# BOXER-6614

Embedded Controller

Intel® Quad Core N2930 1.83GHz Processor

Dual LAN, 3 USB2.0, 1 USB3.0, 4 COM

1 Full Size, 1 Half Size Mini Card



BOXER-6614 Manual 1st Ed.
December 24, 2014

# Copyright Notice

# Acknowledgments

All other products' name or trademarks are properties of their respective owners.

- AMI is a trademark of American Megatrends, Inc.
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# Packing List

Before you begin operating your PC, please make sure that the following materials are enclosed:

- 1 BOXER-6614 Embedded Controller
- 2 Wallmount Brackets
- 1 Screw Package
- 1 CD-ROM for manual (in PDF format) and drivers
- 1 Phoenix Power Connector
- 1 Thermal Pad (A1/A1M)

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

# Safety & Warranty

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a firm surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
14. If any of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.

d. The equipment does not work well, or you cannot get it to work according to the user's manual.

e. The equipment has been dropped and damaged.

f. The equipment has obvious signs of breakage.

15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20°C (-4°F) OR ABOVE 70°C (158°F). IT MAY DAMAGE THE EQUIPMENT.

16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded devices.

# FCC


This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

***Caution:***
*There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.*

**China RoHS Requirements**
**产品中有毒有害物质或元素名称及含量**
**AAEON Boxer/ Industrial System**

| 部件名称 | 有毒有害物质或元素 | | | | | |
|---|---|---|---|---|---|---|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 印刷电路板及其电子组件 | × | ○ | ○ | ○ | ○ | ○ |
| 外部信号连接器及线材 | × | ○ | ○ | ○ | ○ | ○ |
| 外壳 | × | ○ | ○ | ○ | ○ | ○ |
| 中央处理器与内存 | × | ○ | ○ | ○ | ○ | ○ |
| 硬盘 | × | ○ | ○ | ○ | ○ | ○ |
| 电源 | × | ○ | ○ | ○ | ○ | ○ |
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**O**：表示该有毒有害物质在该部件所有均质材料中的含量均在 **SJ/T 11363-2006** 标准规定的限量要求以下。

**X**：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 **SJ/T 11363-2006** 标准规定的限量要求。

备注：
一、此产品所标示之环保使用期限，系指在一般正常使用状况下。
二、上述部件物质中央处理器、内存、硬盘、电源为选购品。

## Chapter 1 General Information



## Chapter 2 Hardware Installation

Chapter

1

# General Information

## 1.1 Introduction

AAEON introduces the newest product in the Boxer series, BOXER-6614, which utilizes the Intel® Quad Core 1.83GHz SoC N2930: this embedded controller expands its graphics performance greatly with the newest generation of Celeron® processors.

In this era of information explosion, the advertising of consumer products will not be confined to the family television, but will also spread to high-traffic public areas, like department stores, the bus, transportation station, the supermarket etc. The advertising marketing industry will resort to every conceivable mean to transmit product information to consumers. System integrators will need a multifunction device to satisfy commercial needs for such public advertising.

The BOXER-6614 is a standalone high performance controller designed for long-life operation and with high reliability. It can replace traditional methods and become the mainstream controller for the multimedia entertainment market.

## 1.2 Features

- Intel® Quad Core 1.83GHz SoC N2930
- Intel® HD Integrated Graphics Engine
- USB3.0 x 1, USB2.0 x 3
- COM x 4
- Dual Gigabit Ethernet LAN
- VGA+HDMI Output, dual view/simultaneous display support
- SATA 3.0Gb/s
- Full size Mini Card with SIM slot x 1
- Half size Mini Card x 1 (Factory install only)
- Fanless System Design
- AAEON's Hi-Safe Support

## 1.3 Specifications

### *System*

| | |
|---|---|
| ● CPU | Intel® Quad Core 1.83GHz SoC N2930 |
| ● Memory | DDR3L 1333 SODIMM x 1, Max. 8GB |
| ● Display | VGA x 1, HDMI x 1 |
| ● Ethernet | Gigabit Ethernet, RJ-45 connector x 2<br>MiniCard wireless module (optional) |
| ● Storage | SATA 3.0Gb/s 2.5” HDD/SSD Bay x 1<br>CFast™ Slot x 1 (W/ cover protection) |
| ● Expansion | Full-size Mini Card Slot x 1<br>Half-size Mini Card x 1 (only for factory-install)<br>SIM Slot x 1 |
| ● Serial Port | RS-232/422/485 x 2, RS-232 x 2, |
| ● USB | USB 3.0 x 1, USB 2.0 x 3 |
| ● System Control | Power ON/OFF |
| ● LED Indicator | Power LED x 1, Hard disk active LED x 1, Link status x 2, Activate status x 2 |
| ● Power Supply | 1) DC power input 12V (A1/A2)<br>2) DC 9-30V w/ 3-pin terminal block (A1M/A2M) |
| ● OS Support | Windows® 8.1 (32/64-bit)<br>Windows® 7(32/64-bit)<br>WES7/WES8<br>Linux Fedora Core |

### *Mechanical and Environmental*

| | |
|---|---|
| Construction | Metal Fe. |
| Color | Dark Gray |
| Mounting | Desktop mount/ Wallmount/ Din Rail |
| Dimension | 8.71”(W) x 3.32”(H) x 2.25”(D)<br>(221.15mm x 84.28mm x 107mm) |
| Gross Weight | 6.16 lb (2.8kg) |
| Net Weight | 4.4 lb (2.0kg) |
| Operating Temperature | Ambient with Airflow<br>-4°F ~ 131°F (-20°C ~ 55°C) - CFast™<br>-4°F ~ 140°F (-20°C ~ 60°C) - HDD<br>With industrial grade device (according to IEC68-2-14) |
| Storage Temperature | -4°F ~ 158°F (-20°C ~ 70°C)<br>With industrial grade device<br>(according to IEC62-2-1, IEC68-2-2) |
| Storage Humidity | 95% @ 40°C, non-condensing |
| Vibration | 5 g rms/ 5~500Hz/ operation – CFast™<br>1 g rms/ 5~500Hz/ operation – HDD |
| Shock | 50 G peak acceleration (11msec. duration) – CFast™<br>20 G peak acceleration (11msec. duration) – HDD |
| EMC | CE/FCC Class A |

