User Mode. Install factory default Secure Boot key databases.
  - **Vendor Keys**

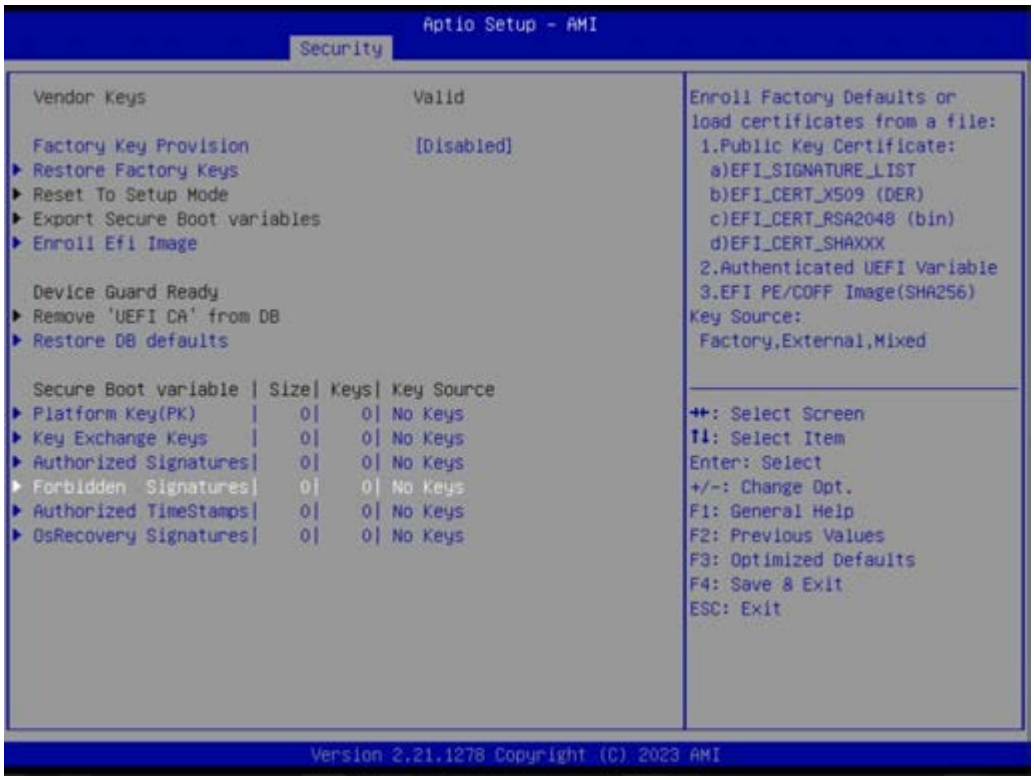


Figure 4.51 Secure Boot – 2

- **Factory Key Provision**
  Install factory default secure boot keys after the platform reset and while the system is in setup mode.
- **Forbidden Signatures**
  Enroll factory defaults or load certificates from a file:
  1. Public key certificates:
     a.EFI_SIGNATURE_LIST
     b.EFI_CERT_X509 (DER)
     c.EFI_CERT_RSA2048(bin)
     d.EFI_CERT_SHAXXX
  2. Athenticated UEFI variable
  3. EFI PE/COFF Image (SHA256)
     Key source: factory, external, mixed
- **Restore DB defaults**
  Restore DB variable to factory defaults.
- **Samsung SSD 980 250GB**
  TCG storage device security configuration.

