AXIOMTEK

# IMB211 Series

**Intel® Socket 1150 Core™ i7/ i5/ i3/ Celeron® Processors ATX Industrial Motherboard**

**User's Manual**

RoHS

## Disclaimers

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## CAUTION

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.



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**Printed in Taiwan**

## ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

## Trademarks Acknowledgments

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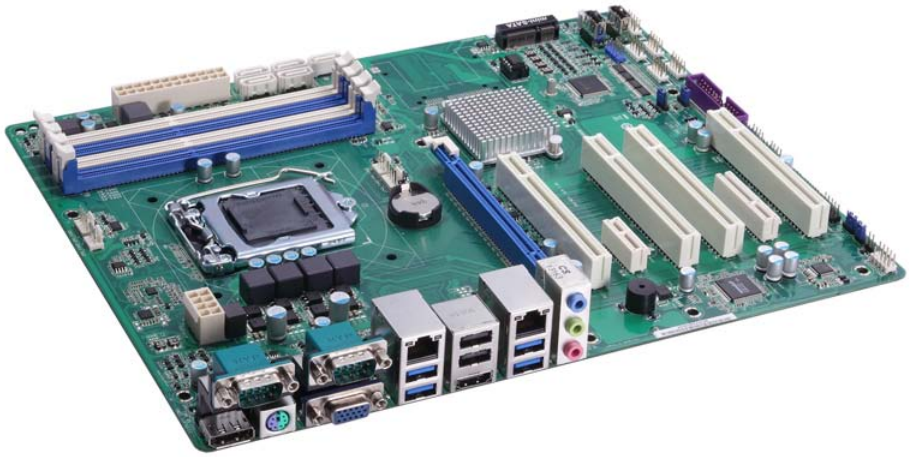
# Chapter 1
# Introduction



The IMB211 is an advanced ATX industrial motherboard based on the 4th Generation Intel® Core™ i7/ i5/ i3/ Celeron® processors (codename: Haswell) in LGA1150 socket with Intel® Q87 PCH. The optimized IMB211 is specially designed for better computing and visual performance; ideally used in every major industry for tasks ranging from financial modeling to designing complex buildings and vehicles. With its built-in Intel® HD Graphics P4000, this industrial grade motherboard delivers great 3D visual performance with triple display capability through DisplayPort, HDMI and VGA ports demanded by professional-grade CAD and media/entertainment fields.

In addition, the IMB211 supports Intel® Turbo Boost 2.0 technology, Intel® Hyper-Threading technology, Intel® HD Graphics with DX11 support, 3-D Tri-Gate transistors, 32GB DDR3 1600/1333MHz memory, and PCI-Express 3.0 x16 slot. It also features Intel® Active Management Technology 9.0 (iAMT), SATA RAID, as well as PCI-Express x4. x1 expansion making it ideal for applications with added security features.

## 1.1 Features

- LGA1150 socket 4th Generation Intel® Core™ i7/ i5/ i3/ Celeron® processors (codename: Haswell)
- Intel® Q87 PCH
- 4 DDR3 1600/1333MHz max. up to 32GB memory capacity
- Triple view display
- PCI-Express x16 Gen. 3 supported
- 4 SATA-600 with RAID 0, 1, 5 and 10
- 4 USB 3.0 supported
- iAMT 9.0 supported

## 1.2 Specifications

- **CPU**
  - Intel® Core™ i7/ i5/ i3/ Celeron® processors.

- **System Chipset**
  - Intel® Q87 PCH.

- **CPU Socket**
  - LGA1150 socket.

- **BIOS**
  - AMI BIOS via SPI interface with socket.

- **System Memory**
  - Four 240-pin DDR3 DIMM sockets.
  - Maximum up to 32GB DDR3 memory.
  - Support 1600/1333MHz memory.

- **L3 Cache**
  - Varies with CPU.

- **Onboard Multi I/O**
  - One PS/2 keyboard and mouse.
  - Six serial ports: Four ports support RS-232 in internal box headers. The other two ports support RS-232/422/485 on the rear I/O.

- **USB Interface**
  - Four USB 3.0 ports.
  - Ten USB 2.0 ports (2 on the rear I/O, 6 with box header and 2 vertical type connector).

- **Onboard Graphics**
  - Intel® HD Integrated Graphics.
  - Display memory: Max. shared system memory up to 1759MB.
  - One DisplayPort: Resolution max. up to 2560x1600 @ 75Hz.
  - One HDMI: Resolution max. up to 1920x1200 @ 75Hz.
  - One VGA: Resolution max. up to 2048x1536 @ 60Hz.

- **Ethernet**
  - LAN1: Intel® i210 supports 1000/100/10 Base-T Gigabit Ethernet with Wake-on-LAN, PXE Boot ROM and iAMT.
  - LAN2: Intel® i217LM, supports 1000/100/10 Base-T Gigabit Ethernet with Wake-on-LAN, PXE Boot ROM and iAMT.

- **Serial ATA**
  - Five Serial ATA 3.0 ports (6Gb/s performance) with RAID 0/1/5/10.

- **Audio**
  - HD codec audio as MIC-in/line-in/line-out.

- **Expansion Slot**
  - One PCI-Express x16 Gen. 3.
  - One PCI-Express x4 Gen. 2.
  - One PCI-Express x1 Gen. 2.
  - Four PCI.
  - One mSATA.

- **CFast™ Socket (Optional)**
  - One CFast™ Socket.

- **Watchdog Timer**
  - Reset supported (1~255 levels).

**Note**

***All specifications and images are subject to change without notice.***

## 1.3 Utilities Supported

- Intel® chipset drivers
- Intel® graphics drivers
- Ethernet utility and drivers
- Intel® USB 3.0 drivers
- HD audio drivers
- RAID utility
- iAMT utility and drivers

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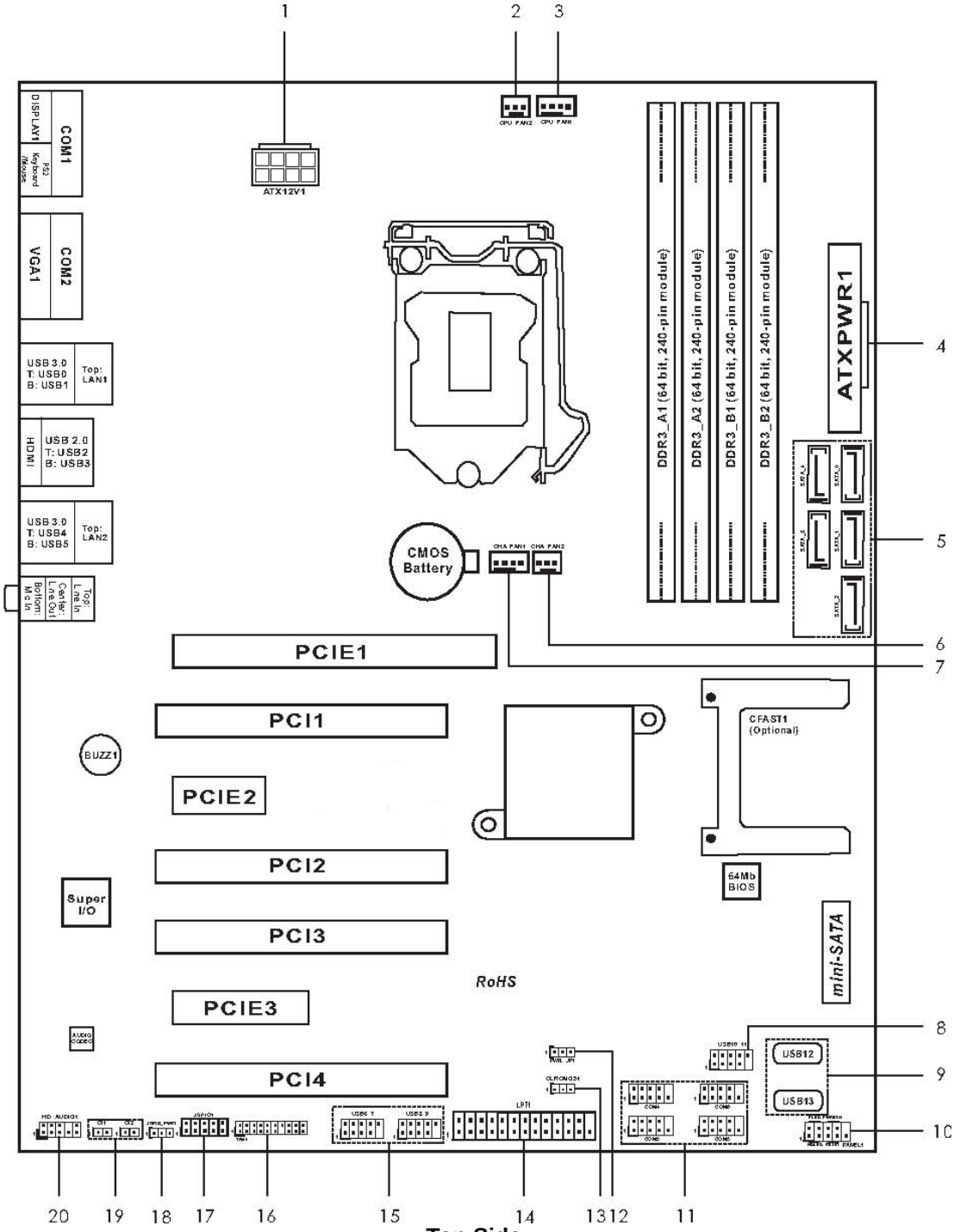
# Chapter 2
# Board and Pin Assignments

## 2.1 Board Layout




**Top Side**

**1 : 12V ATX Power Connector**

**2 : 3-pin CPU Fan Connector**

**3 : 4-pin CPU Fan Connector**

**4 : 24-pin ATX Power Input Connector**

**5 : SATA 3.0 Connectors**

**6 : 3-pin Chassis Fan Connector**

**7 : 4-pin Chassis Fan Connector**

**8 : USB 2.0 Header**

**9 : USB 2.0 Ports**

**10 : System Panel Header**

**11 : RS-232 Port 4 Headers**

**12 : AT/ATX Power Mode Selection**

**13 : Restore BIOS Optimal Defaults Jumper**

**14 : Printer Port Header**

**15 : USB 2.0 Header**

**17 : Digital Input / Output Header**

**18 : Digital Input / Output Power Selection**

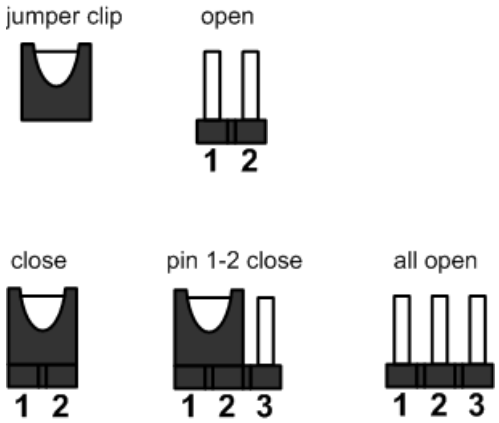
**19 : Chassis Intrusion Headers**

**20 : Front Panel Audio Header**

## 2.2 Rear Panel I/O

## 2.3 Jumper Settings

Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close. And remove jumper clip from 2 jumper pins to open. The following illustration shows how to set up jumper.



