CW-X86-P5 P6

BIOS Manual

Safety Guide

Tips for safe use

1. Before using this product, please be sure to read the product manual carefully;
2. For boards that are not ready to be installed, they should be stored in anti-static protective bags;
3. Before taking out the board from the anti-static protective bag, you should first place your hands on a grounded metal object for a while (such as 10 seconds) to release the static electricity in your body and hands;
4. When holding the board, you need to wear anti-static protective gloves, and you should develop the habit of only touching its edges;
5. To avoid electric shock to the human body or damage to the product, you must turn off the AC power before plugging or reconfiguring the board;
6. Before moving the board or the whole machine, you must turn off the AC power;
7. For the whole machine product, when adding or reducing boards, be sure to turn off the AC power first;
8. When you need to connect or unplug any device, you must turn off the AC power first;
9. To avoid unnecessary damage to the product due to frequent power on and off, you should wait at least 30 seconds after shutting down. Restart after seconds.

Revision History			
Revision	**Date**	**Description**	**Author**
V1	2023-07-11	First edition released	
V2	2024-05-09	Update V2-V3	

contents

Chapter 1. Introduction

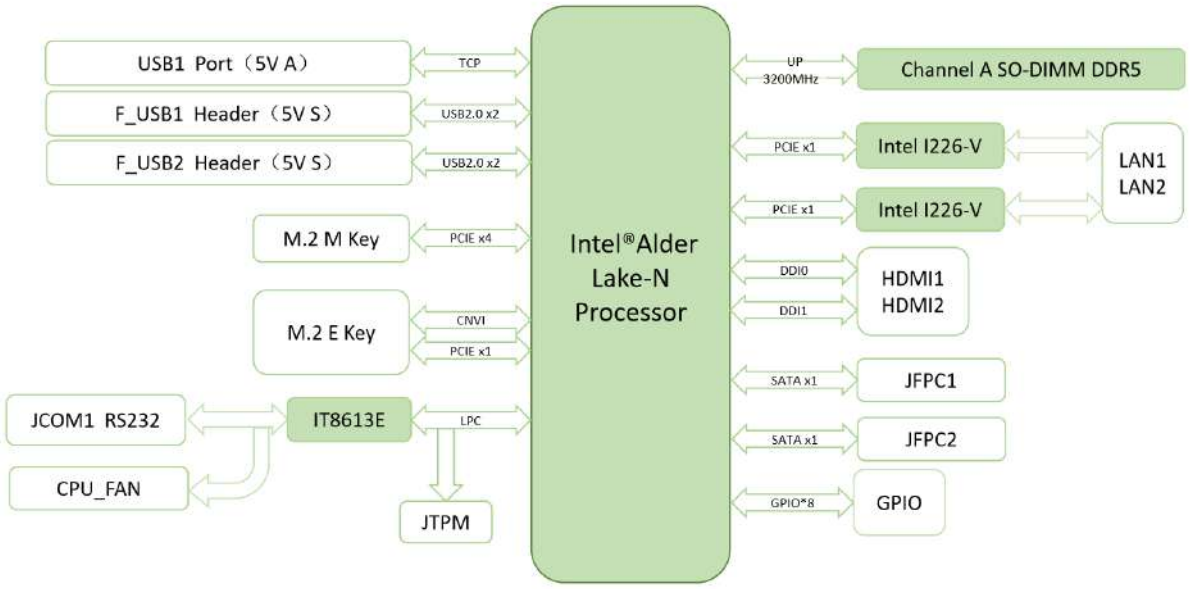
1.1 Packing List

Thank you for your trust in purchasing our products. When you receive the products, please ensure that the outer packaging of the products is intact. If there is any damage on the appearance or missing accessories, please contact your dealer.

- CW-ADLNTB-1C2L V1.0 motherboard x 1
- Cables, boards and other accessories (depending on the order, please contact sales if you have any needs)
- Warranty card
- Certificate of conformity

* The above accessories are for reference only. Please refer to the actual accessories. Changwang Microcontroller reserves the right to modify.
* As the motherboard specifications and BIOS software will be continuously updated, the relevant contents of this manual will be changed without prior notice. Everything is for reference only. Please refer to the actual accessories or pay attention to the upgraded version published online.

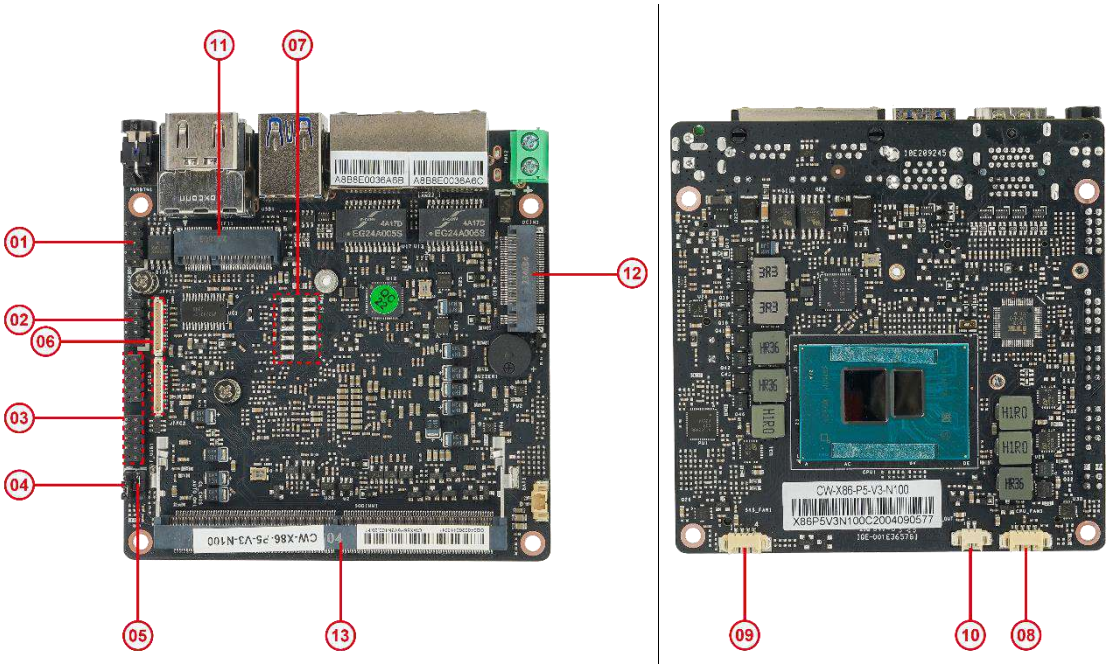
Block Diagram



1.2 Motherboard Specifications

Motherboard size	- 90mm X 90mm
CPU	- Intel® Alder Lake-N processor
Memory	- Onboard 1 260-pin DDR5 SO-DIMM memory slot - A single memory stick supports up to 16GB
Expansion slots	- 1*M.2 E Key (supports WIFI/Bluetooth module expansion)
Backplane interface	- - 1 x DCIN port - - 1 x LAN1+LAN2 port - - 2 x USB3.2 Gen2 ports (10Gbps) - - 2 x HDMI double-layer sockets - - 1 x PWR_ON button
Built-in interface	- - 1 x COM pin - - 1 x TPM pin - - 2 x JUSB pins (can be expanded to 4*USB2.0) - - 1 x GPIO pin - - 2 x JFPC pins - - 1 x CPU_FAN pin - - 1 x SYS_FAN pin
BIOS	- AMI BIOS
Power Management	- Supports advanced power management ACPI - Supports network wake-up S3, S4, S5, supports power-on, etc.
show	- Supports dual HDMI
Backlight adjustment	/
network	-2 x Intel I226-V Ethernet (speed 2.5G)
Audio	/
I/O Chip	- ITE8613E-I
powered by	- DC 12V power supply
Work Environment	- Operating temperature: 0℃~60℃ - Ambient humidity: 0%~95%
operating system	Windows 10 / Windows 11/Linux

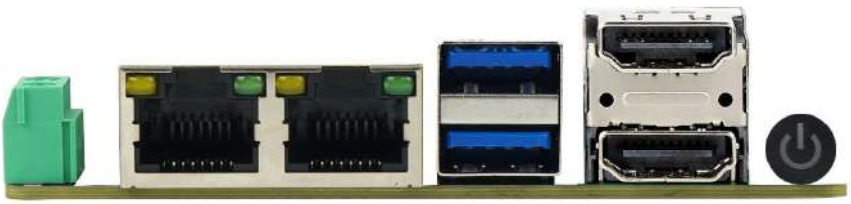
1.3. Mainboard layout diagram



(The picture is for reference only, the actual product shall prevail)

Item		describe
1	GPIO	GPIO Pins
2	JCOM1	Built-in serial port pin
3	F_USB1/2	Built-in USB pin
4	AUTO_ON	Automatic power-on selection jump pin
5	CLR_CMOS	CMOS clear selection jumper
6	JFPC1/2	SATA adapter socket
7	JTPM_S	TPM pins
8	CPU_FAN	CPU Cooling Fan Header
9	SYS_FAN	System cooling fan
10	VCC12_OUT	12V power socket
11	WIFI1	M.2 E Key Slot
12	M2_SSD	M.2 M Key Slot
13	SODIMM1	SO-DIMM DDR5 memory slot

1.3.1. Rear IO interface



Item	describe
PWR2	Phoenix Terminal
LAN1	Link LED: Green and steady, indicating the network is connected
	Active LED: Flashing orange, indicating data transmission
LAN2	Link LED: Green and steady, indicating the network is connected
	Active LED: Flashing orange, indicating data transmission
USB1	2*USB3.2 Gen 2 rate (10Gbps)
2*HDMI	High-definition digital signal output display
PWR_ON	Switch button

Chapter 2, Motherboard Installation

Safety Note:

- Do not tear off the serial number and agent warranty sticker on the motherboard before installation, otherwise it will affect the recognition standard of the product warranty period.
- Before installing or removing the motherboard and other hardware devices, be sure to turn off the power and unplug the power cord from the socket.
- When installing other hardware devices to the socket inside the motherboard, please make sure that the connector and the socket are tightly connected.
- When taking the motherboard, please try not to touch the metal wiring part to avoid short circuit.
- When taking the motherboard, central processing unit (CPU) or memory stick, it is best to wear an anti-static wristband. If there is no anti-static wristband, make sure your hands are dry and touch metal objects first to eliminate static electricity.
- Before installing the motherboard, please place it on an anti-static mat or anti-static bag.
- When you want to unplug the plug from the motherboard power socket, make sure the power supply is turned off.
- Before turning on the power, make sure the voltage value of the power supply is set to the voltage standard value in the window.
- Before turning on the power, make sure that the cables and power cords of all hardware devices are properly connected.
- Do not allow the screws to contact the circuits or parts on the motherboard to avoid damage or malfunction of the motherboard.
- Make sure there are no screws or metal products left on the motherboard or in the computer case.
- Do not place the computer host in an unstable place.
- Do not place the computer host in an environment with excessively high temperatures.
- Turning on the power during installation may cause damage to the motherboard, other devices, or yourself.
- If you are not familiar with performing the installation, or if you encounter any technical problems using this product, please consult a professional technician.

2.1 Memory Installation

The motherboard provides 1 260-pin DDR5 SO-DIMM memory slot.

Before installing the memory, please pay attention to the following information:

1. Please make sure that the memory you purchased is suitable for the specifications supported by this motherboard.

2. Before installing or removing the memory, please make sure that the computer power is turned off to avoid damage.

3. The memory design has a foolproof mark. If you insert the memory in the wrong direction, the memory cannot be inserted. At this time, please change the insertion direction immediately.

Installing the memory:

1. Please turn off the power and unplug the AC power cord before installing or removing the memory.

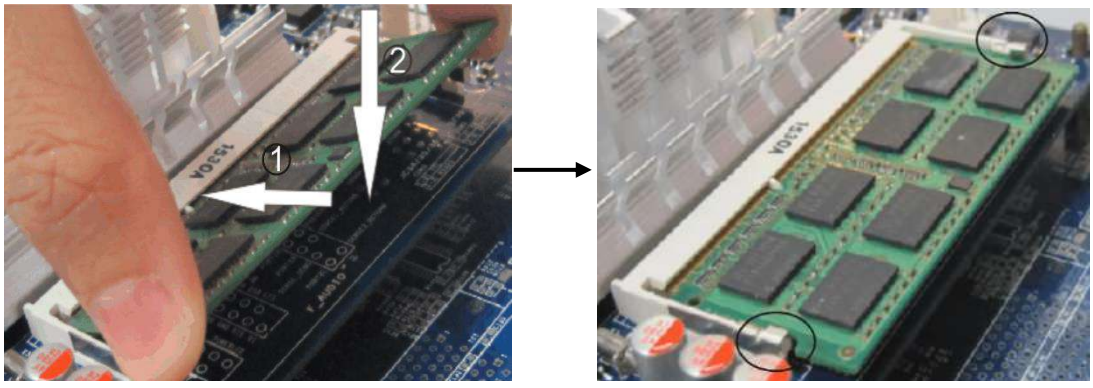
2. Carefully hold both ends of the memory stick and do not touch the metal contacts on it.

3. Align the gold finger of the memory stick with the memory stick slot, and pay attention to the direction that the gold finger concave hole is aligned with the convex point of the slot;

4. Insert the memory stick into the memory slot at an angle of 30 degrees, and then press the memory stick down until you can hear a "click" sound, indicating that the memory has been successfully installed and can be used. (Note: Do not press the memory module too hard to avoid damaging the memory)

5. To remove the memory module, push the latches at both ends of the DIMM slot outward at the same time, and then take out the memory module.

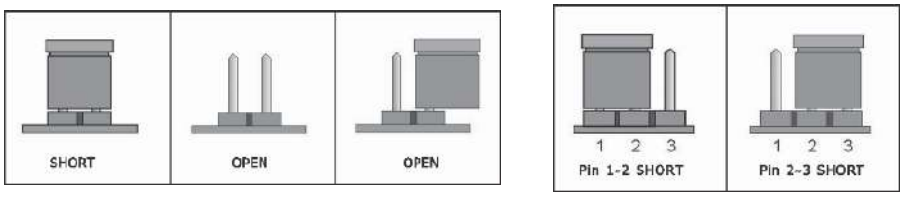
The installation diagram is for reference only:



2.2 Jumper Description

2-pin connector: Inserting a jumper cap across both pins will close (short-circuit).

3-pin connector: A jumper cap can be inserted across pins 1-2 or pins 2-3 to close (short-circuit).



How to identify the position of the first pin of the jumper?

1. Please carefully check the motherboard. The pin marked with "1" or with a thick white line is the first pin. 2. Look at the solder pad on the back panel. Usually the square solder pad is the first pin.

