Portwell

LYNX-812C

SFF Embedded System

User Manual

Version R 1.1

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Revision History

R 1.0	Initial Release Rev. 1.0
R 1.1	Revise photos & add VESA mount installation

Table of Contents

CHAPTER 1 PRODUCT OVERVIEW 5

1.1 INSTRUCTION 6

1.2 PRODUCT SPECIFICATION 7

1.3 DIMENSION 9

CHAPTER 2 SYSTEM OVERVIEW 10

2.1 I/O VIEW 11

2.2 JUMPER SETTING OF MAIN BOARD 12

2.3 JUMPER SETTING OF EXTENSION BOARD 18

CHAPTER 3 SYSTEM INSTALLATION 23

3.1 OPEN THE SYSTEM 24

3.2 M.2 2242 M key SATA SSD INSTALLATION 25

3.3 M.2 2230 E Key Wi-Fi MODULE INSTALLATION 27

3.4 Wi-Fi ANTENNA AND SMA BULKHEAD JACK INSTALLATION 29

3.5 WALL MOUNT INSTALLATION 31

3.6 DIN RAIL INSTALLATION 31

3.7 VESA MOUNT INSTALLATION 32

CHAPTER 4 BIOS SETUP ITEMS 34

CHAPTER 5 IMPORTANT INSTRUCTION 72

5.1 NOTE ON THE WARRANTY 73

5.2 EXCUSION OF ACCIDENT LIABILITY OBLIGATION 73

5.3 LIABILITY LIMITATIONS/EXEMPTION FROM THE WARRANTY OBLIGATION 73

5.4 DECLARATION OF CONFORMITY 73

CHAPTER 6 PORTWELL SOFTWARE SERVICE 75

6.1 PET TOOL 76

Chapter 1

Product Overview

1.1 Instruction
1.2 Product Specification
1.3 Dimension

1.1 Introduction

The LYNX-812C is a compact and reliable embedded computer, purpose-built for demanding industrial applications such as edge computing and gateway solutions. Based on the foundation of the LYNX-8110, the LYNX-812C is further enhanced with three additional 2.5GbE LAN ports through modular I/O expansion, enabling flexible network connectivity for data-intensive environments. Powered by the Intel® Atom® x7000RE series processor (x7433RE), the system delivers efficient computing performance while maintaining low power consumption, making it well-suited for a wide range of industrial and IoT deployments.

Designed for stability and durability, the LYNX-812C supports operation within a wide temperature range from -40° C to 70° C and adopts a fan-less architecture to minimize failure risks, ensuring long-term reliability even in harsh conditions. The wide range 12V to 30V DC input further enhances power flexibility, while the robust mechanical design provides resistance to vibration and shock for mission-critical applications.

In terms of connectivity and expansion, the system integrates versatile I/O interfaces including HDMI®, USB 3.2, USB Type-C with DisplayPort support, and five 2.5GbE LAN ports to meet diverse industrial networking requirements. Storage is supported through an onboard M.2 M key 2242 socket for SATA SSD, while the M.2 E key socket allows the installation of Wi-Fi modules. In addition, onboard LPDDR5 memory provides high-efficiency data access, and the inclusion of onboard eMMC and TPM ensures data integrity and security.

With its modular architecture, compact form factor, and support for both wall-mount and DIN rail installation, the LYNX-812C offers deployment versatility and seamless integration into various industrial environments. These features make it an ideal platform for vertical markets requiring multi-LAN connectivity, secure data handling, and reliable performance under extreme operating conditions.

1.2 Product Specification

Model name	LYNX-812C
General	
CPU	Intel® Amston Lake X7433RE, 4 cores, TDP 9W
System Memory	LPDDR5 4800 MT/s Non-ECC Memory chips up to 32GB (default: 8GB)
Storage	1x M.2 M key 2242 socket (For SATA SSD) Onboard eMMC up to 256GB (default:128GB)
Power Input	DC 12V~30V
Operating System	Windows 10/Windows 11/Linux
TPM	TPM2.0
Expansion	1x M.2 E Key 2230 socket (For M.2 WiFi module)
I/O Interface	
Power Connector	1x 2-Pin Terminal Block Connector
Ethernet	5x Intel® I226IT 2.5GbE LAN
USB	2x USB 3.2 Gen2 (10Gbps) 1x USB Type C (DisplayPort/USB 10Gbps support)
Display	1x HDMI® 1.4a port 1x USB type C with DP ALT mode
Certificate	
Certificate	CE (EN 55032; EN 55024/ EN 55035) CE (EN 61000-6-4; EN 61000-6-2) FCC (Part 15 Subpart Class A) LVD (EN 62368)
Environmental & Mechanical	
Storage Temp.	-40° C ~ 85 ° C
Operating Temp.	-40° C ~ 70° C
Permissible Humidity	40° C, 95%RH, non-condensing
Operation Vibration	5Grms/10~500Hz, IEC 60068-2-6
Operation Shock	50G, 11msec, IEC 60068-2-27

Degree of Protection	IP40
Dimension	120mm(W) x 76mm(H) x 120mm(D)

1.3 Dimension

Figure 1: LYNX-812C Mechanical Dimension

Chapter 2

System Overview

2.1 I/O View

2.2 Jumper Setting of Main Board

2.3 Jumper Setting of Extension Board

2.1 I/O View

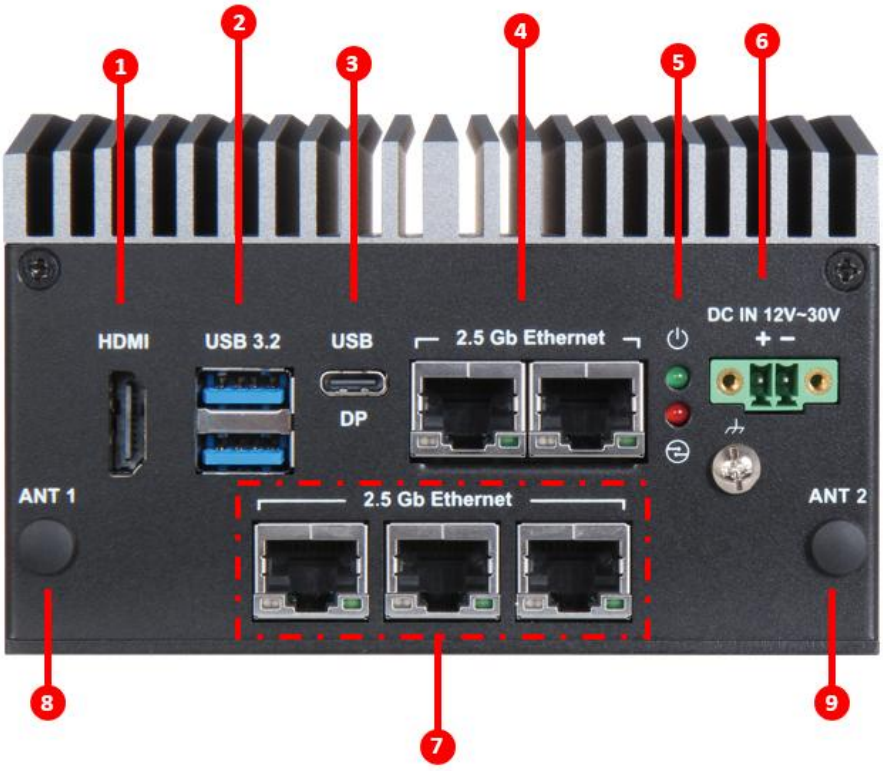


Figure 2: LYNX-812C I/O View

NO.	Description
1	1x HDMI® 1.4a port
2	2x USB 3.2 Gen2 (10Gbps) Ports
3	1x USB Type C (DisplayPort/USB 10Gbps support) Port
4	2x Intel® I226IT 2.5GbE RJ45 Ports
5	LED Indicators The Green LED on the top: System power The Red LED at the bottom: Storage Activity
6	1x 2-Pin Terminal Block Connector
7	3x Intel® I226IT 2.5GbE RJ45 Ports
8&9	SMA connectors for Wi-Fi / LTE module (Optional)

2.2 Jumper Setting of Main Board

This chapter indicates jumpers' headers and connectors' locations. Users may find useful information related to hardware settings in this chapter.

Drawing Overview

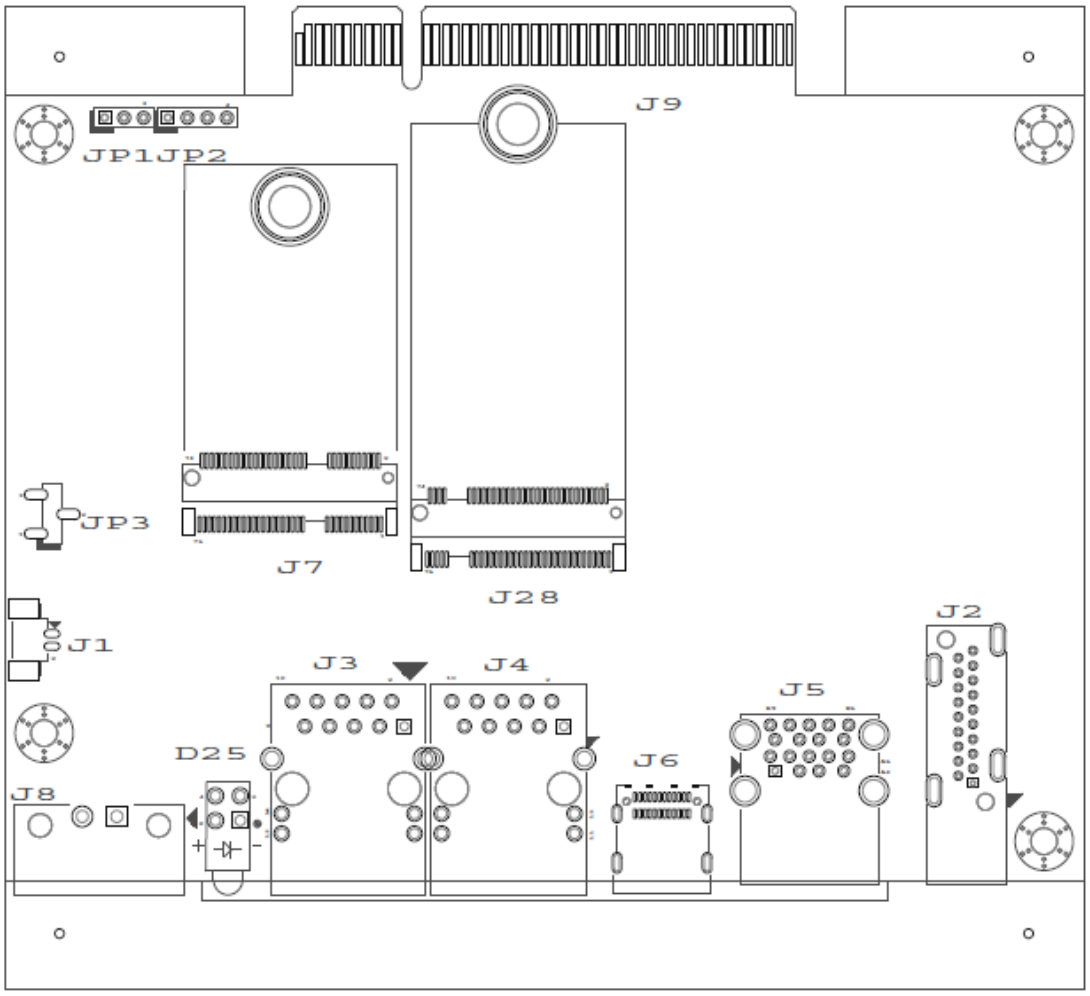


Figure 3: Component Side

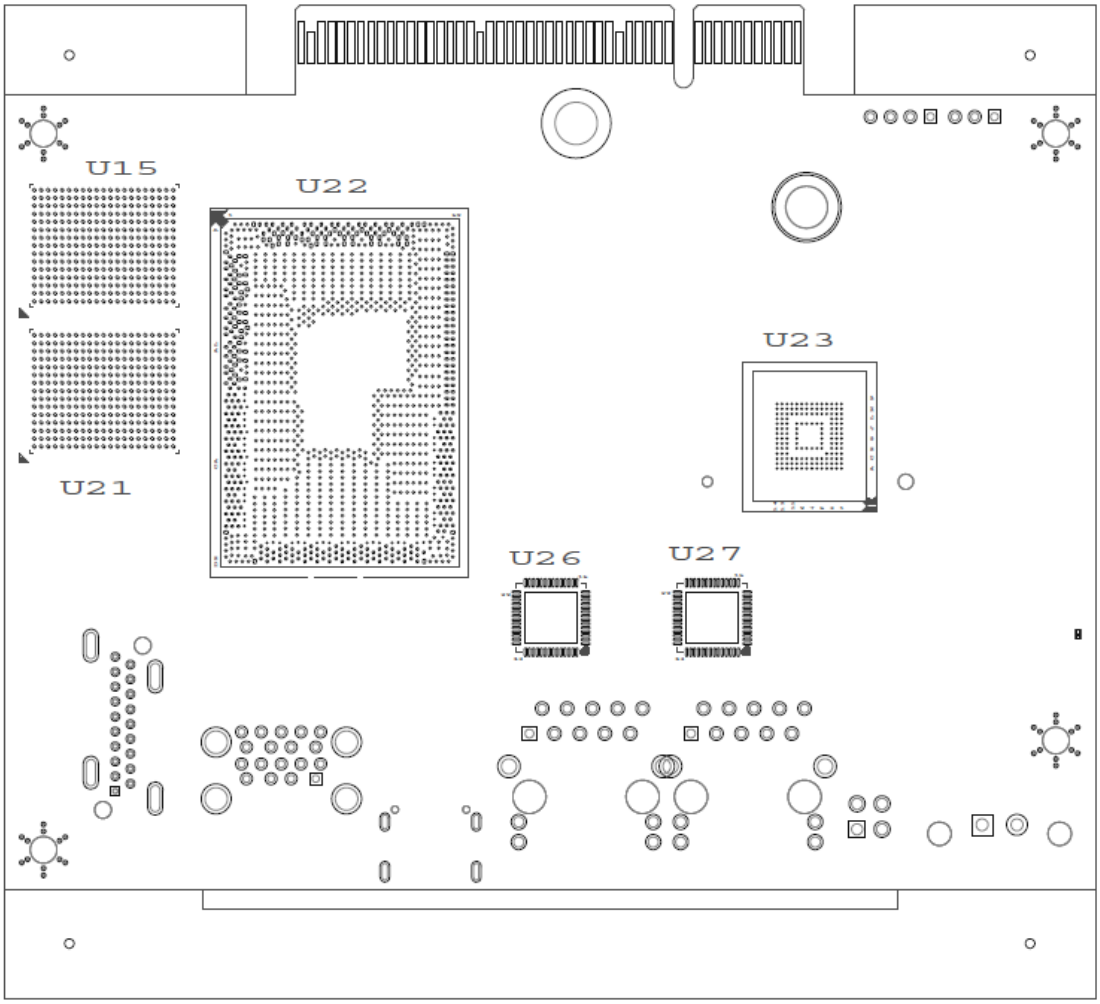


Figure 4: Solder Side

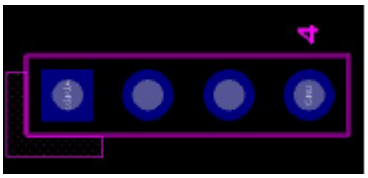
Jumper Setting List

Location	Function
JP1	AT/ATX mode
JP2	Reserve for EC SMBus
JP3	Clear CMOS setting

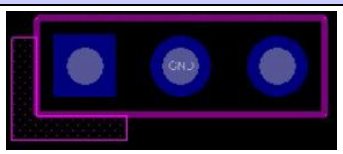
JP1 AT/ATX Mode (Pitch 2.0mm)

PCB Footprint	Jumper Setting	Function Description
	1-2	★AT Mode
	2-3	Reserve

JP2 Reserve for EC SMBus (EC SMBus (Pitch 2.0mm):Reserve)

PCB Footprint	Jumper Setting	Function Description
	1	3.3V
	2	CLK
	3	DATA
	4	GND

JP3 CMOS Setup(Pitch 2.0mm)

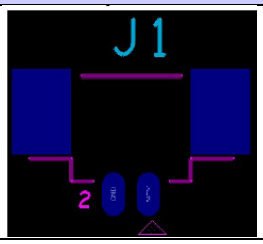
PCB Footprint	Jumper Setting	Function Description
	1-2	Clear CMOS
	2-3	Clear ME RTC

NOTES: Default (Floating)

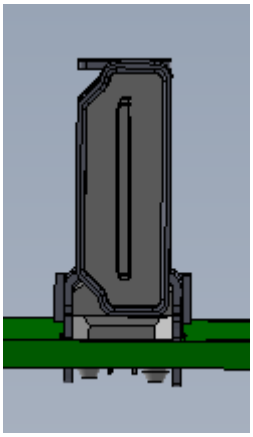
Connector Function List

Location	Function
J1	Battery Connector
J2	HDMI Connector
J3	RJ45 Connector
J4	RJ45 Connector
J5	USB2.0/3.0 Connector
J6	DP ALT mode Type C Connector
J7	M.2 Key E Wifi Connector
J8	DC Power Connector
J28	M.2 Key M SATA Connector

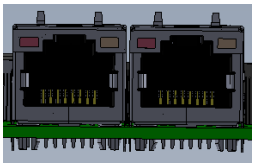
J1: Battery Connector

PCB Footprint	Pin No.	Signal Description
	1	BAT3V
	2	GND

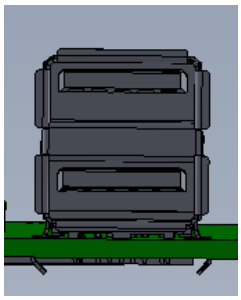
J2: HDMI Connector

PCB Footprint	Pin No.	Signal Description	Pin No.	Signal Description
	1	D2+	2	D2 Shield
	3	D2-	4	D1+
	5	D1 Shield	6	D1-
	7	D0+	8	D0 Shield
	9	D0-	10	CLK+
	11	CLK Shield	12	CLK-
	13	CEC	14	HEC Data/Reserve
	15	SCL	16	SDA
	17	DDC/CEC/HEC GND	18	5V
	19	HPD		

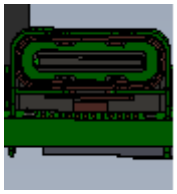
J3/J4: RJ45 Connector

PCB Footprint	Pin No.	Signal Description	Pin No.	Signal Description
	1	TRxP0	2	TRxN0
	3	TRxP1	4	TRxP2
	5	TRxN2	6	TRxN1
	7	TRxP3	8	TRxN3

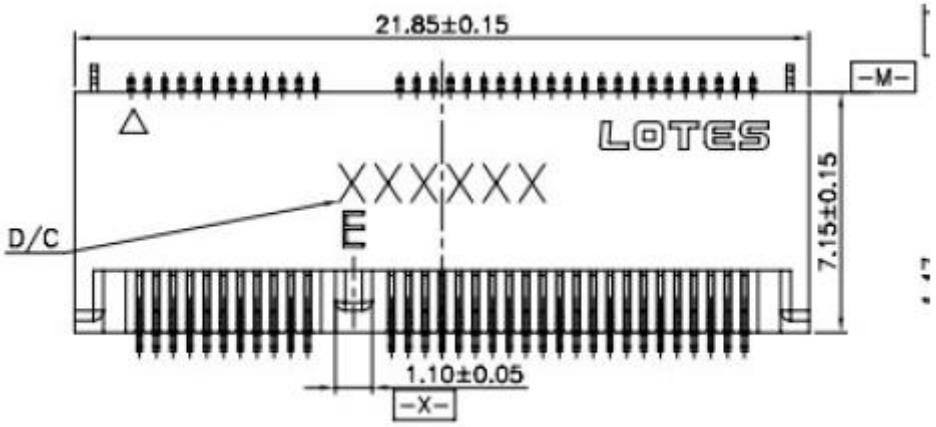
J5: USB2.0/3.0 Connector

PCB Footprint	Pin No.	Signal Description	Pin No.	Signal Description
	A1	5V	B1	GND
	A2	D1-	B2	D0-
	A3	D1+	B3	D0+
	A4	GND	B4	GND
	A5	SSRX1-	B5	SSRX0-
	A6	SSRX1+	B6	SSRX0+
	A7	GND	B7	GND
	A8	SSTX1-	B8	SSRTX0-
	A9	SSTX1+	B9	SSRTX0+

