eBOX625-312-FL

Embedded System

User's Manual

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Safety Precautions

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

1. The eBOX625-312-FL does not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.

2. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.

3. Disconnect the power cord from the eBOX625-312-FL 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 eBOX625-312-FL is properly grounded.

4. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

5. Turn OFF the system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the screen.

6. Do not leave this equipment in an uncontrolled environment where the storage temperature is below -40℃ or above 80℃. It may damage the equipment.

7. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

   ● Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.

   ● When handling boards and components, wear a wrist-grounding strap, available from most electronic component stores.

8. Note!! Caution with touch! eBOX625-312-FL will be hot when it's on.

Classification

1. Degree of production against electric shock : not classified
2. Degree of protection against the ingress of water : IP40
3. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
4. Mode of operation : Continuous

General Cleaning Tips

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

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

Cleaning Tools:

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

Keep in mind that some components in your computer may only be able to be cleaned using a product designed for cleaning that component, if this is the case it will be mentioned in the cleaning.

● Cloth: A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used on most hardware as well, we still recommend you to rub it with a piece of cloth.

● Water or rubbing alcohol: You may moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer. Unknown solvents may be harmful to the plastics parts.

● Vacuum cleaner: Absorb the dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause circuitry to corrode.

● Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas in your keyboard, mouse, and other locations.

● Foam swabs: Whenever possible it is better to use lint free swabs such as foam swabs.

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

Please follow the steps below:
1. Close all application programs
2. Close operating software
3. Turn off power switch
4. Remove all device
5. Pull out power cable

Scrap Computer Recycling

If the computer equipment's needs the maintenance or are beyond repair, we strongly recommended that you should inform your Axiomtek distributor as soon as possible for the suitable solution. For the computers that are no longer useful or no longer working well, please contact your Axiomtek distributor for recycling and we will make the proper arrangement.

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CHAPTER 1
INTRODUCTION

This chapter contains general information and detailed specifications of the eBOX625-312-FL. The Chapter 1 includes the following sections:

- General Description
- System Specification
- Dimensions
- I/O Outlets
- Packing List
- Model List

1.1   General Description

The eBOX625-312-FL is an embedded system equipped with Intel$^®$ Celeron$^®$ N3350/N4200 SoC onboard which features fan-less design with full feature I/O supported for more connectivity. The system also supports 204-pin DDR3L-1866 SO-DIMM slot for up to 8GB of memory. In addition, for enhanced security, the eBOX627-312-FL supports TPM 1.2. It also supports Axiomtek's exclusive AXView Industrial IoT software for smart device monitoring and management. It is well-suited for multimedia applications, security surveillance and smart factory automation.

Features
1. Intel$^®$ Celeron N3350/N4200 SoC onboard
2. Maximum to 8GB DDR3L-1866 memory
3. VGA/HDMI for dual display
4. Supports 4 USB 3.0 & 2 USB 2.0 ports
5. Supports 2 RS-232/422/485 and 1 RS-232
6. Supports dual 10/100/1000Mbps Ethernet ports
7. One 2.5" SATA HDD/SSD drive bay (Max. up 9.5 mm height)
8. Two Full-Size Mini PCI Express Mini Card. Support 1 w/mSATA.
9. One SIM slot
10. AXView 2.0 and TPM 1.2 supported
11. Wide temperature: -20°C~65°C supported (with W.T. SSD & Memory at non-turbo mode)
12. 12VDC screw type power input.

> **Reliable and Stable Design**
> The eBOX625-312-FL adopts the advanced cooling system and supporting wide operating temperature with fan-less design, which makes it especially suitable in harsh environments, best for industrial automation, digital signage and gaming application.

> **Flexible Connectivity**
> It comes with rich I/O interfaces including one RS-232 ports, two RS-232/422/485 ports, four USB 3.0 ports, two USB 2.0 ports, two GbE LAN ports.

> **Embedded O.S. Supported**
> The eBOX625-312-FL supports Windows® 10 IoT,Linux and AXView 2.0.

> **Various Storage**
> Supported In terms of storage, the eBOX625-312-FL supports one 2.5" SATA storage drive bay and one mSATA device.

1.2. System Specification

1.2.1 CPU

● **CPU**

  ■ Intel® Celeron® processor N3350 Dual Core, up to 2.4 GHz with turbo boost.

  ■ Intel® Pentium® processor N4200 Quad Core, up to 2.5 GHz with turbo boost.

● **Chipset**

  ■ SoC integrated

● **System Memory**

  ■ One 204-pin DDR3L-1866 SO-DIMM socket, up to 8 GB at the maximum.

● **BIOS**

  ■ American Megatrends Inc. UEFI (Unified Extensible Firmware Interface) BIOS

● **TPM**

  ■ TPM 1.2

1.2.2 I/O System

● **Display**

  ■ 1 x Lockable HDMI (HDMI 1.4b up to 3840 x 2160@30Hz)

  ■ 1 x VGA (1920 x 1200)

● **Ethernet**

  ■ 2 x 10/100/1000 Ethernet ports (i211-AT)

● **USB Ports**

  ■ 2 x USB 2.0

  ■ 4 x USB 3.0

- **Serial Ports**
  - 1 x RS-232 (9-pin D-Sub male connector)
  - 2 x RS-232-422-485 (9-pin D-Sub male connector)
- **Audio**
  - 1 x Mic-in/Line out
- **Expansion slots**
  - 2 x full-size PCI Express Mini Card Slots (USB + PCI Express signal)
  - 1 x SIM slot
- **Storage**
  - 1 x 2.5" SATA HDD/SSD drive bay
  - 1 x mSATA (enabled in BIOS setting)
- **Indicator**
  - 1 x Green LED as indicator for PWR status
  - 1 x Yellow LED as indicator for HDD active
- **Switch**
  - 1 x ATX PWR switch
  - 1 x ATX/AT Quick switch
- **Antenna**
  - 4 x SMA type connector openings for antenna

1.2.3 System specifications

- **Watchdog Timer**
  - 65536 levels, 1 to 65535 sec.

- **Power Supply**
  - 12VDC/60W AC to DC adapter (optional)

- **Operation Temperature**
  - Turbo Mode **(Default)**:
    -20°C ~ +60°C (-4°F ~ +140°F) (with W.T. SSD/DRAM)
  - Non-turbo Mode:
    -20°C ~ +65°C (-4°F ~ +149°F) (with W.T. SSD/DRAM)

- **Storage Temperature**
  - -40℃ ~ 80℃ (-40 ºF ~ 176ºF)

- **Humidity**
  - 10% ~ 95% (non-condensation)

- **Vibration Endurance**
  - IEC 60068-2-27 (with SSD: 50G, half sine, 11 ms duration)

- **Shock Endurance**
  - IEC 60068-2-64 (with SSD: 3Grms STD, random, 5 to 500 Hz,1 hr/axis)

- **Weight**
  - 1.1 kg (2.43 lb)/1.8 kg (3.97 lb)

- **Dimensions**
  - 200mm (7.87") (W) x 120mm (4.72") (D) x 46mm(1.81") (H)

1.2.4 Driver CD Content

- **Driver**
  - Chipset
  - Graphic
  - TXE
  - Ethernet
  - Audio
  - AXVIEW 2.0

- **Manual**
  - User Manual
  - Quick Manual

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

1.3   Dimensions

The following diagrams show you dimensions and outlines of the eBOX625-312-FL.

