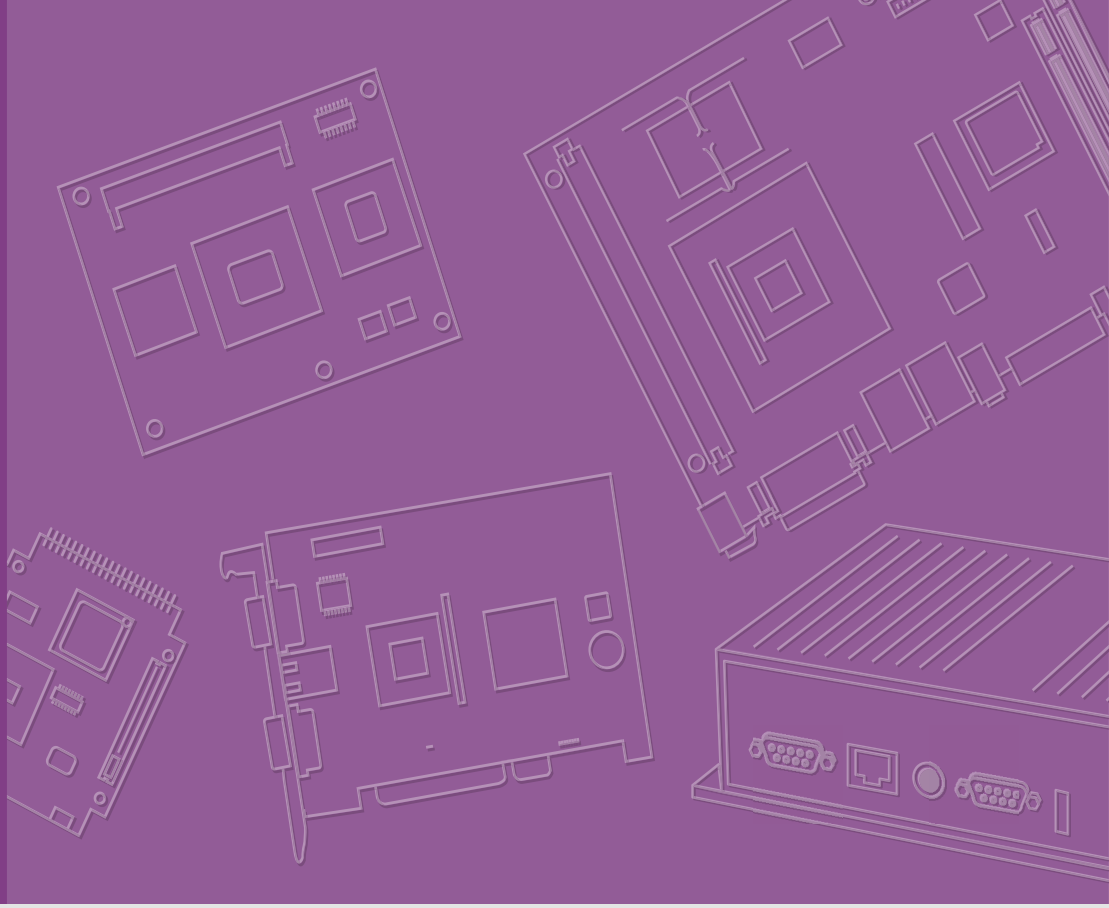


User Manual

DS-054

Computer

ADVANTECH

Enabling an Intelligent Planet

Copyright

Acknowledgments

Award is a trademark of Award Software International, Inc.

IBM, PC/AT, PS/2 and VGA are trademarks of International Business Machines Corporation.

Intel® and ATOM® are trademarks of Intel Corporation.

RTL is a trademark of Realtek Semi-Conductor Co., Ltd.

ESS is a trademark of ESS Technology, Inc.

UMC is a trademark of United Microelectronics Corporation.

SMI is a trademark of Silicon Motion, Inc.

Creative is a trademark of Creative Technology LTD.

CHRONTEL is a trademark of Chrontel Inc.

All other product names or trademarks are properties of their respective owners.

For more information about this and other Advantech products, please visit our website at:
http://www.advantech.com/

For technical support and service, please visit our support website at:
http://support.advantech.com.tw/support/

Part No. 2006005400 Edition 1

Printed in Taiwan September 2026

Product Warranty (2 years)

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

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

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

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

Declaration of Conformity

FCC Class B

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

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

Technical Support and Assistance

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

Warnings, Cautions and Notes

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

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

Warning! *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 qu'au réseau d'alimentation avec une terre de protection.

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

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 DS-054
- 1 x Wall Mount brackets
- 1 x 19V Power adapter

Optional Accessory

Part Number	Description
1700001524	3-pin power cord (US)
170203183C	3-pin power cord (EU)
170203180A	3-pin power cord (UK)
1702031836	3-pin power cord (AU)
1700008921	3-pin power cord with PSE (Japan)
1700019146	3-pin power cord with CCC (China)
1700018553	3-pin power cord (AU)
1700024849-01	3-pin power cord (TW)

Ordering Information

Part Number	Description
DS-0540B-U0A1E	AMD R8640, 4 x HDMI, 2 x LAN, EDID, OOB, RC, barebone
DS-0540B-U1A1E	AMD R8840, 4 x HDMI, 2 x LAN, EDID, OOB, RC, barebone
DS-0540B-U0A1U	AMD R8640, 4 x HDMI, 2 x LAN, EDID, OOB, RC, barebone MIT
DS-0540B-U1A1U	AMD R8840, 4 x HDMI, 2 x LAN, EDID, OOB, RC, barebone MIT

DS-054 Series Part Number

DS-0540B-U0A1E	DS-0540B-U0A1U	DS-0540B-T0A1E	DS-0540B-T0A1U	DS-0540B-P0A1E	DS-0540B-P0A1U	DS-0540B-U0A2U	DS-0540B-U0A3U
DS-0540B-U1A1E	DS-0540B-U1A1U	DS-0540B-T1A1E	DS-0540B-T1A1U	DS-0540B-P1A1E	DS-0540B-P1A1U	DS-0540B-U1A2U	DS-0540B-U1A3U
DS-0540B-U2A1E	DS-0540B-U2A1U	DS-0540B-T2A1E	DS-0540B-T2A1U	DS-0540B-P2A1E	DS-0540B-P2A1U	DS-0540B-U2A2U	DS-0540B-U2A3U
DS-0540B-U3A1E	DS-0540B-U3A1U	DS-0540B-T3A1E	DS-0540B-T3A1U	DS-0540B-P3A1E	DS-0540B-P3A1U	DS-0540B-U3A2U	DS-0540B-U3A3U
DS-0540B-U4A1E	DS-0540B-U4A1U	DS-0540B-T4A1E	DS-0540B-T4A1U	DS-0540B-P4A1E	DS-0540B-P4A1U	DS-0540B-U4A2U	DS-0540B-U4A3U
DS-0540B-U0A2E	DS-0540B-U0A2U	DS-0540B-T0A2E	DS-0540B-T0A2U	DS-0540B-P0A2E	DS-0540B-P0A2U	DS-0540B-U0A3E	DS-0540B-T0A2E
DS-0540B-U1A2E	DS-0540B-U1A2U	DS-0540B-T1A2E	DS-0540B-T1A2U	DS-0540B-P1A2E	DS-0540B-P1A2U	DS-0540B-U1A3E	DS-0540B-T1A2E
DS-0540B-U2A2E	DS-0540B-U2A2U	DS-0540B-T2A2E	DS-0540B-T2A2U	DS-0540B-P2A2E	DS-0540B-P2A2U	DS-0540B-U2A3E	DS-0540B-T2A2E
DS0540B2601-T	DS0540B2701-T	DS0540B2801-T	DS0540B2901-T	DS0540B3001-T	DS-0540B-U0A2E	DS-0540B-U3A3E	DS-0540B-T0A2U
DS0540B2602-T	DS0540B2702-T	DS0540B2802-T	DS0540B2902-T	DS0540B3002-T	DS-0540B-U1A2E	DS-0540B-U4A3E	DS-0540B-T1A2U
DS0540B2603-T	DS0540B2703-T	DS0540B2803-T	DS0540B2903-T	DS0540B3003-T	DS-0540B-U2A2E	DS-0540B-T3A2E	DS-0540B-T2A2U
DS0540B2604-T	DS0540B2704-T	DS0540B2804-T	DS0540B2904-T	DS0540B3004-T	DS-0540B-U3A2E	DS-0540B-T4A2E	DS-0540B-P0A2E
DS0540B2605-T	DS0540B2705-T	DS0540B2805-T	DS0540B2905-T	DS0540B3005-T	DS-0540B-U4A2E	DS-0540B-T4A2U	DS-0540B-P1A2E

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by 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 -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 meets PS2(or LPS) and is rated: 19Vdc, 3.42A min. If need further assistance, please contact Advantech for further information.
    Le produit doit être alimenté par une alimentation certifiée UL, adaptée à une utilisation à une température ambiante minimale (Tma) de 40 °C, dont la sortie répond aux exigences PS2 (ou LPS) et est spécifiée: 19 Vcc, 3,42 A minimum. Pour toute assistance supplémentaire, veuillez contacter Advantech pour plus d'informations.

Contents

Chapter 1

General Information

This chapter gives background information on DS-054 series.

1.1 Introduction

The DS-054 is a compact and high-performance edge AI signage player designed for modern digital display applications. Powered by AMD Ryzen™ Embedded 8000 series processors with integrated RDNA™ 3 graphics and XDNA™ NPU, it delivers up to 16 TOPS of AI performance and up to 30–39 TOPS total compute, enabling real-time analytics and intelligent content delivery.

1.2 Product Features

1.2.1 General

- Build-in AMD (R8640/R8840) CPU
- Supports 4 HDMI ports and up to 1 port 8K and 3 ports 4K
- Supports Dual-CH DDR5 5600 Mhz
- Supports M.2 2242 M Key for storage

1.2.2 Display

- **HDMI1:** 1 x HDMI 2.1 FRL @7680 × 4320 @ 60Hz (8K60)
- **HDMI2:** 1 x HDMI 2.1 TMDS @3840 x 2160 60Hz(4K60)
- **HDMI3:** 1 x HDMI 2.1 TMDS @3840 x 2160 60Hz(4K60)
- **HDMI4:** 1 x HDMI 2.1 TMDS @3840 x 2160 60Hz(4K60)

Note! *Up to 1x 8K60 video playback on one of the 8K displays.*

1.2.3 Thermal Solution

- Build-in Smart Fan

1.3 Hardware & Software Specifications

- **CPU:** AMD R8000 Series
- **System Chipset:** Built-in CPU
- **Graphic chipset:** Intel ® Graphics and Intel® Arc™ graphics
- **BIOS:** AMI uEFI 256 Mbit
- **System Memory:** Dual-CH DDR5 SoDIMM
- **Storage:** M.2 2242 M-Key (NVMe)
- **SUSI:** SUSI is Advantech unique hardware management that provided in standard DS-054 Win11 IoT image. Below function are included.
  - Watchdog Timer
  - Hardware Monitor
  - System information
- **IO Interfaces:**
  - 2 x 2230 E-Key PCIe/USB2.0
  - 4 x HDMI ports
  - 1 x USB 3.2 Gen1, 2 x USB2.0, 1 x USB Type-C (support 1x 20Gbps, DP ALT mode, 15W)
  - 1 x RS232 (by DB9)

- 2 x Gb LAN (by RJ-45)
- 1 x EDID Clear button
- 1 x Remote control
- 1 x Audio

■ **Ethernet Chipset:**

- Controller: i210 +i226
- Interface: Gigabit LAN Controller
- Connector: 2 x RJ-45
- Standard: IEEE 802.3z/ab (1000 Base-T) or IEEE 802.3u 100 Base-T compliant

1.4 Mechanical Specification

1.4.1 Dimensions

180 x 177 x 23 mm

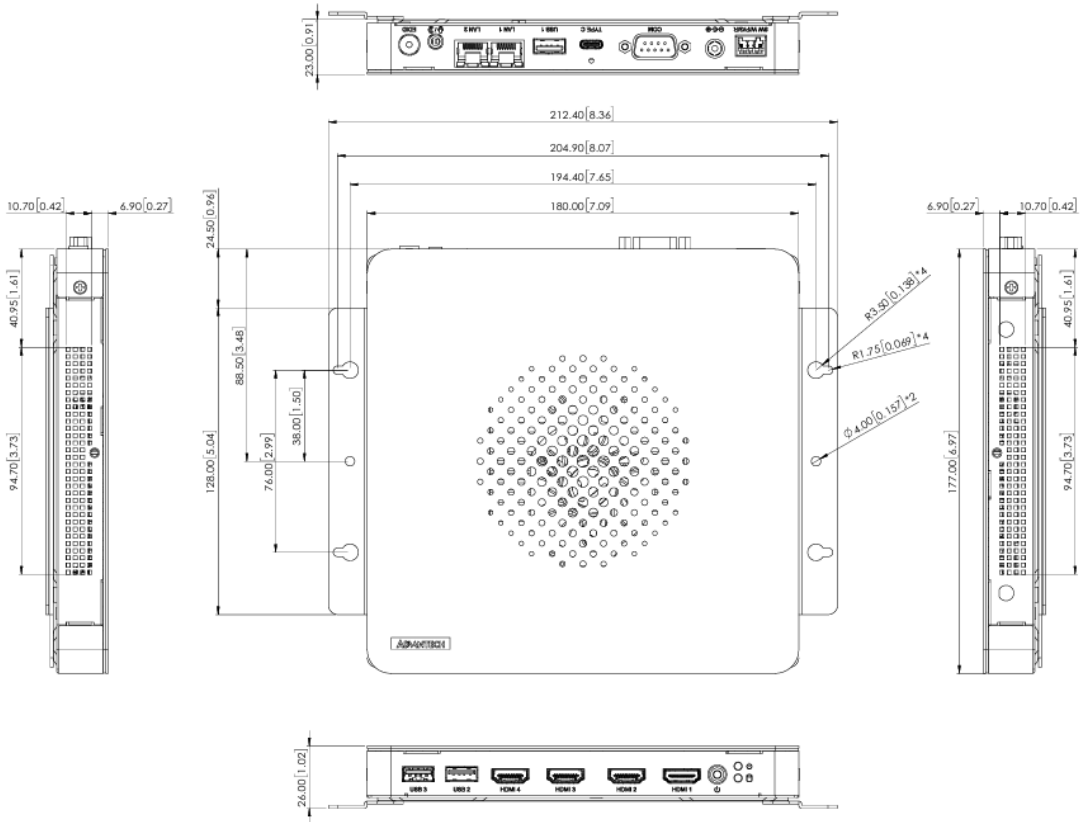


Figure 1.1 Dimensions

1.4.2 Weight

■ 0.9 kg (Net weight)

1.5 Power Requirements

1.5.1 System Power

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

1.5.2 RTC Battery

- **Battery:** 3V/620mAh CR2450

1.6 Environmental Specifications

1.6.1 Operating Temperature

- 0 ~ 40°C with 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, 3 axes,1 hr/axis.

1.6.5 Shock During Vibration

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

1.6.6 EMC

- UL, CB, BSMI, CCC

1.6.7 EMC

- CE, FCC Class B, CCC, BSMI, UKCA

Chapter 2

Hardware configuration

This chapter introduces external IO and the installation of DS-054 series Hardware.

2.1 DS-054 Series I/O Connectors

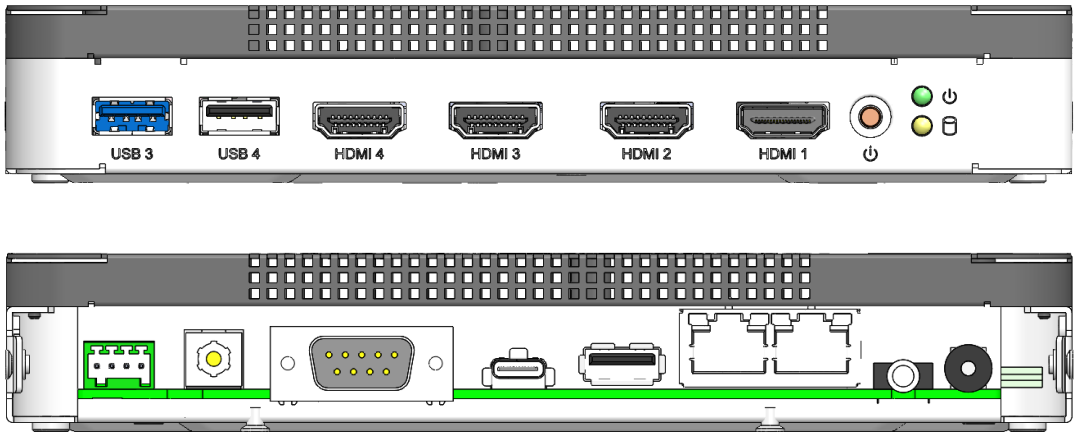


Figure 2.1 DS-054 I/O

2.1.1 Audio Connectors

DS-054 audio connectors can be connected with stereo speakers, or microphone by selecting from the audio application in the operating system. The audio chip is controlled by Realtek ALC888S.

Figure 2.2 Audio Connectors

2.1.2 LED

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

Figure 2.3 Power

This LED indicator means SSD status is active when it shows orange.

Figure 2.4 LED - SSD

2.1.3 Power On/off

Push this button to power on/off DS-054.

Figure 2.5 Power Button

2.1.4 COM Connector

The DS-054 provides two 9-pin COM connector, which support pure RS232 serial communication interface ports.

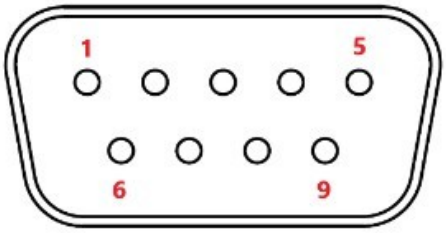


Figure 2.6 DB9 connector

Table 2.1: COM Port Pin Assignments

Pin	Signal
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

2.1.5 USB Connector

The DS-054 includes 1 USB 3.2 Gen1 ports, 2 USB 2.0 ports, and 1 USB2.0 fully compliant with USB UHCI Rev. 3.0 standards. Refer to the pin assignments provided below for details. USB 3.0 connectors feature legacy pins for compatibility with USB 2.0 devices, as well as additional pins to support USB 3.0 connectivity.

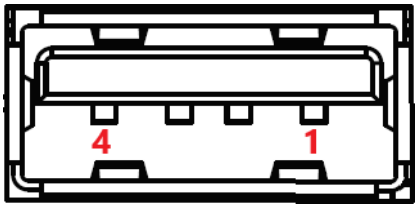


Figure 2.7 USB 2.0 Connector

Table 2.2: USB Port Pin Assignments

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

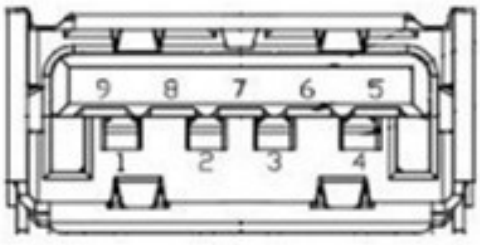


Figure 2.8 USB 3.2 Connector

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 Ethernet Connector (LAN)

The DS-054 offers 1G and 2.5GbE LAN ports, depending on the SKU, and fully complies with IEEE 802.3 standards for 10/100/1000/2500 Base-T Ethernet. Each Ethernet port features a standard RJ-45 connector with LED indicators for Active/Link status and connection speed.

