

# User Manual

Revision 1.0

**FWA-3034**

**1U RACKMOUNT NETWORK APPLIANCE**

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# 1. How To Use This Manual

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## ***Copyright and Trademarks***

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No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of Advantech Co., Ltd. Information provided in this manual is intended to be accurate and reliable.

## **Conventions used in this manual (Warnings & Cautions)**



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



**Caution!** Cautions are included to help you avoid damaging hardware or losing data.  
**ATTENTION!** Des précautions sont incluses pour vous aider à éviter d'endommager le matériel ou de perdre des données.



**Note!** Notes provide additional information.  
**Remarque!** Les notes fournissent des informations supplémentaires.

## ***Product Warranty***

### ***Product Warranty (2 years)***

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

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

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

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

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

## Product Configuration That This Manual Covers

Part Number	Processor	DDR5	PCH	QAT	NMC Slot	PCIe Slot	Storage Bay	USB 3.0	IPMI Port	Console Port	LAN Port			System Fan	PSU
											2.5G RJ45	1G SFP	10G SFP+		
FWA-3034R-00A1R	Single socket for 12 <sup>th</sup> /13 <sup>th</sup> Gen Intel <sup>®</sup> Core™ processor	2	R680E	N/A	1	1	2	2	1	1	8	2	2	3	2
FWA-3034H-00A1S	Single socket for 12 <sup>th</sup> /13 <sup>th</sup> Gen Intel <sup>®</sup> Core™ processor	2	H610E	N/A	1	N/A	2	2	N/A	1	8	0	0	2	1

Input rating:

1. AC Redundant: 100-240V, 5A, 50-60Hz(per PSU)
2. DC Redundant: -48V, 16A(per PSU)
3. AC Single: 100-240V, 3.5A, 47-63Hz

Figure 0-1 Product Configuration

## Revision History

Table 0-1 Revision List

Date	Revision	Modifications
2023-12-21	0.1	Initial version
2024-03-14	1.0	Final version

## ***Related Manuals & Quick Start Image***

If you cannot find the information you're looking for or need more detailed information on a specific topic, please refer to the list of additional documents and other sources of information below.

- Advantech Node Explorer User Manual  
<https://www.advantech.com/en/support/details/manual?id=1-1MU1KB1>
- BIOS Common User Manual  
<https://www.advantech.com/zh-tw/support/details/manual?id=1-2F8TKW5>
- IPMI Common User Manual  
<https://www.advantech.com/zh-tw/support/details/manual?id=1-2FZXUHT>
- Redfish User Guide  
(Please refer to Section 4.4.1.1 to obtain or configure the BMC\_IP. Subsequently, navigate to [https://BMC\\_IP/redfish/v1](https://BMC_IP/redfish/v1) using a web browser. Search for the term 'RedfishSoftwareVersion' and note the version information that follows this term. Then proceed to the URL provided below to download the Redfish user guide that corresponds to the major version number (the first digit of the version information.)  
<https://www.advantech.com/emt/support/details/manual?id=1-27WSW6T>
- Advantech FWA-3034 Linux Platform Software Guide  
<https://www.advantech.com/zh-tw/support/details/manual?id=1-2F9HOFI>

Please contact your Advantech representative if you reference to the following document(s) and image(s).

- Advantech QuickStart Linux Image Getting Started Guide
- Quick Start Linux Image

## 2. Getting Started

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### 2.1 Safety Precautions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. This product is intended to be supplied by an UL certified power supply or dc source suitable for use at operation temperature 0-40 degree C output rated 12Vdc, rated 80.5-97A (AC input rated 100Vac-240Vac, 12A-7A, 50Hz-60Hz). If need further assistance, please contact Advantech for further information.
9. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
10. The power outlet socket should have grounded connection.
11. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
12. Before powering on the equipment, connect the frame of the equipment to earth. For the earthing wire, green and yellow insulation is required and the cross-sectional area of the conductor must be more than 0.75mm<sup>2</sup> or 18 AWG.
13. All cautions and warnings on the equipment should be noted.
14. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
15. Never pour any liquid into an opening. This may cause fire or electrical shock.
16. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
17. If one of the following situations arises, get the equipment checked by service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well, or you cannot get it to work according to the user's manual.
  - The equipment has been dropped and damaged.
  - The equipment has obvious signs of breakage.
18. Do not leave this equipment in an environment where the storage temperature may go below -40° C (-40° F) or above 70° C (158° F). This could damage the equipment. The equipment should be in a controlled environment.
19. Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer, discard used batteries according to the manufacturer's instructions.
20. If optical transceivers are used to be connected to SFP+ connectors, only CDRH certified laser class I optical transceivers shall be used. (UL certificate request).
21. Suitable for installation in Information technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.
22. RESTRICTED ACCESS AREA: The equipment should only be installed in a Restricted Access Area.
23. DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all

responsibility for the accuracy of any statements contained herein.

French:

1. Lisez ces instructions de sécurité attentivement.
2. Conservez ce manuel d'utilisation pour référence ultérieure.
3. Ce produit est destiné à être alimenté par une alimentation électrique certifiée UL ou une source CC adaptée à une utilisation à une température de fonctionnement de 0 à 40 degrés C (minimum) avec une sortie nominale de 12 V CC, 80.5 à 97A. Si vous avez besoin d'aide supplémentaire, veuillez contacter Advantech pour plus d'informations.
4. Débranchez cet équipement de toute prise secteur avant de le nettoyer. Utilisez un chiffon humide. N'utilisez pas de détergent liquide ou pulvérisé pour le nettoyage.
5. Pour les équipements enfichables, la prise de courant doit être située près de l'équipement et doit être facilement accessible.
6. Gardez cet équipement à l'abri de l'humidité.
7. Placez cet équipement sur une surface fiable pendant l'installation. Le laisser tomber ou le laisser tomber peut causer des dommages.
8. Les ouvertures sur l'enceinte servent à la convection de l'air. Protégez l'équipement contre la surchauffe. **NE COUVREZ PAS LES OUVERTURES.**
9. Assurez-vous que la tension de la source d'alimentation est correcte avant de connecter l'équipement à la prise de courant.
10. La prise de courant doit être reliée à la terre.
11. Placez le cordon d'alimentation de manière à ce que personne ne puisse marcher dessus. Ne placez rien sur le cordon d'alimentation.
12. Avant de mettre l'équipement sous tension, connectez le châssis de l'équipement à la terre. Pour le fil de mise à la terre, une isolation verte et jaune est requise et la section transversale du conducteur doit être supérieure à 0,75 mm<sup>2</sup> ou 18 AWG.
13. Toutes les mises en garde et les avertissements sur l'équipement doivent être notés.
14. Si l'équipement n'est pas utilisé pendant une longue période, débranchez-le de la source d'alimentation pour éviter tout dommage dû à une surtension transitoire.
15. Ne versez jamais de liquide dans une ouverture. Cela pourrait provoquer un incendie ou un choc électrique.
16. N'ouvrez jamais l'équipement. Pour des raisons de sécurité, l'équipement doit être ouvert uniquement par du personnel qualifié.
17. Si l'une des situations suivantes se présente, faites vérifier l'équipement par le personnel de service:
  - Le cordon d'alimentation ou la prise est endommagé.
  - Le 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 a été échappé et endommagé.
  - L'équipement présente des signes évidents de rupture.
18. Ne laissez pas cet appareil dans un environnement où la température de stockage peut être inférieure à -40 ° C ou supérieure à 70 ° C. Cela pourrait endommager l'équipement. L'équipement devrait être dans un environnement contrôlé.
19. Attention: Danger d'explosion si la batterie est incorrectement remplacée. Remplacez uniquement par le même type ou un type équivalent recommandé par le fabricant, jetez les piles usagées conformément aux instructions du fabricant.
20. Si des émetteurs-récepteurs optiques sont utilisés pour être connectés à des connecteurs SFP+, seuls des émetteurs-récepteurs optiques de classe I laser certifiés CDRH doivent être utilisés. (Demande de certificat UL).
21. Convient pour une installation dans des salles informatiques conformément à l'article 645 du Code national de l'électricité et à la norme NFPA 75.

22. ZONE D'ACCES RESTREINTE: L'équipement ne doit être installé que dans une zone d'accès restreint.
23. AVERTISSEMENT: Cet ensemble d'instructions est donné conformément à la CEI 704-1. Advantech décline toute responsabilité quant à l'exactitude des déclarations contenues dans ce document.

## 2.2 Declaration of Conformity

### 2.2.1 FCC Class A

This device complies with part 15 of the FCC rules: Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

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

Cet appareil est conforme à la partie 15 des règles de la FCC: Le fonctionnement est soumis aux deux conditions suivantes:

1. Cet appareil ne doit pas provoquer d'interférences nuisibles.
2. Cet appareil doit accepter toute interférence reçue, y compris les interférences susceptibles de provoquer un fonctionnement indésirable.

Remarque: Cet équipement a été testé et déclaré conforme aux limites d'un appareil numérique de classe A, conformément à la partie 15 des règles de la FCC. Ces limites sont conçues pour fournir une protection raisonnable contre les interférences nuisibles lorsque l'équipement est utilisé dans un environnement commercial. Cet équipement génère, utilise et peut émettre de l'énergie radiofréquence et, s'il n'est pas installé et utilisé conformément au manuel d'instructions, peut causer des interférences nuisibles aux communications radio. L'utilisation de cet équipement dans une zone résidentielle est susceptible de provoquer des interférences nuisibles, auquel cas l'utilisateur devra corriger les interférences à ses frais.

### 2.2.2 CCC

警告使用者：这是甲类资讯产品，在居住的环境中使用，可能会造成射频干扰，在这种情况下，使用者会被要求采取某些适当的对抗。

声明：此为A级产品，在生活环境中，可能会造成无线干扰，在这种情况下，可能需要用户对其干扰采取切实可行的措施。

### 安全指令

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. 本產品旨在由適用於工作溫度 0-40 攝氏度（最低）、額定輸出 12Vdc、80.5-97A 的 UL 認證電源或直流電源供電。如果需要進一步的幫助，請聯繫研華以獲取更多信息。
4. 用濕抹布清洗設備前，請從插座拔下電源線。請不要使用液體或去汙噴霧劑清洗設備。
5. 對於使用電源線的設備，設備周圍必須有容易連接到的電源插座。
6. 請讓設備遠離潮濕環境。
7. 請在安裝前確保設備放置在可靠的平面上，意外跌落可能會導致設備損壞。

8. 設備外殼的開口是用於空氣對流，從而防止設備過熱。請不要覆蓋這些開口。
9. 當您連接設備到電源插座上前，請確認電源插座的電壓是否符合要求。
10. 電源插座應接地。
11. 請將電源線安置在人們不易絆到的位置，並不要在電源線上覆蓋任何雜物。
12. 設備上電前，將設備框架接地。對於接地線，需要綠色和黃色絕緣，導體的橫截面積必須大於  $0.75\text{mm}^2$  或 18 AWG。
13. 請注意設備上的所有警告和注意標語。
14. 如果長時間不使用設備，請將設備與電源插座間的電線斷開，避免設備被超目標電壓波動損壞。
15. 請不要讓任何液體流入通風口，以免引起火災或者電路短路。
16. 請不要自行打開設備。為了確保您的安全，請由經過認證的工程師來打開設備。
17. 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。
18. 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  $-40^{\circ}\text{C}(-40^{\circ}\text{F})$  或高於  $70^{\circ}\text{C}(158^{\circ}\text{F})$ ，否則可能會損壞設備。
19. 注意：如果電池放置不正確，將有爆炸的危險，因此，只可以使用製造商推薦的同一種或者同等型號的電池進行替換。請按照製造商的指示處理已使用過的電池。
20. 如果使用光收發器連接到 SFP+ 連接器，則只能使用 CDRH 認證的 I 類激光光收發器。（UL 證書請求）。
21. 根據國家電氣規範第 645 條和 NFPA 75，適合安裝在信息技術室。
22. 根據 IEC 704-1:1982 規定，設備產生的音量不高於 70 分貝。
23. 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。

## 安全指令

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. 本產品旨在由適用於工作溫度  $0-40$  攝氏度（最低）、額定輸出 12Vdc、80.5-97A 的 UL 認證電源或直流電源供電。如果需要進一步的幫助，請聯繫研華以獲取更多信息。
4. 用濕抹布清洗設備前，請從插座拔下電源線。請不要使用液體或去污噴霧劑清洗設備。
5. 對於使用電源線的設備，設備周圍必須有容易連接到的電源插座。
6. 請讓設備遠離潮濕環境。
7. 請在安裝前確保設備放置在可靠的平面上，意外跌落可能會導致設備損壞。
8. 設備外殼的開口是用於空氣對流，從而防止設備過熱。請不要覆蓋這些開口。
9. 當您連接設備到電源插座上前，請確認電源插座的電壓是否符合要求。
10. 電源插座應接地。
11. 請將電源線安置在人們不易絆到的位置，並不要在電源線覆蓋任何雜物。
12. 設備上電前，將設備框架接地。對於接地線，需要綠色和黃色絕緣，導體的橫截面積必須大於  $0.75\text{mm}^2$  或 18 AWG。
13. 請注意設備上的所有警告和注意標語。
14. 如果長時間不使用設備，請將設備與電源插座間的電線斷開，避免設備被超目標電壓波動損壞。
15. 請不要讓任何液體流入通風口，以免引起火災或者電路短路。
16. 請不要自行打開設備。為了確保您的安全，請由經過認證的工程師來打開設備。
17. 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。
18. 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  $-40^{\circ}\text{C}(-40^{\circ}\text{F})$  或高於

70°C(158° F)，否则可能会损坏设备。

19. 注意：如果电池放置不正确，将有爆炸的危险，因此，只可以使用制造商推荐的同一种或者同等型号的电池进行替换。请按照制造商的指示处理已使用过的电池。
20. 如果使用光收发器连接到 SFP+ 连接器，则只能使用 CDRH 认证的 I 类激光光收发器。（UL 证书请求）
21. 根据国家电气规范第 645 条和 NFPA 75，适合安装在信息技术室。
22. 根据 IEC 704-1:1982 规定，设备产生的音量不高于 70 分贝。
23. 免责声明：请安全训示符合 IEC 704-1 要求。研华公司对其内容之准确性不承担任何法律责任。

### 2.2.3 CE Mark

The CE marking on this product indicates that it is in compliance with the European Union EMC Directive 2014/30/EU, Safety Directive 2014/35/EU.

Le marquage CE sur ce produit indique qu'il est conforme à la Directive européenne sur la compatibilité électromagnétique 2014/30 / UE, Directive sur la sécurité 2014/35 / UE.



Note! The equipment is operated and maintained only by professionals

Remarque!! L'équipement est exploité et entretenu uniquement par des professionnels

## 2.3 Unpacking

The FWA-3034 is packaged inside double carton, collectively referred to as the “box” in the remainder of this document.

When opening the box, you will find the FWA-3034 embedded in protective foam and the accessory box embedded to the foam. Remove the accessory box first and then pull out the top foam. Now, lift the system to place on a proper surface before taking off the plastic sleeve on the unit. Please refer to the Figure 2.3-1 as illustration.

After unpacking the unit, please check for any visible damage of the unit and contact your Advantech representative in case of any issue.

**Please note that unless agreed otherwise power cords need to be ordered separately.**

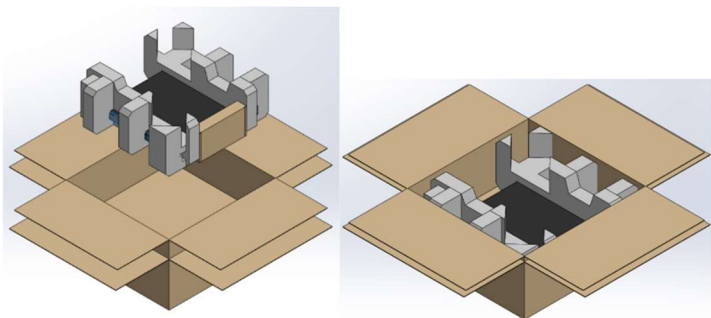








Figure 2.3-1 Open-box Illustration

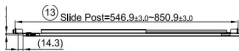

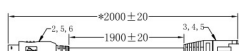
Please check the delivery for completeness as you open the carton carefully. If any of the items listed in Table 2.3-1 is missing or damaged, please contact your Advantech representative.

Table 2.3-1 Packaging List (Mandatory)

Item	Qty.	Image	Description
<b>FWA-3034</b>	1		1U Network Appliance with 12th/13th Gen Intel Core Processors
<b>Rack Mount Accessory</b>	2		Rack mount bracket and handle
<b>heatsink</b>	1		H.S R3 Intel.-Alder Lake-S 6 5W 90x90x27m
<b>Bracket</b>	1		Bracket 3052 for UNO-148
<b>Cable</b>	2		M Cable SATA 7P/SATA 7P 20cm 30u 180/18
<b>Cable</b>	2		M Cable 1x4P-2.5/SATA 15 P 45cm

Item	Qty.	Image	Description
Screw	1		POST F=M3X2.8L M=M3X4 L B=5 H=4.0 CU NK
Screw	1		Screw M3X3L F/S D=5.6 H= 1 2+ ST/H Ni
Screw	8		Screw M3x5L S/S D=4.8 H= 1 (2+) ST BZn
Screw	1		Screw M2x6L RF/S D=4 H= 1.5 1+ ST Bzn
Screw	4		Screw M3x4L R/S D=5.5 H= 2 (2+) ST Ni
Screw	4		Screw M4x8L S/S D=7 H=1. 75 (2+) ST BZn
Screw	3		Screw M3x6L F/S D=10 H= 1 (2+) ST Ni

Table 2.3-2 **Option**. For Example, Slide Rail.

Item	Qty.	Image	Description
Slide Rail Kit	1		22" Rail Kit for 438mm chassis (TL:381mm)
Power Cord	1		Power cord 3P 180 cm
Console Cable	1		USB for RJ45 console cable

## 2.4 Installation and Configuration

The FWA-3034 is provided as a pre-configured system without the scalable processors installed. If you need to install additional components in the FWA-3034 for any other reason, please refer to [Section 4.3](#). For other peripherals, please refer the datasheet order information to order the correct component(s).

### 2.4.1 Installation via Monitor, Keyboard and Mouse

If you wish to install an OS with a graphical user interface, such as Windows or Linux with GUI, it is highly recommended to follow this section for guidance. Additionally, these guidelines can also be used for the installation of text-based OS.