4.5 Boot

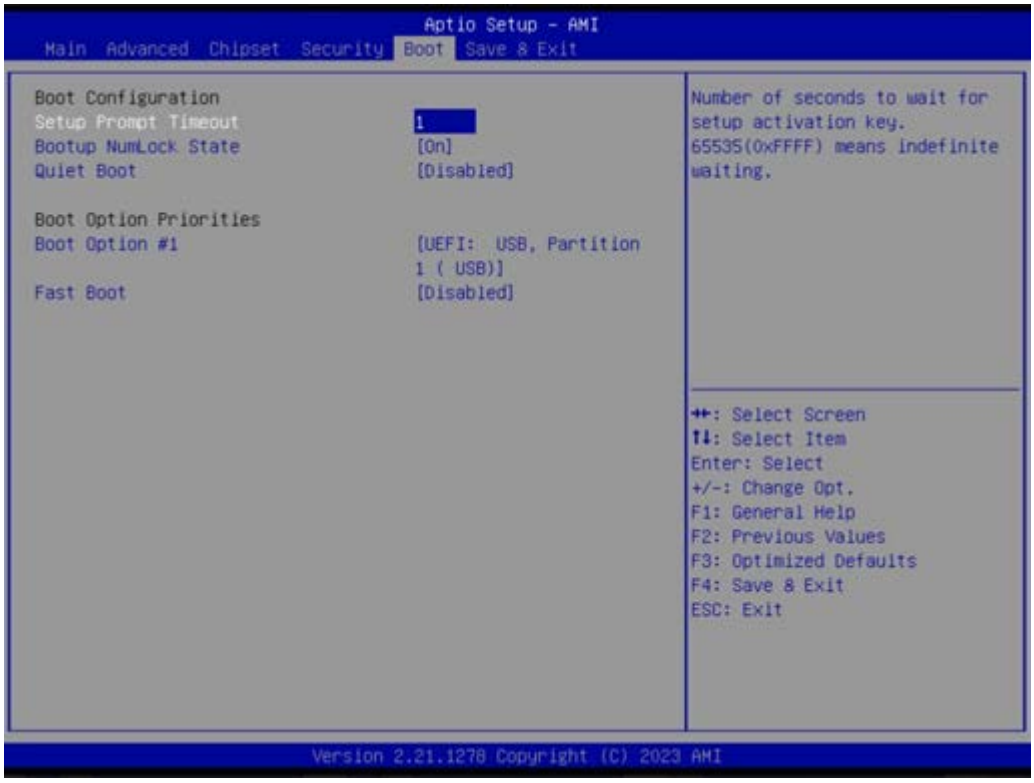


Figure 4.52 Boot

- **Boot Configuration**
  - **Setup Prompt Timeout**
    Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinites waiting.
  - **Bootup NumLock State**
    Select the keyboard NumLock state.
  - **Quiet Boot**
    Enables or disables Quiet Boot option.
- **Boot Priorities**
  - **Boot Option #1**
  - Select the system boot order.
  - **Fast Boot**