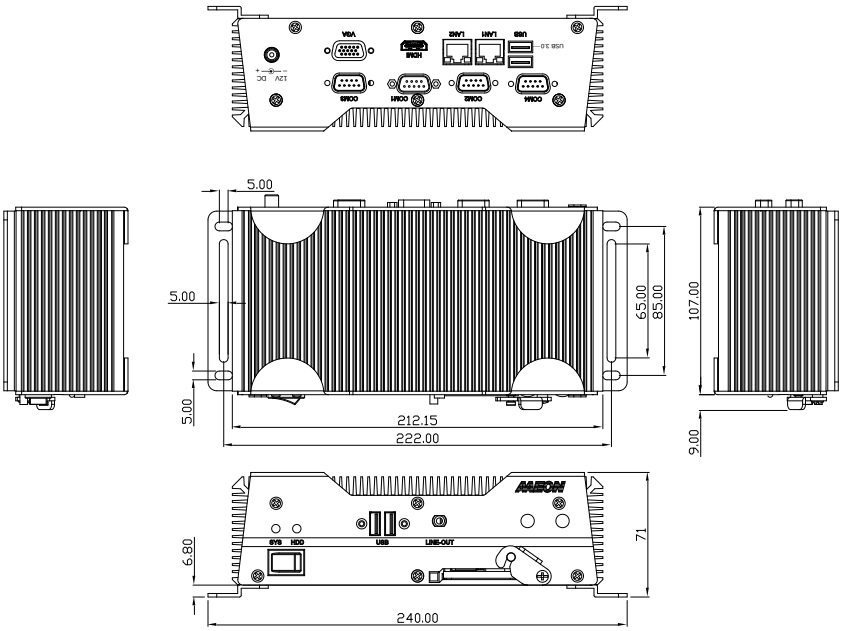
Chapter

2

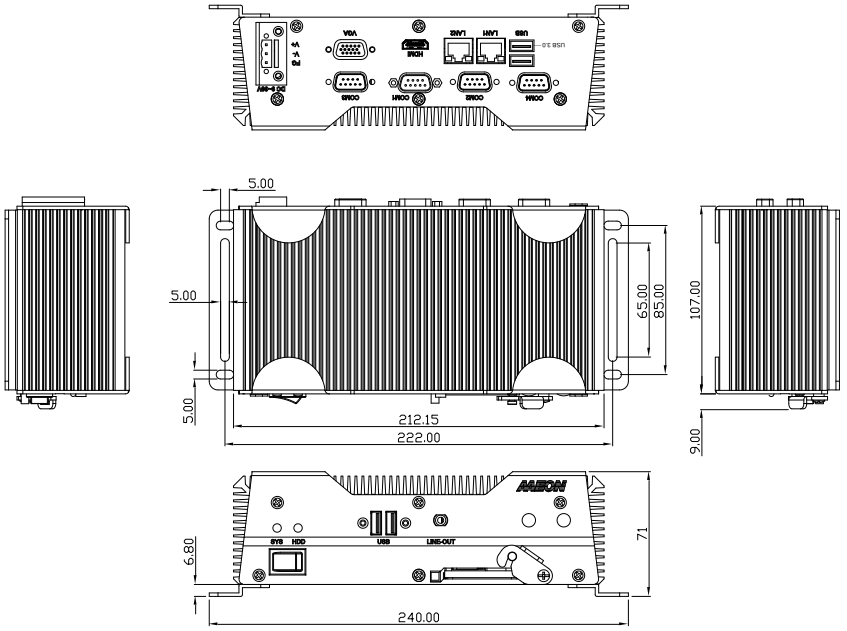
# Hardware Installation

## 2.1 Dimension and I/O of BOXER-6614

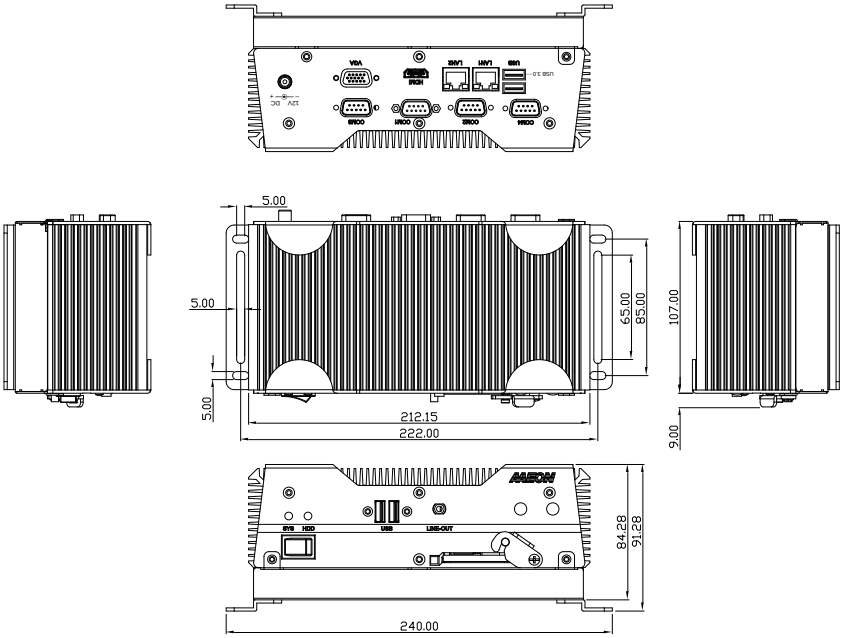
### BOXER-6614-A1



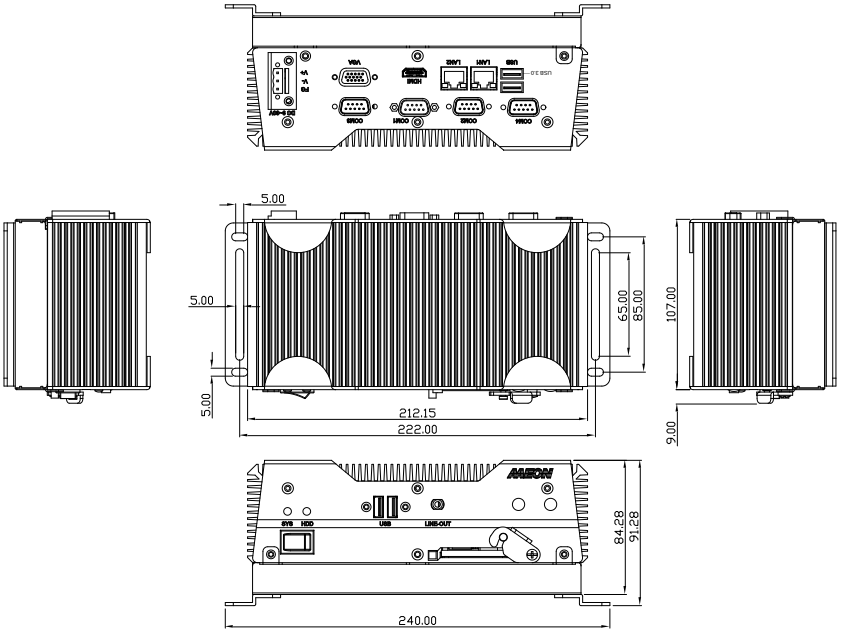
## BOXER-6614-A1M



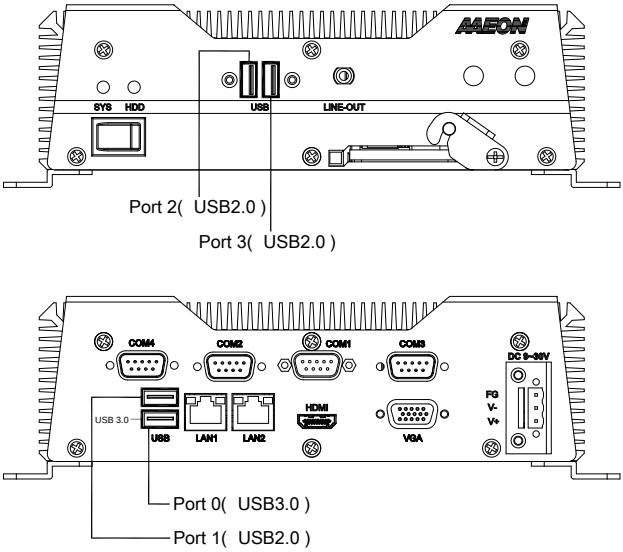
## BOXER-6614-A2



## BOXER-6614-A2M

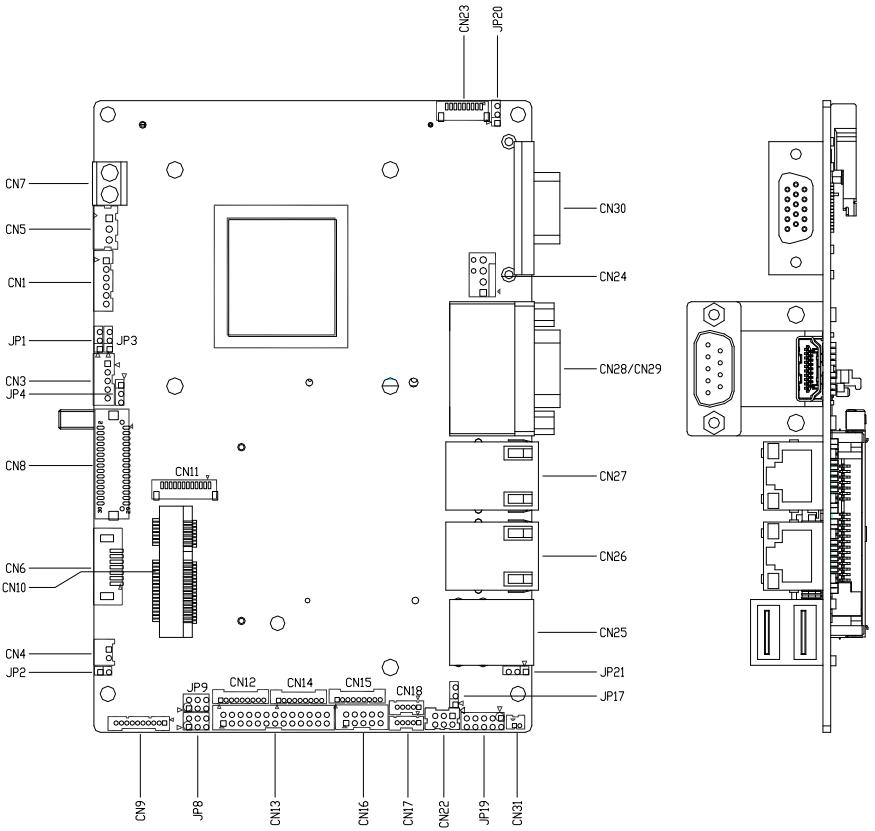


## 2.2 Allocation of USB Ports

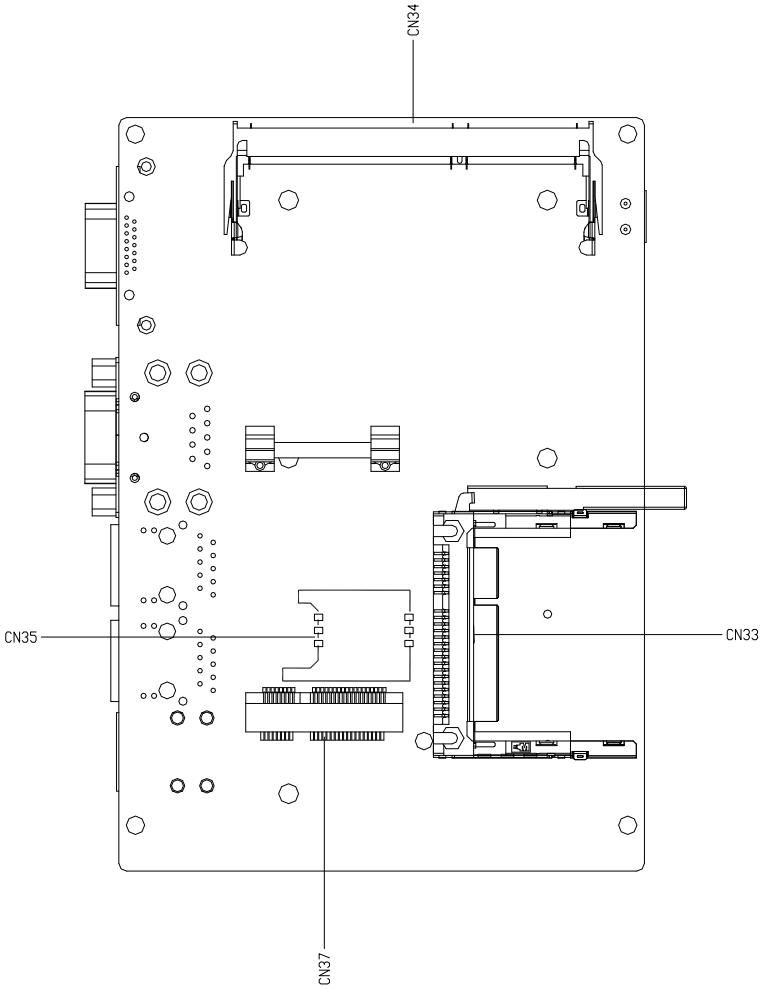


## 2.3 Connectors and Jumpers of The Main Board

### Component Side



## Solder Side



## 2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

| Label | Function |
|---|---|
| JP8 | COM2 Pin8 Function Selection |
| JP9 | COM3 Pin8 Function Selection |
| JP17 | Auto Power Button Enable/Disable Selection |
| JP21 | Clear CMOS Jumper |

## 2.5 List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

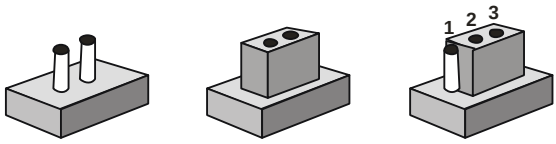
| Label | Function |
|---|---|
| CN1 | +5VSB Output w/SMBus |
| CN4 | +5V Output for SATA HDD |
| CN6 | SATA Port |
| CN7 | External +12V Input |
| CN9 | Audio I/O Port |
| CN10 | Mini-Card Slot (Half-Mini Card) |
| CN11 | LPC Port |
| CN12 | COM Port 2 Connector |
| CN13 | LPT Port |
| CN14 | COM Port 3 Connector |
| CN15 | COM Port 4 Connector |
| CN16 | Digital IO Port |
| CN17 | USB 2.0 Port 3 |
| CN18 | USB 2.0 Port 2 |
| CN19 | SPI Debug Port |
| CN22 | PS/2 Keyboard/Mouse Combo Port |
| CN25 | USB Ports 0 and 1 |
| CN26 | LAN (RJ-45) Port1 |
| CN27 | LAN (RJ-45) Port2 |
| CN28 | COM Port 1 Connector (D-SUB 9) |
| CN29 | HDMI Port |
| CN30 | VGA Port |
| CN31 | Battery |
| CN33 | CFast Slot |

| | |
|---|---|
| CN34 | DDR3L SO-DIMM Slot |
| CN35 | UIM Card Socket |
| CN37 | Mini-Card Slot (Full-Mini Card) |

## 2.6 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



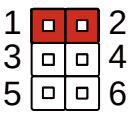

**Open** **Closed** **Closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers.

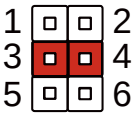
If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

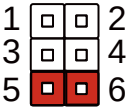
## 2.7 COM2 Pin8 Function Selection (JP8)




+12V



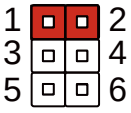

Ring(Default)



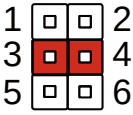

+5V

| JP8 | Function |
|---|---|
| 1-2 | +12V |
| 3-4 | Ring(Default) |
| 5-6 | +5V |

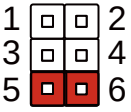
## 2.8 COM3 Pin8 Function Selection (JP9)




+12V



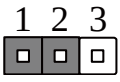

Ring(Default)



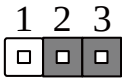

+5V

| JP9 | Function |
|---|---|
| 1-2 | +12V |
| 3-4 | Ring(Default) |
| 5-6 | +5V |

## 2.9 Auto Power Button Enable/Disable Selection (JP17)




Disable

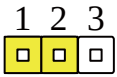



Enable (Default)

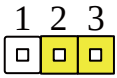
| JP17 | Function |
|---|---|
| 1-2 | Disable |
| 2-3 | Enable (Default) |

**Note 1:** Disable Auto Power Button JP17(1-2) : Need to use power button JP19(1-2) to power on the system.

## 2.10 Clear CMOS Jumper (JP21)



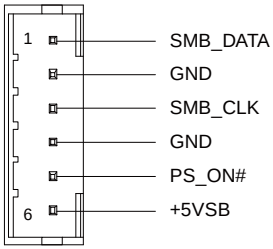

**Normal (Default)**




**Clear CMOS**

| JP21 | Function |
|---|---|
| 1-2 | Normal (Default) |
| 2-3 | Clear CMOS |

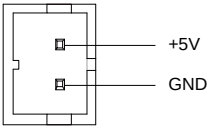
## 2.11 +5VSB Output w/SMBus (CN1)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | SMB_DATA | I/O | +3.3V |
| 2 | GND | GND | |

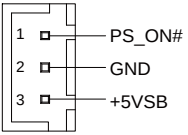
| | | | |
|---|---|---|---|
| 3 | SMB_CLK | I/O | +3.3V |
| 4 | GND | GND | |
| 5 | PS_ON# | OUT | +3.3V |
| 6 | +5VSB | PWR | +5V |

## 2.12 +5V Output for SATA HDD (CN4)



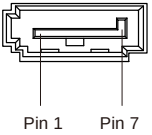

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +5V | PWR | +5V |
| 2 | GND | GND | |

## 2.13 External +5VSB Input (CN5)



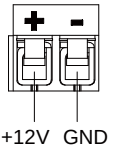

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | PS_ON# | OUT | +3.3V |
| 2 | GND | GND | |
| 3 | +5VSB | PWR | +5V |

## 2.14 SATA Port1 (CN6)



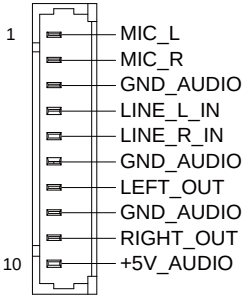

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | GND | GND | |
| 2 | SATA_TX+ | DIFF | |
| 3 | SATA_TX- | DIFF | |
| 4 | GND | GND | |
| 5 | SATA_RX- | DIFF | |
| 6 | SATA_RX+ | DIFF | |
| 7 | GND | GND | |

## 2.15 External +12V Input (CN7)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +12V | PWR | +12V |
| 2 | GND | GND | |

## 2.16 Audio I/O Port (CN9)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | MIC_L | IN | |
| 2 | MIC_R | IN | |
| 3 | GND_AUDIO | GND | |
| 4 | LINE_L_IN | IN | |
| 5 | LINE_R_IN | IN | |
| 6 | GND_AUDIO | GND | |
| 7 | LEFT_OUT | OUT | |
| 8 | GND_AUDIO | GND | |
| 9 | RIGHT_OUT | OUT | |
| 10 | +5V_AUDIO | PWR | +5V |

## 2.17 Mini-Card Slot (Half-Mini Card) (CN10)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | PCIE_WAKE# | IN | |
| 2 | +3.3VSB | PWR | +3.3V |

| | | | |
|---|---|---|---|
| 3 | NC | | |
| 4 | GND | GND | |
| 5 | NC | | |
| 6 | +1.5V | PWR | +1.5V |
| 7 | PCIE_CLK_REQ# | IN | |
| 8 | NC | | |
| 9 | GND | GND | |
| 10 | NC | | |
| 11 | PCIE_REF_CLK- | DIFF | |
| 12 | NC | | |
| 13 | PCIE_REF_CLK+ | DIFF | |
| 14 | NC | | |
| 15 | GND | GND | |
| 16 | NC | | |
| 17 | NC | | |
| 18 | GND | GND | |
| 19 | NC | | |
| 20 | W_DISABLE# | OUT | +3.3V |
| 21 | GND | GND | |
| 22 | PCIE_RST# | OUT | +3.3V |
| 23 | PCIE_RX- | DIFF | |
| 24 | +3.3VSB | PWR | +3.3V |
| 25 | PCIE_RX+ | DIFF | |
| 26 | GND | GND | |

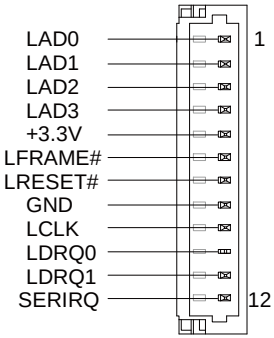
| | | | |
|---|---|---|---|
| 27 | GND | GND | |
| 28 | +1.5V | PWR | +1.5V |
| 29 | GND | GND | |
| 30 | SMB_CLK | I/O | +3.3V |
| 31 | PCIE_TX- | DIFF | |
| 32 | SMB_DATA | I/O | +3.3V |
| 33 | PCIE_TX+ | DIFF | |
| 34 | GND | GND | |
| 35 | GND | GND | |
| 36 | USB_D- | DIFF | |
| 37 | GND | GND | |
| 38 | USB_D+ | DIFF | |
| 39 | +3.3VSB | PWR | +3.3V |
| 40 | GND | GND | |
| 41 | +3.3VSB | PWR | +3.3V |
| 42 | NC | | |
| 43 | GND | GND | |
| 44 | NC | | |
| 45 | NC | | |
| 46 | NC | | |
| 47 | NC | | |
| 48 | +1.5V | PWR | +1.5V |
| 49 | NC | | |
| 50 | GND | GND | |

| | | | |
|---|---|---|---|
| 51 | NC | | |
| 52 | +3.3VSB | PWR | +3.3V |

**Note 1**: CN10 can be selected for Mini-Card or mSATA by changing BOM.

**Note 2**: You can choose the function either from mSATA or from CFast on the motherboard.

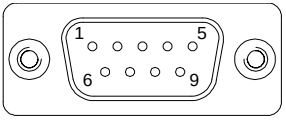
## 2.18 LPC Port (CN11)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | LAD0 | I/O | +3.3V |
| 2 | LAD1 | I/O | +3.3V |
| 3 | LAD2 | I/O | +3.3V |
| 4 | LAD3 | I/O | +3.3V |
| 5 | +3.3V | PWR | +3.3V |
| 6 | LFRAME# | IN | |
| 7 | LRESET# | OUT | +3.3V |
| 8 | GND | GND | |

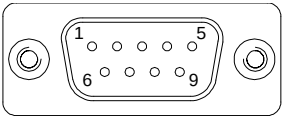
| | | | |
|---|---|---|---|
| 9 | LCLK | OUT | |
| 10 | LDRQ0 | IN | |
| 11 | LDRQ1 | IN | |
| 12 | SERIRQ | I/O | +3.3V |

## 2.19 COM Port 2 Connector (CN12 of mainboard)



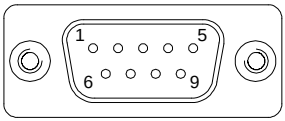

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | DCD | IN | |
| 2 | RX | IN | |
| 3 | TX | OUT | ± 9V |
| 4 | DTR | OUT | ± 9V |
| 5 | GND | GND | |
| 6 | DSR | IN | |
| 7 | RTS | OUT | ± 9V |
| 8 | CTS | IN | |
| 9 | RI | IN | |

**RS-422**



| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | RS422_TX- | OUT | ± 5V |
| 2 | RS422_TX+ | OUT | ± 5V |
| 3 | RS422_RX+ | IN | |
| 4 | RS422_RX- | IN | |
| 5 | GND | GND | |
| 9 | NC/+5V/+12V | PWR | +5V/+12V |

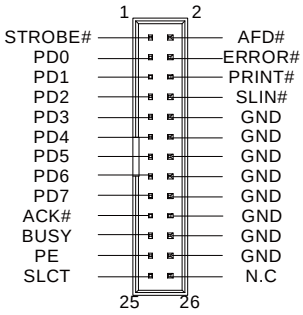
**RS-485**




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | RS485_D-- | I/O | ± 5V |
| 2 | RS485_D+ | I/O | ± 5V |
| 5 | GND | GND | |
| 9 | NC/+5V/+12V - | PWR | +5V/+12V |

**Note:** COM 2 can be configured into RS-232/422/485 through BIOS settings. Default is RS-232

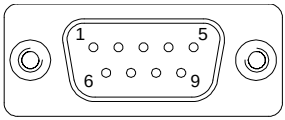
## 2.20 LPT Port (CN13)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | STROBE# | IN | |
| 2 | AFD# | I/O | |
| 3 | PD0 | I/O | |
| 4 | ERROR# | IN | |
| 5 | PD1 | I/O | |
| 6 | PRINT# | I/O | |
| 7 | PD2 | I/O | |
| 8 | SLIN# | I/O | |
| 9 | PD3 | I/O | |
| 10 | GND | GND | |
| 11 | PD4 | I/O | |
| 12 | GND | GND | |
| 13 | PD5 | I/O | |
| 14 | GND | GND | |
| 15 | PD6 | I/O | |

| | | |
|---|---|---|
| 16 | GND | GND |
| 17 | PD7 | I/O |
| 18 | GND | GND |
| 19 | ACK# | IN |
| 20 | GND | GND |
| 21 | BUSY | IN |
| 22 | GND | GND |
| 23 | PE | IN |
| 24 | GND | GND |
| 25 | SLCT | IN |
| 26 | NC | |

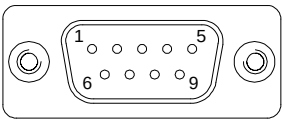
## 2.21 COM Port 3 Connector (CN14 of mainboard)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | DCD | IN | |
| 2 | RX | IN | |
| 3 | TX | OUT | ± 9V |
| 4 | DTR | OUT | ± 9V |
| 5 | GND | GND | |
| 6 | DSR | IN | |

