# SI-62 Series

# User Manual

| Revision | Release Date |
|---|---|
| V0.1 | 2014/01/29 |
| V0.2 | 2014/07/15 |
| V0.3 | 2014/08/13 |

# Table of Contents

# Safety Information

Your SI-62 is designed and tested to meet the latest standards of safety for information technology equipment. However, to ensure your safety, it is important that you read the following safety instructions

## Setting up your system

- Read and follow all instructions in the documentation before you operate your system.
- Do not use this product near water.
- Set up the system on a stable surface. Do not secure the system on any unstable plane.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Slots and openings on the chassis are for ventilation. Do not block or cover these openings. Make sure you leave plenty of space around the system for ventilation. ***Never insert objects of any kind into the ventilation openings***.
- This system should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- Use this product in environments with ambient temperatures between 0˚C and 40˚C.
- If you use an extension cord, make sure that the total ampere rating of the devices plugged into the extension cord does not exceed its ampere rating.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THESTORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 80° C (176° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

## Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill water or any other liquids on your system.
- When the system is turned off, a small amount of electrical current still flows. Always unplug all power, and network cables from the power outlets before cleaning the system.
- If you encounter the following technical problems with the product, unplug the power cord and contact a qualified service technician or your retailer.
  - The power cord or plug is damaged.
  - Liquid has been spilled into the system.
  - The system does not function properly even if you follow the operating instructions.
  - The system was dropped or the cabinet is damaged.

## Lithium-Ion Battery Warning

**CAUTION**: Danger of explosion if 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.

## NO DISASSEMBLY

The warranty does not apply to the products that have been disassembled by users

## WARNING
## HAZARDOUS MOVING PARTS
## KEEP FINGERS AND OTHER BODY PARTS AWAY

## Acknowledgments


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# CHAPTER 1 INTRODUCTION

## 1.1 General Description

SI-62 digital signage player comes with 2nd/3rd Gen. Intel Core i7/i5/i3 Celeron Quad Core/Dual Core processors and Intel HD Integrated Graphics Engine. It supports DVI-I and HDMI output, 2 x USB 3.0, 1x RJ45 for RS-232, 1x Gigabit LAN giving a great selection for data communication in display applications. The compact design 178 x 150 x 35 mm chassis enables the unit to easily fit into the tightest spaces behind displays. This new signage player is an ideal solution for graphics intensive digital signage applications within retail, commerce, education, healthcare and entertainment.

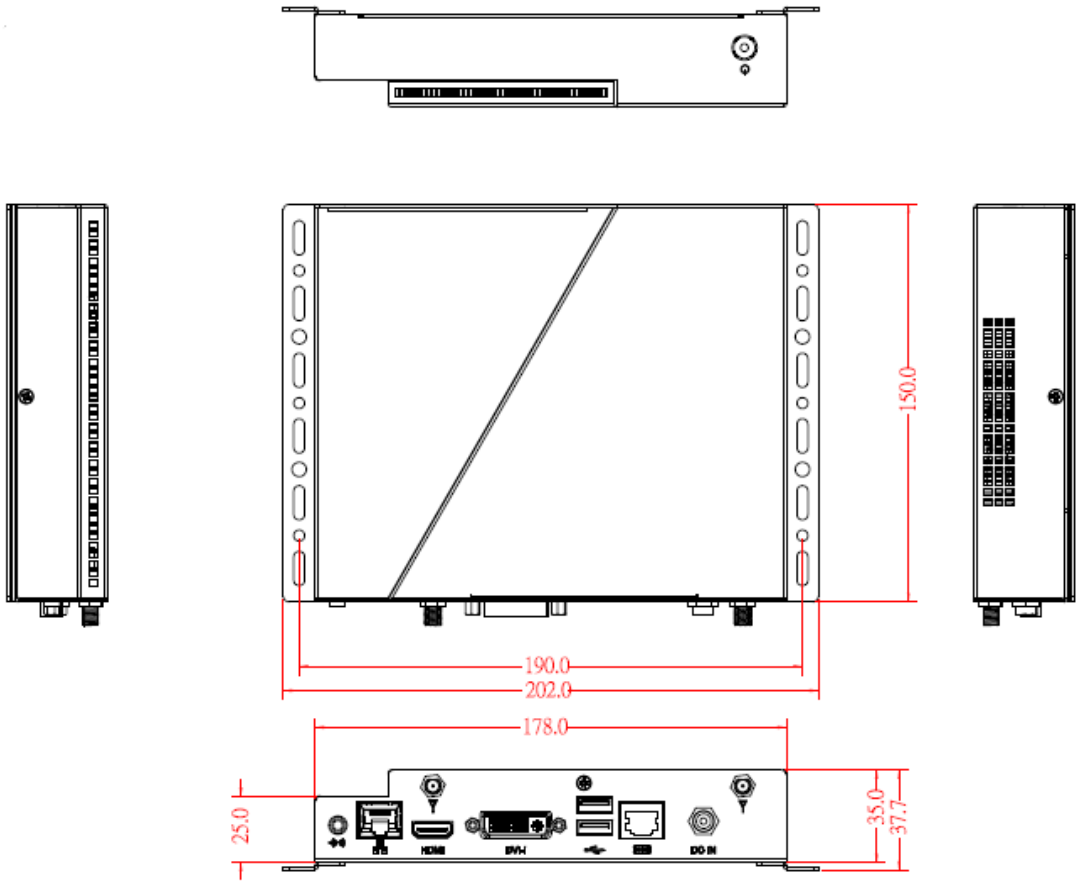
## 1.2 System Specifications

### 1.2.1 Hardware Specifications

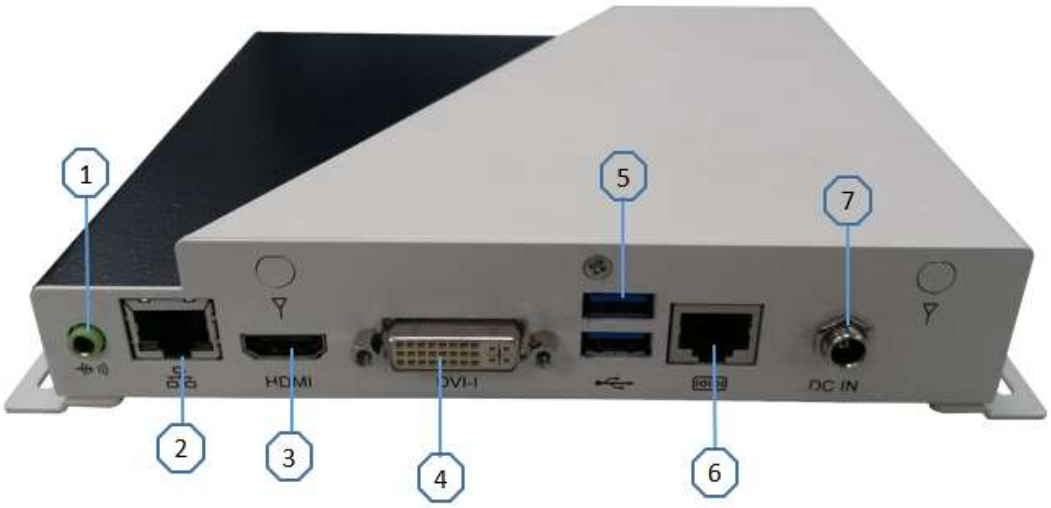
| | |
|---|---|
| Model Name | SI-62 |
| System Mainboard | IB902A |
| CPU | 2nd/3rd Generation Intel® Mobile Core™ i7/i5/i3/ Celeron® QC/ DC processors ( TDP <= 35W) |
| Chipset | Intel® Q77 PCH |
| Memory | 2x DDR3 1066/1333/1600 MHz SO-DIMM, Max. 16GB (Non-ECC) |
| I/O Interface | 1x HDMI, 1x DVI-I<br>1x Microjack audio connectors for Line-out<br>1x Gigabit LAN<br>2x USB 3.0, 1x RS-232 (RJ45 connector)<br>1x Power Button with LED light<br>1x DC Jack |
| Storage | 1x mSATA<br>1x SATA 3.0 2.5” HDD Dock |
| Expansion Slots | 1x Mini PCI-E(x1) slots for WiFi, 3G and TV tuner options |
| Power Supply | 60W power adaptor |
| Construction | SGCC |
| Chassis Color | Black & White |
| Mounting | Standard system bracket |
| Dimensions | 178mm(W) x 150mm(D) x 35mm(H) |
| Operating Temperature | 0°C~ 45°C (32°F~113°F) |
| Storage Temperature | -20° ~ 80°C (-4°F~176°F) |
| Relative Humidity | 5~90% @45°C (non-condensing) |
| Vibration | mSATA: 5 Grms/5~500Hz random operation |
| RoHS | Yes |
| Certification | CE, FCC class B, CCC and UL |

***·This specification is subject to change without prior notice.***

## 1.2.2 Dimensions

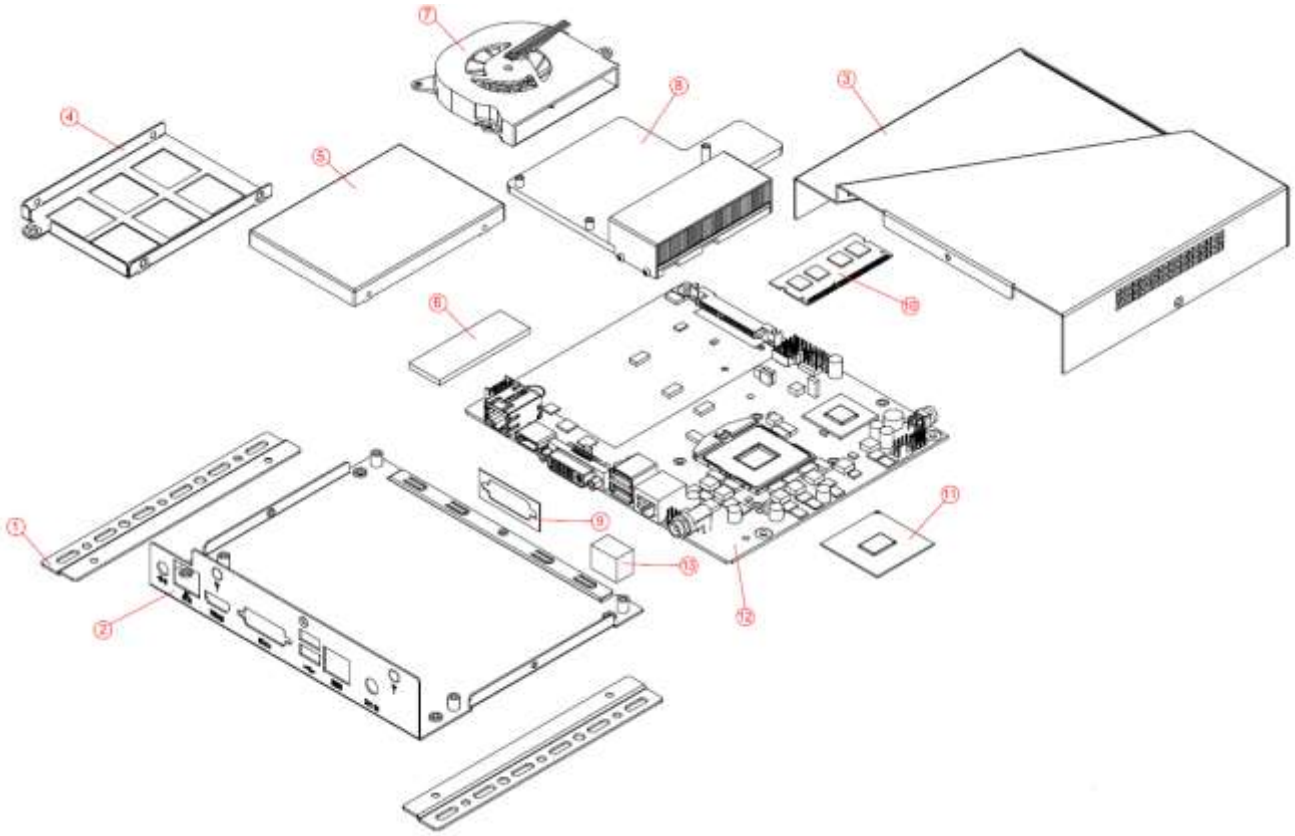


### 1.2.3 I/O View




| Item | Connector | Item | Connector |
|---|---|---|---|
| 1 | Line-out | 5 | 2 x USB 3.0 |
| 2 | Gigabit LAN | 6 | RJ45 for RS-232 |
| 3 | HDMI | 7 | 12V DC in |
| 4 | DVI | | |

## 1.3 Exploded View of the SI-62 Assembly



### 1.3.1 Parts Description

| Part No. | Description | Part No. | Description |
|---|---|---|---|
| 1 | SI-62 side bracket | 2 | Base |
| 3 | Top cover | 4 | 2.5” HDD bracket |
| 5 | 2.5” HDD | 6 | Thermal pad |
| 7 | Fan | 8 | Heatsink |
| 9 | Gasket | 10 | Memory |
| 11 | CPU | 12 | DIP PCBA |
| 13 | LAN gasket | | |

## 1.4 Packing List

| Item No. | Description | Qty |
|---|---|---|
| 1 | Driver CD | 1 |
| 2 | Adaptor | 1 |
| 3 | Power Cord | 1 |

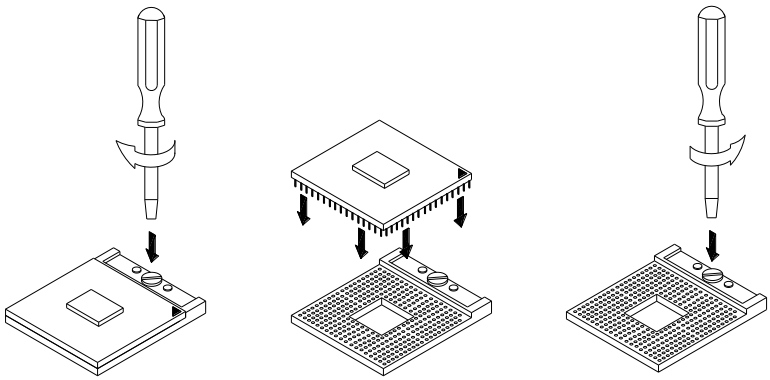
### 1.4.1 Optional Items

| WiFi Solution | Description | |
|---|---|---|
| QCOM WiFi module | Wireless LAN Card; 802.11 B/G/N+BT HALF Card [Q802XKN3B] RoHS (A008WIRELESS00700P) |  |
| External Antenna | Wifi Antenna (A055RFA02C2M20800P) | |
| Internal cable-1/2 | From Wifi module to Rear/Front panel (A055RFA0000021000P/A055RFA0000032000P) |   |
| Bracket | MPCIE-EXT V-B1 Bracket, RoHS; Extend Half to Full size. (SC2MPCIEEXT0B1100P) |  |
| **3G Solution** | **Description** | |
| ZU 202 | Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P) |  |
| ZU 200 | Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P) | |
| Cable | Cable; Antenna-2 30CM P 2pcs (C501ANT0200300000P) | |
| Antenna | Antenna; 3G, P, 2pcs (A055ANT0921Q2P000P) | |
| **COM Port Cable** | **Description** | |
| EXT-311 | Cable; EXT-311 2-HD 10C, 150CM; DSUB-9F => RJ45-10M RoHS (C501EXT3110A12000P) |  |
| EXT-312 | Cable; EXT-312 2-HD 10C, 150CM; DSUB-9M => RJ45-10M RoHS (C501EXT3120A12000P) | |
| **Display Cable** | **Description** | |
| DVI-22 | DVI-22 3-HD, 10CM; DVI => DVI, VGA-15 RoHS (C501DVI2200103000P) |  |

# 2 HARDWARE INSTALLATION

## 2.1 Installing the CPU

The IB902A board supports rPGA988B socket for Intel® Ivy Bridge Dual Core mobile processors. The processor socket comes with a screw to secure the processor. As shown in the picture below, loosen the screw first before inserting the processor. Place the processor into the socket by making sure the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Once the processor has slide into the socket, fasten the screw. Refer to the figures below.



