

Industrial Communication Platforms

Energy Management and Industrial Cyber Security Solutions

ICS-P570 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

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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 to meet FCC emission limits and 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 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 an extremely high temperature surrounding environment can result in an explosion or the leakage of flammable liquid or gas.
- ▶ A battery subjected to extremely low air pressure that 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 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 (T_{ma}) 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.



Electrical Safety Instructions

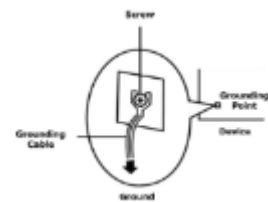
Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect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

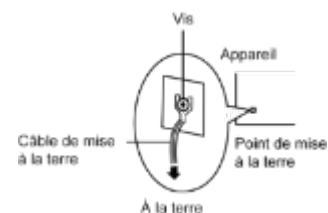
Grounding Procedure for Power Source

- ▶ 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



Important

The power input terminal block is suitable for 12-24 AWG, with a torque value of 7 Lb In. and should be used with copper conductors only.

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CHAPTER 1: PRODUCT OVERVIEW

Lanner's ICS-P570 is designed to protect communication in both IT and OT domains. Powered by the AMD® Ryzen V1404I CPU for enhanced IoT platform and high processing performance, the next-generation industrial cybersecurity gateway ICS-P570 series possesses several key hardware features, including advanced LAN bypass technology, hardware security TPM 2.0 onboard, and wireless connectivity option.

Package Content

Your package contains the following items:

- ▶ 1x ICS-P570 Network Security Platform
- ▶ 1x Console Cable
- ▶ 1x mSATA kit w/ thermal pad, screws, sink
- ▶ 1x 6-Pin Terminal Block Connector (for power input)
- ▶ 1x Wallmount Kit

NOTE: The power input terminal block is suitable for 12-24 AWG, with a torque value of 7 Lb In. and should be used with copper conductors only.

Ordering Information

SKU No.	Main Features
ICS-P570A	AMD V1404I support 2x DRAM channels + 6x GbE RJ45 with 1 pair bypass, 1x M.2 for SATA Storage, 1x M.2 for LTE, 1x USB 3.0, 2x DI & 2xDO via one 4x2(8P) terminal block, 1 x RJ45 Console, 1x internal SD card reader, 2x DC input via one 6P terminal block.
ICS-P570B	AMD V1404I support 2x DRAM channels + 4x GbE RJ45 with 1 pair bypass, 2x SFP ports, 1x M.2 for SATA Storage, 1x M.2 for LTE, 1x USB 3.0, 2x DI & 2xDO via one 4x2(8P) terminal block, 1x RJ45 Console, 1x internal SD card reader, 2x DC input via one 6P terminal block.

Optional Accessories

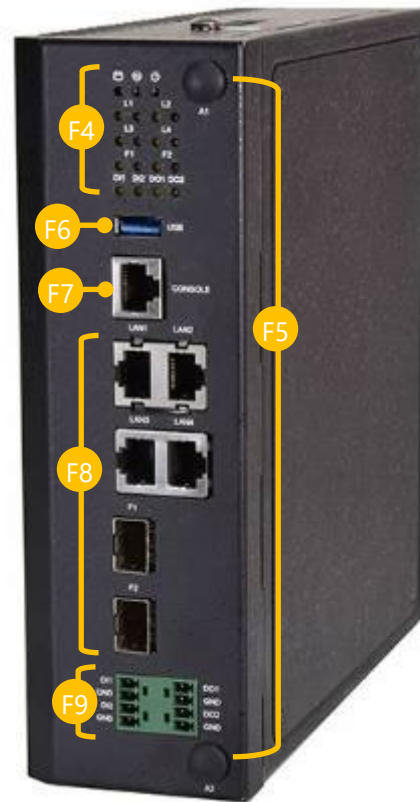
Model No.	Description
LTE Kit	LTE Module Kit w/ thermal pad, screws, internal antenna cables, external antennas

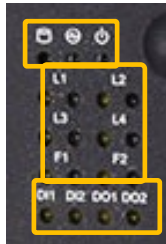
System Specifications

Processor System	Processor Options	AMD Ryzen V140I
	Frequency	Max: 3.6GHz, Base: 2GHz
	Core Number	4 Cores
	Chipset	SoC
	BIOS	AMI SPI Flash BIOS
Memory	Technology	ECC & Non-ECC DDR4 2400MHz
	Max. Capacity	32GB
	Socket	2x 260-pin SODIMM
Ethernet	Controller	Intel® i210-IT / i210IS
	Speed	RJ45: 100M/1G/2.5Gbps; SFP: 1 Gbps
	Interface	6x GbE RJ45 or 4x GbE RJ45; 2x GbE SFP
	Bypass	1 Pair LAN Bypass by RJ45 (LAN1, LAN2)
Storage	Type	1x M.2 2242 M-Key for SATA; 1x Micro SD Reader
I/O Interface	Serial Port	1x RJ45 Console Port
	DIO Input	2x Isolated DIO
	USB Port	1x USB 3.0 Port
	Power-On/ Reset Button	1x Reset Button
	LED Indicator	Power/Status/HDD Status; 2x LEDs per LAN ports (total 12 LEDs); 1x LED DI/DO (total 4 LEDs)
Expansion Interface	M.2	1x M.2 3042 B-Key for LTE with dual Nano-SIM
Miscellaneous	Watchdog	Watchdog timer 256 level time interval system reset, software programmable
	TPM	Onboard TPM 2.0
Graphics	Controller	Vega 8 Graphics
	HDMI	1x Internal HDMI Pin-header
Mechanical	System Dimension (WxDxH)	65 x 196 x 201mm
	Package Dimension (WxDxH)	360 x 167 x 267mm
	System Weight	2.5 kg
	Package Weight	3.3 kg
	Fan-less	Yes
	Construction	Aluminum + SGCC
Environmental	Mounting	DIN Rail Mount, Wall Mount (Optional)
	Operating Temperature	-40°C ~ 70°C
	Storage Temperature	-40°C ~ 85°C
	Relative Humidity	5% ~ 95%, Non-Condensing
Power	Power Supply Voltage	Dual +12 ~ 48 VDC
	Connector	Phoenix Contact 6-pin Connector with Lock
Driver Support	Linux	Linux Kernel 2.6X or later
Certification	EMC	CE/FCC Class A, UL (IEC-62368)
	Others	IEC 61850-3, IEEE 1613

Physical Overview

Top & Front Panel



No.	Description	
F1	Reset Button	Use a pin to reset the system
F2	Grounding Point	For a proper cable to connect the ground
F3	Power Input	1x 6-pin Terminal Block for dual DC input 12~48V
F4	LED Indicators	 Power/Status/HDD Status (3 LEDs) LAN Ports (12 LEDs) DI/DO (4 LEDs)
F5	Antenna	2x Antennas
F6	USB Port	1x USB 3.0 Port
F7	Console Port	1x RJ45 Console Port
F8	LAN/SFP Port	SKU A: 6x GbE RJ45 Ports SKU B: 4x GbE RJ45 Ports & 2x SFP Ports
F9	DIO	4x2-pin Terminal block for 2x DI & 2x DO



Important

The power input terminal block is suitable for 12-24 AWG, with a torque value of 7 Lb In. and should be used with copper conductors only.

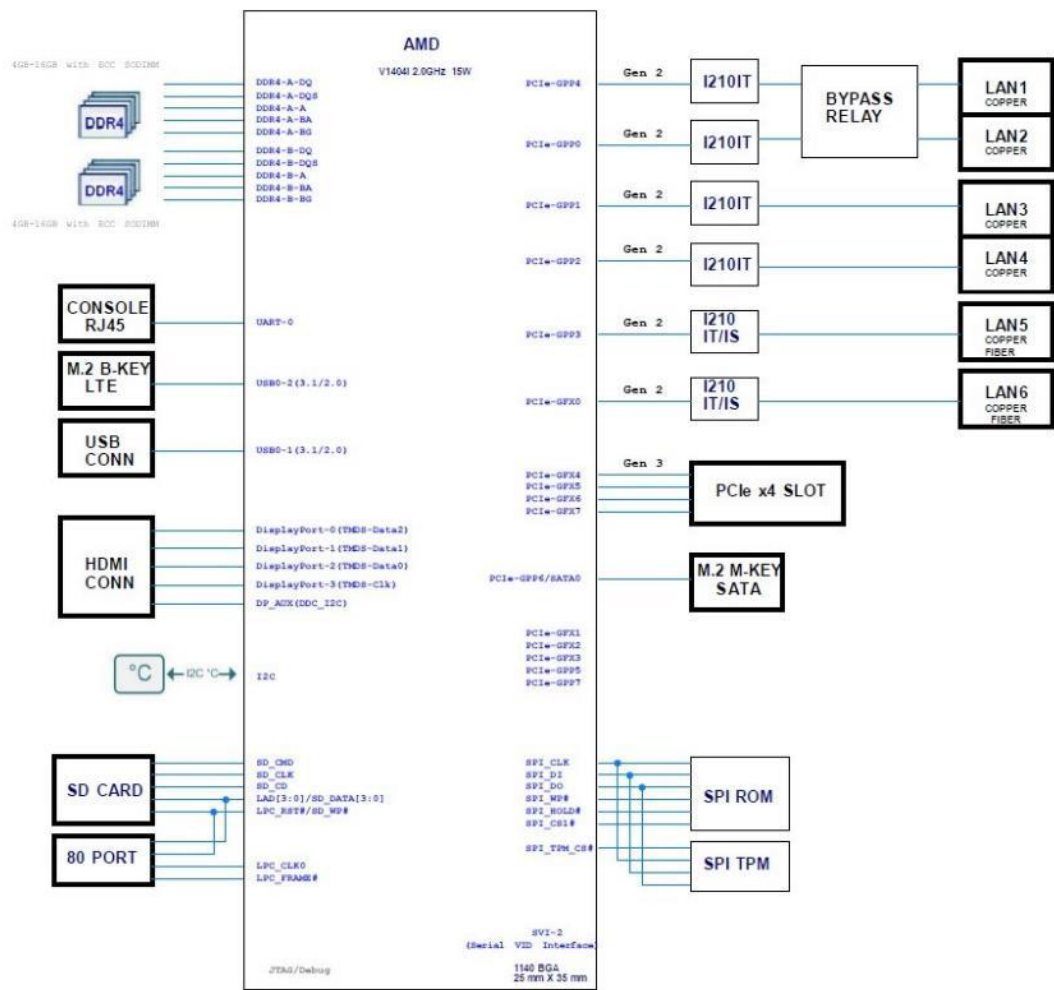
Bottom Panel



No.	Description	
B1	SD/SIM Cover	SD Card & Dual Nano-SIM Card Cover

Motherboard Information

Block Diagram



Use Case #	GFX [7:0]								GPP [7:0]								Physical lane	Logical lane
	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0		
	15	14	13	12	11	10	9	8	3	2	1	0	7	6	5	4		
46	x4				x4				2x SATA		x2	x1	x1	x1	x1	x1		

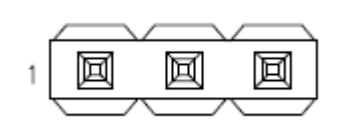
Internal Jumpers and Connector

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.

Jumper Setting

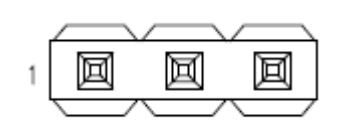
1. J10: LPC1114 Burn Select

Jumper	Description
1-2 (Default)	Normal
2-3	Burn Mode



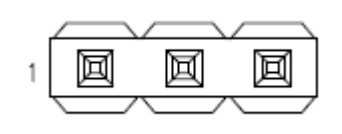
2. JCMOS1: Clear CMOS

Jumper	Description
1-2 (Default)	Normal
2-3	Clear CMOS RAM



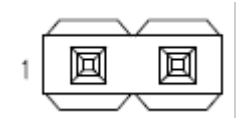
3. SEL1: Hardware / Software Select

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



4. PWR1: Power On / Off

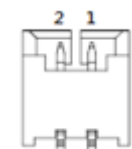
Jumper	Description
1-2	Power On/Off
2-3 (Default)	Normal



Connector Pin Assignment

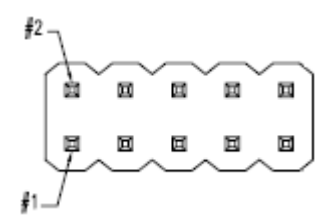
1. BAT1: Battery Connector

Pin No.	Description	Pin No.	Description
1	VDD_3.3V_BAT	2	GND



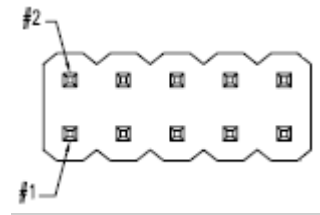
2. JSPI1: SPI ROM Pin Header

Pin No.	Description	Pin No.	Description
1	V1P8_A_SPI	2	GND
3	SPI0_CS_N	4	SPI0_CLK
5	SPI0_MISO	6	SPI0_MOSI
7	NC	8	SPI0_HOLD_#

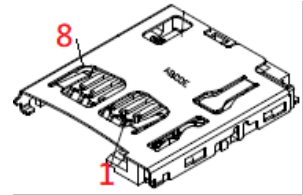


3. J80PORT1: LPC Pin Header

Pin No.	Description	Pin No.	Description
1	LPC_CLK0	2	LPC_LAD1
3	LPC_RST#	4	LPC_LAD0
5	LPC_FRAME#	6	P3V3
7	LPC_LAD3	8	NC
9	LPC_LAD2	10	GND

**4. SD1:** SD Card Connector

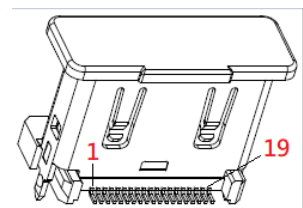
Pin No.	Description	Pin No.	Description
1	SDIO_DATA2	2	SDIO_DATA3
3	SDIO_CMD	4	+P3V3_SD
5	SDIO_CLK	6	GND
7	SDIO_DATA0	8	SDIO_DATA1

**5. PW1:** Power Input Connector

Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
1	GND	2	GND	7	+P12V_SB	8	+P12V_SB
3	GND	4	GND	9	+P12V_SB	10	+P12V_SB
5	GND	6	GND	11	+P12V_SB	12	+P12V_SB