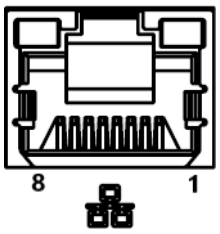


Figure 2.9 RJ45 connector

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: LAN i226V LEDs

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

Table 2.6: LAN i210IT LEDs

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

2.1.7 EDID_CLR Button

After setting EDID Bypass mode to MCU Control mode in the BIOS, press the EDID_CLR button to re-acquire the screen resolution information. Press the EDID_-CLR button by paper clip when the resolution changes or the displayed content does not fit the screen.

Figure 2.10 EDID_CLR Button

2.1.8 HDMI Port

The HDMI (High-Definition Multimedia Interface) port provides an all-digital audio/video connection for transmitting uncompressed audio and video signals and is HDCP-compliant. Use this port to connect an HDMI-compatible audio/video device. HDMI technology supports a maximum resolution of 8K on Port 1 and 4K on Ports2~4, though the actual resolution depends on the capabilities of the connected monitor.

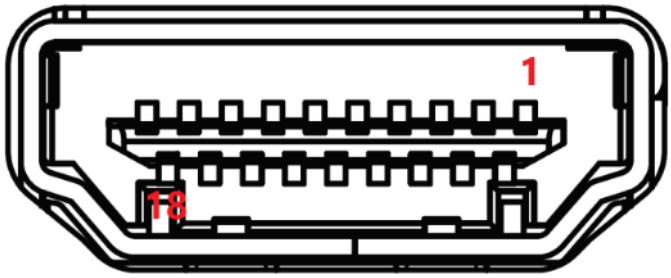


Figure 2.11 HDMI Connector

Table 2.7: 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
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

2.1.9 USB Type-C

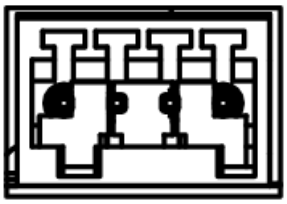
DisplayPort Alt Mode for video output is supported and provides 5V/3A power delivery, enabling display connection and power support through a compact USB-C interface.

TYPE C

Figure 2.12 USB TYPE-C

2.1.10 Remote Switch

The DS-054 provides the remote switch connector for power on/off. From the left to the right are Reset, GND(G), Power button (P), reset button (R), and watch dog (W) out put signal.



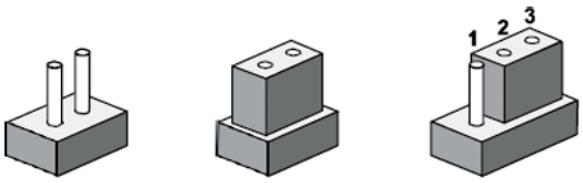
SW W/P/G/R

Table 2.8: Remote Switch Connector Pin Assignments

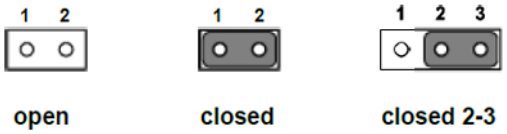
Pin	Signal Name	Operating Instructions
W	Watchdog output signal	Internal pull High, the WDT will pull down for 0.5 seconds.
P	Power Button	Short P to G for within 1 second, and the system willpower on.
G	Ground	Ground (G) is the common reference point for control signals.
R	Reset Button	Short R to G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

2.1.11 Jumpers

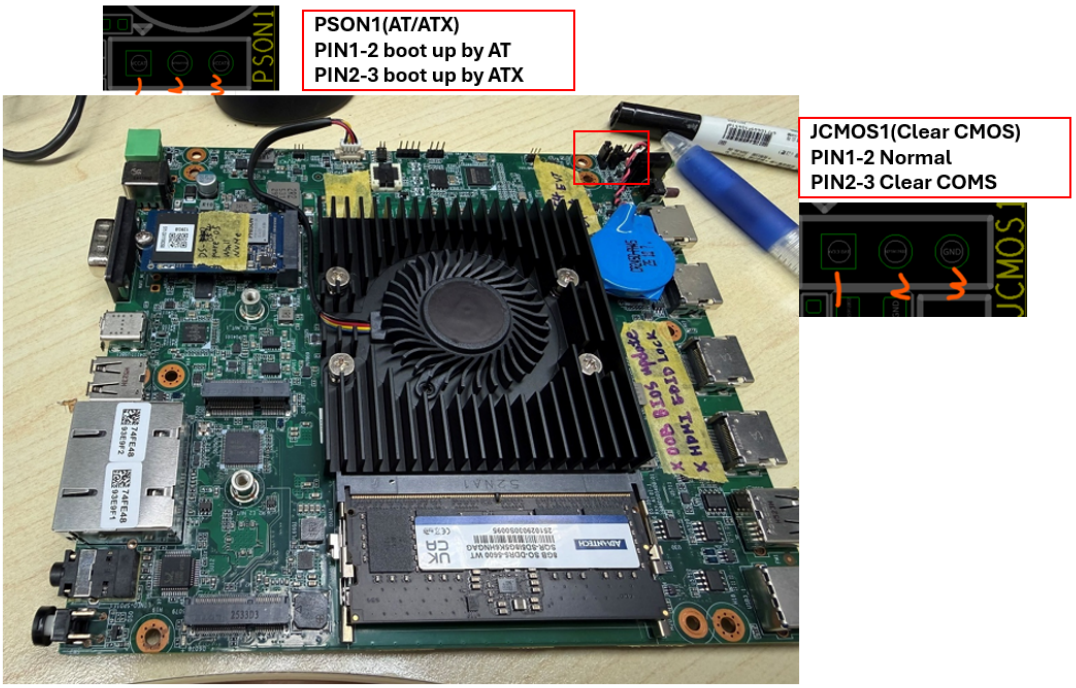
You can configure the DS-054 to meet your application requirements by setting the jumpers. A jumper is a small metal bridge used to open or close an electrical circuit. It consists of two or three metal pins and a small metal clip, typically protected by a plastic cover. To close a two-pin jumper, place the clip over both pins. To open the jumper, remove the clip. For a three-pin jumper labeled 1, 2, and 3, place the clip over pins 1 and 2 or pins 2 and 3, depending on the required configuration.



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



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

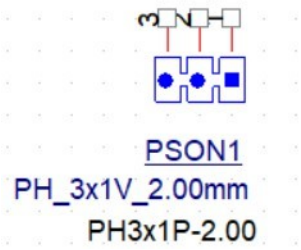


2.1.12 Jumper List

Table 2.9: Jumper List	
JCMOS1	CMOS Header
PSON1	AT/ATX Mode Jumper

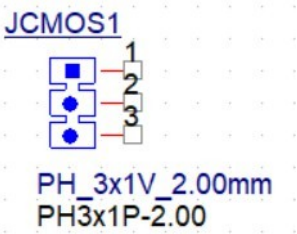
2.1.13 AT/ATX Mode Jumper

Table 2.10: AT/ATX Mode Jumper	
Location	PSON1
Part number	1653003101
Foot Print	HD_3x1P_79_D
Description	PIN HEADER 3x1P2.0 mm 180D(M)DIP 2000-13WS
Setting	**Function**
(1-2)	AT
(2-3)*	ATX (Default)



2.1.14 Clear CMOS Jumper

Table 2.11: Clear CMOS Jumper	
Location	JCMOS1
Part number	1653003101
Foot Print	HD_3x1P_79_D
Description	3 x PIN HEADER 1P2.0mm 180D(M)DIP 2000-13WS
Setting	**Function**
(1-2)*	Normal operation (Default)
(2-3)	Clear CMOS

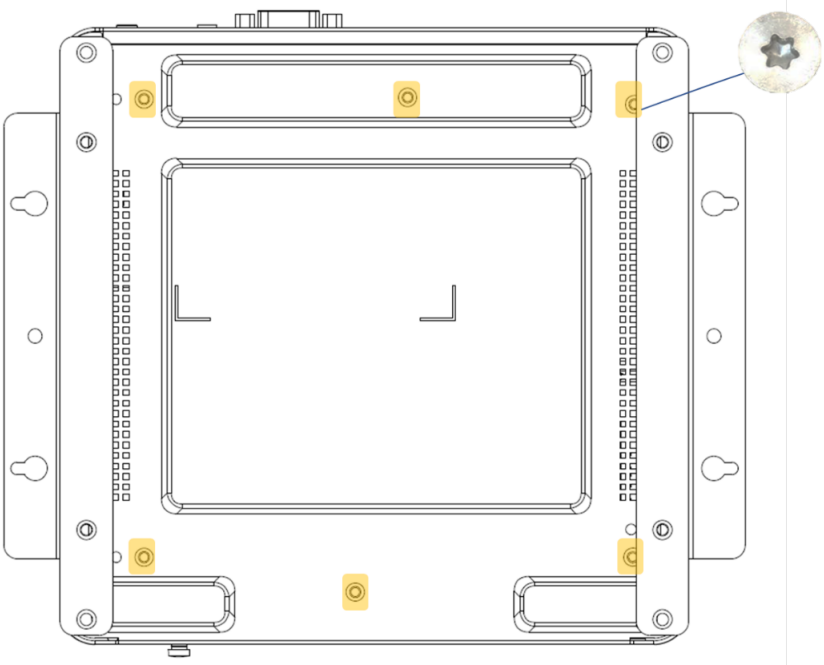


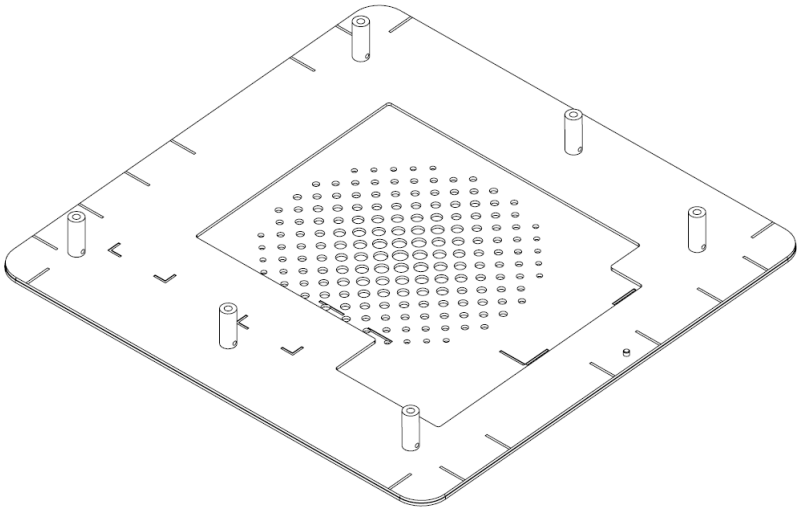
2.2 Installation

2.2.1 DRAM and SSD Installation

1. Remove the 6 yellow-marked screws from the back cover.
2. Remove the top cover, install the M.2 2242 module, and secure it with a screw.
3. Install the DDR5 SO-DIMM* module, using the thermal pads provided in the plastic pack.

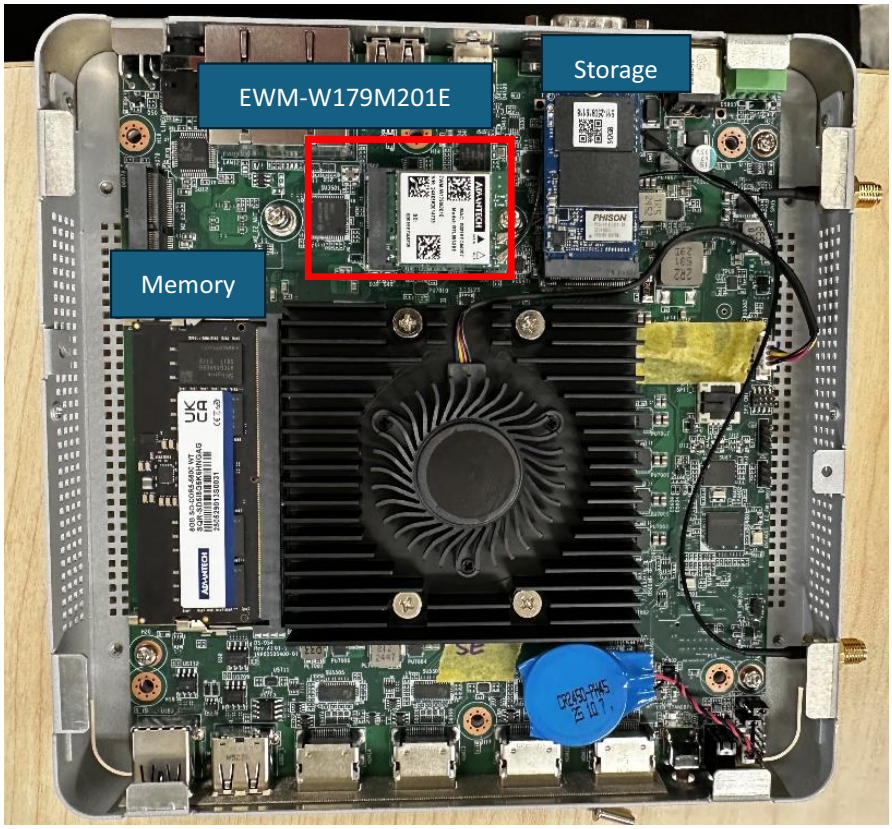
** For optimal CPU/GPU/NPU performance, dual-channel DDR5 is recommended.*





2.2.2 Wireless Module Installation

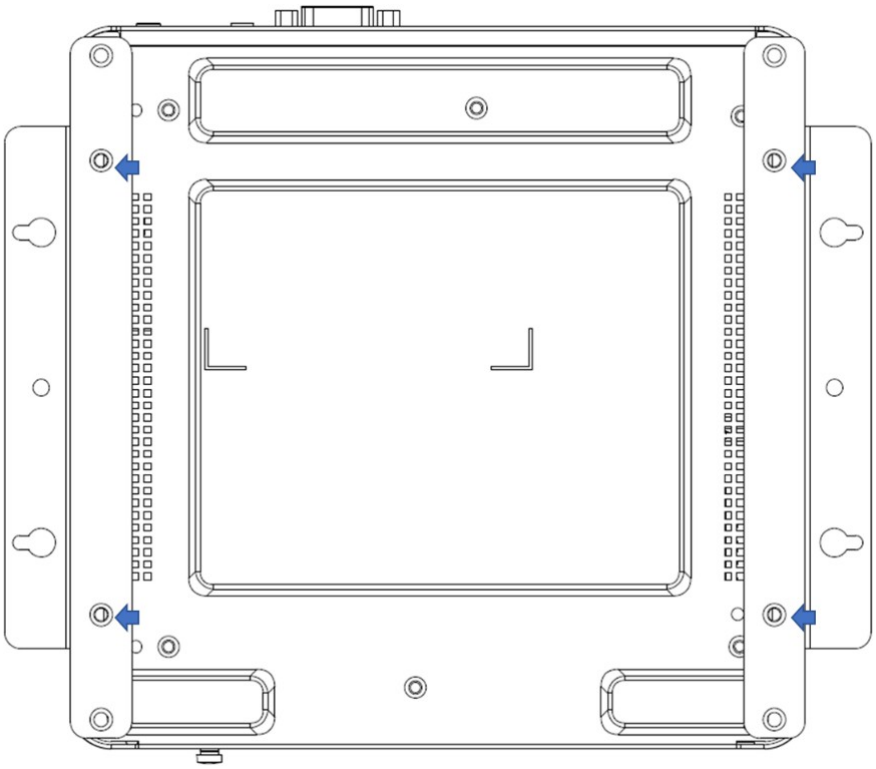
The Wi-Fi module is installed at the red circle and route the RF cable underneath the storage.



2.2.3 Wall Mount Installation

To install the system using the wall mount kit, secure it with 4 x M3-4L (7 mm) screws, following the indicated arrow directions.

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



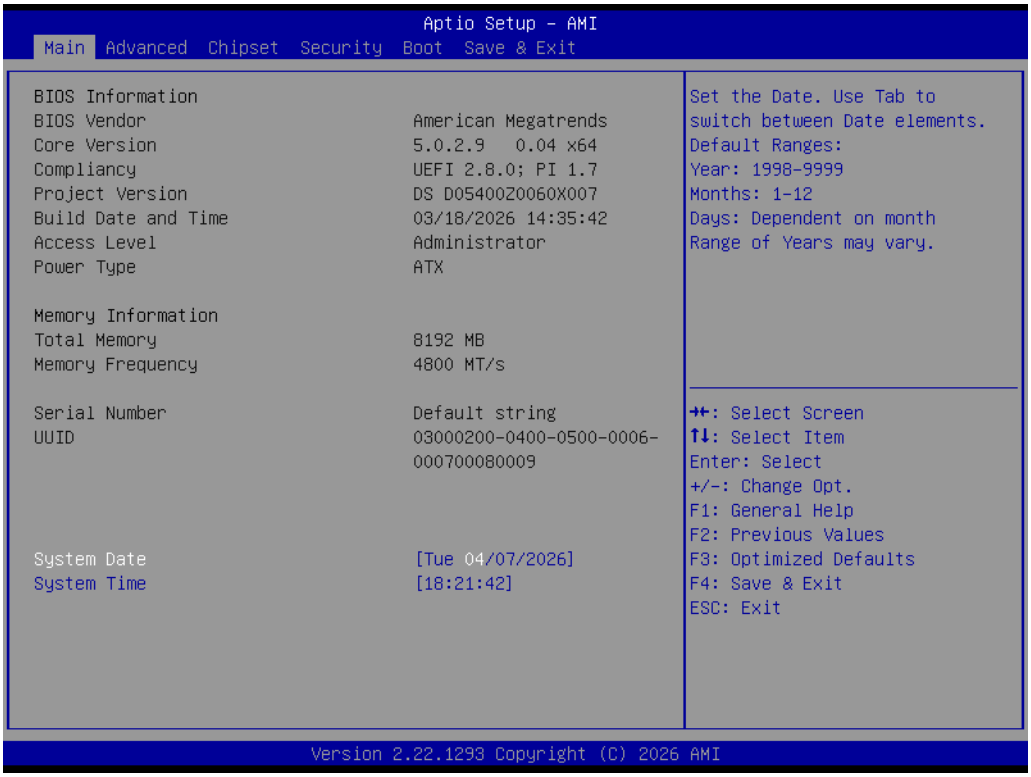
Chapter 3

BIOS Settings

This chapter introduces how to set BIOS configuration data.

3.1 BIOS Introduction

The 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-054 BIOS setup screens.



