

USER'S MANUAL

WCO-3400 Series IP65/IP67 Waterproof Systems



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Prefaces

Revision

Revision	Description	Date
1.0	Manual Released	2019/08/13

Disclaimer

All specifications and information in this User's Manual are believed to be accurate and up to date. Premio Inc. does not guarantee that the contents herein are complete, true, accurate or non-misleading. The information in this document is subject to change without notice and does not represent a commitment on the part of Premio Inc.

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Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. Please recycle to minimize pollution and ensure environment protection.



Safety Precautions

Before installing and using the equipment, please read the following precautions:

- Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
- The power outlet shall be installed near the equipment and shall be easily accessible.
- Turn off the system power and disconnect the power cord from its source before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the equipment is properly grounded.
- When the power is connected, never open the equipment. The equipment should be opened only by qualified service personnel.
- Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- Disconnect this equipment from the power before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
- Avoid the dusty, humidity and temperature extremes.
- Do not place heavy objects on the equipment.
- If the equipment is not used for long time, disconnect it from the power to avoid being damaged by transient over-voltage.
- The storage temperature shall be above -40°C and below 85°C.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.
- If one of the following situation arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well or it cannot work according to the user's manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.

Technical Support and Assistance

1. Visit the C&T Solution Inc website at www.premioinc.com where you can find the latest information about the product.
2. Contact your distributor, our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:
 - Model name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Conventions Used in this Manual



WARNING

This indication alerts operators to an operation that, if not strictly observed, may result in severe injury.



CAUTION

This indication alerts operators to an operation that, if not strictly observed, may result in safety hazards to personnel or damage to equipment.



NOTE

This indication provides additional information to complete a task easily.

Package Contents

Before installation, please ensure all the items listed in the following table are included in the package.

Item	Description	Q'ty
1	WCO-3400 Series Embedded System	1
2	Utility DVD Driver	1
3	Wall Mount Kit	1
4	Waterproof Connector Cover Set	1

Ordering Information

Model No.	Product Description
WCO-3400-7300U	Advanced IP65 Waterproof System with Intel® Core™ i5-7300U Processor
WCO-3400-7100U	Advanced IP65 Waterproof System with Intel® Core™ i3-7100U Processor
WCO-3400-IP67-7300U	Advanced IP67 Waterproof System with Intel® Core™ i5-7300U Processor, 4GB RAM, 128GB SSD
WCO-3400-IP67-7100U	Advanced IP67 Waterproof System with Intel® Core™ i3-7100U Processor, 4GB RAM, 128GB SSD

Optional Accessories

Model No.	Product Description
1-E09A06007	Adapter AC/DC 12V 5A 60W with 3pin Terminal Block Plug 5.0mm Pitch
1-TXXX00003	Waterproof Power Input Cable 1.5M
1-TVGA00003	Waterproof VGA Cable 1.5M
1-TUSB00016	Waterproof USB 3.0 Cable 1.5M
1-TUSB00015	Waterproof USB 2.0 Cable 1.5M
1-TCOM00011	Waterproof COM Cable 1.5M
1-TLAN00006	Waterproof LAN Cable 1.5M

Chapter 1

Product Introductions

1.1 Overview

Based on Intel® Core™ i5-7300U / i3-7100U, Dual Core processor, WCO-3400 series IP65/IP67 waterproof system are designed for wet conditions applications such as food & beverage processing, outdoor digital signage and surveillance applications. These systems are built with an extremely rugged enclosure, as well as the industrial-grade components, making these units dustproof and waterproof. WCO-3400 series offers modularize flexible I/O, wide range (9~50V) DC power input, and high reliability even operating in temperature extremes (-40°C ~ +70°C).



1.1.1 Key Features

- Intel® 7th Gen (Kaby Lake-U) Processor Core™ i5-7300U, Dual Core, 3MB Cache, up to 3.5GHz / Core™ i3-7100U, Dual Core, 3MB Cache, 2.4GHz
- 1x 260-pin DDR4 1866/2133MHz SODIMM. Max up to 16GB (WCO-3400 Only)
- 4GB DDR4 1866/2133MHz SODIMM (WCO-3400-IP67 Only)
- Single display supported by 1x VGA (waterproof connector)
- 2x LAN by M12 X-Code 8-pin
- 1x RS-232/422/485 by M12 D-Code 8-pin, 1x USB 3.0 (waterproof connector), 2x USB 2.0 by M12 D-Code 8-pin
- 1x 2.5" SATA HDD bay with RAID 0, 1 support, and 1x mSATA (shared by 1x Mini PCIe) (WCO-3400 only)
- 1x 128GB 2.5" SATA (WCO-3400-IP67 only)
- 2x Full-size mini PCIe for communication or expansion modules (WCO-3400 only)
- 2x internal SIM socket (WCO-3400 only)
- Full system IP65 level dustproof & waterproof (WCO-3400 only)
- Full system IP67 level dustproof & waterproof (WCO-3400-IP67 only)
- 9 to 50VDC wide range power input
- -40°C to 70°C extended operating temperature

1.2 Hardware Specification

Processor System

- 7th Gen Intel® Core™ i5-7300U Processor, Dual Core, 3MB Cache, up to 3.5 GHz
- 7th Gen Intel® Core™ i3-7100U Processor, Dual Core, 3MB Cache, 2.4 GHz

Chipset

- SoC integrated

Memory

- 1x 260-Pin DDR4 1866/2133MHz SODIMM. Max. up to 16GB (WCO-3400 Only)
- 1x 4GB DDR4 1866/2133 MHz SODIMM (WCO-3400-IP67 Only)

Display

Single Display

- 1x VGA (Waterproof Connector)

Expansion

- 2x Full-size Mini PCIe Socket for Wi-Fi / GSM / Expansion Module (WCO-3400 Only)

Ethernet

- 1x Intel® i219LM GbE LAN Port, Support Wake-on-LAN and PXE
- 1x Intel® i210-AT GbE LAN Port, Support Wake-on-LAN and PXE

Audio

- Codec: Realtek ALC888S

Watchdog Timer

- Software Programmable Supports 1~255 sec. System Reset

Storage

- 1x internal 2.5" SATA HDD bay support RAID 0, 1 (WCO-3400 Only)
- 1x 128GB 2.5" SATA SSD (WCO-3400-IP67 Only)
- 1x mSATA Socket (shared by 1x Mini-PCIe) (WCO-3400 Only)
- 2x internal SIM socket (WCO-3400 Only)

I/O Ports

- 1x USB 3.0 (Waterproof Connector)
- 2x USB 2.0 by M12 D-Code 8-pin
- 1x RS-232/422/485 by M12 D-Code 8-pin
- 2x LAN by M12 X-Code 8-pin
- 2x Antenna Hole (WCO-3400 Only)
- 1x Power Switch

Power

- Support ATX Mode
- 1x M12 A-code 4-pin Connector with Power Input 9~50VDC
- 1x Optional AC/DC 12V/5A, 60W Power Adapter

Environment

- Operating Temperature: Ambient with Air Flow: -40°C to 70°C (with Industrial Grade Peripherals)
- Storage Temperature: -40°C to 85°C
- Relative humidity: 10%~95% (non-condensing)

Physical

- Dimension: 231 (W) x 292 (D) x 56.5 (H) mm
- Weight: TBD
- Construction: Extruded Aluminum with Heavy Duty Metal
- Mounting: Wall Mounting

