

## UNO-137 V2 電腦

**Intel Atom<sup>®</sup> x6413E and x6425RE  
processor Automation  
Computer, with 2 x LAN,  
2 x COM, 4 x USB, 2 x DP,  
8 xDIO, 1 x mPCIe, and 2 x M.2**

**ADVANTECH**

*Enabling an Intelligent Planet*

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

This manual applies to the following models. These are abbreviated as UNO-137 V2 products in this article.

\*Model name UNO-137 V2

\*Part number: 2004013700

UNO-137-E23BA & UNO-137-I23BA

UNO137E23B2301-T	UNO137E23B2407-T	UNO137E23B2603-T
UNO137E23B2302-T	UNO137E23B2408-T	UNO137E23B2604-T
UNO137E23B2303-T	UNO137E23B2409-T	UNO137E23B2605-T
UNO137E23B2304-T	UNO137E23B2410-T	UNO137E23B2606-T
UNO137E23B2305-T	UNO137E23B2501-T	UNO137E23B2607-T
UNO137E23B2306-T	UNO137E23B2502-T	UNO137E23B2608-T
UNO137E23B2307-T	UNO137E23B2503-T	UNO137E23B2609-T
UNO137E23B2308-T	UNO137E23B2504-T	UNO137E23B2610-T
UNO137E23B2309-T	UNO137E23B2505-T	UNO137E23B2701-T
UNO137E23B2310-T	UNO137E23B2506-T	UNO137E23B2702-T
UNO137E23B2401-T	UNO137E23B2507-T	UNO137E23B2703-T
UNO137E23B2402-T	UNO137E23B2508-T	UNO137E23B2704-T
UNO137E23B2403-T	UNO137E23B2509-T	UNO137E23B2705-T
UNO137E23B2404-T	UNO137E23B2510-T	UNO137E23B2706-T
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UNO137I23B2710-T

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## Product Warranty (2 years)

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

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

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers 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

這是甲類資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當對策。

# Technical Support and Assistance

1. Visit the Advantech website at [www.advantech.com/support](http://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

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## 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.

## Packing List

Before system installation, check that the items listed below are included and in good condition. If any item does not accord with the list, contact your dealer immediately.

- UNO-137 V2 (with din-rail mount)
- 1 x 2x5 Plug-in block for COM port
- 1 x 2x1 Plug-in block for power wiring
- 1 x 2x10 Plug-in block for digital I/O wiring
- 1x M2x4L screw for mPCIe card installation
- 1 x Earth-Ground cable
- Startup Manual
- China RoHs sheet
- Warranty card

If any of the above items are missing or damaged, contact your distributor or sales representative immediately.

## 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 skilled service personnel.
14. If any of the following occurs, have the equipment checked by skilled person:
  - 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  $-40\text{ }^{\circ}\text{C}$  ( $-4\text{ }^{\circ}\text{F}$ ) or above  $70\text{ }^{\circ}\text{C}$  ( $158\text{ }^{\circ}\text{F}$ ) 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. Before system installation, check that the items listed below are included and in good
18. condition. If any item does not accord with the list, contact your dealer immediately. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
19. 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.
20. 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.
21. For use in pollution free environments and indoor use.
22. This equipment is not suitable for use in locations where children are likely to be present.

23. If the equipment is used in a manner not specified by the Advantech, the protection provided by the equipment may be impaired.
  24. The equipment contains no user-serviceable parts. Do not open, Return to manufacturer for servicing.
  25. Do not block air ventilation holes.
  26. This is open type equipment and should be installed in a suitable enclosure.
- DISCLAIMER: This set of instructions is given according to IEC 704-1. 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 de 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 la 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 l'alimentation.
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 Personne qualifiée:
  - Un liquide a pénétré dans l'équipement.
  - 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 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 (-4 °F) OU BIEN SUPÉRIEURE À 70 °C (158 °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:** Danger d'explosion si la batterie est mal remplace. Remplacer uniquement 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，以免引起火災或短路。
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. 請不要把設備放置在超出我們建議的溫度範圍的環境，即不要低於  $-40^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) 或高於  $70^{\circ}\text{C}$  ( $158^{\circ}\text{F}$ )，否則可能會損壞設備。
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. 消費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电源适配器。

# 限用物質含有情況標示聲明書

## Declaration of the Presence Condition of the Restricted Substances Marking

設備名稱：電腦 Equipment name		型號（型式）：UNO-137 V2（系列型號請參見手冊載明型號） Type designation (Type)				
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr <sup>+6</sup> )	多溴聯苯 Polybrominat ed biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
電路板	—	○	○	○	○	○
內外殼 （外殼、內部 框架…等）	○	○	○	○	○	○
其它固定組件 （螺絲、夾 具、卡榫）	—	○	○	○	○	○
配件（排線、 傳輸線、網路 線…等）	—	○	○	○	○	○
電源供應器	—	○	○	○	○	○
<p>備考 1. “超出 0.1 wt %” 及 “超出 0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。 Note 1. “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.</p> <p>備考 2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。 Note 2. “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.</p> <p>備考 3. “—” 係指該項限用物質為排除項目。 Note 3. The “—” indicates that the restricted substance corresponds to the exemption.</p>						

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# Chapter 1

## Overview

This chapter overviews specifications for UNO-137 V2.

- Introduction
- Safety precautions
- Accessories
- Hardware Specifications
- Dimensions

## 1.1 Introduction

Advantech's new UNO-1 series serve as modular Integrated edge controllers. They provide configuration flexibility for customers seeking to cost effectively optimize their services. The new integrated DIN-rail mounting kit is designed to be more ruggedized and user-friendly, making it a perfect fit for control cabinets.

This new UNO-137 V2 model features a ruggedized design with an industrial-grade Intel Atom® x6413E 1.5 GHz and x6425RE 1.9 GHz processor and built-in 8 GB DDR4 RAM. It supports a wide temperature range (-40°C ~ 70°C/-40°F ~ 158°F) and sufficient I/O - including 2 x LAN, 2 xRS-232/422/485, 3 x USB 3.2, 1 x USB 2.0, 8 x DI, 8 x DO, and 2 x DP++. It also supports 1 x full-size mini PCIe slot, 2 x M.2, and 1 x Nano SIM card slots to enable expansion. An optional 2nd stack extension kit supports 1 x iDoor module, such as an industrial Fieldbus, as well as I/O and peripheral modules. This expandability makes Advantech's UNO-1 series an excellent choice for various industrial applications. Additionally, UNO-1's flexible expandability and control functions meet emerging demands for industry 4.0.

## 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 connect the chassis while the system power is on. A 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-137 V2. Appareils électroniques modernes sont très sensibles 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-137 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.*



**HOT SURFACE - DO NOT TOUCH.**



**SURFACE HAUDE - NE PAS TOUCHER.**



## 1.3 Hardware Specifications

### 1.3.1 General

Table 1.1: General	
<b>Dimensions (W x D x H)</b>	35 mm x 105 mm x 150 mm (1.4 in x 4.1 in x 5.9 in)
<b>Weight (Net)</b>	0.8 kg (1.7 lb)
<b>Mounting</b>	DIN-rail
<b>Power Requirement</b>	10 VDC - 36 VDC
<b>Power Consumption</b>	21 W (typical), 47 W (max)

### 1.3.2 System Hardware

Table 1.2: System Hardware	
<b>BIOS</b>	AMI 256 Mbit SPI
<b>Watchdog Timer</b>	Programmable 255 levels timer interval, from 1 to 255 sec
<b>Hardware Security</b>	TPM 2.0
<b>Processor</b>	Intel Atom <sup>®</sup> x6413E 1.5 GHz (up to 3.0 GHz) Intel Atom <sup>®</sup> x6425RE 1.9 GHz
<b>Memory</b>	Built-in 8 GB DDR4 3200 MHz (Up to 32 GB)
<b>Graphics Engine</b>	Intel <sup>®</sup> UHD graphics for 10th Gen Intel <sup>®</sup> processors
<b>Ethernet</b>	Intel <sup>®</sup> i226-IT GbE, IEEE802.1 AS, 802.3az
<b>LED Indicators</b>	1 x programmable, 1 x power, 1 x RTC battery and LAN (active, status)
<b>Storage</b>	1 x M.2 M-Key 2242 SSD (PCIe x2/SATA Signal)
<b>Expansion</b>	1 x Full size mPCIe slot (PCIe/SATA/USB signal) 1 x M.2 E-Key 2230 WIFI module (PCIe x2 signal) 1 x Nano SIM card slot

### 1.3.3 I/O Interfaces

Table 1.3: I/O Interfaces	
<b>Serial Ports</b>	2 x RS-232/422/485 (terminal block), 50 kbps ~ 115.2 kbps (isolation protection: 2500 V <sub>DC</sub> )
<b>LAN Ports</b>	2 x 10/100/1000/2500 Mbps IEEE 802.3u 1000BASE-T fast Ethernet (RJ-45)
<b>USB Ports</b>	USB (Type A): 2 x USB 3.2 Gen 2, x USB 3.2 Gen 1 and 1 x USB 2.0
<b>Isolated DIO</b>	8-ch digital input, 8-ch digital output (isolation protection: 2500V <sub>DC</sub> )
<b>Displays</b>	2 x DP 1.2, up to 4096 x 2160 @ 60 Hz
<b>Power Connector</b>	1 x 2 Pin (terminal block)

## 1.3.4 Environment

**Table 1.4: Environment**

<b>Operating Temperature*</b>	1. CPU x6413E: -40°C ~ 70°C (-40°F ~ 158°F) with 0.7 m/s airflow, with wide-temp 2. CPU x6425RE: -40°C ~ 60°C (-40°F ~ 140°F) with 0.7 m/s airflow, with wide-temp (-40°C ~ 85°C/-40°F ~ 185°F) peripherals (e.g. memory, wireless modules)
<b>Storage Temperature</b>	-40°C ~ 85°C (-40°F ~ 185°F)
<b>Relative Humidity</b>	95% RH @ 40°C / 104°F, non-condensing
<b>Shock Protection</b>	Operating, IEC 60068-2-27, 50G, half sine, 11 ms
<b>Vibration Protection</b>	Operating, IEC 60068-2-64, 2 Grms, random, 5 Hz ~ 500Hz, 1hr / axis

## 1.3.5 Certification

**Table 1.5: Certification**

<b>Certification</b>	CE, FCC, UL 61010-1, CCC, BSMI
----------------------	--------------------------------

## 1.3.6 Extension Kit (Optional)

UNO-137 V2 features a modularized design. Advantech offers an optional 2nd stack extension kit for users to expand the functionality using an Advantech iDoor module.

**Table 1.6: Extension Kit (Optional)**

<b>Part Number</b>	UNO-137-ID1EC
<b>Description</b>	2nd stack extension kit to support 1 x iDoor on UNO-137-E23BA & UNO-137-I23BA
<b>Ports</b>	1 x iDoor
<b>Dimensions (W x D x H)</b>	35 mm x 105 mm x 150 mm (1.4 in x 4.1 in x 5.9 in)
<b>Weight</b>	0.2 kg (0.4 lb)

**Note!** *The system operating temperature can keep 60°C (140°F) with most of the iDoor modules. (Exception: PoE iDoor, USB 3.0 iDoor)*



# 1.4 Dimensions

35 mm x 105 mm x 150 mm (1.4 in x 4.1 in x 5.9 in)

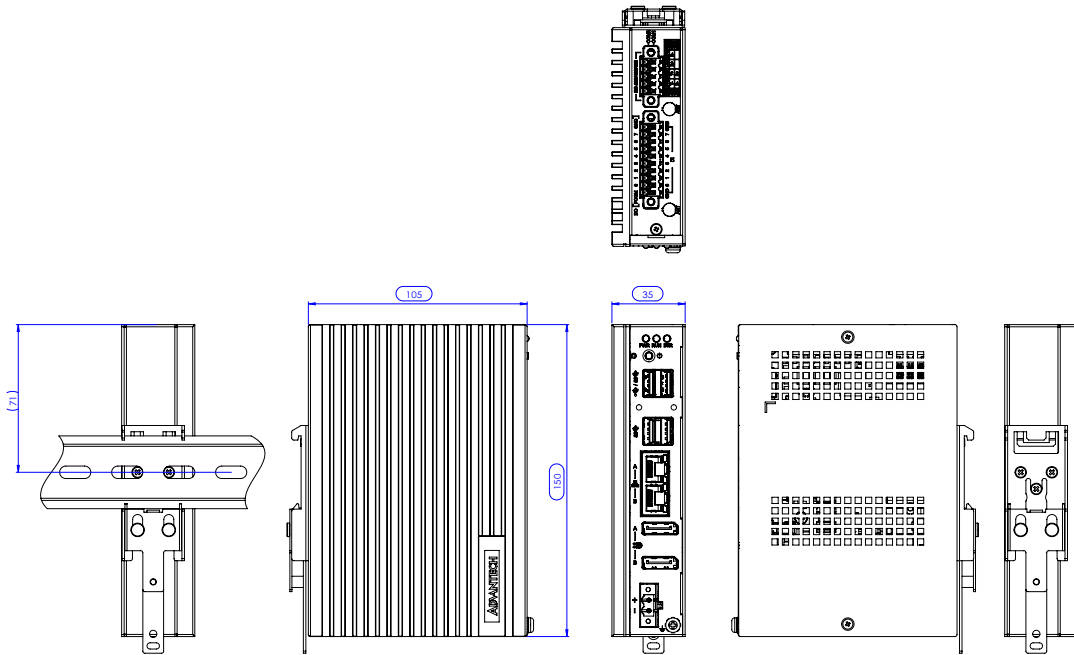


Figure 1.1 UNO-137 V2 Dimensions

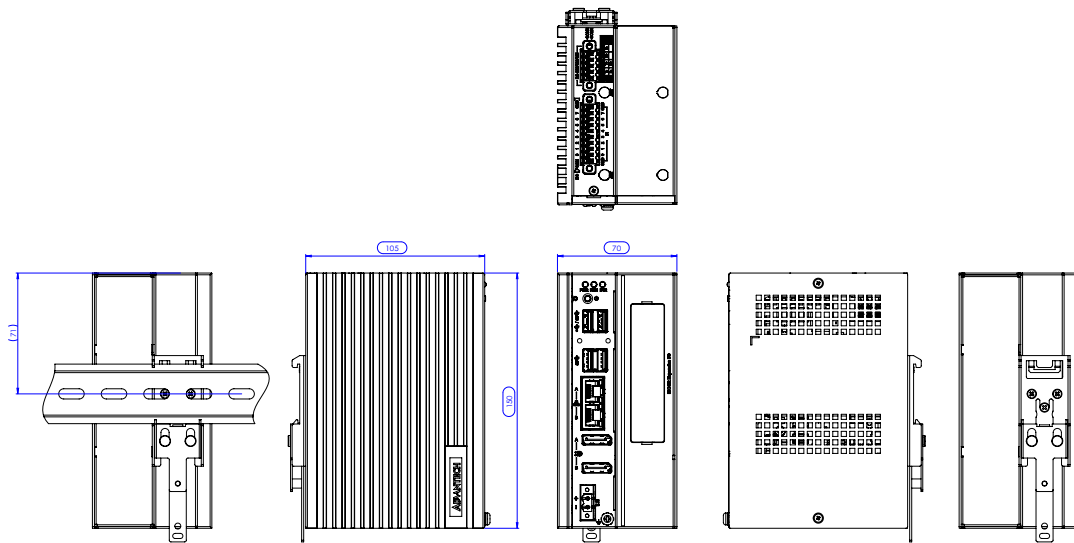


Figure 1.2 UNO-137 V2 Dimensions (with Optional Extension Kit)



# Chapter 2

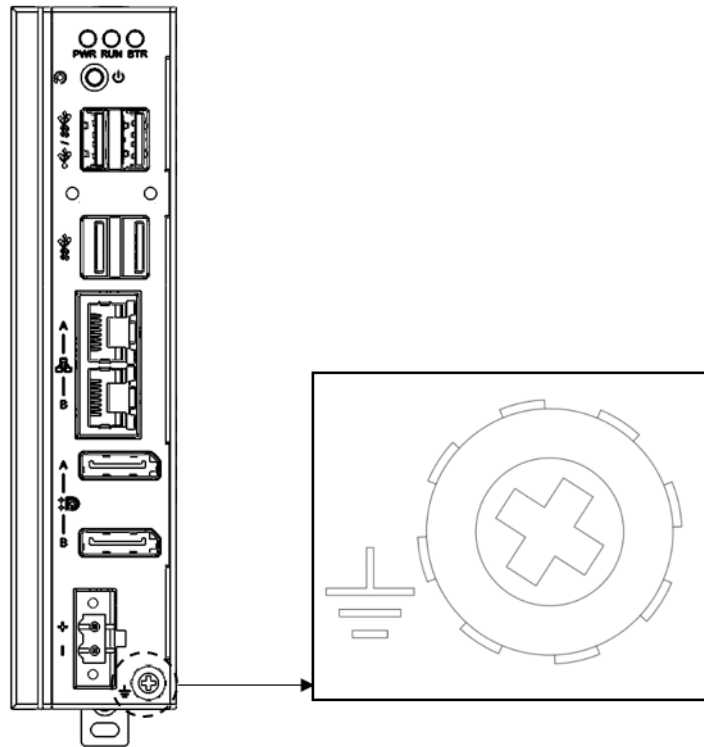
## Initial Setup

This chapter explains how to Initialize the UNO-137 V2.

- Chassis Grounding
- Connecting Power
- Storage Installation (Optional)
- Din-Rail Installation
- Wireless Module Installation (Optional)
- Expansion Module Installation (Optional)
- Remote Power/On & Reset Setting
- BIOS Settings

## 2.1 Chassis Grounding

The UNO-137 V2 provides good EMI protection and a stable grounding base. There is an easy-to-connect chassis grounding point.



**Figure 2.1 Connection Diagram**

Use the grounding cable (16 AWG) from the accessory bag to connect the chassis ground with the earth ground.

## 2.2 Connecting Power

This product is intended to be supplied by an approved power adapter or DC power source. This adapter is rated at 10 Vdc - 36 Vdc, 7.7 -1.31 A and has a Tmax of 70°C (158°F). If you need further assistance or information, please contact Advantech.

**Note!** *It is recommended to choose a 120 W adapter when selected iDoor expansion module (e.g. PCM-24R2PE) is installed. Recommended PN: 96PSA-A120W24T2-4.*

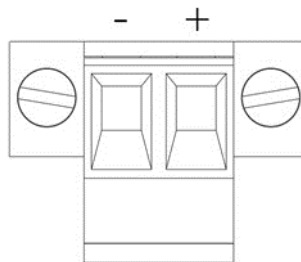


Follow the following instructions:

1. Insert the positive and negative wires into the V+ and V- contacts on the terminal block connector.
2. Tighten the wire-clamps' 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 12-24 AWG (12 A). Torque value 7 lb-in. Use copper conductors only.
2. The temperature rating of the input connection cable should be higher than 95°C (203°F).

