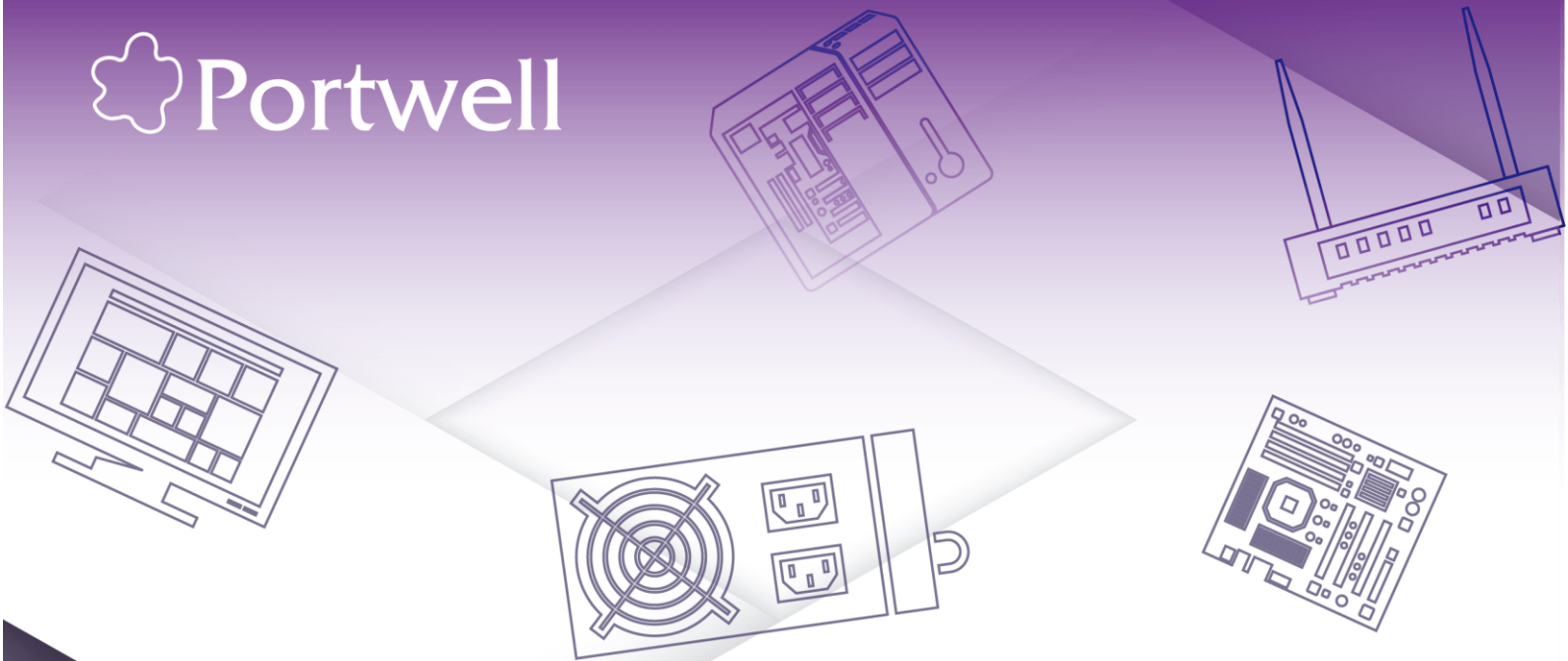




ANS-12000 Series

ANS Series SD-WAN Appliances

User Manual

Version 1.0

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Revision History

1.0	Initial Release
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Chapter 1

System Overview

- 1.1 Introduction
- 1.2 Check List
- 1.3 Product Specification
- 1.4 Mechanical Dimension
- 1.5 I/O Information
- 1.6 RJ45 Console Port Pin Definition

1.1 Introduction

ANS-12000 series is a standard networking product line of Portwell. Keeping the successful experience in design as well as marketing its ascendant in mind. ANS series, adopts x86 based platforms, aims at serving SD-WAN with much more powerful solution which provides high connectivity and performance.

1.2 Check List

ANS-12000 series system package covers the following items:

Essential

One ANS-12000 series system



or

One 65W power adapter with power cord (Optional)



One RJ45/DB9 adapter





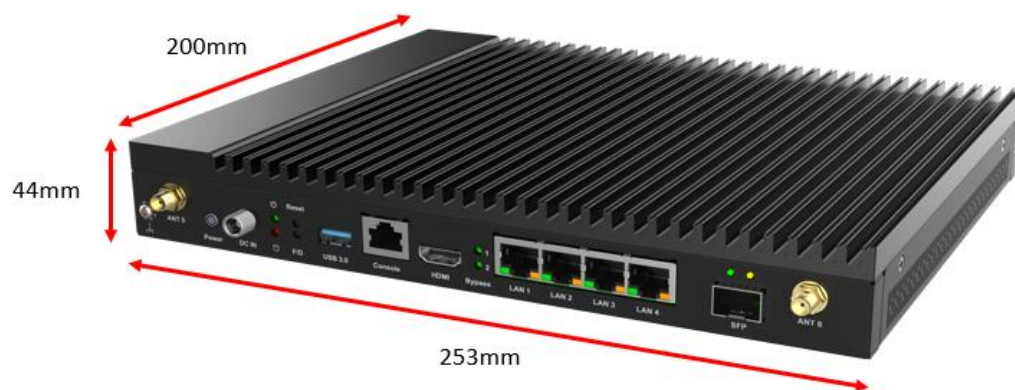
If any of these items are damaged or missing when you receive your order, please contact your vendor. Please keep all the packing materials if replacement and maintenance are necessary.

1.3 Product Specification

Model Name	ANS-12000/12001	ANS-12002/12003
Processor	Intel® Amston Lake x7433RE (4C) Intel® Amston Lake x7835RE (8C)	Intel® Amston Lake x7405C (4C) Intel® Amston Lake x7809C (8C)
BIOS	AMI	
Memory	1 x DDR5 4800 MT/s ECC & non-ECC SO-DIMM up to 32GB	
Ethernet	- 1 x SFP (Intel I210) - 4 x 2.5 GbE RJ45 (Intel I226) w/ bypass	
Expansion	-2 x SIM slots -1 x M.2 Key-E 2230 slot (PCIe + USB 2.0) -1 x M.2 Key-B 3042/3052 slot	
Security	TPM 2.0	
Storage	- 1 x M.2 Key-M slot - 1 x SATA III Connector for SATADOM	
Console	1 x RJ45	
USB	1 x USB 3.0	
Display	1x HDMI	N/A
Antenna	6 x SMA antenna holes for Wi-Fi or LTE/5G module	
Dimension	253 (W) X 200 (D) X 36 (H) mm	253 (W) X 200 (D) X 44 (H) mm
Weight	2.25kg	1.7kg
Power Adapter	65W Power adapter, 110-220V AC input, 12V DC output	
OP Temp.	-40°C ~ 40°C, 10 ~ 90% RH	0°C ~ 40°C, 10 ~ 90% RH
Storage Temp.	-10°C ~ 70°C, 10 ~ 95% RH@55°C	
Certification	CE/FCC Class A, LVD	

