

USER'S MANUAL

tBOX510-518-FL-24- 110MRDC

Embedded System

User's Manual



www.axiomtek.com

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Safety Precautions

Before getting started, please read the following important safety precautions.

1. Users should not modify any unmentioned jumper setting without Axiomtek FAE's instructions. Any modification without instructions might damage the system.
2. The tBOX510-518-FL-24-110MRDC does not come with an operating system which must be loaded first before installation of any software into the computer.
3. Be sure to ground yourself to prevent static charge when installing any internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
4. Disconnect the power cord from the tBOX510-518-FL-24-110MRDC prior to making any installation. Be sure both the system and all external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the tBOX510-518-FL-24-110MRDC is properly grounded.
5. Make sure the voltage of the power source is correct before connecting it to any power outlet.
6. Turn OFF system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the screen.
7. Do not leave equipment in an uncontrolled environment where the storage temperature is below -40°C or above 80°C as it may damage the equipment.
8. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:
 - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help discharge any static electricity on the human body.
 - When handling boards and components, wear a grounding wrist strap available from most electronic component stores.

Classification

1. Degree of protection against electric shock: not classified
2. Degree of protection against the ingress of water: IP30
3. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
4. Mode of operation: Continuous

General Cleaning Tips

You may need the following precautions before you begin to clean the computer. When you clean any single part or component for the computer, please read and understand the details below fully.

When you need to clean the device, please rub it with a piece of dry cloth.

1. Be cautious of the tiny removable components when you use a vacuum cleaner to absorb the dirt on the floor.
2. Turn the system off before you start to clean up the component or computer.
3. Never drop the components inside the computer or get circuit board damp or wet.
4. Be cautious of all kinds of cleaning solvents or chemicals when you use it for the sake of cleaning. Some individuals may be allergic to the ingredients.
5. Try not to put any food, drink or cigarette around the computer.

Cleaning Tools:

Although many companies have created products to help improve the process of cleaning your computer and peripherals users can also use household items to clean their computers and peripherals. Below is a listing of items you may need or want to use while cleaning your computer or computer peripherals.

Keep in mind that some components in your computer may require a designated product for cleaning. Please read the instructions that come with a cleaning product to avoid misuse.

- Cloth: A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used on most hardware as well, we still recommend using a piece of cloth to rub hardware parts.
- Water or rubbing alcohol: You may moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer. Unknown solvents may be harmful to the plastics parts.
- Vacuum cleaner: Using a vacuum cleaner to suck dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause the circuitry to corrode.
- Cotton swabs: Cotton swabs moistened with rubbing alcohol or water are excellent tools for wiping hard-to-reach areas in your keyboard, mouse, and other locations.
- Foam swabs: Whenever possible it is better to use lint-free swabs such as foam swabs.



NOTE: We strongly recommend that you should shut down the system before you start to clean any single component.

Please follow the steps below:

1. Close all application programs
2. Close operating software
3. Turn off power switch
4. Remove all devices
5. Pull out the power cable

Scrap Computer Recycling

Please inform the nearest Axiomtek distributor as soon as possible for suitable solutions in case computers require maintenance or repair; or for recycling in case computers are out of order or no longer in use.

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SECTION 1 INTRODUCTION

This chapter contains general information and detailed specifications of the tBOX510-518-FL-24-110MRDC. Chapter 1 includes the following sections:

- General Description
- System Specification
- Dimensions
- I/O Outlets
- Package List

1.1 General Description

The tBOX510-518-FL-24-110MRDC is an embedded system that supports the 7th Gen. Intel® Celeron -3965U / Core™ i3-7100U / i5-7300U / i7-7600U processor (2.2 up to 2.8 GHz) onboard. It is compatible with Windows® 10 and Linux and has been optimized for the most enduring operation. It also features fanless design with rich I/O, supports SO-DIMM up to 16GB, and delivers enhanced system reliability by including a built-in Watchdog Timer.

● Features

- 7th Generation Intel® Core™ i (15W) processor onboard
- Wide temperature operation of -40°C - +70°C with W.T. accessories (DRAM, SSD...etc)
- Supports 2 RJ-45 Gb Ethernet LAN ports.
- Supports dual display output via 1 VGA and 1 HDMI
- One COM Port support RS-232/422/485 mode.
- Supports one 2.5" SATA SSD and one CFast with external access
- Wide range 24–110V DC-in with M12 A-coded connector
- Isolated 4DI/ 4DO
- 4 USB3.0
- 2 USB2.0 with M12 A-coded
- 4 LED indicators (power, SSD, 2x programmable)
- EN50155 certified
- Optional PIM (Plug-In Module) for extra 2 COM, 2 LAN I/O extension

● Reliable and Stable Design

- The tBOX510-518-FL-24-110MRDC adopts an advanced cooling system and supports CFast, which makes it especially suitable for vibration environments and a perfect solution for smart transportation applications.

● Embedded O/S Supported

- The tBOX510-518-FL-24-110MRDC supports not only Windows® 10 but also embedded O/S, such as Windows® 10 Embedded and Linux. In terms of storage capacity, the tBOX510-518-FL-24-110MRDC supports 2.5" SATA drive and CFast.

1.2 System Specifications

1.2.1 CPU

- **CPU**
 - Onboard Intel® Core™ Celeron-3965U / Core™ i3-7100U / i5-7300U / i7-7600U processor (2.2 up to 2.8 GHz) processor (2M / 3M Cache 2.2GHz up to 2.8 GHz)
- **BIOS**
 - AMI (American Megatrends Inc.) UEFI (Unified Extensible Firmware Interface) BIOS
 - “MI (“Load Optimized Default” can be used to back up customized settings in the BIOS flash chip to prevent CMOS battery fail.)
- **System Memory**
 - 1x DDR4 SO-DIMM socket
 - Supports 2133 MHz up to 16GB
- **Graphics**
 - Integrated Intel® HD Graphics 620 for DVI-I

1.2.2 System I/O

- 1 x HDMI connector
- 1 x D-Sub female connector for VGA
- 2 x RJ-45 10/100/1000 Mbps Ethernet
- 4 x USB 3.0
- 1 x DB9 COM port for RS232/422/485
- 1 x terminal block connectors for DIO
- 1 x Reset button
- 1 x Power button
- 1 x 24-110VDC power input connector with M12-5 Pin
- 4 x Antenna opening
- 1 x CFast
- Optional PIM (Plug-In Module) for extra 2 COM, 2 LAN I/O extension

1.2.3 System Specification

- **Watchdog Timer**
 - Reset supported; 255 levels, 1~255 sec.
- **Power Supply**
 - 24-110 VDC-in power supply
 - Power Rate:2.9A@24VDC; 0.55A@110VDC
- **Operation Temperature**
 - -40°C ~ +70°C (- 40°F ~ 158°F) with W.T. SSD
 - 0°C ~ +60°C (- 32°F ~ +140°F) with HDD

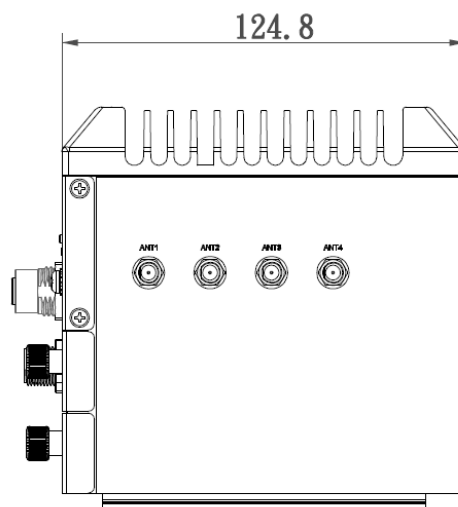
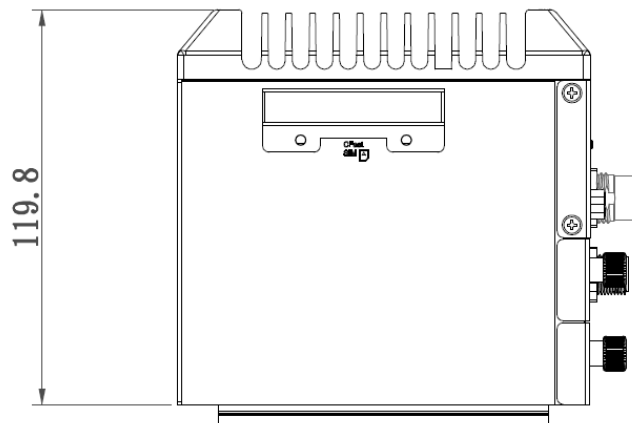
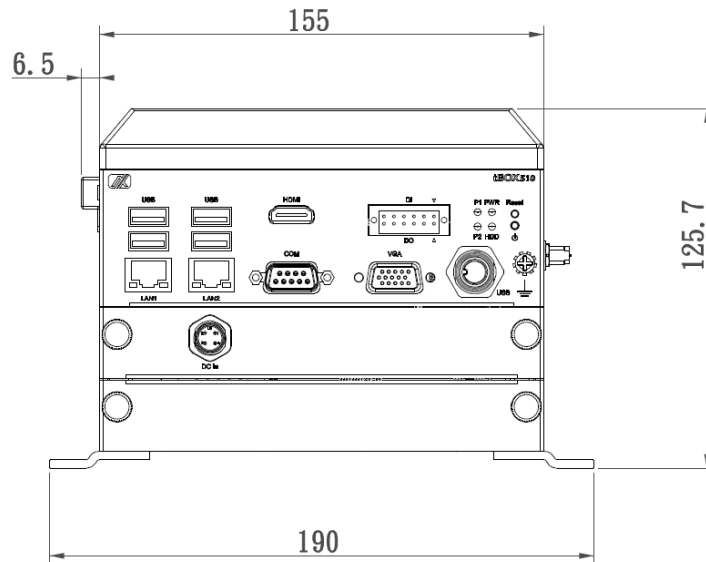
- **Storage Temperature**
 - -40°C ~ +85°C (- 40°F ~ 176°F)
- **Humidity**
 - 0% ~ 95% (non-condensation)
- **Vibration Endurance**
 - With wall mount**
 - 3 Grms w/ SSD (5 ~ 500Hz, X, Y, Z direction; random)
 - 0.5 Grms w/ HDD (5 ~ 500Hz, X, Y, Z direction; random)
 - With DIN-rail kit**
 - 2 Grms w/ SSD (5 ~ 500Hz, X, Y, Z direction; random)
 - With Anti-Vibration Kit**
 - 2 Grms w/ HDD (5 ~ 500Hz, X, Y, Z direction; random)
- **Weight**
 - 2.5 kg (5.51lb) without package
- **Dimensions**
 - 119.8mm (4.72") (W) x 124.8mm (4.91") (D) x 155mm (6.10") (H) without wall mount.

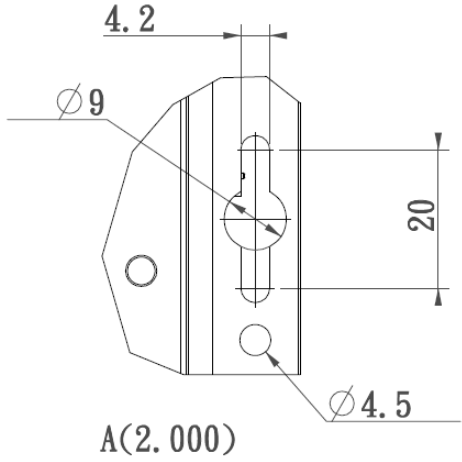
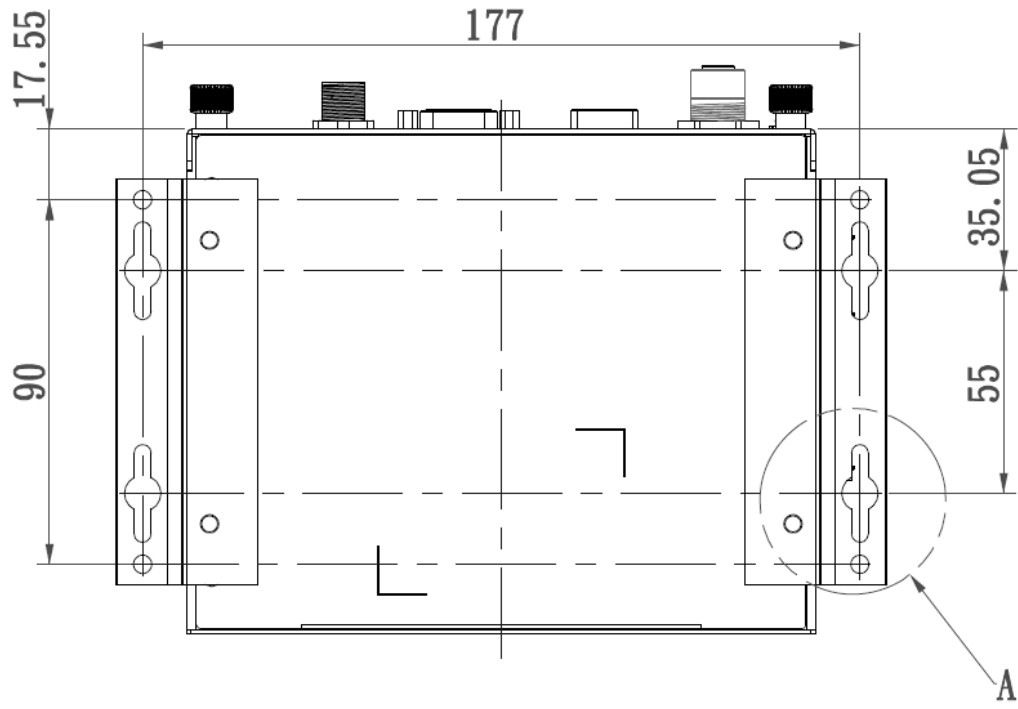


NOTE: All specifications and images are subject to change without notice.

1.3 Dimensions

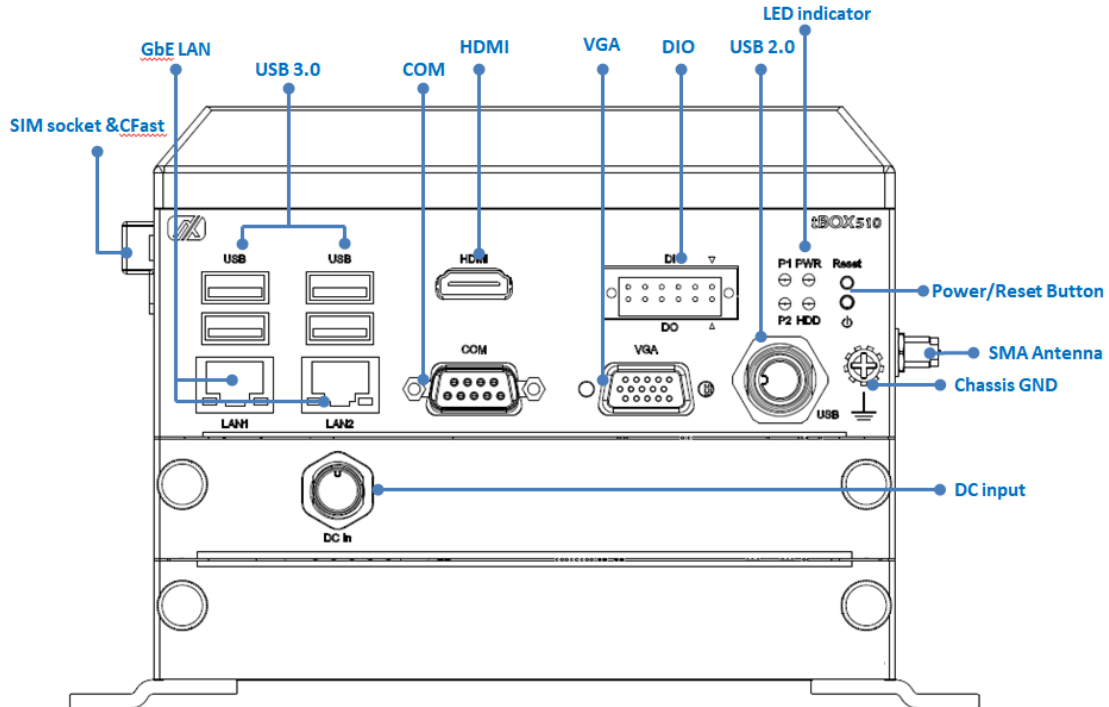
The following diagrams show you the dimensions and outlines of the tBOX510-518-FL-24-110MRDC.





1.4 I/O Outlets

The following figures show you the I/O outlets on the front view, top view of the tBOX510-518-FL-24-110MRDC.