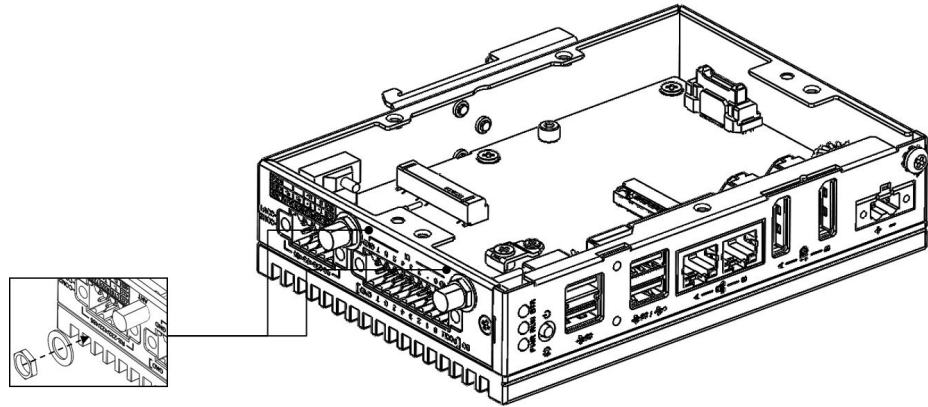


## 2.3 M.2 Installation (Optional)

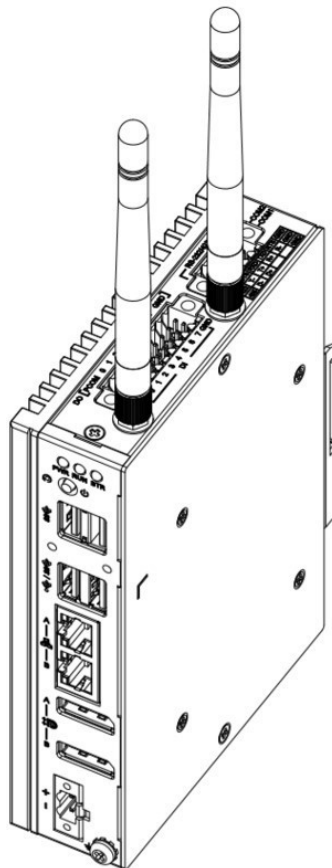
The UNO-137 V2 supports the installation of M.2 E-Key 2230 and M.2 B-Key 2242. Please refer to The UNO-137 V2 Startup Manual for installation steps.

### 2.3.1 Antenna Installation

1. Install the SMA connector of the antenna cable to the antenna hole.



2. Connect the MHF of antenna cable with the module.
3. Return the back cover and gently screw it into place.
4. Assemble the antenna on the SMA connector of the antenna cable.



\*Wireless module, antenna cable, and antennas are optional. Please contact Advantech for further information.

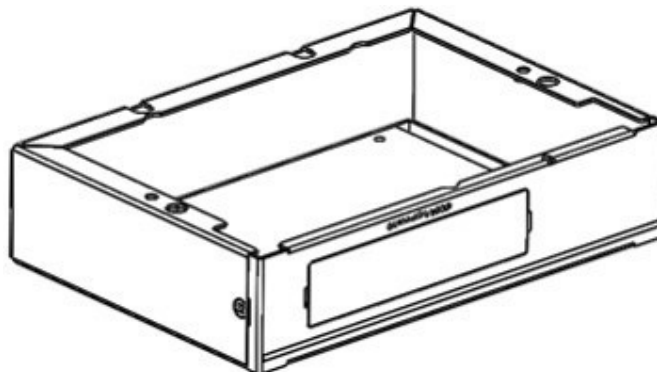


### 2.3.2 Second Stack iDoor Installation (Optional)

You can additionally install the 2nd stack iDoor extension kit (PN:UNO-137-ID1EC) on UNO-137 V2 to expand its functionality:

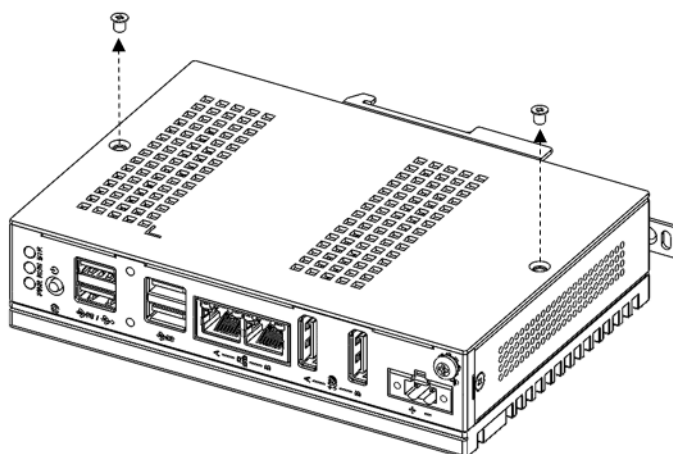
**The accessory list for iDoor extension kit (PN: UNO-137-ID1EC)**

5 x M3x4L screws for extension kit installation.

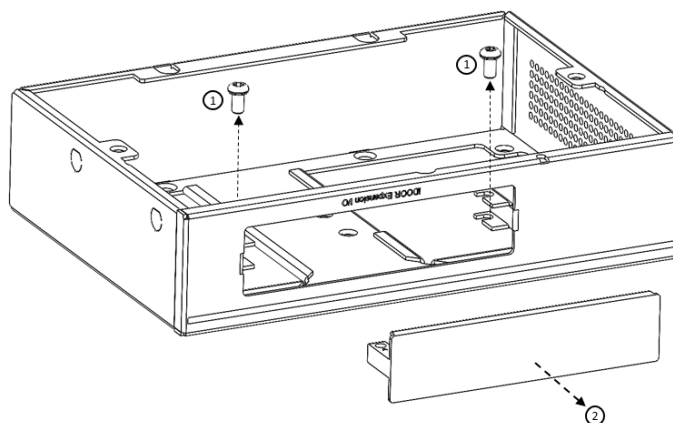


Follow the steps below for extension kit Installation:

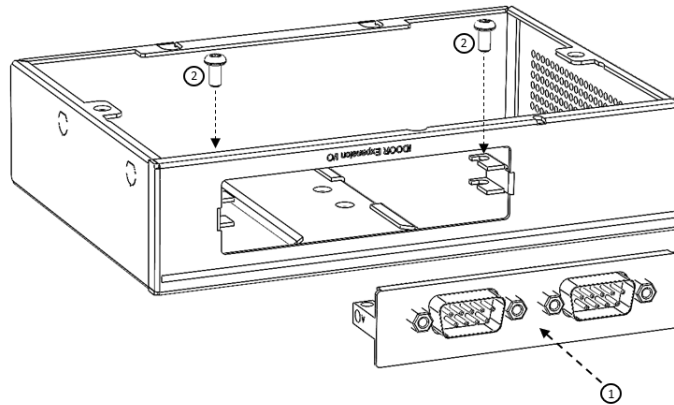
1. Remove 2 screws from the back cover of the UNO-137 V2.



2. Detach the iDoor dummy cover from the iDoor extension kit.



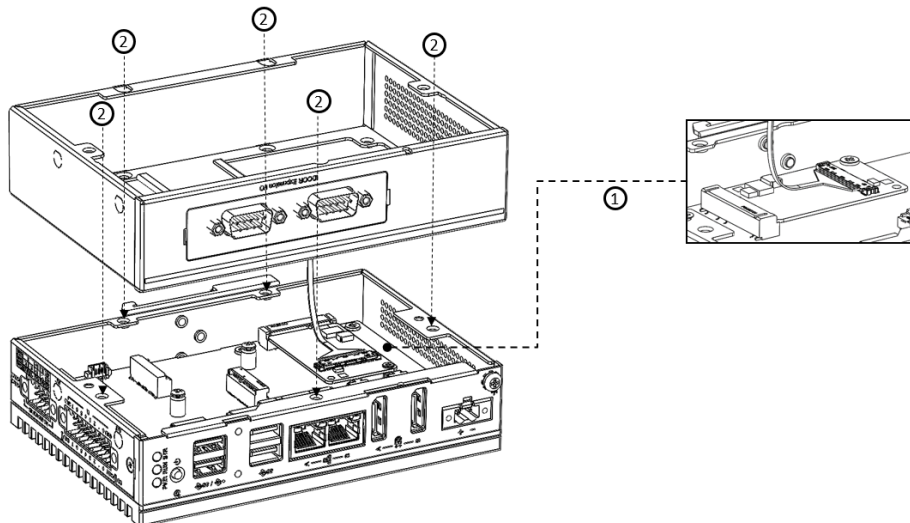
3. Install and secure the iDoor module with the provided screws from Step 2.



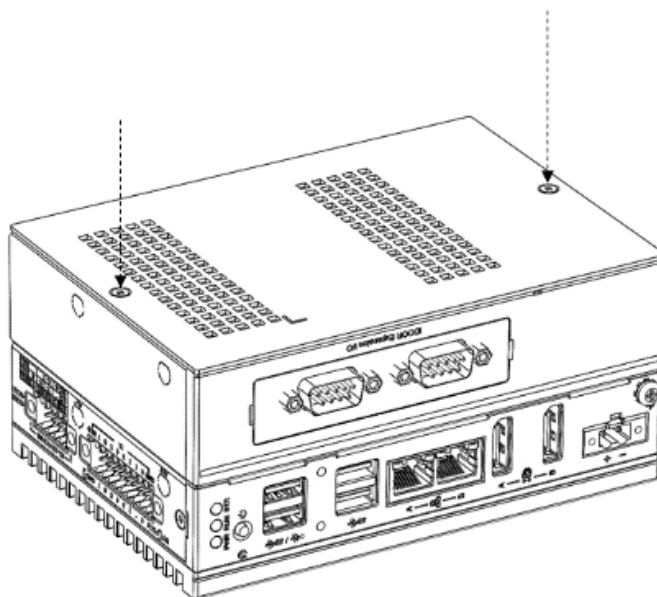
4. Extension Kit Installation:

(1) Connect the mPCIe connector of the iDoor module onto the board of the UNO-137 V2, and fix it with the M2x4L screw from the accessory bag of the UNO-137 V2.

(2) Attach the iDoor extension kit onto the UNO-137 V2 with 5 x M3x4L screws from its accessory bag.

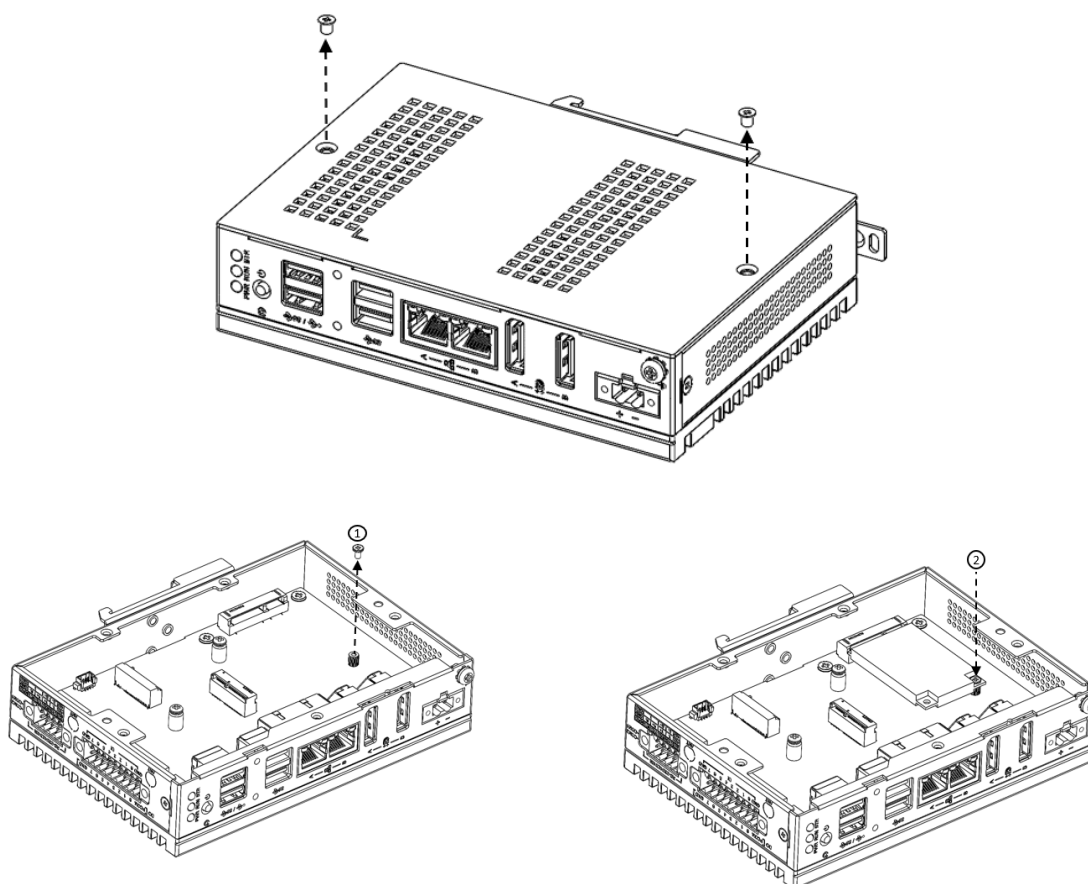


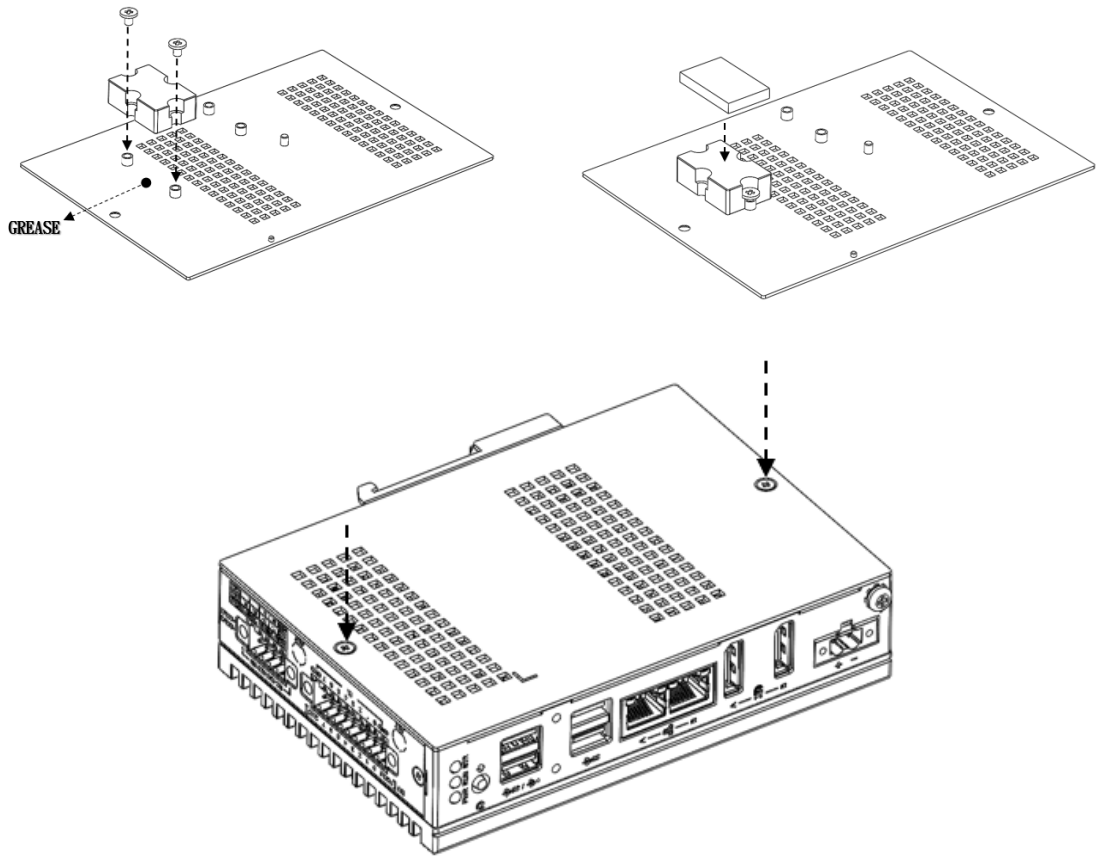
- Return the back cover of the UNO-137 with the provided screws from Step 1.



### 2.3.3 Base Unit: mPCIe+ mSATA (Optional)

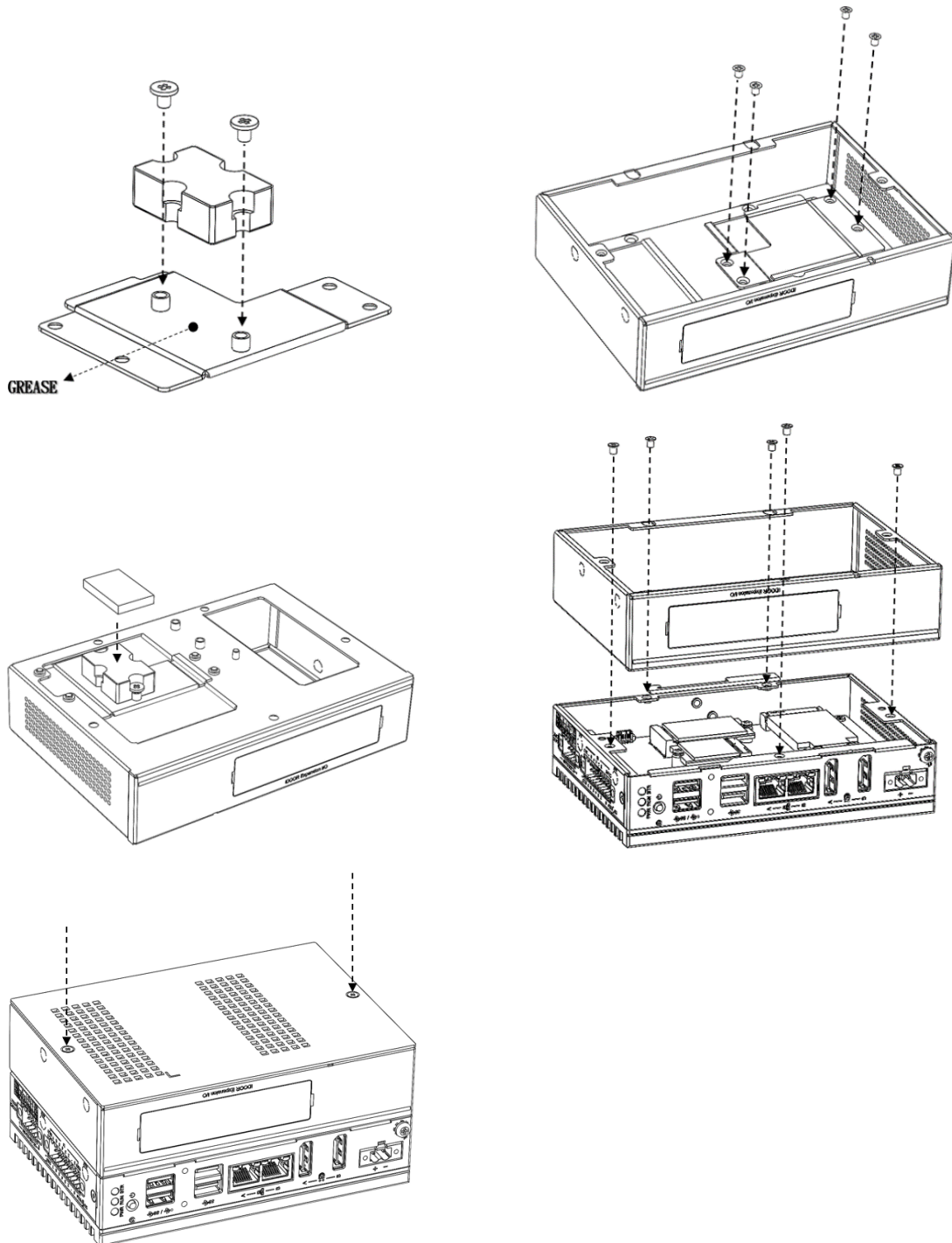
- Remove 2 screws from the back cover of the UNO-137 V2.
- Remove the provided screws from the board. Insert the mSATA card. Secure it with the provided screws
- Insert grease between the back cover and aluminum column and lock back the screws. Paste a thermal pad on the aluminum column.
- Attach the back cover with the provided screws





### 2.3.4 2<sup>ND</sup> Stack: mPCIe+ mSATA (Optional)

1. Insert grease between back the cover and aluminum column and screw in the screws. Attach the transfer plate with 4 screws to the 2nd stack.
2. Paste thermal pad on the aluminum column then lock the second expansion chassis with 5 screws for the first chassis.
3. Fix the back cover with the provided screws.