Operating System

- Windows® 10, Windows® 7, WES7
- Linux kernel 4.X

Certifications

- IP65 (WCO-3400-IP67 Only)
- IP67 (WCO-3400-IP67 Only)
- CE
- FCC Class A

1.3 System I/O

1.3.1 WCO-3400

Front Panel

ATX power on/off switch

Press to power-on or power-off the system

Antenna hole

Used to connect an antenna for optional Mini-PCIe WiFi module

Rear View

DC IN

Used to plug a DC power input with terminal block

VGA

Used to connect a VGA monitor

USB 3.0 port

Used to connect USB 3.0/2.0/1.1 device

USB 2.0 port

Used to connect USB 2.0/1.1 device

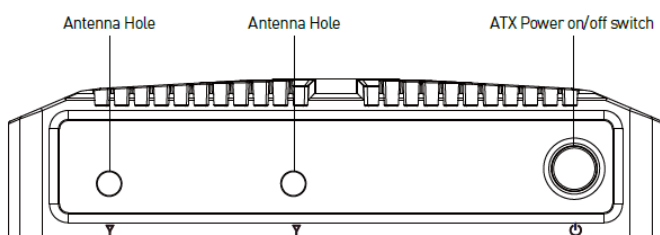
COM port

COM support RS232/422/485 serial device

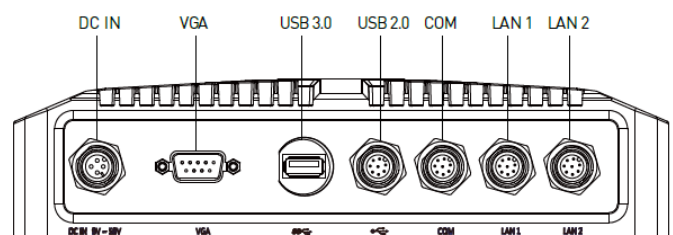
LAN port

Used to connect the system to a local area network

Front Panel



Rear Panel



1.3 System I/O

1.3.2 WCO-3400-IP67

Front Panel

ATX power on/off switch

Press to power-on or power-off the system

Rear View

DC IN

Used to plug a DC power input with terminal block

VGA

Used to connect a VGA monitor

USB 3.0 port

Used to connect USB 3.0/2.0/1.1 device

USB 2.0 port

Used to connect USB 2.0/1.1 device

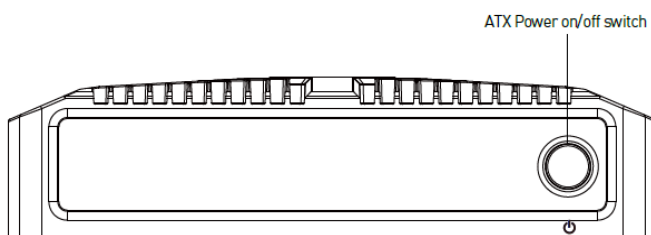
COM port

COM support RS232/422/485 serial device

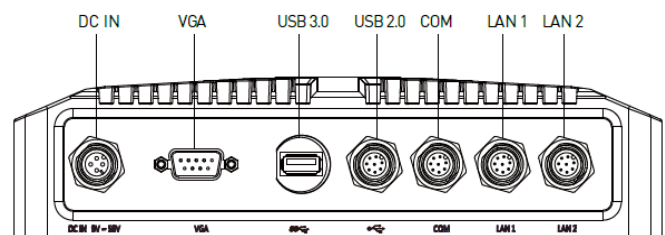
LAN port

Used to connect the system to a local area network

Front Panel

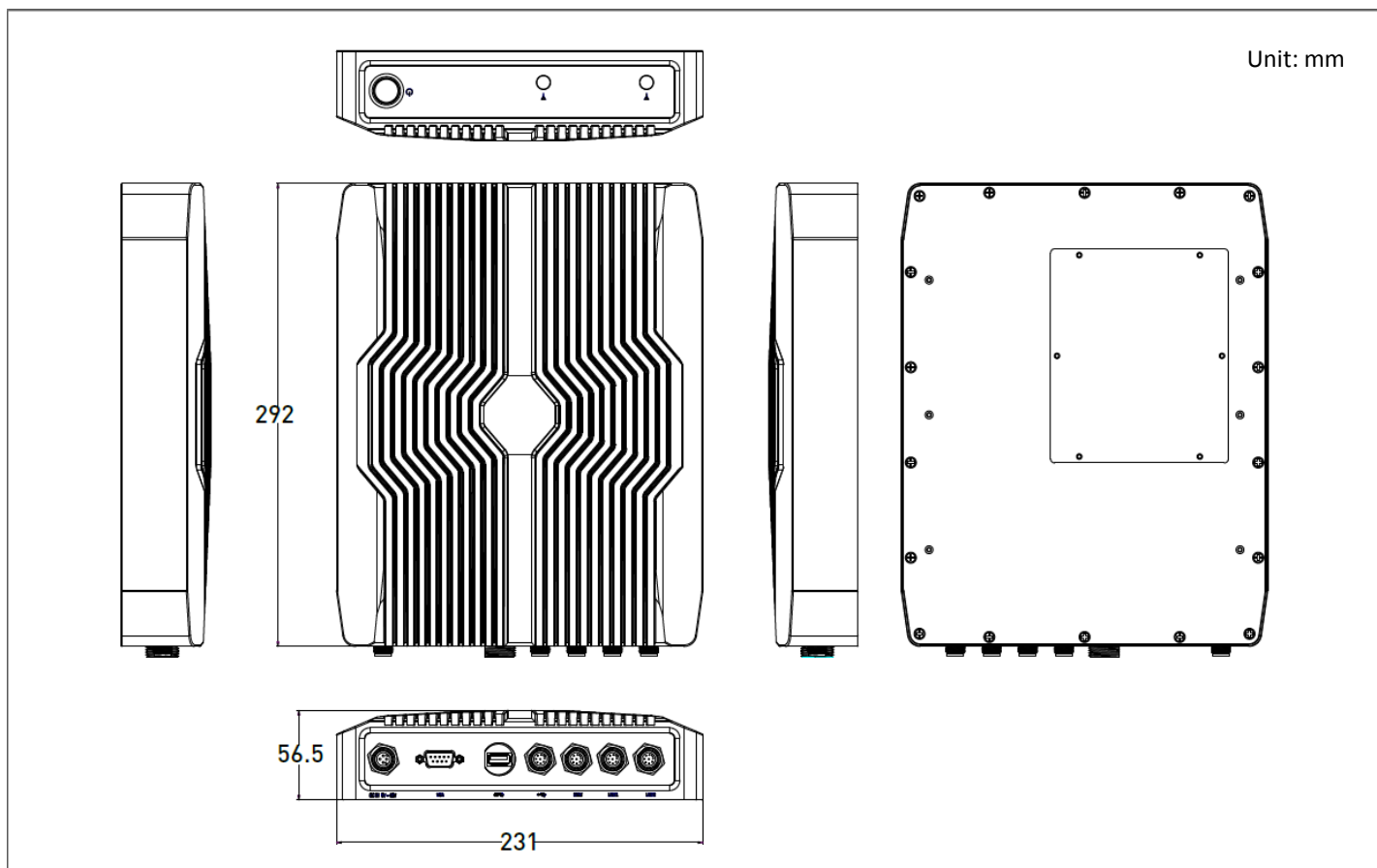


Rear Panel

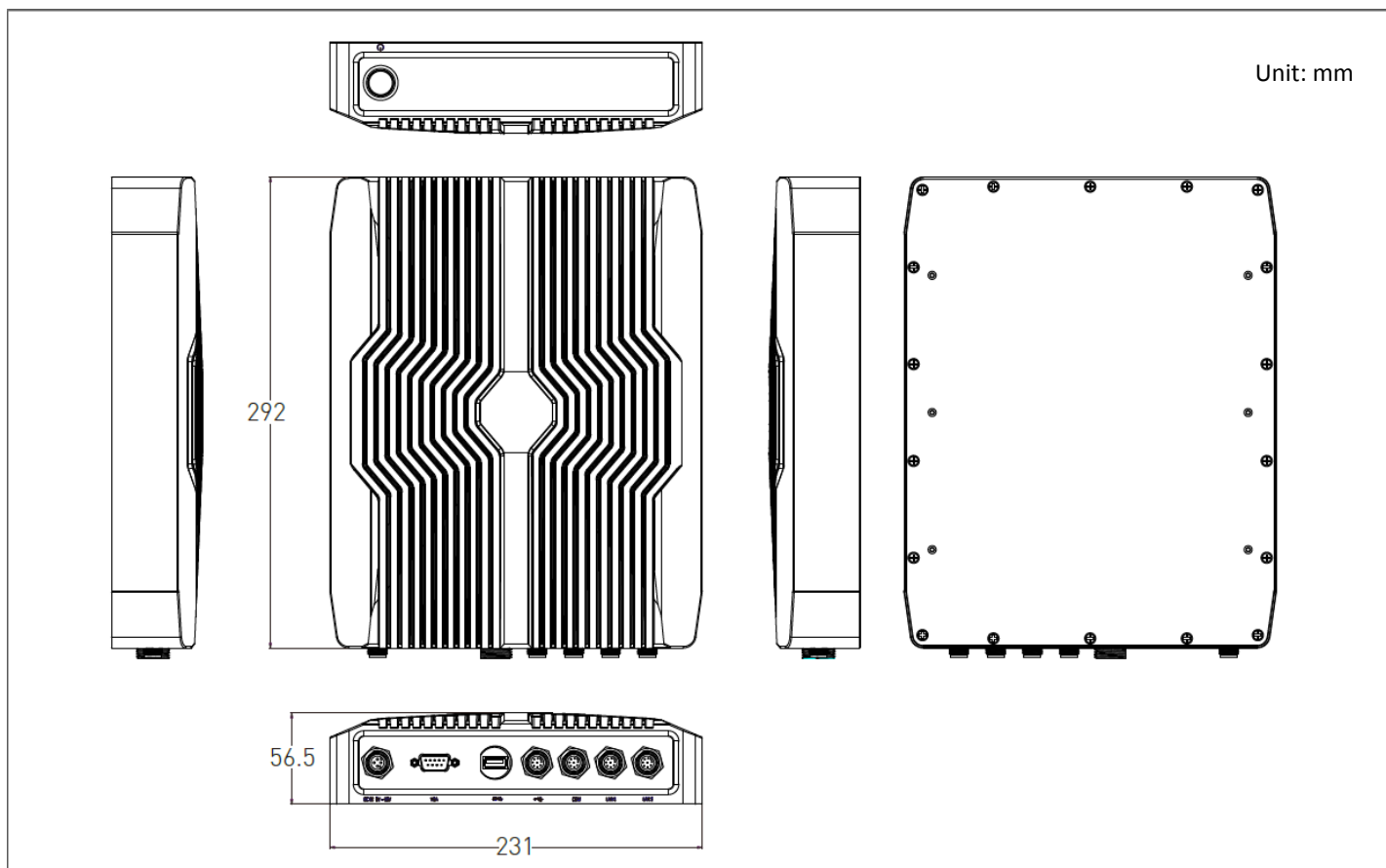


1.4 Mechanical Dimensions

1.4.1 WCO-3400



1.4.2 WCO-3400-IP67

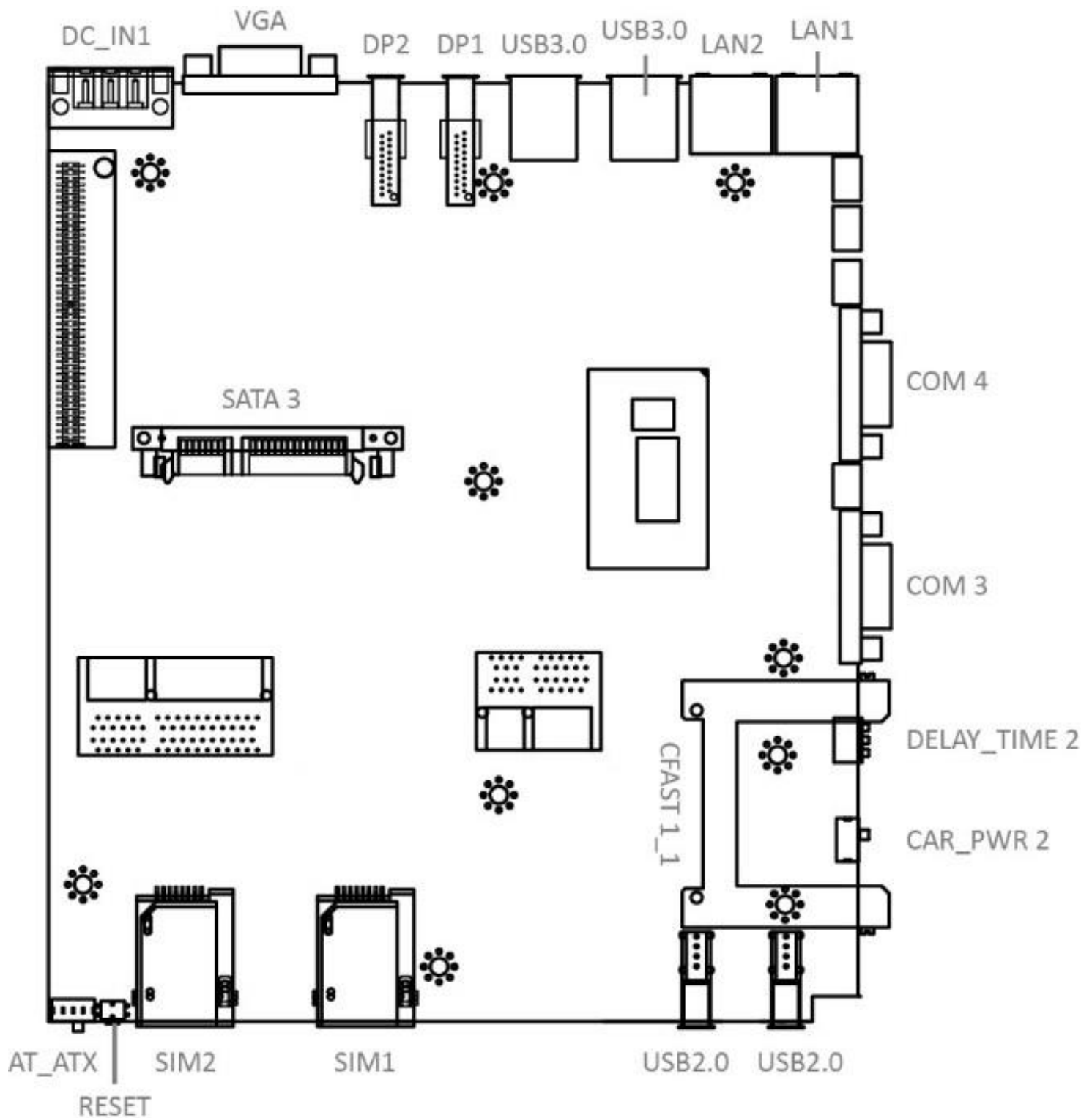


Chapter 2

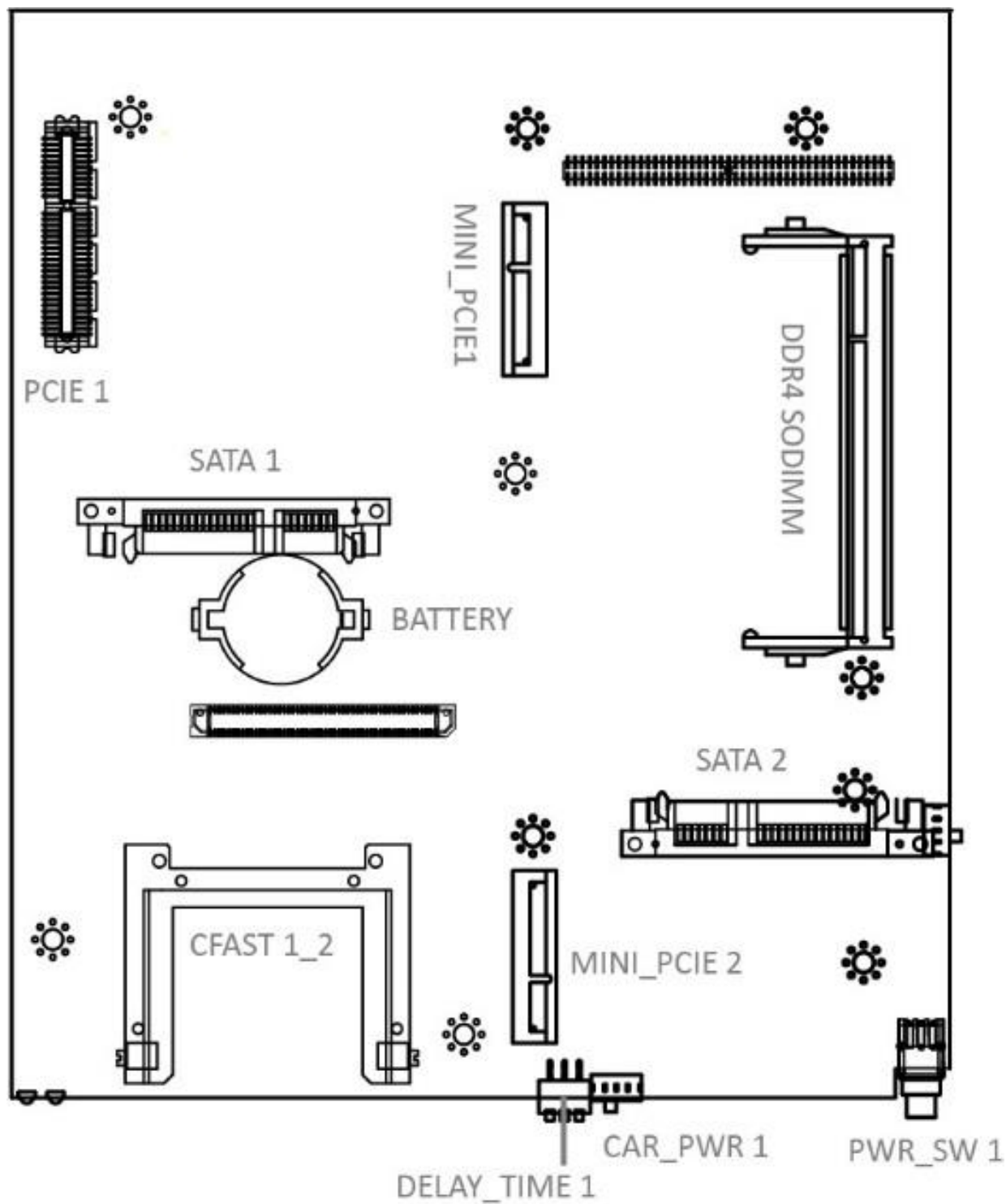
Connectors

2.1 Switch and Connector Locations

2.1.1 Top View



2.1.2 Bottom View



2.2 Connector Definition

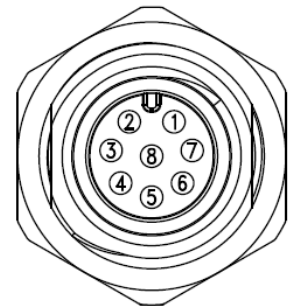
List of Connector

Connector Location	Definition
COM	RS232 / RS422 / RS485 Connector
LAN1, LAN2	LAN Port
USB2.0	USB 2.0 Port
USB3.0	USB 3.0 Port
VGA	Standard VGA Port
DC_IN	DC Power Input Connector (+0 ~ 50V)

COM: RS232 / RS422 / RS485 Connector

Connector Type: M12 D-code 8-pin

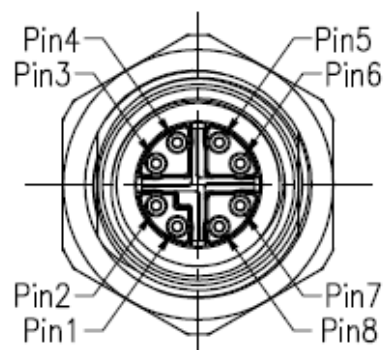
Pin	RS232 Definition	RS422 / 485 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD	TX-	DATA-
2	RXD	TX+	DATA+
3	TXD	RX+	
4	DTR	RX-	
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		



LAN: LAN 1 & LAN 2 Connector

Connector Type: M12 X-code 8-pin

Pin	Definition	Pin	Definition
1	LAN1_MDI0P	5	LAN1_MDI3P
2	LAN1_MDI0N	6	LAN1_MDI3N
3	LAN1_MDI1P	7	LAN1_MDI2N
4	LAN1_MDI1N	8	LAN1_MDI2P

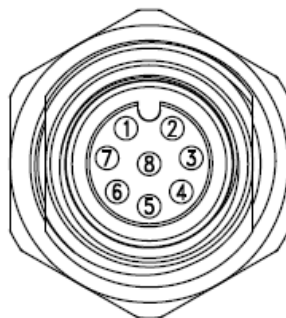


Pin	Definition	Pin	Definition
1	LAN2_MDI0P	5	LAN2_MDI3P
2	LAN2_MDI0N	6	LAN2_MDI3N
3	LAN2_MDI1P	7	LAN2_MDI2N
4	LAN2_MDI1N	8	LAN2_MDI2P

USB 2.0: 2 Ports USB 2.0

Connector Type: M12 D-code 8-pin

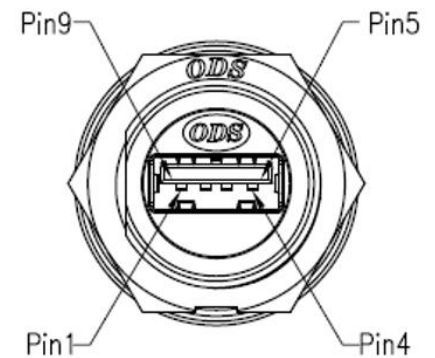
Pin	Definition
1	+5V
2	USB_D1-
3	USB_D1+
4	GND
5	+5V
6	USB_D2-
7	USB_D2+
8	GND



USB 3.0: Standard USB 3.0 Connector

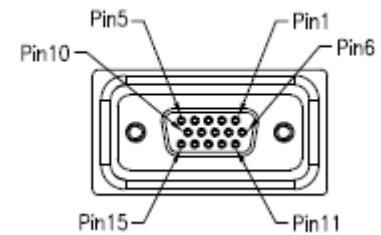
Connector Type: Waterproof Connector

Pin	Definition	Pin	Definition
1	+5V	6	USB3.0_RX+
2	USB2.0_D-	7	GND
3	USB2.0_D+	8	USB3.0_TX-
4	GND	9	USB3.0_TX+
5	USB3.0_RX-		

**VGA: Standard VGA Connector**

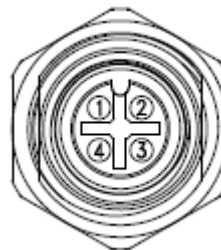
Connector Type: Waterproof Connector

Pin	Definition	Pin	Definition
1	RED	9	+5V
2	GREEN	10	S_GND
3	BLUE	11	NC
4	NC	12	SDA
5	GND	13	HSYNC
6	R_GND	14	VSYNC
7	G_GND	15	SCL
8	B_GND		

**DC IN: DC Power Input Connector (+9 ~ 50V)**

Connector Type: Waterproof Connector

Pin	Definition
1	+9~50VIN
2	NC
3	GND
4	NC



Chapter 3

System Setup

3.1 Set torque force to 3.5 kgf-cm to execute all the screwing and unscrewing

**WARNING**

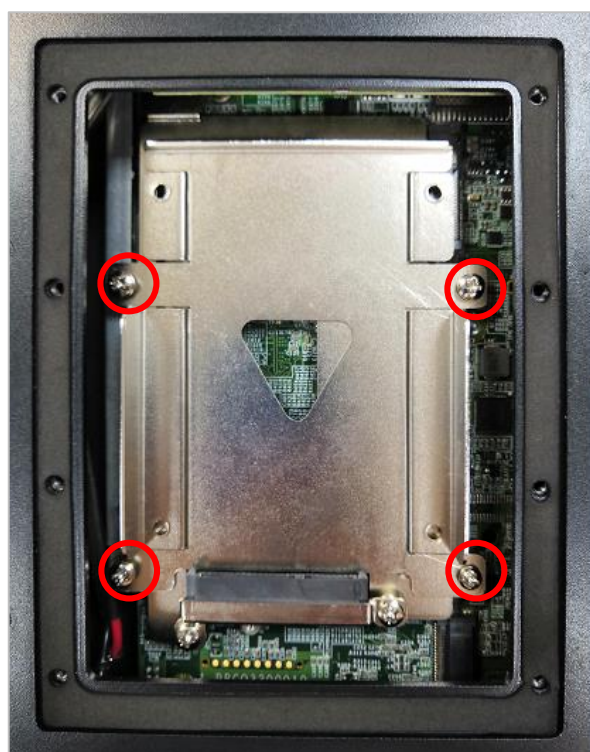
In order to prevent electric shock or system damage, before removing the chassis cover, must turn off power and disconnect the unit from power source.

3.2 Installing SODIMM

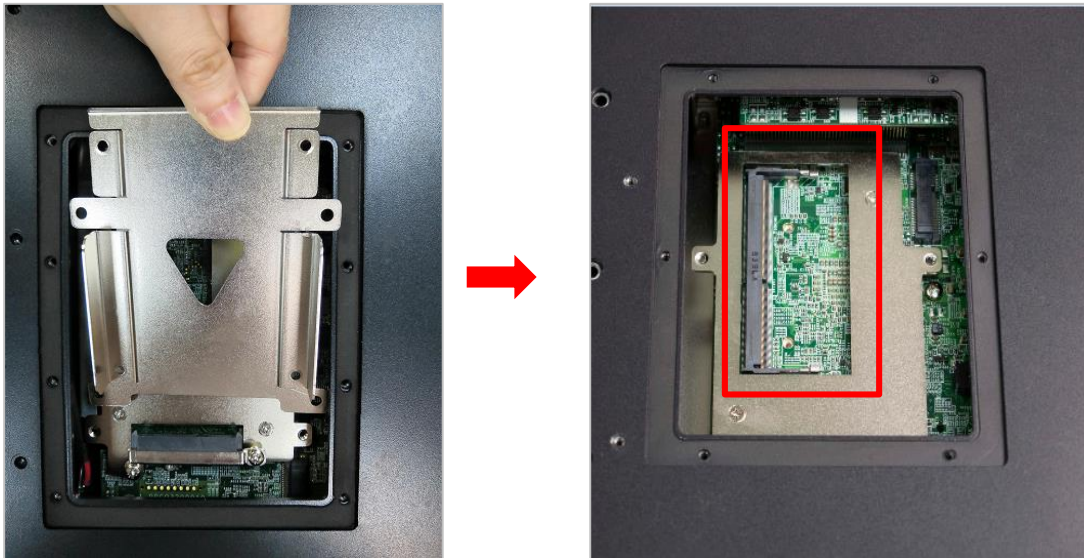
1. Turn the system upside down, removing chassis bottom cover, unscrew the eight screws on the bottom cover.



