

Lanner

Embedded Computing Platform

Hardware Platforms for Intelligent Edge Computing

IIOT-I530 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.

Conventions & Icons

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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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.
- ▶ Turn off and unplug the power 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 Battery is replaced by an incorrect type.
- ▶ Dispose of used batteries according to the instructions.
- ▶ Installation only by a skilled person who knows all Installation 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 extreme heat can cause an explosion or flammable leakage.
- ▶ A battery exposed to very low air pressure may explode or leak 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 Precaution

- ▶ Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- ▶ 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.
- ▶ Installation of the equipment (especially in a rack) should consider the ventilation of the system's intake (for taking chilled air) and exhaust (for emitting hot air) openings so that the amount of airflow required for safe operation of the equipment is not compromised.
- ▶ To avoid a hazardous load condition, be sure the mechanical loading is even when mounting.
- ▶ 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 over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- ▶ Reliable earthing 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.

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.



CAUTION: TO DISCONNECT POWER, REMOVE ALL POWER CORDS FROM UNIT.

注意：要断开电源，请将所有电源线从本机上拔下。

WARNUNG: Wenn Sie das Gerät zwecks Wartungsarbeiten vom Netz trennen müssen, müssen Sie beide Netzteile abnehmen.

ATTENTION: DÉBRANCHER LES TOUT CORDONS D'ALIMENTATION POUR DÉCONNECTER L'UNITÉ DU SECTEUR.

Electrical Safety Instructions

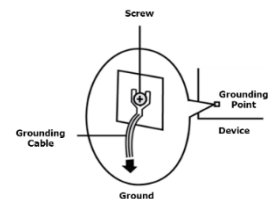
Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect the ground wire after turning off the power. A ground wire 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.

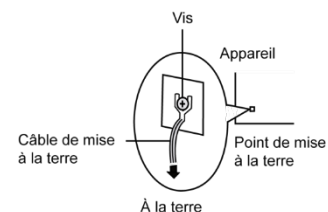
Grounding Procedure for Power Source

- ▶ Loosen the screw of the earthing point.
- ▶ Connect the grounding cable to the ground.
- ▶ The protection device for the power source must provide 30 A current.
- ▶ This protection device must be connected to the power source before power.
- ▶ The cable should be 16 AWG



Procédure de mise à la terre pour source d'alimentation

- ▶ Desserrez la vis du terminal de mise à la terre.
- ▶ Branchez le câble de mise à la terre à la terre.
- ▶ L'appareil de protection pour la source d'alimentation doit fournir 30 A de courant.
- ▶ Cet appareil de protection doit être branché à la source d'alimentation avant l'alimentation.
- ▶ Le câble doit être 16 AWG



This equipment is for INDOOR USE ONLY

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CHAPTER 1: PRODUCT OVERVIEW

IIOT-I530 is a box PC powered by the 11th generation of Intel® Core™ i Series CPU (up to i7-1185GRE). The IIOT-I530 makes available imaging-based automated decision-making capabilities that significantly benefit manufacturing industries that require automatic visual inspection and quality control processes. This particular IPC is designed for computing vision and is equipped with features for machine vision, surveillance and compute-intensive video-related applications.

Key Features

- ▶ 11th Gen Intel® Core™ i CPU (Up to i7-1185GRE)
- ▶ 2x DDR4 2933/3200 SO-DIMM, Max 64GB
- ▶ 6x PoE+ (SKU A only), 2x Ethernet Ports, 2x COM Ports, 4x USB 3.0
- ▶ Intel® Iris® Xe Graphics, 2x HDMI, 8x DI & 4x DO
- ▶ 1x M.2 B-Key with Nano SIM for 5G, 1x M.2 E-Key for Wi-Fi 6, 1x M.2 M-Key for PCIe Gen4 x4 NVME SSD

Package Content

Your package contains the following items:

- ▶ 1x IIOT-I530 Box PC
- ▶ 1x Power Adapter
- ▶ Partition & Thermal Pads Kit
- ▶ 4x Rubber Foot

Ordering Information

SKU No.	Description
IIOT-I530A	11th Gen Intel Core i CPU (up to i7-1185GRE), 2x DDR4 3200/2933 SO-DIMM, 6x PoE+, 2x Ethernet ports, 2x COM ports, 1x M.2 NVMe, 4x USB 3.0, Intel Iris Xe Graphics, 2x HDMI, 8x DI & 4x DO, 1x M.2 B-Key w/ Nano SIM for 5G, 1x M.2 E-Key for Wi-Fi 6
IIOT-I530C	11th Gen Intel Core i CPU (up to i7-1185GRE), 2x DDR4 3200/2933 SO-DIMM, 6x LAN, 2x Ethernet ports, 2x COM ports, 1x M.2 NVMe, 4x USB 3.0, Intel Iris Xe Graphics, 2x HDMI, 8x DI & 4x DO, 1x M.2 B-Key w/ Nano SIM for 5G, 1x M.2 E-Key for Wi-Fi 6
IIOT-I530H	11th Gen Intel Core i CPU (up to i7-1185GRE), 2x DDR4 3200/2933 SO-DIMM, 6x PoE+, 2x Ethernet ports, 2x COM ports, 1x M.2 NVMe, 4x USB 3.0, Intel Iris Xe Graphics, 2x HDMI, 8x DI & 4x DO, 1x M.2 B-Key w/ Nano SIM for 5G, 1x M.2 E-Key for Wi-Fi-6, Hailo-8 M.2 Module

Optional Accessories

Model No.		Description	Q'ty
5G Kit			
PSF9775-001		MV31-W 5G KIT IIOT-I530 FG	
Included in Kit	0TAW000305000	5G Thales MV31-W, USB3.0, M.2 2242 B-Key 3042, with Wide Temp. (WT) 0TAW000260000 5G	1
	0TZW000215000	98619ZSAX066 MasterWave Sub 6GHz-5Gth FB Antenna	4
	080W000840000	Antenna Cable-1 Kit	1
	080W000837000	Antenna Cable-2/4 Kit	2
	080W000909000	Antenna Cable-3 Kit	1
Wi-Fi 6 Kit			
PSF9776-001		WNFB-265AXI WI-FI KIT IIOT-I530 FG	
Included in Kit	0TAW000302000	WNFB-265AXI SPARKLAN 802.11ax/ac/a/b/g/n, with Wide Temp. (WT) Wi-Fi 6 Kit	1
	0TZW000216000	98619VRSX001 MasterWave Wi-Fi 6E FB Antenna	2
	080W000908000	Antenna Cable-1 Kit	1
	080W000877000	Antenna Cabit-2 Kit	1
Other Optional Accessories			
020W000489000		RAM SODIM DDR4 TS2GSH64V2E-I, 16GB, with Wide Temp. (WT)	
020W000490000		RAM SODIM DDR4 TS4GH64V2E-I, 32GB, with Wide Temp. (WT)	
0TEW000615000		TLC M.2/NGFF, 256GB, PCI-E 3.0, TS256GMTE652T-I, Transcend NVme SSD	
0TEW000315000		mSATA, 512GB, SATA III	
0TEW000305000		PHISON 2TB, 2.5" SSD, with Wide Temp. (WT)	
080W000371000		SATA Cable with Power	
098W000004000		Wallmount Kit	



Note

When 5G and/or Wi-Fi feature is required, please inform your dealer when issuing purchase order, as the SMA antenna connectors must be pre-assembled on the housing by Lanner.

Specifications

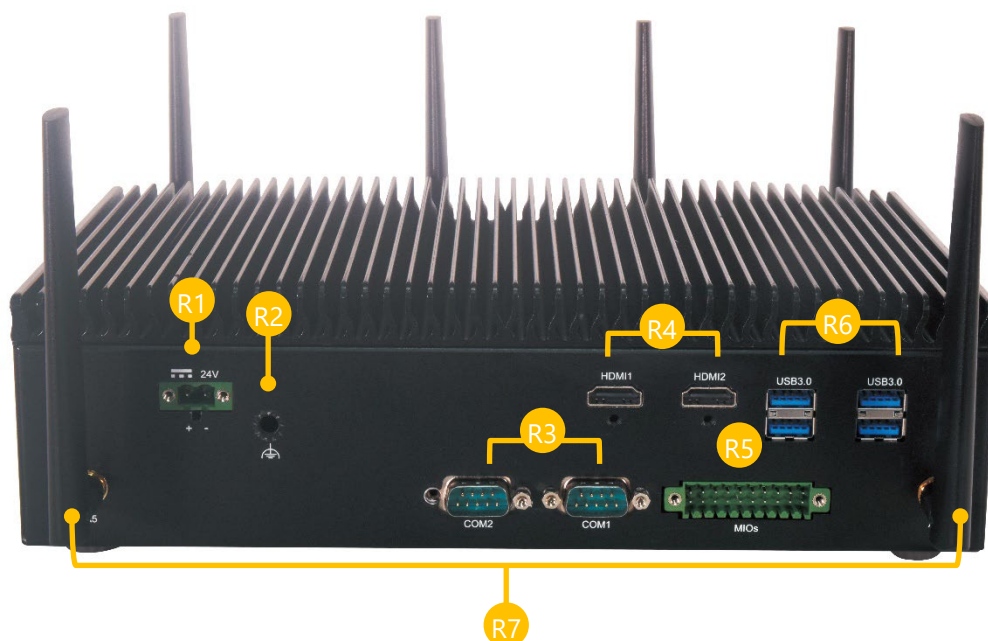
Processor System	CPU	11th Gen Intel® Core™ I (Up to i7-1185GRE, codename TigerLake-UP3)
	Frequency	PBF 1.80GHz, MaxTurbo to 4.4GHz
	Core Number	4 cores
	BIOS	AMI 256Mbit SPI Flash BIOS
Fanless		Yes
Memory	Technology	DDR4 3200 SO-DIMM
	Max. Capacity	64 GB
	Socket	2x 260-pin SO-DIMM
Graphic	Controller	Intel® Iris® Xe Graphics
	Interface	2x HDMI Ports
Audio	Codec	TSI 92HD73C
	Interface	1x for Mic-in, 1x for Line-out
Ethernet	Controller	Intel i225IT / i210IT Ethernet controller
	Speed	2.5Gbps/1Gbps/100Mbps/10Gbps
	Interface	2x 2.5Gbps RJ45, SKU A: 6x GbE RJ45 for PoE+ (Total PoE Budget of 120W) SKU C: 6x LAN RJ45
Storage	HDD/SSD	1x M.2 M-Key 2280 (PCIe Gen4*4) for NVMe SSD; 1x 2.5" SATA drive bay for SSD/HDD
	mSATA	1x mSATA
I/O	Serial Port	2x RS232/422/485
	USB Port	4x USB 3.0 Type A Port
	LED Indicator	Power/Storage
	Power-on/Reset Button	1x Reset Button, 1x Power-on button
	Remote Power Switch	1x 2-pin Remote Power Switch
	Digital I/O	8x Isolated DI, 4x Isolated DO
Expansion Interface	M.2	1x B-Key 3042/3052 w/ 2x Nano-SIM (eSIM Reserved) for 5G; 1x E-Key 2230 for Wi-Fi 6
Watchdog Timer		Watchdog Timer 1-255 Level Time Interval System Reset, Software Programmable
Power	Type	ATX
	Supply Voltage	+24VDC Typically
	Connector	1x 3-pin Terminal Block
Environment	Operating Temperature	-40°C~55°C; -40°C~70°C (Burn-in test over 72Hrs)
	Storage Temperature	-40°C~70°C
	Relative Humidity	5%~95% @40°C, Non-Condensing
	Vibration	IEC 60068-2-64, 0.5Grms, random 5~500Hz, 40mins/axis
Mechanical	Dimension (WxHxD)	270 x 75 x 108mm
	Weight	3kg
	Mounting	Wallmount, VESA
OS Support	Linux	Depends on Intel Driver Release
Certification	EMC	FCC/CE Class A

Front Panel



No.	Description	
F1	Power Button	Power On/Off button
F2	Reset Button	For software reset
F3	LED Indicators	Storage/Power Status LED Indicators
F4	Power Switch	1x 2-pin Remote Power Switch
F5	SIM Card Slot	Dual SIM Card slots
F6	Audio Jack	1x Line-out and 1x Mic-in Jack
F7	LAN Port	2x 2.5GB RJ45 Ethernet Ports
F8	PoE+ Ports	SKU A: 6x GbE RJ45 for PoE+ (Total PoE budget of 120W) SKU C: 6x GbE RJ45 LAN Ports
F9	Antenna	4x Antennas

Rear Panel

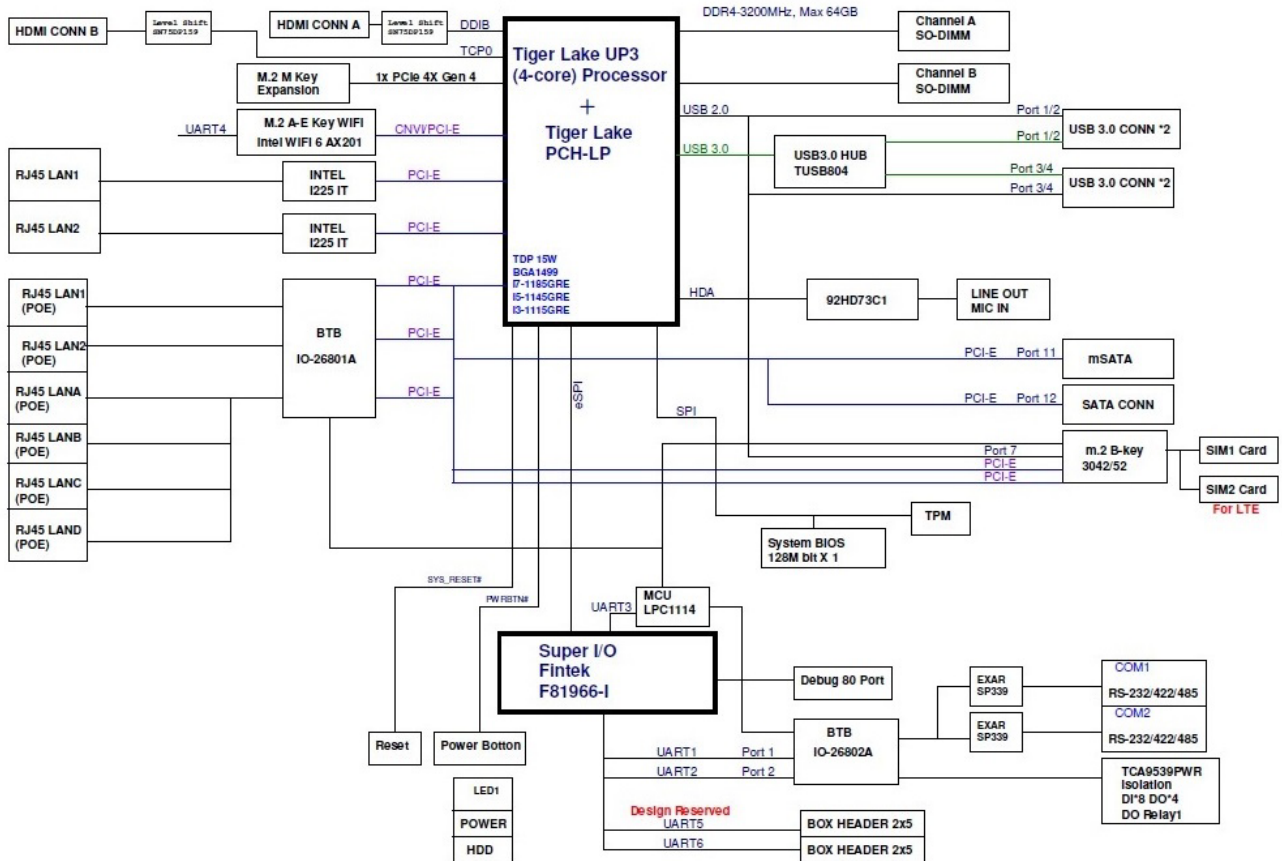


No.	Description	
R1	DC Input	1x 2-pin Terminal Block
R2	Ground Hole	1x Semi-shearing hole for grounding
R3	COM Port	2x DB9 Male Connectors for RS232/422/485
R4	HDMI Port	2x HDMI Ports
R5	Multi-IO	1x 20 pin Terminal Block 8 DI (12V) & 8 DO (12V,100mA) Isolation
R6	USB	4x USB 3.0 Type A
R7	Antenna	2x Antennas

Motherboard Information

Block Diagram

The block diagram indicates how data flows among components on the motherboard.



Internal Jumpers and Connector

The pin headers on the motherboard are often associated with important functions. With the shunt (Jumper) pushed down on the designated pins (the pin numbers are printed on the circuit board, surrounding the pin header), certain feature can be enabled or disabled. When changing the jumpers, make sure your system is completely turned off.

PW2 (+24V): DC IN Connector

PIN No.	DESCRIPTION
1	DC_GND (-)
2	DC_IN (+)

JCOMS1:

PIN No.	DESCRIPTION
1	NC
2	RTC_RST#
3	GND

JCOMS2:

PIN No.	DESCRIPTION
1	NC
2	SRTC_RST#
3	GND

J1

1-2 Default

2-3 For Program MCU

PIN No.	DESCRIPTION
1	+P3V3_STBY
2	PIO0_1
3	GND

SW1

	Normal	Program
1-8, 2-7	ON	OFF
3-6, 4-5	OFF	ON

PIN No.	DESCRIPTION
1 ON (Default)	SOUT3
2 ON (Default)	SIN3
3 OFF	NXP_RXD
4 OFF	NXP_TXD

JTAG1

PIN No.	DESCRIPTION
1	+P3V3_STBY
2	NXP_RXD
3	GND
4	NXP_TXD

JS2**1-2 COM1 (Default)**

PIN No.	DESCRIPTION
1	COM_RI1#_P
2	COM_RI1#_SEL
3	+P5V
4	COM_RI1#_SEL
5	+P12V
6	COM_RI1#_SEL

JS1**1-2 COM2 (Default)**

PIN No.	DESCRIPTION
1	COM_RI2#_P
2	COM_RI2#_SEL
3	V5_S
4	COM_RI2#_SEL
5	V12_S
6	COM_RI2#_SEL

JSPI1

PIN No.	DESCRIPTION
1	SPI_HD1#
2	NC
3	SOC_SPI_CS0#_ROM
4	P3V3_SB_SPI
5	SOC_SPI_MISO_ROM
6	SOC_SPI_IO3_ROM
7	NC
8	SOC_SPI_CLK_ROM
9	GND
10	SOC_SPI_MOSI_ROM

ESPI1

PIN No.	DESCRIPTION
1	ESPI_CLK
2	ESPI_IO1
3	ESPI_RST#
4	ESPI_IO0
5	ESPI_CS0#
6	+P3V3
7	ESPI_IO3
8	NA
9	ESPI_IO2
10	GND
11	+P3V3_STBY
12	NC

Audio LINE1:

PIN	DESCRIPTION
1	GND_AUD
2	FRONT_OUT_L
3	FRONT_JD
4	GND_AUD
5	FRONT_OUT_R

Audio MIC1:

PIN	DESCRIPTION
1	GND_AUD
2	MIC_OUT_L
3	MIC1_JD
4	GND_AUD
5	MIC_OUT_R

COM1: Serial Port

PIN No.	DESCRIPTION
1	COM_DCD1#_P
2	COM_RXD1_P
3	COM_TXD1_P
4	COM_DTR1#_P
5	GND
6	COM_DSR1#_P
7	COM_RTS1#_P
8	COM_CTS1#_P
9	COM_RI1#_SEL

COM2: Serial Port

PIN No.	DESCRIPTION
1	COM_DCD2#_P
2	COM_RXD2_P
3	COM_TXD2_P
4	COM_DTR2#_P
5	GND
6	COM_DSR2#_P
7	COM_RTS2#_P
8	COM_CTS2#_P
9	COM_RI2#_SEL

