AXIOMTEK

eBOX639-830-FL Series

Embedded System

User's Manual

RoHS

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Safety Precautions

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

1. The eBOX639-830-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 eBOX639-830-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 eBOX639-830-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 -20℃ 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.

Classification

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

General Cleaning Tips

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

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

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

Cleaning Tools:

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

Keep in mind that some components in your computer may 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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Table of Contents

CHAPTER 1
INTRODUCTION

This chapter contains general information and detailed specifications of the eBOX639-830-FL. The Chapter 1 includes the following sections:

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

1.1   General Description

The eBOX639-830-FL is an embedded system that supports onboard Intel® Atom™ processor D2550 (1M Cache, 1.86 GHz) processors to provide Windows 7, Windows Embedded 7, WinCE embedded, Linux, suitable for the most endurable operation. It features fan less design with full feature I/O, one 204-pin unbuffered DIMM socket for singe channel DDR3-1066 MHz memory, and enhanced system dependability by built-in Watchdog Timer.

➢ Features
   1. Intel® NM10 chipset
   2. Support Intel® Atom™ Processor D2550 (1M Cache, 1.86 GHz)
   3. Maximum to 4GB DDR3-1066 MHz memory for D2550
   4. Support two 32bit/33MHz PCI slots support max. length of 200   mm of PCB boards expansion
   5. Supports 6 USB 2.0 ports
   6. Supports 4 RS-232 ports
   7. Supports dual 10/100/1000Mbps Ethernet port
   8. Supports HDMI and VGA ports
   9. One LPT port
   10. One 2.5" SATA HDD drive bay
   11. One Full-size PCI Express Mini Card (mSATA or PCIe Mini Card)
   12. One PS/2 keyboard port and mouse port
   13. Two SMA antenna opening
   14. One Audio (Mic-in / Line-out)
   15. Watchdog timer (Reset, 1~255 sec)
   16. Wall mount (optional)
   17. Express Mini Card Module (optional)
   18. Antenna (optional)
   19. AC power cord (optional)

➢ Reliable and Stable Design
   The eBOX639-830-FL adopts the advanced cooling system and supporting the SSD, which makes it especially suitable for vibration environments, best for industrial automation, digital signage and gaming application.

➢ Embedded O.S. Supported
   The eBOX639-830-FL not only supports Windows 7, but also supports embedded OS, such as Windows 7 embedded, WinCE and Linux.

1.2   System Specifications

1.2.1 CPU

■   **CPU**

Onboard Intel® Atom™ Processor D2550 (1M Cache, 1.86 GHz)

■   **BIOS**

AMI 8Mbit SPI Flash, DMI, Plug and Play

■   **System Memory**

Maximum to 4GB DDR3 1066 MHz memory for D2550
One 204-pin unbuffered DDR3 DIMM sockets

1.2.2 I/O System

■   **4 x RS-232 with 5V/12V jumper selection**
■   **1 x VGA   (Supports max resolution 1920x1200)**
■   **1 x HDMI   (Supports max resolution 1920x1200)**
■   **1 x LPT**
■   **1 x Audio (Mic-in/Line-out) with Realtek ALC892**
■   **1 x PS/2 Keyboard**
■   **1 x PS/2 Mouse**
■   **2 x 10/100/1000Mbps RJ45 Realtek RTL8111E Ethernet**
■   **6 x USB**
■   **2 x SMA opening for antenna**
■   **1 x VDC power input connector**

1.2.3 System Specification

■   **Watchdog Timer**

Reset supported; 255 levels, 1~255 sec.

■   **Power Supply**

DC Version:

DC ATX 107W

Input: DC 16~28VDC

Output: +3.3V@6A, +5V@9A, +12V@3A, -12V@0.1A, +5Vsb@1A

AC Version (Optional):

AC Adapter 150W 19V/7.89A

Input: AC 100~240V

Output: 19VDC @ 7.89A , Power 4Pin DIN Plug w/Lock

■   **Operation Temperature**

-10℃ ~ 50℃ (14 ºF ~ 122ºF), D2550 with W.T. SSD

■   **Storage Temperature**

-20℃ ~ 80℃ (-4 ºF ~ 176ºF)

■ **Humidity**

10% ~ 90% (non-condensation)

■ **Vibration Endurance**

2Grm w/ SSD(5-500Hz, X, Y, Z directions)

■ **Weight**

4.1 kg (9.03 lb) without package

4.8 kg (10.58 lb) with package

■ **Dimensions**

192mm(7.56") (W) x 230mm(9.05") (D) x 130.8mm(5.14") (H)

1.2.4 Driver CD Content

■ **Driver**

Audio Driver

Chipset Driver

Ethernet Driver

Graphic Driver

■ **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 eBOX639-830-FL.

1.3.1 System Dimension
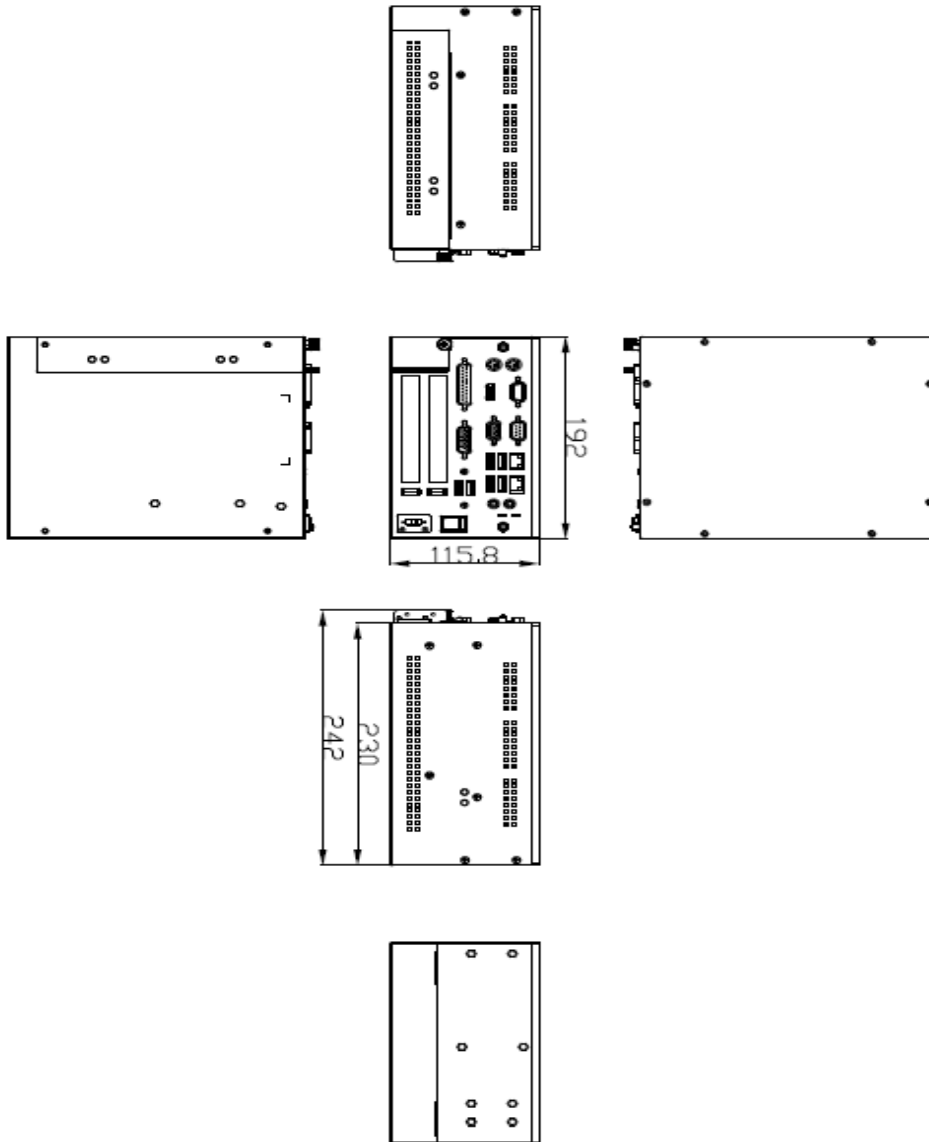
1.3.2 Wall mount Bracket Dimension
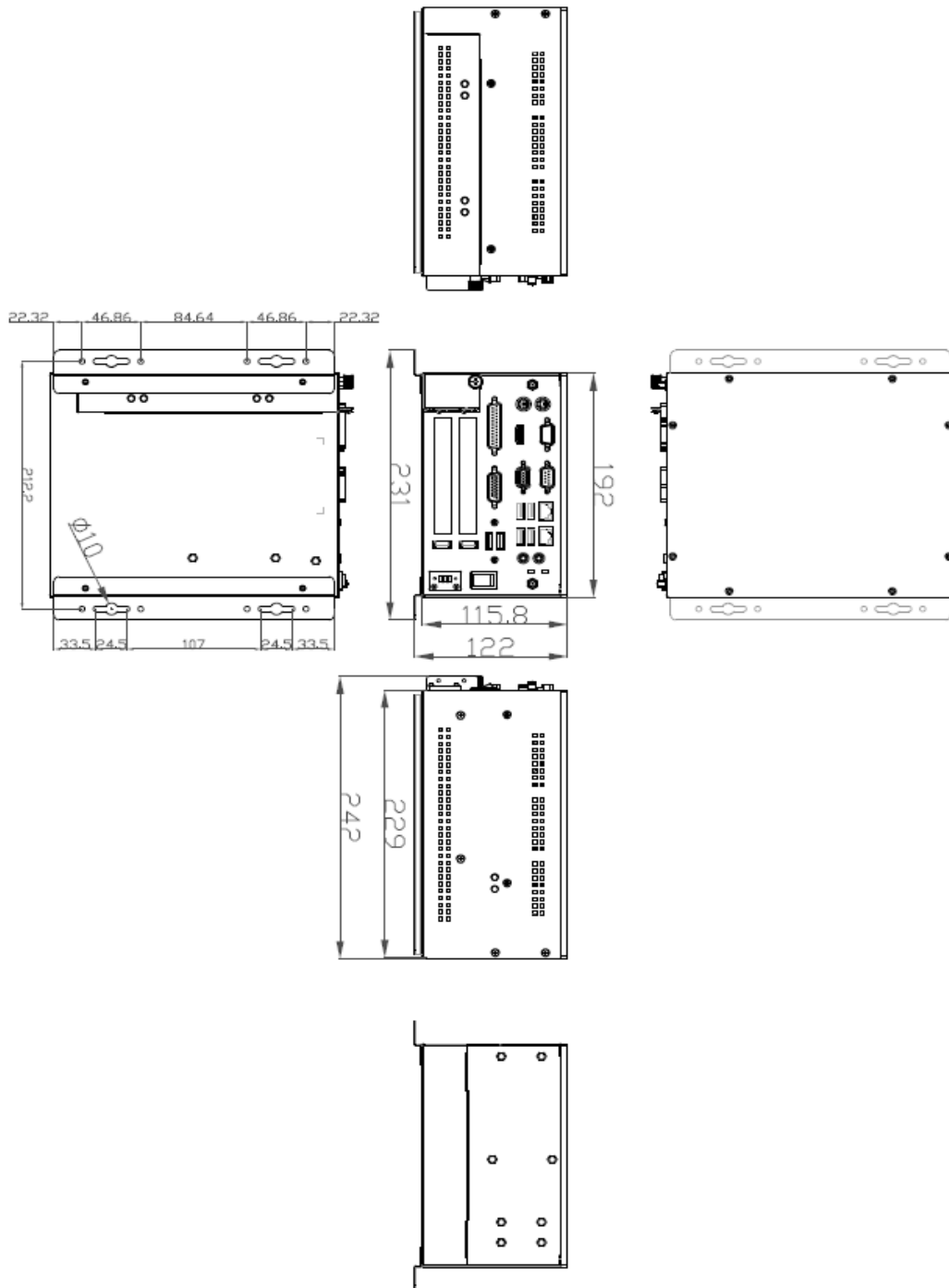
1.4   I/O Outlets