***NOTE**: Ensure that the CPU heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.*

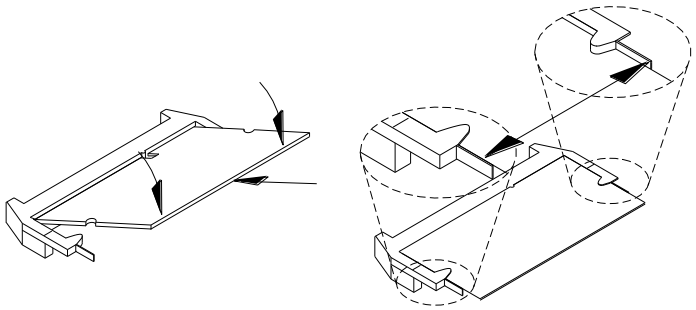
## 2.2 Installing the Memory

The IB902A board supports two DDR3 memory sockets for a maximum total memory of 16GB in DDR3 SO-DIMM memory type.

**Installing and Removing Memory Modules**

To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

1. Hold the DDR3 module so that the key of the DDR3 module aligned with that on the memory slot.
2. Gently push the DDR3 module in an upright position until the clips of the slot close to hold the DDR3 module in place when the DDR3 module touches the bottom of the slot.
3. To remove the DDR3 module, press the clips with both hands.



## 2.3 Installing the HDD Module

### HDD Module:

1. Remove the four screws on the sides that are used to secure the top cover to the chassis. Once all the screws are removed, from the side, push the cover forward to remove it. See steps1 and 2 in the pictures below.

Step1

Step2

2. Loosen the mounting screws that secure the HDD to the bracket.
3. As in the following the picture's arrowed direction, push out the HDD module.

4. Loosen the four screws and then replace the HDD module.

# CHAPTER 3 MOTHERBOARD INTRODUCTION

## 3.1 Introduction

The IB902A motherboard is based on the latest Intel® QM77 chipset. The platform supports 3rd generation Intel® Core processor family with rPGA988B packing and features an integrated dual-channel DDR3 memory controller as well as a graphics core.

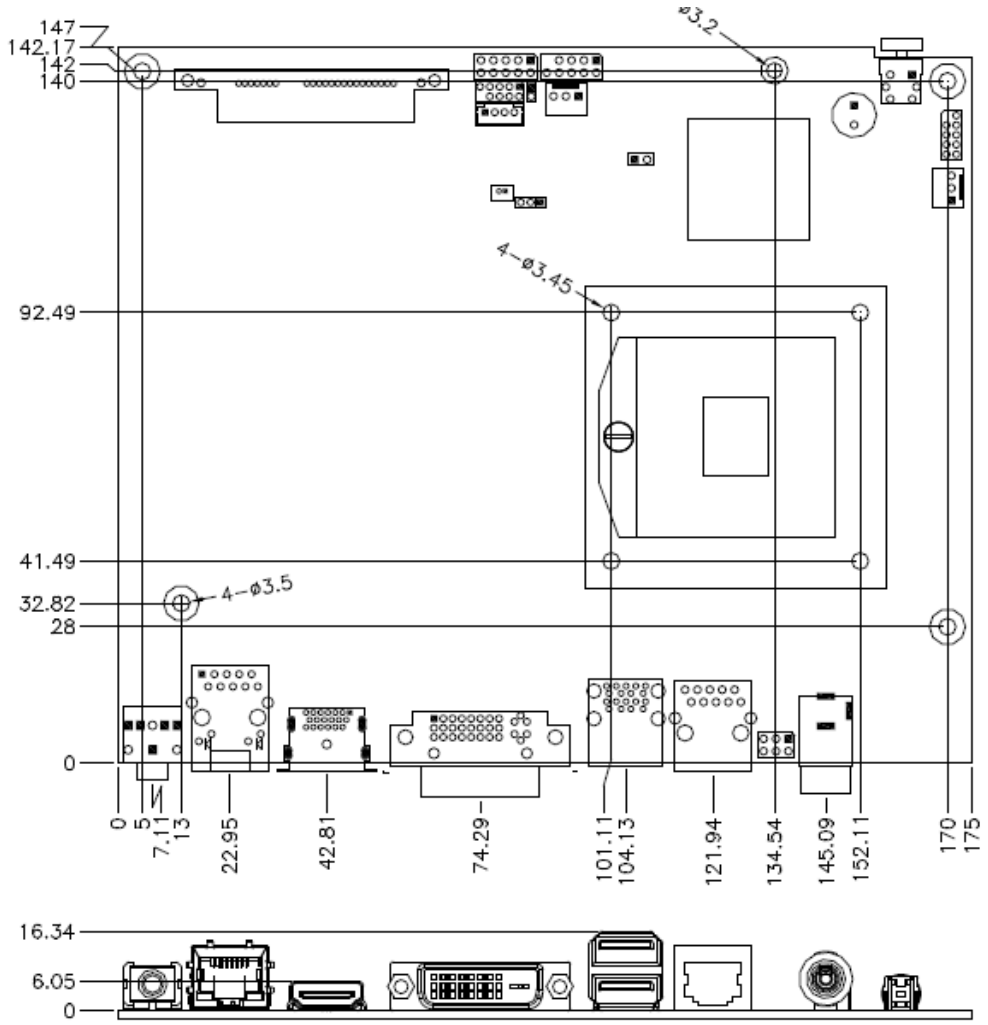
The latest Intel® processors provide advanced performance in both computing and graphics quality. This meets the requirement of customers in the gaming, POS, digital signage and server market segment.

The QM77 chipset is made with 22-nanometer technology that supports Intel's first processor architecture to unite the CPU and the graphics core on the transistor level. The IB902A board utilizes the dramatic increase in performance provided this Intel's latest cutting-edge technology. Measuring 175mm x 147mm, the IB902A offers fast 6Gbps SATA support (1 ports), USB3.0 (2 ports) and interfaces for DVI-I and HDMI displays.

| Specification – Mainboard | |
|---|---|
| Model | IB902A |
| Form Factor | Customized |
| **CPU** | |
| Model | - Intel® 3rd Generation Core™ I7/I5/I3 mobile processors<br>- rPGA package, 37.5 mm x 37.5mm |
| Speed | Up to 3.3GHz |
| Cache | Up to 6MB |
| Socket | rPGA 988B (Socket G2) |
| TDP | 35W |
| **Chipset** | |
| Model | Intel® QM77 Platform Controller Hub<br>25 x 27 mm package size |
| **BIOS** | |
| Model | AMI BIOS [16MB SPI ROM] |
| **Memory** | |
| Max. Support | Intel® Ivy-Bridge mobile processors integrated memory controller<br>DDRIII 1066/1333/1600 MHz<br>- SO-DIMM [204-pin parallel type] x 2 (Non-ECC), Max. 16GB |

| Functionality | |
|---|---|
| Display | - Intel 3rd Generation Core™ mobile processor integrated Gfx, Direct X 11, OpenGL 3.1, Open CL 1.1<br>DVI-I X 1 (thru Level shifter ASM1442)<br>HDMI X 1(thru Level shifter ASM1442) |
| LAN / PHY | Intel 82579V PCI-E Gigabit LAN for QM77 (Real panel) for single GbE (Rear) |
| USB | USB 2.0 host controller [Panther Point integrated]<br>- 1 port via MiniPCIe socket; 2 ports via pin-header<br>USB 3.0 host controller [Panther Point integrated]<br>- 2 ports in the rear panel |
| Serial ATA | Intel® QM77 PCH built-in SATA controller<br>1x SATA 3.0 2.5" HDD Dock |
| Audio | Intel® QM77 PCH built-in High Definition Audio controller + Realtek ALC892 w/ 7.1 channels (Line In/Mic In/Line Out) |
| LPC I / O | Fintek F81866AD-I (128-pin LQFP [14mm x 14 mm])<br>RJ45 connector x1 for COM 1 (RS232) (Rear)<br>CPU fan & SYS fan (4-pin connector x 2, supports PWM) |
| iAMT | None |
| Expansion slot | Mini PCI-Express x 1 port [Full-sized] w/mSATA +USB 2.0 support |
| **Edge I/O** | |
| Display | 1x DVI-I connector (Rear); 1x HDMI connector (Rear) |
| LAN / PHY | 1x RJ-45 connector (Rear) |
| USB | 1x USB (3.0) dual stack (Rear) |
| LPC I / O | 1x RS-232 (RJ45) (Rear) |
| Other | 1x Power Jack (+12V DC) (Rear); 1x Power On/Reset button with LED (Front) |
| **Internal I/O** | |
| FAN | CPU fan & SYS fan (4-pin connector x2 |
| Serial ATA | Intel® QM77 PCH built-in SATA controller<br>1x SATA 3.0 2.5" HDD Dock |
| Memory | 2x DDR 3 SO-DIMM parallel memory slots |
| Expansion slot | Mini PCI-Express x 1 port [Full-sized] w/mSATA +USB 2.0 supporting |
| Other | iSMART function, Auto-scheduler, Power resume |
| **Add-On Feature** | |
| Watchdog | Yes (256 segments, 0, 1, 2…255 sec/min) |
| AMT | Yes |
| Other | iSMART function |
| **Dimensions** | |
| PCB | 175mm x 147mm |
| **Power Supply** | |
| Power | Power Jack (+12V DC) |
| **Environmental** | |
| Temperature | Operating: 0°C~ 40°C (32°F~104°F)<br>Storage: -20oC to 80oC(-4oF~167oF) |
| Humidity | 10%~90% (non-condensing) |
| Shock | IBASE Standard Test |
| Vibration | IBASE Standard Test |
| Certification | RoHS |
| Other | CE/FCC |

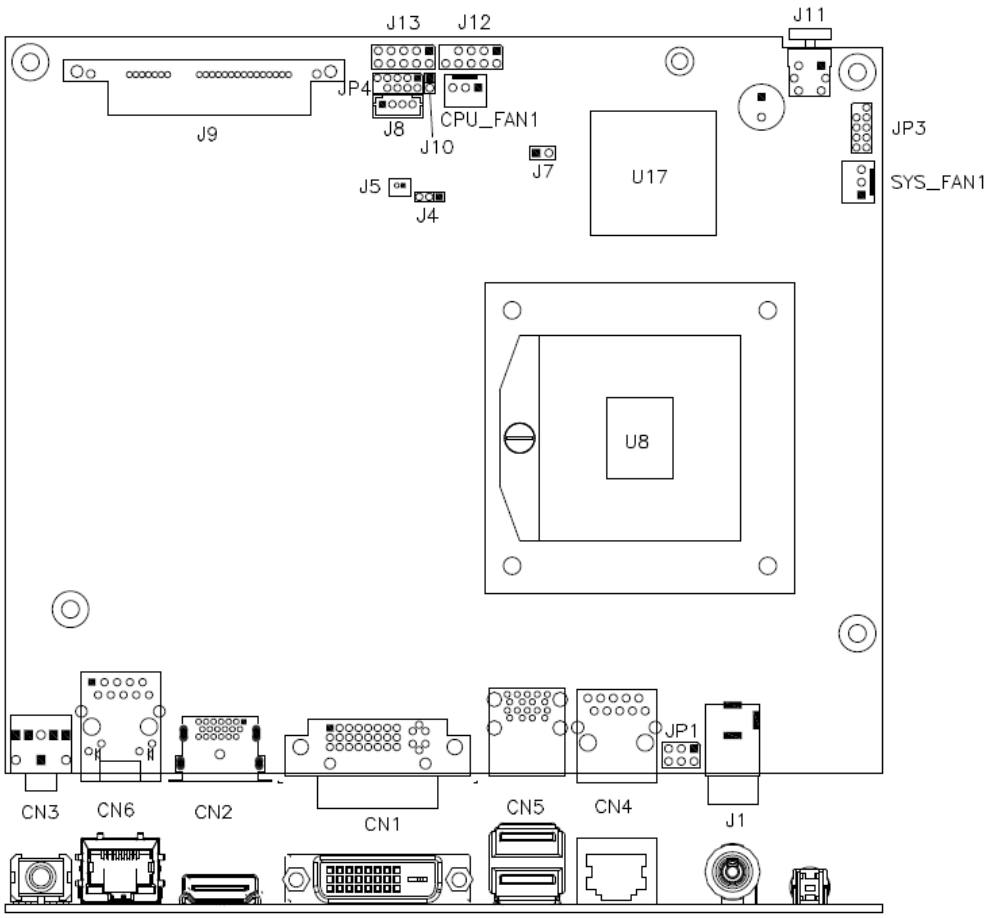
## Board Dimensions



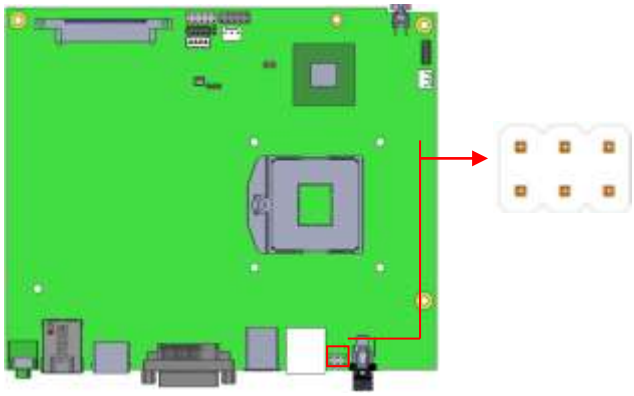
## 3.2 Setting the Jumpers

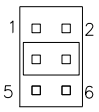
Jumpers are used on IB902A to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs.

## Jumper Locations on IB902A

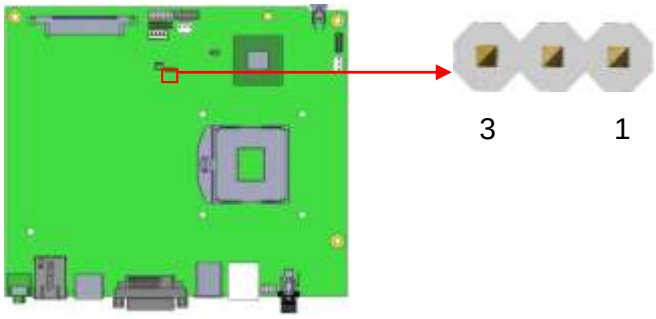


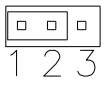
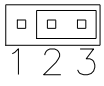
### JP1: COM1 RS232 RI/+5V/+12V Power Setting



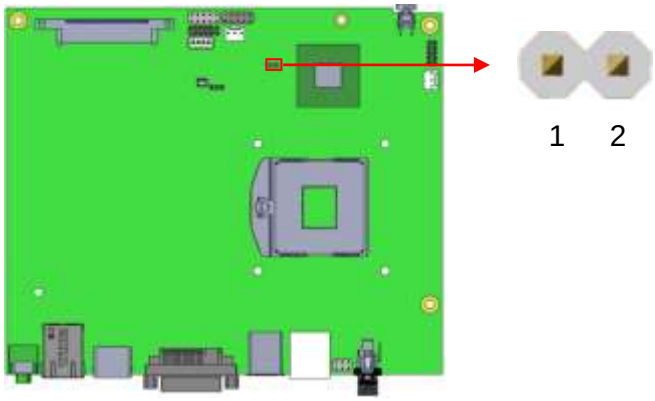
| JP1 | Setting | Function |
|---|---|---|
|   | Pin 1-3 Short/Closed | +12V |
| | Pin 3-4 Short/Closed | RI |
| | Pin 3-5 Short/Closed | +5V |

### J4: Clear CMOS Contents



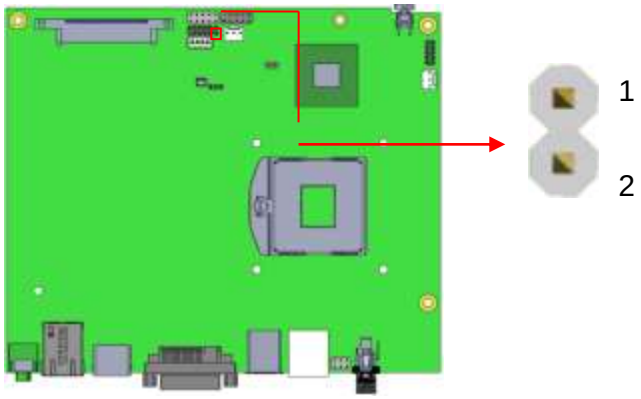

| J4 | Setting | Function |
|---|---|---|
|   | Pin 1-2 Short/Closed | Normal |
|   | Pin 2-3 Short/Closed | Clear CMOS |

