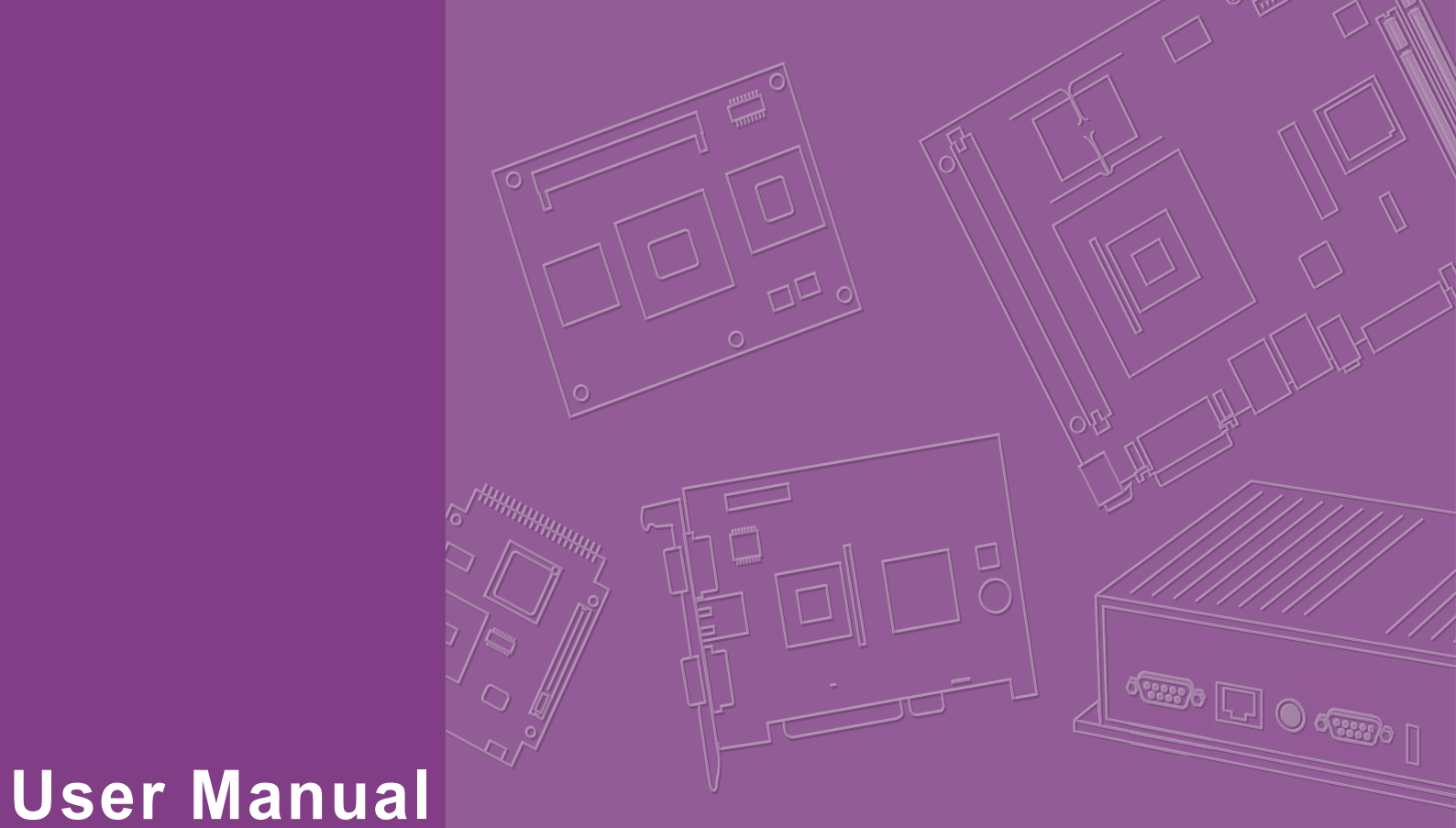




User Manual

AIR-120

Fanless Edge Intelligence System

ADVANTECH

Enabling an Intelligent Planet

Attention!

This product contains a hard copy of the Chinese user manual for China CCC certification purposes. A PDF of the English user manual is included on the accompanying CD. Please disregard the hard copy Chinese user manual if the product is not sold and/or installed in China.

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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!*



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.

Note! *Notes provide additional optional information.*



Document Feedback

To assist us with improving this manual, we welcome all comments and constructive criticism. Please send all feedback in writing to support@advantech.com.

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.

- 1 x AIR-120 unit
- 2 x Wallmount
- 1 x User manual (Simplified Chinese)
- 1 x WISE-DeviceOn Package
- 1x Phoenix connector counterpart
- 1 x M.2 Bracket for 2242/3042 module

Ordering Information

Model Number	Description
AIR-120H-B0A1E	Intel N97 w/ Hailo-8 AI Inference system
AIR-120H-S8A1E	Intel i3-N305 w/ Hailo-8 AI Inference system
AIR-120H-B5A1E	Intel x7433RE w/ Hailo-8 AI Inference system
AIR-1200-B0A1E	Intel N97 Edge Inference system, 2.5"SSD
AIR-1200-S8A1E	Intel i3-N305 Edge Inference system, 2.5"SSD
AIR-1200-B5A1E	Intel x7433RE Edge Inference system, 2.5"SSD
AIR-120H-B0A1U	Intel N97 w/ Hailo-8 AI Inference system, TW
AIR-120H-B5A1U	Intel x7433RE w/ Hailo-8 AI Inference system, TW
AIR-120H-S8A1U	Intel i3-N305 w/ Hailo-8 AI Inference system, TW
AIR-1200-B0A1U	Intel N97 Edge Inference system, 2.5"SSD, TW
AIR-1200-S8A1U	Intel i3-N305 Edge Inference system, 2.5"SSD, TW
AIR-1200-B5A1U	Intel x7433RE Edge Inference system, 2.5"SSD, TW

Optional Accessories

Part Number	Description
XARK-ADP-90MDH	90W Power Adaptor (19V DC in)
1700001524	Power Cable 3-pin 180cm, USA type
170203183C	Power Cable 3-pin 180cm, Europe type
170203180A	Power Cable 3-pin 180cm, UK type
1700008921	Power Cable 3-pin PSE Mark 183cm
1700035775-01	DB9 Cable for COM3/COM4
1700030518-01	DB9 Cable for CAN-FD
1700035814-01	DB9 Cable for DIO

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. By means of a power cord connected to a socket-outlet with a grounded connection.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If any of the following occurs, have the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated the equipment.
 - The equipment has been exposed to moisture.
 - The equipment is malfunctioning, or does not operate according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment shows obvious signs of breakage.
15. Do not leave the equipment in an environment with a storage temperature of below -40 °C (-40 °F) or above 85 °C (185 °F) as this may damage the components. The equipment should be kept in a controlled environment.
16. Any unverified component may cause unexpected damage. To ensure correct installation, always use the components (e.g., screws) provided in the accessory box.
17. 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.
18. 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.
19. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
20. The equipment should only be installed in a restricted access area.
21. This model is intended to be supplied by an UL-certified power supply suitable for use at TMA 60°C (140 °F) min., and the output is rated 12-24VDC, 7.50-3.75A, ES1. If you need further assistance, contact Advantech for additional information

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

Consignes de Sécurité

1. 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. Les ouvertures sur le boîtier sont destinées à la convection d'air, protégeant ainsi l'équipement de la surchauffe. **NE COUVREZ PAS LES OUVERTURES.**
8. Au moyen d'un cordon d'alimentation connecté à une prise de courant avec mise à la terre.
9. Placez le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne placez rien sur le cordon d'alimentation.
10. Tous les avertissements et mises en garde sur l'équipement doivent être notés.
11. Si l'appareil n'est pas utilisé pendant une longue période, débranchez-le du secteur pour ne pas être endommagé par une surtension transitoire.
12. Ne jamais verser de liquide dans les ouvertures de ventilation; Cela pourrait provoquer un incendie ou un choc électrique.
13. N'ouvrez jamais l'équipement. Pour des raisons de sécurité, seul le personnel de maintenance qualifié doit ouvrir l'équipement.
14. 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
15. 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.
16. 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.
17. **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.
18. 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.

19. Niveau de pression acoustique au poste de l'opérateur selon la norme CEI 704-1: 1982 n'est pas supérieur à 70 dB (A).
20. L'équipement ne doit être installé que dans une zone d'accès restreint.
21. Ce modèle est destiné à être alimenté par une alimentation certifiée UL adaptée à une utilisation à TMA 60 °C (140 °F) min., et la sortie est évaluée à 12-24 V CC, 7,50-3,75 A , ES1. Si vous avez besoin d'aide supplémentaire, contactez Advantech pour plus d'informations.
22. 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.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from the PC chassis before manual handling. Do not touch any components on the CPU card or other cards while the PC is powered on.
- Disconnect the power before making any configuration changes. A sudden rush of power after connecting a jumper or installing a card may damage sensitive electronic components.

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Chapter 1

General Introduction

This chapter gives background information on the AIR-120 series.

1.1 Introduction

The AIR-120 is a compact, fanless edge AI system powered by Intel® Atom™ x7433RE, Processor N97, and Core™ i3-N305 processors. It integrates a Hailo AI acceleration module, delivering 26 TOPS of AI computing power. Combined with Hailo's comprehensive AI software toolkit, it enables efficient AI inference acceleration. Additionally, the AIR-120 supports Advantech Edge AI SDK, making it ideal for applications such as smart security screening, intelligent parking management, and smart factories.

Dual Display, Compact Size, and Versatile I/O

Designed for industrial environments, the AIR-120 supports a wide operating temperature range of -20 to 60°C and a 12-24V wide voltage input, meeting IEC 61000-6-2 / 61000-6-4 heavy industrial standards. Despite its compact size, the AIR-120 offers comprehensive I/O options, including dual independent display outputs (HDMI 2.0 and DP 1.4), two COM ports, one GbE port, one 2.5GbE port, and four USB ports. Additionally, it supports expansion for CAN-FD and DIO. Internal expansion includes M.2 B Key 2280, E Key 2230, and B Key 3052 (pre-installed with the Hailo AI module).

Comprehensive AI Software Toolkit for Edge AI Applications

To accelerate AI deployment at the edge, the AIR-120 provides a user-friendly software suite, including the Advantech Edge AI SDK, Advantech SUSI API, and EdgeBMC. It is also compatible with the Advantech DeviceOn platform, offering benchmarking tools, runtime SDKs, and out-of-band remote management for efficient system monitoring and control. The Hailo AI software suite further supports pre-trained AI models, model conversion tools, and runtime environments for seamless deployment. This makes the AIR-120 an excellent choice for industrial automation, IoT, and intelligent transportation applications.

1.2 Product Features

1.2.1 General

- **CPU:**
 - Intel® Processor N97
 - Intel® Core™ i3-N305
 - Intel® Atom™ x7433RE
- **BIOS:** AMI 256 Mbit Flash BIOS
- **System Memory:**
 - Single Channel DDR5 4800 MHz 262 pin SO-DIMM
 - Max. capacity 16GB
- **Serial Port:** 2 x RS-232/422/485, 2 x RS-232 (Optional)
- **USB:** 2 x USB 3.2, 2 x USB 2.0
- **Audio:** High-definition (HD) audio, Mic-in & Line-out
- **Storage:** 1x 2.5" SATA SSD/1x M.2 M-key 2280 (SATA, PCIe x1).

Note! The AIR-120H SKU does not support the 2.5" SATA SSD because of the thermal heatsink design.



- **Expansion Interface:**
 - 1 x M.2 2280 B key
 - 1 x M.2 2230 E key
 - 1 x M.2 3052 B key (The AIR-120H SKU Default bundled with Hailo AI module)
 - 2 x DB9 CANBUS (optional)
 - 1 x 8-bit DIO (optional)
 - 2x LAN (1x 1GbE/1x 2.5 GbE)

1.2.2 Display

- **Controller:** Intel® UHD chipset
- **Resolution:**
 - 1 x HDMI2.0b: Supports up to 4096 x 2160@60Hz
 - 1 x DP1.4a: Supports up to 4096 x 2304@60Hz
- **Dual Display:** 1 x HDMI 2.0b, 1 x DP1.4a

1.2.3 Ethernet

- **Chipset:**
 - LAN1 Intel® I226, 2.5GbE
 - LAN2 Intel® I210, GbE, support Edge BMC
- **LAN1 Speed:** 10/100/1000/2500 Mbps
- **LAN2 Speed:** 10/100/1000 Mbps
- **Interface:** 2 x RJ45
- **Standard:** Compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3y, IEEE 802.ab.

1.3 Chipset

1.3.1 Functional Specifications

1.3.1.1 Processor

Table 1.1: Processor	
Processor	Intel® Processor N97 Intel® Core™ i3-N305 Intel® Atom™ x7433RE
Memory	Single Channel DDR5 4800 MHz 262 pin SO-DIMM Max. capacity 16GB

1.3.1.2 Chipset

Table 1.2: Chipset	
Internal Graphics Features	Direct X 12.1, OpenGL 4.6 1 x HDMI 2.0b, 1 x DP1.4a
Video Accelerator	H/W accelerated video encoding/decoding Video decoder: Support H.265/HEVC, H.264/AVC, VP9 Video encoder: Support H.265/HEVC, H.264/AVC, VP9

Table 1.2: Chipset

SATA Interface	Supports several optional sections of Serial SATA III: Extensions to Serial ATA 1.0 specification, Revision 1.0 Supports SATA transfers to 300 Mbytes/sec.
USB Interface	USB host interface with support for 2 x USB 3.2 and 2 x USB 2.0 port All ports are High-Speed, Full-Speed, and Low-Speed capable
BIOS	AMI 256 Mbit Flash BIOS

1.3.1.3 Others

Table 1.3: Others

Serial Ports	2 x RS-232/422/485, 2 x RS-232 (optional), supports auto-flow control
DIO	1 x 8 bit DIO (optional)
CANBus	2 x CAN-FD (optional)
USB	2 x USB 3.2, 2 x USB 2.0
Ethernet	LAN1 Intel I226, LAN2 Intel I210 ■ Compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3y, and IEEE 802.ab ■ LAN1 Supports 10/100/1000/2500 Mbps ■ LAN2 Supports 10/100/1000 Mbps, and EdgeBMC OOB management LAN Connectors: Phone Jack RJ45 8P 90D(F)
Audio	Audio Codec: Realtek ALC888S: ■ Compliant with HD audio specifications ■ Supports 16/20/24-bit DAC and 16/20/24-bit ADC resolution ■ Supports Line Out and Mic In audio Connectors: 2 x Earphone jack
Battery	1 x 3V/220 mAh battery with wire

1.4 Mechanical Specifications

1.4.1 System Dimensions

176 x 112.35 x 66.4 mm

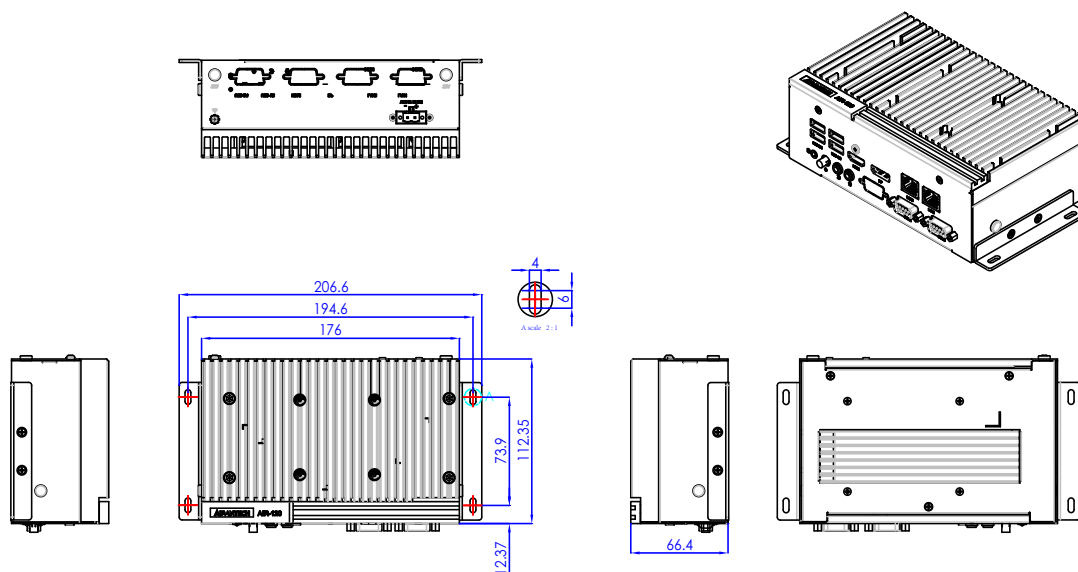


Figure 1.1 AIR-120H Mechanical Dimensions

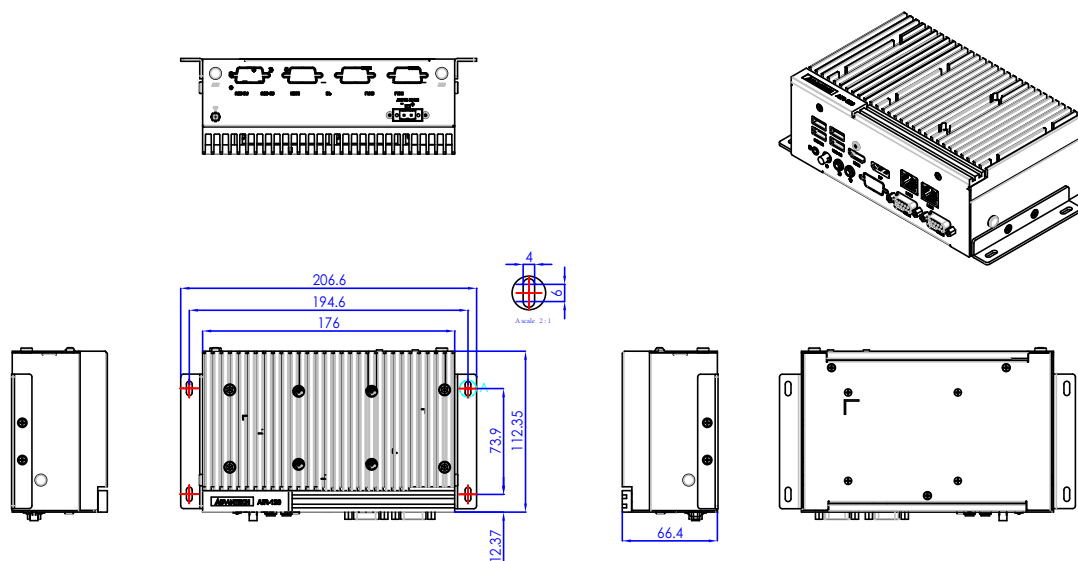


Figure 1.2 AIR-1200 Mechanical Dimensions

1.4.2 Weight

- 1.6 Kg

1.5 Power Requirements

1.5.1 System Power

- Power Input: DC In 12V-24V

1.5.2 RTC Battery

- Lithium: 3V/220mAH

1.6 Environmental Specifications

1.6.1 Operating Temperature

- -20 ~ 60 °C, with 0.7m/s air flow

1.6.2 Relative Humidity

- 95% @ 40 °C (104 °F) (non-condensing)

1.6.3 Storage Temperature

- -40 ~ 85 °C (-40 ~ 185 °F)

1.6.4 Vibration Tolerance

- When the system is equipped with an 2.5"SSD/ M.2 NVME: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis, (x, y, z) 3 axes

1.6.5 Shock Tolerance

- When the system is equipped with an 2.5"SSD/ M.2 NVME: 30 G, IEC 60068-2-27, half sine, 11 ms duration

1.6.6 Safety Certification

- UL, CB, CCC, BSMI

1.6.7 EMC Certification

- CE/FCC Class B, Heavy Industry 61000-6-4, 61000-6-2, CCC, BSMI

Chapter 2

Hardware Installation

This chapter details instructions for installing AIR-120 hardware and external I/O.

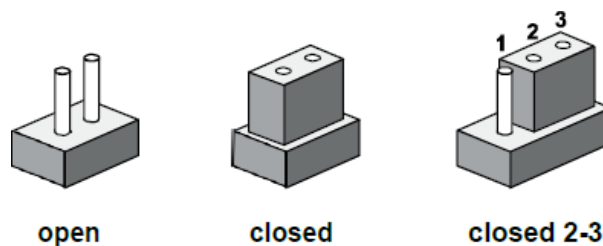
2.1 Introduction

The following sections demonstrate the internal jumper settings and the external connector pin assignments.

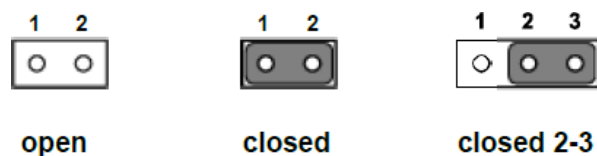
2.2 Jumpers

2.2.1 Jumper Description

AIR-120 can be configured to satisfy specific application requirements 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, 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. For these jumpers, 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 necessary when working with jumpers. Users with concerns regarding the ideal hardware configuration for your application should contact your local distributor or sales representative before making any changes. Usually, only a standard cable is required to make most connections.

2.2.2 Jumper List

Table 2.1: Jumper List

Location	Function
SW1	Multifunction Switch

2.2.3 Jumper Location

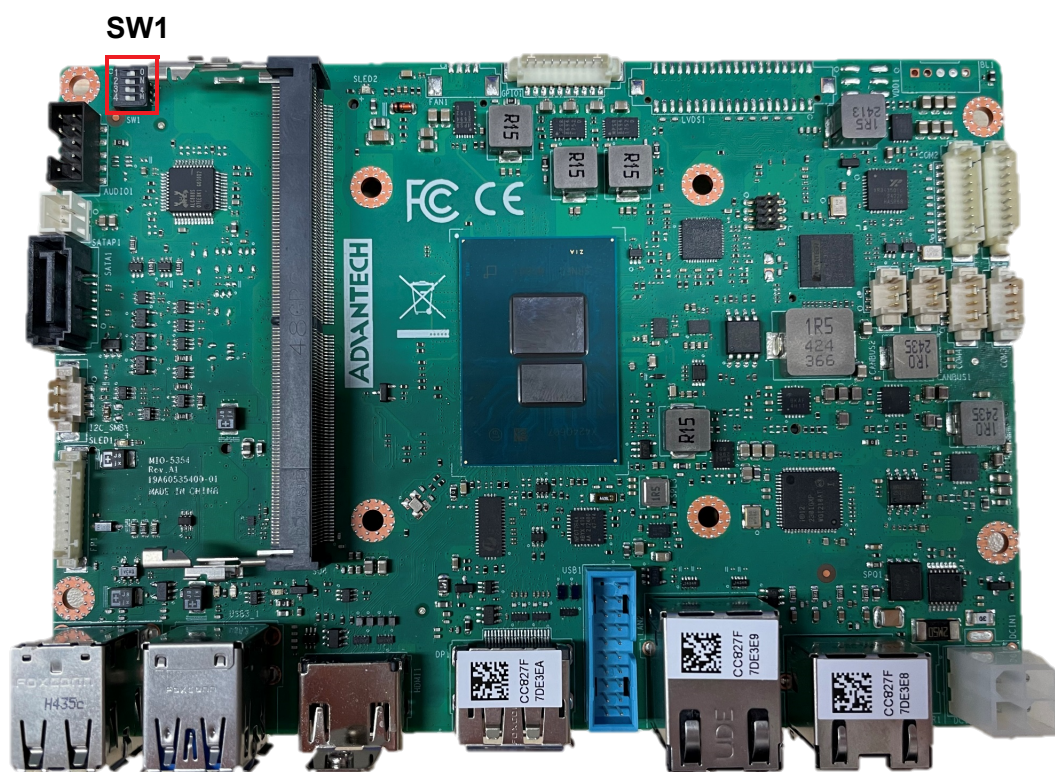


Figure 2.1 Jumper Location

2.2.4 Jumper Settings

Table 2.2: Multifunction Switch(SW1)

Function	Switch Settings	
AT/ATX selection		
	ATX mode*	AT mode
Load CMOS Date		
	Normal*	Load BIOS Default
COM1 TERM RX Enable		
	Disable*	Enable
COM2 TERM RX Enable		
	Disable*	Enable

*Default Switch settings.

