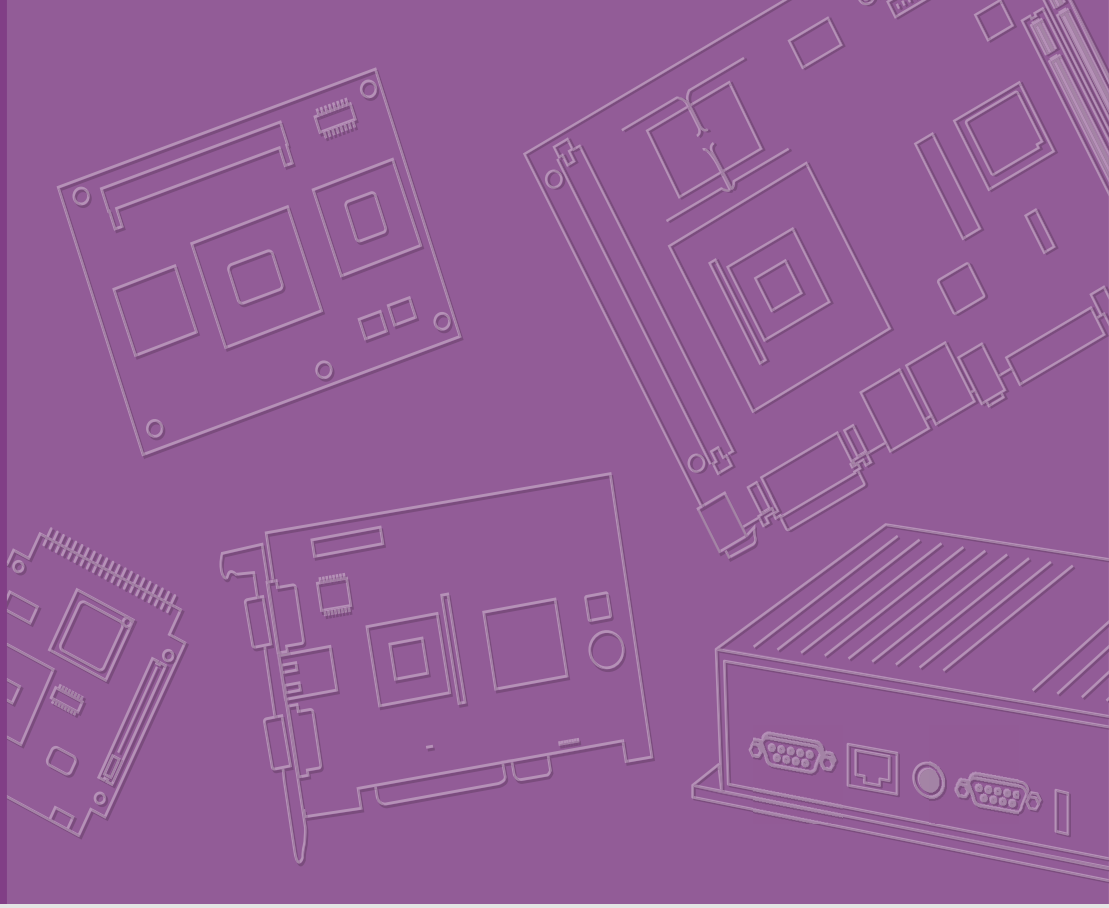

User Manual

DS-086

Computer

ADVANTECH

Enabling an Intelligent Planet

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Part Number: Edition 1

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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/Avertissements, mises en garde et remarques

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 causer des blessures!

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 vous aider à éviter d'endommager le matériel ou à perdre des données. par exemple.
Une pile neuve risque d'exploser si elle n'est pas installée correctement. N'essayez pas de recharger, d'ouvrir de force ou de chauffer la batterie. Remplacez la pile uniquement par le même type ou un type équivalent recommandé par le fabricant. Jetez les piles usagées conformément aux instructions du fabricant.

Note! Notes provide additional optional information.

Les notes fournissent des informations supplémentaires facultatives.

Warning! The equipment is not suitable for use in locations where children are likely to be present.

Cet équipement ne convient pas à une utilisation dans des lieux pouvant accueillir des enfants.

Caution! To avoid risk of electric shock, this equipment must only be connected to supply mains with protective earth.

Pour éviter tout risque d'électrocution, cet équipement ne doit être branché réseau d'alimentation avec une terre de protection.

Warning! *Restricted access area*
Area accessible only to skilled persons and instructed persons with the proper authorization.

Safety Instructions

1. Read these safety instructions carefully.
   Lisez attentivement ces instructions de sécurité.
2. Retain this user manual for future reference.
   Conservez ce manuel de l'utilisateur pour référence ultérieure.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
   Débranchez cet appareil de toute prise secteur avant le nettoyage. Utilisez un chiffon humide. N'utilisez pas de détergents liquides ou en aérosol pour le nettoyage.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
   Pour les équipements enfichables, la prise de courant doit être située à proximité de l'équipement et doit être facilement accessible.
5. Protect the equipment from humidity.
   Gardez cet équipement à l'abri de l'humidité.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
   Placez cet équipement sur une surface fiable lors de l'installation. Le laisser tomber ou le laisser tomber peut causer des dommages.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
   Les ouvertures sur le boîtier sont destinées à la convection de l'air. Protégez l'équipement de la surchauffe. NE COUVREZ PAS LES OUVERTURES.
8. By means of a power cord connected to a socket-outlet with earthing connection.
   Au moyen d'un cordon d'alimentation connecté à une prise de courant avec mise à la terre.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
   Positionnez le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne placez rien sur le cordon d'alimentation.
10. All cautions and warnings on the equipment should be noted.
    Tous les avertissements et mises en garde sur l'équipement doivent être notés.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
    Si l'équipement n'est pas utilisé pendant une longue période, débranchez-le de la source d'alimentation pour éviter tout dommage dû à une surtension transitoire.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
    Ne jamais verser de liquide dans une ouverture. Cela pourrait provoquer un incendie ou un choc électrique.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
    Ne jamais ouvrir l'équipement. Pour des raisons de sécurité, l'équipement ne doit être ouvert que par du personnel qualifié.
14. If any of the following occurs, have the equipment checked by service personnel:
    Si l'une des situations suivantes se produit, faites vérifier l'équipement par le personnel de service:
    - The power cord or plug is damaged.
      Le cordon d'alimentation ou la fiche est endommagé.

- Liquid has penetrated the equipment.
  Un liquide a pénétré dans l'équipement.
- The equipment has been exposed to moisture.
  L'équipement a été exposé à l'humidité.
- The equipment is malfunctioning, or does not operate according to the user manual.
  L'équipement ne fonctionne pas bien ou vous ne pouvez pas le faire fonctionner conformément au manuel d'utilisation.
- The equipment has been dropped and damaged.
  L'équipement est tombé et a été endommagé.
- The equipment shows obvious signs of breakage.
  L'équipement présente des signes évidents de rupture.

15. Do not leave the equipment in an environment with a storage temperature of below -20° C (-4° F) or above 60° C (140° F) as this may damage the components. The equipment should be kept in a controlled environment.
    Ne pas laisser cet équipement dans un environnement o la température de stockage pourrait être inférieure à -20 ° c (-4 ° f) ou supérieure à 60 ° C (140 ° F). Cela pourrait endommager l'équipement. L'équipement doit être dans un environnement contrôlé.
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.
    Attention: Danger d'explosion en cas de remplacement incorrect de la batterie. Remplacez uniquement avec le même type ou le type équivalent recommandé par le fabricant, déposez les piles utilisées selon les instructions du fabricant.
17. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
    Le niveau de pression acoustique au poste de l'opérateur selon la norme CEI 704-1: 1982 n'est pas supérieur à 70 dB (A).
18. RESTRICTED ACCESS AREA: The equipment should only be installed in a Restricted Access Area.
    ZONE D'ACCÈS RESTRICTED: L'équipement ne doit être installé que dans une zone d'accès restreint.
19. DISCLAIMER: These instructions are provided according to IEC 704-1 standards. Advantech disclaims all responsibility for the accuracy of any statements contained herein.
    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 document.
20. The product is intended to be supplied by an UL listed power supply suitable for use at minimum Tma 40 degree C whose output is rated: 19Vdc, 3.42A min. If need further assistance, please contact Advantech for further information.
    Le produit est destiné à être alimenté par un bloc d'alimentation homologué UL adapté à une utilisation à Tma minimum 40 degrés C dont la sortie est nominale: 19 Vcc, 3,42 A min. Si vous avez besoin d'une assistance supplémentaire, veuillez contacter Advantech pour plus d'informations.

Packing List

Before installation, please ensure the following items have been shipped:

- 1 x DS-086
- 1 x Wall Mount brackets
- 1x 19V power adapter

DS-086 Series Part Number

DS-086GB-U0A1E	DS-086GB-U2A1E	DS-086GB-U4A1E	DS-086GB-U6A1E	DS-086GB-U8A1E	DS-086GB-U0A2E	DS-086GB-U2A2E	DS-086GB-U4A2E
DS-086GB-T0A1E	DS-086GB-T2A1E	DS-086GB-T4A1E	DS-086GB-T6A1E	DS-086GB-T8A1E	DS-086GB-T0A2E	DS-086GB-T2A2E	DS-086GB-T4A2E
DS086GB2501-T	DS086GB2601-T	DS086GB2701-T	DS086GB2801-T	DS086GB2901-T	DS086GB3001-T	DS086GB3101-T	DS086GB3201-T
DS086GB2502-T	DS086GB2602-T	DS086GB2702-T	DS086GB2802-T	DS086GB2902-T	DS086GB3002-T	DS086GB3102-T	DS086GB3202-T
DS086GB2503-T	DS086GB2603-T	DS086GB2703-T	DS086GB2803-T	DS086GB2903-T	DS086GB3003-T	DS086GB3103-T	DS086GB3203-T
DS086GB2504-T	DS086GB2604-T	DS086GB2704-T	DS086GB2804-T	DS086GB2904-T	DS086GB3004-T	DS086GB3104-T	DS086GB3204-T

DS-086GB-U1A1E	DS-086GB-U3A1E	DS-086GB-U5A1E	DS-086GB-U7A1E	DS-086GB-U9A1E	DS-086GB-U1A2E	DS-086GB-U3A2E	DS-086GB-U5A2E
DS-086GB-T1A1E	DS-086GB-T3A1E	DS-086GB-T5A1E	DS-086GB-T7A1E	DS-086GB-T9A1E	DS-086GB-T1A2E	DS-086GB-T3A2E	DS-086GB-T5A2E
DS086GB2506-T	DS086GB2606-T	DS086GB2706-T	DS086GB2806-T	DS086GB2906-T	DS086GB3006-T	DS086GB3106-T	DS086GB3206-T
DS086GB2507-T	DS086GB2607-T	DS086GB2707-T	DS086GB2807-T	DS086GB2907-T	DS086GB3007-T	DS086GB3107-T	DS086GB3207-T
DS086GB2508-T	DS086GB2608-T	DS086GB2708-T	DS086GB2808-T	DS086GB2908-T	DS086GB3008-T	DS086GB3108-T	DS086GB3208-T
DS086GB2509-T	DS086GB2609-T	DS086GB2709-T	DS086GB2809-T	DS086GB2909-T	DS086GB3009-T	DS086GB3109-T	DS086GB3209-T

Contents

Chapter 1

General Introduction

This chapter gives background information on DS-086 series.

1.1 Introduction

The DS-086 design is a PC powered by Intel® processors. DS-086 delivers 8K/4K UHD output by HDMI 2.1 ports.

DS-086 save the space, also features built-in I/O such as USB 3.2, RS232 (DB9), and dual-2.5Gb LAN (RJ-45).

DS-086 enables media playback and display and is ideal for all-in-one signage applications with space constraints.

1.2 Product Features

1.2.1 General

- Build-in Intel Meteor Lake Ultra 5 CPU (10 TOPs NPU inside)
- Supports HDMI 2.1 FRL(8K)/HDM 2.1 TMDS (4K)
- Supports Dual-CH DDR5 5600 Mhz
- Supports M.2 2242 M Key for storage

1.2.2 Display

- **HDMI1:** HDMI 2.1 FRL x 1 @7680x4320 60Hz(8K60)*
- **HDMI2:** HDMI 2.1 TMDS x 1 @3840x2160 60Hz(4K60)
- **HDMI3:** HDMI 2.1 TMDS x 1 @3840x2160 60Hz(4K60)
- **HDMI4:** HDMI 2.1 TMDS x 1 @3840x2160 60Hz(4K60)

*Note: Due to 4 4K pipeline design in GFX, DS-086 can support 4 x 4K screens, or 1 x 8K + 2 x 4K HDMI screens.