J6: DP ALT Mode Type C Connector

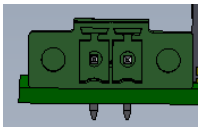
PCB Footprint	Pin No.	Signal Description	Pin No.	Signal Description
	A1	GND	B12	GND
	A2	SSTXp1(TX1+)	B11	SSRXp1(RX1+)
	A3	SSTXn1(TX1-)	B10	SSRXn1(RX1-)
	A4	Vbus	B9	Vbus
	A5	CC1	B8	SBU2
	A6	D+	B7	D-
	A7	D-	B6	D+
	A8	SBU1	B5	CC2
	A9	Vbus	B4	Vbus
	A10	SSRXn2(RX2-)	B3	SSRTn2(TX2-)
	A11	SSRXp2(RX2+)	B2	SSRTp2(TX2+)
	A12	GND	B1	GND

J7: M.2 Key E WiFi Connector

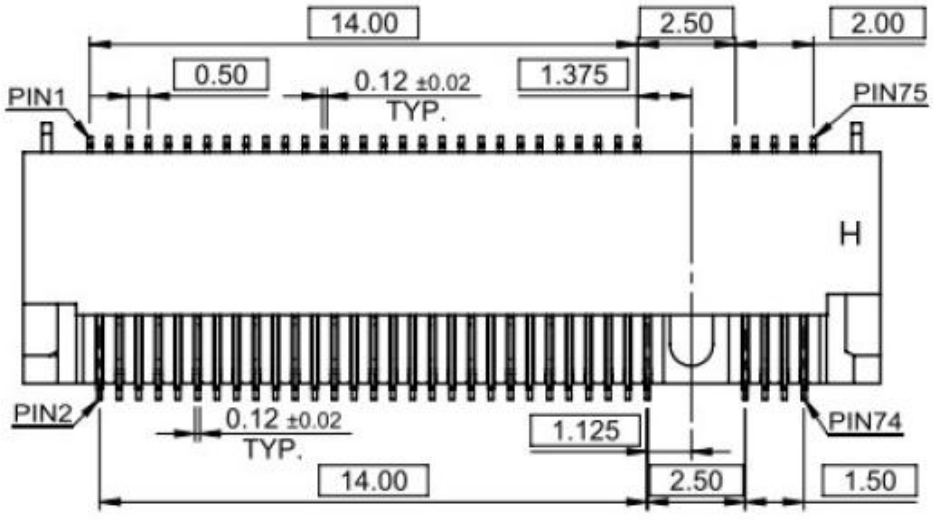


Follow PCI Express M.2 Specification Ver5.1

J8: DC Power input Connector

PCB Footprint	Jumper Setting	Function Description
	1	GND
	2	+12V

J28: M.2(SATA interface TYPE:2242) Connector



Follow PCI Express M.2 Specification Ver5.1

2.3 Jumper Setting of Extension Board

This chapter indicates jumpers' headers and connectors' locations of extension board. Users may find useful information related to hardware settings in this chapter.

Drawing Overview

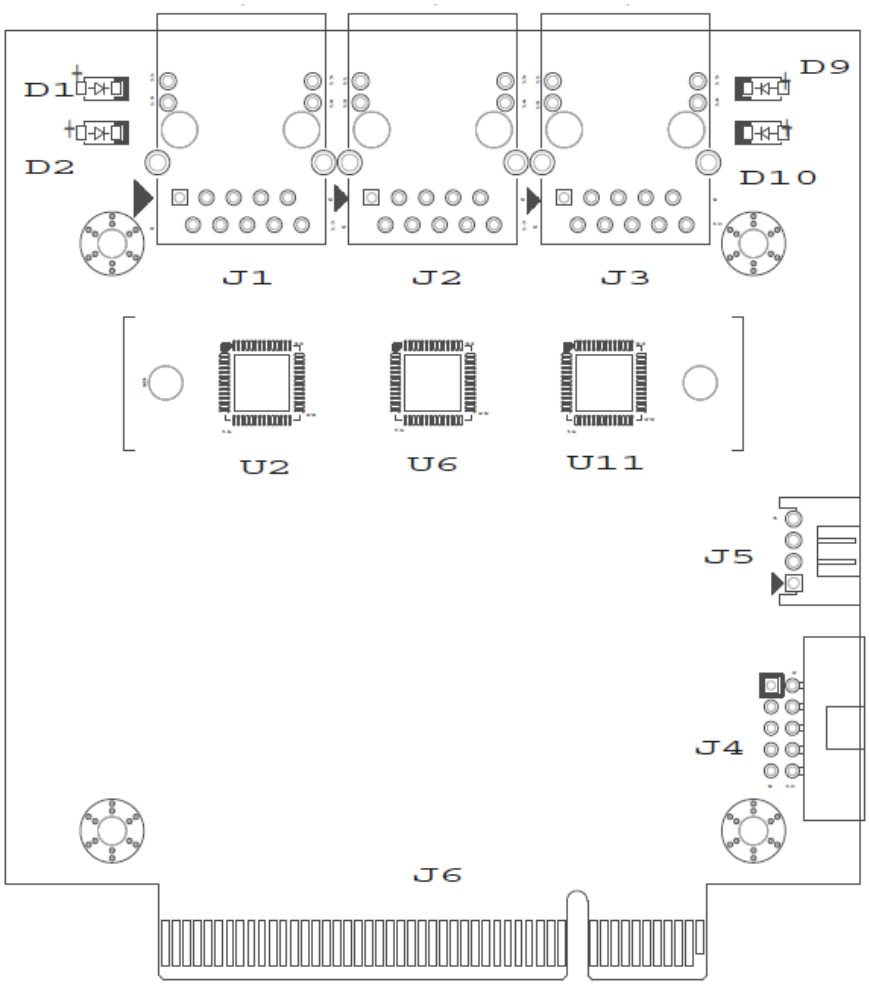
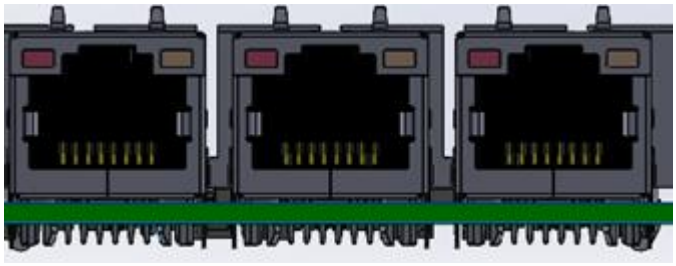


Figure 5: Component Side

Jumper Setting List

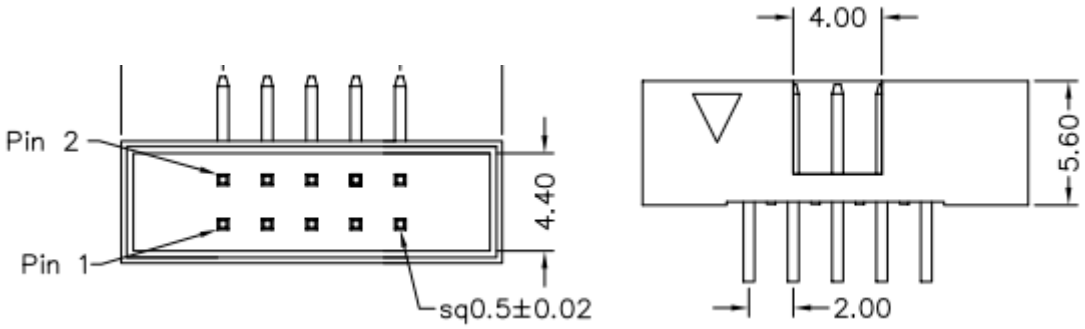
Location	Function
J1	LAN1
J2	LAN2
J3	LAN3
J4	GPIO Pin Header
J5	USB2.0 Pin Header
J6	PCIex8 Golden Finger

J1、J2、J3: RJ45: LAN



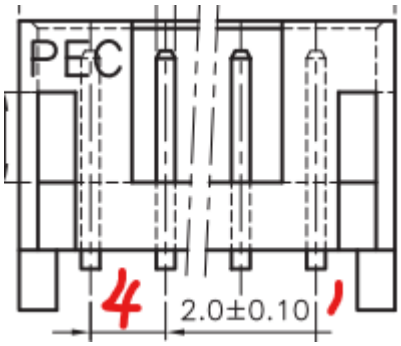
PIN No.	Signal Description	PIN No.	Signal Description
1	TRxP0	2	TRxN0
3	TRxP1	4	TRxP2
5	TRxN2	6	TRxN1
7	TRxP3	8	TRxN3

J4: Box Header: GPIO



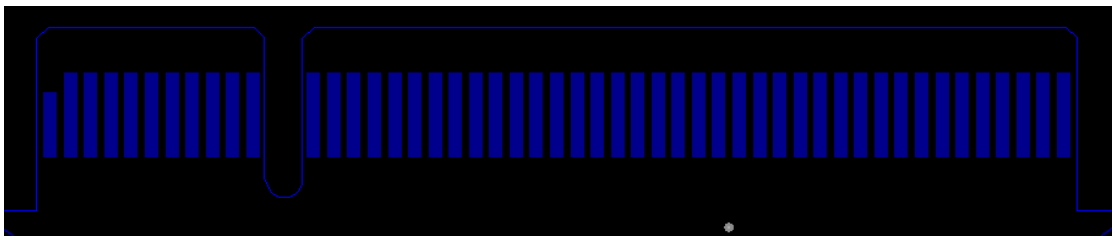
PIN No.	Signal Description	PIN No.	Signal Description
1	GPO0	2	GPI0
3	GPO1	4	GPI1
5	GPO2	6	GPI2
7	GPO3	8	GPI3
9	GND	10	3.3V

J5: Wafer: USB2.0



PIN No.	Signal Description	PIN No.	Signal Description
1	5V	2	USB_D
3	USB_D+	4	GND

J6: PCIex8 Golden Finger



PIN No.	Signal Description	PIN No.	Signal Description
A1	V3P3A	B1	V3P3S
A2	V3P3A	B2	V3P3S
A3	V3P3A	B3	V3P3S
A4	GND	B4	GND
A5	GPI0	B5	GPO0
A6	GPI1	B6	GPO1

PIN No.	Signal Description	PIN No.	Signal Description
A7	GPI2	B7	GPO2
A8	GPI3	B8	GPO3
A9	V12P0A	B9	V5P0A
A10	V12P0A	B10	V5P0A
A11	PCIE_RST#	B11	PCIE_WAKE#
A12	NC	B12	GND
A13	PCIE_CLKREQ4_N	B13	PCIECLK_DIFF_N4
A14	PCIE_CLKREQ3_N	B14	PCIECLK_DIFF_P4
A15	NC	B15	GND
A16	NC	B16	PCIECLK_DIFF_N3
A17	KBC_SLP_S3#	B17	PCIECLK_DIFF_P3
A18	GND	B18	GND
A19	PCIE_TXN12_C	B19	PWRBTN#_D
A20	PCIE_TXP12_C	B20	GND
A21	GND	B21	PCIE_RXN12
A22	GND	B22	PCIE_RXP12
A23	PCIE_TXN4_C	B23	GND
A24	PCIE_TXP4_C	B24	GND
A25	GND	B25	PCIE_RXN4
A26	GND	B26	PCIE_RXP4
A27	PCIE_TXN3_C	B27	GND
A28	PCIE_TXP3_C	B28	GND
A29	GND	B29	PCIE_RXN3
A30	USB_PN3	B30	PCIE_RXP3
A31	USB_PP3	B31	GND
A32	USB2_OC3	B32	LAD0
A33	USB_PN2	B33	LAD1
A34	USB_PP2	B34	LAD2
A35	NC	B35	LAD3
A36	HDA_BCLK	B36	LRESET#
A37	HDA_SYNC	B37	PCICLK

PIN No.	Signal Description	PIN No.	Signal Description
A38	HDA_SDO	B38	LFRAME#
A39	HDA_SDI0	B39	SERIRQ
A40	HDA_RST	B40	GPIO1_R / Reserved
A41	SP339_COM1_Mode0	B41	GPIO2_R / Reserved
A42	SP339_COM1_Mode1	B42	GPIO3_R / Reserved
A43	SP339_COM1_Mode2	B43	GPIO4_R / Reserved
A44	NC	B44	SMB_CLK
A45	SP339_COM2_Mode0	B45	SMB_DAT
A46	SP339_COM2_Mode1	B46	SMB_ALT#
A47	SP339_COM2_Mode2	B47	NC
A48	NC	B48	RSTBTN#
A49	NC	B49	BUF_PLTRST#

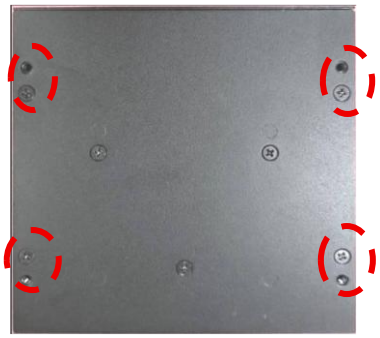
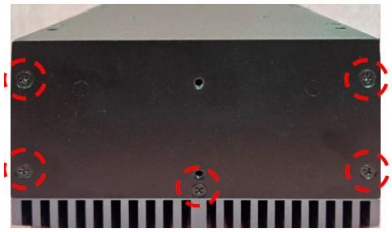
Chapter 3

System Overview

3.1 Open The Chassis
3.2 M.2 2242 M Key SATA SSD Installation
3.3 M.2 2230 E Key Wi-Fi Module Installation
3.4 Wi-Fi Antenna and SMA Bulkhead Jack Installation
3.5 Wall Mount Installation
3.6 Din Rail Installation
3.7 VESA mount Installation

3.1 Open the System

Before disassembly, ensure the system is powered off and all power sources and signal cables are disconnected.

	There are 11 screws on the bottom cover of the LYNX-812C. Loosen the 8 marked screws (M3 × 4L).
	Remove the red-marked 5 screws (M3 × 4L). Gently pull the rear cover outward; the riser card attached to the cover will come out together with it. A slight amount of force may be needed.
	After removing the bottom cover and rear cover assembly, the internal structure will appear as picture showed.

3.2 M.2 2242 M Key SATA SSD Installation

The system is equipped with one M.2 M Key 2242 socket for a SATA SSD. Follow the instructions below to install the SSD.

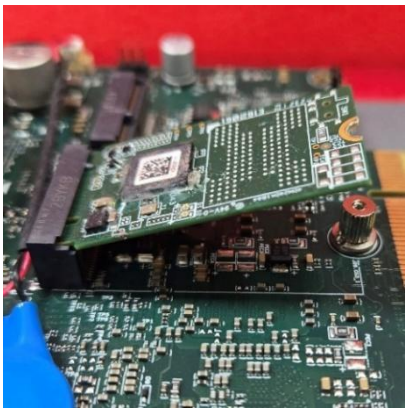
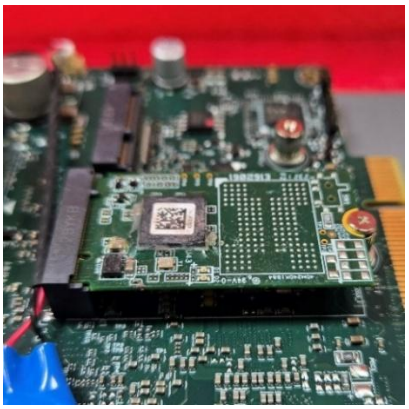
	Loosen the 4 red-marked screws securing the aluminum plate, then remove the plate.

	Align the M.2 card with the module slot, insert it at a slight angle, and ensure the connector is fully seated.
	Press the M.2 card down to a horizontal position and secure it with the bundled screw (M3 x 6L).

3.3 M.2 2230 E Key Wi-Fi Module Installation

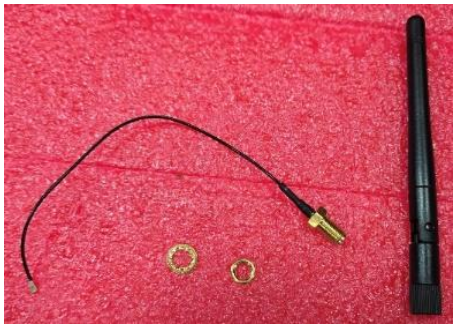
The system is equipped with one M.2 E Key 2230 socket for Wi-Fi card. Follow the instructions below to install it.

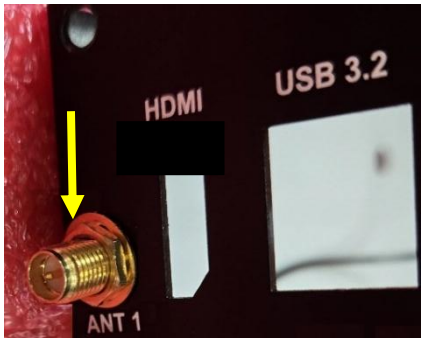
	Loosen the 4 red-marked screws securing the aluminum plate, then remove the plate.

	Align the M.2 card with the module slot, insert it at a slight angle, and ensure the connector is fully seated.
	Press the M.2 card down to a horizontal position and secure it with the bundled screw (M3 x 6L).

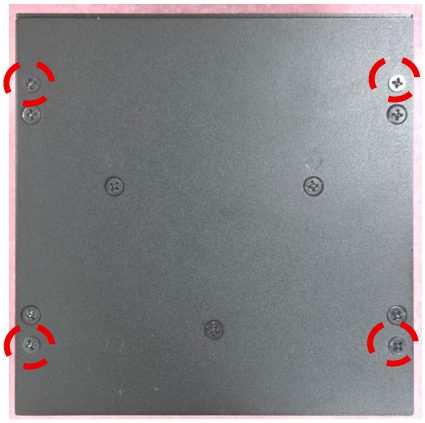
3.4 Wi-Fi Antenna and SMA Bulkhead Jack Installation

LYNX-812C has 6 antenna holes to support Wi-Fi Antenna.
Follow the instructions below for installation.

	If Wi-Fi module is purchased, the accessory box will include the following items 1 × Wi-Fi M.2 card 2 × serrated washer 2 × hex nut 2 × SMA cables (SMA female to IPEX MHF4L) 2 × external Wi-Fi antennas
	1. Remove the antenna hole plug from the front panel. Alternatively, use an appropriate screwdriver to push out the pre-punched antenna hole from the outside to the inside. 2. Insert the SMA cable through the antenna hole so that the threaded part protrudes outside.

