Lanner

Network Appliance Platform

Hardware Platforms for Network Computing

NCA-4242
User Manual

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About this Document

This manual describes the overview of the various functionalities of this product, and the information you need to get it ready for operation. It is intended for those who are:

- responsible for installing, administering and troubleshooting this system or Information Technology professionals.
- assumed to be qualified in the servicing of computer equipment, such as professional system integrators, or service personnel and technicians.

The latest version of this document can be found on Lanner's official website, available either through the product page or through the Lanner Download Center page with a login account and password.

Icon Descriptions

The icons are used in the manual to serve as an indication of interest topics or important messages.

Icon	Usage
Note or Information	This mark indicates that there is something you should pay special attention to while using the product.
Warning or Important	This mark indicates that there is a caution or warning and it is something that could damage your property or product.

Online Resources

To obtain additional documentation resources and software updates for your system, please visit the Lanner Download Center. As certain categories of documents are only available to users who are logged in, please be registered for a Lanner Account at http://www.lannerinc.com/ to access published documents and downloadable resources.

Technical Support

In addition to contacting your distributor or sales representative, you could submit a request at our Lanner Technical Support and fill in a support ticket to our technical support department.

Documentation Feedback

Your feedback is valuable to us, as it will help us continue to provide you with more accurate and relevant documentation. To provide any feedback, comments or to report an error, please email contact@lannerinc.com. Thank you for your time.

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Acknowledgment

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note

1. An unshielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
2. Use only shielded cables to connect I/O devices to this equipment.
3. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Important

1. Operations in the 5.15-5.25GHz band are restricted to indoor usage only.
2. This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

Important

IEC 61000-4-5: As stated above, surge testing is not required for the console if it is used under the following conditions,
(1) Short cables only (<3m, temporary connection).
(2) Indoor use only with no outdoor cable exposure.
(3) Manufacturer specifies console is for service/maintenance only.

Safety Guidelines

Follow these guidelines to ensure general safety:

- Keep the chassis area clear and dust-free during and after installation.
- Do not wear loose clothing or jewelry that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Disconnect all power by turning off the power and unplugging the power cord before installing or removing a chassis or working near power supplies
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit; always check the circuit.

Consignes de sécurité

Suivez ces consignes pour assurer la sécurité générale :

- Laissez la zone du châssis propre et sans poussière pendant et après l'installation.
- Ne portez pas de vêtements amples ou de bijoux qui pourraient être pris dans le châssis. Attachez votre cravate ou écharpe et remontez vos manches.
- Portez des lunettes de sécurité pour protéger vos yeux.
- N'effectuez aucune action qui pourrait créer un danger pour d'autres ou rendre l'équipement dangereux.
- Coupez complètement l'alimentation en éteignant l'alimentation et en débranchant le cordon d'alimentation avant d'installer ou de retirer un châssis ou de travailler à proximité de sources d'alimentation.
- Ne travaillez pas seul si des conditions dangereuses sont présentes.
- Ne considérez jamais que l'alimentation est coupée d'un circuit, vérifiez toujours le circuit. Cet appareil génère, utilise et émet une énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interférences dans les communications radio.

Lithium Battery Caution

- There is risk of explosion if the battery is replaced by an incorrect type.
- Dispose of used batteries according to the instructions.
- Installation should be conducted only by a trained electrician or only by an electrically trained person who knows all installation procedures and device specifications which are to be applied.
- Do not carry the handle of power supplies when moving to another place.
- Please conform to your local laws and regulations regarding safe disposal of lithium battery.
- Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.
- Leaving a battery in an extremely high temperature environment can result in an explosion or the leakage of flammable liquid or gas.
- A battery subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.

Avertissement concernant la pile au lithium

- Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- Jetez les piles usagées conformément aux instructions.
- L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.

Operating Safety

- Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.
- Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Sécurité de fonctionnement

- L'équipement électrique génère de la chaleur. La température ambiante peut ne pas être adéquate pour refroidir l'équipement à une température de fonctionnement acceptable sans circulation adaptée. Vérifiez que votre site propose une circulation d'air adéquate.
- Vérifiez que le couvercle du châssis est bien fixé. La conception du châssis permet à l'air de refroidissement de bien circuler. Un châssis ouvert laisse l'air s'échapper, ce qui peut interrompre et rediriger le flux d'air frais destiné aux composants internes.
- Les décharges électrostatiques (ESD) peuvent endommager l'équipement et gêner les circuits électriques. Des dégâts d'ESD surviennent lorsque des composants électroniques sont mal manipulés et peuvent causer des pannes totales ou intermittentes. Suivez les procédures de prévention d'ESD lors du retrait et du remplacement de composants.
- Portez un bracelet anti-ESD et veillez à ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps à la terre en touchant la partie métallique du châssis.
- Vérifiez régulièrement la valeur de résistance du bracelet antistatique, qui doit être comprise entre 1 et 10 mégohms (Mohms).

Mounting Installation Precautions

The following should be put into consideration for rack-mount or similar mounting installations:

- Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- The installation of this product must be performed by trained specialists; otherwise, a non-specialist might create the risk of the system's falling to the ground or other damages.
- Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the system or use of inappropriate installation components.
- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Grounding - Reliable grounding of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).
- Instruction for the installation of the conductor to building earth by a skilled person.

Electrical Safety Instructions

Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect the ground wire after turning off the power. A ground wire (green-and-yellow) is required and the part connecting the conductor must be greater than 6 mm2 or 8AWG.

Consignes de sécurité électrique

- Avant d'allumer l'appareil, reliez le câble de mise à la terre de l'équipement à la terre.
- Une bonne mise à la terre (connexion à la terre) est très importante pour protéger l'équipement contre les effets néfastes du bruit externe et réduire les risques d'électrocution en cas de foudre.
- Pour désinstaller l'équipement, débranchez le câble de mise à la terre après avoir éteint l'appareil.
- Un câble de mise à la terre est requis et la zone reliant les sections du conducteur doit faire plus de 6 mm2 ou 8 AWG.

Table of Contents

CHAPTER 1: PRODUCT OVERVIEW

The NCA-4242 is built with Intel® Alder Lake S/Raptor Lake S/ Raptor Lake Refresh/Bartlett Lake S processor and Intel® R680E chipset; this appliance is designed network traffic security, cloud computing and data centers.

Package Content

- 1x NCA-4242 Network Security Platform
- 1x CPU Heatsink
- 1x RJ45 Console Cable; 1x RJ45 LAN Cable
- 1x or 2x Power Cable (By SKU)
- 2x Short Ear Rack Mount Kit with Screws

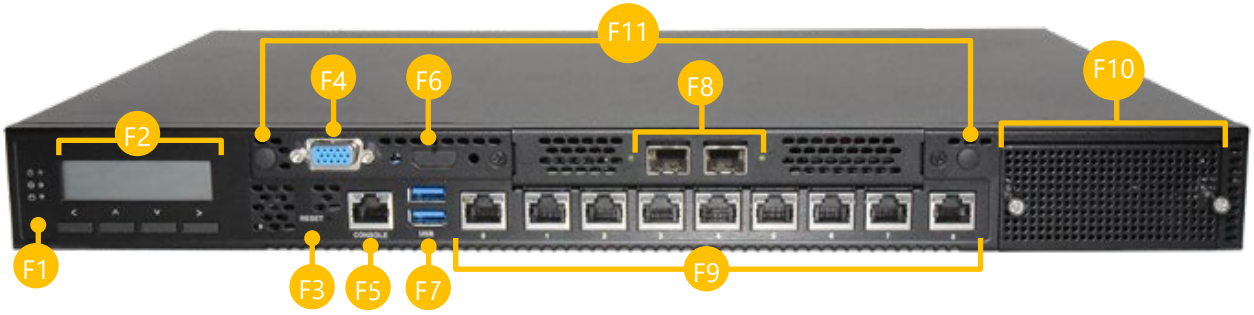
Ordering Information

SKU No.	Main Features
NCA-4242A	Intel® 14th Gen Core™ i9-14900 Processor with R680E, 2x DDR5 UDIMM 5600MHz, 8x 2.5GbE RJ45, 1x 1GbE RJ45 MGMT i210, 2x 10GbE SFP+ (Intel Fortville XL710), TPM2.0 Optional, 1x NCS2 Slot, 450W Redundant PSU
NCA-4242B	Intel® 14th Gen Core™ i9-14900 Processor with R680E, 2x DDR5 UDIMM 5600MHz, 8x 2.5GbE RJ45, 1x 1GbE RJ45 MGMT i210, 2x 10GbE SFP+ (Intel Fortville XL710), TPM2.0 Optional, 1x NCS2 Slot, 220W Single PSU.

System Specifications

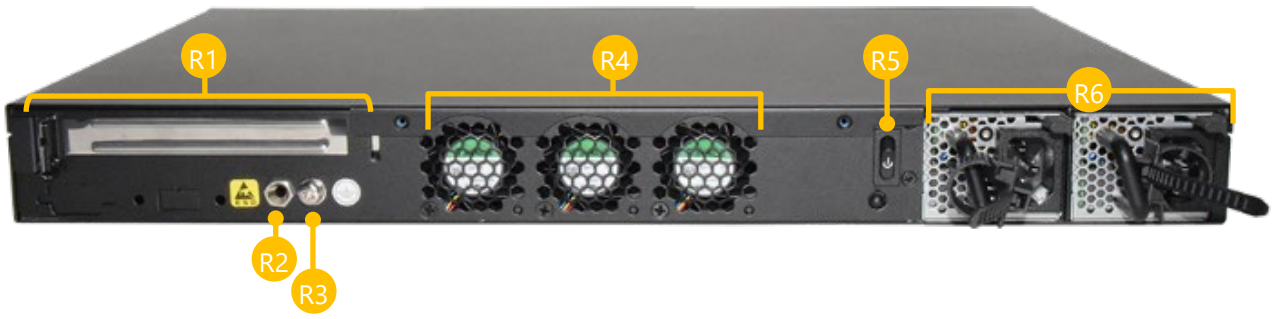
Form Factor		1U 19"Rackmount
Platform	Processor Options	Intel® 12th/13th/14th Gen Core™ i9/i7i5/i3, Pentium® or Celeron® Processor (Codenamed Alder Lake S / Raptor Lake S / Raptor Lake Refresh / Bartlett Lake S)
	CPU Socket	1x LGA1700 socket
	Chipset	Intel® R680E
BIOS		AMI SPI Flash BIOS
System Memory	Technology	DDR5 5600MT/s UDIMM
	Max. Capacity	Up to 96GB
	Socket	2x 288-Pin DIMM
Networking	Ethernet Ports	2x 10GbE SFP+; 1x 1GbE RJ45 (via Intel® i210); 8x 2.5GbE RJ45 (via Intel® i226-LM);
	NIC Module Slot	1x NIC Slot
LOM	OPMA Slot	Yes
I/O Interface	Reset Button	1x Reset Button
	LED Indicators	Power/Status/Storage LED Indicators, refer to Appendix A
	Power Button	1x ATX Power Switch
	Console Port	1x RJ45 Console Port
	USB Port	2x USB 3.0 Port
	LCD Module	2x20 Character LCM, 4x Keypads
	Power Input	AC Power Inlet on PSU
	Antenna	2x Antenna Holes
Storage	HDD/SSD Support	1x 2.5" Internal HDD/SSD (Optional)
	Onboard Slots	1x M.2 2242 (SATA); 1x M.2 2280 (NVMe)
Expansion	PCIe	1x PCIe*8 Gen4 FH/HL (Optional)
	Mini-PCIe/M.2	1x M.2 2230 E-Key for Wi-Fi/BT (CNVIO/PCIe)
	NOTE: The front NIC and rear FHHL PCIe module cannot be installed simultaneously due to a mechanical conflict.	
Miscellaneous	Watchdog	Yes
	Internal RTC w/ Li Battery	Yes
	TPM	N/A; TPM 2.0 (Optional)
Cooling	Processor	Passive CPU Heatsink
	System	3x Cooling Smart Fans
Environmental Parameters	Temperature	0~40ºC Operating; -40~70ºC Non-Operating
	Humidity (RH)	5~90% Operating; 5~ 95% Non-Operating
System Dimensions	Size (WxDxH)	438mm x 350mm x 44mm
	Weight	5kg
Package Dimensions	Size (WxDxH)	588mm x 579mm x 227mm
	Weight	8.9kg
Power	Type/Watts	SKU A: 450W Redundant PSU; SKU B: 220W Single PSU
Approvals and Compliance		RoHS, CE/FCC Class A, UKCA

Front Panel



No.	Description	
F1	LED Indicators	 System Power System Status HDD Activity
F2	LCM Panel	2x20 Character LCM & 4x Keypad
F3	Reset Button	1x Reset Button
F4	VGA Port	1x DB15 VGA Port via LOM card (Optional)
F5	Console Port	1x RJ45 Console Port
F6	HDMI Port	1x HDMI Port via HDMI Cable (2D Display w/out Audio) (Optional)
F7	USB Ports	2x USB 3.0 Ports
F8	SPF Port	2x 10GbE SFP+ Ports
F9	LAN Port	1x 1GbE RJ45 MGMT Port (Port#0); 8x 2.5GbE RJ45 LAN Ports (Port#1~#8)
F10	NIC Slot	1x NCS2 NIC Module Slot
F11	Antenna Holes	2x Antenna Holes (for Wi-Fi Module, Optional)

Rear Panel

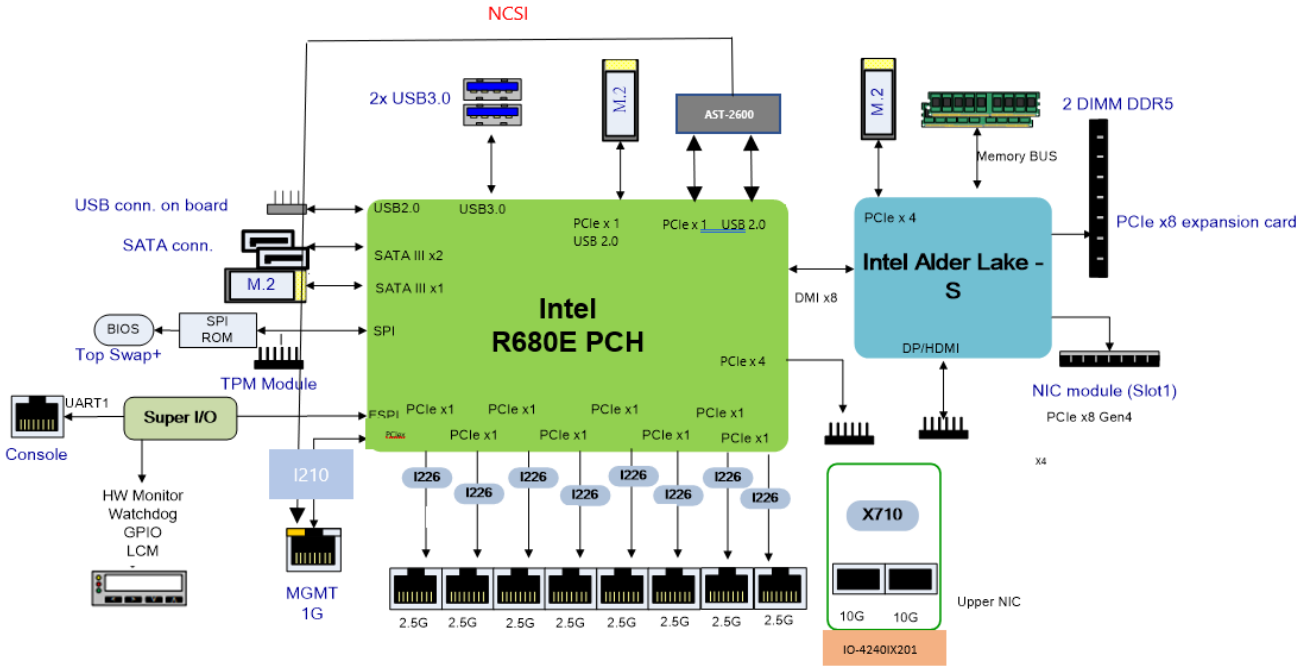


No.	Description	
R1	PCIe Expansion Slot	FH/HL Size PCIe Slot for 1x PCIE*8 (Optional) NOTE: The front NIC and rear FHHL PCIe module cannot be installed simultaneously due to a mechanical conflict.
R2	ESD Jack	1x ESD Jack
R3	Grounding Hole	1x Grounding Hole
R4	Cooling Fan	3x Smart Fans
R5	Power Button	1x Power On/Off Switch
R6	Power Inlet	AC Power Inlet on PSU

Motherboard Information

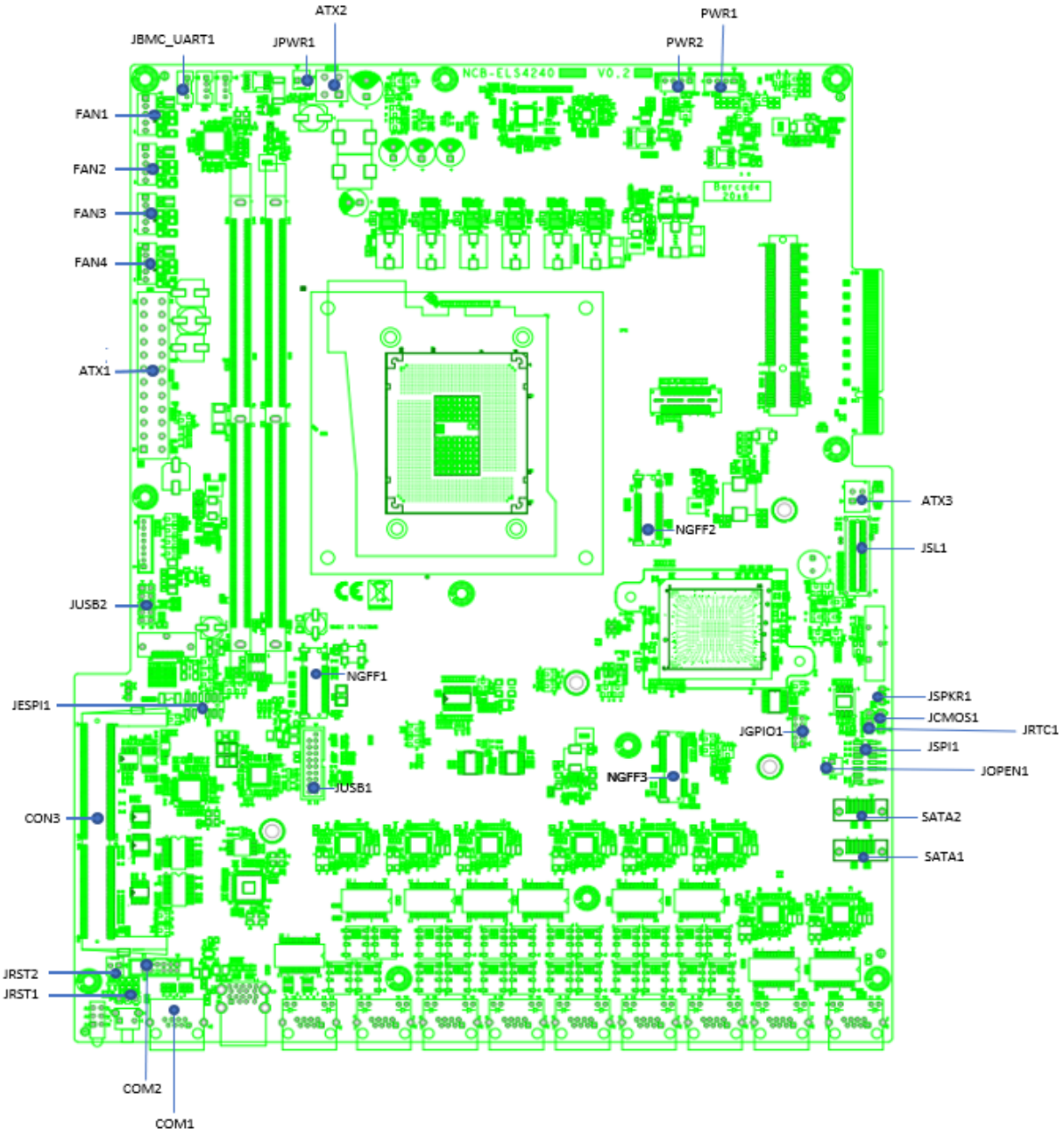
Block Diagram

The block diagram indicates how data flows among components on the motherboard. Please refer to the following figure for your motherboard's layout design.



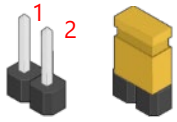
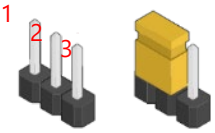
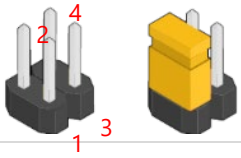
Internal Jumpers & Connector Pin Settings

The pin headers on the motherboard play a crucial role in controlling key functions. By placing a shunt (jumper) over the specified pins (whose numbers are labeled on the circuit board around the pin header), you can enable or disable specific features. Always ensure that your system is powered off before adjusting the jumpers.



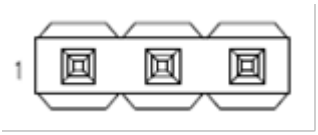
Jumper Setting

To short the designated pins, push the jumper down on them so that they become **SHORT**. To make the pins setting **OPEN**, simply remove the jumper cap.