2.3、Settings of pins and jumpers;

1.GPIO pins

The motherboard provides 1 2*5pin GPIO pin (pin pitch: 2.00mm), the pin definitions are as follows:

Graphics	Pin	Definition	Pin	Definition
	1	GPIO134	2	GPIO138
	3	GPIO135	4	GPIO139
	5	GPIO136	6	GPIO140
	7	GPIO137	8	GPIO141
	9	GND	10	+5V

2.Built-in serial port: COM1

The motherboard provides 1 2*5Pin COM pin (pin pitch: 2.00mm), the pin definitions are as follows:

Graphics	Pin	Definition	Pin	Definition
	1	DCD	2	RXD
	3	TXD	4	DTR
	5	GND	6	DSR
	7	RTS	8	CTS
	9	RI	10	NC

3.Built-in USB interface: F_USB1, F_USB2

The motherboard provides two 2*5pin (N9) built-in USB interfaces (pin pitch: 2.00mm), and the pin definitions are as follows:

Graphics	Pin	Definition	Pin	Definition
	1	VCC +5V	2	VCC +5V
	3	USB1 Date-	4	USB2 Date-
	5	USB1 Date+	6	USB2 Date+
	7	GND	8	GND

	9	/	10	NC

4. Automatic power-on jump needle: AUTO_ON

The motherboard provides a 1*3pin automatic power-on jumper (pitch: 2.00mm), the jumper definition is as follows:

Graphics	Pin	Definition
	1-2	NORMAL
	2-3 (Default)	AUTO_ON

5.CMOS clear selection jumper: CLR_CMOS

The motherboard provides a 1*3pin CMOS clear jumper (pitch: 2.00mm), the jumper definition is as follows:

Graphics	Pin	Definition
	1-2 (Default)	NORMAL
	2-3	CLR_CMOS

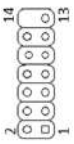
6. Built-in SATA adapter FPC seat: JFPC1/2

The motherboard provides two 1*12 Pin JFPC SATA adapter pin interfaces (pin pitch: 0.8mm), and the pin definitions are as follows:

Graphics	Pin	Definition	Pin	Definition
	1	GND	2	SATA_TXP
	3	SATA_TXN	4	GND
	5	SATA_RXN	6	SATA_RXP
	7	GND	8	+5V_S0
	9	+5V_S0	10	+5V_S0
	11	GND	12	GND

7.TPM pin interface: TPM_S

The motherboard provides 1 2*7pin TPM pin (pitch: 2.00mm), the pin definitions are as follows:

Graphics	Pin	Definition	Pin	Definition
	1	VCCSPI	2	S_SPI_TPM_IRQ#
	3	S_PLTRST#	4	S_SPI_TPM_ CS2#
	5	F2_SPI_CS1#_R	6	F_BIOS_WP#_R
	7	+3V_SPI	8	GND
	9	F_SPI_CS0#_R	10	T_SPI_CLK
	11	T_SPI_MISO	12	T_SPI_MOSI
	13	F_SPI_HOLD#_R	/	/

8.CPU cooling fan power socket: CPU_FAN

The motherboard provides one 1*4pin (CPU_FAN) cooling fan interface (pin pitch: 1.25mm), and the pin definitions are as follows:

Graphics	Pin	Definition
	1	Ground
	2	+12V
	3	Sense
	4	Control

9. System cooling fan power socket: SYS_FAN

The motherboard provides one 1*4pin (SYS_FAN) cooling fan interface (pin pitch: 1.25mm), the pin definitions are as follows:

Graphics	Pin	Definition
	1	Ground
	2	+12V
	3	Sense
	4	Control

10. 12V power socket: VCC12_OUT

The motherboard provides a 1*2pin power socket interface (pin pitch: 1.25mm), the pin definitions are as follows:

Graphics	Pin	Definition
	1	+12V
	2	GND

Chapter 3. BIOS Setup

3.1、BIOS Description

This motherboard uses AMI BIOS. BIOS stands for Basic Input Output System. It is stored in a ROM (Read-Only Memory) chip on the computer motherboard. When you turn on the computer, BIOS is the first program to run. It has the following main functions:

A. Power On Self Test (POST) is used to check whether the computer is in good condition.

B. Initialize and detect some external devices and load and run your operating system.

C. Provide the lowest and most basic control for your computer hardware.

D. Manage your computer through SETUP in BIOS.

BIOS data is stored in a CMOSRO RAM chip on the motherboard, maintained by a 3.3V button battery. It contains important system information and a setup program for setting system parameters - the BIOS Setup program. When the system is running normally, the BIOS does not need to be modified. When the CMOS data is lost due to other reasons, the BIOS needs to be reset.

Note:

Improper BIOS settings will directly damage the computer's hardware and even burn the motherboard. It is recommended that those who are not familiar with it modify the settings carefully.

Due to the continuous upgrade of the BIOS in the motherboard, the relevant BIOS information in this manual is for reference only, so the consistency of the BIOS information in this manual with the information in the actual BIOS of the motherboard is not guaranteed.

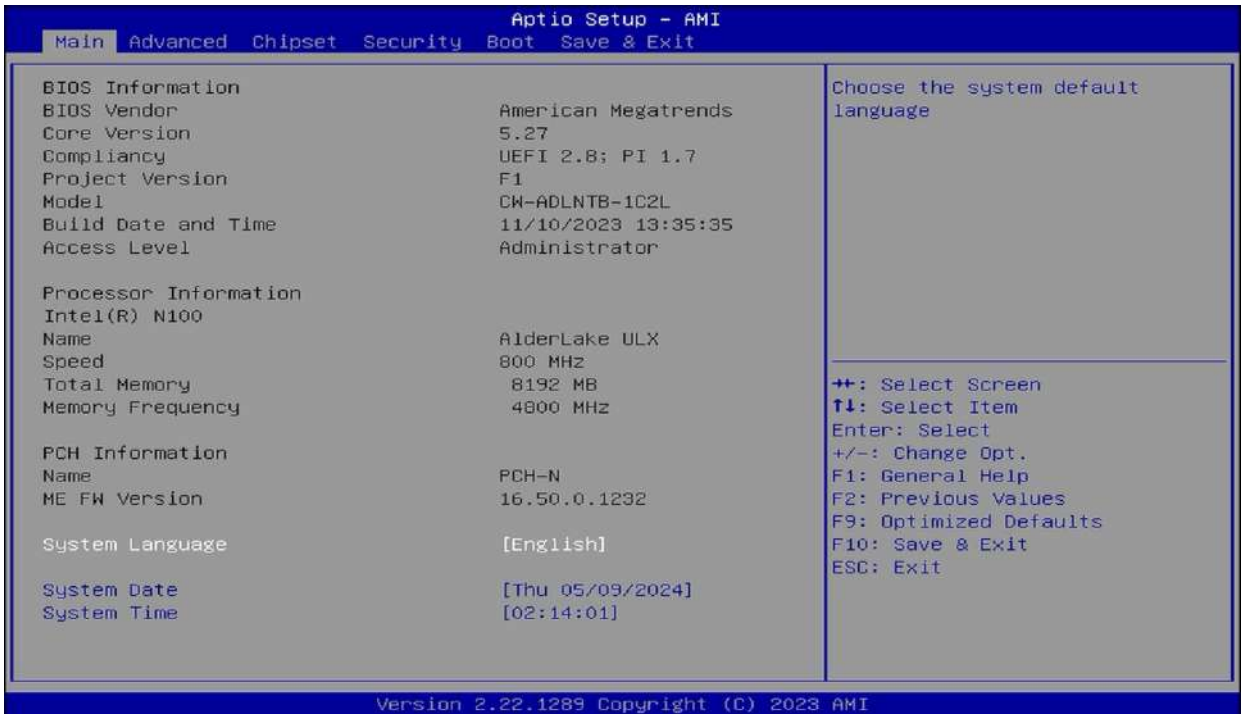
3.2 BIOS settings

When the motherboard is powered on or the system is restarted, the following prompt will appear on the display screen in the Post interface. Press DEL to enter the BIOS Setup

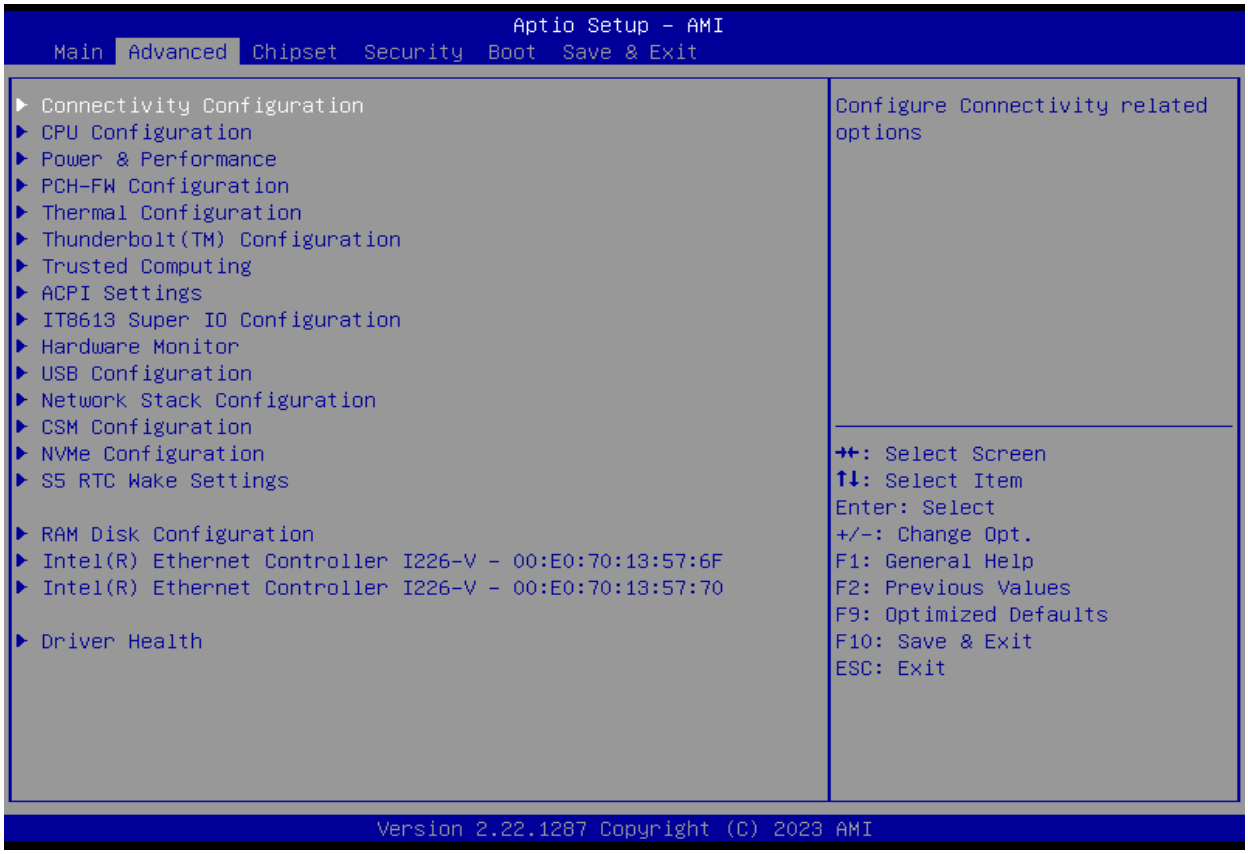
You can use the up, down, left, and right keys to move through the options, press <Enter> to make a selection, and use Page Up and Page Down to change options. Press <F1> for help and <Esc> to exit. See the table below for details.

Control keys	Functional Description
← / →	Move the left and right arrows to select the screen
↑/↓	Move the up and down arrows to select up and down items
+/ -	Increase/decrease value or change selection
<Enter>	Select this option to enter the submenu
<ESC>	Return to the main screen, or end the CMOS SETUP program from the main screen
<F1>	Show related help
<F2>	Restore previous settings
<F9>	Load the optimized settings (BIOS defaults)
<F10>	Save the changed CMOS settings and reboot

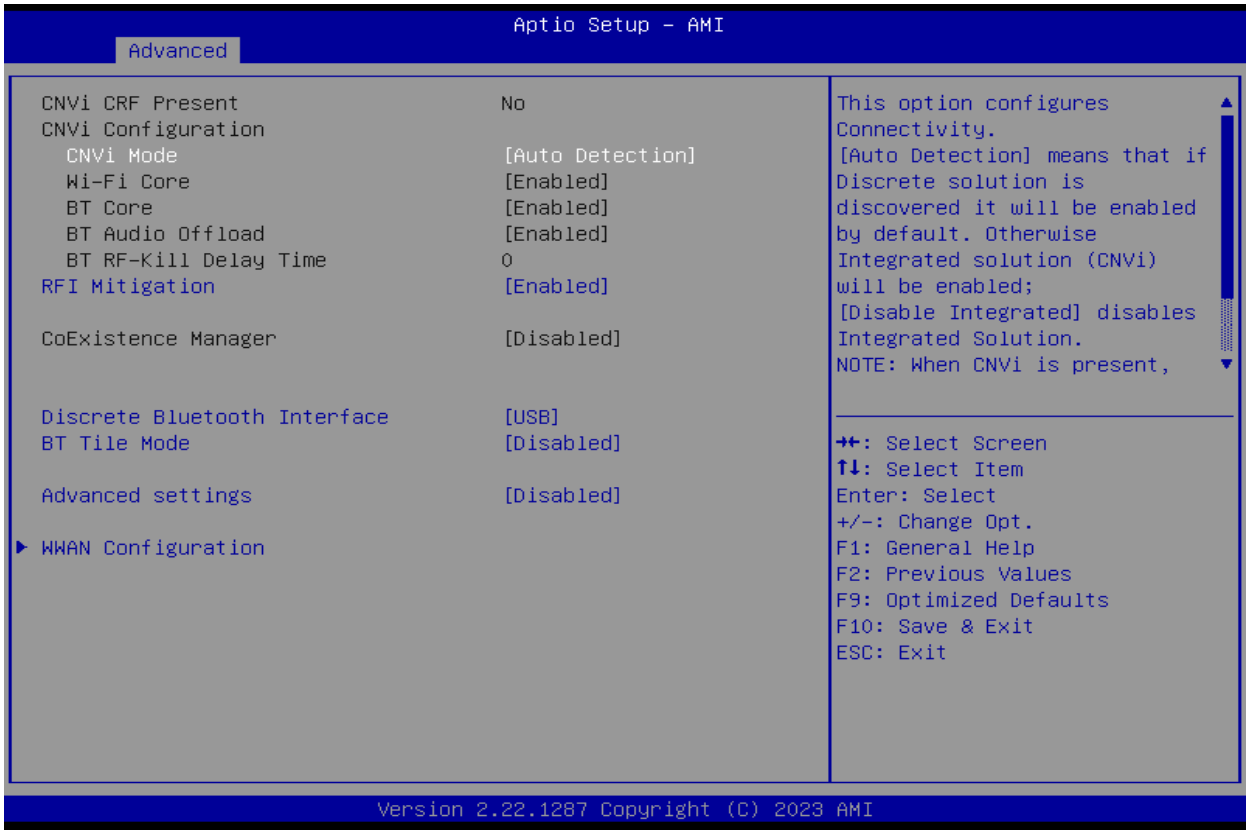
3.2.1. Main menu information (Main)