The FWA-3034 supports 1x VGA port and 2x USB ports for connecting of a monitor, keyboard, and mouse. For details on the location of these connectors, please refer to Figure 2.4-1. If you plan to install the OS from an USB thumb drive, consider a USB hub. Plug the USB-type keyboard and mouse on the USB hub. It is highly recommended inserting the USB thumb drive into one of the USB ports.



Figure 2.4-1 Location of The VGA and USB Ports

## 2.4.2 Installation via Serial Console

Note: The serial console port is specifically designed for the installation of TEXT MODE OS only.

It's essential for the OS installation engineer to have expertise in text-based OS installation and to be familiar with serial console client operations.

An RS232-to-RJ45 console cable is provided in the box. If you've misplaced it or need additional cables, make sure to use the appropriate serial console cable to connect the engineer's PC to the RJ45 serial port (Figure 2.4-2).

For more information on the cable's pin configuration, please refer to [Section 5.2](#), ensuring you use a well-shielded cable, or contact Advantech representative.

If your PC lacks an RS232 port, consider acquiring a USB-to-RS232 cable (Figure 2.4-3). Do note that for the two RS232 ends of the cables, one should be male and the other female.

The FWA-3034 also supports operation via a serial console port, suitable for situations without a connected monitor.

In this configuration, both BIOS and OS outputs are directed through via a serial terminal connection. Note that only TEXT MODE OS can be installed when using the serial console port.

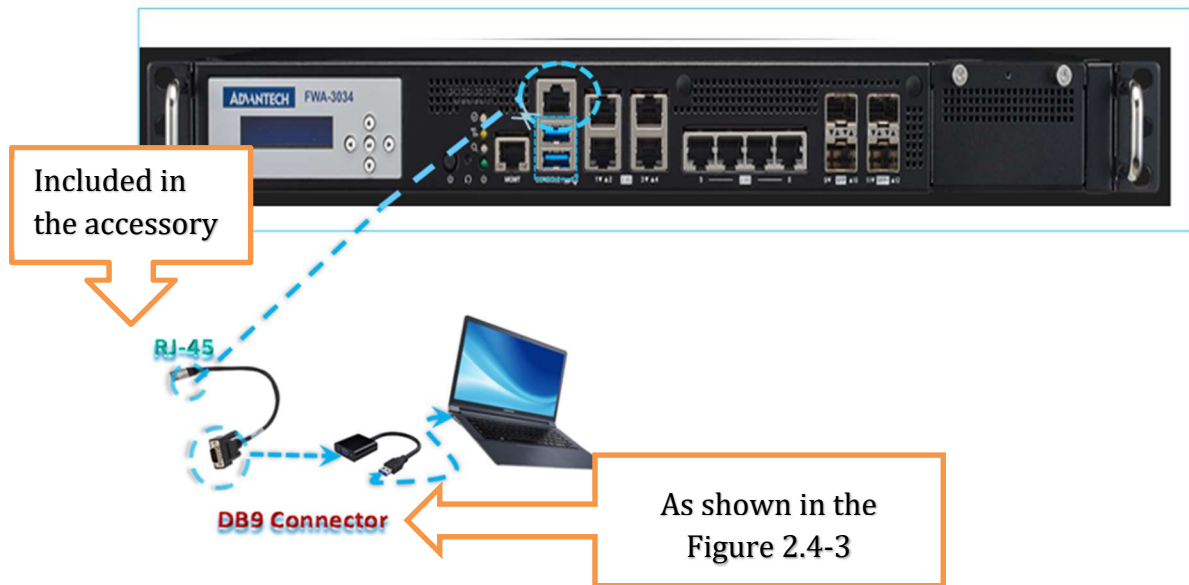


Figure 2.4-2 Access the Server Through Serial Console Port



Figure 2.4-3 The Diagram for The USB to 232 Cable

There are several methods to connect to the serial console port.

If you're using Windows OS as your working PC, one common tool is PuTTY. Follow the steps below to establish a connection using PuTTY.

If you're unfamiliar with PuTTY or haven't installed it yet, you can download it from <https://www.putty.org/>.

If you intend to use PuTTY on a PC running Windows OS. The following of this section describes how to configure PuTTY on a Windows platform for connection with the FWA-3034 serial console as a reference.

Otherwise, feel free to skip these steps if you have another preferred method. Other terminal programs may be used in a similar way as well.

Open PuTTY and start the configuration as outlined below. Instead of "COMx", use the actual COM port number from your client machine. The "COMx" designation will vary based on what you observe in your Windows Device Manager (Figure 2.4-6).

In this guide, we're using "COM1" as an example, which you might see listed in the Device Manager.

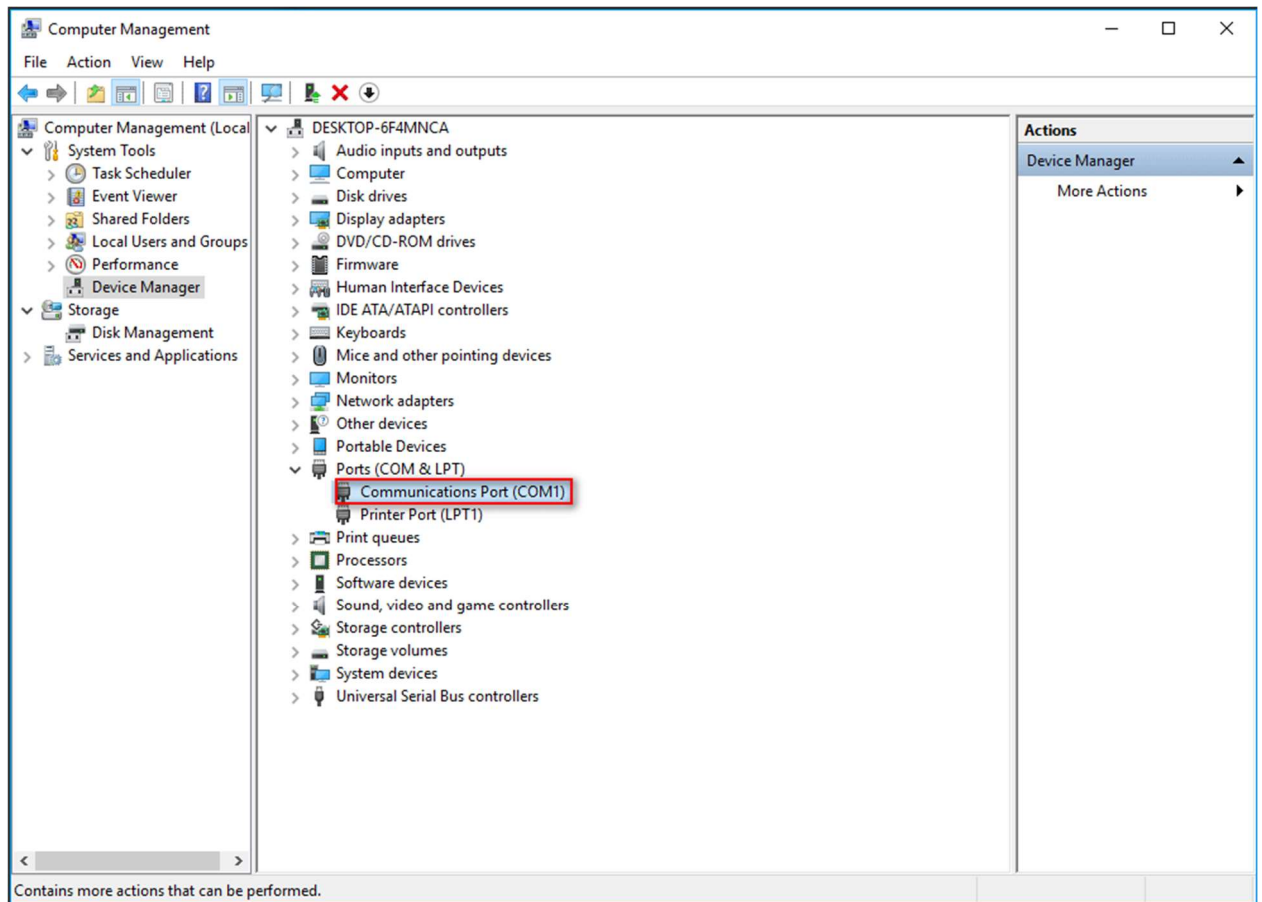


Figure 2.4-4 Windows Device Management COM Number Example

- A. Under "serial line", specify "COM1" and set the speed to "115200". Select "no parity" and "no flow control". The default baud rate for the COM port is 115200 with no parity and no flow control.
- B. If you have previously modified these settings, please use the baud rate you configured in the BIOS, please reference "Common BIOS User Manual (Section 1.2.2.1)". It's worth noting that the BIOS and OS might have different serial console configurations.
- C. To ensure a smooth installation process, verify that both the BIOS and OS have the same serial console port configuration. Also, confirm that the OS could output to the serial console port.
- D. If you are using a Linux system, please refer to the "Common IPMI User Manual (Section 2.3)".

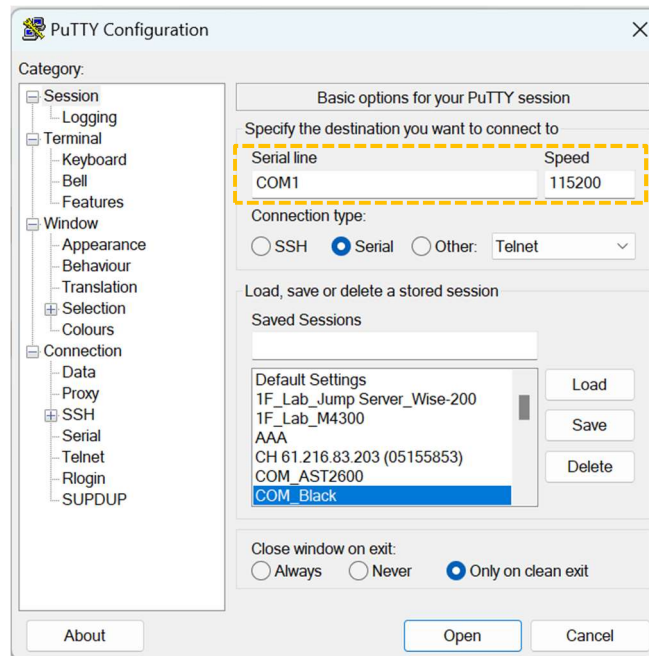


Figure 2.4-5 PuTTY Session Configuration

E. Select “Serial” for connection type.

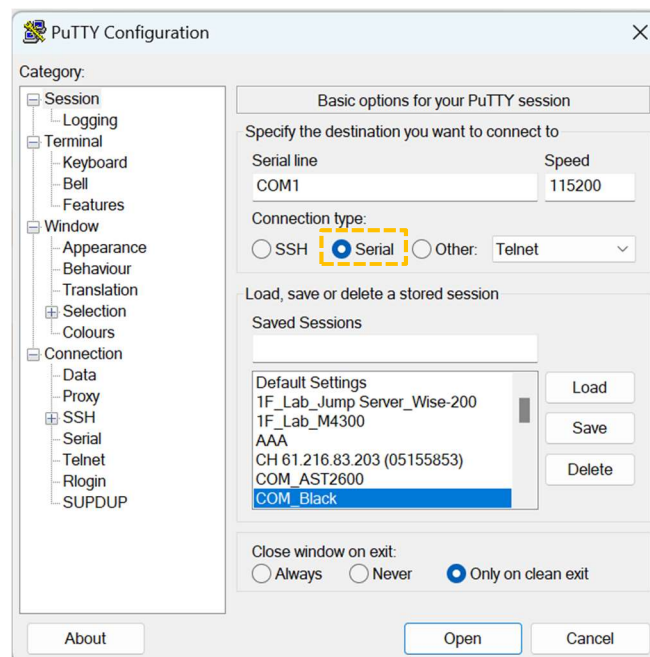


Figure 2.4-6 PuTTY Serial Configuration

F. Check “VT100+” for keypad in the keyboard submenu.

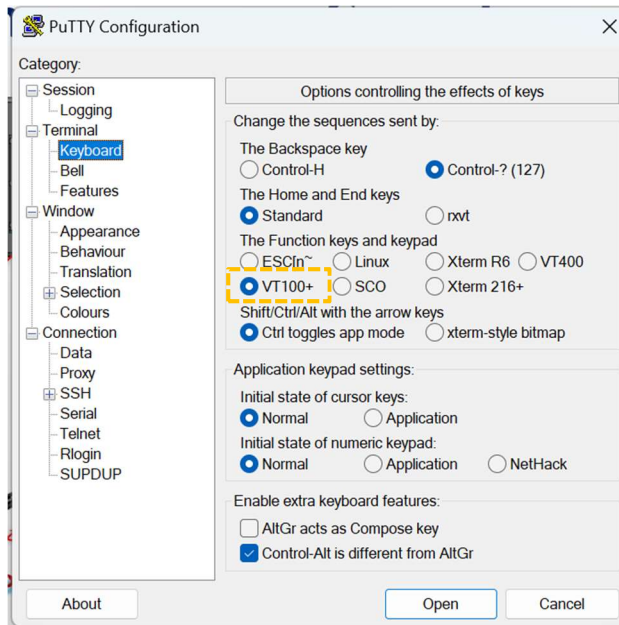


Figure 2.4-7 PuTTY Keyboard Settings

- G. Click the “Open” button and a PuTTY terminal screen will be displayed. If you wish to retain the configuration for future use, click the “Save” button.

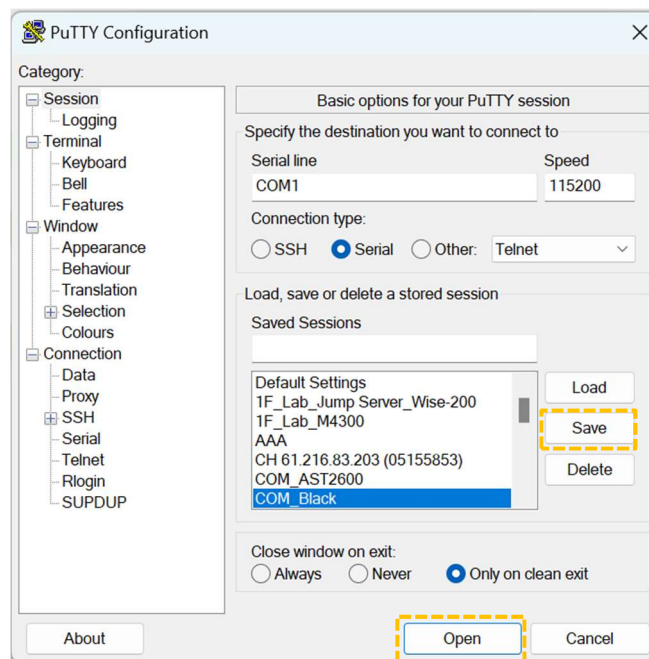


Figure 2.4-8 PuTTY Keyboard Settings

- H. If the connection is successful, after powering on the unit, you should be able to view the BIOS Power-On-Self-Test (POST) screen in the PuTTY terminal as below:

```
Version 2.22.1290. Copyright (C) 2023 AMI
**** FWA-3034 BIOS V2.24 (12/14/2023) ****
Press <DEL> or <F2> to enter setup.
```

Figure 2.4-9 BIOS POST Screen



**Note:**

Please be aware that during the initial startup phase, the BIOS may be performing tasks even if the console appears inactive. It might take a moment for the BIOS POST screen to show up. However, the BIOS has been optimized for a swift boot time. It will progress through the POST rapidly and then attempt to boot an OS based on the boot options selected in the BIOS.

In case you would extend the time, the BIOS displays the POST screen and waits for a key press to enter the setup menu, you can do so via the BIOS setup menu. Please refer to [Section 4.2](#) for details.

### 2.4.3 Installation via iKVM

The FWA-3034 is equipped with Out-of-band (OOB) BMC that features a Web UI, providing a wide range of configuration options, including iKVM for graphic OS installations.

To initiate, set up the BMC IP within the BIOS (please reference to [Section 4.3.1](#)) and then access it using `https://<IP>`. Once there, you have the capability to remotely install either a text-based or GUI-based OS onto your PC.

For details guide on iKVM features, please refer the “Node Explorer user manual (Section 3.5.3)”.