2-Pin Header	3-Pin Header	4-Pin Header
		
Open Short	Open (1-2) Jumped	Open (1-2) Jumped

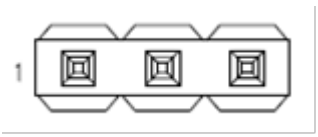
1. JRTC1：RTC Reset

Jumper	Description
1-2 (Default)	Normal
2-3	Reset register bits in the RTC well



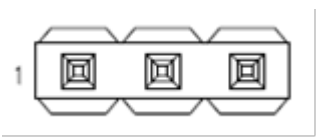
2. JCMOS1: Secured RTC Reset

Jumper	Description
1-2 (Default)	Normal
2-3	Reset the manageability register bits in the RTC well



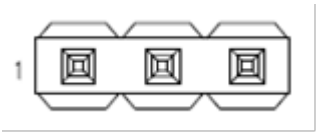
3. JRST1: HW/SW Reset Selection

Jumper	Description
1-2	Hardware Reset
2-3 (Default)	Software Reset



4. JSPKR1: Speaker/Top Swap Selection

Jumper	Description
1-2 (Default)	Speaker
2-3	Enable “Top Swap” Mode



Connectors Pin Assignment

1. JOPEN1: Case Open Wafer

Pin No.	Description
1	GND
2	PCH_INTRUDER_HDR_N

2. JPWR1: Power On/Off Wafer

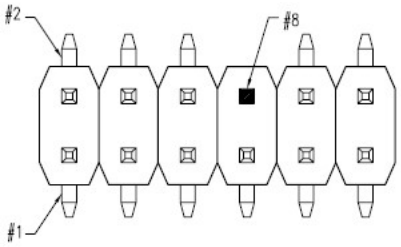
Pin No.	Description
1	PWRBTN_N
2	GND

3. JRST2: Reset Wafer

Pin No.	Description
1	FP_RST_N
2	GND

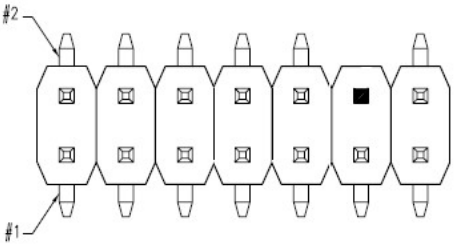
4. JESPI1: ESPI Debug 80 Port Pin Header

Pin No.	Description	Pin No.	Description
1	ESPI_CLK_SIO	2	ESPI_IO1_SIO
3	ESPI_RST_SIO_N	4	ESPI_IO0_SIO
5	ESPI_CS0_SIO_N	6	+V3P3S
7	ESPI_IO3_SIO	-	--
9	ESPI_IO2_SIO	10	GND
11	+V3P3DSW	12	NC



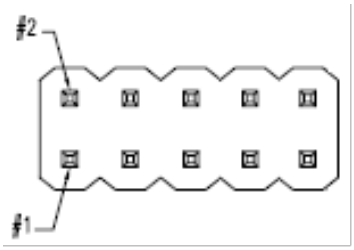
5. JSPI1: SPI Pin Header

Pin No.	Description	Pin No.	Description
1	SPI_HD#	2	NC
3	SPI_CS0_SF_N	4	+V3P3A_TPM
5	SPI_MISO_TPM	6	SPI_HOLD_SF_N
7	NC	8	SPI_CLK_TPM
9	GND	10	SPI_MOSI_TPM
11	--	-	--
13	--	14	--



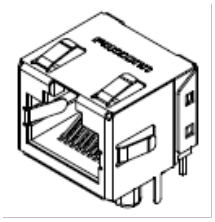
6. JGPIO1: GPIO Pin Header

Pin No.	Description	Pin No.	Description
1	GPO_B_1	2	GPI_B_1
3	GPO_B_2	4	GPI_B_2
5	GPO_B_3	6	GPI_B_3
7	GPO_B_4	8	GPI_B_4
9	GND	10	GND



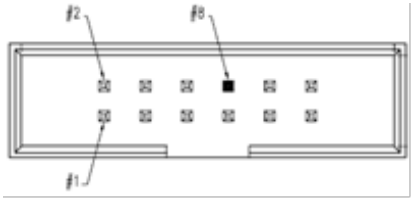
7. COM1: Console RJ45

Pin No.	Description	Pin No.	Description
1	COM1_RTS_N	5	GND
2	COM1_DTR_N	6	COM1_RXD
3	COM1_TXD	7	COM1_DSR_N
4	GND	8	COM1_CTS_N



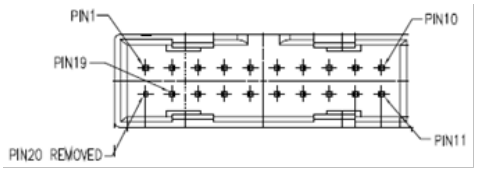
8. COM2: Serial Port 2 Box Header

Pin No.	Description	Pin No.	Description
1	+V5S	2	HDD_LED_N
3	COM2_DCD_N	4	COM2_DSR_N
5	COM2_RXD	6	COM2_RTS_N
7	COM2_TXD	-	--
9	COM2_DTR_N	10	COM2_CTS_N
11	GND_COM	12	COM2_RI_N



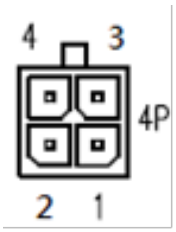
9. JUSB1: Internal USB Box Header

Pin No.	Description	Pin No.	Description
1	+USB3_PW	11	USB2_4+
2	USB3_R3-	12	USB2_4-
3	USB3_R3+	13	GND_USB2
4	GND_USB2	14	USB3_T4+
5	USB3_T3-	15	USB3_T4-
6	USB3_T3+	16	GND_USB2
7	GND_USB2	17	USB3_R4+
8	USB2_3-	18	USB3_R4-
9	USB2_3+	19	+USB4_PW
10	NC	-	--



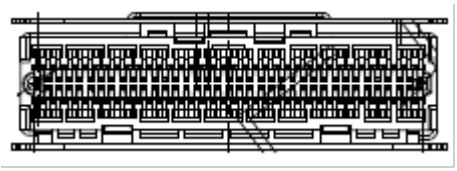
10. ATX3: IO Power Connector

Pin No.	Description
1	GND
2	GND
3	+V3P3S
4	+V12S



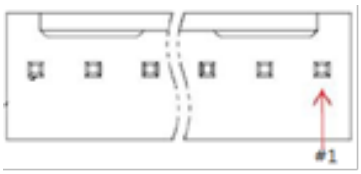
11. JSL1: IO Slim SAS Connector

Pin	Description	Pin	Description	Pin	Description	Pin	Description
A1	GND	A20	PCIE26_RX_DP	B1	GND	B20	
A2	CLK_SLIM_DP	A21	PCIE26_RX_DN	B2	PCIE21_TX_C_DP	B21	
A3	CLK_SLIM_DN	A22	GND	B3	PCIE21_TX_C_DN	B22	GND
A4	GND	A23		B4	GND	B23	
A5	PCIE21_RX_DP	A24		B5	PCIE22_TX_C_DP	B24	
A6	PCIE21_RX_DN	A25	GND	B6	PCIE22_TX_C_DN	B25	GND
A7	GND	A26		B7	GND	B26	
A8	PCIE22_RX_DP	A27		B8	PCIE23_TX_C_DP	B27	
A9	PCIE22_RX_DN	A28	GND	B9	PCIE23_TX_C_DN	B28	GND
A10	GND	A29		B10	GND	B29	SMB_CLK_SL5
A11	PCIE23_RX_DP	A30		B11	PCIE24_TX_C_DP	B30	SMB_DATA_SL5
A12	PCIE23_RX_DN	A31	GND	B12	PCIE24_TX_C_DN	B31	GND
A13	GND	A32	PCIE1_A7	B13	GND	B32	PCH_WAKE_N
A14	PCIE24_RX_DP	A33	PCIE1_A8	B14	PCIE25_TX_C_DP	B33	PCIE1_PRSNT1_N
A15	PCIE24_RX_DN	A34	GND	B15	PCIE25_TX_C_DN	B34	GND
A16	GND	A35	PCIE1_PRSNT0_N	B16	GND	B35	+V3P3_DUAL
A17	PCIE25_RX_DP	A36	PLTRST_PCIE3_N	B17	PCIE26_TX_C_DP	B36	+V3P3_DUAL
A18	PCIE25_RX_DN	A37	GND	B18	PCIE26_TX_C_DN	B37	GND
A19	GND			B19	GND		



12. FAN1 ~ FAN3: FAN Connector

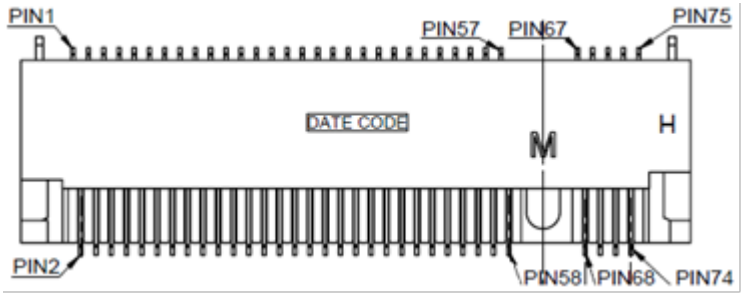
Pin No.	Description
1	GND
2	+V12S
3	HM_FAN_TECH_IN1
4	HM_FAN_TECH_IN2
5	HM_PWMOUT1



13. NGFF1: PCIe M.2 M-Key Connector

Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	GND	39	GND	2	+P3V3	40	NC
3	GND	41	NGFF_CRX_DTX_N0	4	+P3V3	42	NC
5	NGFF_CRX_DTX_N3	43	NGFF_CRX_DTX_P0	6	NC	44	NC
7	NGFF_CRX_DTX_P3	45	GND	8	NC	46	NC

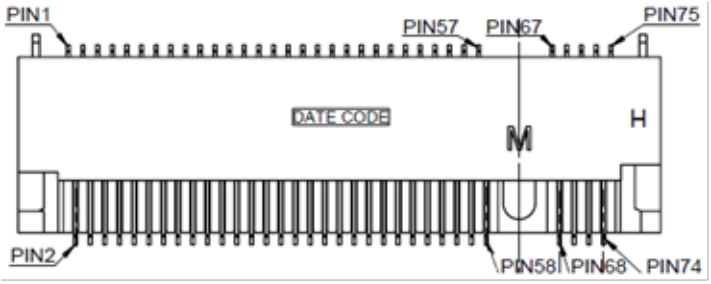
9	GND	47	NGFF_CTX_DRX_N0	10	M2_ACT_LED_L	48	NC
11	NGFF_CTX_DRX_N3	49	NGFF_CTX_DRX_P0	12	+V3P3S	50	RST_M2_N
13	NGFF_CTX_DRX_P3	51	GND	14	+V3P3S	52	M2_CLKREQ_N
15	GND	53	CLK_CPU_M2_D N	16	+V3P3S	54	M2_PEWAKE_N
17	NGFF_CRX_DTX_N2	55	CLK_CPU_M2_D P	18	+V3P3S	56	NC
19	NGFF_CRX_DTX_P2	57	GND	20	NC	58	NC
21	GND	59	KEY	22	NC	60	KEY
23	NGFF_CTX_DRX_N2	61	KEY	24	NC	62	KEY
25	NGFF_CTX_DRX_P2	63	KEY	26	NC	64	KEY
27	GND	65	KEY	28	NC	66	KEY
29	NGFF_CRX_DTX_N1	67	NC	30	NC	68	CLK32K_M2_R
31	NGFF_CRX_DTX_P1	69	M2_PEDET	32	NC	70	+V3P3S
33	GND	71	GND	34	NC	72	+V3P3S
35	NGFF_CTX_DRX_N1	73	GND	36	NC	74	+V3P3S
37	NGFF_CTX_DRX_P1	75	GND	38	NC	-	--



14. NGFF2: SATA M.2 M-Key Connector

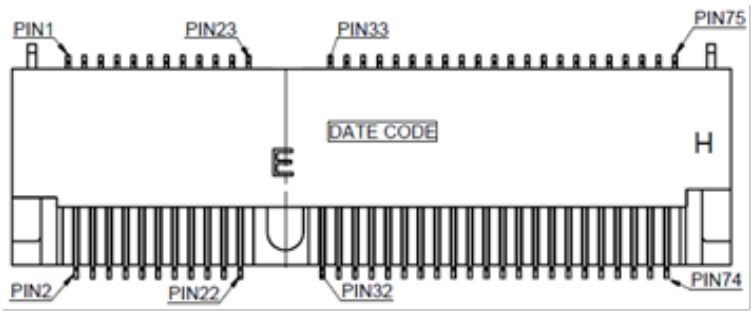
Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	GND	39	GND	2	+V3P3S	40	NC
3	GND	41	SATA_RX6_P	4	+V3P3S	42	NC
5	NC	43	SATA_RX6_N	6	NC	44	NC
7	NC	45	GND	8	NC	46	NC
9	GND	47	SATA_TX6_N	10	NC	48	NC
11	NC	49	SATA_TX6_P	12	+V3P3S	50	NC
13	NC	51	GND	14	+V3P3S	52	NC
15	GND	53	NC	16	+V3P3S	54	NC
17	NC	55	NC	18	+V3P3S	56	NC
19	NC	57	GND	20	NC	58	NC
21	GND	59	KEY	22	NC	60	KEY
23	NC	61	KEY	24	NC	62	KEY
25	NC	63	KEY	26	NC	64	KEY
27	GND	65	KEY	28	NC	66	KEY
29	NC	67	NC	30	NC	68	NC

31	NC	69	M2_PEDET	32	NC	70	+V3P3S
33	GND	71	GND	34	NC	72	+V3P3S
35	NC	73	GND	36	NC	74	+V3P3S
37	NC	75	GND	38	NC	-	--



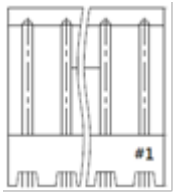
15. NGFF3: CNVio M.2 E-Key Connector

Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	GND	39	GND	2	+V3P3_WIFI	40	
3	USB2_DP14	41	PCIE16_RX_DP	4	+V3P3_WIFI	42	
5	USB2_DN14	43	PCIE16_RX_DN	6	WLAN_LED1	44	
7	GND	45	GND	8		46	
9		47	CLK_PCH_M2_D P	10		48	
11		49	CLK_PCH_M2_D N	12		50	M2_E_SUSCLK
13	GND	51	GND	14		52	M2_E_RST#
15		53	E_CLKREQ_N	16		54	M.2_BT_RF_KILL_N
17		55	PCH_WAKE_N	18	GND	56	M.2_WIFI_RF_KI LL_N
19	GND	57	GND	20		58	NC
21		59		22		60	NC
23		61		24	KEY	62	NC
25	KEY	63	GND	26	KEY	64	NC
27	KEY	65		28	KEY	66	NC
29	KEY	67		30	KEY	68	NC
31	KEY	69	GND	32		70	NC
33	GND	71		34		72	+V3P3_WIFI
35	PCIE16_TX_C_DP	73		36		74	+V3P3_WIFI
37	PCIE16_TX_C_D N	75	GND	38			



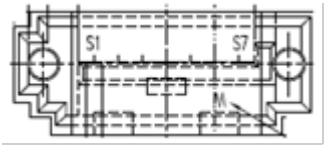
16. PWR1 ~ PWR2: SATA Power Wafer

Pin No.	Description
1	+V12S
2	GND
3	GND
4	+V5S



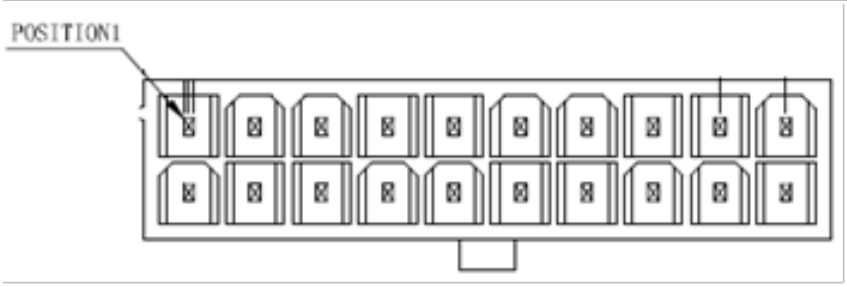
17. SATA1~SATA2: SATA Signal

Pin No.	Description	Pin No.	Description
1	GND	5	SATA_RX_DN
2	SATA_TX_DP	6	SATA_RX_DP
3	SATA_TX_DN	7	GND
4	GND		



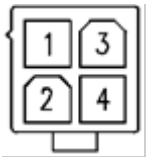
18. ATX1: ATX Power Connector

Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	+V3P3S	39	GND	2	+V3P3S	40	GND
3	+V3P3S	41	POK	4	NC	42	NC
5	GND	43	+V5DSW	6	GND	44	+V5S
7	+V5S	45	+V12S	8	PSON#	46	+V5S
9	GND	47	+V12S	10	GND	48	+V5S
11	+V5S	49	+V3P3S	12	GND	50	GND



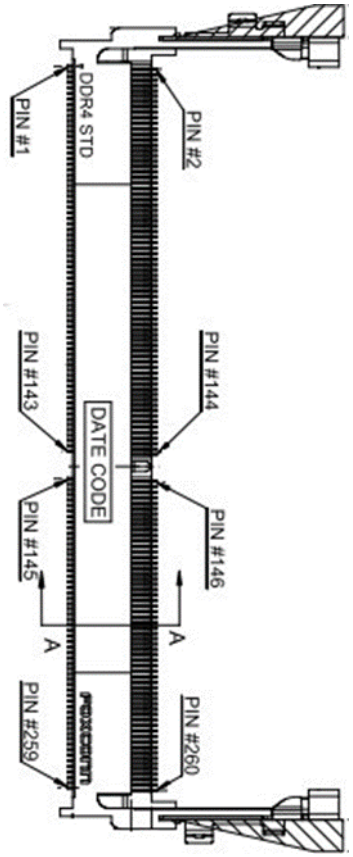
19. ATX2: ATX Power Connector

Pin No.	Description
1	+GND
2	+P12V
3	GND
4	+P12V



20. CON3: DDR4 SODIMM for IPMI

Pin	Description	Pin	Description
1	GND	2	+V12S
3	GND	4	NC
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	GND
15	NC	16	NC
17	NC	18	+V5S
19	NC	20	NC
21	+V3P3S	22	UART_RXD5
23	NC	24	UART_TXD5
25	GND	26	GND
27	I2C_SDA6	28	NC
29	I2C_SCL6	30	NC
31	GND	32	NC
33	NC	34	GND
35	NC	36	NC
37	GND	38	NC
39	NC	40	NC
41	NC	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	GND
49	NC	50	NC
51	NC	52	NC
53	GND	54	NC
55	NC	56	NC
57	NC	58	NC
59	NC	60	NC
61	GND	62	NC
63	NC	64	NC
65	NC	66	GND
67	NC	68	NC
69	NC	70	NC
71	GND	72	GND
73	NC	74	NC



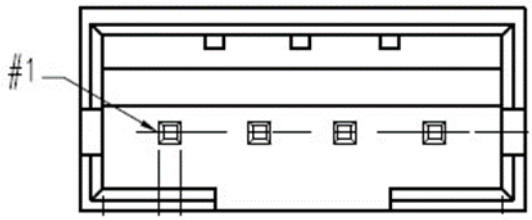
75	GND	76	NC
77	NC	78	GND
79	NC	80	NC
81	NC	82	+VCC1P05_PROC
83	NC	84	H_PECI
85	NC	86	GND
87	NC	88	NC
89	GND	90	NC
91	NC	92	NC
93	GND	94	NC
95	NC	96	GND
97	NC	98	NC
99	NC	100	NC
101	NC	102	NC
103	NC	104	NC
105	NC	106	NC
107	SLP_S5_PCH_N	108	NC
109	PM_SLP_S3_N	110	BMC_EXTRST#
111	NC	112	PCH_WAKE_N
113	NC	114	GND
115	NC	116	I2C_SDA1
117	NC	118	I2C_SCL1
119	GND	120	GND
121	PCIE_C_TXP_13	122	I2C_SCL2
123	PCIE_C_TXN_13	124	I2C_SDA2
125	GND	126	GND
127	PCIE_RXP_13	128	PLTRST_IPMI_N
129	PCIE_RXN_13	130	GND
131	GND	132	NC
133	CLK_IPMI_DP	134	NC
135	CLK_IPMI_DN	136	GND
137	GND	138	NC
139	NC	140	NC
141	NC	142	NC
143	GND	144	GND
145	NC	146	SYS_UART_SWITCH_OUT
147	NC	148	BIOS_READY_IN
149	NC	150	BMC_PWRBTN_OUT
151	NC	152	BMC_READY_OUT

153	GND	154	SYS_NMI_IN_N
155	GND	156	GND
157	BMC_SMI_N	158	BMC_SMI_OUT
159	NC	160	CPU_CATERR_IN
161	NC	162	BMC_UART_SWITCH_OUT
163	PCH_RSMRST_N	164	GND
165	GND	166	CPU_THERMTRIP_IN
167	NC	168	BMC_RSTBTN_OUT
169	ESPI_ALERT1_BMC	170	PCH_SYSPWROK
171	NC	172	CPU0_PROCHOT_IN
173	GND	174	NC
175	ESPI_RST_R_N	176	BMC_SPKR_OUT
177	ESPI_CS_BMC_N	178	NC
179	ESPI_BMC_IO1	180	GND
181	ESPI_IO0_R	182	NC
183	ESPI_IO3_R	184	NC
185	ESPI_IO2_R	186	GND
187	ESPI_CLK_R	188	I2C_SDA3
189	GND	190	I2C_SCL3
191	NC	192	GND
193	NC	194	I2C_SCL4
195	NC	196	I2C_SDA4
197	GND	198	GND
199	USB2_P13	200	BMC_NMI_OUT
201	USB2_N13	202	NC
203	GND	204	GND
205	NC	206	
207	NC	208	
209	GND	210	
211	NC	212	GND
213	UART_TXD3	214	NC
215	UART_RXD3	216	NC
217	GND	218	BMC_RMII2_RXD0
219		220	BMC_RMII2_RCLK
221		222	NC
223	GND	224	BMC_RMII2_CRSDV
225		226	BMC_RMII2_RXD1
227		228	GND
229	GND	230	PULL LOW

231		232	NC
233		234	NC
235	GND	236	BMC_RMII2_TXD0
237		238	NC
239		240	BMC_RMII2_TXEN
241	GND	242	BMC_RMII2_TXD1
243	NC	244	GND
245	NC	246	NC
247	NC	248	+V1P8A
249	NC	250	NC
251	NC	252	+V3P3_DUAL
253	GND	254	+V3P3_DUAL
255	NC	256	+V3P3_DUAL
257	NC	258	NC
259	GND	260	+V5DUAL

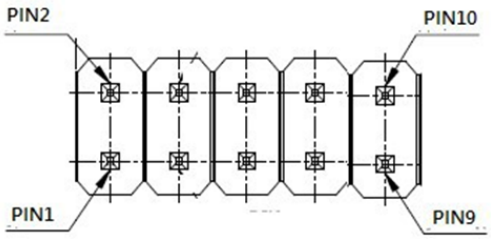
21. JBMC_UART1: IPMI Debug Port Wafer Connector 1x4P, 2.0mm

Pin No.	Description
1	+V3P3_DUAL
2	BMC_UART5_RX
3	BMC_UART5_TX
4	GND



22. JUSB2: Internal Pin Header 2x5P, 2.54mm

Pin	Description	Pin	Description
1	+USB5_PW	2	+USB7_PW
3	USB2_5-	4	USB2_7-
5	USB2_5+	6	USB2_7+
7	GND_USB5	8	GND_USB5
9	GND_USB5	10	GND_USB5



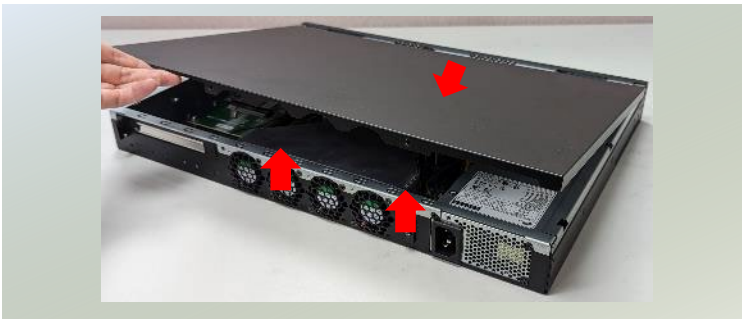
CHAPTER 2: HARDWARE SETUP

To reduce the risk of personal injury, electric shock, or damage to the system, please remove all power connections to shut down the device completely, and wear ESD protection gloves when handling the installation steps.

Opening the Chassis

1. Power off the system and remove all power connections.
2. Locate and remove the two (2) screws on the rear side of the chassis cover.

3. Gently slide the chassis cover away from the system and lift the cover to remove.



Installing the System Memory

The motherboard supports two memory slots for DDR5 UDIMM. Please follow the steps below to install the DIMM memory modules.