<table>
<tr><td>
</td><td>(Take antenna holes on the front panel as an example)
1. On the outside of the chassis, place the serrated washer over the threaded connector.
2. Secure the connector by tightening the hex nut.</td></tr>
<tr><td> </td><td>Inside the chassis, align each MHF4 connector on the antenna cable with the corresponding port on the Wi-Fi card.</td></tr>
<tr><td> </td><td>Press straight down until a click is felt or heard.</td></tr>
<tr><td> </td><td>1. Screw each external Wi-Fi antenna onto the SMA connector on the chassis.
2. Adjust the antennas to the desired position for optimal signal reception.</td></tr>
</table>

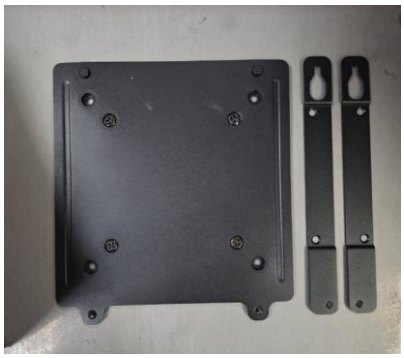
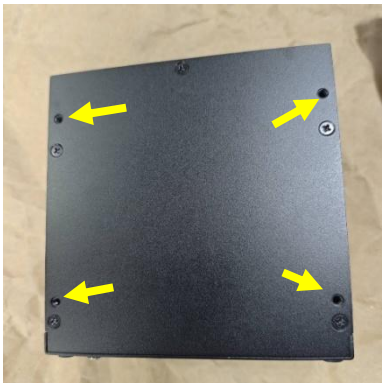
3.5 Wall mount Installation

	Remove the pre-installed screws and align the wall mount brackets with the mounting holes on the bottom cover of the system. Secure the brackets to the system using the supplied screws (M3 × 6L).

3.6 Din Rail Installation

	Remove the pre-installed screws on the rear panel of the system, then align the DIN rail brackets with the mounting holes. Secure the brackets to the system using the supplied screws (M3 × 6L).

3.7 VESA mount Installation

	The VESA mount kit contained: 1. VESA Mounting Plate (1 pc): A black metal plate featuring standard VESA mounting patterns. 2. Device Mounting Brackets (2 pcs): Long brackets equipped with teardrop keyholes at the top for secure hanging. 3. Screw Pack (Not shown in image): Typically includes M4 screws for monitor attachment and for securing the device.
	Remove the pre-installed screws and align the wall mount brackets with the mounting holes on the bottom cover of the system.
	1. Mount the VESA Plate: First, secure the VESA mounting plate onto your target surface (e.g., the back of a monitor or a wall mount). 2. Position the Brackets: Place the brackets onto the device (example showed I/O ports facing downward.) 3. Secure the Screws: Insert and tighten the four screws (indicated by the yellow arrows) to firmly attach the brackets to the device.

<table>
<tr>
<td>
 </td>
<td>1. Align the Keyholes: Lift the LYNX-812B and align the teardrop keyholes on the brackets with the mounting studs (I-shaped pins) on the VESA plate.
2. Slide to Lock: Insert the studs into the wider part of the keyholes, then gently slide the device downward until it is firmly locked into place.
Final Check: Ensure the device is secure and level before releasing your grip.</td>
</tr>
<tr>
<td> </td>
<td>1. Fasten the Security Screws: Install and tighten the two security screws at the bottom of the VESA plate to lock the mounting brackets in place.
2. Prevent Detachment: This step ensures the device is firmly fixed to the VESA plate and prevents it from accidentally sliding out or being detached.
Final Inspection: Double-check that all screws (both the bracket-to-device and plate-to-bracket screws) are fully tightened.</td>
</tr>
</table>

Chapter 4

BIOS Setup Items

4.1 Entering Setup
4.2 Main
4.3 Configuration
4.4 Security
4.5 Boot
4.6 Save & Exit

LYNX-812C is equipped with the AMI BIOS stored in Flash ROM. These BIOS have a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, LYNX-812C Series communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start up.

4.1 Entering Setup -- Launch System Setup

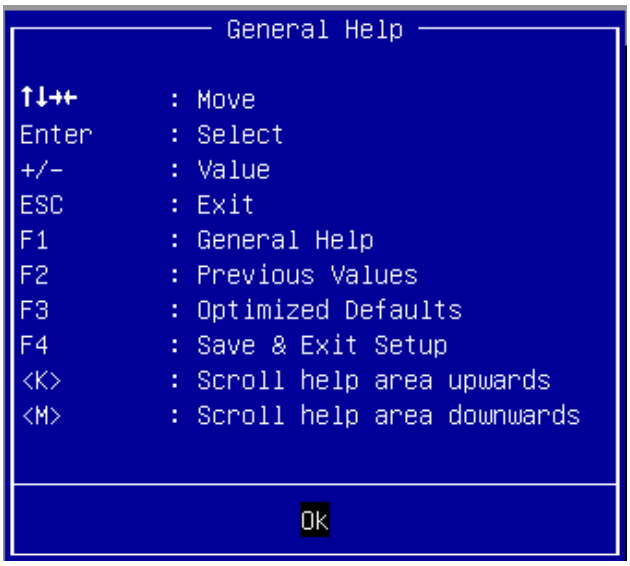
Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <Del> key will enter BIOS setup screen.

Press <Del> to enter SETUP

If the message disappears before responding and still wish to enter Setup, please restart the system by turning it OFF and On or pressing the RESET button. It can be also restarted by pressing <Ctrl>, <Alt>, and <Delete> keys on keyboard simultaneously.

Press <F1> to Run General Help or Resume

The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help screen.

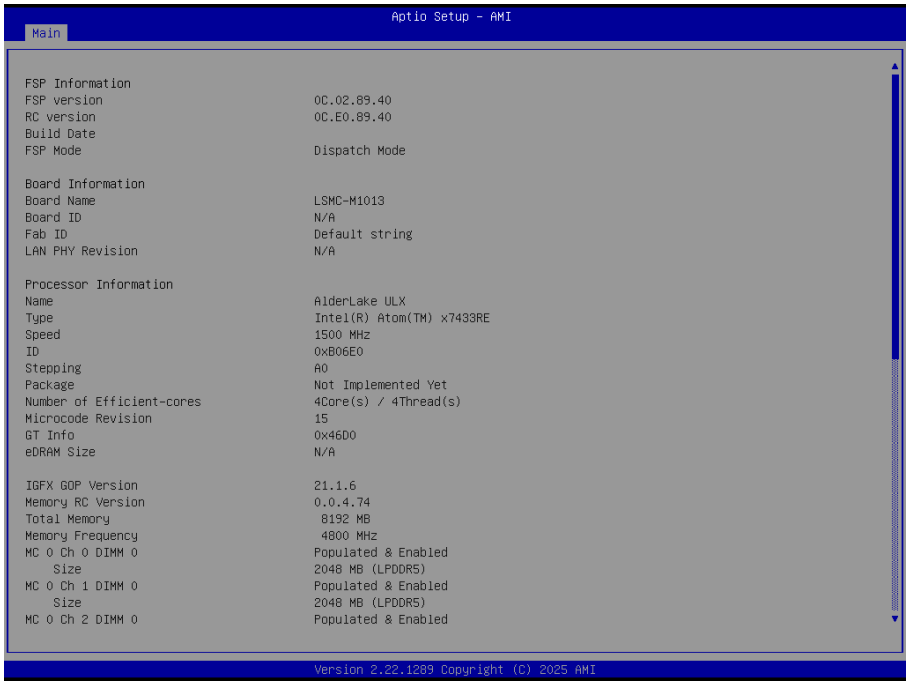


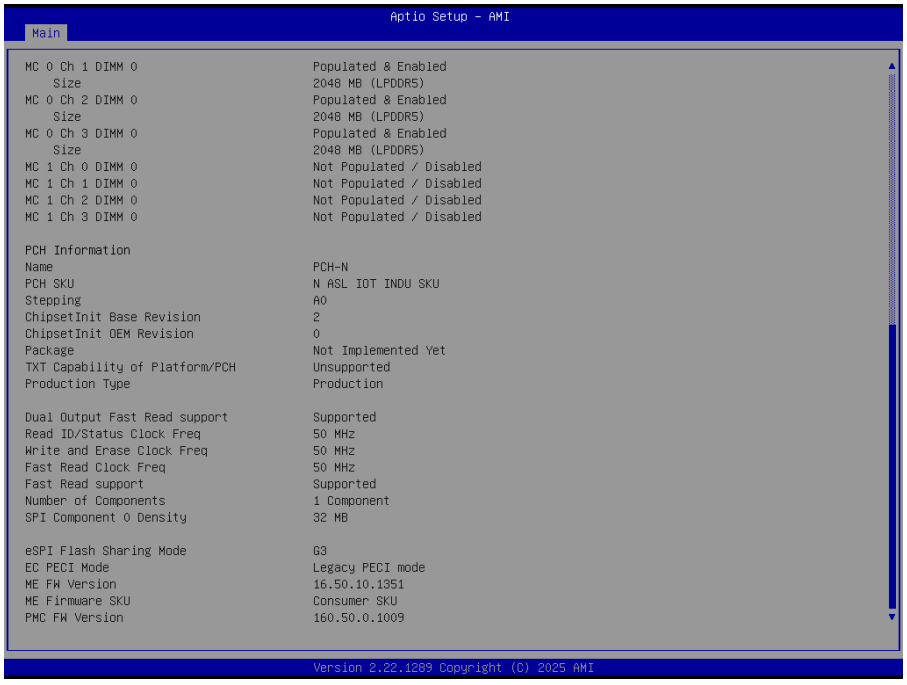
4.2 Main

Use this menu for basic system configurations, such as time, date etc.

Feature	Description	Options
System Date	The date format is <Day>, <Month> <Date> <Year>. Use [+] or [−] to configure system Date.	
System Time	The time format is <Hour> <Minute> <Second>. Use [+] or [−] to configure system Time.	

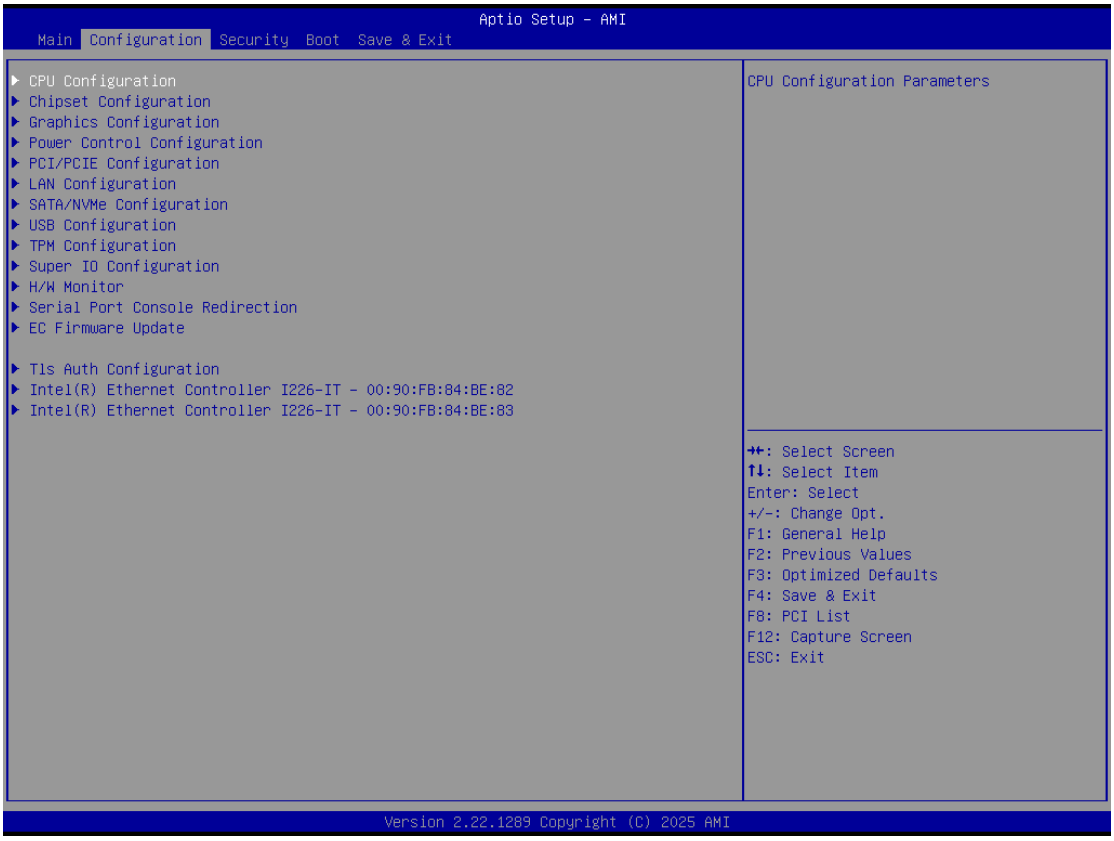
Detailed System Information



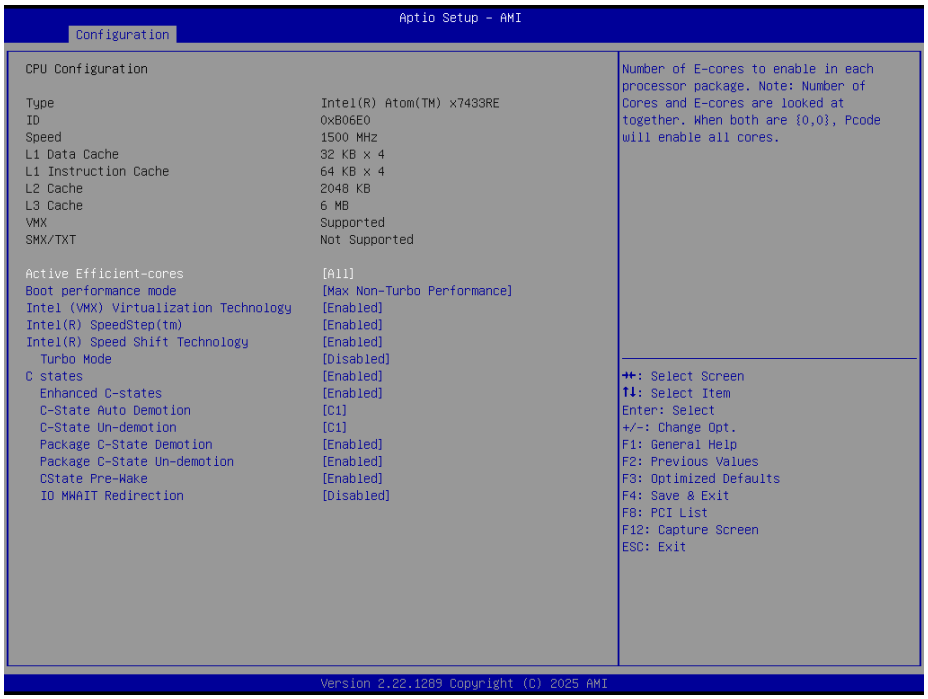


4.3 Configuration

Use this menu to set up the items of special enhanced features



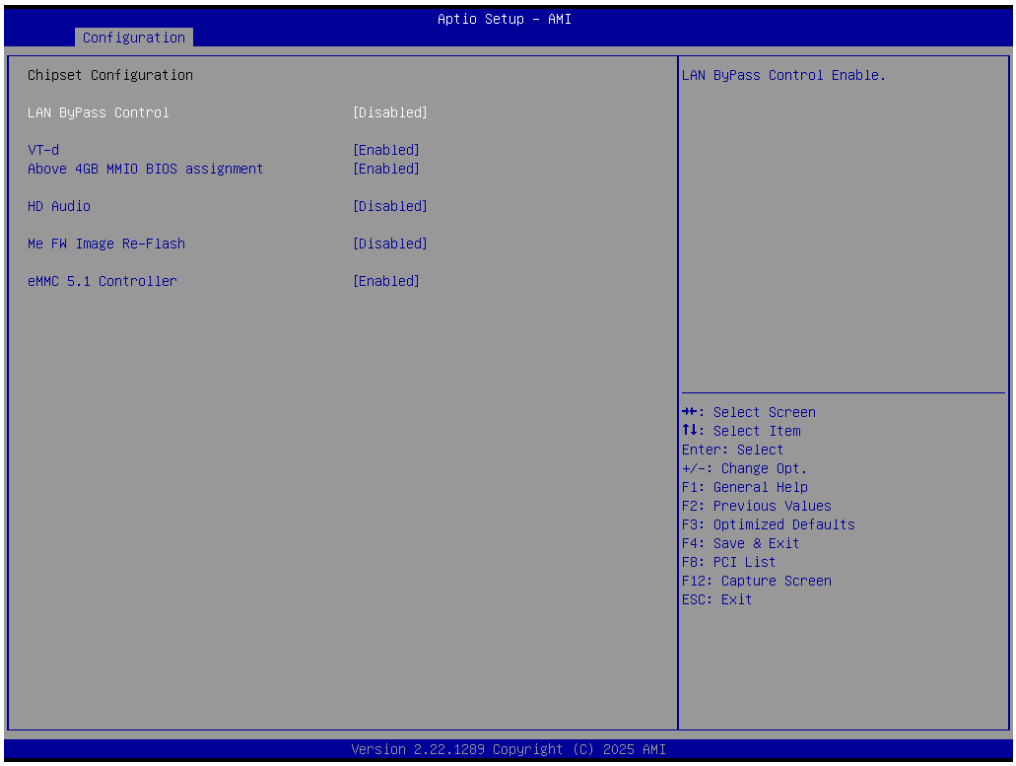
4.3.1 CPU Configuration



Feature	Description	Options
Active Efficient-Cores	Number of E-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together	★All, 3, 2, 1
Boot performance mode	Select the performance state that the BIOS will set starting from reset vector	★Max Non-Turbo Performance, Turbo Performance , Max Battery,
Intel (VMX) Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided by Vander pool Technology.	Disabled, ★Enabled
Intel (R) Speed Step (tm)	Allows more than two frequency ranges to be supported.	Disabled, ★Enabled
Intel (R) Speed Shift Technology	Enable/Disable Intel® Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware-controlled P-states	Disabled, ★Enabled
Turbo Mode	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.	★Disabled, Enabled

Feature	Description	Options
C states	Enable/disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.	Disabled, ★Enabled
Enhanced C-states	Enable/Disable C1E.When enabled, CPU will switch to minimum speed when all cores enter C-state	Disabled, ★Enabled
C-State Auto Demotion	Configure C-State Auto Demotion	Disable, ★C1
C-State Un-demotion	Configure C-State Un-demotion	Disable, ★C1
Package C-state Demotion	Package C-State Demotion	Disabled, ★Enabled
Package C-state Un-demotion	Package C-State Un-demotion	Disabled, ★Enabled
C-State Pre-Wake	Disable – Sets bit 30 of POWER_CTL MSR(0x1FC) to 1 to disable the C-state Pre-Wake	Disabled, ★Enabled
IO MWAIT Redirection	When set, will map IO_read instructions sent to IO registers PMG_IO_BASE_ADDRBASE+offset to MWAIT (offset)	★Disabled, Enabled