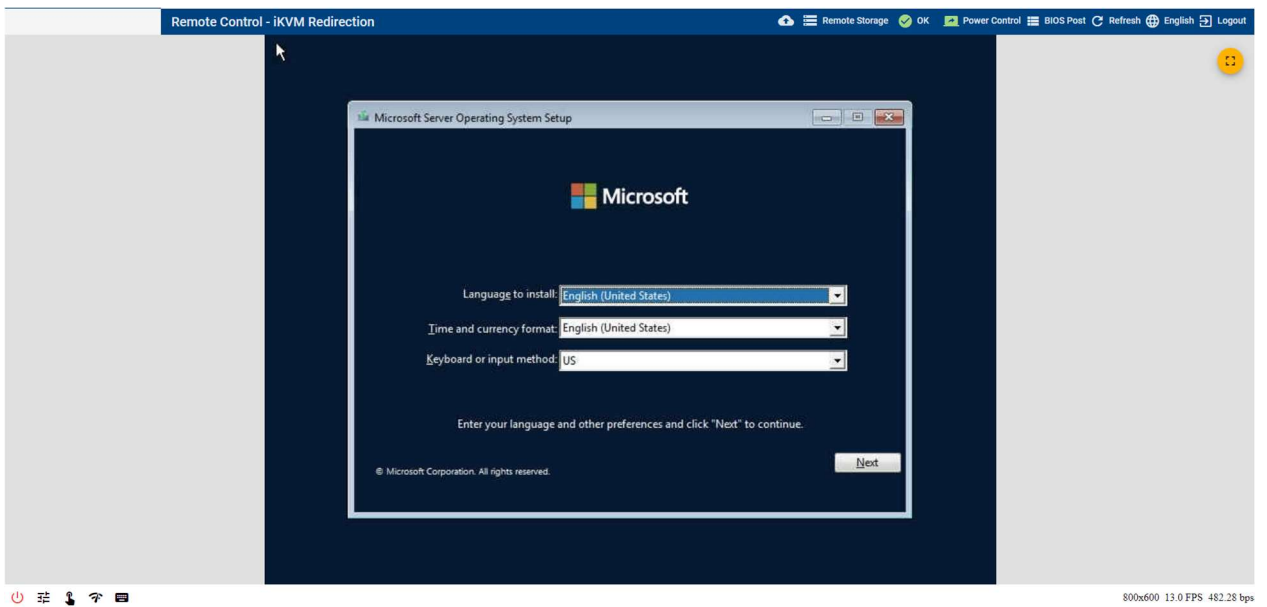


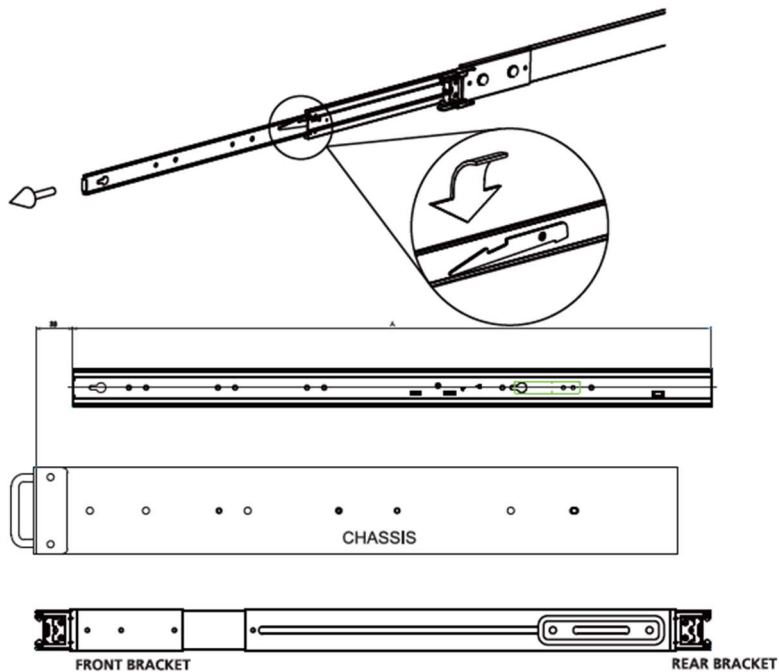
Figure 2.4-10 GUI-based OS (Windows) Through iKVM

#### 2.4.4 Rackmount Kit Installation

Slide rails installation instruction: Align the holes on the slide rails with the holes on the sides of FWA-3034. Insert screws through the holes in the slide rails and into the corresponding holes on appliance. Use a screwdriver or power drill with the appropriate bit to tighten the screws. Be careful not to overtighten, as this can damage the appliance.

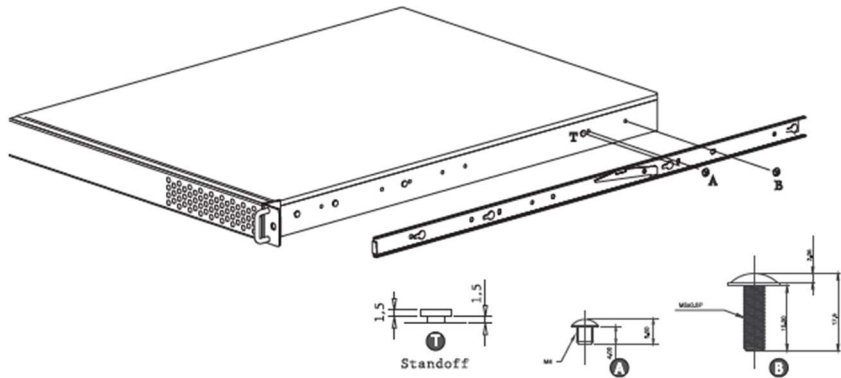
Step 1 Pull the slide open. Then press the trigger down as shown on the drawing, and pull the chassis (inner) member out. Pull chassis (inner) member out

\*\*Extendable front bracket only applies to some Tool-less model



Step 2 Mount the chassis (inner) member to the chassis

You may opt for M4 or M5 pan head screw. The screw head of either M4 or M5 cannot exceed 2.0 mm. Alternatively, you may mount the



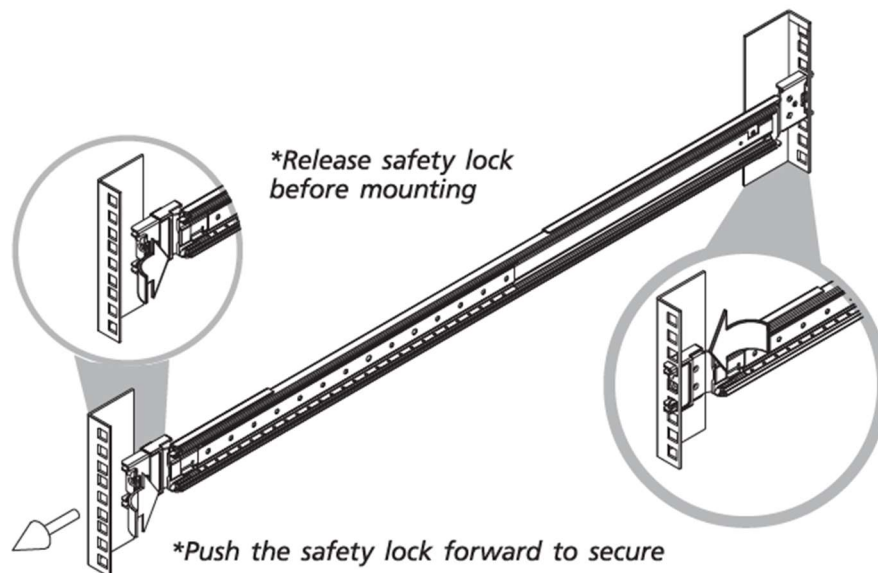
Step 3 Attach the cabinet (outer) member to the rail

Insert the stag into the upper and lower square holes on EIA rack from the back of rail.

Push the safety lock forward to secure the bracket. It is important to check if the safety lock is in unlocked position before mounting the brackets.

\*Release safety lock before mounting

\*Push the safety lock forward to secure



Step 4 Mount the chassis into the cabinet

Insert the chassis (inner) member into the cabinet (outer) member as shown below. It is important to check if the ball retainer is in fully open position before the installation or else it might cause catastrophic damage to the chassis. While pushing the chassis back into the rack, you need to release the slide from locking position by pressing the trigger down.

\* Ball retainer is in fully open position.

\*Press trigger down to release the slides from locking

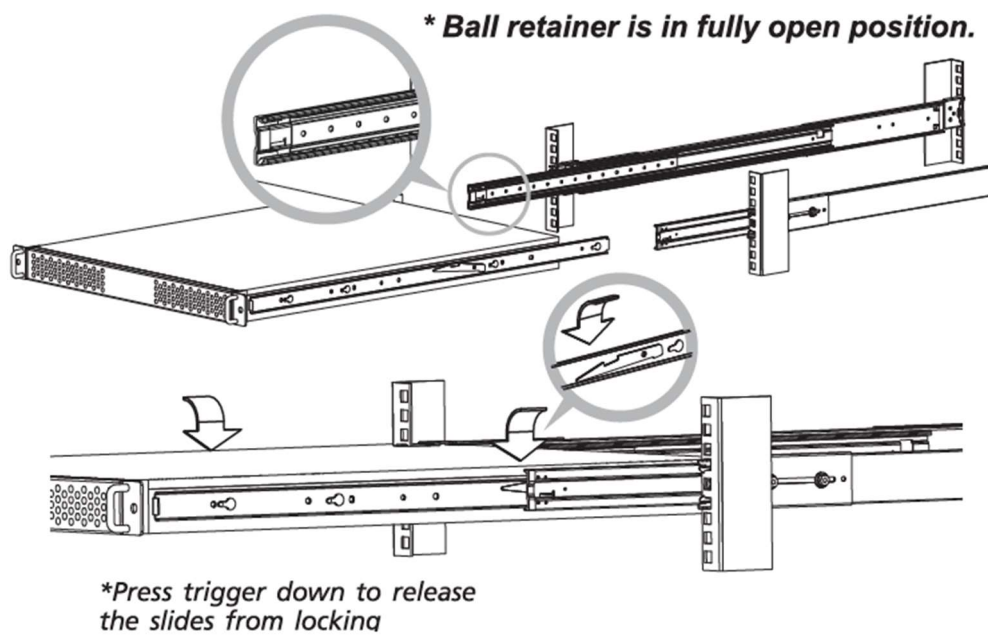


Figure 2.4-11 Slide Rails Installation

## 2.4.5 Powering On



### Caution!

Before connecting the FWA-3034 to the power outlet, ensure that the power rating of the outlet matched that of the FWA-3034 PSU. Also, verify that the primary circuit and all power distribution are not overloaded. Inrush current and steady state power specifications for the FWA-3034 can be found at the label at the side of the unit.

Connect the power cords to the Power supply units (refer to [Section 3.4.6](#) for details) first and then to the power outlets. There are 2 power supply units located at the rear panel of the appliance.



Figure 2.4-12 Location of The Power Inputs

The unit will automatically power on after power is supplied. The green LED on the front panel should be lit as the unit is under power.

Please refer to [Section 3.2.1](#) for the location of front and rear panel elements.

Sections [2.4.1 to 2.4.3](#) provide guidance on OS installation based on specific environmental constraints. Please select the method that best suits your needs.

## 2.5 Getting Help: Technical Support and Assistance

1. Visit the Advantech web site at [www.advantech.com/support](http://www.advantech.com/support) where you can find the latest information about the product.

2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Worldwide contact information can be found on [www.advantech.com](http://www.advantech.com). Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of firmware and software versions installed on the product
- A complete description of the problem
- The exact wording of any error messages

3. For more information please contact regional sales or visit [website](#) PRODUCT SPECIFICATION

# 3. Product Specification

## 3.1 Overview

FWA-3034 is for enterprise level applications, requiring high performance and modest bandwidth data capabilities.

FWA-3034 which is based on Intel Alder lake S support 1 to 2 DDR5 UDIMM memory slots, 8x PCIe 2.5GbE LAN ports, 3x M.2 Socket(M/B/E), 2x USB3.2 Gen2x1 port, 1x RJ45 serial console, 2x 1Gb SFP or 1Gb BASE-T LAN ports by SKU option, 2x 10Gb SFP+ LAN ports, PCIe x8 slot x2, w/ LCM, 1x IPMI dedicated management port.

For more information related to FWA-3034, please check below section:

## 3.2 Introduction

### 3.2.1 Features

- CPU: Intel® 12th/13® Gen Core™ i9/i7/i5/i3 processors
- Memory: 16 DDR5 memory sockets with up to 1TB capacity (RDIMM)
- NMC: Up to 8 slots, each 200GbE bandwidth
- Storage: 2 hot-swappable 2.5” SSD and 2 M.2 2280 SSD
- System Fan: 4 hot-swappable 80mm fans
- Power Supply Unit: 1200W Redundant PSU



Figure 3.2-1 System Front Panel



Figure 3.2-2 System Rear Panel

A	Power Button	H	2 x 2.5Gb RJ45
B	SW control button	I	4 x 2.5Gb RJ45 w/ 2 pairs LAN Bypass
C	System LEDs	J	2 x 1Gb SFP
D	1 x GbE LAN for IPMI	K	2 x 10Gb SFP+
E	1 x GbE RJ45 ports for Console	L	Graphic mode LCM
F	2 x USB 3.0 ports	M	300W Redundant PSU
G	2 x 2.5Gb RJ45	N	2 x 4028 fan modules (hot-swap)
O	VGA port		



Figure 3.2-3 System Front Panel



Figure 3.2-4 System Rear Panel

A	Power Button	H	2 x 2.5Gb RJ45
B	SW control button	I	4 x 2.5Gb RJ45 w/ 2 pairs LAN Bypass
C	System LEDs	J	2 x Advantech NMC slots
D	1 x GbE LAN for IPMI	K	250W AC Single PSU
E	1 x GbE RJ45 ports for Console	L	2 x 4028 fan modules (hot-swap)
F	2 x USB 3.0 ports	M	300W Redundant PSU
G	2 x 2.5Gb RJ45	N	VGA port

The FWA-3034 supports an array of status LEDs on the system front panel.



Figure 3.2-3 Front LEDs

Table 3.2-1 Status LEDs

No. or Icon (Up to Down)	LED Name	Software Controllable	Description	Software Controllable
✔	SW_DEF led	Green/Amber	Solid On	Yes
🔔	Alert led	Amber	Solid On	Yes
🔍	ID/Locate led	Blue	Solid On	Yes
🔌	Power led	Green	Solid On	No

The FWA-3034 provides two buttons on the system front panel.



Figure 3.2-4 Front Buttons

Table 3.2-2 Front Buttons

No. or Icon (Up to Down)	Button Name	Description
🔌	Power Button	Power button to power on and off the unit
🔄	SW-defined Button	Recessed design

### 3.2.2 System Memory

FWA-3034 supports two 1 DPC DDR5 U-DIMM Slot which can support up to 4800 MT/s speed ECC/NON-ECC DDR5 U-DIMM. Customer can select either one of these two slots to populate, no populate sequence limitation on FWA-3034. Please insert DRAM as shown in picture below.

Following features are supported in NAMB-3034MB memory sub-system.

- Single-channel and dual-channel memory organization modes
- Data burst length of eight for all memory organization modes
- Memory DDR5 data transfer rates of 3600,4000, 4400 and 4800 MT/s
- Up to 64GB pre DIMM technologies are supported
- 5V Module supply voltage

### 3.2.3 Memory Installation

1. Double check that the DIMMs be installed match the requirements of section 3.5 and make sure you follow the DIMM population rules given in that section.
2. Open the latches on the left and right sides of the DIMMs by turning it outwards as indicated by the arrows below.

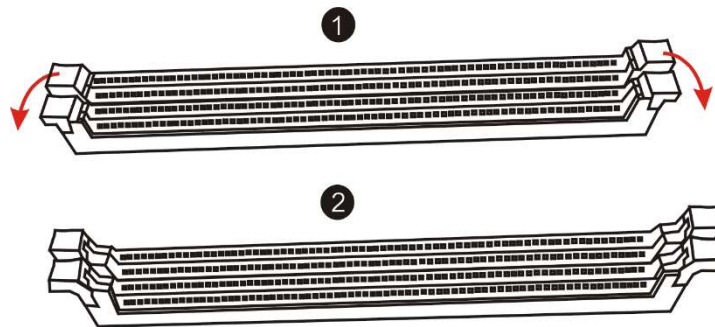


Figure 3-35: Opening DIMM Latches

3. Select DIMM orientation so that the keys in the DIMM module and socket match.

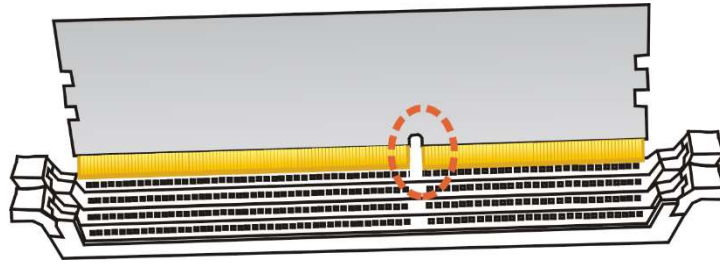


Figure 3-36: DIMM Key Alignment

4. Insert the DIMM from the top using the guide rails on the left and right of the DIMM sockets.

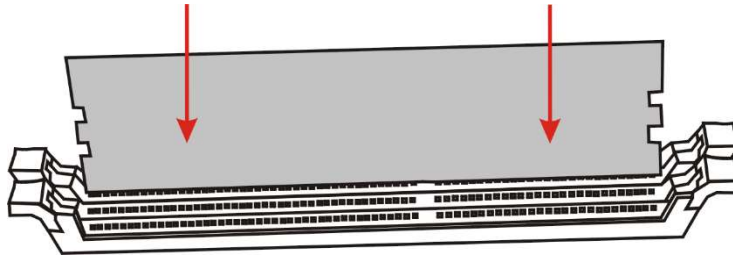


Figure 3-37: DIMM Insertion into Slide Rails

5. Put your thumbs near the right and left end of the DIMM and press down the DIMM evenly until the white latches fully close with a click.



Figure 3-38: Seating the DIMM in the Socket

6. In case you want to install another DIMM, repeat steps 1 to 5 accordingly.



Figure 3.2-5 DRAM Installation Order

### 3.2.4 CPU Installation

FWA-3034 design in LGA1700 CPU slot which used to support Intel Alder/Raptor Lakes S. Please refer below figure to install CPU and CPU heatsink.

Note: FWA-3034 thermal solution can support up to 65w CPU.



Figure 3-5 CPU Installation – install CPU and check Pin1 location



Figure 3-6 CPU Installation – Close CPU bracket to fix CPU and let CPU socket cover remove automatic when bracket close

### 3.2.5 Storage: 2.5 SSD installation

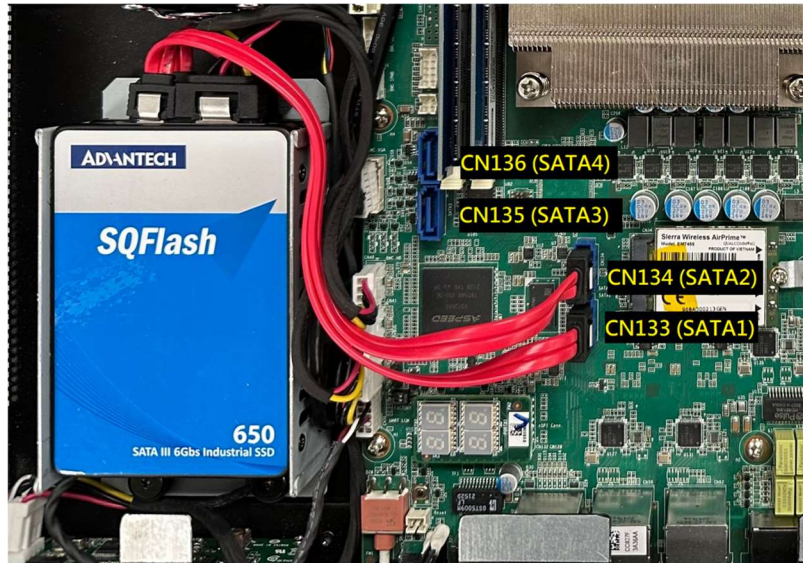


Figure 3-7 SATA Storage Installation

### 3.2.6 SATA/NVMe SSD installation

FWA-3034 support 1x M.2 M-Key(2280) for M.2 SATA/NVMe SSD. Install SSD on CN33 and lock by Screw.



