

Network Appliance Platform

Hardware Platforms for Network Computing

NCA-1250 User Manual

Version: 1.1

Date of Release: 2024-01-19

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 Description

The icons are used in the manual to serve as an indication of interest topics or important messages. Below is a description of these icons:

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, if there are any technical queries, you could submit a support ticket to our [Lanner 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 to contact@lannerinc.com. Thank you for your time.

Contact Information

Taiwan Corporate Headquarters

Lanner Electronics Inc.

7F, No.173, Sec.2, Datong Rd.
Xizhi District, New Taipei City 22184,
Taiwan

立端科技股份有限公司

221 新北市汐止區
大同路二段 173 號 7 樓

T: +886-2-8692-6060

F: +886-2-8692-6101

E: contact@lannerinc.com

USA

Lanner Electronics Inc.

47790 Westinghouse Drive
Fremont, CA 94539

T: +1-855-852-6637

F: +1-510-979-0689

E: sales_us@lannerinc.com

Europe

Lanner Europe B.V.

Wilhelmina van Pruysenweg 104
2595 AN The Hague
The Netherlands

T: +31 70 701 3256

E: sales_eu@lannerinc.com

China

Beijing L&S Lancom Platform Tech. Co., Ltd.

Guodong LOFT 9 Layer No. 9 Huinan Road,
Huilongguan Town, Changping District, Beijing
102208 China

T: +86 010-82795600

F: +86 010-62963250

E: service@ls-china.com.cn

Canada

Lanner Electronics Canada Ltd

3160A Orlando Drive
Mississauga, ON
L4V 1R5 Canada

T: +1 877-813-2132

F: +1 905-362-2369

E: sales_ca@lannerinc.com

Copyright and Trademarks

This document is copyrighted © 2024. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, nor for any infringements upon the rights of third parties that may result from such use.

Acknowledgment

Intel® and Intel® Celeron® are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries.

Microsoft Windows and MS-DOS are registered trademarks of Microsoft Corp.

All other product names or trademarks are properties of their respective owners.

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.

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).

Installation & Operation

- ▶ This equipment must be grounded. The power cord for product should be connected to a socket-outlet with earthing connection.
Cet équipement doit être mis à la terre. La fiche d'alimentation doit être connectée à une prise de terre correctement câblée
- ▶ Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.
Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.
- ▶ The machine can only be used in a restricted access location and must be installed by a skilled person.
Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.
- ▶ Some USB devices may not be compatible with the system. If you encounter an error, please remove the USB device and restart the system.
- ▶ The unit is to be connected only to PoE networks without routing to the outside plant.

Warning

- ▶ Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.
- ▶ Product shall be used with Class 1 laser device modules.

Avertissement

- ▶ Équipement de classe I. Ce matériel doit être relié à la terre. La fiche d'alimentation doit être raccordée à une prise de terre correctement câblée. Une prise de courant mal câblée pourrait induire des tensions dangereuses sur des parties métalliques accessibles.
- ▶ Le produit doit être utilisé avec des modules de dispositifs laser de classe 1."



Electrical Safety Instructions

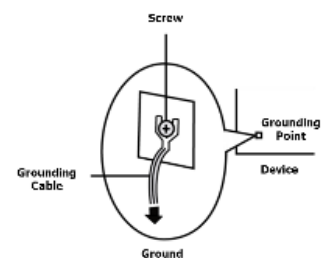
Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect 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 4 mm² or 10 AWG.

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 4 mm² ou 10 AWG.

Grounding Procedure for DC Power Source

- ▶ Connect the grounding cable to the ground.
- ▶ The protection device for the DC power source must provide 30 A current.
- ▶ This protection device must be connected to the power source before DC power.



Procédure de mise à la terre pour source d'alimentation CC

- ▶ Branchez le câble de mise à la terre à la terre.
- ▶ L'appareil de protection pour la source d'alimentation CC doit fournir 30 A de courant.
- ▶ Cet appareil de protection doit être branché à la source d'alimentation avant l'alimentation CC.

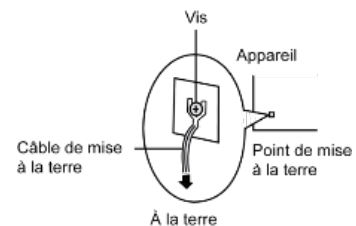


Table of Contents

Chapter 1: Product Overview 10

Package Content.....	10
Ordering Information	10
Optional Accessory	10
System Specifications	11
Front Panel	12
Rear Panel.....	13

Chapter 2: Motherboard Information 14

Block Diagram.....	14
Motherboard Layout	15
Jumper Setting and Pin Assignment.....	17

Chapter 3 Hardware Installation..... 22

Opening the Chassis	22
Installing System Memory	23
Installing M.2 Storage (Optional)	24
Installing Wi-Fi Module Card (Optional).....	25
Installing LTE Module Card (Optional).....	27
Installing 5G Module Card (Optional).....	30
Installing SIM Card (Optional)	33
Rackmount the System (Optional)	34
Wallmount the System (Optional).....	36

Chapter 4 Software Setup 38

Main Menu	39
Advanced Menu	40

Chipset Page 66

Security page 72

Boot Page..... 75

Save and Exit Page..... 76

Appendix A: LED Indicator Explanations 78

Appendix B: Enable 2.5GbE LAN Functionality..... 79

Appendix C: Terms and Conditions 80

Warranty Policy 80

CHAPTER 1: PRODUCT OVERVIEW

The NCA-1250 offers robust multi-core computing power in a compact desktop form factor. It can be configured with Intel® Atom® x7425E/N97, making it a cost-effective gateway platform for SMB, retail, branch offices and those looking to deploy any edge security application.

Package Content

Your package contains the following items:

- ▶ 1x NCA-1250 Network Appliance
- ▶ 1x Power Cable
- ▶ 1x Console Cable
- ▶ 1x Power Adapter
- ▶ 1x Nameplate & 4x rubber foot pads



Note: (1) If any component is missing or damaged, please contact your dealer immediately for assistance.

(2) The supplied power adapter and power cable are dedicated to this product only; do not use them with devices other than this model.

Ordering Information

SKU No.	Specification
NCA-1250A	Intel® x7425E/4 Cores with 6x 2.5GbE RJ45 LAN Ports
NCA-1250B	Intel® N97/4 Cores with 5x 2.5GbE RJ45 LAN Ports

Optional Accessory

Model	Model No.	Description
Wi-Fi Kit	AX201	Wi-Fi 6 /BT (CNVIO) Module with Antenna Kit (By Project)
LTE Kit	EM7590	Sierra EM7590 LTE Module with Antenna Kit
	EM060K-GL	Sierra EM060K-GL LTE Module with Antenna Kit
	LN920A6-WW	Telit LN920A6-WW LTE Module with Antenna Kit
5G Kit	FN980	Telit FN980 (sub 6) 5G Module with Antenna Kit
	FN990A28	Telit FN990A28 5G Module with Antenna Kit
	FN990A40	Telit FN990A40 5G Module with Antenna Kit
	RM520N-GL	Quectel RM520 5G Module with Antenna Kit
Rackmount Kit	PSF7387-010	1U Rackmount Kit (Long ear bracket with adapter holder, 2-sided design)
Wallmount Chassis	098W000004000	Wall mount Chassis Kit for NCA-1250

System Specifications

Form Factor		Desktop
Platform	Processor Options	Intel® Atom® x7425E/N97 (Alder Lake N)
	CPU Socket	Onboard
	Chipset	SoC
BIOS		AMI SPI Flash BIOS
System Memory	Technology	DDR5 4800MHz SODIMM
	Max. Capacity	Up to 16GB
	Socket	1x 262-pin SODIMM
Networking	Ethernet Ports	5x 2.5GbE RJ45 Via Intel® I226-V; 1x 2.5GbE RJ45 Via GPY211 SGMII Interface (By SKU)
LOM	IO Interface	N/A
	OPMA slot	N/A
I/O Interface	Reset Button	1x Reset Button
	LED Indicator	Power/Status/Storage
	Power Button	1x Power Button
	Console Port	1x RJ45 Console Port
	USB Port	1x USB 3.0 Port
Storage	Power input	1x DC Power Adaptor
	HDD/SSD Support	N/A
	Onboard Slots	1x M.2 (SATA) 2280; 1x EMMC 16GB Onboard (By SKU)
Expansion	Mini-PCIe/M.2	1x M.2 3042/3050/3052 for 5G/LTE (USB3.2); 1x M.2 2230 E-Key for Wi-Fi6/BT (CNVIO) (By Project)
	SIM Card Slot	1x Nano SIM Card Slot
Miscellaneous	Watchdog	Yes
	Internal RTC w/ Li-Battery	Yes
	TPM	TPM 2.0 onboard (By SKU)
Cooling	Processor	Passive CPU heatsink
	System	Fanless
Environmental Parameters	Temperature	0~40°C Operating; -20~70°C Non-Operating
	Humidity (RH)	10% to 90% Operating; 5% to 95% Non-Operating
System Dimensions	(WxDxH)	231 x 44 x 200mm
	Weight	1.1 kg
Package Dimensions	(WxDxH)	358 x 135 x 290 mm
	Weight	2.3 kg
Power	Type/Watts	40W Power Adapter; 12V/3.3A
	Input	AC 100~240V @50~60 Hz
Approvals and Compliance		RoHS, CE/FCC Class B

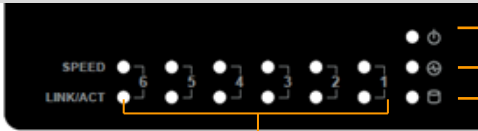
Front Panel

NCA-1250A



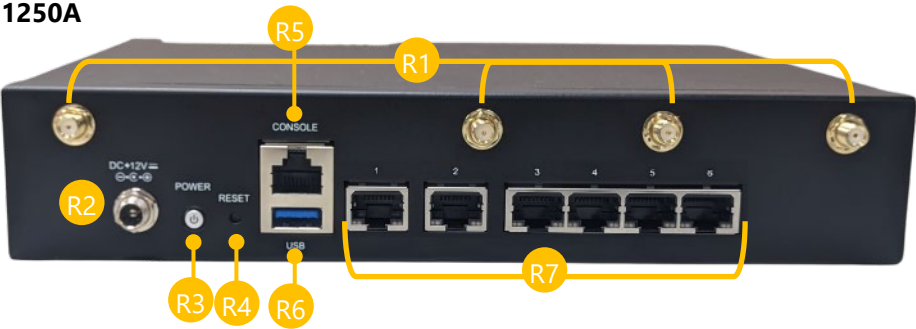
NCA-1250B



No.	Description	
F1	SIM Card Slot	SIM Card Slot Cover
F2	LED Indicators	<div><div>— System Power — System Status — HDD Activity</div></div> <p>LAN 1~6 (SKU B: LAN 1~5)</p>
F3	Antenna Port	2x Antenna Holes for 5G Module (Optional)

Rear Panel

NCA-1250A



NCA-1250B

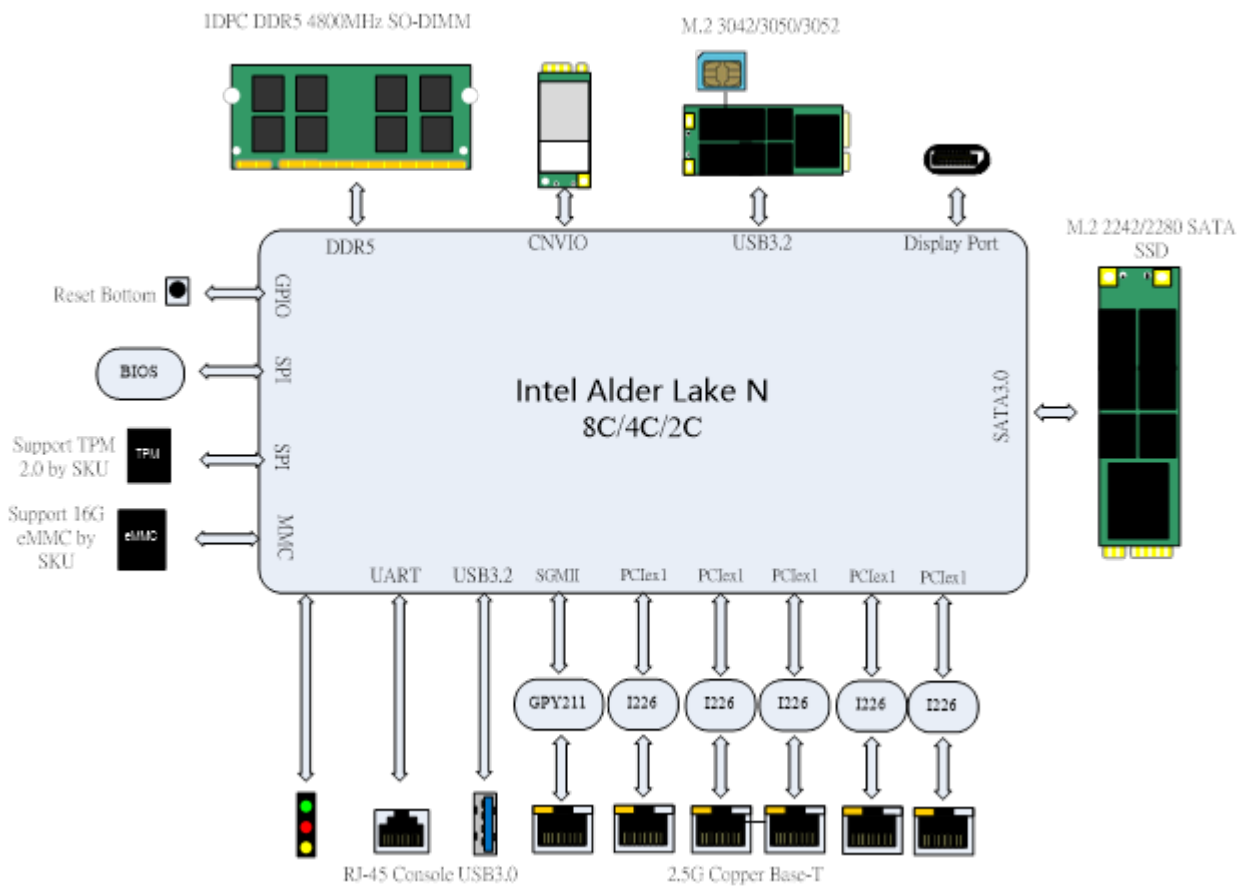


No. Description		
R1	Antenna Port	SMA Connector for the Wi-Fi and 5G/LTE Module (Optional)
R2	Power Supply	1x DC Jack with Lock
R3	Power Button	1x Power ON/OFF Button
R4	Reset Button	1x Reset Button (Software Reset)
R5	Console Port	1x GbE RJ45 Console Port
R6	USB Port	1x Type A USB 3.0 Port
R7	LAN Port	5x or 6x 2.5GbE RJ45 Ethernet Ports with LED Indicators (By SKU)

CHAPTER 2: MOTHERBOARD INFORMATION

Block Diagram

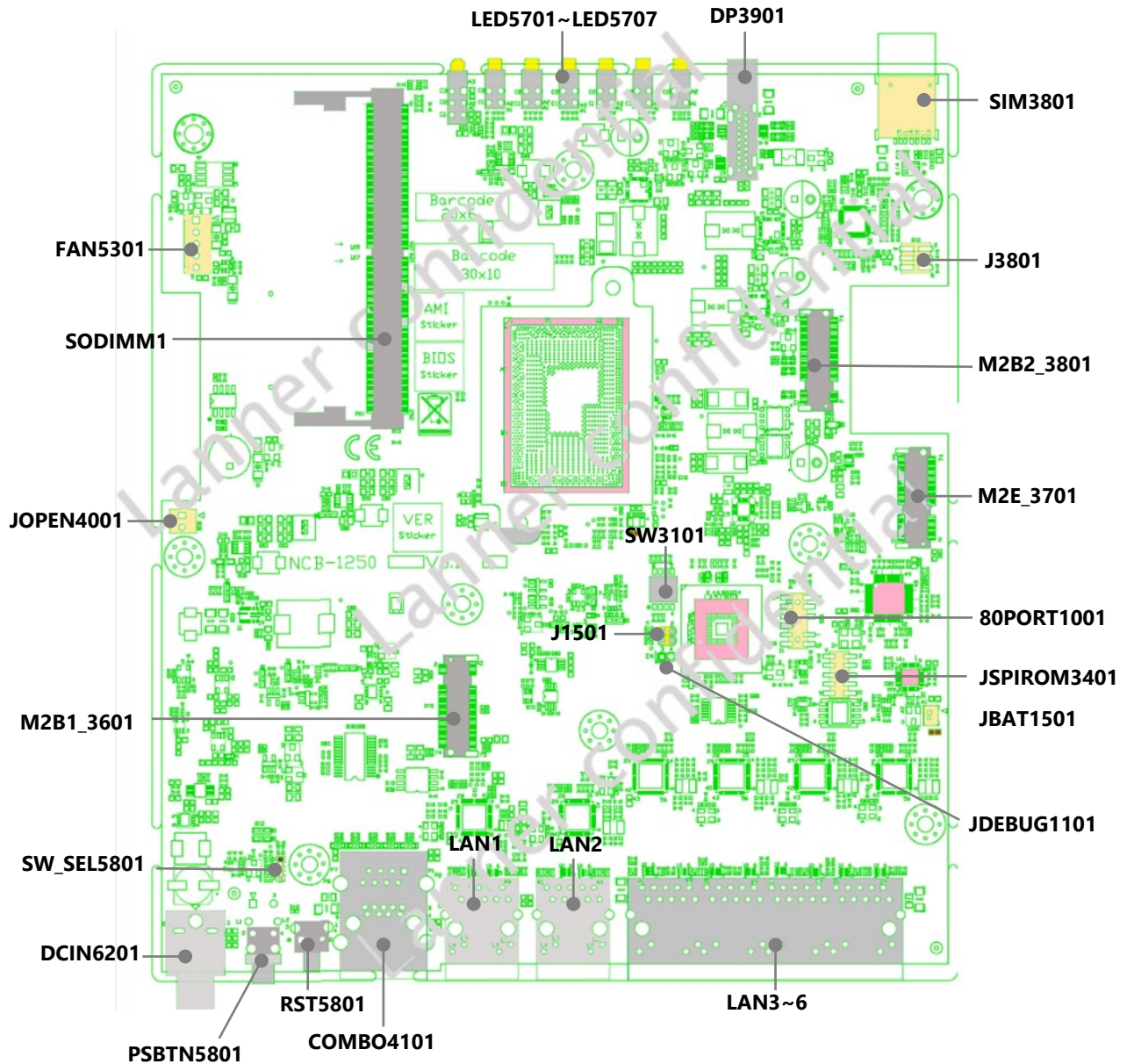
The block diagram indicates how data flows among components on the motherboard. Please refer to the following figure for your motherboard's layout design.



Motherboard Layout

The layout of the motherboard illustrates the positions of connectors and jumpers. Use the accompanying picture for guidance on pin assignments and internal connections.

Top Side of Motherboard



Bottom Side of Motherboard



Jumper Setting and Pin Assignment

J3801: 5G Module Setting

PIN NO.	DESCRIPTION
1	M2B2_OPT_VCC
2	3V3
3	M2B2_P22_VBUS_SENSE
4	3V3
5	M2B2_P20_PCIE_DIS
6	1V8

Matching Table of Jumper Settings and Modules below,

V = install jumper

X = NC

Latch	EM9291	EM9191	Others
(1-2)	V	x	x
(3-4)	x	V	x
(5-6)	x	V	x

SW3101: Debug Setting

PIN NO.	DESCRIPTION
1	SOC_GPP_R2_R
2	SOC_GPP_B18_R
3	NC
4	NC
5	NC
6	NC
7	3V3
8	+P3V3_1V8_VCCPGPPR

Latch 1 (pin 1-8): ON for debug use; OFF for normal operating(default).

Latch 2 (pin 2-7): ON for debug use; OFF for normal operating(default).

Latch 3 (pin 3-6): no function, set switch to OFF as default.

Latch 4 (pin 4-5): no function, set switch to OFF as default

80PORT1001: 80 Port

PIN NO.	DESCRIPTION
1	ESPI_CLK
2	ESPI_IO1
3	ESPI_RST
4	ESPI_IO0
5	ESPI_CS
6	3V3_S0
7	ESPI_IO3
8	LATCH
9	ESPI_IO2
10	GND
11	3V3_SB
12	NC

JSPIROM3401

PIN NO.	DESCRIPTION
1	BIOS1_HOLD
2	NC
3	BIOS1_CS
4	3V3
5	BIOS1_SO
6	NC
7	NC
8	BIOS1_SCK
9	GND
10	BIOS1_SI

JBAT1501

PIN NO.	DESCRIPTION
1	VBAT
2	GND

J1501: CMOS Setting

PIN NO.	DESCRIPTION
1	RTCRST
2	GND
3	SRTCST
4	GND

(1-2): Short for clear CMOS, NC for normal operating.

(3-4): Short for clear CMOS, NC for normal operating.