The following figures show you I/O outlets on front view of the eBOX639-830-FL.

● **Front View**

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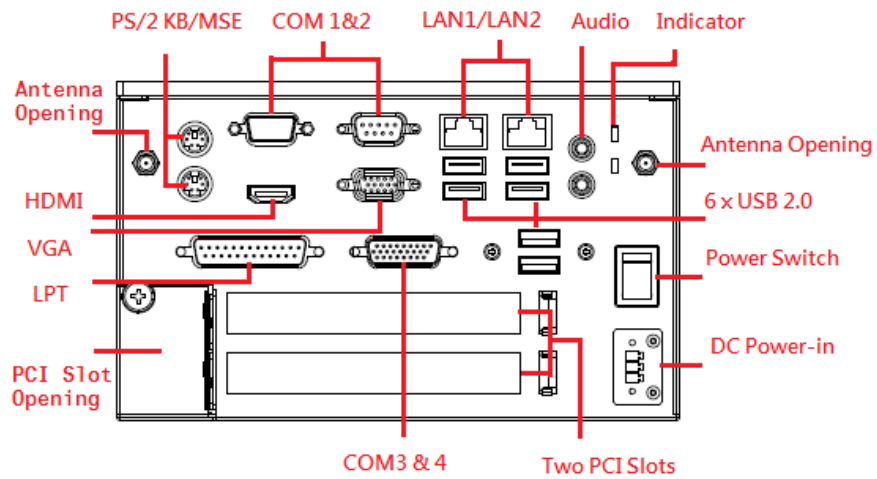
● **Rear View**

● **Rear View drawing**
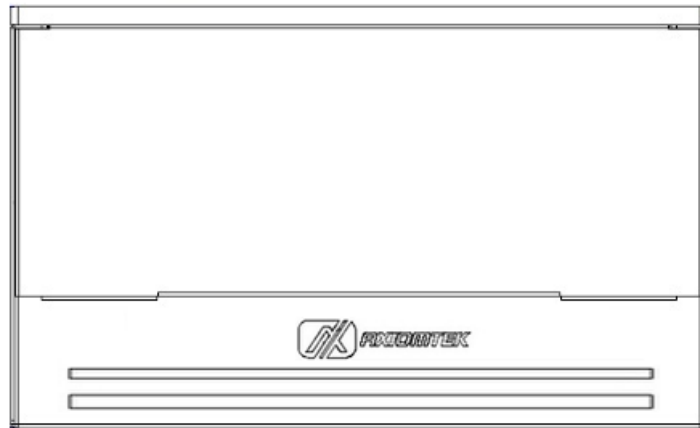
1.5   Packing List

The package bundled with your eBOX639-830-FL should contain the following items:

- **eBOX639-830-FL System Unit x 1**
- **eBOX639-830-FL Quick Manual x 1**
- **CD x 1 (For Driver and User's Manual)**
- **Screws pack x1**
- **Foot pad x4**
- **AC/DC Power Adapter (Optional)**
- **Power Cord x 1 (Optional)**
- **Mini Card Modules (Optional)**
- **Wall-mount Brackets (optional)**
- **HDD/SSD (optional)**
- **DRAM (optional)**

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

CHAPTER 2
HARDWARE INSTALLATION

The eBOX639-830-FL is convenient for your various hardware configurations, such as Memory Module, HDD (Hard Disk Drive), SSD (Solid State Drive) and mSATA. The chapter 2 will show you how to install the hardware.

2.1   Installing the Memory Module

Step 1   Turn off the system, and unplug the power cord.
Step 2   Locate screws at the top side, loosen screws.
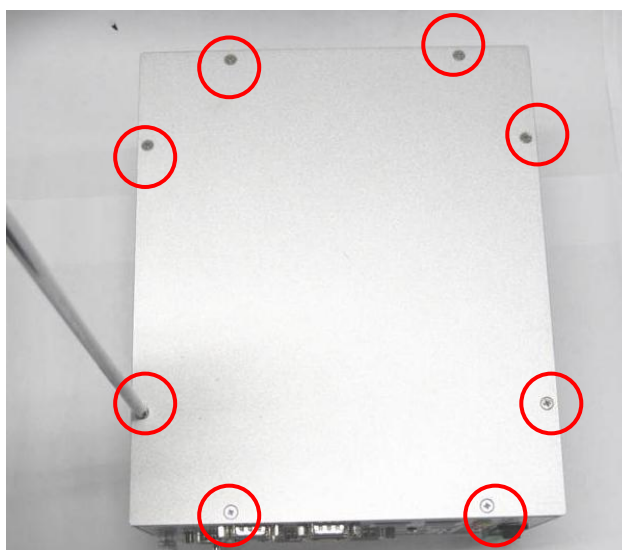
Step 3   Remove the top cover.

Step 4 Locate the memory module, insert the gold colored contact into the socket. Push the module down, until it is firmly seated by locking two latches on the sides.

Step 5 Close the cover to the chassis, and fasten all screws.

