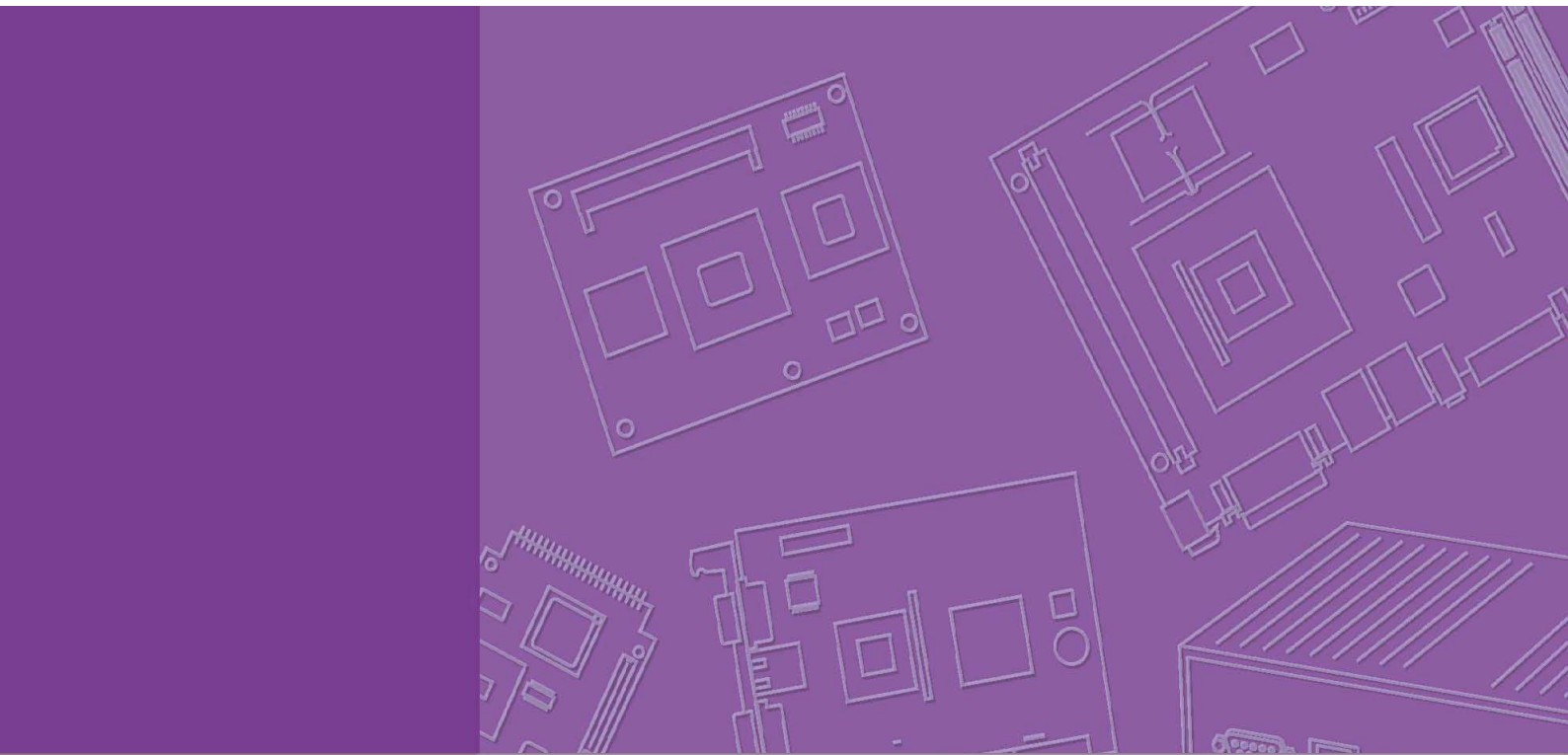




# DS-330

## Fanless Embedded Box Computer

**ADVANTECH**

*Enabling an Intelligent Planet*

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- Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

## Technical Support and Assistance

1. Visit the Advantech website at [www.advantech.com/support](http://www.advantech.com/support) where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- 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, which if not observed, can cause personal injury!



**Caution!** Cautions are included to help you avoid damaging hardware or losing data. e.g. There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.



**Note!** Notes provide optional additional information.



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



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



restricted access area  
area accessible only to skilled persons and instructed persons with the proper authorization

---

CE

UK  
CA

## Avertissements, mises en garde et notes



**Attention!** Les avertissements indiquent des conditions qui, si elles ne sont pas observées, peuvent causer des blessures!



**Mise en garde!** 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.

**Remarque!** Les notes fournissent des informations supplémentaires facultatives.



L'équipement n'est pas adapté à une utilisation dans des endroits où des enfants sont susceptibles d'être présents.



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



zone d'accès restreint

zone accessible uniquement aux personnes qualifiées et aux personnes instruites avec l'autorisation appropriée



## Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. By means of a power cord connected to a socket-outlet with a grounded connection.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any 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 does not work well, or you cannot get it to work according to the user's manual.
  - The equipment has been dropped and damaged.
  - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. Any unverified component may cause unexpected damage. To ensure correct installation, always use the components (e.g., screws) provided in the accessory box
17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
18. Always disconnect the power cord from the chassis before manually handling the hardware. Do not implement connections or configuration changes while the device is powered on. Sudden power surges may damage sensitive electronic components.

19. The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).
20. RESTRICTED ACCESS AREA: The equipment should only be installed in a Restricted Access Area.
21. By means of a power cord connected to a socket-outlet with earthing connection.
22. The product is intended to be supplied by an UL Listed Adapter or DC power source suitable for use at Tma 60°C min. which output meets PS2(or LPS) and is rated: 12-24VDC, 2.5 A min. with mating connector. If need further assistance, please contact Advantech for further information.

## Consignes de sécurité

1. Veuillez lire attentivement ces instructions de sécurité.
2. Veuillez conserver ce manuel de l'utilisateur pour référence ultérieure
3. Veuillez débrancher cet équipement de la prise secteur avant le nettoyage. Utilisez un chiffon humide. Ne pas utiliser de détergent liquide ou pulvérisé pour le nettoyage. Utilisez une feuille ou un chiffon humide pour le nettoyage.
4. Pour les équipements enfichables, la prise de courant doit être à proximité de l'équipement et doit être facilement accessible.
5. S'il vous plaît garder cet équipement de l'humidité.
6. Posez cet équipement sur une surface fiable lors de l'installation. Une chute ou une chute pourrait causer des blessures.
7. Les ouvertures sur le boîtier sont destinées à la convection d'air, protégeant. ainsi l'équipement de la surchauffe. NE COUVREZ PAS LES OUVERTURES.
8. Au moyen d'un cordon d'alimentation connecté à une prise de courant avec mise à la terre.
9. Positionnez le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne placez rien sur le cordon d'alimentation.
10. Tous les avertissements et mises en garde sur l'équipement doivent être notés.
11. Si l'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. Ne jamais verser de liquide dans une ouverture. Cela pourrait provoquer un incendie ou un choc électrique.
13. N'ouvrez jamais l'équipement. Pour des raisons de sécurité, seul le personnel de maintenance qualifié doit ouvrir l'équipement.
14. Si l'une des situations suivantes se produit, faites vérifier l'équipement par le personnel de service:
  1. Le cordon d'alimentation ou la fiche est endommagé
  2. Un liquide a pénétré dans l'équipement.
  3. L'équipement a été exposé à l'humidité.
  4. L'équipement ne fonctionne pas bien ou vous ne pouvez pas le faire fonctionner conformément au manuel d'utilisation.
  5. L'équipement est tombé et a été endommagé.
  6. L'équipement présente des signes évidents de rupture.
15. 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. Tout composant non vérifié peut causer des dommages inattendus. Pour garantir une installation correcte, veuillez toujours utiliser les composants (ex. Vis) fournis avec la boîte d'accessoires.
17. ATTENTION: 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.
18. 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).
19. ZONE D'ACCÈS RESTRICTED: L'équipement ne doit être installé que dans une zone d'accès restreint.

20. 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.
21. Au moyen d'un cordon d'alimentation relié à une prise de courant avec mise à la terre.
22. Le produit est destiné à être alimenté par un adaptateur répertorié UL ou une source d'alimentation CC adaptée à une utilisation à Tma 40°C min. dont la sortie est conforme à PS2 (ou LPS) et est évaluée :  
19 Vdc, 3,42 A min. avec connecteur correspondant. Si vous avez besoin d'aide supplémentaire, veuillez contacter Advantech pour plus d'informations.

## Packing List

Before installation, please ensure the following items are included and in good condition. If any items does not accord with the list, contact your dealer immediately.

- 1 x DS-330 Unit
- 1 x 19V Adapter
- 5 x Thermal PAD for CPU/SSD/WIFI
- 2 x Thermal PAD for Memory

## DS-330 Series Part Number:

| Part Number    | Description                 |
|----------------|-----------------------------|
| DS-3300F-U0A1E | DS-330, x7433RE, Barebones  |
| DS-3300F-U1A1E | DS-330, N97, Barebones      |
| DS-3300F-U1A2E | DS-330, N97, TPM, Barebones |
| DS-3300F-U2A1E | DS-330, i3 N305, Barebones  |

# Contents

|                                                                                      |           |
|--------------------------------------------------------------------------------------|-----------|
| Contents.....                                                                        | 13        |
| <b>1.1 Introduction .....</b>                                                        | <b>16</b> |
| <b>1.2 Product Features .....</b>                                                    | <b>16</b> |
| <b>1.3 Hardware &amp; Software Specifications .....</b>                              | <b>17</b> |
| <b>1.4 Mechanical Specification .....</b>                                            | <b>18</b> |
| <b>1.5 Power Requirements .....</b>                                                  | <b>19</b> |
| <b>1.6 Environmental Specifications .....</b>                                        | <b>19</b> |
| <b>2.1 Introduction .....</b>                                                        | <b>21</b> |
| 2.1.1 LED .....                                                                      | 21        |
| 2.1.2 Power Button .....                                                             | 21        |
| 2.1.3 HDMI Connector .....                                                           | 21        |
| 2.1.4 USB-C Connector .....                                                          | 22        |
| 2.1.5 USB 3.2 - Gen1 connector .....                                                 | 22        |
| 2.1.6 Ethernet Connector (2.5GbE) .....                                              | 23        |
| 2.1.7 COM1/COM2 Connector .....                                                      | 23        |
| 2.1.8 RJ12 Connector .....                                                           | 24        |
| 2.1.9 Audio Connector .....                                                          | 24        |
| 2.1.10 EDID Reset Button .....                                                       | 25        |
| 2.1.11 WiFi Antenna .....                                                            | 25        |
| <b>2.2 Jumpers.....</b>                                                              | <b>25</b> |
| 2.2.1 Jumper List.....                                                               | 25        |
| 2.2.2 Jumper Settings .....                                                          | 26        |
| 2.2.2.1 Cash drawer power (JCASH1) .....                                             | 26        |
| 2.2.2.2 AT/ATX (PSON1).....                                                          | 26        |
| 2.2.2.2 Clear CMOS (JCMOS1) .....                                                    | 27        |
| 2.2.2.3 COM Port Power (RI_VDD1) .....                                               | 27        |
| 2.2.2.3 COM Port Power (RI_VDD2) .....                                               | 27        |
| <b>2.3 Connectors.....</b>                                                           | <b>28</b> |
| 2.3.1 DS-330 External I/O Locations .....                                            | 28        |
| <b>2.4 Installation .....</b>                                                        | <b>28</b> |
| 2.4.1 Exploded View .....                                                            | 28        |
| 2.4.2 Memory and M.2 M-key/E-key Installation .....                                  | 29        |
| 2.4.3 Mounting Installation .....                                                    | 30        |
| <b>3.1 BIOS Introduction .....</b>                                                   | <b>33</b> |
| <b>3.2 Entering the Setup .....</b>                                                  | <b>34</b> |
| 3.2.1 Main setup.....                                                                | 34        |
| 3.2.2 Advanced BIOS Features Setup.....                                              | 35        |
| 3.2.3 Advanced ➔ CPU Configuration .....                                             | 36        |
| 3.2.4 Advanced ➔ Power & Performance .....                                           | 37        |
| 3.2.5 Advanced ➔ PCH-FW Configuration .....                                          | 40        |
| 3.2.6 Advanced ➔ Trusted Computing .....                                             | 43        |
| 3.2.7 Advanced ➔ ACPI Settings .....                                                 | 44        |
| 3.2.8 Advanced ➔ IT5121 HW Monitor .....                                             | 45        |
| 3.2.9 Advanced ➔ IT5121 Super IO Configuration .....                                 | 46        |
| 3.2.9.1 Advanced ➔ IT5121 Super IO Configuration ➔ Serial Port 1 Configuration ..... | 47        |
| 3.2.10 Advanced ➔ EDID Configuration .....                                           | 48        |

|                                                                                                        |    |
|--------------------------------------------------------------------------------------------------------|----|
| 3.2.11 Advanced ➔ S5 RTC Wake Settings.....                                                            | 49 |
| 3.2.12 Advanced ➔ Serial Port Console Redirection .....                                                | 50 |
| 3.2.13 Advanced ➔ USB Configuration.....                                                               | 51 |
| 3.2.14 Advanced ➔ Network Stack Configuration.....                                                     | 52 |
| 3.2.15 Advanced ➔ NVMe Configuration .....                                                             | 53 |
| 3.3 Chipset .....                                                                                      | 54 |
| 3.3.1 Chipset ➔ System Agent (SA) Configuration.....                                                   | 55 |
| 3.3.1.1 Chipset ➔ System Agent (SA) Configuration ➔ Memory Configuration .....                         | 56 |
| 3.3.1.2 Chipset ➔ System Agent (SA) Configuration ➔ TCSS Configuration.....                            | 57 |
| 3.3.2 Chipset ➔ PCH-IO Configuration .....                                                             | 58 |
| 3.3.2.1 Chipset ➔ PCH-IO Configuration ➔ PCI Express Configuration .....                               | 59 |
| 3.3.2.2 Chipset ➔ PCH-IO Configuration ➔ PCI Express Configuration ➔ On board LAN1<br>Contorller ..... | 60 |
| 3.3.2.3 Chipset ➔ PCH-IO Configuration ➔ PCI Express Configuration ➔ PCI Express Root<br>Port 9 .....  | 61 |
| 3.3.2.4 Chipset ➔ PCH-IO Configuration ➔ PCI Express Configuration ➔ PCI Express Root<br>Port 11 ..... | 62 |
| 3.3.2.5 Chipset ➔ PCH-IO Configuration ➔ PCI Express Configuration ➔ Onboard LAN2<br>Controller .....  | 63 |
| 3.3.3.1 Chipset ➔ PCH-IO Configuration ➔ SATA Configuration.....                                       | 64 |
| 3.3.4.1 Chipset ➔ PCH-IO Configuration ➔ USB Configuration.....                                        | 65 |
| 3.3.5.1 Chipset ➔ PCH-IO Configuration ➔ Security Configuration .....                                  | 66 |
| 3.3.6.1 Chipset ➔ PCH-IO Configuration ➔ HD Audio Configuration .....                                  | 67 |
| 3.4 Security .....                                                                                     | 68 |
| 3.4.1 Security ➔ Secure Boot .....                                                                     | 69 |
| 3.4.2 Security ➔ Expert Key Management .....                                                           | 70 |
| 3.5 Boot.....                                                                                          | 71 |
| 3.6 Save & Exit .....                                                                                  | 72 |

# Chapter 1

## General Introduction

# 1.1 Introduction

The DS-330 is a compact, fanless box pc powered by Intel® Atom® x7433RE, Processor N97 and Core™ i3-N305 processors. Triple Display, Compact Size and Versatile I/O Designed for outdoor environments, the DS-330 supports a wide operating temperature range of -20 to 60°C and a 12-24V wide voltage input. Despite its compact size, the DS-330 offers comprehensive I/O options. Including triple independent display outputs (HDMI 2.1 TMDS and USB-C), two 2.5GbE ports, four USB 3.2 Gen1 and one USB-C ports, two COM (RS-232 – with DB9) ports with 5V/12V powered and one RJ12 for cash drawer. Additionally, internal expansion includes M.2 M Key 2242 and E Key 2230.

## 1.2 Product Features

### 1.2.1 General

- **CPU:**
  - Intel® Atom® x7433RE
  - Intel® Processor N97
  - Intel® Core™ i3-N305
- **BIOS:** AMI 256 Mbit Flash BIOS
- **System Memory:**
  - Single channel DDR5 4800 MHz 262 pin SO-DIMM
  - Max capacity 16GB
- **Serial Port:** 2 x RS-232 (DB9 with 5V/12V powered), 1 x RJ12 for cash drawer
- **USB Port:** USB 3.2 Gen1 x 4 + USB-C x 1
- **Audio:** 3.5mm Audio Jack for jack sense (Line-in/out or Mic-in)
- **Internal Expansion:**
  - 1 x M.2 M-key 2242 (SATA/PCIe) for Storage
  - 1 x M.2 E-key 2230 for WiFi, can be integrated with WiFi and Bluetooth combo module

### 1.2.2 Display

- **Controller:** Intel® UHD chipset
- **Resolution:**
  - HDMI 1 and 2 support up to 4K UHD resolution (HDMI 1 and 2 support HW EDID)
  - USB-C support up to 4K UHD Resolution
  - Triple Display: Support 2 x 4K UHD and 1 x FHD Resolution

### 1.2.3 Ethernet

- **Chipset:**
  - LAN1 / LAN2 Intel® I226, 2.5GBE
- **LAN1 / LAN2 Speed :** 10/100/1000/2500 Mbps
- **Interface :** 2 x RJ45

## 1.3 Hardware & Software Specifications

- **CPU:** Intel® Atom® x7433RE, Processor N97 and Core™ i3-N305
- **System Chipset:** Built-in CPU
- **Graphic chipset:** Integrated graphics built in Processor
- **BIOS AMI uEFI 256 Mbit**
- **System Memory:** Single channel DDR5 4800 MHz 262 pin SO-DIMM
- **Storage:** M.2 2242 M Key (SATA/PCIe)
- **SUSI:** SUSI is Advantech unique hardware management that provided in standard DS-330 Win11 / Win10 IoT image. The function below are included.
  - Watchdog Timer
  - Hardware Monitor
  - System information
- **IO Interfaces**
  - 2 x HDMI 2.1 TMDS
  - 1 x USB-C
  - 4 x USB 3.2 Gen1
  - 2 x RJ45
  - 2 x COM RS-232, DB9 with 5V/12V powered
  - 1 x RJ12
  - 1 x Audio Jack
- **Ethernet Chipset:**
  - Speed: 10/100/1000/2500 Mbps
  - Interface: 2 x RJ-45 jacks with LED
  - Standard: IEEE 802.3z/ab (1000 Base-T) or IEEE 802.3u 100 Base-T and IEEE 802.3bz 2.5GBASE-T compliant
- **Resolution:**
  - HDMI 2.1 TMDS x 2, @3840x2160 60Hz
  - USB-C x 1 @3840x2160 60Hz
- **Expansion**
  - M.2 2242 M Key x 1 for Storage (SATA/PCIe)
  - M.2 2230 E Key x 1 for WIFI/Bluetooth Module
- **Operating System:**
  - Windows 11 IoT LTSC, Windows 10 IoT LTSC, Linux

## 1.4 Mechanical Specification

### 1.4.1 Dimension

180 x 150 x 35 mm (L x W x H)

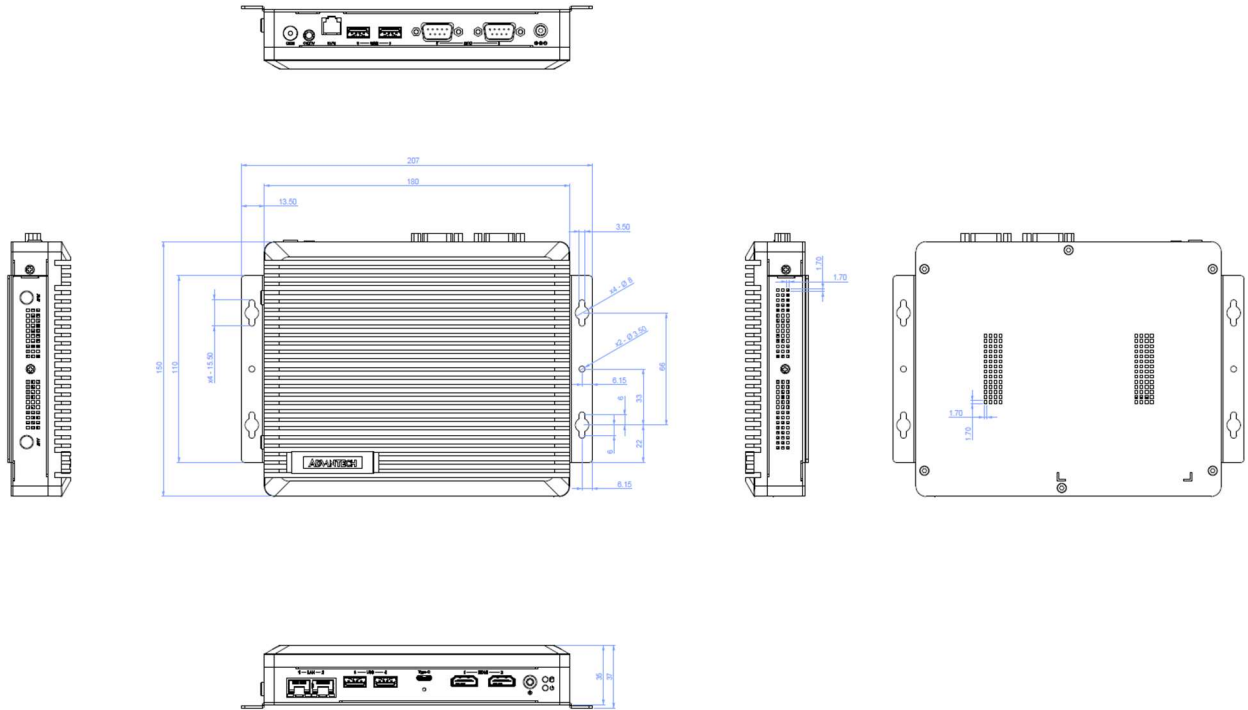


Figure1.1 : Dimension

### 1.4.2 Weight

1.27 kg (Include wall mount)

## 1.5 Power Requirements

### 1.5.1 System Power

Power Input : DC IN 12-24V

### 1.5.2 RTC Battery

Lithium 3V/620mAh 45mm 2P CR2450

## 1.6 Environmental Specifications

### 1.6.1 Operating Temperature

-20°C ~ 60°C @0.7m/s air flow (0° C - 40°C for Safety Certification)

### 1.6.2 Relative Humidity

95% @ 40°C ( Non Condensing )

### 1.6.3 Storage Temperature

-40 ~ 85°C (-40 ~185°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 Safety Certification

UL, CB, CCC, BSMI, UKCA

### 1.6.7 EMC Certification

CE/FCC Class B, CCC, BSMI

# Chapter 2

## Hardware configuration

This chapter introduces external IO  
and the installation of FDJ DS-330  
series Hardware

## 2.1 Introduction

### 2.1.1 LED

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



Figure2.1 : Power

Below LED indicator means SSD status when it shows yellow.



