TEGUAR®

Regis (TB-7393) Series

User Manual V1.0

Regiment Series Embedded System

Intel® Raptor Lake-S Refresh Core-i Processors

Powerful, Versatile, and Rugged & Reliable

PREFACE

Copyright Notice

Disclaimer

We reserve the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. We assume no responsibility or liability for the use of the described product(s) conveys no license or title under any patent, copyright, or masks work rights to these products, and make no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described in this manual are for illustration purposes only. We make no representation or guarantee that such application will be suitable for the specified use without further testing or modification.

Declaration of Conformity

	**FCC** This equipment has been tested and found to comply with the limits for a class "A" digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at him own expense.
	**CE** This equipment is in conformity with the requirement of the following EU legislations and harmonized standards. Product also complies with the Council directions.

Safety Information

	**WARNING! / AVERTISSEMENT!** Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.
	**CAUTION/ATTENTION** Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Safety Precautions

For your safety, please carefully read all the safety instructions before using the device. All cautions and warnings on the equipment should be noted. Keep this user manual for future reference.

***Let service personnel to check the equipment in case any of the following problems appear:**

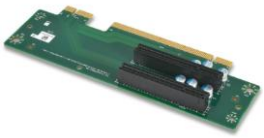
- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well or you cannot get it to work according to the user manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage on the surface.

Packing List

Item	Description	Q'ty
1	TB-7393 Embedded System	1
2	CPU Cooler (passive)	1
3	Wall Mount Brackets (2 pcs in 1 set) with 4 x Rubber pad	1
4	Screw Pack (For HDD, SATA cable, and Wall Mount Bracket)	1
5	3-pin Terminal Block Power Connector (For DC Power Input)	1
6	2-pin Terminal Block Power Connector (For Remote Power Control)	2
7	SATA Y cable	1

Optional Xpansion Modules and Accessories

Image	Description
	Expansion Module with 4 x RS232 / 422 / 485, 8-bit Isolated DIDO (4 x DI, 4 x DO)
	Expansion Module with 4 x Intel i210-IT Giga LAN, RJ45 Port
	Expansion Module with 4 x Intel i210-IT Giga LAN, M12 Port
	Expansion Module with 4 x PoE+, Intel i210-IT Giga LAN, RJ45 Port
	Expansion Module with 4 x PoE+, Intel i210-IT Giga LAN, M12 Port
	Xpansion Module with 2 x CANBus 2.0B and 8-bit Isolated DIDO (4 x DI, 4 x DO)
	Xpansion Module with 802.3 at/af PoE+ support for On Board 4 x 2.5G LAN
	Expansion Module with 2 x PoE+, Intel i210-IT Giga LAN, RJ45 Port
	Internal 4020 FAN Kit for GFX Card (Included by Default)
	Internal 4028 FAN with FAN duct Kit for T4/P4/L4 Card

	MP-088RCN-P10_(PCIE Gen4 X8 + PCIE Gen4 X8) Riser Card w/ Single Packing *This is option. BOM already has one default PCIeX16+PCIeX1 riser card
	AC/DC 24V/12.5A, 300W 3PIN Terminal Block Power Adaptor with EU+US power cords
	AC/DC 12V/15A, 180W DIN4PIN Power Adaptor with internal power cable, and EU+US power cords (2nd AC adaptor for Models needing more power for GPU than 75W)

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INTRODUCTION

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This chapter provides the TB-7393 Embedded System product overview, including features, hardware and mechanical specifications.

CHAPTER 1: INTRODUCTION

This chapter provides the TB-7393 Embedded System product overview, including features, hardware, mechanical specifications, and I/O placement.

1.1 Overview

Teguar's TB-7393 embedded system is the next generation embedded system with Intel® Alder Lake R680E workstation chipset which can support Core-i FCLGA1700 socket type processor. The excellent performance, powerful processor, OCP/OVP power protection, and expandable design provide the solution for every complicated task and most types of application.

1.2 Product Features

TB-7393 Embedded System offers the following features:

- AI Inference
- Intel® Raptor Lake-S Refresh 14th / Raptor Lake-S 13th / Alder Lake-S 12th Core-i processor (Up to 65W)
- Support 2 x DDR5 SO-DIMM (Up to 96GB)
- HDMI, DisplayPort, VGA, 4 x 2.5G LAN
- Support 8 x USB3.2 Gen2, 3 x RS232/422/485, and 8-bit DIO
- 9~48V Wide Power Range
- Support up to NVIDIA RTX A2000 / RTX 4060 GPU
- Support up to 8 x Hailo-8™ AI Processor

1.3 Hardware Specification

SYSTEM	
CPU	14th/13th/12th Gen Intel® Raptor Lake-S Refresh/Raptor Lake-S/Alder Lake-S Core i9/i7/i5/i3/Celeron/Pentium (Up to 65W)
Chipset	Intel® R680E
System Memory	DDR5 4800 MHz / 2 x 262-pin SO-DIMM / Max. 96 GB (Non-ECC/ECC)
Graphics	Intel® UHD Graphics
Display Interface	HDMI1.4, DisplayPort1.4, VGA
Storage Slot	3 x 2.5 HDD / SSD (1 w/ Removable HDD Bay; 2 w/ Internal HDD Bracket, 1st SATA cable as Default, 2nd SATA cable as Option) 1 x M.2 2280/2260/2242 NVMe / SATA SSD 1 x M.2 2242/2260 SATA SSD 1 x mSATA
Ethernet	4 x Intel® I226-LM 2.5G LAN *Optional 4 x PoE 802.3at Expansion
Audio	Realtek® ALC888
I/O Chipset	Nuvoton NCT6126D
TPM	Nuvoton NPCT760AABYX TPM2.0
Expansion Slot	1 x M.2 2230/ 2242 / 2260 / 2280 M key (PCIeX4 NVME, SATAIII) 1 x M.2 2230 E key (CNVi , PCIeX1, USB 2.0) 1 x M.2 3052 / 3042 / 2242 / 2260 B key (USB3.0 , SATAIII, PCIeX1) w/ 2 x SIM slot 1 x mPCIe Full / Half size (USB2.0 / PCIeX1 / SATAIII) a. PCIe 4.0 x16 + PCIe 4.0 x1 (Default) b. PCIe 4.0 x8 + PCIe 4.0 x8 (Option)
Indicator	DIO / LAN1~4 ACT / Power LED / HDD LED
FRONT I/O	2 x USB 3.2 Gen2 1 x HDMI 1.4 2 x SIM Card Slot w/ Cover 1 x 2.5" SATAIII HDD / SSD Bay
REAR I/O	4 x RJ-45 6 x USB 3.2 Gen 2 (10 Gbps) 3 x RS232 / 422 / 485 (Support Power 5V / 12V) 1 x 8-bit GPIO (in DB9 Connector) 1 x DisplayPort 1.2 1 x VGA 1 x Mic-in & 1 x Line-out 1 x 2-pin Terminal Block Remote Power on / off

	1 x 2-pin Terminal Block Remote Power reset 1 x 3-pin Terminal Block Power Input 6 x SMA Antenna (Optional for WiFi/LTE function)
Watchdog Timer	1~255 Steps by Software Program
POWER REQUIREMENT	
Power Input	9~48V Wide Rage DC Input w/ Terminal Block Connectivity **For DC source in directly, the maximum operating ambient temperature is 70℃.* *For using with External AC adaptor model: EA13001N-240 (for 12.5A rating), the maximum ambient operating temperature is 40℃ if the system will be for using with external AC adaptor model: EA13001N-240.*
MECHANICAL	
Thermal Design	2 x 4020 Internal System Fan Included for PCIe Expansion Bay Cooling (Removeable)
Mounting	Wall mount with rubber kit design
Dimension	10.6” x 9.7” x 5” (268 mm x 246 mm x 128 mm)
Material	Top cover: Aluminum Alloy , Bezel and chassis: Steel
ENVIRONMENTAL	
Operating Temperature	**a. Fanless Design:** 35W TDP Processor: -40°C to 70°C 65W TDP Processor: -40°C to 50°C (with 0.7m/s Air Flow and Wide Temperature Memory/Storage) **b. Fan Design, for max. 120W GFX Card thermal design, add Internal 40x20 System Fan x 2:** 35W TDP Processor: -20°C to 50°C 65W TDP Processor: -20°C to 45°C (with 0.7m/s Air Flow and Wide Temperature Memory/Storage)
Operating Humidity	10%~90% R/H (Non-condensing)
Storage Humidity	10%~95% @85°C (Non-condensing)
Vibration Resistance	Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64; w/o GFX Card)
Shock Resistance	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, according to IEC60068-2-27; w/o GFX Card)
Certification	EMC: CE & FCC Safety: compliant with LVD CoC, EN62368-1
OS	
OS Support	Windows® 11 IoT Enterprise LTSC 2024 64-bit Windows® 10 IoT Enterprise 2021 LTSC 64-bit Ubuntu 22.04, Linux (support by request)

**Notes[1]: Installation in Restricted Access Location (RAL)*

A restricted access location is a designated area within an incident area (High or Low temperature environment)

With authorized people can enter for a period of time and for a specific purpose.

1. *Access can only be gained by service people or by users who have been instructed about the reasons for the Restrictions applied to the location and about any precautions that shall be taken.*
2. *Access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority Responsible for the location.*

**Notes[2]: Please make sure that the power consumption is in the spec of the power supply output capability from AC adaptor (300W). Please choose the suitable AC adaptor or power supply for your application.*

AC/DC 24V/12.5A, 300W 3PIN Terminal Block Power Adaptor

**Note[3]: The safety ambient operating temperature is 40 degree C if the external AC adapter model: EA13001N will be placed in the same high temperature area with the embedded system.*

**Note[4]: CAUTION - Lithium battery is included in this embedded system. Please do not puncture, mutilate, or dispose of battery in fire. There will be danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.*

**Note[5]: Please read the BIOS release note before re-flashing BIOS. If the BIOS notes mention the BIOS will be loaded default after re-flashing BIOS, please check the BIOS setting again before boot up. For example, inconsistent RAID setting might cause system boot up issue.*

**Note[6]: When TB-7393 is installed with PCIe GFX card, the BIOS setup menu will only have display output via external graphic card.*

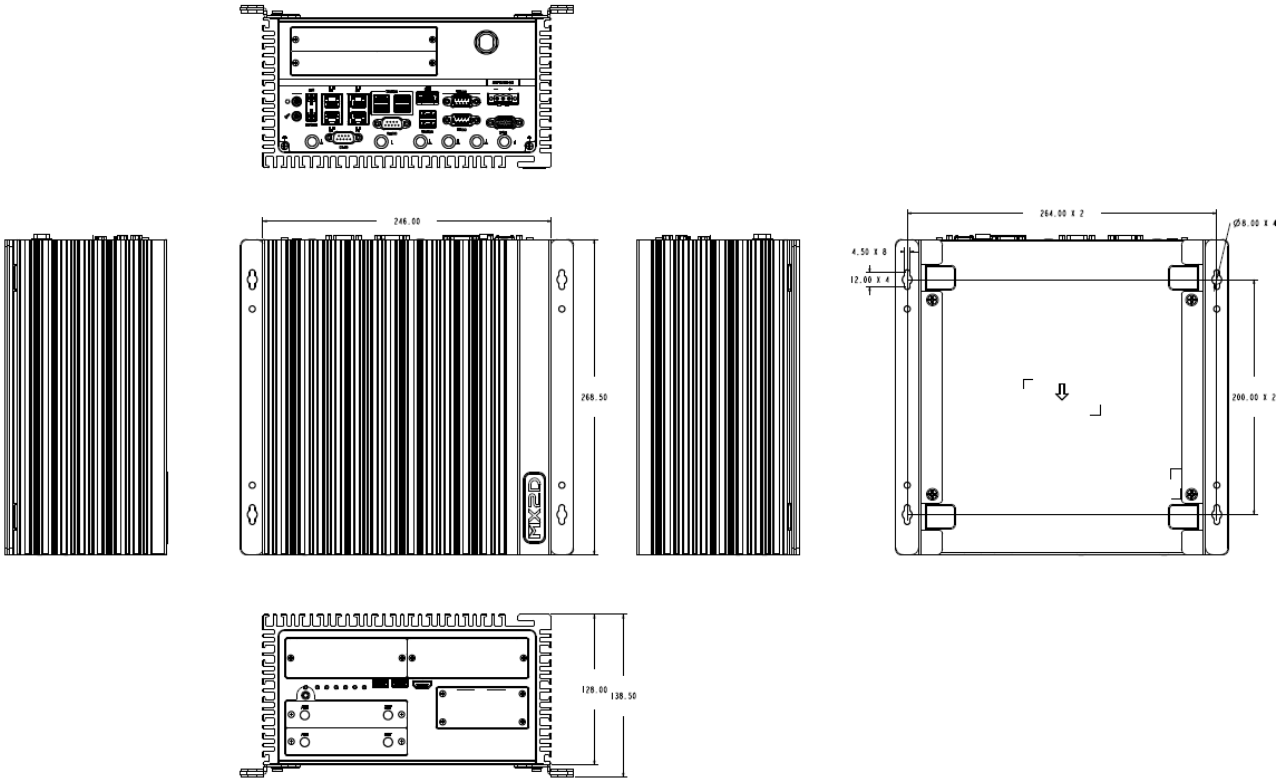
**Note[7]: When TB-7393 is installed with NVIDIA L4 or A2 AI card, 2*40x40x28mm internal system fan, and fan duct, it can only be installed with 1 internal HDD/SSD (not include removable HDD/SSD) instead of 2 in avoid of fan duct interference. The SATA cable connector needs to insert to the internal SATA connector.*

1.4 Mechanical Specification

Mechanical Dimension: 268 mm x 246 mm x 128 mm

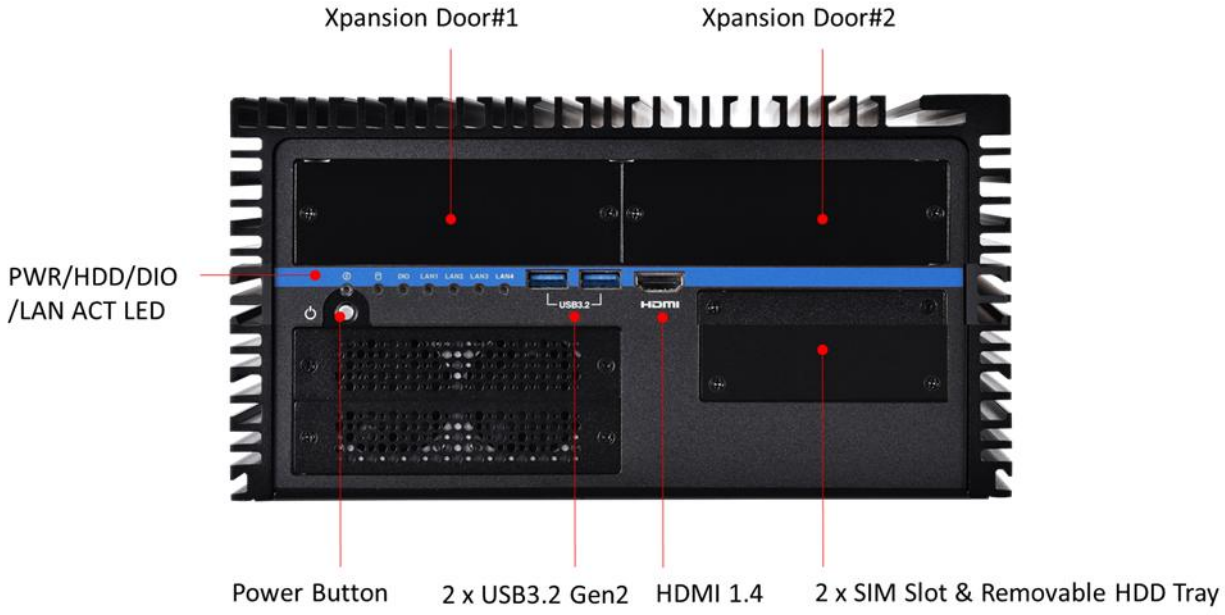
PCI Express x16 Slot Maximum Card Dimension:

145 x 221 x 43mm w/ internal FAN kit

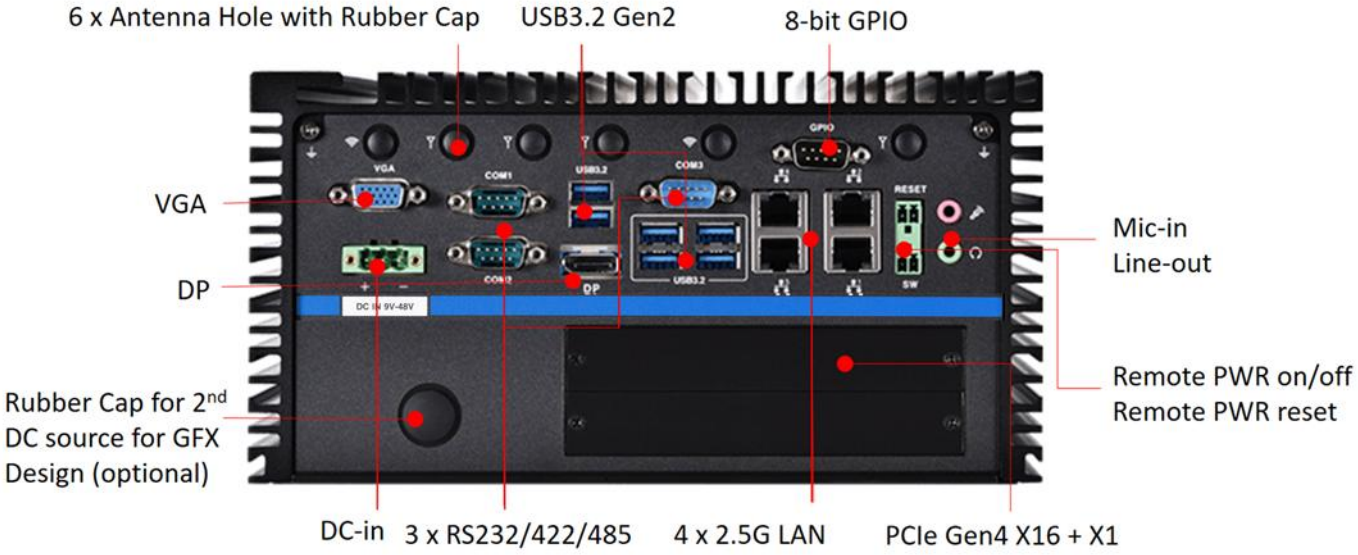


1.5 System I/O Placement

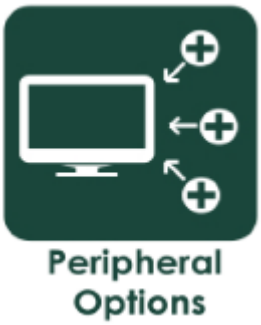
- **Front I/O:**

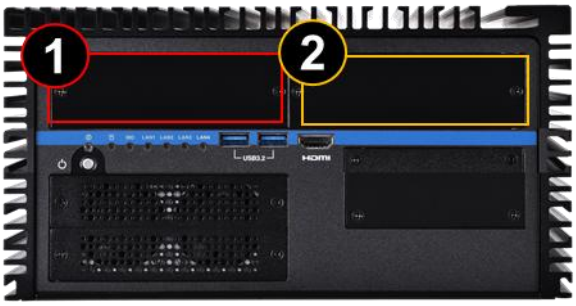


- **Rear I/O:**



■ **Expansion Module (Optional) Configuration Table**





Model	1	2	3	4
4x COM, 4x DIDO	V	V		
4x Gbe LAN (RJ45)	V	V		
4x Gbe LAN (M12)	V	V		
4x PoE LAN (RJ45)	V	V		
4x PoE LAN (M12)	V	V		
PoE+ LAN Power Module				V

1.6 Recommended PoE Configuration and Environmental Spec Matrix

CPU TDP	PoE Configuration	Max. Ambient	CPU Utility	Memory Loading	HDD/SSD Loading	PoE Power%
65W	None	50C	100%	40%	10%	-
65W	x 2 port PoE (Max. 30W)	45C	70%	40%	10%	70%
65W	x 4 port PoE (Max. 50W)	40C	70%	40%	10%	70%
65W	x 8 port PoE (Max. 100W)	30C	50%	40%	10%	70%
35W	None	70C	100%	40%	10%	-
35W	x 2 port PoE (Max. 30W)	65C	70%	40%	10%	70%
35W	x 4 port PoE (Max. 50W)	60C	70%	40%	10%	70%
35W	x 8 port PoE (Max. 100W)	50C	70%	40%	10%	70%
35W	x 12 port PoE (Max. 150W)	40C	70%	40%	10%	70%

DIP SWITCH SETTING AND PIN DEFINITION

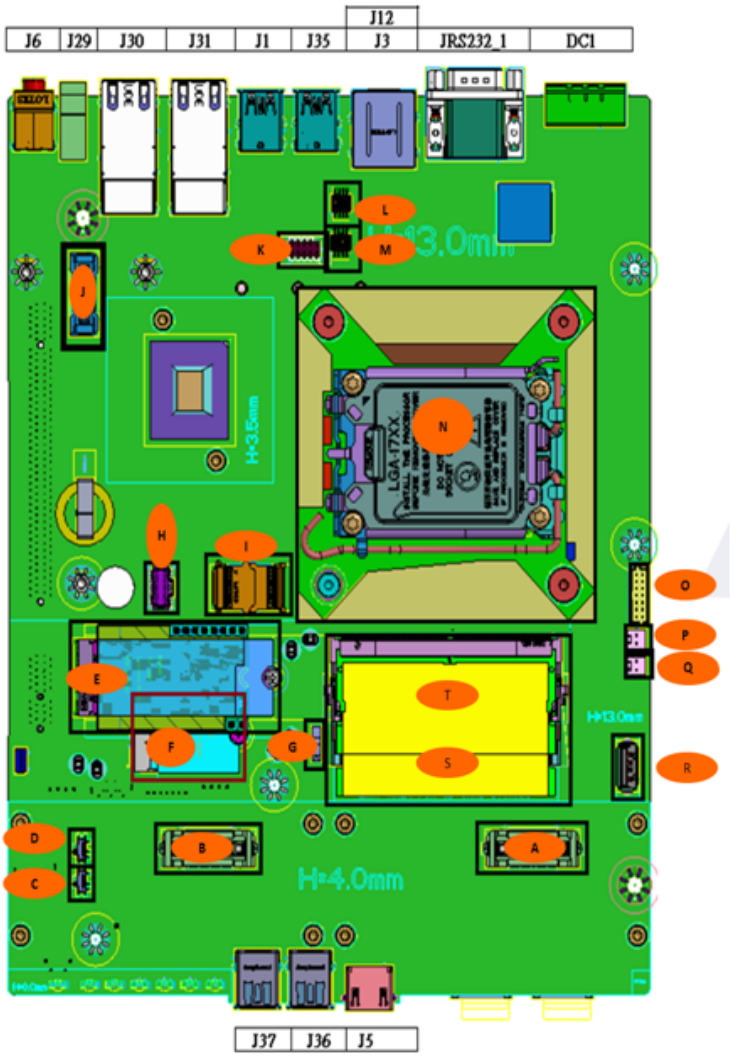
2

This chapter provides information about how to set up the dip switch and use internal I/Os of TB-7393 Embedded System hardware.