Note: *In likely conditions, user may have to replace new thermal pads or grease when existing thermal pad/grease are damaged, dirty or missed. Check the accessory kit for the need.*

2.2 Installing the Express Mini Card

Step 1 Turn off the system, and unplug the power cord.
Step 2 Locate screws at the top side, loosen screws.
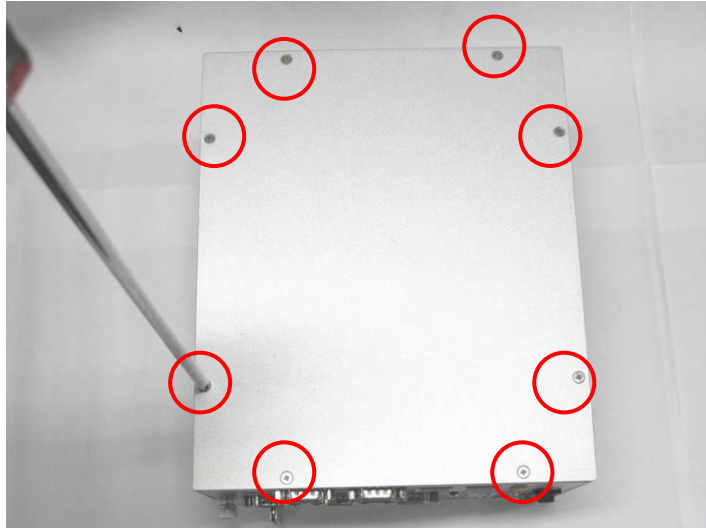
Step 3 Remove the top cover.
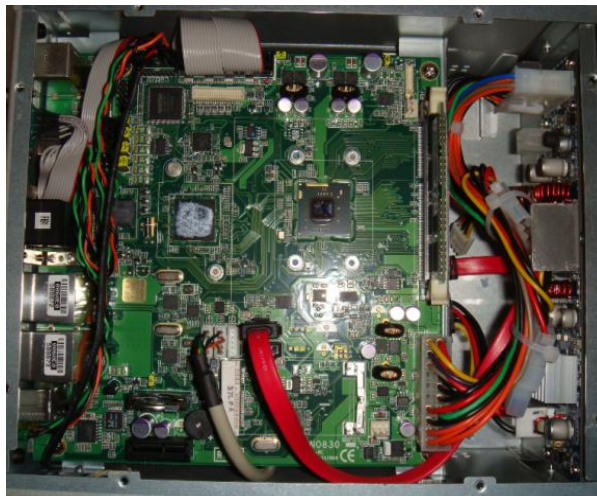
Step 4   Locate the location of Mini card slot.

Step 5   Slide Mini card into Mini Card slot with caution.

Step 6   Fasten the screws of minicard.

Step 7   Assembly the top cover back and fasten all screws.

Note: ***In likely conditions, user may have to replace new thermal pads or grease when existing thermal pad/grease are damaged, dirty or missed. Check the accessory kit for the need.***

2.3   Installing the 2.5" SATA HDD

Step 1   Turn off the system, and unplug the power cord.
Step 2   Locate screws at the top side, loosen screws.
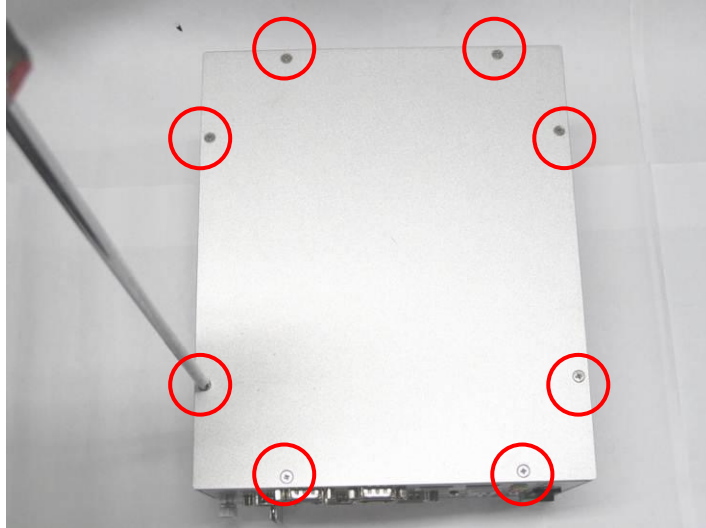
Step 3   Locate screws at the back side, loosen screws.

Step 4   Remove the top cover
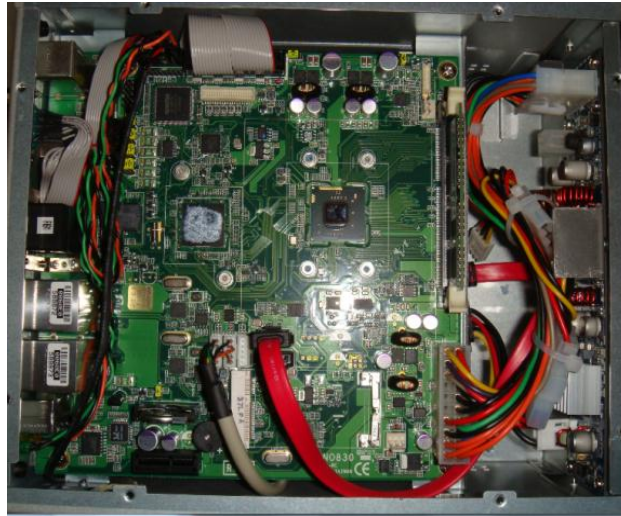
Step 5   Remove the rear cover
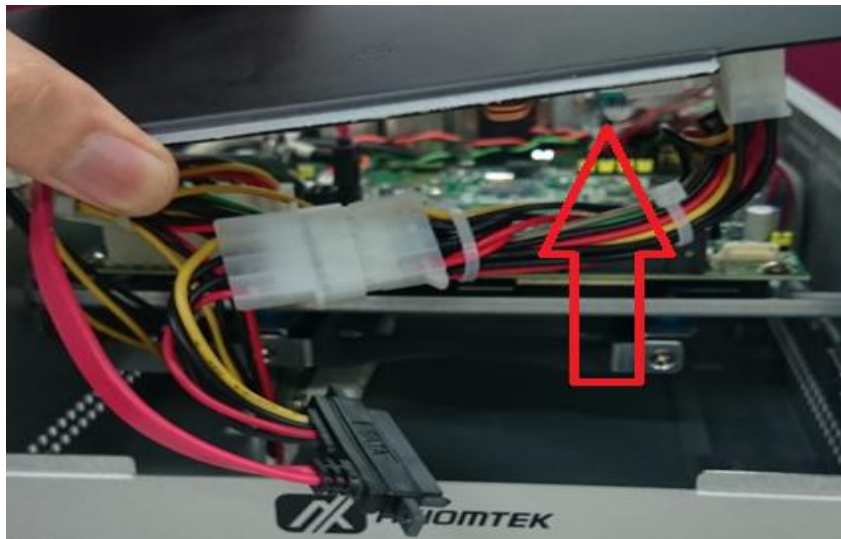
Step 6 Loosen screws and pull out the HDD bracket
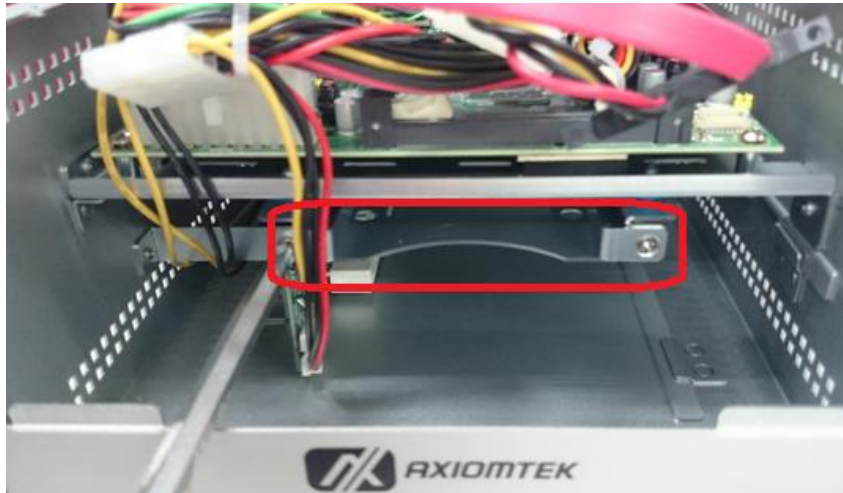
Step 7 Assembly the HDD bracket together with the SATA HDD
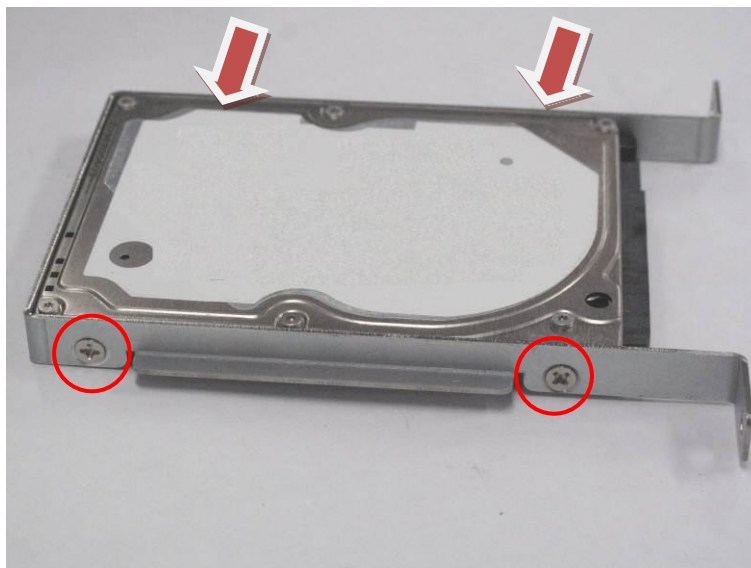
Step 8 Install the HDD tray into tray bracket.