1.5 Packing List

The package bundled with your tBOX510-518-FL-24-110MRDC should contain the following items:

Standard	Optional accessories
✓ tBOX510-518-FL-24-110MRDC system unit x 1	✓ SATA drive (HDD or SSD)
✓ Terminal block (6x2 pin) x 1	✓ CFAST drive
✓ Screws pack x 1	✓ Wi-Fi / Bluetooth module
✓ Wall mount bracket kit x 1	✓ Communication (3G/4G/GPS...etc) modules
✓ SATA tray x 1	✓ DIN-rail kit
✓ DRAM thermal pad x 1	✓ Anti-Vibration Kit
	✓ M12 LAN cable
	✓ M12 power cable
	✓ M12 USB cable
	✓ PIM (Plug-In Module) x 1

If you cannot find this package or any of the above-mentioned items is missing, please contact your local distributor immediately.

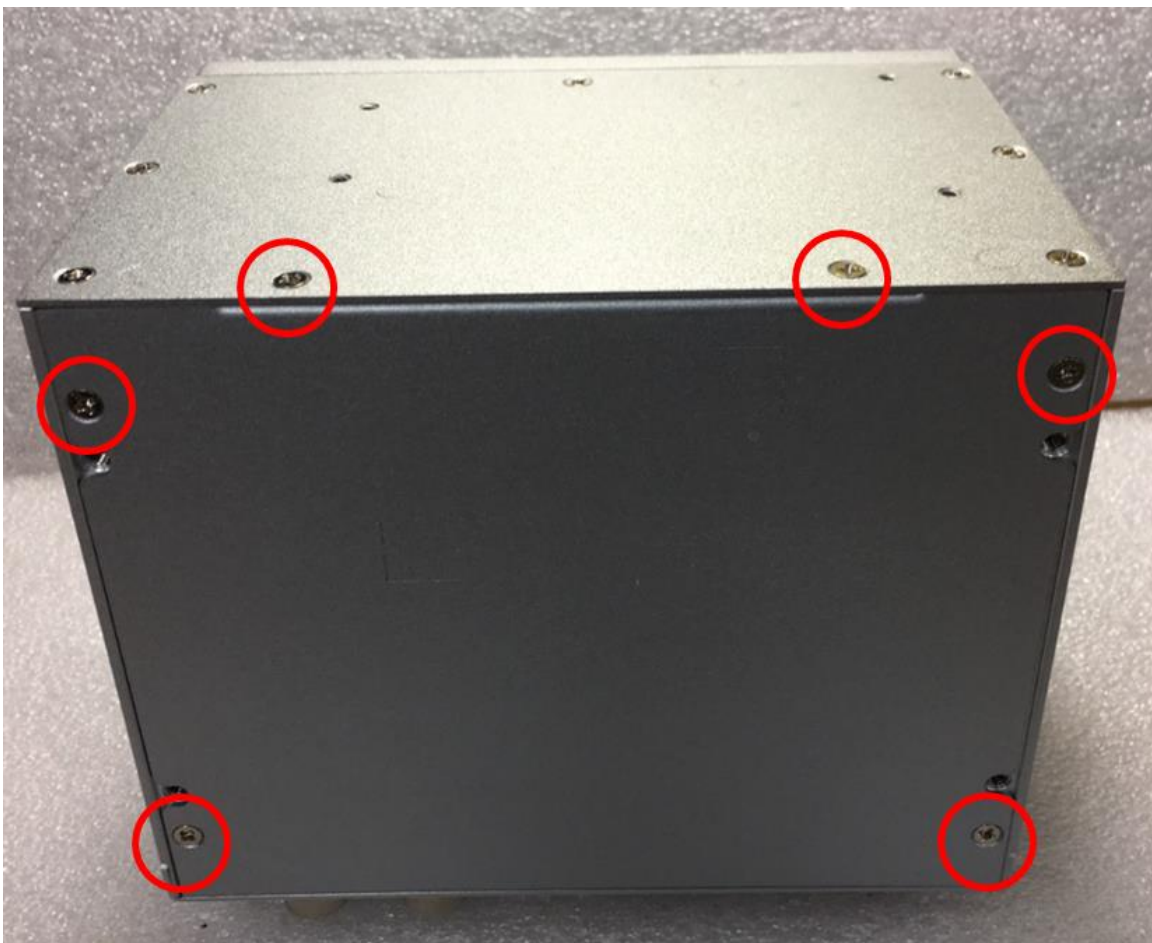
SECTION 2 HARDWARE INSTALLATION

The tBOX510-518-FL-24-110MRDC is flexible for your different hardware configurations, such as the hard disk drive and CFast. Chapter 2 will show you how to install the hardware parts.

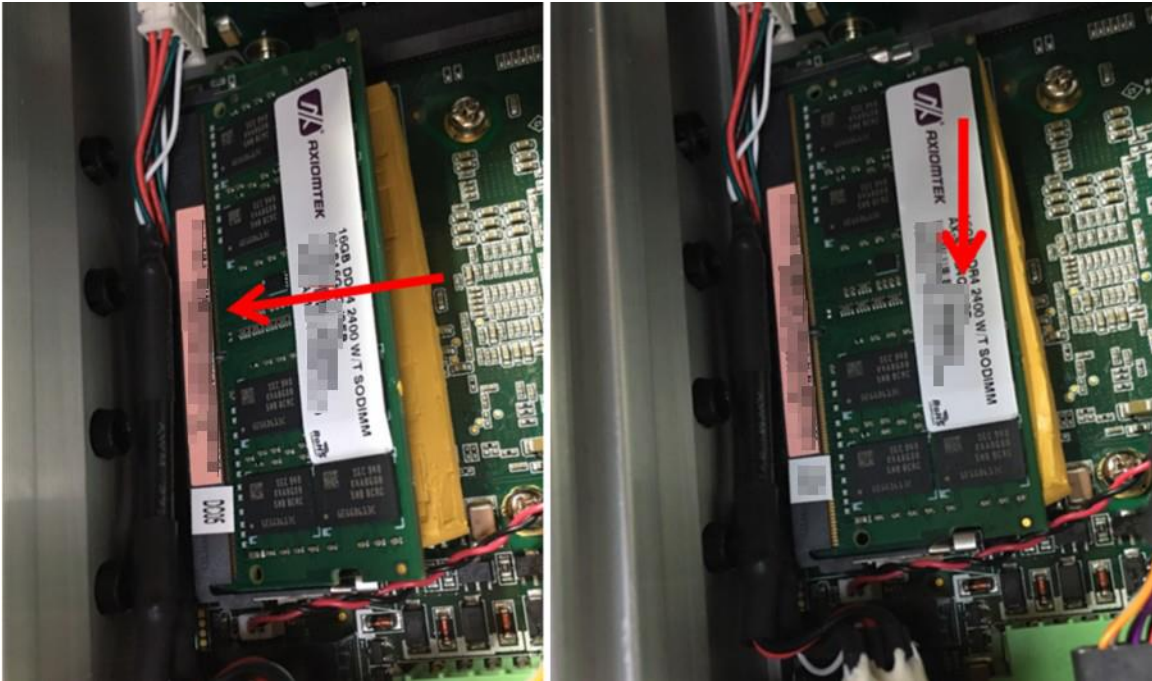
2.1 Installing the Memory & Wireless Modules

Step 1 Turn off the system.

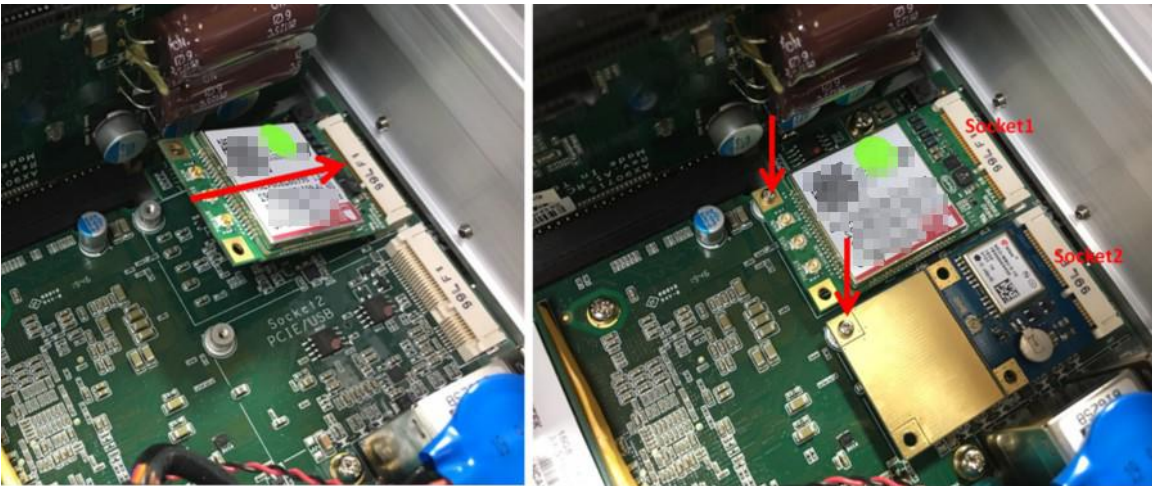
Step 2 Loosen all cover screws and remove the cover from the system.



Step 3 Put the thermal pad on the SO-DIMM socket. Then insert the module's gold finger into the socket and push the module down to complete memory installation.



Step 4 Insert the Mini PCIe card into the socket and fasten screws. (Note: the Mini PCIe card with SIM functions should be inserted into Socket 1)



Step 5 Put the cover back onto the system, and fasten all screws tightly to close the chassis.

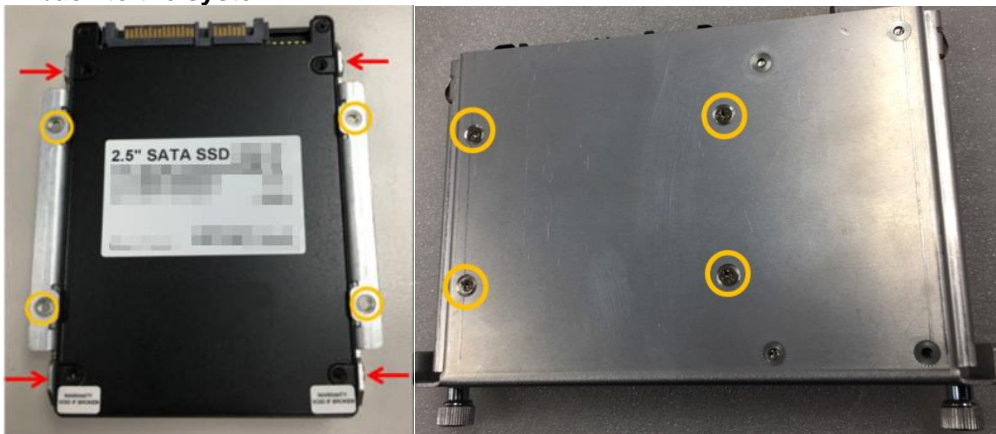
2.2 Installing the Solid-State Disk and CFast Card

Step 1 Turn off the system.

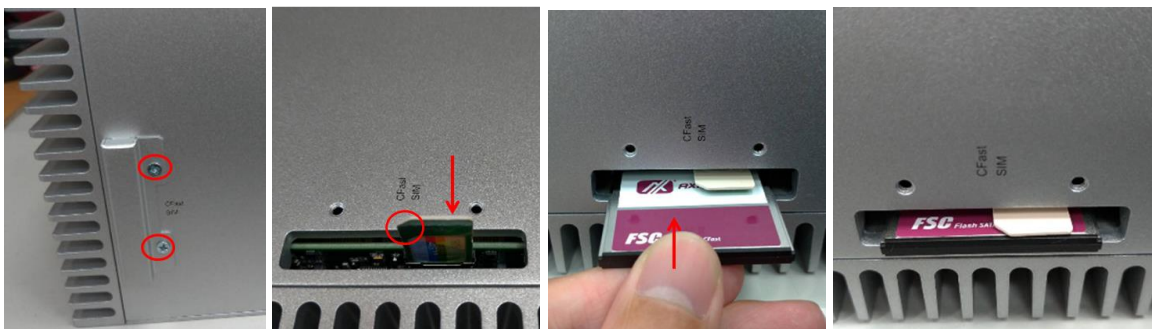
Step 2 Loosen the screws as shown below, and pull out the SSD tray from the system. Be sure to unplug the internal power cable before pulling it out.



Step 3 Fasten the SSD screws (marked by the red arrows below) to fix the SSD. Then screw the SSD firmly to the tray (marked by the yellow circles) and install the tray back to the system.



Step 4 Loosen the screws to open the CFast door and install the SIM and CFast card, as illustrated below. Then screw the CFast door back to the system.



2.3 Installing the PIM (Plug-in Module)

Step 1 Turn off the system.

Step 2 Loosen all cover screws and remove the cover from the system.



Step 3 Install the module as shown below, and fasten the screws firmly to complete the installation.

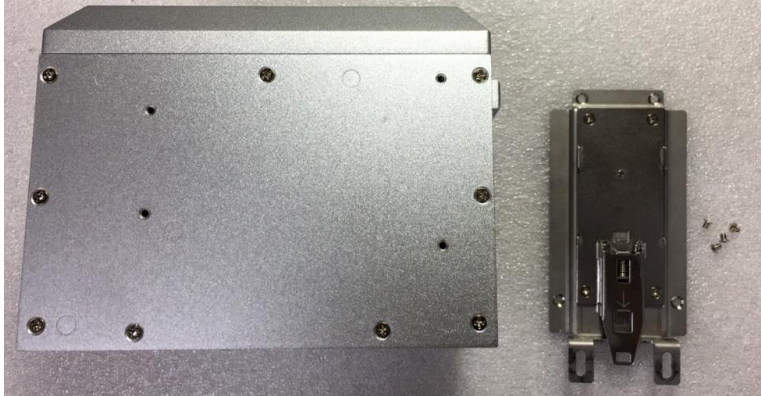


For the Plug-in Module (PIM)s

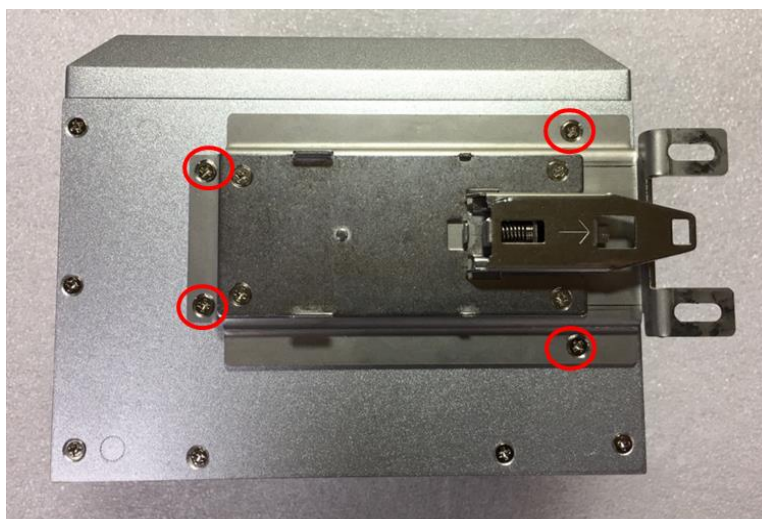
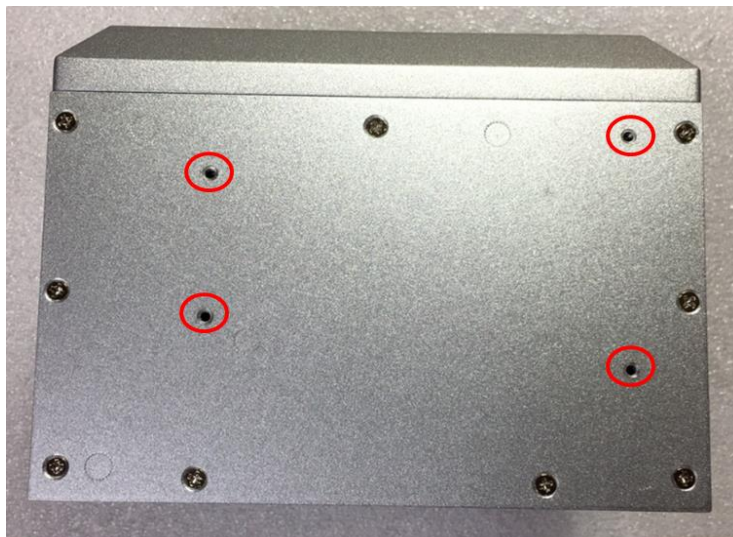
Model name	Specification	Note
PIM901T	2 x M12 D-coded 10/100Mbps Ethernet 2 x DB9 isolated COM RS-232/422/485	

2.4 Installing the DIN-rail Mounting Kit

Step 1 Prepare the DIN-rail mount assembly components (screws and the bracket) ready.



Step 2 Assemble the brackets to the bottom of the system unit and fasten all screws tight.