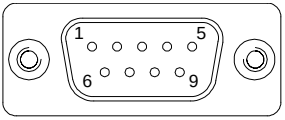
| | | | |
|---|---|---|---|
| 7 | RTS | OUT | ± 9V |
| 8 | CTS | IN | |
| 9 | RI | IN | |

**RS-422**




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | RS422_TX- | OUT | ± 5V |
| 2 | RS422_TX+ | OUT | ± 5V |
| 3 | RS422_RX+ | IN | |
| 4 | RS422_RX- | IN | |
| 5 | GND | GND | |
| 9 | NC/+5V/+12V | PWR | +5V/+12V |

**RS-485**

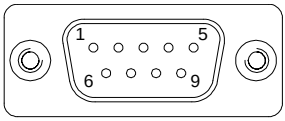



| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | RS485_D-- | I/O | ± 5V |
| 2 | RS485_D+ | I/O | ± 5V |
| 5 | GND | GND | |

| | | | |
|---|---|---|---|
| 9 | NC/+5V/+12V | PWR | +5V/+12V |

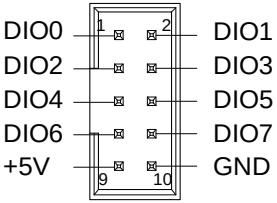
**Note:** COM 3 can be configured into RS-232/422/485 through BIOS settings. Default is RS-232

## 2.22 COM Port 4 (CN15 of mainboard)



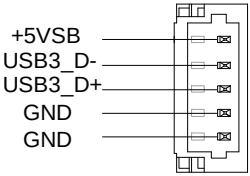

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | DCD | IN | |
| 2 | RX | IN | |
| 3 | TX | OUT | ± 9V |
| 4 | DTR | OUT | ± 9V |
| 5 | GND | GND | |
| 6 | DSR | IN | |
| 7 | RTS | OUT | ± 9V |
| 8 | CTS | IN | |
| 9 | RI | IN | |

## 2.23 Digital IO Port (CN16)



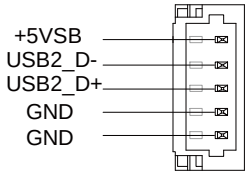

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | DIO0 | I/O | +5V |
| 2 | DIO1 | I/O | +5V |
| 3 | DIO2 | I/O | +5V |
| 4 | DIO3 | I/O | +5V |
| 5 | DIO4 | I/O | +5V |
| 6 | DIO5 | I/O | +5V |
| 7 | DIO6 | I/O | +5V |
| 8 | DIO7 | I/O | +5V |
| 9 | +5V | PWR | +5V |
| 10 | GND | GND | |

## 2.24 USB 2.0 Port 3 (CN17)



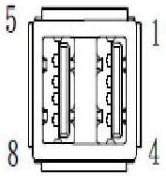
| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +5VSB | PWR | |
| 2 | USB3_D- | DIFF | |
| 3 | USB3_D+ | DIFF | |
| 4 | GND | GND | |
| 5 | GND | GND | |

## 2.25 USB 2.0 Port 2 (CN18)



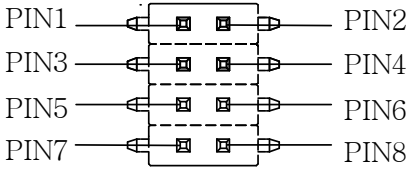

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +5VSB | PWR | +5V |
| 2 | USB2_D- | DIFF | |
| 3 | USB2_D+ | DIFF | |
| 4 | GND | GND | |
| 5 | GND | GND | |

## 2.26 USB Port 2 and 3 (CN17/18)



| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +5VSB | PWR | +5V |
| 2 | USB0_D- | DIFF | |
| 3 | USB0_D+ | DIFF | |
| 4 | GND | GND | |
| 5 | +5VSB | PWR | +5V |
| 6 | USB0_D- | DIFF | |
| 7 | USB0_D+ | DIFF | |
| 8 | GND | GND | |

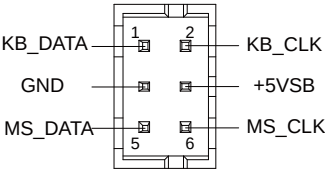
## 2.27 BIOS Debug Port (CN19)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +3.3VSB | PWR | +3.3V |
| 2 | GND | GND | |
| 3 | SPI_CS | IN | |
| 4 | SPI_CLK | IN | |
| 5 | SPI_MISO | OUT | |
| 6 | SPI_MOSI | IN | |
| 7 | NC | | |

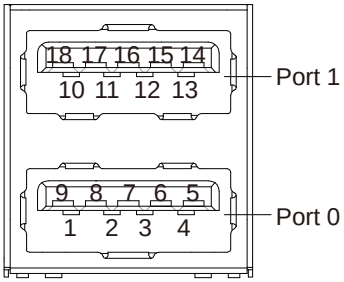
| | |
|---|---|
| 8 | NC |

## 2.28 PS/2 Keyboard/Mouse Combo Port (CN22)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | KB_ DATA | I/O | +5V |
| 2 | KB_CLK | I/O | +5V |
| 3 | GND | GND | |
| 4 | +5VSB | PWR | +5V |
| 5 | MS_DATA | I/O | +5V |
| 6 | MS_CLK | I/O | +5V |

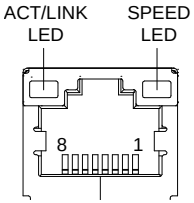
## 2.29 USB Ports 0 and 1 (CN25)



| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +5VSB | PWR | +5V |
| 2 | USB0_D- | DIFF | |
| 3 | USB0_D+ | DIFF | |
| 4 | GND | GND | |
| 5 | USB0_SSRX− | DIFF | |
| 6 | USB0_SSRX+ | DIFF | |
| 7 | GND | GND | |
| 8 | USB0_SSTX− | DIFF | |
| 9 | USB0_SSTX+ | DIFF | |
| 10 | +5VSB | PWR | +5V |
| 11 | USB1_D- | DIFF | |
| 12 | USB1_D+ | DIFF | |
| 13 | GND | GND | |
| 14 | NC | | |
| 15 | NC | | |
| 16 | GND | GND | |
| 17 | NC | | |
| 18 | NC | | |

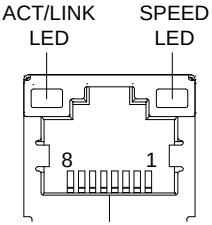
Note**: Only Port0 supports USB3.0.**

## 2.30 LAN (RJ-45) Port1 (CN26)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | MDI0+ | DIFF | |
| 2 | MDI0- | DIFF | |
| 3 | MDI1+ | DIFF | |
| 4 | MDI2+ | DIFF | |
| 5 | MDI2- | DIFF | |
| 6 | MDI1- | DIFF | |
| 7 | MDI3+ | DIFF | |
| 8 | MDI3- | DIFF | |

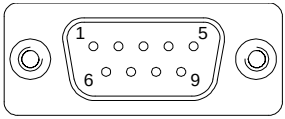
## 2.31 LAN (RJ-45) Port2 (CN27)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | MDI0+ | DIFF | |

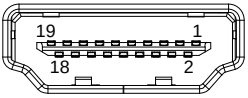
| | | |
|---|---|---|
| 2 | MDI0- | DIFF |
| 3 | MDI1+ | DIFF |
| 4 | MDI2+ | DIFF |
| 5 | MDI2- | DIFF |
| 6 | MDI1- | DIFF |
| 7 | MDI3+ | DIFF |
| 8 | MDI3- | DIFF |

## 2.32 COM Port 1 (D-SUB 9) (CN28)



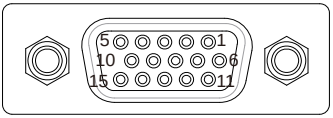

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | DCD | IN | |
| 2 | RX | IN | |
| 3 | TX | OUT | ± 9V |
| 4 | DTR | OUT | ± 9V |
| 5 | GND | GND | |
| 6 | DSR | IN | |
| 7 | RTS | OUT | ± 9V |
| 8 | CTS | IN | |
| 9 | RI | IN | |

## 2.33 HDMI Port (CN29)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | TMDS_DAT2+ | DIFF | |
| 2 | GND | GND | |
| 3 | TMDS_DAT2- | DIFF | |
| 4 | TMDS_DAT1+ | DIFF | |
| 5 | GND | GND | |
| 6 | TMDS_DAT1- | DIFF | |
| 7 | TMDS_DAT0+ | DIFF | |
| 8 | GND | GND | |
| 9 | TMDS_DAT0- | DIFF | |
| 10 | TMDS_CLK+ | DIFF | |
| 11 | GND | GND | |
| 12 | TMDS_CLK- | DIFF | |
| 13 | NC | | |
| 14 | NC | | |
| 15 | DDC_CLK | I/O | +5V |
| 16 | DDC_DATA | I/O | +5V |
| 17 | GND | GND | |
| 18 | +5V | I/O | +5V |
| 19 | HPLG_DETECT | IN | |

## 2.34 VGA Port (CN30)




| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | RED | OUT | |
| 2 | GREEN | OUT | |
| 3 | BLUE | OUT | |
| 4 | NC | | |
| 5 | GND | GND | |
| 6 | RED_GND_RTN | GND | |
| 7 | GREEN_GND_RTN | GND | |
| 8 | BLUE_GND_RTN | GND | |
| 9 | +5V | PWR | +5V |
| 10 | CRT_PLUG# | | |
| 11 | NC | | |
| 12 | DDC_DATA | I/O | +5V |
| 13 | HSYNC | OUT | |
| 14 | VSYNC | OUT | |
| 15 | DDC_CLK | I/O | +5V |

## 2.35 Battery (CN31)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +3.3V | PWR | 3.3V |
| 2 | GND | GND | |

## 2.36 CFast Slot (CN33)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| S1 | GND | GND | |
| S2 | SATA_TX+ | DIFF | |
| S3 | SATA_TX- | DIFF | |
| S4 | GND | GND | |
| S5 | SATA_RX- | DIFF | |
| S6 | SATA_RX+ | DIFF | |
| S7 | GND | GND | |
| PC1 | NC | | |
| PC2 | GND | GND | |
| PC3 | NC | | |
| PC4 | NC | | |
| PC5 | NC | | |
| PC6 | NC | | |
| PC7 | GND | GND | |
| PC8 | NC | | |
| PC9 | NC | | |
| PC10 | NC | | |

| | | | |
|---|---|---|---|
| PC11 | NC | | |
| PC12 | NC | | |
| PC13 | +3.3V | PWR | +3.3V |
| PC14 | +3.3V | PWR | +3.3V |
| PC15 | GND | GND | |
| PC16 | GND | GND | |
| PC17 | NC | | |

## 2.37 DDR3L SO-DIMM Slot (CN34)

Standard specification

## 2.38 UIM Card Socket (CN35)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | UIM_PWR | PWR | |
| 2 | UIM_RST | IN | |
| 3 | UIM_CLK | IN | |
| 4 | GND | GND | |
| 5 | UIM_VPP | PWR | |
| 6 | UIM_DATA | I/O | |

## 2.39 Mini-Card Slot (Full-Mini Card) (CN37)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | PCIE_WAKE# | IN | |
| 2 | +3.3VSB | PWR | +3.3V |

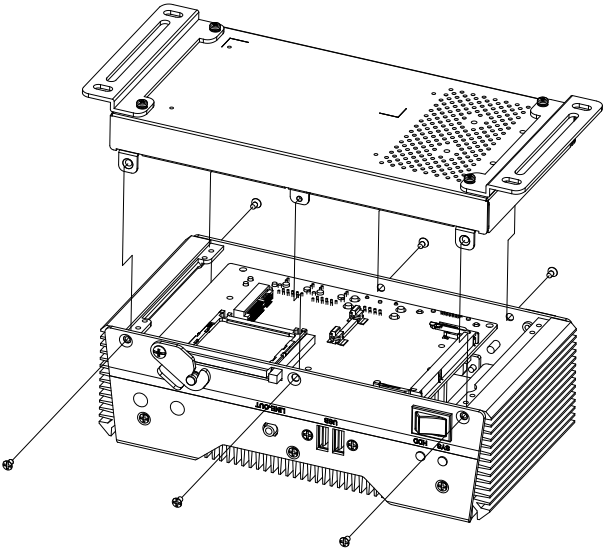
| | | | |
|---|---|---|---|
| 3 | NC | | |
| 4 | GND | GND | |
| 5 | NC | | |
| 6 | +1.5V | PWR | +1.5V |
| 7 | PCIE_CLK_REQ# | IN | |
| 8 | UIM_PWR | PWR | |
| 9 | GND | GND | |
| 10 | UIM_DATA | I/O | |
| 11 | PCIE_REF_CLK- | DIFF | |
| 12 | UIM_CLK | IN | |
| 13 | PCIE_REF_CLK+ | DIFF | |
| 14 | UIM_RST | IN | |
| 15 | GND | GND | |
| 16 | UIM_VPP | PWR | |
| 17 | NC | | |
| 18 | GND | GND | |
| 19 | NC | | |
| 20 | W_DISABLE# | OUT | +3.3V |
| 21 | GND | GND | |
| 22 | PCIE_RST# | OUT | +3.3V |
| 23 | PCIE_RX- | DIFF | |
| 24 | +3.3VSB | PWR | +3.3V |
| 25 | PCIE_RX+ | DIFF | |
| 26 | GND | GND | |

| | | | |
|---|---|---|---|
| 27 | GND | GND | |
| 28 | +1.5V | PWR | +1.5V |
| 29 | GND | GND | |
| 30 | SMB_CLK | I/O | +3.3V |
| 31 | PCIE_TX- | DIFF | |
| 32 | SMB_DATA | I/O | +3.3V |
| 33 | PCIE_TX+ | DIFF | |
| 34 | GND | GND | |
| 35 | GND | GND | |
| 36 | USB_D- | DIFF | |
| 37 | GND | GND | |
| 38 | USB_D+ | DIFF | |
| 39 | +3.3VSB | PWR | +3.3V |
| 40 | GND | GND | |
| 41 | +3.3VSB | PWR | +3.3V |
| 42 | NC | | |
| 43 | GND | GND | |
| 44 | NC | | |
| 45 | NC | | |
| 46 | NC | | |
| 47 | NC | | |
| 48 | +1.5V | PWR | +1.5V |
| 49 | NC | | |
| 50 | GND | GND | |

| | | | |
|---|---|---|---|
| 51 | NC | | |
| 52 | +3.3VSB | PWR | +3.3V |

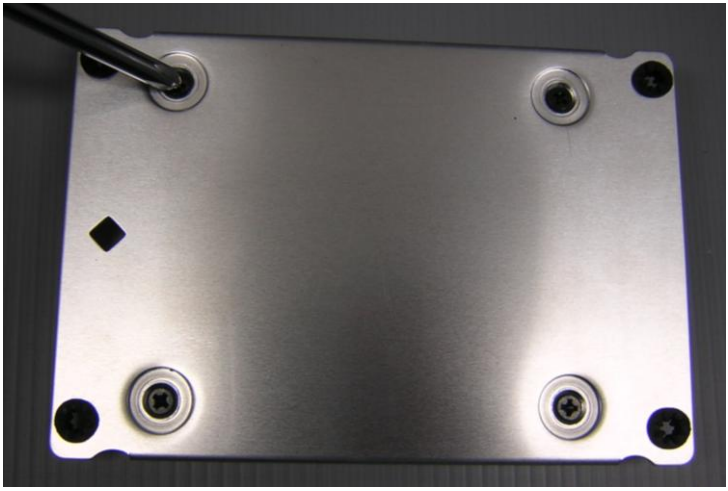
## 2.40 Hard Disk Drive Installation (A2/A2M)

Step 1: Remove the baseplate as instructed below



Step 2: Place the HDD on the bracket plate


Step 3: Tighten the screws at the back to secure the HDD



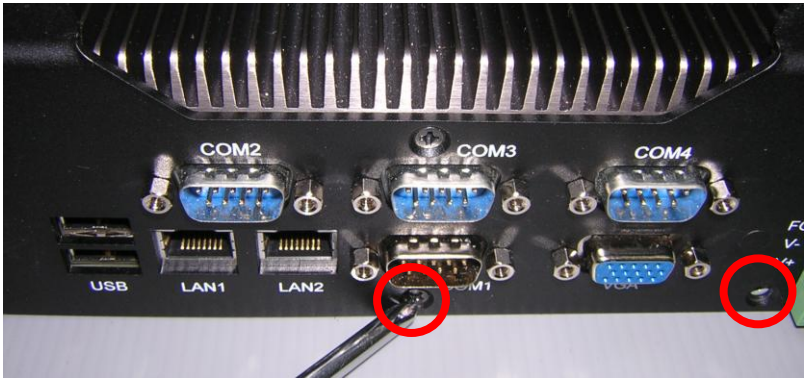
Step 4: Connect the SATA and power cables to the HDD, attach the HDD assembly to the baseplate.