Step 9   Fasten screws and connect SATA cable and power cable to SATA HDD.
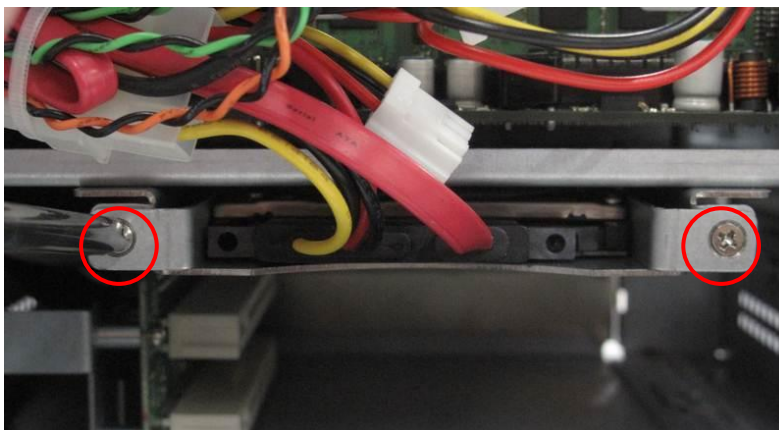
Step 10 Assemble the rear cover and top cover back to the chassis, and fasten all screws.

2.4 Installing the PCI Card

Step 1 Turn off the system.

Step 2 Unplug the power-cord.

Step 3 Turning leftward to loosen the button as marked; next, pull the lower left cover out.

Step 4 You can locate the PCI slot from the side.

Step 5 **Align the PCI card with the slot, and press the card into the slot until it is firmly seated.**
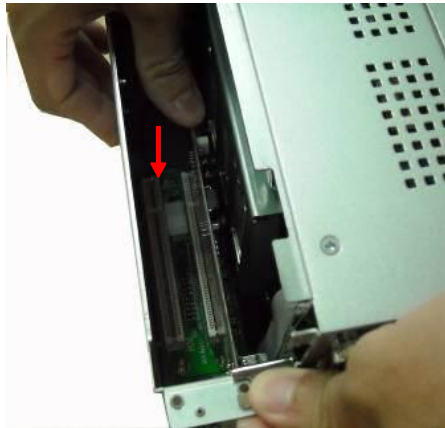
Step 6 **Close the side cover to the chassis and fasten the button.**

CHAPTER 3
JUMPER SETTING & CONNECTOR

Proper jumper settings configure the **eBOX639-830-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   Jumper Location
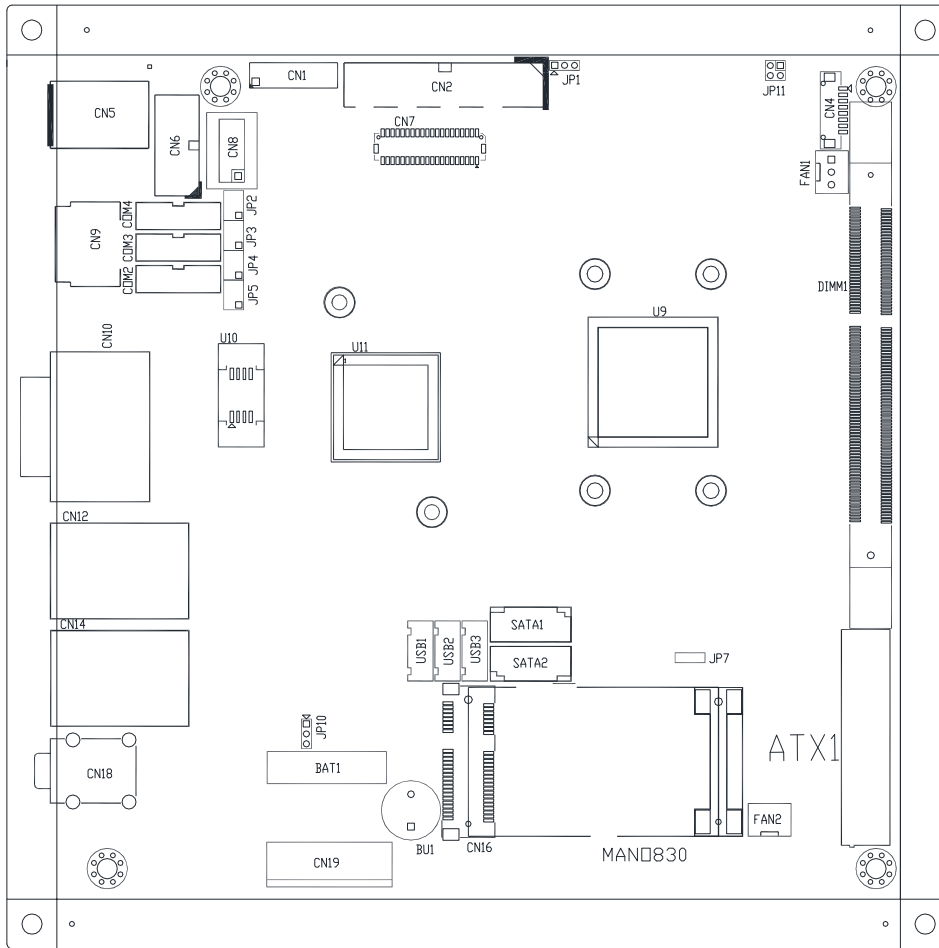
Note: We strongly recommended that you should not modify any unmentioned jumper setting without Axiomtek FAE's instruction. Any modification without instruction might cause system to become damage.

3.2   Jumper Setting Summary

Proper jumper settings configure the eBOX639-830-FL to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Jumper	Function / Default Setting	Jumper Setting
JP2	COM4 Data/Power Selection Default: Pin 1:DCD, Pin 8:RI	Short 3-5 Short 4-6
JP3	COM3 Data/Power Selection Default: Pin 1:DCD, Pin 8:RI	Short 3-5 Short 4-6
JP4	COM2 Data/Power Selection Default: Pin 1:DCD, Pin 8:RI	Short 3-5 Short 4-6
JP5	COM1 Data/Power Selection Default: Pin 1:DCD, Pin 8:RI	Short 3-5 Short 4-6
JP7	Mini Card Selection Default: PCI-Express x1	Short 1-2
JP10	Restore BIOS Optimal Defaults Default: Normal Operation	Short 1-2

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 COM4 Data/Power Selection (JP2)

The COM4 port has +5V level power capability on RI and +12V level on DCD by setting this jumper.

Function	Setting
Power: Set COM4 pin 1 to +12V level	1-3 close
Data: Set COM4 pin 1 to DCD (Default)	3-5 close
Power: Set COM4 pin 8 to +5V level	2-4 close
Data: Set COM4 pin 8 to RI (Default)	4-6 close
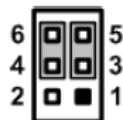
3.2.2 COM3 Data/Power Selection (JP3)

The COM3 port has +5V level power capability on RI and +12V level on DCD by setting this jumper.

Function	Setting
Power: Set COM3 pin 1 to +12V level	1-3 close
Data: Set COM3 pin 1 to DCD (Default)	3-5 close
Power: Set COM3 pin 8 to +5V level	2-4 close
Data: Set COM3 pin 8 to RI (Default)	4-6 close
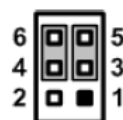
3.2.3 COM2 Data/Power Selection (JP4)

The COM2 port has +5V level power capability on RI and +12V level on DCD by setting this jumper.

