

Vehicle Computing

Rugged Platforms for Vehicles and Railway Computing

V6S 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.

Icon Descriptions

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



Note or Information: This mark indicates that there is a note of interest and is something that 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.

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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.
- ▶ 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

The following should be put into consideration for rackmount or similar mounting installations:

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

- ▶ Reliable Grounding - Reliable grounding of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Installation & Operation :

- ▶ This equipment must be grounded. The power cord for product should be connected to a socket-outlet with earthing connection.
Cet équipement doit être mis à la terre. La fiche d'alimentation doit être connectée à une prise de terre correctement câblée
- ▶ Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.
Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.
- ▶ The machine can only be used in a restricted access location and must be installed by a skilled person.
Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.
- ▶ This product is intended to be supplied by a Listed Power Adapter or DC power source, rated 12-24Vdc, 17.5-8A minimum, Tma = 70°C, and the altitude of operation = 5000m.

Electrical Safety Instructions

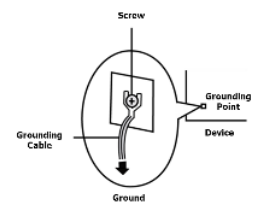
Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect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

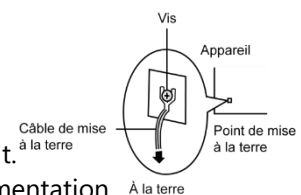


Table of Contents

Chapter 1: Product Overview 10

Package Content.....	10
Ordering Information	10
System Specifications	11
Front Panel	13
Rear Panel.....	14

Chapter 2: Motherboard Information 15

Block Diagram.....	15
Internal Jumpers & Connectors.....	18

Chapter 3: Hardware Setup 23

Installing the System Memory.....	24
Installing the Wifi Module	25
Installing the LTE Module	26
Mounting an SMA-Mount Antenna Cable Assembly	28
Installing the Disk Drive	29
Installing 4G Module (For External M.2 Module).....	31

Chapter 4: BIOS Setup 32

Enter BIOS Setup	32
Main.....	33
Advanced.....	34
Chipset.....	61
Security	74
Boot	77
Save and Exit.....	78

Appendix A: LED Indicator Explanations 79

Appendix B: Ignition Control Setup 80

 Connecting the Devices 80

 Power States Cycle 81

 Using the Ignition System Manager(ISM)..... 82

Appendix C: Terms and Conditions 84

 Warranty Policy 84

CHAPTER 1: PRODUCT OVERVIEW

V6S is the next-generation rugged, fanless vehicle surveillance NVR. It is designed for public transit video surveillance, recording and analytics. V6S, being the robust vehicle surveillance NVR, can operate under wide temperature range (-20~60°C), indicating its excellent reliability in a harsh environment.

V6S is powered by the 7th Generation 14 nm Intel® Core™ i7-7600U SoC (formerly Kaby Lake), offering power-efficient performance and accelerated graphics performance for vehicle computing needs.

Designed for mobile surveillance, the new V6S series offers 1 x GbE RJ45 ports plus 10 x RJ-45 PoE ports for IP camera connection, and two removable 2.5" HDD/SSD drive bays for the storage of recorded footages. For wireless connectivity, V6S is internally built with 2 x full-sized Mini-PCle with dual SIM card reader for LTE/ WiFi, and 1x optional removable PGN Caddy with dual SIM card readers, which allows 4G/LTE module to be removable externally.

- ▶ Intel® Core™ i7-7600U Dual Cores Processor
- ▶ CE/FCC and E-mark certified, MIL-STD-810G anti-vibration & shock qualified. and E-mark certified
- ▶ 10x PoE and 1x GbE RJ45 ports
- ▶ 2x Removable 2.5" HDD/SSD drive bays
- ▶ 2 x full-sized Mini-PCle with dual SIM card reader for LTE/ Wi-Fi, and 1x optional removable PGN Caddy with dual SIM card readers
- ▶ 2x COM, 2x USB 3.0, 2xUSB 2.0, 6x DI/DO, optional CAN bus, Audio, DVI, VGA
- ▶ Wallmount kit
- ▶ Fanless rugged design

Package Content

Your package contains the following items:

- ▶ 1x V6S Vehicle Computer
- ▶ 1x Pack of Screws
- ▶ 1x DC to DC Adapter



Note: If you should find any components missing or damaged, please contact your dealer immediately for assistance.

Ordering Information

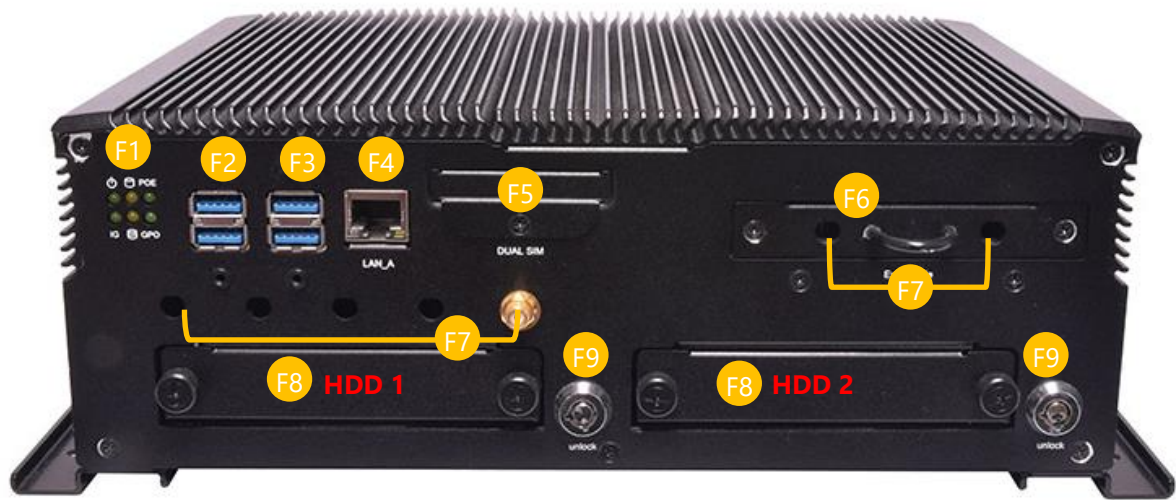
SKU No.	Description
V6SA	Intel® Core i7-7600U in-vehicle Mobile NVR with 10x Intel GbE PoE and External 180w DC power adapter for +9V~36Vdc input with Ignition
PGN-300	4G LTE Radio Modem with LTE Cat-6 embedded module, certified with PTCRB, AT&T, Verizon.
PGN-600	4G LTE-Advanced Pro Radio Modem with LTE Cat-12 embedded module, certified with PTCRB, AT&T.

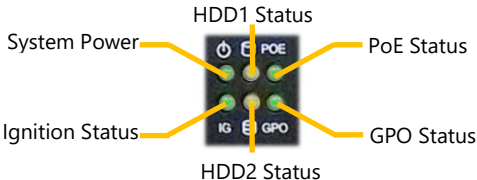

System Specifications

Processor System	CPU	Intel® Core™ i7-7600U 2.8GHz CPU onboard
	Frequency	Up to 2.8 GHz
	Core Number	Dual-core
	Chipset	SoC
Fanless		Yes
Memory	Technology	2x DDR4 2133 SO-DIMM Socket
	Max. Capacity	Up to 32 GB
	Socket	2x 260-pin SODIMM
Graphic	Graphic Processor	Intel integrated HD Graphics 620
Audio	Codec	Realtek ALC886-GR HD codec
	Interface	1x DB9 for MIC-in and Line-out
Ethernet	Controller	11x RJ45 with LED including: 1x Intel i210IT+ 1x Marvell 88E6390 POE Switch + 2x Intel i210IT POE port
	Speed	10/100/1000 Mbps
	PoE	10x IEEE802.3af POE or any 5x IEEE802.3af POE & 5x IEEE802.3at POE+
	Interface	RJ45
Storage	Type	SATA
	Installation	2x Removable 2.5" drive bays (HDD/SSD is not included)
	Type	mSATA
	Installation	1x mSATA socket
I/O	Display	1x DVI-D, 1xVGA
	LAN	1x RJ45 for GbE port, by Intel i210IT
	CAN bus	1x 2x5 pin header for output connection to DB-9male external connector; 1x Onboard connector to support optional CAN Module
	COM	2x RS-232/422/485 with RI/5V
	USB	1x for internal Ignition microcontroller programming 2x USB 3.0 Type A, 2x USB 2.0 type A
	Digital I/O	6x DI 5V or 12V TTL selectable
		6x DO 12V TTL, Max. 100mA
		2x IGN-DI of ignition control to MCU
	SIM	1x 12V Output
		2x SIM card sockets for internal mini-PCle
		1x Ublox NEO-M8N GPS module
		1x 3-axis accelerometer
	Antenna	7x SMA antenna holes (includes GPS)
Expansion Interface	PCIe/USB 3.0	1x removable PGN Caddy (USB 3.0) interface for LTE with dual SIM card readers
		2 x full-sized Mini-PCle (USB 3.0+ PCIe) with dual SIM card reader (on edge) for LTE/ Wi-Fi
Cooling	Processor	Passive CPU heatsink
	System	Fanless design with corrugated aluminum
Power	Connector	3-pin terminal block (+, -, ignition)
	Input	DC 9~36V (+, -, ignition) supports ATX mode support ignition delay on/ off control
Environment	Operating Temperature	-20~60°C / -4~140°F (without battery backup)
	Storage Temperature	20~70°C / -4~158°F
	Relative Humidity	5%~95% @ 40°C / 104°F (Storage Level)
Mechanical	Dimension (W x H x D)	273.8 x 188 x 97.23 mm (without mounting)
		307 x 188 x 105.2 mm (with mounting)
		223 x 143.8 x 45.7 mm (LVP-936BAT01)
	Weight	20.8 kg
	Mounting	Wallmount kit
	Microsoft Windows	Win10 IoT Enterprise

Driver Support	Linux	Redhat Enterprise 5, Fedora 14. Linux Kernel 2.6.18 or later
Certification	EMC	FCC/CE Class A, RoHS
	Safety	E-13 include ISO-7637-2
Miscellaneous	Hardware	Fintek F81866AD-I integrated watchdog timer
	Monitoring	1~255 level
	Internal RTC with Li Battery	Yes
Compliance	Vibration	MIL-STD-810G, Method 514.6
	Shock	MIL-STD-810G, Method 516.6

Front Panel



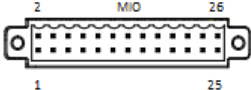
No.	Description	
F1	System Status LED Indicator	
F2	USB 3.0 Port	2x USB 3.0 Type A
F3	USB 2.0 Port	2x USB 2.0 Type A
F4	GbE Port	1x RJ45 port with LED indicators
F5	Dual SIM Socket	2x SIM card slots
F6	Module Slot	Removable PGN Module Slot supporting Dual SIM and 2x Antenna Hole with dust cover
F7	Antenna Port	<p>7x Antenna Port</p> <p>Antennas for internal LTE module</p>  <p>Antennas for PGN Module</p> <p>Wi-Fi Antenna internal LTE module</p> <p>GPS</p> <p>LTE Antenna</p>
F8	Hard Disk Bay	2x SATA interface hard disk bays to support removable 2.5" HDD/SSD drives with lock for each bay
F9	Key Lock	2x key locks for extra protection of the data on the hard disk

Rear Panel



Grounding Point:

For safety measures to help prevent people from accidentally coming in contact with electrical hazards.

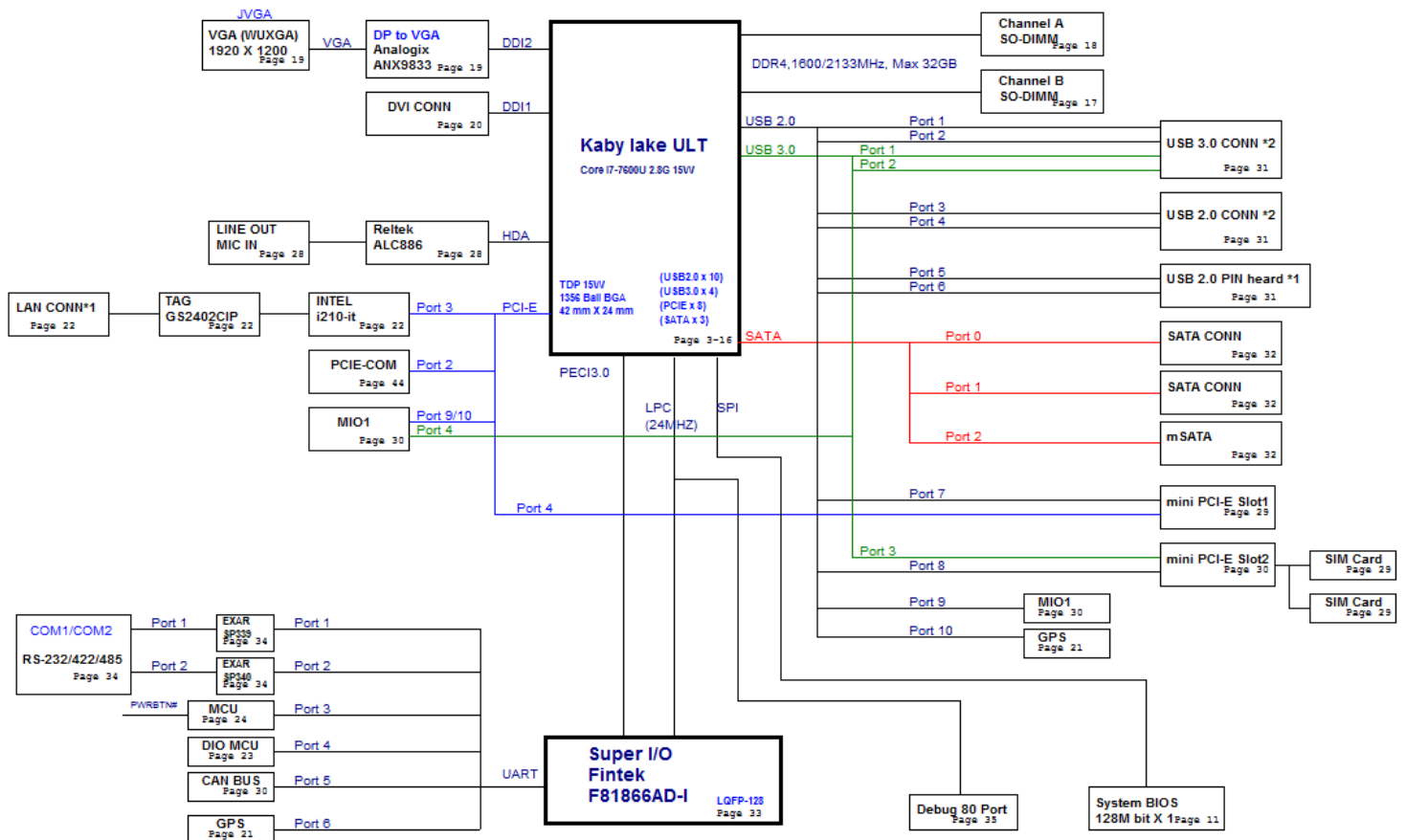
No.	Description																																																																	
R1	DC Input	1x 3-pin terminal block for DC 9~36V external power source, GND and Ignition																																																																
R2	PoE Power Input	1x 2-pin terminal block for +56VDC input for POE power.																																																																
R3	Multi-IO	<div>1x 26-pin terminal block connector for GPIO and +12VDC output</div> <div></div> <div><ul style="list-style-type: none">● 6x DI (5V or 12V TTL selectable)● 6x DO (12V TTL, Max. 100Ma)● 2x DI to Ignition MCU as remote control (5V TTL)● 1x 12V Output @Max. 1A</div> <table><tr><td>1</td><td>3</td><td>5</td><td>7</td><td>9</td><td>11</td><td>13</td><td>15</td><td>17</td><td>19</td><td>21</td><td>23</td><td>25</td></tr><tr><td>MCU TX</td><td>GND</td><td>DI_0</td><td>DI_1</td><td>DI_2</td><td>DI_3</td><td>DI_4</td><td>DI_5</td><td>MCU DI_6</td><td>COM_TX</td><td>GND</td><td>+12VDC</td><td>GND</td></tr><tr><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td><td>14</td><td>16</td><td>18</td><td>20</td><td>22</td><td>24</td><td>26</td></tr><tr><td>MCU RX</td><td>NC</td><td>DO_0</td><td>DO_1</td><td>DO_2</td><td>DO_3</td><td>DO_4</td><td>DO_5</td><td>MCU DI_7</td><td>COM_RX</td><td>GND</td><td>GND</td><td>GND</td></tr></table>													1	3	5	7	9	11	13	15	17	19	21	23	25	MCU TX	GND	DI_0	DI_1	DI_2	DI_3	DI_4	DI_5	MCU DI_6	COM_TX	GND	+12VDC	GND	2	4	6	8	10	12	14	16	18	20	22	24	26	MCU RX	NC	DO_0	DO_1	DO_2	DO_3	DO_4	DO_5	MCU DI_7	COM_RX	GND	GND	GND
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MCU TX	GND	DI_0	DI_1	DI_2	DI_3	DI_4	DI_5	MCU DI_6	COM_TX	GND	+12VDC	GND																																																						
2	4	6	8	10	12	14	16	18	20	22	24	26																																																						
MCU RX	NC	DO_0	DO_1	DO_2	DO_3	DO_4	DO_5	MCU DI_7	COM_RX	GND	GND	GND																																																						
R4	VGA Port	1x VGA DB15 Connector																																																																
R5	DVI-D Port	1x DVI-D Connector																																																																
R6	Audio Port	1x Realtek ALC886-GR, supports external Audio I/O for Line-in/Line-out with L/R-channels via 9-pin female connector																																																																
R7	COM Port	2x DB9 Male Connector for RS232/422/485																																																																
R8	CAN Bus Port	1x DB9 Male connector for CAN Bus																																																																
R9	PoE Port	10x PoE (supports any 5x IEEE802.3at PoE+ & 5x IEEE802.3af PoE ports) Port with LED indicators																																																																

CHAPTER 2: MOTHERBOARD INFORMATION

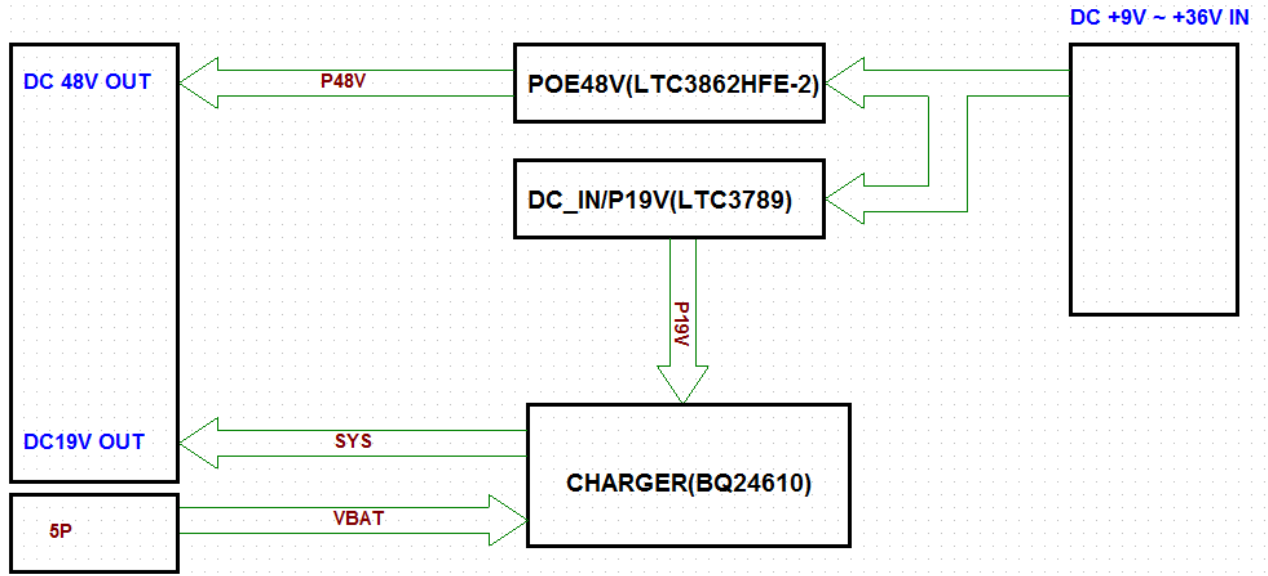
Block Diagram

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

Motherboard

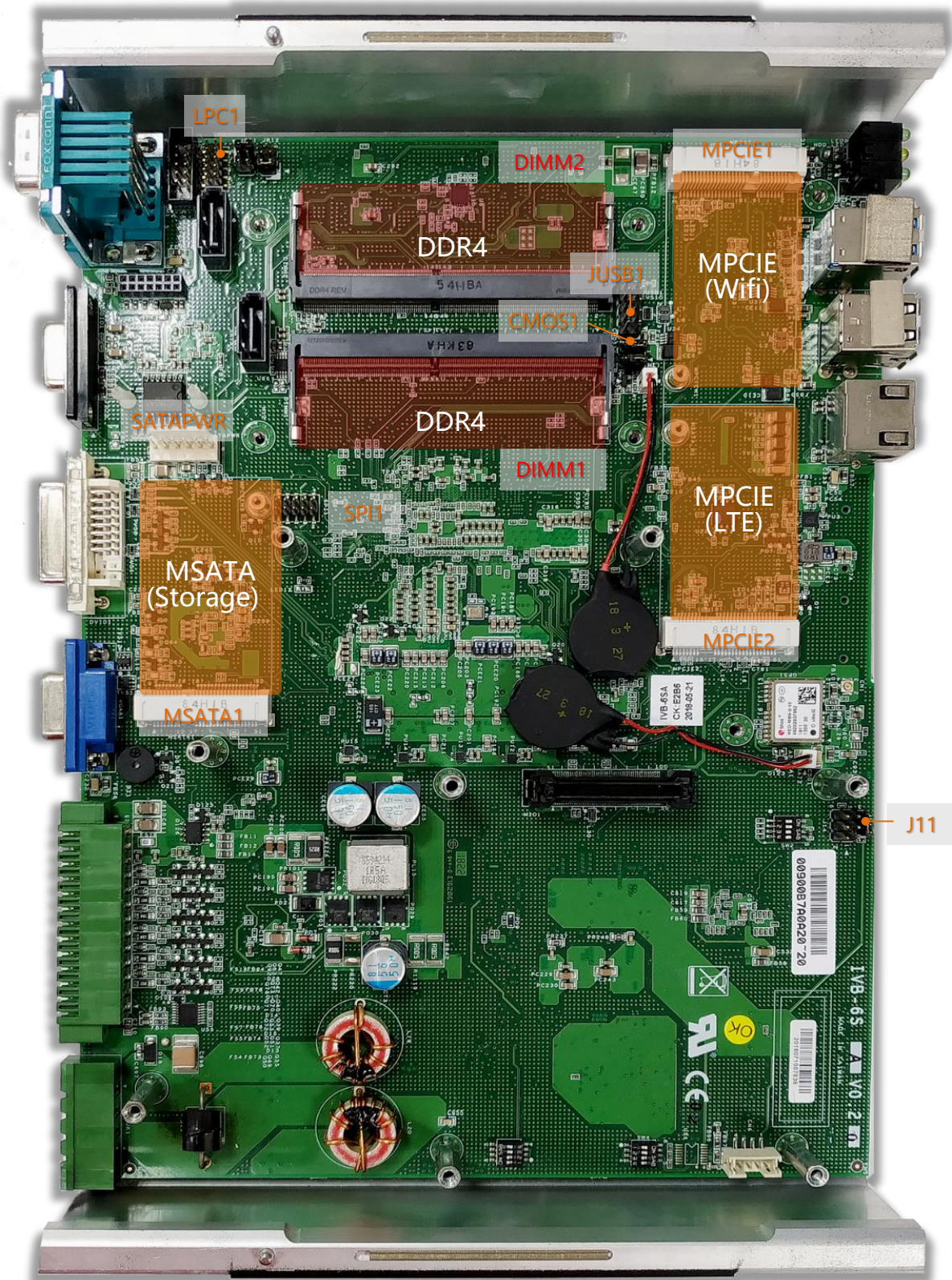


Power Board



Motherboard Layout

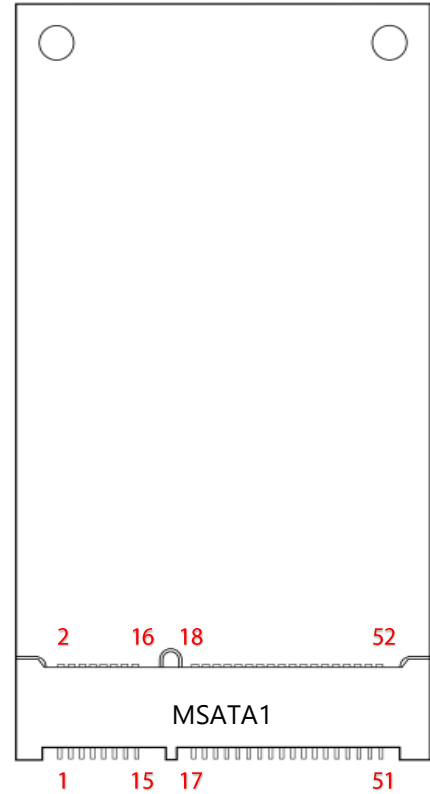
The motherboard layout shows the connectors and jumpers on the board. Refer to the following picture as a reference for the pin assignments and the internal connectors.



