# USER'S MANUAL

# WCO-3000-KBL-U 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. We do not guarantee that the contents herein are complete, true, accurate or non-misleading. The information in this document is subject to change without notice.

We disclaim all warranties, express or implied, including, without limitation, those of merchantability, fitness for a particular purpose with respect to contents of this User's Manual. Users must take full responsibility for the application of the product.

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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 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**



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

| V |  |
|---|--|

CAUTION

NOTE

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



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-3000-KBL-U 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-3000-KBL-U-7300U          | Advanced IP65 Waterproof System with Intel® Core $^{\mathbb{T}M}$ i5-7300U Processor                     |
| WCO-3000-KBL-U-7100U          | Advanced IP65 Waterproof System with Intel® Core $^{\rm TM}$ i3-7100U Processor                          |
| WCO-3000-KBL-U-IP67-<br>7300U | Advanced IP67 Waterproof System with Intel® Core $^{\mathrm{TM}}$ i5-7300U Processor, 8GB RAM, 256GB SSD |
| WCO-3000-KBL-U-IP67-<br>7100U | Advanced IP67 Waterproof System with Intel® Core $^{\rm TM}$ i3-7100U Processor, 8GB RAM, 256GB 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<sup>®</sup> Core<sup>TM</sup> i5-7300U / i3-7100U, Dual Core processor, WCO-3000-KBL-U 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-3000-KBL-U 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).



Front Panel

Rear Panel

## 1.1.1 Key Features

- Intel<sup>®</sup> 7<sup>th</sup> Gen (Kaby Lake-U) Processor Core<sup>TM</sup> i5-7300U, Dual Core, 3MB Cache, up to 3.5GHz / Core<sup>TM</sup> i3-7100U, Dual Core, 3MB Cache, 2.4GHz
- 1x 260-pin DDR4 1866/2133MHz SODIMM. Max up to 16GB (WCO-3000-KBL-U Only)
- 8GB DDR4 1866/2133MHz SODIMM (WCO-3000-KBL-U-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 A-Code 8-pin, 1x USB 3.0 (waterproof connector), 2x USB 2.0 by M12 A-Code 8-pin
- 1x 2.5" SATA HDD bay with RAID 0, 1 support, and 1x mSATA (shared by 1x Mini PCIe) (WCO-3000-KBL-U only)
- 1x 256GB 2.5" SATA (WCO-3000-KBL-U-IP67 only)
- 2x Full-size mini PCIe for communication or expansion modules (WCO-3000-KBL-U only)
- 2x internal SIM socket (WCO-3000-KBL-U only)
- Full system IP65 level dustproof & waterproof (WCO-3000-KBL-U only)
- Full system IP67 level dustproof & waterproof (WCO-3000-KBL-U-IP67 only)
- 9 to 50VDC wide range power input
- -40°C to 70°C extended operating temperature

# **1.2 Hardware Specification**

#### **Processor System**

- 7<sup>th</sup> Gen Intel<sup>®</sup> Core<sup>TM</sup> i5-7300U Processor, Dual Core, 3MB Cache, up to 3.5 GHz
- 7<sup>th</sup> Gen Intel<sup>®</sup> Core<sup>TM</sup> 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-3000-KBL-U Only)
- 1x 8GB DDR4 1866/2133 MHz SODIMM (WCO-3000-KBL-U -IP67 Only)

## Display

#### Single Display

• 1x VGA (Waterproof Connector)

#### Expansion

 2x Full-size Mini PCIe Socket for Wi-Fi / GSM / Expansion Module (WCO-3000-KBL-U Only)

#### Ethernet

- 1x Intel<sup>®</sup> i219LM GbE LAN Port, Support Wake-on-LAN and PXE
- 1x Intel<sup>®</sup> 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-3000-KBL-U Only)
- 1x 256GB 2.5" SATA SSD (WCO-3000-KBL-U-IP67 Only)
- 1x mSATA Socket (shared by 1x Mini-PCIe) (WCO-3000-KBL-U Only)
- 2x internal SIM socket (WCO-3000-KBL-U Only)