4.6 Save & Exit

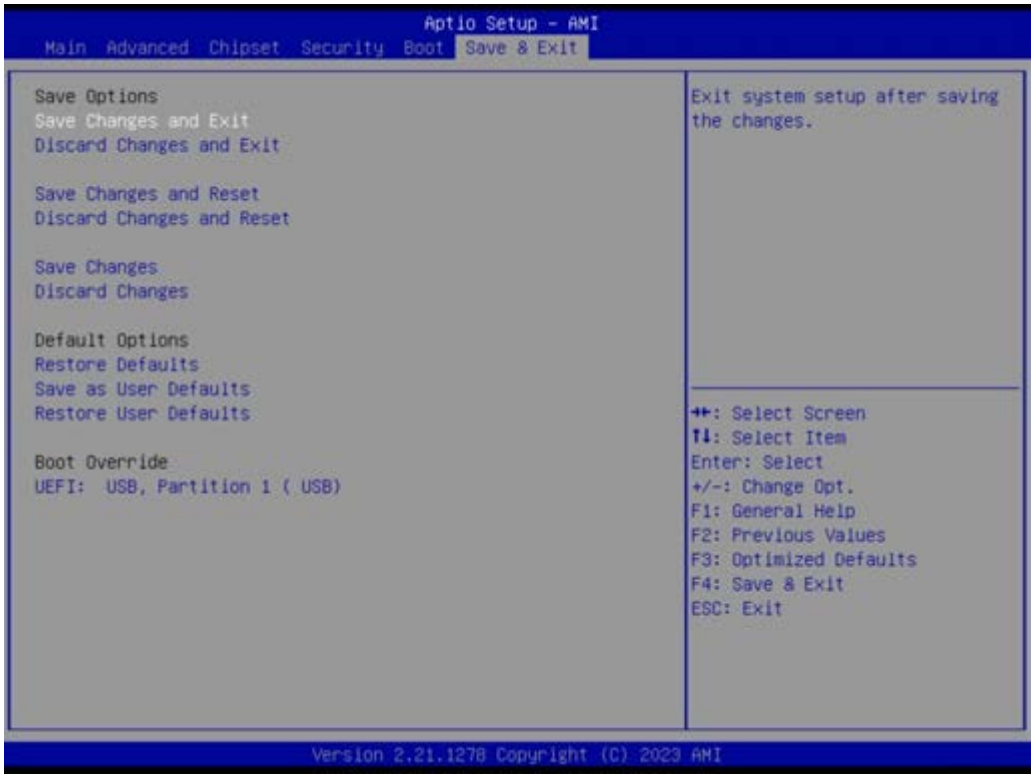


Figure 4.53 Save & Exit

- **Save Options**
- **Save Changes and Reset**
  Exit system setup after saving the changes.
- **Discard Changes and Exit**
  Exit system setup without saving any changes.
- **Save Changes and Reset**
  Reset the system after saving the changes.
- **Discard Changes and Reset**
  Reset system setup without saving any changes.
- **Save Changes**
- **Discard Changes**
  Discard changes done so far to any of the setup options.
- **Restore Defaults**
  Restore/ load default values for all the setup options.
- **Saves as User Defaults**
  Save the changes done so far as User defaults.
- **Restore User Defaults**
  Restore the user defaults t all the setup options.
- **UEFI: USB, Partition 1 (USB)**

Appendix A

System Settings/Pin Assignments

A.1 Power Connector (DCIN1)

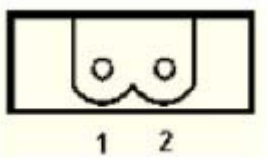


Table A.1: Power Connector Pin Assignments

Pin	Signal	Description
1	Power IN V+	10 - 36 V_{DC}
2	Power IN V- (GND)	

A.2 Clear CMOS Function (CMOS1)

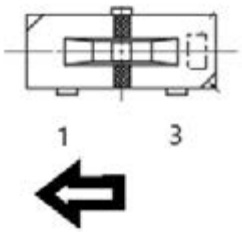


Table A.2: Clear CMOS Function (CMOS1)

CMOS1	CMOS Clear Function
Description	This jumper is used to select CMOS Clear Enable/Disable
(2-3)	Enable (Clear CMOS)
(1-2)	Disable (Default)

A.3 USB Connector (USB3C1/USB3C2)

A.3.1 USB 2.0 Connector

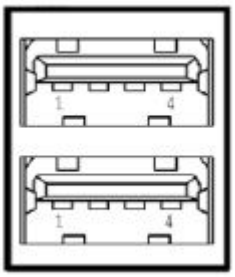


Table A.3: USB Pin Assignments

Pin	Signal Name	Description
1	VBUS	Power
2	D-	USB2.0 differential pair
3	D+	
4	GND	Ground for power return

A.3.2 USB 3.2 Connector

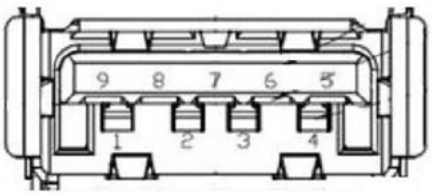


Table A.4: USB Pin Assignments

Pin	Signal Name	Description
1	VBUS	Power
2	D-	USB2.0 differential pair
3	D+	
4	GND	Ground for power return
5	StdA_SSRX-	SuperSpeed receiver differential pair
6	StdA_SSRX+	
7	GND_DRIAN	Ground for signal return
8	StdA_SSTX-	SuperSpeed transmitter differential pair
9	StdA_SSTX+	

A.4 HDMI Connector (HDMI1)

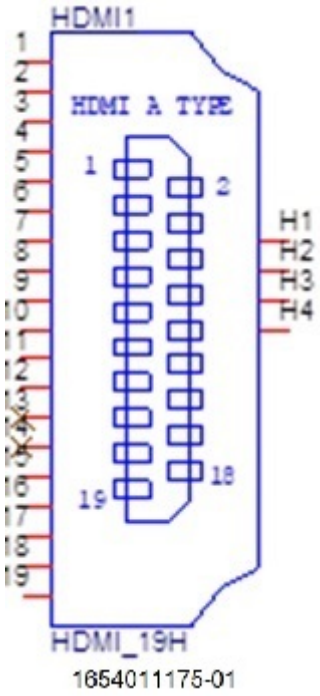


Table A.5: HDMI Port Adapter Cable Pin Assignments

Pin	Signal Name
1	TMDS1_a_P0
2	GND
3	TMDS1_a_N0
4	TMDS1_a_P1
5	GND
6	TMDS1_a_N1
7	TMDS1_a_P2
8	GND
9	TMDS1_a_N2
10	TMDS1_CLK_a_P
11	GND
12	TMDS1_CLK_a_N
13	NC
14	NC
15	TMDS1_DDCCLK
16	TMDS1_DDCDAT
17	GND
18	+V5
19	TMDS1_HPD