Internal Jumpers & Connectors

MSATA1:

Pin No	Description	Pin No	Description
1	N.C	2	+3.3V
3	N.C	4	GND
5	N.C	6	+1.5V
7	N.C	8	N.C
9	GND	10	N.C
11	N.C	12	N.C
13	N.C	14	N.C
15	GND	16	N.C
KEY			
17	N.C	18	GND
19	N.C	20	N.C
21	GND	22	N.C
23	SATA_RXp	24	+3.3V
25	SATA_RXn	26	GND
27	GND	28	+1.5V
29	GND	30	N.C
31	SATA_TXn	32	N.C
33	SATA_TXp	34	GND
35	GND	36	N.C
37	GND	38	N.C
39	+3.3V	40	GND
41	+3.3V	42	N.C
43	N.C	44	N.C
45	N.C	46	N.C
47	N.C	48	+1.5V
49	N.C	50	GND
51	N.C	52	+3.3V



MPCIE1 for wifi:

Supports Wi-Fi PCIe interface adapter

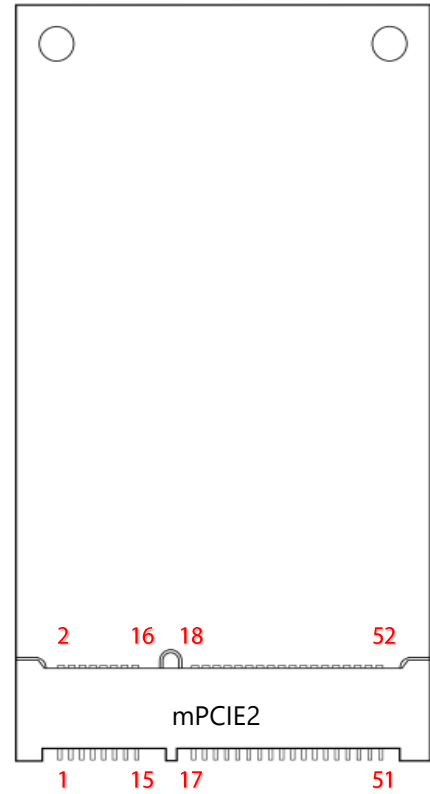
Pin No	Description	Pin No	Description
1	N.C	2	+3.3V
3	N.C	4	GND
5	N.C	6	+1.5V
7	CLKREQ#	8	N.C
9	GND	10	N.C
11	REFCLK-	12	N.C
13	REFCLK+	14	N.C
15	GND	16	N.C
KEY			
17	N.C	18	GND
19	N.C	20	N.C
21	GND	22	PERST#
23	PERn0	24	+3.3V
25	PERp0	26	GND
27	GND	28	+1.5V
29	GND	30	N.C
31	PETn0	32	N.C
33	PETp0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3V	40	GND
41	+3.3V	42	LED_WWAN#
43	GND	44	LED_WLAN#
45	N.C	46	N.C
47	N.C	48	+1.5V
49	N.C	50	GND
51	N.C	52	+3.3V



MPCIE2 for 4G/LTE

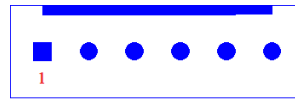
Supports both 3G/4G and USB interface adapter

Pin No	Description	Pin No	Description
1	N.C	2	+3.3V
3	N.C	4	GND
5	N.C	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	N.C	12	UIM_CLK
13	N.C	14	UIM_RESET
15	GND	16	UIM_VPP
KEY			
17	N.C	18	GND
19	N.C	20	N.C
21	GND	22	PERST#
23	USB3_RX-	24	+3.3V
25	USB3_RX+	26	GND
27	GND	28	+1.5V
29	GND	30	N.C
31	USB3_TX-	32	N.C
33	USB3_TX+	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3V	40	GND
41	+3.3V	42	LED_WWAN#
43	GND	44	LED_WLAN#
45	N.C	46	N.C
47	N.C	48	+1.5V
49	N.C	50	GND
51	N.C	52	+3.3V



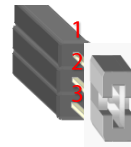
SATAPWR

Pin No	Description
1	12V
2	GND
3	GND
4	5V
5	HDD_LED1
6	HDD_LED2

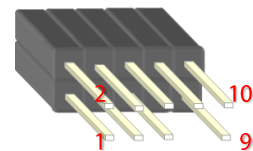
**CMOS1: Clear CMOS**

Use the jumper setting to clear CMOS

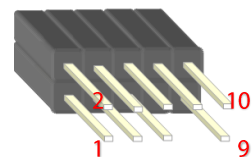
Description	JCMOS1
Normal (Default)	1-2
Clear CMOS	2-3

**JSPI1: SPI Interface(debug only)**

Pin No	Description	Pin No	Description
1	SPI_HOLD	2	N.C
3	SPI_CS#	4	SPI_VCC
5	SPI_MISO	6	N.C
7	N.C	8	SPI_CLK
9	GND	10	SPI_MOSI

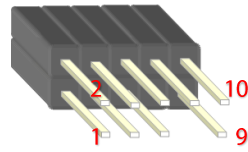
**JLPC1:LPC Interface(debug only)**

Pin No	Description	Pin No	Description
1	LPC_CLK	2	LAD1
3	PLTRST	4	LAD0
5	LFRAME#	6	3.3V
7	LAD3	8	N.C
9	LAD2	10	GND



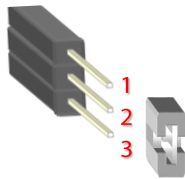
JUSB1:USB2.0 Interface

Pin No	Description	Pin No	Description
1	5V	2	5V
3	USB5-	4	USB6-
5	USB5+	6	USB6+
7	GND	8	GND
9	GND	10	GND



J11:MCU State(Program Only)

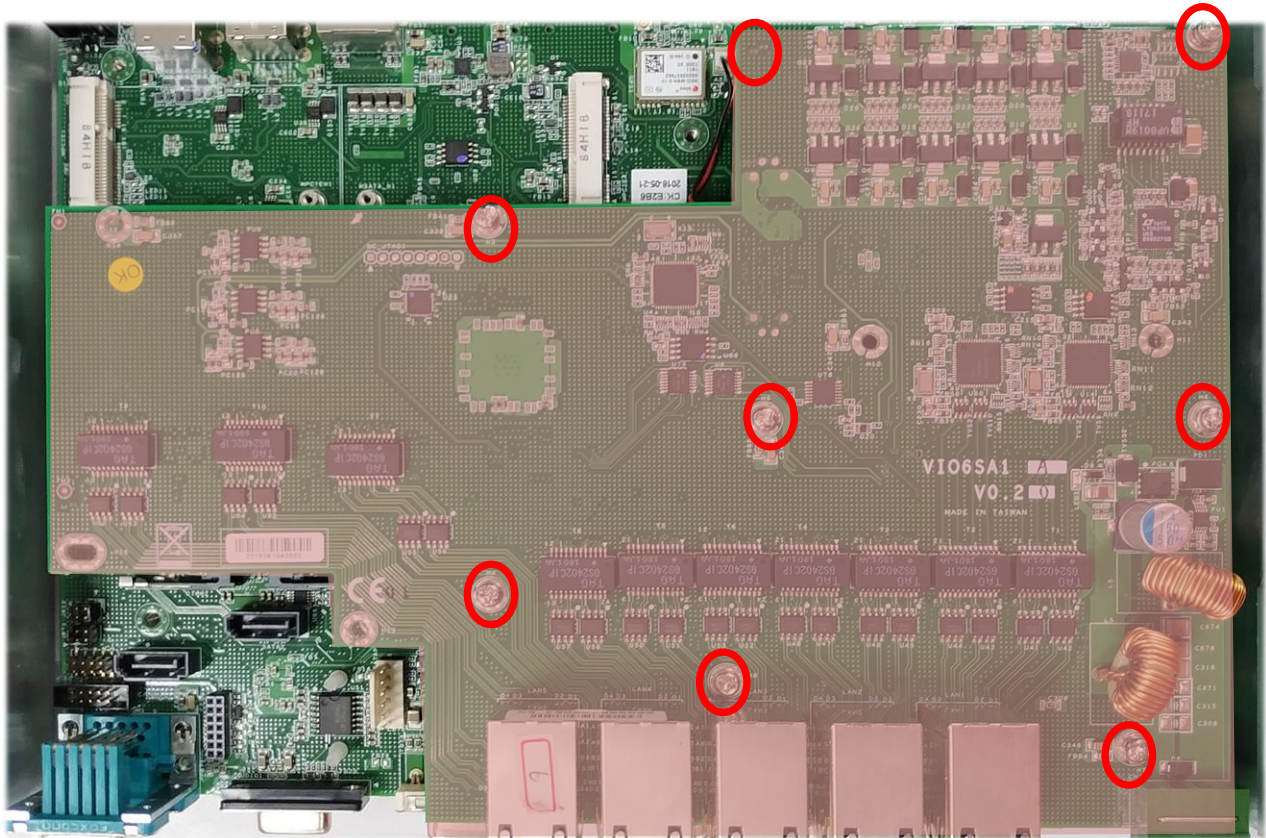
Description	J11
Normal (Default)	1-2
Program	2-3



CHAPTER 3: 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. Also, please wear ESD protection gloves when conducting the steps in this chapter.

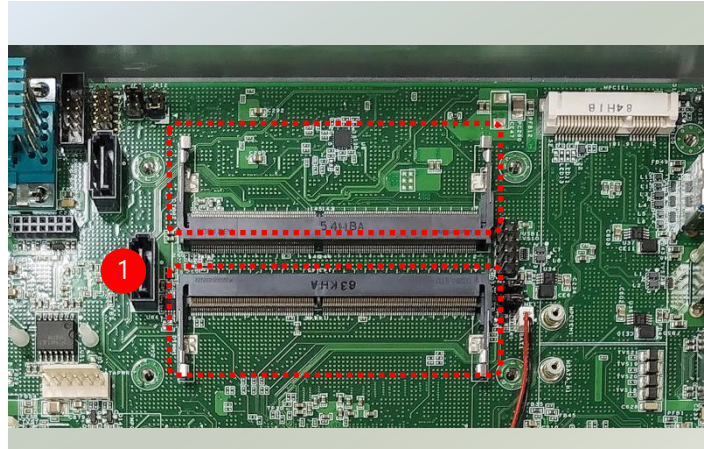
For installation of the system memory and mSATA storage, please remove the IO board by removing the indicated screws that secure the board onto the standoffs:



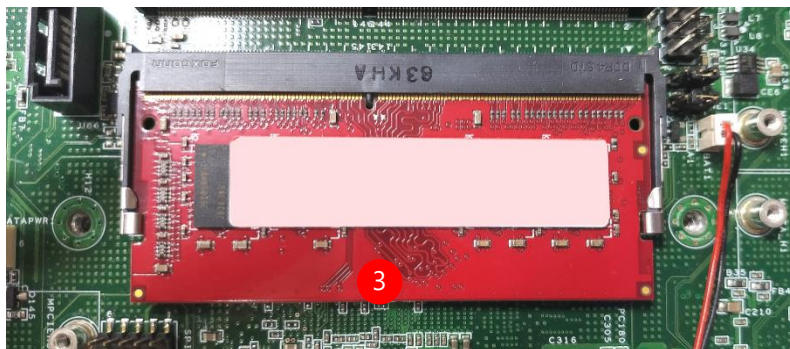
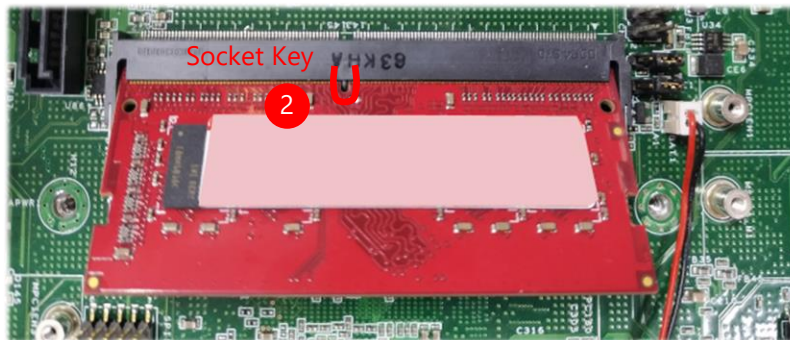
Installing the System Memory

The motherboard supports DDR4 SODIMM memory. Please follow the steps below to install the SODIMM memory modules.

1. Locate **DIMM1** and **DIMM2** slots.

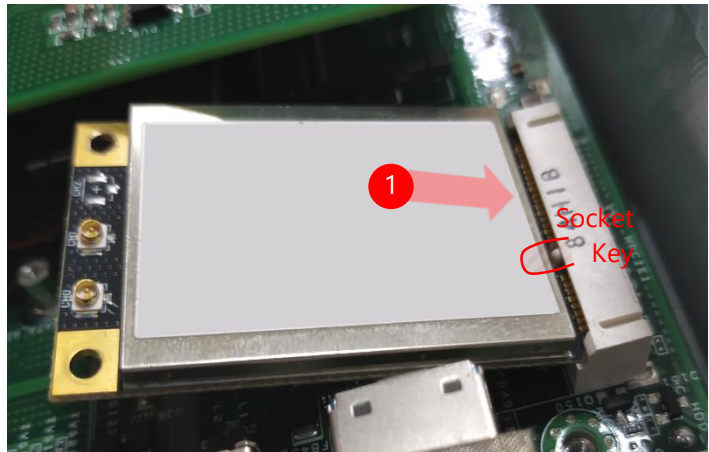


2. Align the notch of the module with the socket key in the slot.
3. Press on the card to push it down vertically until it clicks into place.

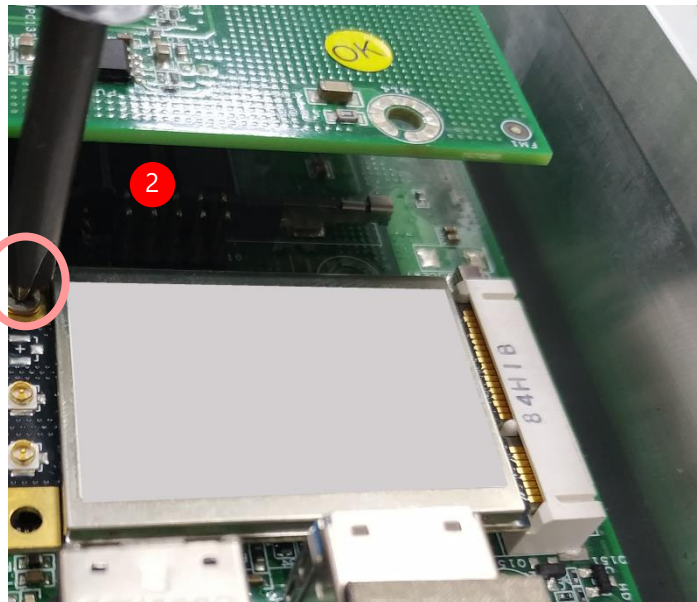


Installing the Wifi Module

1. Locate **MPCIE1** slot. Align the notch of the module with the socket key in the slot, and insert it at 30 degrees into the socket until it is fully seated in the connector.

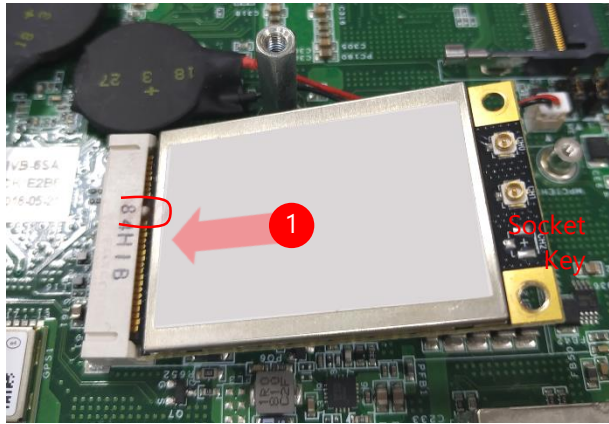


2. Push down on the module and secure it with the screw that comes with it.

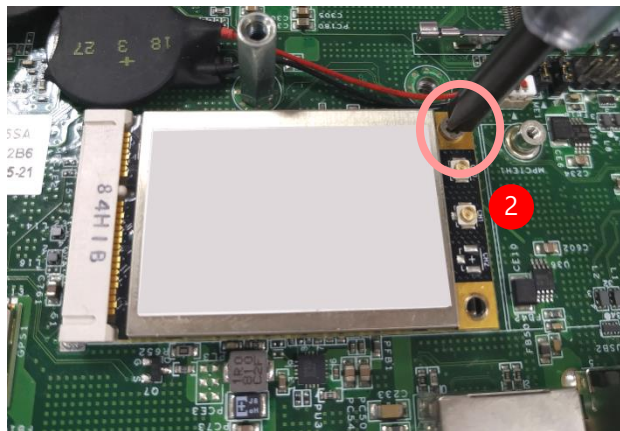


Installing the LTE Module

1. Locate **MPCIE2** slot. Align the notch of the module with the socket key in the slot, and insert it at 30 degrees into the socket until it is fully seated in the connector.



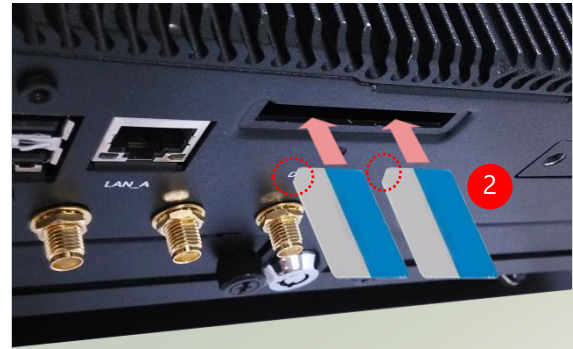
2. Push down on the module and secure it with the screw that comes with it.



3. To install the SIM cards, on front panel, loosen the screw that secures the cover onto the system.



4. Push the SIM cards into the socket. Make sure the angled corner of the card is positioned correctly as shown in this picture.



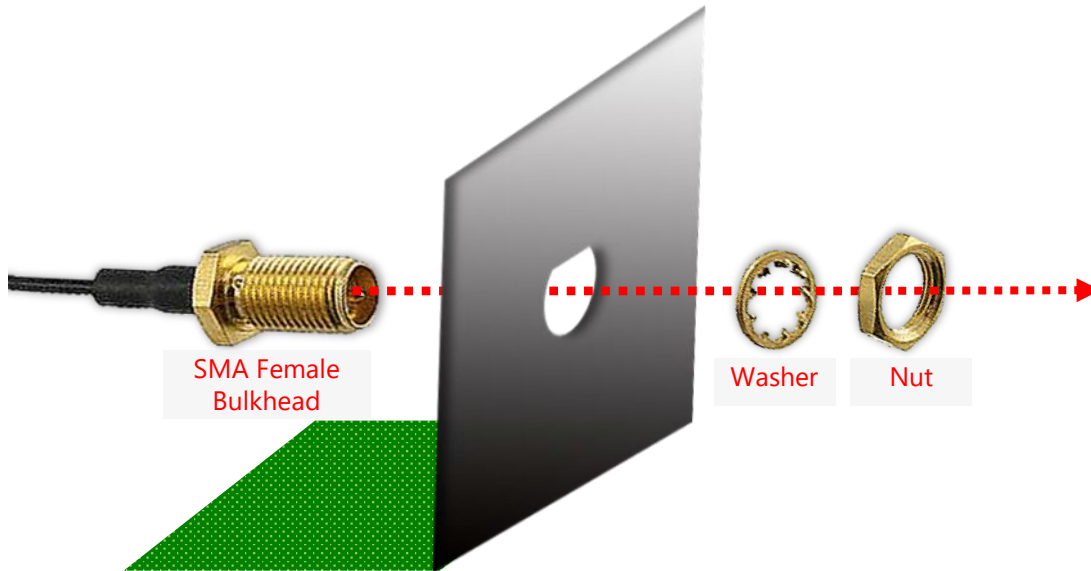
To remove the card, simply push it to have it bounce out automatically.



Mounting an SMA-Mount Antenna Cable Assembly

To mount the Wi-Fi/LTE antennas:

1. Take out the antenna pigtail cable from the Antenna Kit. From inside the chassis, insert the SMA Female Bulkhead through the antenna hole on the panel.



2. From outside the panel, attach the Washer and Nut, and tighten the Nut using an SMA Torque Wrench.



Warning: Do not use any tool other than an SMA Torque Wrench to fasten the Nut. For example, general pliers or tweezers without limited twisting force are very likely to cause the distortion of SMA connector.

Installing the Disk Drive

This system is built with two 2.5" HDD/SSD drive bays. The following will discuss disk drive installation procedures based on their designs.

1. Unscrew the two screws that fix the tray on the system.



2. Install the disk onto the tray and secure it with four provided disk screws. Make sure the SATA connector faces outwards as shown in the picture.



3. Insert the tray into the bay and fasten the two screws that fix the tray on the system.



4. Lock the tray with the provided tray lock key.

Installing 4G Module (For External M.2 Module)

This system comes with an external M.2 slot, supporting dual SIM design. The following will discuss the installation of 4G module and SIM cards.



1. Loosen the two screws that secure the tray and draw out the tray by its grip.



To Install the 4G module:

2. Locate the M.2 slot on the top side of this tray. Align the notch of the module with the socket key in the slot, and insert it at 30 degrees into the socket until it is fully seated in the connector.
3. Push down on the module and secure it with the screw that comes with it.
4. Attach both inner antenna cables to this module.

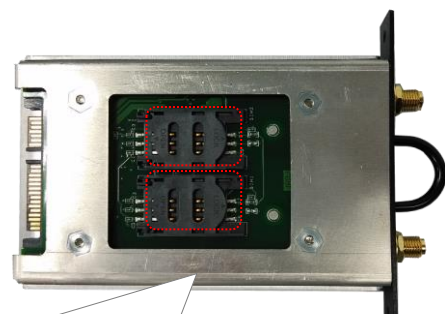
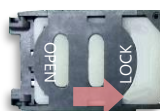
To install the SIM cards:

5. Slide open the socket cover and lift the cover on its hinges.



6. Insert the SIM card into the slot in the cover with the gold contacts facing down.

7. Push down the cover to close, and the SIM card will come in contact with the metal contacts in the socket. Finally, Slide the socket cover to the Lock position.



The angled corner of the card is positioned as shown in this picture.

CHAPTER 4: BIOS SETUP

Enter BIOS Setup

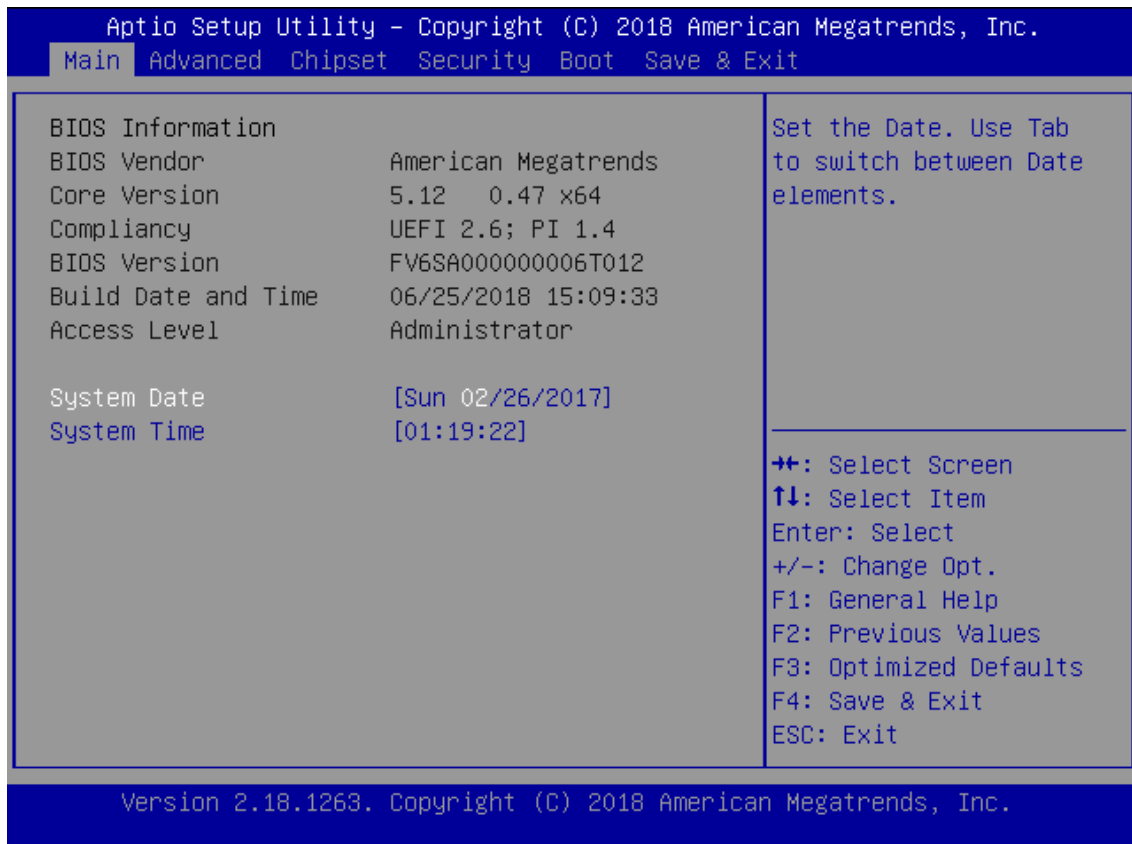
To enter the BIOS setup utility, simply follow the steps below:

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.
3. Instructions of BIOS navigations:

Control Keys	Description
→←	select a setup screen, for instance, [Main], [IntelRCSetup], [Security], [Boot], and [Save & Exit]
↑↓	select an item/option on a setup screen
<Enter>	select an item/option or enter a sub-menu
+/-	to adjust values for the selected setup item/option
F1	to display the 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>	exit the current screen

Main

Setup main page displays a description of BIOS information and project version information. You can also set up the System Time and System Date here.