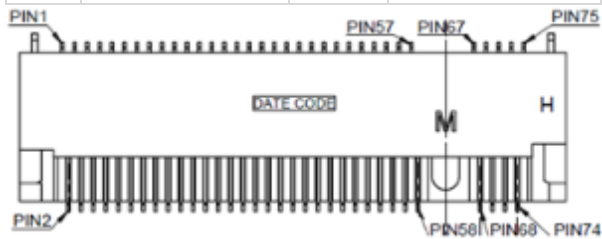
**6. HDMI1:** HDMI Display Connector

Pin No.	Description	Pin No.	Description
1	HDMI_DATA2_DP	11	GND
2	GND	12	HDMI_CLK_DN
3	HDMI_DATA2_DN	13	NC
4	HDMI_DATA1_DP	14	NC
5	GND	15	HDMI_DDC_SCL
6	HDMI_DATA1_DN	16	HDMI_DDC_SDA
7	HDMI_DATA0_DP	17	GND
8	GND	18	V5S_DS
9	HDMI_DATA0_DN	19	HDMI_CBL_HPD
10	HDMI_CLK_DP		



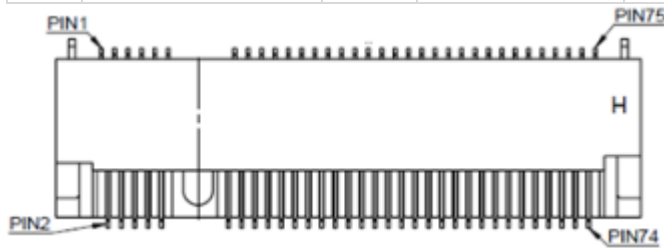
7. NGFF1: M.2 M-Key Connector

Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
1	GND	39	GND	2	+P3V3	40	M2_SCL
3	GND	41	SATA_RX0_P	4	+P3V3	42	M2_SDA
5	NC	43	SATA_RX0_N	6	NC	44	NC
7	NC	45	GND	8	NC	46	NC
9	GND	47	SATA_TX0_N	10	M2_ACT_LED_L	48	NC
11	NC	49	SATA_TX0_P	12	+P3V3	50	M2M_RST#
13	NC	51	GND	14	+P3V3	52	NC
15	GND	53	NC	16	+P3V3	54	PEWAKE#
17	NC	55	NC	18	+P3V3	56	NC
19	NC	57	GND	20	NC	58	NC
21	GND	59	Key	22	NC	60	Key
23	NC	61	Key	24	NC	62	Key
25	NC	63	Key	26	NC	64	Key
27	GND	65	Key	28	NC	66	Key
29	NC	67	NC	30	NC	68	NC
31	NC	69	M2_PEDT	32	NC	70	+P3V3
33	GND	71	GND	34	NC	72	+P3V3
35	NC	73	GND	36	NC	74	+P3V3
37	NC	75	GND	38	M2_SLP		

**8. NGFF2: M.2 B-Key Connector**

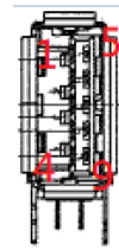
Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
1	NC	39	GND	2	+P3V3_S_M2	40	UIM2_DET
3	GND	41	NC	4	+P3V3_S_M2	42	UIM2_DAT
5	GND	43	NC	6	M2_PWROFF_N	44	UIM2_CLK
7	USB02_L_P	45	GND	8	M2_WDIS1_N	46	UIM2_RST
9	USB02_L_N	47	NC	10	M2_LED_N	48	UIM2_PWR
11	GND	49	NC	12	NC	50	NC
13	NC	51	GND	14	NC	52	NC
15	NC	53	NC	16	NC	54	NC
17	NC	55	NC	18	NC	56	NC

19	NC	57	GND	20	NC	58	NC
21	NC	59	NC	22	NC	60	NC
23	WAKE_ON_WAN#	61	NC	24	NC	62	NC
25	LTE_DPR	63	NC	26	M2_WDIS2_N	64	NC
27	GND	65	NC	28	NC	66	UIM1_DET
29	USB03_RX_N	67	M2B_RESET_N	30	UIM1_RST	68	NC
31	USB03_RX_P	69	NC	32	UIM1_CLK	70	+P3V3_S_M2
33	GND	71	GND	34	UIM1_DAT	72	+P3V3_S_M2
35	USB00_TX_N	73	GND	36	UIM1_PWR	74	+P3V3_S_M2
37	USB00_TX_P	75	NC	38	NC		



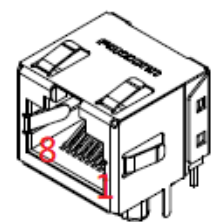
9. USB1: USB 3.0 Connector

Pin No.	Description	Pin No.	Description
1	+P5V_USB	5	USB3_SS_RX_DN
2	USB_P0_L_DN	6	USB3_SS_RX_DP
3	USB_P0_L_DP	7	GND
4	GND	8	USB3_SS_TX_DN
		9	USB3_SS_TX_DP



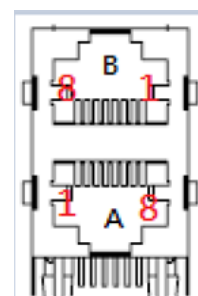
10. CONSOLE: Serial Port 1 RJ45

Pin No.	Description	Pin No.	Description
1	COM_CON_RTS	5	GND_ISO
2	NC	6	COM_CON_RXD
3	COM_CON_TXD	7	NC
4	GND_ISO	8	COM_CON_CTS



11. LAN1: LAN 1/2 Connector

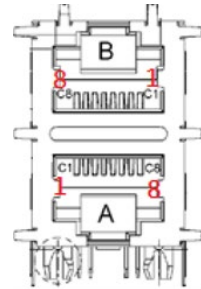
Pin No.	Description	Pin No.	Description
A1	RJ1_DXP0	B1	RJ2_DXP0
A2	RJ1_DNX0	B2	RJ2_DNX0
A3	RJ1_DXP1	B3	RJ2_DXP1
A4	RJ1_DXP2	B4	RJ2_DXP2
A5	RJ1_DNX2	B5	RJ2_DNX2
A6	RJ1_DNX1	B6	RJ2_DNX1



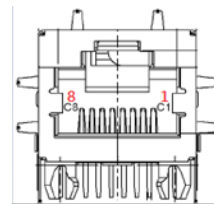
A7	RJ1_DXP3	B7	RJ2_DXP3
A8	RJ1_DXN3	B8	RJ2_DXN3

12. LAN2: LAN 3/4 Connector

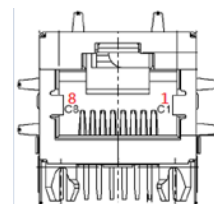
Pin No.	Description	Pin No.	Description
A1	LAN3_MDI0P	B1	LAN4_MDI0P
A2	LAN3_MDI0N	B2	LAN4_MDI0N
A3	LAN3_MDI1P	B3	LAN4_MDI1P
A4	LAN3_MDI1N	B4	LAN4_MDI1N
A5	LAN3_MDI2P	B5	LAN4_MDI2P
A6	LAN3_MDI2N	B6	LAN4_MDI2N
A7	LAN3_MDI3P	B7	LAN4_MDI3P
A8	LAN3_MDI3N	B8	LAN4_MDI3N
A9	NC	B9	NC
A10	GND	B10	GND

**13. LAN5:** LAN 5 Connector

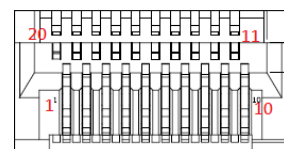
Pin No.	Description	Pin No.	Description
1	LAN5_MDI0P	6	CT
2	LAN5_MDI0N	7	LAN5_MDI2P
3	LAN5_MDI1P	8	LAN5_MDI2N
4	LAN5_MDI1N	9	LAN5_MDI3P
5	CT	10	LAN5_MDI3N

**14. LAN6:** LAN 6 Connector

Pin No.	Description	Pin No.	Description
1	LAN6_MDI0P	6	CT
2	LAN6_MDI0N	7	LAN6_MDI2P
3	LAN6_MDI1P	8	LAN6_MDI2N
4	LAN6_MDI1N	9	LAN6_MDI3P
5	CT	10	LAN6_MDI3N

**15. FIBER5:** LAN 5 Connector

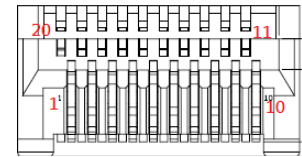
Pin No.	Description	Pin No.	Description
1	GND	11	GND
2	SFP5_TX_FAULT	12	SFP5_RD_N
3	SFP5_TX_DIS	13	SFP5_RD_P
4	SFP5_I2C_SDA	14	GND
5	SFP5_I2C_SCL	15	+P3V3_SFP5_R



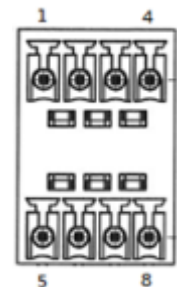
6	SFP5_MOD_ABS	16	+P3V3_SFP5_T
7	GND	17	GND
8	SFP5_RX_LOS	18	SFP5_TD_P
9	GND	19	SFP5_TD_N
10	GND	20	GND

16. FIBER6: LAN 6 Connector

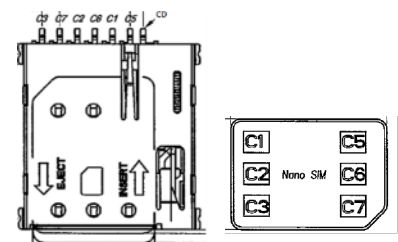
Pin No.	Description	Pin No.	Description
1	GND	11	GND
2	SFP6_TX_FAULT	12	SFP6_RD_N
3	SFP6_TX_DIS	13	SFP6_RD_P
4	SFP6_I2C_SDA	14	GND
5	SFP6_I2C_SCL	15	+P3V3_SFP6_R
6	SFP6_MOD_ABS	16	+P3V3_SFP6_T
7	GND	17	GND
8	SFP6_RX_LOS	18	SFP6_TD_P
9	GND	19	SFP6_TD_N
10	GND	20	GND

**17. DIO1:** Digital Input / Output Connector

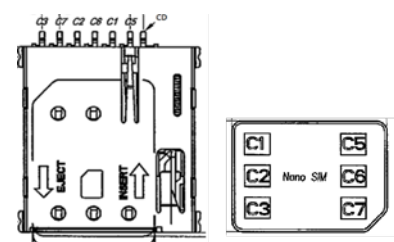
Pin No.	Description	Pin No.	Description
1	DO_1_T	5	DI_1_T
2	ISO_GND	6	ISO_GND
3	DO_2_T	7	DI_2_T
4	ISO_GND	8	ISO_GND

**18. SIM1:** Nano SIM Card Connector

Pin No.	Description	Pin No.	Description
C1	UIM1_PWR	C5	GND
C2	UIM1_RST	C6	NC
C3	UIM1_CLK	C7	UIM1_DAT
CD	UIM1_DET		

**19. SIM2:** Nano SIM Card Connector

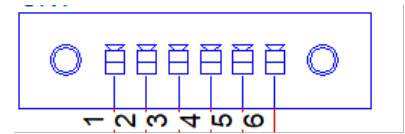
Pin No.	Description	Pin No.	Description
C1	UIM2_PWR	C5	GND
C2	UIM2_RST	C6	NC
C3	UIM2_CLK	C7	UIM2_DAT
CD	UIM2_DET		



Power Board Connector Pin Assignment

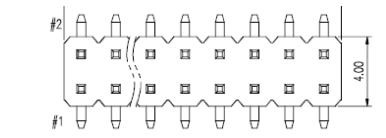
1. CN1: Power Connector

Pin No.	Description	Pin No.	Description
1	DC_PWR2	2	DC_PWR1
3	ALARM2	4	ALARM1
5	DC_PWR2	6	DC_PWR1



2. J1: Power Pin Header

Pin No.	Description	Pin No.	Description
1	GND	2	GND
3	GND	4	GND
5	GND	6	GND
7	+P12V_SB	8	+P12V_SB
9	+P12V_SB	10	+P12V_SB
11	+P12V_SB	12	+P12V_SB

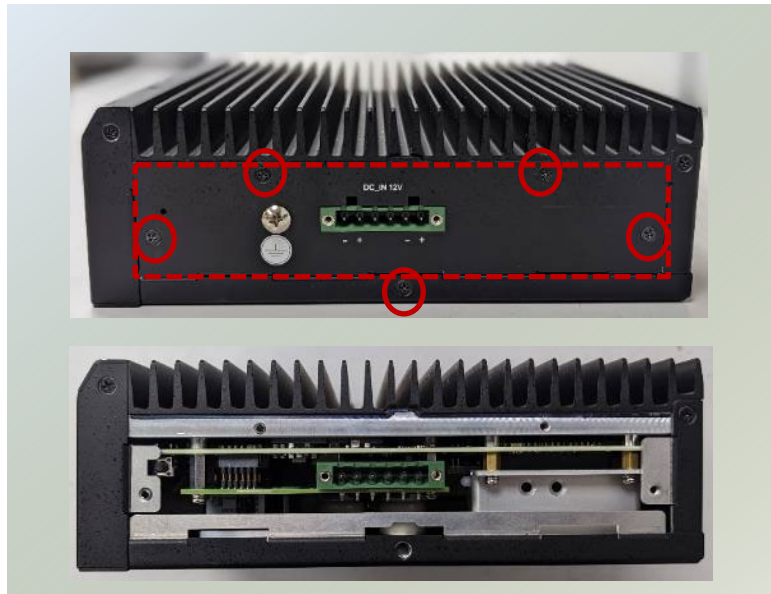


CHAPTER 2: HARDWARE INSTALLATION

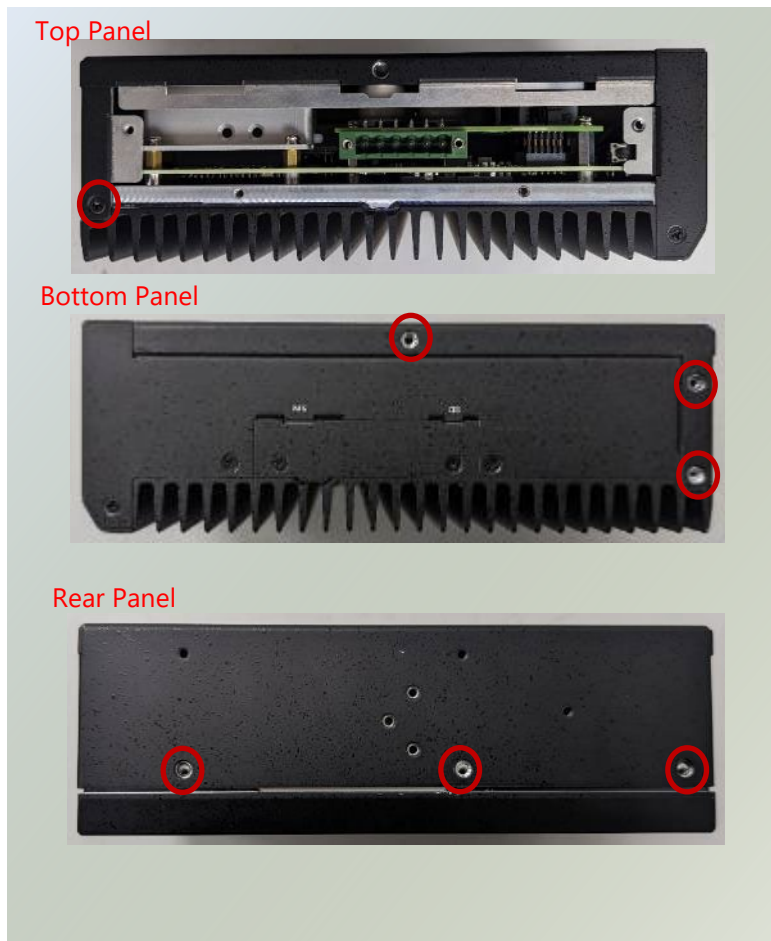
To reduce the risk of personal injury, electric shock, or damage to the system, please remove all power connections to shut down the device completely. Also, please wear ESD protection gloves when conducting the steps in this chapter.