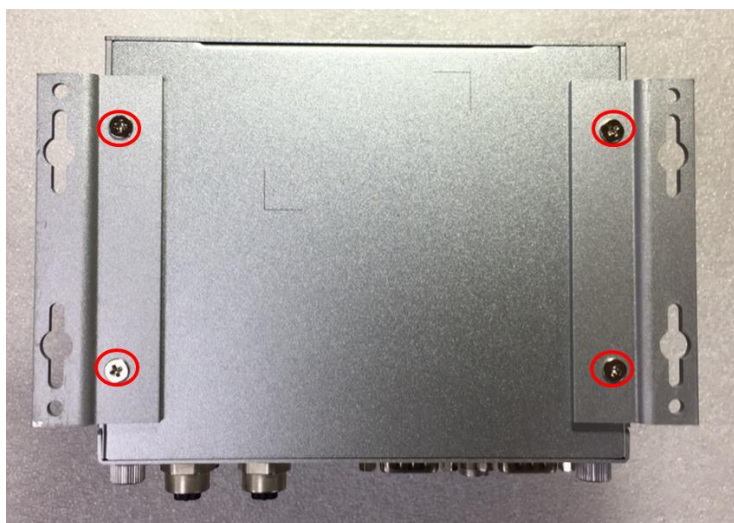


2.5 Installing the Wall Mounting Kit

Step 1 Prepare the wall mount assembly components (screws and brackets) ready.

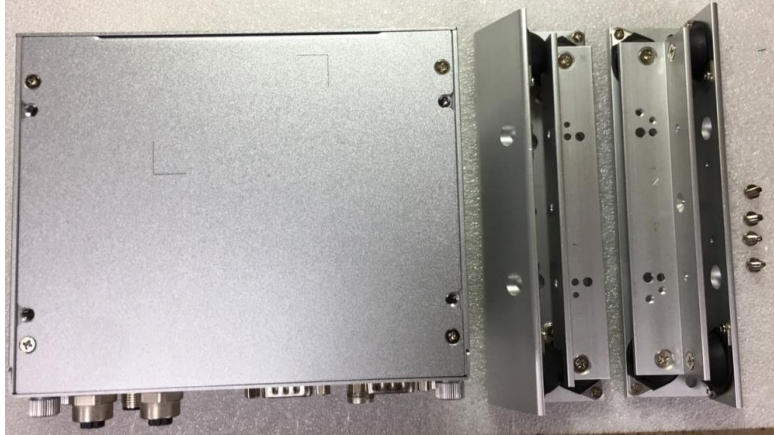


Step 2 Assemble the brackets to the bottom of the system unit and fasten all screws tight.

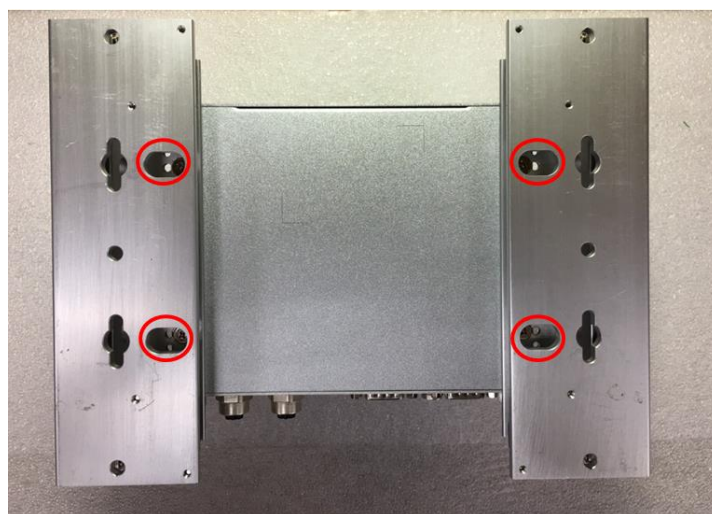


2.6 Installing the Anti-vibration Kit

Step 1 Prepare the Anti-Vibration Kit components (screws and brackets) ready.



Step 2 Assemble the brackets to the bottom of the system unit and fasten screws tight.



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SECTION 3 CONNECTOR

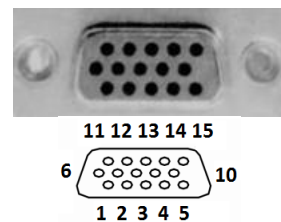
3.1 Connectors

Connectors connect the CPU board with the other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected before your turn on the system.

3.1.1 Display

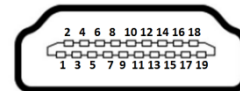
- A 15-pin D-Sub connector as VGA connector

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N.C.	5	GND	6	GND
7	GND	8	GND	9	VCC
10	GND	11	N.C.	12	DDC DATA
13	Horizontal sync	14	Vertical sync	15	DDC CLK



- 1x HDMI

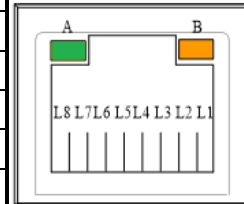
Pin	Signal	Pin	Signal
1	TMDS data 2+	11	TMDS clock shield
2	TMDS data 2 shield	12	TMDS clock-
3	TMDS data 2-	13	CEC
4	TMDS data 1+	14	Not connected
5	TMDS data 1 shield	15	DDC clock
6	TMDS data 1-	16	DDC data
7	TMDS data 0+	17	Ground
8	TMDS data 0 shield	18	+5V power
9	TMDS data 0-	19	Hot plug detect
10	TMDS clock+		



3.1.2 Ethernet Ports

- LAN chip: Intel Ethernet Controller I210.
- The board has dual RJ-45 connectors, supporting 10/100/1000 Base-T with 1.5KV magnetic isolation protection.

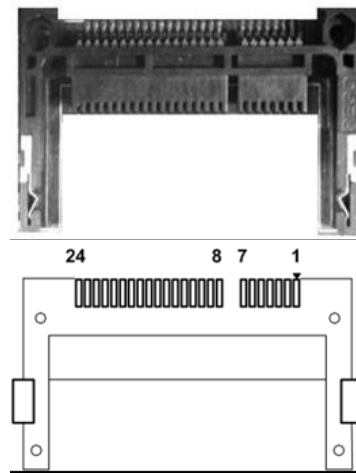
Pin	Description	10/100Base-T	1000Base-T
1	Transmit data+ or bidirectional	TX+	BI_DA+
2	Transmit data- or bidirectional	TX-	BI_DA-
3	Receive data+ or bidirectional	RX+	BI_DB+
4	Not connected or bidirectional	N.C.	BI_DC+
5	Not connected or bidirectional	N.C.	BI_DC-
6	Receive data- or bidirectional	RX-	BI_DB-
7	Not connected or bidirectional	N.C.	BI_DD+
8	Not connected or bidirectional	N.C.	BI_DD-
A	Speed LED	OFF/Green	Orange
B	Activity link LED	OFF: No link Blinking: Data activity detected (Yellow)	



3.1.3 Storage

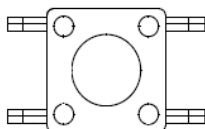
- 1 x 2.5" external SATA drive bay
- 1 x SATA CFast

Pin	Signal	Pin	Signal
1	GND	13	N.C
2	SATA_TX+	14	GND
3	SATA_TX-	15	N.C
4	GND	16	N.C
5	SATA_RX-	17	N.C
6	SATA_RX+	18	N.C
7	GND	19	N.C
8	N.C	20	+3.3VS
9	GND	21	+3.3VS
10	N.C	22	GND
11	N.C	23	GND
12	N.C	24	N.C



3.1.4 Restore BIOS Optimal Defaults (CLEAR CMOS)

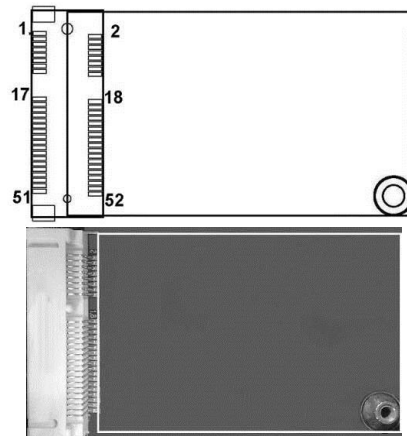
- Push the CMOS button on the motherboard for a few seconds. Doing this procedure can restore BIOS optimal defaults.



3.1.5 Wireless

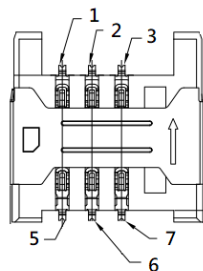
- 1 x Full size Mini Card socket supports a module with USB, PCIe and SIM Interfaces (Socket 1).
- 1 x Full size Mini Card socket supports a module with USB and PCIe Interfaces (Socket 2).

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	N.C.	4	GND
5	N.C.	6	+1.5V
7	CLKREQ#	8	SIM_PWR / N.C.
9	GND	10	SIM_DATA / N.C.
11	REFCLK-	12	SIM_CLK / N.C.
13	REFCLK+	14	SIM_REST / N.C.
15	GND	16	SIM_VPP / N.C.
17	N.C.	18	GND
19	N.C.	20	+3.3VSB
21	GND	22	PERST#
23	PE_RXN	24	+3.3VSB
25	PE_RXP	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PE_TXN	32	SMB_DATA
33	PE_TXP	34	GND
35	GND	36	USB_D3-
37	GND	38	USB_D3+
39	+3.3VSB	40	GND
41	+3.3VSB	42	LED_WWAN#
43	GND	44	LED_WLAN#
45	N.C.	46	LED_WPAN#
47	N.C.	48	+1.5V
49	N.C.	50	GND
51	N.C.	52	+3.3VSB



- 1 x External SIM card slot (for PCI Express Mini Card socket 1)
- 4 x Antenna holes

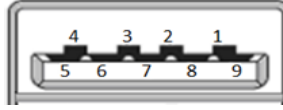
Pin	Signal
1	SIM_PWR
2	SIM_RESET
3	SIM_CLK
5	GND
6	SIM_VPP
7	SIM_DATA



3.1.6 USB

- 4 x USB3.0

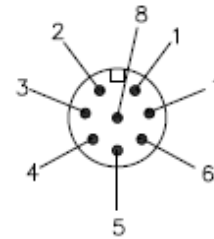
Pin	Signal	Pin	Signal
1	USB_VCC	6	SSRX2+
2	USB_Data2-	7	GND
3	USB_Data2+	8	SSTX2-
4	GND	9	SSTX2+
5	SSRX2-		



3.1.7 USB2.0 M12 Connector

The USB2.0 connector is an M12 A-code Male 8-Pin connector

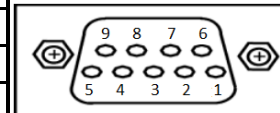
Pin	Signal	Pin	Signal
1	VCC	5	VCC
2	D-	6	D-
3	D+	7	D+
4	GND	8	GND
Shell	CHS GND		



3.1.8 COM Port

- Module serial port 1 only supports RS-232. Serial port 2 supports RS422/485, which can be selected by BIOS.
- Supports Auto Flow Control in RS485 mode.

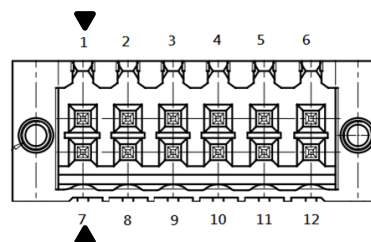
Pin	RS-232	RS-422	RS-485
1	DCD, Data carrier detect	RX+	NC
2	RXD, Receive data	RX-	NC
3	TXD, Transmit data	TX+	Data+
4	DTR, Data terminal ready	TX-	Data-
5	GND, ground	GND	GND
6	DSR, Data set ready	NC	NC
7	RTS, Request to send	NC	NC
8	CTS, Clear to send	NC	NC
9	NC	NC	NC
10	NC	NC	NC



3.1.9 DIO

- 1 Terminal Block port supports 4 Digital In & 4 Digital Out with isolation.

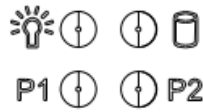
Pin	Signal	Pin	Signal
1	COM+	7	Ext Power
2	0_OUT	8	4_IN
3	1_OUT	9	5_IN
4	2_OUT	10	6_IN
5	3_OUT	11	7_IN
6	COM-	12	DIO_GND



3.1.10 LED

- On front panel LED

LED Indicator	Description
PWR/ Green	Power on
HDD/ Yellow	HDD activity
P1/ Green	Programmable
P2/ Green	Programmable



3.1.11 Power & Reset Button

- Power button settings for software must be set up first.

Pin	Description
1	Reset button
2	Power button

Reset

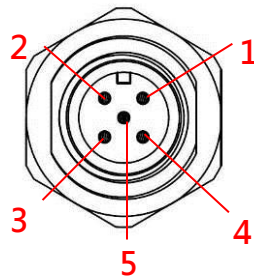


Note: Refer to APPENDIX A for instructions on power button settings for Windows.

3.1.12 Power

- The DC-in power input connector is an M12 A-code Male 5-pin connector.

Pin	Signal
1	VCC
2	VCC
3	System GND
4	System GND
5	Chassis GND



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CHAPTER 4

AMI UEFI BIOS UTILITY

The AMI UEFI BIOS provides users with a built-in setup program to modify basic system configuration. All configured parameters are stored in a flash backup that saves the setup information whenever the power is turned off.

3.1 Entering Setup

To enter the setup screens, follow the steps below:

1. Turn on the computer and press the key immediately.
2. After you press the key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Advanced and Chipset menus.

3.2 The Main Menu

Once you enter the AMI BIOS Aptio Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use Select Screen Keys (or Move Keys) to select the setup page you intend to configure and then press <Enter> to accept or enter its sub-menu.



System Date

The date format is <day> <month> <date> <year>.

System Time

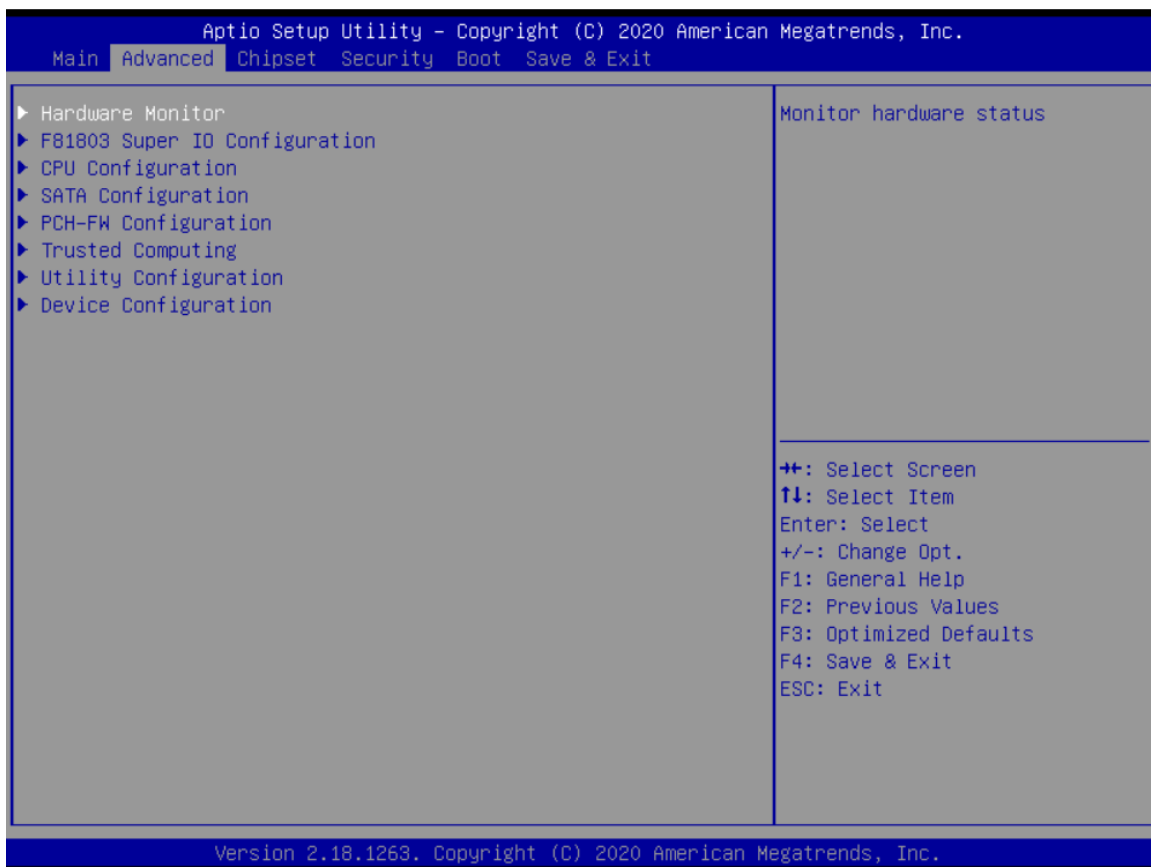
This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

3.3 Advanced Features

The Advanced menu also allows users to set configuration of the CPU and other system devices. Users can select any items in the left frame of the screen to go to sub menus:

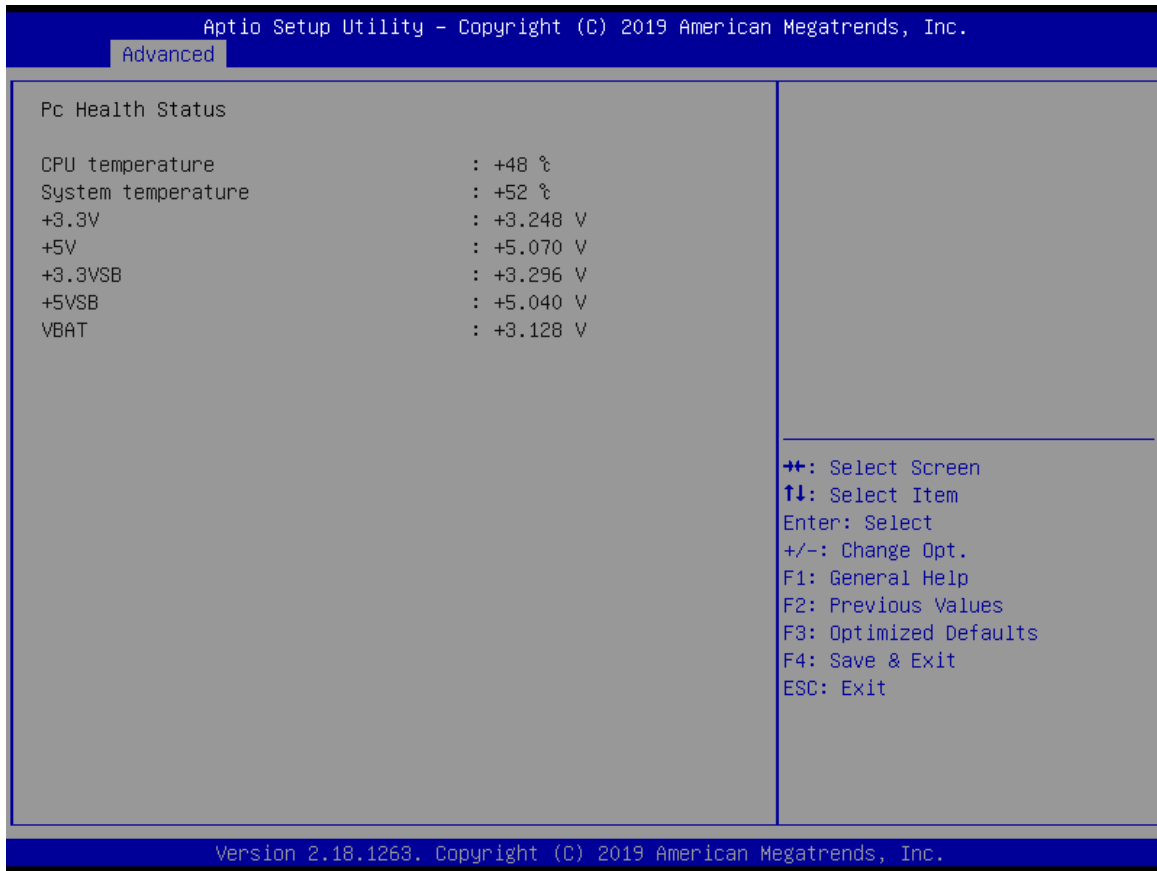
- ▶ Hardware Monitor
- ▶ F81803 Super IO Configuration
- ▶ CPU Configuration
- ▶ SATA Configuration
- ▶ PCH-FW Configuration
- ▶ Trusted Computing
- ▶ Utility Configuration
- ▶ Device Configuration

For items marked with "▶", please press <Enter> for more options.



- **Hardware Monitor**

This screen displays the temperatures of CPU and system, as well as system voltages (+3.3V, +12V and +5V ,etc).



- **F81803 Super IO Configuration**

Use this screen to select options for the F81803 Super IO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "▶", please press <Enter> for more options.

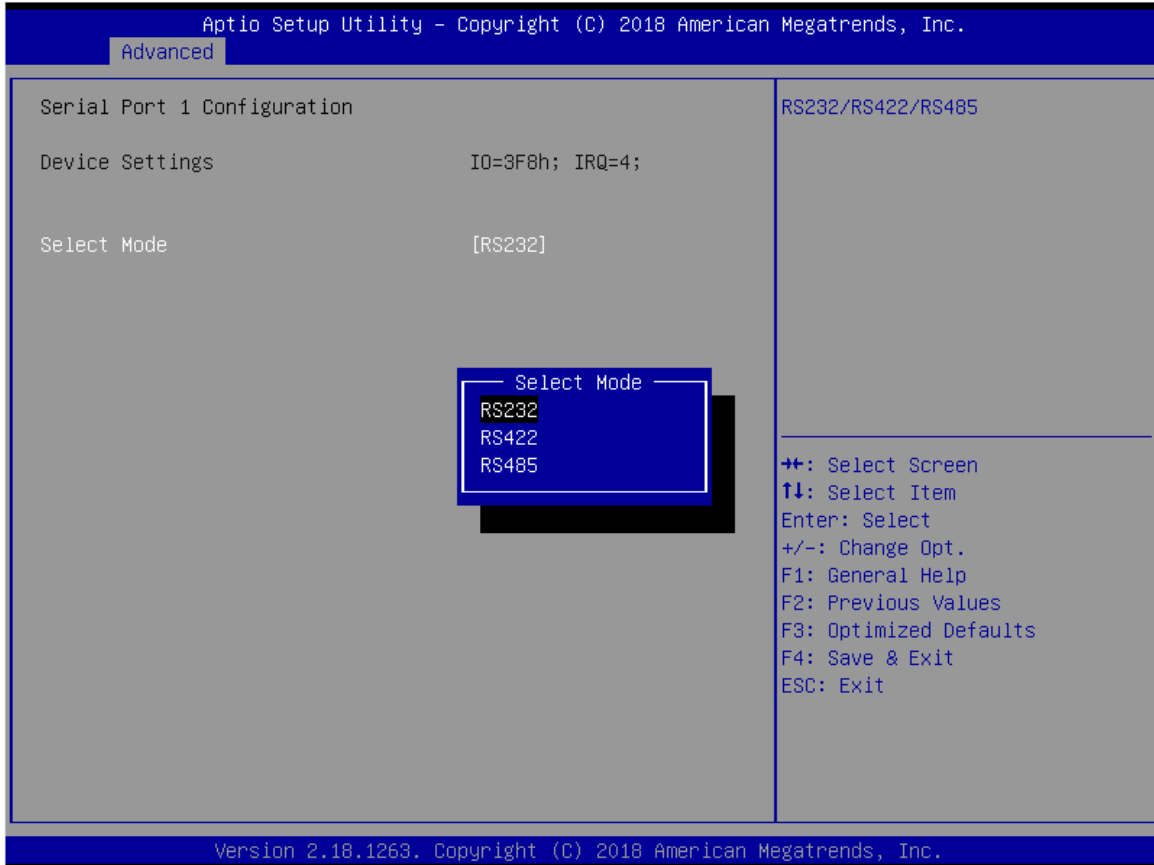
The serial port 2 setting is preset for the internal MCU, so it cannot be set by the user.



Serial Port 1 Configuration

Use these items to set parameters related to serial port 1.

Serial Port 1

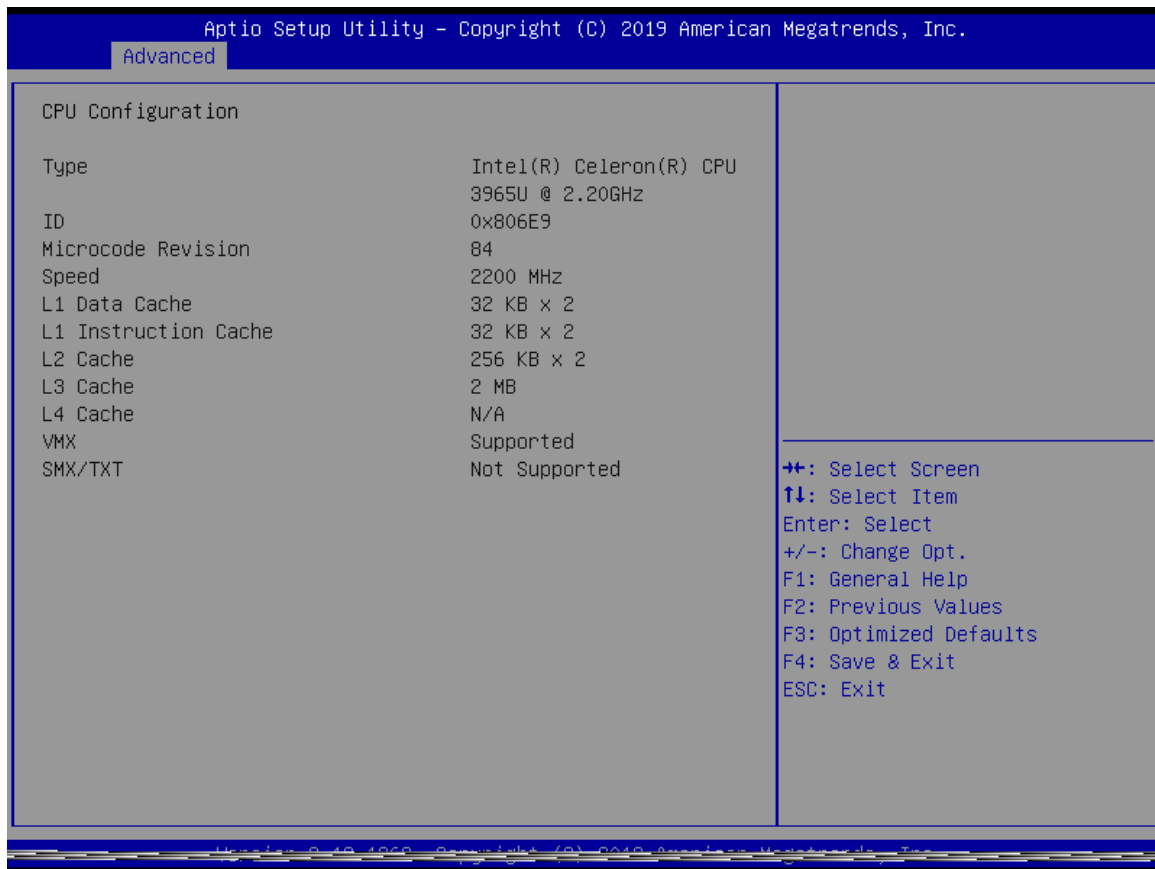


Select Mode

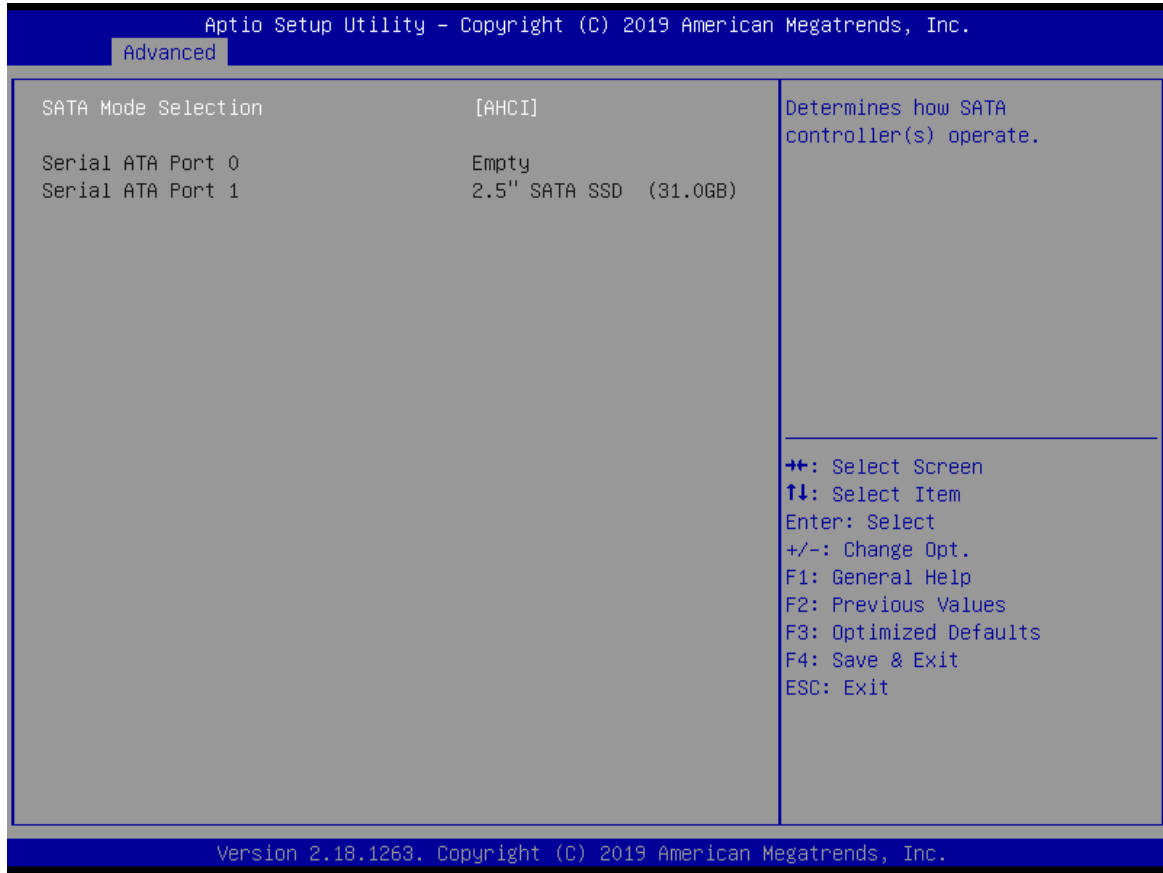
Use this option to set RS-232/RS-422/RS-485 mode.

- **CPU Configuration**

This screen shows the CPU version and its detailed information.



- **SATA Configuration**



SATA Mode Selection

The AHCI (Advanced Host Controller Interface) mode is how SATA controller(s) operate.

Serial ATA Port 0~1

It shows the device installed in connector SATA0~1.

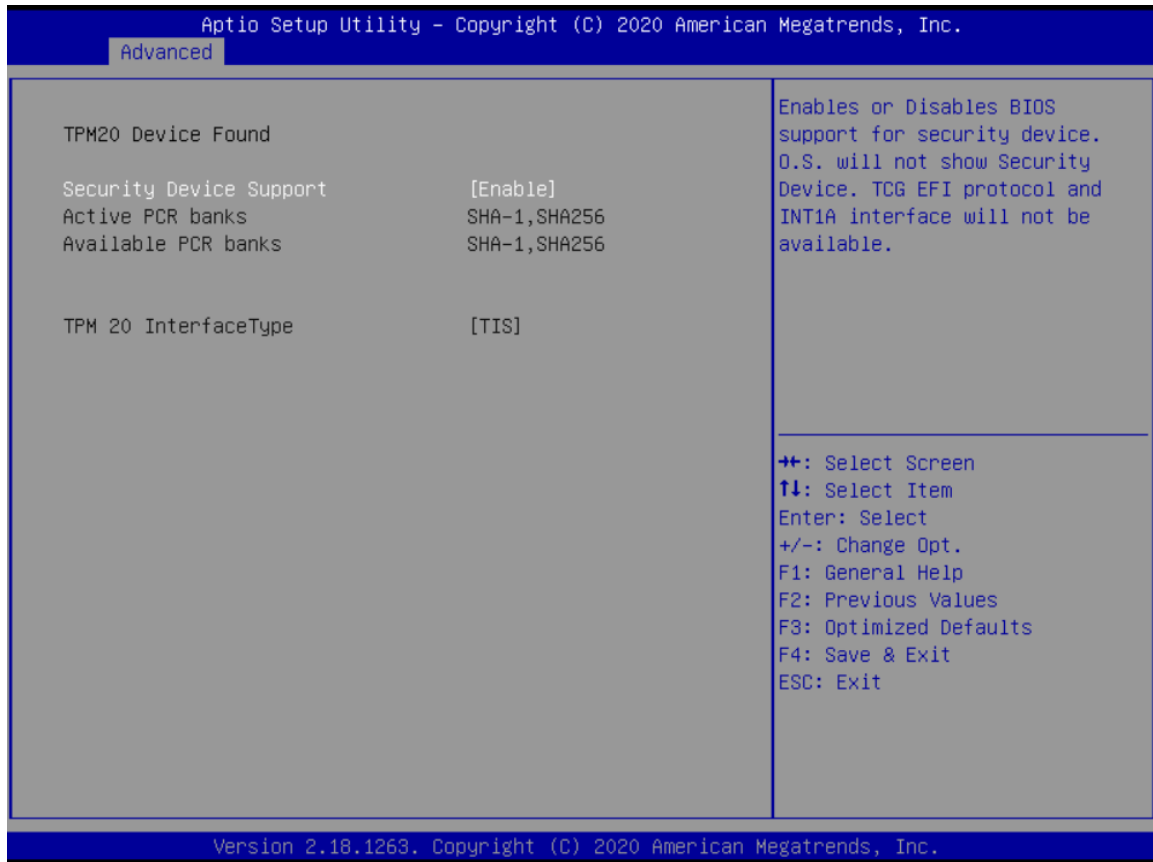
- **PCH-FW Configuration**

This screen shows ME Firmware information.