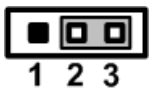

Before applying power to IMB211 Series, please make sure all of the jumpers are in factory default position. Below you can find a summary table of all jumpers and onboard default settings.

| Jumper | Description | Setting |
|---|---|---|
| PWR_JP1 | AT/ATX Power Mode Selection<br>Default: ATX Mode | 2-3 Close |
| CLRCMOS1 | Restore BIOS Optimal Defaults<br>Default: Normal Operation | 1-2 Close |
| JGPIO_PWR1 | Digital I/O Power Selection<br>Default: +12V | 1-2 Close |

### 2.3.1 AT/ATX Power Mode Selection (PWR_JP1)

This jumper allows you to select AT mode or ATX mode.

| Function | Setting |
|---|---|
| AT mode | 1-2 close |
| ATX mode (Default) | 2-3 close |




### 2.3.2 Restore BIOS Optimal Defaults (CLRCMOS1)

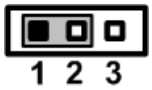
CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin 2 and pin 3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile and MAC address will be cleared only if the CMOS battery is removed.

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


### 2.3.3 Digital I/O Power Selection (JGPIO_PWR1)

This jumper allows you to select digital input/output power.

| Function | Setting |
|---|---|
| +12V (Default) | 1-2 close |
| +5V | 2-3 close |



## 2.4 Headers and Connectors

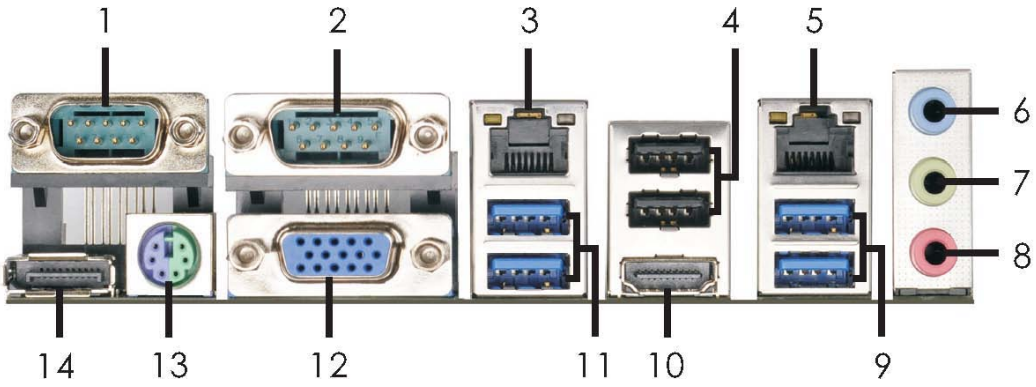
Signals go to other parts of the system through headers and connectors. Loose or improper connection might cause problems, please make sure all headers and connectors are properly and firmly connected. Here is a summary table showing headers and connectors on the hardware.

**Note**

***Onboard headers and connectors are NOT jumpers. Do NOT place jumper clips over these headers and connectors. Placing jumper clips over the headers and connectors will cause permanent damage of the motherboard!***

| Header and Connector | Description |
|---|---|
| JGPIO1 | Digital I/O Header |
| CPU_FAN1~CPU_FAN2 | CPU Fan Connectors |
| CHA_FAN1~CHA_FAN2 | Chassis Fan Connectors |
| ATXPWR1 | ATX Power Input Connector |
| ATX12V1 | 12V ATX Power Input Connector |
| COM3~COM6 | RS-232 Port 4 Headers |
| PANEL1 | System Panel Header |
| SATA_0~SATA_2, SATA_4~SATA_5 | Serial ATA 3.0 Connectors |
| USB6_7, USB8_9, USB10_11, USB12, USB13 | USB 2.0 Headers |
| CI1~CI2 | Chassis Intrusion Headers |
| HD_AUDIO1 | Front Panel Audio Header |
| LPT1 | Printer Port Header |
| CFAST1 (Optional) | CFast™ Socket |
| PCI1~PCI4 | PCI Slots |
| PCIE1 | PCI-Express x16 Slot |
| PCIE2 | PCI-Express x1 Slot |
| PCIE3 | PCI-Express x4 Slot |
| mini-SATA | mSATA Connector |
| DDR3_A1, DDR3_A2 | 240-pin DDR3 DIMM Slot A1 and A2 |
| DDR3_B1, DDR3_B2 | 240-pin DDR3 DIMM Slot B1 and B2 |

### 2.4.1 Rear Panel Connectors

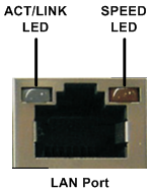



| | | | |
|---|---|---|---|
| **1** | **COM Port (COM1)** | **8** | **Microphone (Pink)** |
| **2** | **COM Port (COM2)** | **9** | **USB 3.0 Ports (USB3_45)** |
| *** 3** | **LAN RJ-45 Port** | **10** | **HDMI Port (HDMI1)** |
| **4** | **USB 2.0 Ports (USB23)** | **11** | **USB 3.0 Ports (USB3_01)** |
| *** 5** | **LAN RJ-45 Port** | **12** | **D-Sub Port (VGA1)** |
| **6** | **Line-in (Light Blue)** | **13** | **PS/2 Mouse and Keyboard Port** |
| **7** | **Line-out (Lime)** | **14** | **DisplayPort (DP1)** |

* There are two LEDs next to the LAN port. Please refer to the table below for the LAN port LED indications.

**LAN Port LED Indications**

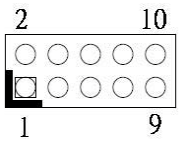
| Activity/Link LED | | SPEED LED | |
|---|---|---|---|
| **Status** | **Description** | **Status** | **Description** |
| OFF | No link | OFF | 10Mbps connection |
| Blinking | Data activity | Orange | 100Mbps connection |
| ON | Link | Green | 1Gbps connection |




### 2.4.2 Digital I/O Header (JGPIO1)

The board is equipped with a digital I/O connector that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers and sense warning signals from an Uninterrupted Power System (UPS), or perform store security control.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | Digital Output 0 | 2 | Digital Input 0 |
| 3 | Digital Output 1 | 4 | Digital Input 1 |
| 5 | Digital Output 2 | 6 | Digital Input 2 |
| 7 | Digital Output 3 | 8 | Digital Input 3 |
| 9 | JGPIO_PWR1 | 10 | GND |

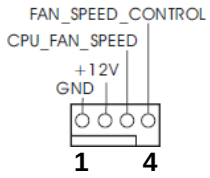


### 2.4.3 Fan Connectors (CPU_FAN1~CPU_FAN2, CHA_FAN1~CHA_FAN2)

Fans are always needed for cooling down CPU and system temperature. The board has four fan connectors.

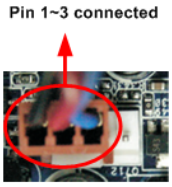
The CPU_FAN1 and CPU_FAN2 are for CPU fan interfaces. Please connect the CPU fan cable to the connector and match the black wire to the ground pin.

| Pin | CPU_FAN1 Signal |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | CPU_FAN_SPEED |
| 4 | FAN_SPEED_CONTROL |



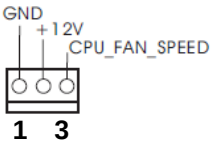

**Note**

***Though this motherboard provides 4-pin CPU fan (Quiet Fan) support, the 3-pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-pin CPU fan to the CPU fan connector on this motherboard, please connect it to pin 1~3.***



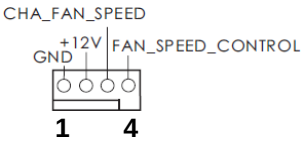

3-pin fan installation

| Pin | CPU_FAN2 Signal |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | CPU_FAN_SPEED |

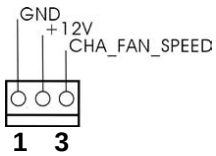



The CHA_FAN1 and CHA_FAN2 are for chassis fan interfaces. Please connect the fan cable to the fan connector and match the black wire to the ground pin.

| Pin | CHA_FAN1 Signal |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | CHA_FAN_SPEED |
| 4 | FAN_SPEED_CONTROL |




| Pin | CHA_FAN2 Signal |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | CHA_FAN_SPEED |

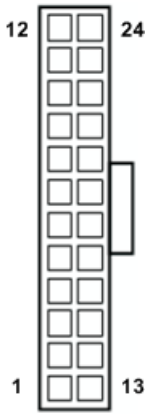


### 2.4.4 ATX Power Input Connectors (ATXPWR1, ATX12V1)

Steady and sufficient power can be supplied to all components on the board by connecting power connector. Please make sure all components and devices are properly installed before connecting the power connector. External power supply plug fits into this connector in only one orientation. Properly press down power supply plug until it completely and firmly fits into this connector. Loose connection may cause system instability.

The ATXPWR1 is a 24-pin ATX power connector. Please connect an ATX power supply to this connector.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | 3.3V | 13 | 3.3V |
| 2 | 3.3V | 14 | -12V |
| 3 | GND | 15 | GND |
| 4 | +5V | 16 | PS_ON |
| 5 | GND | 17 | GND |
| 6 | +5V | 18 | GND |
| 7 | GND | 19 | GND |
| 8 | PWR OK | 20 | -5V |
| 9 | 5VSB | 21 | +5V |
| 10 | +12V | 22 | +5V |
| 11 | +12V | 23 | +5V |
| 12 | 3.3V | 24 | GND |



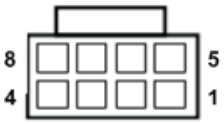

**Note**

***Though this motherboard provides 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use the 20-pin ATX power supply, please plug your power supply along with pin 1 and pin 13.***


**20-pin ATX power supply installation**

The ATX12V1 is an 8-pin ATX power connector. Please connect a 12V ATX power supply to this connector.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | GND | 5 | +12V |
| 2 | GND | 6 | +12V |
| 3 | GND | 7 | +12V |
| 4 | GND | 8 | +12V |




**Note**

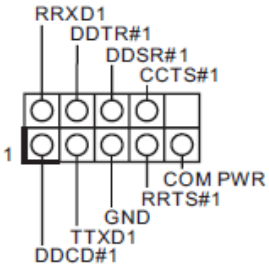
***Though this motherboard provides 8-pin 12V ATX power connector, it can still work if you adopt a traditional 4-pin 12V ATX power supply. To use the 4-pin ATX power supply, please plug your power supply along with pin 1 and pin 5.***


**4-pin 12V ATX power supply installation**

## 2.4.5 RS-232 Port 4 Headers (COM3~COM6)

**COM3/COM4/COM5/COM6:**

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | DDCD#1 | 2 | RRXD1 |
| 3 | TTXD1 | 4 | DDTR#1 |
| 5 | GND | 6 | DDSR#1 |
| 7 | RRTS#1 | 8 | CCTS#1 |
| 9 | COM PWR | | |




## 2.4.6 RS-232/422/485(COM1~COM2)

Only COM1 and COM2 support RS-232/422/485 mode.