## 2.41 RAM Installation (A1/A1M)

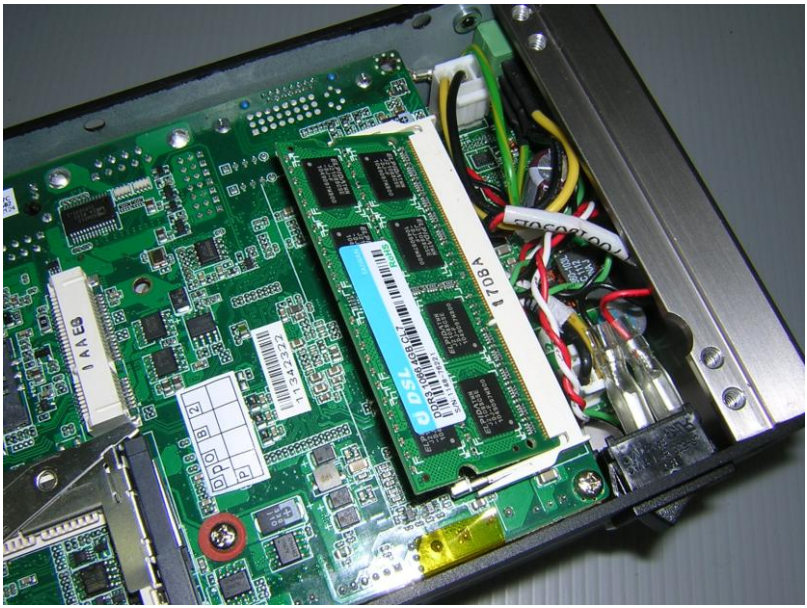
Step 1: Remove the screws on the baseplate

Step 2: Remove the screw on the front panel as shown below

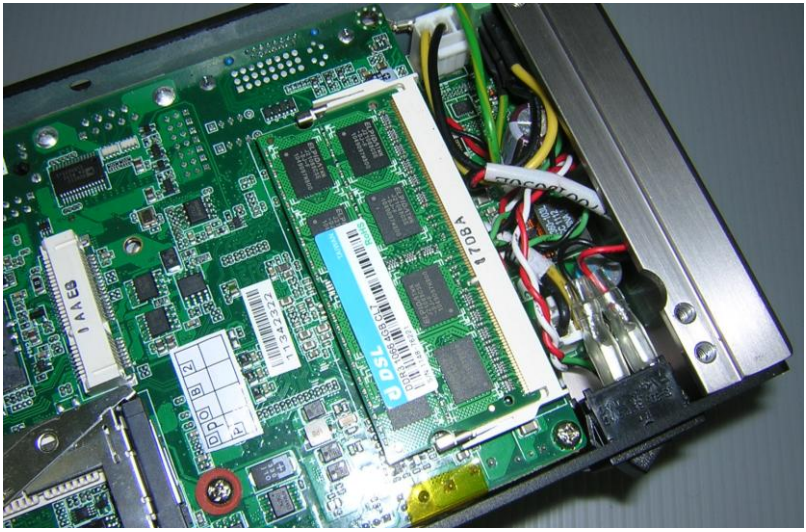
Step 3: Remove the screw on the rear panel as shown below



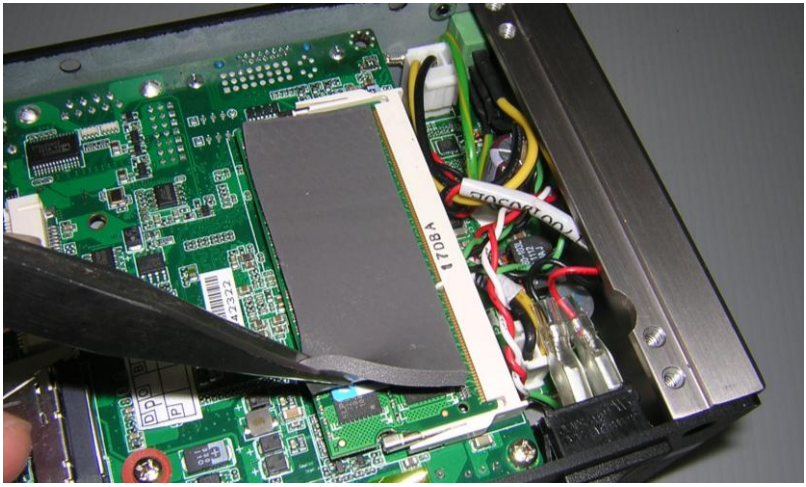

Step 4: Remove the baseplate, insert the RAM into the RAM slot



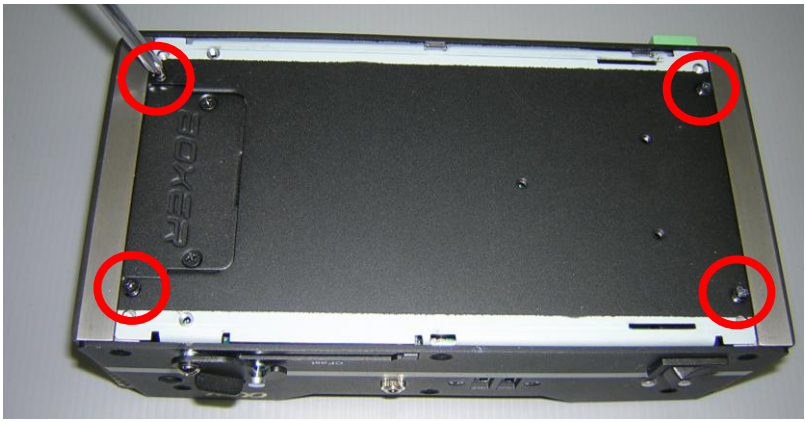
Step 5: Push down to secure the RAM



Step 6: Place a thermal pad over the RAM

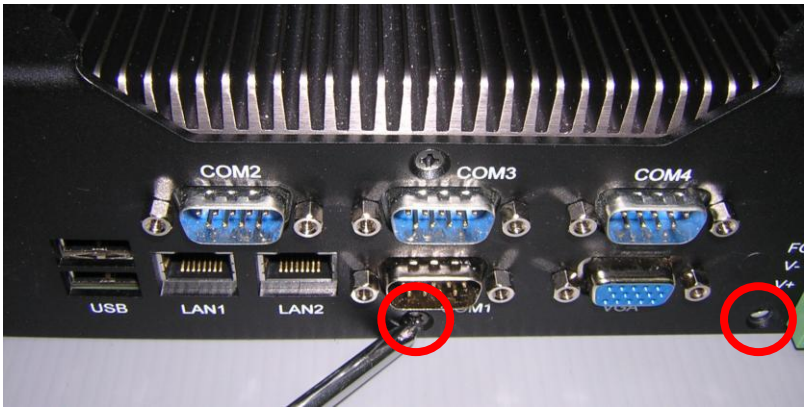


Step 7: Close and secure the baseplate



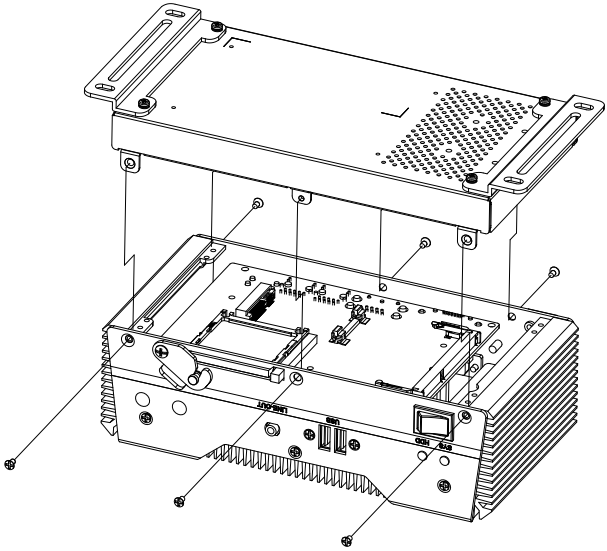

Step 8: Close and secure the front panel as shown below

Step 9: Close and secure the rear panel as shown below

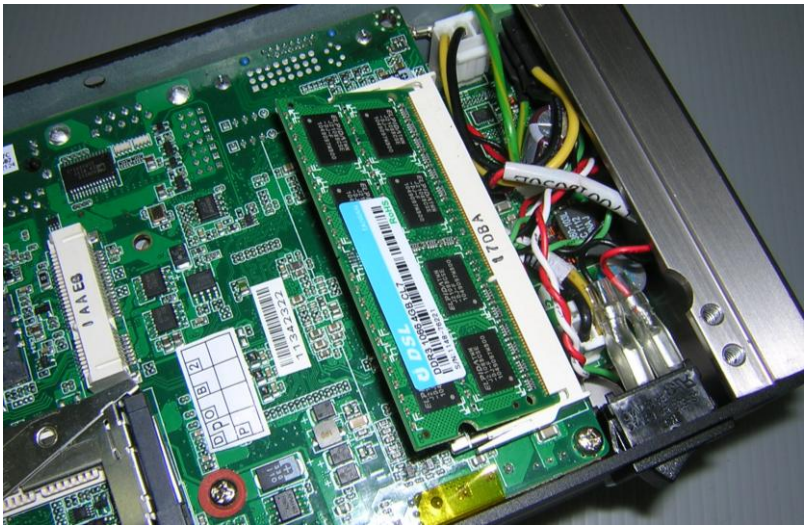


## 2.42 RAM Installation (A2/A2M)

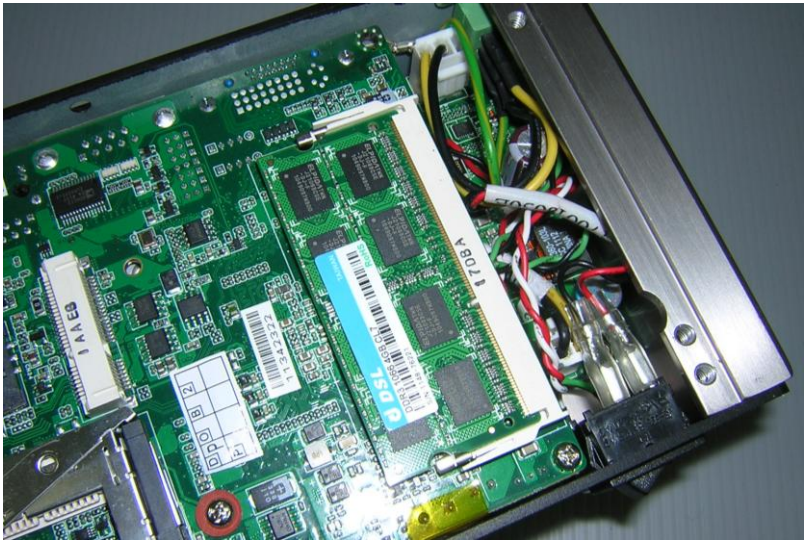
Step 1: Remove the baseplate as instructed below



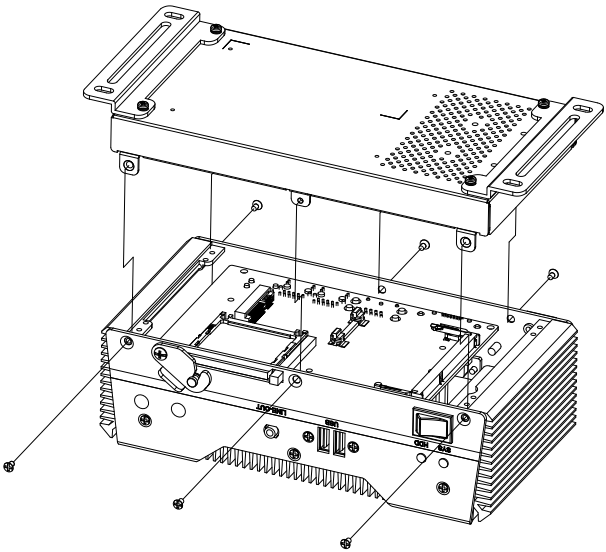
Step 2: Insert the RAM into the RAM slot



Step 3: Push down to secure the RAM

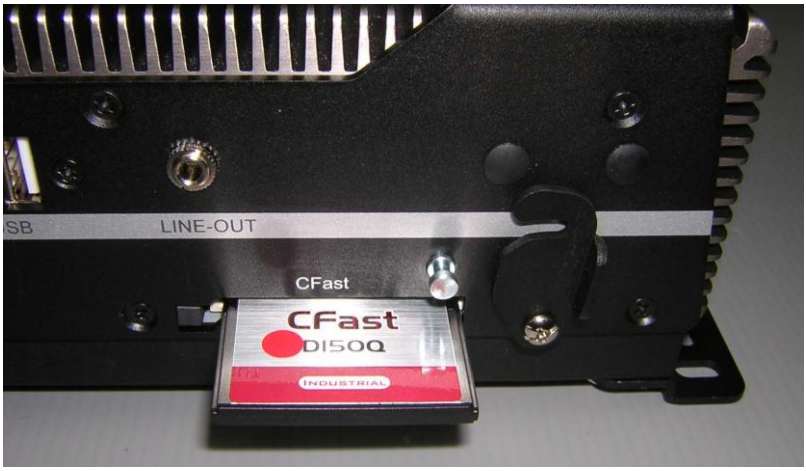


Step 4: Close the baseplate as instructed below



## 2.43 CFast™ Installation (A1/A1M/A2/A2M)

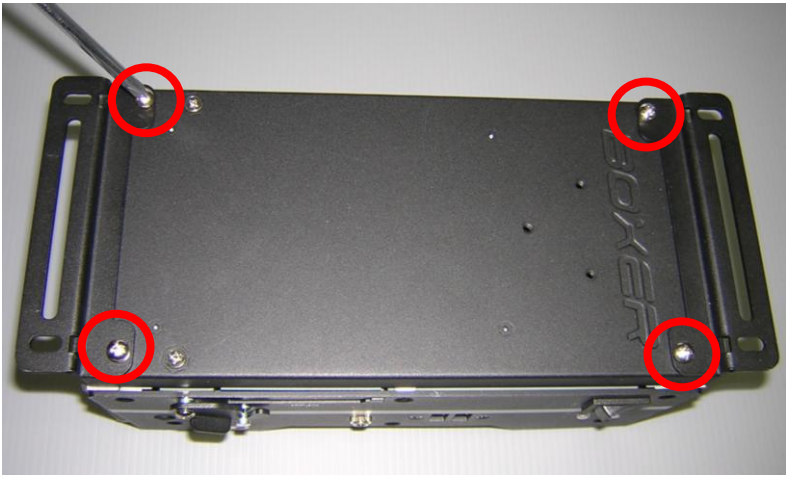
Step 1: Insert a CFast™ Card into the CFast™ slot

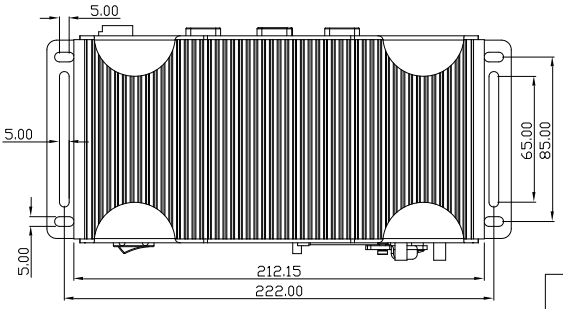


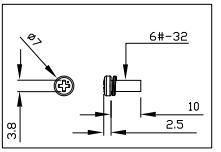

Step 2: Lower the arm to secure the CFast™ Card

## 2.44 Wallmount Installation

Step 1: Attach the brackets






We suggest using this screw.