- **Trusted Computing**

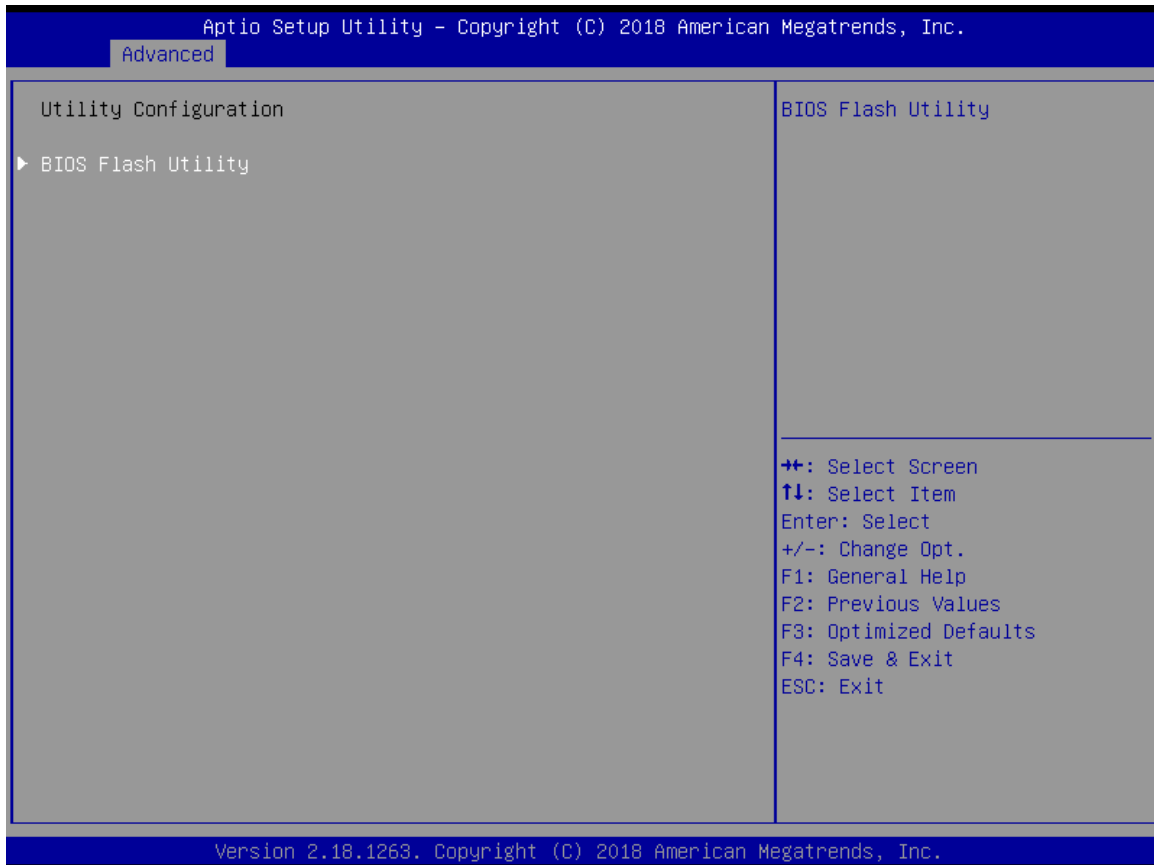
Select the Security Device Support to enable or disable the TPM function.

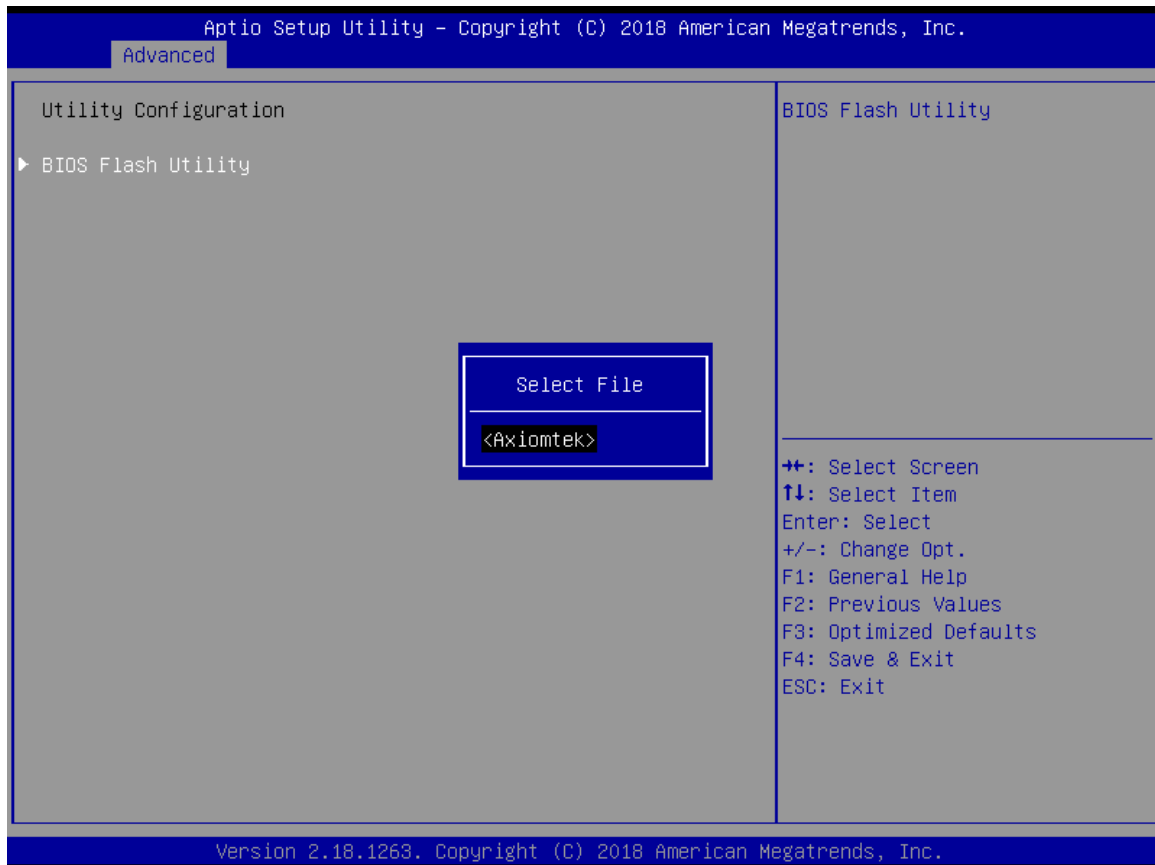
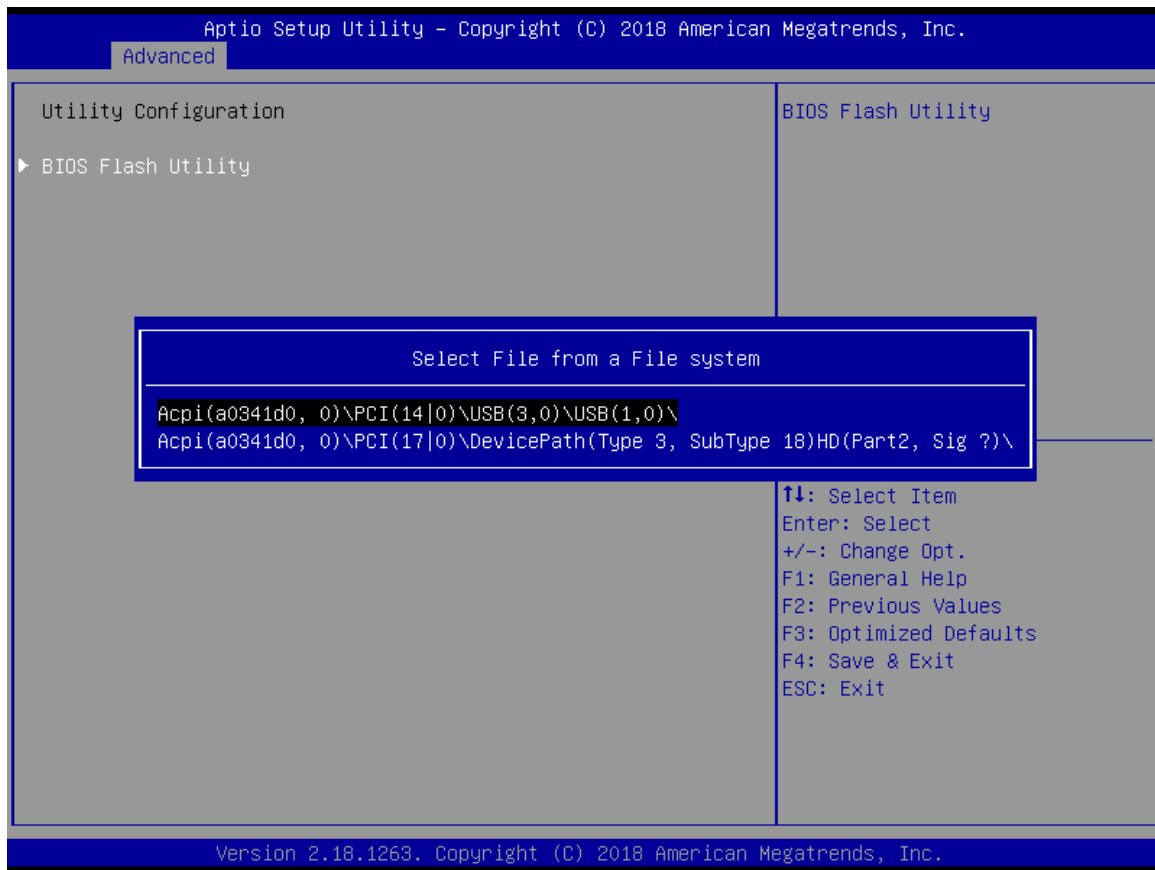


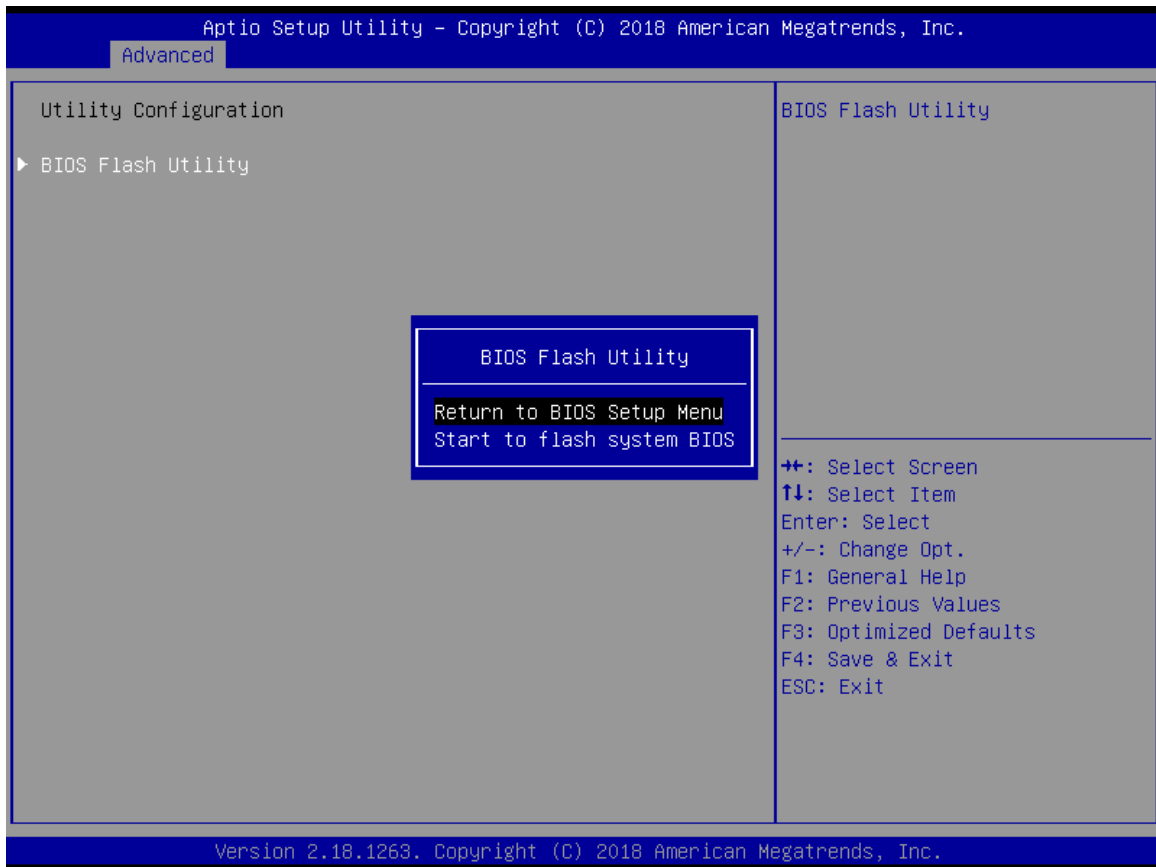
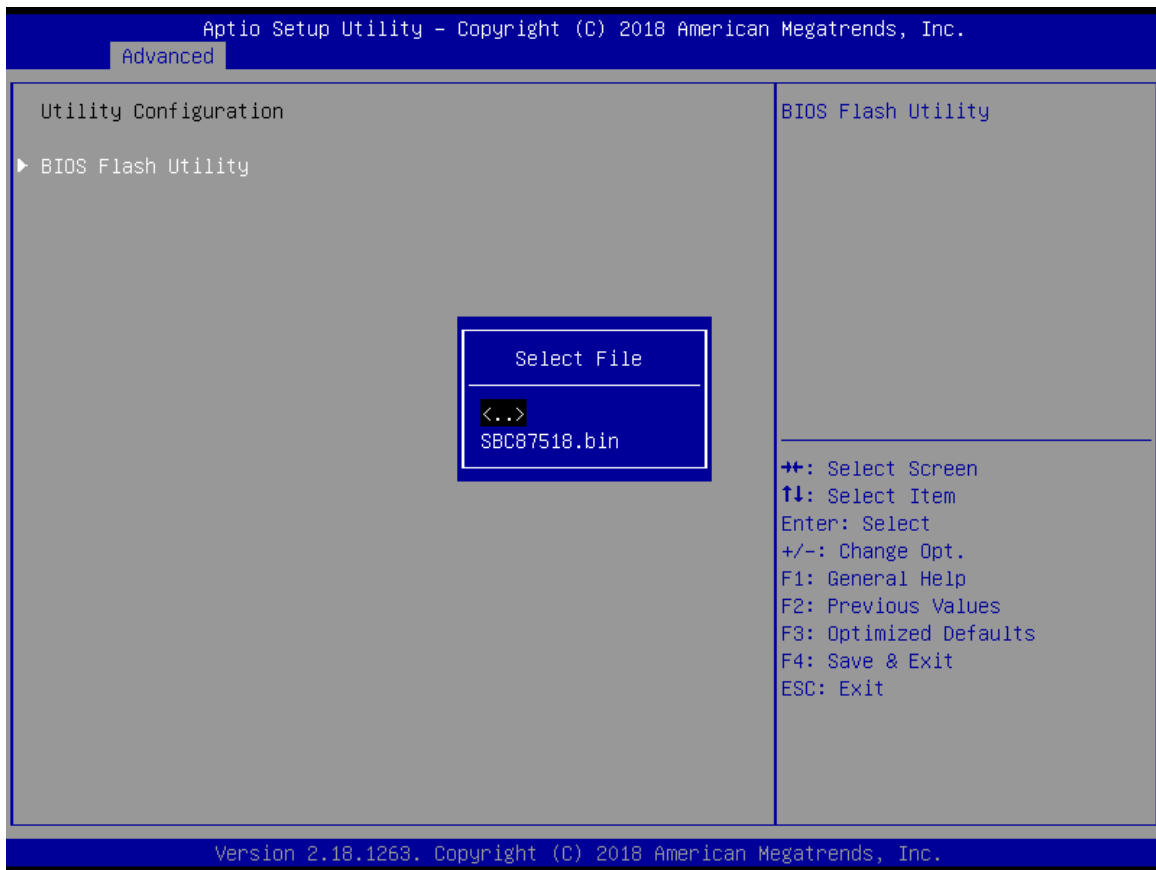
Utility Configuration

BIOS flash utility is a tool for flashing BIOS on setup menu. Follow the steps to flash BIOS.

1. Create a folder and rename it to Axiomtek on the root of USB storage (Ex: X:\Axiomtek).
2. Copy the BIOS file to the Axiomtek folder (Ex: X:\Axiomtek\SBC87518X.005).
(Note : The BIOS file name must contain the word SBC87518)
3. Enter the BIOS flash utility and locate the BIOS file.
4. Push "Start to flash system BIOS".