#### I/O Ports

- 1x USB 3.0 (Waterproof Connector)
- 2x USB 2.0 by M12 A-Code 8-pin
- 1x RS-232/422/485 by M12 A-Code 8-pin
- 2x LAN by M12 X-Code 8-pin
- 2x Antenna Hole (WCO-3000-KBL-U 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:
  - WCO-3000-KBL-U : 4.18 kg
  - WCO-3000-KBL-U-IP67: 4.21 kg
- Construction: Extruded Aluminum with Heavy Duty Metal
- Mounting: Wall Mounting

#### **Operating System**

- Windows® 10
- Linux kernel 4.X

#### Certifications

- IP65 (WCO-3000-KBL-U-IP65 Only)
- IP67 (WCO-3000-KBL-U-IP67 Only)
- CE
- FCC Class A

# 1.3 System I/O

## 1.3.1 WCO-3000-KBL-U

### **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



# 1.3 System I/O

## 1.3.2 WCO-3000-KBL-U-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



# **1.4 Mechanical Dimensions**

## 1.4.1 WCO-3000-KBL-U



## 1.4.2 WCO-3000-KBL-U-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 A-code 8-pin

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



### LAN: LAN 1 & LAN 2 Connector

Connector Type: M12 X-code 8-pin

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | LAN1_MDIOP | 5   | LAN1_MDI3P |
| 2   | LAN1_MDION | 6   | LAN1_MDI3N |
| 3   | LAN1_MDI1P | 7   | LAN1_MDI2N |
| 4   | LAN1_MDI1N | 8   | LAN1_MDI2P |



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | LAN2_MDIOP | 5   | LAN2_MDI3P |
| 2   | LAN2_MDION | 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 A-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



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

**NARNING** 

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-3000-KBL-U 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-3000-KBL-U series. (WCO-3000-KBL-U 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.





# **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 <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></enter>            | Select                                       |  |
| <page +="" up=""></page>   | Increases the numeric value or makes changes |  |
| <page -="" down=""></page> | Decreases the numeric value or makes changes |  |
| <f1></f1>                  | General Help                                 |  |
| <f2></f2>                  | Previous Value                               |  |
| <f3></f3>                  | Load Optimized Defaults                      |  |
| <f4></f4>                  | Save Configuration and Exit                  |  |
| <tab></tab>                | Select Setup Fields                          |  |
| <esc></esc>                | Exit BIOS Setup                              |  |

#### Main Setup

The main menu lists the setup functions you can make changes to. You can use the arrow keys (  $\uparrow \downarrow$  ) 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 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.

| Aptio Setup Utility<br>Main Advanced Chipset Security   | – Copyright (C) 2018 American<br>y Boot Save & Exit   | n Megatrends, Inc.   |
|---|---|--|
| BIOS Information<br>BIOS Vendor<br>Core Version<br>Compliancy<br>Project Version<br>Build Date and Time<br>Access Level | American Megatrends<br>5.12<br>UEFI 2.6; PI 1.4<br>RC340R01 x64<br>12/25/2018 14:02:28<br>Administrator | Choose the system default<br>language  |
| Processor Information<br>Name<br>Type<br>Speed  | Skylake ULT<br>Intel(R) Celeron(R) CPU<br>3955U @ 2.00GHz<br>2000 버너?                                   |  |
| Number of Processors<br>Microcode Revision  | 2Core(s) / 2Thread(s)<br>C2   | ↔: Select Screen<br>↑↓: Select Item<br>Enter: Select   |
| Total Memory<br>Memory Frequency<br>ME FW Version<br>ME Firmware SKU  | 4096 MB<br>2133 MHz<br>11.8.50.3399<br>Corporate SKU  | +/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit |
| System Language   | [English]   | ESC: Exit  |
| System Date<br>System Time  | [Mon 07/15/2019]<br>[18:58:43]  |  |
| Version 2.18.1263.  | Copyright (C) 2018 American t   | Megatrends. Inc.   |