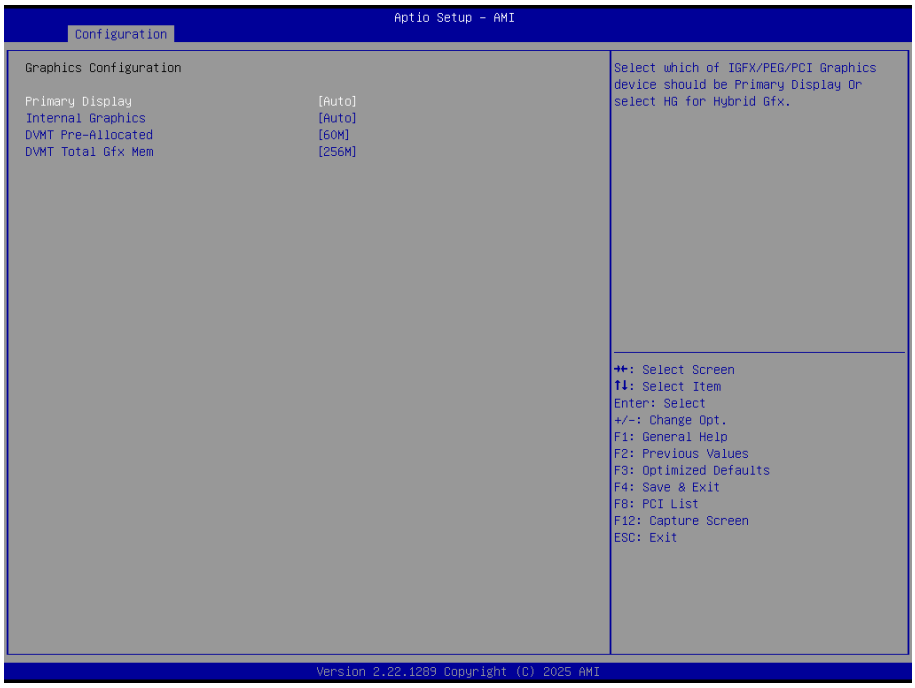
4.3.2 Chipset Configuration



Feature	Description	Options
LAN ByPass Control	LAN ByPass Control Enabled.	★Disabled, Enabled
LAN ByPass Control [Enabled.]		
LAN A ByPass Mode - Next Boot	Next Boot ByPass Mode Config	★Normal Mode, Open Mode, ByPass Mode
LAN A ByPass Mode - Power Off	Power Off ByPass Mode Config.	★Normal Mode, Open Mode, ByPass Mode
LAN A ByPass Mode - WDT Trigger	WDT Trigger ByPass Mode Config.	★Normal Mode, Open Mode, ByPass Mode
LAN A ByPass Mode - WDT TimOut	WDT TimOut ByPass Mode Config.	★Normal Mode, Open Mode, ByPass Mode
VT-d	VT-d Capability	Disabled, ★Enabled
Above 4GB MMIO BIOS assignment	Enable/Disable above 4GB Memory Mapped IO BIOS assignment This is enabled automatically when	Disabled, ★Enabled

Feature	Description	Options
HD Audio	Control Detection of the HD-Audio device. Disabled = HDA unconditionally disabled Enabled = HDA unconditionally enabled	★Disabled, Enabled
Me FW Image Re-Flash	Enable/Disable Me FW Image Re-Flash function.	★Disabled, Enabled
eMMC 5.1 Controller	Enable or Disable SCS eMMC 5.1 Controller	Disabled, ★Enabled

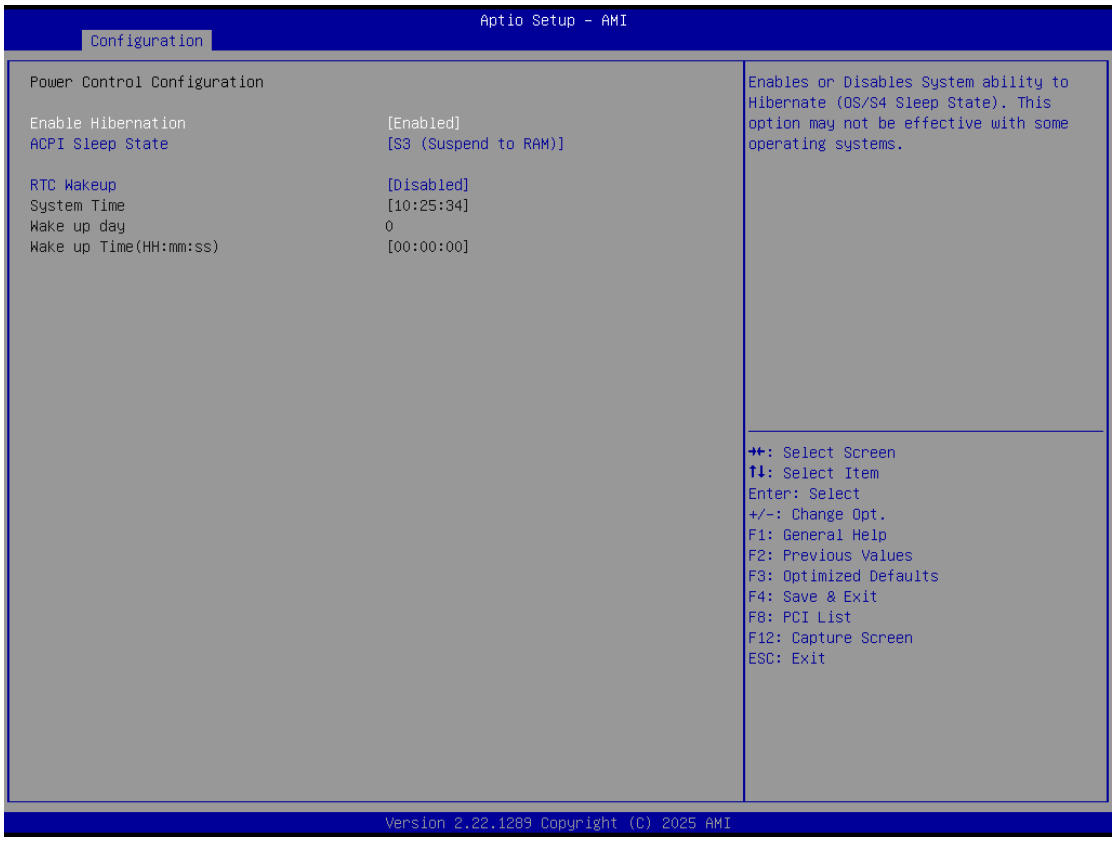
4.3.3 Graphics Configuration



Feature	Description	Options
Primary Display	Select which of IGFX Graphics device should be Primary Display or Select HG for Hybrid Gfx.	★Auto, IGFX
Internal Graphics	Keep IGFX enable based on the setup options.	★Auto, Disabled, Enabled
DVMT Pre-Allocated	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.	32M, 64M, 96M, 128M, 160M, 12M, 16M, 16M, 20M, 24M, 28M, 32M/F7, 36M, 40M, 44M, 48M, 52M, 56M, ★60M

Feature	Description	Options
DVMT Total Gfx Mem	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device	★256M, 128M, MAX

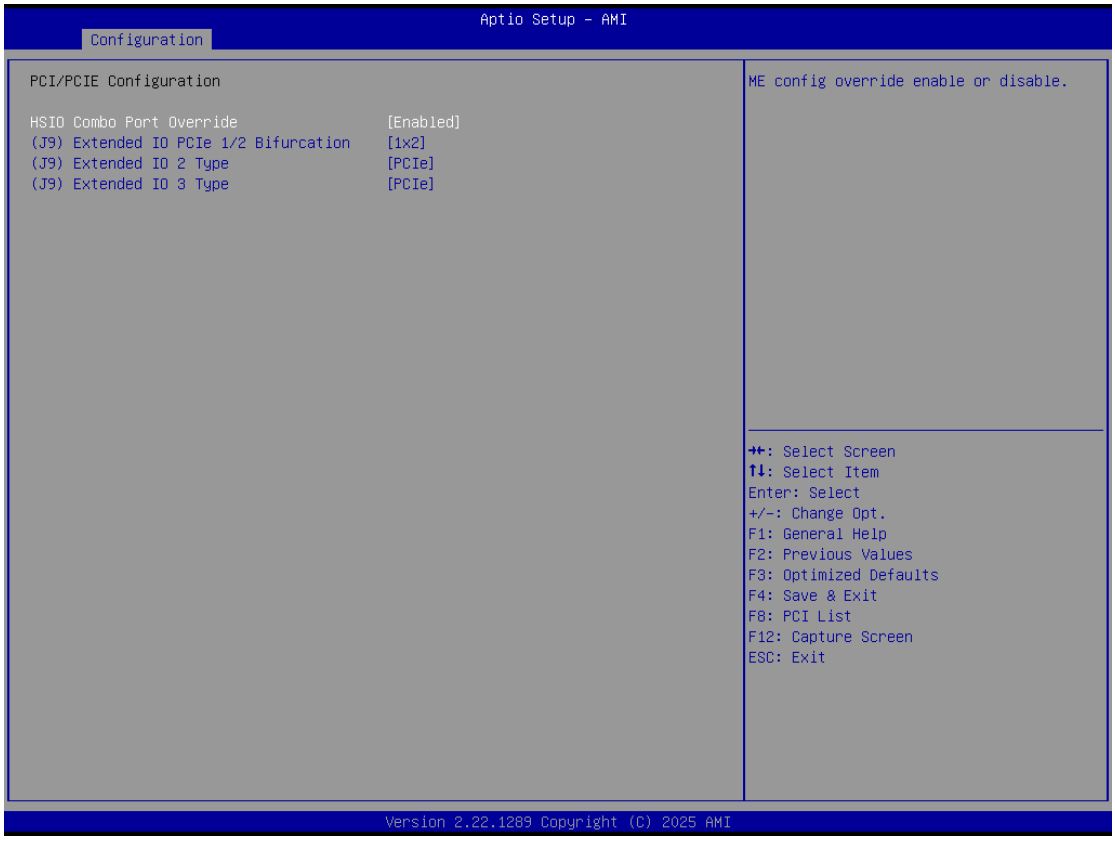
4.3.4 Power Control Configuration



Feature	Description	Options
Enable Hibernation	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.	Disabled, ★ Enabled
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.	★S3 (Suspend to RAM), Suspend Disabled
RTC Wakeup	Enable or Disable System wake on alarm event. [Enabled] system will wake on the Houre:Min:Sec specified. [Disabled] Turn off RTC wakeup	★Disabled, Enabled
RTC Wakeup [Enabled]		

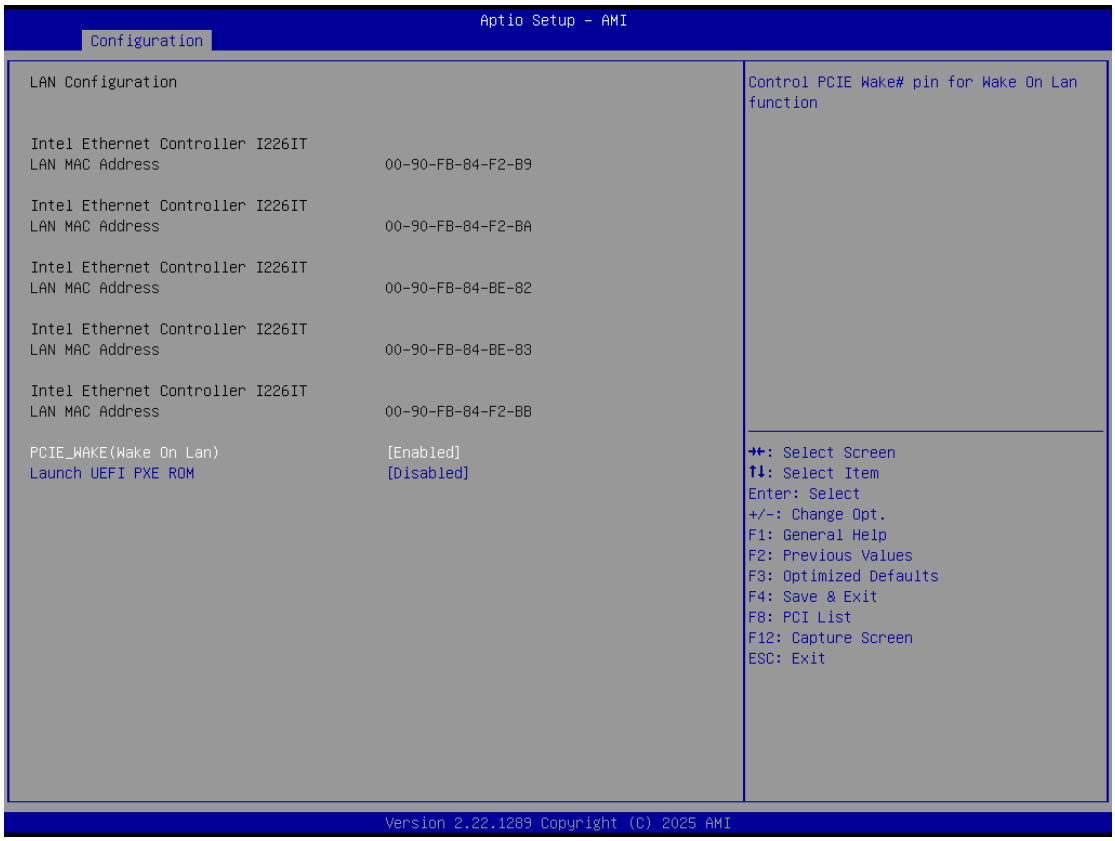
Feature	Description	Options
Wake up day	Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up	★0
Wake up Time (HH:mm:ss)	Use [Enter], [TAB] to select field, HH: 0-23 mm: 0-59 ss: 0-59	★[00:00:00]

4.3.5 PCI/PCIE Configuration



Feature	Description	Options
HSIO Combo Port Override	ME config override enable or disable.	★Disabled, Enabled
HSIO Combo Port Override [Enabled]		
(J9) Extended IO PCIe 1/2 Bifurcation	Control PCH PCIe lane width.	2x1, ★1x2
(J9) Extended IO 2 Type	Control USB/PCIe combo port.	USB, ★PCIe
(J9) Extended IO 3 Type	Control USB/PCIe combo port.	USB, ★PCIe

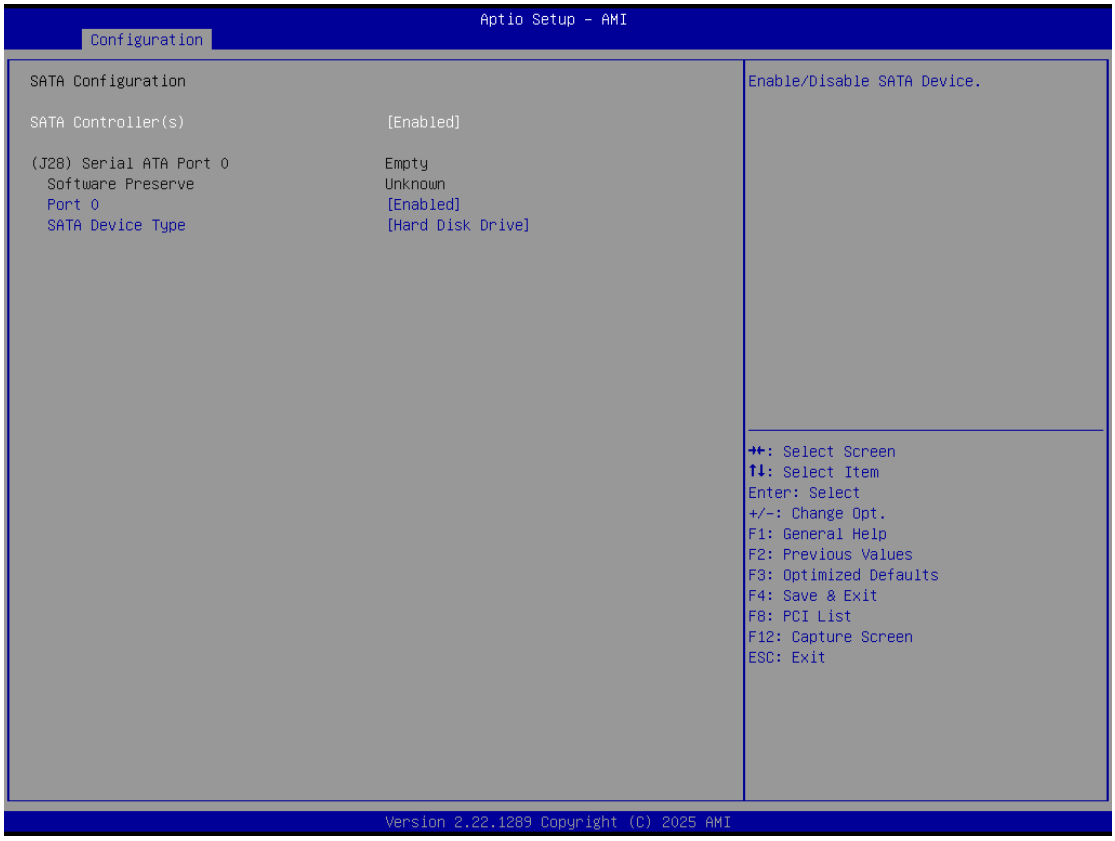
4.3.6 LAN Configuration



Feature	Description	Options
PCIE_WAKE (Wake on Lan)	Control PCIE Wake# pin for wake on Lan function.	Disabled, ★Enabled
Launch UEFI PXE ROM	Enable/Disable UEFI Network Stack	★Disabled, Enabled
Launch UEFI PXE ROM (Enabled)		
IPv4 PXE Support	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.	Disabled, ★Enabled
IPv4 HTTP Support	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.	Disabled, ★Enabled
IPv6 PXE Support	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.	Disabled, ★Enabled
IPv6 HTTP Support	Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.	Disabled, ★Enabled

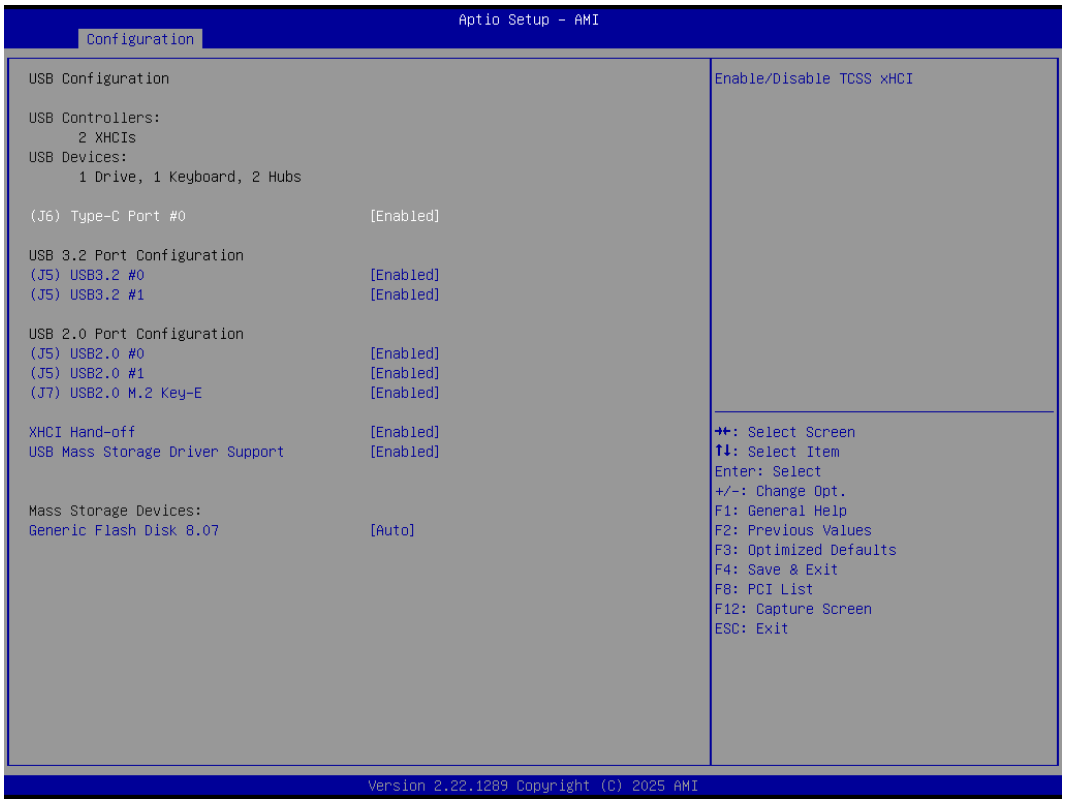
Feature	Description	Options
PXE boot wait time	Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.	★0
Media detect count	Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.	★1

4.3.7 SATA Configuration



Feature	Description	Options
SATA Controller(s)	Enable/Disable SATA Device	Disabled, ★Enabled
(J28) Serial ATA Port 0		
Port 0	Enabled or Disabled SATA Port	Disabled, ★Enabled
SATA Device Type	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.	★Hard Disk Drive, Solid State Drive