2. Unscrew the below four screws to remove the internal SATA HDD bracket.



3. After removing internal SATA HDD bracket, you will be able to access the memory slot.



4. Insert memory module from 45 degree direction.



5. Press the memory module vertically downward until you hear the “click” sound. Make sure the memory module is firmly in place.

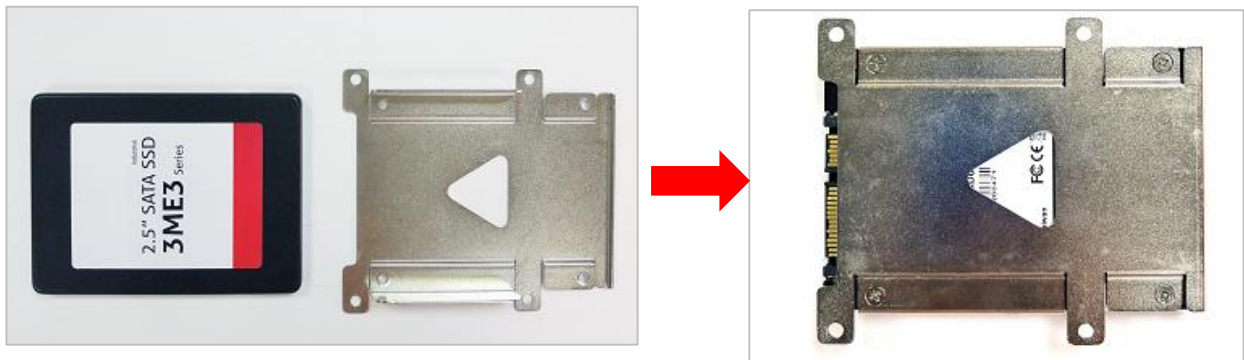


3.3 Installing HDD on internal SATA HDD bay

1. Unscrew the below four screws (M3x5L) to remove the internal SATA HDD bay.



2. Lock the 2.5" HDD with HDD bracket using four screws (M3x4L).



3. Install the HDD bracket following the direction below.

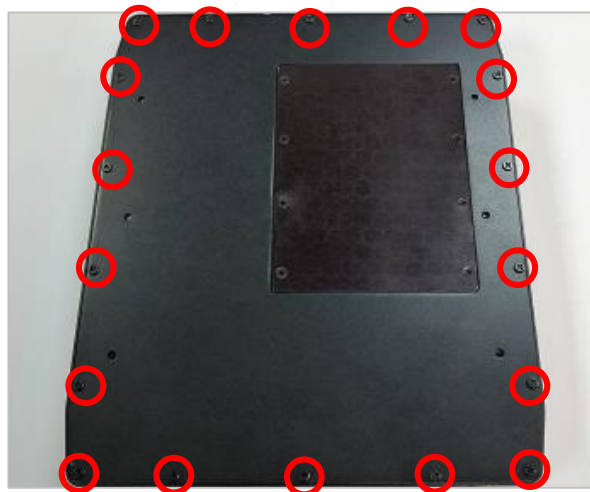


4. Fasten the four screws to lock the internal SATA HDD bracket.



3.4 Removing chassis bottom cover

1. Removing chassis bottom cover may affect waterproof function and is only necessary when you need to install mini PCIe card and antenna.
2. Turn the system upside down. Unscrew the eighteen screws on the bottom cover.

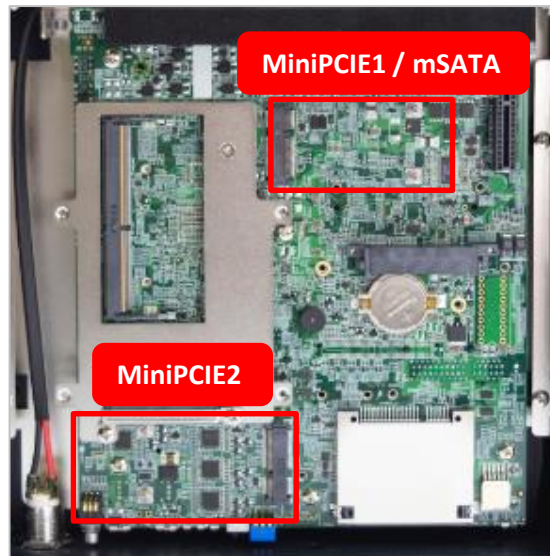


3. Now you can remove the bottom cover.



3.5 Installing mini PCIe card / mSATA

1. Two mini PCIe slots are available for WCO-3400 series. MiniPCIE1 supports mSATA.



2. Insert mini PCIe card or mSATA module from 45 degree direction.

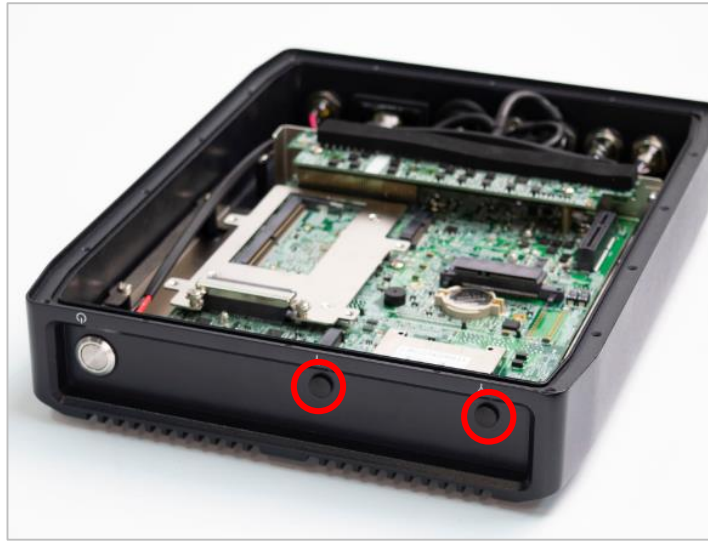


3. Press the mini PCIe card or mSATA module down and lock it with two screws (M2x3.7L).



3.6 Installing antenna

1. Two antenna holes are available for WCO-3400 series. (WCO-3400 only)



2. Remove antenna hole cover on the system panel.



3. Have antenna jack penetrate through the hole.



4. Put on washer and fasten the nut with antenna jack.



5. Attach the RF connector at the cable-end onto the communication module.



6. Assemble the antenna and antenna jack together.

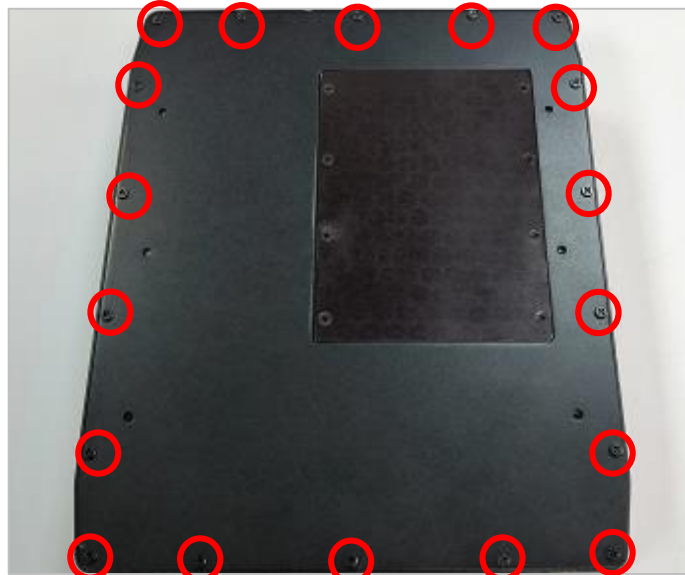


3.7 Assemble chassis bottom cover

1. Place the bottom cover according to the below direction and make sure the rail is facing inside the system.



2. Lock the bottom cover with the eighteen screws.



3.8 Assemble waterproof cable

1. Please remove the external waterproof cover on the connectors that you need to connect to mating waterproof cables.



2. Install external M12 A-CODE 4P power cable. Please align the foolproof opening and tighten the locking ring to secure waterproof cable.



3. Install external waterproof VGA cable. Please align the connector direction and tighten the locking ring to secure waterproof cable.



4. Install external waterproof USB 3.0 cable. Please align the foolproof opening and tighten the locking ring to secure waterproof cable.



5. Install external M12 A-CODE 8P USB 2.0 cable. Please align the foolproof opening and tighten the locking ring to secure waterproof cable.



6. Install external M12 A-CODE 8P COM cable. Please align the foolproof opening and tighten the locking ring to secure waterproof cable.



7. Install external M12 X-CODE 8P LAN1 cable. Please align the foolproof opening and tighten the locking ring to secure waterproof cable.



8. Install external M12 X-CODE 8P LAN2 cable. Please align the foolproof opening and tighten the locking ring to secure waterproof cable.



Chapter 4

BIOS Setup

4.1 BIOS Introduction

The system BIOS software is stored on EEPROM. The BIOS provides an interface to modify the configuration. When the battery is removed, all the parameters will be reset.

BIOS Setup

Power on the embedded system and by pressing immediately allows you to enter the setup screens. If the message disappears before you respond and you still wish to enter the Setup, restart the system by turning it OFF and ON or pressing the RESET button.

You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Control Keys	
<→> <←>	Select Screen
<↑> <↓>	Select Item
<Enter>	Select
<Page Up/+>	Increases the numeric value or makes changes
<Page Down/->	Decreases the numeric value or makes changes
<F1>	General Help
<F2>	Previous Value
<F3>	Load Optimized Defaults
<F4>	Save Configuration and Exit
<Tab>	Select Setup Fields
<Esc>	Exit BIOS Setup

Main Setup

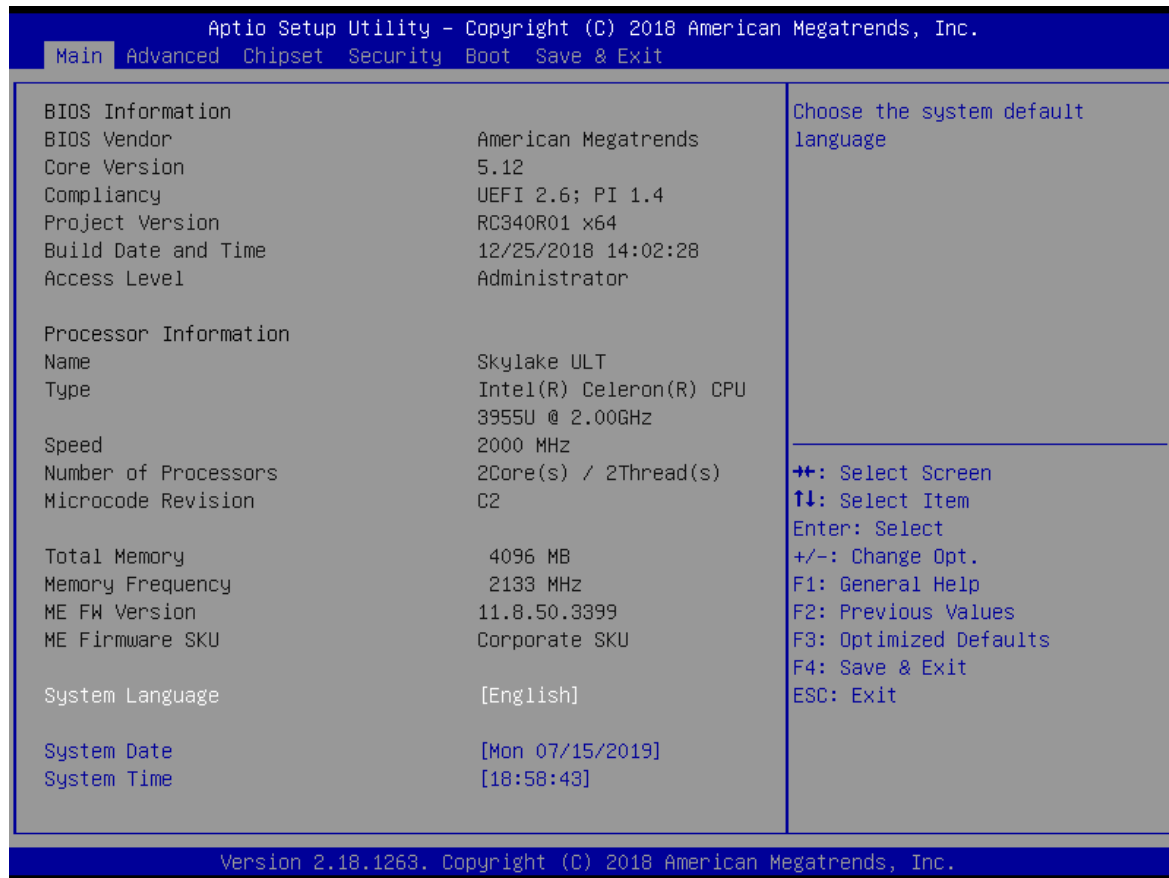
The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

4.2 Main Setup

Press to enter BIOS CMOS Setup Utility. The Main setup screen is showed as following when the setup utility is entered. System Date/Time is set up in the Main Menu.



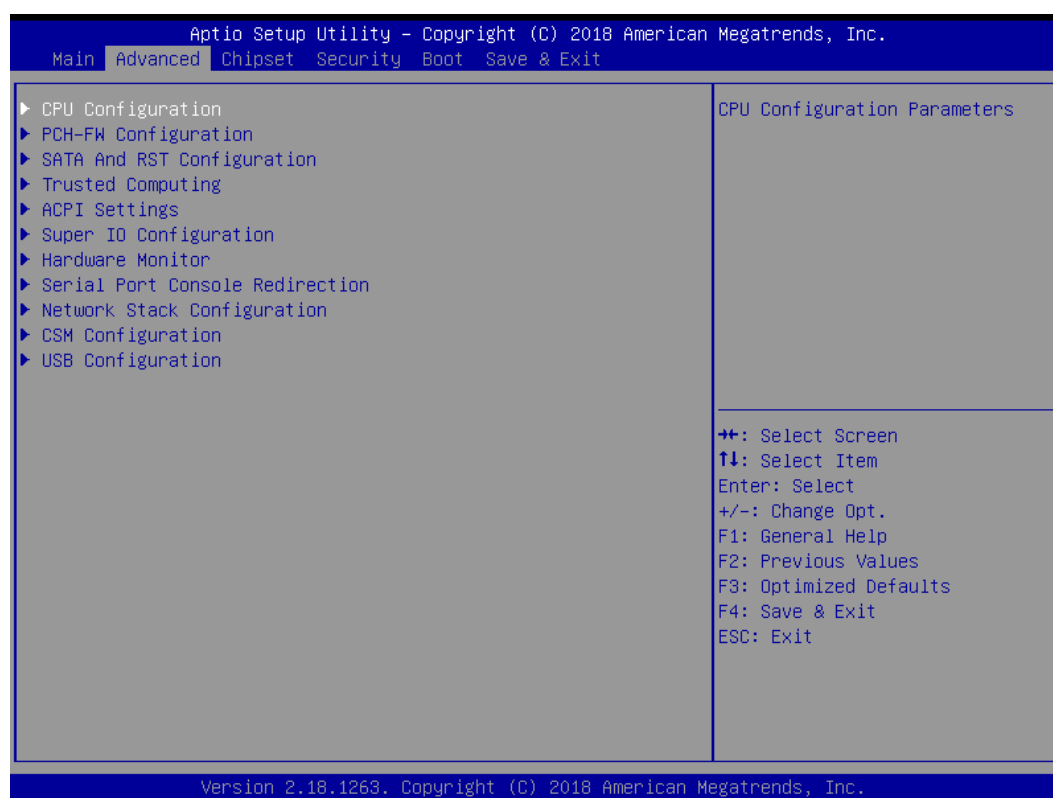
■ System Date

Set the system date. Please use <Tab> to switch between data elements.

■ System Time

Set the system time. Please use <Tab> to switch between time elements.