#### 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

| Aptio Setup Utility – Copyright (C) 2018 American<br>Main Advanced Chipset Security Boot Save & Exit  | Megatrends, Inc.   |
|---|--|
| CPU Configuration PCH-FW Configuration SATA And RST Configuration Trusted Computing ACPI Settings Super IO Configuration Hardware Monitor Serial Port Console Redirection Network Stack Configuration CSM Configuration USB Configuration | CPU Configuration Parameters<br>++: Select Screen<br>11: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |
| Version 2.18.1263. Copyright (C) 2018 American Me   | egatrends, Inc.  |

## 4.3.1 CPU Configuration

| Aptio Setup Utility -<br>Advanced          | - Copyright (C) 2018 Americar              | Megatrends, Inc.  |
|--|--|---|
| CPU Configuration                          |  | When enabled, a VMM can<br>utilize the additional           |
| Туре                                       | Intel(R) Celeron(R) CPU<br>3955U @ 2.00GHz | hardware capabilities provided<br>by Vanderpool Technology. |
| Speed                                      | 2000 MHz                                   |   |
| L1 Data Cache                              | 32 KB x 2                                  |   |
| L1 Instruction Cache                       | 32 KB × 2                                  |   |
| L2 Cache                                   | 256 KB x 2                                 |   |
| L3 Cache                                   | 2 MB                                       |   |
|  | Supported                                  |   |
| SMX/TXT                                    | Not Supported                              |   |
|  |  |   |
| Intel (VMX) Virtualization                 | [Enabled]                                  | ↔: Select Screen  |
| Technology                                 |  | ↑↓: Select Item   |
| Active Processor Cores                     | [A11]                                      | Enter: Select   |
| Intel(R) SpeedStep(tm)                     | [Enabled]                                  | +/-: Change Opt.  |
| Turbo Mode                                 | [Enabled]                                  | F1: General Help  |
| U states                                   | [Enabled]                                  | F2: Previous Values   |
| Ennanceu d-States<br>Packade C State Limit | [Enabled]                                  | F3: Uptimized Detaults                                      |
| Tackage & State Limit                      | [Huto]                                     | ESC: Exit   |
|  |  | LOOT LAT  |
|  |  |   |
|  |  |   |
|  |  |   |
| Vencion 2 40 4962 (                        | Conuniabt (C) 2010 Amoniaco t              | logataanda Taa  |
| VENSIUN 2.18.1263. (                       | sopyright (s) 2018 AMERICAN M              | legatrenus, Inc.  |

#### 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 CO/ C1, C2, C3, C6, C7, C7s, C8 and No Limit.

## 4.3.2 PCH-FW Configuration



## 4.3.3 SATA and RST Configuration

| Aptio Setup Utility -<br>Chipset   | Copyright (C) 2018 Americar  | n Megatrends, Inc.   |
|--|--|--|
| SATA And RST Configuration   |  | Enable/Disable SATA Device.  |
| SATA Controller(s)<br>SATA Mode Selection  | [Enabled]<br>[AHCI]  |  |
| <ul> <li>P0: Serial ATA Port 1</li> <li>Software Preserve</li> <li>Port 0</li> <li>Hot Plug</li> <li>P1: Serial ATA Port 2</li> <li>Software Preserve</li> <li>Port 1</li> <li>P2: Mini Serial ATA Port 1 / CFAST</li> </ul> | Empty<br>Unknown<br>[Enabled]<br>[Enabled]<br>Empty<br>Unknown<br>[Enabled]<br>Empty |  |
| Software Preserve<br>Port 2  | Unknown<br>[Enabled]   | ++: Select Screen<br>f4: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |
|  |  |  |
| Version 2.18.1263. Co  | ppyright (C) 2018American ⊧  | legatrends, Inc.   |

#### 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.

| Aptio Setup Utility -<br>Chipset   | - Copyright (C)   | 2019 American            | Megatrends, Inc.  |
|--|---|--------------------------|---|
| SATA And RST Configuration   |   |                          | Determines how SATA   |
| SATA Controller(s)<br>SATA Mode Selection<br>PO:Serial ATA Port O<br>Software Preserve<br>Port O<br>P1:Serial ATA Port 1<br>Software Preserve<br>Port 1<br>P2:Mini Serial ATA Port 1<br>Software Preserve<br>Port 2<br>P3:Mini Serial ATA Port 2<br>Software Preserve<br>Port 3<br>P4:CFAST<br>Software Preserve<br>Port 4 | [Enabled]<br>[RAID]<br>Empty<br>Unknown<br>[Enabled]<br>Empty<br>Unknown<br>[Enabled]<br>2.5" SATA SSI<br>SUPPORTED<br>[Enabled]<br>Empty<br>Unknown<br>[Enabled] | 0 (64.0GB)<br>0 (64.0GB) | <pre>&gt;</pre> |
| Version 2.18.1263. 0   | Copyright (C) 20  | )19 American M           | egatrends, Inc.   |