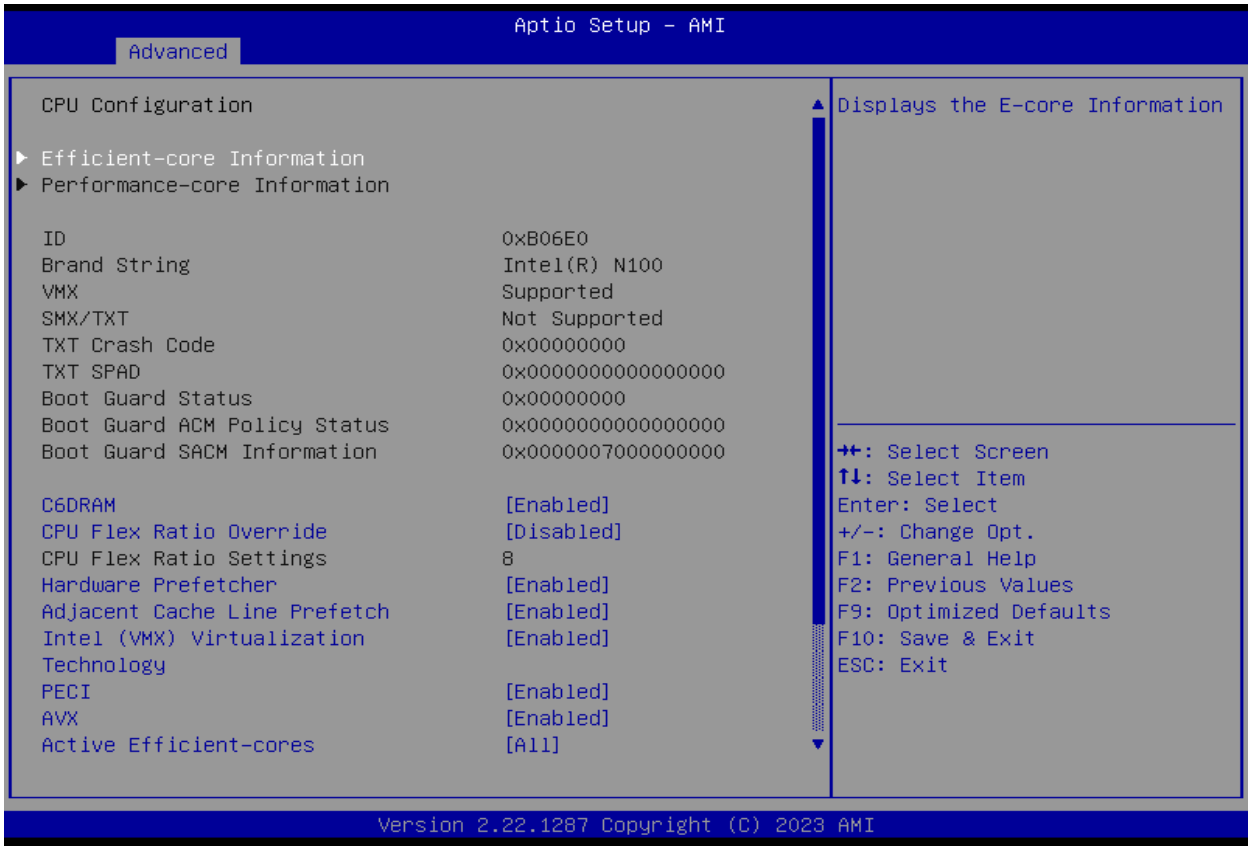
3.2.2、Advanced BIOS function settings (Advanced)