- **Device Configuration**

Device configuration divides into two parts: one part is onboard device; the other is module device.

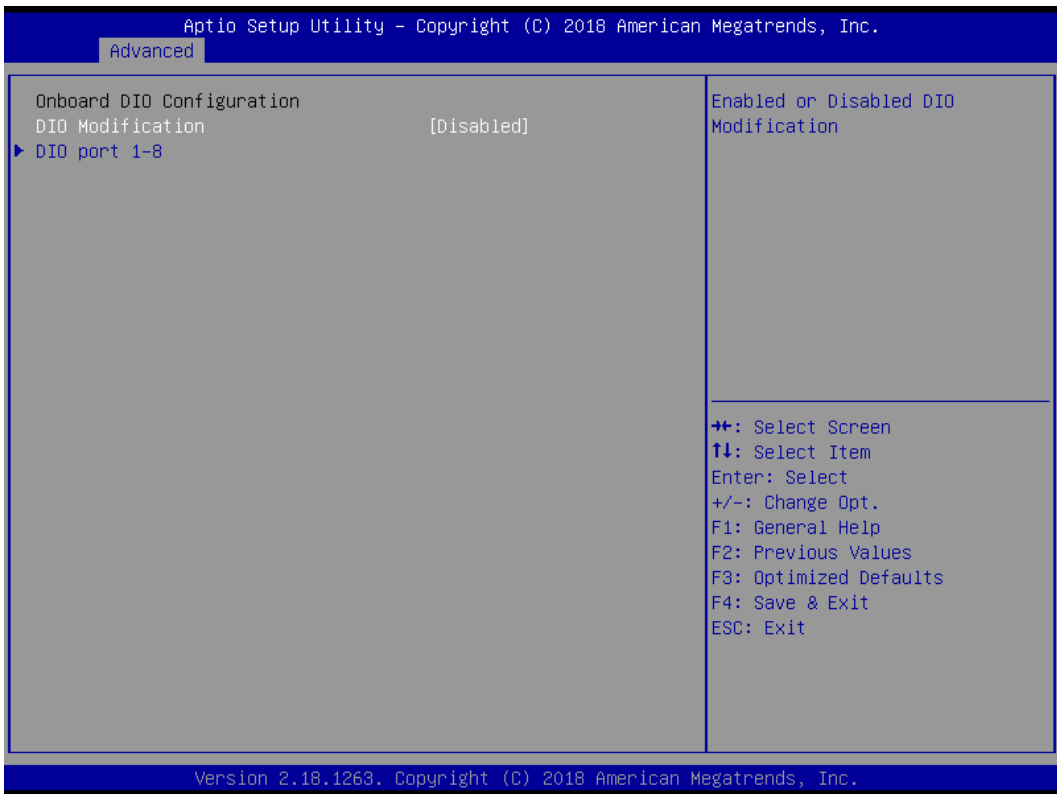
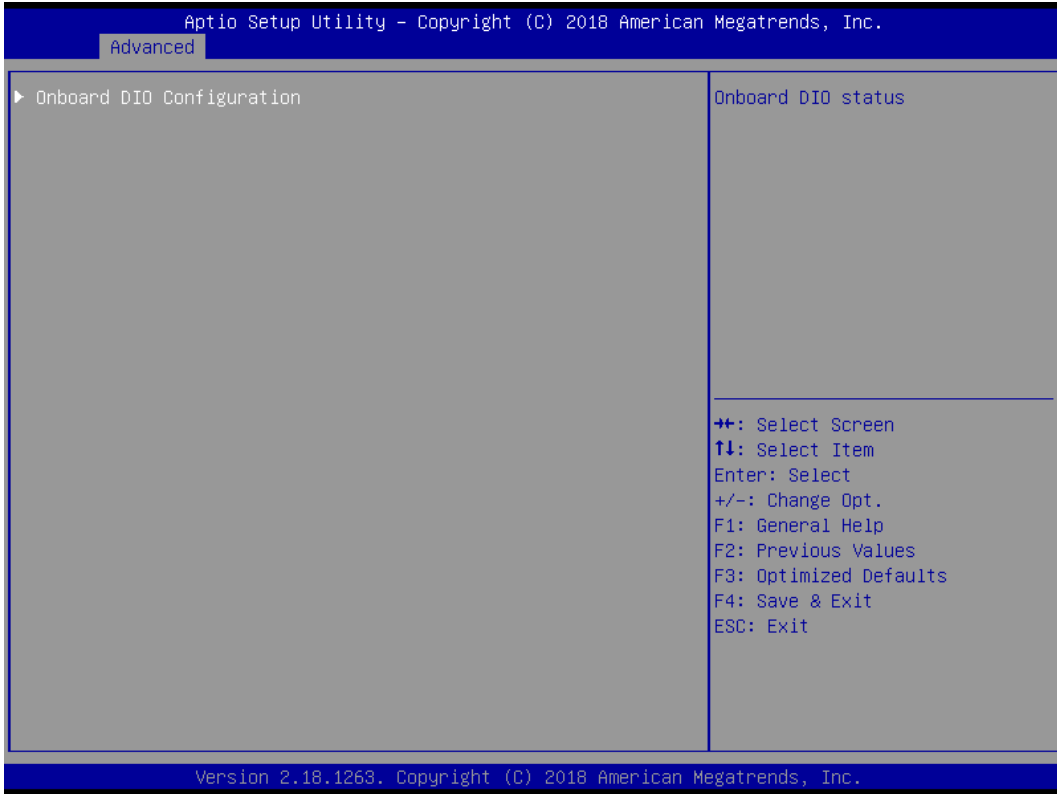
The Module Device Configuration menu would dynamically appear when a module device is plugged into the slot. When no module is plugged in, the screen would only show Onboard Device Configuration.

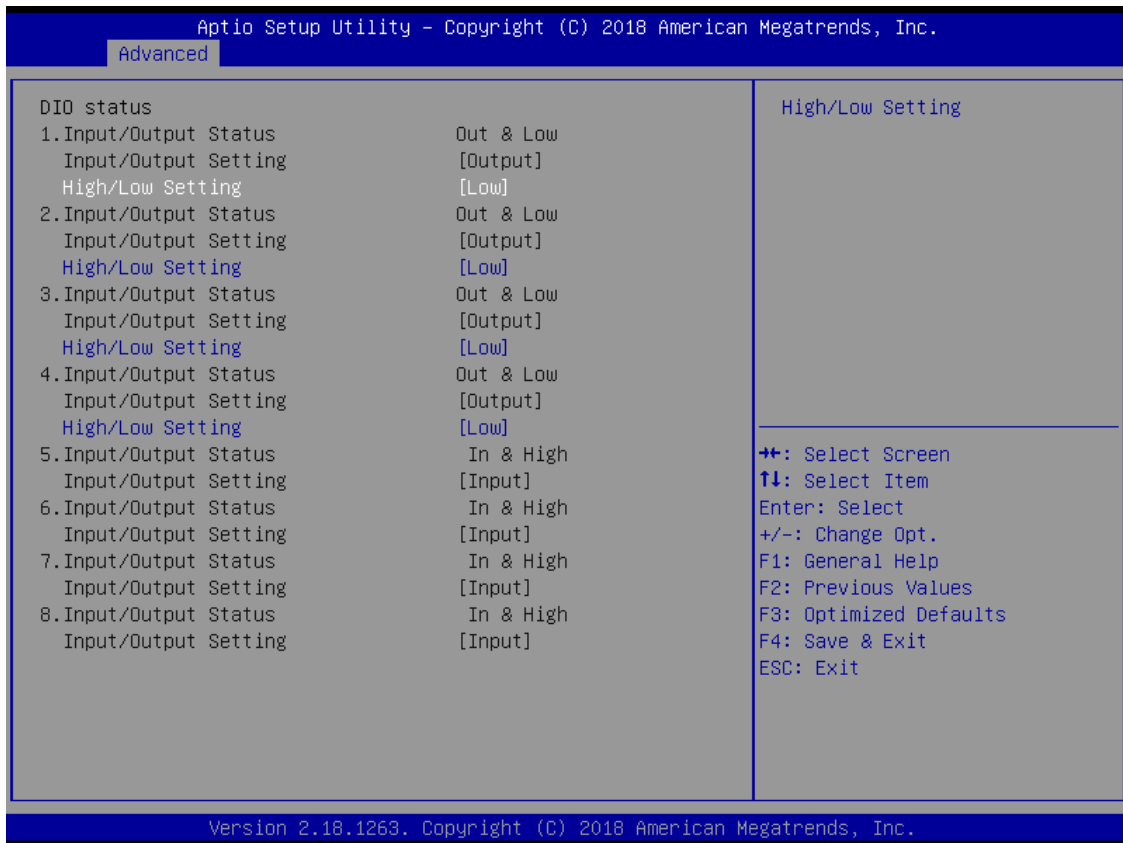


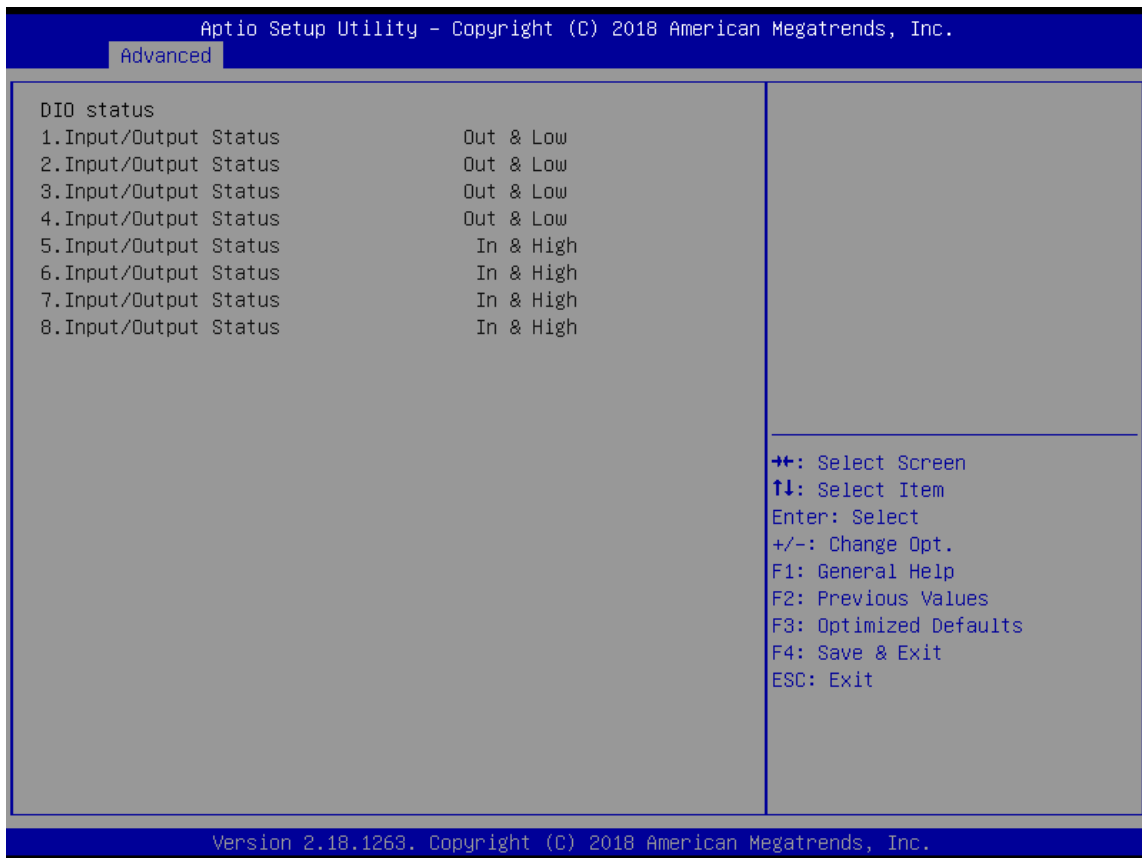
Onboard DIO Configuration

In the onboard DIO configuration, the screen displays DIO information and set I/O.

(Please refer below graphics.)







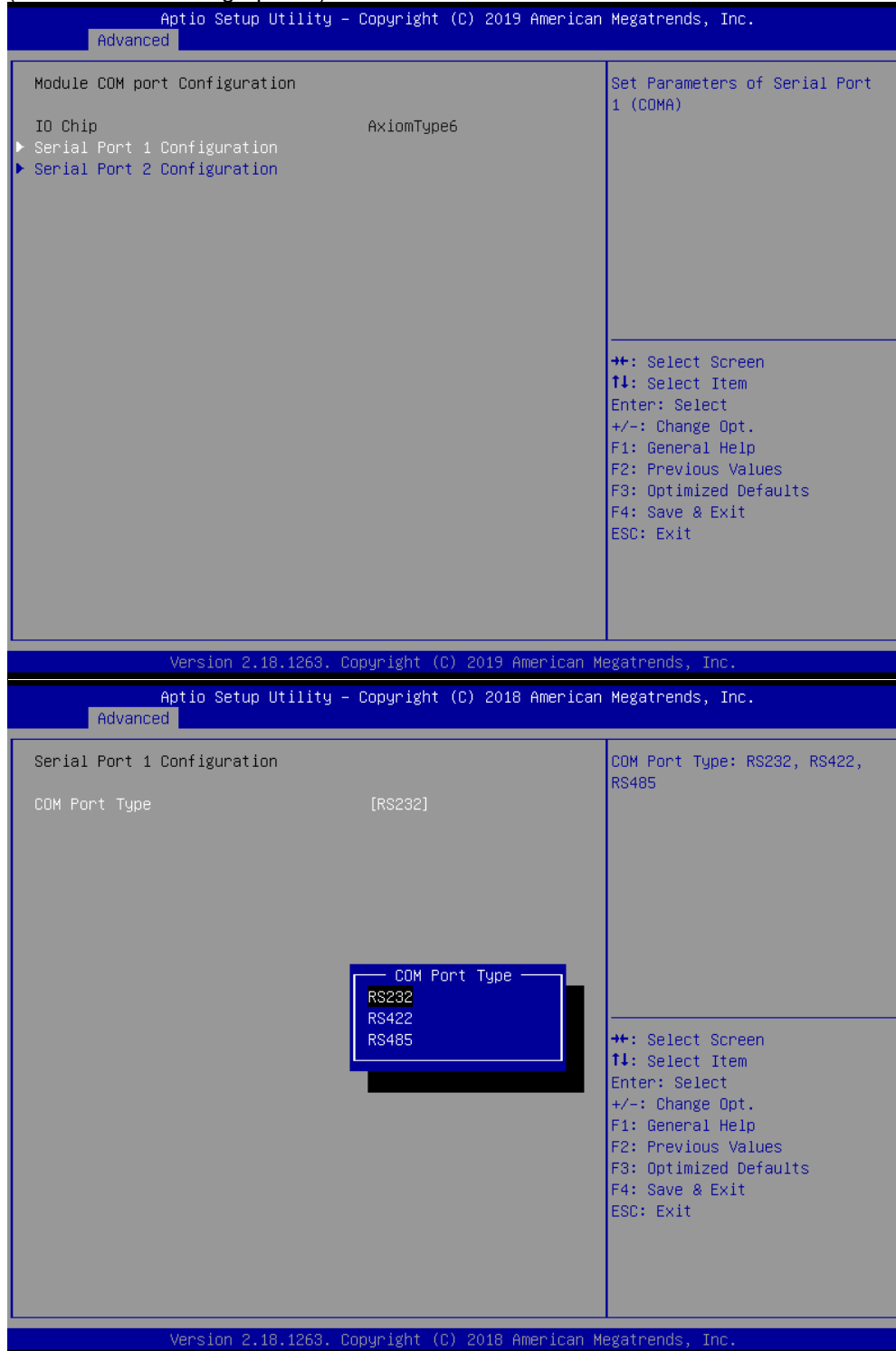
Module COM Port Configuration

When the module has COM port functions, the module COM configuration menu would show.

The default setting for all serial ports is RS232.

You can change the setting by selecting the value you want in each COM port type. The system supports RS422 & RS485 modes as well as high speed mode.

(Please refer below graphics.)