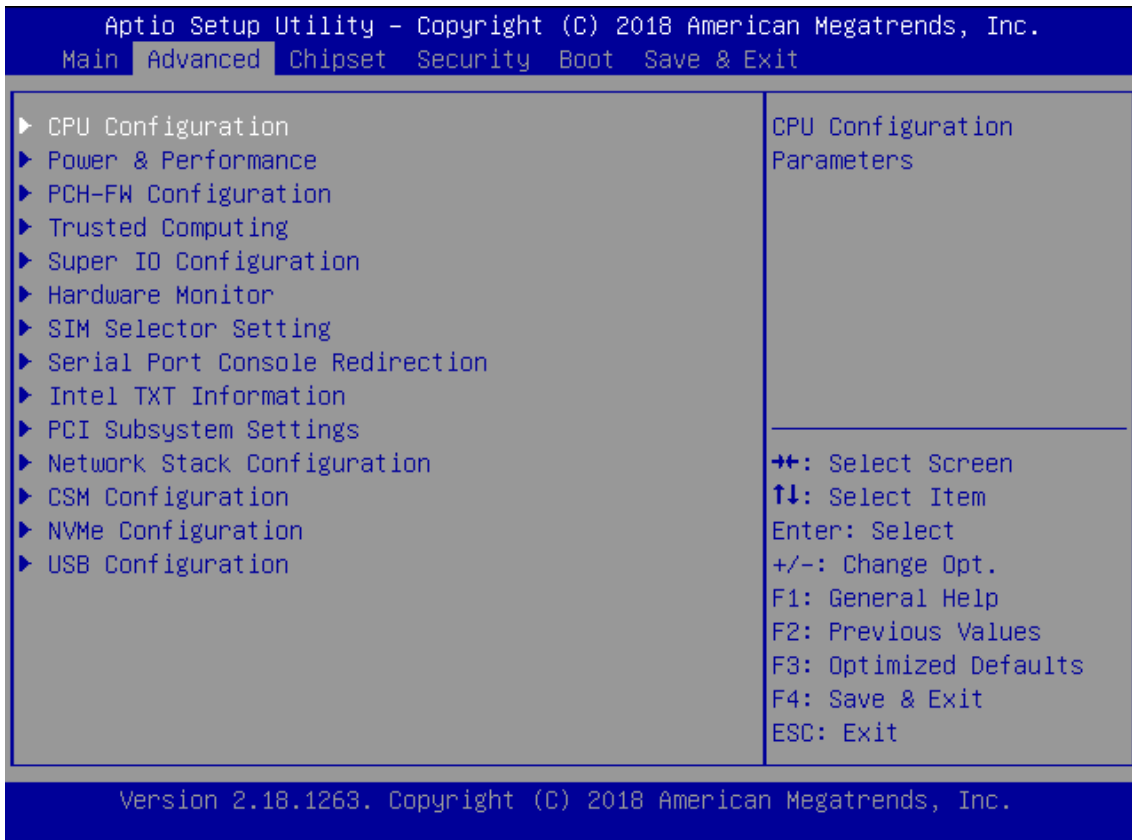


(The screenshots presented in the section are for reference only)

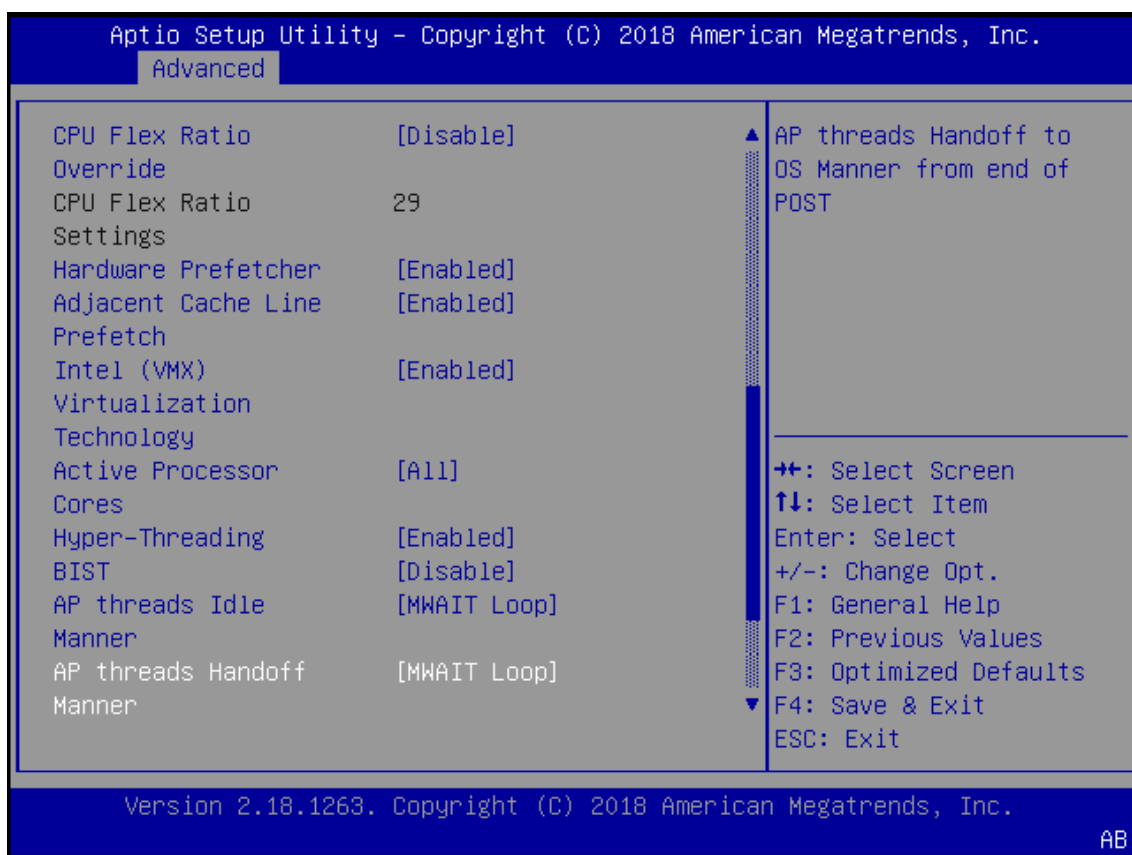
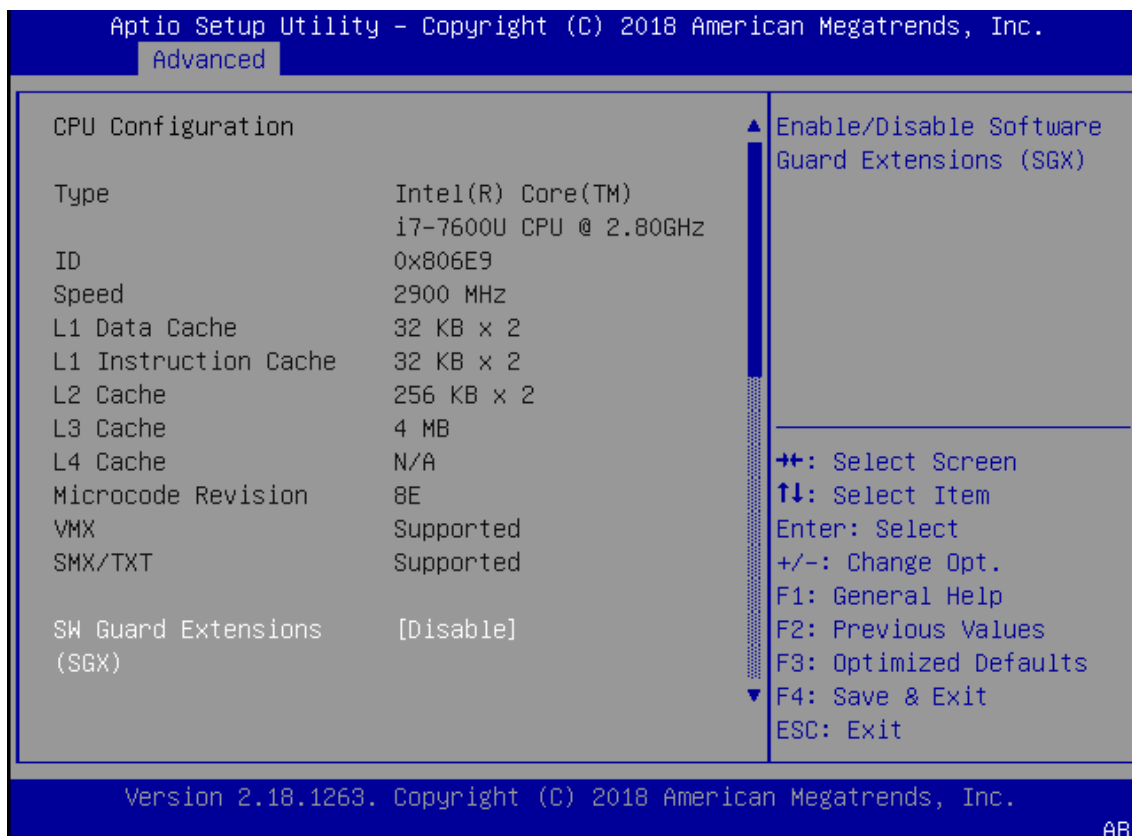
Item	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version: AMI Kernel version, CRB code base, X64 Compliance: UEFI version, PI version Project Version: BIOS release version Build Date and Time: MM/DD/YYYY Access Level: Administrator / User
System Date	To set the Date, use <Tab> to switch between Date elements. <ul style="list-style-type: none"> ● 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

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

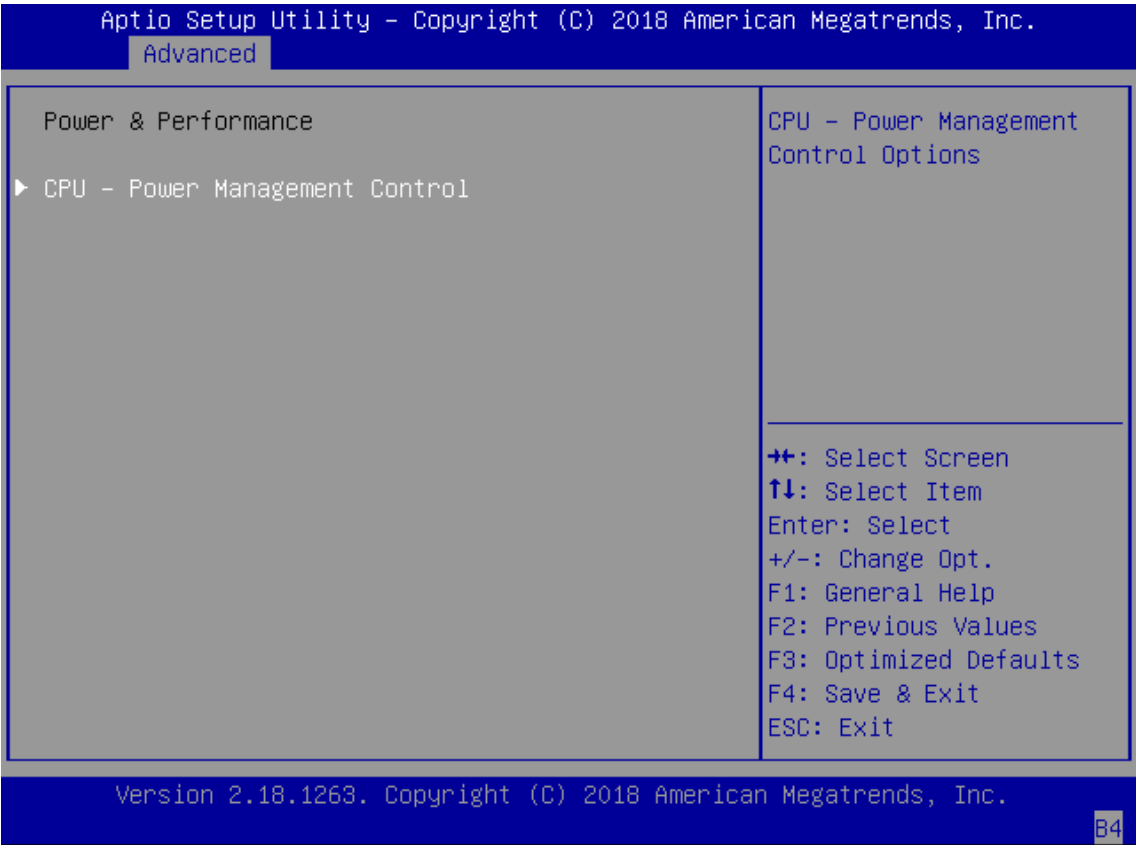


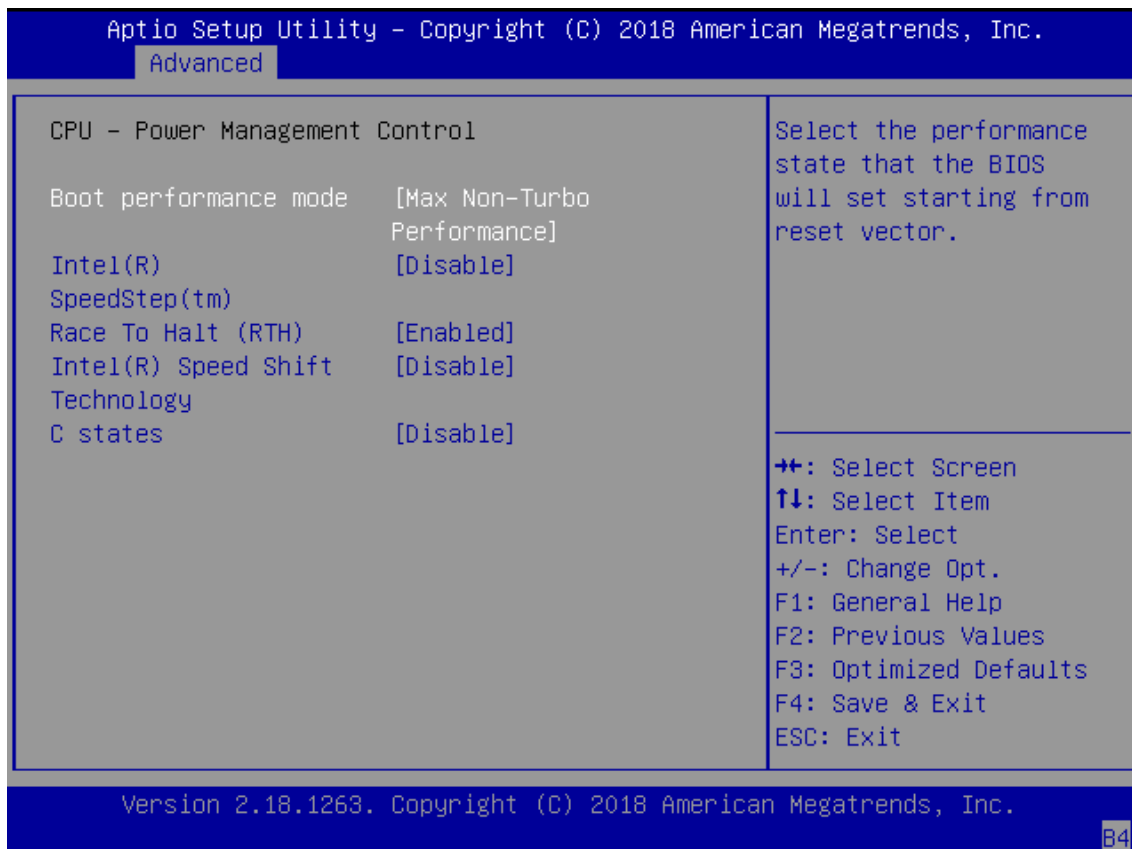


Feature	Options	Description
SW Guard Extensions (SGX)	Software Enabled Disabled	Enable/Disable Software Guard Extensions (SGX).
CPU Flex Ratio Override	Disabled Enabled	Enable/Disable CPU <u>Flex</u> Ratio Programming.
CPU Flex Ratio Settings	29	This value must be between Max Efficiency Ratio (LFM) and Maximum non- <u>turbo</u> ratio set by Hardware (HFM).
Hardware Prefetcher	Disabled Enabled	To turn on/off the MLC streamer prefetcher.
Adjacent Cache Line Prefetch	Disabled Enabled	To turn on/off prefetching of adjacent cache lines.
Intel (VMX) Virtualization Technology	Disabled Enabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	All 1	Number of cores to enable in each processor package.
Hyper-Threading	Disabled Enabled	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).

BIST	Disabled Enabled	Enable/Disable BIST (Built-In Self Test) on reset.
AP threads Idle Manner	HALT Loop MWAIT Loop RUN Loop	AP threads Idle Manner for waiting for the signal to run.
AP threads Handoff Manner	HALT Loop MWAIT Loop	AP threads Handoff to OS Manner from the end of POST.
AES	Disabled Enabled	Enable/Disable AES (Advanced Encryption Standard).
MachineCheck	Disabled Enabled	Enable/Disable Machine Check.
MonitorMWait	Disabled Enabled	Enable/Disable MonitorMWait.
Intel Trusted Execution Technology	Disabled Enabled	Enables utilization of additional hardware capabilities provided by Intel (R) Trusted Execution Technology.\n\nChanges require a full power cycle to take effect.
Alias Check Request	Disabled Enabled	Enables Txt Alias Checking capability\n\nChanges to require full Txt capability before it will take effect.\n\nIt is a one time only change, next reboot will be reset.
DPR Memory Size (MB)	4	Reserve DPR memory size (0-255) MB
Reset AUX Content	Yes No	Reset TPM Aux content. Txt may not functional after AUX content gets reset.

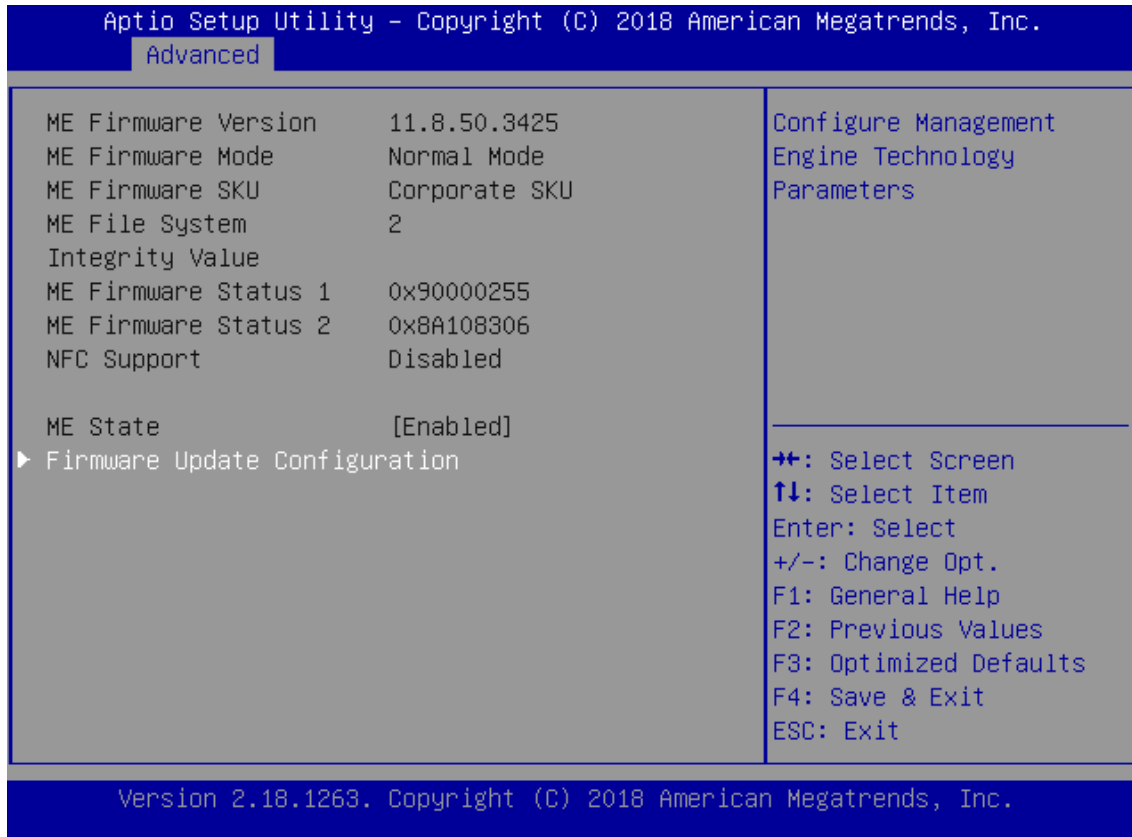
Power & Performance



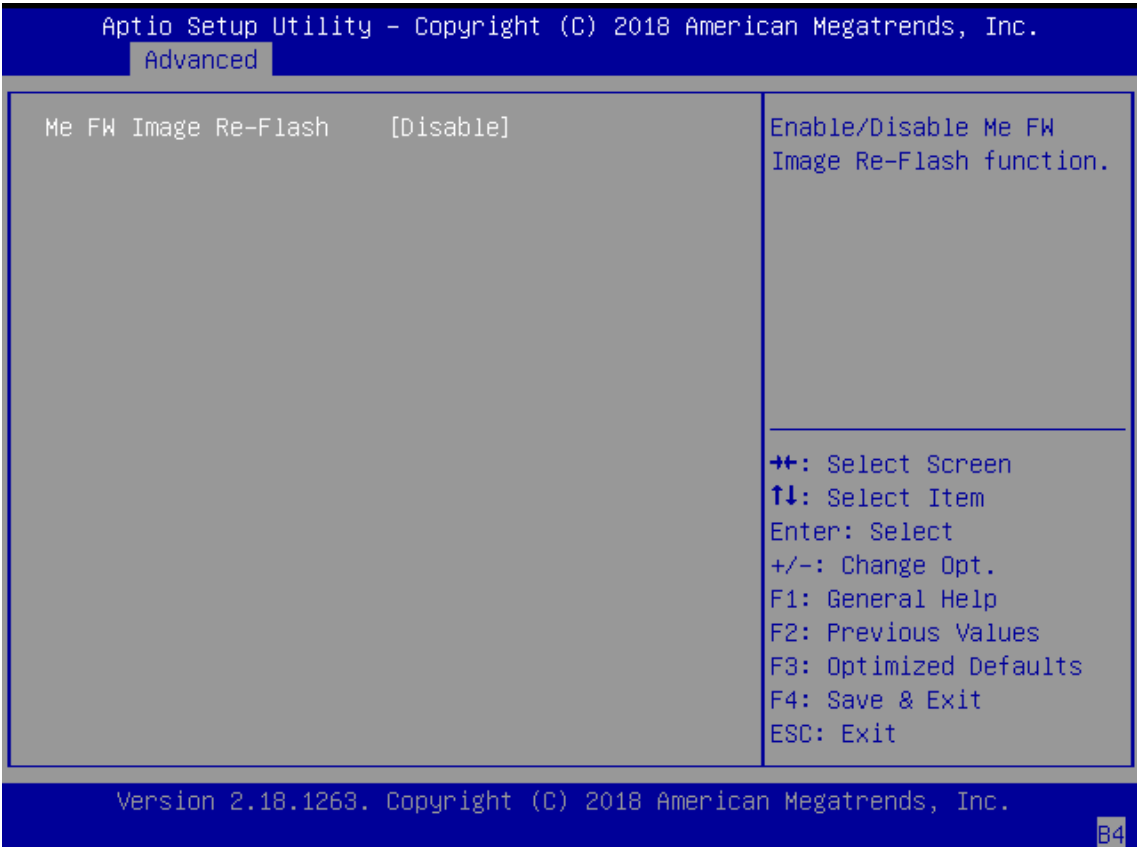
CPU – Power Management Control

Feature	Options	Description
Boot performance mode	Max Non-Turbo Performance Max Battery Turbo Performance	Select the performance state that the BIOS will set starting from reset vector.
Intel(R) SpeedStep(tm)	Disabled Enabled	Allows more than two frequency ranges to be supported.
Race To Halt (RTH)	Disabled Enabled	Enable/Disable Race To Halt feature. RTH will dynamically increase CPU frequency in order to enter pkg C-State faster to reduce overall power. (RTH is controlled through MSR 1FC bit 20).
Intel(R) Speed Shift Technology	Enabled Disabled	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
C states	Enabled Disabled	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