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

| Aptio Setup Utility – Copyright (C) 2019 Amer<br>Main Advanced Chipset Security Boot Save & Exit   | ican Megatrends, Inc.   |
|--|---|
| <ul> <li>CPU Configuration</li> <li>PCH-FW Configuration</li> <li>SATA And RST Configuration</li> <li>Intel(R) Rapid Storage Technology</li> <li>Trusted Computing</li> <li>ACPI Settings</li> <li>NCT6106D Super IO Configuration</li> <li>NCT6106D HW Monitor</li> <li>Serial Port Console Redirection</li> <li>Network Stack Configuration</li> <li>CSM Configuration</li> <li>USB Configuration</li> </ul> | This formset allows the user<br>to manage RAID volumes on the<br>Intel(R) RAID Controller   |
|  | <pre>fl: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre> |
| Version 2.18.1263. Copyright (C) 2019 Americ:  | an Megatrends, Inc.   |

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

| Aptio Setup Utili<br>Advanced  | ty – Copyright (C) 2018 An | merican Megatrends, Inc.  |
|--|----------------------------|---|
| Configuration<br>Security Device Support<br>NO Security Device Found | (Disable)                  | Enables or Disables BIDS<br>support for security device.<br>O.S. will not show Security<br>Device. TCG EFI protocol and<br>INT1A interface will not be<br>available.<br>++: Select Screen<br>11: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help |
|  |                            | F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit   |
| Version 2.18.126   | 3. Copyright (C) 2018 Amer | rican Megatrends, Inc.  |

#### 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.

| Aptio Setup Utility -<br>Advanced   | Copyright (C) 2018 American  | Megatrends, Inc.  |
|---|------------------------------|---|
| Super IO Configuration  |                              | Set Parameters of Serial Port<br>1 (COMA)   |
| Super IO Chip<br>> Serial Port 1 Configuration<br>> Serial Port 2 Configuration<br>> Serial Port 3 Configuration<br>> Serial Port 4 Configuration<br>> Serial Port 5 Configuration<br>> Serial Port 6 Configuration | F81866                       |   |
| Watch Dog Timer   | [Disabled]                   |   |
|   |                              | <pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre> |
| Version 2.18.1263. C  | opyright (C) 2018 American M | egatrends, Inc.   |

#### Serial Port 1 Configuration

| Aptio Setup Utility<br>Advanced       | – Copyright (C) 2018 Americ  | an Megatrends, Inc.  |
|---------------------------------------|------------------------------|--|
| Serial Port 1 Configuration           |                              | Enable or Disable Serial Port  |
| Serial Port<br>Device Settings        | [Enabled]<br>IO=3F8h; IRQ=4; |  |
| Change Settings<br>Device Type Select | [Auto]<br>[RS232]            |  |
|                                       |                              | ++: Select Screen<br>14: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |
| Version 2.18.1263.                    | Copyright (C) 2018 American  | Megatrends, Inc.   |

#### • 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

| Aptio Setup Utilit<br>Advanced        | ty – Copyright (C) 2018 Amer. | ican Megatrends, Inc.   |
|---------------------------------------|-------------------------------|---|
| Serial Port 2 Configuration           |                               | Enable or Disable Serial Port   |
| Serial Port<br>Device Settings        | [Enabled]<br>IO=2F8h; IRQ=3;  | (661)   |
| Change Settings<br>Device Type Select | [Auto]<br>[RS232]             |   |
|                                       |                               |   |
|                                       |                               | <pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit</pre> |
| Version 2.18.126                      | 3. Copyright (C) 2018 America | an Megatrends, Inc.   |