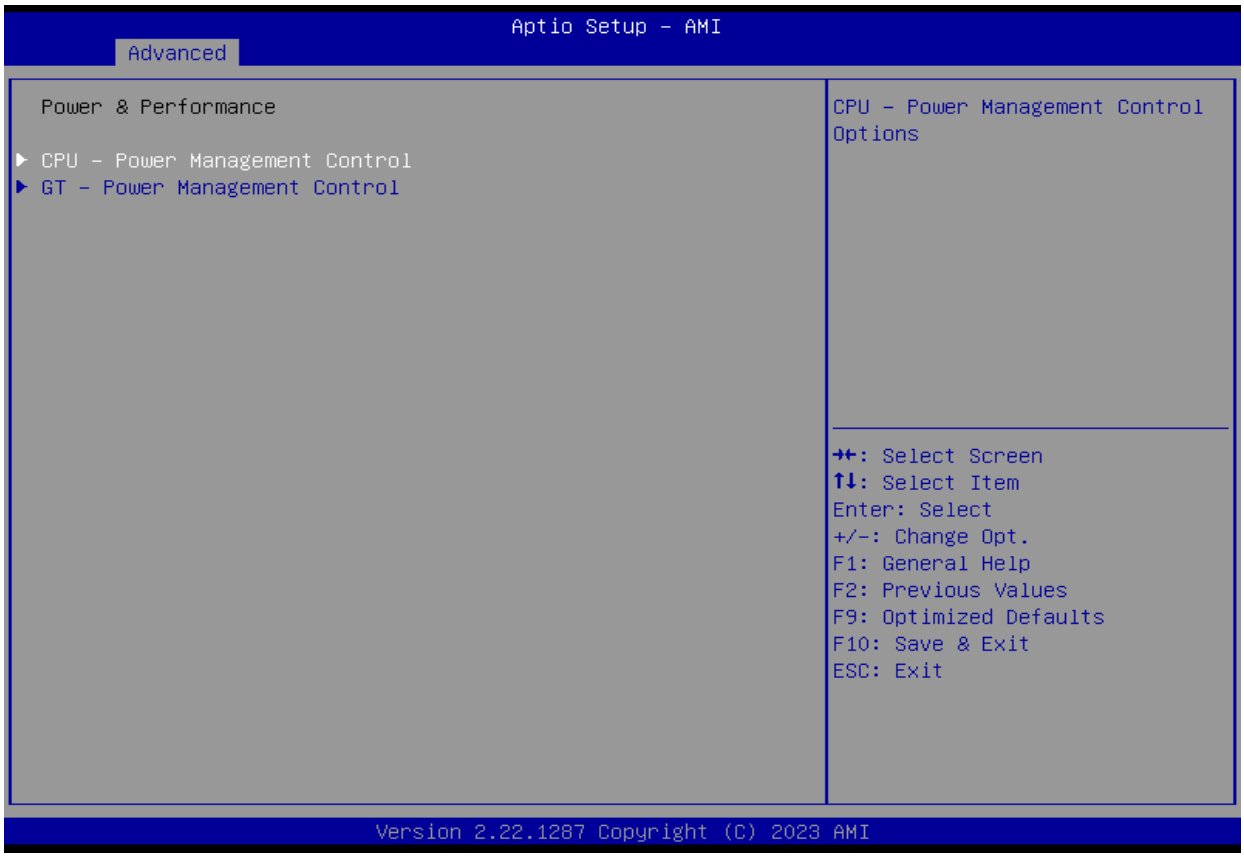
3.2.3. Connectivity Configuration

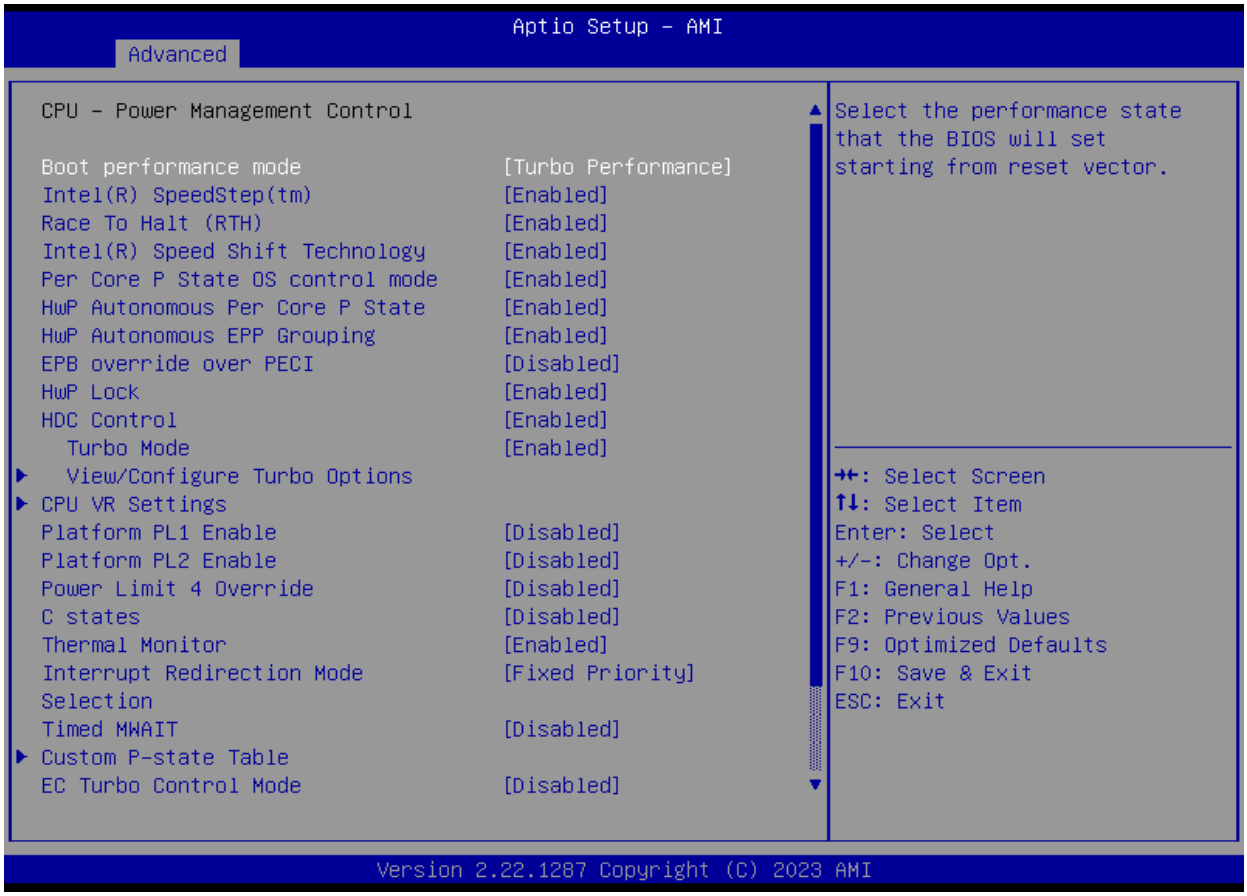


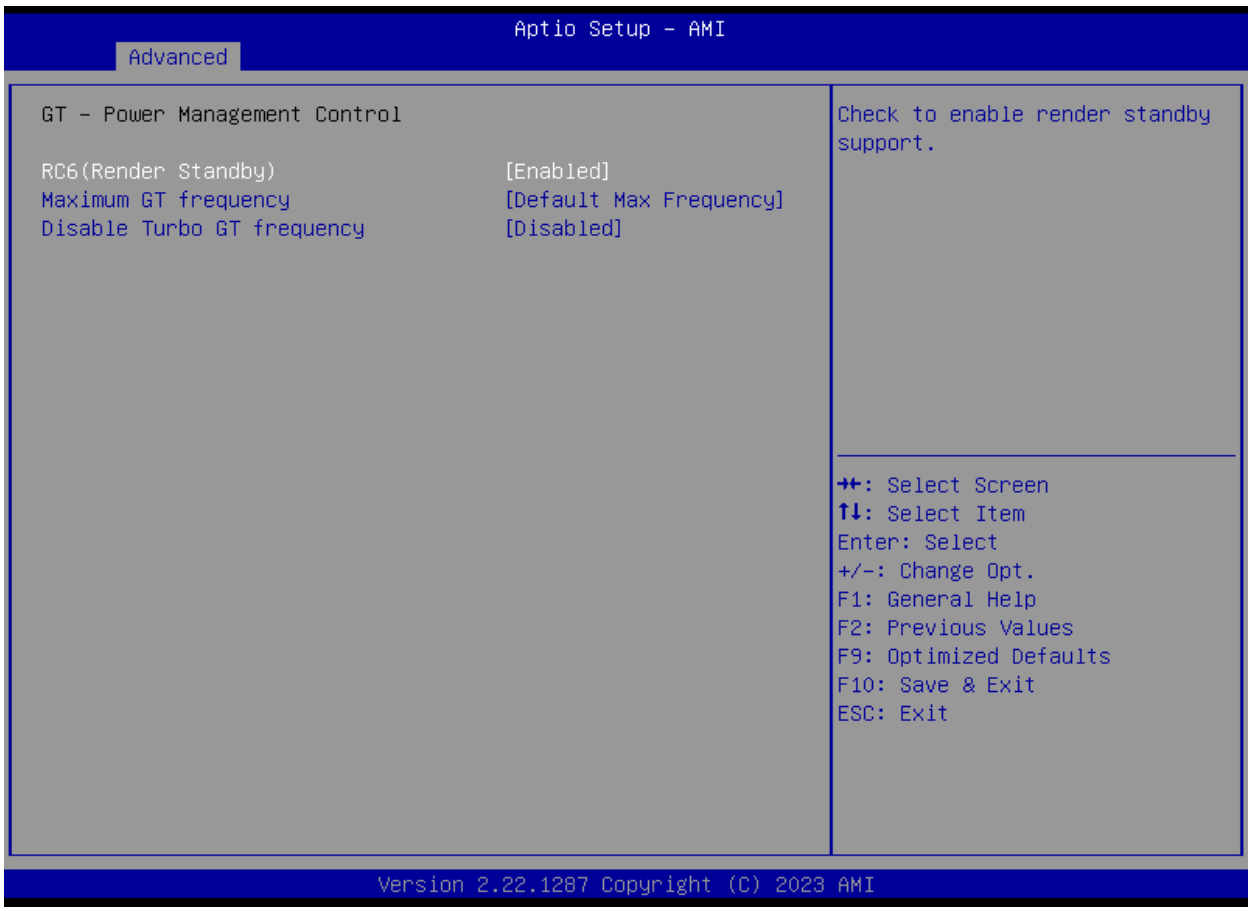
3.2.4、CPU Configuration Information



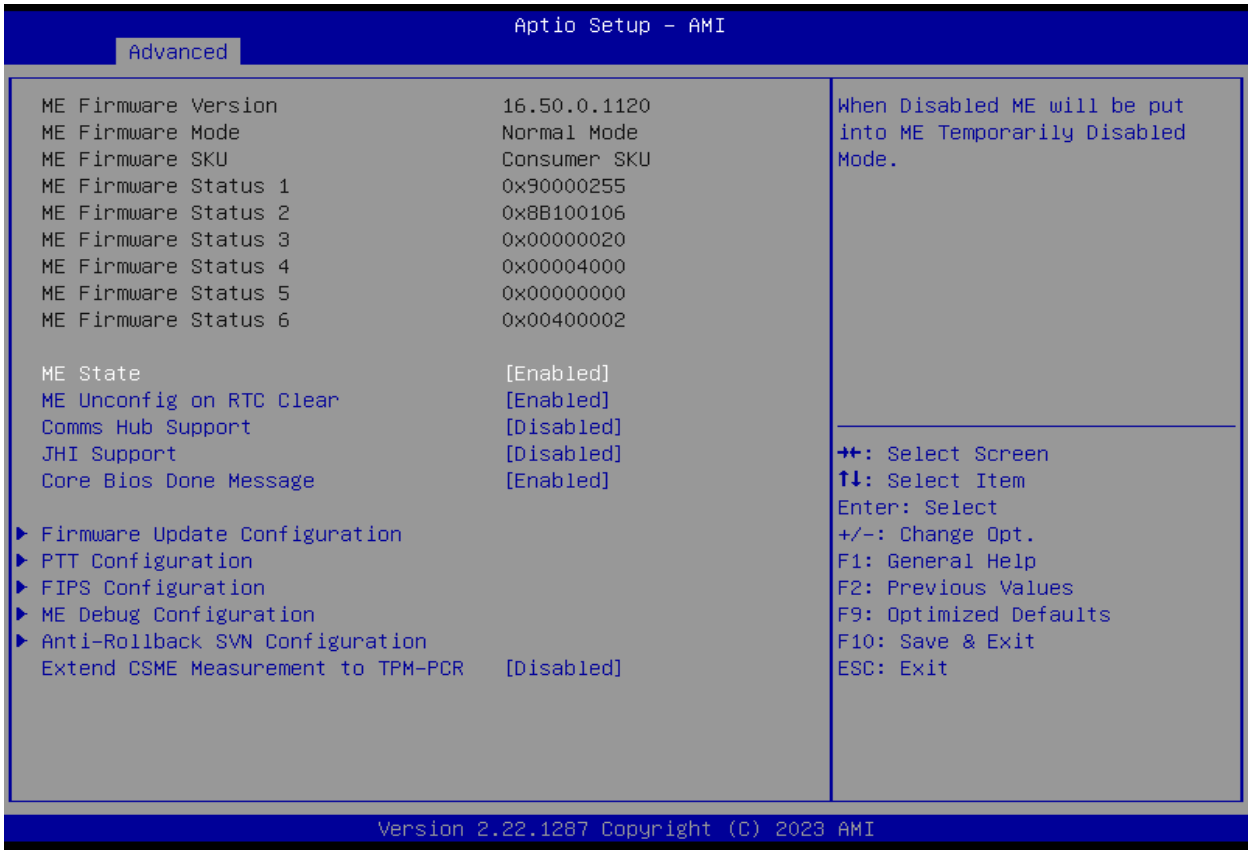
3.2.5 Power & Performance



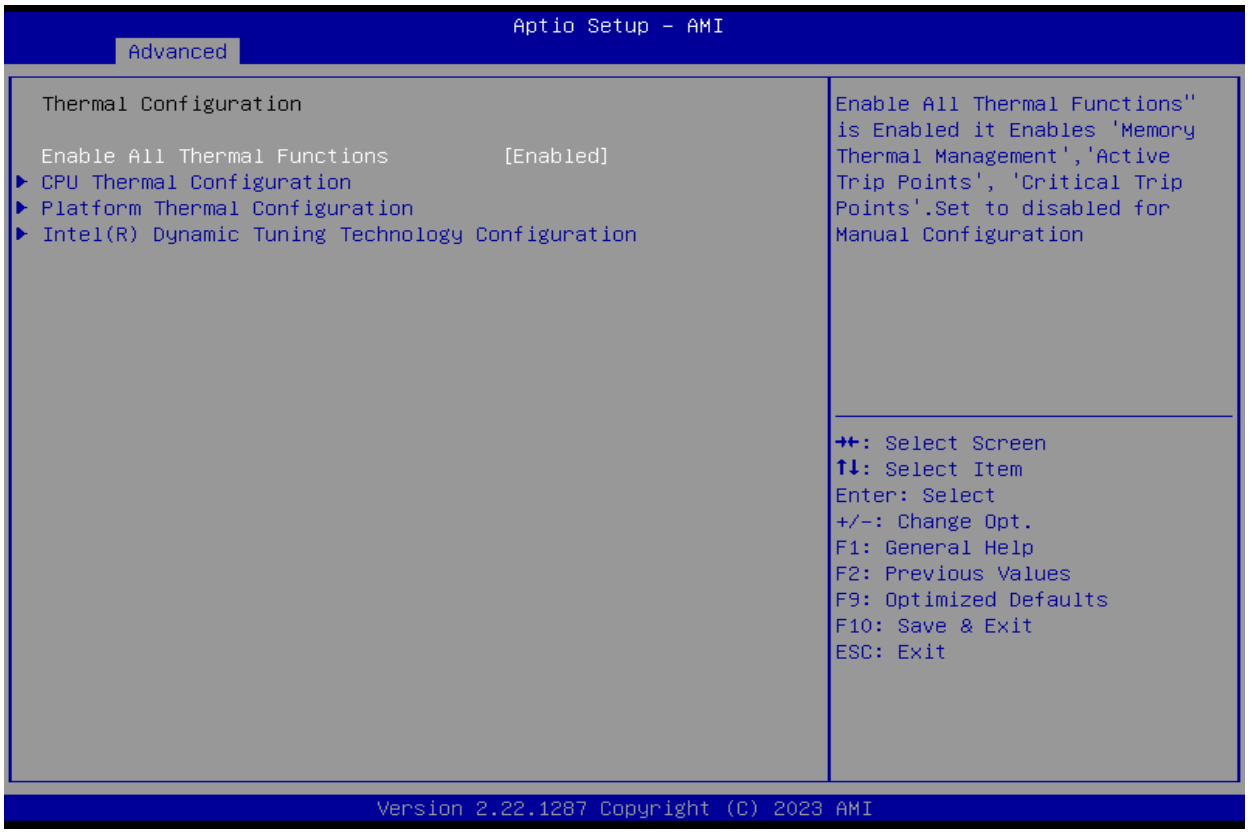




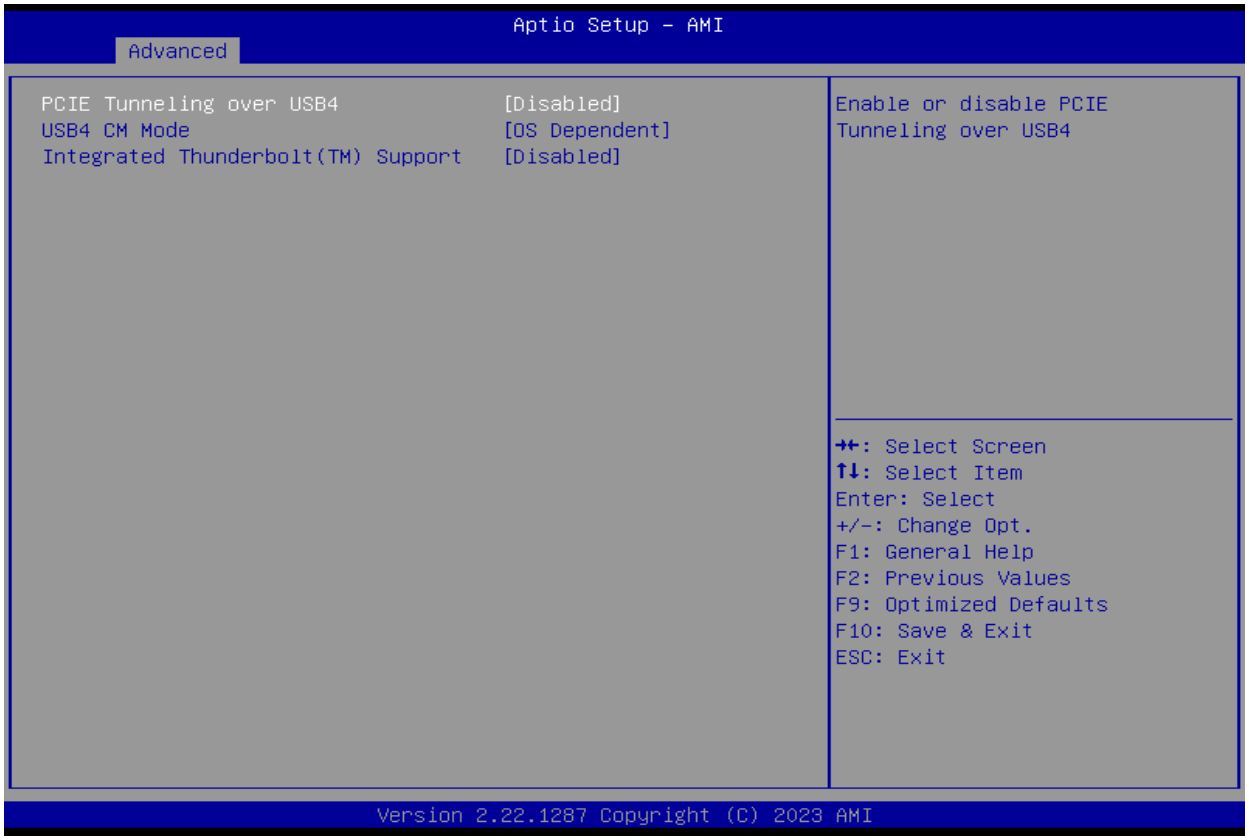
3.2.6. Integrated South Bridge Firmware Configuration (PCH-FW Configuration)