4.3 Advanced Setup



4.3.1 CPU Configuration



■ Intel Virtualization Technology

Virtualization enhanced by Intel Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple Virtual systems.

■ Active Processor Cores

Set number of cores to be enabled. Select <All>, <1>, <2>, <3>, <4>, <5>, <6>, <7>, or <8> mode.

■ Intel SpeedStep

This item allows you to enable or disable the Intel SpeedStep.

● Turbo Mode

This item allows you to enable or disable the Turbo Mode.

■ CPU C states

This item allows you to set the power saving of the CPU states.

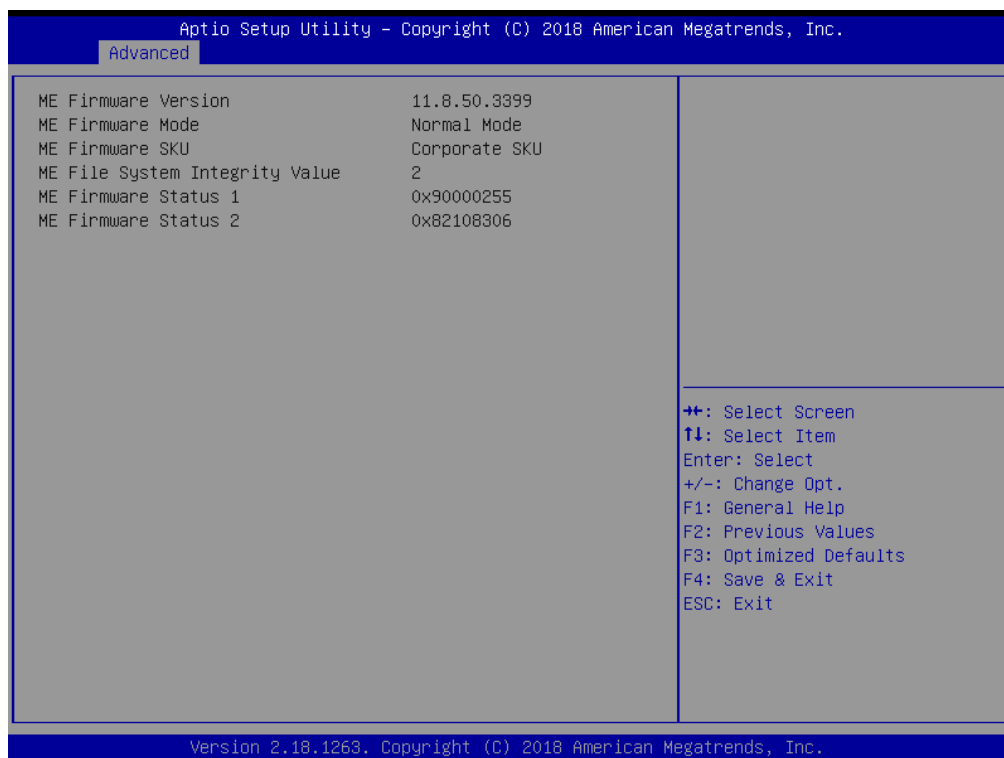
● Enhanced C States

This item allows your CPU reduce power consumption.

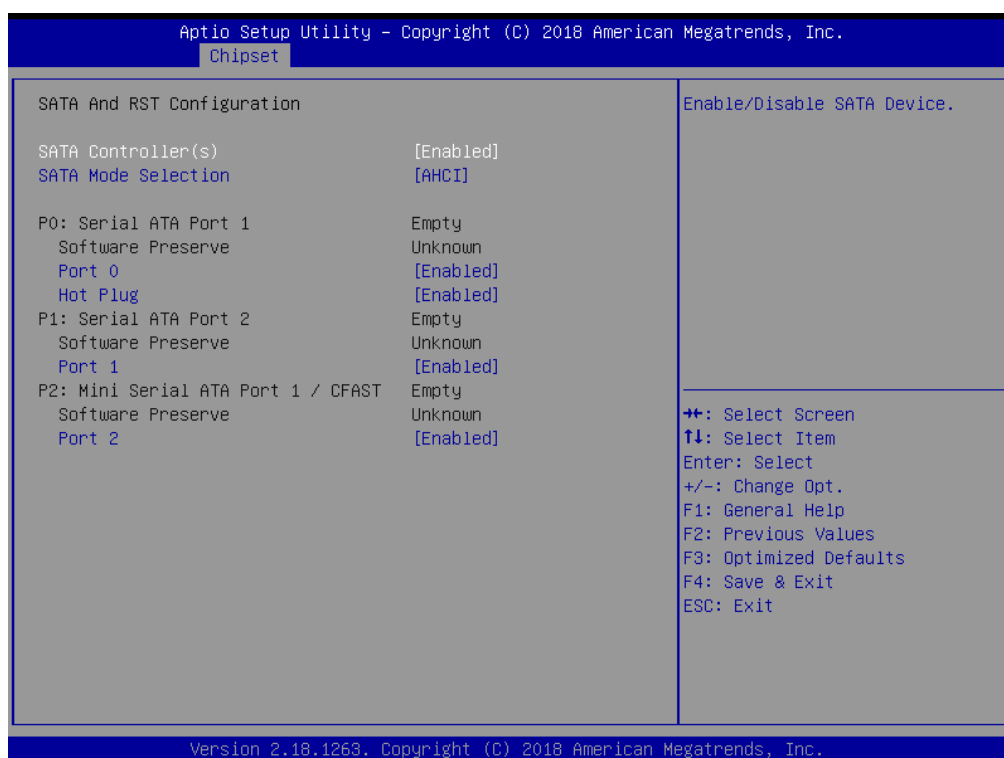
■ Package C State limit

Select Auto for the AMI BIOS to automatically set the limit on the C-State package register. The options are C0/ C1, C2, C3, C6, C7, C7s, C8 and No Limit.

4.3.2 PCH-FW Configuration



4.3.3 SATA and RST Configuration



■ SATA Controller(s)

Enable or disable Serial ATA controller.

■ SATA Mode Selection

This item allows users to select mode of SATA controller.

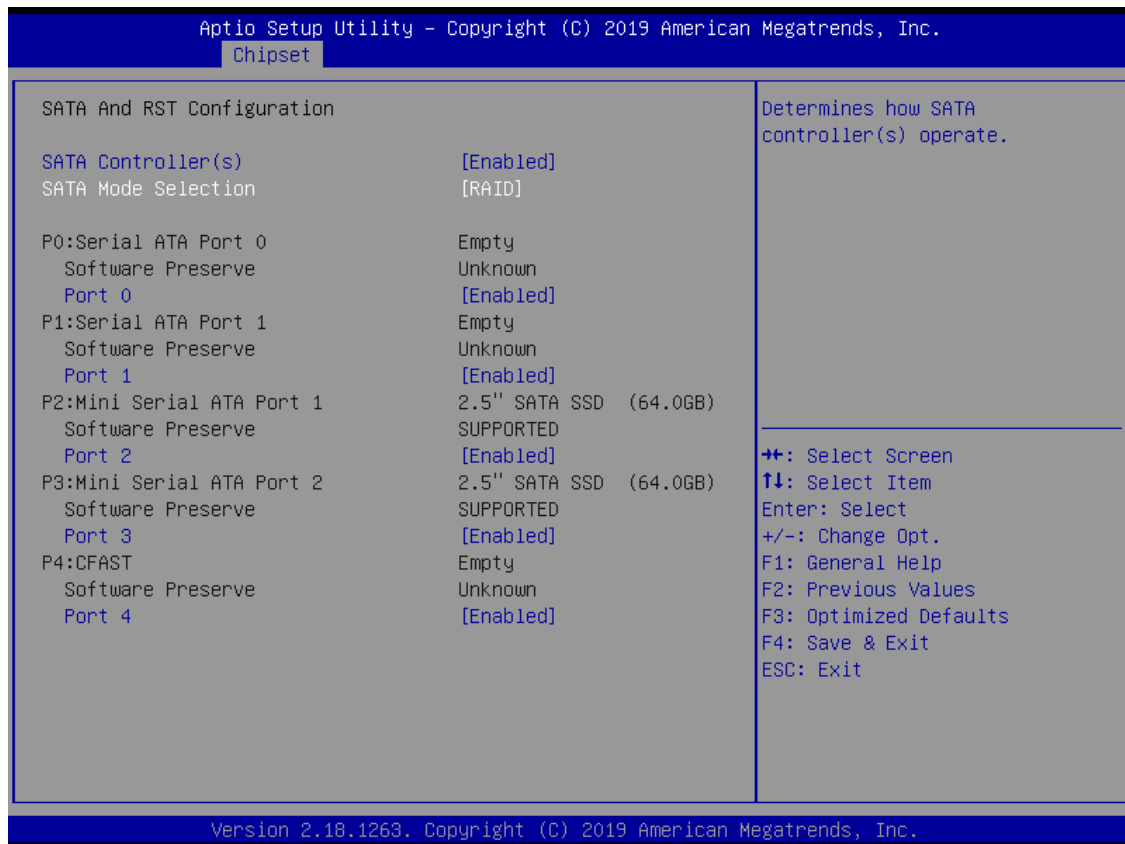
■ Serial ATA Port 0 / 1 / 2

This item allows users to enable or disable Serial ATA Port 0 / 1 / 2.

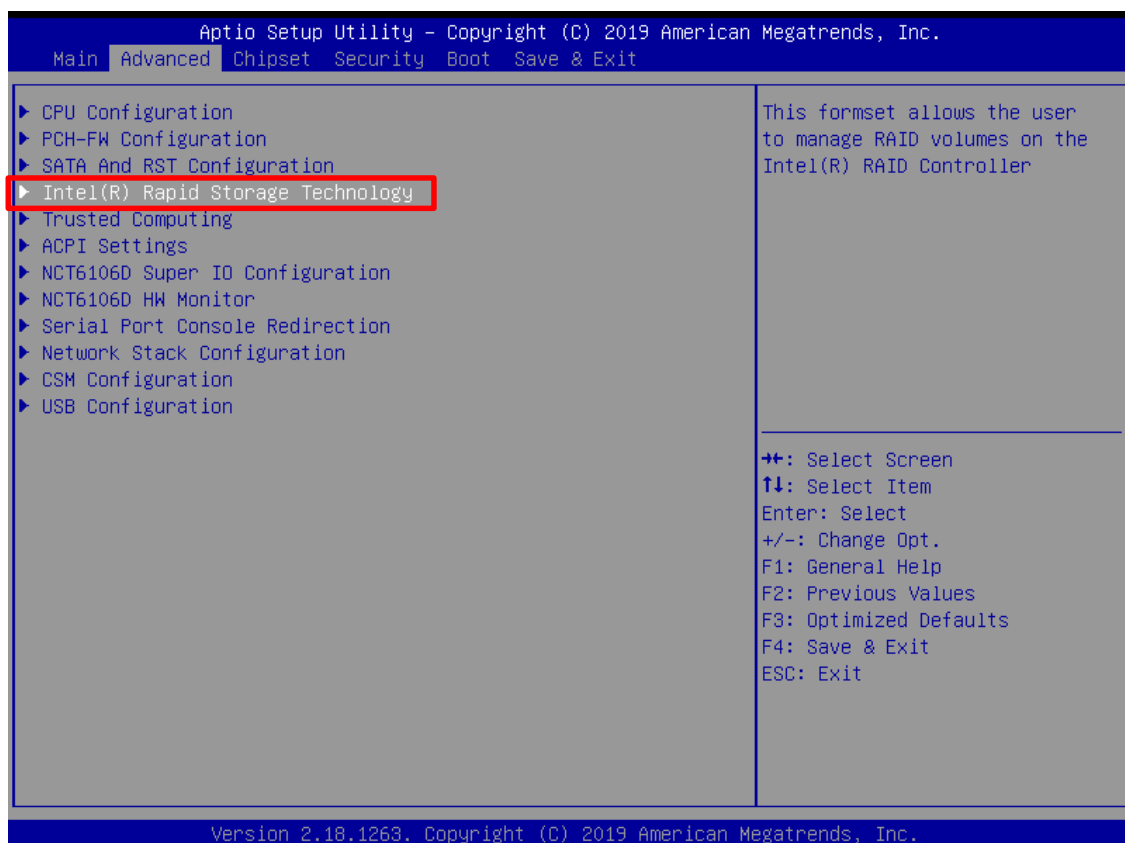
4.3.4 RST (UEFI RAID) Configuration

How to set the UEFI RAID:

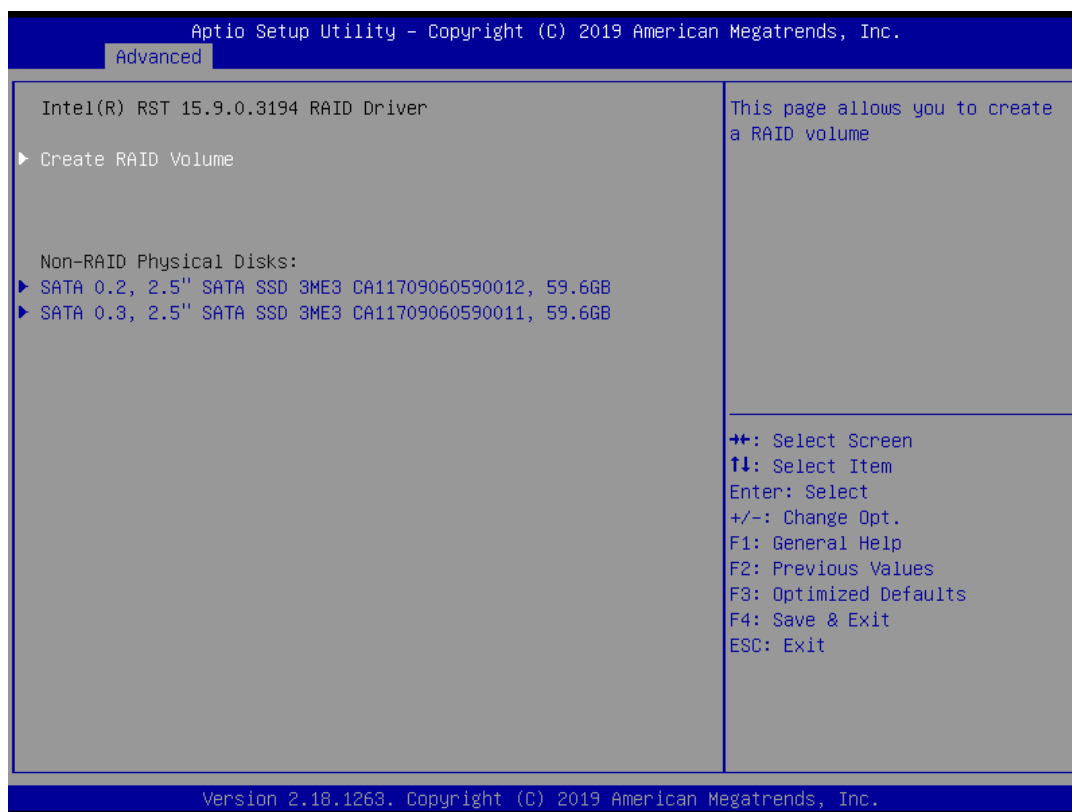
1. When set to RAID, please save change reset system.