CHAPTER 2: DIP SWITCH SETTING AND PIN DEFINITION

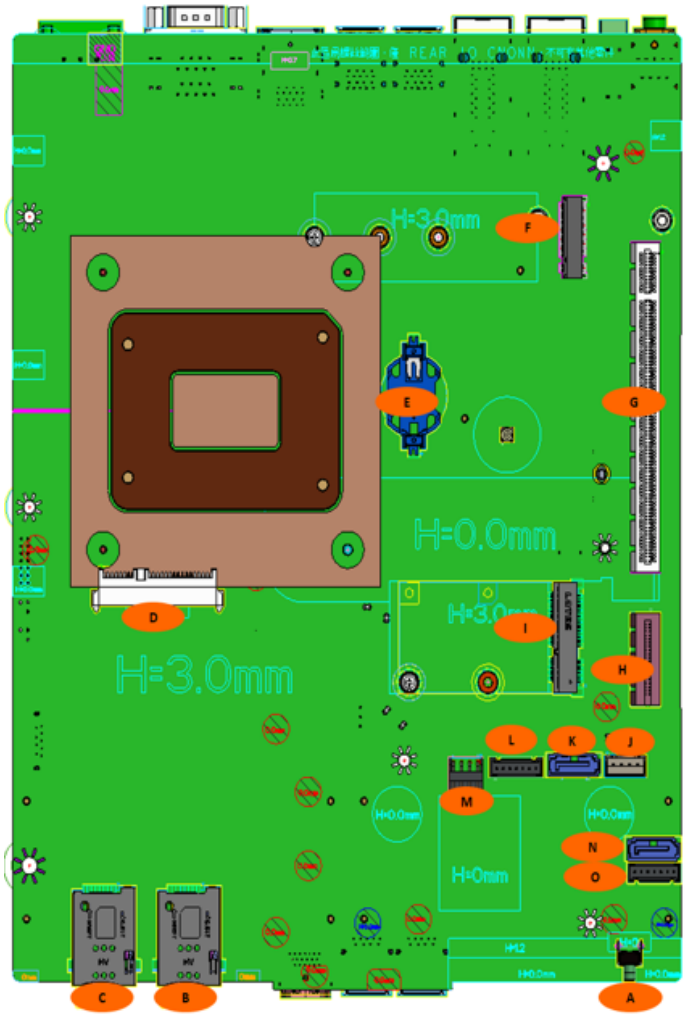
This chapter provides information about how to set up the dip switch, and use internal I/Os of TB-7393 Embedded System hardware.

2.1 Jumper and Internal Connector Overall Placement



Side IO	
J6	AUDIO: MIC/ LINE OUT
J29	Power ON/OFF(Low)/ Reset(High)
J30	DUAL LAN CONN
J31	DUAL LAN CONN
J1	DUAL USB3.2 CONN
J35	DUAL USB3.2 CONN
J12	DUAL USB3.2 (stack-high)
J3	Display port ((stack-low)
JRS232_1	JRS232 CONN
DC1	DC Power CONN
J5	HDMI port
J36	USB3.2 CONN
J37	USB3.2 CONN

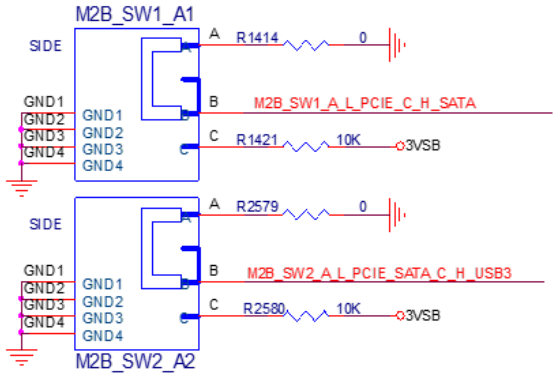
TOP side internal		
A	J16	Board to board 1
B	J17	Board to board 2
C	M2B_SW2_A1	M2B-PCIe/sata/USB3 switch
D	M2B_SW1_A1	M2B-PCIe/sata/USB3 switch
E	M2B1	M.2 key B
F	M2E1	M.2 key E
G	SW1	AT/ATX mode
H	J24	DIO header
I	E1	BIOS socket
J	J11	POE module header
K	J_RS232_P1	RS232 header
L	SW2	COM port RI power selector
M	SW3	COM port RI power selector
N	CPU SOCKET	CPU socket
O	J2	VGA header
P	J27	VCC output header
Q	J28	VCC output header
R	J15	USB3.1 header
S	DIMM2	DIMM2-DDR5
T	DIMM1	DIMM1-DDR5



BTN side internal		
A	PWR_BTN1	Power ON/OFF Button
B	SIM2_J1	SIM card header
C	SIM2_J2	SIM card header
D	J18	SATA header
E	XBT1	RTC battery header
F	M2M1	M.2 -m key Slot
G	PCIE_X16_SLOT1	PCIe X16 slot
H	PCIE_X1_SLOT1	PCIe X1 slot
I	MPCIE1	Mini PCIe slot
J	J26	Power Header(12V-5A)
K	J22	SATA header
L	J19	SATA Power header (12V/ 5V /3V)
M	J25	System FAN header
N	J21	SATA header
O	J20	SATA Power header (12V/ 5V /3V)

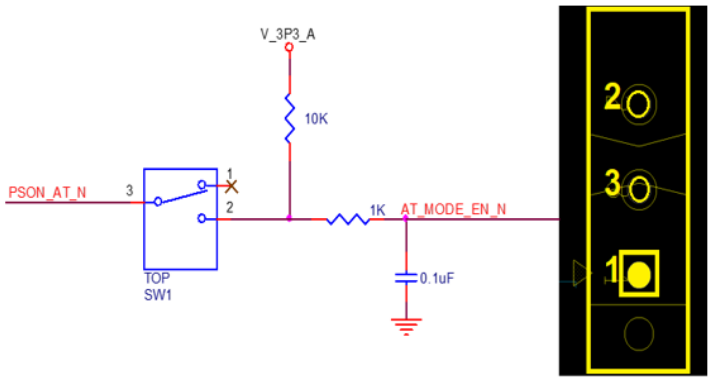
2.2 DIP Switch Setting

D	M2B_SW1_A1	M2B-PCIe/SATA/USB3 switch-1
C	M2B_SW2_A1	M2B-PCIe/SATA/USB3 switch-2

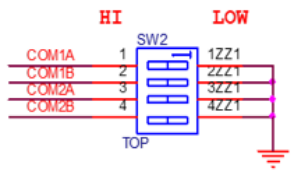


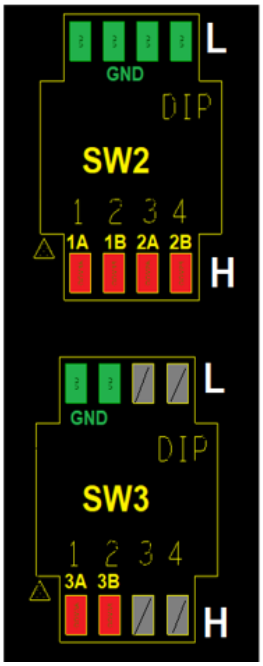
Function	M2B_SW1	M2B_SW2
PCIe	A	A
SATA	C	A
USB3.0	X (A or C)	C

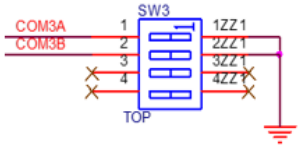
G	SW1	AT/ATX mode
	Pin1- Pin3	Normal mode
	Pin2- Pin3	AT mode



L	SW2	COM port RI power selector
M	SW3	COM port RI power selector







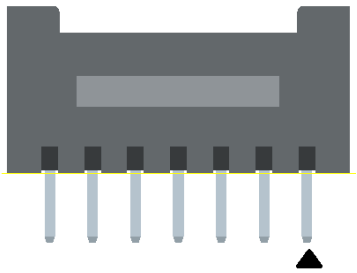
SW2	COM1A	COM1B	COM1 MULTI_NRI1
	Low	Low	Ring
	Low	High	5V
	High	Low	12V
	COM2A	COM2B	COM2 MULTI_NRI2
	Low	Low	Ring
	Low	High	5V
	High	Low	12V
SW3	COM3A	COM3B	COM3 J_RS232_P1
	Low	Low	Ring
	Low	High	5V
	High	Low	12V

2.3 Internal Connector Pin Definition

■ Location J18 – 1st SATA Connector

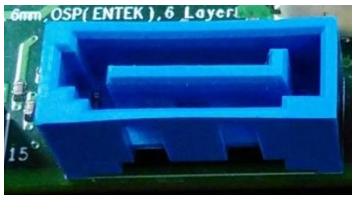
Pin	Signal Name
P1	VCC3
P2	VCC3
P3	VCC3
P4	GND
P5	GND
P6	GND
P7	VCC
P8	VCC
P9	VCC
P10	GND
P11	RES
P12	GND
P13	+12V
P14	+12V
P15	+12V
S1	GND
S2	SATAHDR_TXP0_C
S3	SATAHDR_TXN0_C
S4	GND
S5	SATAHDR_RXN0_C
S6	SATAHDR_RXP0_C
S7	GND

■ Location J19/J20 – 2nd and 3rd SATA Power Header



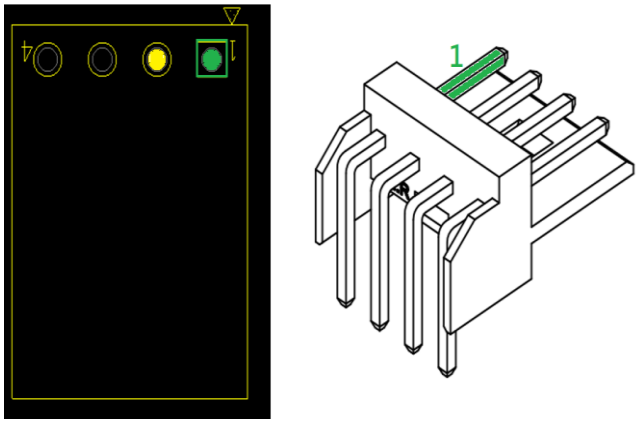
Pin	Signal Name
1	VCC3
2	GND
3	VCC
4	VCC
5	GND
6	+12V
7	+12V

■ Location J21/J22 – 2nd and 3rd SATA Signal Header



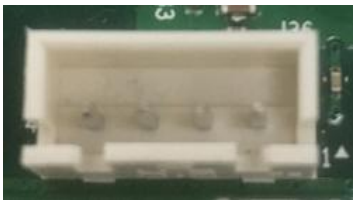
Pin	Signal Name	Description
1	GND	Ground
2	SATAHDR_TXP_C	SATA DATA Transmit(positive)
3	SATAHDR_TXN_C	SATA DATA Transmit(negative)
4	GND	Ground
5	SATAHDR_RXN_C	SATA DATA Receive(negative)
6	SATAHDR_RXP_C	SATA DATA Receive(positive)
7	GND	Ground
8	G1	GND
9	G2	GND

■ Location J25 – Fan Header



Pin	Signal
1	Ground
2	+12V
3	CPU_FAN_TACH
4	CPU_FAN_CTRL

■ Location J26 – 12V/5A Power Header for PoE Xpansion



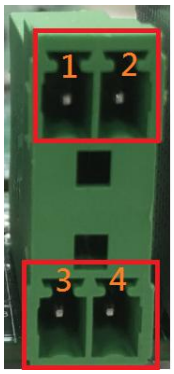
Pin	Signal
1	Ground
2	+12V
3	+12V
4	GND

2.4 External Connector Pin Definition

■ 3-pin terminal block for DC Input

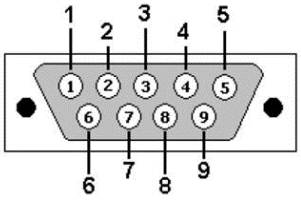
Pin	Signal
1	DC IN +9~48VIN
2	N/A
3	GND

■ 2-pin Terminal Block for Remote Power ON/OFF and Reset



Pin	Signal
1	Ground
2	EXT Reset
3	Ground
4	EXT_PWRBT_ON/OFF

■ COM#1 / COM#2 / COM#3



Pin No	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	RTX	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

2.5 Expansion Module – 4x COM/8x DIDO

This Module consists of two parts, one is Serial COM, and the other is Digital IO function.
Please see the guideline about how to set up this Module correctly.

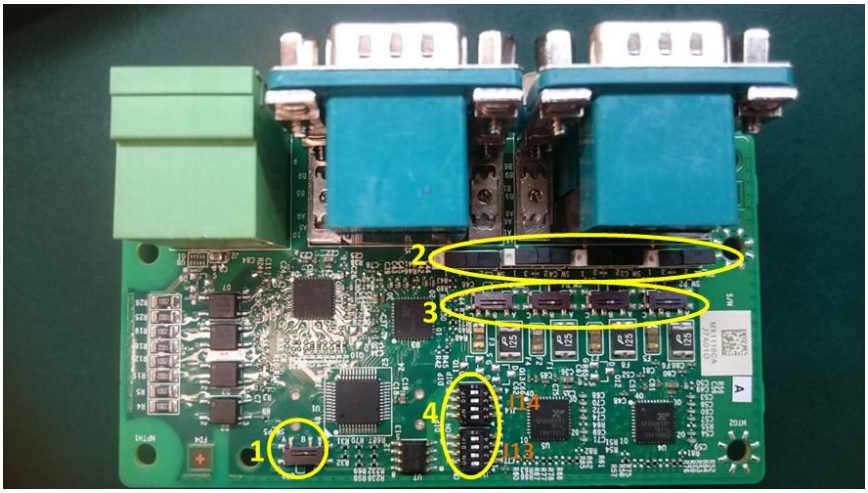
■ COM Port Setting

a. Location

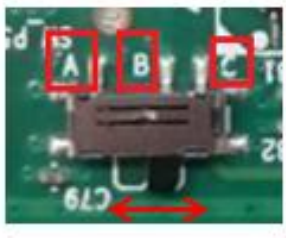
This expansion has total 4 x COM port. These COM ports can be set to be RS232/RS422/RS485 or powered RS232. There are 2 kinds of Expansion COM driver. One is standard non-fixed COM port order driver, and the other one is fixed COM order driver. If what you install is fixed COM port order driver, the position will be as follows.

1st Left Expansion Door	2nd Right Expansion Door
	

b. Dip Switch Function



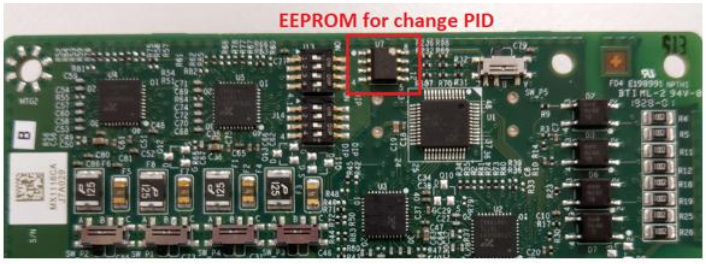
(1) COM PID selection switch



Set A-B; COM PID 0x1414 is determined by UART controller (default).

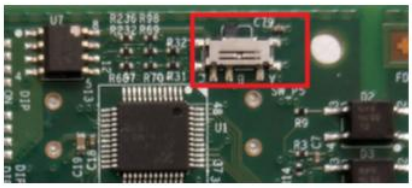
Set B-C; COM PID 0x1415 is determined by EEPROM (setting for 2nd COM Expansion).

PID and Driver Version Matrix Table



PID 0x1414 from COM chip

PID 0x1415 from EERPOM



Fix COM driver (2.5.0.5) "SW Control table V0.21"	PID 0x1414	PID 0x1415
COM sequence	COM 12 ~ COM 15	COM 16 ~ 19

Standard driver (2.5.0.3) "SW Control table V0.21"	PID 0x1414	PID 0x1415
COM sequence	OS detect	OS detect

(2) Powered COM enable switch

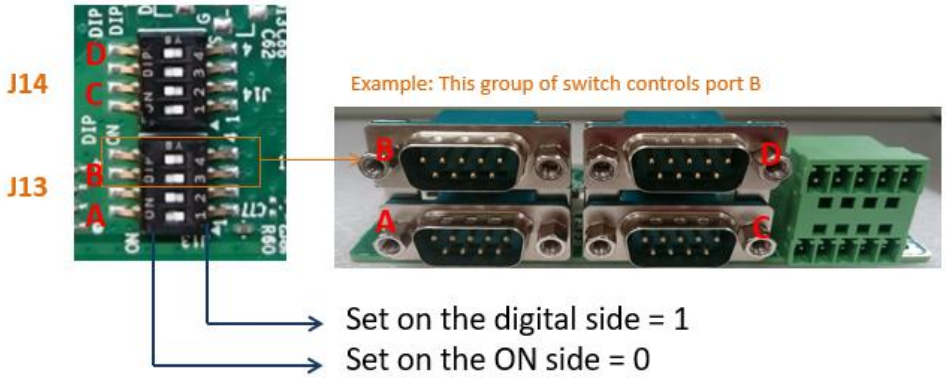
Set to the right(default)
Normal COM port (Pin9 = signal)

Set to the left
Powered COM port (Pin9 = VDD)

(3) Powered COM power source selection switch

Set A-B; VDD = 12V (Default)
Set B-C; VDD = 5V

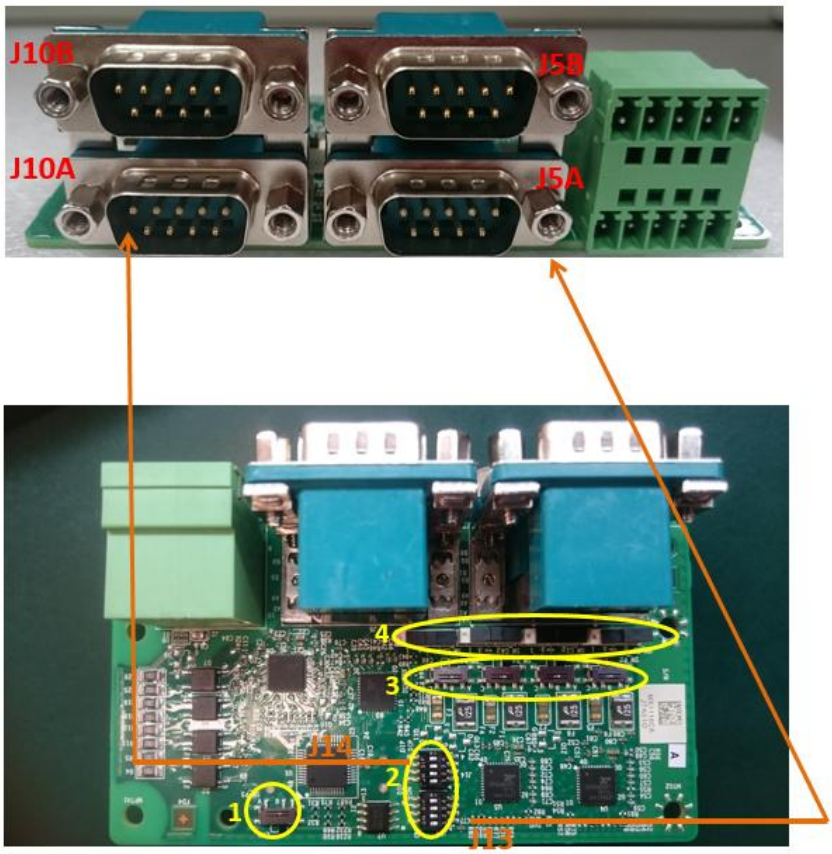
(4) COM Mode setting switch

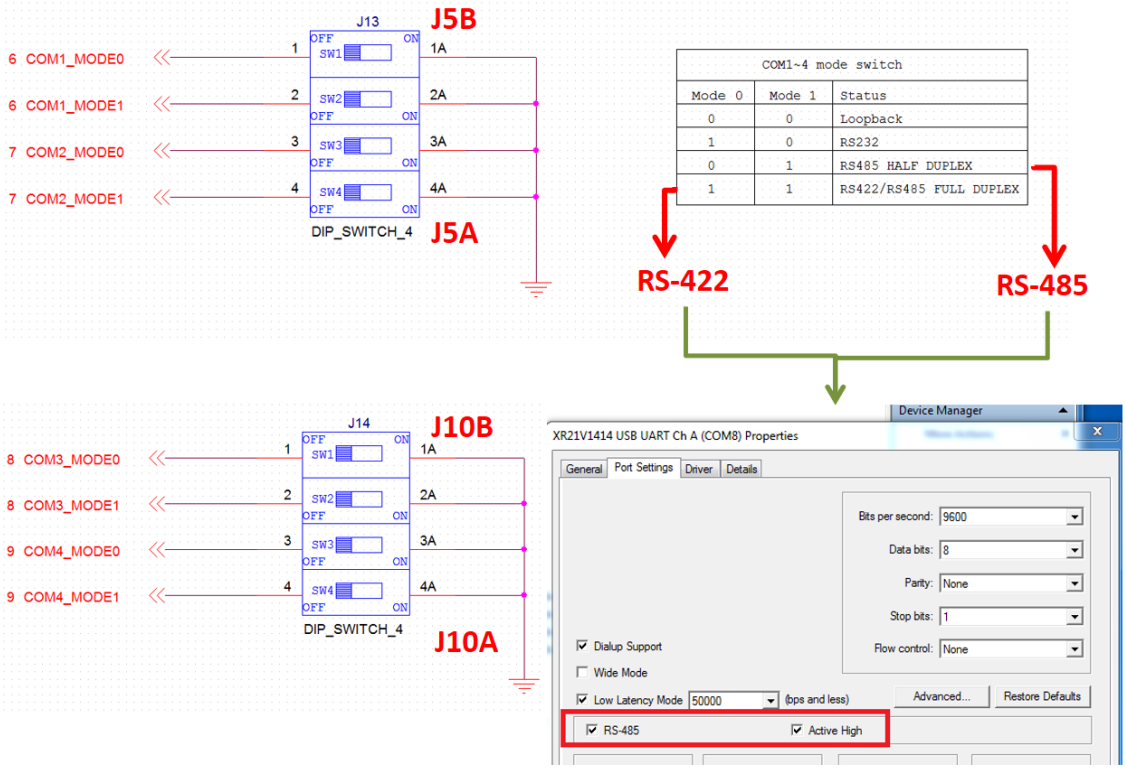


Switch	Bit	COM Port	Test Mode	RS485	RS232 (Default)	RS422
J14	4	Port D	0	1	0	1
	3		0	0	1	1
	2	Port C	0	1	0	1
	1		0	0	1	1

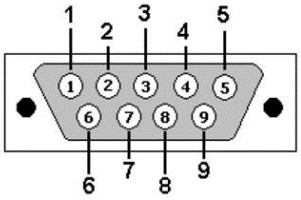
Switch	Bit	COM Port	Test Mode	RS485	RS232 (Default)	RS422
J13	4	Port B	0	1	0	1
	3		0	0	1	1
	2	Port A	0	1	0	1
	1		0	0	1	1

Driver Configuration Setting for RS485





(5) COM Port Pinout

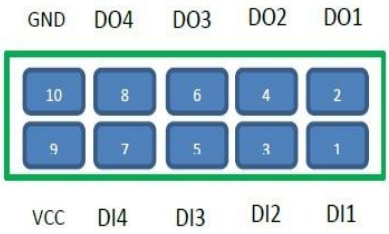


Pin No	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	RTX	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

Digital IO Port

This Expansion has total 8-bit GPIO, the position is as follows.

