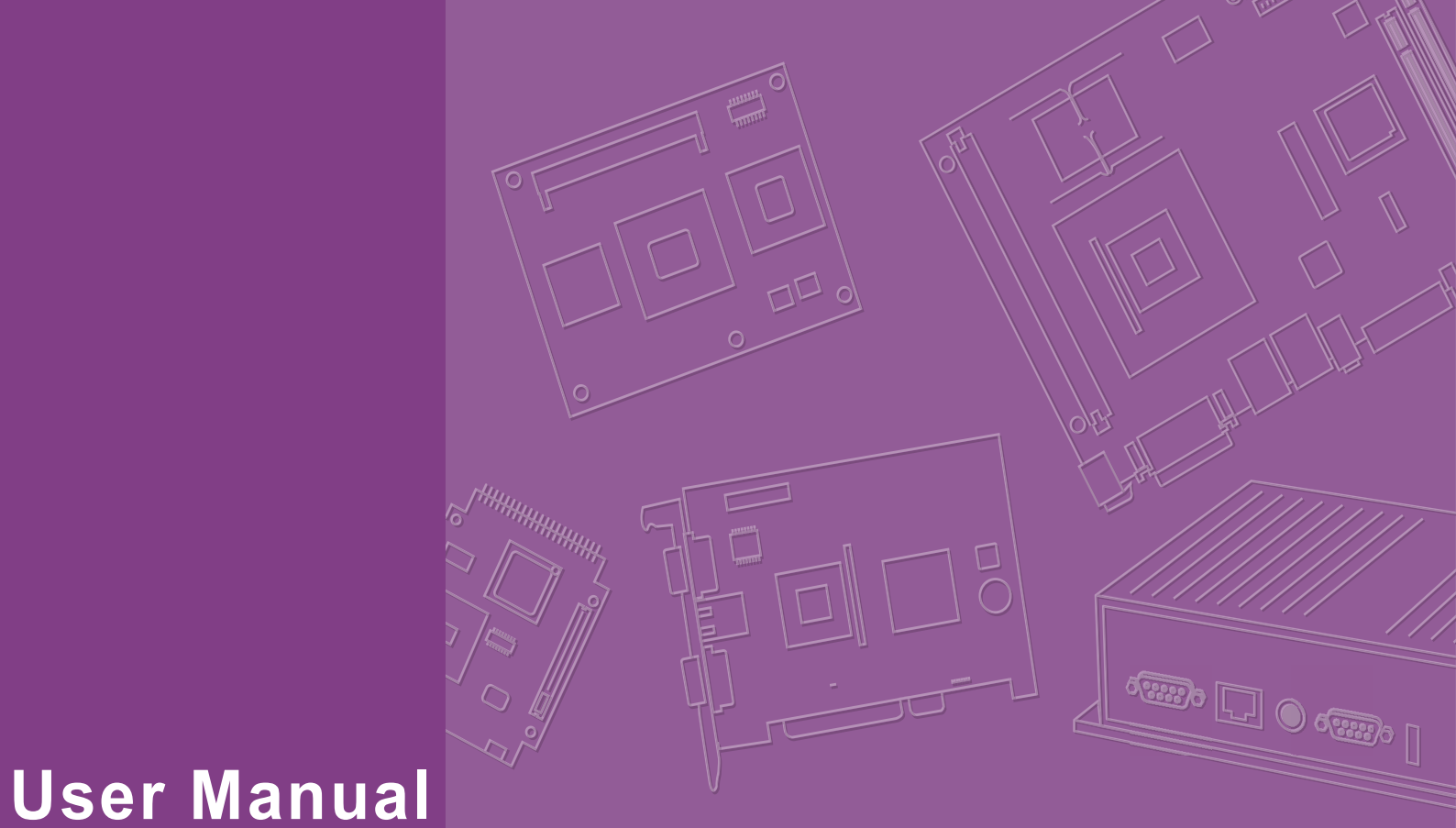




User Manual

ARK-3535

Fanless Embedded Box PC

ADVANTECH

Enabling an Intelligent Planet

Attention!

This package contains a hard-copy user manual in Chinese for China CCC certification purposes. Please disregard the Chinese hard-copy user manual if the product is not to be sold and/or installed in China.

Veillez noter que ce paquet contient un manuel d'utilisation papier en chinois à des fins de certification China CCC. Veuillez ne pas tenir compte du manuel d'utilisation chinois sur papier si le produit ne doit pas être vendu et/ou installé en Chine.

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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

FCC Class B

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

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

Technical Support and Assistance

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

Warnings, Cautions and Notes

Warning! Warnings indicate conditions that if not observed can cause personal injury!



Les avertissements indiquent des conditions qui, si elles ne sont pas observées, peuvent entraîner blessure!

Caution! Cautions are included to help prevent hardware damage and data losses. For example,



“Batteries are at risk of exploding if incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.”
Des précautions sont incluses pour éviter les dommages matériels et les données pertes.

Note! Notes provide additional optional information.



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.

Part Number	Description
-	1 x ARK-3535 Unit
2006353510	1 x User Manual (Simplified Chinese)
-	China RoHS
1960093556N021	1 x Wall Mount BKT
36WSWPDOBUND11	WISE-DeviceOn
36WSWPDOBD0211	Trellix Application Control Lite/Acronis Backup 11.7 for Windows PC
1652003234	4-pin plug-in block for power in
1652008233-01	6-pin terminal block for CANBus
1652007880-01	4-pin plug-in block for switch
-	1 x DDR5 Thermal kit

Ordering Information

Part No.	CPU	DDR5	HDMI	LAN	COM	USB-A	USB-C	M.2 B	M.2 E
ARK-3535-T5A1	8640U	Up to 96G	2	4	6	4 x USB 3.2, 4 x USB 2.0	1	1	1
ARK-3535-T8A1	8845HS	Up to 96G	2	4	6	4 x USB 3.2, 4 x USB 2.0	1	1	1
ARK-3535-T5A1U	8640U	Up to 96G	2	4	6	4 x USB 3.2, 4 x USB 2.0	1	1	1
ARK-3535-T8A1U	8845HS	Up to 96G	2	4	6	4 x USB 3.2, 4 x USB 2.0	1	1	1

ARK-3535 Optional Item for Default SKU

Part Number	Description
96PSA-A230W24P4-3	AC to DC adapter, DC 24V 230W, -20 ~ 60 °C
1702002600	Power cable 3-pin 183cm, USA type
1702002605	Power cable 3-pin 183cm, EU type
1700032693-11	Power cable 3-pin 183cm, UK type
1700000237	Power cable, 3-Pin 183cm, PSE type
1700001714	Power cable, 3-Pin 183cm, BSMI type
1960103315N010	M.2 Bracket (for 3052 device on M.2 B key)
1960103315N020	M.2 Bracket (for 2242 device on M.2 B key)

ARK-3535 Optional Expansion Kit for Add-on Cards

Part Number	Description
AMO-3511	ARK-3535 expansion kit for PCIe x 16 slot*1(Signal x 8)
96PSA-A150W12W7-4	ADP A/D 100-240V 150W 12V LOCKABLE DC JACK

ARK-3535 Optional Item for M.2 Thermal Kit

Part Number	Description
AMK-A0058	Thermal kit of ARK-3535 for 5G or Hailo B key module

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 power outlet sockets should have grounded connections.
8. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
9. All cautions and warnings on the equipment should be noted.
10. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
11. Never pour liquid into an opening. This may cause fire or electrical shock.
12. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
13. If any of the following occurs, have the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated the equipment.
 - The equipment has been exposed to moisture.
 - The equipment is malfunctioning, or does not operate according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment shows obvious signs of breakage.
14. Do not leave the equipment in an environment with a storage temperature of below -40° C (-40° F) or above 85° C (185° F) as this may damage the components. The equipment should be kept in a controlled environment.
15. Any unverified component may cause unexpected damage. To ensure correct installation, always use the components (e.g., screws) provided in the accessory box.

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. Always disconnect the power cord from the chassis before manually handling the hardware. Do not implement connections or configuration changes while the device is powered on. Sudden power surges may damage sensitive electronic components.
18. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
19. Use a power cord connected to a socket-outlet with a grounded connection.
20. DISCLAIMER: These instructions are provided according to IEC 704-1 standards. Advantech disclaims all responsibility for the accuracy of any statements contained herein.
21. This product is intended to be supplied by a UL-Listed power supply suitable for use at minimum Tma 50° C (122° F) whose output meets ES1 (or SELV) and out put is rated: 9-36 Vdc, 25.5-6.3 A. Please contact Advantech for further information.
22. RESTRICTED ACCESS AREA: The equipment should only be installed in a Restricted Access Area.
23. The product is intended to be supplied by UL Listed Adapter/DC power source with mating connector which output complied with ES1, one is rated 9-36Vdc, 25.5-6.3A minimum and another is 12Vdc, 12.5A minimum for using extended riser module, Tma 50 degree C minimum and altitude 2000m, if need further assistance, please contact manufacture or UL File owner or brand owner further information.
24. Please return to the authorized dealer for any installation, replacement, repair, update or service

Consignes de Sécurité

1. Veuillez lire attentivement ces instructions de sécurité.
2. Veuillez conserver ce manuel de l'utilisateur pour référence ultérieure.
3. Veuillez débrancher cet équipement de la prise secteur avant le nettoyage. Utilisez un chiffon humide. Ne pas utiliser de détergent liquide ou pulvérisé pour le nettoyage. Utilisez une feuille ou un chiffon humide pour le nettoyage.
4. Pour les équipements enfichables, la prise de courant doit être à proximité de l'équipement et doit être facilement accessible.
5. S'il vous plaît garder cet équipement de l'humidité.
6. Posez cet équipement sur une surface fiable lors de l'installation. Une chute ou une chute pourrait causer des blessures.
7. La prise de courant doit avoir une connexion mise à la terre.
8. Placez le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne placez rien sur le cordon d'alimentation.
9. Tous les avertissements et mises en garde sur l'équipement doivent être notés.
10. Si l'appareil n'est pas utilisé pendant une longue période, débranchez-le du secteur pour ne pas être endommagé par une surtension transitoire.
11. Ne jamais verser de liquide dans les ouvertures de ventilation; Cela pourrait provoquer un incendie ou un choc électrique.
12. N'ouvrez jamais l'équipement. Pour des raisons de sécurité, seul le personnel de maintenance qualifié doit ouvrir l'équipement.
13. Si l'une des situations suivantes se présente, faites vérifier le matériel par le personnel de service:

- Le cordon d'alimentation ou la fiche est endommagé.
 - Un liquide a pénétré dans l'appareil.
 - L'équipement a été exposé à l'humidité.
 - L'équipement ne fonctionne pas bien ou vous ne pouvez pas le faire fonctionner conformément au manuel d'utilisation.
 - Equipment L'équipement est tombé et a été endommagé.
 - Equipment L'équipement présente des signes évidents de rupture.
14. Ne laissez pas cet équipement dans un environnement où la température de stockage peut être inférieure à -40°C (-40°F) ou supérieure à 85°C (185°F). Cela pourrait endommager l'équipement. L'équipement doit être dans un environnement contrôlé.
 15. Tout composant non vérifié peut causer des dommages inattendus. Pour garantir une installation correcte, veuillez toujours utiliser les composants (ex. Vis) fournis avec la boîte d'accessoires.
 16. **ATTENTION:** L'ordinateur est équipé d'un circuit d'horloge temps réel alimenté par batterie. Il y a un risque d'explosion si la batterie est remplacée de manière incorrecte. Remplacez uniquement avec le même type ou un type équivalent recommandé par le fabricant. Jetez les piles usagées conformément aux instructions du fabricant.
 17. Débranchez toujours complètement le cordon d'alimentation de votre châssis lorsque vous utilisez du matériel. Ne faites pas de connexion quand l'appareil est sous tension. Les composants électroniques sensibles peuvent être endommagés par des surtensions soudaines.
 18. Niveau de pression acoustique au poste de l'opérateur selon la norme CEI 704-1: 1982 n'est pas supérieur à 70 dB (A).
 19. **AVERTISSEMENT:** Cet ensemble d'instructions est donné conformément à la norme CEI 704-1. Advantech décline toute responsabilité quant à l'exactitude des déclarations contenues dans ce.
 20. Au moyen d'un cordon d'alimentation connecté à une prise de courant avec mise à la terre.
 21. Ce produit est destiné à être alimenté par un bloc d'alimentation homologué UL adapté à une utilisation à T_{ma} 50 degrés C min. dont la sortie est conforme à ES1 (ou SELV) et dont la sortie est nominale: 9-36Vdc, 25.5-6.3A, si besoin d'aide supplémentaire, veuillez contacter Advantech pour plus d'informations.
 22. **ZONE D'ACCÈS RESTREINT:** L'équipement ne doit être installé que dans une zone d'accès restreint.
 23. Ce produit doit être alimenté par un adaptateur ou une source d'alimentation CC homologué(e) UL, équipé(e) d'un connecteur compatible, dont la sortie est conforme à ES1.
 Une alimentation doit être comprise entre 9 et 36 V_{CC} avec un courant minimum de 25,5 à 6,3 A, et une autre de 12 V CC avec un courant minimum de 12,5 A pour l'utilisation d'un module riser étendu.
 La température ambiante maximale (T_{ma}) doit être d'au moins 50 °C, et l'altitude d'utilisation ne doit pas dépasser 2000 m.
 Pour toute assistance supplémentaire, veuillez contacter le fabricant, le titulaire du dossier UL ou le propriétaire de la marque.
 24. Veuillez vous adresser à un revendeur agréé pour toute installation, remplacement, réparation, mise à jour ou opération de maintenance.

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Chapter 1

General Introduction

1.1 Introduction

The ARK-3535 is an wall mount intelligent fanless embedded system featuring AMD Ryzen™ 8000 series processor. It comes with Advantech SUSI 5.0 and DeviceOn for efficient remote system monitoring. With the latest hybrid-core processor design, the ARK-3535 offers enhanced performance in CPU processing, display capabilities, security, and I/O flexibility.

Rugged Multi-Functional Design

ARK-3535 adopts an advanced thermal design for its desktop processor solution. All models are fanless, and feature various quality features. These include wide operating temperatures (-20 ~ 50° C / -4 ~ 122° F), diverse expandability options, and structural strengthening. It supports diverse I/O interfaces — up to 4 x Intel® GbE, 4 x USB 3.2 (2 x Gen2 + 2 x Gen1), 4 x USB 2.0, 2 x CAN Bus, 2 x 2.5" HDD, 1 x M.2 (B-Key), 1 x M.2 (E-Key), 2 x RS-232/422/485 and 4 x RS-232/485 COM ports.

Built-In Intelligent Management Tools — Advantech SUSI API and WISE-DeviceOn

The Advantech SUSI API provides a valuable suite of programmable APIs such as multi-level watchdog, hardware monitoring, and other user-friendly interfaces. SUSI API is an intelligent self-management cross-platform tool that monitors the system's status for problems and takes actions in the event of abnormalities. SUSI API offers a boot-up guarantee in critical, low-temperature environments so systems can automatically recover when voltages dip. SUSI API makes the entire system more reliable and intelligent. ARK-3535 also supports Advantech's own WISE-DeviceOn, which provides easy remote management so users can monitor, configure, and control a large number of terminals to make maintenance and system recovery simpler.

1.2 Product Features

1.2.1 Processor System

- **CPU:**
 - AMD Ryzen 5 Pro 8640U, 3.5GHz, 6 cores, TOPS 31
 - AMD Ryzen 7 Pro 8845HS, 3.8GHz, 8 cores, TOPS 38
- **BIOS:** AMI EFI 256 Mbit

1.2.2 Memory

- **Technology:** DDR5 5600Mhz
- **Max capacity:** Up to 96GB
- **Socket:** dual-channel DDR5 5600 MHz 262-pin SODIMM (ECC supported)

1.2.3 Graphics

- **Chipset:** AMD Radeon RDNA3 Graphics
- **HDMI2.1:** Up to 3840x2160@ 60Hz
- **Type C (Alt):** Up to 3840x2160@ 60Hz
- **Triple Display:** HDMI x 2 + Type C(Alt) x 1

1.2.4 Ethernet

- **LAN1/2/3:** 10/100/1000/2500 Mbps Intel i226V LAN, support Wake-On-LAN
- **LAN4:** 10/100/1000 Mbps Intel i210 GbE, supports Wake-On-LAN, EdgeBMC

1.2.5 Audio

- **Interface:** Realtek ALC888S, Mic-in / Line-out

1.2.6 I/O Interface

- **Serial Ports:** 6 x (2 x RS232/422/485 + 4 x RS232/485), COM1/COM2 support High speed COM
- **USB Type A:** 8 x (4 x USB3.2, 2 x Gen2, 2 x Gen1+ 4 x USB2.0)
- **USB Type C:** 1 x USB4 20Gbps, Alt mode, 15W
- **GPIO:** 16-bit Programmable DIO
- **CANBus:** 2
- **Remote Switch:** 1 x 4pin connector (Reset, Power on, Ground, and Watch dog output signal)
- **Antenna holes:** 6 x (3 x left, 3 x right)

1.2.7 Expansion

- **M.2:**
 - 1 x M.2 with SIM holder (B-Key 2280 for NVME, LTE/5G modules)
 - 1 x M.2 (E-Key 2230 for NVME, Wi-Fi)
- **Add-On Card Slot:** 1 Slot PCIe x16, signal PCIe x8 (by optional AMO-3511)

1.2.8 Storage

- **SSD:** 2 x 2.5" SATAIII 9.5mm height HDD bays
- **NVME:**
 - 1 x Key B 2280 PCIe Gen4 x2
 - 1 x Key E 2230 PCIe Gen3 x2

1.2.9 Other

- **TPM:** NPCT764AABYX FW7.2.3.1 (On board)
- **Watchdog Timer:** 255-level timer interval, set up by software

1.2.10 Software Support

- **Microsoft Windows:** Windows 11 Enterprise
- **Linux:** Ubuntu 24.04

1.2.11 Power Requirement

- **Power Type:** ATX/AT
- **Power Input Voltage:** 9-36 V_{DC}
- **Power Adapter:** 230W AC to DC (Option)

1.2.12 Power Consumption

- **AMD Ryzen 7 Pro 8845HS:**
 - Typical: 9.12W
 - Max: 94.08W
- **AMD Ryzen 5 Pro 8640U:**
 - Typical: 10.8W
 - Max: 74.4W

1.2.13 Mechanical

- **Construction:** Aluminum top + metal bottom
- **Mounting:** Wall Mounting Kit
- **Dimensions (W x H x D):** 200 x 75 x 215 mm
- **Weight:** 3.285Kg

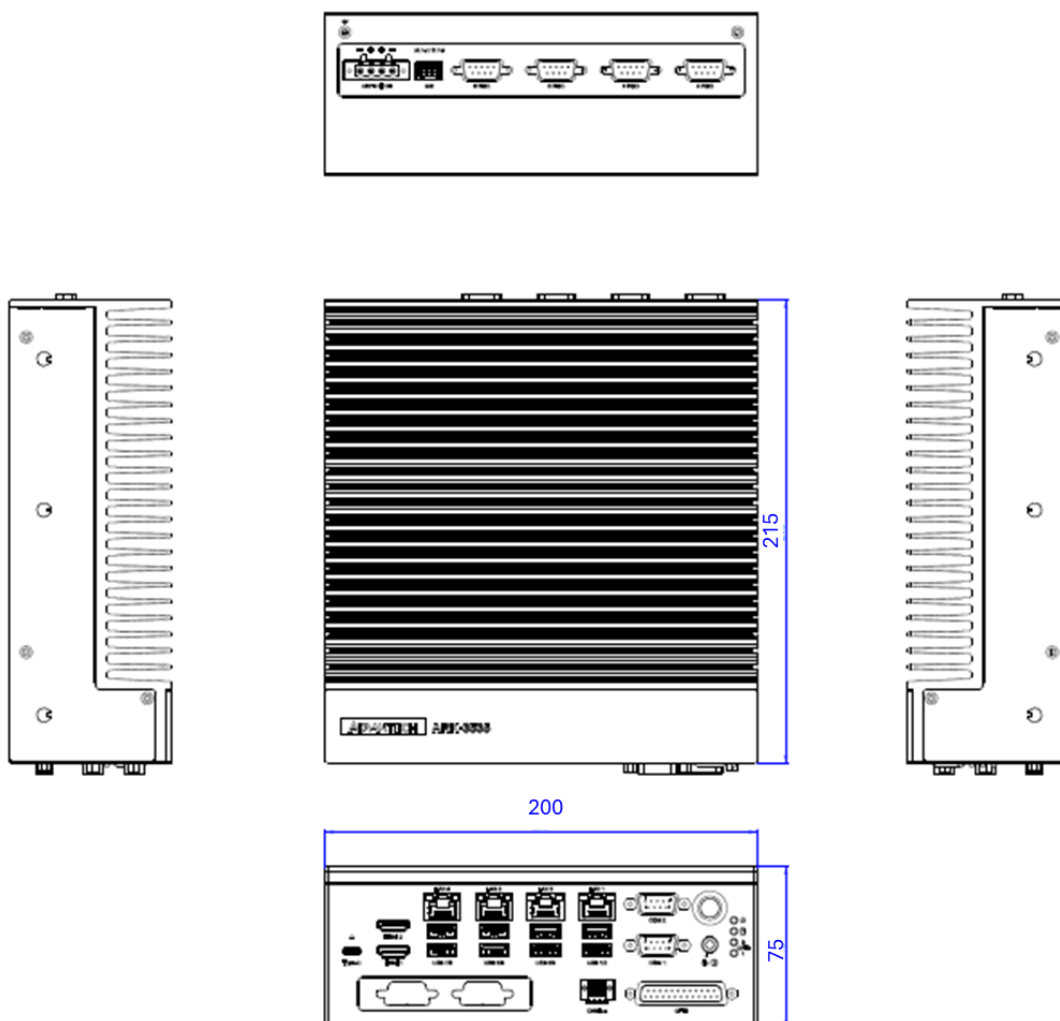
1.2.14 Environment

- **Operating Temperature:** With extended temp. peripherals -20 ~ 50° C with 0.7m/s air flow
- **Storage Temperature:** -40 ~ 85° C (-40 ~ 185° F)
- **Relative Humidity:** 95% @ 40° C (non-condensing)
- **Vibration during Operation:** With SSD, 3 Grms, IEC60068-2-64, random, 5~500 Hz, 1hr/axis (with Wall Mount and SSD)
- **Shock during Operation:** With SSD, 30 G, IEC-60068-2-27, half sine, 11 ms duration (with Wall Mount and SSD)
- **EMC:** CE/FCC Class B, CCC, UKCA and BSMI
- **Safety:** UL, CB, CCC

1.3 Mechanical Specifications

1.3.1 Dimensions

200 x 75 x 215 mm/7.87 x 2.95 x 8.46 in (W x H x D)



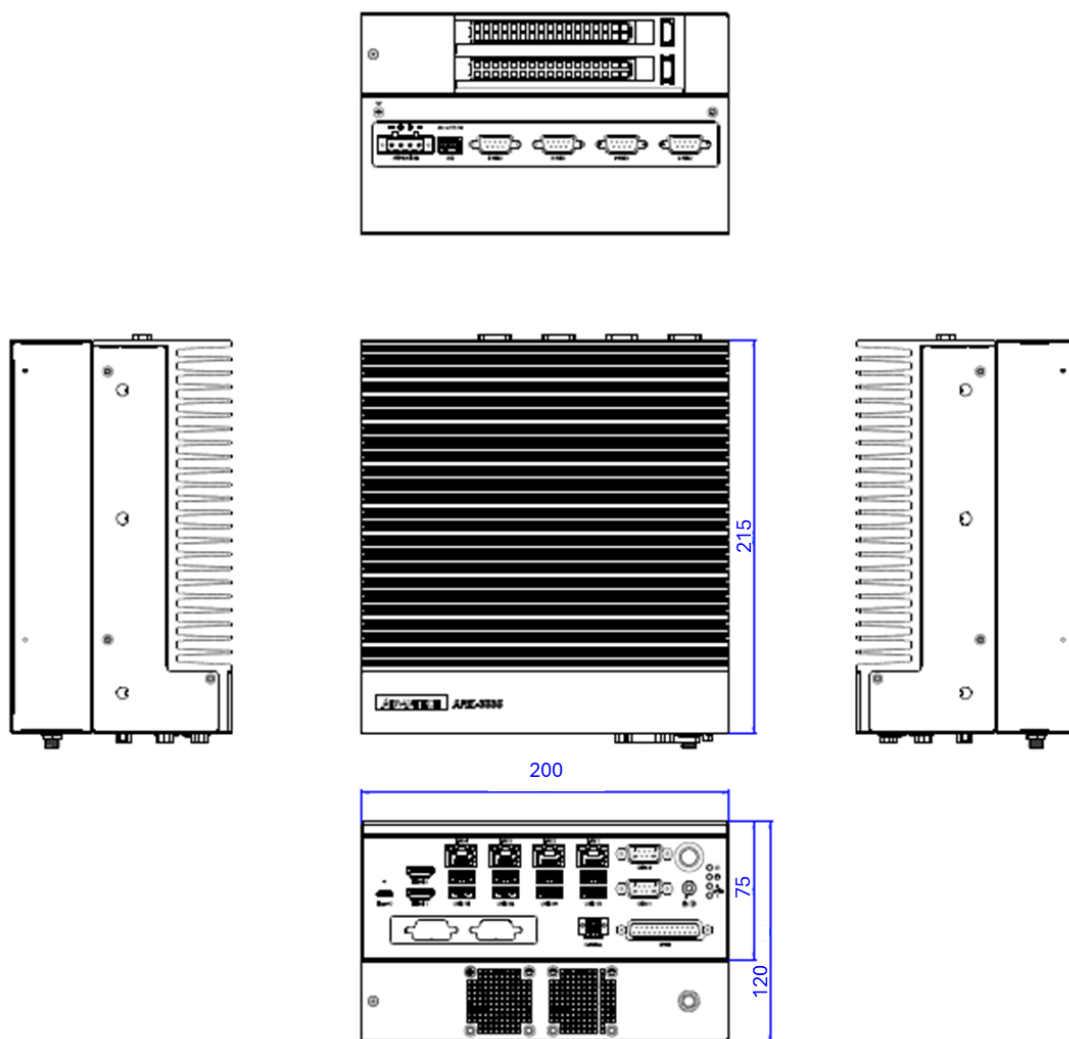


Figure 1.1 ARK-3535 Mechanical Diagram

Chapter 2

Hardware Configuration

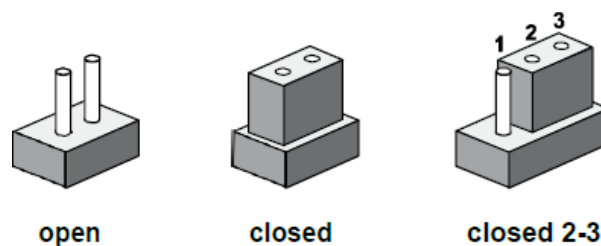
2.1 Introduction

The following sections show the internal jumper settings and the external connector pin assignments for different applications.