**COM1/COM2: (RS-232)**

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | DDCD#1 | 2 | RRXD1 |
| 3 | TTXD1 | 4 | DDTR#1 |
| 5 | GND | 6 | DDSR#1 |
| 7 | RRTS#1 | 8 | CCTS#1 |
| 9 | COM PWR | | |

**COM1/COM2: (RS-422)**

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | TX- | 2 | RX+ |
| 3 | TX+ | 4 | RX- |
| 5 | GND | 6 | N.C. |

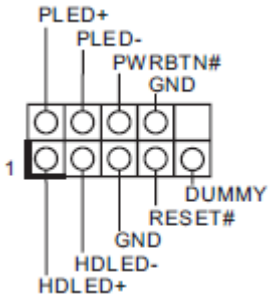
**COM1/COM2: (RS-485)**

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | RTX- | 2 | N.C. |
| 3 | RTX+ | 4 | N.C. |
| 5 | GND | 6 | N.C. |

### 2.4.7 System Panel Header (PANEL1)

This header accommodates several system front panel functions.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | HDLED+ | 2 | PLED+ |
| 3 | HDLED- | 4 | PLED- |
| 5 | GND | 6 | PWRBTN# |
| 7 | RESET# | 8 | GND |
| 9 | DUMMY | | |




Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

**PWRBTN (Power Switch)**
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

**RESET (Reset Switch)**
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

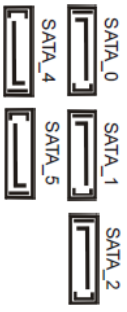
**PLED (System Power LED)**
Connect to the power status indicator on the chassis front panel. The LED is ON when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is OFF when the system is in S4 sleep state or powered off (S5).

**HDLED (Hard Drive Activity LED)**
Connect to the hard drive activity LED on the chassis front panel. The LED is ON when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly

### 2.4.8 Serial ATA 3.0 Connectors (SATA_0~SATA_2, SATA_4~SATA_5)

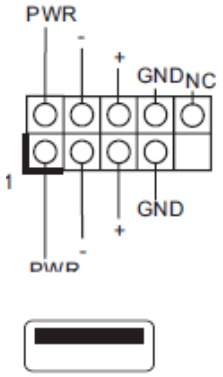
These five Serial ATA 3.0 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0Gb/s data transfer rate.



### 2.4.9 USB 2.0 Headers (USB6_7, USB8_9, USB10_11, USB12, USB13)

Besides two USB 2.0 ports on the I/O panel, there are two headers and two ports on this motherboard. Each USB 2.0 header can support two ports.

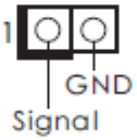
| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | PWR | 2 | PWR |
| 3 | USB DX- | 4 | USB DY- |
| 5 | USB DX+ | 6 | USB DY+ |
| 7 | GND | 8 | GND |
| | | 10 | NC |




### 2.4.10 Chassis Intrusion Headers (CI1~CI2)

This motherboard supports CASE OPEN detection feature that detects if the chassis cover has been removed. This feature requires a chassis with chassis intrusion detection design.

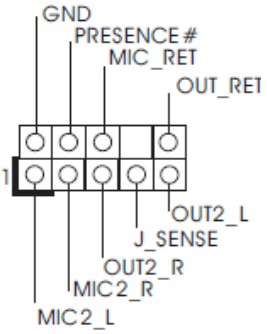
| Pin | Signal |
|---|---|
| 1 | Signal |
| 2 | GND |




### 2.4.11 Front Panel Audio Header (HD_AUDIO1)

This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

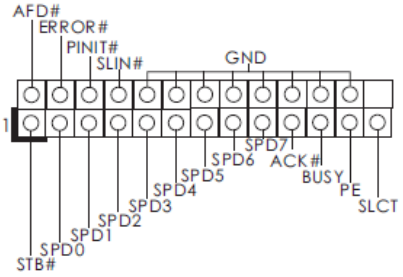
| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | MIC2_L | 2 | GND |
| 3 | MIC2_R | 4 | PRESENCE# |
| 5 | OUT2_R | 6 | MIC_RET |
| 7 | J_SENSE | | |
| 9 | OUT2_L | 10 | OUT_RET |



### 2.4.12 Printer Port Header (LPT1)

This is an interface for printer port cable that allows convenient connection of printer devices.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | STB# | 2 | AFD# |
| 3 | SPD0 | 4 | ERROR# |
| 5 | SPD1 | 6 | PINIT# |
| 7 | SPD2 | 8 | SLIN# |
| 9 | SPD3 | 10 | GND |
| 11 | SPD4 | 12 | GND |
| 13 | SPD5 | 14 | GND |
| 15 | SPD6 | 16 | GND |
| 17 | SPD7 | 18 | GND |
| 19 | ACK# | 20 | GND |
| 21 | BUSY | 22 | GND |
| 23 | PE | 24 | GND |
| 25 | SLCT | | |



# Chapter 3
# Hardware Installation

This is an ATX form factor (12.0" x 9.6", 30.5 x 24.4cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.


**Note**

***Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.***

## 3.1 Screw Holes

Place screws into the holes to secure the motherboard to the chassis


**Note**

***Do not over-tighten the screws! Doing so may damage the motherboard.***

## 3.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.


**Note**

***Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals and/or components.***

## 3.3 Installation of Memory Modules (DIMM)

This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology.

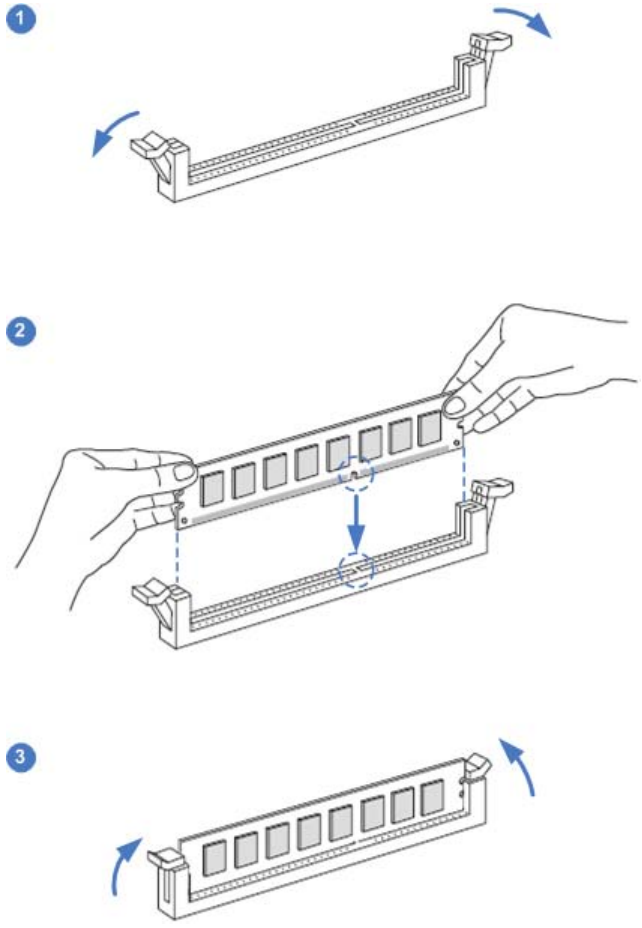
Note

1. ***For dual channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR3 DIMM pairs.***
2. ***It is unable to activate Dual Channel Memory Technology with only one or three memory module installed.***
3. ***It is not allowed to install a DDR or DDR2 memory module into a DDR3 slot; otherwise, this motherboard and DIMM may be damaged.***

| Priority | DDR3_A1 | DDR3_A2 | DDR3_B1 | DDR3_B2 |
|---|---|---|---|---|
| 1 | | Populated | | Populated |
| 2 | Populated | | Populated | |
| 3 | Populated | Populated | Populated | Populated |

Note

***The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.***



## 3.4 Expansion Slots (PCI and PCI-Express Slots)

There are 4 PCI slots, 3 PCI-Express slots and 1 CFast™ card socket (optional) on this motherboard.

**PCI slots:**
PCI slots are used to install expansion cards that have the 32-bit PCI interface.

**PCIE slots:**
PCIE1 (PCIE x16 slot; Blue) is used for PCI-Express x16 lane width graphics cards.
PCIE2 (PCIE x1 slot; White) is used for PCI-Express cards with x1 lane width cards.
PCIE3 (PCIE x4 slot; White) is used for PCI-Express x4 lane width graphics cards.

**CFast™ card socket (optional):**
CFAST1 (CFast™ card socket) is used for CFast™ cards.

## 3.5 Installing an Expansion Card

1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Fasten the card to the chassis with screws.
6. Replace the system cover.

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# Chapter 4
# Hardware Description

## 4.1 Microprocessors

The IMB211 Series supports Intel® Core™ i7/ i5/ i3/ Celeron® processors, which enable your system to operate under Windows® 7, Windows® 8 and Linux environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

## 4.2 BIOS

The IMB211 Series uses AMI Plug and Play BIOS with a single SPI Flash.

## 4.3 System Memory

The IMB211 Series supports four 240-pin DDR3 DIMM sockets for a maximum memory of 32GB DDR3 SDRAMs. The memory module comes in sizes of 1GB, 2GB, 4GB and 8GB.

## 4.4 I/O Port Address Map

The Intel® Core™ i7/ i5/ i3/ Celeron® processors communicate via I/O ports. Total 1KB port addresses are available for assigning to other devices via I/O expansion cards.

