eBOX625-842-FL Series

Embedded System

User's Manual

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Dec 2019, Version A2

Printed in Taiwan

Safety Precautions

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

1. The eBOX625-842-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 eBOX625-842-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 eBOX625-842-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.

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 eBOX625-842-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 eBOX625-842-FL is an embedded system that supports onboard quad core Intel® Celeron® J1900 (2.0 GHz) single chip design to provide Windows 8.1, Windows 7 , Windows 8 Embedded, Windows 7 Embedded or Linux, suitable for the most endurable operation. It features fan less design with full feature I/O, one 204-pin unbuffered SODIMM socket for singe channel DDR3L-1066/1333 MHz memory, and enhanced system dependability by built-in Watchdog Timer.

- **Features**
  1. Intel® Celeron® 2.0 GHz quad core SoC
  2. Maximum to 8GB DDR3L-1066/1333 memory for J1900
  3. Ultra slim and compact design
  4. VGA & HDMI for display output
  5. Supports 4 USB 2.0 ports
  6. Supports 2 RS-232/422/485
  7. Supports 8-CH Programmable Digital I/O
  8. Supports dual 10/100/1000Mbps Ethernet ports
  9. One 2.5" SATA HDD drive bay
  10. One Full-Size Mini PCI Express Mini Card w/mSATA supported
  11. One Half-Size Mini PCI Express Mini Card
  12. One SIM slot
  13. Watchdog timer
  14. 12V / 36W AC-DC Adapter
  15. Wide temperature: -20°C~55°C supported (with W.T. SSD & Memory)

- **Reliable and Stable Design**
  The eBOX625-842-FL adopts the advanced cooling system and supporting the mSATA device, which makes it especially suitable for vibration environments, best for industrial automation, digital signage and gaming application.

- **Embedded O.S. Supported**
  The eBOX625-842-FL not only supports Windows 8.1, Windows 7, but also supports embedded OS, such as Windows 8 Embedded, Windows 7 Embedded, WinCE and Linux.

- **Various Storage devices supported**
  For storage device, the eBOX625-842-FL supports one 2.5" SATA storage drive bay and mSATA supported.

1.2 System Specifications

1.2.1 CPU

- **CPU**
  - Intel® Celeron® quad core J1900 2.0 GHz.

- **BIOS**
  - American Megatrends Inc. UEFI (Unified Extensible Firmware Interface) BIOS.
  - 16Mbit SPI Flash, DMI, Plug and Play.
  - PXE Ethernet Boot ROM.

- **System Memory**
  - One 204-pin unbuffered **DDR3L** SO-DIMM socket. (DDR3L Only)
  - **Maximum to 8GB DDR3L 1066/1333 MHz** memory.

1.2.2 I/O System

- **Two 9-pin D-Sub male connectors, COM1~COM2 for RS-232/422/485**
- **One D-Sub female connector, 8-CH TTL Level Digital I/O**
- **One 15-pin D-Sub female connector for VGA, up to 1600 x 1200 @60Hz**
- **One HDMI port, up to 1080P**
- **Two Audio connector (Mic-IN, Line-OUT), HD audio compliant with Realtek ALC662**
- **Two RJ-45 connector for 10/100/1000Base-T Ethernet w/Wake-on-LAN and PXE Boot ROM**
- **Four USB 2.0 ports**
- **One 12V DC Jack for power input connector**
- **Two Indicators (System Power, HDD Active)**
- **Three Antenna Opening**

1.2.3 System Specification

- **Watchdog Timer**
  - 1~255 seconds or minutes; up to 255 levels.
- **Power Supply**
  - External 12V@3A, 36W AC/DC power adapter
- **Operation Temperature**
  - -20℃ ~ 55℃ (-4 ºF ~ 133ºF), J1900 with W.T. SSD/RAM
- **Storage Temperature**
  - -40℃ ~ 80℃ (-40 ºF ~ 176ºF)
- **Humidity**
  - 10% ~ 90% (non-condensation)
- **Vibration Endurance**
  - 3Grm w/ SSD™ (5-500Hz, X, Y, Z directions)
- **Weight**
  - 1.1kg(2.43lb) without package/ 1.8kg(3.97) with package
- **Dimensions**
  - 200mm (7.87") (W) x 120mm (4.72") (D) x 46mm(1.81") (H)

1.2.4 Driver CD Content

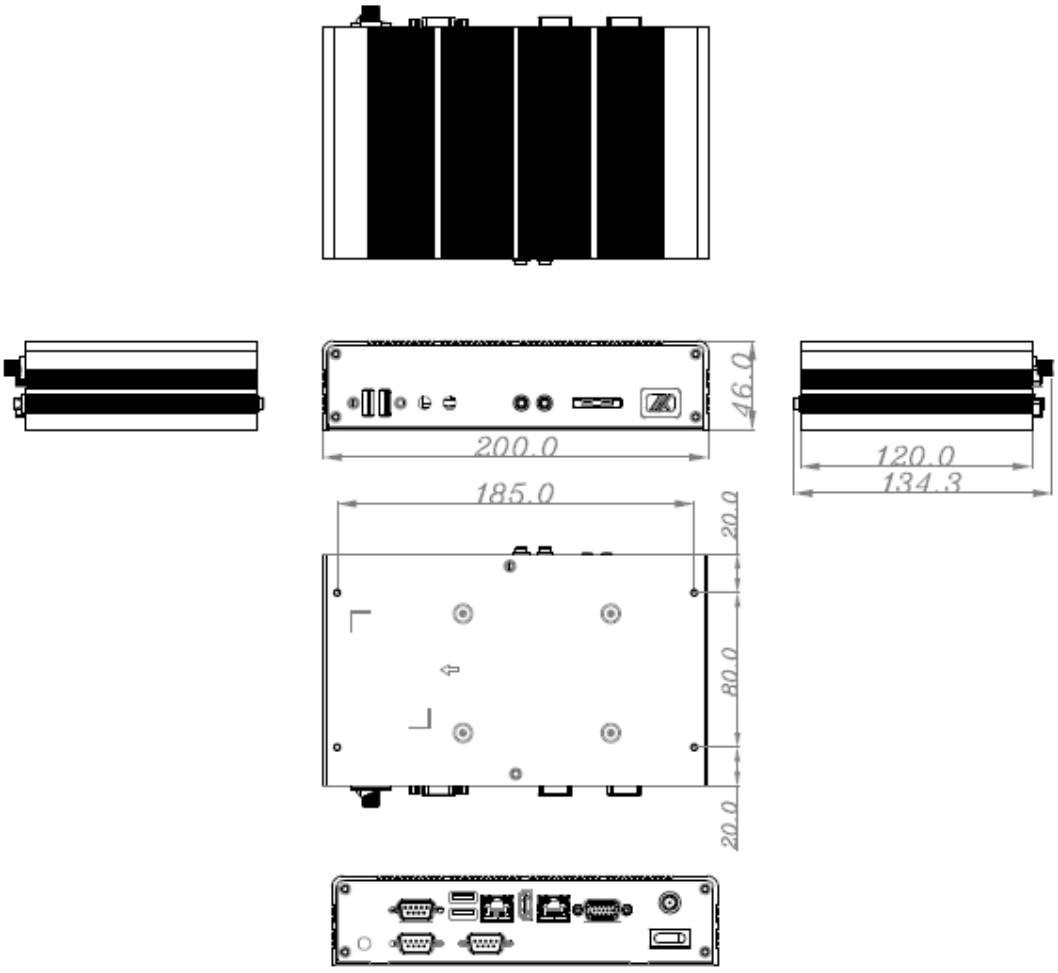
- **Driver**
  - Audio
  - Chipset
  - Ethernet
  - Graphic
  - TPM
- **Manual**
  - User Manual
  - Quick Manual

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

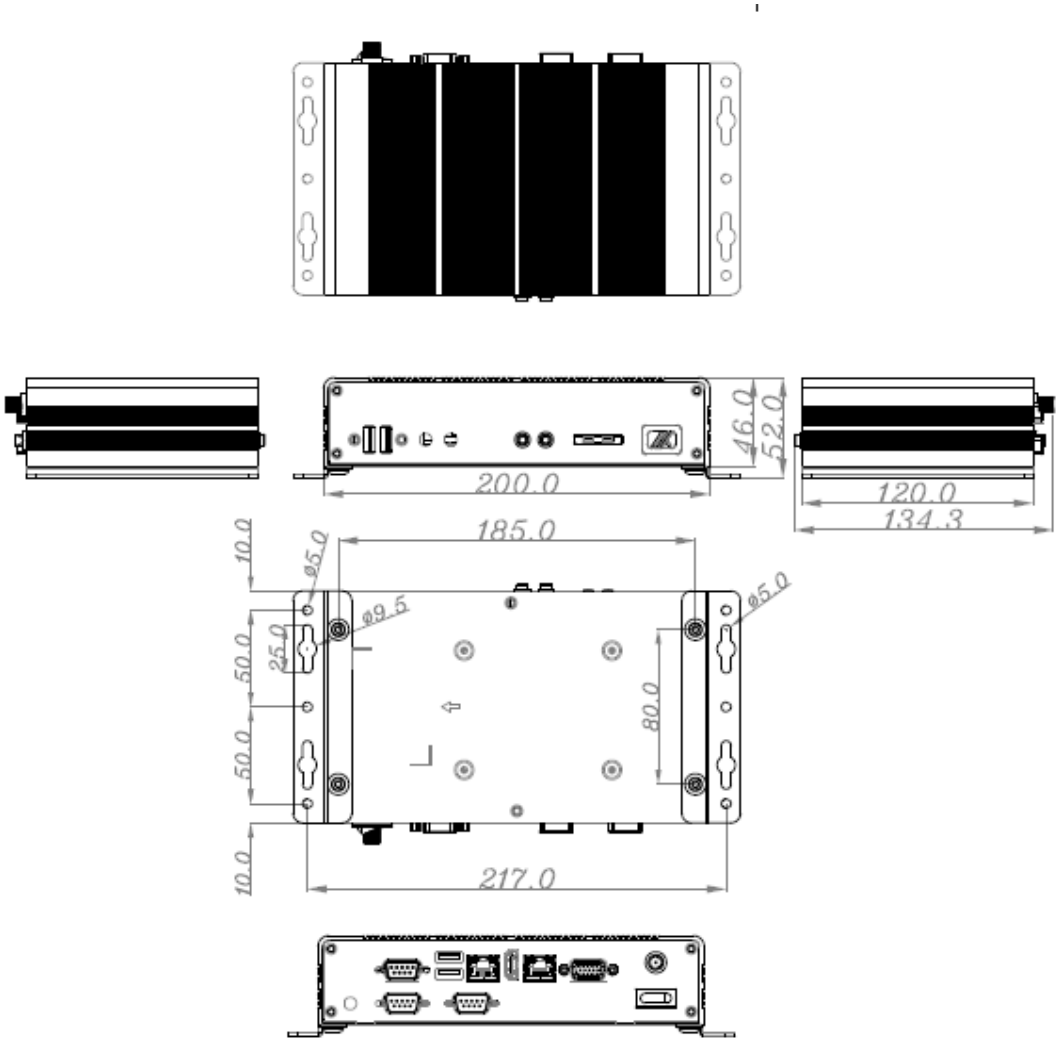
1.3 Dimensions

The following diagrams show you dimensions and outlines of the eBOX625-842-FL.

1.3.1 System Dimension



1.3.2 Wall mount Bracket Dimension

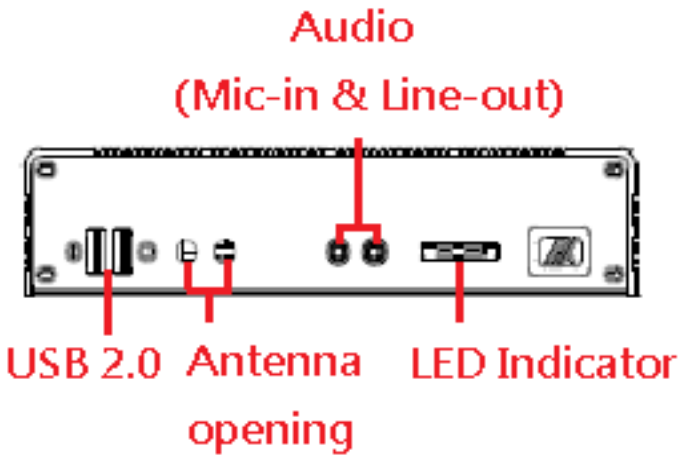


1.4 I/O Outlets

The following figures show you I/O outlets on front view of the eBOX625-842-FL.