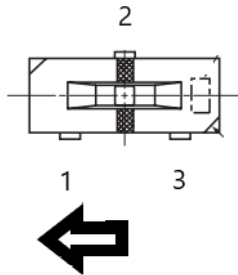
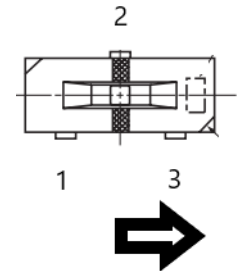
## 2.4 Remote Power & Reset Settings

The UNO-137 V2 supports remote power and reset functions through the DI connector with the switch setting (SW8) on the motherboard. The default setting is for DI6/ DI7 functionality. If you want to configure the UNO-137 for remote control functions, configure SW8- Bit 2 to “on”, then the DI6 can be used for remote power settings, and the DI7 can be used for remote reset setting.

**Table 2.1: Remote Power/On & Reset Settings**

**SW2 Default (Pin 1-Pin 2)**

**Note: no function if poses is on Pin 2**

Description	Instructions	SW2
DI Function for DI6/DI7 (Default)	Pin1-Pin 2	
Remote Setting Function	Pin 2-Pin 3	

## 2.5 BIOS Setting

With the BIOS setup program, you can modify the BIOS settings and control the special features of your computer. The setup program uses a number of menus for making changes and turning special features on or off.

Press the “ESC” key upon the first boot up to enter the BIOS setup screen. Then, press the “Delete” key during the Power On Self Test (POST) process to enter the BIOS setup screen, otherwise the system will continue the POST process.

(Please refer to User Manual- Appendix A.11/A.12 for more settings.)

# Chapter 3

## Hardware Functionality

This chapter details setup instructions for UNO-137 V2's hardware functions. It includes connecting peripherals and indicators.

- Introduction
- External I/O Connector
- Internal I/O Connector
- LED Indicators
- Reset Buttons
- Antenna Hole

### 3.1 Introduction

The following diagram demonstrates the location of the UNO-137 V2 motherboard's key components and internal/external connectors.

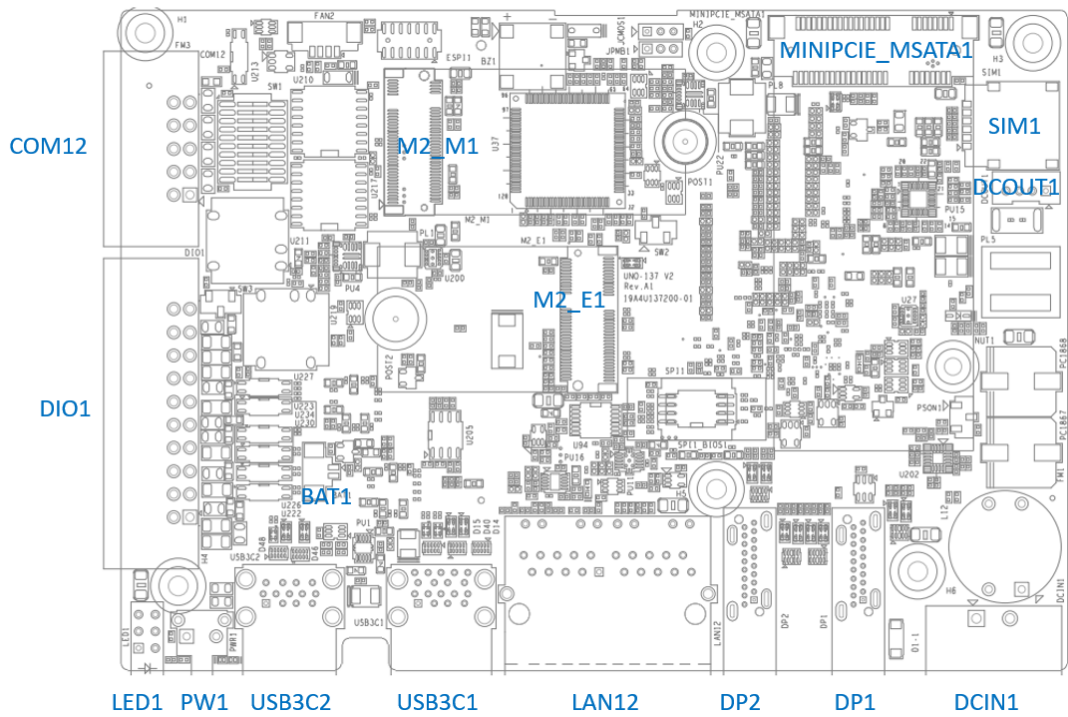


Figure 3.1 Diagram of Connector Locations on UNO-137 V2 (Top Side)

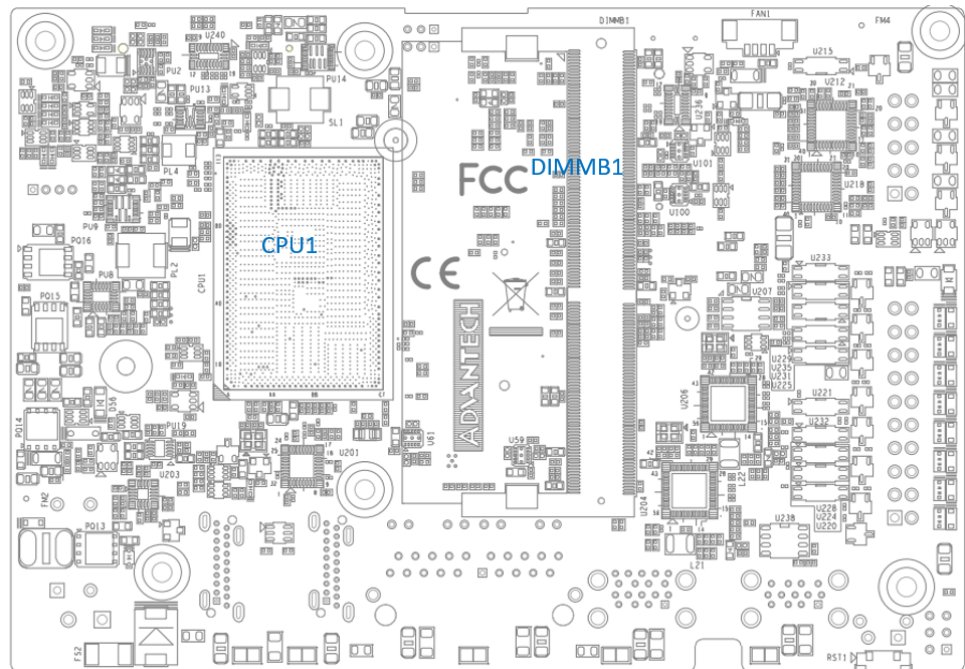


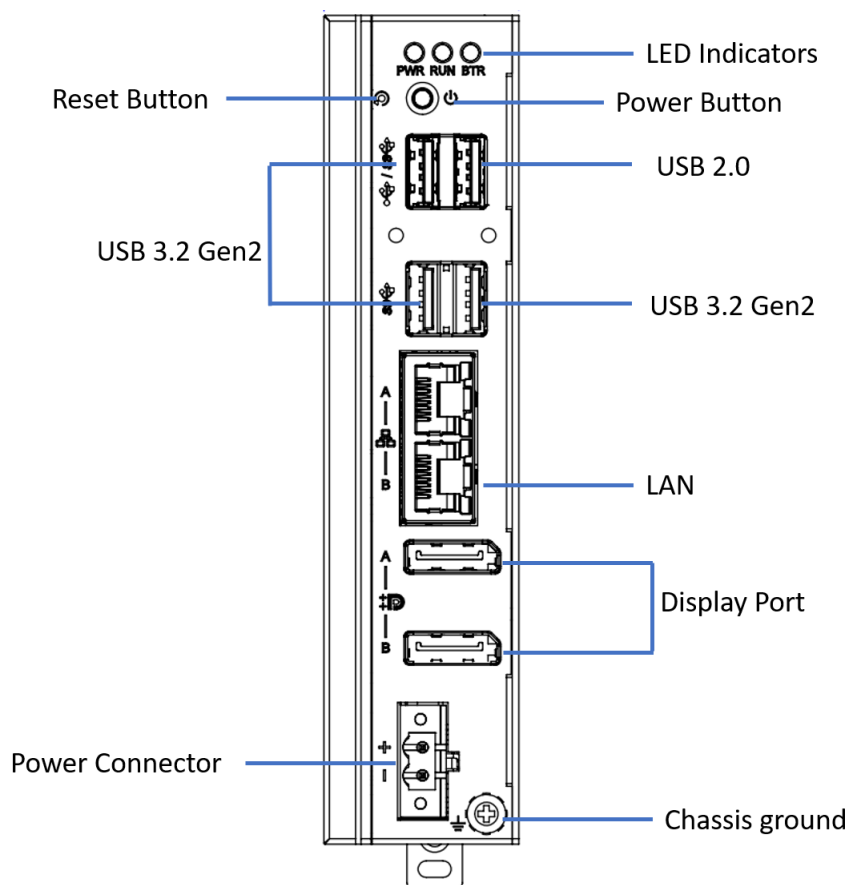
Figure 3.2 Diagram of Key Components Location on UNO-137 V2 (Bottom Side)



**Table 3.1: Key Components, Connectors on Board**

Category	Label	Function
External	DCIN1	Power Connector
	DP1	Display port Connector
	DP2	Display port Connector
	LAN12	LAN Connector
	USB3C1	USB 3.0 Connector
	USB3C2	USB 2.0 + 3.0 Connector
	DIO1	8DI/ 8DO Terminal Connector
	COM12	COM Port Terminal Connector (RS232/422/485)
Internal	M2_M1	M.2 M-Key for 2242 Connector
	M2_E1	M.2 E-Key for 2230 Connector
	MINIPCIE_MSATA1	Mini PCIe Connector
	DCOUT1	Expansion iDoor Power Connector
	BAT1	RTC Battery Connector
	SIM1	SIM Card Connector

## 3.2 External I/O Connectors

**Figure 3.3 Front Panel of UNO-137 V2**

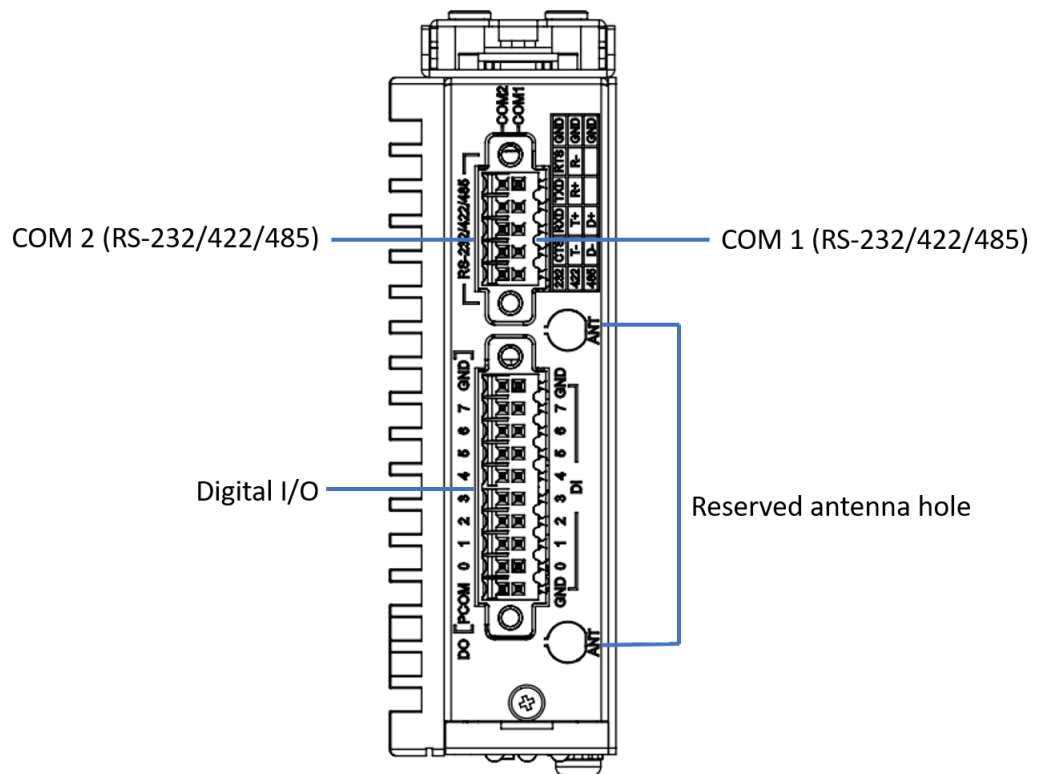


Figure 3.4 Top View of UNO-137 V2

### 3.2.1 Power Connector

The UNO-137 V2 comes with a Phoenix connector that carries 10 - 36 V<sub>DC</sub> 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)

### 3.2.2 LAN: Ethernet Connector

The UNO-137 V2 is equipped with two Gigabit LAN controllers. An Intel® i226 Ethernet controller that complies with IEEE 802.3u 10/100/1000/2500 Base-T is 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.)

### 3.2.3 USB Connector

The UNO-137 V2 features 4 x USB ports that comply with 3 x Rev 3.2, 1 x Rev 2.0 specifications. The USB connectors support plug-and-play and hot-swapping 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.)

### 3.2.4 Display Connector

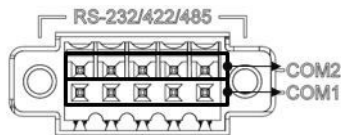
The UNO-137 V2 provides 2 x DP 1.2 connectors for a high resolution interface up to 4096 x 2160 @ 60 Hz, It also supports DP++ that can be compatible with passive adapters. (Please refer to User Manual- Appendix A.4 for pin assignments.)

### 3.2.5 COM Connector

The UNO-137 V2 has 2 x COM RS232/422/485 ports of terminal block types. They offer transmission speeds of 50 kbps ~115.2 kbps.

The default mode for both COM ports (COM 1 & COM 2) is RS-232 mode. Settings can be adjusted via an on-board switch (SW1).

(Please refer to User Manual- Appendix A.8 for RS232/422/485 settings).

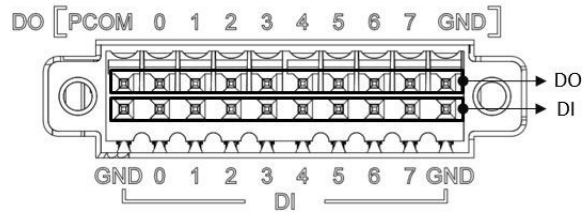


**Table 3.2: COM Connector Pin Assignments**

Pin	COM1 Mode	Signal Name	Pin	COM2 Mode	Signal Name
1	RS232	CTS	2	RS232	CTS
	RS422	T-		RS422	T-
	RS485	D-		RS485	D-
3	RS232	RXD	4	RS232	RXD
	RS422	T+		RS422	T+
	RS485	D+		RS485	D+
5	RS232	TXD	6	RS232	TXD
	RS422	R+		RS422	R+
	RS485			RS485	
7	RS232	RTS	8	RS232	RTS
	RS422	R-		RS422	R-
	RS485			RS485	
9	RS232	GND	10	RS232	GND
	RS422	GND		RS422	GND
	RS485	GND		RS485	GND

### 3.2.6 Digital Input and Output

There are 8x digital inputs and 8x digital outputs configured from GPIO pins for on/off triggering and status reading.

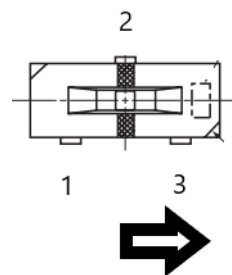
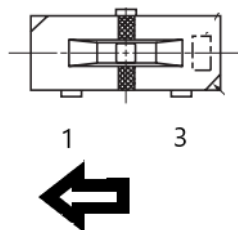


The following table indicates the mapping for DIO and GPIO.

GPIO Pin	Pin 0	Pin1	Pin2	Pin3
DI Pin	DI0	DI1	DI2	DI3
GPIO Pin	Pin 4	Pin5	Pin6	Pin7
DI Pin	DI4	DI5	DI6	DI7
GPIO Pin	Pin 8	Pin9	Pin10	Pin11
DO Pin	DO0	DO1	DO2	DO3
GPIO Pin	Pin 12	Pin13	Pin14	Pin15
DO Pin	DO4	DO5	DO6	DO7

Use SW3 to set wet contact and dry contact for digital input.