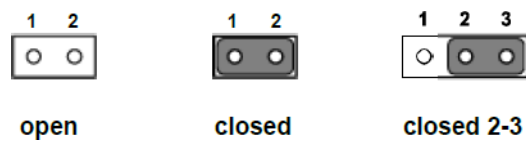
2.2 Jumpers

2.2.1 Jumper Description

You may configure ARK-3535 to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To close a jumper, you connect the pins with the clip. To open a jumper, remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



The jumper settings are schematically diagrammed in this manual as follows:



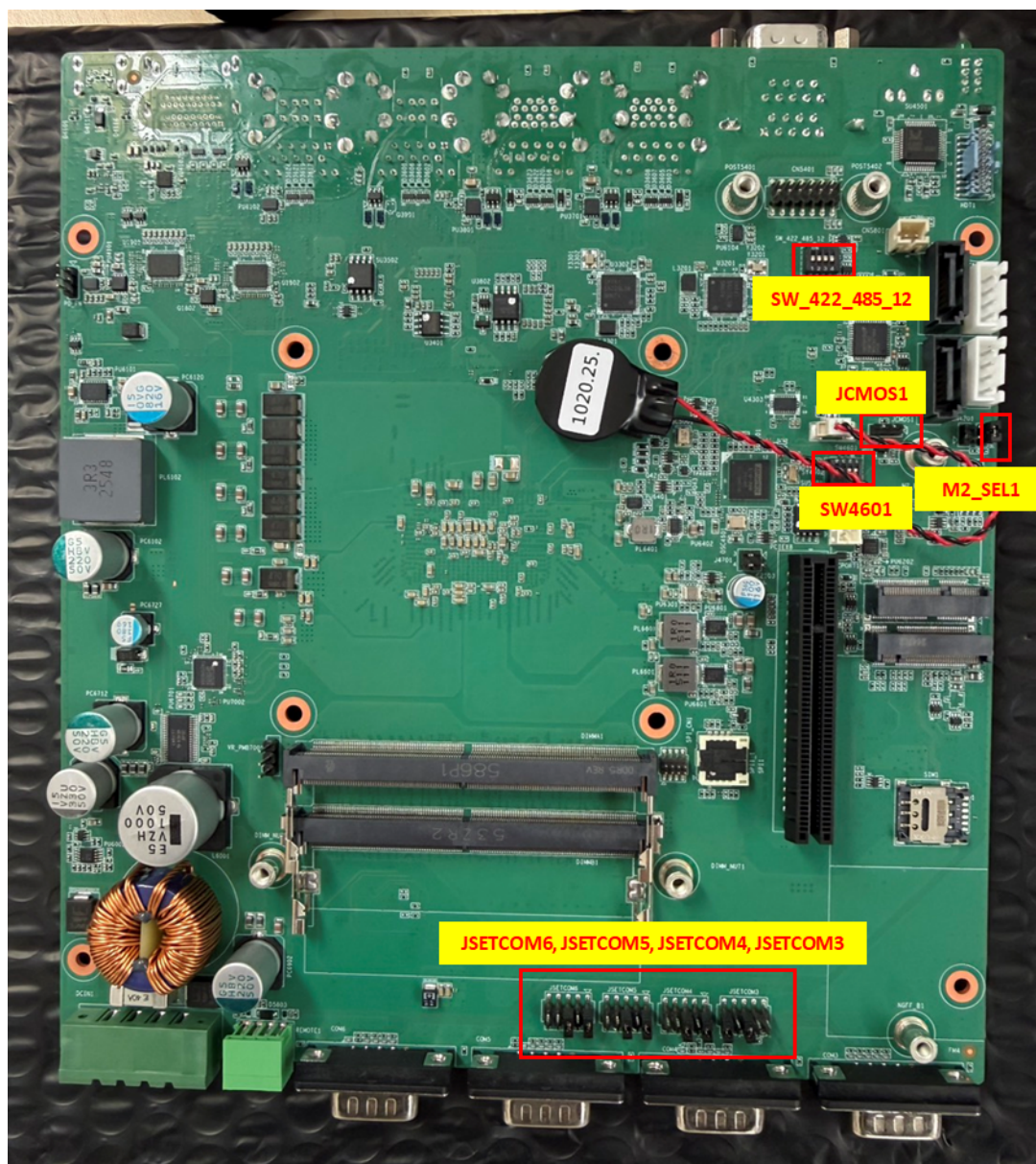
A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes. Generally, you simply need a standard cable to make most connections.

2.2.2 Jumper List

Table 2.1: Jumper List

JCMOS1	CMOS Header
M2_SEL1	M.2 Key B Device Selection
JSETCOM3	COM3 Mode Select
JSETCOM4	COM4 Mode Select
JSETCOM5	COM5 Mode Select
JSETCOM6	COM6 Mode Select

2.2.3 Jumper Location

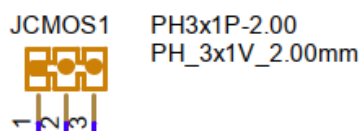


2.2.4 Jumper Settings

2.2.4.1 CMOS Header (JCMOS1)-Default w/o jumper

Table 2.2: JCMOS1 CMOS Header

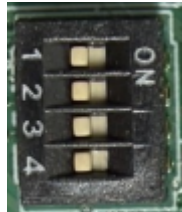
Part Number	1653003101
Description	PIN HEADER 3x1P 2.0mm 180D(M) DIP 2000-13 WS
1-2	NA
2-3 Close	HW Clear CMOS



2.2.4.2 HW AT/ATX Mode DIP Switch

Table 2.3: SW4601, HW AT/ATX Mode DIP Switch

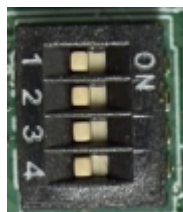
Part Number	1600004766-01
Description	DIP SW SPSTx4/8P/1.27/VA/GFL/S/BK/H2.3
1-8	Off: ATX mode(default) , On: AT mode
2-7	Reserved
3-6	Reserved
4-5	Reserved



2.2.4.3 COM Termination DIP Switch

Table 2.4: SW_422_485_12,COM Terminal DIP Switch

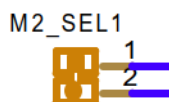
Part Number	1600004766-01
Description	DIP SW SPSTx4/8P/1.27/VA/GFL/S/BK/H2.3
1-8	Off: COM2 termination disable (default) , On: COM2 termination enable
2-7	Off: COM2 termination disable (default) , On: COM2 termination enable
3-6	Off: COM1 termination disable (default) , On: COM1 termination enable
4-5	Off: COM1 termination disable (default) , On: COM1 termination enable



2.2.4.4 M.2 Key B Device Selection (M2_SEL1)

Table 2.5: M2_SEL1 M.2 Key B Device Selection

Part Number	1653002101-02
Description	PIN HEADER 2x1P 2.0mm 180D(M) DIP 21N12050
1-2 Close	SSD(default)
1-2 Open	USB (For 5G)

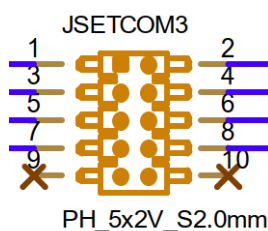


2.2.4.5 COM3/4/5/6 Mode Select (JSETCOM3~6)

Table 2.6: JSETCOM3~6, COM3/4/5/6 Mode Select

Part Number	1653008397-01
Description	Jumper 1x2P/2.0/PA66/VA/GFL/D/BK/H4.5/Bulk
Pin	Description
1-2 and 5-6 short	RS232(default)
3-4 and 7-8 short	RS485

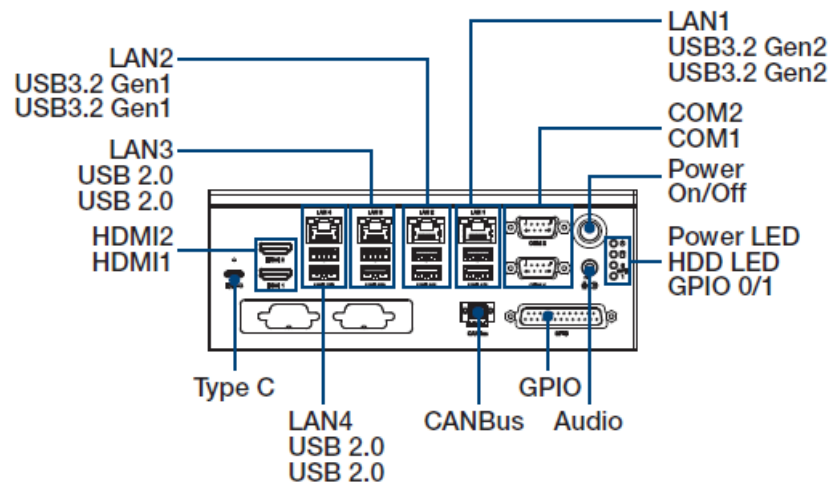
Note! COM3~COM6 default RS232, setting needs to adjust BIOS and jumpers.



2.3 System I/O

2.3.1 ARK-3535 External I/O Locations

Front Panel External I/O Mechanical Layout/Drawing



Rear Panel External I/O Mechanical Layout/Drawing

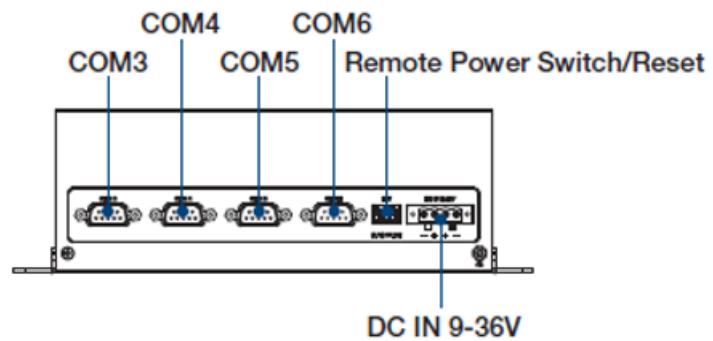


Figure 2.1 ARK-3535 Front and Rear I/O Connector Diagrams

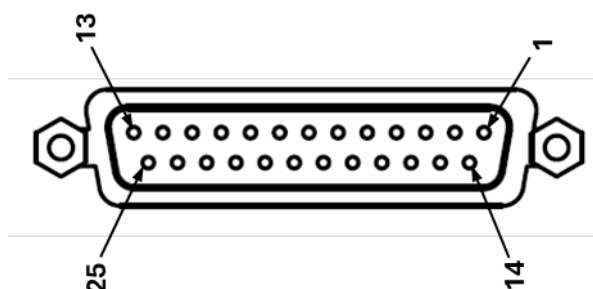
2.3.1.1 DIO (GPIO16, AMO-I033)

Table 2.7: GPIO16, AMO-I033 DIO

Part Number 1654525300			
Description D-SUB Conn. 25P 2.77mm 90D(F) DIP DB93-25011B100			
Pin	Signal Name	Pin	Signal Name
1	GND	2	GPIO0
3	GPIO1	4	GPIO2
5	GPIO3	6	GPIO4
7	GPIO5	8	GPIO6
9	GPIO7	10	+V5A_GPIO
11	NC	12	NC
13	NC	14	GND
15	GPIO8	16	GPIO9
17	GPIO10	18	GPIO11
19	GPIO12	20	GPIO13
21	GPIO14	22	GPIO15
23	+V5A_GPIO	24	NC
25	NC	26	DChassis_GND
27	DChassis_GND		

Table 2.8: GPIO SPEC

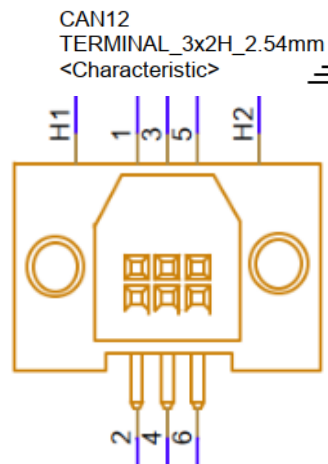
Item	Description
Output Type	Push-Pull only (depending on TCA9555PWR)
VIH (Input High Voltage)	$\geq 3.5V$ (typical)
VIL (Input Low Voltage)	$\leq 1.5V$ (typical)
VOH (Output High Voltage)	$\geq 4V$ @ IOH = -10 mA (@Vcc = 4.75V)
VOL (Output Low Voltage)	≤ 0.5 @ IOL = 8 mA (@Vcc = 1.65V to 5.5V)
IOH/IOL (Output Current Drive)	IOH = -10mA, IOL= 10mA (typical , support up to ± 50 mA)



2.3.1.2 CAN Bus (CAN1/2, AMO-I033)

Table 2.9: CAN1/2, AMO-I033 CAN Bus

Part Number		1652008025-01	
Description		Terminal Block 2x3/2.54/PA66/RA/Sn/BK/L3.5/W SC	
Pin	Signal Name	Pin	Signal Name
1	CAN1_D-	2	CAN2_D+
3	GND	4	GND
5	CAN1_D+	6	CAN2_D-
H1	GND	H2	GND



2.3.1.3 USB 3.2

The ARK-3535 supports 4 x USB 3.2 ports. compliant with the USB XHCI, Rev. 3.2 revision standard. The USB 3.2 connectors (2 x Gen2+2 x Gen1) include both legacy pins for compatibility with USB 2.0 devices and additional pins to support full USB 3.2 functionality.

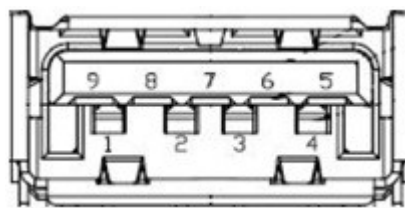


Table 2.10: USB 3.2 Gen2 Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	+5V	2	USB_data-
3	USB_data+	4	GND
5	SSRX-	6	SSRX+
7	GND	8	SSTX-
9	SSTX+		

2.3.1.4 USB 2.0

ARK-3535 provides 4 x USB 2.0 interface connectors. The USB interface supports plug-and-play functionality.

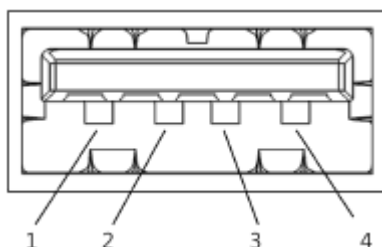


Table 2.11: USB 2.0

Pin	Signal Name
1	VCC
2	USB_data+
3	USB_data-
4	GND

2.3.1.5 Ethernet Connector (LAN)

ARK-3535 is equipped with up to 3 x Ethernet controllers that are fully compliant with IEEE 802.3u 10/100/1000/2500 Mbps Intel i226V and 1x Ethernet controller supports 10/100/1000 Mbps Intel i210IT GbE CSMA/CD standards. These Ethernet ports provide a standard RJ-45 jack connector with LED indicators on the front side to show Active/Link status (Green LED on the right) and Speed status (Orange/Green LED on the left).

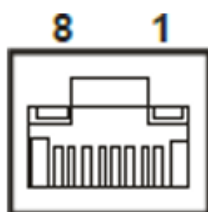


Table 2.12: Ethernet Connector Pin Assignments

Pin	Signal Name
1	TX+
2	TX-
3	RX+
4	MDI2+
5	MDI2-
6	RX-
7	MDI3+
8	MDI3-

Table 2.13: LAN i226V LEDs**Left side LED: Green/Orange LED**

Status	Display
10/100Mbps	Always turn off
1000Mbps	Orange
2500Mbps	Green

Right side LED: Green LED

Link status	Always turn on without transmitting/receiving data
Activity status	Flash

Table 2.14: LAN i210IT LEDs**Left side LED: Green/Orange LED**

Status	Display
10Mbps	Always turn off
100Mbps	Orange
1000Mbps	Green

Right side LED: Green LED

Link status	Always turn on without transmitting/receiving data
Activity status	Flash

2.3.1.6 USB Type-C

ARK-3535 features a 24-pin USB Type-C connector with a rotationally symmetrical design. The type-C provides 15W and type-C to type-C DP signal.

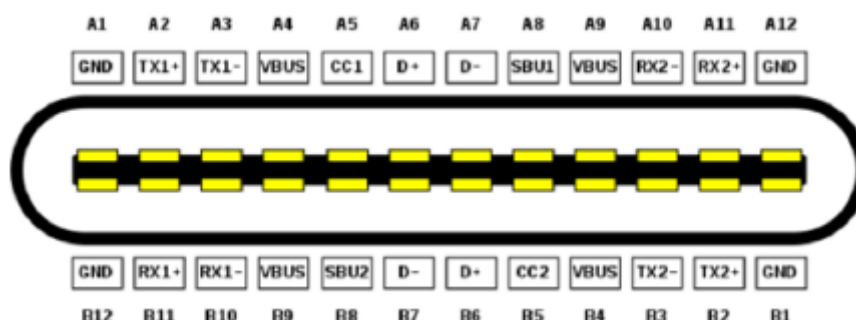
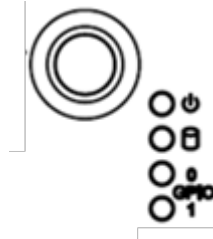


Table 2.15: SB Type C Pin Definition

Type-C receptacle A pin layout		
Pin	Signal Name	Description
A1	GND	Ground return
A2	SSTXp1	SuperSpeed differential pair #1, TX, positive
A3	SSTXn1	SuperSpeed differential pair #1, TX, negative
A4	VBUS	Bus power
A5	CC1	Configuration channel
A6	Dp1	USB 2.0 differential pair, position 1, positive
A7	Dn1	USB 2.0 differential pair, position 1, negative
A8	SBU1	Sideband use (SBU)
A9	VBUS	Bus power
A10	SSRXn2	SuperSpeed differential pair #4, RX, negative
A11	SSRXp2	SuperSpeed differential pair #4, RX, positive
A12	GND	Ground return
Type-C receptacle B pin layout		
Pin	Name	Description
B12	GND	Ground return
B11	SSTXp1	SuperSpeed differential pair #2, RX, positive
B10	SSTXn1	SuperSpeed differential pair #2, RX, negative
B9	VBUS	Bus power
B8	SBU2	Sideband use (SBU)
B7	Dn2	USB 2.0 differential pair, position 2, negative[a]
B6	Dp2	USB 2.0 differential pair, position 2, positive[a]
B5	CC2	Configuration channel
B4	VBUS	Bus power
B3	SSRXn2	SuperSpeed differential pair #3, TX, negative
B2	SSRXp2	SuperSpeed differential pair #3, TX, positive
B1	GND	Ground return

2.3.1.7 Power On/Off Button

ARK-3535 has a Power On/Off button with LED indicators on the front side that show “On” (Orange LED) and “Off/ Suspend/ Shut down” statues (no light). The Power button supports dual functions: Soft Power- On/Off (Instant off or Delay 4 Seconds then off), and Suspend.



2.3.1.8 LED

1. The LED remains steady orange when the system is powered on; the LED remains off (no light) when the system is powered down.
2. The LED blinks orange to indicate disk activity (Read/Write); it remains off (no light) when there is no disk activity or no drive detected.
3. GPIO 0 and 1 are internally pulled high to default as blue and green; they remain illuminated when the output is high and turn off only when the output is driven low.

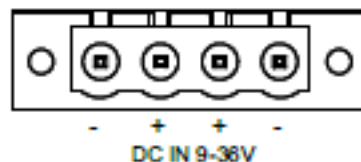
2.3.1.9 Audio Connector

ARK-3535 features 1 phone jack connectors that support stereo Line-Out or Mic-In audio ports. The audio chip is controlled by ALC888S and is compliant with the Azalea standard.



2.3.1.10 Phoenix Terminal Connector

ARK-3535 supports one 4-pin Phoenix terminal power input connector. Connect the positive and negative power cables to the terminals in the power distribution connector correctly at the same time.



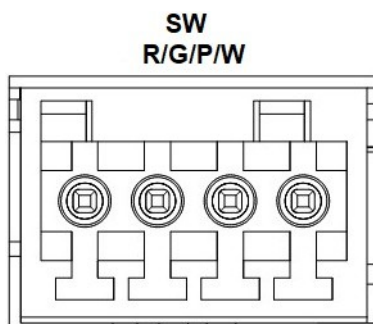
1. For supply connections use wires suitable for at least 105°C.
2. The terminal block is suitable for 14 AWG. Torque value is 7 lb-in. User copper conductors only. It must be installed by skilled person.
3. The terminal block uses two sets of interfaces to be installed at the same time to make it split to meet the maximum current limit, and a single pin will be limited below 16 A.

Table 2.16: Phoenix Terminal Connector

Pin	Signal Name
-	GND
+	V-in (9~36 V)

2.3.1.11 Remote Switch Connector

ARK-3535 provides the remote switch connector for power on/off. From the left to the right are Reset, GND(G), Power button (P), reset button (R), and watch dog (W) output signal.

**Table 2.17: Remote Switch Connector Pin Assignments**

Pin	Signal Name	Operating Instructions
W	Watchdog output signal	Internal pull High, the WDT will pull down for 0.5 seconds.
P	Power Button	Short P to G for within 1 second, and the system will power on.
G	Ground	Ground (G) is the common reference point for control signals.
R	Reset Button	Short R to G for within 1 second, and the system will reboot.

2.3.1.12 COM Connector

ARK-3535 provides up to eight D-sub 9-pin connectors, COM1/2 offer RS-232/422/485 communication and COM3/4/5/6 offer RS-232/ 485.