Chapter

3

# AMI BIOS Setup

## 3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

**System configuration verification**

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The BOXER-6614 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it runs down.

## 3.2 AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del> or <F2> immediately. This will allow you to enter Setup.

**Main**

Set the date, use tab to switch between date elements.

**Advanced**

Advanced BIOS Features Setup including TPM, ACPI, etc.

**Chipset**

Host bridge parameters.

**Boot**

Enables/disable quiet boot option.

**Security**

Set setup administrator password.

**Save&Exit**

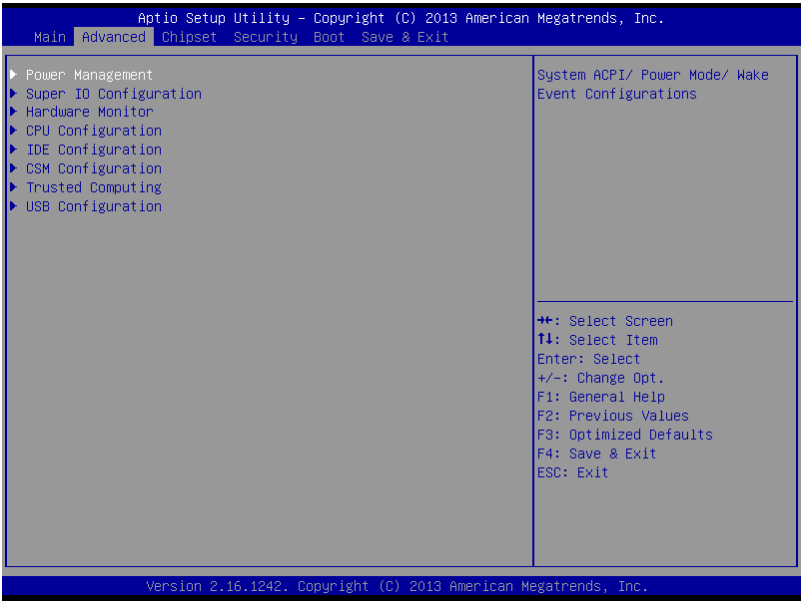
Exit system setup after saving the changes.

## BIOS Setup Menu

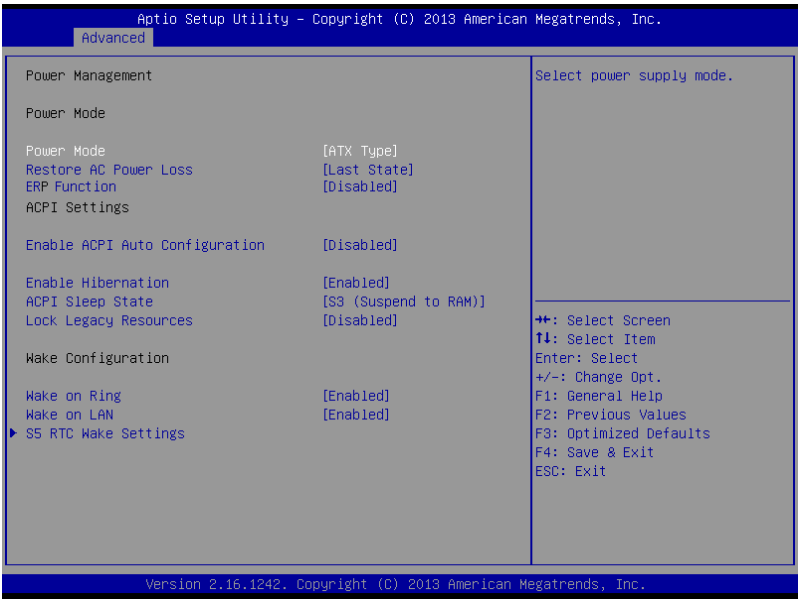
Main

Press '*Delete*' Key to enter Setup

## Advanced


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
Power Management
Super IO Configuration
Hardware Monitor
CPU Configuration
IDE Configuration
CSM Configuration
Trusted Computing
USB Configuration
System ACPI/ Power Mode/ Wake Event Configurations
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

## Advanced -> Power Management

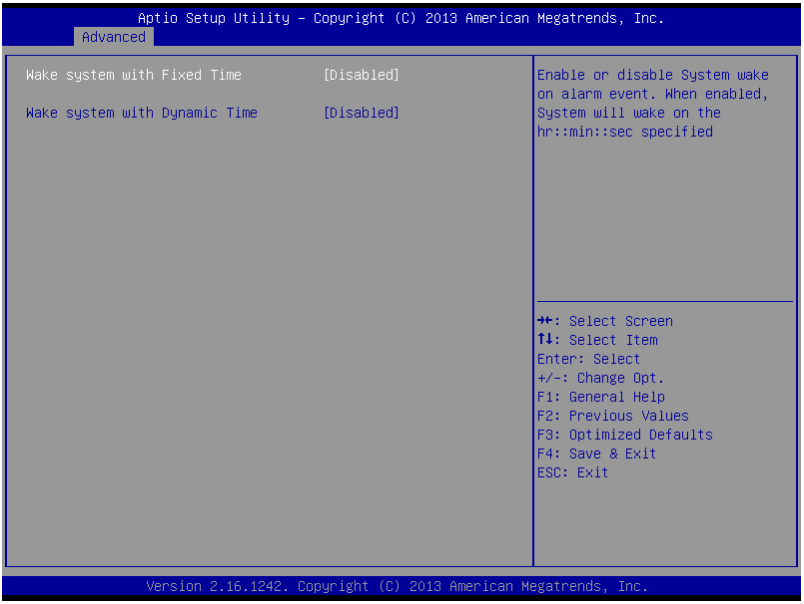



Options summary:

| | | |
|---|---|---|
| Power Mode | ATX Type | Optimal Default, Failsafe Default |
| | AT Type | |
| Select power supply mode | | |
| Restore AC Power Loss | Last State | Optimal Default, Failsafe Default |
| | Power On | |
| | Power Off | |
| Select AC power state when power is re-applied after a power failure | | |
| Enable ACPI Auto Configuration | Enable | |
| | Disable | Optimal Default, Failsafe Default |

| | | |
|---|---|---|
| Enables or Disables BIOS ACPI Auto Configuration | | |
| Enable Hibernation | Enable | Optimal Default, Failsafe Default |
| | Disable | |
| Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS | | |
| Lock Legacy Resources | Enable | |
| | Disable | Optimal Default, Failsafe Default |
| Enables or Disables Lock of Legacy Resources | | |
| Wake on Ring | Enable | Optimal Default, Failsafe Default |
| | Disable | |
| Enabled/Disabled wake from Ring | | |
| Wake on LAN | Enable | Optimal Default, Failsafe Default |
| | Disable | |
| Enabled/Disabled wake from LAN | | |

## Advanced -> Power Management -> S5 RTC Wake Settings

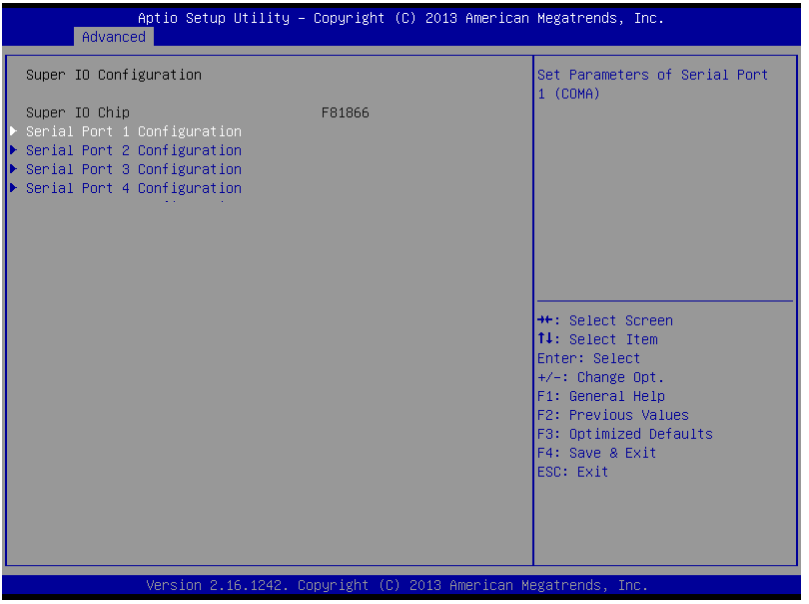



Options summary:

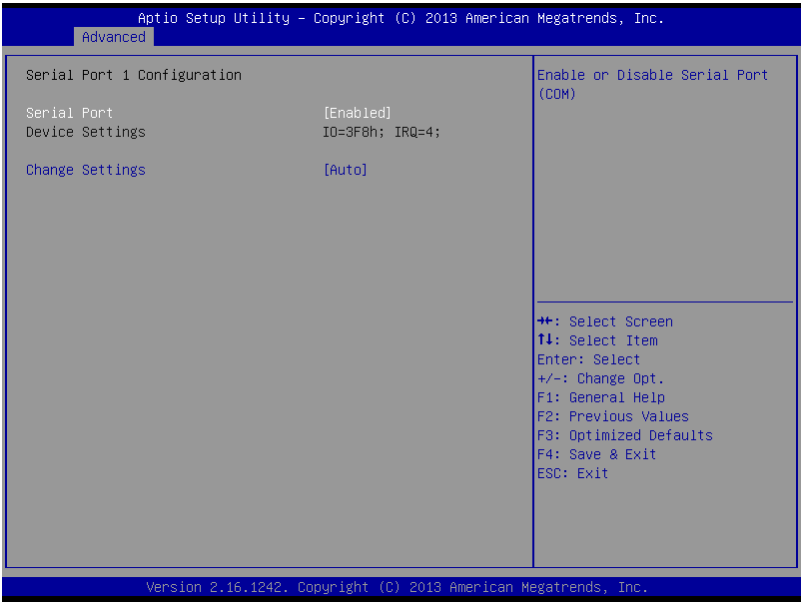
| | | | |
|---|---|---|---|
| Wake system with Fixed Time | | Enable | |
| | | Disable | Optimal Default, Failsafe Default |
| | Wake up hour | 0 | |
| | Wake up minute | 0 | |
| | Wake up second | 0 | |
| Wake system with Dynamic Time | | Enable | |
| | | Disable | Optimal Default, Failsafe Default |
| | Wake up minute increase | 0 | |

Select RTC wake mode

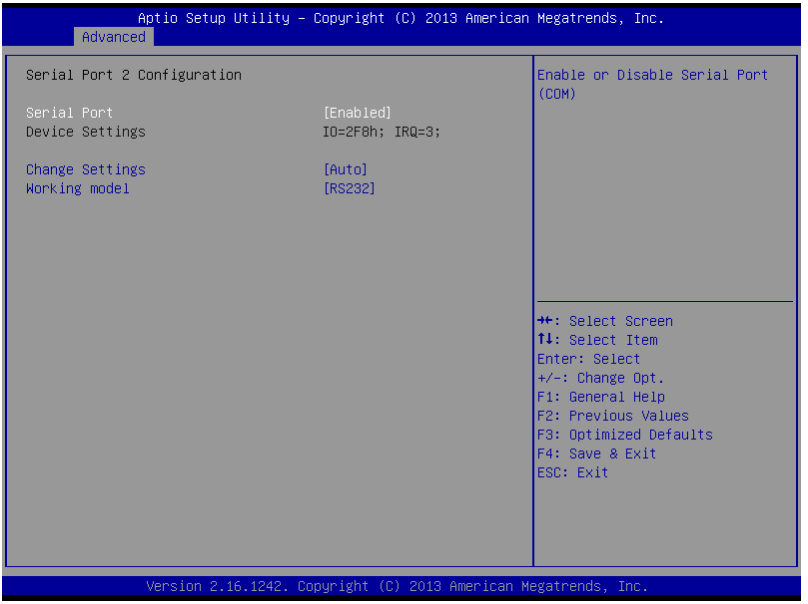
## Advanced -> Super IO Configuration



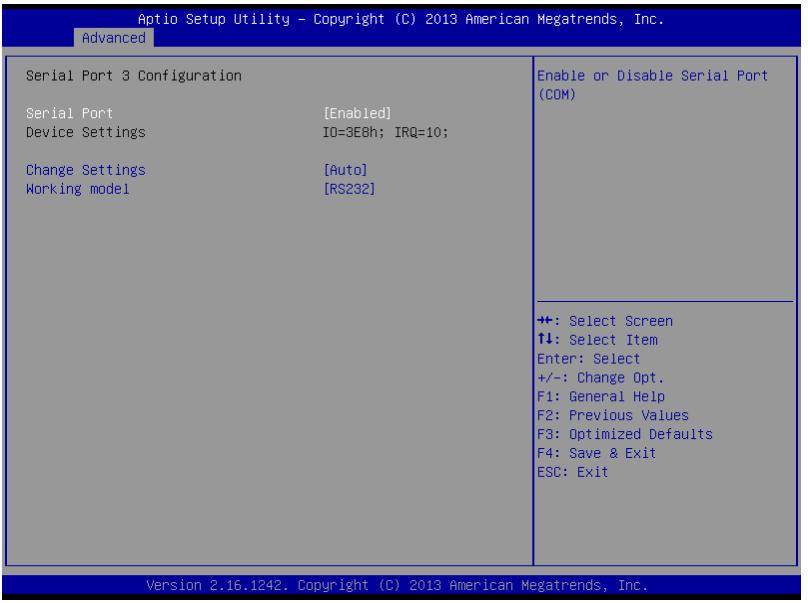
Advanced -> Super IO Configuration Serial Port 1 Configuration



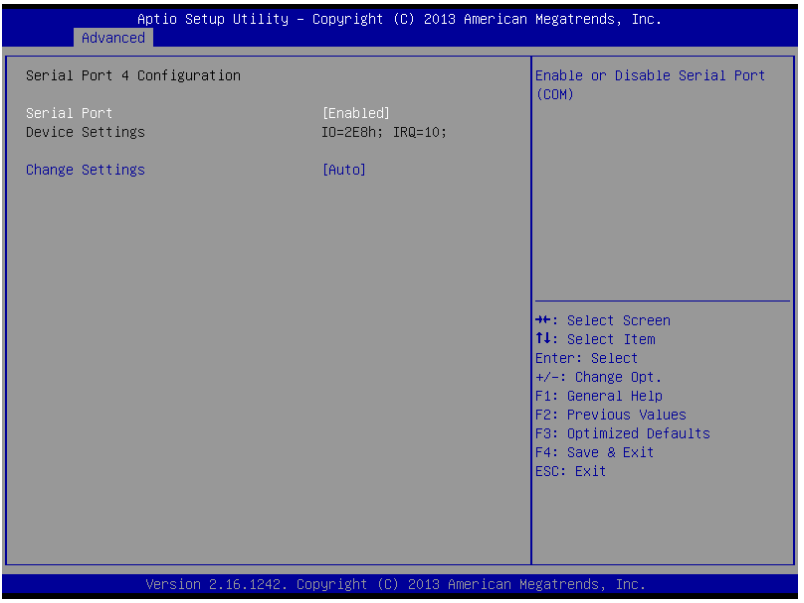
Advanced -> Super IO Configuration Serial Port 2 Configuration



Advanced -> Super IO Configuration Serial Port 3 Configuration



## Advanced -> Super IO Configuration Serial Port 4 Configuration




Options summary:

| | | |
|---|---|---|
| Serial Port | Disabled | |
| | Enabled | Default |
| Allows BIOS to En/Disable correspond serial port. | | |
| Change Settings (Serial Port 1) | Auto | Default |
| | IO=3F8h; IRQ=4; | |
| | IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; | |