DIDO board pin definition



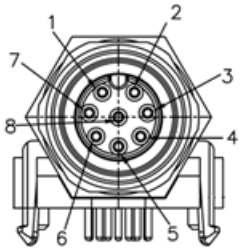
Left DIO Expansion	Right DIO Expansion

PIN	HW	Left DIO Order	Right DIO Order	Description
PIN1	DI_1	21	11	Digital Input 1
PIN2	DO_1	22	12	Digital Output 1
PIN3	DI_2	23	13	Digital Input 2
PIN4	DO_2	24	14	Digital Output 2
PIN5	DI_3	25	15	Digital Input 3
PIN6	DO_3	26	16	Digital Output 3
PIN7	DI_4	27	17	Digital Input 4
PIN8	DO_4	28	18	Digital Output 4
PIN9	VCC	-	-	VCC
PIN10	GND	-	-	Ground

2.6 Expansion Module – 4x Gbe LAN (M12)

This Module is a Giga LAN module, which supports four M12 type interfaces.
Combined with MS-01PON-S10 to support PoE (typeA).

■ M12 Code A LAN Module Pin definitions



PIN	Signal	POE typeA
1	LAN_MDI1+	DC+
2	LAN_MDI1-	DC+
3	LAN_MD20+	DC-
4	LAN_MDI2-	
5	LAN_MDI3+	
6	LAN_MDI3-	DC-
7	LAN_MDI4+	
8	LAN_MDI4-	

SYSTEM SETUP

This chapter provides information about how to set up the TB-7393 Embedded System hardware installation.

3

CHAPTER 3: SYSTEM SETUP

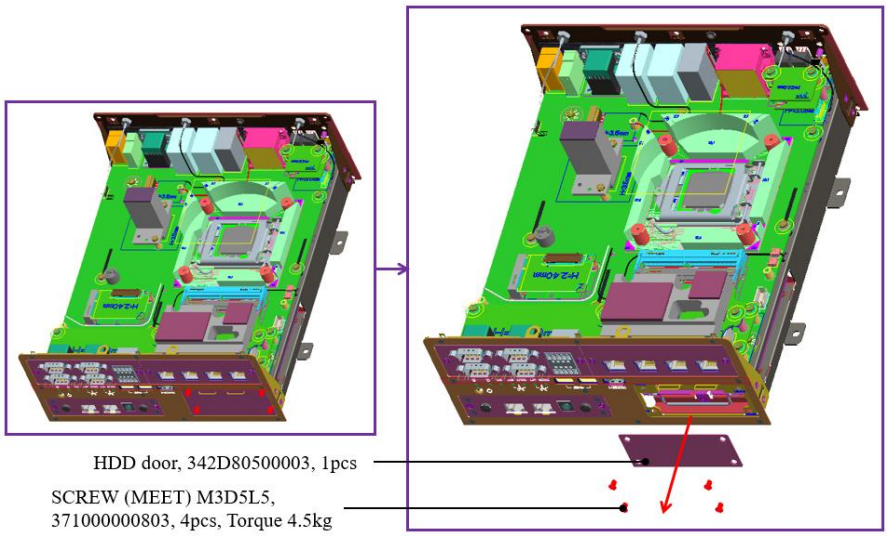
This chapter provides information about how to set up the TB-7393 Embedded System hardware installation.

	Warning: The edge of TB-7393 aluminum extrusion fins is a little bit sharp. Please be careful when you move the unit, do the installation, and operate the embedded system!

3.1 1st 2.5” SATA HDD/SSD Installation

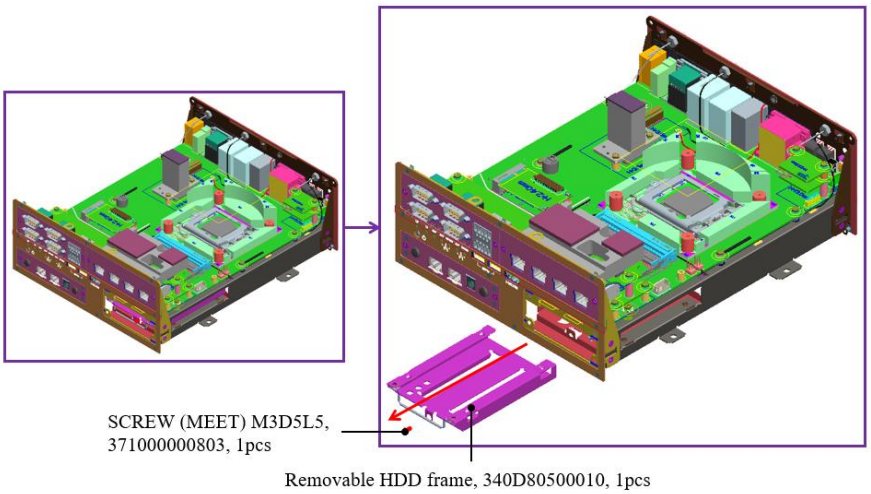
Please follow the instructions to install SATA HDD as below.

- Remove the door from front bezel

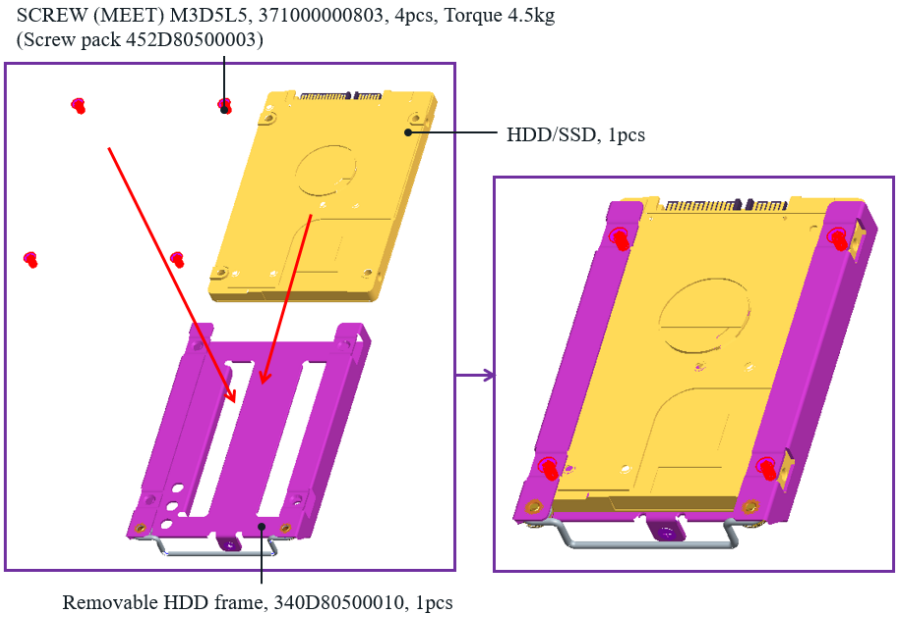


**Notes: After loosen the four screws from the expansion door, please lift the cover by fingernail slightly and be careful to take the door out of the front bezel.*

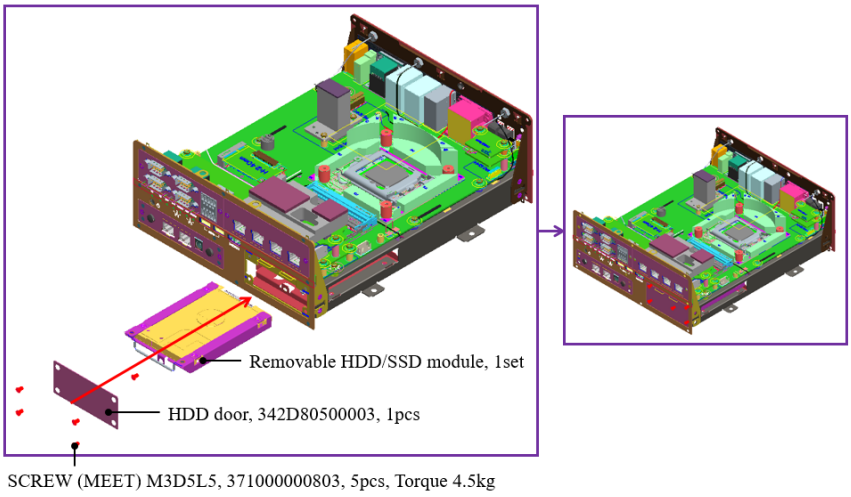
- Pull the HDD tray out from main chassis



- Fasten the screws to assemble the HDD/SSD to the bracket



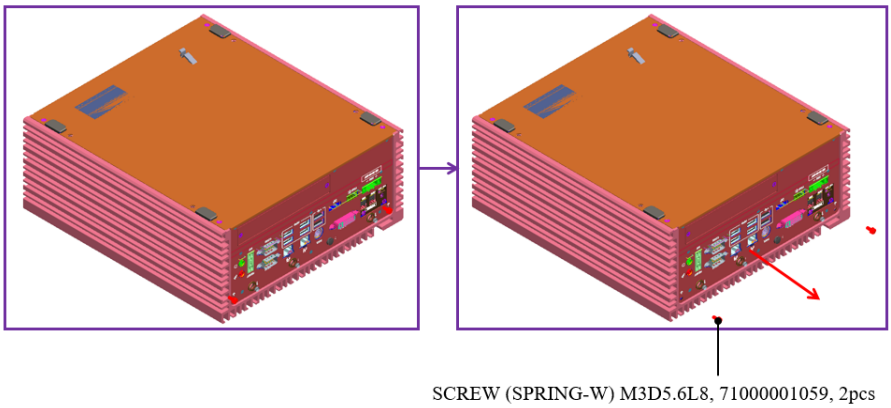
- Insert the HDD/SSD tray back to main chassis and fasten the screws on the door



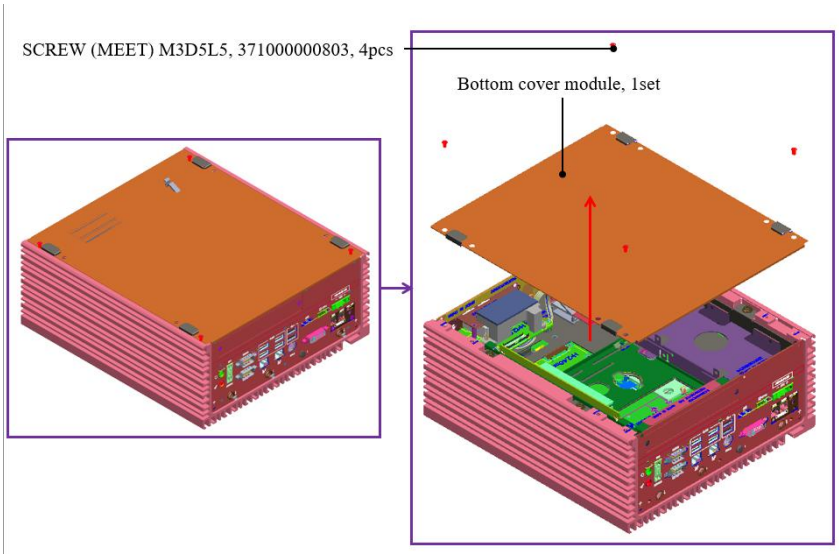
**Notes: Please keep the unit in horizontally. It will make it easierly to insert the HDD tray back to machine.*

3.2 2nd and 3rd 2.5” SATA HDD/SSD Installation

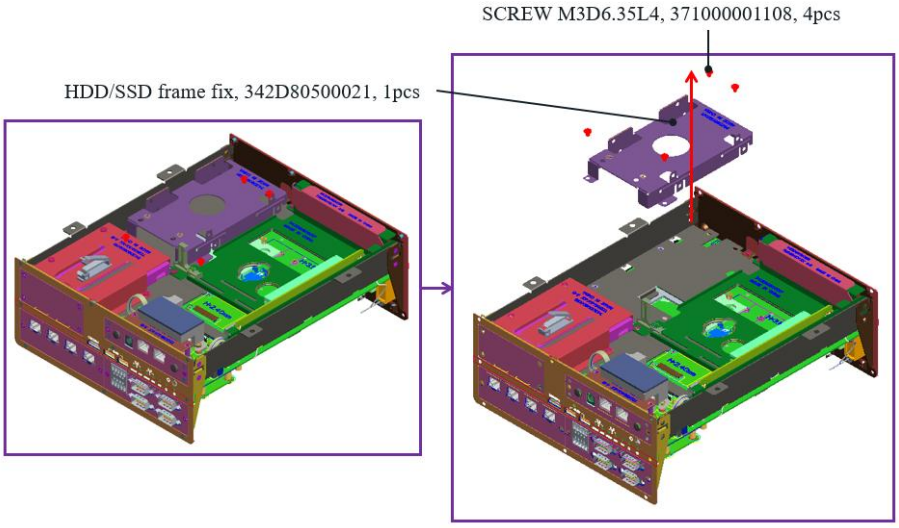
- Remove the GND screws from the rear bezel



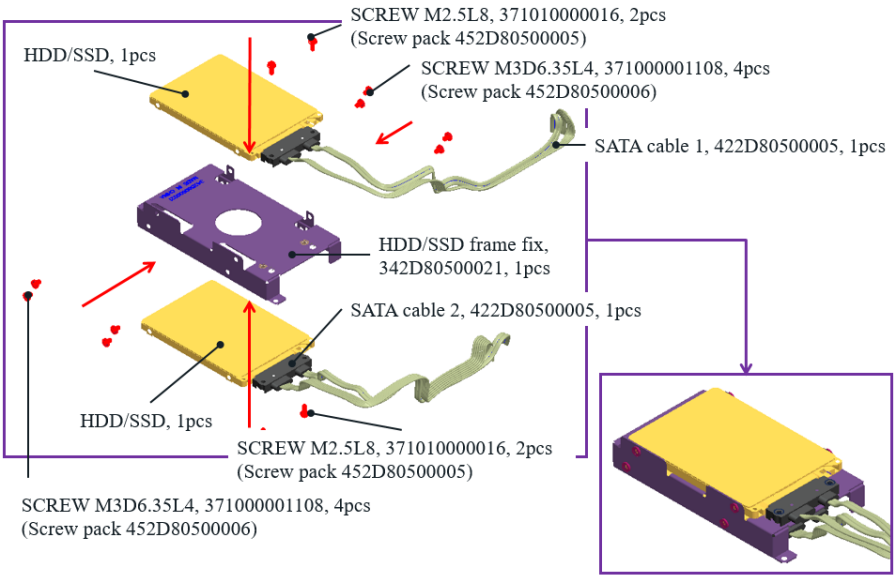
- Remove the bottom cover



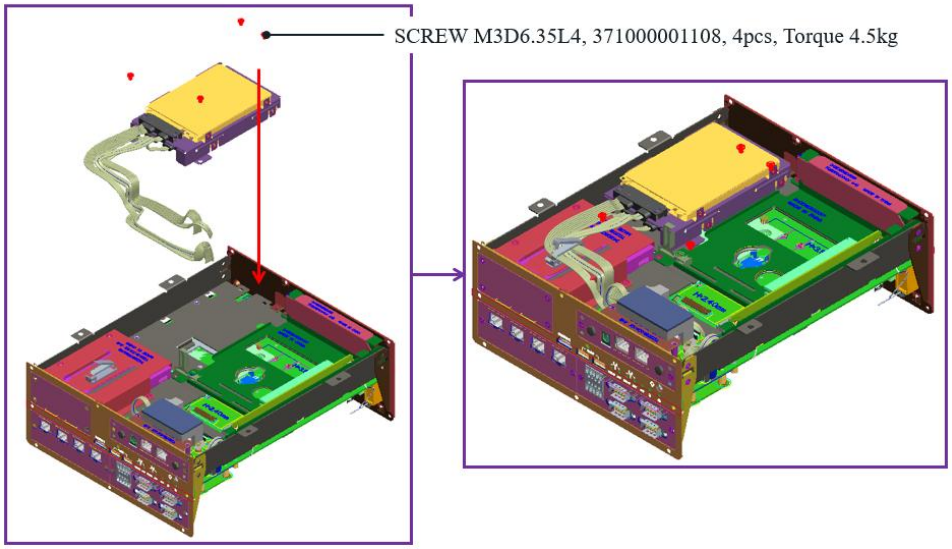
- Loosen four HDD bracket screws and pull the bracket out of the unit



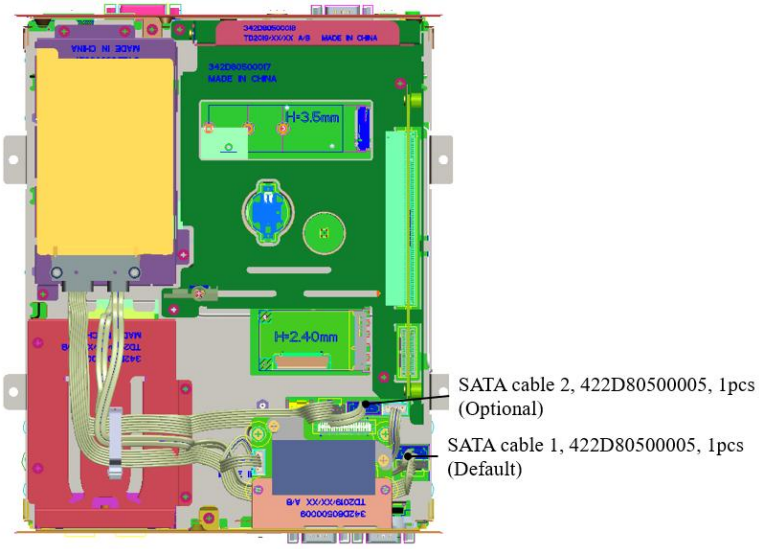
- Fasten 2nd and 3rd HDD/SSD to the bracket as following concept drawing



- Fasten four bracket screws to the main unit

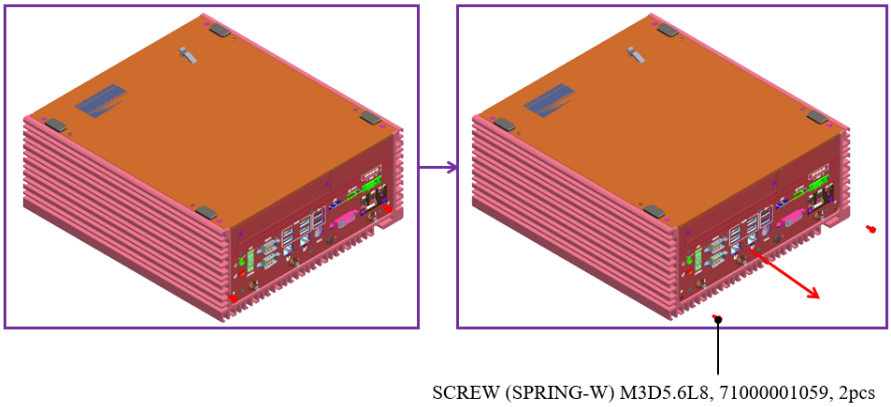


Follow the drawing to do the SATA cable routing

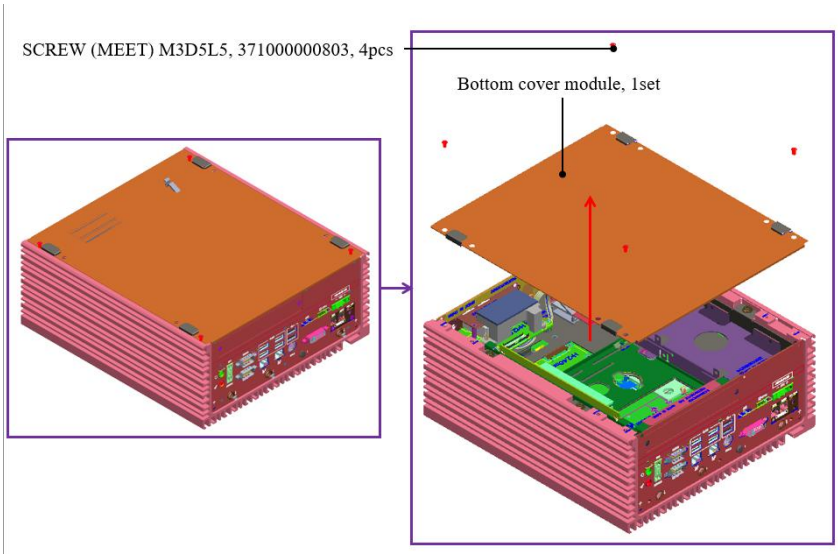


3.3 CPU/CPU Heatsink/DRAM Installation

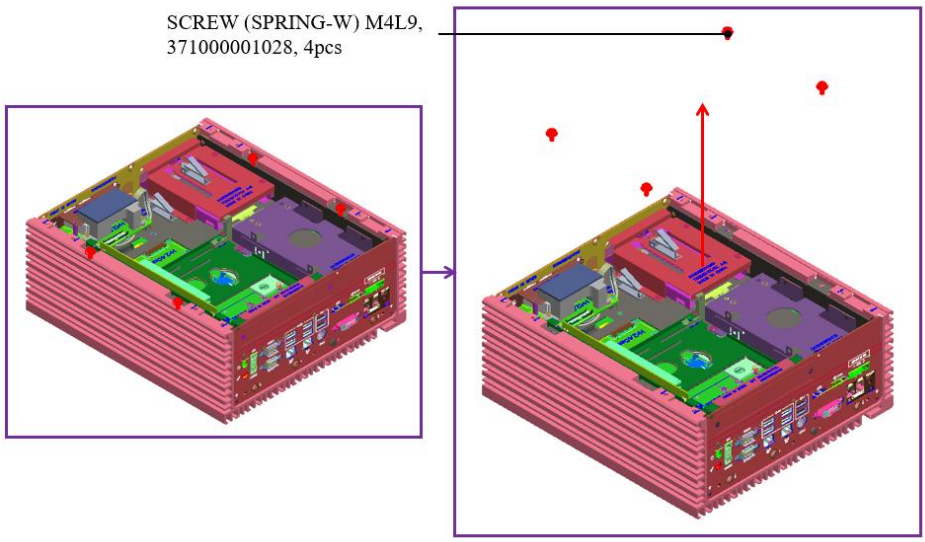
- Remove the GND screws from the rear bezel



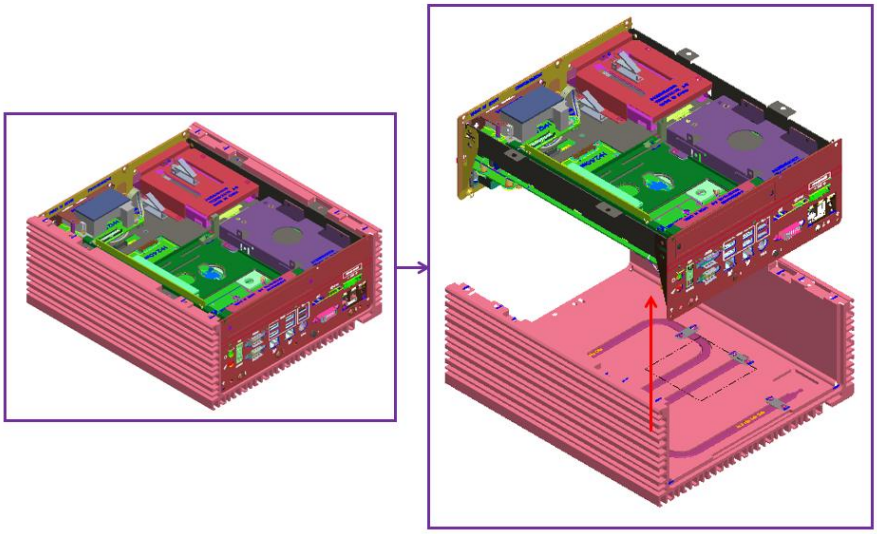
- Remove the bottom cover



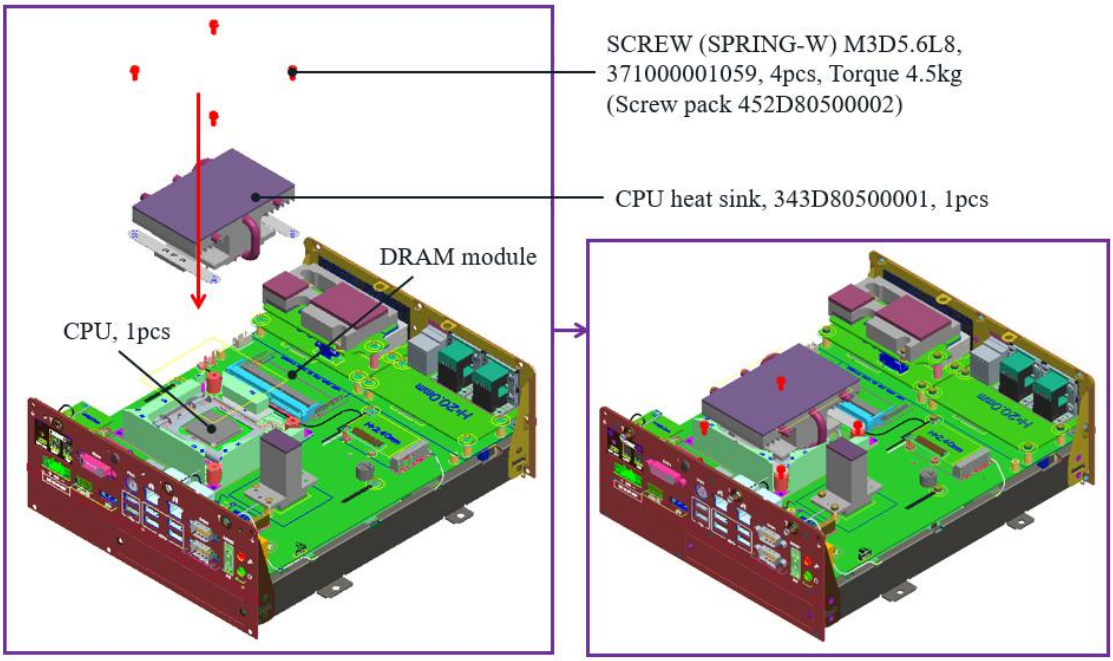
- Loosen four M4 screws from the main chassis



- Before this step, please check that you already loosen two GND screws. And then pull the main chassis from the aluminum extrusion. There are chipset thermal pads (L6), and two guide pin on the aluminum extrusion, so you need to force to pull it out.
  *Warning: Please be very careful about the sharp edge from the alu. and metal parts when force to pull the main chassis out!