| Resource | Device | Status |
|---|---|---|
| 0x00000000-0x00000CF7 | PCI bus | OK |
| 0x00000000-0x00000CF7 | Direct memory access controller | OK |
| 0x00000010-0x0000001F | Motherboard resources | OK |
| 0x00000020-0x00000021 | Programmable interrupt controller | OK |
| 0x00000022-0x0000003F | Motherboard resources | OK |
| 0x00000024-0x00000025 | Programmable interrupt controller | OK |
| 0x00000028-0x00000029 | Programmable interrupt controller | OK |
| 0x0000002C-0x0000002D | Programmable interrupt controller | OK |
| 0x0000002E-0x0000002F | Motherboard resources | OK |
| 0x00000030-0x00000031 | Programmable interrupt controller | OK |
| 0x00000034-0x00000035 | Programmable interrupt controller | OK |
| 0x00000038-0x00000039 | Programmable interrupt controller | OK |
| 0x0000003C-0x0000003D | Programmable interrupt controller | OK |
| 0x00000040-0x00000043 | System timer | OK |
| 0x00000044-0x0000005F | Motherboard resources | OK |
| 0x0000004E-0x0000004F | Motherboard resources | OK |
| 0x00000050-0x00000053 | System timer | OK |
| 0x00000061-0x00000061 | Motherboard resources | OK |
| 0x00000062-0x00000063 | Motherboard resources | OK |
| 0x00000063-0x00000063 | Motherboard resources | OK |
| 0x00000065-0x00000065 | Motherboard resources | OK |
| 0x00000065-0x00000065 | Motherboard resources | OK |
| 0x00000067-0x00000067 | Motherboard resources | OK |
| 0x00000070-0x00000070 | Motherboard resources | OK |
| 0x00000070-0x00000070 | System CMOS/real time clock | OK |
| 0x00000072-0x0000007F | Motherboard resources | OK |
| 0x00000080-0x00000080 | Motherboard resources | OK |
| 0x00000080-0x00000080 | Motherboard resources | OK |
| 0x00000081-0x00000091 | Direct memory access controller | OK |
| 0x00000084-0x00000086 | Motherboard resources | OK |
| 0x00000088-0x00000088 | Motherboard resources | OK |
| 0x0000008C-0x0000008E | Motherboard resources | OK |
| 0x00000090-0x0000009F | Motherboard resources | OK |
| 0x00000092-0x00000092 | Motherboard resources | OK |
| 0x00000093-0x0000009F | Direct memory access controller | OK |
| 0x000000A0-0x000000A1 | Programmable interrupt controller | OK |
| 0x000000A2-0x000000BF | Motherboard resources | OK |
| 0x000000A4-0x000000A5 | Programmable interrupt controller | OK |
| 0x000000A8-0x000000A9 | Programmable interrupt controller | OK |
| 0x000000AC-0x000000AD | Programmable interrupt controller | OK |
| 0x000000B0-0x000000B1 | Programmable interrupt controller | OK |
| 0x000000B2-0x000000B3 | Motherboard resources | OK |
| 0x000000B4-0x000000B5 | Programmable interrupt controller | OK |
| 0x000000B8-0x000000B9 | Programmable interrupt controller | OK |
| 0x000000BC-0x000000BD | Programmable interrupt controller | OK |
| 0x000000C0-0x000000DF | Direct memory access controller | OK |
| 0x000000E0-0x000000EF | Motherboard resources | OK |
| 0x000000F0-0x000000FF | Numeric data processor | OK |
| 0x00000274-0x00000277 | ISAPNP Read Data Port | OK |
| 0x00000279-0x00000279 | ISAPNP Read Data Port | OK |
| 0x00000290-0x00000297 | Motherboard resources | OK |
| 0x000002E0-0x000002E7 | Communications Port (COM5) | OK |
| 0x000002E8-0x000002EF | Communications Port (COM4) | OK |
| 0x000002F0-0x000002F7 | Communications Port (COM6) | OK |
| 0x000002F8-0x000002FF | Communications Port (COM2) | OK |
| 0x00000378-0x0000037F | ECP Printer Port (LPT1) | OK |
| 0x000003B0-0x000003BB | Intel Haswell HD Graphics - GT1 | OK |
| 0x000003C0-0x000003DF | Intel Haswell HD Graphics - GT1 | OK |
| 0x000003E8-0x000003EF | Communications Port (COM3) | OK |
| 0x000003F8-0x000003FF | Communications Port (COM1) | OK |
| 0x000004D0-0x000004D1 | Programmable interrupt controller | OK |
| 0x000004D0-0x000004D1 | Motherboard resources | OK |
| 0x00000680-0x0000069F | Motherboard resources | OK |
| 0x00000778-0x0000077F | ECP Printer Port (LPT1) | OK |
| 0x00000A79-0x00000A79 | ISAPNP Read Data Port | OK |
| 0x00000D00-0x0000FFFF | PCI bus | OK |

| Resource | Device | Status |
|---|---|---|
| 0x00000080-0x00000080 | Motherboard resources | OK |
| 0x00000081-0x00000091 | Direct memory access controller | OK |
| 0x00000084-0x00000086 | Motherboard resources | OK |
| 0x00000088-0x00000088 | Motherboard resources | OK |
| 0x0000008C-0x0000008E | Motherboard resources | OK |
| 0x00000090-0x0000009F | Motherboard resources | OK |
| 0x00000092-0x00000092 | Motherboard resources | OK |
| 0x00000093-0x0000009F | Direct memory access controller | OK |
| 0x000000A0-0x000000A1 | Programmable interrupt controller | OK |
| 0x000000A2-0x000000BF | Motherboard resources | OK |
| 0x000000A4-0x000000A5 | Programmable interrupt controller | OK |
| 0x000000A8-0x000000A9 | Programmable interrupt controller | OK |
| 0x000000AC-0x000000AD | Programmable interrupt controller | OK |
| 0x000000B0-0x000000B1 | Programmable interrupt controller | OK |
| 0x000000B2-0x000000B3 | Motherboard resources | OK |
| 0x000000B4-0x000000B5 | Programmable interrupt controller | OK |
| 0x000000B8-0x000000B9 | Programmable interrupt controller | OK |
| 0x000000BC-0x000000BD | Programmable interrupt controller | OK |
| 0x000000C0-0x000000DF | Direct memory access controller | OK |
| 0x000000E0-0x000000EF | Motherboard resources | OK |
| 0x000000F0-0x000000FF | Numeric data processor | OK |
| 0x00000274-0x00000277 | ISAPNP Read Data Port | OK |
| 0x00000279-0x00000279 | ISAPNP Read Data Port | OK |
| 0x00000290-0x00000297 | Motherboard resources | OK |
| 0x000002E0-0x000002E7 | Communications Port (COM5) | OK |
| 0x000002E8-0x000002EF | Communications Port (COM4) | OK |
| 0x000002F0-0x000002F7 | Communications Port (COM6) | OK |
| 0x000002F8-0x000002FF | Communications Port (COM2) | OK |
| 0x00000378-0x0000037F | ECP Printer Port (LPT1) | OK |
| 0x000003B0-0x000003BB | Intel Haswell HD Graphics - GT1 | OK |
| 0x000003C0-0x000003DF | Intel Haswell HD Graphics - GT1 | OK |
| 0x000003E8-0x000003EF | Communications Port (COM3) | OK |
| 0x000003F8-0x000003FF | Communications Port (COM1) | OK |
| 0x000004D0-0x000004D1 | Programmable interrupt controller | OK |
| 0x000004D0-0x000004D1 | Motherboard resources | OK |
| 0x00000680-0x0000069F | Motherboard resources | OK |
| 0x00000778-0x0000077F | ECP Printer Port (LPT1) | OK |
| 0x00000A79-0x00000A79 | ISAPNP Read Data Port | OK |
| 0x00000D00-0x0000FFFF | PCI bus | OK |
| 0x0000164E-0x0000164F | Motherboard resources | OK |
| 0x00001800-0x000018FE | Motherboard resources | OK |
| 0x00001854-0x00001857 | Motherboard resources | OK |
| 0x00001C00-0x00001CFE | Motherboard resources | OK |
| 0x00001D00-0x00001DFE | Motherboard resources | OK |
| 0x00001E00-0x00001EFE | Motherboard resources | OK |
| 0x00001F00-0x00001FFE | Motherboard resources | OK |
| 0x0000E000-0x0000EFFF | Intel(R) 8 Series/C220 Series PCI Express Root Port #7 - 8... | OK |
| 0x0000E000-0x0000EFFF | Ethernet Controller | OK |
| 0x0000F000-0x0000F03F | Intel Haswell HD Graphics - GT1 | OK |
| 0x0000F040-0x0000F05F | Intel(R) 8 Series/C220 Series SMBus Controller - 8C22 | OK |
| 0x0000F060-0x0000F07F | Ethernet Controller | OK |
| 0x0000F080-0x0000F08F | Intel(R) 8 Series/C220 Series 2 port Serial ATA Storage Co... | OK |
| 0x0000F090-0x0000F09F | Intel(R) 8 Series/C220 Series 2 port Serial ATA Storage Co... | OK |
| 0x0000F0A0-0x0000F0A3 | Intel(R) 8 Series/C220 Series 2 port Serial ATA Storage Co... | OK |
| 0x0000F0B0-0x0000F0B7 | Intel(R) 8 Series/C220 Series 2 port Serial ATA Storage Co... | OK |
| 0x0000F0C0-0x0000F0C3 | Intel(R) 8 Series/C220 Series 2 port Serial ATA Storage Co... | OK |
| 0x0000F0D0-0x0000F0D7 | Intel(R) 8 Series/C220 Series 2 port Serial ATA Storage Co... | OK |
| 0x0000F0E0-0x0000F0EF | Intel(R) 8 Series/C220 Series 4 port Serial ATA Storage Co... | OK |
| 0x0000F0F0-0x0000F0FF | Intel(R) 8 Series/C220 Series 4 port Serial ATA Storage Co... | OK |
| 0x0000F100-0x0000F103 | Intel(R) 8 Series/C220 Series 4 port Serial ATA Storage Co... | OK |
| 0x0000F110-0x0000F117 | Intel(R) 8 Series/C220 Series 4 port Serial ATA Storage Co... | OK |
| 0x0000F120-0x0000F123 | Intel(R) 8 Series/C220 Series 4 port Serial ATA Storage Co... | OK |
| 0x0000F130-0x0000F137 | Intel(R) 8 Series/C220 Series 4 port Serial ATA Storage Co... | OK |
| 0x0000FFFF-0x0000FFFF | Motherboard resources | OK |
| 0x0000FFFF-0x0000FFFF | Motherboard resources | OK |
| 0x0000FFFF-0x0000FFFF | Motherboard resources | OK |

## 4.5 Interrupt Controller (IRQ) Map

The interrupt controller (IRQ) mapping list is shown as follows:

| Resource | Device | Status |
|---|---|---|
| IRQ 0 | System timer | OK |
| IRQ 3 | Communications Port (COM2) | OK |
| IRQ 4 | Communications Port (COM1) | OK |
| IRQ 7 | Communications Port (COM3) | OK |
| IRQ 7 | Communications Port (COM4) | OK |
| IRQ 8 | System CMOS/real time clock | OK |
| IRQ 9 | Microsoft ACPI-Compliant System | OK |
| IRQ 10 | Communications Port (COM5) | OK |
| IRQ 10 | Communications Port (COM6) | OK |
| IRQ 13 | Numeric data processor | OK |
| IRQ 15 | Intel(R) 8 Series/C220 Series B xHCI HC - 8C31 | OK |
| IRQ 15 | Ethernet Controller | OK |
| IRQ 15 | Ethernet Controller | OK |
| IRQ 15 | Intel(R) 8 Series/C220 Series SMBus Controller - 8C22 | OK |
| IRQ 16 | Intel Haswell HD Graphics - GT1 | OK |
| IRQ 16 | Microsoft UAA Bus Driver for High Definition Audio | OK |
| IRQ 16 | Intel(R) Management Engine Interface | OK |
| IRQ 16 | Intel(R) 8 Series/C220 Series USB EHCI #2 - 8C2D | OK |
| IRQ 16 | Intel(R) 8 Series/C220 Series PCI Express Root Port #1 - 8... | OK |
| IRQ 17 | PCI standard PCI-to-PCI bridge | OK |
| IRQ 18 | Intel(R) 8 Series/C220 Series PCI Express Root Port #7 - 8... | OK |
| IRQ 19 | Intel(R) 8 Series/C220 Series 4 port Serial ATA Storage Co... | OK |
| IRQ 19 | Intel(R) 8 Series/C220 Series 2 port Serial ATA Storage Co... | OK |
| IRQ 23 | Intel(R) 8 Series/C220 Series USB EHCI #1 - 8C26 | OK |