Function	Setting
Power: Set COM2 pin 1 to +12V level	1-3 close
Data: Set COM2 pin 1 to DCD (Default)	3-5 close
Power: Set COM2 pin 8 to +5V level	2-4 close
Data: Set COM2 pin 8 to RI (Default)	4-6 close
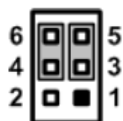
3.2.4 COM1 Data/Power Selection (JP5)

The COM1 port has +5V level power capability on RI and +12V level on DCD by setting this jumper.

Function	Setting
Power: Set CN10B pin 1 to +12V level	1-3 close
Data: Set CN10B pin 1 to DCD (Default)	3-5 close
Power: Set CN10B pin 9 to +5V level	2-4 close
Data: Set CN10B pin 9 to RI (Default)	4-6 close
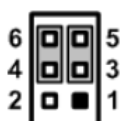
3.2.5 Mini Card Selection (JP7)

Select mSATA or PCI-Express x1 support on PCI-Express Mini Card socket.

Function	Setting
Select PCI-Express x1 (Default)	1-2 close
Select mSATA	2-3 close

3.2.6 Restore BIOS Optimal Defaults (JP10)

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 operation (Default)	1-2 close
Restore BIOS optimal defaults	2-3 close

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 eBOX639-830-FL Series.

External Connectors / Buttons	Section
DC-in Phoenix Power Connector	3.3.1
DC Power-din Connector (optional)	3.3.2
ATX Power On/Off Button	3.3.3
PS/2 Keyboard and Mouse Connector	3.3.4
COM1/COM2 Serial Port Connector	3.3.5
COM3&4 Serial Port Connector	3.3.6
VGA Connector	3.3.7
HDMI Connector	3.3.8
LAN Connector(LAN1,LAN2)	3.3.9
USB Connector	3.3.10
Audio Connector	3.3.11
SATA Connector	3.3.12
LPT Connector	3.3.13
Mini Card Slot	3.3.14

3.3.1 DC-in Phoenix Power Connector

The system supports a wide range Phoenix DC-in connector for system power input.

Pin	Signal
1	DC+
2	GND
3	DC-
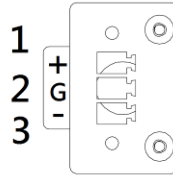
3.3.2 DC Power-din Connector (optional)

Connect it to the power AC-DC 19V/150W power-din connector with adapter.

Pin	Signal
1	GND
2	GND
3	DC 19V
4	DC 19V
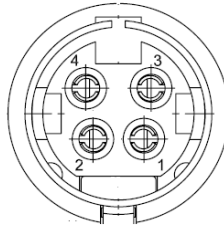
3.3.3 ATX Power On/OFF Button

The ATX power button is on the I/O side. It can allow users to control eBOX639-830-FL power on/off.

Pin	Signal
1	GND
2	PSIN
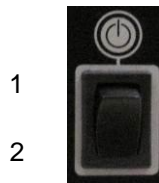
3.3.4 PS/2 Keyboard and Mouse Connector

eBOX639-830-FL provides a keyboard and Mouse interface with a DIN connector. To install the PS/2 keyboard and mouse, plug the mouse to the upper port (green), and the keyboard to the lower port (purple).

Pin	Signal	Pin	Signal
1	K/B Data	7	M/S Data
2	NC	8	NC
3	GND	9	GND
4	VCC	10	VCC
5	K/B CLK	11	M/S CLK
6	NC	12	NC
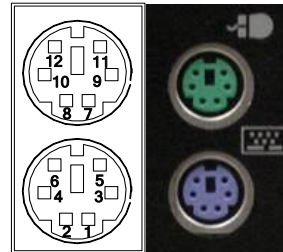
3.3.5 COM1 & COM2 Serial Port Connector

Please refer to the following pin define for COM1 and COM2.

Pin	Description
1	DCD, Data Carrier Detect
2	RXD, Receive Data
3	TXD, Transmit Data
4	DTR, Data Terminal Ready
5	GND, Ground
6	DSR, Data Set Ready
7	RTS, Request To Send
8	CTS, Clear To Send
9	RI, Ring Indicator

COM1~COM2
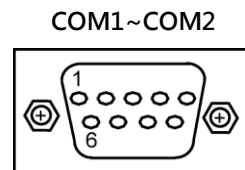
3.3.6 COM3 & COM4 Serial Port Connector

The following is pin define for one d-sub 26 pin connector, you can connect RS-232 devices through COM3&4 connector.

Pin	Description
1	DCD3, Data Carrier Detect
2	RXD3, Receive Data
3	TXD3, Transmit Data
4	DTR3, Data Terminal Ready
5	GND3, Ground
6	DSR3, Data Set Ready
7	RTS3, Request To Send
8	CTS3, Clear To Send
9	RI3, Ring Indicator
10	DCD4, Data Carrier Detect
11	RXD4, Receive Data
12	TXD4, Transmit Data
13	DTR4, Data Terminal Ready
14	GND4, Ground
15	DSR4, Data Set Ready
16	RTS4, Request To Send
17	CTS4, Clear To Send
18	RI4, Ring Indicator
19~26	N/A

COM3 & 4
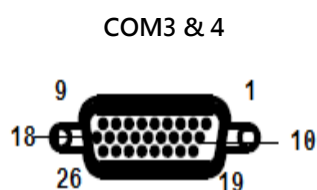
3.3.7 VGA Connector

The VGA connector is a slim type 15-pin D-Sub connector which is common for the CRT VGA display. The VGA interface configuration can be configured via the software utility.

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

3.3.8 HDMI Connector

The HDMI is a compact digital interface which is capable of transmitting high-definition video and high-resolution audio over a single cable.

Pin	Signal	Pin	Signal
1	HDMI OUT_DATA2+	11	GND
2	GND	12	HDMI OUT Clock-
3	HDMI OUT_DATA2-	13	N.C.
4	HDMI OUT_DATA1+	14	N.C.
5	GND	15	HDMI OUT_SCL
6	HDMI OUT_DATA1-	16	HDMI OUT_SDA
7	HDMI OUT_DATA0+	17	GND
8	GND	18	+5V
9	HDMI OUT_DATA0-	19	HDMI_HTPLG
10	HDMI OUT Clock+		
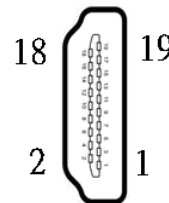
3.3.9 LAN Connector (LAN1, LAN2)

The RJ-45 connector is for Ethernet. To connect the board to a 1000/100/10 Base-T hub, just plug one end of the cable into connector and connect the other end (phone jack) to a 1000/100/10-Base-T hub

Pin	Signal	Pin	Signal
L1	MDI0+	L5	MDI2-
L2	MDI0-	L6	MDI1-
L3	MDI1+	L7	MDI3+
L4	MDI2+	L8	MDI3-
A	100 LAN LED (Green)/ 1000 LAN LED (Orange)		
B	Active LED (Yellow)		
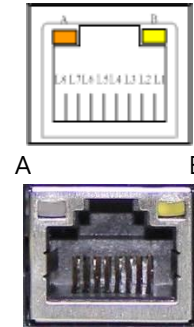
3.3.10 USB Connector

The Universal Serial Bus connectors are compliant with USB 2.0 (480Mbps), and ideally for installing USB peripherals such as keyboard, mouse, scanner, etc.

Pin	Signal USB Port 0	Pin	Signal USB Port 1
1	USB VCC (+5V level)	5	USB VCC (+5V level)
2	USB #0_D-	6	USB #1_D-
3	USB #0_D+	7	USB #1_D+
4	Ground (GND)	8	Ground (GND)
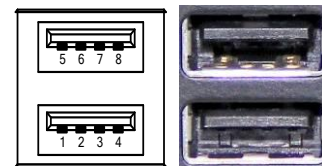
3.3.11 Audio Connector

These two audio jacks ideal are for Audio Mic-In and Audio Line-out.

Pin	Signal
1	Line Out
2	Microphone In
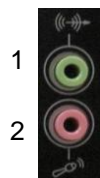
3.3.12 SATA Connector

The SATA connector is for high-speed SATA interface ports and they can be connected to hard disk devices.

Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND
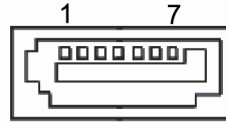
3.3.13 LPT Connector

The following is pin define for LPT port, you can connect print devices through this port.