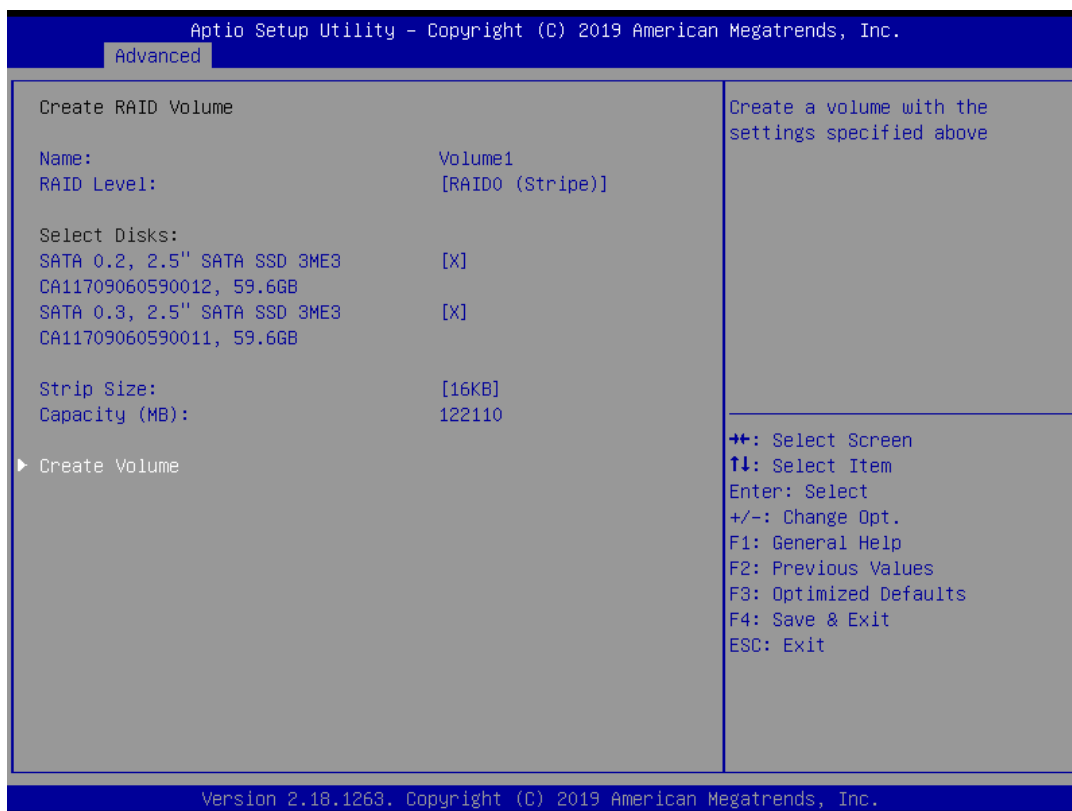
2. After reboot the system, please into BIOS utility and then will see "Intel (R) Rapid Storage Technology"



3. Into Intel(R) Rapid Storage Technology, and start create RAID volume.

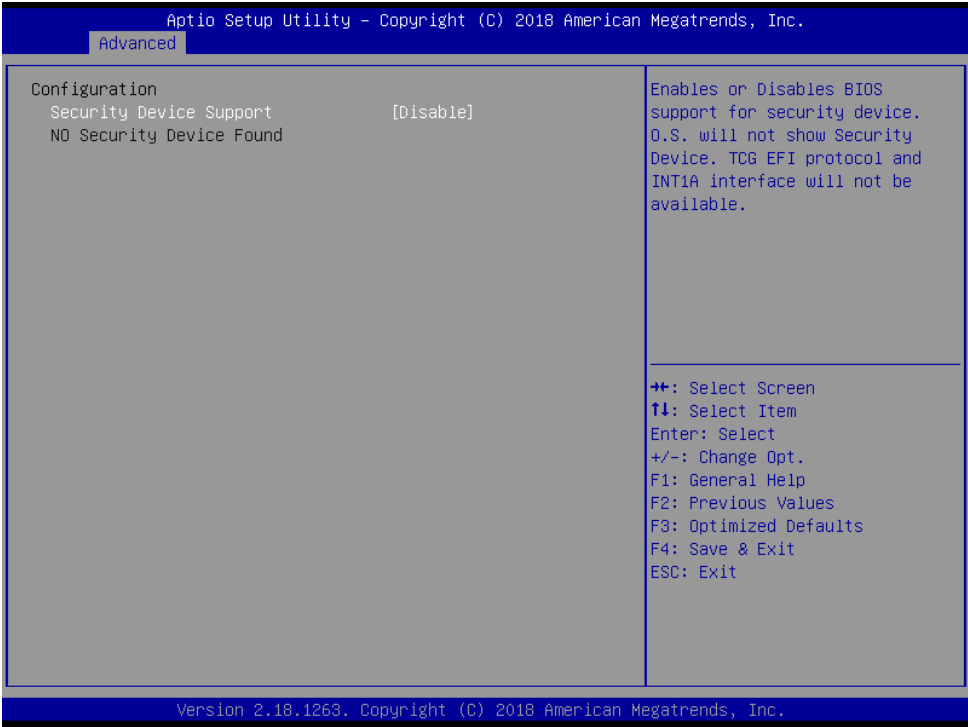


4. Start Create the RAID



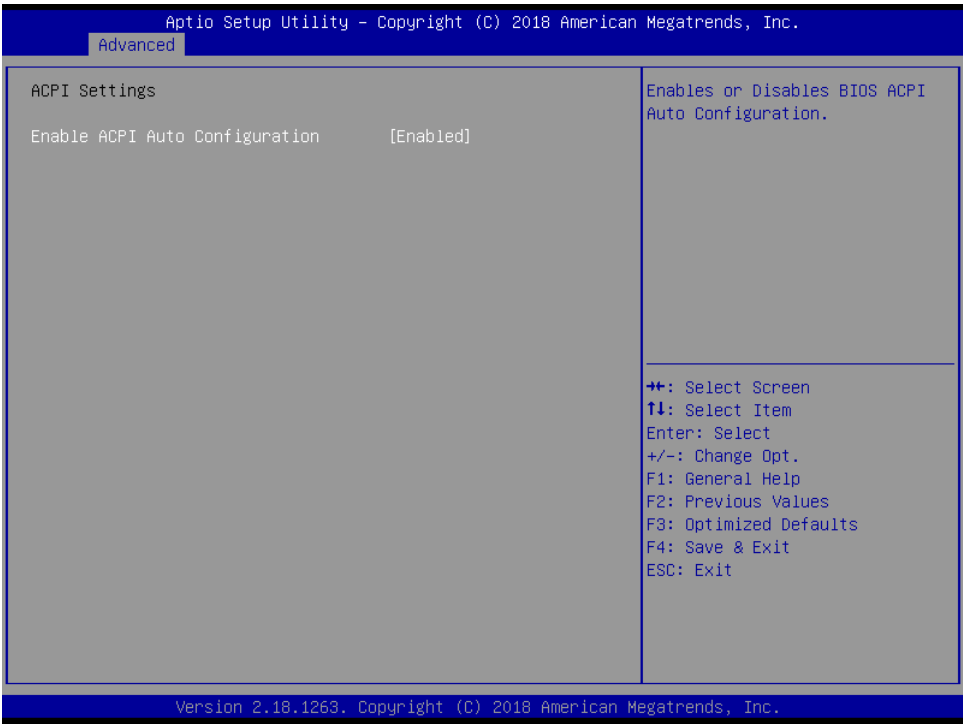
- Select Disk that you want to do the RAID
- Select [x]; No-Select []

4.3.5 Trusted Computing



- **Security Device Support**
Enable or disable Security Device Support.

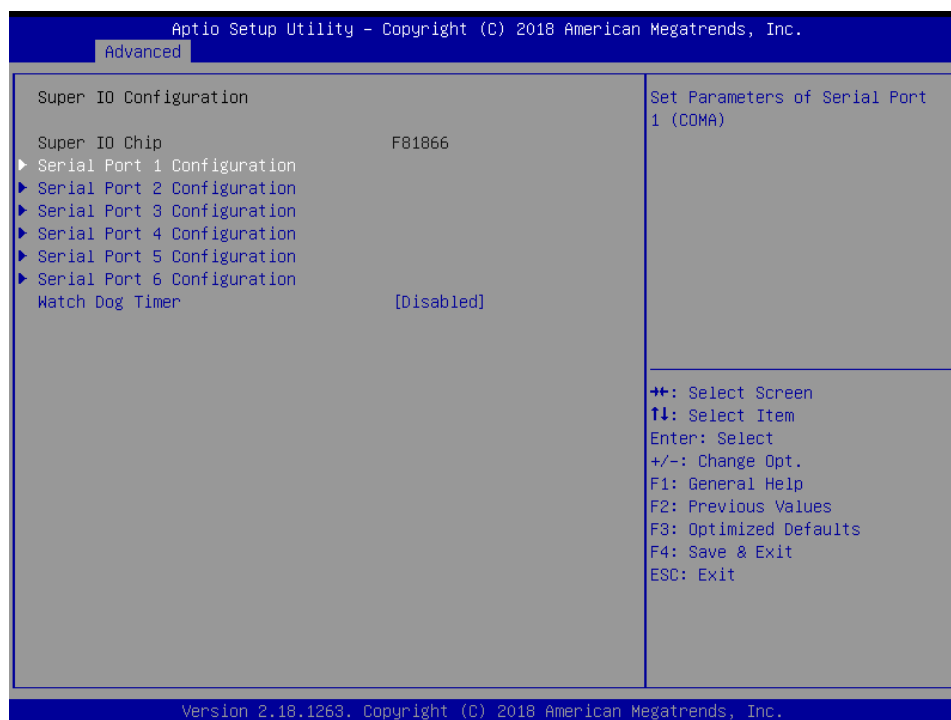
4.3.6 ACPI Settings



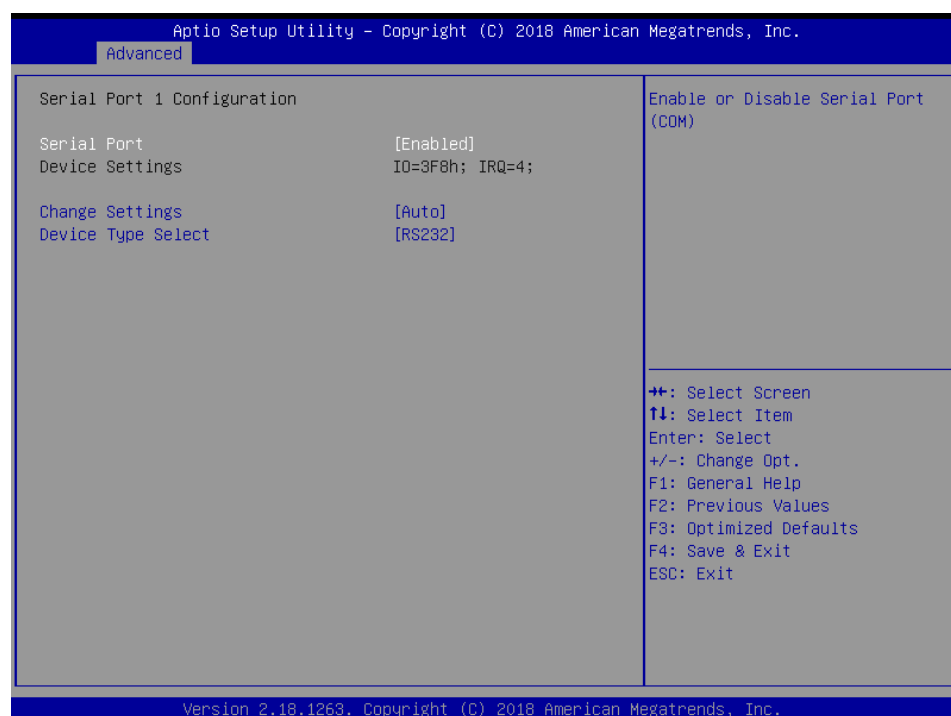
- **Enable ACPI Auto Configuration**
Enable or disable ACPI Auto Configuration.

4.3.7 Super IO Configuration

This setting allows you to select options for the Super IO Configuration, and change the value of the selected option.

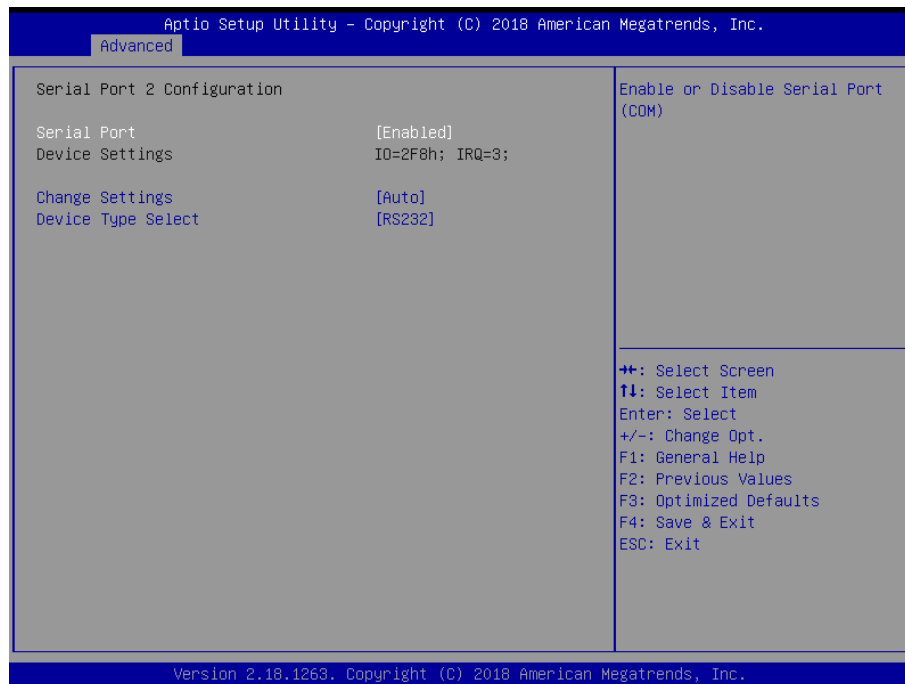


Serial Port 1 Configuration



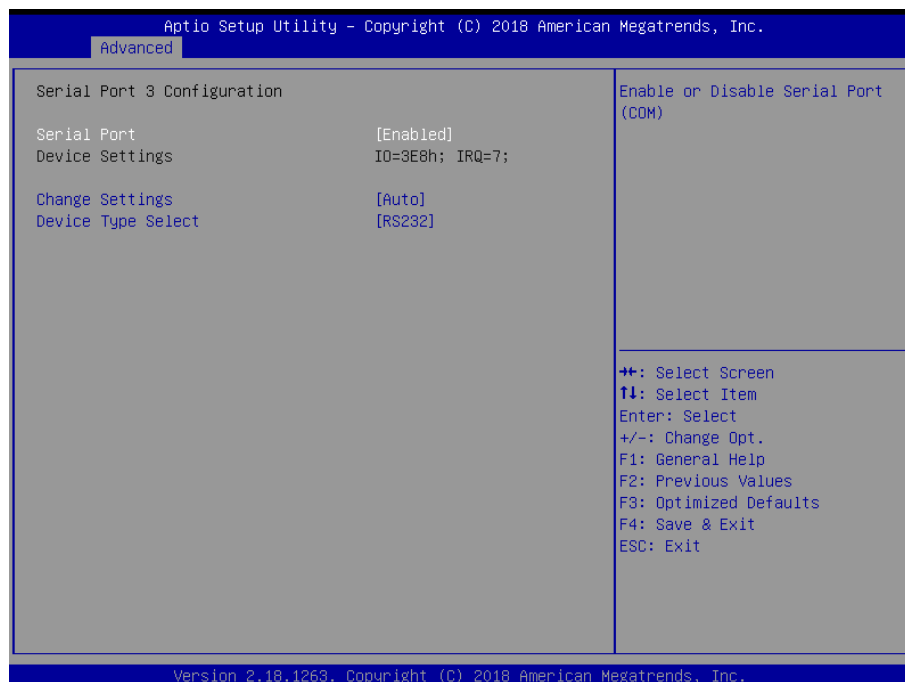
- **Serial Port**
This item allows you to enable or disable serial port.
- **Change Settings**
This item allows you to change the address & IRQ settings of the specified serial port.
- **Device Type Select**
Change the Serial interface. Select <RS232>, <RS422> or <RS485> interface.

Serial Port 2 Configuration



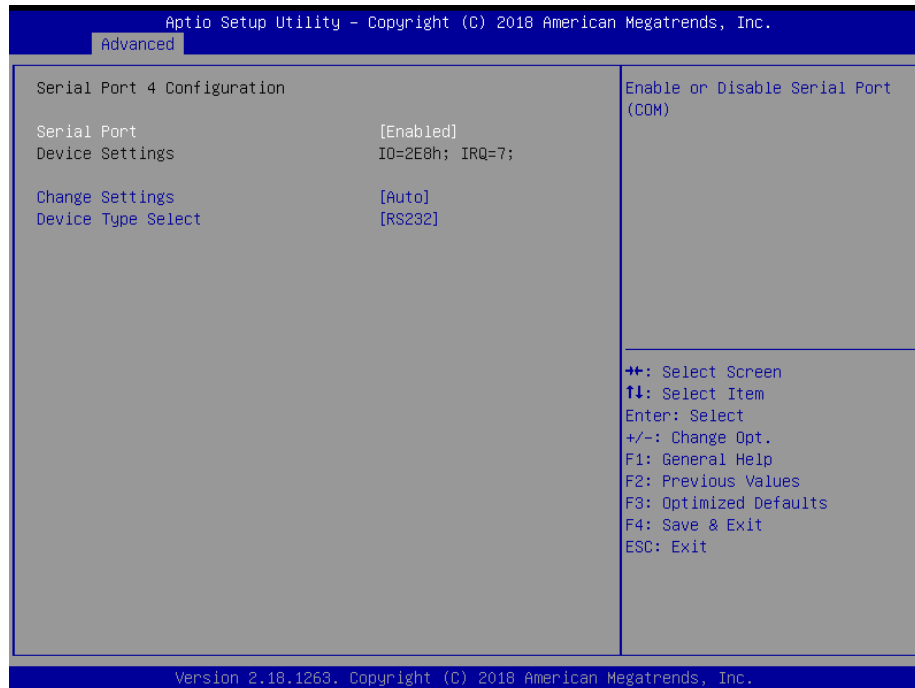
- **Serial Port**
This item allows you to enable or disable serial port.
- **Change Settings**
This item allows you to change the address & IRQ settings of the specified serial port.
- **Device Type Select**
Change the Serial interface. Select <RS232>, <RS422> or <RS485> interface.