1.3.1 System Dimension
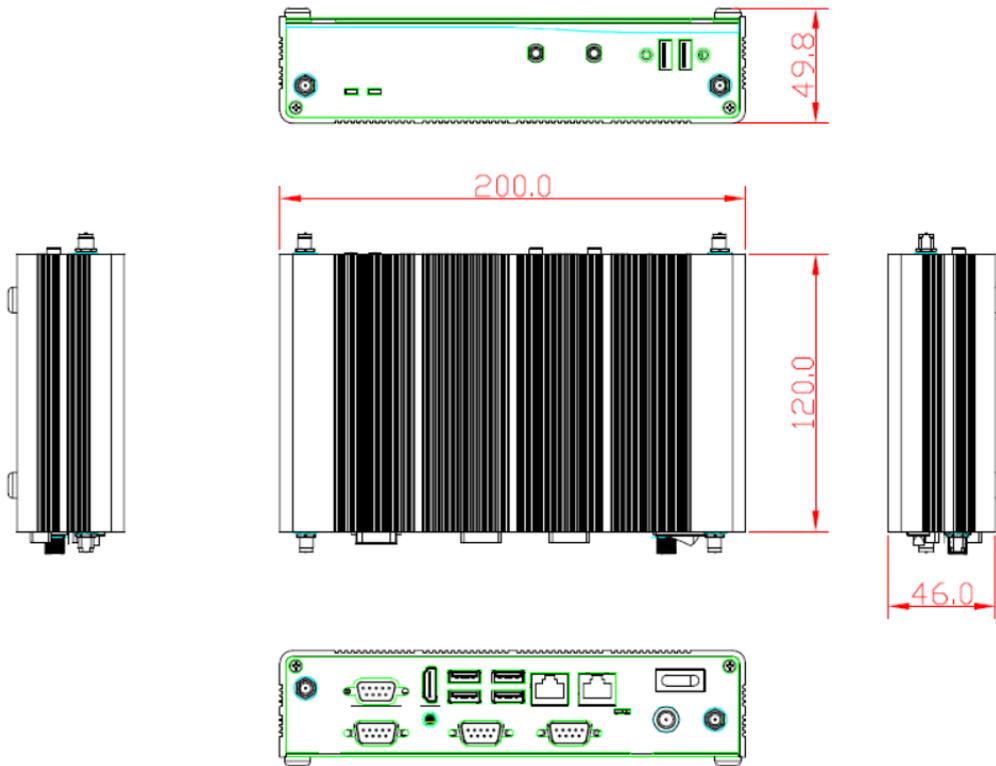
1.3.2 Wall mount Bracket Dimension
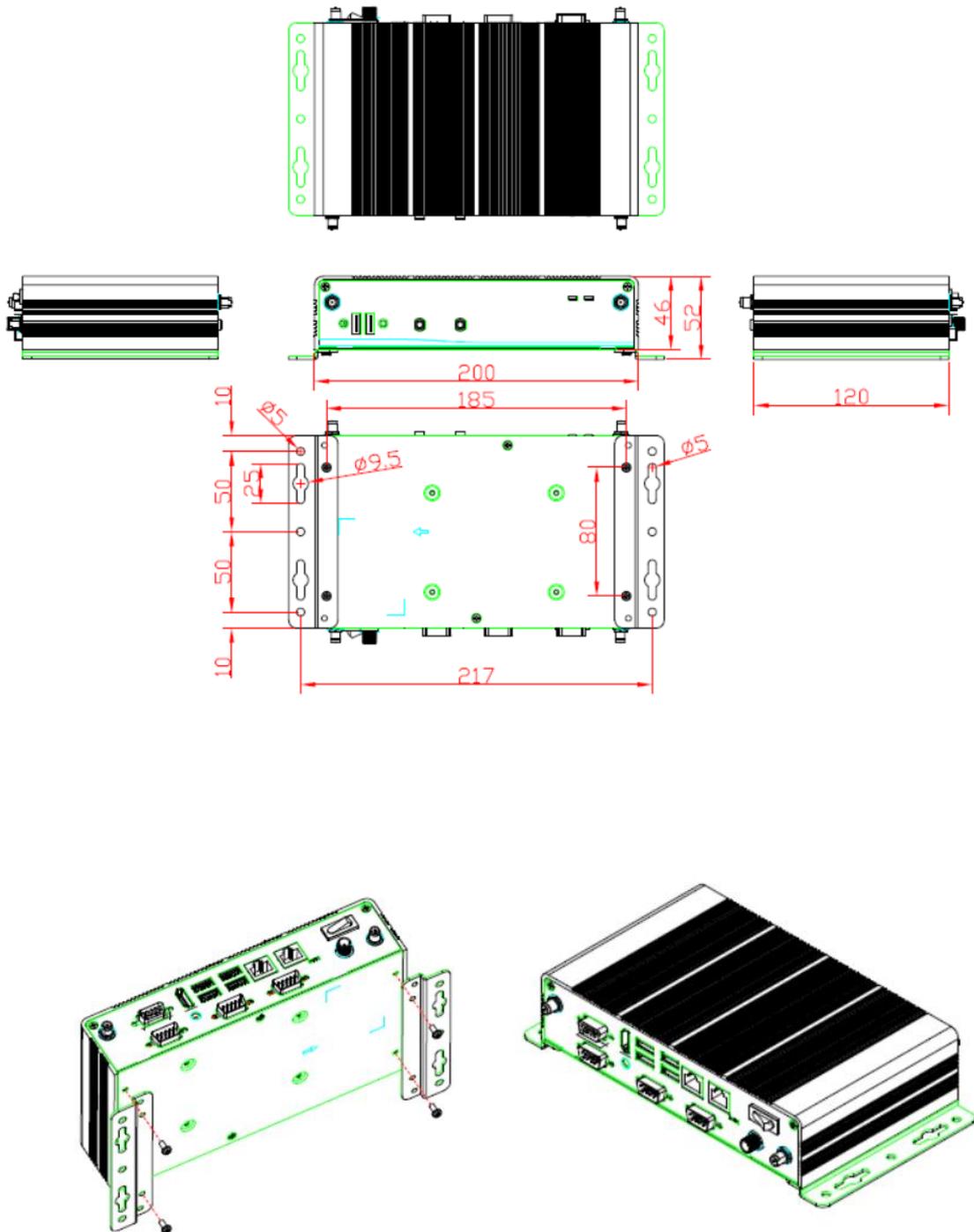
1.3.3 Din-rail mount Bracket Dimension
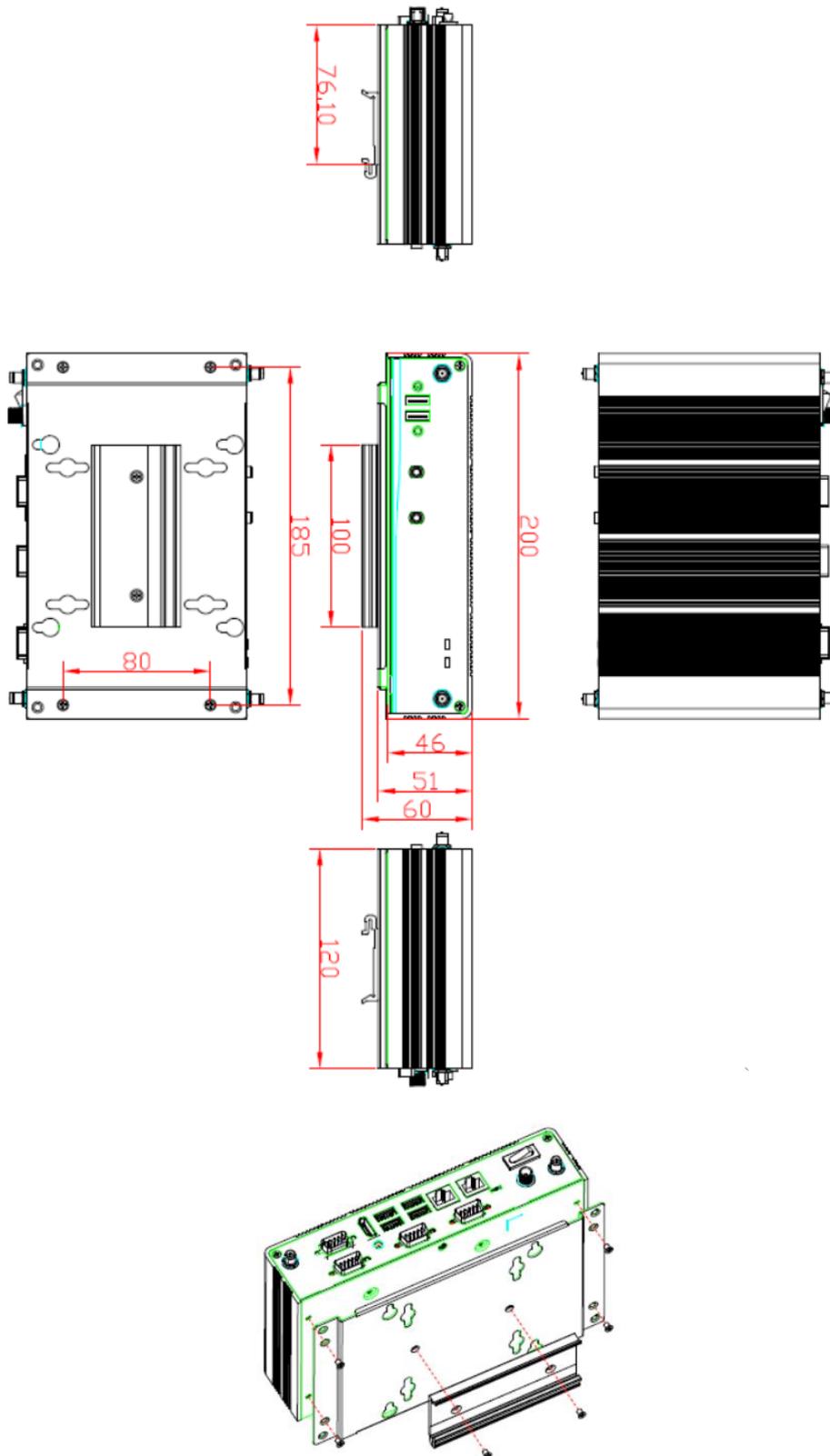
1.3.4 VESA mount Bracket Dimension
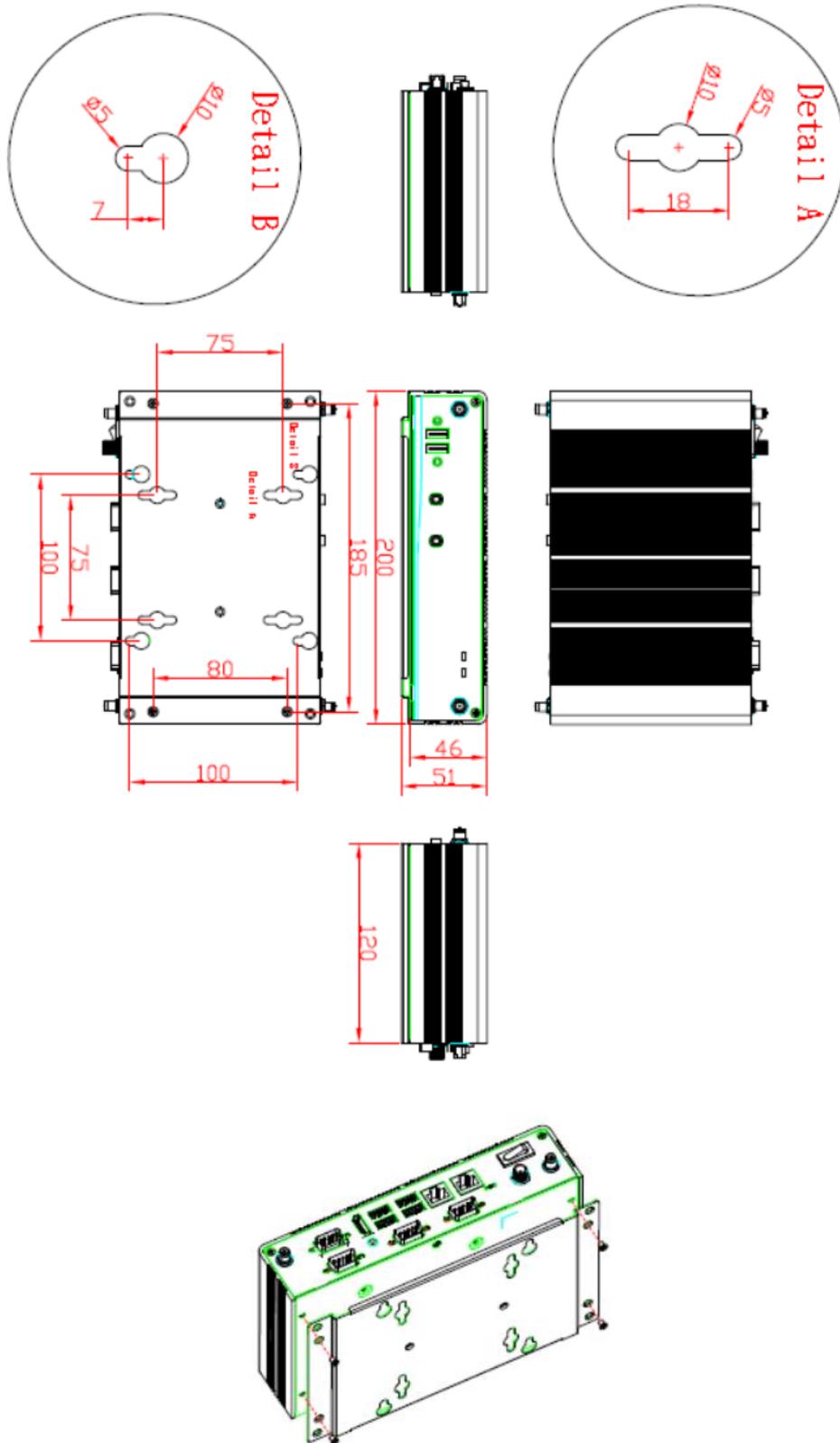
1.4 I/O Outlets

The following figures show you I/O outlets on front view of the eBOX625-312-FL.