2.3 System I/O

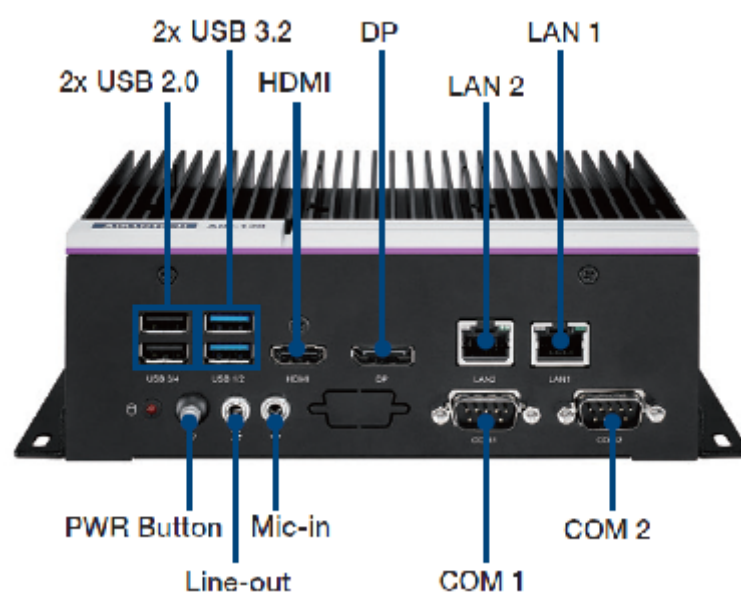


Figure 2.2 Front View



Figure 2.3 Rear View

2.4 External I/O

2.4.1 Power On/Off Button

AIR-120 features a Power On/Off button with an LED indicators on the top side that show On status (Green LED).



Figure 2.4 Power On/Off Button

2.4.2 Power Input Connector

AIR-120 supports one 2-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.

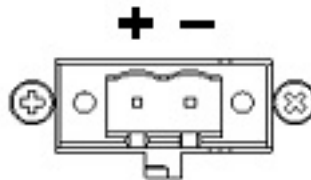


Figure 2.5 Phoenix Terminal Connector

Note!



1. For supply connections use wires suitable for at least 75 °C.
2. The terminal block is suitable for 14 AWG. Torque value 7lb-in User copper conductors only. Must be installed by skilled person.
3. The terminal block uses two sets of interfaces to make it split to meet the maximum current limit, and a single pin will be limited below 16A.

2.4.3 Ethernet Connector (LAN1/LAN2)

AIR-120 is equipped with one Intel® I226 Ethernet and one Intel® I210 controllers that are fully compliant with IEEE 802.3u and 802.3bz 10/100/1000/2500 Mbps CSMA/CD standards and connected to LAN1/LAN2. The Ethernet port provides a standard RJ45 jack connector with LED indicators on the front side to show its Active/Link status (Green LED) and Speed status (Orange/Yellow LED).

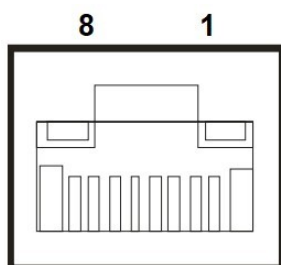


Figure 2.6 Ethernet Connector

Table 2.3: Ethernet Connector Pin Assignments

Pin	100/1000/2500 BaseT Signal Name
1	TX+
2	TX-
3	RX+
4	MDI2+
5	MDI2-
6	RX-
7	MDI3+
8	MDI3-

2.4.4 USB 3.2 Gen1 Connector

AIR-120 supports two USB 3.2 interfaces, which support Plug-and-Play functionality and hot swapping for up to 127 external devices. The USB interfaces comply with USB UHCI, Rev. 3.2. USB 3.2 connectors contain legacy pins to interface to USB 2.0 devices and a new set of pins for USB 3.2 connectivity.

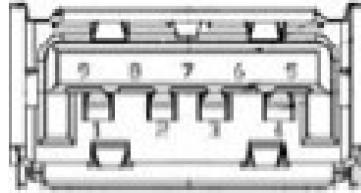


Figure 2.7 USB 3.2 Connector

Table 2.4: USB Connector Pin Definition

Pin	Signal Name
1	+5V
2	D- _0
3	D+ _0
4	GND
5	USB0_SSRX-
6	USB0_SSRX+
7	GND
8	USB0_SSTX-
9	USB0_SSTX+

2.4.5 USB 2.0 Connector

AIR-120 supports two USB 2.0 interfaces, which support Plug-and-Play functionality.

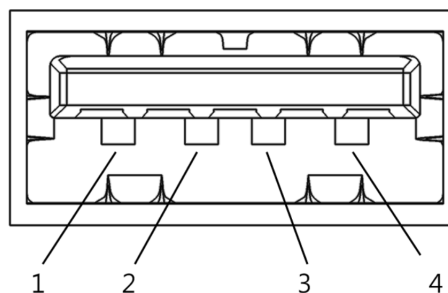


Figure 2.8 USB 2.0 Connector

Table 2.5: USB 2.0 Pin Definition

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

2.4.6 Audio Connector

AIR-120 features two phone jack connectors that support stereo Line Out and Mic In audio ports. The audio chip is controlled by ALC888S and compliant with the Azalea standard.



Figure 2.9 Audio Connector

2.4.7 COM1/COM2 Connector

AIR-120 provides two 9-pin COM connector, which supports RS232/422/485 serial communication interface ports. The default setting is RS-232, if you want to use RS422/485, you can use the BIOS manual to change settings.

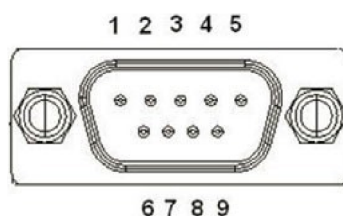


Figure 2.10 COM Connector

Table 2.6: COM1/2 Connector Pin Definition

Pin	RS-232	RS-422	RS-485
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

NC represents "No Connection".

2.4.8 HDMI Connector

AIR-120 offers one integrated 19-pin receptacle connector HDMI 2.0b interfaces. The HDMI link supports resolutions up to 4096 x 2160 @ 60 Hz.

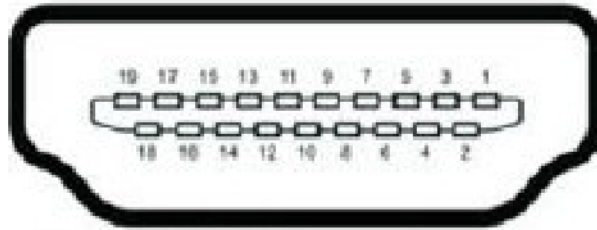


Figure 2.11 HDMI Connector

Table 2.7: HDMI Connector Pin Definition

Pin	Signal Name
1	HDMI_TX2+
2	GND
3	HDMI_TX2-
4	HDMI_TX1+
5	GND
6	HDMI_TX1-
7	HDMI_TX0+
8	GND
9	HDMI_TX0-
10	HDMI_CLK+
11	GND
12	HDMI_CLK-
13	NC
14	NC
15	HDMI_DCLK
16	HDMI_DDAT
17	GND
18	+V5_HDMI-HPD
19	DDP0_HPDP

NC represents "No Connection".

2.4.9 DP Connector

AIR-120 offers one DP interfaces. The DP link supports resolutions up to 4096 x 2304 @ 60 Hz.

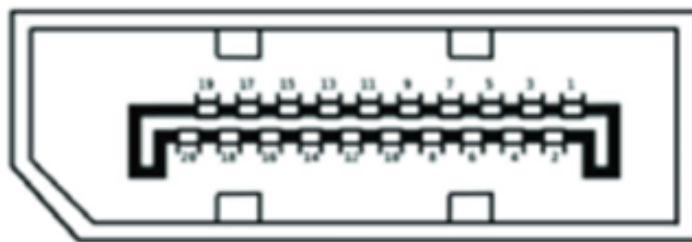


Figure 2.12 DP Connector

Table 2.8: DP Connector Pin Definition

Pin	Signal Name
1	D0+
2	GND
3	D0-
4	D1+
5	GND
6	D1-
7	D2+
8	GND
9	D2-
10	D3+
11	GND
12	D3-
13	DP_AUX_E#
14	GND
15	AUX+
16	GND
17	AUX-
18	HPD
19	GND
20	+3.3V

2.4.10 Antenna Socket

AIR-120 reserves four antenna sockets for installing wireless/LTE device antennas.



Figure 2.13 Antenna Socket

2.4.11 COM3/4 Connector (Optional)

AIR-120 provides two 9-pin COM connector, which supports RS232 serial communication interface ports.

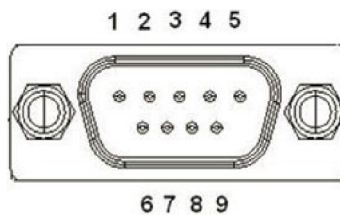


Figure 2.14 COM Connector

Table 2.9: COM3/4 Connector Pin Definition

Pin	Signal Name
1	NC
2	RS232-RXD
3	RS232-TXD
4	NC
5	GND
6	NC
7	RS232-RTS#
8	RS232-CTS#
9	NC
NC represents "No Connection".	

2.4.12 CANBUS Port and Pin Definition (Optional)

AIR-120 offers two CANBUS port and pin definition as below.

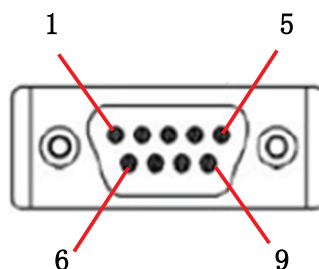


Figure 2.15 CANBUS Port

Table 2.10: CANBUS Port and Pin Definition

Pin	Signal Name
1	NC
2	CAN_D-
3	GND
4	NC
5	NC
6	NC
7	CAN_D+
8	NC
9	NC

2.4.13 DIO Connector (optional)

AIR-120 offers 9-bit DI/O and pin definition as below.

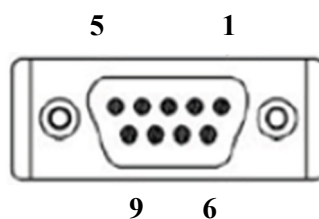


Figure 2.16 DIO Connector

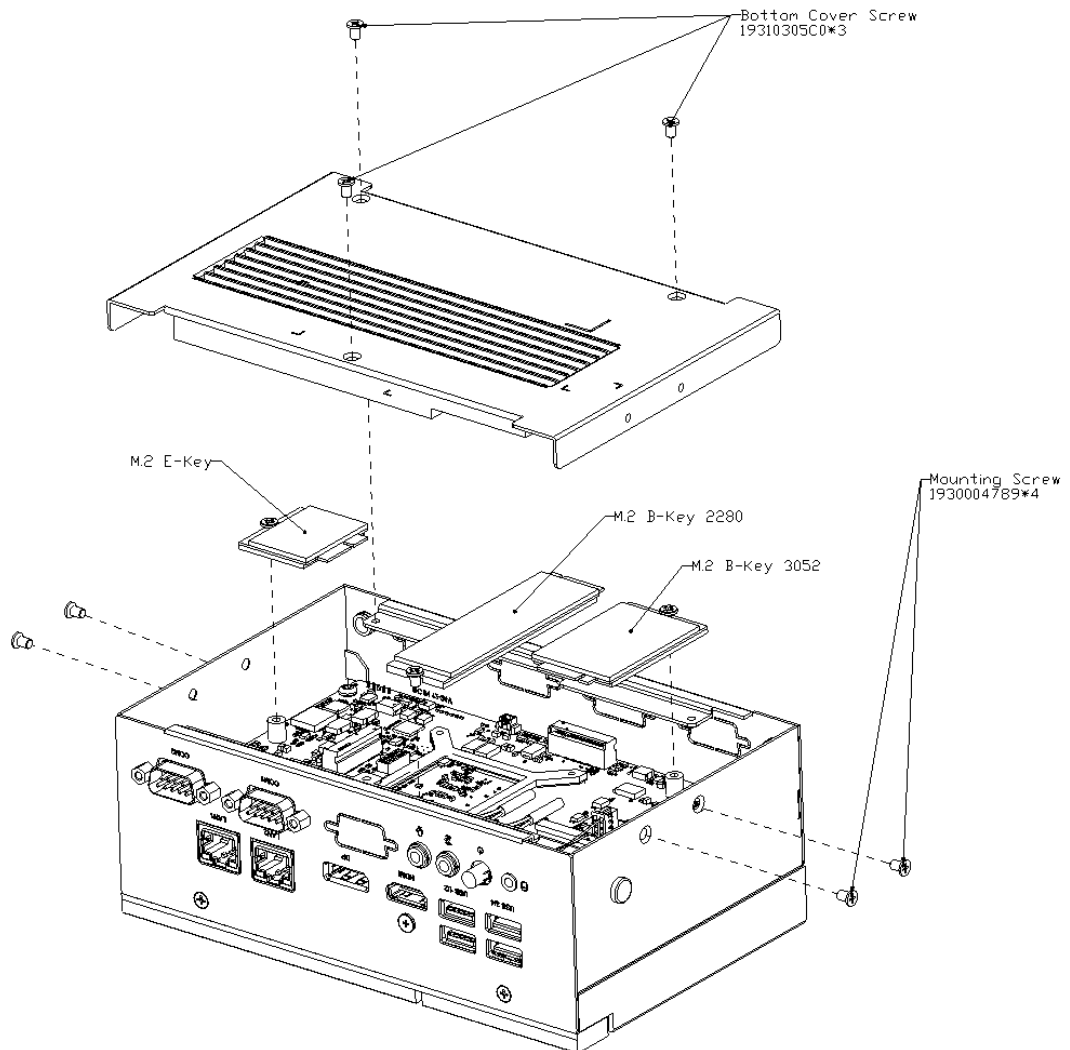
Table 2.11: DIO Connector and Pin Definition

Pin	Signal Name
1	DIO bit 0
2	DIO bit 1
3	DIO bit 2
4	DIO bit 3
5	DIO bit 4
6	DIO bit 5
7	DIO bit 6
8	DIO bit 7
9	GND

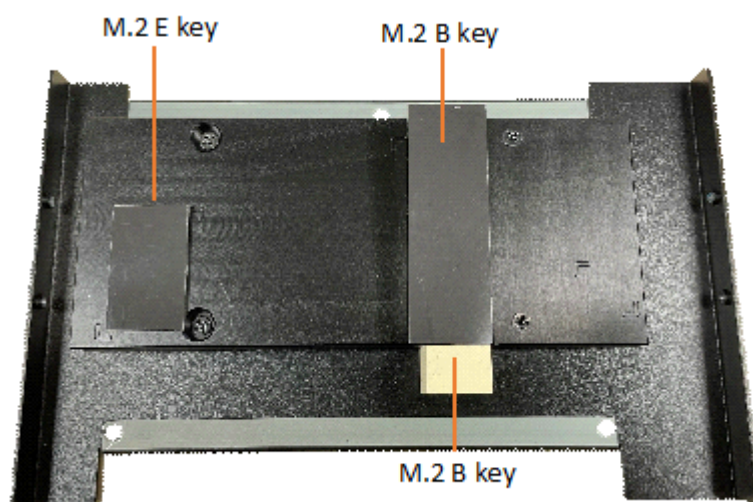
2.5 Installation

2.5.1 M.2 B key/E-key Installation

1. Loosen the 7 screws affixing screws and remove the bottom cover.
2. Install the M.2 2280 M/ 2230 E key module.
 - Install the M.2 E-Key 2230 (with round head screw and thermal pad).
 - Install the M.2 B-Key 2280 module (with round head screw and thermal pad).

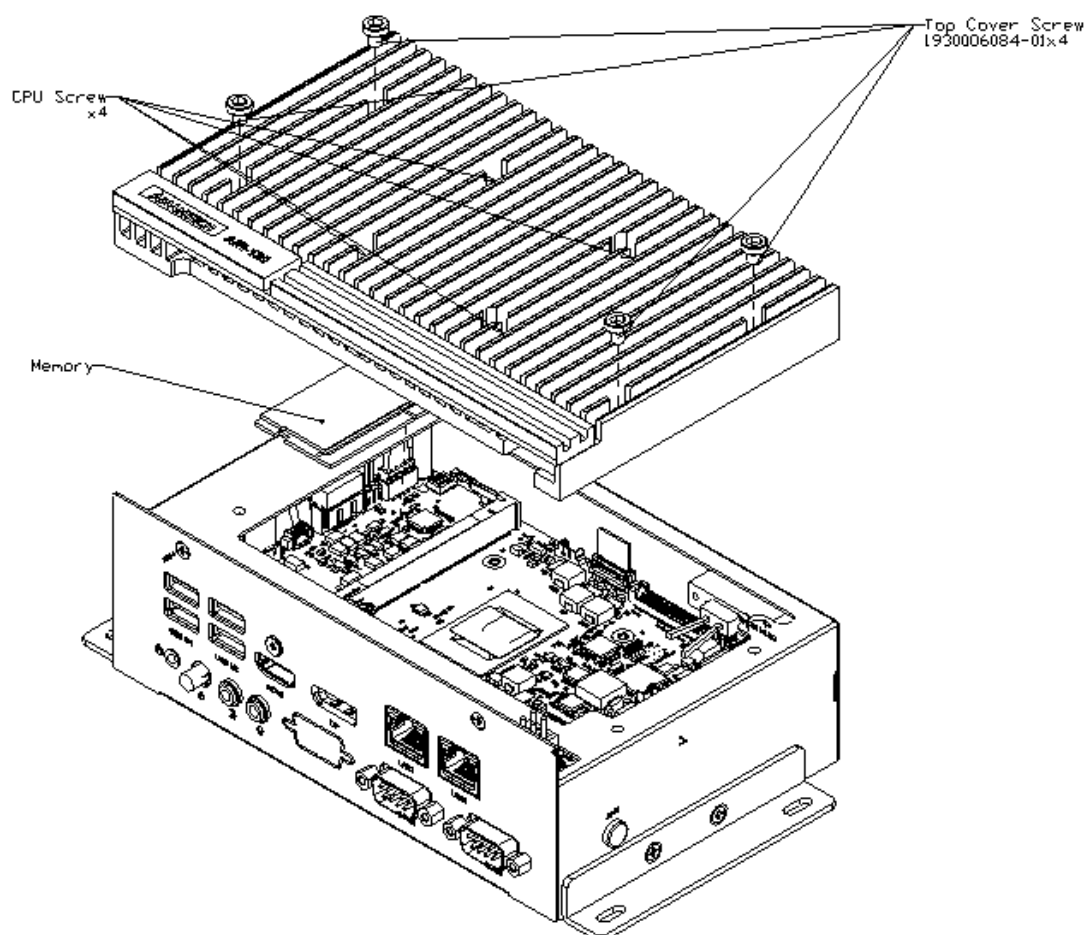


- The accessory package includes M.2 thermal pads. Please attach it according to the markings on the bottom cover heatsink.



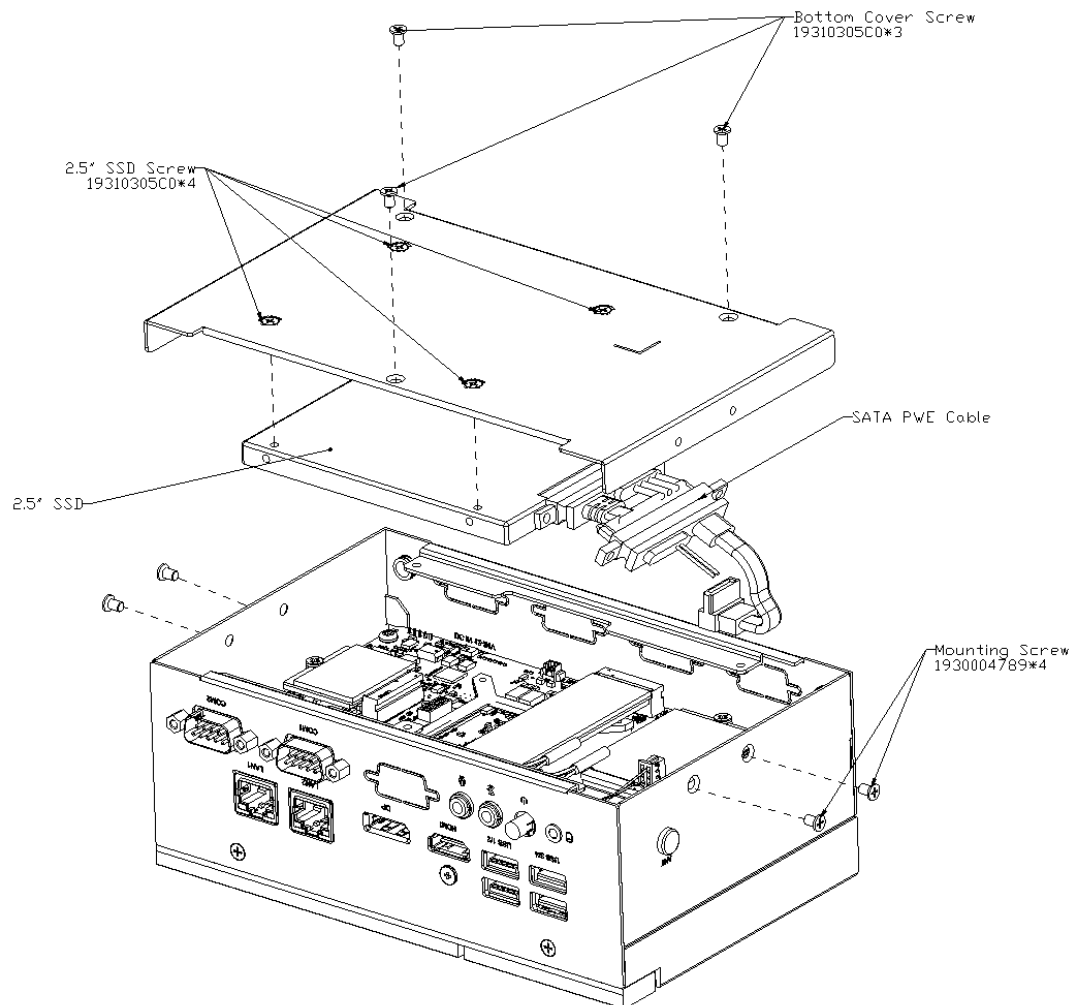
2.5.2 Memory Installation

1. Loosen 6 screws affixing screws and remove the TOP cover.
2. Install the memory.



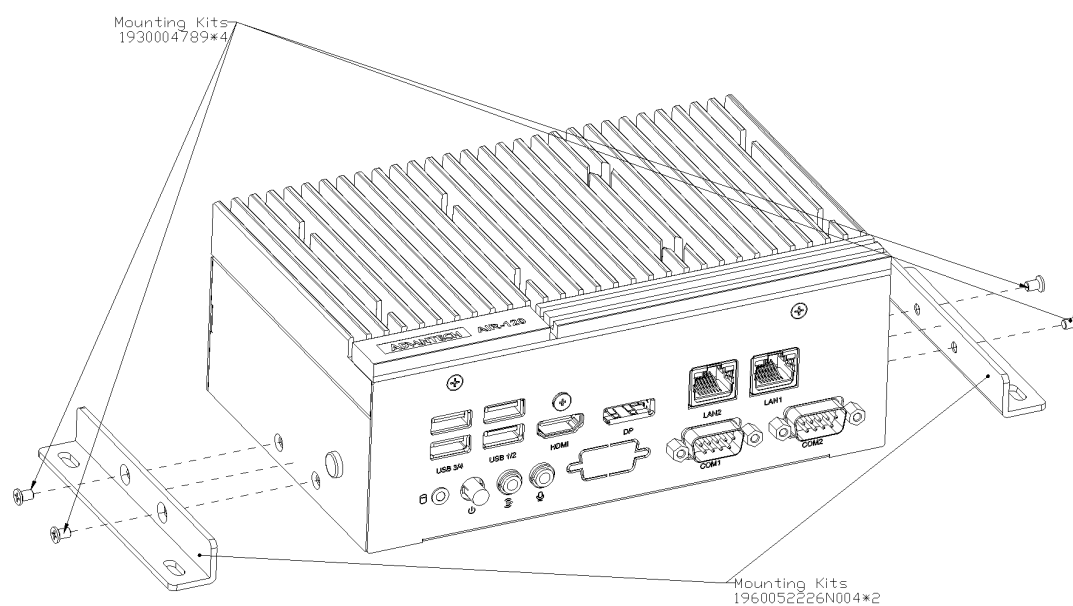
2.5.3 2.5" SATA SSD Installation

1. Loosen the 7 screws affixing screws and remove the bottom cover.
2. Let 2.5" SATA SSD to Fasten 4 screws onto bottom cover.
3. Insert SATA Cable into SATA SSD.