A.5 M.2 B-Key Connector (M2_B1)

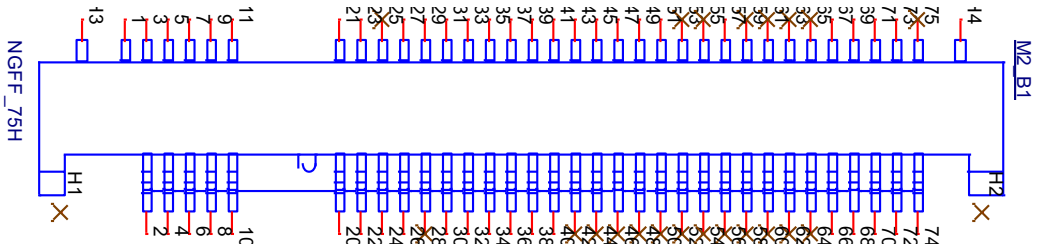


Table A.6: M.2 B key Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	+V3.3_SB_M2_B1	2	+V3.3_SB_M2_B1
3	GND	4	+V3.3_SB_M2_B1
5	GND	6	M2_LTE_PWR_OFF#
7	USB2_PCH_M1_B1_D_P	8	M2_LTE_W1_DISABLE_N
9	USB2_PCH_M1_B1_D_N	10	+V3.3_SB_M2_B1
11	GND	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	M2_PCIE_DIS
21	GND	22	M2_USB_DET
23	+V3.3_SB_M2_B1	24	+V3.3_SB_M2_B1
25	NC	26	M2_LTE_W2_DISABLE_N
27	GND	28	NC
29	USB3_PCH_M2_B1_RX_N	30	M2_SIM1_RESET
31	USB3_PCH_M2_B1_RX_P	32	M2_SIM1_CLK
33	GND	34	M2_SIM1_DATA
35	USB3_PCH_M2_B1_TX_N	36	M2_SIM1_PWR
37	USB3_PCH_M2_B1_TX_P	38	PCIE_USB
39	GND	40	M2_SIM2_DET
41	SATA_PCH_M2_B1_RX_P	42	NC
43	SATA_PCH_M2_B1_RX_N	44	NC
45	GND	46	NC
47	SATA_PCH_M2_B1_TX_N	48	NC
49	SATA_PCH_M2_B1_TX_P	50	NC
51	GND	52	NC
53	NC	54	NC
55	NC	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	M2_SIM1_DET
67	PLTRST_M2BKEY#	68	+V3.3_SB_M2_B1
69	GND	70	+V3.3_SB_M2_B1

Table A.6: M.2 B key Connector Pin Assignments			
71	GND	72	+V3.3_SB_M2_B1
73	GND	74	+V3.3_SB_M2_B1
75	NC		

A.6 M.2 M-Key Connector (NVME1)