● **Front View**

● **Front View drawing**
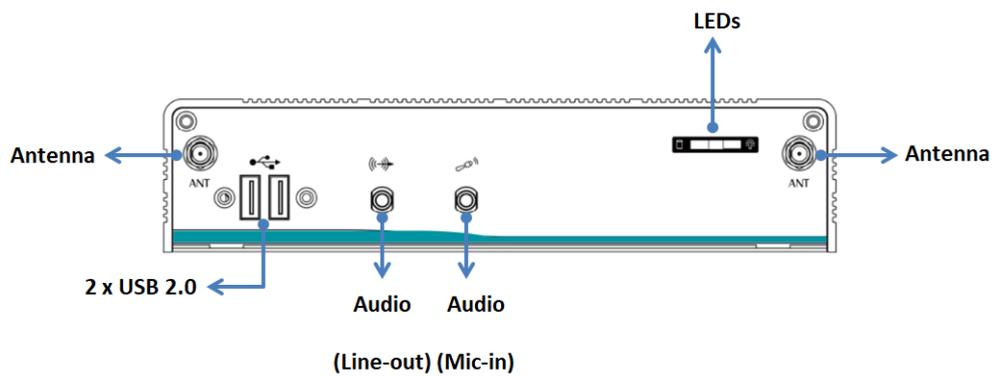
● **Rear View**

● **Rear View drawing**

4 x USB 3.0

1 x HDMI
(Lockable)

1 x VGA

2 x GbE LAN

ATX power switch

Antenna

RS-232/422/485
(COM 2)

RS-232/422/485
(COM 1)

RS-232
(COM 3)

AT/ATX
quick switch

Antenna

12 VDC power input
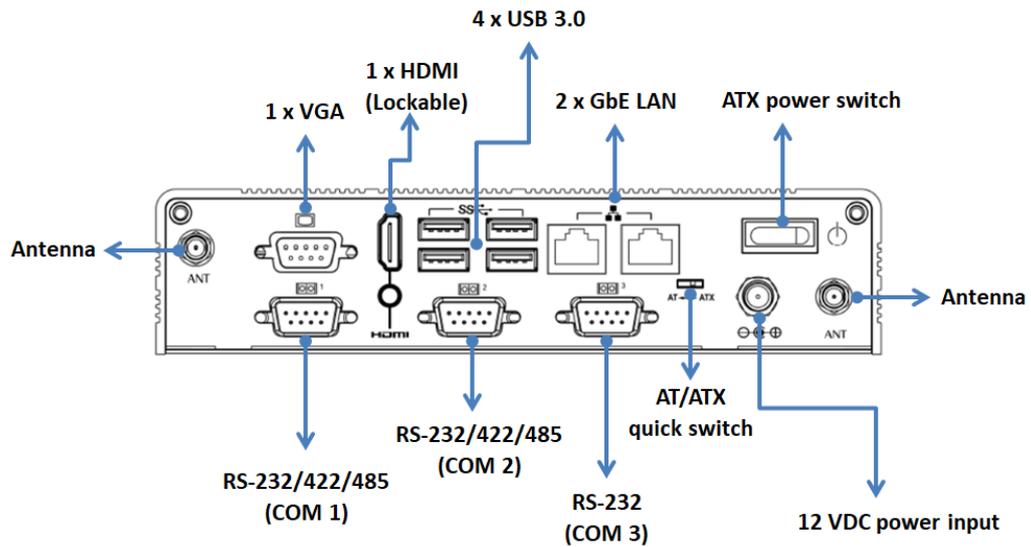
1.5   Packing List

The package bundled with your eBOX625-312-FL should contain the following items:
●   eBOX625-312-FL System Unit x 1

●   eBOX625-312-FL Quick Manual x 1

●   DVD/CD x 1 (For Driver and User's Manual)

●   Screws Pack x 1

●   Pre-installed Foot pad x 4

●   DRAM Thermal Pad x 1

●   HDMI Cable Locking Clip (optional)

●   12V/60W power adapter (optional)

●   Power cord (optional)

If you cannot find this package or any items are missing, please contact Axiomtek distributors immediately.

1.6   Model List

eBOX625-312-FL-DC-N3350	Fanless Embedded System with Intel$^®$ Celeron$^®$ N3350 2.4 GHz,HDMI/VGA, 2 GbE LANs, 6 USB, 3 COM and 12 VDC (w/o power adapter and power cord)
eBOX625-312-FL-DC-N4200	Fanless Embedded System with Intel$^®$ Celeron$^®$ N4200 2.5 GHz,HDMI/VGA, 2 GbE LANs, 6 USB, 3 COM and 12 VDC(w/o power adapter and power cord)

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CHAPTER 2
HARDWARE INSTALLATION

The eBOX625-312-FL is convenient for your various hardware configurations, such as Memory Module, HDD (Hard Disk Drive), SSD (Solid State Drive) and mini card slot. The chapter 2 will show you how to install the hardware.

2.1   Installing of the Memory module

Step 1   Turn off the system, and unplug the power cord.

Step 2   Turn the system upside down to locate screws at the side of the system, and then loosen two screws and four foot pads.

Step 3   Remove the bottom cover.

Step 4   Locate the DDR3L SO-DIMM slot, holding the DDR3L SO-DIMM at a 30 degree angle up from horizontal; slowly insert the golden fingers into the DDR3L SO-DIMM slot until it is fully inserted in.
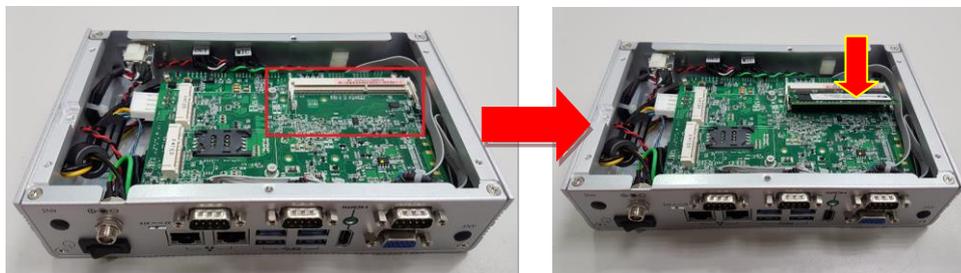
Step 5 Press it down gently, until it is firmly seated by locking two latches on the sides and place the thermal pad on the DRAM.
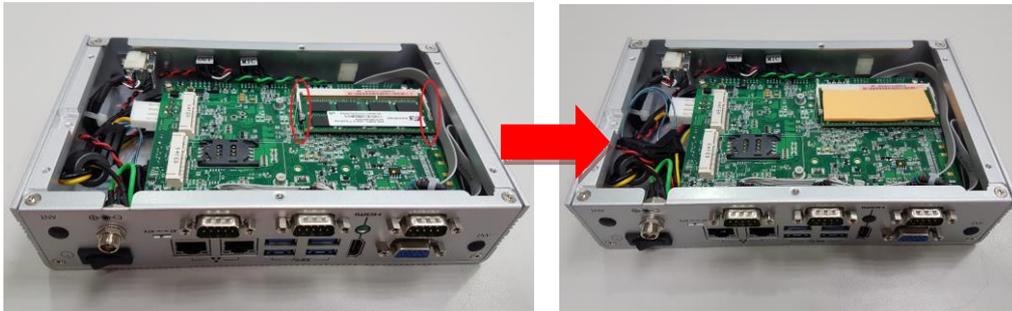
Step 6 Put the bottom cover back and fasten all screws.

2.2   Installing of the PCI Express Mini Card

Step 1   Turn off the system, and unplug the power cord.

Step 2   Turn the system upside down to locate screws at the side of the system, and then loosen two screws and four foot pads.

Step 3   Remove the bottom cover.

Step 4   Locate the PCI Express mini card slot on the board and prepare the Wi-Wi mini card and bracket from the min card accessory pack.

Step 5 **Holding the Wi-Fi PCI Express mini card at a 45 degree angle up from horizontal; slowly insert the golden fingers into the PCI Express slot until it is fully inserted in and fasten screws and connect the cable to antenna.**

Step 6 **Put the bottom cover back and fasten all screws.**

2.3   Installing of the 2.5"SATA Device

Step 1   Turn off the system, and unplug the power cord.

Step 2   Turn the system upside down to locate screws at the side of the system, and then loosen two screws and four foot pads.

Step 3   Please prepare HDD/SSD and four M3*4L screws and then assembly the HDD/SSD with the bracket.
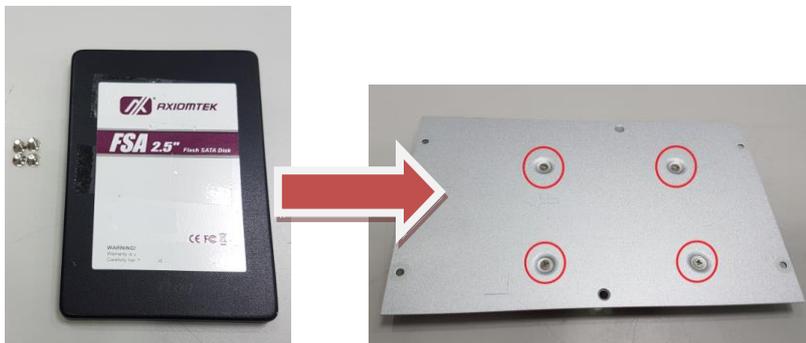
Step 4   Connect the power and SATA cable directly and then make sure the insertion is complete.

Note: Please notice the direction of connector for HDD/SSD.

Step 5   Put the bottom cover back and fasten all screws.