NA: Configure to setting 2



Dry: Configure to setting 1 (default)    Wet: Configure to setting 3

#### Digital Input

- Input Channels: 8
- Input Voltage (wet contact), configure SW6 to setting 3
  - Logic 0:  $0 V_{DC} \sim 3 V_{DC}$
  - Logic 1:  $10 V_{DC} \sim 30 V_{DC}$
- Input Voltage (dry contact), configure SW6 to setting 1
  - Logic 0: Shorted to GND
  - Logic 1: Open
- Isolation Protection:  $2,500 V_{DC}$
- Over-voltage Protection:  $30 V_{DC}$
- Opto-Isolator Response:  $50 \mu s$

### Digital Output

- Output Channels: 8
- Output Voltage:  $5 V_{DC} \sim 30 V_{DC}$
- Output Capability Sink: 500 mA max./channel
- Opto-Isolator Response: 50  $\mu$ s

### Isolated Digital Input

Each of the 8 isolated digital input channels accept voltages from 0 V ~ 30 V. The following figure shows how to connect an external input source to the isolated inputs of the UNO- 137 V2.

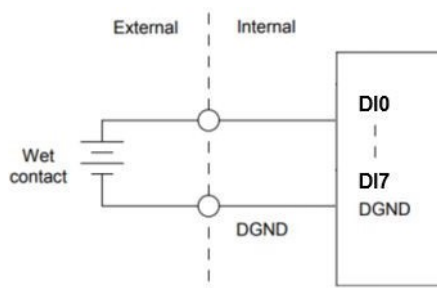


Figure 3.5 Isolated DI Wet Connection Diagram

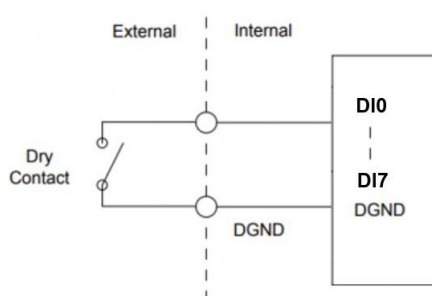


Figure 3.6 Isolated DI Dry Connection Diagram

## Isolated Digital Output

If the external voltage source (5 V ~ 30 V) is connected to each isolated digital output channel and its isolated digital output turns on (500 mA max./ch), the board's current will sink from the external voltage source. The following figure shows how to connect an external output load to the isolated outputs on the UNO-137 V2.

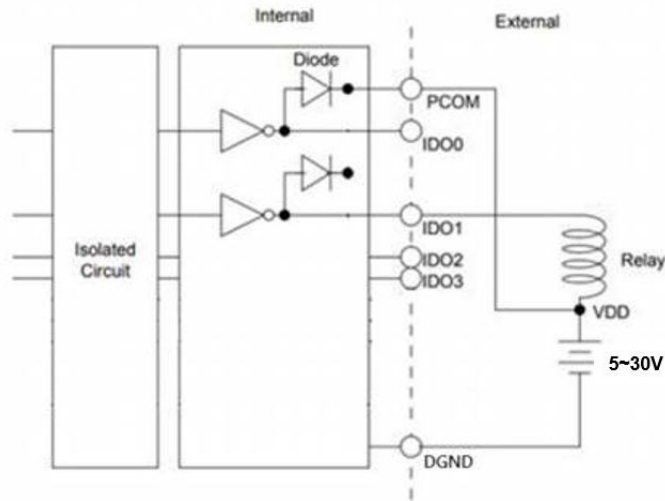


Figure 3.7 Isolated DO Connection Diagram

## 3.3 Internal I/O Connectors and Switches

The following figure demonstrates the locations of internal connectors and switches on the UNO-137 V2's motherboard.

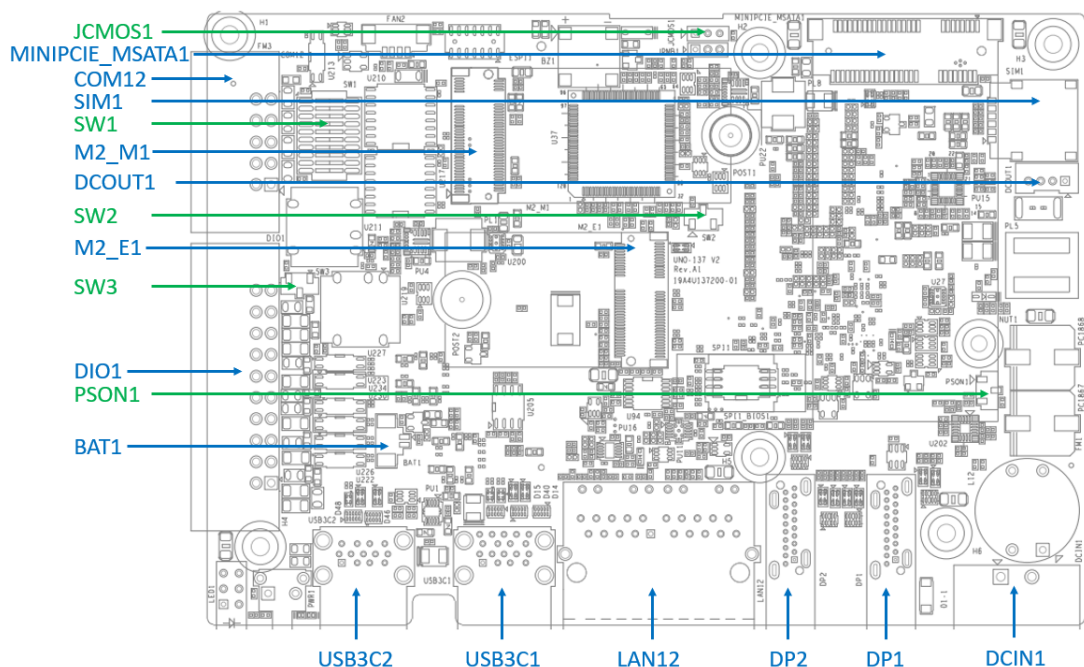


Figure 3.8 Locations Internal I/O Connectors/Switches for UNO-137 V2

**Table 3.3: Internal Connectors and Jumper Switches**

Label	Function
MINIPCIE_MSATA1	Mini PCIe connector
M2_M1	M.2 M-Key for 2242 connector
M2_E1	M.2 E-Key for 2230 connector
DCOUT1	iDoor Power connector
BAT1	RTC Battery connector
SIM1	SIM card connector
JCMOS1	Clear CMOS connector
PSON1	AT/ATX mode selection
SW1	Serial port mode selection for RS-232/422/485
SW2	Remote IO selection
SW3	DI selection for dry/wet contact

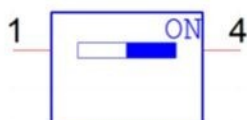
**Note!** \*This power is from DC power inputs.



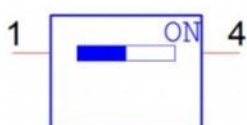
Configure the UNO-137 V2 to match the needs of your application by setting switches. The following details the switch setting definitions:

Dip switch definition:

Bit 1: on



Bit 1: off



### 3.3.1 M.2 Connector

There is one M.2 M-Key connector for M.2 cards, labeled “M2\_M1” on the board. This M.2 interface is a PCIe signal co-lay with a SATA signal. It will automatically detect which device you installed and determine the appropriate PCIe or SATA signal to use. Therefore, it supports the installation of M.2 2242.

(Please refer to User Manual- Chapters 3.3 & 3.5 for installation details and User Manual-Appendix A.6 for pin assignments.)

There is one M.2 E-Key connector for M.2 cards, labeled “M2\_E1” on the board. This M.2 interface is a PCIe/USB signal. It will automatically detect which device you installed and determine the appropriate PCIe or USB signal to use. Therefore, it supports the installation of M.2 2230.

### 3.3.2 MINIPCIE\_MSATA1 Connector

There's one socket for full size PCI Express mini cards, labeled "MINIPCIE\_MSATA1" on the board. It supports mSATA and iDoor modules for diversified applications such as isolated COM port, Profibus, WLAN GPRS, LTE, and MRAM. Users can install the iDoor easily with an optional extension kit.

(Please refer to User Manual- Chapter 3.6 for extension kit installation details and User Manual-Appendix A.7 for pin assignments.)

### 3.3.3 Nano SIM Slot

There's one Nano SIM slot for supporting LTE function, labeled "SIM1" on the board. In addition to installing the SIM card on "SIM1", users are required to install an LTE module on "MINIPCIE\_MSATA1" to enable the functionality.

## 3.4 Others

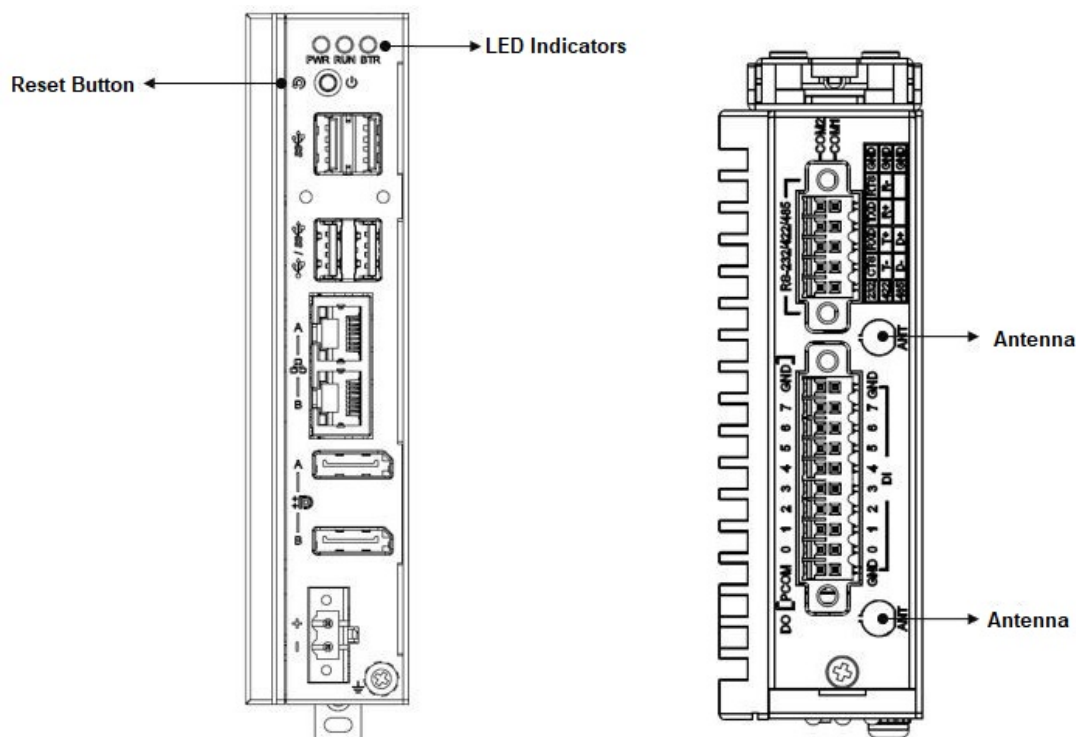


Figure 3.9 LED Indicators, Reset Buttons, and Antenna Hole

#### 3.4.1 LED Indicators

Three LEDs indicate the status of the system's power, RTC battery, and programmable LED for user's configurations.

- PWR (Power): Green indicates "normal" and orange indicates "standby".
- BTR (RTC Battery): Red indicates a low RTC battery. Check the RTC battery.
- RUN (Programmable): Users can configure the LED indicator's behavior through GPO signal controls. Green indicates under programming.

#### 3.4.2 Reset Buttons

Press the "reset" button to initiate a hardware reset.



### 3.4.3 Antenna Hole

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

**Note!** Please be aware of the maximum OD value of the antenna hole when selecting the antenna.

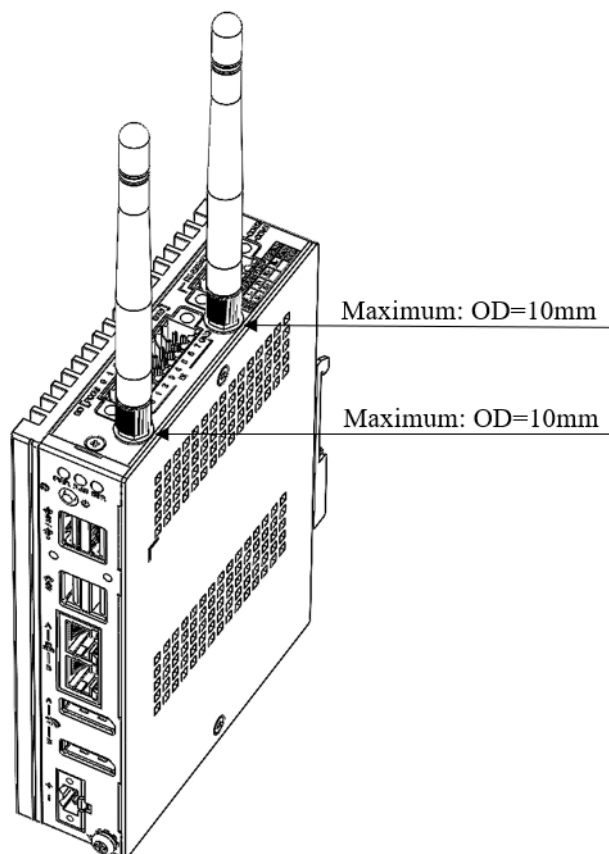


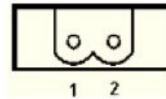
Figure 3.10 Diagram of Maximum OD Value for Antenna Hole



# Appendix **A**

System Settings/Pin  
Assignments

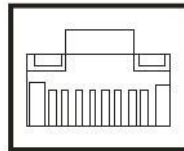
## A.1 Power Connector (DCIN1)



**Table A.1: Power Connector Pin Assignments**

Pin	Signal	Description
1	Power IN V+	10 V <sub>DC</sub> - 36 V <sub>DC</sub>
2	Power IN V- (GND)	

## A.2 LAN: Ethernet Connector (LAN12)



**Table A.2: Ethernet Connector Pin Assignments**

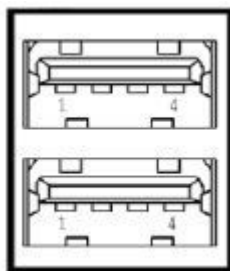
RJ-45 Pin	Signal	Description
1	MDI0+	<ul style="list-style-type: none"> <li>In BASE-T: Media Dependent Interface[0]:</li> <li>1000BASE-T: In MDI configuration, MDI[0] +/- corresponds to BI_DA +/- and in MDI-X configuration MDI[0] +/- corresponds to BI_DB +/-.</li> </ul>
2	MDI0-	<ul style="list-style-type: none"> <li>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.</li> </ul>
3	MDI1+	<ul style="list-style-type: none"> <li>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 +/-.</li> </ul>
6	MDI1-	<ul style="list-style-type: none"> <li>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.</li> </ul>
4	MDI2+	<ul style="list-style-type: none"> <li>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 +/-.</li> </ul>
5	MDI2-	
7	MDI3+	
8	MDI3-	<ul style="list-style-type: none"> <li>100BASE-TX: Unused.</li> <li>10BASE-T: Unused.</li> </ul>

**Table A.3: LED**

Left LED		Right LED	
100/10 Link	1000 Link	2500 Link	Active
Off	Orange	Green	Green

## A.3 USB Connector

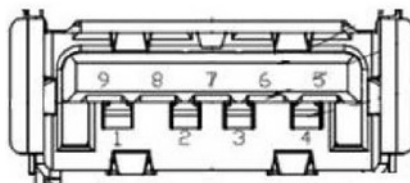
### A.3.1 USB 2.0 Connector (USB3C2)



**Table A.4: Connector Pin Assignments**

Pin	Signal Name	Description
1	VBUS	Power
2	D-	USB 2.0 differential pair
3	D+	
4	GND	Ground for power return

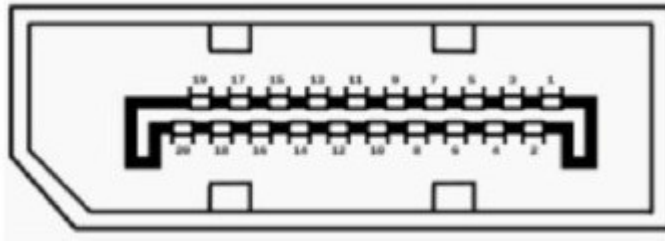
### A.3.2 USB 3.0 Connector (USB3C1)



**Table A.5: USB 3.0 Connector Pin Assignments**

Pin	Signal Name	Description
1	VBUS	Power
2	D-	USB 2.0 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+	

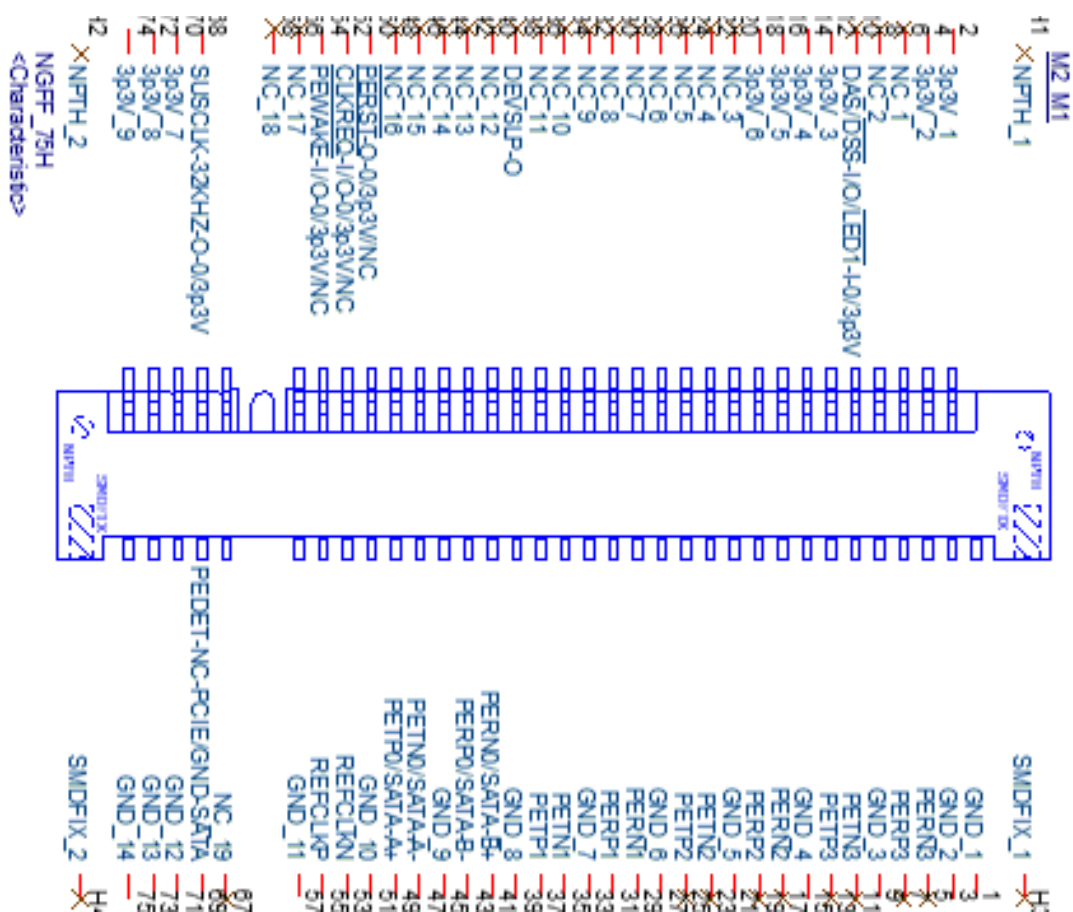
## A.4 Display Connector (DP1, DP2)