Opening the Chassis

1. Power off the system and unplug the power cord.
2. Unscrew the five (5) screws on the system's top panel. Then remove the side metal partition.



3. Turn the system upside down. Unscrew the seven (7) screws on the system's rear and top/bottom panels.



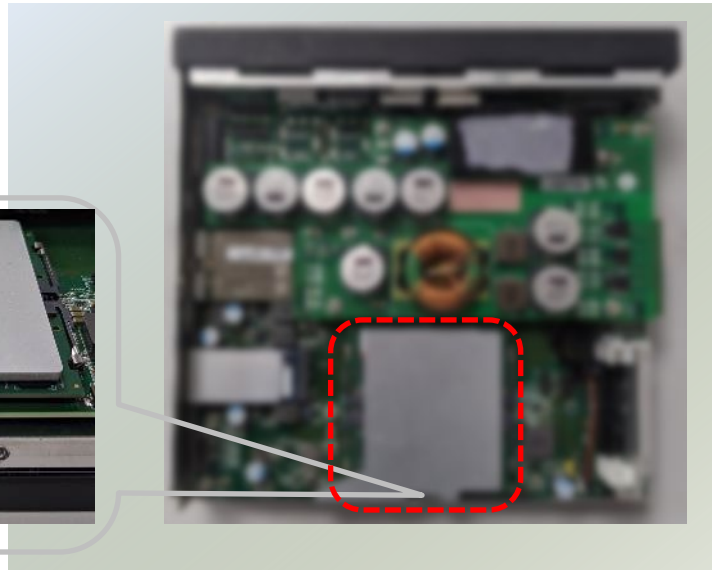
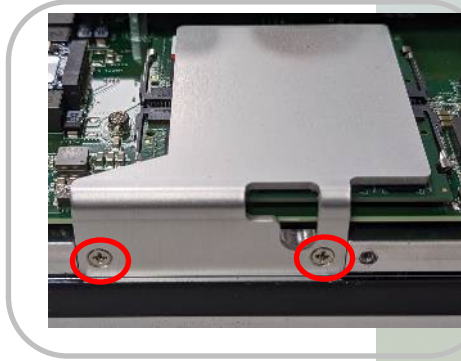
4. Lift the cover to remove.



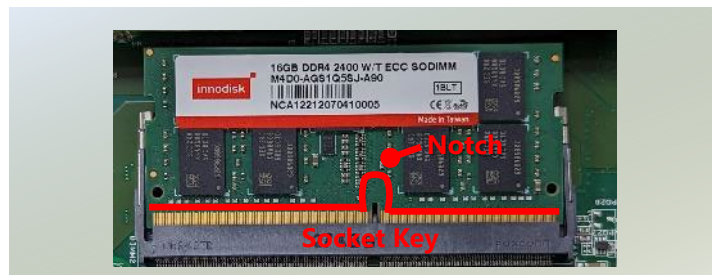
Installing the System Memory

The motherboard supports 2x DDR 2400MHz SODIMM for additional system memory. Please follow the procedures for installation.

1. Power off the system, turn the system around, and open the bottom chassis cover. Remove the metal partition by loosening the two (2) screws.



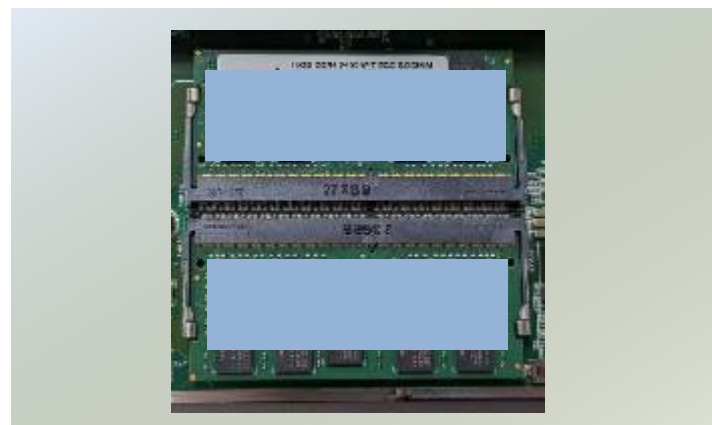
2. Locate the DIMM socket on the motherboard.
3. Align the notches of the DIMM module with the socket key in the pin slot.



4. Insert the module into the slot at a diagonal angle and press down until it is firmly seated by the clips on both sides.
5. Repeat the steps to insert a second DIMM module.



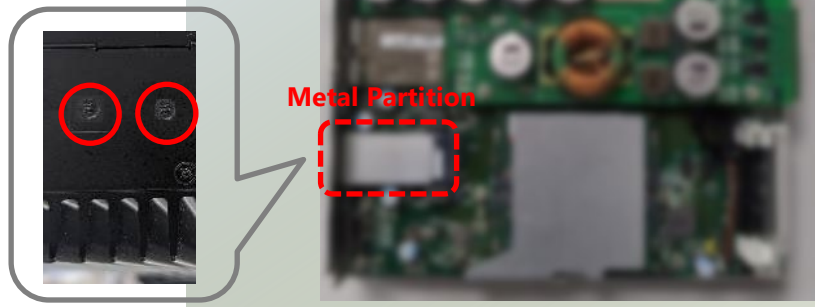
6. Next, thermal pad placement. Remove the protective film on the two (2) Thermal Pad (included in accessory pack), and gently place on the DIMM modules.
7. Then place the metal bracket back on top and secure with two (2) screws.



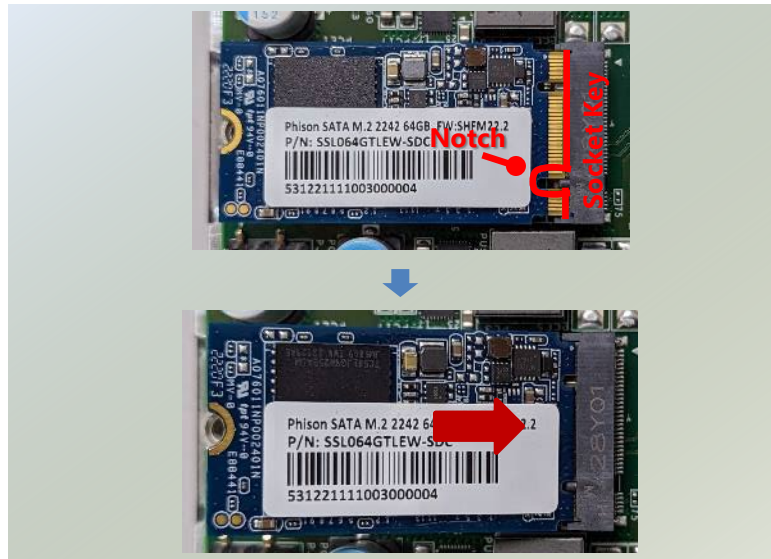
Installing the SATA Storage (Optional)

The motherboard supports one M.2 M-Key for SATA storage module expansion. Please follow the procedures for installation.

1. Power off the system and remove the bottom side chassis cover.
2. Unscrew the two (2) screws on the system's top panel, and remove the metal partition.



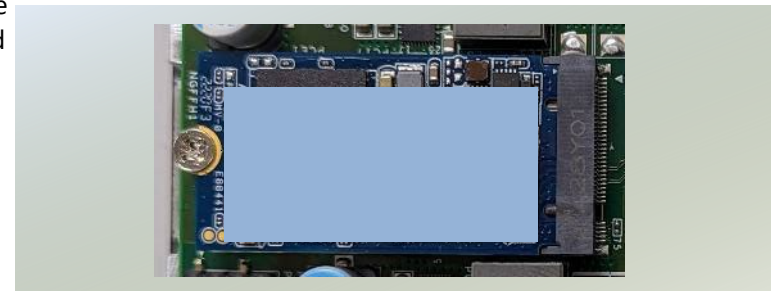
3. Align the notch of the SATA storage card with the socket key in the pin slot.
4. Insert the storage card pins at 30 degrees into the socket until it is fully seated.



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



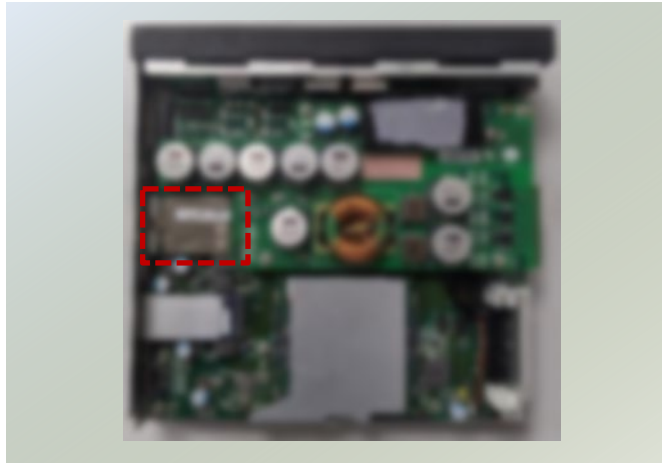
6. Next, thermal pad placement. Remove the protective film on the thermal pad (included in the accessory pack) and gently place on the module card.
7. Then place the metal partition over the thermal pad, and secure with two (2) screws on the right side.



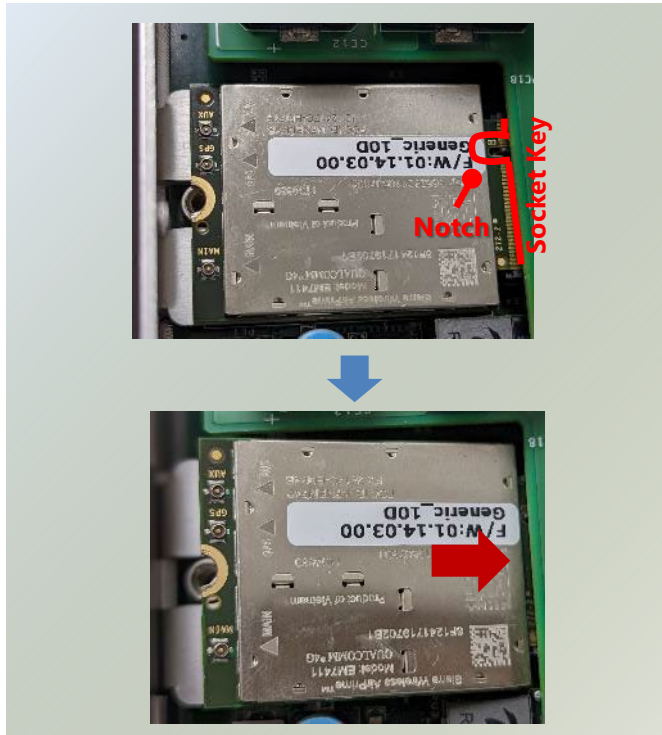
Installing the LTE Module (Optional)

The system supports one M.2 B-Key for LTE module card expansion. LTE module requires two antennas. Please follow the procedures for installation.

1. Locate the M.2 slot on the motherboard.



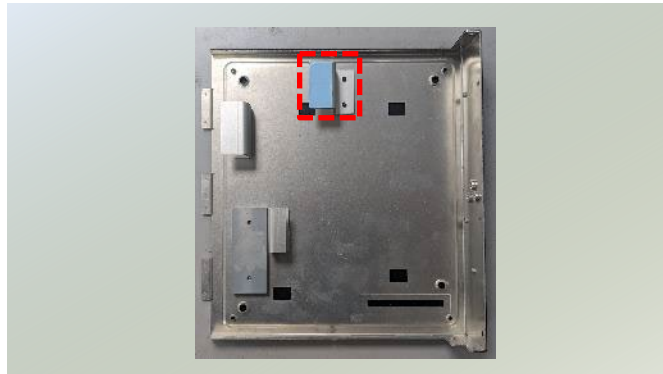
2. Align the notch of the module card with the socket key in the pin slot.
3. Insert the module card at 30 degrees into the socket until it is fully seated.



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



5. Next, thermal pad placement. Remove the protective film on the two (2) thermal pads (15x15mm) (included in the accessory pack) and gently place on the bottom chassis cover.