Figure2.2 : LED - SSD

### 2.1.2 Power Button

Push below button to power on/off DS-330.



Figure2.3 : Power ON/OFF Button

### 2.1.3 HDMI Connector

DS-330 offers one integrated 19-pin receptacle connector HDMI 2.1 TMDS interfaces. The HDMI link supports resolutions up to 3840 x 2160 @ 60 Hz.

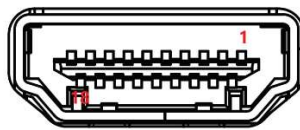


Figure 2.4: HDMI Connector

**Table 2.1 : HDMI Connector Pin Definition**

| 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   | TMDS Data 0-       |
| 10  | TMDS Clock+        |

|    |                          |
|----|--------------------------|
| 11 | TMDS Clock shield        |
| 12 | TMDS Clock-              |
| 13 | CEC (by project support) |
| 14 | Reserved                 |
| 15 | SCL                      |
| 16 | SDA                      |
| 17 | DDC/CEC Ground           |
| 18 | +5V                      |
| 19 | Hot Plug Detect          |

## 2.1.4 USB-C Connector

DS-330 support 1 x USB-C. USB-C (5V/3A) : Support 1 x DP 1.4a 4K @60Hz + 1 x USB 3.2 Gen1x1. Please refer to Table 2.2 for its pin assignments.

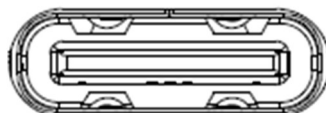


Figure 2.5 : USB-C connector

**Table 2.2 : USB-C Connector Pin Assignments**

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1   | GND    | 13  | GND    |
| 2   | SSTXp1 | 14  | SSRXp1 |
| 3   | SSTXn1 | 15  | SSRXn1 |
| 4   | VBUS   | 16  | VBUS   |
| 5   | CC1    | 17  | SBU2   |
| 6   | DP1    | 18  | DN2    |
| 7   | DN1    | 19  | DP2    |
| 8   | SBU1   | 20  | CC2    |
| 9   | VBUS   | 21  | VBUS   |
| 10  | SSRXn2 | 22  | SSTXn2 |
| 11  | SSRXp2 | 23  | SSTXp2 |
| 12  | GND    | 24  | GND    |

## 2.1.5 USB 3.2 - Gen1 connector

The DS-330 supports 4 x USB 3.2. The USB interfaces comply with USB UHCI, Rev. 3.0 standards. Please refer to Table 2.3 for pin assignments.

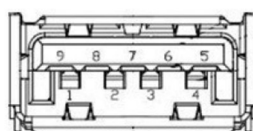


Figure 2.6 : USB 3.2 connector

**Table 2.3 : USB 3.2 Gen1 Connector Pin Assignments**

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

## 2.1.6 Ethernet Connector (2.5GbE)

The DS-330 is equipped with up to 2 x Ethernet controllers that are fully compliant with IEEE 802.3 10/100/1000/2500 Mbps CSMA/CD standards. These Ethernet ports provide a standard RJ-45 jack connector with LED indicators on the front side to show Active/Link status (Green LED on the right) and Speed status (Yellow/Green LED on the left).

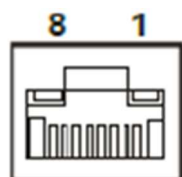


Figure 2.7 : RJ45 connector

**Table 2.4: Ethernet Connector Pin Assignment**

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

| 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                                            |
| 10/100Mbps                      | Always off                                         |
| 1 Gbps                          | Orange                                             |
| 2.5 Gbps                        | Green                                              |

## 2.1.7 COM1/COM2 Connector

DS-330 provides two 9-pin COM connector, which support pure RS232 serial communication interface ports. The default setting is 0V, if you want to use 5V or 12V powered COM, you can adjust jumper to change settings.

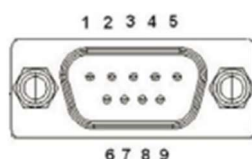


Figure 2.8 : COM connector

**Table 2.5: COM Connector Pin Definition**

| Pin | RS-232                       |
|-----|------------------------------|
| 1   | DCD                          |
| 2   | RxD                          |
| 3   | TxD                          |
| 4   | DTR                          |
| 5   | GND                          |
| 6   | DSR                          |
| 7   | RTS                          |
| 8   | CTS                          |
| 9   | RI (0V/5V/12V jumper option) |

### 2.1.8 RJ12 Connector

RJ12 is a 6-pin telephone-style connector commonly used to connect cash drawers to point-of-sale (POS) systems. It allows the POS system to send signals to automatically open the cash drawer. Standardize all DCIN adapters (12V / 19V / 24V) to support 12V mode to ensure simultaneous operation of two drawers. This approach also allows omitting the protection IC for cost savings.

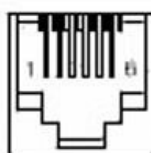


Figure 2.9 : RJ12 connector

**Table 2.6: RJ12 Connector Pin Assignment**

| Pin | Signal Name                |
|-----|----------------------------|
| 1   | GND                        |
| 2   | Drawer kick-out signal 1   |
| 3   | Drawer open/close signal   |
| 4   | +V12                       |
| 5   | Drawer open/close signal 2 |
| 6   | GND                        |

### 2.1.9 Audio Connector

The DS-330 features 1 phone jack connectors that support stereo Line-Out and Mic-In audio ports. The audio chip is controlled by ALC888S and is compliant with the Azalea standard.



Figure 2.10 : Audio connector

### 2.1.10 EDID Reset Button

Under normal operation, the EDID button LED remains off. To initiate an EDID reset, press and hold the EDID button for 3 to 5 seconds. During this interval, the LED will blink green, indicating that the reset process is in progress. Once the LED stops blinking and turns off, the EDID reset procedure is complete. The EDID reset function is only supported on the HDMI port. For the EDID function SOP, please refer to the official website documents.



Figure 2.11 : EDID Reset Button

### 2.1.11 WiFi Antenna

DS-330 provides two WiFi antenna connectors to connect with SMA antenna.



**ANT**

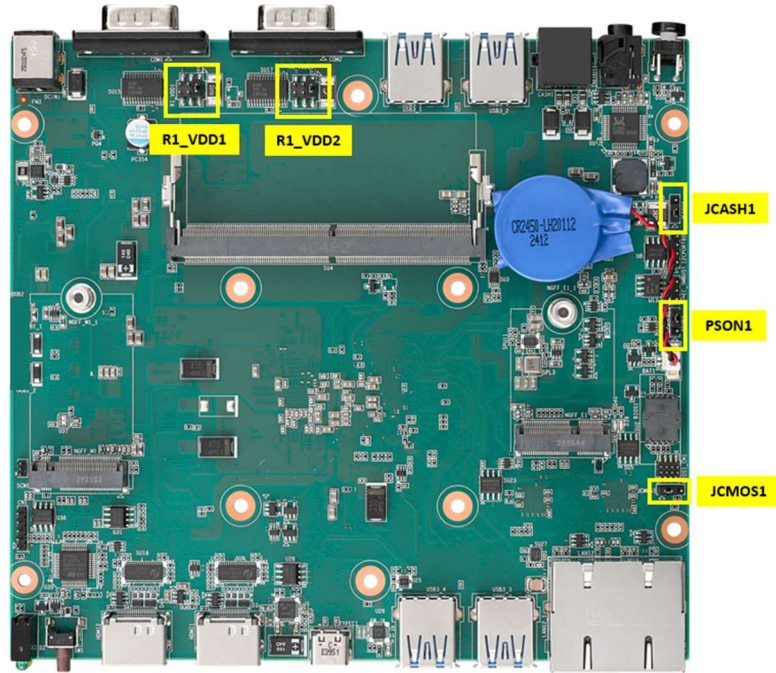
Figure 2.12 : SMA connector

## 2.2 Jumpers

The DS-330 has a number of jumpers that allow you to configure your system to suit your application. The table below lists the functions of the various jumpers.

### 2.2.1 Jumper List

| Table 2.7 : Jumper List |                   |
|-------------------------|-------------------|
| JCASH1                  | Cash drawer power |
| PSON1                   | AT/ATX            |
| JCMOS1                  | Clear CMOS        |
| RI_VDD1                 | COM port power    |
| RI_VDD2                 | COM port power    |

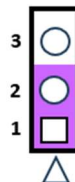


## 2.2.2 Jumper Settings

### 2.2.2.1 Cash drawer power (JCASH1)

**Table 2.8 : JCASH1 Cash drawer power**

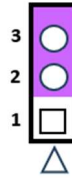
| Description | Cash drawer power |
|-------------|-------------------|
| Setting     | Function          |
| (1-2)       | Cash drawer 12V   |
| (2-3)       | N/A               |



### 2.2.2.2 AT/ATX (PSON1)

**Table 2.9 : PSON1 Auto Power On Settings**

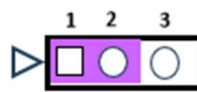
| Description | Cash drawer power        |
|-------------|--------------------------|
| Setting     | Function                 |
| (1-2)       | Boot up by AT            |
| (2-3)       | Boot up by ATX (Default) |



### 2.2.2.2 Clear CMOS (JCMOS1)

**Table 2.10 : JCMOS1 Clear CMOS Settings**

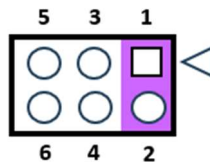
| Description | PIN HEADER 1X3P 2.00mm 180D(M) DIP |
|-------------|------------------------------------|
| Setting     | Function                           |
| (1-2)       | Normal Operation (Default)         |
| (2-3)       | Clear CMOS                         |



### 2.2.2.3 COM Port Power (RI\_VDD1)

**Table 2.11 : RI\_VDD1 COM port power Setting**

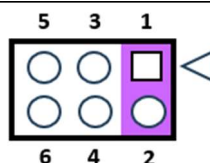
| Description | PIN HEADER 1X3P 2.00mm 180D(M) DIP |
|-------------|------------------------------------|
| Setting     | Function                           |
| (1-2)       | Normal Operation (Default)         |
| (3-4)       | COM port 5V                        |
| (5-6)       | COM port 12V                       |



### 2.2.2.3 COM Port Power (RI\_VDD2)

**Table 2.12 : RI\_VDD1 COM port power Setting**

| Description | PIN HEADER 1X3P 2.00mm 180D(M) DIP |
|-------------|------------------------------------|
| Setting     | Function                           |
| (1-2)       | Normal Operation (Default)         |
| (3-4)       | COM port 5V                        |
| (5-6)       | COM port 12V                       |



## 2.3 Connectors

### 2.3.1 DS-330 External I/O Locations

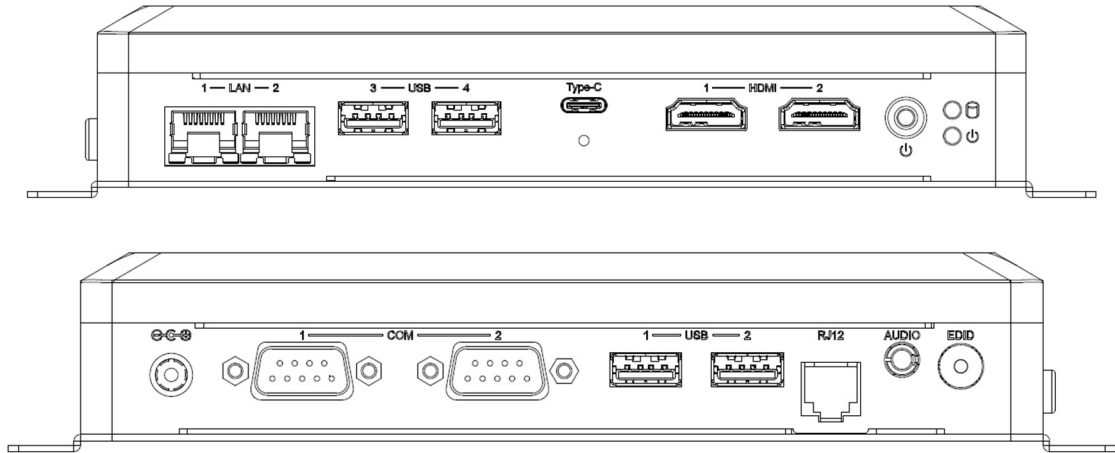


Figure2.1 : DS-330 Front and Rear I/O Connector Diagrams

## 2.4 Installation

### 2.4.1 Exploded View

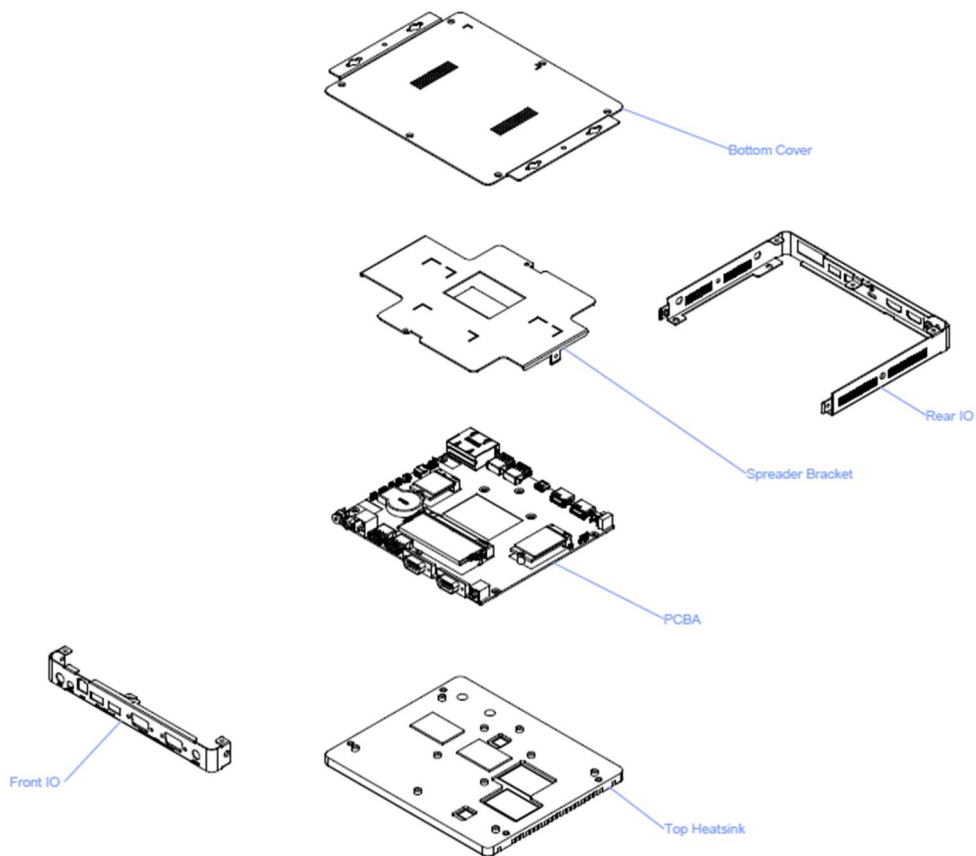
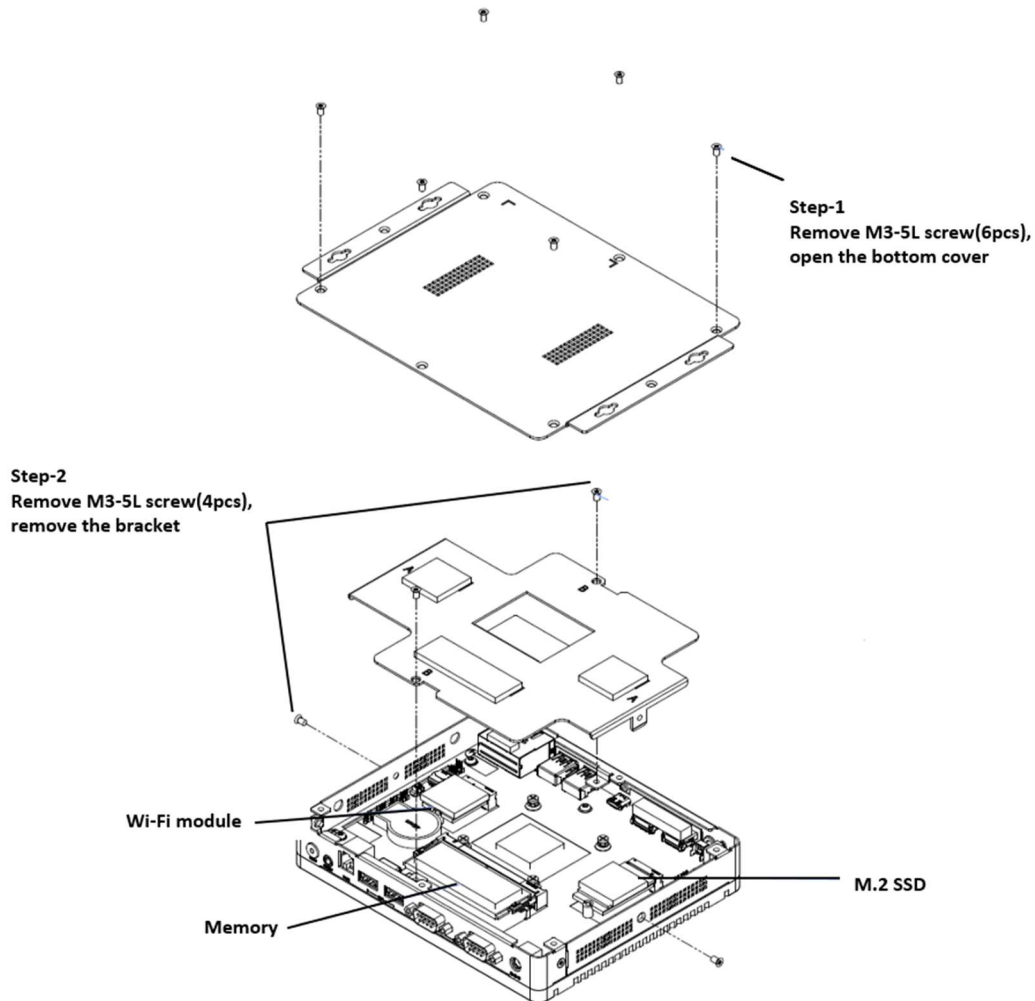


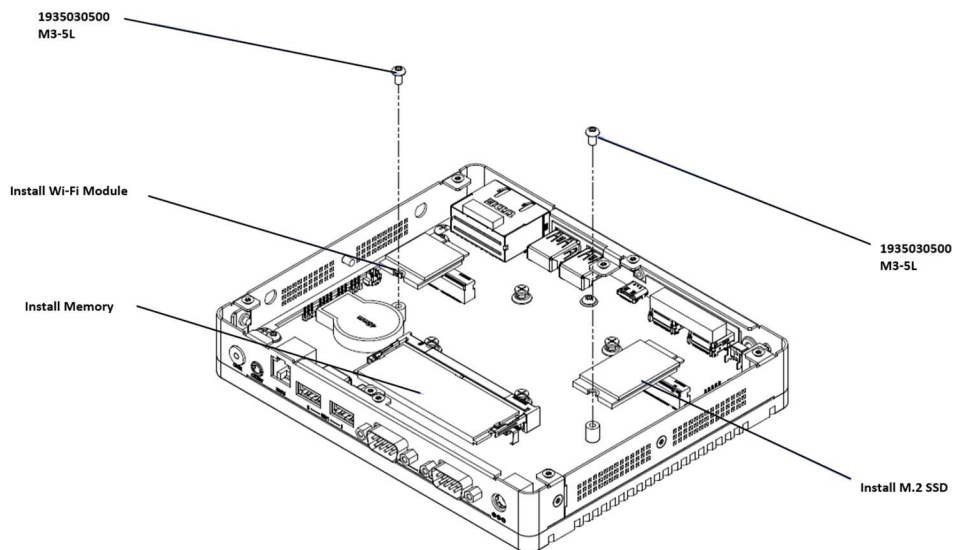
Figure2.2 : DS-330 system exploded view

## 2.4.2 Memory and M.2 M-key/E-key Installation

- Loosen the 6 screws affixing screws and remove the bottom cover.
- Loosen the 4 screws affixing screws and remove the spreader bracket.