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CHAPTER 3
JUMPER SETTING & CONNECTOR

Proper jumper settings configure the **eBOX625-312-FL** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

3.1   CAPA312 layout

Top View
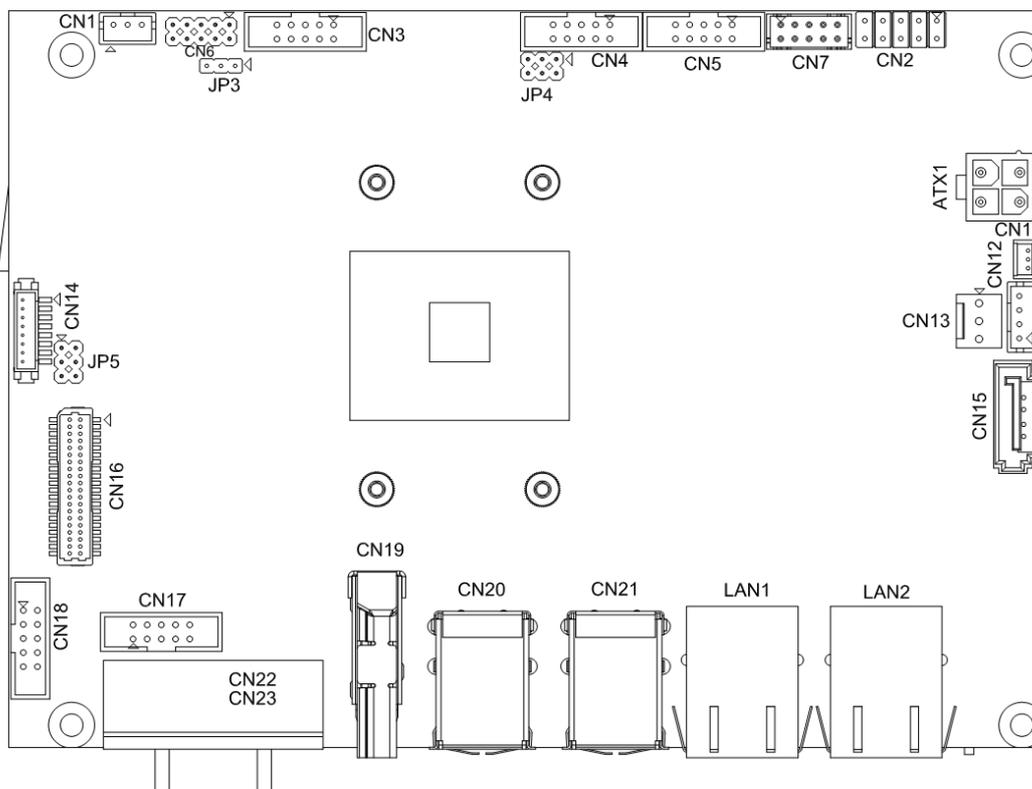
Side View

NOTE: We strongly recommended that you should not modify any unmentioned jumper setting without Axiomtek FAE's instruction. Any modification without instruction might cause system to become damage.

Bottom View
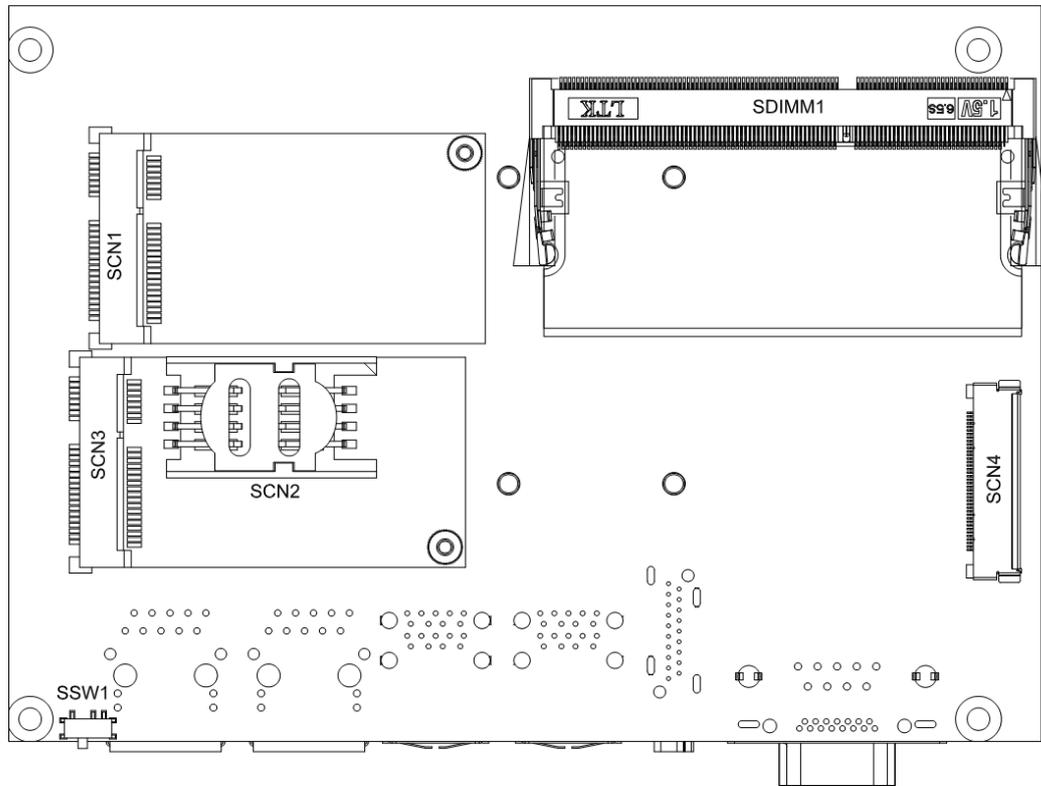
3.2 Jumper Setting Summary

Proper jumper settings configure the eBOX625-312-FL to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Jumper and Switch	Description		Setting
JP3	Restore BIOS Optimal Defaults Default: Normal Operation		1-2 Close
JP4	COM3 Data/Power Selection Default: RS-232 Data	CN4 Pin 1: DCD	3-5 Close
		CN4 Pin 8: RI	4-6 Close
SSW1	Auto Power On Default: Disable		ATX

NOTE: How to setup Jumpers

The illustration shows how to set up jumpers. When the jumper cap is placed on pins, the jumper is "close", if not, that means the jumper is "open".

[Open]   [Closed]   [Pin1-2 Closed]
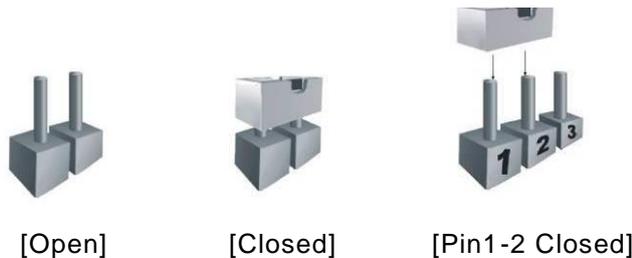
3.2.1 Restore BIOS Optimal Defaults (JP3)

This is a 1x3-pin (pitch=2.0mm) jumper. Put jumper clip to pin 2-3 for a few seconds then move it back to pin 1-2. Doing this procedure can restore BIOS optimal defaults.

Function	Setting
Normal (Default)	1-2 close
Restore BIOS optimal defaults	2-3 close

3.2.2 COM3 Data/Power Selection (JP4)

This is a 2x3-pin (pitch=2.0mm) jumper. The COM3 port has +5V level power capability on DCD and +12V level on RI by setting jumper JP4.

Function	Setting
Power: Set CN4 pin 1 to +5V level	1-3 close
Data: Set CN4 pin 1 to DCD (Default)	3-5 close
Power: Set CN4 pin 8 to +12V level	2-4 close
Data: Set CN4 pin 8 to RI (Default)	4-6 close
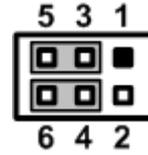
3.2.3 AT/ATX Quick Switch (SSW1)

If SSW1 is enabled for power input, the system will be automatically power on without pressing soft power button. If SSW1 is disabled for power input, it is necessary to manually press soft power button to power on the system.

Function	Setting
Disable auto power on (Default)	ATX
Enable auto power on	AT
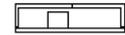
3.3   Connectors

Connectors connect the board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors and button on the **eBOX625-312-FL** Series.

Connectors / Buttons	Location	Section
VGA Connector	CN23	3.3.1
COM Serial Port Connector (COM1~3)	CN17, CN18, CN4	3.3.2
USB 2.0 Wafer Port	CN7	3.3.3
SATA Connector	CN15	3.3.4
HDMI Connector	CN19	3.3.5
USB 3.0 Port	CN20 and CN21	3.3.6
Ethernet Port 1 and 2	LAN1and LAN2	3.3.7
Full-size PCI-Express Mini Card Connector	SCN1	3.3.8
SIM Card Socket	SCN2	3.3.9
Full-size PCI-Express Mini Card or mSATA Connector	SCN3	3.3.10
Power and HDD LED Indicator		3.3.11
System Power Switch		3.3.12
DC Jack Power In Connector		3.3.13

3.3.1 VGA Connector (CN23)

This is a standard 15-pin D-Sub connector. It is commonly used for VGA display. This VGA interface configuration can be configured via software utility.

Pin	Signal	Pin	Signal
1	RED	2	GREEN
3	BLUE	4	N.C
5	GND	6	GND
7	GND	8	GND
9	CRT_VCC	10	GND
11	N.C	12	DDC_DATA
13	Hsync	14	Vsync
15	DDC_CLK		
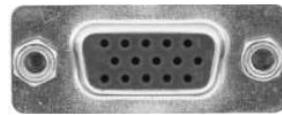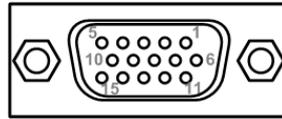
3.3.2 COM Serial Port Connector (CN17, CN18, CN4)

The system has four serial ports. COM1 and COM2 are RS-232/422/485 ports; COM3 is RS-232 ports. Please refer to Chapter 4 for the detail of BIOS setting.

COM1 and COM2 (CN17 and CN18):

Pin	RS-232	RS-422	RS-485
1	DCD, Data Carrier Detect	TX-	Data-
2	RXD, Receive Data	TX+	Data+
3	TXD, Transmit Data	RX+	No use
4	DTR, Data Terminal Ready	RX-	No use
5	GND, Ground	No use	No use
6	DSR, Data Set Ready	No use	No use
7	RTS, Request To Send	No use	No use
8	CTS, Clear To Send	No use	No use
9	RI, Ring Indicator	No use	No use
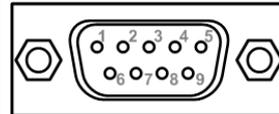
COM3 (CN4):

COM2	Signal
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)

3.3.3 USB 2.0 Port (CN7)

The CN7 is a Universal Serial Bus (compliant with USB 2.0 (480Mbps)) connector on the rear I/O. It is commonly used for installing USB peripherals such as keyboard, mouse, scanner, etc.

Pin	Signal	Pin	Signal
1	USB VCC (+5V_SBY)	5	USB VCC (+5V_SBY)
2	USB #4_D-	6	USB #5_D-
3	USB #4_D+	7	USB #5_D+
4	GND	8	GND

CN7
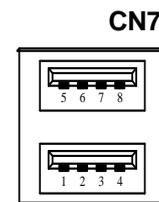
3.3.4 SATA Connector (CN15)

This Serial Advanced Technology Attachment (Serial ATA or SATA) connector is for high-speed SATA interface. It is a computer bus interface for connecting to devices such as hard disk drive.

Pin	Signal
1	GND
2	SATA_TXP0
3	SATA_TXN0
4	GND
5	SATA_RXN0
6	SATA_RXP0
7	GND
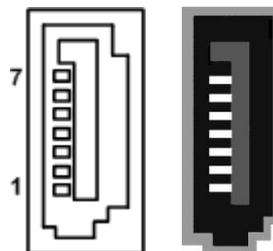
3.3.5 HDMI Connector (CN19)

The HDMI (High-Definition Multimedia Interface) is a compact digital interface which is capable of transmitting high-definition video and high-resolution audio over a single cable. Its interface is available through connector CN19.