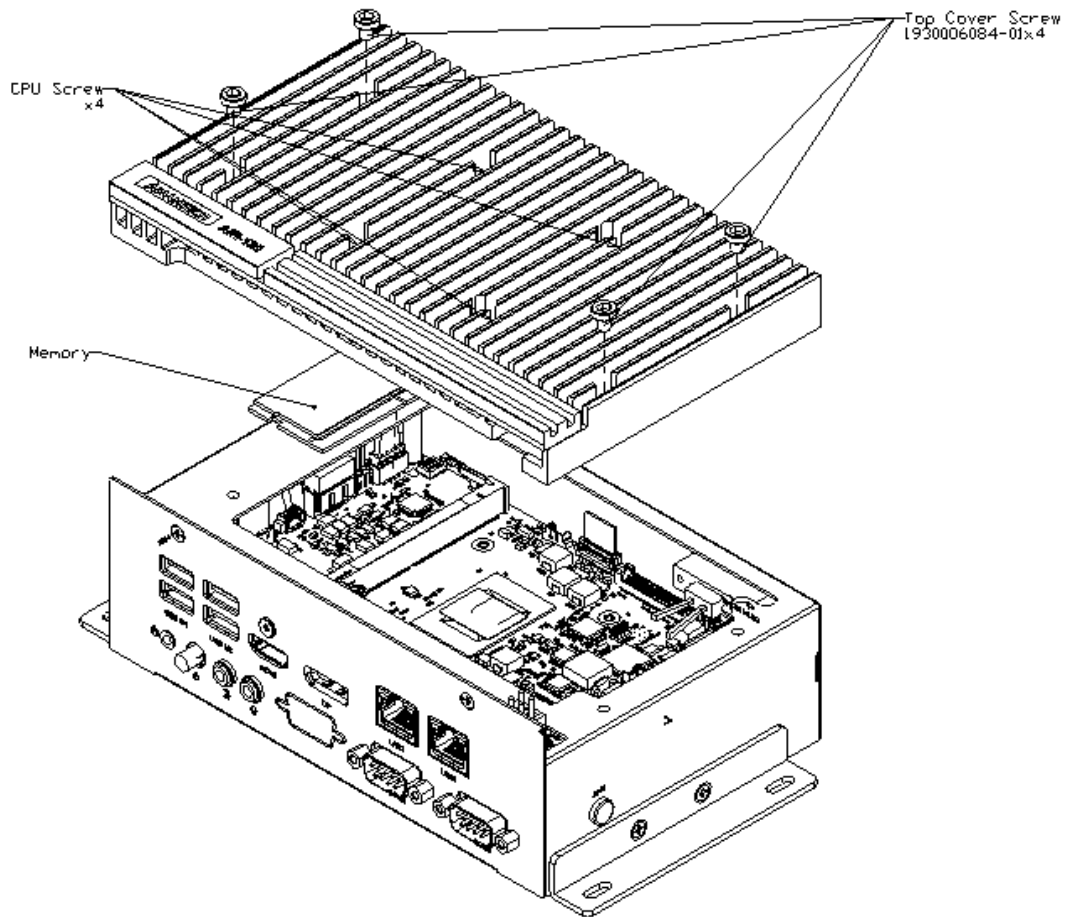
2.5.4 AIR-120 Wall Mount Installation

1. AIR-120 default supports wall mount with the two wings on the bottom cover.
2. Use 4x existed screw (with flat head screw) which already attached on side cover.

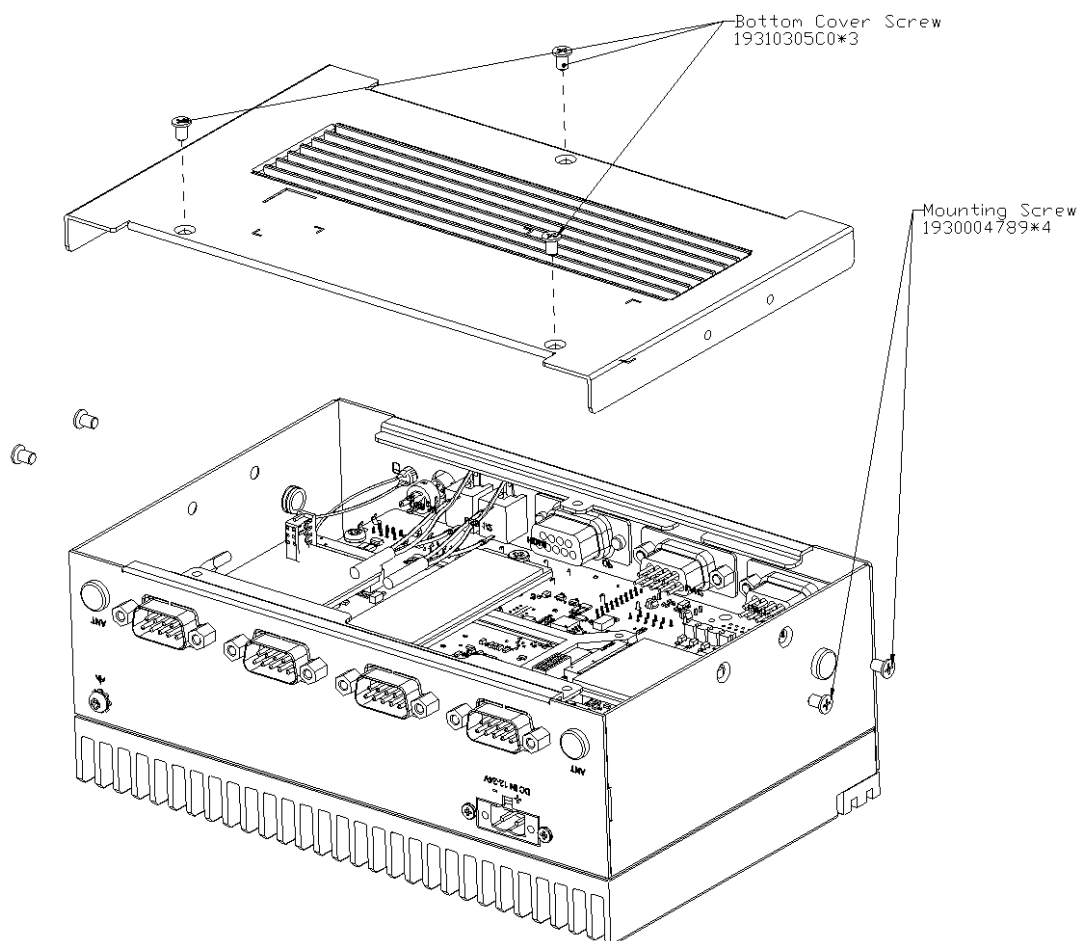


2.5.5 AIR-120 Optional Cables Installation (COM3/COM4/CAN1/CAN2/DIO)

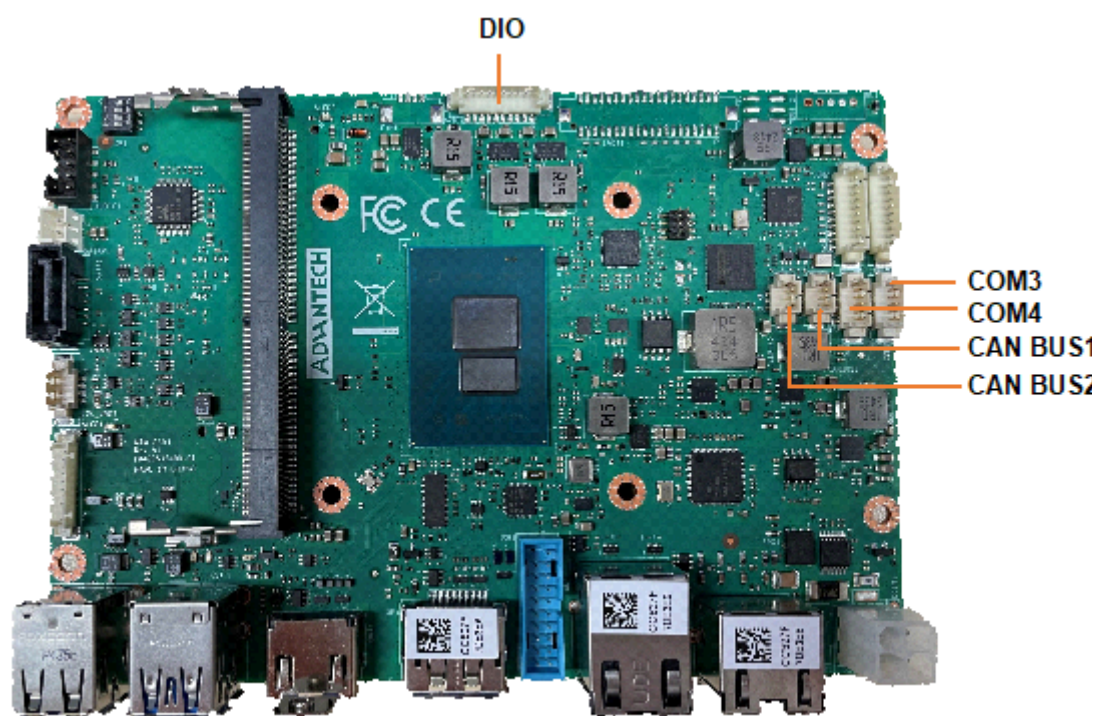
1. AIR-120 supports optional COM3 & COM4 (P/N: 1700035775-01), CAN-FD(P/N: 1700030518-01), and DIO(P/N: 1700035814-01).
2. Loosen 6 screws affixing screws and remove the TOP cover.



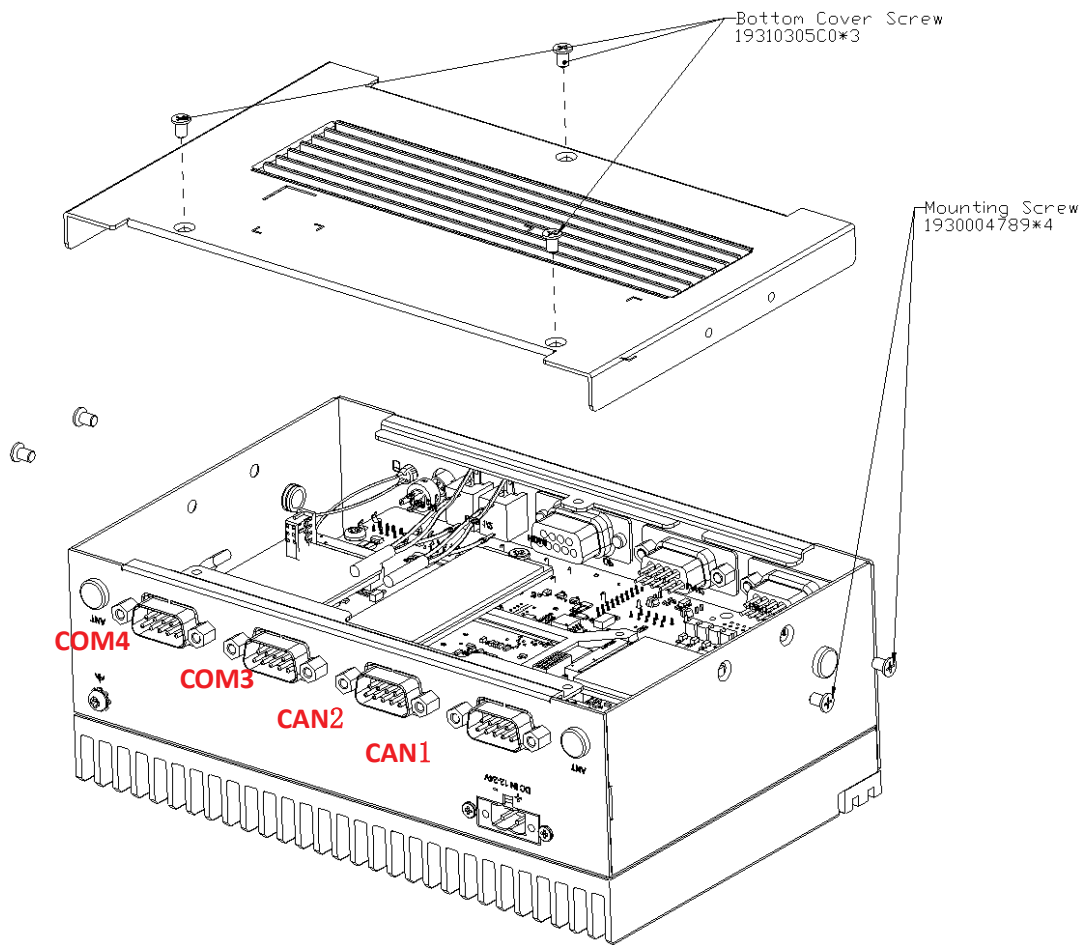
- Loosen the 7 screws affixing screws and remove the bottom cover.

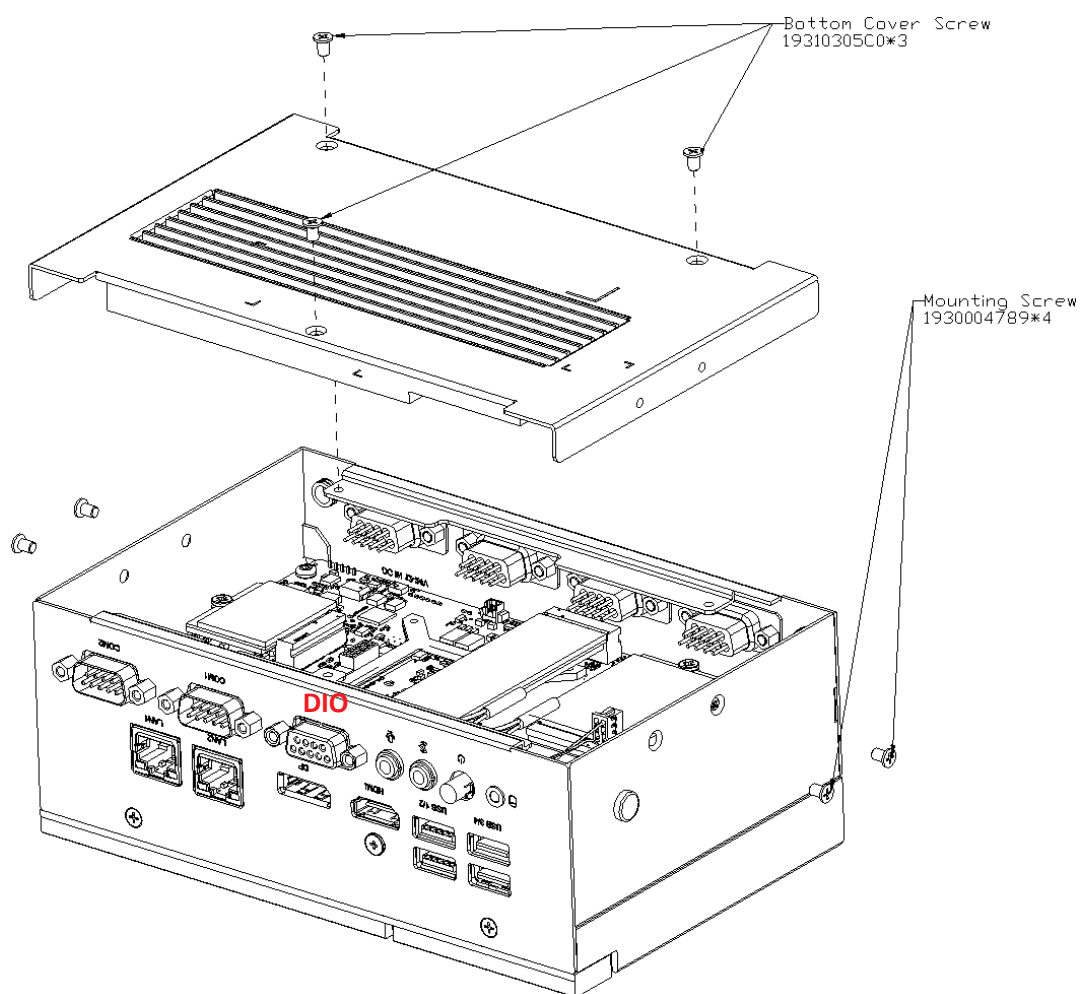


- Locate the reserved connector position on the board and connect the cable.



5. Remove the pre-cut knockout on the panel and use the two included standoff screws for installation.





Chapter 3

BIOS Settings

This chapter details the BIOS configuration instructions.

3.1 Introduction

The AMI BIOS ROM has a built-in setup program - the BIOS Setup Utility - that allows users to modify the basic system configuration. All configuration data is stored in battery-backed CMOS to ensure the setup information is retained when the power is turned off.

This chapter describes the basic navigation of the AIR-120 BIOS setup screens.



3.2 Entering BIOS Setup

Turn on the computer and then press ESC or DEL to enter the BIOS Setup menu.

3.2.1 Main Setup

Upon accessing the BIOS Setup Utility, users are presented with the Main setup page. Users can always return to the Main setup page by selecting the Main tab. The Main BIOS Setup page is shown below.



The Main BIOS setup page has two main frames. The left frame displays all the items accessible on the Main page. Items that are grayed out cannot be configured, whereas items presented in blue text can be configured. The right frame displays the key legend.

Located above the key legend is an area reserved for a text message. When an item is selected in the left frame, the item is presented in white text and often accompanied by a text message.

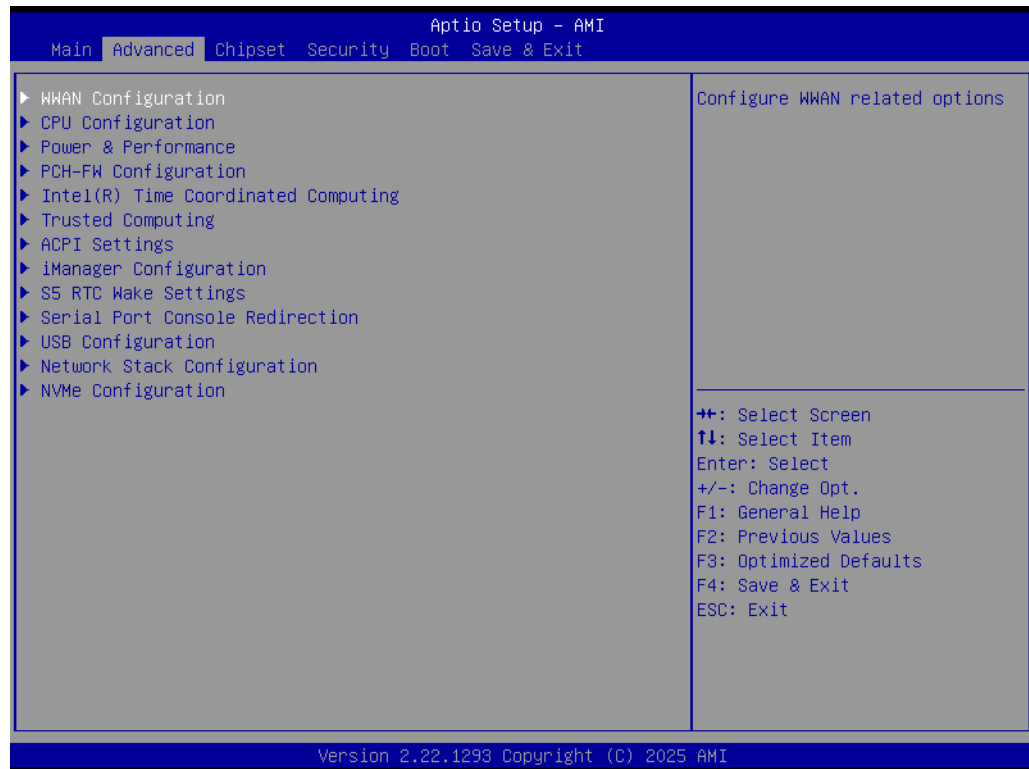
■ System Time/System Date

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

3.2.2 Advanced BIOS Setup

Select the Advanced tab from the BIOS Setup Utility to enter the Advanced BIOS Setup page. Select any of the items in the left frame of the screen, such as CPU Configuration, to access the sub menu for that item. The options for any of the Advanced BIOS Setup items can be displayed by highlighting the item using the <Arrow> keys.