Figure 3-8 M.2 M-KEY SATA/NVMe SSD Installation

### 3.2.7 Wifi module installation

FWA-3034 support 1x M.2 E-Key(2230) CN36 for WIFI module installation, lock WIFI module by screw directly

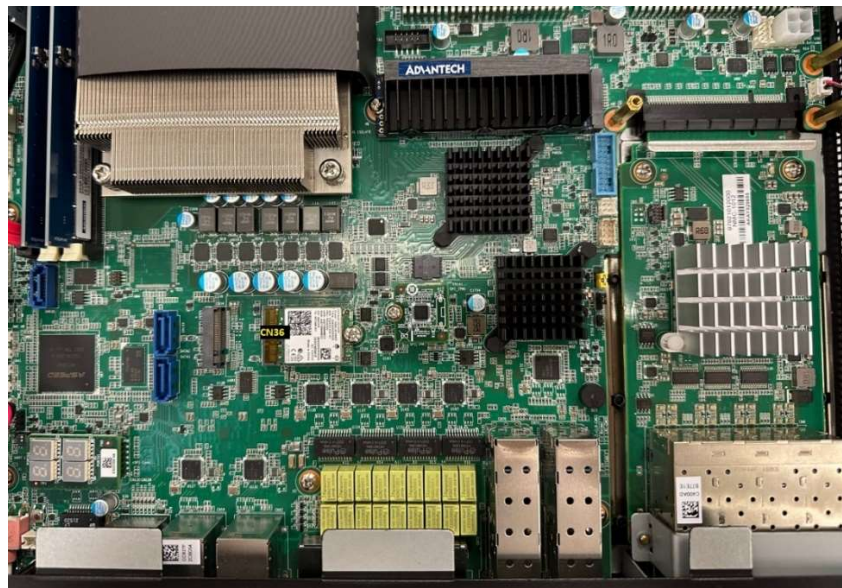


Figure 3-9 M.2 E-KEY WIFI module installation

### 3.2.8 LTE module installation

FWA-3034 support 1x M.2 B-Key (3042/3052) CN34 for LTE/5G module installation, LTE 3042 module need to install with one mechanical cage which used to transfer 3042 to 3052 and lock with screw. 5G module lock with screw directly.

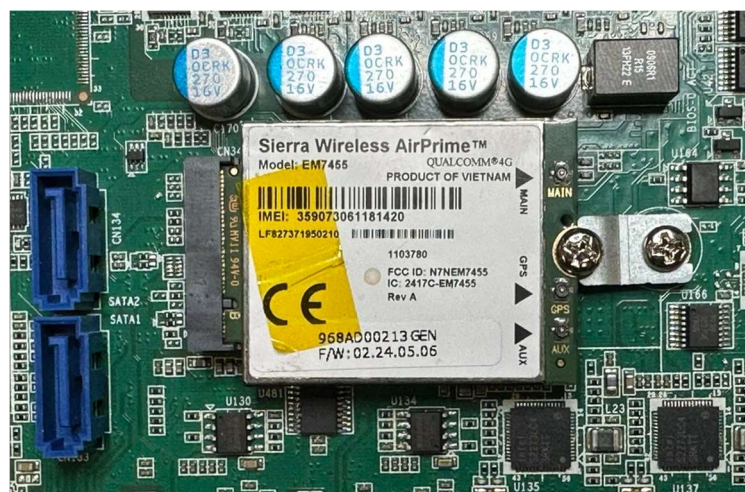


Figure 3-8 LTE module installation

### 3.3 Product Version/Ordering Information

The FWA-3034 is available in the following standard configurations.

Contact your Advantech representative for availability of other configuration options.

Table 3.3-1 Available Product Version

Model Name	Configurations	Peripherals	Power Supply Unit
FWA-3034-00A1R	-1U form factor -Single socket for 12th/13th Generation Intel® Core™ processors -1 x NMC slots	-2 x DDR5 sockets - 2 x 2.5" bays for SATA SSD/HDD -1 x M.2 2280 slots for SATA/NVMe SSD	300W redundant PSU
FWA-3034H-00A1S	-1U form factor -Single socket for 12th/13th Generation Intel® Core™ processors	NA	250W single PSU

## 3.4 Technical Specifications

Table 3.4-1 Datasheet

System P/N		FWA-3034R-00A1R	FWA-3034H-00A1S
Form Factor		1U	
Processor System	Processor	12 <sup>th</sup> /13 <sup>th</sup> Generation Intel® Core™ processors	
	Core Count	24	
	Base Frequency	3.40 GHz (5.0 GHz Turbo frequency)	
	Chipset	R680E	H610E
	BIOS	AMI UEFI	
Virtualization		Intel® VT-x, VT-d, SR-IOV	
Memory	Technology	DDR5	
	Max. Capacity	64 GB (32 GB per slot)	
	Socket	2 x 288-pin DIMM	
	ECC Support	ECC/Non-ECC UDIMM	Non-ECC UDIMM
Networking	Controller	2 x Intel i210-IS 8 x Intel i226-LM 1 x Intel X710-BM2	8 x Intel i226-LM
	1GbE	2 x 1GbE SFP (2 x 1GbE RJ45 by project base) N/A	
	2.5GbE	8 x 2.5GbE RJ45	
	10GbE	2 x 10GbE SFP+ N/A	
	LAN Bypass	Two pair of LAN bypass	
	Expansion Slot	PCIe x8	1 (Gen 4, FH/HL)
	NMC	1 (100G via single slot)	
	M.2 (Except SSD)	1 x M.2 B-key 3052/3042 for 4G module (5G by project base) or E-key 2230 for WiFi module N/A	
	SIM Socket	1 N/A	
IPMI		IPMI 2.0 and Redfish compliant 1x dedicated 1GbE LAN for IPMI port	N/A
Storage	2.5" Bay	2 x SATA HDD/SATA SSD	
	M.2 (SSD)	1 x 2280 M.2 M-key slot for SATA SSD or PCIe x4 Gen4 NVMe SSD N/A	
I/O	Console	1 x RJ45 type console	
	USB	2 x USB 3.2 Gen 2x1 ports	
	LED Indicator	1 x SW-defined LED (Amber/Green)	
		1 x Alert LED by IPMI (Amber)	
		1 x ID LED by IPMI (Blue)	
		1 x Power (Green)	
	Display	1 x VGA port	
Button	1 x Power button 1 x SW-defined button		
Others	1 x RJ45 type console		
TPM		TPM 2.0 module	
LCD Module		21 columns x 4 lines text display	

### 3.4.1 Processor(s)

The FWA-3034 supports single Intel® 12th/13® Gen Core™ i9/i7/i5/i3 processors. The table below gives an overview of the processor SKUs for communication infrastructure which can be supported on the FWA-3034:

Table 3.4-2 Processors Supported List

Brand	CPU	Processor Cores (P+E)	Threads	Cache (L3)	TDP	Base Freq		
Intel® Core™ i9 processors	I9-13900	24(8+16)	32	30MB	65W	2.0GHz	<b>Raptor Lake-S</b>	
	I9-13900E	24(8+16)	32	30MB	65W	2.0GHz		
Intel® Core™ i7 processors	I7-13700	16(8+8)	24	30MB	65W	2.1GHz		
	I7-13700E	16(8+8)	20	30MB	65W	2.1GHz		
Intel® Core™ i5 processors	I5-13400	10(6+4)	16	20MB	65W	2.5GHz		
	I5-13500	14(6+8)	20	24MB	65W	2.5GHz		
Intel® Core™ i3 processors	I3-13100	4(4+0)	12	12MB	60W	3.4 GHz		
Brand	CPU	Processor Cores (P+E)	Threads	Cache (L3)	TDP	Base Freq		
Intel® Core™ i9 processors	I9-12900	16(8+8)	24	30MB	65W	2.4GHz		<b>Alder Lake-S</b>
	I9-12900E	16(8+8)	24	30MB	65W	2.3GHz		
Intel® Core™ i7 processors	I7-12700	12(8+4)	20	25MB	65W	2.1GHz		
	I7-12700E	12(8+4)	20	25MB	65W	2.1GHz		
Intel® Core™ i5 processors	I5-12400	6(6+0)	12	18MB	65W	2.5GHz		
	I5-12500E	6(6+0)	12	18MB	65W	2.9GHz		
Intel® Core™ i3 processors	I3-12100	4(4+0)	8	12MB	60W	3.2GHz		

### 3.4.2 SPI TPM 2.0

A 2.0 Trusted Platform Module is supported on the FWA-3034.

Trusted Platform Module (TPM): A TPM is a dedicated hardware component or microcontroller that provides secure storage and cryptographic functions. It is designed to enhance the security of a computing platform by securely storing encryption keys, performing cryptographic operations, and verifying the integrity of the system.

### 3.4.3 Internal Storage

One M.2 2280 SSDs are supported on the FWA-3034 located on the management board. Socket location details may refer to Appendix 5.1.

### 3.4.4 BIOS

FWA-3034 BIOS is based on AMI's APTIO BIOS and compliant to the UEFI, SMBIOS and ACPI specifications.

The BIOS performs probing, initialization and configuration of the FWA-3034 and initializes the OS boot process at the end of POST (Power-On-Self-Test).

Regular BIOS output as well as the setup menu are displayed via console port and please note that the FWA-3034 does not have any on-board POST Code LEDs. A special POST code adapter is required to retrieve BIOS error codes.

All BIOS configuration parameters are stored in NVRAM, a dedicated section of the BIOS flash chip. Parameters are no longer stored in legacy CMOS RAM by the platform BIOS. i.e. BIOS configuration parameters will not be lost due to an empty battery.

### 3.4.5 Advanced Platform Management

Advanced Platform Management is supported via an integrated BMC running IPMI2.0 compliant system management firmware. Several enhancements have been made to standard white box server management code to enhance reliability and serviceability of the system including but not limited to:

- Improved thermal management to cover special scenarios as well as fan degradation / failure
- Chassis intrusion and FRU presence detection
- Redundant BMC and BIOS flashes for maximum reliability
- Fail safe BMC and BIOS upgrades using industry standard HPM.1 mechanisms and tools including automatic rollback on an upgrade failure
- Remote update firmware as long as power is connected to the unit
- BIOS Watchdog for reliable POST process and improved POST code sensor
- Time synchronization between the BMC and x86 host at startup for consistent event logs
- System FRU Information synchronization to the host via standard DMI tables
- Large system event log for efficient troubleshooting
- Capability to log system events from the x86 host
- Enhanced security (more information available under NDA)

For a detailed description of Advanced Platform Management features, please contact Advantech representative directly to obtain the FWA-3034 BMC specification.

Additionally, appendix 5.5 provides the FWA-3034 sensor list and information on Threshold-based sensors.

### 3.4.6 Power Supply Unit(s)

The FWA-3034 supports 300W 1+1 redundant AC and AC Single 250W. Technical specification for the power supply can be found in Appendix 5.4.

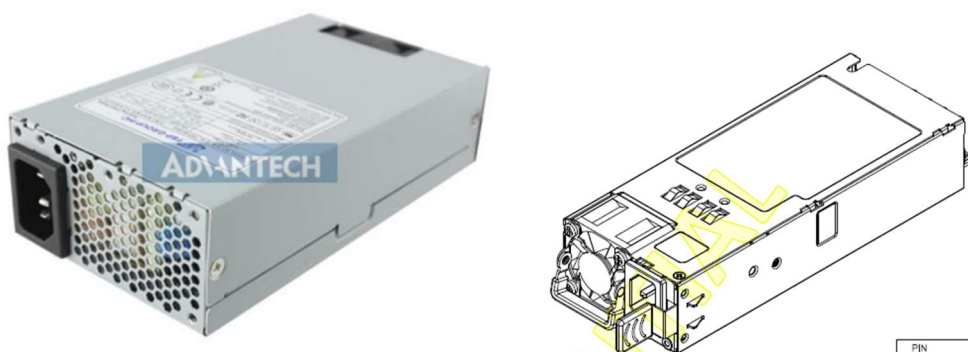


Figure 3.4-1 Redundant Power Supply Unit



**Caution!**

1. *DO NOT* remove the PSU before unplugging the power cable (power cord).
2. For 1+1 redundant system power, only *ONE* PSU is allowed to be extracted at one time.
3. *DO NOT* leave the slot empty when extracting the PSU, the alternative PSU *MUST* be inserted immediately for safety purpose.

## 3.5 Advanced Platform Features

The FWA-3034 supports intrusion detection by default. Removing or lifting the top cover will generate an intrusion detection event. The BMC event will keep ON even if the top cover is put back. Please login to the OS to run the following command:

Re-arm Command:

```
# ipmitool raw 0x04 0x2a 0x08 0x80 0x01 0x00 0x01 0x00
```

Event:

```
Physical Security CASE_INTRUSION | General Chassis intrusion | Asserted
```

After command be executed.

```
Physical Security CASE_INTRUSION | General Chassis intrusion | Deasserted
```

## 3.6 Available Accessories and Related Products

The following accessories are available for ordering. Please contact your Advantech representative for a list of available and supported peripherals such as memory modules and 2.5"/M.2 SSDs.

Table 3.6-1 Accessories

Order Number	Description
1702002600	Power cable 3P 180 cm, USA
1702002605	Power cable 3P 180 cm, Europe
1702031801	Power cable 3P 180 cm, UK
1700000237	Power cable 3P 180 cm, JP
1700009652	Power cord 3P 180 cm, China
1930008928	Screws for slide rail installation (Order 10 pieces per system)
968AE00073	22" Rail Kit for 438mm chassis (TL:381mm)
FWA-3050-800WPSU	800W DC Power kit
1700027334-01	USB for RJ45 console cable, 190cm

# 4. Configuration and Service

## 4.1 Jumper Settings

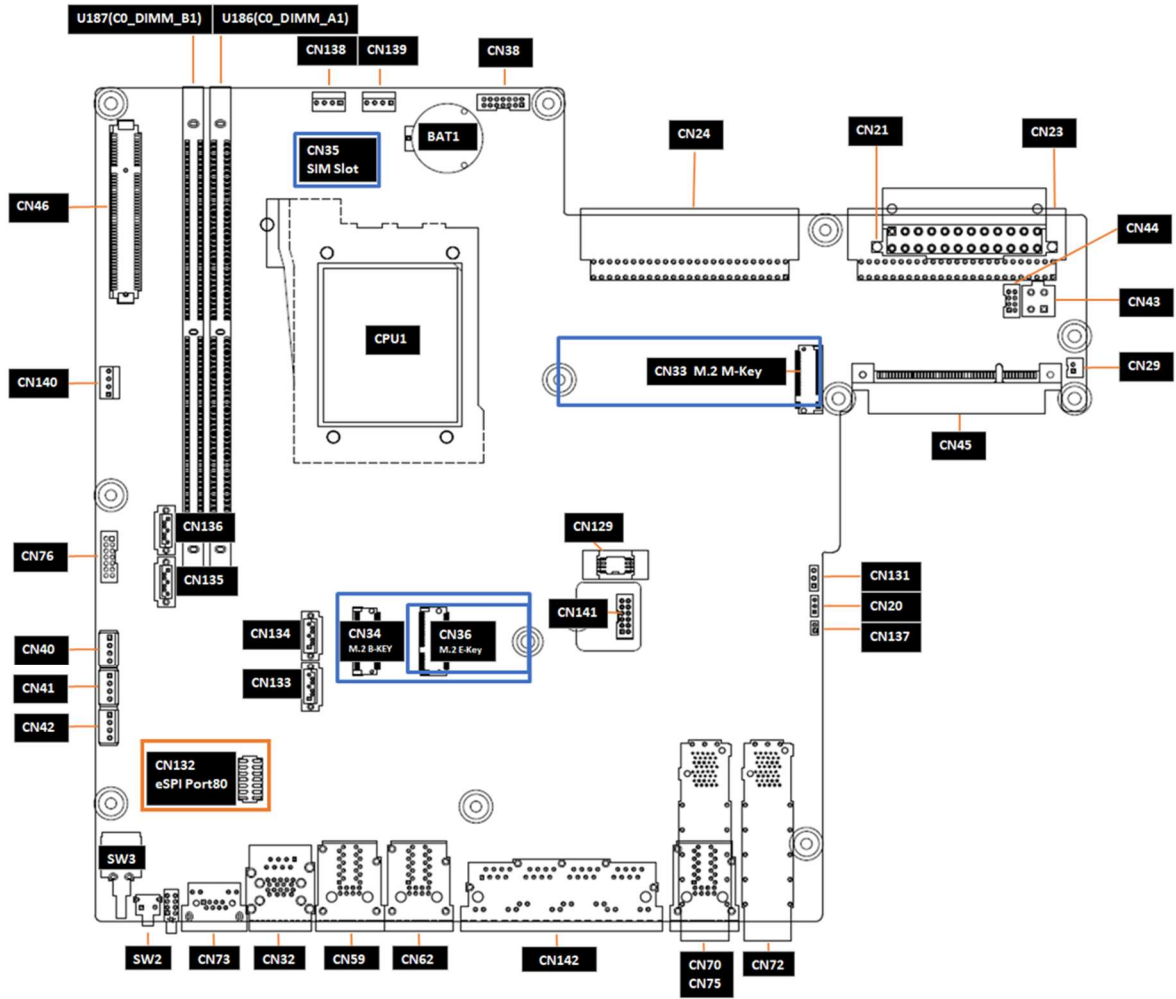


Table 4.1-1 Jumper List

Connector/Jumper Name	Function
U186(C0_DIMM_A1)	DDR5 U-DIMM SLOT
U187(C0_DIMM_B1)	DDR5 U-DIMM SLOT
CN138	FAN connector #1
CN139	FAN connector #2
CN140	FAN connector #3
CN42	LCM module POWER connector
CN43	ATX 4-pin power connector(for PoE NMC-E02 using)
CN44	USB2.0 connector(for PoE NMC-E02 using)
CN32	2x USB3.2 Gen2x1 and COM port(RJ-45)

CN22	ATX 24-pin power connector
CN141	TPM module connector
CN33	M.2 M-Key connector
CN34	M.2 B-Key connector
CN36	M.2 E-Key connector
CN40	SATA POWER connector#1
CN41	SATA POWER connector#2
CN133	SATA#1 connector
CN134	SATA#2 connector
CN135	SATA#3 connector
CN136	SATA#4 connector
CN129	SPI socket for 1ST SPI flash (BIOS)
CN46	PCIe Gen4 x8 expansion slots from CPU(for PCIe riser card)
CN45	PCIe Gen4 x8 expansion slots from CPU(for NMC card)
CN35	SIM slot
CN59, CN62	RJ45 2x1 connector(2.5GbE)
CN29	Case Open connector
BAT1	Battery holder for coin battery
CN20	FLASH SECURITY OVERRIDE
CN131	Clear CMOS pin header
CN23	CRPS connector #1
CN24	CRPS connector #2
CN38	VGA connector (CPU output)
CN76	VGA connector (BMC output)
CN72	SFP+ 2x1 connector
CN70	SFP 2x1 connector
CN142	RJ45 1x4 connector(2.5GbE)

CN75	RJ45 2x1 connector(1GbE)
CN73	BMC Dedicate LAN Port
SW2	SW define button
SW3	System PWR button
CN127	X710 debug mode header
CPU1	CPU Socket
CN132	eSPI header

Figure 4.1-1 Jumper Location

## 4.2 BIOS Setup Menu

### 4.2.1 BIOS Defaults

The BIOS comes with a set of configuration parameters when shipped by Advantech referred to as “Optimized Defaults” or “factory defaults”. The user can change BIOS settings via the setup menu either temporarily or permanently by saving the changes as “User defaults”.