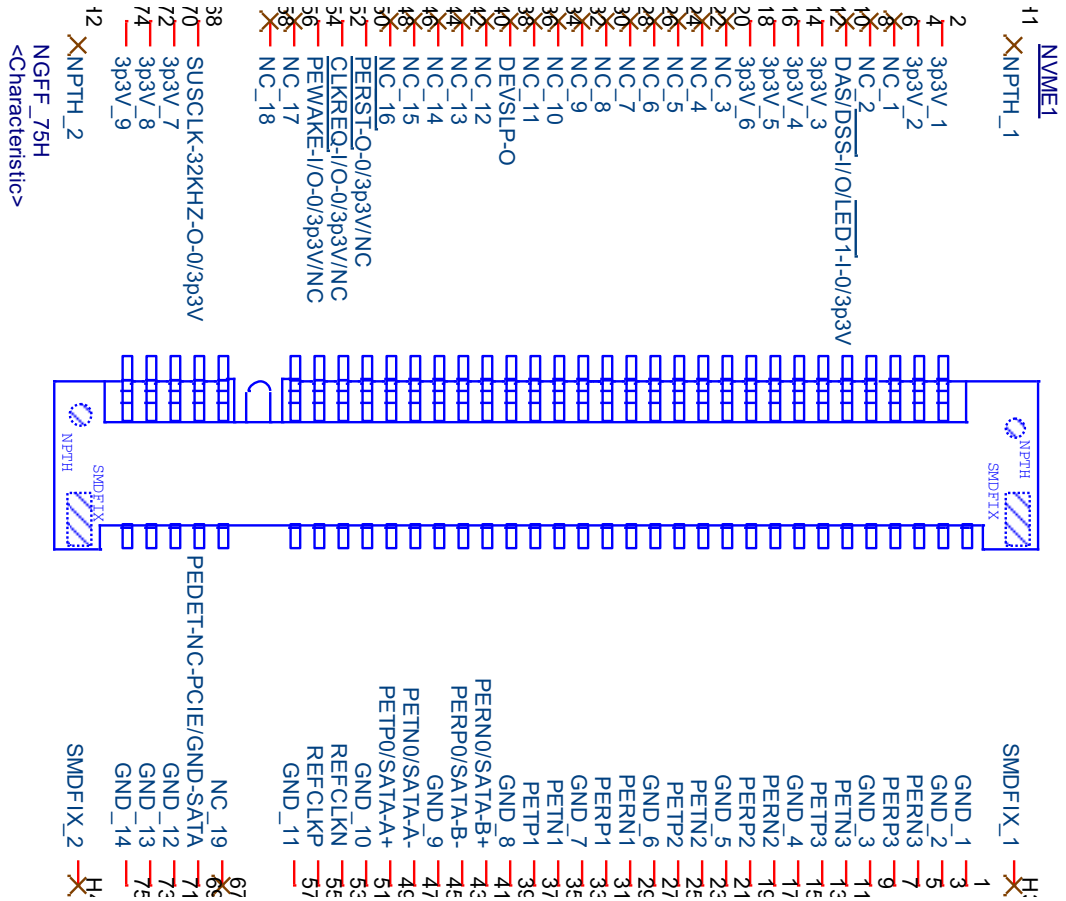


Table A.7: M.2 B key Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	GND	2	+V3.3_SB_NVME1
3	GND	4	+V3.3_SB_NVME1
5	PCIE_CPU_M2_M1_RX_N4	6	NC
7	PCIE_CPU_M2_M1_RX_P4	8	NC
9	GND	10	NC
11	PCIE_CPU_M2_M1_TX_N4	12	+V3.3_SB_NVME1
13	PCIE_CPU_M2_M1_TX_P4	14	+V3.3_SB_NVME1
15	GND	16	+V3.3_SB_NVME1
17	PCIE_CPU_M2_M1_RX_N3	18	+V3.3_SB_NVME1
19	PCIE_CPU_M2_M1_RX_P3	20	NC
21	GND	22	NC
23	PCIE_CPU_M2_M1_TX_N3	24	NC
25	PCIE_CPU_M2_M1_TX_P3	26	NC
27	GND	28	NC
29	PCIE_CPU_M2_M1_RX_N2	30	NC
31	PCIE_CPU_M2_M1_RX_P2	32	NC
33	GND	34	NC
35	PCIE_CPU_M2_M1_TX_N2	36	NC
37	PCIE_CPU_M2_M1_TX_P2	38	NC
39	GND	40	NC
41	PCIE_CPU_M2_M1_RX_N1	42	NC
43	PCIE_CPU_M2_M1_RX_P1	44	NC
45	GND	46	NC
47	PCIE_CPU_M2_M1_TX_N1	48	NC
49	PCIE_CPU_M2_M1_TX_P1	50	NC
51	GND	52	PCIE_REQ#
53	CLK100M_PCH_M2_M1_K_N	54	PCIE_WAKE#
55	CLK100M_PCH_M2_M1_K_P	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	SUSCLK
69	PEDET	70	+V3.3_SB_NVME1
71	GND	72	+V3.3_SB_NVME1
73	GND	74	+V3.3_SB_NVME1
75	GND		