**Table A.6: 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.5 M.2 Connector (M2\_M1)



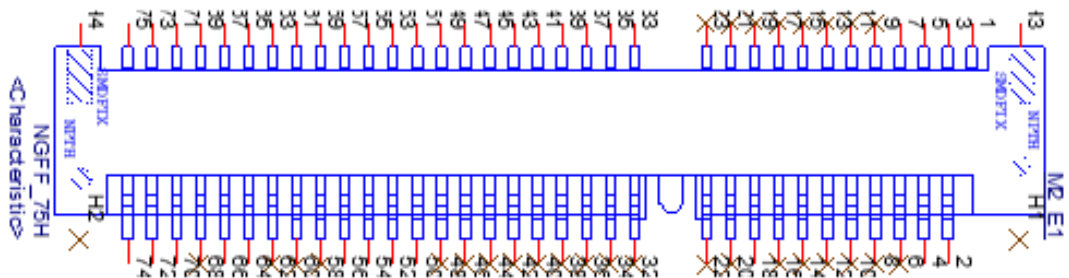
**Table A.7: M.2 M-Key Connector Pin Assignments**

Pin	Signal Name	Pin	Signal Name
1	GND	2	+V3.3_Sb_NVME1
3	GND	4	+V3.3_Sb_NVME1
5	NC	6	NC
7	NC	8	NC
9	GND	10	NC
11	NC	12	+V3.3_Sb_NVME1
13	NC	14	+V3.3_Sb_NVME1
15	GND	16	+V3.3_Sb_NVME1
17	NC	18	+V3.3_Sb_NVME1
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	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

**Table A.7: M.2 M-Key Connector Pin Assignments**

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	PLTRST_MKEY#
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.6 M.2 Connector (M2\_E1)

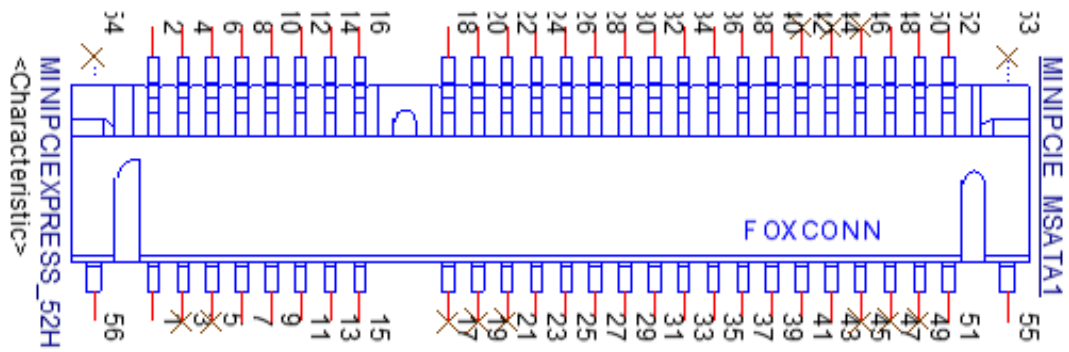
**Table A.8: M.2 E-Key Connector Pin Assignments**

Pin	Signal Name	Pin	Signal Name
1	USB2_PCH_M2_E1_A_D_P	2	+V3.3_SB_M2_E1
3	USB2_PCH_M2_E1_A_D_N	4	+V3.3_SB_M2_E1
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	NC
21	NC	22	NC
23	NC	24	NC
25	NC	26	NC



Table A.8: M.2 E-Key Connector Pin Assignments			
27	NC	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	NC
35	PCIE_PCH_M2_E1_TX_P1	36	NC
37	PCIE_PCH_M2_E1_TX_N1	38	NC
39	GND	40	NC
41	PCIE_CPU_M2_E1_RX_P1	42	NC
43	PCIE_CPU_M2_E1_RX_N1	44	NC
45	GND	46	NC
47	CLK100M_PCH_M2_E1_K_P1	48	NC
49	CLK100M_PCH_M2_E1_K_N1	50	PLTRST_MKEY#
51	GND	52	PCIE_REQ#
53	CLKREQ4#	54	+V3.3_SB_M2_E1
55	PCIE_WAKE#	56	WIFI_OFF#
57	GND	58	NC
59	PCIE_PCH_M2_E1_TX_P2	60	NC
61	PCIE_PCH_M2_E1_TX_N2	62	NC
63	GND	64	NC
65	PCIE_CPU_M2_E1_RX_P2	66	PLRST
67	PCIE_CPU_M2_E1_RX_N2	68	NC
69	GND	70	PCIE_WAKE#
71	CLK100M_PCH_M2_E1_K_P2	72	+V3.3_SB_M2_E1
73	CLK100M_PCH_M2_E1_K_N2	74	+V3.3_SB_M2_E1
75	GND		

## A.7 mPCIe Connector (MINIPCI\_MSATA1)



**Table A.9: mPCIe Connector Pin Assignments**

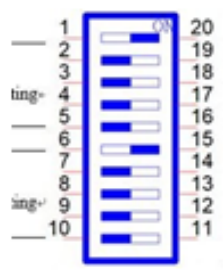
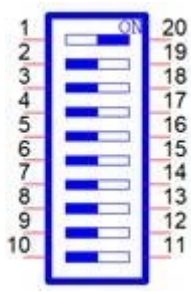
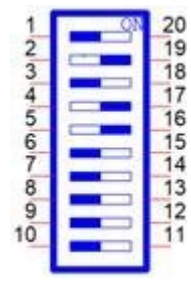
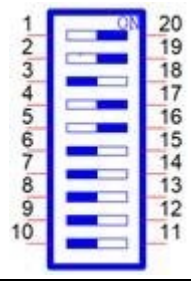
Pin	Signal Name	Pin	Signal Name
1	PCIE_WAKE#_3.3	2	+V3.3_SB_MINI
3	NC	4	GND
5	NC	6	+V1.5_MINI1
7	+V3.3	8	+VUIM_VPP
9	GND	10	UIM_RESET
11	CLK100M_PCH_MINI1_K_N	12	UIM_CLK
13	CLK100M_PCH_MINI1_K_P	14	UIM_DATA
15	GND	16	+VUIM_PWR
17	NC	18	GND
19	NC	20	WIFI_DISABLE#
21	NC	22	MINI_PLTRST#
23	SWITCH_MINIPCI1_RX_N	24	+V3.3_SB_MINI
25	SWITCH_MINIPCI1_RX_P	26	GND
27	GND	28	+V1.5_MINI1
29	GND	30	NC
31	SWITCH_MINIPCI1_TX_N	32	NC
33	SWITCH_MINIPCI1_TX_P	34	GND
35	GND	36	USB2_PCH_MINI1_D_N
37	GND	38	USB2_PCH_MINI1_D_P
39	+V3.3_SB_MINI	40	GND
41	+V3.3_SB_MINI	42	NC
43	MPCI1_PWRSEL	44	NC
45	NC	46	NC
47	NC	48	+V1.5_MINI1
49	NC	50	GND
51	MINIPCI1_DET#	52	+V3.3_SB_MINI

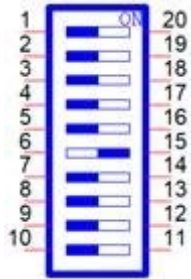
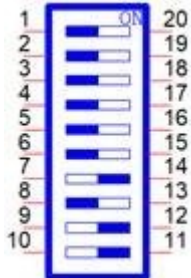
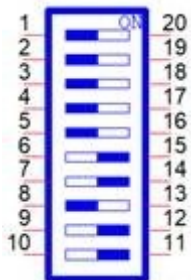
## A.8 COM Port RS232/422/485 Settings

The default setting for the COM port is RS-232. This can be changed to RS-422 or RS-485 modes can be configured by adjusting switch on the motherboard.

### A.8.1 RS232/422/485 Setting (SW1)

**Table A.10: RS232/422/485 Setting (SW1)**

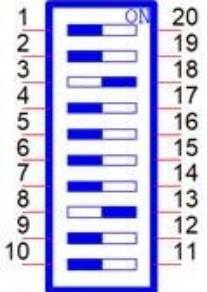
<b>SW1 Default</b>		
<b>Description</b>	This switch is used to select RS232/422/485 mode settings	
<b>Default</b>	RS232 mode	
<b>RS232 Mode</b>	Bit 1 ON Bit 2,3,4,5,6,7,8,9,10 OFF	
<b>COM1 RS485 Mode</b>	Bit 2,4,5 ON Bit 1,3,6,7,8,9,10 OFF	
<b>RS422 Mode</b>	Bit 1,2,4,5 ON Bit 3,6,7,8,9,10 OFF	

	<b>RS232 Mode</b>	Bit 6 ON Bit 1,2,3,4,5,7,8,9,10 OFF	
<b>COM1</b>	<b>RS485 Mode</b>	Bit 7,9,10 ON Bit 1,2,3,4,5,7,8 OFF	
	<b>RS422 Mode</b>	Bit 6,7,9,10 ON Bit 1,2,3,4,5,8 OFF	

## A.8.2 COM Port RS422/485 Termination Resistor Setting

**Table A.11: COM Port RS422/485 Termination Resistor Setting**

<b>SW1</b>	Termination resistor setting
<b>Description</b>	This switch is used to select the termination resistor (120 ohm) for long distance transmissions or device matching
<b>Default</b>	Bit 3 off & Bit 8 off
<b>COM1</b>	Bit 3 on
<b>COM2</b>	Bit 8 on

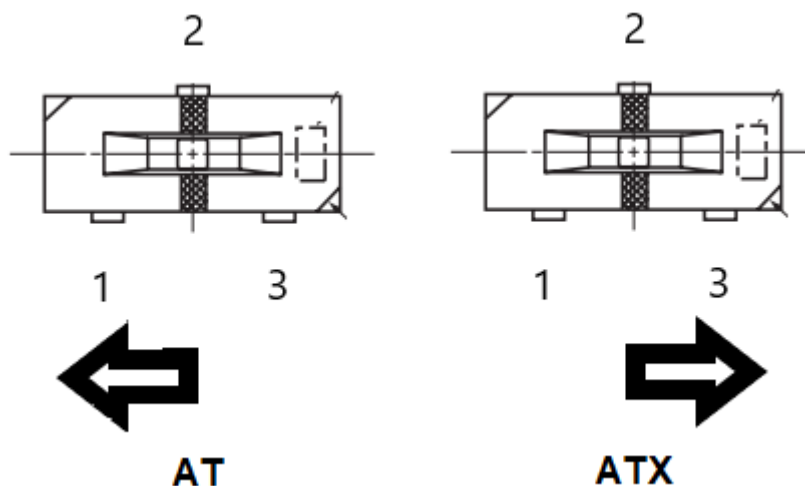


## A.9 AT/ATX Setting (PSON1)

SW8 can be used for AT/ATX settings. The default setting is AT mode. See the following table for switching configurations.

**Table A.12: AT/ATX Setting (PSON1)**

Description	Instruction	PSON1
AT Mode (Default)	Pin 1 - Pin 2	
ATX Mode	Pin 2 - Pin 3	
No Function	Pin 2	



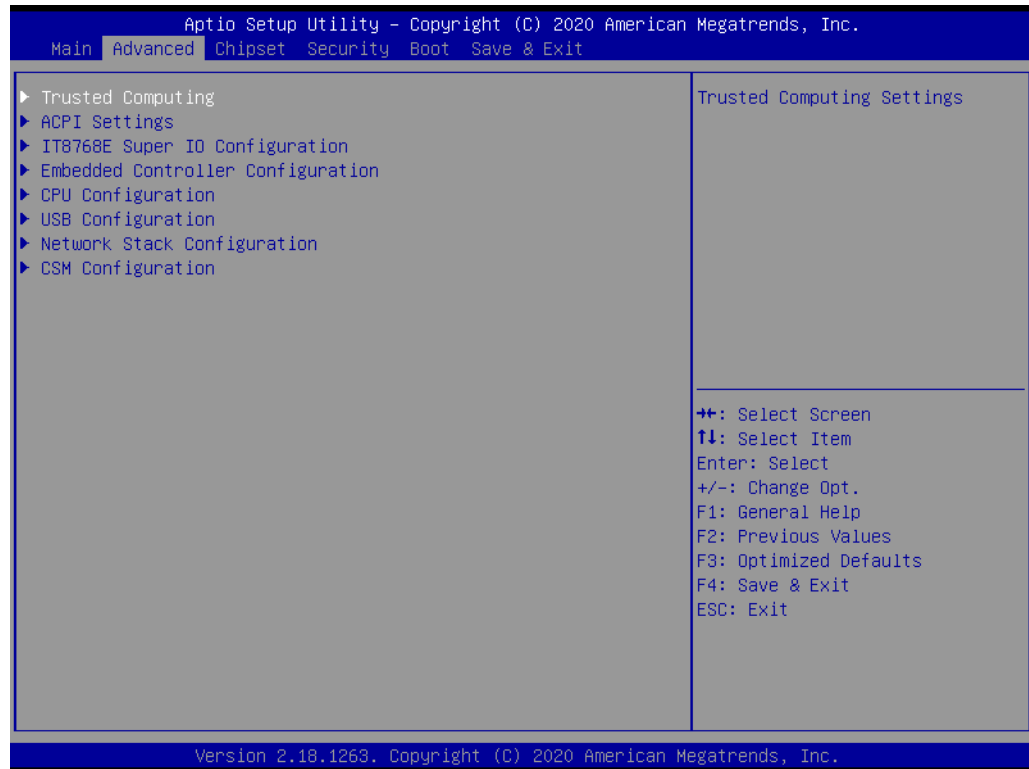
**Table A.13: Expansion Board to Board Connector Pin Assignments**

Pin	Signal Name	Pin	Signal Name
1	eDP_HPD#	2	GND
3	eDP_TX0+	4	eDP_TX0-
5	GND	6	eDP_TX1+
7	eDP_TX1-	8	GND
9	eDP_AUX+	10	eDP_AUX-
11	GND	12	PLTRST_B2B#
13	PMU_SLP_S3#	14	eDP_VDDEN_1V8
15	eDP_BKLTEN_1V8	16	eDP_BKLCTL_1V8
17	EC_LVDS_BKLT_EN	18	EC_LVDS_BKLT_CTL
19	ouch_EN_1V8	20	PCIE_WAKE#_3.3
21	GND	22	CLK_PCIE_mPCIe0+
23	CLK_PCIE_mPCIe0-	24	GND
25	PCIE_TX2+	26	PCIE_TX2-
27	GND	28	PCIE_RX2+
29	PCIE_RX2-	30	GND
31	NC	32	NC
33	GND	34	NC
35	NC	36	GND
37	USB2_P2+	38	USB2_P2-
39	GND	40	PCIE_MINI1_CLKREQ#

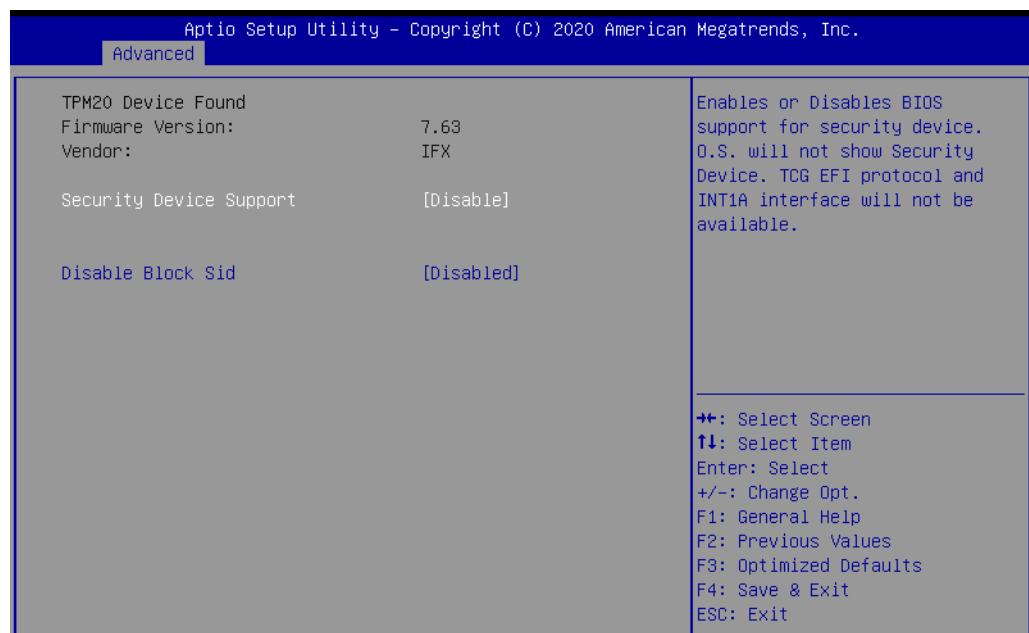
## A.10 TPM 2.0 BIOS Setting

The UNO-137 V2 system supports TPM 2.0 functionality. This can be enabled or disabled in the BIOS menu by following the instructions provided below:

1. Power on the UNO-137 system and press “delete” to enter the BIOS configuration menu.
2. On the “**Advanced**” tab, select the “**Trusted Computing**” item.