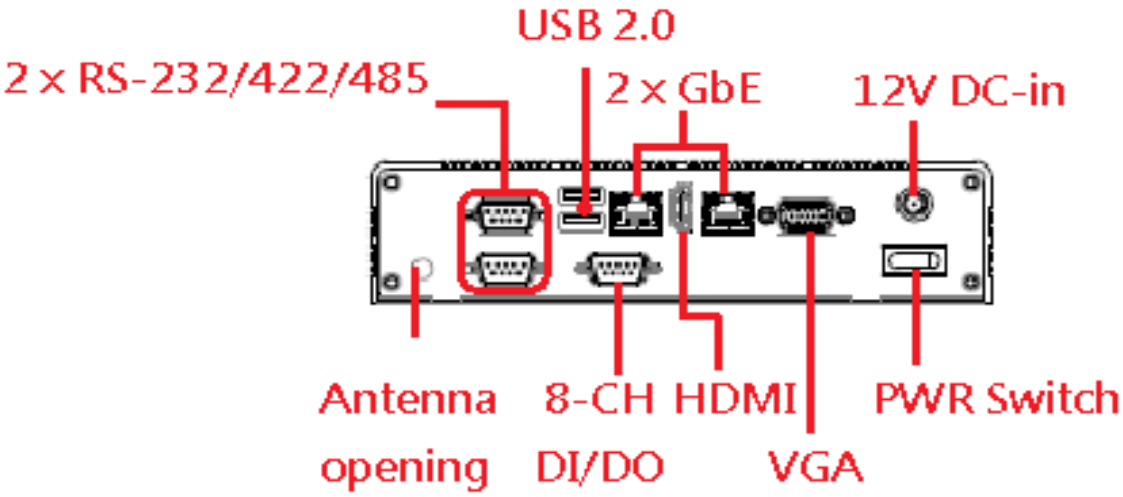
- **Front View**

- **Front View drawing**



- **Rear View**

- **Rear View drawing**



1.5 Packing List

The package bundled with your eBOX625-842-FL should contain the following items:

- **eBOX625-842-FL System Unit x 1**
- **eBOX625-842-FL Quick Manual x 1**
- **Power Cord x 1**
- **CD x 1 (For Driver and User's Manual)**
- **Screws pack x1**
- **Foot pad x4**
- **Optional 12V/36W AC-DC Adapter**
- **Optional Power cord**
- **Optional Wall-mount Brackets**
- **Optional VESA-mount Bracket**
- **Optional Din-rail Bracket**
- **Optional WIFI/ 3G/ GPS Modules**

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

1.6 Model List

eBOX625-842-FL-DC-J1900	Fanless embedded system with Intel® Celeron® J1900 2.0GHz quad core single chip design, 2 COM, 4 USB and 8-CH DIO (w/o adapter and power cord)

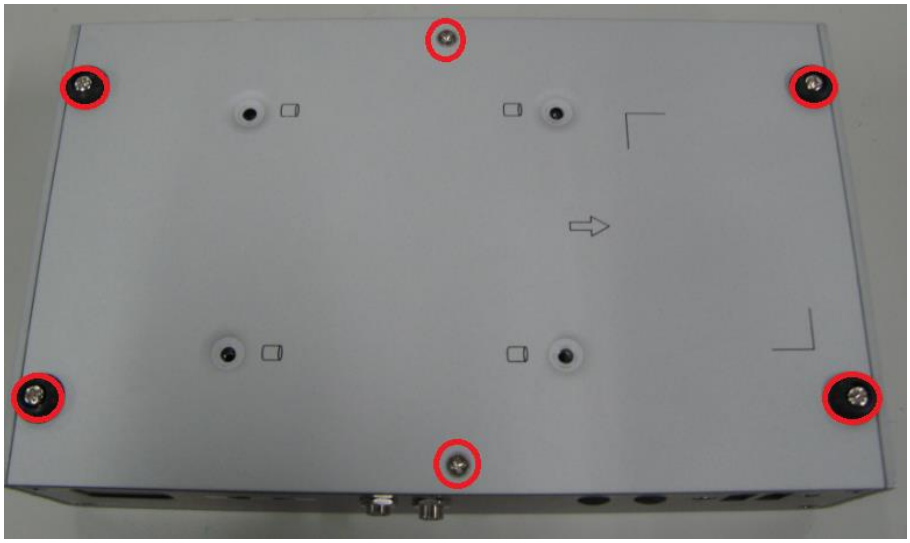
CHAPTER 2
HARDWARE INSTALLATION

The eBOX625-842-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

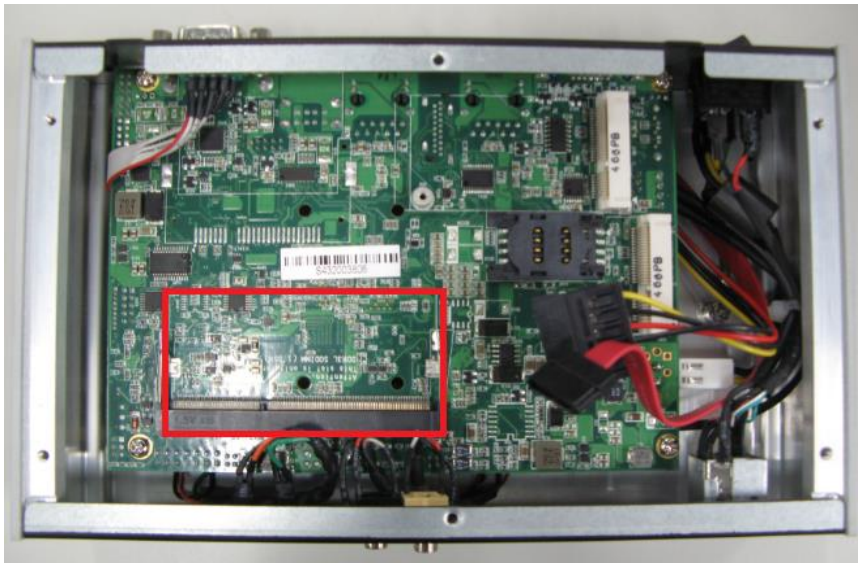
Step 1 Turn off the system, and unplug the power cord.

Step 2 Turn the system upside down to locate screws at the bottom, loosen screws.



Step 3 Remove the bottom cover.

Step 4 Find the DDR3L SO-DIMM position.



Step 5 Locate the memory module, insert the gold colored of memory to contact into the socket.

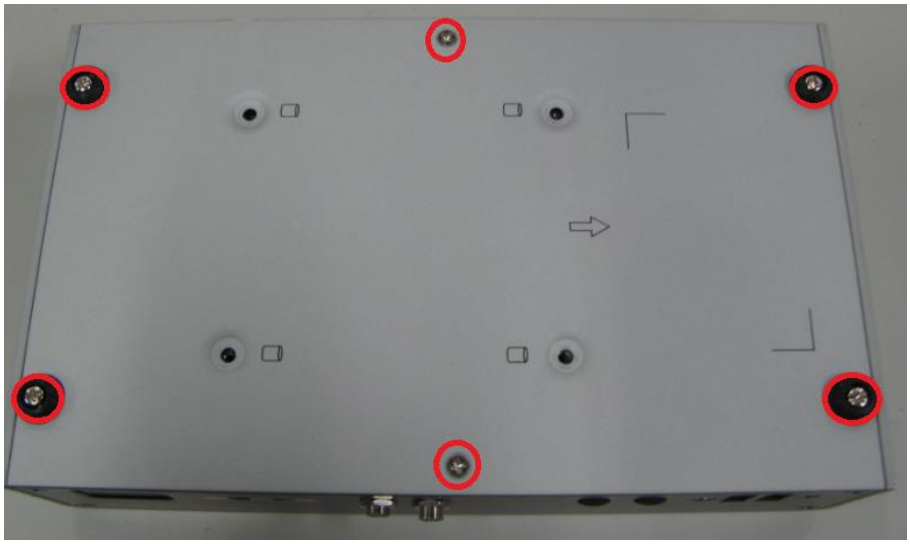
Step 6 Push the module down, until it is firmly seated by locking two latches on the sides.

Step 7 Fasten all screws of bottom cover to finish installation.

2.2 Installing the 2.5" SATA HDD/SSD

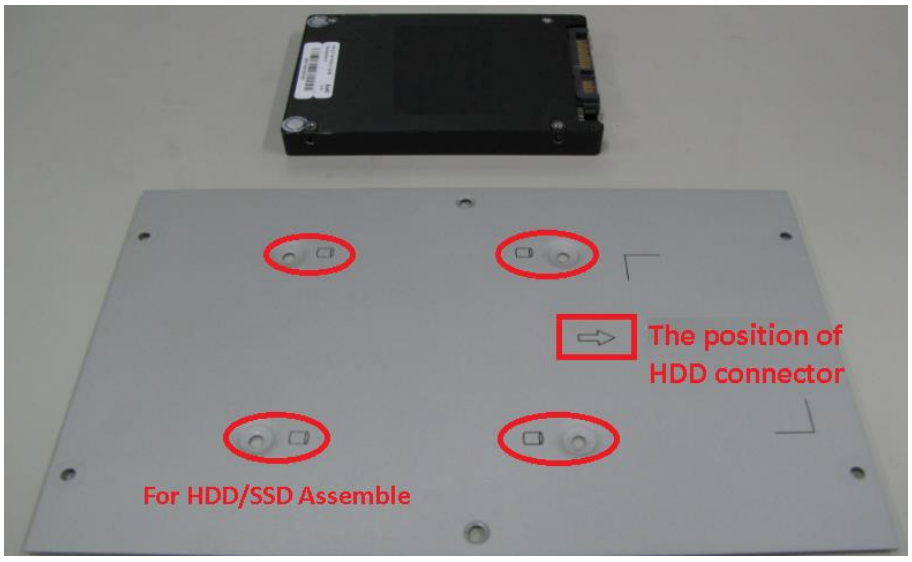
Step 1 **Turn off the system, and unplug the power cord.**

Step 2 **Turn the system upside down to locate screws at the bottom, loosen screws.**



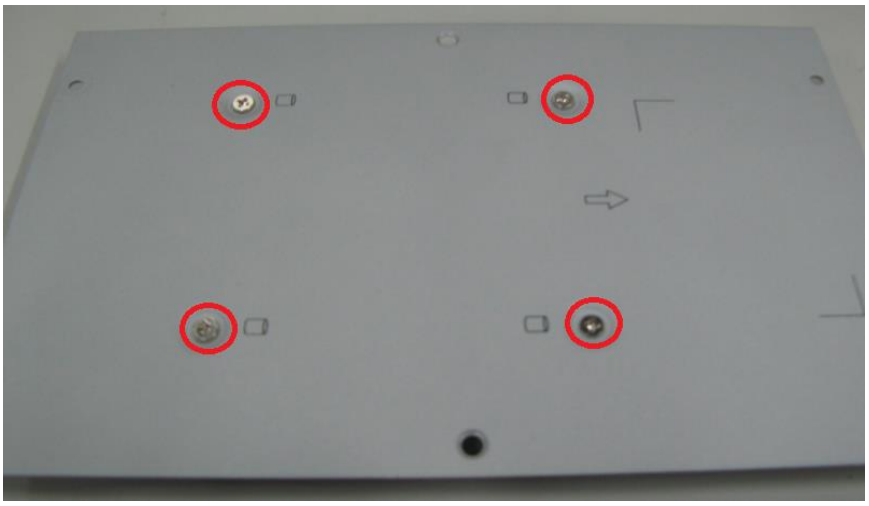
Step 3 **Remove the bottom cover and then prepare your 2.5" HDD/SSD to assemble with your bottom cover.**

Step 4 **Please refer to the below photo and you can see some marks on the surface of bottom cover, assemble your HDD on bottom cover and notice HDD's connector position.**



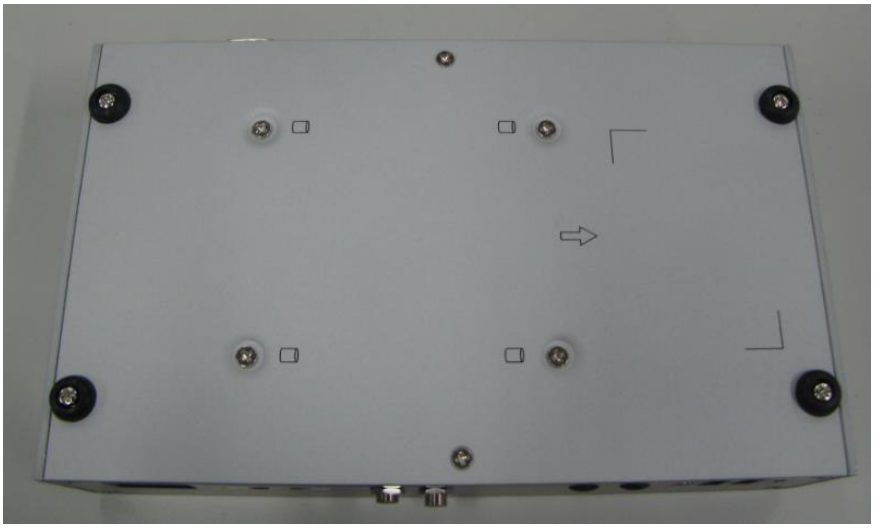
Step 5 Assembly the HDD together with the SATA HDD.

Step 6 Fasten total four screws.



Step 7 Connect SATA PWR and SATA Signal cables.