3.2.7. Temperature Control Information (Thermal Configuration)

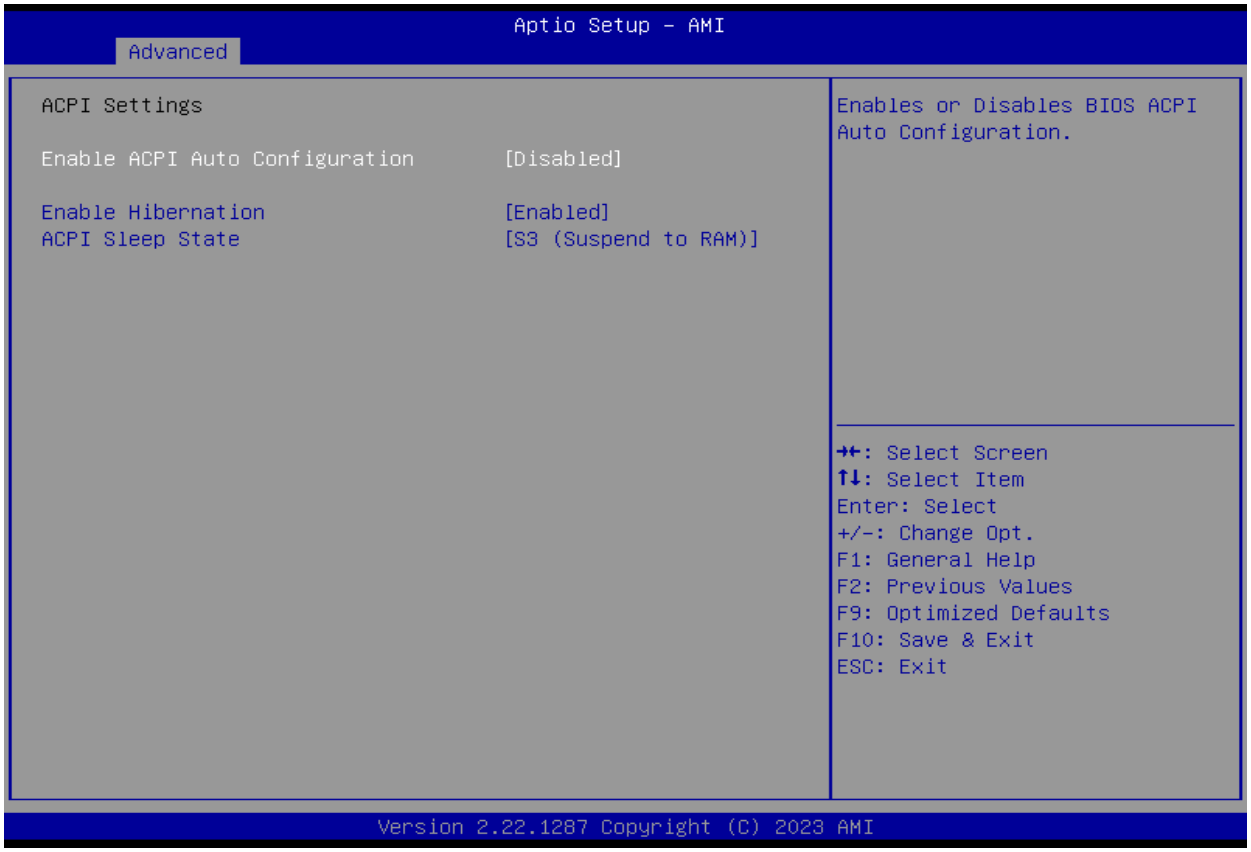


3.2.8. TM Configuration Information (Thunderbolt (TM) Configuration)



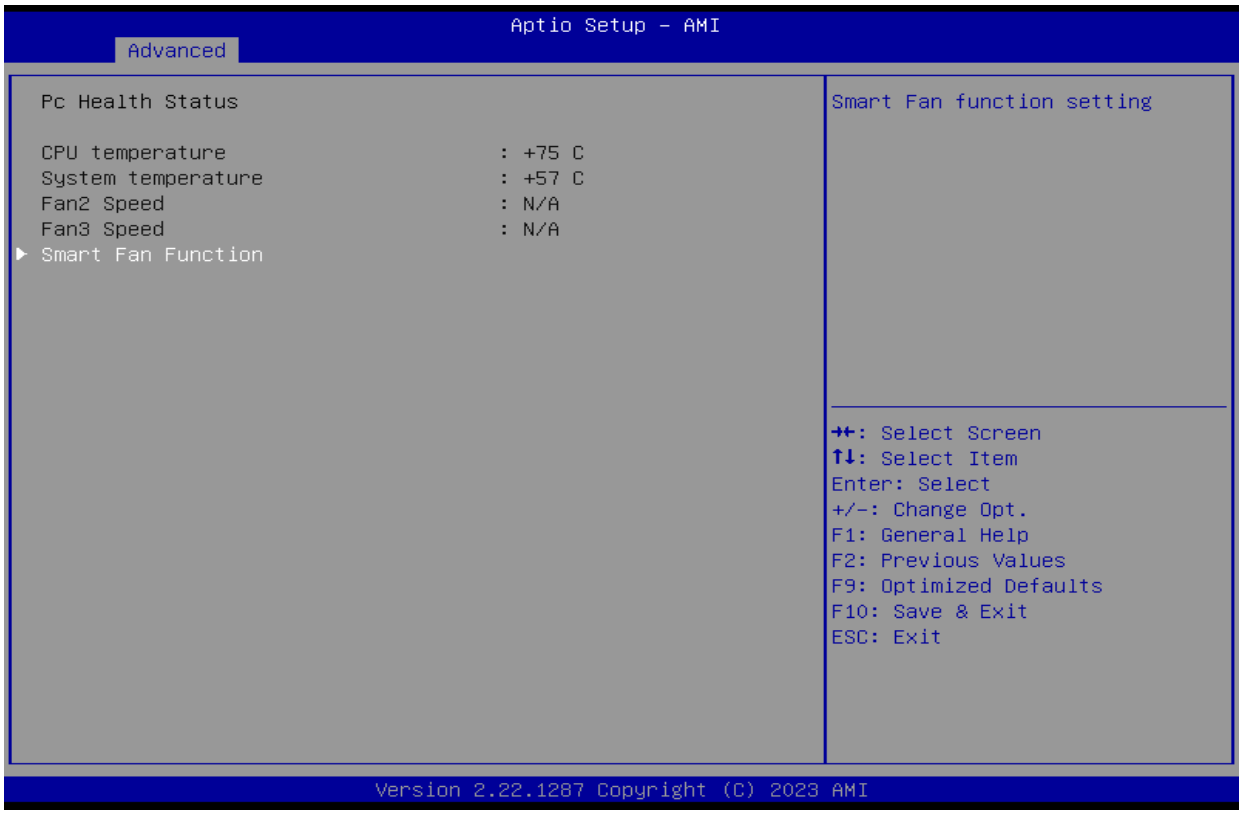
3.2.9 Trusted Computing

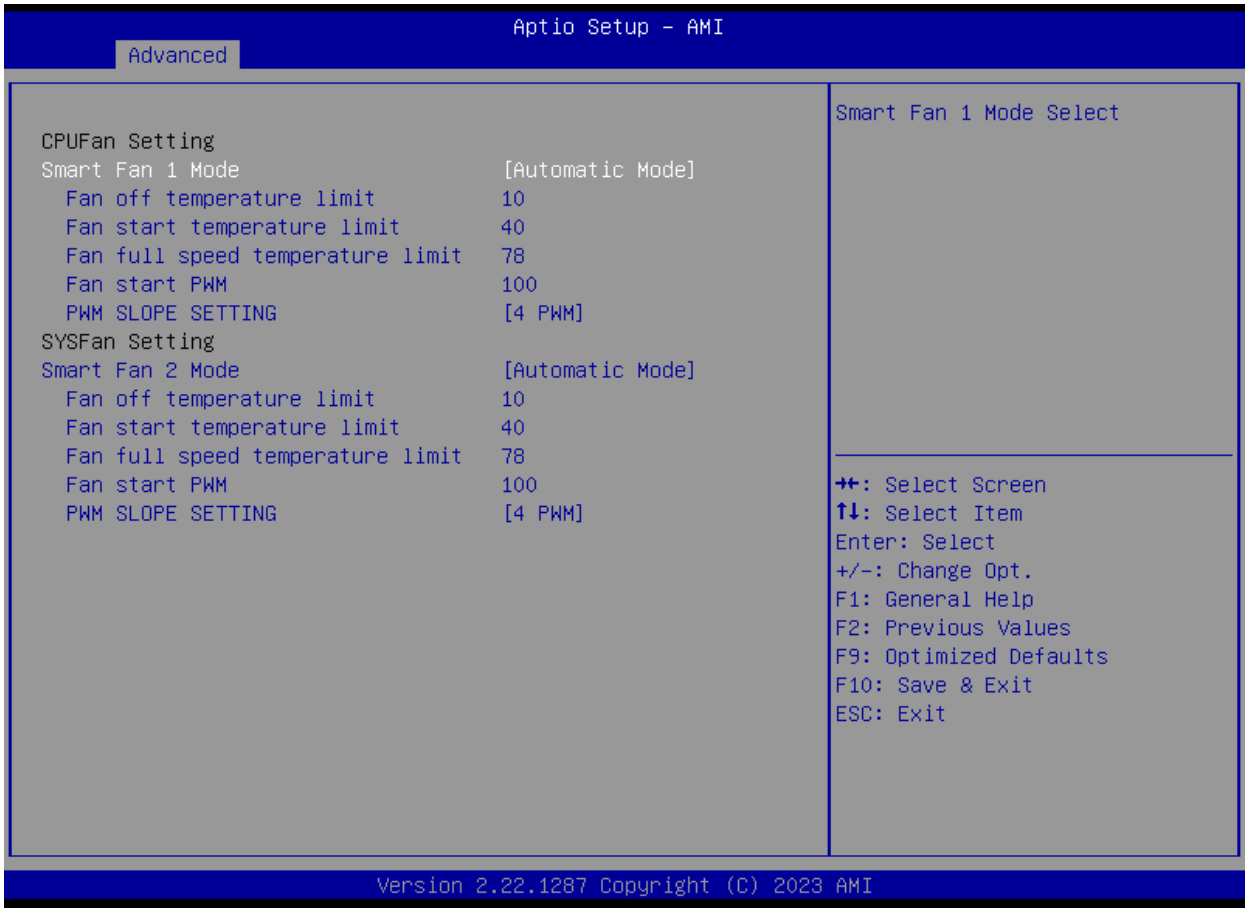
3.2.10 Power Management Configuration (ACPI Settings)



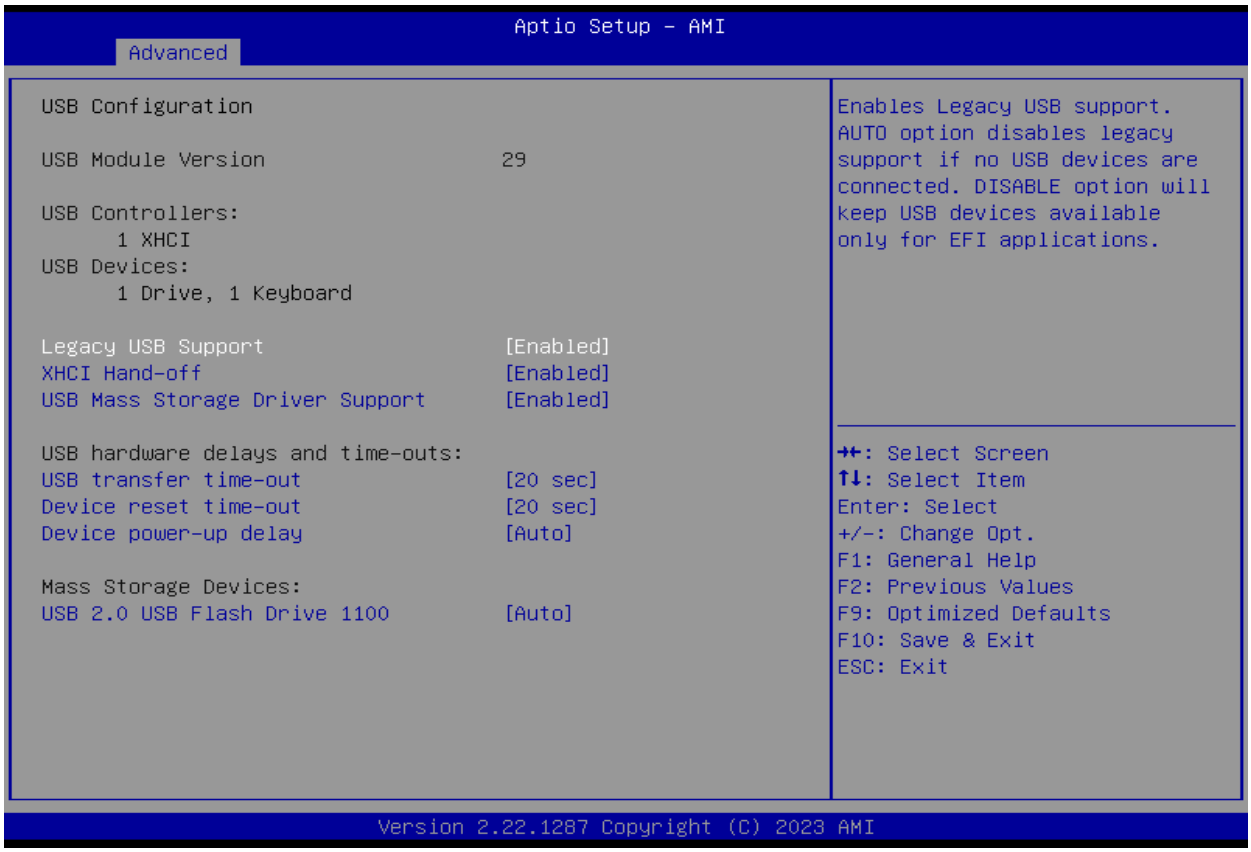
3.2.11、I/O Serial Port Settings (Super IO Configuration)