DIO1: Isolation Digital Input / Output

PIN No.	DESCRIPTION	PIN No.	DESCRIPTION
1	RELAY1_COM1	2	RELAY1_NO1
3	DI_0	4	DI_1
5	DI_3	6	DI_2

7	DI_5	8	DI_4
9	DI_7	10	DI_6
11	ISO_DO_24V	12	NC
13	DO_COM	14	DO_COM
15	DO_0	16	DO_1
17	DO_3	18	DO_2
19	I_COM	20	I_COM

MSATA1: MSATA Slots

PIN No.	DESCRIPTION	PIN No.	DESCRIPTION
1	NC	2	+P3V3
3	NC	4	GND
5	NC	6	NC
7	NC	8	NC
9	GND	10	NC
11	NC	12	NC
13	NC	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	NC
23	SATA1_RXP	24	+P3V3
25	SATA1_RXN	26	GND
27	GND	28	NC
29	GND	30	NC
31	SATA1_TXN	32	NC
33	SATA1_TXP	34	GND
35	GND	36	NC
37	GND	38	NC
39	+P3V3	40	GND
41	+P3V3	42	NC
43	NC	44	NC
45	NC	46	NC
47	NC	48	NC
49	NC	50	GND
51	NC	52	+P3V3

JNGFF1: NVME Slot (M-KEY)

PIN No.	DESCRIPTION	PIN No.	DESCRIPTION	PIN No.	DESCRIPTION
1	GND	26	NC	51	GND
2	+P3V3	27	GND	52	M2_2_CLKREQ_N
3	GND	28	NC	53	CLKOUT_PCIE_N0
4	+P3V3	29	PCIE4_RX_N1	54	PCH_WAKE#
5	PCIE4_RX_N3	30	NC	55	CLKOUT_PCIE_P0
6	NC	31	PCIE4_RX_P1	56	NC
7	PCIE4_RX_P3	32	NC	57	GND
8	NC	33	GND	58	NC
9	GND	34	NC	59	NC
10	GEN4_LED	35	PCIE4_TX_N1	60	NC
11	PCIE4_TX_N3	36	NC	61	NC
12	+P3V3	37	PCIE4_TX_N1	62	NC
13	PCIE4_TX_P3	38	NC	63	NC
14	+P3V3	39	GND	64	NC
15	GND	40	NC	65	NC
16	+P3V3	41	PCIE4_RX_N0	66	NC
17	PCIE4_RX_N2	42	NC	67	NC
18	+P3V3	43	PCIE4_RX_P0	68	SUSCLK
19	PCIE4_RX_P2	44	NC	69	+P3V3
20	NC	45	GND	70	+P3V3
21	GND	46	NC	71	GND
22	NC	47	PCIE4_TX_N0	72	+P3V3
23	PCIE4_TX_N2	48	NC	73	GND
24	NC	49	PCIE4_TX_P0	74	+P3V3
25	PCIE4_TX_P2	50	PLTRST_GEN4	75	GND

M2_1: M.2 Slots (B-KEY)

PIN No.	DESCRIPTION	PIN No.	DESCRIPTION	PIN No.	DESCRIPTION
1	M2_1_Config_3	26	V3P3_G1/NC	51	GND
2	V3P3_G1	27	GND	52	E3_CLKREQ-
3	GND	28	UIM1_VPP_1	53	CLK_PCIE_N_MPCIE2_SW
4	V3P3_G1	29	USB3_M2_R1-	54	E3_WAKE-
5	GND	30	UIM1_RST	55	CLK_PCIE_P_MPCIE2_SW
6	PWROFF1#	31	USB3_M2_R1+	56	NC
7	USB2_2+	32	UIM1_CLK	57	GND

8	W_DIS1#	33	GND	58	NC
9	USB2_2-	34	UIM1_DAT	59	ANTCTL0
10	NGFF_LED_1N	35	USB3_M2_T1-	60	NC
11	GND	36	UIM1_PWR	61	ANTCTL1
12	NC	37	USB3_M2_T1+	62	NC
13	NC	38	V3P3_G1/NC	63	ANTCTL2
14	NC	39	GND	64	NC
15	NC	40	M2_1_UIM2_Detect	65	ANTCTL3
16	NC	41	PCH_PCIE_RXN5	66	M2_1_UIM1_DET
17	NC	42	NC	67	PERST#M
18	NC	43	PCH_PCIE_RXP5	68	V3P3_G1
19	NC	44	NC	69	M2_1_Config_1
20	PCIE_DIS	45	GND	70	V3P3_G1
21	M2_1_Config_0	46	NC	71	GND
22	+P5V/ +P1V8_STBY	47	PCH_PCIE_TXN5	72	V3P3_G1
23	WWAN_WAKE_N	48	NC	73	GND
24	V3P3_G1/NC	49	PCH_PCIE_TXP5	74	V3P3_G1
25	M2_1_DPR	50	PERST#1	75	M2_1_Config_2

M2_E_KEY1: M.2 Slots (E-KEY)

PIN No.	DESCRIPTION	PIN No.	DESCRIPTION	PIN No.	DESCRIPTION
1	GND	26	NC	51	GND
2	+P3V3	27	NC	52	PERST#EKEY
3	USB2_P10	28	NC	53	+P3V3
4	+P3V3	29	NC	54	PMC_I2C_SCL
5	USB2_N10	30	NC	55	PCH_WAKE#
6	LED_WLAN1-	31	NC	56	GSPI0_CS0#
7	GND	32	CNV_RGI_DT	57	GND
8	I2S2_SCLK	33	GND	58	NC
9	CNV_WR_D1_DN	34	CNV_UART0_CTS#	59	CNVI_WT_D1N
10	CNV_RF_RESET#	35	PCH_PCIE_TXP9	60	NC
11	CNV_WR_D1_DP	36	PCH_GPP_F0	61	CNVI_WT_D1P
12	I2S2_RXD	37	PCH_PCIE_TXN9	62	NC
13	GND	38	CL_RST#	63	GND
14	CLKREQ_CNV	39	GND	64	NC
15	CNV_WR_D0_DN	40	CL_DATA	65	CNVI_WT_D0N
16	LED_WLAN2-	41	PCH_PCIE_RXP9	66	NC

17	CNV_WR_D0_DP	42	CL_CLK	67	CNVI_WT_D0P
18	GND	43	PCH_PCIE_RXN9	68	NC
19	GND	44	GPP_F6	69	GND
20	NC	45	GND	70	NC
21	CNV_WR_CLKN	46	CNV_MFUART2_TXD	71	CNVI_WT_CLKN
22	CNV_UART0_RXD	47	CLKOUT_PCIE_P2	72	+P3V3
23	CNV_WR_CLKP	48	CNV_MFUART2_RXD	73	CNVI_WT_CLKP
24	NC	49	CLKOUT_PCIE_N2	74	+P3V3
25	NC	50	SUSCLK	75	GND

CHAPTER 2: HARDWARE SETUP

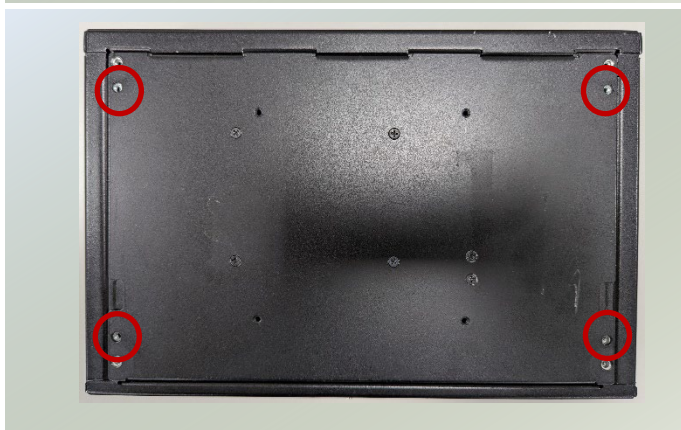
To reduce the risk of personal injury, electric shock, or damage to the unit, please remove all power connections to completely shut down the device and wear ESD protection gloves when handling the installation steps.

Open the Chassis

1. Power off the system and disconnect the power cord. Turn the system over. Unscrew the four (4) rubber pads securing the cover.



2. Then loosen the four (4) screws securing the cover.



2. Lift and open the chassis.



Protecting the Motherboard

To protect the additional electronic components (e.g. RAMs, Module cards) on the motherboard, we have included a partitions and thermal pads kit. Thermal pads placed between electronic component parts help to efficiently dissipate heat, resulting in a better cooling situation.

The partitions and thermal pads kit contain the following items:

- ▶ 2x Metal Partitions
- ▶ 5x Thermal Pads
- ▶ Screw pack

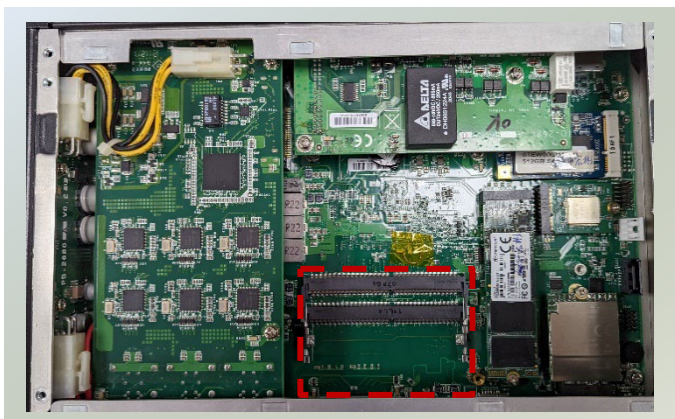
[All pictures shown are for illustration purposes only. Actual product may vary.]



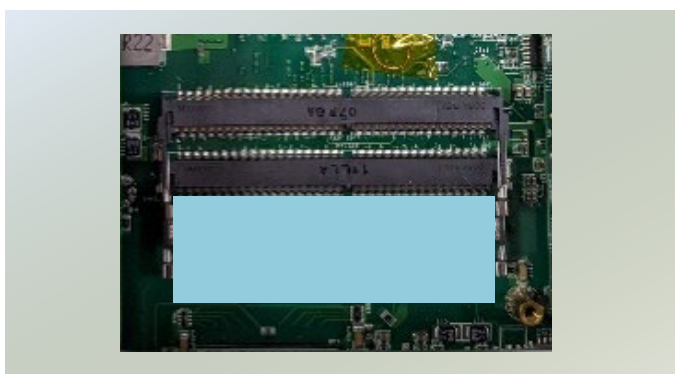
Installing the System Memory

The motherboard supports 2x DDR4 3200MHz SO-DIMM, up to 64GB, for additional system memory. Please follow the steps for installation.

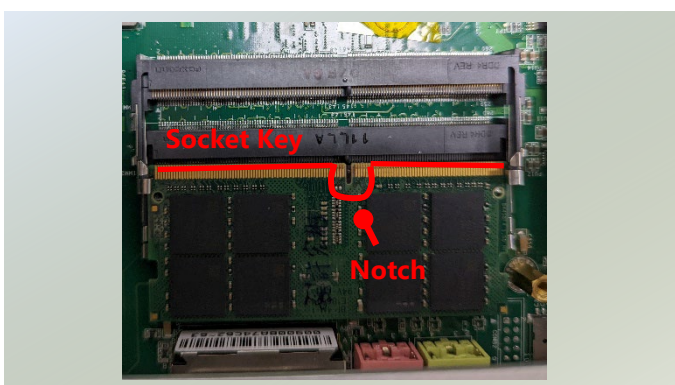
1. Power off the system, turn the system around, and open the bottom chassis cover. Locate the DIMM socket on the motherboard.



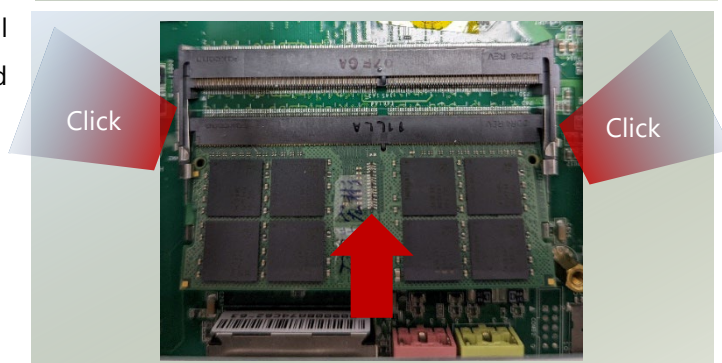
2. Next, thermal pad placement. Remove the protective film from Thermal Pad A (included in Partition & Thermal Pad Kit), and gently place on the motherboard. The thermal pad needs to be underneath the DIMM module.



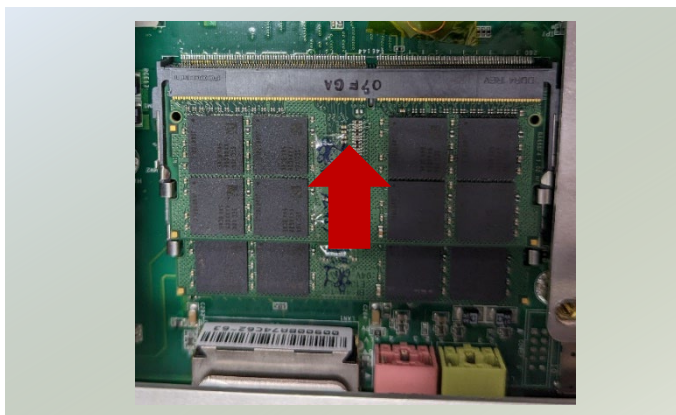
3. Align the notches of the DIMM module with the socket key in the pin slot.



4. Insert the module into the slot at a diagonal angle and press it down until it is firmly seated by the clips on both sides.



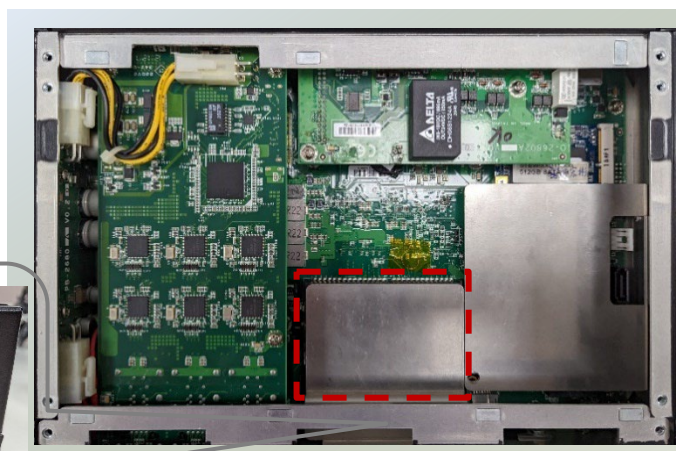
5. Repeat the steps to insert the top DIMM module.



6. After the top DIMM module has been securely inserted, a thermal pad needs to be placed over it. Remove the protective film from Thermal Pad B (included in Partition & Thermal Pad Kit), and gently place on the module surface.



7. Place the metal Partition A (included in Partition & Thermal Pad Kit), over the system memory, and secure with two (2) screws on the rear panel.



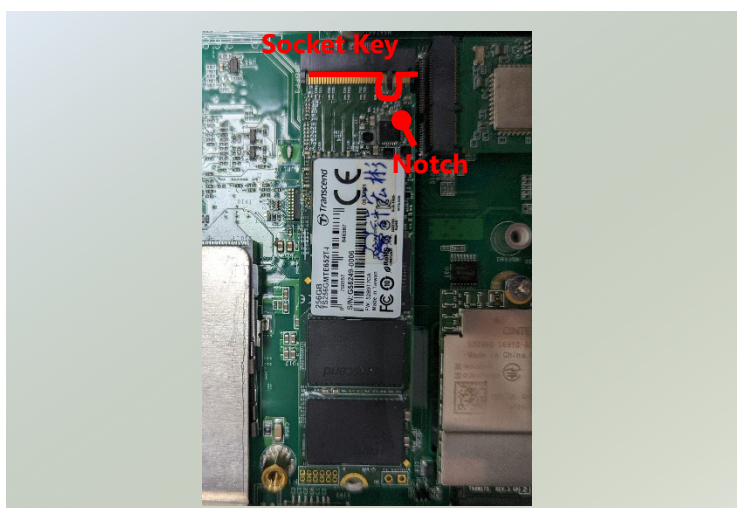
Installing M.2 Storage Card (Optional)

The system supports one M.2 M-Key NVMe SSD card for additional memory storage. Please follow the steps for installation.

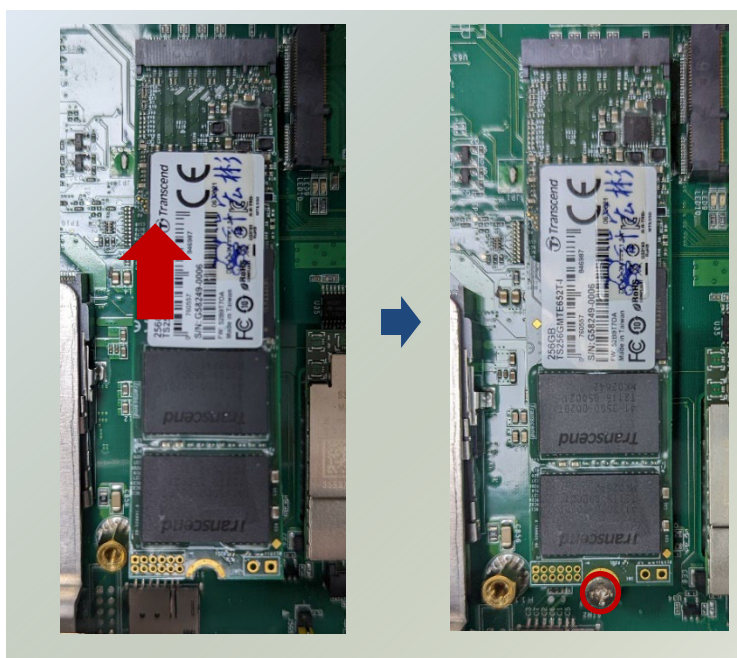
1. Power off the system, turn the system over, and open the bottom chassis cover. Locate the M.2 slot on the motherboard.



2. Align the notch of the M.2 memory card with the socket key in the pin slot.

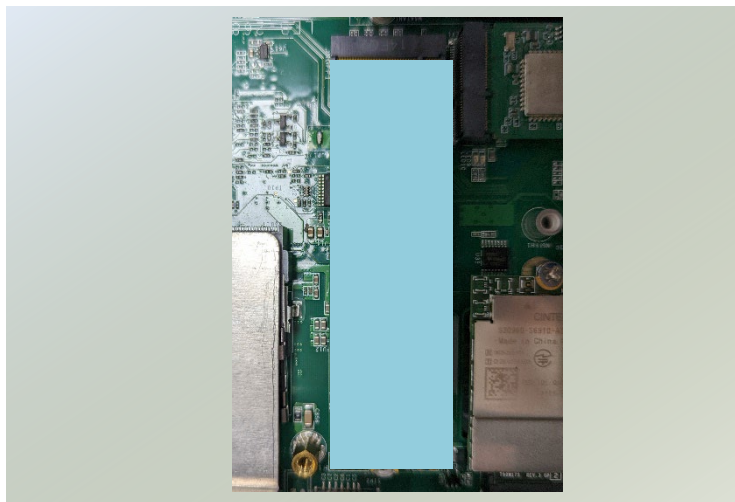


3. Insert the M.2 memory card pins at 30 degrees into the socket until it is fully seated.
4. Push down on the module card and secure it with a screw.

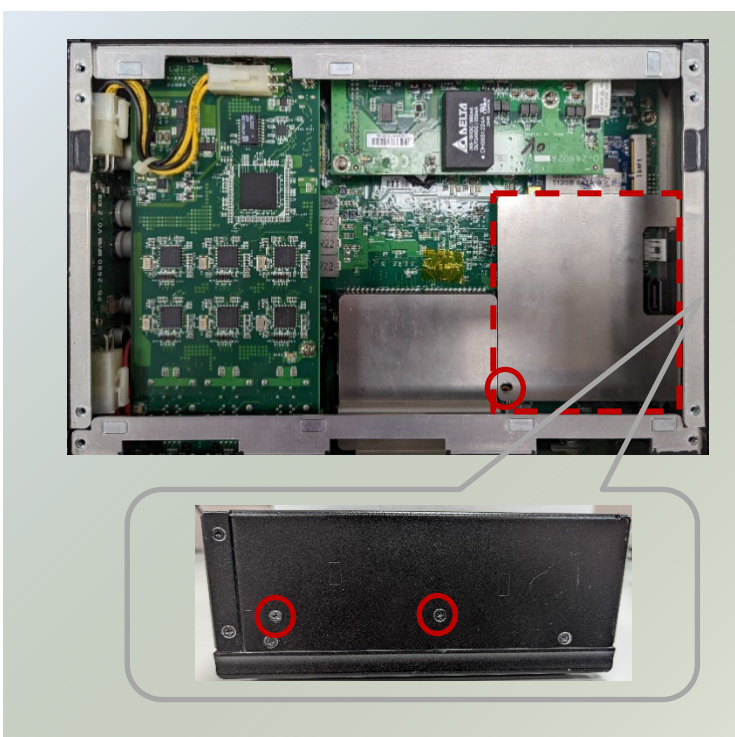


5. Next, thermal pad placement.

Remove the protective film from Thermal Pad C (included in Partition & Thermal Pad Kit), and gently place on the module surface.