JDEBUG1101

PIN NO.	DESCRIPTION
1	SOC_UART0_TXD
2	GND

FAN5301

PIN NO.	DESCRIPTION
1	GND
2	12V
3	FAN_TACH
4	NC
5	FAN_PWM

JOPEN4001

PIN NO.	DESCRIPTION
1	GND
2	SIO_CASEOPEN

JSW_SEL5801

(1-2): SW Reset, Default Setting.

(2-3): HW Reset.

PIN NO.	DESCRIPTION
1	SW_RESET
2	BTN_RESET
3	HW_RESET

DCIN6201

PIN NO.	DESCRIPTION
1	12V
2	GND
3	GND

M2B2_3801

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	38	M2B2_P38
2	3V3	39	GND
3	GND	40	NC
4	3V3	41	NC
5	GND	42	NC
6	F_CARD_POWER_OFF_N (default:1V8)	43	NC
7	USB2_TXP	44	NC
8	NC	45	GND
9	USB2_TXN	46	NC
10	NC	47	NC
11	GND	48	NC
12	LATCH	49	NC
13	LATCH	50	NC
14	LATCH	51	GND
15	LATCH	52	NC
16	LATCH	53	NC
17	LATCH	54	NC
18	LATCH	55	NC
19	LATCH	56	NC
20	M2B2_P20_PCIE_DIS	57	GND
21	NC	58	NC
22	M2B2_P22_VBUS_SENSE	59	NC
23	NC	60	NC
24	M2B2_P24	61	NC
25	NC	62	NC
26	GND	63	NC
27	GND	64	NC
28	NC	65	NC
29	USB3_RXN	66	SIM_DETECT (Default: NC)
30	SIM_RST	67	RESET
31	USB3_RXP	68	M2B2_P68
32	SIM_CLK	69	NC
33	GND	70	3V3
34	SIM_DAT	71	GND
35	USB3_TXN	72	3V3

36	SIM_VCC	73	GND
37	USB3_TXP	74	3V3
--	--	75	NC

M2E_3701

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	39	GND
2	3V3	40	NC
3	NC	41	NC
4	3V3	42	NC
5	NC	43	NC
6	LED_WIFI_N	44	GND
7	GND	45	NC
8	NC	46	NC
9	CNVi_D1_RXN	47	NC
10	CNVi_RESET	48	NC
11	CNVi_D1_RXP	49	SUSCLK
12	NC	5-	GND
13	GND	51	NC
14	CNVi_CLKREQ_N	52	NC
15	CNVi_D0_RXN	53	NC
16	LED_BT_N	54	NC
17	CNVi_D0_RXP	55	NC
18	GND	56	GND
19	GND	57	NC
20	NC	58	CNVi_D1_TXN
21	CNVi_CLK_RXN	59	NC
22	CNVi_BRI_RSP	60	CNVi_D1_TXP
23	CNVi_CLK_RXP	61	NC
24	LATCH	62	GND
25	LATCH	63	NC
26	LATCH	64	CNVi_D0_TXN
27	LATCH	65	NC
28	LATCH	66	CNVi_D0_TXP
29	LATCH	67	NC
30	LATCH	68	GND
31	LATCH	69	NC
32	CNVi_RGI_DT	70	CNVi_CLK_TXN
33	GND	71	3V3
34	CNVi_RGI_RSP	72	CNVi_CLK_TXP
35	NC	73	3V3
36	CNVi_BRI_DT	74	GND
37	NC	75	GND
38	NC	--	--

M2B1_3601

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	39	GND
2	3V3	40	NC
3	GND	41	SATA3_RXP
4	3V3	42	NC
5	GND	43	SATA3_RXN

6	NC	44	NC
7	NC	45	GND
8	NC	46	NC
9	NC	47	SATA3_TXN
10	NC	48	NC
11	NC	49	SATA3_TXP
12	LATCH	5-	NC
13	LATCH	51	GND
14	LATCH	52	NC
15	LATCH	53	NC
16	LATCH	54	NC
17	LATCH	55	NC
18	LATCH	56	NC
19	LATCH	57	GND
20	NC	58	NC
21	NC	59	NC
22	NC	60	NC
23	NC	61	NC
24	NC	62	NC
25	NC	63	NC
26	NC	64	NC
27	GND	65	NC
28	NC	66	NC
29	NC	67	NC
30	NC	68	NC
31	NC	69	NC
32	NC	70	3V3
33	GND	71	GND
34	NC	72	3V3
35	NC	73	GND
36	NC	74	3V3
37	NC	75	GND
38	GND	--	--

CHAPTER 3 HARDWARE INSTALLATION

For your safety and to prevent electric shock or damage to the system, ensure all power connections are disconnected to completely power off the device. Additionally, wear ESD protection gloves while performing the procedures outlined in this chapter.

Opening the Chassis

1. Power off the system and remove all power connections.
2. Locate and remove the six (6) screws on the right, left, and bottom side.

Right Side



Left Side



Bottom Side



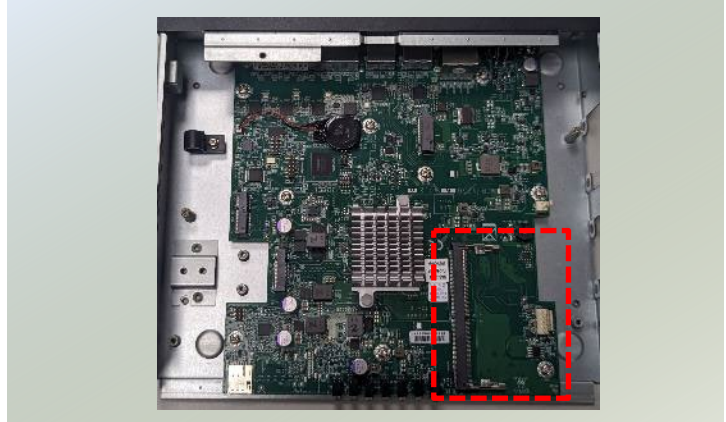
3. Gently slide the chassis cover away from the system and lift the cover to remove.



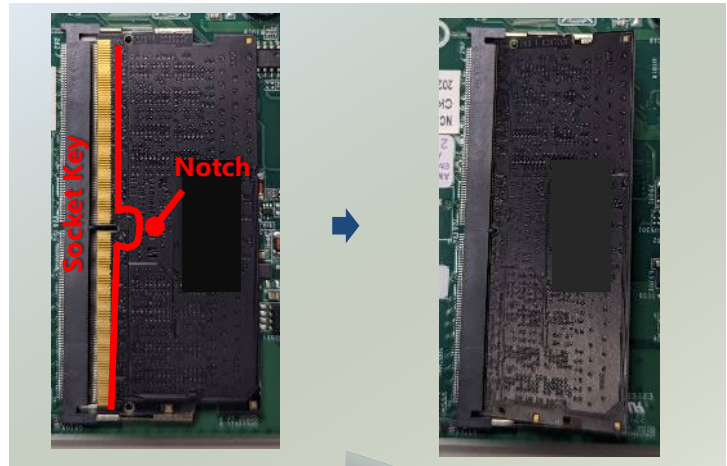
Installing System Memory

The motherboard supports one DDR5 SODIMM with speeds of up to 4800MHz. Please follow the steps for installation

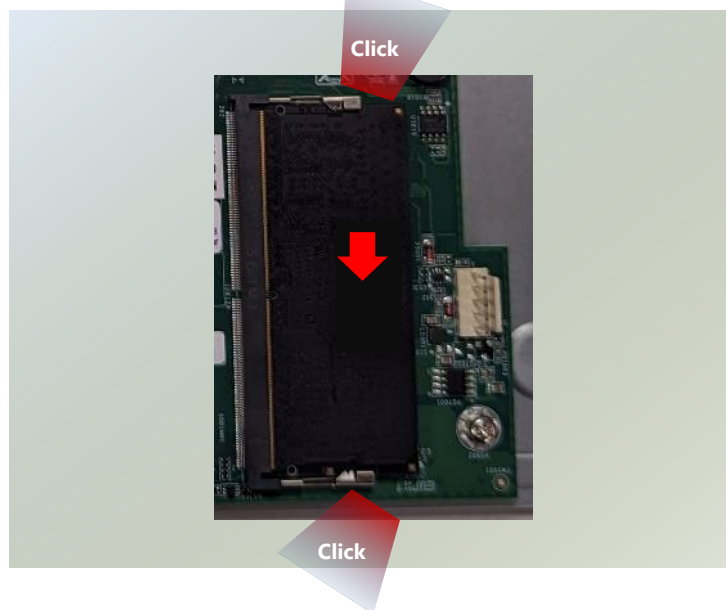
1. Power off the system and open the bottom chassis cover.
2. Locate the system memory slot.



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



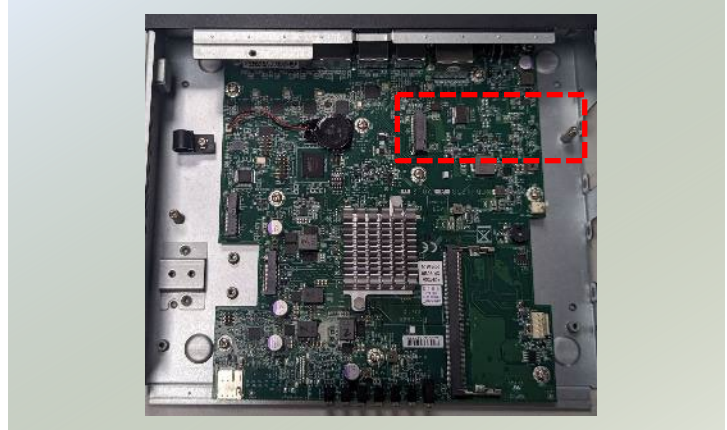
4. Push down on the module until the slot latch catches and clicks into place.



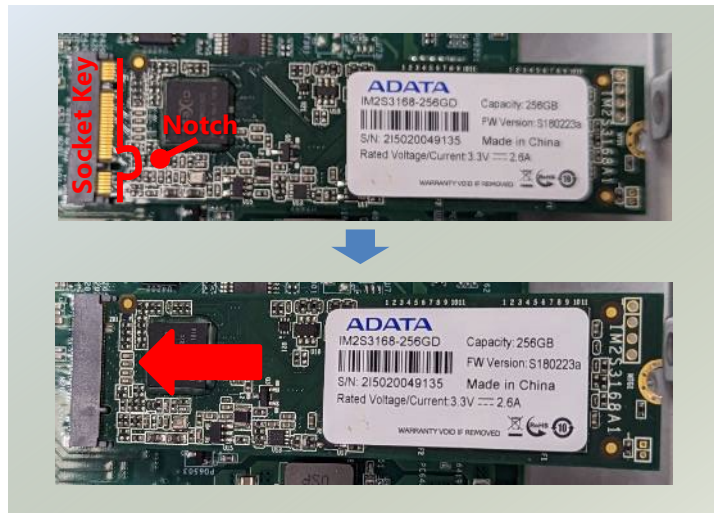
Installing M.2 Storage (Optional)

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

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



3. Align the notch of the M.2 storage module with the socket key in the pin slot.
4. Insert the M.2 storage module card pins at 30 degrees into the socket until it is fully seated.



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

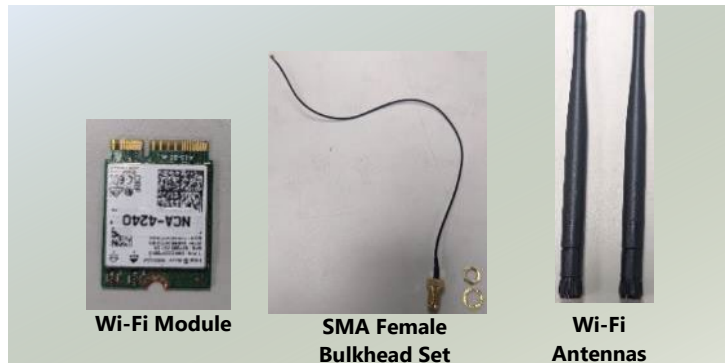


Installing Wi-Fi Module Card (Optional)

The system provides one M.2 2230 E-Key slot for Wi-Fi module. The Wi-Fi module will require two (2) antennas. Follow the steps for installation.

1. The Wi-Fi Module Kit includes:

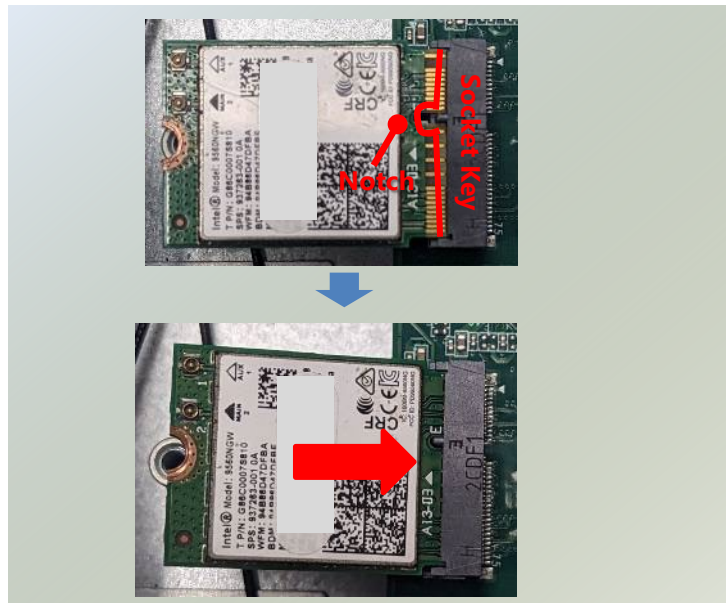
- ▶ 1x Wi-Fi Module Card
- ▶ 2x SMA Female Cable Sets
- ▶ 2x Wi-Fi Antennas



2. Power off the system and open the bottom chassis cover.
3. Locate the M.2 slot on the motherboard.



4. Align the notch of the Wi-Fi module card with the socket key in the pin slot.
5. Angle the Wi-Fi module card pins at 30 degrees and insert them into the socket until the card is fully seated.



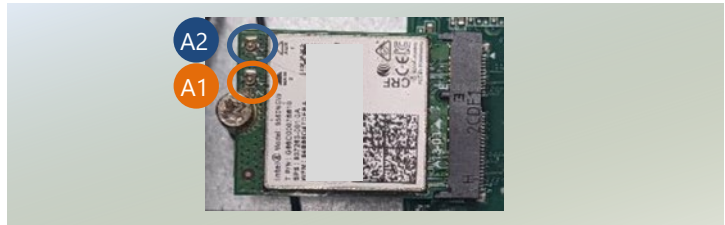
6. Push down on the module card and secure with a screw.



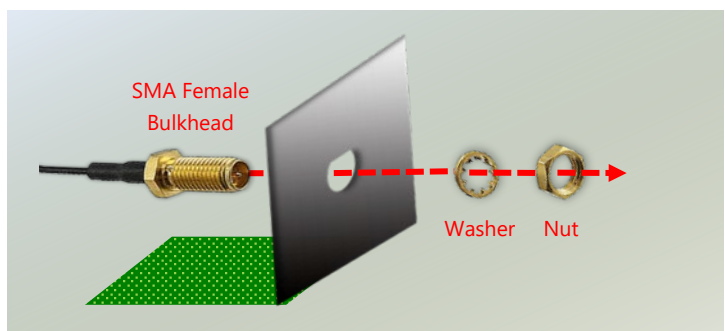
Installing Wi-Fi Antennas



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



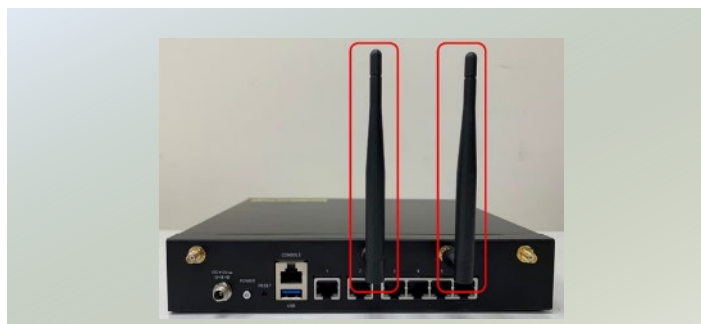
2. From inside the chassis, insert the SMA Female Bulkhead through the antenna hole on the rear panel.
3. From the outside of the system, affix the Washer and Nut, then securely tighten the Nut using an SMA Torque Wrench.



4. Connect the antenna cables to the IPEX connectors on the Wi-Fi module card.



5. Lastly, fasten the antennas onto the bulkhead located on the system's exterior.

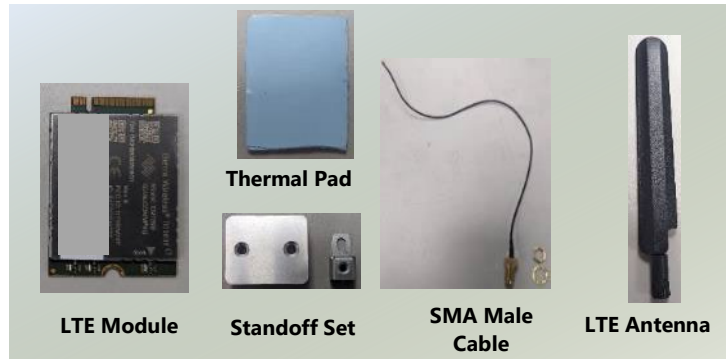


Installing LTE Module Card (Optional)

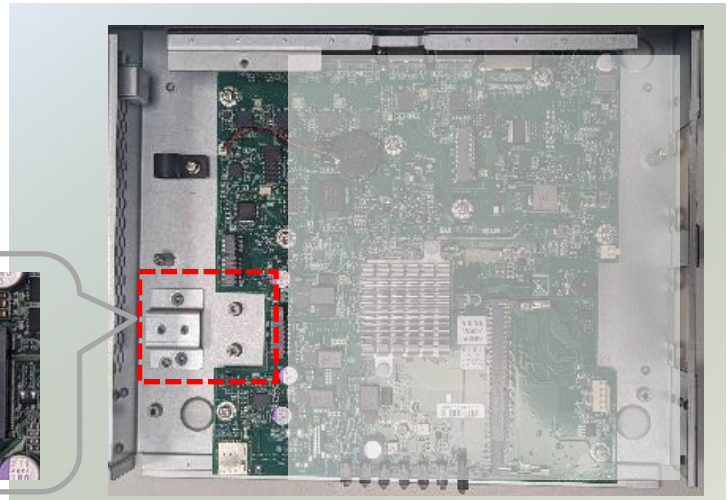
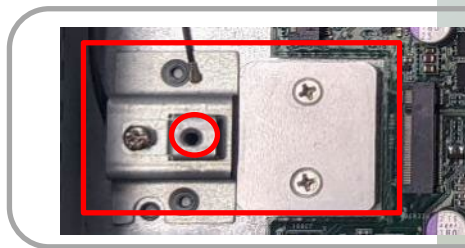
The motherboard provides one M.2 3042/3050/3052 slot for LTE/5G expansion. LTE module requires two (2) antennas, and 5G module requires four (4) antennas. Therefore, only one LTE module or one 5G module can be installed. Please follow the procedures for LTE module card expansion installation.

1. The LTE Module Kit includes:

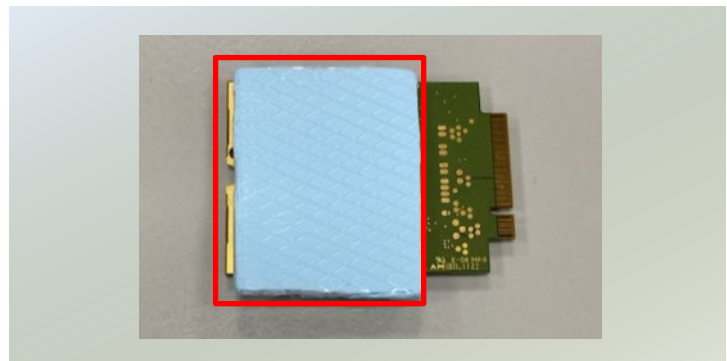
- ▶ 1x LTE Module Card
- ▶ 2x SMA Male Cable Sets
- ▶ 2x LTE Antennas
- ▶ 1x Standoff Set
- ▶ 1x Thermal pad



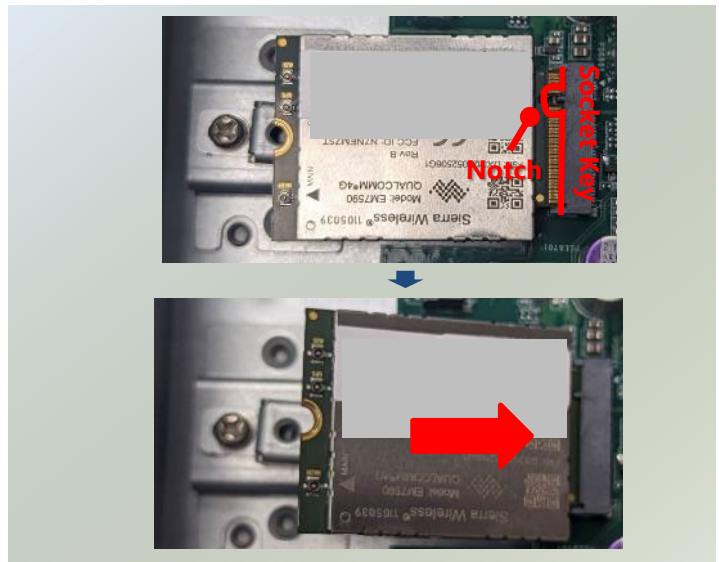
2. Power off the system and open the bottom chassis cover.
3. Locate the M.2 slot on the motherboard. Position the Standoff set and secure with a screw.