## 4.6 Memory Map

The memory mapping list is shown as follows:

| Resource | Device | Status |
|---|---|---|
| 0xDFA00000-0xFEAFFFFF | PCI bus | OK |
| 0xF0000000-0xF03FFFFF | Intel Haswell HD Graphics - GT1 | OK |
| 0xE0000000-0xEFFFFFFF | Intel Haswell HD Graphics - GT1 | OK |
| 0xF0530000-0xF0533FFF | Microsoft UAA Bus Driver for High Definition Audio | OK |
| 0xF0520000-0xF052FFFF | Intel(R) 8 Series/C220 Series B xHCI HC - 8C31 | OK |
| 0xF053B000-0xF053B00F | Intel(R) Management Engine Interface | OK |
| 0xF0500000-0xF051FFFF | Ethernet Controller | OK |
| 0xF0538000-0xF0538FFF | Ethernet Controller | OK |
| 0xF0537000-0xF05373FF | Intel(R) 8 Series/C220 Series USB EHCI #2 - 8C2D | OK |
| 0xF0400000-0xF04FFFFF | Intel(R) 8 Series/C220 Series PCI Express Root Port #7 - 8... | OK |
| 0xF0400000-0xF04FFFFF | Ethernet Controller | OK |
| 0xF0480000-0xF0483FFF | Ethernet Controller | OK |
| 0xF0536000-0xF05363FF | Intel(R) 8 Series/C220 Series USB EHCI #1 - 8C26 | OK |
| 0xFF000000-0xFFFFFFFF | Intel(R) 82802 Firmware Hub Device | OK |
| 0xFF000000-0xFFFFFFFF | Motherboard resources | OK |
| 0xFED00000-0xFED003FF | High precision event timer | OK |
| 0xF0535000-0xF05350FF | Intel(R) 8 Series/C220 Series SMBus Controller - 8C22 | OK |
| 0xFED40000-0xFED44FFF | System board | OK |
| 0xFED1C000-0xFED1FFFF | Motherboard resources | OK |
| 0xFED10000-0xFED17FFF | Motherboard resources | OK |
| 0xFED18000-0xFED18FFF | Motherboard resources | OK |
| 0xFED19000-0xFED19FFF | Motherboard resources | OK |
| 0xF8000000-0xFBFFFFFF | Motherboard resources | OK |
| 0xFED20000-0xFED3FFFF | Motherboard resources | OK |
| 0xFED90000-0xFED93FFF | Motherboard resources | OK |
| 0xFED45000-0xFED8FFFF | Motherboard resources | OK |
| 0xFEE00000-0xFEEFFFFF | Motherboard resources | OK |
| 0xF7FEF000-0xF7FEFFFF | Motherboard resources | OK |
| 0xF7FF0000-0xF7FF0FFF | Motherboard resources | OK |
| 0xA0000-0xBFFFF | PCI bus | OK |
| 0xA0000-0xBFFFF | Intel Haswell HD Graphics - GT1 | OK |
| 0xD0000-0xD3FFF | PCI bus | OK |
| 0xD4000-0xD7FFF | PCI bus | OK |
| 0xD8000-0xDBFFF | PCI bus | OK |
| 0xDC000-0xDFFFF | PCI bus | OK |
| 0xE0000-0xE3FFF | PCI bus | OK |

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# Chapter 5
# AMI BIOS Setup Utility

The AMI UEFI BIOS provides users with a built-in setup program to modify basic system configuration. All configured parameters are stored in a flash chip to save the setup information whenever the power is turned off. This chapter provides users with detailed description about how to set up basic system configuration through the AMI BIOS setup utility.

## 5.1 Starting

To enter the setup screens, follow the steps below:

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


**Note**

***If your computer cannot boot after making and saving system changes with BIOS setup, you can restore BIOS optimal defaults by setting CLRCMOS1 (see section 2.3.2).***

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


**Note**

***Because the BIOS setup software is constantly being updated, the following setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.***

## 5.2 Menu Bar

The top of the screen has a menu bar with the following selections:

| Menu Bar | Description |
|---|---|
| **Main** | To set up the system time/date information. |
| **Advanced** | To set up the advanced BIOS features. |
| **H/W Monitor** | To display current hardware status. |
| **Boot** | To set up the default system device to locate and load the Operating System. |
| **Security** | To set up the security features. |
| **Exit** | To exit the current screen or the BIOS setup utility. |

Use <← > key or <→ > key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

## 5.3 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F7>, <Enter>, <ESC>, <Arrow> keys, and so on.

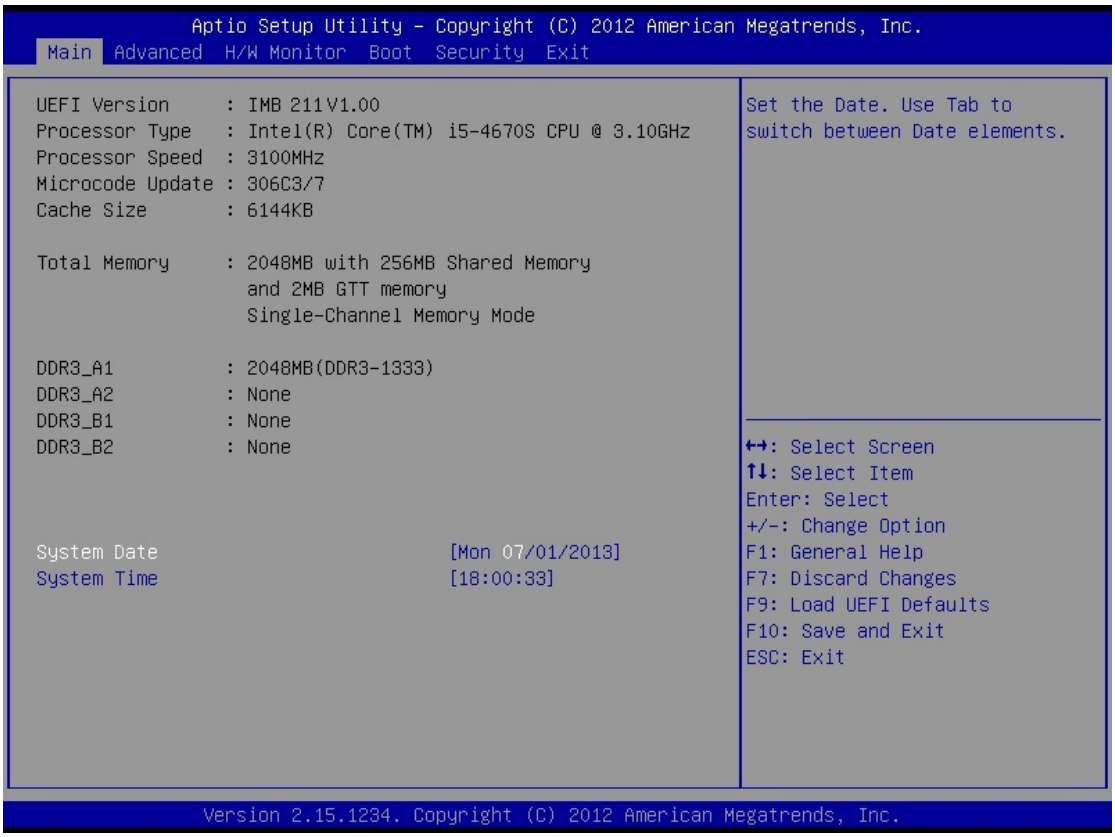
**Note**

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

| Hot Keys | Description |
|---|---|
| →← **Left/Right** | The Left and Right <Arrow> keys allow you to select a setup screen. |
| ↑↓ **Up/Down** | The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen. |
| **+– Plus/Minus** | The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item. |
| **Enter** | The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens. |
| **F1** | The <F1> key allows you to display the General Help screen. |
| **F7** | Discard changes. |
| **F9** | The <F9> key allows you to load optimal default values for all the settings. |
| **F10** | The <F10> key allows you to save any changes you have made and exit Setup. Press the <F10> key to save your changes. |
| **Esc** | The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes. |

## 5.4 Main Menu

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



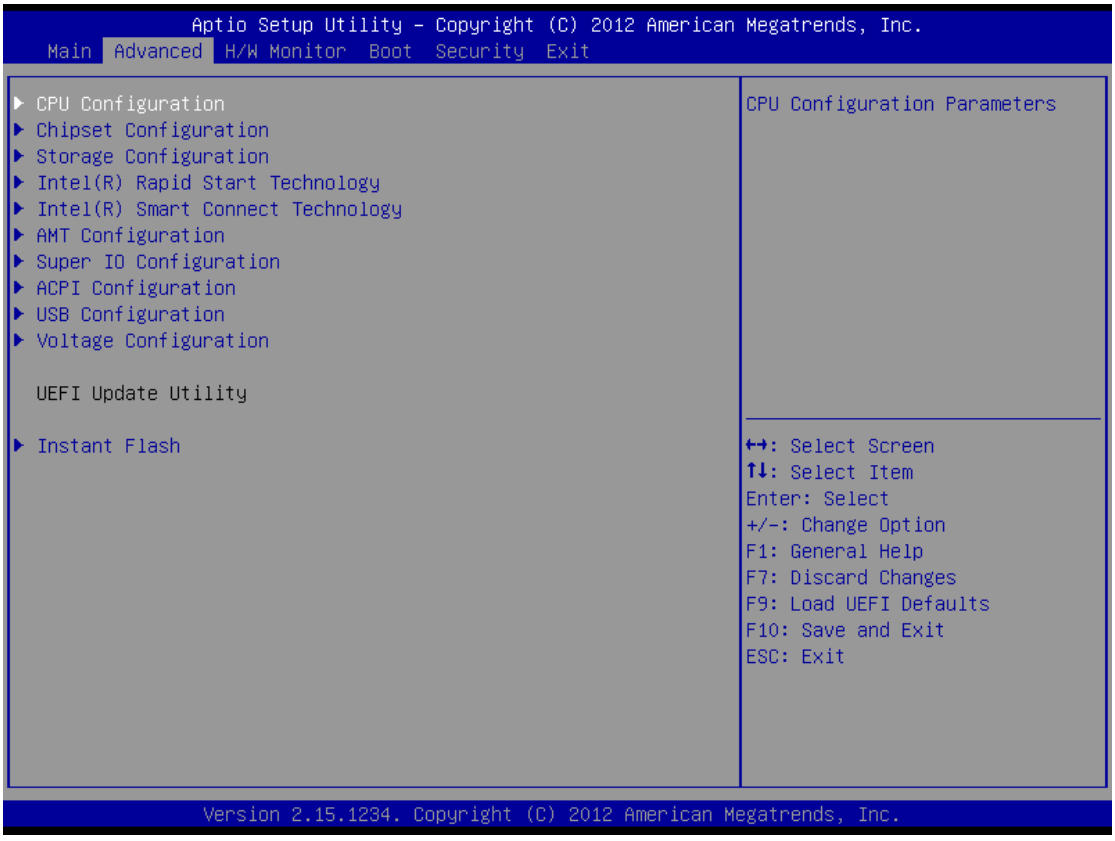

**BIOS Information**
Display the auto-detected BIOS information.

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

## 5.5 Advanced Menu

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

- ▶ CPU Configuration
- ▶ Chipset Configuration
- ▶ Storage Configuration
- ▶ Intel(R) Rapid Start Technology
- ▶ Intel(R) Smart Connect Technology
- ▶ AMT Configuration
- ▶ Super IO Configuration
- ▶ ACPI Configuration
- ▶ USB Configuration
- ▶ Voltage Configuration
- ▶ Instant Flash