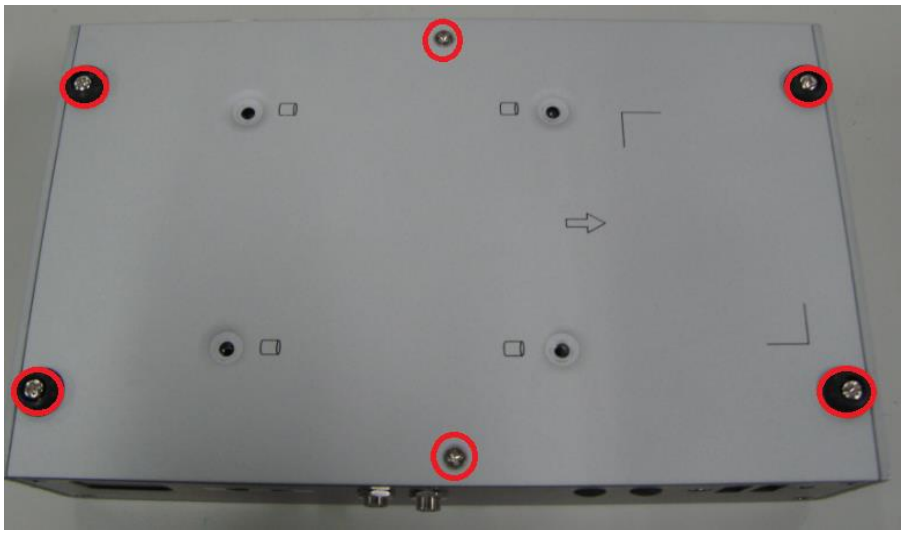
Step 8 Put the bottom cover back then fasten screws to finish the installation.



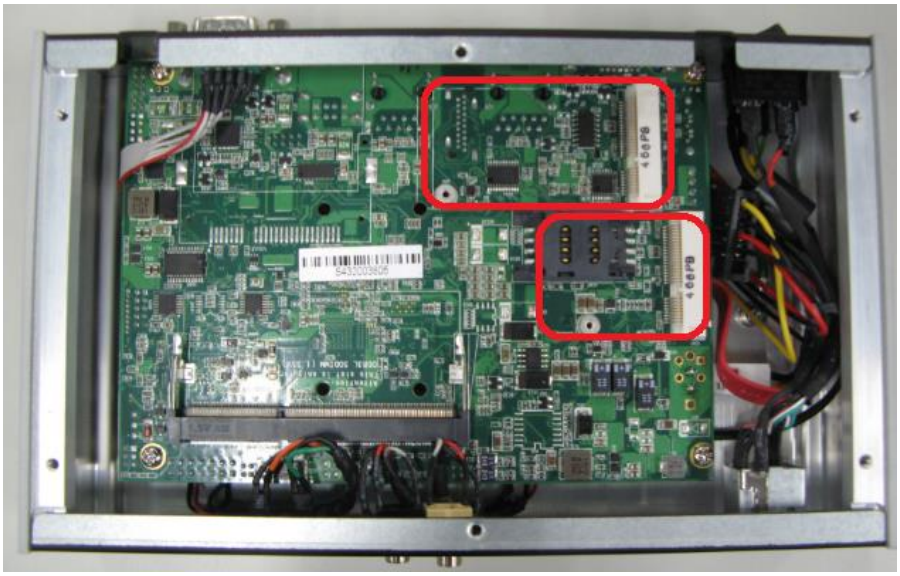
2.3 Installing the Express Mini Card

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

Step 2 Turn the system upside down to locate screws at the Bottom, loosen screws.



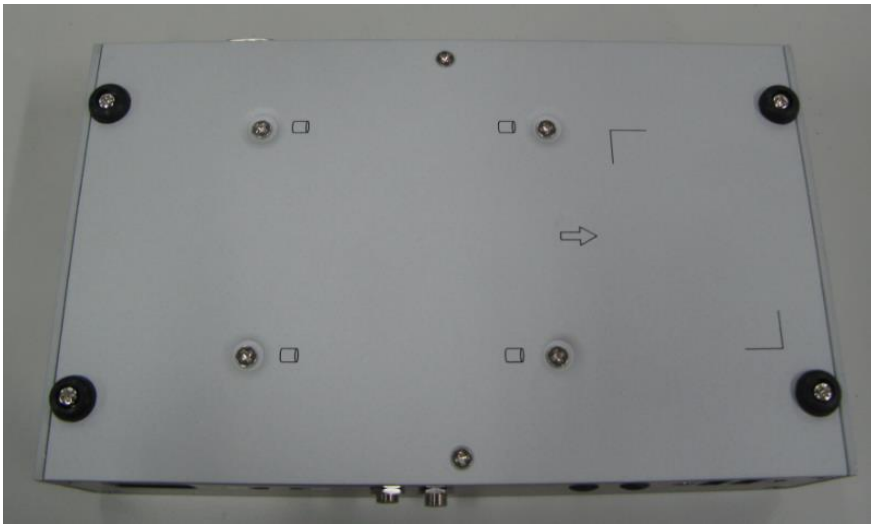
Step 3 Find the location of Mini card slot.



※Please notice that eBOX625-841/842 supports one full-size Express Mini card slot and one half-size Express Mini card slot, and also supports one SIM slot to let you connect SIM card.

Step 4 Slide Mini Card into Mini Card slot with caution and fasten screw of Express Mini Card.

Step 5 Assembly the bottom cover back and fasten all screws to finish installation.



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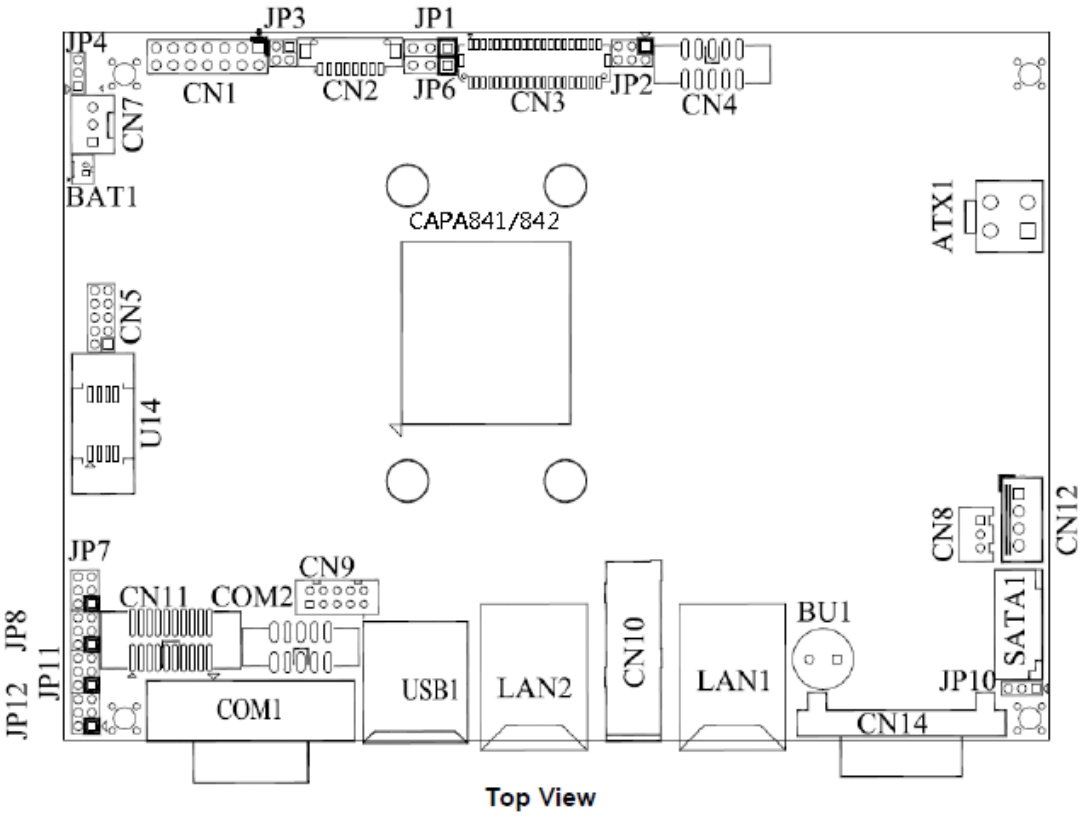
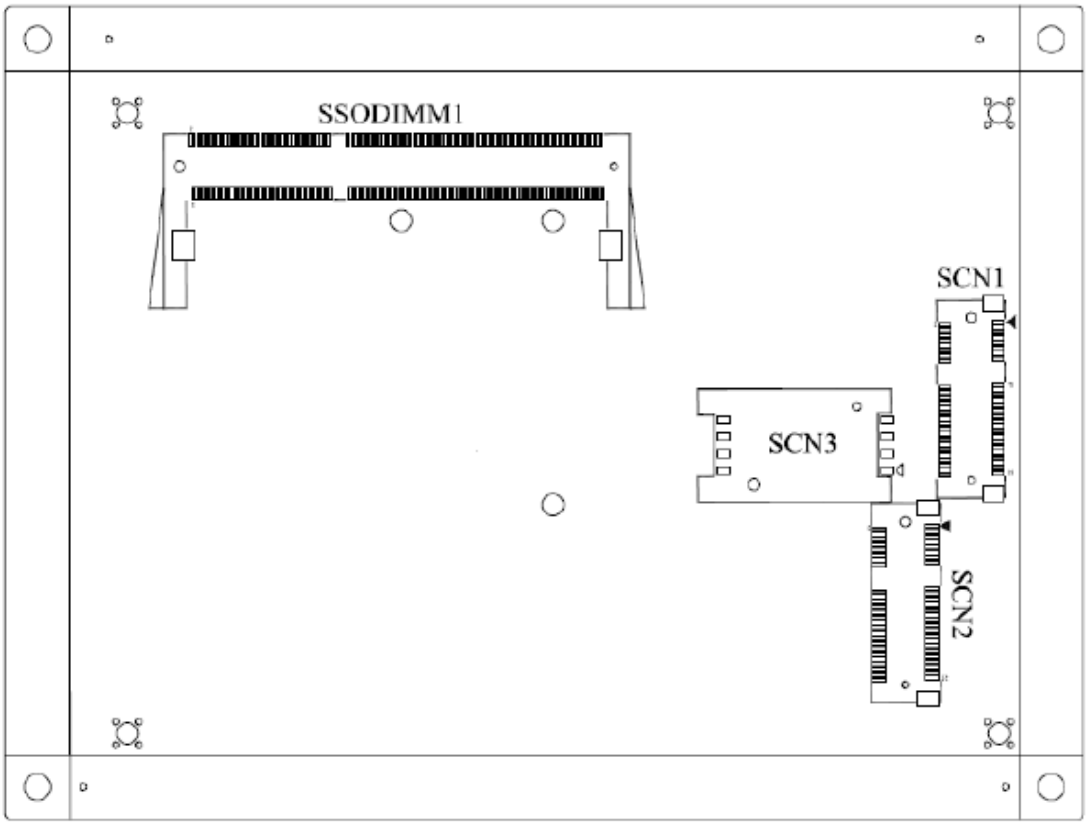
CHAPTER 3
JUMPER SETTING & CONNECTOR

Proper jumper settings configure the **eBOX625-842-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 SBC Layout



Top View



Bottom 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.

3.2 Jumper Setting Summary

Proper jumper settings configure the eBOX625-842-FL to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Jumper	Description		Jumper Setting
JP4	Restore BIOS Optimal Defaults Default: Normal Operation		1-2 Close
JP10	Auto Power On Default: Disable		1-2 Close
JP11	COM2 Data/Power Selection Default: RS-232 Data	COM2 Pin 1: DCD	3-5 Close
		COM2 Pin 8: RI	4-6 Close
JP12	COM1 Data/Power Selection Default: RS-232 Data	COM1 Pin 1: DCD	3-5 Close
		COM1 Pin 9: RI	4-6 Close

NOTE: How to setup Jumpers

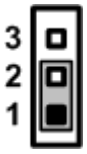
The illustration shows how to set up jumpers. When the jumper cap is placed on pins, the jumper is "close", if not, that means the jumper is "open".

[Open] [Closed] [Pin1-2 Closed]

3.2.1 Restore BIOS Optimal Defaults (JP4)

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 Auto power on (JP10)

If JP10 is enabled for AC power input, the system will be automatically power on without pressing soft power button. If JP10 is disabled for AC power input, it is necessary to manually press soft power button to power on the system.

Function	Setting
Disable auto power on (Default)	1-2 close
Enable auto power on	2-3 close

NOTE: ***This function is similar to the feature of power on after power failure, which is controlled by hardware circuitry instead of BIOS.***

3.2.3 COM2 Data/Power Selection (JP11)

The COM2 port has +5V level power capability on DCD and +12V level on RI by setting this jumper. When this port is set to +5V or +12V level, please make sure its communication mode is RS-232. You can change the communication mode (RS-232/422/485) via BIOS setting.

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

3.2.4 COM1 Data/Power Selection (JP12)

The COM1 port has +5V level power capability on DCD and +12V level on RI by setting this jumper. When this port is set to +5V or +12V level, please make sure its communication mode is RS-232. You can change the communication mode (RS-232/422/485) via BIOS setting.

Function	Setting
Power: Set COM1 pin 1 to +5V level	1-3 close
Data: Set COM1 pin 1 to DCD (Default)	3-5 close
Power: Set COM1 pin 9 to +12V level	2-4 close
Data: Set COM1 pin 9 to RI (Default)	4-6 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 **eBOX625-842-FL** Series.

External Connectors	Section
AC-DC Jack Power In Connector	3.3.1
COM1~COM2 Serial Port Connector	3.3.2
VGA Connector	3.3.3
HDMI Connector	3.3.4
Ethernet Connector(LAN1,LAN2)	3.3.5
USB Connector	3.3.6
ATX Power On/Off Button	3.3.7
Audio Connector	3.3.8
8-CH Digital I/O Connector	3.3.9
Internal Connectors	**Section**
Serial ATA (SATA) Connector	3.3.10
SATA Power Connector	3.3.11
SIM Card Slot (SCN3)	3.3.12
Half-Size Express Mini Card slot	3.3.13
Full-Size Express Mini Card slot	3.3.14

3.3.1 AC-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 36W Adapter

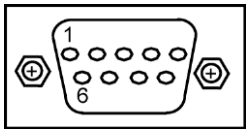
Pin	Signal
1	+12V
2	GND

3.3.2 COM1~COM2 Serial Port Connector

The system has two serial ports. COM1~COM2 are RS-232/422/485 ports. Please refer to Chapter 3.2.5 and 3.2.6 for the setting.