3.4 Chipset Feature

The Chipset menu allows users to change the advanced chipset settings. Users can select any of the items in the left frame of the screen to go to the sub menus:

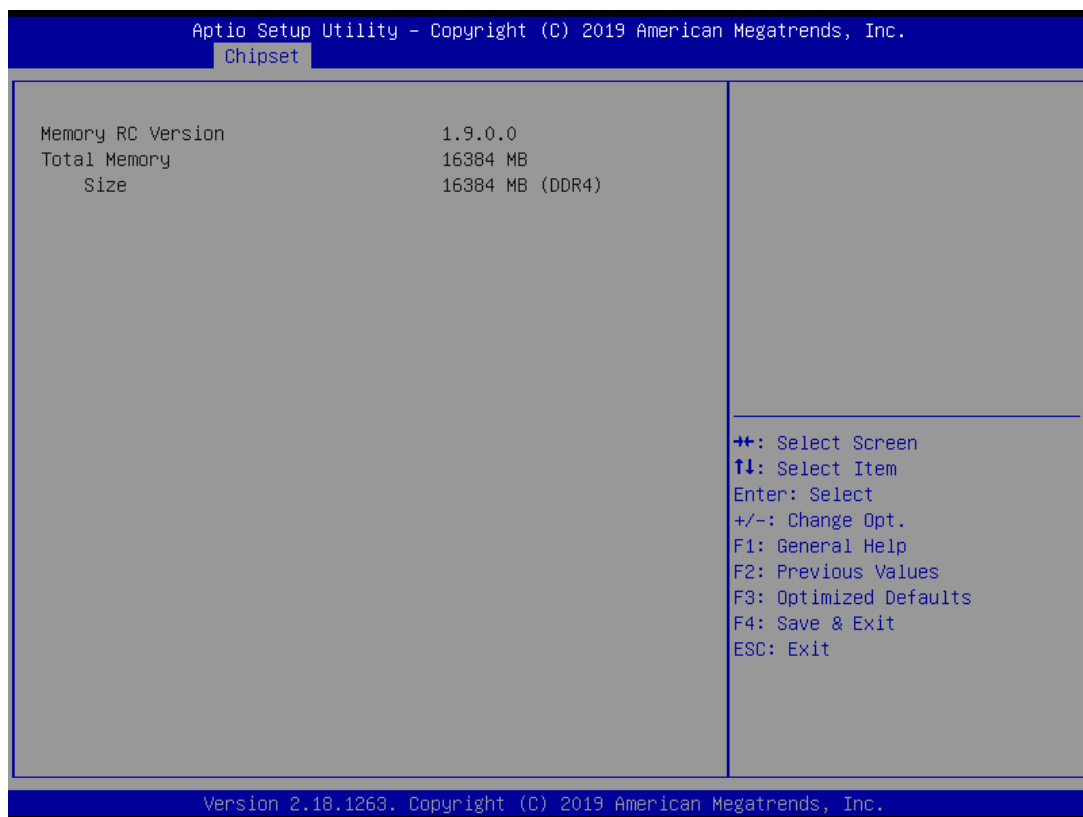
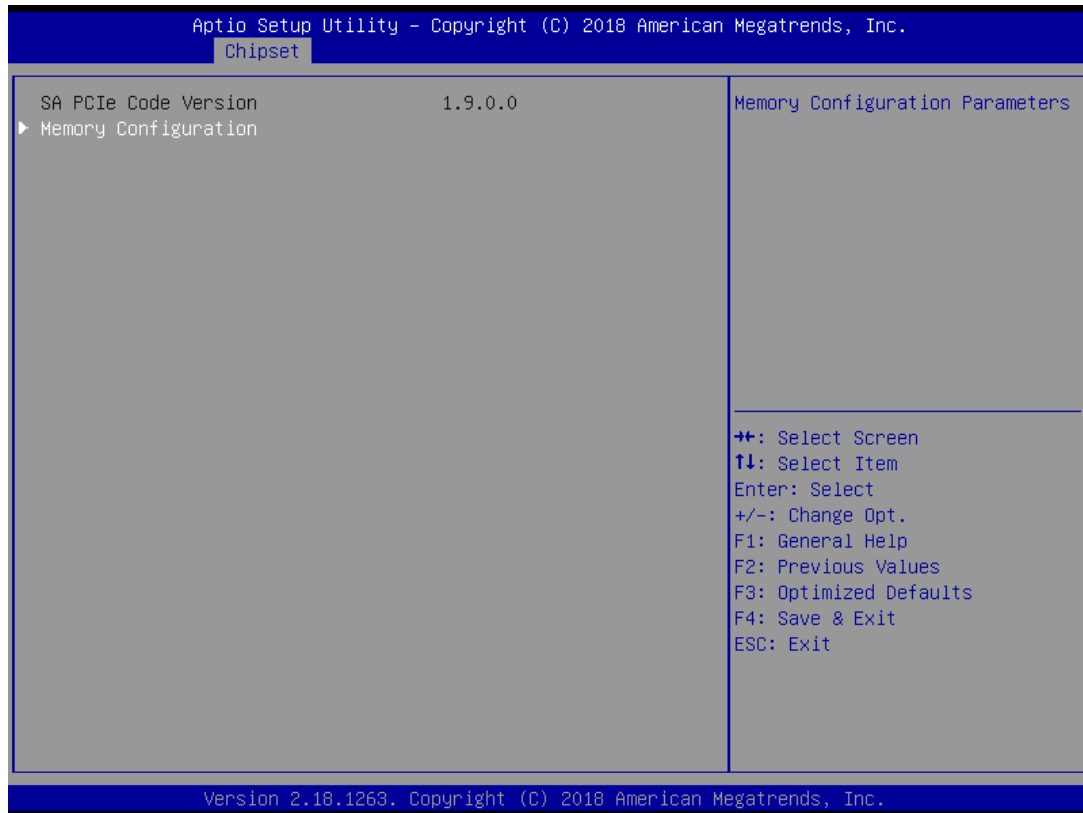
▶ System Agent (SA) Configuration

For items marked with “▶”, please press <Enter> for more options.



- **Memory Configuration**

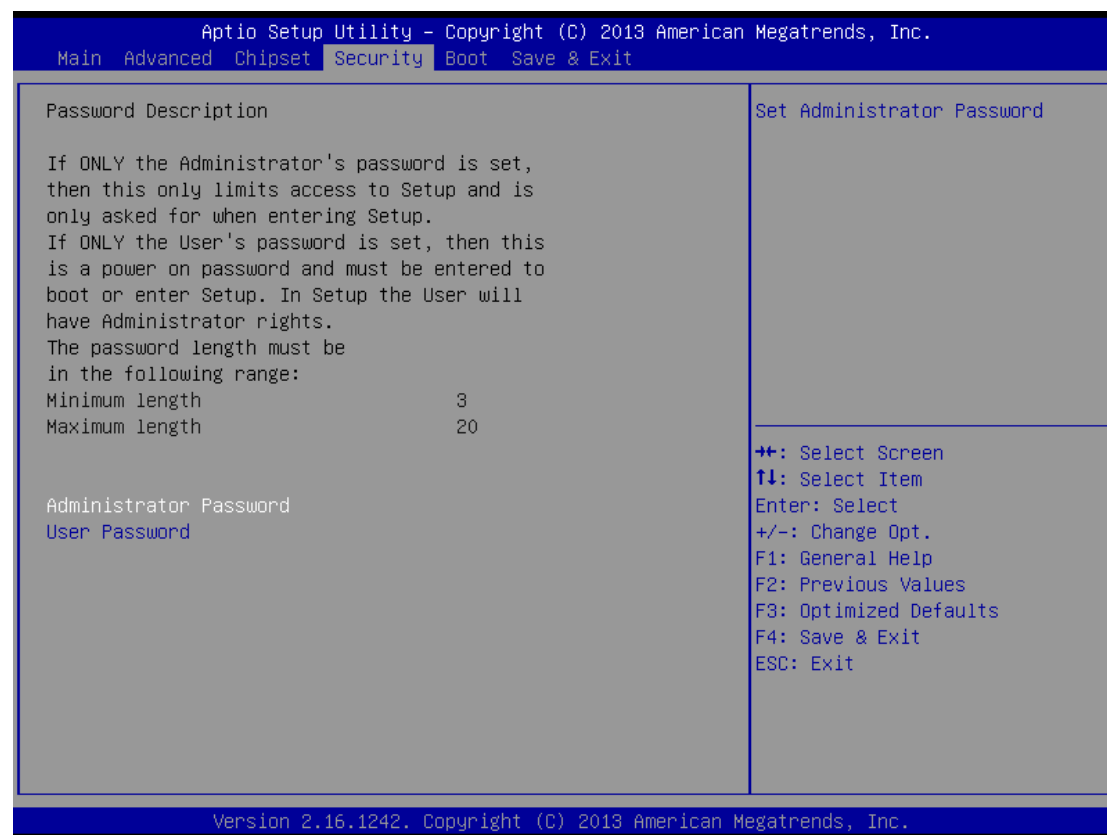
This screen shows the system memory information.



3.5 Security

The Security menu allows users to set an administrator password and a user password to enhance system security. No password is set in the default setting.

(Please refer below graphics.)



Administrator Password

This item indicates whether an administrator password has been set (installed or uninstalled).

User Password

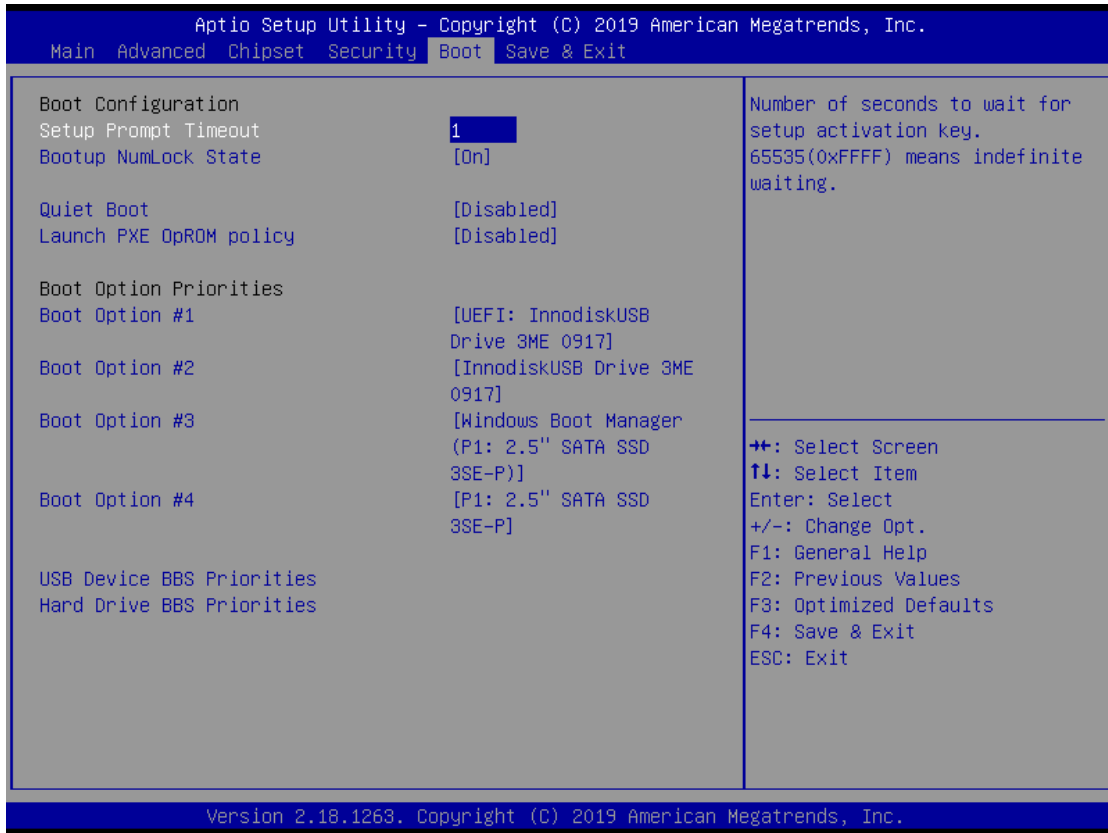
This item indicates whether a user password has been set (installed or uninstalled).



Note: The BIOS default has no password. The user must remember the password after creating it. If the user forgets the password the RMA is the only solution.

3.6 Boot Type

The Boot menu allows users to change boot options of the system.



Setup Prompt Timeout

Use this item to set up number of seconds to wait for setup activation key where 65535(0xFFFF) means indefinite waiting.

Bootup NumLock State

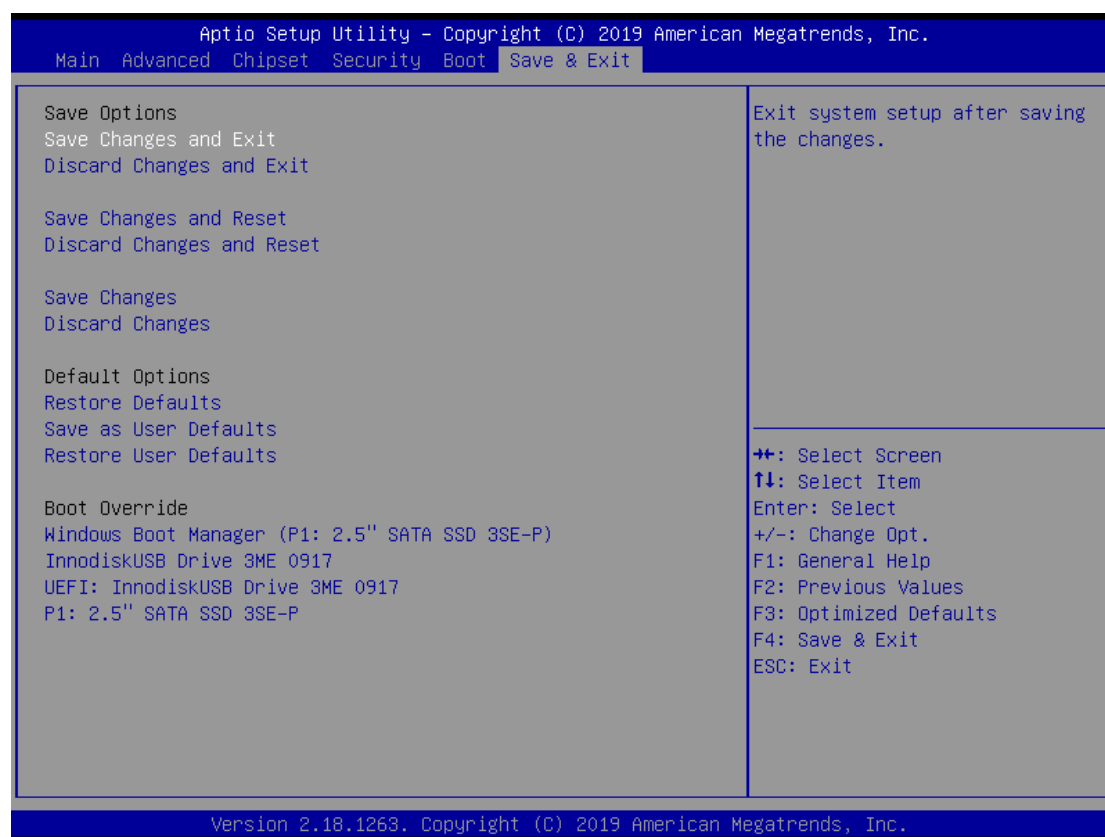
Use this item to select the power-on state for the keyboard NumLock.

Boot Option Priorities

These are settings for boot priority. Specify the boot device priority sequence from the available devices.

3.7 Save & Exit

The Save & Exit menu allows users to load system configurations with optimal or fail-safe default values.



Save Changes and Exit

When users have completed the system configuration changes, select this option to leave Setup and return to Main Menu. Select Save Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configurations and return to Main Menu. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

Save Changes and Reset

After completing the system configuration changes, select this option to leave Setup and reboot the computer so the new system configurations will take effect. Select Save Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

Discard Changes and Reset

Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

Save Changes

After completing the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

Discard Changes

Select this option to quit Setup without making any permanent changes to the system configurations. Select Discard Changes from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

Restore Defaults

It automatically sets all Setup options to a complete set of default settings when users select this option. Select Restore Defaults from the Save & Exit menu and press <Enter>.

Save as User Defaults

Select this option to save system configuration changes done so far as User Defaults. Select Save as User Defaults from the Save & Exit menu and press <Enter>.

Restore User Defaults

It automatically sets all Setup options to a complete set of User Defaults when users select this option. Select Restore User Defaults from the Save & Exit menu and press <Enter>.