A.7 mPCIe Connector (MINIPCIE1/2)

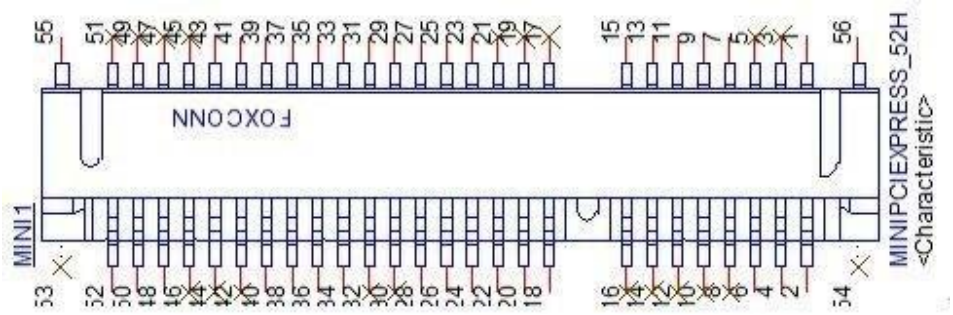


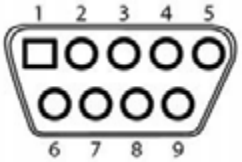
Table A.8: mPCIe Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	PCIE_WAKE#	2	+V3.3_MINI
3	NC	4	GND
5	NC	6	+V1.5
7	PCIEX1_CLKREQ0#	8	NC
9	GND	10	NC
11	CLK100M_PCIEX1_D0-	12	NC
13	CLK100M_PCIEX1_D0+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	WIFI_DISABLE#
21	NC	22	MINI_PLTRST#
23	SATA0_RX+	24	+V3.3_MINI
25	SATA0_RX-	26	GND
27	GND	28	+V1.5
29	GND	30	NC
31	SATA0_TX-	32	NC
33	SATA0_TX+	34	GND
35	GND	36	USB2_MPCI_P8-
37	GND	38	USB2_MPCI_P8+
39	+V3.3_MINI	40	GND
41	+V3.3_MINI	42	NC
43	MPCIE_PWRSEL	44	NC
45	NC	46	NC
47	NC	48	+V1.5
49	NC	50	GND
51	MSATA#_z_PCIE_SEL	52	+V3.3_MINI

A.8 COM Port RS232/422/485 Settings

Table A.9: COM Port RS232/422/485 Settings

Pin	RS232	RS422	RS485
1	DCD	TX-	D-
2	RX	TX+	D+
3	TX	RX+	
4	DTR	RX-	
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		



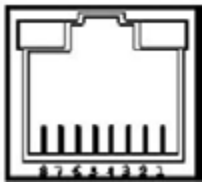
A.9 LAN1/2/3/4 RJ45 Connector

Table A.10: LAN1/2/3/4 RJ45 Connector

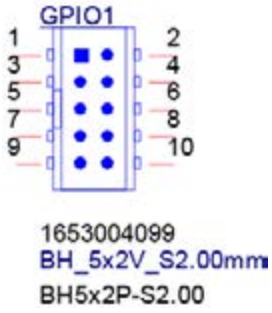
RJ45 Pin	Signal	Description
1	MDI0+	■ In BASE-T: Media-dependent interface[0]: ■ 1000BASE-T: In MDI configuration, MDI[0]+/- corresponds to BI_DA+/- and in MDI-X configuration MDI[0]+/- corresponds to BI_DB+/-. ■ 10BASE-T and 100BASE-TX: In MDI configuration, MDI[0]+/- is used for the transmit pair and in MDIX configuration MDI[0]+/- is used for the receive pair.
2	MDI0-	
3	MDI1+	■ In BASE-T: Media-dependent interface[1]: ■ 1000BASE-T: In MDI configuration, MDI[1]+/- corresponds to BI_DB+ and in MDI-X configuration MDI[1]+/- corresponds to BI_DA+/-. ■ 10BASE-T and 100BASE-TX: In MDI configuration, MDI[1]+/- is used for the receive pair and in MDI-X configuration MDI[1]+/- is used for the transmit pair.
6	MDI1-	
4	MDI2+	■ In BASE-T: Media-dependent interface[3:2]: ■ 1000BASE-T: In MDI and in MDI-X configuration, MDI[2]+/- corresponds to BI_DC+/- and MDI[3]+/- corresponds to BI_DD+/-. ■ 100BASE-TX: Unused. ■ 10BASE-T: Unused.5
5	MDI2-	
7	MDI3+	
8	MDI3-	

Table A.11: LED

Left LED			Right LED
10Link	100Link	1000 Link	Active
Off	off	Orange	Green



A.10 GPIO Port (GPIO1)



The GPIO port can connect to DB9 connector for extension module.