3.2.12 Hardware Monitor

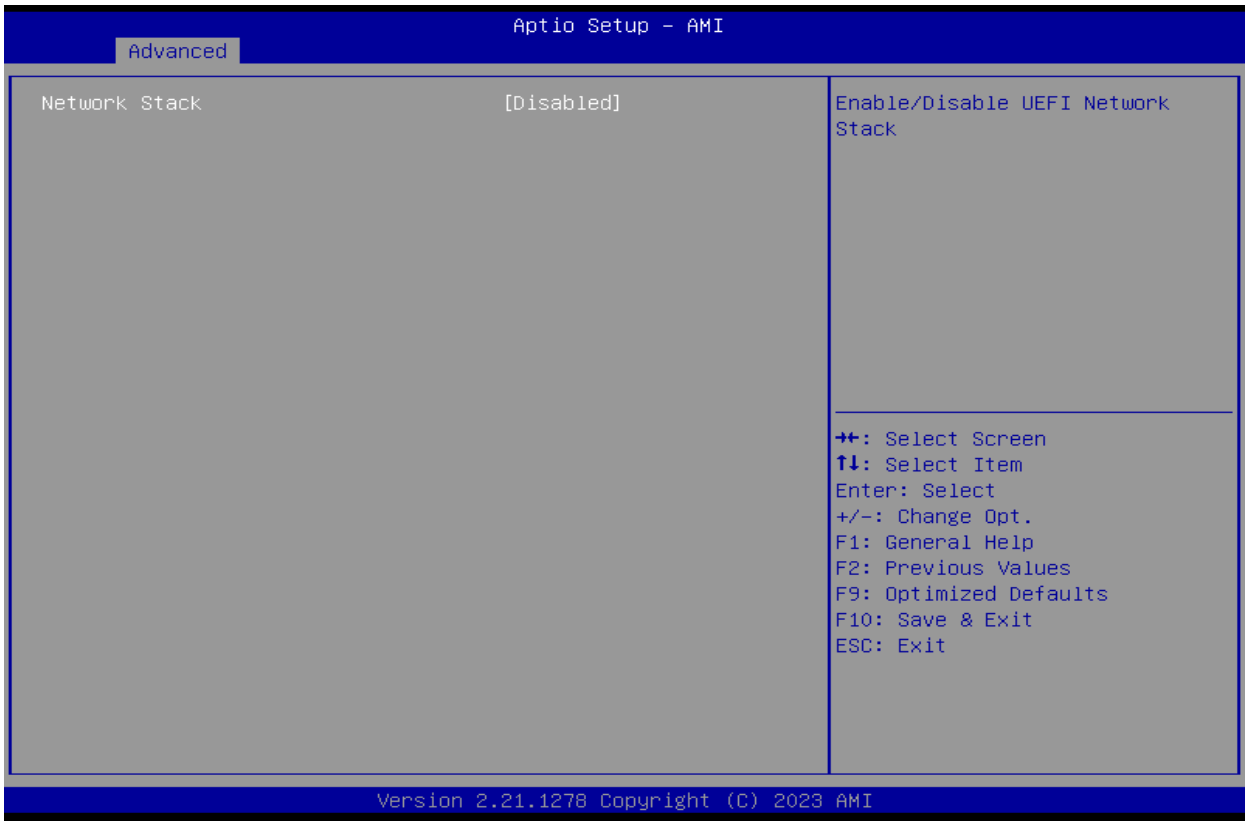




3.2.13 USB Configuration

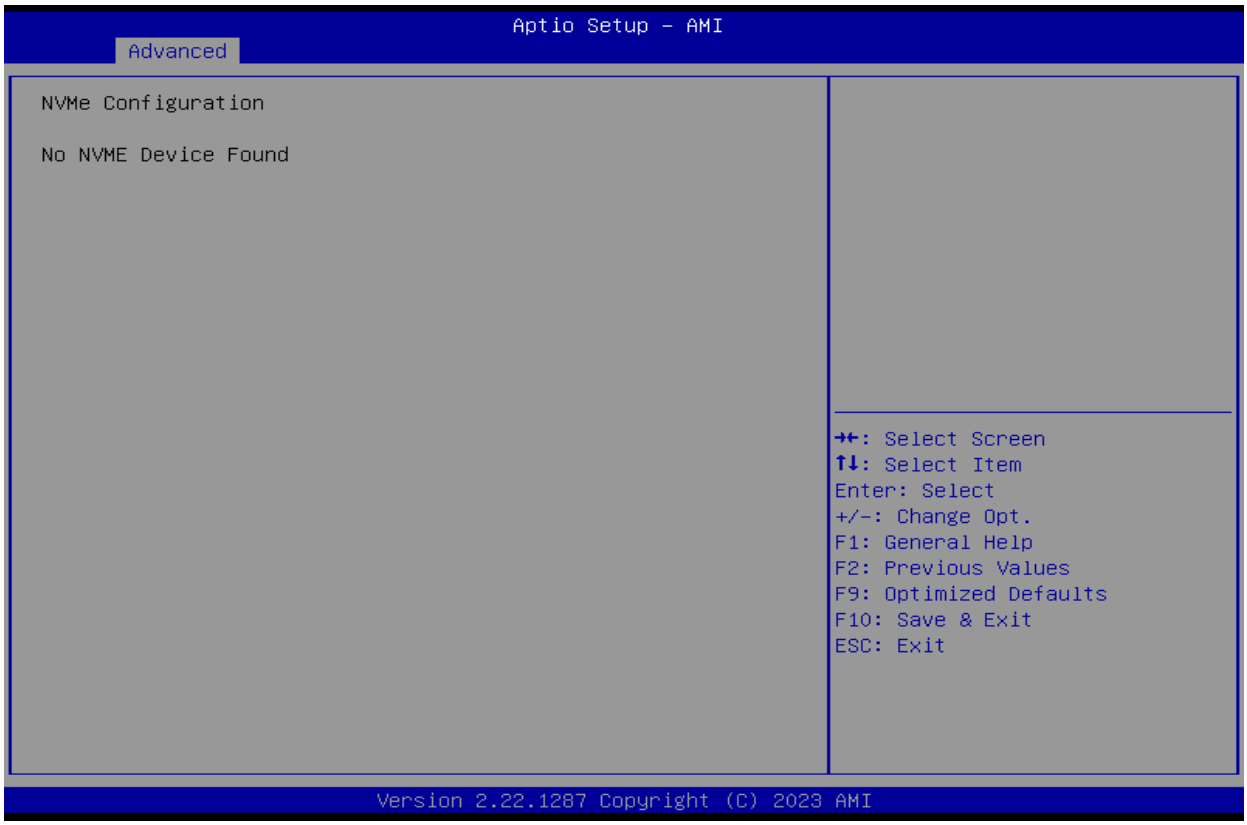


3.2.14 Network Stack Configuration Tool

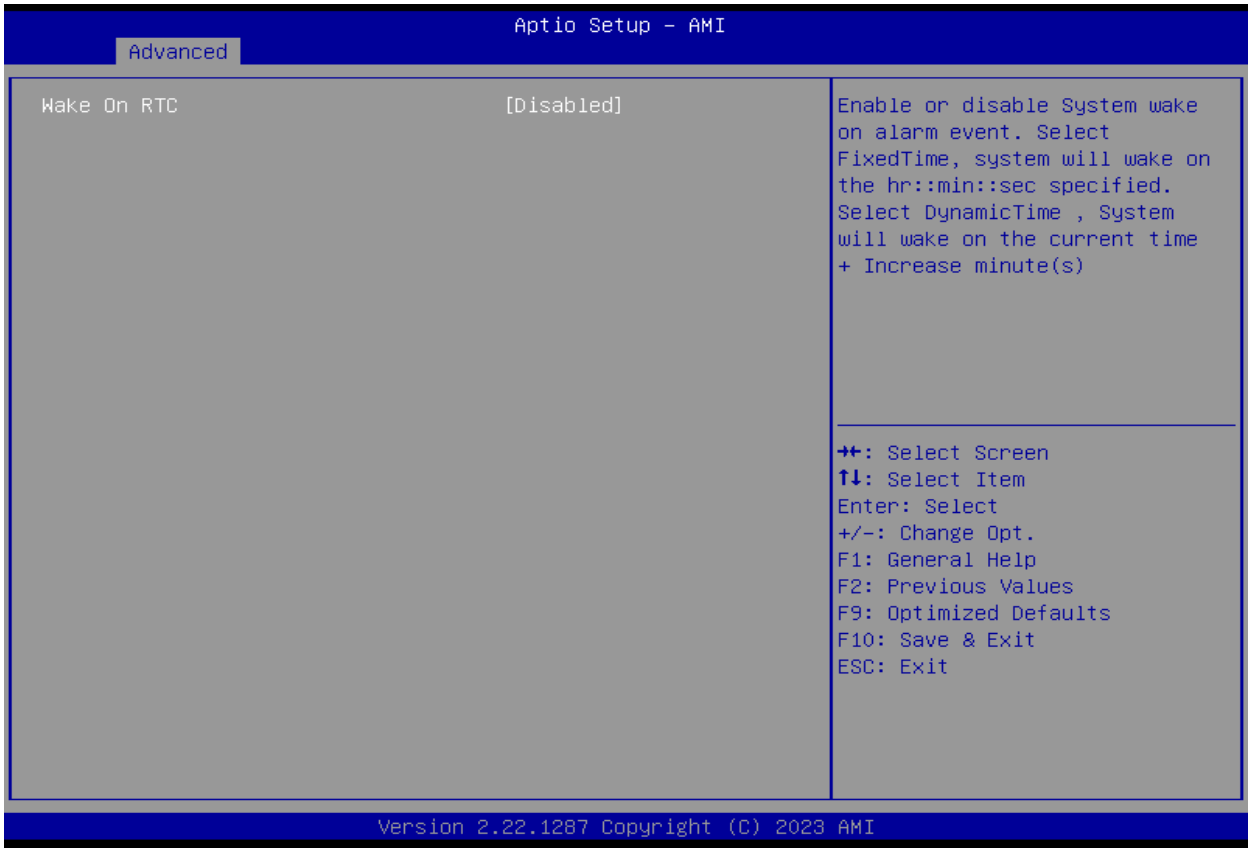


3.2.15. Compatibility Support Module (CSM Configuration)

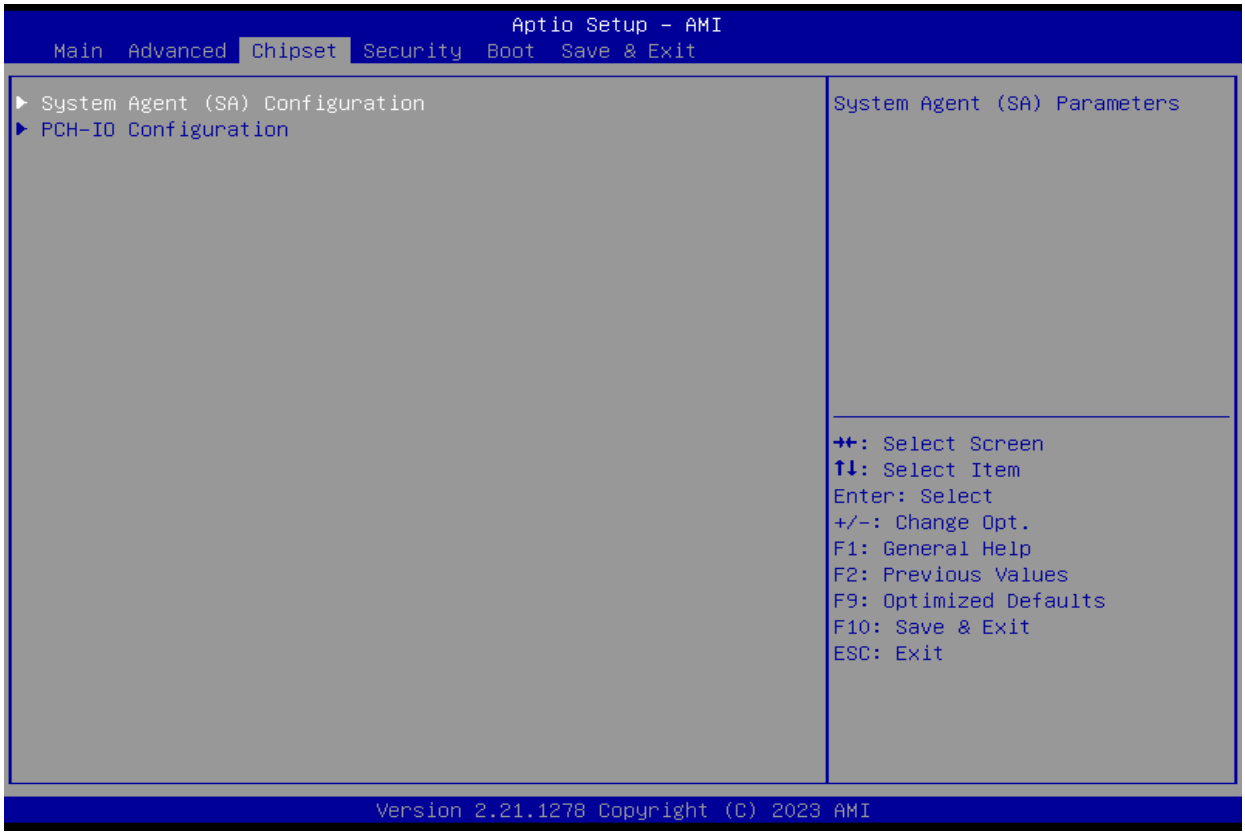
3.2.16 NVME Configuration



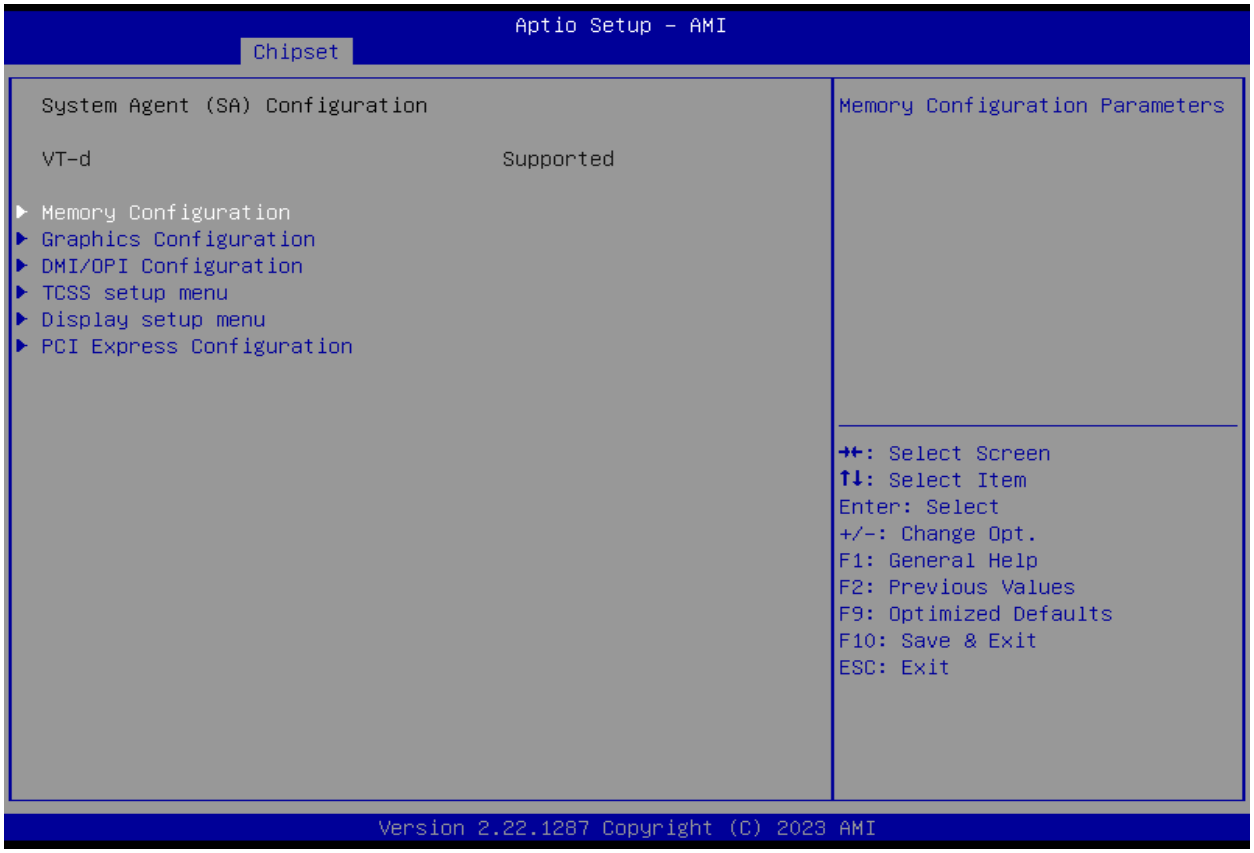
3.2.17, Automatic power-on settings (S5 RTC Wake Settings)