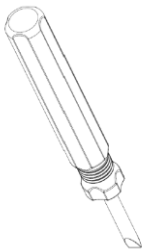


- Take the CPU passive cooler from the accessories. Then install the CPU, CPU heatsink, and DRAM modules as below picture.

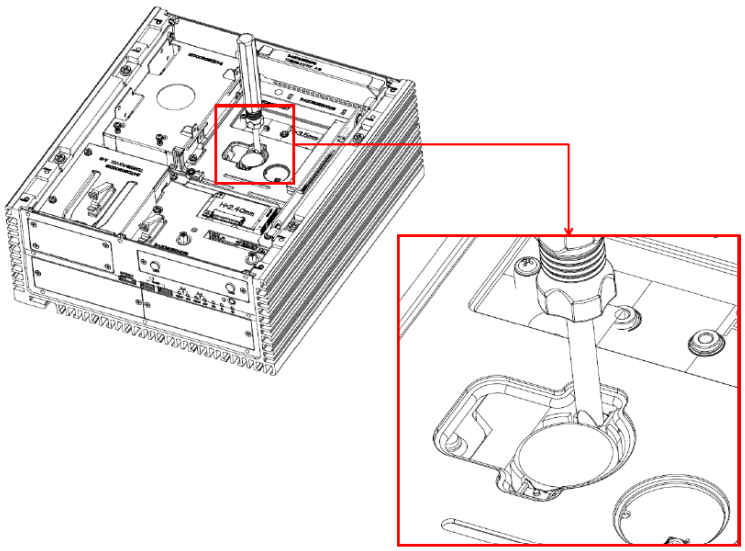


3.4 RTC Battery Maintenance

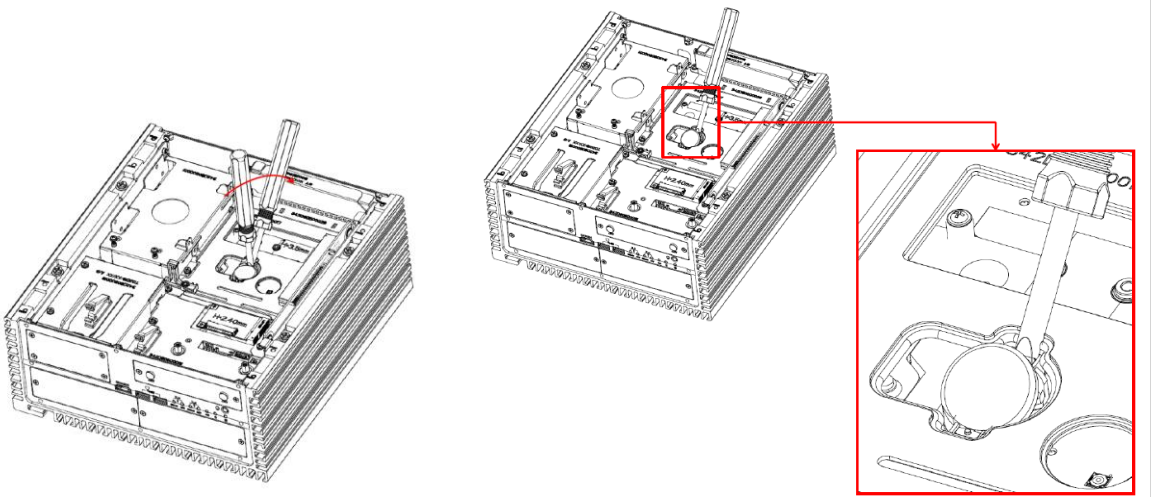
- Preparation for disassembly:

Flathead Screwdriver (The battery holder is designed for great vibration resistant and harsh environment use, so it needs to use a tool to disassemble the coin battery)	

- Insert flathead screwdriver to the gap of one side of RTC battery vertically.



- Rotate the screwdriver at around 45 degrees to loosen the coin battery

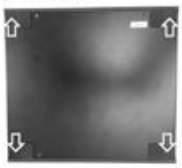


3.5 Quick Installation Guide

Quick Assembly Guide

5615D8920002

Open Bottom Cover



1. Loosen M3 screws(x 4) from Bottom cover as the arrow locations.

Install/Remove Removable 2.5" HDD

2-1. Loosen M3 screws(x 4) from HDD cover.
2-2. Remove M3 screw from bracket.
2-3. Pull/push HDD bracket by handle bar.

Assembly of PCIe Bracket and Holder

3-1. Loosen M3 screws(x 4) from PCIe bracket.
3-2. Install PCIe card and fix with M3 screws(x 2).
3-3. Fix Holder to hold card with M3 screw (x 1).

Disassemble Internal SSD Bracket

4. Loosen M3 screws(x 4) as the arrow directions.

Install 2.5" SSD into Internal SSD Bracket

(Bottom)

(Top)

5. Tighten M3 screws(x 4, pack 452D80500006) for 2.5" SSD and M2.5 screws(x 2, pack 452D80500005) for SATA cable.

Fix Internal SSD Bracket

6. Tighten M3 screws(x 4) for internal SSD bracket and insert SATA cable to main board.

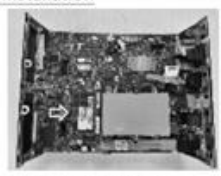
Disassemble Mid-Frame

7-1. Loosen M4 screws(x 4) from Mid-Frame.
7-2. Loosen M3 screws(x 2) from Rear-Cover.

CPU Heat-sink Installation

8. Fix CPU heat-sink by M3 screws(x 4, pack 452D80500002) as arrow shown.

DRAM Installation



9. Install DRAM to SO-DIMM slot

BIOS SETUP

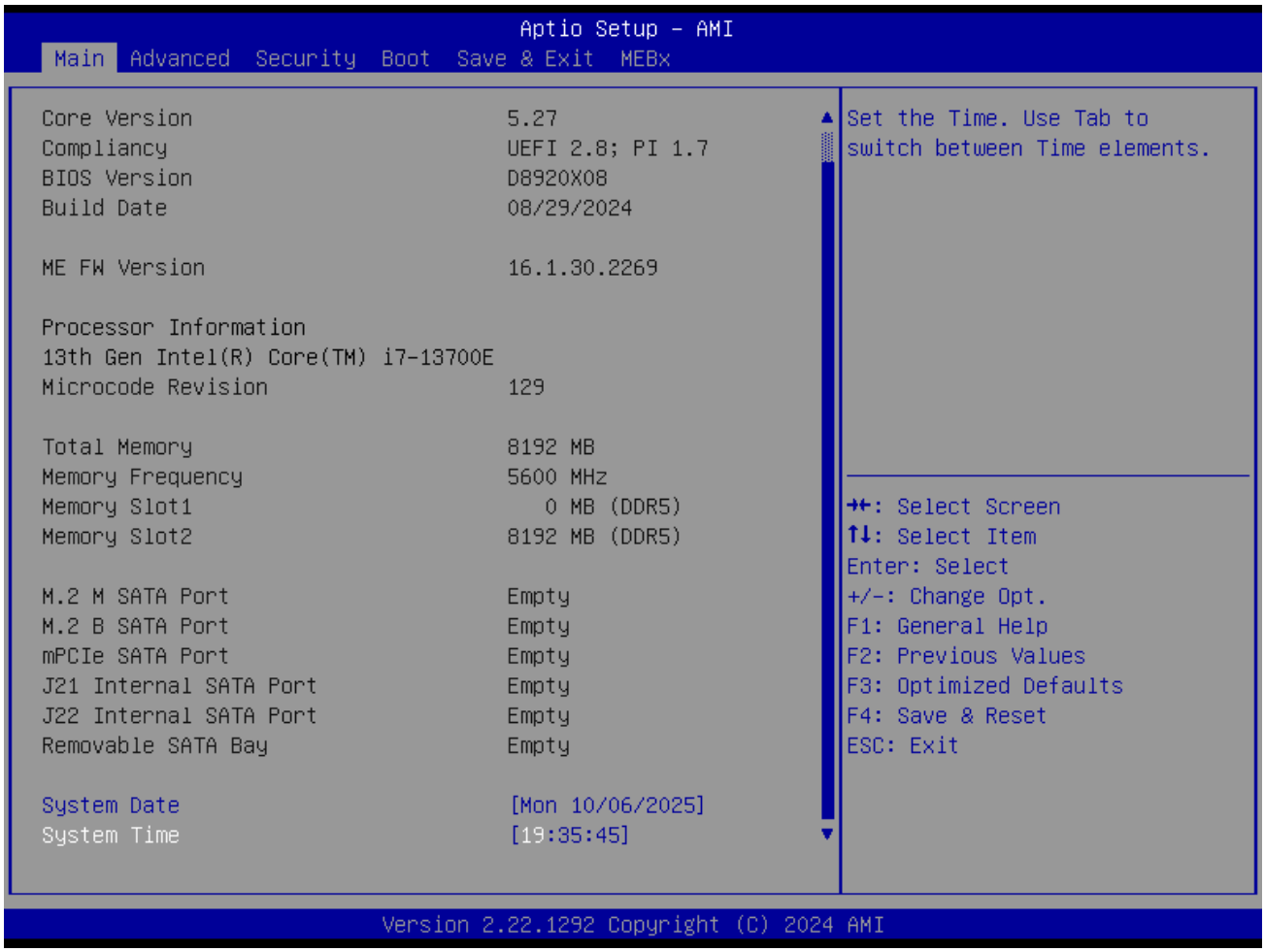
This chapter provides information about how to set up BIOS and use BIOS menu items to adjust basic function settings.

4

CHAPTER 4: BIOS SETUP

This chapter provides information about how to set up BIOS and use BIOS menu items to adjust basic function settings.

4.1 Main Page



Field Name	**BIOS Vender**
Default Value	American Megatrends
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Core Version**
Default Value	5.27
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Compliancy**
Default Value	UEFI 2.8 ; PI 1.7
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**BIOS Version**
Default Value	Display the version of the BIOS
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Build Date**
Default Value	Display build date of the BIOS
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**ME FW Version**
Value	ME Firmware Version.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Processor Information**
Value	Display the installed CPU brand.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Microcode Revision**
Value	Display the CPU microcode revision.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Total Memory**
Value	Display the installed memory size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Memory Frequency**
Value	Display the installed memory frequency.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Memory Slot1**
Value	Display the installed memory size of slot1.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Memory Slot2**
Value	Display the installed memory size of slot2.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**M.2 M SATA Port**
Value	Display the installed SATA device model/size of M.2 M SATA Port.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**M.2 B SATA Port**
Value	Display the installed SATA device model/size of M.2 B SATA Port.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**mPCIe SATA Port**
Value	Display the installed SATA device model/size of mPCIe SATA Port.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**J21 Internal SATA Port**
Value	Display the installed SATA device model/size of J21 Internal SATA Port.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**J22 Internal SATA Port**
Value	Display the installed SATA device model/size of J22 Internal SATA Port.
Comment	This field is not selectable. There is no help text associated with it.

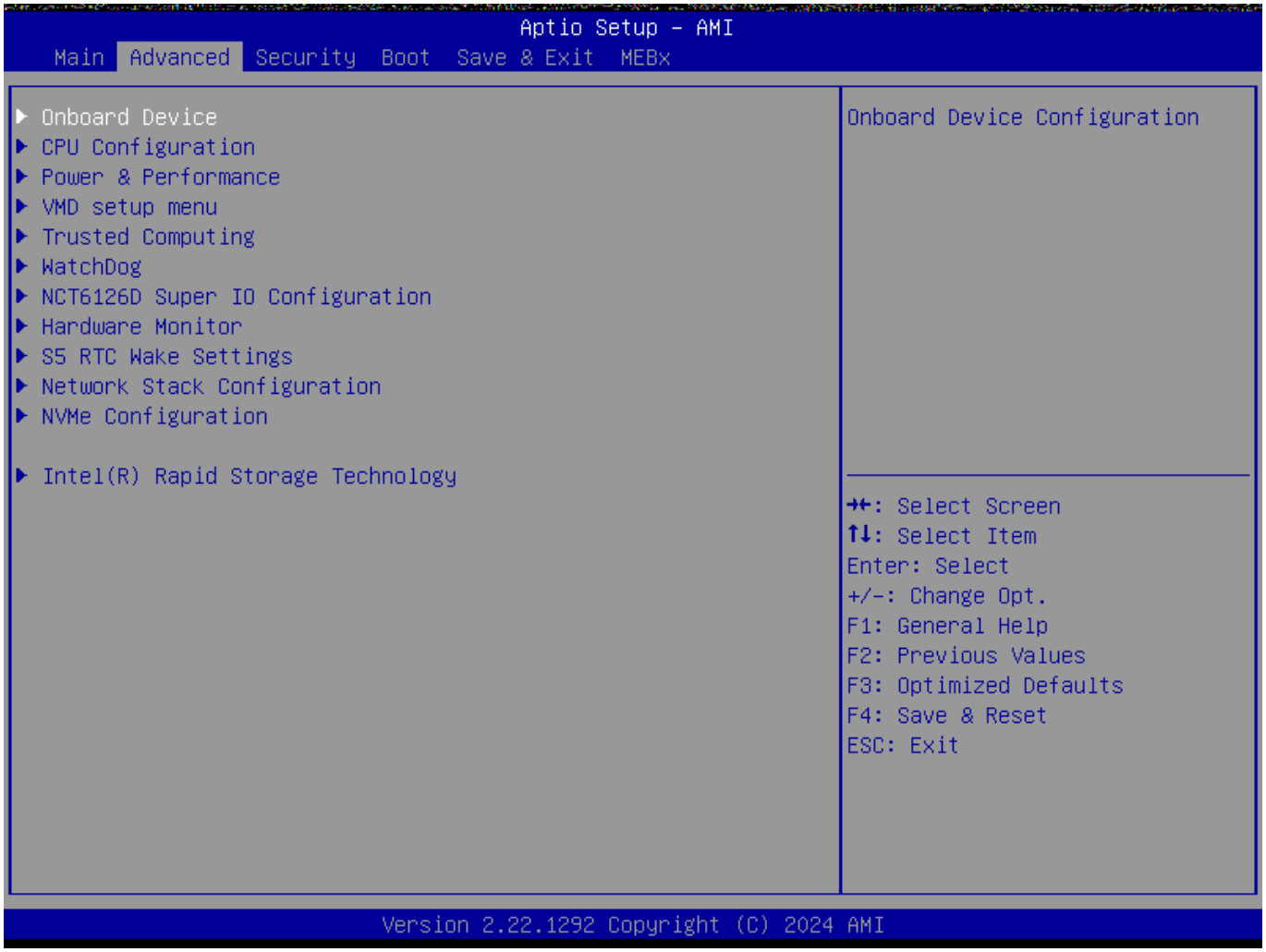
Field Name	**Removable SATA Bay**
Value	Display the installed SATA device model/size of Removable SATA Bay.

Comment	This field is not selectable. There is no help text associated with it.

Field Name	**System Date**
Default Value	[Www mm/dd/yyyy]
Possible Value	Www : Mon/Tue/Wed/Thu/Fri/Sat/Sun mm : 1-12 dd : 1-31 yyyy : 2024-2099
Help	Set the Date. Use Tab to switch between Date elements. Default Rangers Year : 2024-2099 Months : 1-12 Days : Dependent on month Range of Years may vary.

Field Name	**System Time**
Default Value	[hh :mm :ss]
Possible Value	hh : 0-23 mm : 0-59 ss : 0-59
Help	Set the Time. Use Tab to switch between Time elements.

4.2 Advanced Page



Field Name	**Onboard Device**
Help	Onboard Device Configuration.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**CPU Configuration**
Help	CPU Configuration Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Power & Performance**
Help	Power & Performance Options
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**VMD setup menu**
Help	VMD Configuration settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Trusted Computing**
Help	Trusted Computing Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**WatchDog**
Help	WatchDog Configuration
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**NCT6126D Super IO Configuration**
Help	System Super IO Chip Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Hardware Monitor**
Help	Monitor hardware status
Comment	Press Enter when selected to go into the associated Sub-Menu.

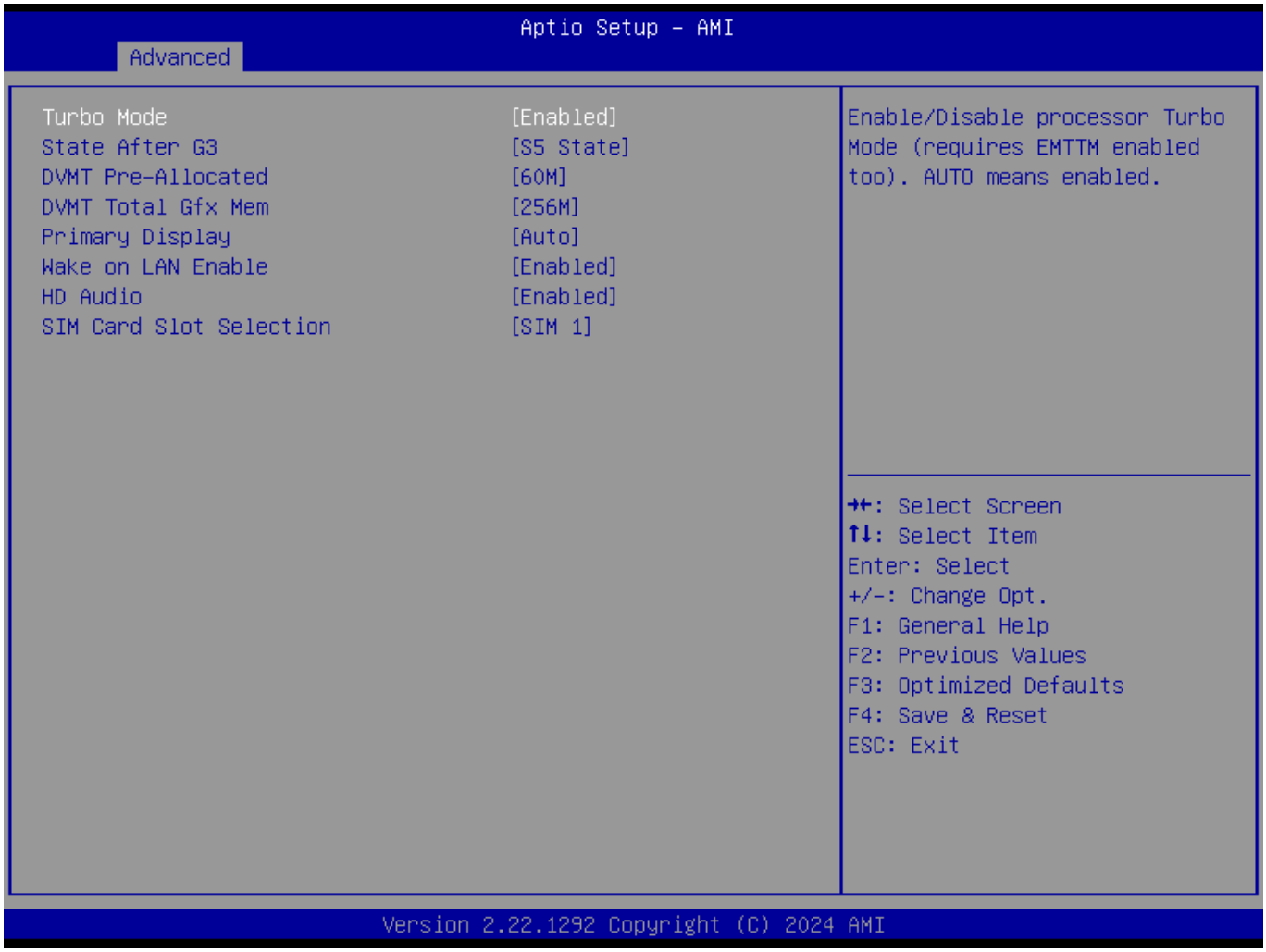
Field Name	**S5 RTC Wake Settings**
Help	Enable system to wake from S5 using RTC alarm
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Network Stack Configuration**
Help	Network Stack Settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**NVMe Configuration**
Help	NVMe Device Options Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Intel(R) Rapid Storage Technology**
Help	This Formset allows the user to manage RAID volumes on the Intel(R) RAID Controller
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.2.1 Onboard Device



Field Name	**Turbo Mode**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.

Field Name	**State After G3**
Default Value	[S5 State]
Possible Value	S0 State S5 State
Help	Specify what state to go to when power is re-applied after a power failur (G3 state).