The BIOS loads Optimized Defaults by the option “Restore Defaults; and loads User defaults by the option “Restore User Defaults”. If no User defaults have been defined, the BIOS will do nothing.

### 4.2.2 BIOS Setup Menu

This section describes the FWA-3034’s UEFI BIOS based on AMI’s APTIO BIOS.

Users can modify BIOS settings and control the special features of the FWA-3034 using the BIOS setup menu.

Please note that Advantech supports shipping the FWA-3034 with custom BIOS defaults to simplify the deployment and integration for our customers. Please contact your Advantech representative if you want to receive more information regarding this service.

The BIOS Setup Menu can be entered via the BIOS POST screen displayed on the console interface:

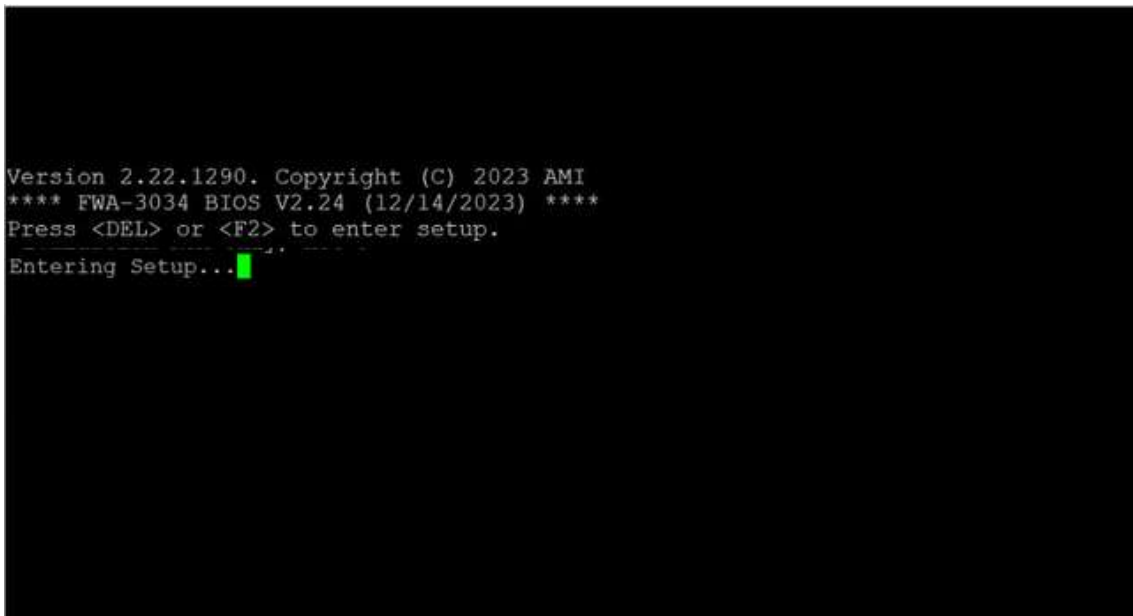


Figure 4.2-1 BIOS POST Screen (Example)

BIOS Setup can be entered by hitting <DEL> or <F2> keys during POST.

The BIOS setup menu screens have a few main elements as shown in the Figure 4.2-2. The menu bar displays the selectable menu pages as tabs. The parameter window displays and allows configuration of the settings available in a given menu page or a submenu thereof. Auxiliary text providing information about the selected setup item is displayed in the top right corner.

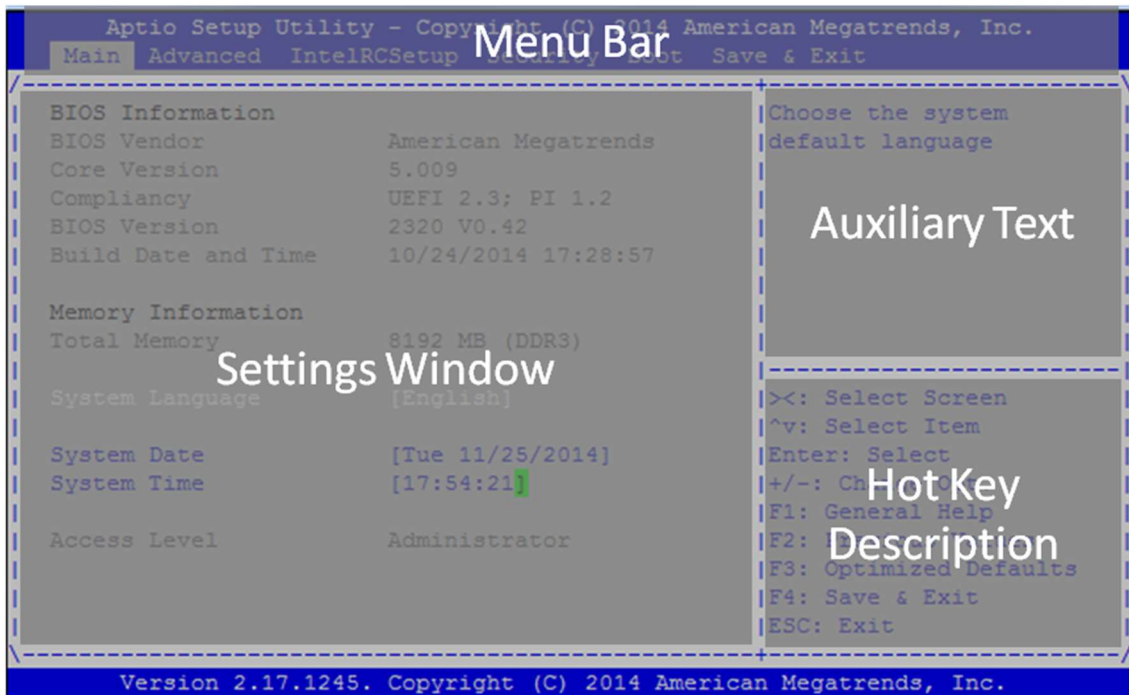


Figure 4.2-2 BIOS Setup Screen Organization

### 4.2.3 Main Setup Menu

Please reference “Common BIOS User Manual”

<https://www.advantech.com/zh-tw/support/details/manual?id=1-2F8TKW5>

## 4.2.4 Platform Setup Menu

Here only “SW Button Configuration” and “SW GPIO Configuration are described”. For additional information, please refer to the “Common BIOS User Manual”.

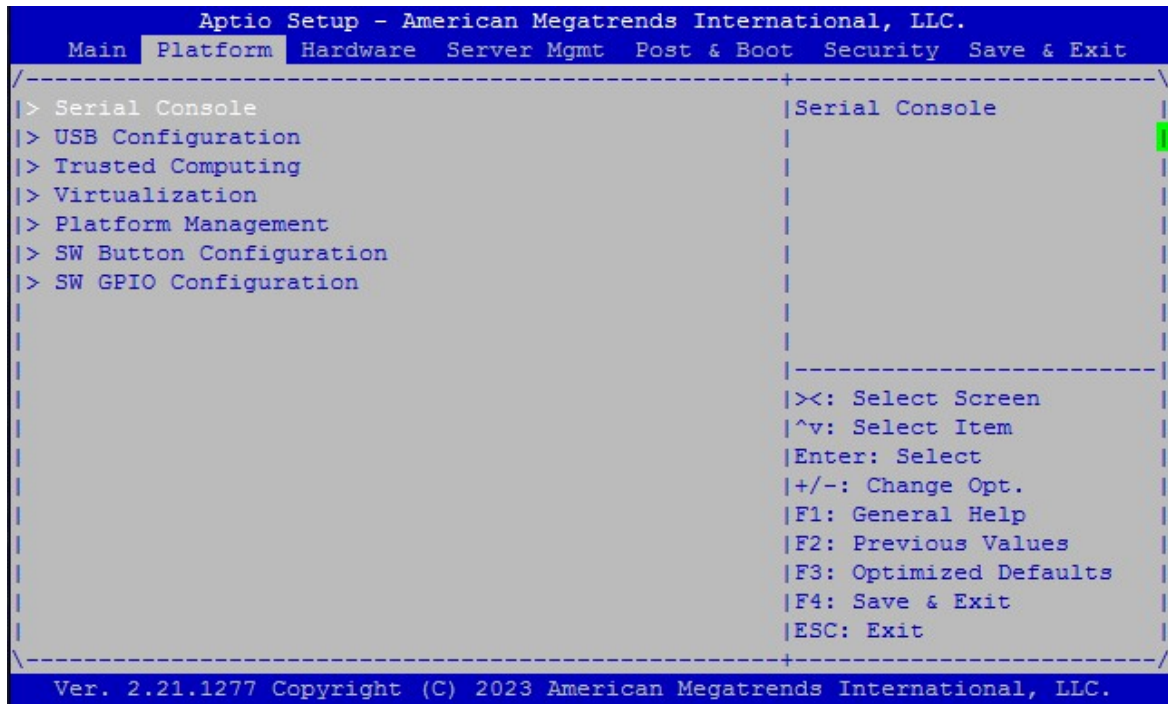


Figure 4.2-3 Platform Setup Main Screen

### 4.2.4.1 SW Button Configuration

This sub menu allows you to change the settings used for the SW Button Mode.

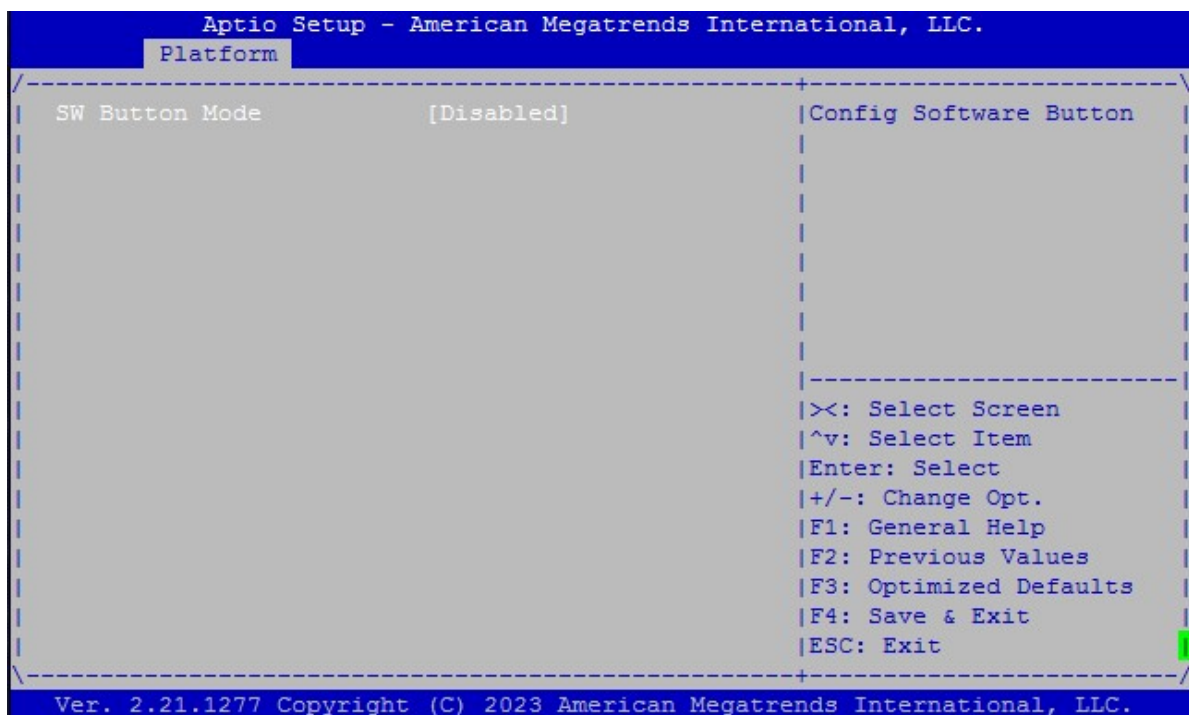


Figure 4.2-4 Platform Setup: SW Button Configuration Menu

The settings for SW Button can be accessed in this menu.

This sub menu allows you to change the settings used for the SW Button. For example, users can define the SW Button Mode as Sleep Button or others.

Table 4.2-1 Platform Setup: SW Button Configuration Menu Items

Setup item	Access / Options	Description
SW Button Mode	Sleep Button / Driver / <b>Disabled</b>	Set the SW Button as Sleep Button or Driver mode or disable it.

#### 4.2.4.2 SW GPIO Configuration

This sub menu allows you to change the settings used for SW GPIO.

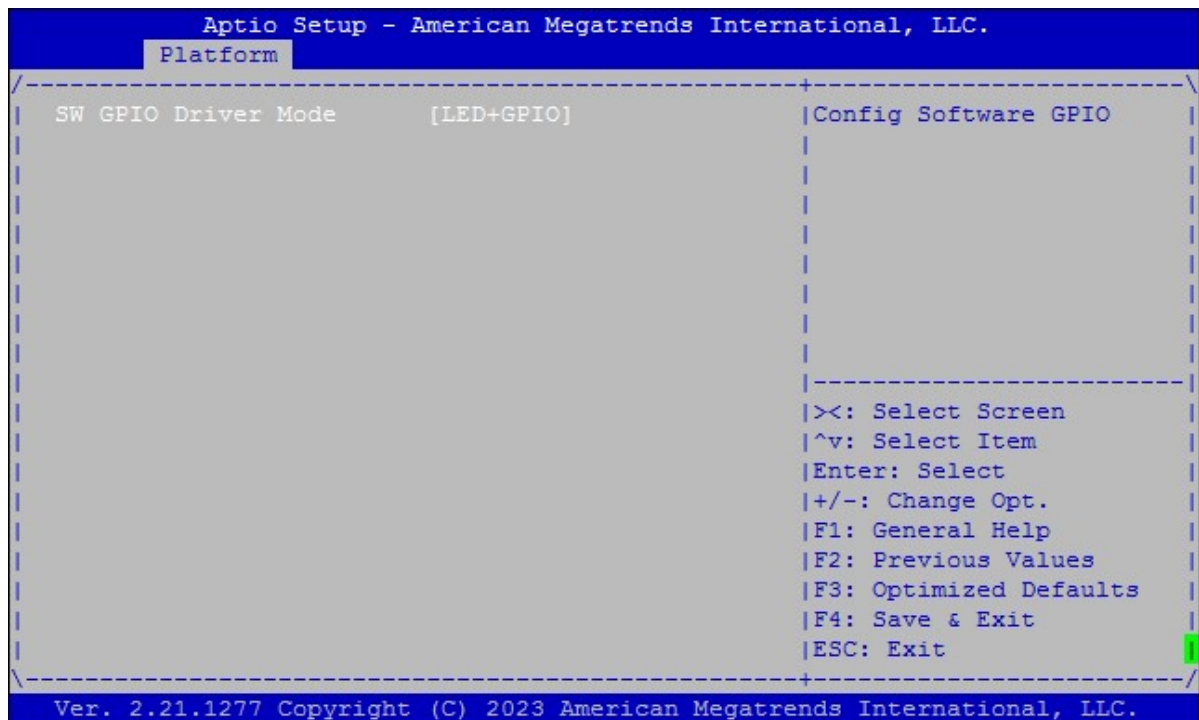


Figure 4.2-5 Platform Setup: SW GPIO Configuration Menu

Table 4.2-2 SW GPIO Configuration Menu

Setup item	Access / Options	Description
SW GPIO Driver Mode	GPIO Only <b>LED+GPIO</b>	Set SW GPIO Driver mode to GPIO Only or both LED and GPIO.

#### 4.2.5 Hardware Setup Menu

This sub menu allows you to change the settings of the Intel chipset. Please note that “chipset” is a legacy term, and the related functionality is split over the CPU and PCH portions. Similarly, the terms “South Bridge” and “North Bridge” are legacy terms and do not represent the silicon implementation anymore. However, those terms are kept consistent with previous products to allow users to navigate more easily.

The sub menus are described on the following pages.