1.4 Mechanical Dimension

ANS-12000/12001

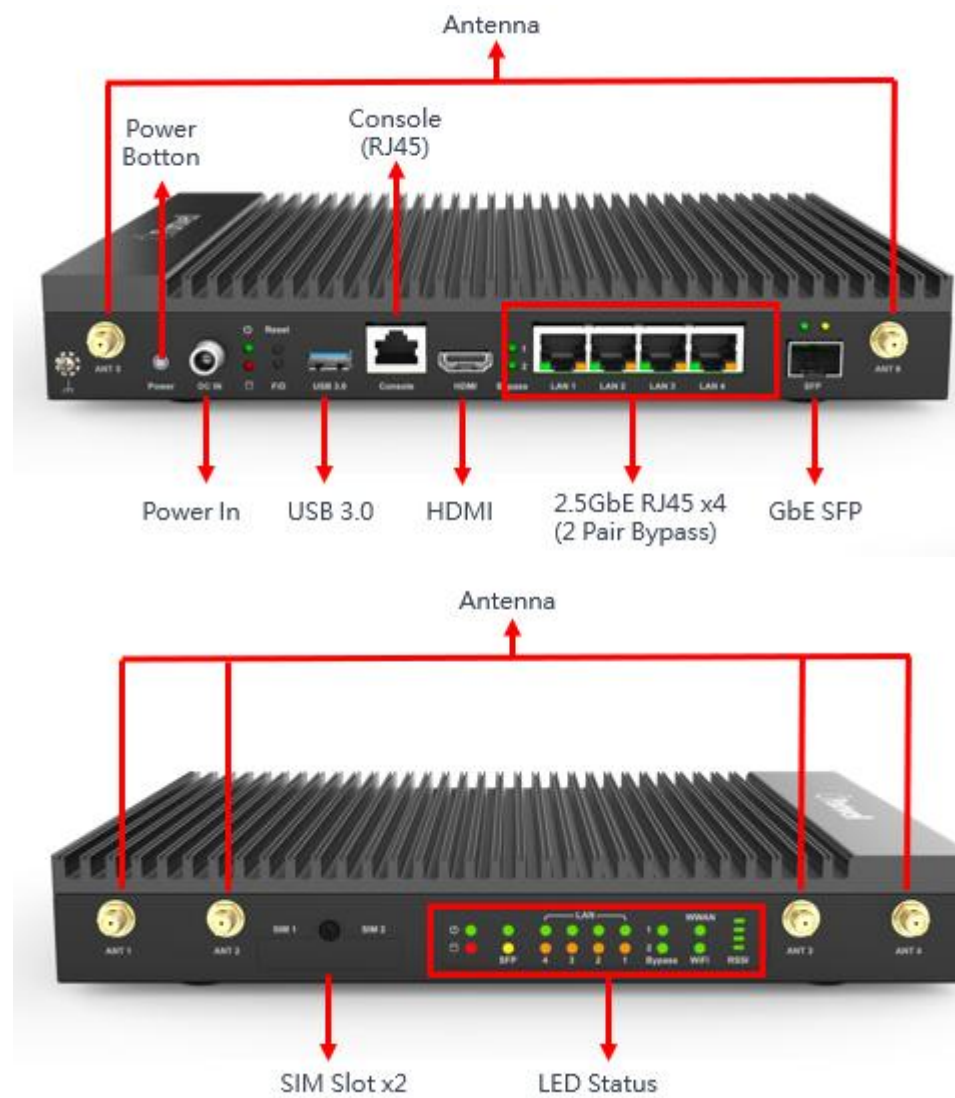


ANS-12002/12003

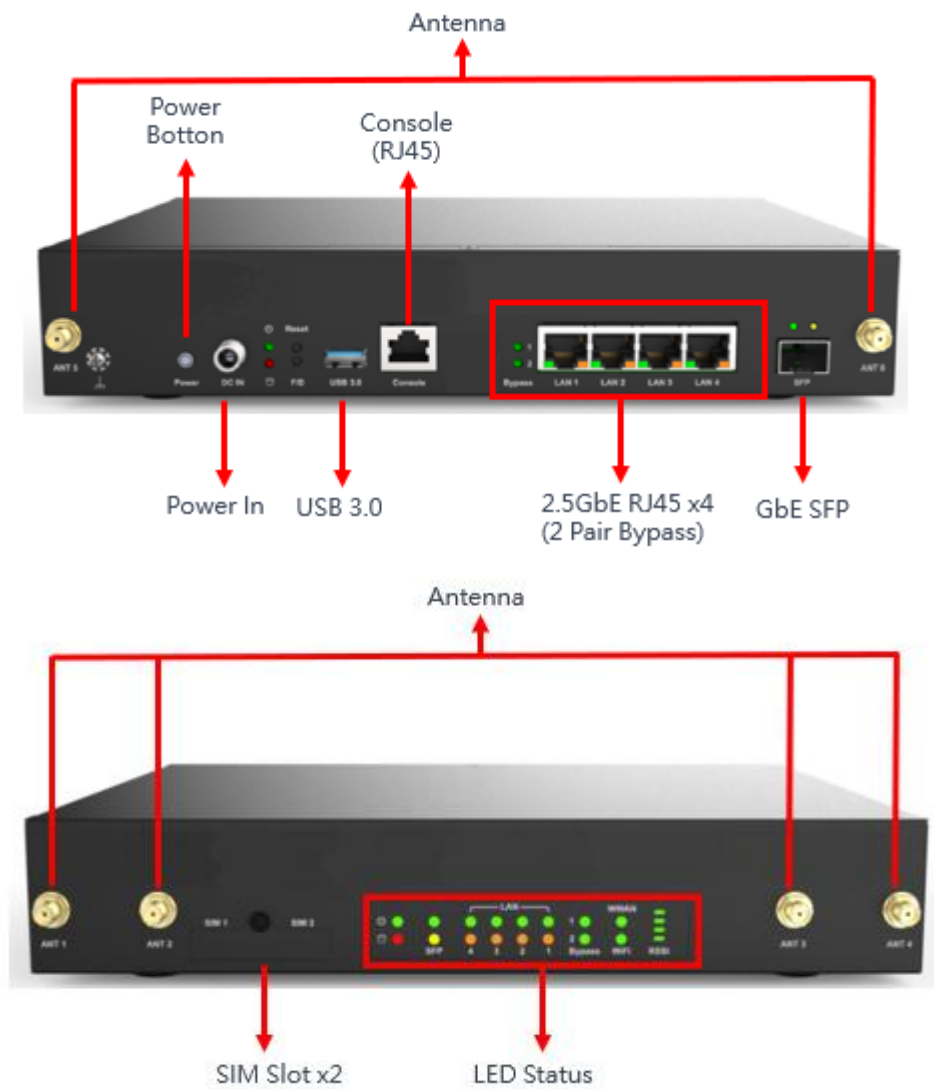


1.5 I/O Information

ANS-12000/12001



ANS-12002/12003



1.6 RJ45 Console Port Pin

Definition

No.	Description
1	RTS
2	DTR
3	TXD
4	Ground
5	Ground
6	RXD
7	DSR / DCD
8	CTS

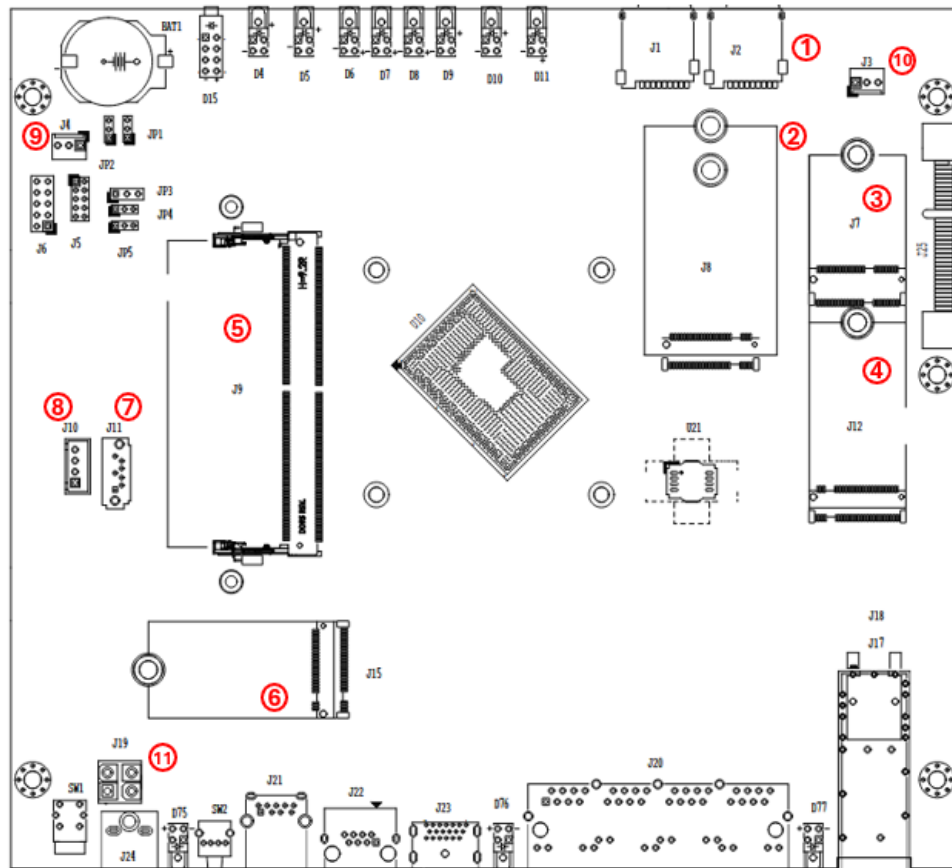
Chapter 2

Hardware Setup

- 2.1 Opening The Chassis
- 2.2 Memory Installation
- 2.3 M.2 Module Installation
- 2.4 5G Module Installation
- 2.5 Installing SIM Card
- 2.6 Wi-Fi Module Installation
- 2.7 5G/Wi-Fi Antenna and SMA Bulkhead Jack Installation
- 2.8 Replace CMOS Battery

This chapter helps install and replace SSD/HDD, memory, M.2 modules and SIM card. To lower the risk, please turn off the device and remove all power connections before the setup.

Motherboard schematics:



No.	Description	No.	Description
1	SIM Slot	2	M.2 Key-B
3	M.2 Key-E	4	M.2 Key-M
5	DDR5 Slot	6	M.2 SATA
7	SATA	8	SATA Power
9 & 10	Fan Connector	10	ATX Power

2.1 Opening the Chassis

- **ANS-12000/12001 Fan-less System**

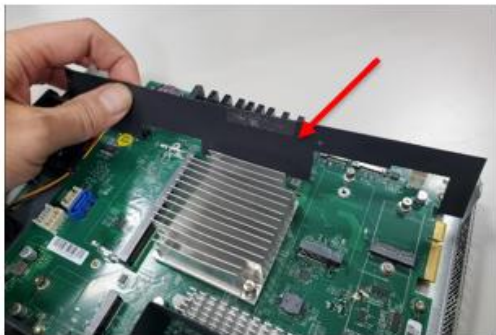


There are 4 screws (as shown) that tightly fix the top cover to the main frame of the chassis. Remove all screws to remove the top cover. Since there is thermal grease and thermal pad, please remove it carefully to avoid damage.

- **ANS-12002/12003 System**



There are 2 screws (as shown) that tightly hold the top cover with the main frame of the chassis. Unscrew all the screws to remove the top cover.



Remove the air guide partition near CPU heat-sink. It is attached to the heat sink using double-sided tape, carefully separate it.

PS:

1. After installing the system components, reattach the air guide partition in its original position.

	<p>2. If the adhesive has lost its stickiness, please remember to remove the old double-sided tape and replace it with a new one.</p>
--	---

2.2 Memory Installation

The system supports one DDR5 SO-DIMM slot for high-performance tasks. Follow the instructions below to provide a general installation and handling information for SO-DIMM memory module.



Align a DIMM on the socket such that the notch on the DIMM matches the DIMM slot key on the socket. Push down the RAM module until it clicks in place.



★ONLY for ANS-12000/12001 Fan-less System:
When you are using 8 or 16GB single side DDR5 memory. Please find a thermal pad in the accessory box. Put it on the side of DDR5 without components and tear release paper.

	The thermal pad size is 27.8mm*59mm*1.5mm.
--	--

2.3 M.2 Module Installation

The system supports one M.2 2280 NVMe and one M.2 2242 SATA slot for storage. Follow the instructions below for installation.

M.2 2280 NVMe:



Align and insert the M.2 NVMe card into the module slot.



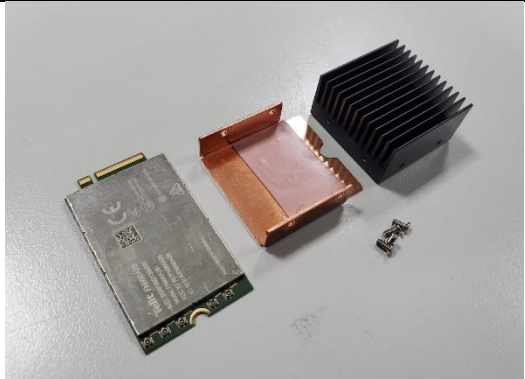
Push down and secure the M.2 card in place using the bundled screw.

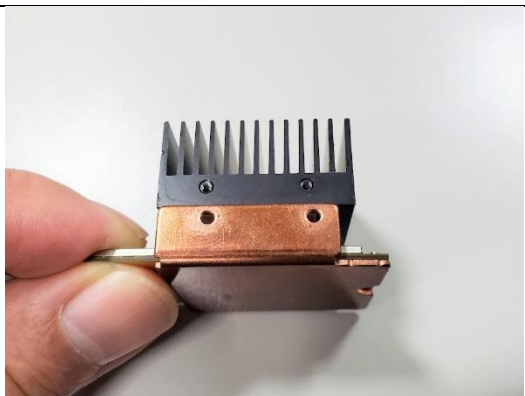
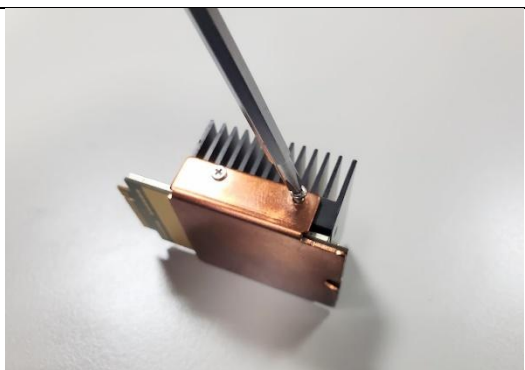
M.2 2242 SATA

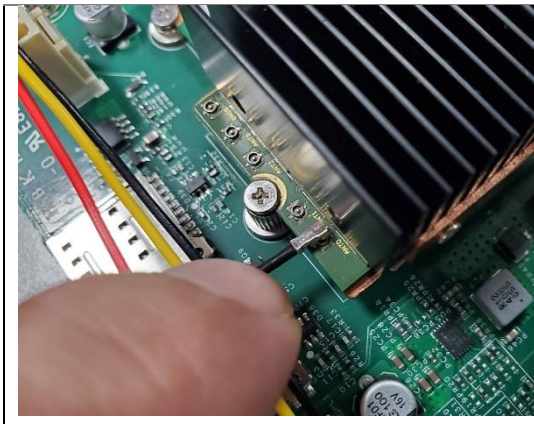
	<p>Align and insert the M.2 SATA card into the module slot.</p>
	<p>Push down and secure the M.2 card in place using the bundled screw.</p>

2.4 5G Module Installation

The system supports one M.2 slot for LTE/5G. Follow the instructions below for installation.

	<p>★ONLY for ANS-12002/12003 System:</p> <p>The 5G module must be used with a heat sink; the components are shown in the image on the left. Please tear off the release paper before assembly.</p>
---	---

	<p>Align the 5G module's screw hole with the notch on the base.</p>
	<p>Align the screw holes of the heat sink with those on the base.</p> <p>Note: The orientation of the heat sink must match the one shown in the image to ensure optimal heat dissipation.</p>
	<p>Attach the heat sink to the 5G module and secure both sides with screws.</p>
	<p>Align and insert the 5G module into the module slot. Push down and secure the 5G module in place using the bundled screw.</p>



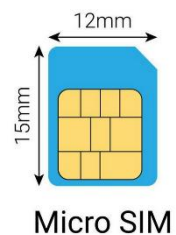
Carefully connect the black antenna cables into their respective sockets on the module. Make sure to align them well before applying force to click them into place, as the connectors are small and fragile.

2.5 Installing SIM Card

The system supports two Micro SIM cards for one 5G modules. The Micro SIM card slot is located on the system's front panel. After removing the SIM card cover, you will see two Micro SIM card slots.



Open the SIM card slot cover. Insert the Micro SIM card into the slot (as shown) with the gold contacts facing PCB.

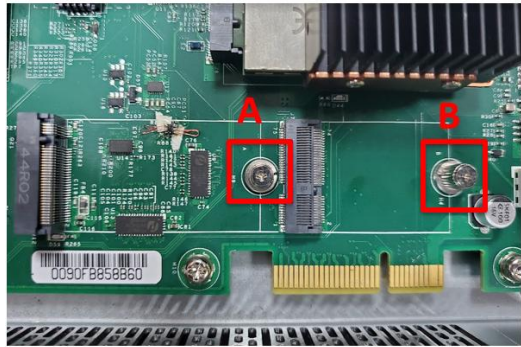


Removing Micro SIM card:

Press the Micro SIM card to eject, then pull it out.

2.6 Wi-Fi Module Installation

The system supports one M.2 slot for Wi-Fi. Follow the instructions below for installation.

	<p>There are two removable standoffs on the motherboard. By default, standoff A is the shorter one and standoff B is the taller one. Before installing the Wi-Fi module, please move the shorter standoff to position B and the taller standoff to position A.</p>
	<p>Align and insert the Wi-Fi module into the module slot.</p>
	<p>Push down and secure the Wi-Fi module in place using the bundled screw.</p>



Carefully connect the black antenna cables into their respective sockets on the module. While keeping a finger on top of the antennas to hold them in place. Make sure to align them well before applying force to click them into place, as the connectors are small and fragile.

2.7 5G/Wi-Fi Antenna and SMA

Bulkhead Jack Installation

The system has 6 antenna holes to support SMA antenna. Follow the instructions below for installation.

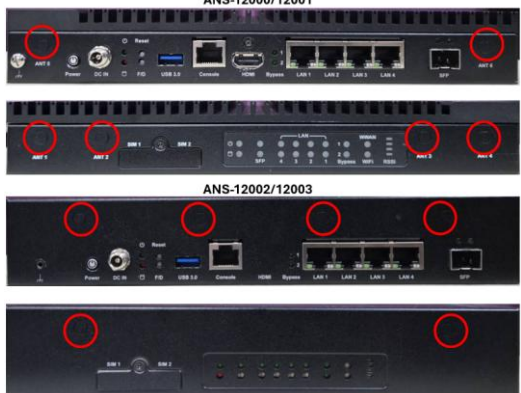


In the accessory box (if you have purchased 5G/Wi-Fi modules), there are two types of SMA bulkhead jack.

The upper connector (as shown) is a female SMA bulkhead jack for 5G

	modules, below is a male connector for Wi-Fi modules.
--	---

	<p>In the accessory box (if you have purchased 5G/Wi-Fi modules), there are two types of antennas.</p>
	<p>The upper antenna (as shown) is a male connector 5G SMA bulkhead jack, below is a female connector for Wi-Fi SMA bulkhead jack.</p>

	<p>There are 6 SMA jack reserved holes on the chassis (like shown). These reserved holes can be easily pushed open from the inside using a tool for antenna mount installation.</p>

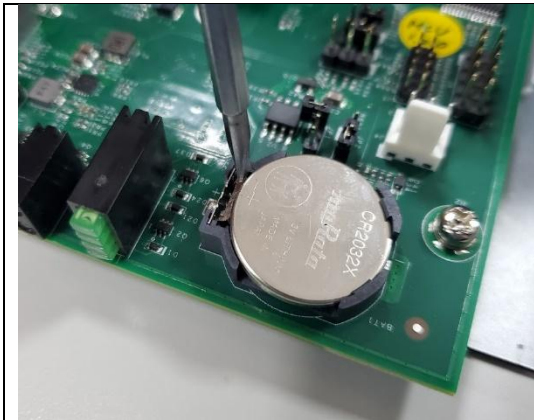
	<p>open it then push the SMA jack through the hole from inside the chassis.</p>
---	---



Outside the panel, push the washer and tighten the nut with a 6 mm hex key.

2.8 Replace CMOS Battery

A coin-cell battery powers the RTC and CMOS memory. The battery has an estimated life of three years when the unit isn't plugged into an AC power source. When the computer is plugged in, the standby current from the power supply extends the life of the battery.



Find the location of CMOS battery on motherboard. There is a latch used to secure battery on battery holder, press the latch down by screwdriver. Battery pops up when the latch gets loose. Remove the battery and replace it with a new one.

*Battery type: CR2032/CR2032X 3V Li-ion battery. The CR2032X for extended temperature supports wider operating temperature -40 to +85 °C.

Chapter 3

BIOS

- 3.1 Entering Setup Main Page
- 3.2 Main
- 3.3 Configuration
- 3.4 Security
- 3.5 Save & Exit

The system is equipped with the AMI BIOS stored in flash ROM. The BIOS has a built-in setup program that allows user 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, the system 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 COMS 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.

3.1. Entering Setup Main Page

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

Press 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.