Pin 1	Data Strobe
Pin 2	Data 0
Pin 3	Data 1
Pin 4	Data 2
Pin 5	Data 3
Pin 6	Data 4
Pin 7	Data 5
Pin 8	Data 6
Pin 9	Data 7
Pin 10	Acknowledge
Pin 11	Busy
Pin 12	Paper Out
Pin 13	Select
Pin 14	Auto Feed
Pin 15	Error
Pin 16	Init
Pin 17	Select Input
Pin 18-25	Ground

25 Pin Female
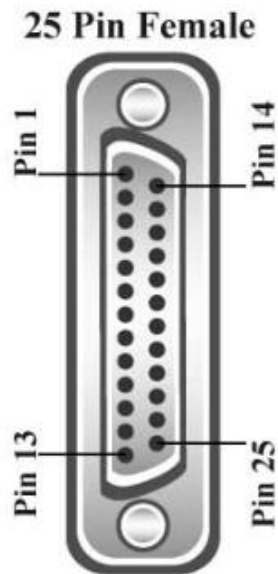
3.3.14 Express Mini Card Slot

PCI Express Mini Card connector supports a PCI Express x1 link and a USB 2.0 link.

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	No use	4	GND
5	No use	6	+1.5V
7	CLKREQ#	8	No use
9	GND	10	No use
11	REFCLK-	12	No use
13	REFCLK+	14	No use
15	GND	16	No use
17	No use	18	GND
19	No use	20	No use
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_D8-
37	GND	38	USB_D8+
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
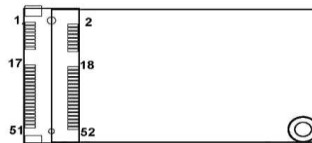
CHAPTER 4
BIOS SETUP UTILITY

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

The first time you 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) 2012 American Megatrends, Inc.
    Main  Advanced  Chipset  Boot  Security  Save & Exit

   Project Version              MANO830 X006           Set the Date. Use Tab to
   Build Date and Time          08/23/2013             switch between Date elements.

   System Date                  [Fri 08/30/2013]
   System Time                  [10:54:34]

   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 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```

BIOS 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.

Access Level

Display the access level of current user.

4.4 Advanced Menu

● **Launch PXE OpROM**
  Use this item to enable or disable the boot ROM function of the onboard LAN chip when
  the system boots up.
● **Launch Storage OpROM**
  Enable or disable boot option for legacy mass storage devices with option ROM.

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:
  ► ACPI Settings
  ► CPU Configuration
  ► IDE Configuration
  ► NCT6627UD Super IO Configuration
  ► NCT6627UD HW Monitor

For items marked with "►", please press <Enter> for more options.
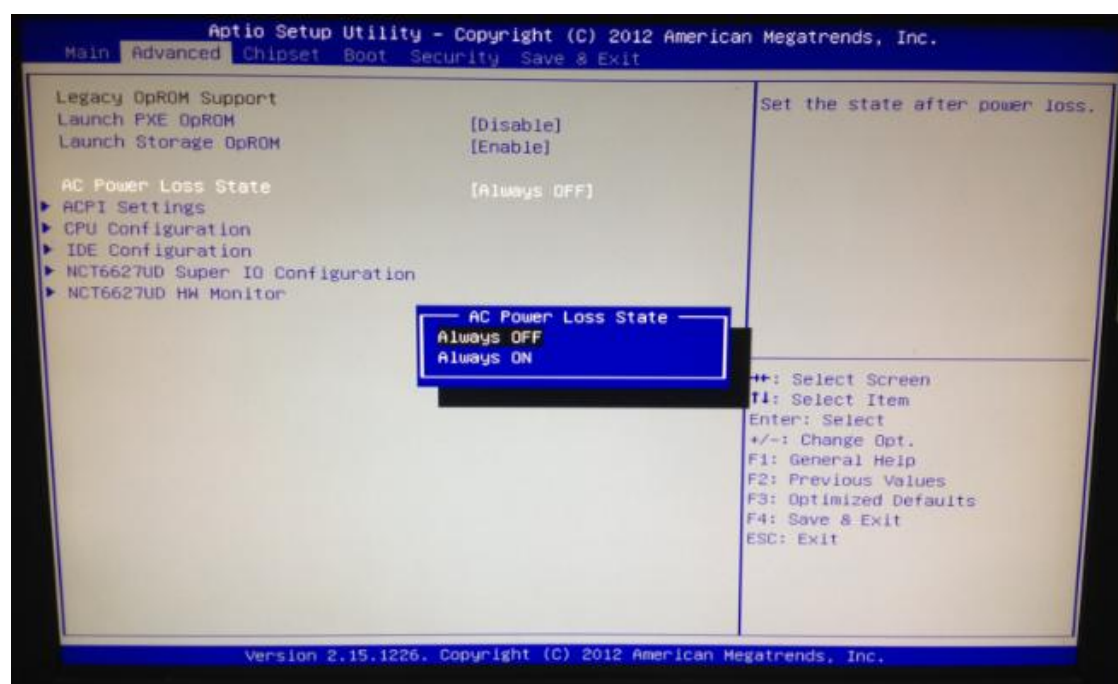
● **AC Power Loss State**

The system will be automatically power ON without pressing soft power button if you set this
item to "Always ON". We can set this item to avoid sudden power loss or imitate to AT mode.

● **ACPI Settings**

You can use this screen to select options for the ACPI configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

```
         Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
       Advanced

 ACPI Settings                                          Select the highest ACPI sleep
                                                        state the system will enter
 ACPI Sleep State                    [S1 (CPU Stop Clock)]   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 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```
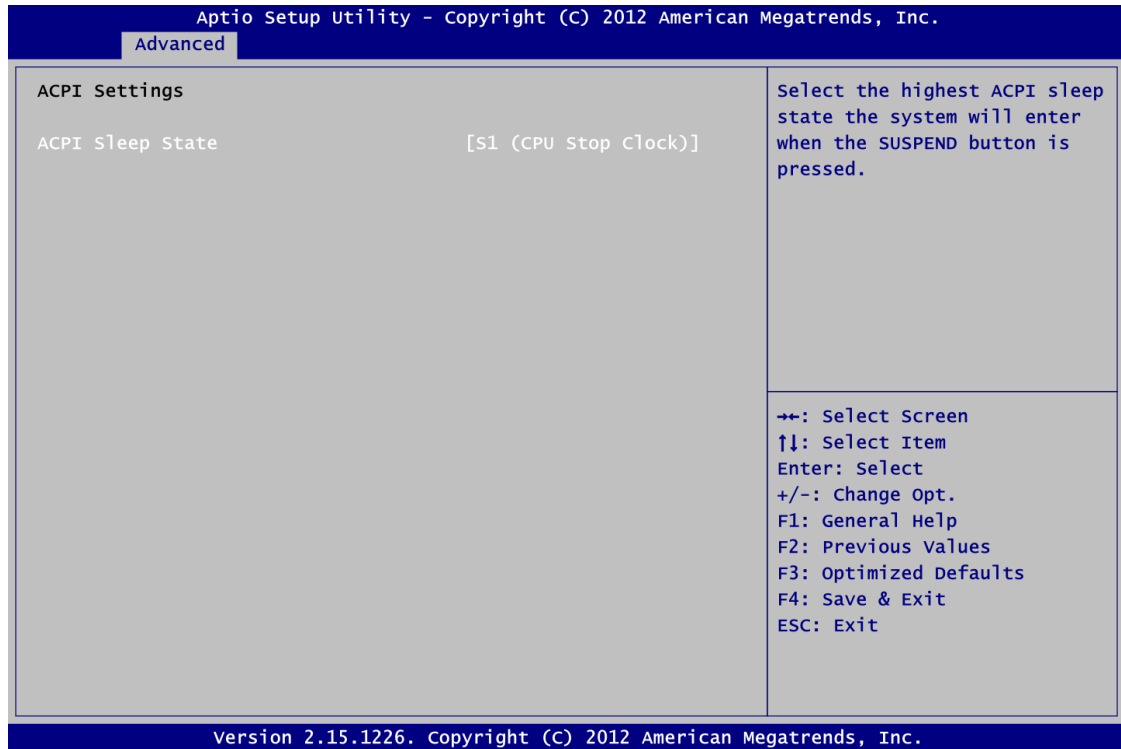
ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. Configuration options are Suspend Disabled and S1 only (CPU Stop Clock).

● **CPU Configuration**

This screen shows the CPU information.