1.2.3 Thermal Solution

- Build-in Smart Fan

1.3 Hardware & Software Specifications

- **CPU:** Intel Meteor Lake Ultra CPU Series.
- **System Chipset:** Built-in CPU
- **Graphic chipset:** Integrated graphics built in Processor
- **BIOS:** AMI uEFI 256 Mbit
- **System Memory:** Dual-CH DDR5 SoDIMM
- **Storage:** M.2 2242 M Key (NVMe SSD)
- **SUSI:** SUSI is Advantech unique hardware management that provided in standard DS-086 Win10 IoT image. Below function are included.
  - Watchdog Timer
  - Hardware Monitor
  - System information
- **IO Interfaces:**
  - 4 x HDMI 2.1
  - 2 x USB 3.2 Gen1
  - 2 x USB 2.0
  - 1 x RS232 (by DB9)
  - 1~2 x 2.5 Gb LAN (by RJ45)
- **Ethernet Chipset:**
  - Speed: 100/1000/2500 Mbps

– Interface: RJ-45 jacks with LED
– Standard: IEEE 802.3z/ab (1000 Base-T) or IEEE 802.3u 100 Base-T compliant

1.4 Mechanical Specification

1.4.1 Dimension

177 x 180 x 22 mm (L x W x H)

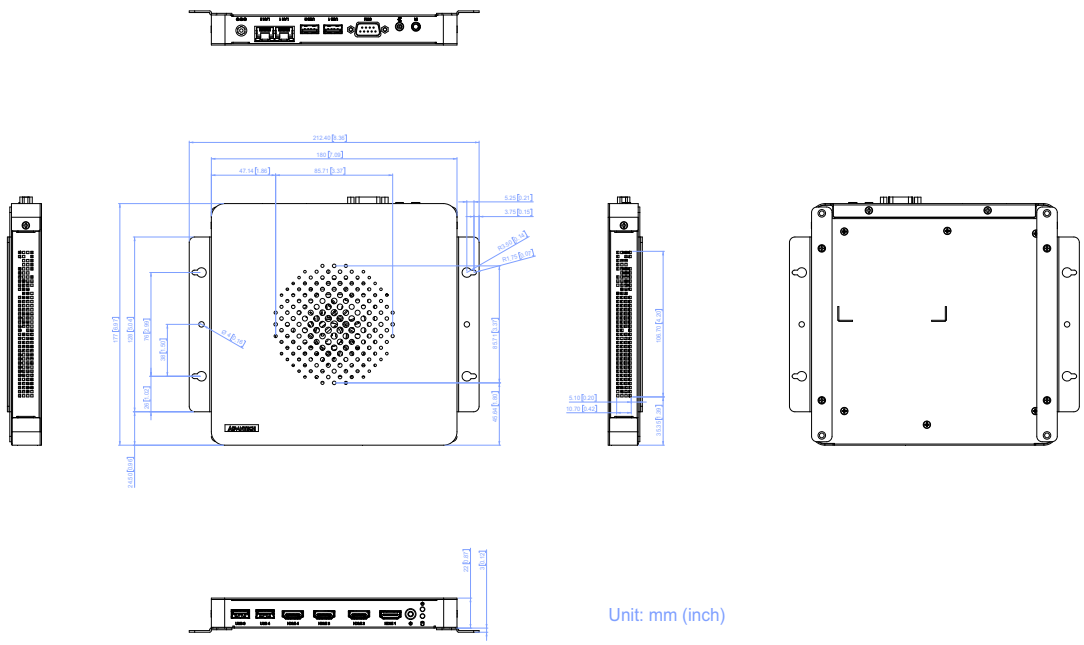


Figure 1.1 Dimensions

1.4.2 Weight

- 0.9 kg

1.5 Power Requirements

1.5.1 System Power

- **Max:** 19V@3.42A

1.5.2 RTC Battery

- **Battery:** 3V 195mAH BR2032

1.6 Environmental Specifications

1.6.1 Operating Temperature

- 0° C - 40 °C.(without air flow)

1.6.2 Relative Humidity

- 95% @ 40°C (Non Condensing)

1.6.3 Storage Temperature

- -20 ~ 85 °C (-4 ~ 140 °F)

1.6.4 Vibration Loading During Operation

- 0.5 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis

1.6.5 Shock During Vibration

- 20 G, IEC 60068-2-27, half sine, 11 ms duration

1.6.6 EMC

- CE, FCC Class B

Chapter 2

Hardware Configuration

This chapter introduces external IO and the installation of DS-086 series Hardware.

2.1 DS-086 Series I/O

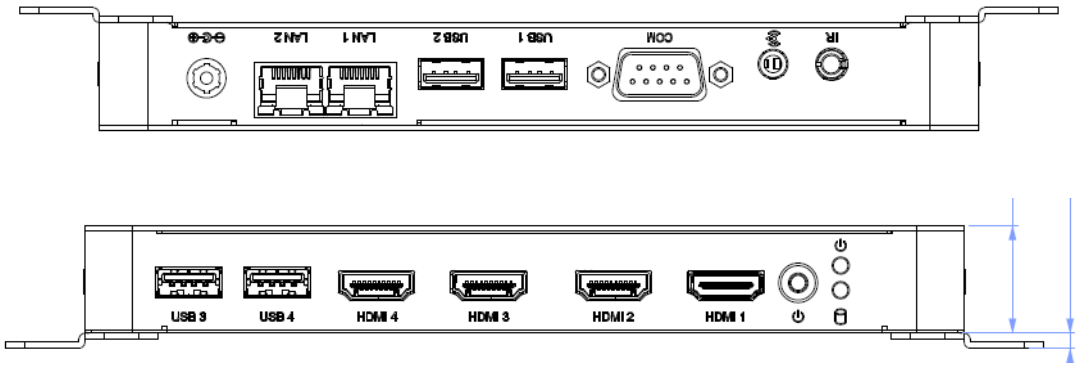


Figure 2.1 DS-086 I/O

2.1.1 Audio Connectors

DS-086 audio connectors can be connected with stereo speakers, or microphone buy selecting from audio application of the operation system.

Figure 2.2 Audio connectors

2.1.2 LED

Below LED indicator means power on status when it shows green.

Figure 2.3 Power

Below LED indicator means SSD status when it shows orange.

Figure 2.4 LED - HDD

2.1.3 Power On/off

Push below button to power on/off DS-086.

Figure 2.5 Power Button

2.1.4 COM Connector

DS-086 Series provides one D-sub 9-pin connectors serial communication interface port. The ports support RS-232 communications.

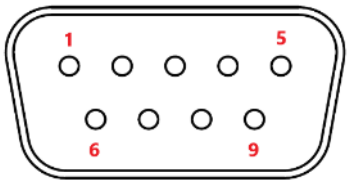


Figure 2.6 DB9 connector

Table 2.1: COM Port Pin Assignments

Pin	Signal
1	--
2	RxD
3	TxD
4	---
5	GND
6	--
7	--
8	--
9	--

2.1.5 USB Connector

DS-086 supports 2 x USB 3.2 Gen1, and 2 x USB 2.0 interfaces. The USB interfaces complies with USB UHCI, Rev. 3.0 standards. Please refer to this pin assignments. USB 3.0 connectors contain legacy pins to interface with USB 2.0 devices, and a new set of pins for USB 3.0 connectivity.

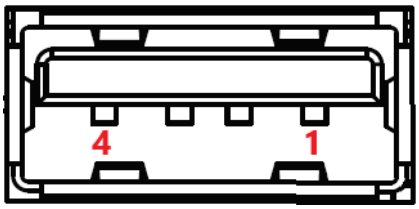


Figure 2.7 USB 2.0 Connector

Table 2.2: USB Port Pin Assignments

Pin	Signal
1	VCC
2	USB Data-
3	USB Data+
4	GND

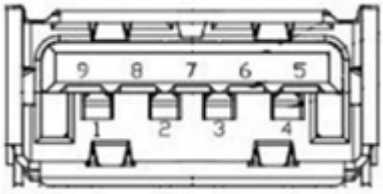


Figure 2.8 USB 3.2 Connector

Table 2.3: USB Port Pin Assignments	
Pin	**Signal**
1	VCC
2	USB Data-
3	USB Data+
4	GND
5	SSRX-
6	SSRX+
7	GND
8	SSTX-
9	SSTX+

2.1.6 LAN Connector

DS-086 provides 1 or 2 2.5 Gb LAN ports by different sku, fully compliant with IEEE802.3u 100/1000/2500 Base-T CSMA/CD standards. The Ethernet port provides a standard RJ-45 jack connector with LED indicators to show its Active/Link status and speed status.

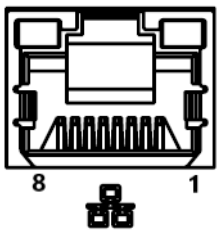


Figure 2.9 RJ45 connector

Table 2.4: LAN Port Pin Assignments	
Pin	**Signal**
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	GND
6	GND
7	MDI2+
8	MDI2-

Table 2.5: LEDs	
Right side LED: Green LED	
Link Status	Always turn on without transmitting/receiving data
Activity status	Flash
Left side LED: Green/Orange LED	
Status	Display
10Mbps	Always off
100Mbps	Always off
1000Mbps	Orange
2500Mbps	Green

2.1.7 IR Phone Jack

DS-086 Series provides 3.5mm phone jack to connect with IR receiver for remote controller possibility.

Figure 2.10 IR Phone Jack

2.1.8 HDMI Port

The HDMI (High-Definition Multimedia Interface) provides an all-digital audio/video interface to transmit the uncompressed audio/video signals and is HDCP compliant. Connect the HDMI audio/video device to this port. HDMI technology can support a maximum resolution of Port 1 8K, port 2~4 4K, but the actual resolution supported depends on the monitor being used.

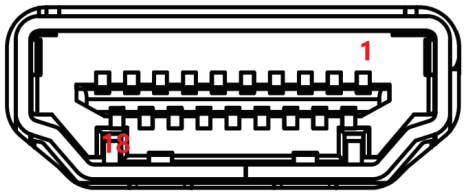


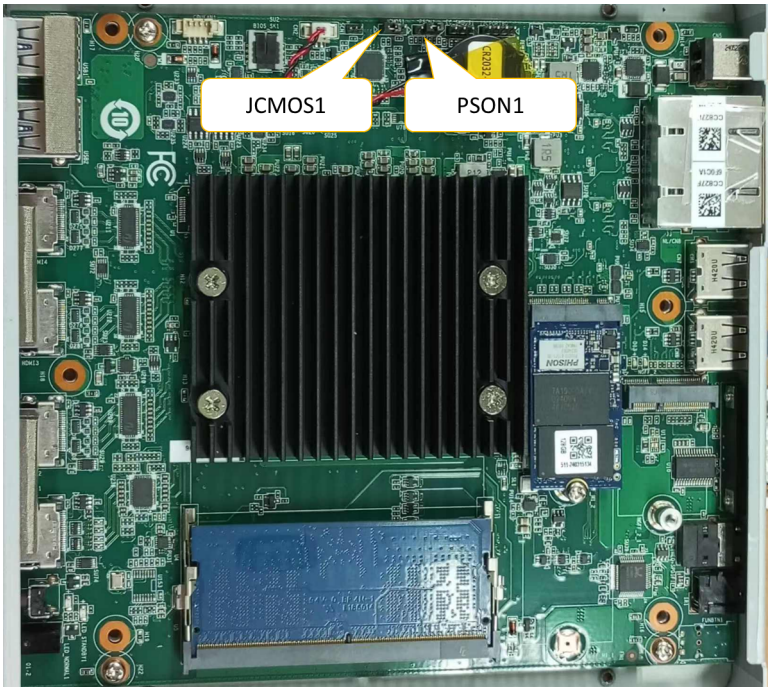
Figure 2.11 HDMI Connector

Table 2.6: HDMI Pin Assignments	
Pin	**Signal**
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

Table 2.6: HDMI Pin Assignments	
9	TTMDS Data 0-
10	TMDS Clock+
11	TMDS Clock shield
12	TMDS Clock-
13	CEC (Support by OEM/ODM)
14	Reserved
15	SCL
16	SDA
17	DDC/CEC Ground
18	+5V
19	Hot Plug Detect

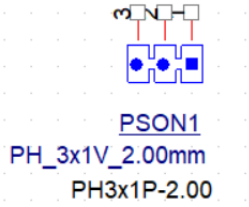
2.2 Jumpers

The Main Jumpers location of DS-086 PCB are located here.



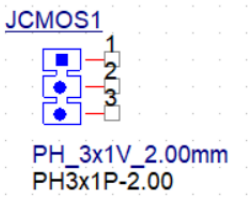
2.2.1 AT/ATX Mode Jumper

Table 2.7: AT/ATX Mode Jumper	
Location	PSON1
Part number	1653003101
Foot Print	HD_3x1P_79_D
Description	PIN HEADER 3x1P2.0mm 180D(M)DIP 2000-13WS
Setting	**Function**
(1-2)	AT
(2-3)*	ATX (Default)



2.2.2 Clear CMOS Jumper

Table 2.8: Clear CMOS Jumper	
Location	JCMOS1
Part number	1653003101
Foot Print	HD_3x1P_79_D
Description	PIN HEADER 3x1P2.0mm 180D(M)DIP 2000-13WS
Setting	**Function**
(1-2)*	Normal operation (Default)
(2-3)	Clear CMOS