Table A.12: GPIO Port (GPIO1)

Pin	Signal Name
1	+5V
2	GPIO0
3	GPIO1
4	GPIO2
5	GPIO3
6	GPIO4
7	GPIO5
8	GPIO6
9	GPIO7

A.11 DP Connector (DP1)

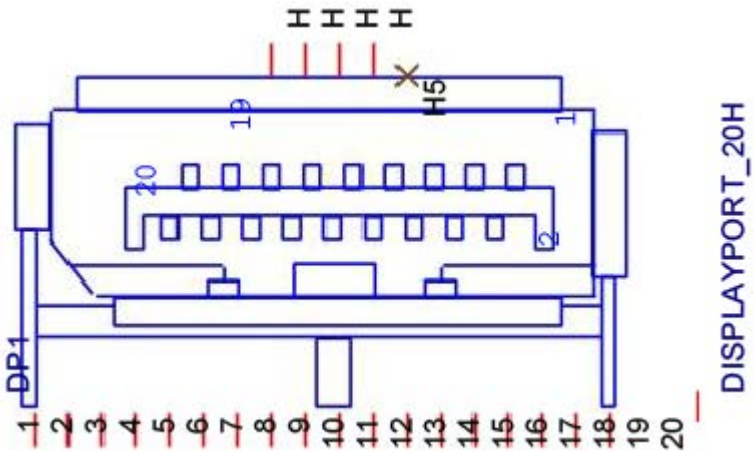


Table A.13: Display Port Adapter Cable Pin Assignments

Pin	Signal Name
1	DP0_z_D0+
2	GND
3	DP0_z_D0-
4	DP0_z_D1+
5	GND
6	DP0_z_D1-
7	DP0_z_D2+
8	GND
9	DP0_z_D2-
10	DP0_z_D3+
11	GND
12	DP0_z_D3-
13	DP0_AUX_EN#
14	DP0_CONFIG
15	DP0_AUX_P
16	GND
17	DP0_AUX_N
18	DP0_z_HPD
19	GND
20	+V3.3

A.12 Type-C Connector (TYPEC1)

