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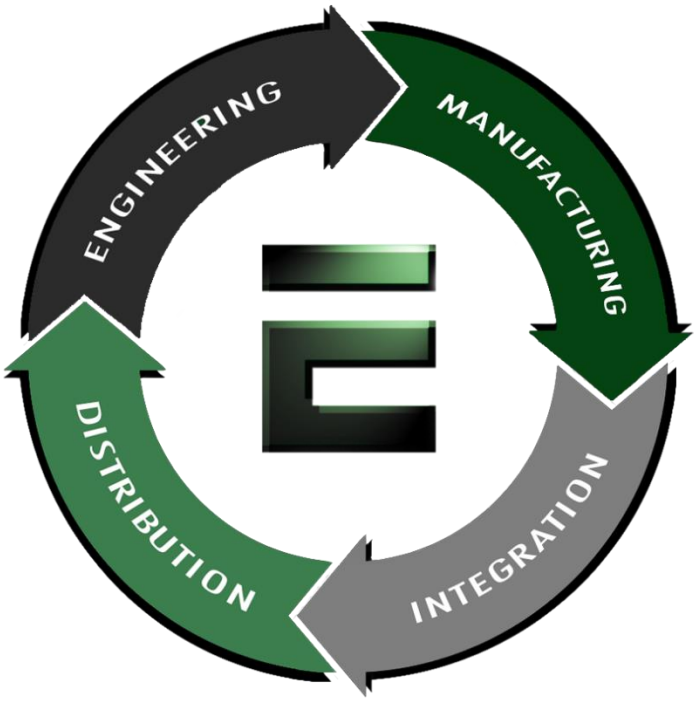

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USER'S MANUAL

PPC-215

Industrial Panel PCs

Table of Contents

Prefaces

Revision

Revision	Description	Date
1.0	Manual Released	2020/07/15

Disclaimer

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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 -20°C and below 70°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 be 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 the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.

Technical Support and Assistance

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	PPC-215 Series Waterproof Panel PC	1
2	Utility DVD Driver	1
3	Waterproof Connector Cover Set	1
4	120W Power Adapter with mating 1.5M Waterproof M12 Cable	1

Ordering Information

Model No.	Description
1-TVGA00003	Waterproof VGA Cable 1.5M
1-TUSB00016	Waterproof USB 3.0 Cable 1.5M
1-TCOM00011	Waterproof COM Cable 1.5M
1-TLAN00006	Waterproof LAN Cable 1.5M

Available Models

Model No.	Description
PPC-215-7300U	21.5" 16:9 FHD Capacitive Touch Waterproof IP66 Panel PC with Intel® Core™ i5-7300U Processor, 1x VGA, 2x USB 3.0, 2x M12 LAN, 1x COM
PPC-215-7100U	21.5" 16:9 FHD Capacitive Touch Waterproof IP66 Panel PC with Intel® Core™ i3-7100U Processor, 1x VGA, 2x USB 3.0, 2x M12 LAN, 1x COM

Chapter 1

Product Introductions

1.1 Overview

The PPC-215 series full system IP66 waterproof Panel PC features a certified IP66 waterproof and dustproof anti-corrosion enclosure and secure lockable M12 connectors to protect against ingress of high temperature and high pressure water. It's wide operating temperature is ideal for freezing and hot weather conditions. With its rugged construction and slim design, the PPC-215 series is suitable for outdoor applications and in other harsh operating environments with a high risk of dust and water spray.

21.5" 16:9 FHD Capacitive or Resistive Touch Waterproof IP66 Panel PC with Intel® Core™ i5/i3 Processor,
1x VGA, 2x USB 3.0, 2x M12 LAN, 1x COM

1.1.1 Key Features

Constructed out of Type 304 stainless steel for added anti-corrosion properties

21.5" TFT FHD 16:9 LCD with Projected Capacitive or Resistive Touch

Multi touch on PCAP type

Intel® Core™ Processor i5-7300U, up to 3.5GHz / i3-7100U, 2.4GHz

8GB DDR4 SODIMM

1x 128GB mSATA SSD, 2x internal SIM socket

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

2x USB 3.0 (waterproof connector)

9 to 50VDC wide range power input

-10˚C to 60˚C extended operating temperature

Full system IP66 compliant

Two 10W internal speakers built-in (Optional for IP65 Configuration)

Multi-language OSD built-in

1.2 Hardware Specification

Display
- LCD Size 21.5" (16:9)
- Max. Resolution 1920 x 1080
- Brightness (cd/m2) 300
- Contrast Ratio 5000:1
- LCD Color 16.7M
- Pixel Pitch (mm) 0.248 (H) x 0.248 (V)
- Viewing Angle (H-V) 178 / 178
- Backlight MTBF 50000 hrs (LED Backlight)

Touch
- Projected Capacitive 10 Points
- Surface hardness 7H

System
- Processor 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
- System Chipset SoC integrated
- LAN Chipset
  GbE1: Intel I219LM (Support Wake-on-LAN and PXE)
  GbE2: Intel I210-AT (Support Wake-on-LAN and PXE)
- Audio Codec Realtek ALC888S
- System Memory 8GB DDR4 SODIMM
- BIOS AMI 128Mbit SPI BIOS
- Watchdog Software Programmable Supports 1~255 sec. System Reset

Storage
- mSATA 128GB mSATA SSD
- SIM Socket 2x Internal SIM socket

Expansion
- Mini PCI Express 1x Full-size Mini PCIe

I/O
- VGA : 1x Waterproof VGA
- COM : 1x RS-232/422/485 by M12 D-Code 8-pin
- USB : 2x USB 3.0 (Waterproof connector)
- LAN : 2x LAN by M12 X-Code 8-pin
- Others : 2x WiFi Antenna Holes

Other Features
- Internal Speaker AMP 10W + 10W, Optional for IP65 Only
- OSD Power On/Off, Auto, Menu, Up and Down Multi-language

Operating System
- Windows : Windows 10
- Linux : Linux kernel 4.X

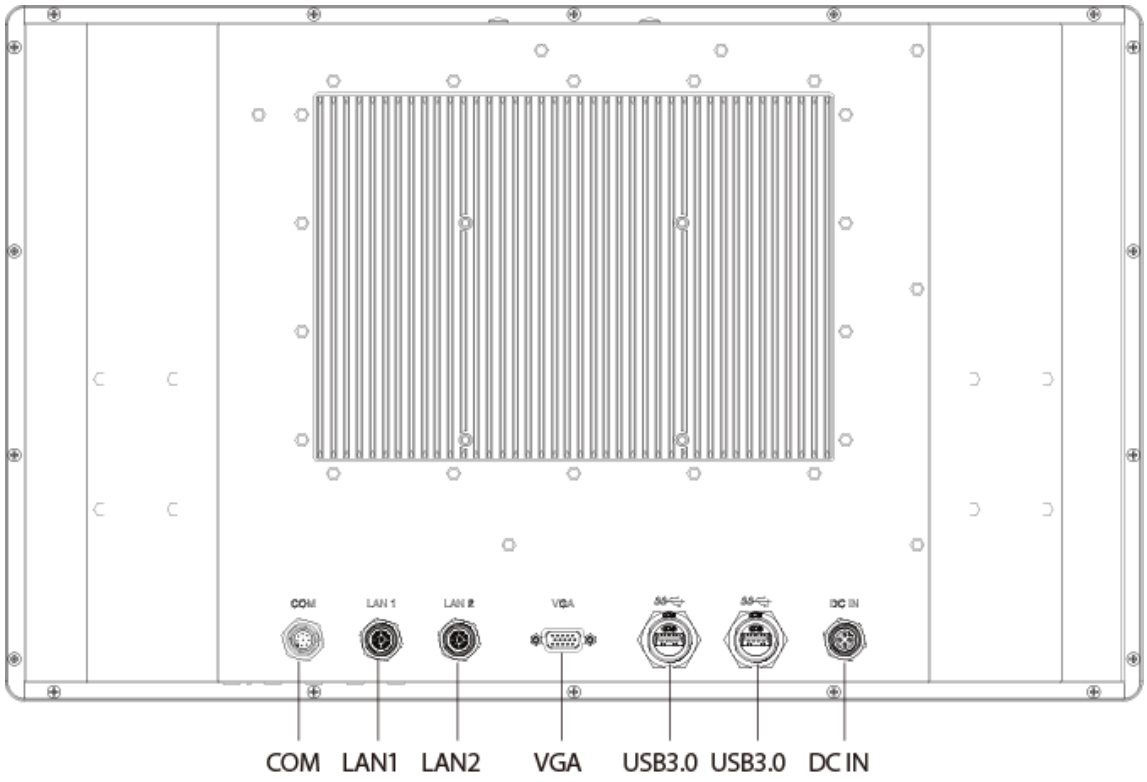
Power
- Power Mode : ATX
- Power Supply Voltage : 9~50VDC
- Power Connector : M12 A-code 4-pin
- Power Adaptor :
  AC/DC 24V/5A, 120W with
  mating 1.5M Waterproof M12 Cable
- Power Protection :
  OVP (Over Voltage Protection)
  OCP (Over Current Protection)
  Reverse Protection

Environment
- Operating Temp : -10°C to 60°C
- Storage Temp : -20°C to 70°C
- Relative Humidity : 10%~80% (non-condensing)
- Vibration :
  With SSD: 2.4 Grms, 10 - 500 Hz, 0.5 hr/axis,
  With HDD: 1 Grms, 10 - 500 Hz, 0.5 hr/axis
- Shock : With SSD: 20G, half sine, 11ms
- IP Level : Full System IP66
- Standards / Certification : CE, FCC Class A

Physical
- Front Panel Construction : Die-cast Flat Surface
- Dimension : 525 (W) x 320.8 (D) x 74 (H) mm
- Weight : TBC
- Mounting : VESA Mounting Holes 100 x 100mm

1.3 System I/O

1.3.1 Rear Panel



DC IN
Used to plug a DC power input with M12 Power connector

VGA
Used to connect an analog VGA monitor

USB 3.0 port
Used to connect USB 3.0/2.0/1.1 device

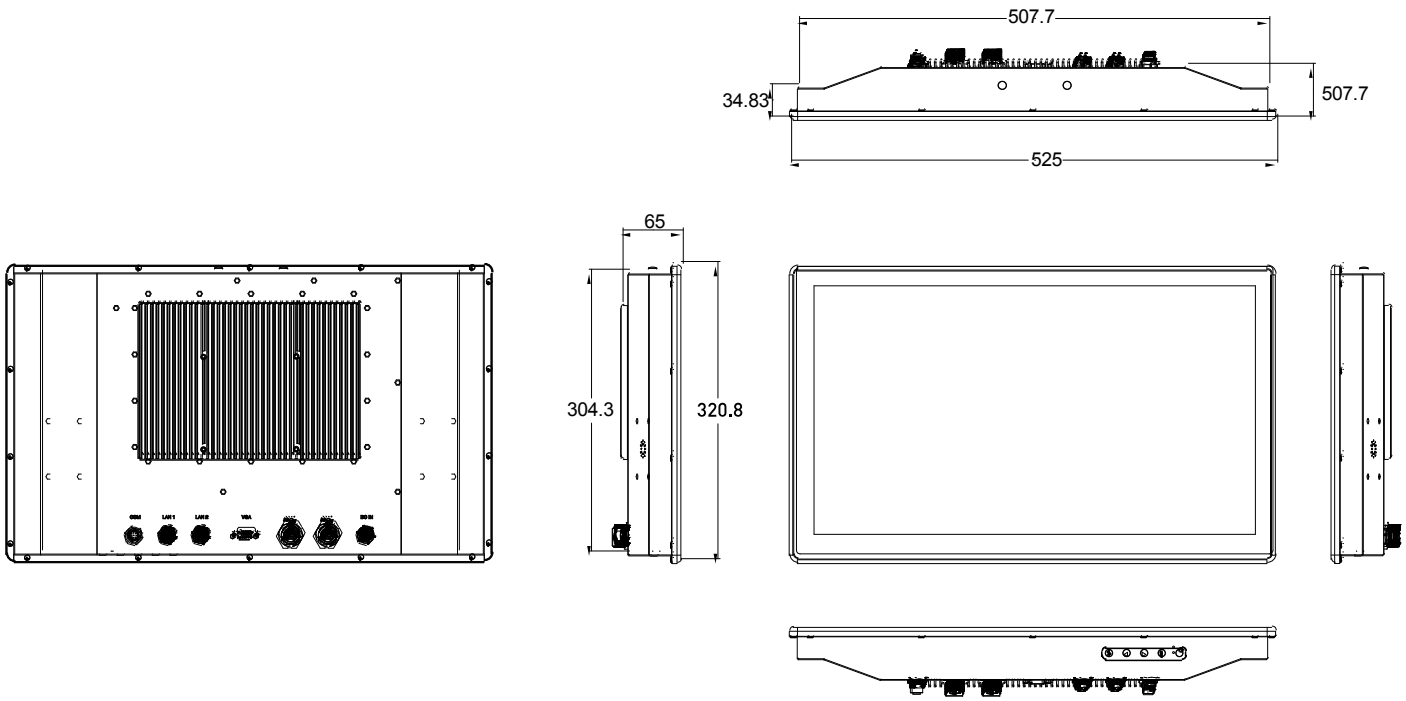
LAN port
Used to connect the system to a local area network