Supported System Memory Summary

Total Slots	2
Number of Channels	2 (2 DIMMs per channel)
Supported DIMM Capacity	4GB, 8GB, 16GB, 32GB, 48GB
Memory Size	Maximum 96GB (48GB*2)
Memory Type	DDR5 UDIMM 5600MT/s
Minimum DIMM Installed	At least 1 memory modules to boot and run from

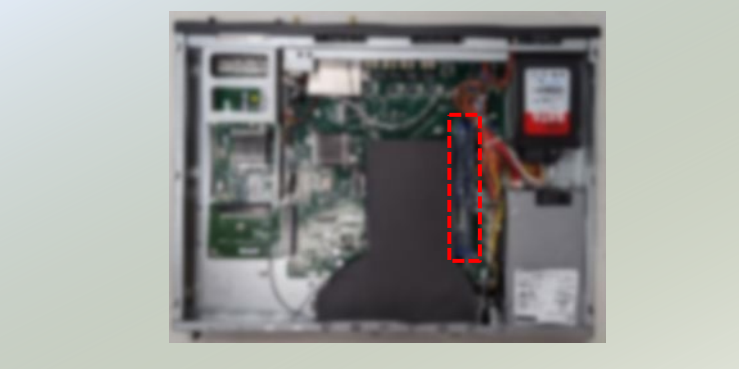
DIMM Population Guidelines

- The CPU requires at least 1 memory module to boot and run from.
- Use memory modules of the same capacity, speed, and from the same manufacturer to avoid compatibility issues and to achieve optimal CPU performance.

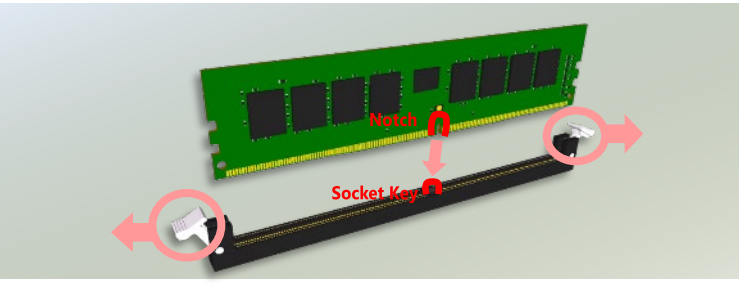
Memory Module Installation Instructions

Please follow the steps below to install the DIMM memory modules.

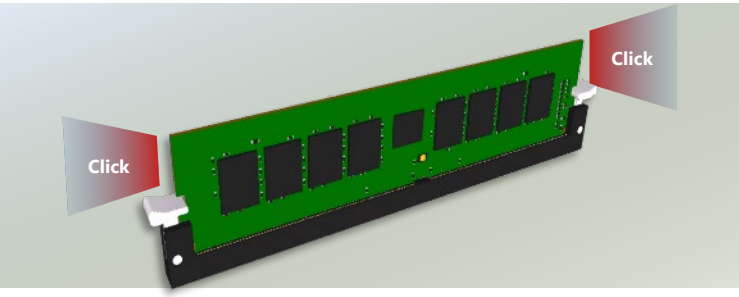
1. Power off the system and open the chassis cover.
2. Locate the DIMM memory slots.



3. Pull open the DIMM slot latches.
4. Align the notch of the module with the socket key in the slot and carefully insert the card into the slot.



5. Push the module down into the slot until it is firmly seated. Press vertically on both corners of the card until it clicks into place.



Installing the TPM Module (Optional)

The system provides one slot for a TPM module card for hardware-based security related functions. Follow the steps below for installation.

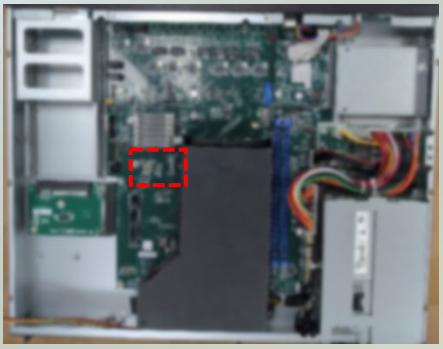
1. Power off the system and open the chassis cover.
2. Locate the TPM connector pins on the motherboard.

3. Insert the module card pins with the connector pins, until the module card is firmly seated.

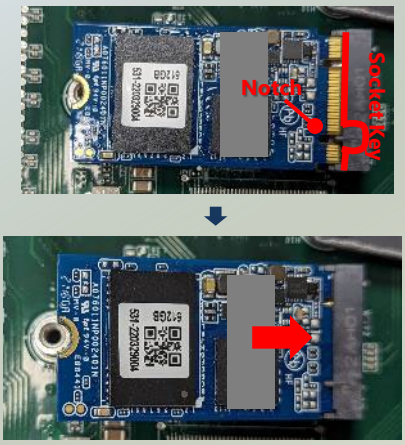
Installing the M.2 SATA Storage (Optional)

The system supports one M.2 slot for additional SATA data storage. Please follow the steps for installation.

1. Power off the system and open the chassis cover.
2. Locate the M.2 2242 M-Key slot on the motherboard.



3. Align the notch of the storage card with the socket key in the pin slot.
4. Insert the module card pins at 30 degrees into the socket until it is fully seated.



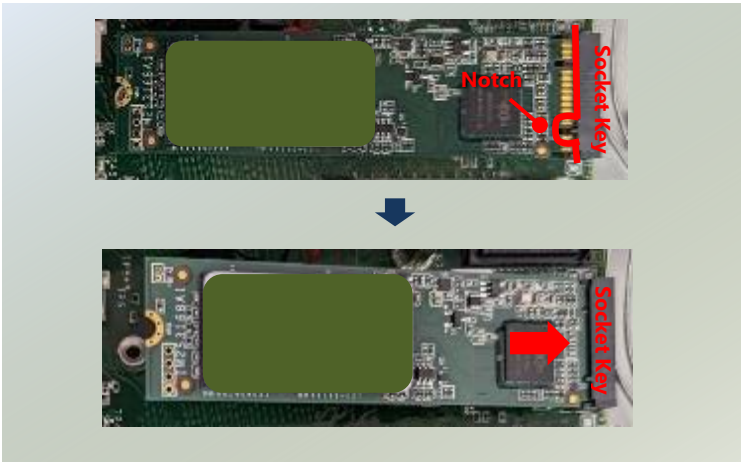
5. Push down on the module card and secure with a screw.

Installing the M.2 NVMe Storage (Optional)

NCA-4242 supports one M.2 2280 M-Key slot for NVMe storage. Please follow the steps for installation.

1. Power off the system and open the chassis cover.
2. Locate the M.2 2280 M-Key slot on the motherboard.

3. Align the notch of the storage card with the socket key in the pin slot.
4. Insert the module card pins at 30 degrees into the socket until it is fully seated.



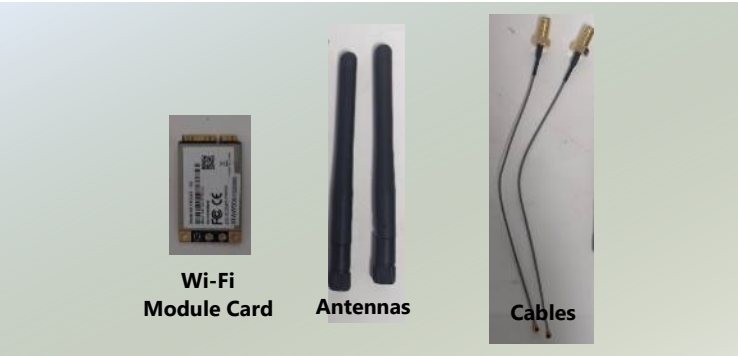
5. Push down on the module card and secure with one (1) screw.

Installing the Wi-Fi Module Card (Optional)

NCA-4242 supports one M.2 2230 E-Key for a Wi-Fi or BT module card. Wi-Fi module requires two antennas. Please follow the steps to install the Wi-Fi module card.

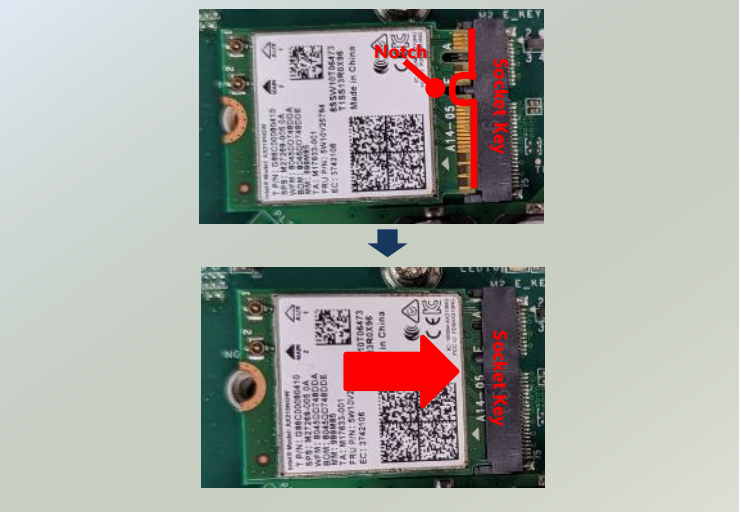
The Wi-Fi Module Card kit contains the following items:

- 1x Wi-Fi Module Card
- 2x SMA to IPEX cable
- 2x Antennas



1. Power off the system and open the chassis cover.
2. Locate the M.2 2230 E-Key slot on the motherboard.

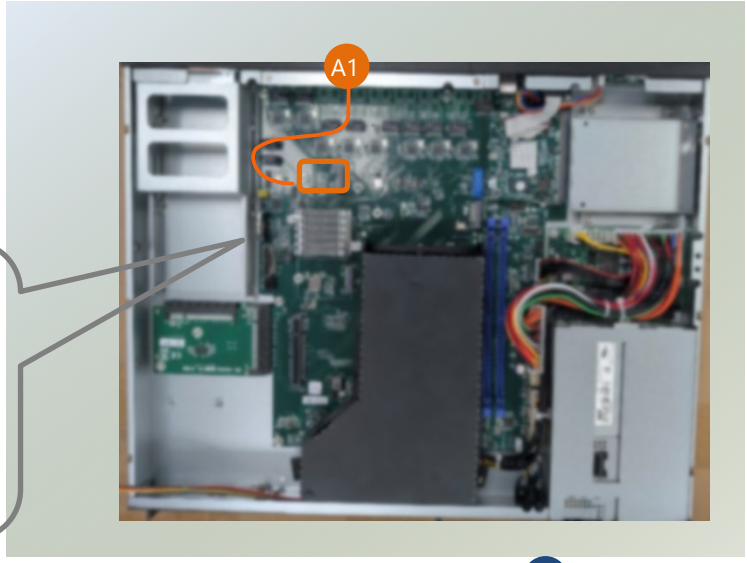
3. Align the notch of the Wi-Fi module with the socket key in the pin slot.
4. Insert the Wi-Fi module card pins at 30 degrees into the socket until it is fully seated.



5. Push down on the module card and secure with a screw.

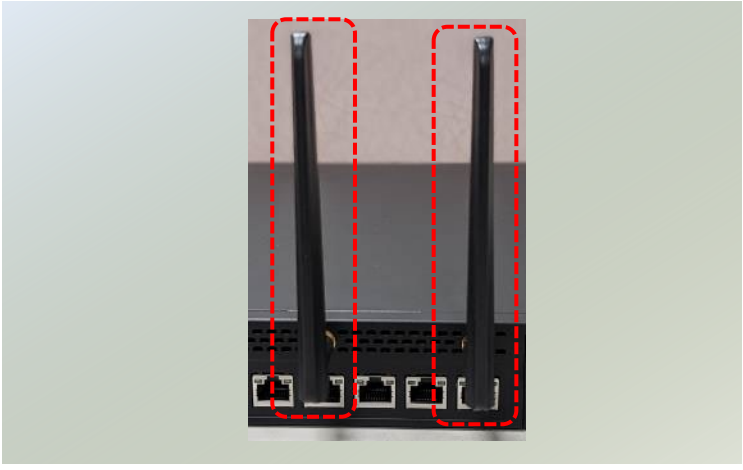
Installing Wi-Fi Antennas

1. Locate the two (2) antenna hole placements (A1, A2). Locate the two (2) IPEX connectors on the Wi-Fi module card.



2. Connect the RF cables to the IPEX connectors on the Wi-Fi module card and screw the other end of the cables in the antenna holes.

3. Then, screw on the antennas on the outside of the system.

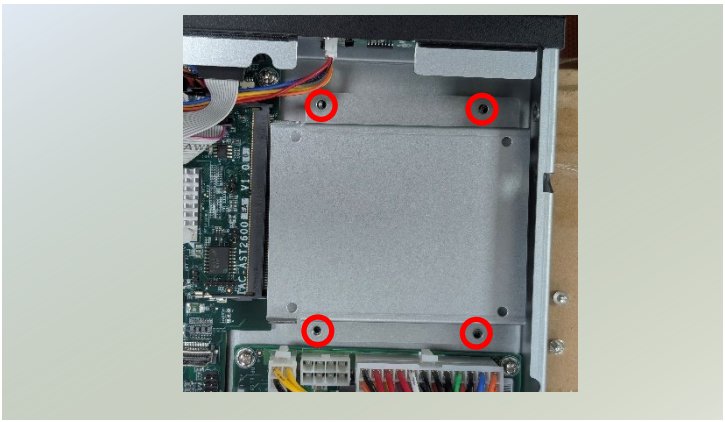


Installing the Disk Drives (Optional)

The HDD/SSD bay supports one 2.5" SATA HDDs or SSD for additional data storage. Follow the steps for installation.

1. Power off the system and open the chassis cover.
2. Locate the 2.5" disk tray inside the system.

3. Loosen the four (4) screw that secures the tray. Remove the screw, take the tray out and prepare to install the disk drives.



4. Mount the disk drives in the tray, make sure the SATA Contacts (SATA data cables and power cable connectors) are facing outwards. Apply four (4) screws on the bottom of the disk drive.

5. Place the tray (with the disk drives now installed) back to its original place inside the system. Attach the SATA data cable and power cable to the HDD/SSD disk.

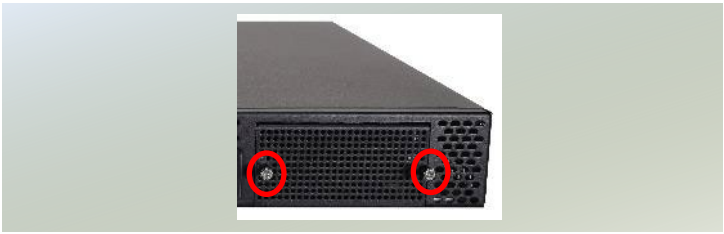
6. Secure with the original four (4) screw.

Installing the NIC Modules

The system comes with one NIC module slot for expansion. NOTE: The front NIC and rear FHHL PCIe module cannot be installed simultaneously due to a mechanical conflict. Follow the steps for installation.

1. Locate the NIC module slot on the front panel of the system.

2. Rotate clockwise and loosen the two lock-screws, and remove the NIC module slot door.



3. Insert your NIC module. (The module shown here is for reference only.)

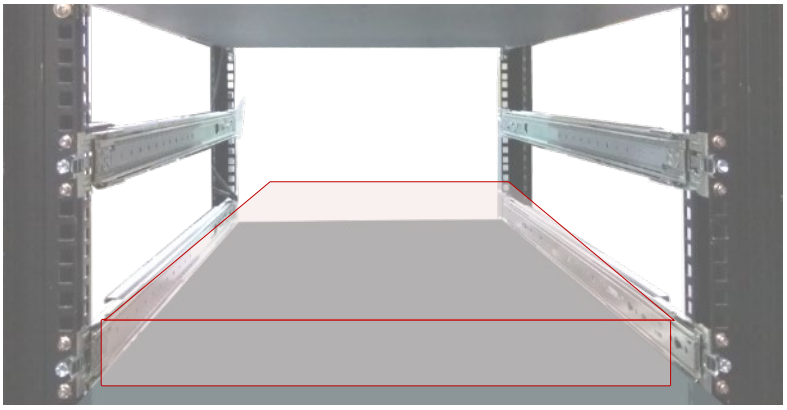
4. Once the module is firmly seated, rotate counter-clockwise and tighten the two lock-screws.

Mounting the System

This system offers multiple mounting options to suit your application and environment. It includes two types of mounting kits: one for standard rack or enclosure installations and another for integrating this system into a rack.

- **Ear Brackets**

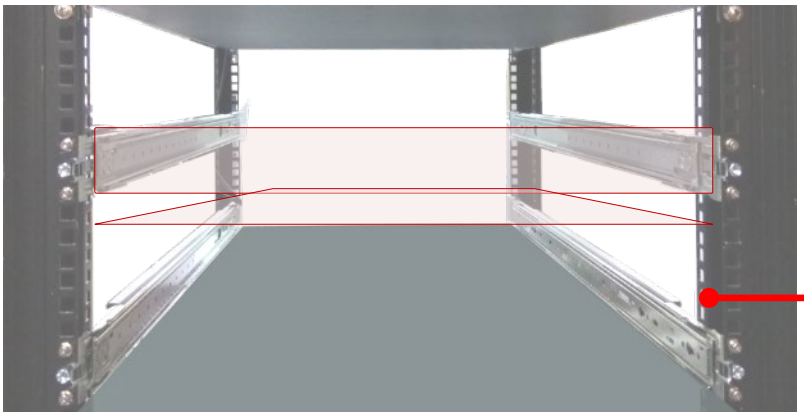
This quick and straightforward method involves attaching the system to the rack's front posts. To prevent the chassis from tipping over, it's crucial to pair this method with a shelf or slide rails for added stability.



Note: The system should be installed on the rack using a shelf or slide rails, as the "Mounting Ears" are designed for securing the system, not supporting it.

- **Slide Rail Kit + Short Ear Brackets**

The sliding rack-mount rails provide easy access to the system while ensuring it is securely fastened to the rack.



Installing the System Using Mounting Ear Brackets Only

1. Check the accessory pack for the following items:
   - 1x Screw Pack
   - 2x Ear Brackets

Screw Pack

Ear Brackets

2. Align the bracket to the side of the chassis and make sure the screw-holes are matched, and then secure the bracket onto the chassis with three provided screws.

3. Repeat Step 2 to attach the bracket to the other side of the chassis.

4. Install the chassis into the rack with the brackets fixed onto the posts using the provided screws. The actual approach you adopt and the needed parts for assembly will depend on the supporting accessory (shelf or rail kit) you use.

.

Installing the System Using the Slide Rail Kit (with Mounting Ear Brackets)

1. Check the package contents of the Slide Rail Kit. The kit shall include the following items:

   - 1x pack of M4X4L screws (for securing the Rail Brackets on the system)
   - 1x pack of 7.1 Round Hole screws (for securing the system on the rail posts)
   - 2x Slide Rails

M4X4L Screws

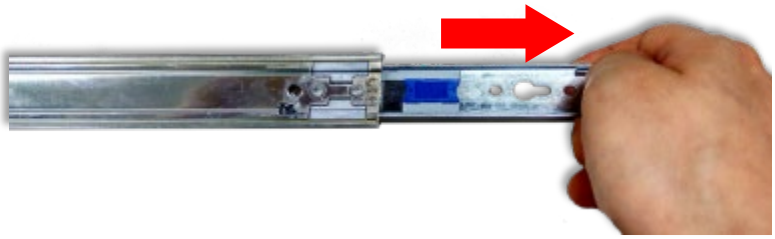
7.1 Round Hole Screws

Slide Rails

A rail consists of the following parts:

2. Unpack a slide rail and slide the Inner Rail all the way to the end.

3. Stretch the Rail Bracket to the fullest.
4. Remove the Rail Bracket from the Inner Rail by pushing the Release Tab on the bracket outwards while sliding it out.



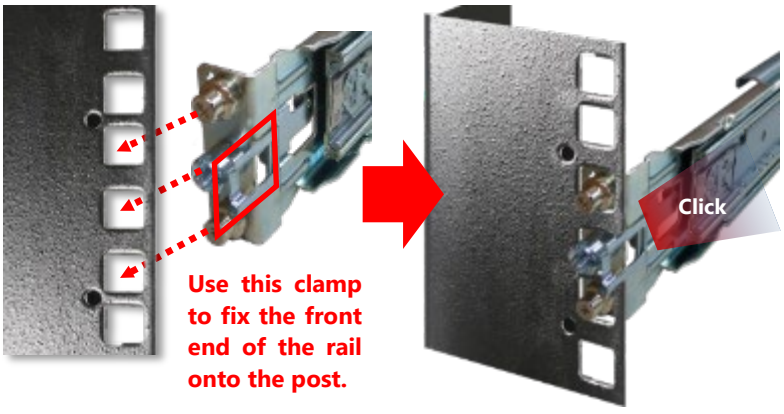
5. Align the bracket to the side of the chassis and make sure the screw-holes are matched, and then secure the bracket onto the chassis with three provided M4X4L screws.

Align the screws with the holes indicated on the brackets and the screw holes on the side of the chassis.

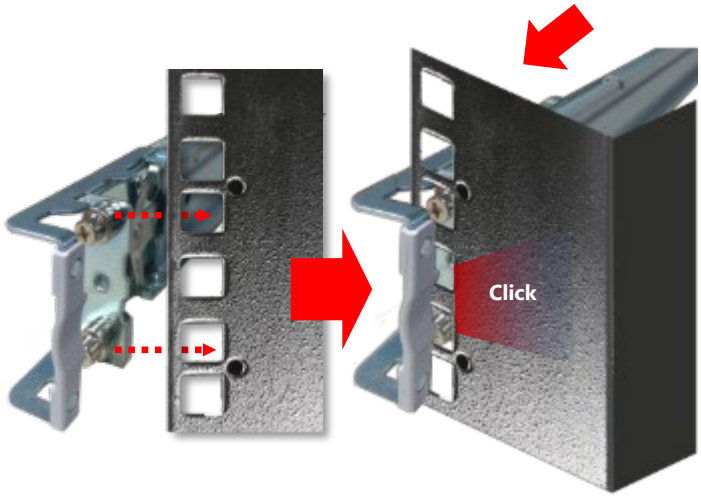
6. Repeat Steps 2~5 to attach the bracket to the other side of the chassis.
7. Follow the instructions in Installing the System Using Mounting Ear Brackets Only to attach the Mounting Ear Brackets.

Now, you shall install the slide rail assemblies onto the rack.

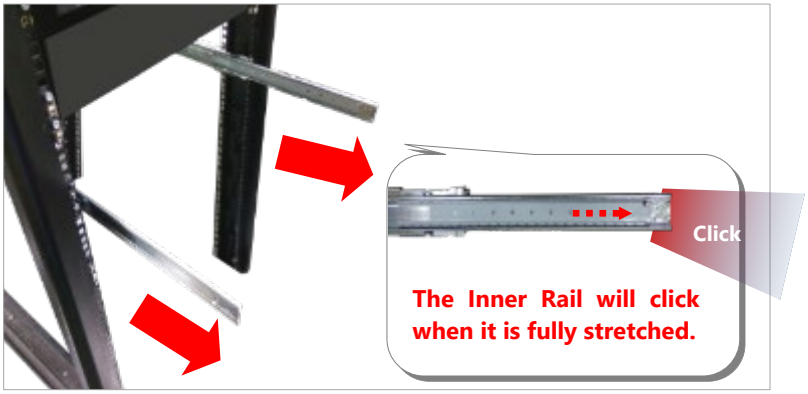
8. This slide rail kit does NOT require screw-fixing. Simply aim at three available screw holes on the rack front and snap the rail front into the rack post as shown in the image. You should hear a "click" sound once it is firmly attached.