PCH-FW Configuration

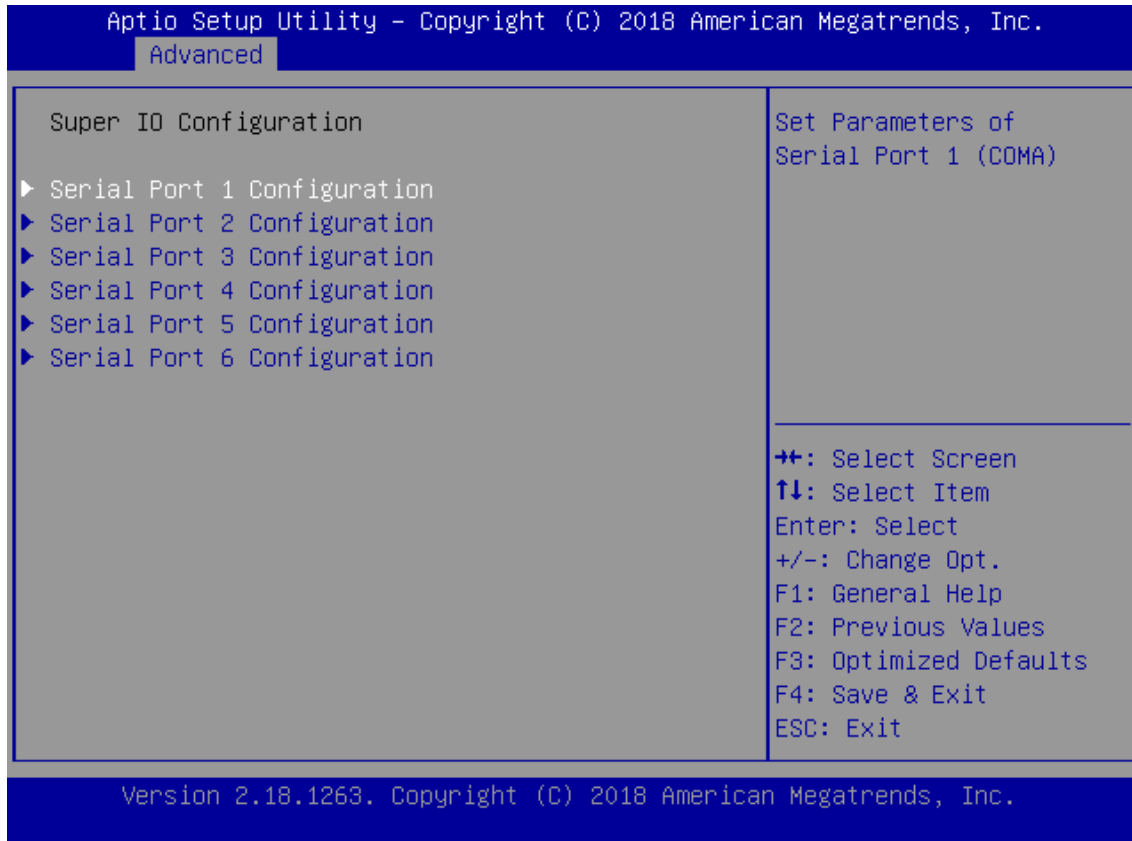


Firmware Update Configuration



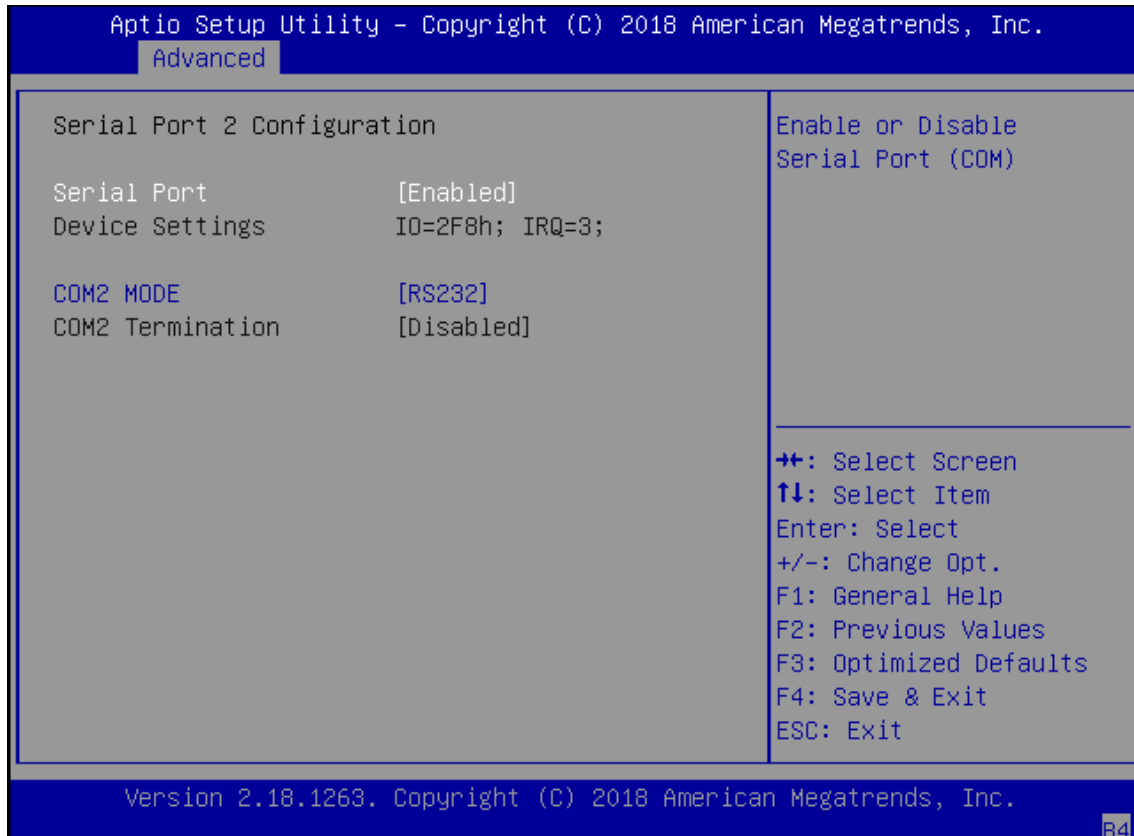
Feature	Options	Description
Me FW Image Re-Flash	Disabled Enabled	Enable/Disable Me FW Image Re-Flash function.

Super IO Configuration



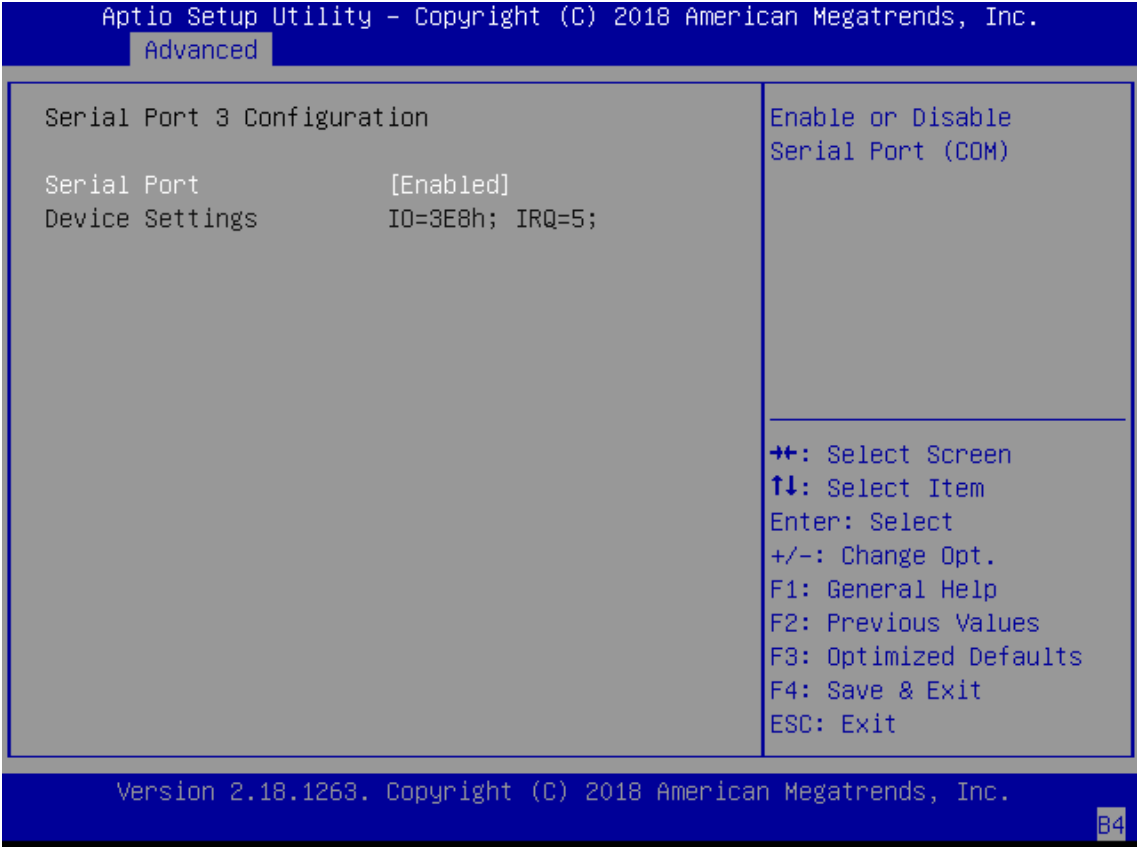
Serial Port 1 Configuration

Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM).
Device Settings	NA	IO=3F8h; IRQ = 4;
COM1 MODE	RS232 RS485 RS422	COM RS-422/485 Support.
COM1 Termination	Disabled Enabled	COM RS-422/485 Receiver Termination.

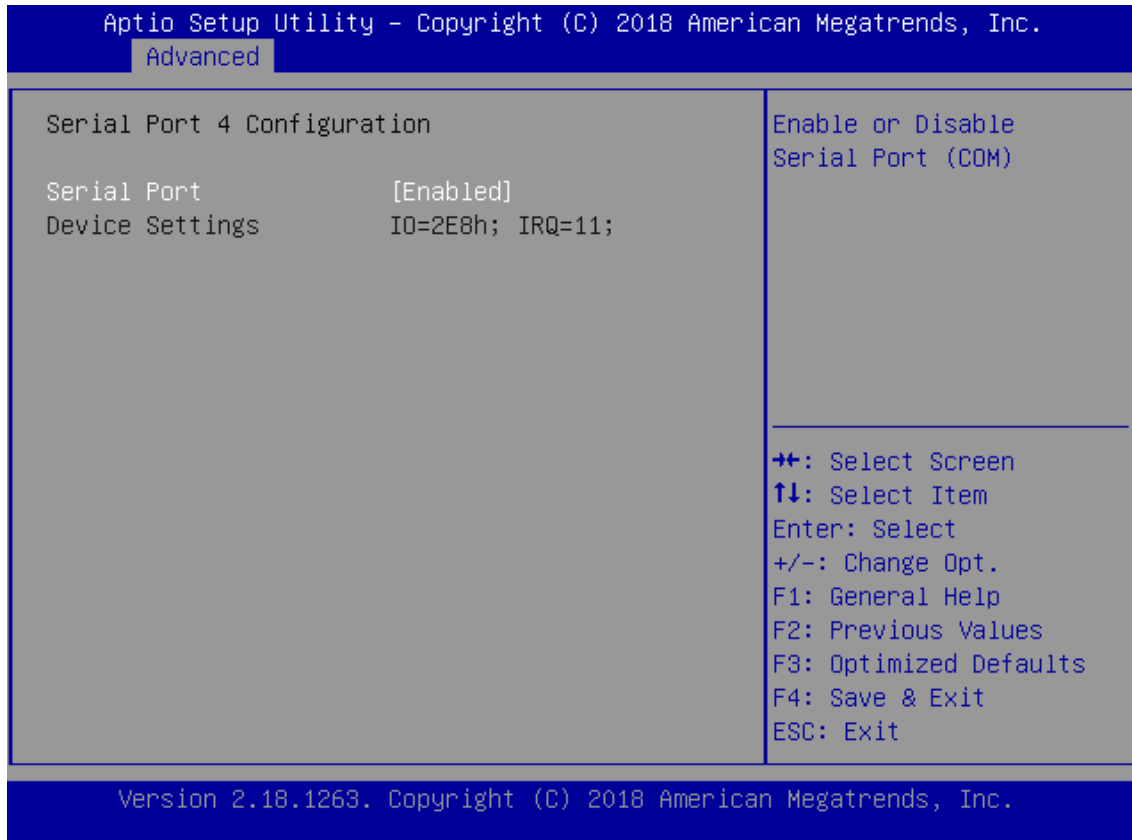
Serial Port 2 Configuration

Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM).
Device Settings	NA	IO=2F8h; IRQ = 3;
COM2 MODE	RS232 RS485 RS422	COM RS-422/485 Support.
COM2 Termination	Disabled Enabled	COM RS-422/485 Receiver Termination.

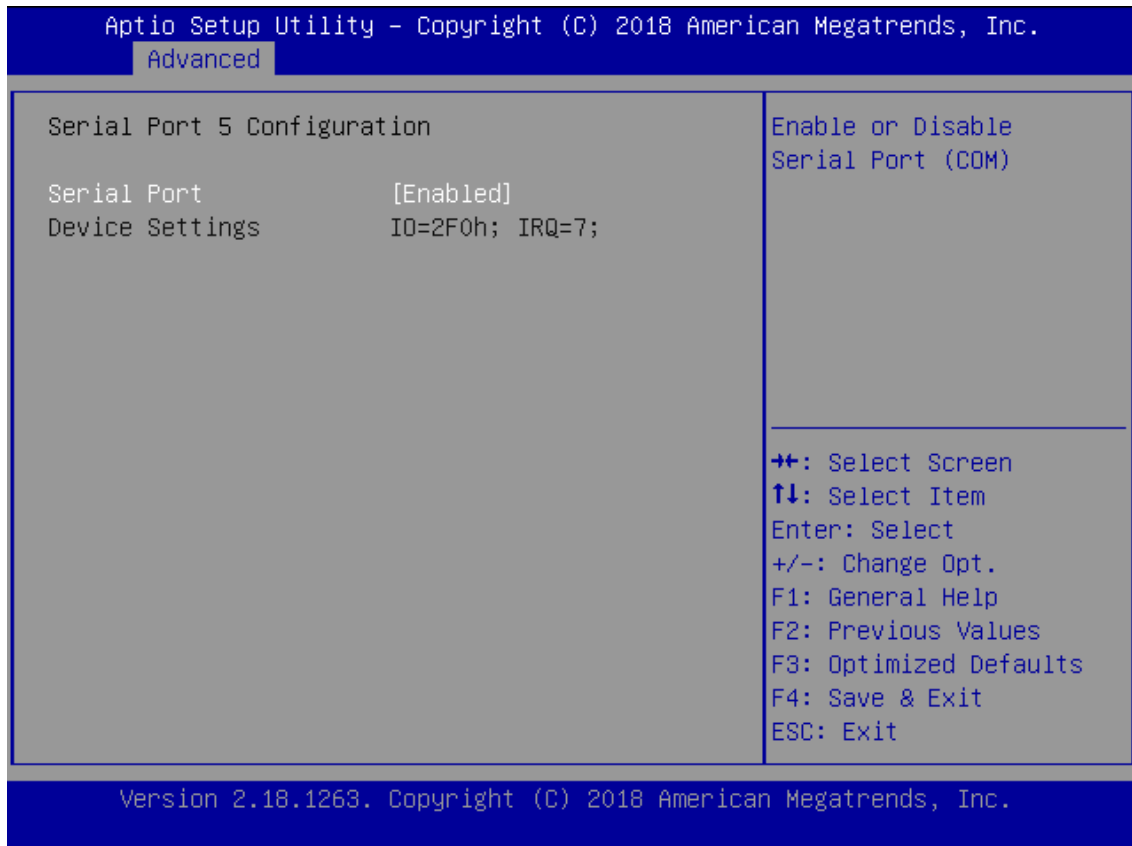
Serial Port 3 Configuration



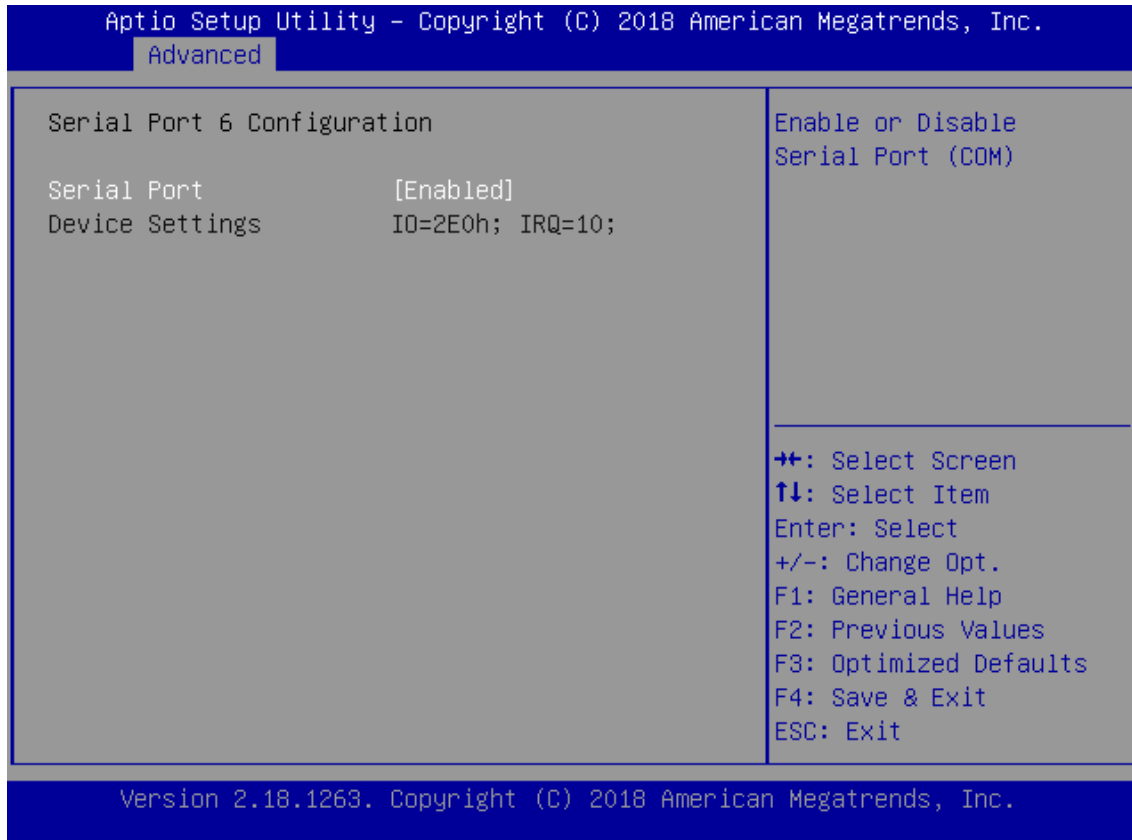
Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM).
Device Settings	NA	IO=3E8h; IRQ = 5;

Serial Port 4 Configuration

Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM).
Device Settings	NA	IO=2E8h; IRQ = 11;

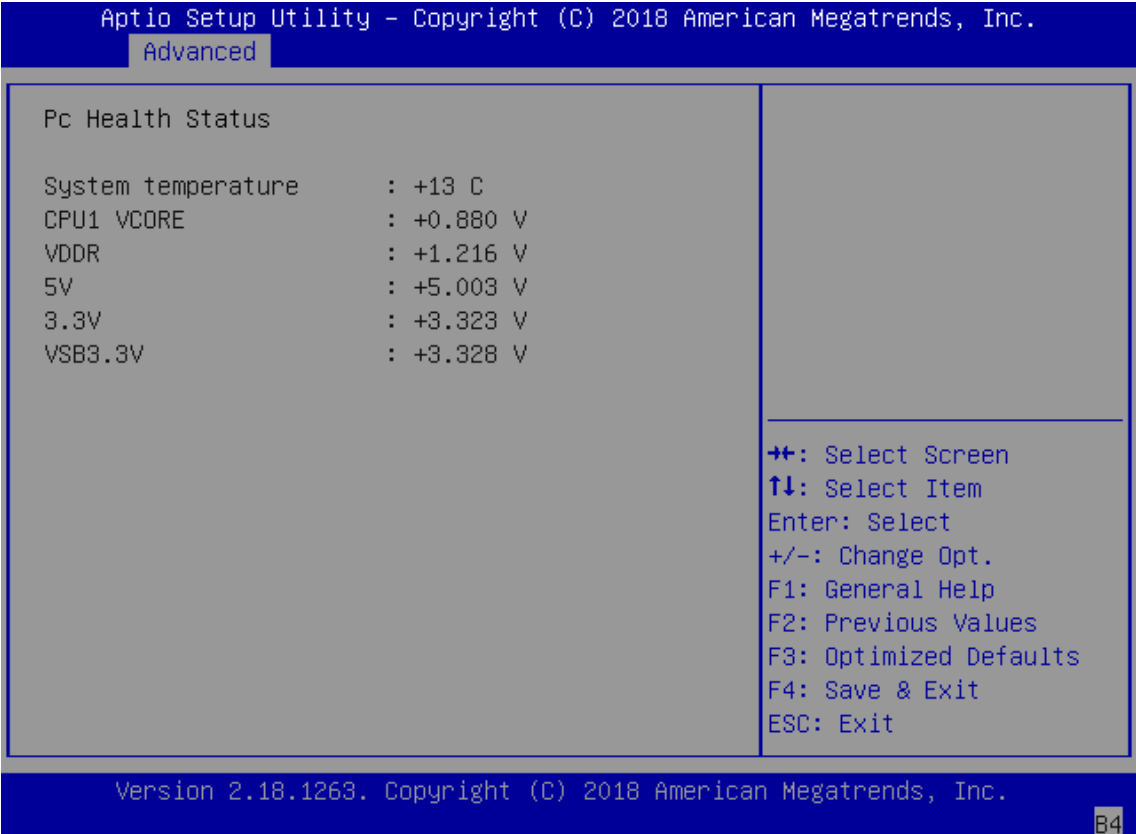
Serial Port 5 Configuration

Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM).
Device Settings	NA	IO=2F0h; IRQ = 7;

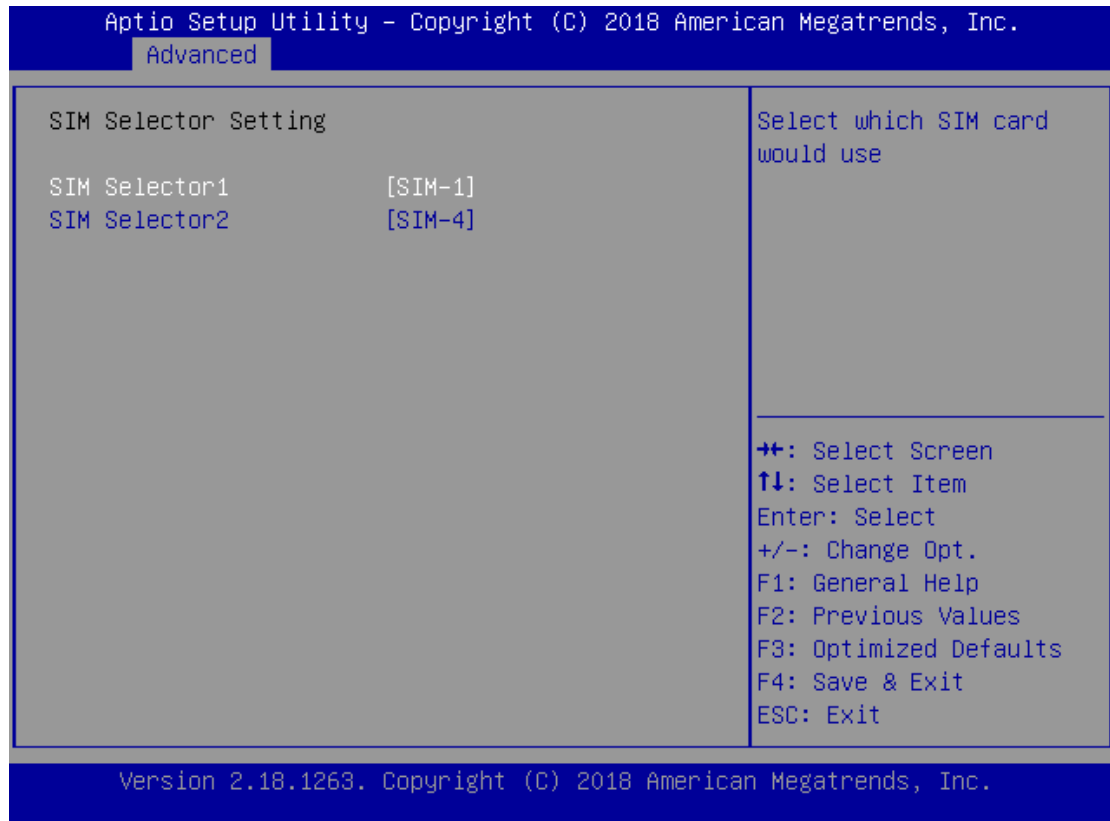
Serial Port 6 Configuration

Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM).
Device Settings	NA	IO=2E0h; IRQ =10 ;