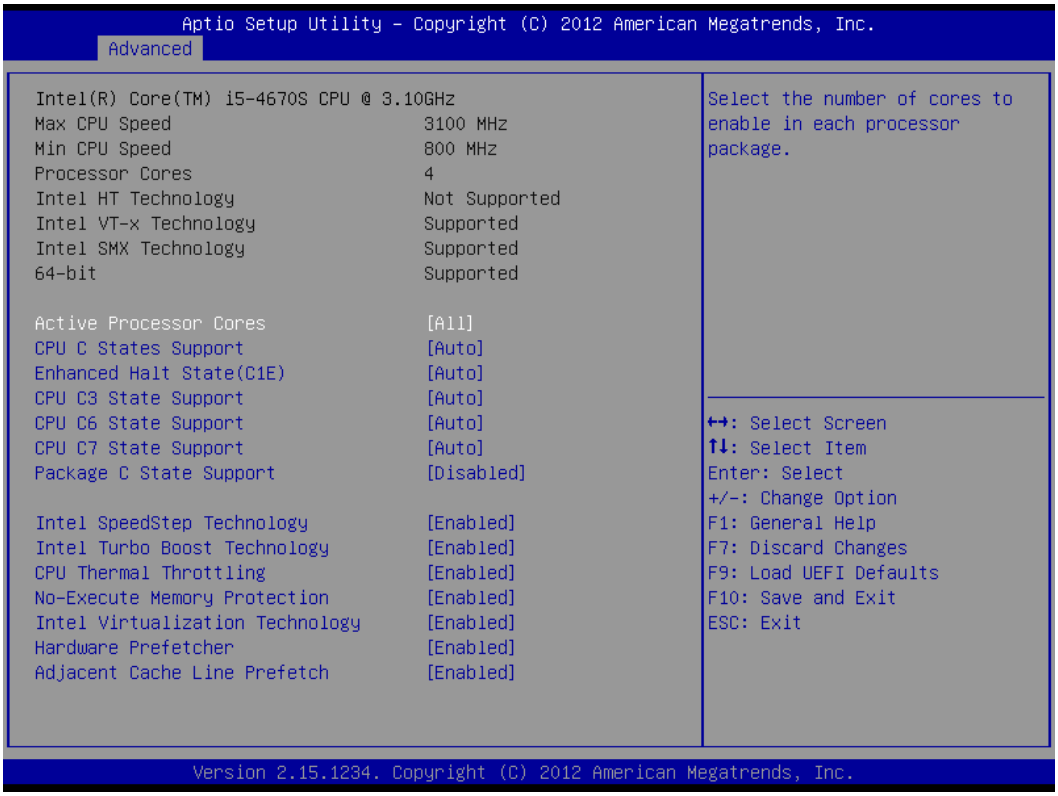

For items marked with "▶", please press <Enter> for more options.

**Note** ***Setting wrong values in this section may cause the system to malfunction.***

**Instant Flash**

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just launch this tool and save the new UEFI file to your USB flash drive, floppy disk or hard drive, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes.

- **CPU Configuration**




**Active Processor Cores**
Select the number of cores to enable in each processor package.

**CPU C States Support**
Enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

**Enhanced Halt State (C1E)**
Enable Enhanced Halt State (C1E) for lower power consumption.

**CPU C3 State Support**
Enable C3 sleep state for lower power consumption.

**CPU C6 State Support**
Enable C6 deep sleep state for lower power consumption.

**CPU C7 State Support**
Enable C7 deep sleep state for lower power consumption.

**Package C State Support**
Enable CPU, PCIe, Memory, Graphics C State Support for power saving.

**Intel SpeedStep Technology**
Intel® SpeedStep technology is Intel®'s new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is Enabled. Configuration options are Enabled and Disabled. If you install Windows® Vista™ / 7 / 8 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.


**Note**

***Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to Disabled if above issues occur.***

**Intel Turbo Boost Technology**
Use this item to enable or disable Intel® Turbo Boost Mode Technology. Turbo Boost Mode allows processor cores to run faster than marked frequency in specific conditions. The default value is Enabled.

**CPU Thermal Throttling**
You may select Enabled to enable CPU internal thermal control mechanism to keep the CPU from overheating.

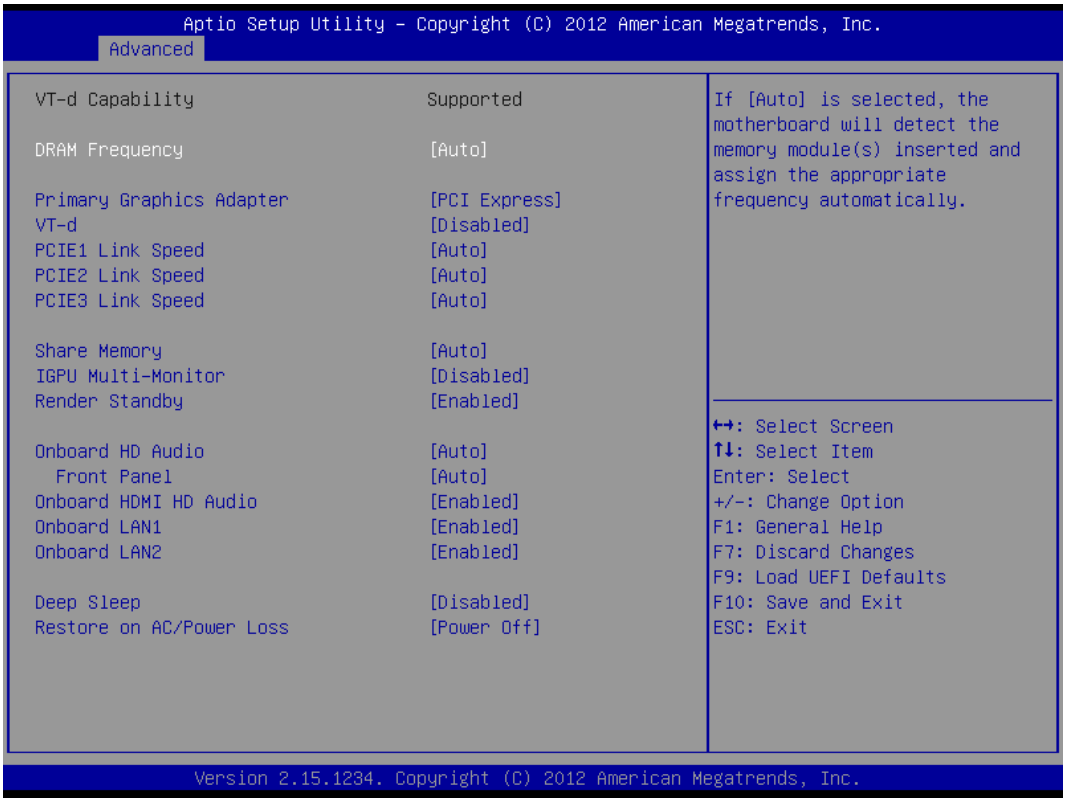
**No-Execute Memory Protection**
No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with "No Execute (NX) Memory Protection" can prevent data pages from being used by malicious software to execute codes. This option will be hidden if the current CPU does not support No-Excute Memory Protection.

**Intel Virtualization Technology**
When this option is set to Enabled, a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel® Virtualization Technology.

**Hardware Prefetcher**
Use this item to turn on/off the MLC streamer prefetcher.

**Adjacent Cache Line Prefetch**
Use this item to turn on/off prefetching of adjacent cache lines.

- **Chipset Configuration**




**DRAM Frequency**
If Auto is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.

**Primary Graphics Adapter**
This allows you to select Onboard, PCI or PCI Express as the boot graphic adapter priority. The default value is PCI Express.

**VT-d**
Use this to enable or disable Intel® VT-d technology (Intel® Virtualization Technology for Directed I/O). The default value of this feature is Disabled.

**PCIE1 Link Speed**
Select the link speed for PCIE1.

**PCIE2 Link Speed**
Select the link speed for PCIE2.

**PCIE3 Link Speed**
Select the link speed for PCIE3.

**Share Memory**
Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

**IGPU Multi-Monitor**
Select Disabled to disable the integrated graphics when an external graphics card is installed. Select Enabled to keep the integrated graphics enabled at all times.

**Render Standby**
Use this to enable or disable Render Standby by Internal Graphics Device. The default value is Enabled.

**Onboard HD Audio**
Select Auto, Enabled or Disabled for the onboard HD Audio feature. If you select Auto, the onboard HD Audio will be disabled when PCI Sound Card is plugged.

**Front Panel**
Select Auto or Disabled for the onboard HD Audio Front Panel.

**Onboard HDMI HD Audio**
This allows you to enable or disable the Onboard HDMI HD Audio feature.

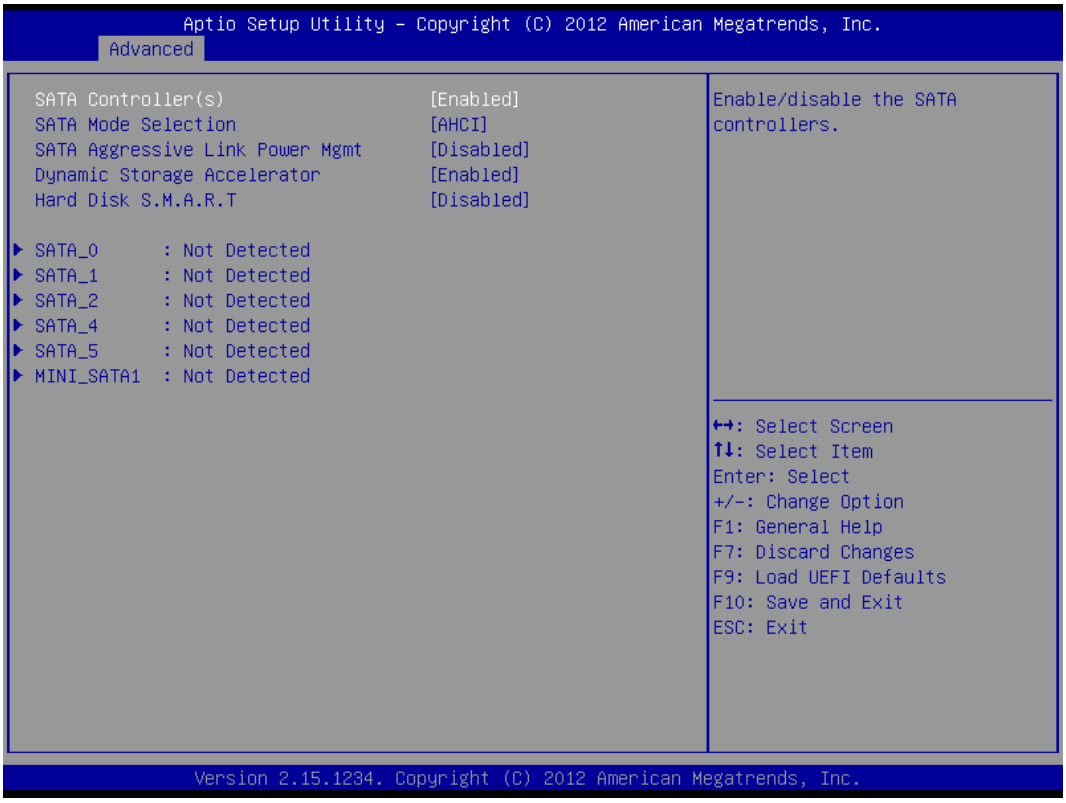
**Onboard LAN1**
This allows you to enable or disable the Onboard LAN1 feature.