6. If a 5G and/or Wi-Fi module will not be added, then place metal Partition B (included in Partition & Thermal Pad Kit), over the storage module, and secure with one (1) screw on the partition and two (2) screws on the side panel.



Installing 5G Module Card (Optional)

The motherboard provides one M.2 B-Key slot for a 5G module card, which is an optional additional accessory. 5G module will require four antennas. Please follow the procedures for the installation of the 5G module card.



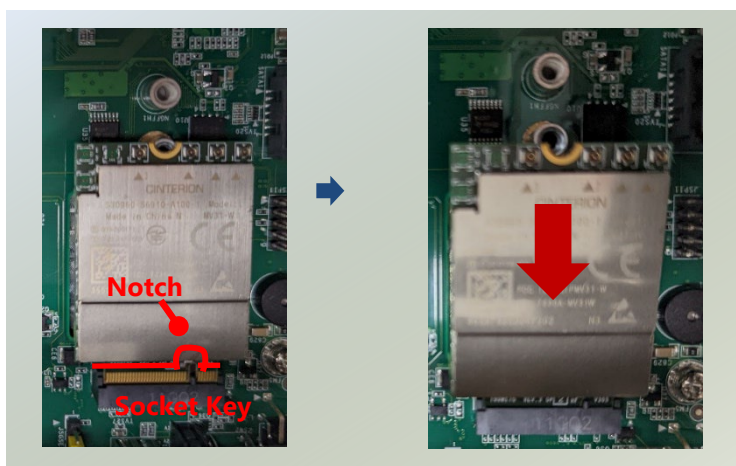
Note

When 5G feature is required, please inform your dealer when issuing purchase order, as the four SMA antenna connectors must be pre-assembled on the housing by Lanner.

1. Power off the system, turn the system around, and open the bottom chassis cover.
2. Locate the M.2 B-Key slot on the motherboard.



2. Align the notch of the 5G module card with the socket key in the pin slot.
4. Insert the 5G module card pins at 30 degrees into the socket until it is fully seated.

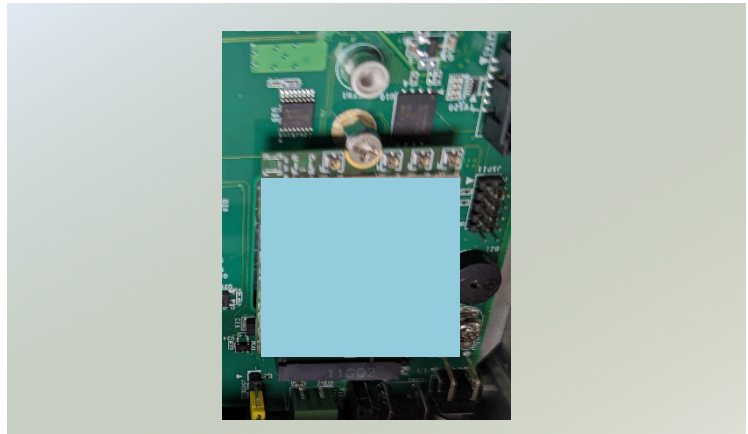


5. Push down on the module card and secure it with a screw.



6. Next, thermal pad placement.

Remove the protective film from Thermal Pad D (included in Partition & Thermal Pad Kit), and gently place on the module surface.



Installing 5G Antennas

Front Panel



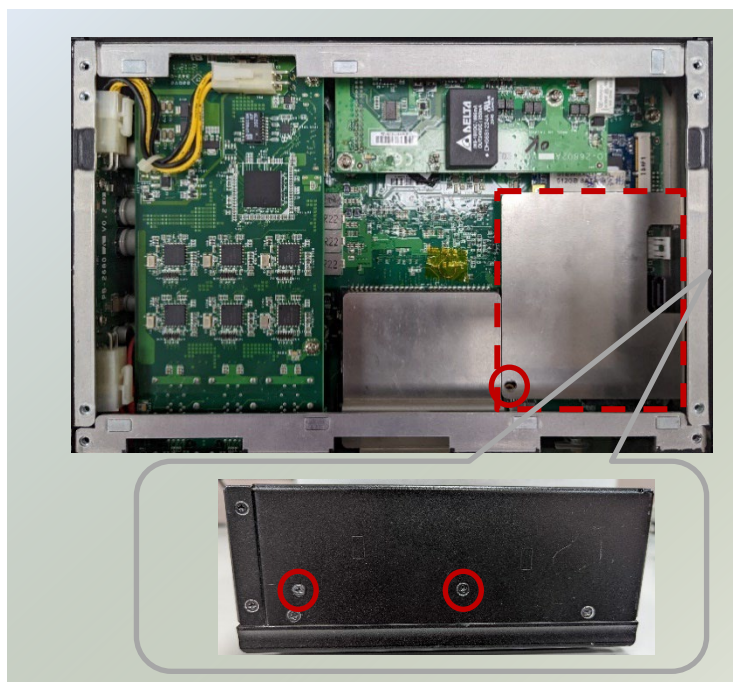
Rear Panel



1. Locate the four (4) antenna RF cables (pre-assembled). Locate the four (4) IPEX connectors on the 5G module card.
2. Connect A1, A4, A5, A6 RF cables to the 5G module card.



3. If a Wi-Fi module will not be added, then place metal Partition B (included in Partition & Thermal Pad Kit), over the 5G module, and secure with one (1) screw on the partition and two (2) screws on the side panel.



4. Screw on the four (4) antennas to the system's rear panel.



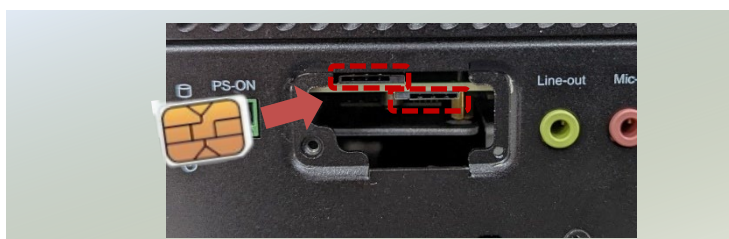
Installing Nano SIM Card (Optional)

The SIM slot on the front panel supports the 5G module card. The SIM socket supports the push-push mechanism, allowing inserting and ejecting the SIM card to be as easy as one push.

1. Locate the door of SIM card slot on the front panel.
2. Loosen the twist-screw and remove the slot cover.



3. There are two (2) nano-SIM slots, one on the upper side and another on the bottom side.
4. Insert and push the nano-SIM card all the way in until it clicks into place.



5. To remove the nano-SIM card, use your fingertips to push it once, to have the card automatically ejected.
6. Place the door back and tighten the twist-screw.

Installing Wi-Fi Module Card (Optional)

The system supports one M.2 E-key slot for a Wi-Fi module card, an optional accessory. Wi-Fi module requires two antennas. Please follow the steps to install the Wi-Fi module card.



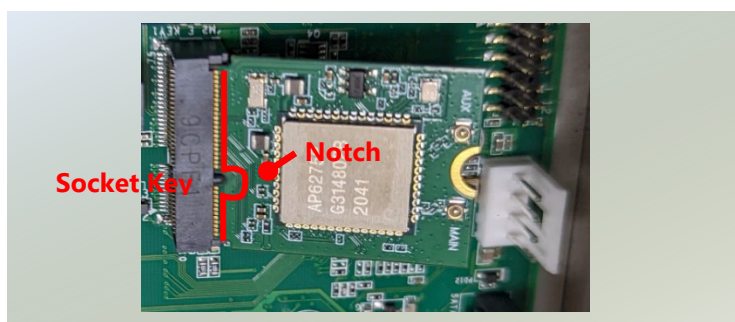
Note

When Wi-Fi feature is required, please inform your dealer when issuing purchase order, as the two SMA antenna connectors must be pre-assembled on the housing by Lanner.

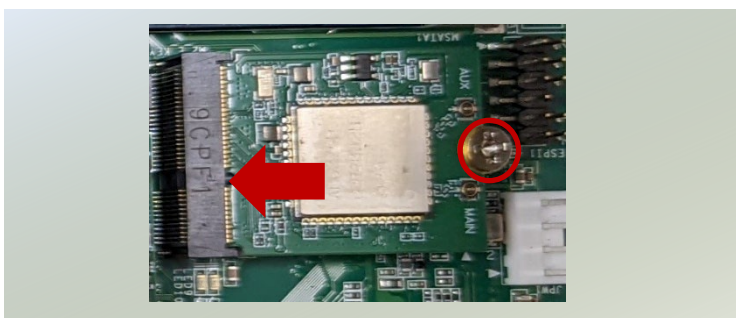
1. Power off the system, turn the system around, and open the bottom chassis cover.
2. Locate the M.2 E-Key slot on the motherboard.



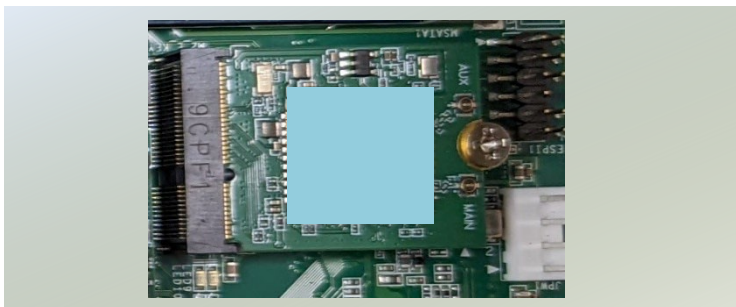
3. Align the notch of the 5G module card with the socket key in the pin slot.
4. Insert the Wi-Fi module card pins at 30 degrees into the socket until it is fully seated.



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



6. Next, thermal pad placement. Remove the protective film from Thermal Pad E (included in Partition & Thermal Pad Kit), and gently place on the module surface.

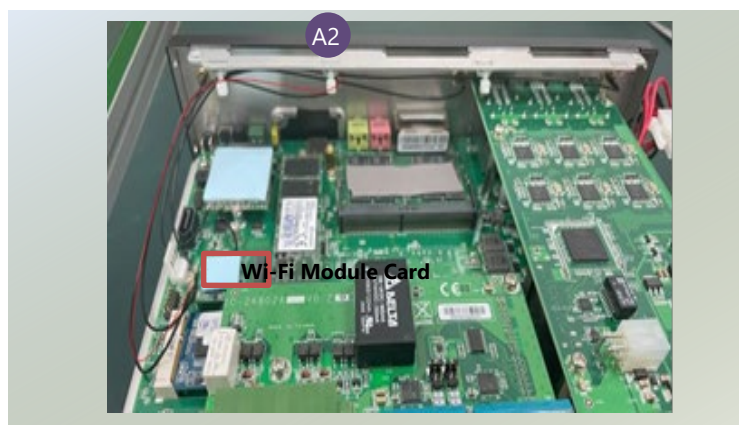
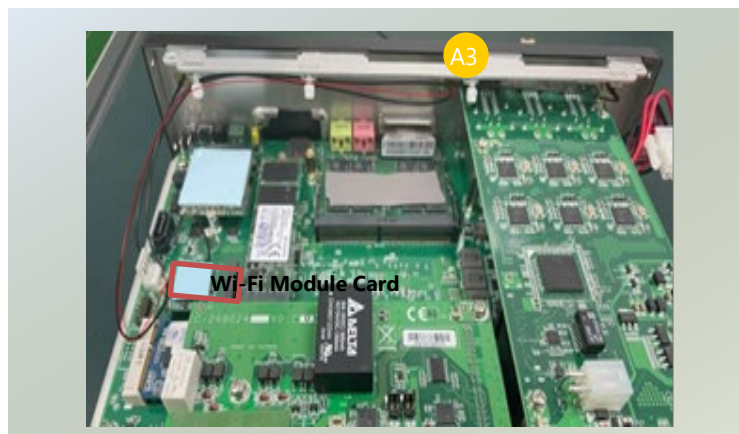


Installing Wi-Fi Antennas

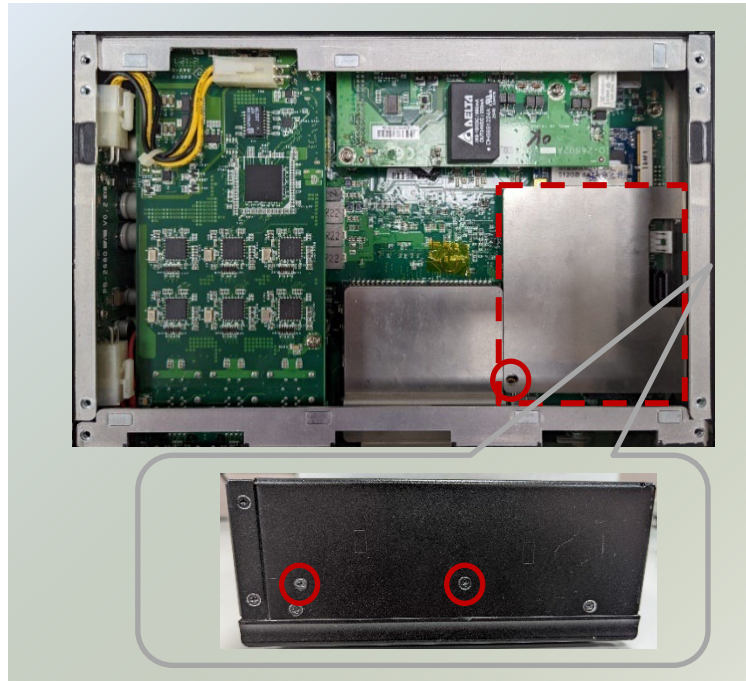
Front Panel



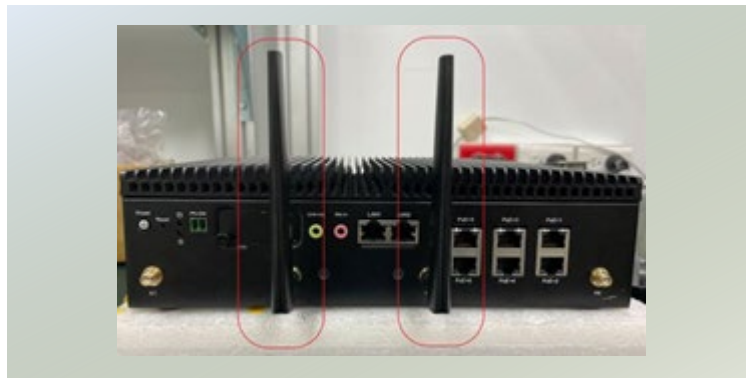
1. Locate the two (2) antenna RF cables (pre-assembled). Locate the two (2) IPEX connectors on the Wi-Fi module card.
2. Connect A2, A3 RF cables to the Wi-Fi module card.



3. Then place metal Partition B (included in Partition & Thermal Pad Kit), over the Wi-Fi module, and secure with one (1) screw on the partition and two (2) screws on the side panel.



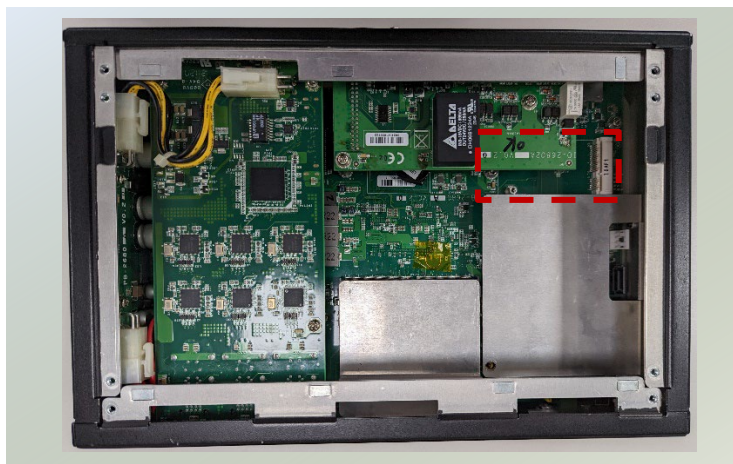
4. Screw on the two (2) antennas to the system's front panel.



Installing mSATA Card (Optional)

The system supports one mSATA SSD module card for additional memory storage. Please follow the steps for installation.

1. Power off the system, turn the system around, and open the bottom chassis cover.
2. Locate the mSATA slot on the motherboard.



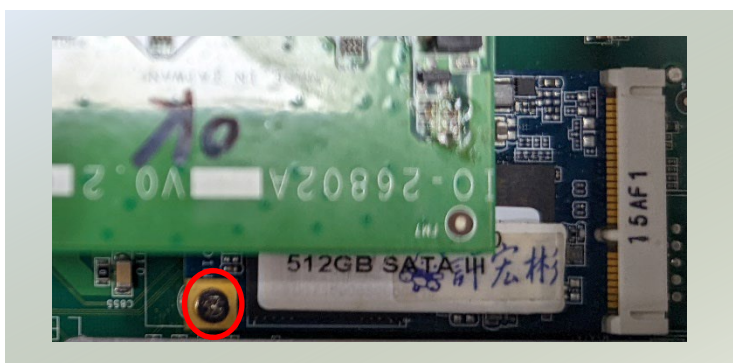
3. Align the notch of the M.2 memory card with the socket key in the pin slot.



4. Insert the M.2 memory card pins at 30 degrees into the socket until it is fully seated.



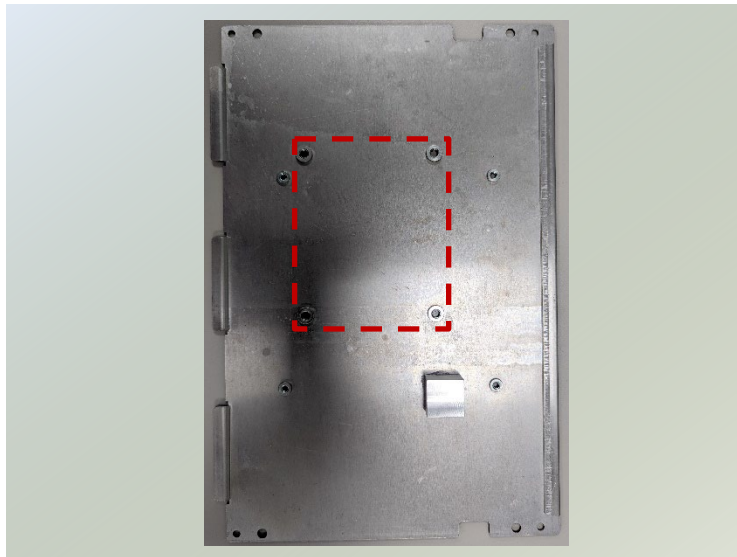
5. Push down on the module card and secure it with a screw.



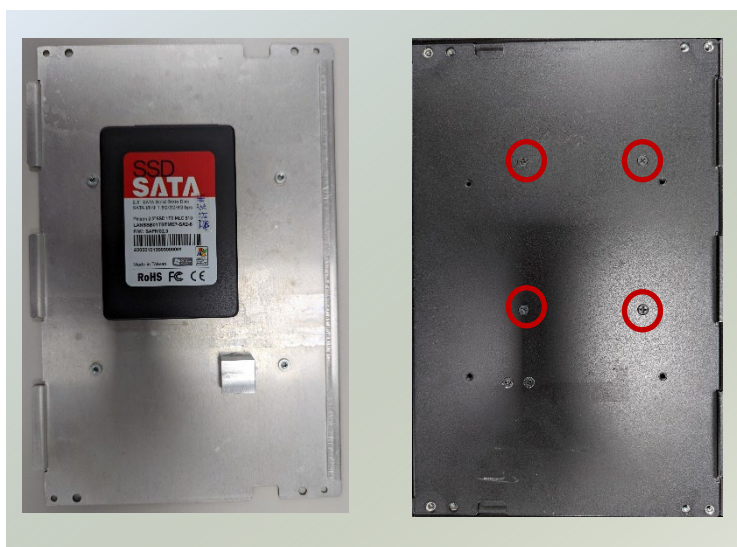
Installing Disk Drive (Optional)

The system supports one 2.5" SATA HDD/SSD drive bay for additional data storage. Please follow the steps for installation.