Hardware Monitor

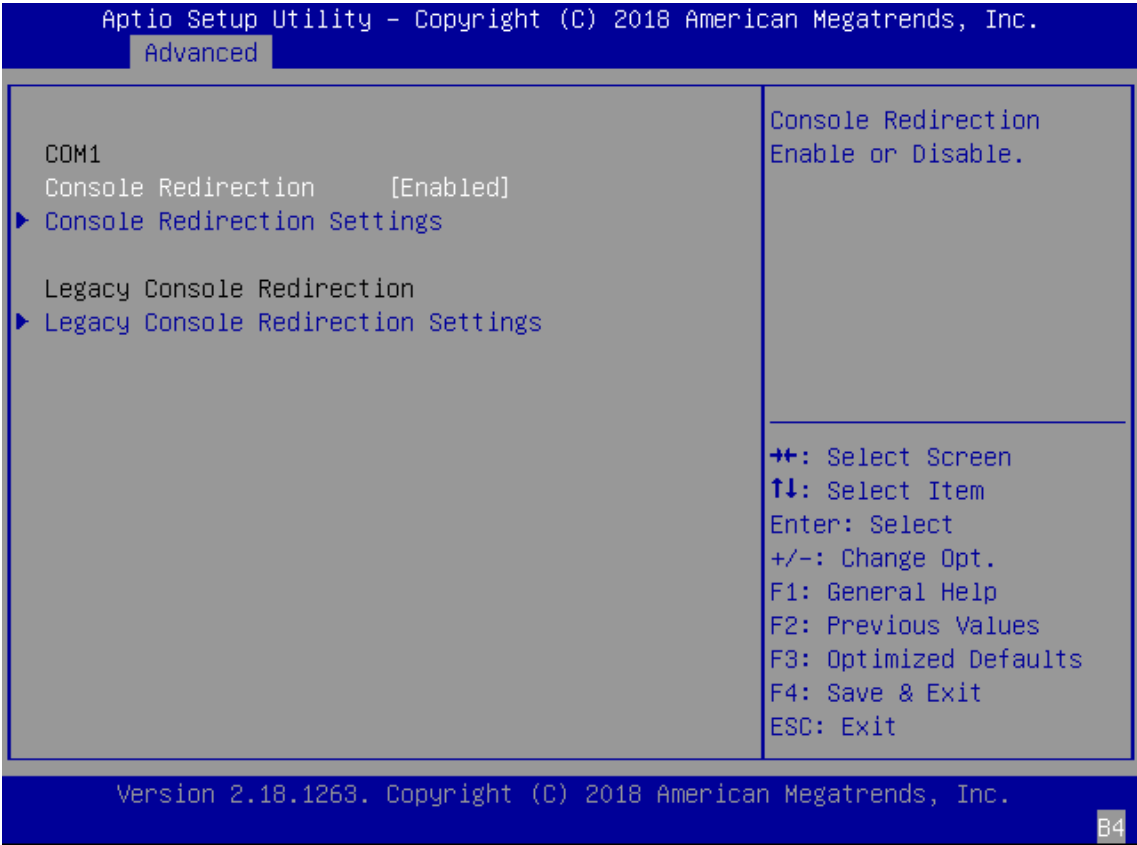


SIM Selector Setting

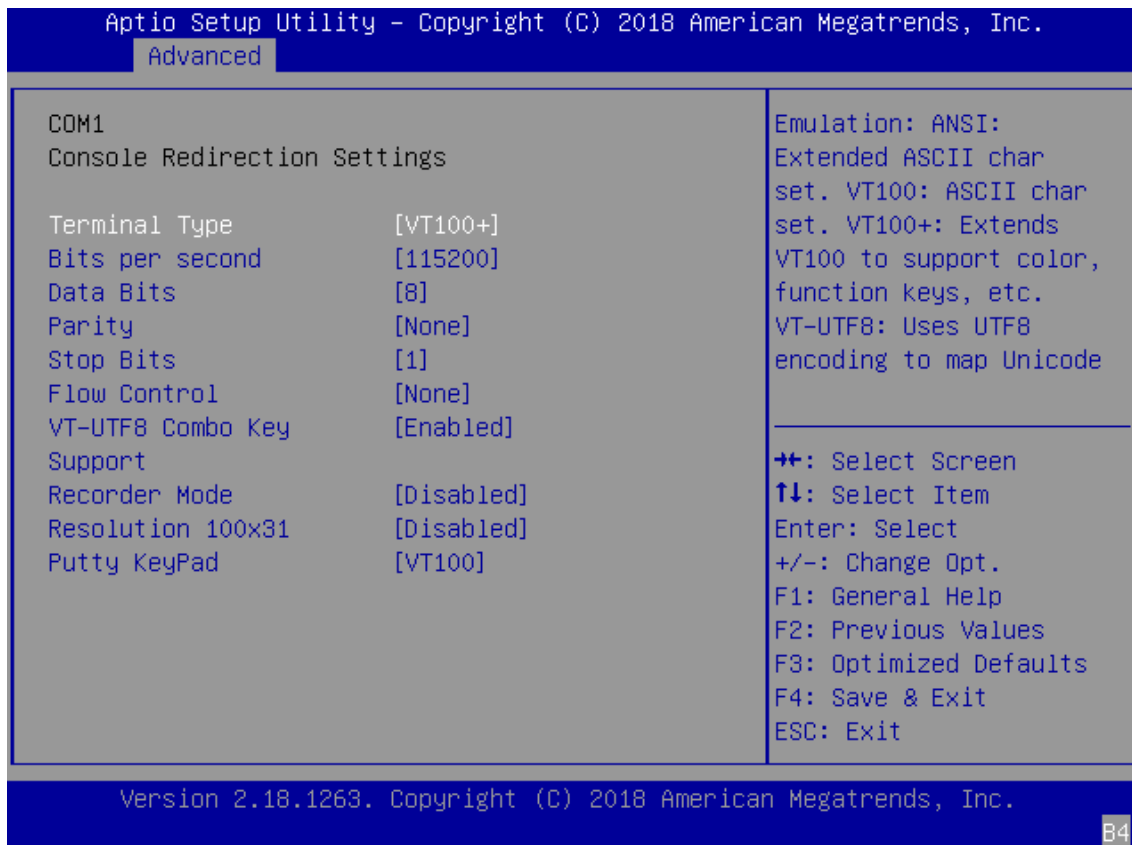


Feature	Options	Description
SIM Selector1	SIM-2	Select Which SIM card would use.
	SIM-1	
SIM Selector2	SIM-3	Select Which SIM card would use.
	SIM-4	

Serial Port Console Redirection

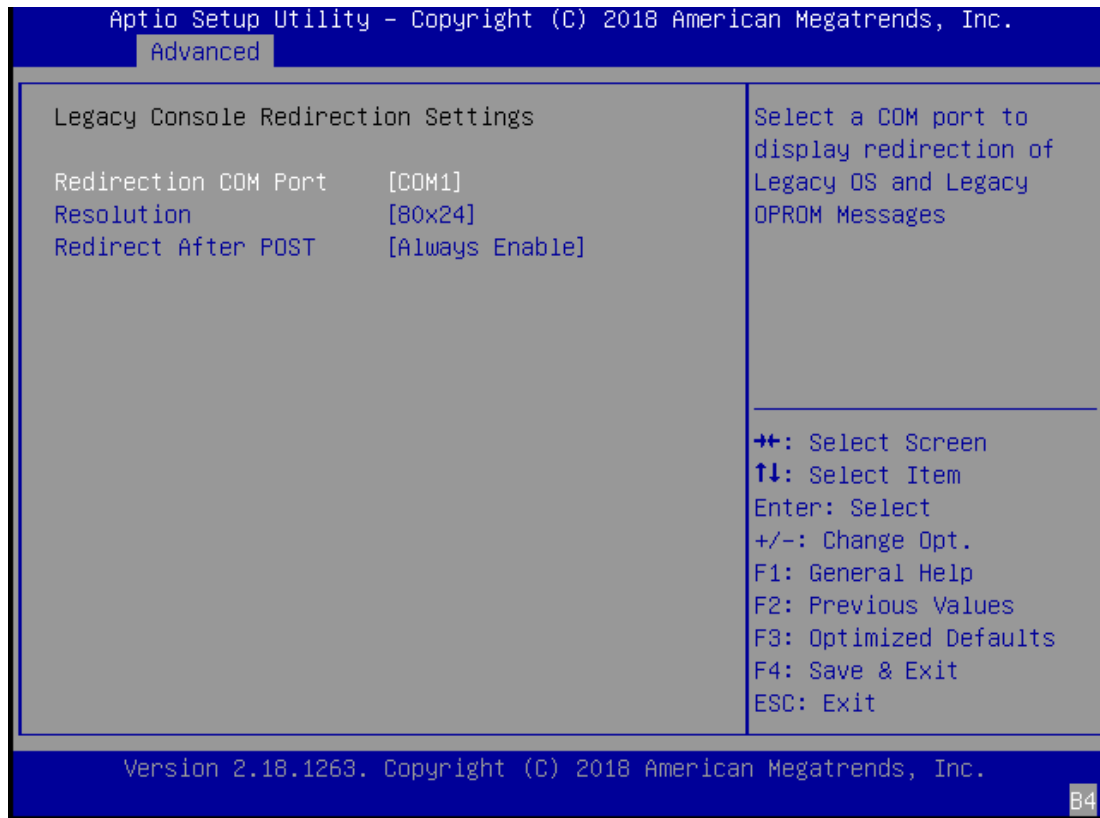


Feature	Options	Description
COM1 Console Redirection	Disabled Enabled	Console Redirection Enable or Disable.

Console Redirection Settings

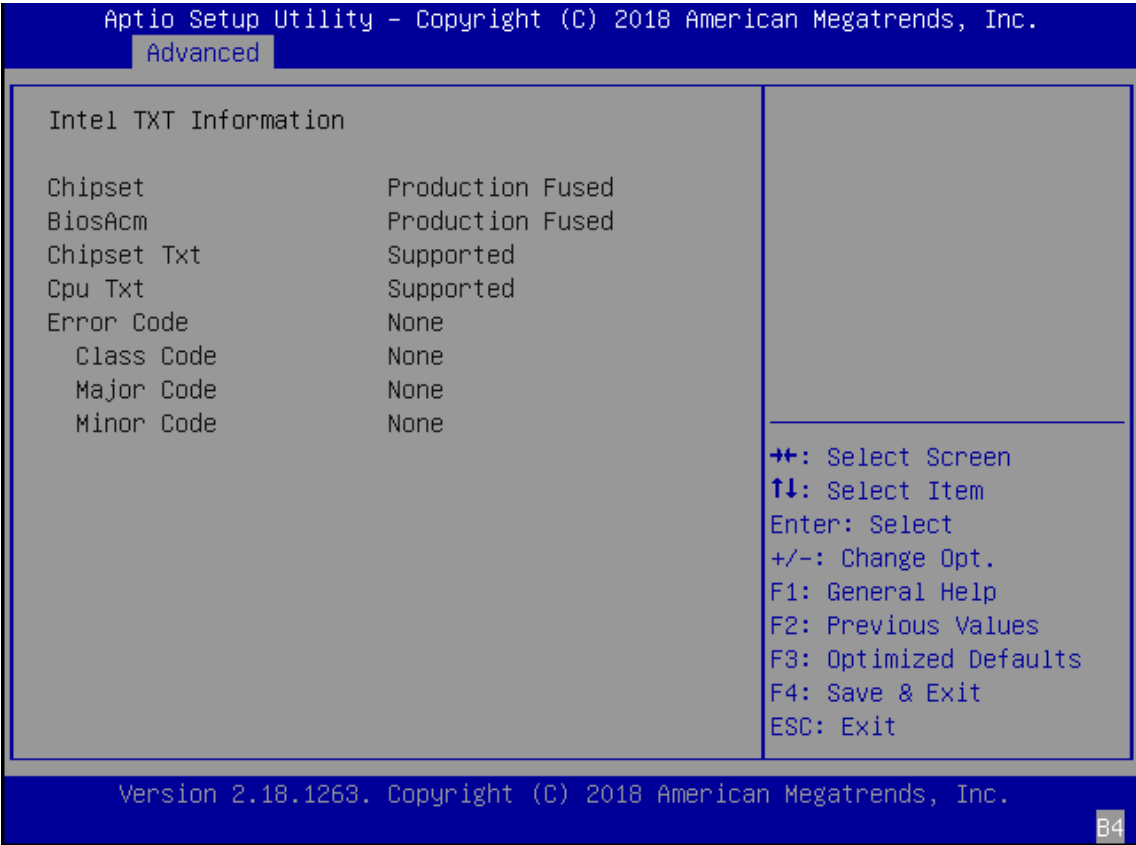
Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	VT100: ASCII char set VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes ANSI: Extended ASCII char set
Bits per second	9600 19200 38400 57600 115200	Selects 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 RTS/CTS	Flow Control can prevent data loss from buffer overflow.

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.

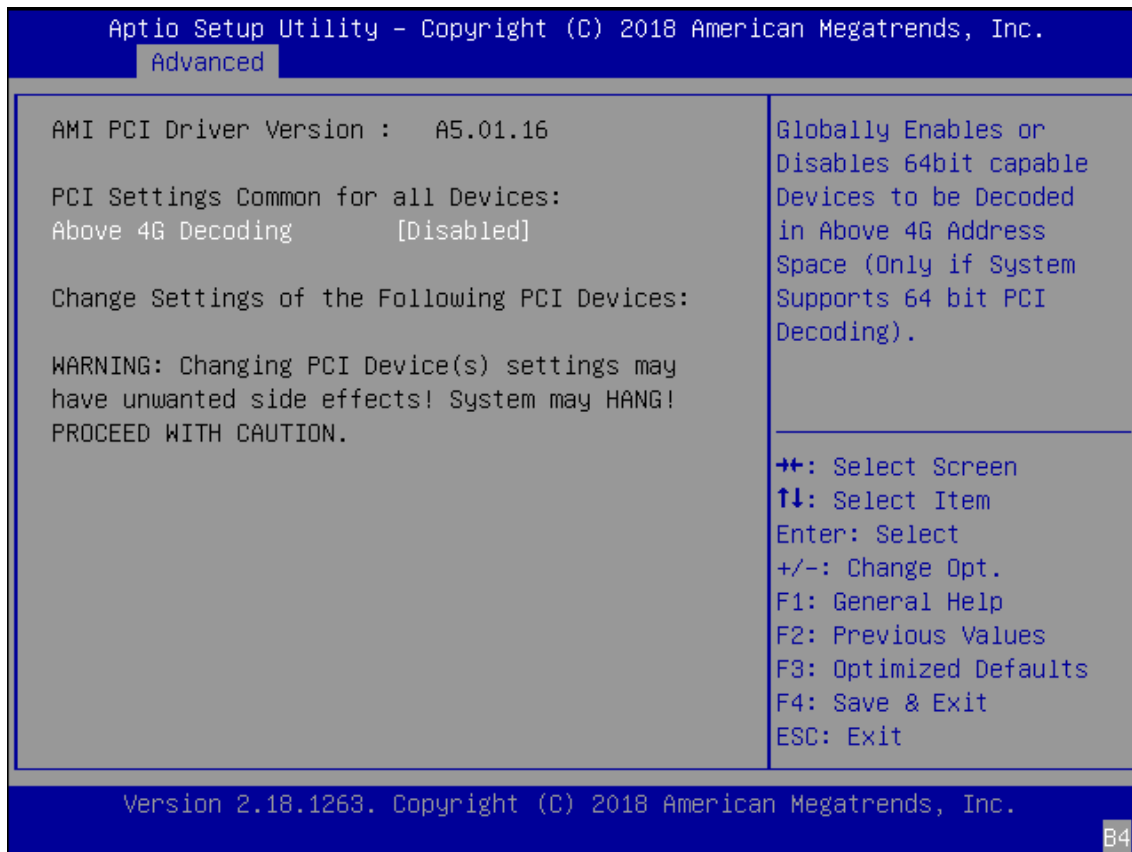
Legacy Console Redirection Settings

Feature	Options	Description
Redirection COM Port	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 BIOS POST	Always Enable BootLoader	When Bootloader is selected, Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. The default setting for this option is set to Always Enable .

Intel TXT Information

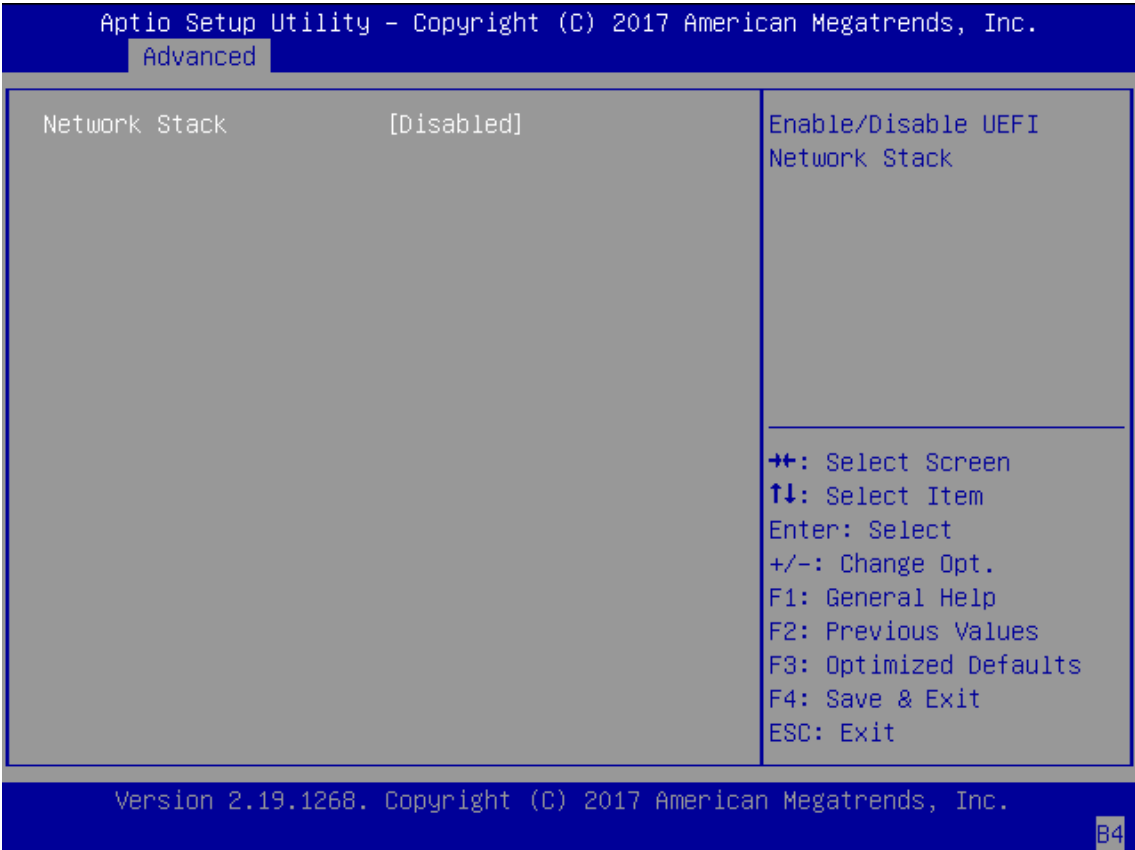


PCI Subsystem Settings



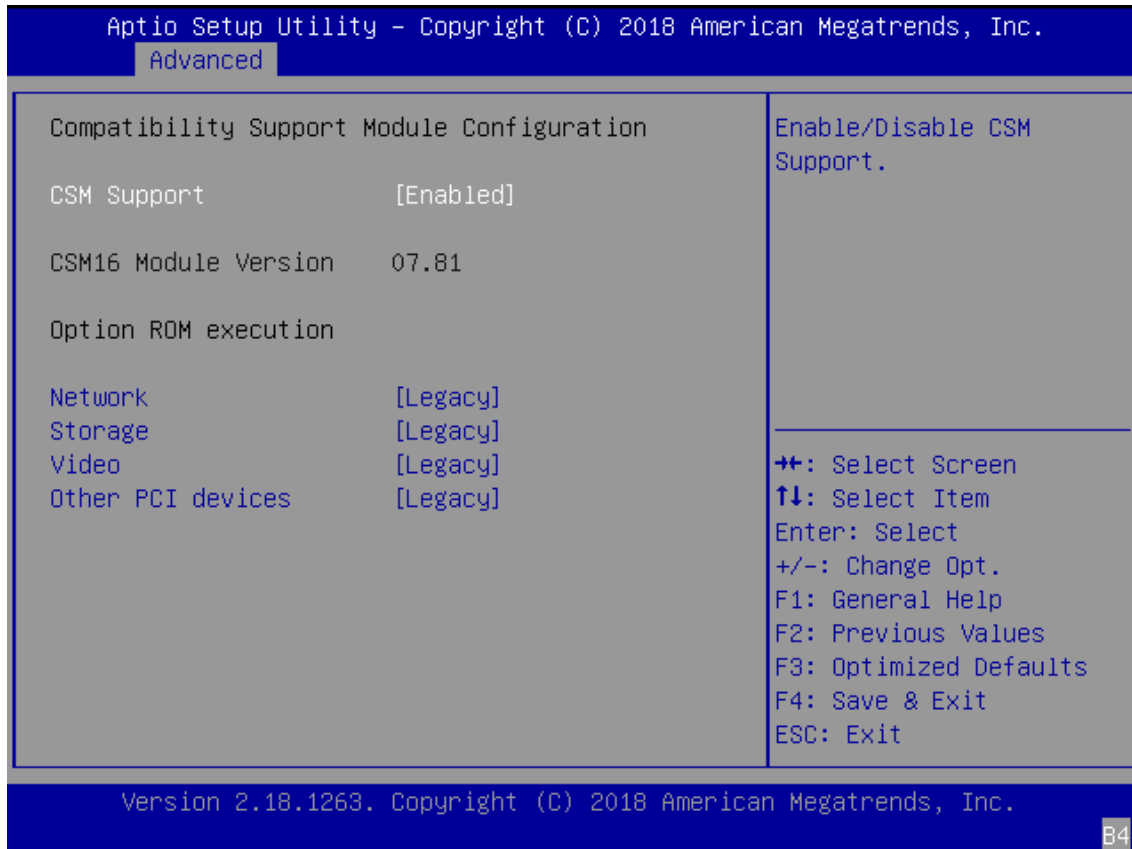
Feature	Options	Description
Above 4G Decoding	Disabled Enabled	Globally Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).