COM port
COM support RS232/422/485 serial device

Speaker
Two 10W internal speakers built-in (Optional for IP65 Configuration)

1.4 Mechanical Dimensions

Unit: mm

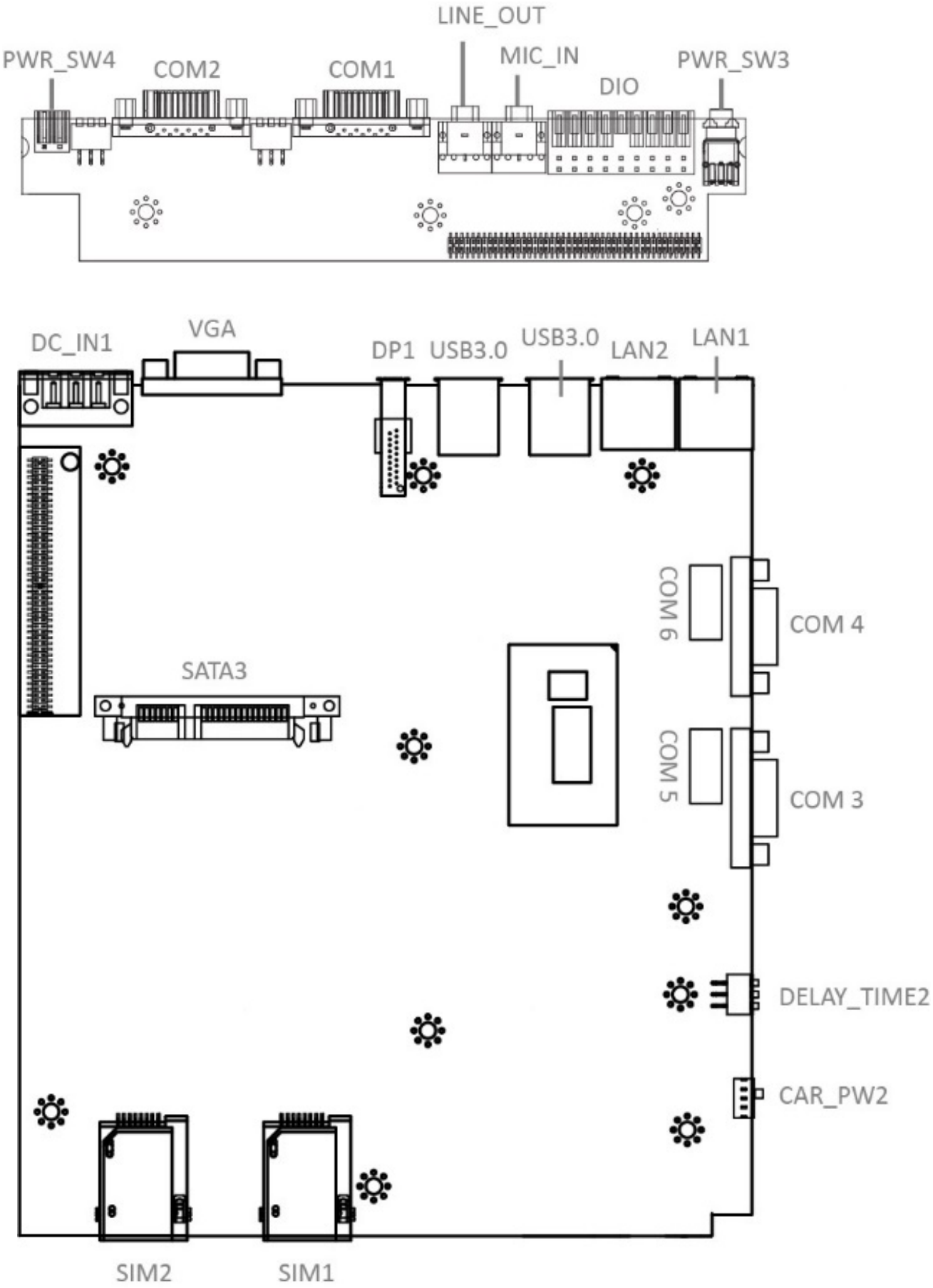


Chapter 2

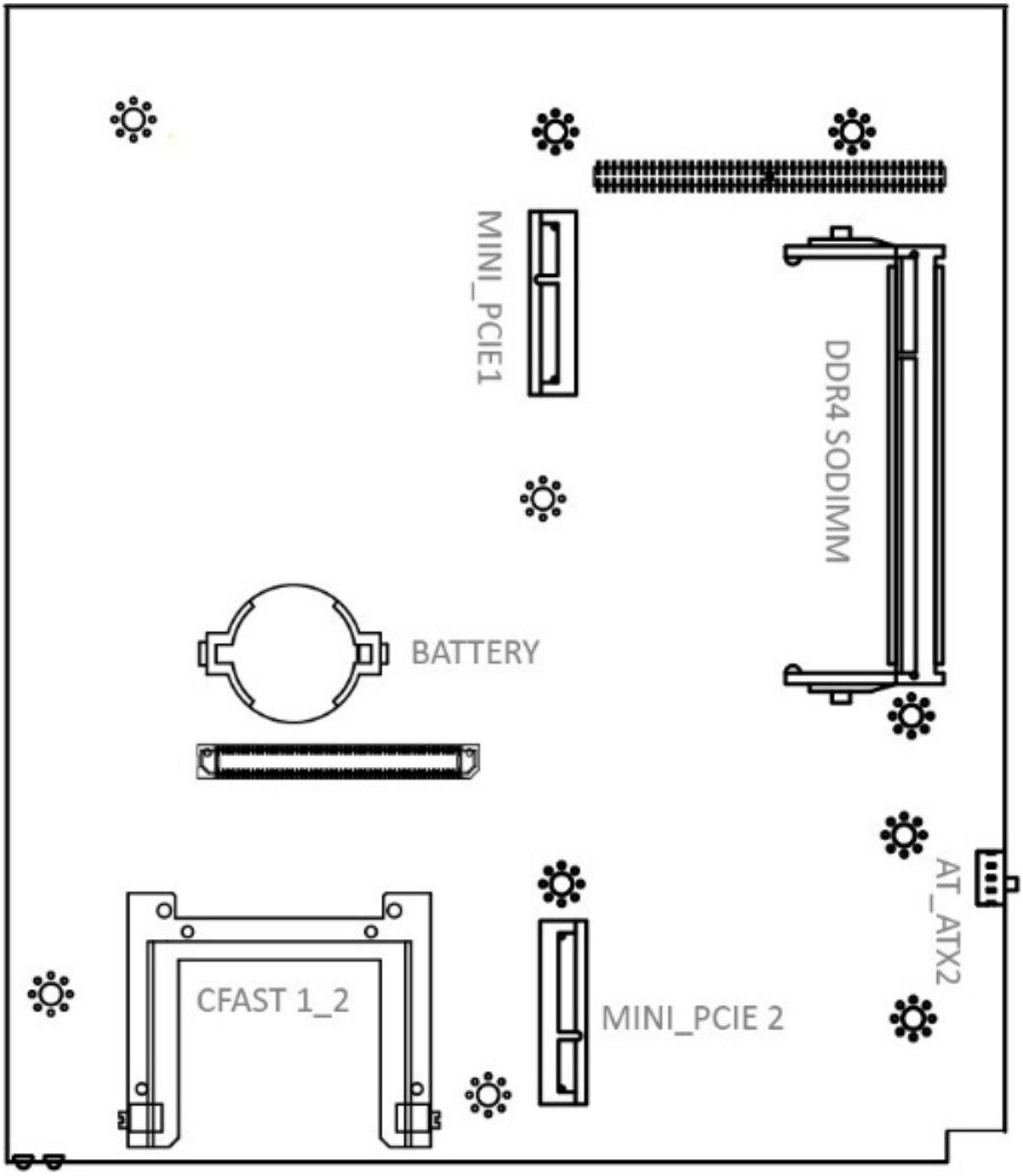
Switches and Connectors

2.1 Switch and Connector Locations

2.1.1 Top View



2.1.2 Bottom View



2.2 Connector / Switch Definition

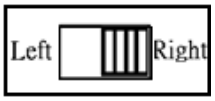
List of Connector / Switch

Connector Location	Definition
AT_ATX2	AT / ATX Power Mode Switch
CLR_CMOS1	Clear BIOS Switch
CAR_PWR2	PC / Car Mode Switch
DELAY_TIME2	Car mode PC turn off delay time
CFAST1_2	CFast Socket
PWR_SW3	Power Switch
RESET2	Reset Switch
USB1_2_1, USB1_2_2	USB 3.0 Port
SIM1_1, SIM2_1	SIM Card Socket
COM1_1, COM2_1, COM3_1, COM4_1	RS232 / RS422 / RS485 Connector
LAN1, LAN2	LAN Port
DC_IN1	3-pin DC 9~50V Power Input Connector
DP1	DisplayPort Connector
LINE_OUT1	Line-out Jack
MIC_IN1	Mic-in Jack
DIO1	8DI / 8DO Connector
PWR_SW4	Remote Power Switch
MINI-PCIE1	Mini PCI-Express / mSATA Socket
MINI-PCIE2	Mini PCI-Express Socket
SATA3	SATA with Power Connector
PWR_LED2	Power LED Status
HDD_LED2	HDD Access LED Status

2.3 Switches Definitions

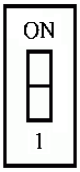
AT_ATX1: AT / ATX Power Mode Switch

Switch	Definition
1-2 (Right)	ATX Power Mode（Default）
2-3 (Left)	AT Power Mode



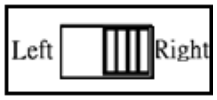
CLR_CMOS1: Clear BIOS Switch

Switch	Definition
Off	Normal Status (Default)
ON	Clear BIOS



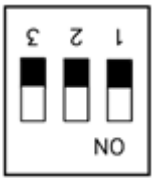
CAR_PWR2: PC / Car Mode Switch

Switch	Definition
1-2 (Left)	PC Power Mode（Default）
2-3 (Right)	Power Ignition Mode



DELAY_TIME1: Power off delay time setup Switch

Switch 1 / 2 / 3	Definition
ON / ON / ON	3 sec.（Default Shutdown Timer by O.S）
ON / ON / OFF	1 min.
ON / OFF / ON	5 min.
ON / OFF / OFF	10 min.
OFF / ON / ON	30 min.
OFF / ON / OFF	1 hour
OFF / OFF / ON	2 hour



Step of Setting Power Ignition

Step 1:
To select power ignition by PC/CAR switch.

Step 2:
To configure the power off delay time, please check the Delay Time Setting Options in advance.

Step 3:
To connect the power and ignition power

Step 3

Switch 1 / 2 / 3	Power off delay time
ON / ON / ON	3 second
ON / ON / OFF	1 minute
ON / OFF / ON	5 minutes
ON / OFF / OFF	10 minutes
OFF / ON / ON	30 minutes
OFF / ON / OFF	1 hour
OFF / OFF / ON	2 hours

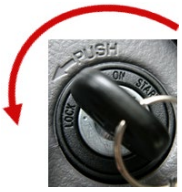
Step 1
Pin 1-2 (Right): PC Mode
Pin 2-3 (Left): Power Ignition Mode

Step 3
To connect the battery power and ignition signal

Example: Delay Time Setting for 5 minutes

1. If delay time set as "5 minutes"

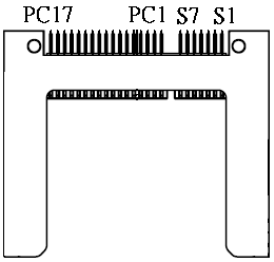
2. The system will shut down 5 minutes later after turning off the vehicle.