Field Name	**DVMT Pre-Allocated**
Default Value	[60M]
Possible Value	64M 32M/F7 36M 40M 44M 48M 52M

	56M 60M
Help	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

Field Name	**DVT Total Gfx Mem**
Default Value	[256M]
Possible Value	128M 256M MAX
Help	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

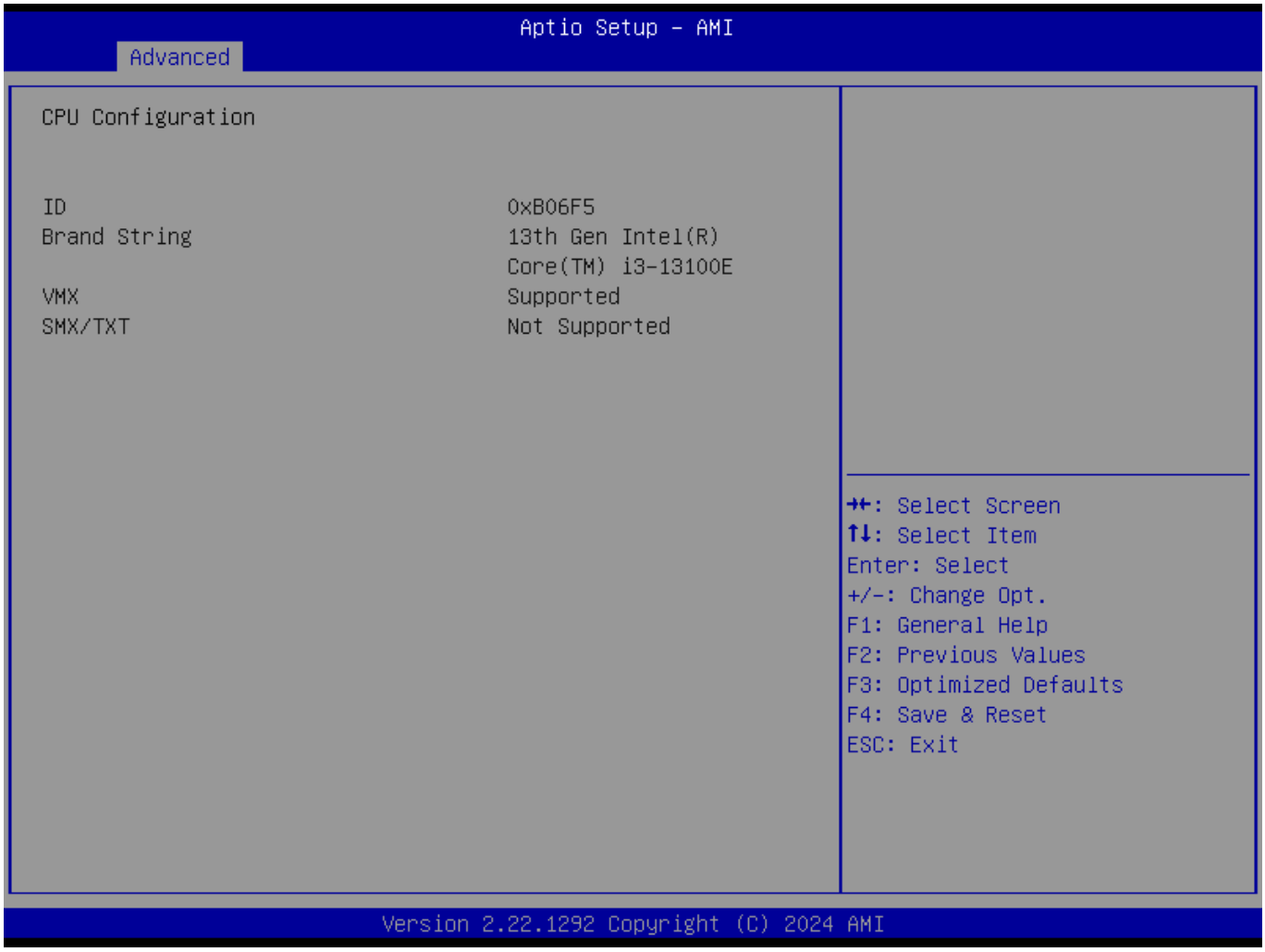
Field Name	**Primary Display**
Default Value	[Auto]
Possible Value	Auto IGFX PEG
Help	Select which of IGFX/PEG Graphics device should be Primary Display.

Field Name	**Wake on LAN Enable**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable integrated LAN to wake the system.

Field Name	**HD Audio**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled.

Field Name	**SIM Card Slot Selection**
Default Value	[SIM 1]
Possible Value	SIM 1 SIM 2
Help	Select which SIM card slot preferred to use.

4.2.2 CPU Configuration



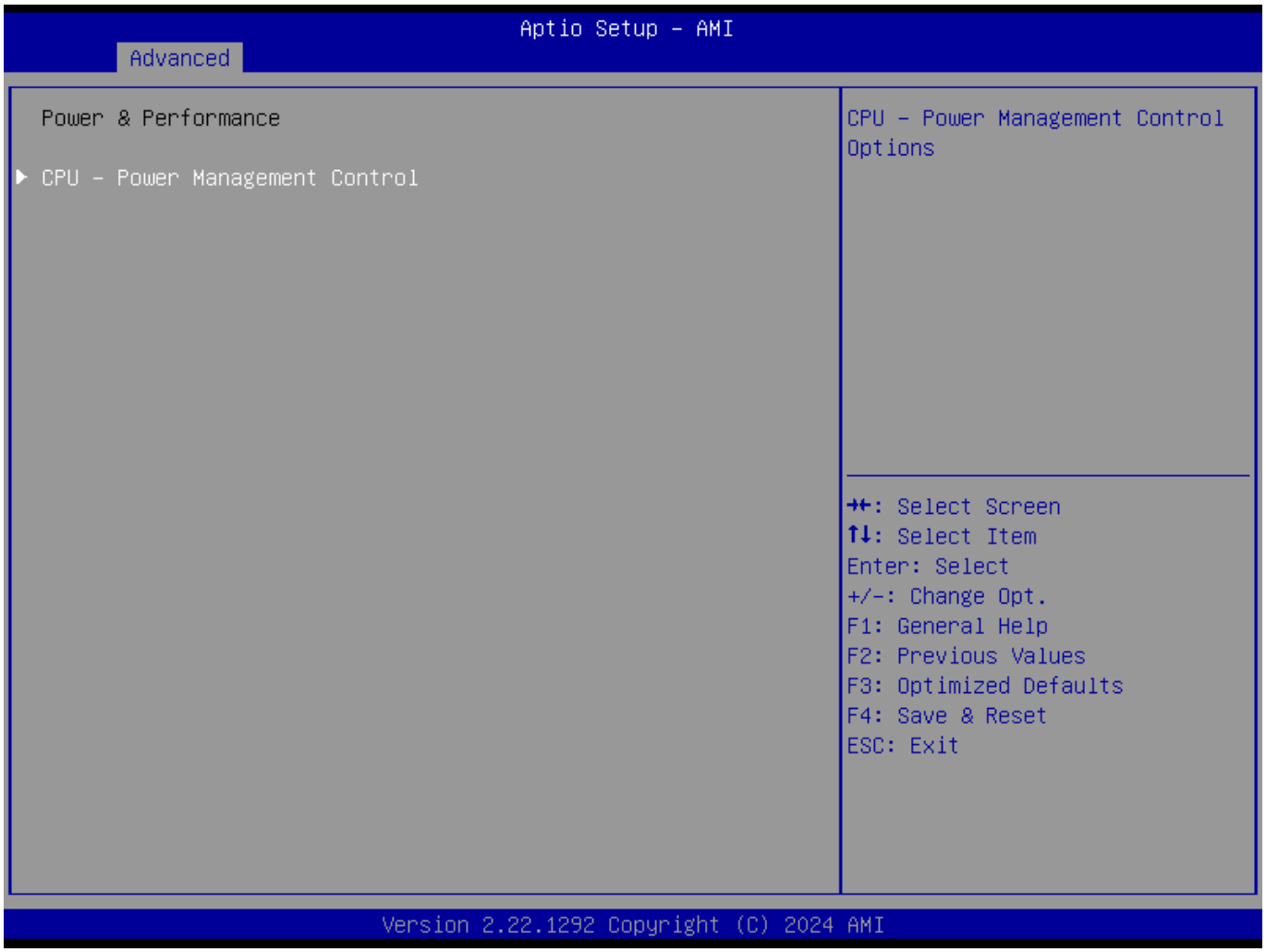
Field Name	**ID**
Default Value	Displays CPU Signature
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Brand String**
Default Value	Displays the CPU brand string
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**VMX**
Default Value	VMX Supported or Not
Comment	This field is not selectable. There is no help text associated with it.

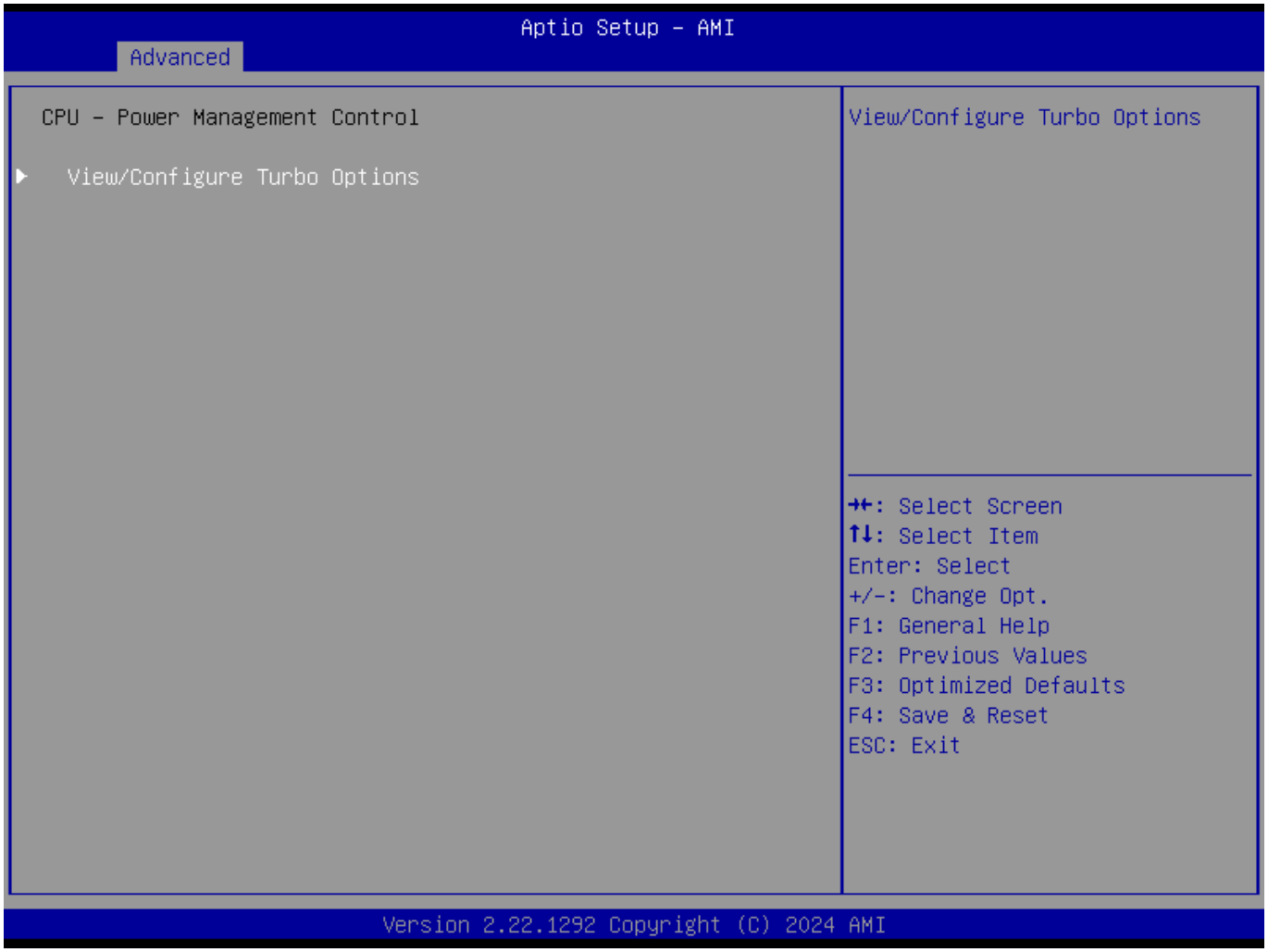
Field Name	**SMX/TXT**
Default Value	SMX/TXT Supported or Not
Comment	This field is not selectable. There is no help text associated with it.

4.2.3 Power & Performance



Field Name	**CPU – Power Management Control**
Help	CPU – Power Management Control Options
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.2.3.1 CPU – Power Management Control

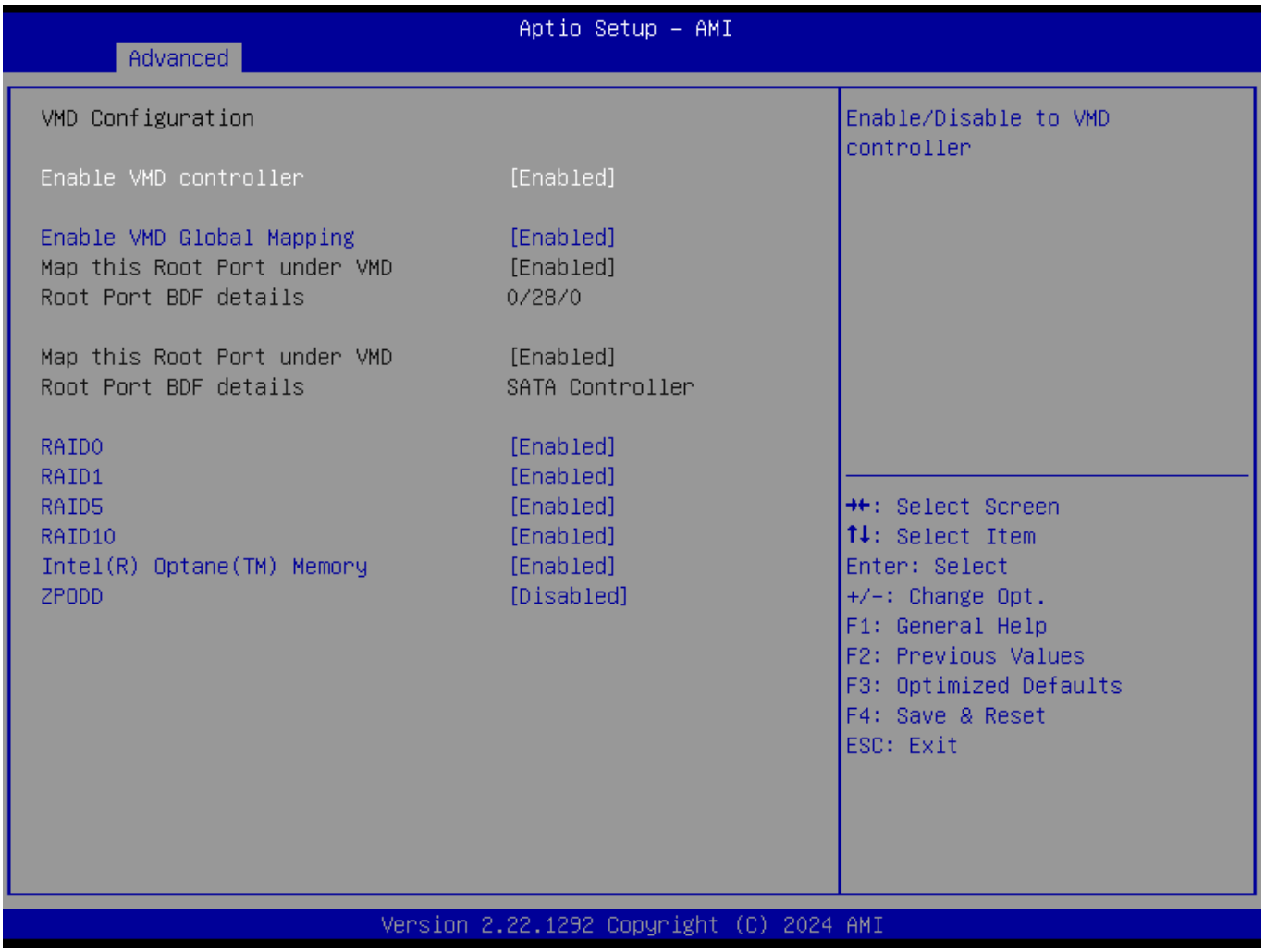


Field Name	**View/Configure Turbo Options**
Help	View/Configure Turbo Options
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.2.3.1.1 View/Configure Turbo Options

Field Name	**CPU Performance Mode Selection**
Default Value	[Balanced Mode]
Possible Value	Balanced Mode Performance Mode
Help	Select the performance state that the BIOS will set for CPU.

4.2.4 VMD setup menu



Field Name	**VMD Configuration**
Default Value	VMD Configuration.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Enable VMD controller**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable to VMD controller.

Field Name	**Enable VMD Global Mapping**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable to VMD Global Mapping

Field Name	**Map this Root Port under VMD**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Map/UnMap this Root Port to VMD.

Field Name	**RAID0**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable RAID0 support.

Field Name	**RAID1**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable RAID1 support.

Field Name	**RAID5**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable RAID5 support.

Field Name	**RAID10**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable RAID10 support.

Field Name	Intel(R) Optane(TM) Memory
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable System Acceleration with Intel(R) Optane(TM) Memory feature.

Field Name	ZPODD
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable ZPODD. The option is only needed to be enabled when ZPODD is connected in VMD mode

4.2.5 Trusted Computing

Field Name	**Firmware Version**
Default Value	TPM module version.
Comment	This field is not selectable. There is no help text associated with it.

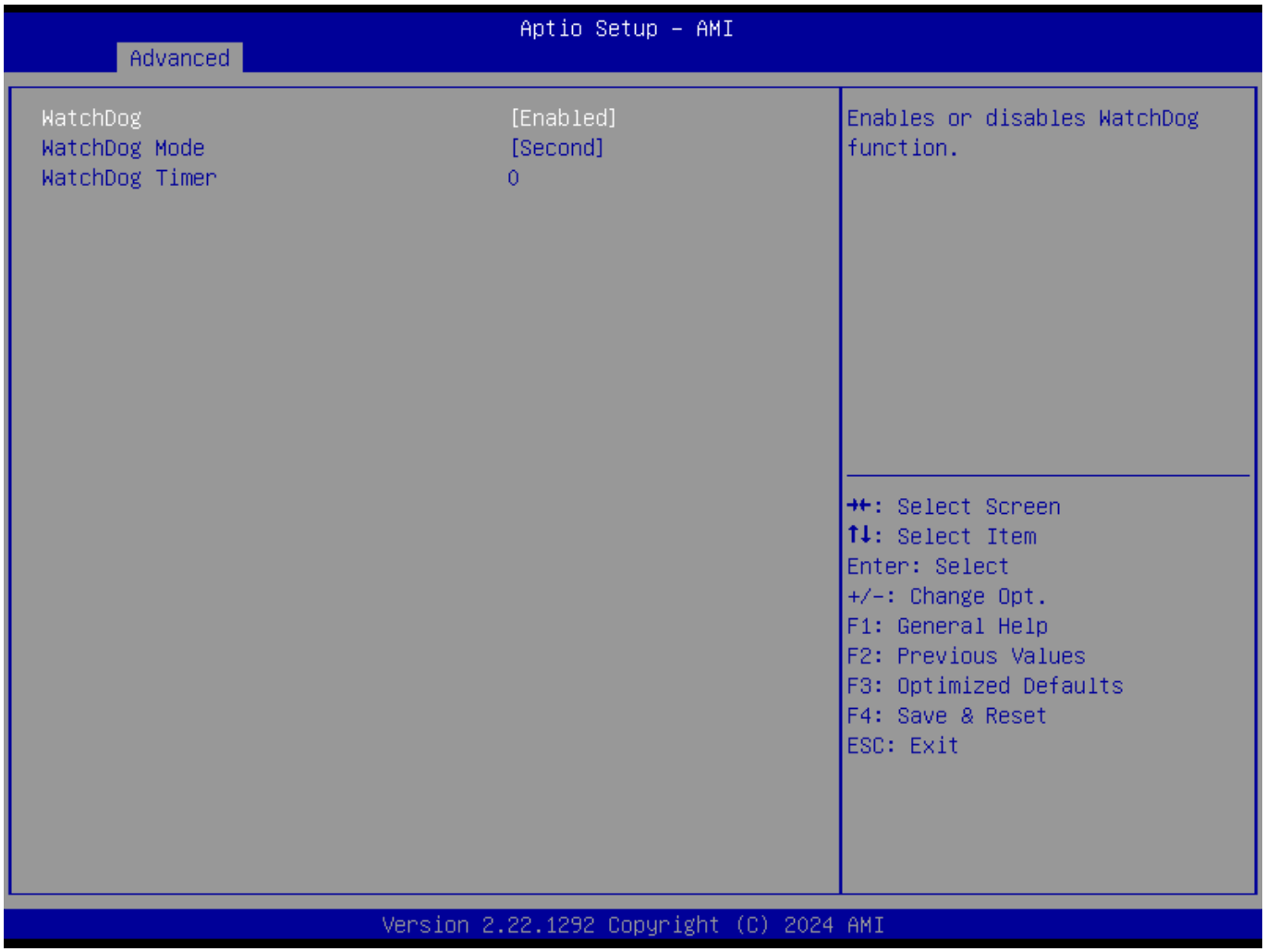
Field Name	**Vender**
Default Value	TPM module vender name.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Security Device Support**
Default Value	[Enable]
Possible Value	Disable Enable
Help	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be

	available.

Field Name	**Pending operation**
Default Value	[None]
Possible Value	None TPM Clear
Help	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

4.2.6 WatchDog

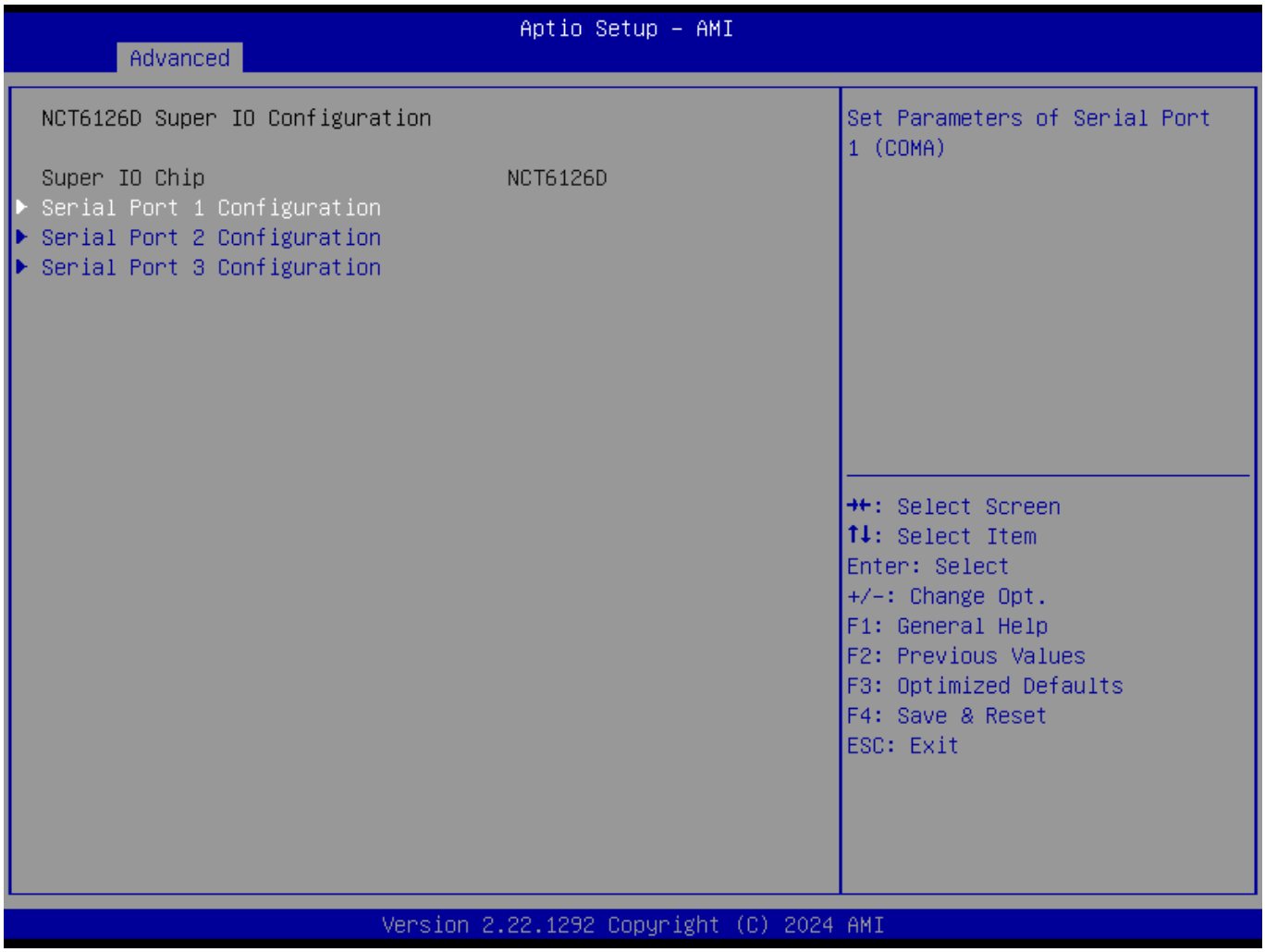


Field Name	**WatchDog**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enables or disables WatchDog function.