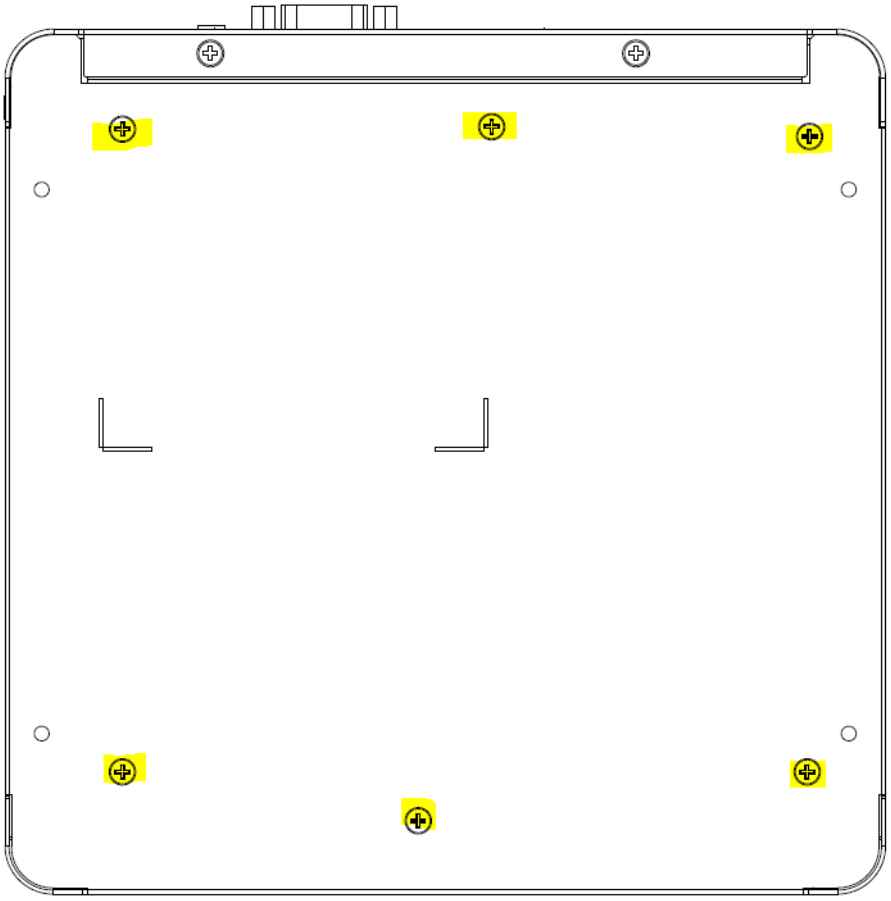


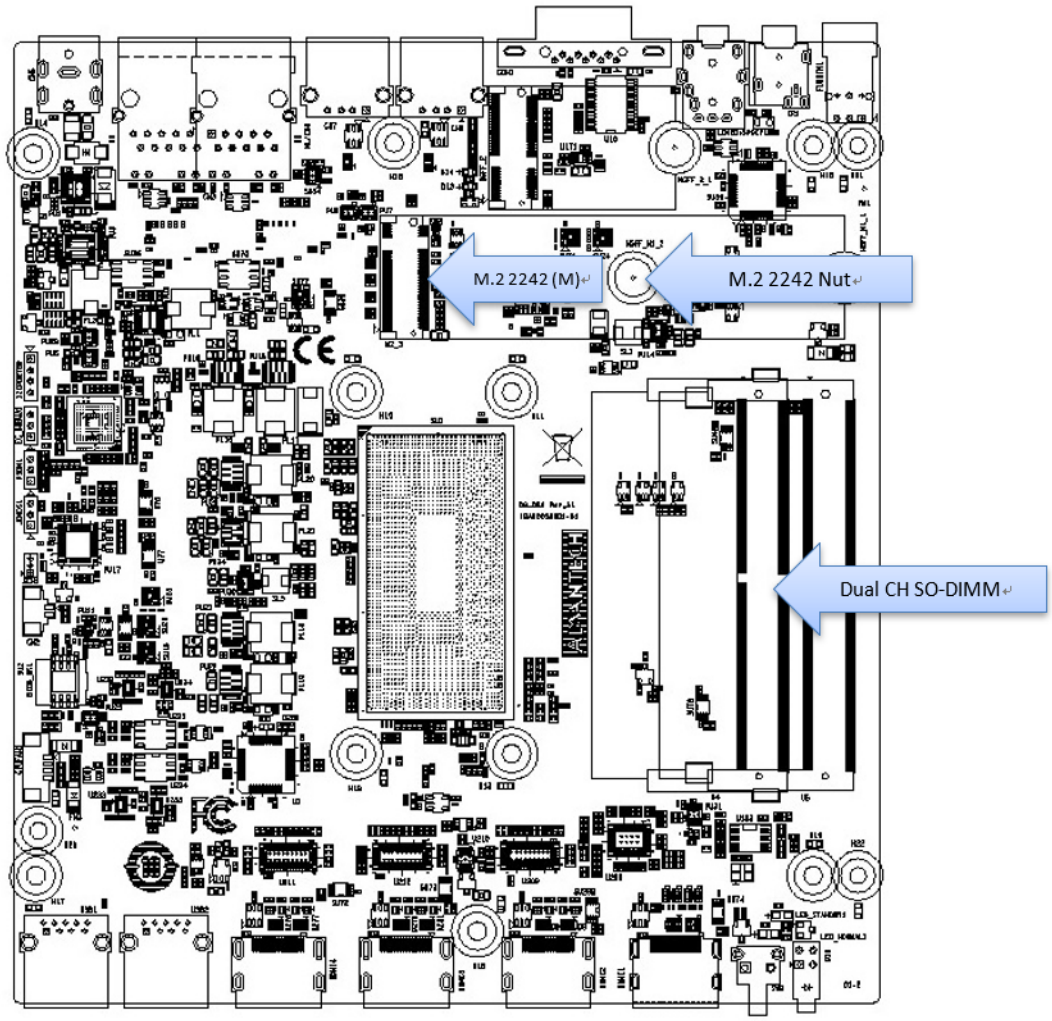
2.3 Installation

2.3.1 DRAM and SSD Installation

1. Remove 6 yellow remarked screws of back cover.
2. Remove top cover and install M.2 2242 module and fix screw.
3. Install DDR5* SO-DIMM with thermal pads in the plastic pack.

*(Dual-CH DDR5 are suggested to get the best CPU/GPU/NPU performance.)



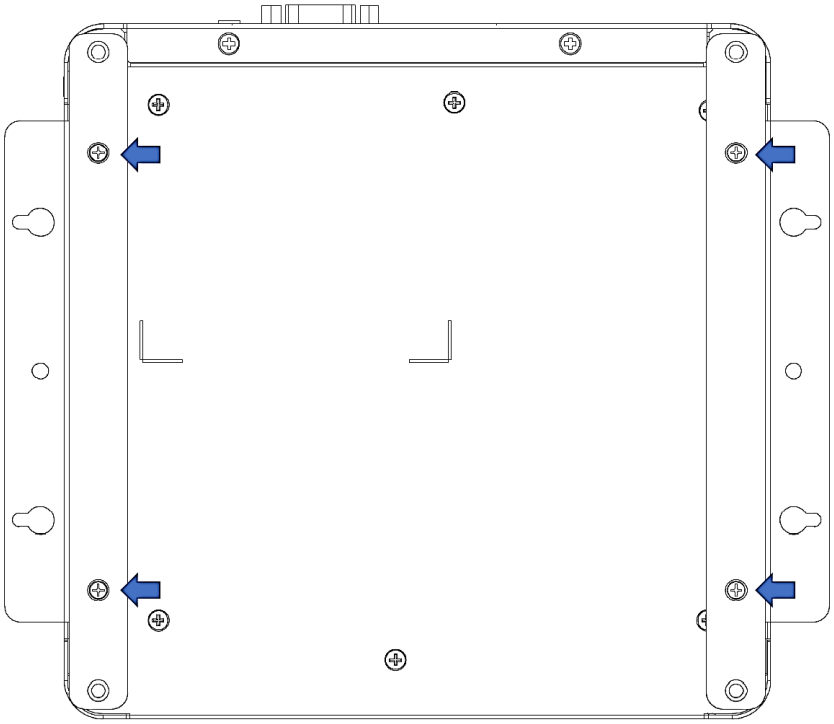

M.2 2242 (M)
M.2 2242 Nut
Dual CH SO-DIMM

2.3.2 Wall Mount Installation

When installing the system by wall mount kit, Please screw the four M3-4L (7mm) screws according to the arrow directions.

Lors de l'installation du système avec le kit de montage mural, veuillez visser les quatre vis M3-4L selon les indications des flèches.

当安装墙挂所附配件时，请锁附 4 颗 M3-4L 螺丝于箭头所指示之处。

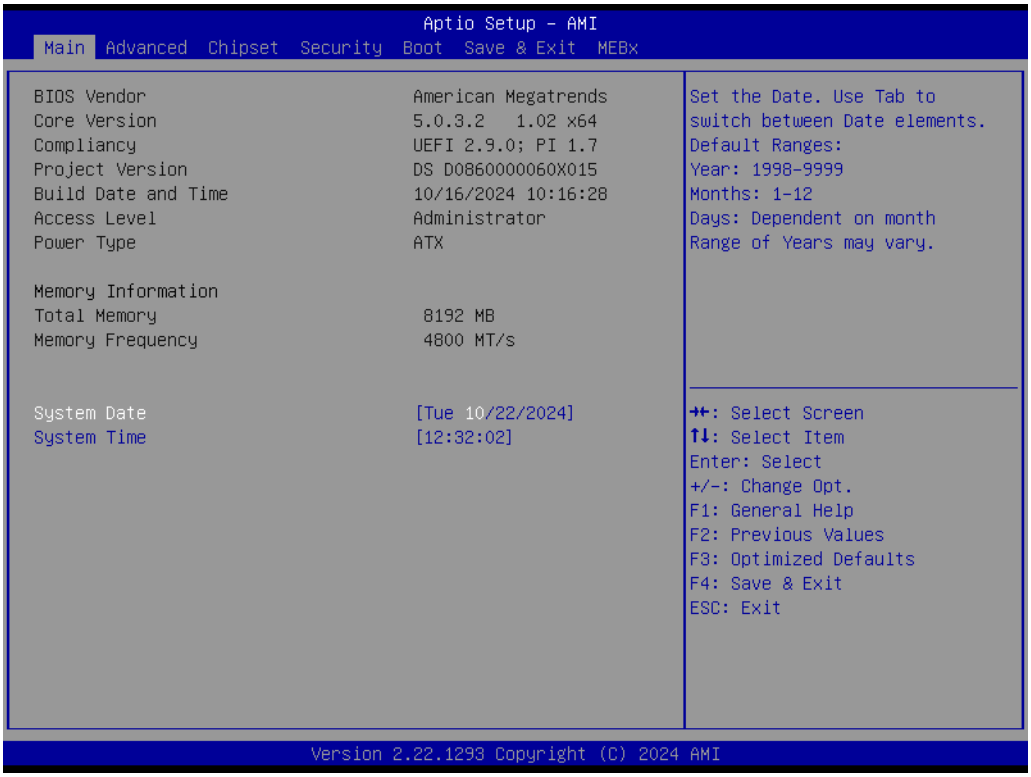


Chapter 3

BIOS Settings

3.1 BIOS Introduction

AMI's BIOS has been integrated into motherboards for over two decades. With the AMI's BIOS Setup program, users can modify BIOS settings and control various system features. This chapter describes the basic navigation of the DS-086 BIOS setup screens.



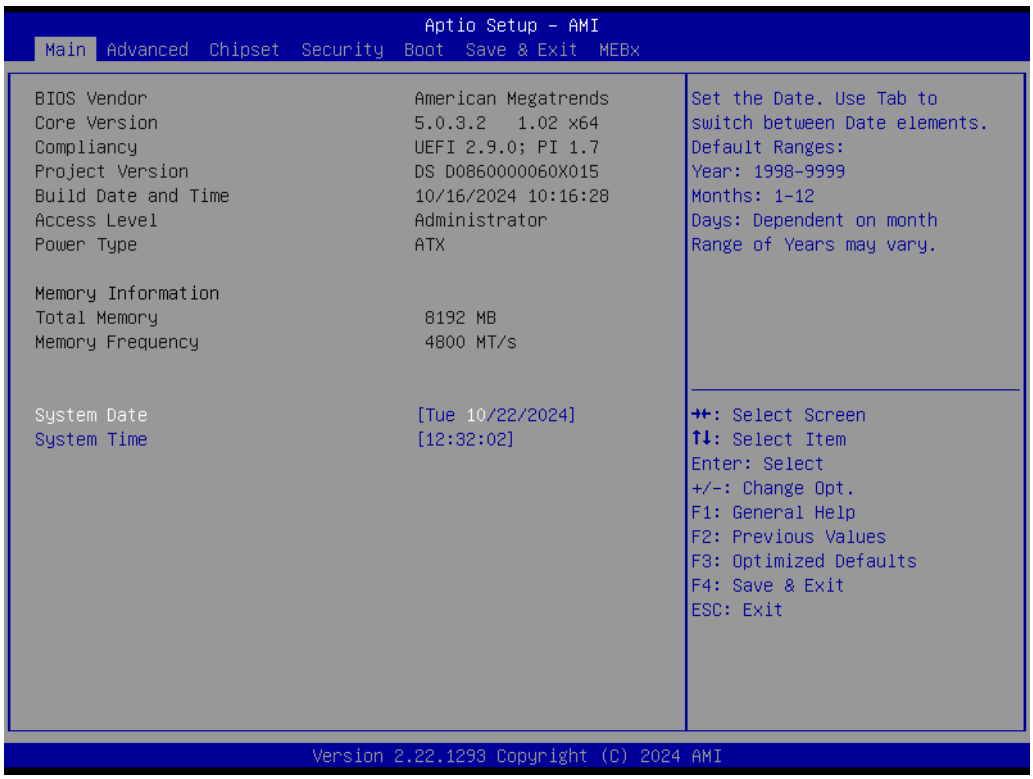
AMI's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in flash ROM so it retains the Setup information when the power is turned off.

3.2 Entering the Setup

Turn on the computer and check for the patch code. If there is a number assigned to the patch code, it means that 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 <DEL> and you will immediately be allowed to enter Setup.

3.2.1 Main Setup

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

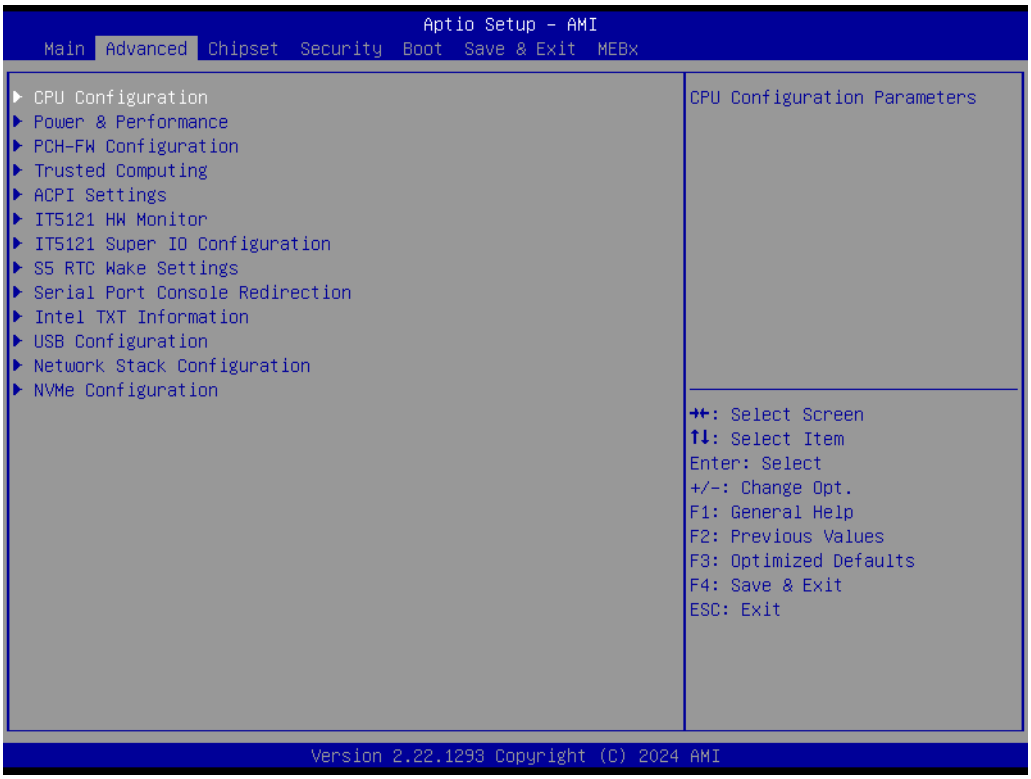


The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

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.