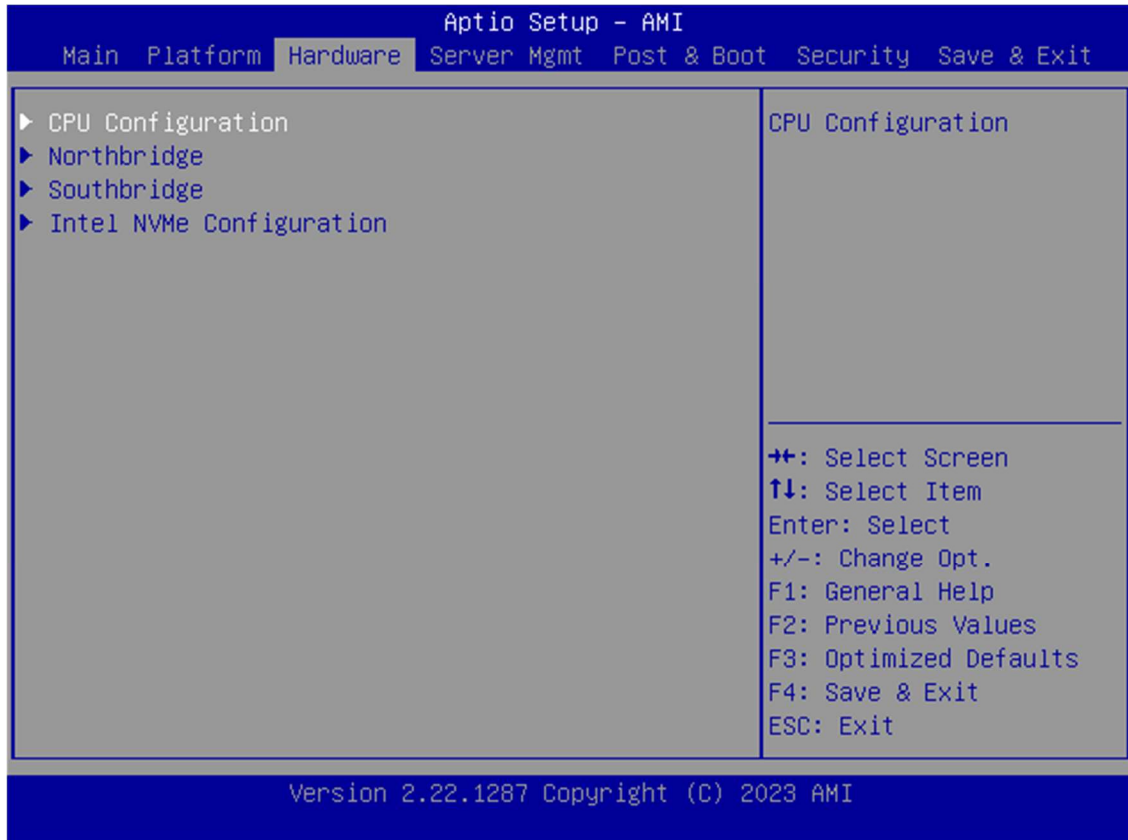


Figure 4.2-6 Hardware Configuration Menu

#### 4.2.5.1 Hardware Setup: CPU Configuration

This menu uses example of CPU configuration.

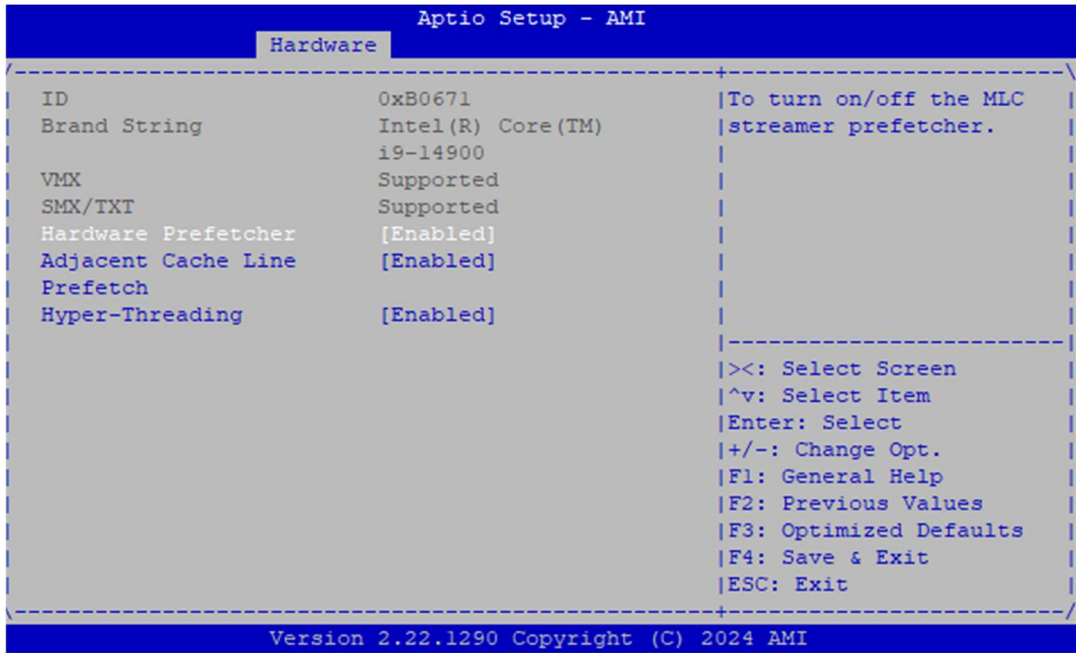


Figure 4.2-7 Chipset: Processor Configuration Menu

Group	Setup item	Access / Options	Description
CPU Configuration	ID	Display only	Displays information on the processor installed
	Brand String		
	VMX		
	SMX/TXT		
	Hardware Prefetcher	Enable Disable	To turn on/off the MLC streamer prefetcher.
	Adjacent Cache Line Prefetch	Enable Disable	To turn on/off prefetching of adjacent cache lines.
	Hyper-Threading	Enable Disable	Enable or Disable Hyper-Technology.

Table 4.2-3 SW GPIO Configuration Menu

#### 4.2.5.2 Hardware Setup: North Bridge Configuration

This menu allows the configuration of the memory controller and related features of the processors.

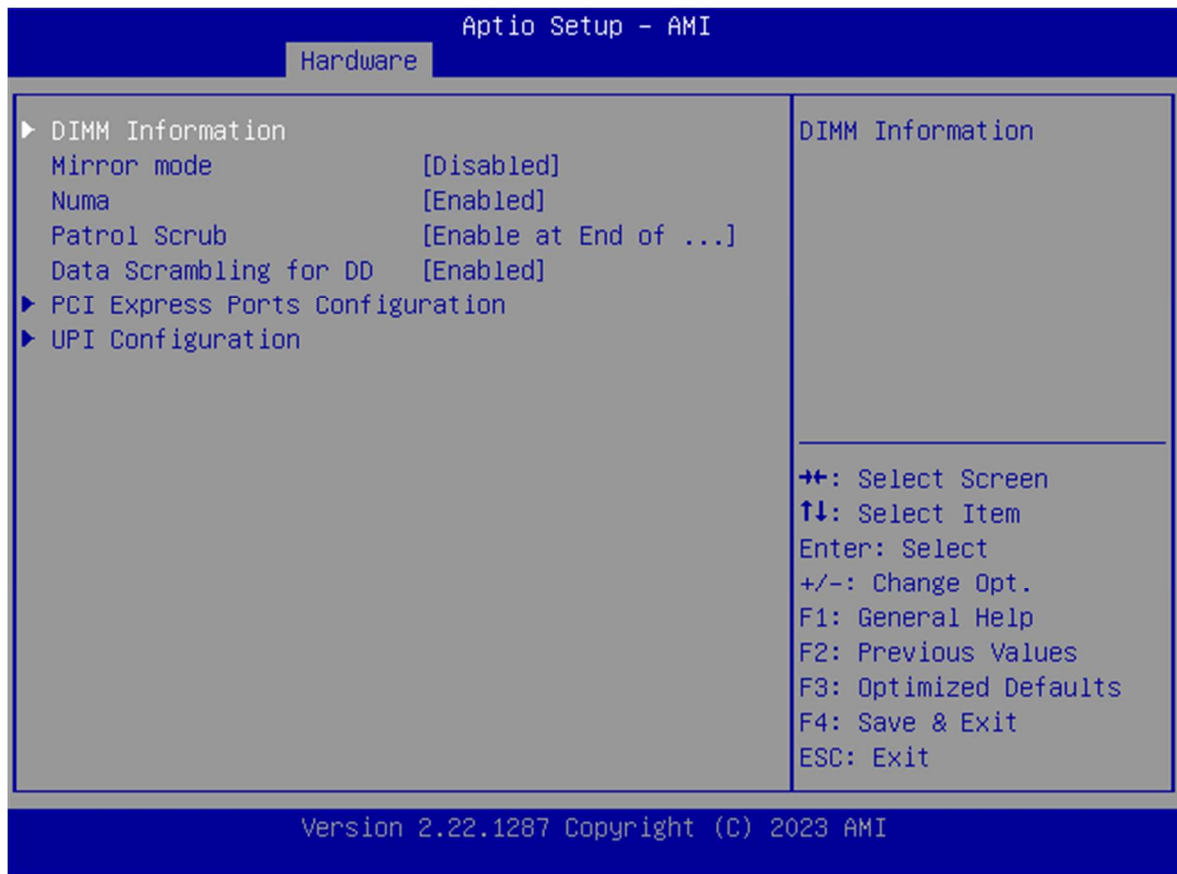


Figure 4.2-8 North Bridge Configuration Menu

Table 4.2-4 North Bridge Configuration Menu

Group	Setup item	Access / Options	Description
VMD setup menu	Enable VMD controller	Enable Disable	Enable/Disable to VMD controller.
CPU Configuration	ID	Display only	Displays information on the processor installed
	Brand String		
	VMX		
	SMX/TXT		
	Hardware Prefetcher	Enable Disable	To turn on/off the MLC streamer prefetcher.
	Adjacent Cache Line Prefetch	Enable Disable	To turn on/off prefetching of adjacent cache lines.
PCI Express Configuration	PCI Express Root Port 1	N/A	Select sub-menu.

Group	Setup item	Access / Options	Description
	PCI Express Root Port 2	N/A	Select sub-menu.
	PCI Express Root Port 3	N/A	Select sub-menu.
	Hyper-Threading	Enable Disable	Enable or Disable Hyper-Technology.

#### 4.2.5.3 Hardware Setup: South Bridge Configuration

This menu contains settings for the South Bridge for related SATA and USB and ACPI setting etc.

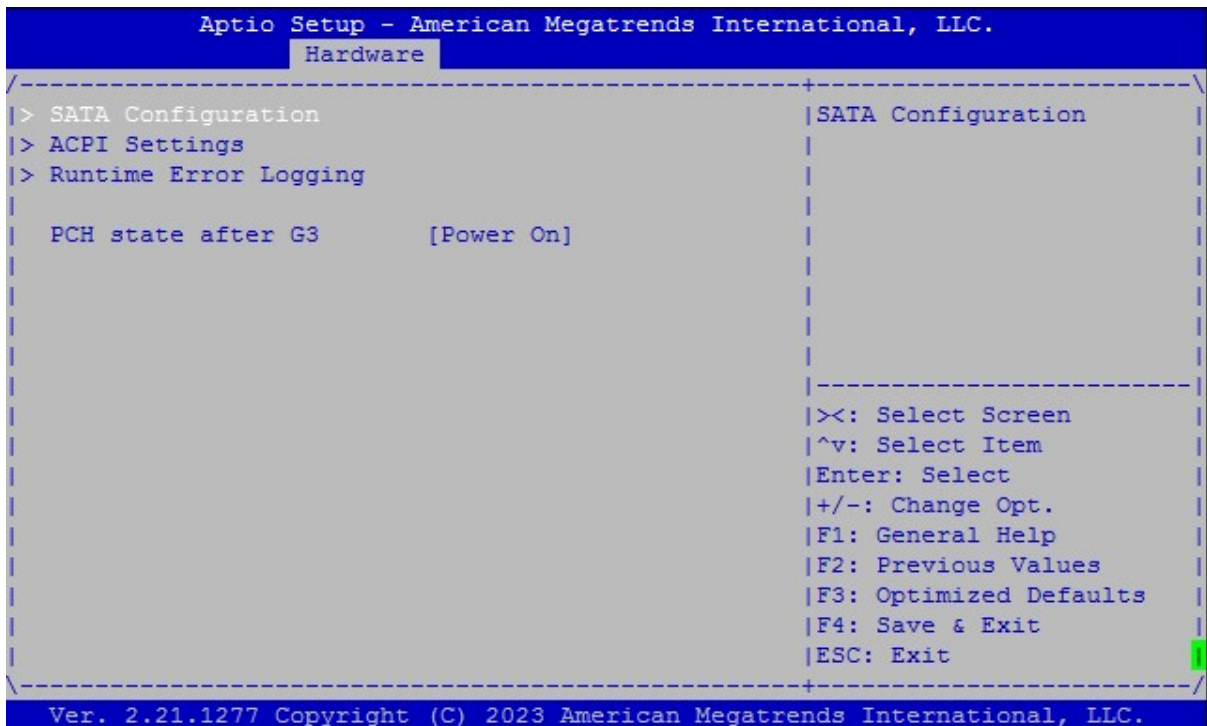


Figure 4.2-9 Hardware Setup: South Bridge Configuration

Table 4.2-5 Hardware Setup: South Bridge Configuration Menu Items

Group	Setup item	Access / Options	Description
Hardware	SATA Configuration	N/A	Select sub-menu.
	ACPI Settings	N/A	Select sub-menu.
	PCH state after G3	Power on/Power Off/Last State	Select S0/S5 for ACPI state after a G3

#### 4.2.5.3.1 South Bridge Configuration: SATA Configuration

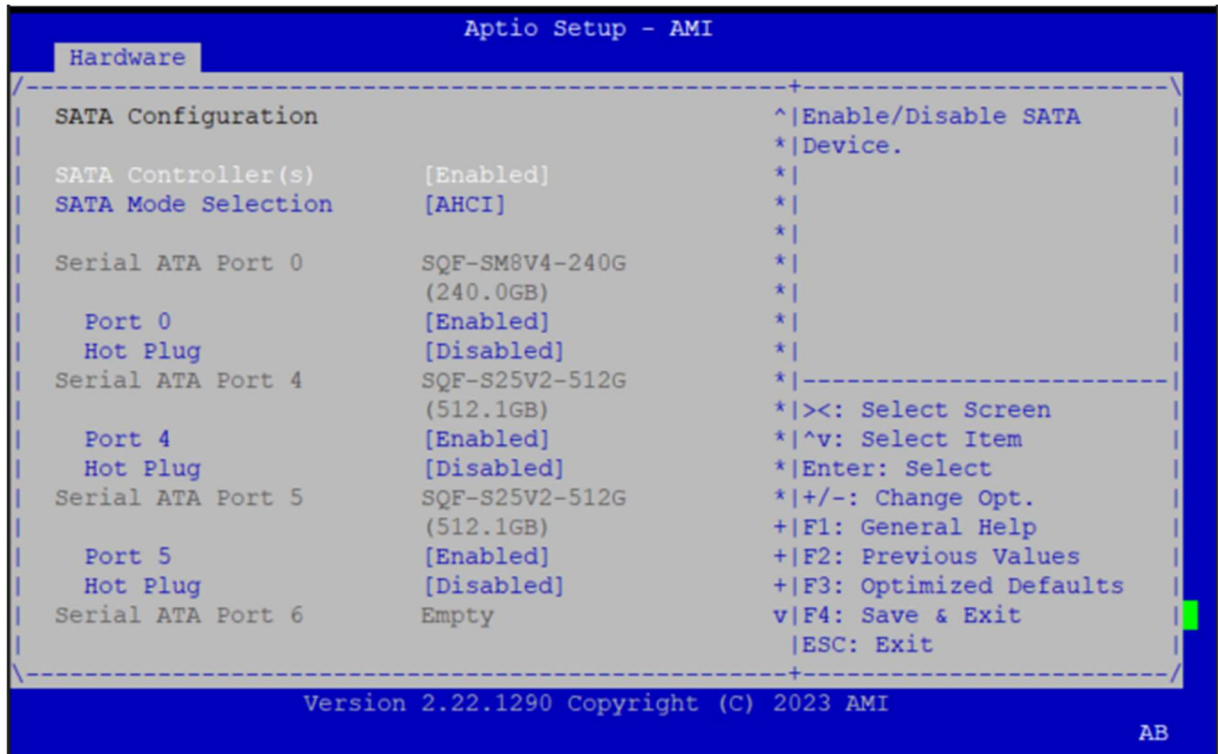


Figure 4.2-10 Hardware Setup: SATA Configuration

Table 4.2-6 Hardware Setup: SATA configuration Menu Items

Feature	Default	Description
SATA Controller 1	Enabled Disabled	Enable/Disable SATA Device.
SATA Mode	AHCI	Determines how SATA controller(s) operate.
Serial ATA Port 0	Display only	
Port 0	Enabled Disabled	
Hot Plug	Enabled Disabled	
Serial ATA Port 4	Display only	
Port 0	Enabled Disabled	
Hot Plug	Enabled	

	Disabled	
Serial ATA Port 5	Display only	
Port 0	Enabled Disabled	
Hot Plug	Enabled Disabled	
Serial ATA Port 6	Display only	
Port 0	Enabled Disabled	
Hot Plug	Enabled Disabled	
Serial ATA Port 7	Display only	
Port 0	Enabled Disabled	
Hot Plug	Enabled Disabled	

#### 4.2.5.4 ACPI Setting

This menu contains settings for the ACPI configuration.