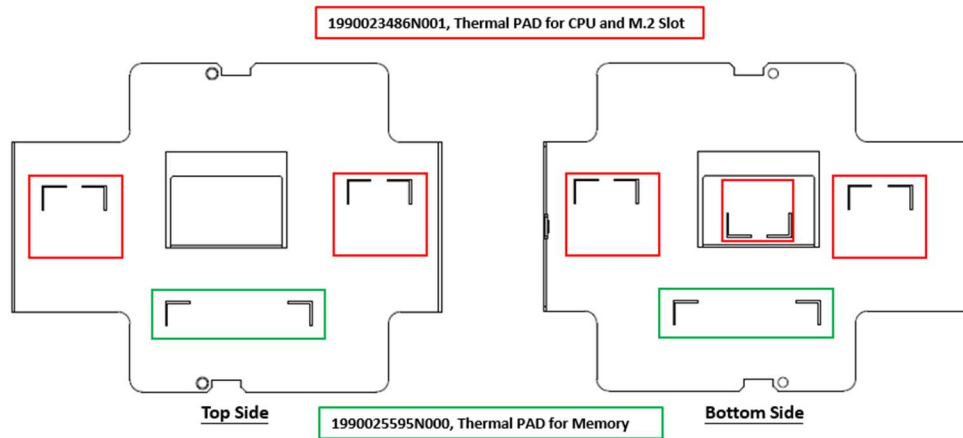
- Install memory
- Install M.2 M-Key 2242 module (with M3-5L screw PN:1935030500 and thermal pad)
- Install M.2 E-Key 2230 module (with M3-5L screw PN:1935030500 and thermal pad)



- The accessory package includes CPU, memory and M.2 thermal pads.

- Memory Thermal PAD, PN: 1990025595N000 (Green Frame)
- CPU and M.2 Thermal PAD, PN: 1990023486N001 (Red Frame)

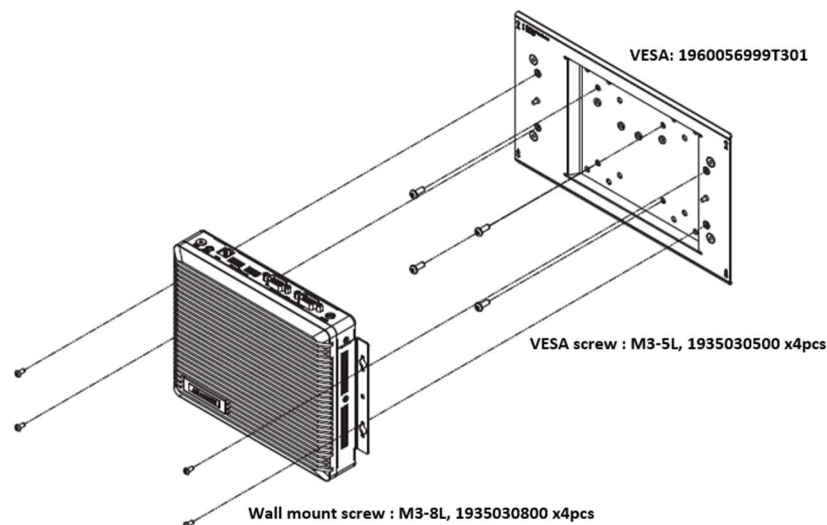
Please attach it according to the markings on the both sides of the spreader bracket.



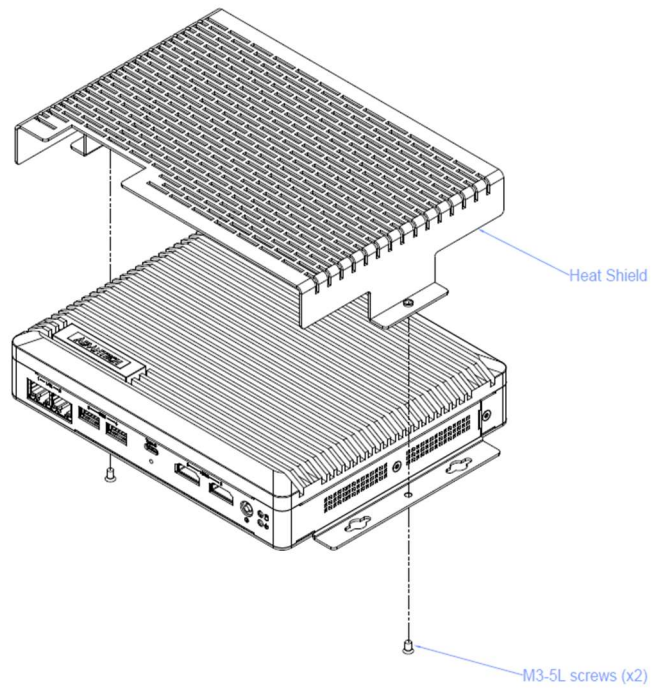
### 2.4.3 Mounting Installation

- Wall mount fasten the four screws, M3-8L screws, 1935030800
- VESA mount (1960056999T301) fasten the four screws, M3-5L screws, 1935030500

#### VESA Mount



- Protective Cover (1960119683N001), fasten the two screws, M3-5L screws, 1935030500



# Chapter 3

## BIOS Settings

## 3.1 BIOS Introduction

AMIBIOS has been integrated into motherboards for over two decades. With the AMIBIOS Setup program, users can modify BIOS settings and control various system features. This chapter describes the basic navigation of the DS-330 BIOS setup screens.



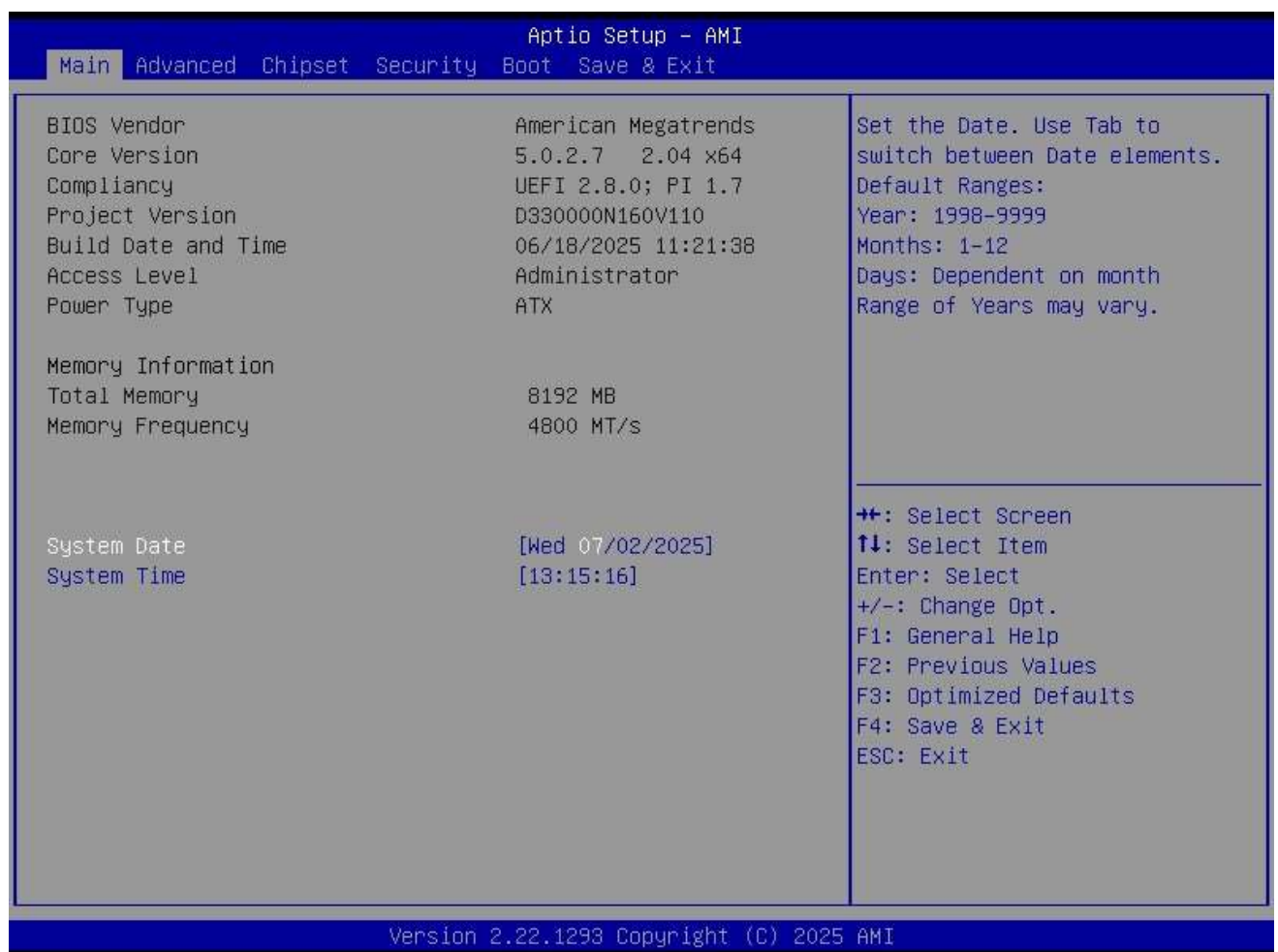
AMI's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in flash ROM so it retains the Setup information when the power is turned off.

## 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.

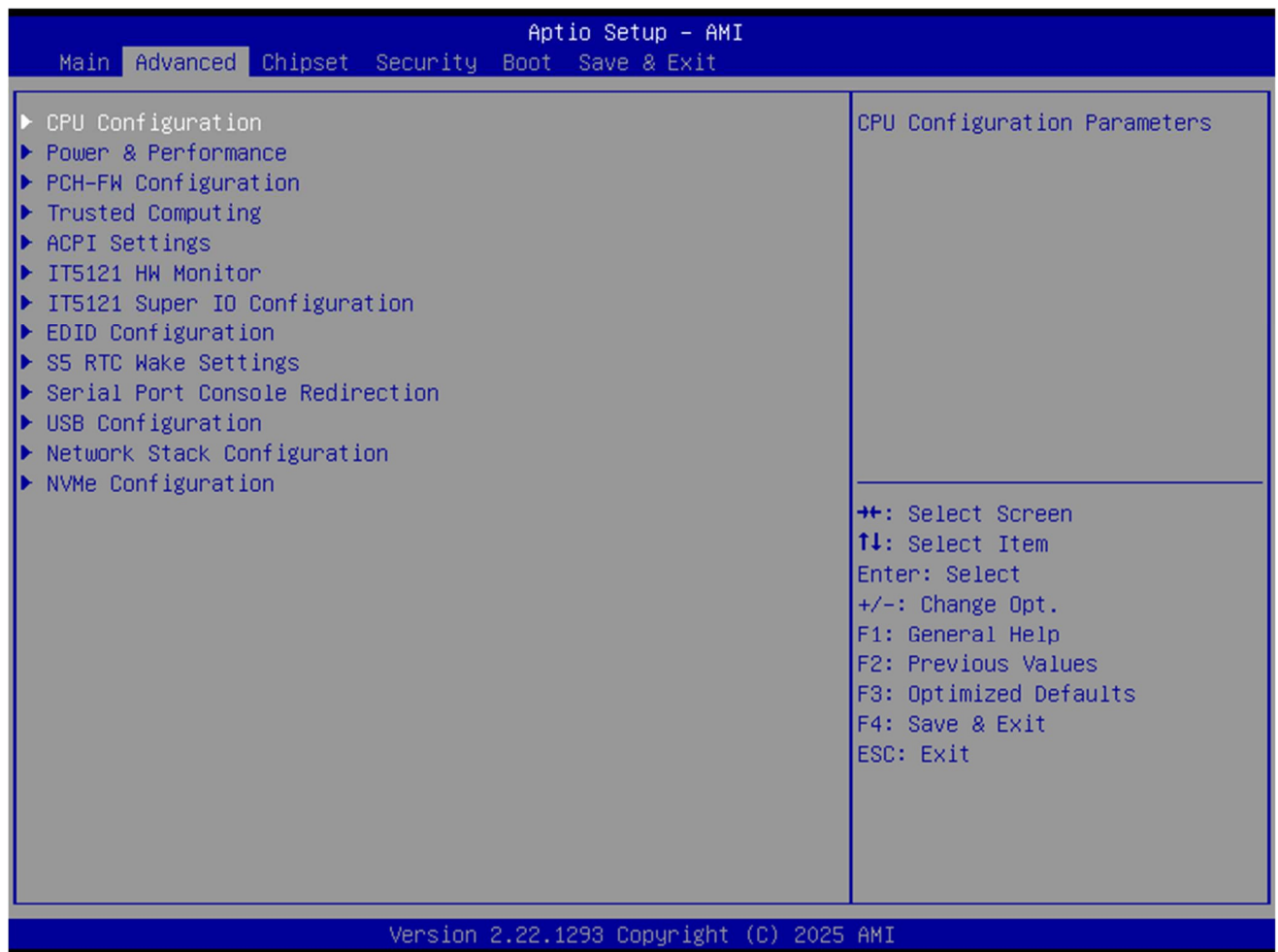
Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

#### ■ System time/System date

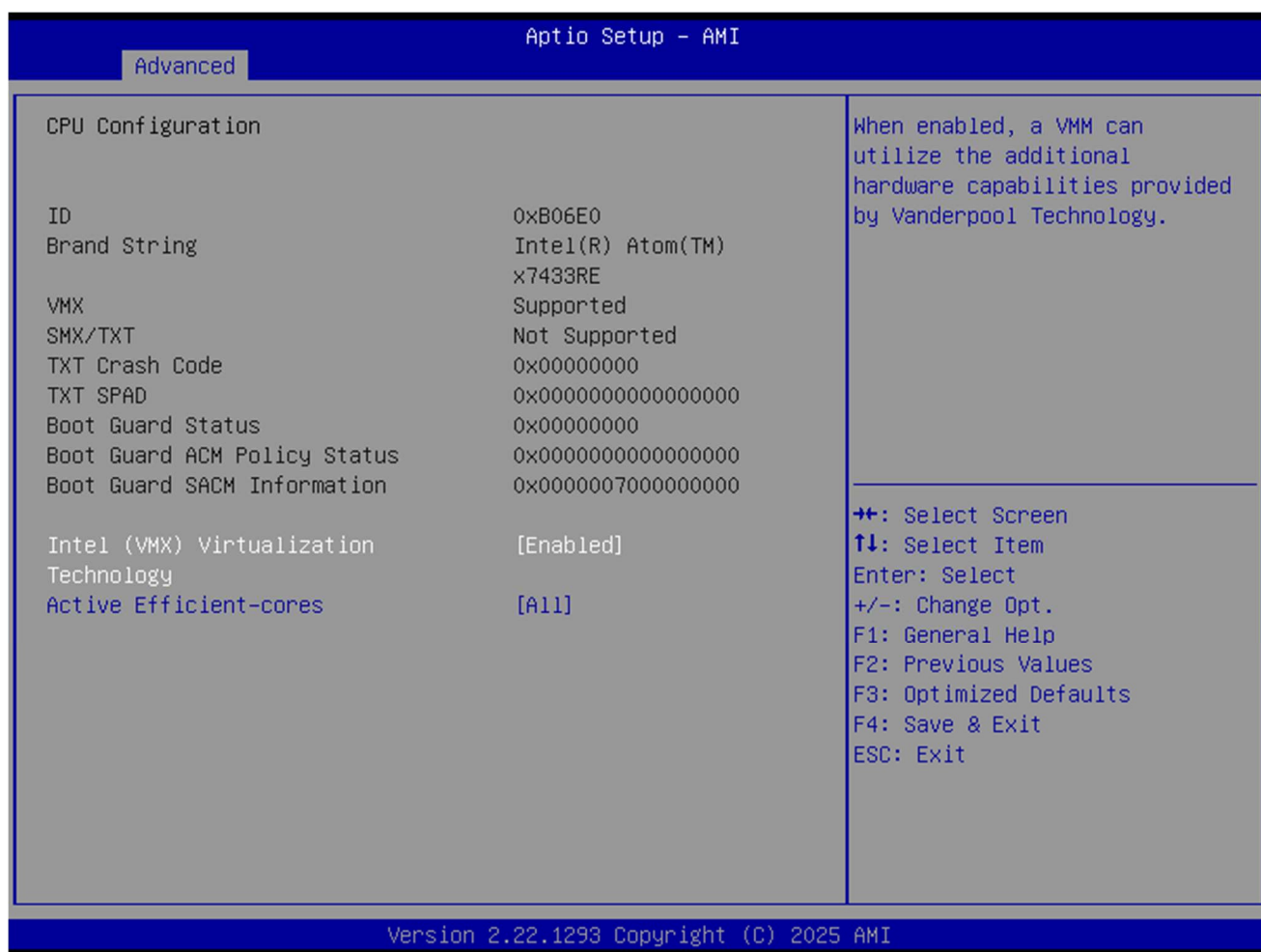
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