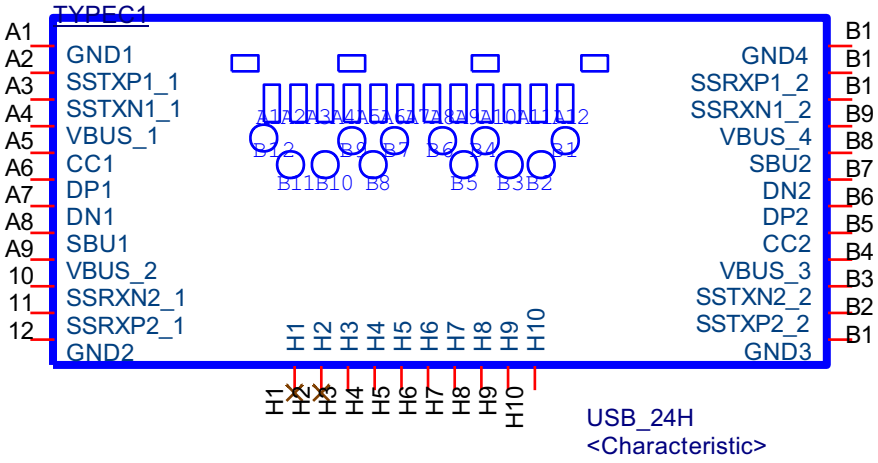


Table A.14: mPCIe Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
A1	GND	B1	GND
A2	USBC_TXP0_CON	B2	USBC_RXP0_CON
A3	USBC_TXN0_CON	B3	USBC_RXN0_CON
A4	+V5BUS_CON	B4	+V5BUS_CON
A5	CCG5_CC1_CON	B5	USBC_SBU2_CON
A6	USB2_PCH_TYPEC1_a_D_P	B6	USB2_PCH_TYPEC1_a_D_N
A7	USB2_PCH_TYPEC1_a_D_N	B7	USB2_PCH_TYPEC1_a_D_P
A8	USBC_SBU1_CON	B8	CCG5_CC2_CON
A9	+V5BUS_CON	B9	+V5BUS_CON
A10	USBC_RXN1_CON	B10	USBC_TXN1_CON
A11	USBC_RXP1_CON	B11	USBC_TXP1_CON
A12	GND	B12	GND

A.13 AT/ATX Setting (PSON1)

PSON1 can be used for AT/ATX setting. The default setting is ATX mode. See the following table for jumper configuration.

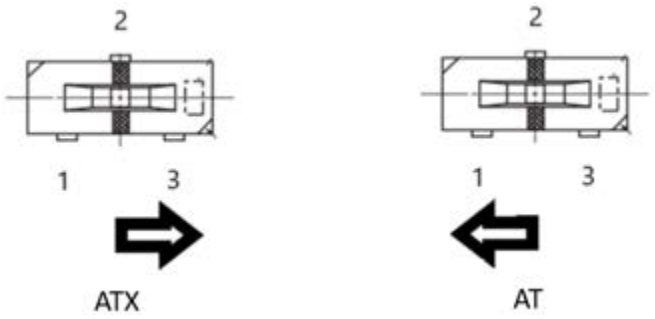
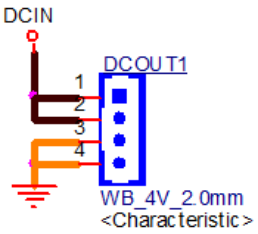


Table A.15: AT/ATX Setting (PSON1)		
AT	1-2	
ATX	2-3	Default

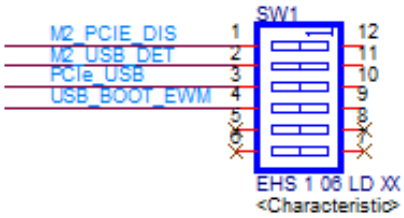
A.14 DC in Setting (DCOUT1)

DCOUT1 can be used for iDoor module. The power input follow iDoor module specification.



A.15 Slide Switch Setting (SW1)

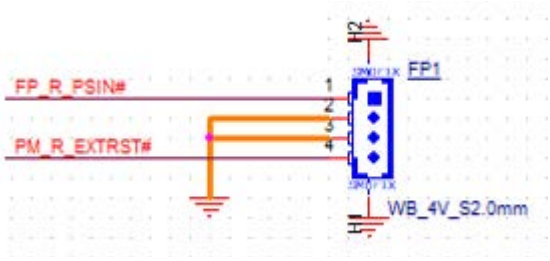
SW1 can be used for 5G module. The slide switch on the right hand side is on. The default setting of pin1~pin4 is on, and please follow the 5G module requirement for the slide switch setting



SW1
SIERA(M.2_Pin20/22)
Pin1 H = USB L/Floating = PCIe
Pin2 H = USB L/Floating = PCIe
Neoway(M.2_Pin38)
Pin3 H = USB L/Floating = PCIe
AIW-315(M.2_Pin38)
Pin3 Floating =5Gmode
EWM([M.2_Pin68)
Pin4 H = USB L/Floating = PCIe

A.16 Remote power Setting(FP1)

FP1 can be used for iDoor module to connect power.



A.17 RAID0/RAID1 Setting

In order to support RAID0/RAID1, please follow the steps below to enable VMD.

1. Entering BIOS setup menu.
2. Chipset -> System Agent (SA) Configuration->VMD setup menu->Enable VMD controller = Enable
3. Chipset-> System Agent (SA) Configuration->VMD setup menu-> Map this Root Port under VMD = Enable
4. Entering BIOS setup menu.
5. Advanced->Intel Rapid Storage Technology->Creat Raid volume
6. Save & Exit
7. Install RST driver on Intel website.

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Please verify specifications before quoting. This guide is intended for reference purposes only.