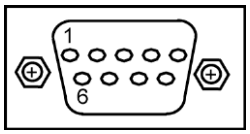
Pin	RS-232	RS-485	RS-422
1	DCD, Data Carrier Detect	TX- / RX-	TX-
2	RXD, Receive Data	TX+ / RX+	TX+
3	TXD, Transmit Data	No use	RX+
4	DTR, Data Terminal Ready	No use	RX-
5	GND, Ground	GND	GND
6	DSR, Data Set Ready	No use	No use
7	RTS, Request To Send	No use	No use
8	CTS, Clear To Send	No use	No use
9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

COM1



Pin	RS-232	RS-485	RS-422
1	DCD, Data Carrier Detect	TX- / RX-	TX-
2	RXD, Receive Data	TX+ / RX+	TX+
3	TXD, Transmit Data	No use	RX+
4	DTR, Data Terminal Ready	No use	RX-
5	GND, Ground	GND	GND
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

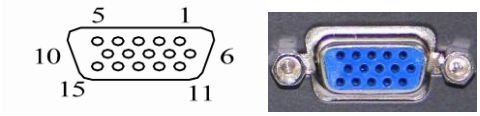
COM2



3.3.3 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.

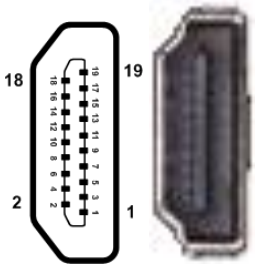
Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N.C.	5	GND	6	DETECT
7	GND	8	GND	9	VCC
10	GND	11	N.C.	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK



3.3.4 HDMI Connector

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 CN10.

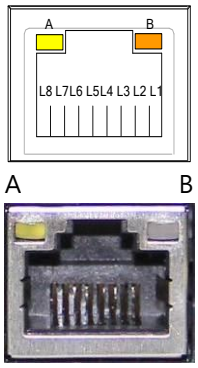
Pin	Signal	Pin	Signal
1	HDMI OUT_DATA2+	2	GND
3	HDMI OUT_DATA2-	4	HDMI OUT_DATA1+
5	GND	6	HDMI OUT_DATA1-
7	HDMI OUT_DATA0+	8	GND
9	HDMI OUT_DATA0-	10	HDMI OUT_Clock+
11	GND	12	HDMI OUT_Clock-
13	CEC	14	N.C.
15	HDMI OUT_SCL	16	HDMI OUT_SDA
17	GND	18	+5V
19	HDMI_HTPLG		



3.3.5 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.

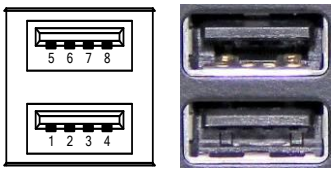
Pin	Signal	Pin	Signal
L1	MDI0+	L5	MDI2-
L2	MDI0-	L6	MDI1-
L3	MDI1+	L7	MDI3+
L4	MDI2+	L8	MDI3-
A	Active LED (Yellow)		
B	100 LAN LED (Green)/ 1000 LAN LED (Orange)		



3.3.6 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.

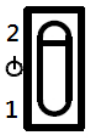
Pin	Signal USB Port 0	Pin	Signal USB Port 1
1	USB VCC (+5V level)	5	USB VCC (+5V level)
2	USB #0_D-	6	USB #1_D-
3	USB #0_D+	7	USB #1_D+
4	Ground (GND)	8	Ground (GND)



3.3.7 ATX Power On/OFF Button

The ATX power button is on the I/O side. It can allow users to control eBOX625-842-FL power on/off.

Pin	Signal
1	GND
2	PSIN



3.3.8 Audio Connector

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

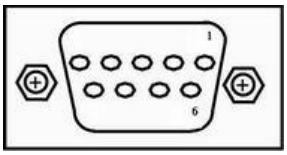
Pin	Signal
1	Microphone In
2	Line Out

3.3.9 8-CH Digital I/O Connector

The onboard digital I/O has 8 bits (DIO0~7). Each bit can be set to function as input or output by software programming. The BIOS default settings are 3 inputs and 5 outputs.

Pin	Description
1	DO0
2	DO1
3	DO2
4	DO3
5	DO4
6	DI0
7	DI1
8	DI2
9	GND

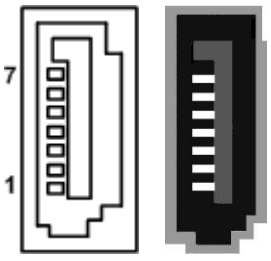
Digital I/O



3.3.10 SATA Connector

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.

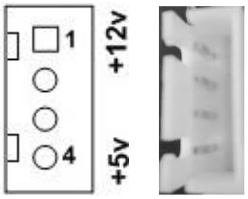
Pin	Signal
1	GND
	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND



3.3.11 SATA Power Connector

Use CN12 for interfacing to SATA 2.5" HDD power supply.

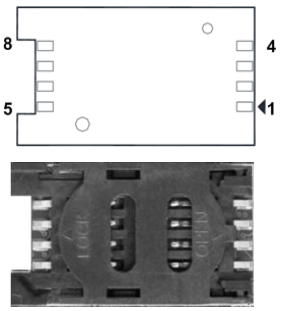
Pin	Signal
1	+12V level
2	GND
3	GND
4	+5V level



3.3.12 SIM Card Slot (SCN3)

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

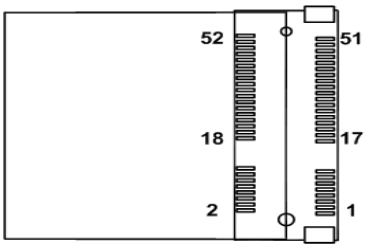
Pin	Signal
1	PWR
2	RST
3	CLK
4	NC
5	GND
6	VPP
7	I/O
8	NC



3.3.13 Half-Size PCI Express Mini card Slot (SCN1)

The SCN1 is a half-size PCI-Express Mini Card connector. It supports the PCI-Express Mini Cards which are applied to either PCI-Express x1 or USB. It complies with PCI-Express Mini Card Spec. V1.2.

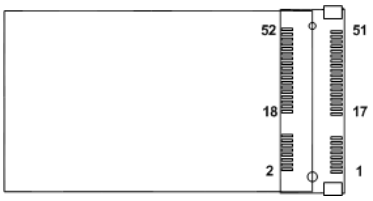
Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	No use	4	GND
5	No use	6	+1.5V
7	CLKREQ#	8	No use
9	GND	10	No use
11	REFCLK-	12	No use
13	REFCLK+	14	No use
15	GND	16	No use
17	No use	18	GND
19	No use	20	W_DISABLE#
21	GND	22	PERST#
23	PE_RXN3	24	+3.3VSB
25	PE_RXP3	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PE_TXN3	32	SMB_DATA
33	PE_TXP3	34	GND
35	GND	36	USB_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



3.3.14 Full-Size PCI Express Mini Card Slot (SCN2)

This is a PCI-Express Mini Card connector on the bottom side applying to either PCI-Express or USB 2.0 or **SATA (mSATA)**. It complies with PCI-Express Mini Card Spec. V1.2. It can also support mSATA cards. Please refer to BIOS setting to enable or disable mSATA support.

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	W_DISABLE#
21	GND	22	PERST#
23	PE_RXN3/ SATA_RXP	24	+3.3VSB
25	PE_RXP3/ SATA_RXN	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PE_TXN3/ SATA_TXN	32	SMB_DATA
33	PE_TXP3/ SATA_TXP	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

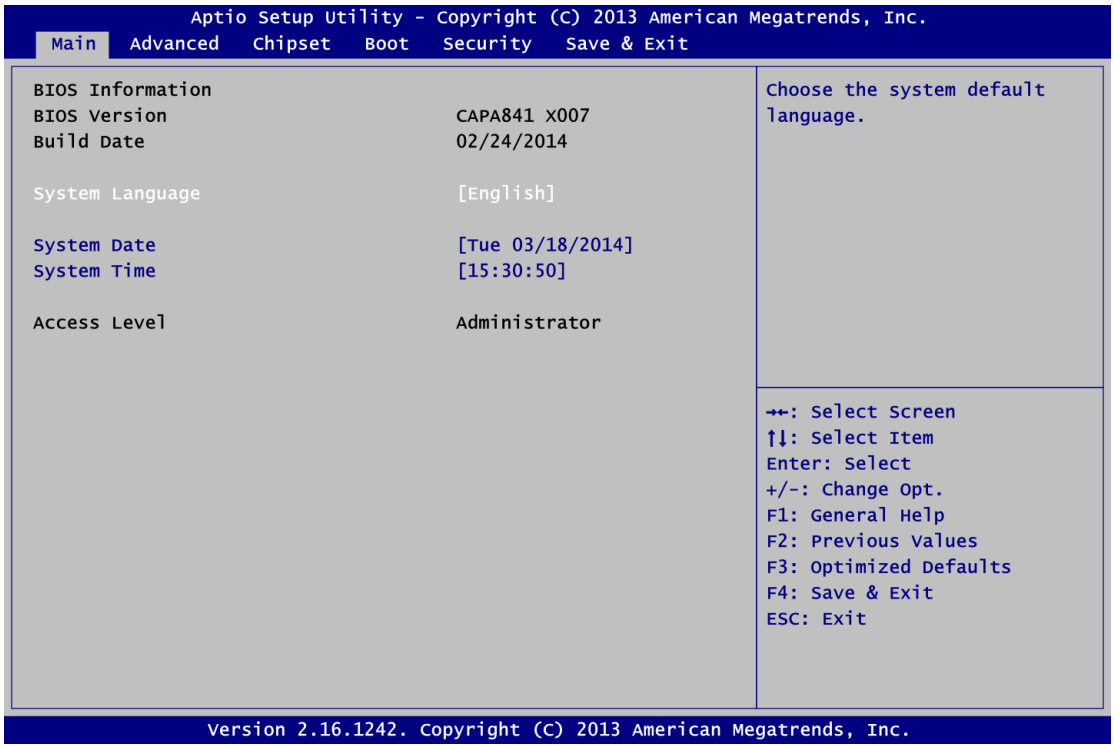
The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.

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

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.



BIOS/Memory Information

Display the auto-detected BIOS/memory information.

System Language

Choose the system default language.

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

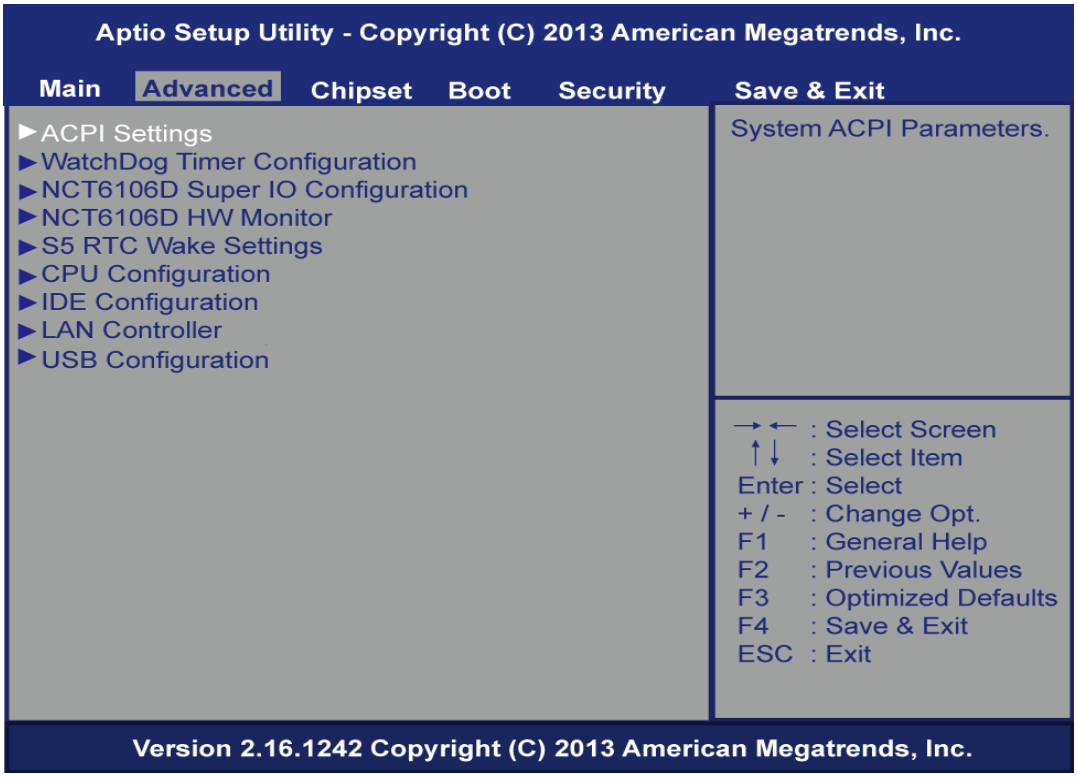
Display the access level of current user.