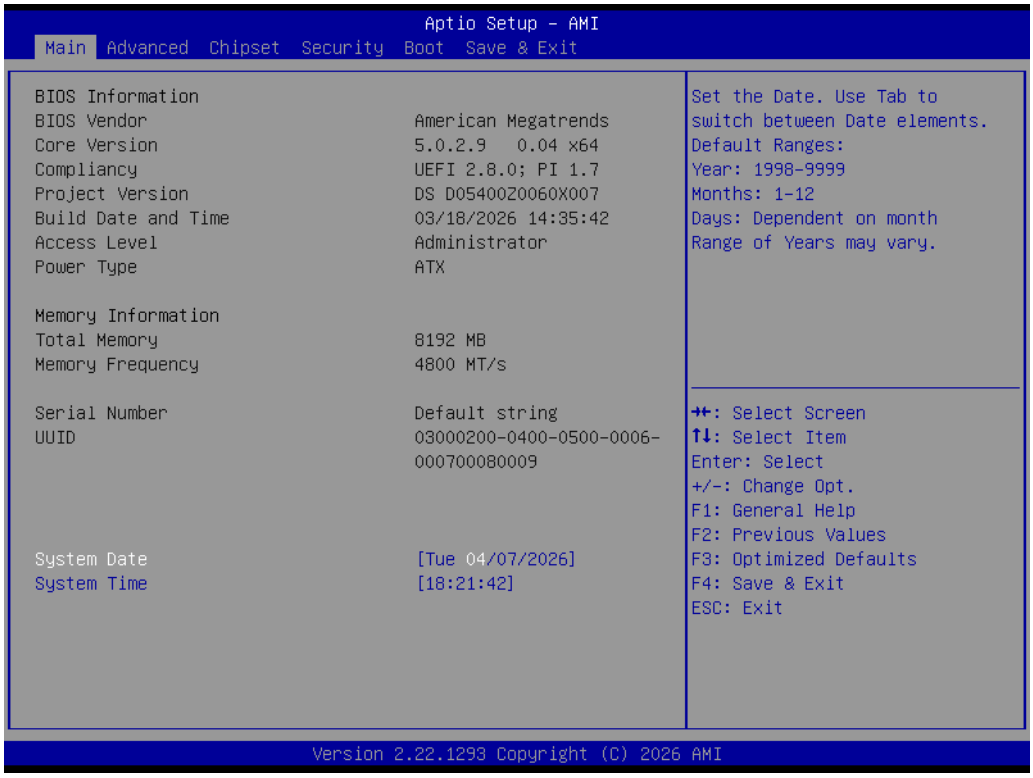
The AMI's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in flash ROM so it retains the Setup information when the power is turned off.

3.2 Entering 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.



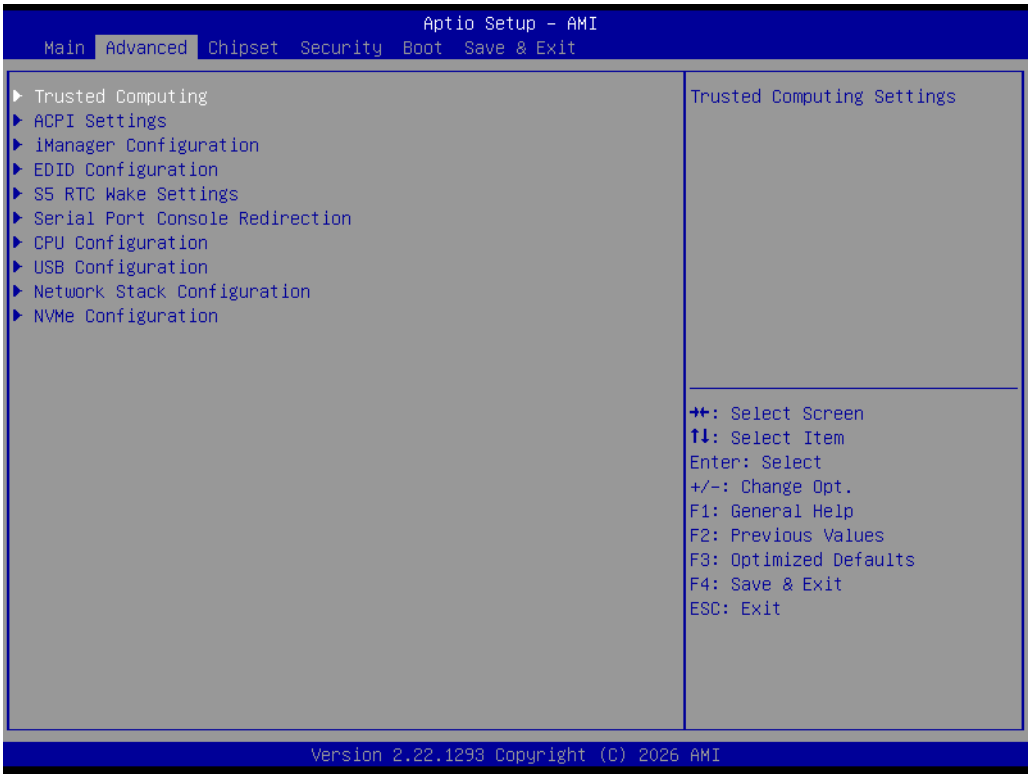
The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

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.

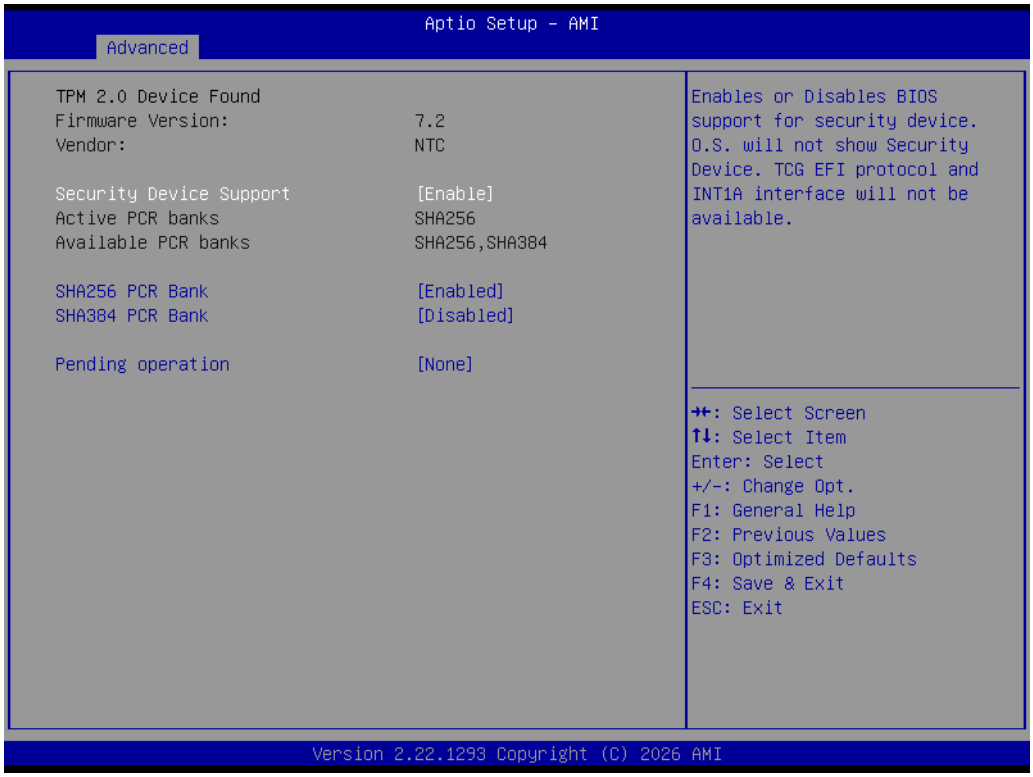
- **System time/System date**
  Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values via the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must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

3.2.2 Advanced

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

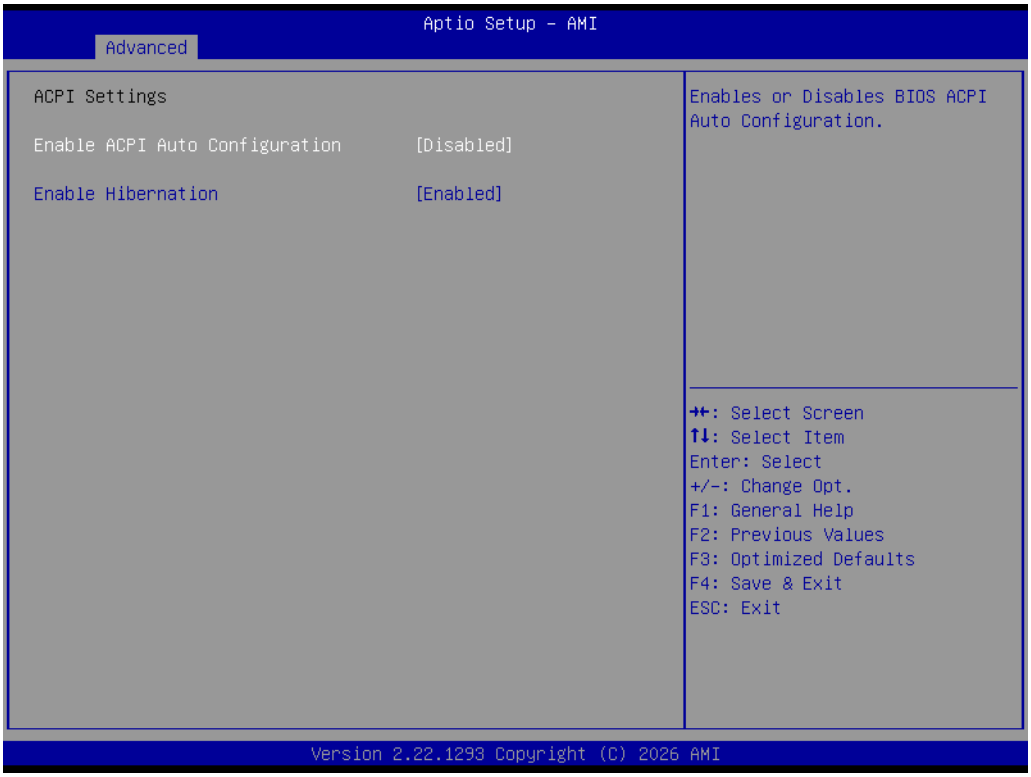


3.2.2.1 Advanced → Trusted Computing



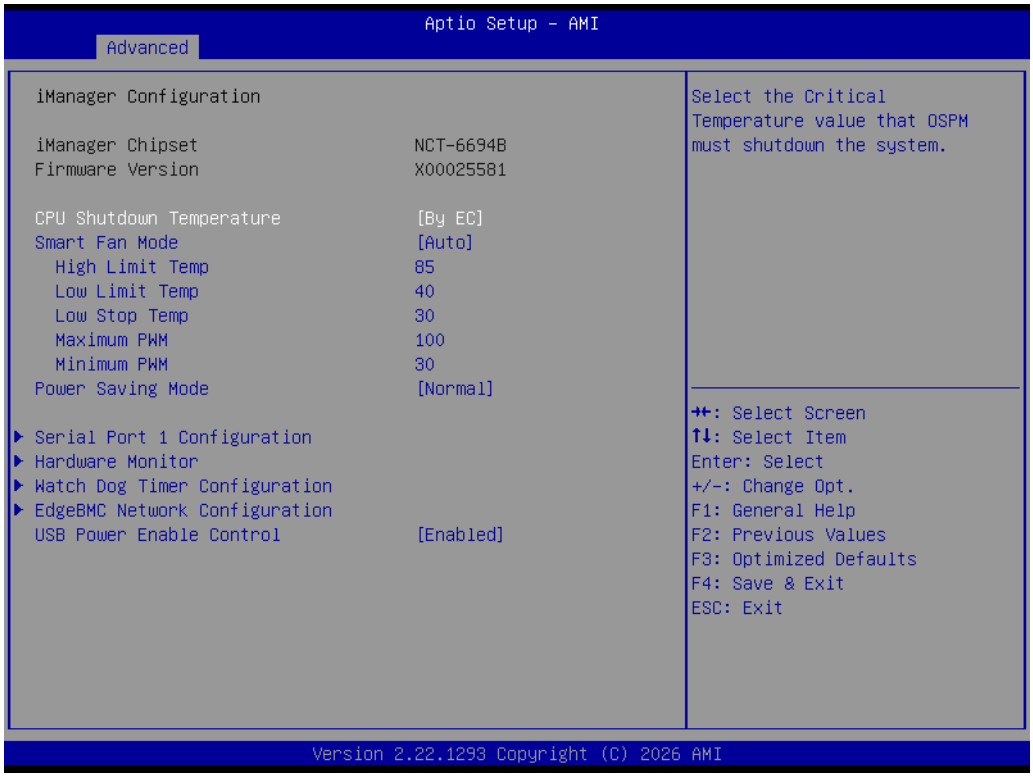
- **Enable Security Device Support [Disabled]**
  This item allows users to enable/disable security support.

3.2.2.2 Advanced → ACPI Settings



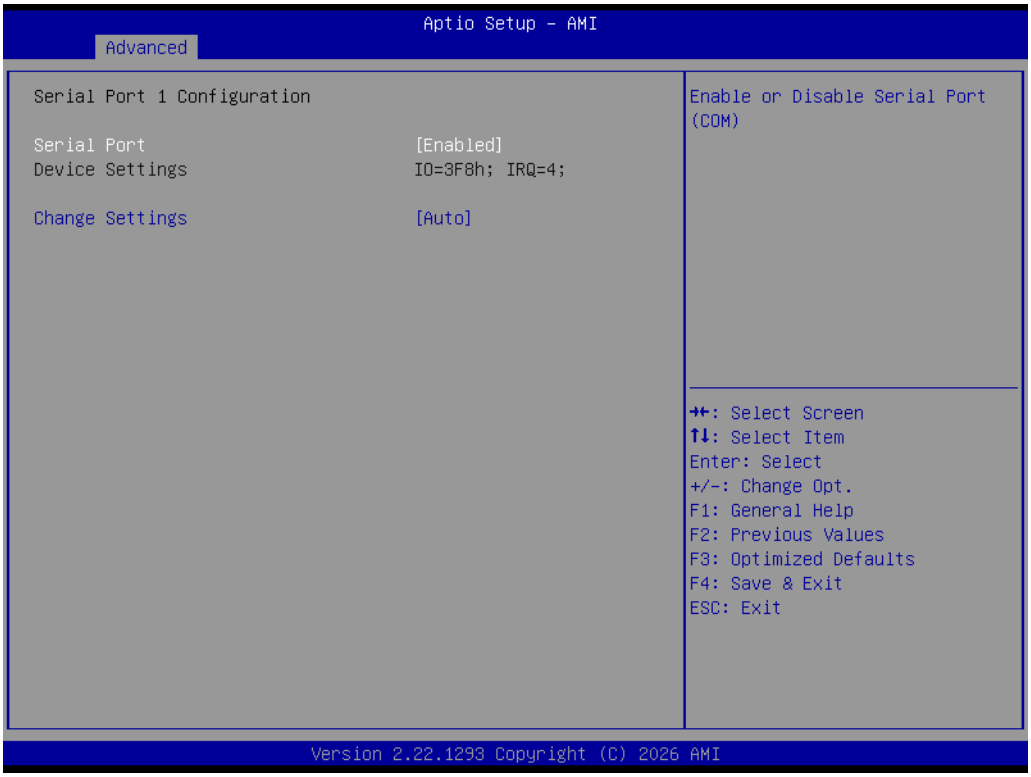
- **Enable ACPI Auto Configuration [Disabled]**
  This item allows users to enable/disable BIOS ACPI auto configuration.
- **Enable Hibernation [Enabled]**
  This item allows users to enable/disable the Hibernate (OS/S4 sleep state) function. This option may not be available with certain operating systems.
- **ACPI Sleep State [Auto]**
  This item allows users to select the ACPI sleep state the system will enter when the SUSPEND button is pressed.

3.2.2.3 Advanced → iManager Configuration

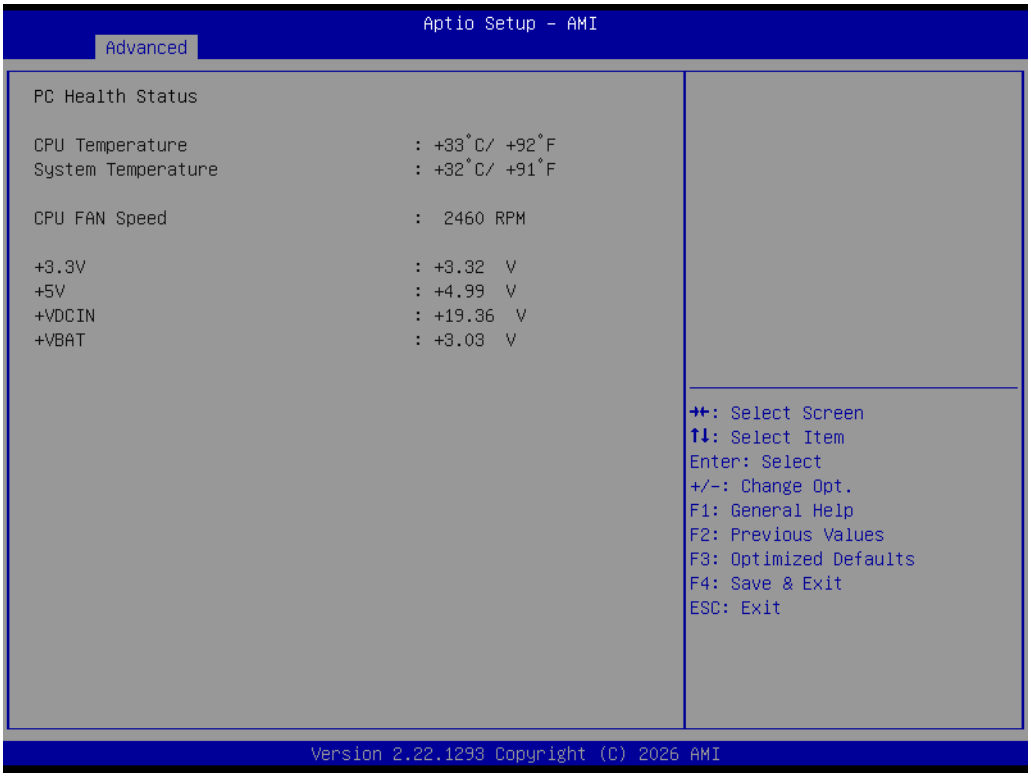


- **CPU Shutdown Temperature**
  Protects the system by automatically shutting down the CPU when the temperature reaches the preset safety limit, preventing overheating and hardware damage.
- **Smart Fan Mode**
  Automatically adjusts fan speed based on system temperature to balance cooling performance, noise level, and power efficiency.
- **Power Saving Mode**
  Reduces system power consumption by optimizing CPU performance and power settings, helping lower energy usage and improve thermal efficiency.