3.2.2.1 WWAN Configuration

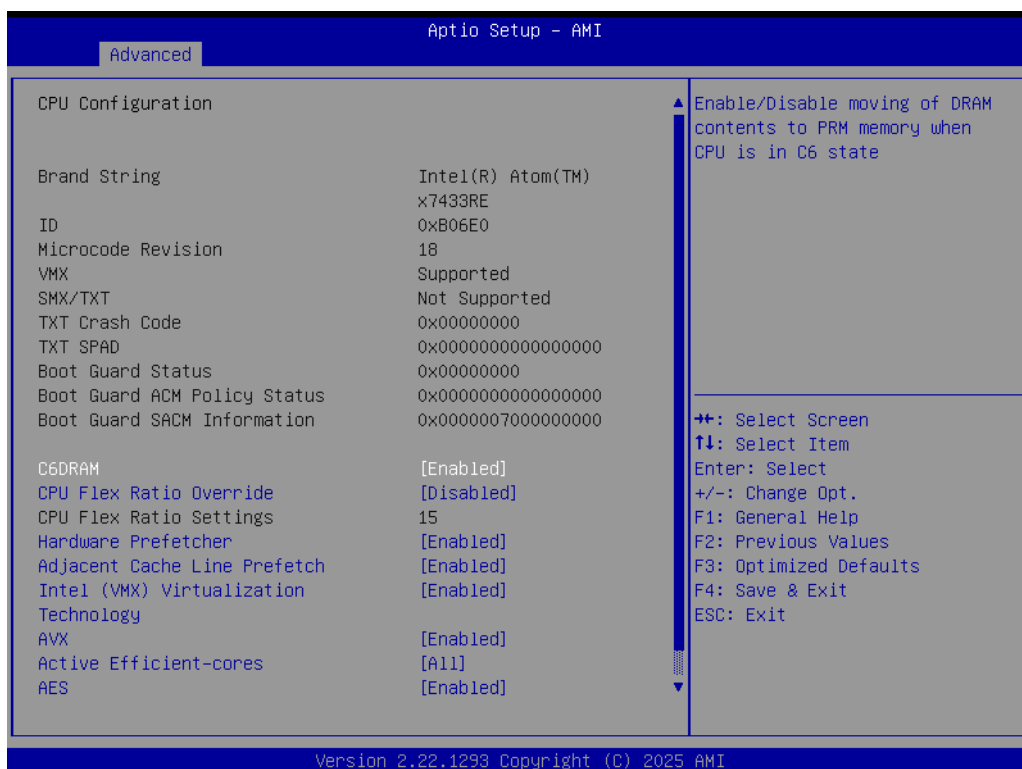


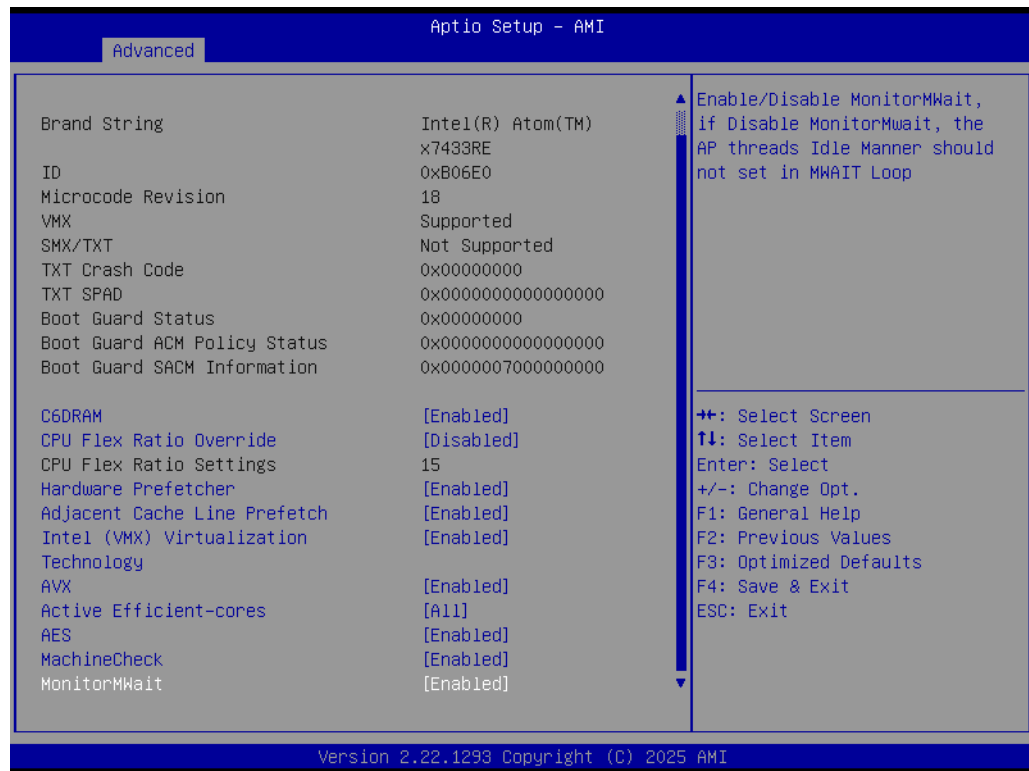


■ WWAN DEVICE

When Disabled, Select the M.2 WWAN Device options to enable 4G - 7360/7560 (Intel).

3.2.2.2 CPU Configuration





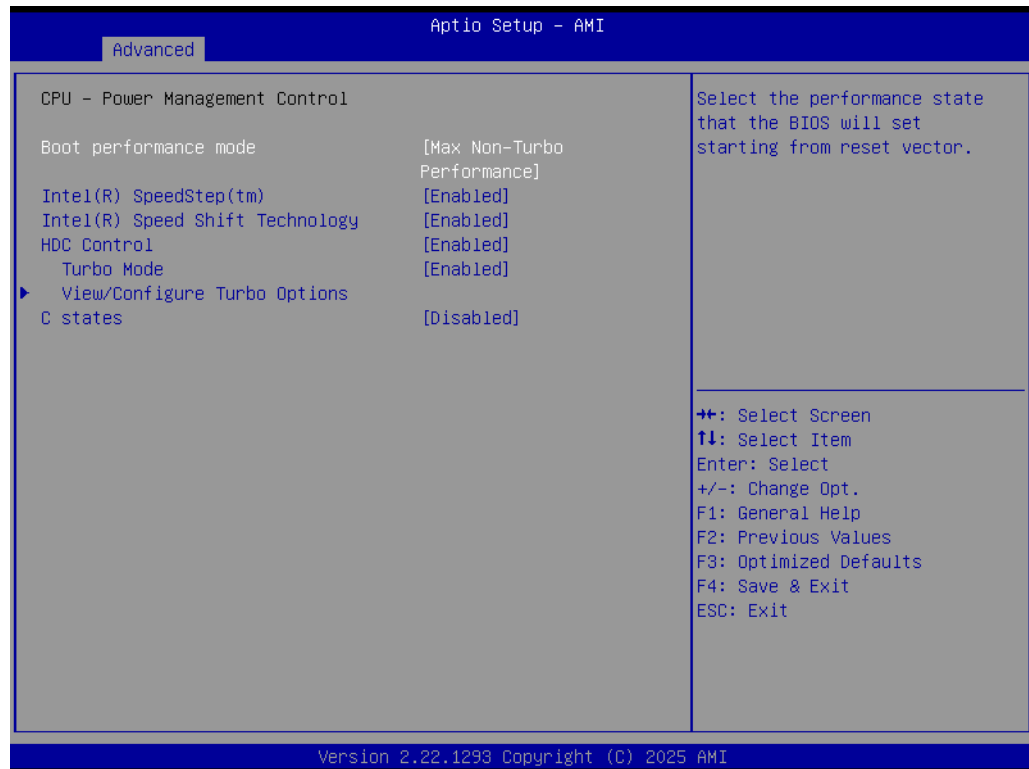
- **C6DRAM**
Enable/Disable moving of DRAM contents to PRM memory when the CPU is in C6 state.
- **CPU Flex Ratio Override**
Enable/Disable CPU Flex Ratio Programming.
- **Hardware Prefetcher**
This item allows users to enable or disable the hardware prefetcher feature.
- **Adjacent Cache Line Prefetch**
This item allows users to enable or disable the adjacent cache line prefetch feature.
- **Intel® (VMX) Virtualization Technology**
When Enabled, a VMM can utilize the additional hardware capability provided by Vanderpool Technology.
- **AVX**
Enable/Disable the AVX 2/3 Instructions.
- **Active Efficient-cores**
Number of E-cores to enable in each processor package.
- **AES**
Enable/Disable AES (Advanced Encryption Standard).
- **MachineCheck**
Enable/Disable Machine Check.
- **MonitorMWait**
Enable/Disable MonitorMWait.

3.2.2.3 Power & Performance



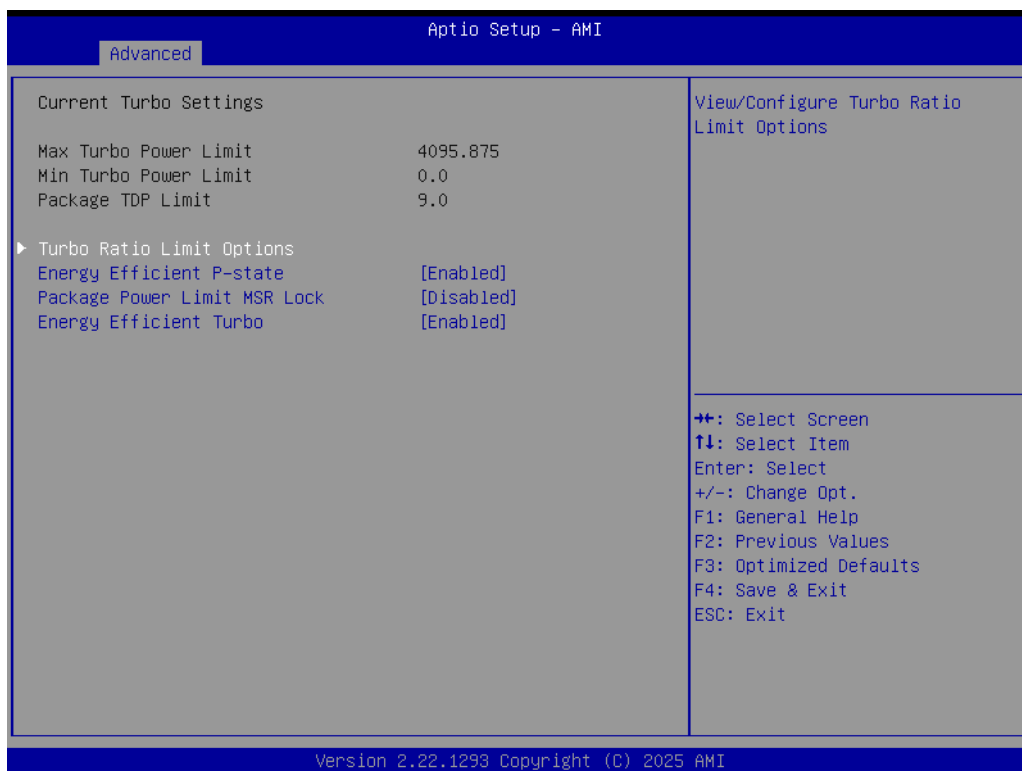
- **CPU – Power Management Control**
CPU – Power Management Control Options.
- **GT – Power Management Control**
GT – Power Management Control Options.

CPU - Power Management Control



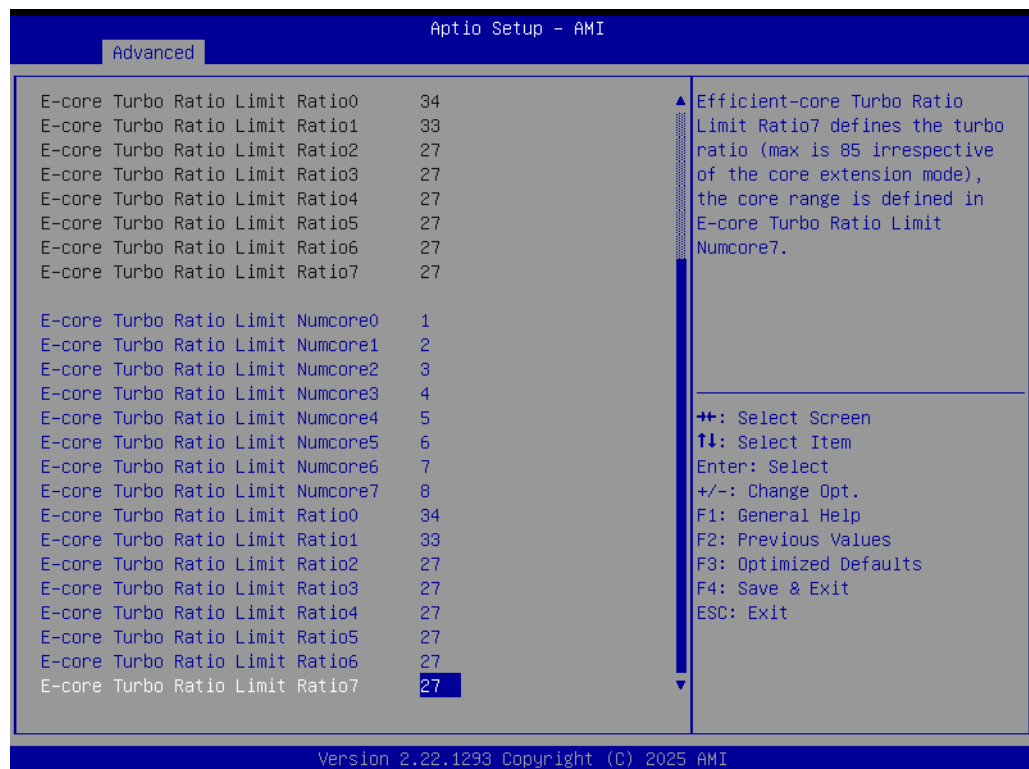
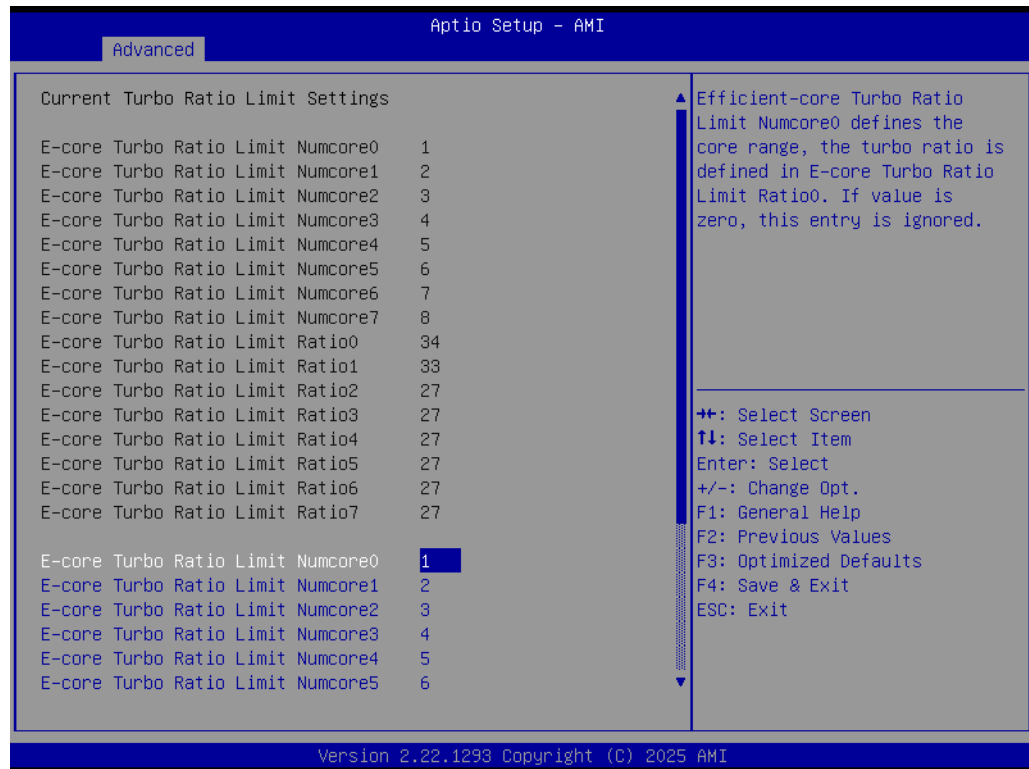
- **Boot Performance mode**
Select the performance state that the BIOS will set before OS handoff.
- **Intel® SpeedStep™**
Allows more than two frequency ranges to be supported.
- **Intel® Speed Shift Technology**
Enable/Disable Intel® Speed Shift Technology support.
- **HDC Control**
Enable/Disable Intel HDC.
- **Turbo Mode**
Enable/Disable processor turbo mode.
- **View/Configure Turbo Options**
View and Configure Turbo Options.
- **C states**
Enable/Disable CPU Power Management.

View/Configure Turbo Options



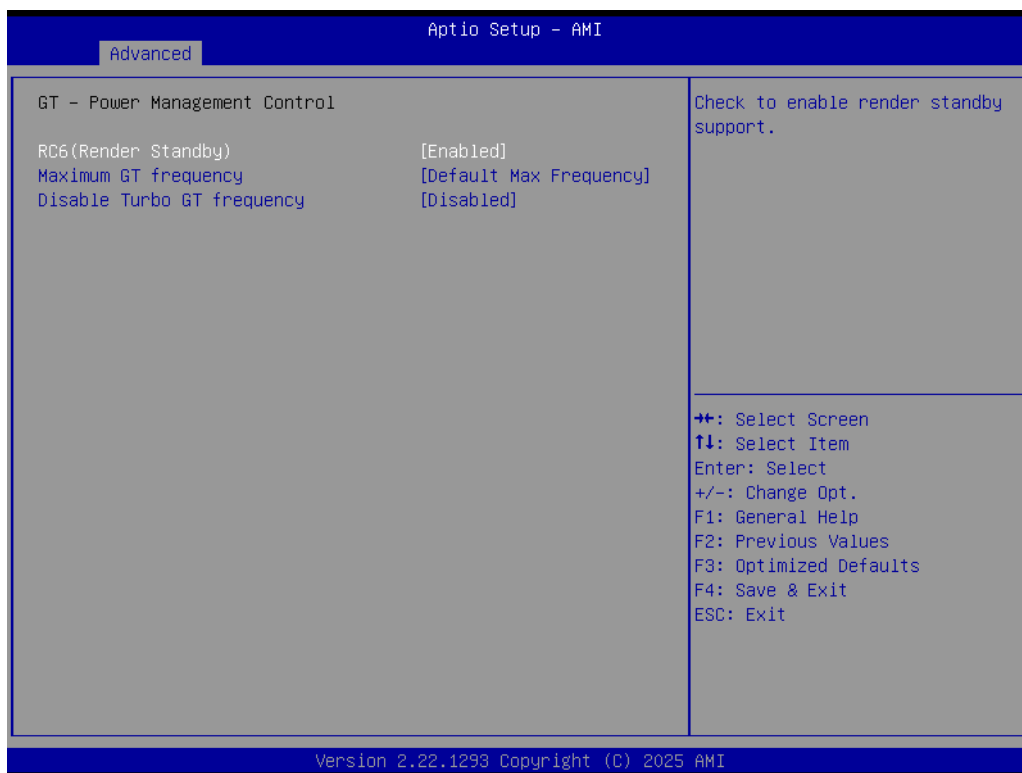
- **Turbo Ratio Limit Option**
View/Configure Turbo Ratio Limit Options.
- **Energy Efficient P-state**
Enable/Disable the Energy Efficient P-state feature.
- **Package Power Limit MSR Lock**
Enable/Disable locking of Package Power Limit settings.
- **Energy Efficient Turbo**
Enable/Disable the Energy Efficient Turbo feature.

■ Current Turbo Ratio Limit Settings



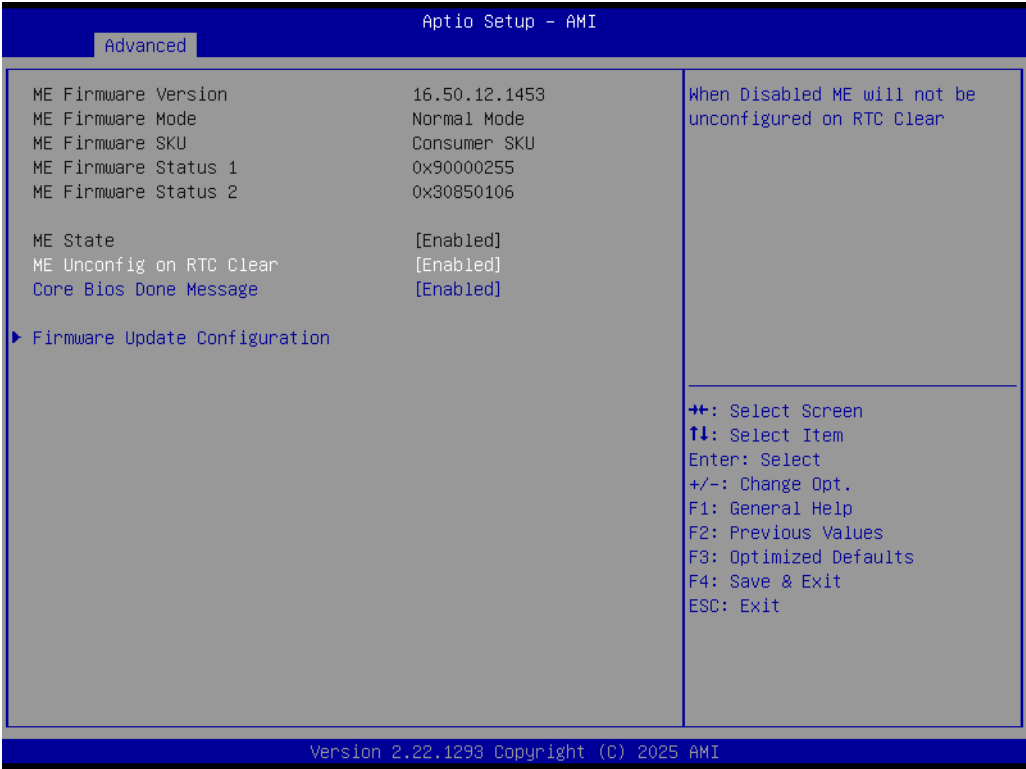
- E-core Turbo Ratio Limit Numcore x Efficient-core Turbo Ratio Limit Numcore x defines the core range.

GT - Power Management Control



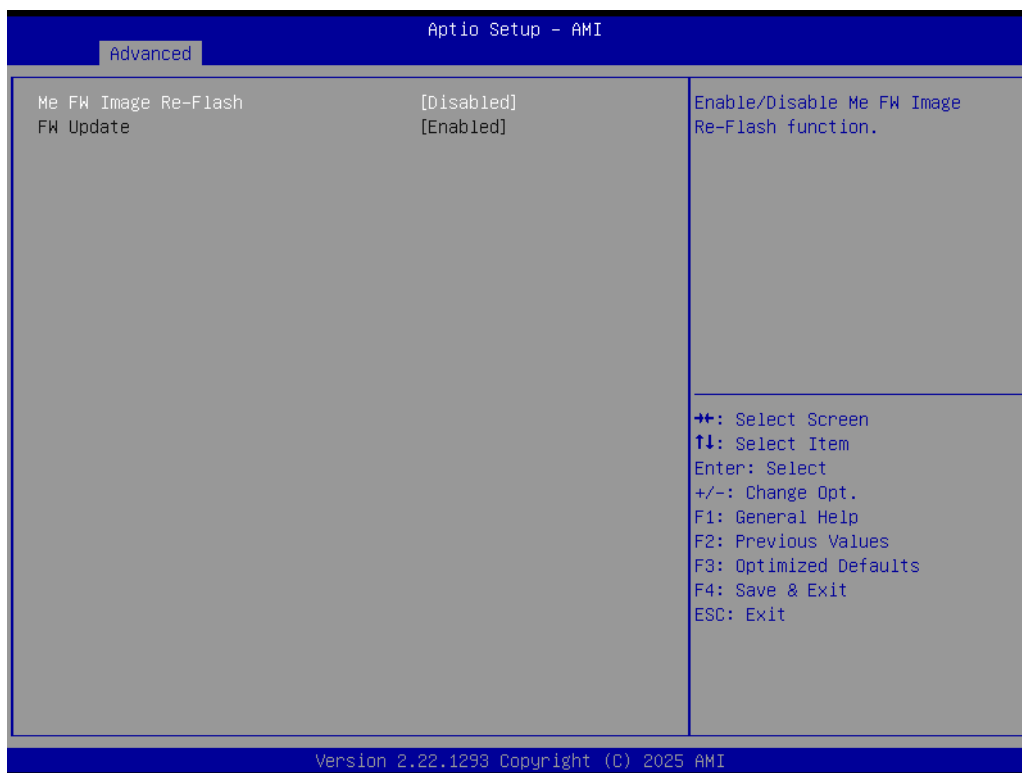
- **RC6 (Render Standby)**
Check to enable render standby support.
- **Maximum GT frequency**
Maximum GT frequency limited by the user.
- **Disable Turbo GT frequency**
Enabled: Disables Turbo GT frequency. Disabled: GT frequency is not limited.