### J7: Flash Descriptor Security Override (Factory use only)



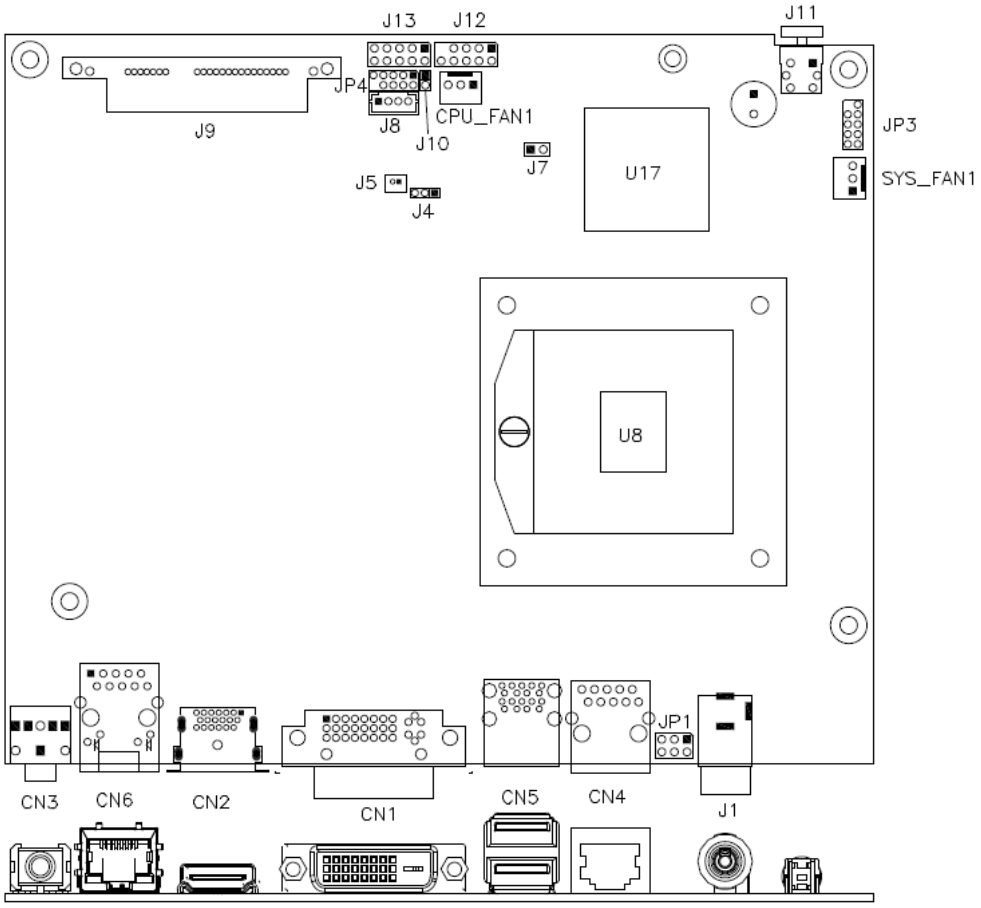

| J7 | Flash Descriptor Security Override |
|---|---|
| Open | Disabled (Default) |
| Close | Enabled |

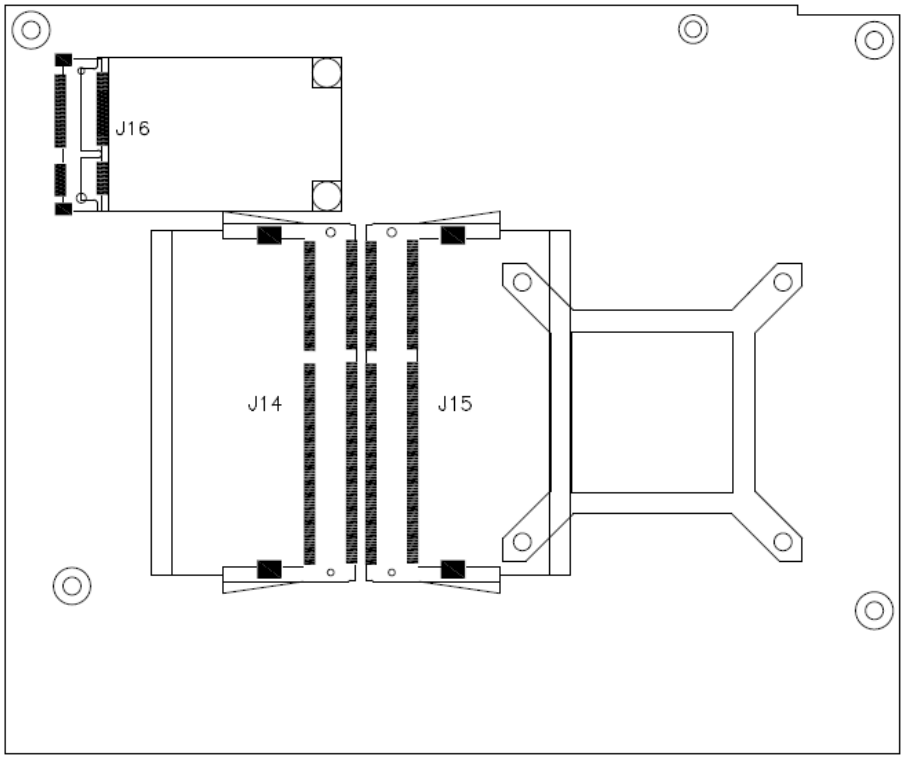
### J10: Reset BTN



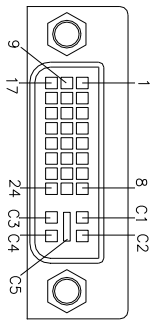

| J10 | Reset BTN |
|---|---|
| Open | Disabled (Default) |
| Close | Enabled |

## 3.3 Connector Locations on IB902A



### CN1: DVI-I Connector

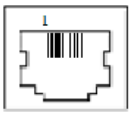



| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| DATA 2- | 1 | 16 | HOT POWER |
| DATA 2+ | 2 | 17 | DATA 0- |
| Shield 2/4 | 3 | 18 | DATA 0+ |
| DATA 4- | 4 | 19 | SHIELD 0/5 |
| DATA 4+ | 5 | 20 | DATA 5- |
| DDC CLOCK | 6 | 21 | DATA 5+ |
| DDC DATA | 7 | 22 | SHIELD CLK |
| N.C | 8 | 23 | CLOCK - |
| DATA 1- | 9 | 24 | CLOCK + |
| DATA 1+ | 10 | C1 | Analog Red |
| SHIELD 1/3 | 11 | C2 | Analog Green |
| DATA 3- | 12 | C3 | Analog Blue |
| DATA 3+ | 13 | C4 | Analog HYNC |
| DDC POWER | 14 | C5 | A GROUND2 |
| A GROUND 1 | 15 | C6 | A GROUND3 |

### CN2: HDMI Connector

### CN3: HDA Audio Connector

### CN4: LAN Port To COM1




| Pin # | Signal Name |
|---|---|
| 1 | DSR, Data set ready |
| 2 | GND, ground |
| 3 | GND, ground |
| 4 | TXD, Transmit data |
| 5 | RXD, Receive data |
| 6 | DCD, Data carrier detect |
| 7 | DTR, Data terminal ready |
| 8 | CTS, Clear to send |
| 9 | RTS, Request to send |
| 10 | RI, Ring indicator |

**CN5: USB3 Connector**

**CN6: Gigabit LAN (82579V)**

**J1: +12V Power Supply Connector**

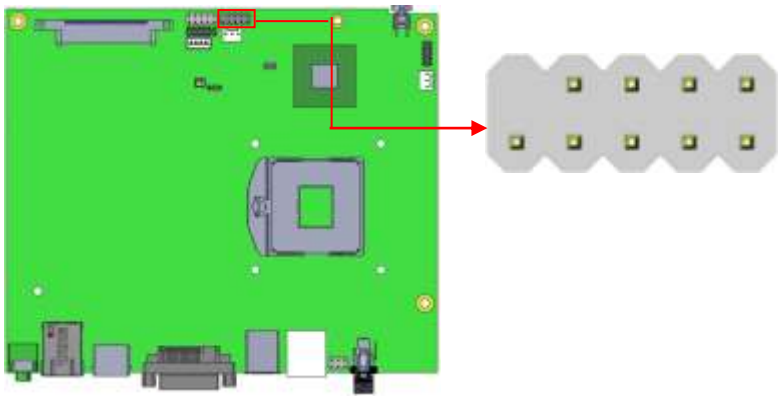
**J5: Battery 1/2AA Connector**


| Pin # | Signal Name |
|---|---|
| 1 | BAT |
| 2 | Ground |

### J9: SATA3 Connector

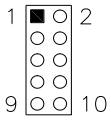
### J11: Power Button

### J12: USB2 Connector



| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| Vcc | 1 | 2 | Vcc |
| D0- | 3 | 4 | D1- |
| D0+ | 5 | 6 | D1+ |
| Ground | 7 | 8 | Ground |
| Key | 9 | 10 | NC |

### J13: Digital I/O Connector (4 in, 4 out)



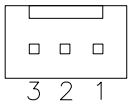

| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| Ground | 1 | 2 | +5V |
| Out3 | 3 | 4 | Out1 |
| Out2 | 5 | 6 | Out0 |
| IN3 | 7 | 8 | IN1 |
| IN2 | 9 | 10 | IN0 |

### J14: DDR3 SO-DIMM Channel A

### J15: DDR3 SO-DIMM Channel B

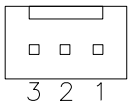
### J16: Mini-PCIE Connector and mSATA

**CPU_FAN1: CPU Fan Power Connector**




| Pin # | Signal Name |
|---|---|
| 1 | Ground |
| 2 | +12V |
| 3 | Rotation detection |

**SYS_FAN2: System Fan Power Connector**




| Pin # | Signal Name |
|---|---|
| 1 | Ground |
| 2 | +12V |
| 3 | Rotation detection |

**JP3: SPI Flash connector (Factory use only)**

**JP4: LPC debug Connector (Factory use only)**

# CHAPTER 4 BIOS SETUP

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

**BIOS Introduction**

The BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

**BIOS Setup**

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL> or <F2> to  Enter  Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

***Warning:*** *It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

## Main Settings

**Aptio Setup Utility – Copyright © 2011 American Megatrends, Inc.**

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|
| BIOS Information | | | | | Choose the system default language |
| Total memory | | | 8176 MB (DDR3) | | |
| Memory Frequency | | | 1333Mhz | | |
| System Date | | | [Tue 01/20/2013] | | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |
| System Time | | | [00.00.00] | | |
| Access Level | | | Administrator | | |

### System Language

Choose the system default language.

### System Date

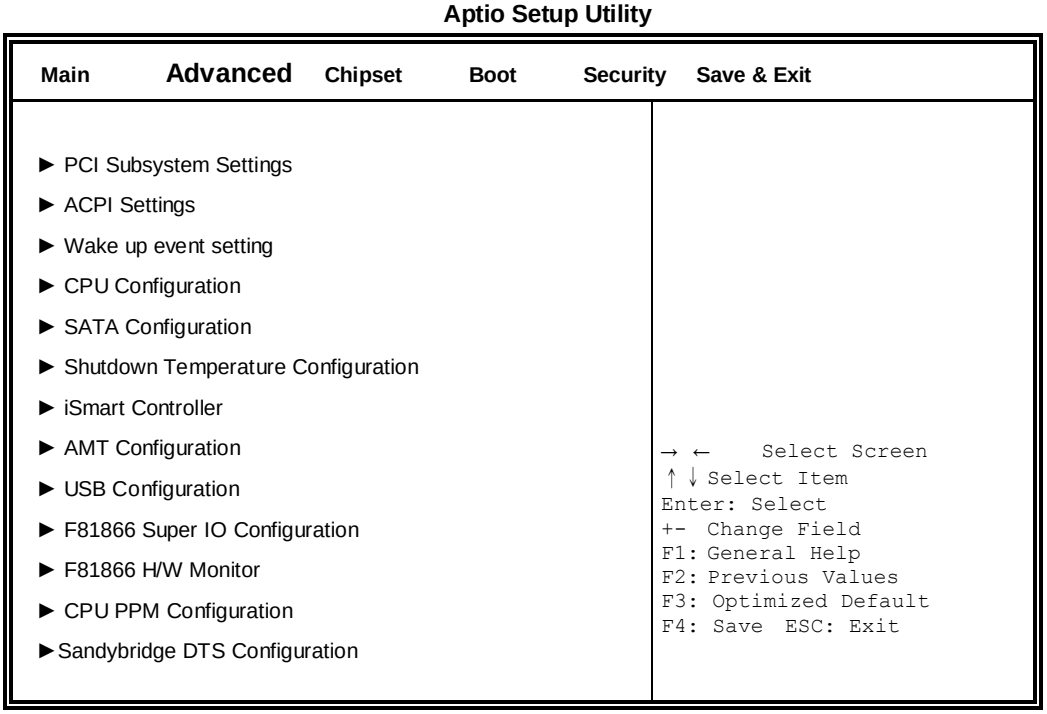
Set the Date. Use Tab to switch between Data elements.

### System Time

Set the Time. Use Tab to switch between Data elements.

## Advanced Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



## PCI Subsystem Settings

**Aptio Setup Utility**

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|
| PCI Bus Driver Version | | | V 2.0502 | | |
| PCI 64bit Resources Handing | | | | | |
| Above 4G Decoding | | | Disabled | | |
| PCI Common Settings | | | | | |
| PCI Latency Timer | | | 32 PCI Bus Clocks | | |
| VGA Palette Snoop | | | Disabled | | |
| PERR# Generation | | | Disabled | | |
| SERR# Generation | | | Disabled | | |
| ► PCI Express Settings | | | | | |

→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save ESC: Exit

### Above 4G Decoding

Enables or Disables 64bit capable devices to be decoded in above 4G address space (only if system supports 64 bit PCI decoding).

### PCI Latency Timer

Value to be programmed into PCI Latency Timer Register.

### VGA Palette Snoop

Enables or disables VGA Palette Registers Snooping.

### PERR# Generation

Enables or disables PCI device to generate PERR#.

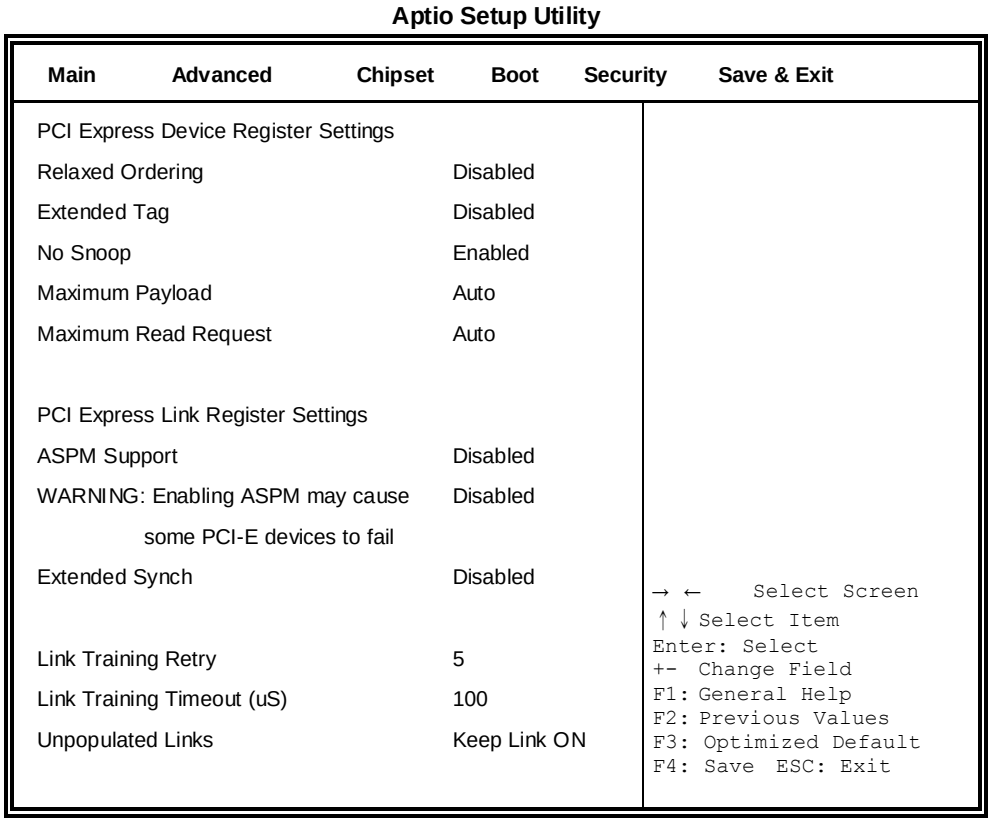
### SERR# Generation

Enables or disables PCI device to generate SERR#.

### PCI Express Settings

Change PCI Express devices settings.

## PCI Express Settings




### Relaxed Ordering

Enables or disables PCI Express Device Relaxed Ordering.

### Extended Tag

If ENABLED allows device to use 8-bit Tag field as a requester.