4.3.8 USB Configuration

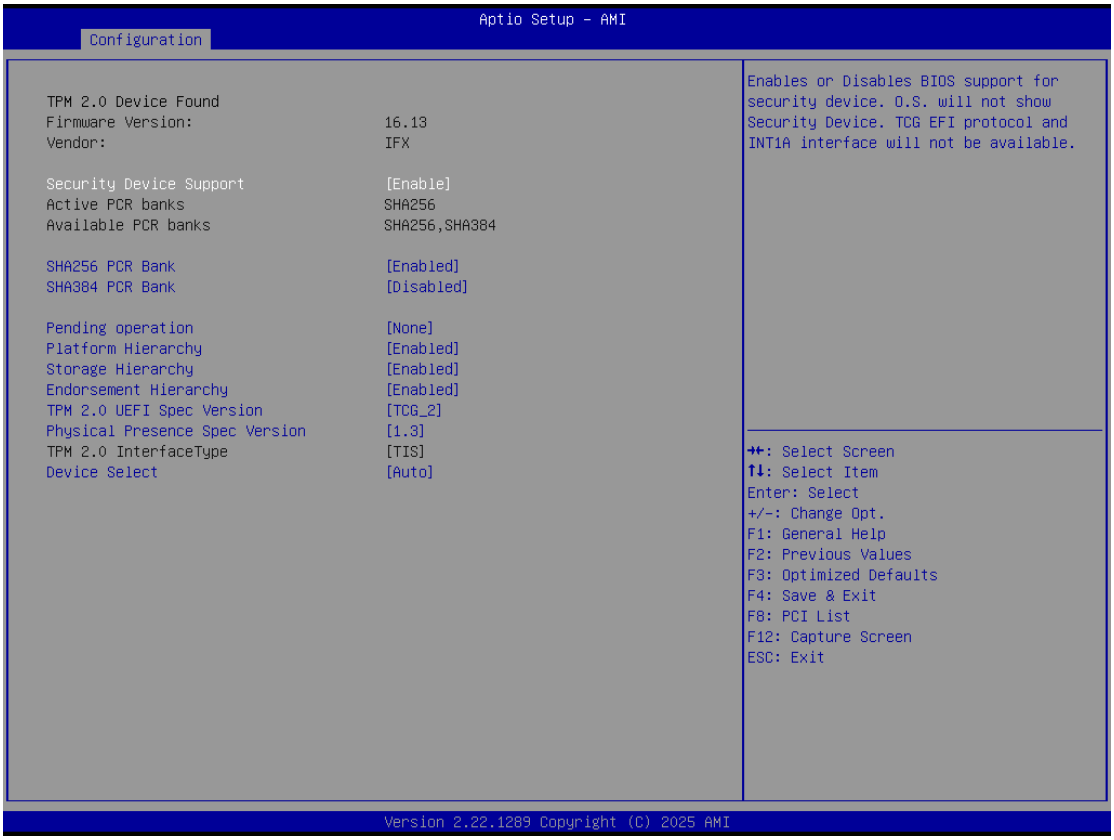


Feature	Description	Options
(J6) Type-C Port #0	Enabled/Disabled TCSS xHCI	Disabled, ★Enabled
USB 3.2 Port Configuration		
(J5) USB3.2 #0	Enable/Disable this USB Physical connector (Physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	Disabled, ★Enabled
(J5) USB3.2 #1	Enable/Disable this USB Physical connector (Physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	Disabled, ★Enabled

Feature	Description	Options
USB 2.0 Port Configuration		
(J5) USB2.0 #0	Enable/Disable this USB Physical connector (Physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	Disabled, ★Enabled
(J5) USB2.0 #1	Enable/Disable this USB Physical connector (Physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	Disabled, ★Enabled
(J9) Extended USB2.0 Port 1	Enable/Disable this USB Physical connector (Physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	Disabled, ★Enabled
(J7) USB2.0 M.2 Key-E	Enable/Disable this USB Physical connector (Physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	Disabled, ★Enabled
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver	Disabled, ★Enabled
USB Mass Storage Driver Support	Enable/Disable USB Mass Storage Driver Support	Disabled, ★Enabled
Mass storage Devices:		
Generic Flash Disk 8.07	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM'; drives with no media will be emulated according to a drive type.	★Auto, Floppy, Forced FDD, Hard Disk, CD-ROM

4.3.9 TPM Configuration:

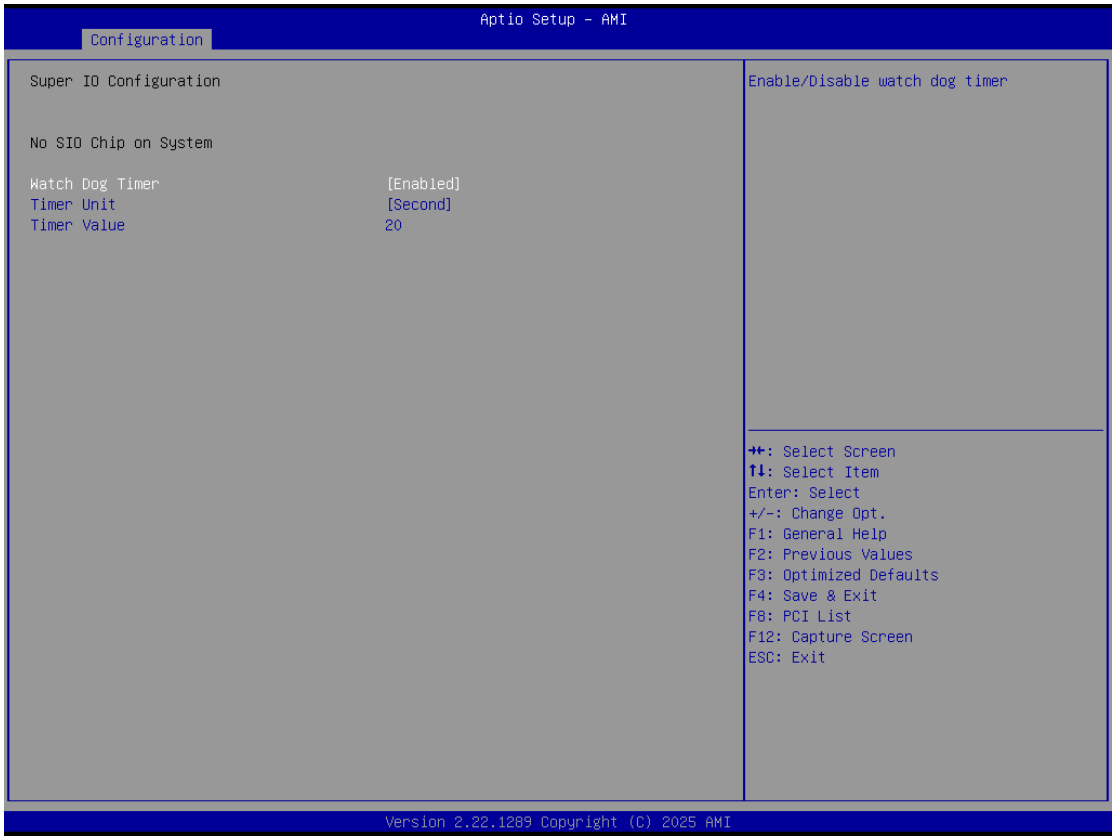
TPM 2.0 Device Found



Feature	Description	Options
Security Device Support	Enables or Disables BIOS support for security devices. O.S. will not show Security Device. TCG EFI protocol and INT1A Interface will not be available.	Disabled, ★Enabled
SHA256 PCR Bank	Enables or Disables SHA256 PCR Bank.	Disabled, ★Enabled
SHA384 PCR Bank	Enables or Disables SHA384 PCR Bank.	★Disabled Enabled,
Pending operation	Schedule an Operation for the Security Device. Note: Your computer will reboot during restart in order to change State of Security Device.	★None, TPM Clear
Platform Hierarchy	Enables or Disables Platform Hierarchy.	Disabled, ★Enabled
Storage Hierarchy	Enables or Disables Storage Hierarchy.	Disabled, ★Enabled
Endorsement Hierarchy	Enables or Disables Endorsement Hierarchy.	Disabled, ★Enabled

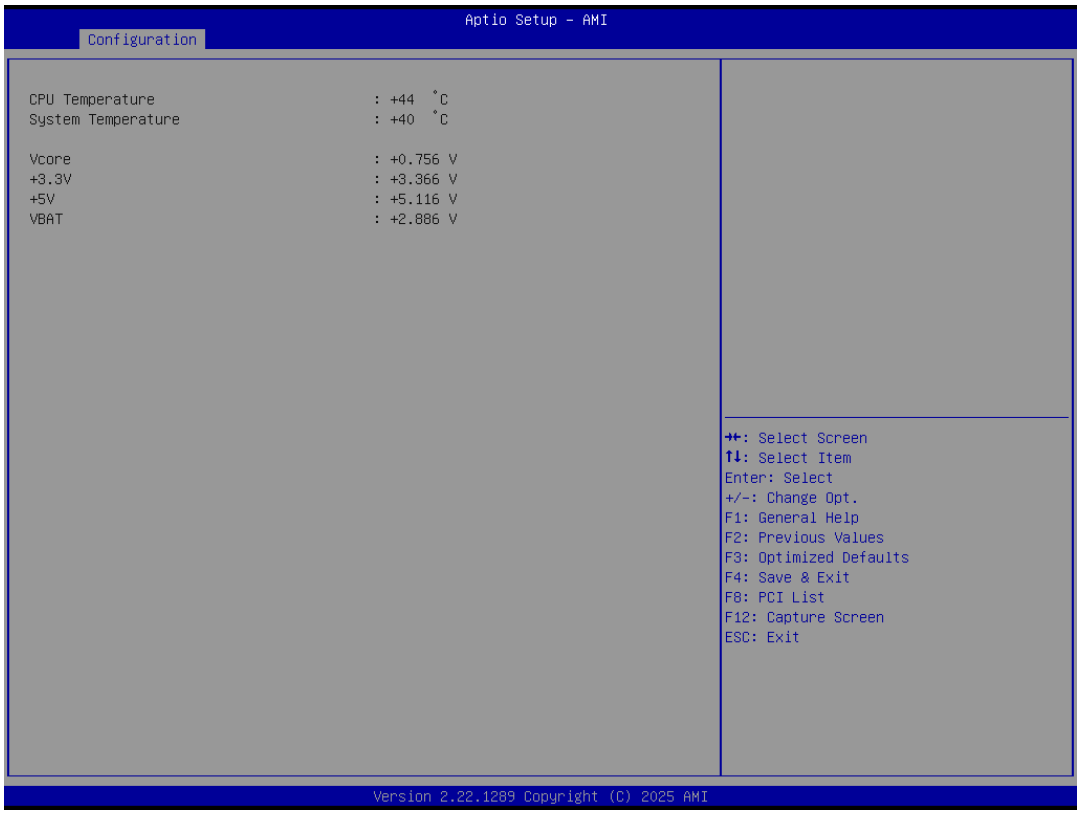
Feature	Description	Options
TPM2.0 UEFI Spec Version	Select the TCG2 Spec Version Support. TCG_1_2: the Compatible mode for Win8/Win10. TCG_2: Support new TCG2 protocol and event format for Win10 or later.	TCG_1_2, ★TCG_2
Physical Presence Spec Version	Select to Tell O.S. to Support PPI Spec Version 1.2 or 1.3. Not some HCK tests might not support 1.3.	1.2, ★1.3
Device Select	TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.	★Auto, TPM 1.2, TPM 2.0

4.3.10 Super IO Configuration

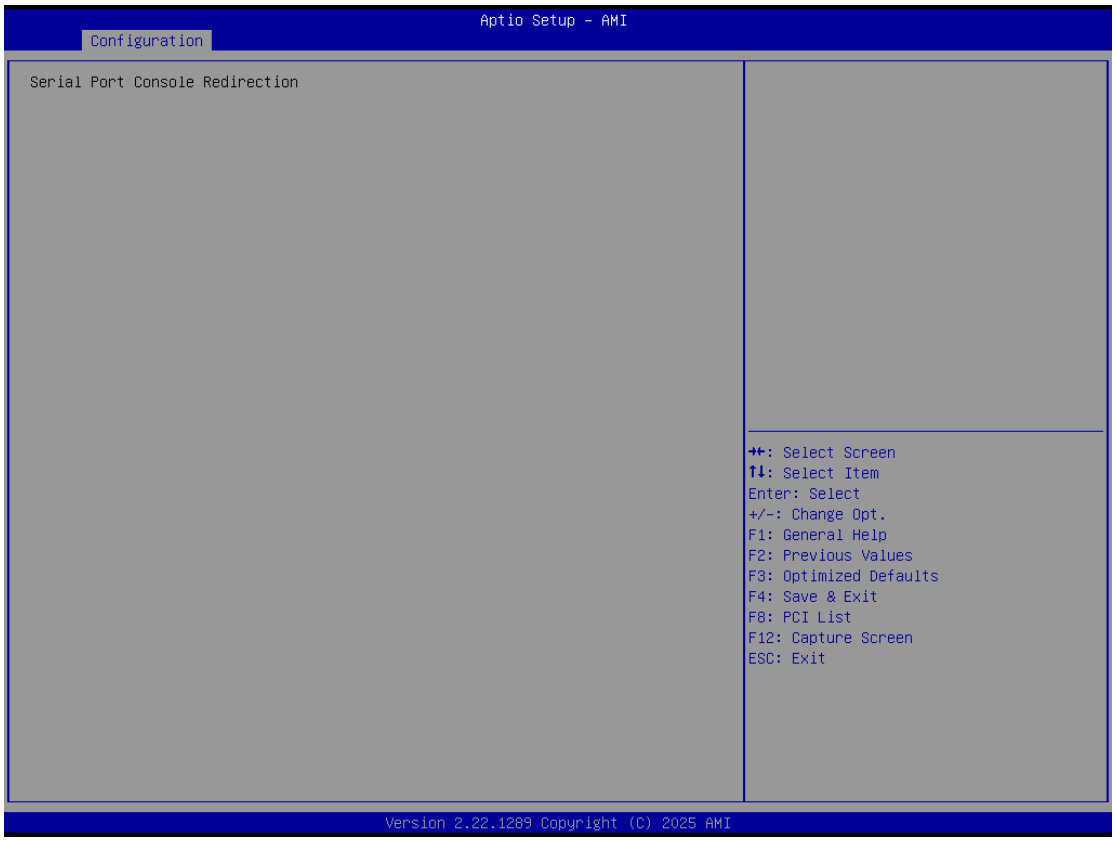


Feature	Description	Options
Watch Dog Timer	Enable/Disable Watch Dog Timer	★Disabled, Enabled
Watch Dog Timer [Enabled]		
Timer Unit	Select Timer count unit of WDT	★Second, Minute
Timer value	Set WDT Timer value seconds / minutes	★20