### 3.2.2 Advanced BIOS Features Setup

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

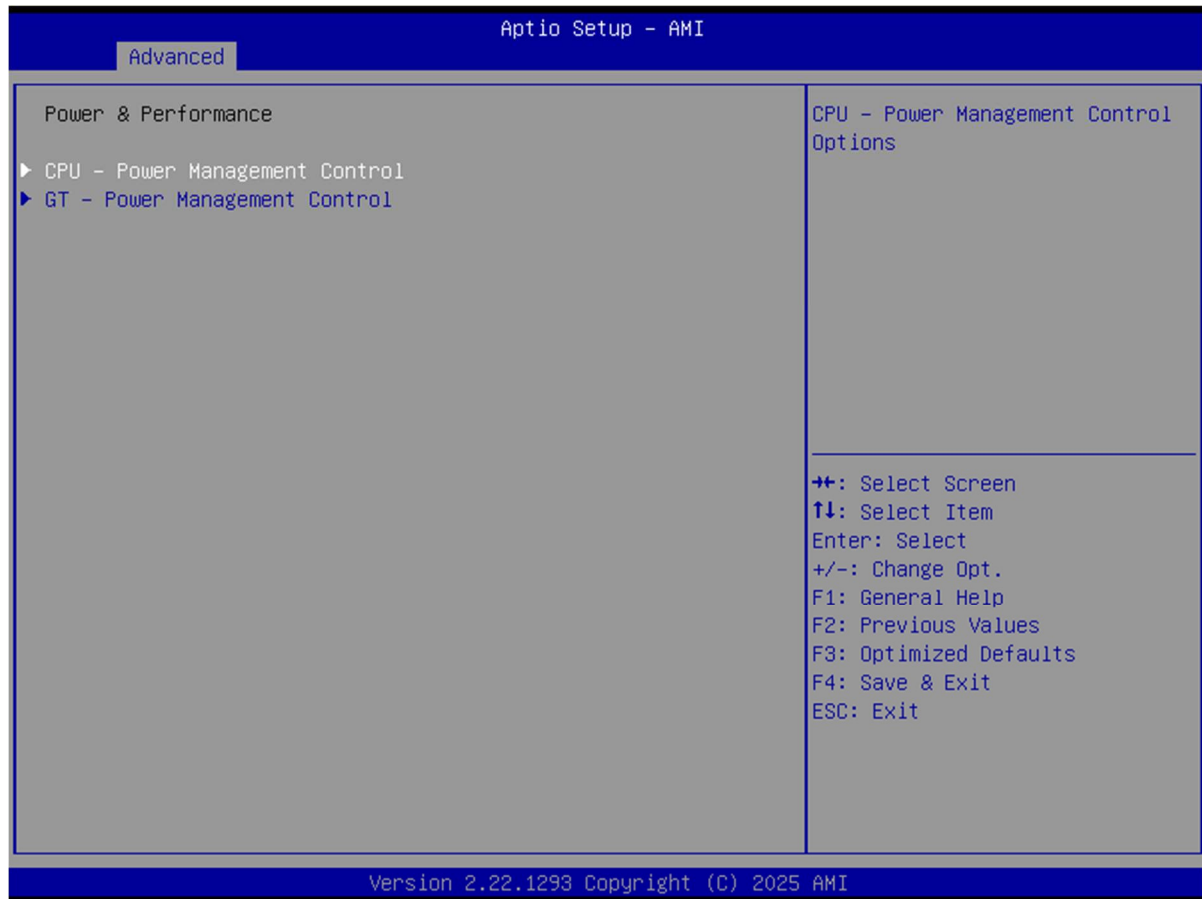


### 3.2.3 Advanced → CPU Configuration



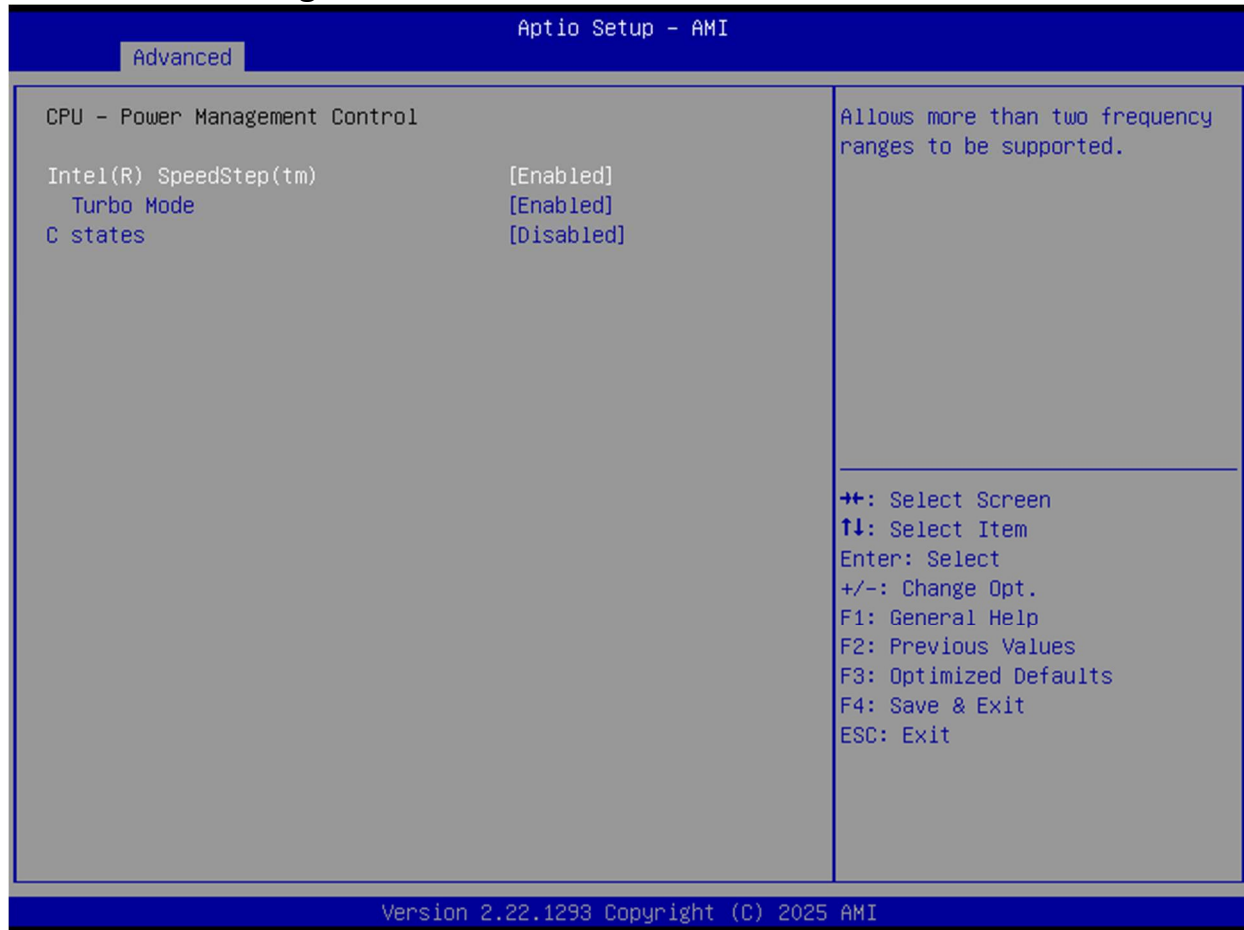
- **Intel (VMX) Virtualization**  
Enable / Disable Intel VMX Virtualization support
- **Active Processor Cores**  
Enable all or 1 / 2 / 3

### 3.2.4 Advanced → Power & Performance



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

## CPU - Power Management Control



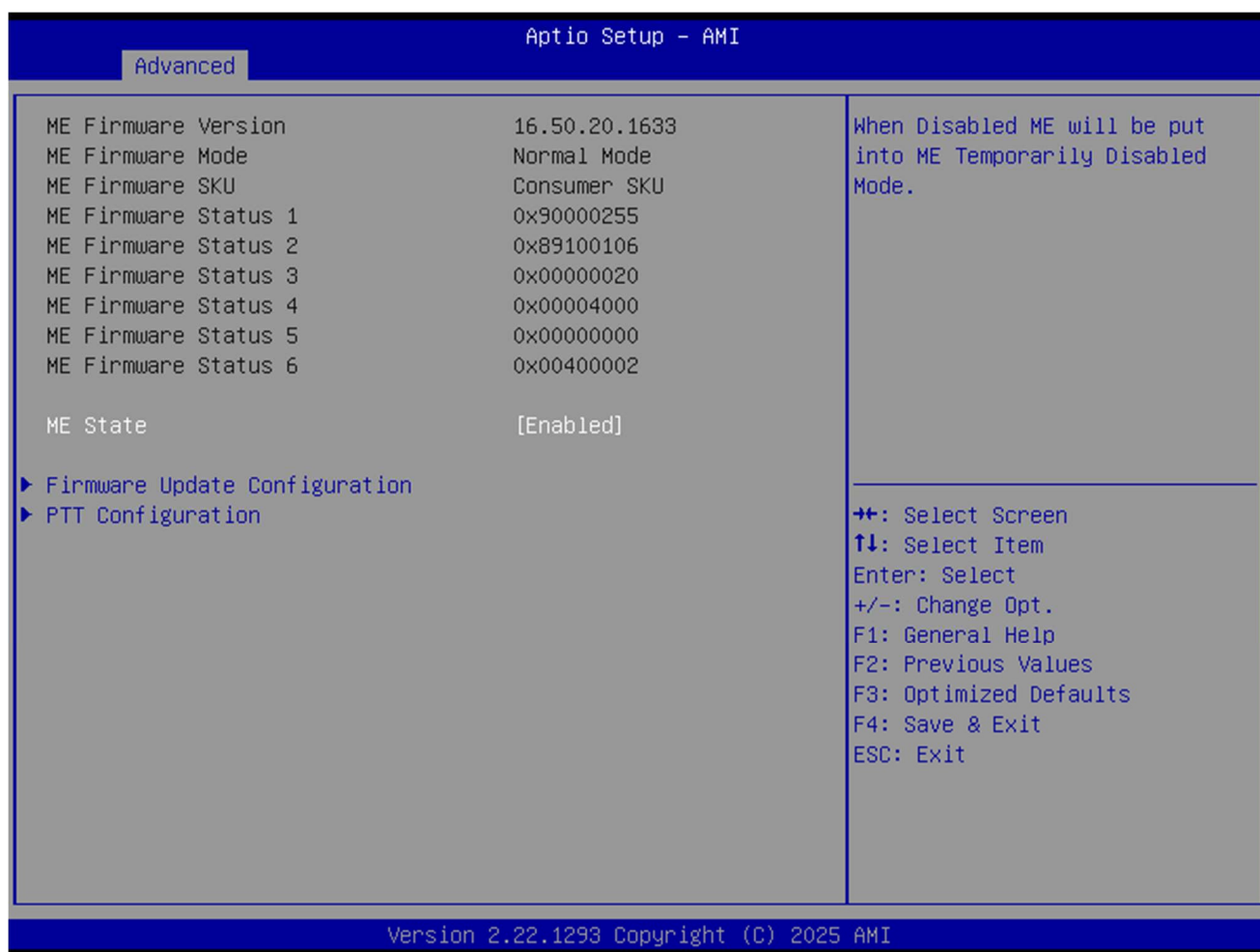
- **Intel® SpeedStep™**  
Enable / disable Intel SpeedStep support
- **Turbo mode**  
Enable / disable Turbo mode.
- **C states**  
Enable / disable CPU Power Management.

## GT - Power Management Control



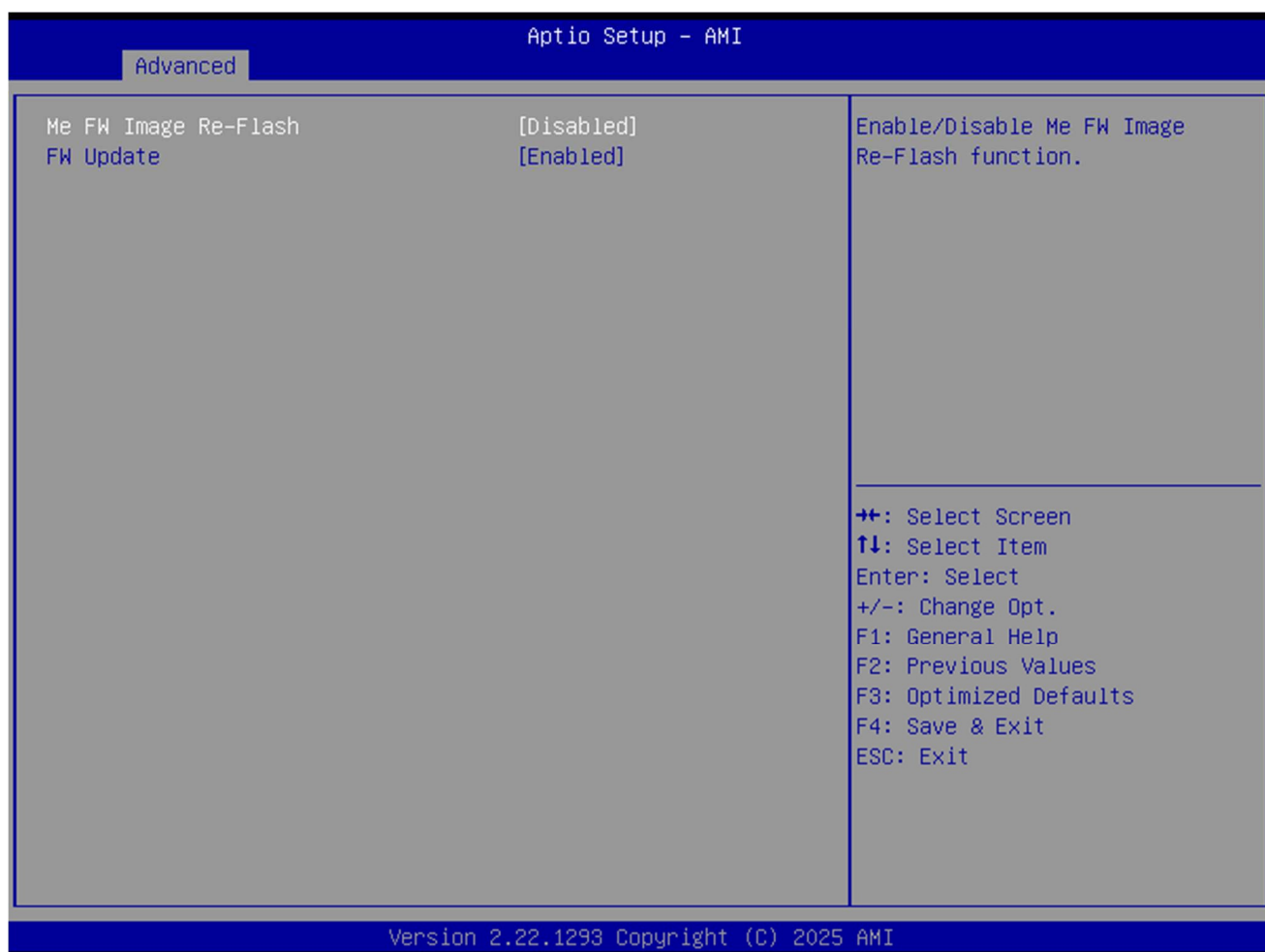
- **RC6 (Render Standby)**  
Check to enable render standby support.
- **Maximum GT frequency**  
Maximum GT frequency limited by user.
- **Disable Turbo GT frequency**  
Enable/Disable Turbo GT frequency.

### 3.2.5 Advanced → PCH-FW Configuration



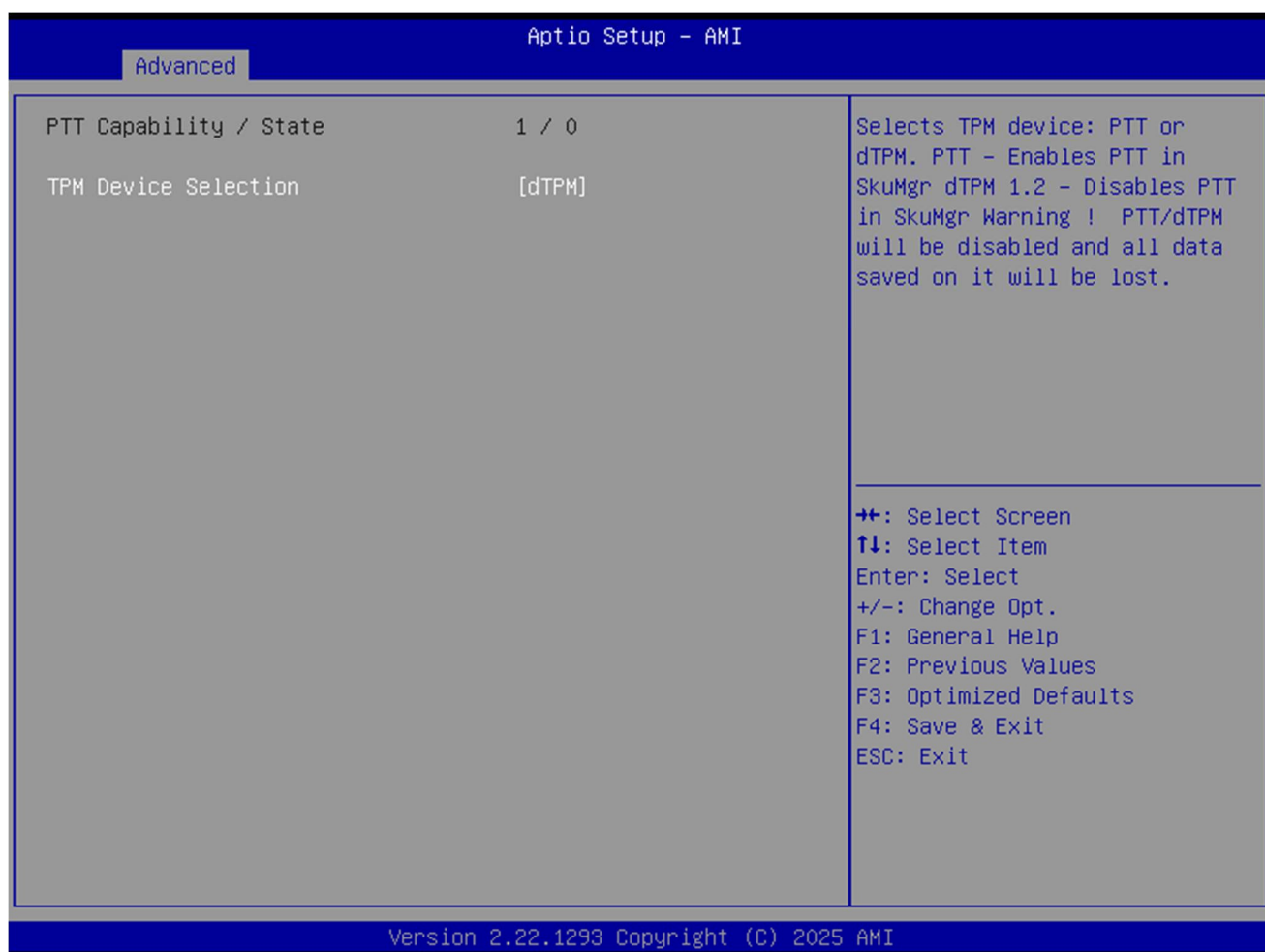
- **ME State**  
When Disabled, ME will be put ME into Temporarily Disabled Mode.
- **Firmware Update Configuration**  
Configure Management Engine Technology Parameters.
- **PTT Configuration**  
Configure PTT Parameters.

## Firmware Update Configuration



- **Me FW Image Re-Flash**  
Enable / Disable Me FW Image Re-Flash.
- **FW Update**  
Enable / Disable FW Update.