3.2. Main

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

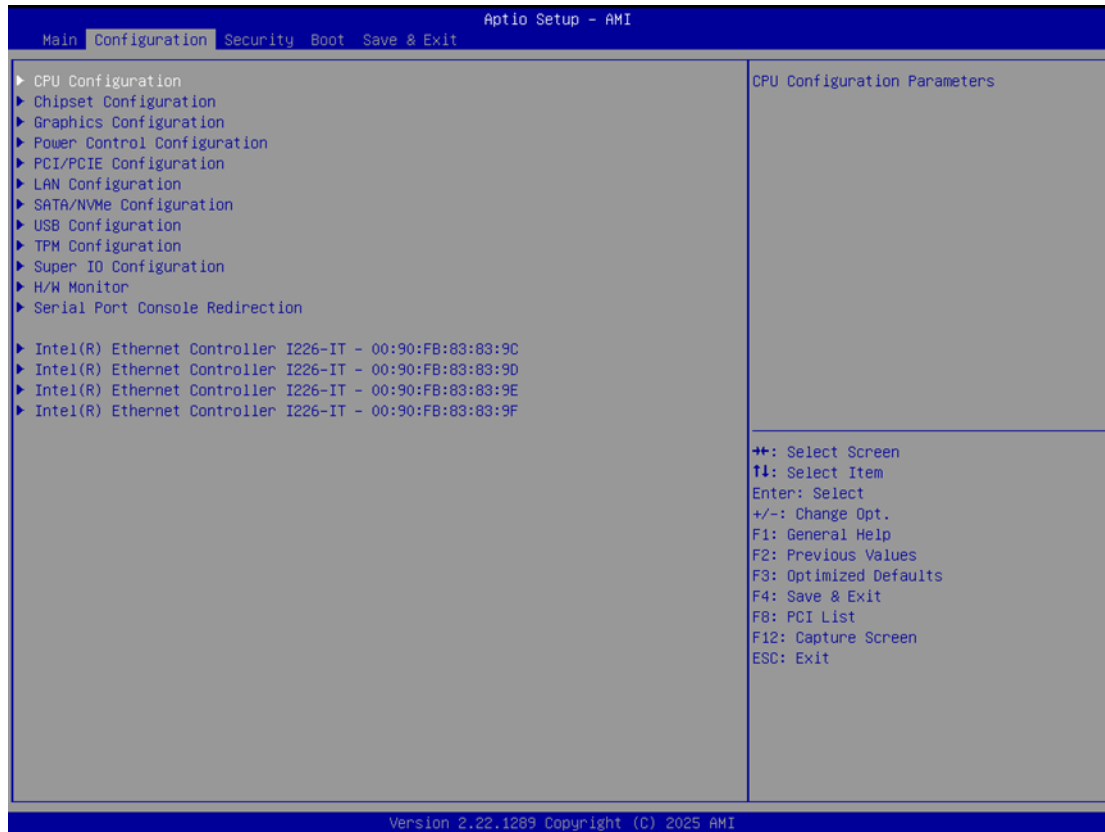


Feature	Description	Options
System Date	The date format is <Day>, <Month><Date><Year>. Use [+] or [-] to configure system Date.	
System Time	The time format is <Hour><Minute><Second>. Use [+] or [-] to configure system Time.	

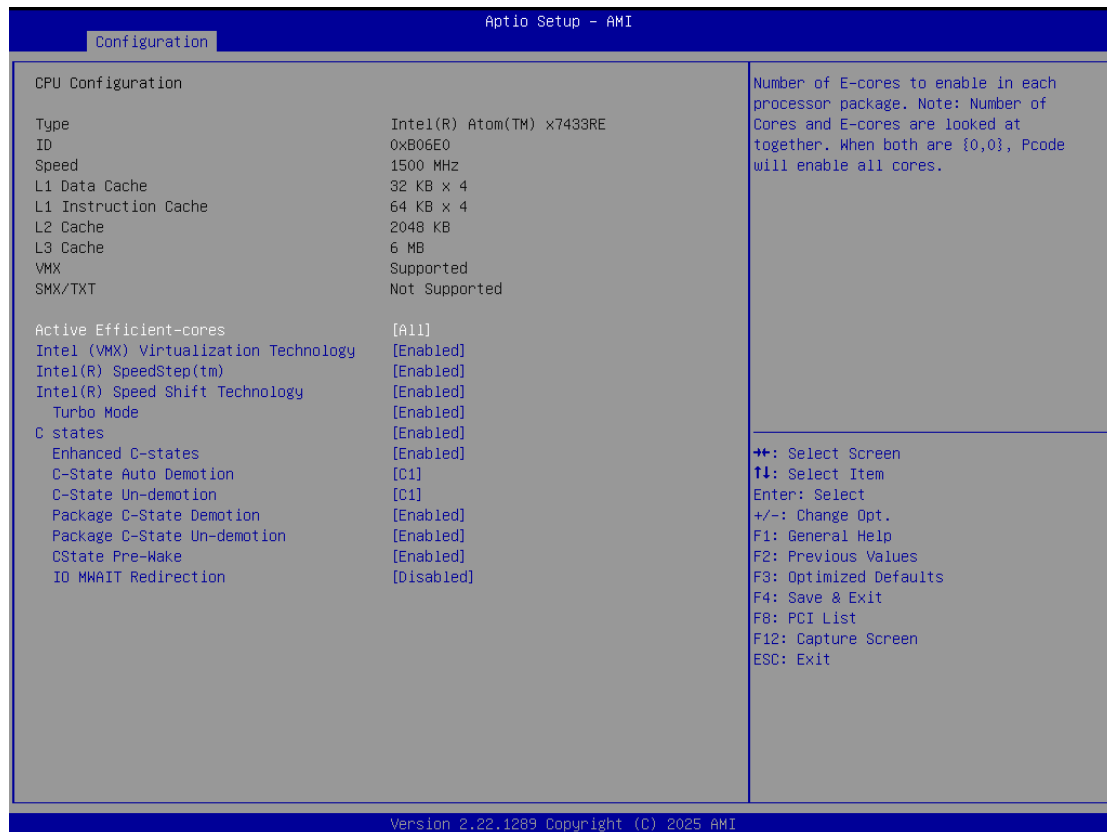
Detailed System Information

Main		Aptio Setup - AMI	
FSP Information			
FSP version		0C.02.89.40	
RC version		0C.E0.89.40	
Build Date			
FSP Mode		Dispatch Mode	
Board Information			
Board Name		PNAB-1210	
Board ID		N/A	
Fab ID		Default string	
LAN PHY Revision		N/A	
Processor Information			
Name		AlderLake ULX	
Type		Intel(R) Atom(TM) x7433RE	
Speed		1500 MHz	
ID		0xB06E0	
Stepping		A0	
Package		Not Implemented Yet	
Number of Efficient-cores		4Core(s) / 4Thread(s)	
Microcode Revision		15	
GT Info		0x46D0	
eDRAM Size		N/A	
Memory Information			
IGFX GOP Version		21.0.1065	
Memory RC Version		0.0.4.74	
Total Memory		8192 MB	
Memory Frequency		4800 MHz	
MC 0 Ch 0 DIMM 0		Populated & Enabled	
Size		8192 MB (DDR5)	
MC 0 Ch 0 DIMM 1		Not Populated / Disabled	
MC 0 Ch 1 DIMM 0		Not Populated / Disabled	
MC 0 Ch 1 DIMM 1		Not Populated / Disabled	
Version 2.22.1289 Copyright (C) 2025 AMI			

3.3. Configuration



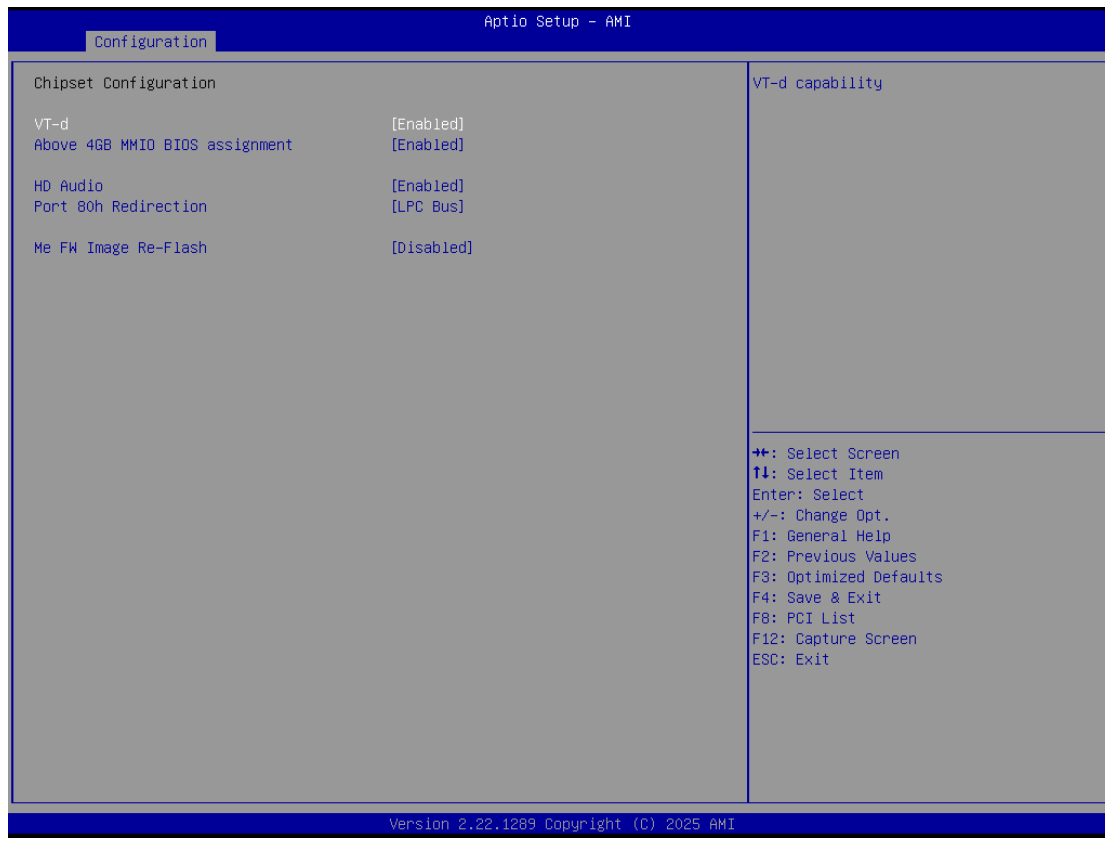
CPU Configuration



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, When both are {0,0}, Pcode will enable all cores.	★All, 3, 2, 1
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)	Dynamically adjusts CPU frequency and voltage to save power and reduce heat; enable for better battery life, disable for fixed performance.	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

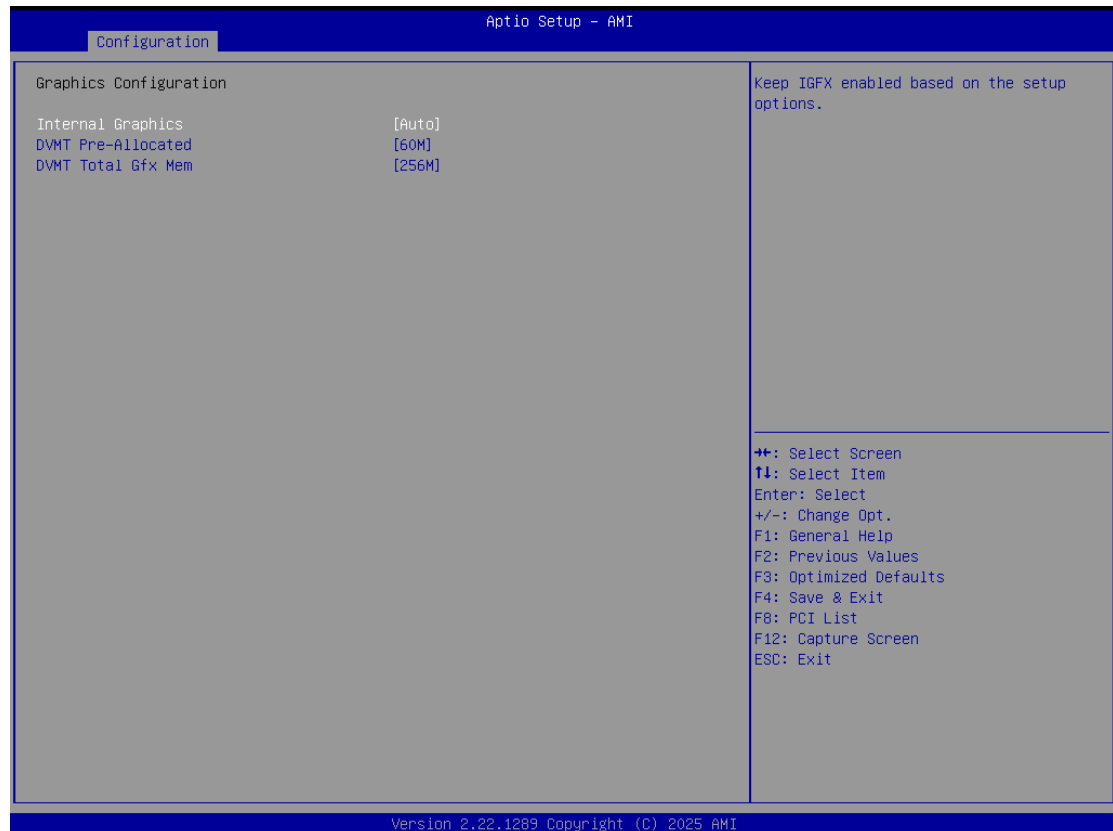
Turbo Mode	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.	Disabled, ★Enabled
C states	Enable/disable CPU Power Management. Allows CPU to enter states when it's not 100% utilized	Disabled, ★Enabled
Enhanced C-states	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-state	Disabled, ★Enabled
C-State Auto Demotion	Configure C-State Auto Demotion	Disabled, ★C1
C-State Un-demotion	Configure C-State Un-demotion	Disabled, ★C1
Package C State Demotion	Package C-State Demotion	Disabled, ★Enabled
Package C State Un-demotion	Package C-State Un-demotion	Disabled, ★Enabled
CState Pre-Wake	Disable – Sets bit 30 of POWER_CTL MSR(0x1FC) to 1 to disable the Cstate 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