3.2.2.4 PCH-FW Configuration



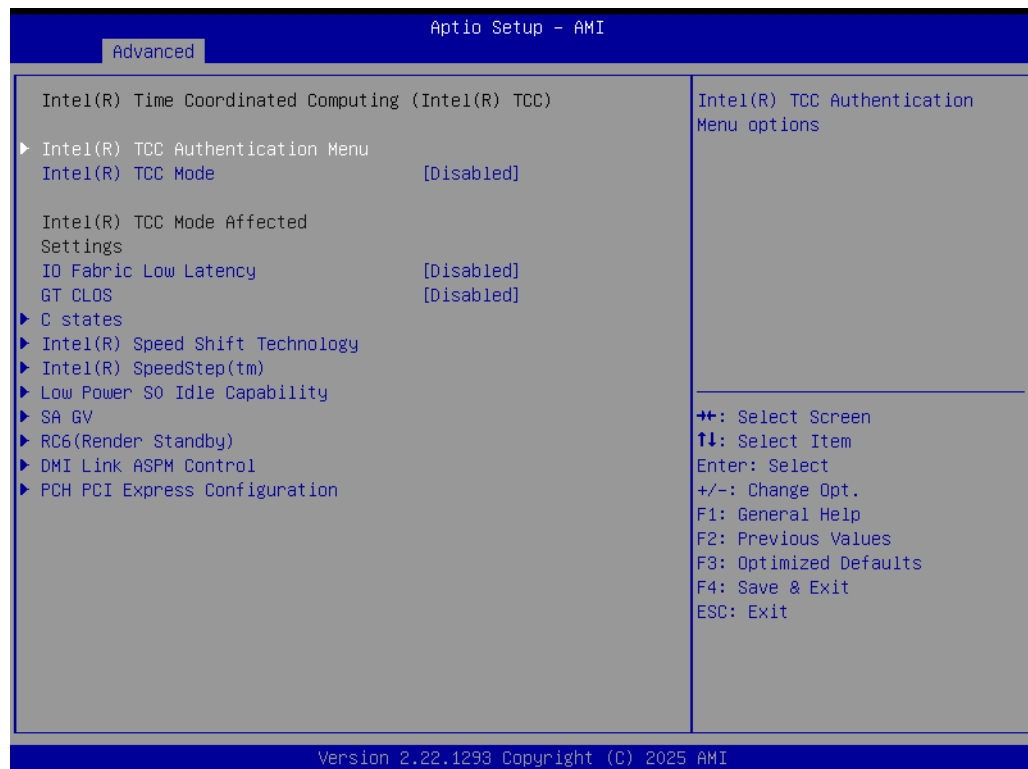
- **ME State**
When Disabled ME will be put into ME Temporarily Disabled Mode.
- **ME Unconfig on RTC Clear**
When Disabled, ME will not be unconfigured on RTC Clear.
- **Core BIOS Done Message**
Enable/Disable Core BIOS Done message sent to ME.
- **Firmware Update Configuration**
Configure Management Engine Technology Parameters.

Firmware Update Configuration



- **ME FW Image Re-Flash**
Enable/Disable ME FW Image Re-Flash function.
- **FW Update**
Enable/Disable ME FW Update function.

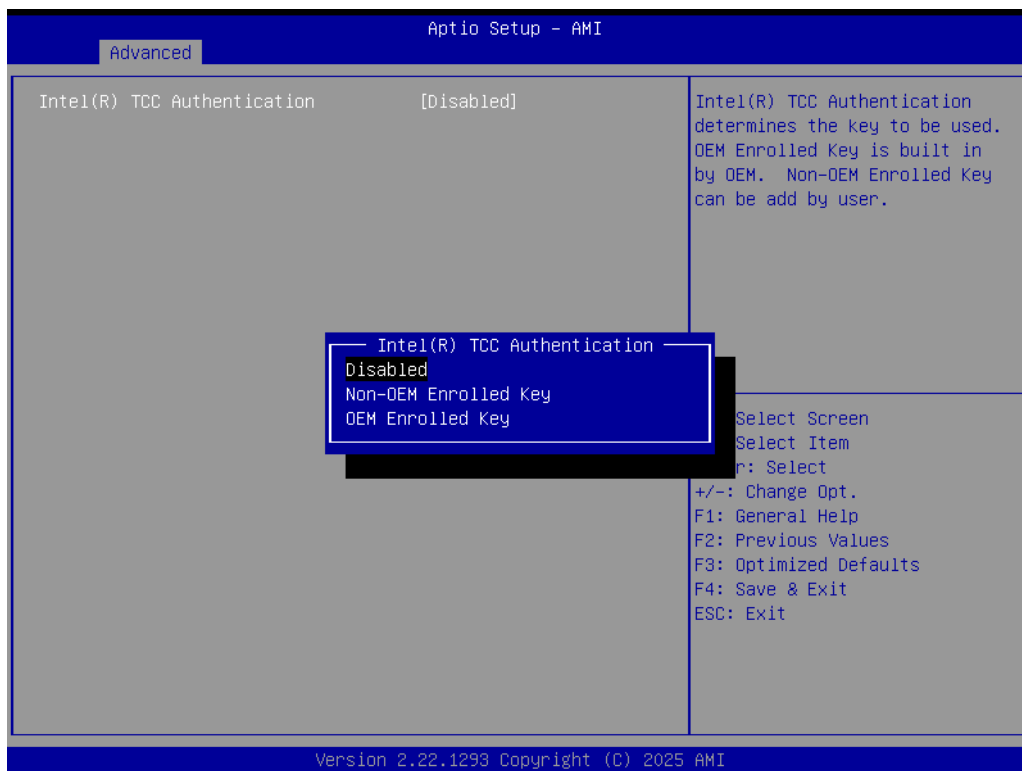
3.2.2.5 Intel® Time Coordinated Computing (Intel® TCC)



- **Intel® TCC Authentication Menu**
Intel® TCC Authentication Menu Options
- **Intel® TCC Mode**
Enable or Disable Intel® TCC Mode. When enabled, this will modify system settings to improve real-time performance. The full list of settings and their current state are displayed below when Intel® TCC mode is enabled.
- **Intel® TCC Mode Affected Settings**
- **IO Fabric Low Latency**
Enable or Disable IO Fabric Low Latency. This will turn off some power management in the PCH IO fabrics. This option provides the most aggressive IO Fabric performance setting. S3 state is NOT supported.
- **GT CLOS**
Enable or Disable Graphics Technology (GT) Class of Service. Enable will reduce Gfx LLC allocation to minimize impact of Gfx workload on LLC.
- **C state**
Enable/Disable CPU Power Management. Allow CPU to go to C states when it's not 100% utilized.
- **Intel® Speed Shift Technology**
Enable/Disable Intel® Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
- **Intel® SpeedStep™**
Allow more than two frequency ranges to be supported.
- **Low Power S0 Idle Capability**
This variable determines if we enable ACPI Lower Power S0 Idle Capability (Mutually exclusive with Smart connect). While this is enabled, it also disables the 8254 timer for SLP_S0 support.

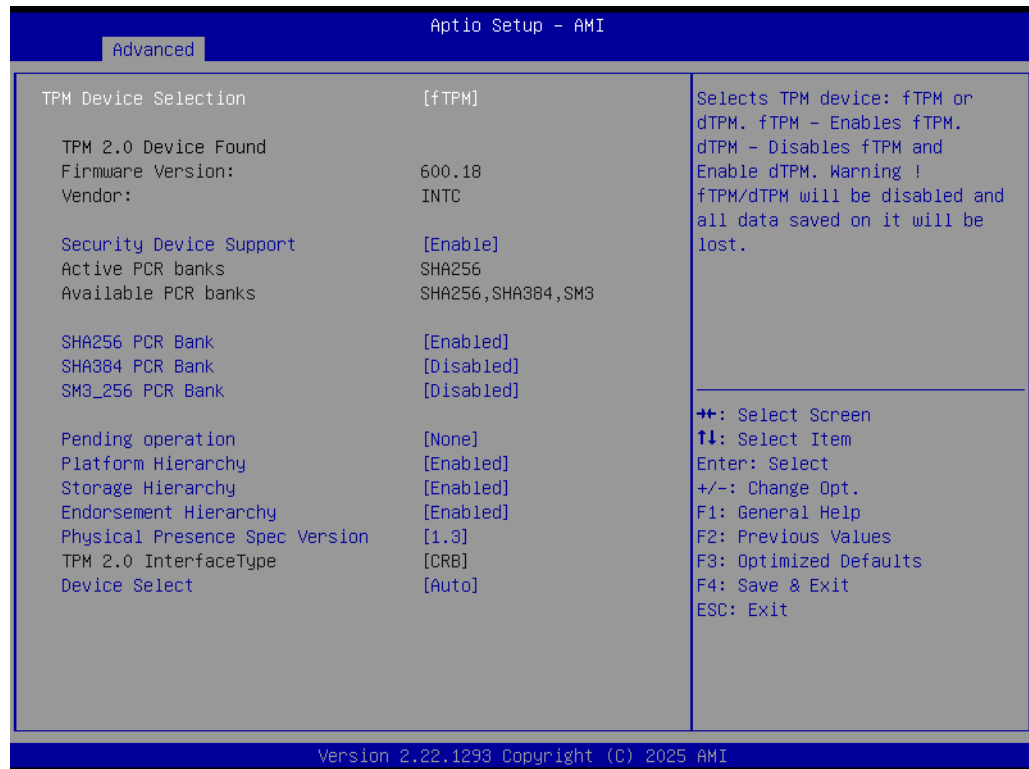
- **SA GV**
System Agent Geyserville. This can disable, fix to a specific point, or enable frequency switching.
- **RC6 (Render Standby)**
Check to enable render standby support.
- **DMI Link ASPM Control**
The control of Active State Power Management of the DMI Link.
- **PCH PCI Express Configuration**
PCI Express Configuration Setting.

Intel® TCC Authentication



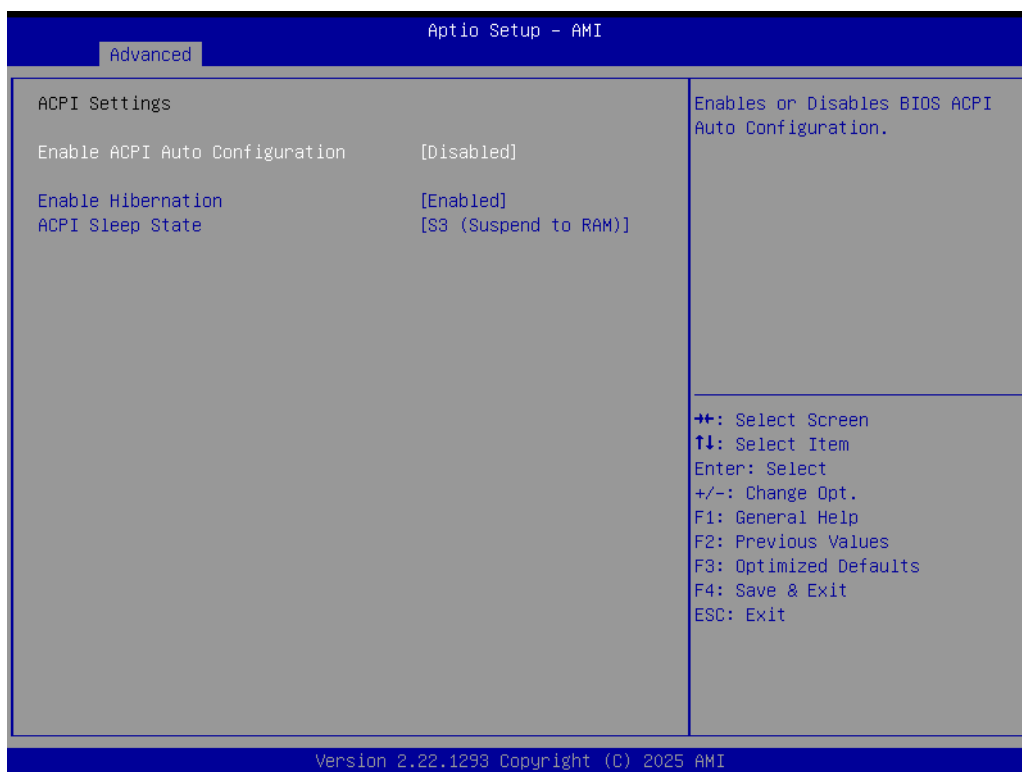
- Intel® TCC Authentication determines the key to be used. OEM Enrolled Key is built in by the OEM. Non-OEM Enrolled Key can be added by the user.

3.2.2.6 Trusted Computing



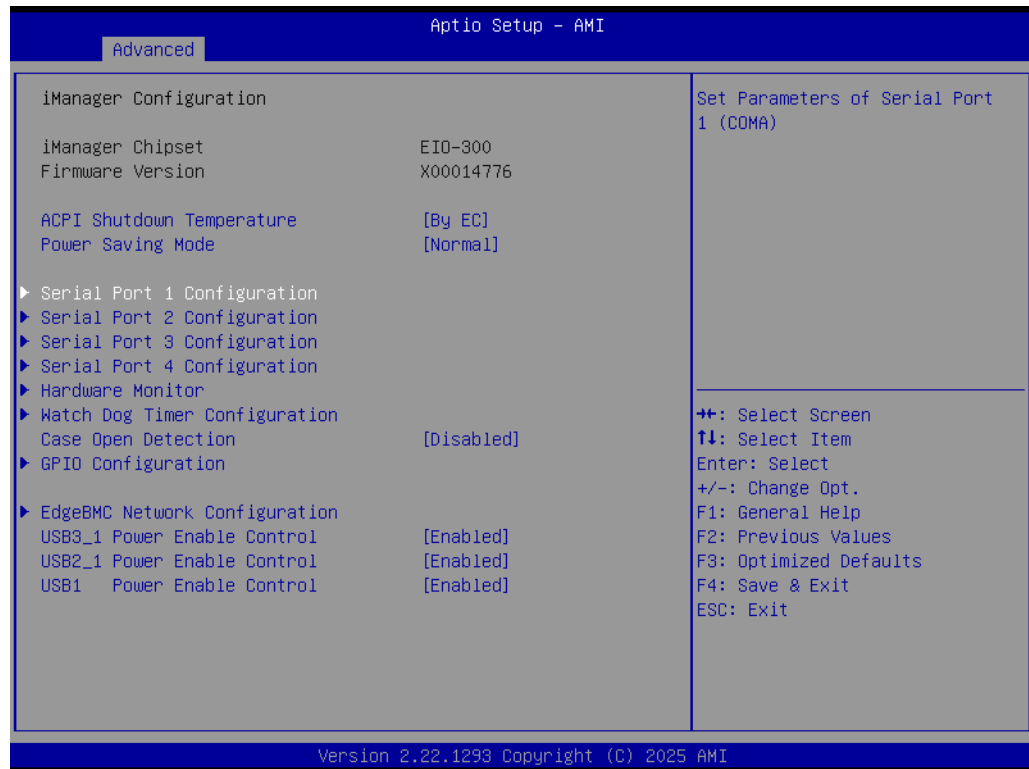
- **TPM Device Selection**
Select TPM device: fTPM or dTPM.
- **Security Device Support**
Enable or disable BIOS support for a security device.
- **SHA-1 PCR Bank**
Enable or Disable SHA-1 PCR Bank.
- **SHA256 PCR Bank**
Enable or Disable SHA256 PCR Bank.
- **SHA384 PCR Bank**
Enable or Disable SHA384 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 the OS to support PPI Spec Version 1.2 or 1.3.
- **TPM 2.0 Interface Type**
- **Device Select**
TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both with the default set to TPM 2.0 devices. If not found, TPM 1.2 devices will be enumerated.

3.2.2.7 ACPI Settings



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

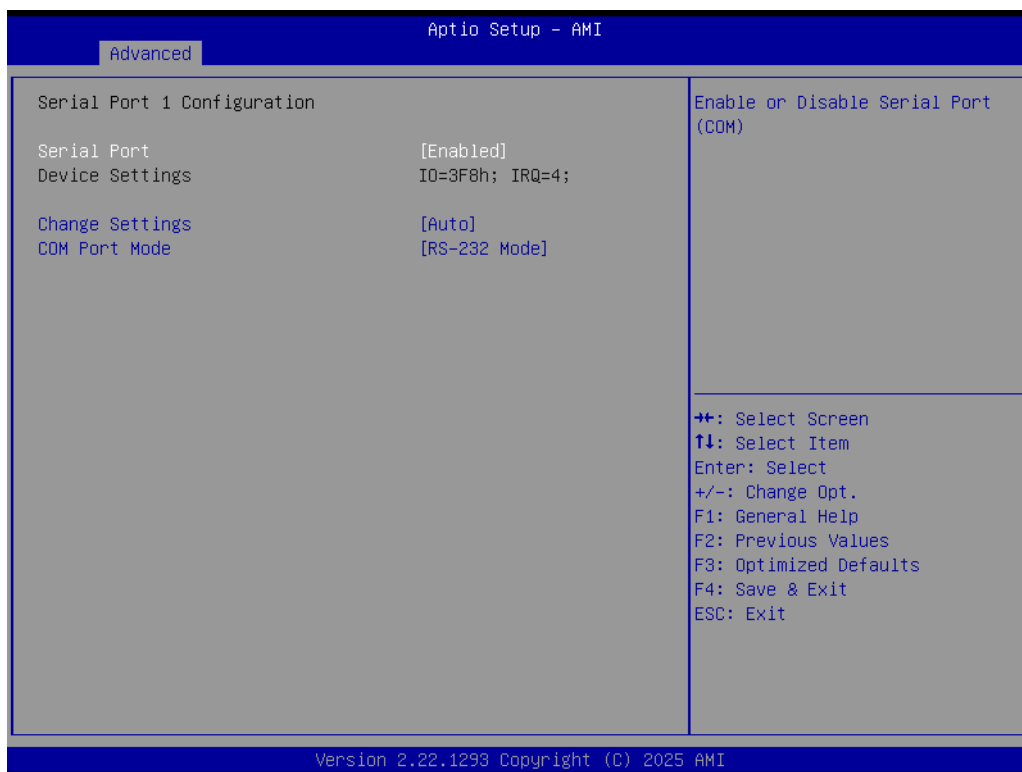
3.2.2.8 iManager Configuration



- **ACPI Shutdown Temperature**
Select the Critical Temperature value at which the OSPM must shut down the system.
- **Power Saving Mode**
Select Power Saving Mode.
- **Serial Port 1 Configuration**
Set Parameters of Serial Port 1 (COMA).
- **Serial Port 2 Configuration**
Set Parameters of Serial Port 2 (COMB).
- **Serial Port 3 Configuration**
Set Parameters of Serial Port 3 (COMC).
- **Serial Port 4 Configuration**
Set Parameters of Serial Port 4 (COMD).
- **Hardware Monitor**
Monitor hardware Status.
- **Watch Dog Timer Configuration**
Watch Dog Timer Configuration Page.
- **Case Open Detection**
Enable or Disable Case Open Detect Function.
- **GPIO Configuration**
GPIO Configuration Settings.
- **EdgeBMC Network Configuration**
Configure EdgeBMC Network Parameters.
- **USB3_1 Power Enable Control 1/2/3**
Enable or Disable USB3_1 Rear Port Power in S4/S5.
- **USB2_1 Power Enable Control 1/2/3**
Enable or Disable USB2_1 Rear Port Power in S4/S5.

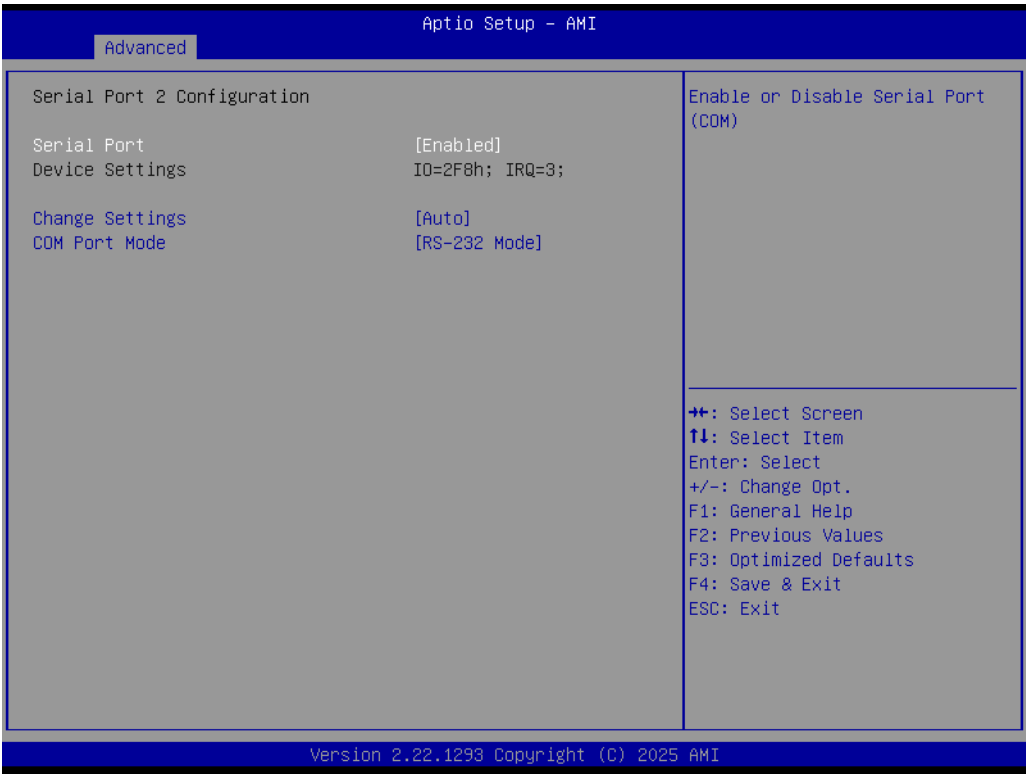
- **USB1 Power Enable Control 1/2/3**
Enable or Disable USB1 Internal Port Power in S4/S5.