Serial Port 3 Configuration



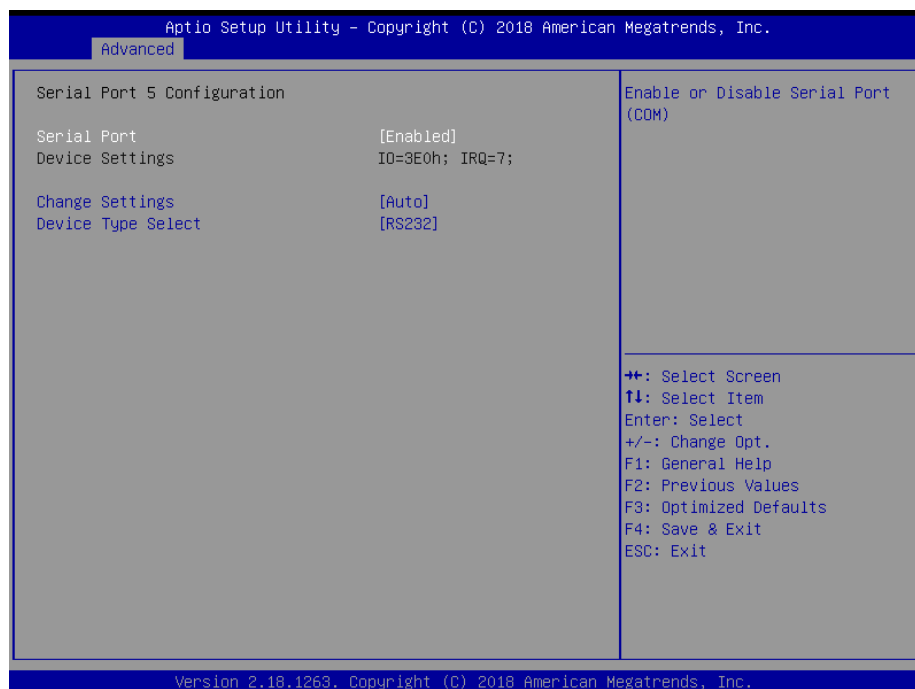
- **Serial Port**
This item allows you to enable or disable serial port.
- **Change Settings**
This item allows you to change the address & IRQ settings of the specified serial port.
- **Device Type Select**
Change the Serial interface. Select <RS232>, <RS422> or <RS485> interface.

Serial Port 4 Configuration



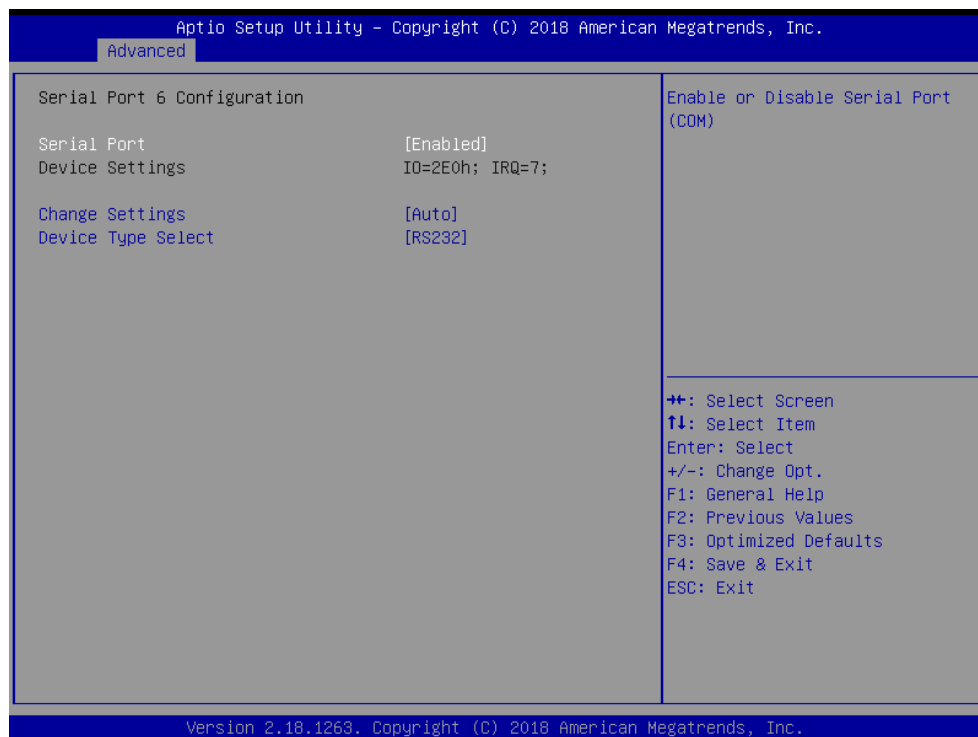
- **Serial Port**
This item allows you to enable or disable serial port.
- **Change Settings**
This item allows you to change the address & IRQ settings of the specified serial port.
- **Device Type Select**
Change the Serial interface. Select <RS232>, <RS422> or <RS485> interface.

Serial Port 5 Configuration



- **Serial Port**
This item allows you to enable or disable serial port.
- **Change Settings**
This item allows you to change the address & IRQ settings of the specified serial port.
- **Device Type Select**
Change the Serial interface. Select <RS232>, <RS422> or <RS485> interface.

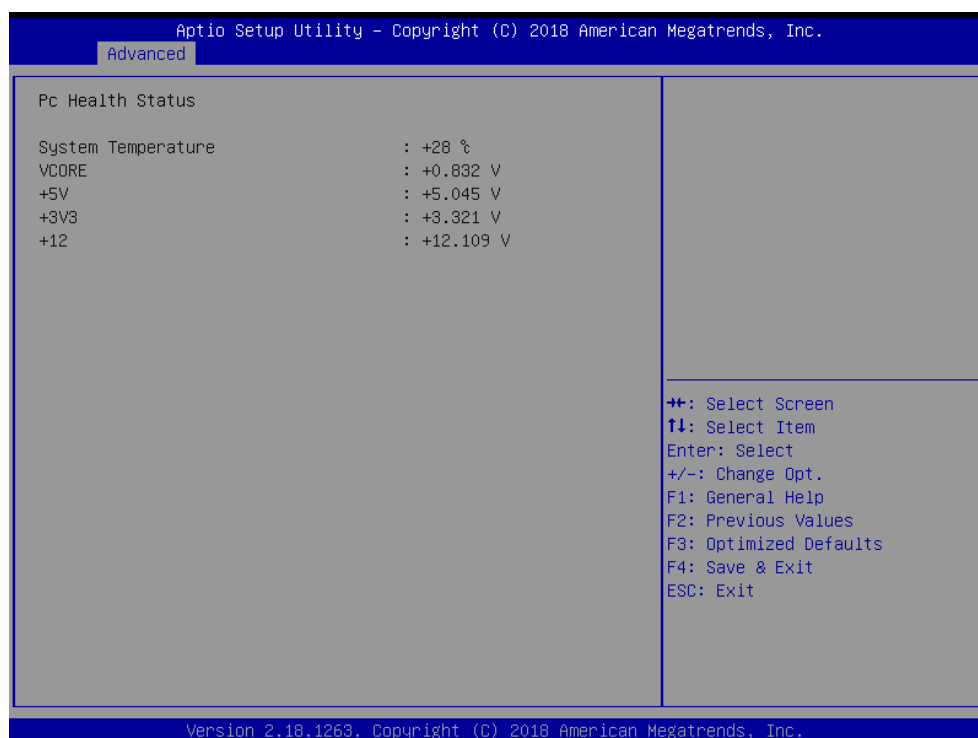
Serial Port 6 Configuration



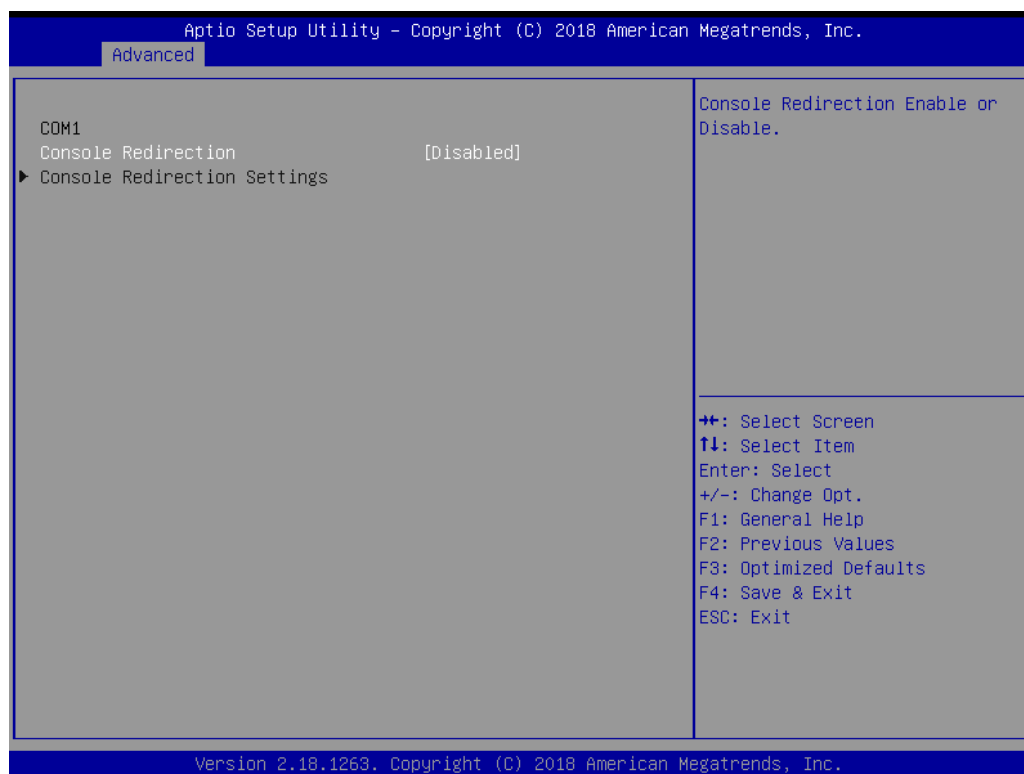
- **Serial Port**
This item allows you to enable or disable serial port.
- **Change Settings**
This item allows you to change the address & IRQ settings of the specified serial port.
- **Device Type Select**
Change the Serial interface. Select <RS232>, <RS422> or <RS485> interface.

4.3.8 Hardware Monitor

These items display the current status of all monitored hardware devices/ components such as voltages and temperatures.



4.3.9 Serial Port Console Redirection



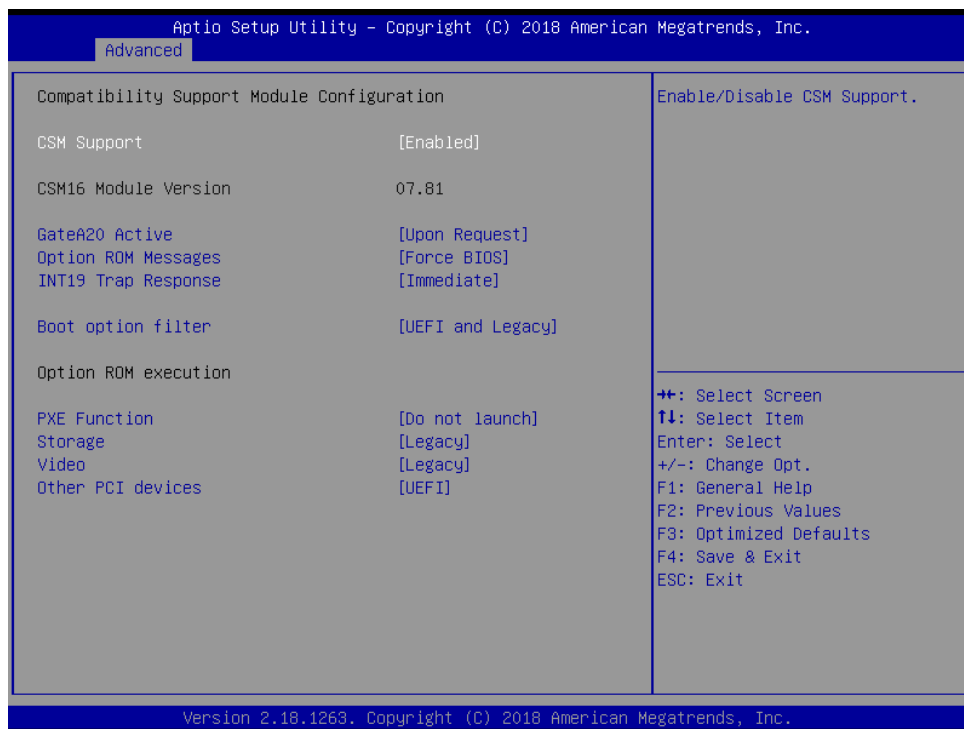
■ Console Redirection

These items allows you to enable or disable COM1 console redirection.

4.3.10 Stack Configuration



4.3.11 CSM Configuration



■ CSM Support

This item allows users to enable or disable for “CSM Support”.

■ GateA20 Active

This item allows users to set Upon Request or Always for "GateA20 Active".

■ Option ROM Messages

This item allows users to set Force BIOS or Keep Current for “Option ROM Messages”.

■ INT19 Trap Response

This item allows users to set the BIOS reaction to INT19 trapping by Option ROM:

“Immediate” - execute the trap right away;

“postponed” - execute the trap during legacy boot.

■ Boot option filter

This item allows users to select which type of operating system to boot by option:

“UEFI and Legacy” - allows booting from operating systems that support legacy option ROM or UEFI option ROM;

“Legacy only” - allows booting from operating systems that only support legacy option ROM;

“UEFI only” - allows booting from operating systems that only support UEFI option ROM.

This item is configurable only when CSM Support is set to Enabled.

■ PXE Function

This item allows users to enable or disable PXE function.

■ Storage

This item allows users to set Do not launch or UEFI or Legacy for “Storage”.

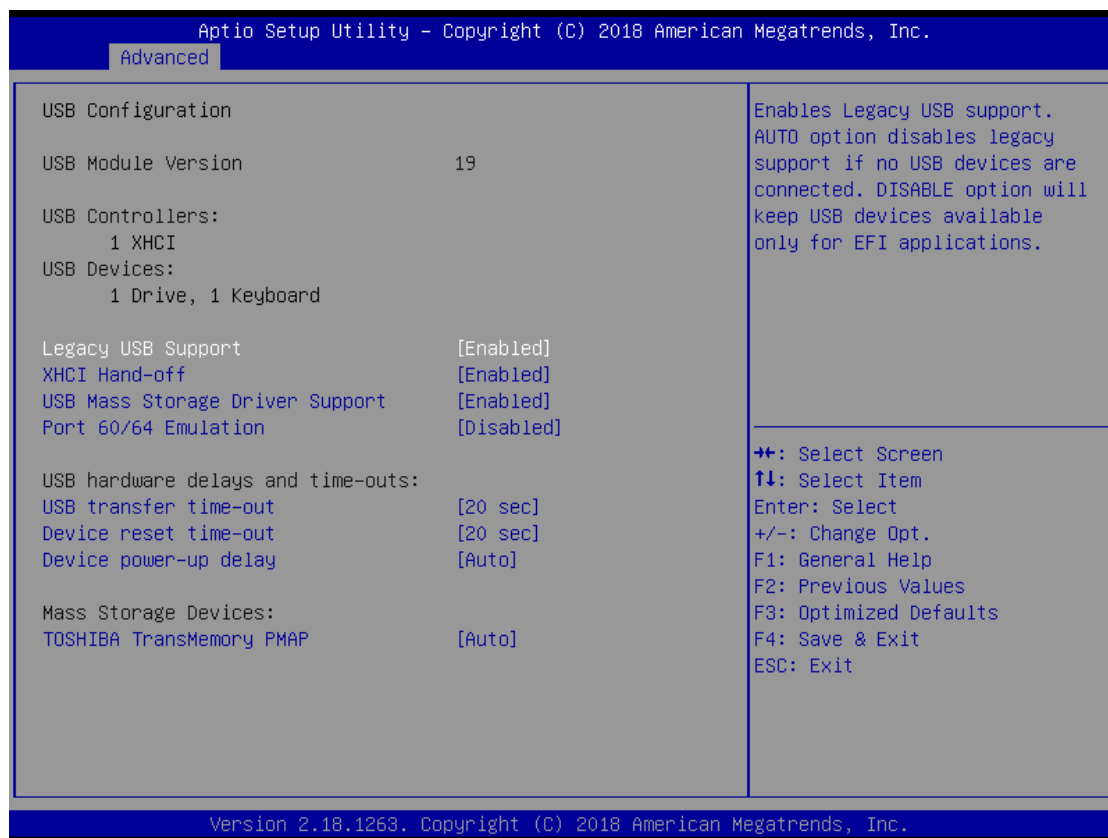
■ Video

This item allows users to set Do not launch or UEFI or Legacy for “Video”.