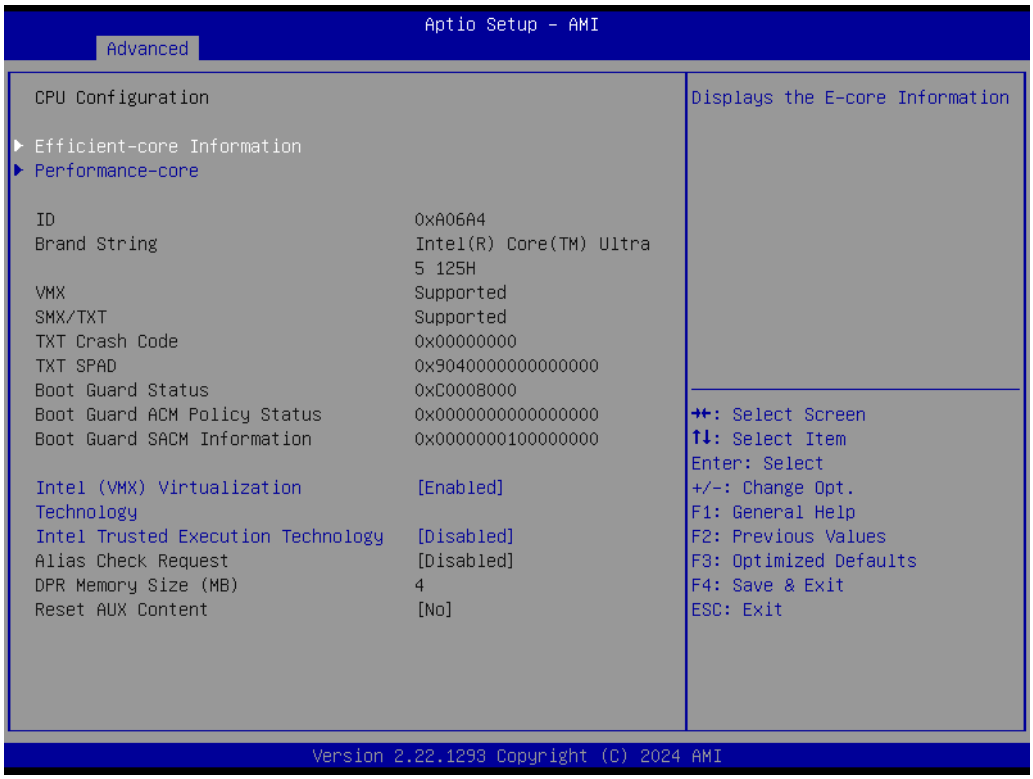
- **System time/System date**
  Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time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

3.2.2 Advanced



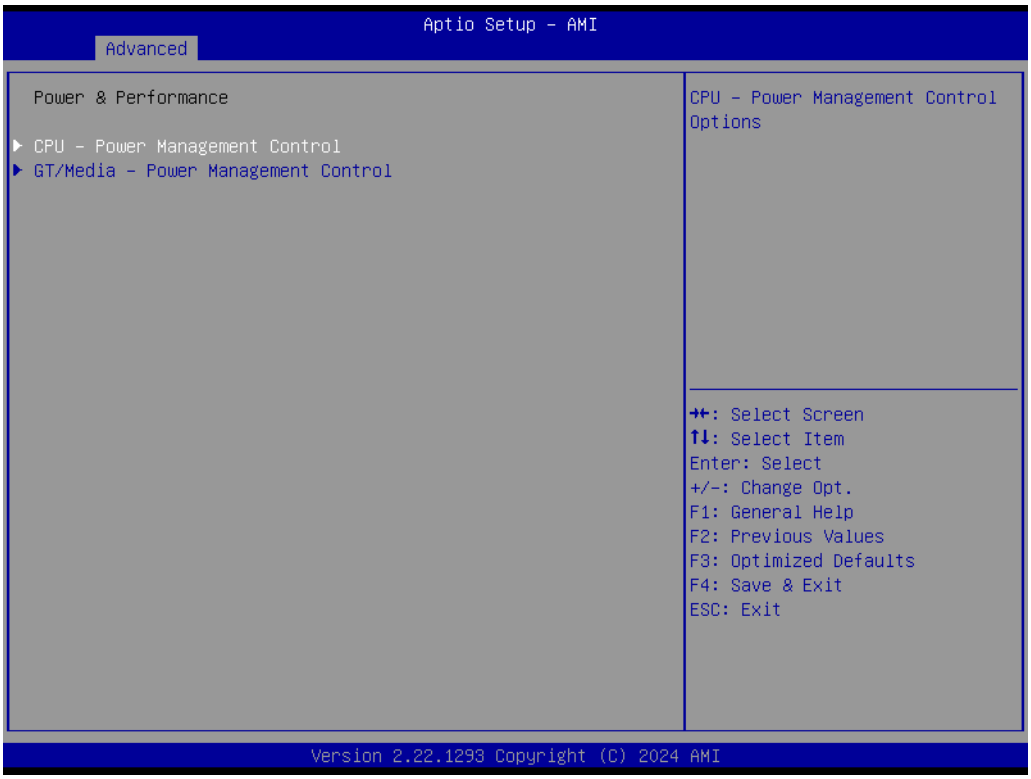
Select the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described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

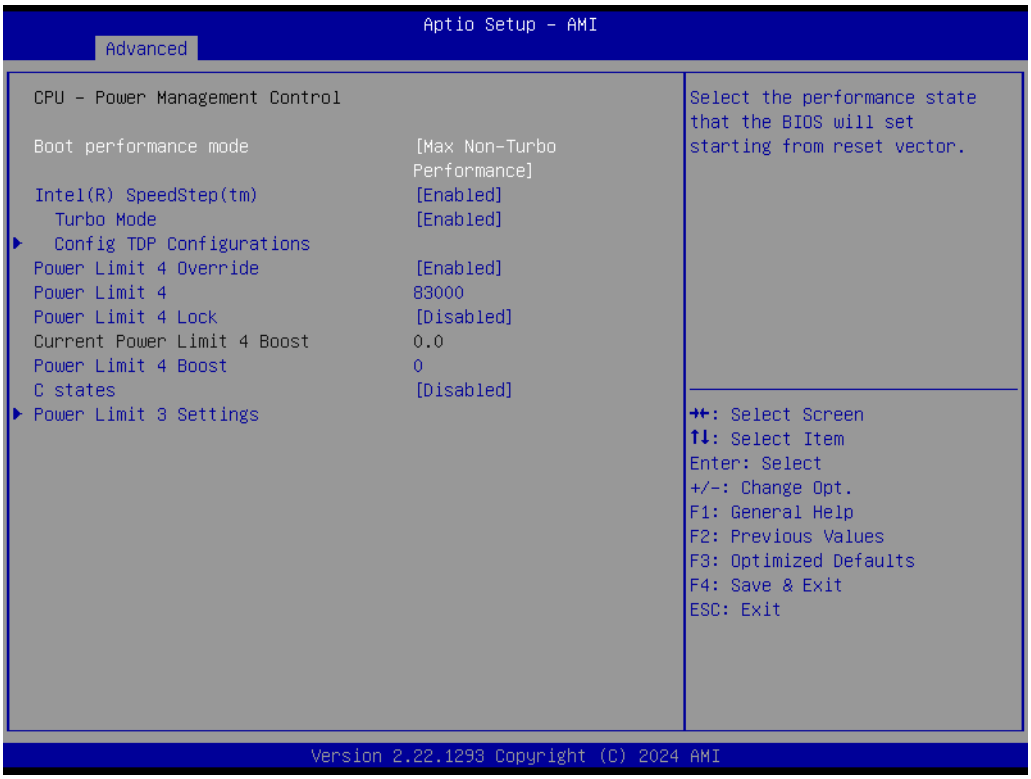
3.2.3 Advanced → CPU Configuration



- **Efficient-core Information**
  Shows the information of E-core.
- **Performance-core**
  Shows the information of P-core.
- **Intel (VMX) Virtualization**
  Enable or Disable Intel VMX Virtualization support.
- **Intel Trusted Excution Technology**
  Enables utilization of additional Intel® Trusted Execution Technology.
- **Alias Check Request**
  Enable or Disable Alias check request.
- **Reset AUX Content**
  To Reset AUX Content.

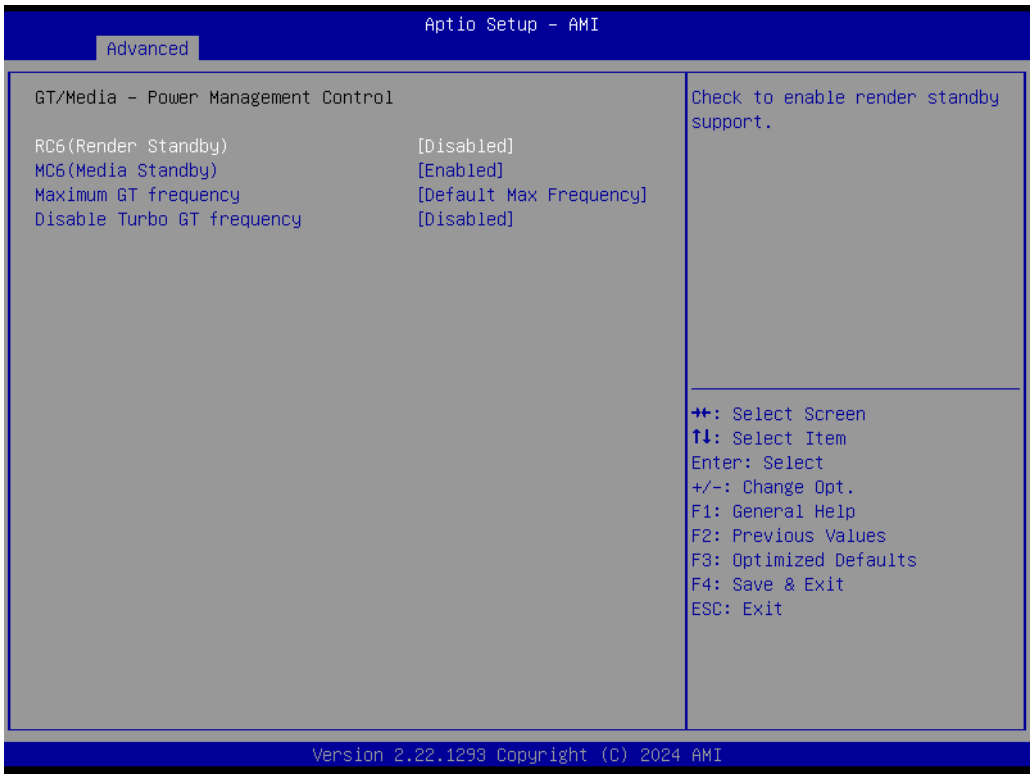
3.2.4 Advanced → Power & Performance CPU





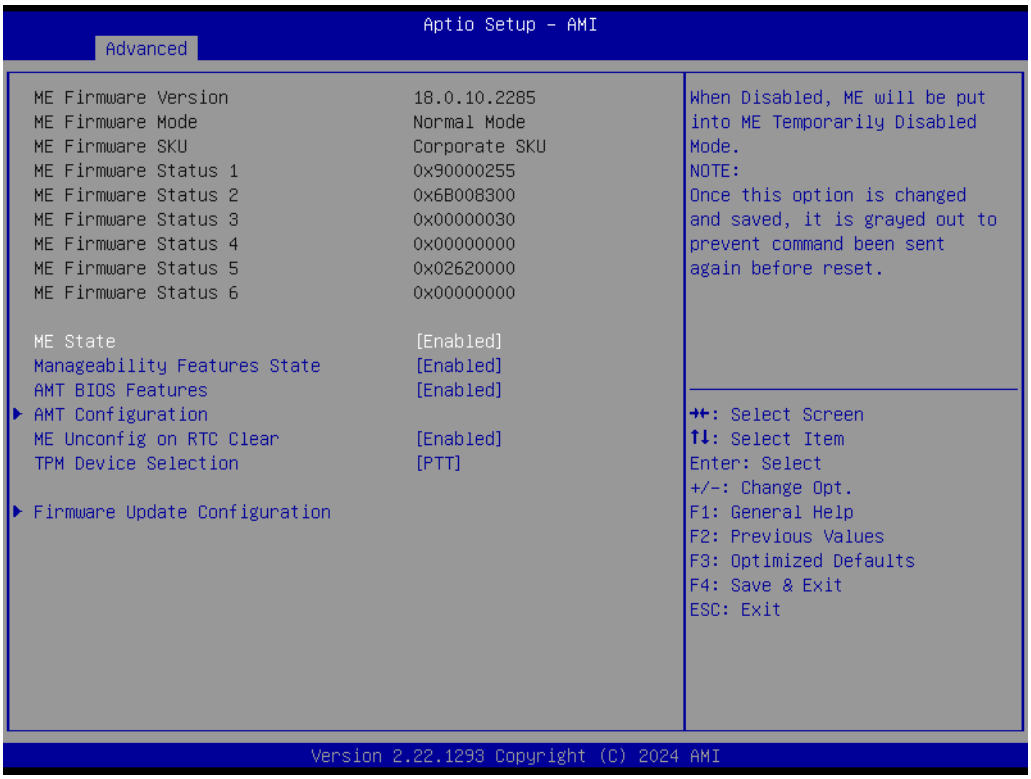
- **Boot performance mode**
  Max non-Turbo performance.
  Max battery.
  Turbo performance.