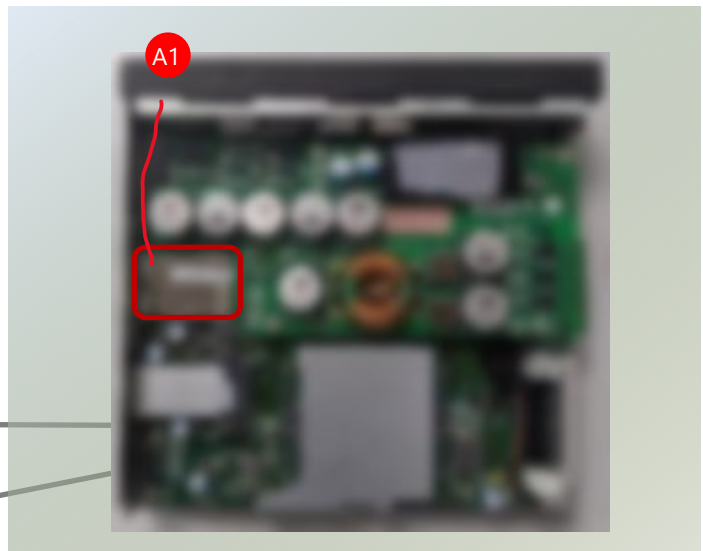


Installing LTE Antenna

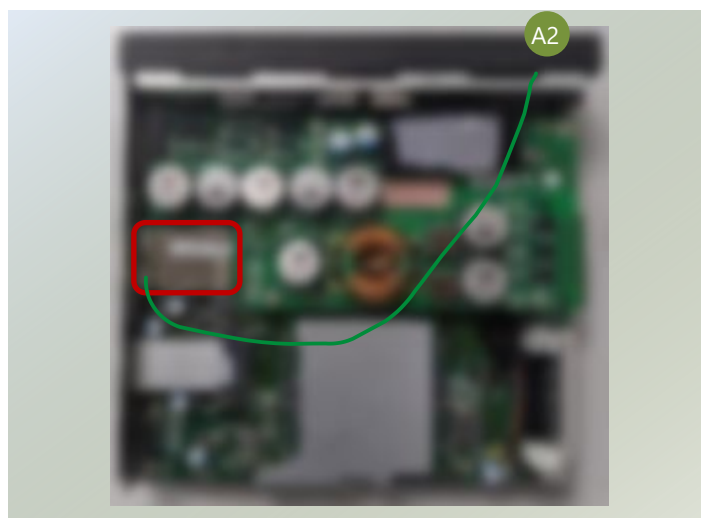
Front Panel



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



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



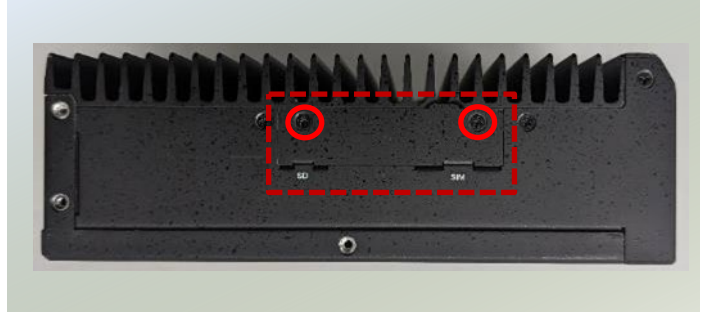
3. Screw the two (2) antennas to the system.



Installing SIM Cards & SD Cards (Optional)

The system supports one SD card and one dual-Nano SIM card expansion. The SD card and SIM card socket supports a push-push mechanism, allowing inserting and ejecting the SD card and SIM card to be as easy as one push.

1. The SD/SIM card slot is located on the bottom panel. Remove the side metal partition on the bottom panel by unscrewing the two screws.



2. Locate the SD card and dual Nano-SIM card slots. Insert and push the SD card or Nano-SIM card all the way in until it clicks into place.

For Nano-SIM, the gold contacts should be facing downwards. Repeat if dual Nano-SIM cards will be placed.

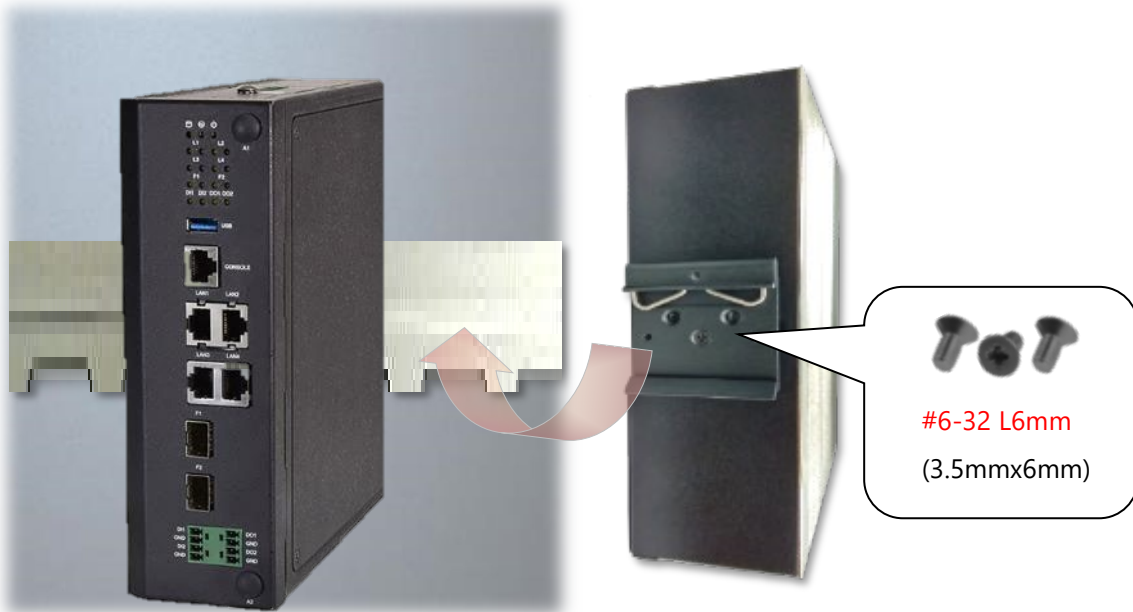


3. To remove/replace the SD/SIM card, use your fingertips to push it once, to have the card automatically eject.

DIN Rail Mounting (Optional)

The system can be mounted via DIN Rail method with an optional DIN Rail kit.

1. Attach the DIN rail bracket to the rear of the system with three (3) screws.
2. Hang the system onto a rail by engaging the hook of the Bracket into the DIN Rail until it is totally fixed.

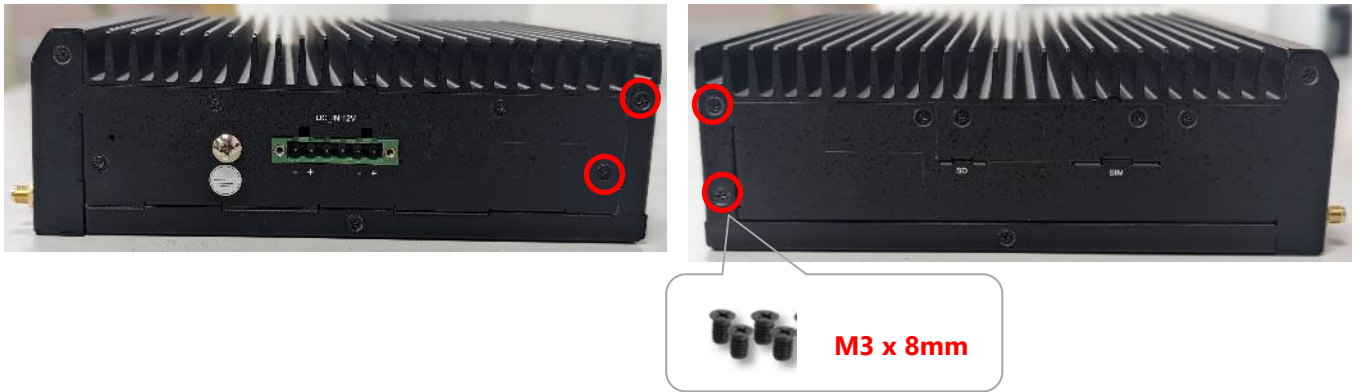


Note: After the unit is mounted, make sure to check that the installation provides strong and appropriate support and that each part is assembled correctly.

Wall Mounting (Optional)

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

1. Unscrew four (4) screws on the right and left side of the system.



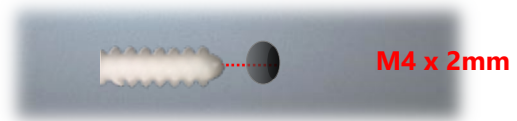
2. Attach the wall mount brackets onto the system with two (2) screws on each side.



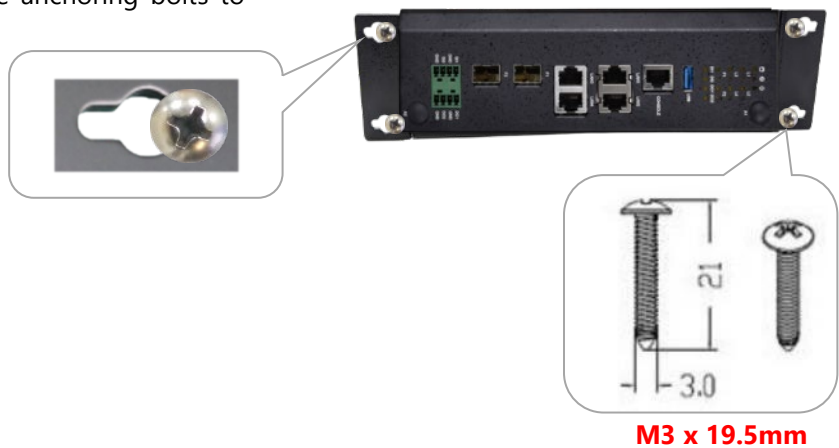
3. On the wall, measure the exact place where you want to hang the system, and drill four holes that match the four mounting holes on both brackets.

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 four (4) anchor bolts into the holes.



5. Align the system's wall bracket holes and drive four (4) long screws into the anchoring bolts to secure the system.



CHAPTER 3: BIOS SETUP

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

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

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

NOTE: The screenshots presented in this section are for reference only.

Main Page

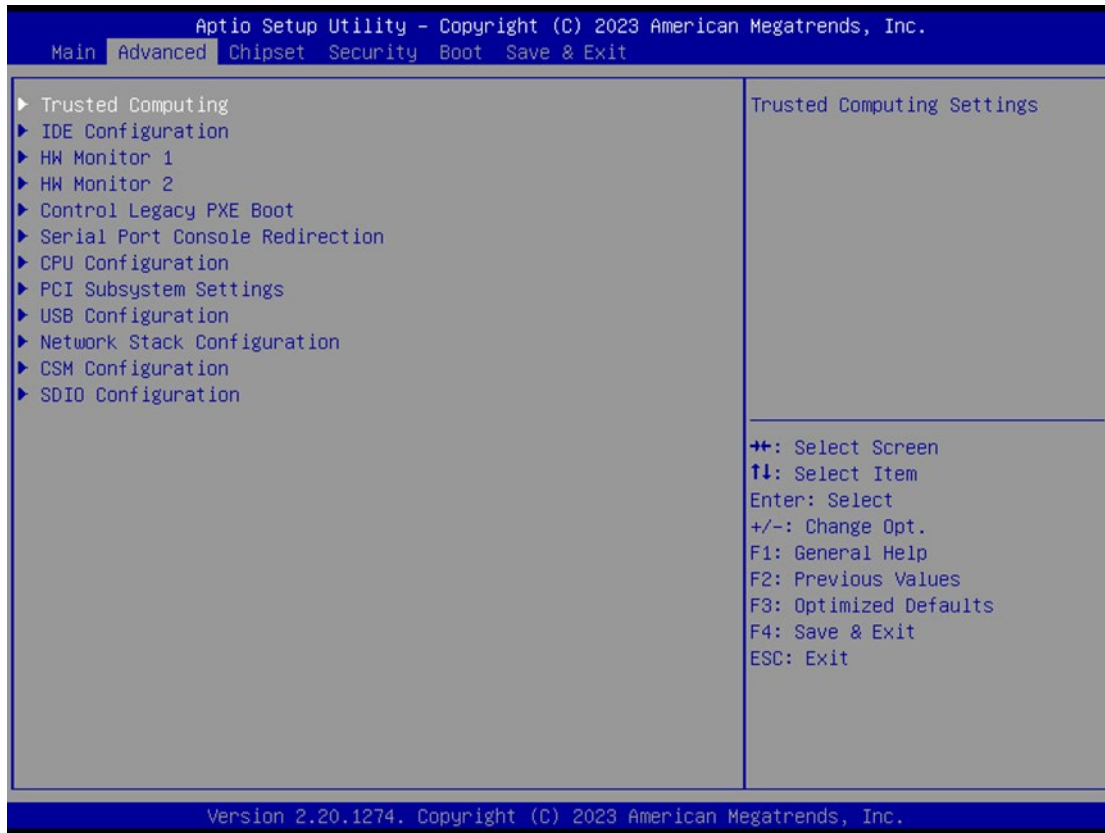
Setup main page contains BIOS information and project version information.



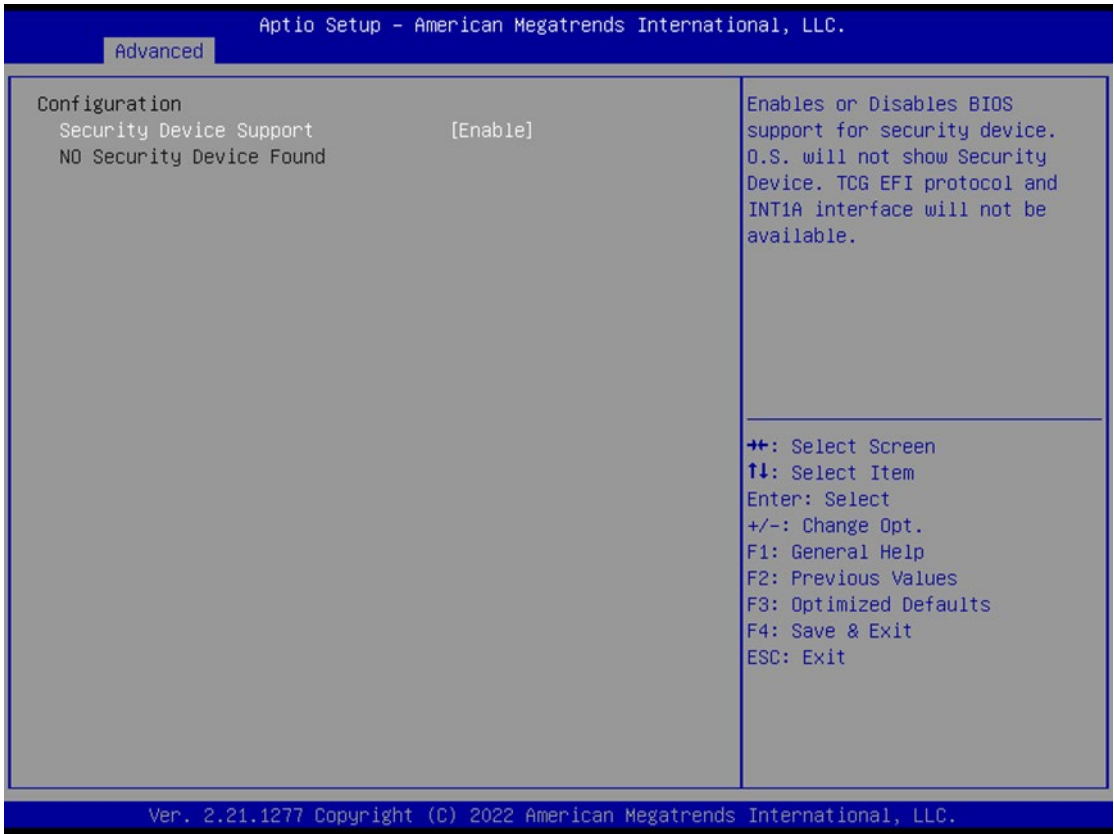
Item	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version: AMI Kernel version, CRB code base, X64 Compliance: UEFI version, PI version Project Version: BIOS release version Build Date and Time: MM/DD/YYYY Access Level: Administrator / User
System Date	To set the Date, use <Tab> 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.