1. Power off the system, turn the system onto its bottom, open the bottom chassis cover. Locate the 2.5" SATA HDD/SSD drive bay on the underside of the bottom chassis cover.



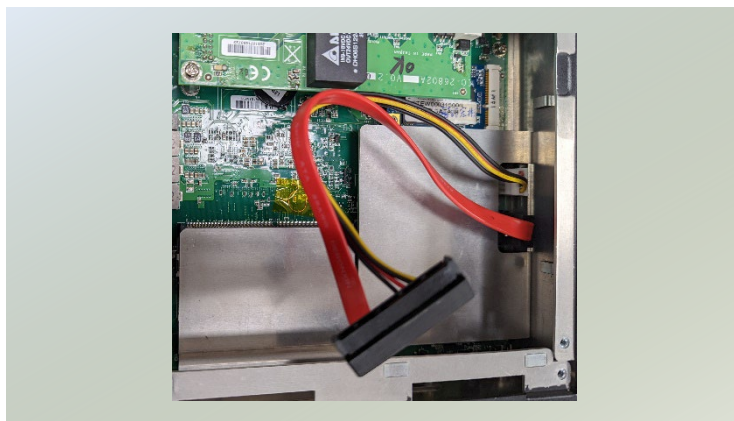
2. Place disk drive onto the drive bay and apply four (4) screws on the top side of the bottom chassis cover to secure the disk drive.



3. Locate the SATA connectors on the motherboard.



4. Connect the SATA 7-pin signal cable and the SATA 4-pin power cable to their corresponding connectors on the motherboard.



5. Plug the standard 7+15 SATA connector to the SSD.

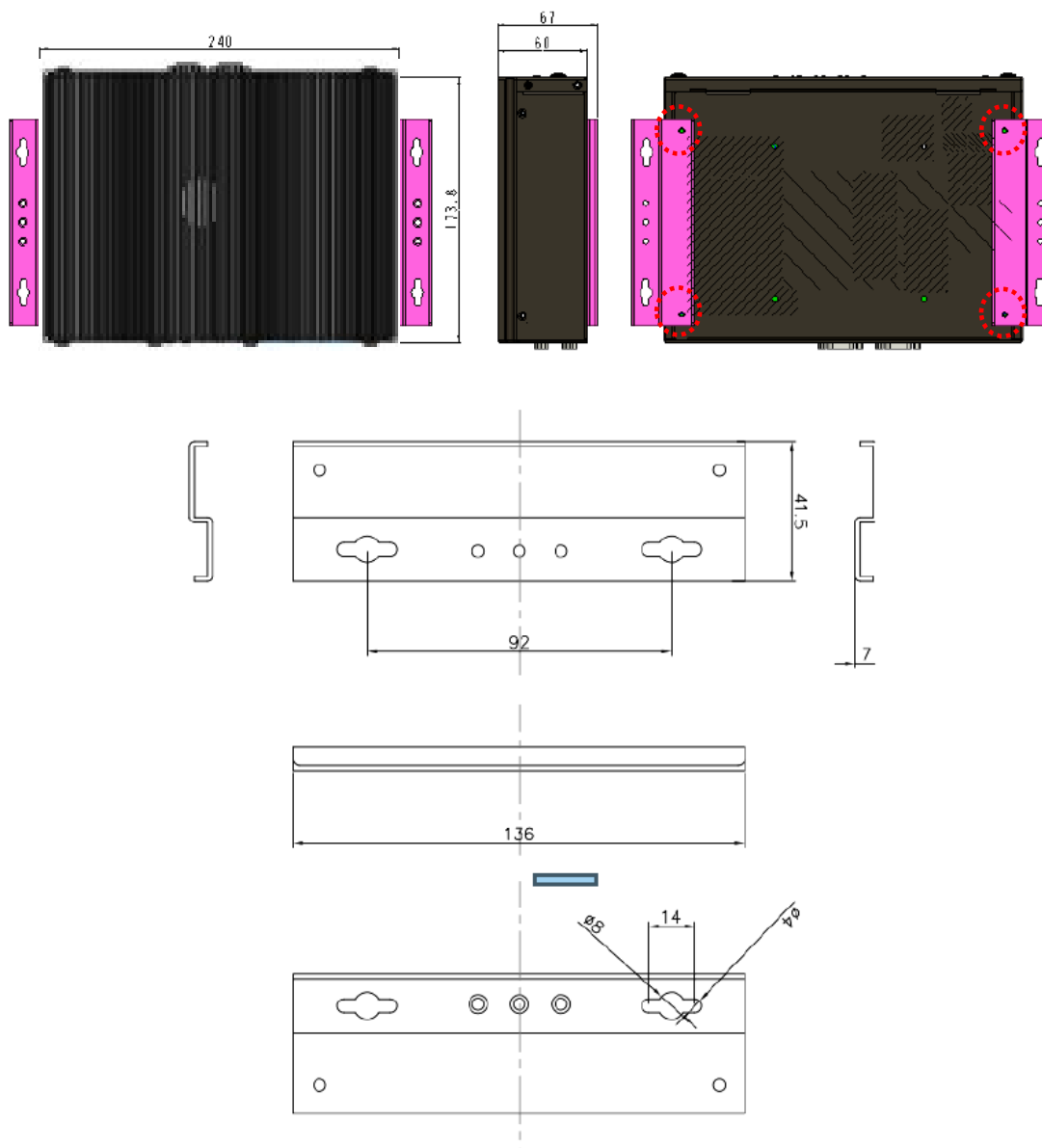


Wall Mounting

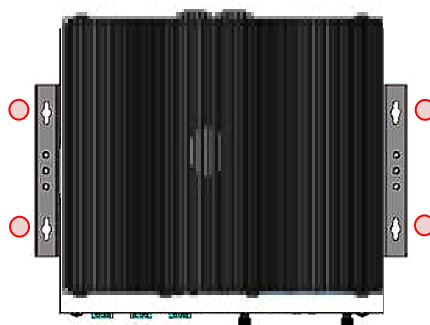
The system can be mounted on a flat surfaced wall. Please take the following into considerations when mounting the system onto the wall.

Note: All pictures shown are for illustration purposes only, actual product may vary due to specific model or enhancement.

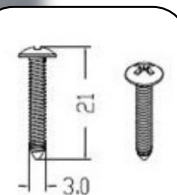
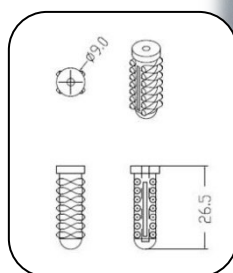
1. Fix the wall mount brackets onto the system bottom by securing them with four (4) provided screws.



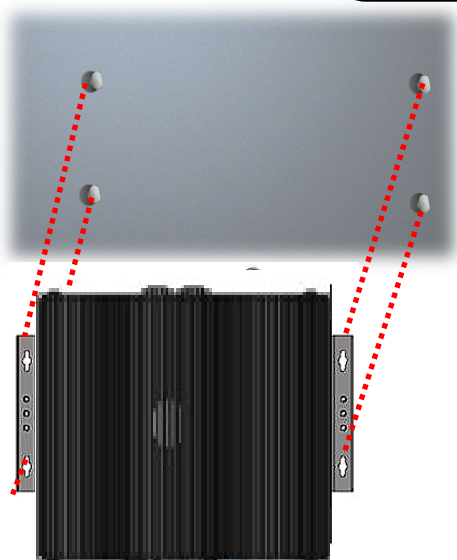
2. On the wall, measure the exact place where you want to hang the system, and drill four holes that match the four mounting holes on both brackets.



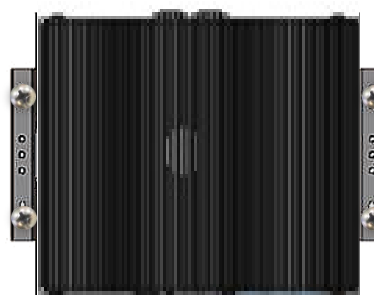
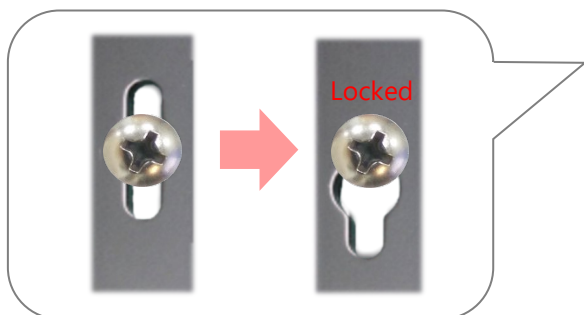
3. Insert **four** anchoring bolts into the holes.



4. Align the four mounting holes on the system's brackets with the four anchoring bolts you just installed on the wall.



5. Engage the four screws in the bracket holes and push the system downwards to lock the screws into position.



CHAPTER 3: SOFTWARE SETUP

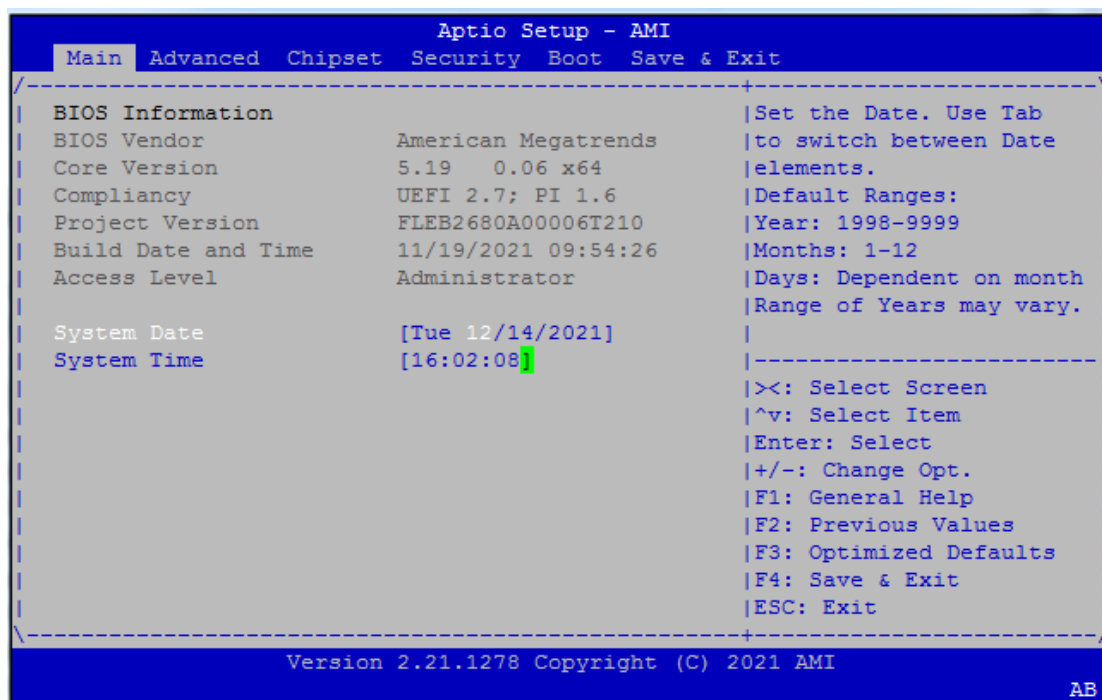
BIOS Setup

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], [Chipset], [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 Page

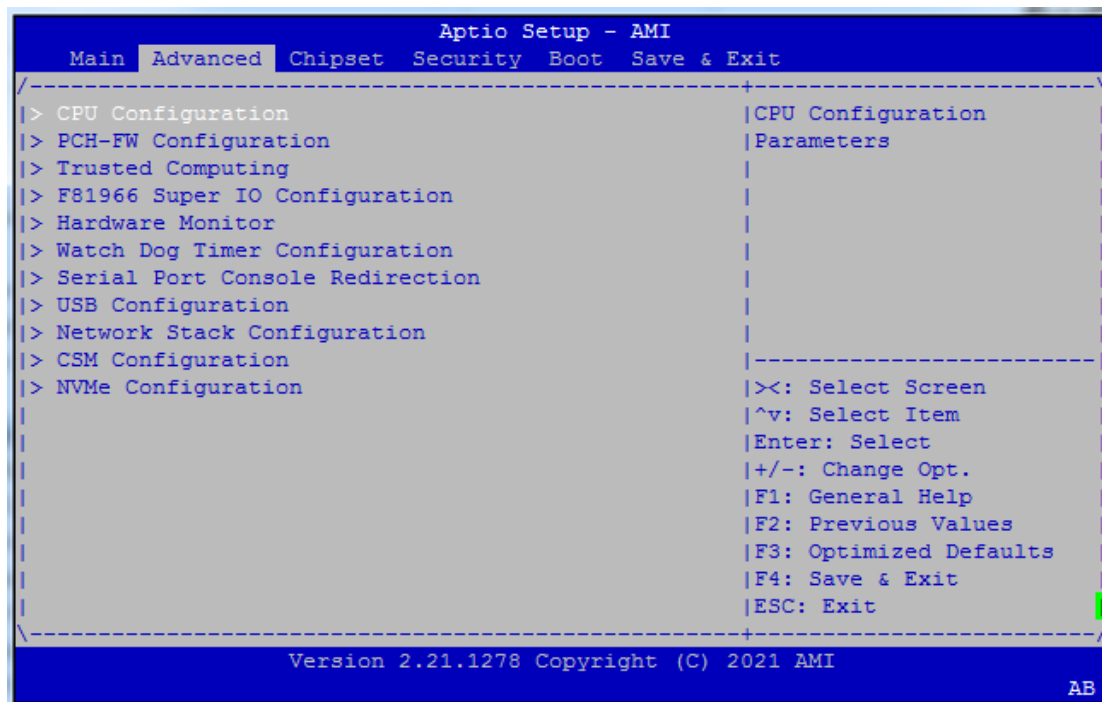
Setup main page contains BIOS information and project version information.



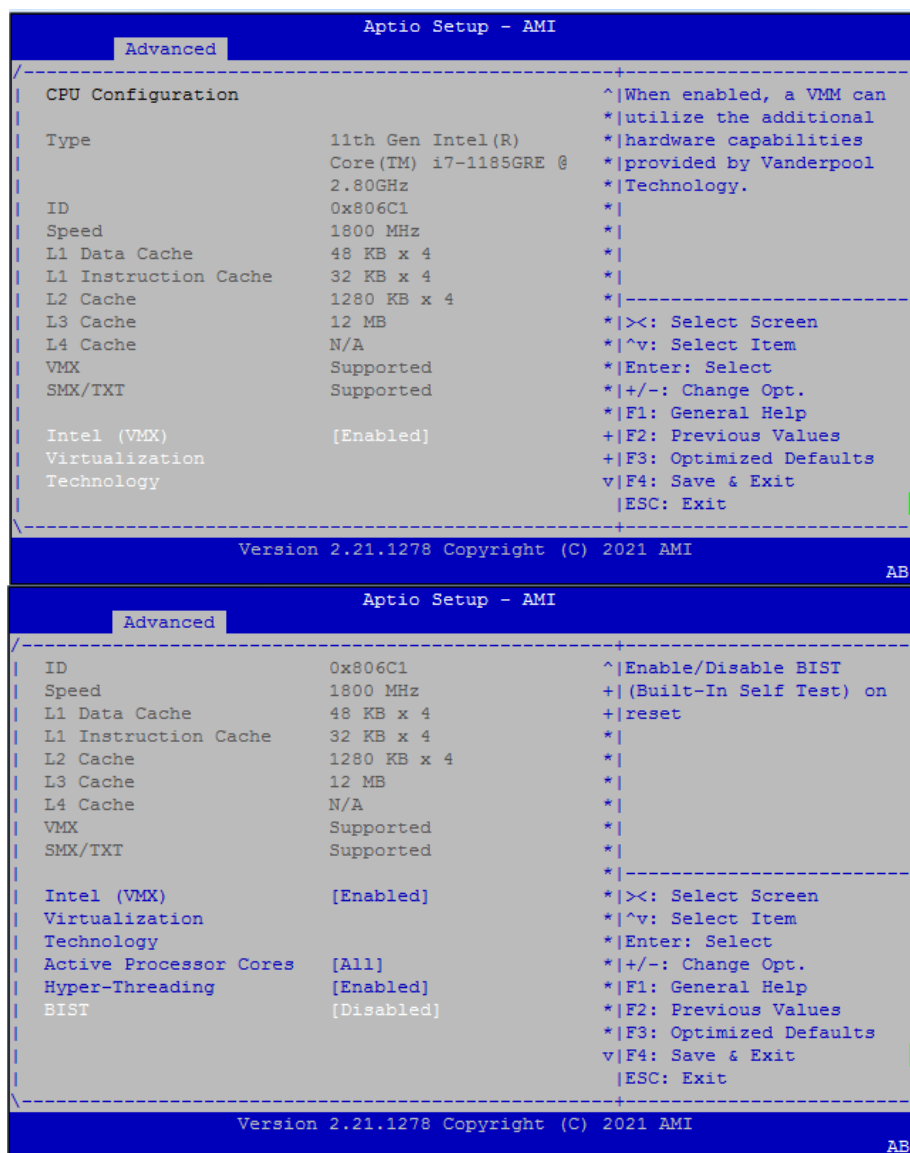
Feature	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version: AMI Kernel version, CRB code base, X64 Compliance: UEFI version, PI version Project Version: BIOS release version Build Date and Time: MM/DD/YYYY Access Level: Administrator / User
System Date	To set the Date, use <Tab> to switch between Date elements. Default Range of Year: 2005-2099 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.