Figure 4.2-11 Hardware Setup: ACPI Configuration

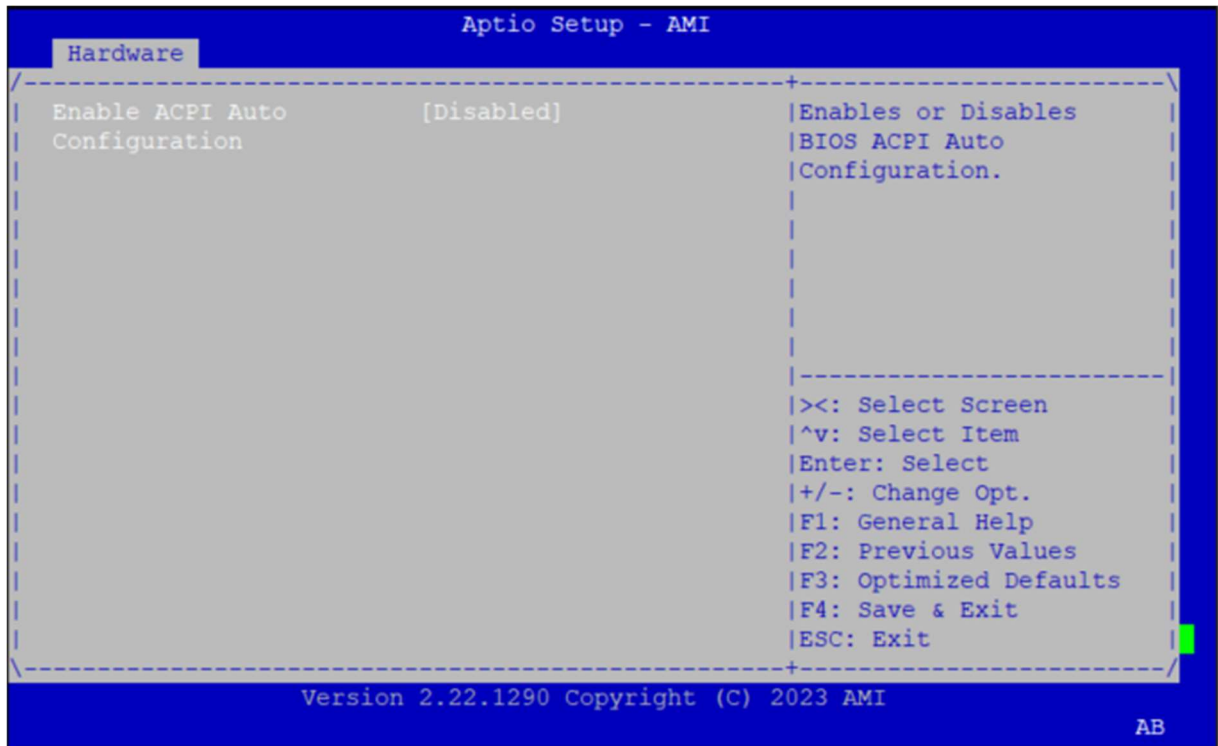


Table 4.2-7 Hardware Setup: ACPI Configuration Menu Items

Group	Setup item	Access / Options	Description
None	Enable ACPI Auto Configuration	Enabled Disabled	Enable or disable BIOS ACPI auto configuration

#### 4.2.6 Server Mgmt Setup Menu

The Server MGMT menu supports configuring BMC related features such as OS Watchdog Timer, etc. Please reference “Common BIOS User Manual”.

#### 4.2.7 Setup POST & Boot Menu

Users can configure the system boot priority settings via the boot page.

Please reference “Common BIOS User Manual”. (Note: FWA-3034 supports UEFI mode only; there is no legacy mode. CSM is not supported in FWA-3034 series)

#### 4.2.8 Security Setup

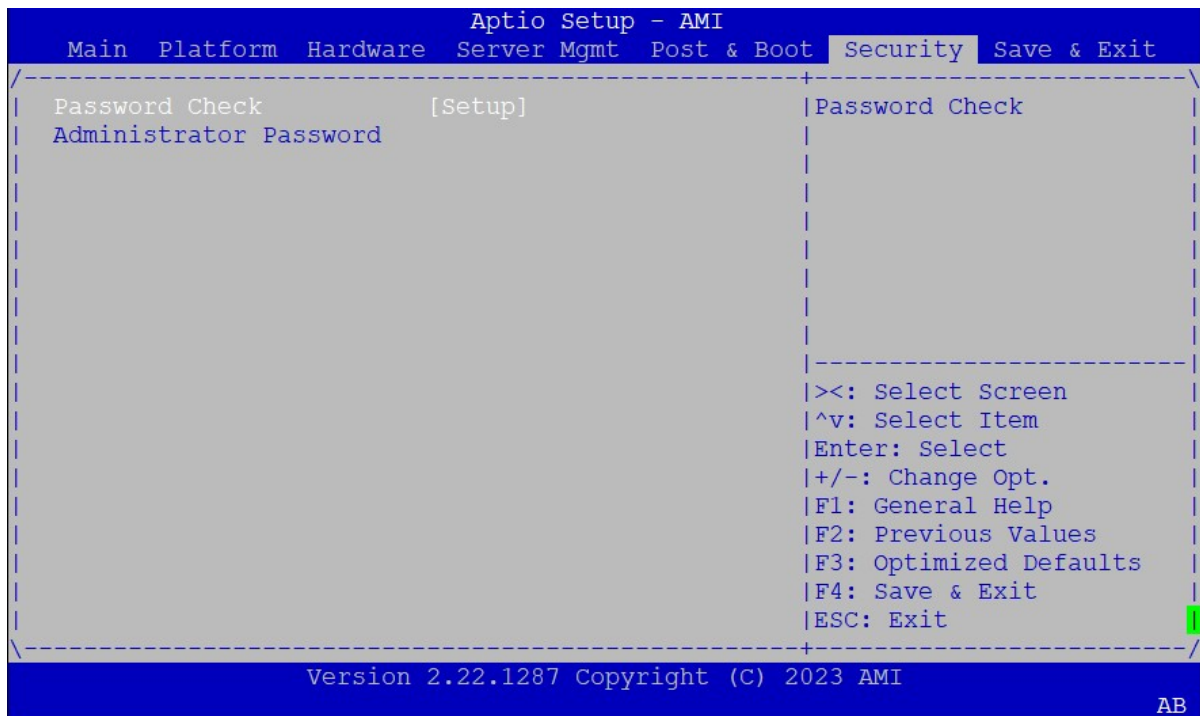


Table 4.2-8 Security Setup: Menu Items

Allows users to configure the system a password

Please reference “Common BIOS User Manual”.

## 4.2.9 Save & Exit Menu

```
Aptio Setup - AMI
Main Platform Hardware Server Mgmt Post & Boot Security Save & Exit
-----|-----|-----|
| Save Changes and Exit |Exit system setup after |
| Discard Changes and Exit |saving the changes. |
| Save Changes and Reset | |
| Discard Changes and Reset | |
| | |
| Save Options | |
| Save Changes | |
| Discard Changes | |
| Restore Defaults | |
| Save as User Defaults | |
| Restore User Defaults |-----|
| | |
| Boot Override |><: Select Screen |
| UEFI: Built-in EFI Shell |^v: Select Item |
| ubuntu (P4: TS32XBTMM0000A) |Enter: Select |
| UEFI: SanDisk, Partition 1 (SanDisk) |+/-: Change Opt. |
| UEFI: SanDisk, Partition 2 (SanDisk) |F1: General Help |
| | |F2: Previous Values |
| | |F3: Optimized Defaults |
| | |F4: Save & Exit |
| | |ESC: Exit |
|-----|-----|-----|
Version 2.22.1287 Copyright (C) 2023 AMI
AB
```

Allows users to store BIOS configuration results and exit.

Please reference “Common BIOS User Manual”.

## 4.3 Firmware Upgrades

The FWA-3034 is equipped with BMC (Baseboard Management Controller) functionality. Firmware upgrades can be performed through BMC. First, you need to set the BMC IP address. The firmware can be upgraded using either the BMC Web interface or the ipmitool utility. Here are the instructions:

### 4.3.1 How to Access The BMC Web (Node Explorer)?

#### 4.3.1.1 Network Configuration

Configure the BMC's IP as desired (by default, it is set as static address 0.0.0.0).

First, please refer to [Section 3.2](#) introduction and Figure 3.2-1 system front panel to confirm the location of the IPMI port.

1. During the boot process, press DEL (or F2) into BIOS, select **"Server Mgmt page"**.

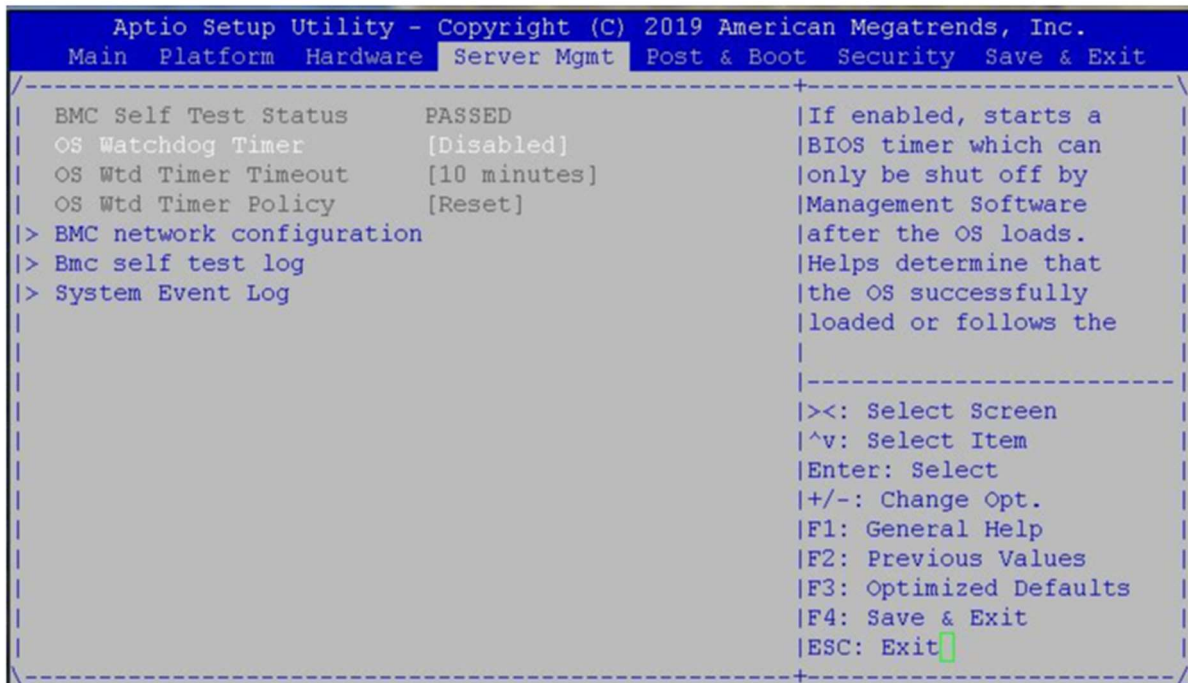


Figure 4.3-1 BIOS Setup Menu

2. Choose "BMC network configuration".

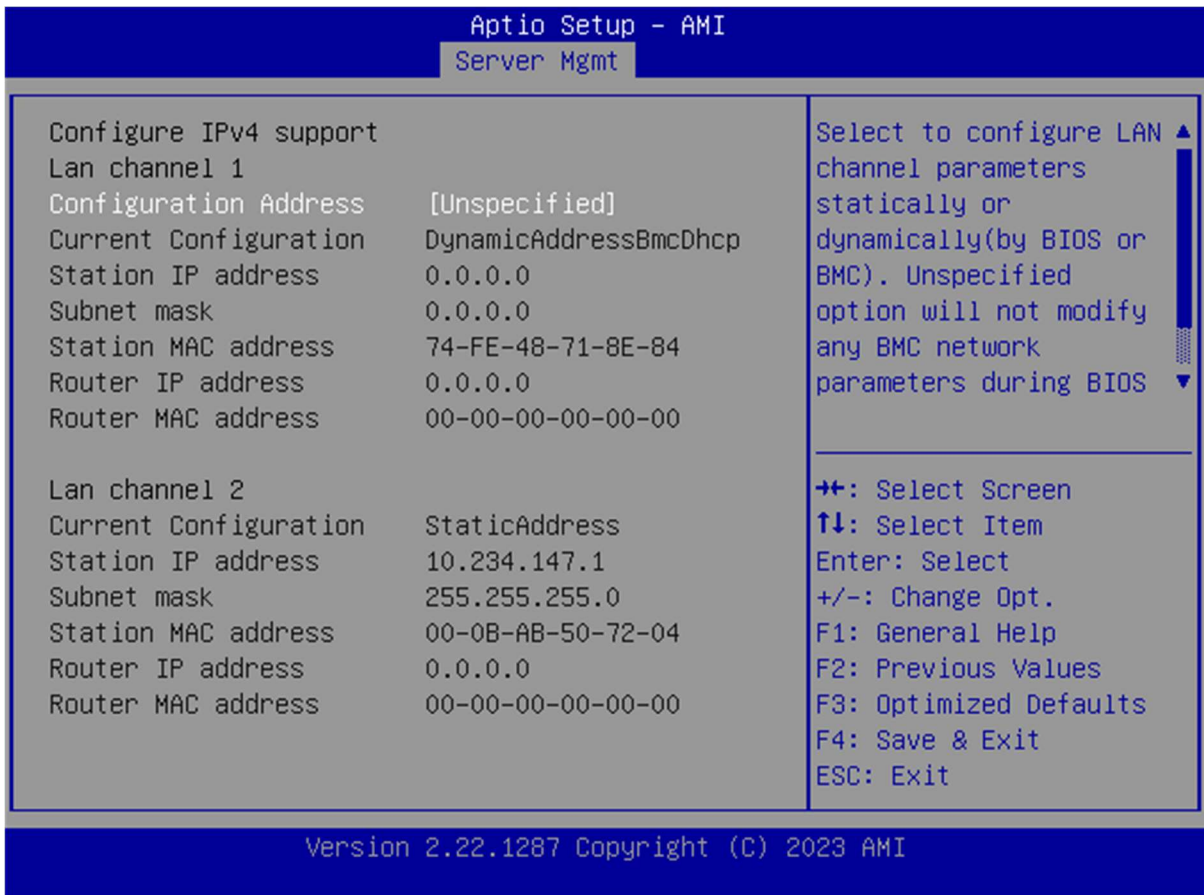
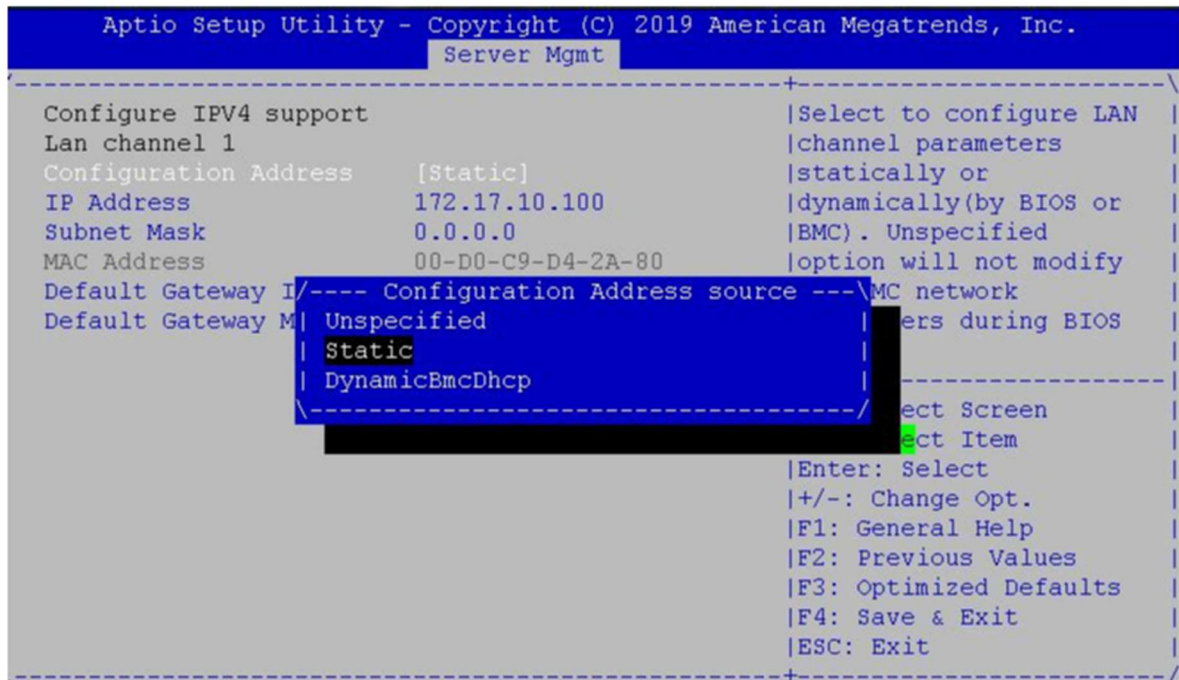


Figure 4.3-2 BIOS Setup Menu

3. Set "Configuration Address" -> "Static", and then key in the IP address, subnet mask, gateway and other relevant network.



PS: Set "**Configuration Address**" -> "**DHCP**" if obtain IP address from DHCP server

#### 4.3.2 How to Upgrade The Firmware via BMC WEB (Node Explorer)?

For more details, please refer to "Node Explorer User Manual (Section 2 & 3.4.4)".

<https://www.advantech.com/en/support/details/manual?id=1-1MU1KB1>

#### 4.3.3 How to Upgrade The Firmware via IPMI?

For more details, please refer to "Common IPMI User Manual (Section 3)".