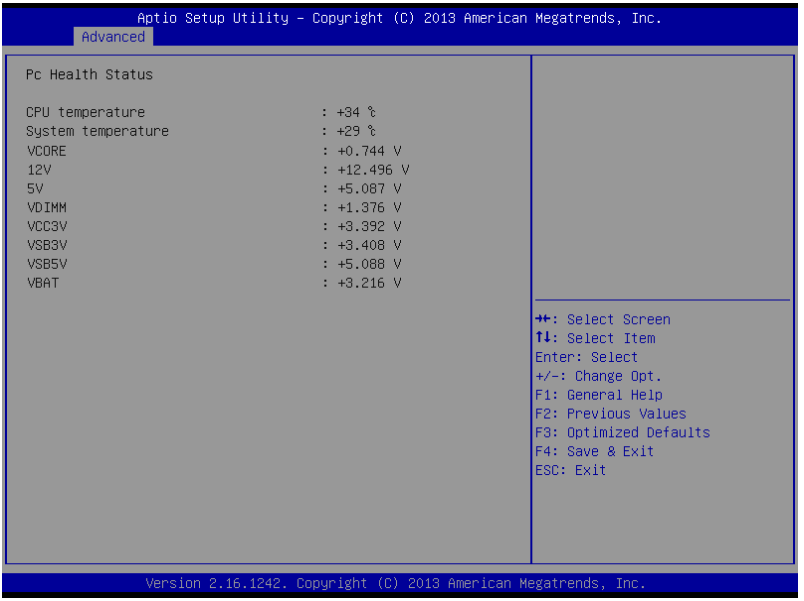
| | | |
|---|---|---|
| | IO=3E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=2E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| Allows BIOS to Select Serial Port resource. | | |
| Change Settings<br>(Serial Port 2) | Auto | Default |
| | IO=2F8h; IRQ=3; | |
| | IO=3F8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=2F8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=3E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=2E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| Working model | RS232 | Default |
| | RS422 | |
| | RS485 | |
| Select Working model | | |
| Change Settings<br>(Serial Port 3) | Auto | Default |
| | IO=3E8h; IRQ=7; | |
| | IO=3E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |

| | | |
|---|---|---|
| | IO=2E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=3E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=2E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| Working model | RS232 | Default |
| | RS422 | |
| | RS485 | |
| Select Working model | | |
| Change Settings<br>(Serial Port 4) | Auto | Default |
| | IO=2E8h; IRQ=7; | |
| | IO=3F8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=2F8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=3E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=2E8h;<br>IRQ=3,4,5,6,7,9,10,11,12; | |
| Allows BIOS to Select Serial Port resource. | | |
| | | |

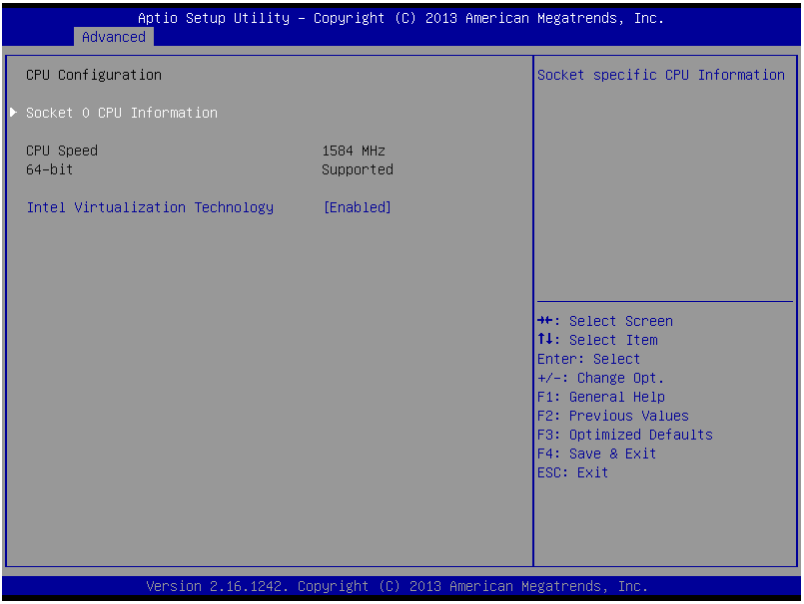
| | | |
|---|---|---|
| Smart Fan Function | Enable | |
| | Disable | Optimal Default, Failsafe Default |

Enable or Disable Smart Fan

## Advanced -> H/W Monitor



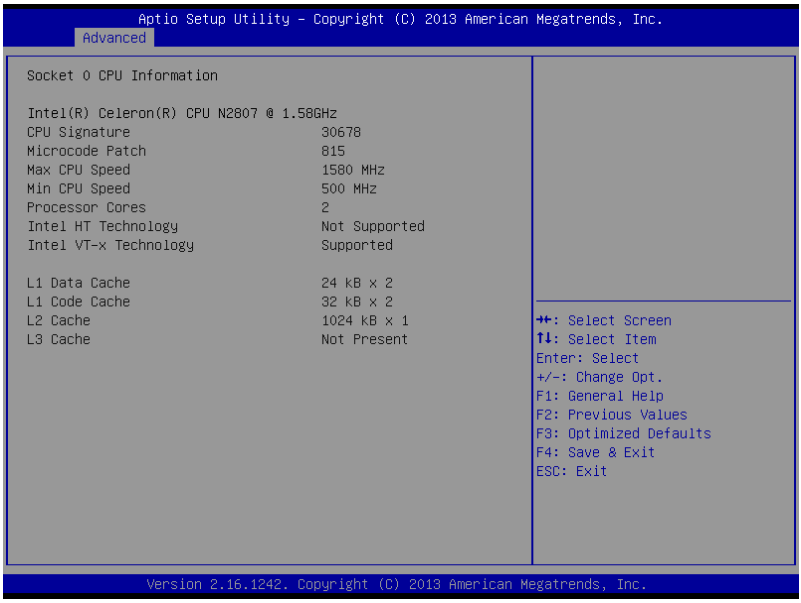
## Advanced -> H/W Monitor



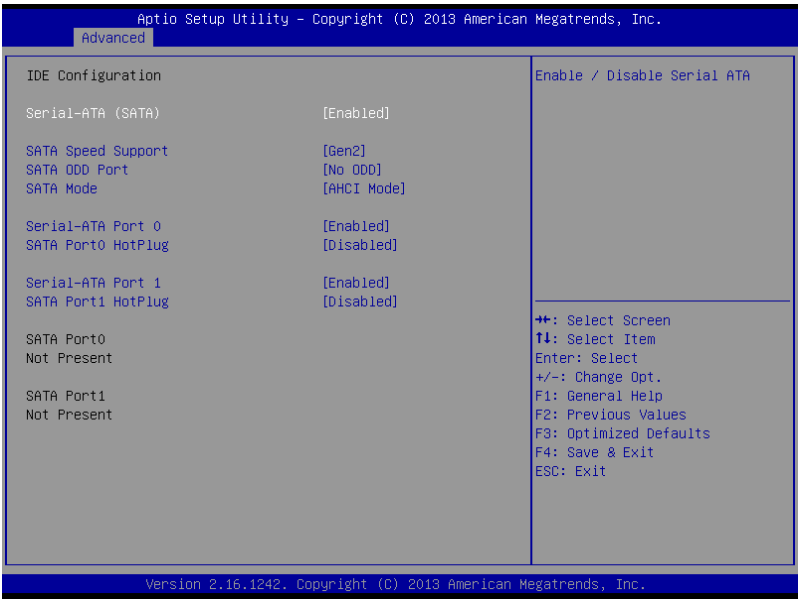

Options summary:

| | | |
|---|---|---|
| Intel Virtualization Technology | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| When enabled, a VMM can utilize the additional hardware capabilities provided by Vander pool Technology | | |

Advanced -> CPU Configuration Socket 0 CPU Information



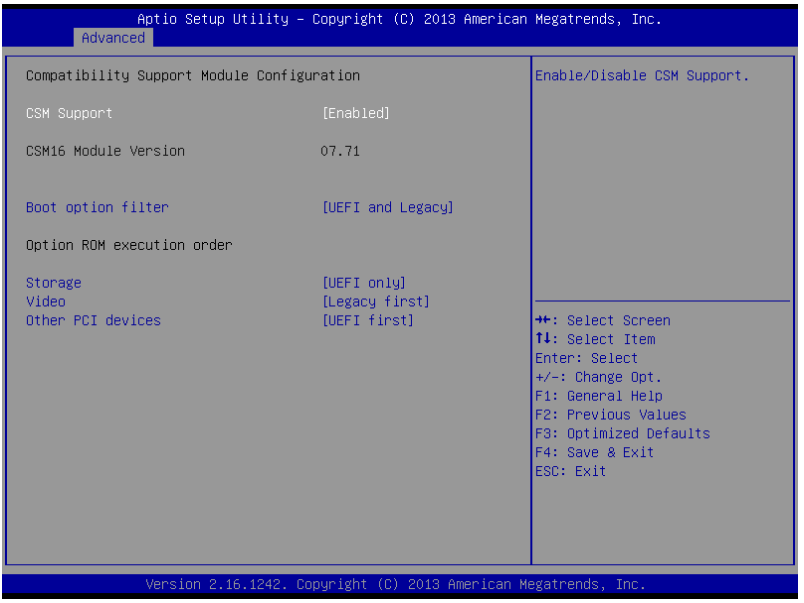
## Advanced -> SATA Configuration



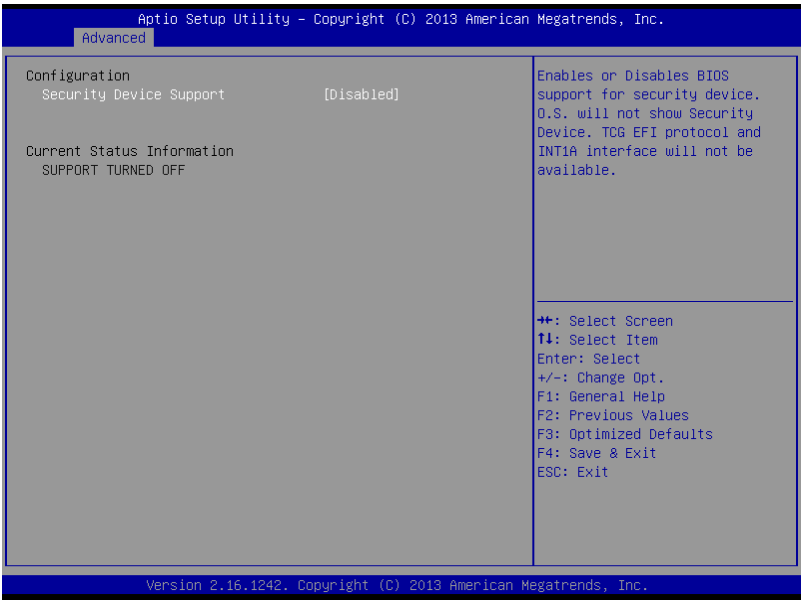

Options summary:

| | | |
|---|---|---|
| SATA Mode | IDE | Default |
| | AHCI | |
| IDE: Configure SATA controllers as legacy IDE<br>AHCI: Configure SATA controllers to operate in AHCI mode | | |
| En/Disable SATA Port | | |

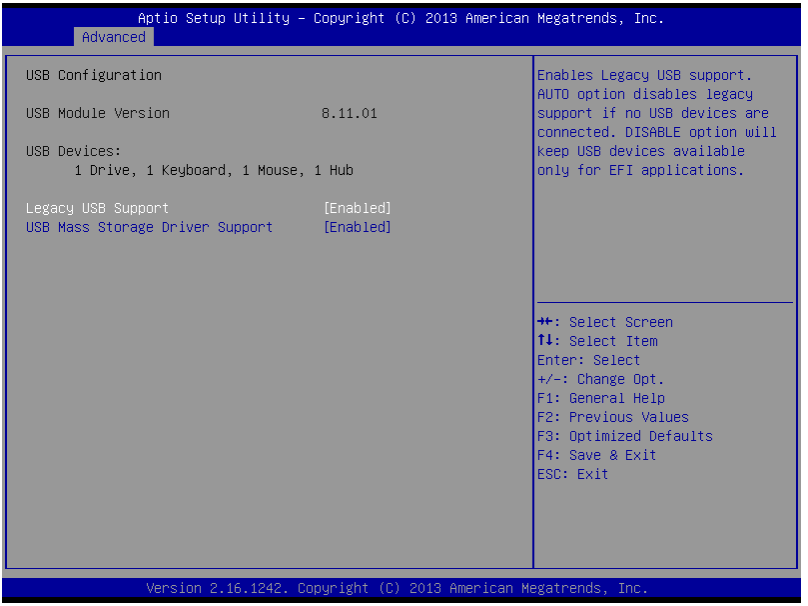
## Advanced -> CSM Configuration



## Advanced -> Trusted Computing



## Advanced -> USB Configuration

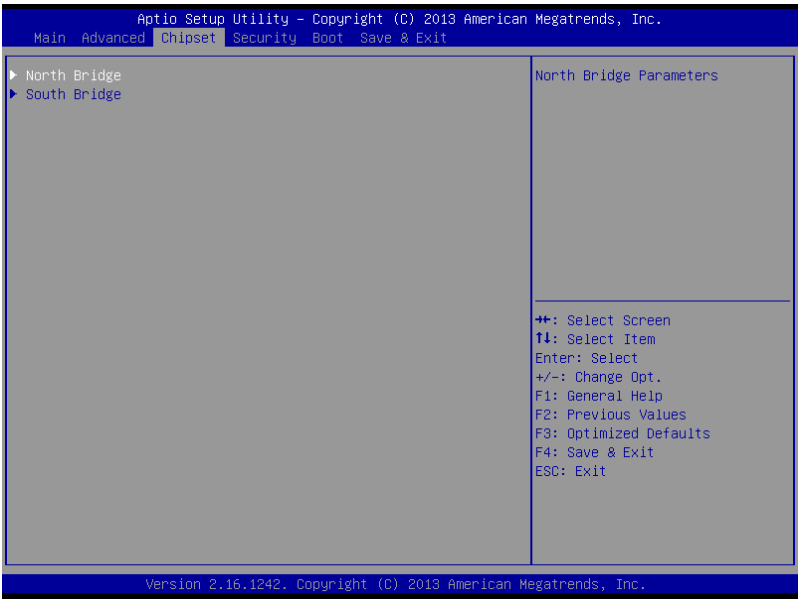



Options summary:

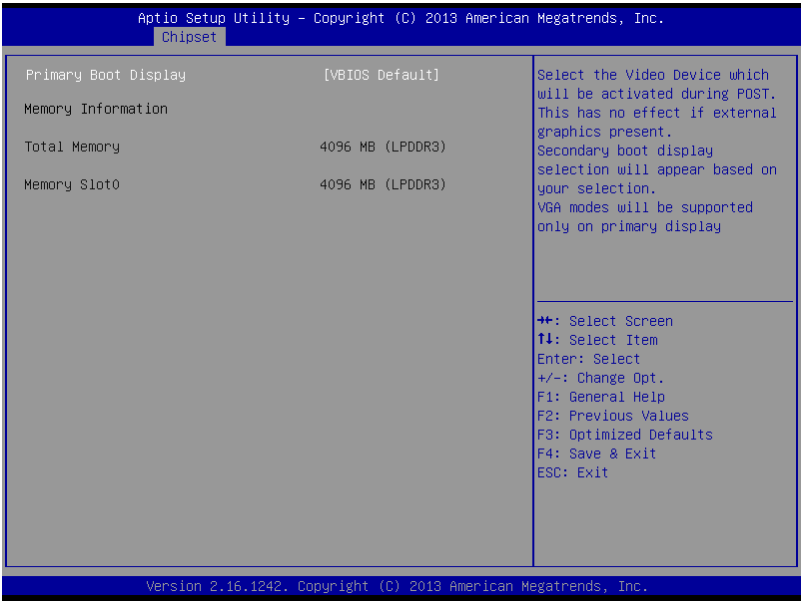
| | | |
|---|---|---|
| Legacy USB Support | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| | Auto | |
| Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS.<br>AUTO option disables legacy support if no USB devices are connected | | |
| Device Name (Emulation Type) | Auto | Optimal Default, Failsafe Default |
| | Floppy | |
| | Forced FDD | |

| | | |
|---|---|---|
| | Hard Disk | |
| | CDROM | |
| If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive) | | |