Serial Port 1 Configuration



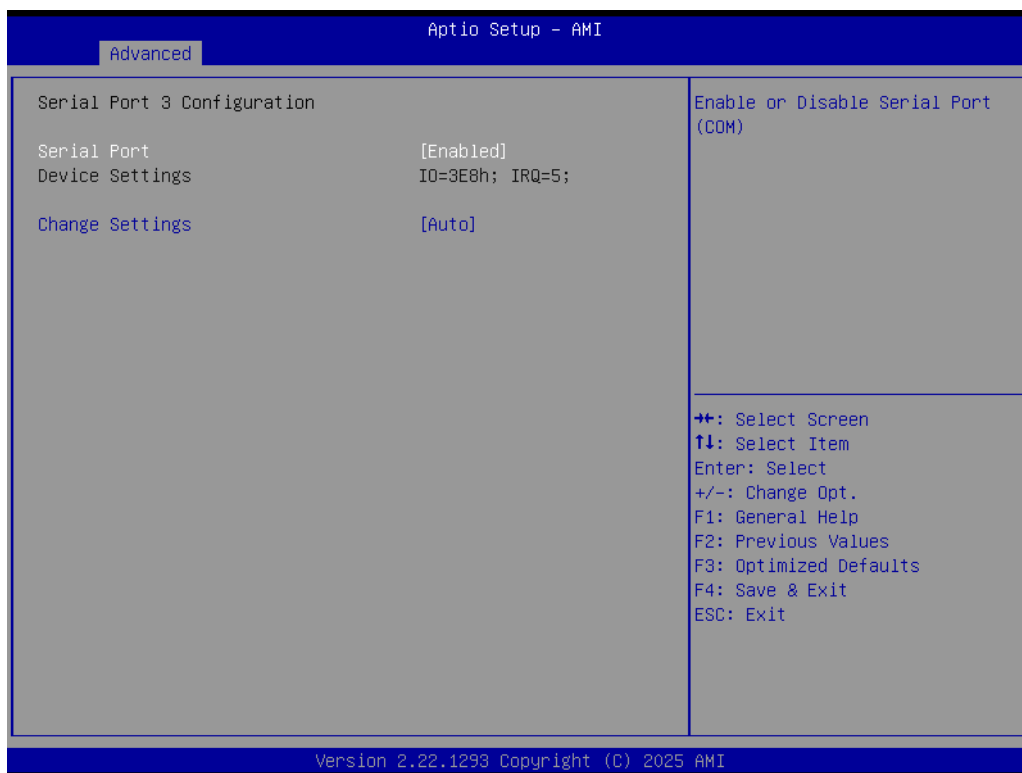
- **Serial Port**
Enable or Disable serial port (COM).
- **Change Settings**
Select an optional settings for Super IO device.
- **COM Port Mode**
COM Port mode select.

Serial Port 2 Configuration



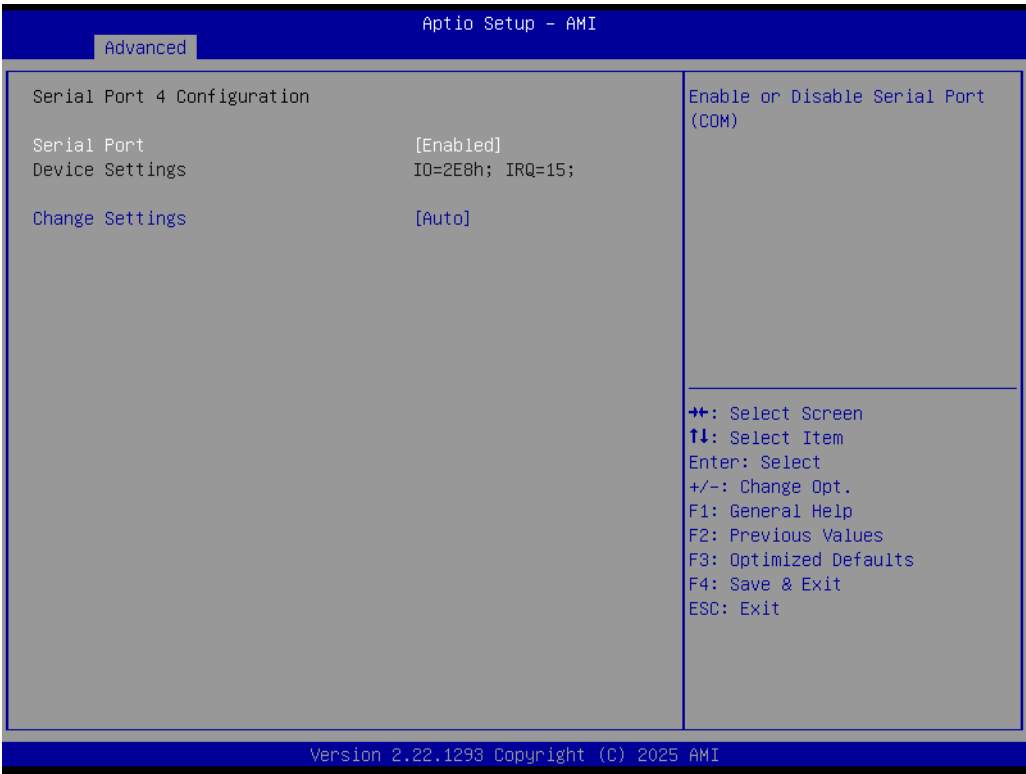
- **Serial Port**
Enable or Disable serial port (COM).
- **Change Settings**
Select an optional settings for Super IO device.
- **COM Port Mode**
COM Port mode select.

Serial Port 3 Configuration



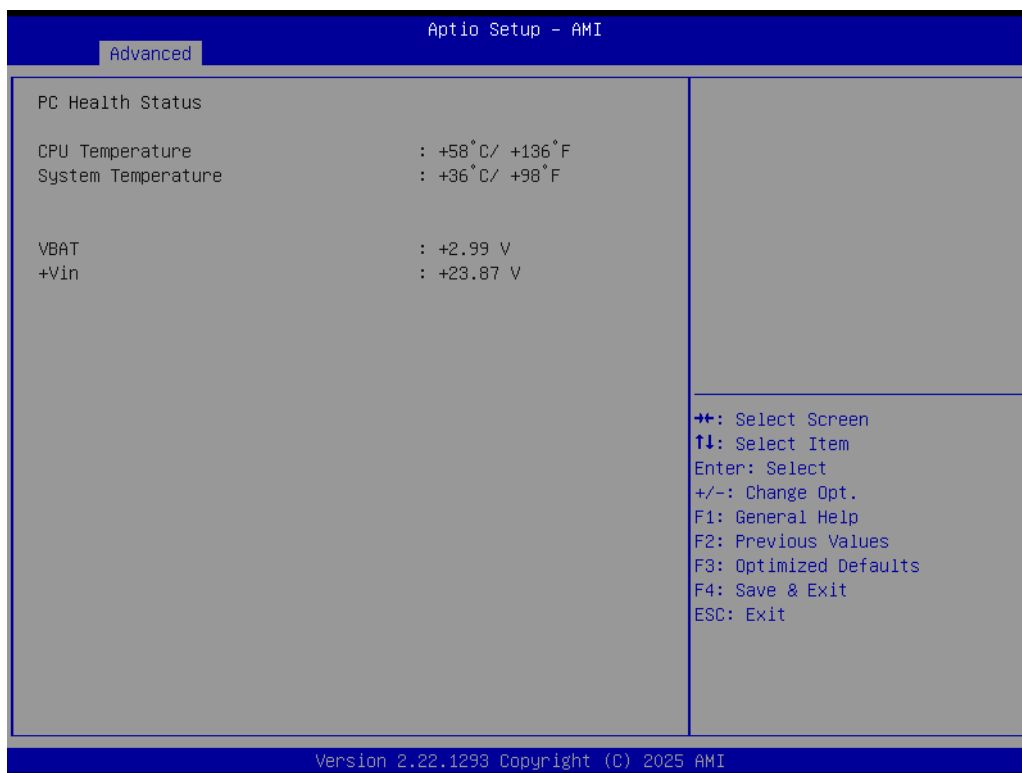
- **Serial Port**
Enable or Disable Serial Port (COM).
- **Change Settings**
Select optimal settings for a Super IO device.

Serial Port 4 Configuration



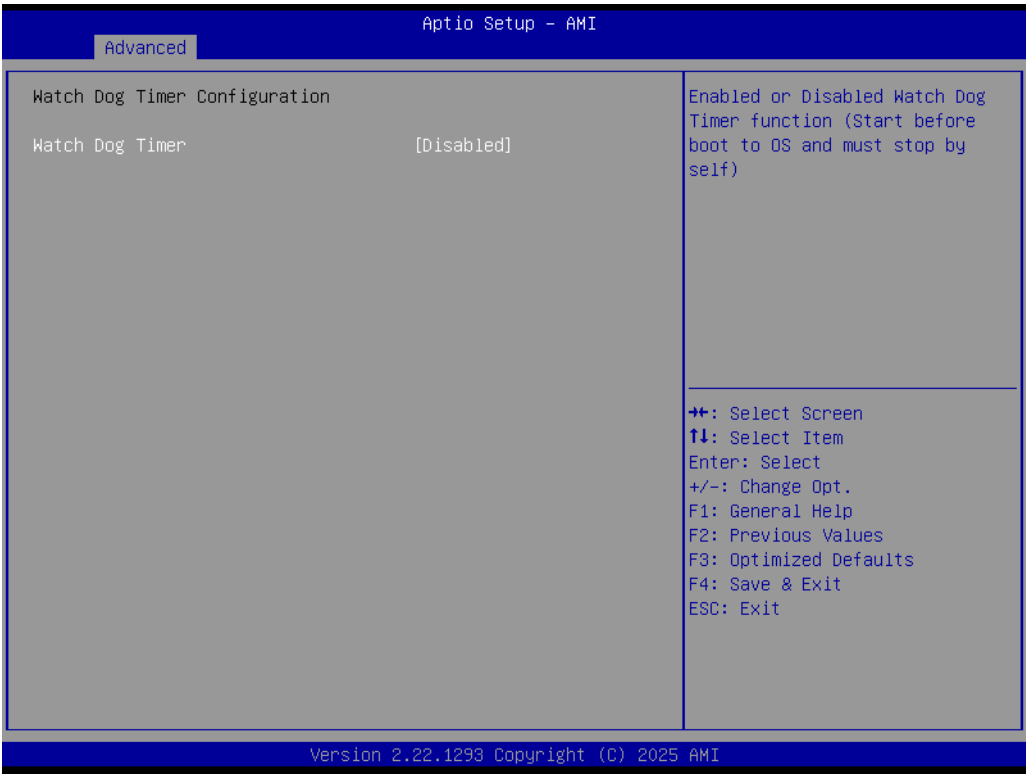
- **Serial Port**
Enable or Disable Serial Port (COM).
- **Change Settings**
Select optimal settings for a Super IO device.

Hardware Monitor



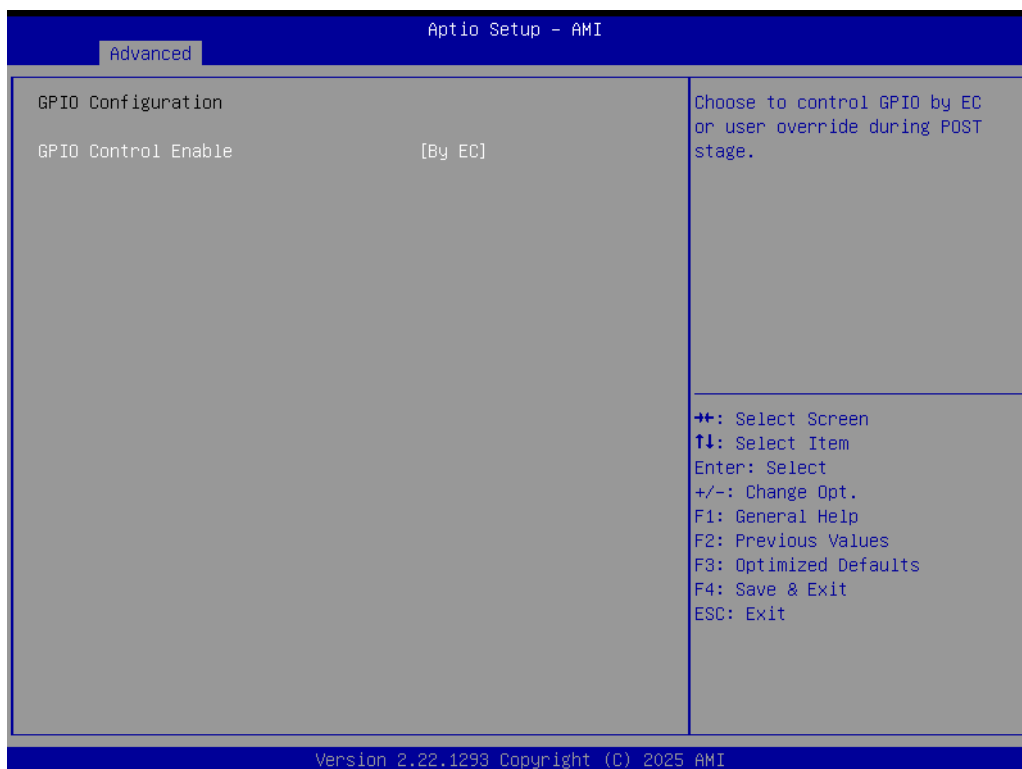
- **CPU Temperature**
- **System Temperature**
- **VBAT**
The Voltage of RTC Battery.
- **+Vin**
The Voltage of System DC-IN.

Watch Dog Timer Configuration



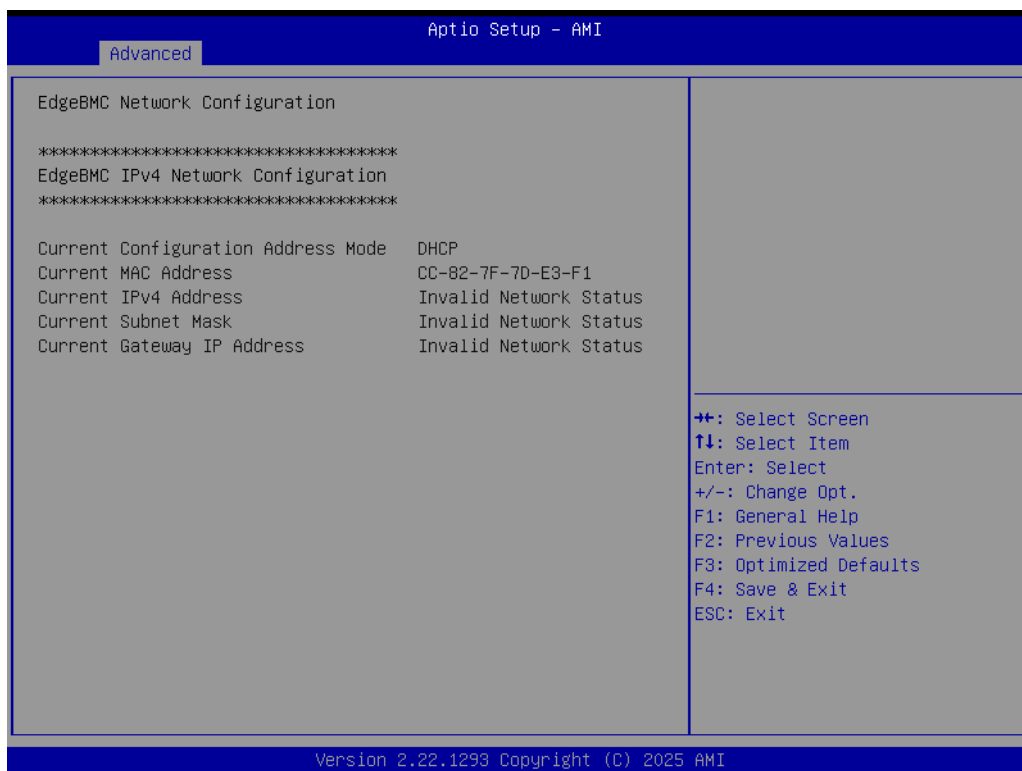
- **Watch Dog Timer**
Enabled or Disabled Watch Dog Timer function (Start before boot to OS and must stop by self).

GPIO Configuration



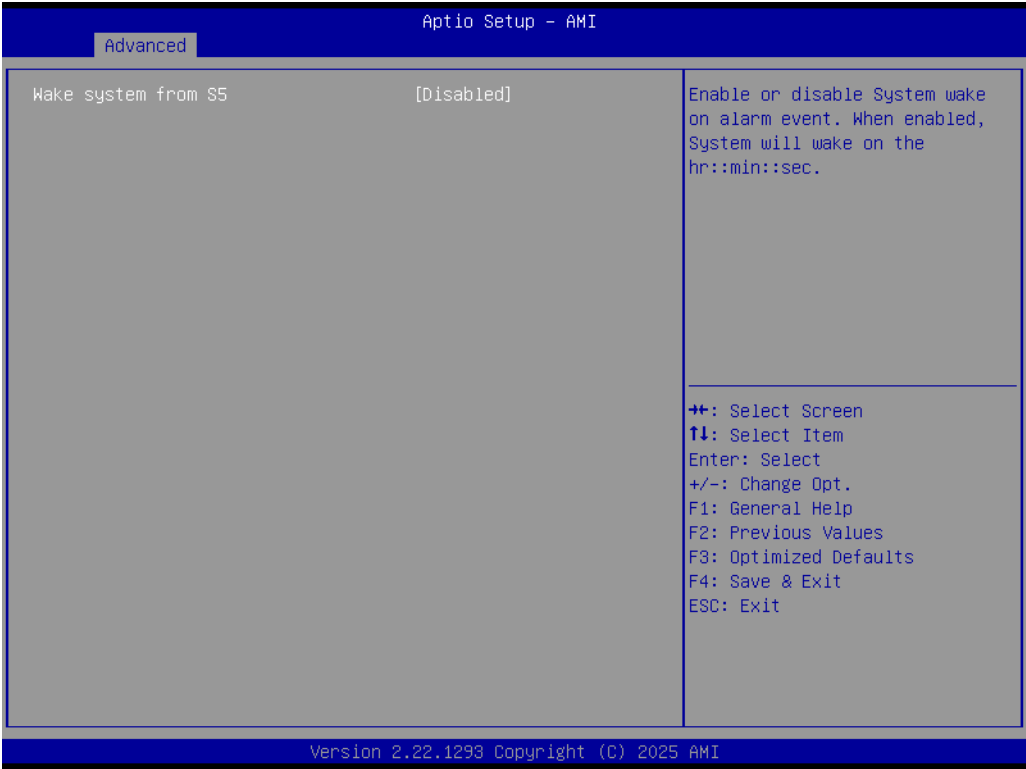
- **GPIO Control Enable**
Choose to control GPIO by EC or user override during POST stage.

EdgeBMC Network Configuration



- **EdgeBMC Network Configuration**

3.2.2.9 S5 RTC Wake Settings



- **Wake system from S5**
Enable/Disable System wake-on-alarm event. Select FixedTime for the system to wake at the hr:min:sec specified.

3.2.2.10 Serial Port Console Redirection



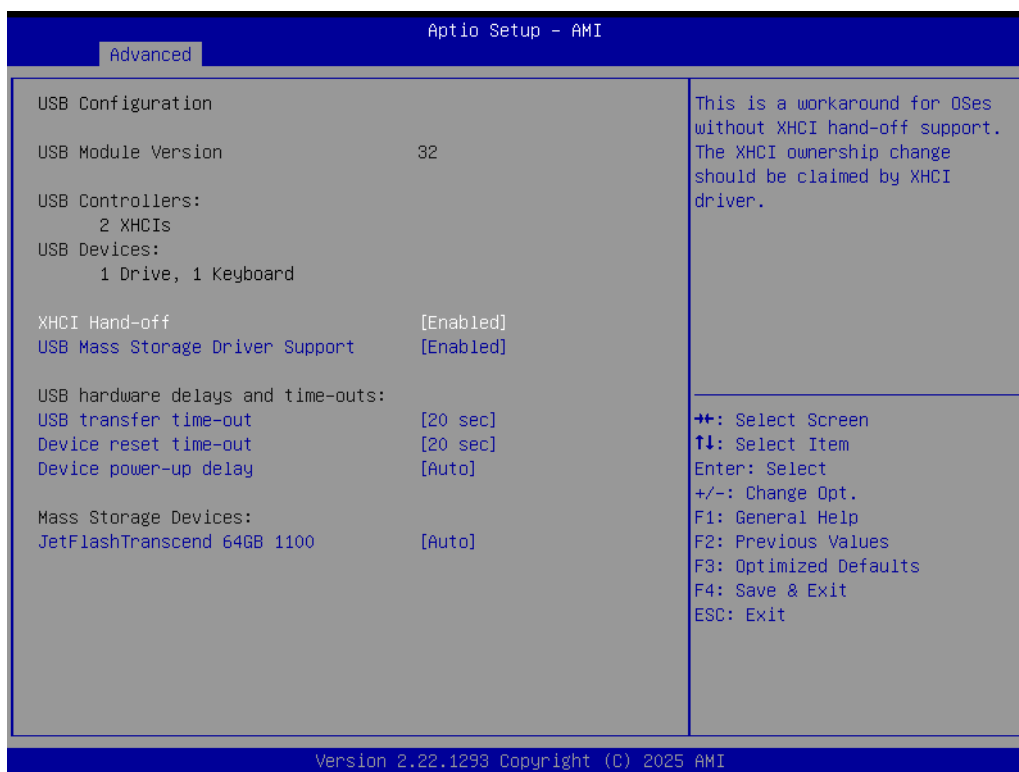
- **Console Redirection**
This item allows users to enable or disable console redirection for Microsoft Windows Emergency Management Services (EMS).
- **Legacy Console Redirection**
This item allows users to configure legacy console redirection detail settings.
- **Console Redirection EMS**
This item allows users to enable or disable console redirection for Microsoft Windows Emergency Management Services (EMS).