4.4 Advanced Menu

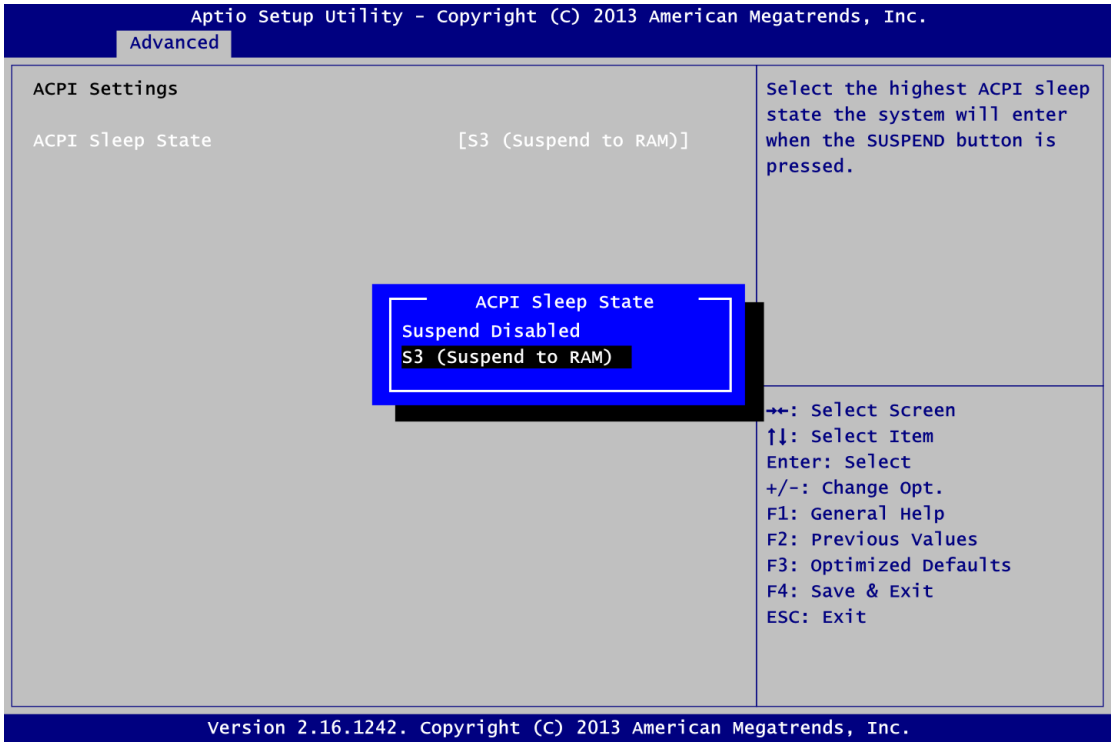
The Advanced menu also allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- ► ACPI Settings
- ► WatchDog Timer Configuration
- ► NCT6106D Super IO Configuration
- ► NCT6106D HW Monitor
- ► S5 RTC Wake Settings
- ► CPU Configuration
- ► IDE Configuration
- ► USB Configuration

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



- **ACPI Settings**

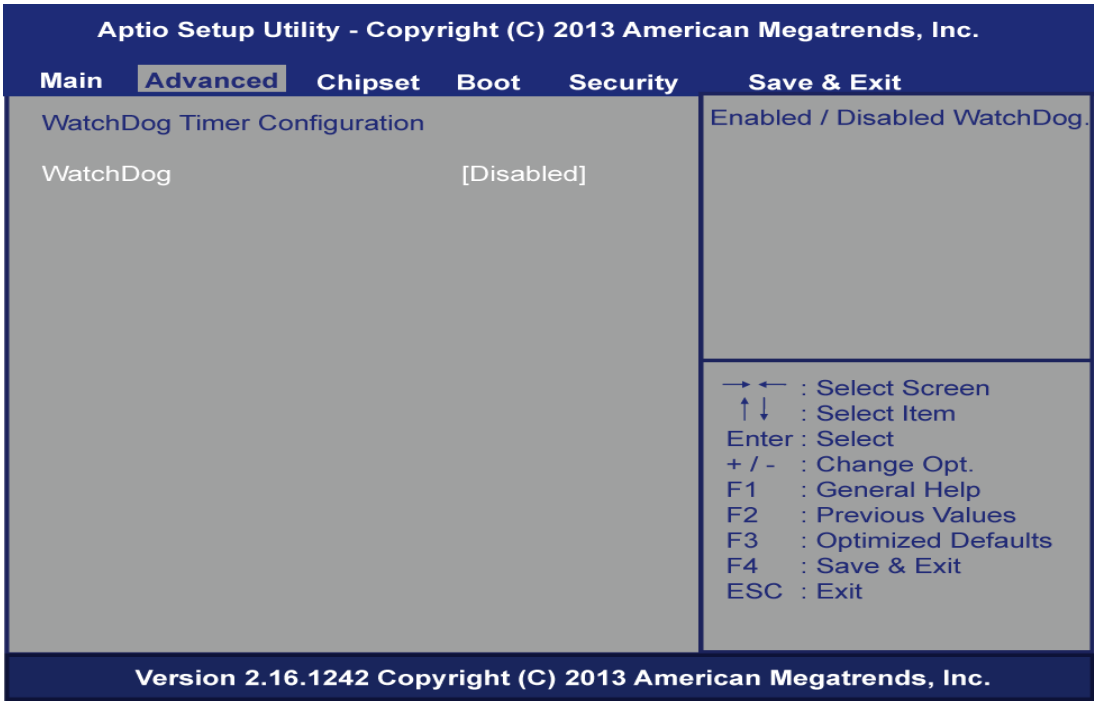


ACPI Sleep State

When the sleep button is pressed, the system will be in the ACPI sleep state. The default is S3 (Suspend to RAM).

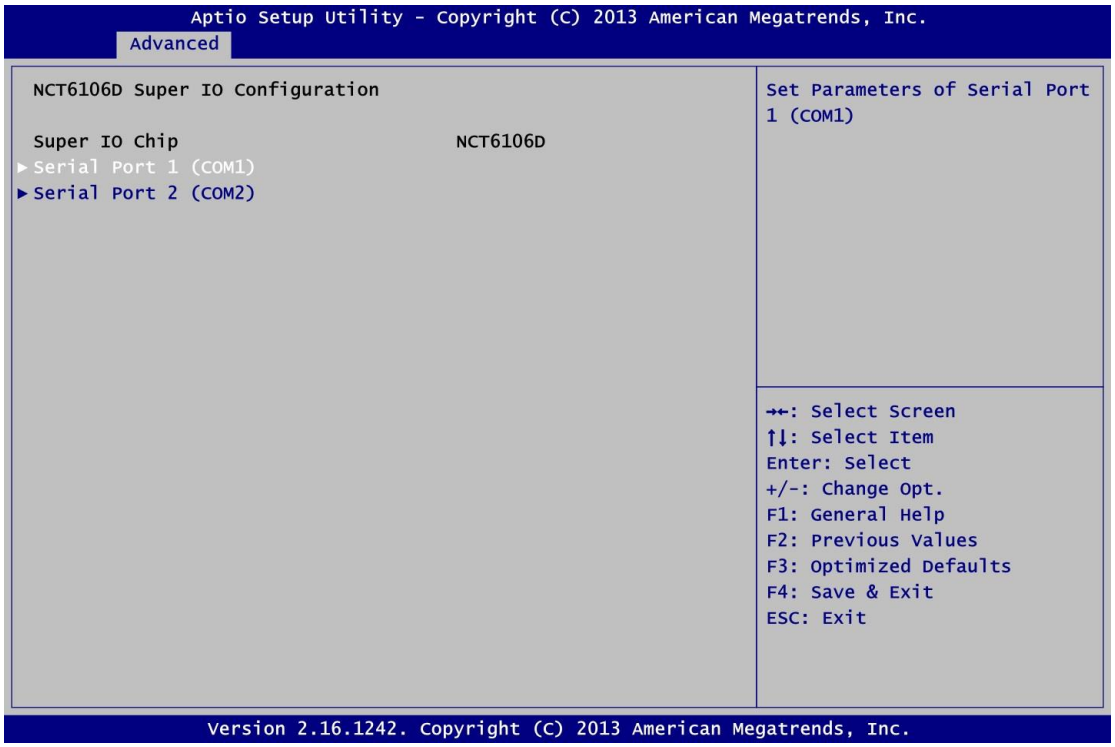
- **WatchDog Timer Configuration**

Enable/Disabled Watchdog; the default setting is disabled.



- **NCT6106D 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.



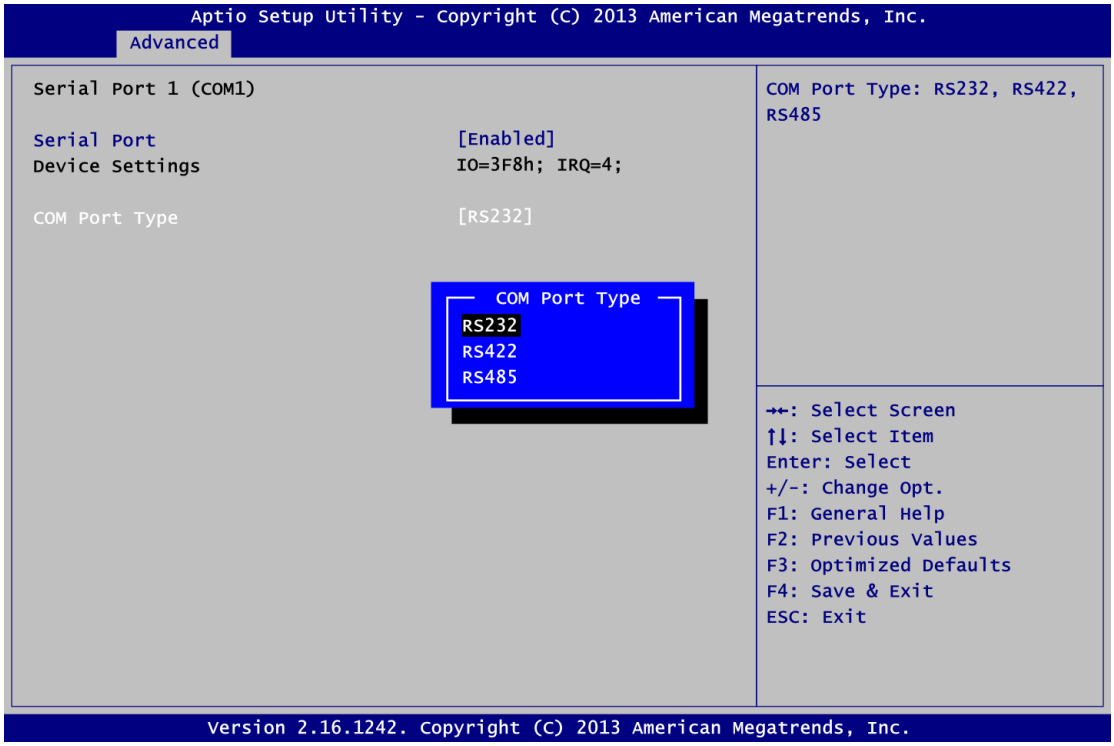
Serial Port 1~2 (COM1~2) Configuration

Use these items to set parameters related to serial port 1~2.

DIO Configuration

Use this item to setup 8-CH digital I/O configurations.