## PTT Configuration



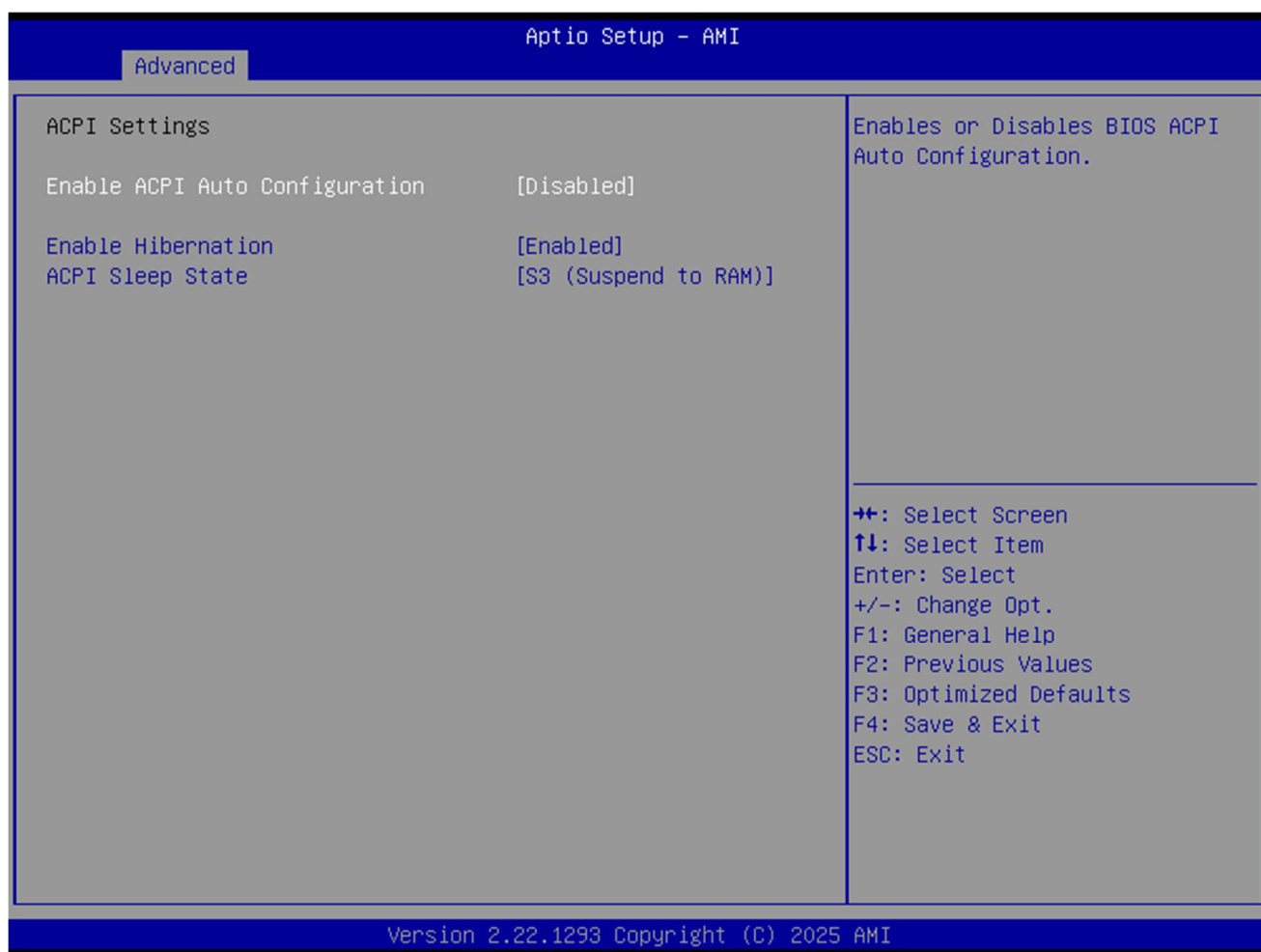
- **TPM Device Selection**  
Select PTT or dTPM

### 3.2.6 Advanced → Trusted Computing



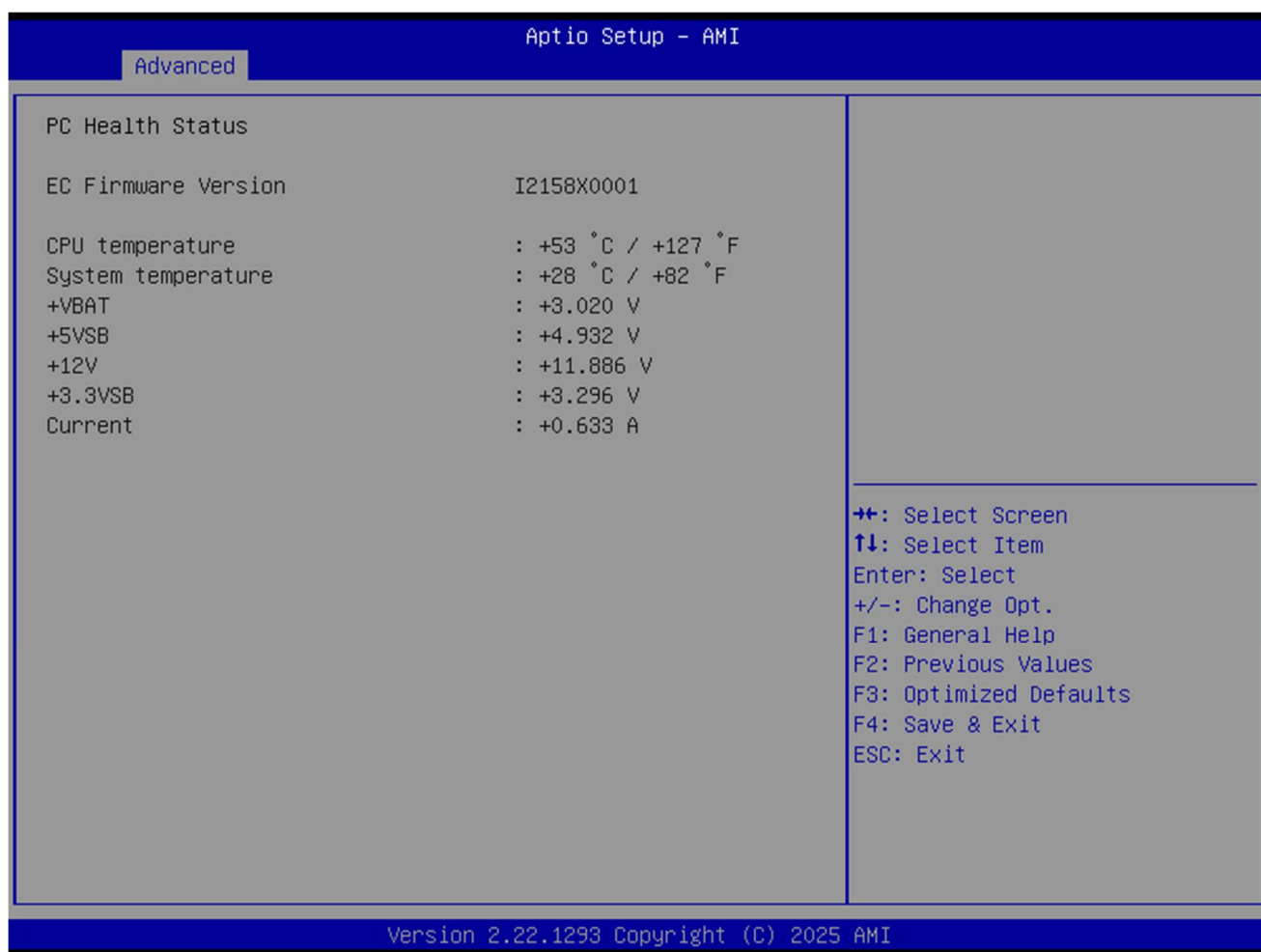
- **Security Device Support**  
Enable/Disable BIOS support for security device.
- **SHA256 PCR Bank**  
Enable/Disable SHA256 PCR Bank.
- **SHA384 PCR Bank**  
Enable/Disable SHA384 PCR Bank.
- **Pending operation**  
Schedule an Operation for the Security Device.

### 3.2.7 Advanced → ACPI Settings



- **Enable ACPI Auto Configuration**  
Enable or disable ACPI Auto Configuration.
- **Enable Hibernation**  
Enable or disable Hibernation.
- **ACPI Sleep State**  
Select S3 (Suspend to RAM) or suspend Disabled.

### 3.2.8 Advanced → IT5121 HW Monitor

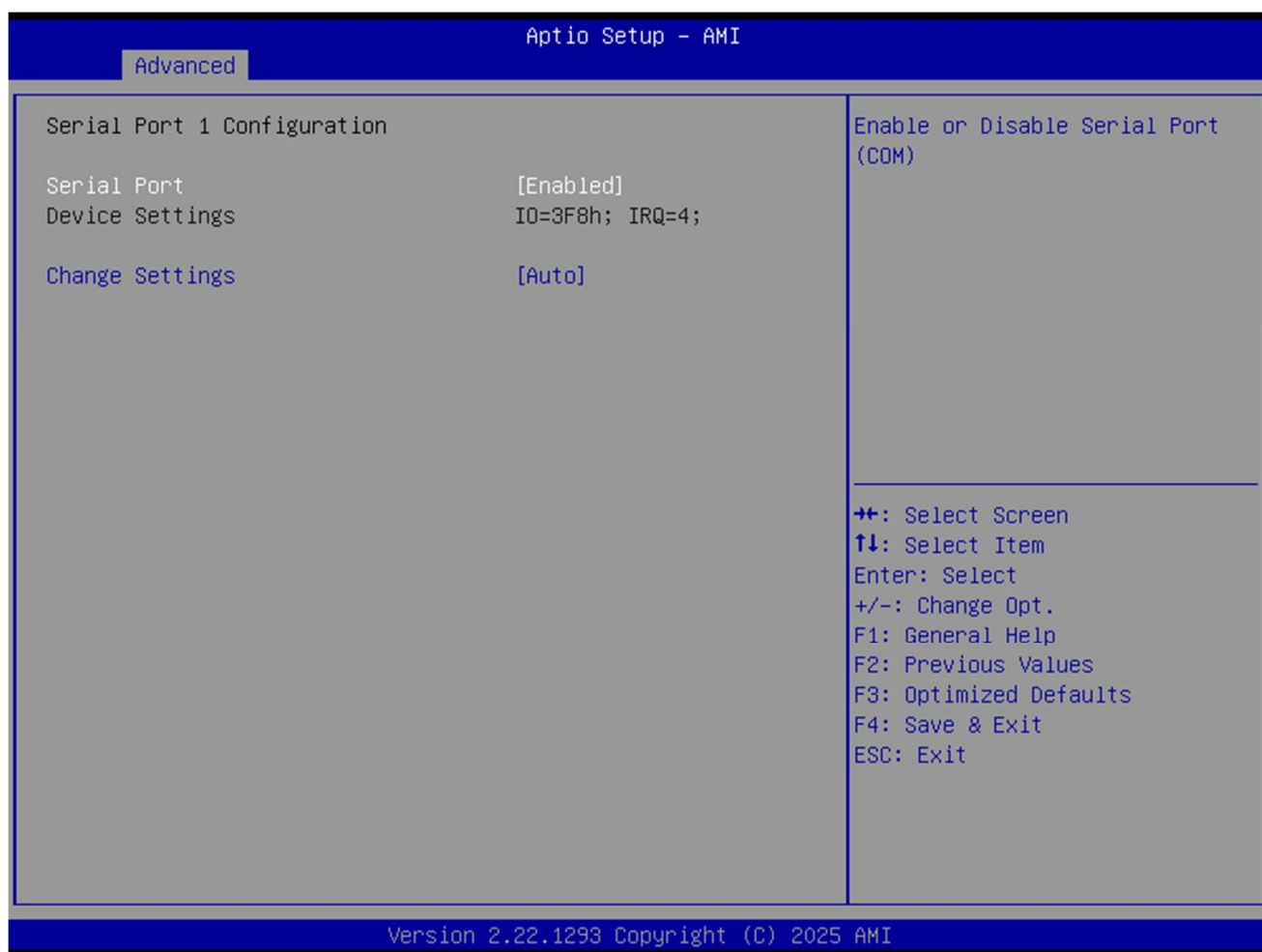


### 3.2.9 Advanced → IT5121 Super IO Configuration



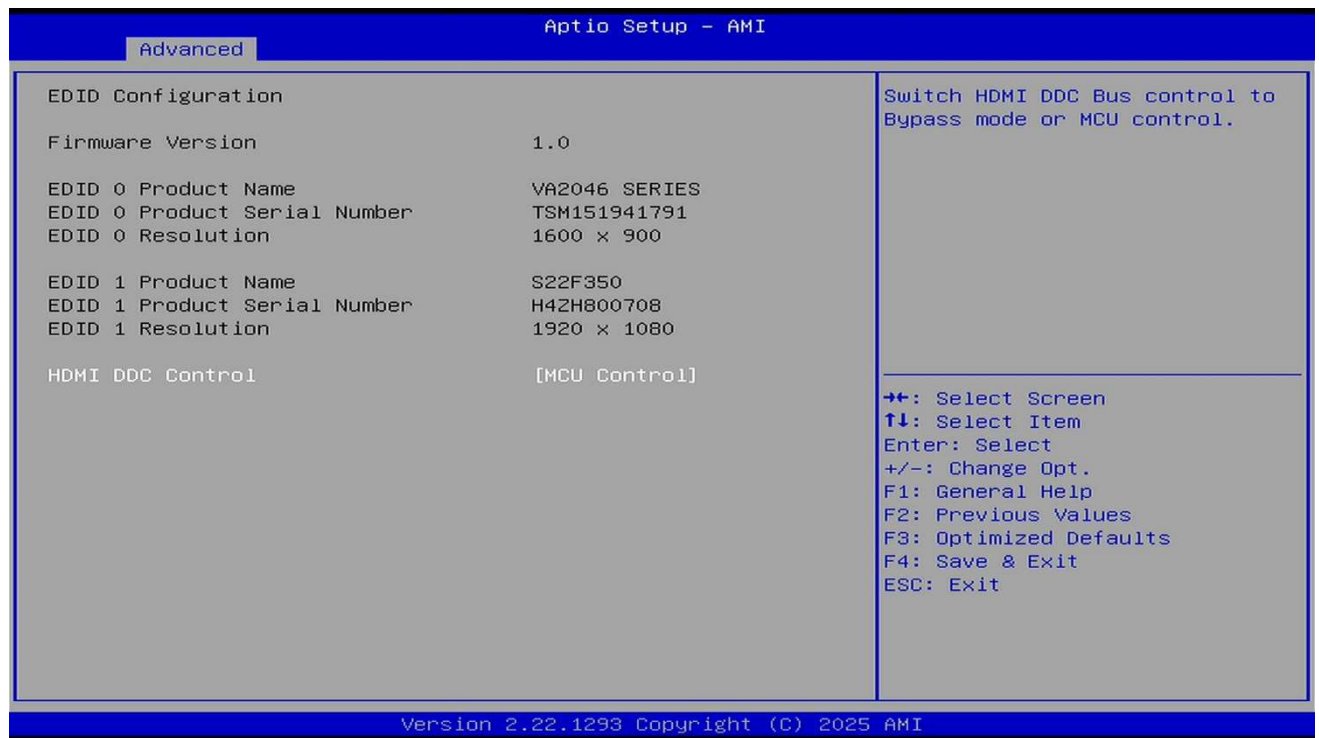
- **Serial Port Description**
- **ACPI Shutdown Temperature**
  - Disabled
  - 70° C/158° F
  - 75° C/167° F
  - 80° C/176° F
  - 85° C/185° F
  - 90° C/194° F
  - 95° C/205° F
- **Watch Dog Timer (PreBoot)**
  - Enable or disable Watch Dog Timer (PreBoot).
- **Watch Dog Timer**
  - Enable or disable Watch Dog Timer.

### 3.2.9.1 Advanced → IT5121 Super IO Configuration → Serial Port 1 Configuration



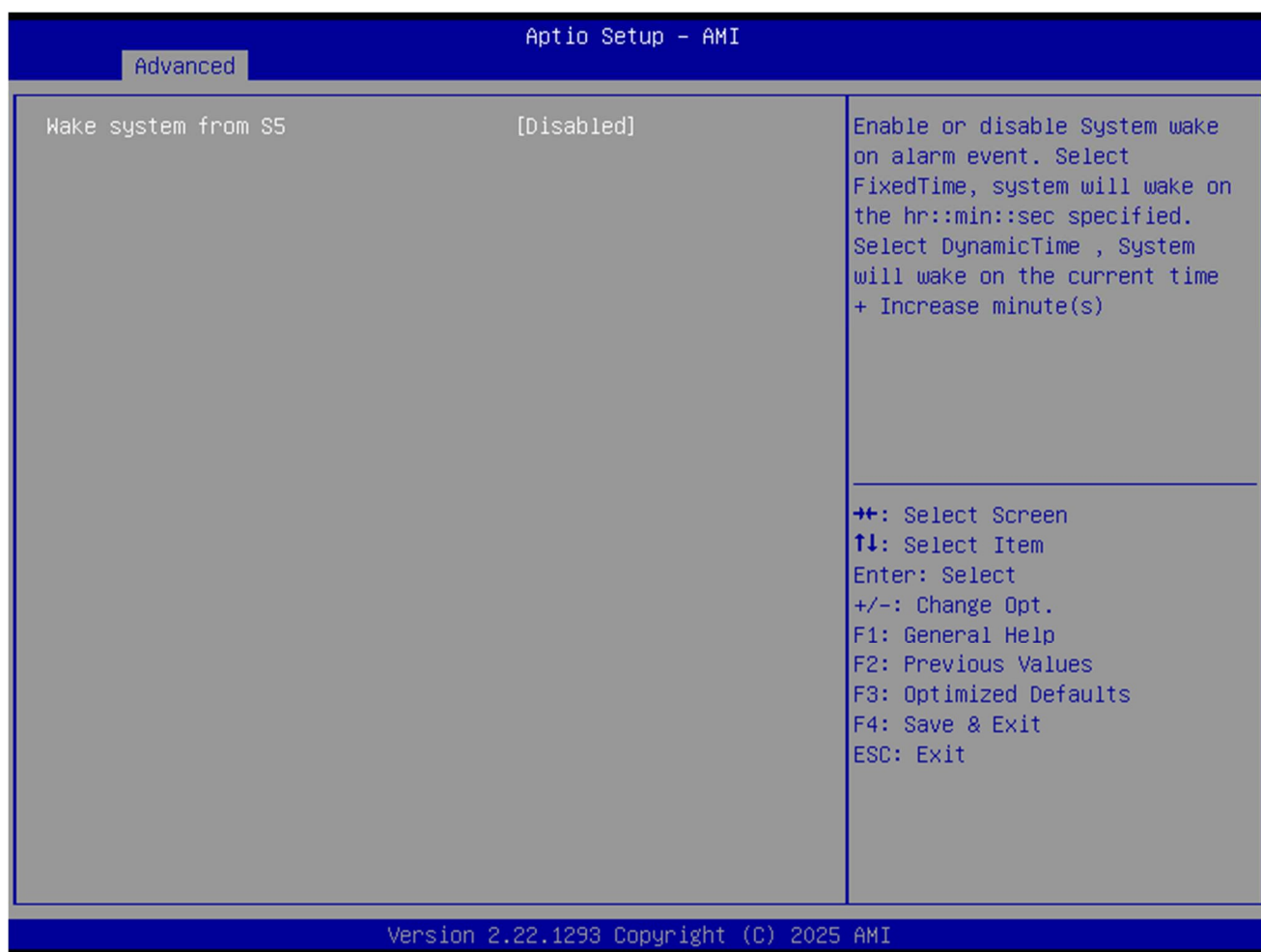
- **Serial Port**  
Enable / Disable serial port (COM).
- **Change Settings**  
Select an optional settings for Super IO device.

### 3.2.10 Advanced ➔ EDID Configuration



- **HDMI DDC Control**  
Switch HDMI DDC Bus Control to Bypass mode or MCU control

### 3.2.11 Advanced ➔ S5 RTC Wake Settings



- **Wake system from S5**  
Enable or disable Wake system from S5.

### 3.2.12 Advanced → Serial Port Console Redirection



- **Console Redirection**  
Console Redirection Enable or Disable.
- **Console Redirection EMS**  
This item allows users to Enable or Disable console redirection for Microsoft Windows Emergency Management Services (EMS)

### 3.2.13 Advanced ➔ USB Configuration



- **XHCI Hand-off**  
Enable or disable XHCI Hand-off.
- **USB Mass Storage Driver Support**  
Enable or disable USB Mass Storage Driver Support.
- **USB transfer time-out**  
Configure time for USB transfer time-out.
- **Device reset time-out**  
Configure time for Device reset time-out.
- **Device power-up delay**  
Auto or Manual set.
- **Mass Storage Devices**  
Auto or Floppy or Forced FDD or Hard Disk or CD-ROM.

### 3.2.14 Advanced ➔ Network Stack Configuration



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

### 3.2.15 Advanced → NVMe Configuration



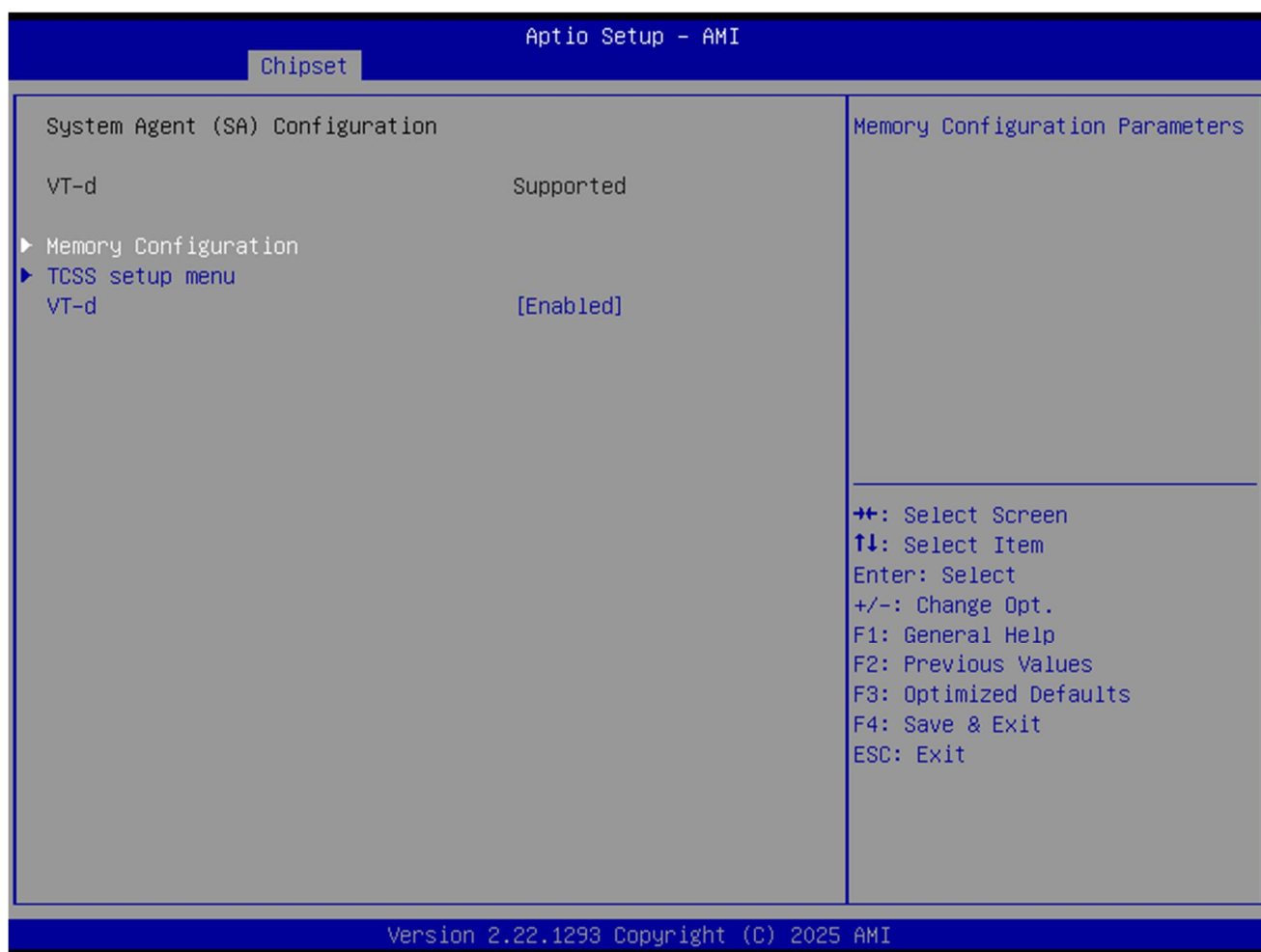
### 3.3 Chipset

Select the Chipset tab from the DS-330 setup screen to enter the Chipset BIOS Setup screen. You can display a Chipset BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section.