3.2.2.4 Advanced → Serial Port 1 Configuration

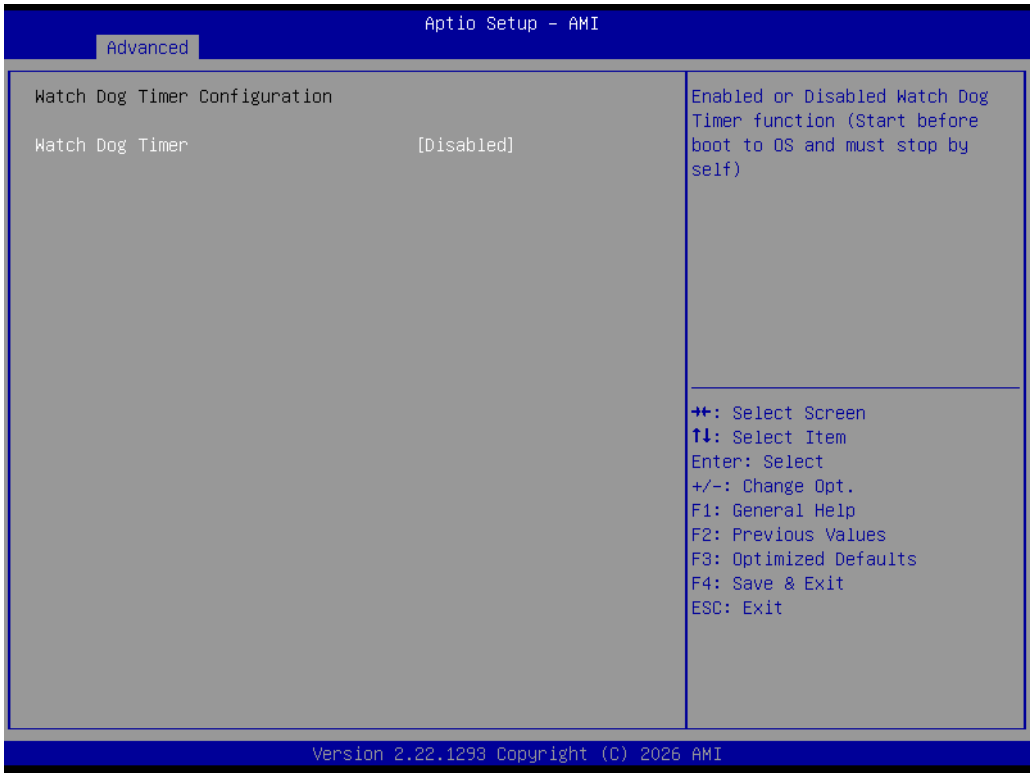


3.2.2.5 Advanced → Hardware Monitor

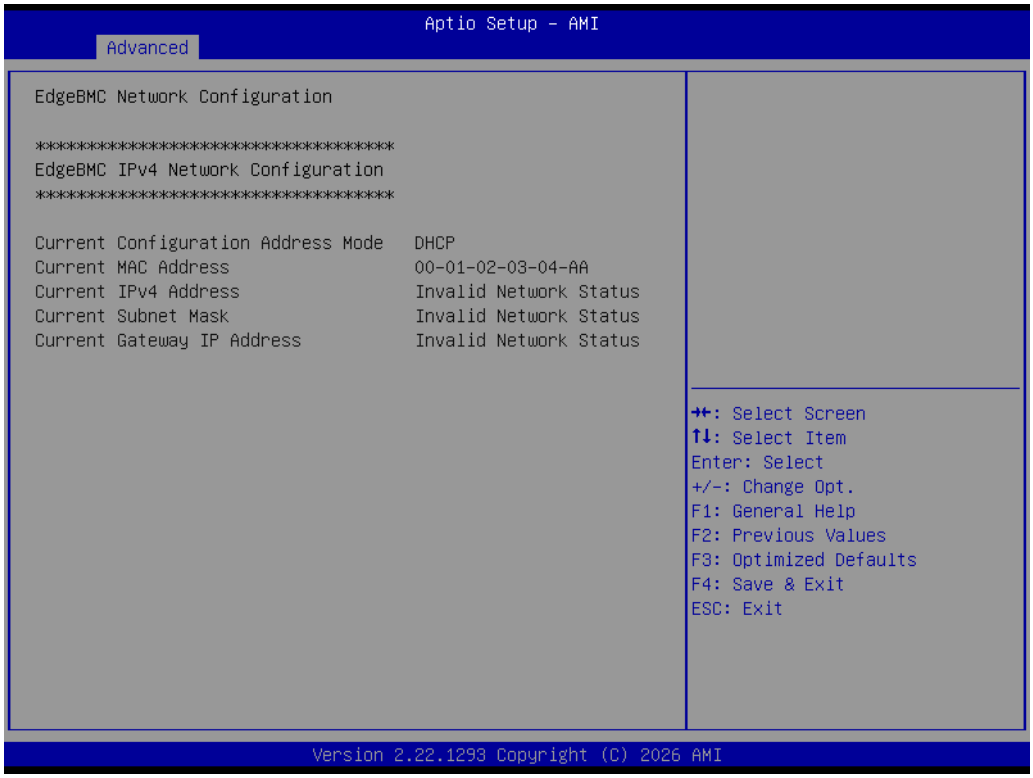


3.2.2.6 Advanced → Watch Dog Time Configuration

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



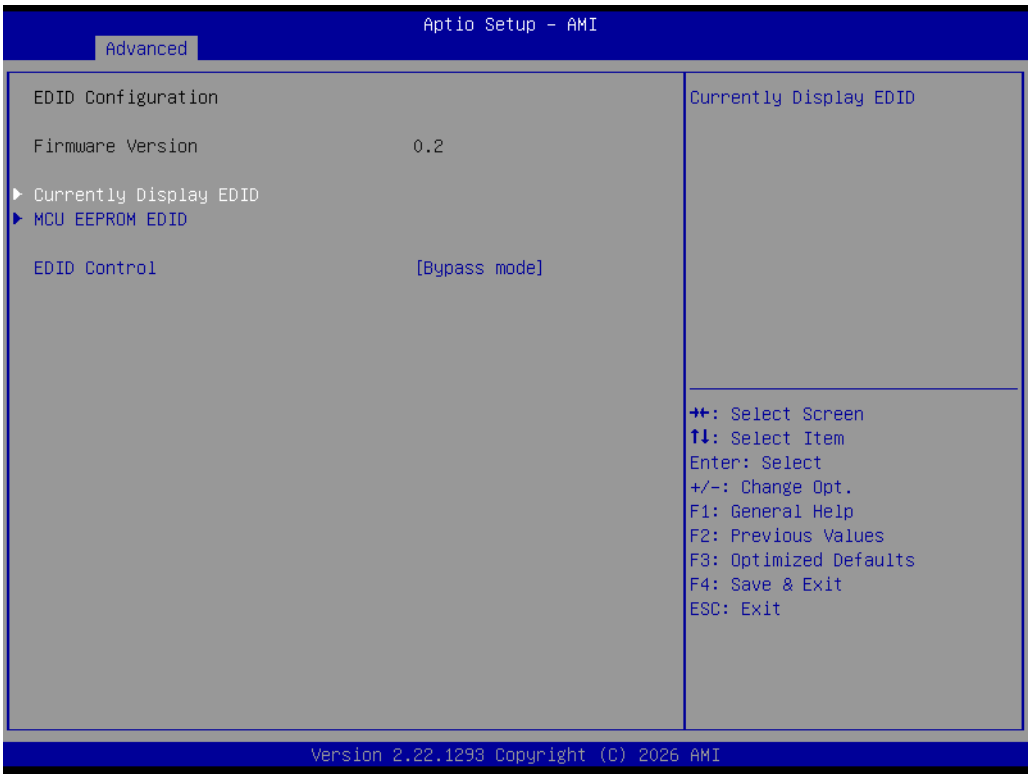
3.2.2.7 Advanced → EdgeBMC Network Configuration

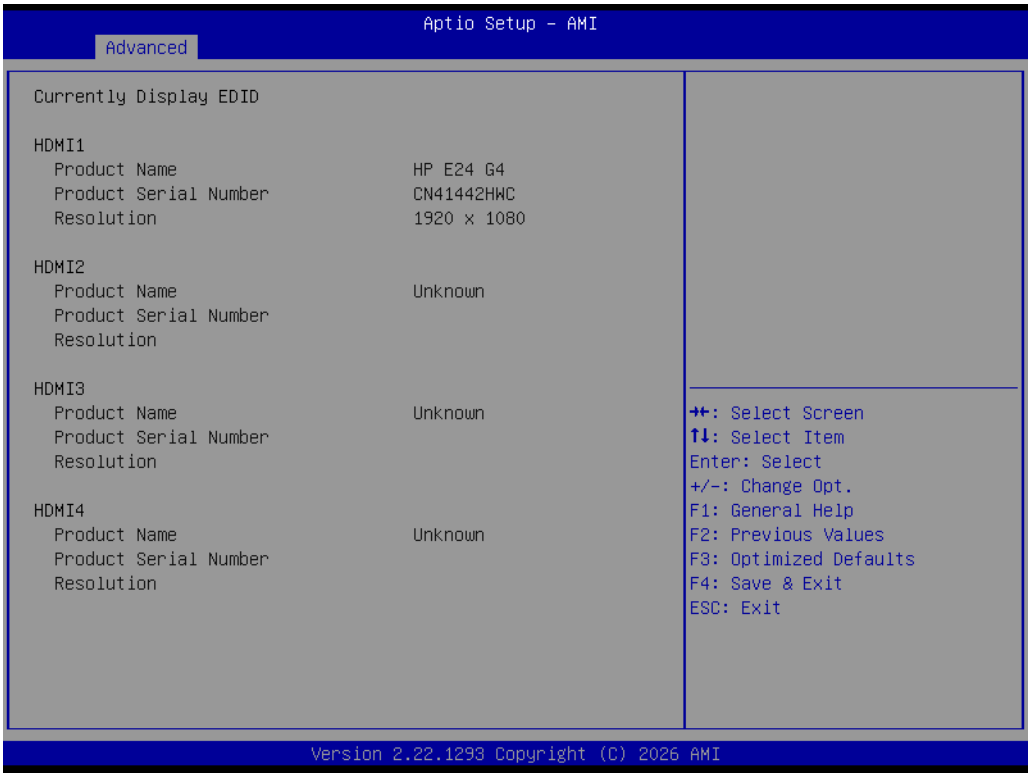


3.2.2.8 Advanced > EDID Configuration

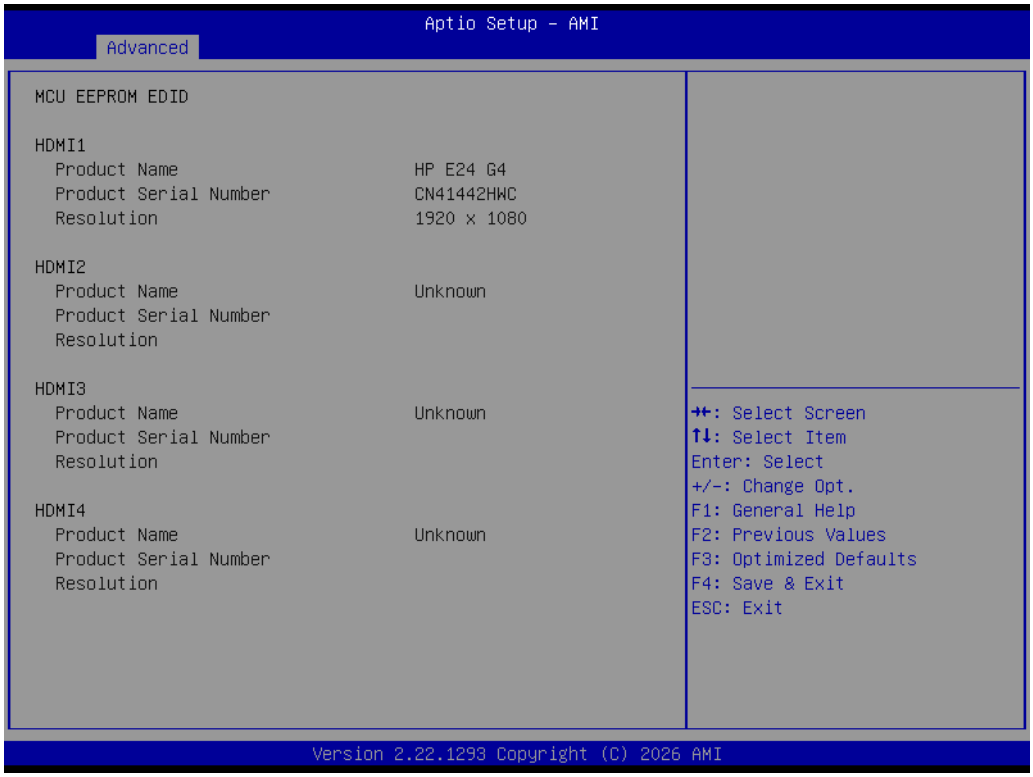
Configures how the system detects and applies the Extended Display Identification Data (EDID) of the connected display device.

EDID contains information about the display's supported resolutions, refresh rates, audio capabilities, and other display-related parameters. Proper EDID configuration helps ensure correct video output and stable display operation.



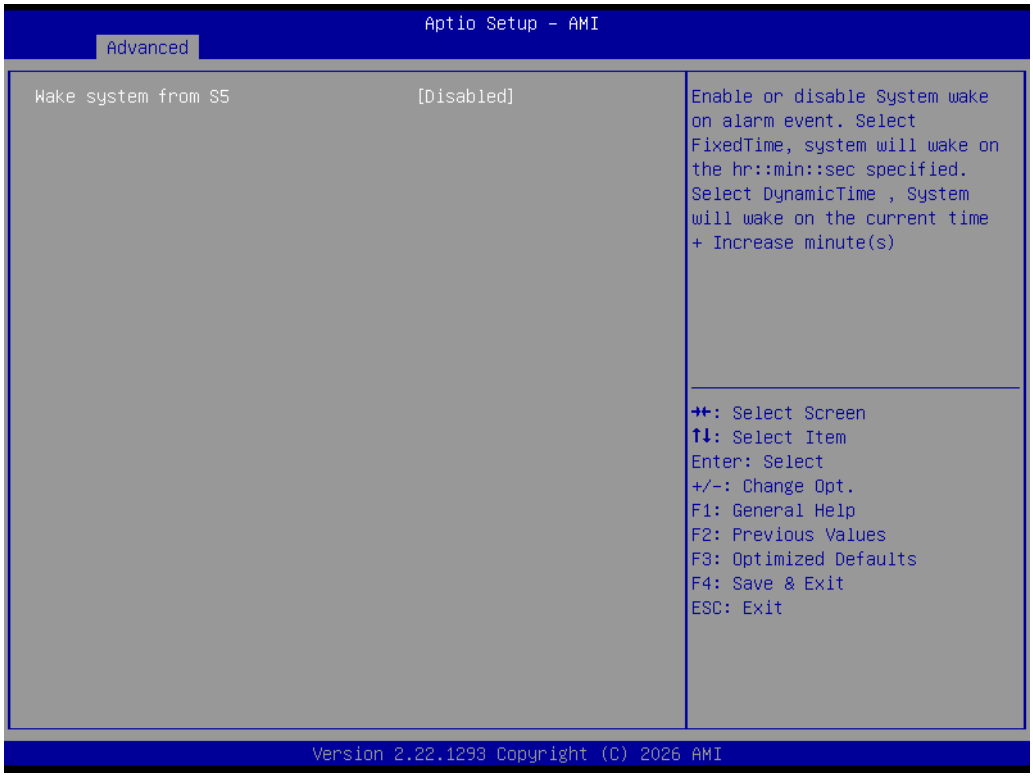


3.2.2.9 Advanced > MCU EEPROM EDID



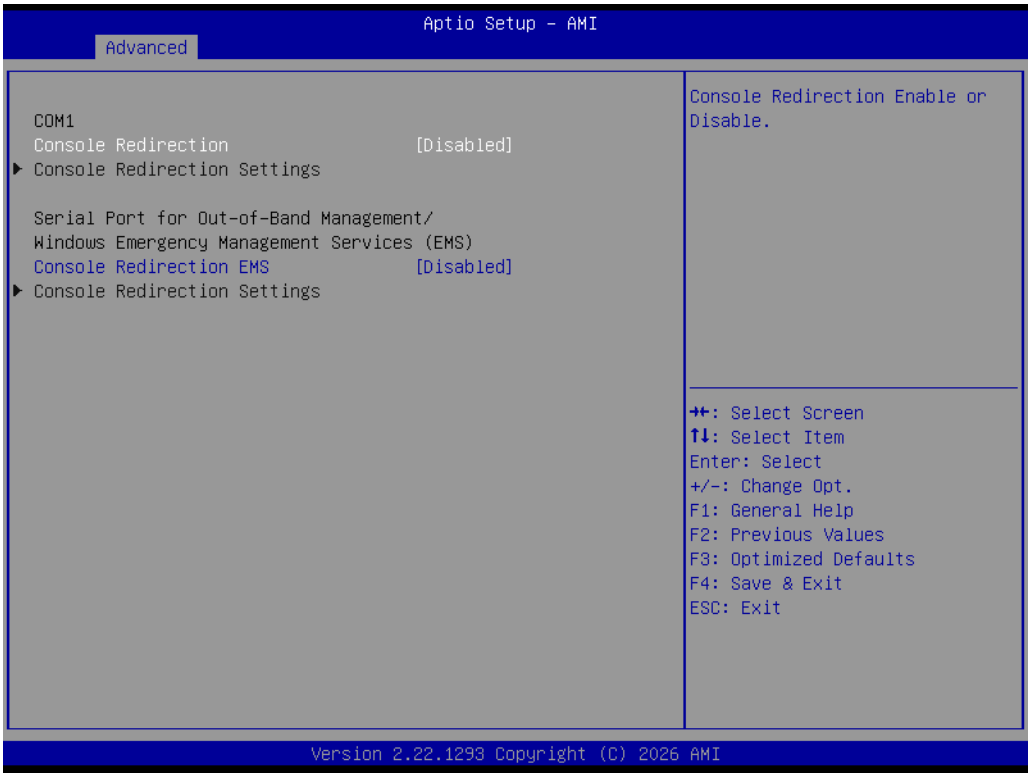
3.2.2.10 Advanced > Wake System from S5

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



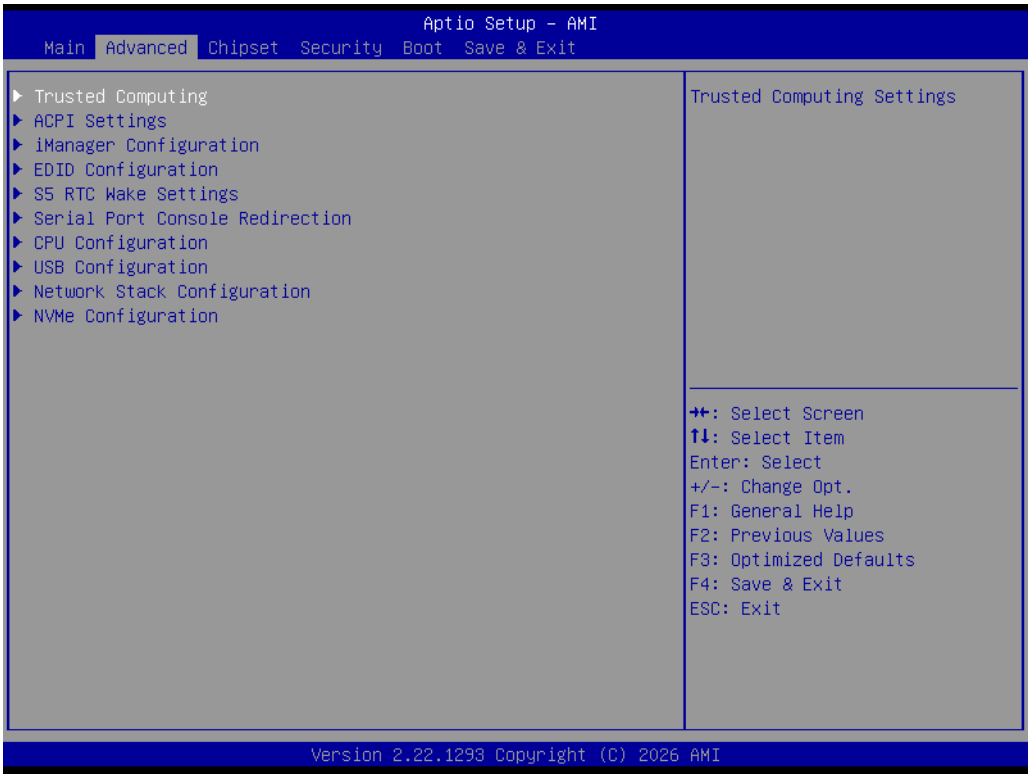
3.2.2.11 Advanced → Serial Port Console Redirection

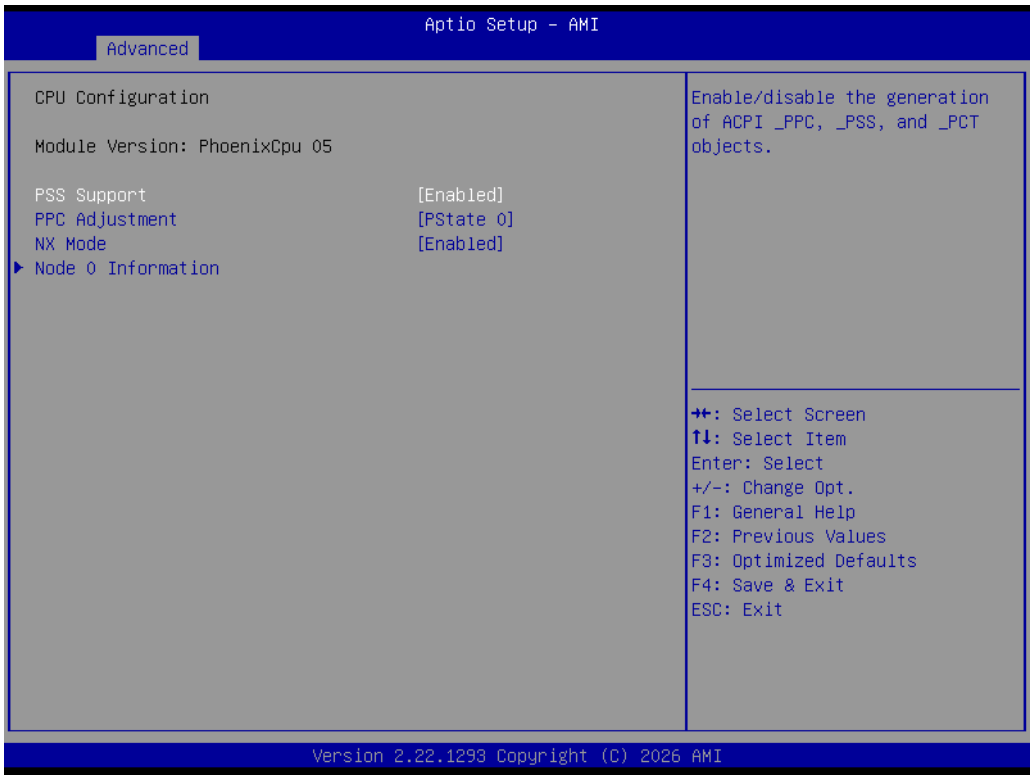
Enable or disable BIOS output redirection through the serial port for remote console access.