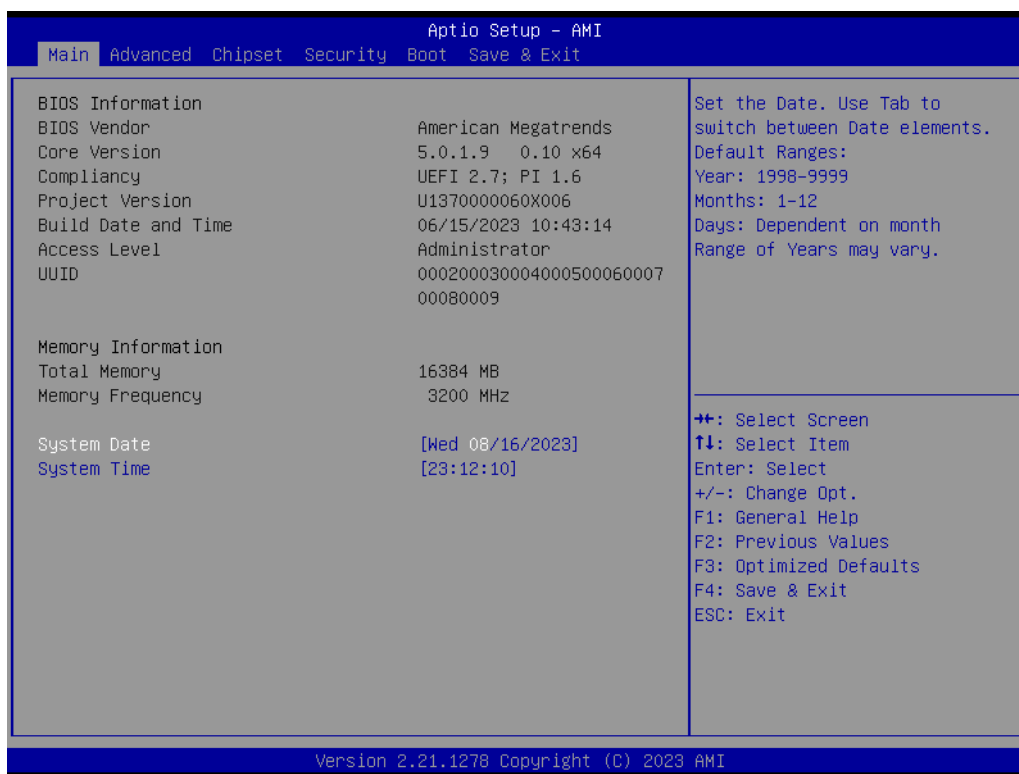
3. Then select the “**Security Device Support**” item.
4. Choose “**enable/disable**” to enable or disable the TPM 2.0 function (the default setting is to disable this function)



## A.11 BIOS Operation

### A.11.1 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-137 V2 setup screens.



**Figure A.1 Main setup screen**

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

### A.11.1.1 Entering BIOS Setup

Press <Delete> to enter the AMI BIOS setup menu. 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.

### A.11.1.2 Main Menu

Press <Delete> to enter the AMI BIOS setup menu. 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 A.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.

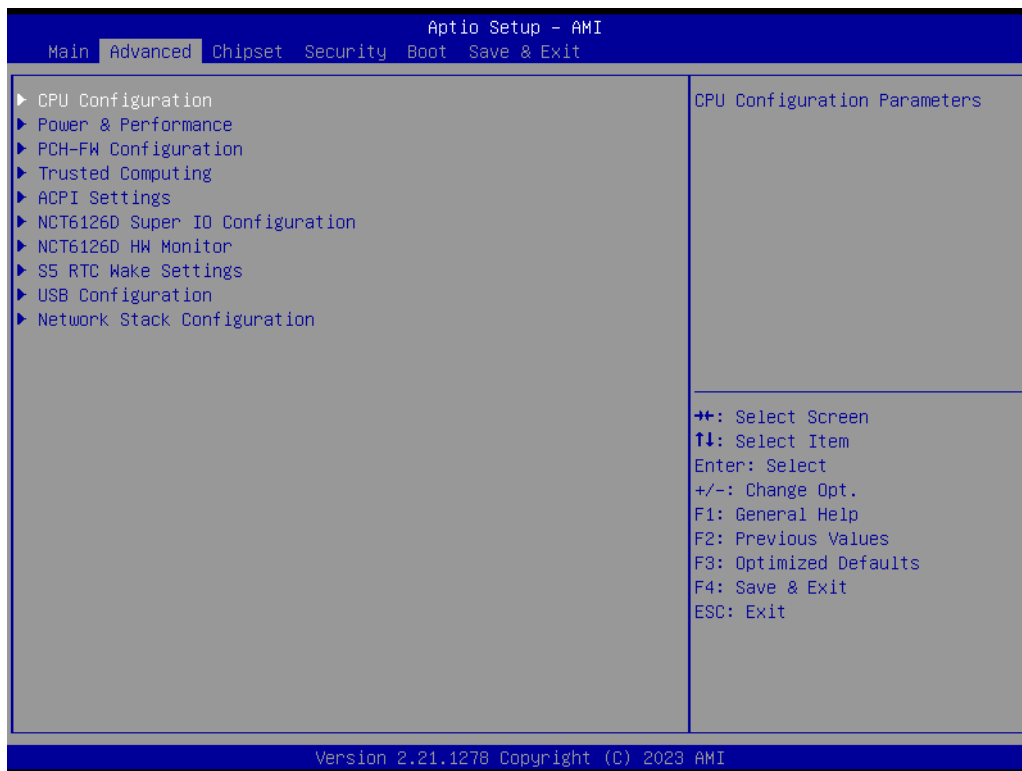
#### ■ System Time/System Date

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.



### A.11.1.3 Advanced BIOS Features

Select **Advanced Tab** from the UNO-137 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, by going 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 A.3 Advanced BIOS features setup screen**

### A.11.1.4 CPU Configuration



Figure A.4 CPU configuration



Figure A.5 CPU configuration-1

- **CPU Flex Ratio Override**  
Enable/disable CPU flex ratio programming.

- **Hardware Prefetcher**  
The Hardware Prefetcher is to turn on or off the MLC streamer prefetcher.
- **Adjacent Cache Line Prefetch**  
To turn on or off prefetching of adjacent cache lines.
- **Intel (VHX) Virtualization Technology**  
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
- **Active Processor Cores**  
Number of cores to enable in each processor package.
- **BIST**  
To enable or disable BIST (Built-in Self Test) on reset.
- **AP Threads Idle Manner**  
AP Threads Idle Manner is waiting for the signal to run
- **AES**  
To enable or disable AES (Advanced Encryption Standard).
- **Machine Check**  
To enable or disable the Machine Check.
- **CPU SMM Enhancement**
  - **SMM Use Delay Indication**  
Enable/disable usage of SMM\_DELAYED MSR for MP Sync in SMI.
  - **SMM Use Block Indication**  
Enable/disable usage of SMM\_BLOCKED MSR for MP Sync in SMI.
  - **SMM Use SMM en-US Indication**  
Enable/Disable usage of SMM\_ENABLE MSR for MP Sync in SMI.

#### A.11.1.5 Power & Performance

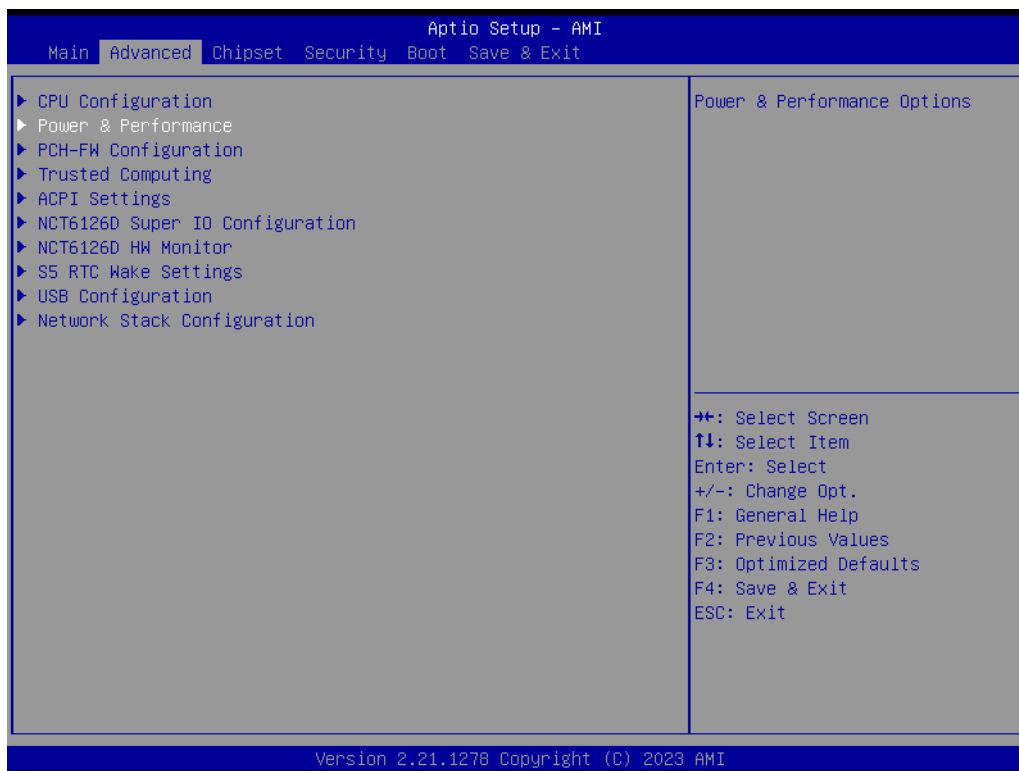
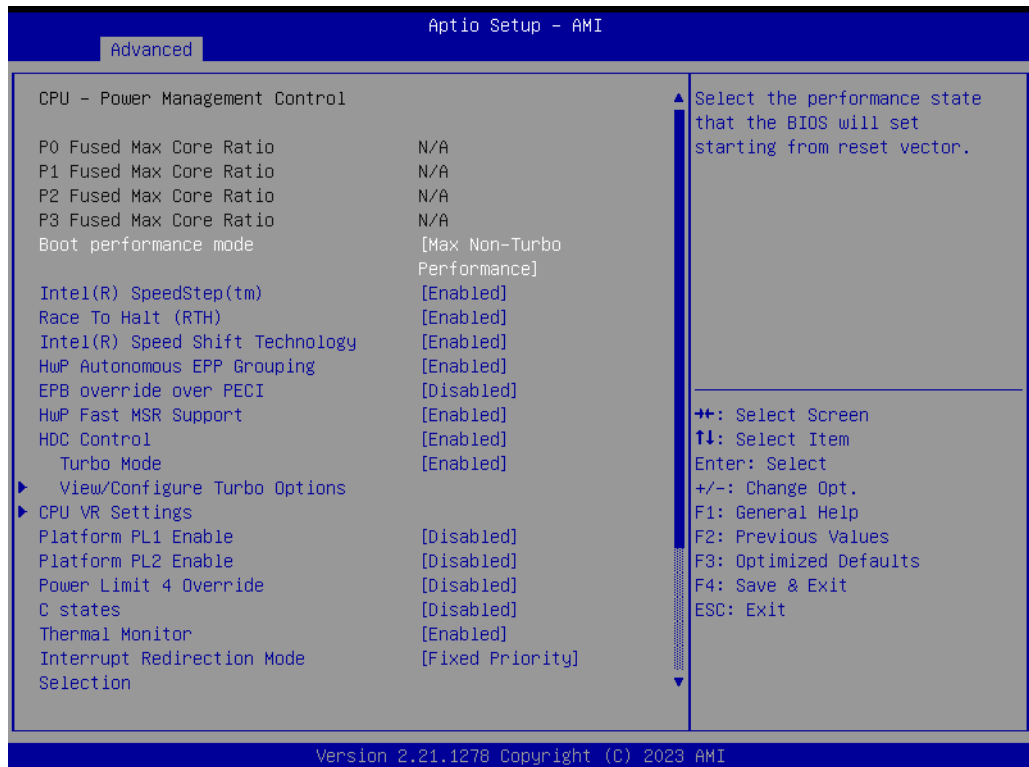


Figure A.6 Power & performance



**Figure A.7 CPU - Power management control-1**

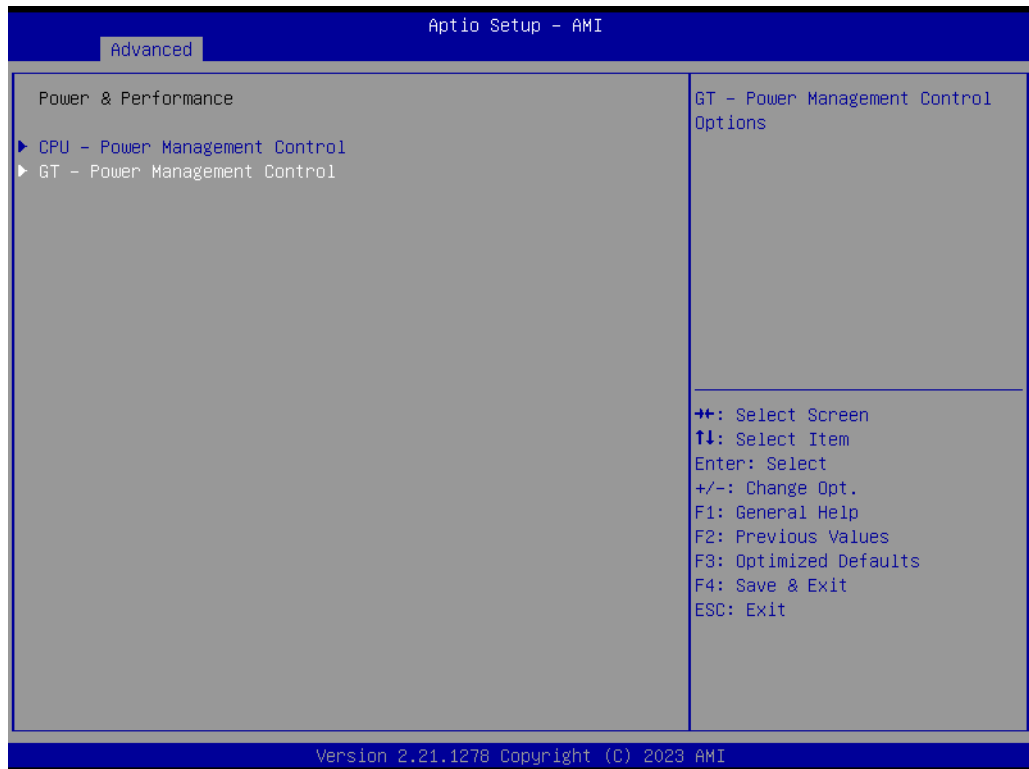


**Figure A.8 CPU - Power management control-2**

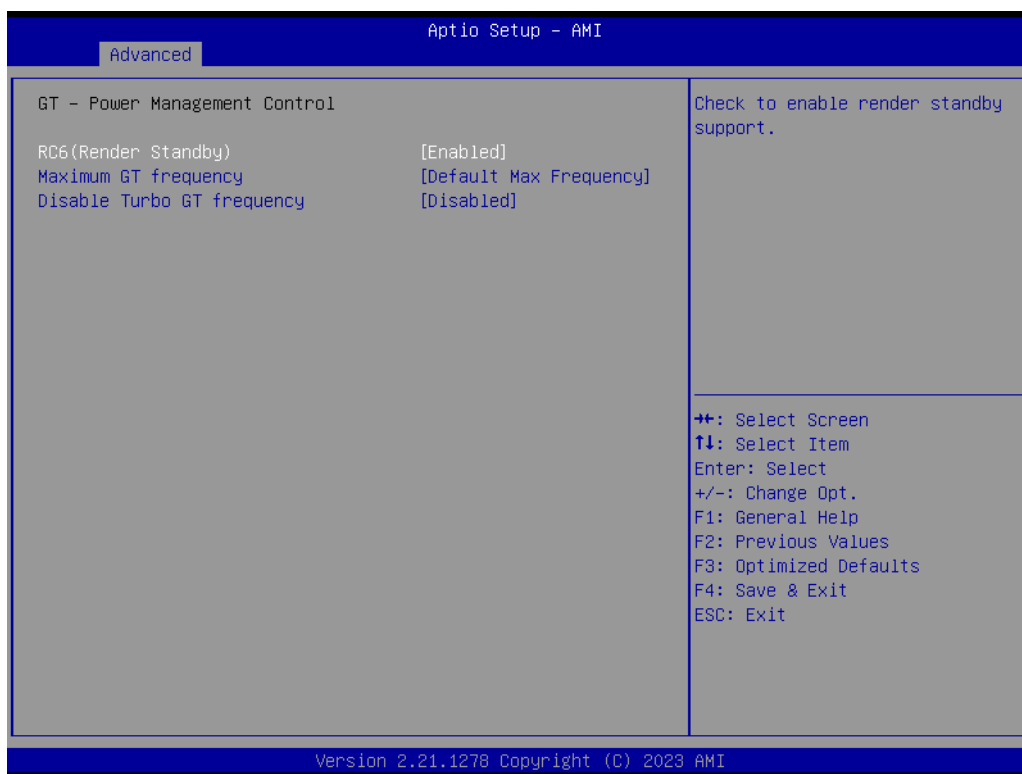
## CPU Power Management Control:

- **Boot Performance Mode**  
Select the performance state that the BIOS will set starting from reset vector.
- **Intel® Speed Step (tm)**  
Allows more than two frequency ranges to be supported.
- **Race to Halt (RTH)**  
Enable/Disable Race to Halt feature. RTH will dynamically increase CPU frequency in order to enter pkg C-State faster to reduce overall power. (RTH is controlled through MSR 1FC bit 20)
- **Intel® Speed Shift Technology**  
To enable or disable Intel® Speed Shift technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-state.
- **HwP Autonomous EPP Grouping**
- **HDC Control**  
This option allows HDC configuration.  
Disabled: Disable HDC.  
Enabled: Can be enabled by OS if OS native support is available.
- **CPU VR Settings**
- **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.
- **Thermal Monitor**  
Enable/Disable thermal monitor.
- **Interrupt Redirection Mode Selection**  
Interrupt redirection mode select for logical Interrupts.
- **Timed MWAIT**  
Enable/Disable timed MWAIT support.
- **Custom P-state Table**  
Add custom P-state table
- **EC Turbo Control Mode**  
Enable/Disable EC turbo control mode.
- **Energy Performance Gain**  
Enable/Disable energy performance gain.
- **CPU Lock Configuration**

## ■ GT – Power Management Control



**Figure A.9 GT – Power management control**



**Figure A.10 GT disable Turbo GT frequency-1**

- **RC6 (Render Standby)**  
Check to enable render standby support.
- **Maximum GT frequency**  
Maximum GT frequency limited by the user. Choose between 200 MHz (RPN) AND 750 MHz (RP0). Value beyond this range will be clipped to min/max supported by the SKU.
- **Disable Turbo GT Frequency**  
Enabled: Disables Turbo GT frequency. Disabled: GT frequency is not limited.