2.4 Connectors Definitions

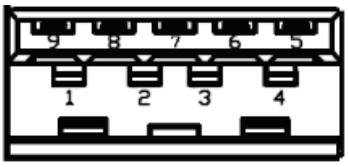
CFAST1_2: CFast Socket

Pin	Definition	Pin	Definition	Pin	Definition
S1	GND	PC1	NC	PC10	NC
S2	SATA_TXP1	PC2	GND	PC11	NC
S3	SATA_TXN1	PC3	NC	PC12	NC
S4	GND	PC4	NC	PC13	+3.3V
S5	SATA_RXN1	PC5	NC	PC14	+3.3V
S6	SATA_RXP1	PC6	NC	PC15	GND
S7	GND	PC7	GND	PC16	GND
		PC8	NC	PC17	NC
		PC9	NC		



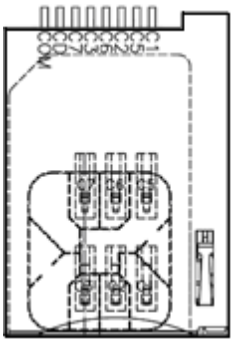
USB3.0 Connector, Type A

Pin	Definition	Pin	Definition
1	+5V	6	USB3_RX+
2	USB2_D-	7	GND
3	USB2_D+	8	USB3_TX-
4	GND	9	USB3_TX+
5	USB3_RX-		



SIM1, SIM2: SIM Card Socket

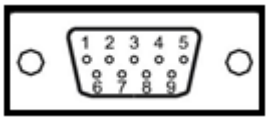
Pin	Definition	Pin	Definition
C1	UIM_PWR	C6	UIM_VPP
C2	UIM_RESET	C7	UIM_DATA
C3	UIM_CLK	CD	NC
C5	GND	COM	GND



COM: RS232 / RS422 / RS485 Connector

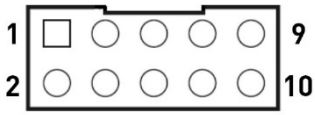
Connector Type: 9-pin D-Sub

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		
9	RI		



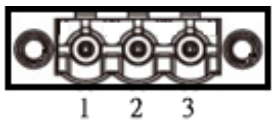
COM: RS232 / RS422 / RS485 Connector
Connector Type: 2X5 10-pin box header, 2.54mm pitch

Pin	RS232 Definition	RS422 / 485 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD	TX-	DATA-
2	DSR		
3	RxD	TX+	DATA+
4	RTS		
5	TxD	RX+	
6	CTS		
7	DTR	RX-	
8	RI		
9	GND	GND	GND
10	NC	NC	NC



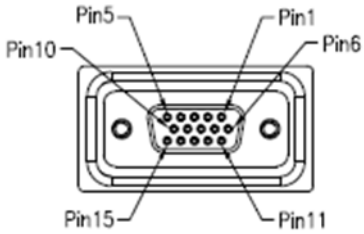
DC_IN1: DC Power Input Connector (+9~48V)
Connector Type: Terminal Block 1X3 3-pin, 5.0mm pitch

Pin	Definition
1	+9~48VIN
2	Power Ignition
3	GND



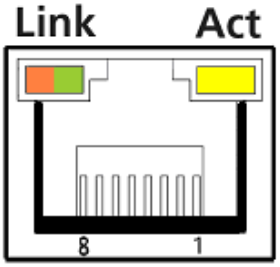
VGA: Standard VGA Connector
Connector Type: 15-pin D-Sub

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		



LAN1, LAN2: RJ45 with LEDs Port

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



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

Link LED Status	Definition	Act LED Status	Definition
Steady Orange	1Gbps Network Link	Blinking Yellow	Data Activity
Steady Green	100Mbps Network Link	Off	No Activity
Off	10Mbps Network Link		

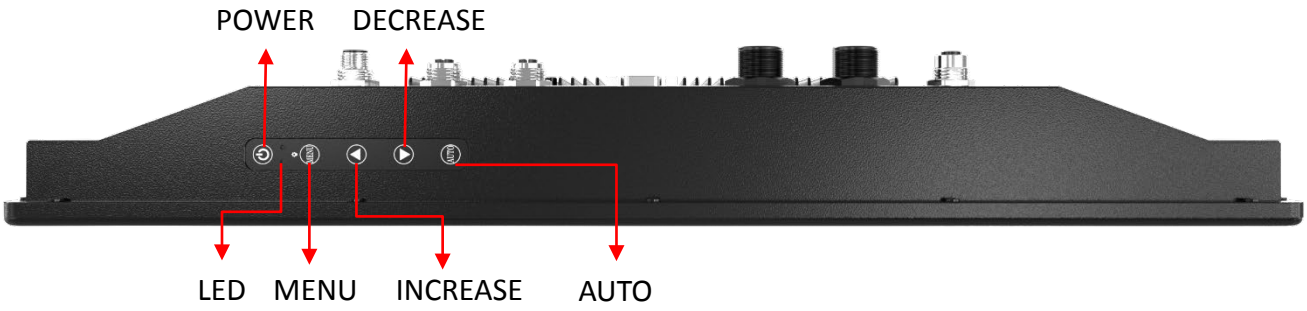
DP1: DisplayPort Connector

Pin	Definition	Pin	Definition
1	DP_LANE0_P	11	GND
2	GND	12	DP_LANE3_N
3	DP_LANE0_N	13	GND
4	DP_LANE1_P	14	GND
5	GND	15	DP_AUX_P
6	DP_LANE1_N	16	GND
7	DP_LANE2_P	17	DP_AUX_N
8	GND	18	DP_HPD
9	DP_LANE2_N	19	GND
10	DP_LANE3_P	20	DP_PWR

Chapter 3

Front Panel Controls

3.1 Users Controls



3.1.1 Power Button
Turns the monitor on or off.

3.1.2 LED
1. Blue indicates power on.
2. Yellow indicates HDD access status.

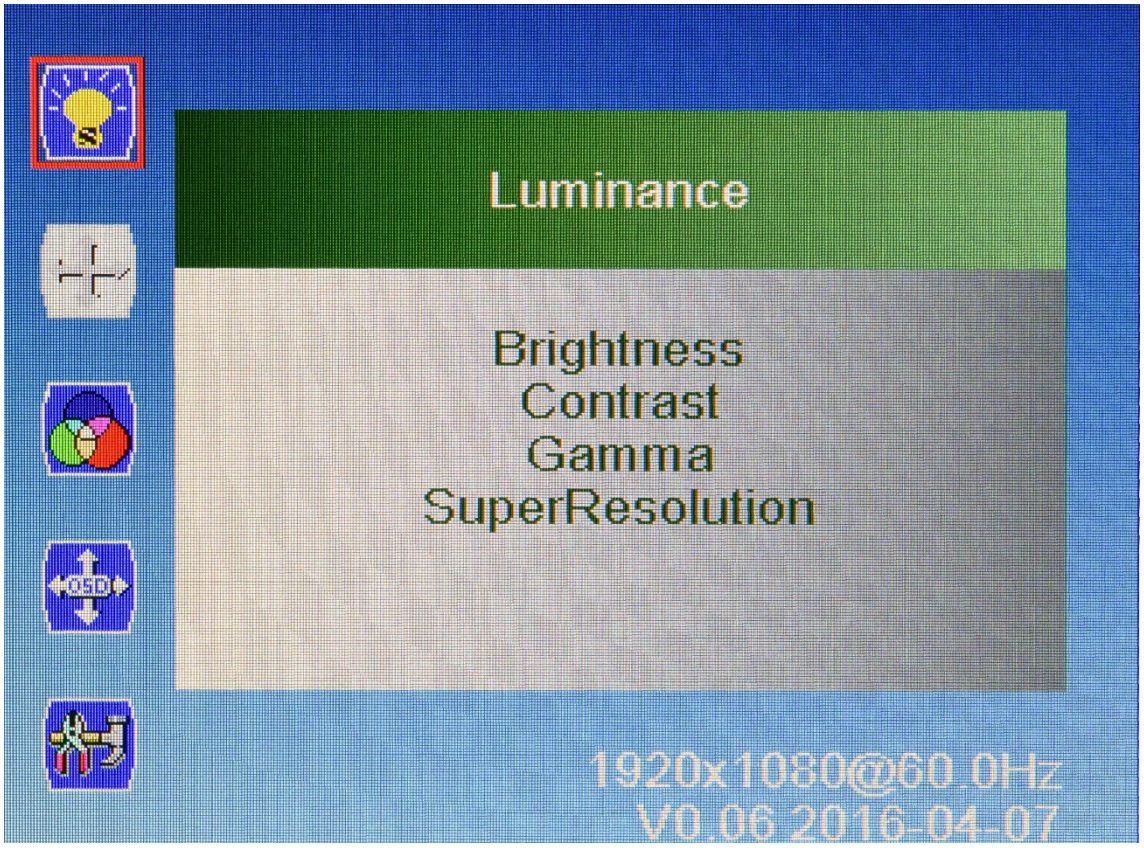
3.1.3 MENU / Enter Button
Press to view the OSD menu. Press it again to enter a selection in the OSD menu.

3.1.4 Increase Button
1. Activates the Volume control menu, and increases volume (with audio option).
2. Scrolls the OSD menu upward.
3. Increases the value of a selected function.

3.1.5 Decrease Button
1. Activates the Volume control menu, and decreases volume (with audio option).
2. Scrolls the OSD menu downward.
3. Decreases the value of a selected function.

3.1.6 AUTO / Exit Button
1. When the OSD menu is active, press this button to exit the OSD menu.
2. When the OSD menu is inactive, press this button for two seconds to activate the Auto Adjustment function and the monitor will automatically optimize the display position, focus, and clock of your display.

3.2 OSD Operation



3.2.1 Luminance

■ **Brightness**
Adjust the luminance level of the screen.

■ **Contrast**
Adjusts the contrast level of the screen.

■ **Gamma**
This item allows you to on or off the Gamma function.

■ **SuperResolution**
This setting allows you to select options for the SuperResolution. Select <Off> , <Weak>, <Median> or <Strong>.

3.2.2 Picture

Phase
Adjust the monitor internal signal phase.

Clock
Adjust the monitor internal sampling clock rate.

H. Position
Adjusts the position of the screen image left and right.

V. Position
Adjusts the position of the screen image up and down.

3.2.3 Color

Color Temperature
6500K: Select the setting of screen color to be reddish white.
7500K: Select the setting of screen color to be bluish white.
9300K: Select the setting of screen color to be bluish white.
sRGB: Set the screen color to fit the sRGB standard color specification.
User Define: Individual adjustments for red (R), green (G), blue (B).

3.2.4 OSD Settings

Horizontal
Changes the viewing position of the OSD menu to the left or right area of the screen.

Vertical
Changes the viewing position of the OSD menu to the top or bottom area of the screen.

Transparency
Adjust to view the background information through the OSD.

OSD Time Out
Sets the time duration in seconds that the OSD is visible after the last button is pressed.

3.2.5 Setup

■ **Language**
Selects the language in which the OSD menu is displayed. The factory default is English.

■ **Mute**
Allows the user to turn the Mute On or Off.

■ **Input**
When press Input Select change Input signal to D-SUB, DVI or DP.

■ **Reset**
Reset monitor parameters back to factory preset values.

Chapter 4

BIOS Setup

4.1 BIOS Introduction

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 <Del> 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

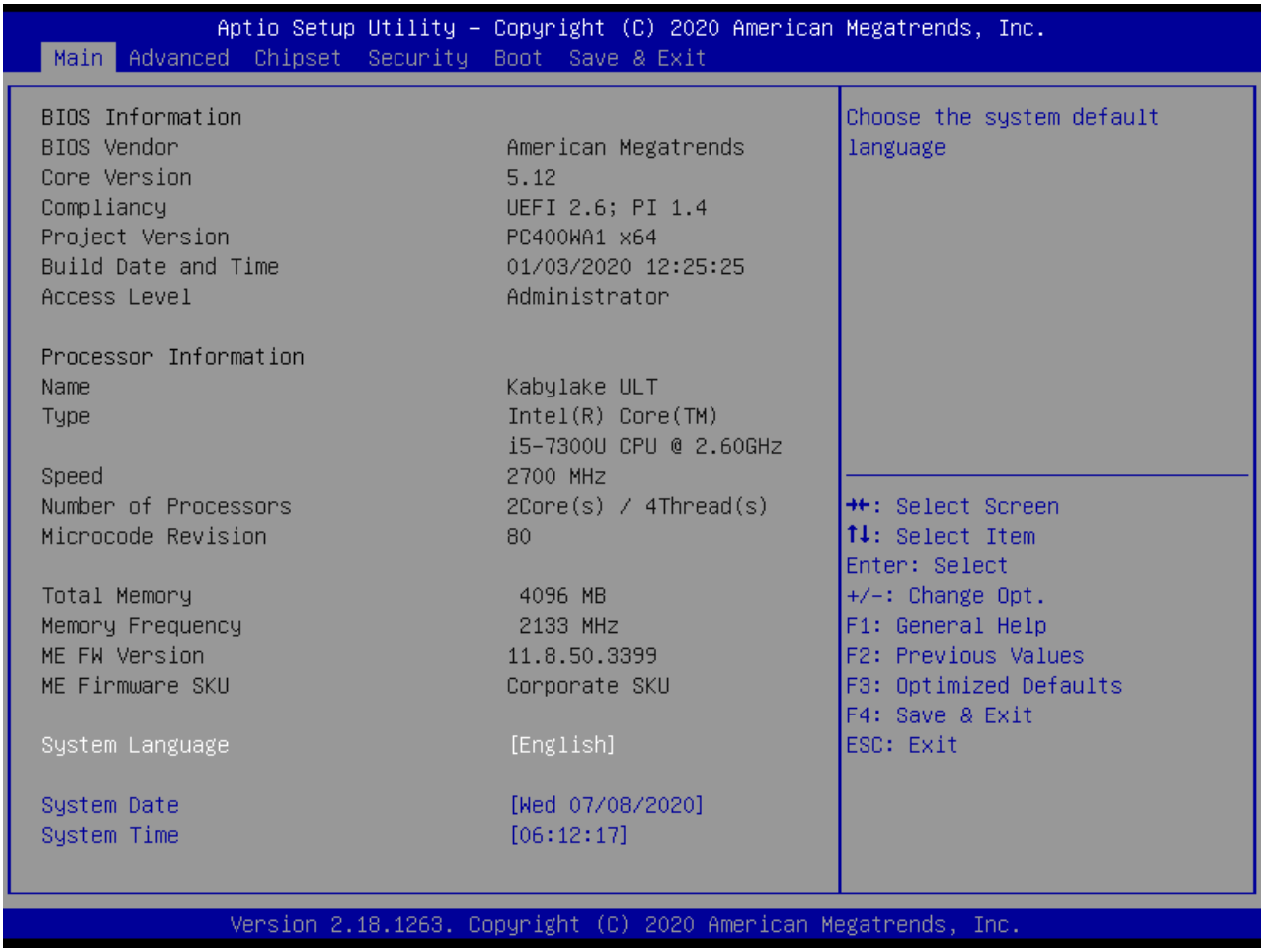
The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

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 <Del> to enter BIOS 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.