Field Name	**WatchDog Mode**
Default Value	[Second]
Possible Value	Second Minute
Help	Changes the WatchDog mode. Select <Second> or <Minute> mode.

Field Name	**WatchDog Timer**
Default Value	[0]
Possible Value	0-255
Help	User can set a value in the range of 0 to 255.

4.2.7 Super IO Configuration

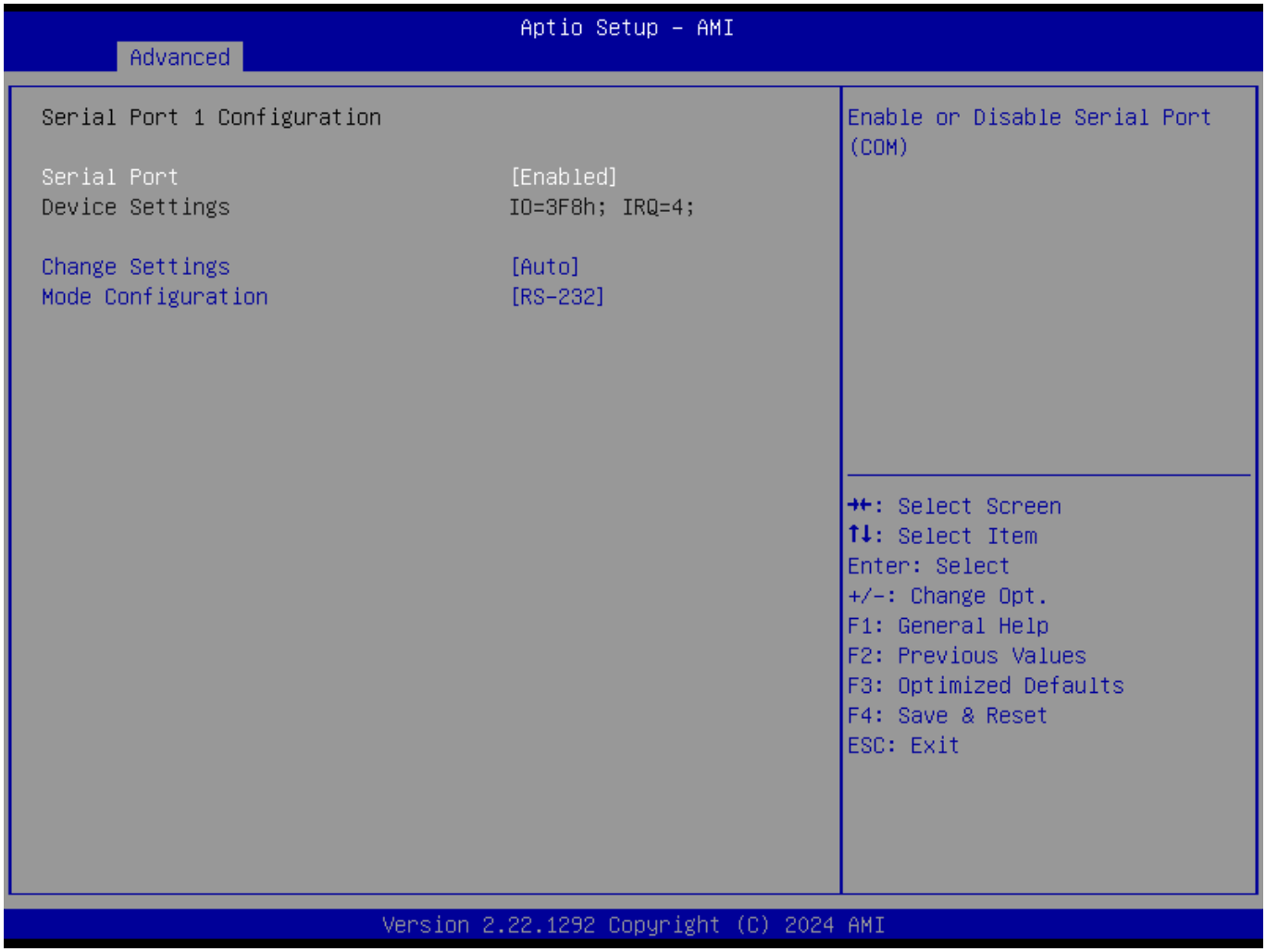


Field Name	**Serial Port 1 Configuration**
Help	Set Parameters of Serial Port 1 (COMA)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 2 Configuration**
Help	Set Parameters of Serial Port 2 (COMB)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 3 Configuration**
Help	Set Parameters of Serial Port 3 (COMC)
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.2.7.1 Serial Port 1 Configuration



Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

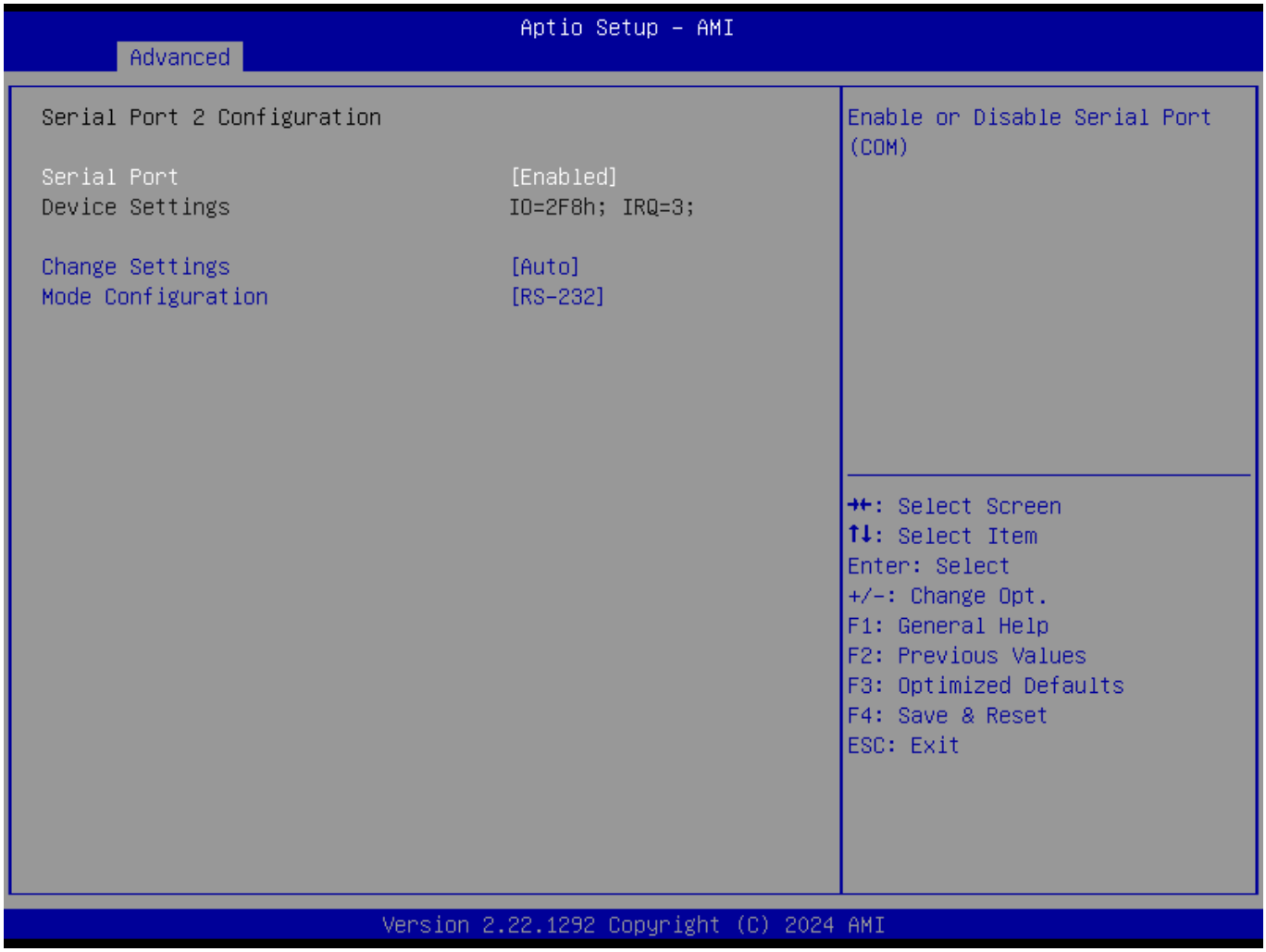
Field Name	**Device Settings**
Default Value	Device Super IO COM1 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=3F8h; IRQ=4; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

Field Name	**Mode Configuration**

Default Value	[RS-232]
Possible Value	RS-232 RS-485 RS-422
Help	Configure serial port as RS232/RS422/RS485.

4.2.7.2 Serial Port 2 Configuration



Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

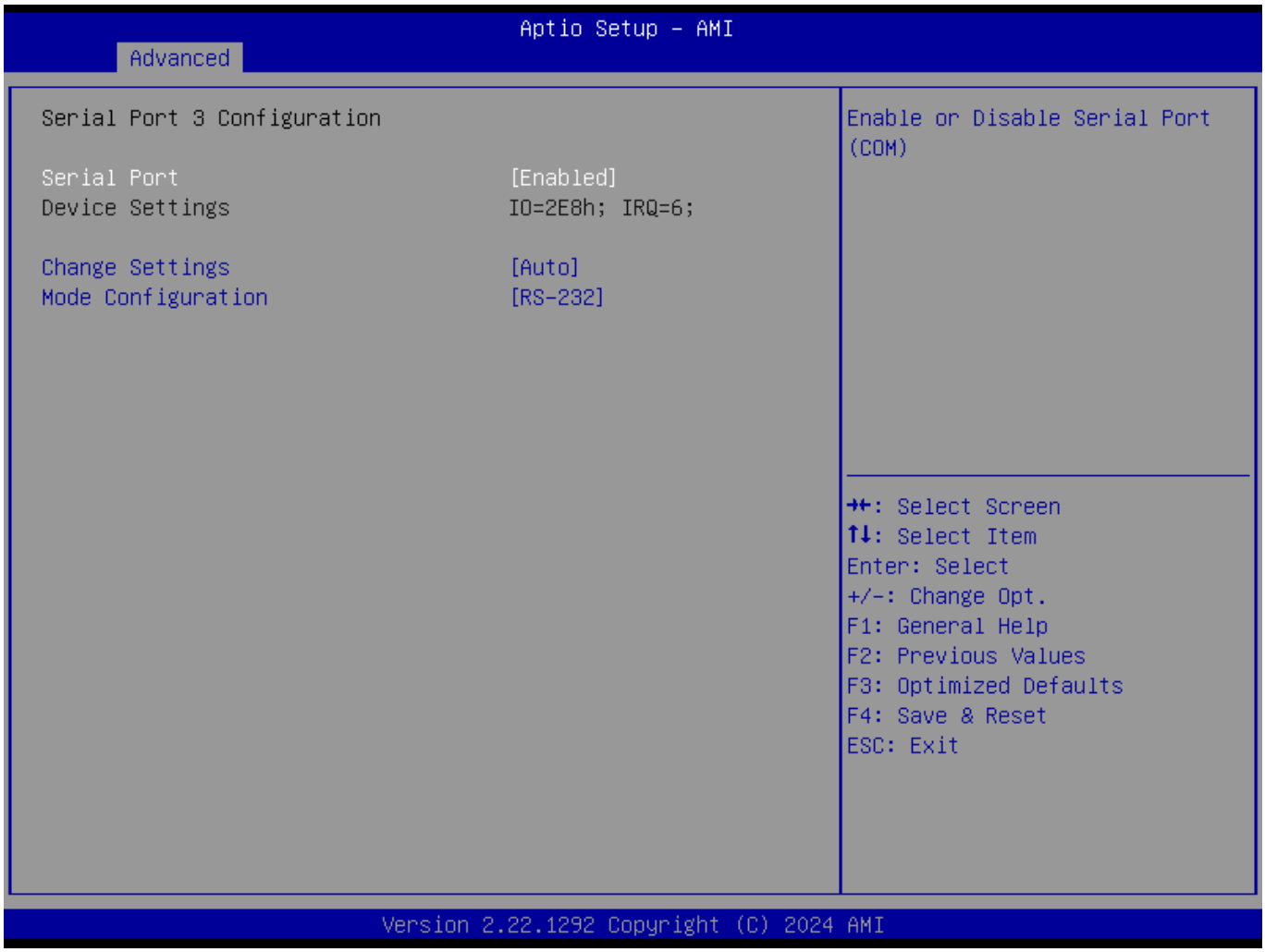
Field Name	**Device Settings**
Default Value	Device Super IO COM2 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=2F8h; IRQ=3; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

Field Name	**Mode Configuration**
Default Value	[RS-232]

Possible Value	RS-232 RS-485 RS-422
Help	Configure serial port as RS232/RS422/RS485.

4.2.7.3 Serial Port 3 Configuration



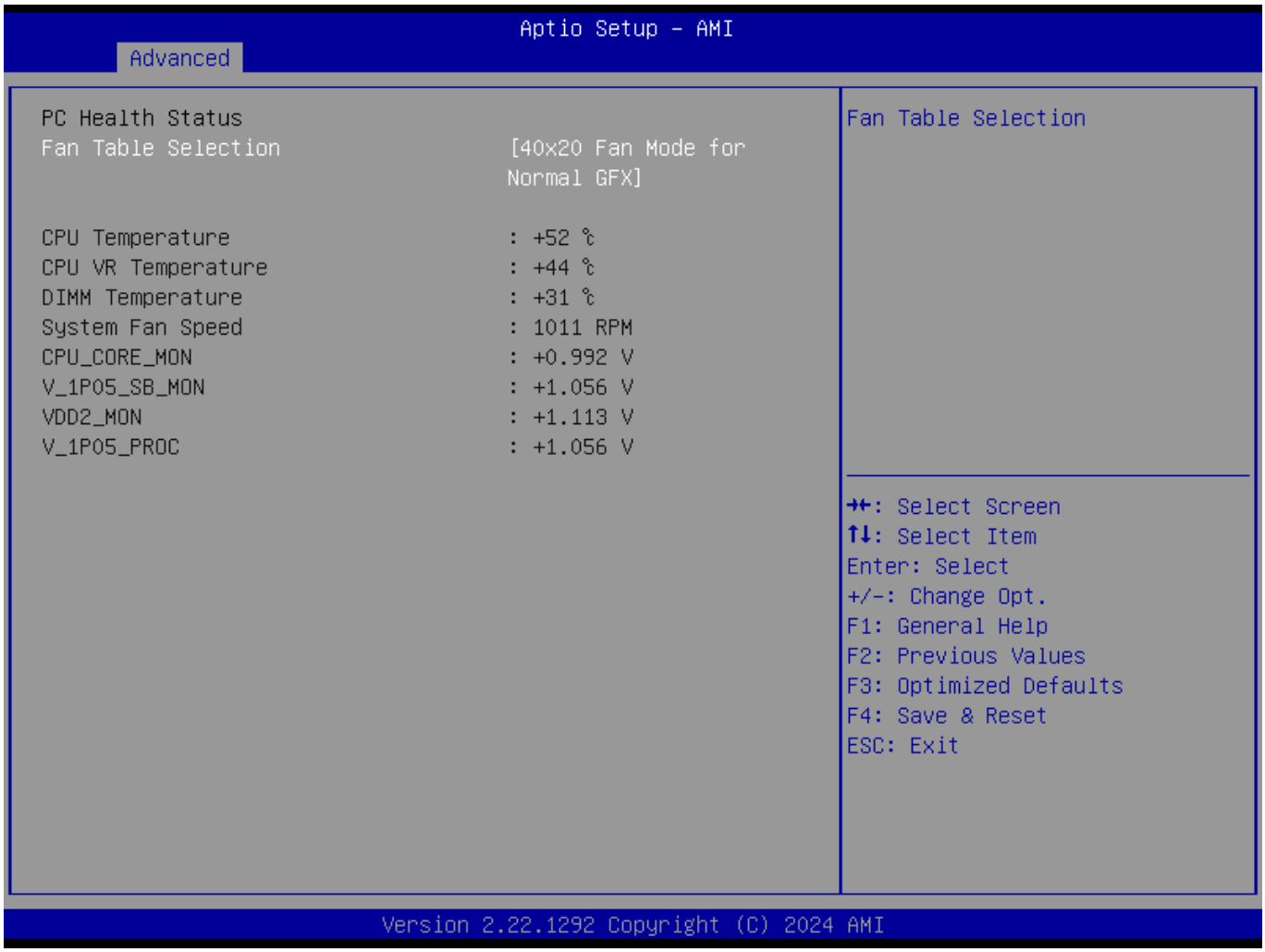
Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM3 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=2E8h; IRQ=6; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=220h; IRQ=3,4,5,6,7,9,10,11,12; IO=228h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

Field Name	**Mode Configuration**
Default Value	[RS-232]
Possible Value	RS-232 RS-485 RS-422
Help	Configure serial port as RS232/RS422/RS485.

4.2.8 Hardware Monitor

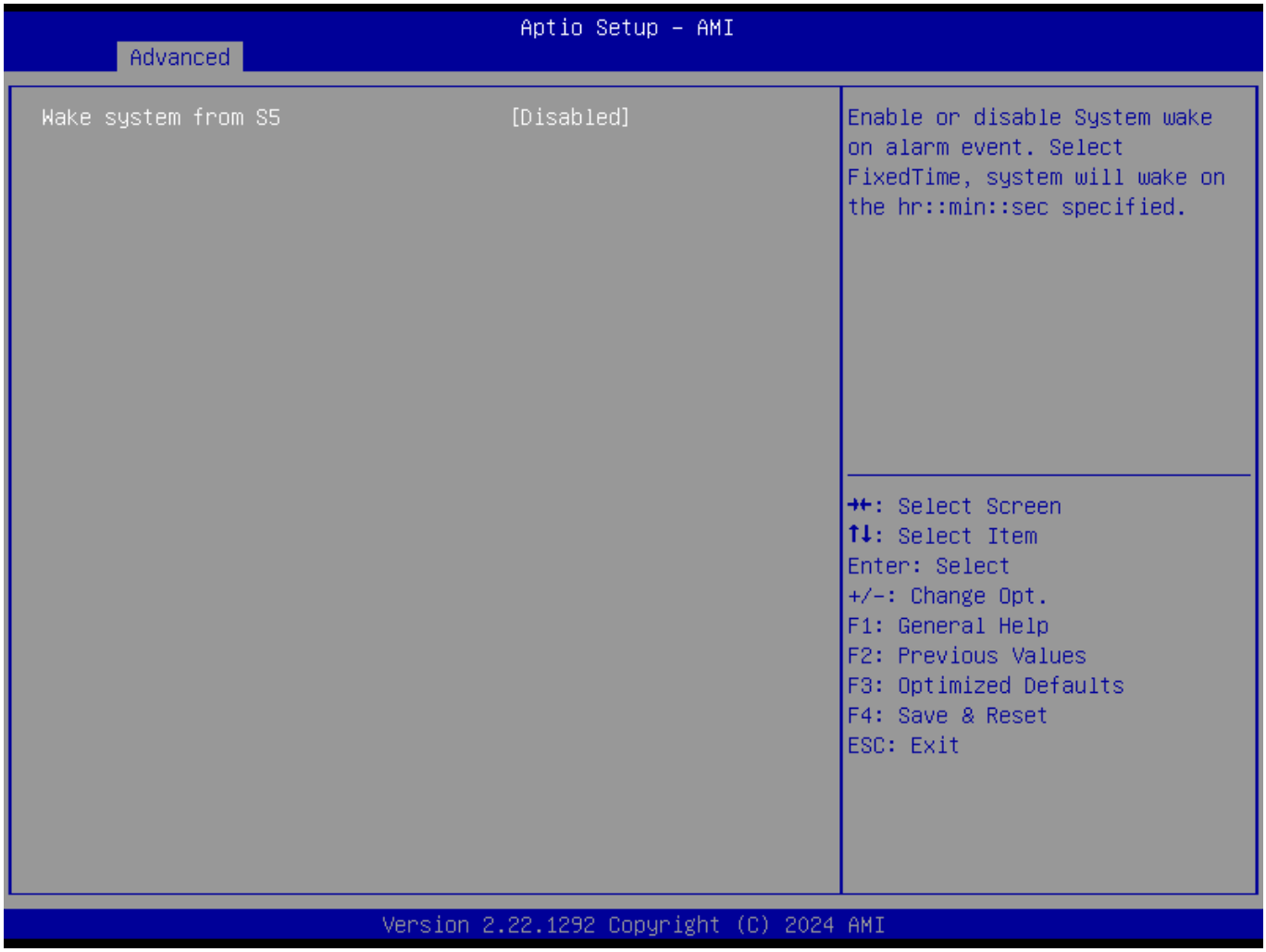


Field Name	**Fan Table Selection**
Default Value	[40x20 Fan Mode for Normal GFX]
Possible Value	40x28 Fan Mode for Nvidia T4P4 GPU 40x20 Fan Mode for Normal GFX
Help	Fan Table Selection.

Type	**Range**
CPU Temperature	-20 ~ (By Processor Tjmax) °C
CPU VR Temperature	-20 ~ 120 °C
DIMM Temperature	-20 ~ 120 °C
System Fan Speed	There are many kinds of the fan could be installed into the system, so we could only set 0 RPM for the failed fan speed, and there is also no high RPM limitation.
CPU_CORE_MON	0~1.72V

V_1P05_SB_MON	0.9975~1.1025V
VDD2_MON	1.045~1.155V
V_1P05_PROC	0.9975~1.1025V

4.2.9 S5 RTC Wake Settings



Field Name	Wake system from S5
Default Value	[Disabled]
Possible Value	Disabled Fixed Time
Help	Enable or disable System wake on alarm event, Select FixedTime, system wil wake on the hr::min::sec specified.