4. Next, thermal pad placement. Place the thermal pad on the bottom of the LTE module card.



4. Align the notch of the LTE module card with the socket key in the pin slot.
5. Position the LTE module card pins at a 30-degree angle and insert them into the socket until the card is completely seated.



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



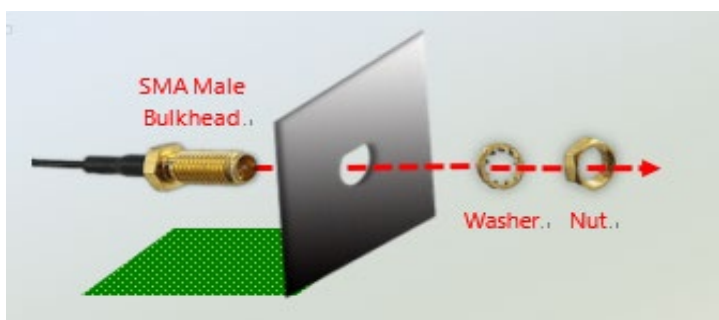
Installing LTE Antennas



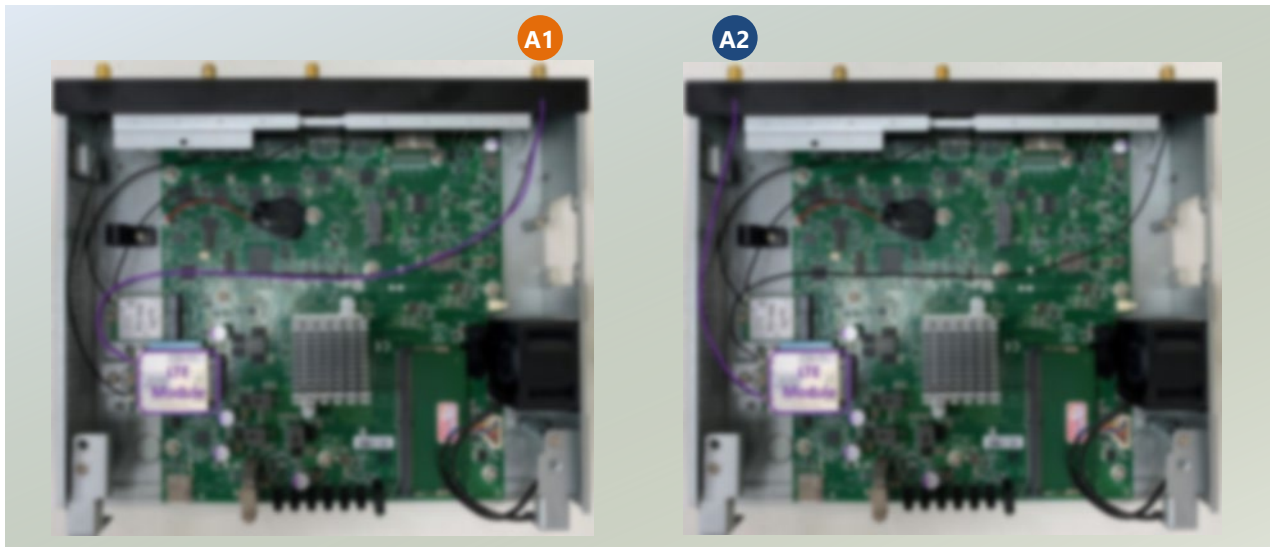
1. Locate the two (2) antenna hole placements (A1, A2). Locate the two (2) IPEX connectors on the LTE module card.



2. From inside the chassis, insert the SMA Male Bulkhead through the antenna hole on the panel.
3. On the outside of the system, attach the Washer and Nut, and tighten the Nut using an SMA Torque Wrench.



4. Connect the antenna cables to the IPEX connectors on the LTE module card.



5. Lastly, fasten the antennas onto the bulkhead located on the system's exterior.

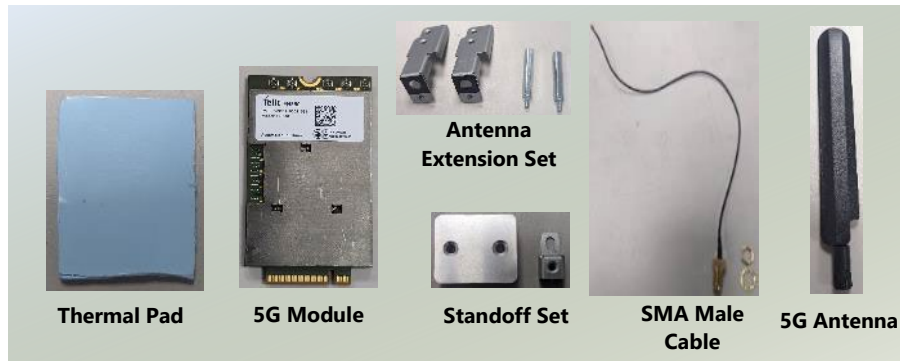


Installing 5G Module Card (Optional)

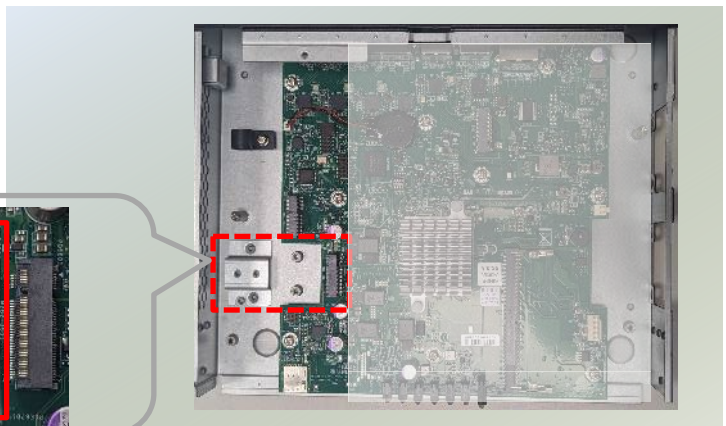
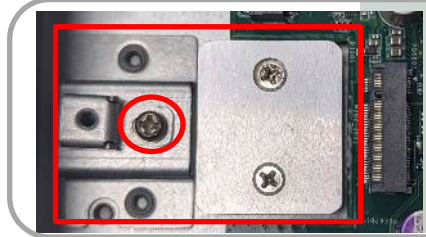
The motherboard provides one M.2 slot for 5G/LTE expansion. LTE module requires two (2) antennas, and 5G module requires four (4) antennas. Therefore, only one LTE module or one 5G module can be installed. Please follow the procedures for 5G module card expansion installation.

1. The 5G Module Kit includes:

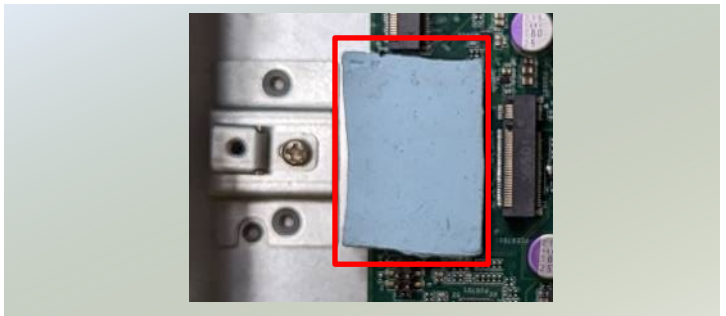
- ▶ 1x 5G Module Card
- ▶ 4x SMA Male Cable Sets
- ▶ 2x Antenna Extension Set
- ▶ 4x 5G Antennas
- ▶ 1x Standoff Set
- ▶ 1x Thermal Pad



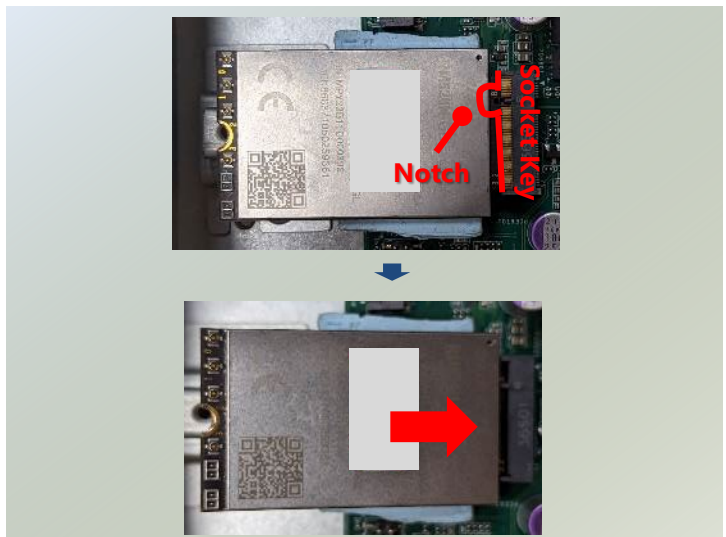
2. Power off the system and open the bottom chassis cover.
3. Locate the M.2 slot on the motherboard. Place the Standoff in position and secure with a screw.



4. Next, thermal pad placement. Place the thermal pad over the standoff.



5. Align the notch of the 5G module card with the socket key in the pin slot.
6. Position the 5G module card pins at a 30-degree angle and insert them into the socket until the card is completely seated.



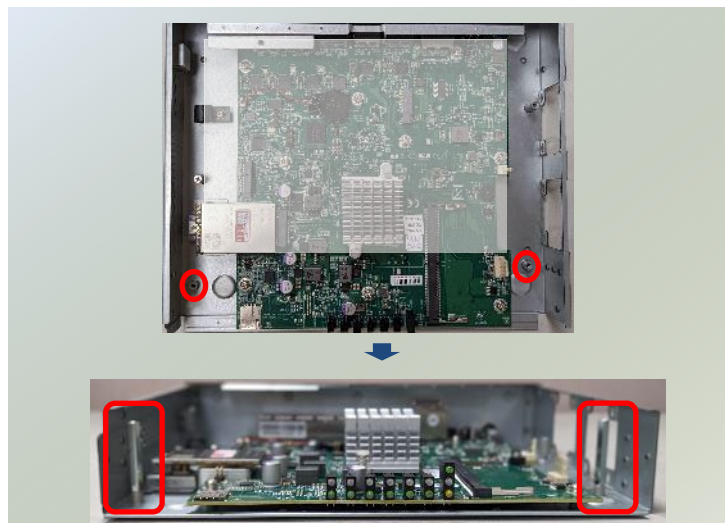
5. Push down on the module card and secure it with a screw.



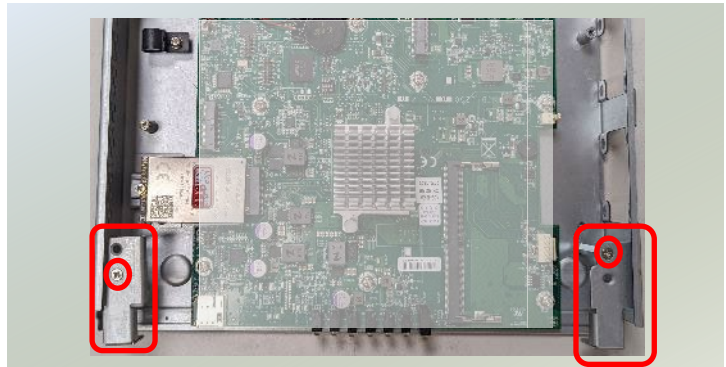
Installing 5G Antennas



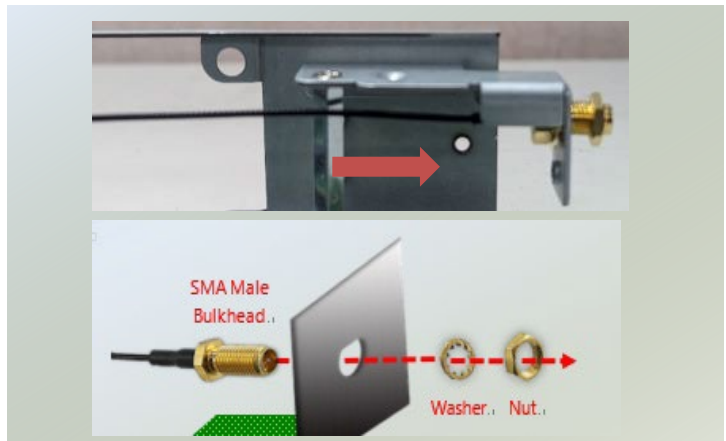
1. First, antenna extension setup. Locate the metal pillars placement on the motherboard. Then screw in the two metal pillars.



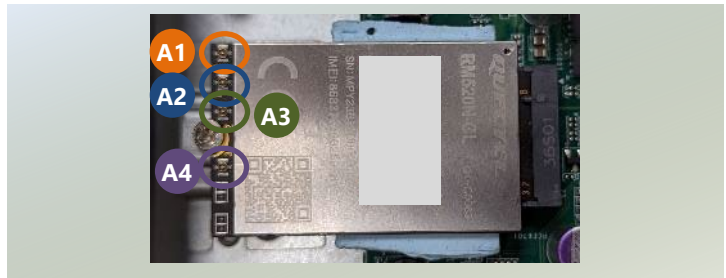
2. Then place the Extenders on top of the pillars, and secure with screws.



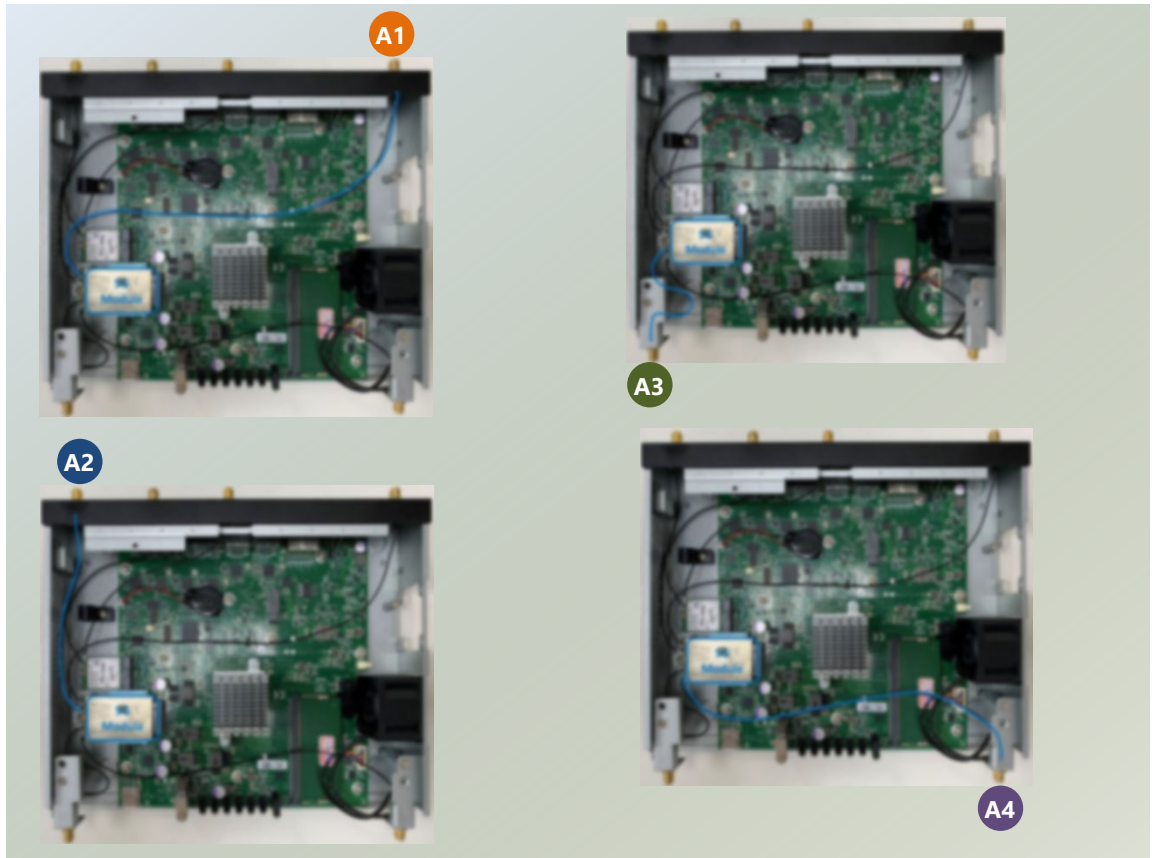
3. Then insert the SMA Male Bulkhead through Extender Antenna Hole. From the outside of the system, affix the Washer and Nut, then securely tighten the Nut using an SMA Torque Wrench.



4. Locate the four (4) IPEX connectors on the 5G module card.



5. Connect the antenna cables to the IPEX connectors on the 5G module card.



6. Lastly, fasten the antennas onto the bulkhead located on the system's exterior.

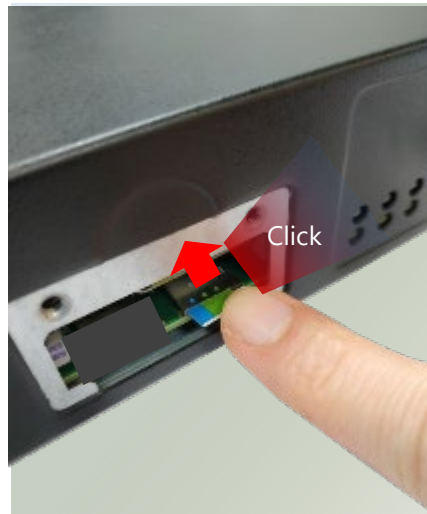


Installing SIM Card (Optional)

The SIM slot on the front panel supports an LTE/5G module (optional). The SIM socket support push-push mechanism, allowing inserting and ejecting the SIM card to be as easy as one push.



1. Locate the SIM card slot cover on the front panel. Loosen the two screws that secure the SIM slot cover and remove the slot cover. With the gold contacts on the SIM card facing downwards and the cut edge of the SIM card on the left side, push the SIM card all the way in until it clicks into place.



2. To remove the SIM card, use your fingertip to push it a little to have the card automatically ejected.

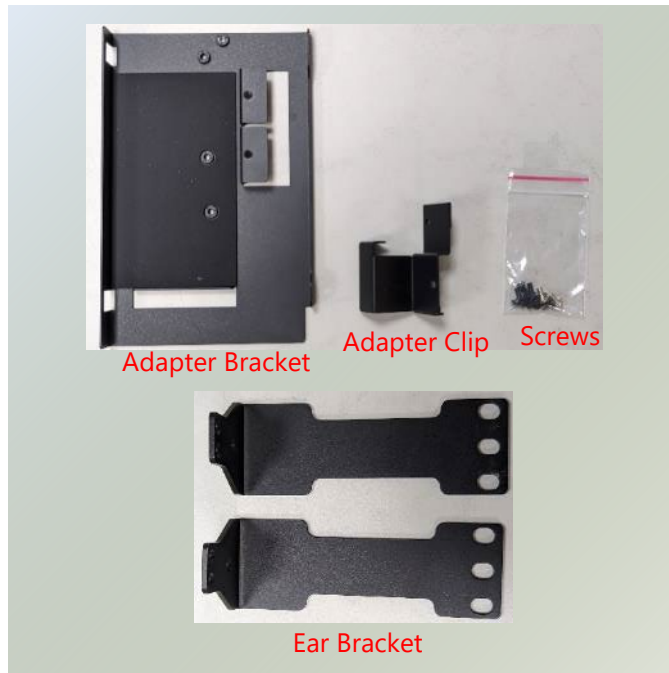


Rackmount the System (Optional)

With the rackmount kit, this system can be fixed onto rack posts. Please contact Lanner's sales representative for purchasing this kit.

The Rackmount Kit includes:

- ▶ 2x Ear Bracket
- ▶ 1x Adapter Bracket
- ▶ 1x Adapter Clip
- ▶ 1x Screws Pack
(For bracket and rack-mounting)



Attaching the Assembly to the Chassis

1. Align the ear bracket with the side panel's screw holes on one side of the system and secure it using three (3) screws.