### No Snoop

Enables or disables PCI Express Device No Snoop option.

### Maximum Payload

Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

### Maximum Read Request

Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value.

### ASPM Support

Set the ASPM Level: Force L0s – Force all links to L0s State:
AUTO – BIOS auto configure: DISABLE – Disables ASPM.

### Extended Synch

If ENABLED allows generation of Extended Synchronization patterns.

**Link Training Retry**

Defines number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful.

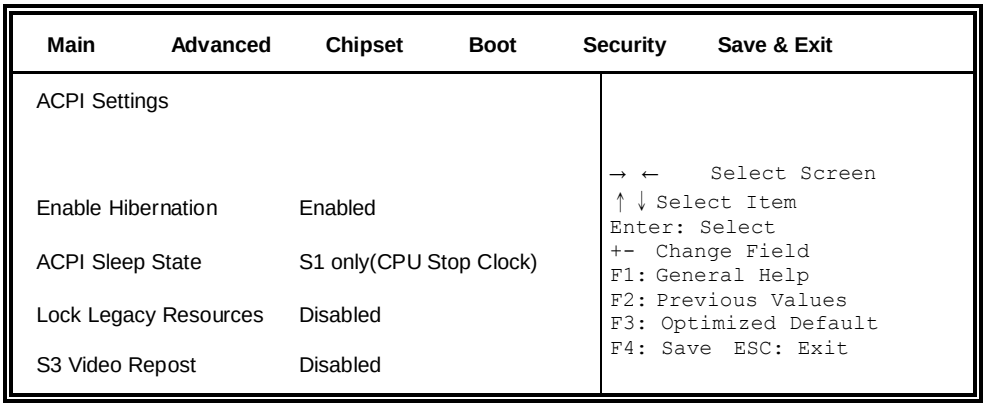
**Link Training Timeout (uS)**

Defines number of Microseconds software will wait before polling 'Link Training' bit in Link Status register. Value range from 10 to 1000 uS.

**Unpopulated Links**

In order to save power, software will disable unpopulated PCI Express links, if this option set to 'Disable Link'.

## ACPI Settings




### Enable Hibernation

Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

### ACPI Sleep State

Select ACPI sleep state the system will enter, when the SUSPEND button is pressed.

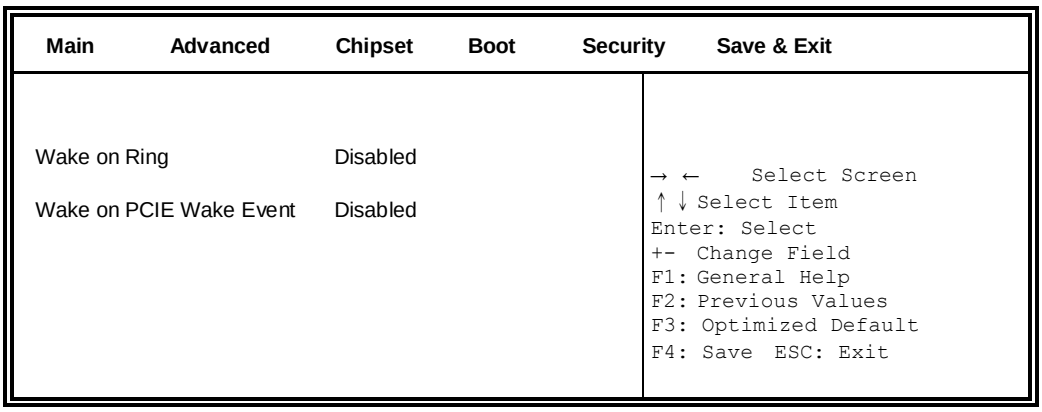
### Lock Legacy Resources

Enabled or Disabled Lock of Legacy Resources.

### S3 Video Repost

Enable or disable S3 Video Repost.

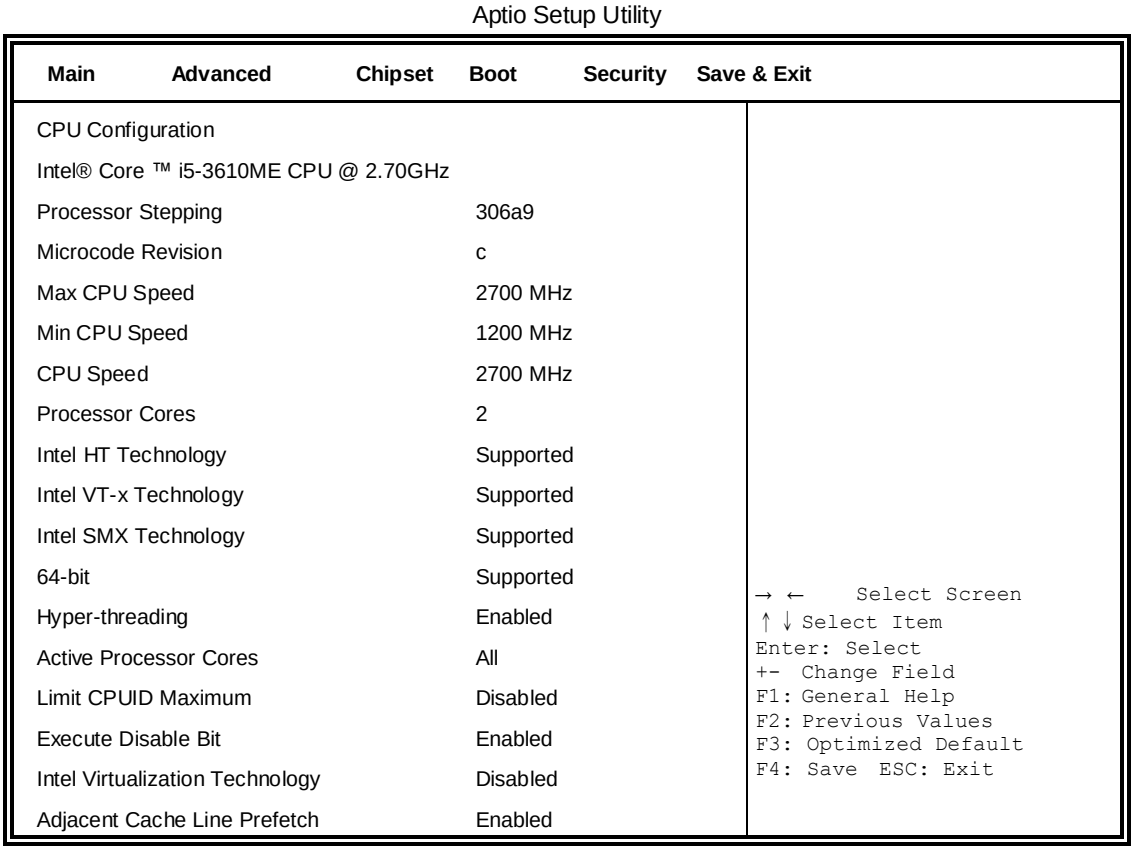
## Wake up event settings




### Wake on PCIE PME Wake Event

The options are Disabled and Enabled.

## CPU Configuration




### Hyper-threading

Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled, only one thread per enabled core is enabled.

### Active Processor Cores

Number of cores to enable in each processor package.

### Limit CPUID Maximum

Disabled for Windows XP.

### Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)

### Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

### Adjacent Cache Line Prefetch

To turn on/off prefetching of adjacent cache lines.

## SATA Configuration

SATA Devices Configuration.

Aptio Setup Utility

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|
| SATA Controller(s) | | | Enabled | | |
| SATA Mode Selection | | | AHCI | | |
| SATA Port0 | | | Empty | | |
| Software Preserve | | | Unknown | | |
| SATA Port5 | | | Empty | | |
| Software Preserve | | | Unknown | | |

→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save ESC: Exit

## SATA Controller(s)

Enable / Disable Serial ATA Controller.

## SATA Mode Selection

(1) IDE Mode.
(2) AHCI Mode.

### Shutdown Temperature Configuration

**Aptio Setup Utility**

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|
| APCI Shutdown Temperature | | | Disabled | | |

→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save ESC: Exit

### ACPI Shutdown Temperature

The default setting is Disabled.

### iSmart Controller

**Aptio Setup Utility**

| Main | **Advanced** | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|
| iSmart Controller | | | | | |
| Power-On after Power failure | | | Disable | | |
| Schedule Slot 1 | | | None | | |
| Schedule Slot 2 | | | None | | |

→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save ESC: Exit

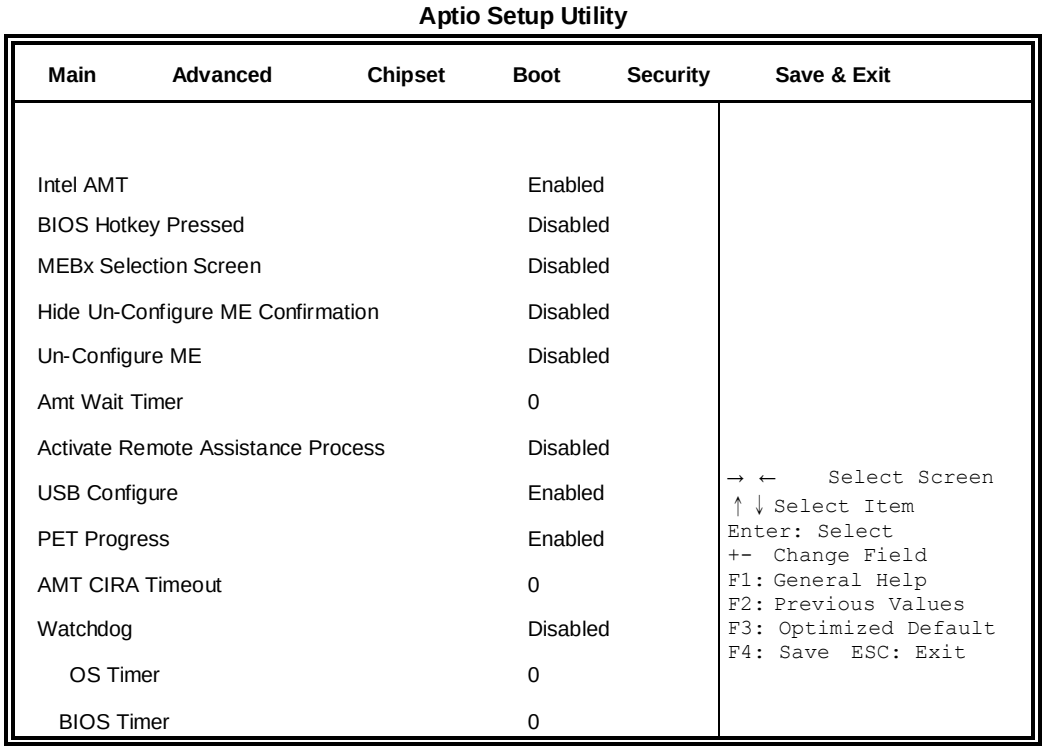
### ISmart Controller

Setup the power on time for the system.

### Schedule Slot 1 / 2

Setup the hour/minute for system power on.

## AMT Configuration




### AMT Configuration

This configuration is supported only with IB902AVF (with iAMT function). Options are Enabled and Disabled.

Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.

### Unconfigure ME

This configuration is supported only with IB902AVF (with iAMT function). Perform AMT/ME unconfigure without password operation.

### Amt Wait Timer

Set timer to wait before sending ASF_GET_BOOT_OPTIONS.

### Activate Remote Assistance Process

Trigger CIRA boot.

### PET Progress

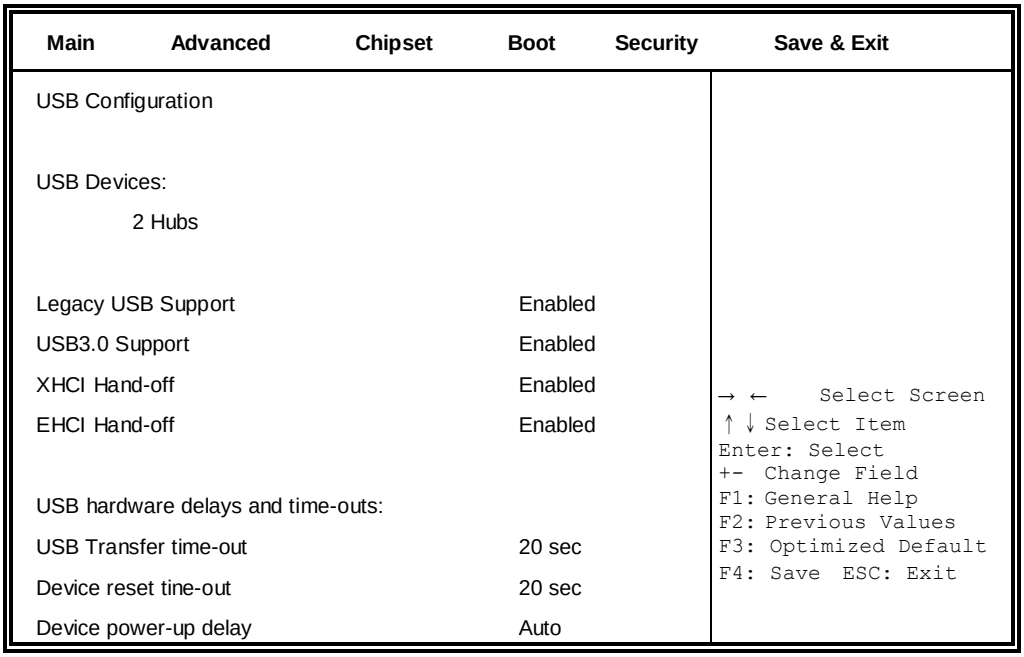
User can Enable/Disable PET Events progress to receive PET events or not.

### Watchdog Timer

This configuration is supported only with IB902AVF (with iAMT function).

Enable/Disable Watchdog Timer.

## USB Configuration




### Legacy USB Support

AUTO option disables legacy support if no USB devices are connected.
DISABLE option will keep USB devices available only for EFI applications.

### USB3.0 Support

Enable/Disable USB3.0 (XHCI) Controller support.

### XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

### EHCI Hand-off

Enabled/Disabled. This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

### USB Transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

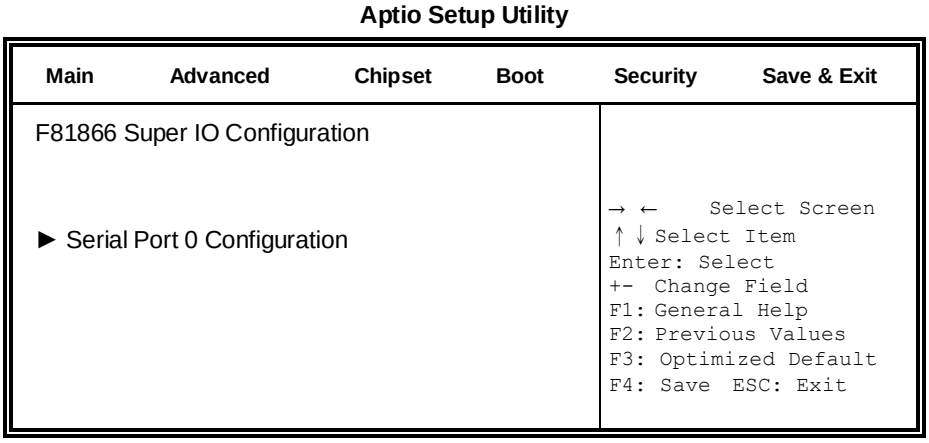
### Device reset tine-out

USB mass Storage device start Unit command time-out.

### Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. ‘Auto’ uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

## F81866 Super IO Configuration




### Serial Port Configuration

Set Parameters of Serial Ports. User can Enable/Disable the serial port and Select an optimal settings for the Super IO Device.