Network Stack Configuration



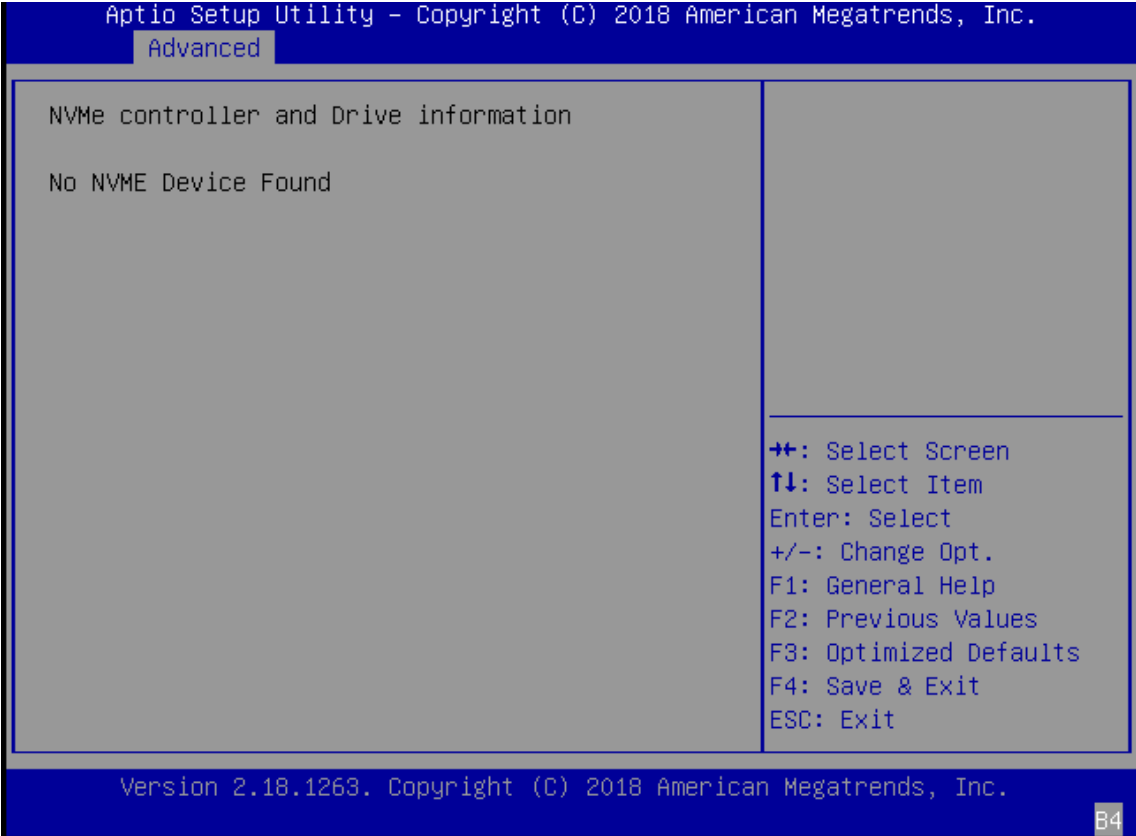
Feature	Options	Description
Network Stack	Disabled Enabled	Enables or disables UEFI Network Stack

CSM Configuration

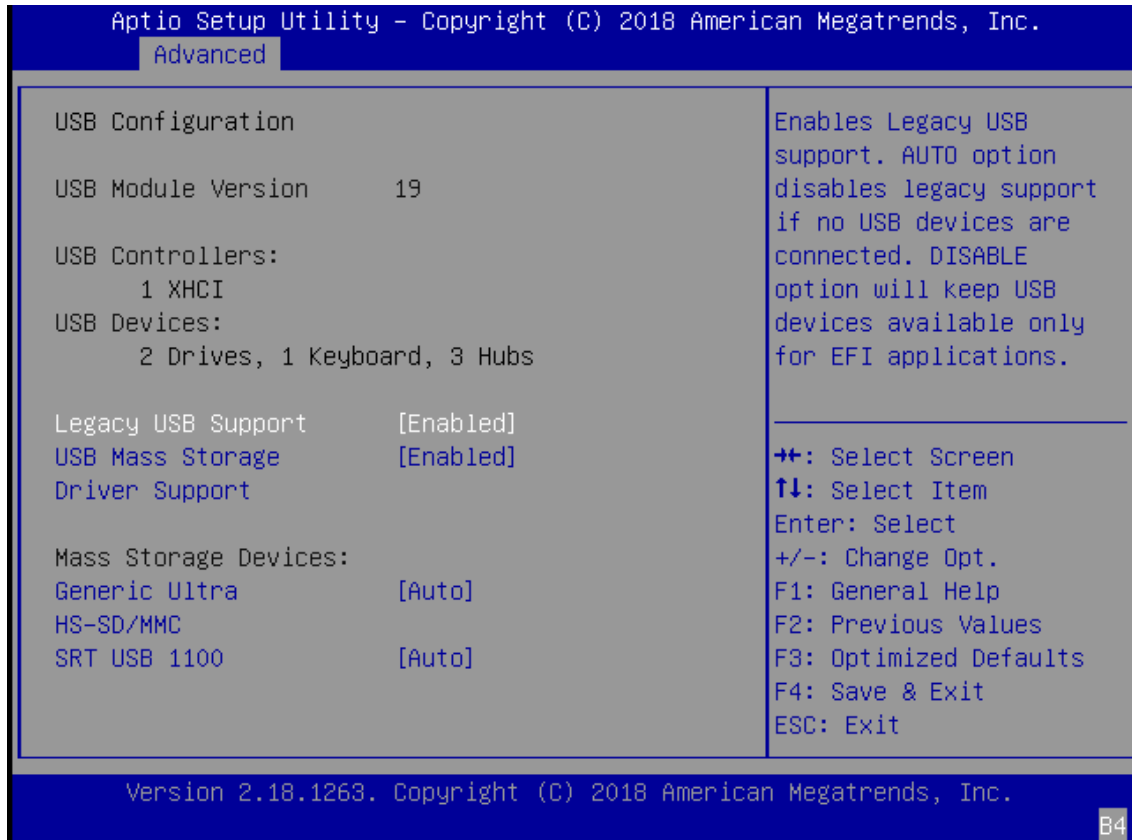


Feature	Options	Description
CSM Support	Disabled Enabled	Enables or disables CSM Support
Network	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy PXE OpROM
Storage	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy Storage OpROM
Video	Do Not Launch UEFI Legacy	Controls 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

NVMe Configuration



USB Configuration



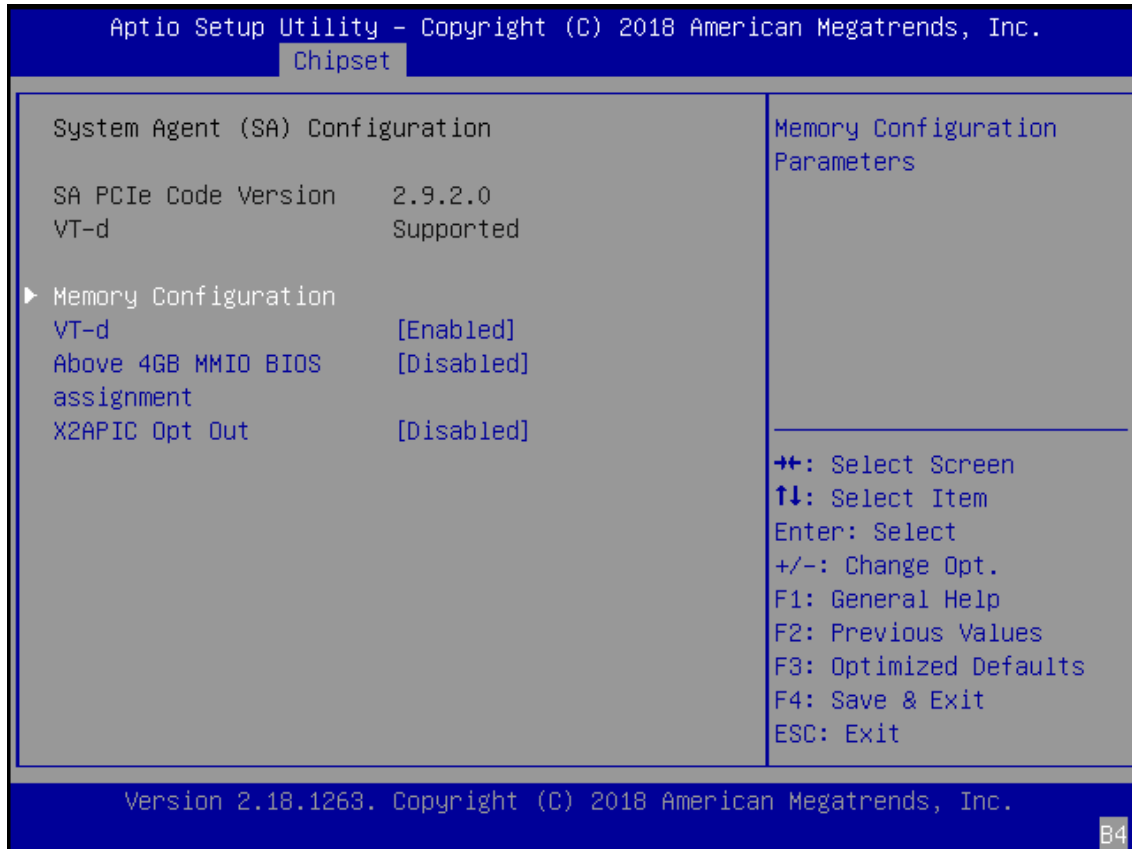
Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. Auto option disables legacy support if no USB devices are connected; Disabled option will keep USB devices available only for EFI applications.
USB Mass Storage Driver Support	Disabled Enabled	Enables or disables USB Mass Storage Driver Support.

Chipset

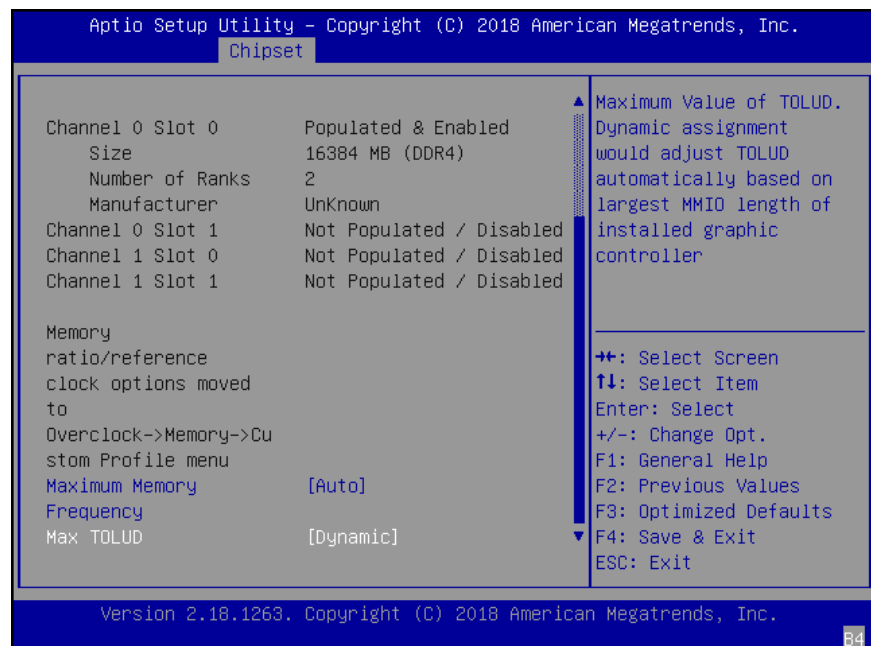
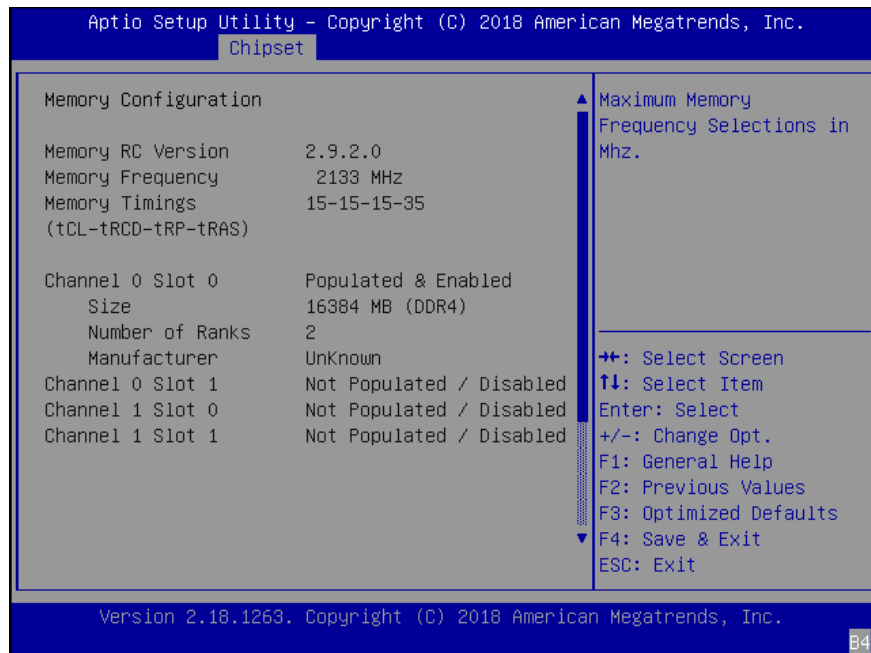
Select the Chipset menu item from the BIOS setup screen to enter the Platform Setup screen. Users can select any of the items in the left frame of the screen.



System Agent (SA) Configuration

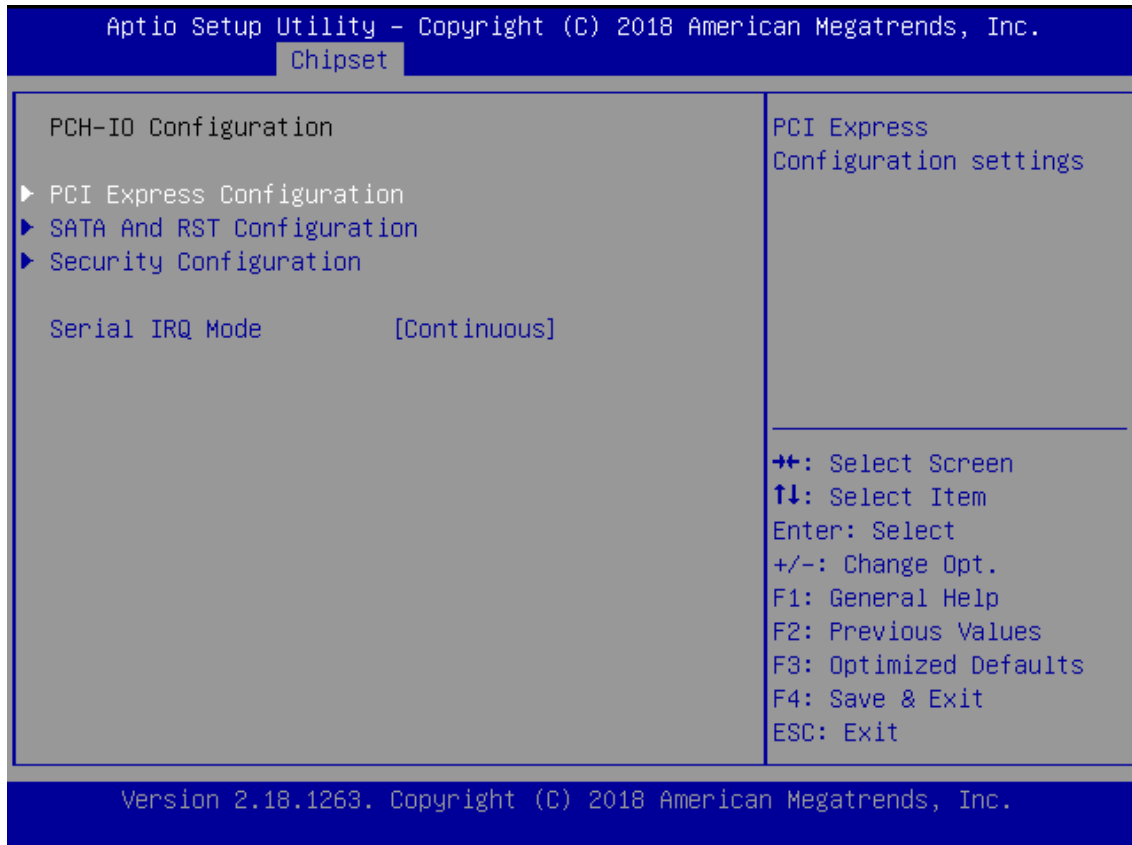


Feature	Options	Description
VT-d	Disabled Enabled	VT-d capability
Above 4GB MMIO BIOS assignment	Enabled Disabled	Enable/Disable above 4GB Memory Mapped IO BIOS assignment. This is enabled automatically when Aperture Size is set to 2048MB.
X2APIC Opt Out	Enabled Disabled	Enable/Disable X2APIC_OPT_OUT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

Memory Configuration

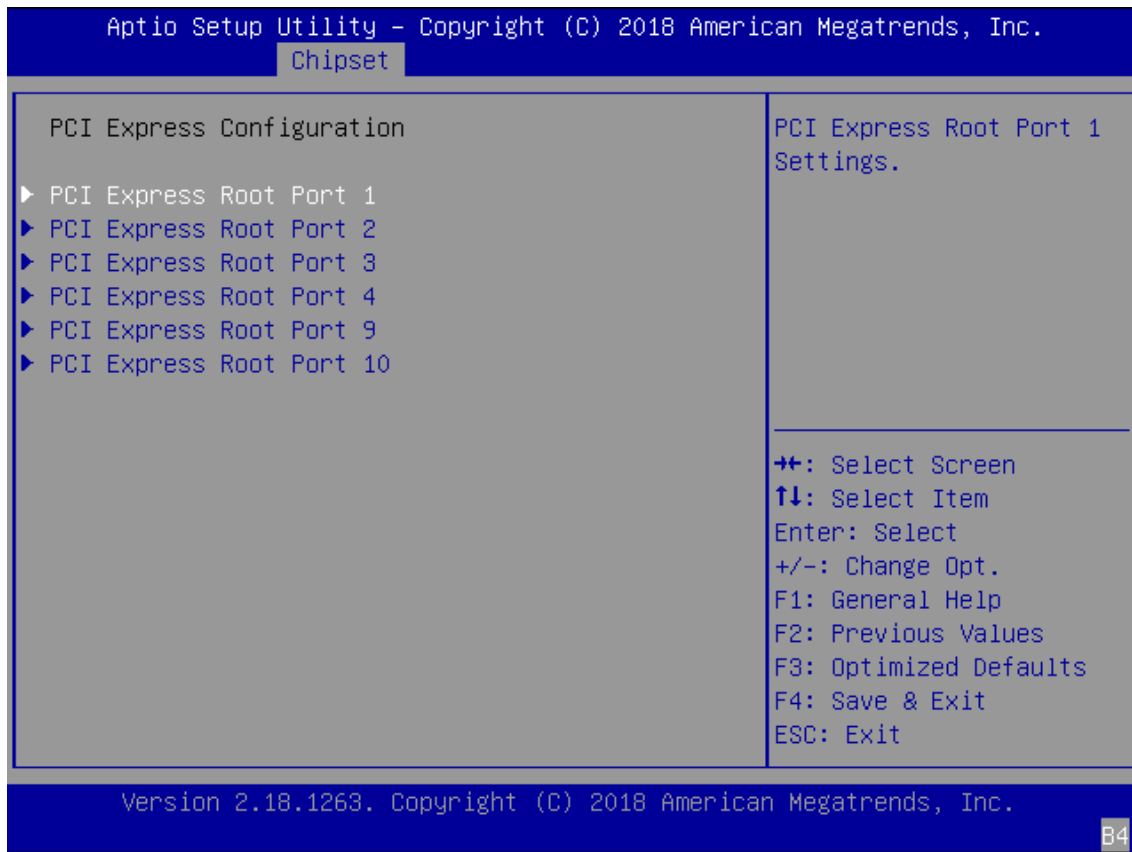
Feature	Options	Description
Maximum Memory Frequency	Auto 1067 ~ 3733	Maximum Memory Frequency Selections in Mhz.
Max TOLUD	Dynamic 1 GB ~ 3.5GB	Maximum Value of TOLUD. The dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller

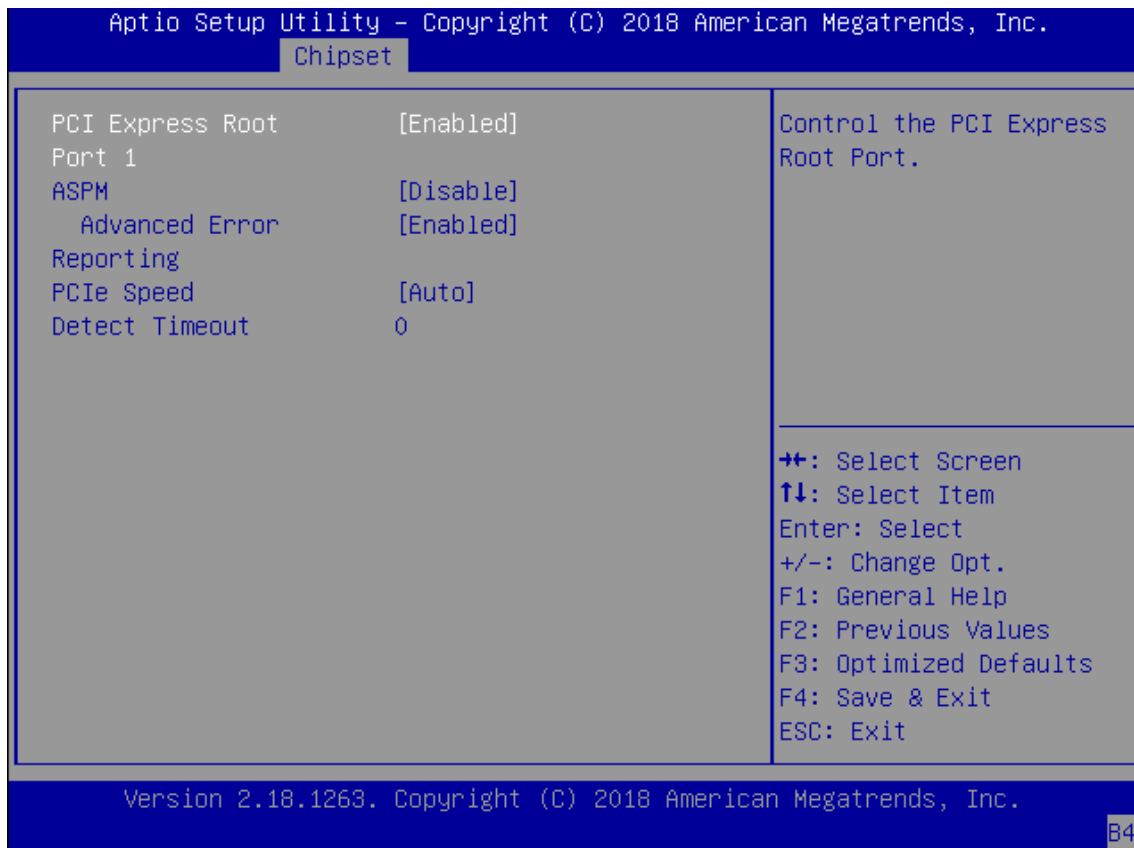
PCH-IO Configuration



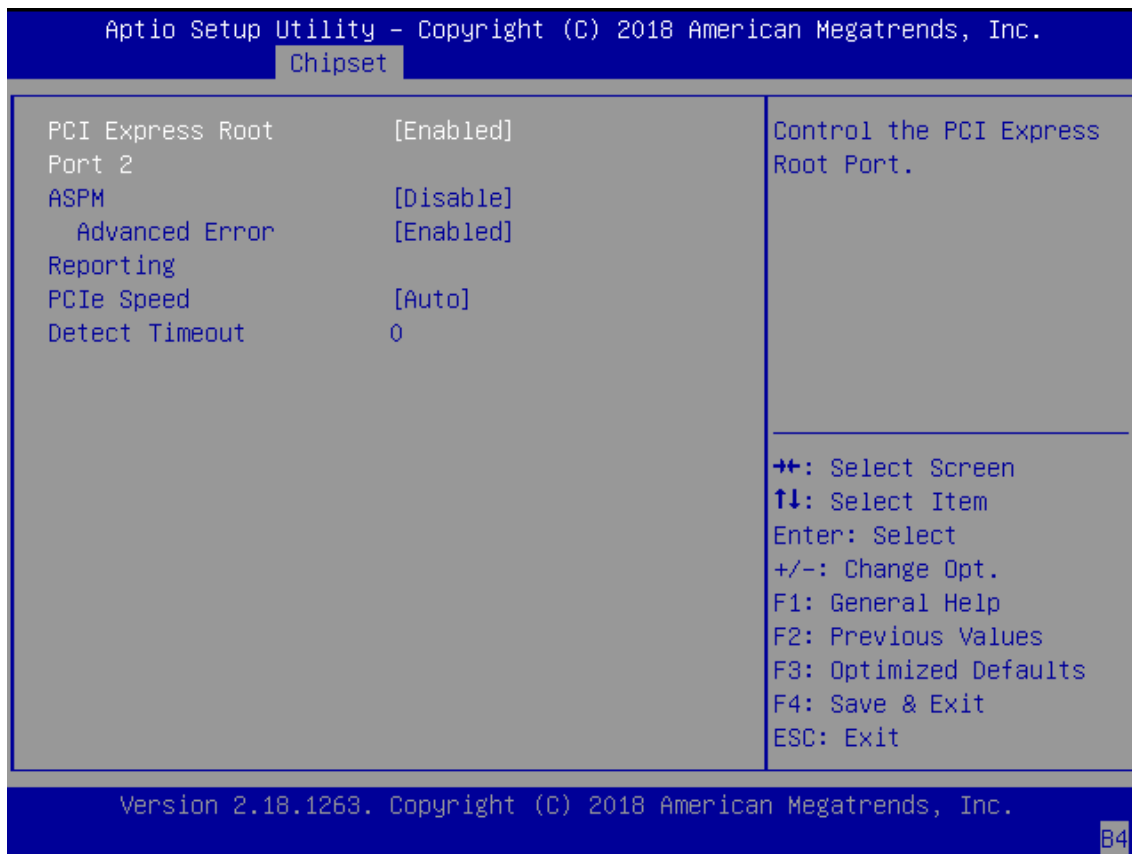
Feature	Options	Description
Serial IRQ Mode	Quiet Continuous	Configure Serial IRQ Mode.