The Plug and Play BIOS Setup screen is shown below.



### 3.3.1 Chipset → System Agent (SA) Configuration

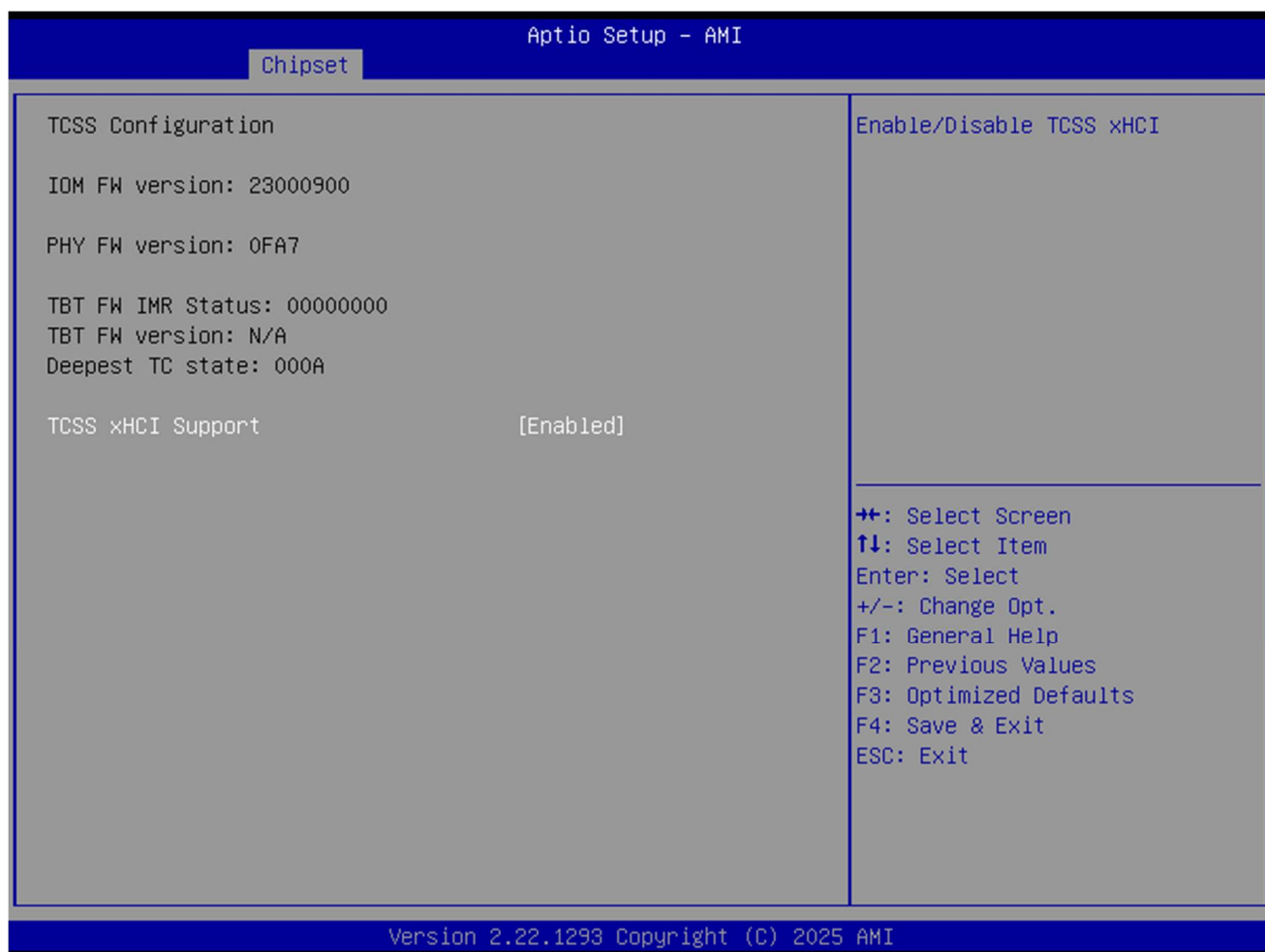


- **Memory Configuration**  
Memory Configuration Parameters.
- **VT-d**  
Enable / Disable VT-D.

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

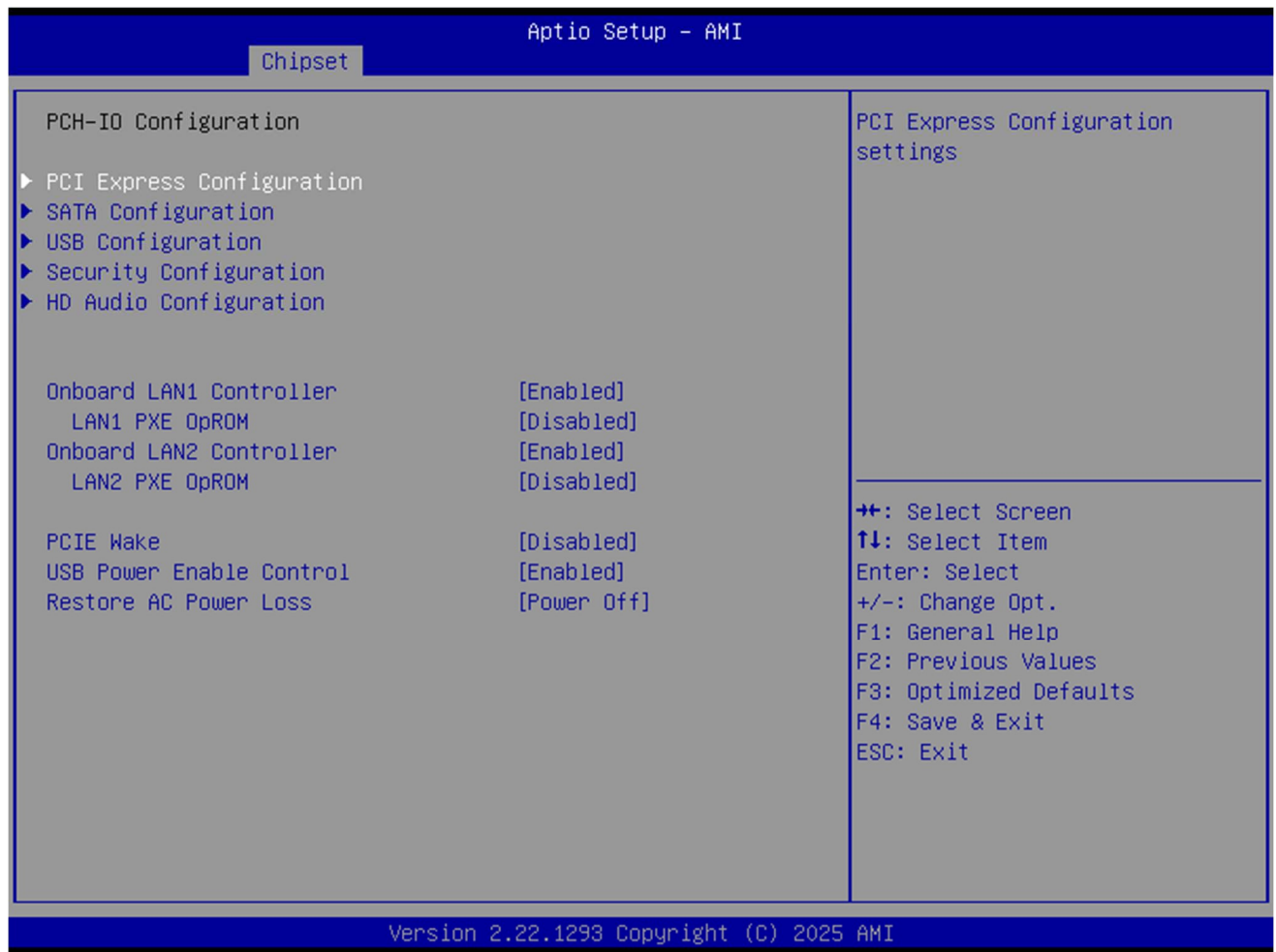
| Aptio Setup - AMI                                                                                                                                                                                     |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Chipset                                                                                                                                                                                               |                     |
| Memory Configuration                                                                                                                                                                                  |                     |
| Memory RC Version                                                                                                                                                                                     | 0.0.4.74            |
| Memory Frequency                                                                                                                                                                                      | 4800 MT/s           |
| MC 0 Ch 0 DIMM 0 (SU4)                                                                                                                                                                                | Populated & Enabled |
| Size                                                                                                                                                                                                  | 8192 MB (DDR5)      |
| Number of Ranks                                                                                                                                                                                       | 1                   |
| Manufacturer                                                                                                                                                                                          | Advantech Co Ltd    |
| <div>←→: Select Screen<br/>↑↓: Select Item<br/>Enter: Select<br/>+/-: Change Opt.<br/>F1: General Help<br/>F2: Previous Values<br/>F3: Optimized Defaults<br/>F4: Save &amp; Exit<br/>ESC: Exit</div> |                     |
| Version 2.22.1293 Copyright (C) 2025 AMI                                                                                                                                                              |                     |

### 3.3.1.2 Chipset → System Agent (SA) Configuration → TCSS Configuration



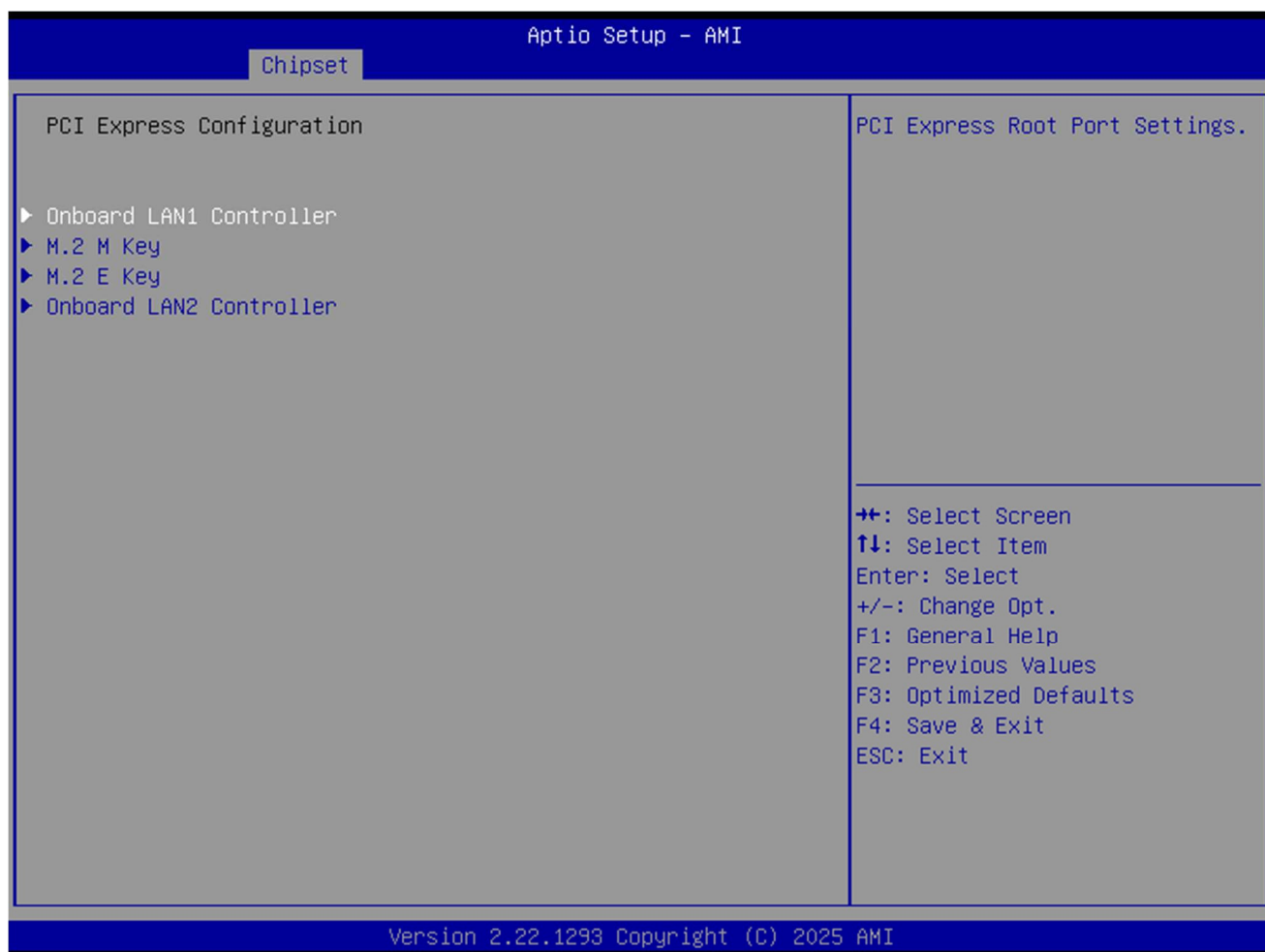
- **TCSS xHCI Support**  
Enable/Disable TCSS xHCI

### 3.3.2 Chipset → PCH-IO Configuration



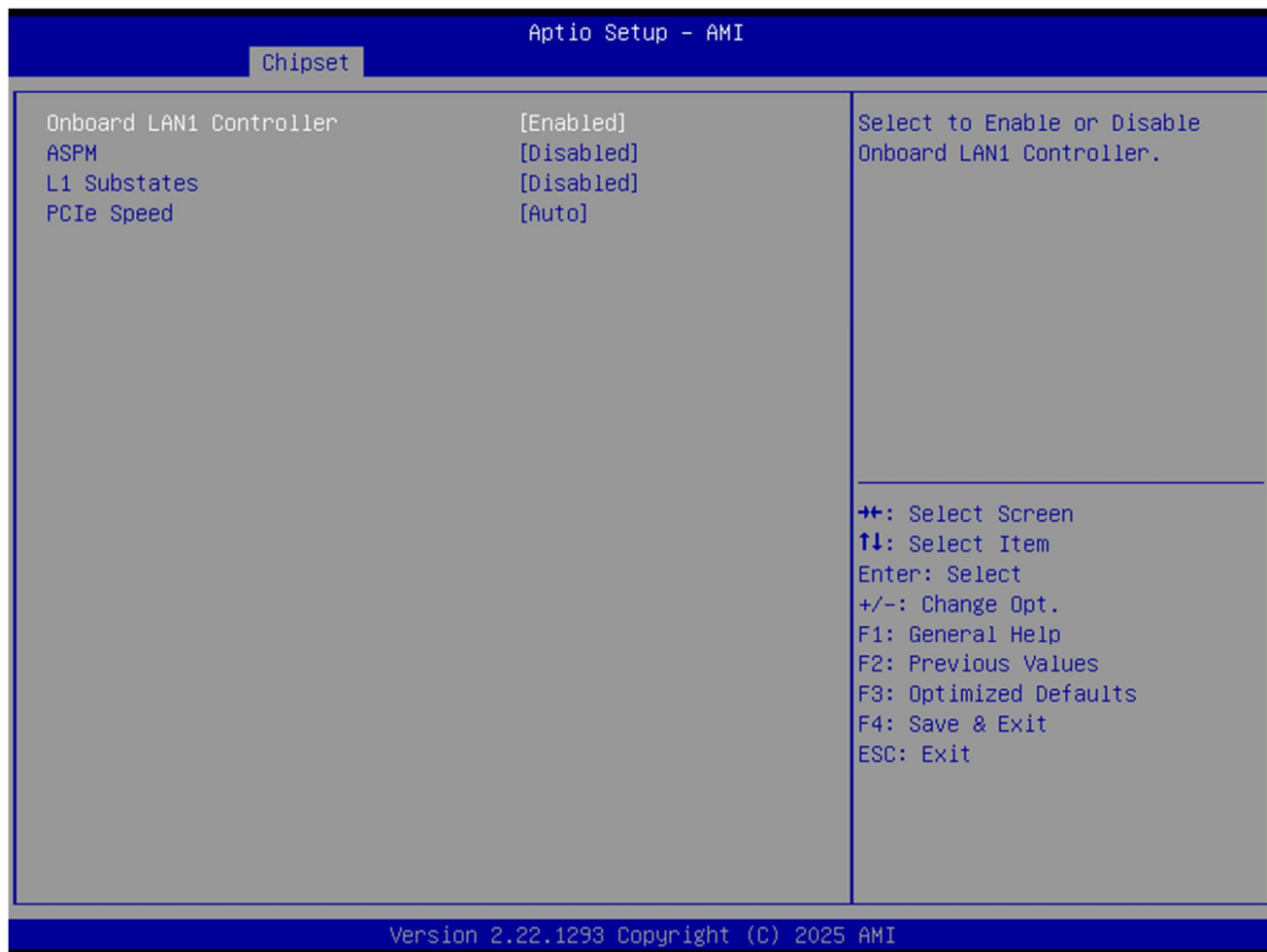
- **PCI Express Configuration**  
PCI Express Device Options Settings.
- **SATA Configuration**  
SATA Device Options Settings.
- **USB Configuration**  
USB Configuration Settings.
- **Security Configuration**  
Security Configuration Settings.
- **HD Audio Configuration**  
HD Audio Subsystem Configuration Settings.
- **Onboard LAN1/2 Controller**  
Select to Enable or Disable onboard LAN1/2 Controller.
- **LAN1/2 PXE ROM**  
Enable/Disable boot option ROM for LAN1/2 Controller.
- **PCIe Wake**  
Enable/Disable PCIe Wake
- **USB Power Enable Control**  
Enable/Disable USB Power
- **Restore AC Power Loss**  
Specify what state to go to when power is re-applied after a power failure (G3 state).