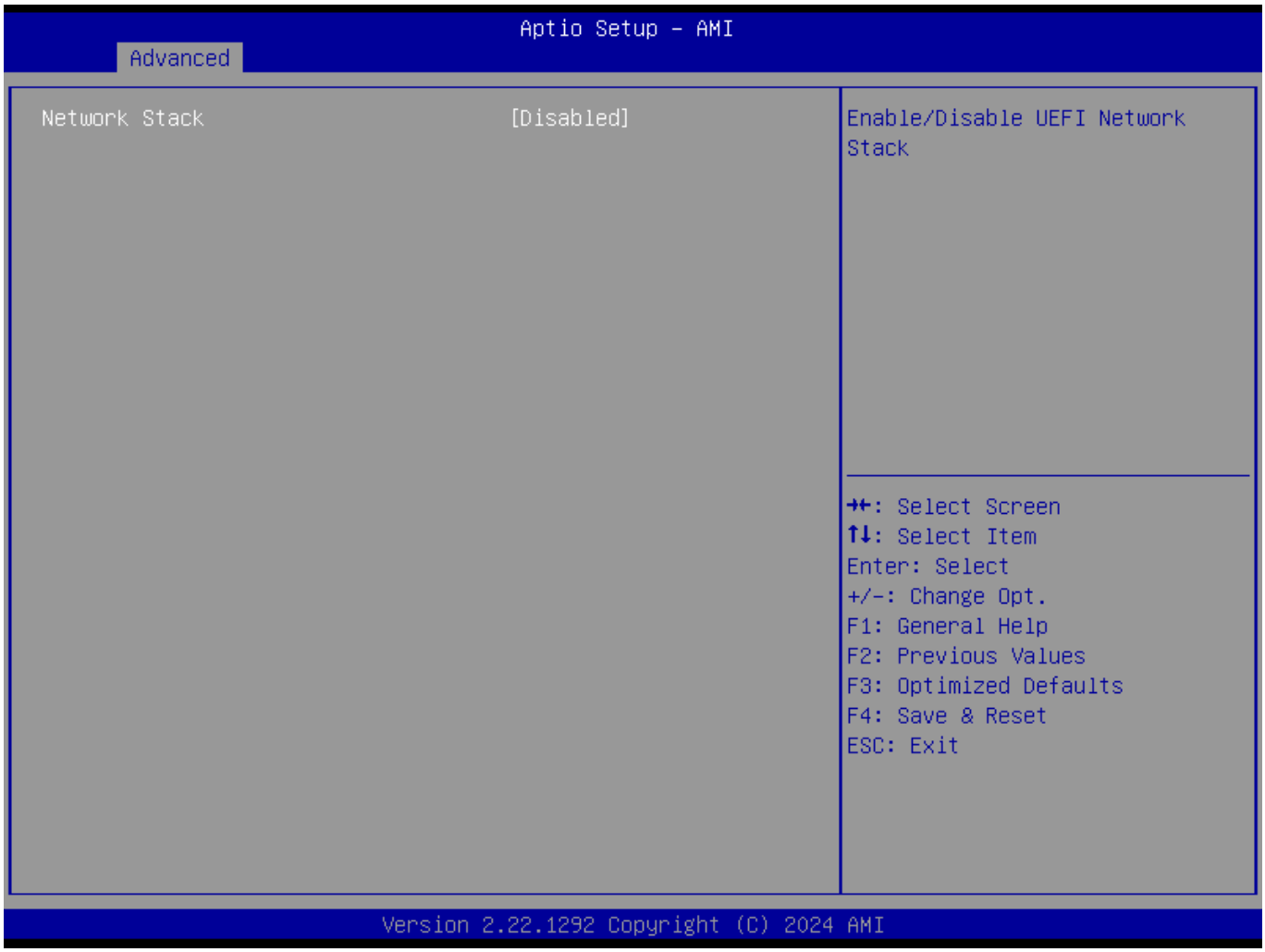
Field Name	Wake up hour(Show when Wake system from S5 set to Fixed Time)
Default Value	0
Possible Value	0-23
Help	Select 0-23 For example enter 3 for 3am and 15 for 3pm

Field Name	Wake up minute(Show when Wake system from S5 set to Fixed Time)

Default Value	0
Possible Value	0-59
Help	Select 0 – 59 for Minute

Field Name	Wake up second(Show when Wake system from S5 set to Fixed Time)
Default Value	0
Possible Value	0 - 59
Help	Select 0 – 59 for Second

4.2.10 Network Stack Configuration



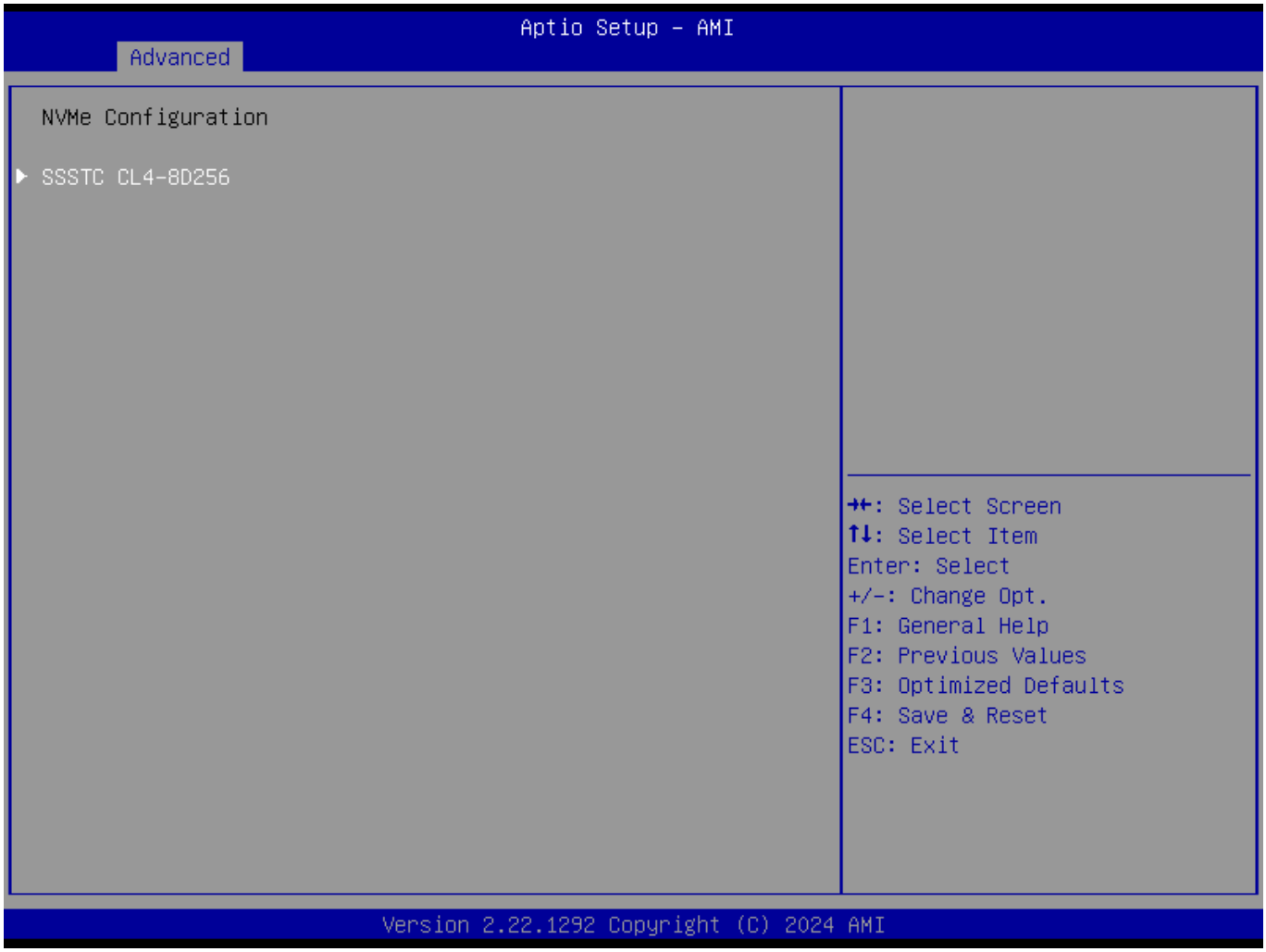
Field Name	**Network stack**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable UEFI Network stack.

Field Name	**Ipv4 PXE Support (Available when Network stack Enabled)**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot

	support will not be available.

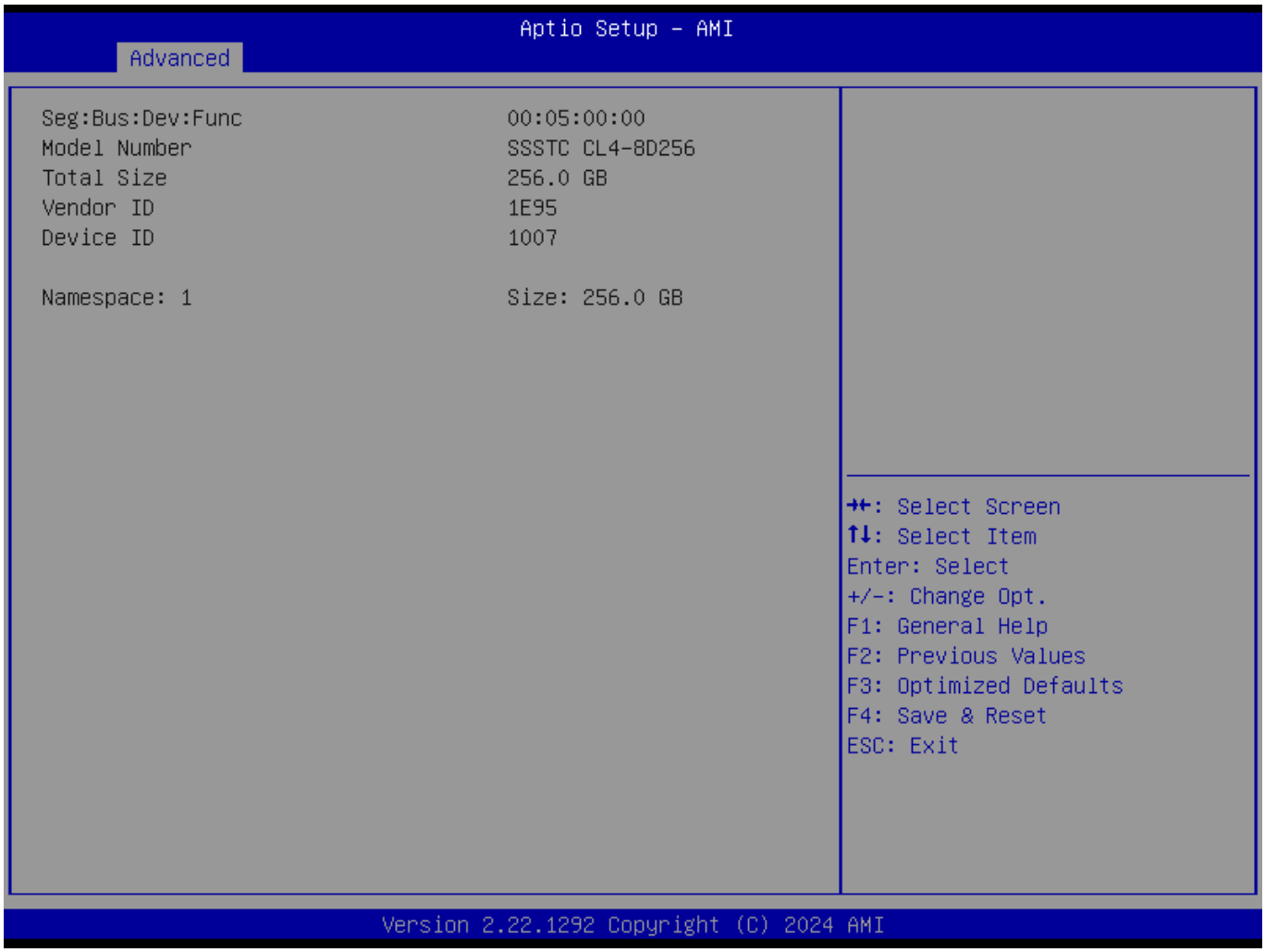
Field Name	**Ipv6 PXE Support (Available when Network stack Enabled)**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot support will not be available.

4.2.11 NVMe Configuration

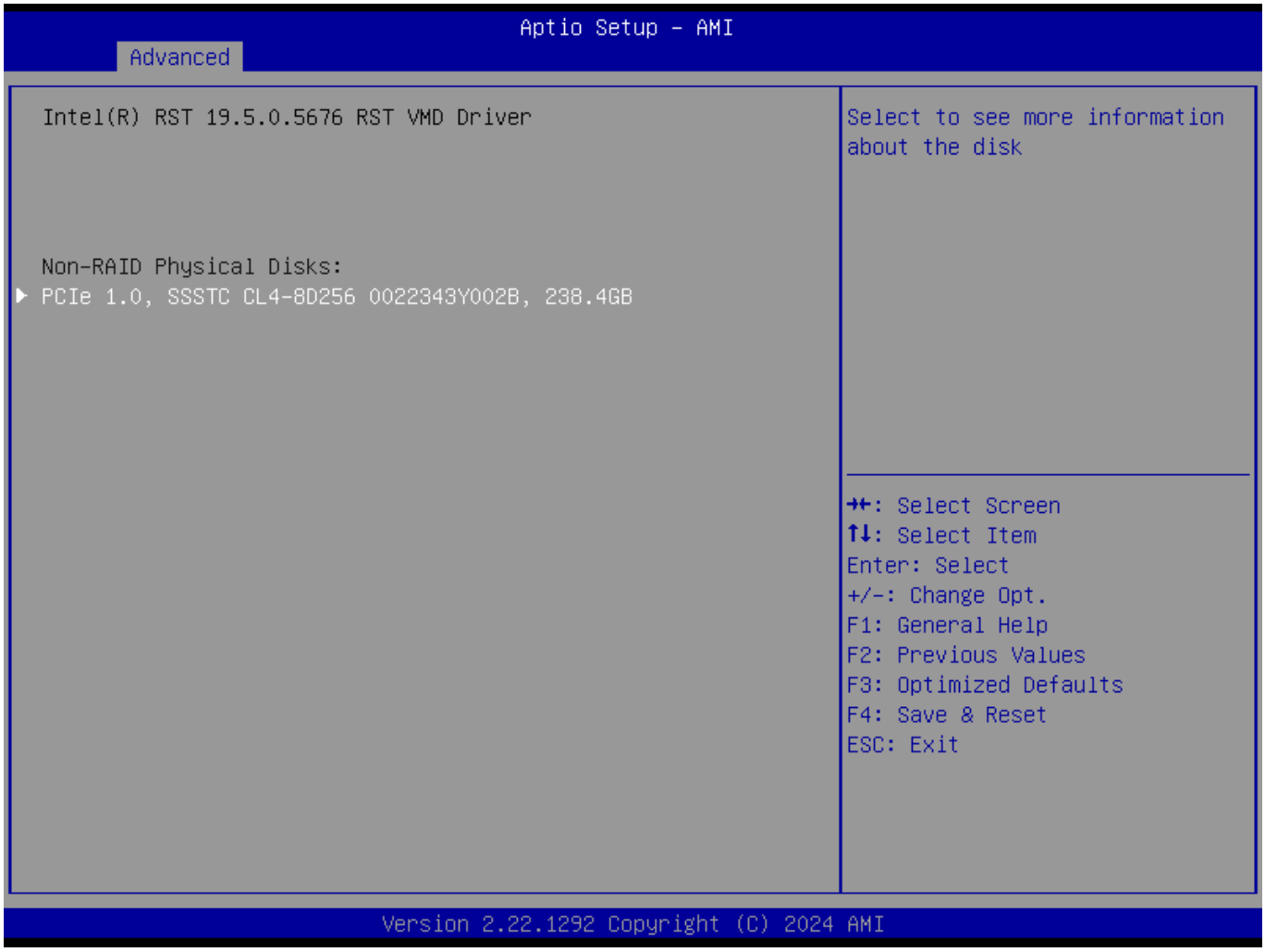


Field Name	**(Device)**
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.2.11.1 NVMe Device Information

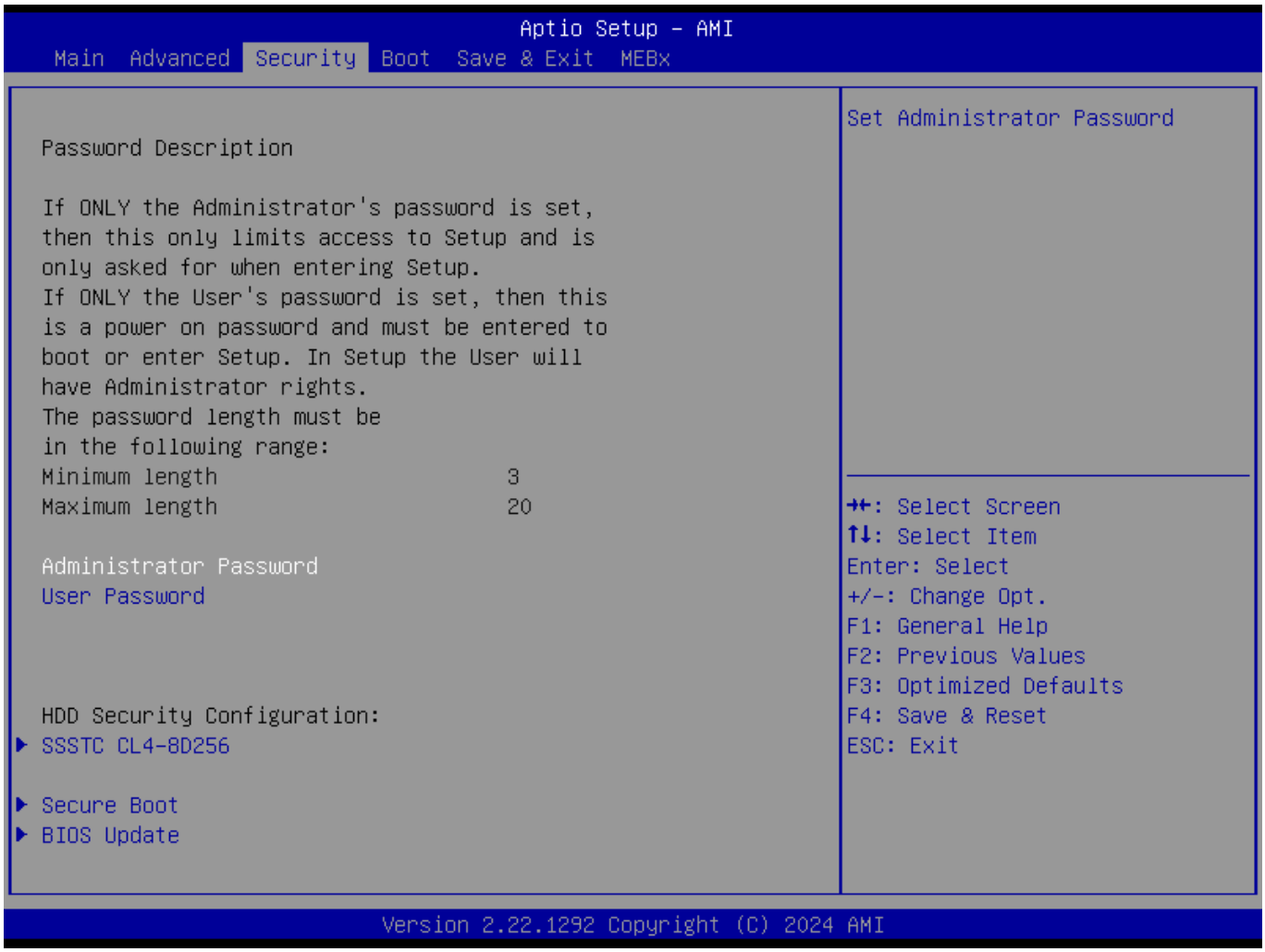


4.2.12 Intel(R) Rapid Storage Technology



Field Name	**(Device)**
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.3 Security Page



Field Name	**Administrator Password**
Help	Set Administrator Password

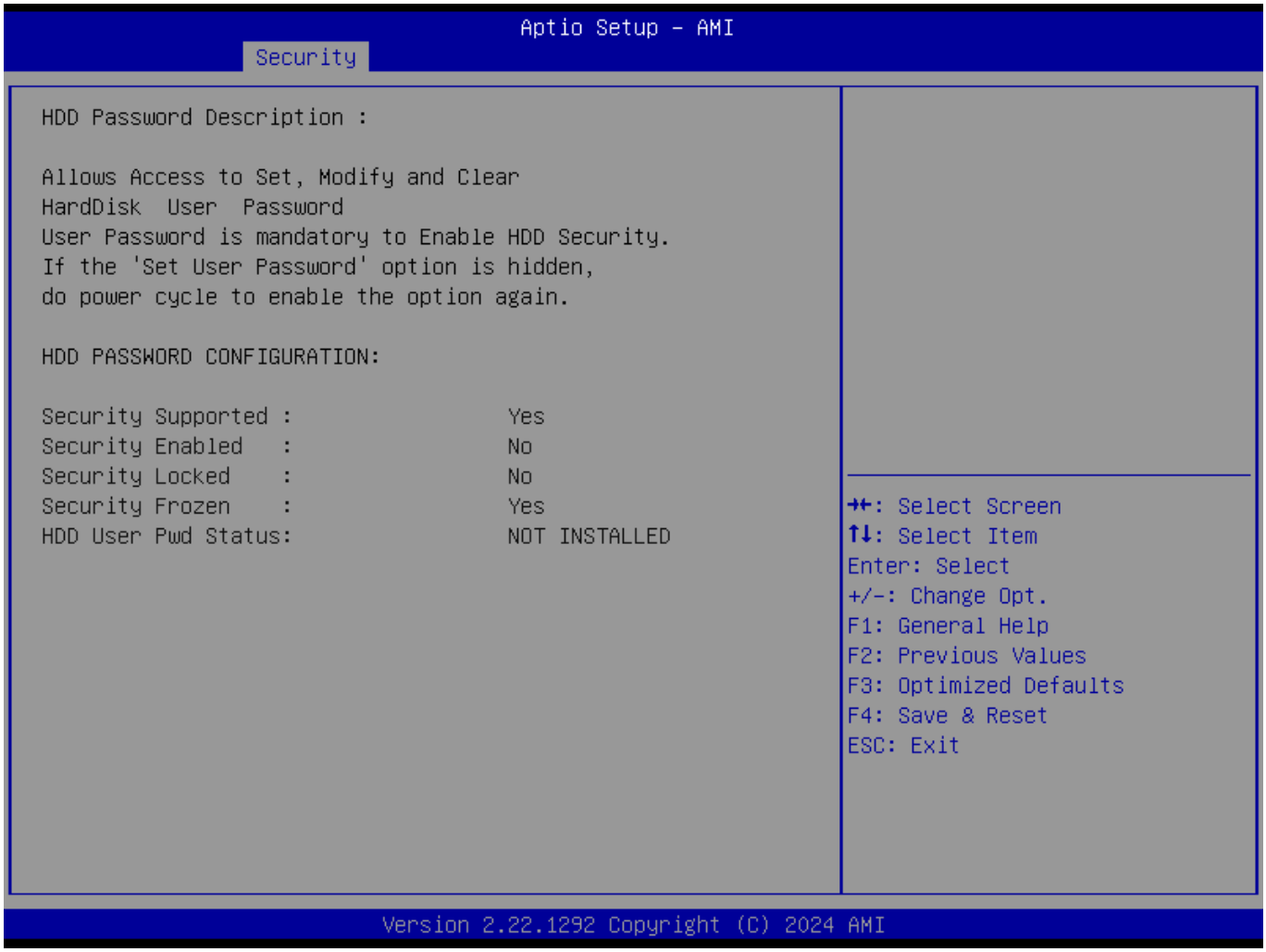
Field Name	**User Password**
Help	Set User Password.