■ Other PCI devices

This item allows users to set Do not launch or UEFI or Legacy for “Other PCI devices”.

4.3.12 USB Configuration



■ Legacy USB Support

Allows USB keyboard/ mouse to be used in MS-DOS.

■ XHCI Hand-off

Determines whether to enable XHCI (USB3.0) Hand-off feature for an operating system without XHCI (USB3.0) Hand-off support.

■ USB Mass Storage Driver Support

Enables or disables support for USB storage devices.

■ Port 60/64 Emulation

Enables or disables support for Port 60/64 Emulation.

■ USB transfer time-out

This item allows users to set different time mode for “USB transfer time-out”.

■ Device reset time-out

This item allows users to set different time mode for “Device reset time-out”.

■ Device power-up delay

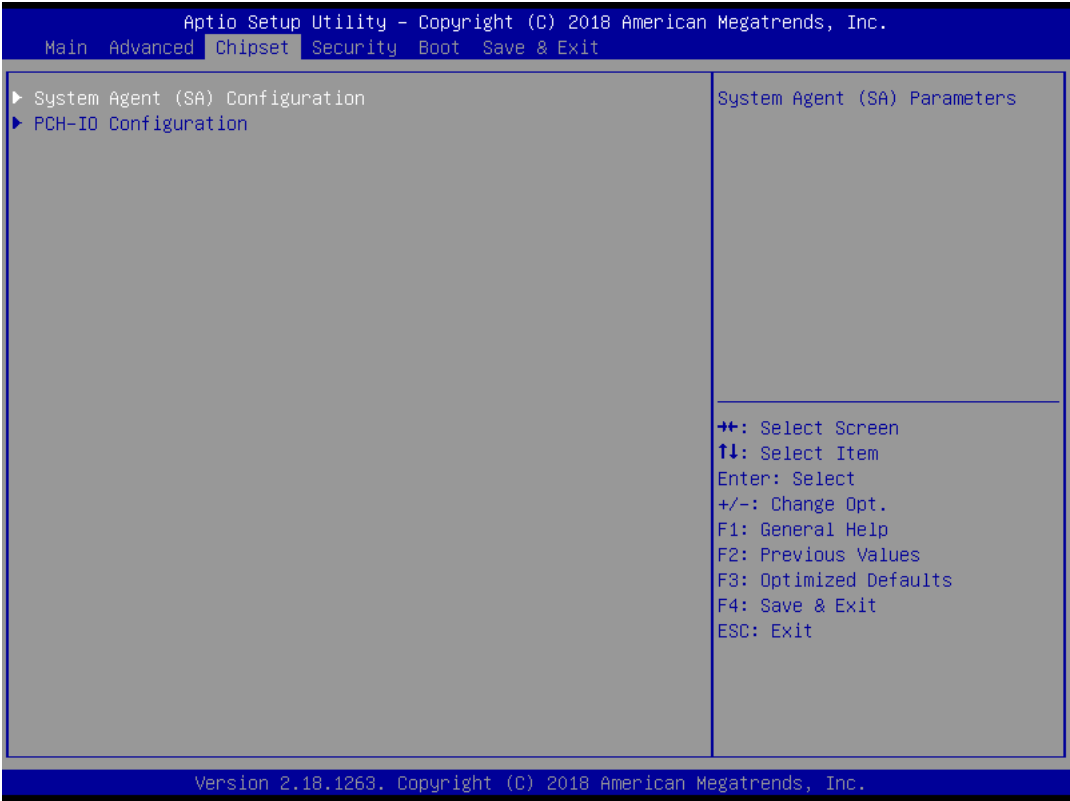
This item allows users to set different time mode for “Device power-up delay”.

■ Mass Storage Devices

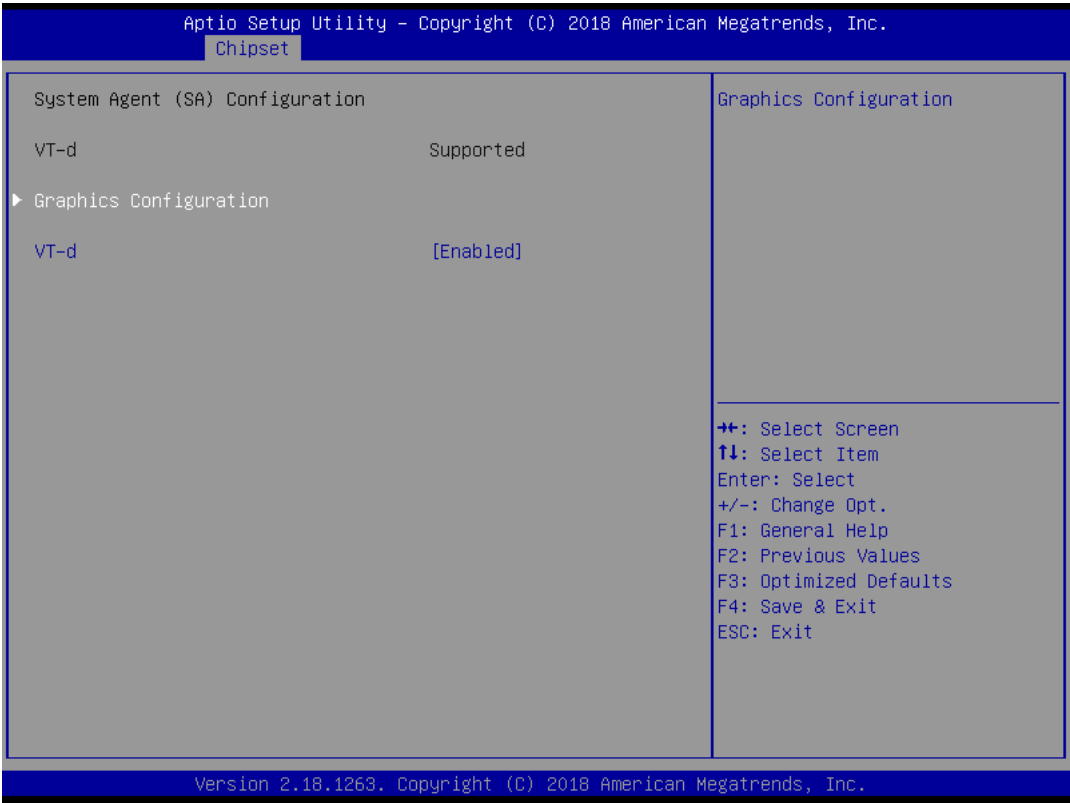
This item allows users to set different mode for “Mass Storage Devices”.

4.4 Chipset

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



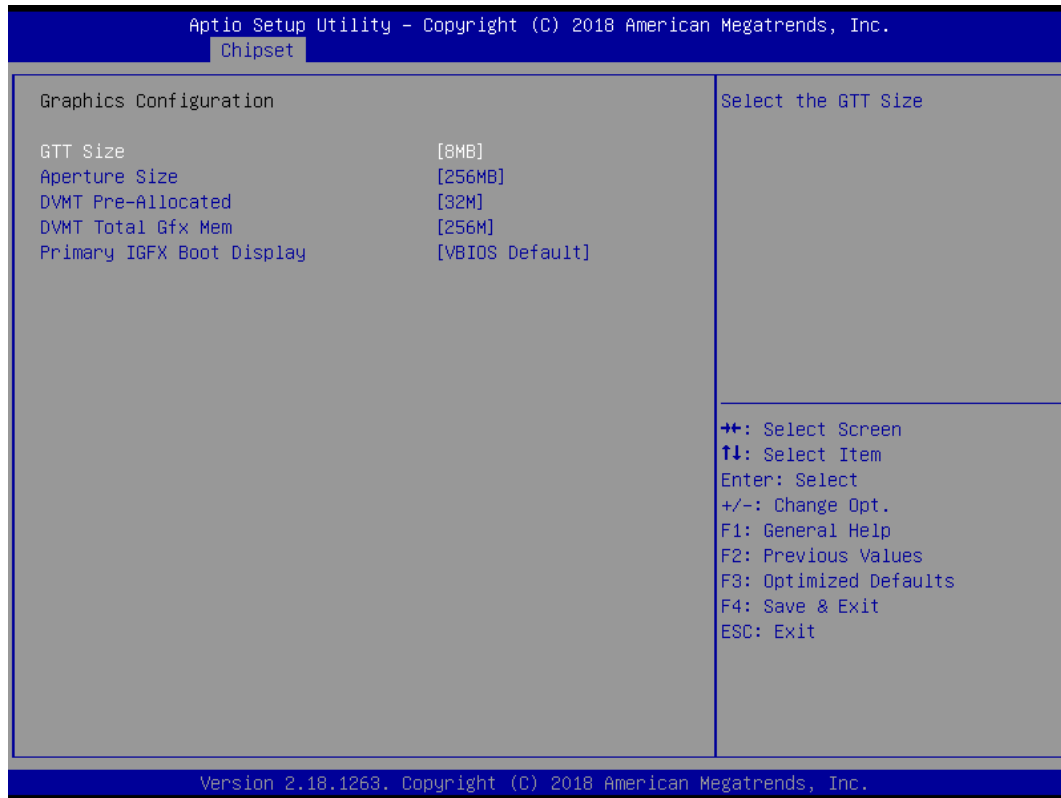
4.4.1 System Agent (SA) Configuration



VT-d

This item allows users to enable or disable VT-d.

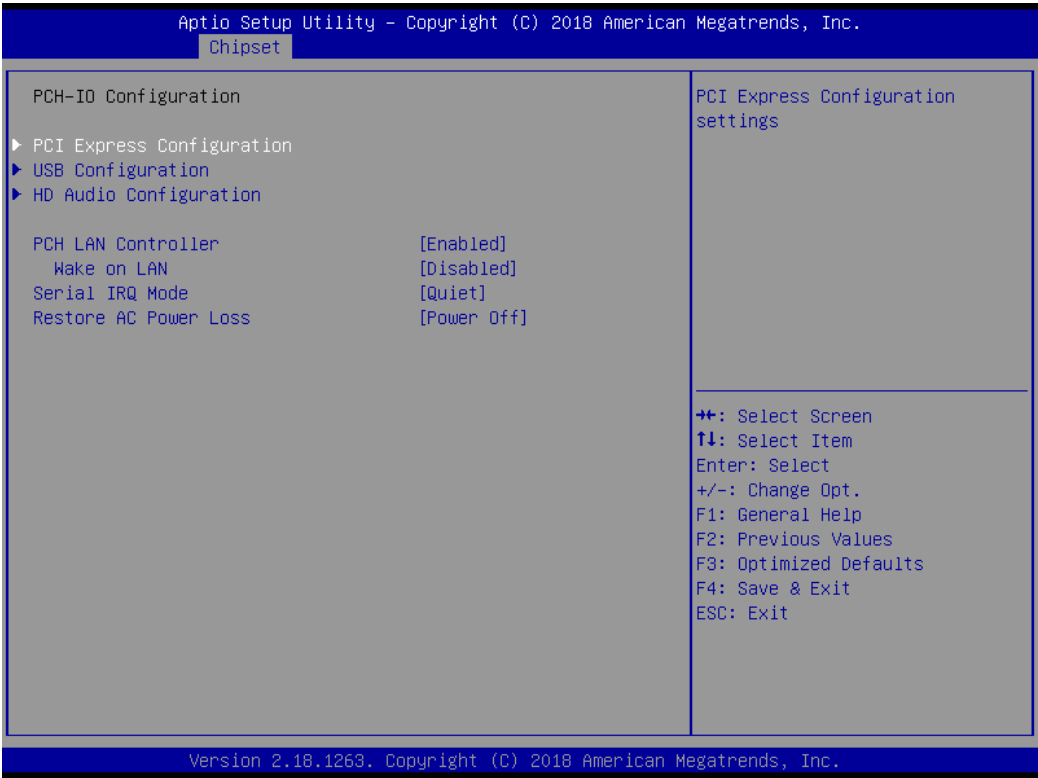
■ Graphic Configuration



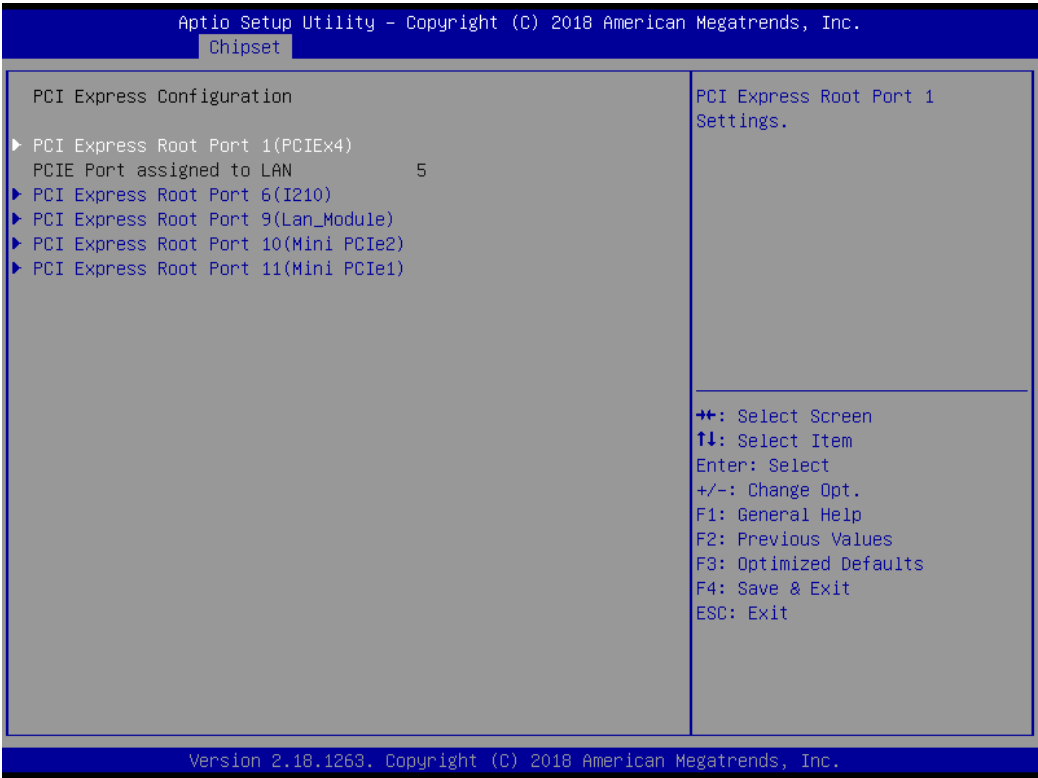
- **GTT Size**
This item allows you to change the GTT size.
- **Aperture Size**
Aperture size optimal between 128MB, 256MB, 512MB, 1024MB or 2048MB.
- **DVMT Pre-Allocated**
DVMT pre-allocated (fixed) Graphics memory size optimal from 0M to 60M.
- **DVMT Total Gfx Mem**
DVMT Total Gfx Mem optimal Between 128M, 256M or MAX.
- **Primary IGFX Boot Display**
Use the field to select the type of device you want to use as the display(s) of the system.

4.4.2 PCH-IO Configuration

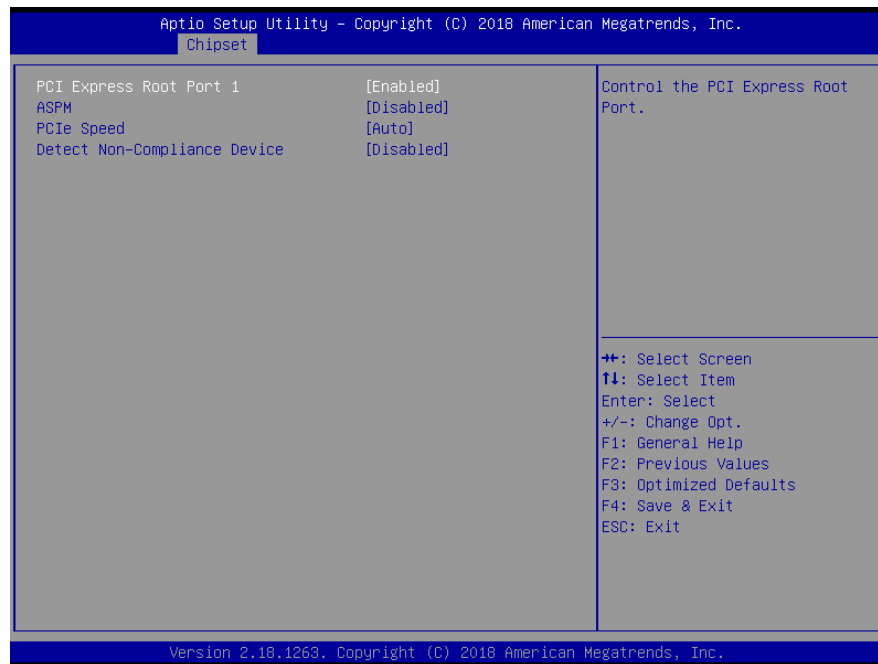
This section allows you to configure the chipset.