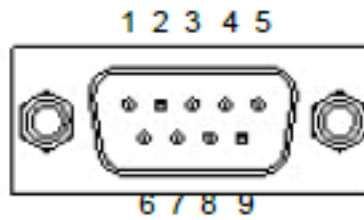


Table 2.18: COM Port Pin Definition

	RS-232	RS-422	RS-485
Pin	Signal Definition	Signal Definition	Signal Definition
1	DCD	Tx-	DATA-
2	RxD	Tx+	DATA+
3	TxD	Rx+	NC
4	DTR	Rx-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

2.3.1.13 HDMI 2.1 Connector

ARK-3535 is equipped with a 2 x 19-pin HDMI Type A interface. The HDMI link supports resolutions up to 3840 x 2160 @ 60 Hz.

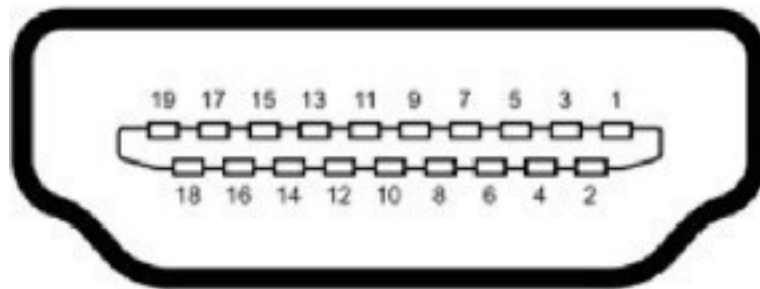
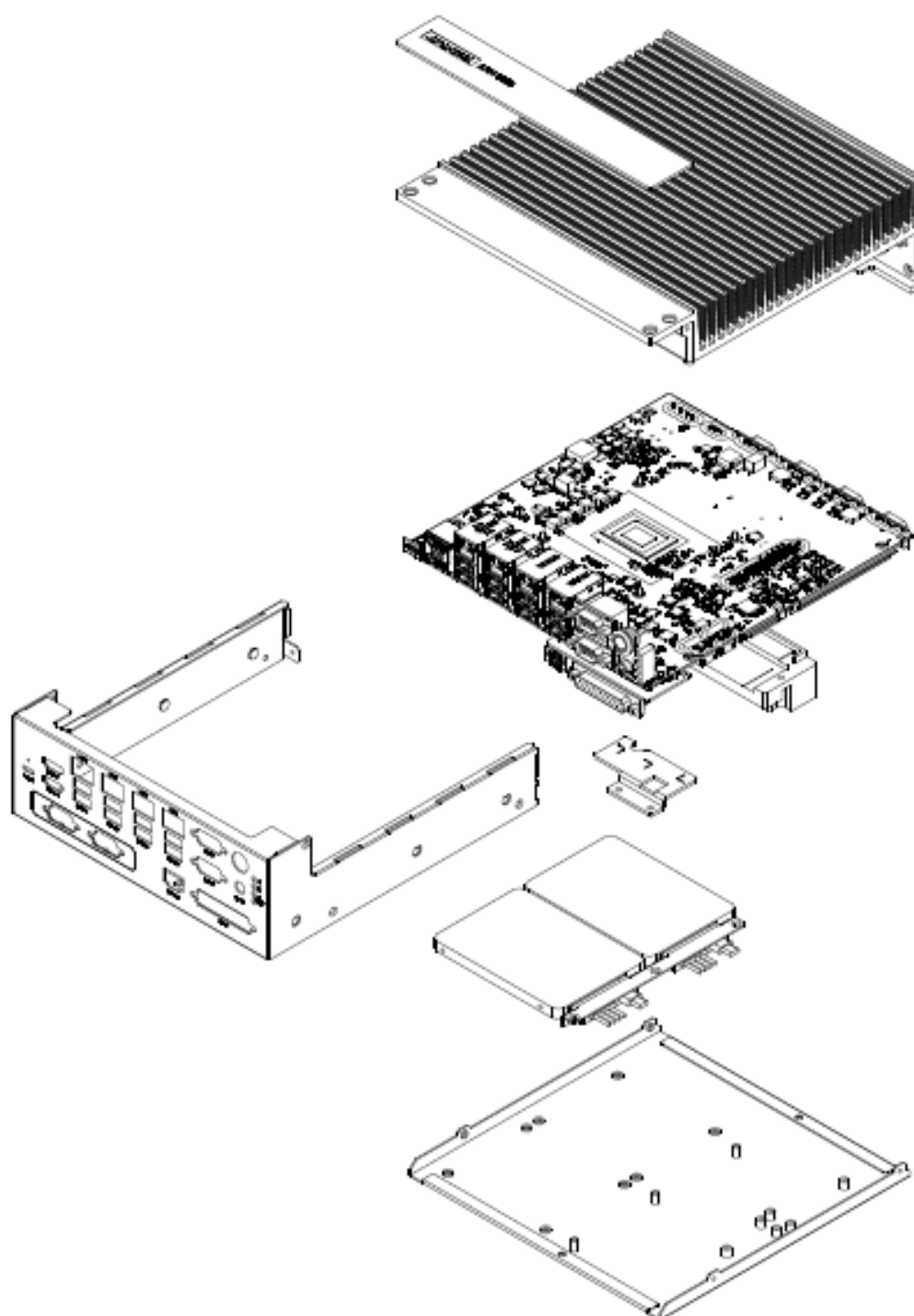


Table 2.19: HDMI Pin Definition

Pin	Signal Definition	Pin	Signal Definition
1	TMDS Data 2+	2	TMDS Data 2 shield
3	TMDS Data 2-	4	TMDS Data 1+
5	TMDS Data 1 shield	6	TMDS Data 1-
7	TMDS Data 0+	8	TMDS Data 0 shield
9	TMDS Data 0-	10	TMDS clock+
11	TMDS clock shield	12	TMDS clock-
13	CEC	14	Reserved
15	SCL	16	SDA
17	DDC/CEC Ground	18	+5V
19	Hot Plug Detect		

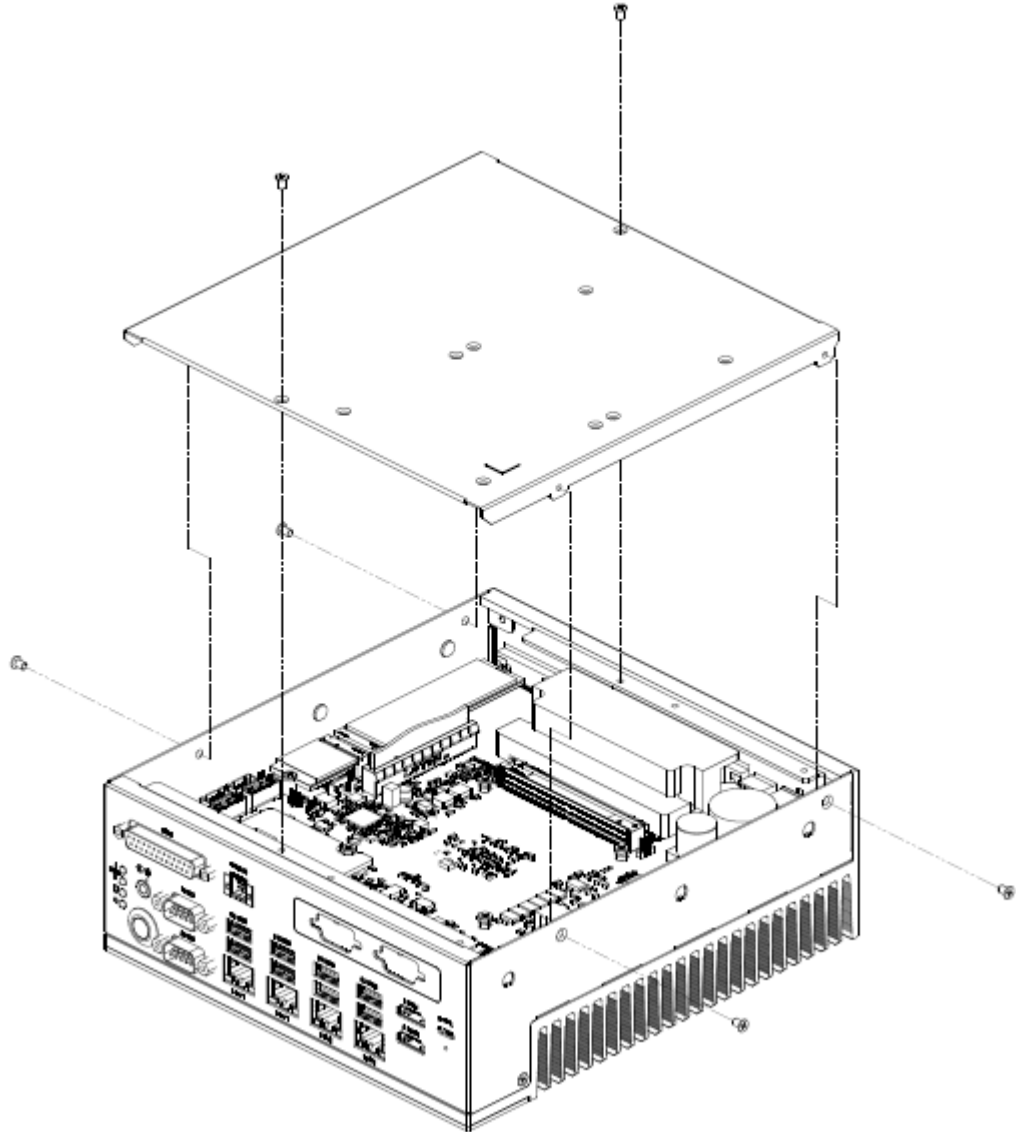
2.4 Installation

2.4.1 Exploded View



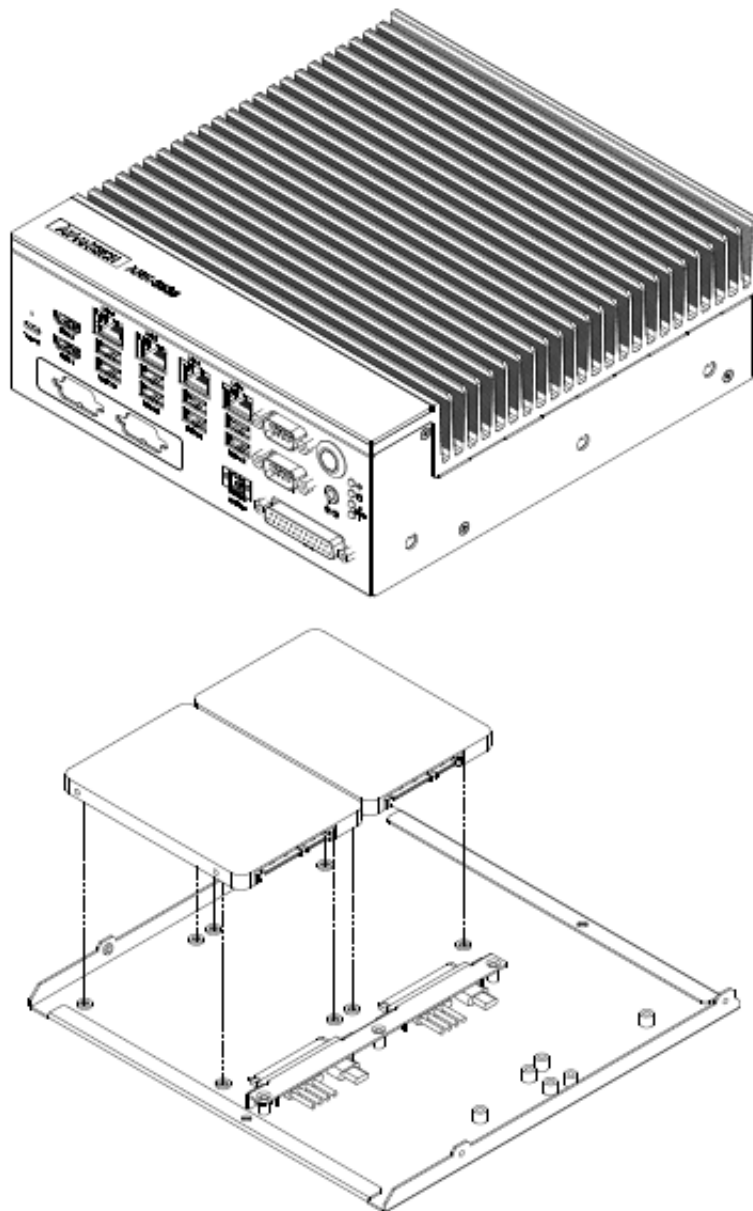
2.4.2 Remove the Bottom Cover

Unscrew the 6 screws on the bottom cover.



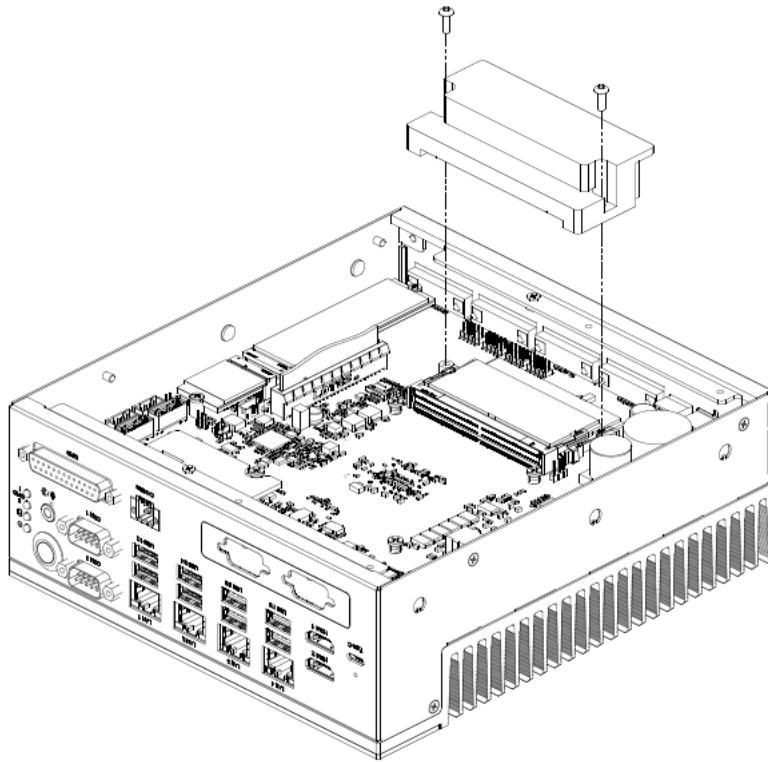
2.4.3 2.5" SSD Installation

1. Remove the bottom cover (2.4.2)
2. Remove the 4 screws for the HDD/SSD bracket.
3. Install the SSDs with 4 screws on each HDD/SSD.
4. Replace the bottom cover and secure in place with 6 screws.



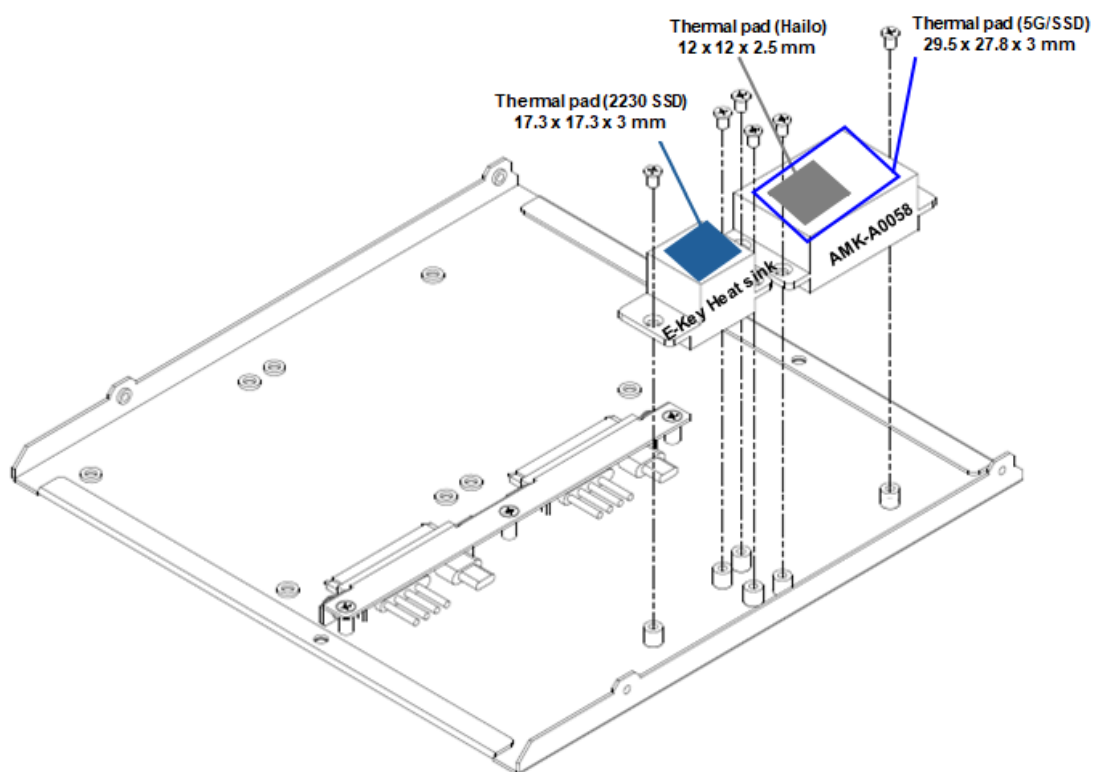
2.4.4 Memory Installation

1. Unscrew the bottom cover (2.4.2).
2. Remove the M3x8L screws*2pcs from the two sides of heat sink.
(Thermal pad on HS bottom side)
3. Install 1 or 2 pcs of memory into the system.
4. Install the heat sink on the memory with the M3x8L screws*2pcs.
5. Remove the bottom cover (2.4.2).



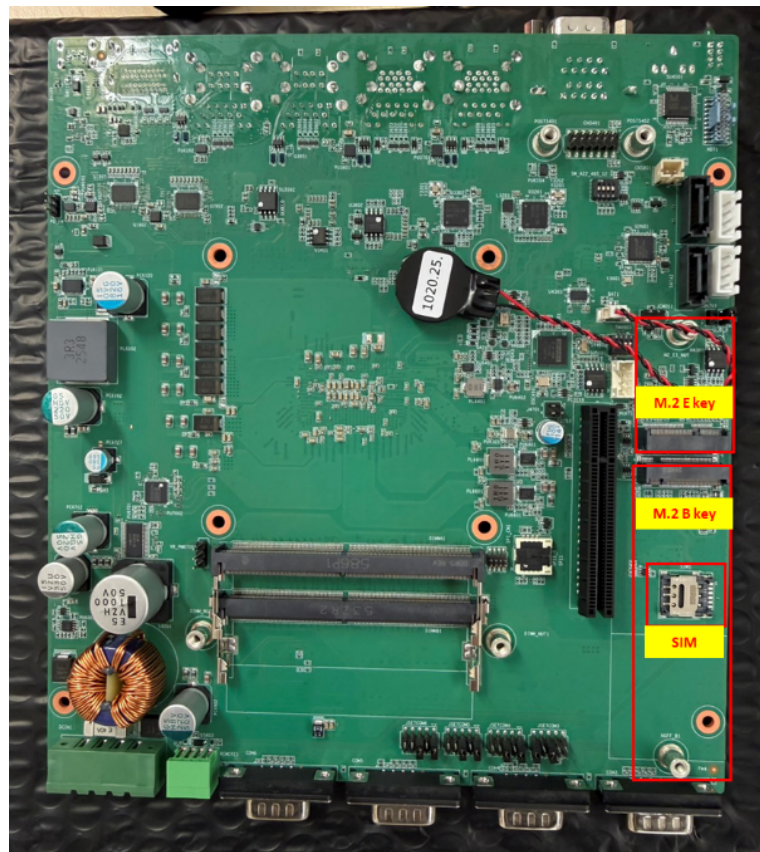
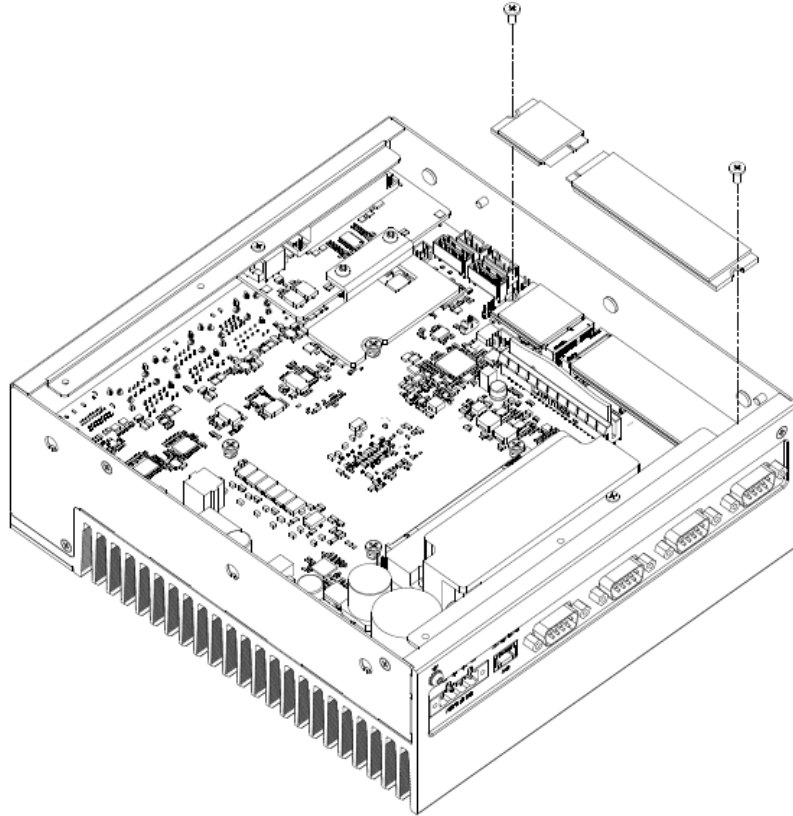
2.4.5 AMK-A0058/E-key Heat Sink Installation (Option)

1. Remove the bottom cover (2.4.2).
2. Install AMK-A0058 with M3x5L screws*3pcs.
3. Replace the bottom cover and secure in place with 6 screws.



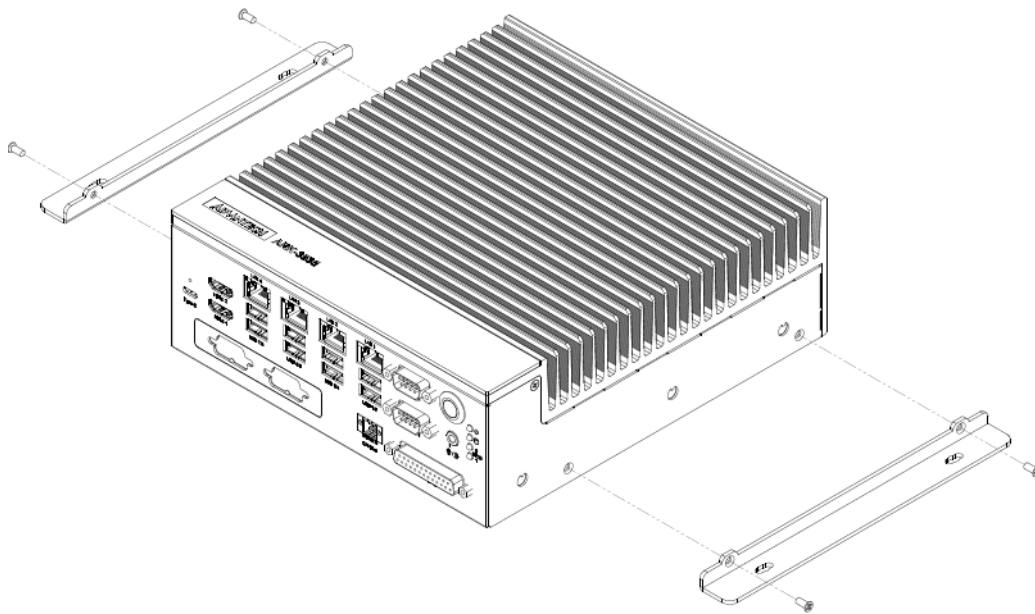
2.4.6 M.2 Module Installation

1. Remove the bottom cover (2.4.2).
2. If SIM card installation required, install the SIM card under the B key.
3. Install the M.2 module with 1 screw.
4. Replace the bottom cover and fix it in place with 6 screws.