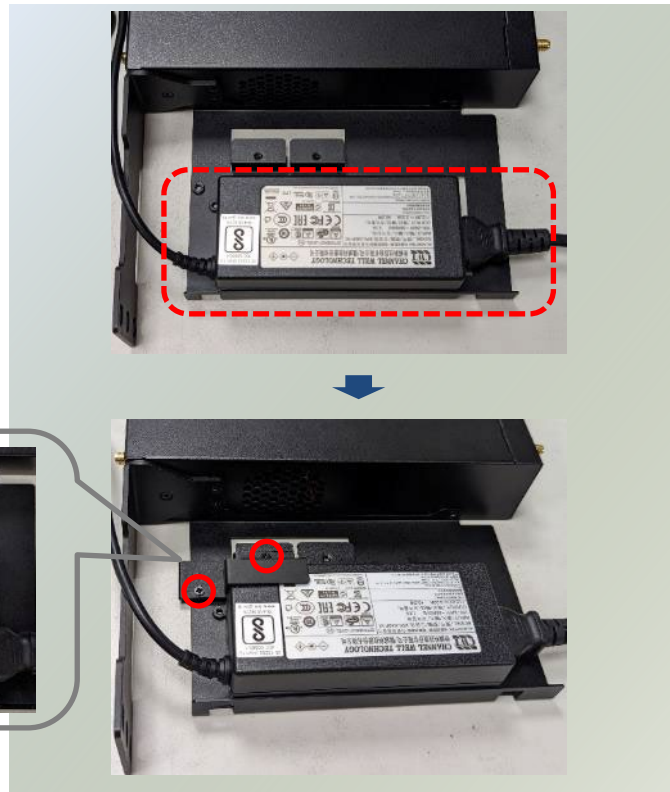
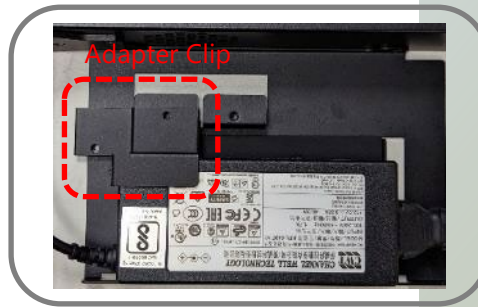
2. Secure the other ear bracket to the other side of the system.



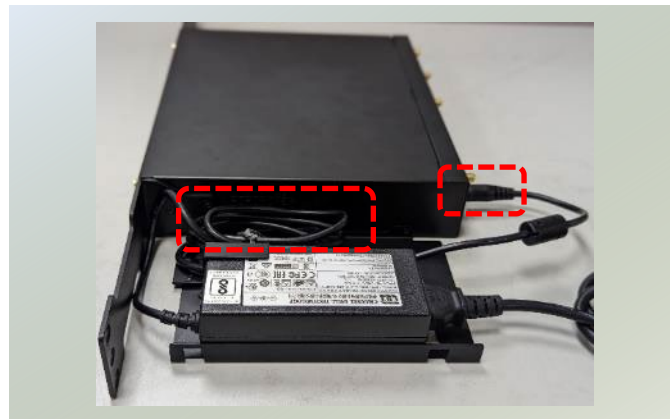
3. Attach the adapter holder to the left side panel with two screws.



4. Designed for a 12V adapter, position the adapter onto the bracket. Then, attach the adapter clip, and fasten it using the two (2) provided screws.



5. Arrange the adapter's cables within the adapter bracket.
6. Connect the power adapter's connector to the system's rear panel power supply jack.



Installing the System to the Rack

1. Install a shelf in the rack to support the system (recommended). Hold the system with the front facing you, lift it gently and place it into the rack. Secure the brackets to the rack rails using rack-mounting screws.



Wallmount the System (Optional)

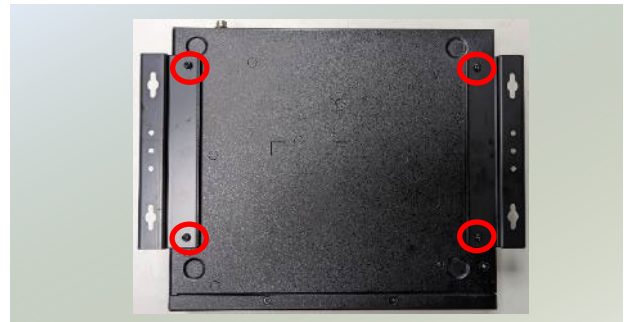
With the Wall-mount Kit, this system can be fixed on the wall surface. Please contact Lanner's sales representative for purchasing this kit.

1. The Wallmount Kit includes:

- ▶ 1x pair of Wall Brackets
- ▶ 1x Screw Pack



2. Turn the system over, and attach the wall brackets to its underside, fastening them securely using the four provided screws.

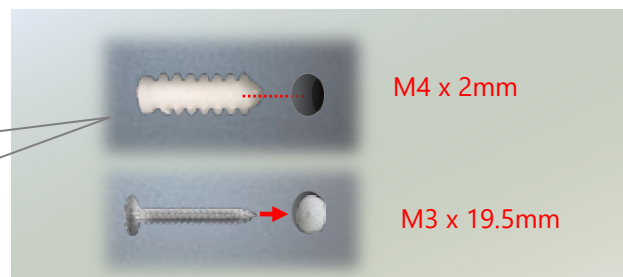
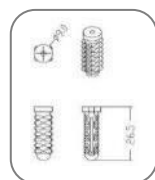


3. Measure and mark the exact location on the wall for the system. Drill four (4) holes to align with the bracket's mounting holes.

Note: The demonstrated screw type can fit in general drywall or shelves. Please identify the wall type and select a suitable fixing approach to fix this system to the wall and consult qualified trained person if you are unsure.



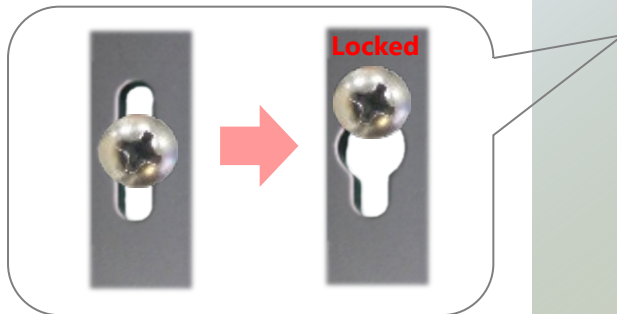
4. Insert the wall plugs into the drilled holes, then insert the long screws into the wall plugs.



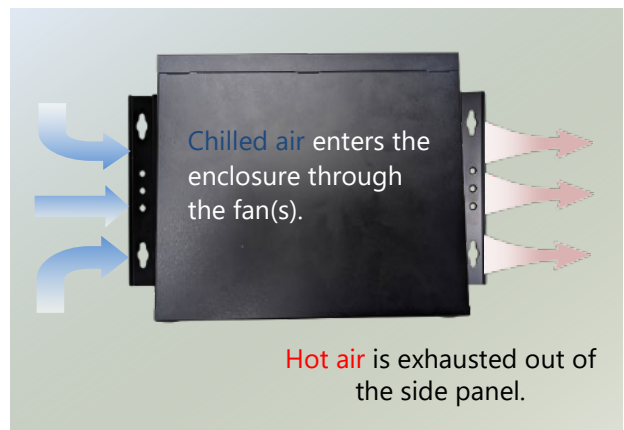
5. Position the system's wall brackets to line up with the four screws on the wall.



6. Attach the system by aligning its bracket holes with the wall screws, then press downward on the system to secure.



7. Ensure optimal airflow ventilation for the system by clearing obstructions around its intake and exhaust openings, and by organizing cables effectively to create sufficient space.



CHAPTER 4 SOFTWARE SETUP

BIOS Setup

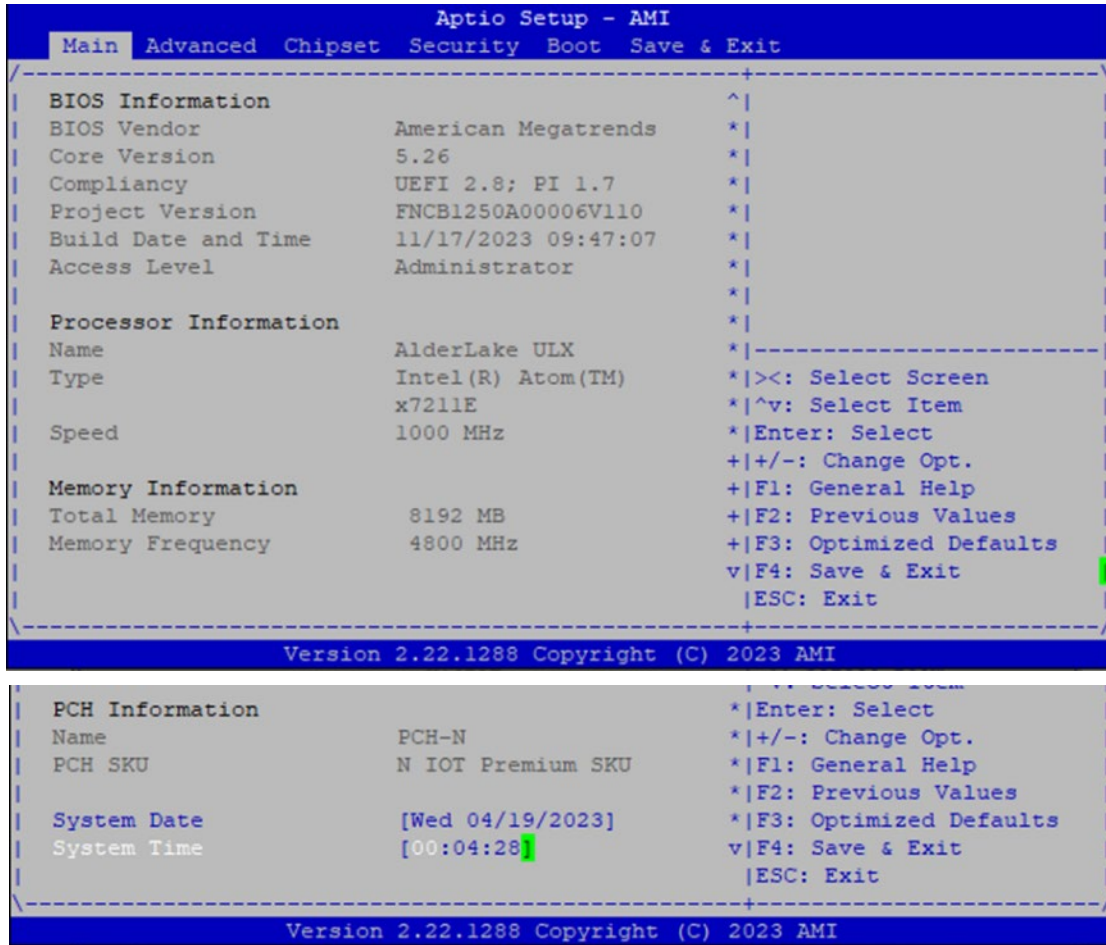
To enter the BIOS setup utility, simply follow the steps below:

1. Boot up the system.
2. The system has AMI BIOS built-in, with a SETUP utility that allows users to configure required settings or to activate certain system features. Pressing the **<Tab>** or **** key immediately allows you to enter the Setup utility.

Control Keys	Description
→←	select a setup screen, for instance, [Main], [Advanced],[IntelRCSetup], [Security], [Boot], and [Save & Exit]
↑↓	select an item/option on a setup screen
<Enter>	select an item/option or enter a sub-menu
+/-	to adjust values for the selected setup item/option
F1	to display General Help screen
F2	to retrieve previous values, such as the parameters configured the last time you had entered BIOS.
F3	to load optimized default values
F4	to save configurations and exit BIOS
<Esc>	to exit the current screen

Main Menu

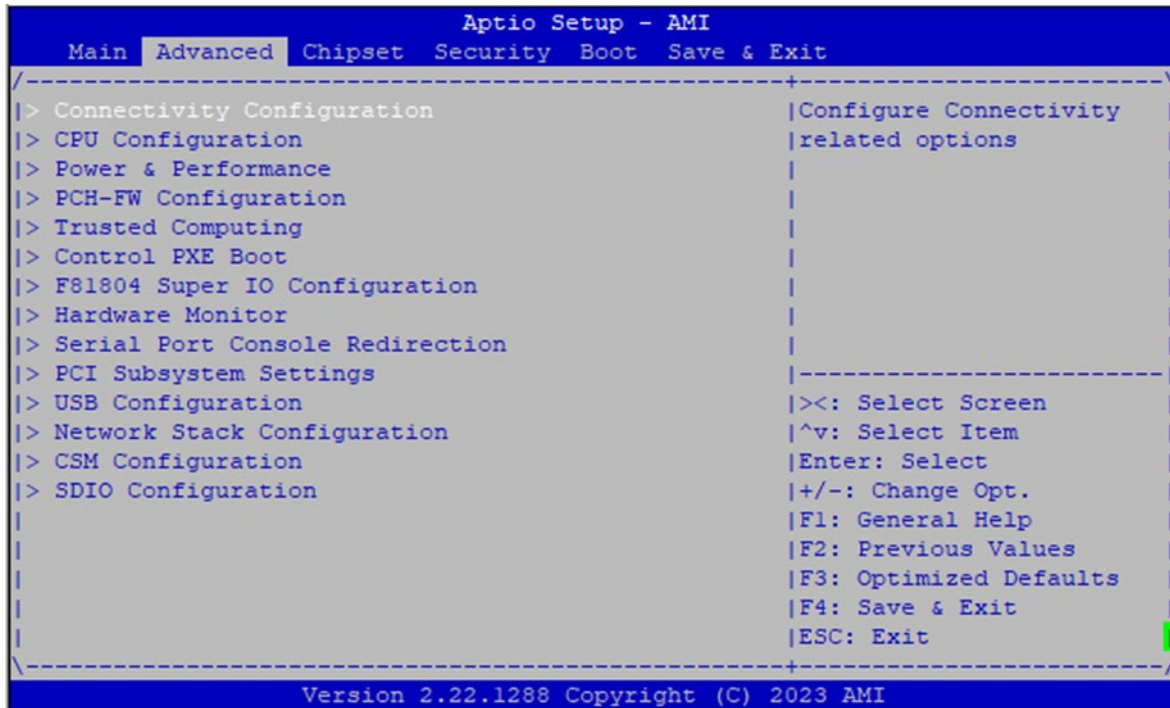
Setup main page contains BIOS information and project version information.



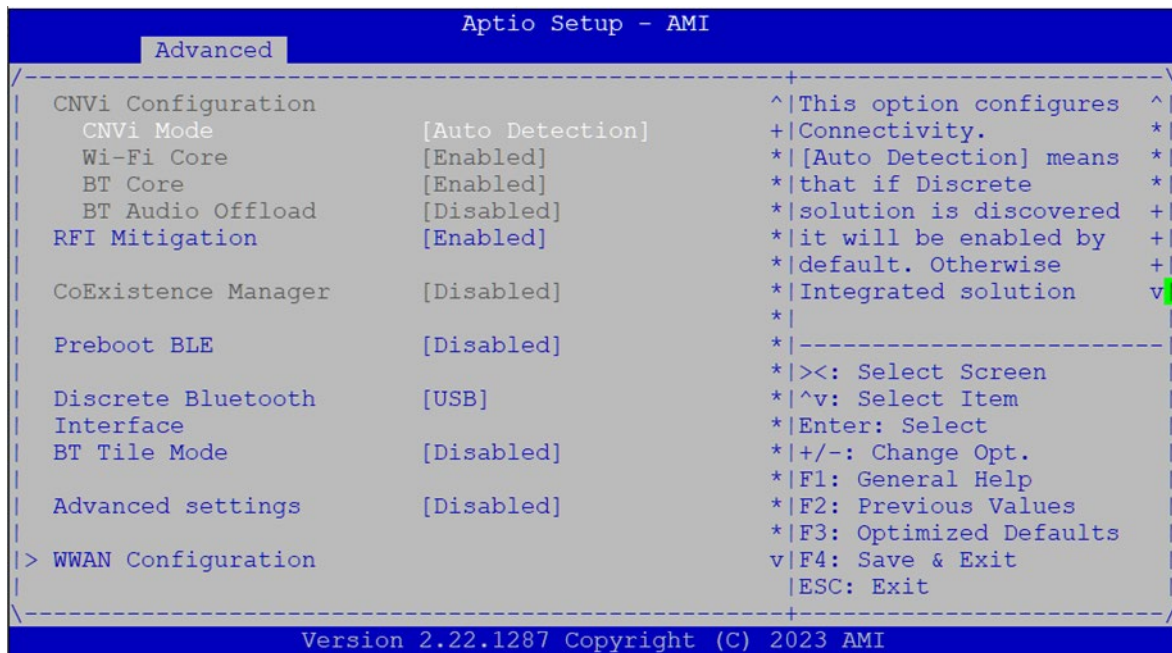
Feature	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version: AMI Kernel version, CRB code base, X64 Compliancy: UEFI version, PI version Project Version: BIOS release version Build Date and Time: MM/DD/YYYY Access Level: Administrator / User
Processor Information	Information of 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 Menu

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.



Connectivity Configuration



Feature	Options	Description
CNVi Mode	Disable Integrated Auto Detection	This option configures Connectivity. [Auto Detection] means that if Discrete solution is discovered it will be enabled by default. Otherwise Integrated solution (CNVi) will be enabled; [Disable Integrated] disables Integrated Solution. NOTE: When CNVi is present, the GPIO pins that are used for radio interface cannot be assigned to the other native function.
Wi-Fi Core	Enabled Disabled	This is an option intended to Enable/Disable Wi-Fi Core in CNVi
BT Core	Enabled Disabled	This is an option intended to Enable/Disable BT Core in CNVi
BT Audio Offload	Disabled Enabled	This is an option to Enable/Disable BT Audio Offload which enables audio input from BT device in HFP format to the audio DSP and enables power efficient audio output to BT device via A2DP format. This feature only support with Intel(R) Wireless-AX 22560
RFI Mitigation	Enabled Disabled	This is an option intended to Enable/Disable DDR-RFIM feature for Connectivity This RFI mitigation feature may result in temporary slowdown of the DDR speed.
Preboot BLE	Disabled Enabled	This will be used to enable Preboot Bluetooth function
Discrete Bluetooth Interface	Disabled USB	Serial IO UART0 needs to be enabled to select BT interface

BT Tile Mode	Disabled Enabled	Enable/Disable Tile
Advanced settings	Disabled Enabled	Configure ACPI objects for wireless devices

WWAN Configuration

Feature	Options	Description
WWAN Device	Disabled 4G - 7360/7560 5G - M80	Select the M.2 WWAN Device options to enable 4G - 7360/7560 (Intel), 5G - M80 (MediaTek) Modems

CPU Configuration

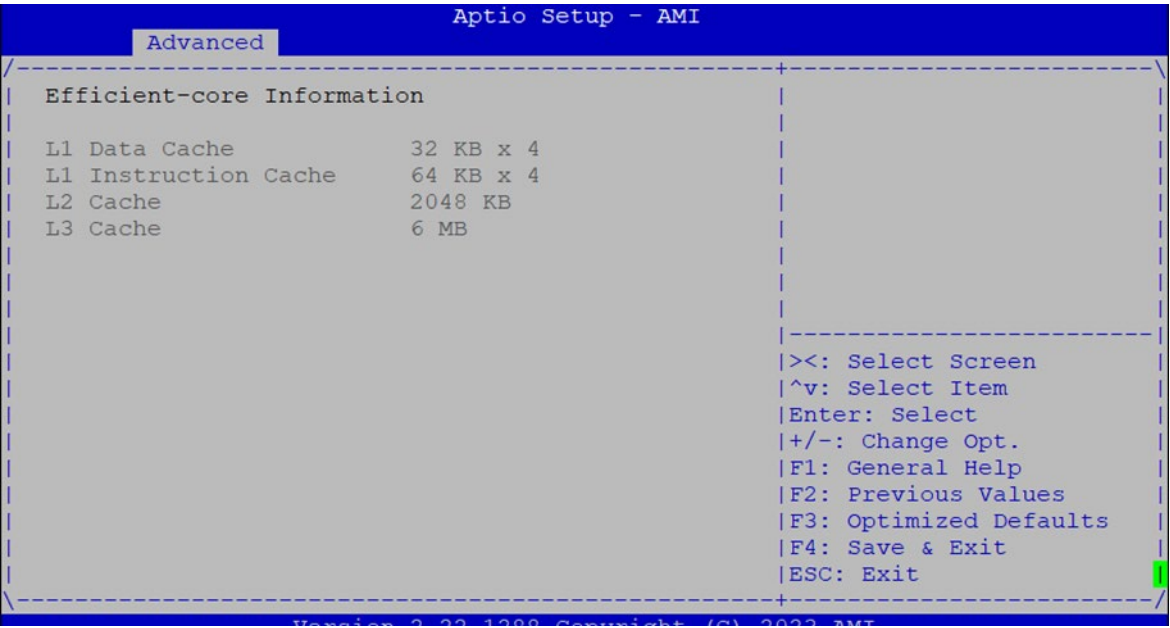
```

Apptio Setup - AMI
Advanced
-----
CPU Configuration                                     ^|Displays the E-core
                                                    *|Information
> Efficient-core Information                         *|
> Performance-core Information                     *|
                                                    *|
ID                                                    *|
Brand String                                         *|
Intel(R) Atom(TM)                                  *|
x7425E                                              *|
VMX                                                  *|
Supported                                           *|
SMX/TXT                                              *|
Not Supported                                       *|-----
Hardware Prefetcher                                *|>=: Select Screen
Adjacent Cache Line                               *|^v: Select Item
Prefetch                                           *|Enter: Select
Intel (VMX)                                        *|+/-: Change Opt.
Virtualization                                    *|F1: General Help
Technology                                         *|F2: Previous Values
AVX                                                +|F3: Optimized Defaults
[Enabled]                                         v|F4: Save & Exit
[Enabled]                                         |ESC: Exit
-----
Version 2.22.1288 Copyright (C) 2023 AMI
AES [Enabled] *|F3: Optimized Defaults
MonitorMWait [Enabled] v|F4: Save & Exit
|ESC: Exit
-----
Version 2.22.1288 Copyright (C) 2023 AMI