■ PCI Express Configuration



● PCI Express Root Port 1 / 6 / 9 / 10 / 11



✓ PCI Express Port 1 / 6 / 9 / 10 / 11

This item allows you to enable or disable PCI Express Port 1 / 6 / 9 / 10 / 11 in the chipset.

✓ ASPM

This item allows you to select the ASPM state for energy-saving. Select <Disabled>, <L0s>, <L1>, <L0sL1> or <Auto>

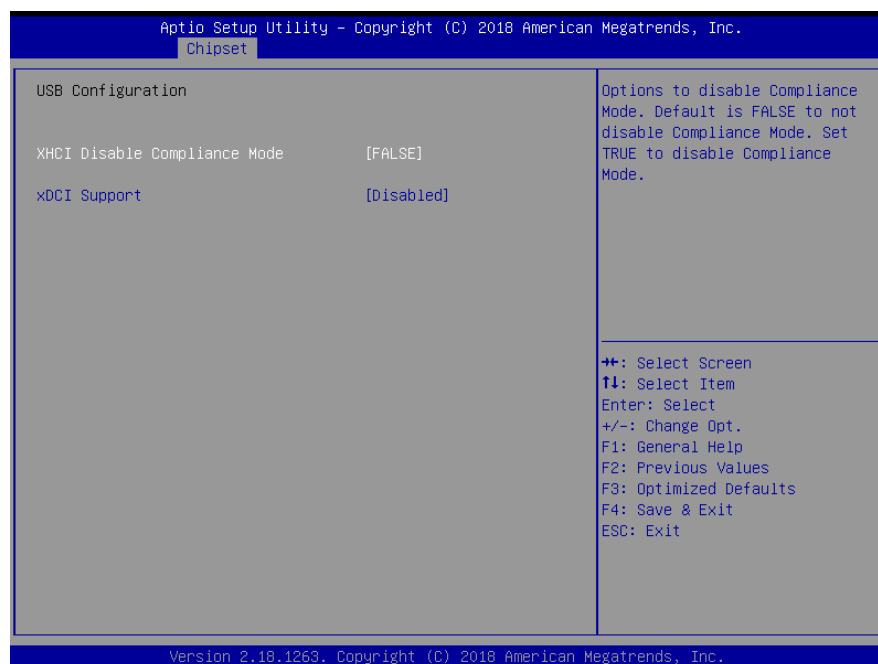
✓ PCIe Speed

Change the PCIe Port Speed. Select <AUTO>, <Gen 1>, <Gen 2> or <Gen 3>

✓ Detect Non-Compliance Device

Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.

■ USB Configuration



● XHCI Disable Compliance mode

Options to disable compliance mode. Default is FALSE enable compliance mode. Set TRUE to disable compliance mode.

● xDCI Support

This item will allow users to enable or disable xDCI Support.

■ HD Audio Configuration



● HD Audio

Control detection of the HD-Audio device. This item allows you to select <Enabled>, <Disabled> or <Auto>.

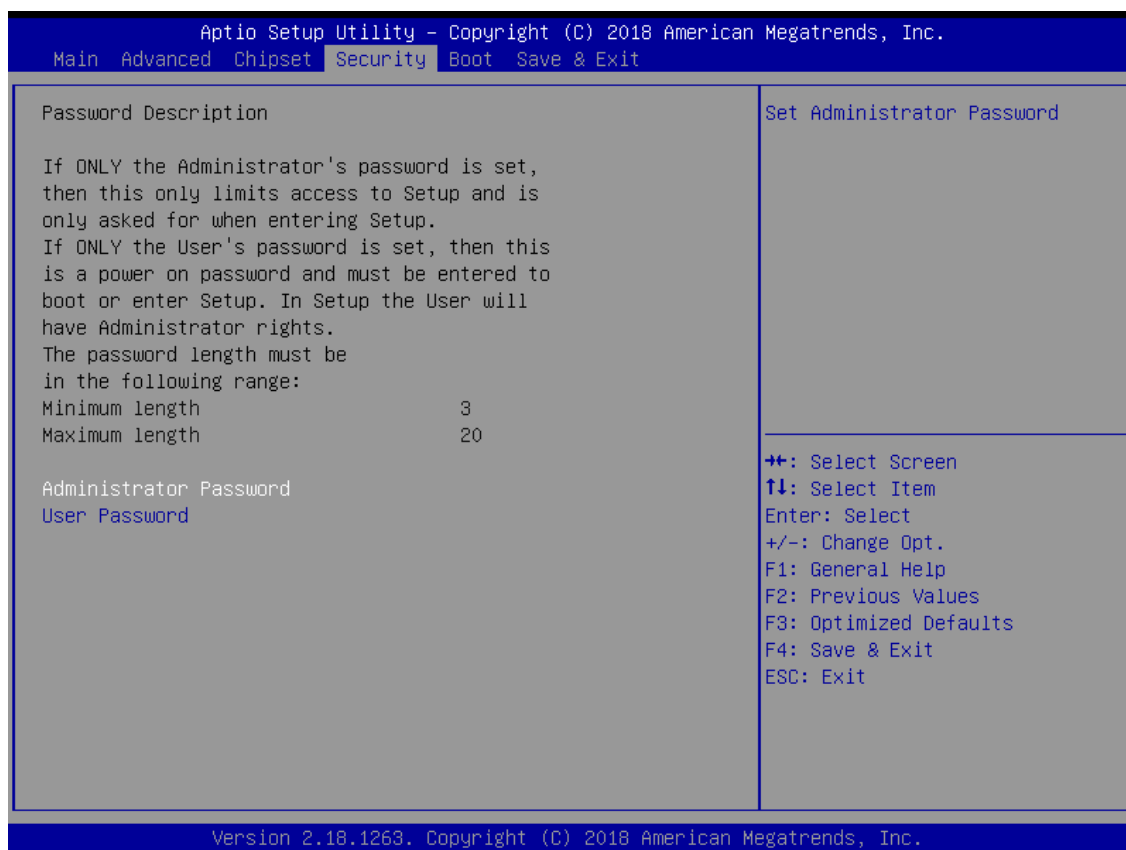
Disabled: Azalia will be unconditionally be disabled.

Enabled: Azalia will be unconditionally be enabled.

Auto: Azalia will be enabled if present, disabled otherwise.

4.5 Security

Security menu allow users to change administrator password and user password settings.



■ Administrator Password

This item allows you to set Administrator Password.

■ User Password

This item allows you to set User Password.

4.6 Boot

This menu allows you to setup the system boot options.



■ Setup Prompt Timeout

This item sets number of seconds to wait for setup activation key.

■ Bootup NumLock State

This item selects the keyboard NumLock state. Select <On> or <Off>.

■ Full Screen Logo Show

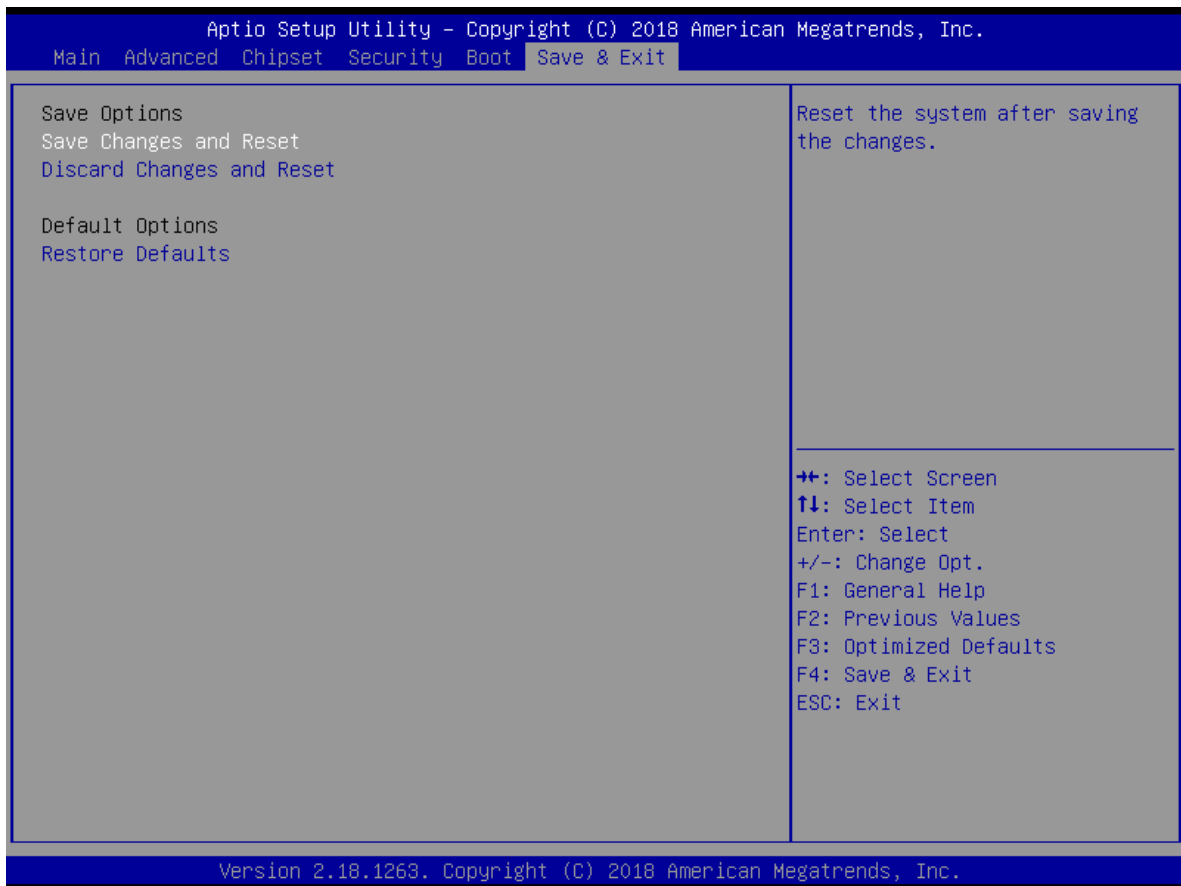
This item allows you to enable or disable Full Screen Logo Show function.

■ Hard Driver BBS Priorities

The items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

4.7 Save & Exit

This setting allows users to configure the boot settings.



■ Save Changes and Reset

This item allows user to reset the system after saving the changes. This item allows user to reset the system after saving the changes.

■ Discard Changes and Reset

This item allows user to reset the system without saving any changes.

■ Restore Defaults

Use this item to restore /load default values for all the setup options.

Appendix

WDT & GPIO

This appendix provides the sample codes of WDT (Watch Dog Timer) and GPIO (General Purpose Input/ Output).

WDT Sample Code

```
// IO Address 0xA16 is time value
// IO Address 0xA15 is WDT enable and configuration
Example, Set 0xA16=0x03, 0xA15=0x31, it will reset after 3 seconds
```

```
#define TimePort    0xA16
#define TimeEnablePort 0xA15

WriteByte (TimePort,0x03)
WriteByte (TimeEnablePort,0x31)
```

Watchdog Timer Configuration Register 1 – base address + 05h

Bit	Name	R/W	Reset	Default	Description
7	Reserved	R	-	0	Reserved
6	WDTMOUT_STS	R/W	5VSB	0	If watchdog timeout event occurred, this bit will be set to 1. Write a 1 to this bit will clear it to 0.
5	WD_EN	R/W	5VSB	0	If this bit is set to 1, the counting of watchdog time is enabled.
4	WD_PULSE	R/W	5VSB	0	Select output mode (0: level, 1: pulse) of RSTOUT# by setting this bit.
3	WD_UNIT	R/W	5VSB	0	Select time unit (0: 1 sec, 1: 60 sec) of watchdog timer by setting this bit.
2	WD_HACTIVE	R/W	5VSB	0	Select output polarity of RSTOUT# (1: high active, 0: low active) by setting this bit.
1-0	WD_PSWIDTH	R/W	5VSB	0	Select output pulse width of RSTOUT# 0: 1 ms 1: 25 ms 2: 125 ms 3: 5 sec

Watchdog Timer Configuration Register 2 – base address + 06h

Bit	Name	R/W	Reset	Default	Description
7-0	WD_TIME	R/W	5VSB	0	Time of watchdog timer

GPIO Sample Code

● GPI 1 ~ GPI 8

	GPI 1	GPI 2	GPI 3	GPI 4	GPI 5	GPI 6	GPI 7	GPI 8
IO Address	0xA03h	0xA03h	0xA03h	0xA03h	0xA06h	0xA06h	0xA06h	0xA06h
Bit	4	5	6	7	0	1	2	3
Sample code	#1							

● GPO 1 ~ GPO 8

	GPO 1	GPO 2	GPO 3	GPO 4	GPO 5	GPO 6	GPO 7	GPO 8
IO Address	0xA02h	0xA02h	0xA02h	0xA02h	0xA06h	0xA07h	0xA08h	0xA04h
Bit	0	1	2	3	4	7	0	7
Sample code	#2							

```
#define GPI1to4_ADDR    0xA03
#define GPI5to8_ADDR    0xA06
```

```
#define GPO1to4_ADDR    0xA02
```

```
#define GPO5_ADDR        0xA06
#define GPO6_ADDR        0xA04
#define GPO7_ADDR        0xA08
#define GPO8_ADDR        0xA04
```

```
#define GPO1_DataHigh    0x01
#define GPO2_DataHigh    0x02
#define GPO3_DataHigh    0x04
#define GPO4_DataHigh    0x08
#define GPO5_DataHigh    0x10
#define GPO6_DataHigh    0x80
#define GPO7_DataHigh    0x01
#define GPO8_DataHigh    0x80
```

```
#define WriteByte    outputb
#define ReadByte     inportb
```


Sample Code:

```
#1 :  
// Get GPI 1 status  
//Get GPI 0 Pin Status Register  
printf("Input port value = %x\n", ReadByte(GPI1to4_ADDR)); // bit4 = GPI 1 status
```

```
// Get GPI 5 status  
//Get GPI 0 Pin Status Register  
printf("Input port value = %x\n", ReadByte(GPI_REG5to8)); // bit0 = GPI 5 status
```

```
#2 :  
// Set GPO status to high  
; Set GPO 1 Pin to High  
Data = ReadByte(GPO1to4_ADDR) | GPO1_DataHigh;  
WriteByte(GPO1to4_ADDR, Data); //Set IO_DO1 to High
```

```
; Set GPO 2 Pin to High  
Data = ReadByte(GPO1to4_ADDR) | GPO2_DataHigh;  
WriteByte(GPO1to4_ADDR, Data); //Set IO_DO2 to High
```

```
; Set GPO 3 Pin to High  
Data = ReadByte(GPO1to4_ADDR) | GPO3_DataHigh;  
WriteByte(GPO1to4_ADDR, Data); //Set IO_DO3 to High
```

```
; Set GPO 4 Pin to High  
Data = ReadByte(GPO1to4_ADDR) | GPO4_DataHigh;  
WriteByte(GPO1to4_ADDR, Data); //Set IO_DO4 to High
```

```
; Set GPO 5 Pin to High  
Data = ReadByte(GPO5_ADDR) | GPO5_DataHigh;  
WriteByte(GPO5_ADDR, Data); //Set IO_DO5 to High
```

```
; Set GPO 6 Pin to High  
Data = ReadByte(GPO6_ADDR) | GPO6_DataHigh;  
WriteByte(GPO6_ADDR, Data); //Set IO_DO6 to High
```

```
; Set GPO 7 Pin to High  
Data = ReadByte(GPO7_ADDR) | GPO7_DataHigh;  
WriteByte(GPO7_ADDR, Data); //Set IO_DO7 to High
```

```
; Set GPO 8 Pin to High  
Data = ReadByte(GPO8_ADDR) | GPO8_DataHigh;  
WriteByte(GPO8_ADDR, Data); //Set IO_DO8 to High
```