## F81866 H/W Monitor

**Aptio Setup Utility**

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|

| | | |
|---|---|---|
| PC Health Status | | |
| CPU temperature | +32 C | |
| SYS temperature | +35 C | |
| FAN1 Speed | 5154 RPM | |
| FAN2 Speed | N/A | |
| Vcore | +0.904 V | |
| Vcc5V | +5.003 V | |
| Vcc12V | +12.408 V | |
| +1.5V | +1.512 V | |
| Vcc3.3V | +3.296 V | |
| Fan1 smart fan control | Disabled | |
| Fan2 smart fan control | Disabled | |

→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save ESC: Exit

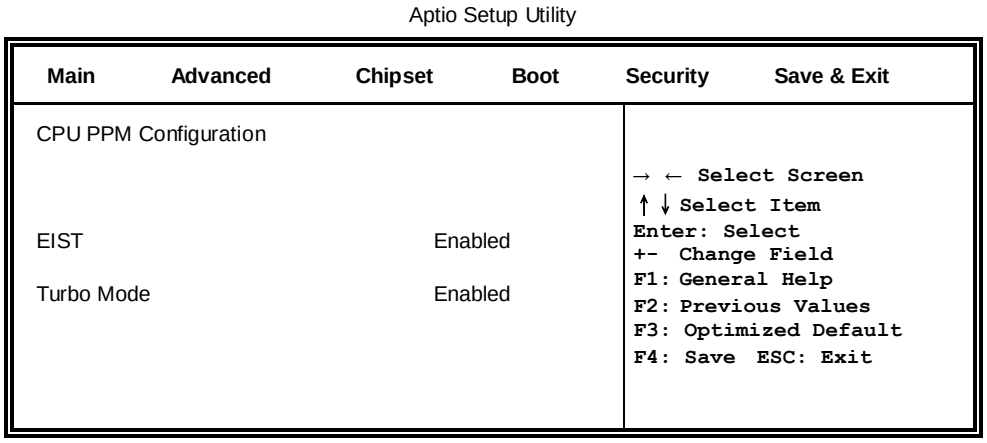
### Temperatures/Voltages

These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

### Fan1/Fan2 Smart Fan Control

This field enables or disables the smart fan feature. At a certain temperature, the fan starts turning. Once the temperature drops to a certain level, it stops turning again.

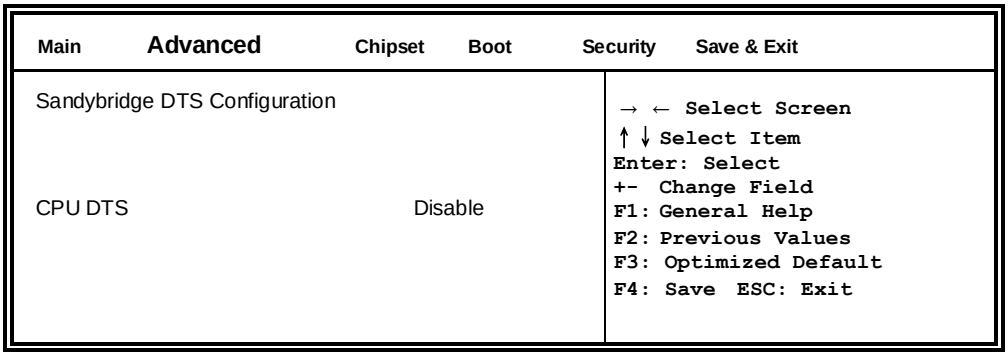
## CPU PPM Configuration




### EIST

Enable/Disable Intel SpeedStep.

## Sandybridge DTS Configuration




### CPU DTS

Disabled: ACPI thermal management uses EC reported temperature values.

Enabled: ACPI thermal management uses DTS SMM mechanism to obtain CPU temperature values.

Out of Spec: ACPI Thermal Management uses EC reported temperature values and TS SMM is used to handle Out of Spec.

## Chipset Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Aptio Setup Utility

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|
| ► PCH-IO Configuration | | | | | |
| ► System Agent (SA) Configuration | | | | | |

## PCH-IO Configuration

This section allows you to configure the North Bridge Chipset.

Aptio Setup Utility

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|
| Intel PCH RC Version | | | 1.1.0.0 | | |
| Intel PCH SKU Name | | | QM77 | | |
| Intel PCH Rev ID | | | O4/C1 | | |
| ► PCI Express Configuration | | | | | |
| ► USB Configuration | | | | | |
| ► PCH Azalia Configuration | | | | | |
| PCH LAN Controller | | | Enabled | | → ← Select Screen |
| Wake on LAN | | | Disabled | | ↑ ↓ Select Item |
| Board Capability | | | SUS_PWR_ON_ACK | | Enter: Select |
| High Precision Event Timer Configuration | | | | | +- Change Field |
| High Precision Timer | | | Enabled | | F1: General Help |
| SLP_S4 Assertion Width | | | 1-2 Seconds | | F2: Previous Values |
| | | | | | F3: Optimized Default |
| | | | | | F4: Save ESC: Exit |

### PCH LAN Controller

Enable or disable onboard NIC.

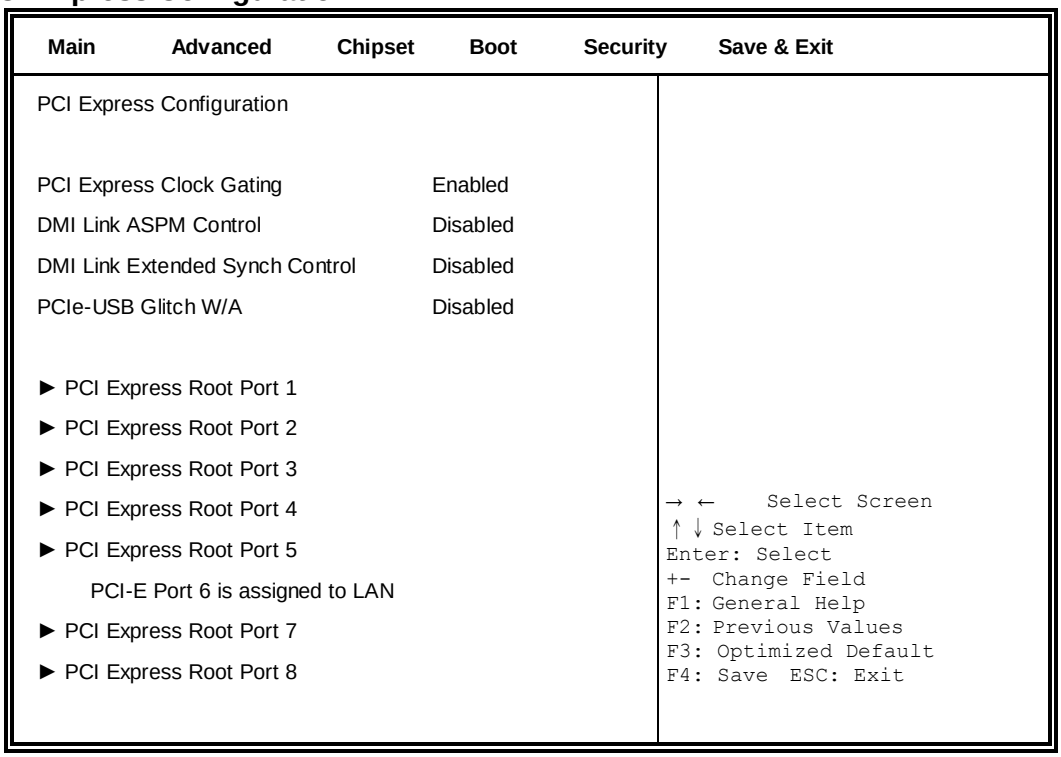
### Wake on LAN

Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)

### SLP_S4 Assertion Width

Select a minimum assertion width of the SLP_S4# signal.

## PCI Express Configuration




### PCI Express Clock Gating

Enable or disable PCI Express Clock Gating for each root port.

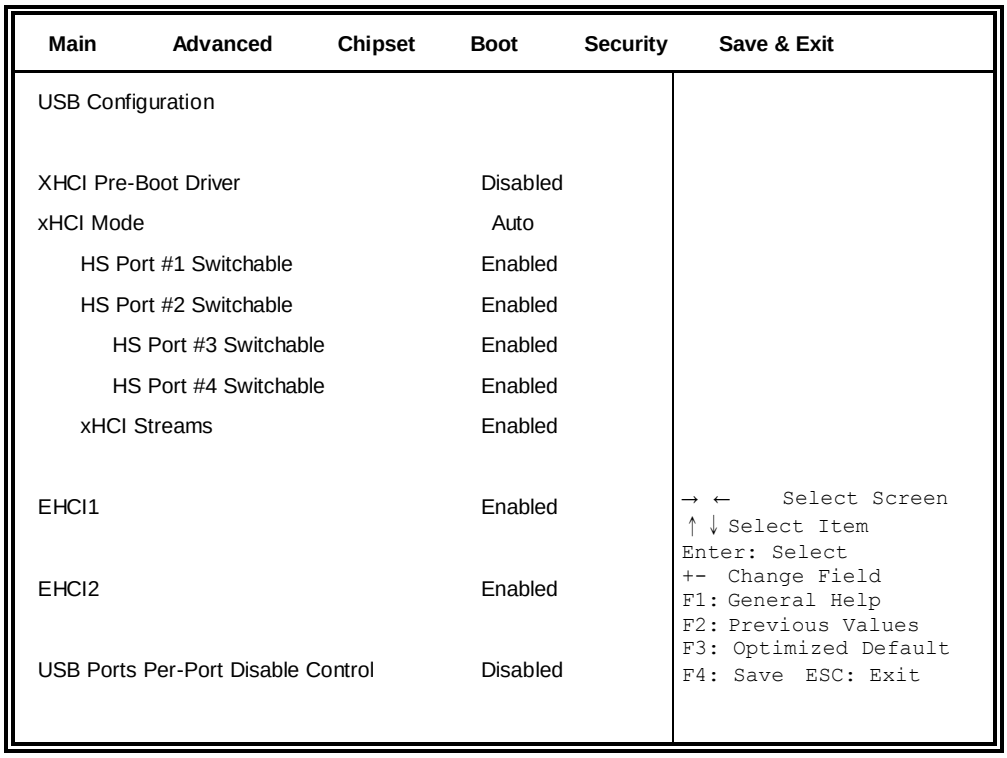
### DMI Link ASPM Control

The control of Active State Power Management on both NB side and SB side of the DMI link.

### PCIe-USB Glitch W/A

PCIe-USB Glitch W/A for bad USB device(s) connected behind PCIE/PEG port.

## USB Configuration




### HS Port #1/2/3/4 Switchable

Allows for HS port switching between xHCI and EHCI. If disabled, port is routed to EHCI. If HS port is routed to xHCI, the corresponding SS port is enabled.

### xHCI Streams

Enable or disable xHCI Maximum Primary Stream Array Size.

### EHCI1/2

Control the USAB EHCI (USB 2.0) functions. One EHCI controller must always be enabled.

### USB Ports Per-Port Disable Control

Control each of the USB ports (0~13) disabling.

### PCH Azalia Configuration

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|
| PCH Azalia Configuration | | | | | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |
| Azalia | | | Auto | | |

**Azalia**

Control Detection of the Azalia device.

Disabled = Azalia will unconditionally disabled.

Enabled Azalia will be unconditionally enabled.

Auto = Azalia will enabled if present, disabled otherwise.

### System Agent (SA) Configuration

Aptio Setup Utility

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|
| System Agent Bridge Name | | | IvyBridge | | |
| System Agent RC Version | | | 1.1.0.0 | | |
| VT-d Capability | | | Supported | | |
| VT-d | | | Enabled | | |
| CHAP Device (B0:D7:F0) | | | Disabled | | |
| Thermal Device (B0:D4:F0) | | | Disabled | | |
| Enable NB CRID | | | Disabled | | |
| BDAT ACPI Table Support | | | Disabled | | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |
| C-State Pre-Wake | | | Enabled | | |
| ► Graphics Configuration | | | | | |
| ► Memory Configuration | | | | | |

**VT-d**

Check to enable VT-d function on MCH.

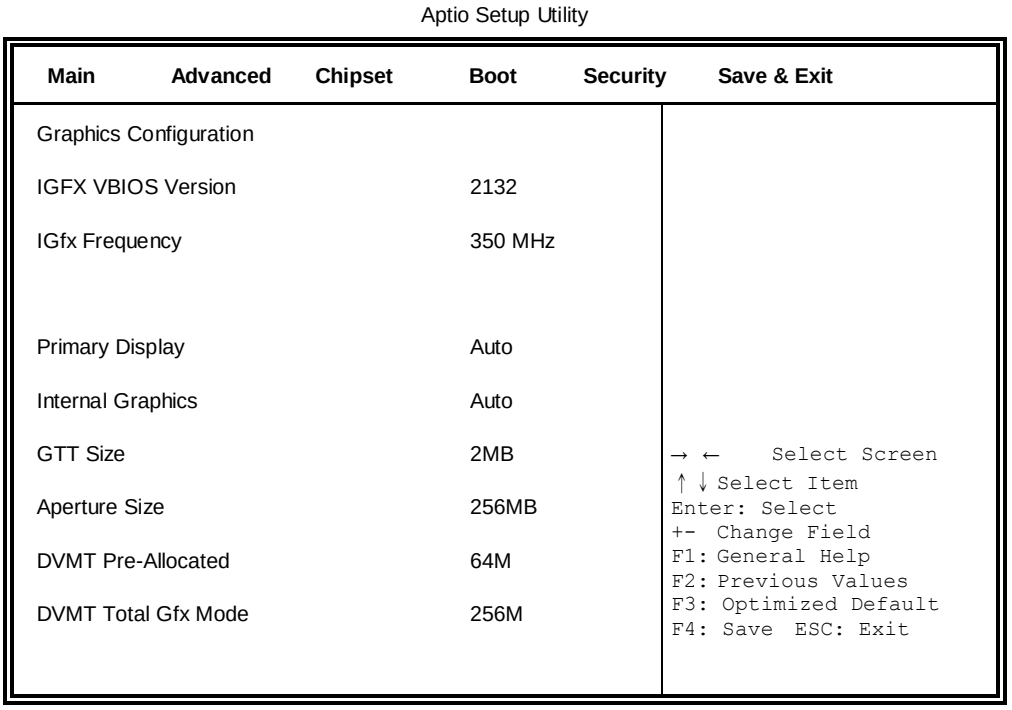
**Enable NB CRID**

Enable or disable NB CRID WorkAround.

**C-State Pre-Wake**

Controls C-State Pre-Wake feature for ARAT, in SSKPD[57].

## Graphics Configuration




### Primary Display

Select which of IGFX/PEG/PCI graphics device should be primary display or select SG for switchable Gfx.

### Internal Graphics

Keep IGD enabled based on the setup options.

### DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) graphics memory size used by the internal graphics device.

### DVMT Total Gfx Mem

Select DVMT 5.0 total graphics memory size used by the internal graphics device.

### Gfx Low Power Mode

This option is applicable for SFF only.

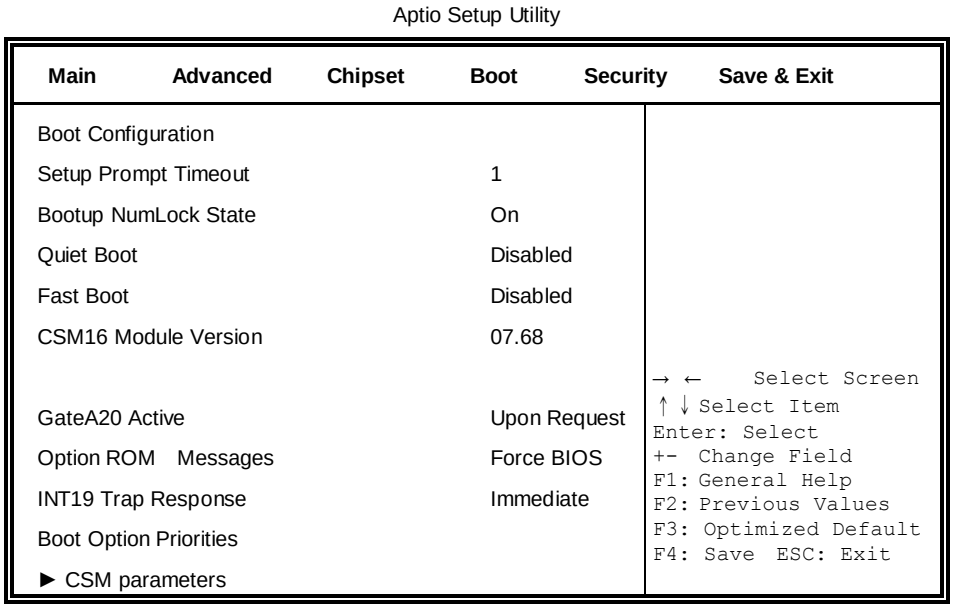
## Memory Configuration

Aptio Setup Utility

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|

| | | |
|---|---|---|
| Memory Information | | |
| Memory RC Version | 1.1.0.0 | |
| Memory Frequency | 1333 MHz | |
| Total Memory | 2048 MB (DDR3) | |
| DIMM#0 | 2048 MB (DDR3) | |
| DIMM#1 | Not Present | |
| CAS Latency (tCL) | 9 | |
| Minimum delay time | | → ← Select Screen |
| CAS to RAS (tRCDmin) | 9 | ↑ ↓ Select Item |
| Row Precharge (tRPmin) | 9 | Enter: Select |
| Active to Precharge (tRASmin) | 24 | +- Change Field |
| | | F1: General Help |
| | | F2: Previous Values |
| | | F3: Optimized Default |
| | | F4: Save ESC: Exit |

## Boot Settings




### Setup Prompt Timeout

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

### Bootup NumLock State

Select the keyboard NumLock state.