### 3.3.2.1 Chipset → PCH-IO Configuration → PCI Express Configuration



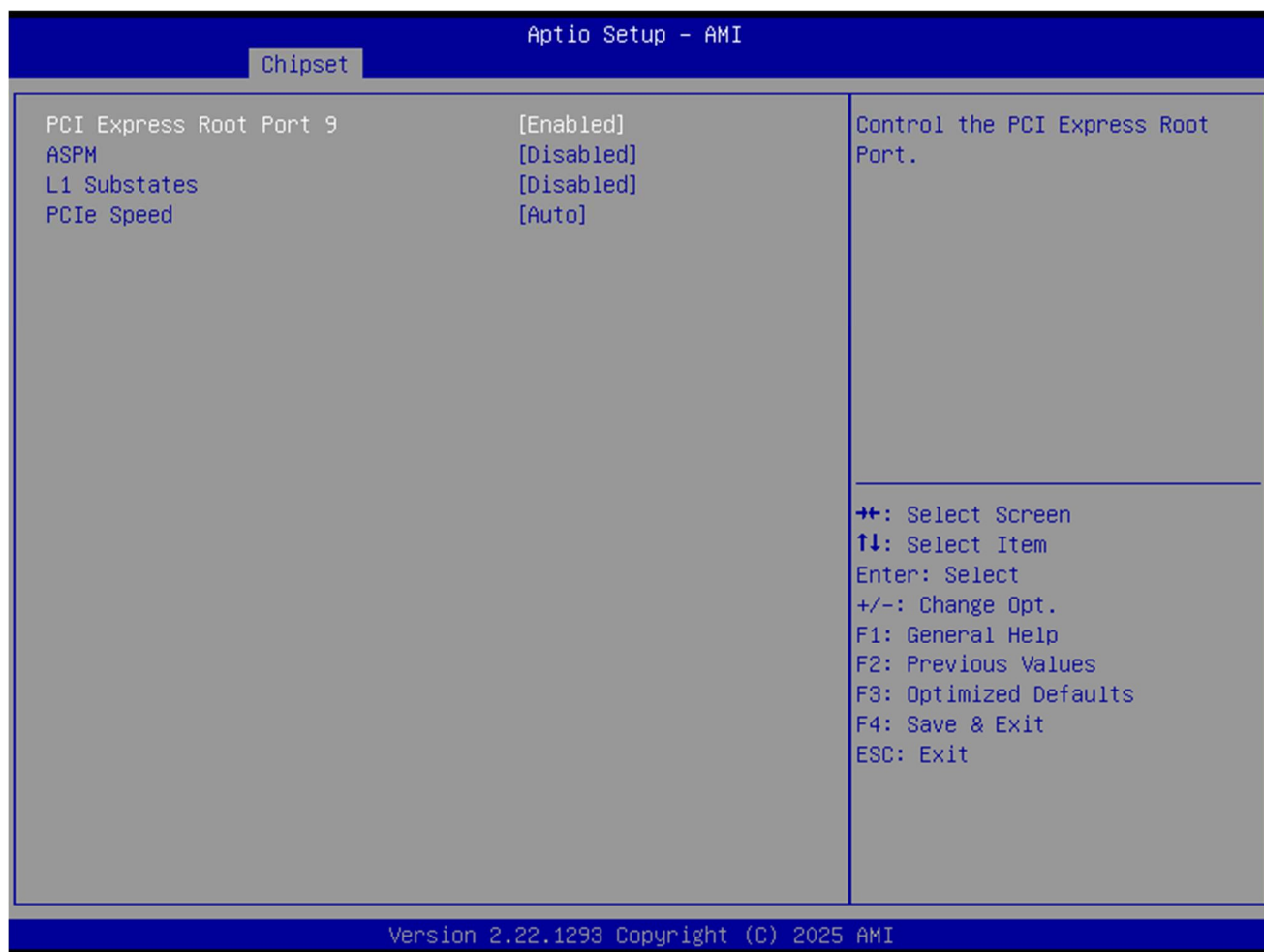
- **Onboard LAN1 Controller**  
Select to Enable / Disable onboard LAN1 Controller.
- **M.2 M Key**
- **M.2 E Key**
- **Onboard LAN2 Controller**  
Select to Enable / Disable onboard LAN2 Controller.

### 3.3.2.2 Chipset → PCH-IO Configuration → PCI Express Configuration → Onboard LAN1 Controller



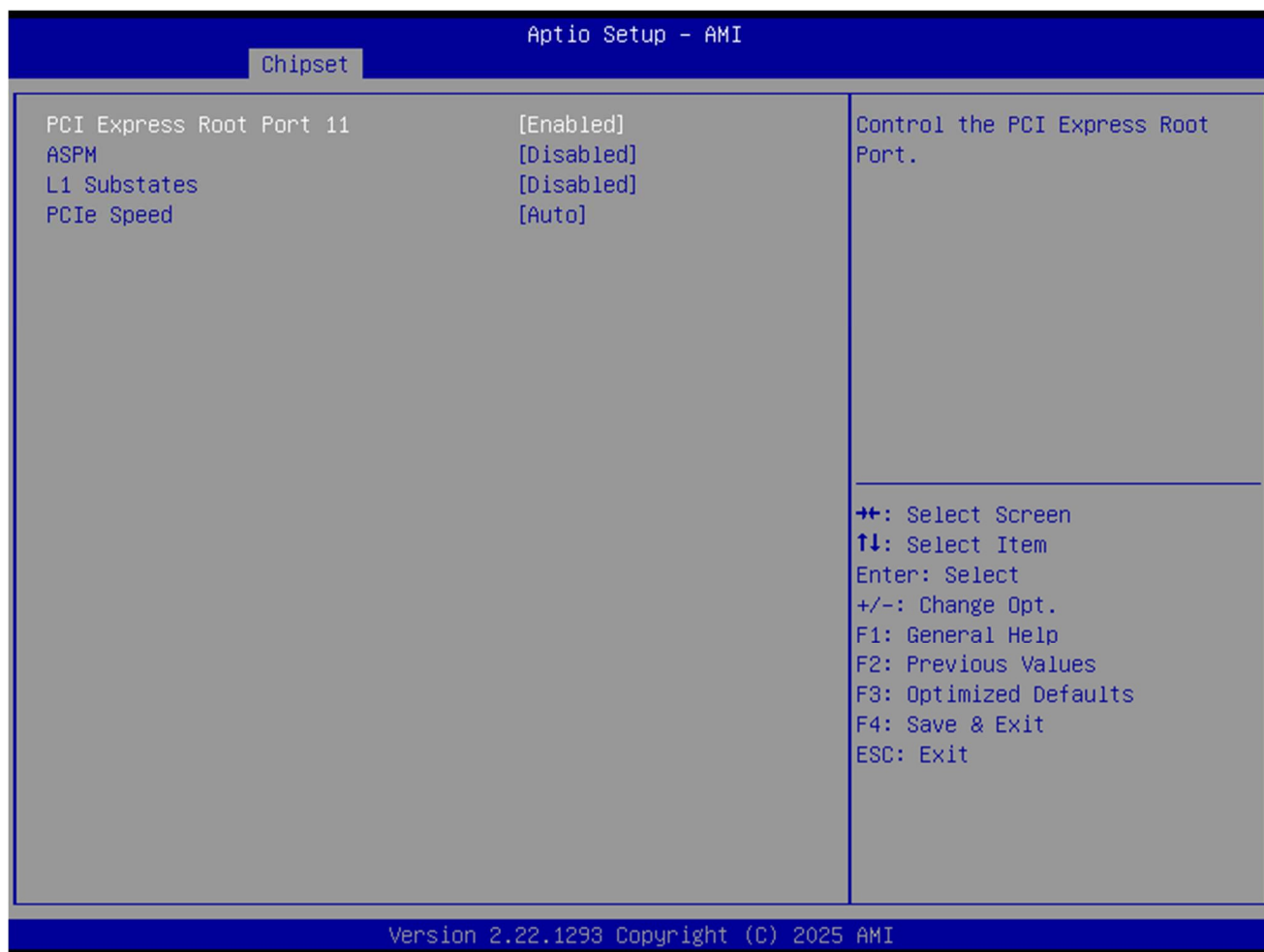
- **Onboard LAN1 Controller**  
Select to Enable / Disable onboard LAN1 Controller.
- **ASPM**  
Set the ASPM Level.
- **L1 Substates**  
PCI Express L1 Substates settings.
- **PCIe Speed**  
Configure PCIe Speed.

### 3.3.2.3 Chipset → PCH-IO Configuration → PCI Express Configuration → PCI Express Root Port 9



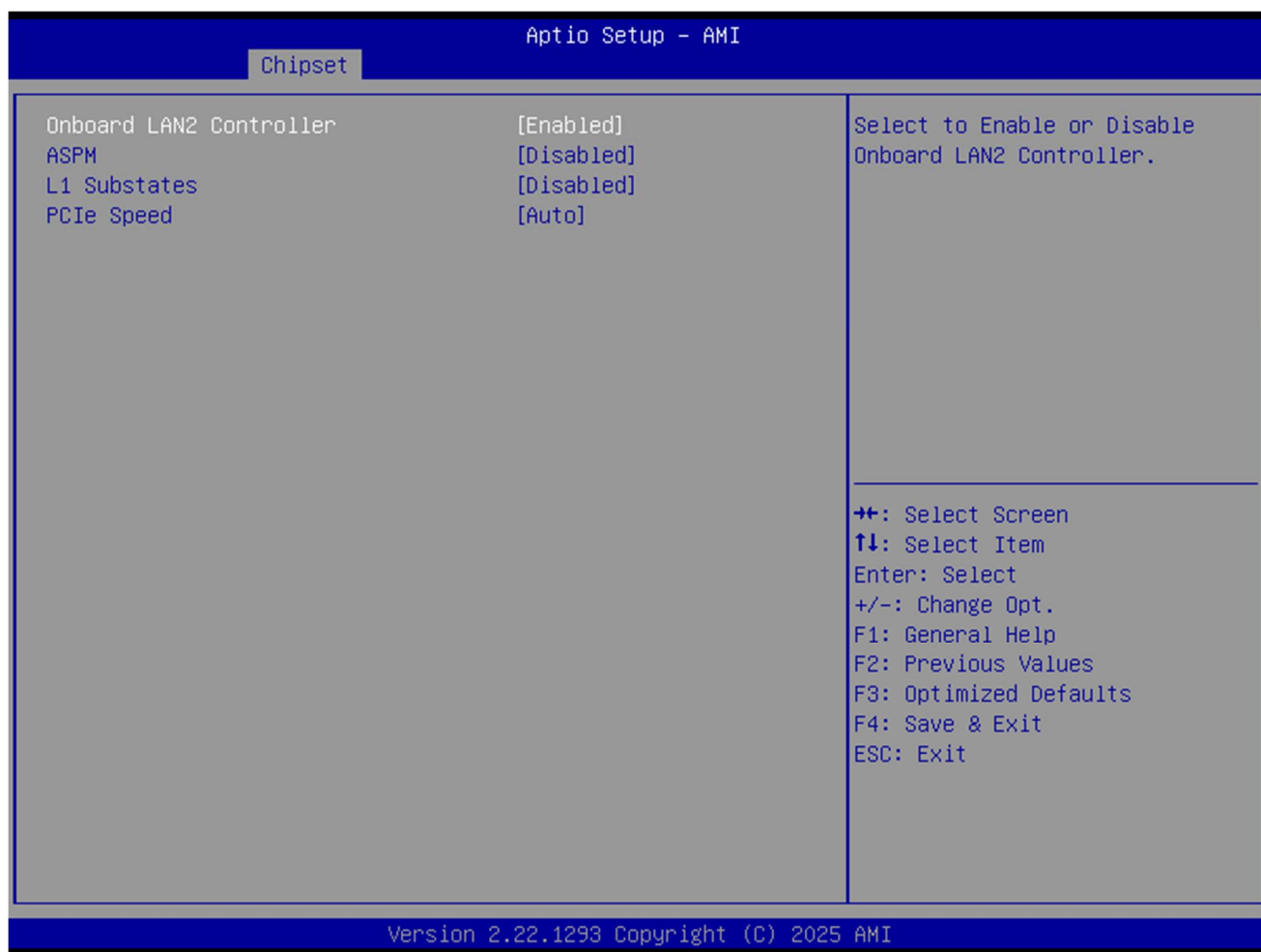
- **PCI Express Root Port 9**  
Control the PCI Express Root Port.
- **ASPM**  
Set the ASPM Level.
- **L1 Substates**  
PCI Express L1 Substates settings.
- **PCIe Speed**  
Configure PCIe Speed.

### 3.3.2.4 Chipset → PCH-IO Configuration → PCI Express Configuration → PCI Express Root Port 11



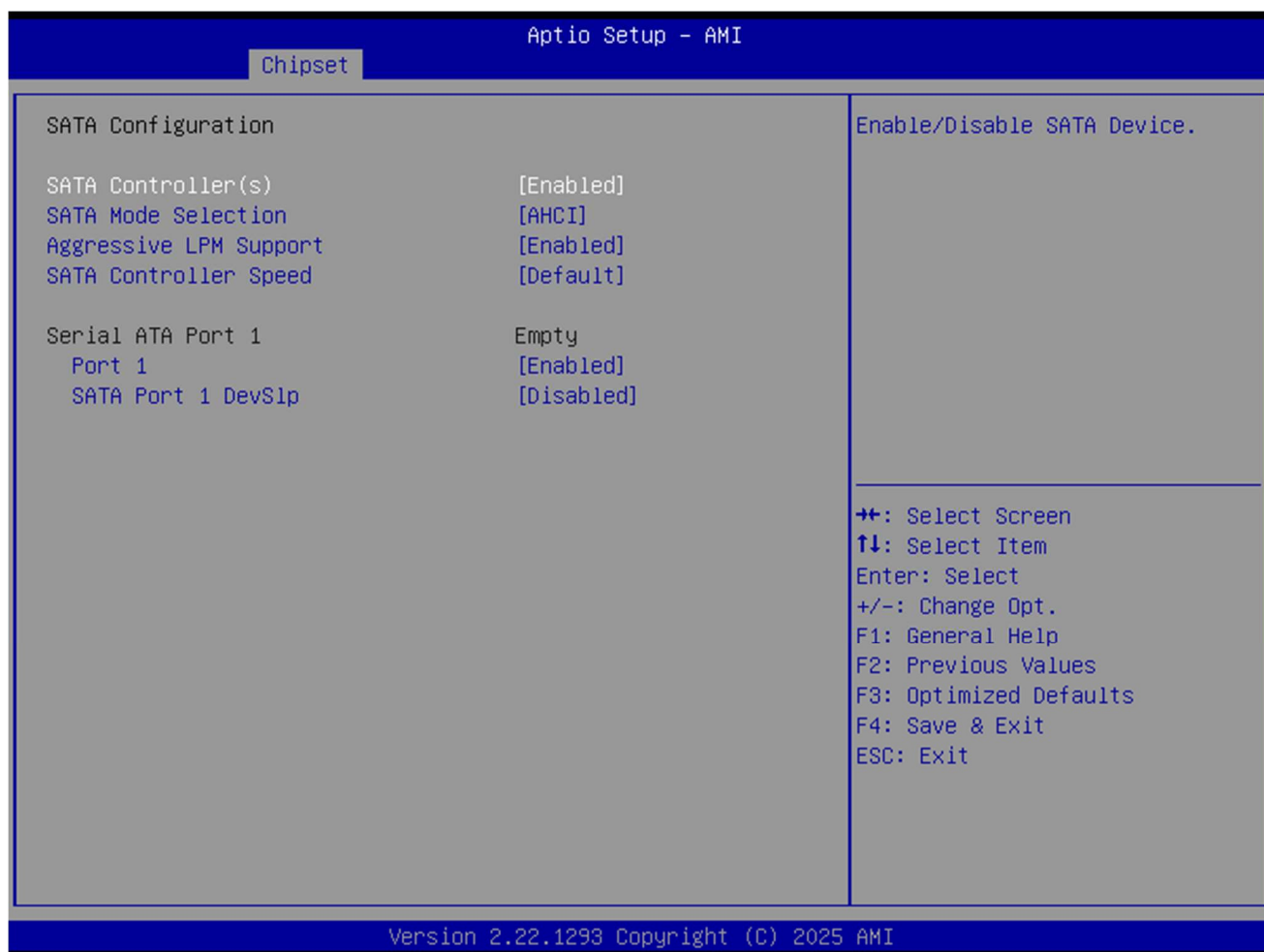
- **PCI Express Root Port 11**  
Control the PCI Express Root Port.
- **ASPM**  
Set the ASPM Level.
- **L1 Substates**  
PCI Express L1 Substates settings.
- **PCIe Speed**  
Configure PCIe Speed.

### 3.3.2.5 Chipset → PCH-IO Configuration → PCI Express Configuration → Onboard LAN2 Controller



- **Onboard LAN2 Controller**  
Select to Enable / Disable onboard LAN2 Controller.
- **ASPM**  
Set the ASPM Level.
- **L1 Substates**  
PCI Express L1 Substates settings.
- **PCIe Speed**  
Configure PCIe Speed.

### 3.3.3.1 Chipset → PCH-IO Configuration → SATA Configuration

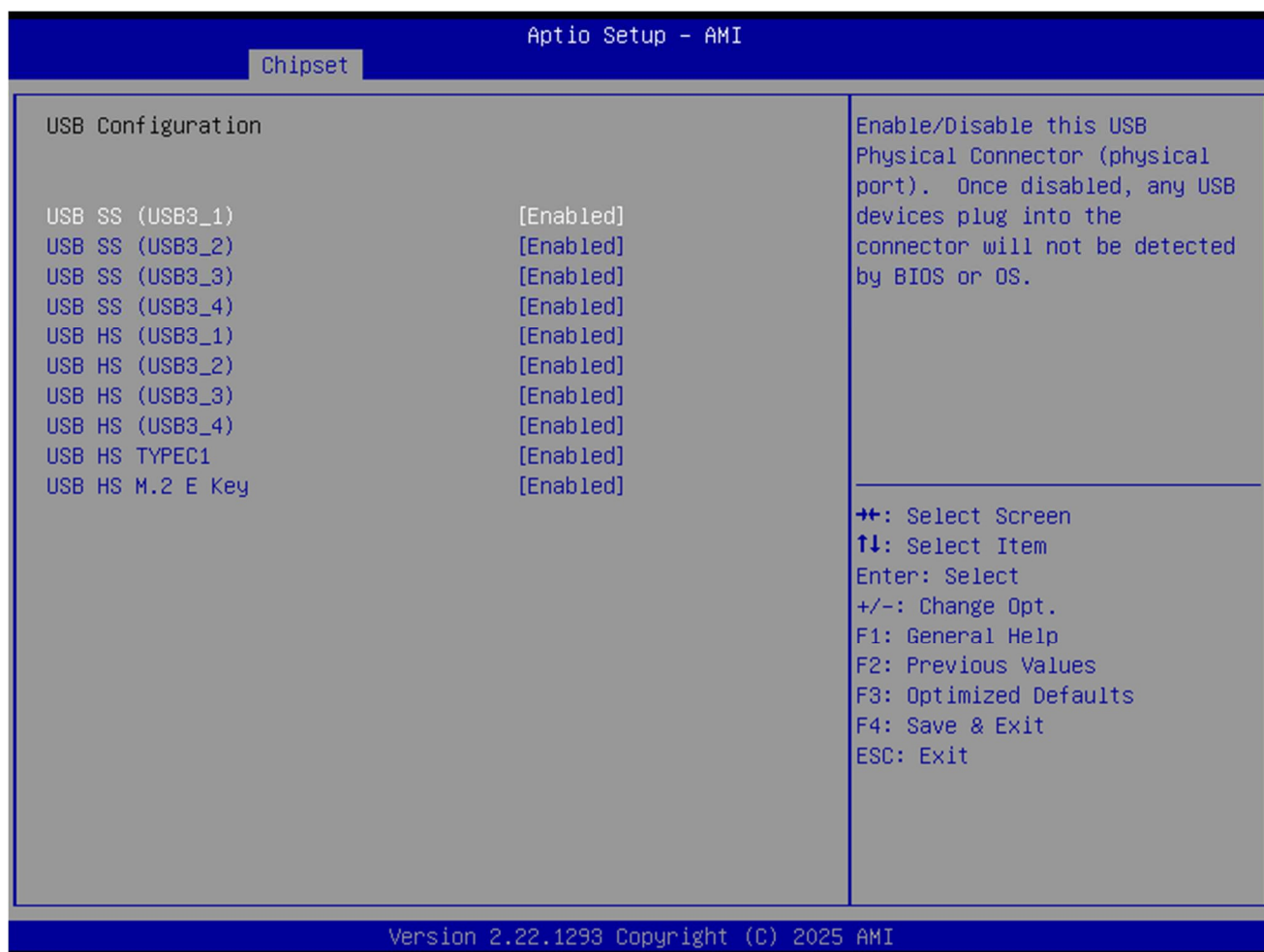


- **SATA Controller(s)**  
Enable/Disable SATA Device.
- **SATA Mode Selection**  
Determine how the SATA controller operates
- **Aggressive LPM Support**  
Enable PCH to aggressively enter link power state
- **SATA Controller Speed**  
Indicates the maximum speed the SATA controller can support.