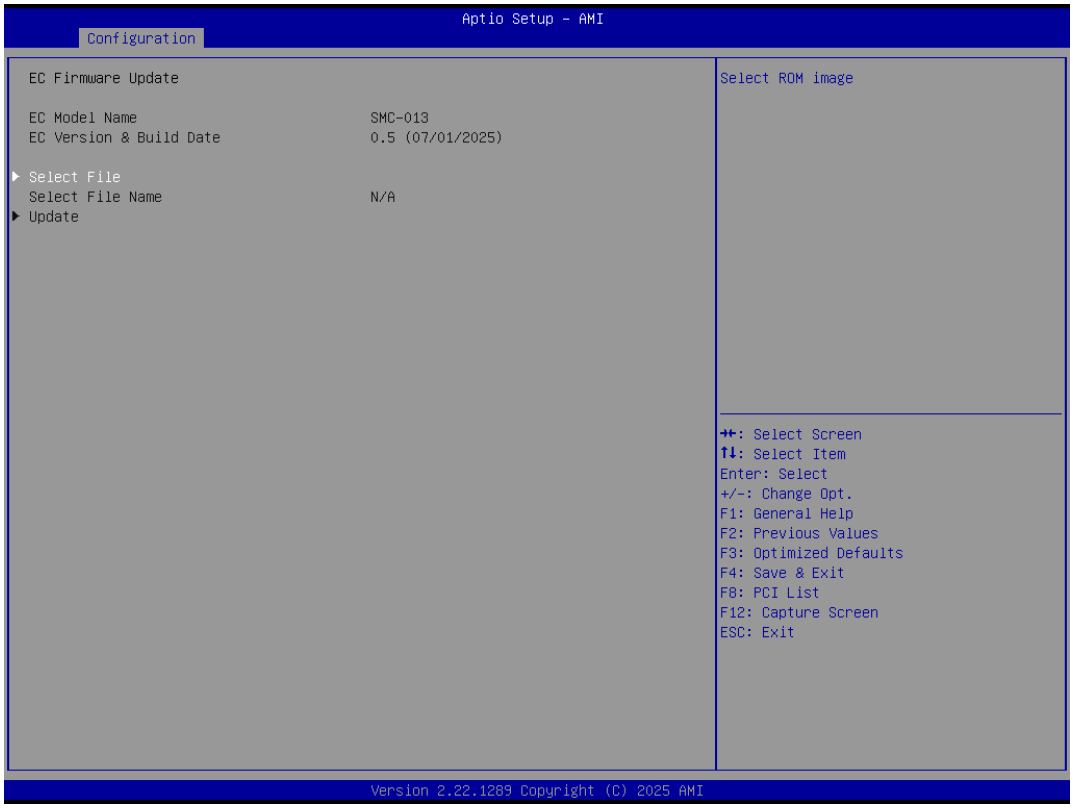
4.3.11 HW Monitor



4.3.12 Serial Port Console Redirection

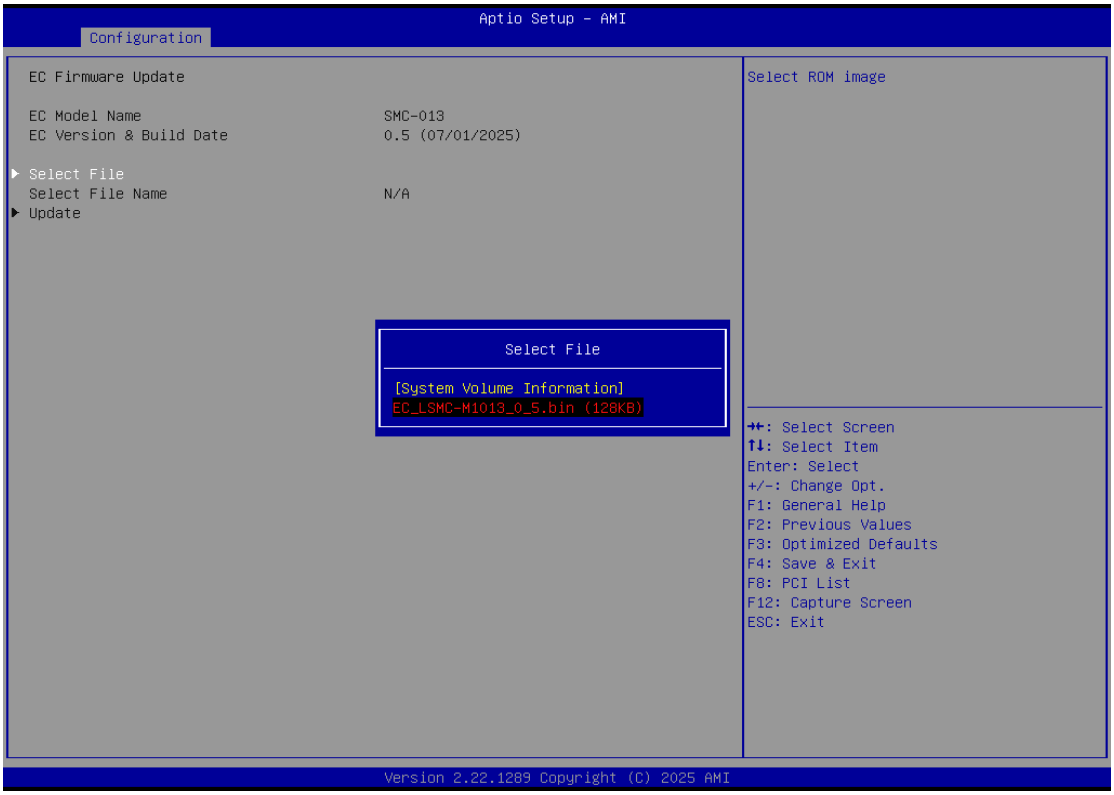


4.3.13 EC Firmware Update

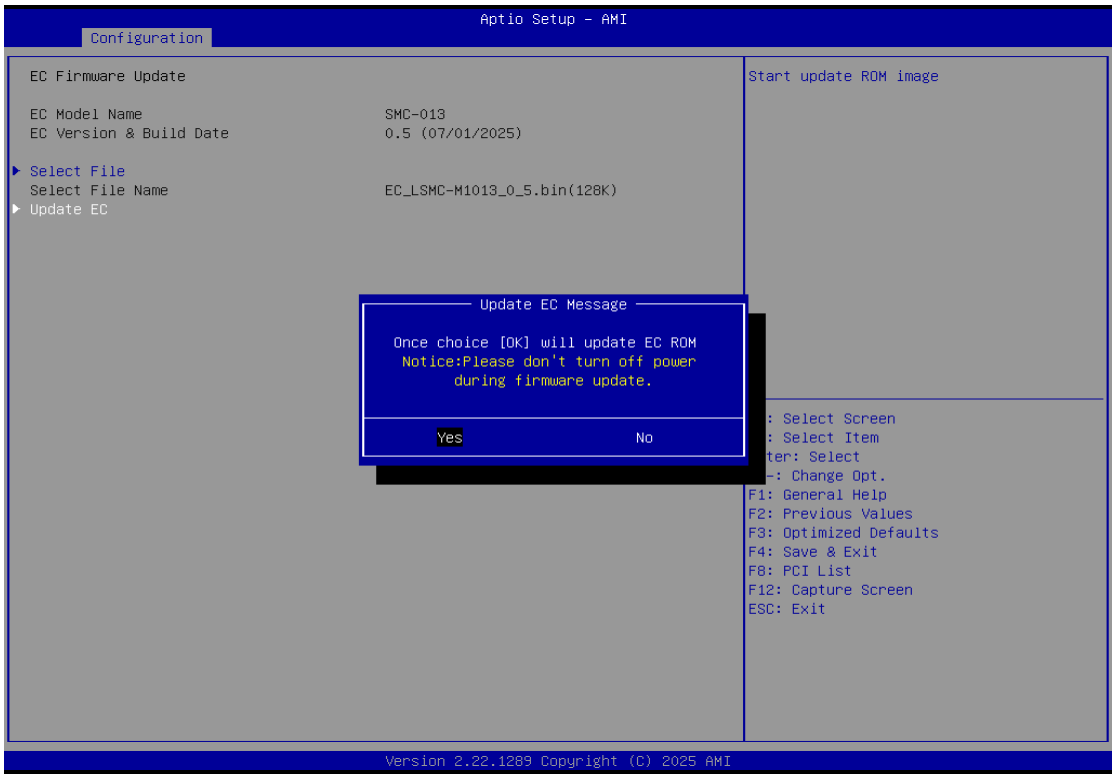


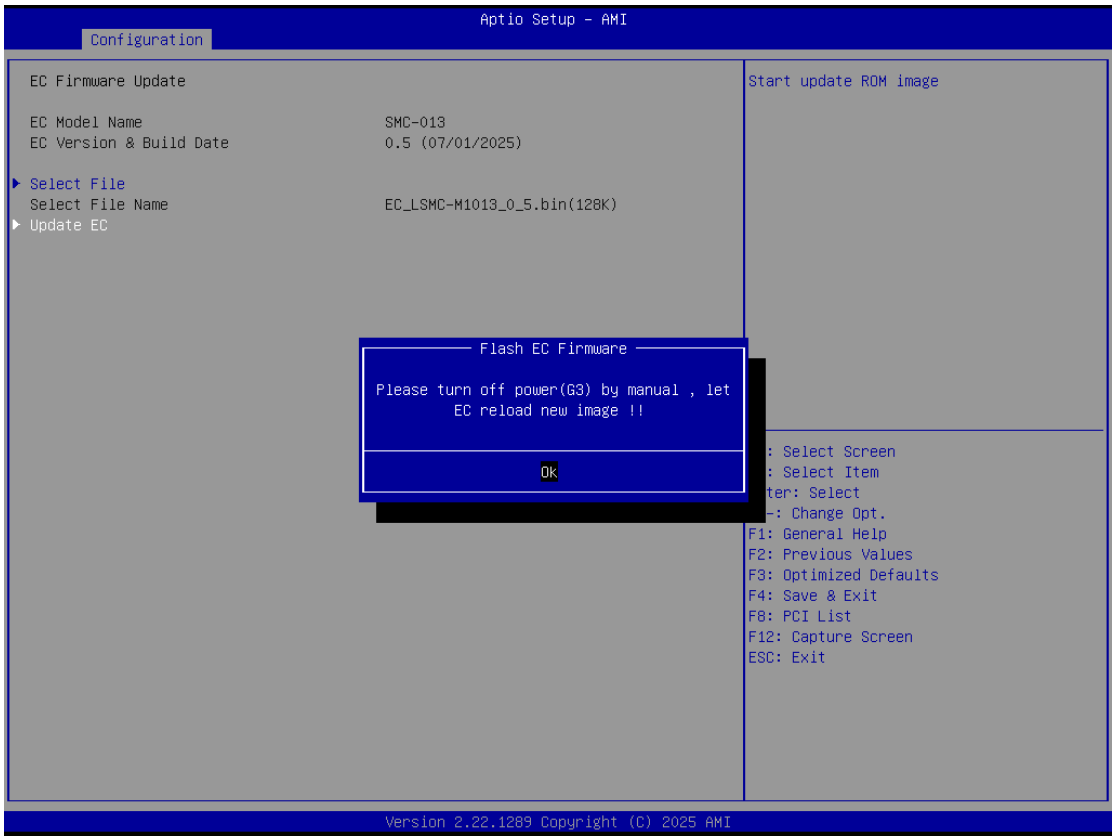
Feature	Description	Options
Select File	Select BIOS BIN file in (USB) drive to update	
Update	Start updating ROM image	

Select file



Update EC

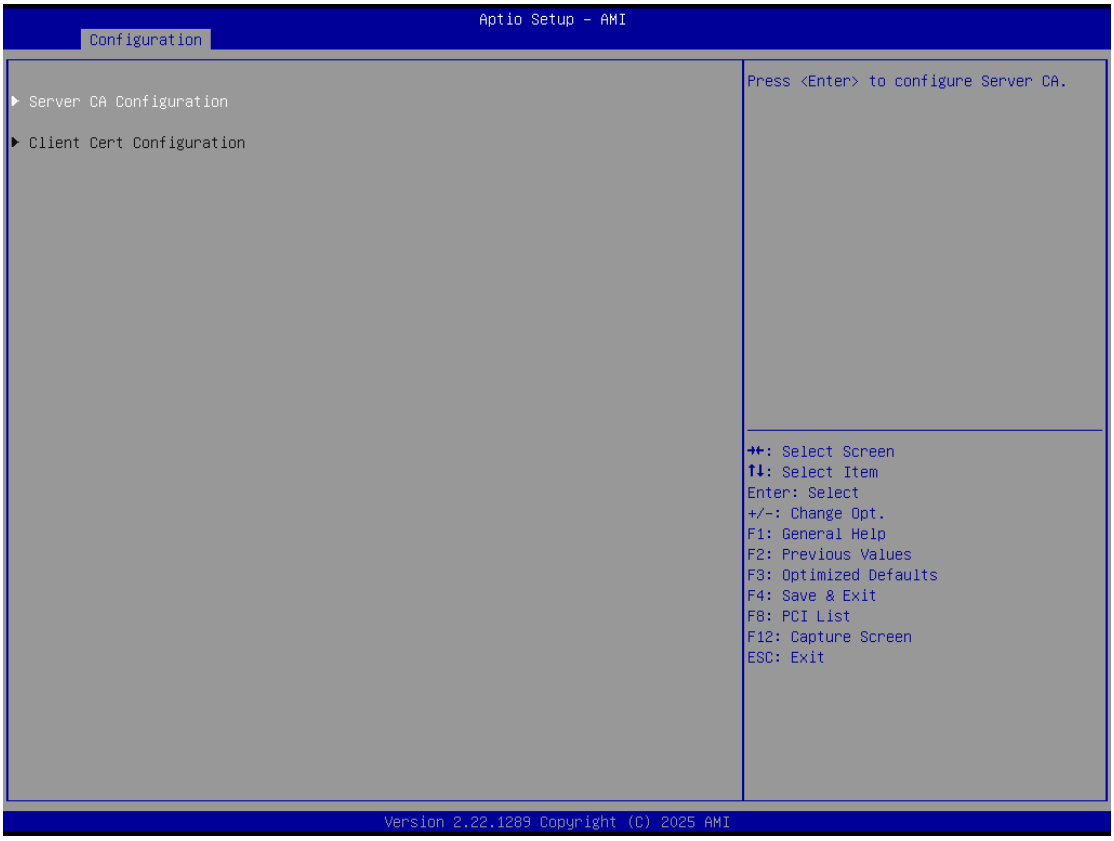

Aptio Setup – AMI
Configuration
EC Firmware Update
EC Model Name
SMC-013
EC Version & Build Date
0.5 (07/01/2025)
Select File
Select File Name
EC_LSMC-M1013_0_5.bin(128K)
Update EC
Start update ROM image
Update EC Message
Once choice [OK] will update EC ROM
Notice:Please don't turn off power
during firmware update.
Yes
No
: Select Screen
: Select Item
ter: Select
-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
F8: PCI List
F12: Capture Screen
ESC: Exit
Version 2.22.1289 Copyright (C) 2025 AMI


Aptio Setup – AMI
Configuration
EC Firmware Update
EC Model Name
SMC-013
EC Version & Build Date
0.5 (07/01/2025)
Select File
Select File Name
EC_LSMC-M1013_0_5.bin(128K)
Update EC
Start update ROM image
Flash EC Firmware
Please turn off power(G3) by manual , let
EC reload new image !!
Ok
: Select Screen
: Select Item
ter: Select
-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
F8: PCI List
F12: Capture Screen
ESC: Exit
Version 2.22.1289 Copyright (C) 2025 AMI

4.3.14 TIs Auth Configuration

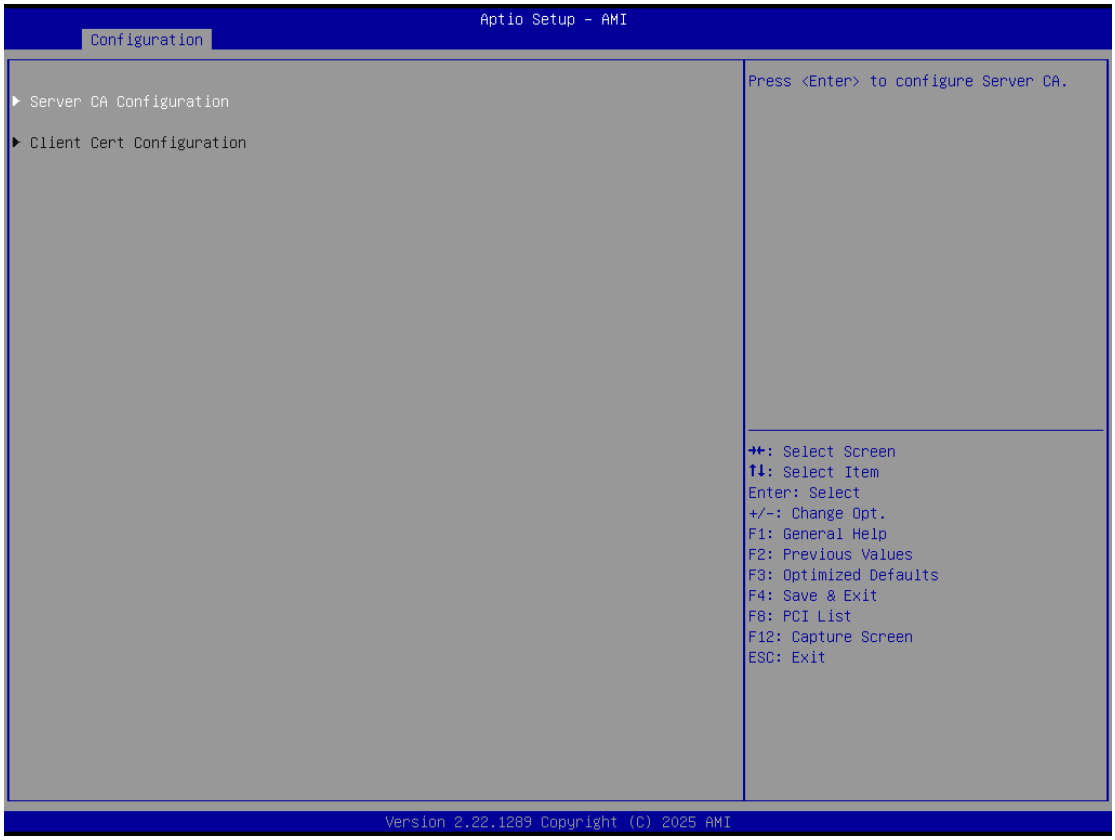
Server CA Configuration

Press <Enter> to configure Server CA.



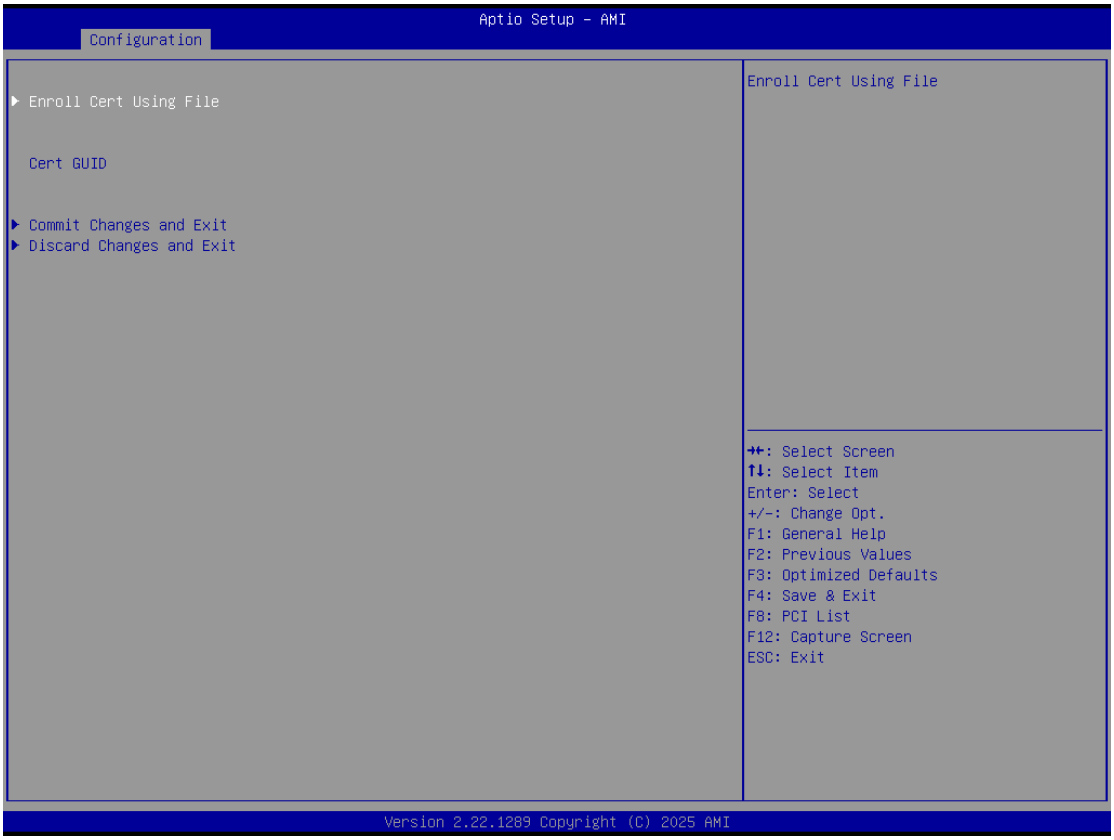
Enroll Cert

Press <Enter> to enroll cert



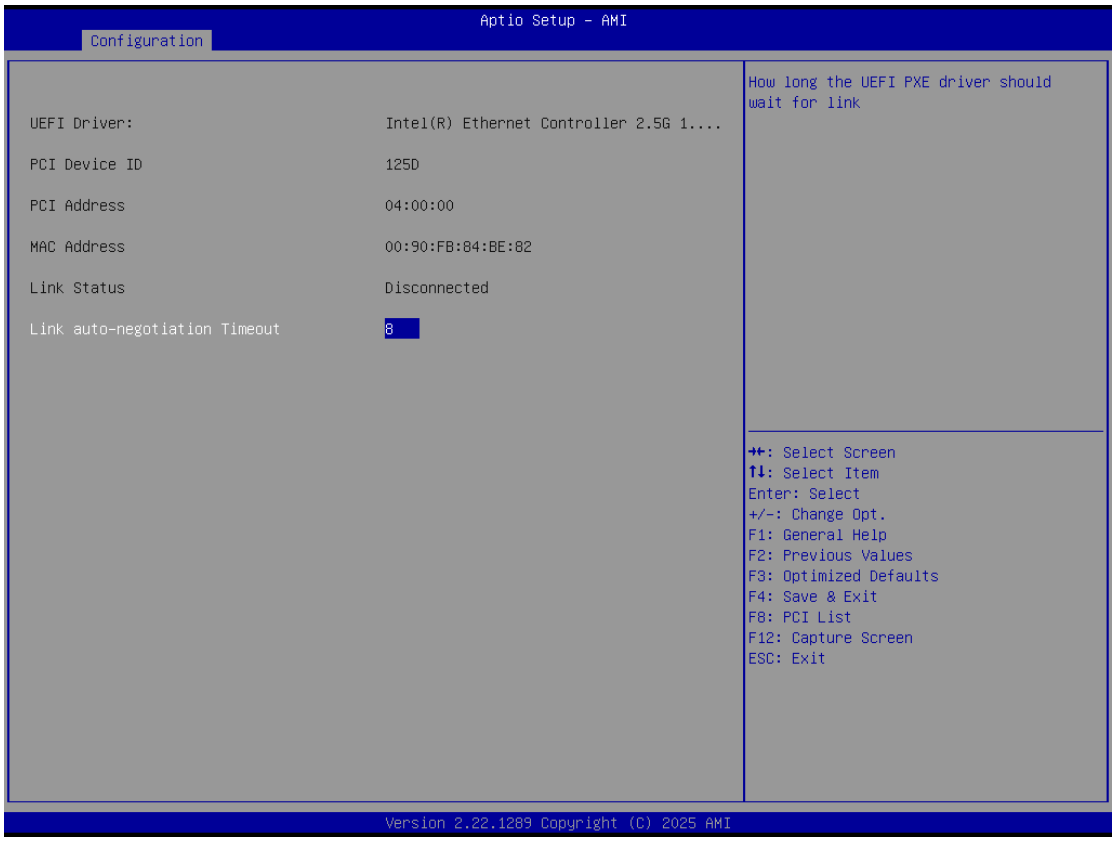
Enroll Cert Using File

Enroll Cert Using File.