Pin	Signal	Pin	Signal
1	HDMI OUT_DATA2+	2	GND
3	HDMI OUT_DATA2-	4	HDMI OUT_DATA1+
5	GND	6	HDMI OUT_DATA1-
7	HDMI OUT_DATA0+	8	GND
9	HDMI OUT_DATA0-	10	HDMI OUT_Clock+
11	GND	12	HDMI OUT_Clock-
13	N.C.	14	N.C.
15	HDMI OUT_SCL	16	HDMI OUT_SDA
17	GND	18	+5V
19	HDMI_HTPLG		
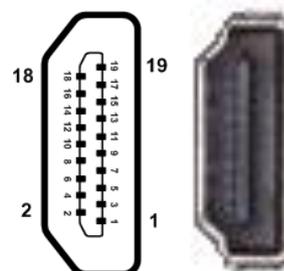
3.3.6 USB 3.0 Ports (CN20 and CN21)

The Universal Serial Bus (compliant with USB 3.0 (5Gb/s) connector on the rear I/O is for installing USB peripherals such as keyboard, mouse, scanner, etc.

USB 3.0 port 0 and 1 (CN20):

Pin	Signal	Pin	Signal
1	USB_VCC (+5V)	10	USB_VCC (+5V)
2	USB #0_D-	11	USB #1_D-
3	USB #0_D+	12	USB #1_D+
4	GND	13	GND
5	SSRX0-	14	SSRX1-
6	SSRX0+	15	SSRX1+
7	GND	16	GND
8	SSTX0-	17	SSTX1-
9	SSTX0+	18	SSTX1+
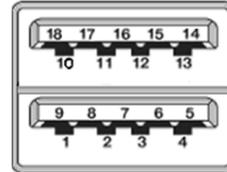
USB 3.0 port 2 and 3 (CN21):

Pin	Signal	Pin	Signal
1	USB_VCC (+5V)	10	USB_VCC (+5V)
2	USB #2_D-	11	USB #3_D-
3	USB #2_D+	12	USB #3_D+
4	GND	13	GND
5	SSRX2-	14	SSRX3-
6	SSRX2+	15	SSRX3+
7	GND	16	GND
8	SSTX2-	17	SSTX3-
9	SSTX2+	18	SSTX3+

3.3.7   Ethernet Ports (LAN1 and LAN2)

The system supports two RJ-45 connectors: LAN1 and LAN2. Ethernet connection can be established by plugging one end of the Ethernet cable into this RJ-45 connector and the other end (phone jack) to a 1000/100/10-Base-T hub.

Pins	1000 Base-T	100/10 Base-T	Descriptions
L1	BI_DA+	TX+	Bidirectional or Transmit Data+
L2	BI_DA-	TX-	Bidirectional or Transmit Data-
L3	BI_DB+	RX+	Bidirectional or Receive Data+
L4	BI_DC+	N.C.	Bidirectional or Not Connected
L5	BI_DC-	N.C.	Bidirectional or Not Connected
L6	BI_DB-	RX-	Bidirectional or Receive Data-
L7	BI_DD+	N.C.	Bidirectional or Not Connected
L8	BI_DD-	N.C.	Bidirectional or Not Connected
A	Active Link LED (Yellow) Off: No link Blinking: Data activity detected		
B	Speed LED 1000: Orange 100: Green 10: OFF		
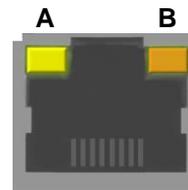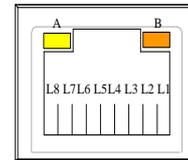
3.3.8 Full-size PCI-Express Mini Card Connector (SCN1)

This is a full-size PCI-Express Mini Card connector on the bottom side supporting PCI-Express x1 or USB 2.0. It also complies with PCI-Express Mini Card Spec. V1.2.

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	No use	4	GND
5	No use	6	+1.5V
7	CLKREQ#	8	SIM_PWR
9	GND	10	SIM_DATA
11	REFCLK-	12	SIM_CLK
13	REFCLK+	14	SIM_REST
15	GND	16	SIM_VPP
17	No use	18	GND
19	No use	20	W_DISABLE#
21	GND	22	PERST#
23	PE_RXN3	24	+3.3VSB
25	PE_RXP3	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PE_TXN3	32	SMB_DATA
33	PE_TXP3	34	GND
35	GND	36	USB_D6-
37	GND	38	USB_D6+
39	+3.3VSB	40	GND
41	+3.3VSB	42	No use
43	GND	44	No use
45	No use	46	No use
47	No use	48	+1.5V
49	No use	50	GND
51	No use	52	+3.3VSB
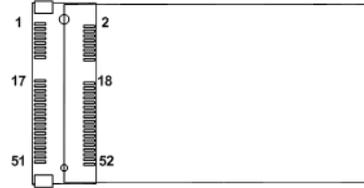
3.3.9 SIM Card Socket (SCN2)

The system has SCN2 socket on the bottom side for inserting SIM Card. In order to work properly, the SIM Card must be used together with 3G/LTE module which is inserted to SCN1 or SCN3. It is mainly used in 3G/LTE wireless network application.

Pin	Signal
1	PWR
2	RST
3	CLK
4	NC
5	GND
6	VPP
7	I/O
8	NC
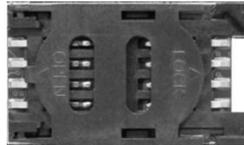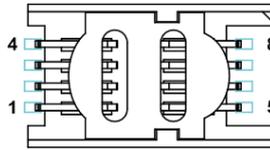
3.3.10 Full-size PCI-Express Mini Card or mSATA Connector (SCN3)

This is a full-size PCI-Express Mini Card connector on the bottom side complying with PCI-Express Mini Card Spec. V1.2. It supports either PCI-Express, USB 2.0 or SATA (mSATA). Since the default setting is PCI-Express, if mSATA is needed to insert, please refer to section 4.4 to change the setting.

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	No use	4	GND
5	No use	6	+1.5V
7	CLKREQ#	8	SIM_PWR
9	GND	10	SIM_DATA
11	REFCLK-	12	SIM_CLK
13	REFCLK+	14	SIM_REST
15	GND	16	SIM_VPP
17	No use	18	GND
19	No use	20	W_DISABLE#
21	GND	22	PERST#
23	PE_RXN2/SATA_RXP	24	+3.3VSB
25	PE_RXP2/SATA_RXN	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PE_TXN2/SATA_TXN	32	SMB_DATA
33	PE_TXP2/SATA_TXP	34	GND
35	GND	36	USB_D5-
37	GND	38	USB_D5+
39	+3.3VSB	40	GND
41	+3.3VSB	42	No use
43	GND	44	No use
45	No use	46	No use
47	No use	48	+1.5V
49	No use	50	GND
51	No use	52	+3.3VSB
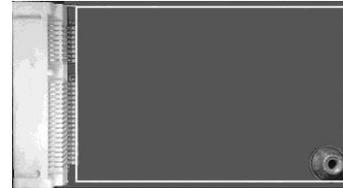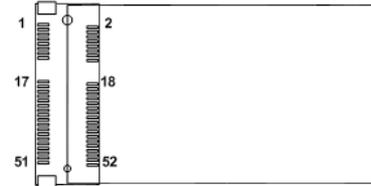
3.3.11 Power and HDD LED Indicator

The Yellow LED is linked to Hard Disk Drive (HDD) activity signal. LED flashes every time HDD is accessed. The power LED (Green) lights up and will remain steady while the system is powered on.

LED Color	Description
Green	Power on/off
Yellow	Hard disk drive activity

3.3.12 System Power Switch

This button is for turning on/off the system power.

Functions	Descriptions
On	Turn on/off system
Off	Keep system status
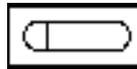
3.3.13 AC to DC Jack Power In Connector

The system supports a DC12V DC-in Jack connector for system power input. Connect it to the power AC-DC 60W Adapter (optional)

Pin	Signal
1	+12V
2	GND

CHAPTER 4
BIOS SETUP UTILITY

This chapter provides users with detailed description how to set up basic system configuration through the BIOS setup utility.

4.1   Starting

To enter the setup screens, follow the steps below:

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

It is strongly recommended that you should avoid changing the chipset's defaults. Both AMI and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.2   Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.

NOTE: Some of the navigation keys differ from one screen to another.

Hot Keys	Description
→← Left/Right	The Left and Right <Arrow> keys allow you to select a setup screen.
↑↓ Up/Down	The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the General Help screen.
F2	The <F2> key allows you to Load Previous Values.
F3	The <F3> key allows you to Load Optimized Defaults.
F4	The <F4> key allows you to save any changes you have made and exit Setup. Press the <F4> key to save your changes.
Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

4.3   Main Menu

When you first enter the setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. System Time/Date can be set up as described below. The Main BIOS setup screen is shown below.

```
         Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
   Main  Advanced  Chipset  Security  Boot  Save & Exit

   BIOS Information                                      Set the Date. Use Tab to
   Project Version           CAPA312 C1.00               switch between Date elements.
   Build Date and Time       12/12/2018 15:40:00         Default Ranges:
                                                         Year: 2005-2099
   EC Information                                        Months: 1-12
   Firmware Version          CAPA312 V02                 Days: dependent on month

   System Date               [Wed 12/12/2018]
   System Time               [13:21:42]

   Access Level              Administrator

                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit

         Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

Project Version Information

Display the auto-detected BIOS information.

System Date/Time

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

4.4   Advanced Menu

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

- ► Hardware Monitor
- ► ACPI Settings
- ► Trusted Computing
- ► Super IO Configuration
- ► CPU Configuration
- ► SATA Configuration
- ► USB Configuration
- ► Utility Configuration

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

```
           Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ Hardware Monitor                                    Monitor hardware status
  ▶ ACPI Settings
  ▶ Trusted Computing
  ▶ Super IO Configuration
  ▶ CPU Configuration
  ▶ SATA Configuration
  ▶ USB Configuration
  ▶ Utility Configuration




                                                        ➔←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit




           Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

● **Hardware Monitor**

This screen monitors hardware health status.

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Advanced

 Pc Health Status

 CPU Temperature                   : +32 ℃
 System Temperature                : +33 ℃
 Fan Speed                         : N/A
 VBAT                              : +2.97 V
 +3.3V                             : +3.21 V
 +3.3VSB                           : +3.22 V
 +5VSB                             : +4.99 V



                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit




          Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

This screen displays the temperature of system and CPU, fan speed in RPM and system voltages (VBAT, +3.3V, +3.3VSB and +5VSB).

● **ACPI Settings**

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
   Advanced

  ACPI Settings                                          Select the highest ACPI sleep
                                                         state the system will enter
  ACPI Sleep State              [S3 (Suspend to RAM)]    when the SUSPEND button is
                                                         pressed.