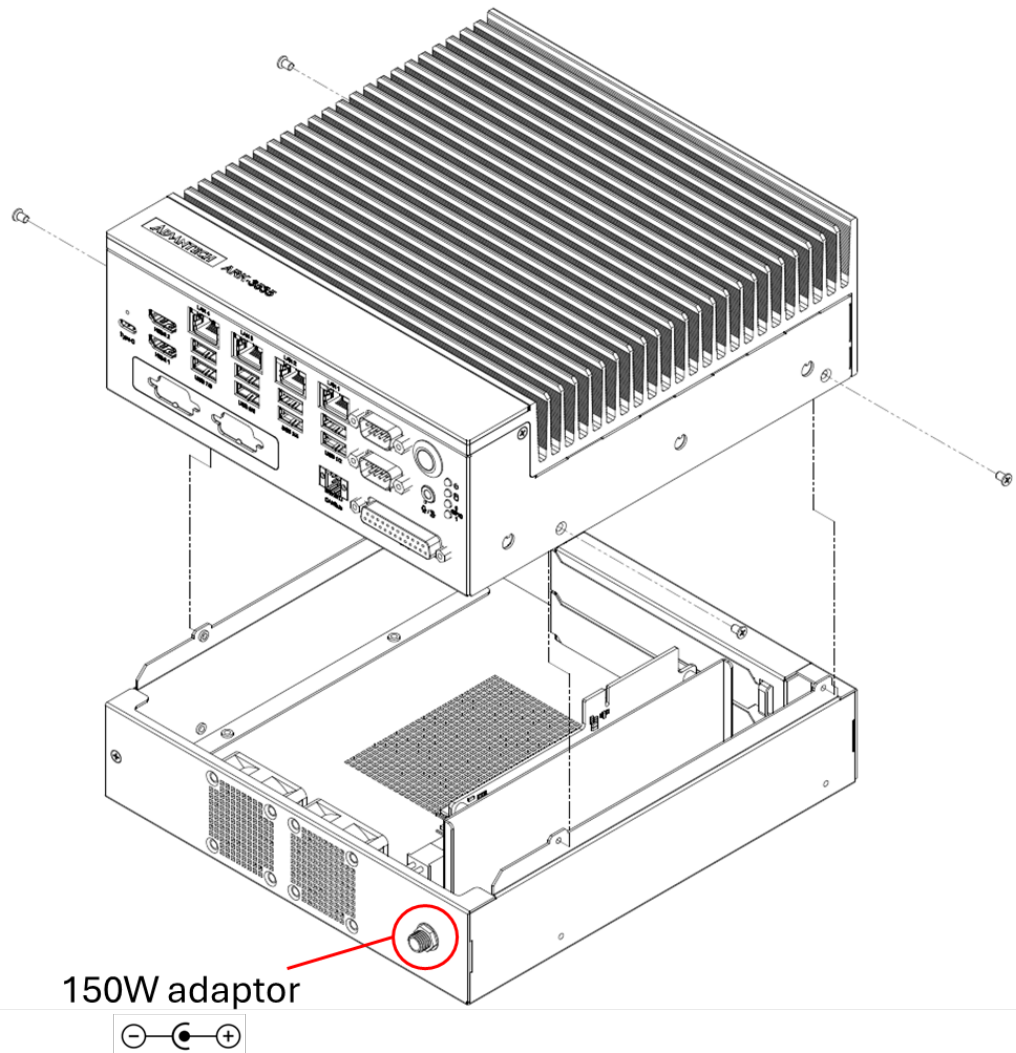
2.4.7 Wall Mount Kit Installation (Optional)

1. Take out the mounting*2pcs and M3x6L screws*4pcs from the accessory box.
2. Screw one of the M3x6L screws*2pcs on the left and right side and attach the system horizontally.



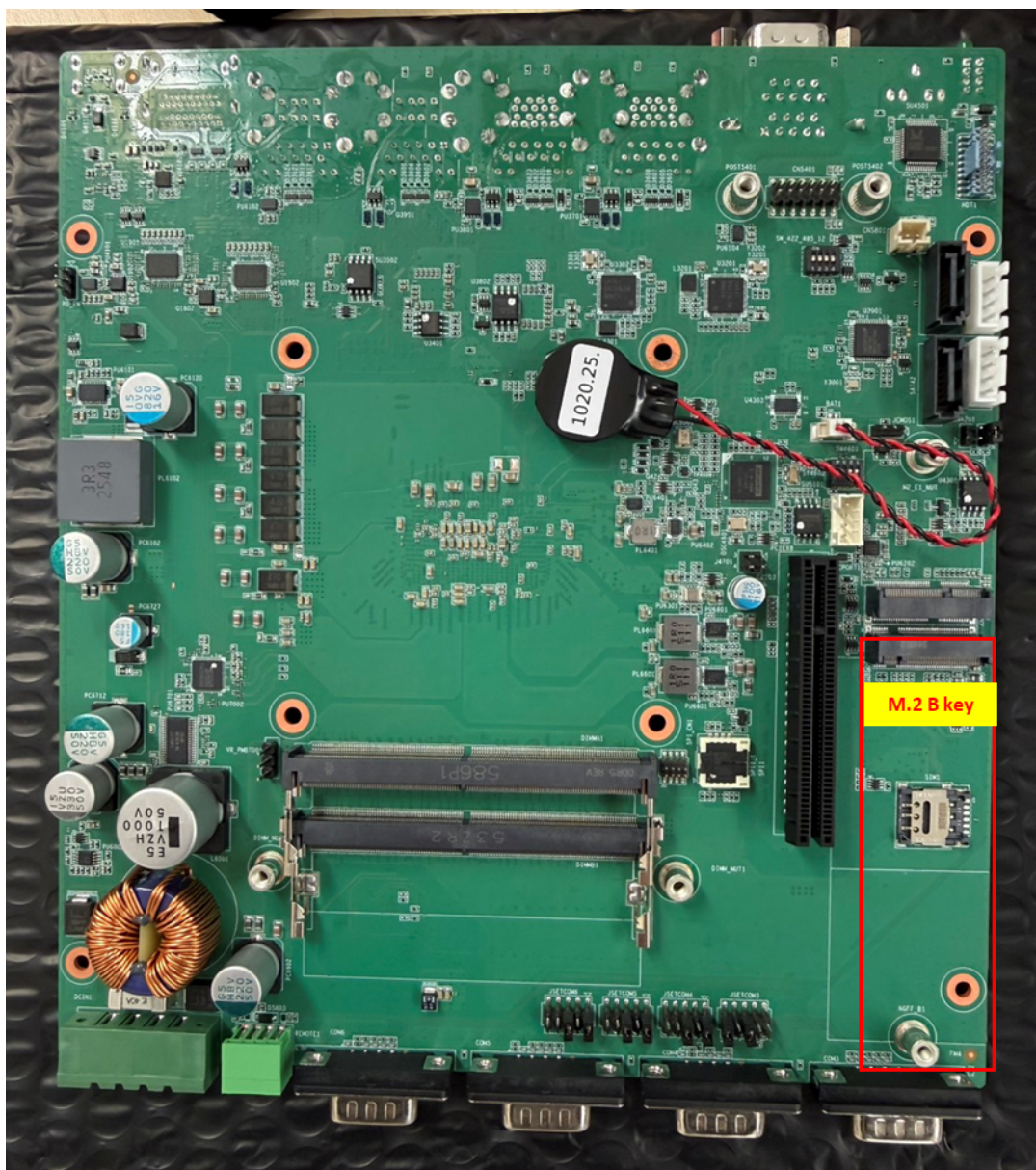
2.4.8 AMO-3511 Expansion Kit (Riser Card) Installation

1. Remove the bottom cover (2.4.2).
2. Put the front IO with the fan net on the same side.
3. Screw the M3x5L*4pcs screws.



2.4.9 Bundle with AMO-3511 Using an M.2 B-Key Thermal Module

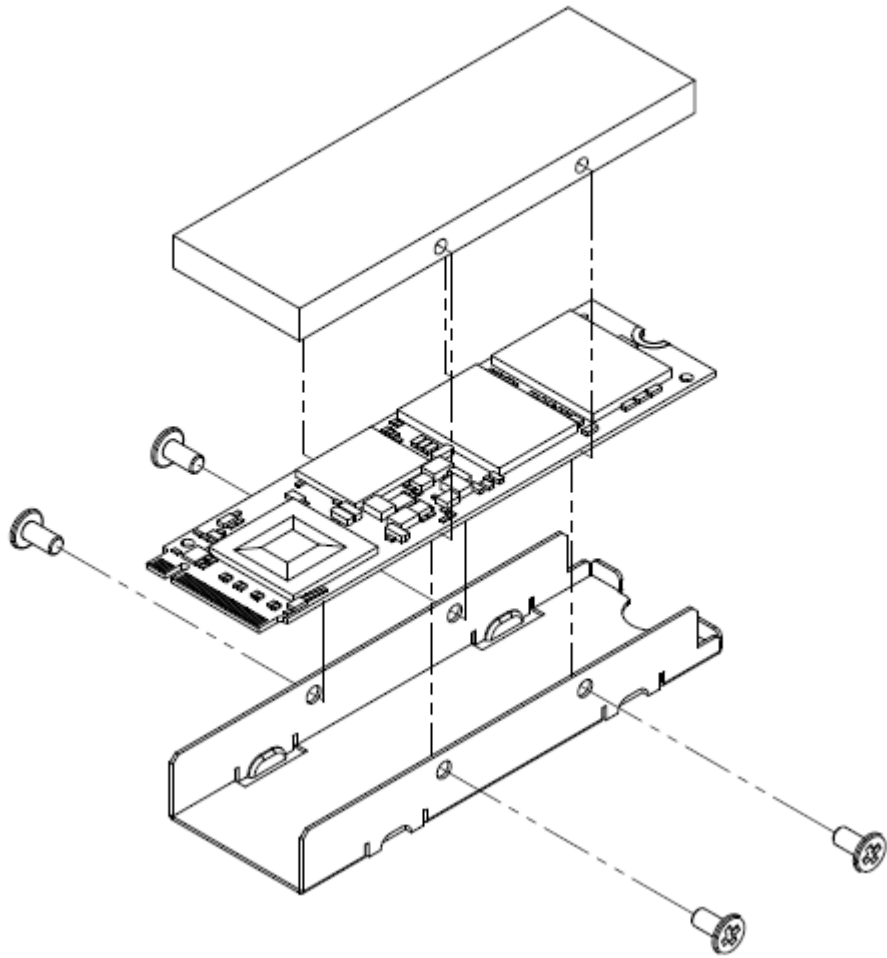
1. Remove the bottom cover (2.4.2).



Note! Note bundle with AMO-3511, the default SSD is M.2 B-Key, not support with 2.5" SATA.



2. Take out M3.5 screw*4pcs from the accessory box to install the M.2 SSD thermal kit and thermal pad for the M.2 2280 PCIe module.



Note! The release paper must be removed when installing a thermal pad for an SSD.





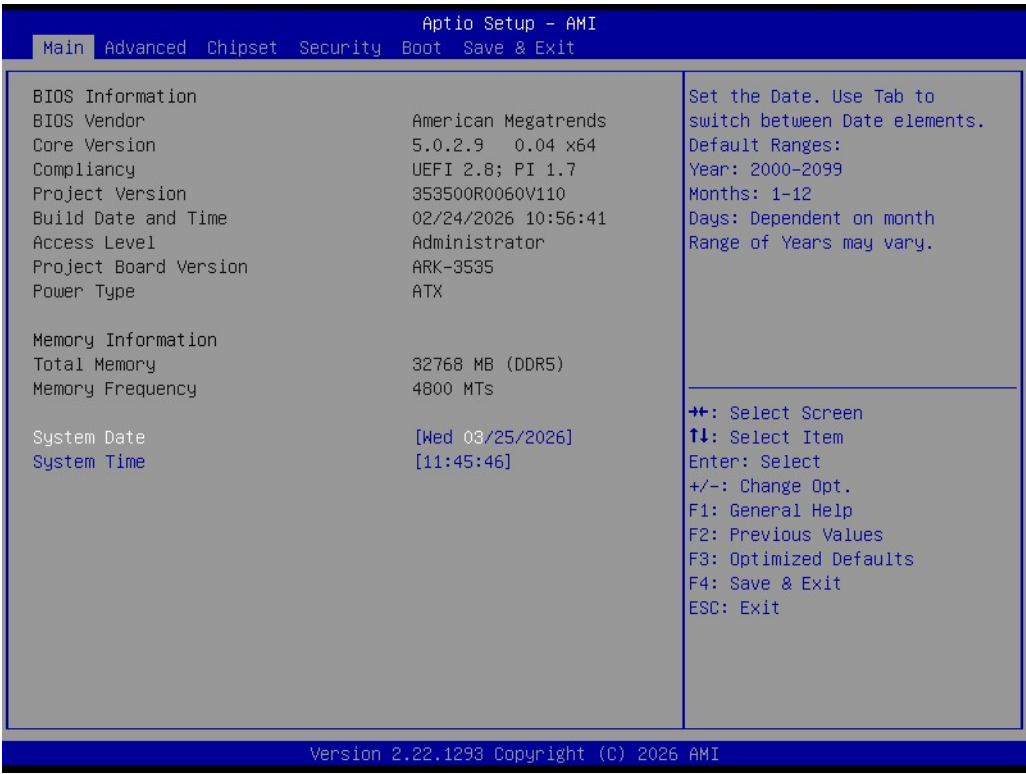
Chapter 3

BIOS Settings

This chapter details instructions for Setting BIOS configuration data.

3.1 Introduction

AMI BIOS has been integrated into a plethora of motherboards for decades. With the AMIBIOS Setup program, you can modify BIOS settings and control the various system features. This chapter describes the basic navigation of the ARK-3535 BIOS setup screens.



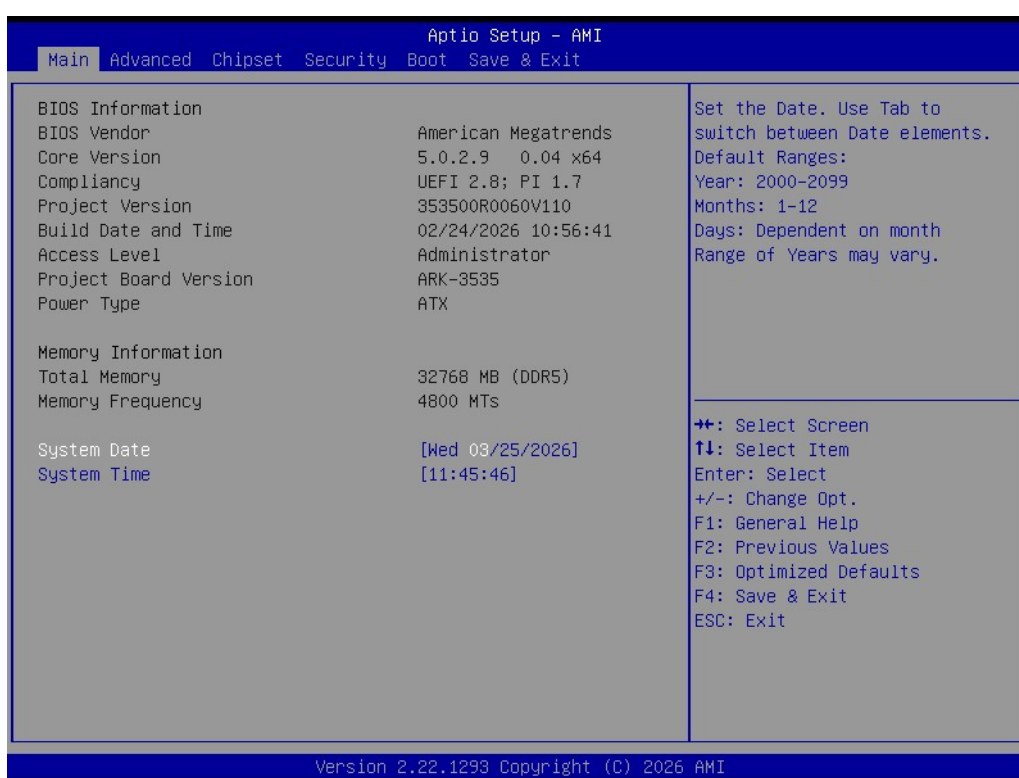
AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed CMOS so it retains the Setup information when the power is turned off.

3.2 Entering BIOS Setup

Turn on the computer and check for the patch code. If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, please contact an Advantech application engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid. After ensuring that you have a number assigned to the patch code, press and you will immediately be allowed to enter Setup.

3.2.1 Main Setup

When you first enter the BIOS Setup Utility, you will encounter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



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

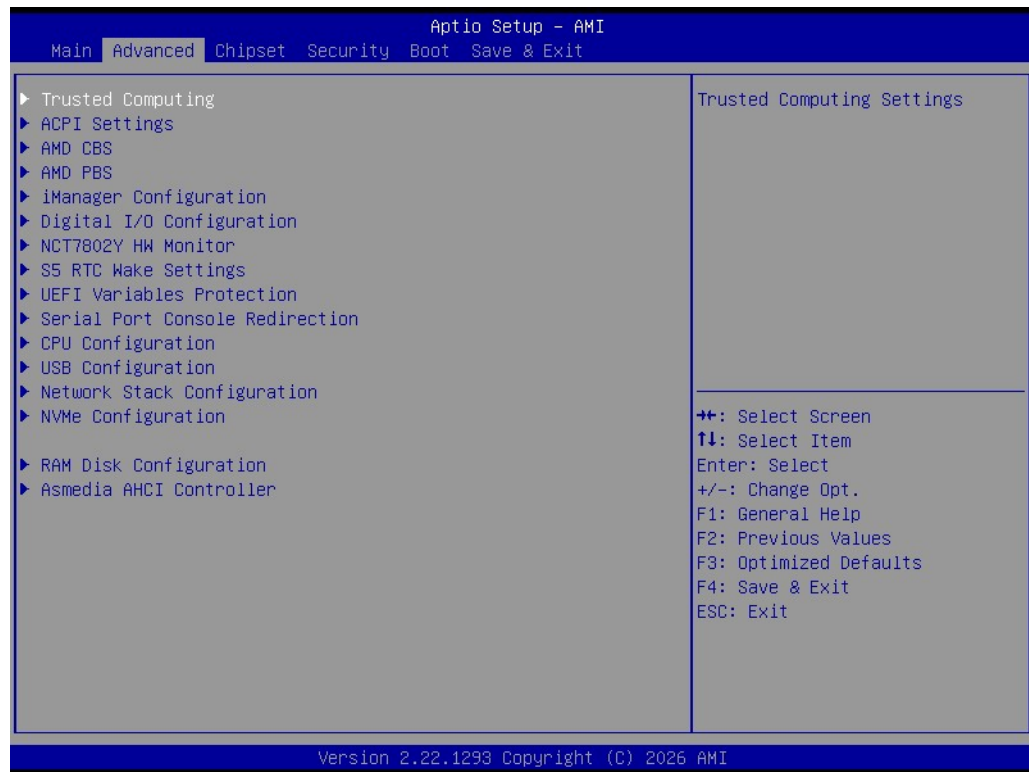
Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

■ System Time/System Date

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

3.2.2 Advanced

Select the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub-menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens is shown below. The sub-menus are described on the following pages.



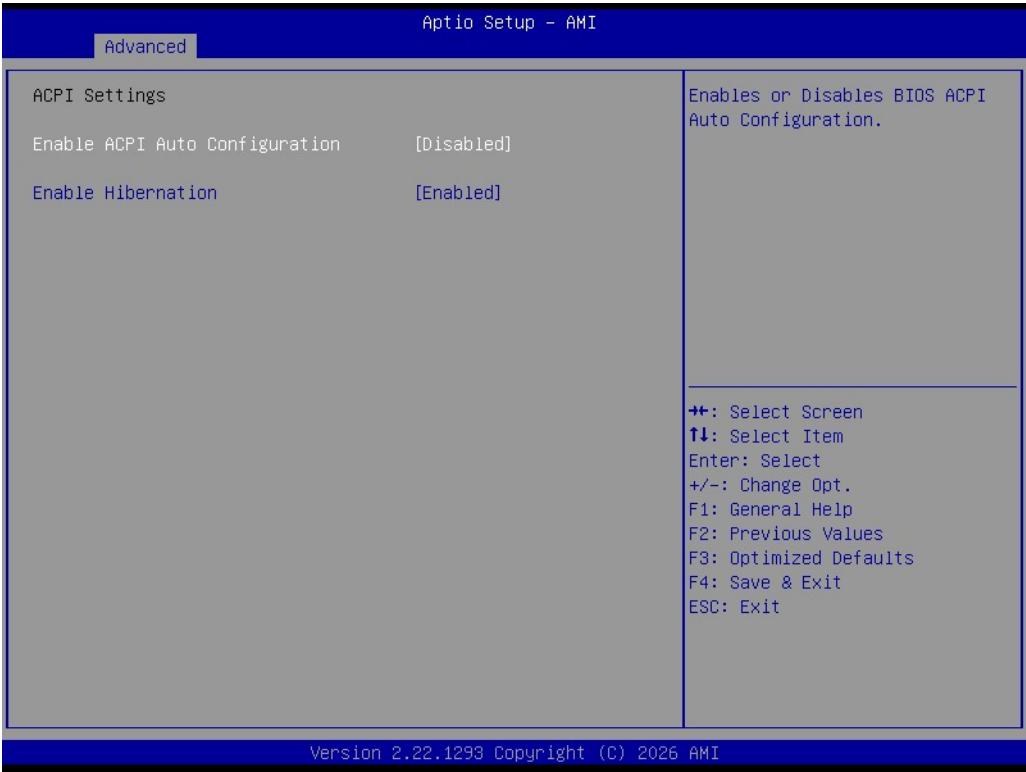
3.2.2.1 Advanced → Trust Computing

This item allows users to enable/disable the TPM (TPM 2.0). The TPM (Trusted Platform Module) is a secure key generator and key cache management component that enables protected storage of encryption keys and authentication credentials for enhanced security.



- **Security Device Support**
Enable or disable BIOS support for security device.
- **SHA256 PCR Bank**
Enable or disable SHA256 PCR Bank.
- **Pending operation**
Schedule an Operation for the Security Device.
- **Platform Hierarchy**
Enable or disable Platform Hierarchy.
- **Storage Hierarchy**
Enable or disable Storage Hierarchy.
- **Endorsement Hierarchy**
Enable or disable Endorsement Hierarchy.
- **Physical Presence Spec Version**
Select to Tell OS to support PPI Spec Version 1.2 or 1.3.
- **Device Select**
TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices.

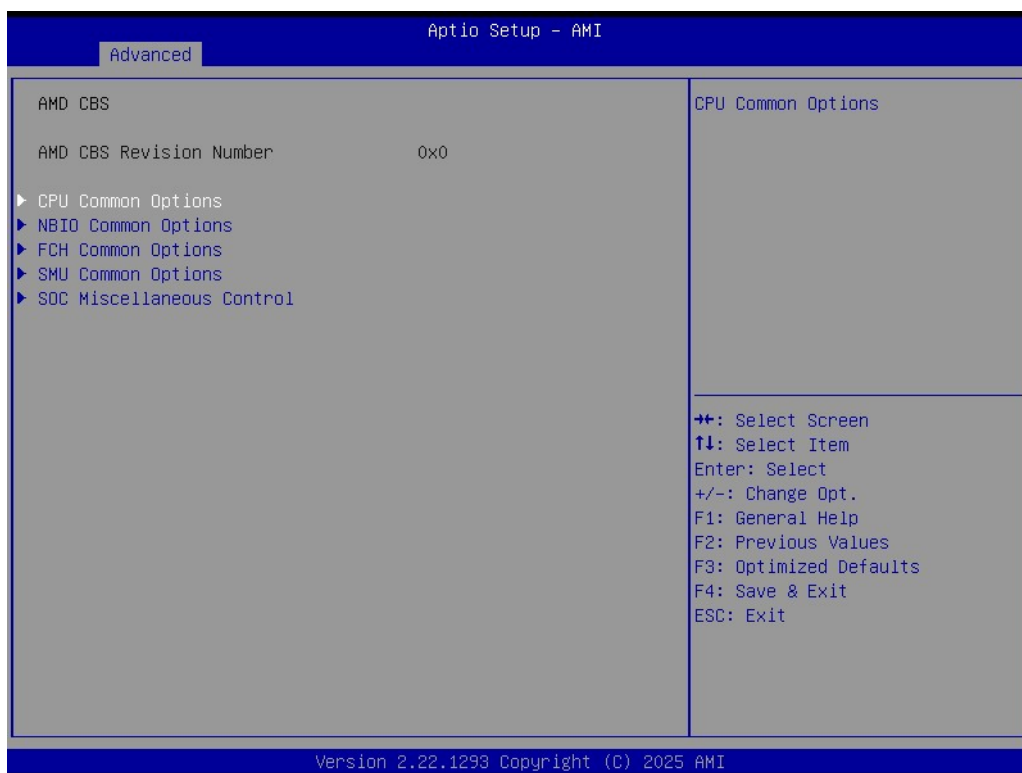
3.2.2.2 Advanced → ACPI Settings



- **Enable ACPI Auto Configuration [Disabled]**
This item allows users to enable/disable BIOS ACPI auto configuration.
- **Enable Hibernation [Enabled]**
This item allows users to enable/disable the Hibernate (OS/S4 sleep state) function. This option may not be available with certain operating systems.