Chipset Configuration



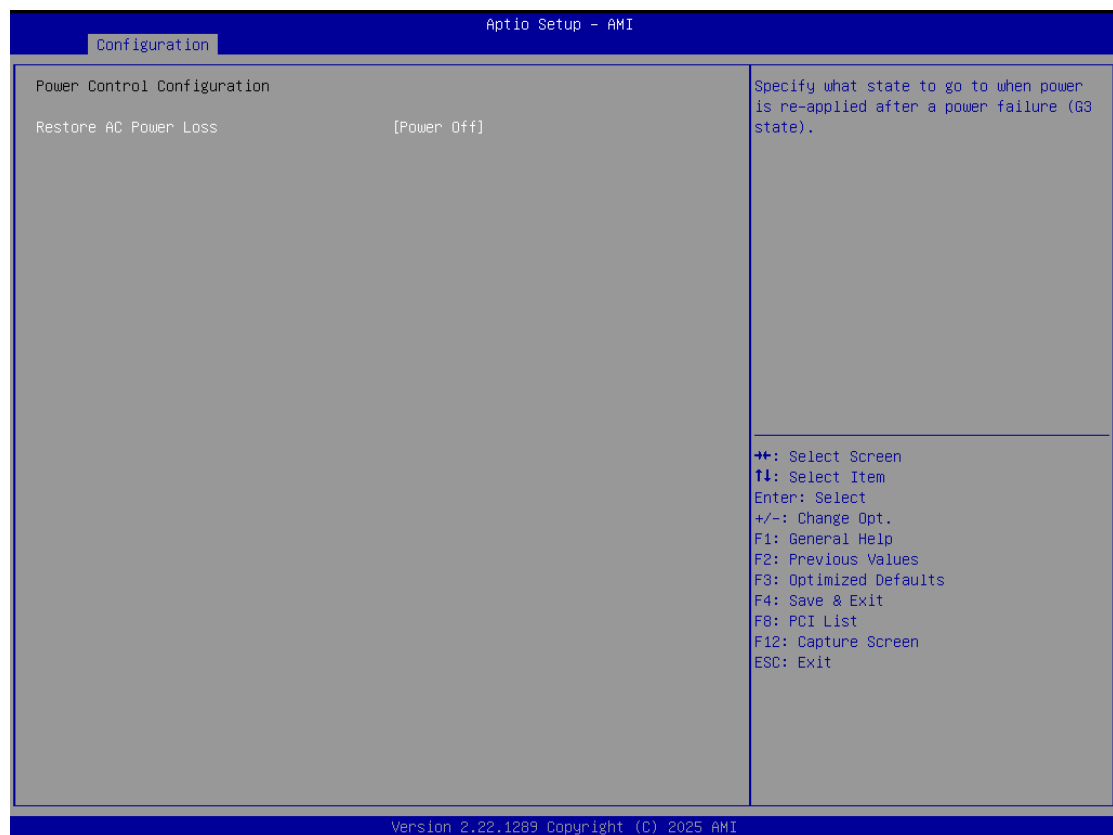
VT-d	VT-d Capability.	Disabled, ★Enabled
Above 4GB MMIO BIOS assignment	Enable/Disable the assignment of BIOS for memory-mapped I/O above 4GB; this feature is automatically enabled when the aperture size is set to 2048 MB.	Disabled, ★Enabled
HD Audio	Control detection of the HD Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HDA will be unconditionally enabled.	Disabled, ★Enabled
Port 80h Redirection	Control when the Port 80h cycles are sent.	★LPC Bus, PCIE Bus
Me FW Image Re-Flash	Enable/Disable ME FW Image re-flash function.	★Disabled, Enabled

Graphics Configuration



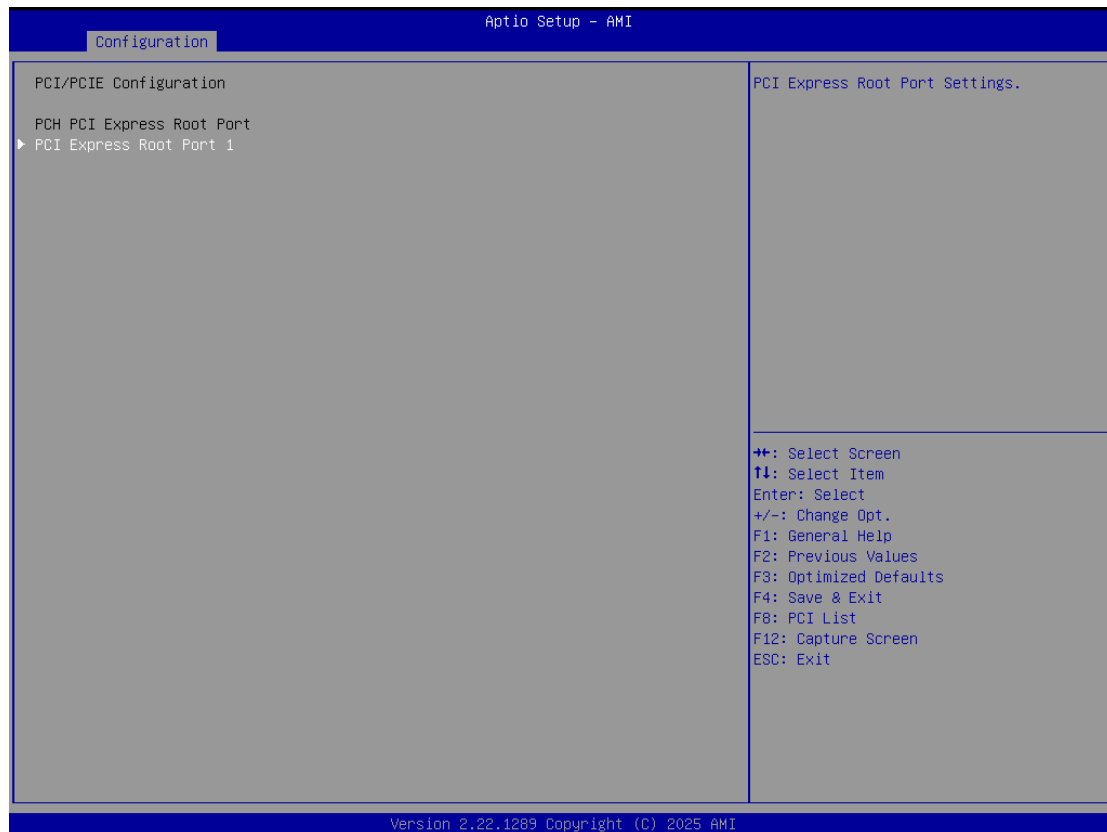
Feature	Description	Options
Internal Graphics	Keep IGFX enable based on the selected setup option.	★Auto, Disabled, Enabled
DVMT Pre-Allocated	Select the DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.	32M, 64M, 96M, 128M, 160M, 12M, 16M, 20M, 24M, 28M, 32M/F7, 36M, 40M, 44M, 48M, 52M, 56M, ★60M
DVMT Total Gfx Mem	Select the DVMT 5.0 total graphics memory size used by the internal graphics device.	★256M, 128M, MAX

Power Control Configuration

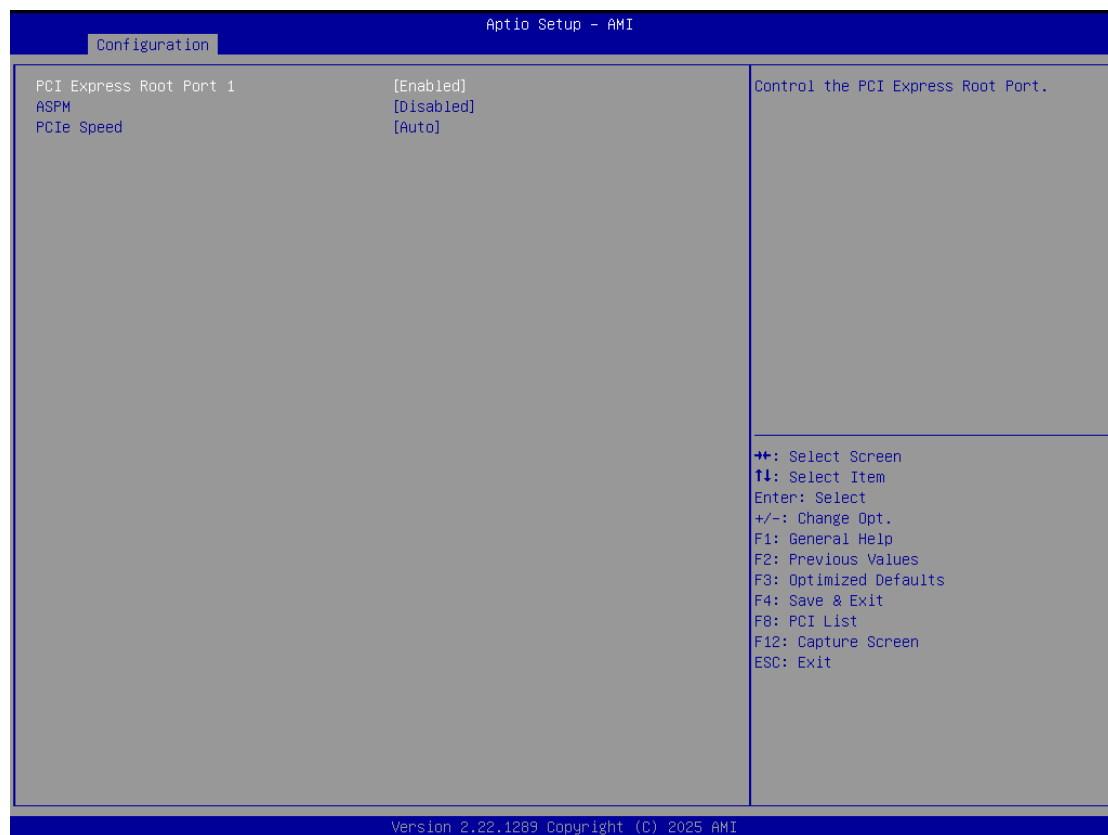


Feature	Description	Options
Restore AC Power Loss	Specifies what state the system will enter when power is restored after an AC power loss (G3 state).	★Power Off, Power On, Last State

PCI/PCIE Configuration

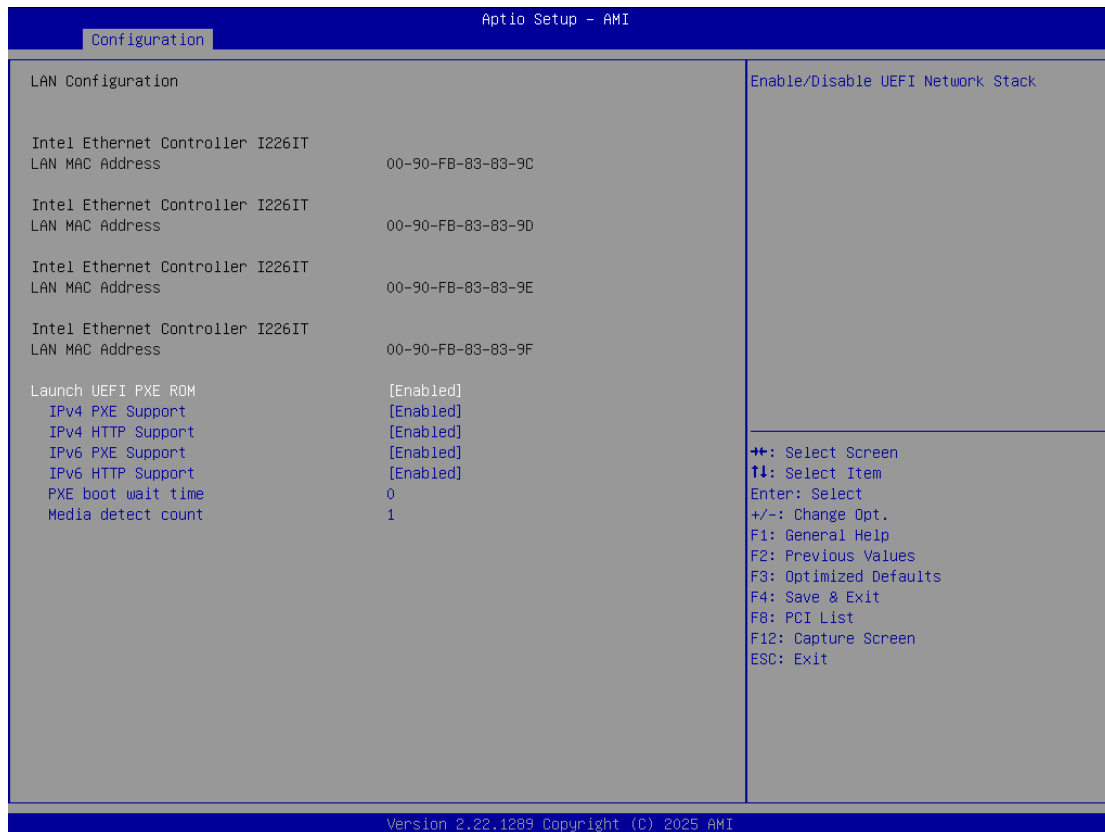


PCI Express Root Port 1



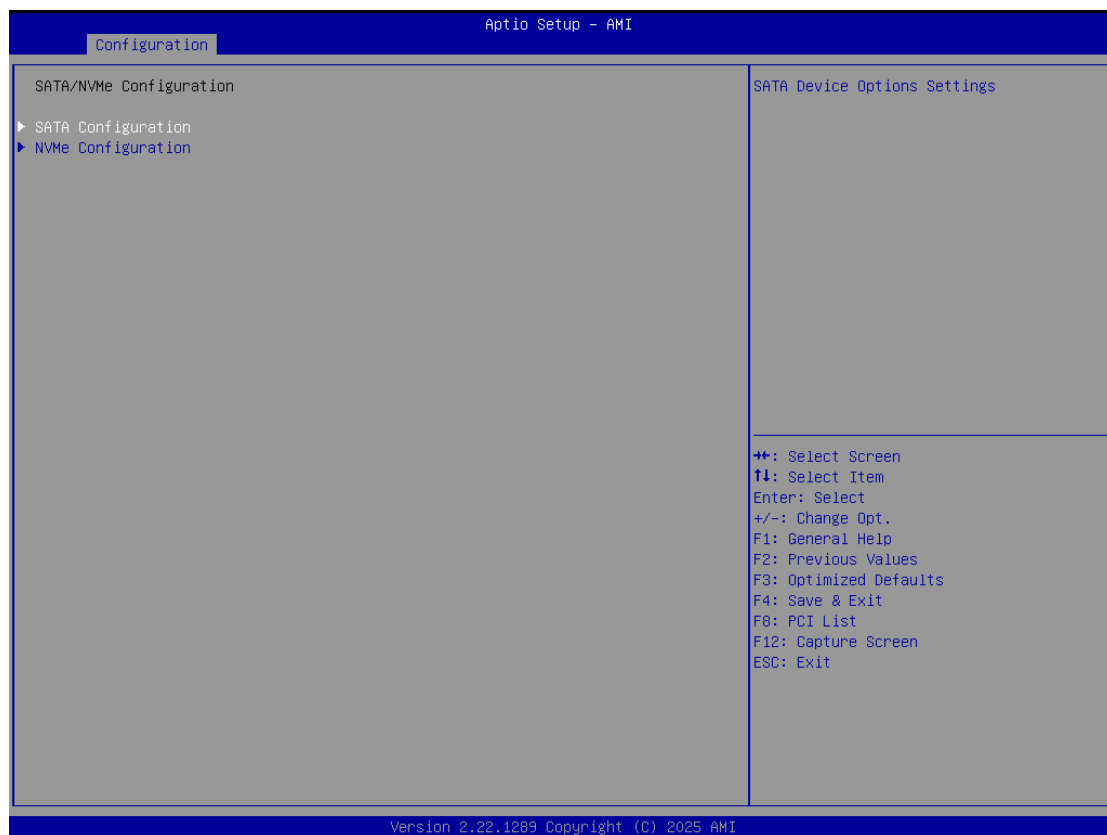
Feature	Description	Options
PCI Express Root Port 1	Control the PCI Express Root Port.	Disabled, ★Enabled
ASPM	Set the ASPM Level: AUTO-BIOS auto configure DISABLE – Disables ASPM	★Disabled, L1, Auto
PCIe Speed	Sets the PCIe link speed.	★Auto, Gen1, Gen2, Gen3