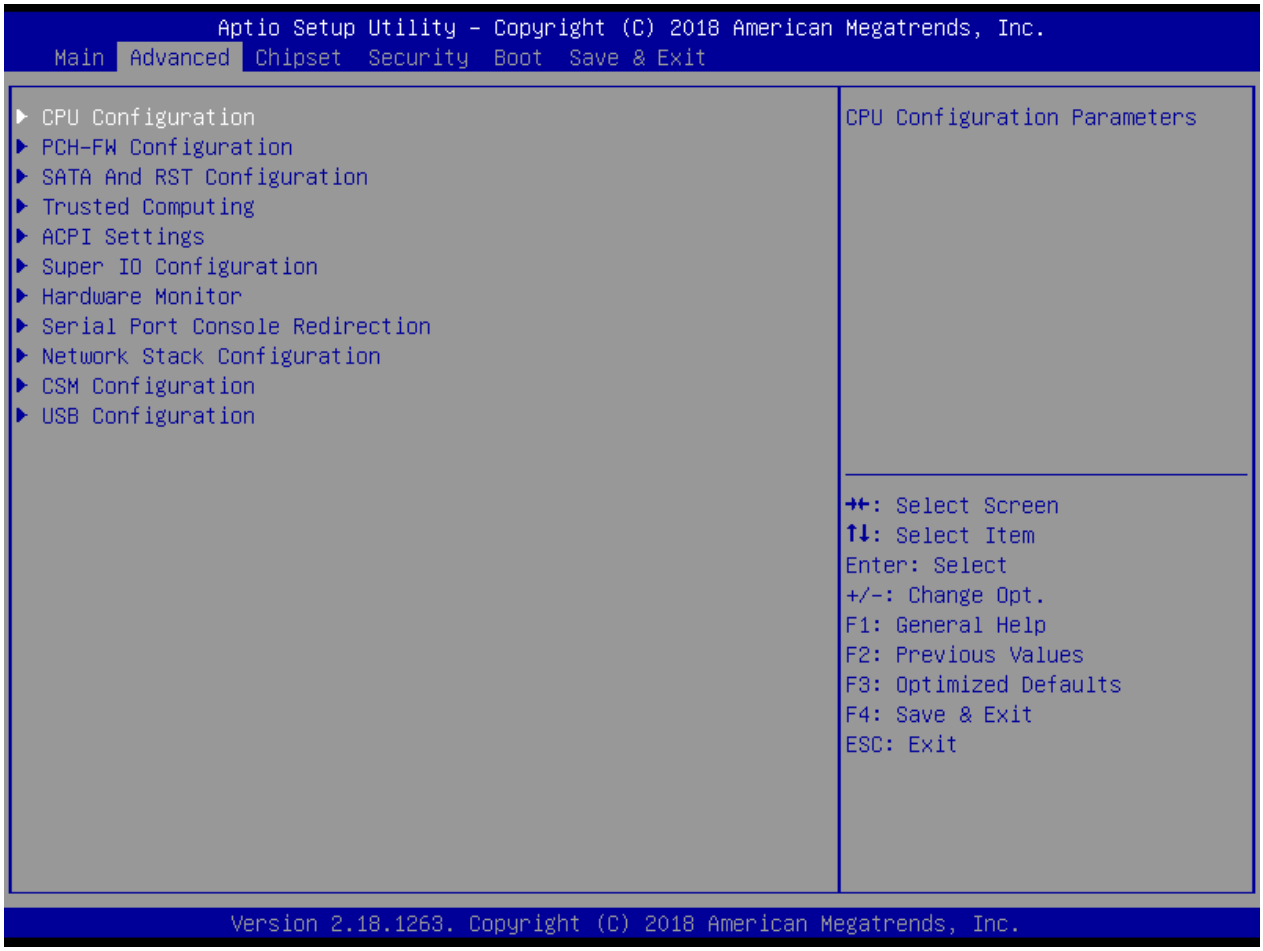
■ System Date

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

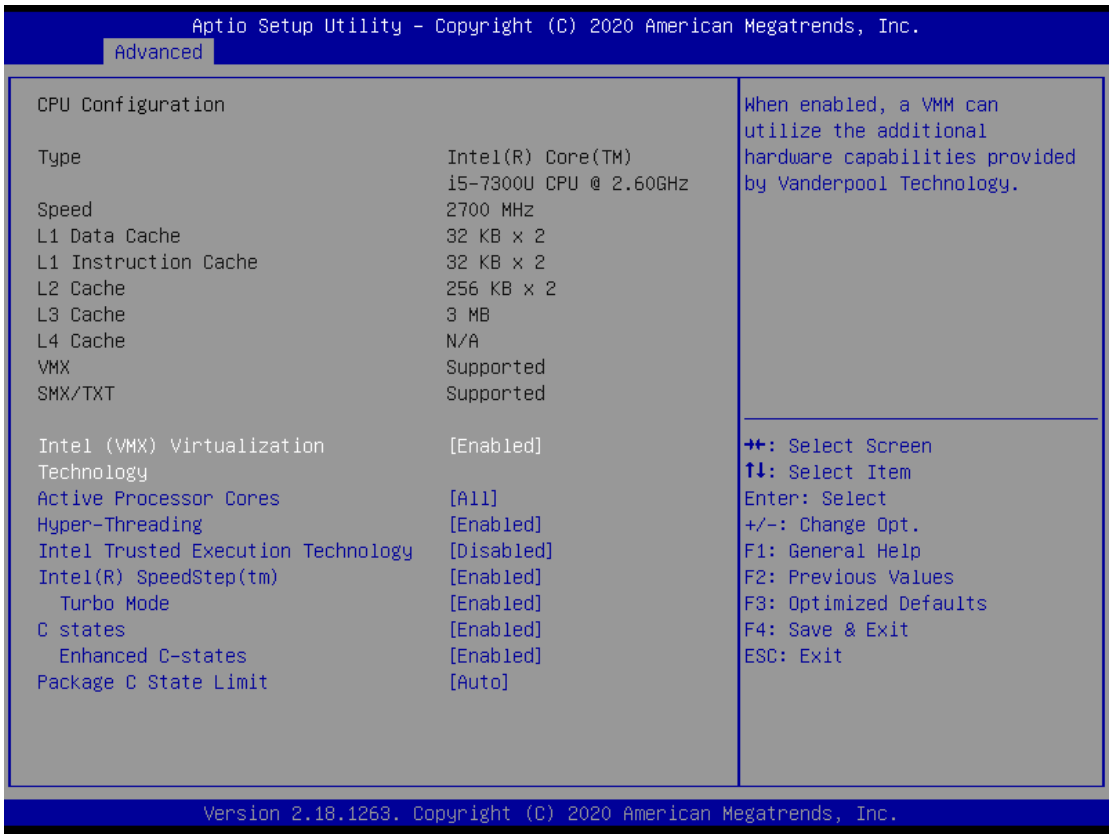
■ System Time

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.

Hyper-Threading

This item allows you to enable or disable the Intel Hyper-Threading Technology.

Intel Trusted Execution Technology

This item allows you to enable or disable the Intel Trusted Execution Technology.

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.

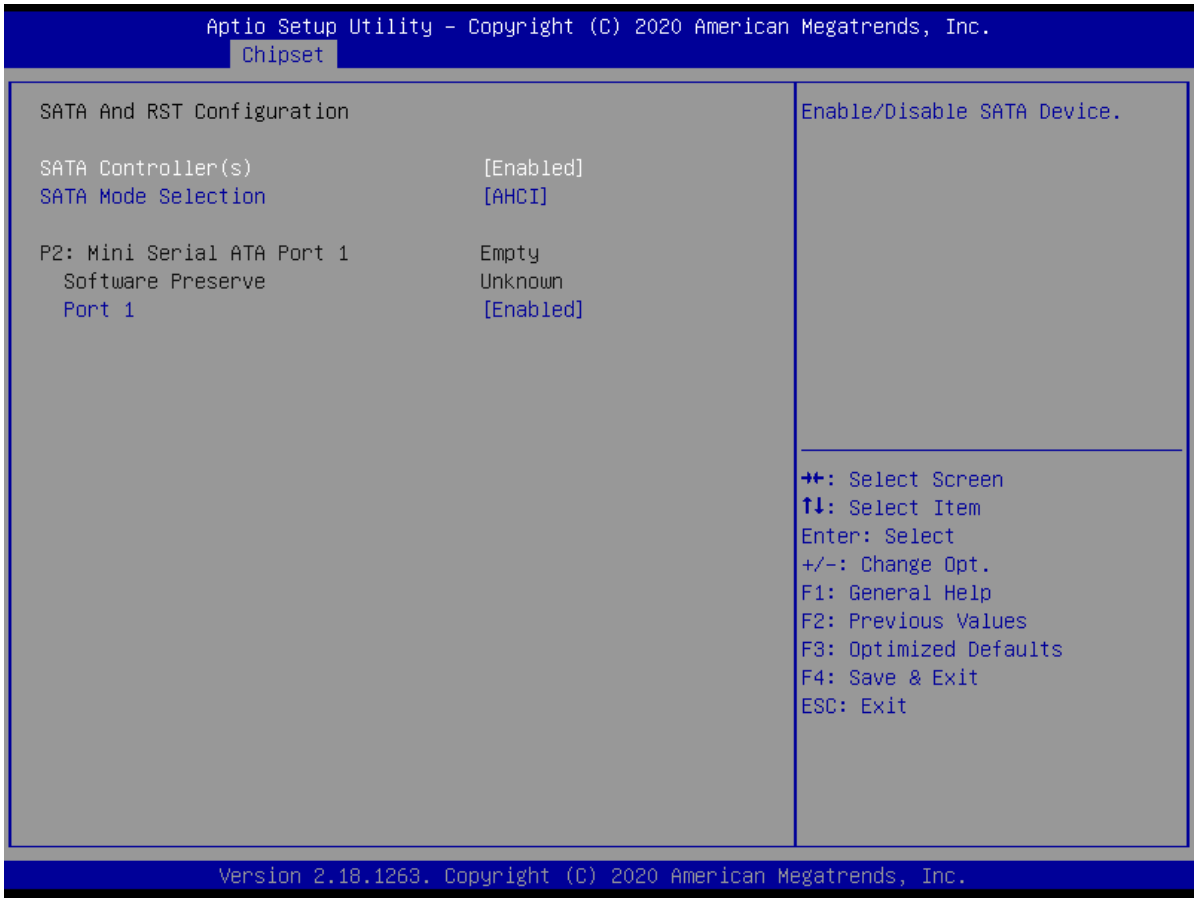
- **Enhanced C States**

  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 ,C9,C10,Cpu Default , and Auto.