3.2.2.3 Advanced → AMD CBS

Configure advanced settings for AMD Common BIOS Settings (CBS).



3.2.2.3.1 CPU Common Options

Advanced → AMD CBS → CPU Common Options

Configure common CPU performance and global C-state control options.

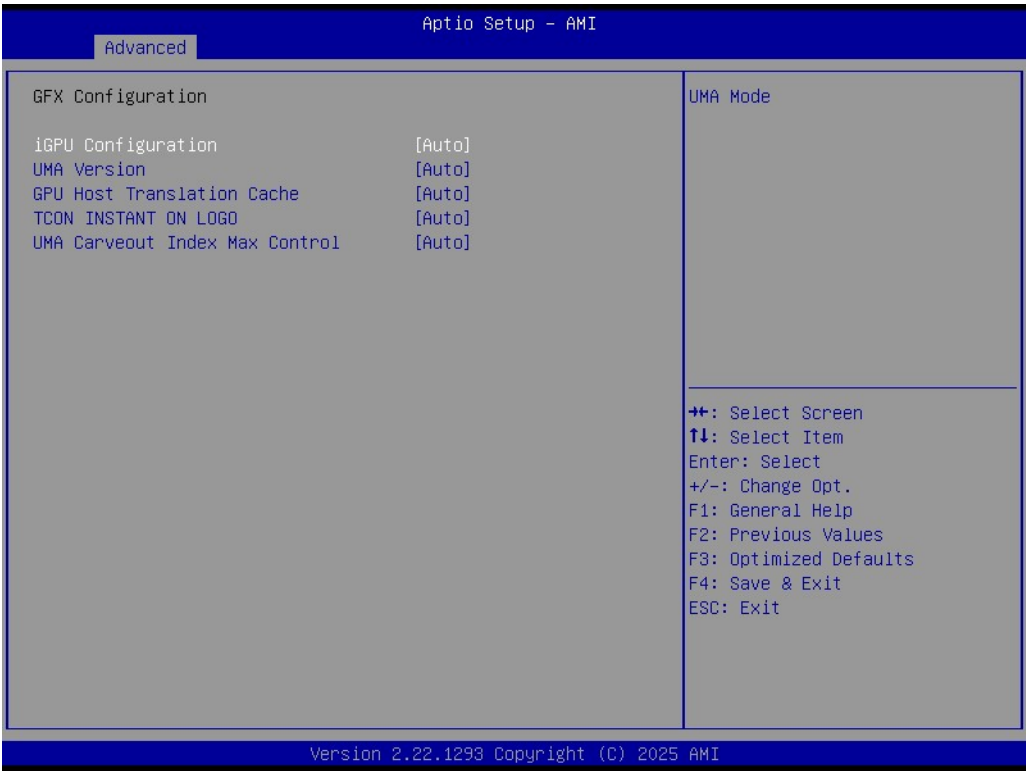


3.2.2.3.2 NBIO Common Options

Advanced → AMD CBS → NBIO Common Options
To setup auto system GFX configuration and audio configuration.



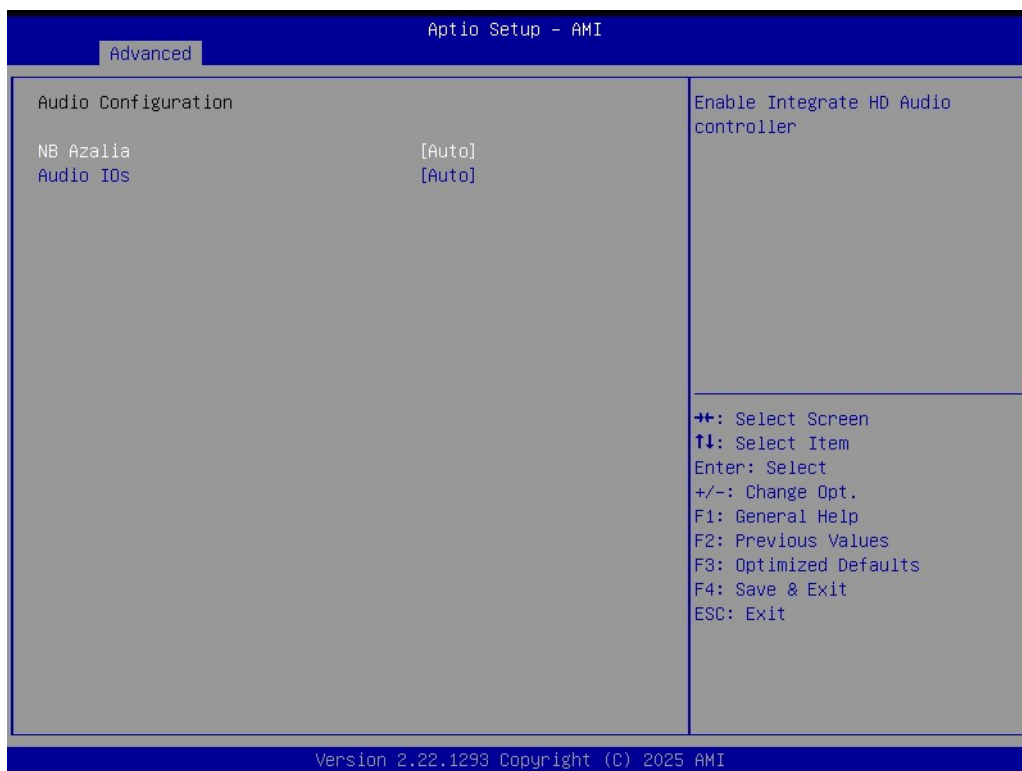
- **GFX Configuration**
Advanced → AMD CBS → NBIO Common Options → GFX Configuration
Configure GFX settings and features



■ Audio Configuration

Advanced → AMD CBS → NBIO Common Options → GFX Configuration → Audio Configuration

Configure onboard audio settings and features.



3.2.2.3.3 FCH Common Options

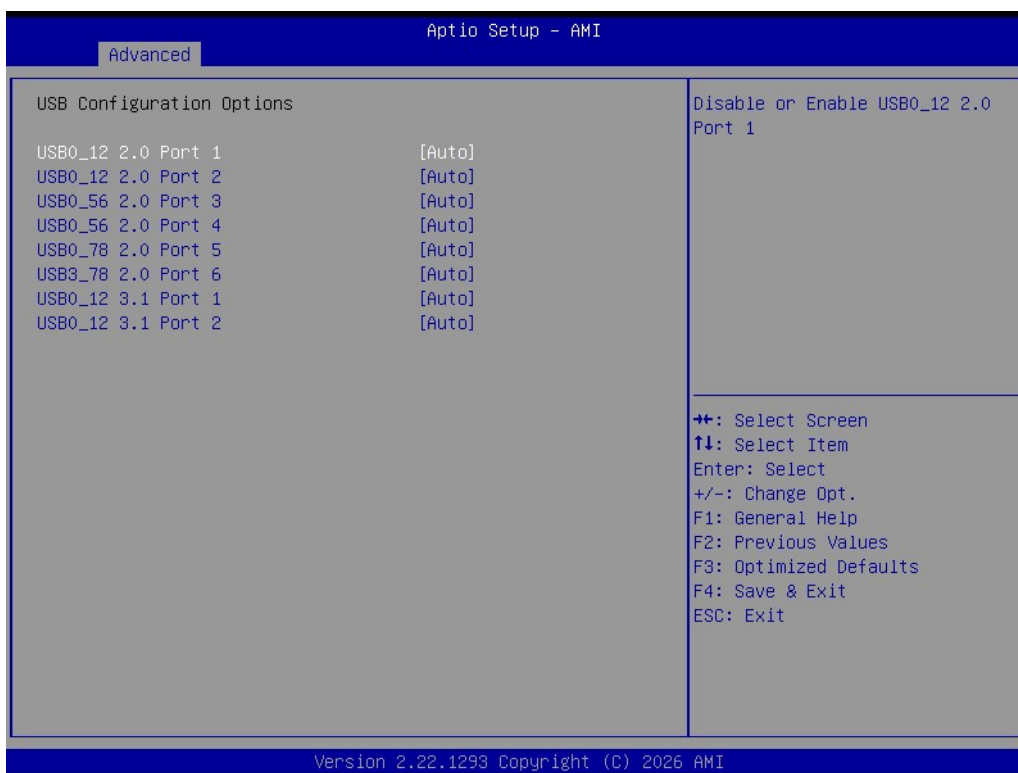
Advanced → AMD CBS → FCH Common Options

To specify what state to go to when power is re-applied after a power failure.



■ USB Configuration Options

Advanced → AMD CBS → FCH Common Options → USB Configuration Options

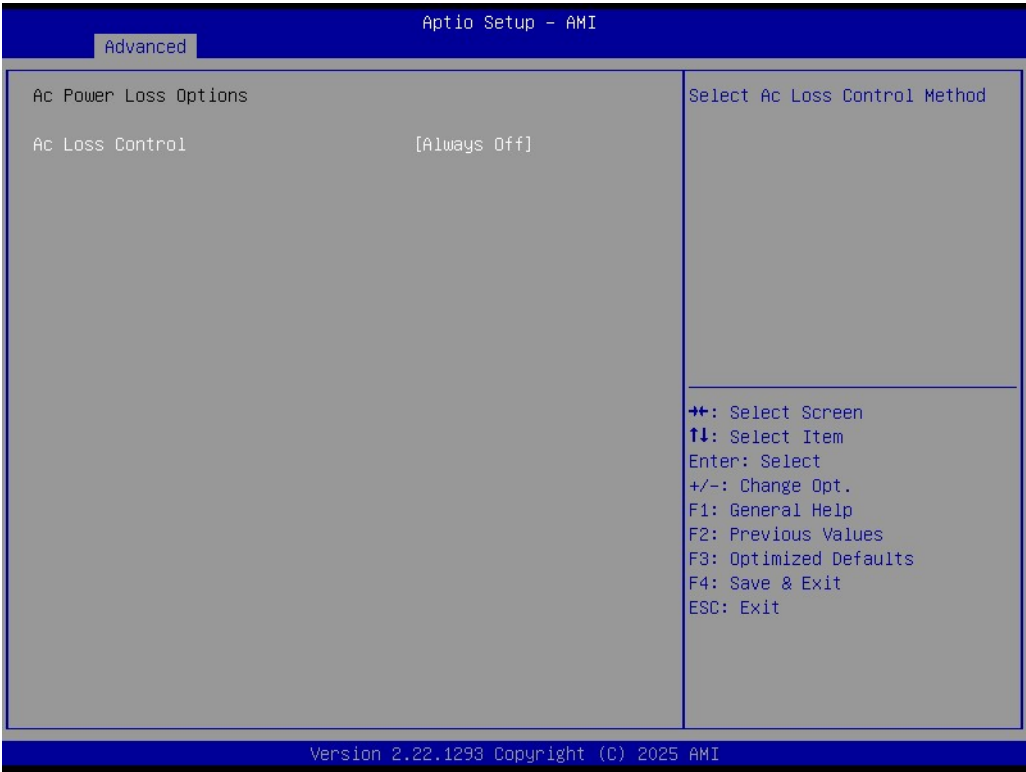


- USB0_12 2.0 port 1
To set-up USB0_12 2.0 port 1 enable/disable/auto.
- USB0_12 2.0 port 2
To set-up USB0_12 2.0 port 2 enable/disable/auto.
- USB0_56 2.0 port 3
To set-up USB0_56 2.0 port 3 enable/disable/auto.
- USB0_56 2.0 port 4
To set-up USB0_56 2.0 port 4 enable/disable/auto.
- USB0_78 2.0 port 5
To set-up USB0_78 2.0 port 5 enable/disable/auto.
- USB3_78 2.0 port 6
To set-up USB3_78 2.0 port 6 enable/disable/auto.
- USB0_12 3.1 port 1
To set-up USB0_12 3.1 port 1 enable/disable/auto.
- USB0_12 3.1 port 2
To set-up USB0_12 3.1 port 2 enable/disable/auto.

3.2.2.3.4 AC Power Loss Options

Advanced → AMD CBS → AC Power Loss Options

To specify what state to go to when power is re-applied after a power failure.



3.2.2.3.5 SMU Common Options

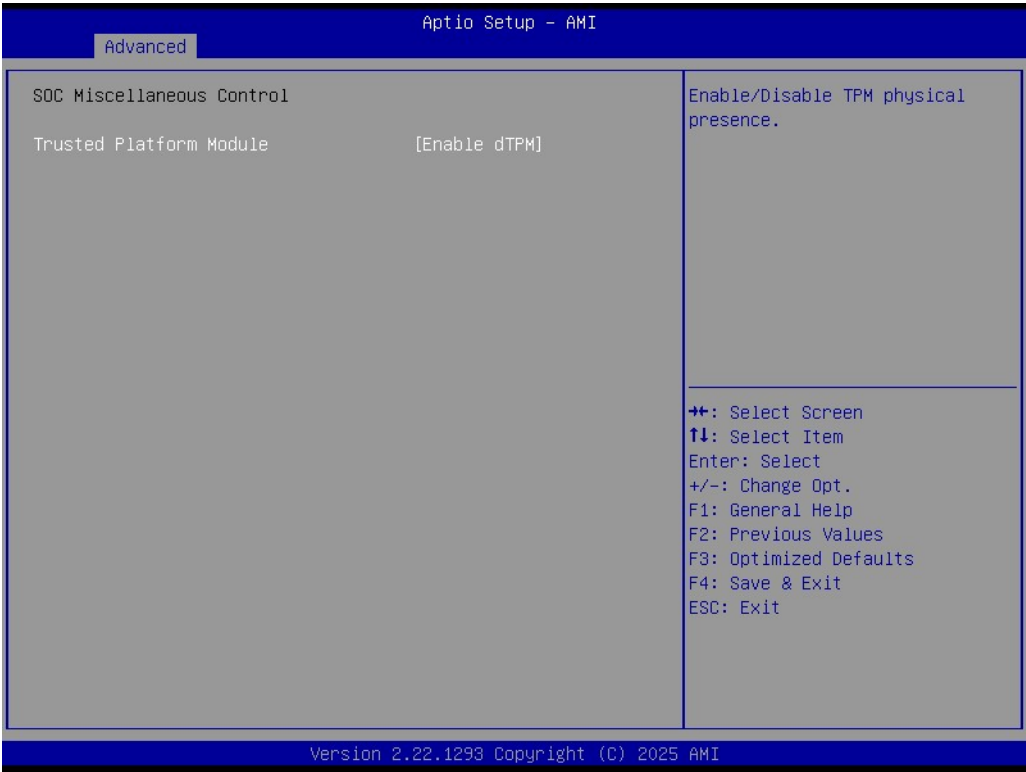
Advanced → AMD CBS → SMU Common Options



- **System Configuration**
This item allows users to configure system settings.
- **SPL Control (Sustained Power Limit)**
This item allows users to configure SPL settings.
- **PPT Control (Package Power Tracking)**
This item allows users to configure PPT settings.
- **STAPM Control (Skin Temperature Aware Power Management)**
This item allows users to configure STAPM settings.
- **Thermal Control**
This item allows users to configure thermal settings.
- **TDC Control (Thermal Design Current)**
This item allows users to configure TDC settings.
- **EDC Control (Electrical Design Current)**
This item allows users to configure EDC settings.
- **PROCHOT Control (Processor Hot)**
This item allows users to configure PROCHOT settings.
- **ECO Control**
This item allows users to configure ECO settings.

3.2.2.3.6 SOC Miscellaneous Control

Advanced → AMD CBS → SOC Miscellaneous Control
Configure trusted platform module for TPM.



3.2.2.4 Advanced → AMD PBS

Configure platform-level BIOS settings such as PCIe, integrated graphics, and power-management features.

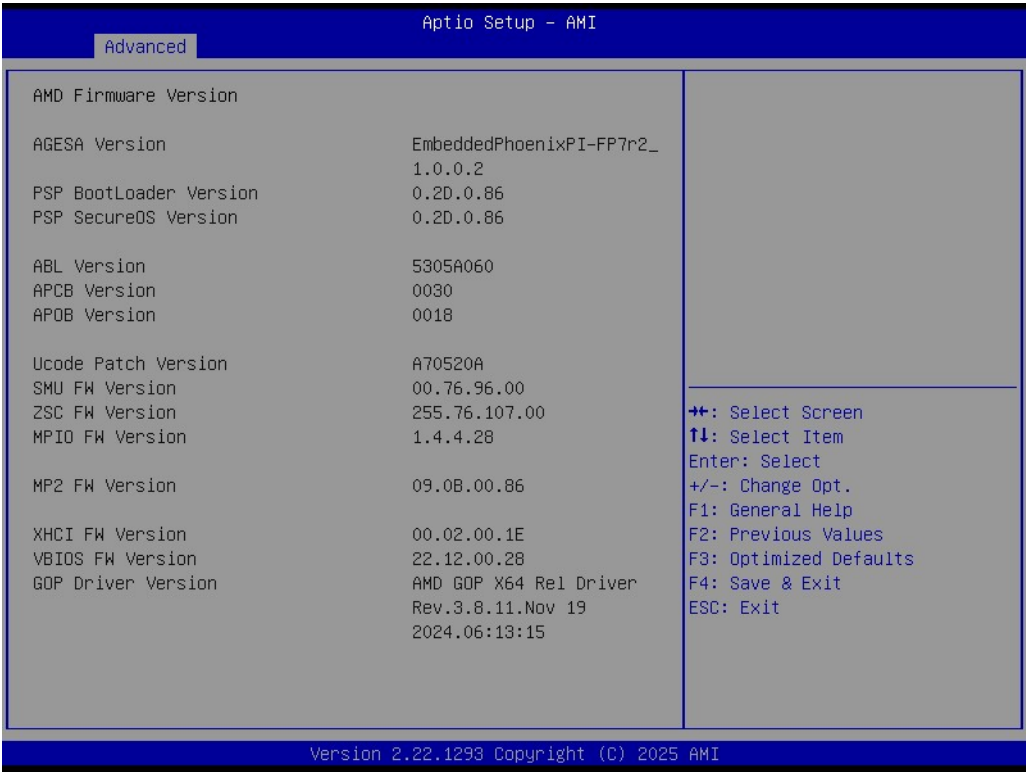


■ Above 4GB MMIO Limit

Above 4GB MMIO Limit enables allocation of memory-mapped I/O space above the 4GB address boundary to support devices with large memory requirements.

3.2.2.4.1 AMD Firmware Version

Advanced → AMD PBS → AMD Firmware Version
Displays the AMD firmware version information, including AGESA.

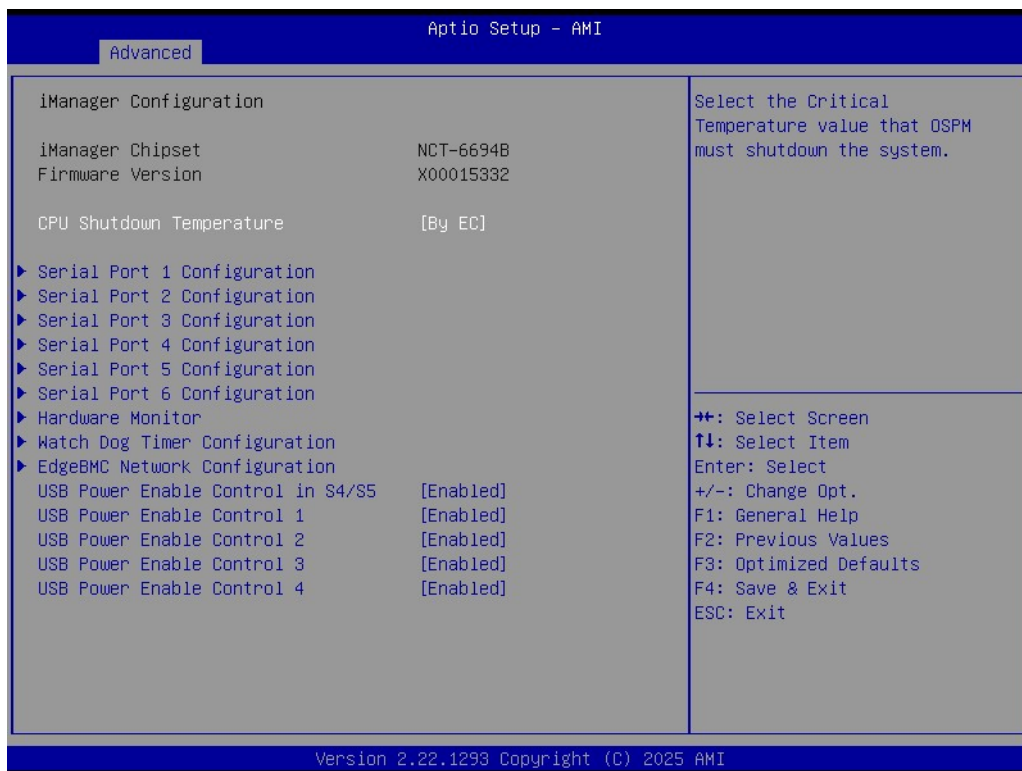


3.2.2.4.2 PCI Express Configurations

Advanced → AMD PBS → PCI Express Configurations
Configure PCI Express port settings NVMe RAID enable/disable status.