Field Name	**HDD Security Configuration**
Help	HDD Security Configuration for selected drive
Comment	Press Enter when selected to go into the associated Sub-Menu.

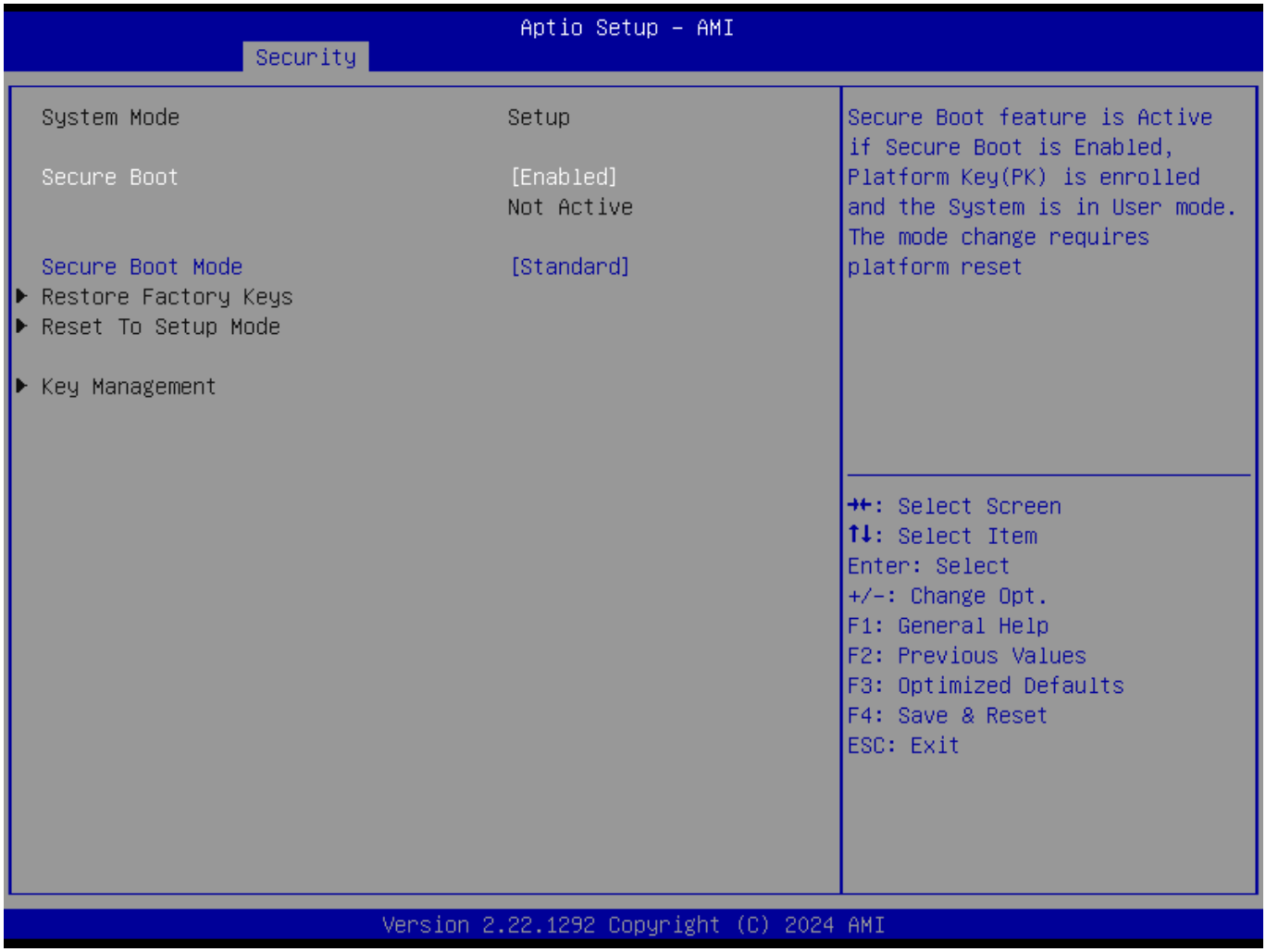
Field Name	**Secure Boot**
Help	Secure Boot Configuration
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**BIOS Update**
Help	BIOS Update support
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.3.1 HDD Security



4.3.2 Secure Boot



Field Name	**Secure Boot**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	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 platform reset

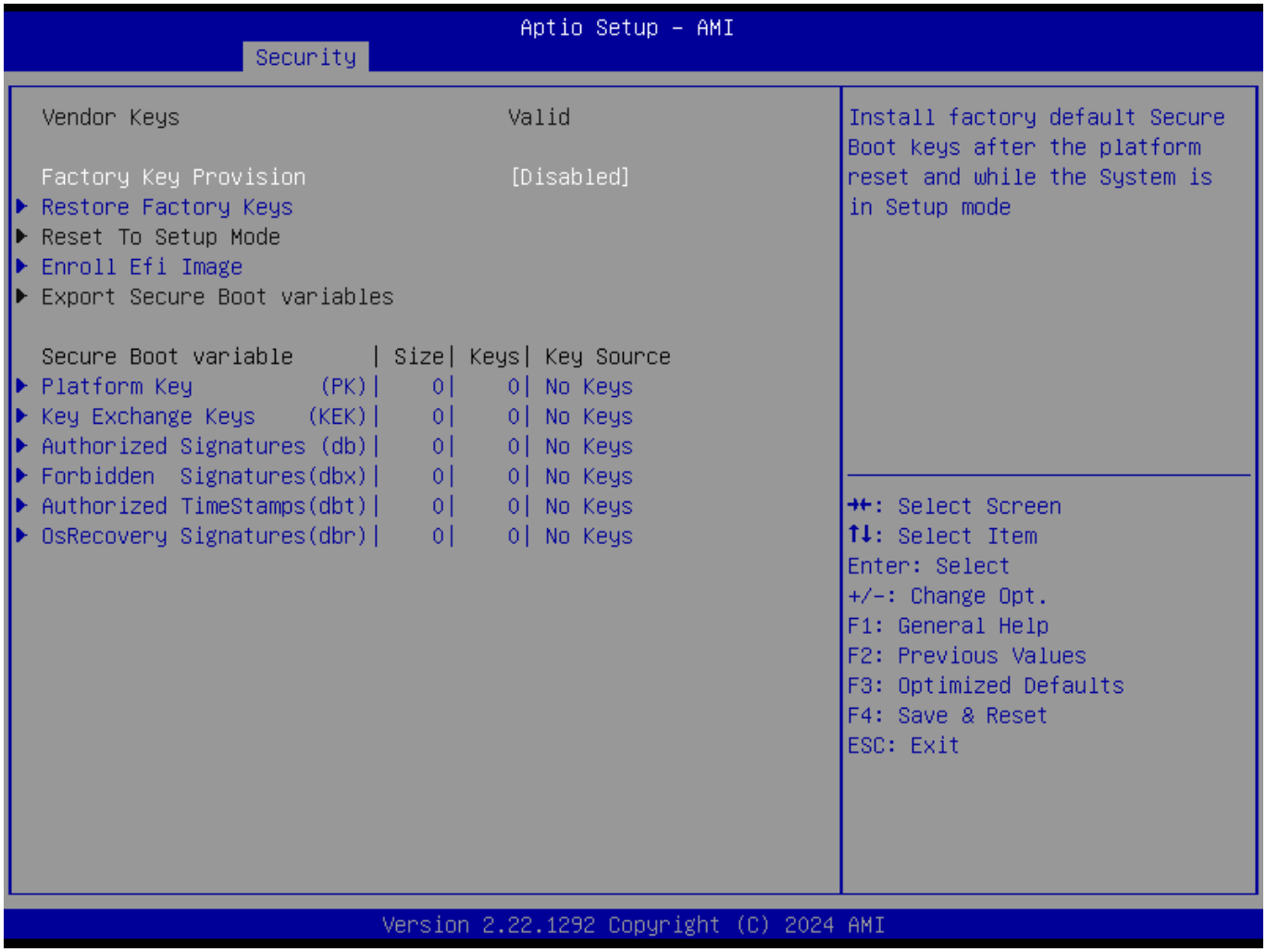
Field Name	**Secure Boot Mode**
Default Value	[Standard]
Possible Value	Standard Custom
Help	Secure Boot mode options:Standard or Custom.In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication

Field Name	**Restore Factory Keys**
Help	Force System to User Mode. Install factory default Secure Boot key databases

Field Name	**Reset to Setup Mode**
Help	Delete all Secure Boot key databases from NVRAM

Field Name	**Key Management**
Help	Enables expert users to modify Secure Boot Policy variables without full authentication

4.3.2.1 Key Management



Field Name	**Factory Key Provision**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode

Field Name	**Restore Factory Keys**
Help	Force System to User Mode. Install factory default Secure Boot key databases

Field Name	**Reset to Setup Mode**
Help	Delete all Secure Boot key databases from NVRAM

Field Name	**Enroll Efi Image**
Help	Allow Efi image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)

Field Name	**Export Secure Boot variables**
Help	Save NVRAM content of Secure Boot variable to a file.

Field Name	**Platform Key (PK)**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu “Key Management”.

Field Name	**Key Exchange Keys (KEK)**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

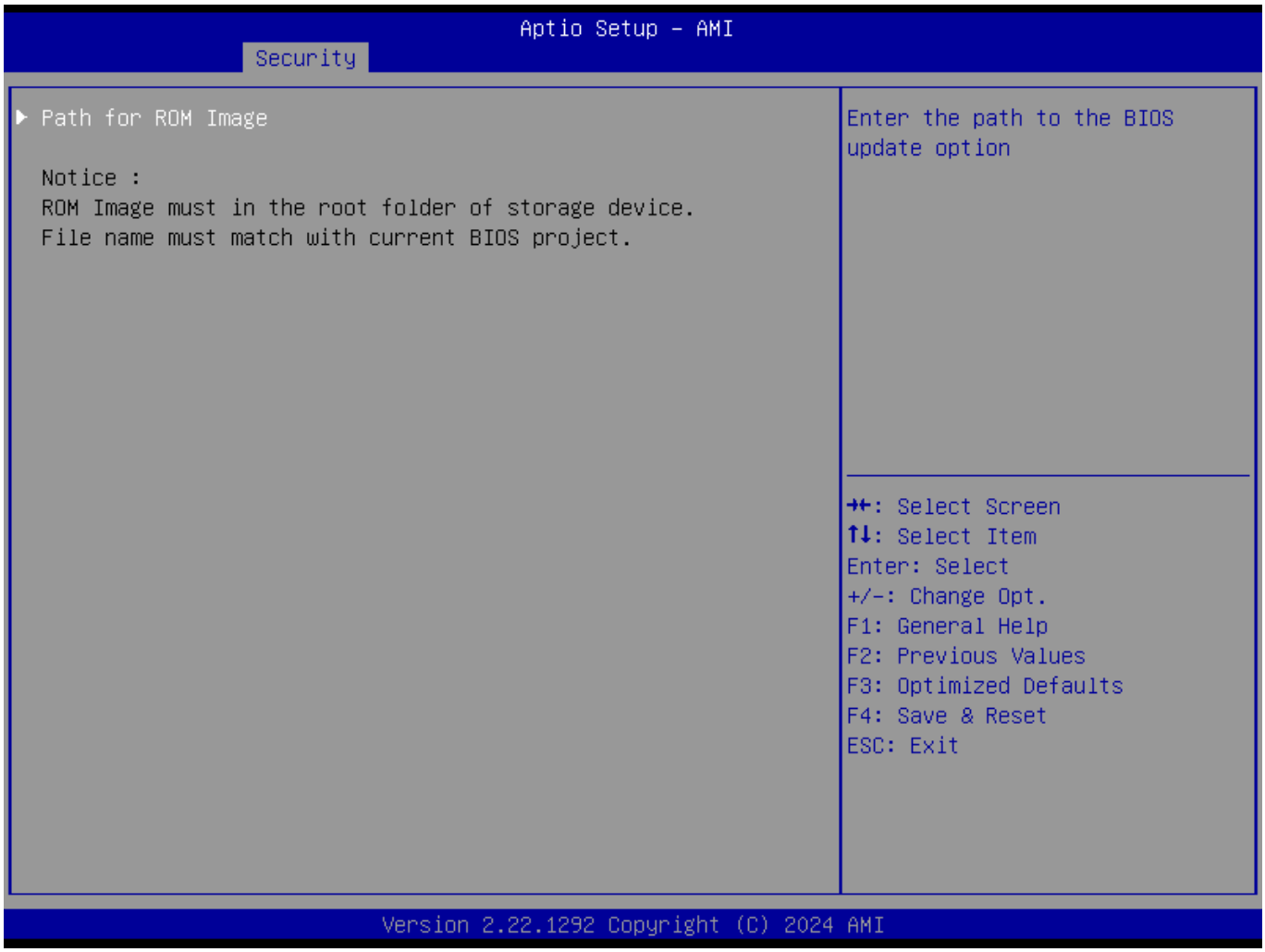
Field Name	**Authorized Signatures (db)**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Forbidden Signatures (dbx)**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Authorized TimeStamps (dbt)**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

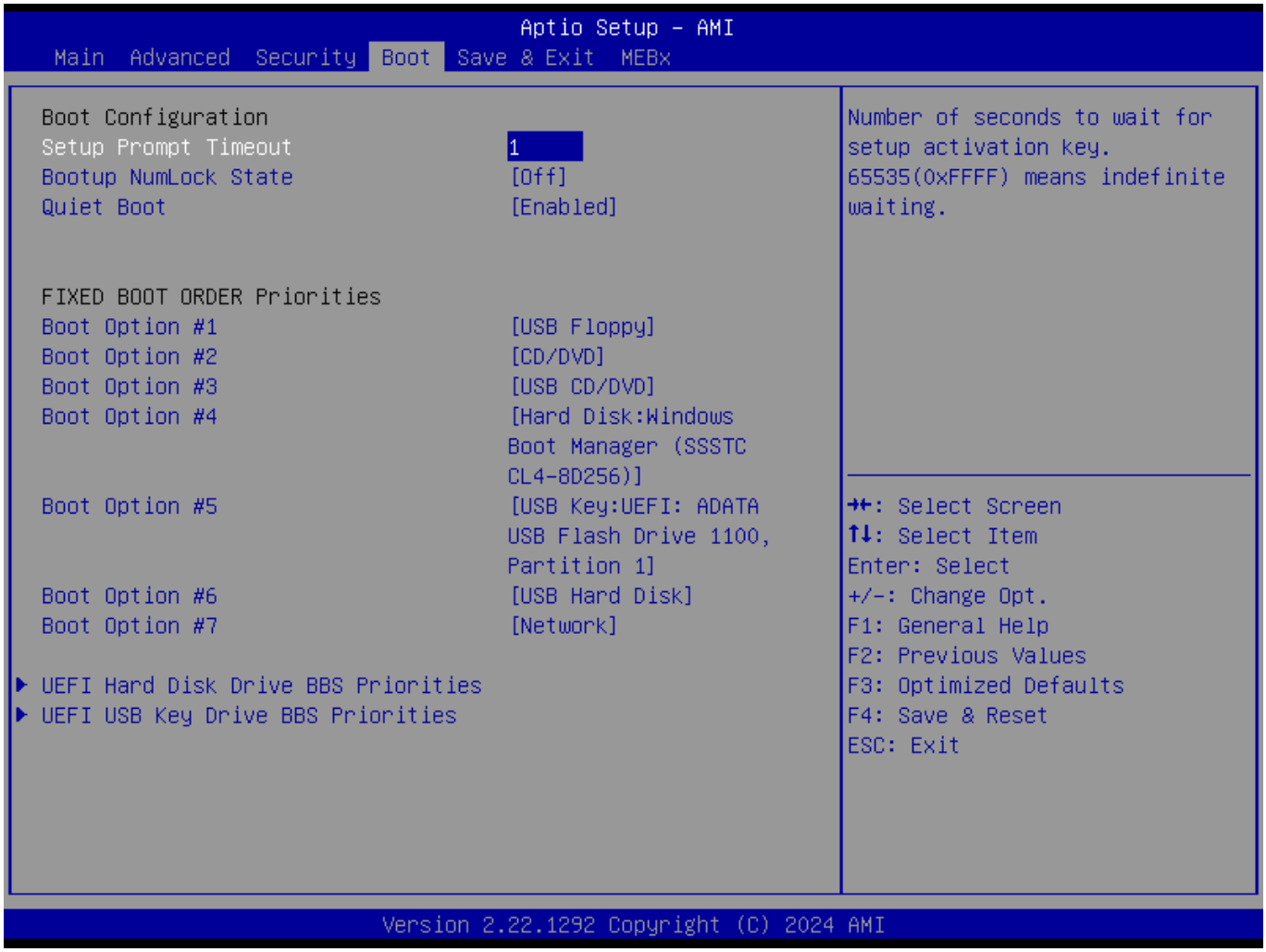
Field Name	**OsRecovery Signatures (dbr)**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

4.3.3 BIOS Update



Field Name	**Path for ROM Image**
Help	Enter the path to the BIOS update option

4.4 Boot Page



Field Name	**Setup Prompt Timeout**
Default Value	1
Possible Value	1~65535
Help	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Field Name	**Bootup NumLock State**
Default Value	[Off]
Possible Value	On Off
Help	Select the keyboard NumLock state

Field Name	**Quiet Boot**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enables or disables Quiet Boot option

Field Name	**Boot Option #1**
Default Value	[USB Floppy]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #2**
Default Value	[CD/DVD]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #3**
Default Value	[USB CD/DVD]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #4**
Default Value	[Hard Disk]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #5**
Default Value	[USB Key]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #6**
Default Value	[USB Hard Disk]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #7**
Default Value	[NVME]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk Network, Disabled
Help	Sets the system boot order

Field Name	**(UEFI) USB Floppy Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB Floppy Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) CDROM/DVD ROM Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available CDROM/DVD Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) USB CDROM/DVD ROM Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB CDROM/DVD Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) Hard Disk Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) USB KEY Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB Key Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

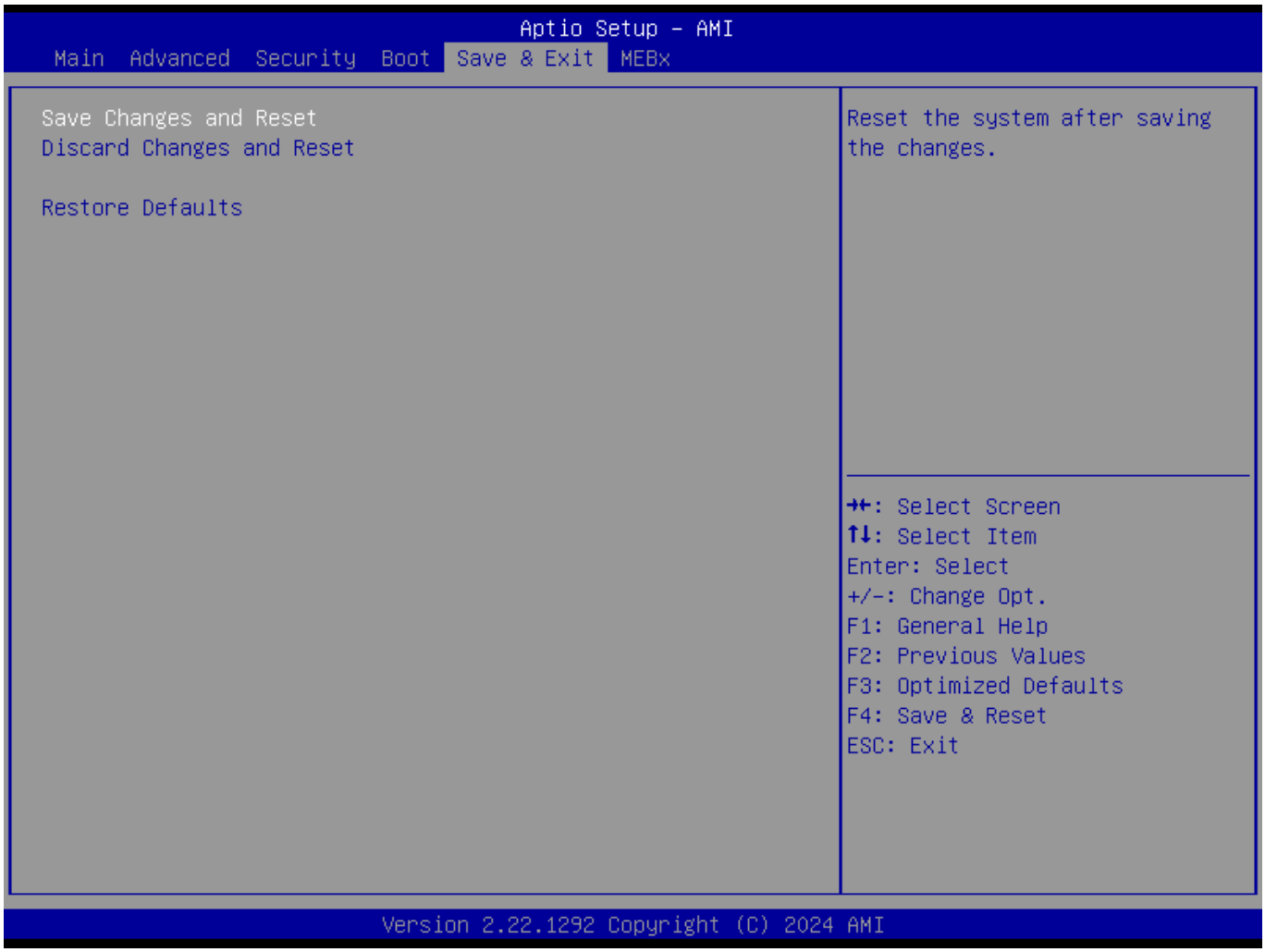
Field Name	**(UEFI) USB Hard Disk Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) NETWORK Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available NETWORK Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.4.1 (List Boot Device Type) Drive BBS Priorities

Field Name	**Boot Option #1**
Default Value	
Possible Value	Boot Device Name 1 of this type, Disable
Help	Sets the system boot order

4.5 Save & Exit Page



Field Name	**Save Changes and Reset**
Help	Reset the system after saving the changes.

Field Name	**Discard Changes and Rest**
Help	Reset system setup without saving any changes.

Field Name	**Restore Defaults**
Help	Restore/Load Default values for all the setup options.

MEBx

Note: This page will not display if Intel AMT not support.

Field Name	**Intel ® ME Password**
Default Value	admin (Force change new password after first entering.)
Help	MEBx Login

Password rule:

1. Password Length: At least 8 characters, and no more than 32.

2. Password Complexity: Password must include the following:

- At least one digit character (‘0’, ‘1’, … ‘9’)
- At least one 7-bit ASCII non alpha-numeric character (e.g. '!', '$', ';'), but excluding ‘:’, ‘,’ and ‘”’ characters.
- At least one lower-case letter ('a', ‘b’…’z’) and at least one upper case letter ('A',‘B’…'Z').