- **Intel SpeedStep**
  Enable or disable Intel SpeedStep support.
- **Turbo mode**
  Enable or disable Turbo mode.
- **config TDP Configurations**
  Config Power limit 4 related parameter.
- **C states**
  Enable or disable C states.
- **Power Limit 3 settings**
  The Power limit 3 related settings.



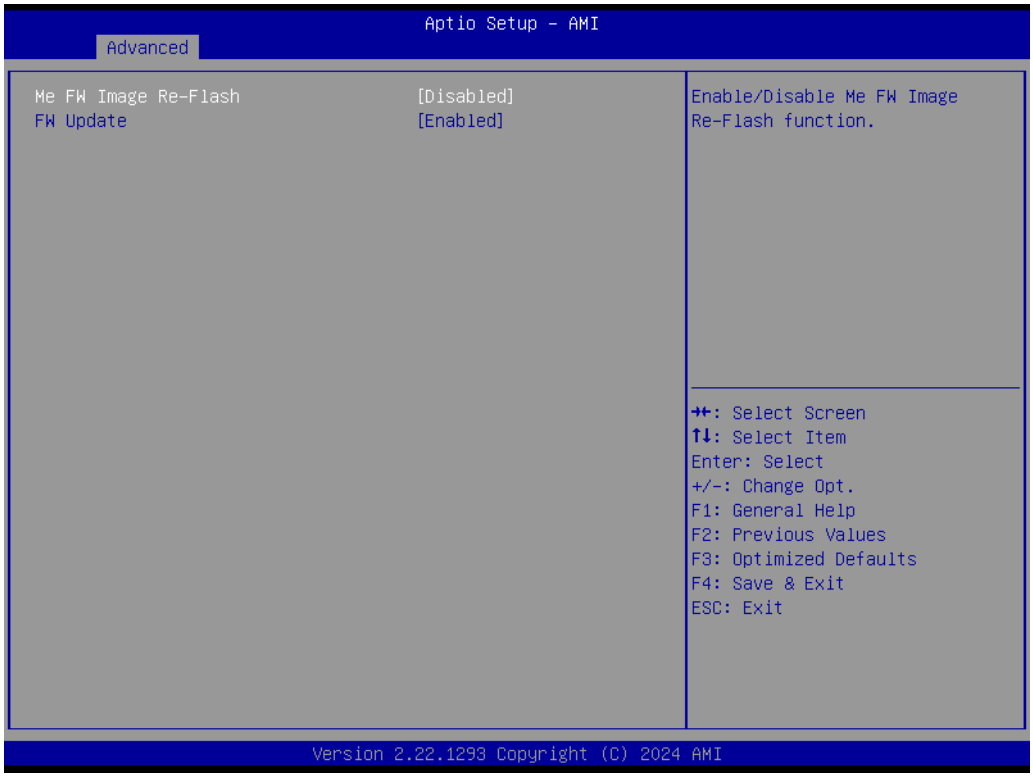
- **RC6 (Render Standby)**
  Check to enable render standby support.
- **MC6 (Media Standby)**
  Check to enable media standby support.
- **Maximum GT frequency**
  Maximum GT frequency limited by user.
- **Disable Turbo GT frequency**
  Enabled/Disabled Turbo GT frequency.

3.2.5 Advanced → PCH-FW Configuration



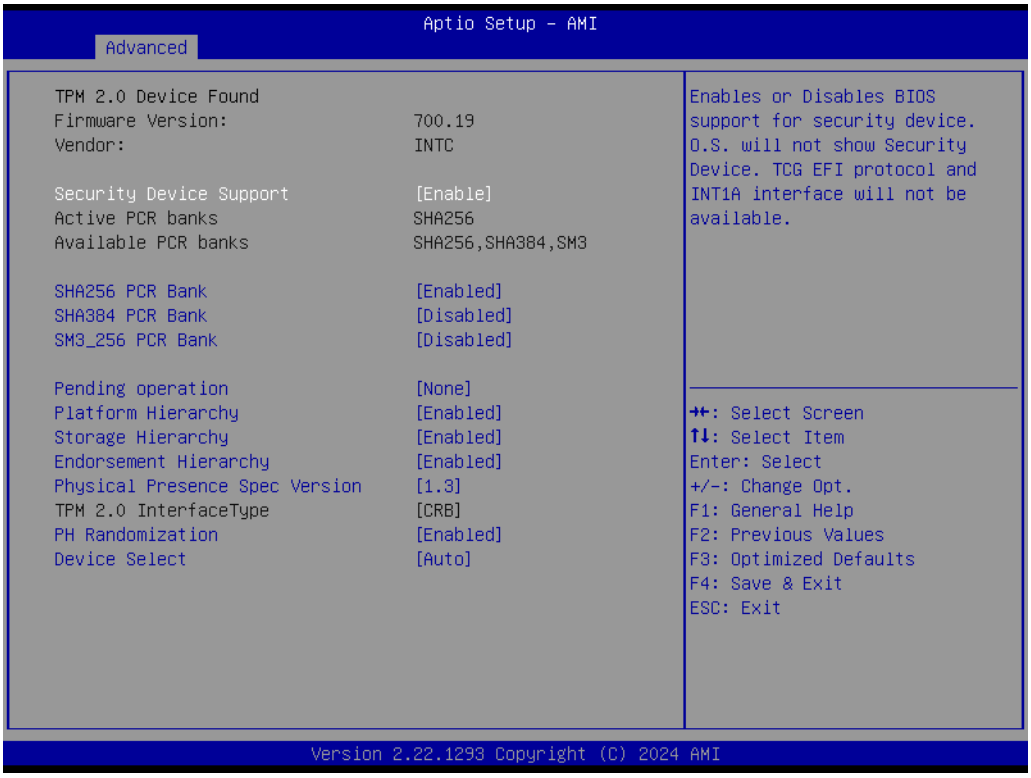
- **ME State**
  When Disabled ME will be put ME into Temporarily Disabled Mode.
- **Manageability Feature State**
  When Disabled, ME will not be unconfigured on RTC Clear.
- **AMT BIOS Features**
  When Disabled, ME will not be unconfigured on RTC Clear.
- **AMT Configuration**
  Configure Intel® Active Management Technology Parameters.
- **ME Unconfig on RTC Clear**
  When Disabled, ME will not be unconfigured on RTC Clear.
- **Firmware Update Configuration**
  Configure Management Engine Technology Parameters.

3.2.5.1 Advanced → PCH-FW Configuration → Firmware update Configuration



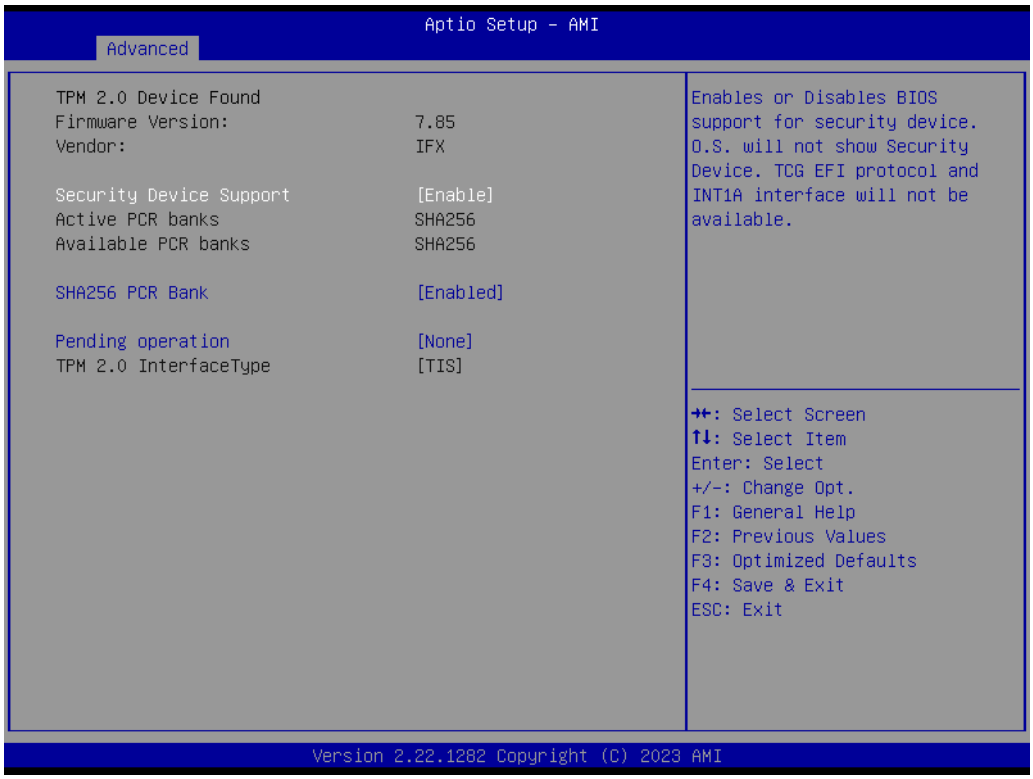
- **Me FW Image Re-Flash**
  Enable or disable Me FW Image Re-Flash.
- **FW Update**
  Enable or disable FW Update.

3.2.5.2 Advanced → PCH-FW Configuration → TPM Device Configuration



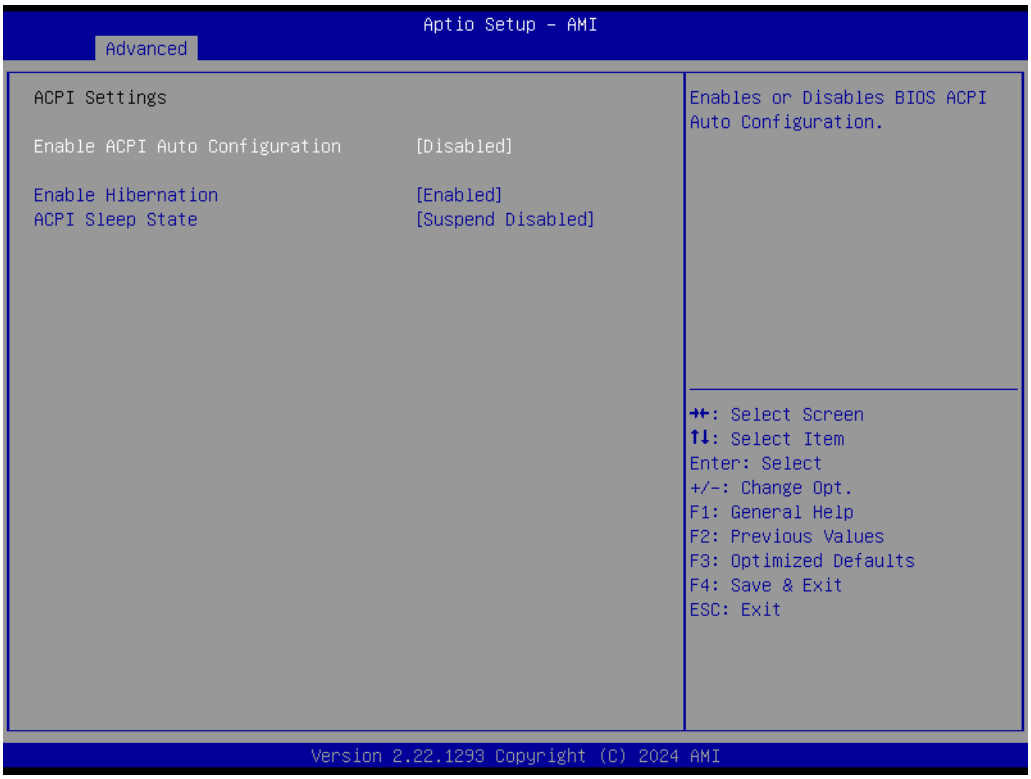
- **Security Device Support**
  Enable or disable BIOS support for security device.
- **SHA256 PCR Bank**
  Enable or Disable SHA256 PCR Bank.
- **SHA384 PCR Bank**
  Enable or Disable SHA384 PCR Bank.
- **SM3_256 PCR Bank**
  Enable or Disable SM3_256 PCR Bank.
- **Pending operation**
  Schedule an 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 O.S. to support PPI Spec Version 1.2 or 1.3.
- **PH Randomization**
  Enable or Disable PH Randomization.
- **Device Select**
  TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices.