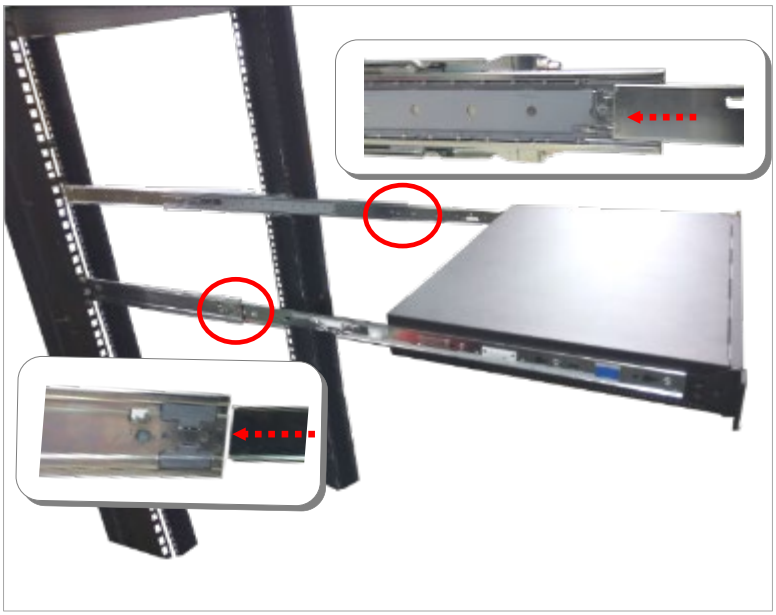
9. For the rear rack installation, slide the rail to aim and engage the bolts on the rail's rear end with the two available holes on the post, and the rail assembly will click into place.



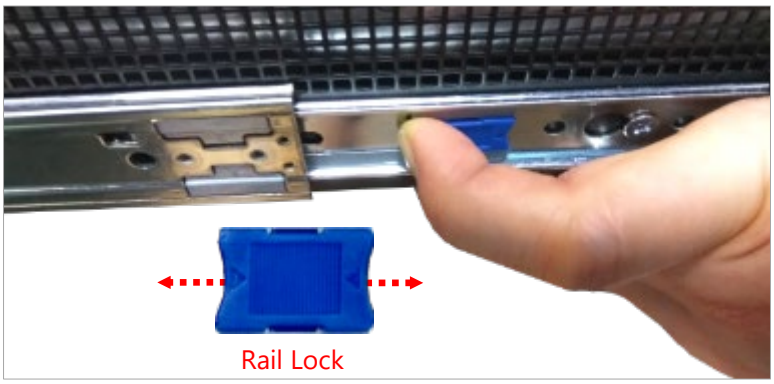
10. Stretch both of the Inner Rails out to their fullest extent. You will hear a click sound when they are fully stretched and locked.



11. Hold the system with its front facing you, lift the chassis and gently engage the brackets on the system while aligning them with the Inner Rails as shown in the image, and then push the system into the cabinet.

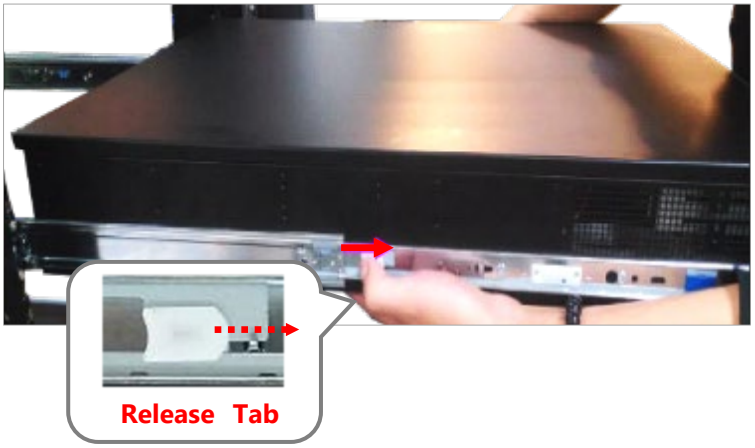


12. While pushing in the system, also push and hold the Rail Lock tab on both brackets.



Push the system all the way in until it stops.

To remove the system from the rack, gently pull it outwards, towards you, while pushing the Release Tab on both sides of the brackets.



CHAPTER 3: SOFTWARE SETUP

BIOS Setup

BIOS is a firmware embedded on an exclusive chip on the system's motherboard. Lanner's BIOS firmware offering including market-proven technologies such as Secure Boot and Intel Boot Guard technology deliver solid commitments for the shield protection against malware, uncertified sequences and other named cyber threats.

Main Setup

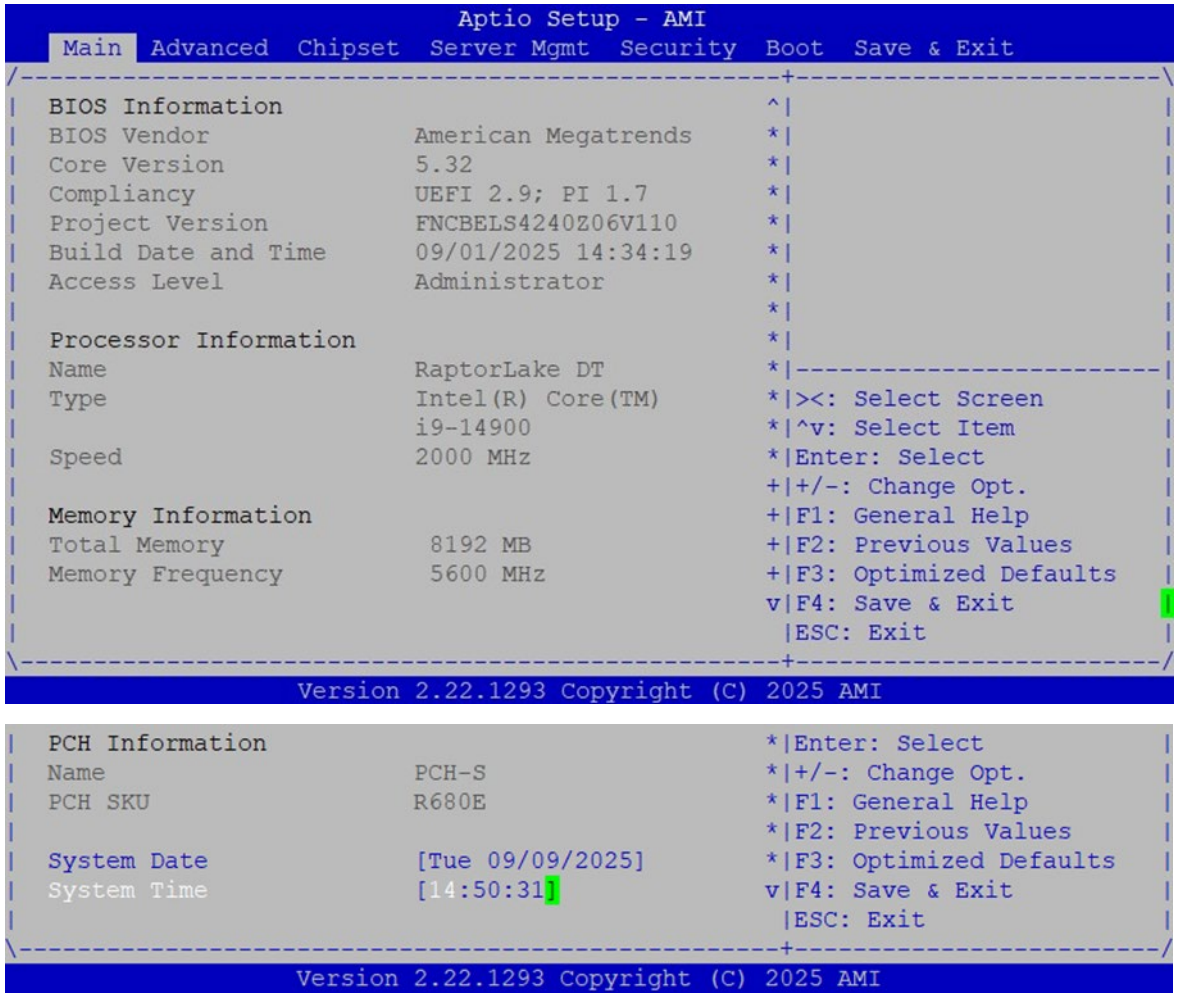
To enter the BIOS setup utility, simply follow the steps below:

1. Boot up the system.
2. Pressing the **<Tab>** or **<Del>** key immediately allows you to enter the Setup utility, and then you will be directed to the BIOS main screen. The instructions for BIOS navigations are as below:

Control Keys	Description
→←	select a setup screen
↑↓	select an item/option on a setup screen
<Enter>	select an item/option or enter a sub-menu
+/-	adjust values for the selected setup item/option
F1	display General Help screen
F2	retrieve previous values, such as the last configured parameters during the last time you entered BIOS
F3	load optimized default values
F4	save configurations and exit BIOS
<Esc>	exit the current screen

Main Page

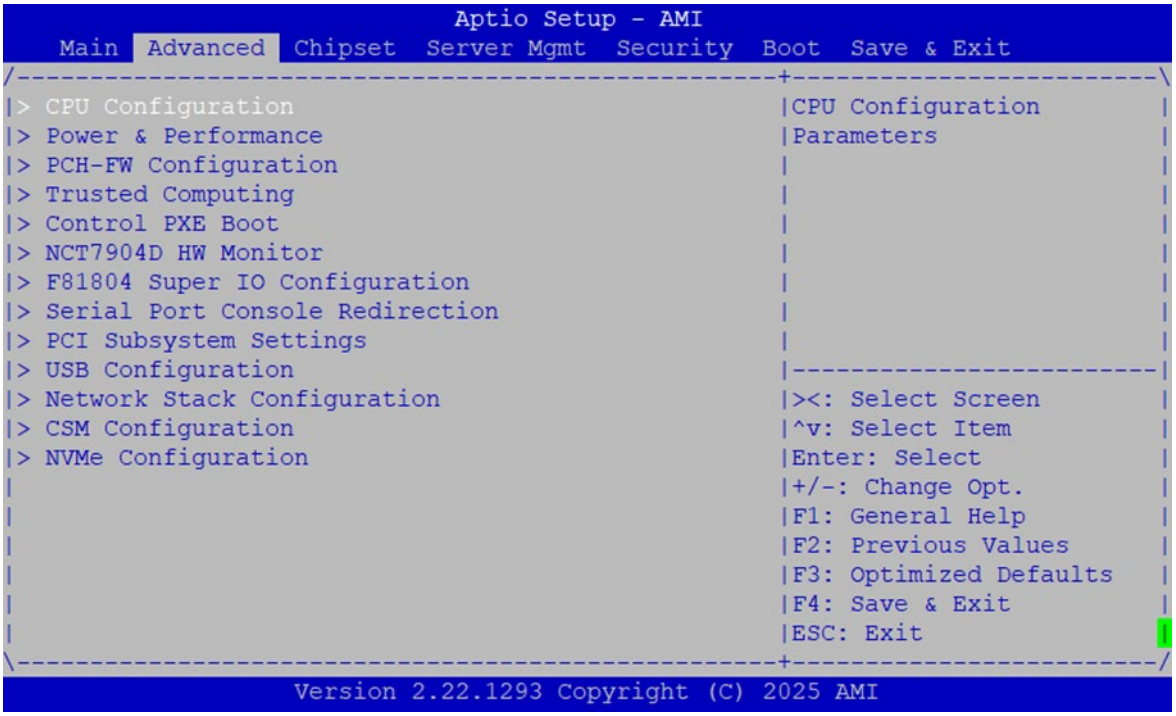
Setup main page contains BIOS information and project version information.



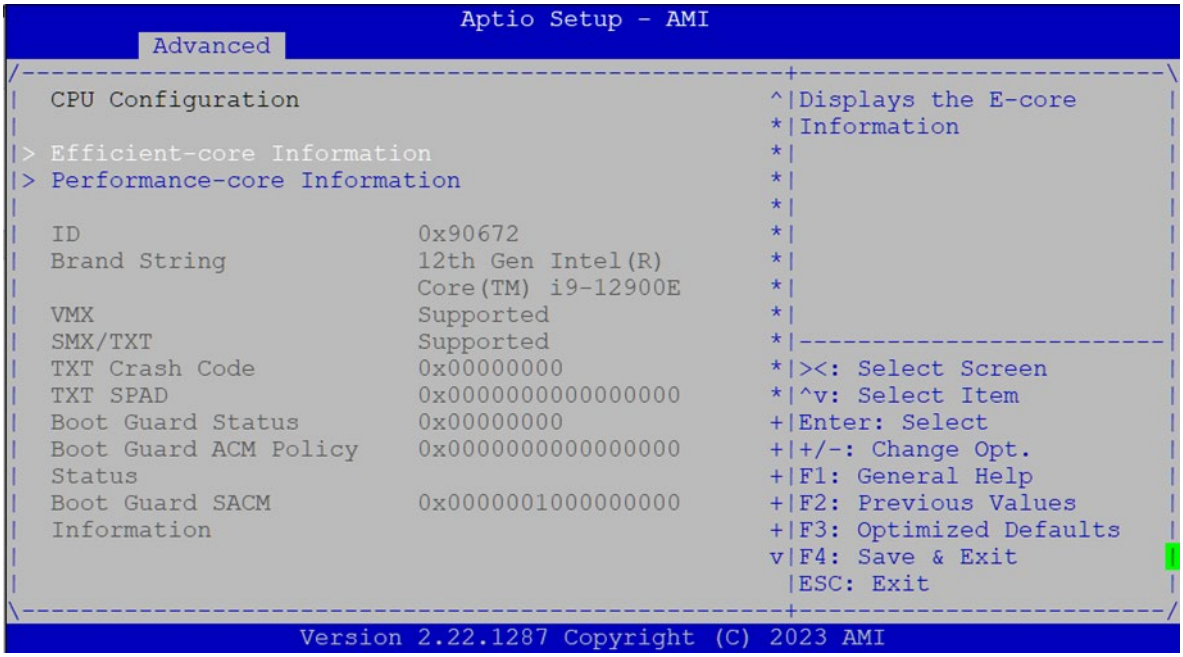
Feature	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version: AMI Kernel version, CRB code base, X64 Compliancy: UEFI version, PI version Project Version: BIOS release version Build Date and Time: MM/DD/YYYY Access Level: Administrator / User
Processor Information	Information of platform processor
Memory Information	Information of memory
PCH Information	Information of platform pch
System Date	To set the Date, use **<Tab>** to switch between Date elements. Default Range of Year: 1998-9999 Default Range of Month: 1-12 Days: dependent on Month.
System Time	To set the Date, use **<Tab>** to switch between Date elements.

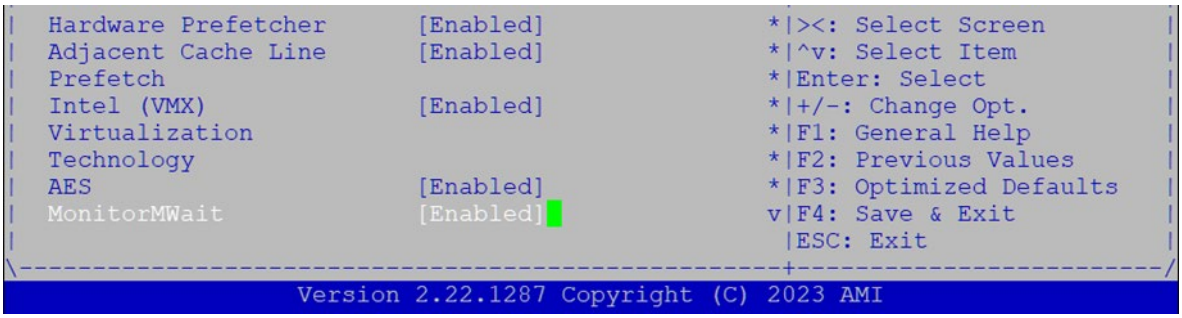
Advanced Page

Select the **Advanced** menu item from the BIOS setup screen to enter the **Advanced** setup screen. Users can select any of the items in the left frame of the screen.



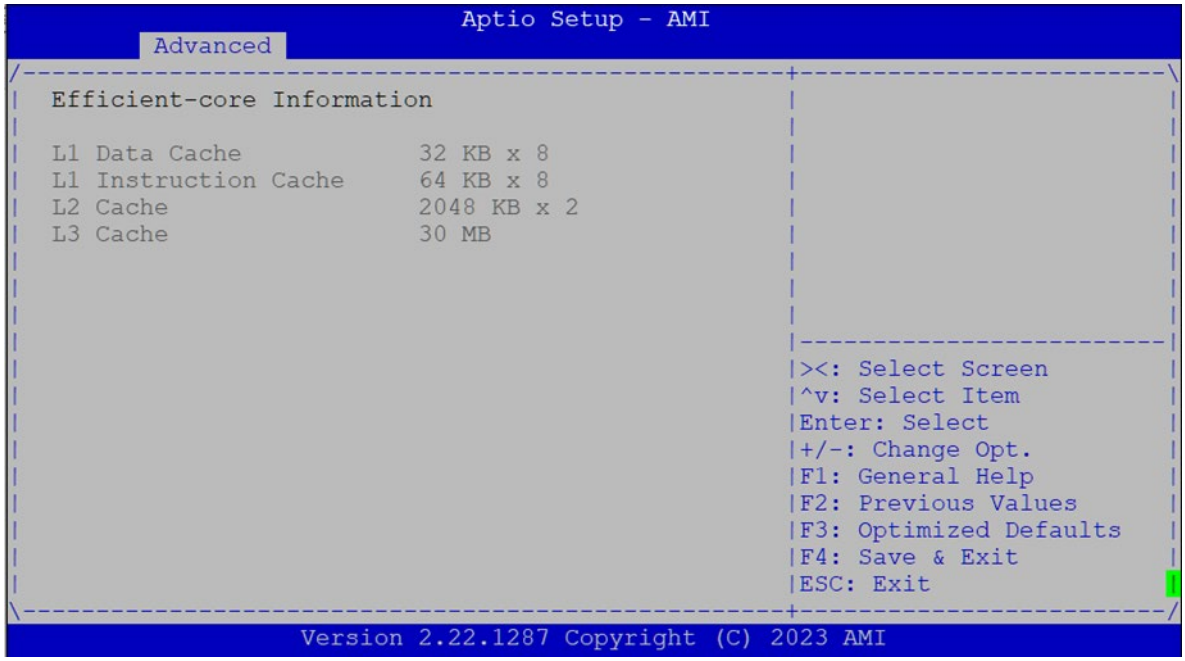
CPU Configuration



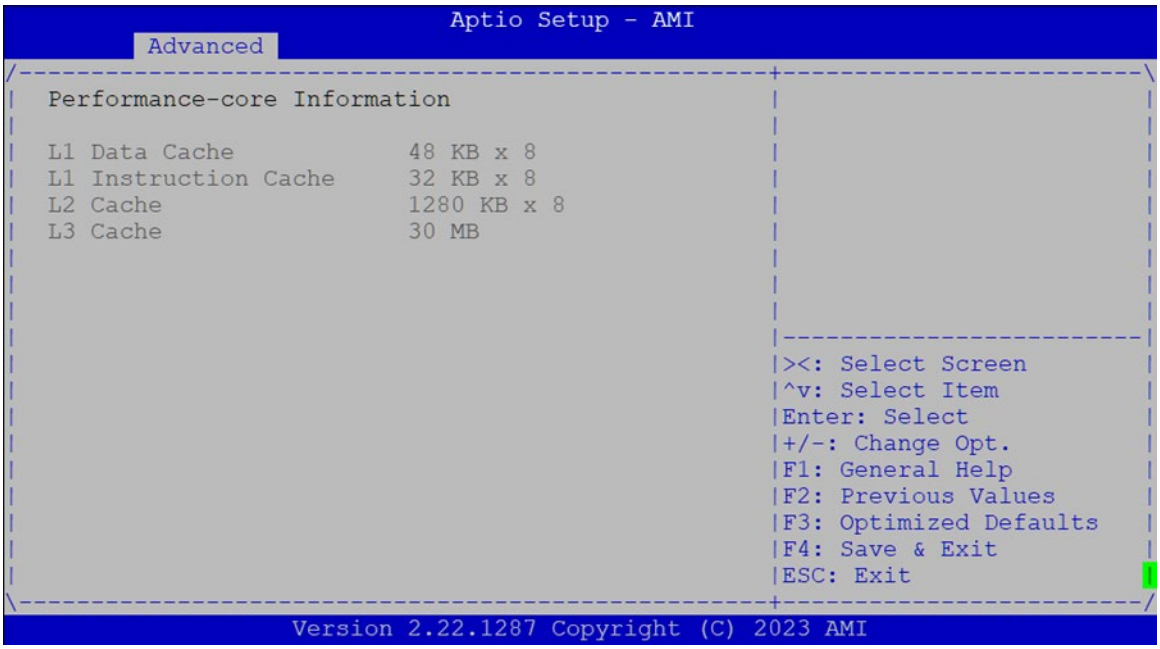


Feature	Options	Description
Hardware Prefetcher	Disabled Enabled	To turn on/off the MLC streamer prefetcher.
Adjacent Cache Line Prefetch	Disabled Enabled	To turn on/off prefetching of adjacent cache lines.
Intel (VMX) Virtualization Technology	Disabled Enabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
AES	Disabled Enabled	Enable/Disable AES (Advanced Encryption Standard)
MonitorMWait	Disabled Enabled	Enable/Disable MonitorMWait, if Disable MonitorMwait, the AP threads Idle Manner should not set in MWAIT Loop