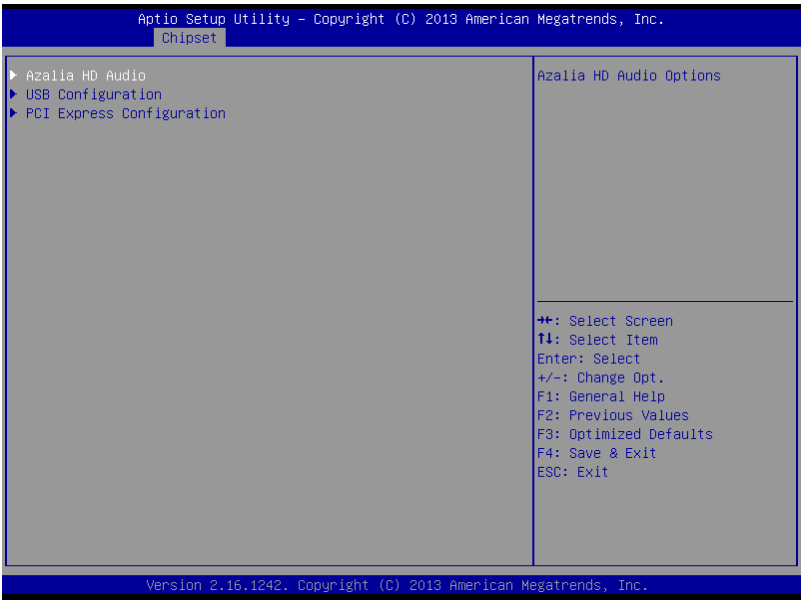
## Chipset



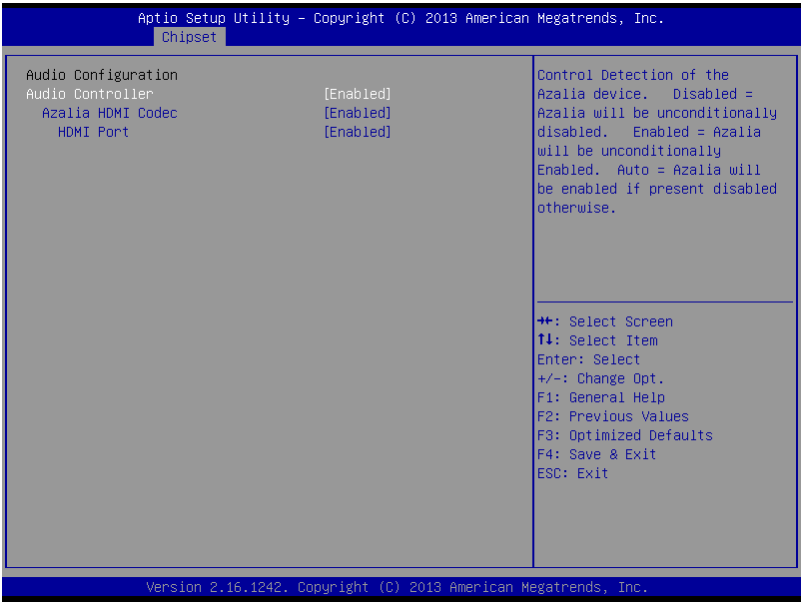
## Chipset -> Host Bridge



Chipset -> South Bridge

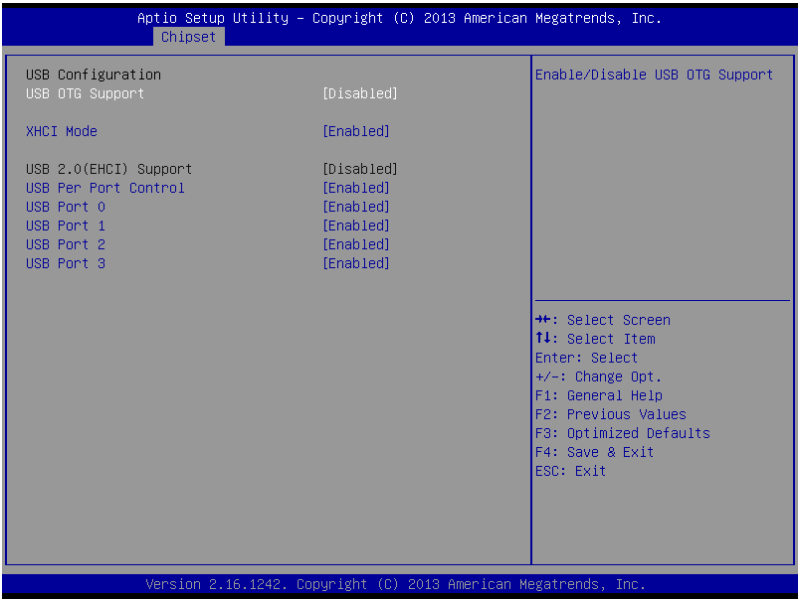


## Chipset -> South Bridge -> Azallia HD Audio

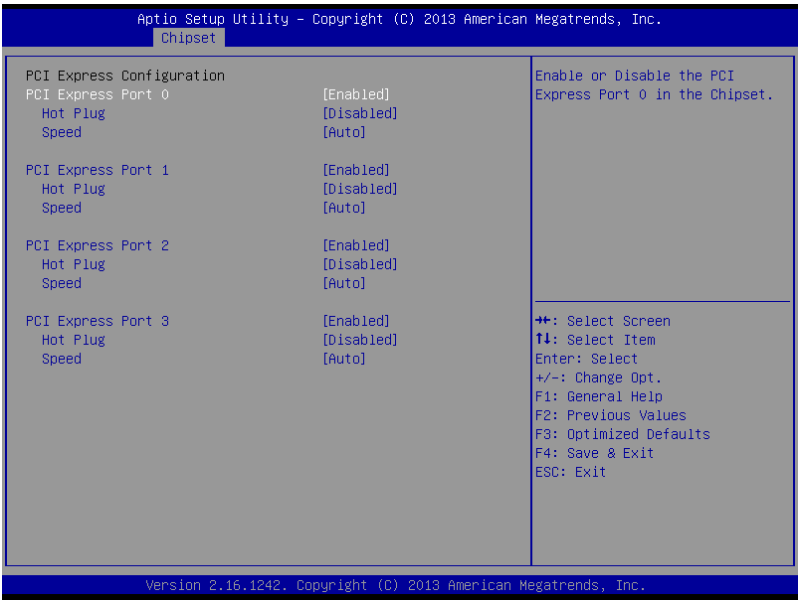



| | | |
|---|---|---|
| Azalia HD Audio | Disabled | Optimal Default, Failsafe Default |
| | HD Audio | |
| Enabling/Disabling HD Audio controller. | | |

## Chipset -> South Bridge -> USB Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Chipset
USB Configuration
USB OTG Support [Disabled]
XHCI Mode [Enabled]
USB 2.0(EHCI) Support [Disabled]
USB Per Port Control [Enabled]
USB Port 0 [Enabled]
USB Port 1 [Enabled]
USB Port 2 [Enabled]
USB Port 3 [Enabled]
Enable/Disable USB OTG Support
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

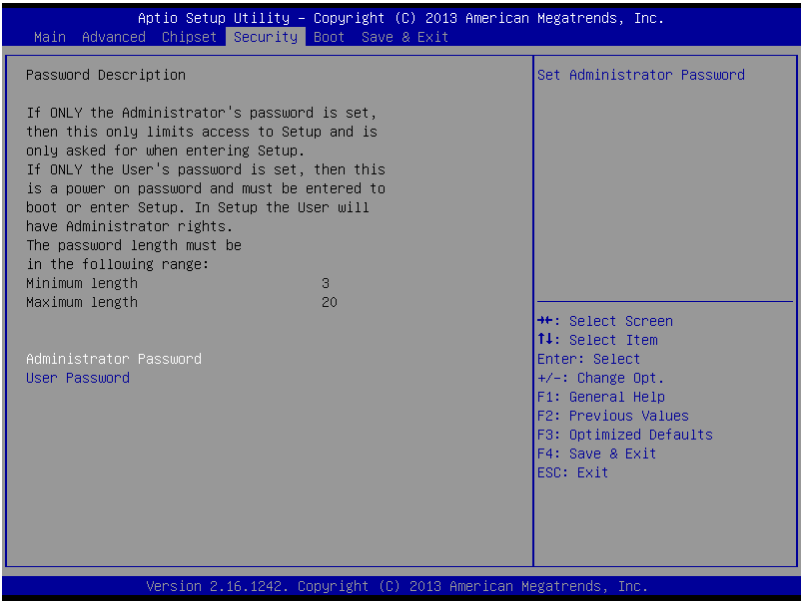
Chipset -> South Bridge -> PCI Express Configuration




Options summary:

| | | |
|---|---|---|
| PCI Express Root Port 0 | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enabling/Disabling PCI Express root ports | | |
| PCI Express Root Port x | Disabled Enabled | |
| | Auto | Optimal Default, Failsafe Default |
| Enabling/Disabling PCI Express root ports | | |

## Security




Setup submenu: Security

Change User/Supervisor Password

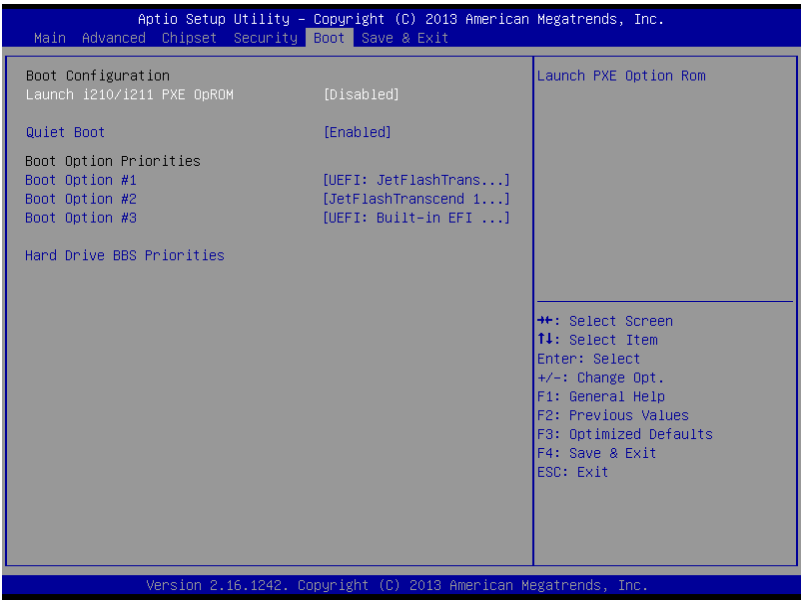
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

## Boot

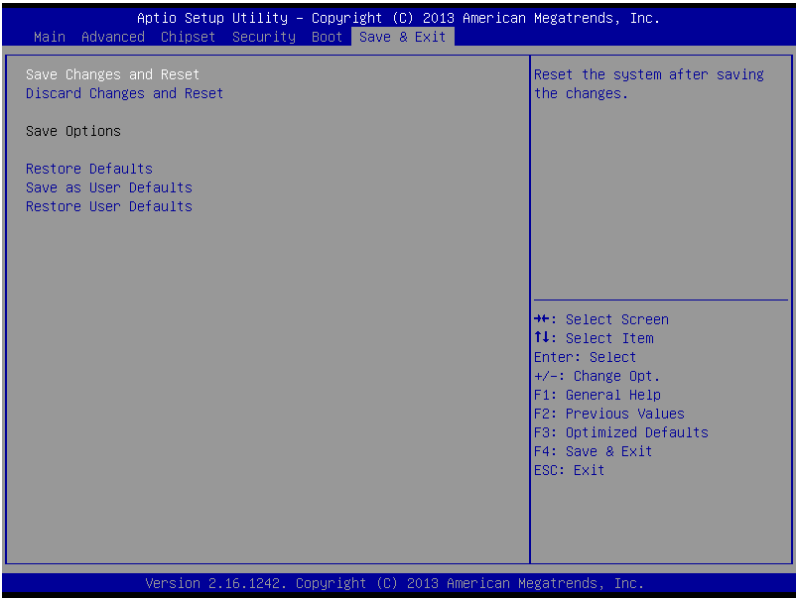



Options summary:

| | | |
|---|---|---|
| Quiet Boot | Disabled | |
| | Enabled | Default |
| En/Disable showing boot logo. | | |
| Launch i210/i211 PXE OpROM | Disabled | Default |
| | Enabled | |

En/Disable PXE boot for 8111E LAN

## Exit



Chapter

4

# Driver Installation

The BOXER-6614 comes with a DVD-ROM that contains all drivers and utilities that meet your needs.

### *Follow the sequence below to install the drivers:*

Step 1 – Install Chipset Driver

Step 2 – Install Graphics Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

Step 5 – Install TXE Driver

Step 6 – Install TPM Driver

Step 7 – Install MBI Driver

Step 8 – Install Serial Port Driver (Optional)

Step 9 – Install USB3.0 Driver

## 4.1 Installation:

Insert the BOXER-6614 DVD-ROM into the DVD-ROM Drive. And install the drivers from Step 1 to Step 9 in order.

Step 1 – Install Chipset Driver

1. Click on the ***Step1 - Chipset*** folder and double click on the ***SetupChipset.exe*** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install Graphics Driver

1. Click on the ***Step2 - Graphic*** folder and select the OS your system is
2. Double click on the ***Setup.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 3 – Install LAN Driver

1. Click on the ***Step3 - LAN*** folder and select the OS folder your system is
2. Double click on the ***.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 4 – Install Audio Driver

1. Click on the ***Step4 - Audio*** folder and double click on the

***Win7_8-32_64_R273.exe*** file

2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 5 – Install TXE Driver

1. Click on the ***Step5 - TXE*** folder and double click on the ***SetupTXE.exe*** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 6 – Install TPM Driver

1. Click on the ***Step7 - TPM*** folder and double click on the ***Atmel TPM Driver Installer 3.0.3.15.exe*** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 7 – Install MBI Driver

1. Click on the ***Step8 - MBI*** folder and double click on the ***Setup.exe*** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 8 – Install Serial Port Driver (Optional)

1. Click on the ***Step10 - Serial Port Driver (Optional)*** folder and select the OS folder your system is
2. Double click on the ***patch.exe*** file located in each OS

folder

3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 9 – Install USB3.0 Driver

1. Click on the ***Step9 - USB3.0*** folder and double click on the ***Setup.exe*** file

Follow the instructions that the window shows

Appendix

A

# Programming the Watchdog Timer

## A.1 Watchdog Timer Registers

| Table 1 : Watch dog relative IO address | | |
|---|---|---|
| **I/O Base Address** | **Default Value** | **Note** |
| | **0xA00** | I/O Base address for Watchdog operation. This address is assigned by SIO LDN7, register 0x60-0x61. |

| Table 2 : Watchdog relative register table | | | | |
|---|---|---|---|---|
| **Register** | **Offset** | **BitNum** | **Value** | **Note** |
| **Watchdog WDTRST# Enable** | **0x00** | **7** | **1** | Enable/Disable time out output via WDTRST# 0: Disable 1: Enable |
| **Pulse Width** | **0x05** | **0:1** | **01** | Width of Pulse signal 00: 1ms (do not use) 01: 25ms 10: 125ms 11: 5s ***Pulse width is must longer than 16ms.*** |
| **Signal Polarity** | **0x05** | **2** | **0** | 0: low active 1: high active ***Must set this bit to 0*** |

| | | | | |
|---|---|---|---|---|
| **Counting Unit** | **0x05** | **3** | **0** | Select time unit.<br>0: second<br>1: minute |
| **Output Signal Type** | **0x05** | **4** | **1** | 0: Level<br>1: Pulse<br>***Must set this bit to 1*** |
| **Watchdog Timer Enable** | **0x05** | **5** | **1** | 0: Disable<br>1: Enable |
| **Timeout Status** | **0x05** | **6** | **1** | 1: timeout occurred. Write a 1 to clear timeout status |
| **Timer Counter** | **0x06** | | | Time of watchdog timer (0~255) |