Legacy Console Redirection Settings



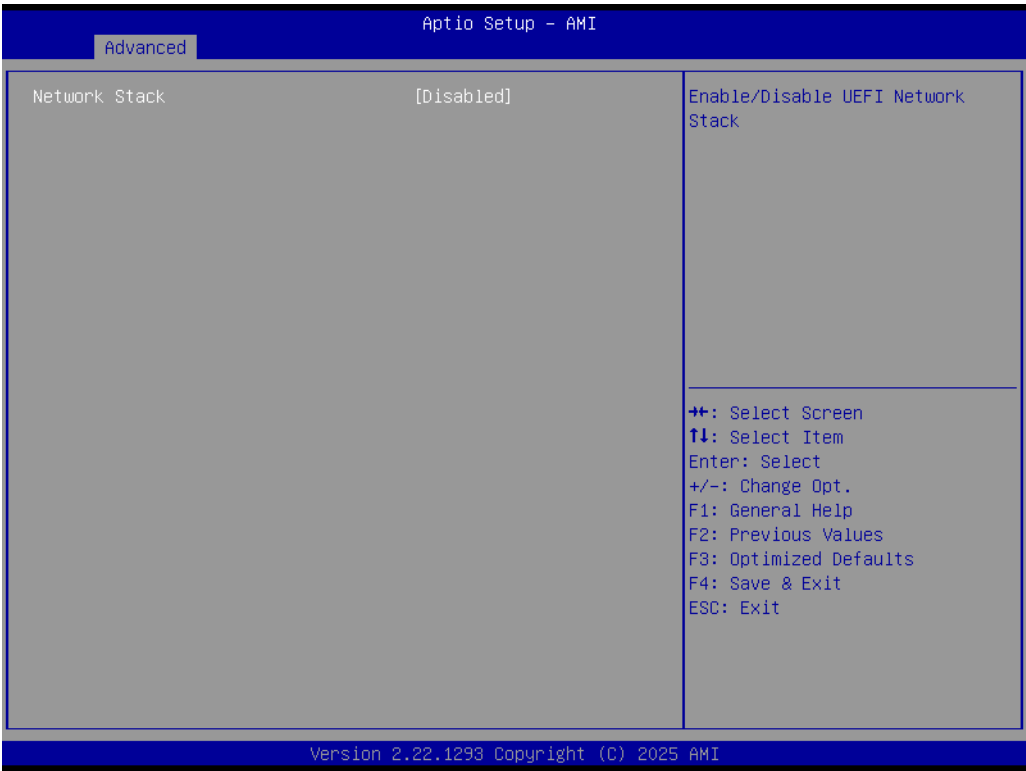
- **Redirection COM port**
Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.
- **Resolution**
On Legacy OS, the Number of Rows and Columns supported redirection
- **Redirect After POST**
When Bootloader is selected, the Legacy Console Redirection is disabled before booting to a legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting fir this option is set to Always Enable.

3.2.2.11 USB Configuration



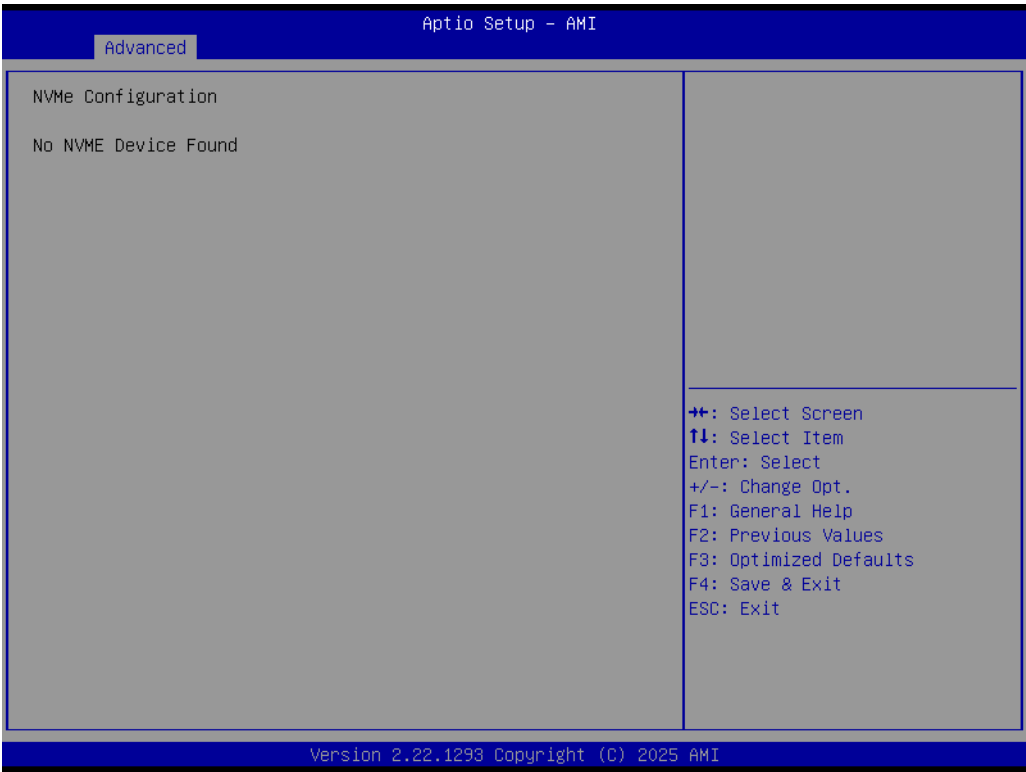
- **XHCI Hand-off**
This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should be claimed by the XHCI driver.
- **USB Mass Storage Driver Support**
Enable/Disable USB Mass Storage Driver Support.
- **USB transfer time-out**
Time-out value for control, bulk, and interrupt transfers.
- **Device reset time-out**
USB mass storage device start unit command time-out.
- **Device power-up delay**
Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses the default value: for a Root port it is 100 ms, for a Hub port the delay is taken from the Hub descriptor.

3.2.2.12 Network Stack Configuration



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

3.2.2.13 NVMe Configuration

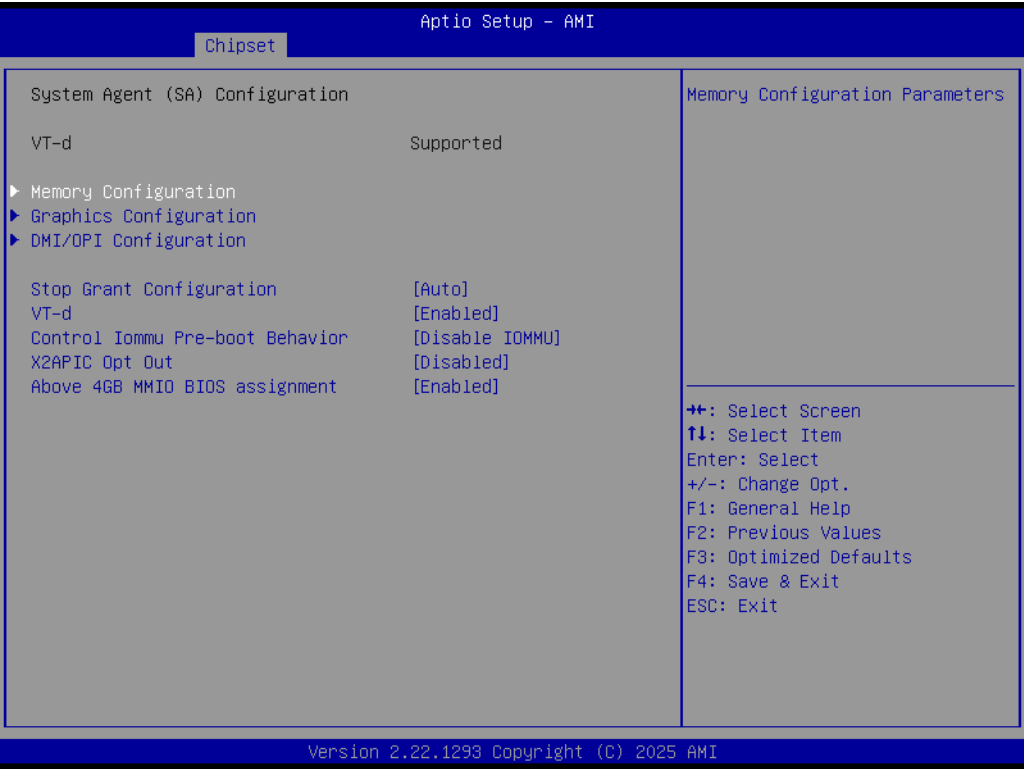


3.2.3 Chipset Configuration

Select the Chipset tab from the AIR-120 setup screen to enter the Chipset BIOS Setup screen. You can display a Chipset BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.

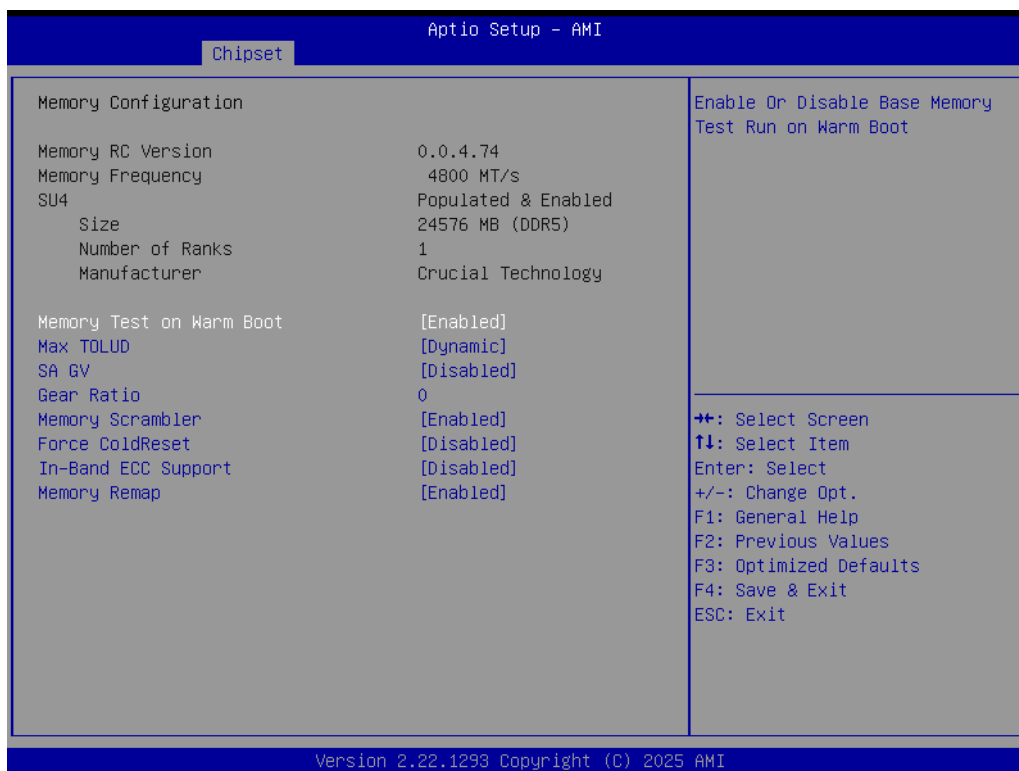


3.2.3.1 System Agent (SA) Configuration



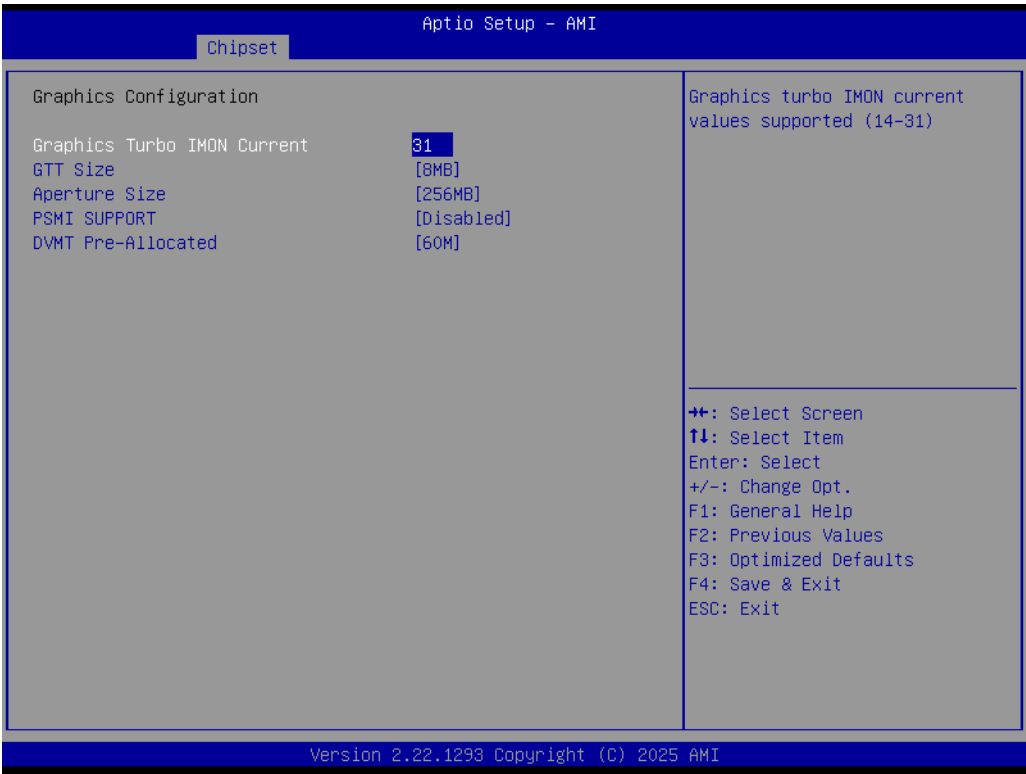
- **Memory Configuration**
Memory Configuration Parameters.
- **Graphics Configuration**
Graphics Configuration Parameters.
- **DMI/OPI Configuration**
Control various DMI functions.
- **Stop Grant Configuration**
Automatic/Manual stop grant configuration.
- **VT-d**
VT-D capability.
- **Control Iommu Pre-Boot Behavior**
Enable IOMMU in the Pre-boot environment.
- **X2APIC Opt Out**
Enable/Disable X2APIC Opt Out Bit.
- **Above 4GB MMIO BIOS assignment**
Enable/Disable above 4GB Memory Mapped IO BIOS assignment.

Memory Configuration



- **Memory Test on Warm Boot**
Enable/Disable Base Memory Test Run on Warm Boot.
- **Max TOLUD**
Maximum Value of TOLUD.
- **SA GV**
System Agent Geyserville.
- **Gear Ratio**
Gear ratio when SAGV is disabled.
- **Memory Scrambler**
Enable/Disable Memory Scrambler support.
- **Force ColdReset**
Force ColdReset OR Choose MrcColdBoot mode.
- **In-Band ECC Support**
Enable/Disable In-Band ECC.
- **Memory Remap**
Enable/Disable Memory Remap above 4GB.

Graphics Configuration



- **Graphics Turbo IMON Current**
Graphics turbo IMON current values supported.
- **GTT Size**
Select the GTT Size.
- **Aperture Size**
Select the Aperture Size.
- **PSMI Support**
Enable/Disable PSMI.
- **DVMT Pre-Allocated**
Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

DMI/OPI Configuration

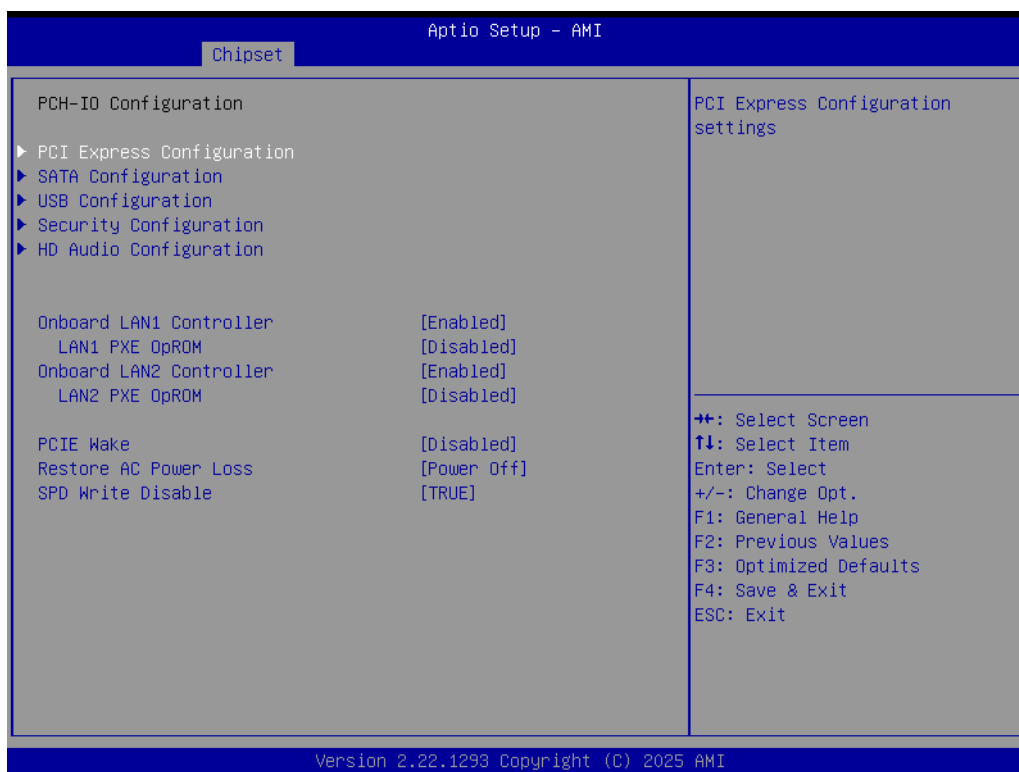


- **DMI Gen3 ASPM**
DMI Gen3 ASPM Support.
- **DMI ASPM**
DMI ASPM Support.

Display Setup Menu

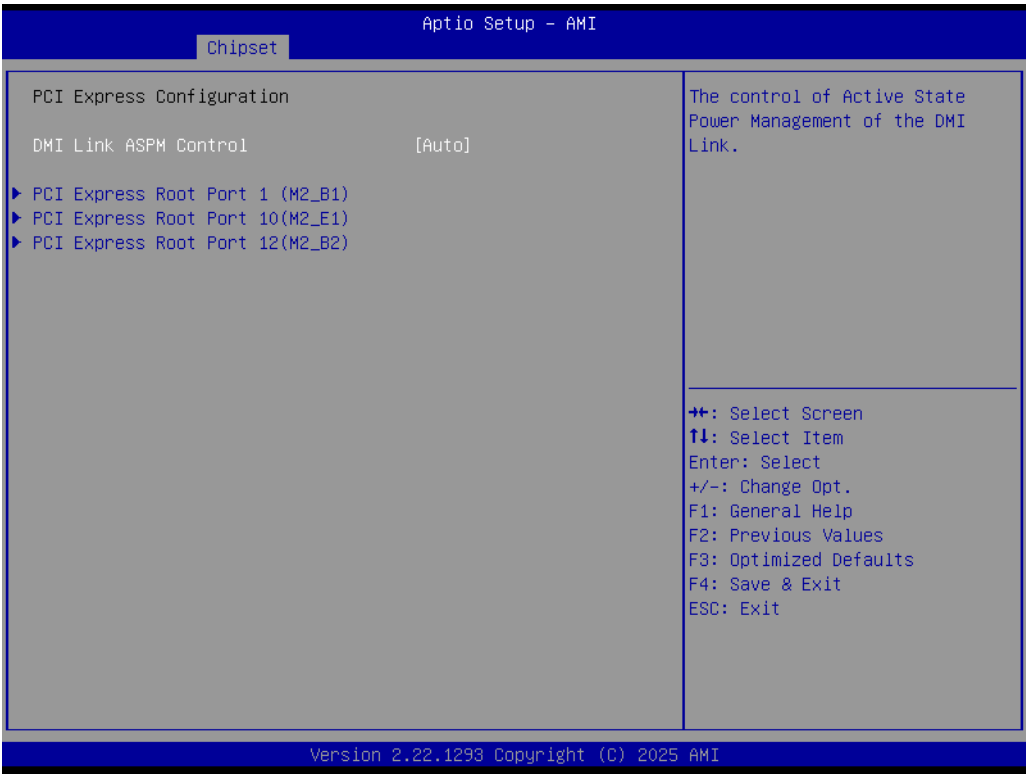


3.2.3.2 PCH-IO Configuration



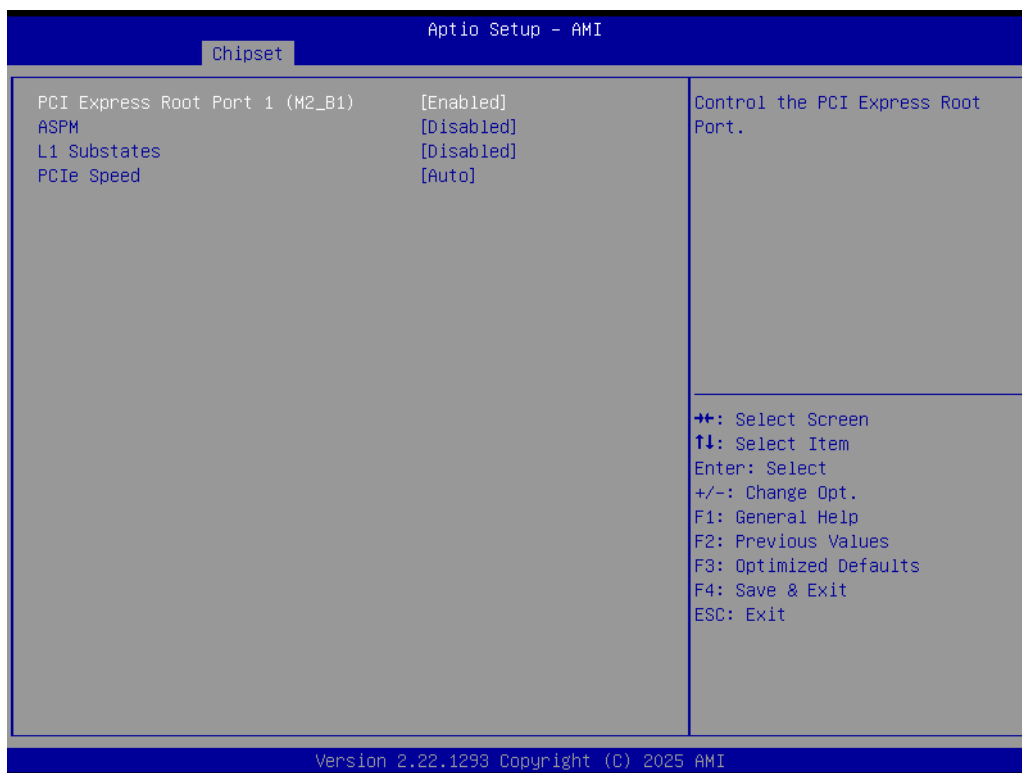
- **PCI Express Configuration**
PCI Express Configuration Settings.
- **SATA Configuration**
SATA Device Options Settings.
- **USB Configuration**
USB Configuration Settings.
- **Security Configuration**
Security Configuration Settings.
- **HD Audio Configuration**
HD Audio Subsystem Configuration Settings.
- **Onboard LAN1 Controller**
Select to Enable or Disable onboard LAN1 Controller.
- **LAN1 PXE ROM**
Enable or Disable onboard LAN1's PXE option ROM.
- **Onboard LAN2 Controller**
Select to Enable or Disable onboard LAN2 Controller.
- **LAN2 PXE ROM**
Enable or Disable onboard LAN2's PXE option ROM.
- **PCIE Wake**
Enable or disable PCIE to wake the system from S5.
- **Restore AC Power Loss**
Specify what state to go to when power is re-applied after a power failure (G3 state).
- **SPD Write Disable**
Enable/Disable setting SPD Write Disable.