#### M.2 SATA Port

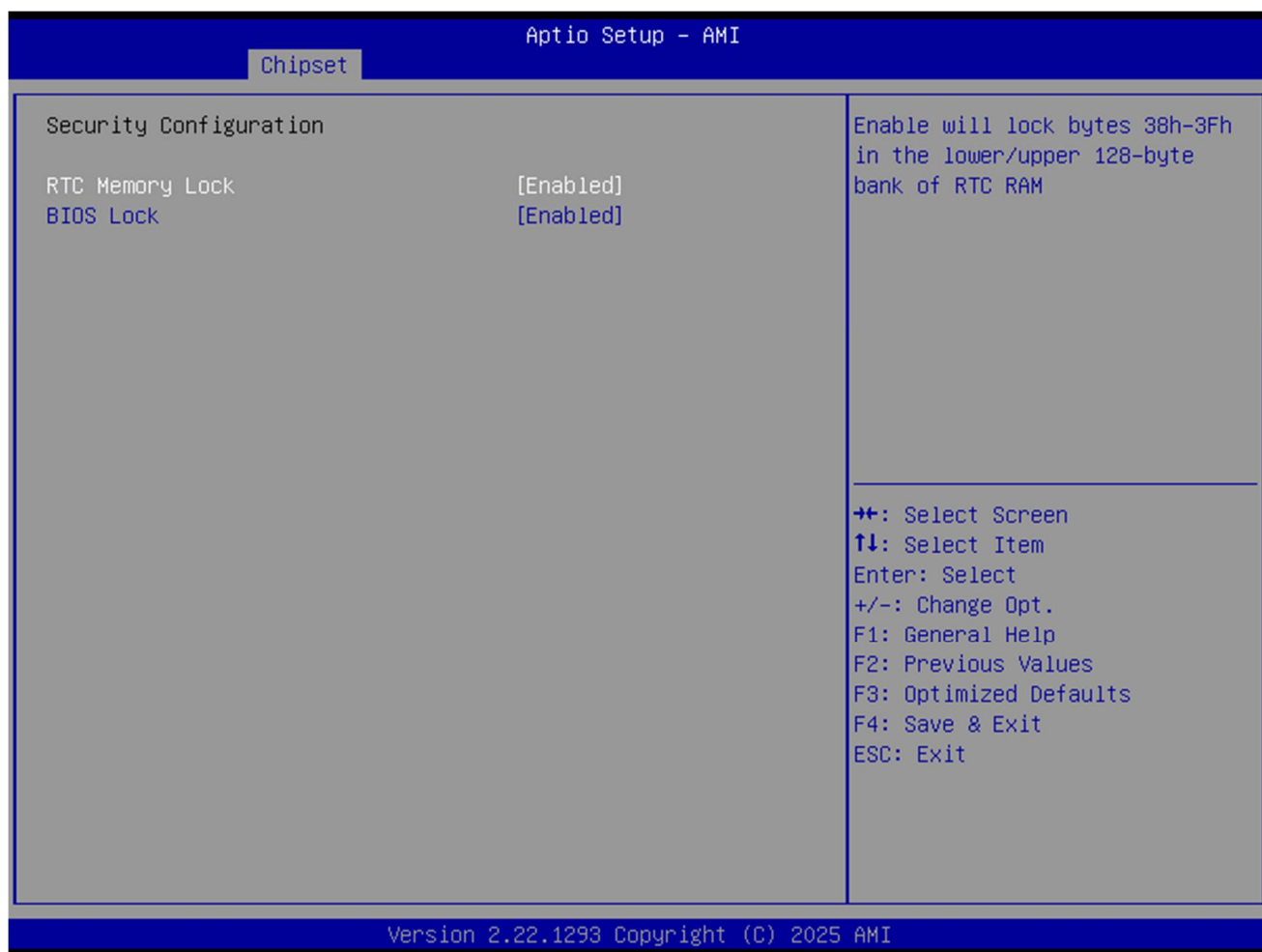
- **Port 1**  
Enable/Disable SATA Port.
- **SATA Port 1 DevSlp**  
Enable/Disable SATA Port 1 DevSlp. For DevSlp to work, both hard drive and SATA port need to support DevSlp function, otherwise an unexpected behavior might happen.

### 3.3.4.1 Chipset → PCH-IO Configuration → USB Configuration



- **USB SS (USB3\_1)**  
Enable/Disable USB3 Port 1.
- **USB SS (USB3\_2)**  
Enable/Disable USB3 Port 2.
- **USB SS (USB3\_3)**  
Enable/Disable USB3 Port 3.
- **USB SS (USB3\_4)**  
Enable/Disable USB3 Port 4.
- **USB HS (USB3\_1)**  
Enable/Disable USB3 Port 1.
- **USB HS (USB3\_2)**  
Enable/Disable USB3 Port 2.
- **USB HS (USB3\_3)**  
Enable/Disable USB3 Port 3.
- **USB HS (USB3\_4)**  
Enable/Disable USB3 Port 4.
- **USB HS TYPEC1**  
Enable/Disable TYPEC Port 1.
- **M.2 E-Key Port**  
Enable/Disable M.2 USB Port.

### 3.3.5.1 Chipset → PCH-IO Configuration → Security Configuration



- **RTC Memory Lock**  
Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.
- **BIOS Lock**  
Enable/Disable the PCH BIOS Lock Enable feature.

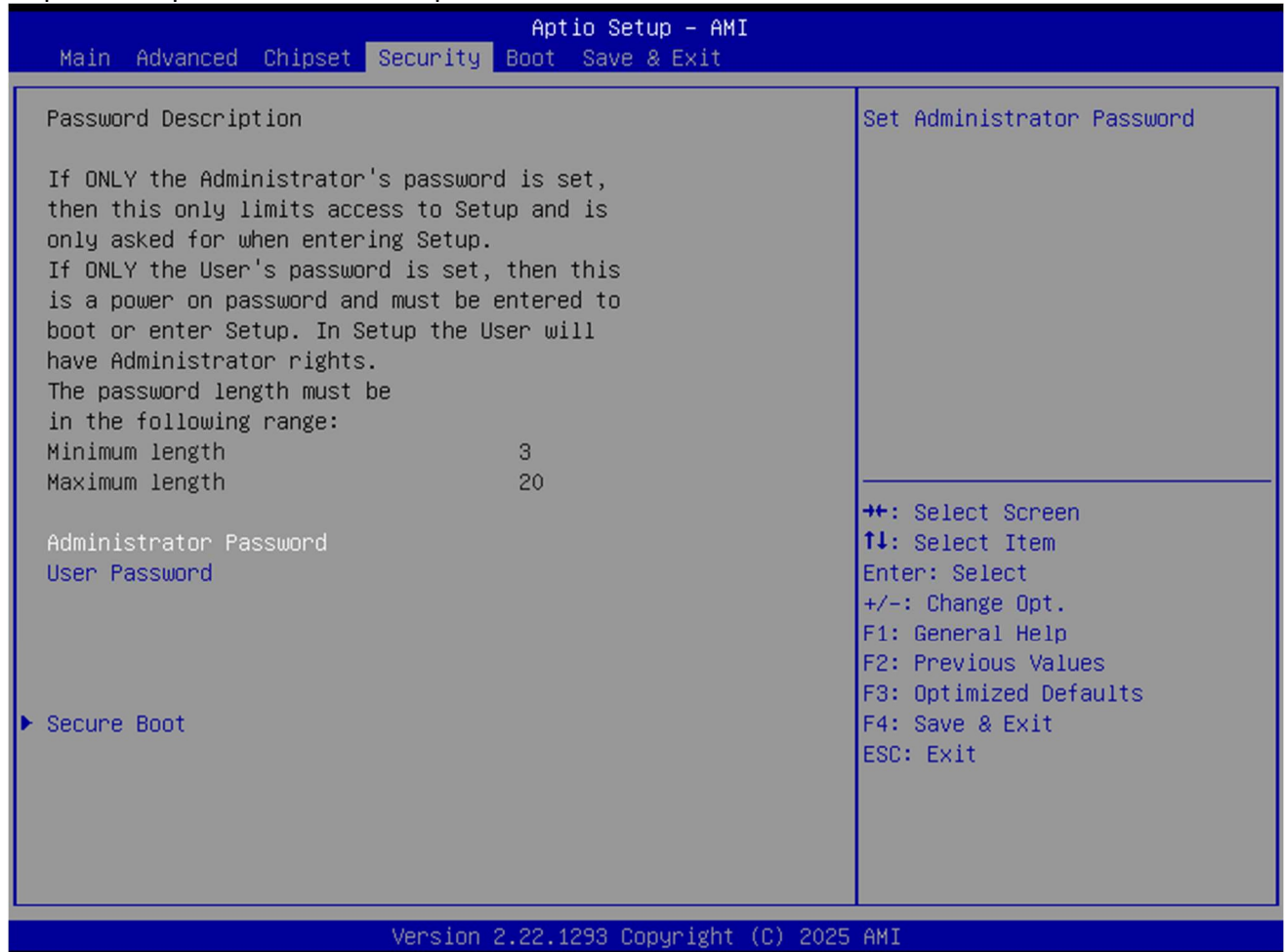
### 3.3.6.1 Chipset → PCH-IO Configuration → HD Audio Configuration



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

## 3.4 Security

Select Security Setup from the DS-330 Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection are described in this section.



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

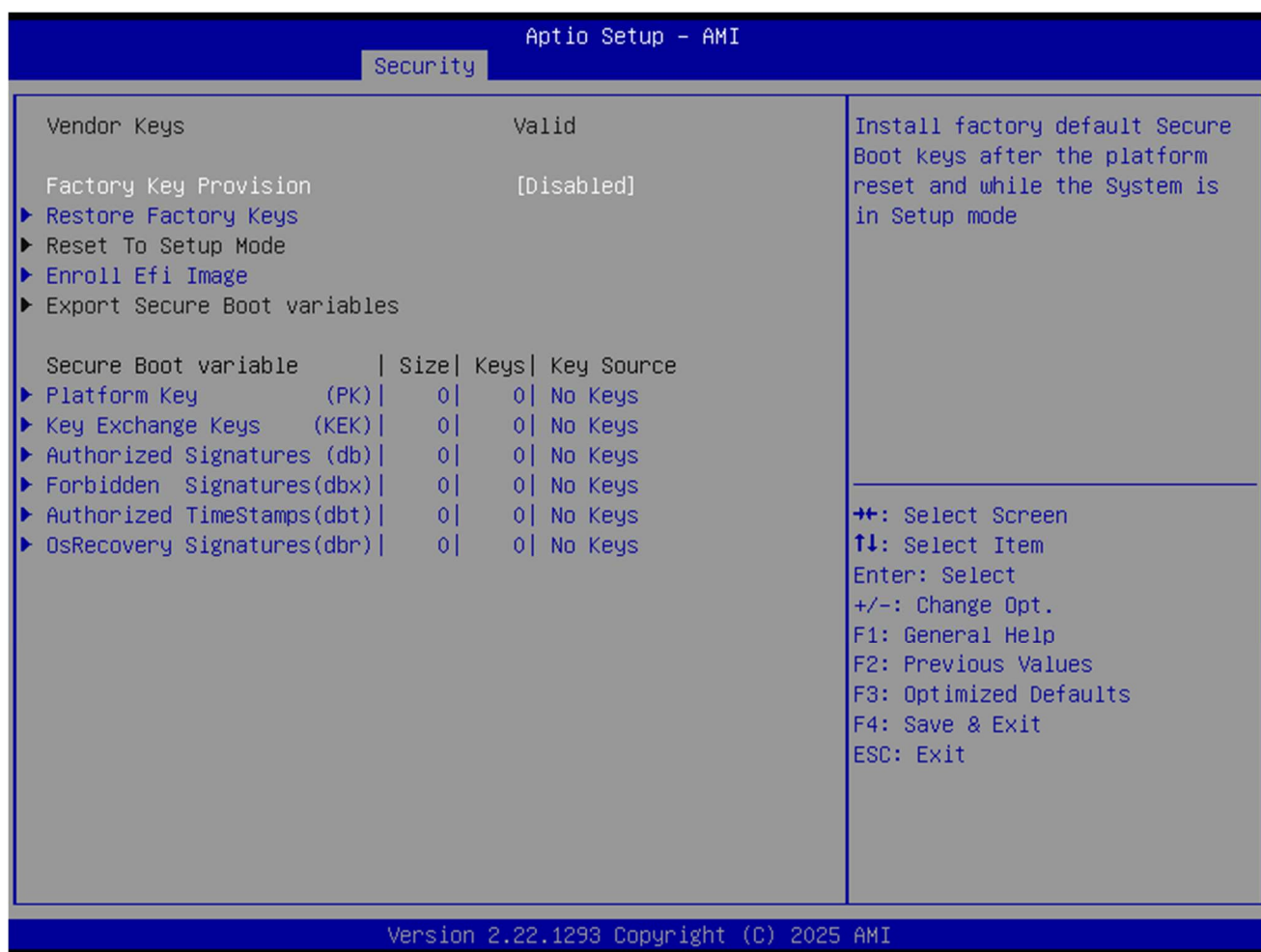
- **Change Administrator/User Password**  
Select this option and press <ENTER> to access the sub-menu, and then type in the password.
- **Secure Boot**  
Secure Boot Configurations.

### 3.4.1 Security → Secure Boot



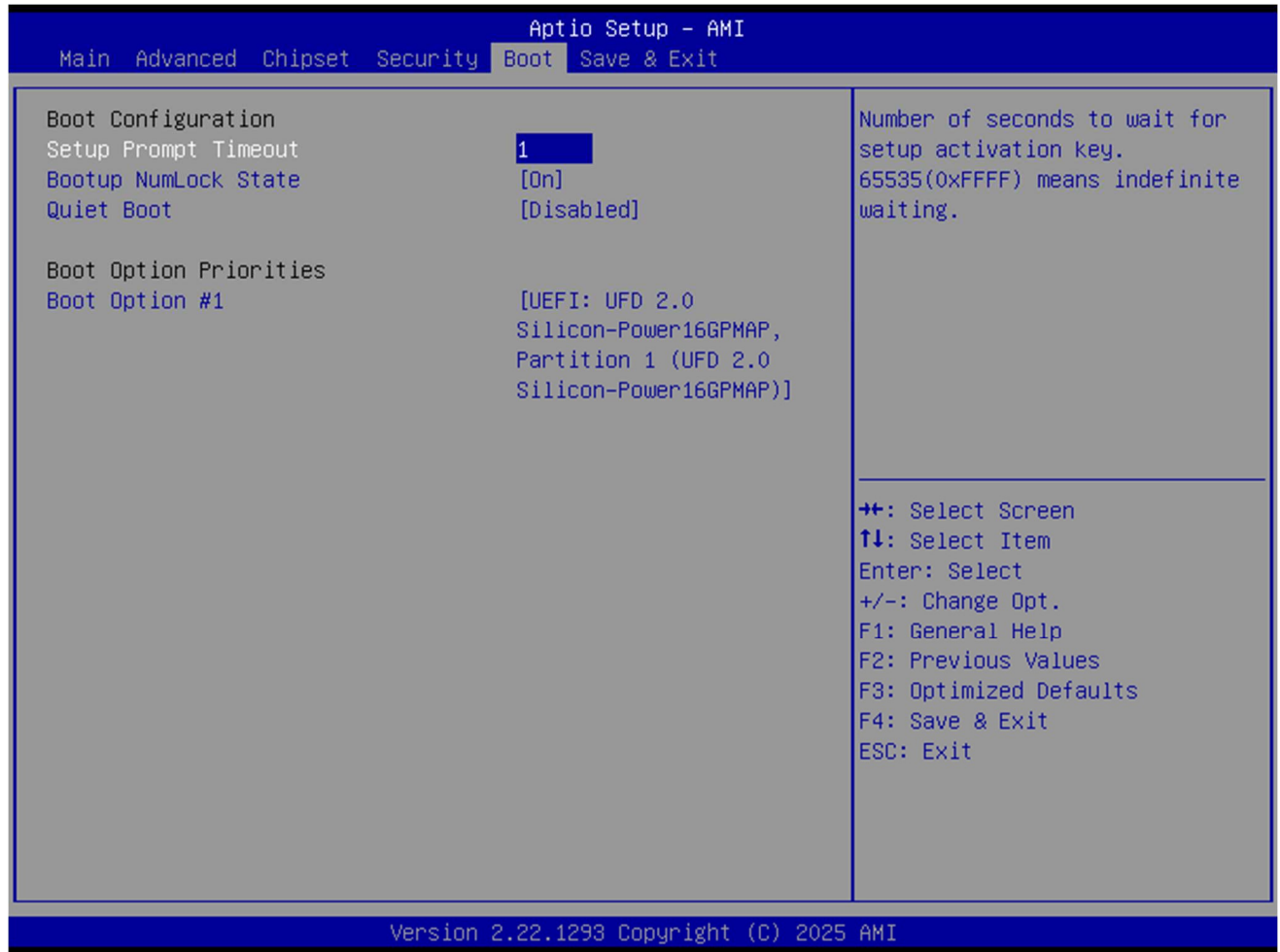
- **Secure Boot**  
The Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled, and the System is in User mode. The mode change requires a platform reset.
- **Secure Boot Mode**  
Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables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

### 3.4.2 Security → Expert Key Management



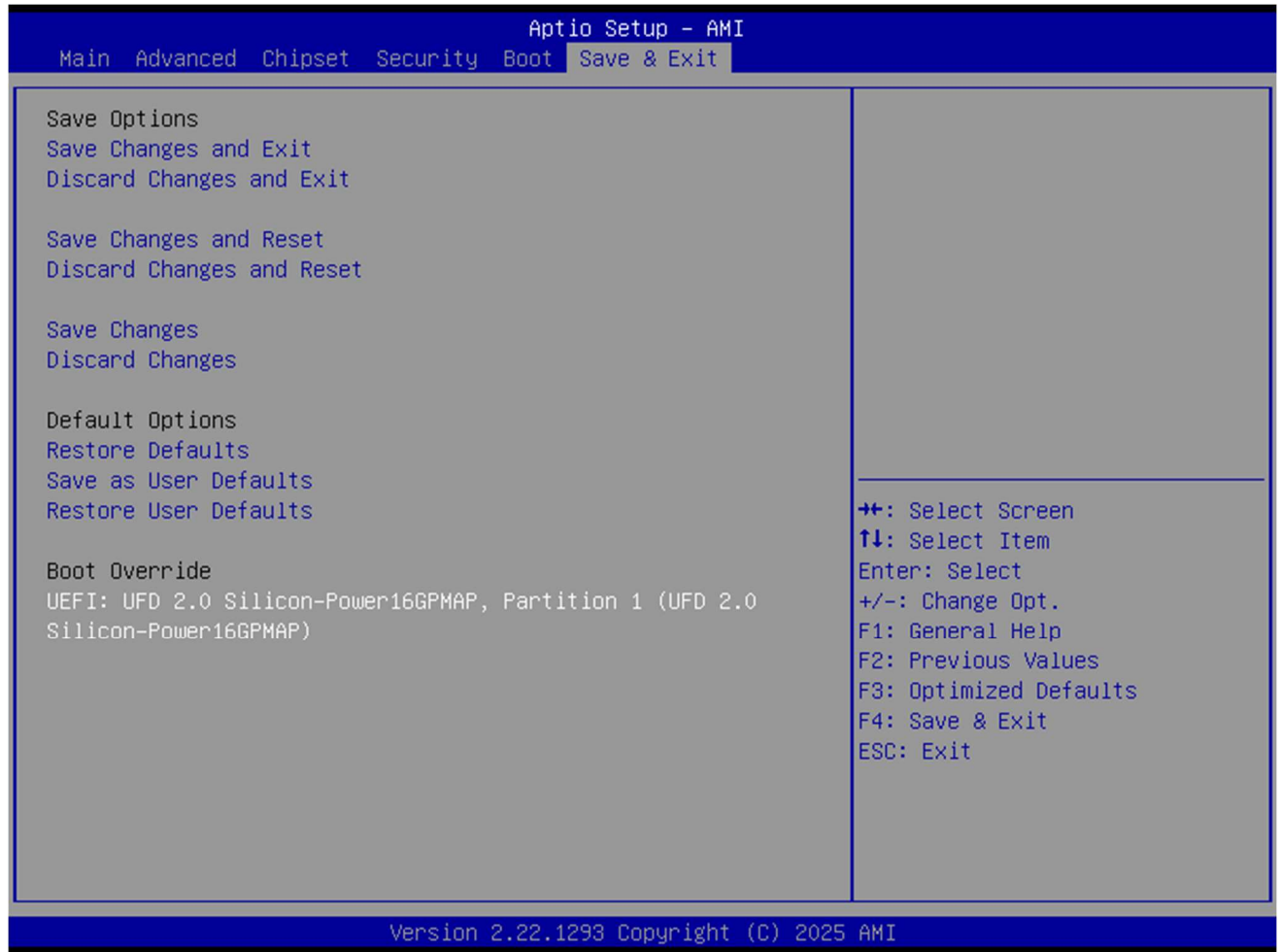
- **Factory Key Provision**  
Enable or disable Factory Key Provision

## 3.5 Boot



- **Setup Prompt Timeout**  
Number of seconds that the firmware will wait before initiating the original default boot selection. A value of 0 indicates that the default boot selection is to be initiated immediately on boot. A value of 65535(0xFFFF) indicates that firmware will wait for user input before booting. This means the default boot selection is not automatically started by the firmware.
- **Bootup NumLock State**  
Select the keyboard NumLock state.
- **Quiet Boot**  
Enable/Disable Quiet Boot option.
- **Boot Option #1**  
Sets the system boot order

## 3.6 Save & Exit



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



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