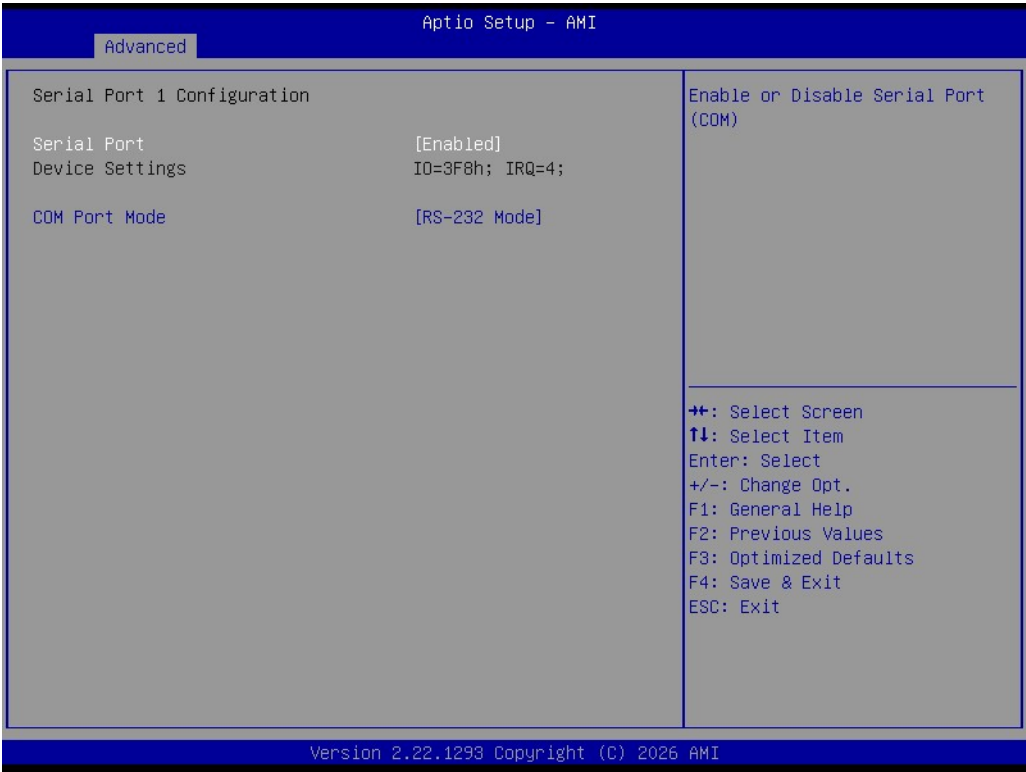


3.2.2.5 Advanced → iManager Configuration



- **CPU Shutdown Temperature**
This item is set-up by EC.
- **USB power Enable control in S4/S5**
Enable/Disable USB ports power in S4/S5.
- **USB power Enable control in 1**
- **USB power Enable control in 2**
- **USB power Enable control in 3**
- **USB power Enable control in 4**

3.2.2.5.1 Serial Port 1 Configuration



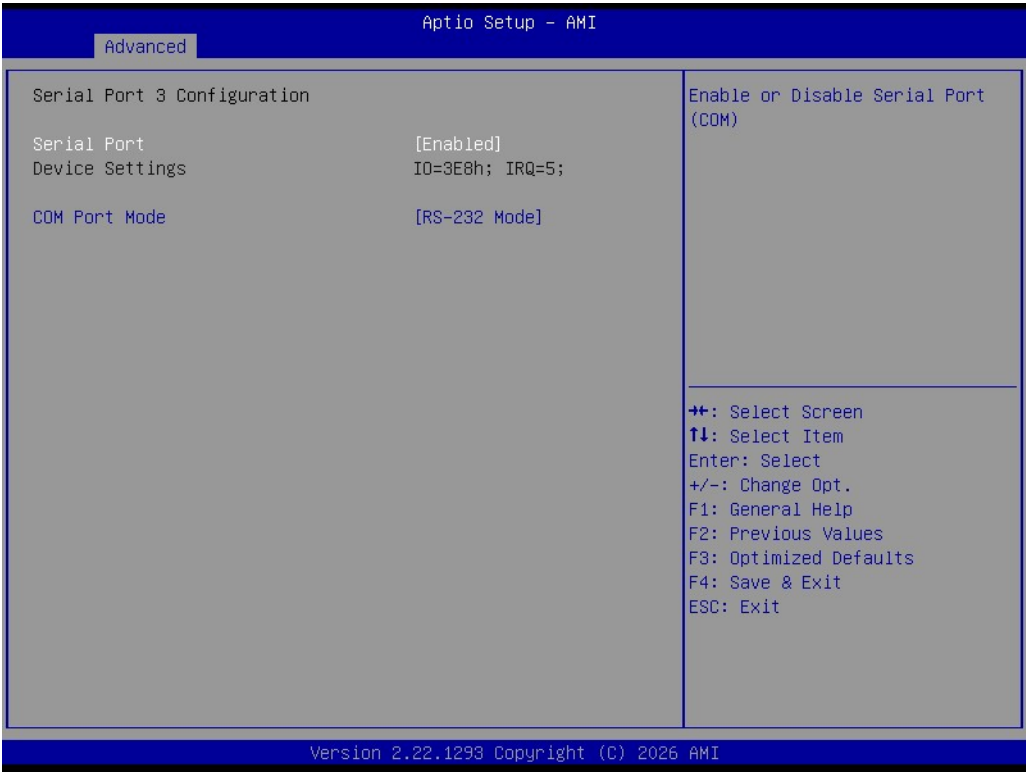
- **Serial Port**
Enable or disable serial port.
- **Device settings**
Select optimal settings for Super IO device.
- **COM Port Mode**
COM port mode select [RS-232/ RS-422/ RS-485 Mode].

3.2.2.5.2 Serial Port 2 Configuration



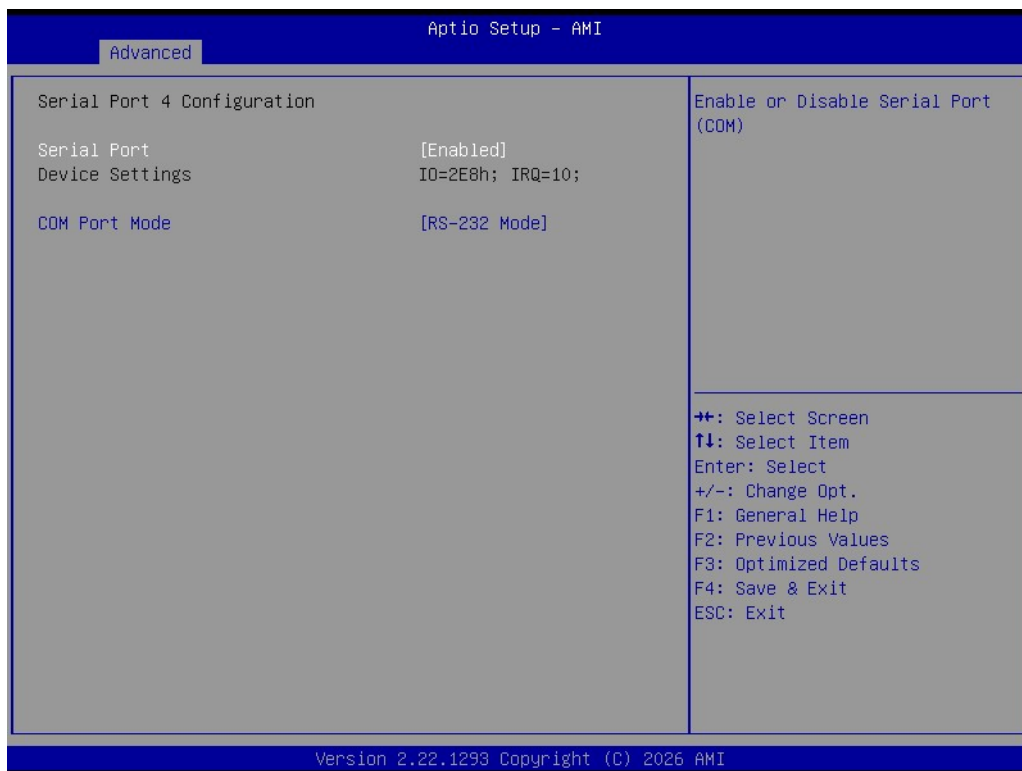
- **Serial Port**
Enable or disable serial port.
- **Device settings**
Select optimal settings for Super IO device.
- **COM Port Mode**
COM port mode select [RS-232/ RS-422 / RS-485 Mode].

3.2.2.5.3 Serial Port 3 Configuration



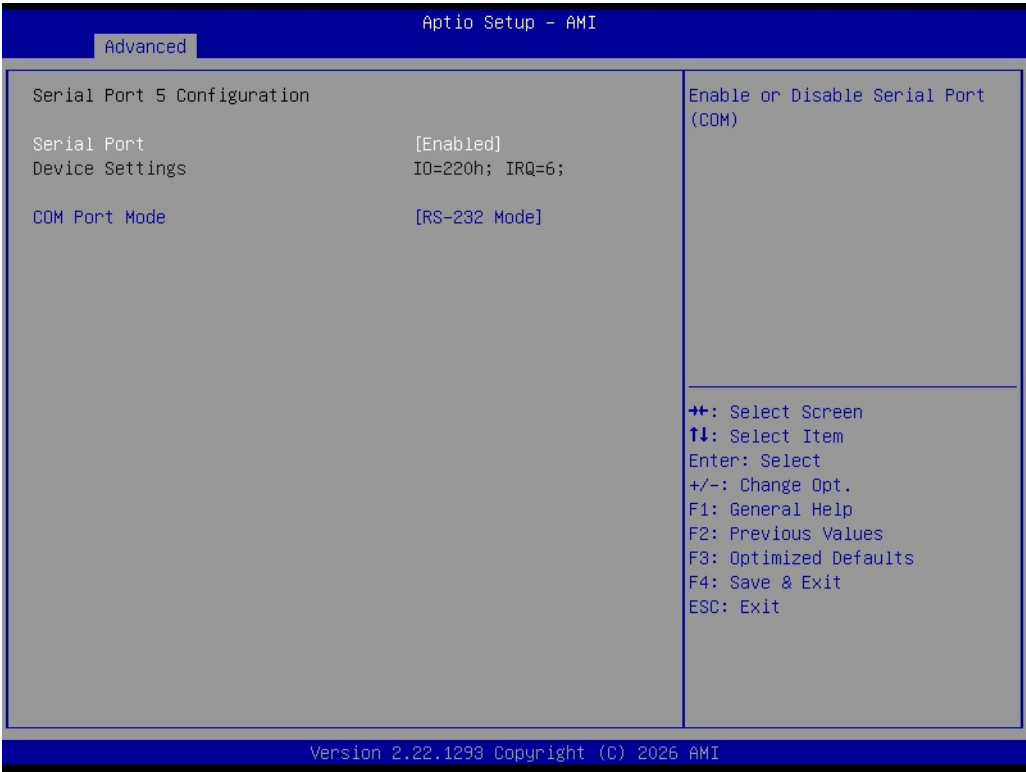
- **Serial Port**
Enable or disable serial port.
- **Device settings**
Select optimal settings for Super IO device.
- **COM Port Mode**
COM port mode select [RS-232/ RS-485 Mode].

3.2.2.5.4 Serial Port 4 Configuration



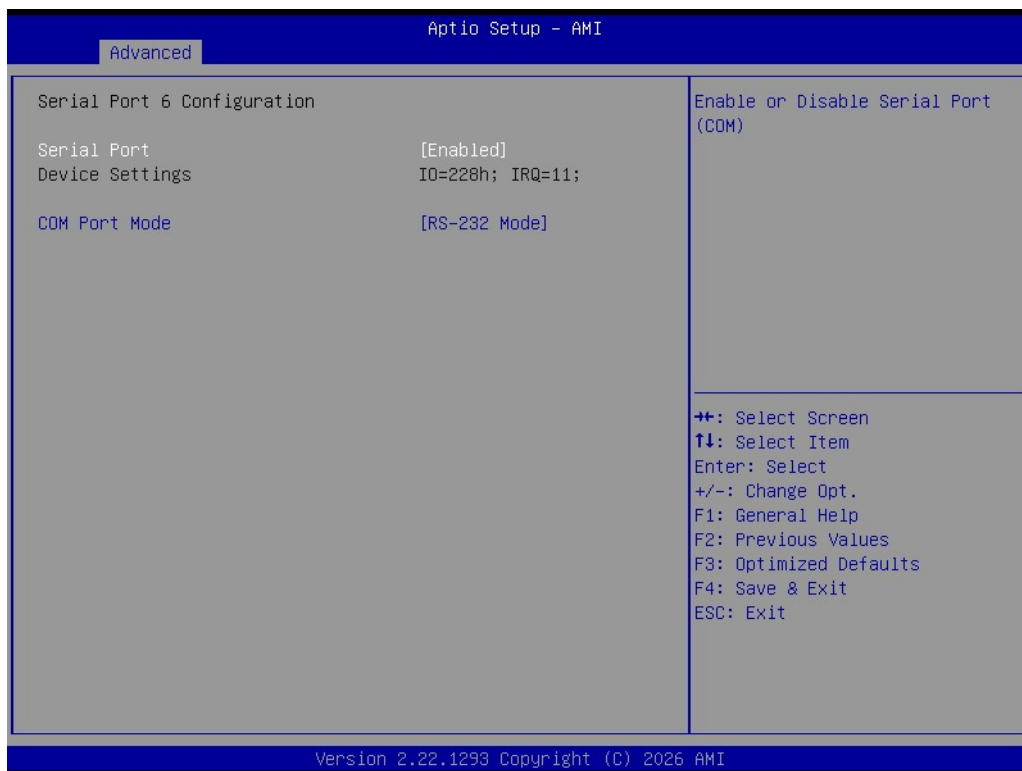
- **Serial Port**
Enable or disable serial port.
- **Device settings**
Select optimal settings for Super IO device.
- **COM Port Mode**
COM port mode select [RS-232/ RS-485 Mode].

3.2.2.5.5 Serial Port 5 Configuration



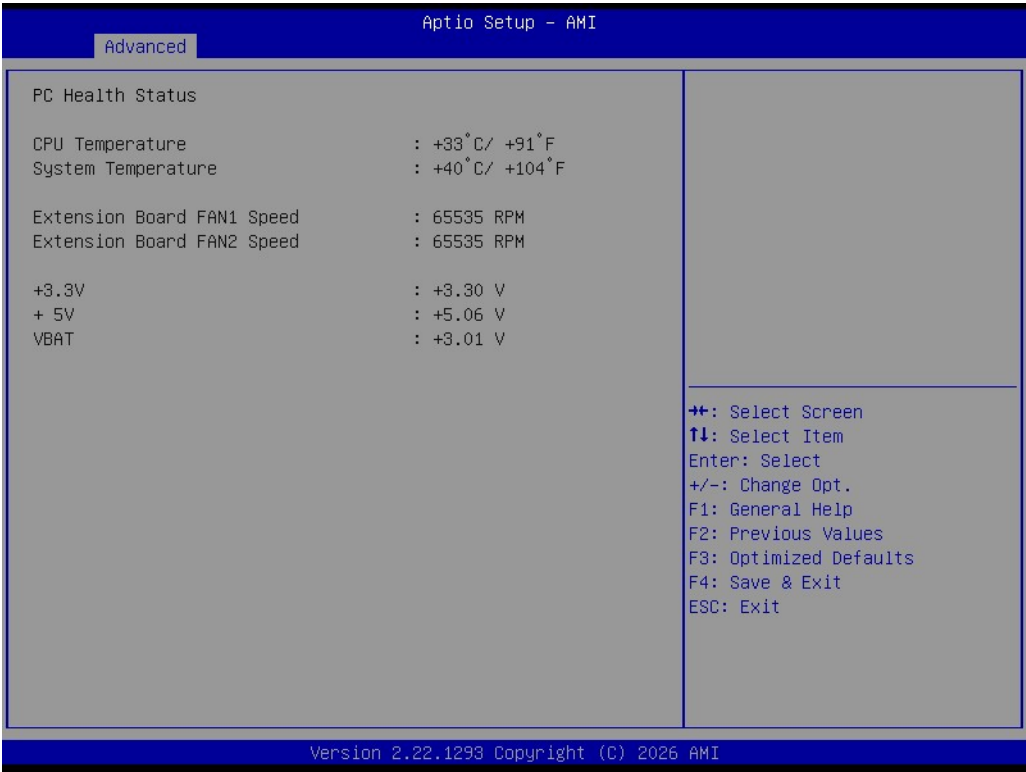
- **Serial Port**
Enable or disable serial port.
- **Device settings**
Select optimal settings for Super IO device.
- **COM Port Mode**
COM port mode select [RS-232/ RS-485 Mode].

3.2.2.5.6 Serial Port 6 Configuration



- **Serial Port**
Enable or disable serial port.
- **Device settings**
Select optimal settings for Super IO device.
- **COM Port Mode**
COM port mode select [RS-232/ RS-485 Mode].

3.2.2.5.7 Hardware Monitor



- **Hardware Monitor**
Provides hardware monitoring information.

3.2.2.5.8 Watch Dog Timer Configuration

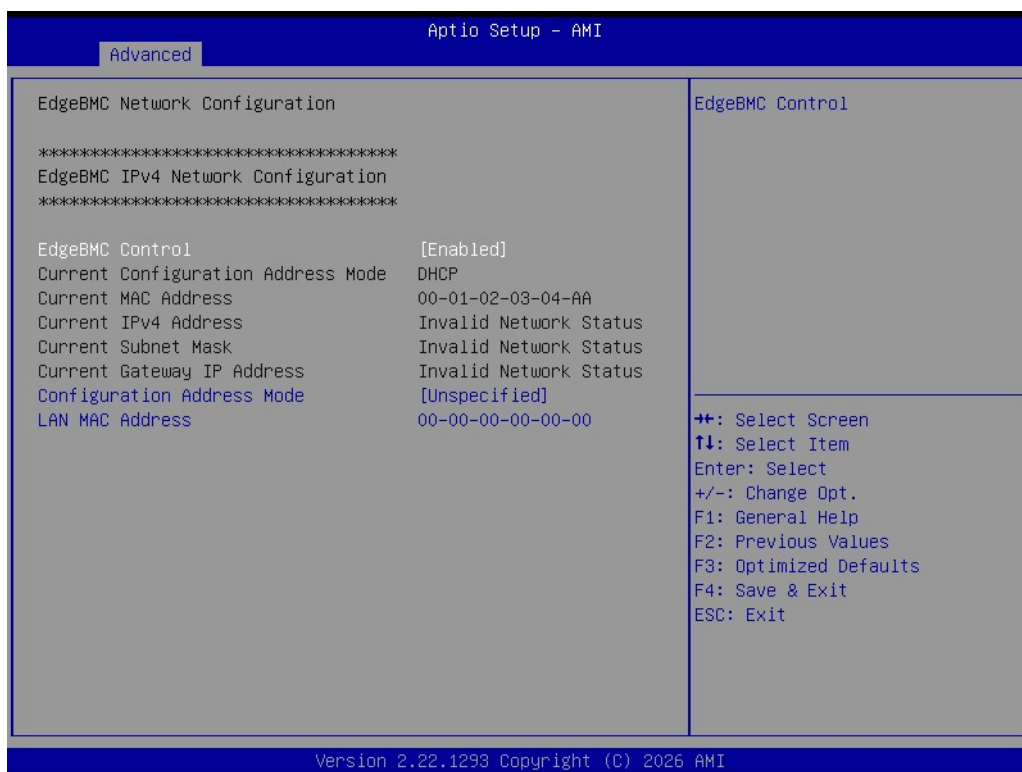




■ Watch Dog Timer Configuration

This item allows users to enable or disable Watch Dog Timer on the settings.

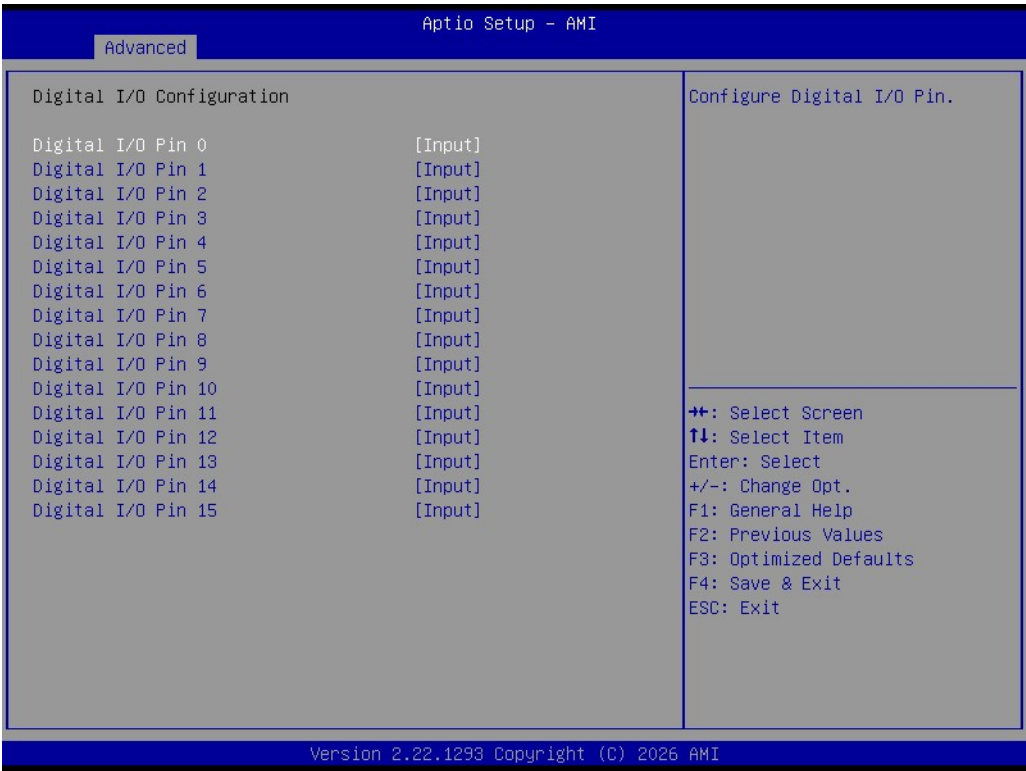
3.2.2.5.9 EdgeBMC Control



■ EdgeBMC Control

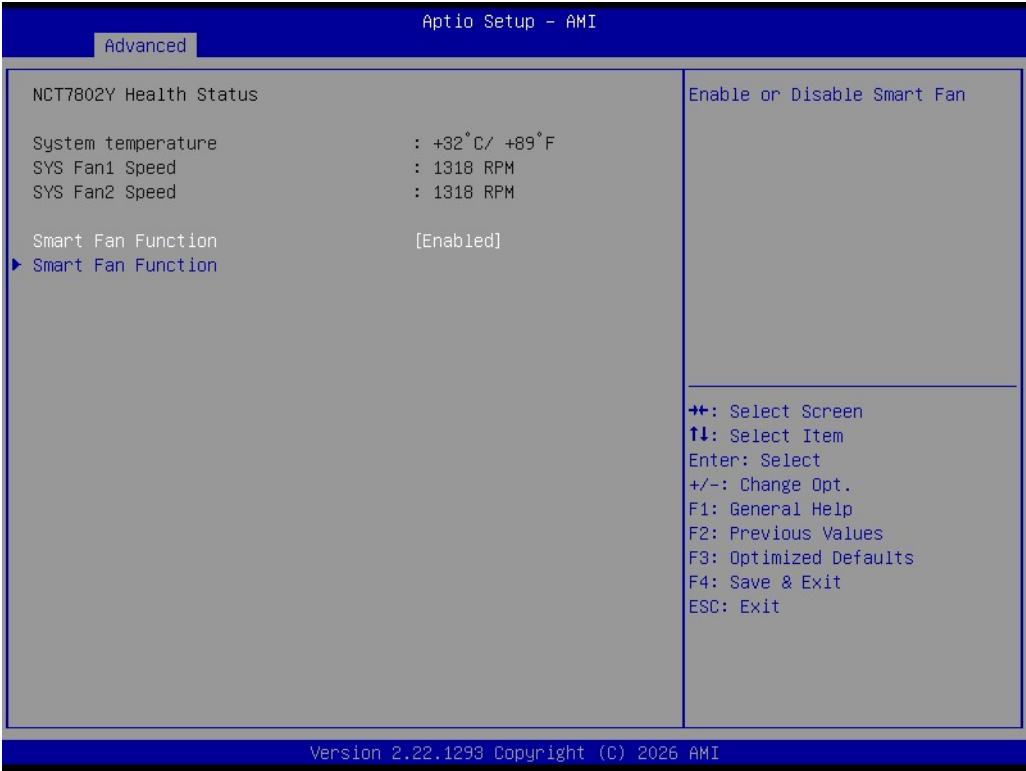
This item allows users to enable or disable EdgeBMC on the settings.

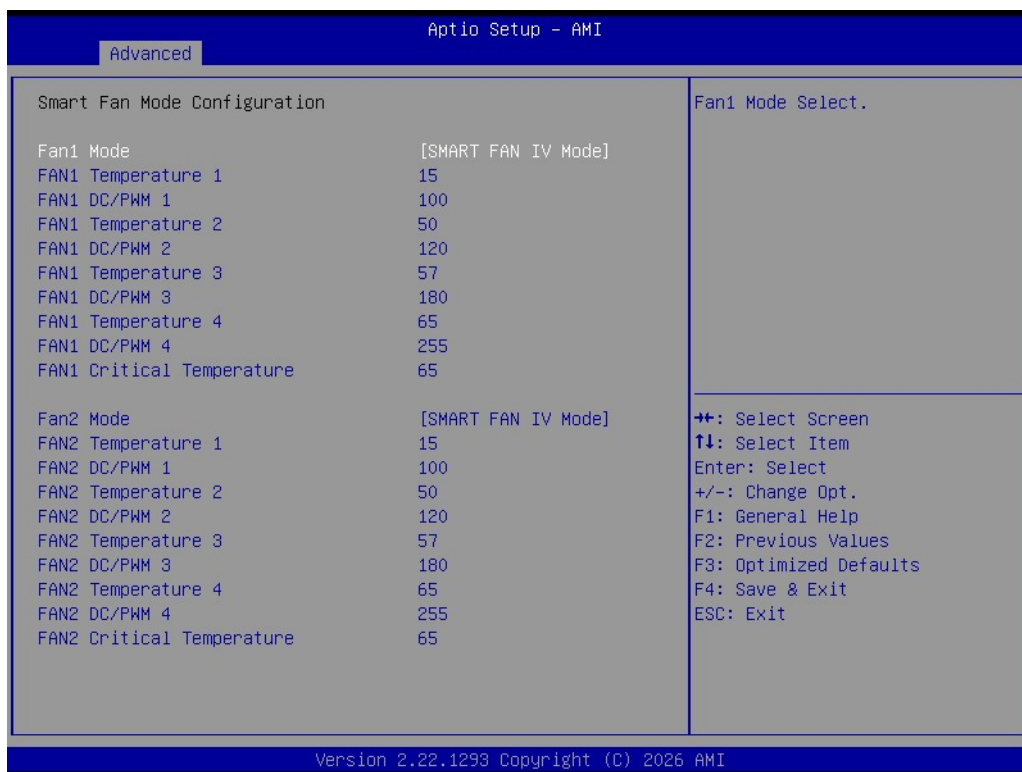
3.2.2.6 Advanced → Digital I/O Configuration



- **Digital I/O Configuration**
This item allows users to configure each digital I/O pin as input or output and define its operating behavior.