4.3.2 SATA and RST Configuration

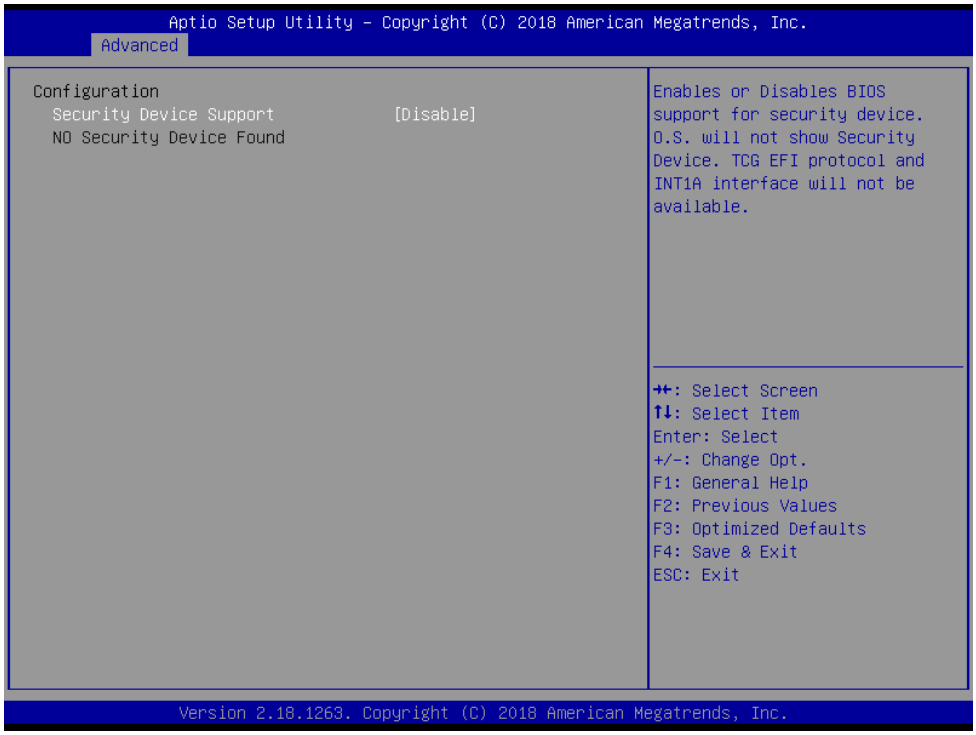


■ SATA Controller(s)
Enable or disable Serial ATA controller.

■ SATA Mode Selection
This item allows users to select mode of SATA controller.

■ Serial ATA Port 1
This item allows users to enable or disable Serial ATA Port 1.

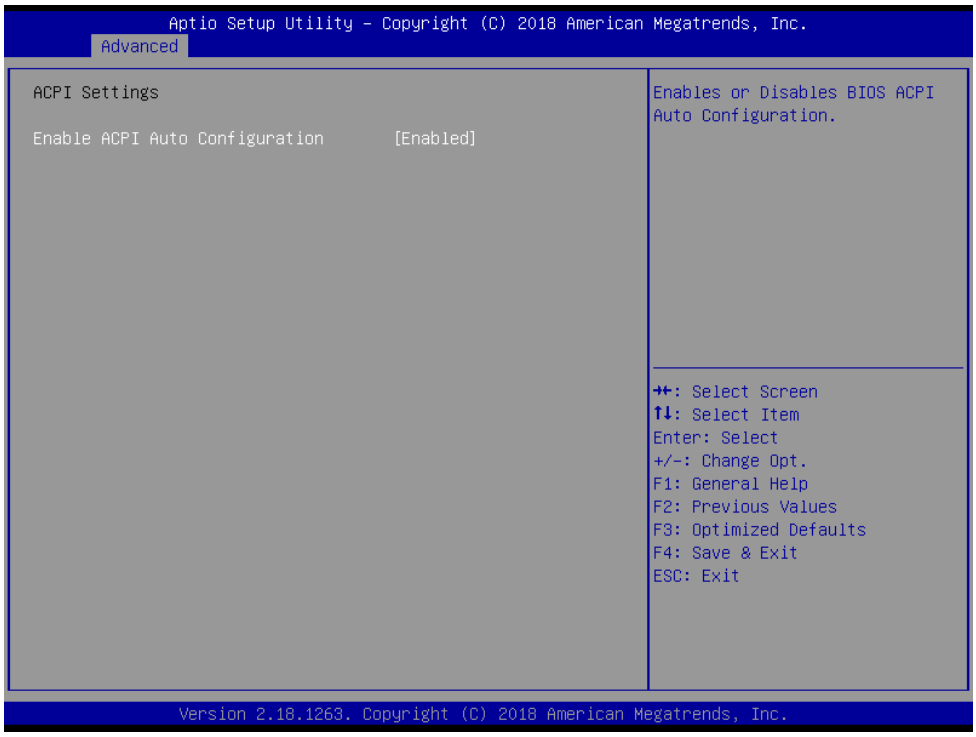
4.3.3 Trusted Computing



■ Security Device Support

Enable or disable Security Device Support.

4.3.4 ACPI Settings

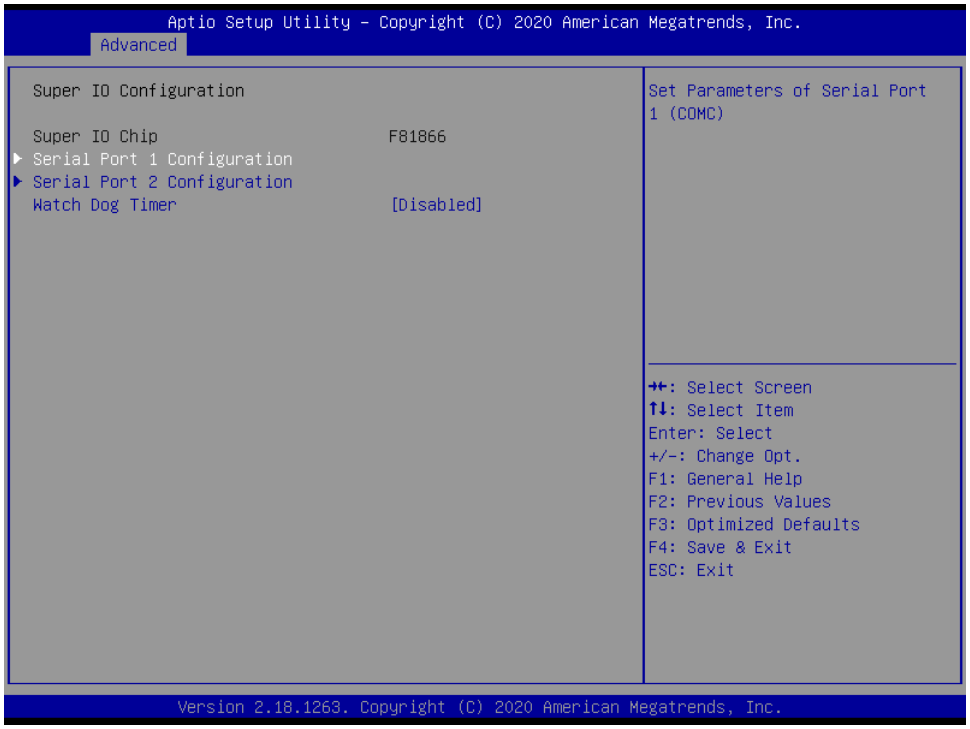


■ Enable ACPI Auto Configuration

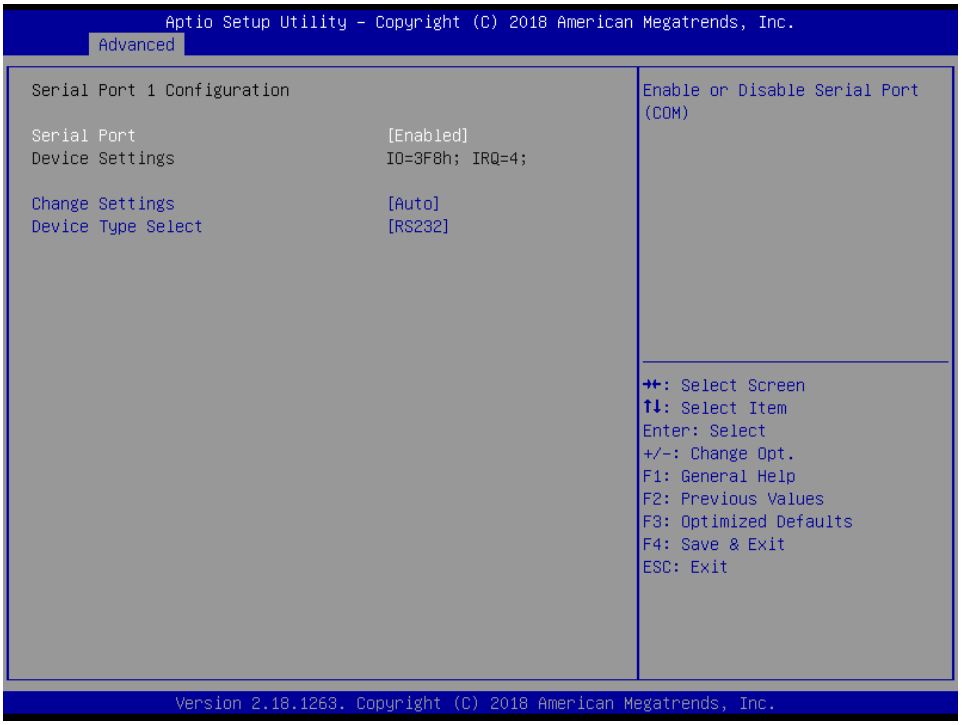
Enable or disable ACPI Auto Configuration.

4.3.5 Super IO Configuration

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

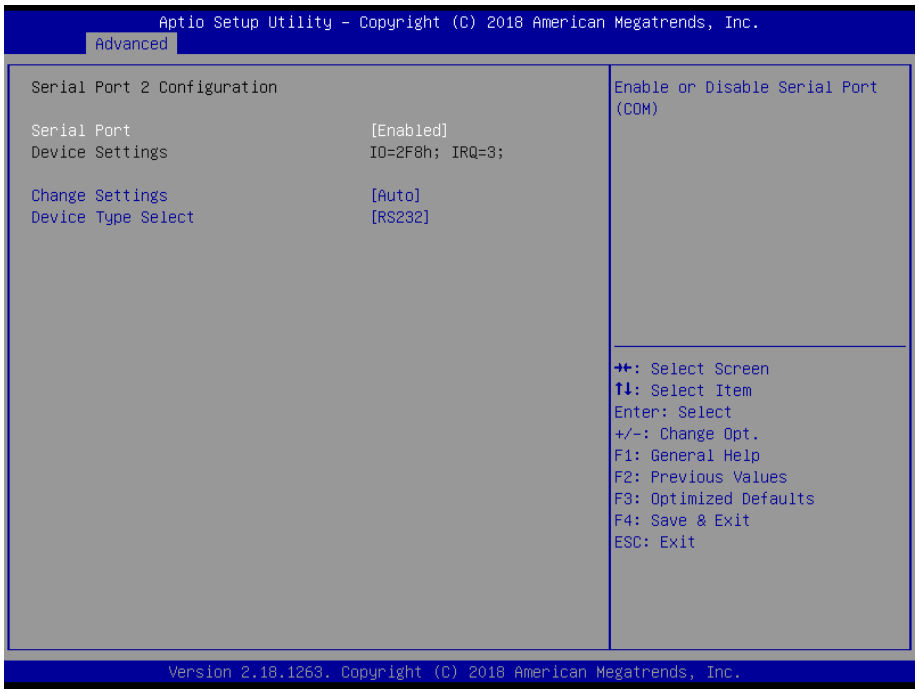


■ Serial Port 1 Configuration



- **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.