### Quiet Boot

Enables/Disables Quiet Boot option.

### Fast Boot

Enables/Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

### GateA20 Active

UPON REQUEST – GA20 can be disabled using BIOS services.
ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

### Option ROM Messages

Set display mode for Option ROM. Options are Force BIOS and Keep Current.

### INT19 Trap Response

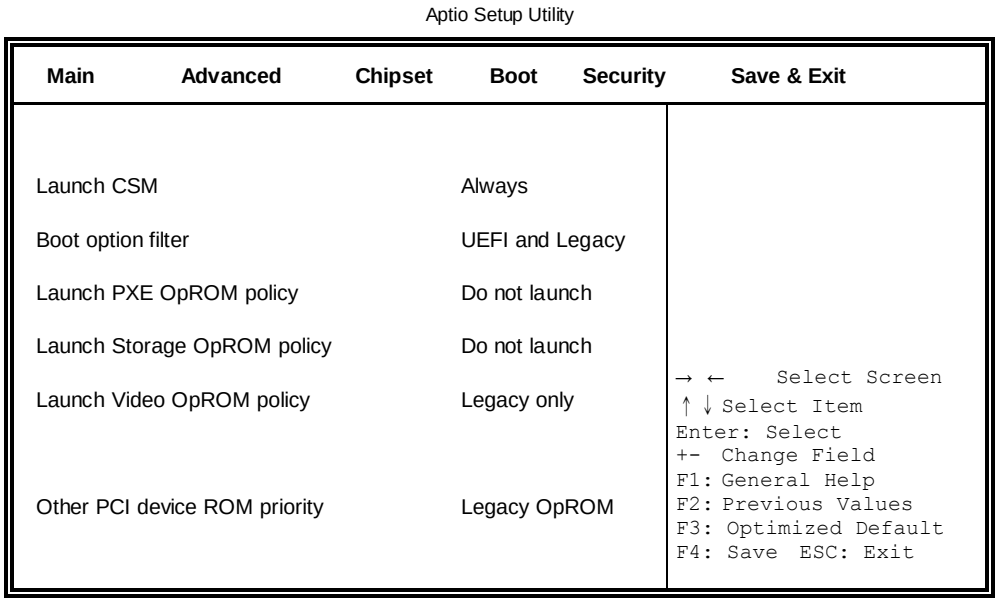
Enable: Allows Option ROMs to trap Int 19.

### Boot Option Priorities

Sets the system boot order.

### CSM parameters

This section allows you to configure the boot settings.




### Boot option filter

This option controls what devices system can boot to.

### Launch PXE OpROM policy

Controls the execution of UEFI and Legacy PXE OpROM.

### Launch Storatge OpROM policy

Controls the execution of UEFI and Legacy Storage OpROM.

### Launch Video OpROM policy

Controls the execution of UEFI and Legacy Video OpROM.

### Other PCI device ROM priority

For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.

## Security Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Aptio Setup Utility

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|---|---|---|---|---|---|

Password Description

If ONLY the Administrator's password is set, then this only limit access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights

The password length must be

in the following range:

Minimum length 3

Maximum length 20

Administrator Password

User Password

→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save ESC: Exit

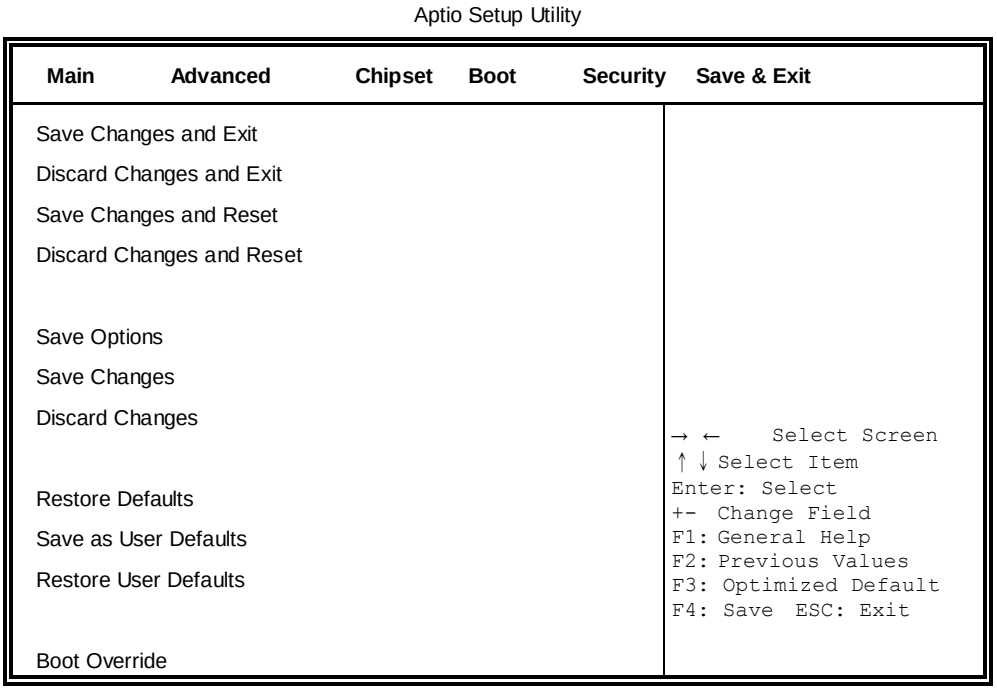
### Administrator Password

Set Setup Administrator Password.

### User Password

Set User Password.

## Save & Exit Settings




### Save Changes and Exit

Exit system setup after saving the changes.

### Discard Changes and Exit

Exit system setup without saving any changes.

### Save Changes and Reset

Reset the system after saving the changes.

### Discard Changes and Reset

Reset system setup without saving any changes.

### Save Changes

Save Changes done so far to any of the setup options.

### Discard Changes

Discard Changes done so far to any of the setup options.

### Restore Defaults

Restore/Load Defaults values for all the setup options.

### Save as User Defaults

Save the changes done so far as User Defaults.

### Restore User Defaults

Restore the User Defaults to all the setup options.

# CHAPTER 5 DRIVERS INSTALLATION

This section describes the installation procedures for software and drivers. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase.

**IMPORTANT NOTE:**

After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

## 5.1 Intel Chipset Software Installation Utility

The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation.

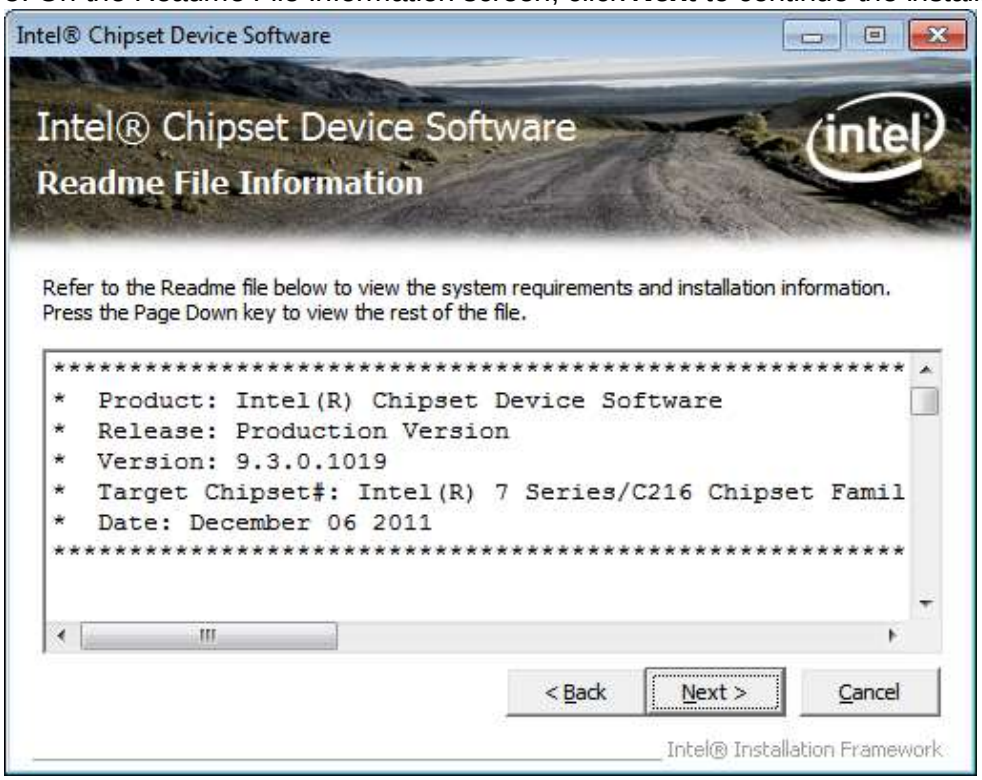
1. Insert the CD that comes with the board. Click ***Intel*** and then ***Intel(R) 7 Series Chipset Drivers***.

2. Click ***Intel(R) Chipset Software Installation Utility.***

3. When the Welcome screen to the Intel® Chipset Device Software appears, click ***Next*** to continue.


4. Click ***Yes*** to accept the software license agreement and proceed with the installation process.

5. On the Readme File Information screen, click ***Next*** to continue the installation.




6. The Setup process is now complete. Click ***Finish*** to restart the computer and for changes to take effect.

## 5.2 VGA Drivers Installation

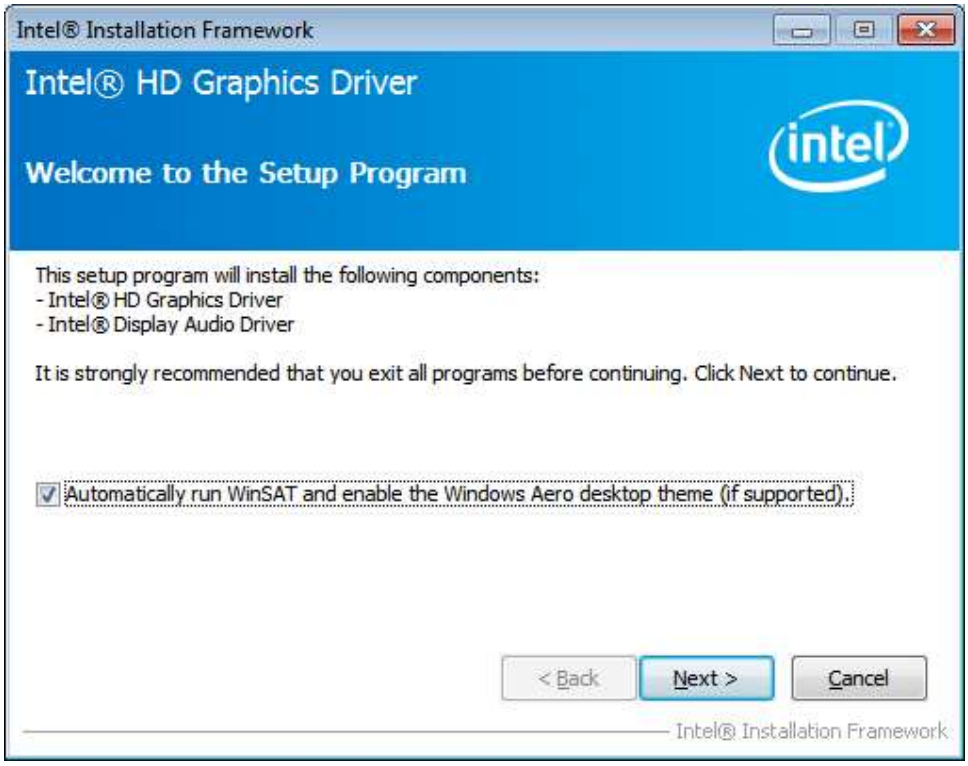
**NOTE: Before installing the Intel(R) Q77 Chipset Family Graphics Driver, the Microsoft .NET Framework 3.5 SPI should be first installed.**

To install the VGA drivers, follow the steps below.

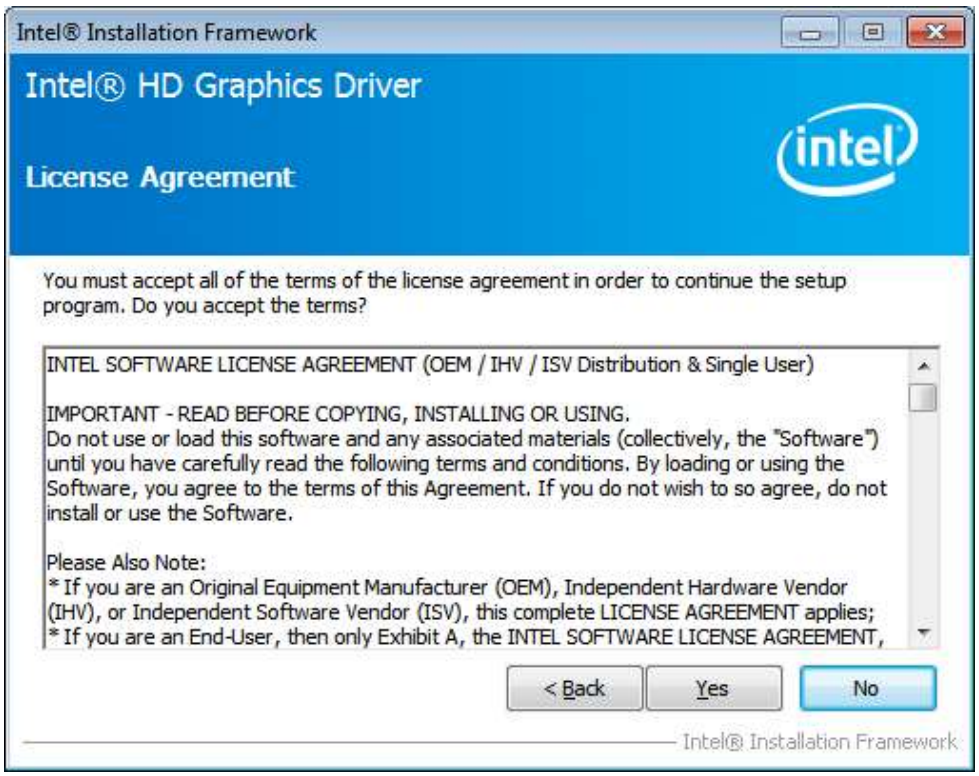
1. Insert the CD that comes with the board. Click ***Intel*** and then ***Intel(R) Q7 Series Chipset Drivers***.


2. Click ***Intel(R) Q77 Chipset Family Graphics Driver.***

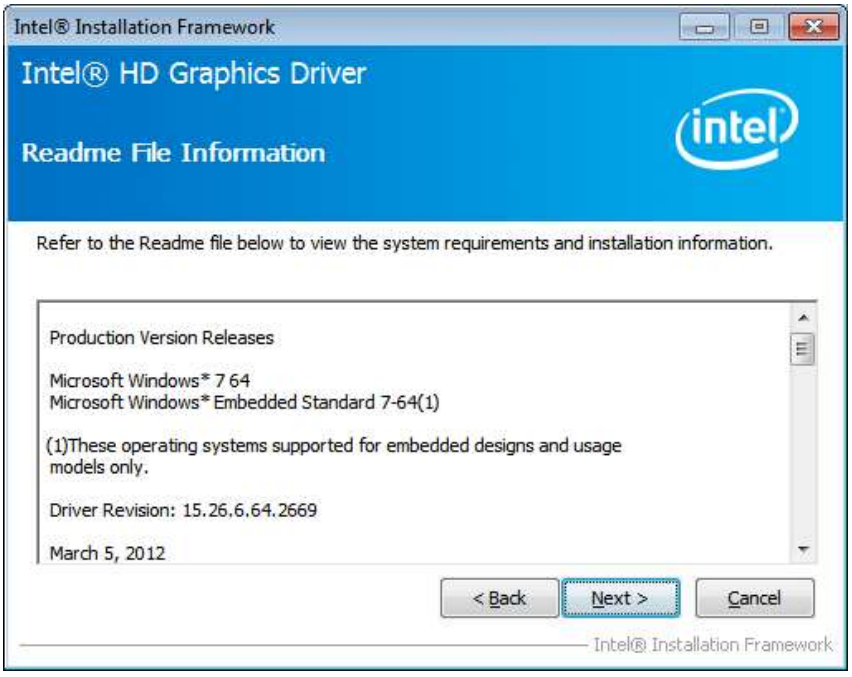
3. When the Welcome screen appears, click ***Next*** to continue.