3.2.2.7 Advanced → NCT7802Y HW Monitor



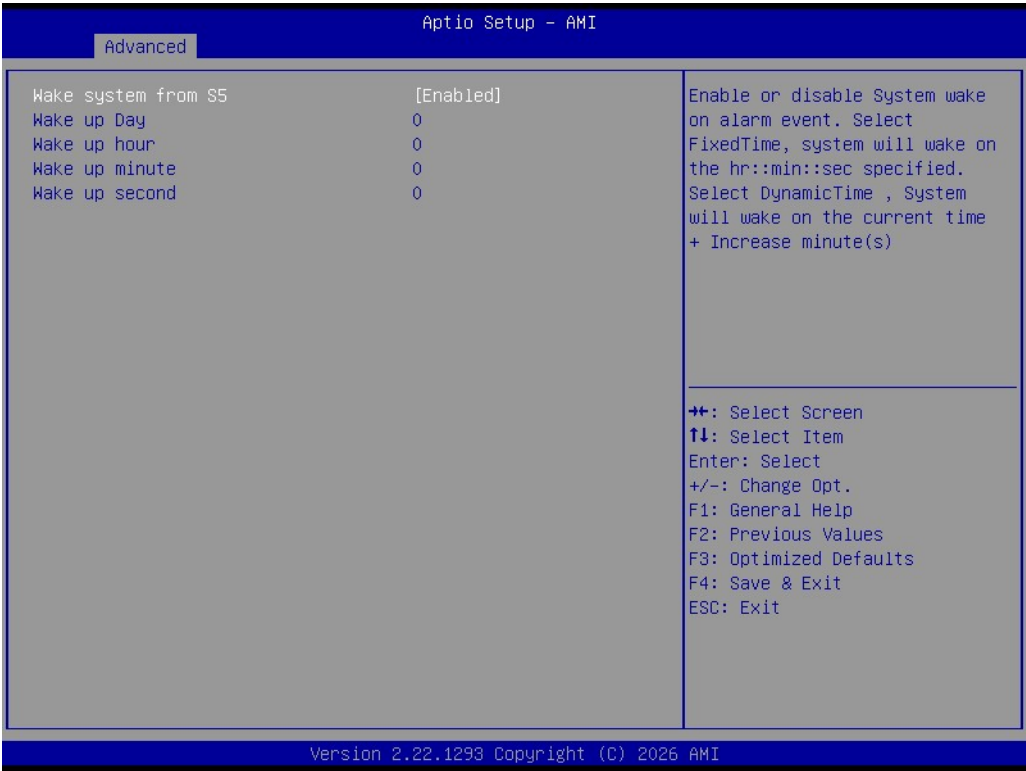
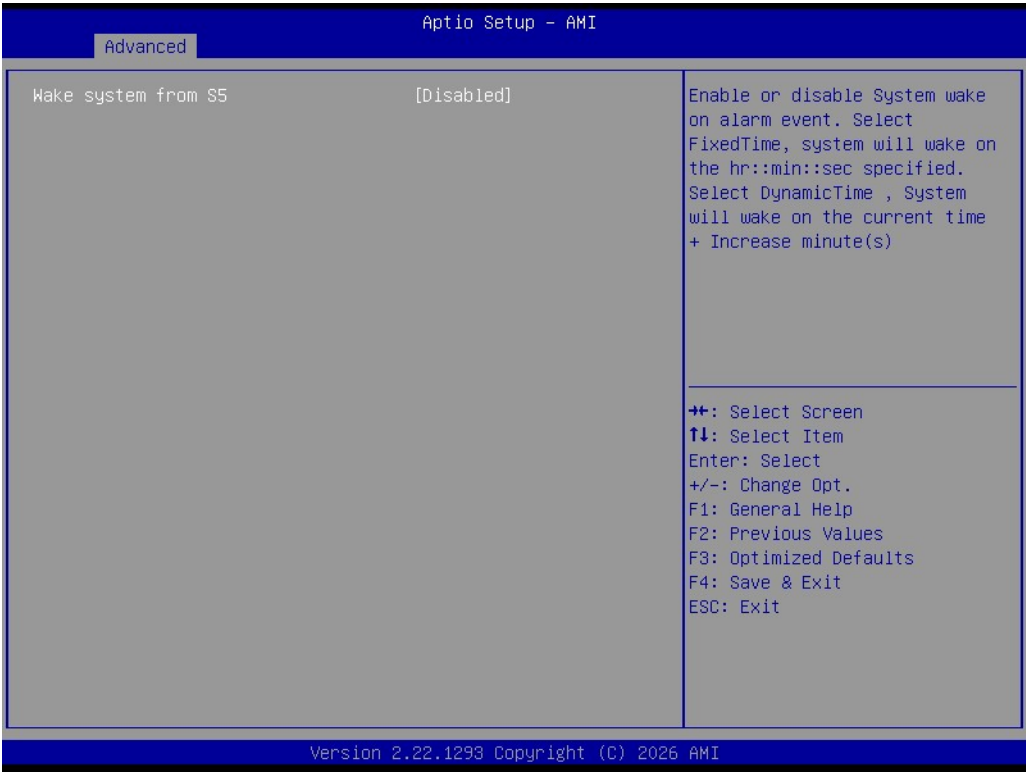


- **Smart Fan Function**
This item allows users to enable or disable Smart fan on the settings.
- **Smart Fan Mode Configuration**
Select Fan1 Mode or Fan2 Mode.

Note! This function is optional for AMO-3511.



3.2.2.8 Advanced → S5 RTC Wake Settings



- **Wake system from S5**
Enable or disable system wake on alarm events. Select Fixed Time for the system to wake on the day:hr:min:sec specified.

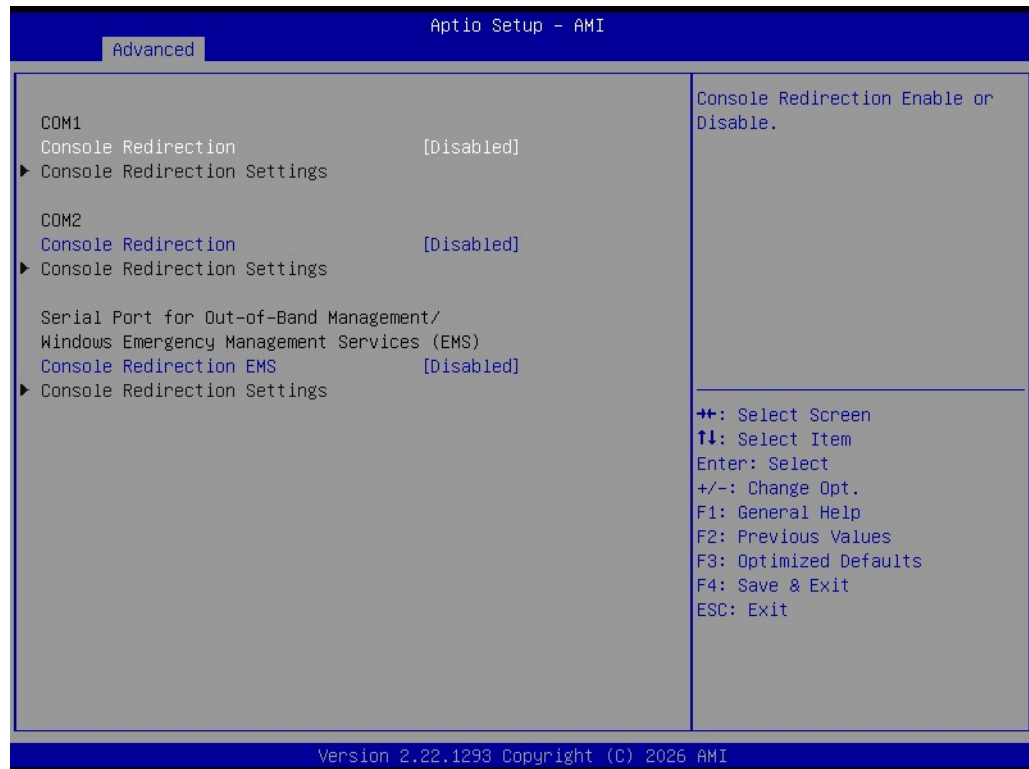
3.2.2.9 Advanced → UEFI Variables Protection

Enable or disable password-based protection for UEFI runtime variables stored in NVRAM.



3.2.2.10 Advanced → Serial Port Console Redirection

Enable or disable BIOS output redirection through the serial port for remote console access.



- **COM1 and COM2 Console Redirection**
Console Redirection Enable or Disable.
- **Console Redirection EMS**
Console Redirection Enable or Disable.

3.2.2.11 CPU Configuration

Advanced → CPU Configuration

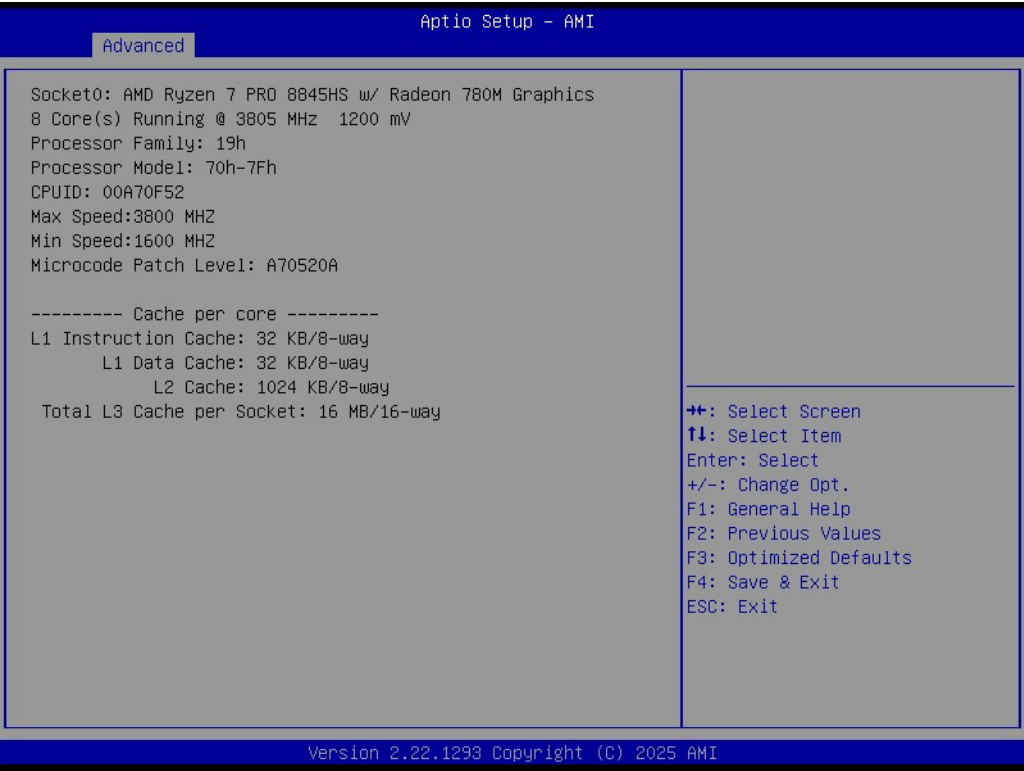
Access and configure CPU-related features such as core count, virtualization, power management, and hyper-threading.



- **PSS Support (Performance Supported States)**
This item allows user to enable/ disable PSS Support on the device settings.
- **PCC Support (Platform Communications Channel)**
This item allows user to enable/ disable PSS Support on the device settings.
- **NX Mode (No-Execute Mode)**
NX Mode enables hardware-based protection by preventing execution of code in non-executable memory regions.

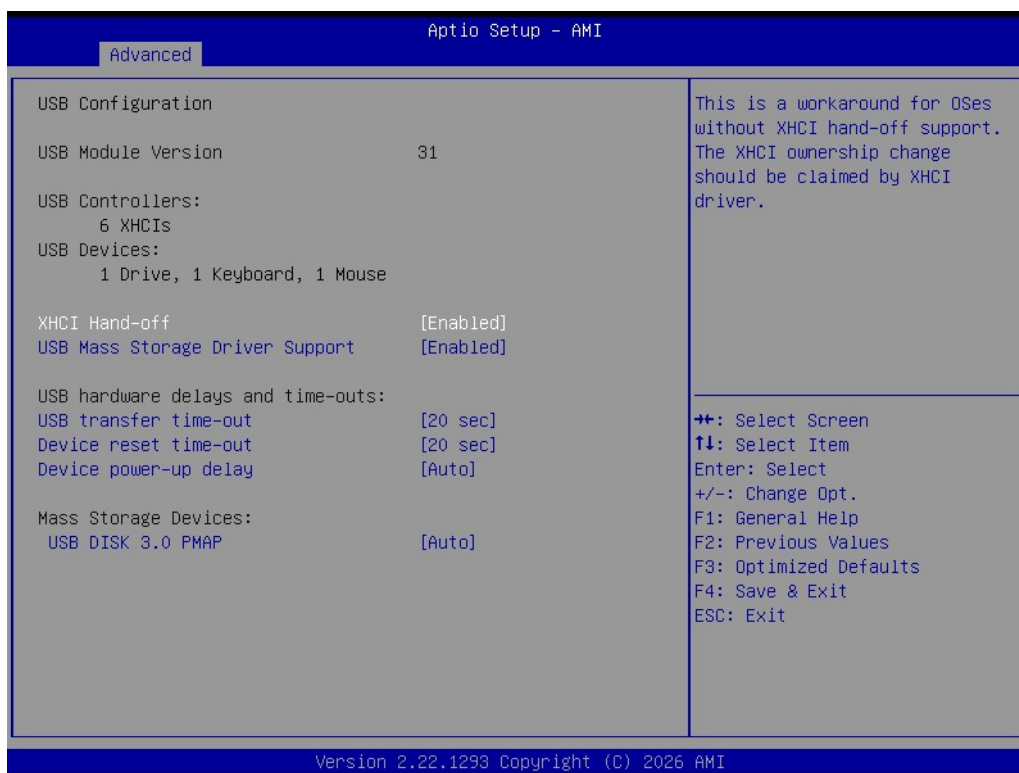
3.2.2.11.1 Node 0 Information

Advanced → CPU Configuration → Node 0 Information
Node 0 Information shows AMD R2000 Series CPU information for user reference.



3.2.2.12 Advanced → USB Configuration

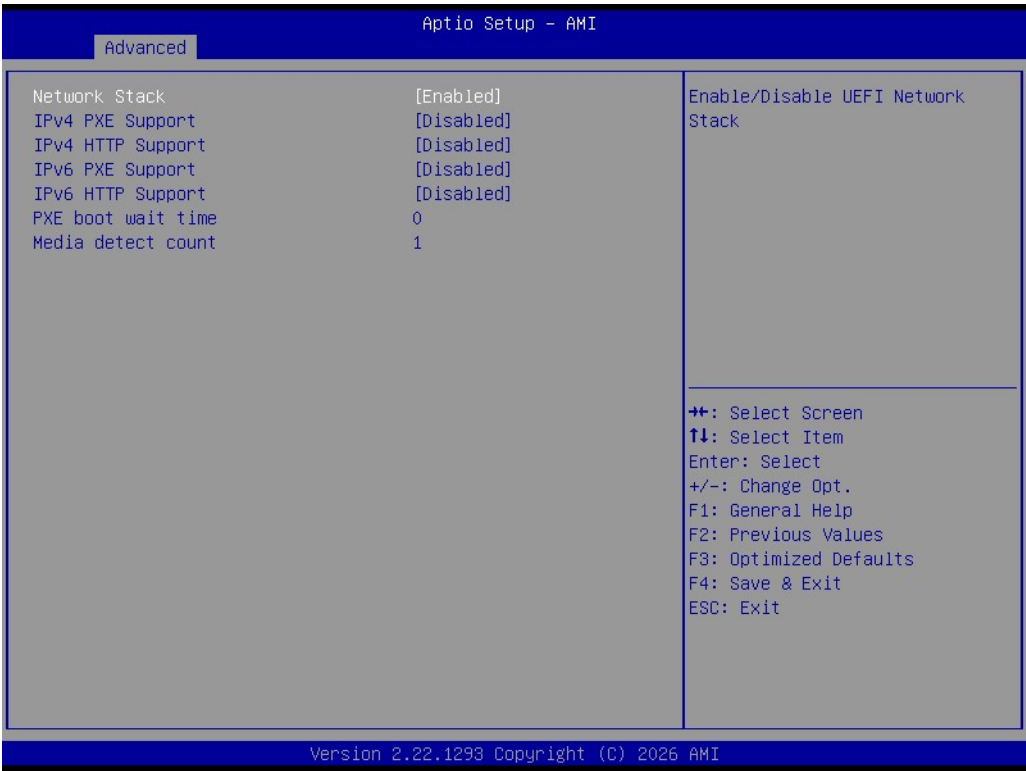
Configure USB controller behavior and legacy support options.



- **XHCI Hand-off**
This is a workaround for OS without XHCI hand-off support. The XHCI owner ship change should be claimed by XHCI driver.
- **USB Mass Storage Driver Support**
This item allows users to enable or disable USB Mass Storage driver support.
- **USB Transfer Time-Out**
This item allows users to select the USB transfer time-out value. [1,5,10,20sec].
- **Device Reset Time-Out**
This item allows users to select the USB device reset time-out value. [10,20,30,40sec].
- **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 take from Hub descriptor.
- **Mass Storage Devices**
Mass storage device emulation type. "Auto" enumerates device according to their media format. Optical drives are emulated as "CD-ROM", drives with no media will be emulated according to a drive type.

3.2.2.13 Advanced → Network Stack Configuration

Enable or disable network booting functionality (e.g., PXE) by initializing the UEFI network stack.



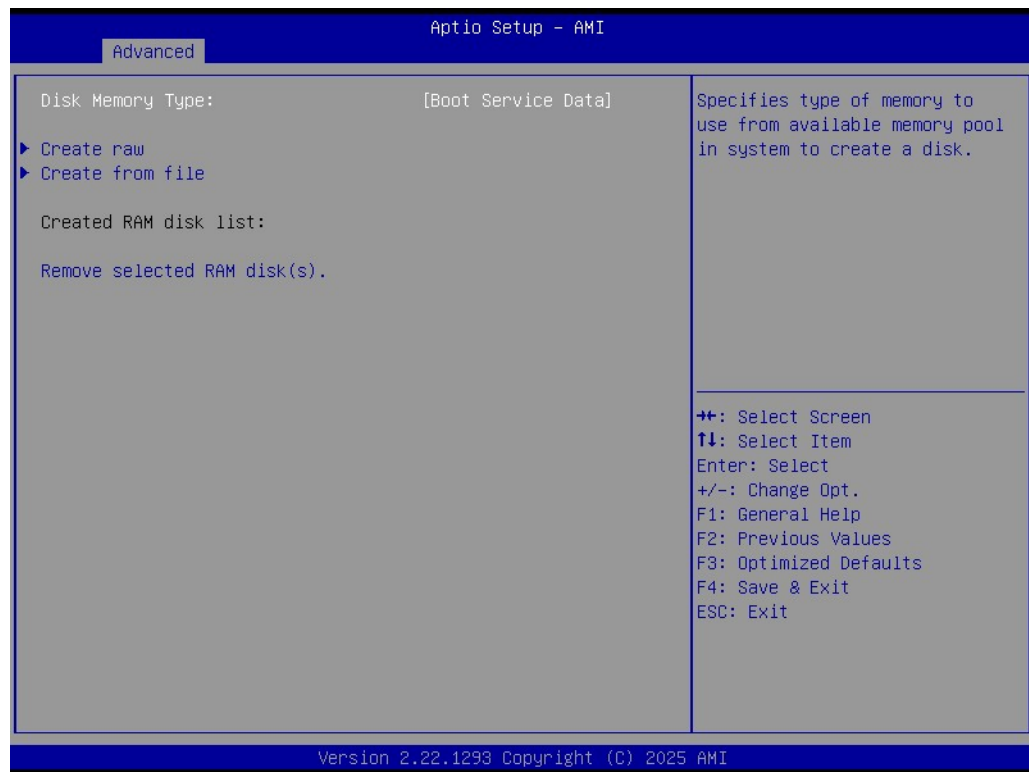
3.2.2.14 Advanced → NVMe Configuration

Enable and configure NVMe SSD settings, such as PCIe link mode and M.2 slot bandwidth.



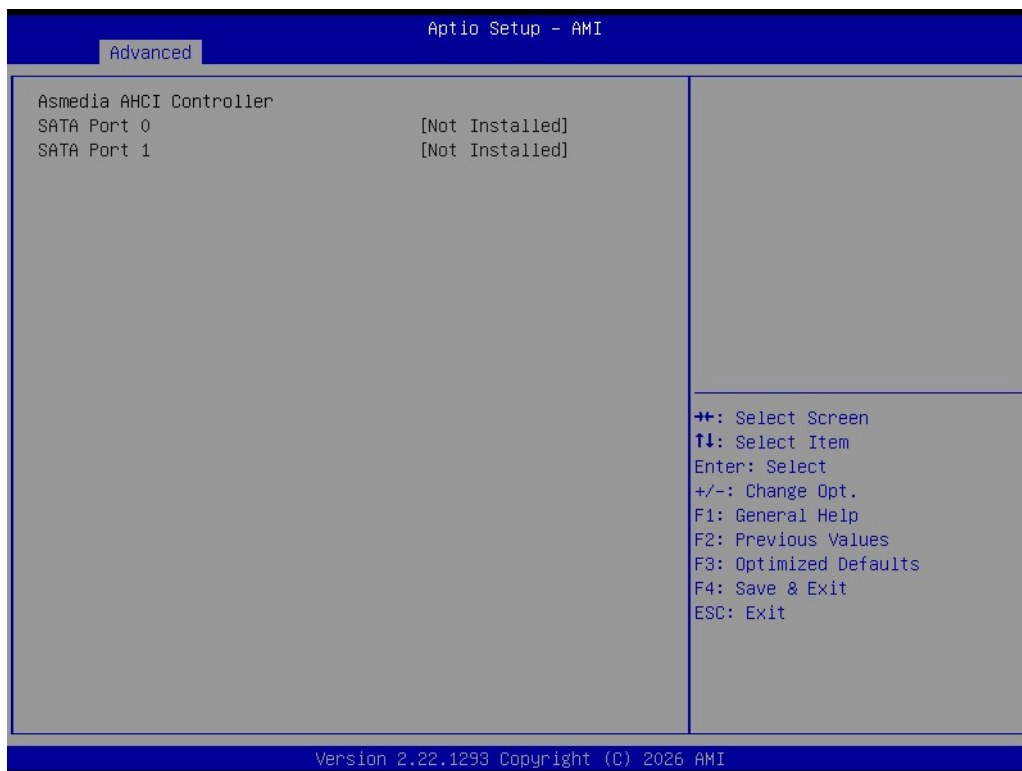
3.2.2.15 Advanced → RAM Disc Configuration

This item allows users to create and manage a RAM-based virtual disk from available system memory for high-speed data storage.



- **Create raw**
This item allows users to create new RAM disk with a given starting and ending address.
- **Create from file**
This item allows users to create a new RAM from files.
- **Remove selected RAM disk(s)**
This item allows users to discard the RAM disk.