<https://www.advantech.com/zh-tw/support/details/manual?id=1-2FZXUHT>

## 5. Appendix

### 5.1 Connector and Pinout Information

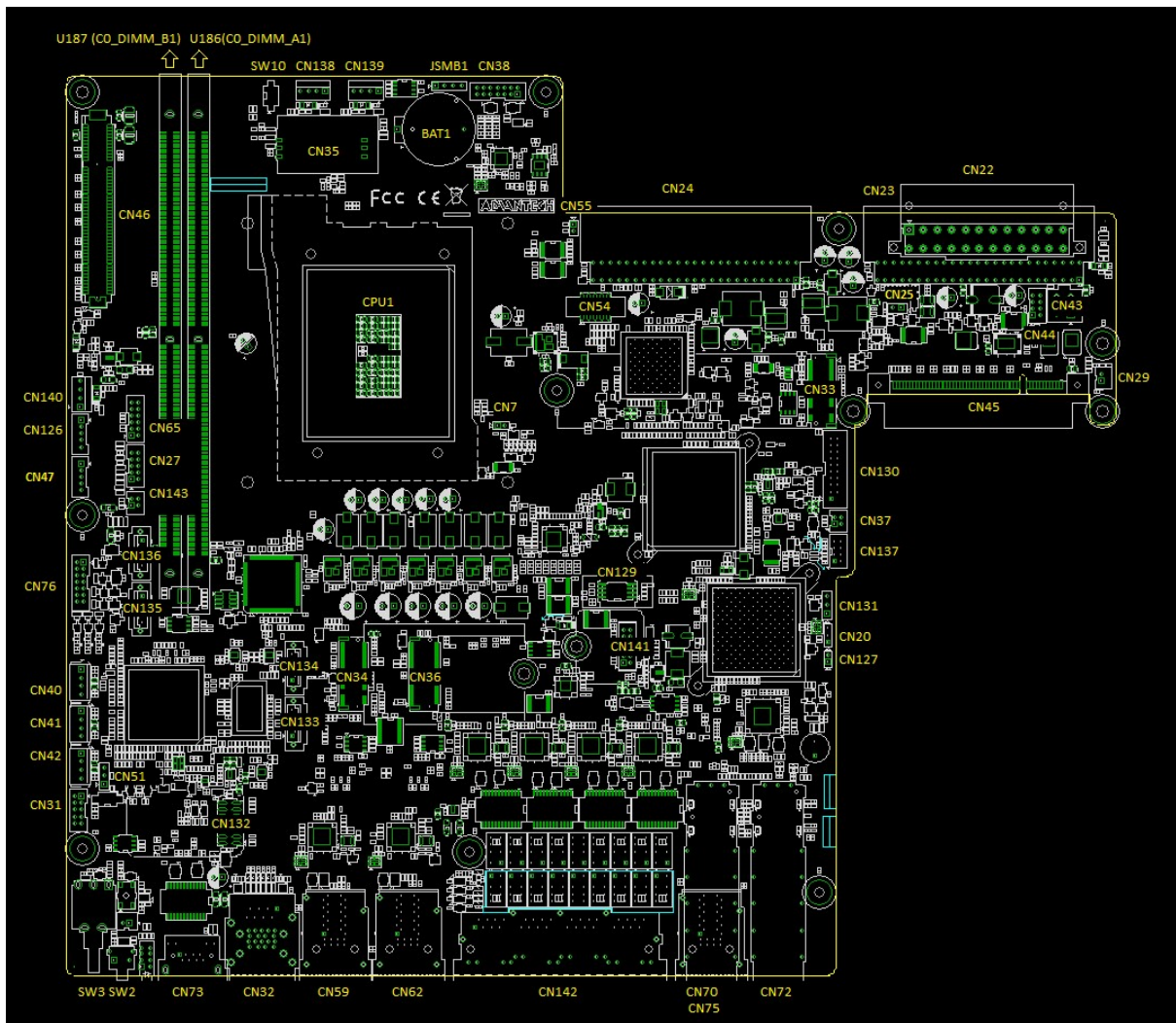


Figure 5.1-1 Connector Location

Table 5.1-1 Connector List

Connector/Jumper Name	Function
U186(C0_DIMM_A1)	DDR5 U-DIMM SLOT
U187(C0_DIMM_B1)	DDR5 U-DIMM SLOT
CN138	FAN connector #1
CN139	FAN connector #2
CN140	FAN connector #3
CN31	LCM module UART connector
CN42	LCM module POWER connector

CN43	ATX 4-pin power connector(for PoE NMC-E02 using)
CN44	USB2.0 connector(for PoE NMC-E02 using)
CN32	2x USB3.2 Gen2x1 and COM port(RJ-45)
CN22	ATX 24-pin power connector
CN130	USB on Board connector
CN141	TPM module connector
CN33	M.2 M-Key connector
CN34	M.2 B-Key connector
CN36	M.2 E-Key connector
CN54	CPLD programming header
CN40	SATA POWER connector#1
CN41	SATA POWER connector#2
JSMB1	CPU core power VCC PWM download pin header
CN133	SATA#1 connector
CN134	SATA#2 connector
CN135	SATA#3 connector
CN136	SATA#4 connector
CN129	SPI socket for 1ST SPI flash (BIOS)
CN27	Pin header for GPIOs
CN46	PCIe Gen4 x8 expansion slots from CPU(for PCIE riser card)
CN45	PCIe Gen4 x8 expansion slots from CPU(for NMC card)
CN35	SIM slot
CN59, CN62	RJ45 2x1 connector(2.5GbE)
CN29	Case Open connector
BAT1	Battery holder for coin battery
CN20	FLASH SECURITY OVERRIDE
CN131	Clear CMOS pin header
CN25	FORCE PS_ON (non-BMC SKU)
CN23	CRPS connector #1
CN24	CRPS connector #2
CN38	VGA connector (CPU output)
CN76	VGA connector (BMC output)
CN72	SFP+ 2x1 connector
CN70	SFP 2x1 connector
CN142	RJ45 1x4 connector(2.5GbE)
CN75	RJ45 2x1 connector(1GbE)

CN73	BMC Dedicate LAN Port
SW2	SW define button
SW3	System PWR button
CN51	BMC debugging header
CN126	BMC SGPIO header
CN47	BMC IPMB header
CN7	BMC VR PMBUS control header
CN137	LBP_8051 programming connector
CN65	C8051 MASTER connector (for Sanfor)
CN37	X86 Sgpio
CN127	X710 debug mode header
CPU1	CPU Socket
CN143	X86 SMBUS connector
CN55	Force power on header(BMC SKU)
CN132	eSPI header

## 5.2 Serial Console Cable Pin Configuration

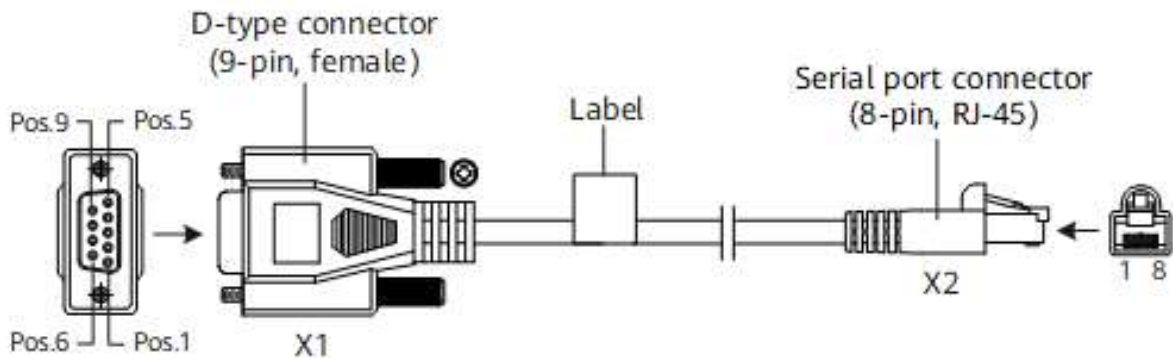


Figure 5.2-1 Serial Console Cable Overview

Table 5.2-1 Serial Console Cable Pin Assignment

Connector	X1 (DB9)	X2(RJ45)
Pin assignment	2	3
	3	6
	5	5

## 5.3 BIOS Post Code

Please refer to the BIOS POST Codes Table in the document linked below:

<https://www.advantech.com/zh-tw/support/details/manual?id=1-2F8TKW5>

## 5.4 Power Supply Specification

The FWA-3034 is available with redundant power supply solution. The specifications for the available power supply on the standard product SKU are listed below. Please consult your Advantech representative if you have further questions.

Table 5.4-1 300W AC Power Supply Specification

Item	Specification	Comment / Conditions
Input Voltage	Rated: 100Vrms-240Vrms AC @ 50/60Hz	
Rating	300W	
Input Current	4A	
Inrush Current	Shall not exceed 55A peak shall be less than the ratings of its critical components (including input fuse, bulk rectifiers, and surge limiting device)	
Efficiency	90% @ 20% load (12V is 19.4A,12vsb is 0.6A) 94% @ 50% load (12V is 48.5A,12vsb is 1.5A) 91% @ 100% load (12V is 97A,12vsb is 3A)	
MTBF	1. 100,000 hours at 75% load and 40C, as calculated by Bell core RPP, or 2. 250,000 hours demonstrated at 75% load and 40C.	calculated by Telcordia SR-332 Issues 2
Environment	Temperature: - Operation[Normal]: 0-55°C (Max at 5000m above sea level) - Operation[Stand-by]: -5-55°C (Max at 5000m above sea level) - Non-Operation: -40-70°C	
	Humidity: - Operation: 5~90%RH - Non-Operation: 5~95%RH storage.	
	Altitude: - Operation: sea level to 5000m - Non-Operation: sea level to 15000m	
	Vibration: - Operating, 0.01g <sup>2</sup> /Hz at 5Hz slopping to 0.02g <sup>2</sup> /Hz at 20Hz, and maintaining 0.02g <sup>2</sup> /Hz from 20Hz ~ 500H	PSD=3.13grms, 20 minutes/axis Force Direction X, Y, Z

Item	Specification	Comment / Conditions
Regulatory/ Certifications	<p>Safety:</p> <ul style="list-style-type: none"> <li>- UL 62368-1/CSA 62368-1 Edition 2</li> <li>- EN62368-1 Edition 2 (Europe)</li> <li>- IEC62368-1 Edition 2 (International)</li> <li>- CB Certificate &amp; Report, IEC62368-1 Edition 2 (report to include all country national deviations)</li> <li>- CE – Low Voltage Directive 2006/95/EC (Europe)</li> <li>- GB4943-CBCA Certification (China)</li> </ul> <p>EMC:</p> <ul style="list-style-type: none"> <li>- FCC / ICES-003 Emission (USA/Canada) Verification</li> <li>- CRISP 22 – Emission (International)</li> <li>- EN55032 – Emission (Europe)</li> <li>- EN55024 – Immunity (Europe)</li> <li style="padding-left: 40px;">EN61000-4-2; EN61000-4-3;</li> <li style="padding-left: 40px;">EN61000-4-4; EN61000-4-5;</li> <li style="padding-left: 40px;">EN61000-4-6; EN61000-4-8;</li> <li style="padding-left: 40px;">EN61000-4-11;</li> <li>- EN61000-3-2 – Harmonics (Europe)</li> <li>- EN61000-3-3 – Voltage Flicker (Europe)</li> <li>- CE – EMC Directive 2004/108/EEC (Europe)</li> <li>- JEIDA (Japan)</li> <li>- AS/NZS CISPR 22 (Australia / New Zealand)</li> <li>- GB 9254 2008 (EMC) Certification (China)</li> <li>- GB 17625.1 – (Harmonics) CNCA Certification (China)</li> </ul>	Class A Compliance
Protection	<p>Input brown out</p> <p>Input surge</p> <p>Input transient</p> <p>Output over voltage</p> <p>Output over current &amp; short circuit</p> <p>Thermal</p> <p>Fan failure</p>	

Table 5.4-2 250W AC Power Supply Specification

Item	Specification	Comment / Conditions
Input Voltage	Rated: 100Vrms-240Vrms AC @ 47/63Hz	
Rating	250W	
Input Current	3.5A	
Inrush Current	No Component was damaged and input fuse shall not blow	
Efficiency	82% @ 20% load (12V is 1.44A,5vsb is 0.36A) 85% @ 50% load (12V is 3.61A,5vsb is 0.9A) 82% @ 100% load (12V is 7.22A,5vsb is 1.806A)	
MTBF	1. 100,000 hours at 75% load and 40C, as calculated by Bell core RPP, or 2. 250,000 hours demonstrated at 75% load and 40C.	calculated by Telcordia SR-332 Issues 2
Environment	Temperature: - Operation[Normal]: 0-55°C (Max at 5000m above sea level) - Operation[Stand-by]: -5-55°C (Max at 5000m above sea level) - Non-Operation: -40-70°C	
	Humidity: - Operation: 5~90%RH - Non-Operation: 5~95%RH storage.	
	Altitude: - Operation: sea level to 5000m - Non-Operation: sea level to 15000m	
	Vibration: - Operating, 0.01g <sup>2</sup> /Hz at 5Hz slopping to 0.02g <sup>2</sup> /Hz at 20Hz, and maintaining 0.02g <sup>2</sup> /Hz from 20Hz ~ 500H	PSD=3.13grms, 20 minutes/axis Force Direction X, Y, Z

## 5.5 Sensors

The BMC uses Sensor Data Records (SDRs) to describe the sensors and their capabilities.

### 5.5.1 Sensor List

The following table is the list of sensors provided by the BMC:

Table 5.5-1 BMC Sensor List

No	Sensor ID	Sensor Type	Event Reading Type	Entity ID	Payld. Power only?	Description
0	FWA-3034	-	-	07h	-	IPMI Mgmt. Contr. Device Locator
1	BMC_HEALTH	28h	6Fh	07h	-	IPMI Mgmt. Subsystem Health
2	VERSION_CHANGE	2Bh	6Fh	07h	-	IPMI Version Change sensor
3	BMC_WATCHDOG	23h	6Fh	07h	-	IPMI BMC Watchdog sensor
4	ACPI_STATE	22h	6Fh	07h	-	IPMI System ACPI Power State
5	PROC_STATE	07h	6Fh	03h	-	IPMI Processor sensor
6	PCIE_CR_INT	13h	6Fh	31h		Critical interrupt sensor
7	SYSTEM_RESET	1Dh	6Fh	07h	-	Payload system reset indication
8	FW_PROGRESS	0Fh	6Fh	07h	-	IPMI System FW Progress sensor
9	CASE_INTRUSION	05h	6Fh	17h	-	IPMI Physical Security sensor
10	SESSION_AUDIT	2Ah	6Fh	07h	-	IPMI Session Audit sensor
11	POWER_GOOD	08h	6Fh	07h	-	Power good sensor
12	POWER_OFF	12h	05h	07h	-	DCMI Power Off Event sensor
13	THERMAL_LIMIT	01h	05h	37h	-	DCMI Thermal Limit Event sensor
14	POWER_LIMIT	09h	05h	13h	-	DCMI Power Threshold Event sensor
15	SYSTEM_EVENT_LOG	10h	05h	07h	-	IPMI Event Logging Disabled sensor
16	INTEGRITY	C0h	70h	07h	-	Advantech

						Integrity OEM sensor
17	BIOS_POST	0Fh	70h	22h	-	BIOS POST Code OEM sensor
18	BOARD-POWER	0Bh	01h	07h	-	Board Power Consumption sensor
19	PAY_12-VOL	02h	01h	14h	Yes	Payload Power voltage 12V
20	SB_12-VOL	02h	01h	14h	No	Standby Power voltage 12V
21	PAY_5-VOL	02h	01h	14h	Yes	Payload Power voltage 5V
22	SB_5-VOL	02h	01h	14h	No	Standby Power voltage 5V
23	PAY_4_2-VOL	02h	01h	14h	Yes	Payload Power voltage 4.2V
24	PAY_3_3-VOL	02h	01h	14h	Yes	Payload Power voltage 3.3V

### 5.5.2 Threshold Based Sensors

Sensor event thresholds are classified as Non-critical (NC), Critical (CR), or Non-recoverable (NR). This classification is possible in both directions (lower and upper).

The threshold-based sensor event data format is according to the IPMI specification. All defined sensors in this sub-section will use below described event data bytes 1 – 3:

Table 5.5-2 Based Sensor Event Data Format

Event Data 1	Event Data 2	Event Data 3
[7:6] = 01b (Trigger reading in byte 2), [5:4] = 01b (Trigger threshold in byte 3), [3:0] = Offset (threshold event)	Reading that triggered the event generation	Threshold value that was crossed

All thresholds specified subsequent will generate events (assertion and de-assertion event direction). Unused thresholds have the event generation disabled (event mask bits in SDR data not set).

Table 5.5-3 Threshold Based Sensor Supported Events

Sensor Types	Type Codes	Generic Offset	Event
Temperature, Voltage, Current, Fan Speed, Power	01h 02h 03h 0Bh	00h	Lower Non-critical - going low
		01h	Lower Non-critical - going high
		02h	Lower Critical - going low
		03h	Lower Critical - going high
		04h	Lower Non-recoverable - going low
		05h	Lower Non-recoverable - going high
		06h	Upper Non-critical - going low
		07h	Upper Non-critical - going high
		08h	Upper Critical - going low
		09h	Upper Critical - going high
		0Ah	Upper Non-recoverable - going low
		0Bh	Upper Non-recoverable - going high

Following subchapters just use the usual abbreviations for the different thresholds (LNR, LCR, LNC and UNC, UCR, UNR).

### 5.5.2.1 Voltage Sensors

The input, standby and most payload power voltages are monitored by BMC.

All sensors use a hysteresis for the event generation. For all sensors, the hysteresis is 1.5% of the nominal sensor voltage plus ripple from the voltage regulator.

Table 5.5-4 Voltage Sensor List

Sensor Name	Nominal	LNR	LCR	LNC	UNC	UCR	UCR
PAY_12-VOL	12.0	-	10.703	-	-	13.167	-
SB_12-VOL	12.0	-	10.703	-	-	13.167	-
PAY_5-VOL	5.0	-	4.714	-	-	5.246	-
SB_5-VOL	5.0	-	4.714	-	-	5.246	-
PAY_4_2-VOL	4.2	-	3.919	-	-	4.402	-
PAY_3_3-VOL	3.3	-	3.08	-	-	3.454	-
SB_3_3-VOL	3.3	-	3.08	-	-	3.454	-
BAT_3_0-VOL	3.0	-	1.92	-	-	3.228	-
SB_PCH_3_3-VOL	3.3		3.08			3.454	
SB_1_8-VOL	1.8	-	1.658	-	-	1.948	-
CPU_1_8-VOL	1.8	-	1.658	-	-	1.948	-
DDR2_1_1-VOL	1.1	-	1.001	-	-	1.197	-
SB_1_05-VOL	1.05		0.938			1.134	
CPU_1_05-VOL	1.15	-	0.938	-	-	1.134	-
X710_0_92-VOL	0.92	-	0.826	-	-	0.987	-
SB_0_82-VOL	0.82		0.721			0.896	

### 5.5.2.2 Temperature Sensors

Several temperature sensors are supported, either via board populated IC's (e.g. TMP75) or Intel PECI readings from CPU.

All temperature sensors use a hysteresis of about 3°C for the event generation.

To prevent false temperature sensor events caused by a single incorrect reading, a mechanism is implemented to ignore those readings. Each new reading is compared to the previous reading and if the difference is more than 10°C, the reading is ignored.

This only applies for one reading. If there are more false readings in a row, the reading will be treated as correct reading and a temperature sensor event might be generated. This avoids stuck temperature sensors. The same mechanism is implemented for “0xFF” and “0x00” temperature value readings.

Table 5.5-5 Temperature Sensor List

Sensor Name	Nominal	LNR	LCR	LNC	UNC	UCR	UNR
SYS1-TMP	30				55	65	75
SYS2-TMP	30				65	75	85
M_KEY-TMP	30				65	75	85
CPU-TMP	40				90	100	
PCH-TMP	40				90	100	

### 5.5.2.3 PSU

The used system power supply (PSU) provides an input and output current draw reading. Both power values are available to read and are supported by BMC as PSU current sensors.

**[www.advantech.com](http://www.advantech.com)**

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

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