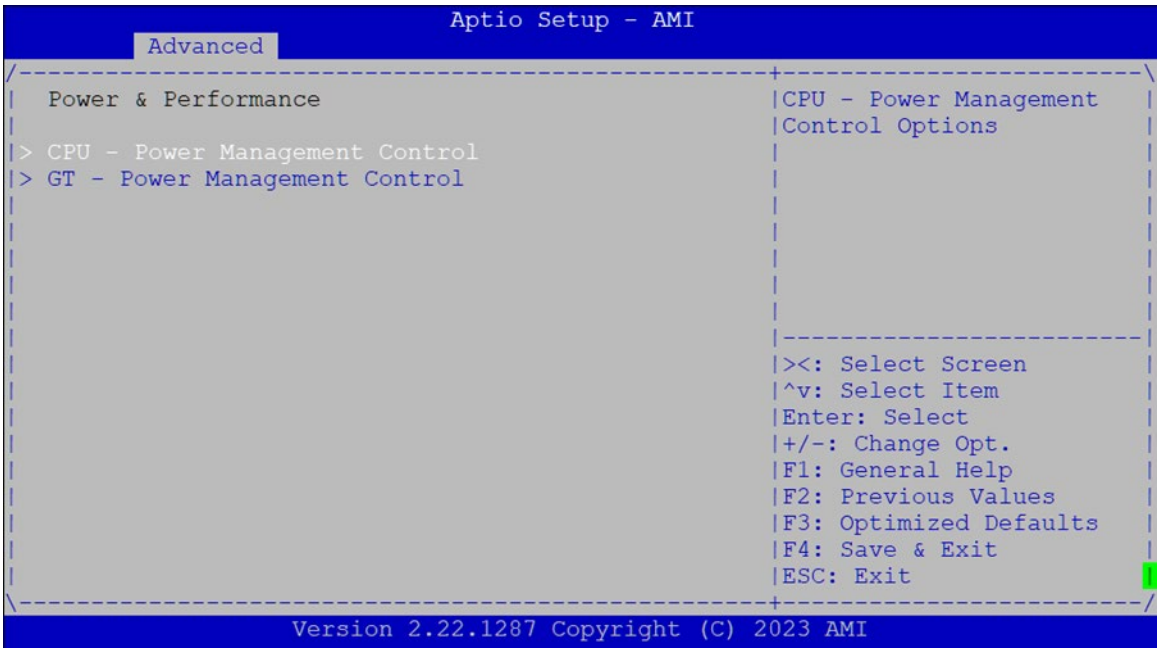
Efficient-Core Information



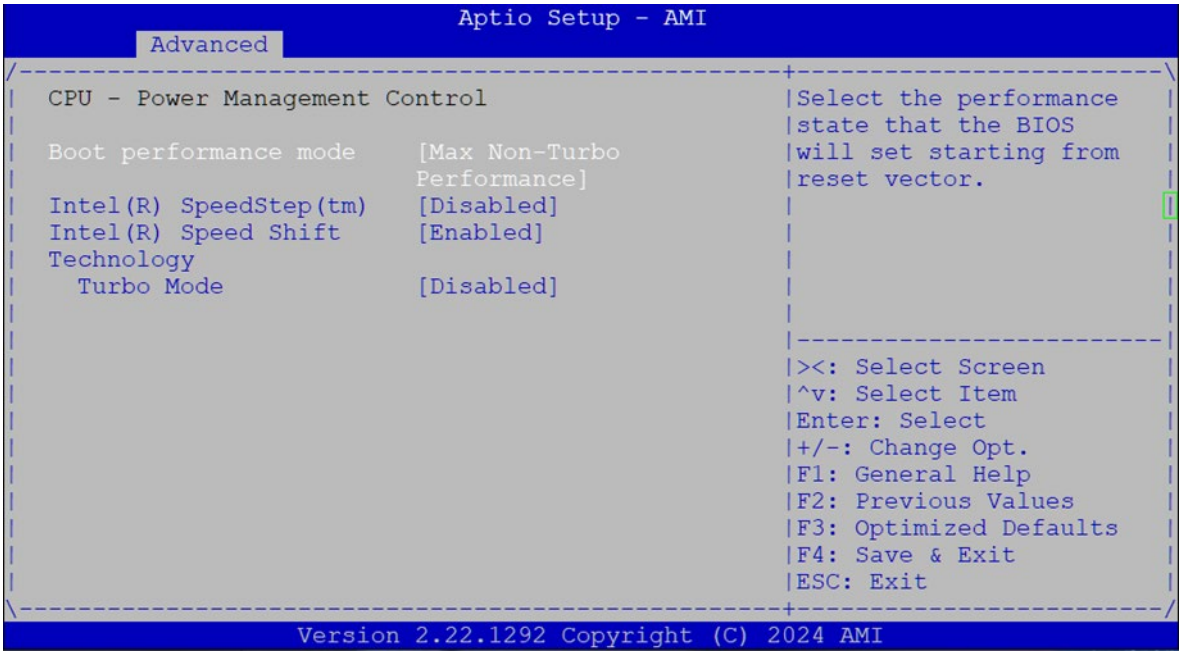
Performance-Core Information



Power & Performance

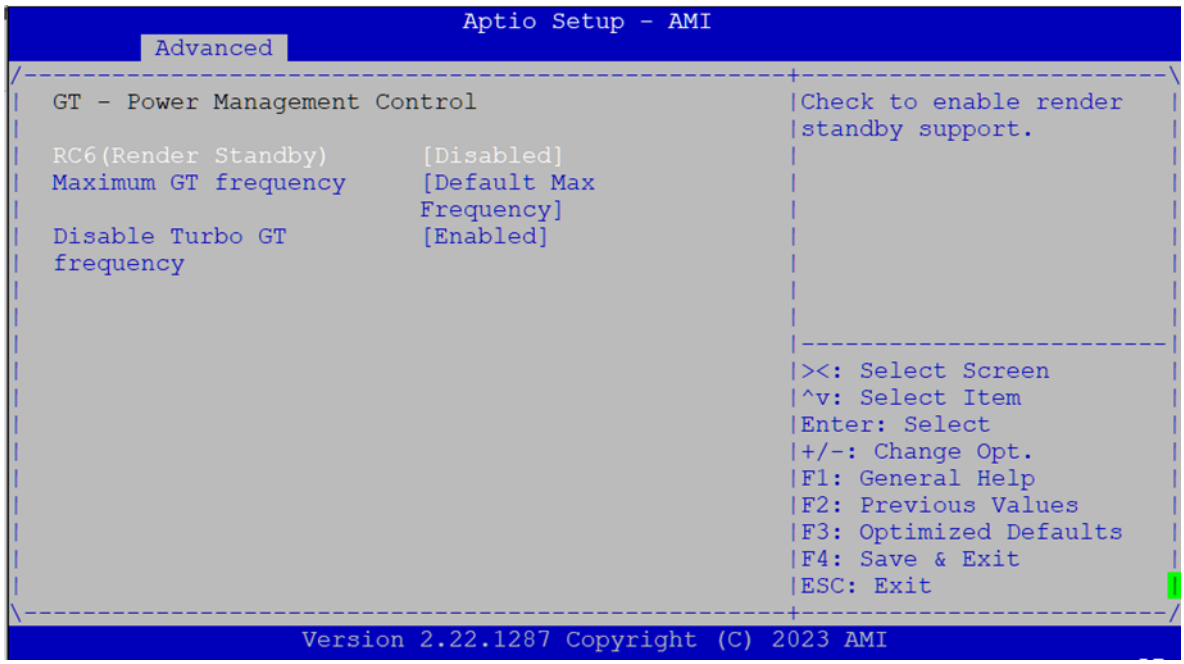


CPU – Power Management Control



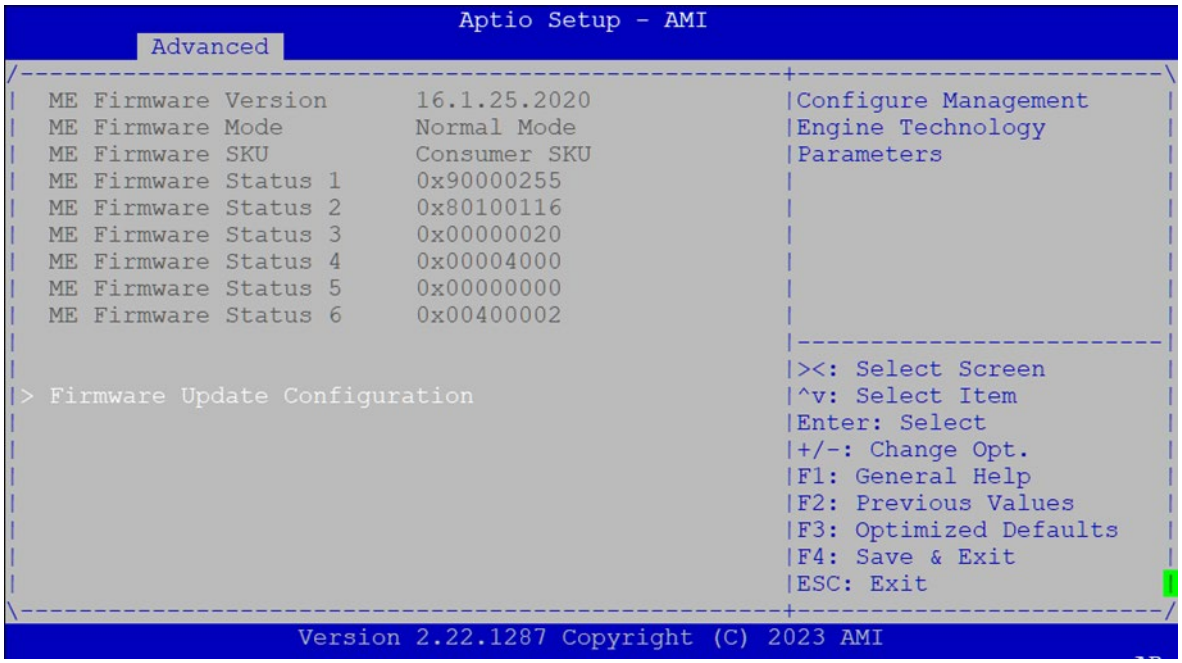
Feature	Options	Description
Boot Performance Mode	Max Battery Max Non-Turbo Performance Turbo Performance	Select the performance state that the BIOS will set starting from reset vector.
Intel(R) SpeedStep(tm)	Disabled Enabled	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	Disabled Enabled	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware-controlled P-states.
Turbo Mode	Disabled Enabled	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.

GT – Power Management Control

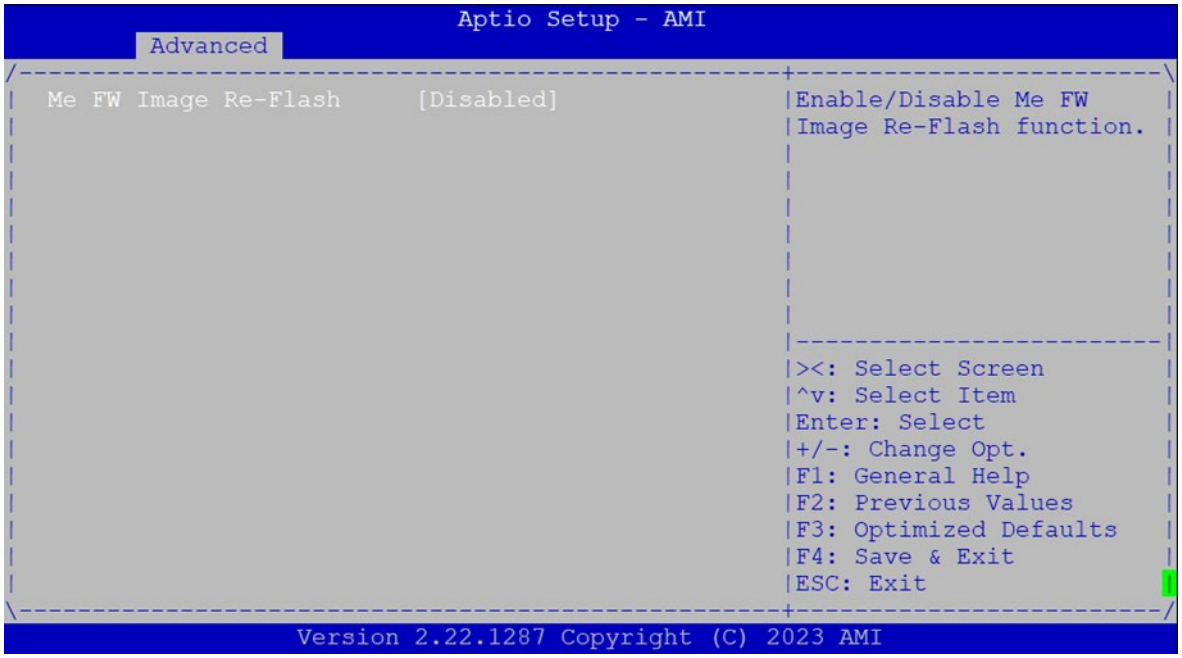


Feature	Options	Description
RC6 (Render Standby)	Disabled Enabled	Check to enable render standby support.
Maximum GT Frequency	Default Max Frequency	Maximum GT frequency limited by the user. Choose between 300MHz (RPN) and 1550MHz (RP0). Value beyond the range will be clipped to min/max supported by SKU
Disable Turbo GT Frequency	Enabled Disabled	Enabled: Disables Turbo GT frequency. Disabled: GT frequency is not limited

PCH-FW Configuration

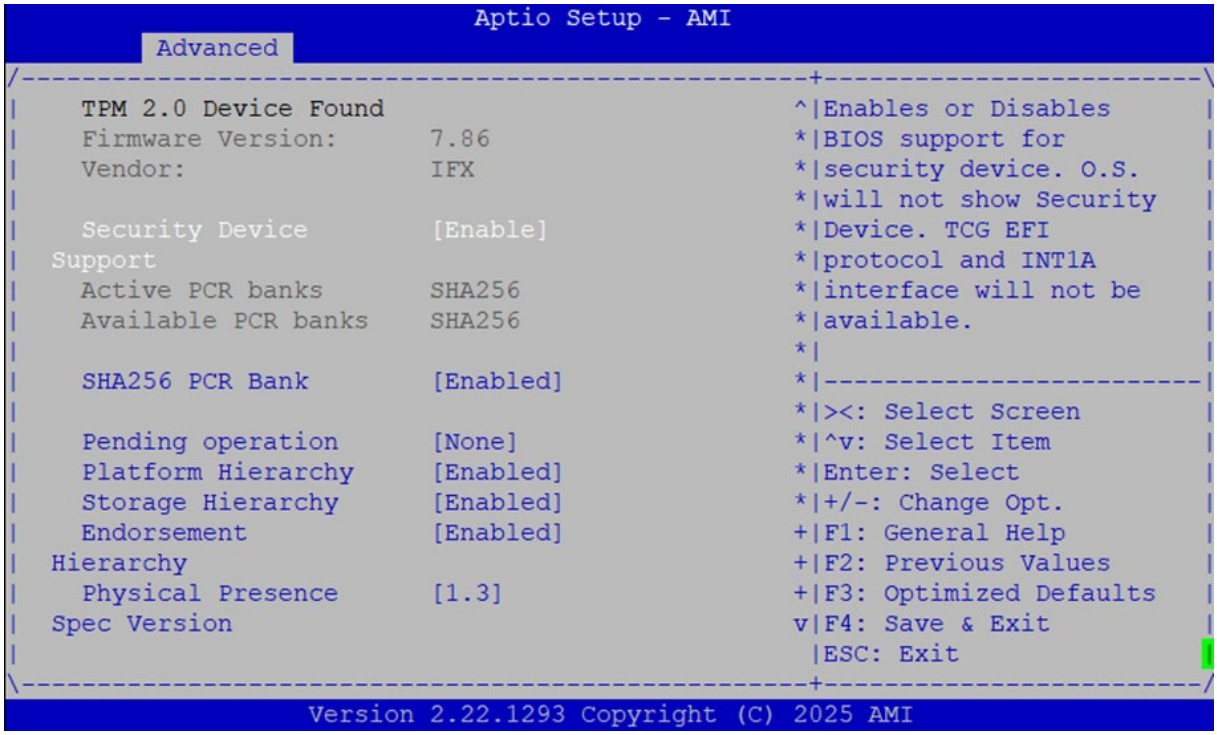


Firmware Update Configuration



Feature	Options	Description
Me FW Image Re-Flash	Disabled Enabled	Enable/Disable Me FW Image Re-Flash function.

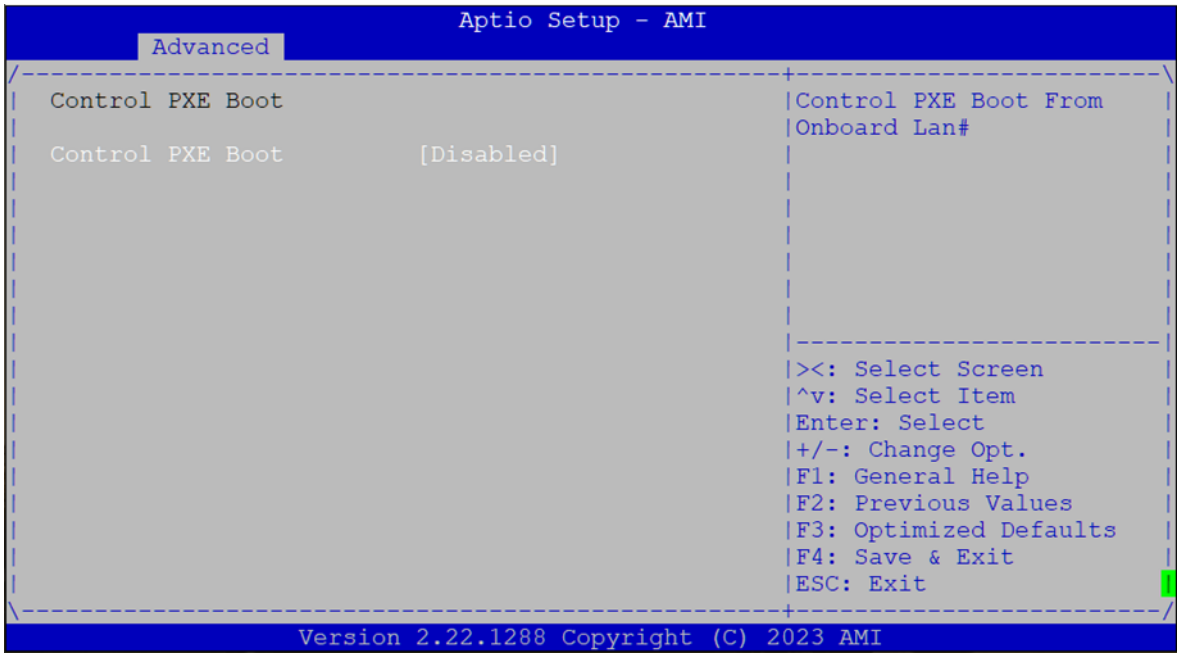
Trusted Computing



Feature	Options	Description
Security Device Support	Disable Enable	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA256 PCR Bank	Disabled Enabled	Enable or Disable SHA256 PCR Bank
Pending operation	None TPM Clear	Schedule an Operation for the Security Device. **NOTE:** Your Computer will reboot during restart in order to change State of Security Device.
Platform Hierarchy	Disabled Enabled	Enable or Disable Platform Hierarchy
Storage Hierarchy	Disabled Enabled	Enable or Disable Storage Hierarchy
Endorsement Hierarchy	Disabled Enabled	Enable or Disable Endorsement Hierarchy
Physical Presence Spec Version	1.2 1.3	Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.

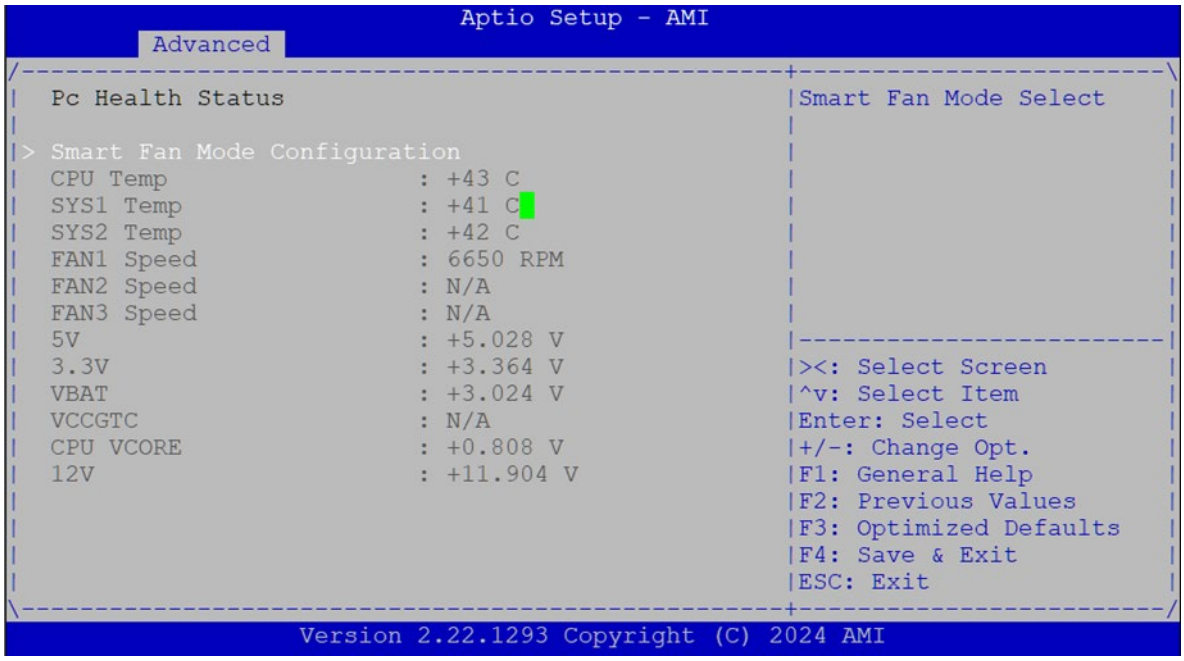
PH Randomization	Disabled Enabled	Enables or Disables Platform Hierarchy randomization. DO NOT ENABLE THIS QUESTION IN PRODUCTION PLATFORMS. THIS IS FOR DEVELOPMENT TESTING. OVERRIDE ChangePlatformAuth ELINK for production platforms supporting TXT.
Device Select	TPM 1.2 TPM 2.0 Auto	TPM 1.2 will restrict 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

Control PXE Boot



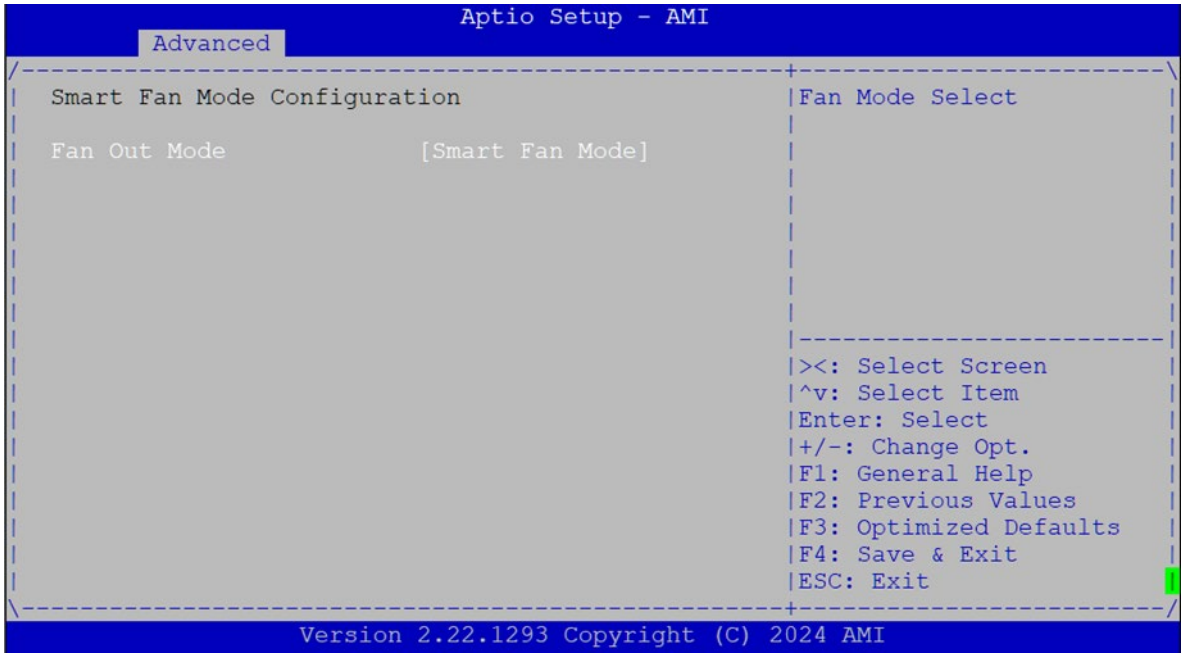
Feature	Options	Description
Control PXE Boot	Disabled Lan0 Lan1	Control PXE Boot from onboard Lan#.