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



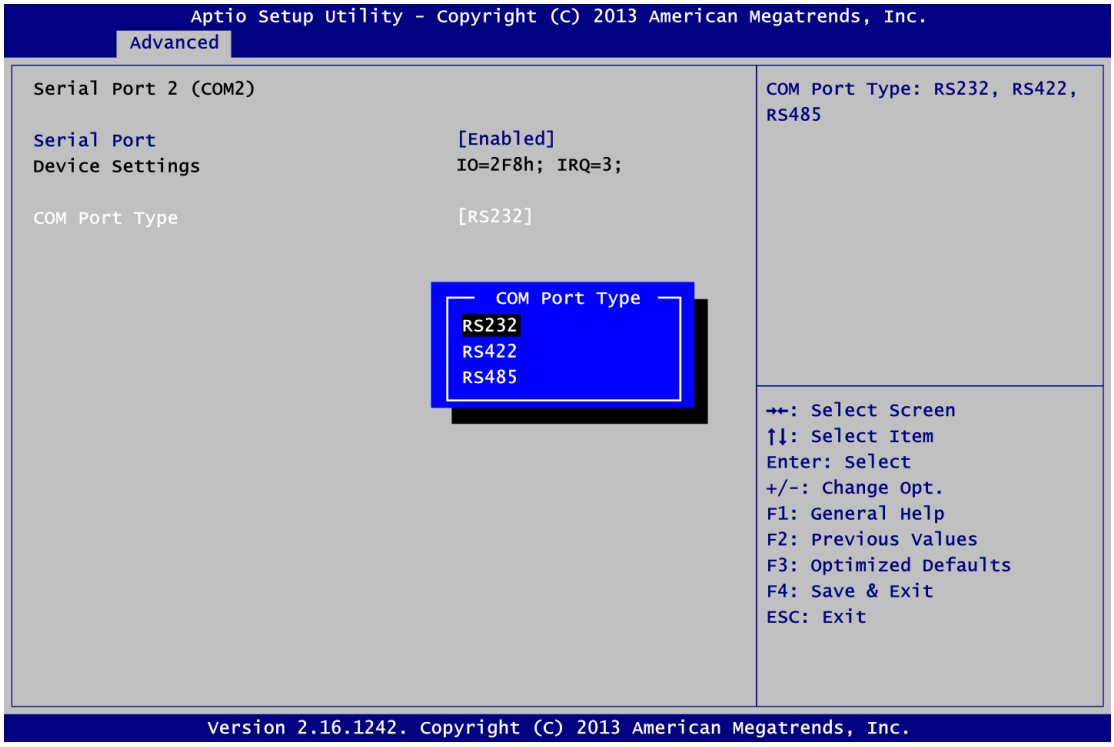
Serial Port

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**



Serial Port

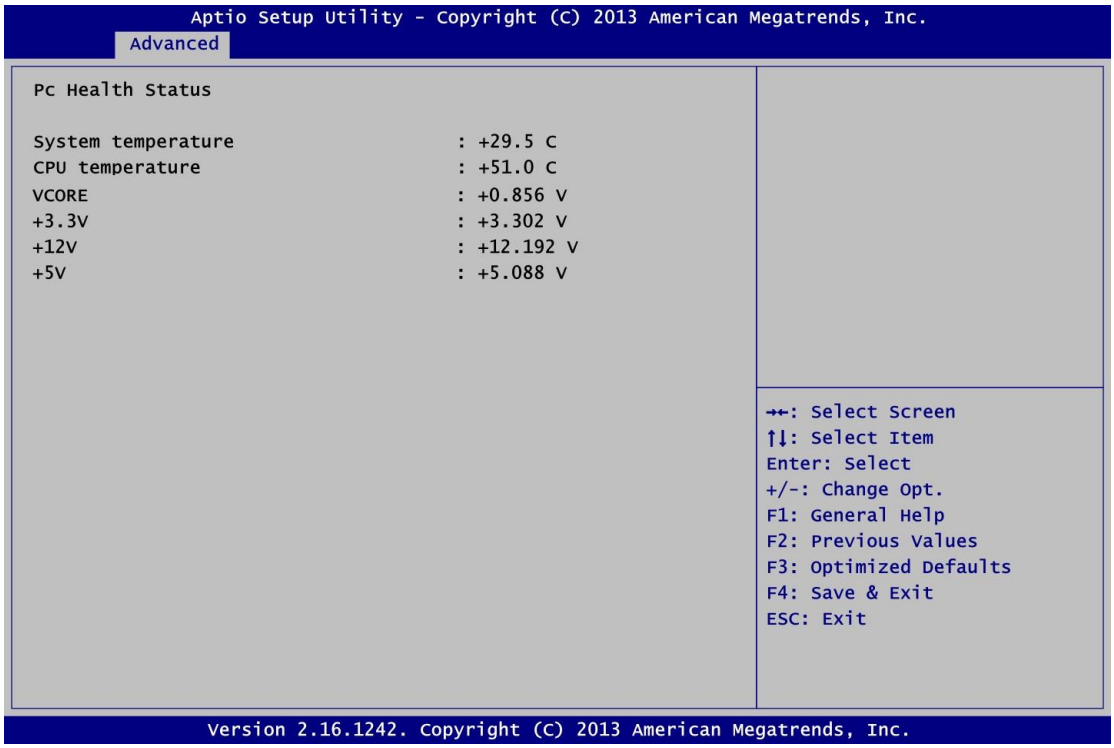
Enable or disable serial port 2. The optimal setting for base I/O address is 2F8h and for interrupt request address is IRQ3.

COM Port Type

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

- **NCT6106D HW Monitor**

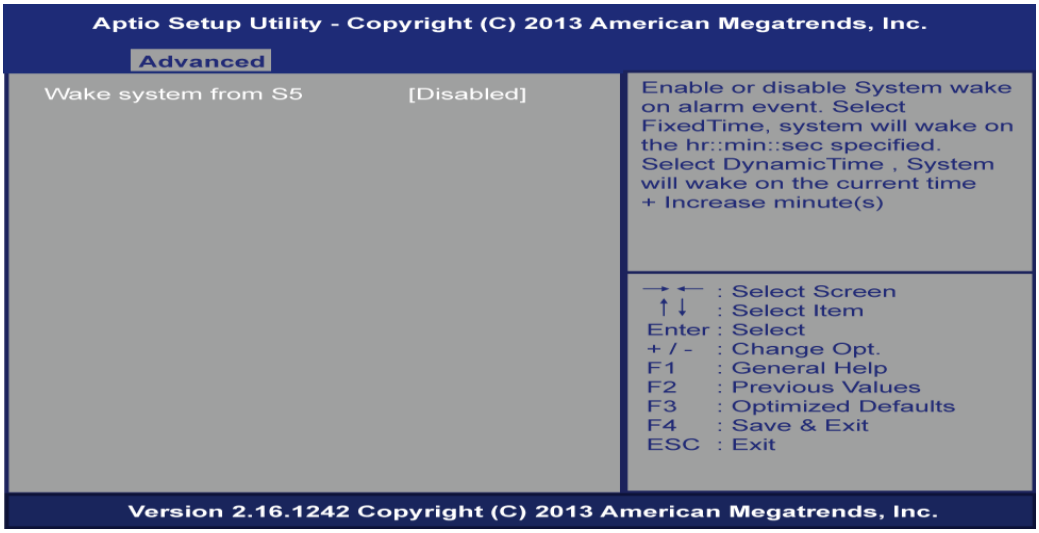
This screen monitors hardware health status.



This screen displays the temperature of system and CPU, and system voltages (VCORE, +3.3V, +12V and +5V).

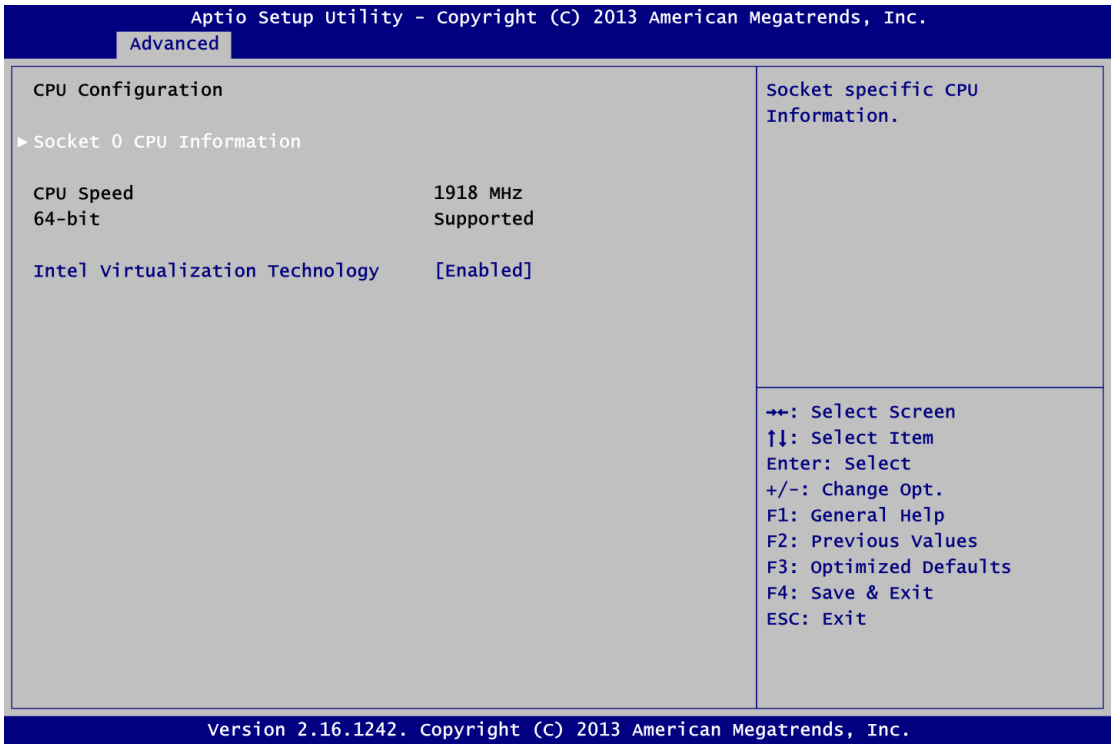
- **S5 RTC Wake Setting**

Enable or disable system wake on alarm event. When enabled, System will wake on the hr:min::sec specified; the default setting is disabled.
While enable RTC Wake up setting, there are two options for setting Fixed Time/Dynamic Time; While choosing Fixed Time at the BIOS and reboot the system, it will be turned on base on the fixed setting time (hr:min:sec); for DynamicTime option, system will be turned on after waiting time (minutes) which is set.



- **CPU Configuration**

This screen shows the CPU Configuration.



Socket 0 CPU Information

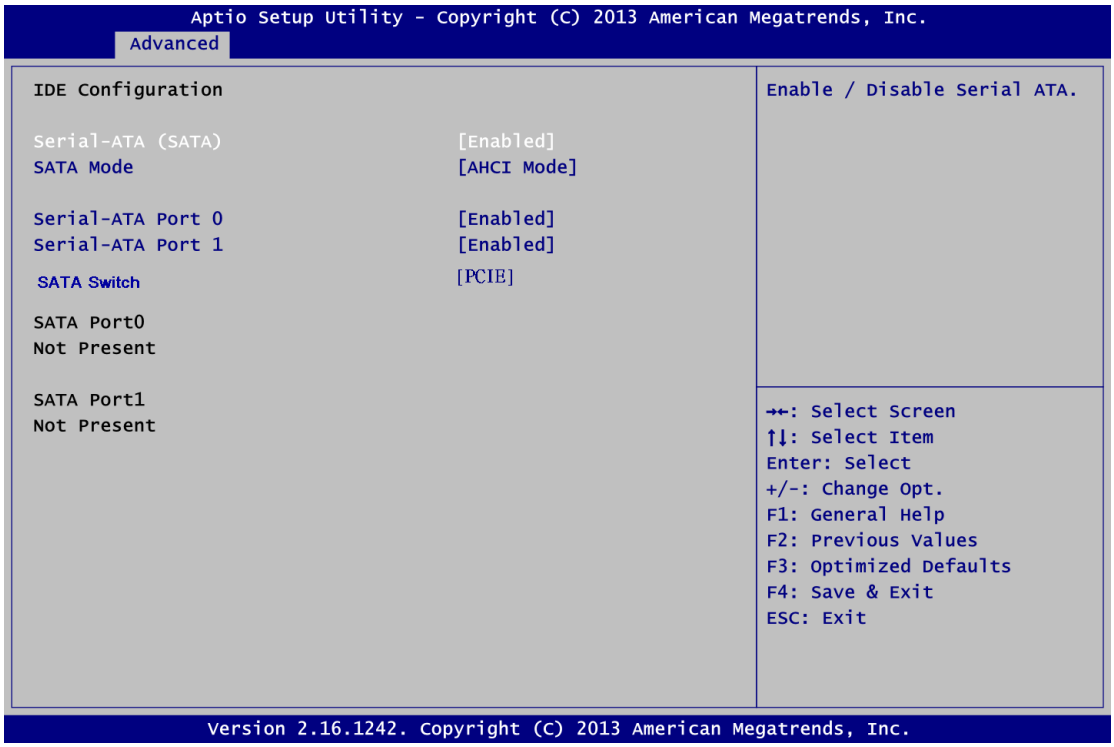
This item is for socket specific CPU information.

Intel Virtualization Technology

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

- **IDE Configuration**

In the IDE 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.



Serial-ATA (SATA)

Enable or disable the SATA Controller feature. The default is Enabled.

SATA Mode Selection

Determine how SATA controller(s) operate. Operation mode options are IDE Mode and AHCI (Advanced Host Controller Interface) Mode. The default is AHCI Mode.

Serial-ATA Port 0

Enable or disable the onboard SATA port 0.

Serial-ATA Port 1

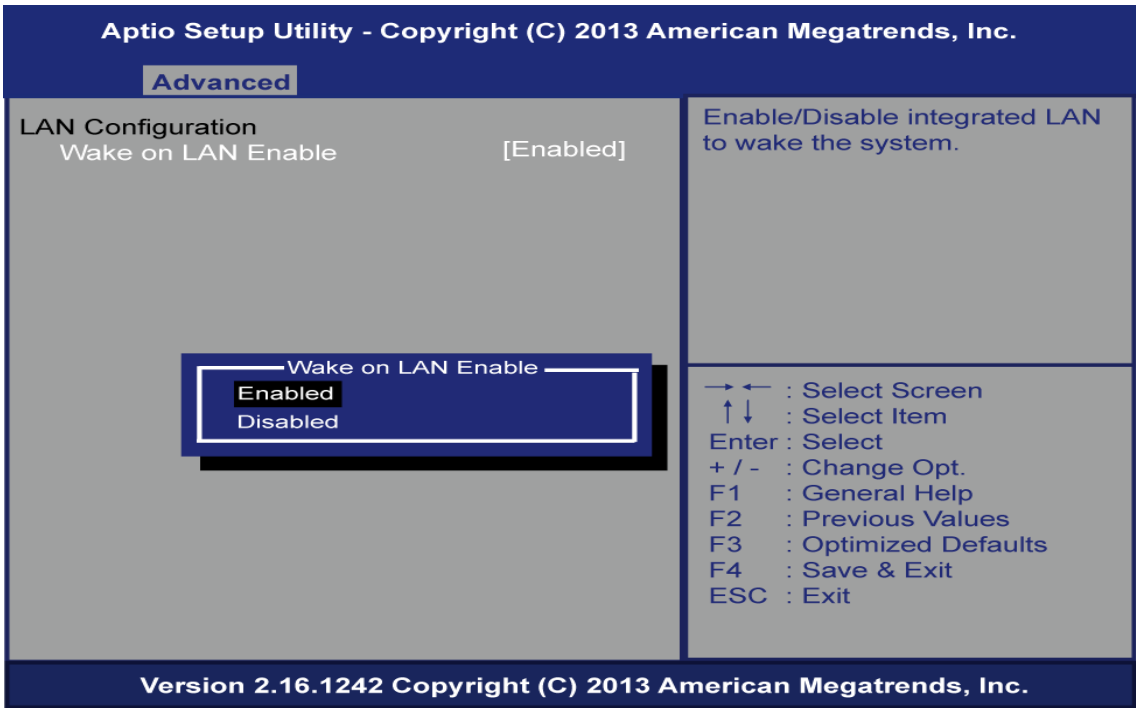
Enable or disable the onboard SATA port 1 for mSATA device.