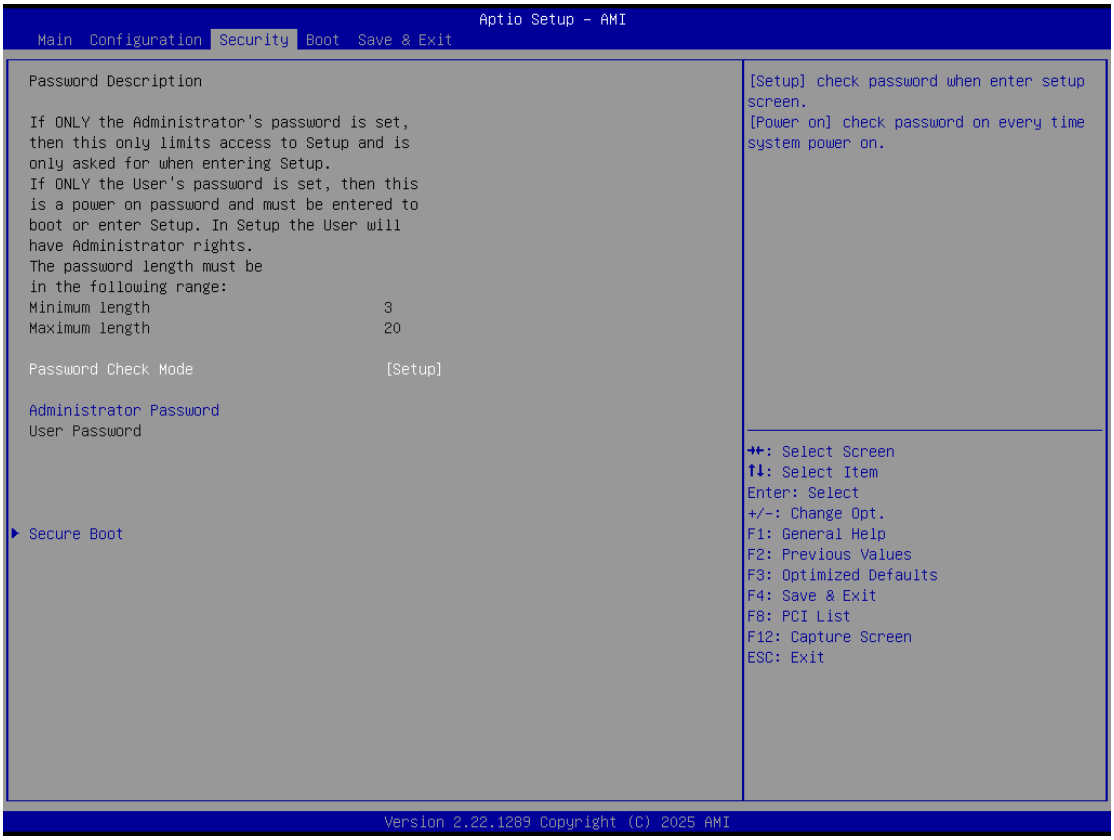
Feature	Description	Options
Enroll Cert Using File	Enroll Cert Using File.	
Cert GUID	Input digit character in 11111111-2222-3333-4444-1234567890ab format.	
Commit Changes and Exit	Commit Changes and Exit	
Discard Changes and Exit	Discard Changes and Exit	

4.3.15 Intel (R) Ethernet Controller I226-IT – 00:90:FB:84:BE:82



Feature	Description	Options
Link auto-negotiation Timeout	How long the UEFI PXE driver should wait for link.	★8

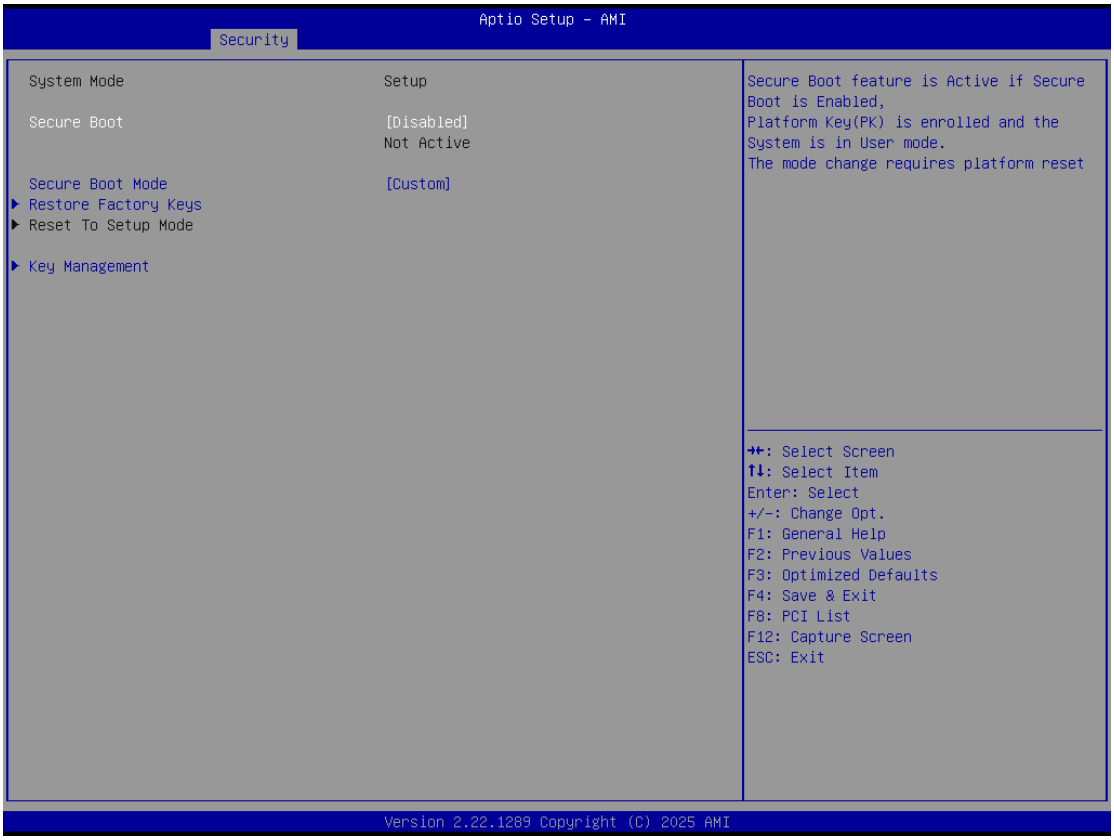
4.4 Security



Feature	Description	Options
Password Check Mode	[Setup] check password when enter setup screen. [Power on] check password on every time system power on.	★Setup, Power On
Administrator Password	Set Administrator Password	
Secure Boot	Secure Boot configuration	

Secure Boot

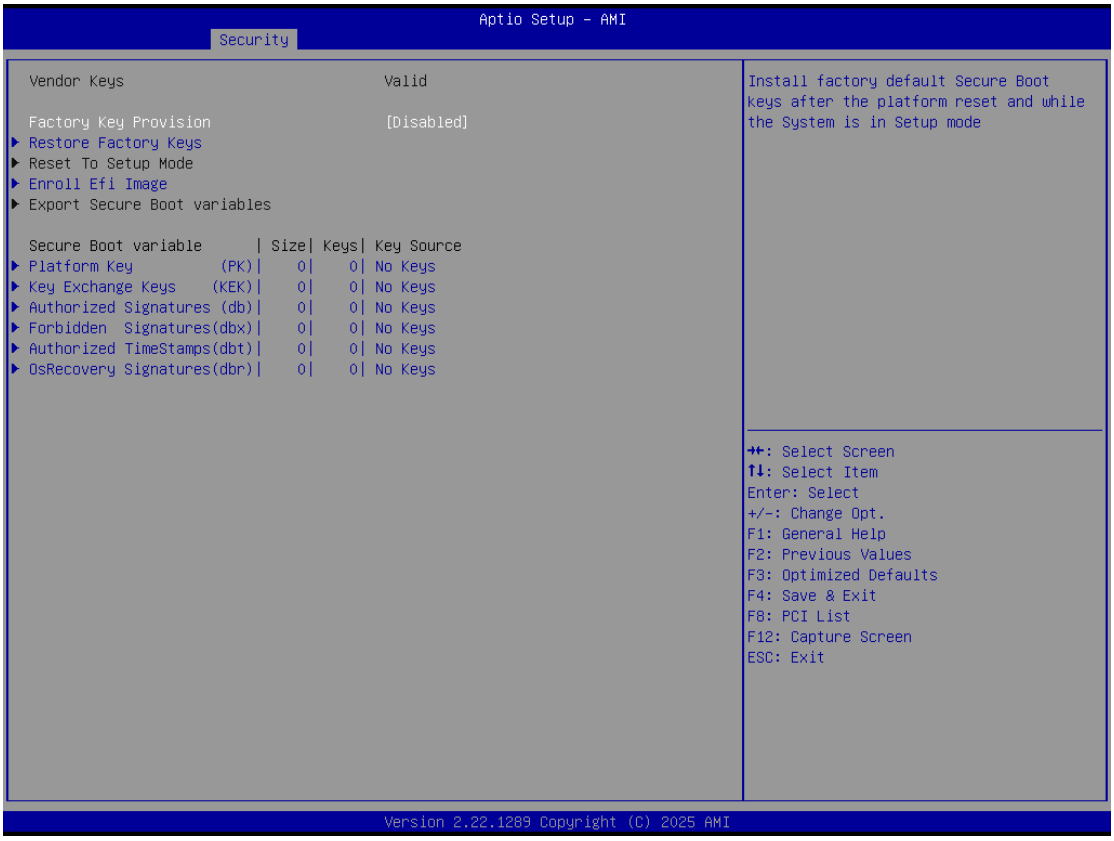
Secure Boot configuration



Feature	Description	Options
Secure Boot	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.	★Disabled, Enabled
Secure Boot Mode	Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication	★Custom, Standard
Restore Factory keys	Force System to User Mode. Install factory default Secure Boot key databases	Yes, No
Key Management	Enables expert users to modify Secure Boot Policy variables without variable authentication	

Key Management

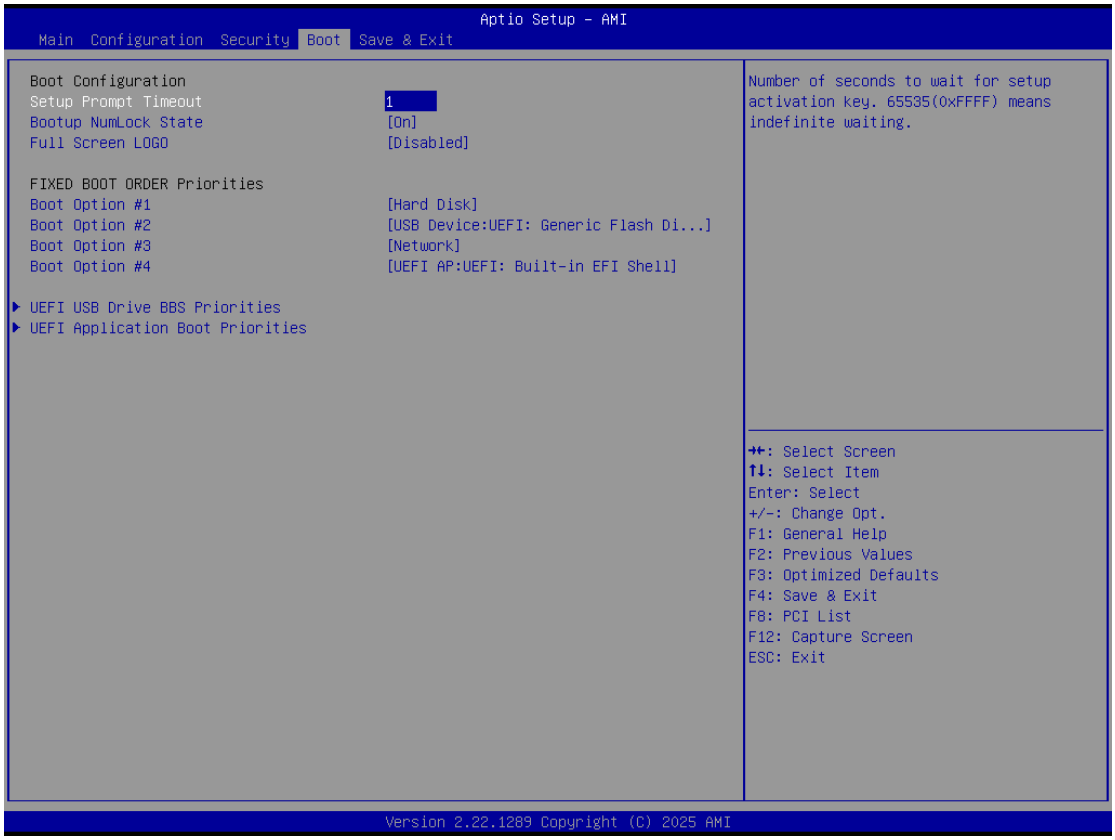
Enables expert users to modify Secure Boot Policy variables without variable authentication



Feature	Description	Options
Factory keys Provision	Install factory default Secure Boot key after the platform reset and while the System is in Setup mode.	★Disabled, Enabled
Restore Factory keys	Force System to User Mode. Install factory default Secure Boot key databases	Yes, No
Enroll Efi Image	Allow Efi image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)	

Feature	Description	Options
Platform Key(PK)	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, Modified, Mixed	
Key Exchange Keys(KEK)		
Authorized Signatures(db)		
Forbidden Signatures(dbx)		
Authorized TimeStamps(dbt)		
OsRecovery Signatures(dbr)		

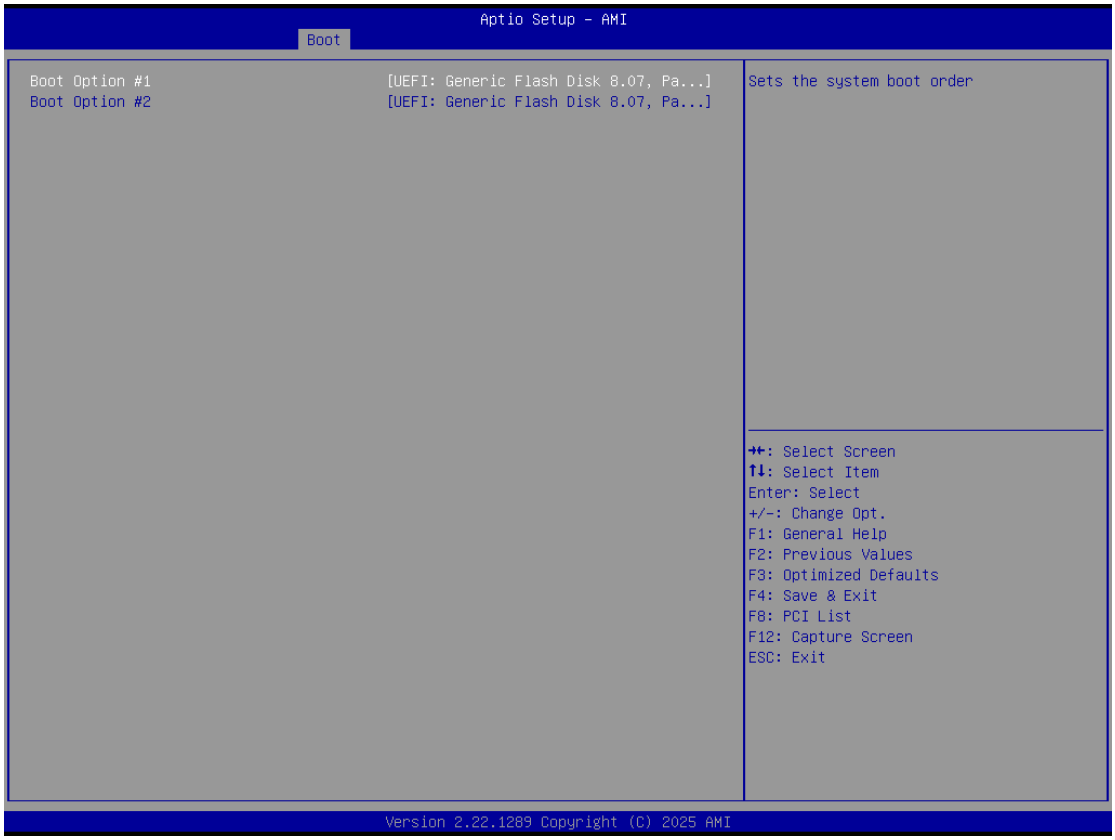
4.5 Boot



Feature	Description	Options
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.	★1
Bootup NumLock State	Select the keyboard NumLock state.	★On, Off
Full Screen LOGO	Enables or disables Quiet Boot option and Full screen Logo.	★Disabled, Enabled
Boot Option #1 ~ #4	Sets the system boot order	Hard Disk, USB Device, Network, UEFI AP: UEFI: Built-in EFI Shell, Disabled
UEFI USB Drive BBS Priorities	Specifies the Boot Device Priority sequence from available UEFI USB Drivers	
UEFI Application Boot Priorities	Specifies the Boot Device Priority sequence from available UEFI Application	

UEFI USB Drive BBS Priorities

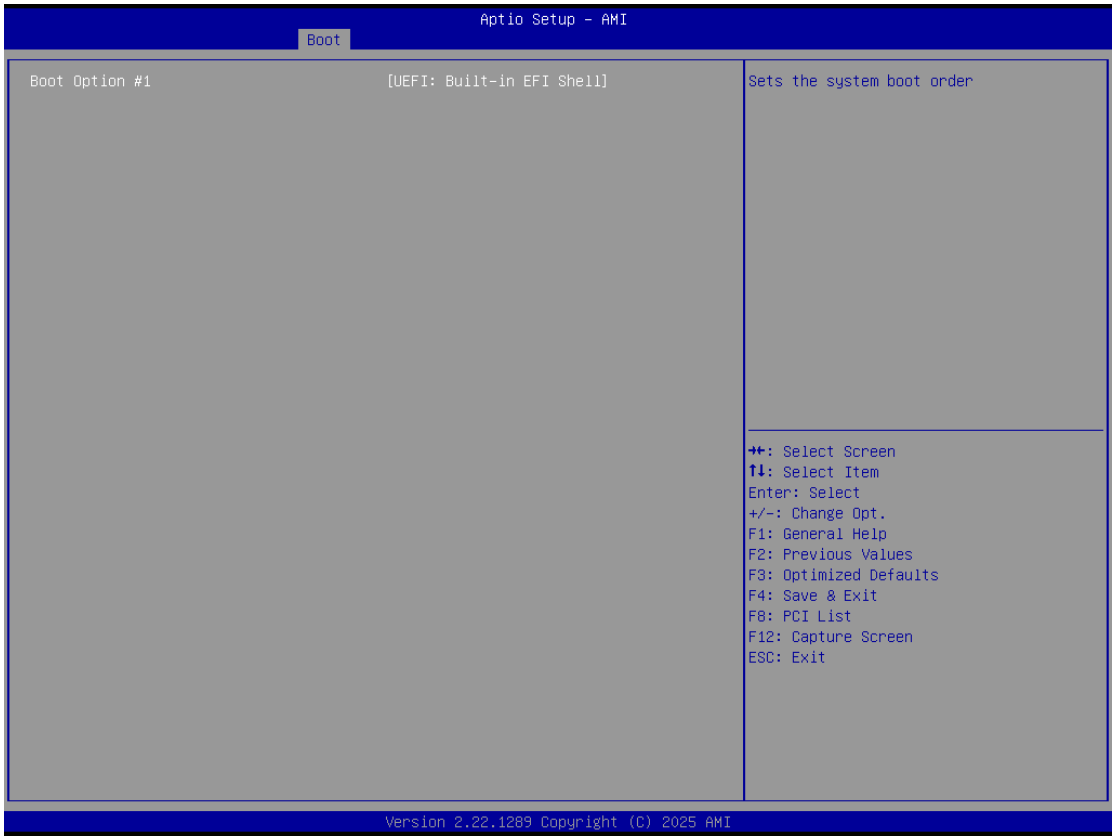
Specifies the Boot Device Priority sequence from available UEFI USB Drivers.