**Onboard LAN2**
This allows you to enable or disable the Onboard LAN2 feature.

**Deep Sleep**
Mobile platforms support Deep S4/S5 in DC only and desktop platforms support Deep S4/S5 in AC only. The default value is Disabled.

**Restore on AC/Power Loss**
This allows you to set the power state after an unexpected AC/power loss. If Power Off is selected, the AC/power remains off when the power recovers. If Power On is selected, the AC/power resumes and the system starts to boot up when the power recovers.

- **Storage Configuration**




**SATA Controller(s)**
Use this item to enable or disable the SATA Controller feature.

**SATA Mode Selection**
Use this to select SATA mode. Configuration options are IDE Mode, AHCI Mode and RAID Mode. The default value is AHCI Mode.

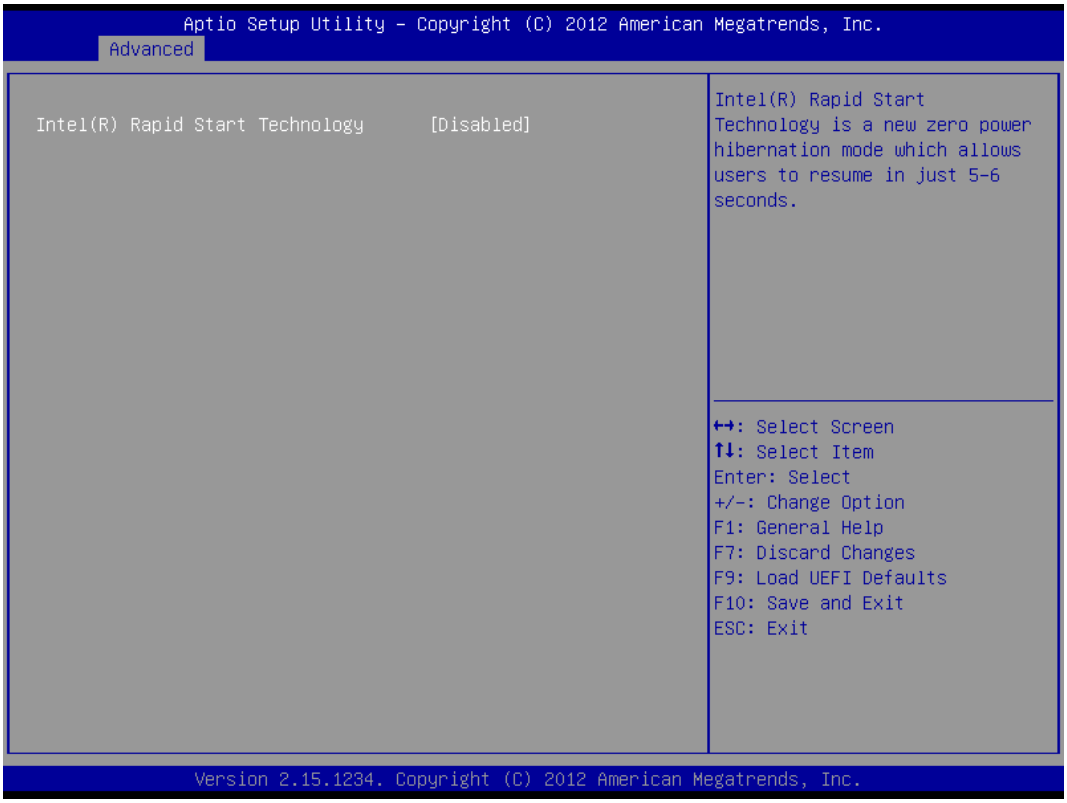
**Note** ***AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.***

**SATA Aggressive Link Power Management**
Use this item to configure SATA Aggressive Link Power Management.

**Dynamic Storage Accelerator**
Keep this option enabled for higher HDD and SDD I/O performance, lower latency and increased system responsiveness.

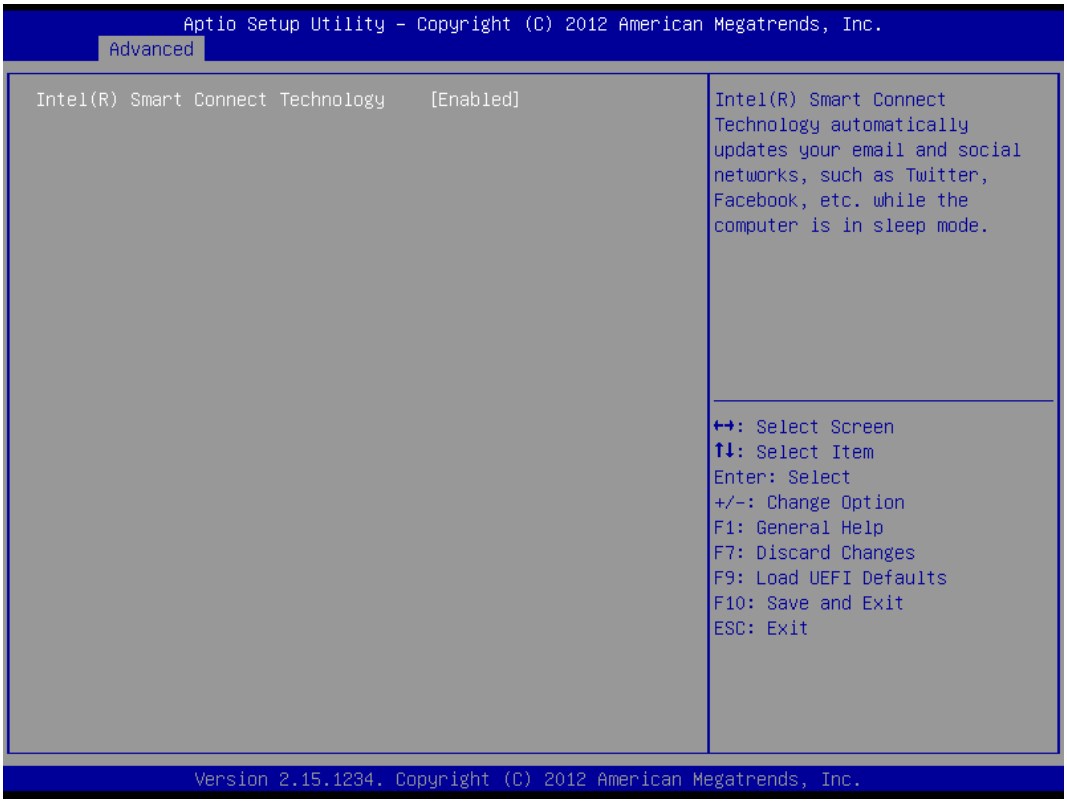
**Hard Disk S.M.A.R.T.**
Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options are Disabled and Enabled.

- **Intel(R) Rapid Start Technology**



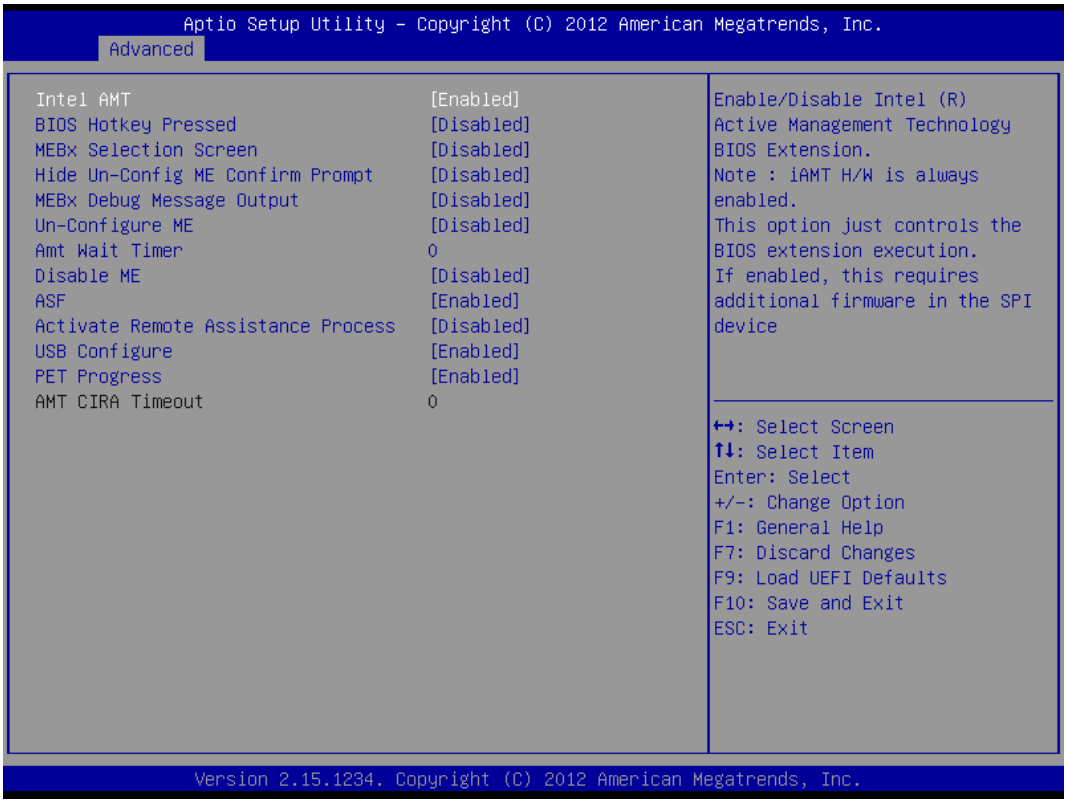

**Intel(R) Rapid Start Technology**
Use this item to enable or disable Intel(R) Rapid Start Technology. Intel(R) Rapid Start Technology is a new zero power hibernation mode which allows users to resume in just 5-6 seconds. The default is Disabled.

- **Intel(R) Smart Connect Technology**




**Intel(R) Smart Connect Technology**
Use this item to enable or disable Intel(R) Smart Connect Technology. Intel(R) Smart Connect Technology keeps your e-mail and social networks, such as Twitter, Facebook, etc. updated automatically while the computer is in sleep mode. The default is Enabled.