NCT7904D HW Monitor



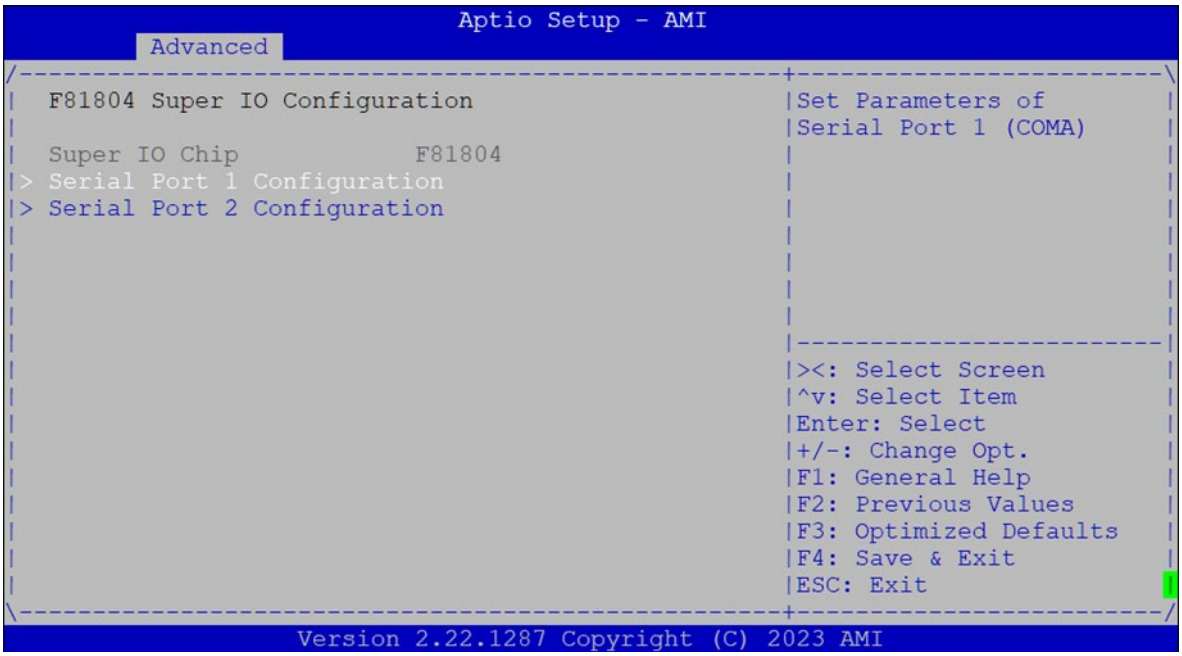
Feature	Description
CPU Temp	This value reports the CPU temperature
SYS1 Temp	This value reports the System temperature
SYS2 Temp	This value reports the System temperature (Close to CPU)
FAN1 Speed	This value reports the Fan1 speed
FAN2 Speed	This value reports the Fan2 speed
FAN3 Speed	This value reports the Fan3 speed
5V	This value reports the 5V Input voltage
3.3V	This value reports the 3.3V Input voltage
VBAT	This value reports the VBAT Input voltage
CPU VCORE	This value reports the CPU VCORE Input voltage
12V	This value reports the 12V Input voltage

Smart Fan Mode Configuration

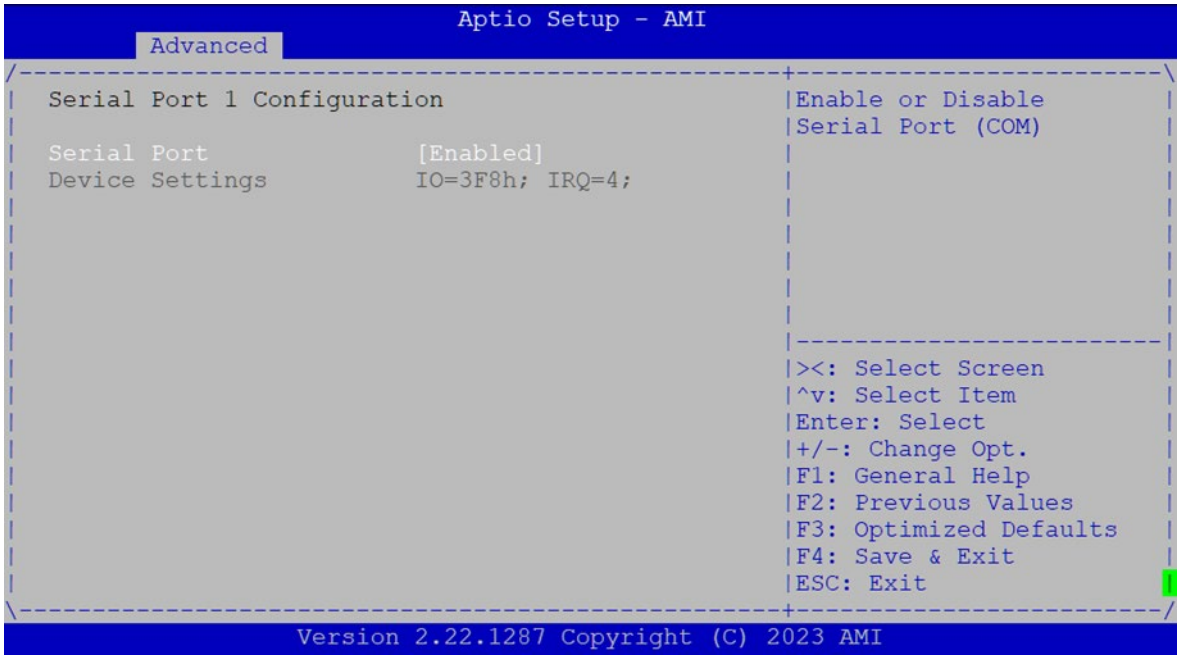


Feature	Options	Description
Fan Out Mode	Full Speed Mode Smart Fan Mode	Fan Mode Select

F81804 Super IO Configuration

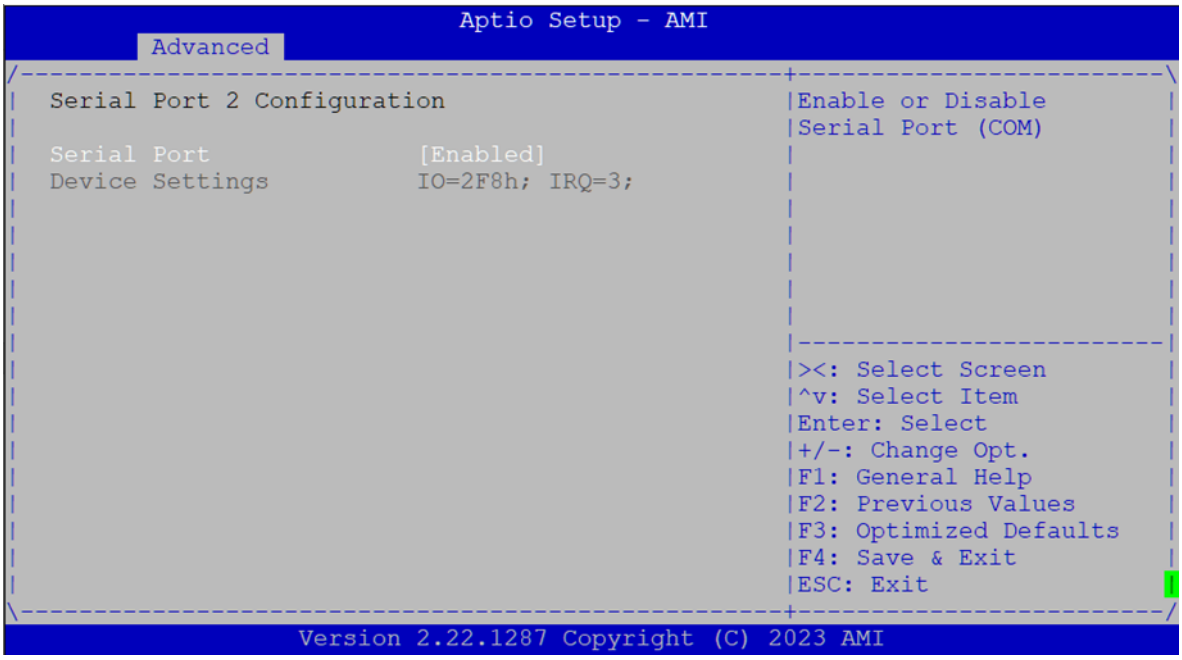


Serial Port 1 Configuration



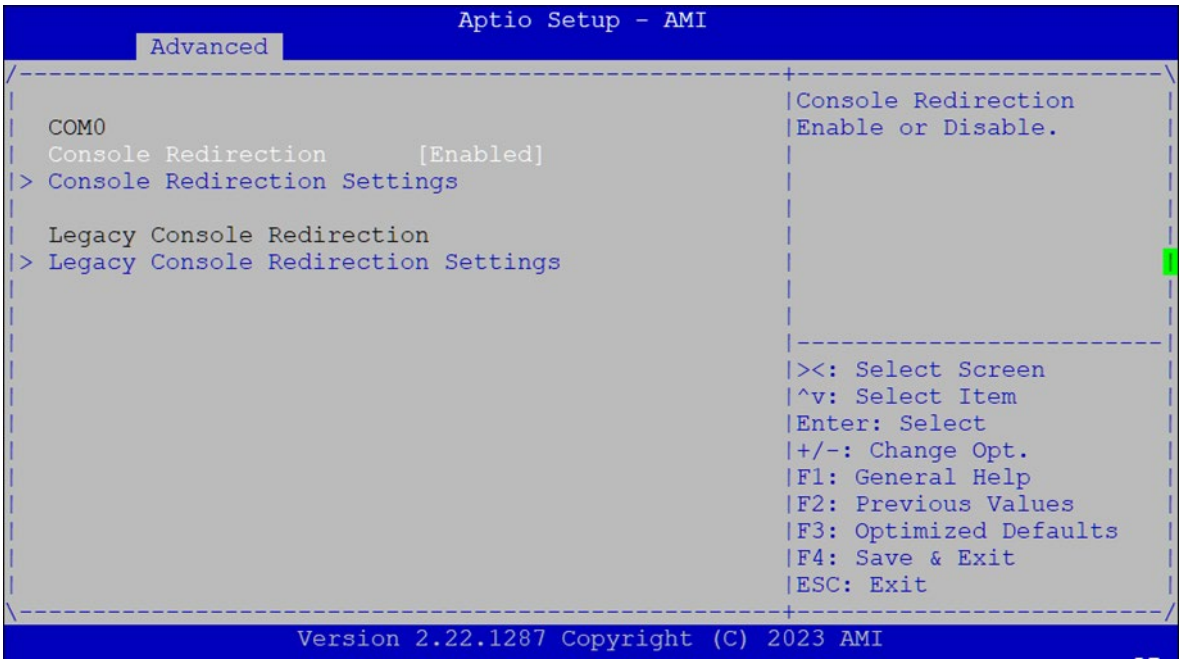
Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM)
Device Settings	N/A	IO=3F8h; IRQ=4;

Serial Port 2 Configuration



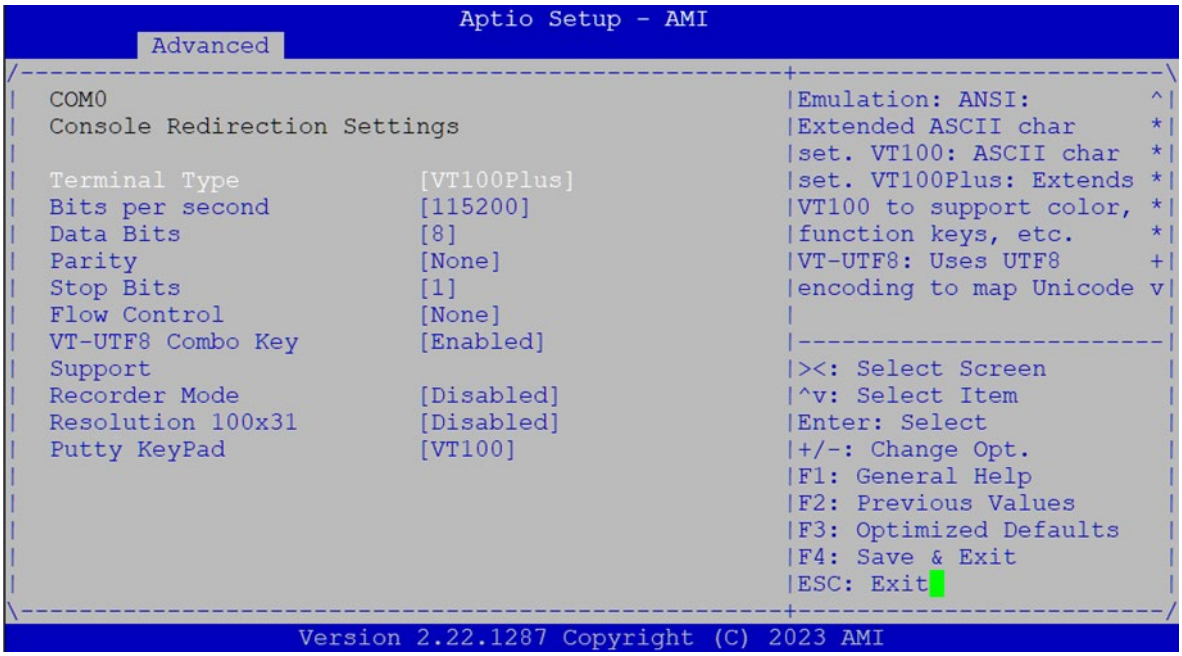
Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM)
Device Settings	N/A	IO=2F8h; IRQ=3;

Serial Port Console Redirection



Feature	Options	Description
Console Redirection	Disabled Enabled	Console Redirection Enable or Disable.

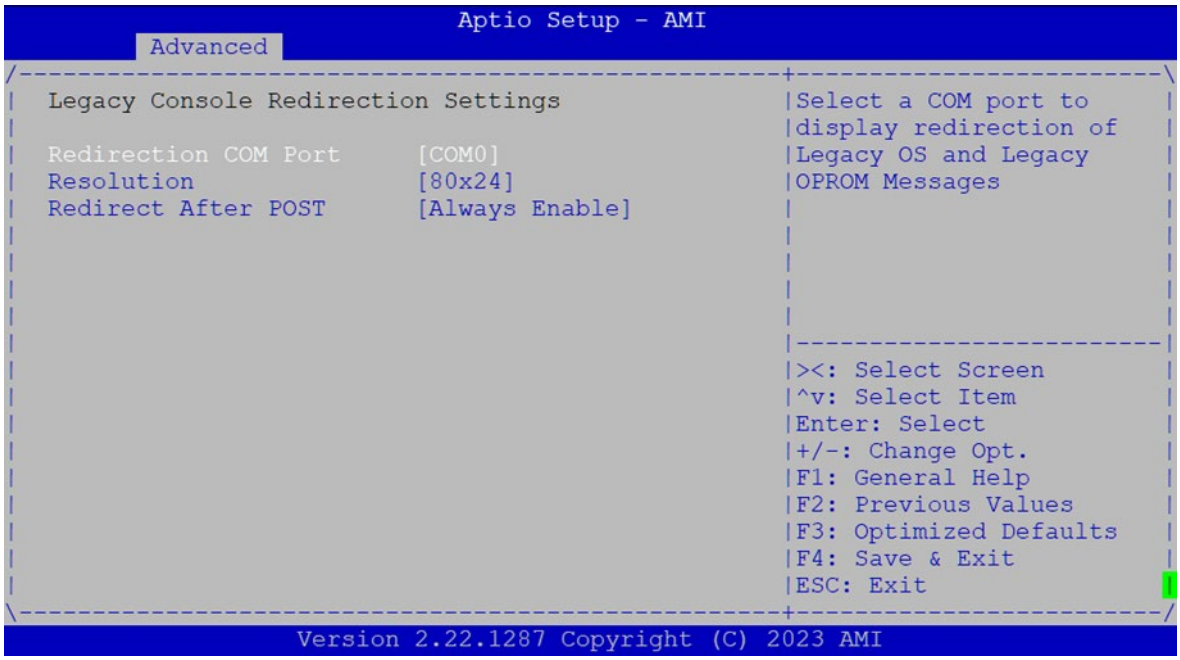
Console Redirection Settings



Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400 57600 115200	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 8	Data Bits
Parity	None Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors.
Stop Bits	1 2	Stop bits indicate the end of a serial data packet.
Flow Control	None Hardware RTS/CTS	Flow control can prevent data loss from buffer overflow.

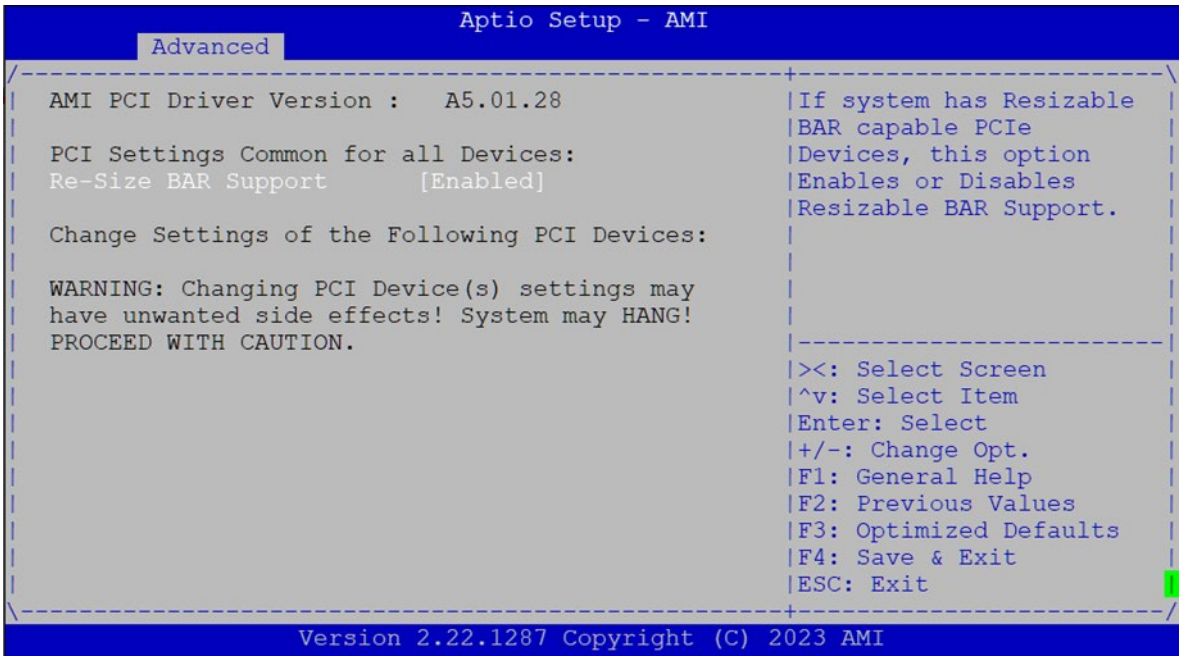
VT-UTF8 Combo Key Support	Disabled Enabled	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	Disabled Enabled	Enables or disables extended terminal resolution.
Putty Keypad	VT100 LINUX XTERMR6 SCO ESCN VT400	Select FunctionKey and KeyPad on Putty.

Legacy Console Redirection Settings



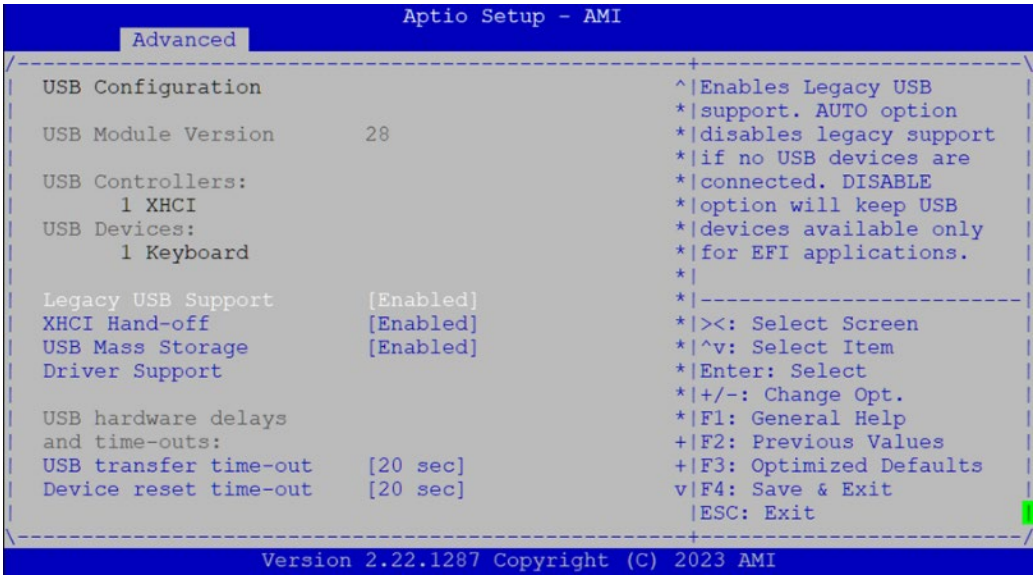
Feature	Options	Description
Redirection COM Port	COM0	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages
Resolution	80x24 80x25	On Legacy OS, the Number of Rows and Columns supported redirection
Redirect After POST	Always Enable BootLoader	When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

PCI Subsystem Settings



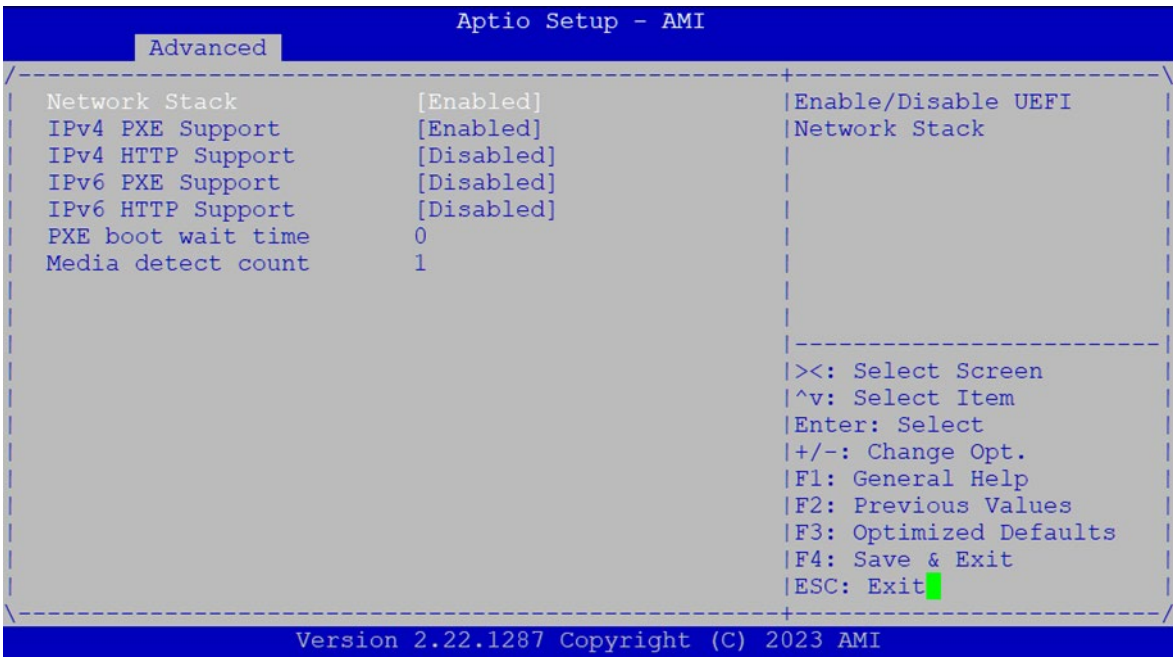
Feature	Options	Description
Re-Size BAR Support	Disabled Enabled	If system has Resizable BAR capable PCIe Devices, this option Enables or Disables Resizable BAR Support