3.2.6 Advanced → Trusted Computing



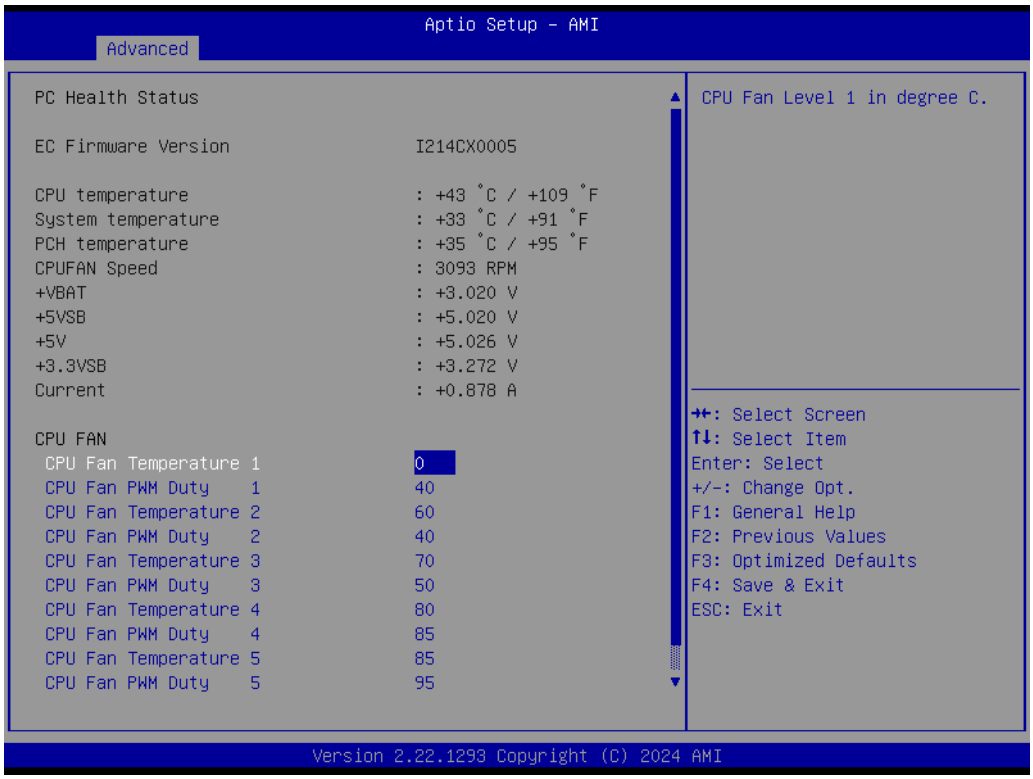
- **Security Device Support**
  Enable or disable Security Device Support.
- **SHA256 PCR Bank**
  Enable or disable SHA256 PCR Bank.
- **Pending operation**
  None or TPM Clear.

3.2.7 Advanced → ACPI Settings



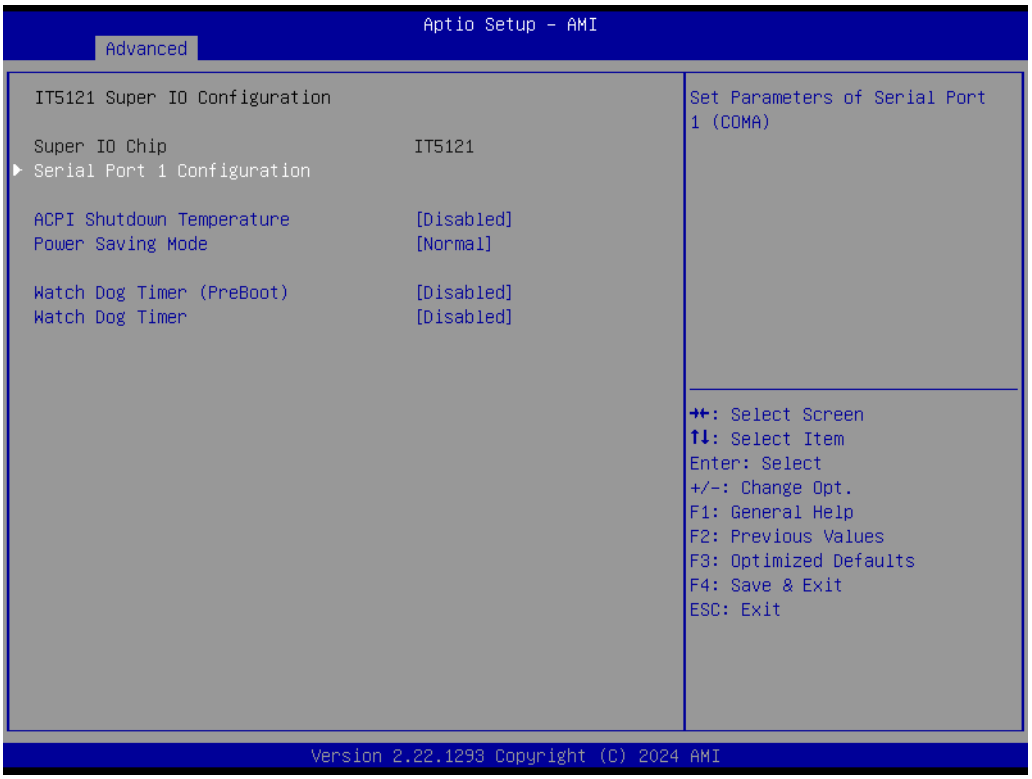
- **Enable ACPI Auto Configuration**
  Enable or disable BIOS ACPI auto configuration.
- **Enable Hibernation**
  Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
- **ACPI Sleep State**
  Select the highest ACPI sleep state the system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

3.2.8 Advanced → IT5121 HW Monitor



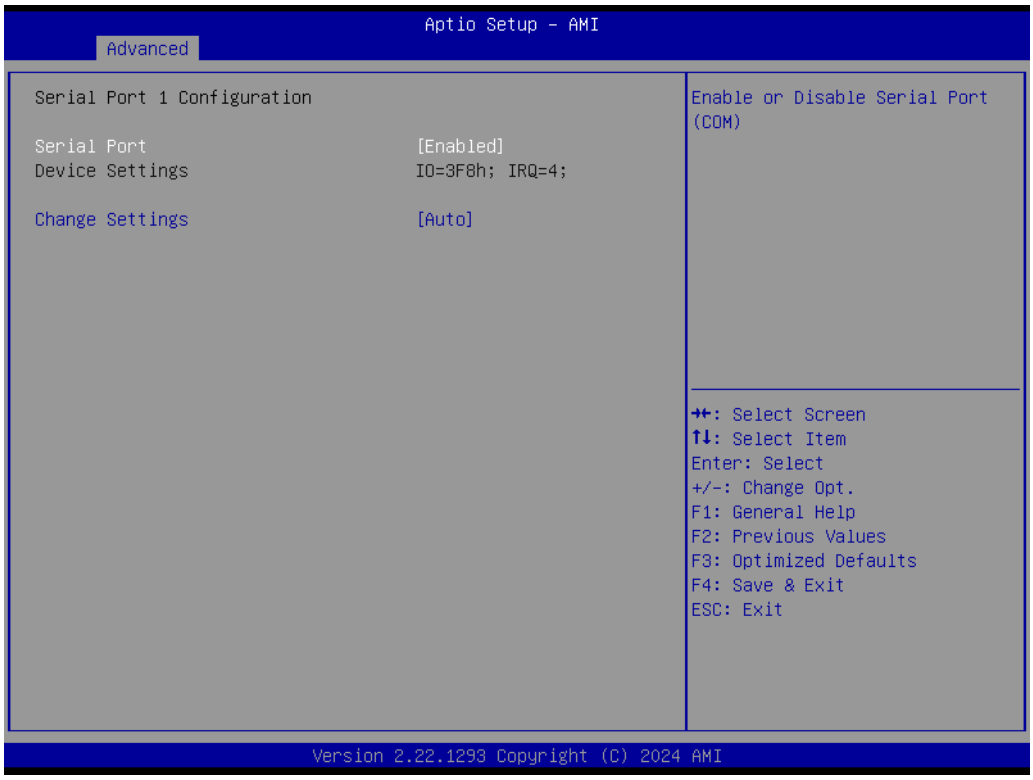
- **CPU FAN**
  Confige each PWM duty of fan by each CPU Tj temperature.

3.2.9 Advanced → IT5121 Super IO Configuration



- **Serial Port 1 Configuration**
  Set Parameters of Serial Port 1.
- **ACPI Shutdown Temperature**
  Enable/Disable CPU Shutdown Temperature.
- **Power Saving Mode**
  Enable/Disable power saving mode.
- **Watch Dog Timer Configuration (PreBoot)**
  Watch Dog Timer Configuration (PreBoot) Page.
- **Watch Dog Timer Configuration**
  Watch Dog Timer Configuration Page.

3.2.9.1 Advanced⟶ IT5121 Super IO Configuration ⟶ Serial Port 1 Configuration

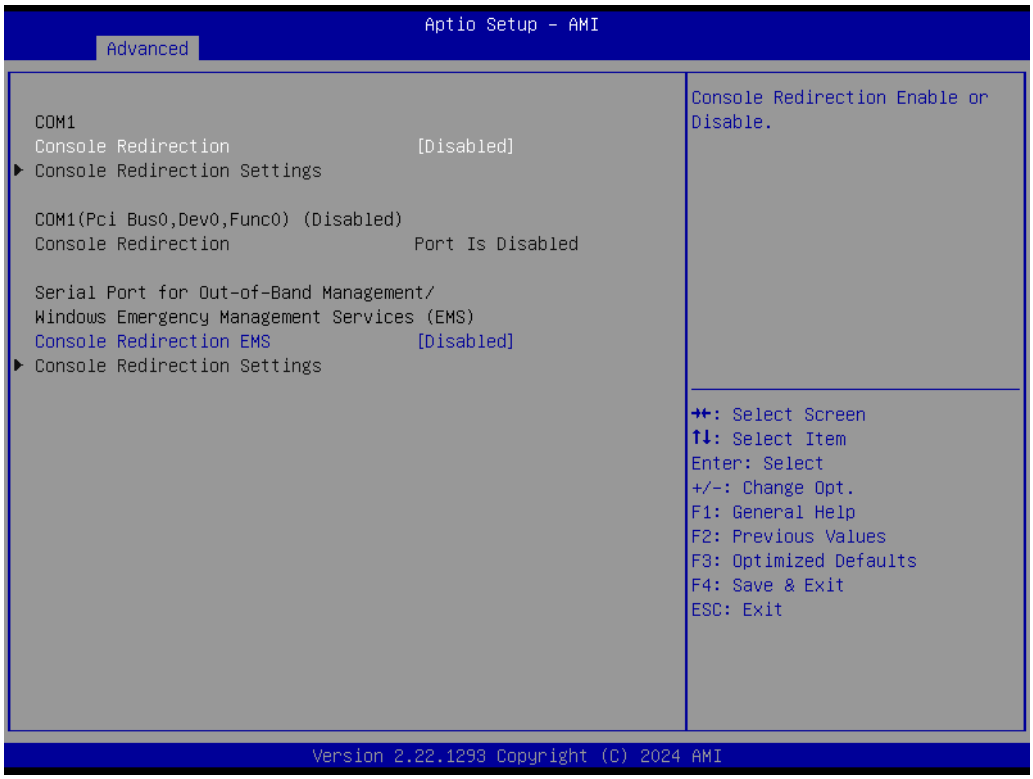


- **Serial Port**
  Enable or Disable Serial Port (COM).
- **Change Settings**
  Select an optimal settings for Super IO device.

3.2.10 Advanced → S5 RTC Wake Settings

- **Wake system from S5**
  Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified.

3.2.11 Advanced → Serial Port Console Redirection

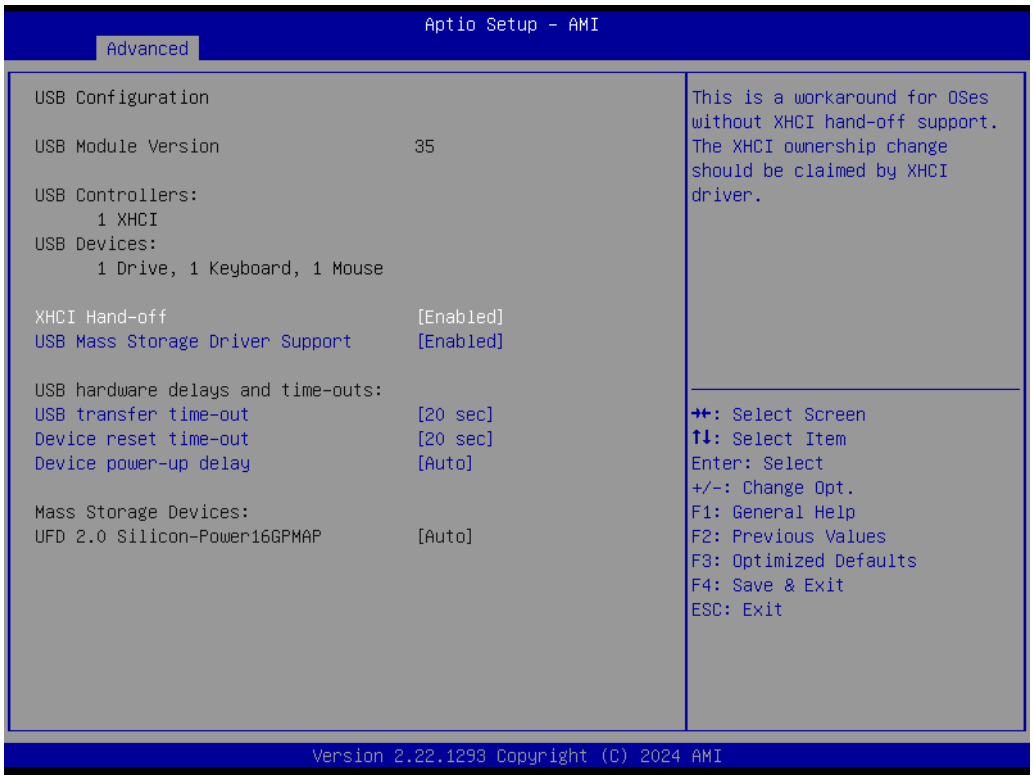


- **Console Redirection**
  This item allows users to configuration console redirection detail settings.
- **Console Redirection EMS**
  This item allows users to enable or disable console redirection for Microsoft Windows Emergency Management Services (EMS).

3.2.12 Advanced → Intel TXT Information

- **Intel TXT Information**
  Display Intel TXT information.