```
            Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
    Advanced

 CPU Configuration

 Intel(R) Atom(TM) CPU D2550  @ 1.86GHz
 EMT64                          Supported
 Processor Speed                1865 MHz
 System Bus Speed               533 MHz
 Ratio Status                   14
 Actual Ratio                   14
 System Bus Speed               533 MHz
 Processor Stepping             30661
 Microcode Revision             269
 L1 Cache RAM                   2x56 k
 L2 Cache RAM                   2x512 k            →←: Select Screen
 Processor Core                 Dual               ↑↓: Select Item
 Hyper-Threading                Supported          Enter: Select
                                                   +/-: Change Opt.
                                                   F1: General Help
                                                   F2: Previous Values
                                                   F3: Optimized Defaults
                                                   F4: Save & Exit
                                                   ESC: Exit



            Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```

● **IDE Configuration**

In this 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) 2012 American Megatrends, Inc.
          Advanced

  SATA Port0                       ST3160316AS      (160.0GB)    Select a configuration for
  SATA Port1                       Not Present                   SATA Controller.

     Configure SATA as             [IDE]




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



                 Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```

Configure SATA as

Determine how SATA controller(s) operate. Operation mode options are IDE Mode and AHCI Mode.

● **NCT6627UD 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) 2012 American Megatrends, Inc.
        Advanced

    NCT6627UD Super IO Configuration                              Set Parameters of Serial Port
                                                                  1
    NCT6627UD Super IO Chip              NCT6627UD
  ► Serial Port 1 Configuration
  ► Serial Port 2 Configuration
  ► Serial Port 3 Configuration
  ► Serial Port 4 Configuration
  ► Parallel Port Configuration


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



            Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```

Serial Port 1~4 Configuration

Use this item to set parameters of Serial Port 1~4.

Parallel Port Configuration

This item allows you to determine the parallel port mode and I/O address for onboard parallel port.

● **NCT6106D HW Monitor**

This screen is for hardware health status monitoring.

```
          Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
     Advanced

 Pc Health Status

 SYS Temperature                     : +46 C
 CPU Temperature                     : +39.0 C
 SysFan Speed                        : N/A
 CpuFan Speed                        : N/A
 VCORE                               : +1.184 V
 VTTIN                               : +1.032 V
 +3.3V                               : +3.312 V
 +12V                                : +11.806 V


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



          Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```

This screen displays the temperature of system and CPU, cooling fan speed in RPM and system voltages (VCORE, VTTIN, +3.3V and +12V).

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:

►   Host Bridge

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

```
           Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
     Main    Advanced   Chipset   Boot    Security    Save & Exit

  ►Host Bridge                                        Host Bridge Parameters




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



           Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```
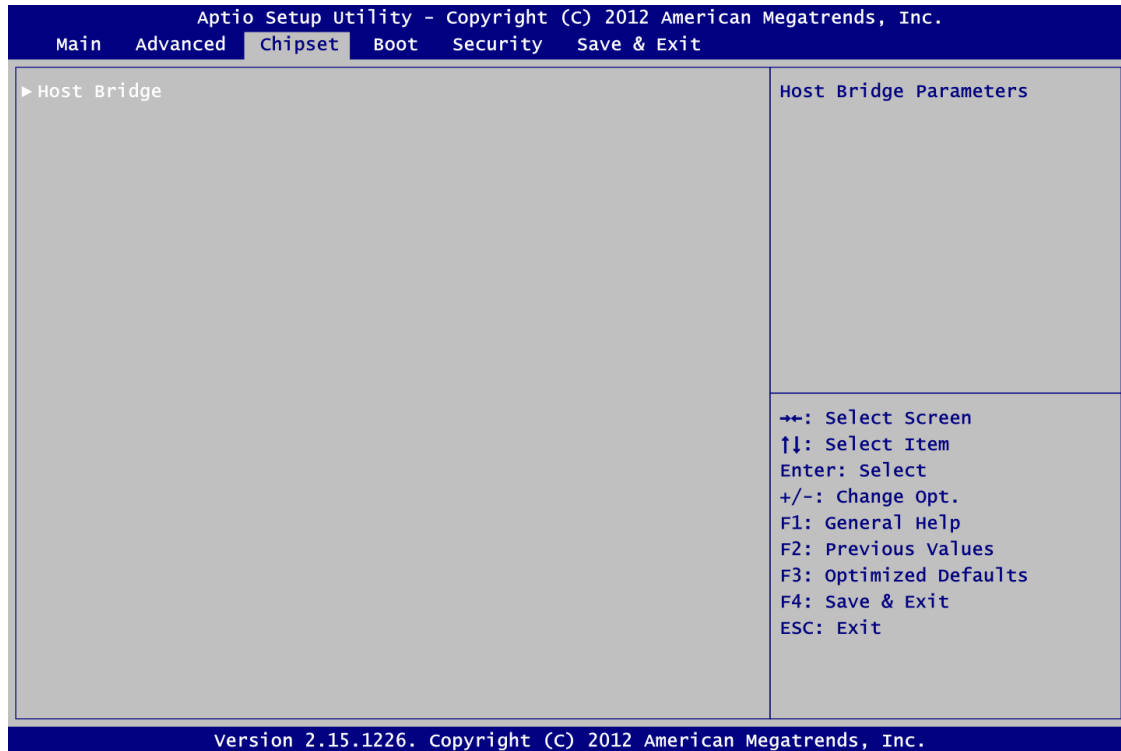
● **Host Bridge**

This screen shows memory information. For items marked with "▶", please press <Enter> for more options.

```
           Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
                Chipset

▶ Intel IGD Configuration                                   Config Intel IGD Settings.


  ******* Memory Information *******
  Memory Frequency                      1067 MHz(DDR3)
  Total Memory                          4096 MB
  DIMM#1                                4096 MB




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



           Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```
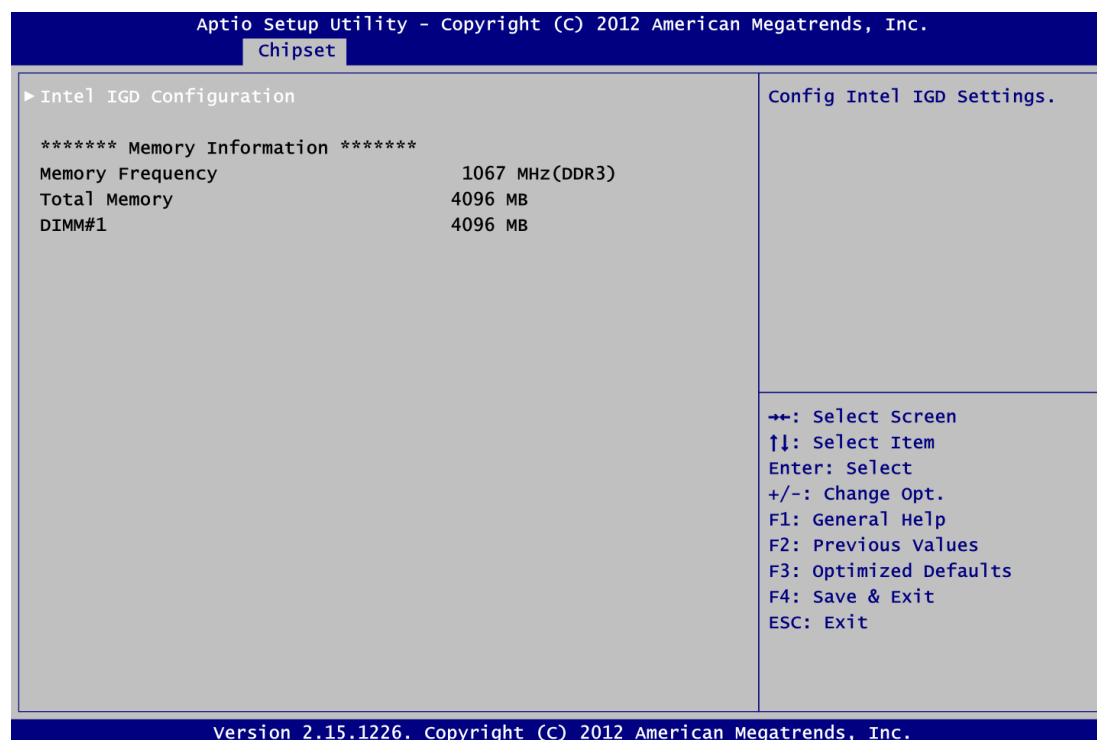
● **Intel IGD Configuration**

This screen provides function for specifying internal graphics controller related parameters.

```
            Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
              Chipset

 Intel IGD Configuration                                   Select the Video Device which
 IGFX - Boot Type                    [Auto]                will be activated during POST.
 LVDS Panel Type                     [1024x768    18Bit]   This has no effect if
                                                           external graphics present.