                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit




            Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

ACPI Sleep State

Select the ACPI (Advanced Configuration and Power Interface) sleep state. Configuration options are Suspend Disabled and S3 (Suspend to RAM). The S3 (Suspend to RAM) option selects ACPI sleep state the system will enter when suspend button is pressed.

● **Trusted Computing**

This screen provides function for specifying the TPM settings.

```
              Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
       Advanced

   Configuration                                              Enables or Disables BIOS
     Security Device Support          [Enable]                support for security device.
                                                              O.S. will not show Security
   TPM Device                         [Enabled]               Device. TCG EFI protocol and
   Pending operation                  [None]                  INT1A interface will not be
                                                              available.

   Current Status Information
     TPM Enabled Status:              Enable
     TPM Active Status:               Activated
     TPM Owner Status:                Owned

                                                              →←: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit

              Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

Security Device Support

Enable or disable BIOS support for security device. The default setting is Enable.

TPM Device

Enable or disable TPM device.

Current Status Information

Display current TPM status information.

● **Pending operation**

Schedule a TPM operation which will take effect at the next bootup process.

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
    Advanced

  Configuration                                            Schedule an Operation for the
    Security Device Support        [Enable]                Security Device. NOTE: Your
  TPM Device                       [Enabled]               Computer will reboot during
  Pending operation                [None]                  restart in order to change
                                                           State of Security Device.

  Current Status Information
    TPM Enabled Status:            Enable
    TPM Active Status:             Activated
    TPM Owner Status:              Owned
                          ┌───── Pending operation ─────┐
                          │ None                        │
                          │ TPM Clear                   │
                          └─────────────────────────────┘
                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit



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```

● **Super IO Configuration**

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

```
          Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
          Advanced

  Super IO Configuration                                 Set Parameters of Serial Port
                                                         1 (COMA)
  Super IO Chip                        NCT5104D
▶ Serial Port 1 Configuration
▶ Serial Port 2 Configuration
▶ Serial Port 3 Configuration




                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



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```

Serial Port 1~3 (COM1~3) Configuration

Use these items to set parameters related to serial port 1~3.

● **Serial Port 1 (COM1) Configuration**

```
          Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
      Advanced

 Serial Port 1 Configuration                              COM Mode: RS232,RS485,RS422

 Serial Port                      [Enabled]
 Device Settings                  IO=3F8h; IRQ=4;

 COM Mode                         [RS232]


                         ┌──────── COM Mode ────────┐
                         │ RS232                     │
                         │ RS485                     │
                         │ RS422                     │
                         └───────────────────────────┘      ↔: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit




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```

Serial Port

Enable or disable serial port 1. The optimal setting for base I/O address is 3F8h and for interrupt request address is IRQ4.

COM Port Type

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

● **Serial Port 2 (COM2) Configuration**

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
   Advanced

 Serial Port 2 Configuration                                COM Mode: RS232,RS485,RS422

 Serial Port                    [Enabled]
 Device Settings                IO=2F8h; IRQ=3;

 COM Mode                       [RS232]

                          ┌───── COM Mode ─────┐
                          │ RS232              │
                          │ RS485              │       ►◄: Select Screen
                          │ RS422              │       ↑↓: Select Item
                          └────────────────────┘       Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit



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```

Serial Port

Enable or disable serial port 2. The optimal setting for base I/O address is 2F8h and for interrupt request address is IRQ3.

COM Port Type

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

● **Serial Port 3 (COM3) Configuration**

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
   Advanced

 Serial Port 3 Configuration                                    Enable or Disable Serial Port
                                                                (COM)
 Serial Port                             [Enabled]
 Device Settings                         IO=3E8h; IRQ=11;




                                                                ↔: Select Screen
                                                                ↑↓: Select Item
                                                                Enter: Select
                                                                +/-: Change Opt.
                                                                F1: General Help
                                                                F2: Previous Values
                                                                F3: Optimized Defaults
                                                                F4: Save & Exit
                                                                ESC: Exit



          Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```
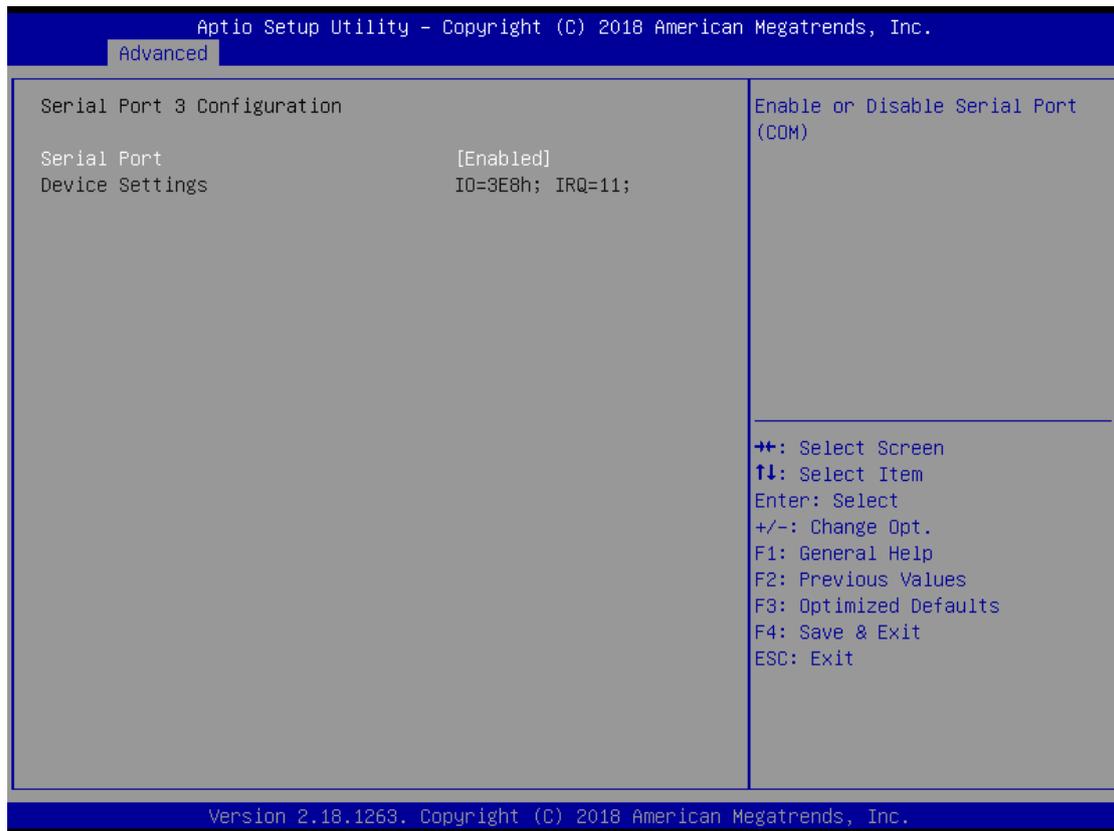
Serial Port

Enable or disable serial port 3. The optimal setting for base I/O address is 3E8h and for interrupt request address is IRQ11.

COM Port Type

Use this option to set only RS-232 mode.

● **CPU Configuration**

This screen shows the CPU Configuration.

```
              Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Advanced

  CPU Configuration                                        When enabled, a VMM can
                                                           utilize the additional
  Intel(R) Celeron(R) CPU N3350 @ 1.10GHz                  hardware capabilities provided
  CPU Signature               506C9                        by Vanderpool Technology
  Microcode Patch             2E
  Max CPU Speed               1100 MHz
  Min CPU Speed               800 MHz
  Processor Cores             2
  Intel HT Technology         Not Supported
  Intel VT-x Technology       Supported
  64-bit                      Supported

  L1 Data Cache               24 kB x 2
  L1 Code Cache               32 kB x 2          ┌─────────────────────────
  L2 Cache                    1024 kB x 1        →←: Select Screen
  L3 Cache                    Not Present        ↑↓: Select Item
                                                 Enter: Select
  Intel Virtualization Technology  [Enabled]     +/-: Change Opt.
  Turbo Mode                       [Enabled]     F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F4: Save & Exit
                                                 ESC: Exit


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```

Intel Virtualization Technology

Allow a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

● **Turbo Mode**

This item is for enabling or disabling turbo mode. When enabled, it allows processor cores to run faster than marked frequency under certain conditions. The default is Turbo Mode.

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
    Advanced

 CPU Configuration                                          Turbo Mode.

 Intel(R) Celeron(R) CPU N3350 @ 1.10GHz
 CPU Signature                  506C9
 Microcode Patch                2E
 Max CPU Speed                  1100 MHz
 Min CPU Speed                  800 MHz
 Processor Cores                2
 Intel HT Technology            Not Supported
 Intel VT-x Technology          Supported
 64-bit                        ┌──── Turbo Mode ────┐
                               │ Disabled           │
 L1 Data Cache                 │ Enabled            │    →←: Select Screen
 L1 Code Cache                 └────────────────────┘    ↑↓: Select Item
 L2 Cache                       1                         Enter: Select
 L3 Cache                       Not Present               +/-: Change Opt.
                                                          F1: General Help
 Intel Virtualization Technology  [Disabled]              F2: Previous Values
 Turbo Mode                       [Enabled]               F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



            Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

● **SATA Configuration**

In the SATA Configuration menu, you can see the currently installed hardware in the SATA ports. During system boot up, the BIOS automatically detects the presence of SATA devices.

```
             Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
      Advanced

     SATA Configuration                                            Enables or Disables the
                                                                   Chipset SATA Controller.
      Chipset SATA                           [Enable]
     PCIE Mini Card Function                 [PCIE]
     SATA Mode Selection                     [AHCI]

      SATA Port 0                            [Not Installed]




                                                                 →←: Select Screen
                                                                 ↑↓: Select Item
                                                                 Enter: Select
                                                                 +/-: Change Opt.
                                                                 F1: General Help
                                                                 F2: Previous Values
                                                                 F3: Optimized Defaults
                                                                 F4: Save & Exit
                                                                 ESC: Exit




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```

Chipset SATA

Enable or disable Chipset Controller feature. The default is Enabled.

PCIE Mini Card Function

Select PCI-Express Mini Card or mSATA support for SCN3. The default is PCIE. If mSATA is needed to insert to SCN3 (see section 3.3.8), please change setting to mSATA.

SATA Mode Selection

Determine how SATA controller(s) operate. The default is AHCI (Advanced Host Controller Interface) Mode.

● **USB Configuration**

```
           Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Advanced

  USB Configuration

  USB Module Version                    16

  USB Controllers:
        1 XHCI
  USB Devices:
        1 Drive, 1 Keyboard, 1 Mouse