SATA Switch

This option supports you to select mSATA (SATA signal) or standard Mini card modules (USB & PCIe signals) on SCN2. The default is PCIe signal. If you intend to insert mSATA card to SCN2 (Full-Size PCI Express Mini Card Slot), please change setting to mSATA.

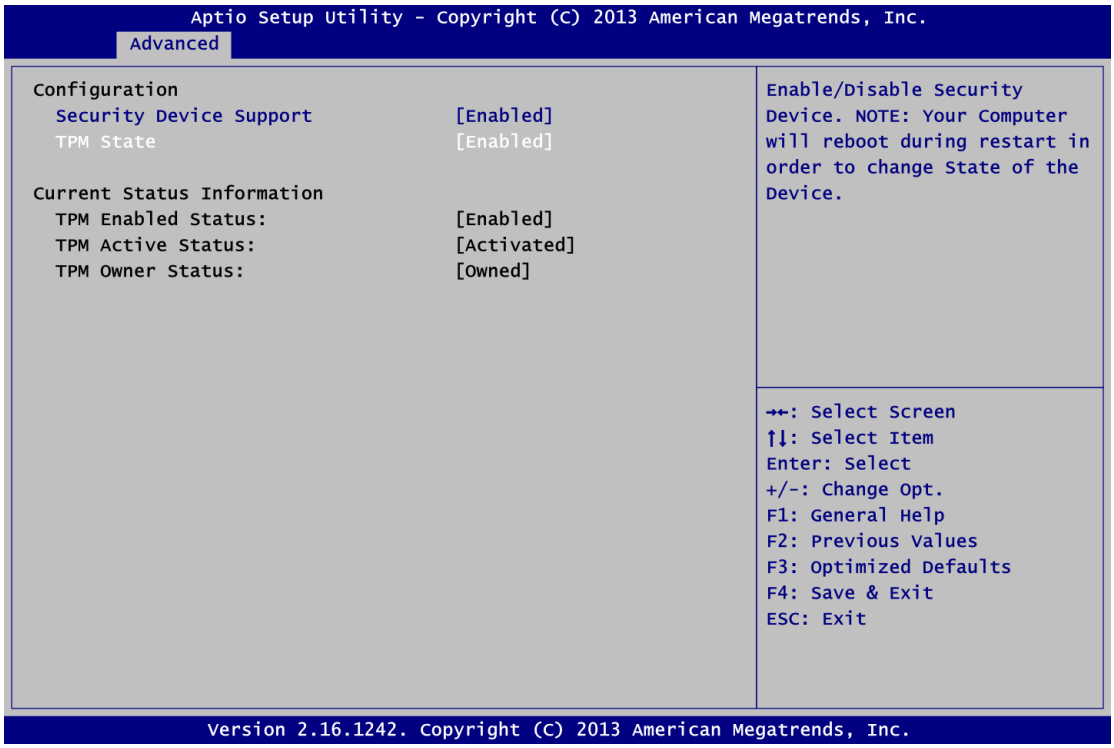
- **LAN Controller**

Enable or disable integrated LAN to wake the system; default setting is enabled



- **Trusted Computing**

This screen provides function for specifying the TPM settings.



Security Device Support

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

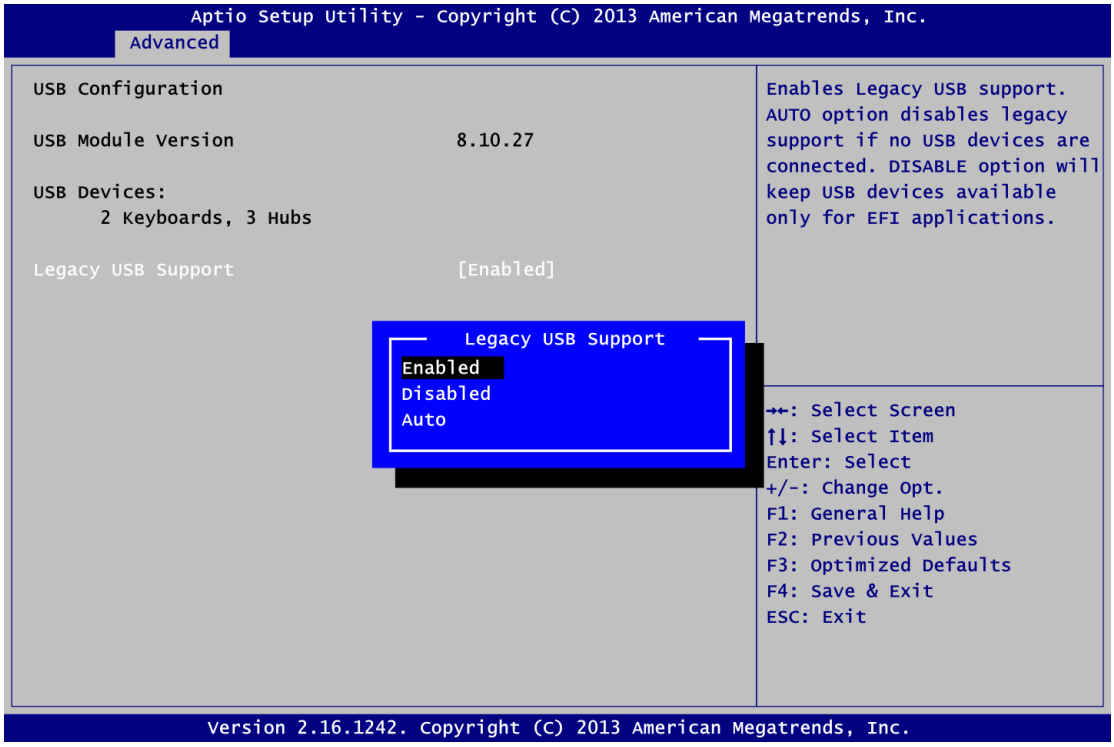
TPM State

Once the Security Device Support is Enabled, TPM can be used by the operating system.

Current Status Information

Display current TPM status information.

- **USB Configuration**



USB Devices

Display all detected USB devices.

Legacy USB Support

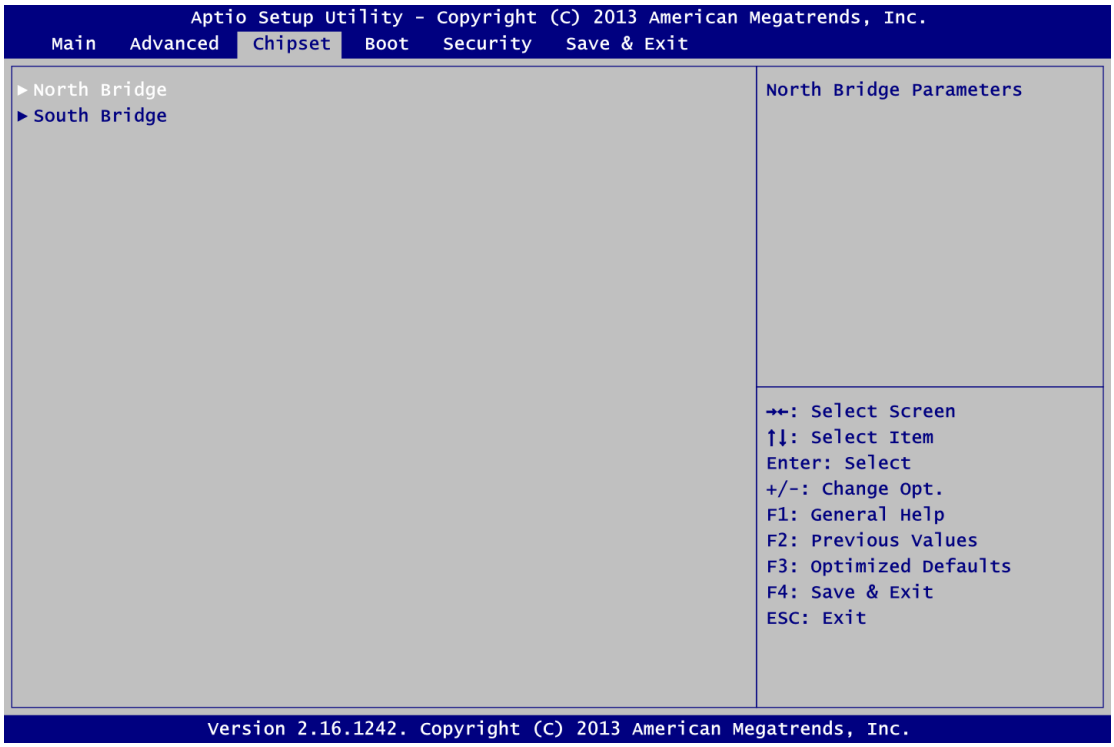
Use this item to enable or disable support for USB device on legacy operating system. The default setting is Enabled. Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.

4.5 Chipset Menu

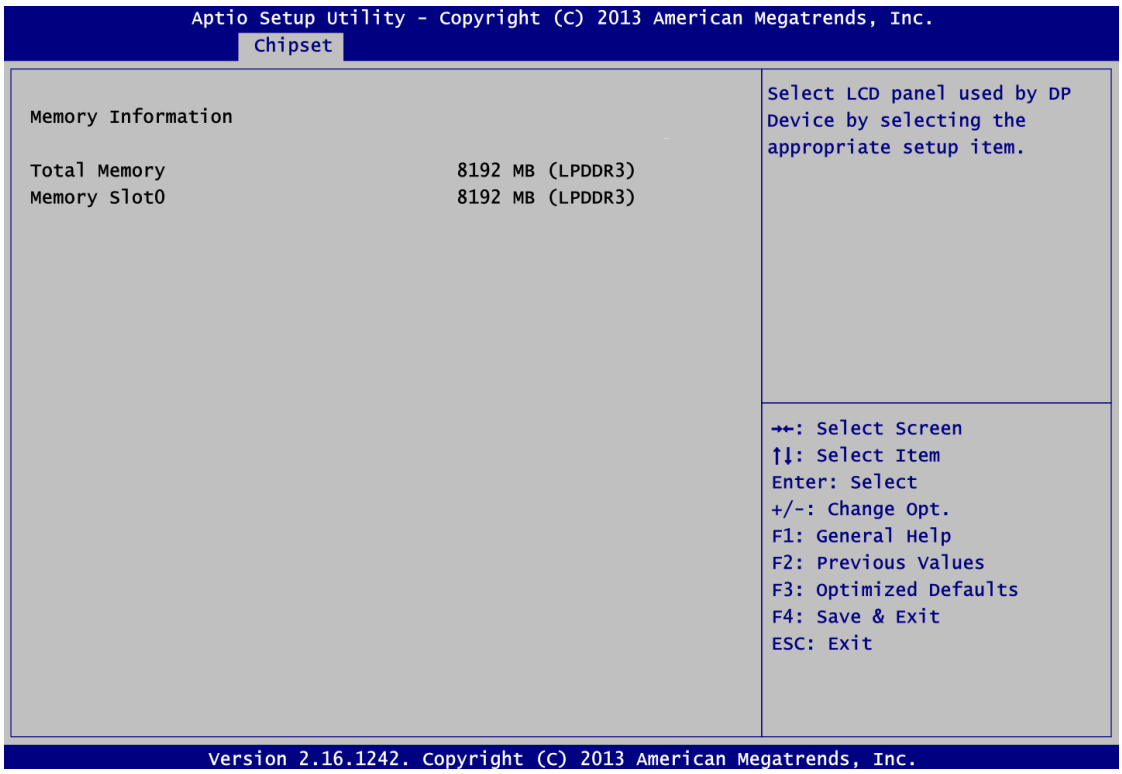
The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- ► North Bridge
- ► South Bridge