PCI Express Configuration

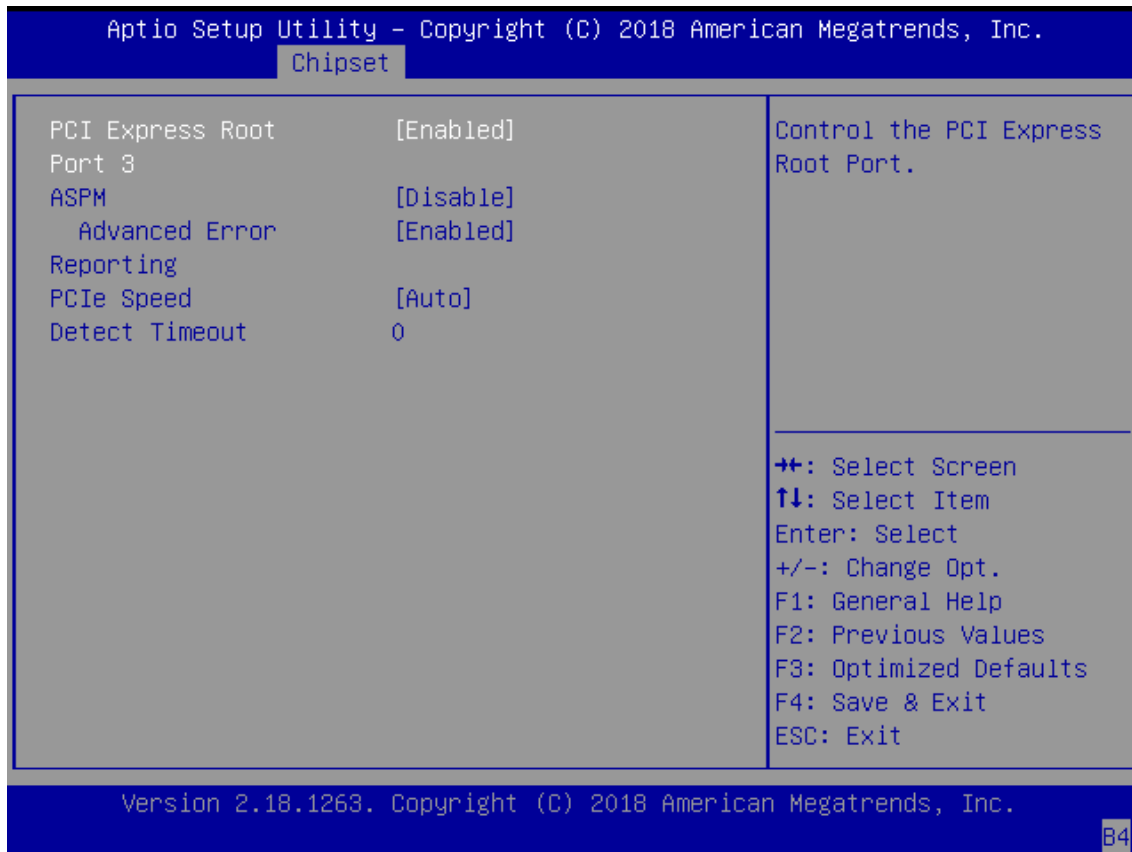


PCI Express Root Port 1

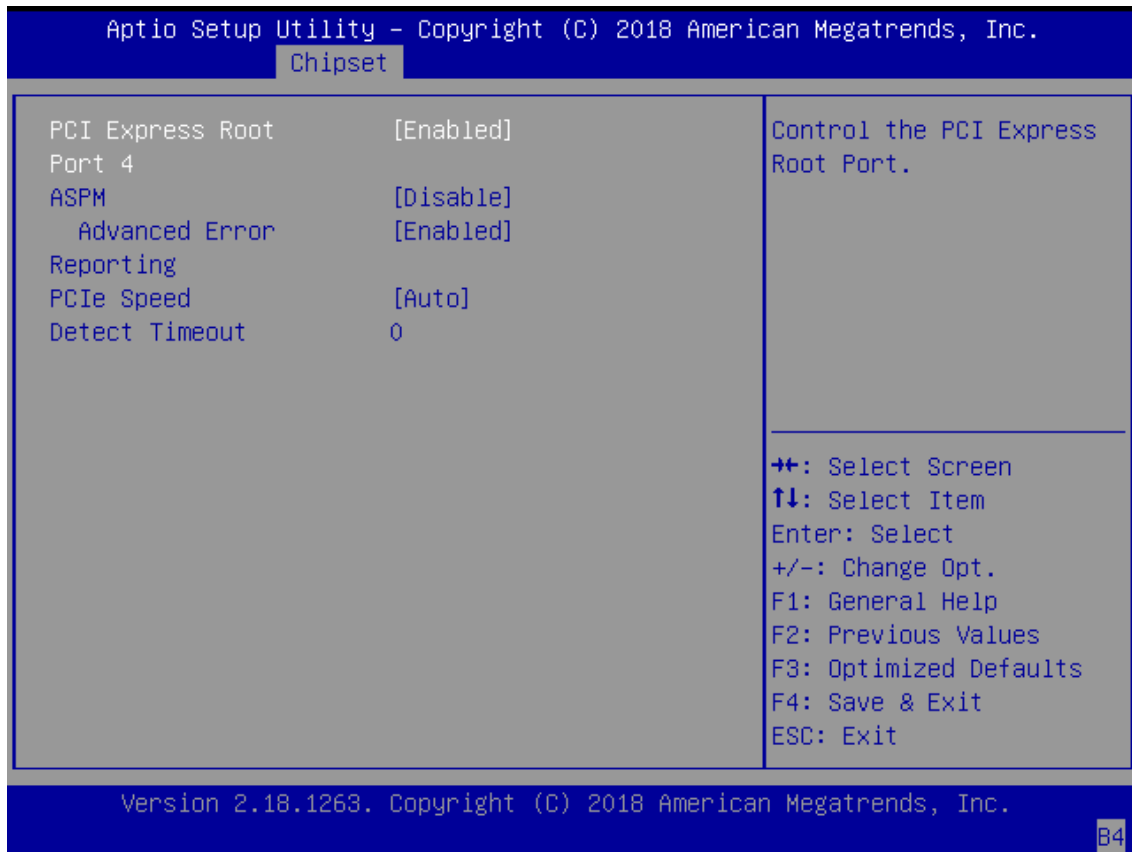
Feature	Options	Description
PCI Express Root Port 1	Disabled Enabled	Control the PCI Express Root Port.
ASPM	Auto L0sL1 L1 L0s Disabled	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM
Advanced Error Reporting	Disabled Enabled	Advanced Error Reporting Enable/Disable.
PCIe Speed	Auto Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for the link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

PCI Express Root Port 2

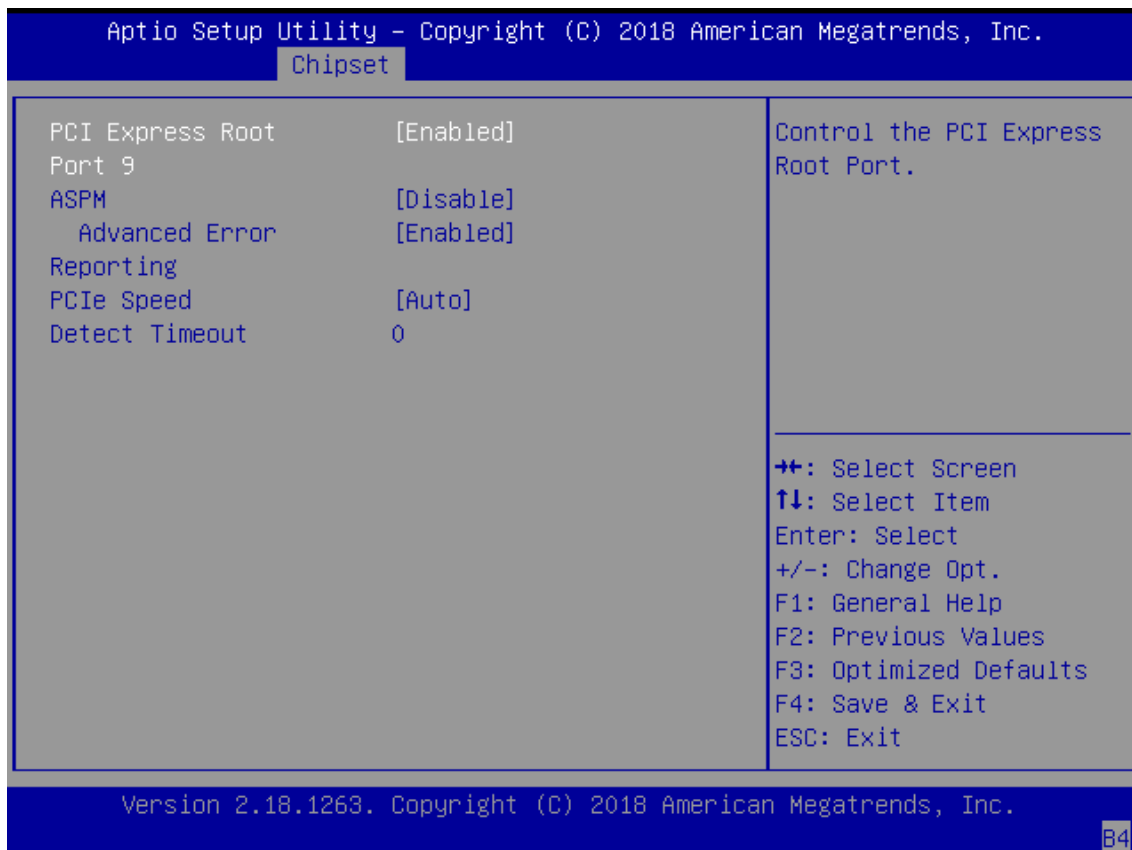
Feature	Options	Description
PCI Express Root Port 2	Disabled Enabled	Control the PCI Express Root Port.
ASPM	Auto L0sL1 L1 L0s Disabled	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM
Advanced Error Reporting	Disabled Enabled	Advanced Error Reporting Enable/Disable.
PCIe Speed	Auto Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

PCI Express Root Port 3

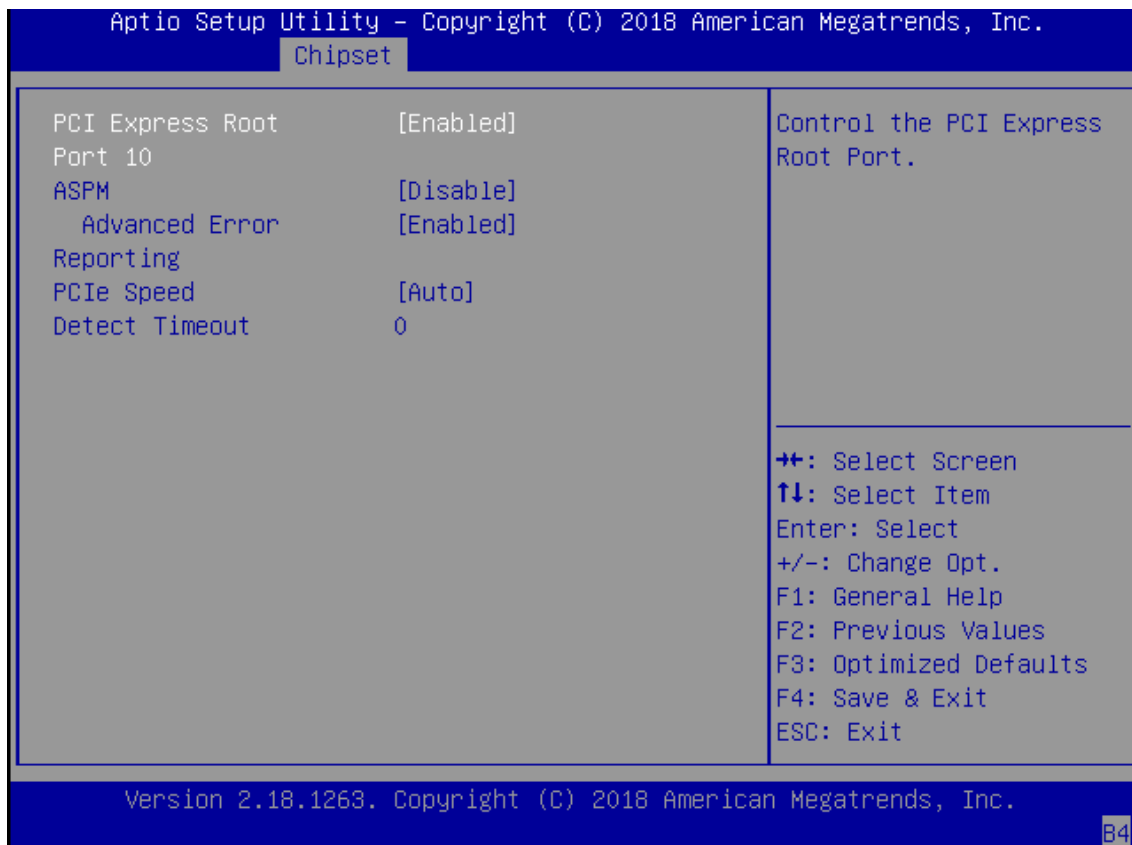
Feature	Options	Description
PCI Express Root Port 3	Disabled Enabled	Control the PCI Express Root Port.
ASPM	Auto L0sL1 L1 L0s Disabled	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM
Advanced Error Reporting	Disabled Enabled	Advanced Error Reporting Enable/Disable.
PCIe Speed	Auto Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

PCI Express Root Port 4

Feature	Options	Description
PCI Express Root Port 4	Disabled Enabled	Control the PCI Express Root Port.
ASPM	Auto L0sL1 L1 L0s Disabled	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM
Advanced Error Reporting	Disabled Enabled	Advanced Error Reporting Enable/Disable.
PCIe Speed	Auto Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

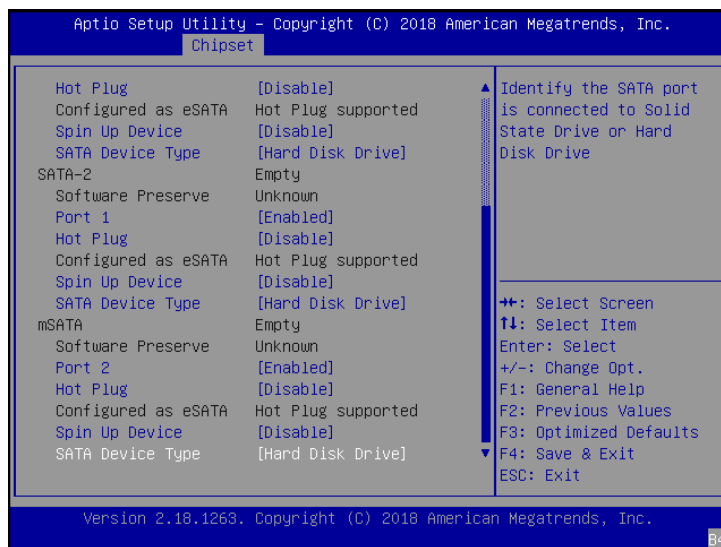
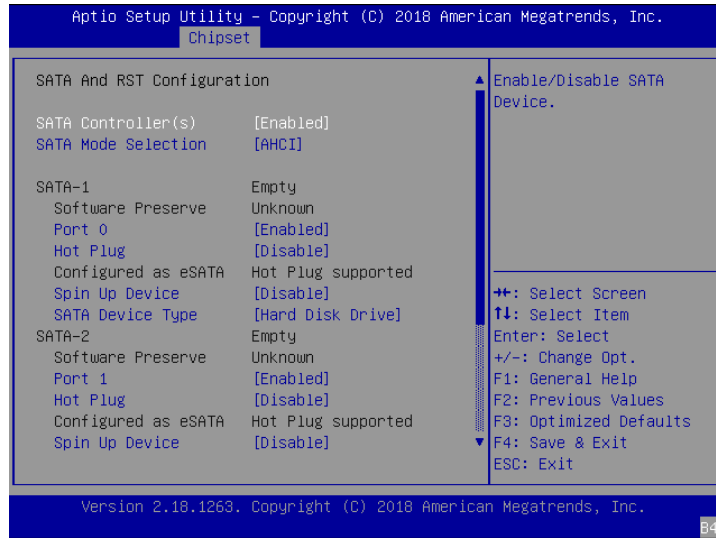
PCI Express Root Port 9

Feature	Options	Description
PCI Express Root Port 9	Disabled Enabled	Control the PCI Express Root Port.
ASPM	Auto L0sL1 L1 L0s Disabled	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM
Advanced Error Reporting	Disabled Enabled	Advanced Error Reporting Enable/Disable.
PCIe Speed	Auto Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

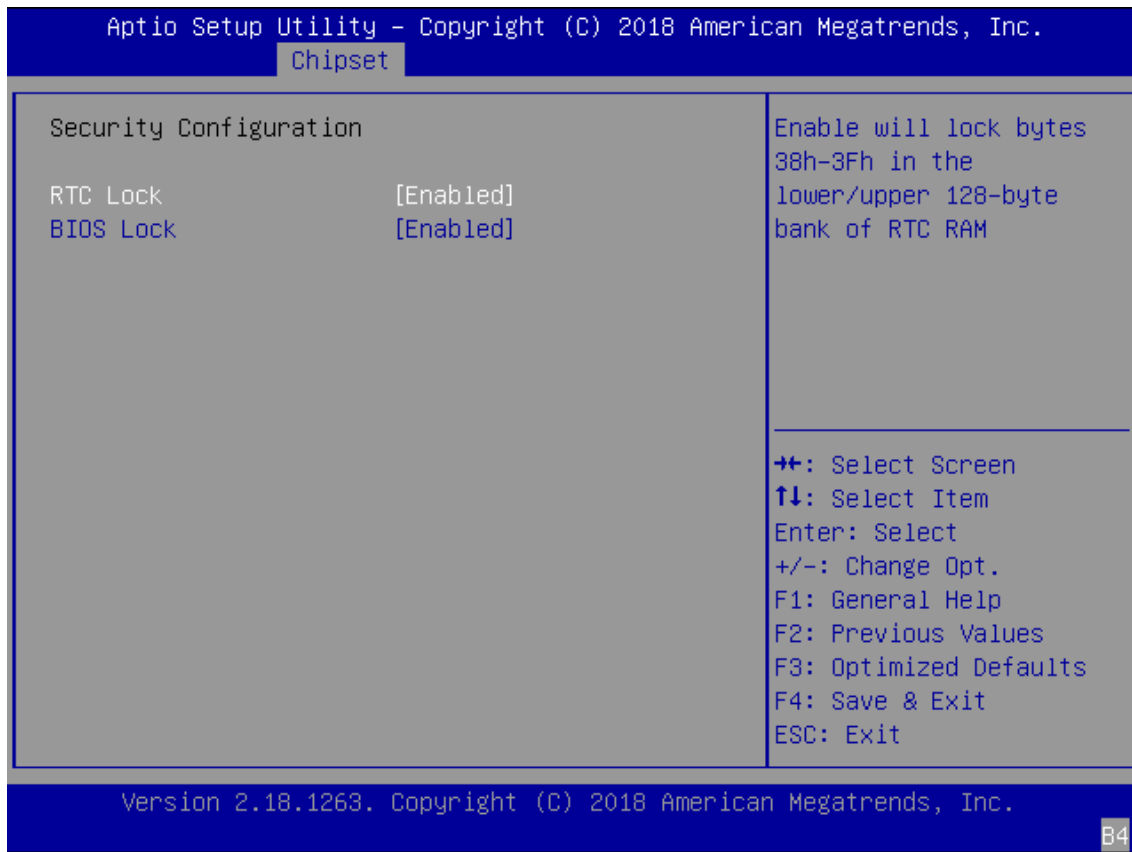
PCI Express Root Port 10

Feature	Options	Description
PCI Express Root Port 10	Disabled Enabled	Control the PCI Express Root Port.
ASPM	Auto L0sL1 L1 L0s Disabled	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM
Advanced Error Reporting	Disabled Enabled	Advanced Error Reporting Enable/Disable.
PCIe Speed	Auto Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

SATA And RST Configuration



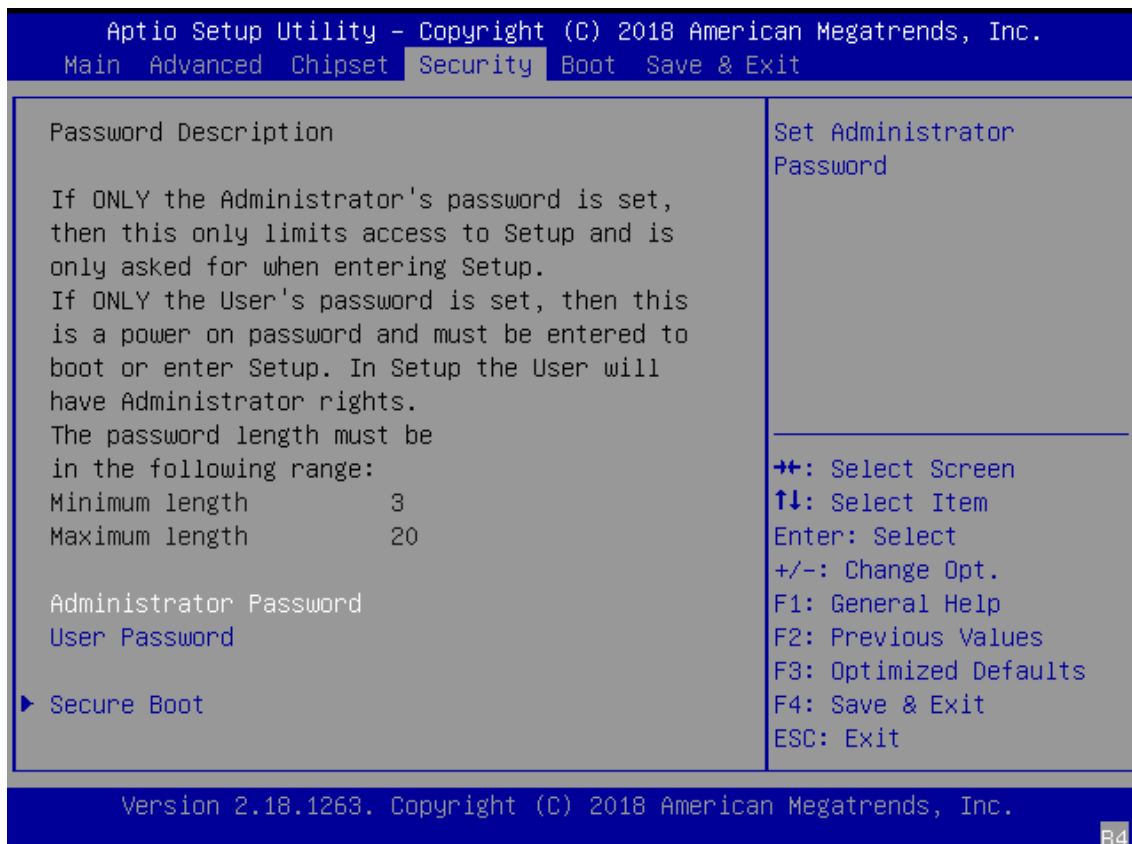
Feature	Options	Description
SATA Controller(s)	Enabled Disabled	Enable/Disable SATA Device.
SATA Mode Selection	AHCI Intel RST	Determines how SATA controller(s) operate.
Port 0/1/2	Disabled Enabled	Enable or Disable SATA Port
Hot Plug	Disabled Enabled	Designates this port as Hot Pluggable.
Spin Up Device	Disabled Enabled	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

Security Configuration

Feature	Options	Description
RTC Lock	Disabled	Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM
	Enabled	
BIOS Lock	Disabled	Enable/Disable the PCH BIOS Lock Enable feature. Required to be enabled to ensure SMM protection of flash.
	Enabled	

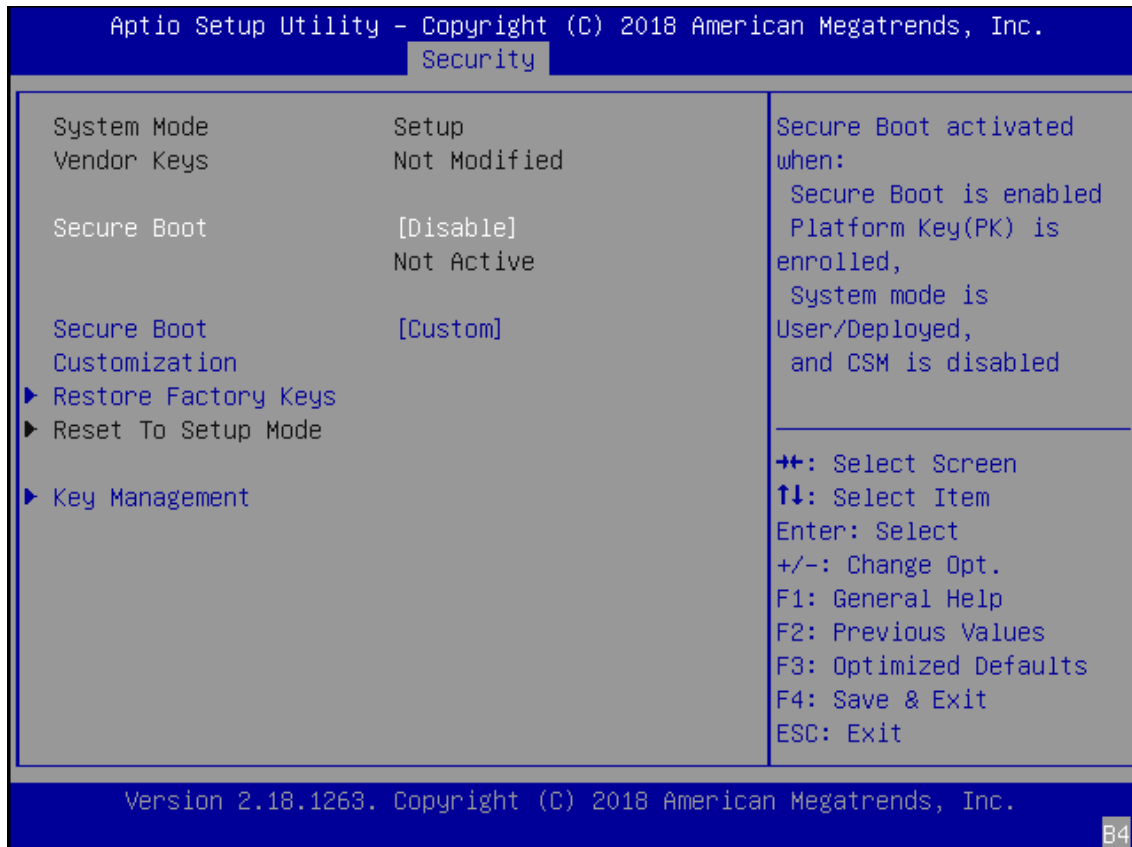
Security

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.