3.2.13 Advanced → USB Configuration

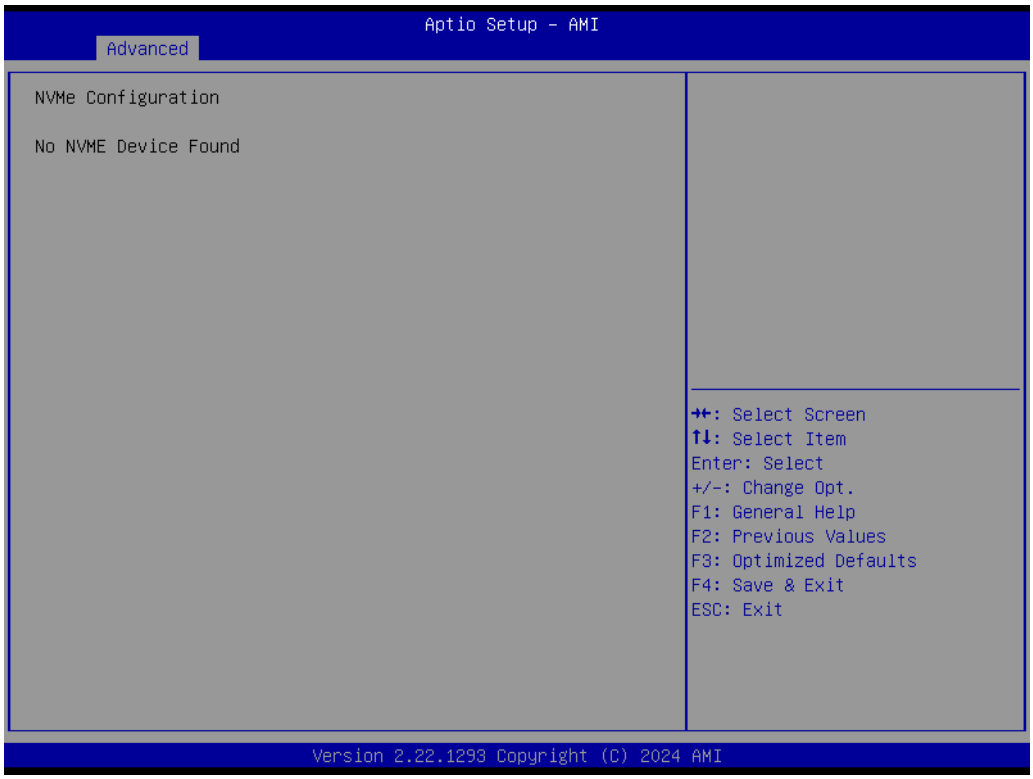


- **XHCI Hand-off**
  This is a workaround for OSes without XHCI hand-off support. The XHCI ownership. Change should be claimed by XHCI driver.
- **USB Mass Storage Driver Support**
  Enable/Disable USB Mass Storage Driver Support.
- **USB transfer time-out**
  Time-out value for control, Bulk, and interrupt 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 default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

3.2.14 Advanced → Network Stack Configuration

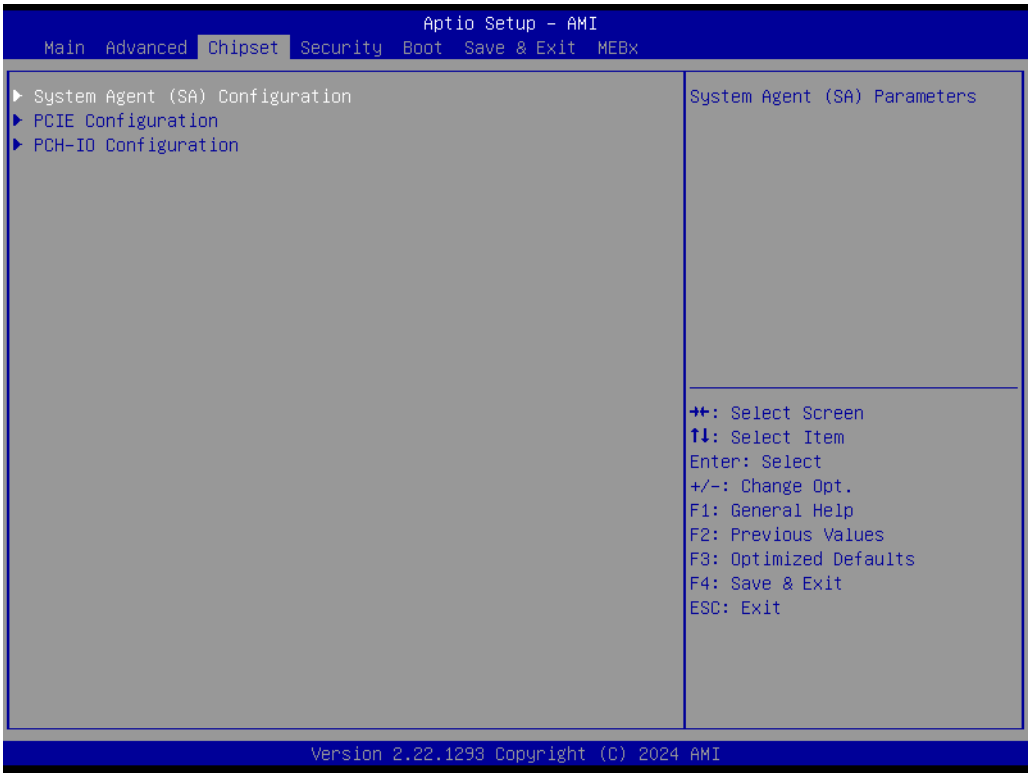
- **Network Stack**
  Enable or disable Network Stack.

3.2.15 Advanced → NVMe Configuration



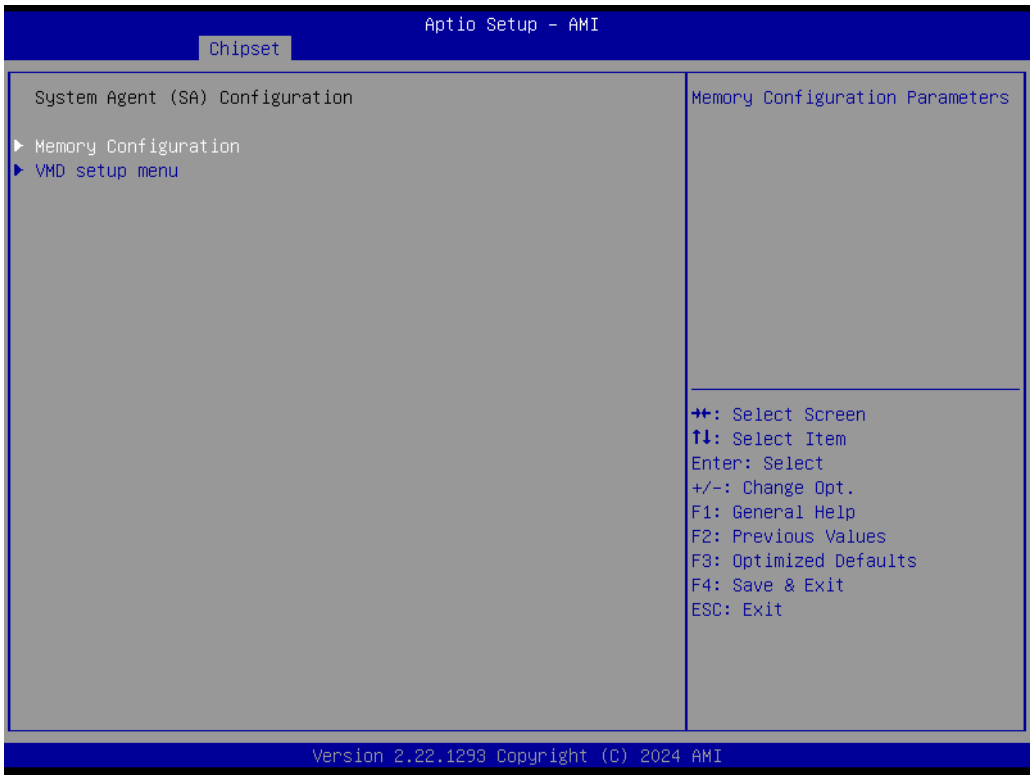
- **Shows the NVMe device**
  To config or shows the NVMe information.

3.3 Chipset



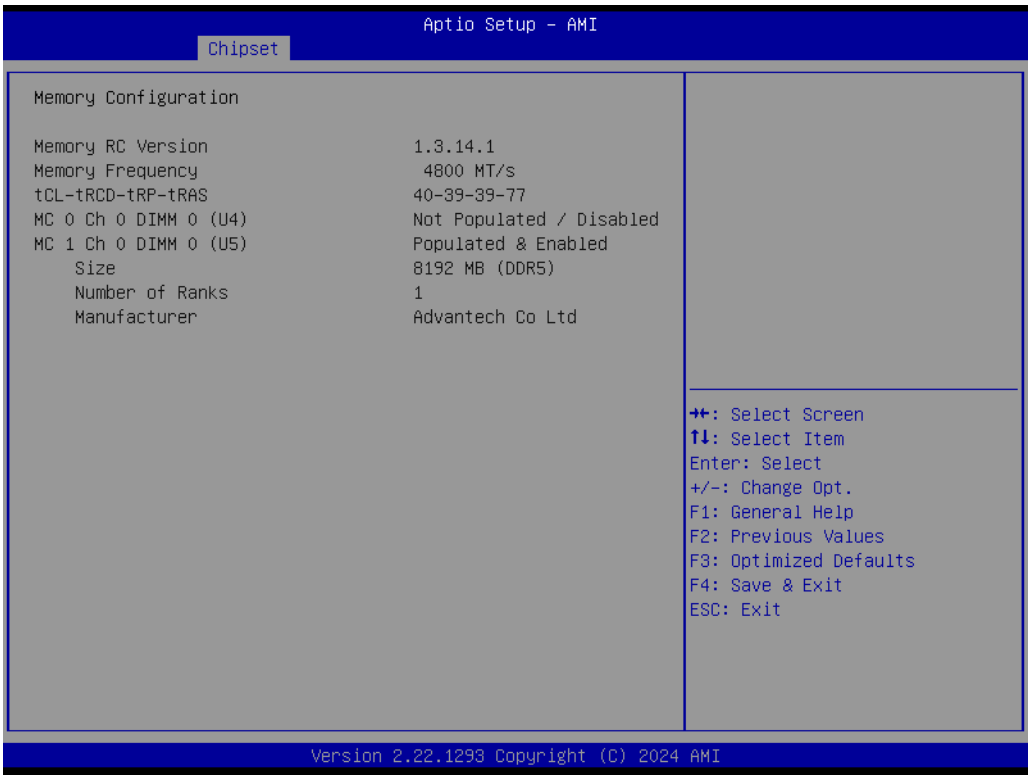
Select the Chipset, the Chipset BIOS Setup option by highlighting it using the <Arrow> keys.

3.3.1 Chipset → System Agent (SA) Configuration



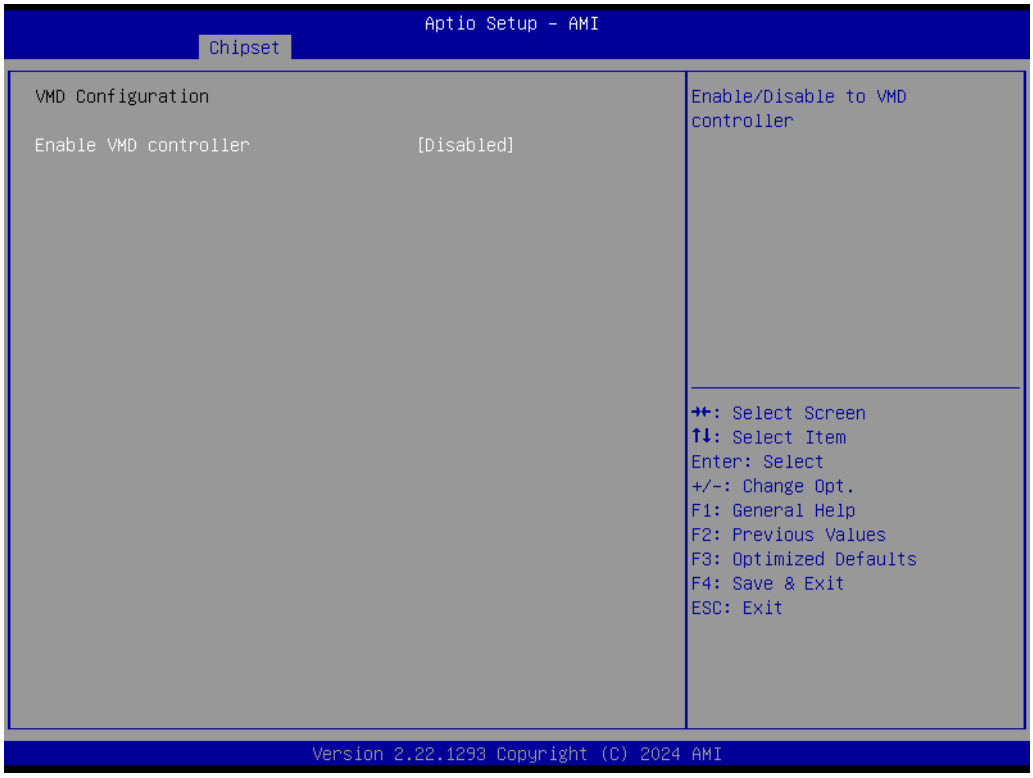
Select to enter Memory Configuration Parameter page.