LAN Configuration

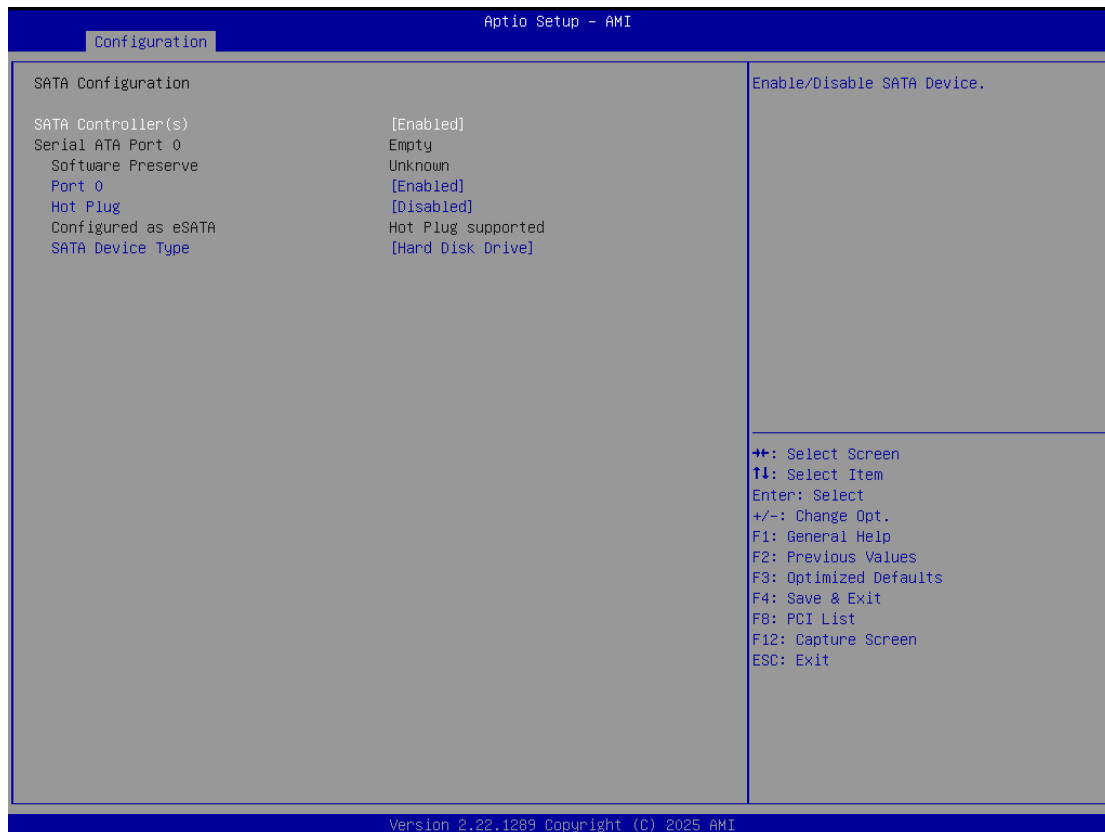


Feature	Description	Options
Launch UEFI PXE ROM	Enable/Disable UEFI Network Stack	★Disabled, Enabled
Launch UEFI PXE ROM (Enabled)		
IPv4 PXE Support	Enable/Disable IPv4 PXE boot support.	Disabled, ★Enabled
IPv4 HTTP Support	Enable/Disable IPv4 HTTP boot support.	Disabled, ★Enabled
IPv6 PXE Support	Enable/Disable IPv6 PXE boot support.	Disabled, ★Enabled
IPv6 HTTP Support	Enable/Disable IPv6 HTTP boot support.	Disabled, ★Enabled
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

SATA / NVMe Configuration



SATA Configuration



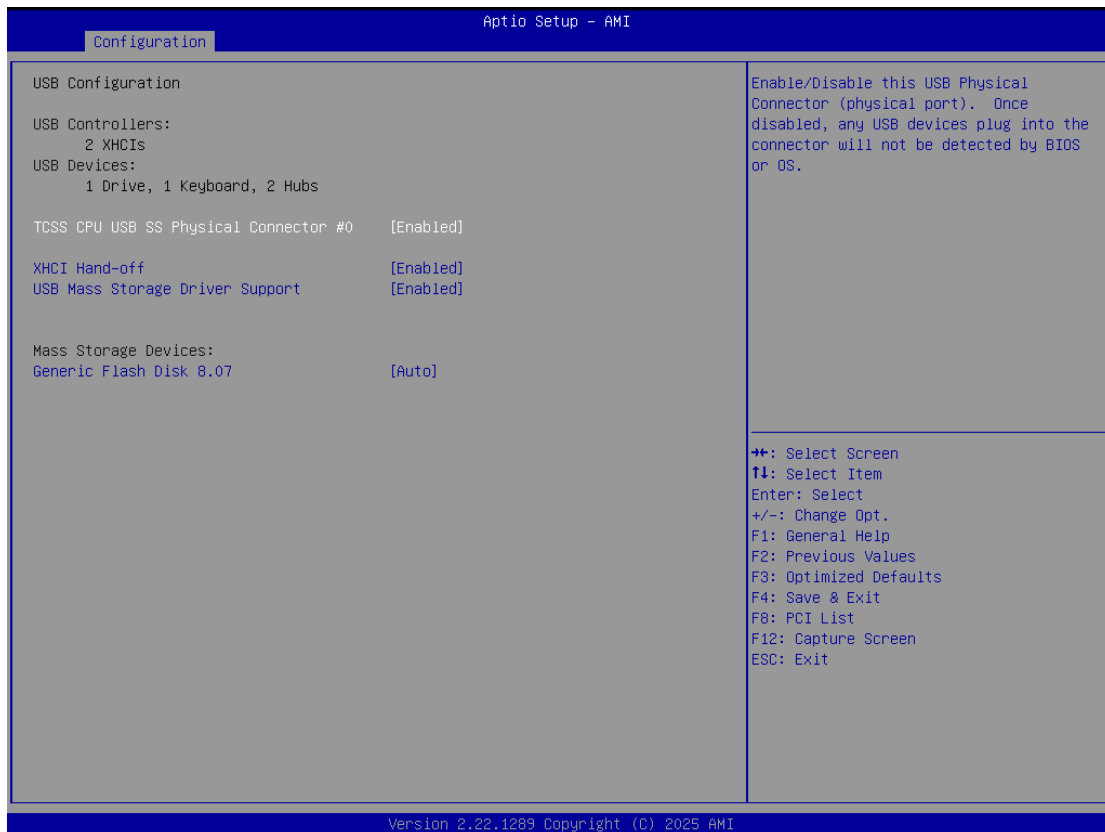
Feature	Description	Options
SATA Controller(s)	Enable/Disable SATA Device	Disabled, ★Enabled
Serial ATA Port 0		
Port 0	Enable/Disable SATA Port	Disabled, ★Enabled
Hot plug	Designates this port as Hot pluggable.	★Disabled, Enabled
SATA Device Type	Identify the SATA port is connected to Solid State Drive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

NVMe Configuration



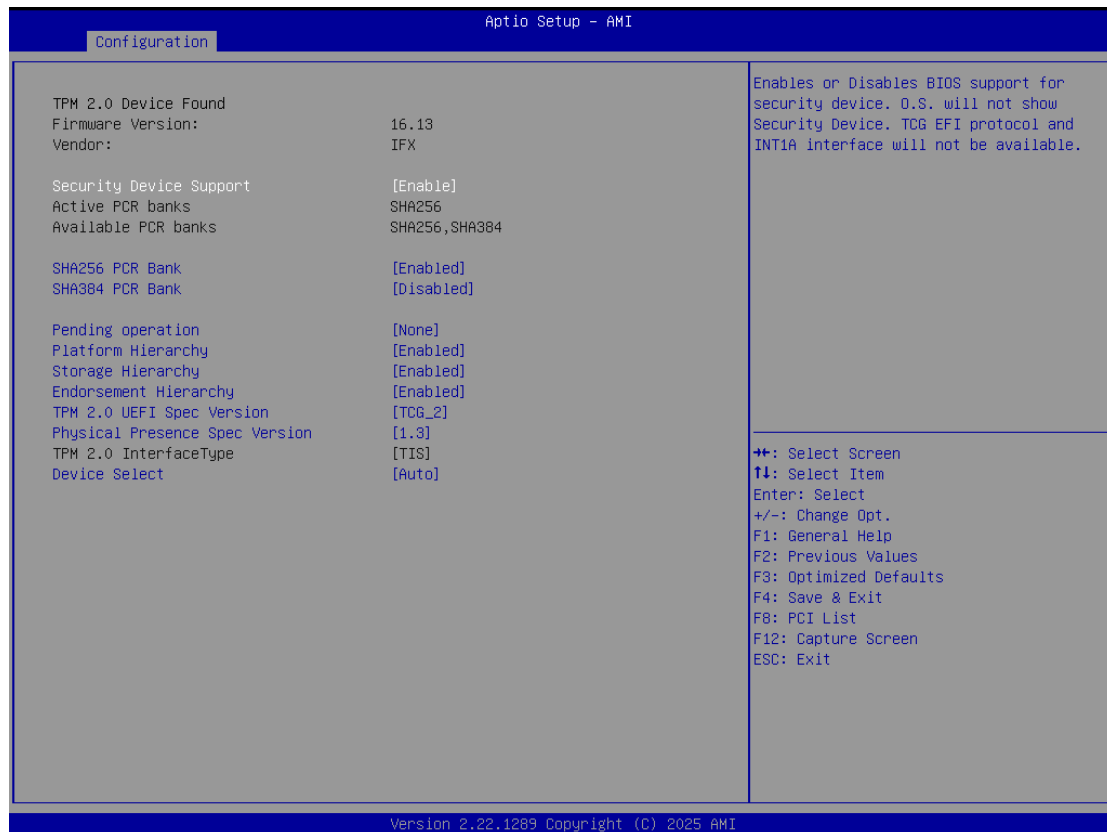
After you set up the NVMe device, this page will display the relevant information about the device.

USB Configuration



Feature	Description	Options
TCSS CPU USB SS Physical Connector #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
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

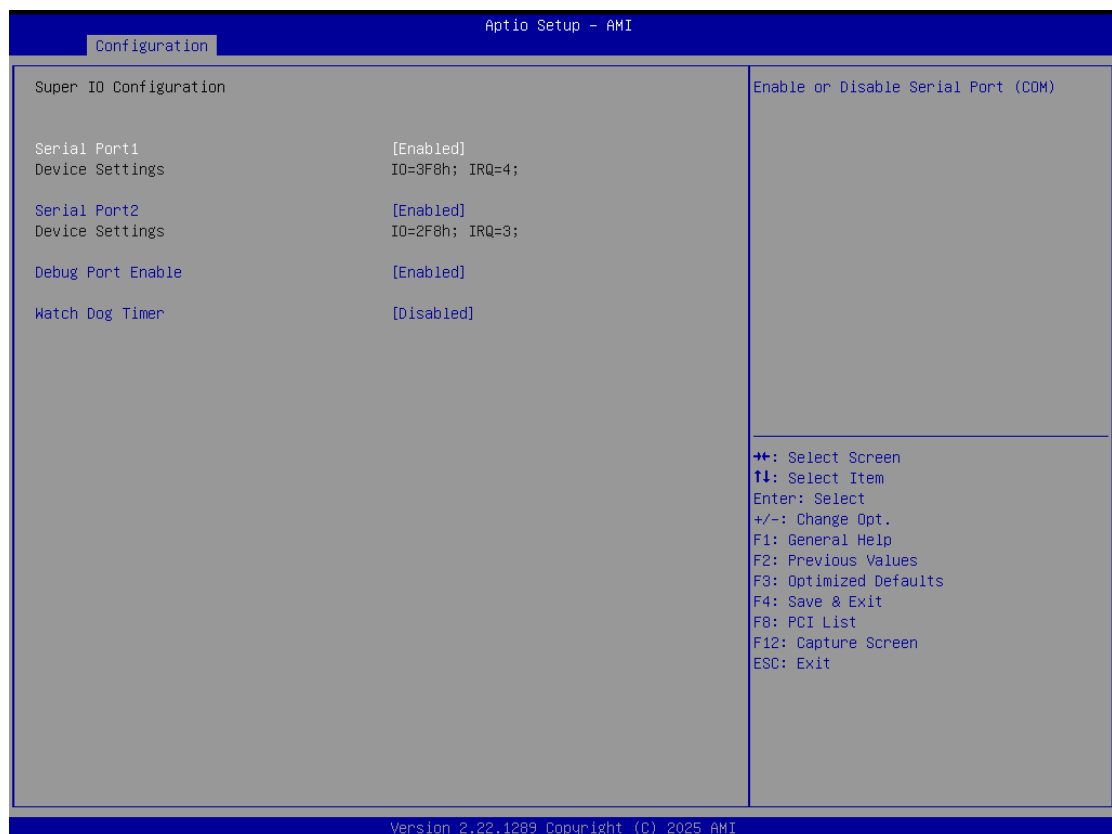
TPM Configuration:



Feature	Description	Options
Security Device Support	Enable/Disable 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	Enable/Disable SHA256 PCR Bank.	Disabled, ★Enabled
SHA384 PCR Bank	Enable/Disable 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	Enable/Disable Platform Hierarchy.	Disabled, ★Enabled

Storage Hierarchy	Enable/Disable Storage Hierarchy.	Disabled, ★Enabled
Endorsement Hierarchy	Enable/Disable Endorsement Hierarchy.	Disabled, ★Enabled
TPM2.0 UEFI Spec Version	Select the TCG2 Spec Version Support. CG_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. Note 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