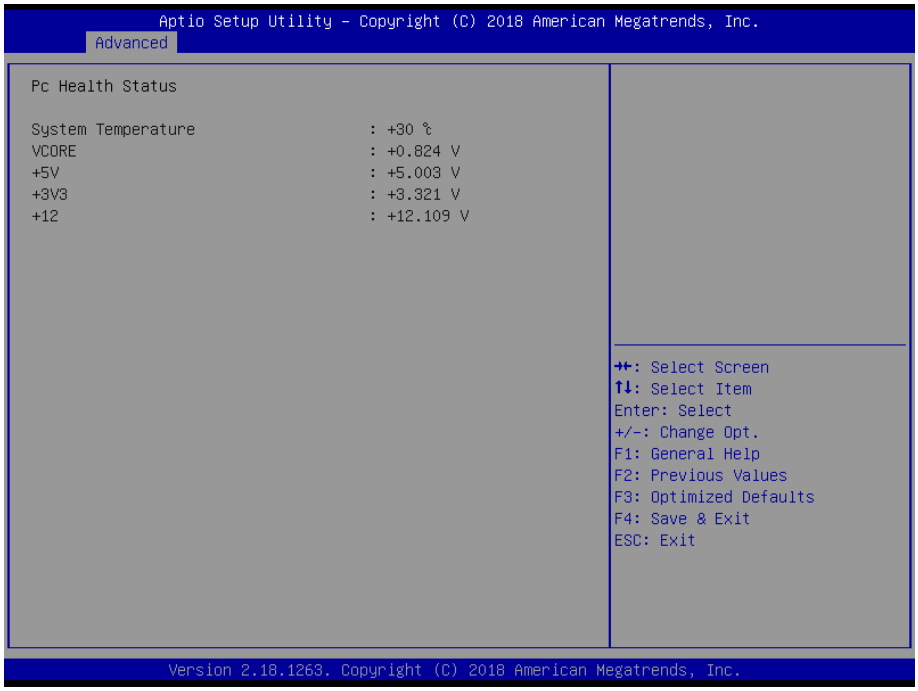
■ Serial Port 2 Configuration



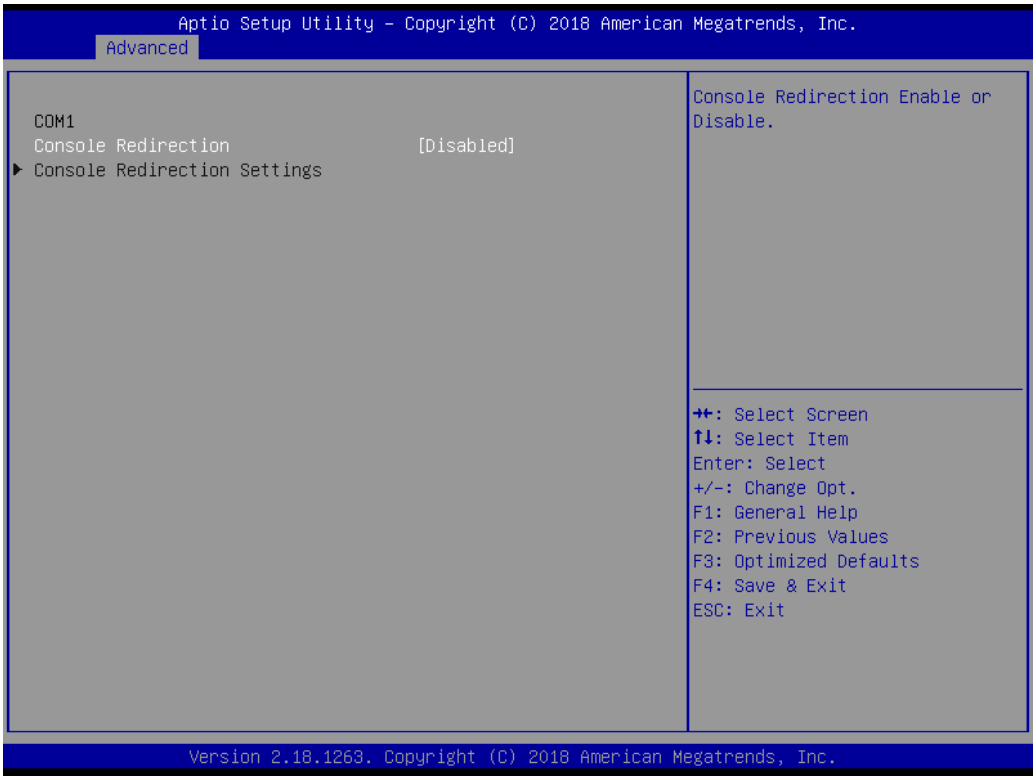
- **Serial Port**
  This item allows you to enable or disable serial port.
- **Change Settings**
  This item allows you to change the address & IRQ settings of the specified serial port.
- **Device Type Select**
  Change the Serial interface. Select <RS232>, <RS422> or <RS485> interface.

4.3.6 Hardware Monitor

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



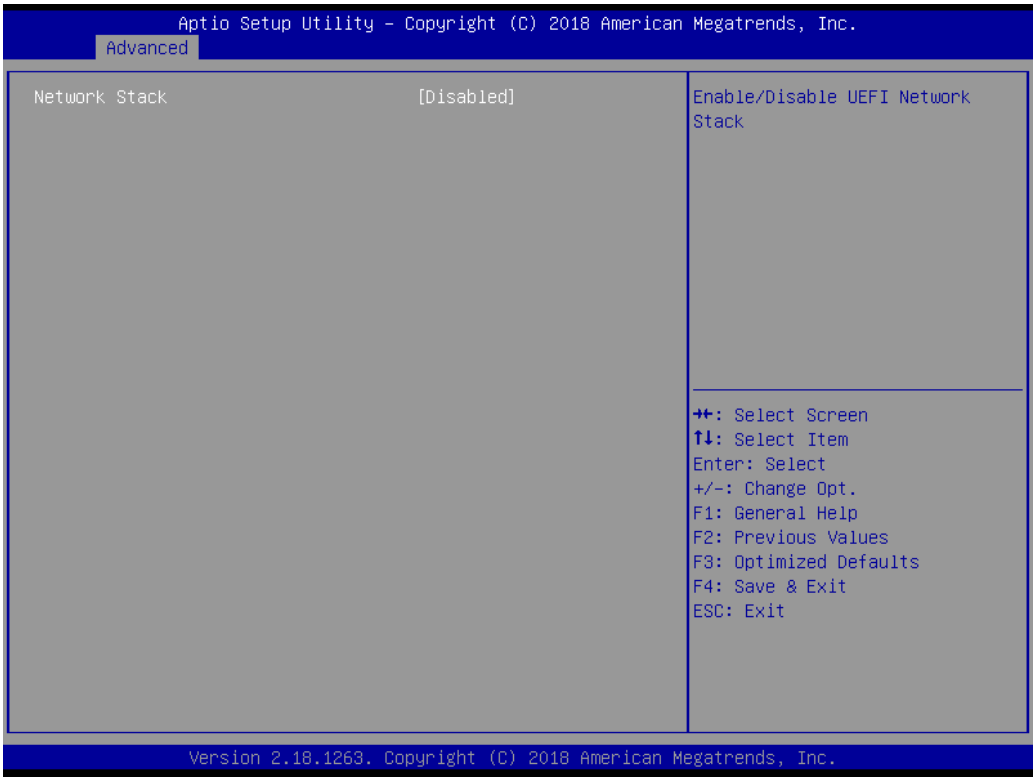
4.3.7 Serial Port Console Redirection



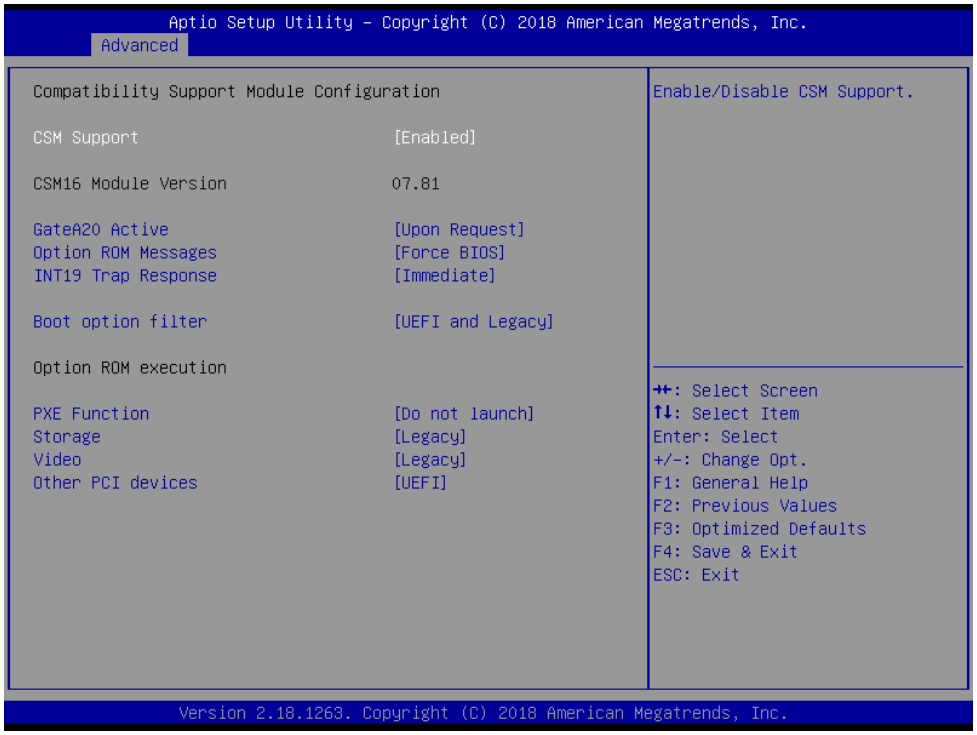
■ Console Redirection

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

4.3.8 Stack Configuration



4.3.9 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.

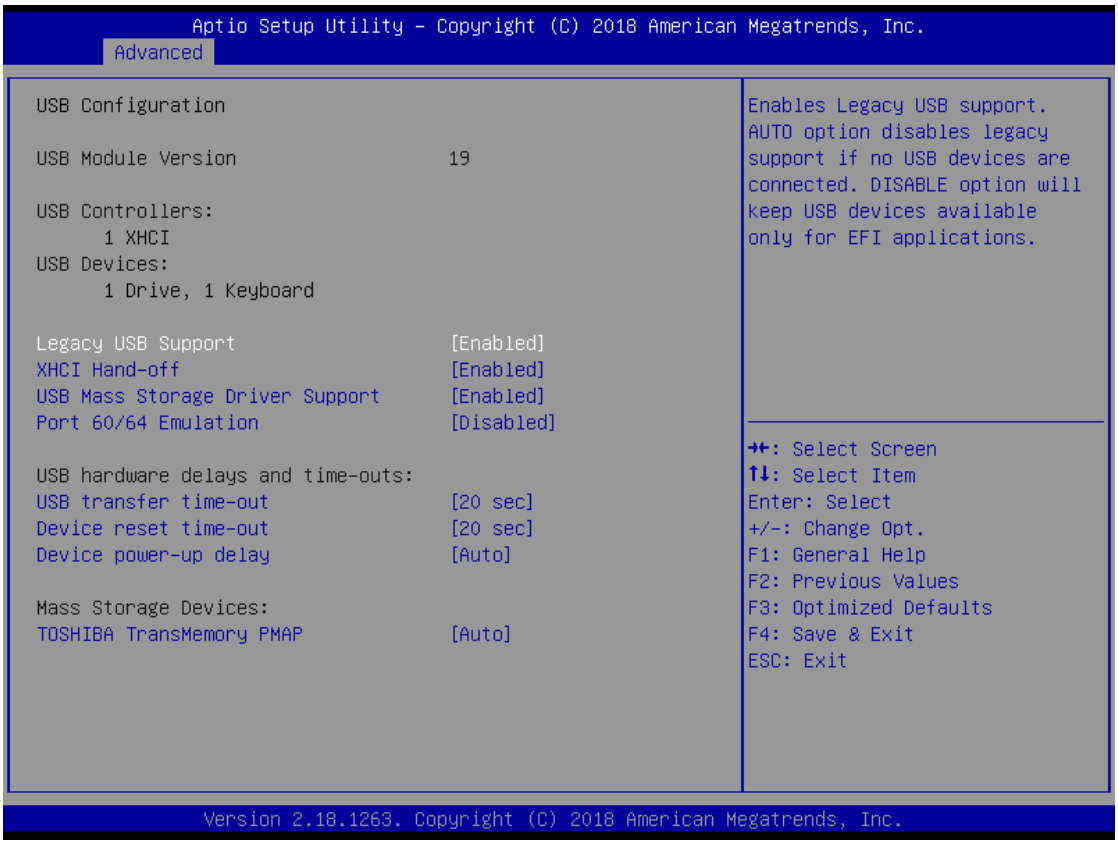
PXE Function
This item allows users to enable or disable PXE function.

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".

4.3.10 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".

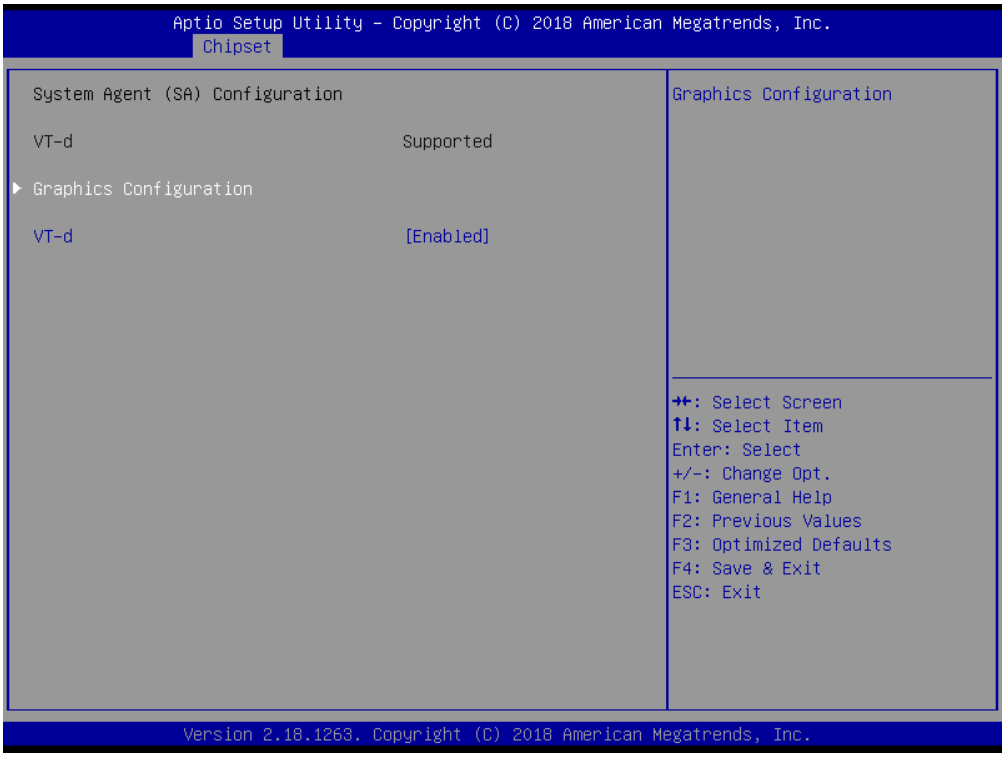
Device power-up delay
This item allows users to set different time mode for "Device power-up delay".