3.3.1.1 Chipset → System Agent (SA) Configuration → Memory Configuration



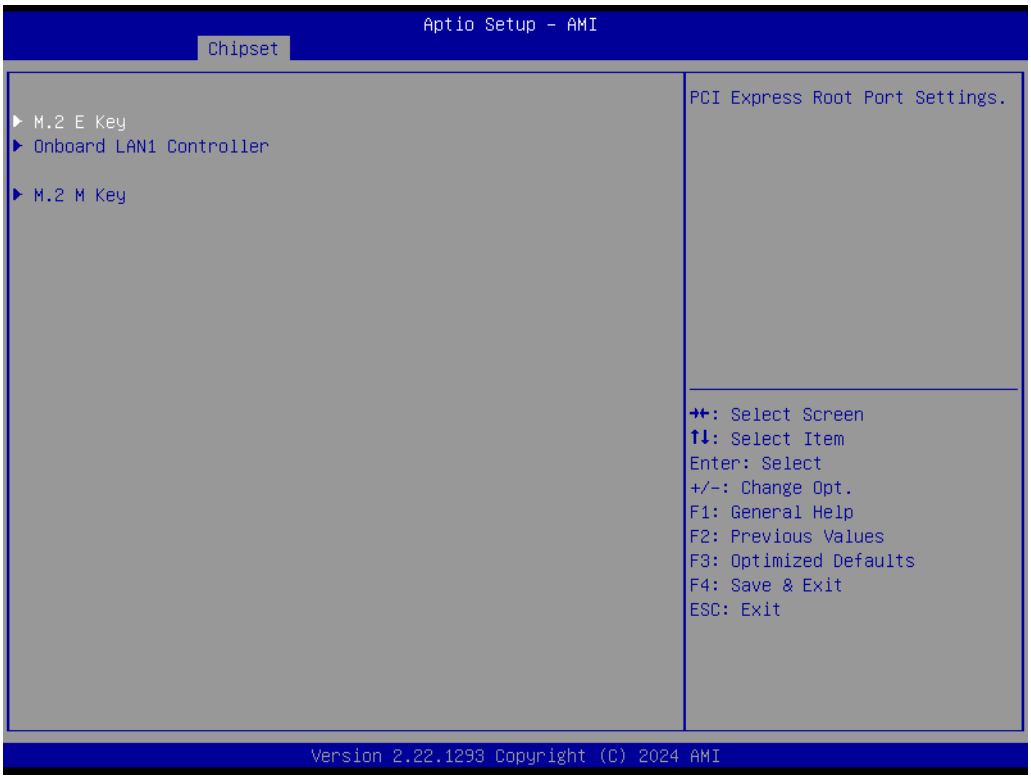
- **Memory Configuration**
  Memory Configuration Parameters.

3.3.1.2 Chipset → System Agent (SA) Configuration → VMD Configuration



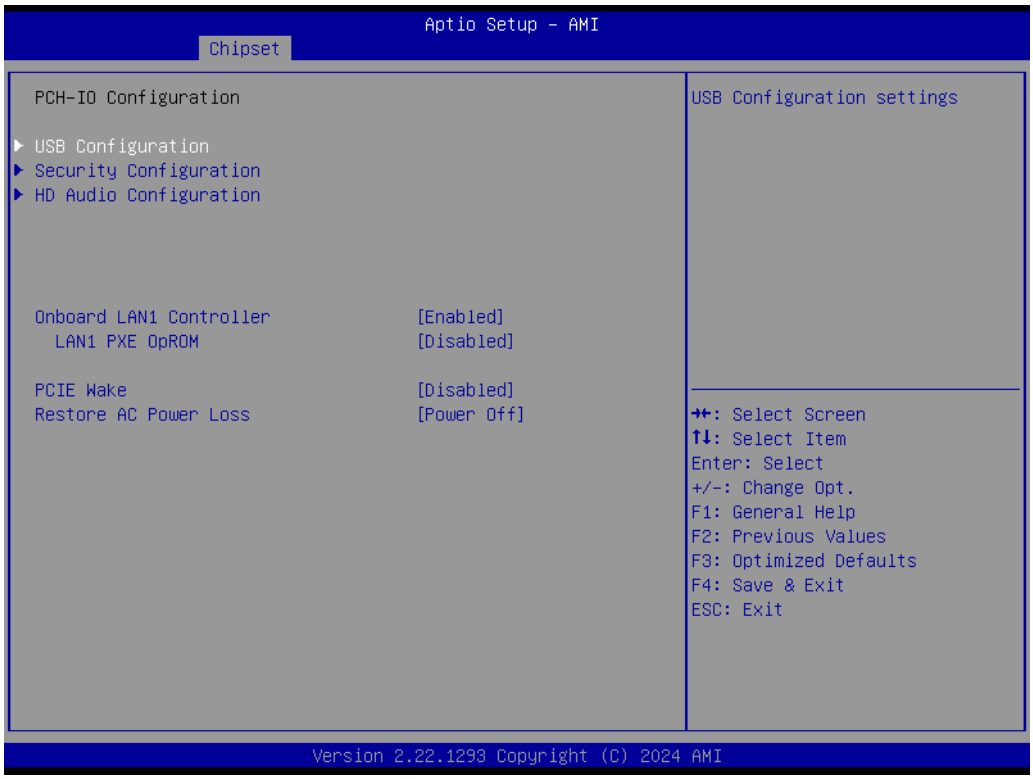
- **Enable VMD Controller**
  To enable/disable VMD Controller.

3.3.2 Chipset → PCIE Configuration



- **PCI Express Root Port PXPB1/PXPB3/PXPD/PXPE**
  PCI Express Root Port Settings.

3.3.3 Chipset → PCH-IO Configuration

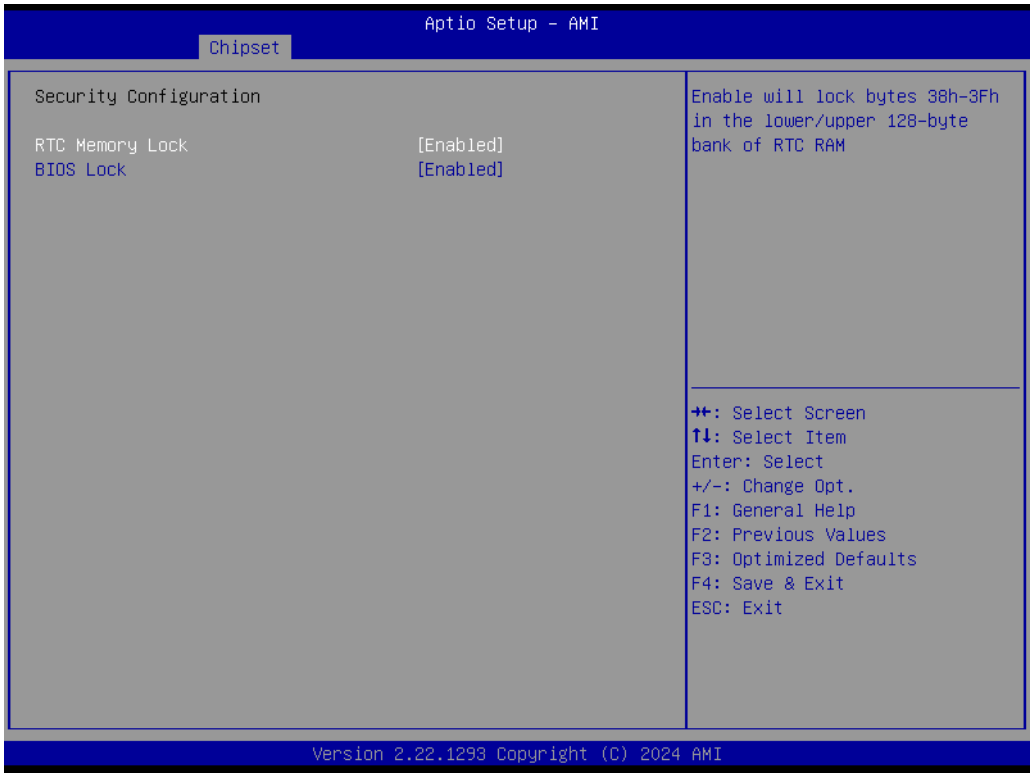


- **USB Configuration**
  USB Configuration Settings.
- **Security Configuration**
  Security Configuration Settings.
- **HD Audio Configuration**
  HD Audio Subsystem Configuration Settings.
- **Onboard LAN Controller**
  Enable or disable Onboard LAN Controller.
- **LAN1 PXE OpROM**
  Enable or disable LAN1 PXE OpROM.
- **PCIE Wake**
  Enable or disable PCIE Wake.
- **Restore AC Power Loss**
  Specify what state to go to when power is re-applied after a power failure (G3 state).

3.3.3.1 Chipset ⟶ PCH-IO Configuration ⟶ USB Configuration

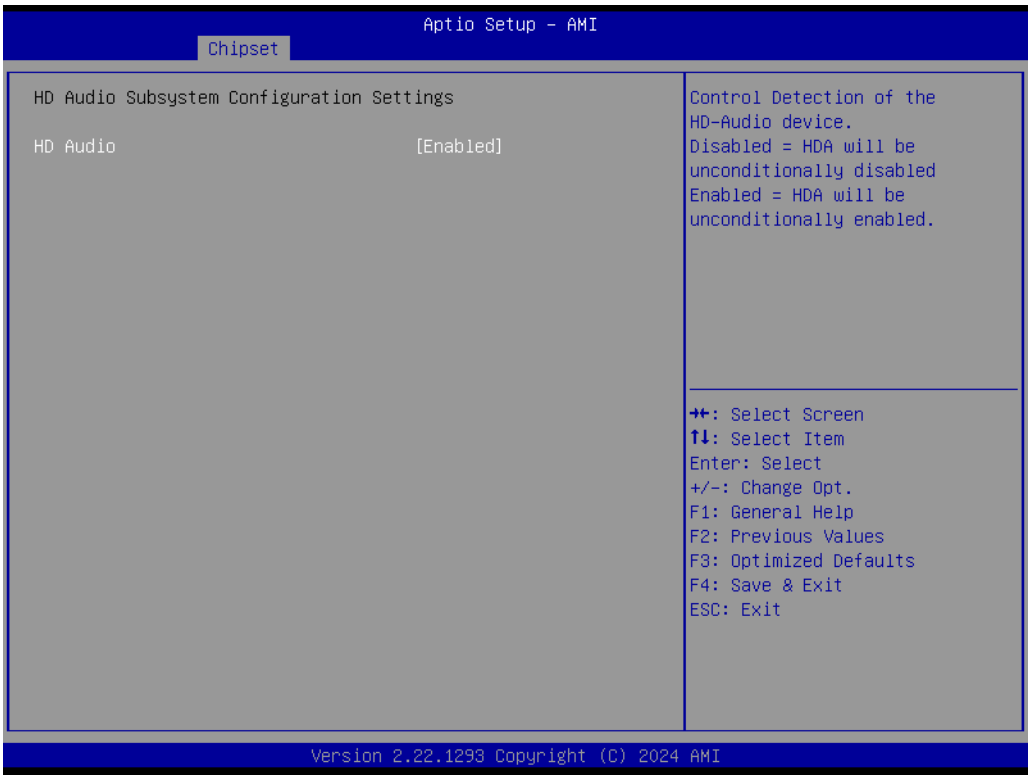
- **USB Port Disable Override**
  Enable or disable USB Port.

3.3.3.2 Chipset → PCH-IO Configuration → Security Configuration



- **RTC Memory Lock**
  To enable/disable RTC Memory Lock.
- **BIOS Lock**
  To enable/disable BIOS Lock.

3.3.3.3 Chipset ⟶ PCH-IO Configuration ⟶ HD Audio Configuration



- **HD Audio**
  Enable or disable HD Audio.

3.4 Security

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

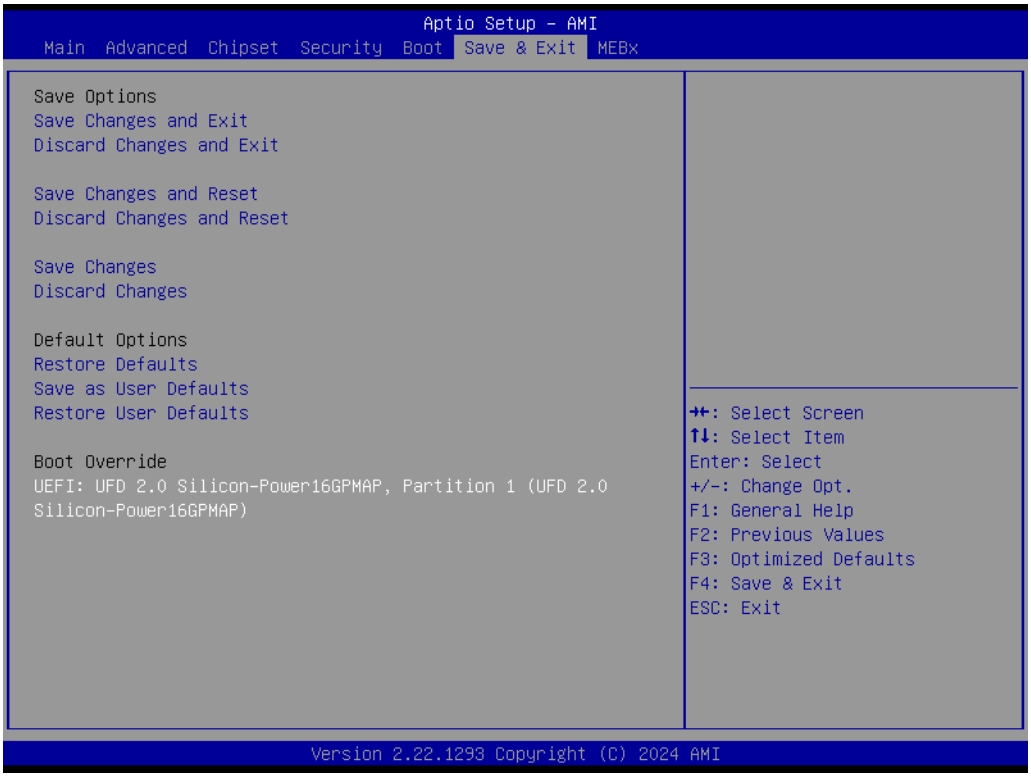
3.4.1 Security → Secure Boot

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

3.5 Boot

- **Setup Prompt Timeout**
  Configure Setup Prompt Timeout.
- **Bootup Numlock State**
  Select On or off.
- **Quiet Boot**
  Enable or disable Quiet Boot.
- **Boot Option #1**
  Sets the system boot order.

3.6 Save & Exit



- **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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