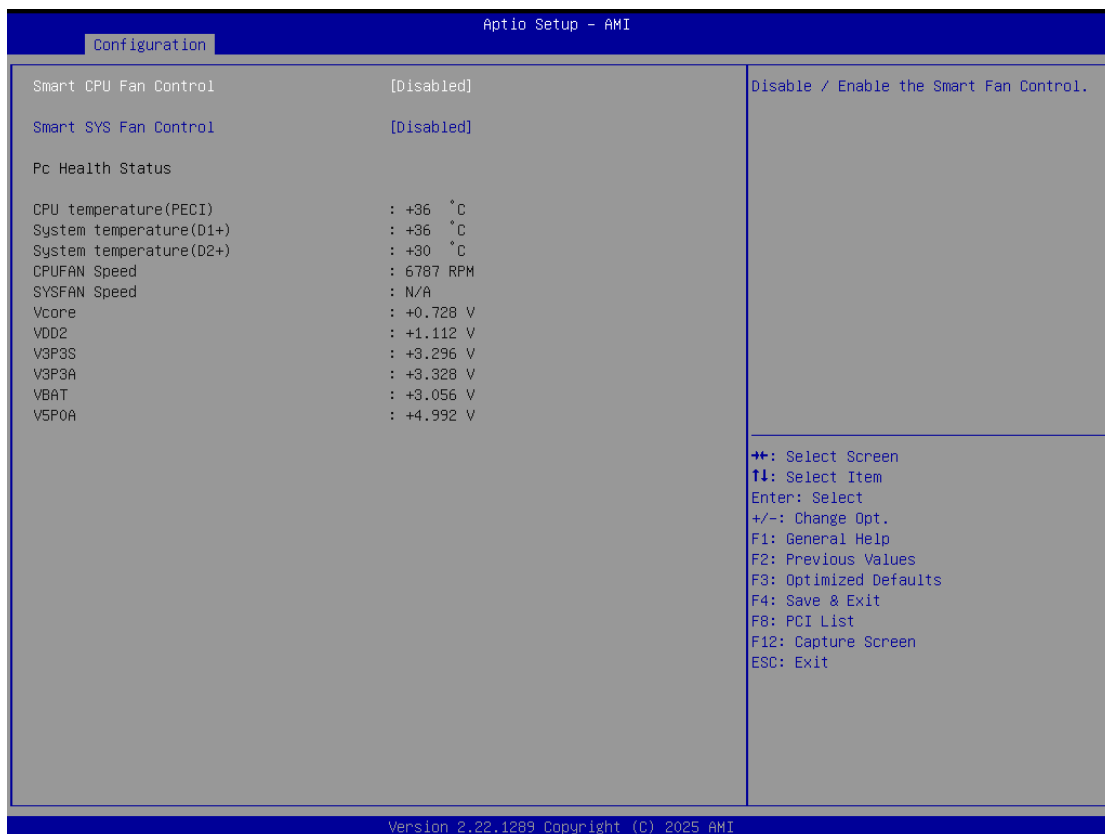
Super IO Configuration



Feature	Description	Options
Serial Port 1	Enable/Disable Serial Port 1 (COM)	Disabled, ★Enabled
Serial Port 2	Enable/Disable Serial Port 2 (COM)	Disabled, ★Enabled
Debug Port Enable	Enable/Disable Debug Port Ox80 Port	Disabled, ★Enabled

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	★60

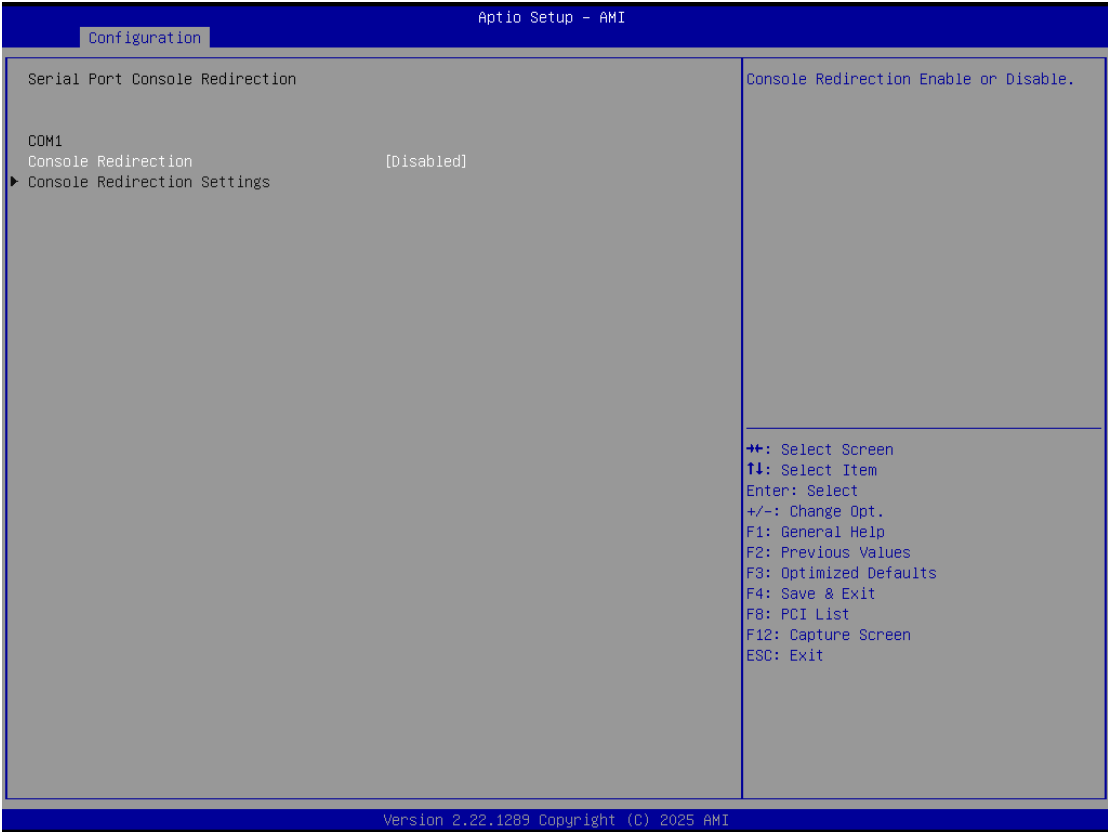
HW Monitor



Feature	Description	Options
Smart CPU Fan Control	Enable/Disable the Smart Fan Control.	★Disabled, Enabled
Smart SYS Fan Control	Enable/Disable the Smart Fan Control.	★Disabled, Enabled
Smart CPU Fan Control [Enabled]		
Smart Fan Start Target	Set Fan Start Target Temperature range from 20 to 80 degree.	★20
Smart Fan Full Target	Set Fan Full Target Temperature range from 20 to 80 degree.	★80
Smart Fan Low End RPM Percentage	Smart Fan Low End RPM Percentage.	★50
Smart SYS Fan Control [Enabled]		
Smart Fan Start Target	Set Fan Start Target Temperature range from 20 to 80 degree.	★20
Smart Fan Full Target	Set Fan Full Target Temperature range from 20 to 80 degree.	★80

Smart Fan Low End RPM Percentage	Smart Fan Low End RPM Percentage.	★50
----------------------------------	-----------------------------------	-----

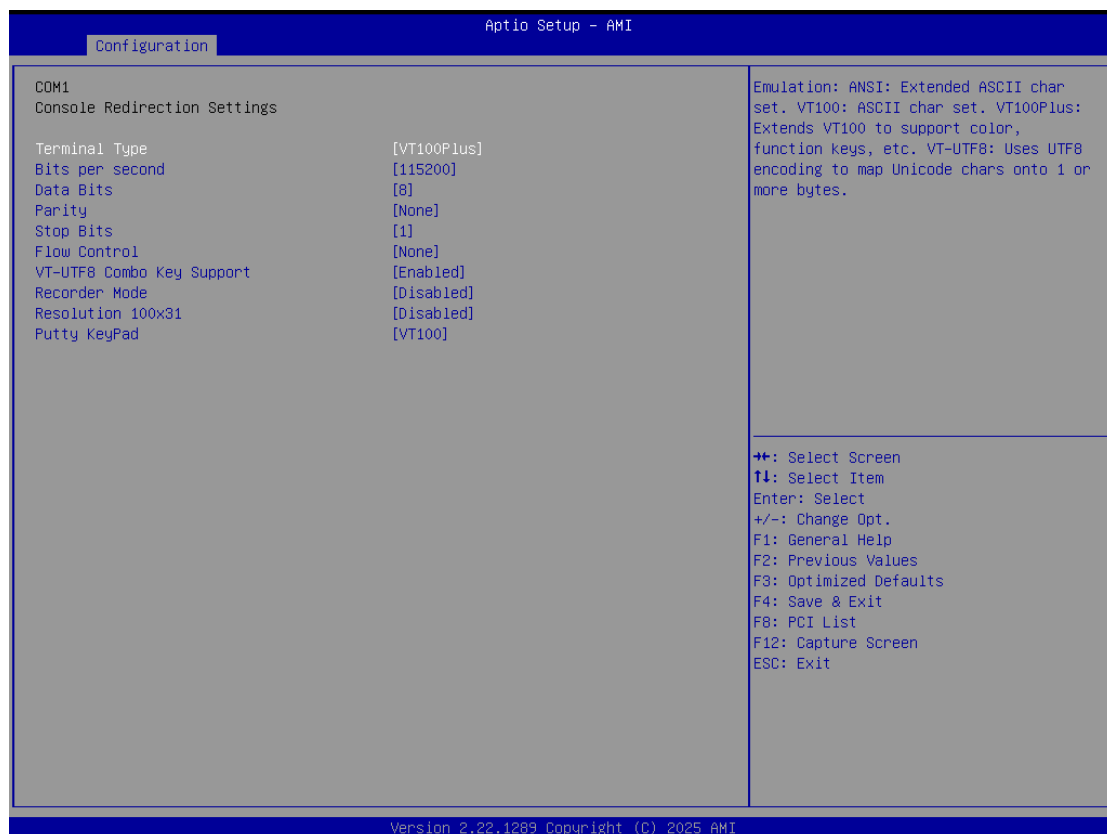
Serial Port Console Redirection



Feature	Description	Options
Console Redirection	Console Redirection Enable or Disable	★Disabled, Enabled
Console Redirection [Enabled] for Console Redirection Settings [Enabled]		

COM1 Console Redirection Settings:

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.



Feature	Description	Options
Terminal Type	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100Plus: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars	★VT100Plus, ANSI, VT100, VT-UTF8
Bits per second	Select Serial port transmission speed. The speed must	★115200, 9600, 19200,
Data bits	Data bits	★8, 7

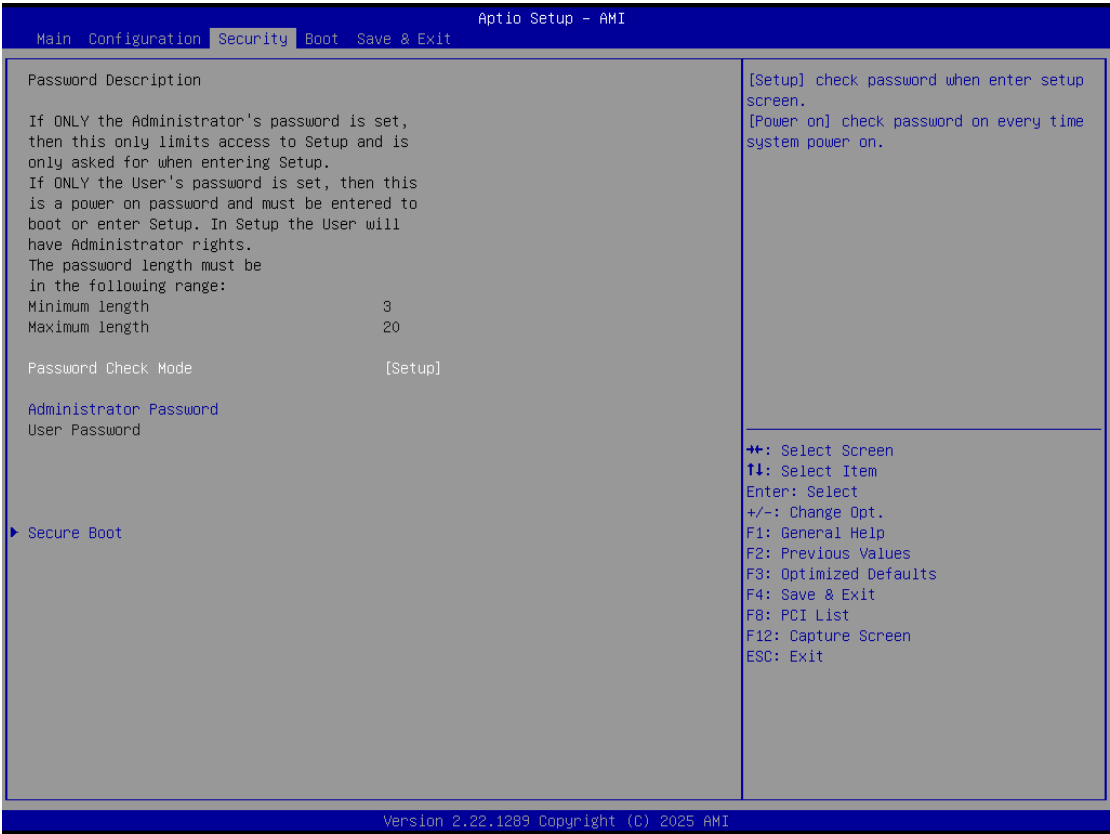
Parity	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1' s in the data bits is even. Odd: parity bit is 0 if num of 1' s in the data bits is odd. Mark: parity bit is always 1. Space parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.	★None, Even, Odd, Mark, Space
Stop Bits	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	★1, 2
Flow Control	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signal.	★None, Hardware RTS/CTS
VT-UTF8 Combo Key Support	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals	Disabled, ★Enabled
Recorder Mode	With this mode enabled only text will be sent. This is to capture Terminal data.	★Disabled, Enabled
Resolution 100x31	Enables / Disables extended terminal resolution	★Disabled, Enabled
Putty KeyPad	Select FunctionKey and KeyPad on Putty	★VT100, LINUX, XTERMR6, SCO, ESCN, VT400