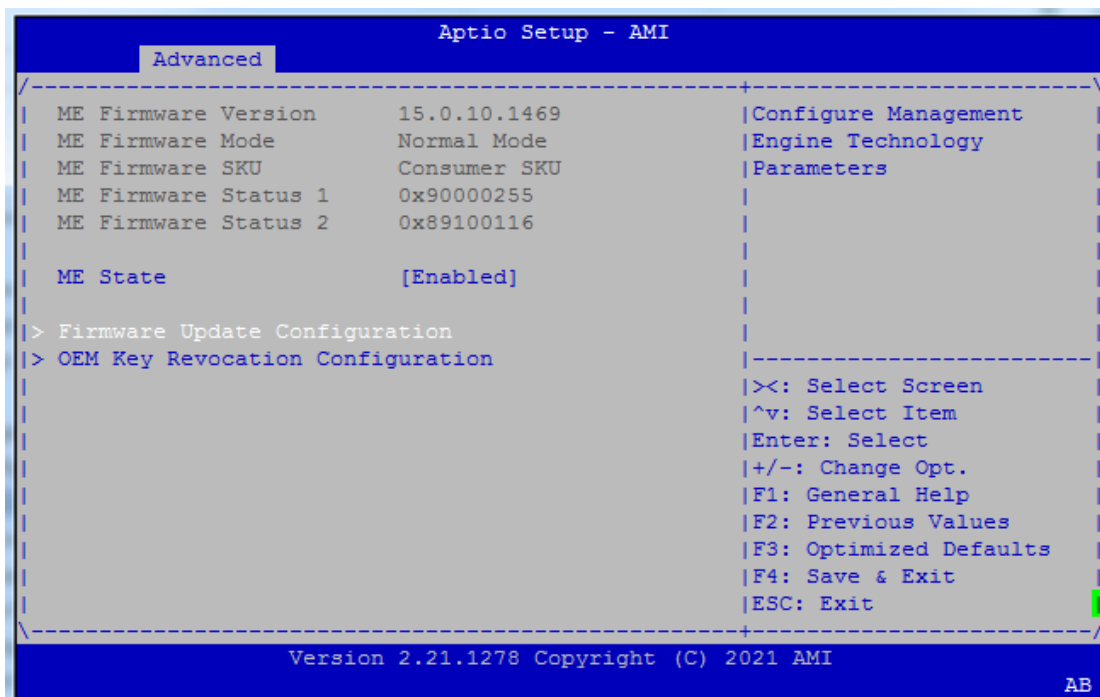


CPU Configuration



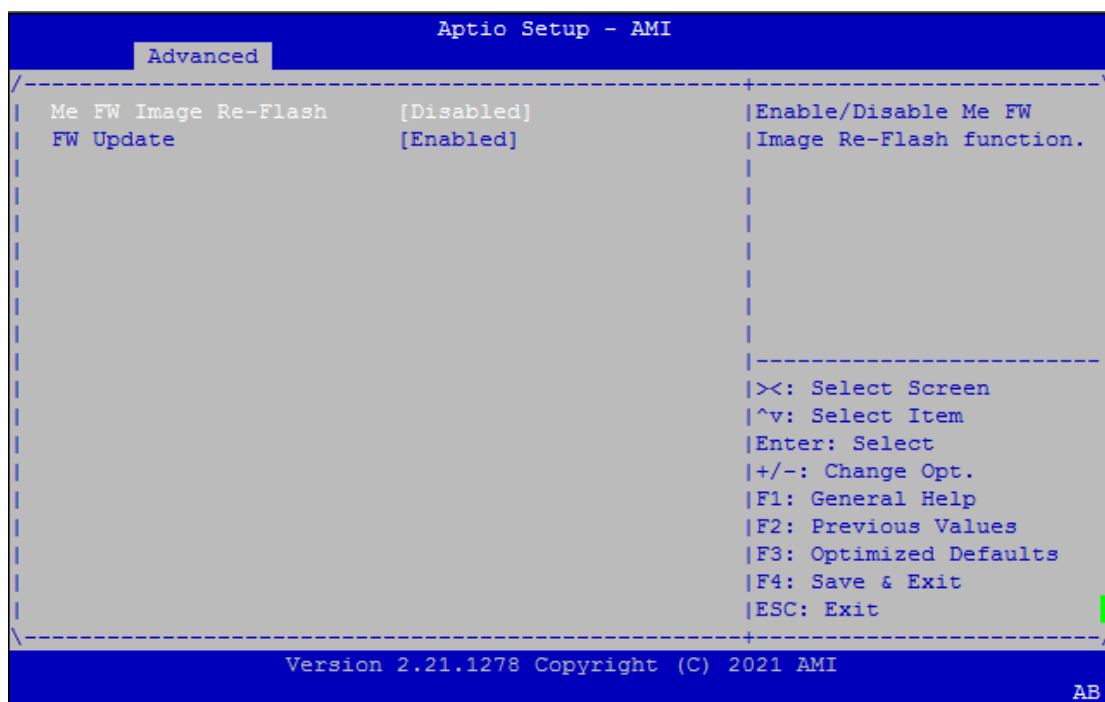
Feature	Options	Description
Intel (VMX) Virtualization Technology	Enabled Disabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	All 1 2 3	Number of cores to enable in each processor package.
Hyper-Threading	Enabled Disabled	Enable or Disable Hyper-Threading Technology.
BIST	Enabled Disabled	Enable/Disable BIST (Built-In Self-Test) on reset

PCH-FW Configuration



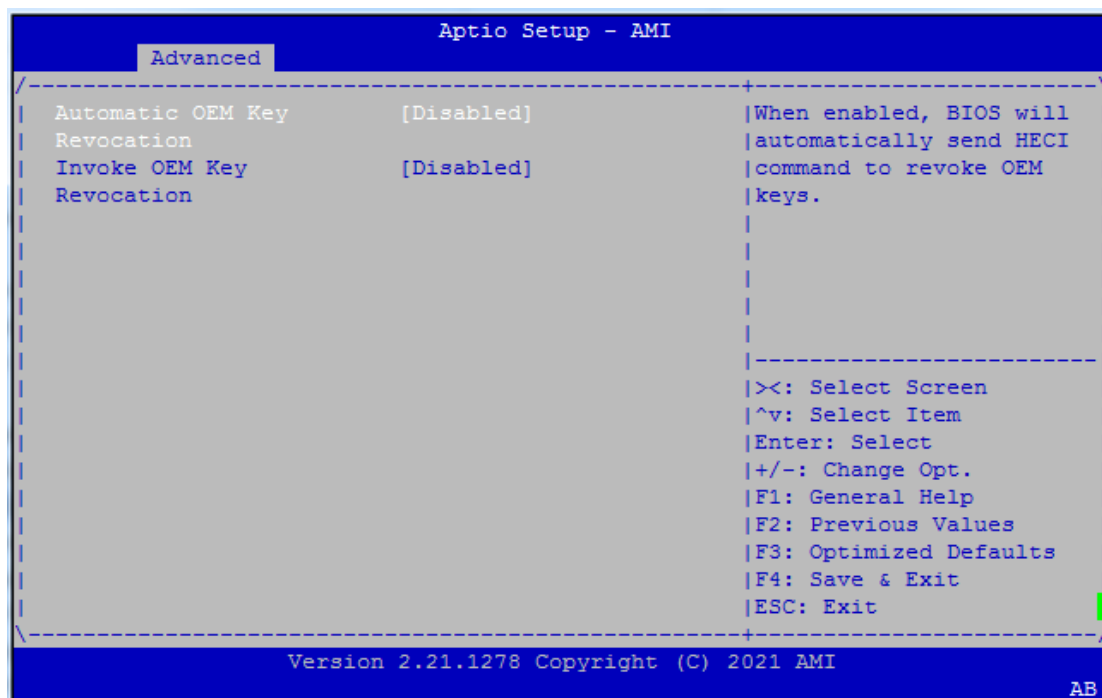
Feature	Options	Description
ME State	Enabled Disabled	Configure Management Engine Technology Parameters

Firmware Update Configuration



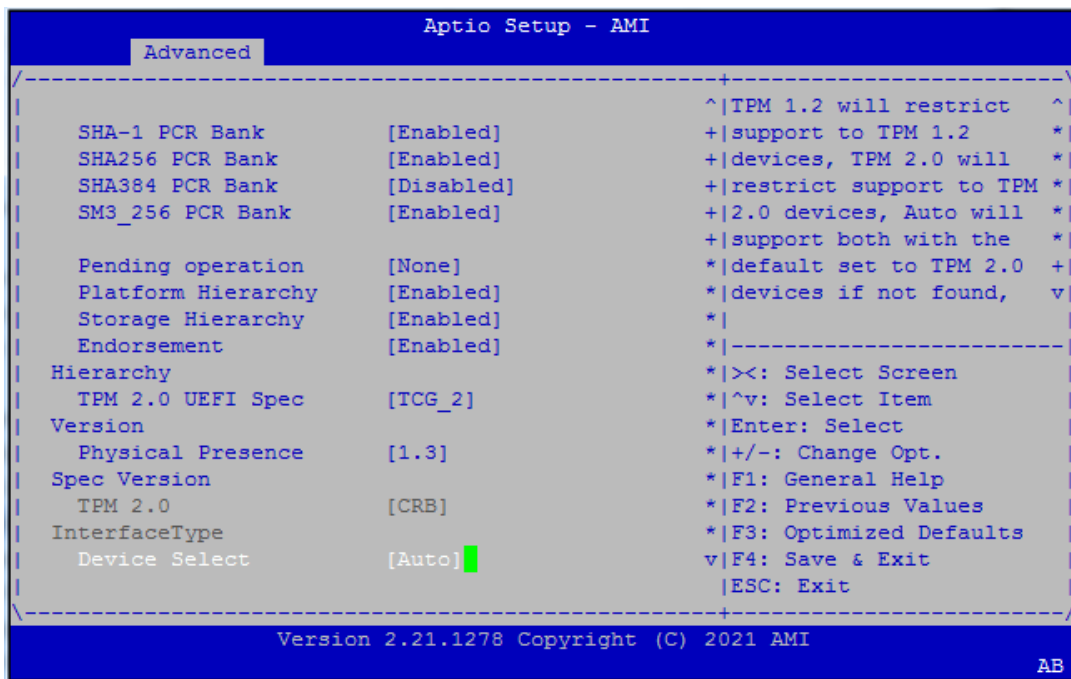
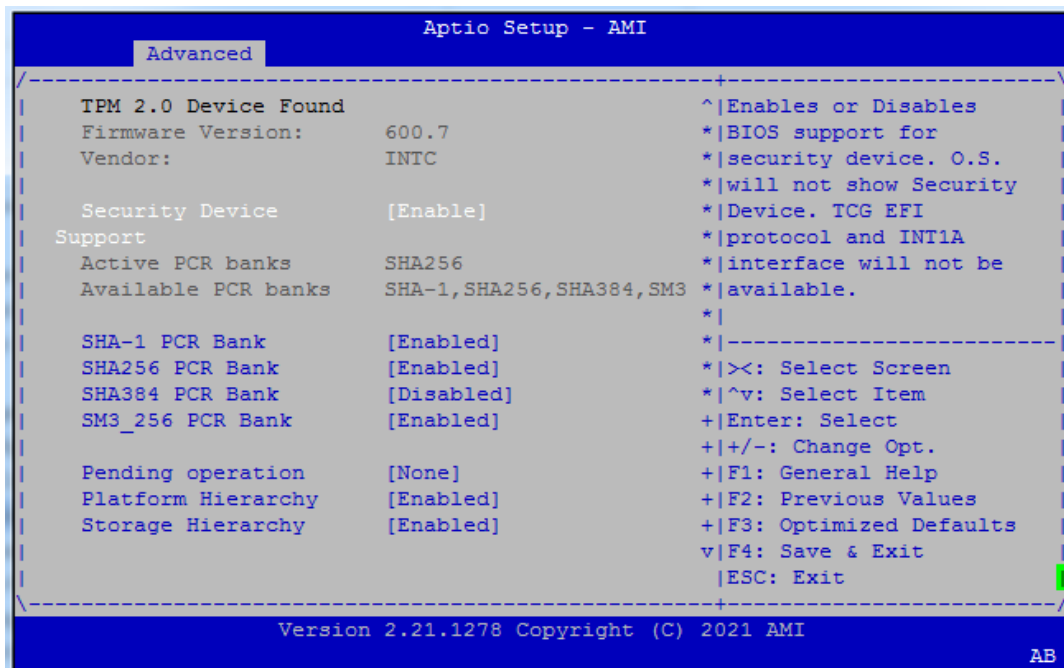
Feature	Options	Description
Me FW Image Re-Flash	Enabled Disabled	Enable/Disable ME FW Image Re-Flash function.
FW Update	Enabled Disabled	Enable/Disable ME FW Update function.

OEM Key Revocation Configuration



Feature	Options	Description
Automatic OEM Key Revocation	Enabled Disabled	When enabled, BIOS will automatically send HECI command to revoke OEM keys.
Invoke OEM Key Revocation	Enabled Disabled	When enabled, BIOS will automatically send HECI command to revoke OEM keys.

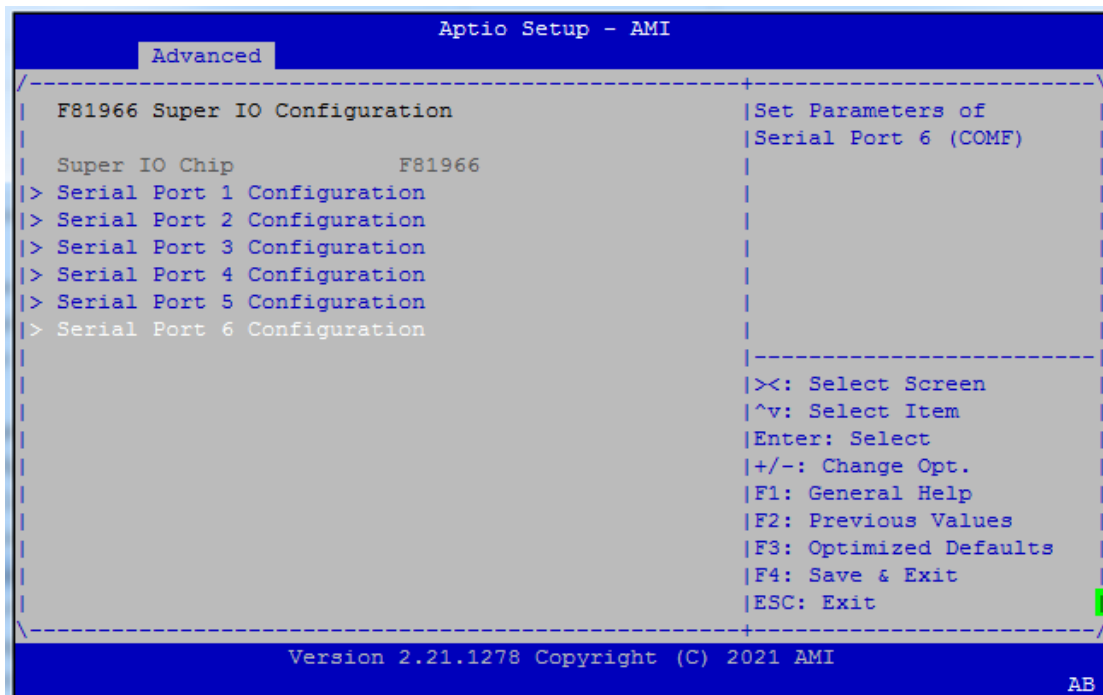
Trusted Computing



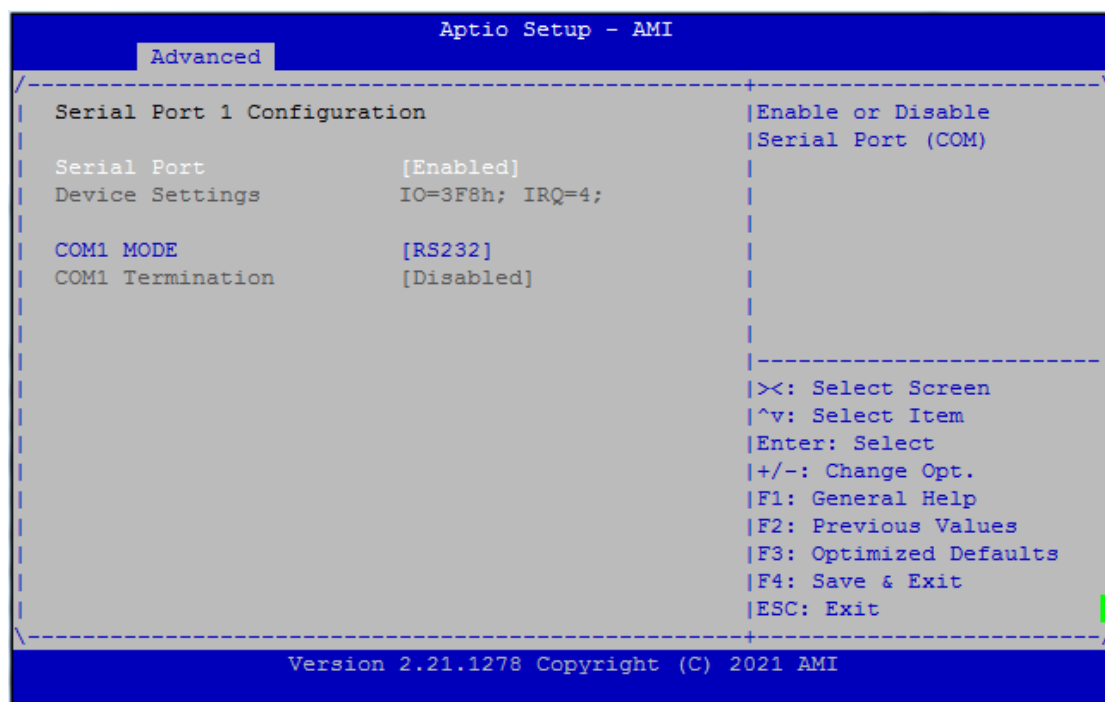
Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enabled Disabled	Enables or Disables SHA-1 PCR Bank.
SHA256 PCR Bank	Enabled Disabled	Enables or Disables SHA256 PCR Bank.

SHA384 PCR Bank	Enabled Disabled	Enables or Disables SHA384 PCR Bank.
SM3_256 PCR Bank	Enabled Disabled	Enables or Disables SM3_256 PCR Bank.
Pending operation	None TPM Clear	Schedules an Operation for the Security Device. NOTE: Your computer will reboot during restart in order to change State of Security Device.
Platform Hierarchy	Enabled Disabled	Enables or disables Platform Hierarchy.
Storage Hierarchy	Enabled Disabled	Enables or disables Storage Hierarchy.
Endorsement Hierarchy	Enabled Disabled	Enables or disables Endorsement Hierarchy.
TPM2.0 UEFI Spec Version	TCG_1_2 TCG_2	Select the TCG2 Spec Version, TCG_1_2: The Compatible mode for Win8/Win10 TCG_2: Supports new TCG2 protocol and event format for Win10 or later.
Physical Presence Spec Version	1.2 1.3	Select to tell OS to support PPI Spec Version 1.2 or 1.3. NOTE: Some HCK tests might not support 1.3.
Device Select	TPM 1.2 TPM 2.0 Auto	TPM 1.2 will restrict support to TPM 1.2 devices; while 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.

F81966 Super IO Configuration

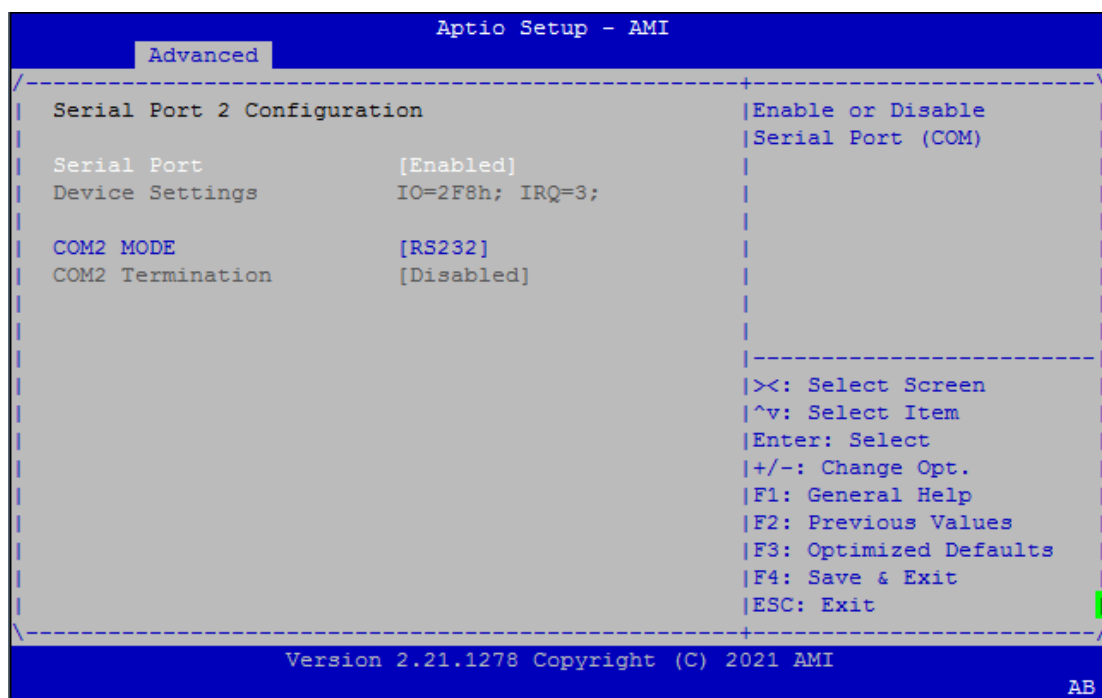


Serial Port 1 Configuration



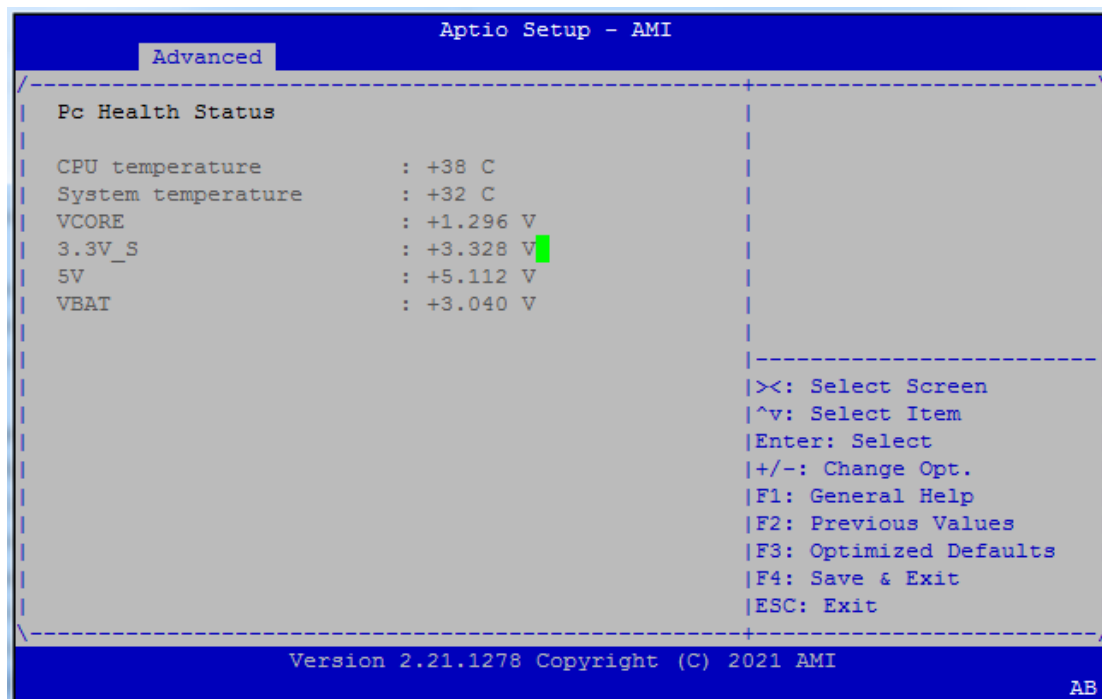
Feature	Options	Description
Serial Port	Enabled Disabled	Enables or Disables Serial Port (COM)
Device Settings	NA	IO=3F8h; IRQ = 4
COM1 MODE	Loopback RS232 RS485 Half Duplex RS485/422 Full Duplex	Select Com Mode as RS232/RS485
COM1 Termination	Enabled Disabled	COM RS-422/485 Receiver Termination