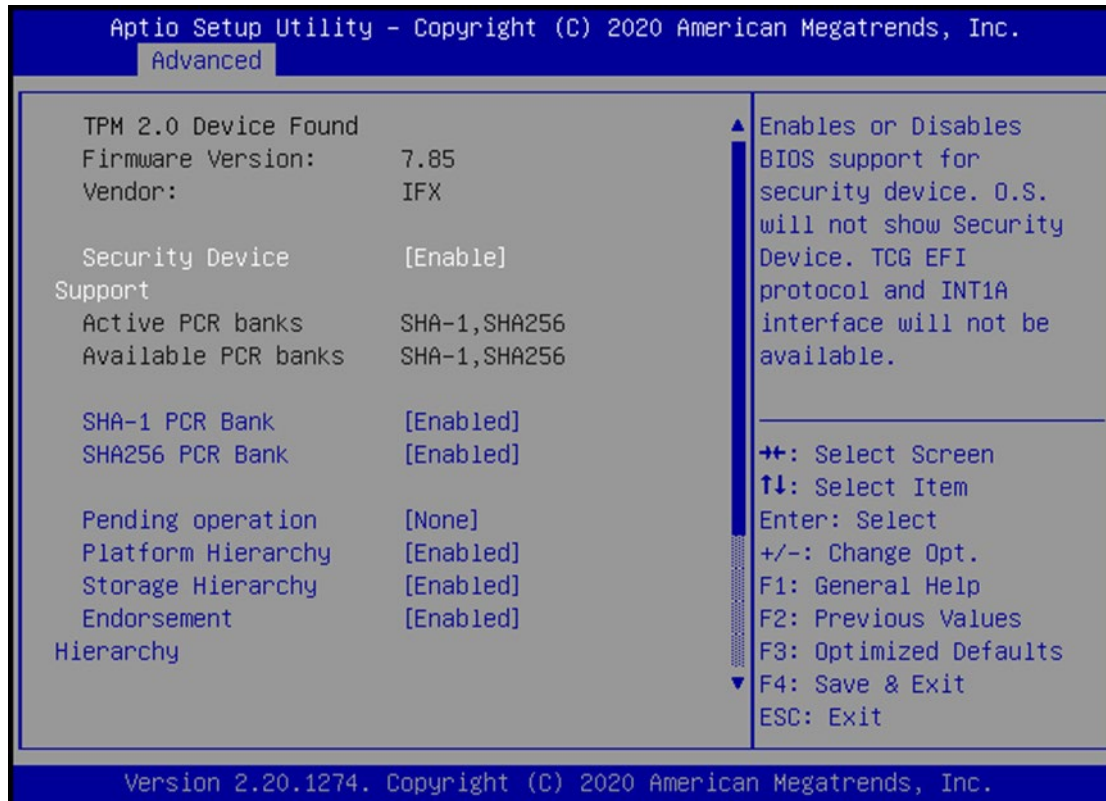


Trusted Computing



Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

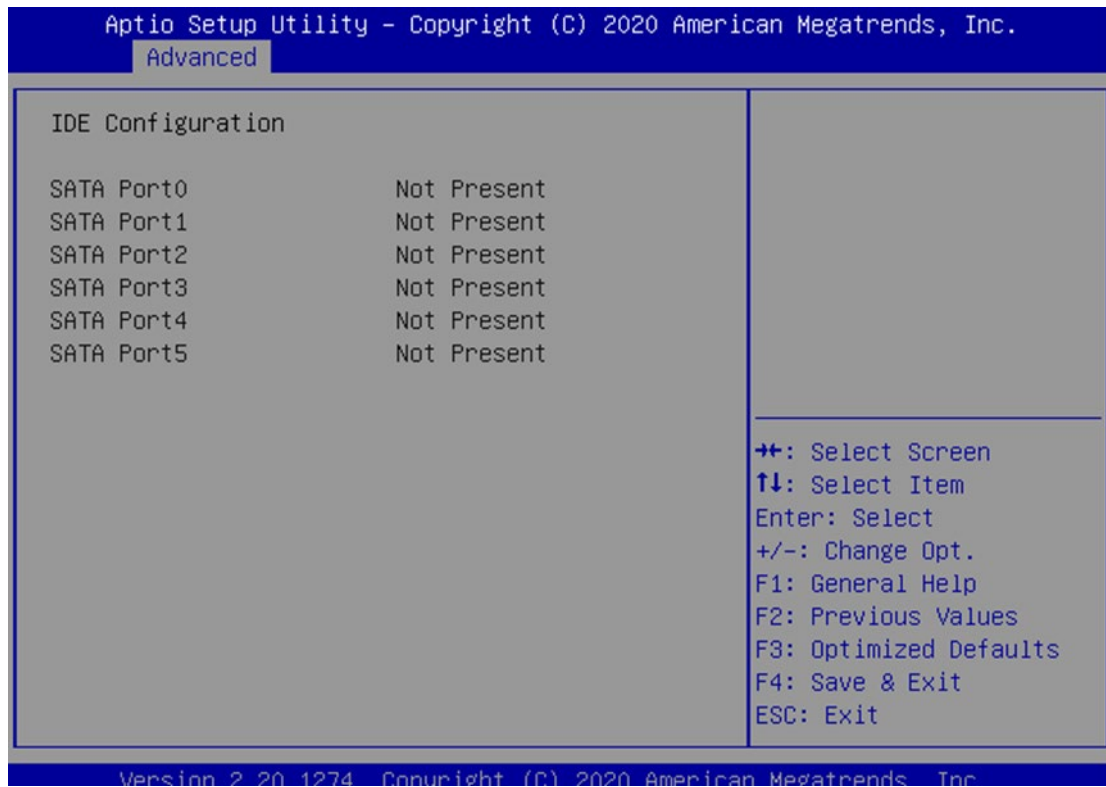
Trusted Computing (TPM2.0)



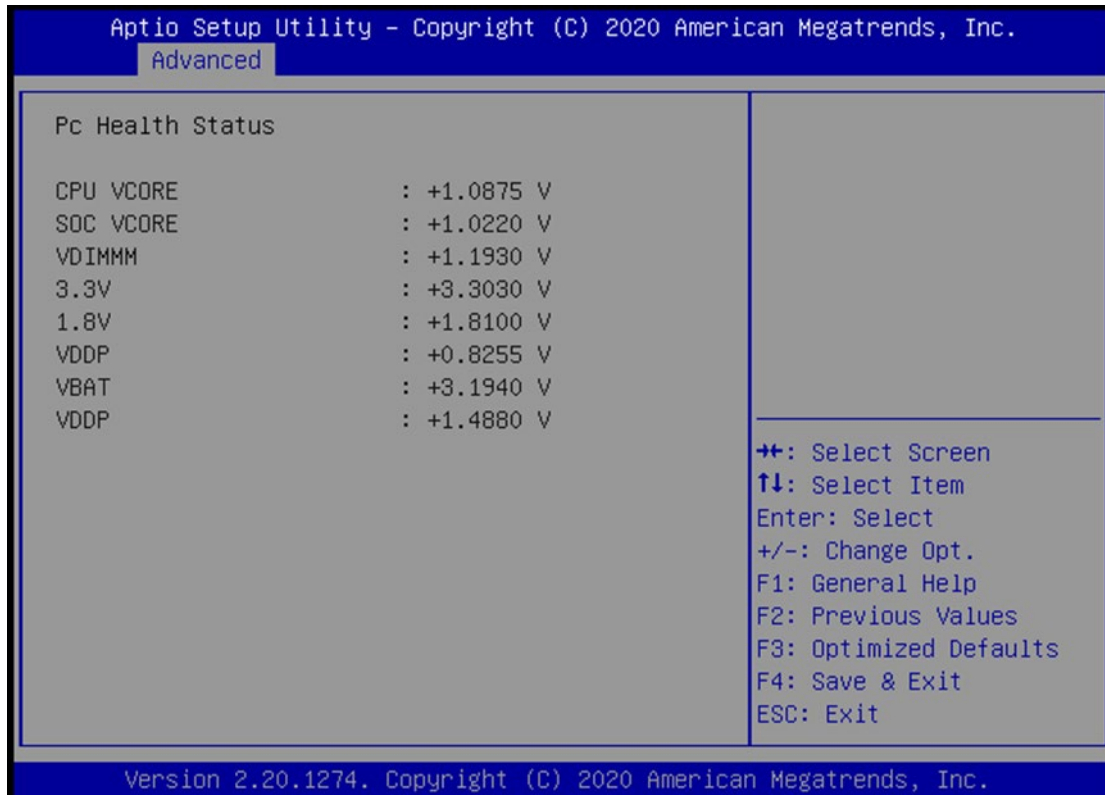
Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enabled Disabled	Enables or disables SHA-1 PCR Bank.
SHA256 PCR Bank	Enabled Disabled	Enables or disables SHA256 PCR Bank.
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: Supports 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.
TPM 20 InterfaceType	TIS	Select TPM 20 Device for the Communication Interface.
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.

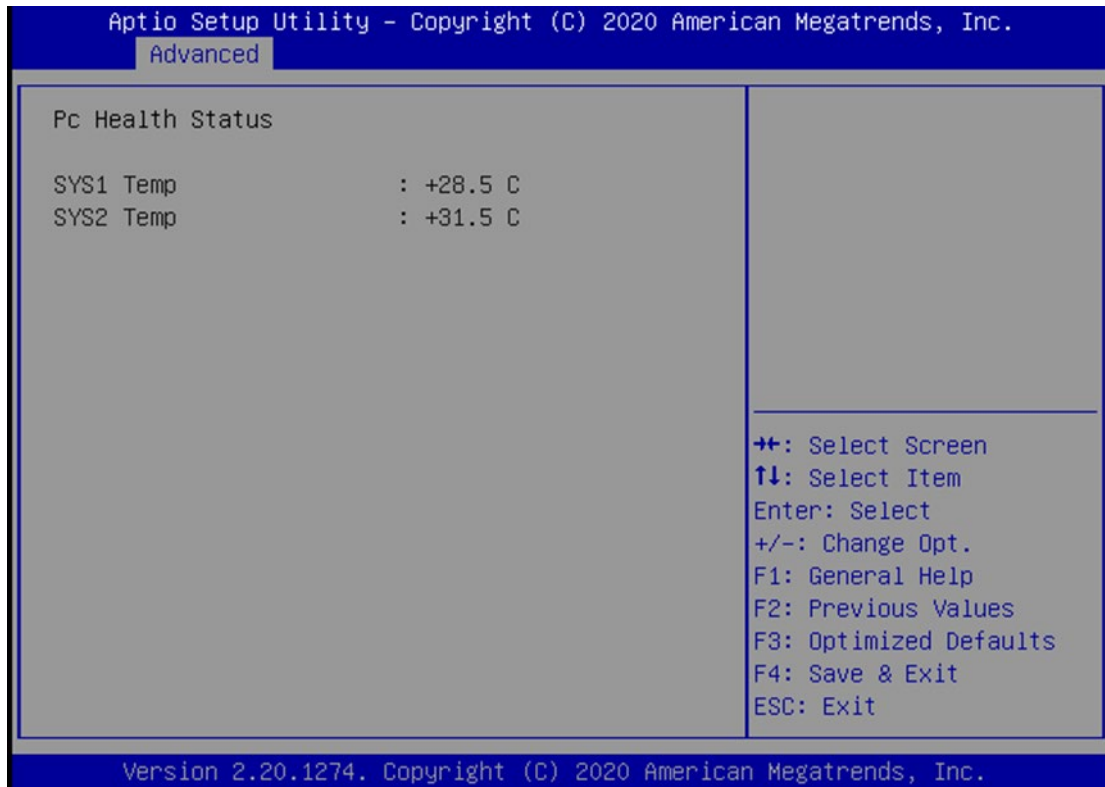
IDE Configuration



HW Monitor 1



HW Monitor 2



Control Legacy PXE Boot

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.

Advanced

Control Legacy PXE Boot

Control Legacy PXE Boot from [Disabled]

Control Legacy PXE Boot from which Lan

→+: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F3: Optimized Defaults

F4: Save & Exit

ESC: Exit

Version 2.20.1274. Copyright (C) 2020 American Megatrends, Inc.

Feature	Options	Description
Control PXE Boot from	Disabled Lan1 Lan2	Control PXE Boot from which Lan

Serial Port Console Redirection

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.

Advanced

COM0(Pci Bus0,Dev0,Func0,Port1)

Console Redirection [Enabled]

▶ Console Redirection Settings

Legacy Console Redirection

▶ Legacy Console Redirection Settings

Console Redirection

Enable or Disable.