#### • 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

| Aptio Setup Utility - (<br>Advanced   | Copyright (C) 2018 American  | Megatrends, Inc.                                      |
|---------------------------------------|------------------------------|---|
| Serial Port 3 Configuration           |                              | Enable or Disable Serial Port                         |
| Serial Port<br>Device Settings        | [Enabled]<br>IO=3E8h; IRQ=7; | (600)   |
| Change Settings<br>Device Type Select | [Auto]<br>[RS232]            |   |
|                                       |                              |   |
|                                       |                              |   |
|                                       |                              | ++: Select Screen<br>14: Select Item                  |
|                                       |                              | r/ter: Select<br>+/−: Change Opt.<br>F1: General Help |
|                                       |                              | F2: Previous Values<br>F3: Optimized Defaults         |
|                                       |                              | ESC: Exit   |
|                                       |                              |   |
| Version 2.18.1263. Co                 | oyright (C) 2018 American M  | egatrends, Inc.                                       |

• 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 is a set of the set of th

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

| Aptio Setup Utility<br>Advanced       | – Copyright (C) 2018 Ameri   | can Megatrends, Inc.  |
|---------------------------------------|------------------------------|---|
| Serial Port 5 Configuration           |                              | Enable or Disable Serial Port   |
| Serial Port<br>Device Settings        | [Enabled]<br>IO=3E0h; IRQ=7; |   |
| Change Settings<br>Device Type Select | [Auto]<br>[RS232]            |   |
|                                       |                              | ++: Select Screen   |
|                                       |                              | Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>E4: Save 8 Evit |
|                                       |                              | ESC: Exit   |
| Version 2.18.1263.                    | Copyright (C) 2018 America   | n Megatrends, Inc.  |

• 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.

| Aptio Setup Utility -<br>Advanced                 | - Copyright (C) 2018 Americar                                    | n Megatrends, Inc.   |
|---|--|--|
| Pc Health Status                                  |  |  |
| System Temperature<br>VCORE<br>+5V<br>+3V3<br>+12 | : +28 %<br>: +0.832 V<br>: +5.045 V<br>: +3.321 V<br>: +12.109 V | ++: Select Screen<br>11: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |
| Version 2 18 1263 (                               | Conuright (C) 2018 American M                                    | Jegatrends Inc   |

## 4.3.9 Serial Port Console Redirection

| Aptio Setup<br>Advanced                                     | Utility – Copyright (C) 2018 America   | n Megatrends, Inc.  |
|---|--|---|
| COM1<br>Console Redirection<br>▶ Console Redirection Settin | [Disabled]<br>ngs                      | Console Redirection Enable or<br>Disable.   |
|   |  | <pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre> |
| Version 2.:   | 18.1263. Copyright (C) 2018 American H | Megatrends, Inc.  |

### Console Redirection

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

## 4.3.10 Stack Configuration

| Network Stack       [Disabled]       Enable/Disable UEFI Network         Stack       **: Select Screen       **: Select Item         **: Select Item       Enter: Select       */-: Change Opt.         F1: General Help       F2: Previous Values       F3: Optimized Defaults         F4: Save & Exit       ESC: Exit       ESC: Exit | Aptio Setup<br>Advanced | o Utility – Copyright (C) 2018 Ameri | can Megatrends, Inc.   |
|---|-------------------------|--------------------------------------|--|
| ++: Select Screen<br>14: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit  | Network Stack           | [Disabled]                           | Enable/Disable UEFI Network<br>Stack   |
|   |                         |                                      | ++: Select Screen<br>11: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |

## 4.3.11 CSM Configuration

| Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.<br>Advanced |   |   |
|--|---|---|
| Compatibility Support Module Configu   | ration  | Enable/Disable CSM Support.   |
| CSM Support  |   |   |
| CSM16 Module Version   | 07.81   |   |
| GateA20 Active<br>Option ROM Messages<br>INT19 Trap Response                   | [Upon Request]<br>[Force BIOS]<br>[Immediate]     |   |
| Boot option filter   | [UEFI and Legacy]                                 |   |
| Option ROM execution   |   |   |
| PXE Function<br>Storage<br>Video<br>Other PCI devices                          | [Do not launch]<br>[Legacy]<br>[Legacy]<br>[UEFI] | <pre>++: Select Screen<br/>14: Select Item<br/>Enter: Select<br/>+/-: Change Opt.<br/>F1: General Help<br/>F2: Previous Values<br/>F3: Optimized Defaults<br/>F4: Save &amp; Exit<br/>ESC: Exit</pre> |
| Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.                |   |   |