Serial Port 2 Configuration



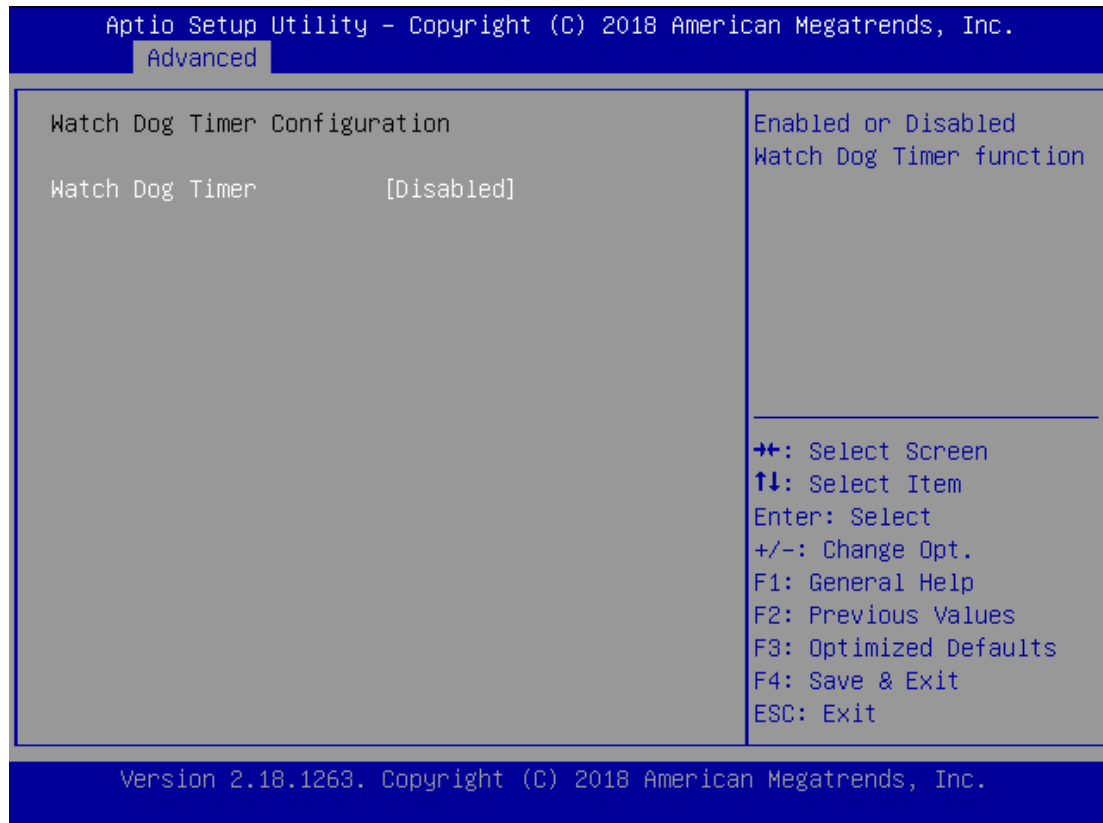
Feature	Options	Description
Serial Port	Enabled Disabled	Enables or Disables Serial Port (COM)
Device Settings	NA	IO=2F8h; IRQ = 3
COM1 MODE	Loopback RS232 RS485 Half Duplex RS485/422 Full Duplex	Select Com Mode as RS232/RS485
COM1 Termination	Enabled Disabled	COM RS-422/485 Receiver Termination

Hardware Monitor



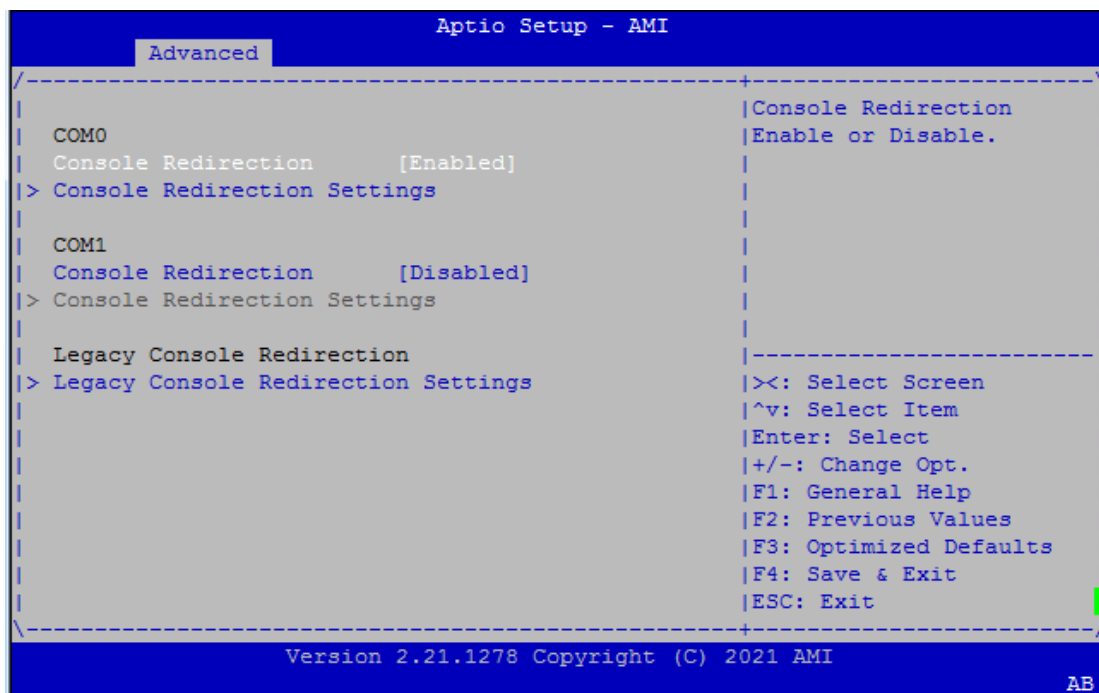
Feature	Description
CPU temperature	This value reports the CPU temperature.
System temperature	This value reports the System temperature.
VCORE	This value reports the CPU VCORE.
3.3V_S	This value reports the 3.3V_S Input voltage.
5V	This value reports the 5V Input voltage.
VBAT	This value reports the VBAT Input voltage.

Watch Dog Timer Configuration



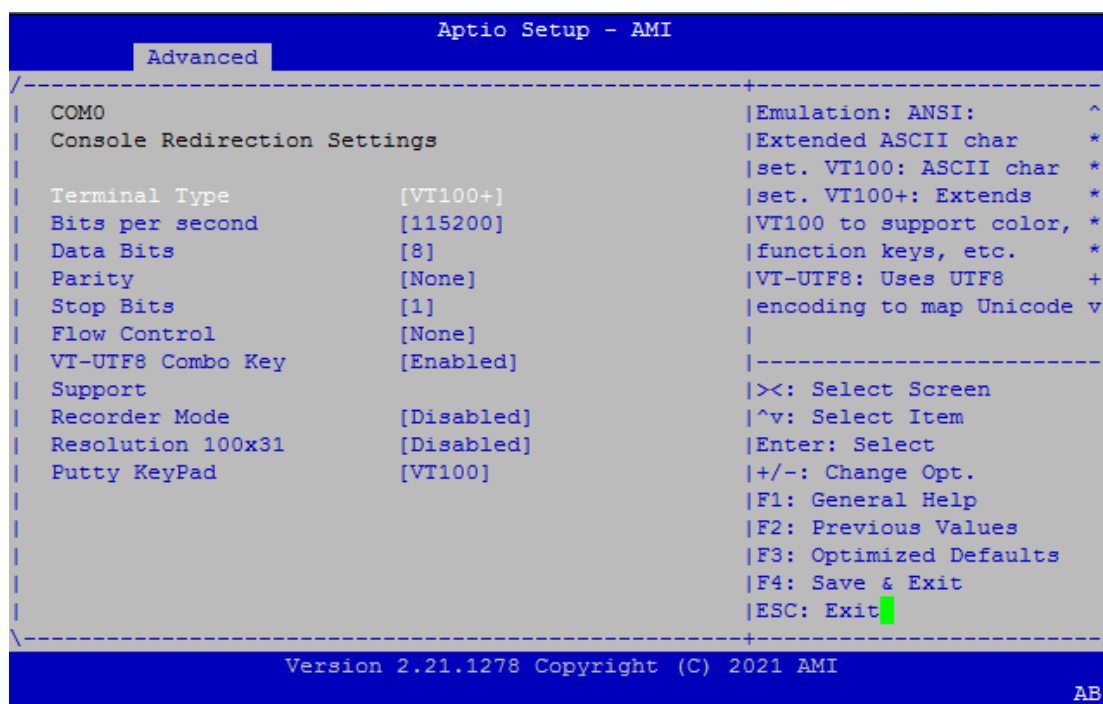
Feature	Options	Description
Watch Dog Timer	Enabled Disabled	Enable or Disable Watch Dog function

Serial Port Console Redirection



Feature	Options	Description
COM0 Console Redirection	Enabled Disabled	Enables or disables Console Redirection
COM1 Console Redirection	Enabled Disabled	Enables or disables Console Redirection

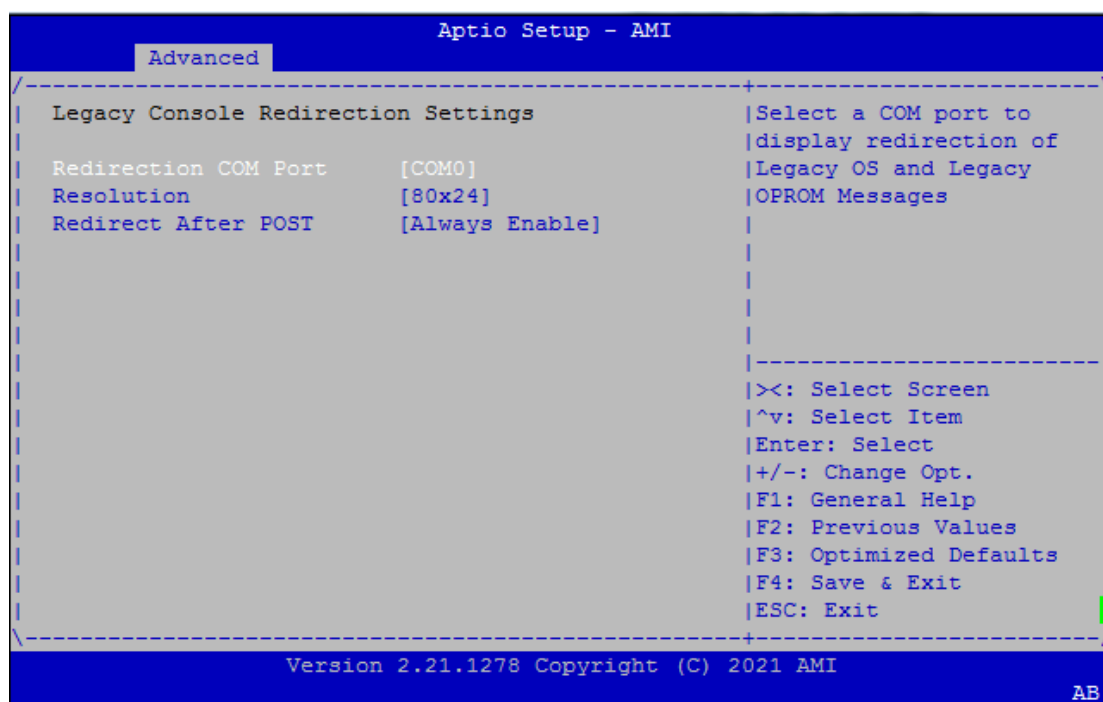
Console Redirection Settings



Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	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.

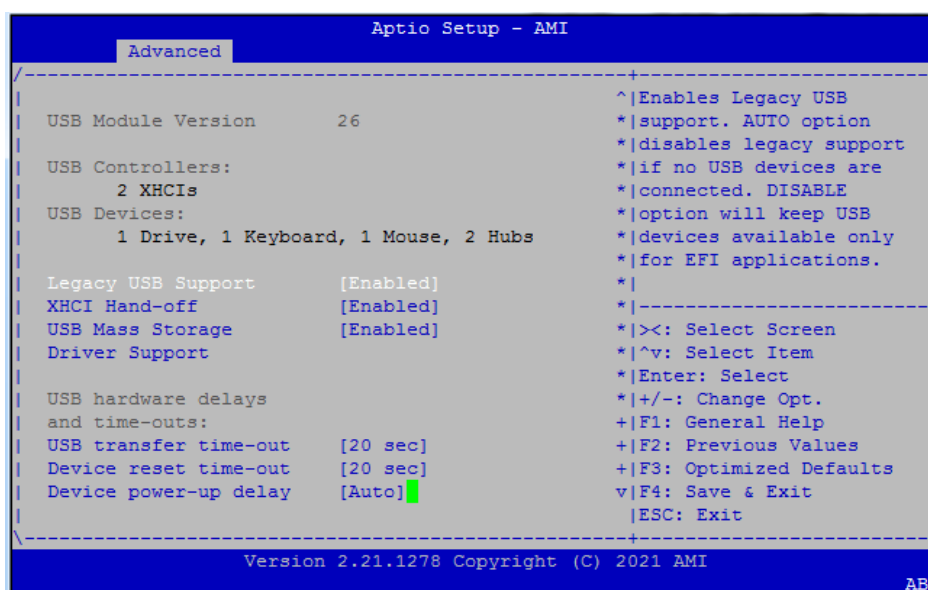
VT-UTF8 Combo Key Support	Disabled Enabled	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	Disabled Enabled	Enables or disables extended terminal resolution.
Putty KeyPad	VT100 LINUX XTERM86 SCO ESCN VT400	Select FunctionKey and KeyPad on Putty.

Legacy Console Redirection Setting



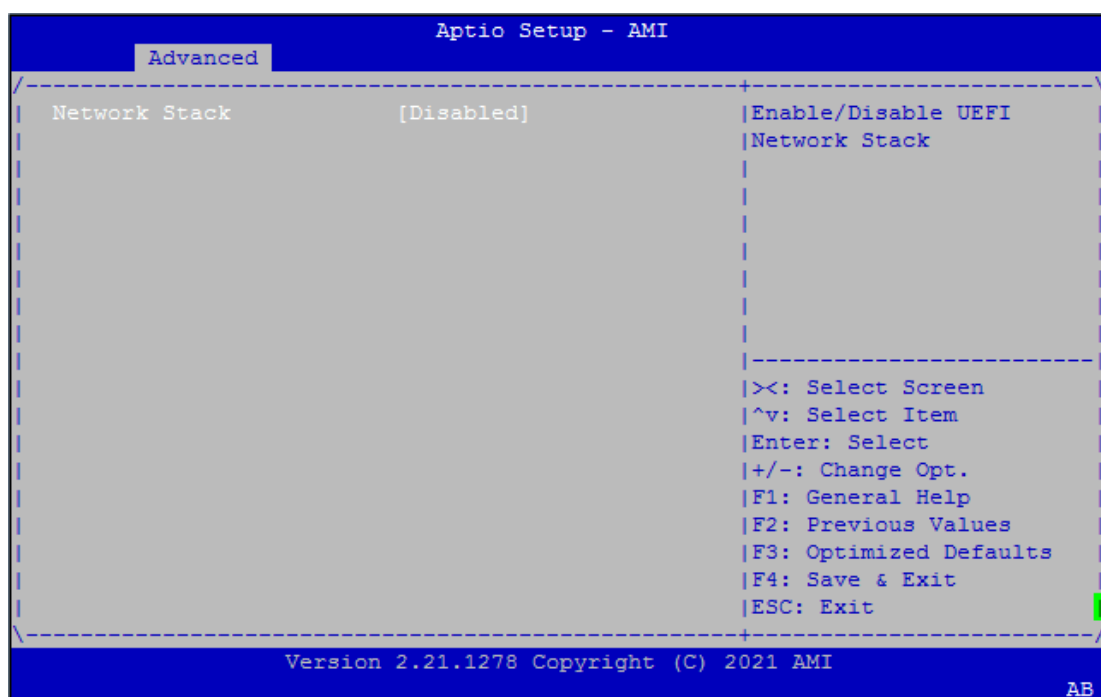
Feature	Options	Description
Redirection COM Port	COM0 COM1	Select a COM port to display redirection of Legacy OS and Legacy OPRM Messages
Resolution	80x24 80x25	On Legacy OS, the Number of Rows and Columns supported redirection.
Redirection After POST	Always Enable BootLoader	When Bootloader is selected, 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.