↔: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F3: Optimized Defaults

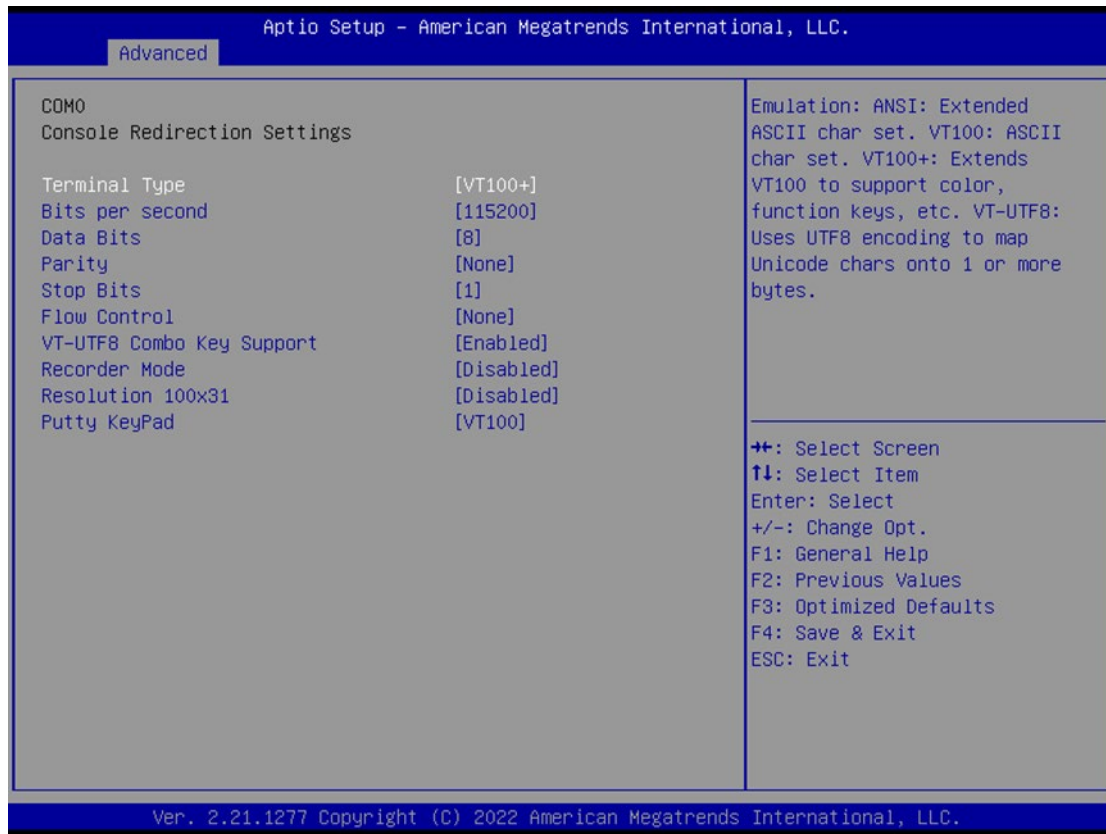
F4: Save & Exit

ESC: Exit

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

Console Redirection Settings

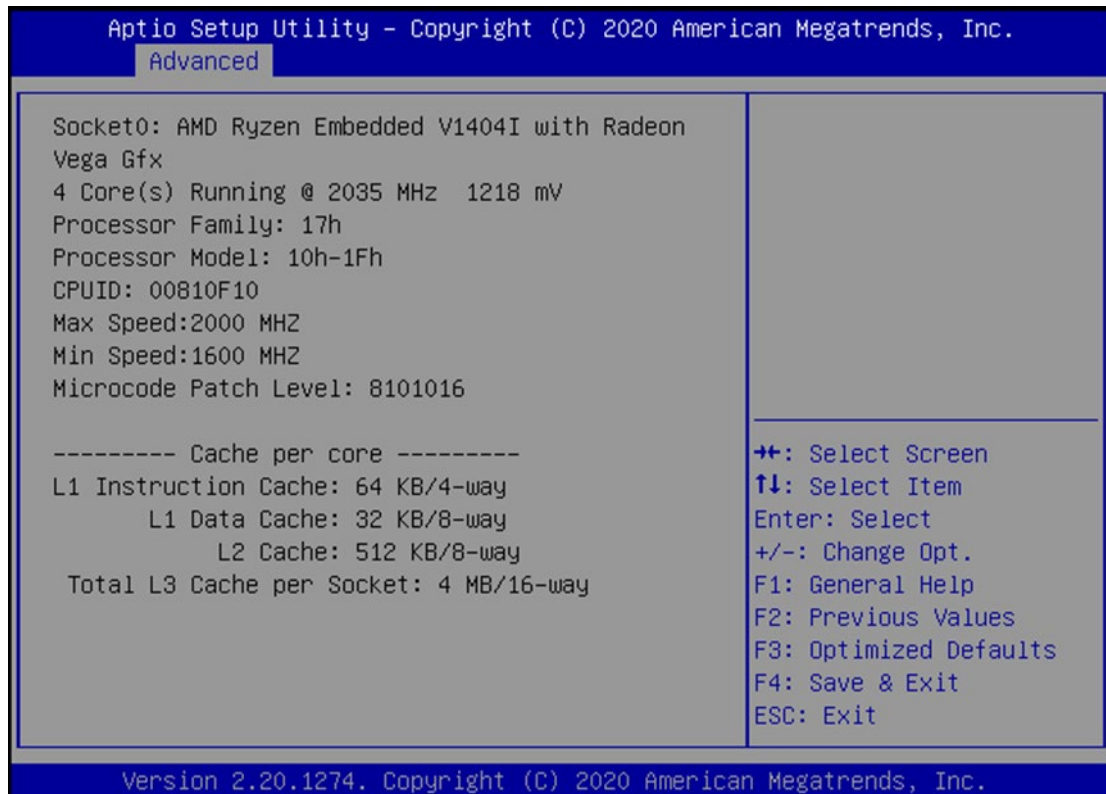


Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	VT100: ASCII char set VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes ANSI: Extended ASCII char set
Bits per second	9600 19200 38400 57600 115200	Selects 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	Indicates the end of a serial data packet.
Flow Control	None Hardware	Flow Control can prevent data loss from buffer overflow.

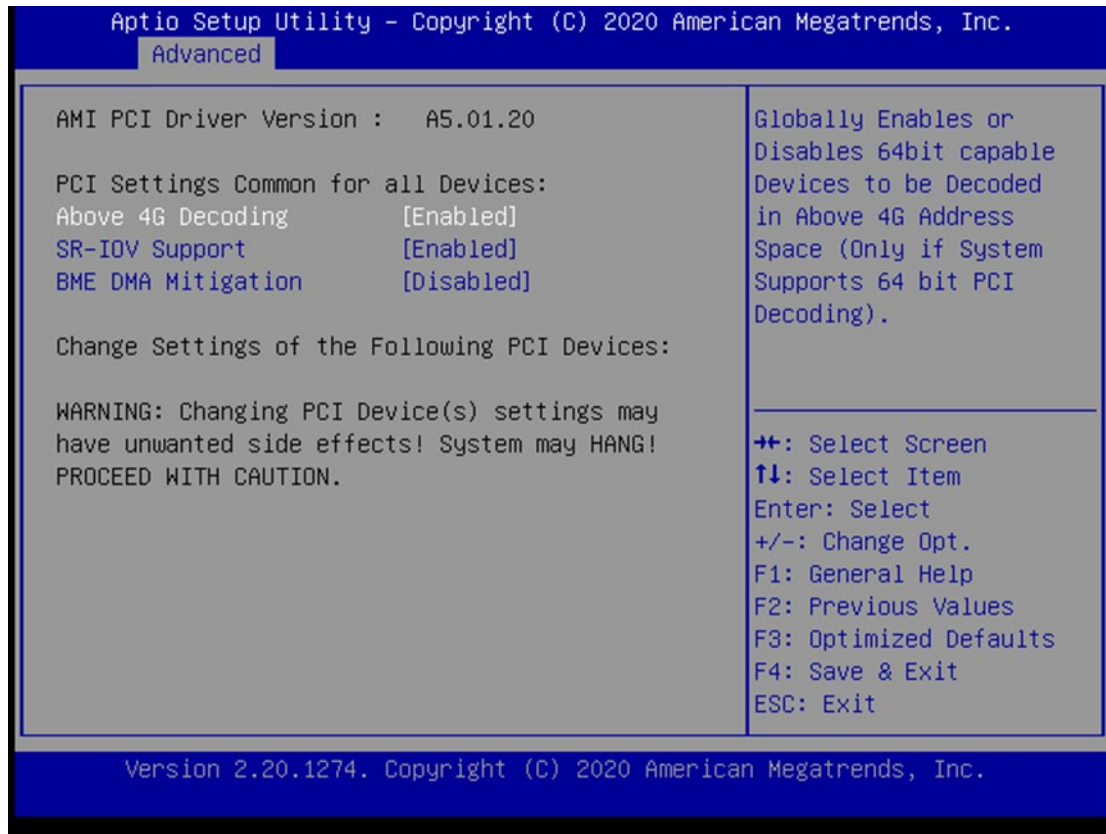
	RTS/CTS	
VT-UTF8 Combo Key Support	Disabled Enabled	Enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled, only text will be sent. This is to capture Terminal data.
Resolution 100x31	Disabled Enabled	Enables or disables extended terminal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

CPU Configuration



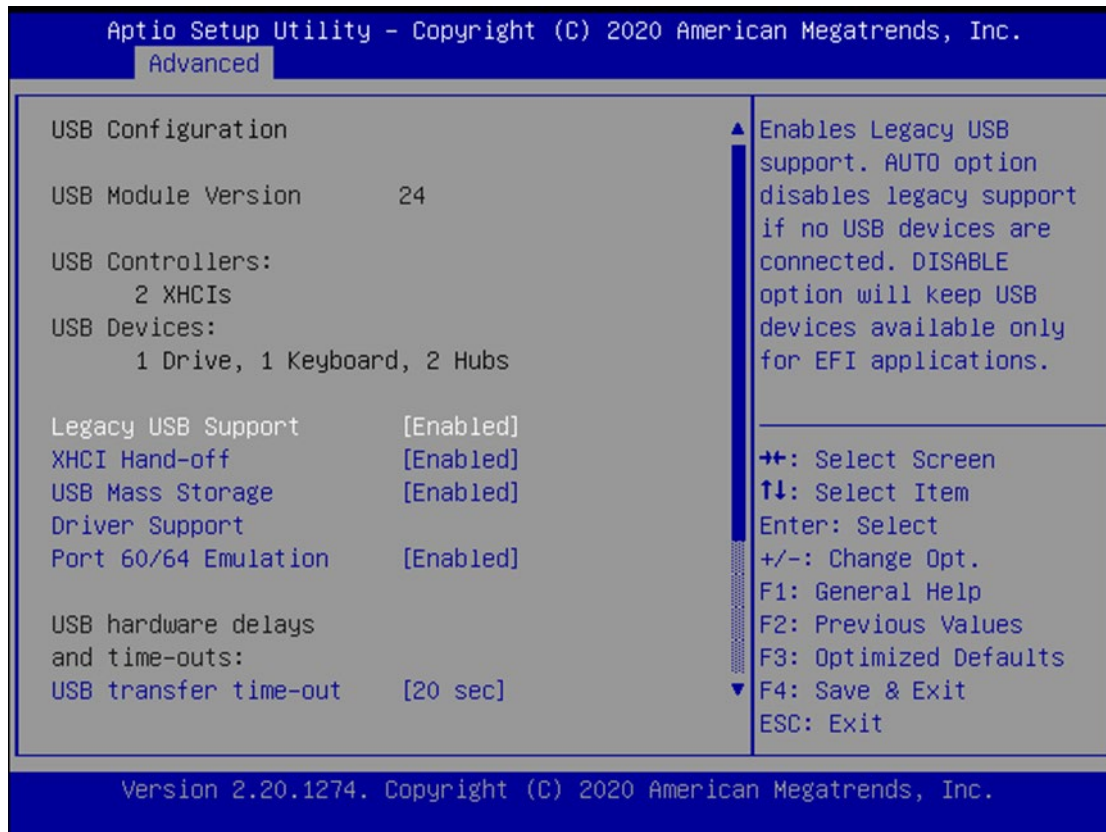
Node 0 Information

PCI Subsystem Settings



Feature	Options	Description
Above 4G Decoding	Disabled Enabled	Globally Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).
SR-IOV Support	Disabled Enabled	If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.
BME DMA Mitigation	Disabled Enabled	Re-enable Bus Master Attribute disabled during Pci enumeration for PCI Bridges after SMM Lock

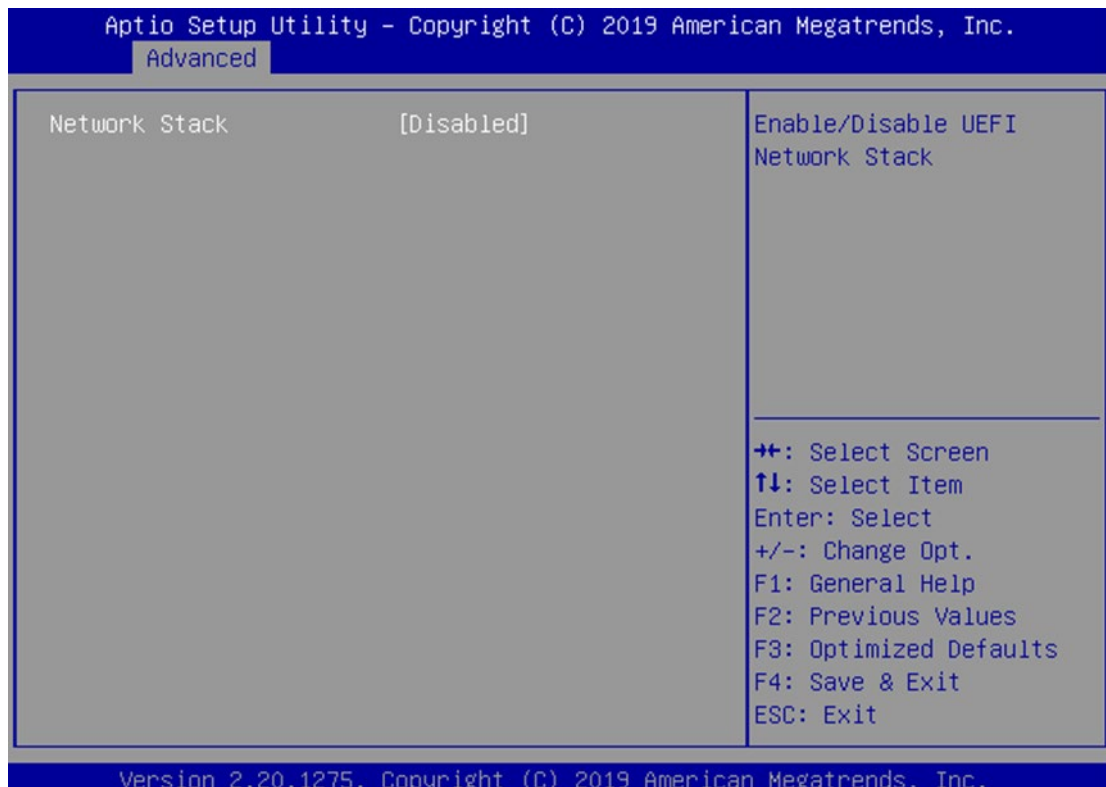
USB Configuration



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.
Port 60/64 Emulation	Enabled Disabled	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
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	USB mass storage device Start Unit command time-out