## A.2 Watchdog Sample Program

```
**********************************************************************// WDT I/O
operation relative definition (Please reference to Table 1)
#define WDTAddr 0xA00 // WDT I/O base address
Void WDTWriteByte(byte Register, byte Value);
byte WDTReadByte(byte Register);
Void WDTSetReg(byte Register, byte Bit, byte Val);
// Watch Dog relative definition (Please reference to Table 2)
#define DevReg 0x00 // Device configuration register
#define WDTRstBit 0x80 // Watchdog WDTRST# (Bit7)
#define WDTRstVal 0x80 // Enabled WDTRST#
#define TimerReg 0x05 // Timer register
#define PSWidthBit 0x00 // WDTRST# Pulse width (Bit0:1)
#define PSWidthVal 0x01 // 25ms for WDTRST# pulse
#define PolarityBit 0x02 // WDTRST# Signal polarity (Bit2)
#define PolarityVal 0x00 // Low active for WDTRST#
#define UnitBit 0x03 // Unit for timer (Bit3)
#define ModeBit 0x04 // WDTRST# mode (Bit4)
#define ModeVal 0x01 // 0:level 1: pulse
#define EnableBit 0x05 // WDT timer enable (Bit5)
#define EnableVal 0x01 // 1: enable
#define StatusBit 0x06 // WDT timer status (Bit6)
#define CounterReg 0x06 // Timer counter register
**********************************************************************
```

```
 ************************************************************************
VOID Main(){
// Procedure : AaeonWDTConfig
// (byte)Timer : Counter of WDT timer.(0x00~0xFF)
// (boolean)Unit : Select time unit(0: second, 1: minute).
AaeonWDTConfig(Counter, Unit);
// Procedure : AaeonWDTEnable
// This procudure will enable the WDT counting.
WDTSetBit(TimerReg, PSWidthBit, PSWidthVal);
// Watchdog WDTRST# Enable
WDTSetBit(DevReg, WDTRstBit, WDTRstVal);
}
VOID WDTClearTimeoutStatus(){
WDTSetBit(TimerReg, StatusBit, 1);
}
************************************************************************

************************************************************************
VOID WDTWriteByte(byte Register, byte Value){
IOWriteByte(WDTAddr+Register, Value);
}
byte WDTReadByte(byte Register){
return IOReadByte(WDTAddr+Register);
}
VOID WDTSetBit(byte Register, byte Bit, byte Val){
```

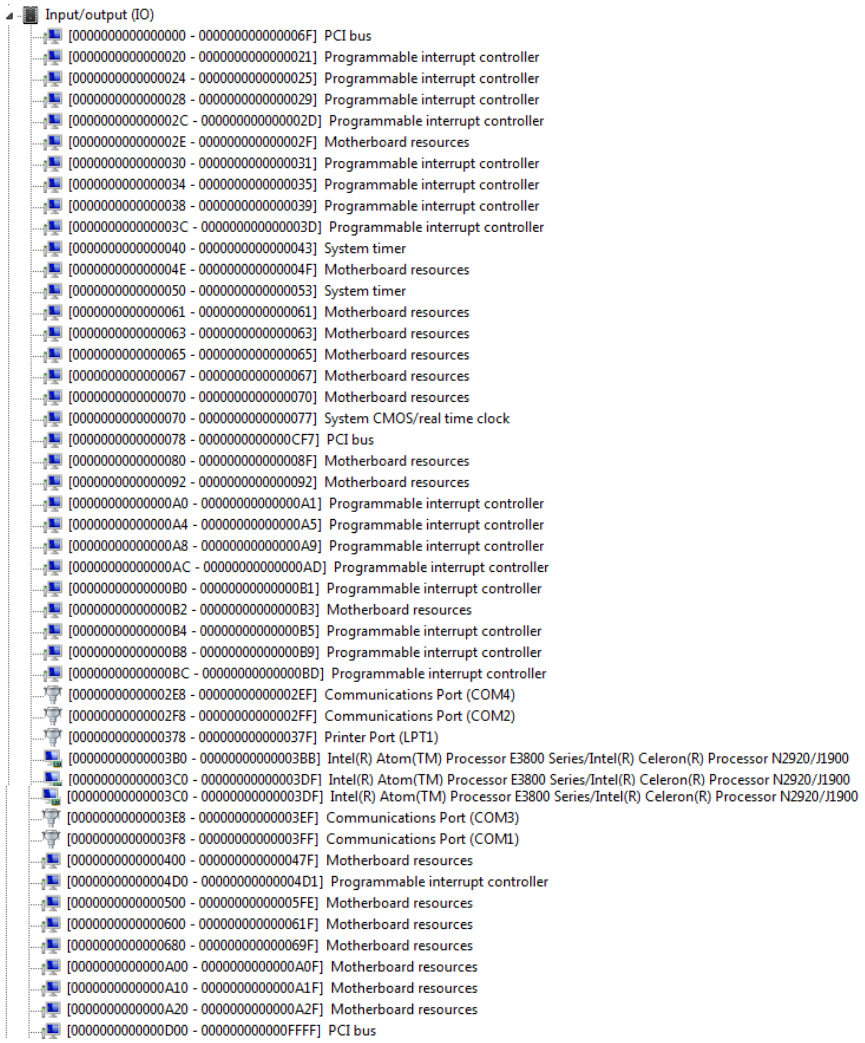
```
byte TmpValue;
TmpValue = WDTReadByte(Register);
TmpValue &= ~(1 << Bit);
TmpValue |= Val << Bit;
WDTWriteByte(Register, TmpValue);
}
**********************************************************************
```

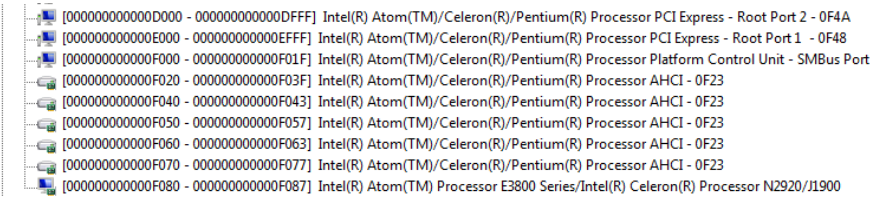
Appendix

B

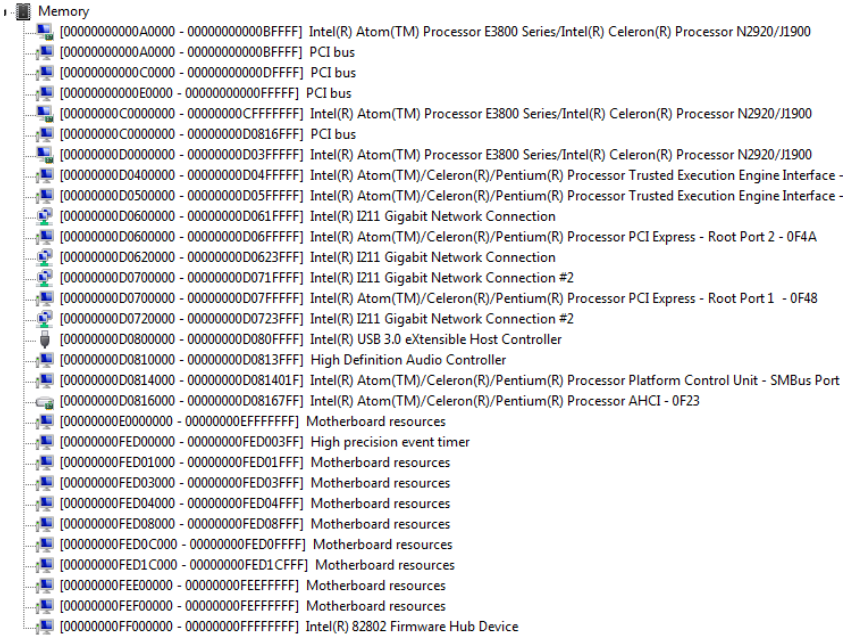
# I/O Information

## B.1 I/O Address Map

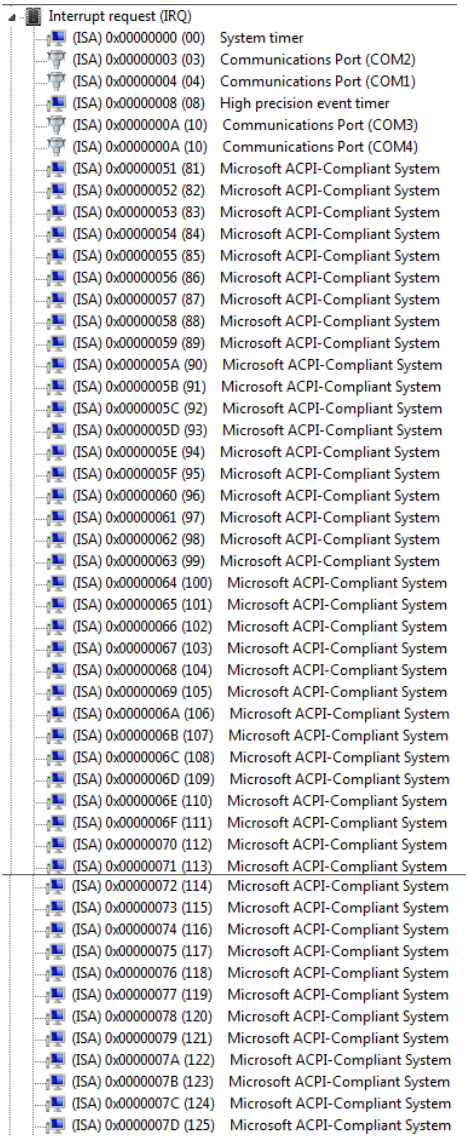




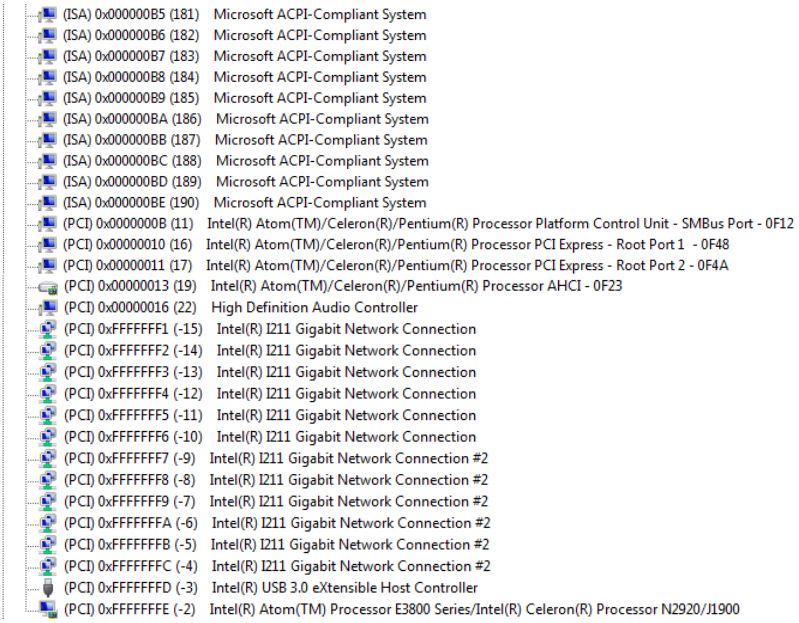

## B.2 Memory Address Map



## B.3 IRQ Mapping Chart



(ISA) 0x0000007E (126) Microsoft ACPI-Compliant System
(ISA) 0x0000007F (127) Microsoft ACPI-Compliant System
(ISA) 0x00000080 (128) Microsoft ACPI-Compliant System
(ISA) 0x00000081 (129) Microsoft ACPI-Compliant System
(ISA) 0x00000082 (130) Microsoft ACPI-Compliant System
(ISA) 0x00000083 (131) Microsoft ACPI-Compliant System
(ISA) 0x00000084 (132) Microsoft ACPI-Compliant System
(ISA) 0x00000085 (133) Microsoft ACPI-Compliant System
(ISA) 0x00000086 (134) Microsoft ACPI-Compliant System
(ISA) 0x00000087 (135) Microsoft ACPI-Compliant System
(ISA) 0x00000088 (136) Microsoft ACPI-Compliant System
(ISA) 0x00000089 (137) Microsoft ACPI-Compliant System
(ISA) 0x0000008A (138) Microsoft ACPI-Compliant System
(ISA) 0x0000008B (139) Microsoft ACPI-Compliant System
(ISA) 0x0000008C (140) Microsoft ACPI-Compliant System
(ISA) 0x0000008D (141) Microsoft ACPI-Compliant System
(ISA) 0x0000008E (142) Microsoft ACPI-Compliant System
(ISA) 0x0000008F (143) Microsoft ACPI-Compliant System
(ISA) 0x00000090 (144) Microsoft ACPI-Compliant System
(ISA) 0x00000091 (145) Microsoft ACPI-Compliant System
(ISA) 0x00000092 (146) Microsoft ACPI-Compliant System
(ISA) 0x00000093 (147) Microsoft ACPI-Compliant System
(ISA) 0x00000094 (148) Microsoft ACPI-Compliant System
(ISA) 0x00000095 (149) Microsoft ACPI-Compliant System
(ISA) 0x00000096 (150) Microsoft ACPI-Compliant System
(ISA) 0x00000097 (151) Microsoft ACPI-Compliant System
(ISA) 0x00000098 (152) Microsoft ACPI-Compliant System
(ISA) 0x00000099 (153) Microsoft ACPI-Compliant System
(ISA) 0x0000009A (154) Microsoft ACPI-Compliant System
(ISA) 0x0000009B (155) Microsoft ACPI-Compliant System
(ISA) 0x0000009C (156) Microsoft ACPI-Compliant System
(ISA) 0x0000009D (157) Microsoft ACPI-Compliant System
(ISA) 0x0000009E (158) Microsoft ACPI-Compliant System
(ISA) 0x0000009F (159) Microsoft ACPI-Compliant System
(ISA) 0x000000A0 (160) Microsoft ACPI-Compliant System
(ISA) 0x000000A1 (161) Microsoft ACPI-Compliant System
(ISA) 0x000000A2 (162) Microsoft ACPI-Compliant System
(ISA) 0x000000A3 (163) Microsoft ACPI-Compliant System
(ISA) 0x000000A4 (164) Microsoft ACPI-Compliant System
(ISA) 0x000000A5 (165) Microsoft ACPI-Compliant System
(ISA) 0x000000A6 (166) Microsoft ACPI-Compliant System
(ISA) 0x000000A7 (167) Microsoft ACPI-Compliant System
(ISA) 0x000000A8 (168) Microsoft ACPI-Compliant System
(ISA) 0x000000A9 (169) Microsoft ACPI-Compliant System
(ISA) 0x000000AA (170) Microsoft ACPI-Compliant System
(ISA) 0x000000AB (171) Microsoft ACPI-Compliant System
(ISA) 0x000000AC (172) Microsoft ACPI-Compliant System
(ISA) 0x000000AD (173) Microsoft ACPI-Compliant System
(ISA) 0x000000AE (174) Microsoft ACPI-Compliant System
(ISA) 0x000000AF (175) Microsoft ACPI-Compliant System
(ISA) 0x000000B0 (176) Microsoft ACPI-Compliant System
(ISA) 0x000000B1 (177) Microsoft ACPI-Compliant System
(ISA) 0x000000B2 (178) Microsoft ACPI-Compliant System
(ISA) 0x000000B3 (179) Microsoft ACPI-Compliant System
(ISA) 0x000000B4 (180) Microsoft ACPI-Compliant System




## B.4 DMA Channel Assignments