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.

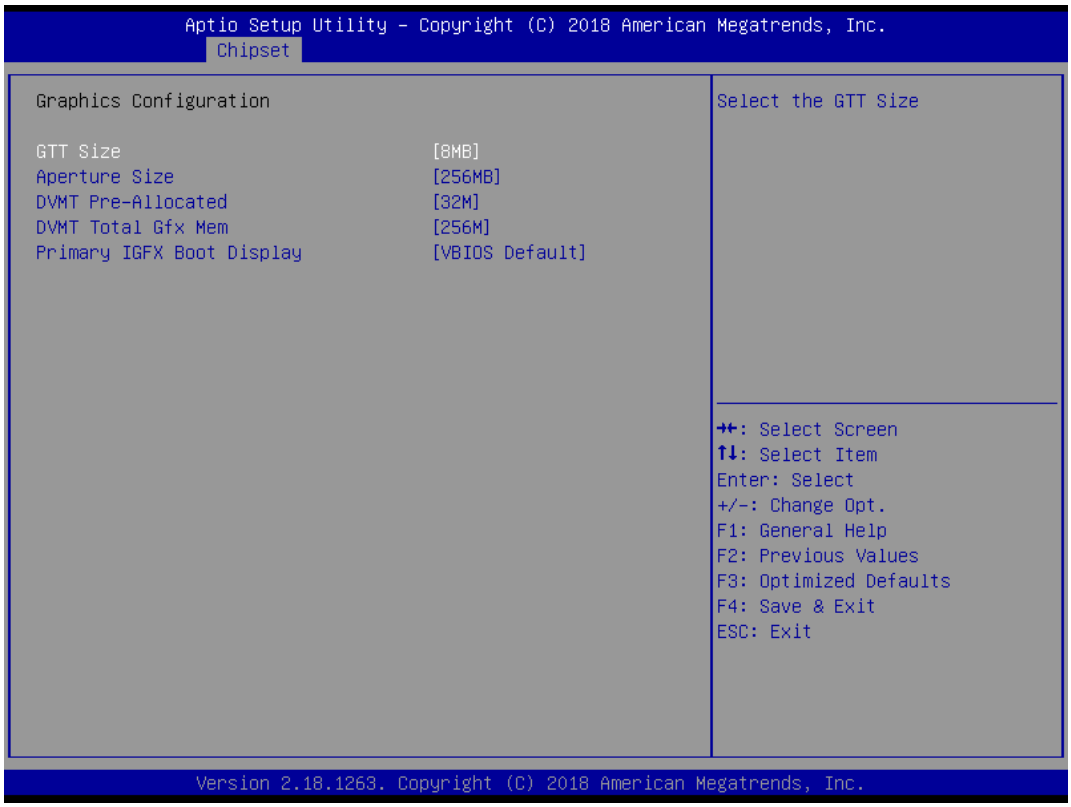
4.4.1 System Agent (SA) Configuration



■ VT-d

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

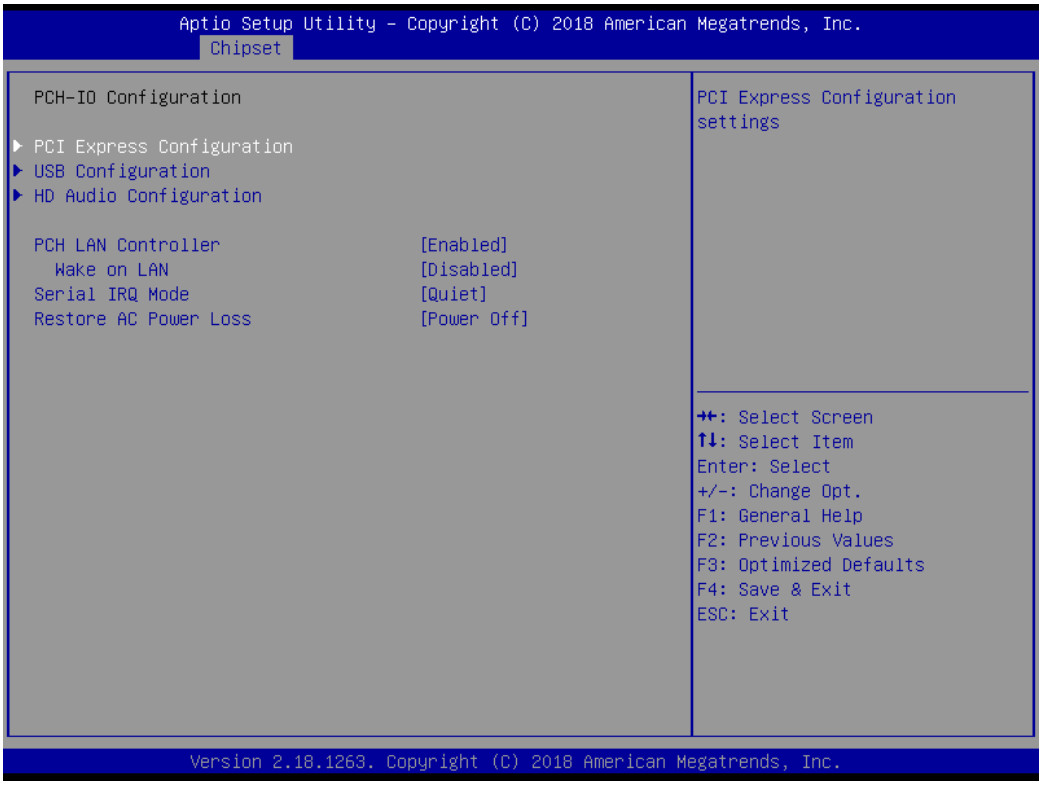
■ Graphic Configuration



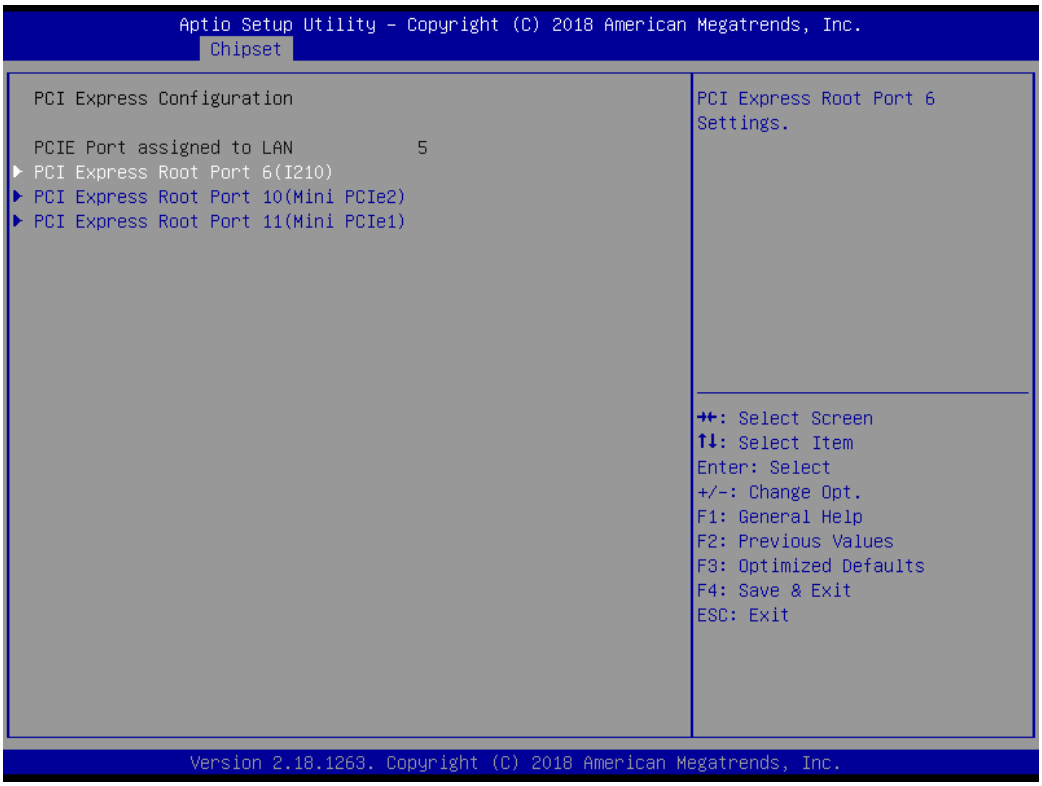
- **GTT Size**
  This item allows you to change the GTT size.
- **Aperture Size**
  Aperture size optimal between 128MB, 256MB, 512MB, 1024MB or 2048MB.
- **DVMT Pre-Allocated**
  DVMT pre-allocated (fixed) Graphics memory size optimal from 0M to 60M.
- **DVMT Total Gfx Mem**
  DVMT Total Gfx Mem optimal 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

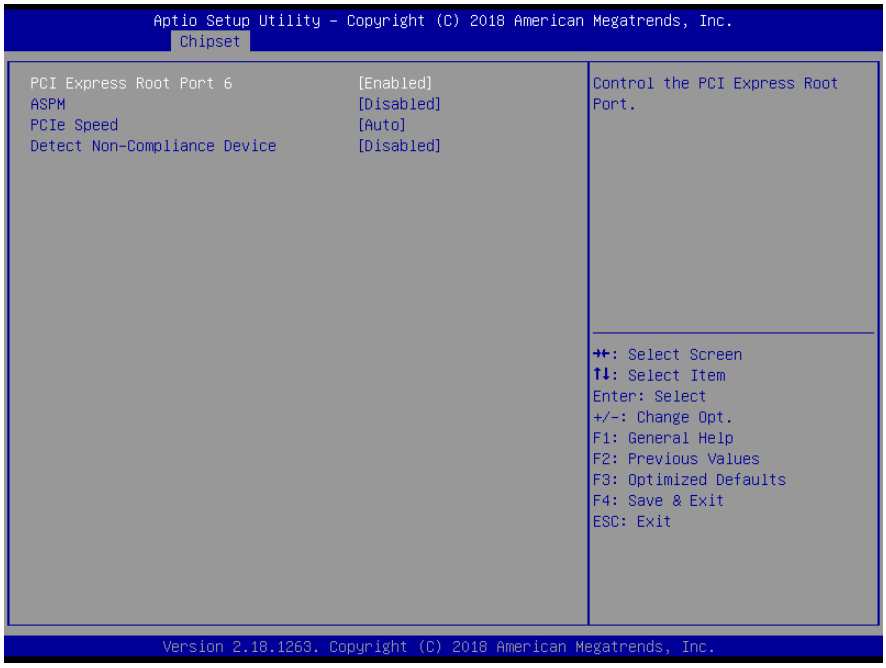
This section allows you to configure the chipset.



■ PCI Express Configuration



- **PCI Express Root Port 6 / 10 / 11**



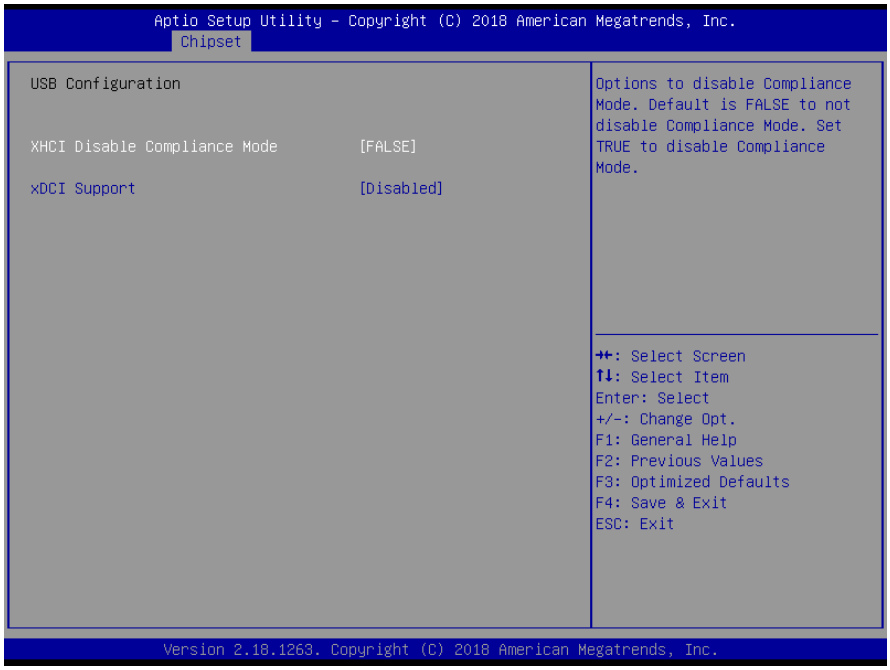
✓ **PCI Express Port 6 / 10 / 11**
This item allows you to enable or disable PCI Express Port 6 / 10 / 11 in the chipset.