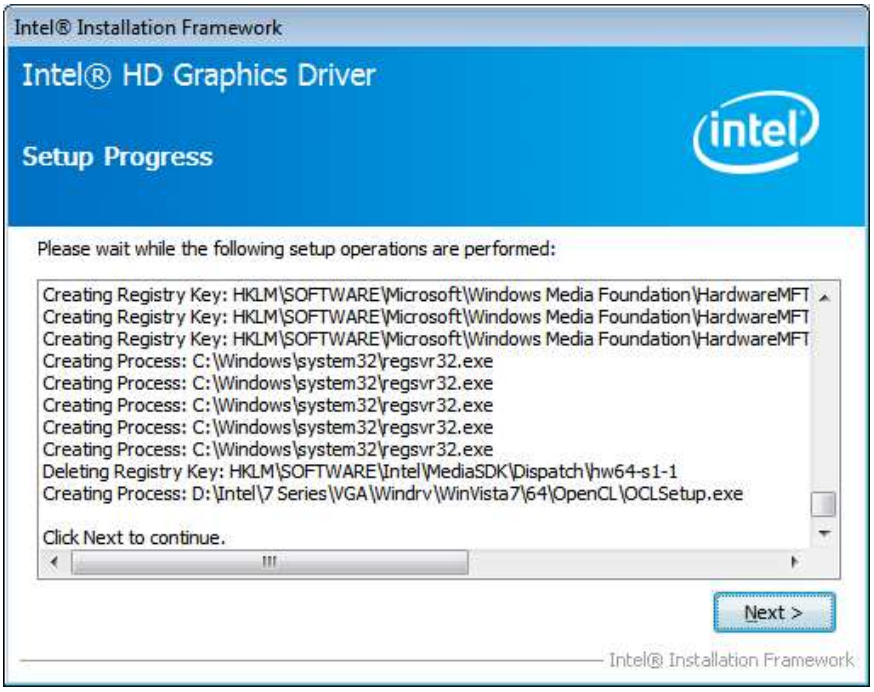

4. Click ***Yes*** to to agree with the license agreement and continue the installation.



5. On the Readme File Information screen, click ***Next*** to continue the installation of the Intel® Graphics Media Accelerator Driver.




6. On Setup Progress screen, click ***Next*** to continue.




7. Setup complete. Click ***Finish*** to restart the computer and for changes to take effect.

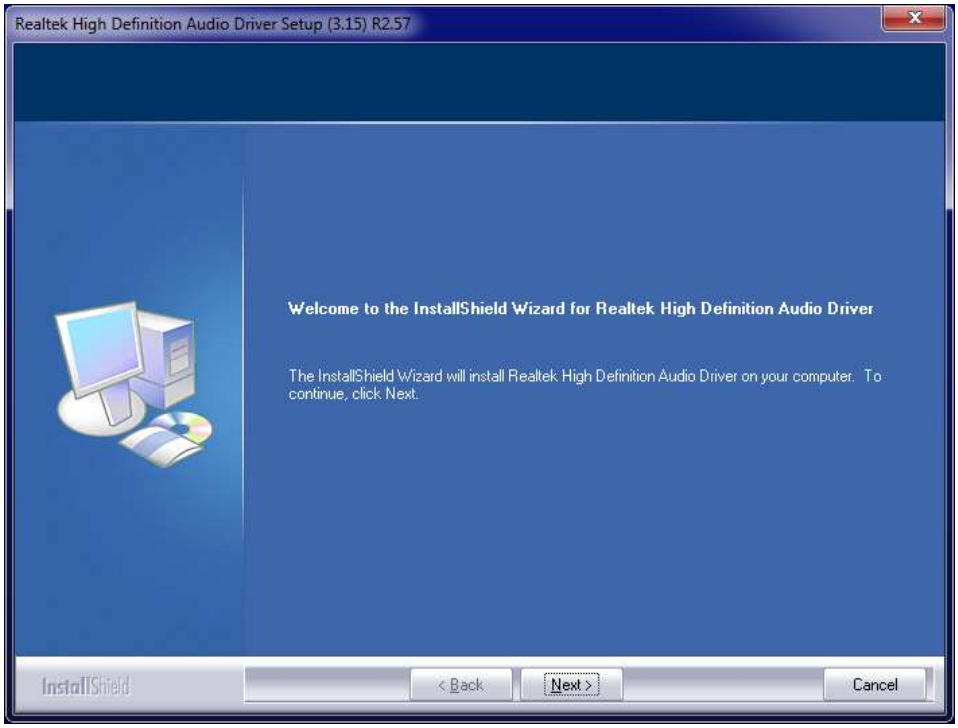
## 5.3 Realtek HD Audio Driver Installation

Follow the steps below to install the Realtek HD Audio Drivers.

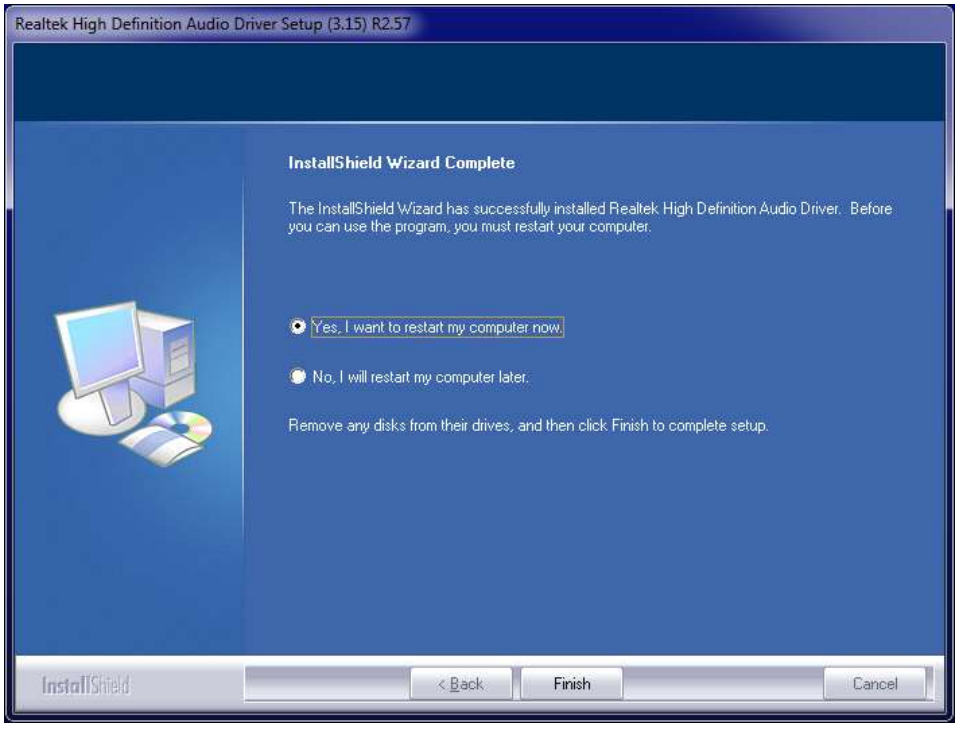
1. Insert the CD that comes with the board. Click ***Intel*** and then ***Intel(R) Q7 Series Chipset Drivers.***


2. Click ***Realtek High Definition Audio Driver.***

3. On the Welcome to the InstallShield Wizard screen, click ***Next*** to proceed with and complete the installation process.




4. The InstallShield Wizard Complete. Click ***Finish*** to restart the computer and for changes to take effect.

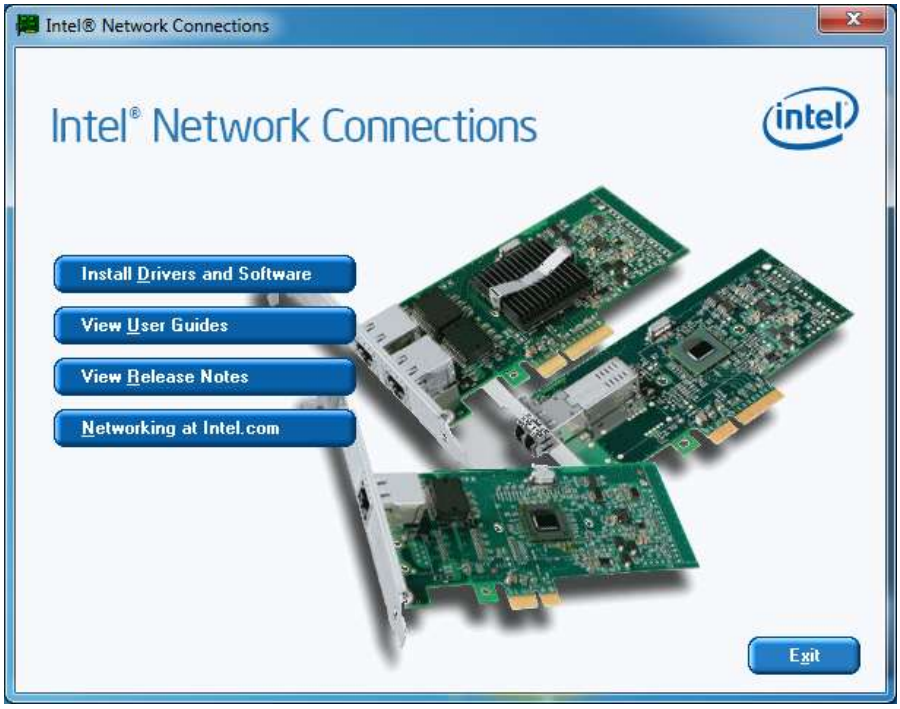


## 5.4 LAN Drivers Installation

1. Insert the CD that comes with the board. Click ***Intel*** and then ***Intel(R) Q7 Series Chipset Drivers.***

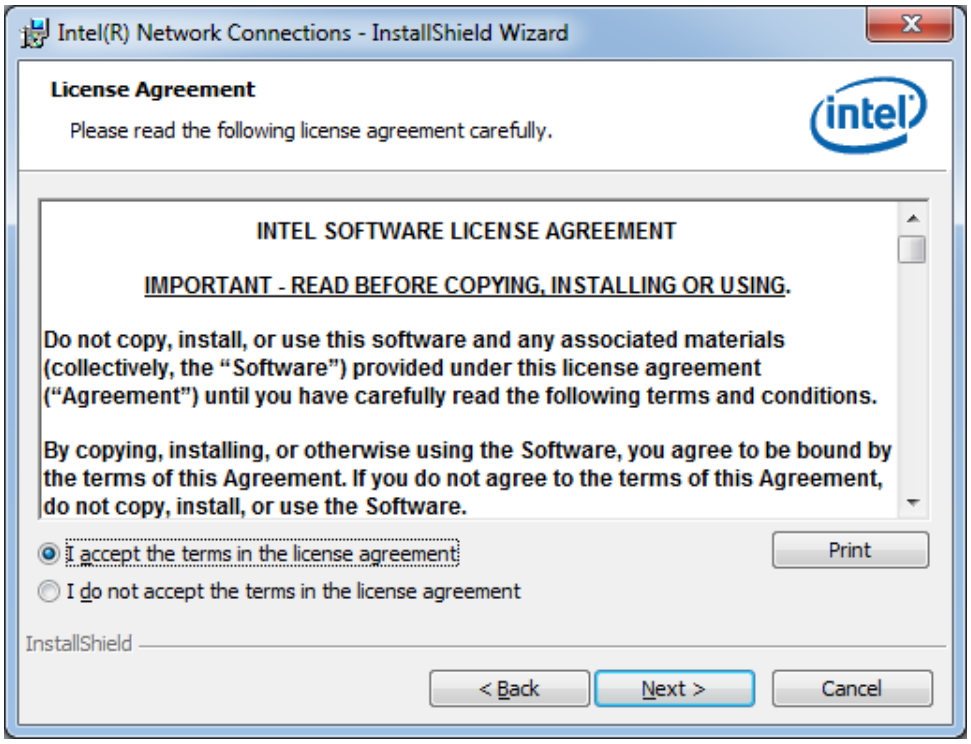

2. Click ***Intel(R) PRO LAN Network Driver.***

3. Click ***Install Drivers and Software.***

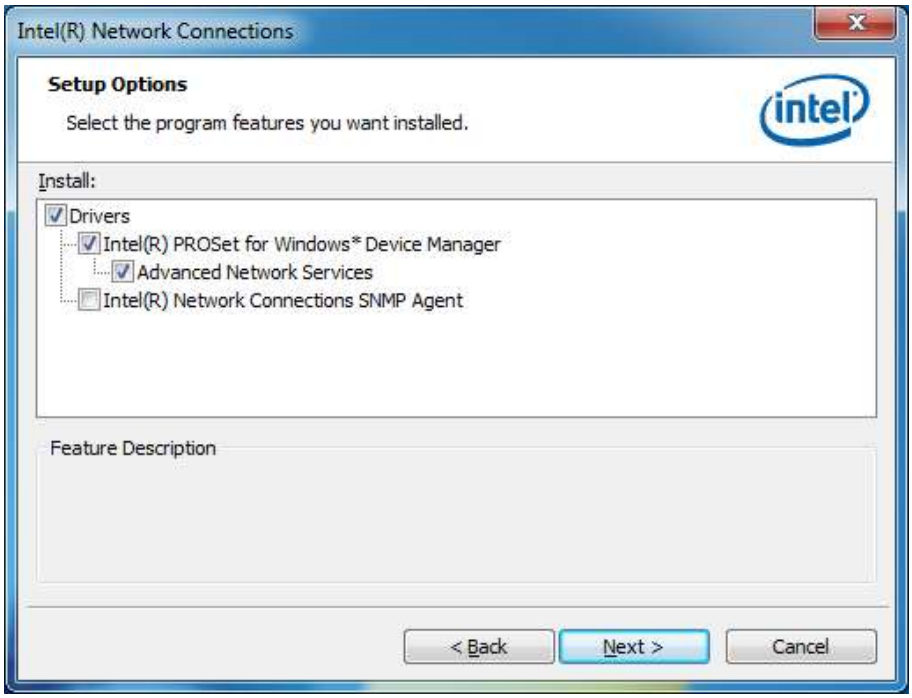



4. When the Welcome screen appears, click ***Next***.

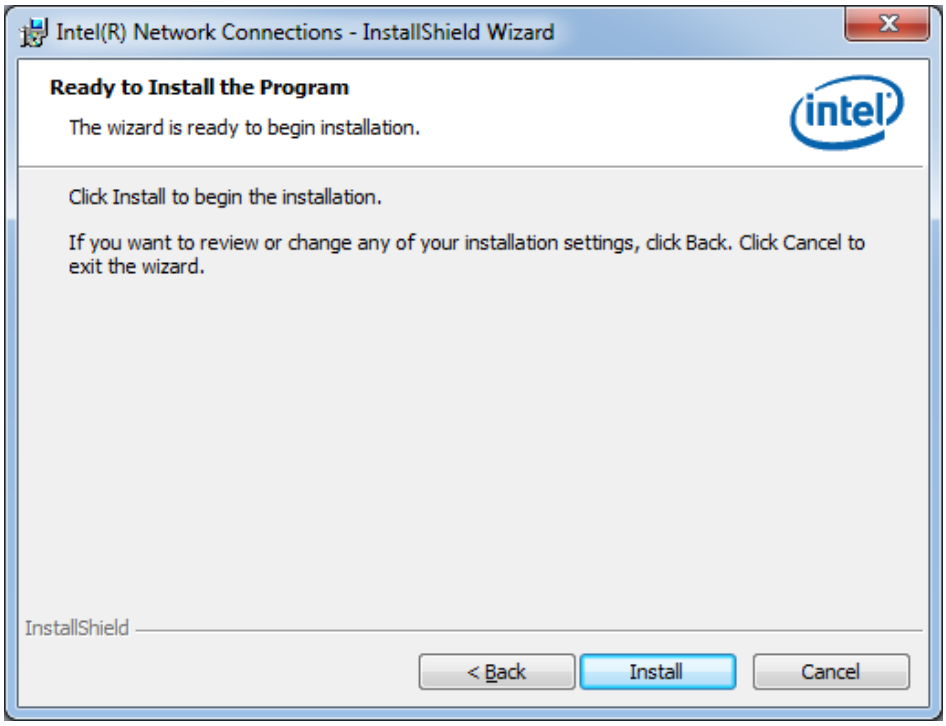
5. Click ***Next*** to to agree with the license agreement.