#### 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

| Aptio Setup Utility –<br>Advanced                                      | Copyright (C) 2018 American         | Megatrends, Inc.   |
|--|-------------------------------------|--|
| USB Configuration  |                                     | Enables Legacy USB support.                              |
| USB Module Version   | 19                                  | support if no USB devices are                            |
| USB Controllers:<br>1 XHCI   |                                     | keep USB devices available<br>only for EFI applications. |
| USB Devices:<br>1 Drive, 1 Keyboard                                    |                                     |  |
| Legacy USB Support<br>XHCI Hand–off<br>USB Mass Storage Driver Support | [Enabled]<br>[Enabled]<br>[Enabled] |  |
| Port 60/64 Emulation   | [Disabled]                          | →++: Select Screen                                       |
| USB hardware delays and time-outs:                                     | [20, 222]                           | ↑↓: Select Item  |
| Device reset time-out  | [20 sec]                            | +/-: Change Opt.   |
| Device power-up delay  | [Auto]                              | F1: General Help<br>F2: Previous Values                  |
| Mass Storage Devices:  |                                     | F3: Optimized Defaults                                   |
| TOSHIBA TransMemory PMAP   | [Auto]                              | F4: Save & Exit<br>ESC: Exit                             |
|  |                                     |  |
|  |                                     |  |
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#### 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.

| Aptio Setup Utility – Copyright (C) 2018 Americar<br>Main Advanced <mark>Chipset</mark> Security Boot Save & Exit | n Megatrends, Inc.   |
|---|--|
| <ul> <li>System Agent (SA) Configuration</li> <li>PCH-IO Configuration</li> </ul>                                 | System Agent (SA) Parameters<br>++: Select Screen<br>14: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |
| Version 2.18.1263. Copyright (C) 2018 American N  | Megatrends, Inc.   |

## 4.4.1 System Agent (SA) Configuration

| System Agent (SA) Co   | nfiguration | Graphics Configuration                    |
|------------------------|-------------|---|
| VT-d                   | Supported   |   |
| ▶ Graphics Configurati | on          |   |
| VT-d                   | [Enabled]   |   |
|                        |             |   |
|                        |             |   |
|                        |             |   |
|                        |             | ++: Select Screen                         |
|                        |             | Enter: Select                             |
|                        |             | +/–: Change Opt.<br>F1: General Help      |
|                        |             | F2: Previous Values                       |
|                        |             | F3: Optimized Defaults<br>F4: Save & Exit |
|                        |             | ESC: Exit                                 |
|                        |             |   |
|                        |             |   |
|                        |             |   |

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

#### Graphic Configuration

| Aptio Setup Utility —<br>Chipset   | Copyright (C) 2018 American                            | Megatrends, Inc.  |
|--|--|---|
| Graphics Configuration   |  | Select the GTT Size   |
| GTT Size<br>Aperture Size<br>DVMT Pre-Allocated<br>DVMT Total Gfx Mem<br>Primary IGFX Boot Display | [8HB]<br>[256MB]<br>[32M]<br>[256M]<br>[VBIOS Default] | <pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre> |
| Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.                                    |  |   |

• 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.

| Aptio Setup L<br>Chipset   | Jtility – Copyright                             | (C) 2018 American | Megatrends, Inc.  |
|--|---|-------------------|---|
| PCH-IO Configuration   |   |                   | PCI Express Configuration settings  |
| <ul> <li>PCI Express Configuration</li> <li>USB Configuration</li> <li>HD Audio Configuration</li> </ul> |   |                   |   |
| PCH LAN Controller<br>Wake on LAN<br>Serial IRQ Mode<br>Restore AC Power Loss                            | [Enabled]<br>[Disabled]<br>[Quiet]<br>[Power Of | Ð                 |   |
|  |   |                   | <pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre> |
| Version 2.18   | 3.1263. Copyright (C                            | ) 2018 American M | egatrends. Inc.   |