USB Configuration



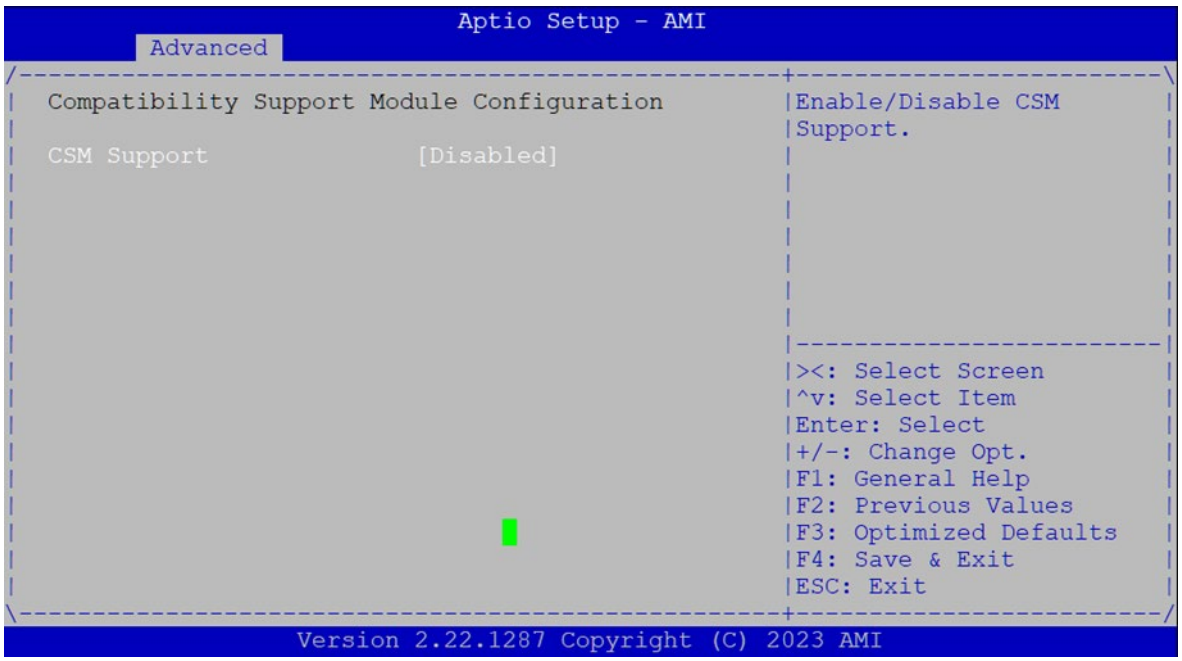
Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. **Auto** option disables legacy support if no USB devices are connected. **Disabled** option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Disabled Enabled	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec	The time-out value for Control, Bulk, and Interrupt transfers
Device reset time-out	10 sec 20 sec 30 sec 40 sec	USB mass storage device Start Unit command time-out
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. **Auto** uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Network Stack Configuration



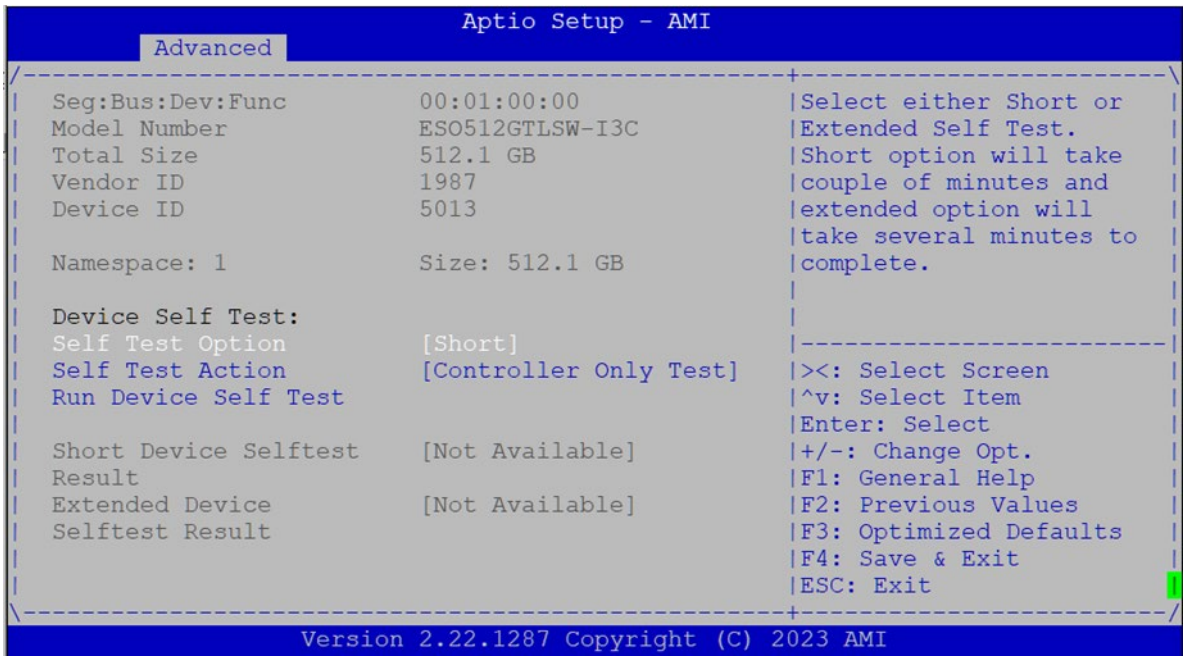
Feature	Options	Description
Network Stack	Disabled Enabled	Enable/Disable UEFI Network Stack
IPv4 PXE Support	Disabled Enabled	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
IPv4 HTTP Support	Disabled Enabled	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
IPv6 PXE Support	Disabled Enabled	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
IPv6 HTTP Support	Disabled Enabled	Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.
PXE Boot Wait Time	0	Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.
Media Detect Count	1	Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

CSM Configuration



Feature	Options	Description
CSM Support	Disabled Enabled	Enable/Disable CSM Support

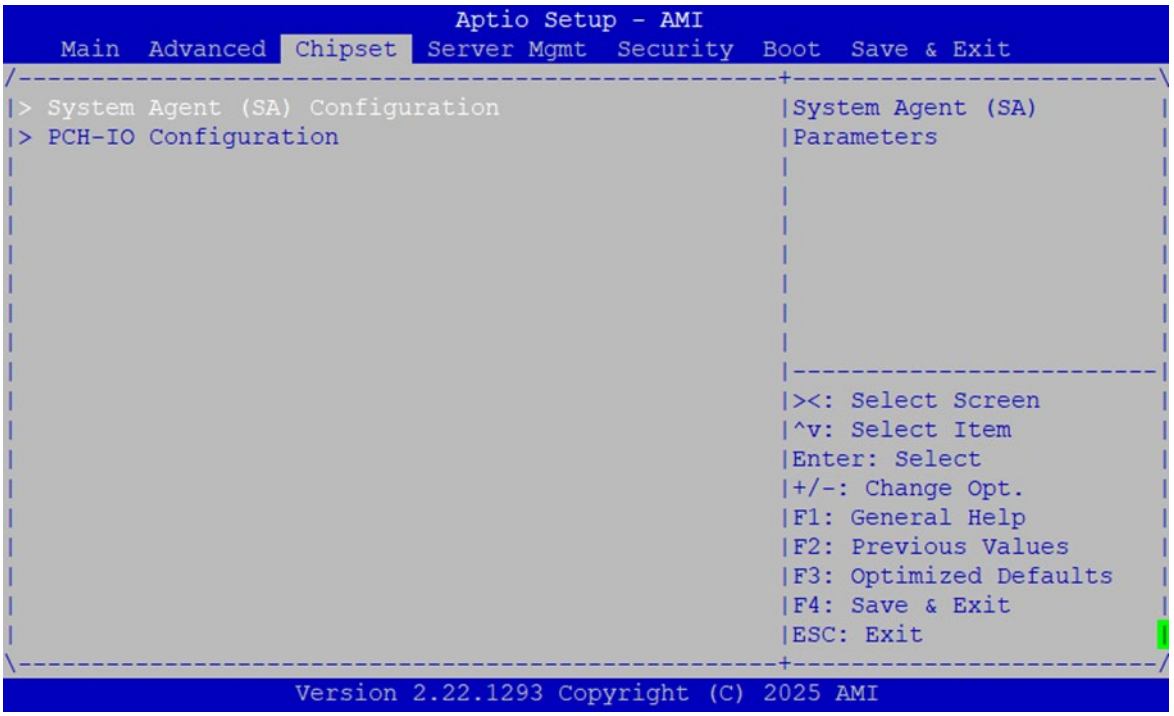
NVMe Configuration



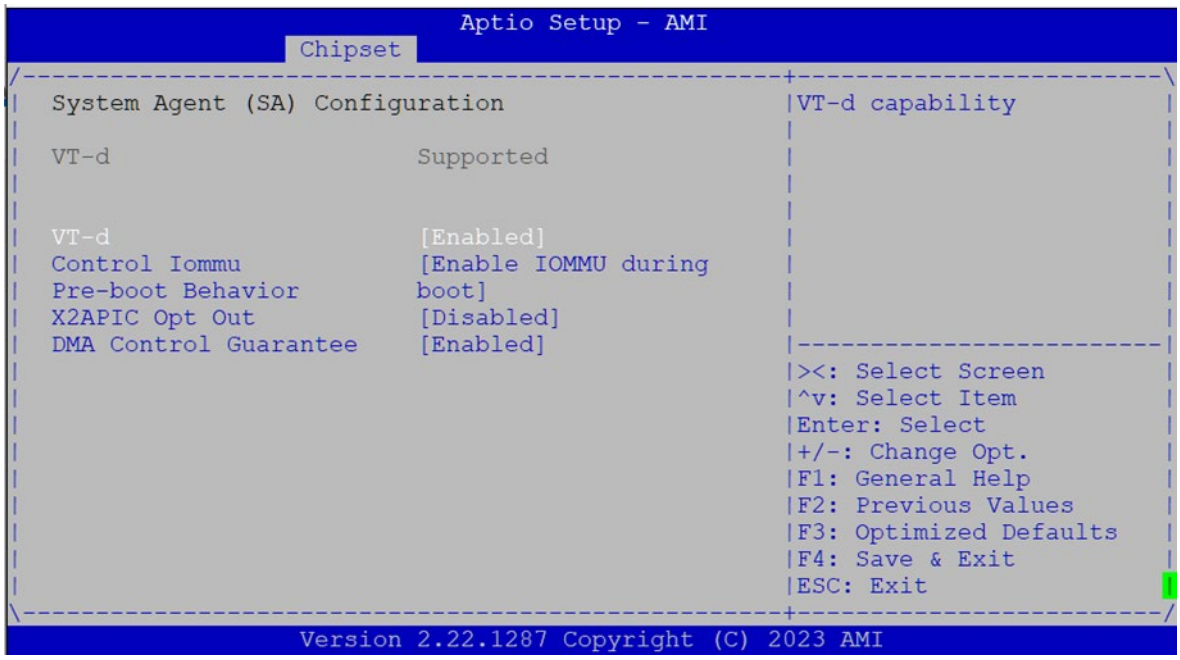
Feature	Options	Description
Self-Test Option	Short Extended	Select either Short or Extended Self-Test. Short option will take couple of minutes and extended option will take several minutes to complete.
Self-Test Action	Controller Only Test Controller and NameSpace Test	Select either to test Controller alone or Controller and NameSpace. Selecting Controller and Namespace option will take lot longer to complete the test.
Run Device Self-Test	N/A	Perform device self-test for the corresponding Option and Action selected by user. Pressing 'Esc' key will abort the test. Result shown below is the recent result logged in the device.

Chipset Page

Select the **Chipset** item from the BIOS setup screen to enter the **Chipset** page. Users can select any of the items in the left frame of the screen.

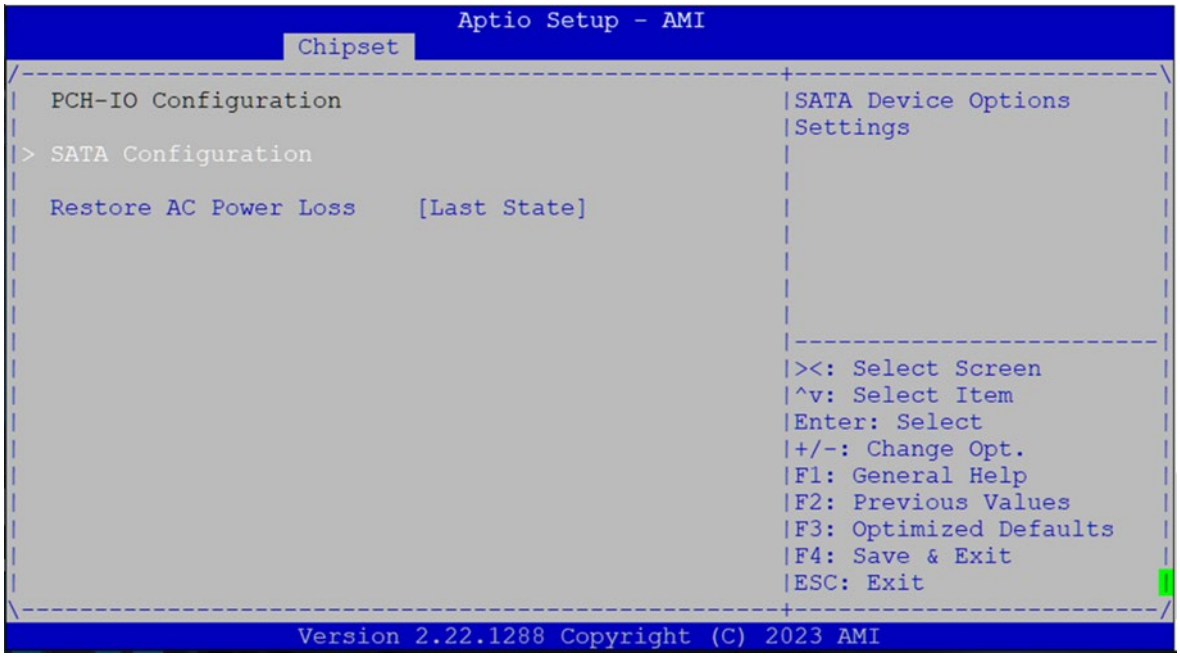


System Agent (SA) Configuration



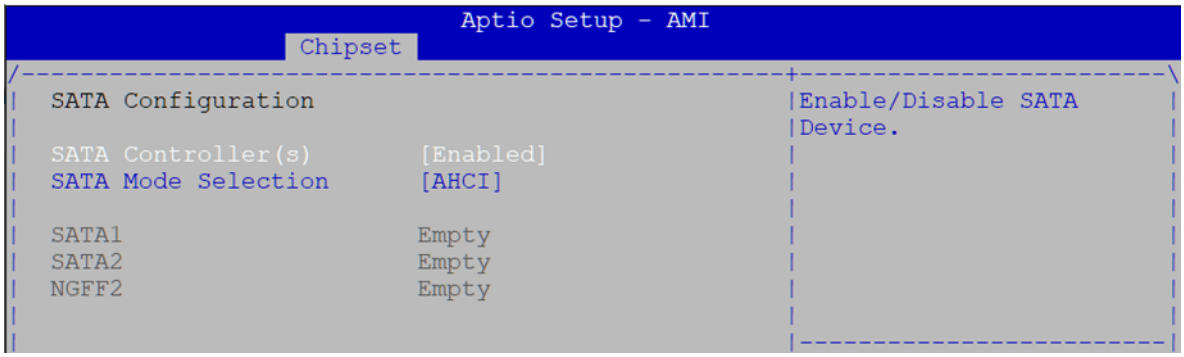
Feature	Options	Description
VT-d	Disabled Enable	VT-d capability
Control Iommu	Disable IOMMU Enable IOMMU during Boot	Enable IOMMU in Pre-boot environment (If DMAR table is installed in DXE and If VTD_INFO_PPI is installed in PEI.)
X2APIC Opt Out	Enabled Disabled	Enable/Disable X2APIC_OPT_OUT bit
DMA Control Guarantee	Enabled Disabled	Enable/Disable DMA_CONTROL_GUARANTEE bit

PCH-IO Configuration



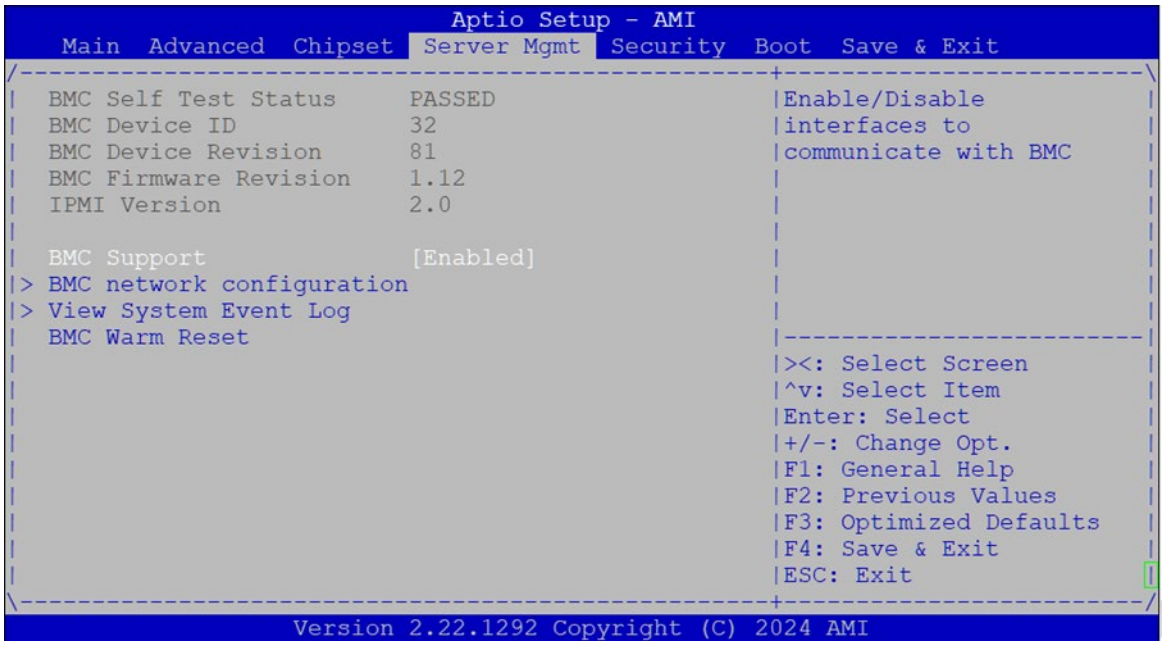
Feature	Options	Description
Restore AC Power Loss	Power On Power Off Last State	Specify what state to go to when power is re-applied after a power failure (G3 state).

SATA Configuration



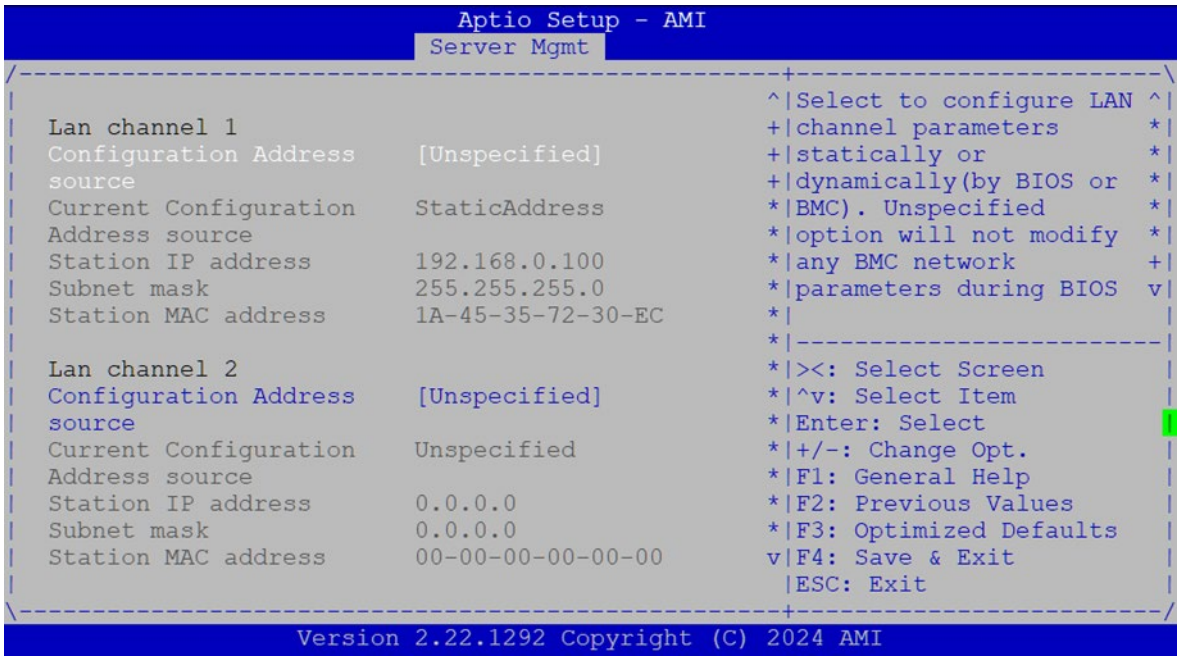
Feature	Options	Description
SATA Controller(s)	Enabled Disabled	Enable/Disable SATA Device
SATA Mode Selection	AHCI	Determines how SATA controller(s) operate.