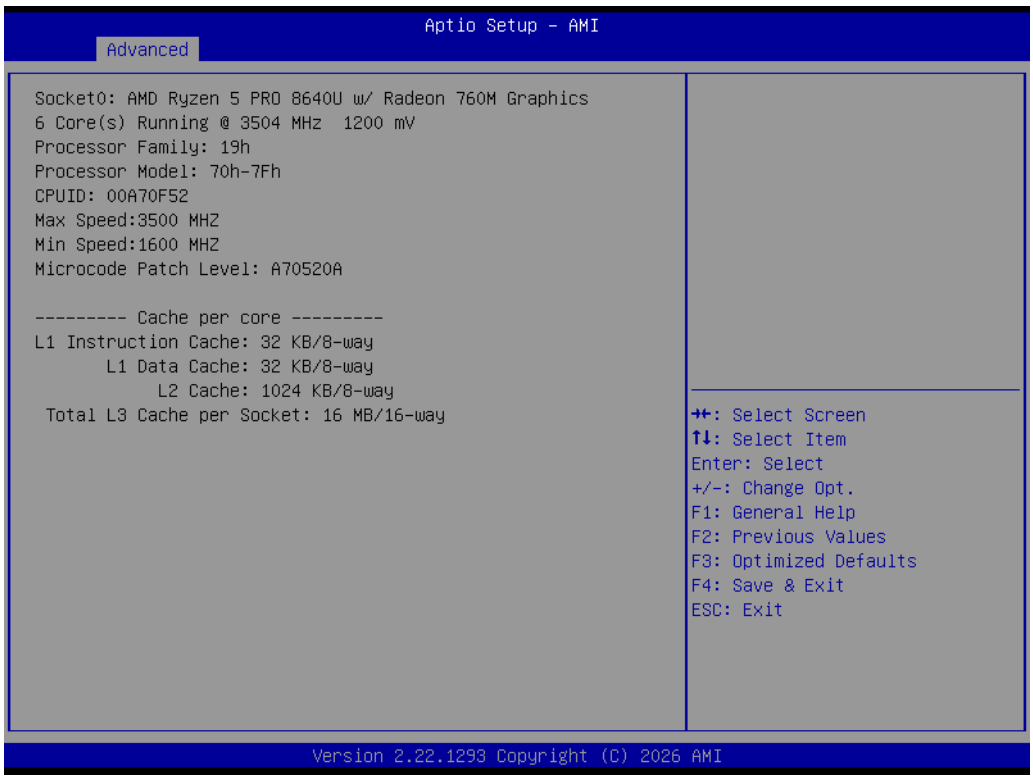


3.2.2.12 Advanced → CPU Configuration → Enable PPS Support

Enables or disables the ACPI _PPC, _PSS, and _PCT objects for processor power and performance-state management.



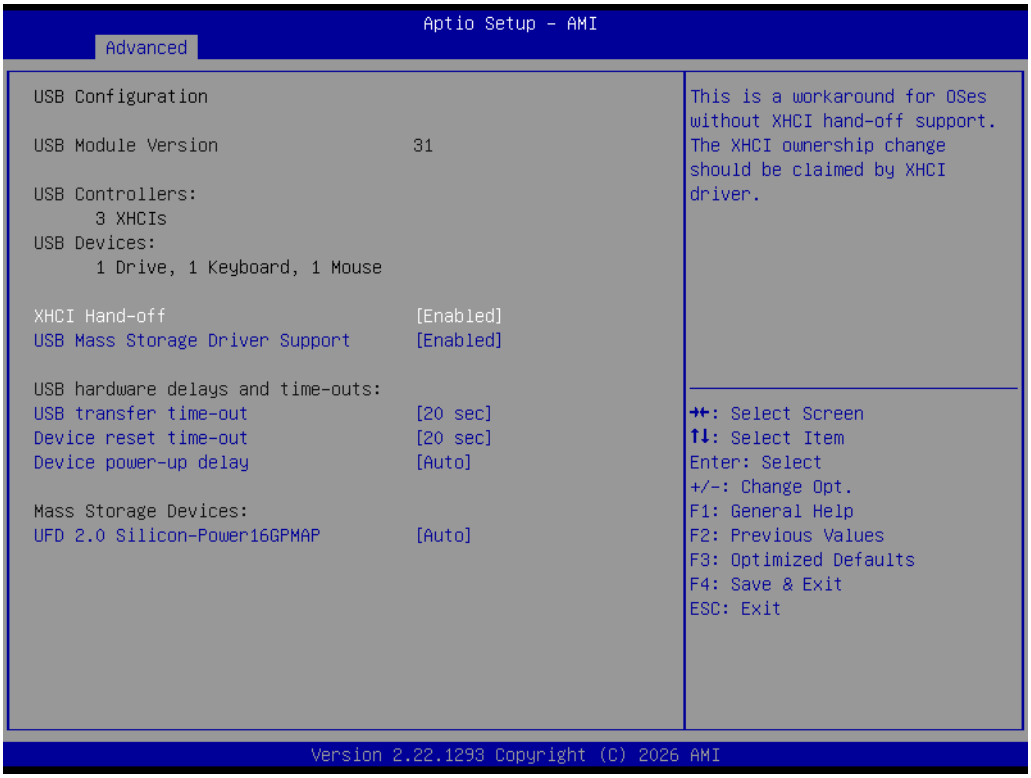

Aptio Setup – AMI
Advanced
CPU Configuration
Module Version: PhoenixCpu 05
PSS Support [Enabled]
PPC Adjustment [PState 0]
NX Mode [Enabled]
Node 0 Information
Enable/disable the generation of ACPI _PPC, _PSS, and _PCT objects.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI


Aptio Setup – AMI
Advanced
Socket0: AMD Ryzen 5 PRO 8640U w/ Radeon 760M Graphics
6 Core(s) Running @ 3504 MHz 1200 mV
Processor Family: 19h
Processor Model: 70h-7Fh
CPUID: 00A70F52
Max Speed:3500 MHZ
Min Speed:1600 MHZ
Microcode Patch Level: A70520A
--------- Cache per core ---------
L1 Instruction Cache: 32 KB/8-way
L1 Data Cache: 32 KB/8-way
L2 Cache: 1024 KB/8-way
Total L3 Cache per Socket: 16 MB/16-way
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI

3.2.2.13 Advanced -> USB Configuration ->XHCI Hand-off

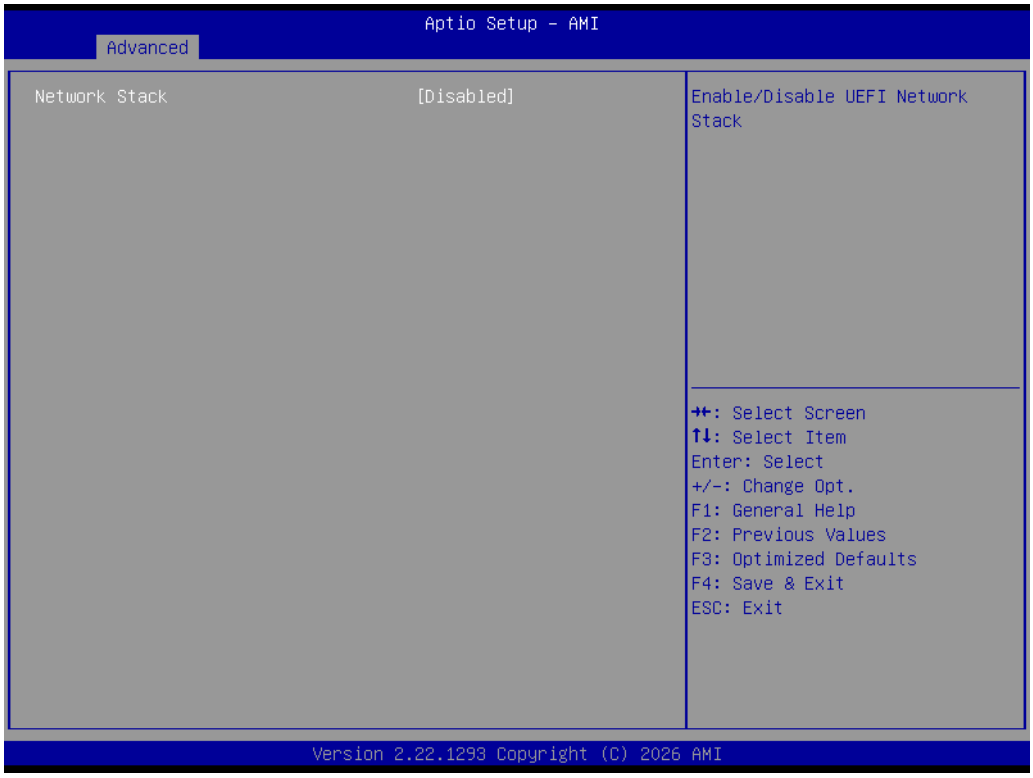
This is a workaround for OS without XHCI hand-off support. The XHCI owner ship change should be claimed by XHCI driver.

- **USB Mass Storage Driver Support**
  This item allows users to enable or disable USB Mass Storage driver support.
- **USB Transfer Time-Out**
  This item allows users to select the USB transfer time-out value. [1,5,10,20sec].
- **Device Reset Time-Out**
  This item allows users to select the USB device reset time-out value. [10,20,30,40sec].
- **Device Power-Up Delay**
  Maximum time the device will take before it properly reports itself to the Host Controller. “Auto” uses default value: for a Root port it is 100 ms, for a Hub port the delay is take from Hub descriptor.
- **Mass Storage Devices**
  Mass storage device emulation type. “Auto” enumerates device according to their media format. Optical drives are emulated as “CD-ROM”', drives with no media will be emulated according to a drive type.



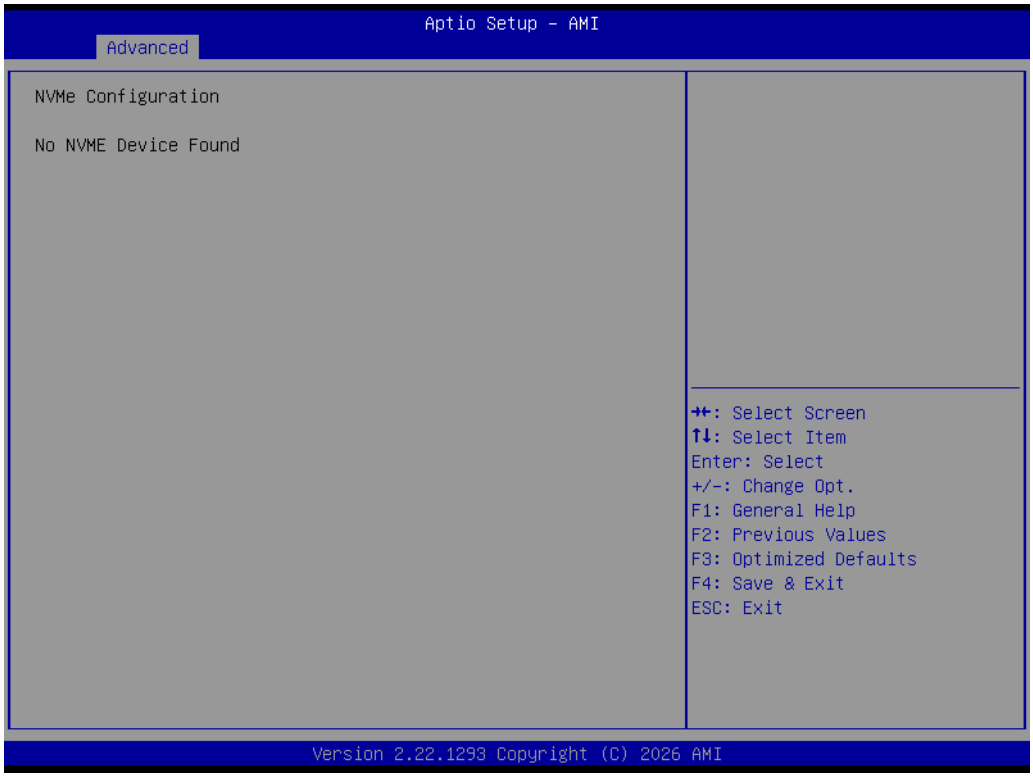
3.2.2.14 Advanced → Network Stack Configuration

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



3.2.2.15 NVMe Configuration

Detect if there is any NVMe storage.

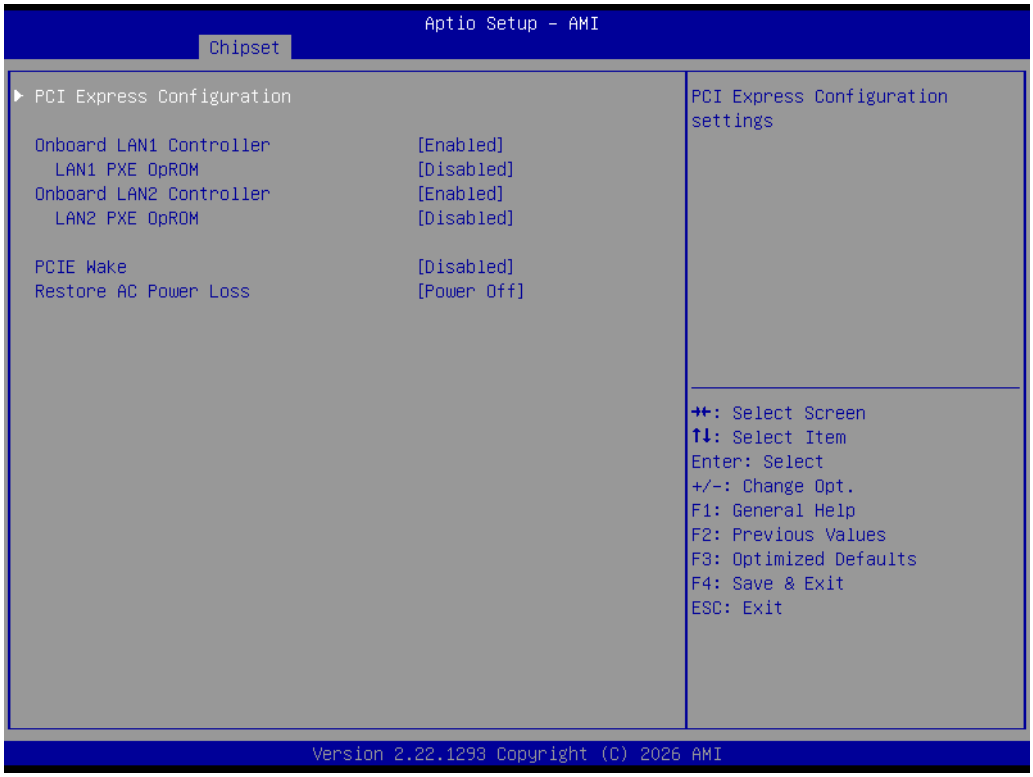


3.2.3 Chipset

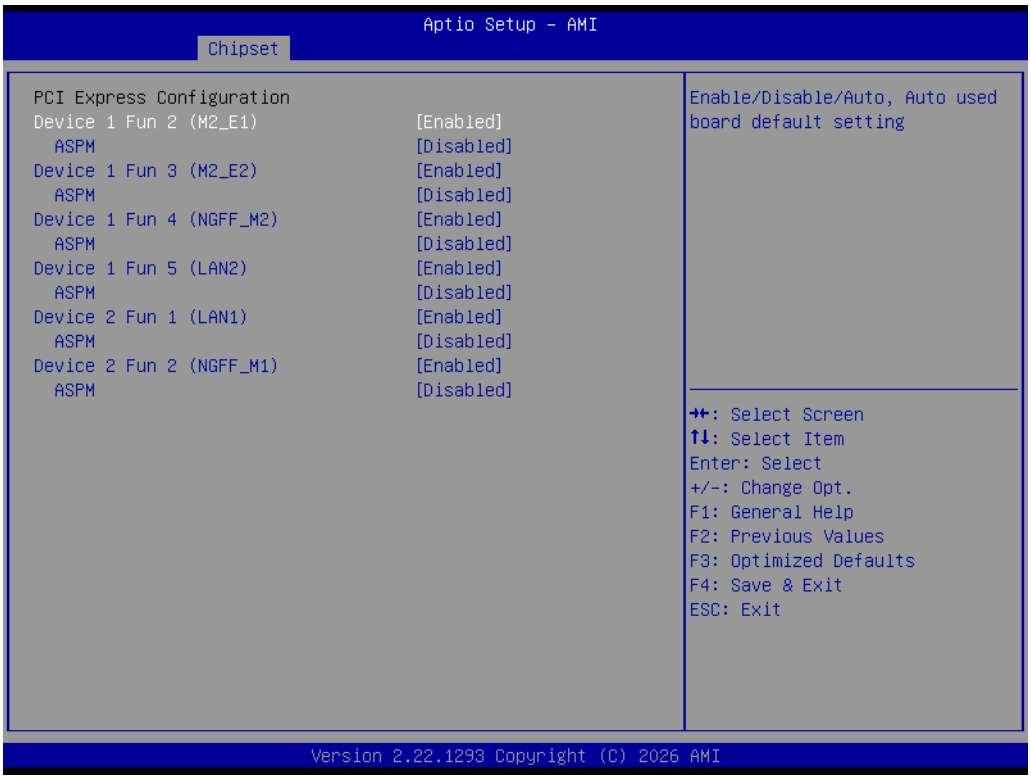
Select the Chipset BIOS Setup option by highlighting it using the <Arrow> keys.