```

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

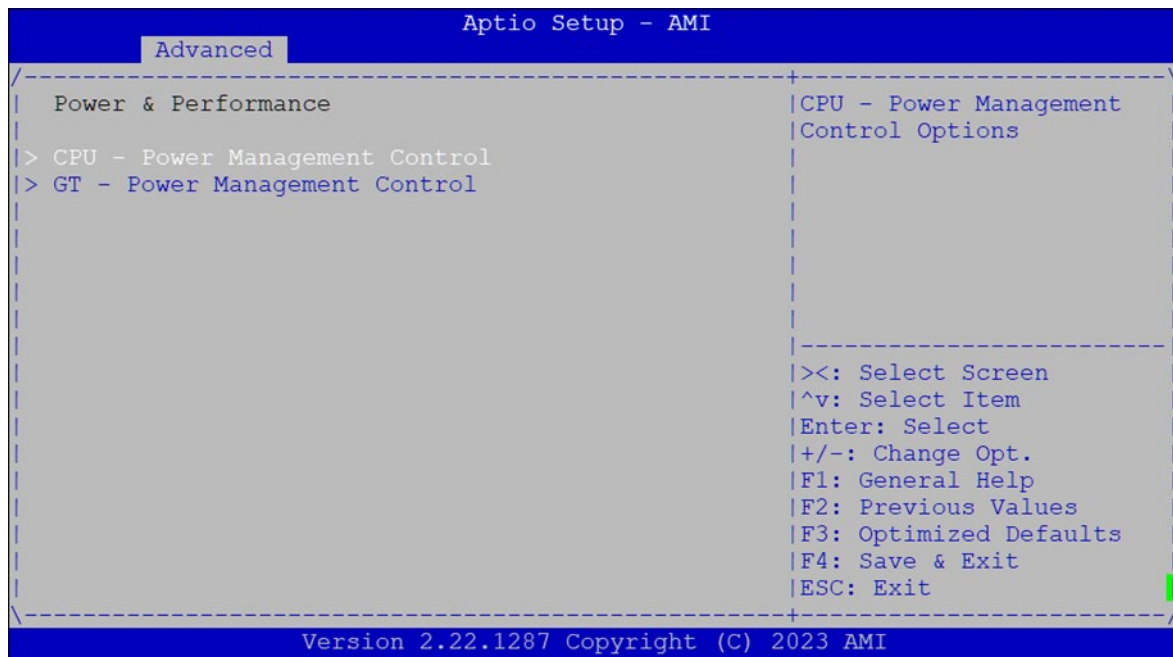
Efficient-Core Information



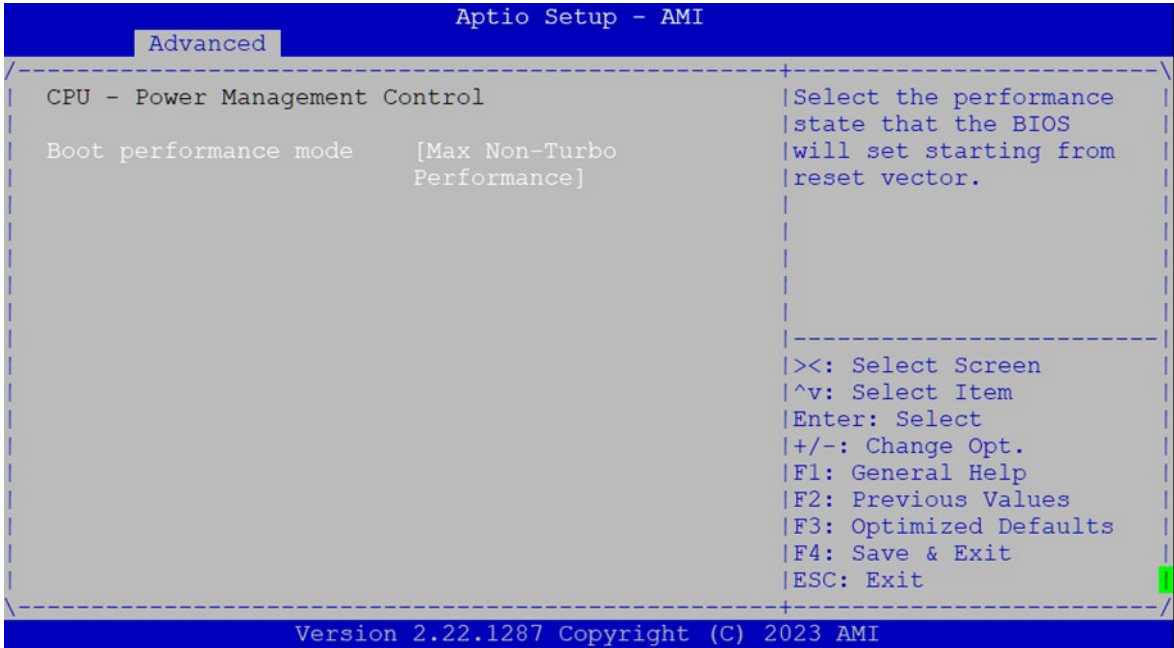
Performance-Core Information

NA

Power & Performance

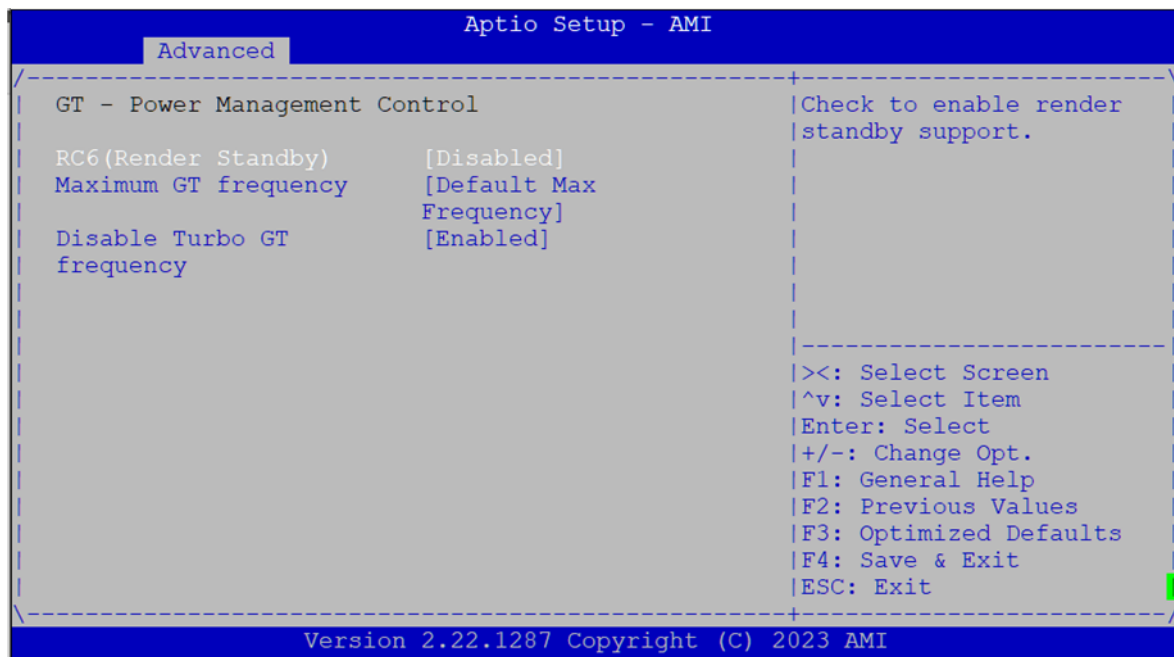


CPU – Power Management Control



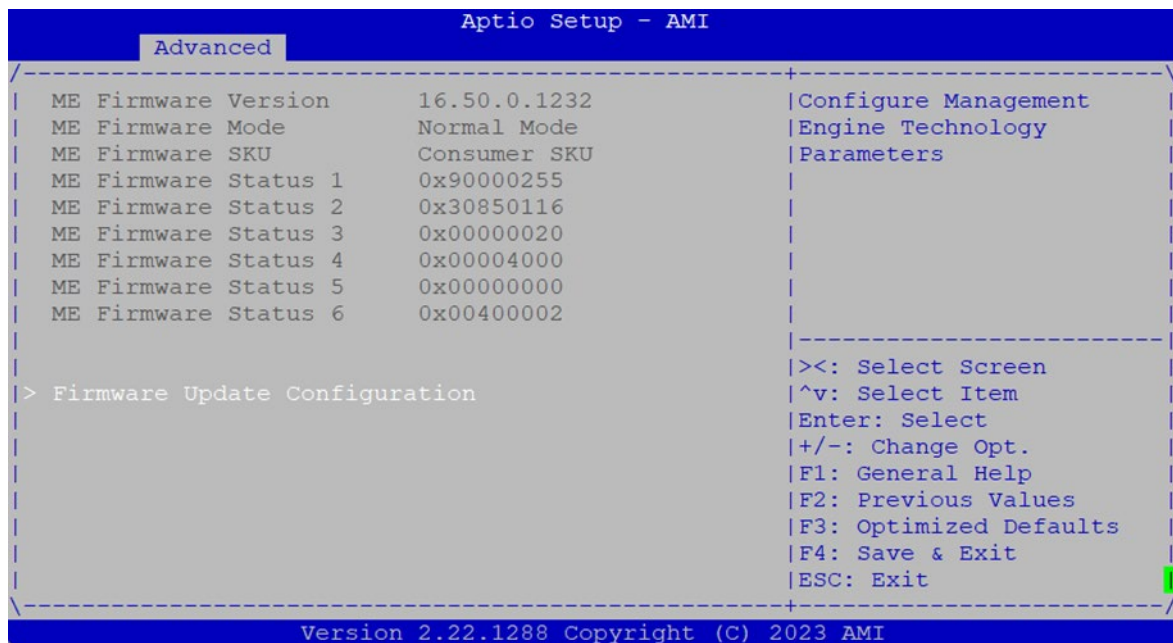
Feature	Options	Description
Boot performance mode	Max Battery Max Non-Turbo Performance Turbo Performance	Select the performance state that the BIOS will set starting from reset vector.

GT – Power Management Control

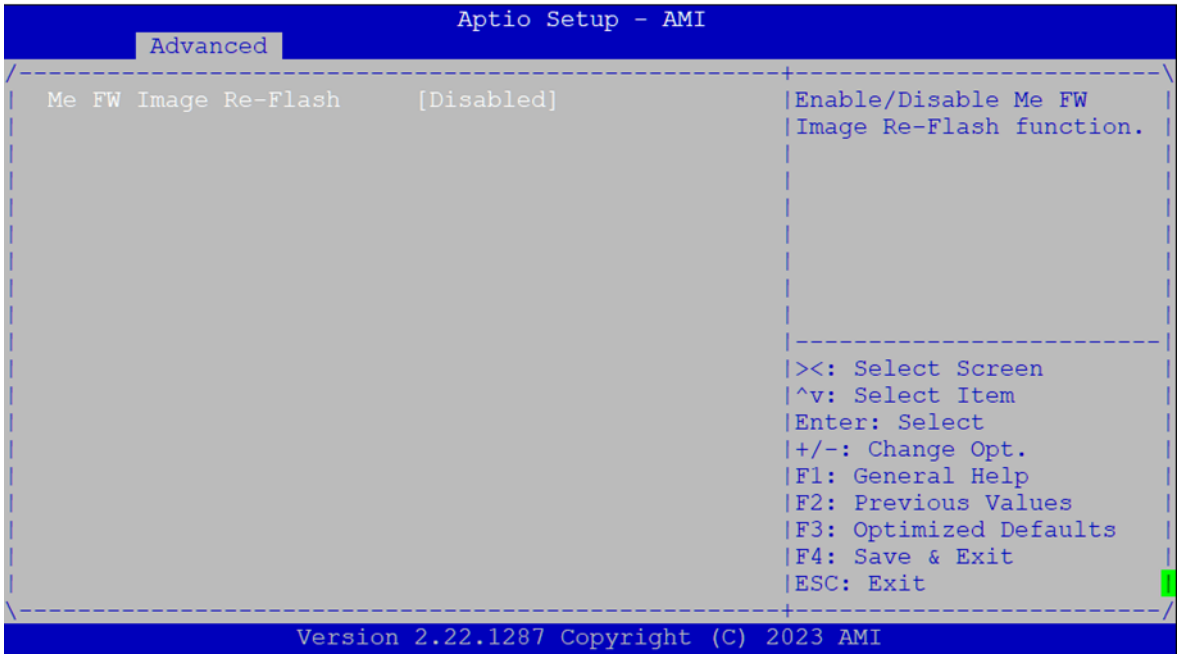


Feature	Options	Description
RC6 (Render Standby)	Disabled Enabled	Check to enable render standby support.
Maximum GT frequency	Default Max Frequency	Maximum GT frequency limited by the user. Choose between 300MHz (RPN) and 1550MHz (RP0). Value beyond the range will be clipped to min/max supported by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

PCH-FW Configuration

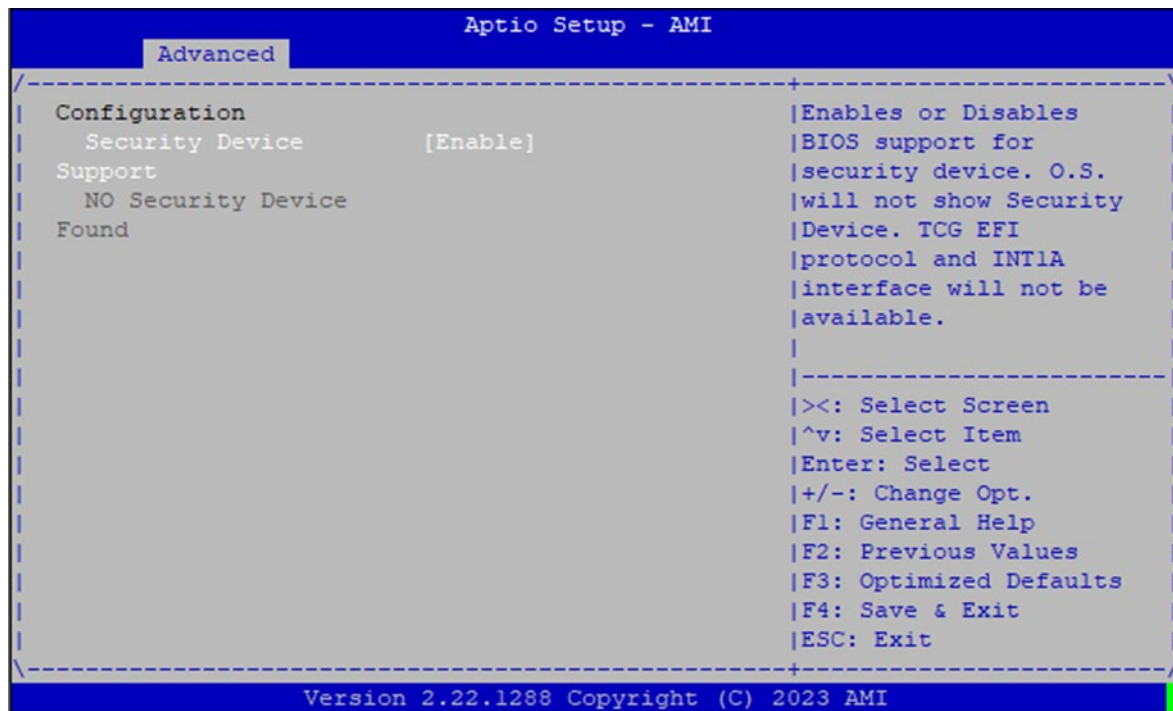


Firmware Update Configuration



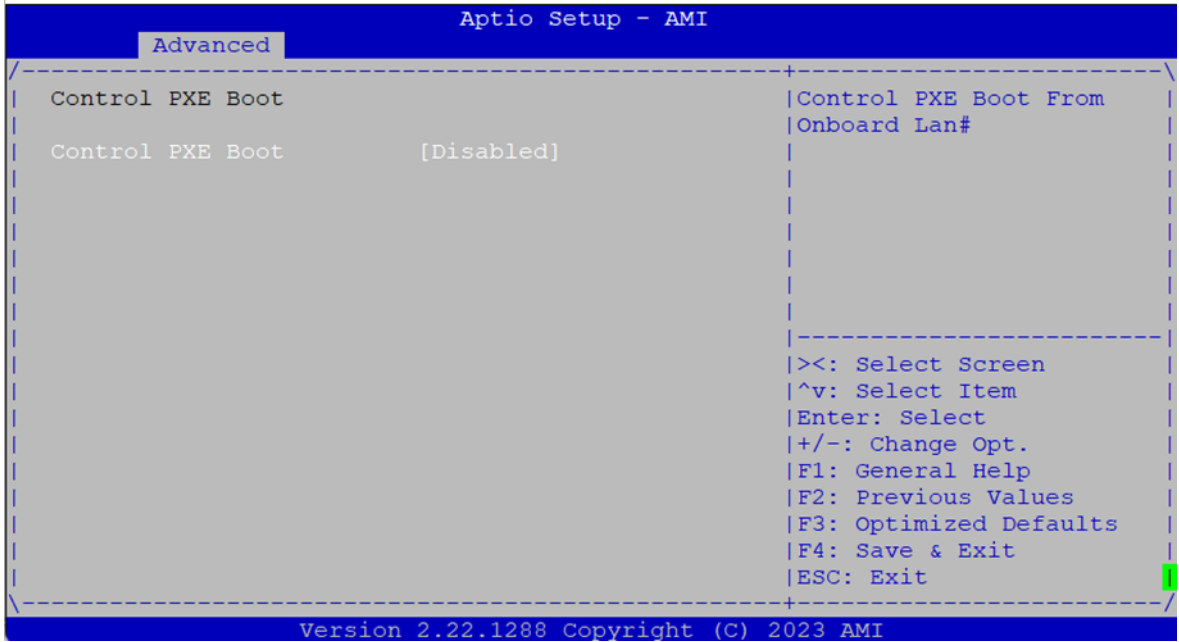
Feature	Options	Description
Me FW Image Re-Flash	Disabled Enabled	Enable/Disable Me FW Image Re-Flash function.