Feature	Description	Options
	Enable/Disable	

--	--	--

3.4. Security

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	

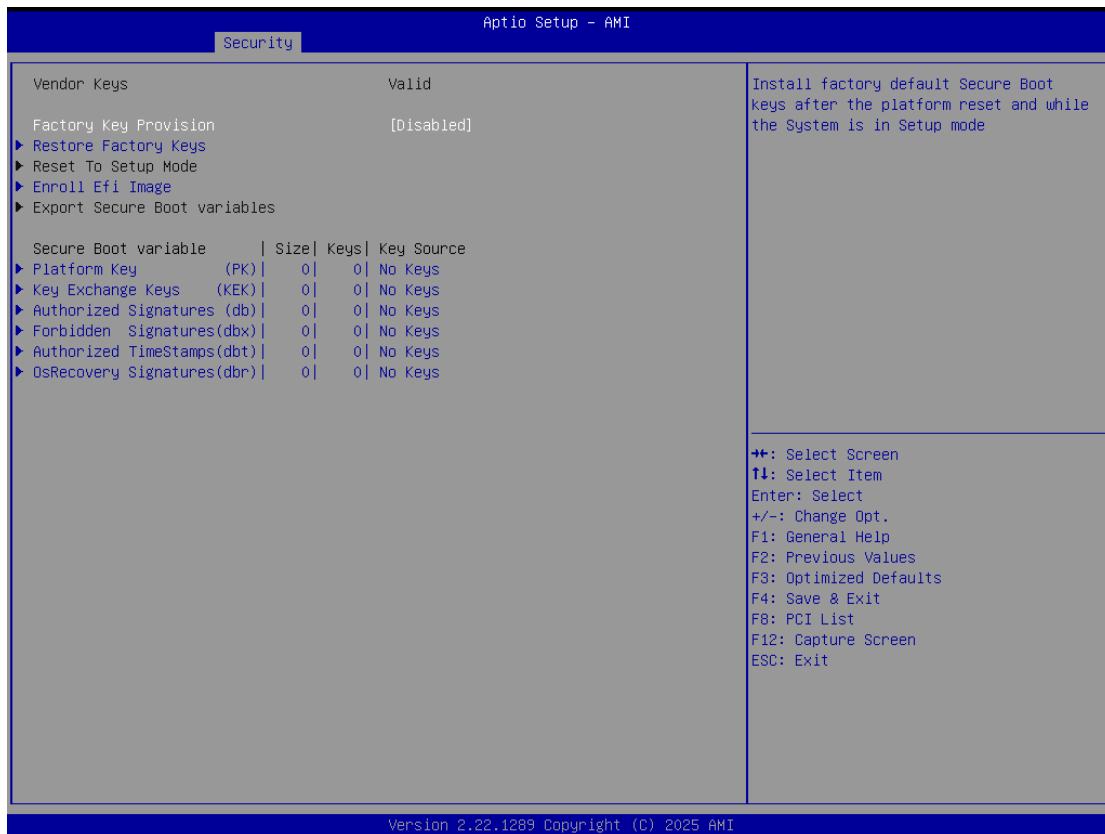
Secure Boot



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	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.	★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

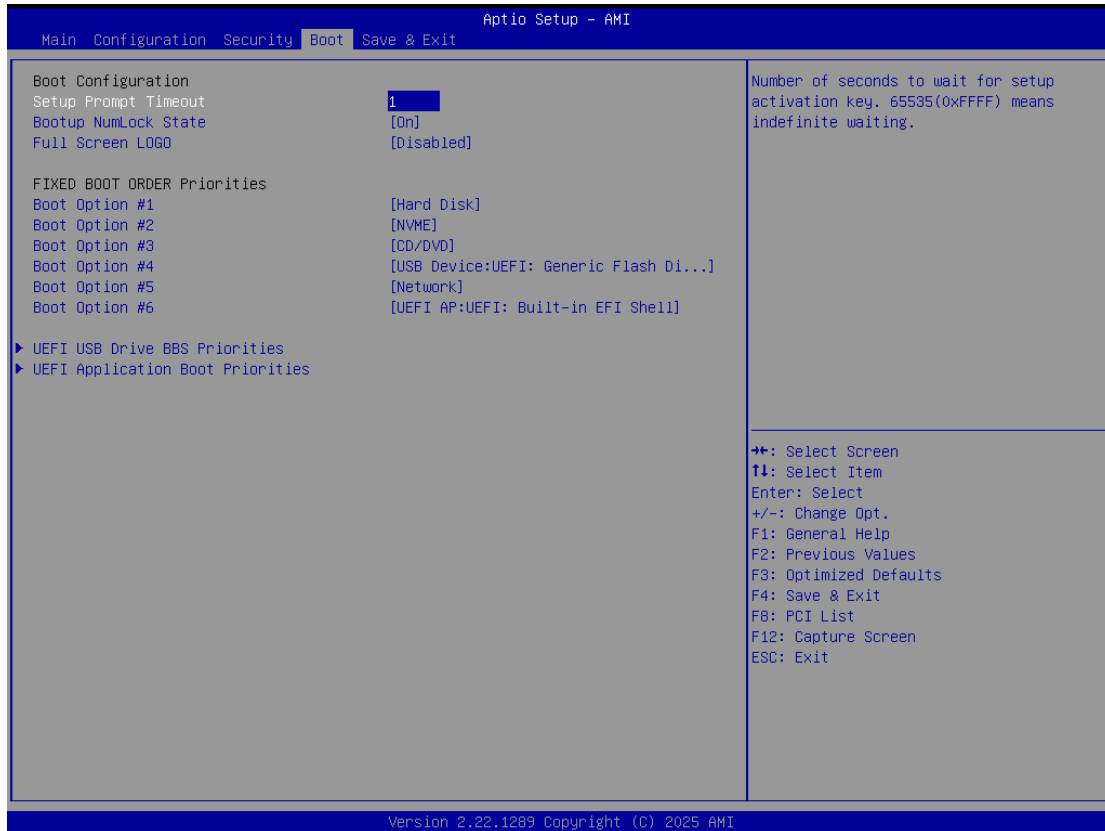
Enables expert users to modify Secure Boot Policy variables without variable authentication.



Feature	Description	Options
Factory key 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).	
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)		

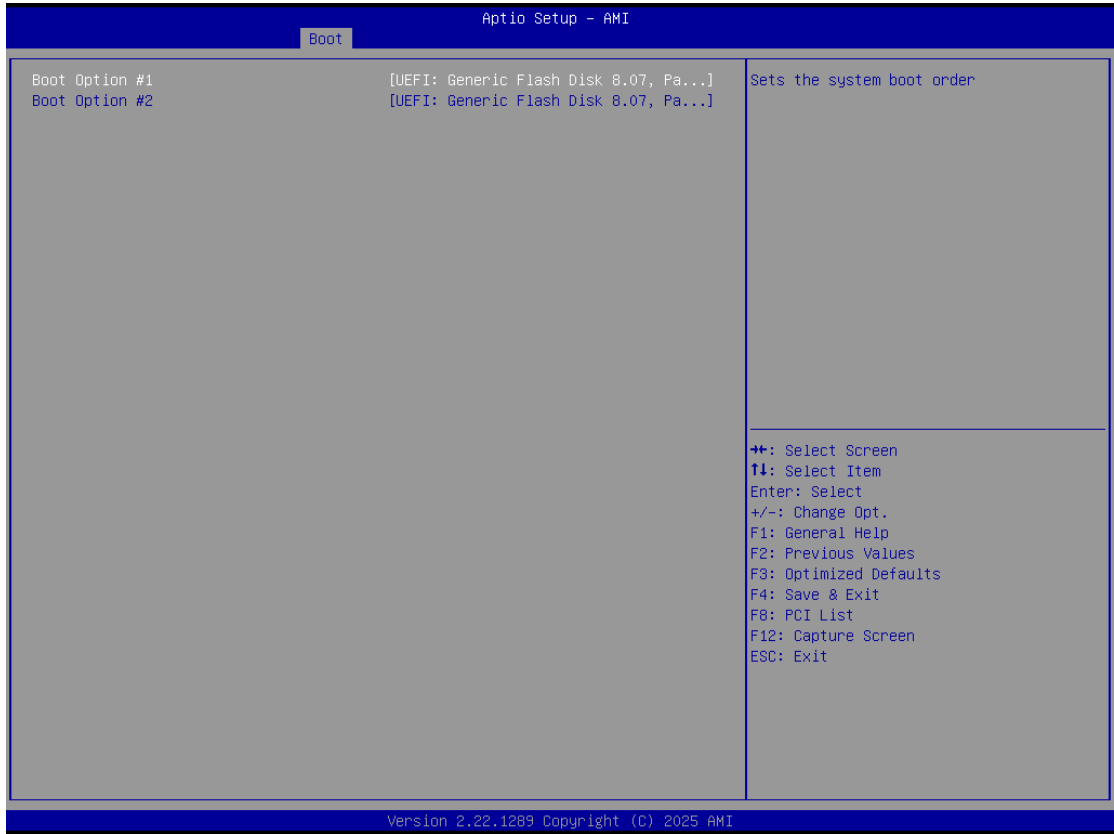
Boot



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	Enable/Disable Quiet Boot option and Full screen Logo.	★Disabled, Enabled
Boot Option #1 ~ #6	Sets the system boot order	Hard Disk, NVME, USB Device, CD/DVD, 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:

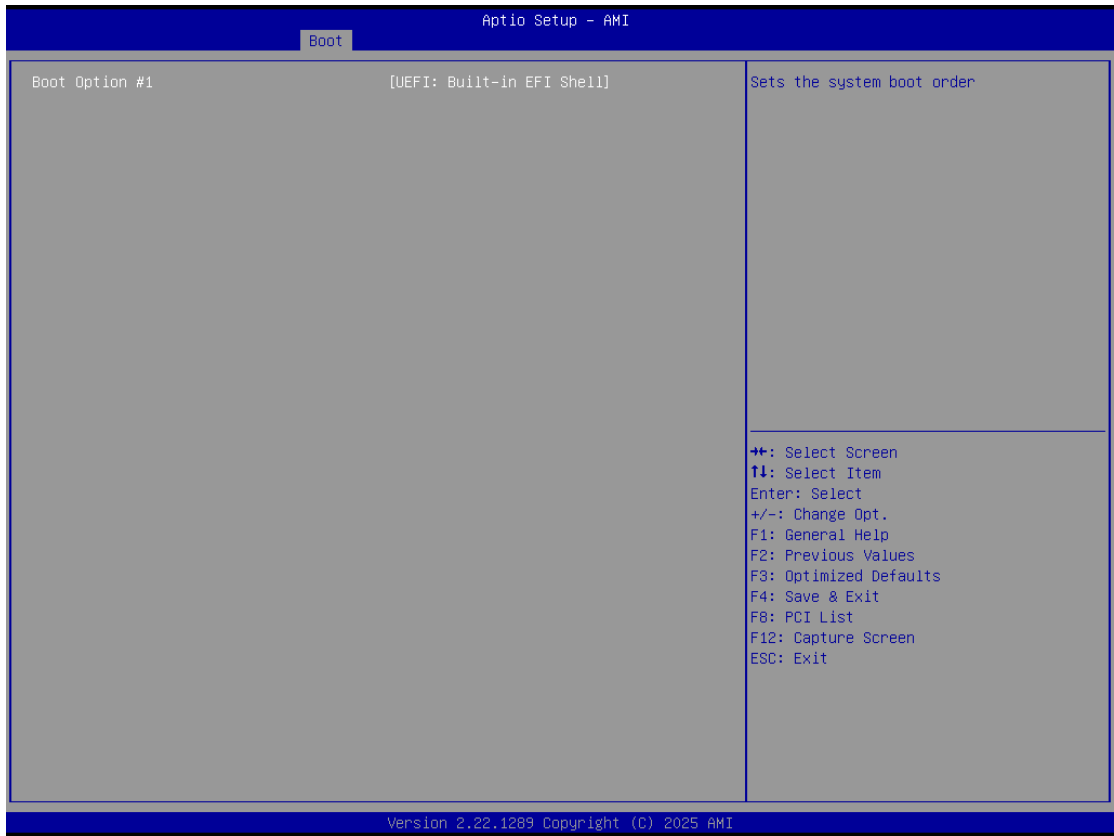
Specifies the Boot Device Priority sequence from available UEFI USB Drivers.



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

UEFI Application Boot Priorities

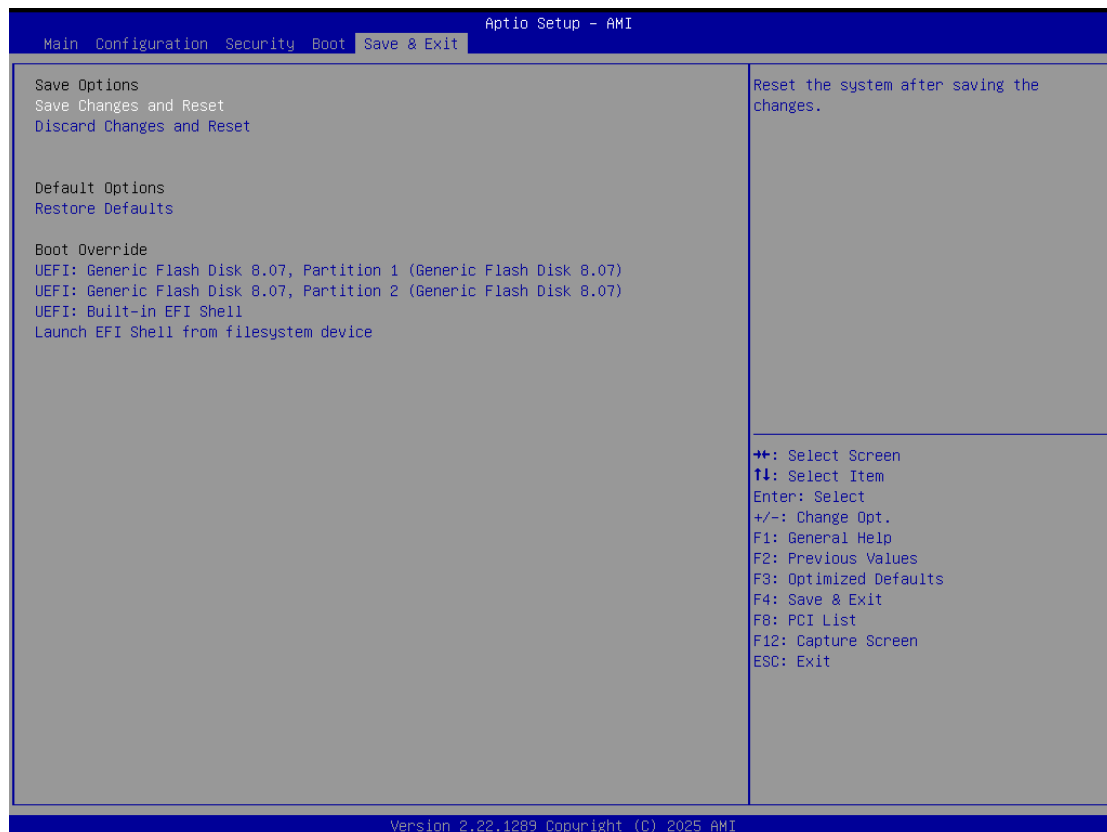
Specifies the Boot Device Priority sequence from available UEFI Application.