- **South Bridge Configuration**
  This item allows users to configure the south bridge settings.
- **GFX Configuration**
  Allows users to configure integrated graphics settings, including memory allocation, display output, and performance options.
- **North Bridge Configuration**
  This item allows users to configure the north bridge settings.
- **AMD CBS**
  This item allows users to configure the AMD CBS settings.
- **AMD PBS**
  This item allows users to configure the AMD PBS settings.

3.2.3.1 Chipset → South Bridge



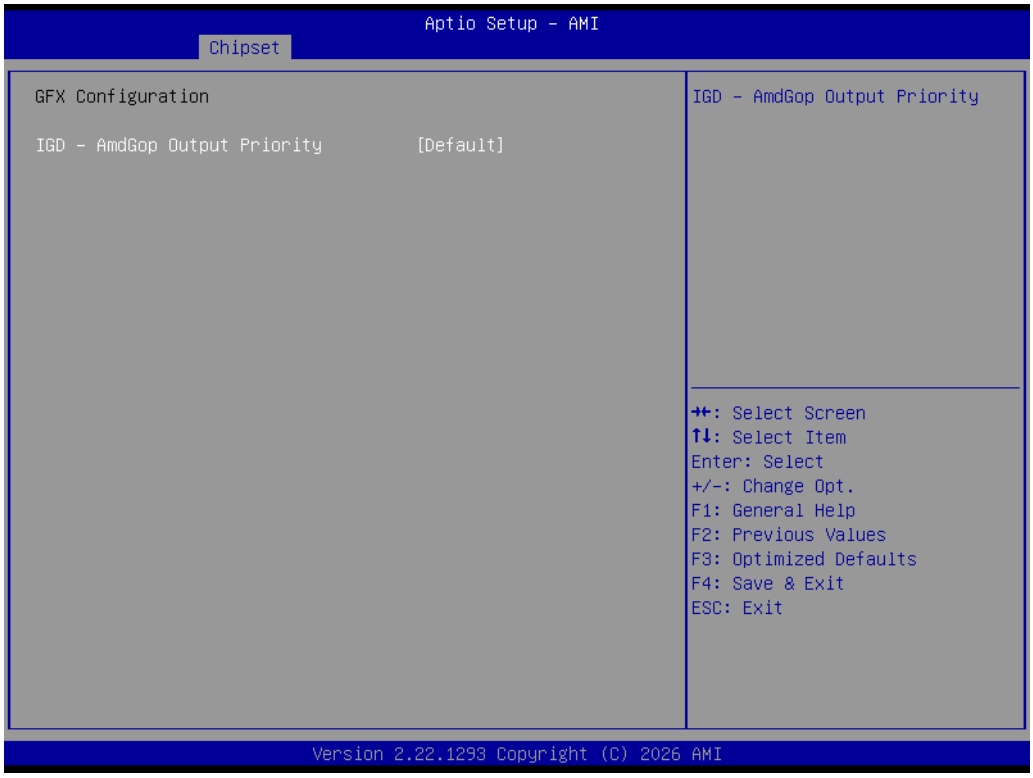
- **PCI Express Configuration**
  This item allows users to configure the PCI Express device settings.
- **Onboard LANs Controller**
  This item allows users to configure the LAN and PXE OpROM settings.
- **USB Power Enable Control**
  This item allows users to enable/ disable the power of USB ports.
- **PCIe Wake**
  This item allows users to enable/ disable the PCIe Wake function.
  This item allows users to enable/ disable the power of USB ports.
- **Restore AC Power Less**
  Automatically restores the system to its previous power state after a power outage.



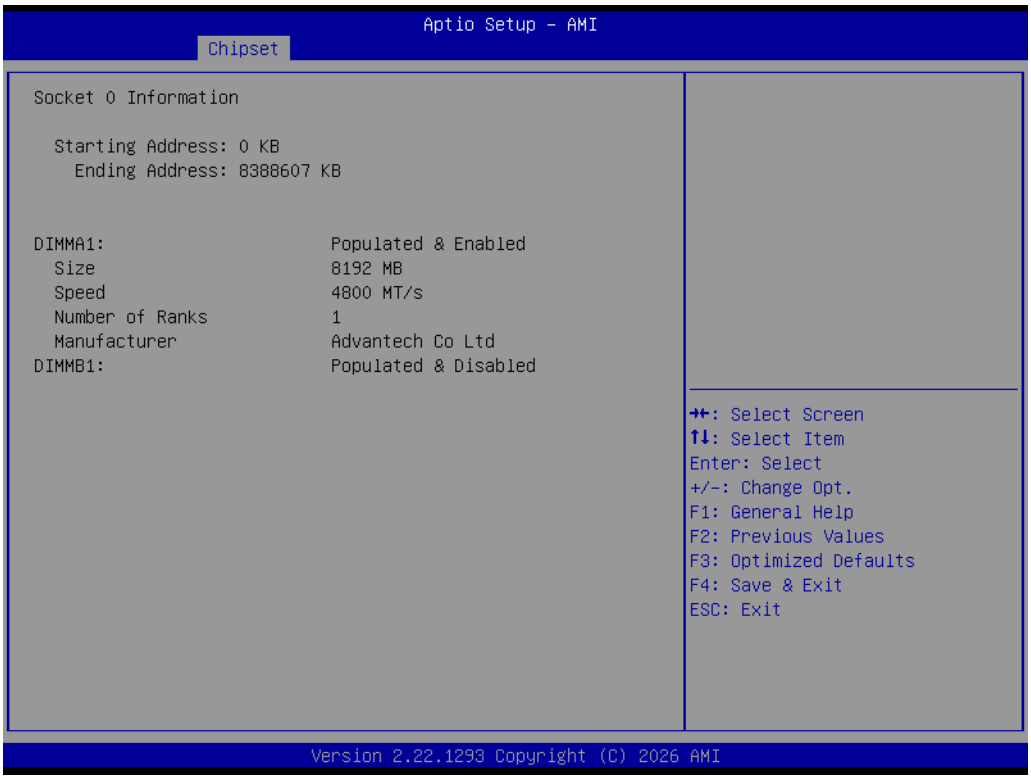
- **Enable/disable Device 1 Fun 2 (M2_E1)**
- **Enable/disable Device 1 Fun 3 (M2_E2)**
- **Enable/disable Device 1 Fun 4 (NGFF_M2)**
- **Enable/disable Device 1 Fun 5 (LAN2)**
- **Enable/disable Device 2 Fun 1 (LAN1)**
- **Enable/disable Device 2 Fun 2 (NGFF_M1)**

3.2.3.2 Chipset → South Bridge

Provides configuration options for chipset-related I/O and platform functions, including USB, SATA, PCIe, audio, power management, and other integrated peripheral settings.

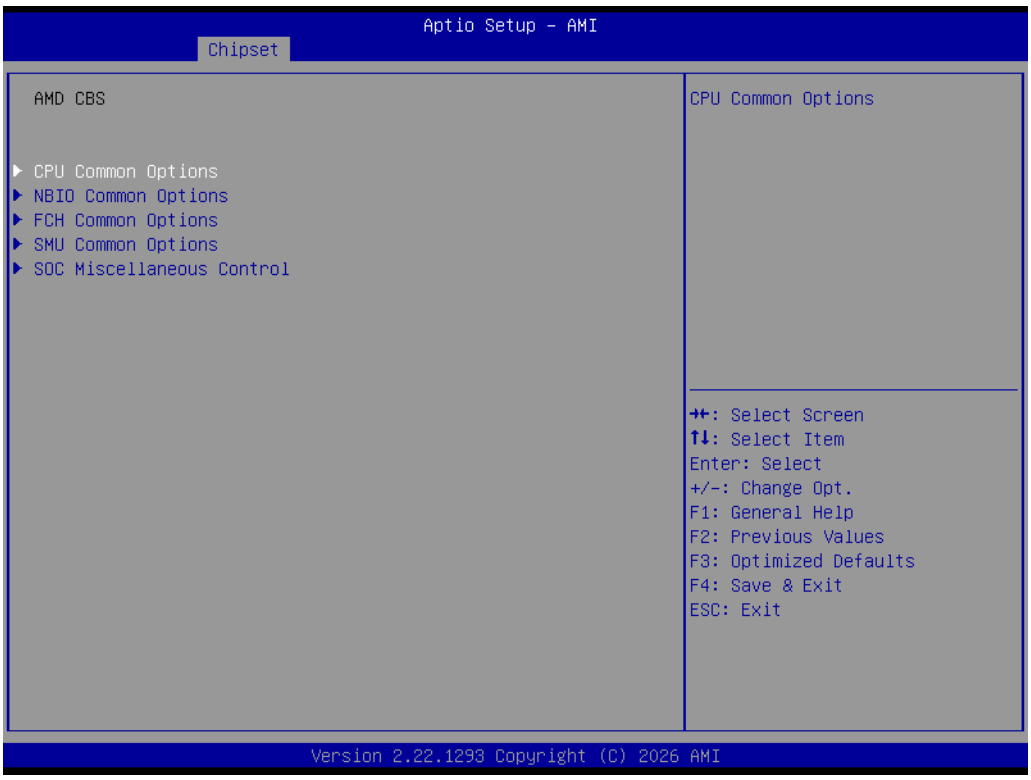


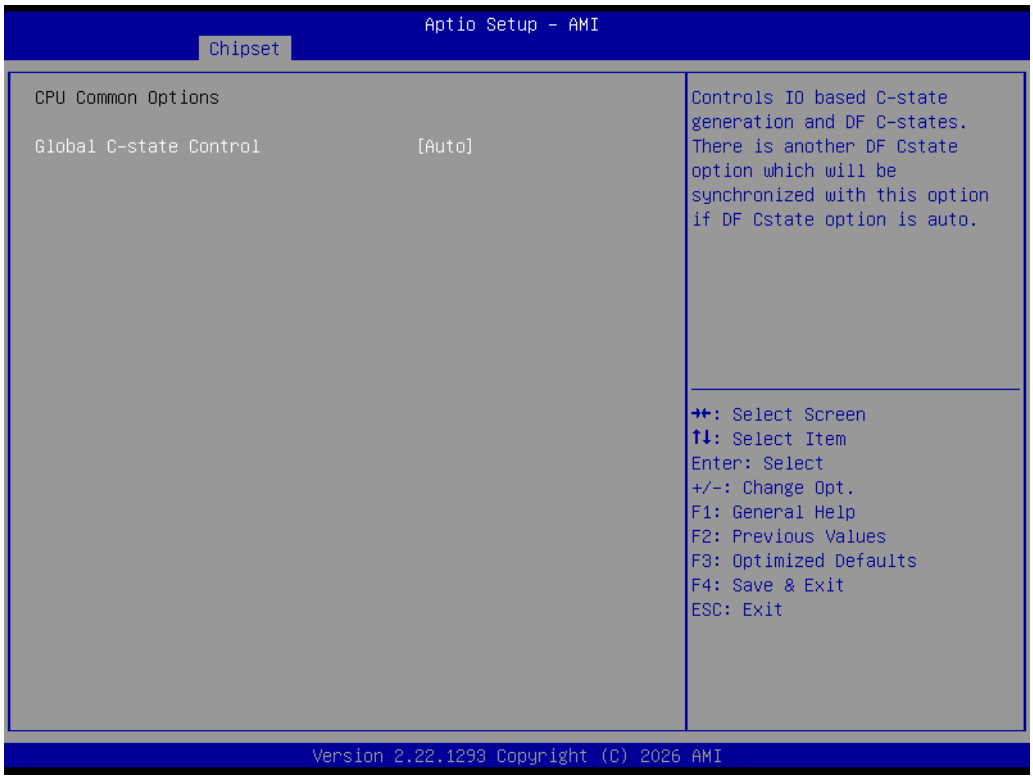
3.2.3.3 Chipset → North Bridge



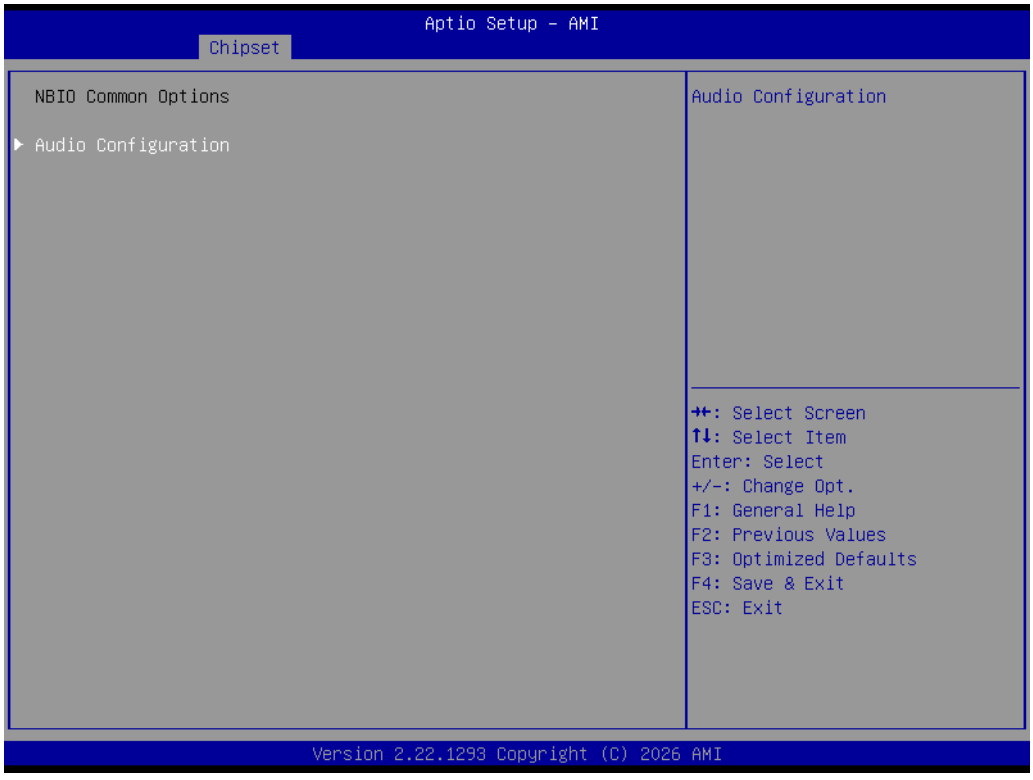
- **Socket 0 Information**
  To view the information related to Socket 0.

3.2.3.3.1 Chipset → AMD CBS

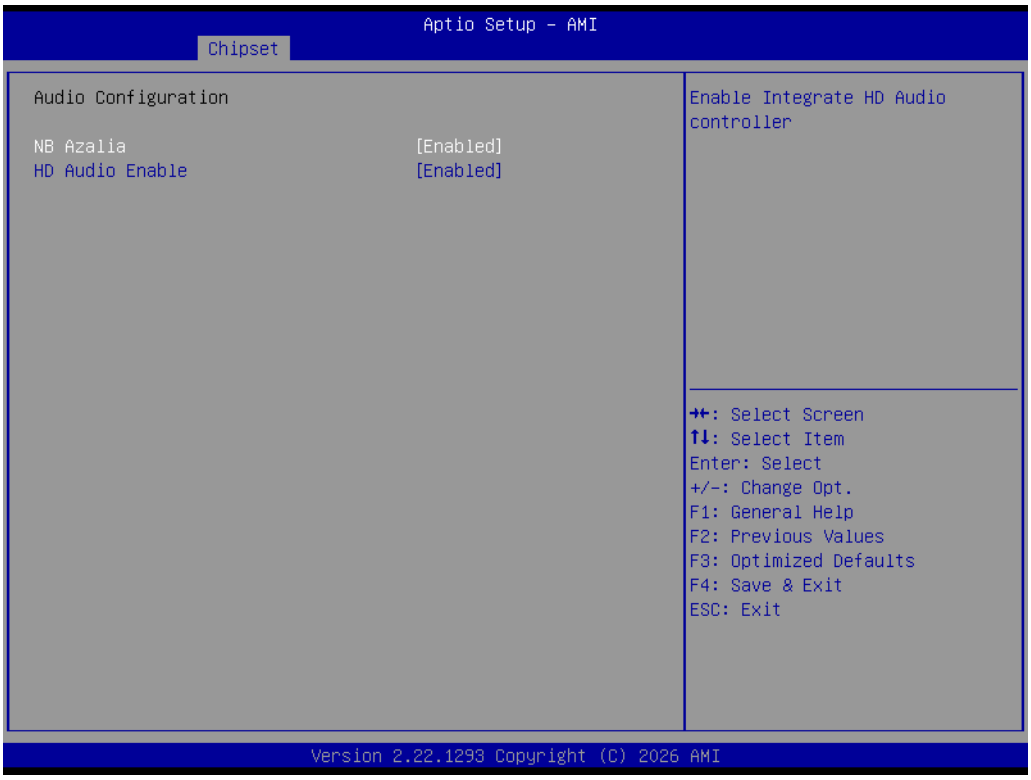




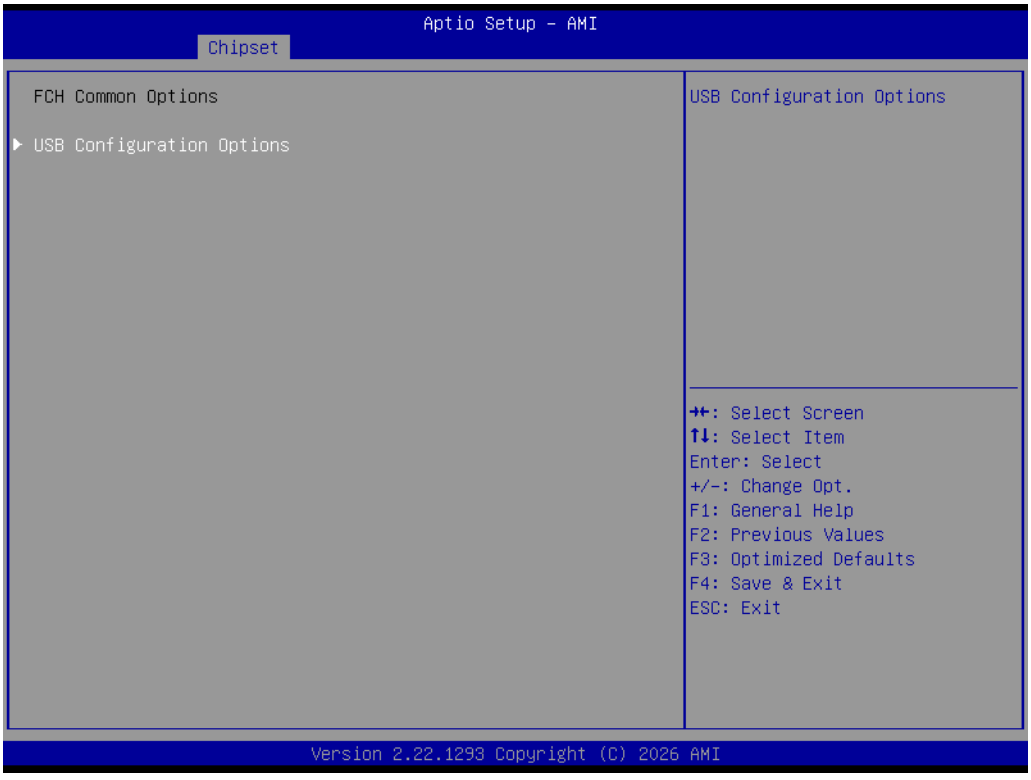
- **NBIO Common Options**
  Provides configuration options for AMD Northbridge I/O (NBIO) functions, including PCI Express, integrated graphics, IOMMU, and other processor-related I/O settings.