                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit

           Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```
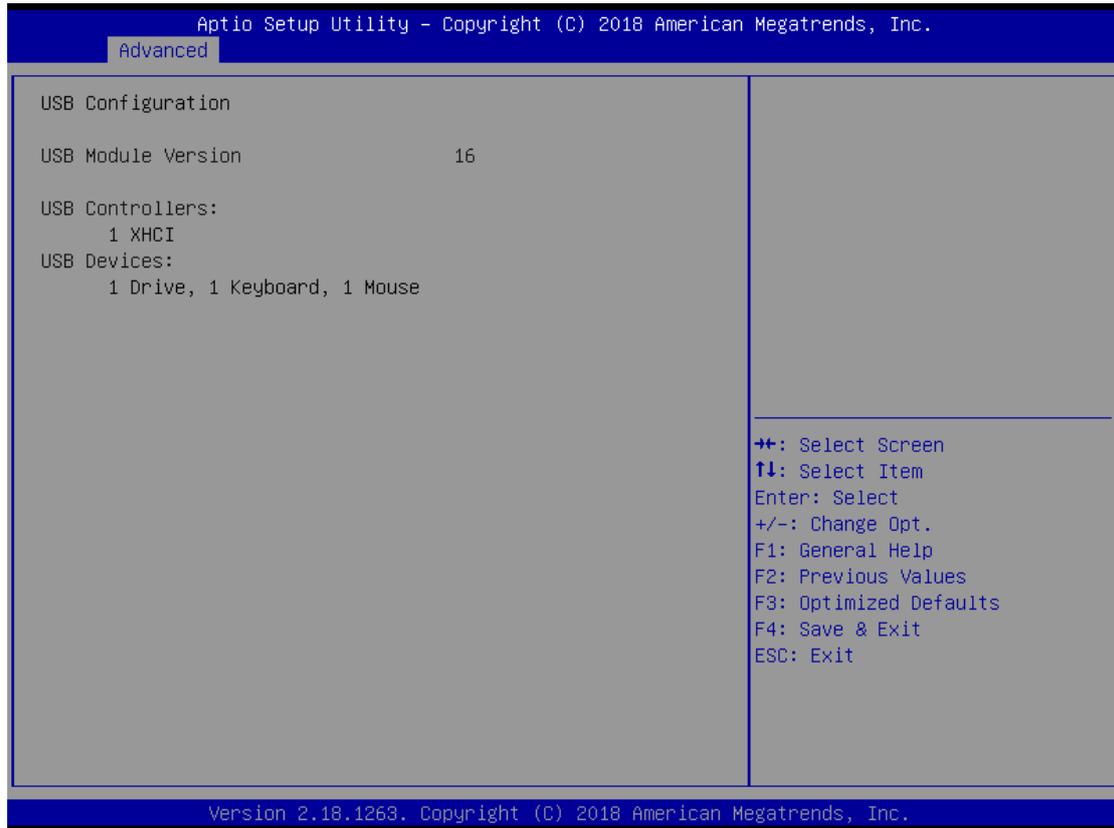
USB Devices

Display all detected USB devices.

● **Utility Configuration**

```
          Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
     Advanced

  Utility Configuration                                 BIOS Flash Utility

▶ BIOS Flash Utility



                      ┌──────────────────────────────────────┐
                      │    Select File from a File system    │
                      ├──────────────────────────────────────┤
                      │Acpi(a0341d0, 0)\PCI(15|0)\USB(5,0)\HD(Part1, Sig ?)\│
                      └──────────────────────────────────────┘
                                                        Screen
                                                 ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F4: Save & Exit
                                                 ESC: Exit




          Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

BIOS Flash Utility

You can execute the BIOS flasher.

4.5   Chipset Menu

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

  ► North Bridge
  ► South Bridge

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

```
            Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ North Bridge                                        South Bridge Parameters
  ▶ South Bridge




                                                    ↔: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



            Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

● **North Bridge**

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Chipset


 Memory Information

 Total Memory                        8192 MB




                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit




            Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

Memory Information

Display system memory information.

● **South Bridge**

This screen allows users to configure parameters of South Bridge chipset.

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
           Chipset

  TXE Information

  MRC Version                       0.56
  PMC FW                            03.25
  TXE FW                            3.1.50.2222



                                                  →←: Select Screen
                                                  ↑↓: Select Item
                                                  Enter: Select
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Exit
                                                  ESC: Exit



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```
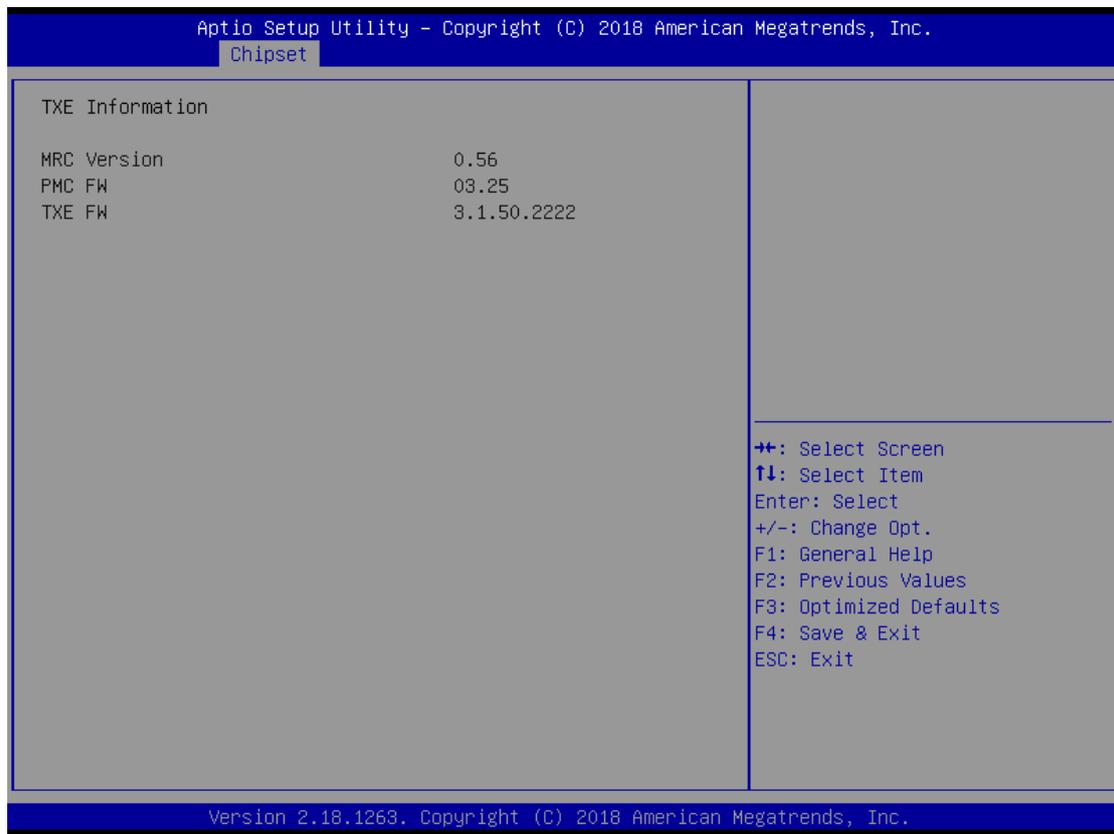
4.6   Security Menu

The Security menu allows users to change the security settings for the system.

```
             Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
       Main  Advanced  Chipset  Security  Boot  Save & Exit

    Password Description                              Set Setup Administrator
                                                      Password
    If ONLY the Administrator's password is set,
    then this only limits access to Setup and is
    only asked for when entering Setup.
    If ONLY the User's password is set, then this
    is a power on password and must be entered to
    boot or enter Setup. In Setup the User will
    have Administrator rights.
    The password length must be
    in the following range:
    Minimum length               3
    Maximum length               20
                                                     ++: Select Screen
                                                     ↑↓: Select Item
    Setup Administrator Password                     Enter: Select
    User Password                                    +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit




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```

Setup Administrator Password

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

User Password

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

4.7 Boot Menu

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

```
                Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

    Boot Configuration                                        Number of seconds to wait for
                                                              setup activation key.
    Setup Prompt Timeout            1                         65535(0xFFFF) means indefinite
    Bootup NumLock State            [On]                      waiting.

    Quiet Boot                      [Disabled]
    Launch UEFI PXE OpROM policy    [Disabled]

    Boot Option Priorities
    Boot Option #1                  [UEFI: KingstonDataT...]
    Boot Option #2                  [UEFI: Built-in EFI ...]

    Boot Mode                       [UEFI Mode]
                                                              →←: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit



                Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

Setup Prompt Timeout
Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

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

Quiet Boot
Select to display either POST output messages or a splash screen during boot-up.

Launch UEFI PXE OpROM policy
Use this item to enable or disable the boot ROM function of the onboard onboard LAN chip when the system boots up.

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

Boot Mode
Select either UEFI Mode or Legacy Mode to boot-up. The default is UEFI Mode.

4.8   Save & Exit Menu

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

```
             Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Main   Advanced   Chipset   Security   Boot   Save & Exit

   Save Options                                           Exit system setup after saving
   Save Changes and Exit                                  the changes.
   Discard Changes and Exit

   Save Changes and Reset
   Discard Changes and Reset

   Save Changes
   Discard Changes

   Default Options
   Restore Defaults
   Save as User Defaults
   Restore User Defaults                                  →←: Select Screen
                                                          ↑↓: Select Item
   Boot Override                                          Enter: Select
   UEFI: Built-in EFI Shell                               +/-: Change Opt.
   UEFI: KingstonDataTraveler 2.06.16, Partition 1        F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



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```

Save Changes and Exit

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

Discard Changes and Exit

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

Save Changes and Reset

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Save Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

Discard Changes and Reset

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

Save Changes

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

Discard Changes

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

Restore Defaults

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

Save as User Defaults

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

Restore User Defaults

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

Boot Override

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

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APPENDIX A
WATCHDOG TIMER

A.1 About Watchdog Timer

After the system stops working for a while, it can be auto-reset by the watchdog timer. The integrated watchdog timer can be set up in the system reset mode by program.

A.2 How to Use Watchdog Timer

Assembly sample code:

```
mov    dx,fa10        ; 5 seconds (Maximum is 65535 seconds; fill in
                      ;   0xFA10   and   0xFA11   register,   ex:
              0xFA11=0x01,
                      ; 0xFA10=0x68 means 360 seconds)
mov    al,05
out    dx,al


mov    dx,fa12        ; Enable WDT
mov    al,01
out    dx,al
```

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APPENDIX B
BIOS FLASH UTILITY

The BIOS Flash utility is a new helpful function in BIOS setup program. With this function you can easily update system BIOS without having to enter operating system. In this appendix you may learn how to do it in just a few steps. Please read and follow the instructions below carefully.

1. In your USB flash drive, create a new folder and name it "Axiomtek", see figure below.
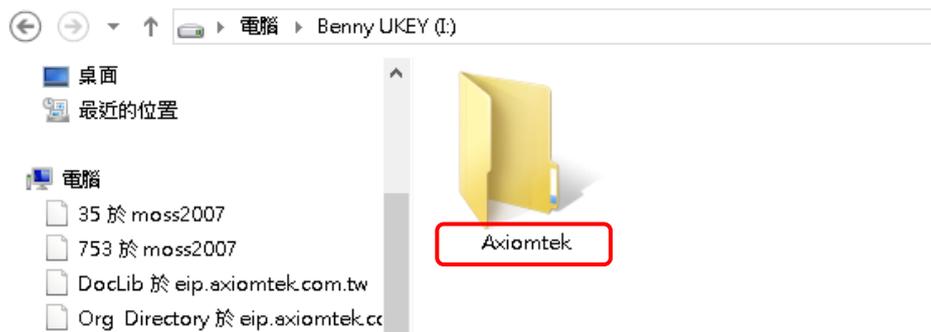
2. Copy BIOS ROM file (e.g. CAPA312.005) to "Axiomtek" folder.

3. Insert the USB flash drive to your system.

4. Enter BIOS setup menu and go to Advanced\Utility Configuration. Select BIOS Flash Utility and press <Enter>.