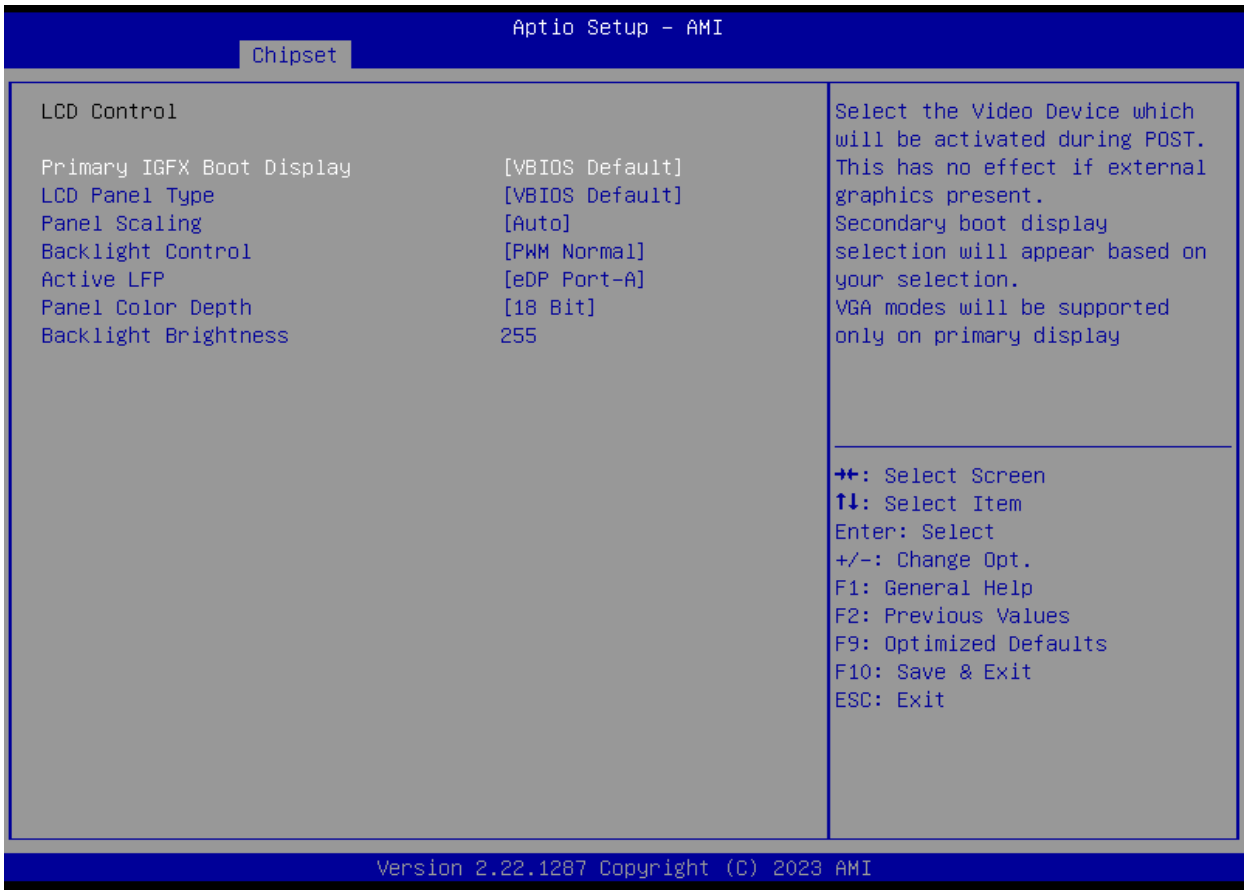


3.2.18 Chipset Setting Information (Chipset)

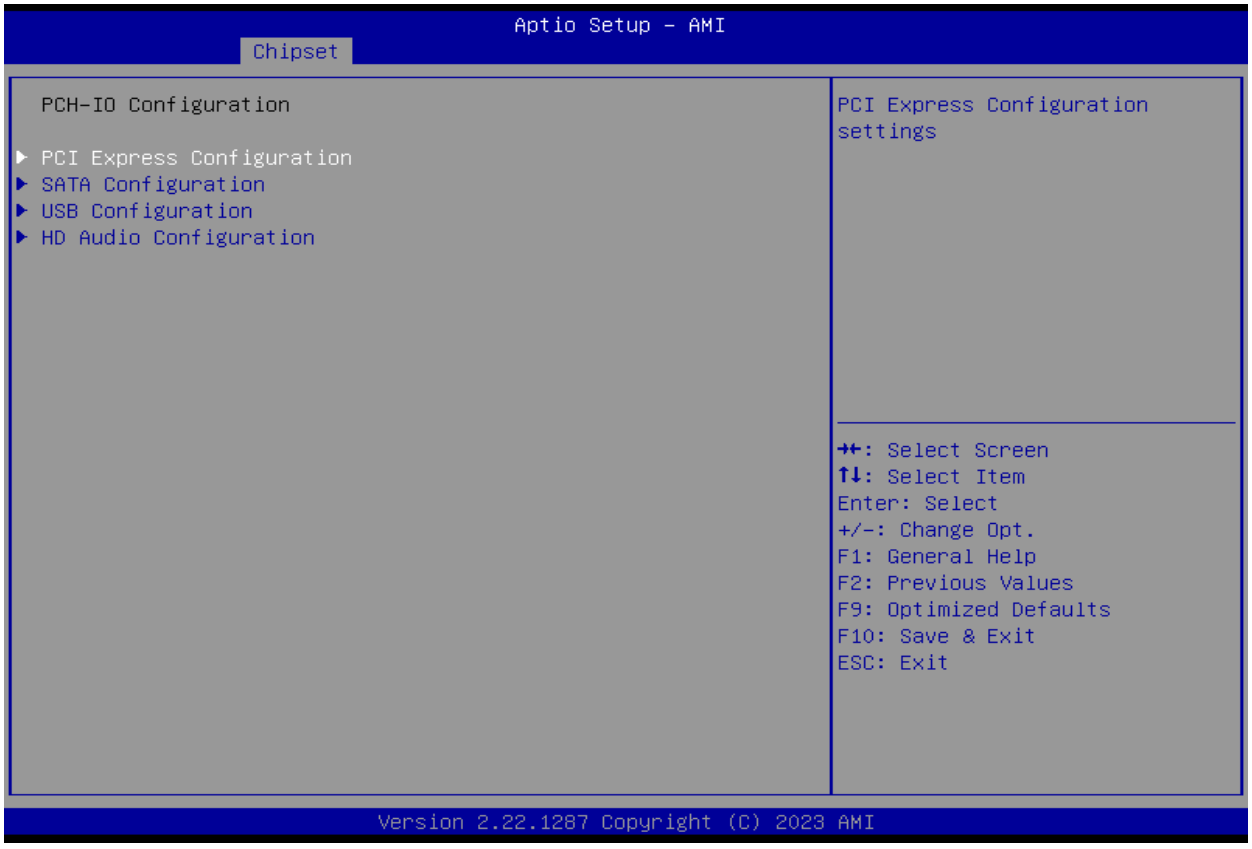


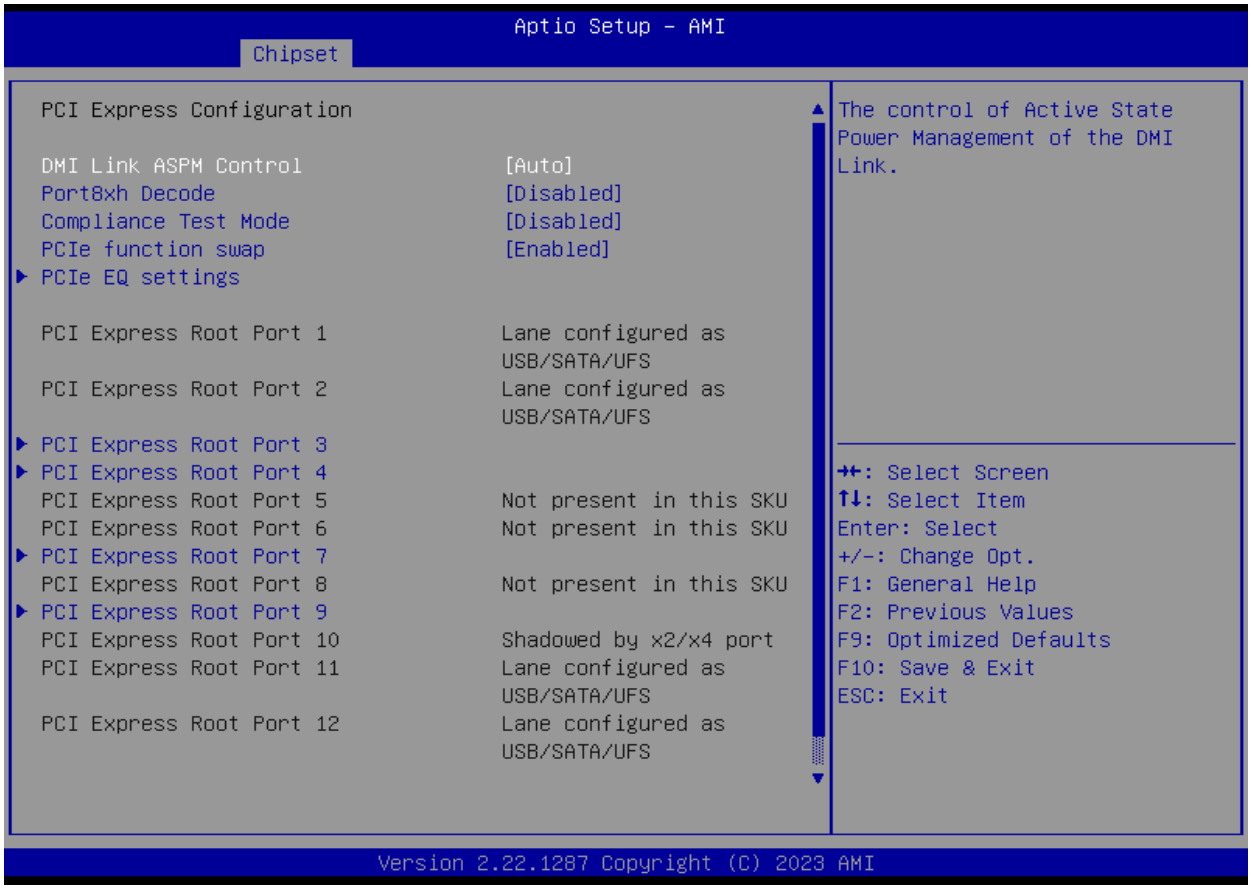
3.2.19. System Agent (SA) Configuration

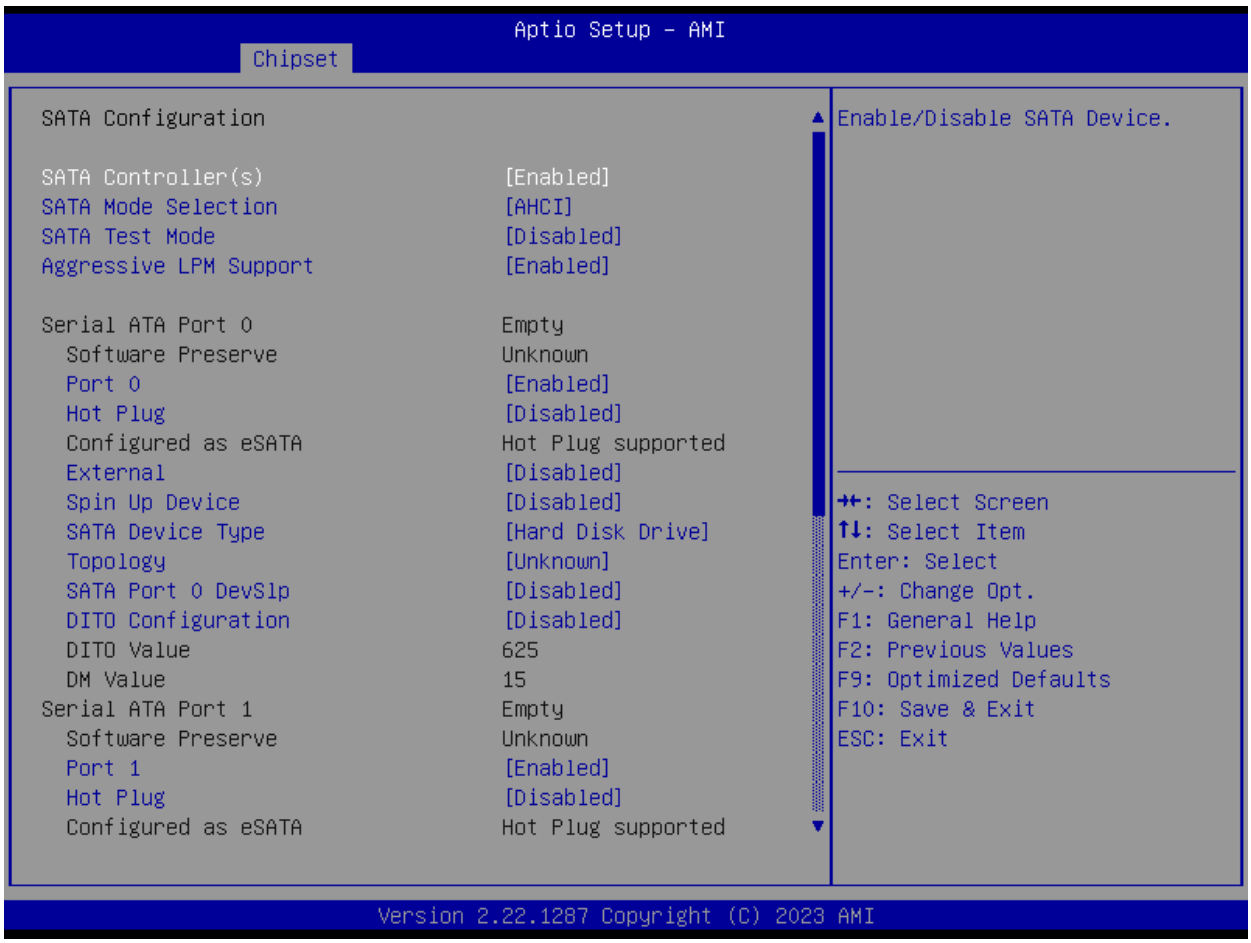




3.2.20, PCH-IO Configuration Information (PCH-IO Configuration)




Aptio Setup – AMI
Chipset
PCI Express Configuration
DMI Link ASPM Control [Auto]
Port8xh Decode [Disabled]
Compliance Test Mode [Disabled]
PCIe function swap [Enabled]
PCIe EQ settings
PCI Express Root Port 1 Lane configured as USB/SATA/UFS
PCI Express Root Port 2 Lane configured as USB/SATA/UFS
PCI Express Root Port 3
PCI Express Root Port 4
PCI Express Root Port 5 Not present in this SKU
PCI Express Root Port 6 Not present in this SKU
PCI Express Root Port 7
PCI Express Root Port 8 Not present in this SKU
PCI Express Root Port 9
PCI Express Root Port 10 Shadowed by x2/x4 port
PCI Express Root Port 11 Lane configured as USB/SATA/UFS
PCI Express Root Port 12 Lane configured as USB/SATA/UFS
The control of Active State Power Management of the DMI Link.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
Version 2.22.1287 Copyright (C) 2023 AMI


Aptio Setup – AMI
Chipset
SATA Configuration
SATA Controller(s) [Enabled]
SATA Mode Selection [AHCI]
SATA Test Mode [Disabled]
Aggressive LPM Support [Enabled]
Serial ATA Port 0 Empty
Software Preserve Unknown
Port 0 [Enabled]
Hot Plug [Disabled]
Configured as eSATA Hot Plug supported
External [Disabled]
Spin Up Device [Disabled]
SATA Device Type [Hard Disk Drive]
Topology [Unknown]
SATA Port 0 DevSlp [Disabled]
DITO Configuration [Disabled]
DITO Value 625
DM Value 15
Serial ATA Port 1 Empty
Software Preserve Unknown
Port 1 [Enabled]
Hot Plug [Disabled]
Configured as eSATA Hot Plug supported
Enable/Disable SATA Device.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
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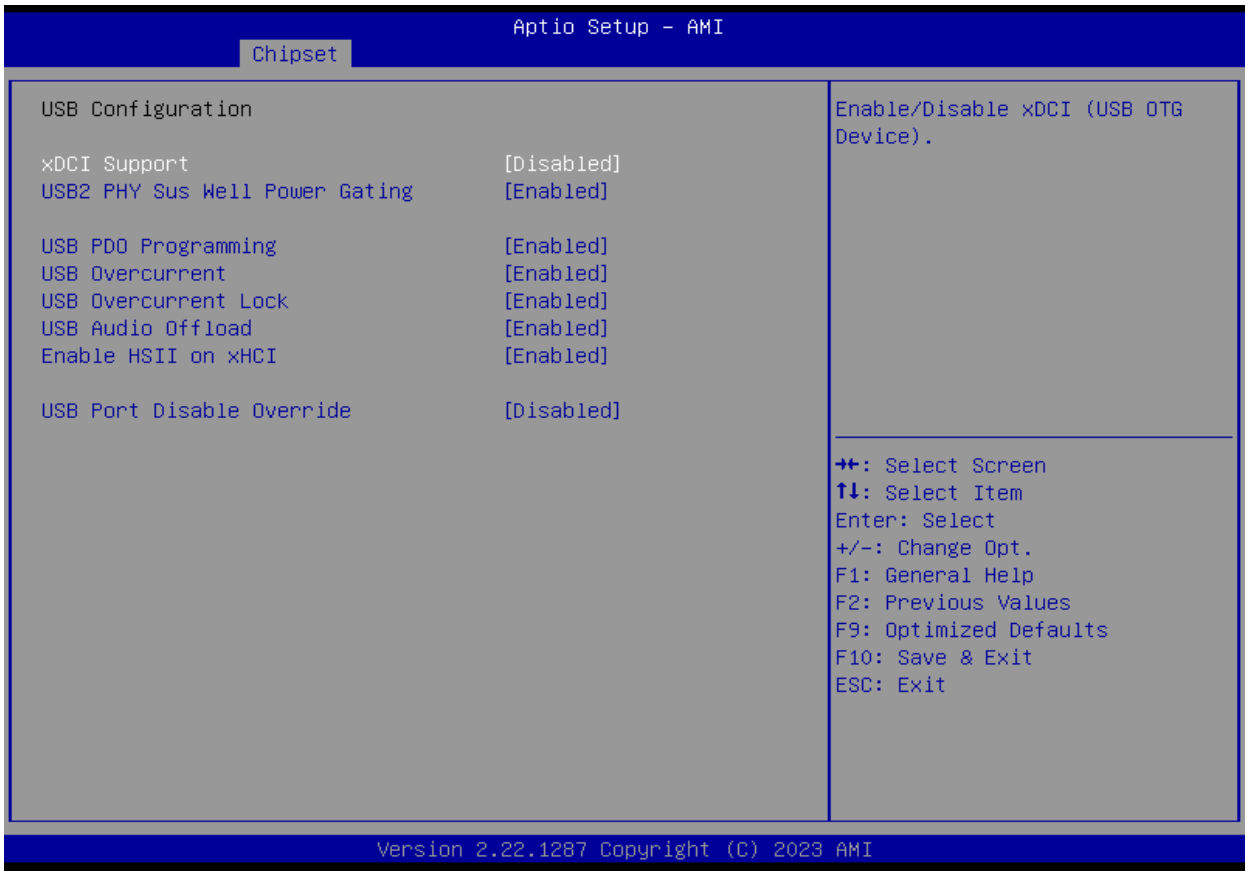
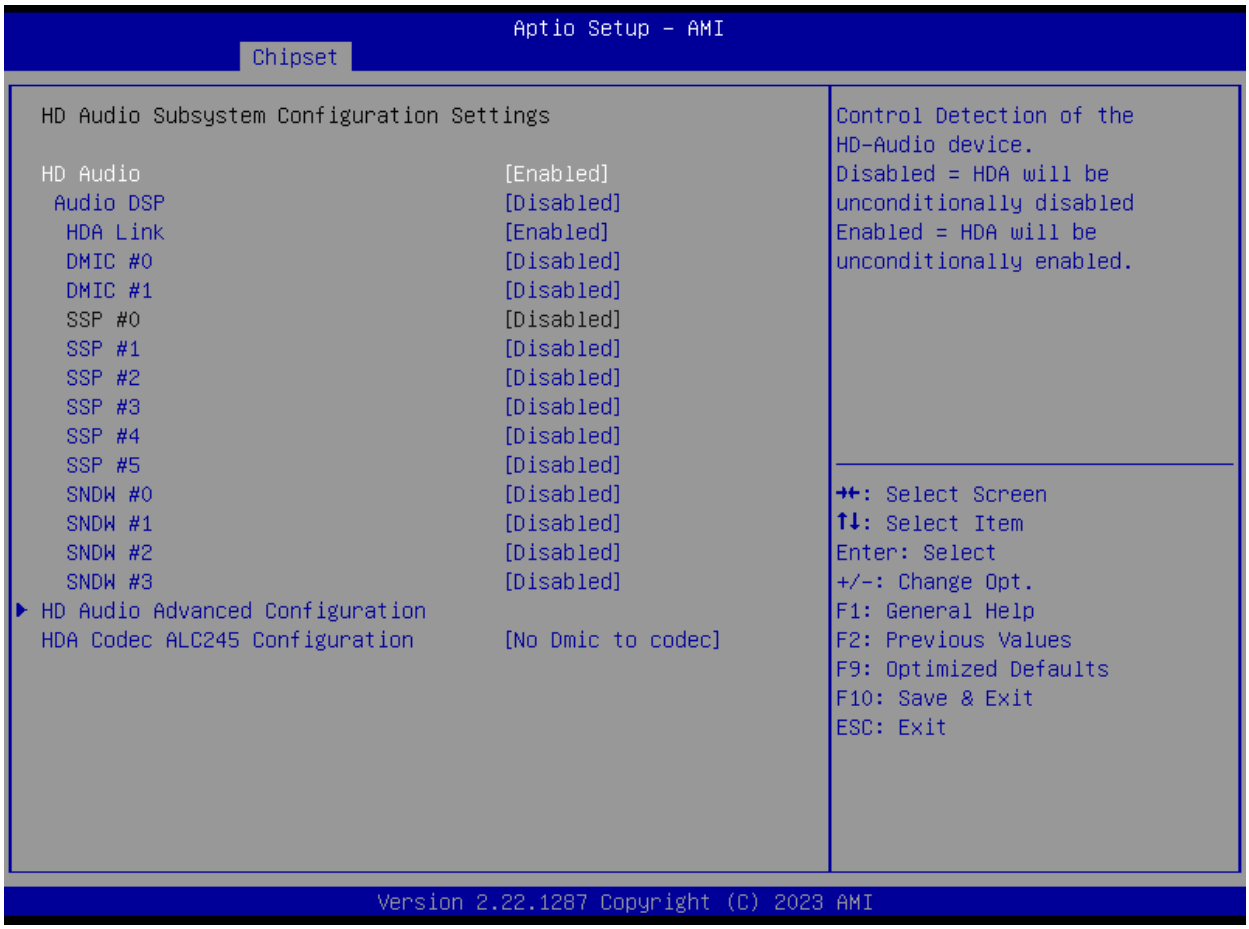
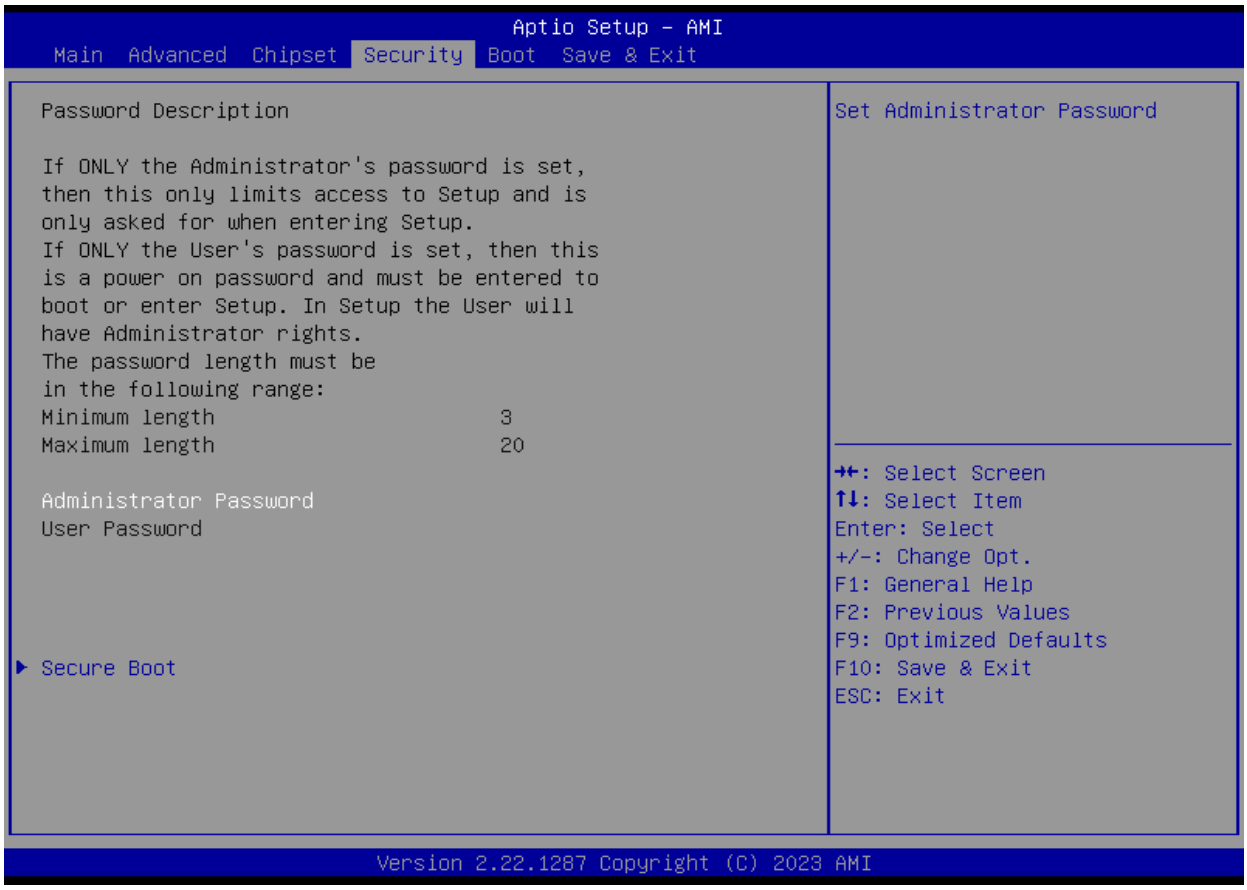
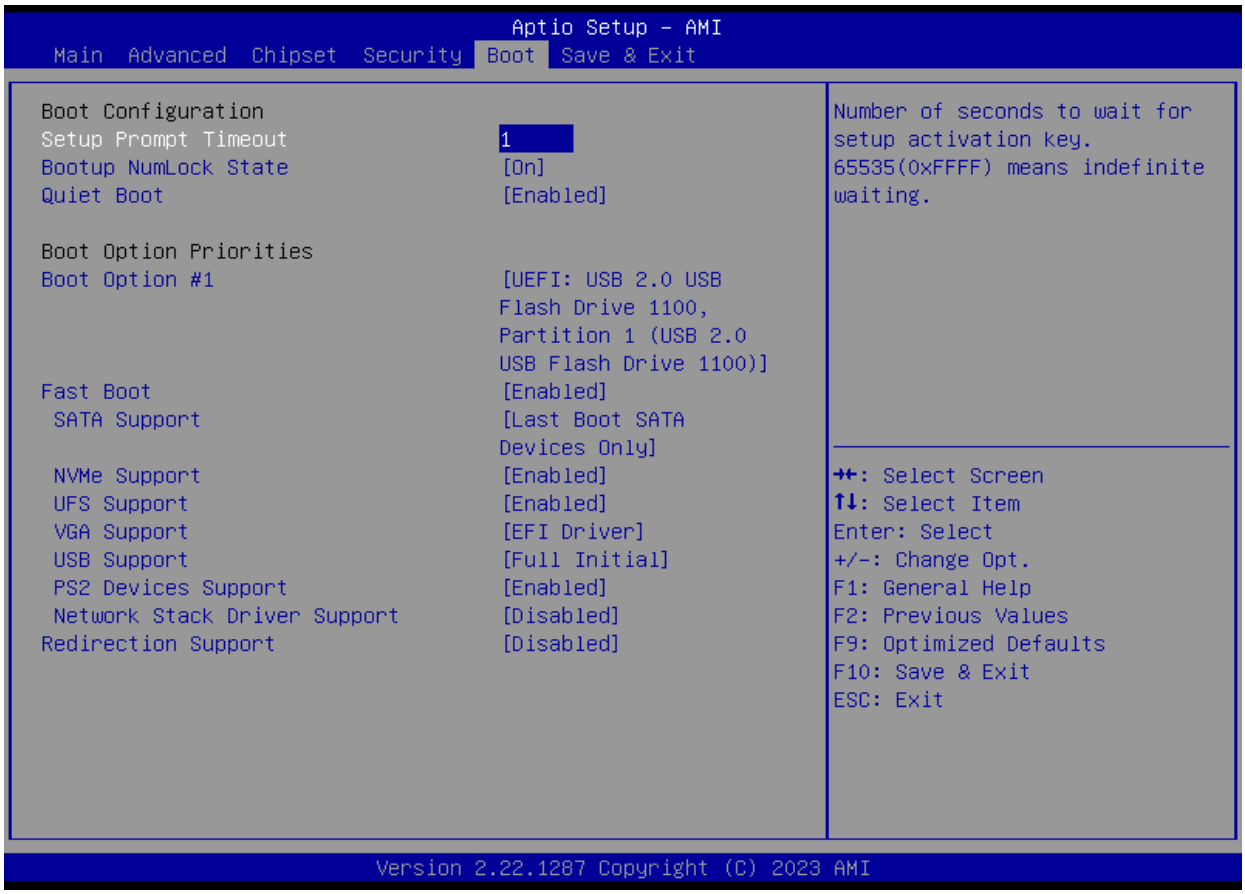