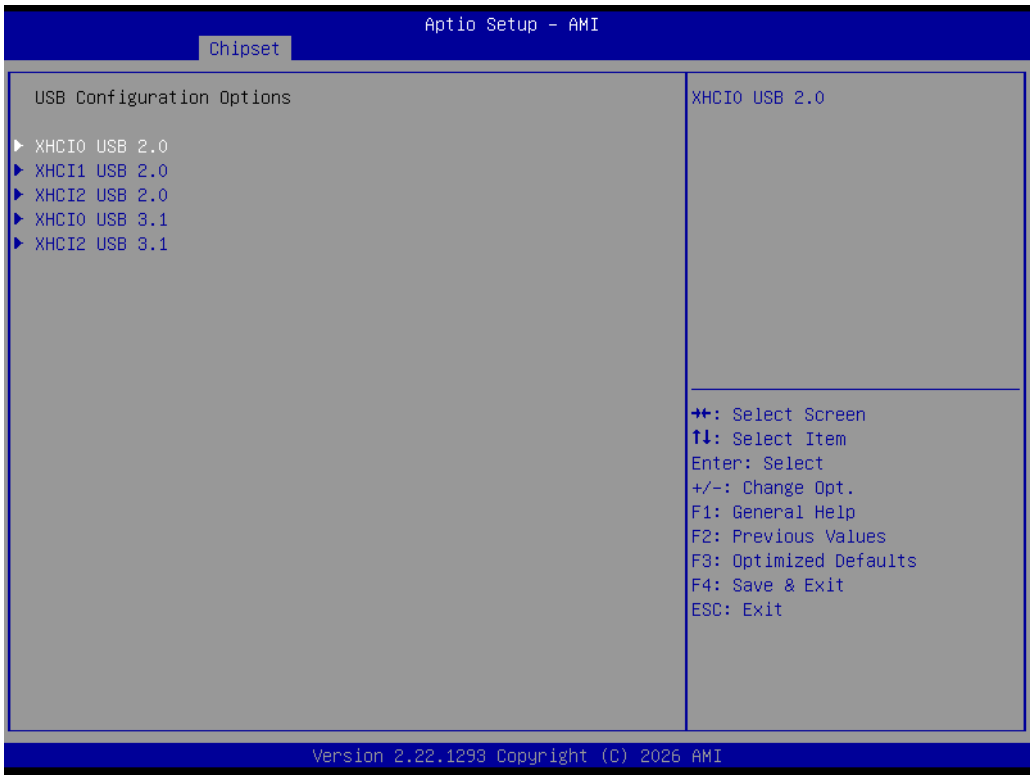
- **NBIO Common Options**
  To setup auto system configuration and To enable/ disable Audio IO.

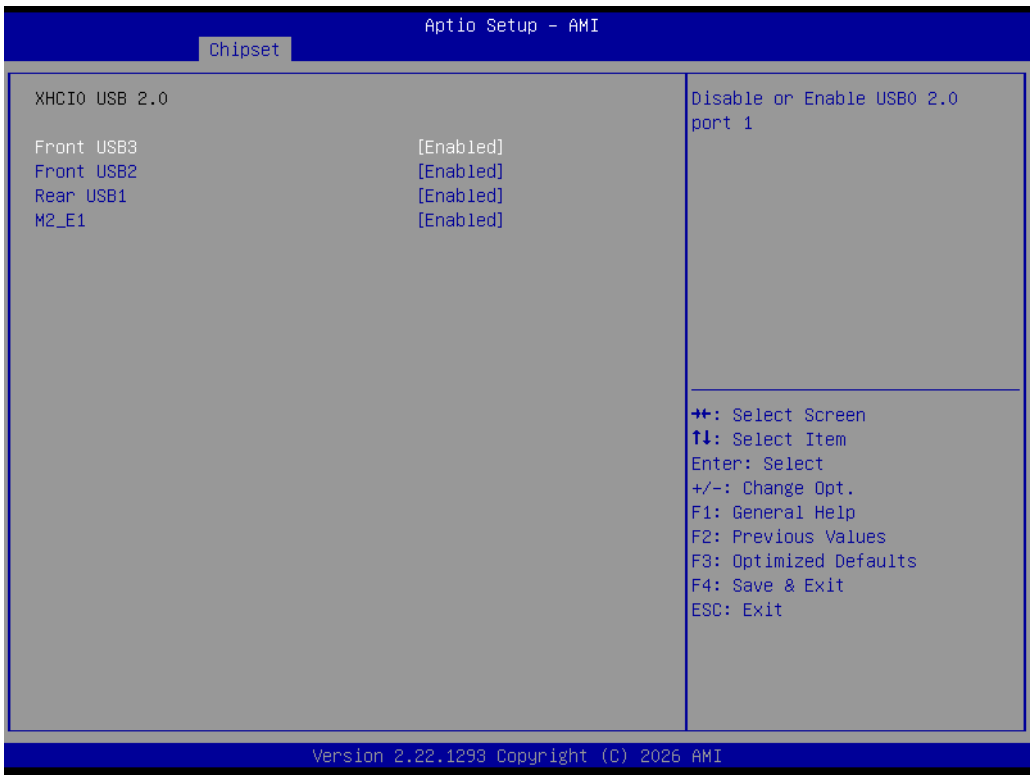


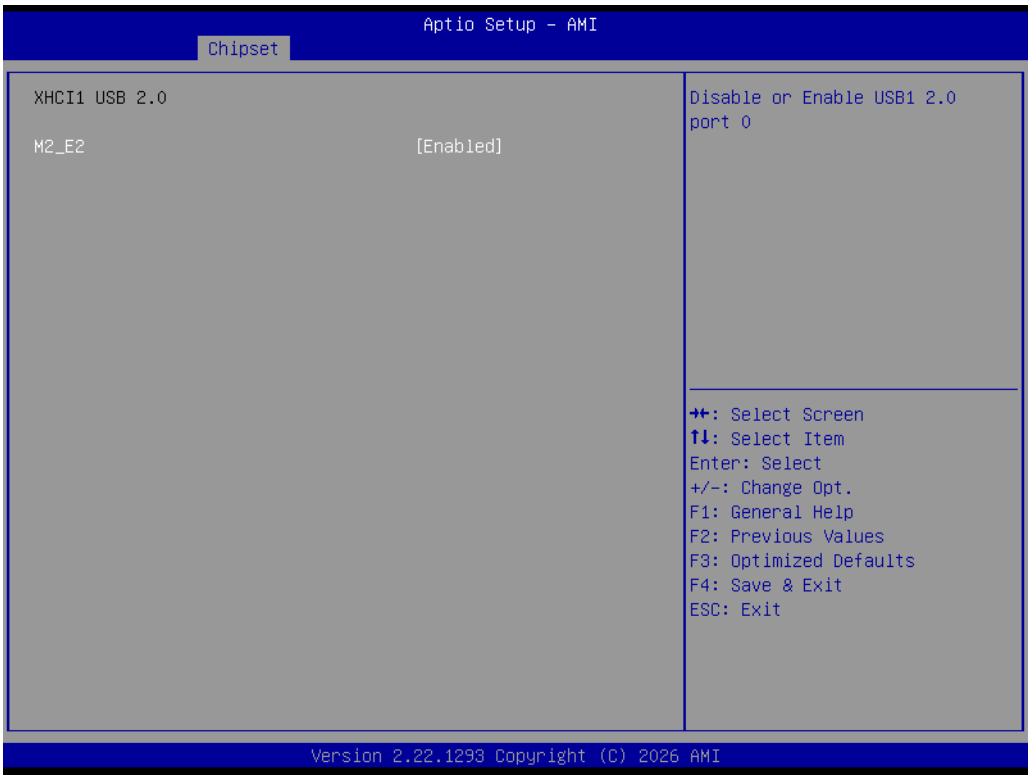
- **Audio Configuration**
  Enables users to manage onboard audio settings, including enabling/disabling NB Azalia and HD Audio.

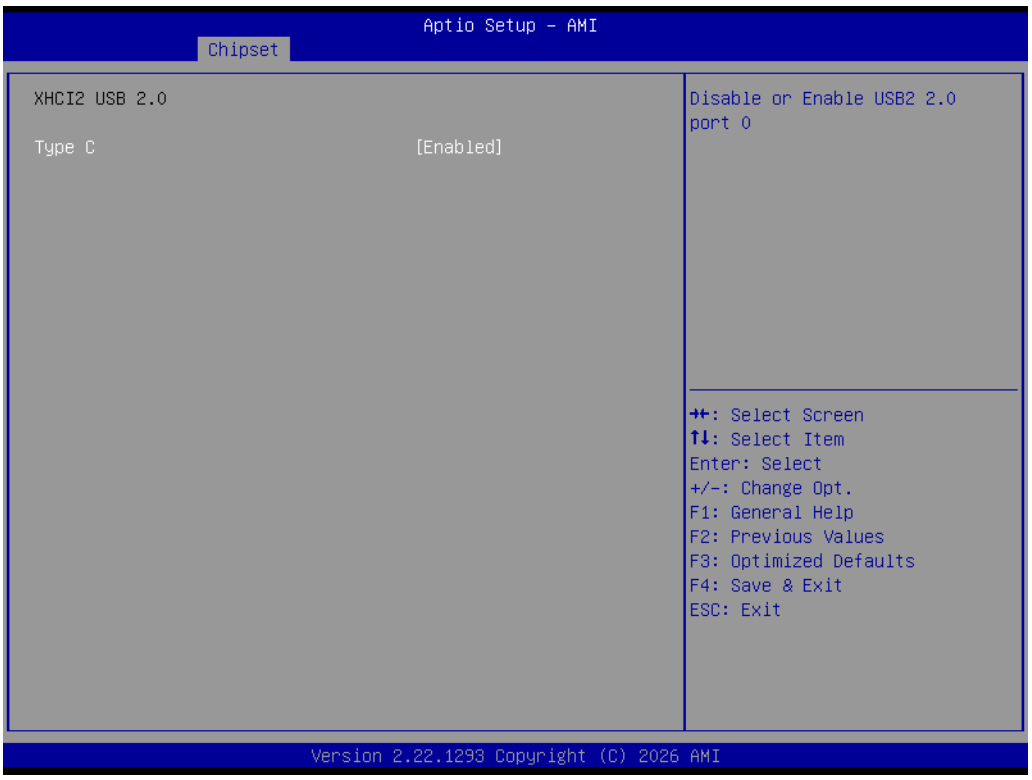


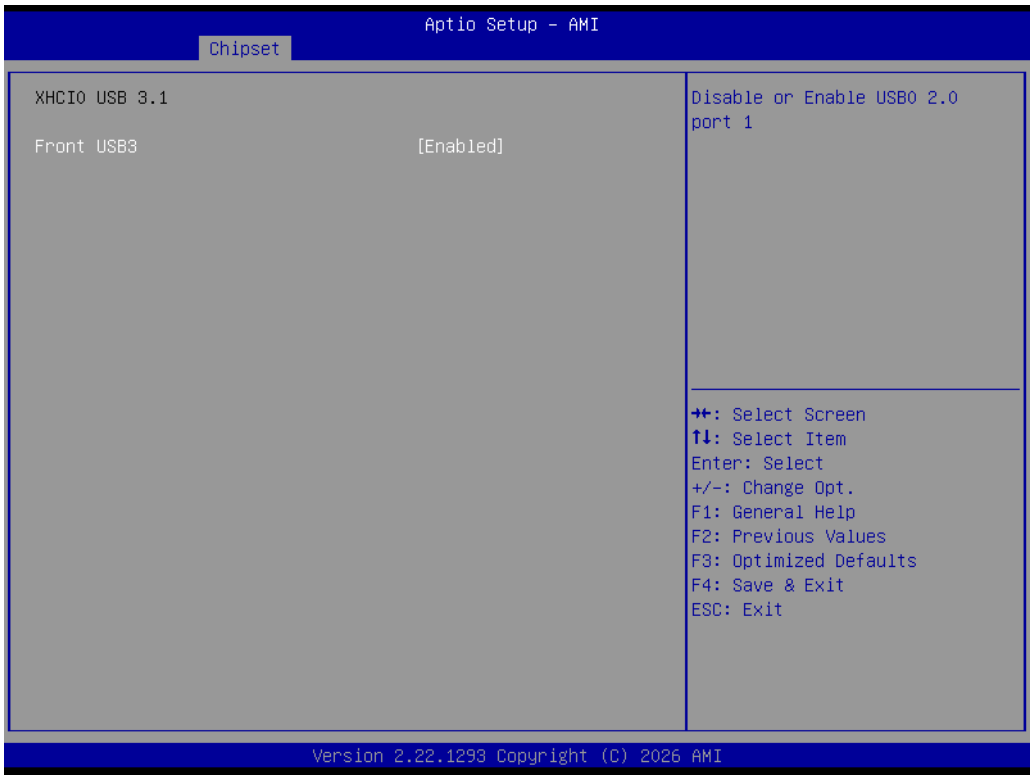
- **FCH Common Options – USB Configuration**
  Allows users to configure USB controller settings, including port enable/disable, USB mode, and power management options.

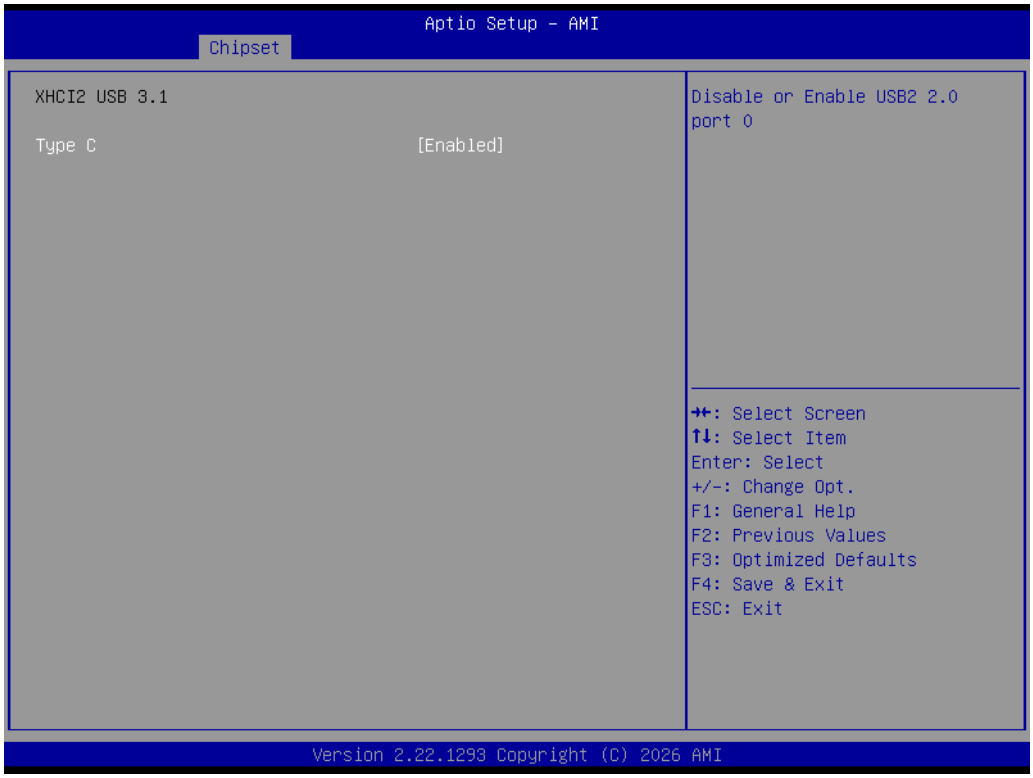

Aptio Setup – AMI
Chipset
USB Configuration Options
XHCI0 USB 2.0
XHCI1 USB 2.0
XHCI2 USB 2.0
XHCI0 USB 3.1
XHCI2 USB 3.1
XHCI0 USB 2.0
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI

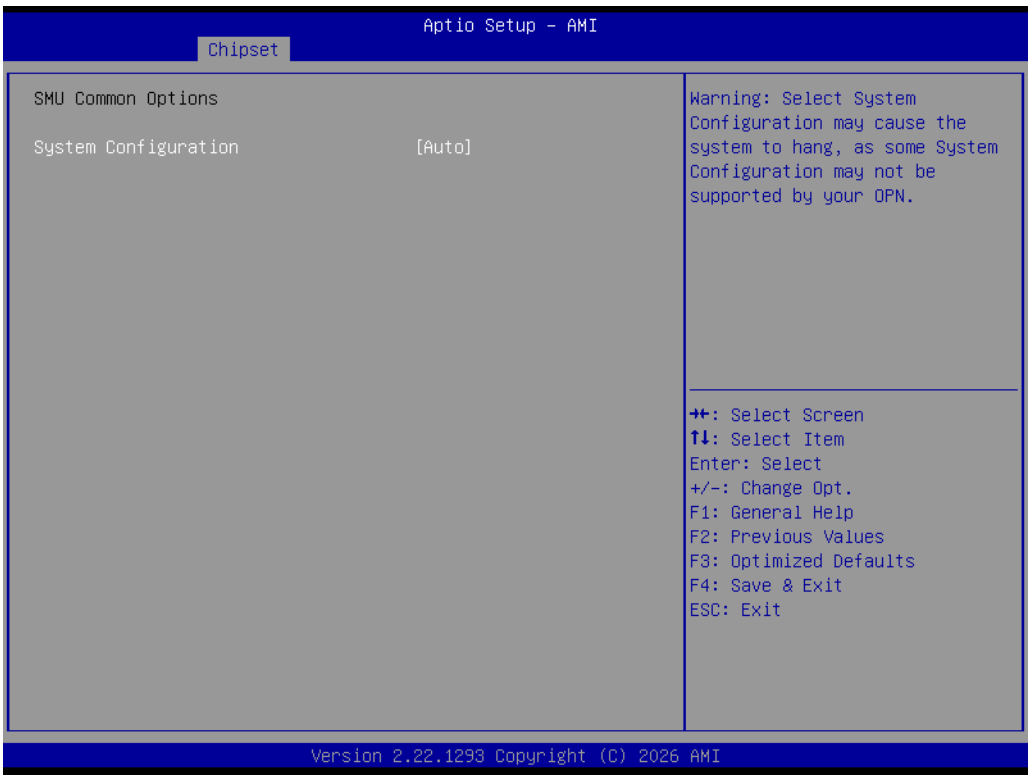

Aptio Setup – AMI
Chipset
XHCI0 USB 2.0
Front USB3 [Enabled]
Front USB2 [Enabled]
Rear USB1 [Enabled]
M2_E1 [Enabled]
Disable or Enable USB0 2.0 port 1
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI


Aptio Setup – AMI
Chipset
XHCI1 USB 2.0
M2_E2 [Enabled]
Disable or Enable USB1 2.0 port 0
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI