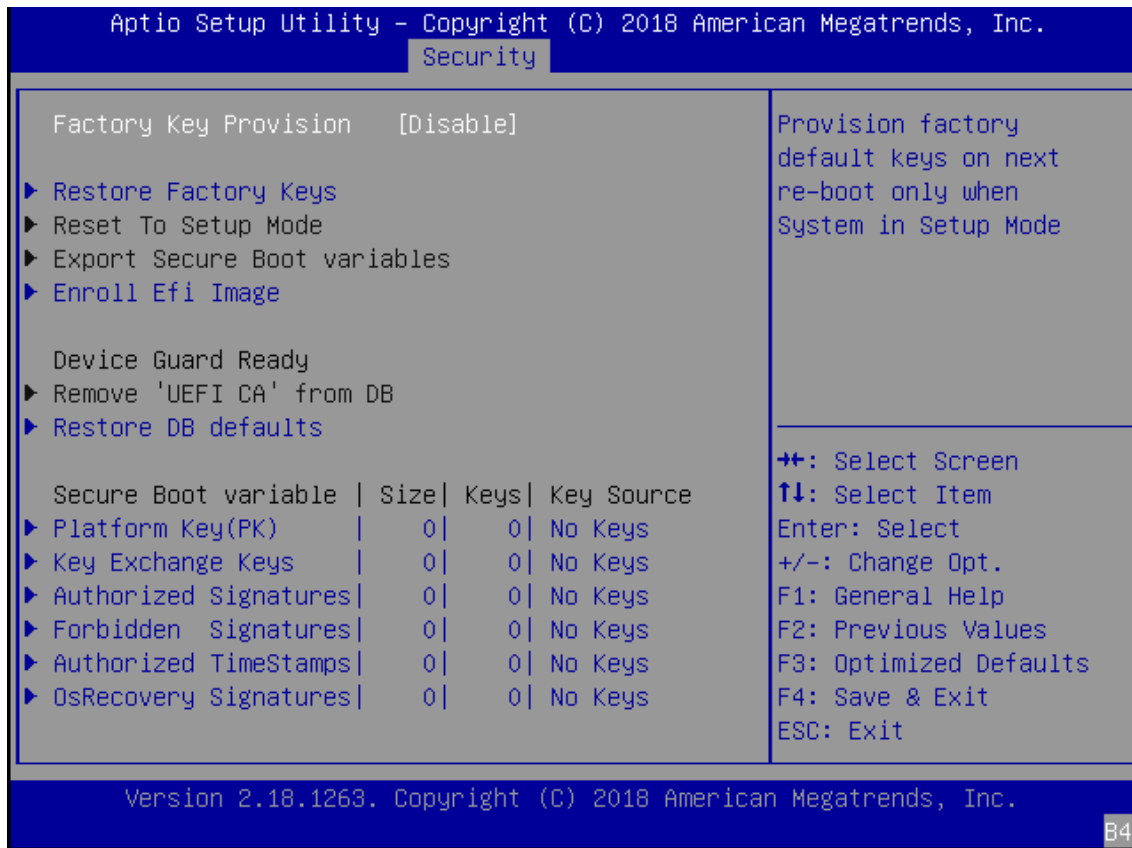
Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the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

Secure Boot



Feature	Option	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 Custom	Customizable Secure Boot mode: In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

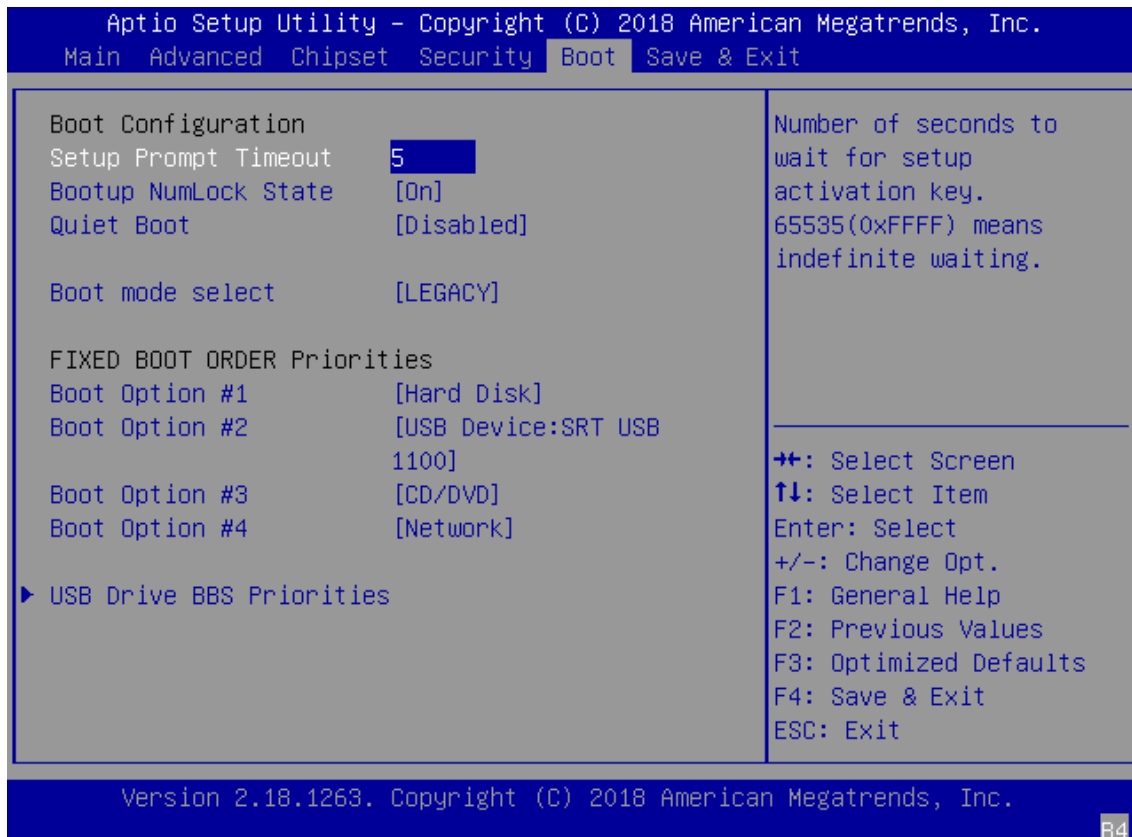
Key Management



Feature	Options	Description
Factory Key Provision	Disabled Enabled	Provision factory default keys on next re-boot only when System in Setup Mode.
Restore Factory keys	None	Force System to User Mode. Configure NVRAM to contain OEM-defined factory default Secure Boot 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)
Restore DB defaults	None	Restore DB variable to factory defaults

Boot

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.

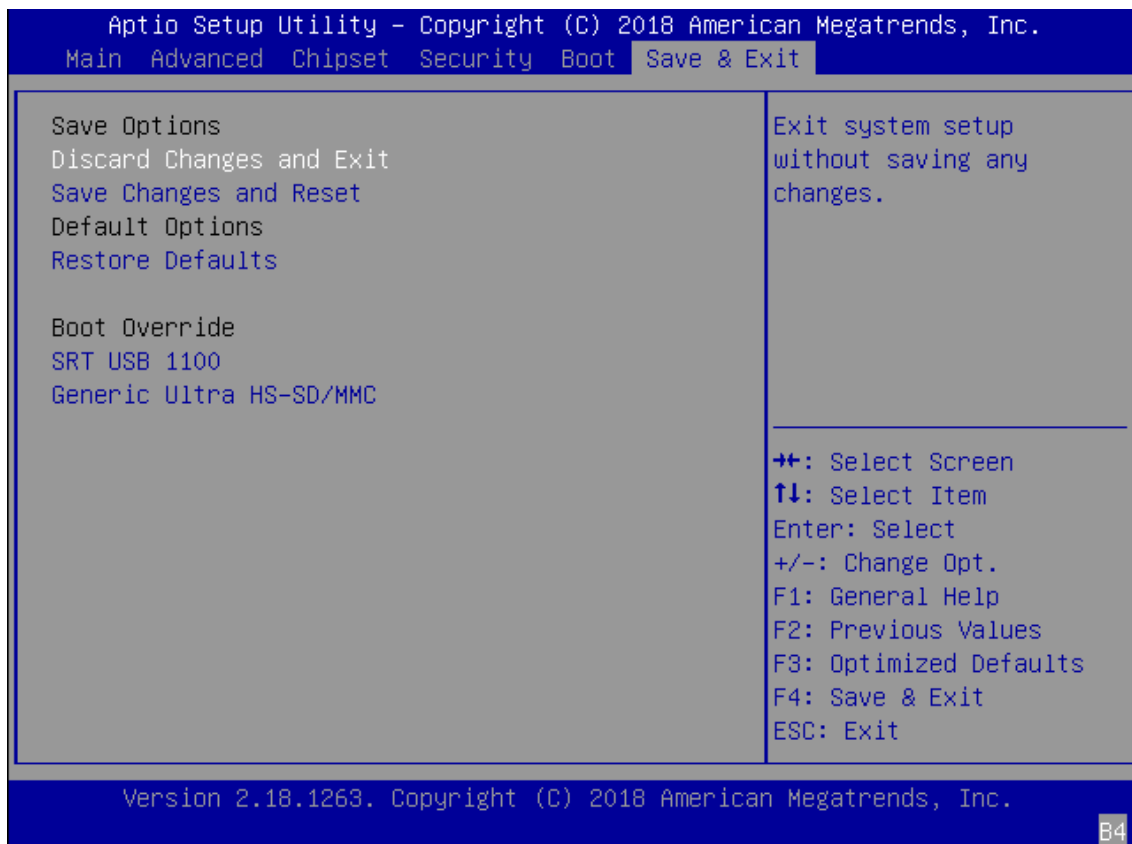


Feature	Options	Description
Setup Prompt Timeout	5	The number of seconds to wait for the setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.
Boot mode select	LEGACY UEFI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

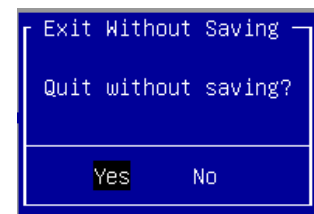
Save and Exit

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.



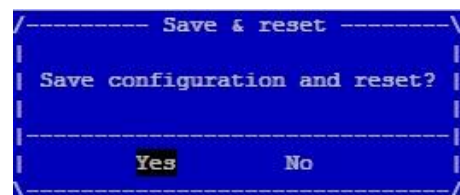
■ Discard Changes and Exit

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.



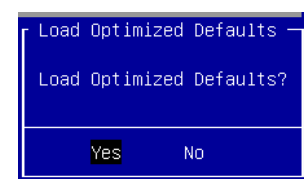
■ Save Changes and Reset

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.



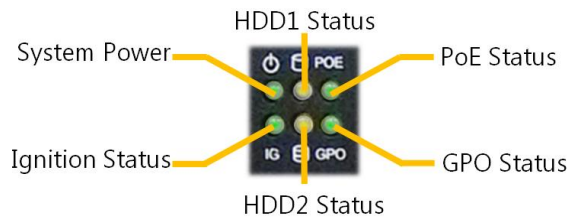
■ Restore Defaults

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



APPENDIX A: LED INDICATOR EXPLANATIONS

The status explanations of LED indicators on the Front Panel are as follows:



► System Power

<i>Solid Green</i>	<i>The system is powered on</i>
<i>Off</i>	<i>The system is powered off</i>

► Ignition Status

<i>Solid Green</i>	<i>The system is powered on Ignition control</i>
<i>Off</i>	<i>Ignition control is disabled</i>

► HDD1 /HDD2 Status

<i>Blinking Amber</i>	<i>Data access activity</i>
<i>Off</i>	<i>No data access activity</i>

► PoE Status

<i>Off</i>	<i>PoE is disabled</i>
<i>Solid Green</i>	<i>PoE is enabled</i>

► GPO Status

<i>Off</i>	<i>definable</i>
<i>Solid Green</i>	<i>definable</i>

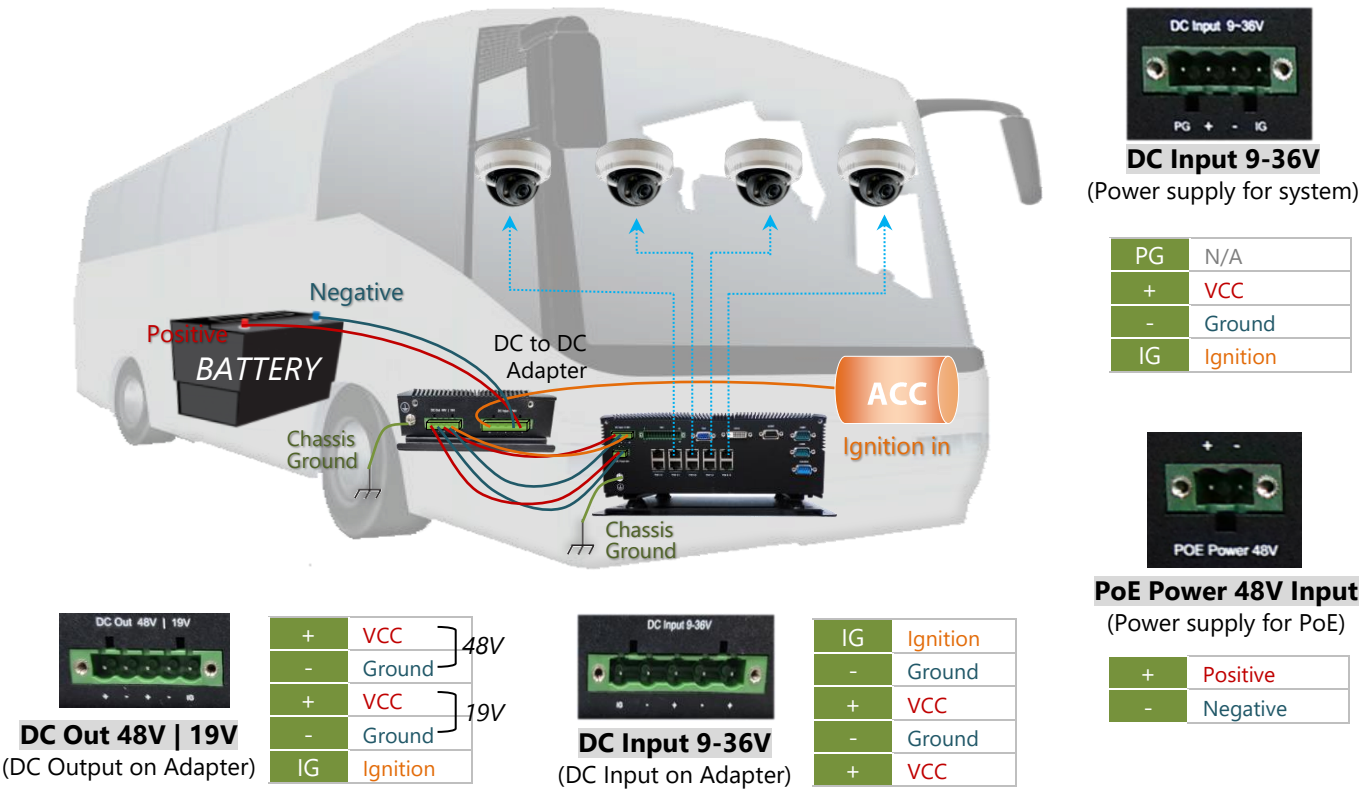
APPENDIX B: IGNITION CONTROL SETUP

Connecting the Devices

The system comes with a controller to ensure that the device is well-shielded against premature failure at the boot or shutdown phase. When installing:

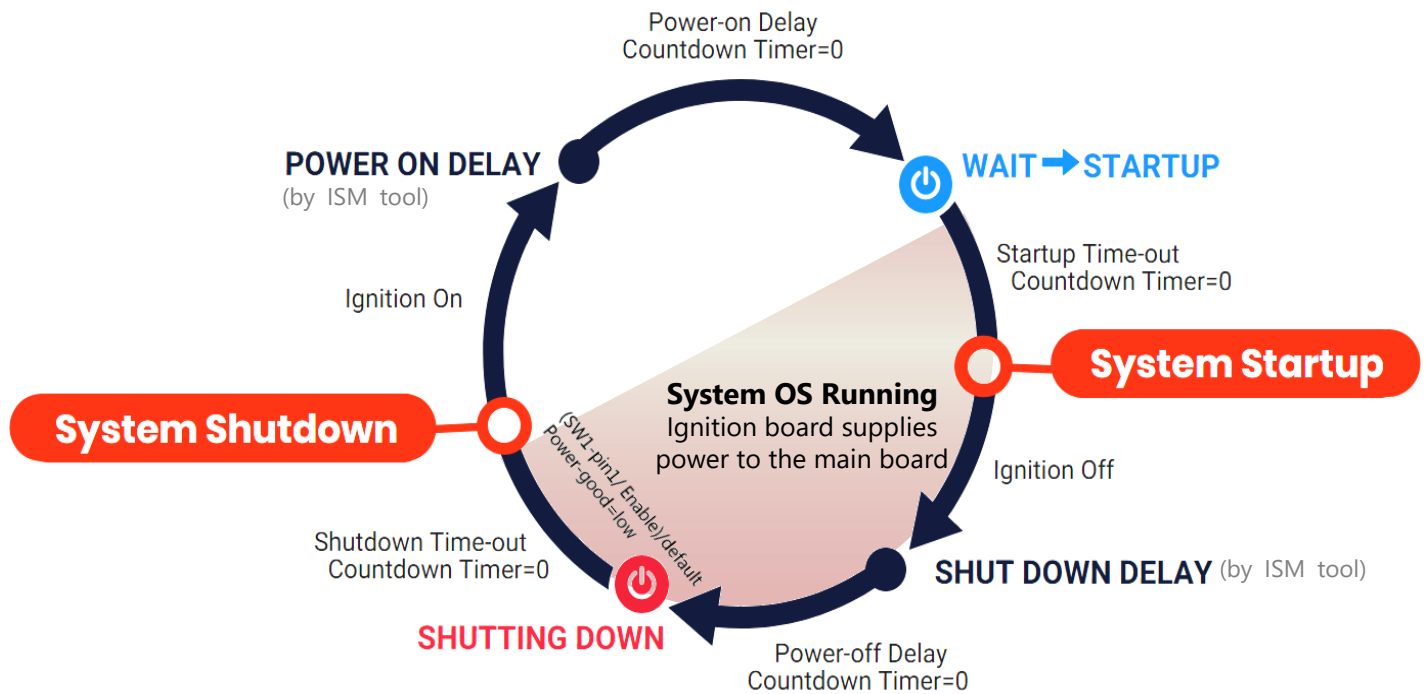
- 1. Make sure both your vehicle and the system are turned off.
- 2. Follow the wiring definition and illustration below to connect the vehicle battery and ignition (ACC) to the in-vehicle system through the 4-pin terminal block connector marked as **"DC Input 9-36V"**, and another DC power source to the 2-pin terminal block connector marked as **"POE Power 48V."**

In a typical in-vehicle computing solution, this system usually acts as a PSE (Power Sourcing Equipment) to power up connected PoE devices, for which you should ensure a minimum of 48V DC power supply to the system with the use of a **DC to DC Adapter**.



Power States Cycle

The diagram below describes the cycle of the system's power states controlled by the Ignition System Manager (ISM) when the appropriate timer control parameters are set.



Note: When the system's shutdown timer starts counting down 180sec, using ignition or External PWR_BTN to start the system again during the shutdown process will not work until the countdown finishes.

Using the Ignition System Manager(ISM)

Command Format:

1. Host communication interface: COM#3 (RS-232)
2. Support buad rate: 57600/ 8N1
3. Communication protocol: ANSI terminal.

GET VariableName
SET VariableName value

MCU Command	Wirte/Read (SET/GET)	VariableName	value	
Startup Voltage(mV)	SET	STARTUP_VOLTAGE	0(default)	0mV
	GET	STARTUP_VOLTAGE		
Shutdown Voltage(mV)	SET	INPUT_VOLTAGE_MIN	8500(default)	8500mV
	GET	INPUT_VOLTAGE_MIN		
PowerOn Delay (Sec)	SET	POWERON_DELAY	4(default)	4S
	GET	POWERON_DELAY		
PowerOff Delay (Sec)	SET	SHUTDOWN_DELAY	4(default)	4S
	GET	SHUTDOWN_DELAY		
Input Voltage	GET	INPUT_VOLTAGE		
Wakeup DI2/DI1	SET	WAKEUP_ENABLE	7(default)	1:DI1 2:Reserved 4: Reserved
Device ID	GET	DEVICE_ID	V6S_N	
Firmware Version	GET	VERSION	0.07B	
Digital Out (SIM selection)	SET	DIGITAL_OUT	0(default)	
Digial In	GET	DIGITAL_IN		
Ignition	GET	IGNITION		
Digital POE	SET	DIGITAL_POE	1023(default)	0~1023
	GET	DIGITAL_POE		
Save flash	SAVE			

Example:

1. The minimum voltage for startup,
Setting : 6V(6000mV)

Command	Response message
SET STARTUP_VOLTAGE 6000	OK
GET STARTUP_VOLTAGE	STARTUP_VOLTAGE= 6000

- 2.The delay time for POWERON_DELAY state,
Setting : 4 S

Command	Response message
SET POWERON_DELAY 4	OK
GET POWERON_DELAY	POWERON_DELAY= 4

- 3.Wakeup DI2/DI1 Enable,
Setting : DI2 & DI1 enable (011)

Command	Response message
SET WAKEUP_ENABLE 3	OK
GET WAKEUP_ENABLE	WAKEUP_ENABLE= 3

- 4.Device ID

Command	Response message
GET DEVICE_ID	DEVICE_ID= V6S_N

- 5.Firmware Version

Command	Response message
GET VERSION	VERSION= 0.07B

- 6.Write/Read Digital_Out state,
Setting : SIM Card Control

Command	Response message
SET DIGITAL_OUT 3	OK
GET DIGITAL_OUT	DIGITAL_OUT= 3

bit0 = LTE 1(MPCI) - SIM Control
1: SIM #2
0: SIM #1

bit1 = LTE 2(M.2) - SIM Control
1: SIM #2
0: SIM #1

bit2 = LTE 1(MPCI) - Power Control
1: Power Off
0: Power On

bit3 = LTE 2(M.2) - Power Control
1: Power Off
0: Power On

- 7.Read Digital_In state

Command	Response message
GET DIGITAL_IN	DIGITAL_IN= 3

- 8.Ignition state (only read)

Command	Response message
GET IGNITION	IGNITION= 0 (0: Ignition off / 1: ignition on)

- 9.Control the ON/OFF of each POE port

Command	Response message
SET DIGITAL_POE 1	OK
GET DIGITAL_POE	DIGITAL_POE= 1

POE1/bit0 = 1
POE2/bit1 = 2
POE3/bit2 = 4
POE4/bit3 = 8
POE5/bit4 = 16
POE6/bit5 = 32
POE7/bit6 = 64
POE8/bit7 = 128
POE9/bit8 = 256
POE10/bit9 = 512

To achieve POE1~10 enable, please entry value setting at 1023.

- 10.Save setting

Command	Response message
SAVE	OK Flash Updated

APPENDIX C: TERMS AND CONDITIONS

Warranty Policy

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

RMA Service

Requesting an RMA#

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



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

RMA Service Request Form

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

RMA No:		Reasons to Return: <input type="checkbox"/> Repair(Please include failure details)	
		<input type="checkbox"/> Testing Purpose	
Company:		Contact Person:	
Phone No.		Purchased Date:	
Fax No.:		Applied Date:	
Return Shipping Address: _____			
Shipping by: <input type="checkbox"/> Air Freight <input type="checkbox"/> Sea <input type="checkbox"/> Express _____			
<input type="checkbox"/> Others: _____			
Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

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

Request Party

Confirmed By Supplier

Authorized Signature / Date

Authorized Signature / Date