```
       Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
           Advanced

    Utility Configuration                                   BIOS Flash Utility

  ▶ BIOS Flash Utility
```
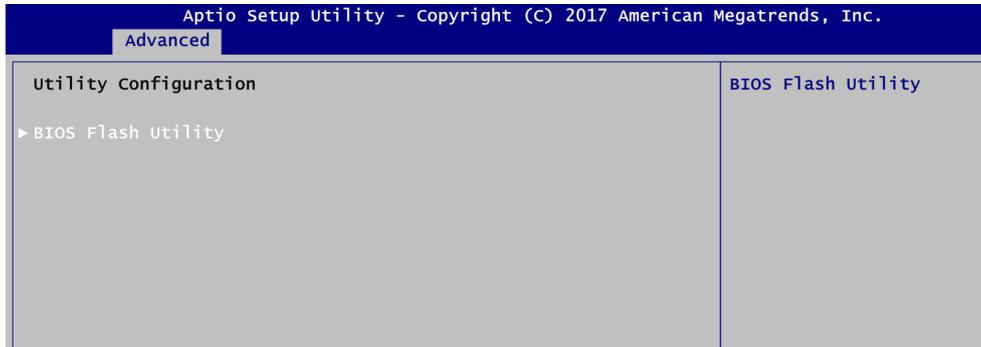
5. BIOS automatically detect all USB drive(s) attached to the system. In this example only one USB drive is attached to the system. That's why, you can see only one device is displayed in figure below.

```
       Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
           Advanced

    Utility Configuration                                   BIOS Flash Utility

  ▶ BIOS Flash Utility
        ┌──────────────────────────────────────────────────────────┐
        │            Select File from a File system                │
        ├──────────────────────────────────────────────────────────┤
        │ Acpi(a0341d0, 0)\PCI(15|0)\USB(2,0)\HD(Part1, Sig ?)\     │
        └──────────────────────────────────────────────────────────┘
```
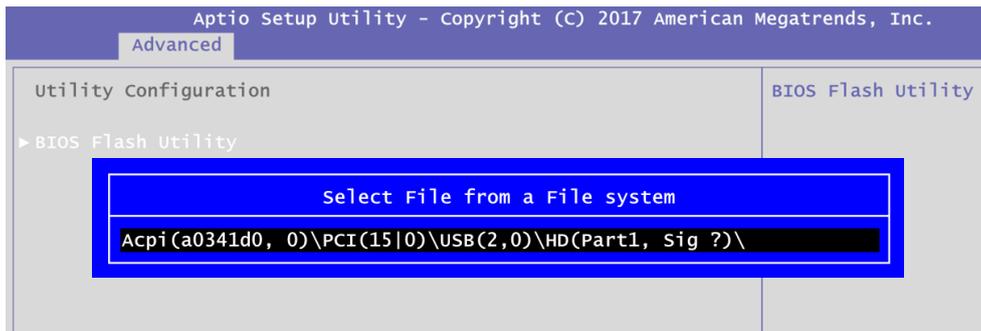
6. Select the USB drive containing BIOS ROM file you want to update using the <↑> or <↓> key. Then press <Enter> to get into "Axiomtek" folder.

```
       Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
           Advanced

    Utility Configuration                                   BIOS Flash Utility

  ▶ BIOS Flash Utility
              ┌────────────────────────────────┐
              │          Select File           │
              ├────────────────────────────────┤
              │ <Axiomtek>                     │
              └────────────────────────────────┘
```

7. Now you can see the BIOS ROM file on the screen, press <Enter> to select.

```
         Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
          Advanced

  Utility Configuration                                    BIOS Flash Utility

  ▶ BIOS Flash Utility
                              ┌──────────────────────────┐
                              │       Select File        │
                              │                          │
                              │ <..>                     │
                              │  ┌──────────────────┐    │
                              │  │ CAPA312.005      │    │
                              └──┴──────────────────┴────┘
```
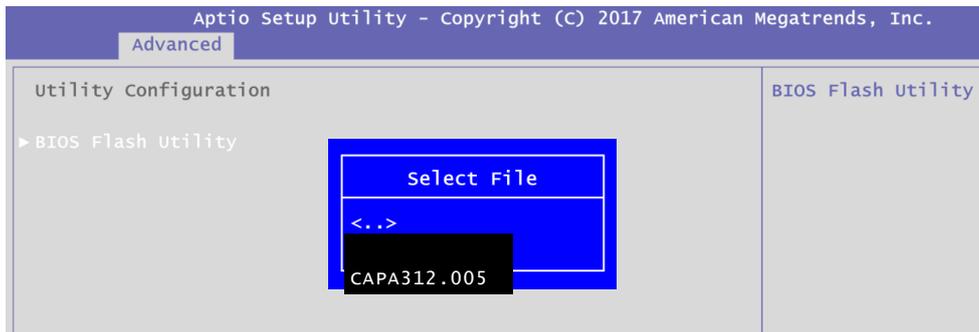
8. Select Start to flash system BIOS option to begin updating procedure.

```
         Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
          Advanced

  Utility Configuration                                    BIOS Flash Utility

  ▶ BIOS Flash Utility
                        ┌────────────────────────────────┐
                        │       BIOS Flash Utility        │
                        │                                 │
                        │  Return to BIOS Setup Menu      │
                        │  Start to flash system BIOS     │
                        └────────────────────────────────┘
```
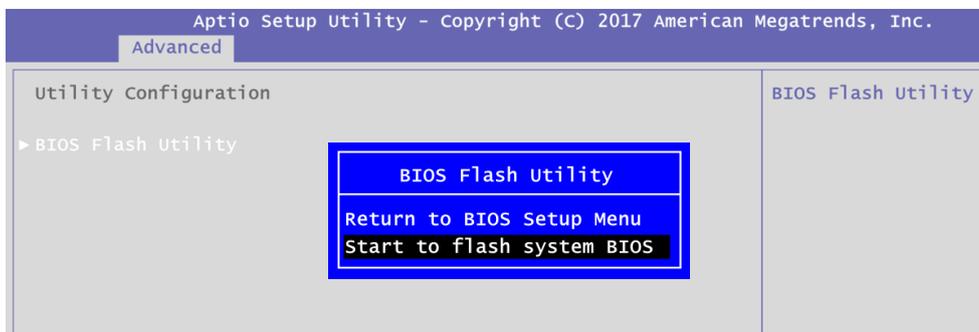
9. Please wait while BIOS completes the entire flash update process: erase data, write new data and verify data.

```
o Setup Utility – Copyright (C) 2017 American Megatrends

ion                                                    BIOS Fla

         ┌─ Flash Update Progress ─┐
         │                         │
         │        Erase data       │
         │                         │
         │───────── 13% ───────────│
         │                         │
         │  ██                     │
         └─────────────────────────┘
```

```
o Setup Utility – Copyright (C) 2017 American Megatrends

ion                                                    BIOS Fla

         ┌─ Flash Update Progress ─┐
         │                         │
         │       Write new data    │
         │                         │
         │───────── 4% ────────────│
         │                         │
         │ ██                      │
         └─────────────────────────┘
```

```
o Setup Utility – Copyright (C) 2017 American Megatrends

ion                                                    BIOS Fla

         ┌─ Flash Update Progress ─┐
         │                         │
         │        Verify data      │
         │                         │
         │───────── 10% ───────────│
         │                         │
         │ ██                      │
         └─────────────────────────┘
```
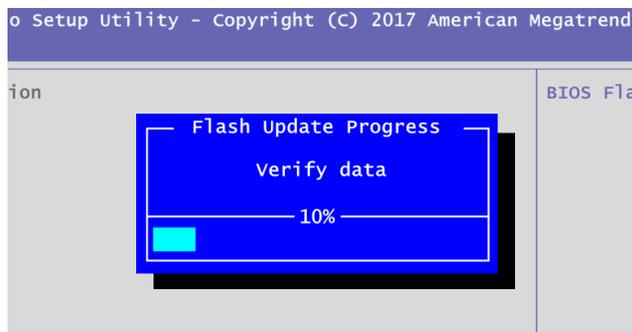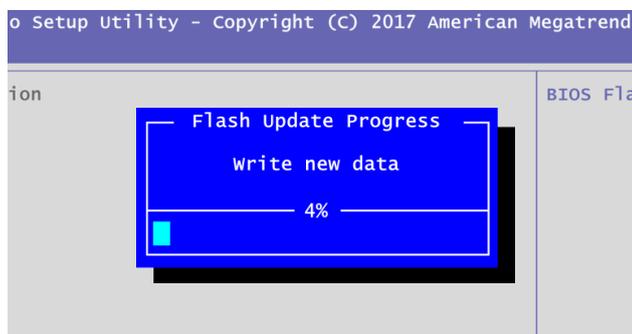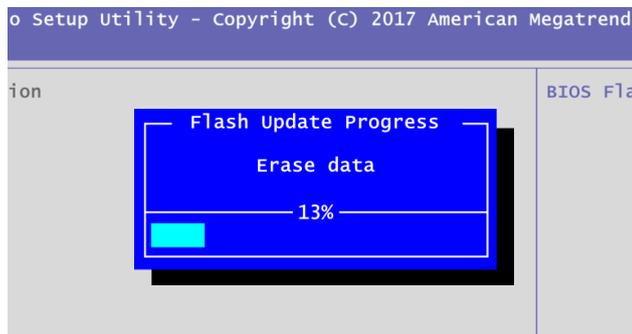
10. When you see the following figure, press <Enter> to finish the update process. After that the system will shut down and restart immediately.

```
        Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
        Advanced

Utility Configuration                                  BIOS Flash Utility

▶ BIOS Flash Utility    ┌─ Flash Update Progress ─┐
                        │                         │
                        │  Flash system BIOS finish! │
                        │                         │
                        │         ┌──────┐        │
                        │         │  OK  │        │
                        │         └──────┘        │
                        └─────────────────────────┘
```