USB Configuration



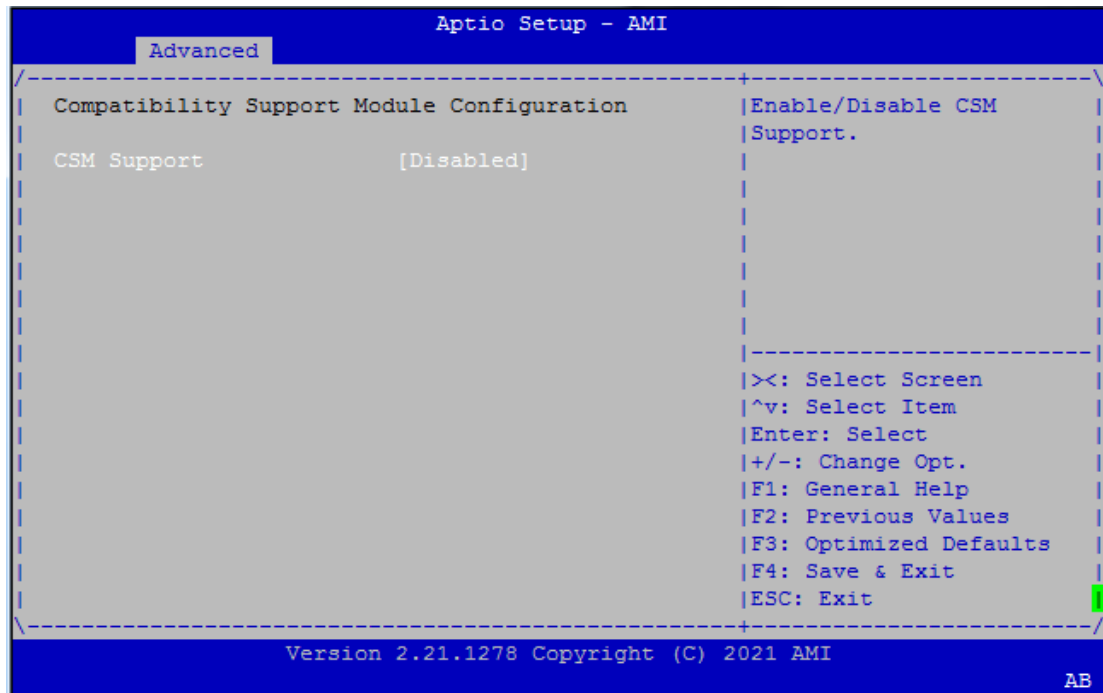
Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. Auto option disables legacy support if no USB devices are connected; Disabled option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled Disabled	This is a workaround for OSES without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enabled Disabled	Enables or disables 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	1 sec 5 sec 10 sec 20 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



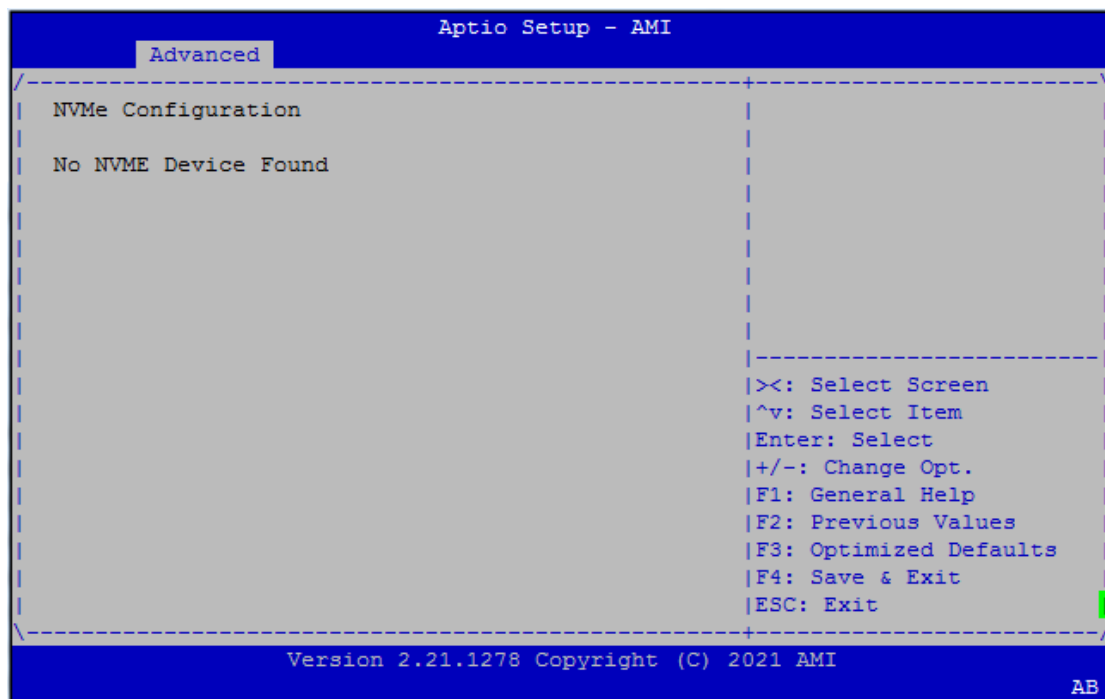
Feature	Options	Description
Network Stack	Disabled Enable	Enable/Disable UEFI Network Stack
IPv4 PXE Support	Disabled Enable	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
IPv4 HTTP Support	Disabled Enable	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
IPv6 PXE Support	Disabled Enable	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
IPv6 HTTP Support	Disabled Enable	Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.

CSM Configuration



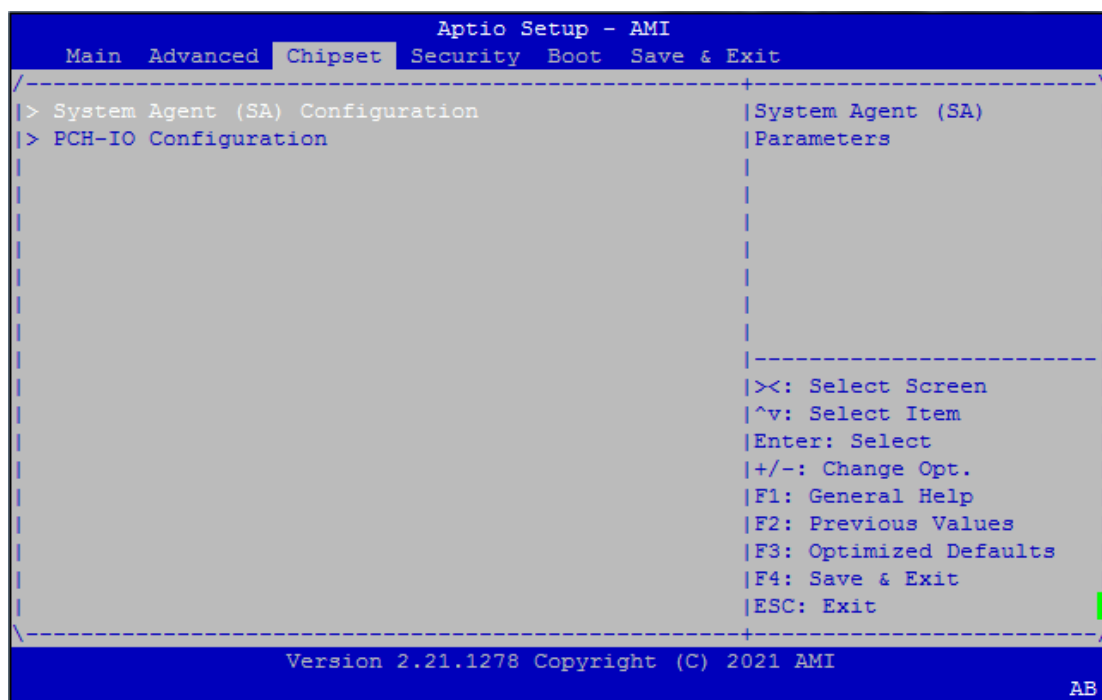
Feature	Options	Description
CSM Support	Disabled Enabled	Enables or disables CSM Support
Boot option filter	UEFI and Legacy Legacy only UEFI only	This option controls Legacy/UEFI ROMs priority
Network	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy PXE OpROM
Storage	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy Storage OpROM
Video	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy Video OpROM
Other PCI device	Do Not Launch UEFI Legacy	Determines OpROM execution policy for devices other than Network, Storage, or Video

NVMe Configuration

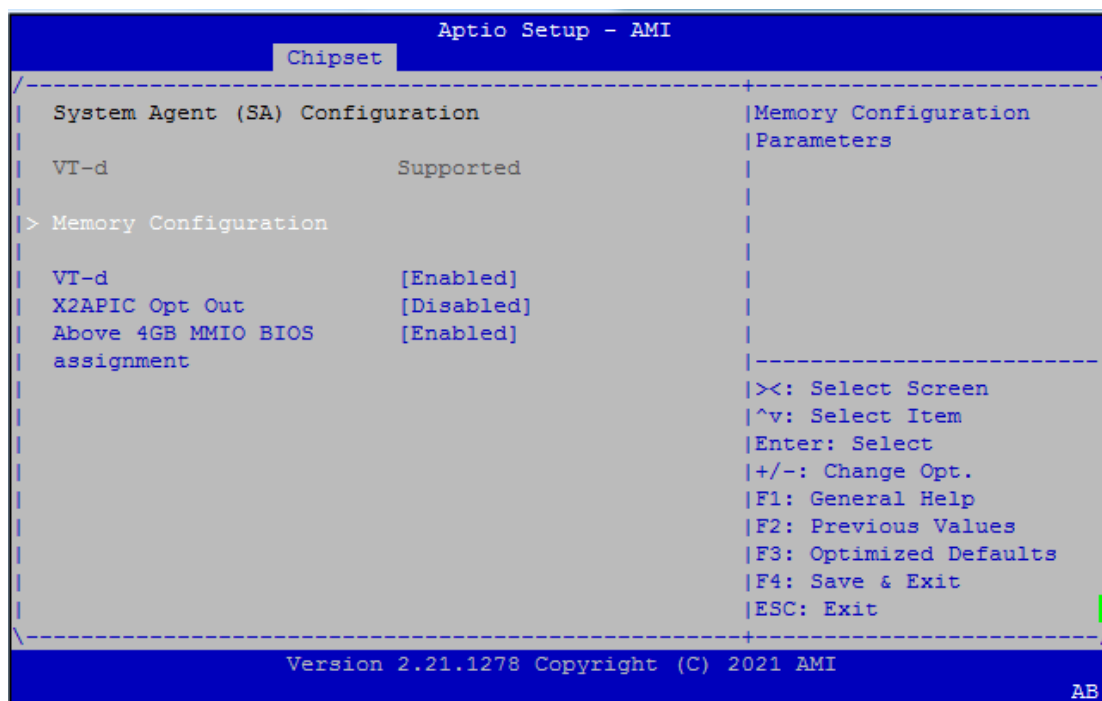


Chipset

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

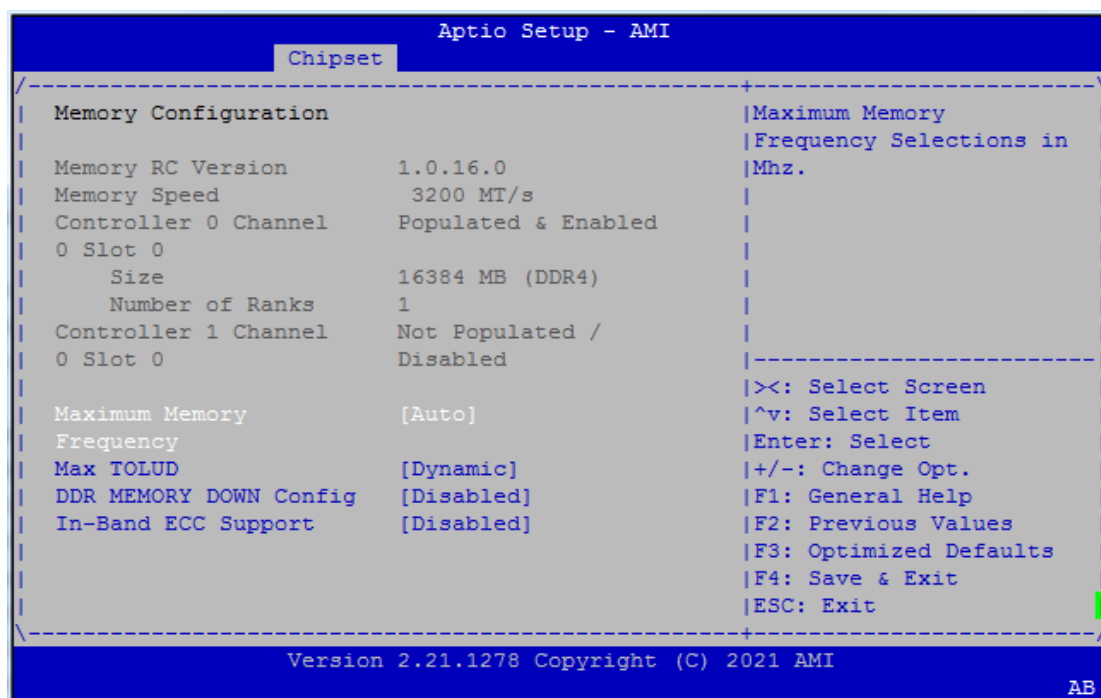


System Agent (SA) Configuration



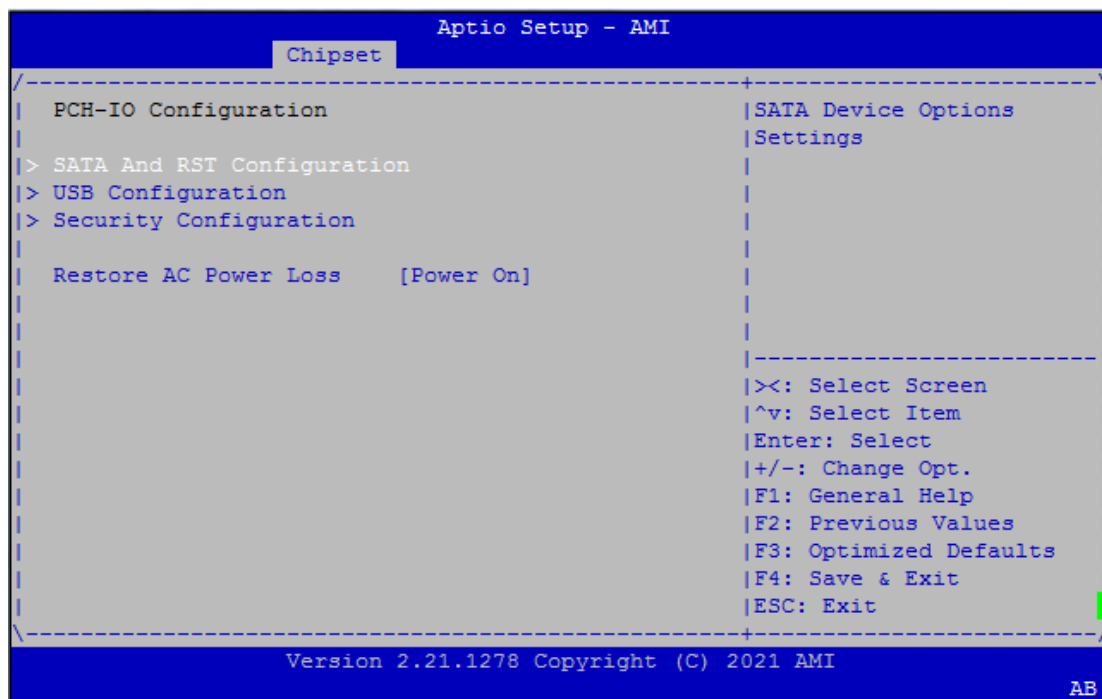
Feature	Options	Description
VT-d	Enabled Disabled	VT-d capability
X2APIC Opt Out	Enabled Disabled	Enable/Disable X2APIC_OPT_OUT bit
Above 4GB MMIO BIOS assignment	Enabled Disabled	Enable/Disable above 4GB MemoryMappedIO BIOS assignment This is disabled automatically when Aperture Size is set to 2048MB

Memory Configuration



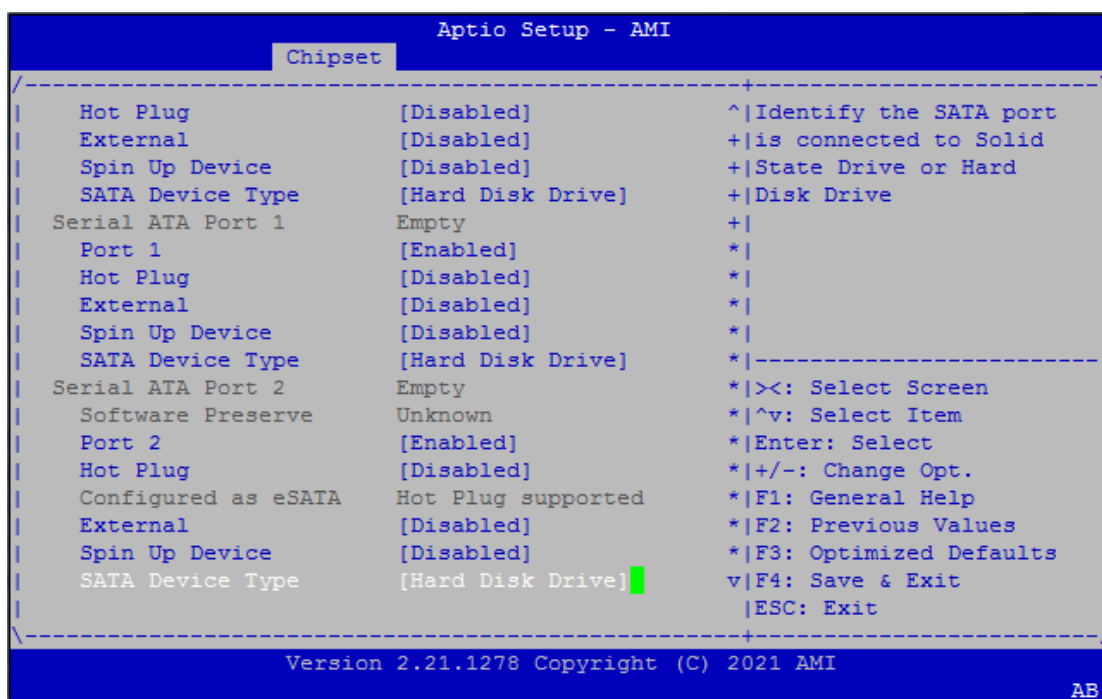
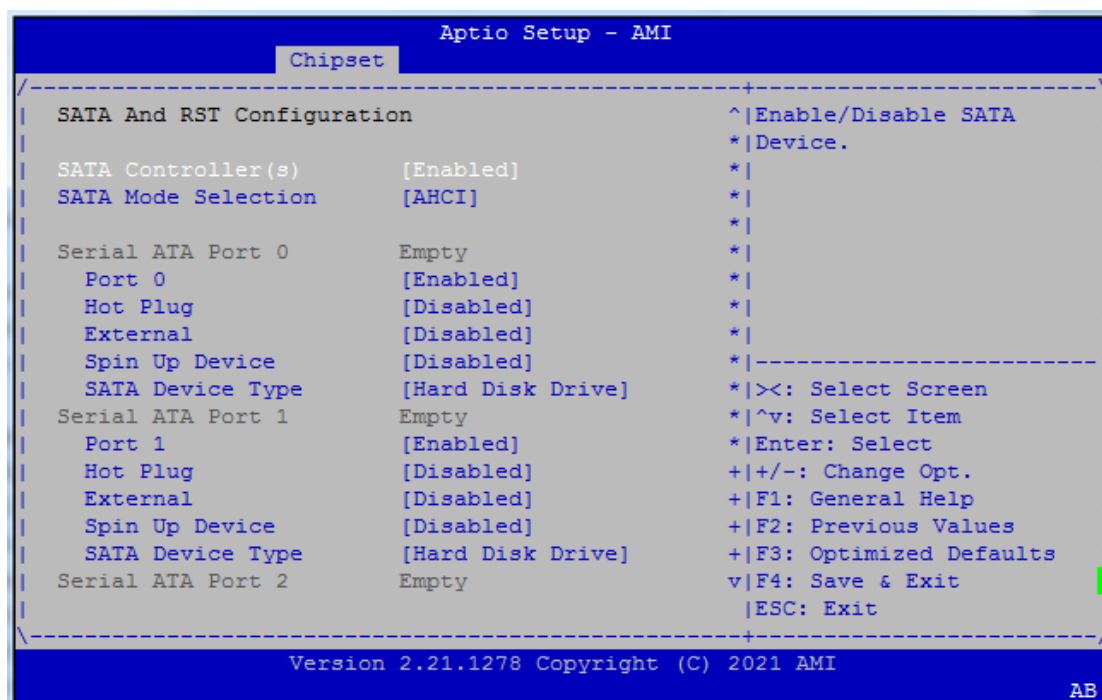
Feature	Options	Description
Maximum Memory Frequency	Auto	Maximum Memory Frequency Selections in Mhz.
Max TOLUD	Dynamic	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller
DDR MEMORY DOWN Config	Enabled Disabled	DDR MEMORY DOWN Config Support
In-Band ECC Support	Enabled Disabled	Enable/Disable In-Band ECC. Either the IBECC or the TME can be enabled.