## PCI Express Configuration

| Aptio Setup Utility - Cop<br>Chipset  | yright (C) 2018 American  | Megatrends, Inc.  |
|---|---------------------------|---|
| <pre>PCI Express Configuration &gt; PCI Express Root Port 1(PCIEx4) PCIE Port assigned to LAN 5 &gt; PCI Express Root Port 6(I210) &gt; PCI Express Root Port 9(Lan_Module) &gt; PCI Express Root Port 10(Mini PCIe2) &gt; PCI Express Root Port 11(Mini PCIe1)</pre> |                           | PCI Express Root Port 1<br>Settings.  |
|   |                           | <pre>++: Select Screen t1: Select Item Enter: Select +/-: Change Opt. f1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre> |
| Version 2.18.1263. Copyr  | ight (C) 2018 American Me | egatrends, Inc.   |

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

|               | Aptio Setup Utility – Copyright (C) 2018 America<br>Chipset | n Megatrends, Inc.  |
|---------------|---|---|
| HD Audio Subs | system Configuration Settings                               | Control Detection of the  |
| HD Audio      | [Auto]  | HD-Audio device.<br>Disabled = HDA will be<br>unconditionally disabled<br>Enabled = HDA will be<br>unconditionally enabled<br>Auto = HDA will be enabled if<br>present, disabled otherwise.<br>++: Select Screen<br>14: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |
|               | Version 2.18.1263. Copyright (C) 2018 American (            | Megatrends, Inc.  |

### • 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.

| Aptio Setup<br>Main Advanced Chipset   | J <mark>tility – Copyright (C) 2018 American</mark><br>Security Boot Save & Exit | n Megatrends, Inc.  |
|--|--|---|
| Password Description<br>If ONLY the Administrator's<br>then this only limits access<br>only asked for when enterin<br>If ONLY the User's password                  | s password is set,<br>ss to Setup and is<br>ng Setup.<br>d is set, then this     | Set Administrator Password  |
| is a power on password and<br>boot or enter Setup. In Se<br>have Administrator rights.<br>The password length must be<br>in the following range:<br>Minimum length | must be entered to<br>tup the User will<br>e<br>3                                |   |
| Maximum length<br>Administrator Password<br>User Password  | 20   | <pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults</pre> |
| Vancian 2.1  | 1269 Comunicipit (C) 2018 American k   | F4: Save & Exit<br>ESC: Exit  |

#### 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.

| Aptio Setup Utility –<br>Main Advanced Chipset Security                                     | Copyright (C) 2018 American<br>Boot Save & Exit     | Megatrends, Inc.  |
|---|---|---|
| Boot Configuration<br>Setup Prompt Timeout<br>Bootup NumLock State<br>Full Screen Logo Show | <mark>1</mark><br>[On]<br>[Disabled]                | Number of seconds to wait for<br>setup activation key.<br>65535(0xFFFF) means indefinite<br>waiting.  |
| Boot Option Priorities<br>Boot Option #1  | [UEFI: TOSHIBA<br>TransMemory PMAP,<br>Partition 1] |   |
| Boot Option #2  | [TOSHIBA TransMemory<br>PMAP]                       |   |
| Hard Drive BBS Priorities   |   | <pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre> |
| Version 2.18.1263. C  | opuright (C) 2018 American M                        | legatrends. Inc.  |

#### 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.

| Aptio Setup Utility – Copyright (C) 2018 American<br>Main Advanced Chipset Security Boot Save & Exit | Megatrends, Inc.   |
|--|--|
| Save Options<br>Save Changes and Reset<br>Discard Changes and Reset                                  | Reset the system after saving<br>the changes.  |
| Default Options<br>Restore Defaults  |  |
|  |  |
|  | ↔: Select Screen<br>†↓: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help |
|  | F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit                |
|  |  |

#### 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.



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<br>bit will be set to 1. Write a 1 to this bit will<br>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#<br>0: 1 ms 1: 25 ms<br>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          | 0xA07 |
| #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   |       |

#### Appendix – WDT & GPIO

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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