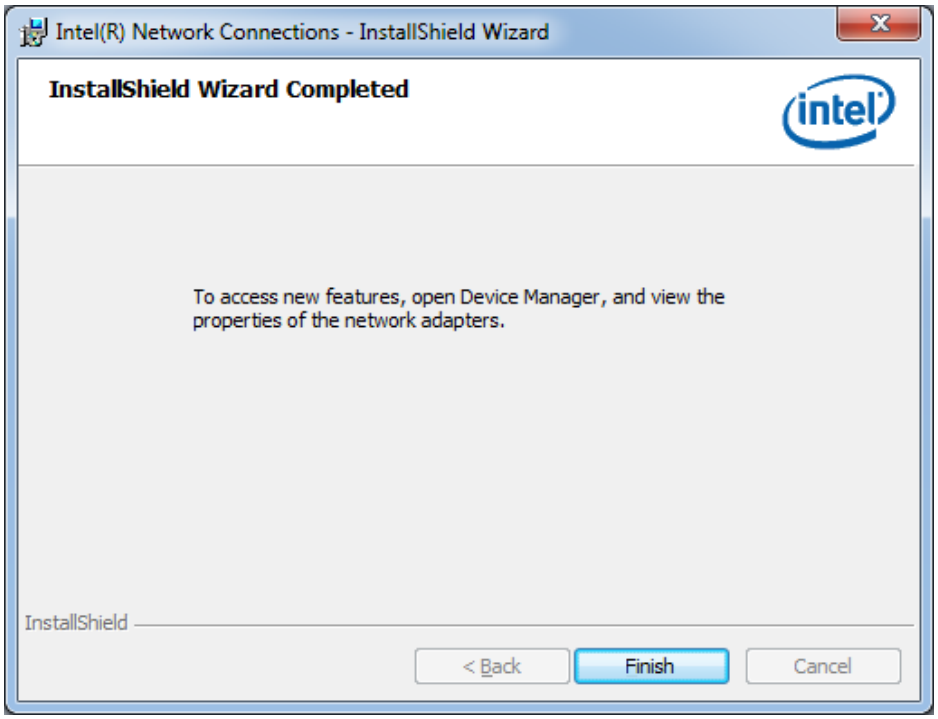

6. Click the checkbox for **Drivers** in the Setup Options screen to select it and click **Next** to continue.



7. The wizard is ready to begin installation. Click ***Install*** to begin the installation.




8. When InstallShield Wizard is complete, click ***Finish***.



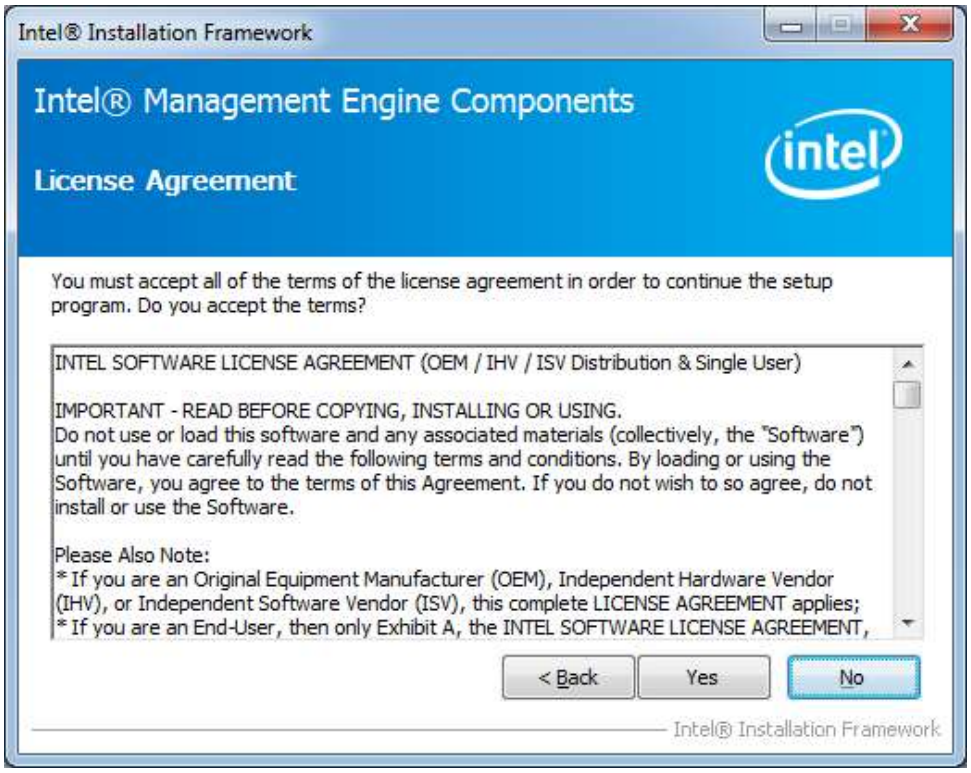
## 5.5 Intel® Management Engine Interface

Follow the steps below to install the Intel Management Engine.

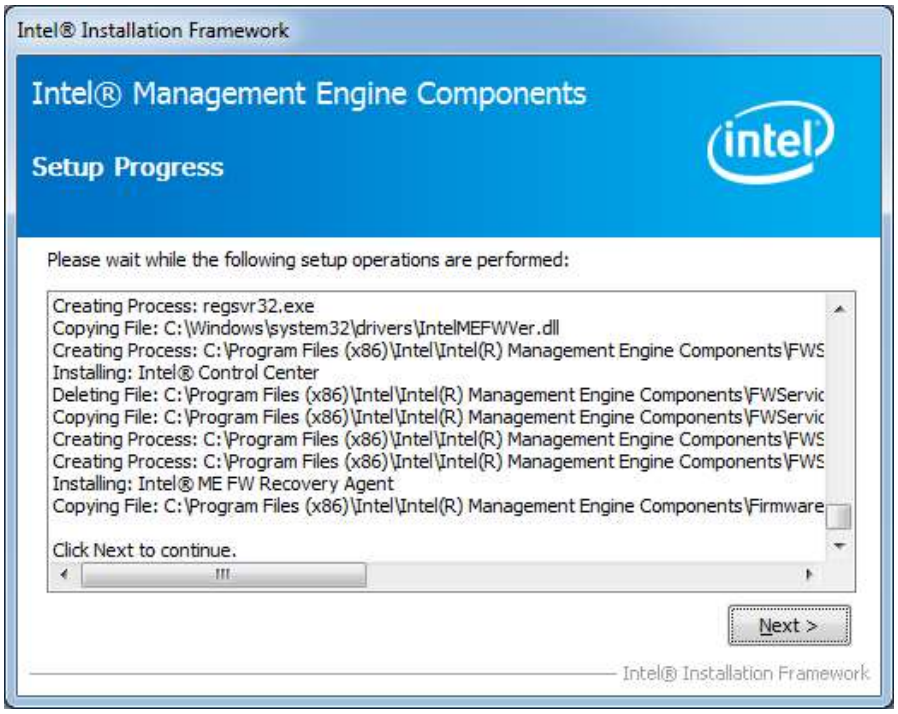
1. Insert the CD that comes with the board. Click ***Intel*** and then ***Intel(R) AMT 8.0 Drivers.***

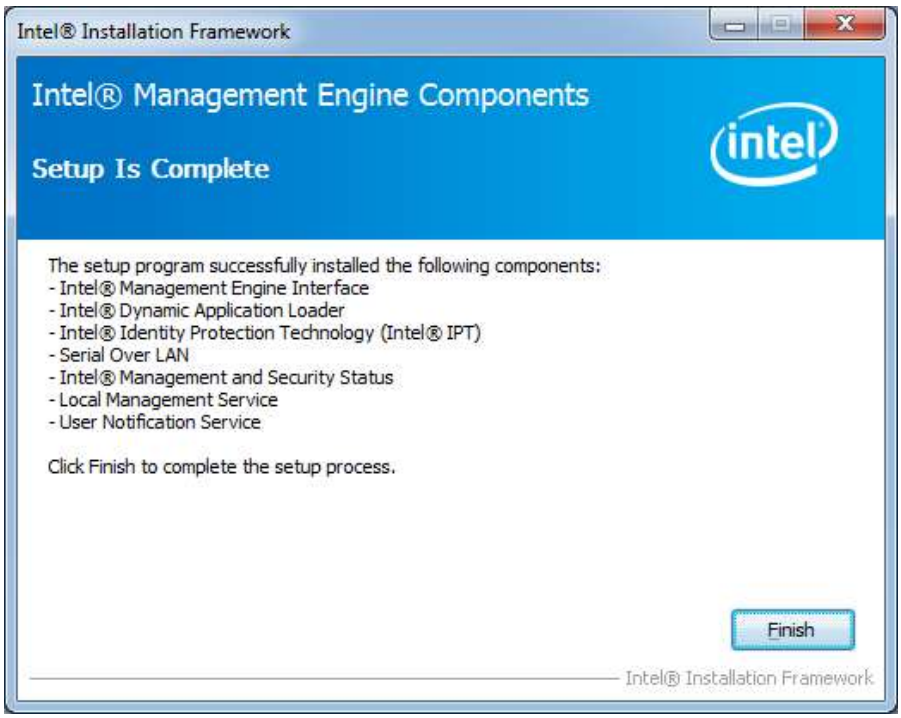
2. When the Welcome screen to the InstallShield Wizard for Intel® Management Engine Components, click the checkbox for **Install Intel® Control Center** & click ***Next***.


3. Click ***Yes*** to to agree with the license agreement.



4. When the Setup Progress screen appears, click ***Next***. Then, click ***Finish*** when the setup progress has been successfully installed.



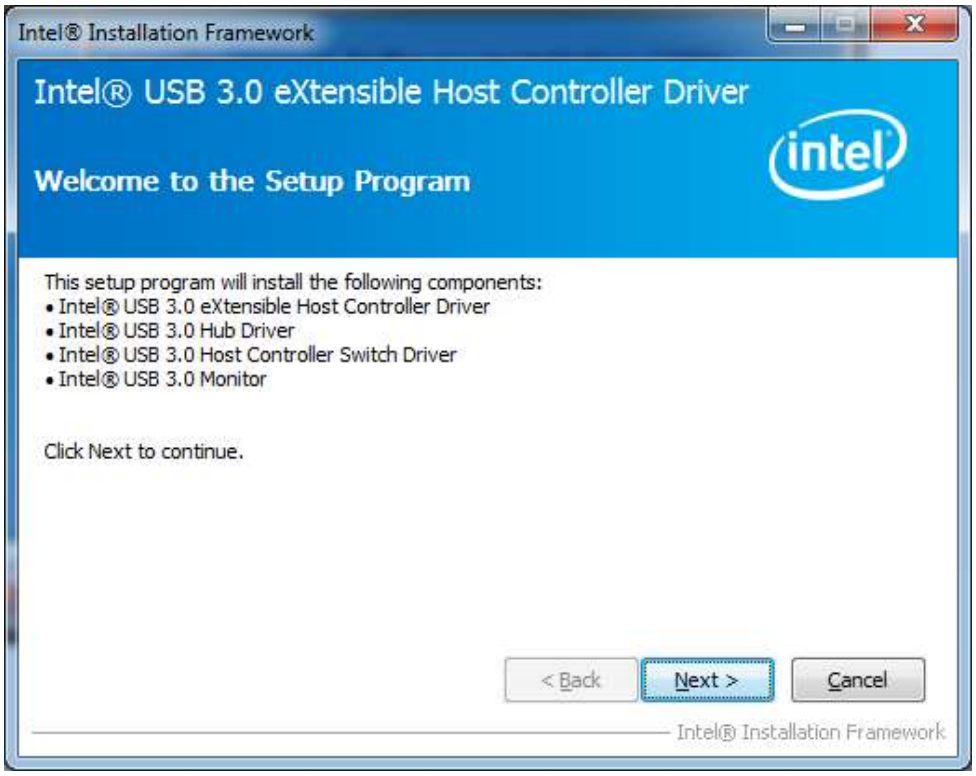



## 5.6 Intel® USB 3.0 Drivers

1. Insert the CD that comes with the board. Click ***Intel*** and then ***Intel(R) Q7 Series Chipset Drivers***.


2. Click ***Intel(R) USB 3.0 Drivers.***

3. When the Welcome screen to the InstallShield Wizard for Intel® USB 3.0 eXtensible Host Controller Driver, click ***Next***.



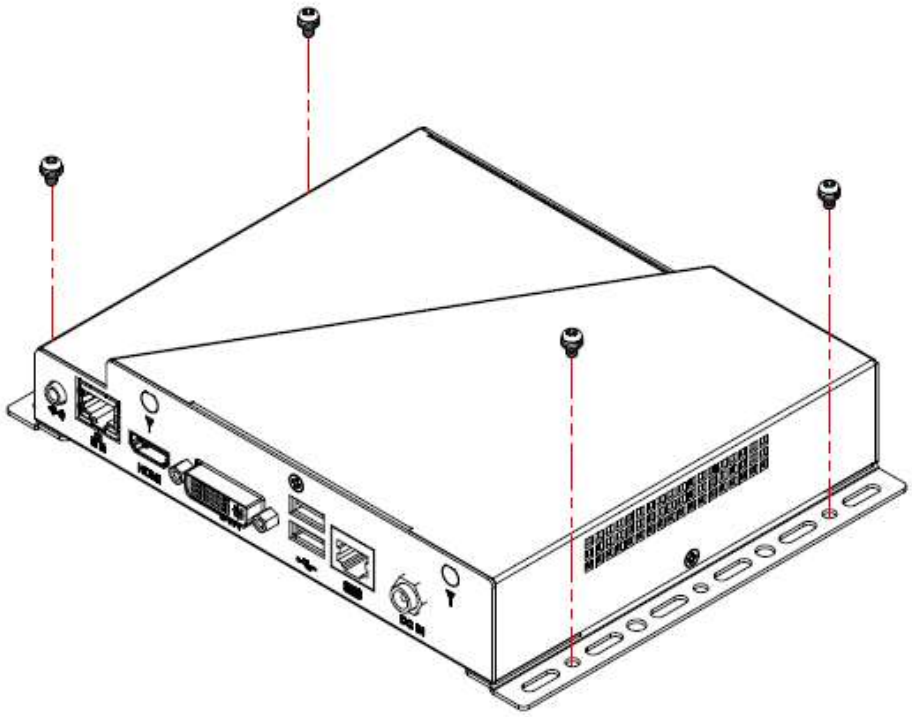

4. Click ***Yes*** to to agree with the license agreement and continue the installation.

5. On the Readme File Information screen, click ***Next*** to continue the installation of the Intel® USB 3.0 eXtensible Host Controller Driver.

6. Setup complete. Click ***Finish*** to restart the computer and for changes to take effect.

# Appendix

## Mounting SI-62 to the Wall



You can install SI-62 on wood, drywall surface over studs, or a solid concrete or metal plane directly. Ensure the installer uses at least four M3 length 6mm screws to secure the system on wall. ***Four M3 length 6mm screws are recommended to secure the system on wall.***

Fasteners are not included with the unit, and must be supplied by the installer. The types of fasteners required are dependent on the type of wall construction. Choose fasteners that are rated either ”Medium Duty“ or ”Heavy Duty.“ To assure proper fastener selection and installation, follow the fastener manufacturer’s recommendations.

## Wall Mounting Requirements

***Note:*** *Before mounting the system on wall, ensure that you are following all applicable building and electric codes.*

When mounting, ensure that you have enough room for power and signal cable routing. And have good ventilation for power adapter. The method of mounting must be able to support weight of the SI-62 plus the suspend weight of all the cables to be attached to the system. Use the following methods for mounting your system:

**Mounting to hollow walls**

- **Method 1: Wood surface** – A minimum wood thickness – 38mm (1.5in.) by 25.4 cm (10in.) – of high, construction – grade wood is recommended. **Note:** This method provides the most reliable attachment of the unit with little risk that the unit will come loose or require ongoing maintenance.
- **Method 2: Drywall walls** - Drywall over wood studs is acceptable.

**Mounting to a solid concrete or brick wall** - Mounts on a flat smooth surface.

## Selecting the Location

Plan the mounting location thoroughly. Locations such as walkway areas, hallways, and crowded areas are not recommended. Mount the unit to a flat, sturdy, structurally sound column or wall surface.

The best mounting surface is a standard countertop, cabinet, table, or other structure that is minimally the width and length of the unit. This recommendation reduces the risk that someone may accidentally walk into and damage the device. Local laws governing the safety of individuals might require this type of consideration.

## SI-62 Mounting Bracket Solution

SI-62 mounting bracket (IBASE) part number: SC2SI38----0A1100P

Please install SI-62 to the mounting bracket using 4 screws, as shown in the picture.