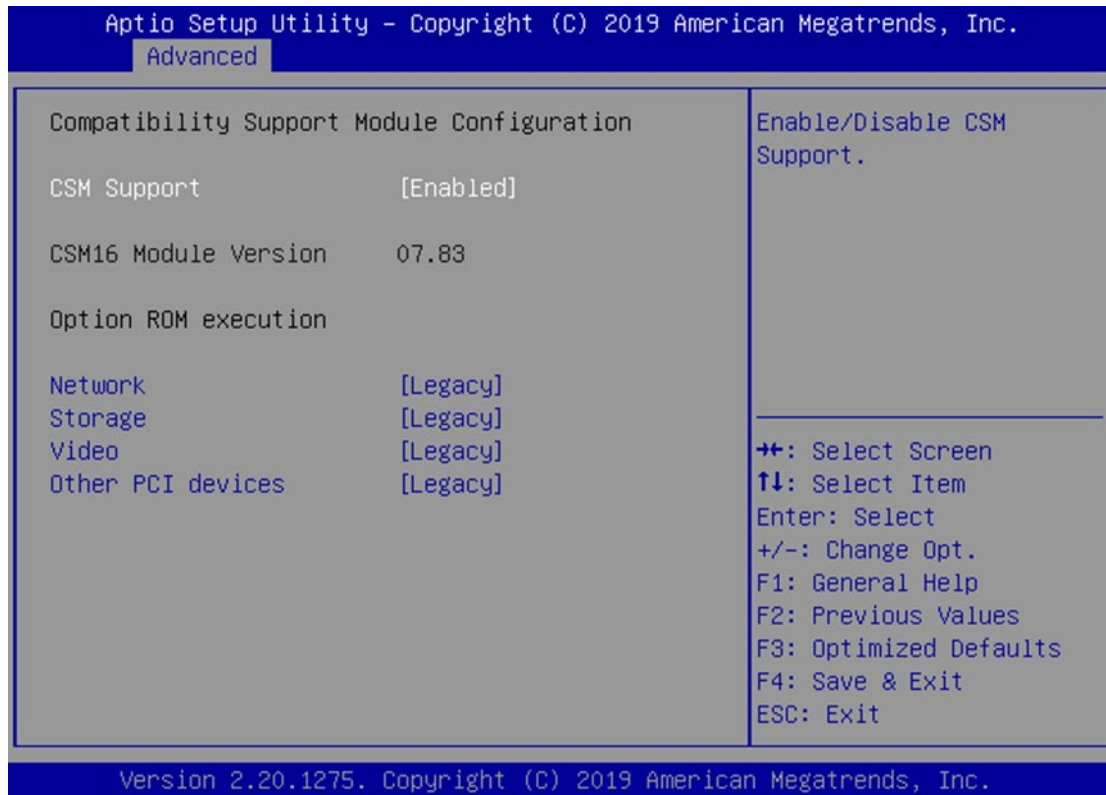
	10 sec 20 sec	
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. Auto uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Network Stack Configuration



Feature	Options	Description
Network Stack	Disabled Enabled	Enables or disables UEFI Network Stack
Ipv4 PXE Support	Disabled Enabled	Enables Ipv4 PXE Boot Support. If IPV4 is disabled, PXE boot option will not be created.
Ipv4 HTTP Support	Disabled Enabled	Enables Ipv4 HTTP Boot Support. If IPV4 is disabled, HTTP boot option will not be created.
Ipv6 PXE Support	Disabled Enabled	Enables Ipv6 PXE Boot Support. If IPV6 is disabled, PXE boot option will not be created.
Ipv6 HTTP Support	Disabled Enabled	Enables Ipv6 HTTP Boot Support. If IPV6 is disabled, HTTP boot option will not be created.
PXE boot wait time	0	Wait time to press <ESC> key to abort the PXE boot
Media detect count	1	Number of times the presence of media will be checked

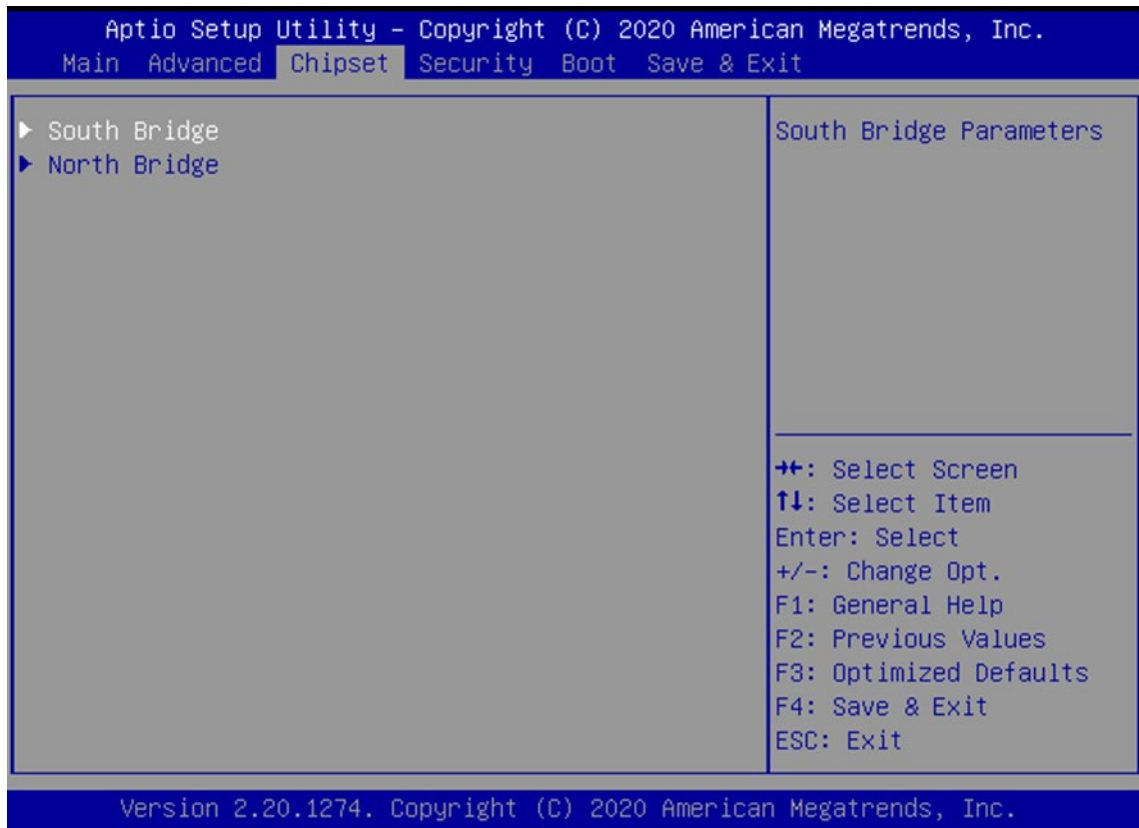
CSM Configuration



Feature	Options	Description
CSM Support	Disabled Enabled	Enables or disables CSM Support
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

Chipset

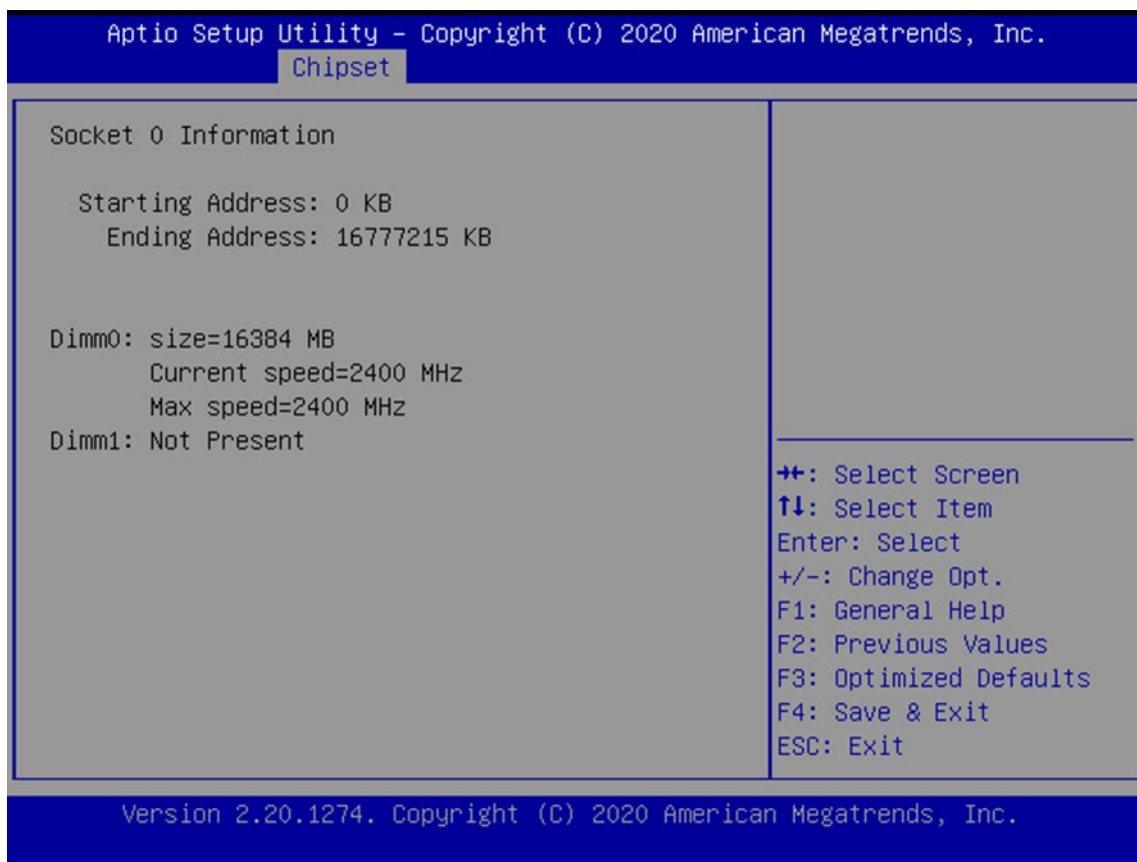
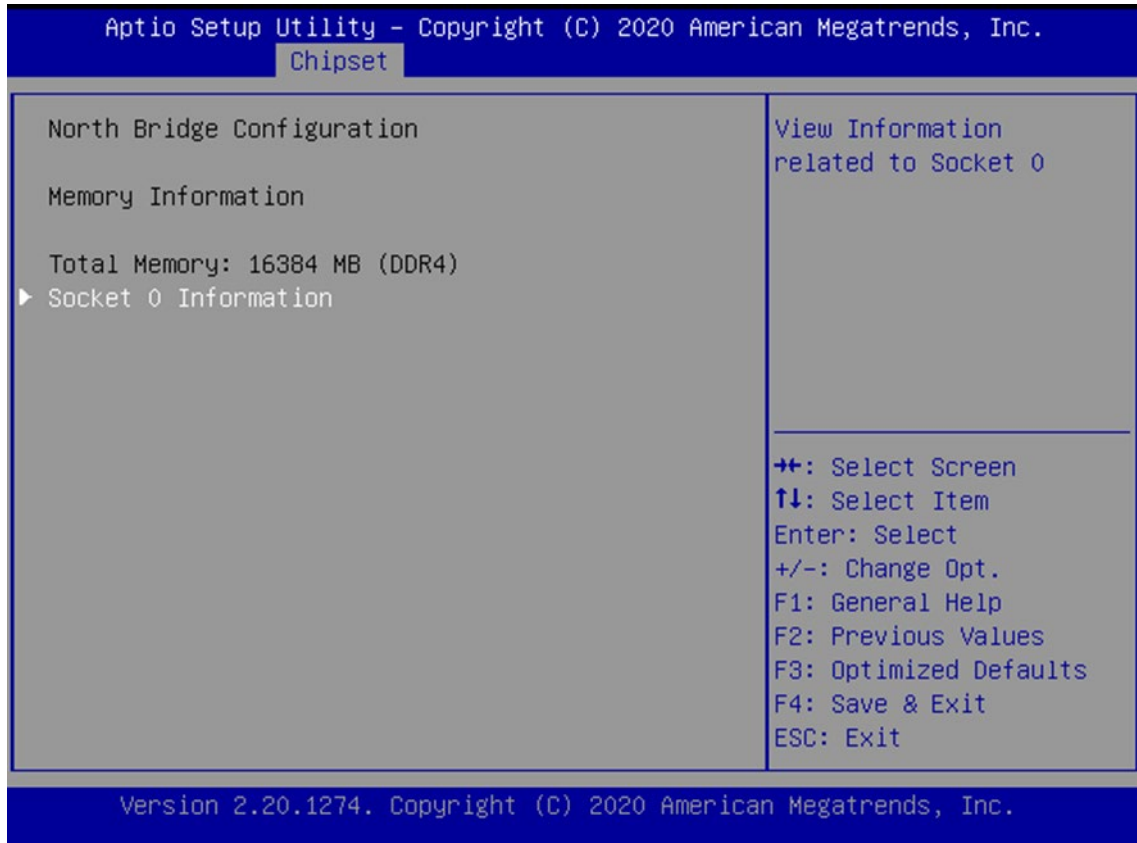
Select the **Chipset** menu item from the BIOS setup screen to enter the "Chipset" setup screen. Users can select any of the items in the left frame of the screen.