Trusted Computing



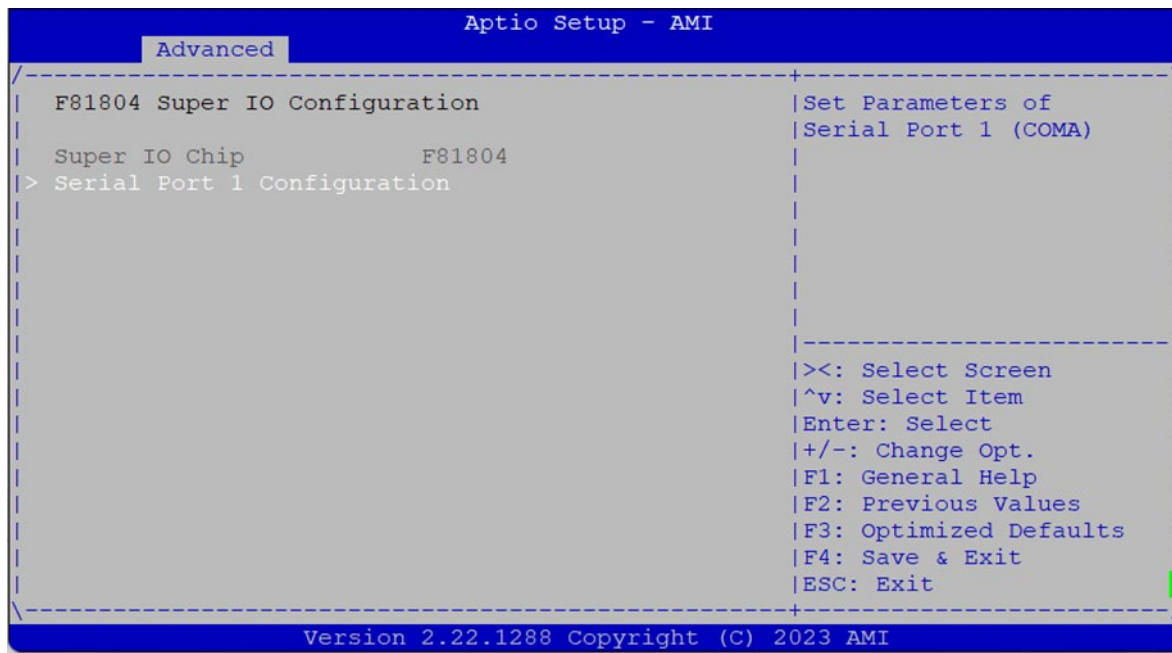
Feature	Options	Description
Security Device Support	Disable Enable	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Control PXE Boot

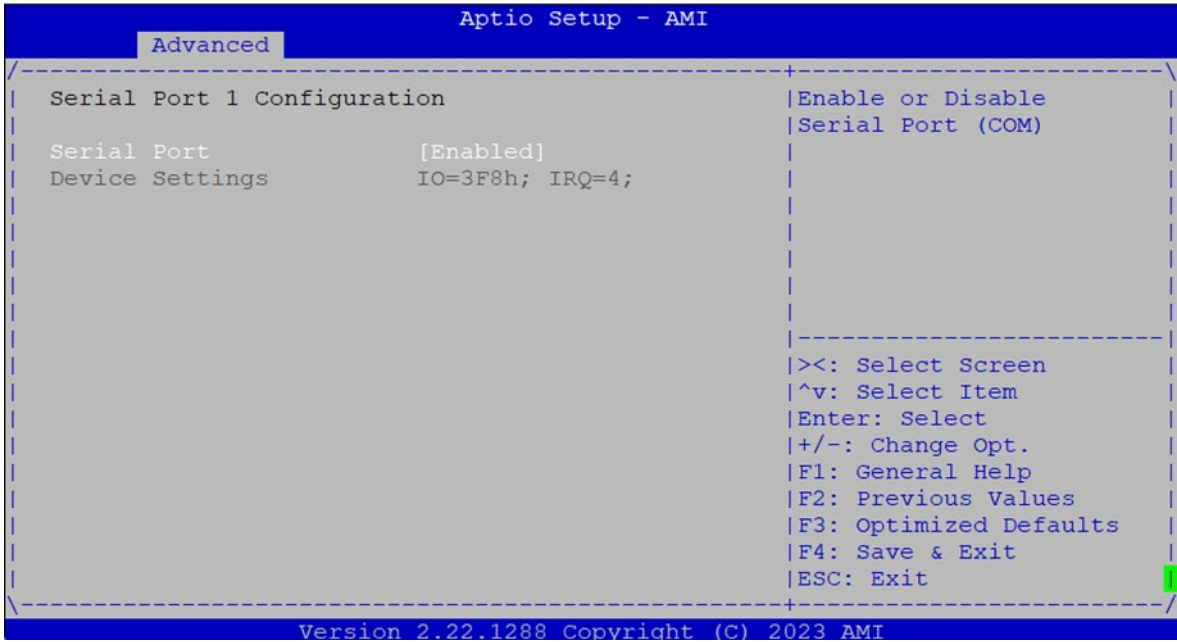


Feature	Options	Description
Control PXE Boot	Disabled	Control PXE Boot from I226 Lan#
	LAN2	
	LAN3	
	LAN4	
	LAN5	
	LAN6	

F81804 Super IO Configuration

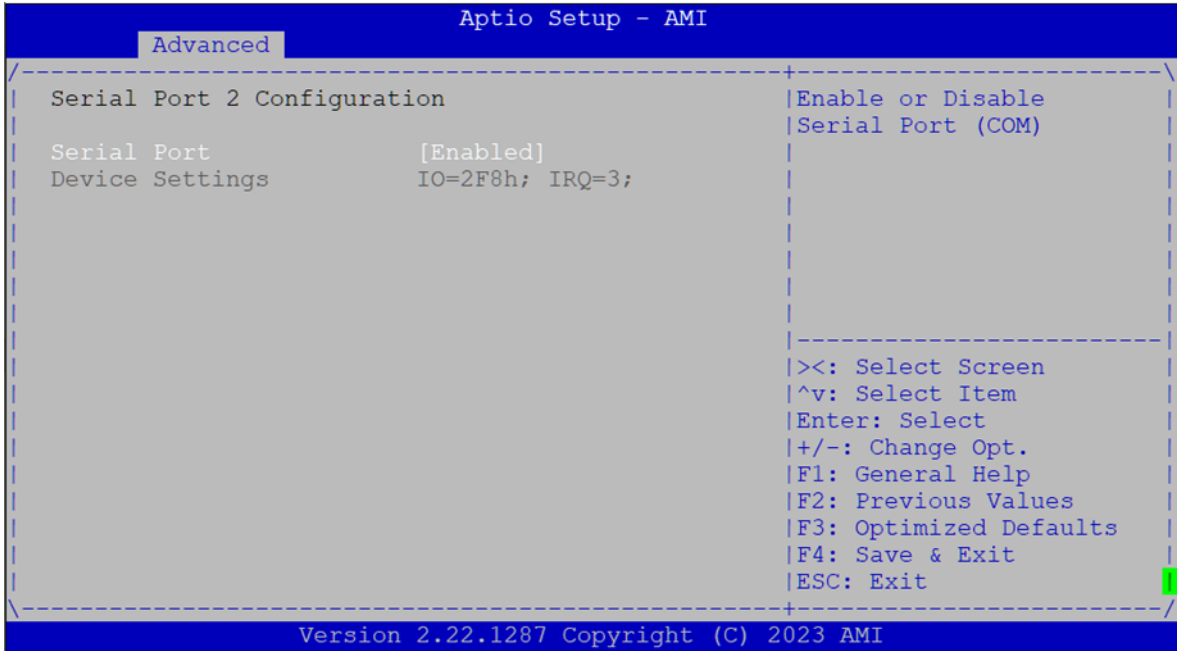


Serial Port 1 Configuration



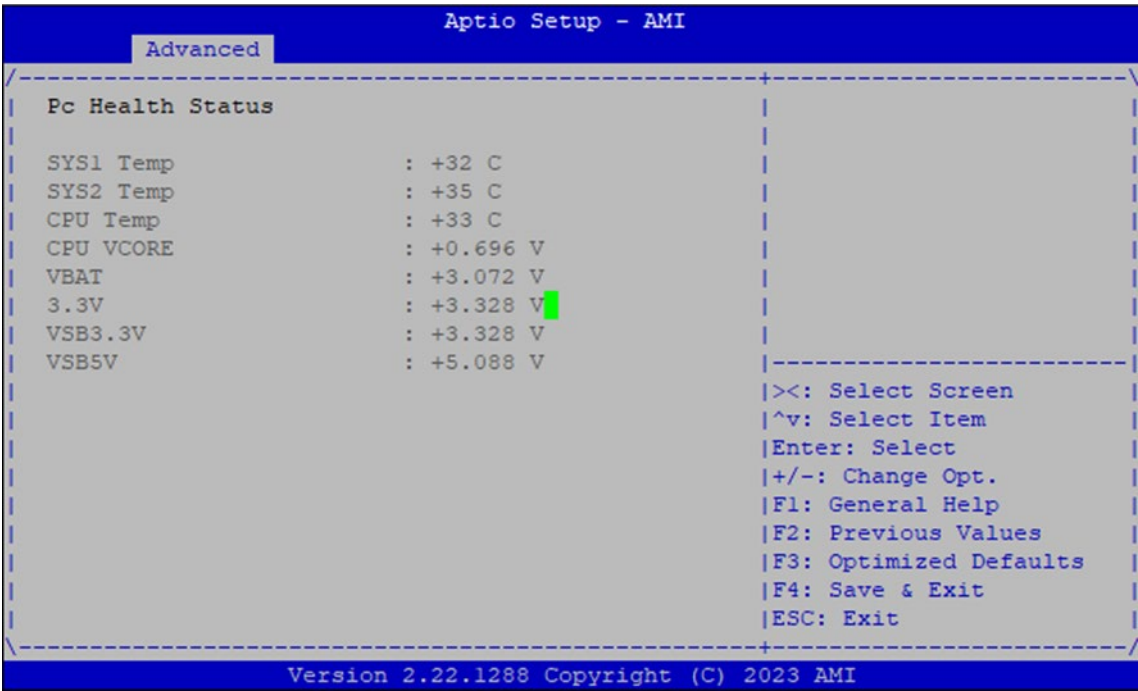
Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM)
Device Settings	N/A	IO=3F8h; IRQ=4;

Serial Port 2 Configuration



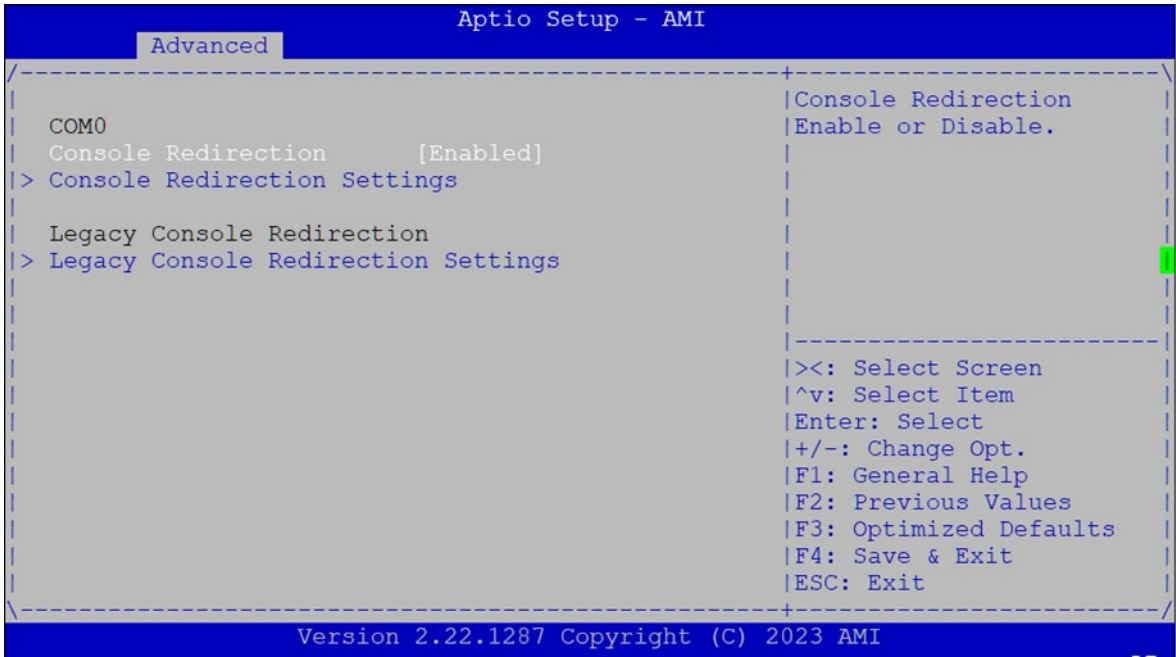
Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM)
Device Settings	N/A	IO=2F8h; IRQ=3;

Hardware Monitor



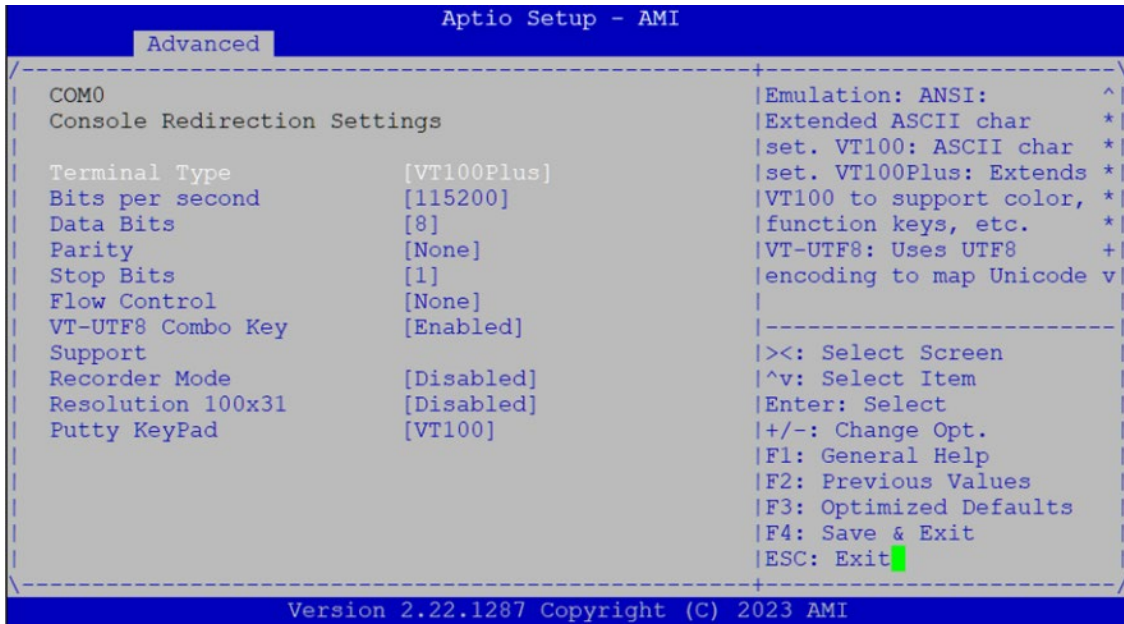
Feature	Description
SYS1 Temp	This value reports the System temperature
SYS2 Temp	This value reports the System temperature (Close to CPU)
CPU Temp	This value reports the CPU temperature
FAN1 Speed	This value reports the Fan1 speed
CPU VCORE	This value reports the CPU VCORE Input voltage
VBAT	This value reports the VBAT Input voltage
3.3V	This value reports the 3.3V Input voltage
VS3.3V	This value reports the VS3.3V Input voltage
VS5V	This value reports the VS5V Input voltage

Serial Port Console Redirection



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

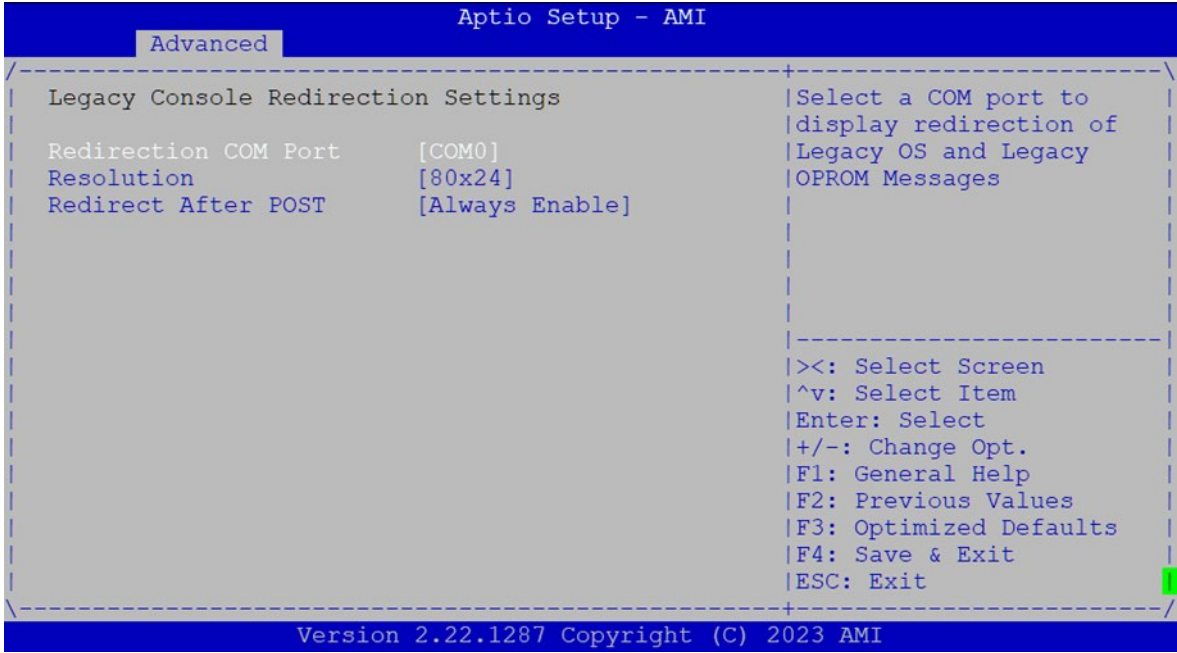
Console Redirection Settings



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.

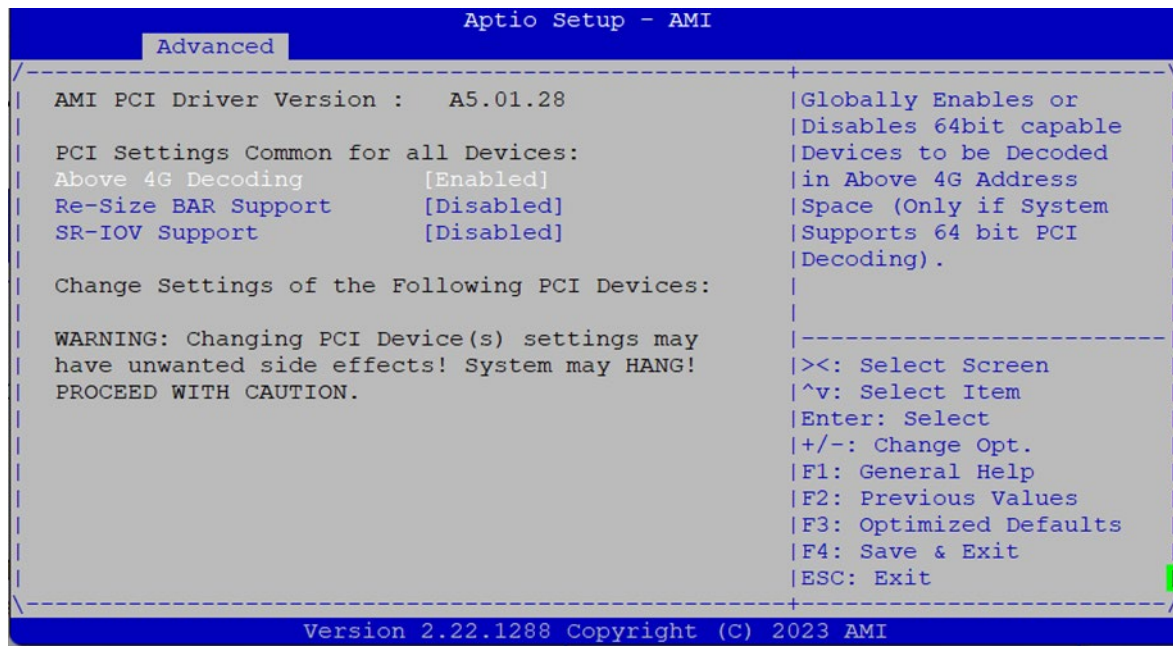
VT-UTF8 Combo Key Support	Disabled Enabled	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	Disabled Enabled	Enables or disables extended terminal resolution.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

Legacy Console Redirection Settings



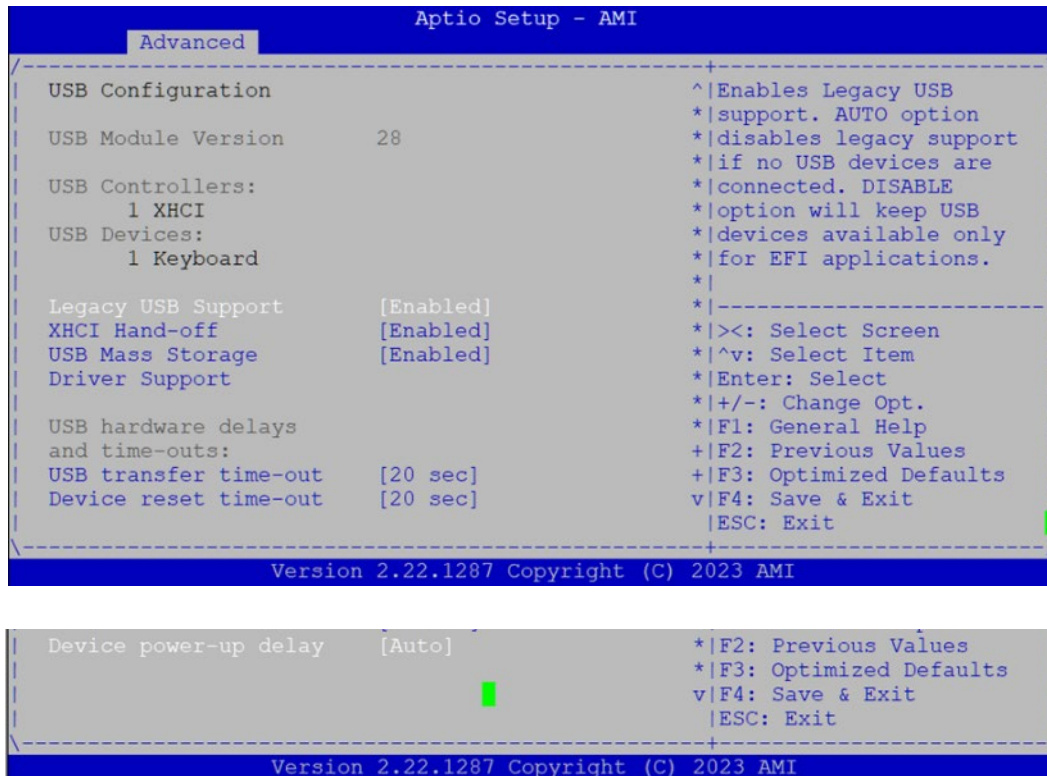
Feature	Options	Description
Redirection COM Port	COM0	Select a COM port to display redirection of Legacy OS and Legacy OPRom Messages
Resolution	80x24 80x25	On Legacy OS, the Number of Rows and Columns supported redirection
Redirect After POST	Always Enable BootLoader	When Bootloader is selected, then 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



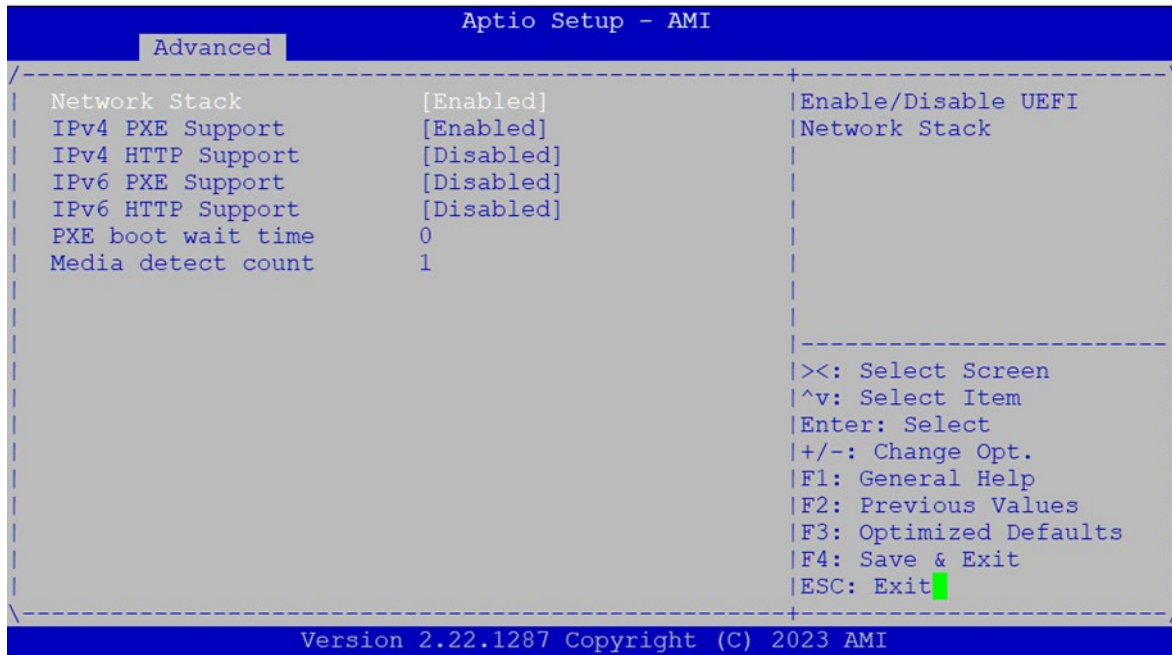
Feature	Options	Description
Above 4G Decoding	Disabled Enabled	Disables 64bit capable Device Resources to be Allocated in Above 4G Address Space.
SR-IOV Support	Disabled Enabled	If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.
Re-Size BAR Support	Disabled Enabled	If system has Resizable BAR capable PCIe Devices, this option Enables or Disables Resizable BAR Support.