Aptio Setup – AMI
Chipset
USB Configuration
xDCI Support [Disabled]
USB2 PHY Sus Well Power Gating [Enabled]
USB PDO Programming [Enabled]
USB Overcurrent [Enabled]
USB Overcurrent Lock [Enabled]
USB Audio Offload [Enabled]
Enable HSII on xHCI [Enabled]
USB Port Disable Override [Disabled]
Enable/Disable xDCI (USB OTG Device).
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
Version 2.22.1287 Copyright (C) 2023 AMI


Aptio Setup – AMI
Chipset
HD Audio Subsystem Configuration Settings
HD Audio [Enabled]
Audio DSP [Disabled]
HDA Link [Enabled]
DMIC #0 [Disabled]
DMIC #1 [Disabled]
SSP #0 [Disabled]
SSP #1 [Disabled]
SSP #2 [Disabled]
SSP #3 [Disabled]
SSP #4 [Disabled]
SSP #5 [Disabled]
SNDW #0 [Disabled]
SNDW #1 [Disabled]
SNDW #2 [Disabled]
SNDW #3 [Disabled]
HD Audio Advanced Configuration
HDA Codec ALC245 Configuration [No Dmic to codec]
Control Detection of the HD-Audio device.
Disabled = HDA will be unconditionally disabled
Enabled = HDA will be unconditionally enabled.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
Version 2.22.1287 Copyright (C) 2023 AMI

3.2.21 Security Settings



3.2.22. Boot Settings



- **Setup Prompt Timeout**

  This option is used to set the length of time the POST interface stays on.

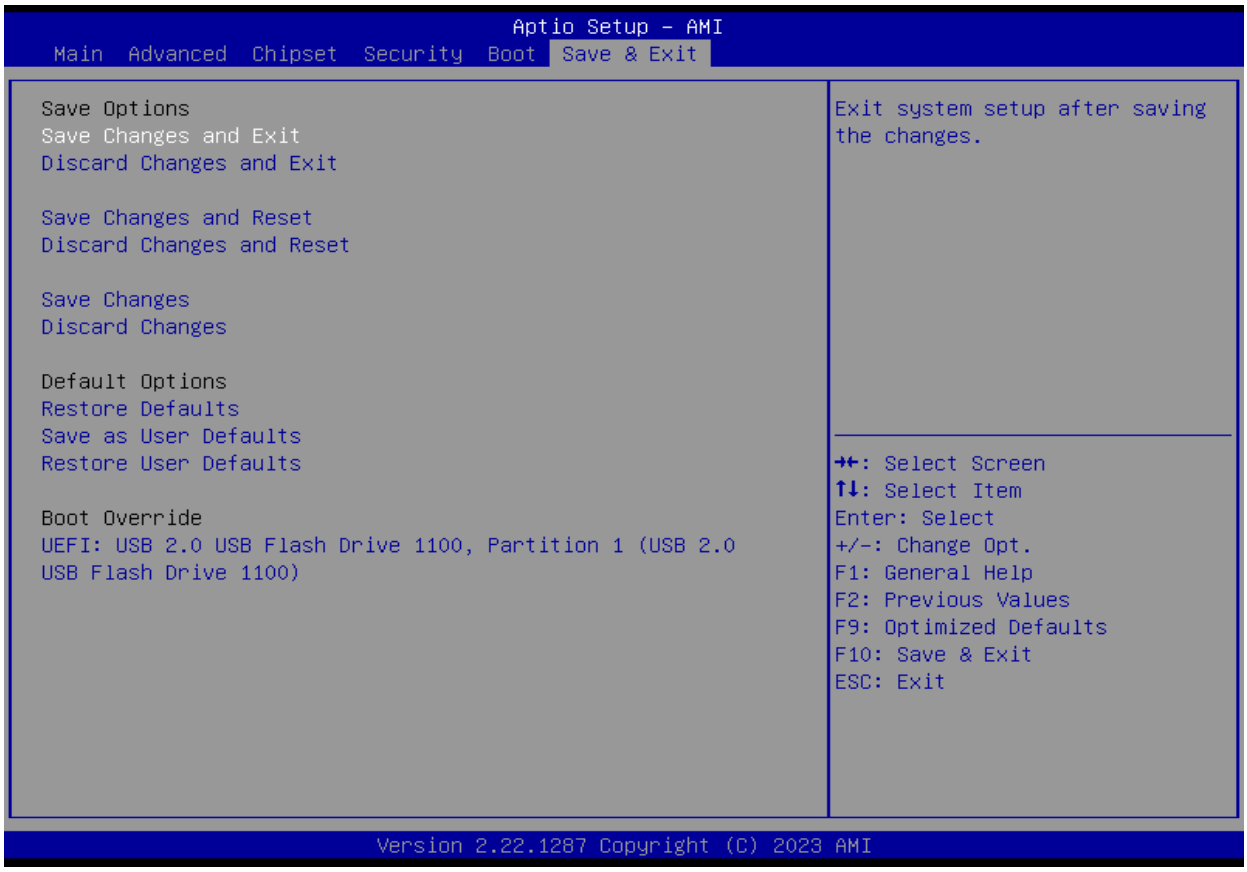
- **Bootup Numlock State**

  It is used to set the state of Numlock after the system starts. When set to On, Numlock will be turned on after the system starts, and the numeric keys on the keypad will be valid. When set to Off, Numlock will be turned off after the system starts, and the arrow keys on the keypad will be valid.

- **Fast boot**

  This option is used to set fast boot, options: Disabled, Enabled.

3.2.23. Save & Exit



· **Save Changes and Exit**

Save the changes and exit the BIOS program.

· **Discard Changes and ExitExit the BIOS program without saving changes.**

· **Save Changes and ResetSave the changes and restart the motherboard.**

· **Discard Changes and ResetDo not save changes and restart the BIOS program.**

· **Save Changes**

· **Discard Changes**

Do not save changes

· **Restore Defaults**

Restore default settings

· **Save as User Defaults**

Save as user default settings

· **Restore User Defaults**

Restore user default settings

Chapter 4. Fault Analysis and Solutions

According to customer feedback, common motherboard problems and the simple solutions we provide are listed below:

4.1 Power on but the device does not turn on

Solution:

A. Confirm whether the power adapter is connected properly;
B. Confirm whether the power specification used meets the power supply requirements of the motherboard;
C. Clean the memory stick and re-insert it; or replace other memory sticks
D. Clear CMOS according to the motherboard user manual;

4.2 VGA does not display after power on

Solution:

A. Check whether the monitor is turned on normally;
B. Check whether the monitor circuit function is normal;
C. Check whether the LVDS/EDP main display is set in the BIOS;
D. Check whether the driver of the multi-display module is installed;

4.3 BIOS Setup settings cannot be saved

Solution:

A. Measure the CMOS battery voltage. If it is lower than 2.8V, replace the battery with a new one and reset and save;
B. Re-flash the same version of BIOS;

4.4 Unable to enter the system or cannot capture the hard disk

Solution:

A. Check whether the hard disk power cable and data cable are connected properly;
B. Check whether the hard disk is damaged;
C. Check whether the operating system is installed normally in the hard disk;
D. Check whether the hard disk is inserted in the wrong position;
E. Check whether the motherboard supports the hard disk mode;

4.5 Blue screen or freeze during system entry

Solution:

A. Check whether the memory stick and external card are loose;
B. Remove the newly installed hardware, uninstall the driver or software;
C. Replace other memory sticks;

4.6 Boot stuck at BIOS interface

Solution:

A. Replace other memory sticks;
B. It may be because the host recognizes the peripherals as the boot device, remove all peripherals, and replace the monitor to test

4.7 System Automatic Restart

Solution:

A. Please confirm whether the CPU cooling fan is rotating normally;
B. Check whether the memory module and external card are loose;
C. Check whether the power consumption of the power supply can meet the working requirements, and try to replace the power supply;

4.8 Unable to detect USB device

Solution:

A. Check and confirm whether the USB device needs to be powered separately;
B. Check whether the USB interface has poor contact;
C. Check whether the USB controller is turned on in BIOS Setup;

Note: If you encounter other problems during use, please contact our FAE for feedback and after the problem is solved, it will be added to the problem solving section accordingly. Welcome all users to provide valuable suggestions!