South Bridge

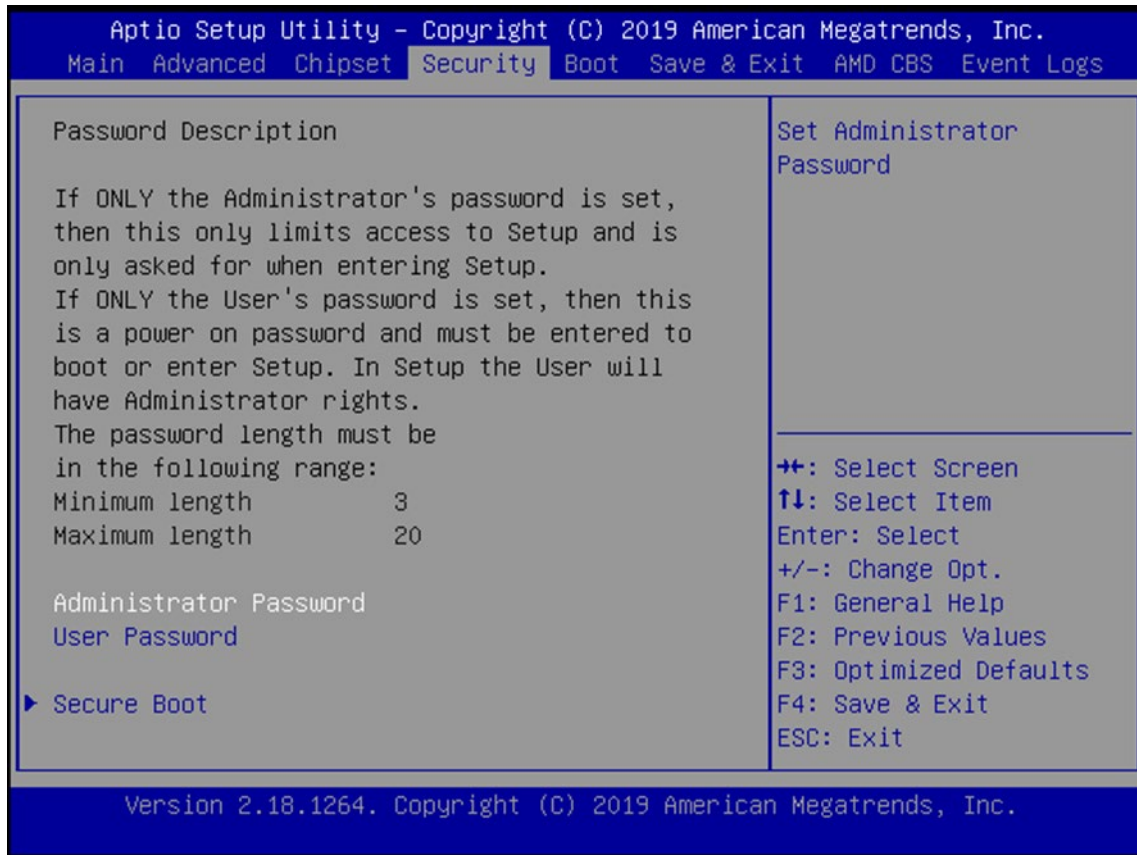


North Bridge



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.



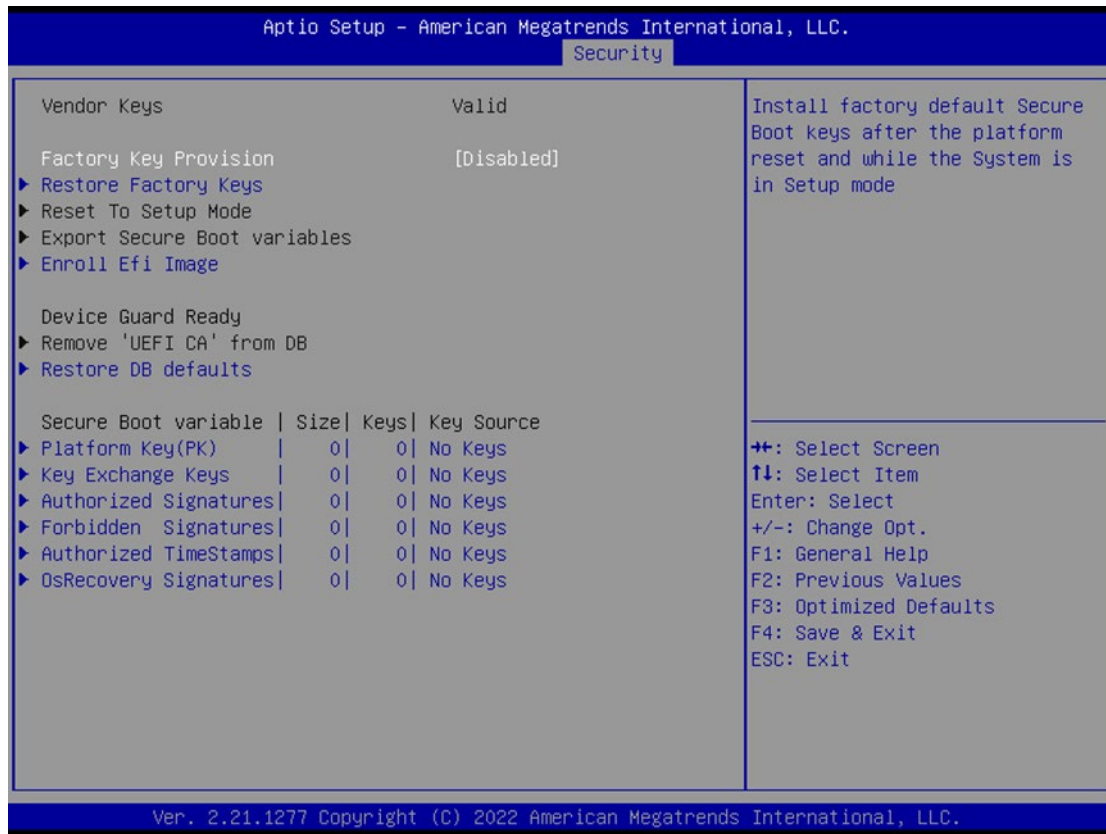
Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the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

Secure Boot



Feature	Options	Description
Secure Boot	Disabled Enabled	Secure Boot is activated when Platform Key (PK) is enrolled, System mode is User/Deployed, and CSM function is disabled.
Secure Boot Customization	Standard Customized	Secure Boot Mode - Custom & Standard, Set UEFI Secure Boot Mode to STANDARD mode or CUSTOM mode, this change is effect after save. And after reset, the mode will return to STANDARD mode

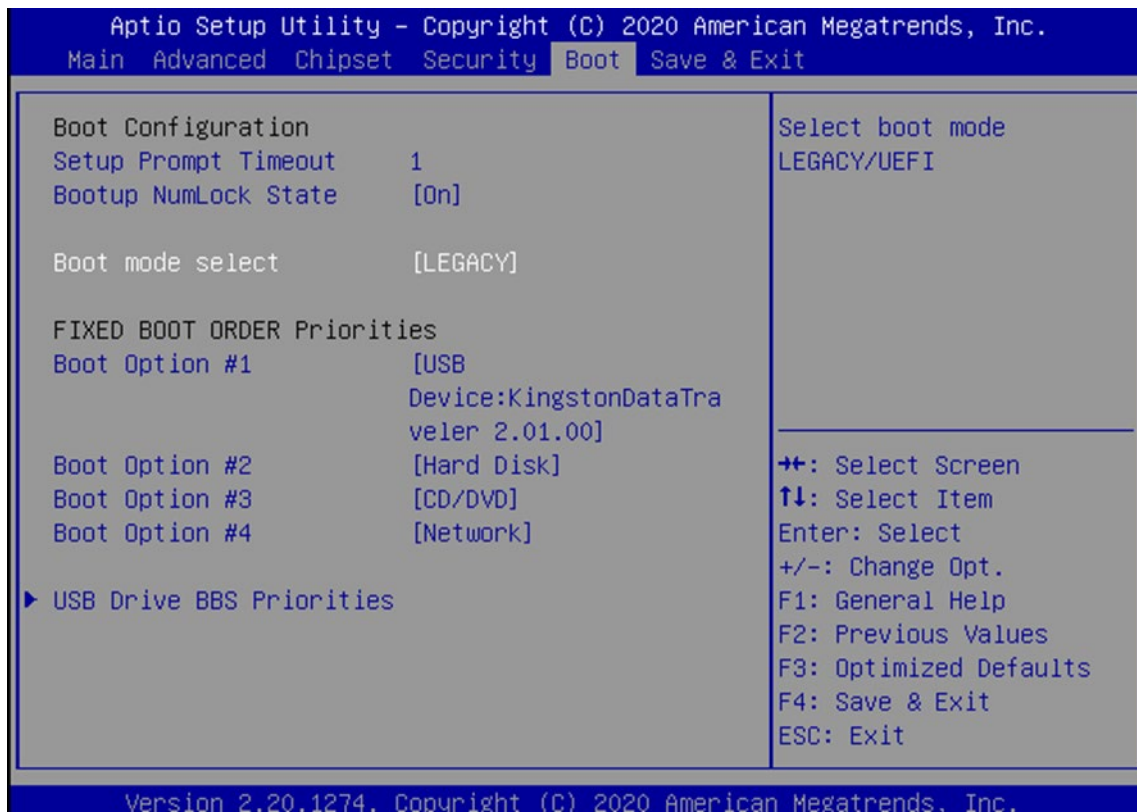
Key Management



Feature	Options	Description
Provision Factory Defaults	Disabled Enabled	Allows User to provision factory default Secure Boot keys when System is in Setup Mode.
Install Factory Default keys	None	Forces System to User Mode - install all Factory Default keys
Enroll Efi Image	None	Allows the image to run in Secure Boot mode. Enroll SHA256 hash of the binary 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.

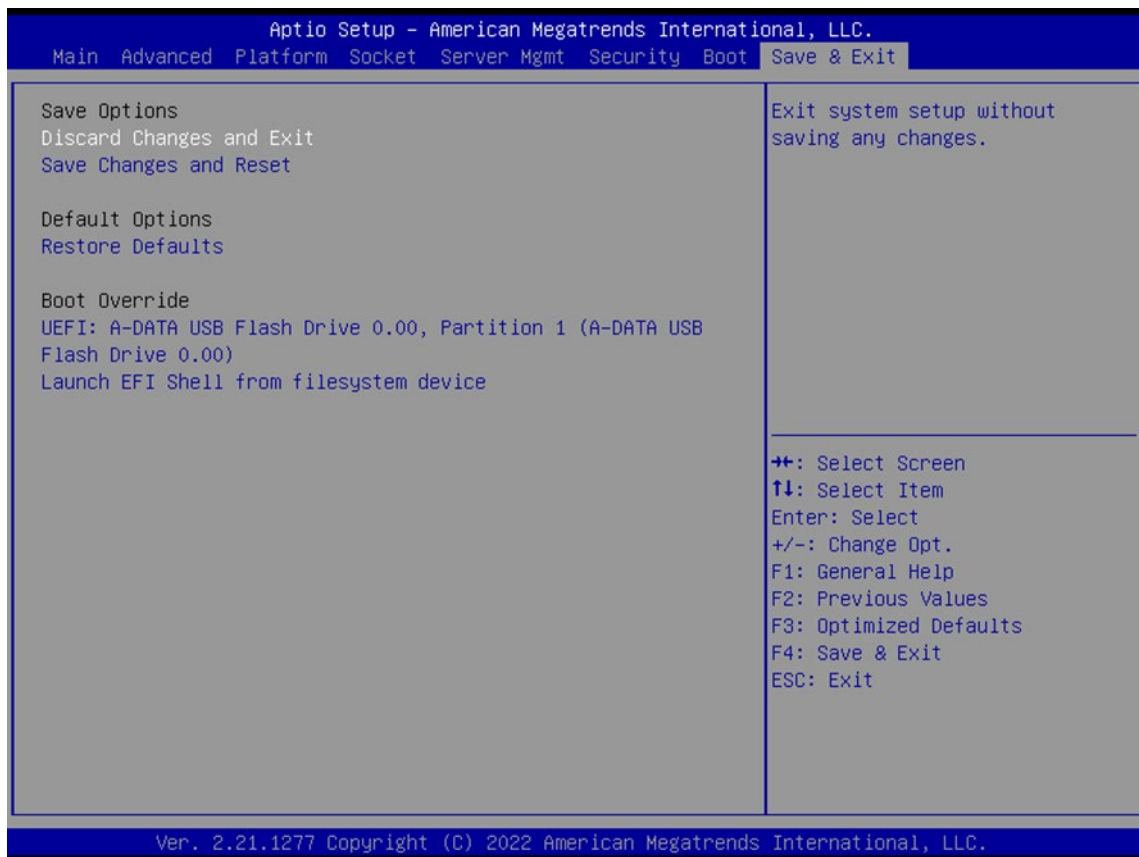


Feature	Options	Description
Setup Prompt Timeout	1	The Number of seconds to wait for setup activation key. 65535 means indefinite waiting.
BootupNumLock State	On Off	Select the keyboard NumLock state.
Quiet Boot	Enabled Disable	Enables or disables Quiet Boot option.
Boot mode select	LEGACY UEFI DUAL	Select boot mode for LEGACY or UEFI.

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

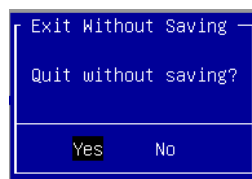
Save and Exit Menu

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.



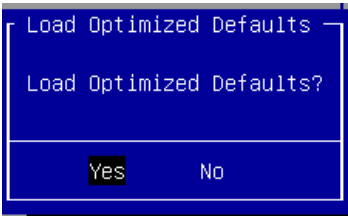
■ Save Changes and Reset

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**

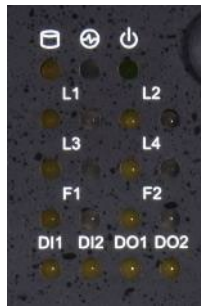
Restore default values for all setup options. Select “**Yes**” to load Optimized defaults.



Note

The items listed under Boot Override will depend on the devices connected to this system.

APPENDIX A: LED DEFINITIONS



HDD/Status/Power

ACT1 LINK1 ACT2 LINK2

ACT3 LINK3 ACT4 LINK4

ACT5 LINK5 ACT6 LINK6

DI1 DI2 DO1 DO2

► HDD/Status/Power (3 LEDs)

LED	Color on Board
Power	Green
	OFF
Status	Green
	Red
	OFF
HDD	Amber
	OFF

► LAN Port (12 LEDs)

Speed	Amber (Active/ACT)	Green / Amber (LINK)
10M	Flash / Data Access	OFF
100M	Flash / Data Access	ON (Green)
1G	Flash / Data Access	ON (Amber)

► DI/DO (4 LEDs)

LED	Color on Board
DI	Amber
	OFF
DO	Amber
	OFF

APPENDIX B: TERMS AND CONDITIONS

Warranty Policy

1. All products are under warranty against defects in materials and workmanship for 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, 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 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