Server Mgmt Page



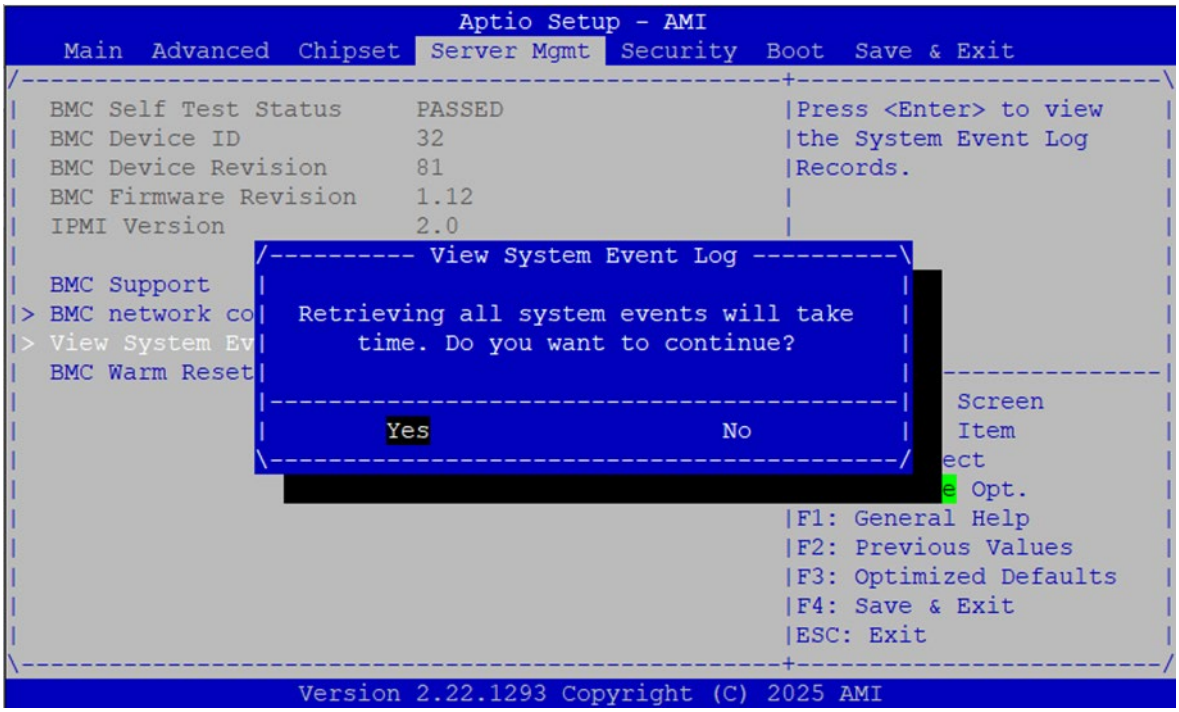
Feature	Options	Description
BMC Support	Enabled Disabled	Enable/Disable interfaces to communicate with BMC

BMC Network Configuration

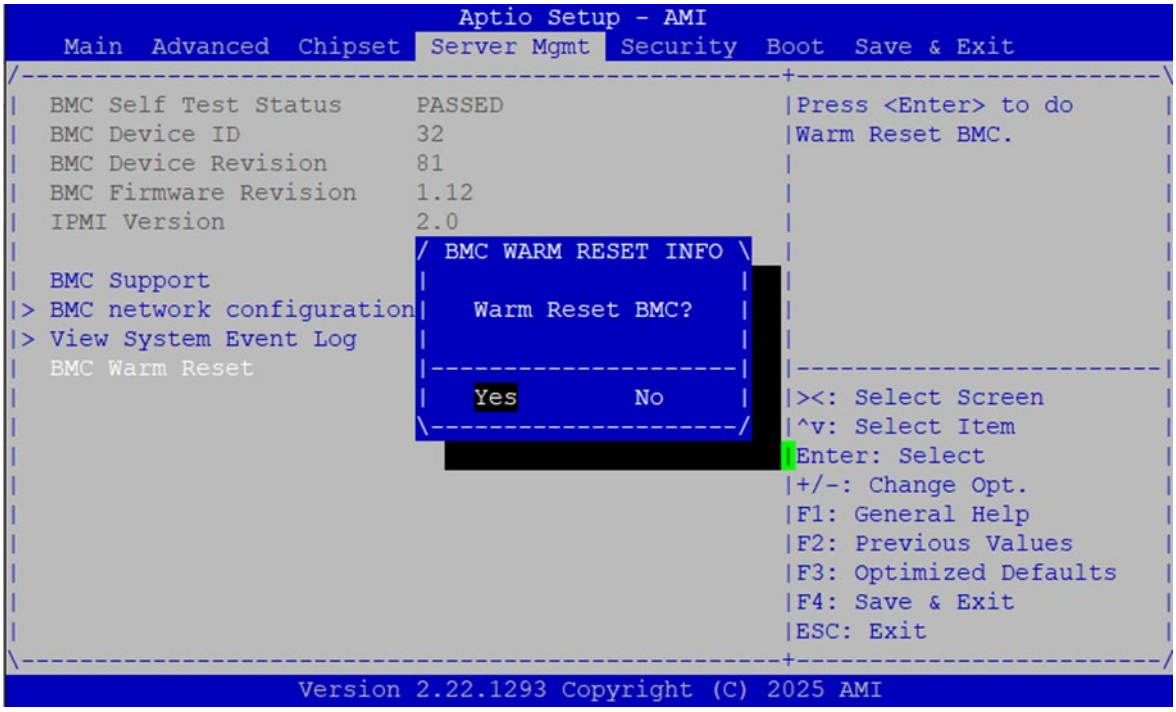


Feature	Options	Description
Configuration Address source	Unspecified Static DynamicBmcDhcp	Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified

View System Event Log

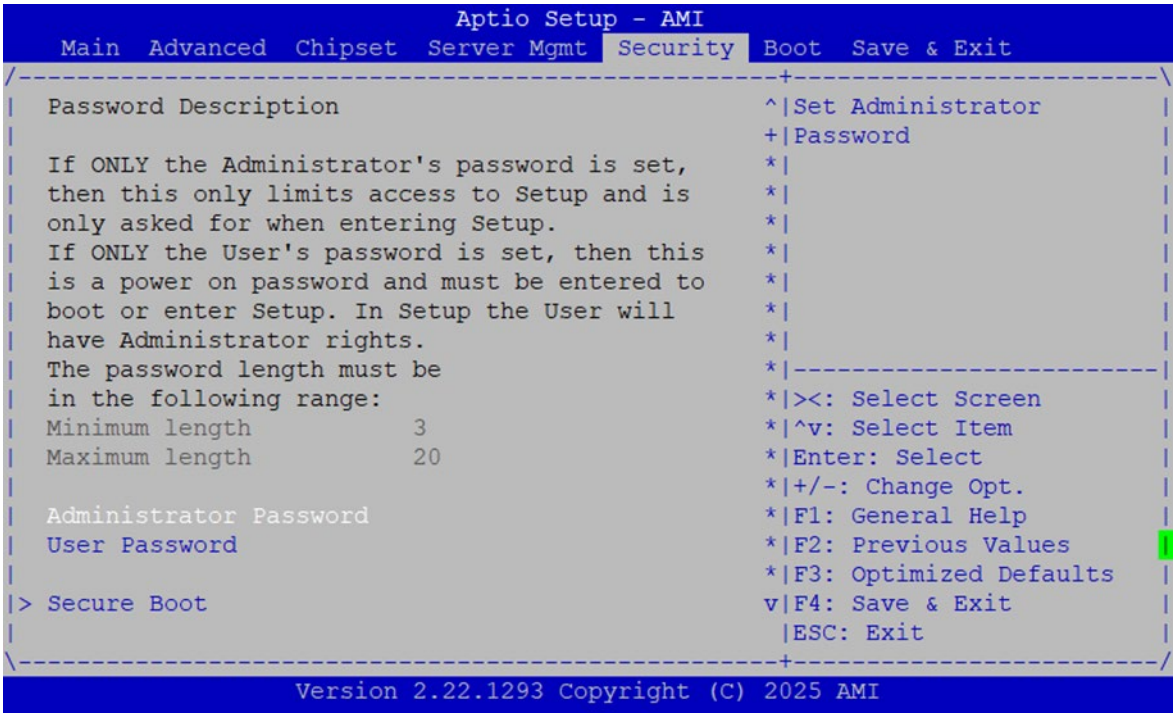


BMC Warm Reset



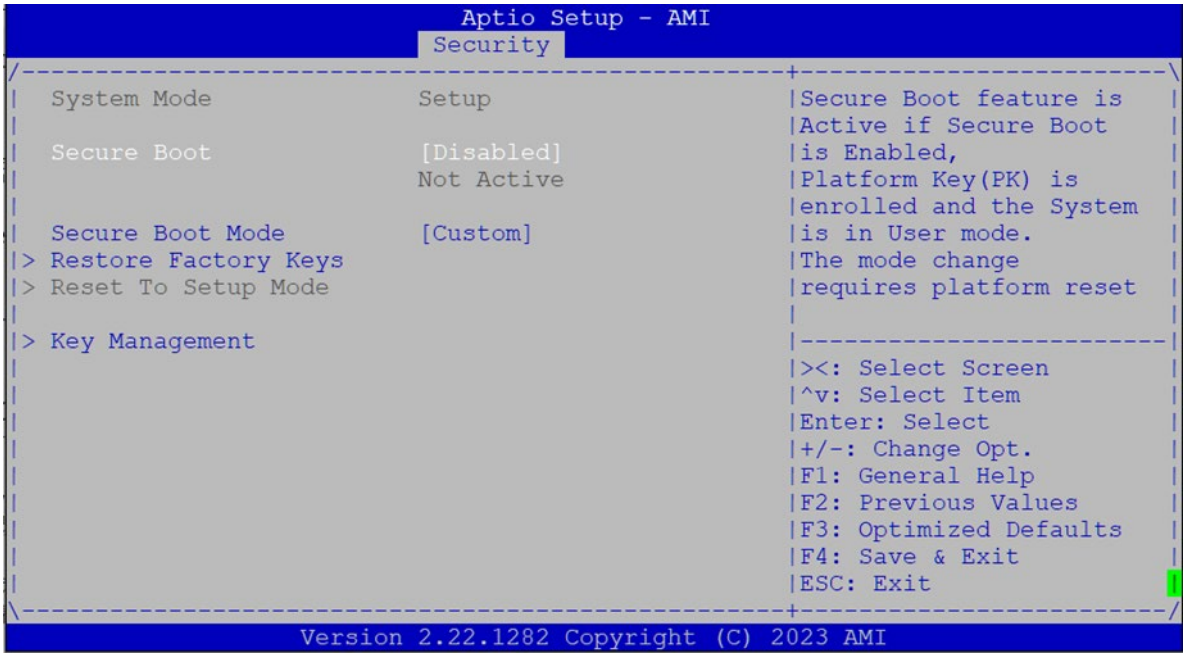
Security Page

Select the **Security** item from the BIOS setup screen to enter the **Security** page. Users can select any of the items in the left frame of the screen.



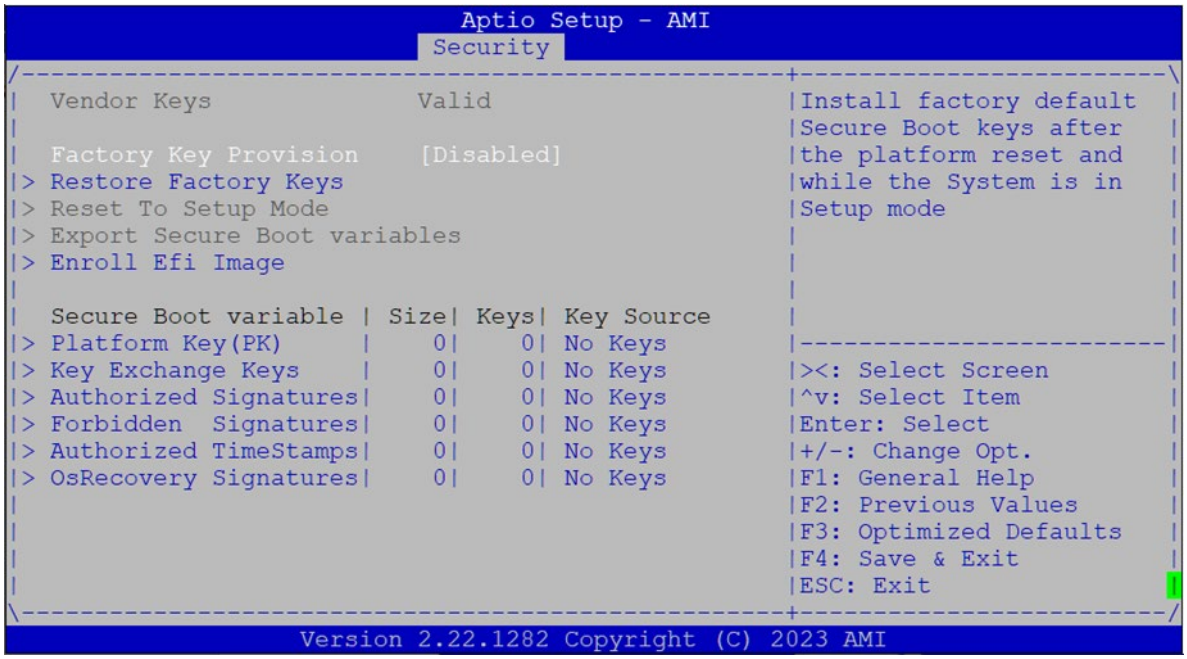
Feature	Description
Setup Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the User will have Administrator rights.

Secure Boot



Feature	Options	Description
Secure Boot	Disabled Enabled	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
Secure Boot Mode	Standard Custom	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

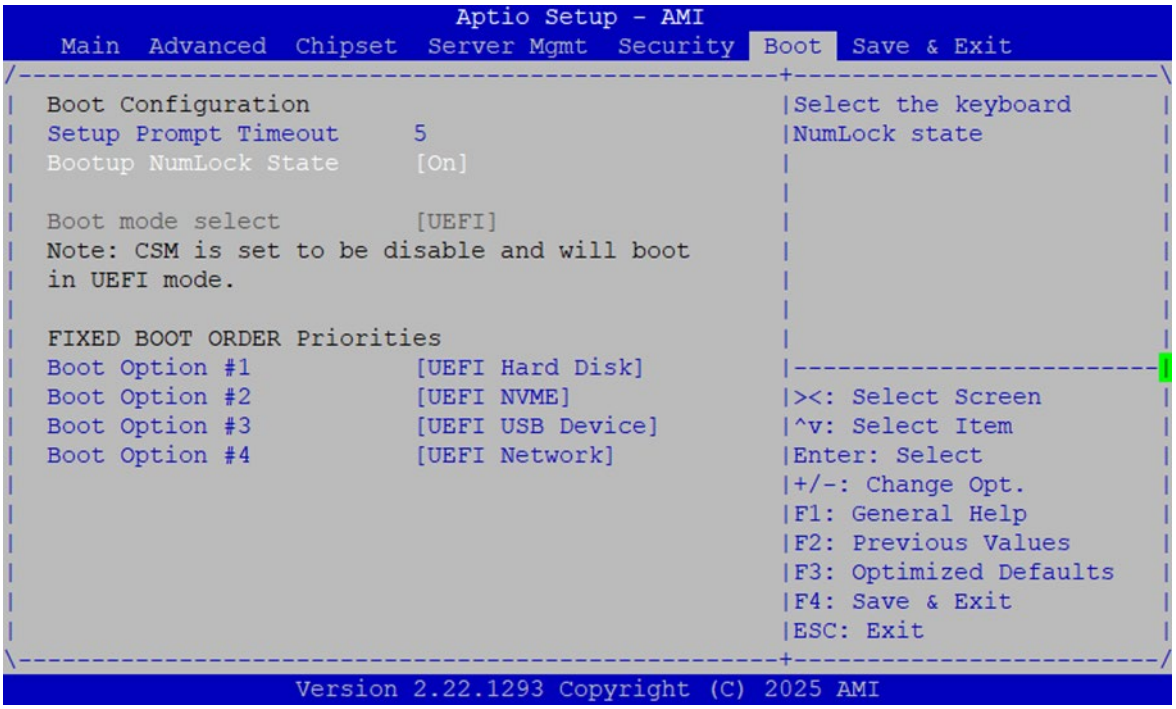
Key Management



Feature	Options	Description
Factory Key Provision	Disabled Enabled	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode
Restore Factory Keys	None	Force System to User Mode. Install factory default Secure Boot key databases
Reset to Setup Mode	None	Delete all Secure Boot key databases from NVRAM
Export Secure Boot Variables	None	Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device
Enroll Efi Image	None	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)

Boot Page

Select the **Boot** item from the BIOS setup screen to enter the **Boot** page. Users can select any of the items in the left frame of the screen.

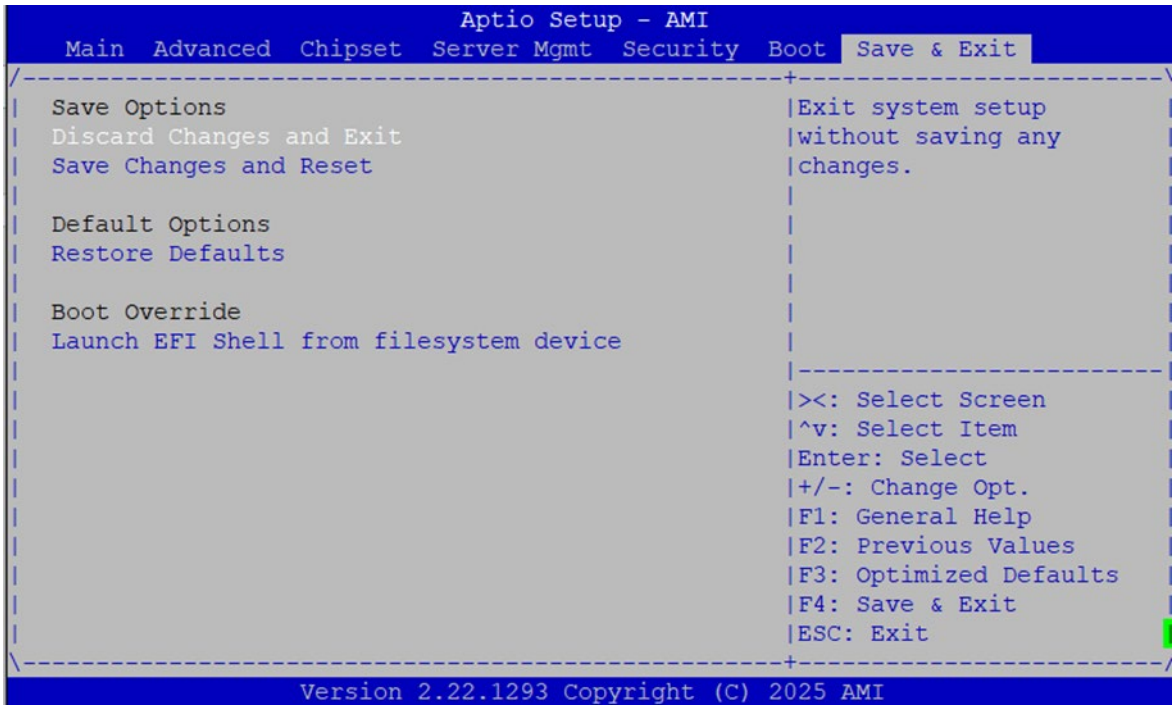


Feature	Options	Description
Setup Prompt Timeout	5	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Boot mode select	LEGACY UEFI DUAL	Select boot mode LEGACY/UEFI Note: CSM is set to be disable and will boot in UEFI mode.

- Default boot priority: **Hard Disk -> NVME -> USB -> Network**
- Choose specific boot device priority sequence from available Group device.
- Choose boot priority from boot option group.

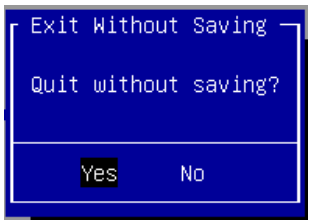
Save and Exit Page

Select the **Save and Exit** item from the BIOS setup screen to enter the **Save and Exit** page. Users can select any of the items in the left frame of the screen.



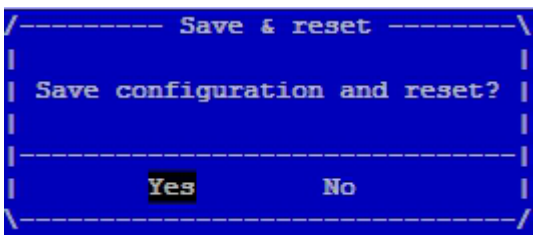
- **Discard Changes and Exit**

Select this option to quit Setup without saving any modifications to the system configuration. The following window will appear after the "**Discard Changes and Exit**" option is selected. Select "**Yes"** to Discard changes and Exit Setup.



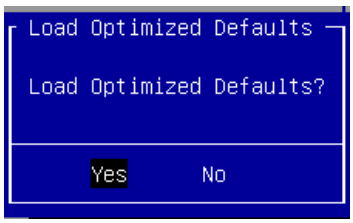
- **Save Changes and Reset**

When Users have completed the system configuration changes, select this option to save the changes and reset from BIOS Setup in order for the new system configuration parameters to take effect. The following window will appear after selecting the "**Save Changes and Reset**" option is selected. Select "**Yes**" to Save Changes and reset.



- **Restore Defaults**

Restore default values for all setup options. Select "**Yes"** to load Optimized defaults.

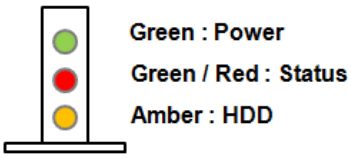


Note

The items under Boot Override may not be the same image as above. It should depend on the actual devices connected to the system.

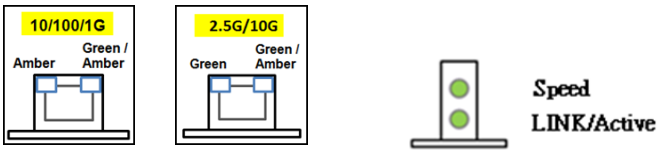
APPENDIX A: LED INDICATOR EXPLANATIONS

▸ System Power / Status / HDD Activity



LED	COLOR ON LCM	COLOR ON BOARD	LED ACTION	DESCRIPTION
POWER	Green	Green	Steady	When system power on
	Off	Off	N/A	No power on
STATUS	"Green/Yellow"	Green	Steady	control by GPIO
	Amber	Red	Steady	control by GPIO
	Off	Off	N/A	control by GPIO (Default) or No power on
HDD	"Green/Yellow"	Amber	**Blinking**	Blinking indicates HDD activity Include SATA / NVME
	Off	Off	N/A	No data access or No power on

▸ RJ45 LAN LED



1Gb RJ-45 Define:

Speed	Amber (Link/Active)	Green/Amber (Speed)
10M	ON / Blinking (Data access)	OFF
100M	ON / Blinking (Data access)	ON (Green)
1G	ON / Blinking (Data access)	ON (Amber)
1. When cable is plugged-in and network is linked. Both LED will be bright. The behavior is as defined. 2. Without the Cable plug-in, the LED should be off. 3. If LAN Driver controls the LED, the behavior will follow the driver		

2.5Gb RJ-45 Define:

Speed	Green (Link/Active)	Green/Amber (Speed)
10/100M	ON / Blinking (Data access)	OFF
1G	ON / Blinking (Data access)	ON (Amber)
2.5G	ON / Blinking (Data access)	ON (Green)
1. When cable is plug-in and network is linked. Both LED lights will be bright. The behavior is as defined. 2. Without the Cable plug-in, the LED should be off 3. If LAN Driver controls the LED, the behavior will follow the driver		

APPENDIX B: TERMS AND CONDITIONS

Warranty Policy

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period, whereas the manufacturer will bear the after service freight charges for goods returned to the user.
3. The buyer will pay for the repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on the "RMA Service," RMA goods will be returned at customer's expense.
5. The following conditions are excluded from this warranty:
   - Improper or inadequate maintenance by the customer
   - Unauthorized modification, misuse, or reversed engineering of the product
   - Operation outside of the environmental specifications for the product.

RMA Service

Requesting an RMA#

1. To obtain an RMA number, simply fill out and fax the "RMA Request Form" to your supplier.
2. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.
3. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.
4. Mark the RMA# clearly on the box.

Note: The customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.

RMA Service Request Form

When requesting RMA service, please fill out the following form. Without this form enclosed, your RMA cannot be processed.

RMA No:	Reasons to Return: ▫ Repair(Please include failure details) ▫ Testing Purpose
Company:	Contact Person:
Phone No.	Purchased Date:
Fax No.:	Applied Date:
Return Shipping Address: _____ Shipping by: ▫ Air Freight ▫ Sea ▫ Express_____ ▫ Others:_____	

Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

01:D.O.A.	07: BIOS Problem	13: SCSI	19: DIO
02: Second Time R.M.A.	08: Keyboard Controller Fail	14: LPT Port	20: Buzzer
	09: Cache RMA Problem	15: PS2	21: Shut Down
03: CMOS Data Lost	10: Memory Socket Bad	16: LAN	22: Panel Fail
04: FDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
05: HDC Fail	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)
06: Bad Slot			

Request Party

Authorized Signature / Date

Confirmed By Supplier

Authorized Signature / Date