### A.11.1.6 PCH-FW Configuration: Configure Management Engine Technology Parameters

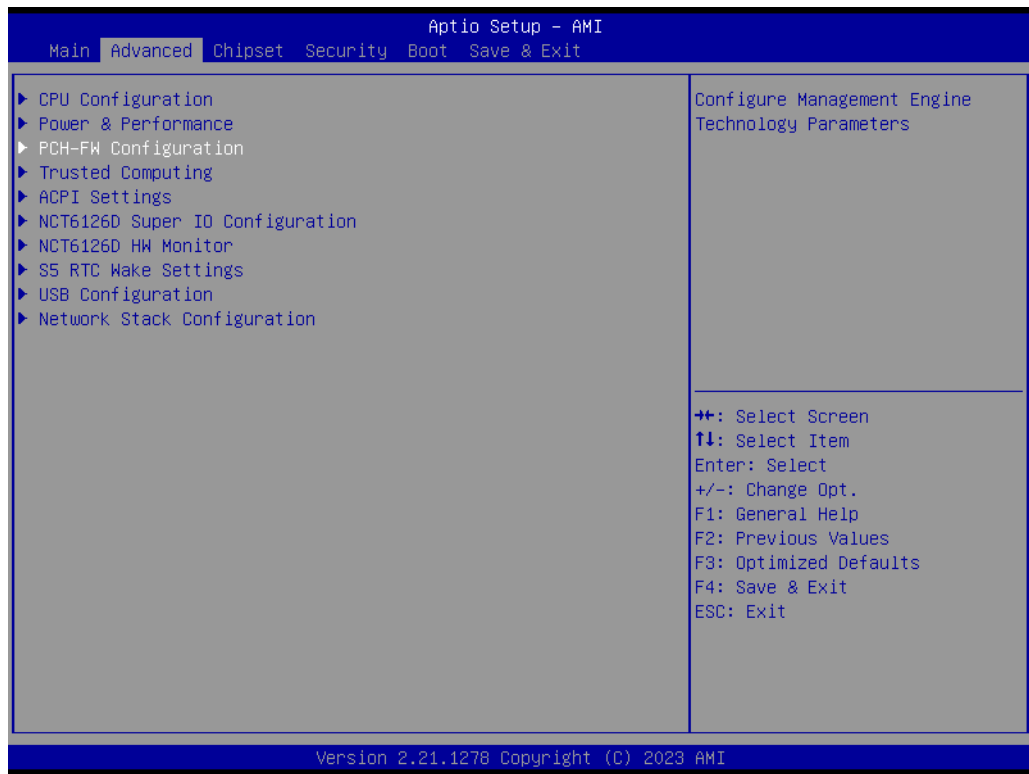


Figure A.11 PCH-FW configuration

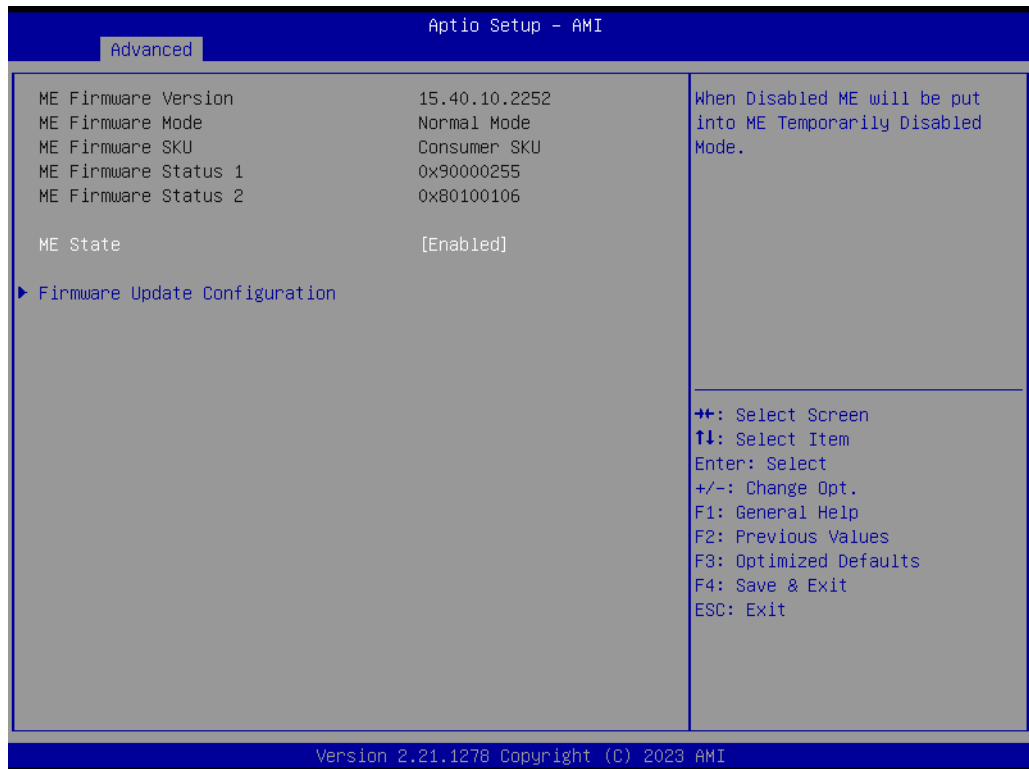


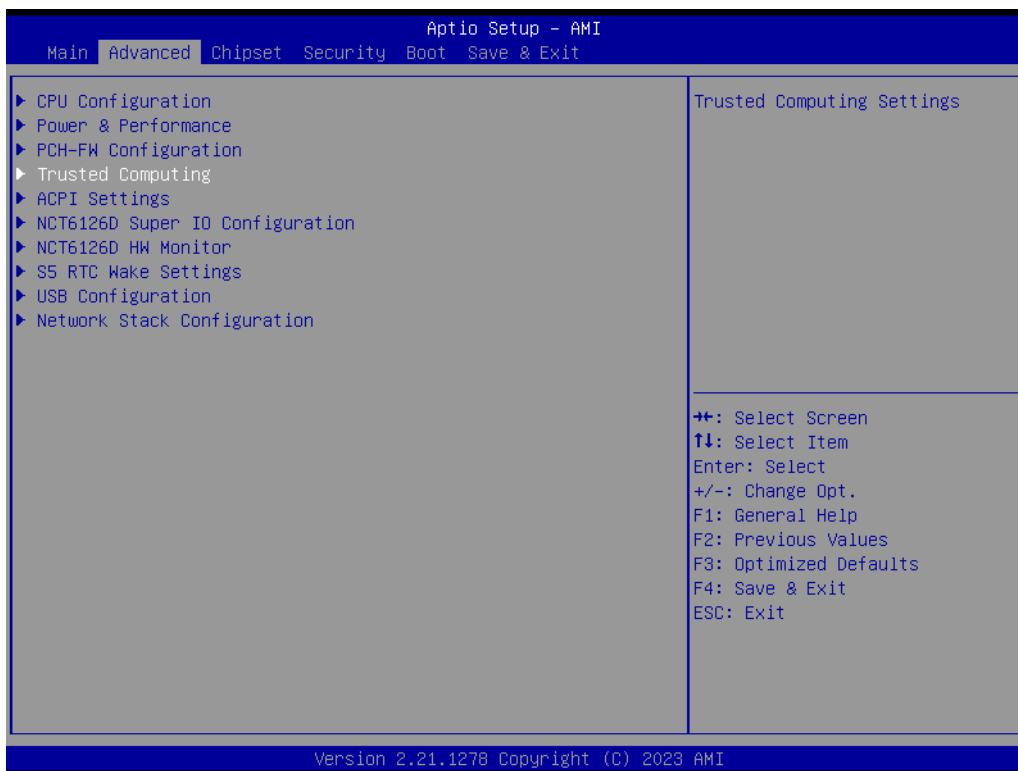
Figure A.12 PCH-FW configuration - 1

- **ME State**  
When disabled, ME will be put into ME temporarily disabled mode.

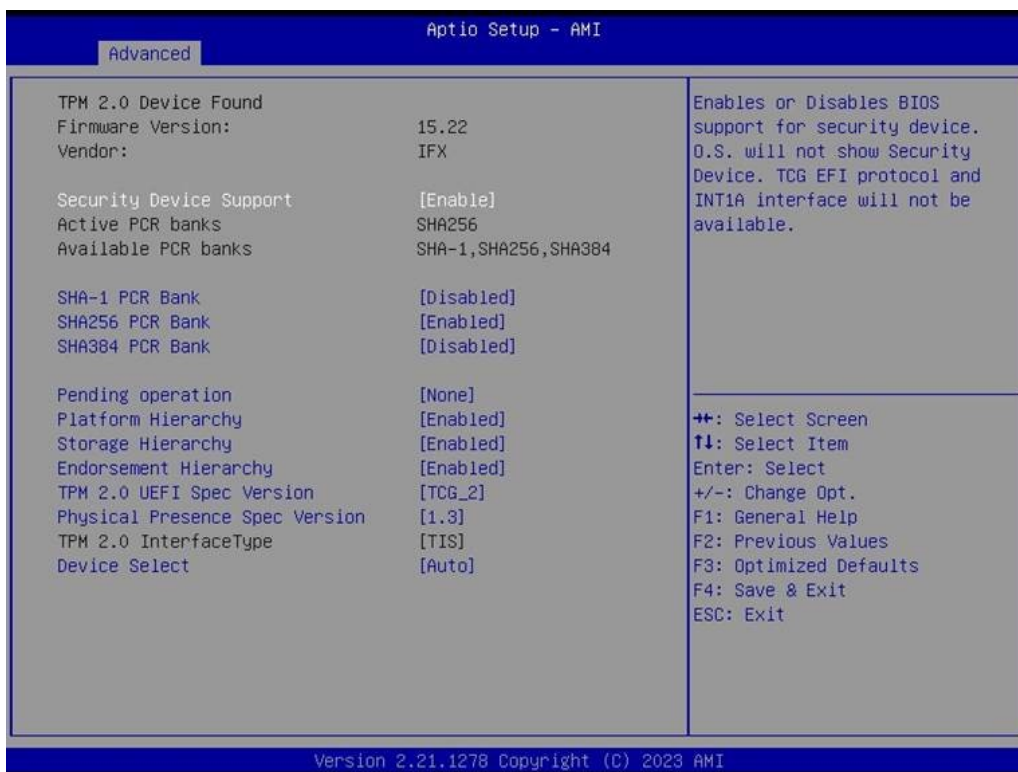


- **Firmware Update Configuration**  
Configure management engine technology parameters.

### A.11.1.7 Trusted Computing



**Figure A.13 Trusted computing**



**Figure A.14 Trusted computing-1**

- **Security Device Support**  
Enable or disable BIOS support for the security device. The OS will not show the security device. TCG EFI protocol and INT1A interface will not be available.
- **Disable Block Sid**  
Override to allow SID authentication in the TCG storage device.

#### A.11.1.8 ACPI Settings: System ACPI Parameters



**Figure A.15 ACPI setting**



**Figure A.16 ACPI setting - 1**

- **Enable ACPI Auto Configuration**  
Default is disabled.
- **Enable Hibernation**  
Enable or disable system's 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.

### A.11.1.9 NCT61260 Super IO Configuration: System Super IO Chip Parameters

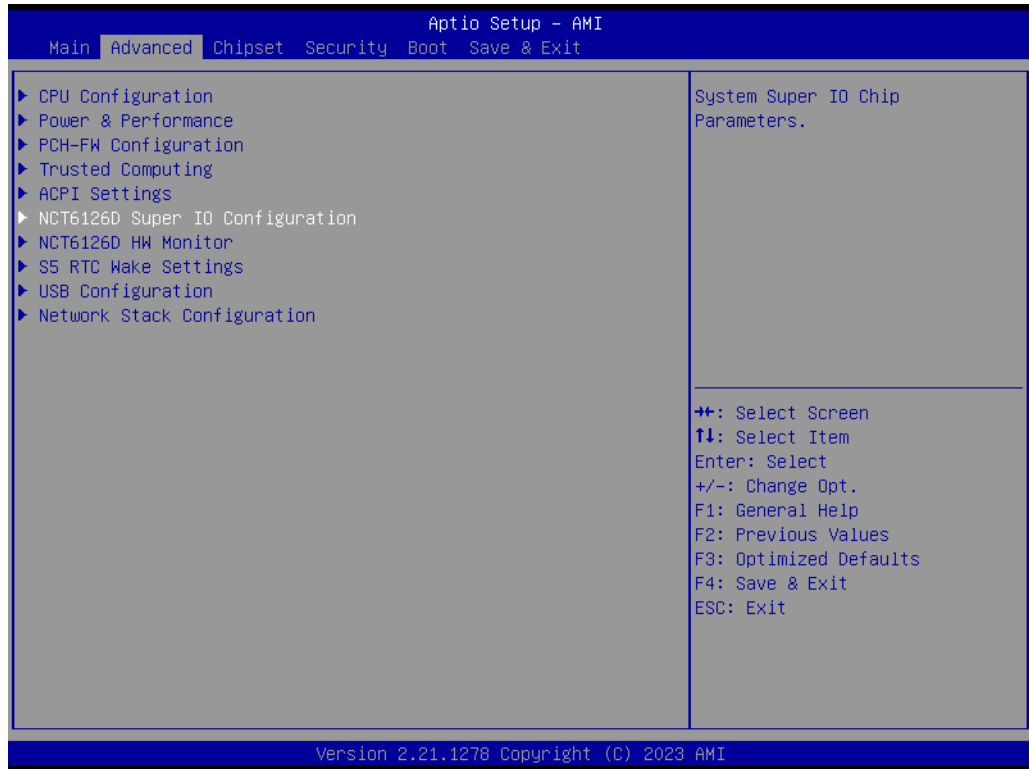


Figure A.17 NCT61260 super IO configuration

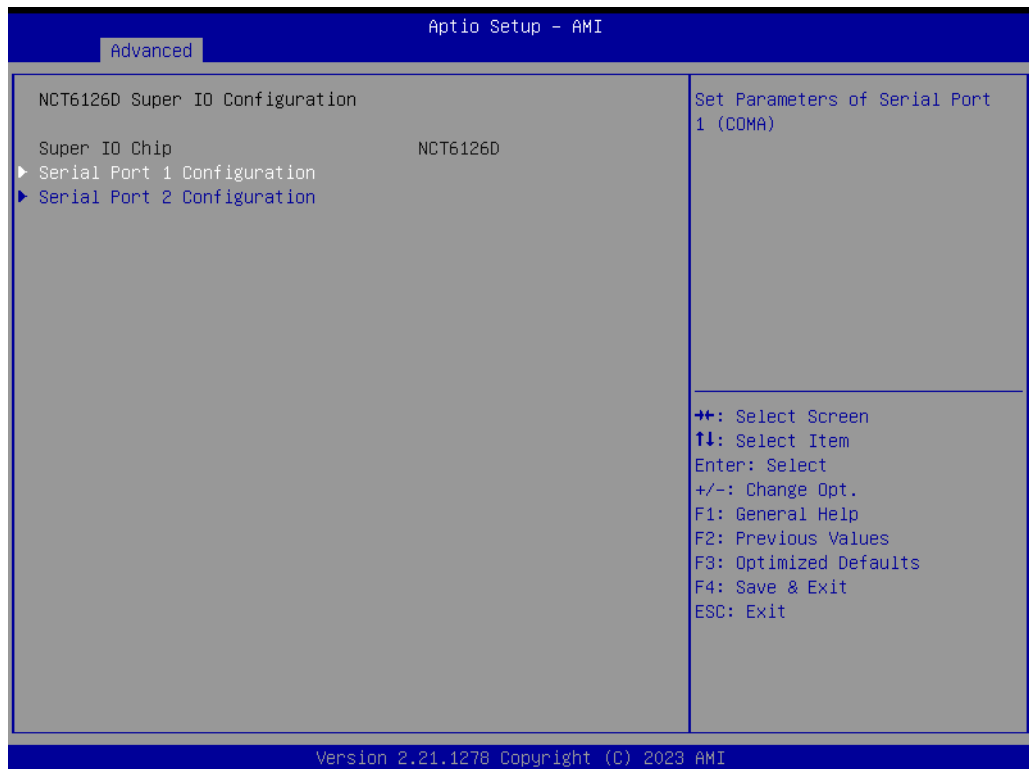


Figure A.18 NCT61260 super IO configuration-1

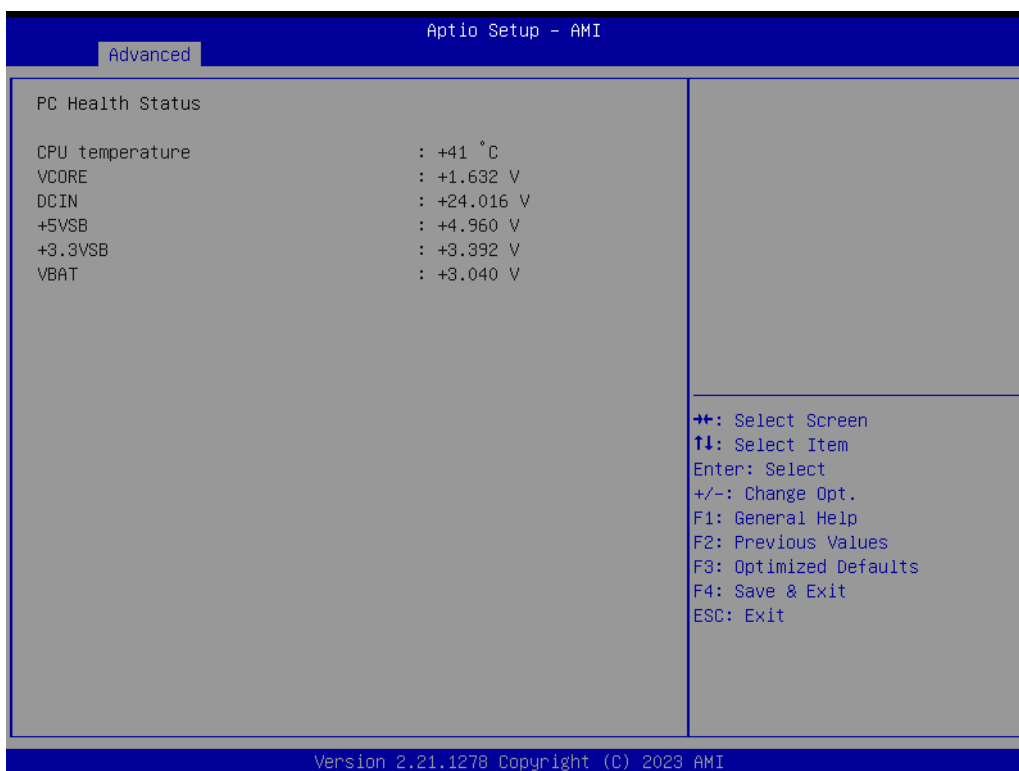
- **Serial Port 1 Configuration**  
Set parameters of serial port 1 (COM).

- **Serial Port 2 Configuration**  
Set Parameters of Serial Port 2 (COMB).