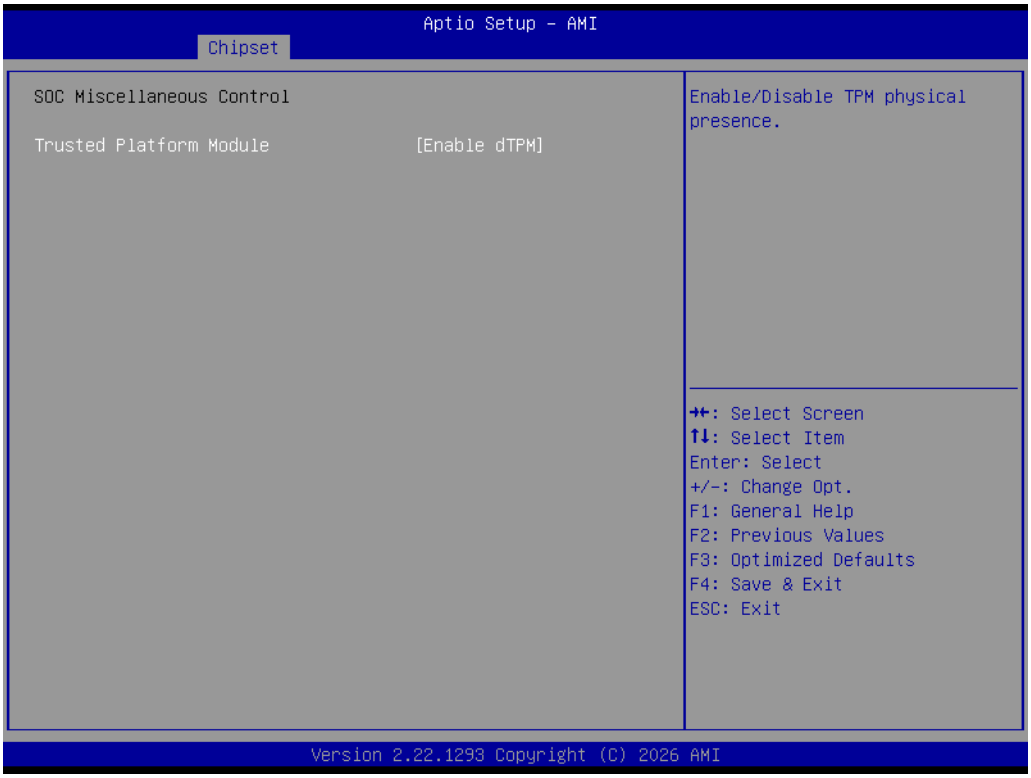

Aptio Setup – AMI
Chipset
XHCI2 USB 2.0
Type C [Enabled]
Disable or Enable USB2 2.0 port 0
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI

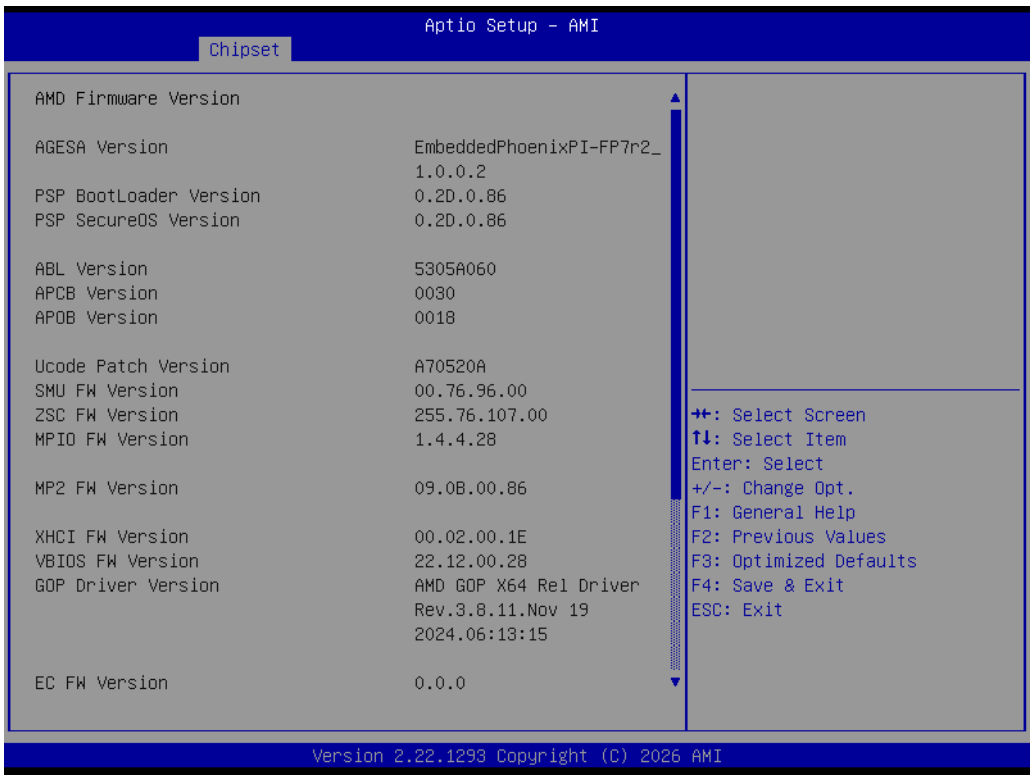

Aptio Setup – AMI
Chipset
XHCI0 USB 3.1
Front USB3 [Enabled]
Disable or Enable USB0 2.0 port 1
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI

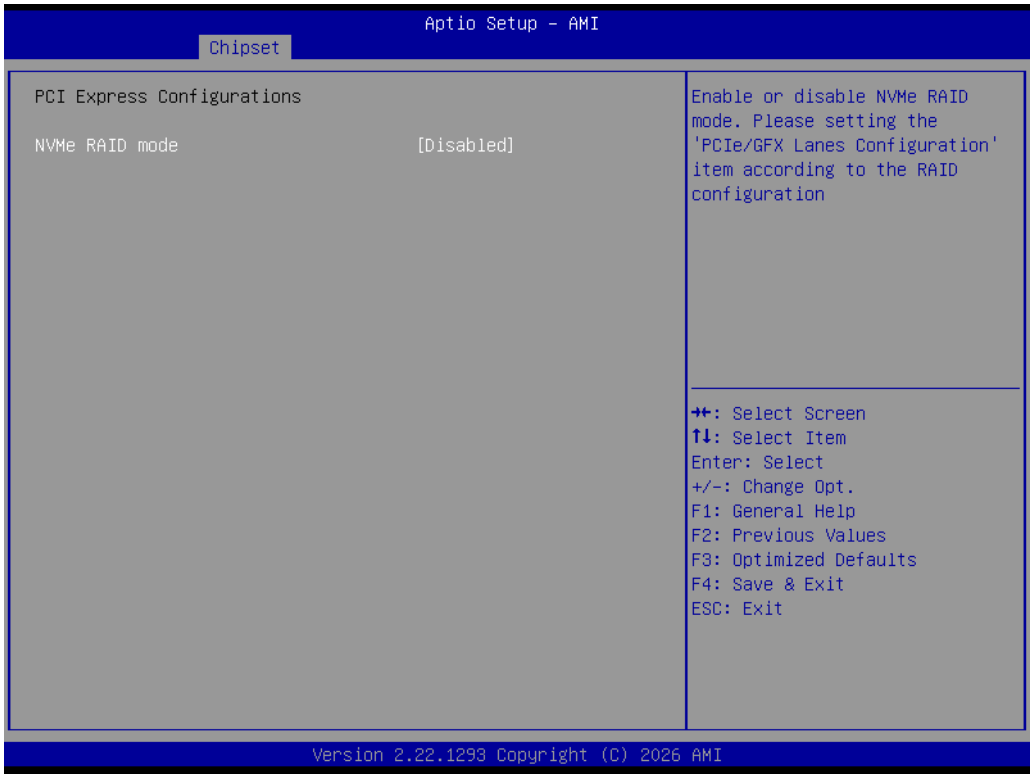

Aptio Setup – AMI
Chipset
XHCI2 USB 3.1
Type C [Enabled]
Disable or Enable USB2 2.0 port 0
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI



- **PCI Express Configuration**
  Enable/disable NVMe RAID mode.



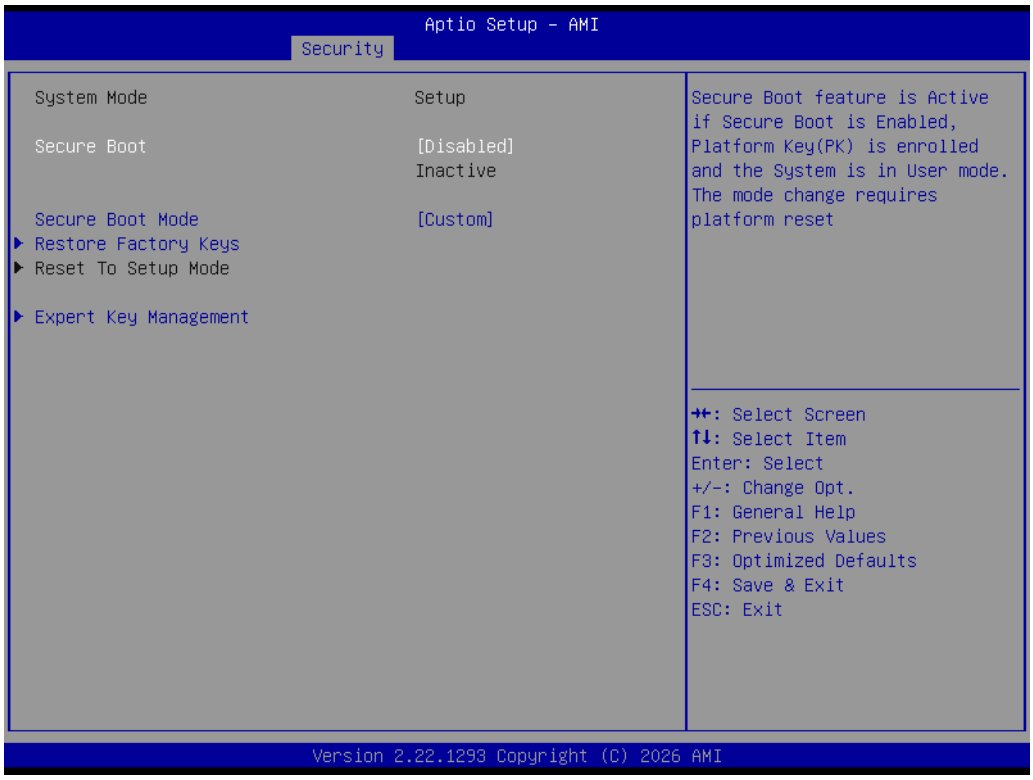

Aptio Setup – AMI
Chipset
AMD Firmware Version
AGESA Version
EmbeddedPhoenixPI-FP7r2_ 1.0.0.2
PSP BootLoader Version
0.2D.0.86
PSP SecureOS Version
0.2D.0.86
ABL Version
5305A060
APCB Version
0030
APOB Version
0018
Ucode Patch Version
A70520A
SMU FW Version
00.76.96.00
ZSC FW Version
255.76.107.00
MPIO FW Version
1.4.4.28
MP2 FW Version
09.0B.00.86
XHCI FW Version
00.02.00.1E
VBIOS FW Version
22.12.00.28
GOP Driver Version
AMD GOP X64 Rel Driver Rev.3.8.11.Nov 19 2024.06:13:15
EC FW Version
0.0.0
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI

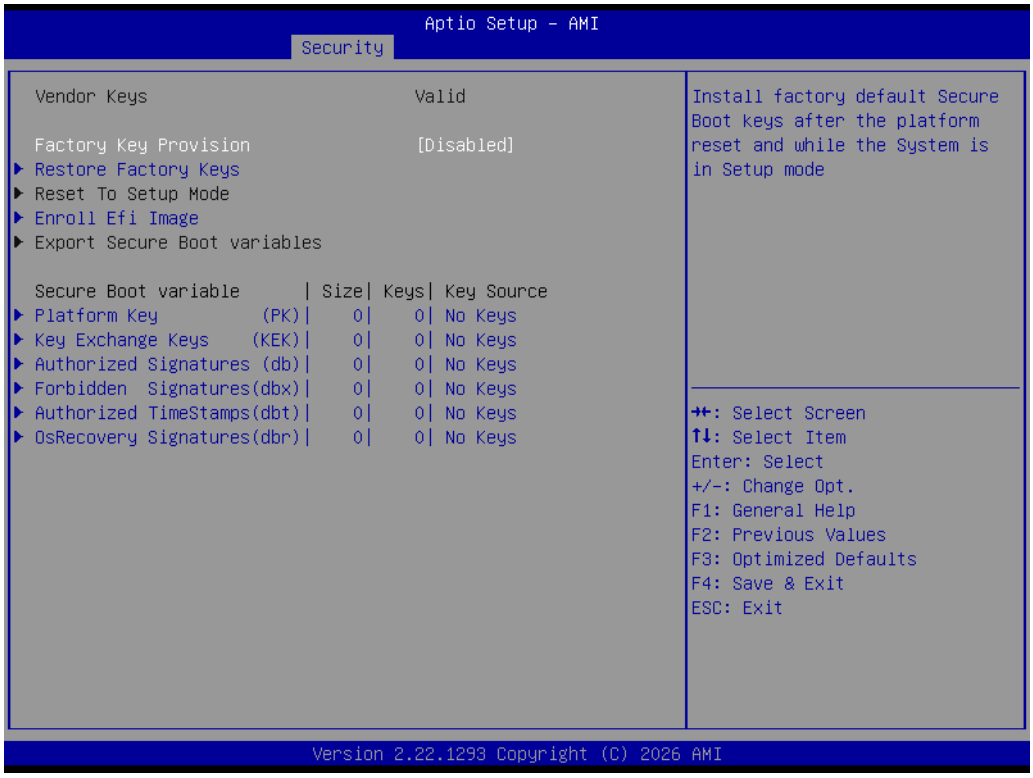

Aptio Setup – AMI
Chipset
PCI Express Configurations
NVMe RAID mode
[Disabled]
Enable or disable NVMe RAID mode. Please setting the 'PCIe/GFX Lanes Configuration' item according to the RAID configuration
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2026 AMI

3.2.4 Security

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

3.2.4.1 Security → Secure Boot

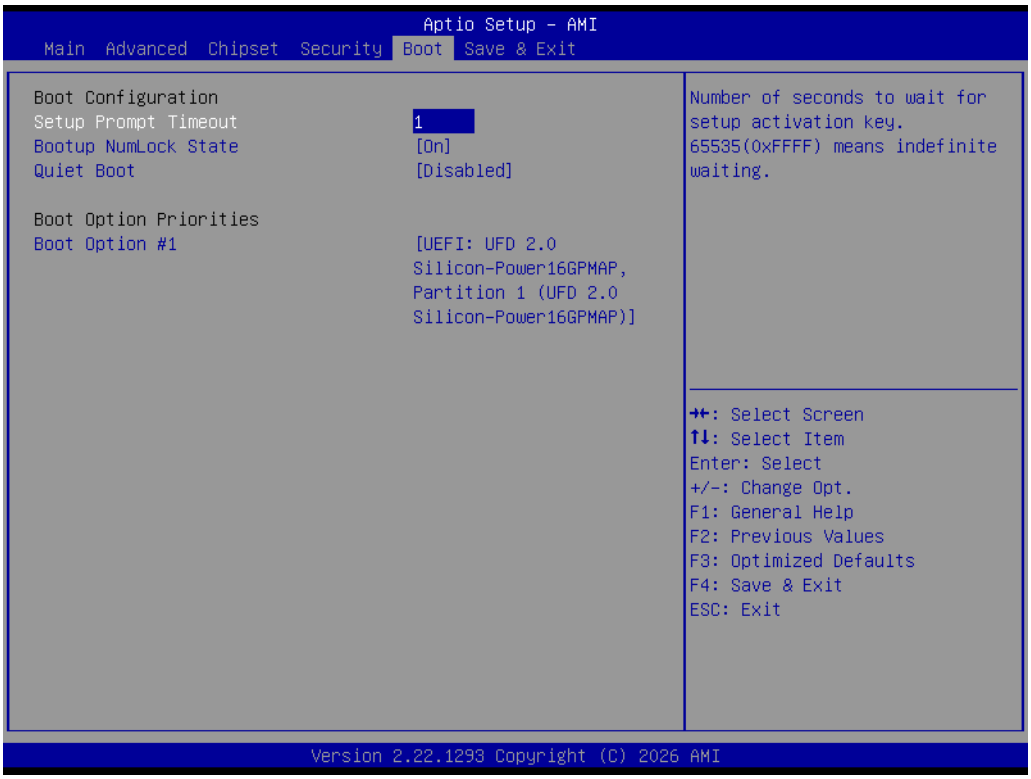




- **Secure Boot**
  Enable or disable Secure Boot.
- **Secure Boot Mode**
  Select Custom or Standard.

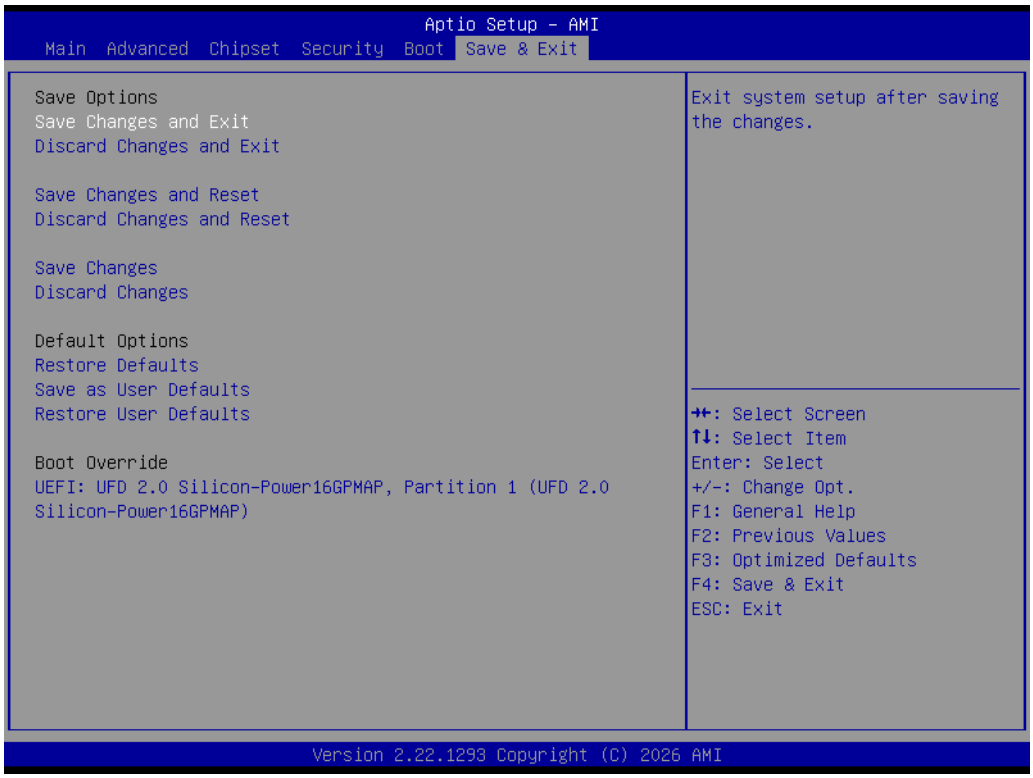
- **Restore Factory Keys**
  Enable or disable Factory Key.
- **Reset to Setup Mode**
  To reset to Setup Mode.
- **Key Management**
  Enable or disable Expert Key Management.

3.2.5 Boot



- **Setup Prompt Timeout**
  Configure Setup Prompt Timeout.
- **Bootup NumLock State**
  Select On or Off.
- **Quiet Boot**
  Enable/disable Quiet Boot.
- **Boot Option #1**
  Set the system boot order.

3.2.6 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.

ADVANTECH

Enabling an Intelligent Planet

www.advantech.com

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