USB Configuration



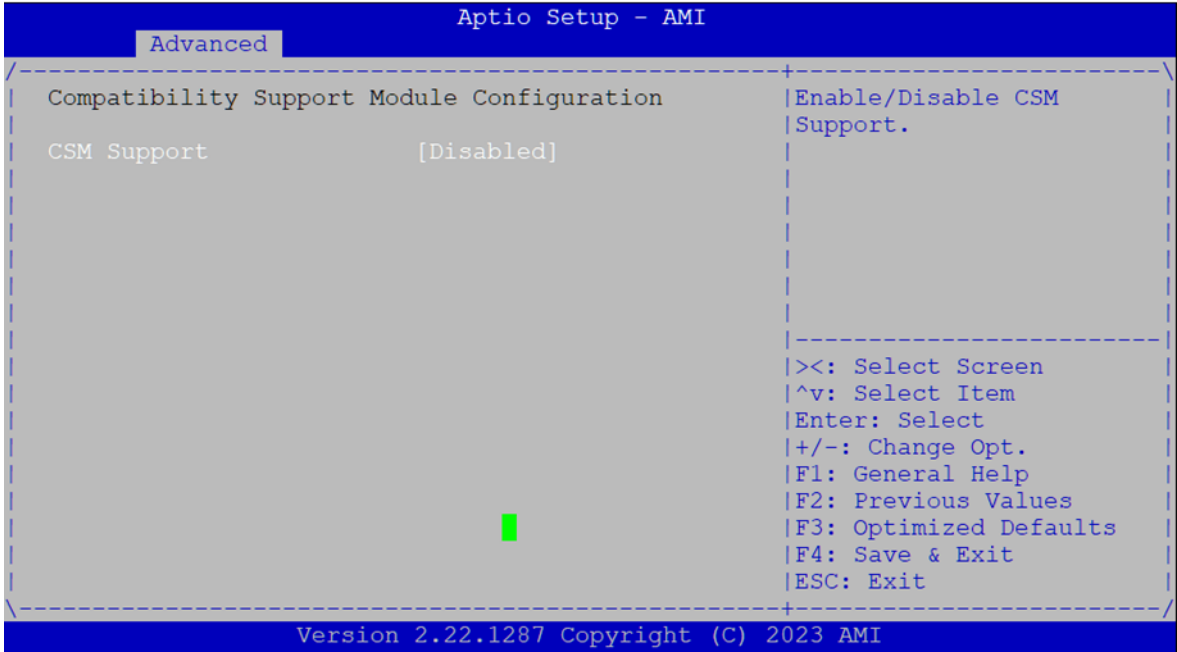
Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. Auto option disables legacy support if no USB devices are connected. Disabled option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled Disabled	This is a workaround for OSes 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



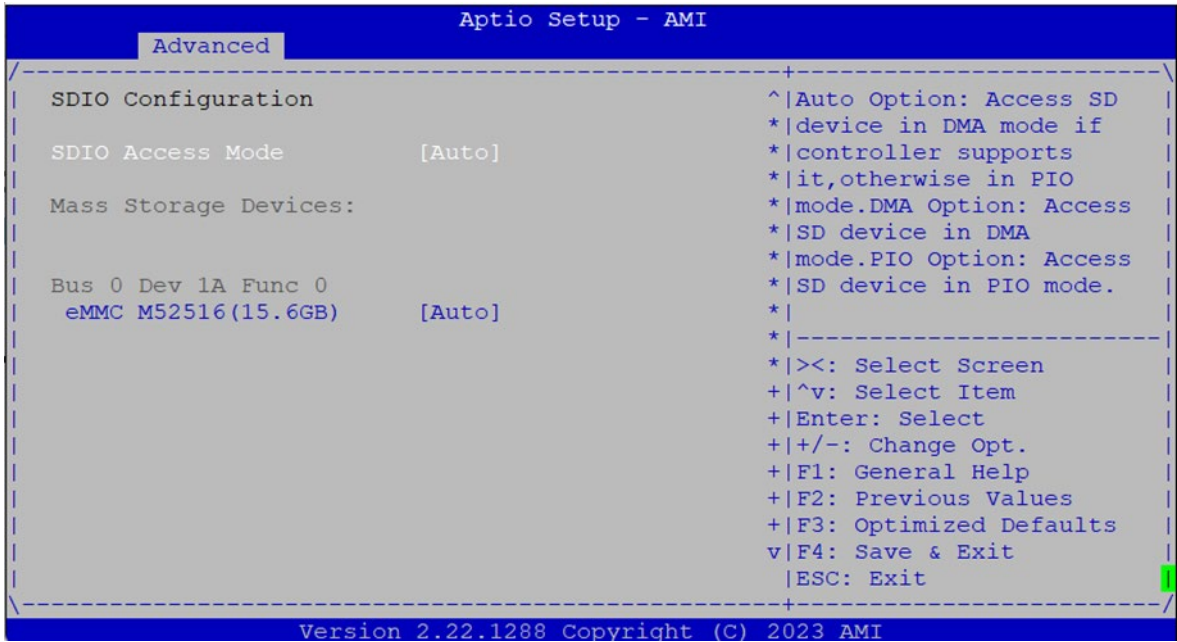
Feature	Options	Description
Network Stack	Disabled Enabled	Enable/Disable UEFI Network Stack
IPv4 PXE Support	Disabled Enabled	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
IPv4 HTTP Support	Disabled Enabled	Enable/Disable IPv4 HTTP boot support. If disabled, 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.

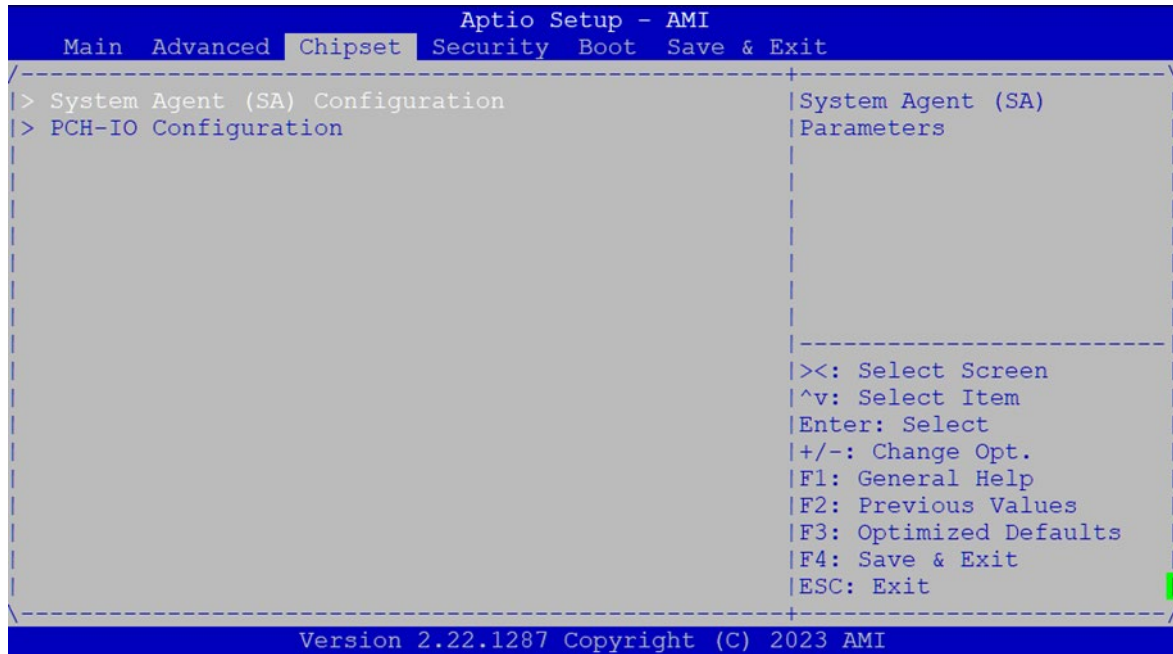
SDIO Configuration



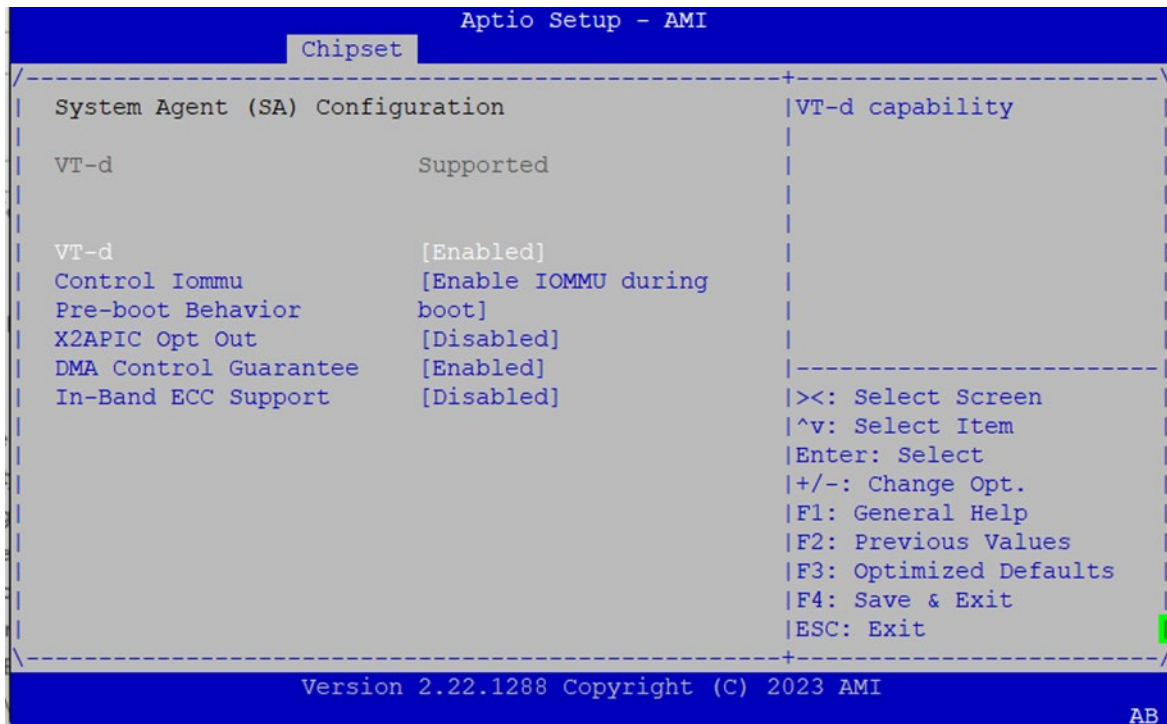
Feature	Options	Description
SDIO Access Mode	Auto ADMA SDMA PIO	Auto Option: Access SD device in DMA mode if controller supports it, otherwise in PIO mode. DMA Option: Access SD device in DMA mode. PIO Option: Access SD device in PIO mode.

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.

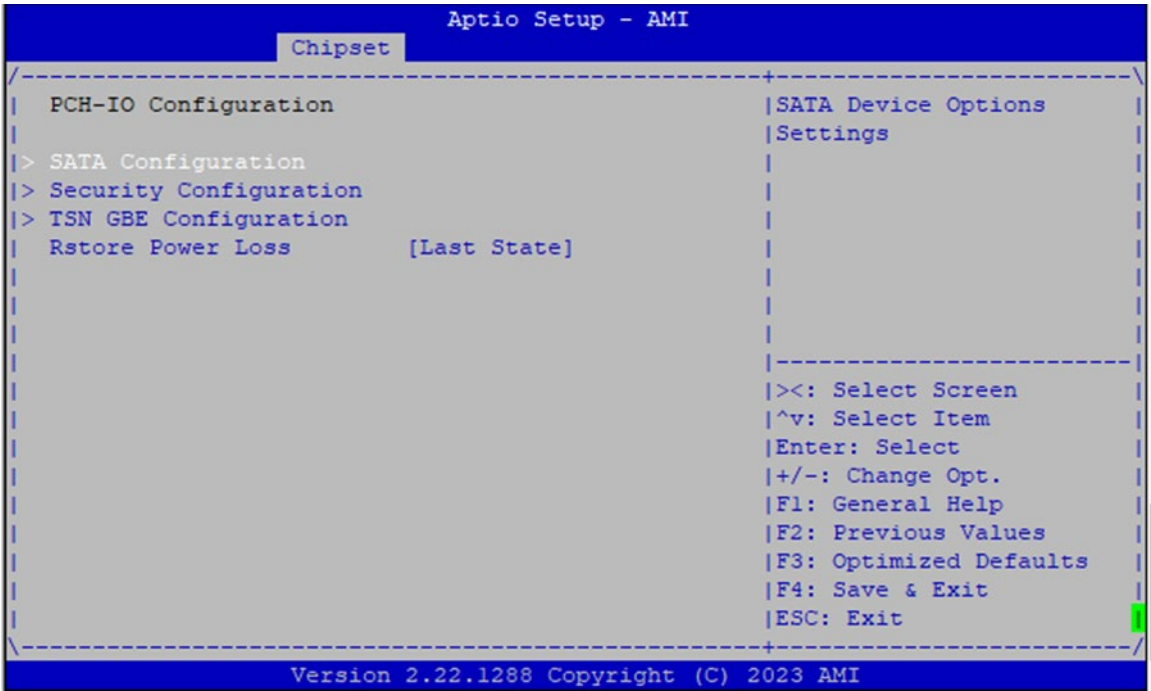


System Agent (SA) Configuration



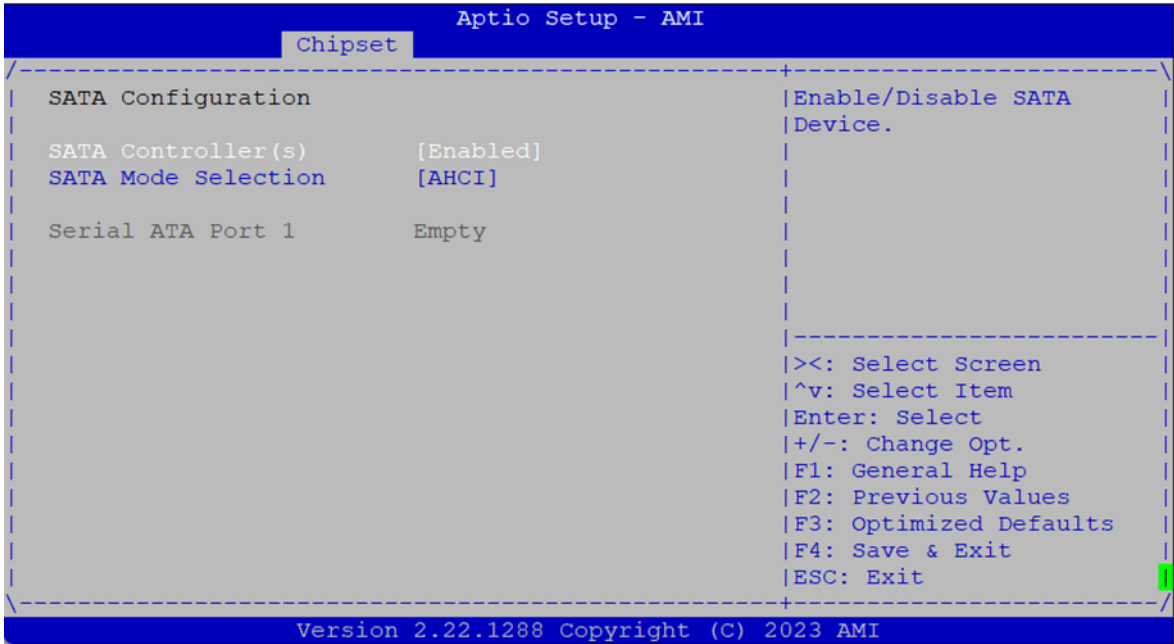
Feature	Options	Description
VT-d	Disabled Enable	VT-d capability
Control Iommu	Disable IOMMU Enable IOMMU during boot	Enable IOMMU in Pre-boot environment (If DMAR table is installed in DXE and If VTD_INFO_PPI is installed in PEI.)
X2APIC Opt Out	Enabled Disabled	Enable/Disable X2APIC_OPT_OUT bit
DMA Control Guarantee	Enabled Disabled	Enable/Disable DMA_CONTROL_GUARANTEE bit
In-Band ECC Support	Enabled Disabled	Enable/Disable In-Band ECC. Will be enabled if memory has symmetric configuration

PCH-IO Configuration



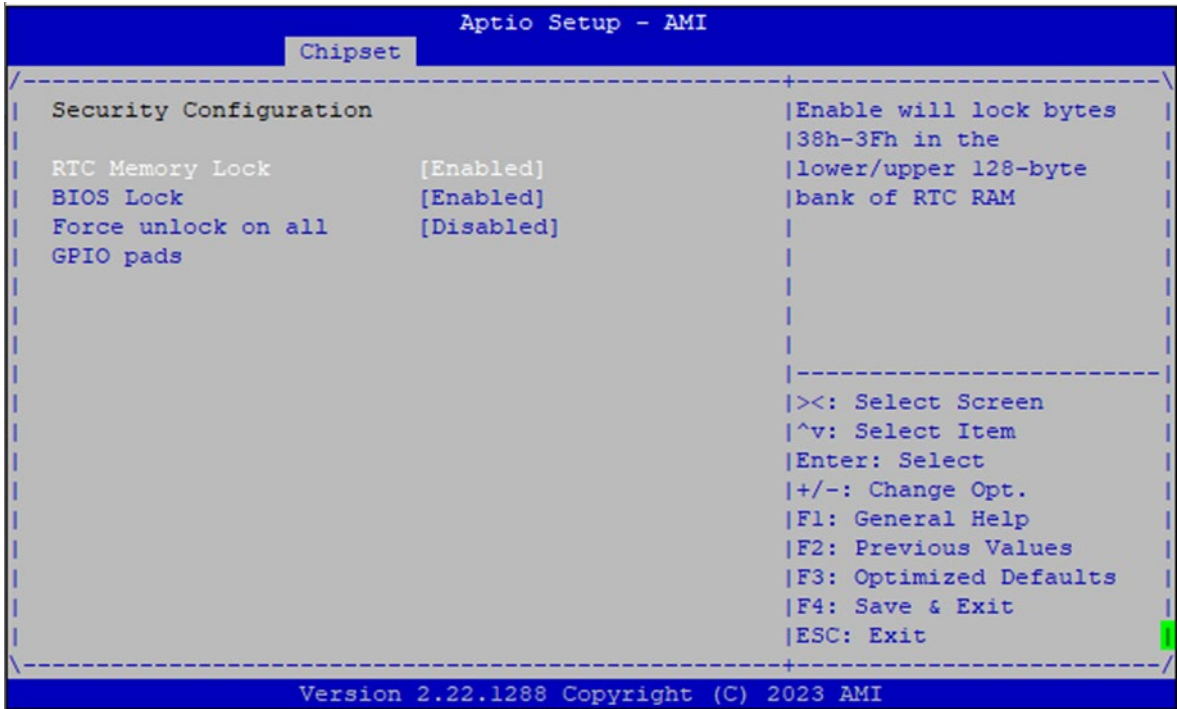
Feature	Options	Description
Restore AC Power Loss	Power On Power Off Last State	Specify what state to go to when power is re-applied after a power failure (G3 state).