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

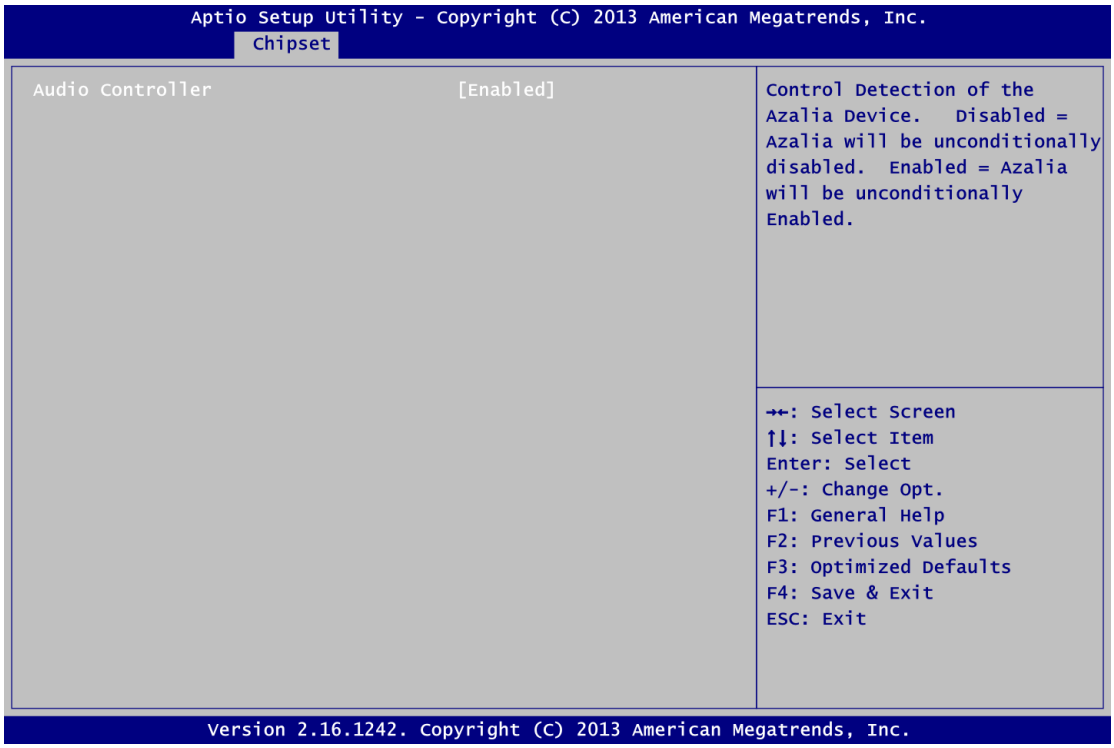


- **North Bridge**



- **South Bridge**

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

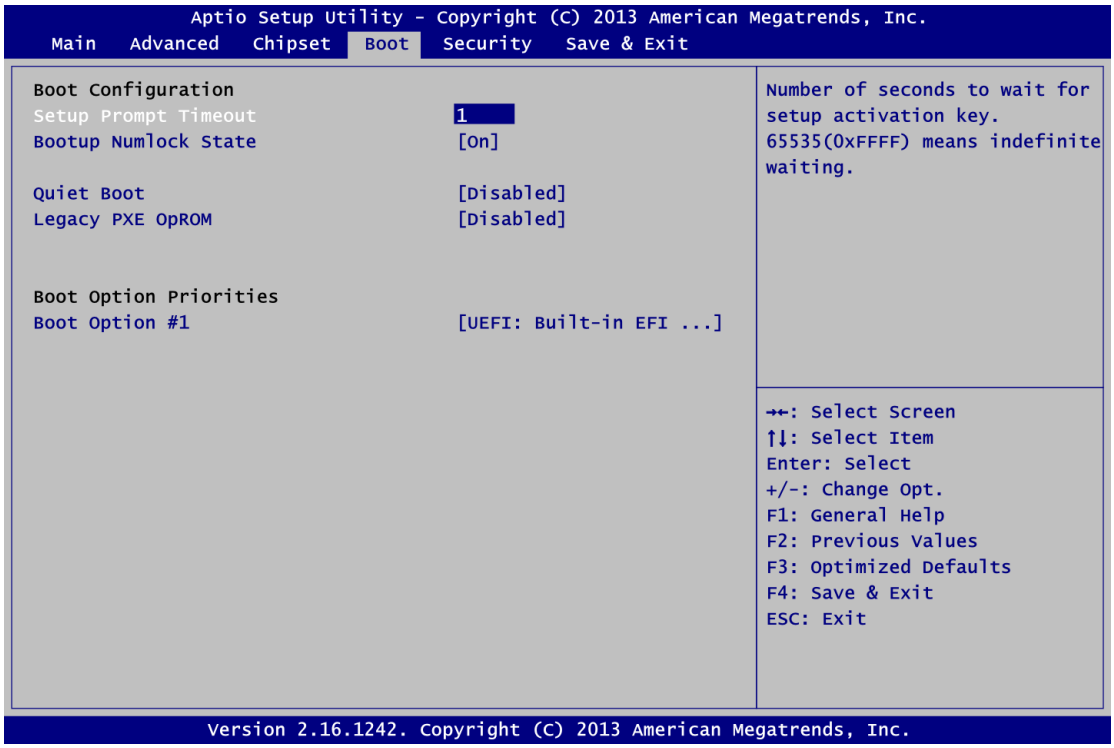


Audio Controller

Control detection of the Azalia device.
Disabled - Azalia will be unconditionally disabled.
Enabled - Azalia will be unconditionally enabled.

4.6 Boot Menu

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



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 PXE OpROM

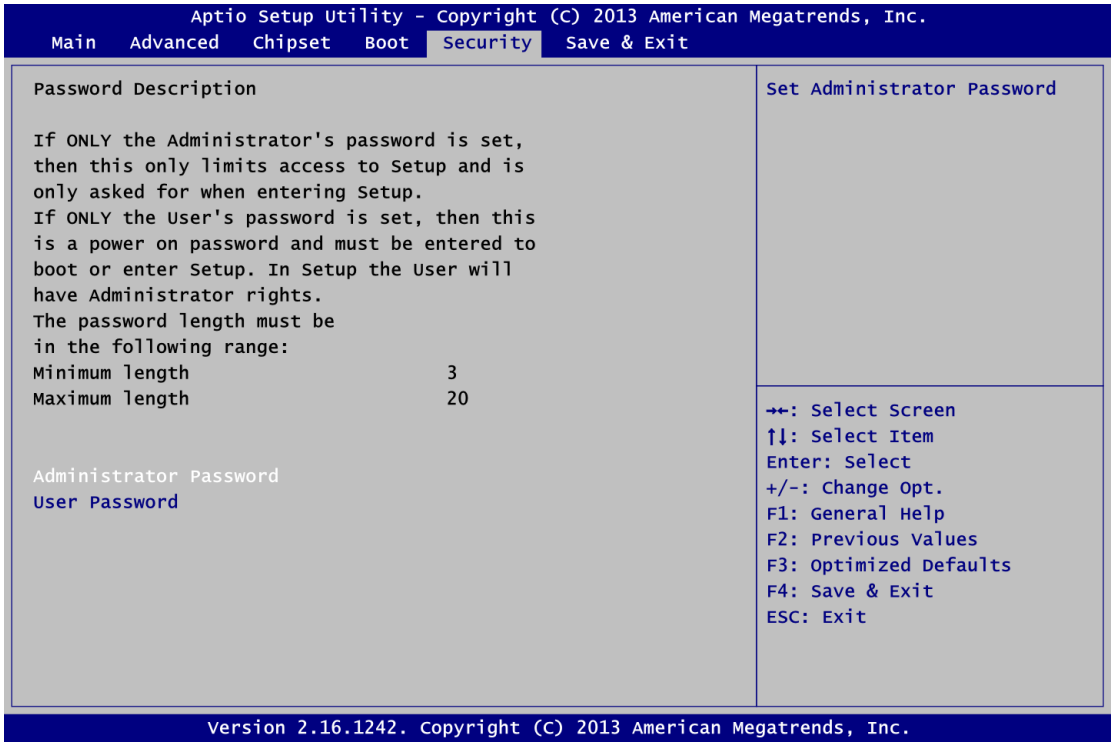
Use this item to enable or disable the boot ROM function of the onboard LAN chip when the system boots up.

Boot Option Priorities

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

4.7 Security Menu

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



Administrator Password

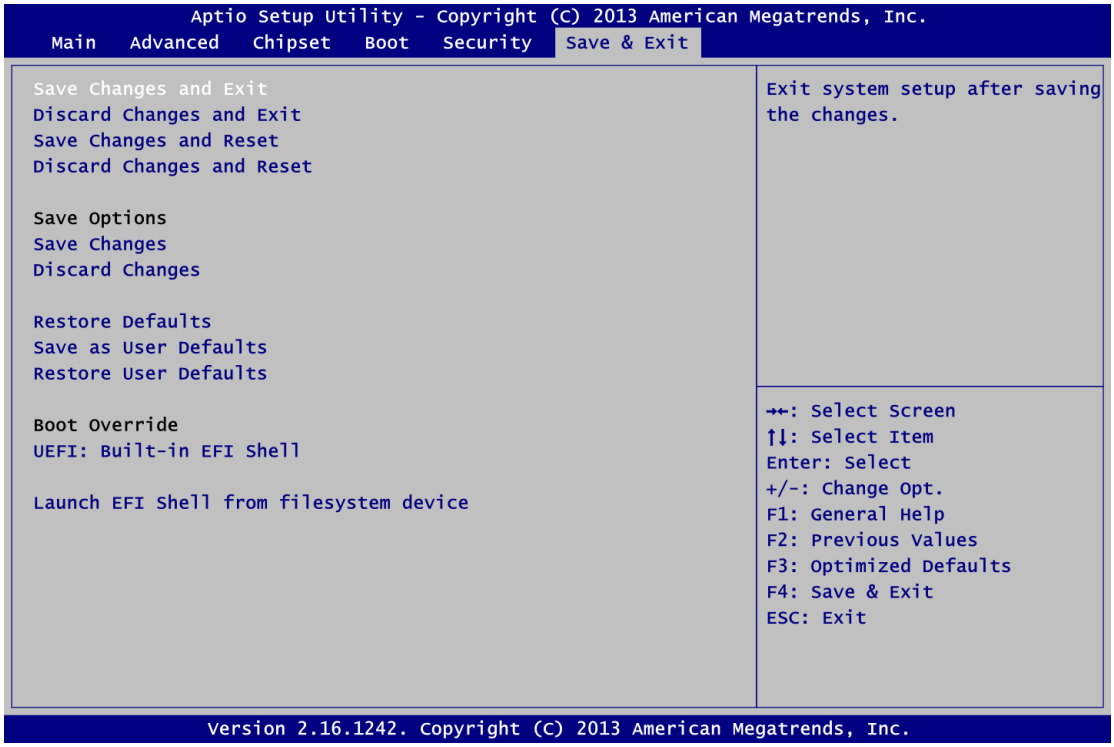
This item indicates whether an administrator password has been set (installed or uninstalled).

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.



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.

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

The following example enables configuration using debug tool.

Enable WDT

↓

Enable configuration:

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

O 2E 87

↓

Select logic device:

O 2E 07

O 2F 08

↓

WDT device enable:

O 2E 30

O 2F 01

↓

Set timer unit:

O 2E F0

O 2F 00 ; (00: Sec; 08:Minute)

↓

Set base timer:

O 2E F1

O 2F 0A ; Set reset time (where 0A (hex) = 10sec)

Disable WDT

↓

Enable configuration:

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

O 2E 87

↓

Select logic device:

O 2E 07

O 2F 08

↓

WDT device disable:

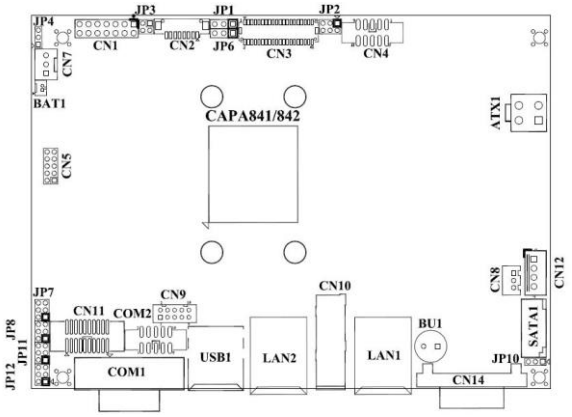
O 2E 30

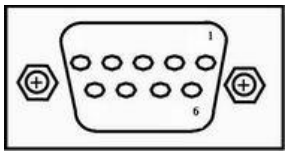
O 2F 00

Appendix B
Digital I/O

About Digital I/O

The onboard digital I/O has 8 bits (DIO0~7) and we set one DB9 female connector to output this function through cable. Each bit can be set to function as input or output by software programming. In default, all pins are pulled high with +5V level (according to main power). The BIOS default settings are 3 inputs and 5 outputs where all of these pins are set to 1.





Digital I/O

Pin	Signal	Pin	Signal
1	DI0 (Bit0)	2	DO0 (Bit 3)
3	DI1 (Bit1)	4	DO1 (Bit 4)
5	DI2 (Bit2)	6	DO2 (Bit 5)
7	GND	8	DO3 (Bit 6)
9	GND	10	DO4 (Bit 7)

Digital I/O Programming

The following example enables configuration using debug tool.

Start digital I/O programming

↓

Enable configuration:

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

O 2E 87

↓

Select logic device:

O 2E 07

O 2F 07

↓

Set multi-function selection:

O 2E 1C

O 2F 1C ; Open GPIO2 and close UART

↓

Set GPIO2 I/O register:

O 2E E8

O 2F 00 ; 00: Programmed to function as output port

; FF: Programmed to function as input port

↓

Set GPIO2 data register:

; Set digital output pins value

O 2E E9

O 2F 00 ; 00: Set digital output to low level

; FF: Set digital output to high level

↓

Digital Input:

; Read digital input data

O 2E E9

i 2F ; FF: Digital input data is high (default state)