✓ **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>

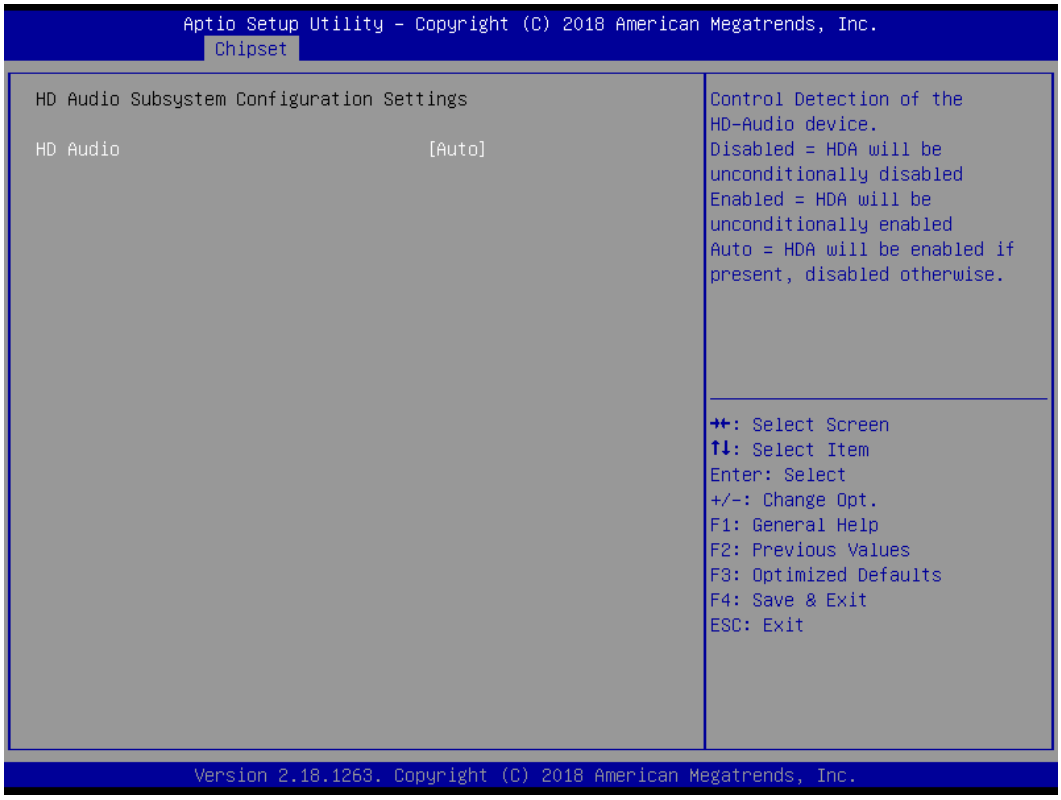
✓ **Detect Non-Compliance Device**
Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.

■ 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>.

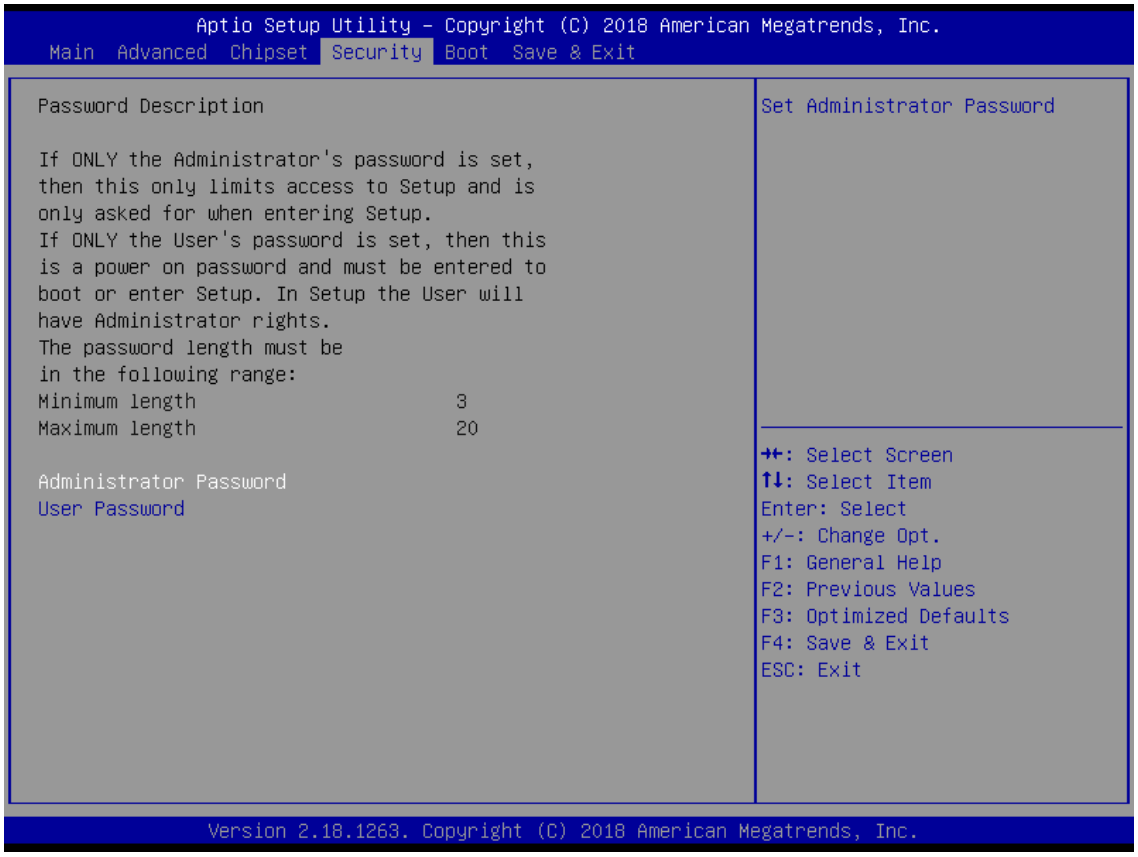
  Disabled: Azalia will be unconditionally be disabled.

  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

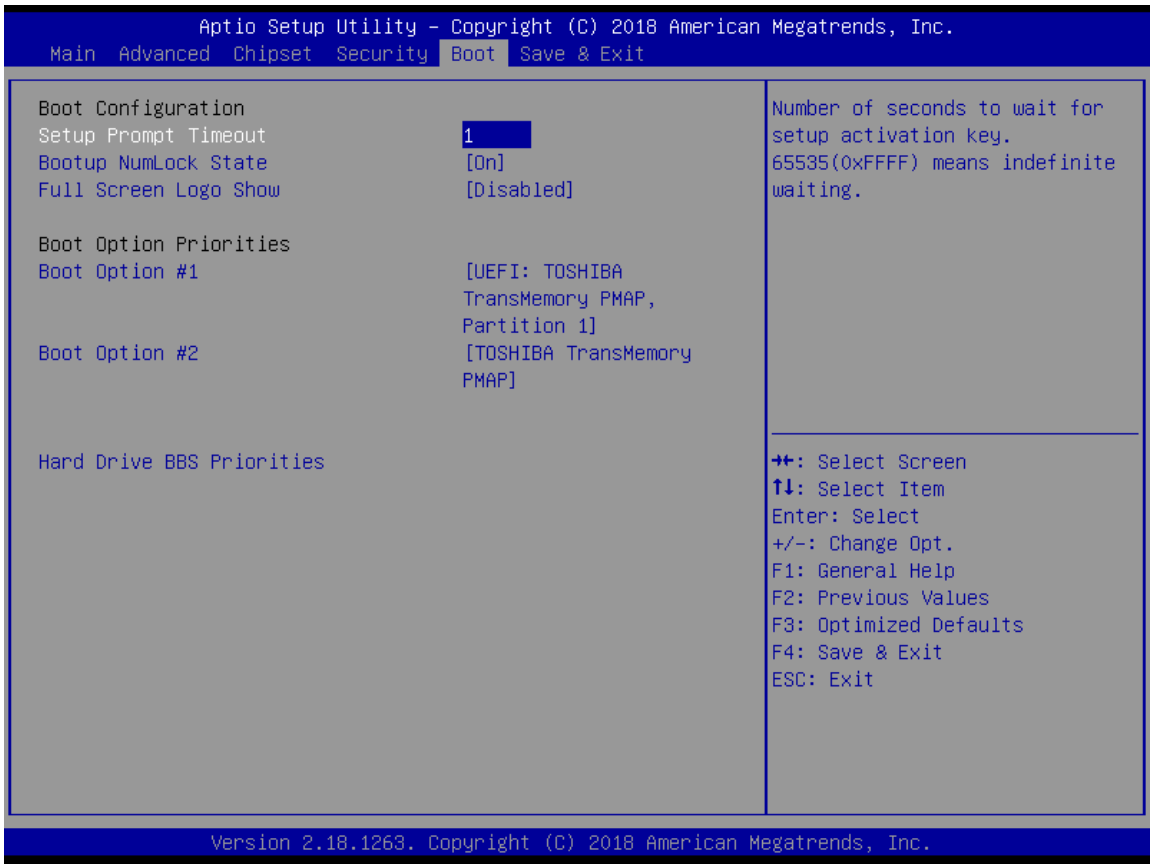
This item allows you to set Administrator Password.

■ 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

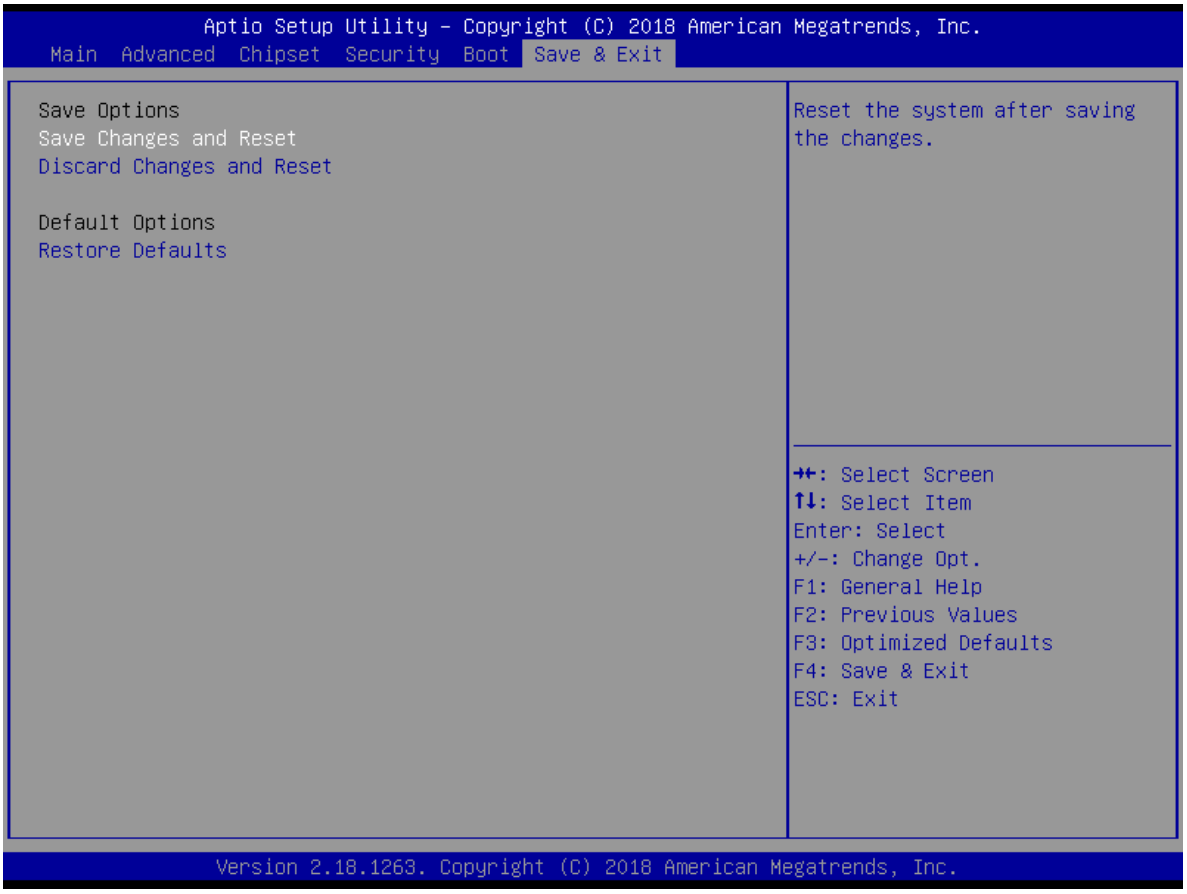
This item allows you to enable or disable Full Screen Logo Show function.

■ 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       outportb
#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

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