South Bridge



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

SATA and RST Configuration

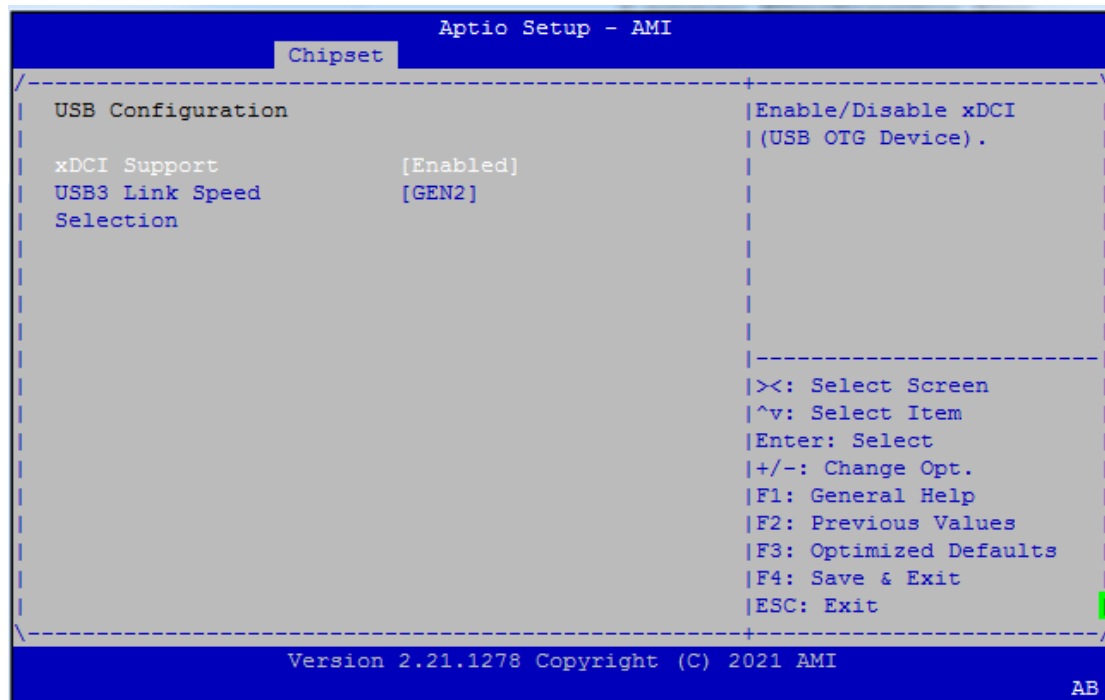


Feature	Options	Description
SATA Controller(s)	Enabled Disabled	Enable/Disable SATA Device.
SATA Mode Selection	AHCI Intel RST	Determines how SATA controller(s) operate.
Port 0	Enabled Disabled	Enable or Disable SATA Port

Hot Plug	Enabled Disabled	Designates this port as Hot Pluggable.
External	Enabled Disabled	Marks this port as external.
Spin Up Device	Enabled Disabled	If enabled for any of ports Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
SATA Port 0 DevSlp	Enabled Disabled	Enable/Disable SATA Port 0 DevSlp. For DevSlp to work, both hard drive and SATA port need to support DevSlp function, otherwise an unexpected behavior might happen. Please check board design before enabling it.
Port 1	Enabled Disabled	Enable or Disable SATA Port
Hot Plug	Enabled Disabled	Designates this port as Hot Pluggable.
External	Enabled Disabled	Marks this port as external.
Spin Up Device	Enabled Disabled	If enabled for any of ports Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
SATA Port 1 DevSlp	Enabled Disabled	Enable/Disable SATA Port 0 DevSlp. For DevSlp to work, both hard drive and SATA port need to support DevSlp function, otherwise an unexpected behavior might happen. Please check board design before enabling it.
Port 2	Enabled Disabled	Enable or Disable SATA Port
Hot Plug	Enabled Disabled	Designates this port as Hot Pluggable.
External	Enabled Disabled	Marks this port as external.

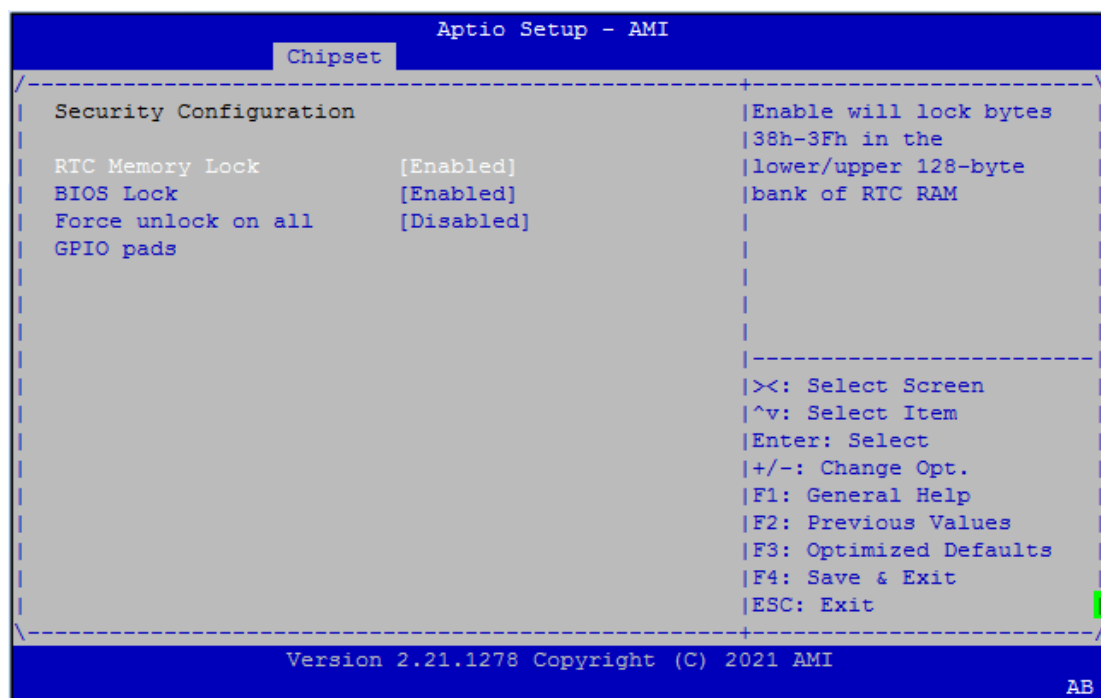
Spin Up Device	Enabled Disabled	If enabled for any of ports Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
SATA Port 2 DevSlp	Enabled Disabled	Enable/Disable SATA Port 2 DevSlp. For DevSlp to work, both hard drive and SATA port need to support DevSlp function, otherwise an unexpected behavior might happen. Please check board design before enabling it.

USB Configuration



Feature	Options	Description
xDCI Support	Enable Disable	Enable/Disable xDCI (USB OTG Device).
USB3 Link Speed Selection	GEN1 GEN2	This option is to select USB3 Link Speed GEN1 or GEN2

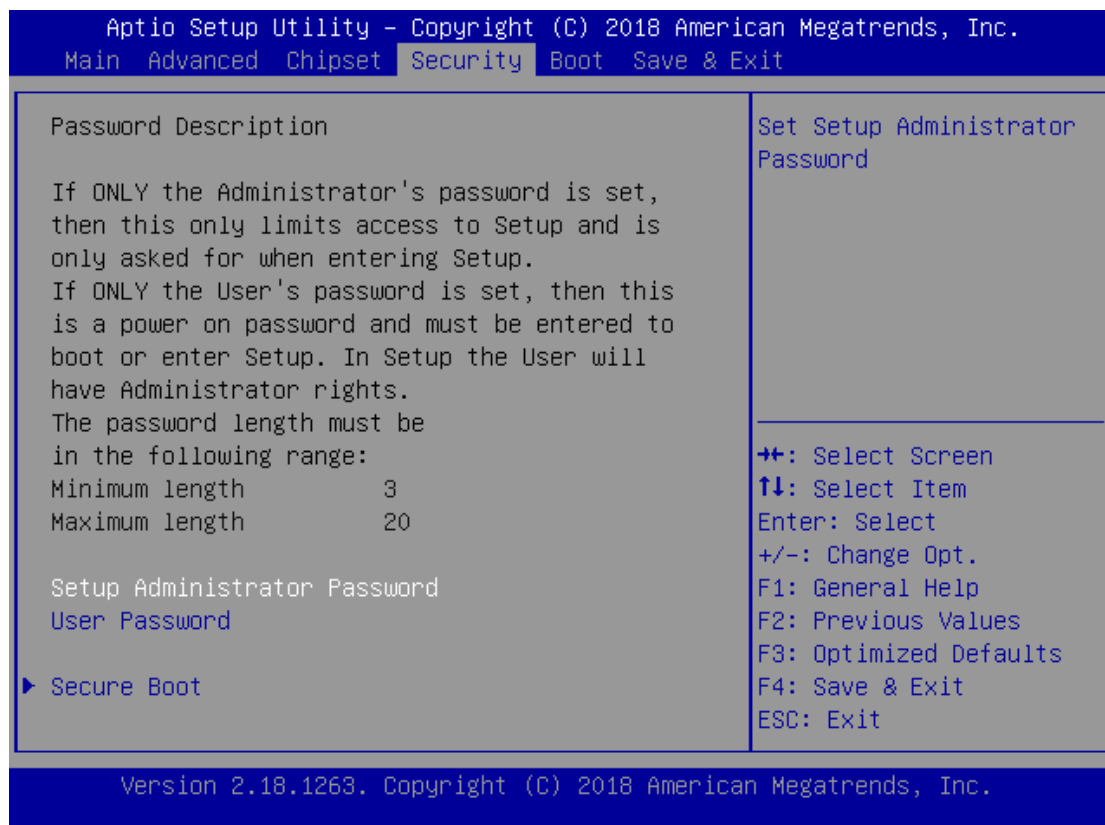
Security Configuration



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

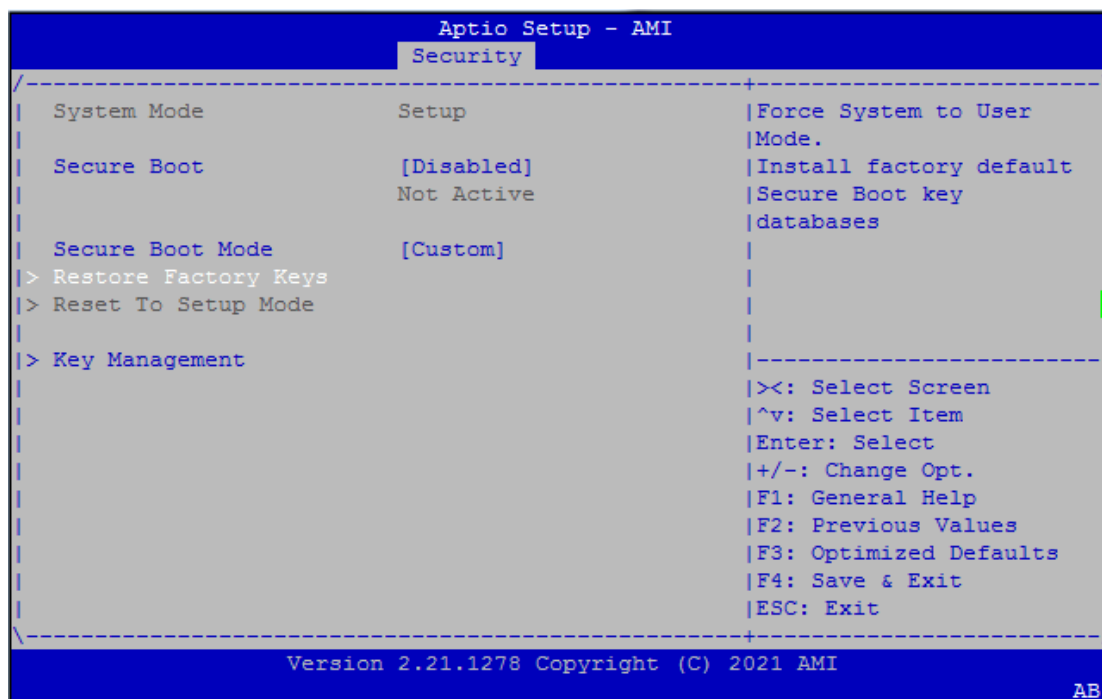
Security

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



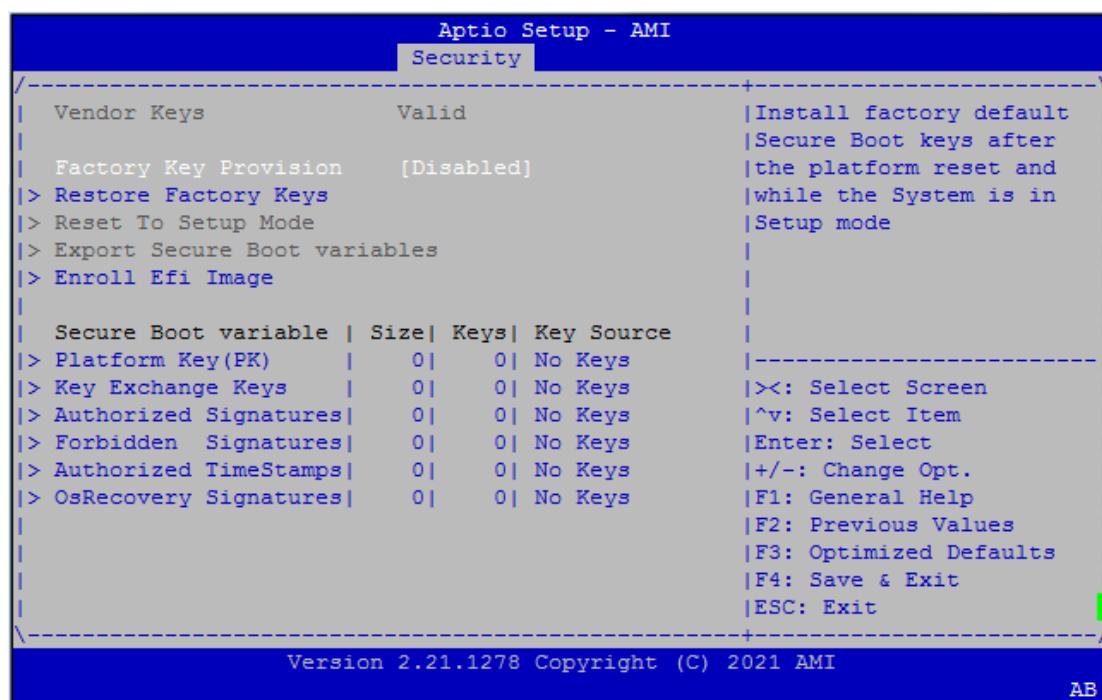
Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the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

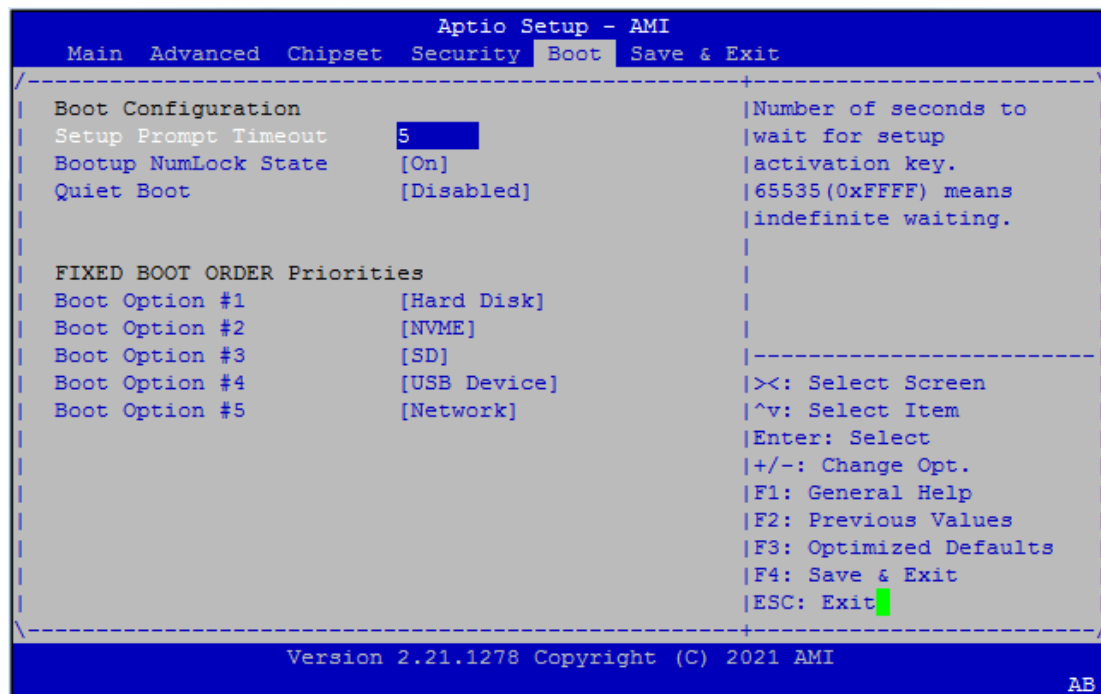
Key Management



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 Menu

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

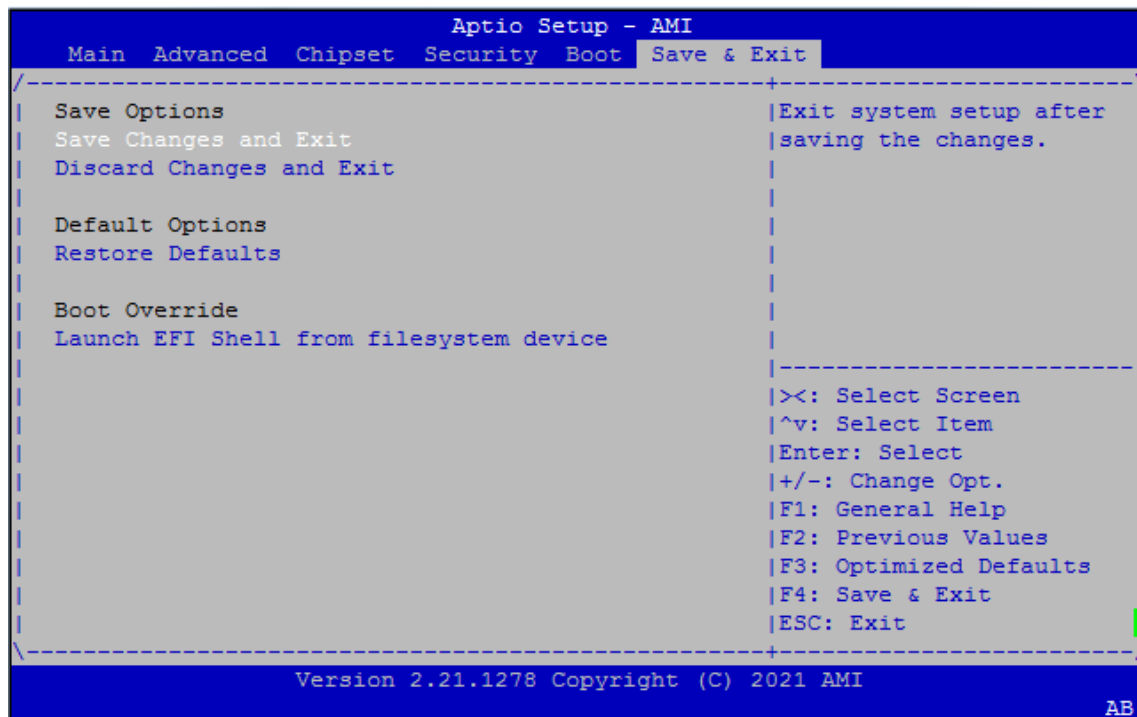


Feature	Options	Description
Setup Prompt Timeout	5	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.

- Choose boot priority from boot option group.
- Choose specifies boot device priority sequence from available Group device.

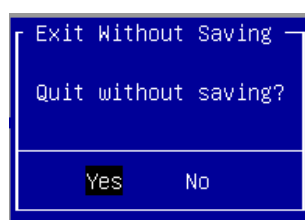
Save and Exit Menu

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



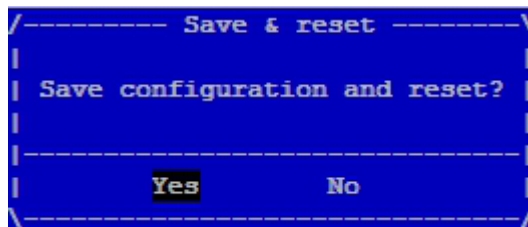
■ Discard Changes and Exit

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.



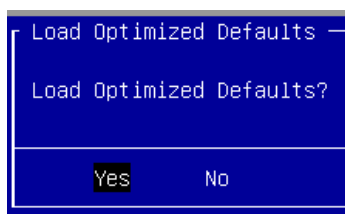
■ Save Changes and Reset

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, it would depend on the devices connected on the system.

APPENDIX A: 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: ☐ 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	08: Keyboard Controller Fail	14: LPT Port	20: Buzzer
R.M.A.	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

Confirmed By Supplier

Authorized Signature / Date

Authorized Signature / Date