3.2.2.16 Advanced → Asmedia AHCI Controller

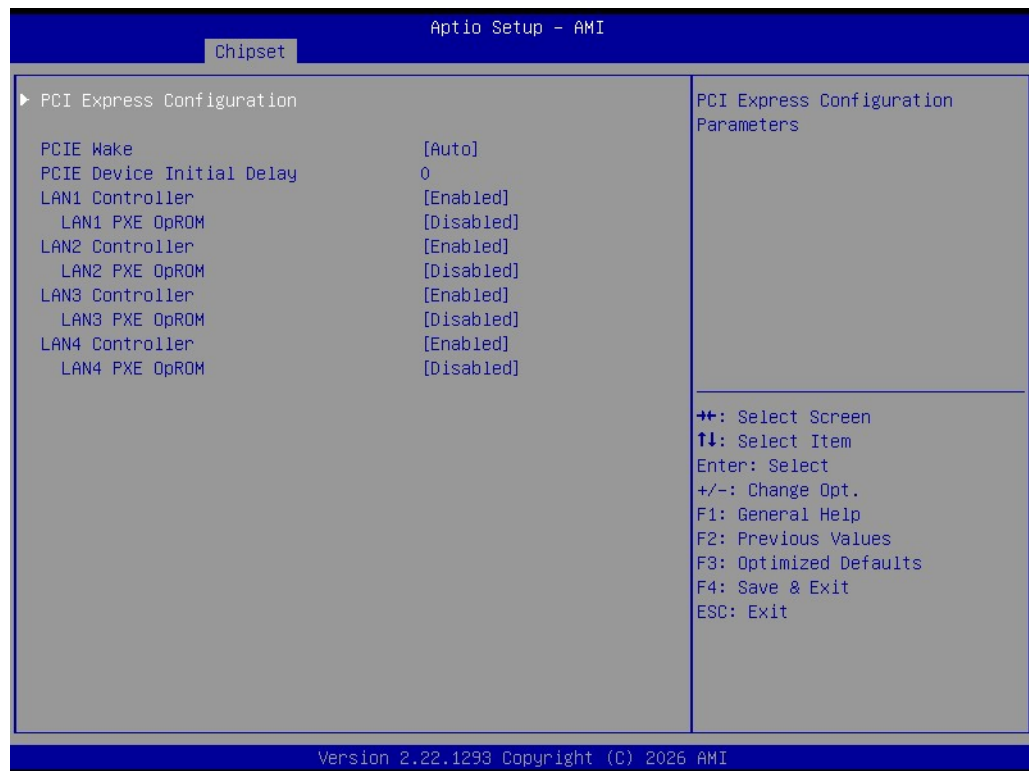


- **Asmedia AHCI Controller**
To configure SATA port 0 and port1 settings on the device.

3.2.3 Chipset Configuration Setting

Select the chipset tab from the BIOS setup screen to enter the Chipset Setup screen. Users can select any item in the left frame of the screen, such as PCI Express Configuration, to go to the sub-menu for that item. Users can display a Chipset Setup option by highlighting it using the <Arrow> keys. All Chipset Setup options are described in this section. The Chipset Setup screens are shown below. The sub-menus are described on the following pages.

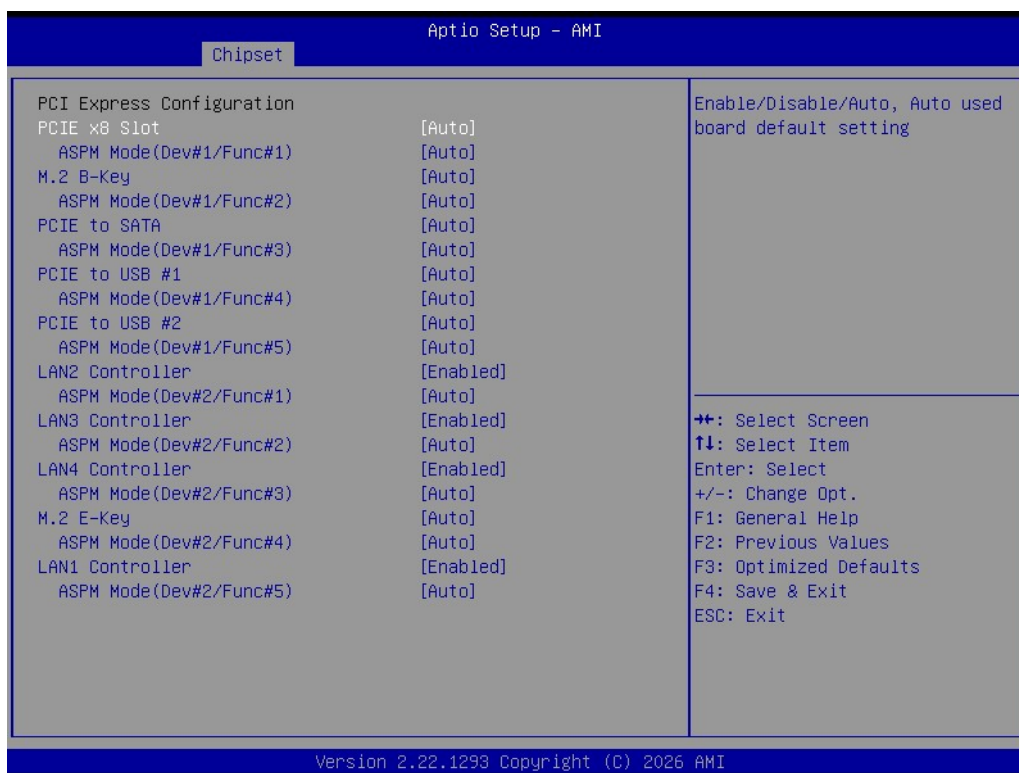
3.2.3.1 Chipset → PCI Express Configuration



- **PCI Express Wake**
This item allows user to set-up the system to be powered on or resumed from sleep by activity from a PCI Express device.
- **PCI Express Device Initial Delay**
- **LAN1 controller**
LAN1 PXE OpROM enables/disables the PXE boot option ROM on LAN port 1, allowing the system to boot from a network server.
- **LAN2 controller**
LAN2 PXE OpROM enables/disables the PXE boot option ROM on LAN port 1, allowing the system to boot from a network server.
- **LAN3 controller**
LAN3 PXE OpROM enables/disables the PXE boot option ROM on LAN port 1, allowing the system to boot from a network server.
- **LAN4 controller**
LAN4 PXE OpROM enables/disables the PXE boot option ROM on LAN port 1, allowing the system to boot from a network server.

3.2.3.1.1 PCI Express Configuration

This item allows user to enable or disable PCIe on the device settings.

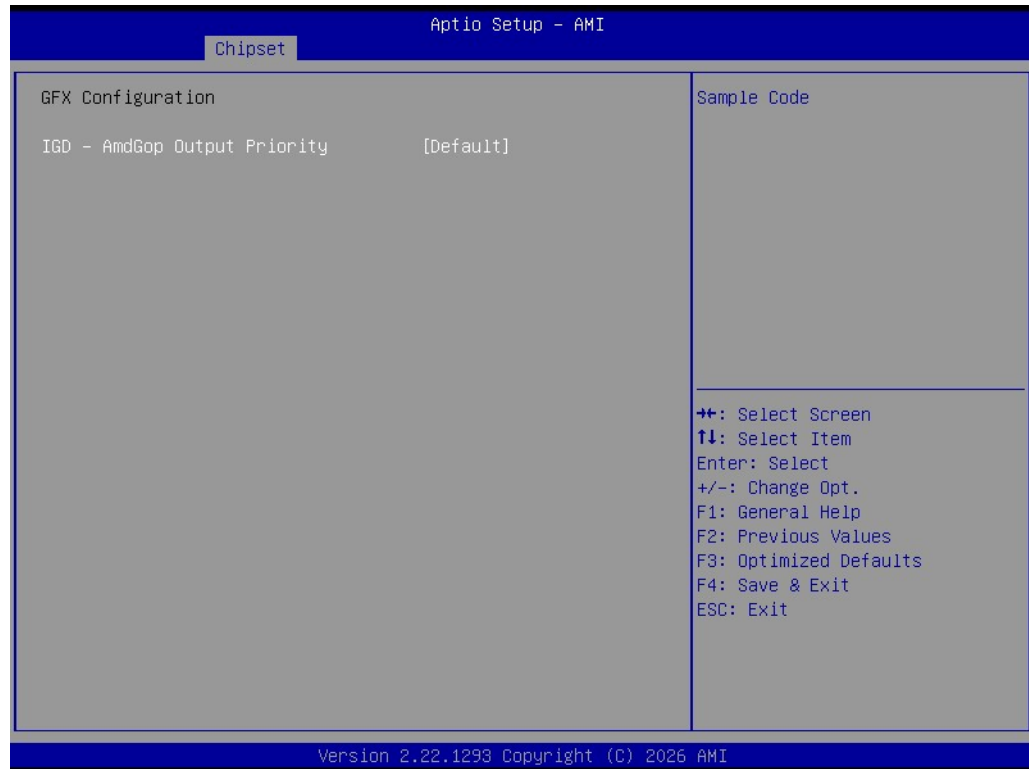


- **PCI Express Slot**
This item allows users to enable/disable/auto the ASPM mode settings on PCI Express Slot.
- **M.2 B-key**
This item allows users to enable/disable/auto the ASPM mode settings on M.2 B-key.
- **PCI Express to SATA**
This item allows users to enable/disable/auto the ASPM mode settings on PCI Express to SATA.
- **PCI Express to USB #1**
This item allows users to enable/disable/auto the ASPM mode settings on PCI Express to USB#1.
- **PCI Express to USB#2**
This item allows users to enable/disable/auto the ASPM mode settings on PCI Express to USB#2.
- **LAN2 Controller**
This item allows users to enable/disable/auto the ASPM mode settings on LAN2.
- **LAN3 Controller**
This item allows users to enable/disable/auto the ASPM mode settings on LAN3.
- **LAN4 Controller**
This item allows users to enable/disable/auto the ASPM mode settings on LAN4.
- **M.2 E-Key**
This item allows users to enable/disable/auto the ASPM mode settings on M.2 E-Key.

- **LAN1 Controller**
This item allows users to enable/disable/auto the ASPM mode settings on LAN1.

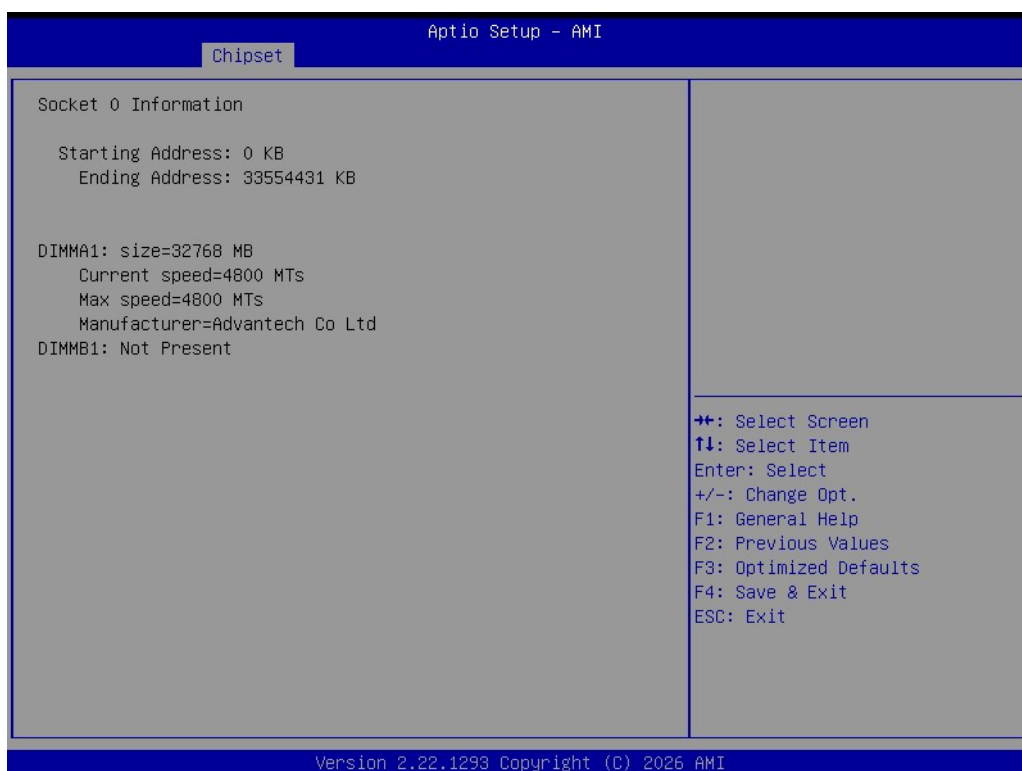
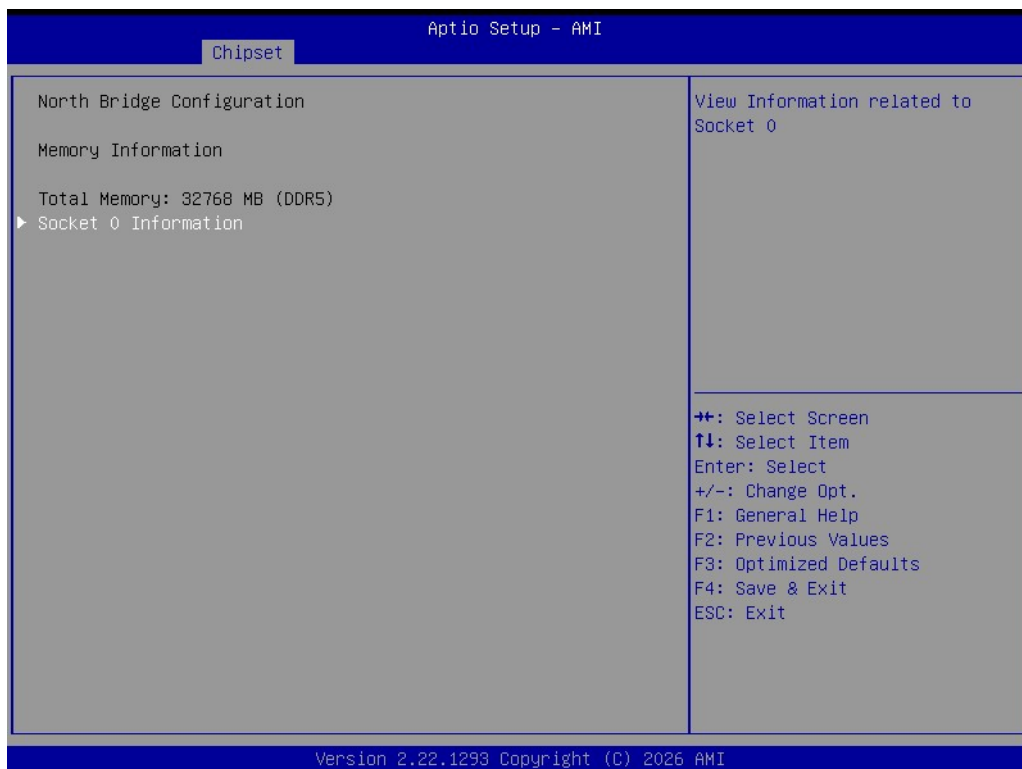
3.2.3.1.2 GFX Configuration

Chipset → PCI Express Configuration → GFX Configuration



- **GFX Configuration**
This item allows user to configure the priority of multiple displays on the device settings.

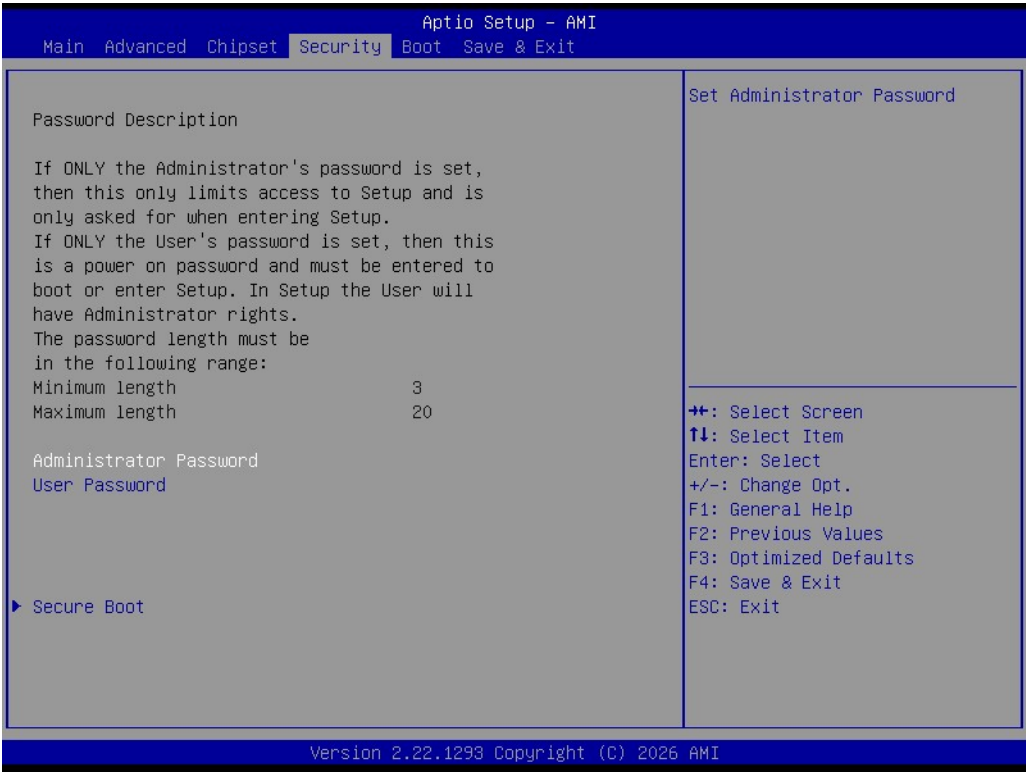
3.2.3.2 Chipset → North Bridge Configuration



- **Socket 0 Information**
To view the information related to Socket 0.

3.2.4 Security

Manage firmware-level protections such as BIOS passwords, user access control.



- **Administrator Password**
Set/Configure Administrator Password.
- **User Password**
Set/Configure User Password.

3.2.4.1 Security→Secure Boot

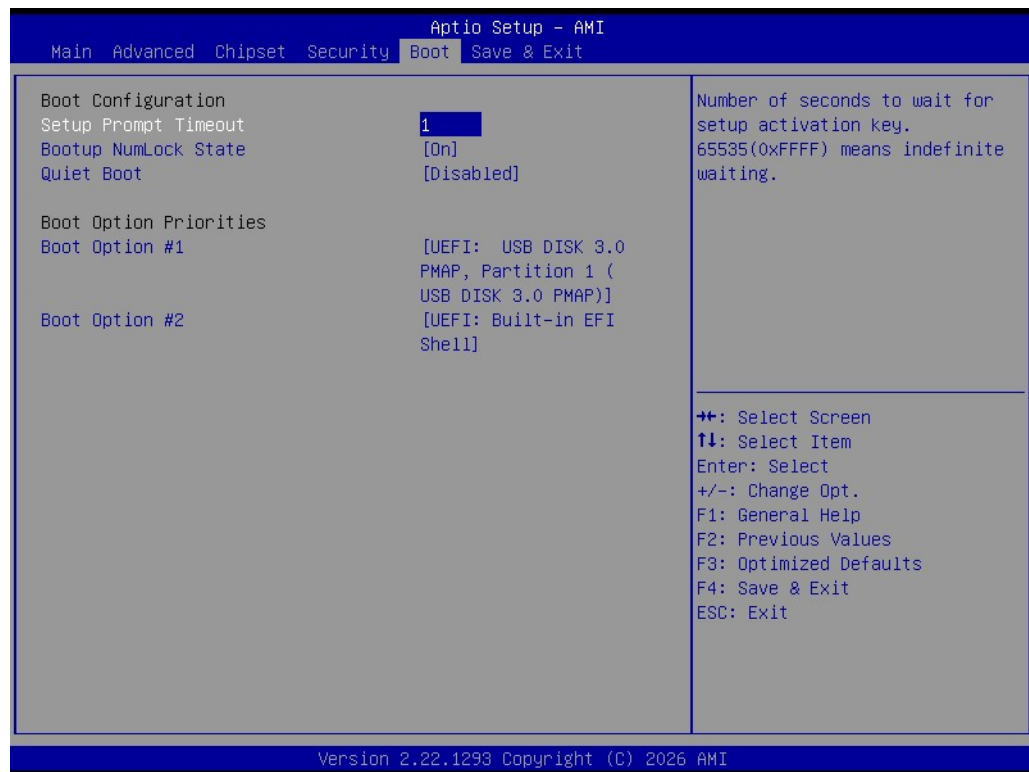
Enable or disable UEFI Secure Boot to ensure only digitally signed, trusted software can execute during system startup.



- **Secure Boot**
Enable or disable Secure Boot.
- **Secure Boot Mode**
Select Custom or Standard.
- **Restore Factory Keys**
Enable or disable Factory Key.
- **Reset to Setup Mode**
To reset to Setup Mode.
- **Key Management**
Enable or disable Expert Key Management.

3.2.5 Boot

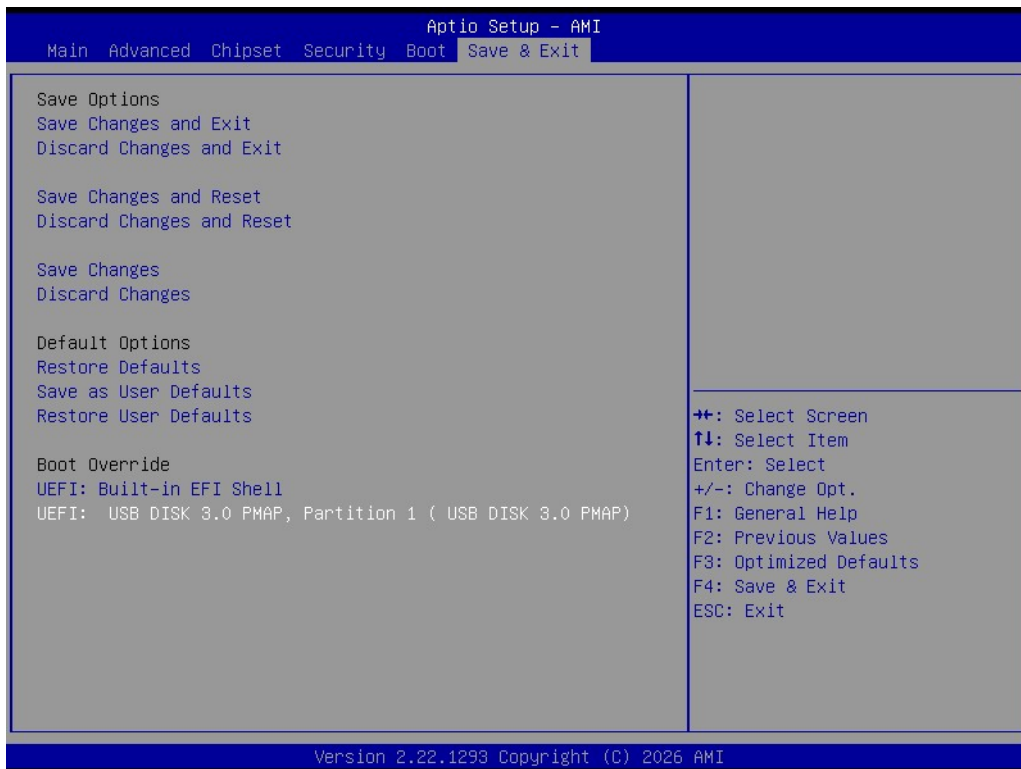
Configure the system's startup behavior, including boot device priority, NumLock state, and quiet boot settings.



- **Setup Prompt Timeout**
Configure Setup Prompt Timeout.
- **Bootup Numlock State**
Select On or Off.
- **Quite Boot**
Enable or disable Quiet Boot.

3.2.6 Save & Exit

Save your BIOS configuration changes and exit setup (with optional reboot).



- **Save Changes and Exit**
Save your changes and exit BIOS setting.
- **Discard Changes and Exit**
Discard your changes and exit BIOS setting.
- **Save Changes and Reset**
Save your changes and reset the system.
- **Discard Changes and Reset**
Discard your changes and reset the system.
- **Save Changes**
Save your changes.
- **Discard Changes**
Discard your changes.
- **Restore Defaults**
Restore all the changes and back to default.
- **Save as User Defaults**
Save all your changes as user defaults.
- **Restore User Defaults**
Restore back to user defaults.



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