PCI Express Configuration



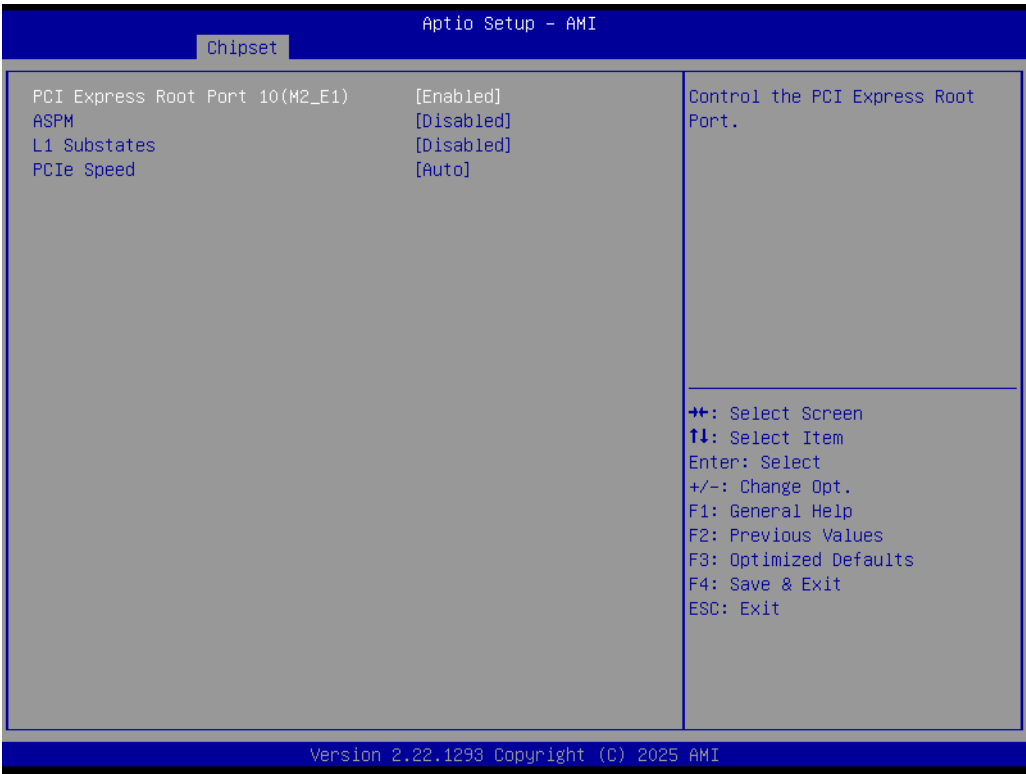
- **DMI Link ASPM Control**
This item controls Active State Power Management of the DMI Link.
- **PCI Express Root Port 1/10/12**
PCI Express Port 1/10/12 Settings.

PCI Express Root Port 1



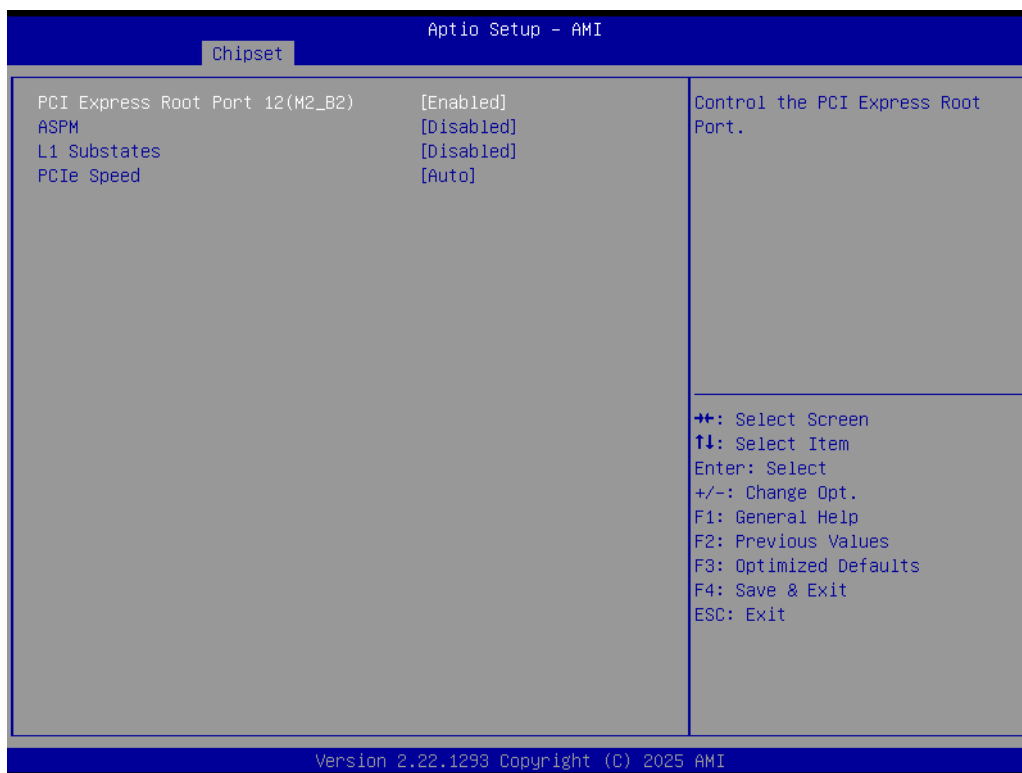
- **PCI Express Root Port 1**
Control the PCI Express Root Port.
- **ASPM**
Set the ASPM Level.
- **L1 Substates**
PCI Express L1 Substates settings.
- **PCIe Speed**
Configure PCIe Speed.

PCI Express Root Port 10



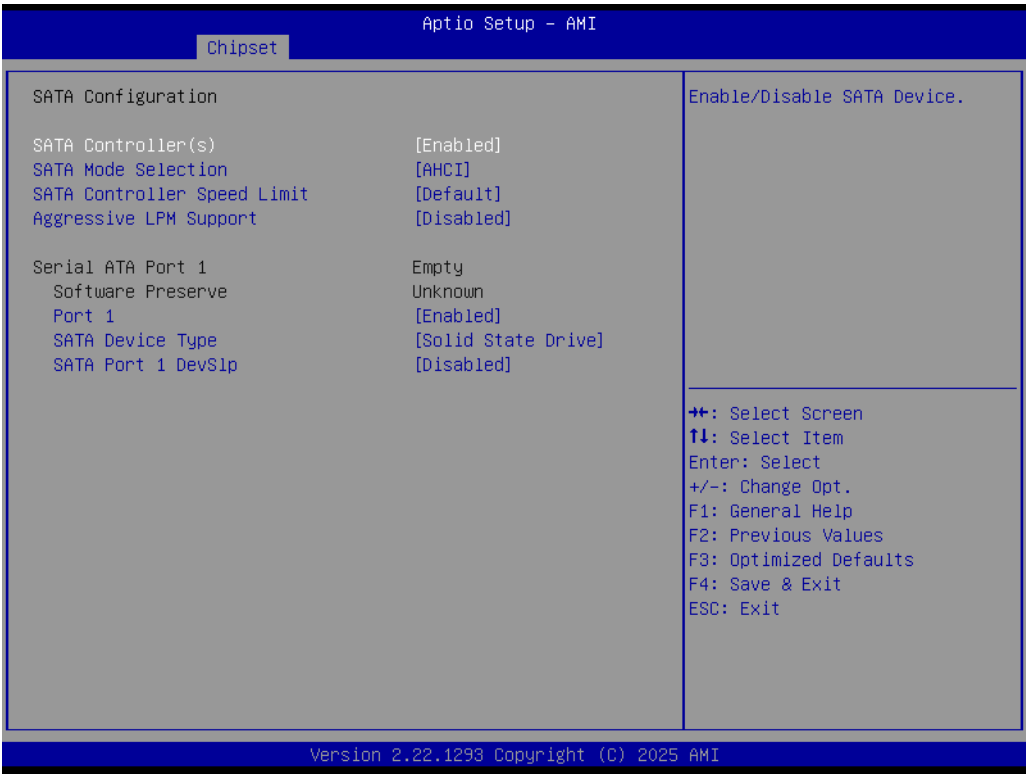
- **PCI Express Root Port 10**
Control the PCI Express Root Port.
- **ASPM**
Set the ASPM Level.
- **L1 Substates**
PCI Express L1 Substates settings.
- **PCIe Speed**
Configure PCIe Speed.

PCI Express Root Port 12



- **PCI Express Root Port 12**
Control the PCI Express Root Port.
- **ASPM**
Set the ASPM Level.
- **L1 Substates**
PCI Express L1 Substates settings.
- **PCIe Speed**
Configure PCIe Speed.

SATA Configuration



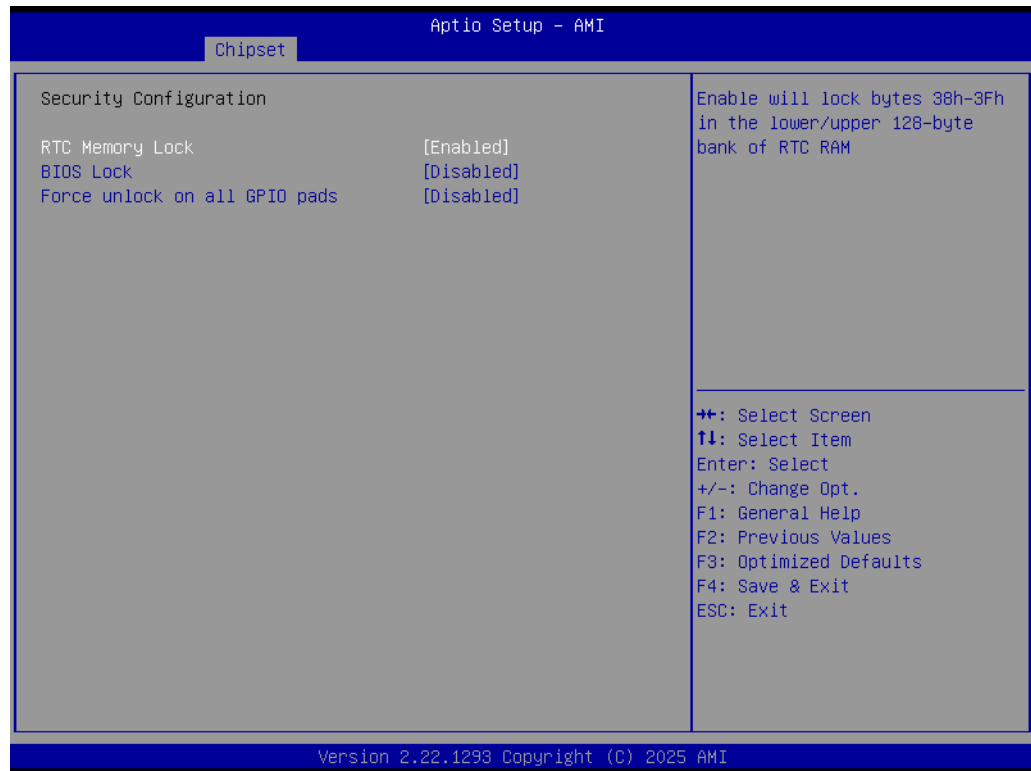
- **SATA Controller(s)**
Enable/Disable SATA Device.
- **SATA Mode Selection**
Determine how the SATA controller operates.
- **SATA Controller Speed Limit**
Indicates the maximum speed the SATA controller can support.
- **Aggressive LPM Support**
Enable PCH to aggressively enter link power state.

USB Configuration



- **USB Overcurrent**
Select “Enabled” if Overcurrent functionality is used.
- **USB Port Disable Override**
Selectively Enable/Disable the corresponding USB Port from reporting a device connection to the controller.

Security Configuration



- **RTC Memory Lock**
Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.
- **BIOS Lock**
Enable or Disable the PCH BIOS Lock Enable feature.
- **Force unlock on all GPIO pads**
If Enabled, BIOS will force all GPIO pads to be in the unlock state.

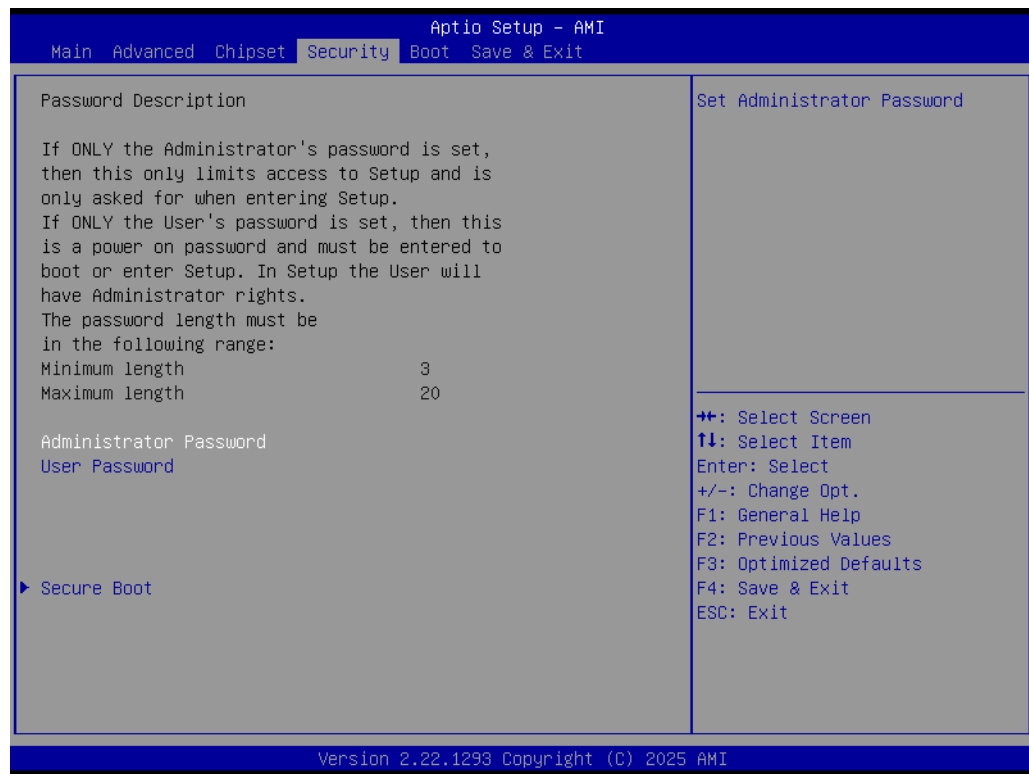
HD Audio Configuration



- **HD Audio**
Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HDA will be unconditionally enabled.

3.2.4 Security

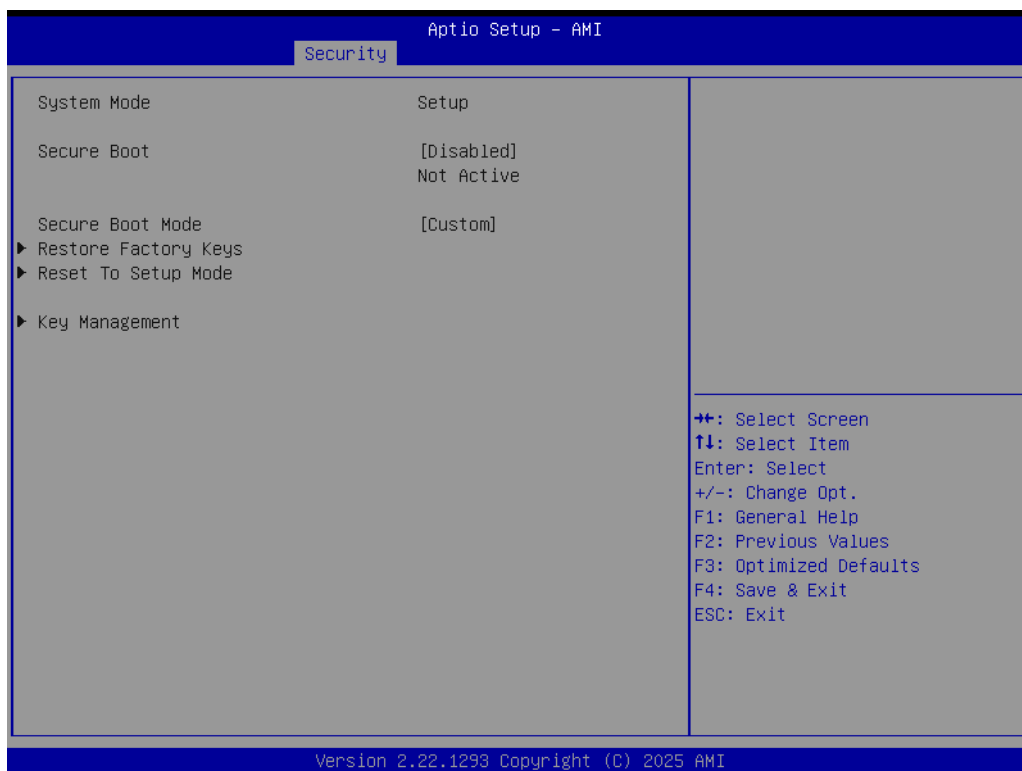
Select Security Setup from the AIR-120 Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection are described in this section.



To access the sub-menu for the following items, select the item and press <Enter>:

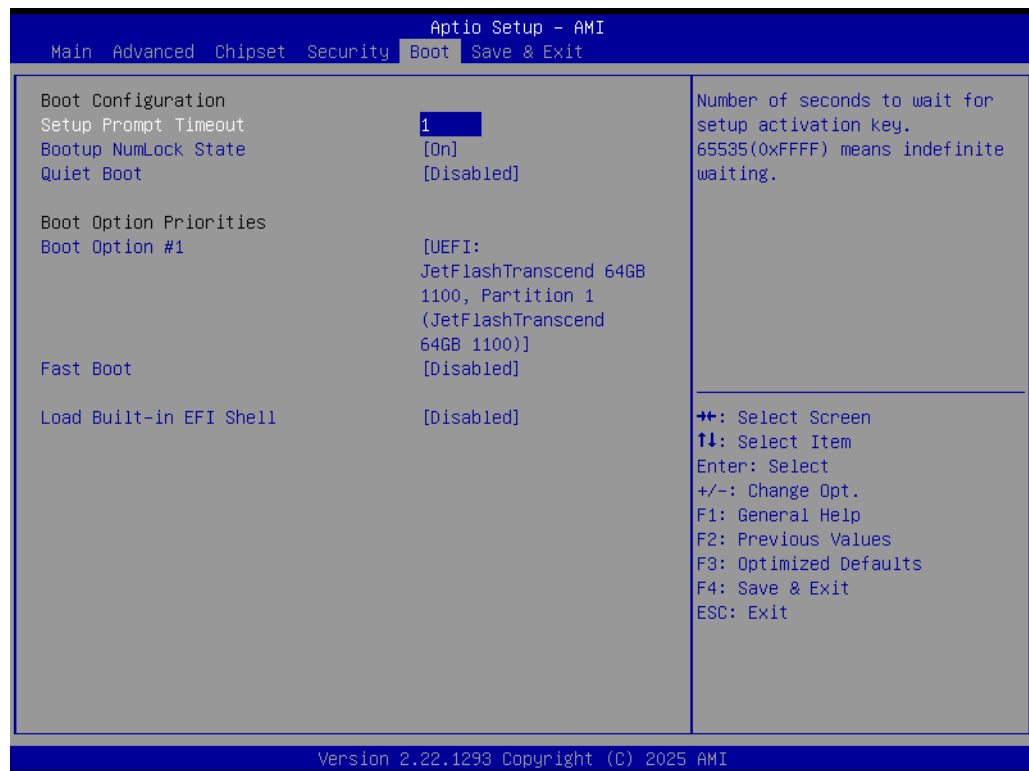
- Change Administrator/User Password
Select this option and press <ENTER> to access the sub-menu, and then type in the password.
- Secure Boot
Secure Boot Configurations.

Security Boot



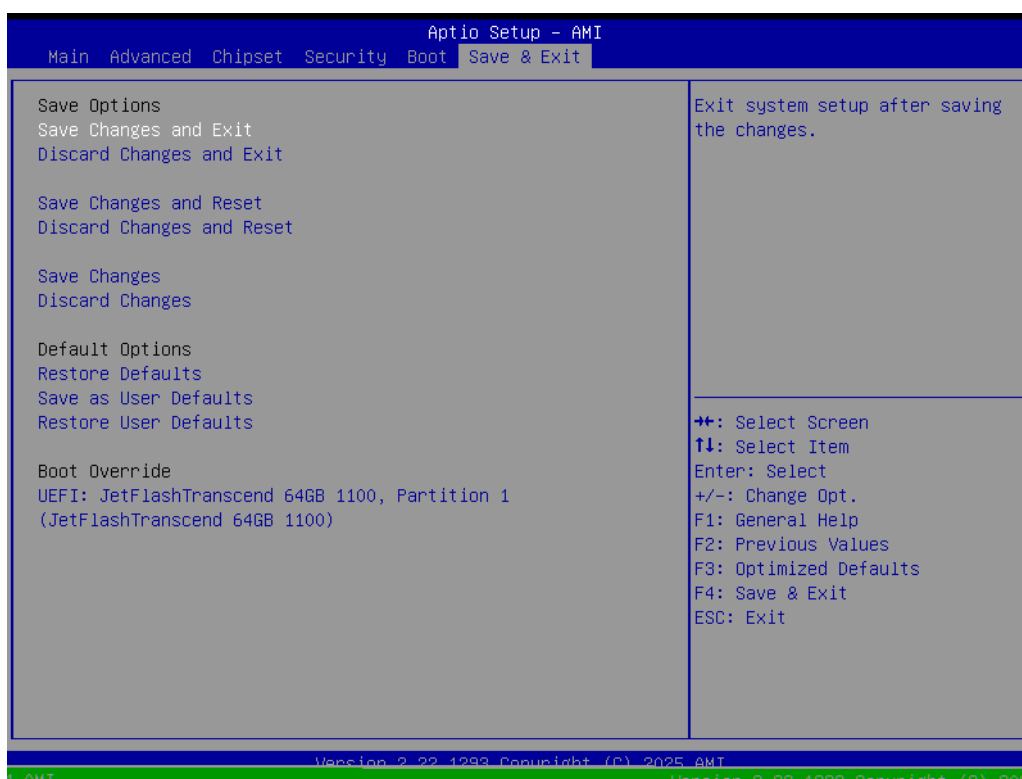
- **Secure Boot**
The Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled, and the System is in User mode. The mode change requires a platform reset.
- **Secure Boot Mode**
Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can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

3.2.5 Boot



- **Setup Prompt Timeout**
This is the number of seconds that the firmware will wait before initiating the original default boot selection. A value of 0 indicates that the default boot selection is to be initiated immediately on boot. A value of 65535(0xFFFF) indicates that firmware will wait for user input before booting. This means the default boot selection is not automatically started by the firmware.
- **Bootup NumLock State**
Select the keyboard NumLock state.
- **Quiet Boot**
Enables or disables the Quiet Boot option.
- **Boot Option #1**
Sets the system boot order.
- **Fast Boot**
Enable/Disables boot with initialization of a minimal set of devices required to launch the active boot option. It has no effect on BBS boot options.
- **Load Built-in EFI Shell**
Load/Unload Internal Built-in EFI Shell image inside the BIOS. (Built-in EFI Shell will still be loaded if no bootable device is found).

3.2.6 Save & Exit



- **Changes and Exit**
Exit system setup after saving the changes.
- **Discard Changes and Exit**
Exit system setup without saving any changes.
- **Save Changes and Reset**
Reset the system after saving the changes.
- **Discard Changes and Reset**
Reset system setup without saving any changes.
- **Save Changes**
Save Changes done so far to any of the setup options.
- **Discard Changes**
Discard Changes done so far to any of the setup options.
- **Restore Defaults**
Restore/Load Default values for all the setup options.
- **Save as User Defaults**
Save the changes done so far as User Defaults.
- **Restore User Defaults**
Restore the User Defaults to all the setup options.
- **Boot Override**
Boot device select can override your boot priority.



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