### A.11.1.10 NCT6126D HW Monitor: Monitor Hardware Status



**Figure A.19 H/W monitor configuration**



**Figure A.20 H/W monitor configuration-1**

- **PC Health Status**

## A.11.1.11 S5 RTC Make Settings: Enable System to Wake from S5 Using RTC Alarm

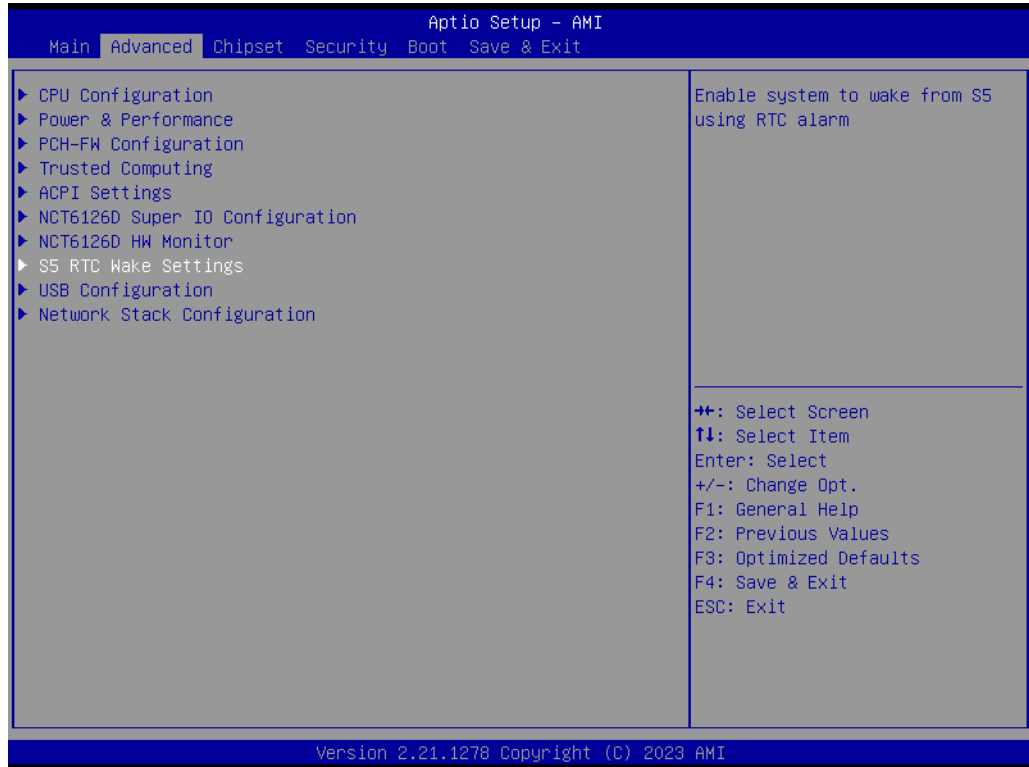


Figure A.21 S5 RTC wake settings



Figure A.22 S5 RTC wake settings -1

- **Wake System from S5**  
Enable or disable system wake on alarm event. Select **Fixed Time**, and the system will wake on the hr::min::sec specified. Select dynamic time. The system will wake at the current time + Increase minute(s).

### A.11.1.12 USB Configuration

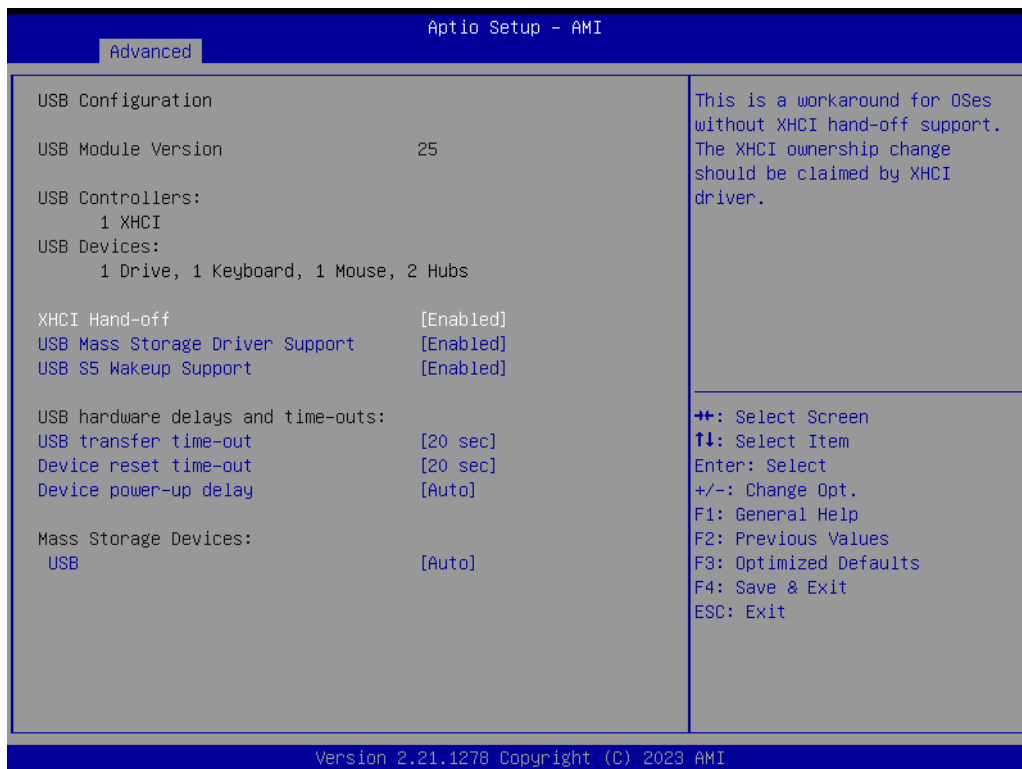


Figure A.23 USB configuration

- **XHCI Hand-off**  
This is a workaround for an OS without XHCI hands-off support. The XHCI ownership change should be claimed by the XHCI driver.
- **USB Mass Storage Driver Support**  
Enable/Disable USB mass storage driver support.
- **USB S5 Wakeup Support**  
Enable/Disable USB S5 wakeup support.
- **USB hardware delays and time-outs**
  - **USB transfer time-out**  
The time-out value for control, bulk, and interrupt transfers.
  - **Device reset time-out**  
USB mass storage device start unit command time-out.
  - **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 100 ms, for a hub port the delay is taken from hub 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.

### A.11.1.13 Network Stack Settings



Figure A.24 Network stack configuration

- **Network Stack**  
Enable/Disable UEFI network stack.

### A.11.1.14 Chipset



Figure A.25 Chipset





**Figure A.26 System agent (SA) configuration - 1**

#### System Agent (SA) Configuration

- **Memory Configuration**
- **Graphics Configuration**
  - Skip scanning of external Gfx card. If enabled, it will not scan for external Gfx card on PEG and PCH PCIE ports
  - **Primary Display**  
Select which of the IGFx/PEG/PCIE graphics devices should be primary displayed or select HG for a hybrid Gfx.
  - **Internal Graphics**  
Keep IGFx enabled based on the setup options.
- **VT-d**
- **Above 4 GB MMIO BIOS assignment**  
Enable/Disable above 4 GB memory-mapped IO BIOS assignment. This is enabled automatically when aperture size is set to 2048 MB.

### A.11.1.15 PCH-IO Configuration



Figure A.27 PCH-IO configuration

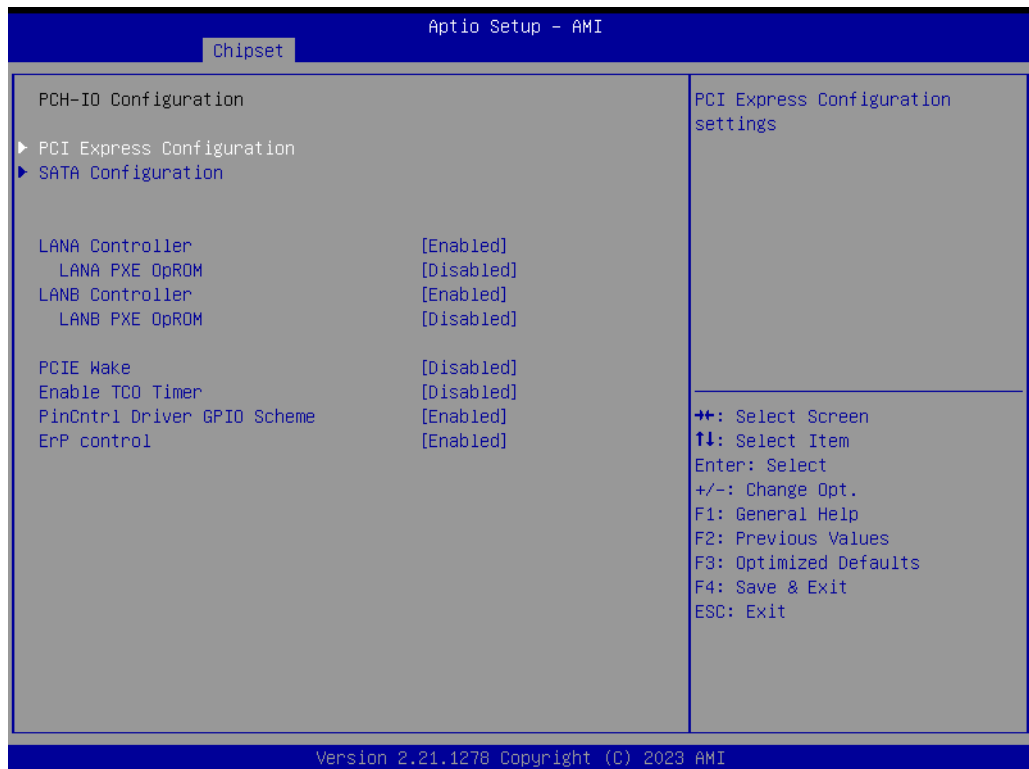


Figure A.28 PCH-IO configuration – 1



**Figure A.29 PCH-IO configuration – 2**



**Figure A.30 PCH-IO configuration – 3**

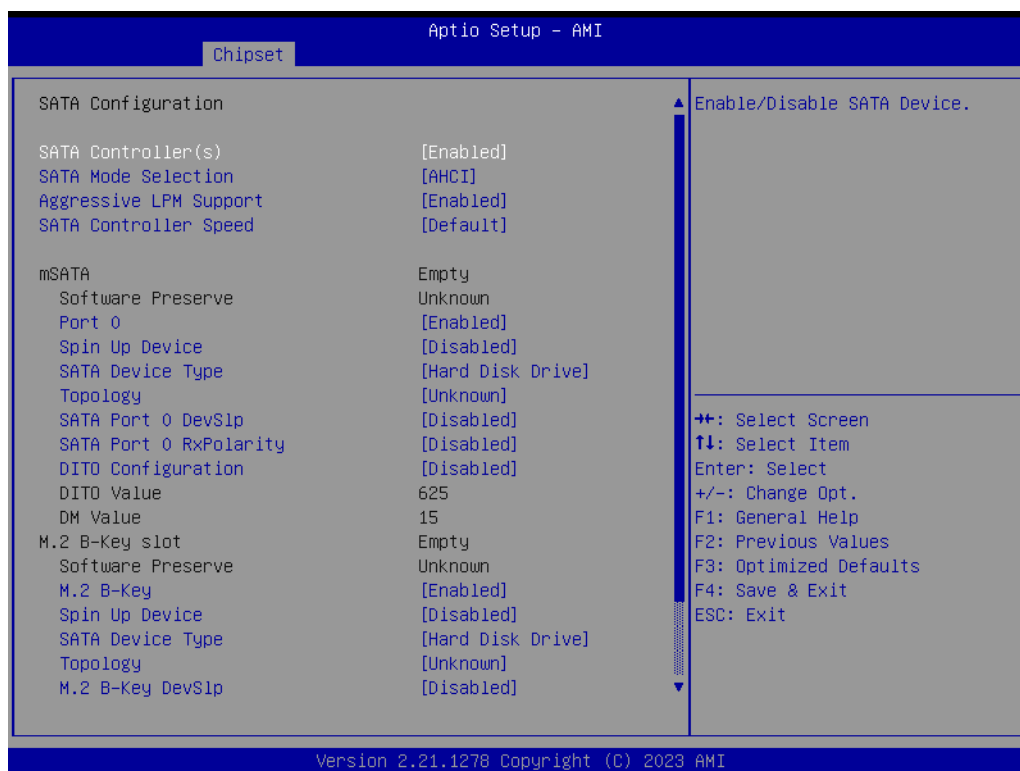


Figure A.31 PCH-IO configuration – 4

- **PCI Express Configuration**
  - **M.2 E-Key**  
Control the PCI Express root port.
  - **ASPM**  
Set the ASPM level: force L0s-force all links to L0s state. Auto-BIOS auto configure. DISABLE-disables ASPM.
  - **L1 Substrates**  
PCI Express L1 substrate settings.
  - **Multi-VC**  
Enable/Disable multi virtual channel.
- **SATA Configuration**
  - **SATA Controller(s)**  
Enable/Disable SATA Device.
  - **SATA Mode Selection**  
Determines how SATA controller(s) operate.
  - **Aggressive LPM Support**  
Enable PCH to aggressively enter link power state.
  - **SATA Controller Speed**  
Indicates the maximum speed the SATA controller can support.

### A.11.1.16 Security



Figure A.32 Security

- **Administrator Password**  
Set administrator password.
- **Security Boot**  
The secure boot feature is active if the secure boot is enabled, the Platform Key(PK) is enrolled and the system is in user mode. The mode change requires a platform reset.
- **Secure Boot Mode**  
Secure Boot mode has two options: standard or custom. In custom mode, the secure boot policy variables can be configured by a physically present user without full authentication.
  - **Restore Factory Keys**  
Forces system into user mode. Installs factory default Secures boot key data-bases.
  - **Key Management**  
Enables expert users to modify secure boot policy variables without full authentication.
- **SQF-C4MV2-128GDEDE**  
TCG Storage Security Configuration.

## A.11.1.17 Boot

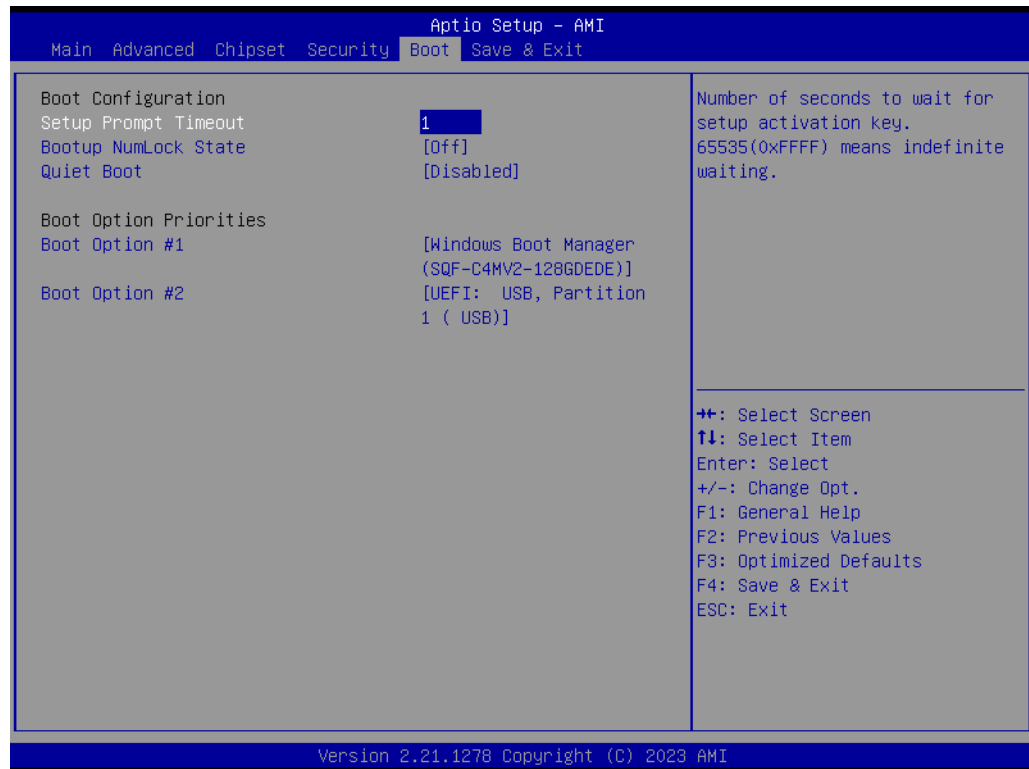


Figure A.33 Boot

- **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.

### A.11.1.18 Save & Exit

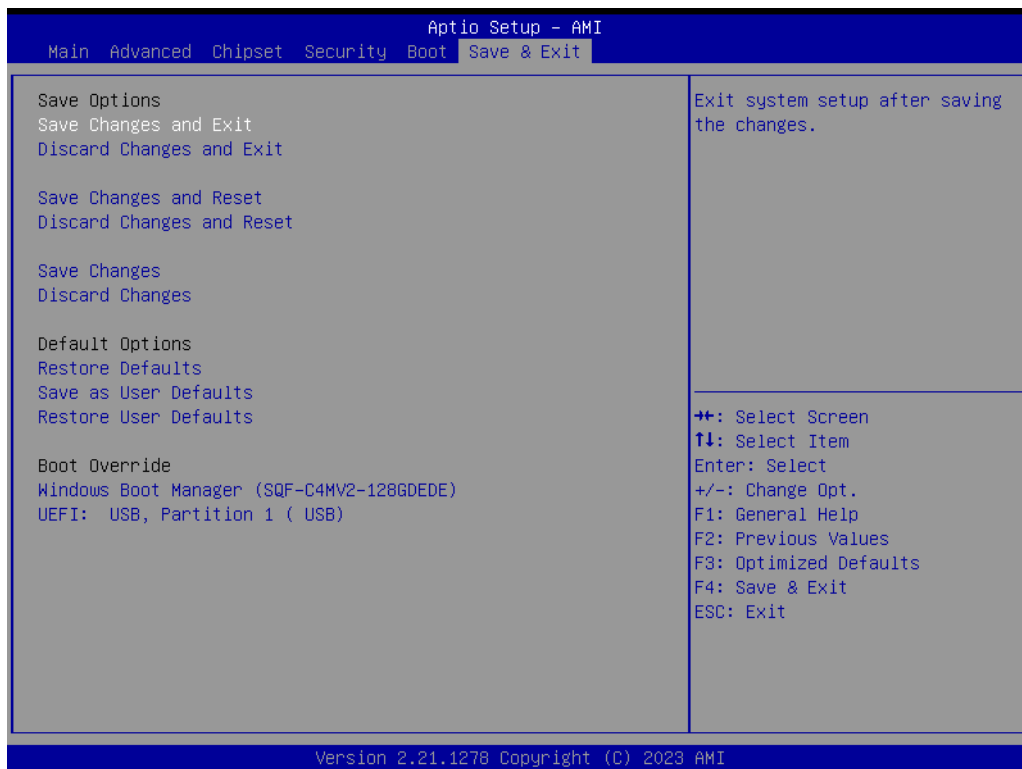


Figure A.34 Save & exit

- **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)**

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