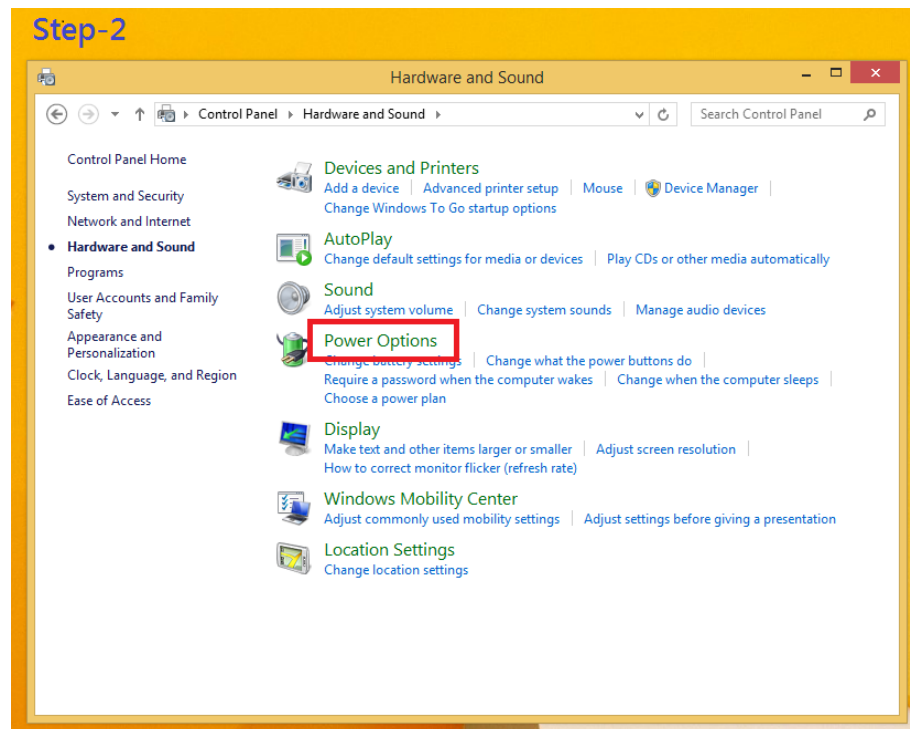
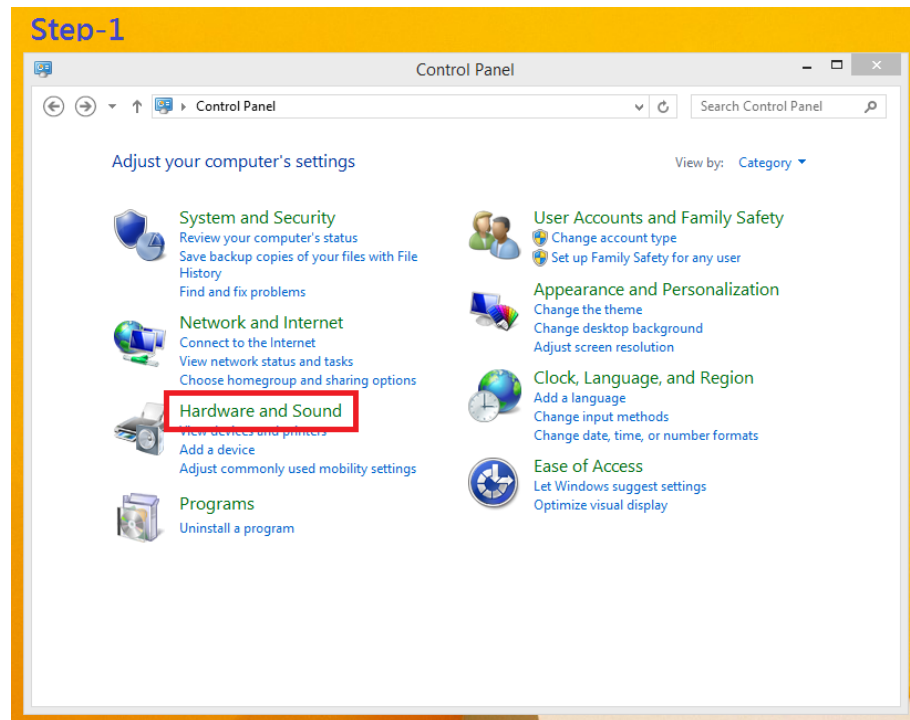
Boot Override

Select a drive to immediately boot that device regardless of the current boot order.

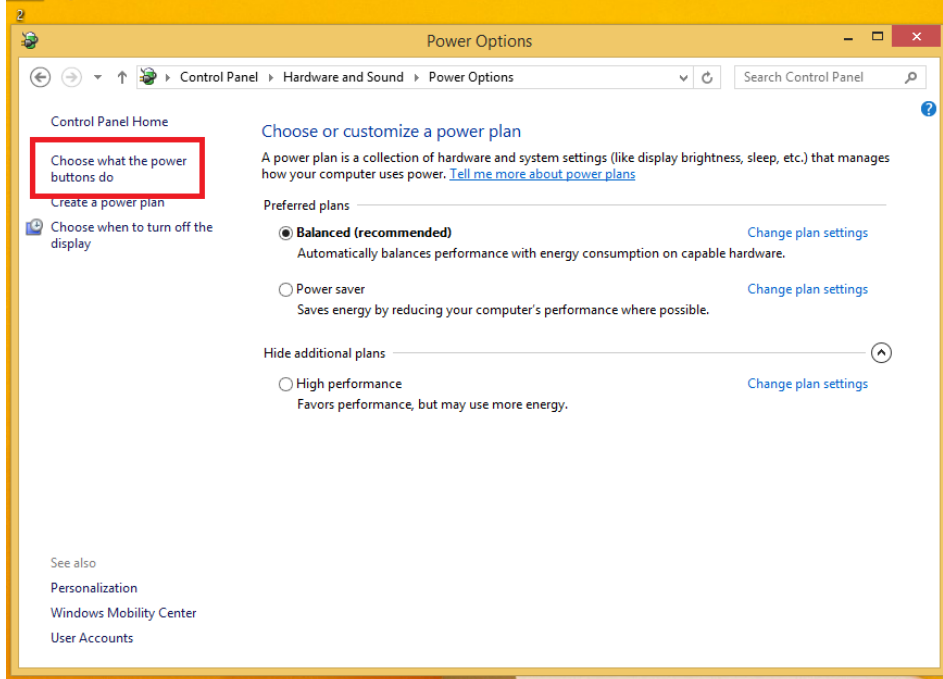
APPENDIX A

POWER BUTTON SETTING FOR WINDOWS

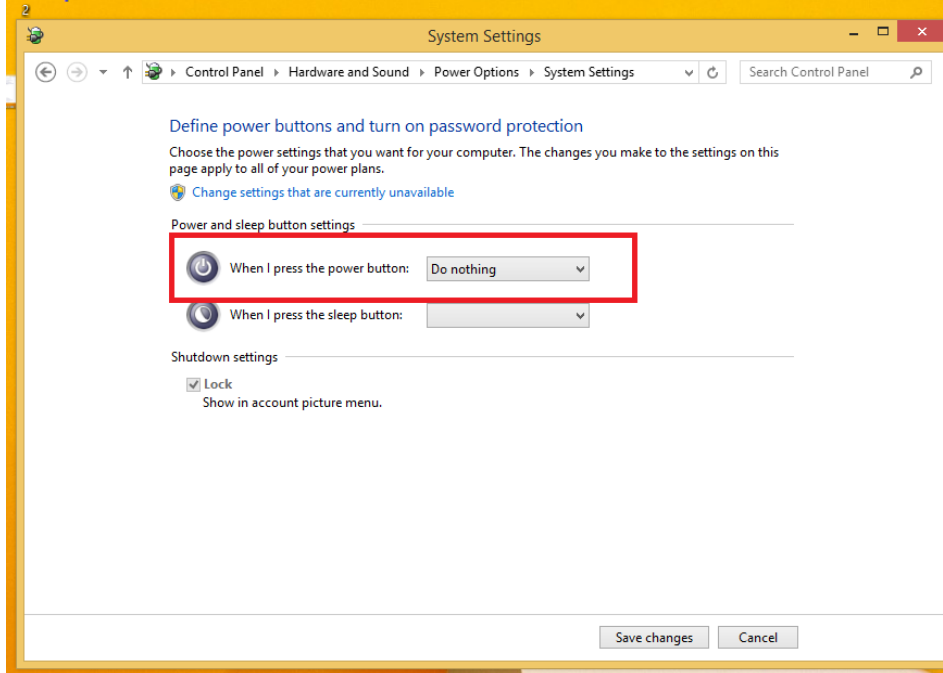
To define how the power button operates, go to the console of the PC and then follow below figures to complete the setting.



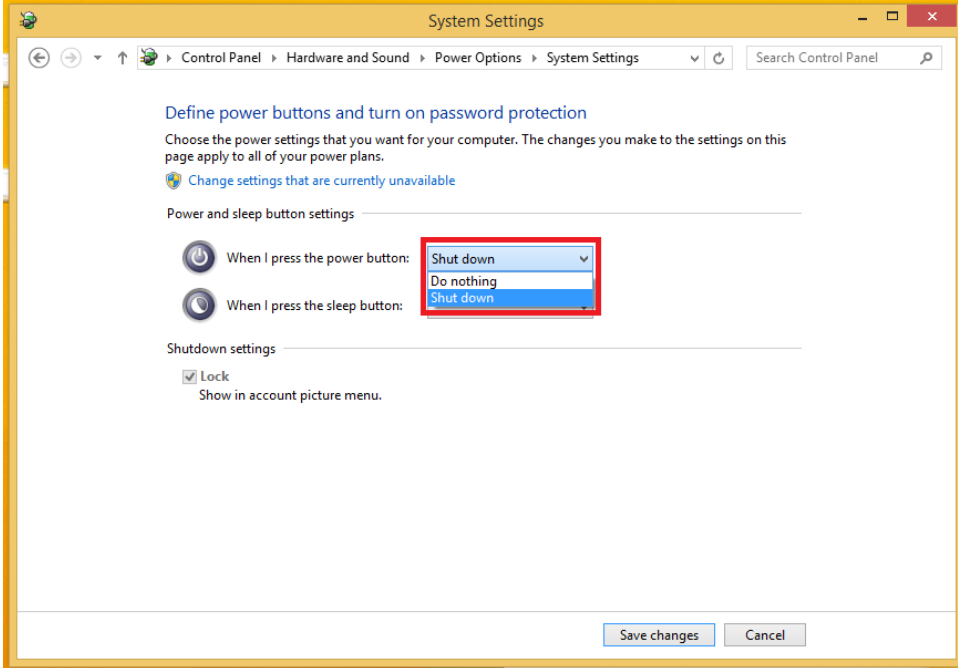
Step-3



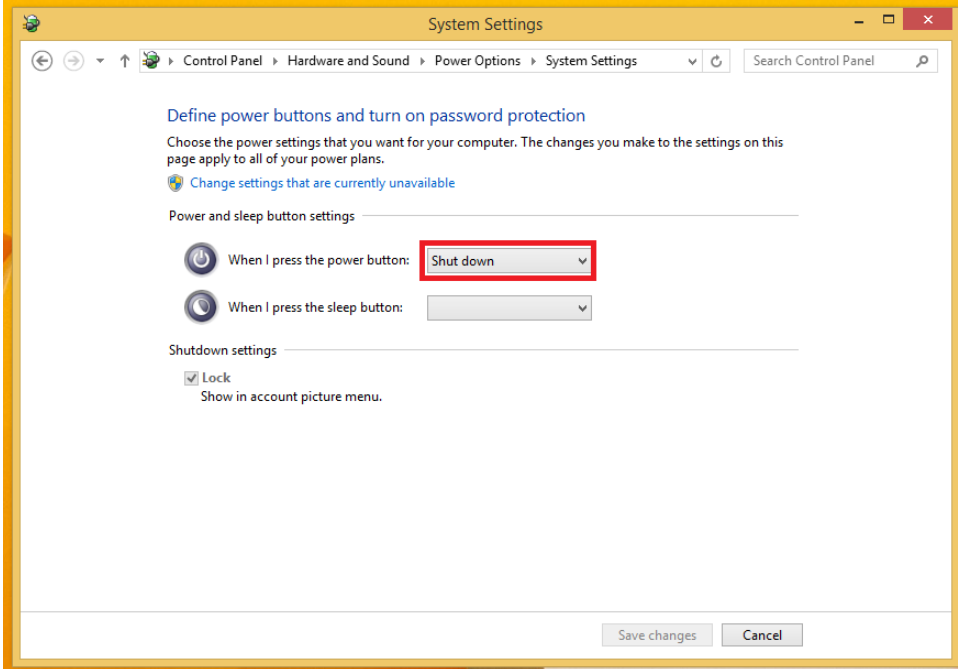
Step-4



Step-5



Step-6



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APPENDIX B

DIGITAL I/O

Digital Input:

Ext Power Input Voltage: 30Vdc Max.

Digital Input channels: 4, sink/source type

Digital Input voltage: 0 to 30VDC

Input level for dry contacts:

Logic level 0: close

Logic level 1: open

Input level for wet contacts:

Logic level 1: +/-3VDC max.

Logic level 0: +/- 10VDC min. to +/-30VDC max. (source to digital input)

Digital output:

COM+ Power Input Voltage: 30Vdc Max. On-state voltage:12~ 24VDC nominal

Output channels: 4, sink type,

Output current: 200mA max. per channel

Digital I/O Software Programming

- I2C to GPIO PCA9554PW GPIO Group0[3:0] is Output, Group0[7:4] is Input.
- I2C address: 0100010x.
- Registers:

Table 3. Command byte

Command	Protocol	Function
0	read byte	Input Port register
1	read/write byte	Output Port register

Table 4. Register 0 - Input Port register bit description

Bit	Symbol	Access	Value	Description
7	I7	read only	X	determined by externally applied logic level
6	I6	read only	X	
5	I5	read only	X	
4	I4	read only	X	
3	I3	read only	X	
2	I2	read only	X	
1	I1	read only	X	
0	I0	read only	X	

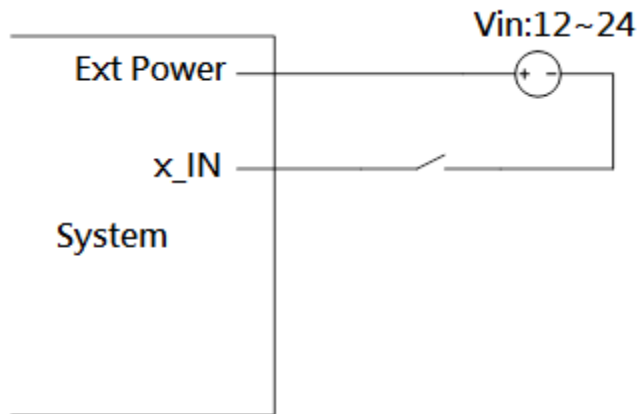
Table 5. Register 1 - Output Port register bit description

Legend: * default value.

Bit	Symbol	Access	Value	Description
7	O7	R	1*	reflects outgoing logic levels of pins defined as outputs by Register 3
6	O6	R	1*	
5	O5	R	1*	
4	O4	R	1*	
3	O3	R	1*	
2	O2	R	1*	
1	O1	R	1*	
0	O0	R	1*	

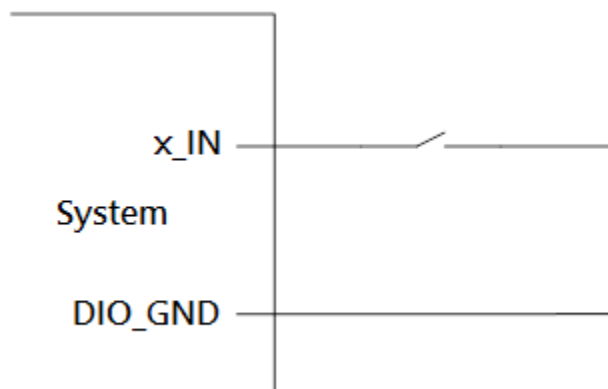
Digital Input Wiring

Dry Contact (1):



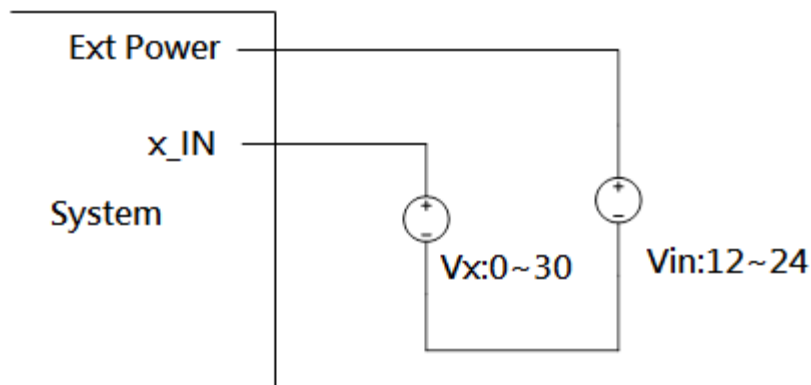
With external power.

Dry Contact (2):

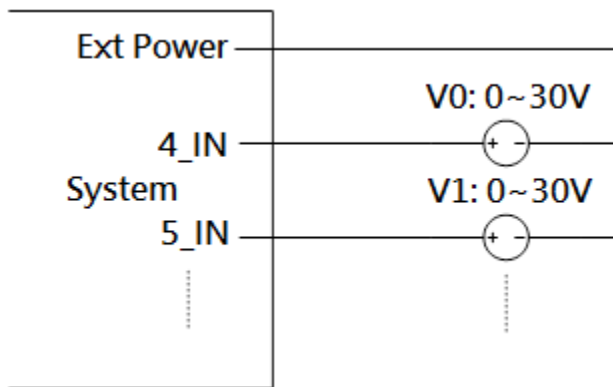


Without external power.

Wet Contact (1):



Wet Contact (2):



Digital Output Wiring

DO drive high: x_OUT equal to COM-(up to 200mA)

DO drive low: High impedance