SATA Configuration



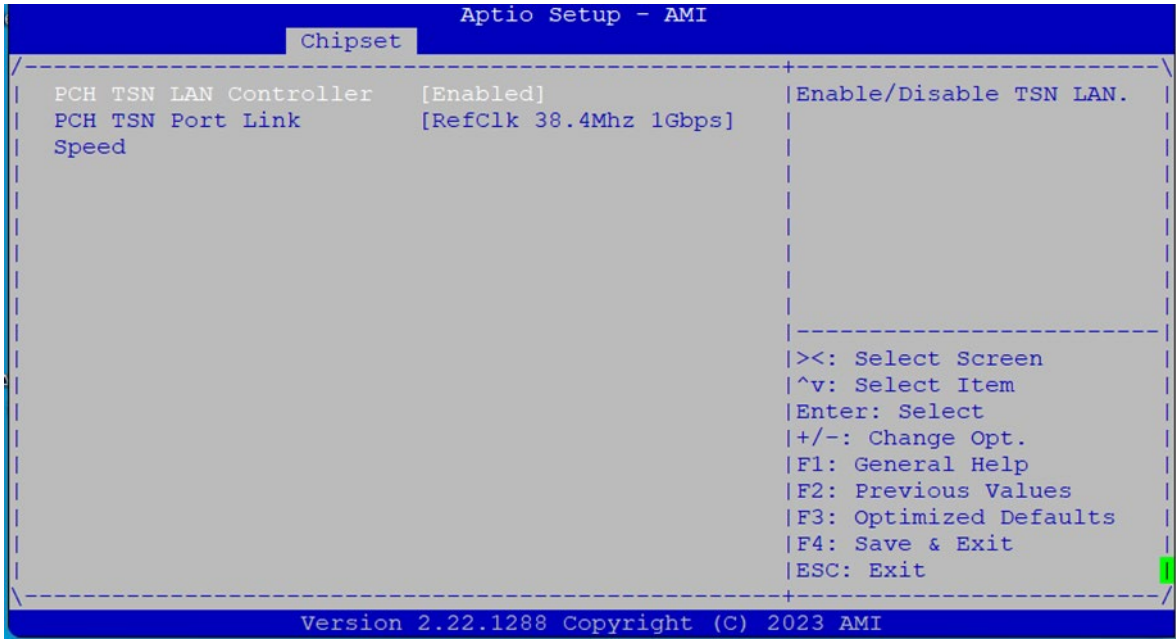
Feature	Options	Description
SATA Controller(s)	Enabled Disabled	Enable/Disable SATA Device.
SATA Mode Selection	AHCI	Determines how SATA controller(s) operate.

Security Configuration



Feature	Options	Description
RTC Memory Lock	Enabled Disabled	Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.
Bios Lock	Enabled Disabled	Enable/Disable the PCH BIOS Lock Enable feature. Required to be enabled to ensure SMM protection of flash.
Force unlock on all GPIO pads	Enabled Disabled	If Enabled BIOS will force all GPIO pads to be in unlocked state

TSN GBE Configuration



Feature	Options	Description
PCH TSN LAN Controller	Enabled Disabled	Enable/Disable TSN LAN Device.
PCH TSN Port Link Speed	RefClk 38.4Mhz 1Gbps RefClk 38.4Mhz 2.5Gbps	Select TSN LANLink Speed

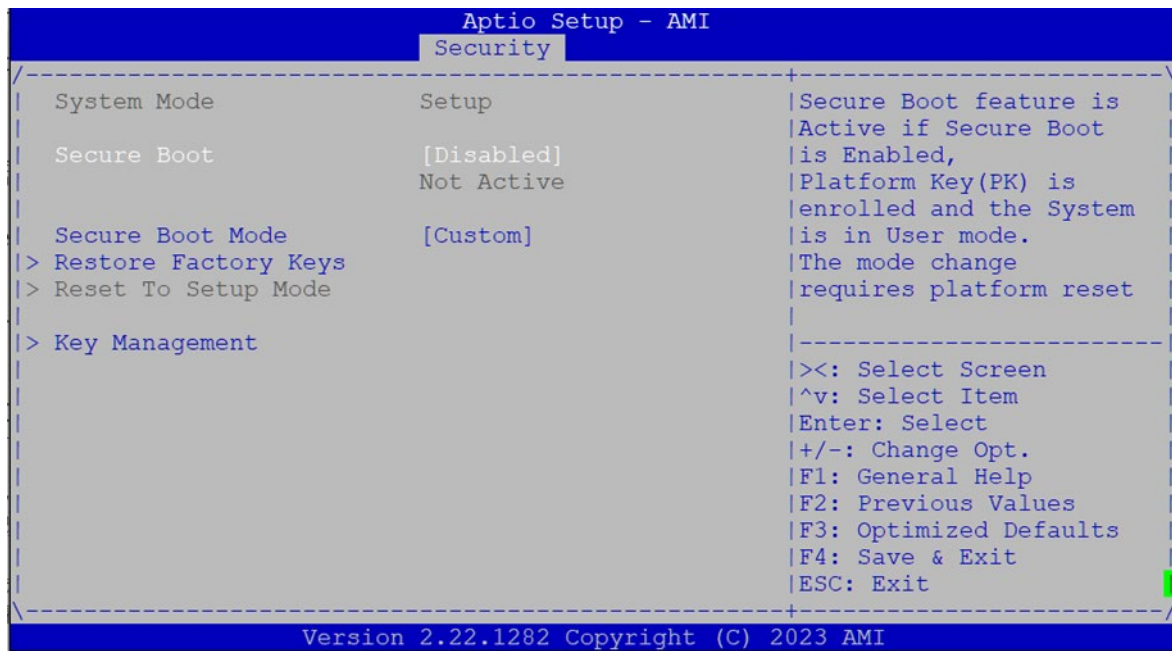
Security page

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.



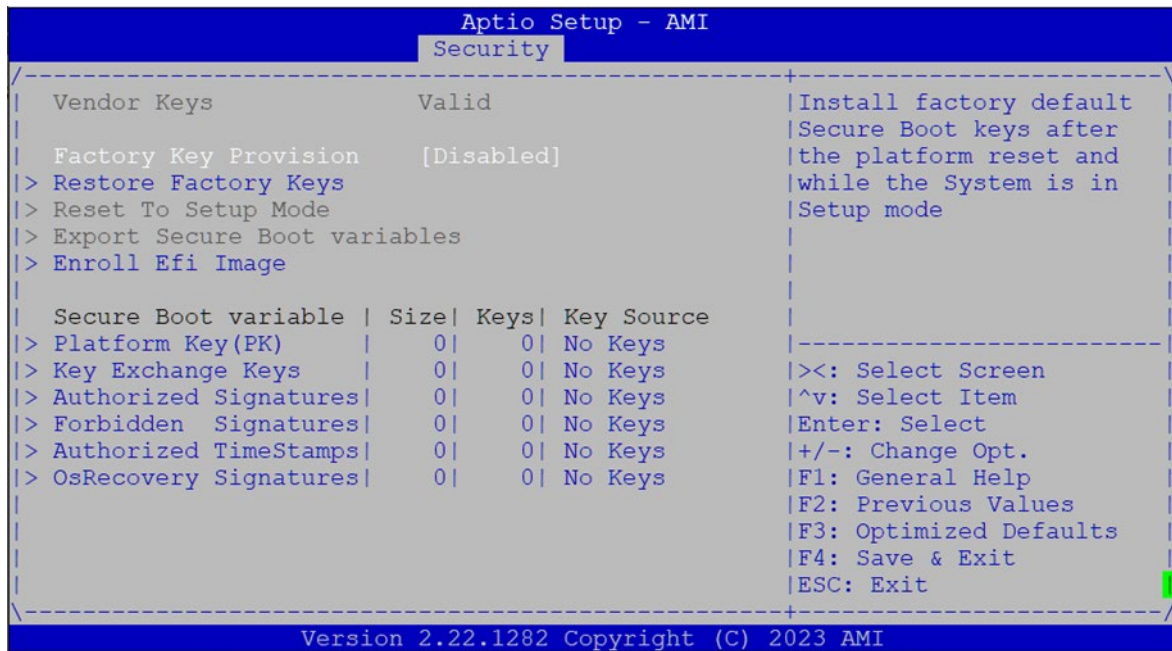
Feature	Description
Setup Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup,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

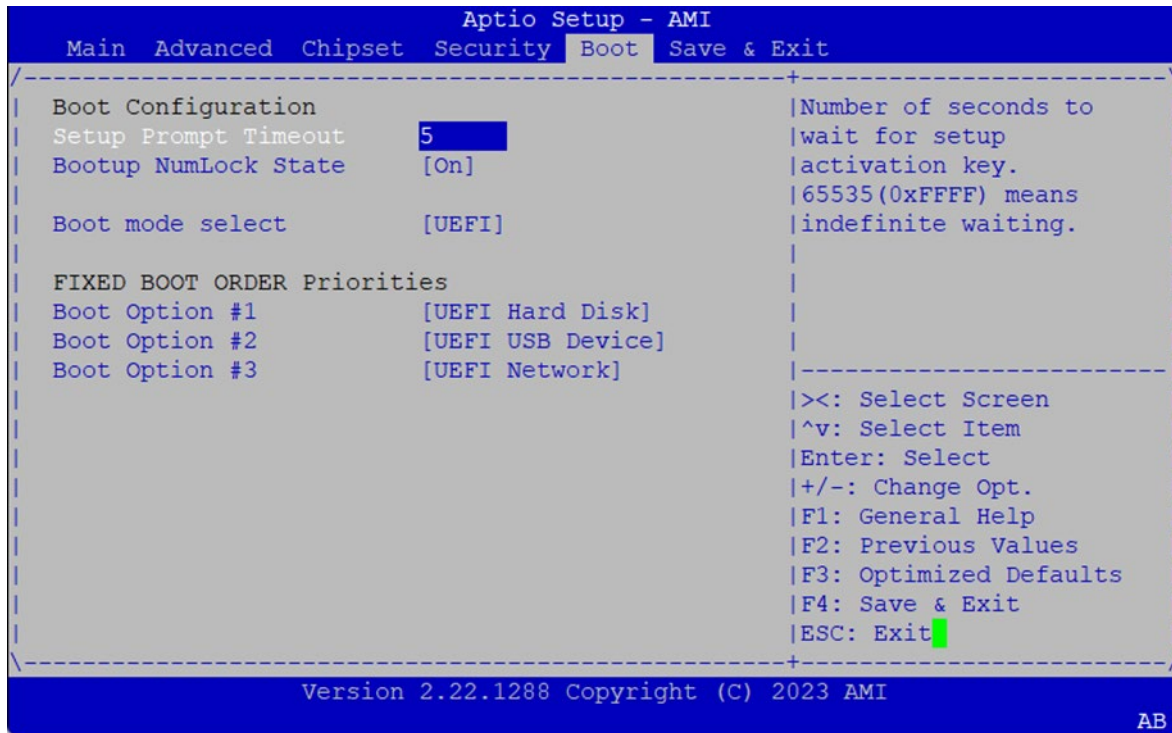
Key Management



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.

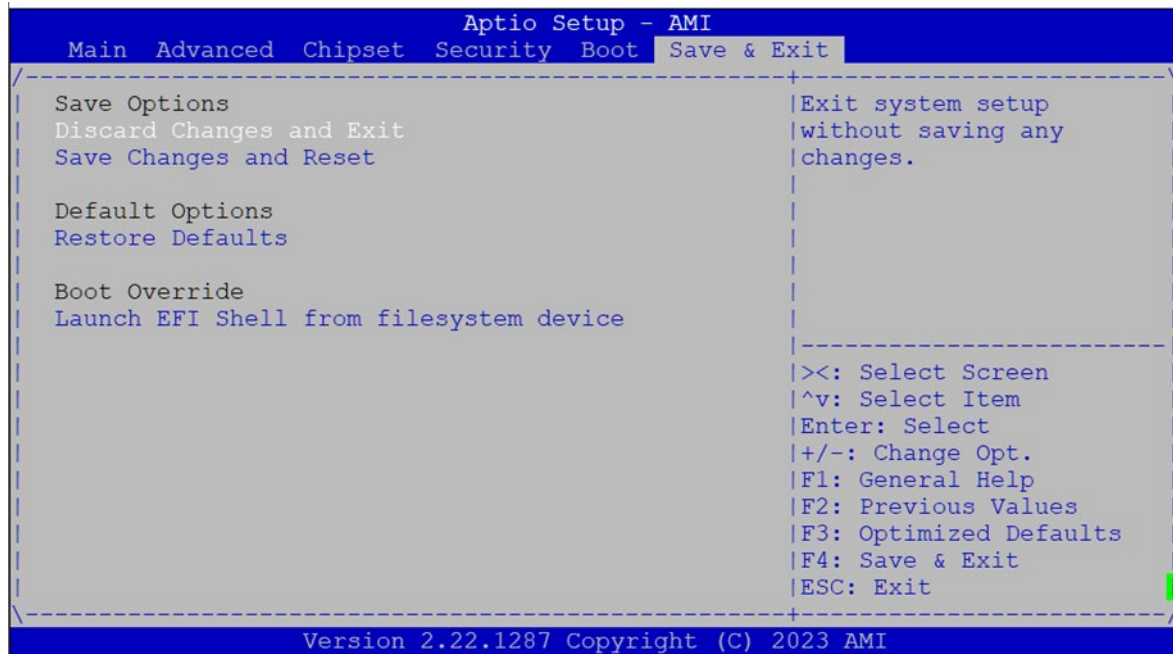


Feature	Options	Description
Setup Prompt Timeout	5	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Boot mode select	LEGACY UEFI DUAL	Select boot mode LEGACY/UEFI

- Default Boot Priority: **Hard Disk → USB → Network**
- Choose specifies boot device priority sequence from available Group device.
- Choose boot priority from boot option group.

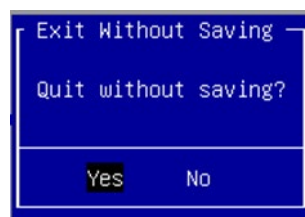
Save and Exit Page

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.



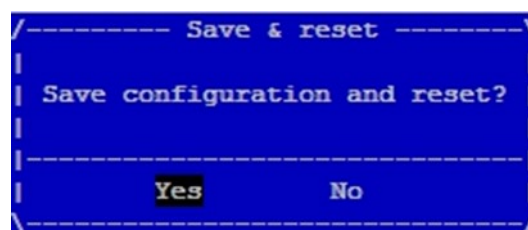
■ Discard Changes and Exit

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.



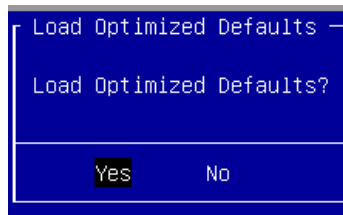
■ Save Changes and Reset

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

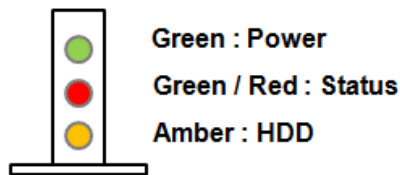
Restore default values for all setup options. Select **"Yes"** to load Optimized defaults.



PS: The items under Boot Override will depend on devices connected on the system.

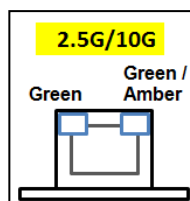
APPENDIX A: LED INDICATOR EXPLANATIONS

► 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	Green	Steady	control by GPIO
	Amber	Red	Steady	control by GPIO
	Off	Off	N/A	control by GPIO (Default) or No power on
HDD	Amber	Amber	Blinking	Blinking indicates HDD activity, Include SATA / NVME
	Off	Off	N/A	No data access or No power on

► RJ-45 LAN LED



2.5Gb RJ-45 Define:

Speed	Green (Active)	Green/Amber (Link)
10/100M	Blinking / Data access	OFF
1G	Blinking / Data access	ON (Amber)
2.5G	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: ENABLE 2.5GBE LAN FUNCTIONALITY

The NCA-1250 features the Intel® i226 Ethernet Controller. To activate the Intel® i226 2.5GbE LAN capabilities, ensure your Linux Kernel is updated to version 5.16.18 or later.

The OS Support matrix can be found [here](#).

Open Source support for 2.5 GbE Intel® Ethernet Network Controllers (igc)

Product Specifications	Linux Driver	Linux*										FreeBSD*	VMware*	DPDK*	
		Kernel 5.4	Kernel 5.8	Kernel 5.16.18	RHEL 7.9	RHEL 8.1	RHEL 8.3	RHEL 8.6	Ubuntu* 18.04 LTS	Ubuntu* 20.04 LTS	Ubuntu* 22.04 LTS	13.0	ESXi8.0	20.05	22.07
I226-LM	igc	-	-	Yes	-	-	-	Yes	-	-	-	-	Yes	-	Yes
I226-V	igc	-	-	Yes	-	-	-	Yes	-	-	-	-	Yes	-	Yes
I226-IT	igc	-	-	Yes	-	-	-	Yes	-	-	-	-	Yes	-	Yes

If a customer requires assistance with a Kernel that is not mentioned in the table above, kindly contact our technical support team.

The NCA-1250A LAN1 (from GPY211 via SOC TSN) does not support auto-switching between 1G and 2.5G. Considering that most equipment is focused on 1G, the default setting for device port1 is 1G.

Users can manually change the LAN1 setting to 2.5G by following these steps:

Step 1. Press the <Tab> or key to enter the BIOS Setup utility.

Step 2. Select the Chipset page.

Step 3. Choose PCH-IO Configuration.

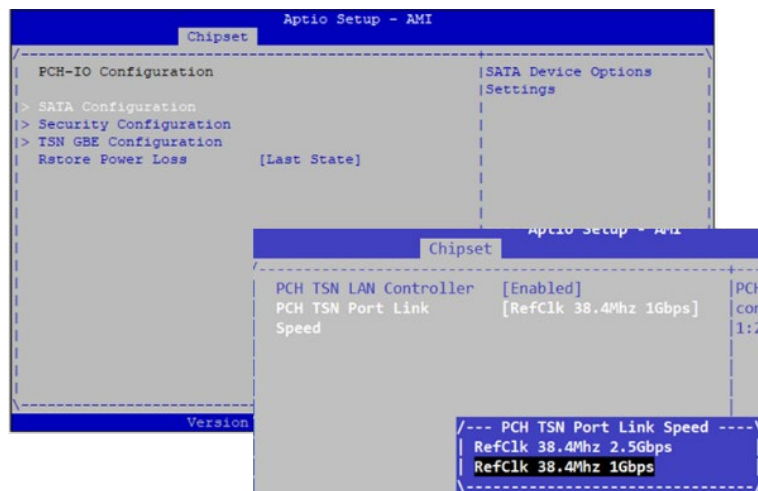
Step 4. Select TSN GBE Configuration.

Step 5. Choose RefClk 38.4Mhz 1Gbps.

Step 6. Press F4: Save & Exit.

Notes: After adjusting the BIOS to 2.5G, if LAN1 is connected to 1G, the device will not automatically slow down to 2.5G. It's important to understand that 2.5G means only 2.5G; 1G or below must be set to 1G. The inability to auto-convert is due to the characteristics of the Intel® IC.

BIOS page → Chipset → PCH-IO Configuration → TSN GBE Configuration



APPENDIX C: 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 "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: 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: <input type="checkbox"/> Repair(Please include failure details) <input type="checkbox"/> Testing Purpose		
Company:	Contact Person:		
Phone No.	Purchased Date:		
Fax No.:	Applied Date:		
Return Shipping Address: _____			
Shipping by: <input type="checkbox"/> Air Freight <input type="checkbox"/> Sea <input type="checkbox"/> Express _____			
<input type="checkbox"/> 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
03: CMOS Data Lost	09: Cache RMA Problem	15: PS2	21: Shut Down
04: FDC Fail	10: Memory Socket Bad	16: LAN	22: Panel Fail
05: HDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
06: Bad Slot	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)

Request Party

Confirmed By Supplier

Authorized Signature / Date

Authorized Signature / Date