Feature	Description	Options
Boot Option #1	Sets the system boot order.	

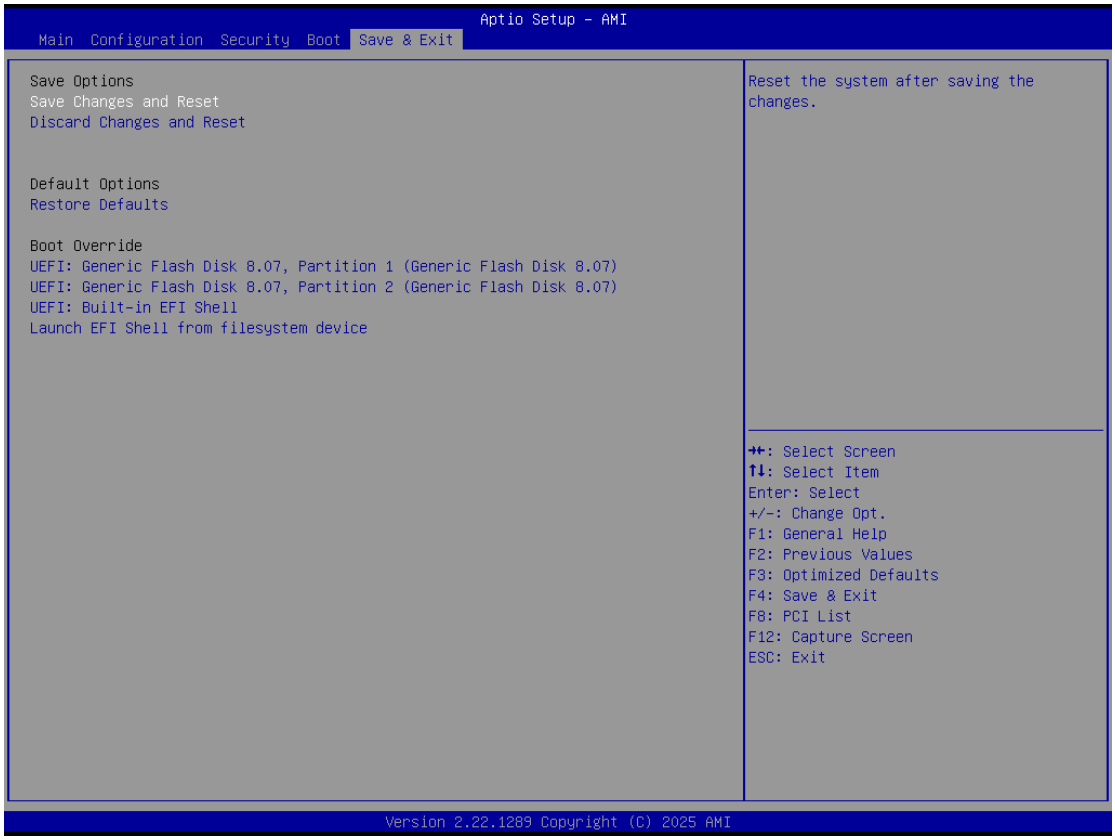
UEFI Application Boot Priorities

Specifies the Boot Device Priority sequence from available UEFI Application.



Feature	Description	Options
Boot Option #1	Sets the system boot order.	

4.6 Save& Exit

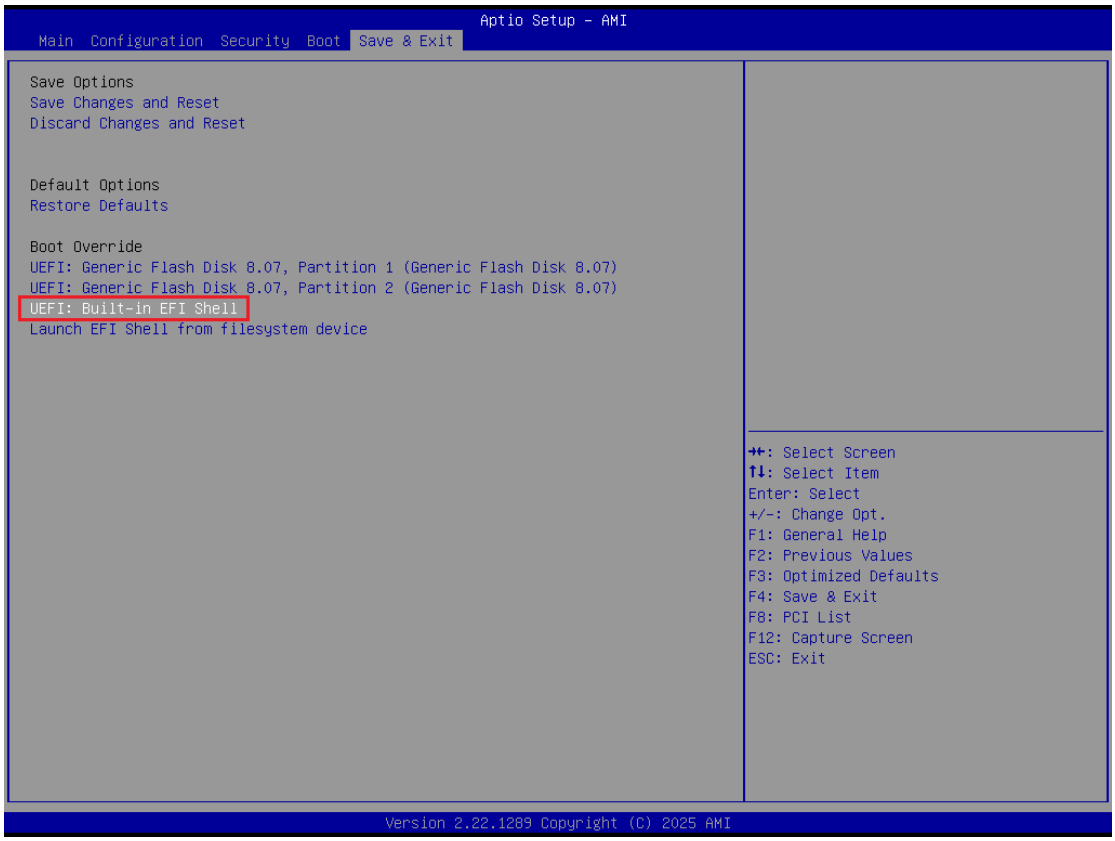


Feature	Description	Options
Save Changes and Reset	Reset the system after saving the changes.	
Discard Changes and Reset	Reset system setup without saving any changes.	
Restore Defaults	Restore/Load Default values all the setup options.	
UEFI: Built-in EFI Shell		
Launch EFI Shell from filesystem device	Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.	

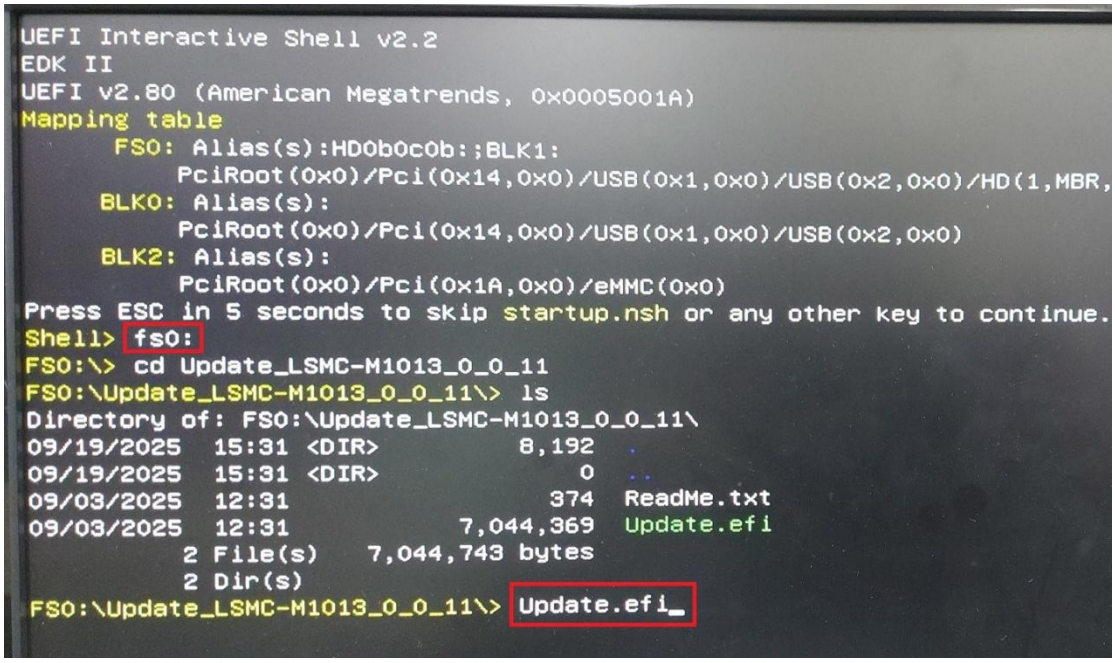
LYNX-812C BIOS /EC UEFI Update SOP process under UEFI Shell Step 1. Prepare a USB DOK.

Step 2. Unzip BIOS update file to the USB DOK.

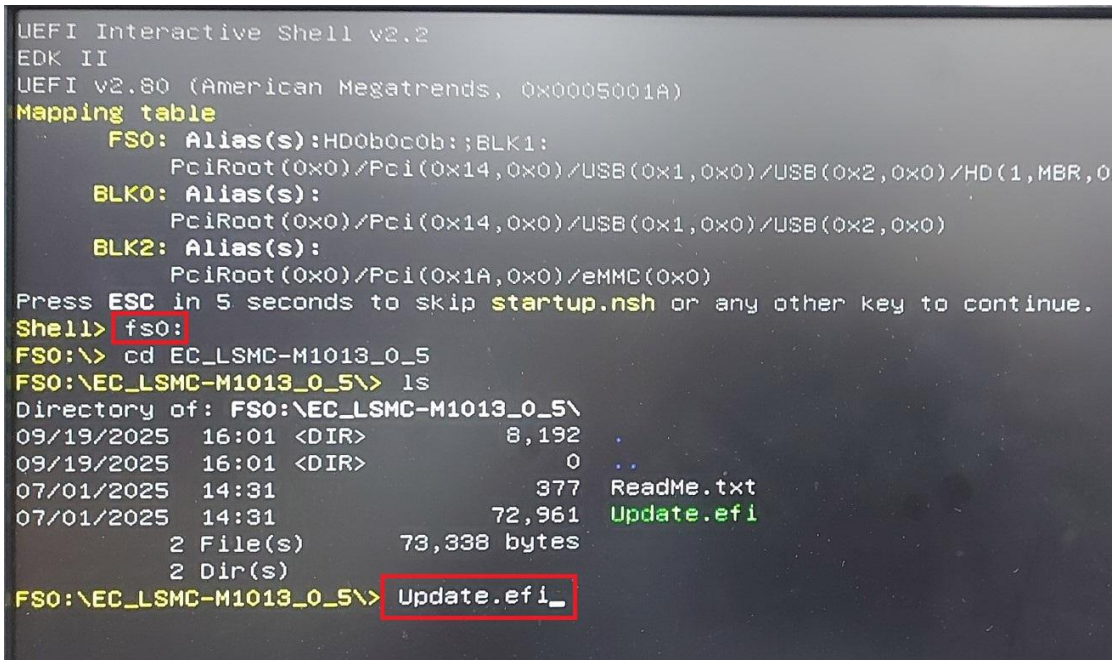
Step 3. Plug the USB DOK into the target system and then boot in UEFI Shell by selecting UEFI: Built-in EFI Shell in the BIOS Save & Exit page.



Step 4. Under the UEFI shell, direct to your USB DOK, below picture is an example using fs0. Then direct to the folder with BIOS updated file and then enter command: "Update.efi" to start updating BIOS or EC.

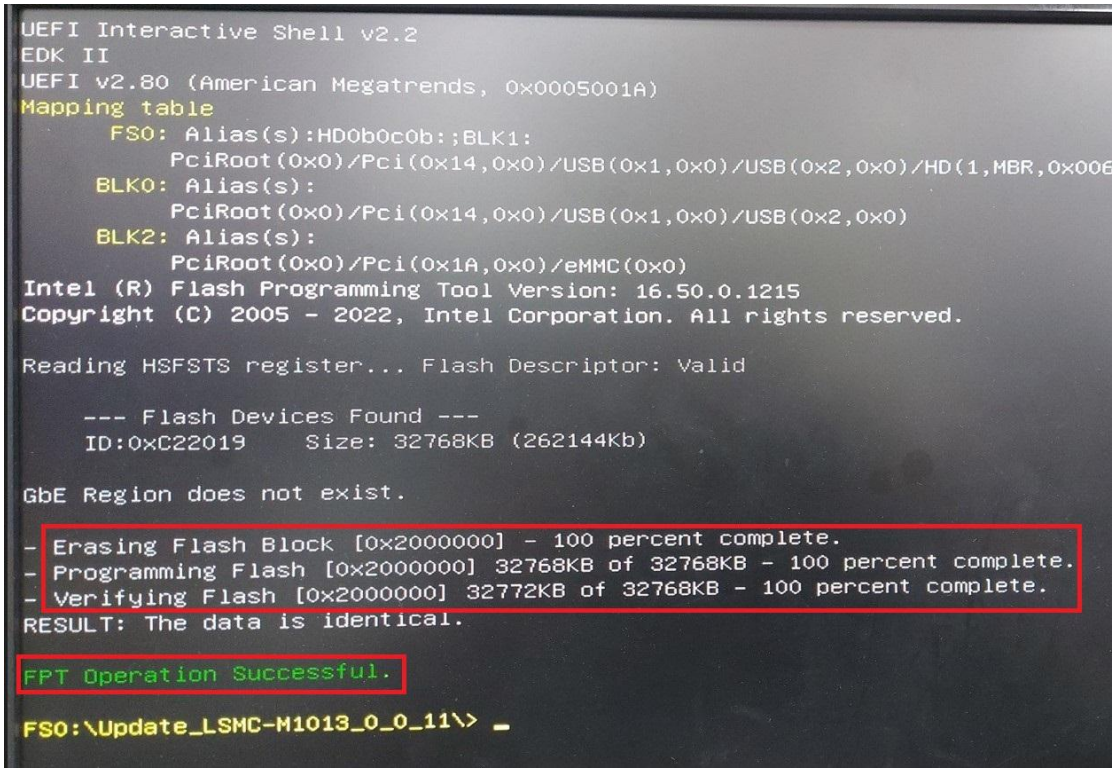


(BIOS File Update)

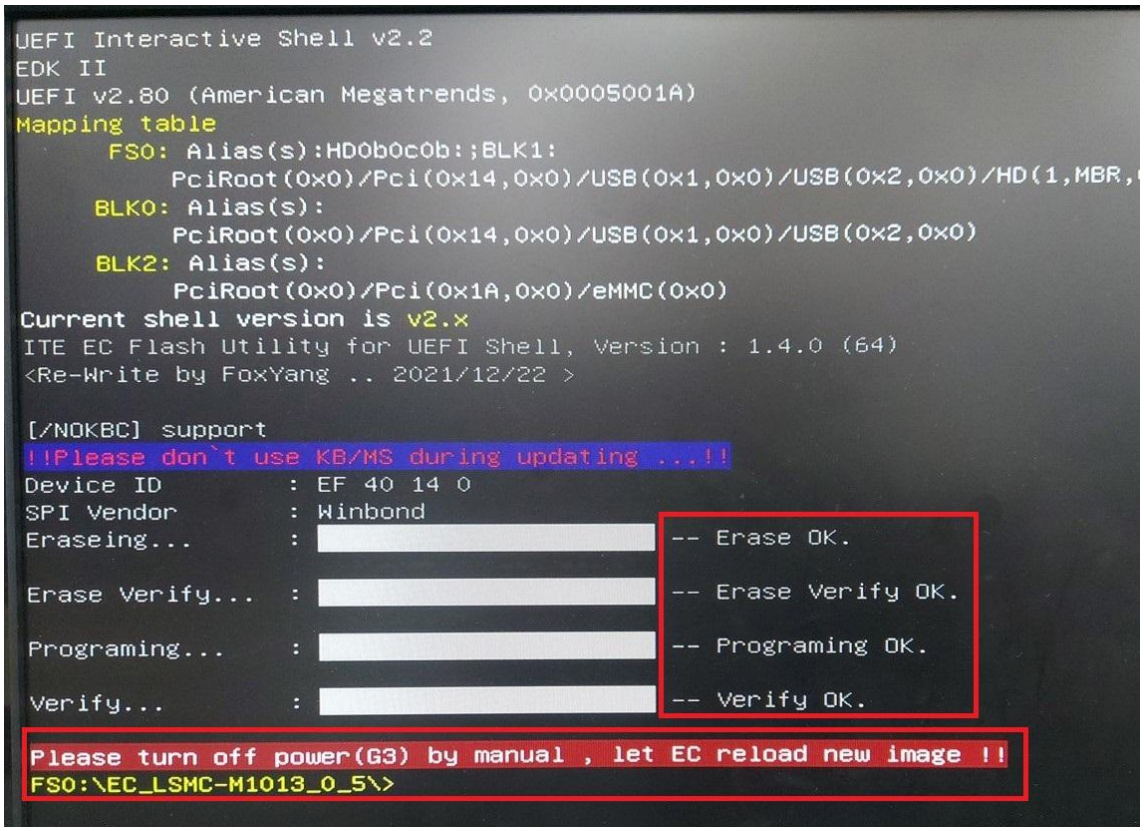


(EC File Update)

Step 5. The updating process will start, and you can see the updating progress. When you see the following pictures, which means the BIOS update processes finished.
Please cut the AC power off and wait for 10 seconds before powering on.



(BIOS update finished)



(EC update finished)

Chapter 5

IMPORTANT INSTRUCTION

5.1 Note on the Warranty

5.2 Exclusion of Accident Liability Obligation

5.3 Liability Limitations / Exemption from the Warranty Obligation

5.4 Declaration of Conformity

5.1 Note on the Warranty

Due to their limited-service life, parts which, by their nature, are especially subject to wear are not included in the guarantee beyond the legal stipulations.

5.2 Exclusion of Accident Liability Obligation

Portwell, Inc. shall be exempt from the statutory accident liability obligation if users fail to abide by the safety instructions.

5.3 Liability Limitations/Exemption from the Warranty Obligation

In the event of damage to the system unit caused by failure to abide by the hints in this manual and on the unit (especially the safety instructions), Portwell, Inc. shall not be required to respect the warranty even during the warranty period and shall be free from the statutory accident liability obligation.

5.4 Declaration of Conformity

EMC

CE/FCC Class A

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This equipment may not cause harmful interference.

2. This equipment must accept any interference that may cause undesired operation

Portwell

Chapter 6

Portwell Software Service

6.1 PET tool

6.1 PET Tool

Portwell Evaluation Tool (PET)

The Portwell Evaluation Tool (PET) is an API which Portwell's customers can access the GPIO, I2C, SMBus, etc under Windows and Linux OS. For more information, please contact Portwell.

Please visit our Download Center to obtain the necessary documents and files, such as the catalog, user manual, PET, BIOS, and driver.
附網址

If you have other additional technical information or requests which are not covered in this manual, please fill in the technical request form as below hyperlink

We will do our best to provide a suggestion or solution for you.

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