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

3.5. Save & Exit

Save & Exit



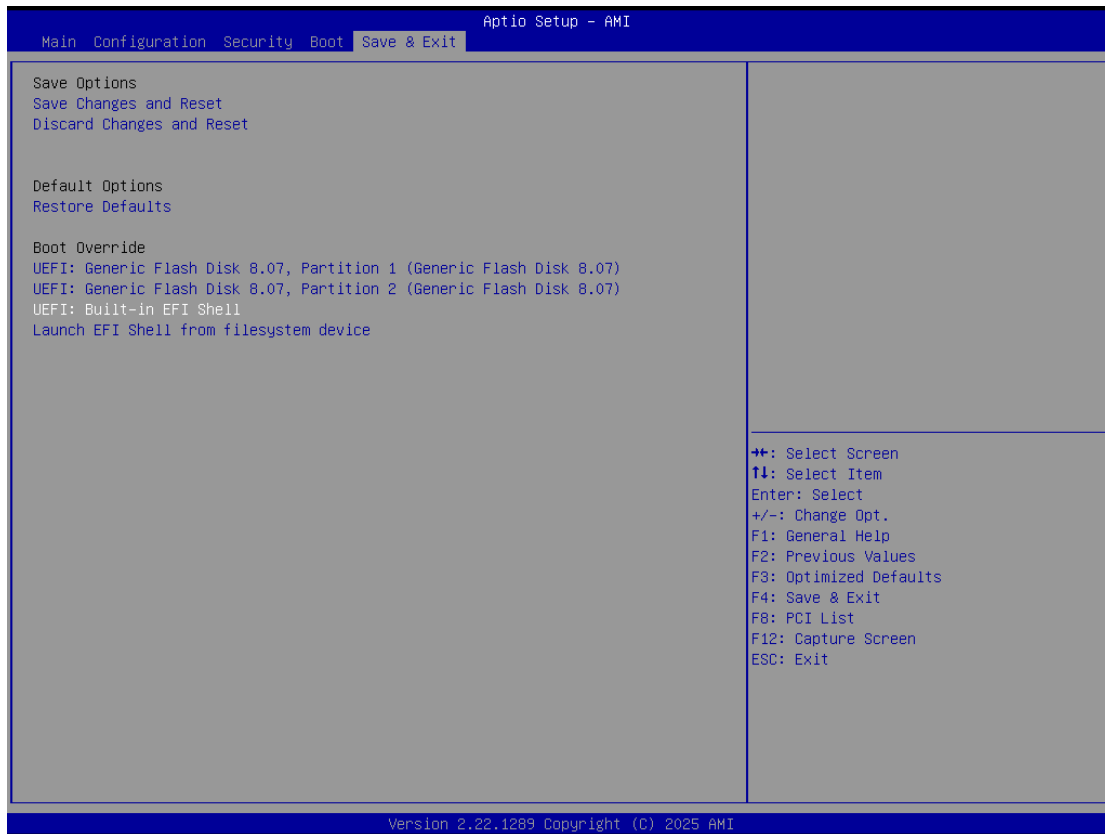
Feature	Description	Options
Save Changes and Reset	Reset the system after saving the changes.	
Discard Changes and Reset	Reset system setup without saving any changes.	
Restore Defaults	Restore/Load Default values for all the setup options.	
UEFI: Built-in EFI Shell		
Launch EFI Shell from filesystem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

PNAB-1210 BIOS UEFI Update SOP process under UEFI Shell

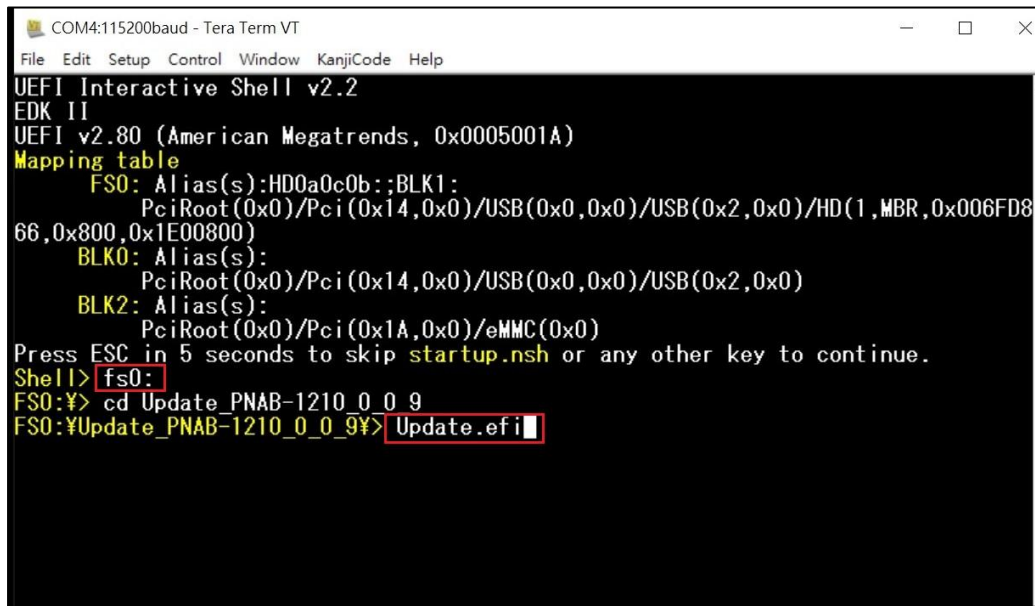
Step1. Prepare a USB DOK.

Step2. Unzip BIOS update file to the USB DOK

Step3. 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.



Step4. 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.



```

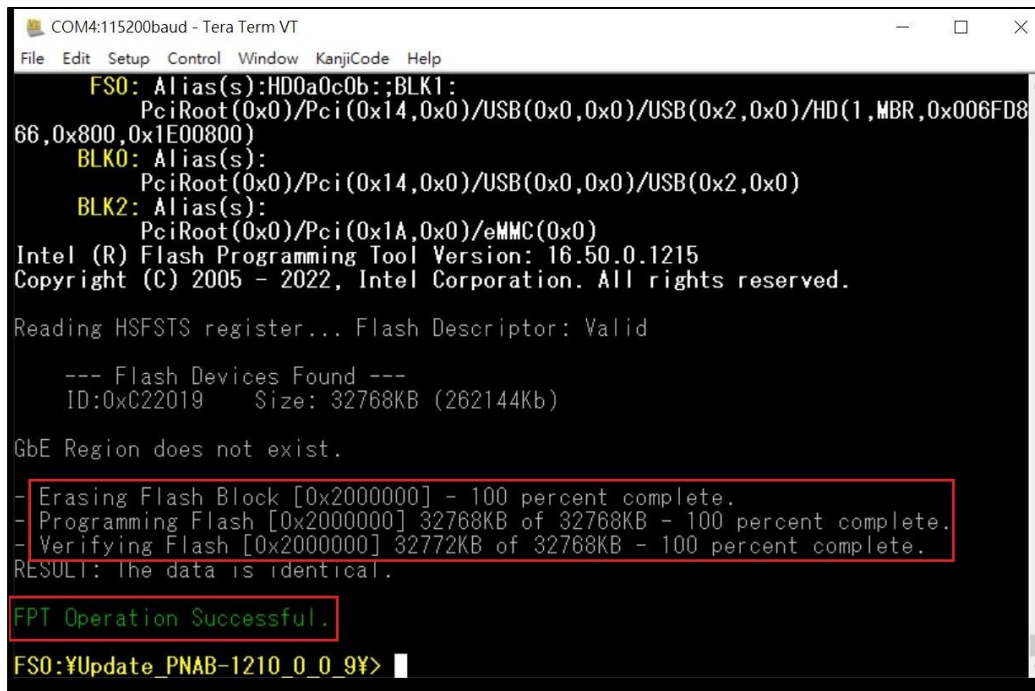
COM4:115200baud - Tera Term VT
File Edit Setup Control Window KanjiCode Help
UEFI Interactive Shell v2.2
EDK II
UEFI v2.80 (American Megatrends, 0x0005001A)
Mapping table
  FS0: Alias(s):HD0a0c0b::BLK1:
        PciRoot(0x0)/Pci(0x14,0x0)/USB(0x0,0x0)/USB(0x2,0x0)/HD(1,MBR,0x006FD8
66,0x800,0x1E00800)
  BLK0: Alias(s):
        PciRoot(0x0)/Pci(0x14,0x0)/USB(0x0,0x0)/USB(0x2,0x0)
  BLK2: Alias(s):
        PciRoot(0x0)/Pci(0x1A,0x0)/eMMC(0x0)
Press ESC in 5 seconds to skip startup.nsh or any other key to continue.
Shell> fs0:
FS0:¥> cd Update_PNAB-1210_0_0_9
FS0:¥Update_PNAB-1210_0_0_9¥> Update.efi

```

Step5. 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.



```

COM4:115200baud - Tera Term VT
File Edit Setup Control Window KanjiCode Help
  FS0: Alias(s):HD0a0c0b::BLK1:
        PciRoot(0x0)/Pci(0x14,0x0)/USB(0x0,0x0)/USB(0x2,0x0)/HD(1,MBR,0x006FD8
66,0x800,0x1E00800)
  BLK0: Alias(s):
        PciRoot(0x0)/Pci(0x14,0x0)/USB(0x0,0x0)/USB(0x2,0x0)
  BLK2: Alias(s):
        PciRoot(0x0)/Pci(0x1A,0x0)/eMMC(0x0)
Intel(R) Flash Programming Tool Version: 16.50.0.1215
Copyright (C) 2005 - 2022, Intel Corporation. All rights reserved.

Reading HSFSTS register... Flash Descriptor: Valid

--- Flash Devices Found ---
ID:0xC22019   Size: 32768KB (262144Kb)

GbE Region does not exist.

- Erasing Flash Block [0x20000000] - 100 percent complete.
- Programming Flash [0x20000000] 32768KB of 32768KB - 100 percent complete.
- Verifying Flash [0x20000000] 32772KB of 32768KB - 100 percent complete.
RESULT: The data is identical.

FPT Operation Successful.

FS0:¥Update_PNAB-1210_0_0_9¥>

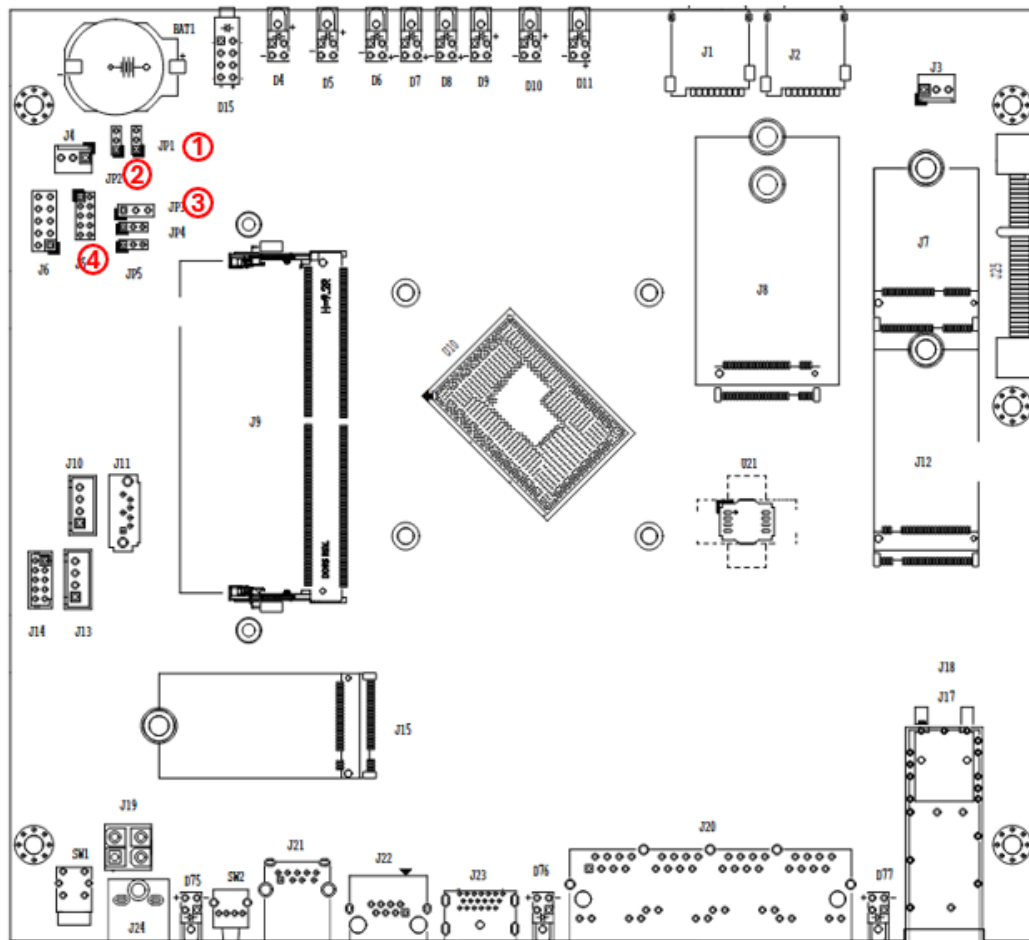
```

Chapter 4

Jumper Setting

This chapter describes the positions and functions of jumpers, and pin headers on the motherboard for hardware configuration.

PNAB-1210 Top view



Jumper No.	Signal Description
1	Clear CMOS (JP1)
2	AT/ATX Mode (JP2)
3	Power Debug Port (JP3)
4	80 Port (J5)

Jumper Setting

For users to customize PNAB-1210 features, the following sections describe jumper settings. “Pin No.” indicates the pins that should be connected by placing a jumper cap over them (e.g., Pin No. 1–2 means covering pins 1 and 2 with a jumper cap). “Open” or “N/C (Not Connected)” means the jumper cap should be removed from the pins.

Jumper List:

JP1: Clear CMOS

PIN No.	Signal Description
1-2	Clear CMOS
2-3	Clear ME RTC
1-X	NC★

JP2: AT / ATX Mode

PIN No.	Signal Description
1-2	AT
2-3	ATX★

JP3: Power Debug Port

PIN No.	Description
1	SDA
2	SCL
3	GND

Header List

J5: 80 Port

PIN No.	Description	PIN No.	Description
1	LED_A	2	3.3V
3	LED_B	4	LED_E
5	LED_C	6	LED_F
7	LED_D	8	LED_G
9	LED_L#	10	GND



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