                        ┌──────  IGFX  -  Boot Type  ──────┐
                        │ Auto                             │
                        │ CRT                              │
                        │ HDMI                             │
                        │                                  │
                        │                                  │    →←: Select Screen
                        └──────────────────────────────────┘    ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit



            Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```

4.6   Boot Menu

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

```
              Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
    Main    Advanced    Chipset    Boot    Security    Save & Exit

    Boot Configuration                                         Number of seconds to wait for
    Setup Prompt Timeout                    1                  setup activation key.
                                                              65535(0xFFFF) means indefinite
    CSM16 Module Version                    07.69             waiting.

    Driver Option Priorities

    Boot Option Priorities
    Boot Option #1                    [SATA  PM: ST3160316...]

    Hard Drive BBS Priorities

                                                              →←: 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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```

- **Setup Prompt Timeout**

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

- **Boot Option Priorities**

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

- **Hard Drive BBS Priorities**

This item is for configuring the boot order for a specific device class. Its option(s) is only visible if at least one device for this class is detected.

4.7   Security Menu

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

```
                Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
    Main    Advanced    Chipset    Boot    Security    Save & Exit

  Password Description                                    Set 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
                                                          Enter: Select
  Administrator Password                                  +/-: Change Opt.
  User Password                                           F1: General Help
                                                          F2: Previous Values
  HDD Security Configuration:                             F3: Optimized Defaults
  HDD0:ST3160316AS                                        F4: Save & Exit
                                                          ESC: Exit


                Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```
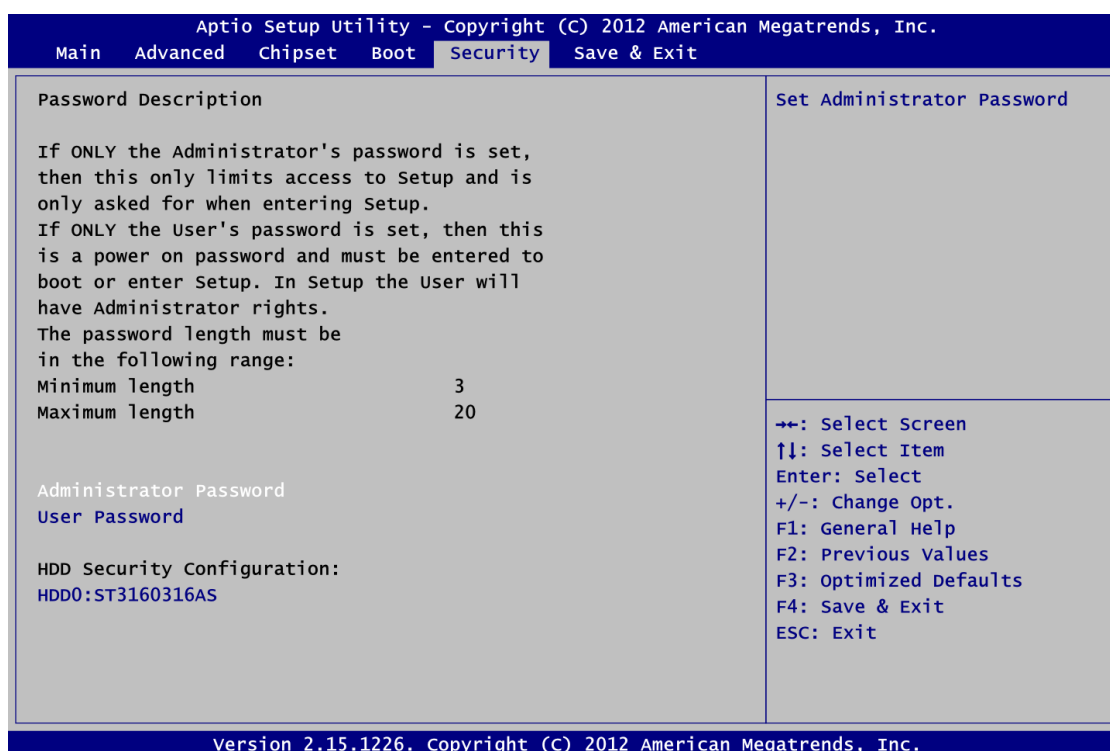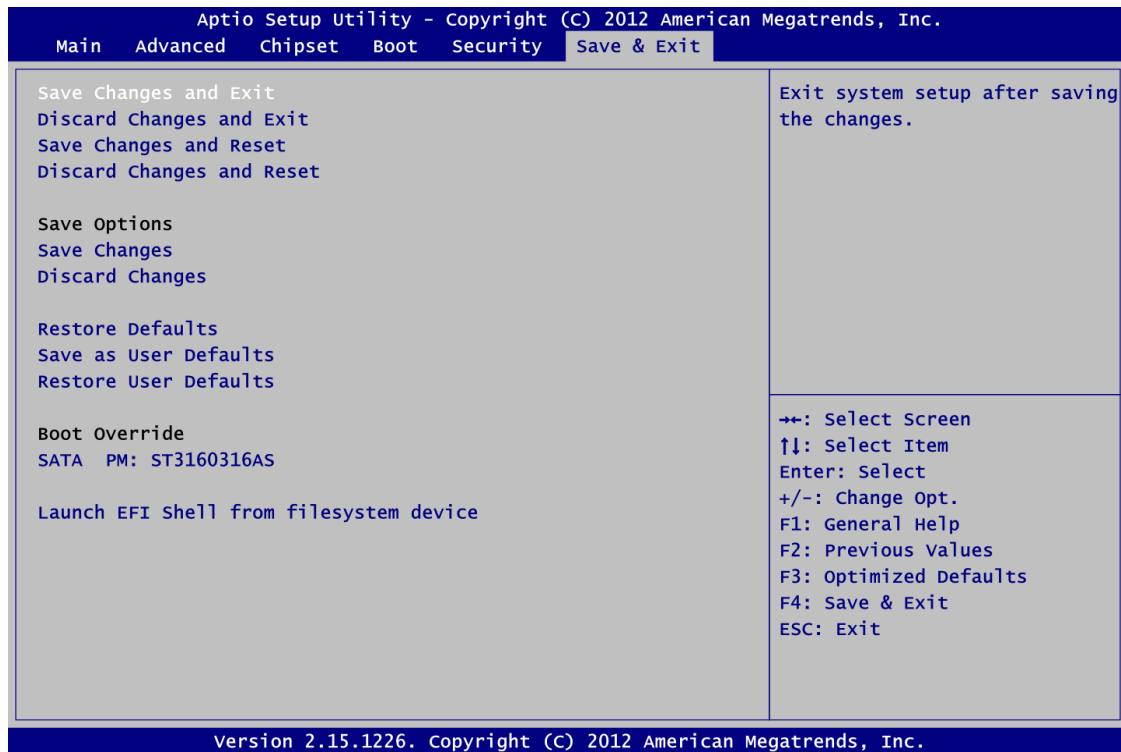
- **Administrator Password**

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).

4.8   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) 2012 American Megatrends, Inc.
     Main    Advanced    Chipset    Boot    Security   Save & Exit

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

    Save Options
    Save Changes
    Discard Changes

    Restore Defaults
    Save as User Defaults
    Restore User Defaults
                                                      →←: Select Screen
    Boot Override                                     ↑↓: Select Item
    SATA  PM: ST3160316AS                             Enter: Select
                                                      +/-: Change Opt.
    Launch EFI Shell from filesystem device           F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit



           Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.
```

● **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.

● **Launch EFI Shell from filesystem device**

Attempt to launch EFI Shell application (Shellx64.efi) from one of   the available filesystem devices.

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APPENDIX A
WATCHDOG TIMER

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.

How to Use Watchdog Timer

Start

↓

Un-Lock WDT:

            O 2E 87 ; Un-lock super I/O

            O 2E 87 ; Un-lock super I/O

↓

Select Logic device:

            O 2E 07

            O 2F 08

↓

Activate WDT:

            O 2E 30

            O 2F 01

↓

Set Second or Minute:

            O 2E F5

            O 2F N   ; N=00 or 08

↓

Set base timer:

            O 2E F6

            O 2F M   ; M=00,01,02,…FF(Hex) ,Value=0 to 255

↓

;IF to disable WDT:

            O 2E 30

            O 2F 00 ; Can be disabled at any time

- Timeout Value Range
    - 1 to 255
    - Minute / Second

● Program Sample

O 2E 87	
O 2E 87	
O 2E 07	
O 2F 08	Logical Device 8
O 2E 30	Activate
O 2F 01	
O 2E F5	
O 2F N	Set Minute or Second; **N**=08 (Min), 00(Sec)
O 2E F6	
O 2F M	Set Value; **M**=00~FF