- **AMT Configuration**




**Intel AMT**
Use this to enable or disable Intel(R) Active Management Technology BIOS Extension. The default is Enabled.

**BIOS Hotkey Pressed**
Use this to enable or disable BIOS hotkey press. The default is Disabled.

**MEBx Selection Screen**
Use this to enable or disable MEBx Selection Screen. The default is Disabled.

**Hide Un-Configure ME Confirmation**
Hide Un-Configure ME without password confirmation prompt. The default is Disabled.

**MEBx Debug Message Output**
Use this to enable or disable MEBx Debug Message Output. The default is Disabled.

**Un-Configure ME**
Un-Configure ME without password. The default is Disabled.

**Amt Wait Timer**
Set timer to wait before sending ASF_GET_BOOT_OPTIONS.

**Disable ME**
Set ME to Soft Temporary Disabled. The default is Disabled.

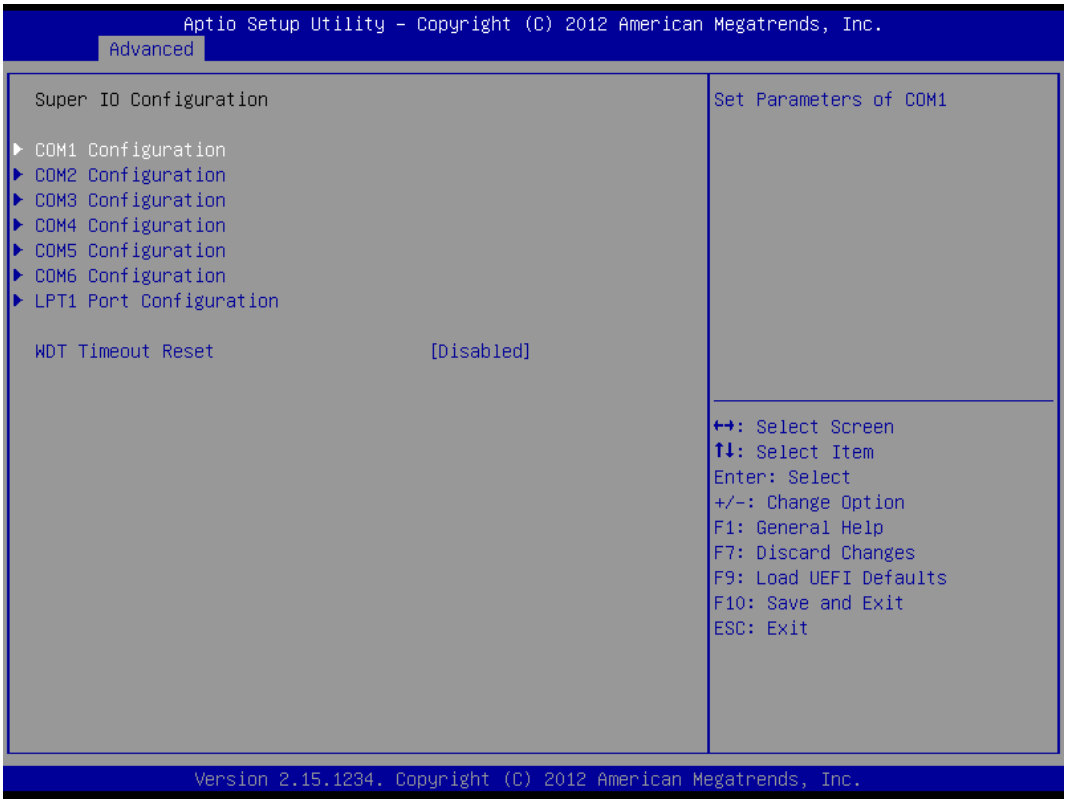
**ASF**
Use this to enable or disable Alert Specification Format. The default is Enabled.

**Activate Remote Assistance Process**
Trigger CIRA boot. The default is Disabled.

**USB Configure**
Use this to enable or disable USB Configure function. The default is Enabled.

**PET Progress**
User can enable or disable PET Events progress to receive PET events or not. The default is Enabled.

- **Super IO Configuration**




**COM1 Configuration**
Use this to set parameters of COM1.

**COM2 Configuration**
Use this to set parameters of COM2.

**COM3 Configuration**
Use this to set parameters of COM3.

**COM4 Configuration**
Use this to set parameters of COM4.

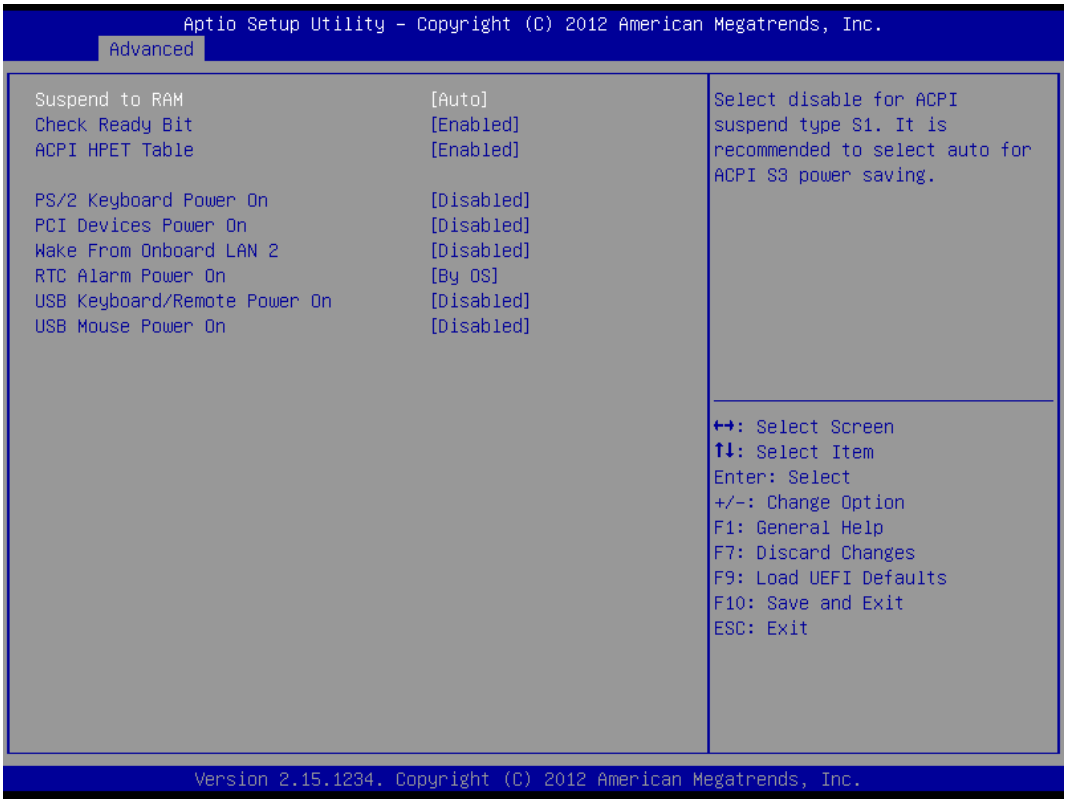
**COM5 Configuration**
Use this to set parameters of COM5.

**COM6 Configuration**
Use this to set parameters of COM6.

**LPT1 Port Configuration**
Use this to set parameters of the onboard parallel port.

**WDT Timeout Reset**
This allows users to enable/disable the Watchdog timer timeout to reset system. The default value is Disabled.

- **ACPI Configuration**




**Suspend to RAM**
Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select Auto will enable this feature if the OS supports it.

**Check Ready Bit**
Use this item to enable or disable the feature Check Ready Bit.

**ACPI HPET Table**
Use this item to enable or disable ACPI HPET Table. The default value is Enabled. Please set this option to Enabled if you plan to use this motherboard to submit Windows® certification.

**PS/2 Keyboard Power On**
Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

**PCI Devices Power On**
Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

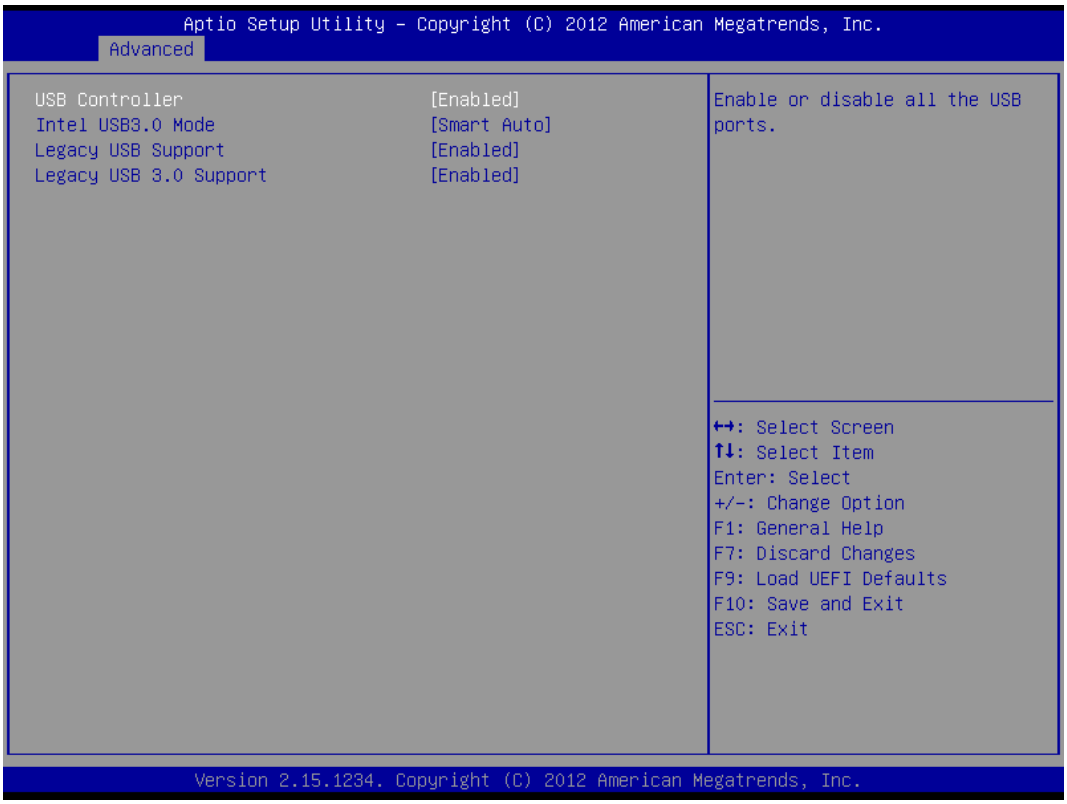
**Wake From Onboard LAN 2**
Use this item to enable or disable the Wake From Onboard LAN 2 feature.

**RTC Alarm Power On**
Use this item to enable or disable RTC (Real Time Clock) to power on the system.

**USB Keyboard/Remote Power On**
Use this item to enable or disable USB Keyboard/Remote to power on the system.

**USB Mouse Power On**
Use this item to enable or disable USB Mouse to power on the system.

- **USB Configuration**




**USB Controller**
Use this item to enable or disable the use of USB controller.

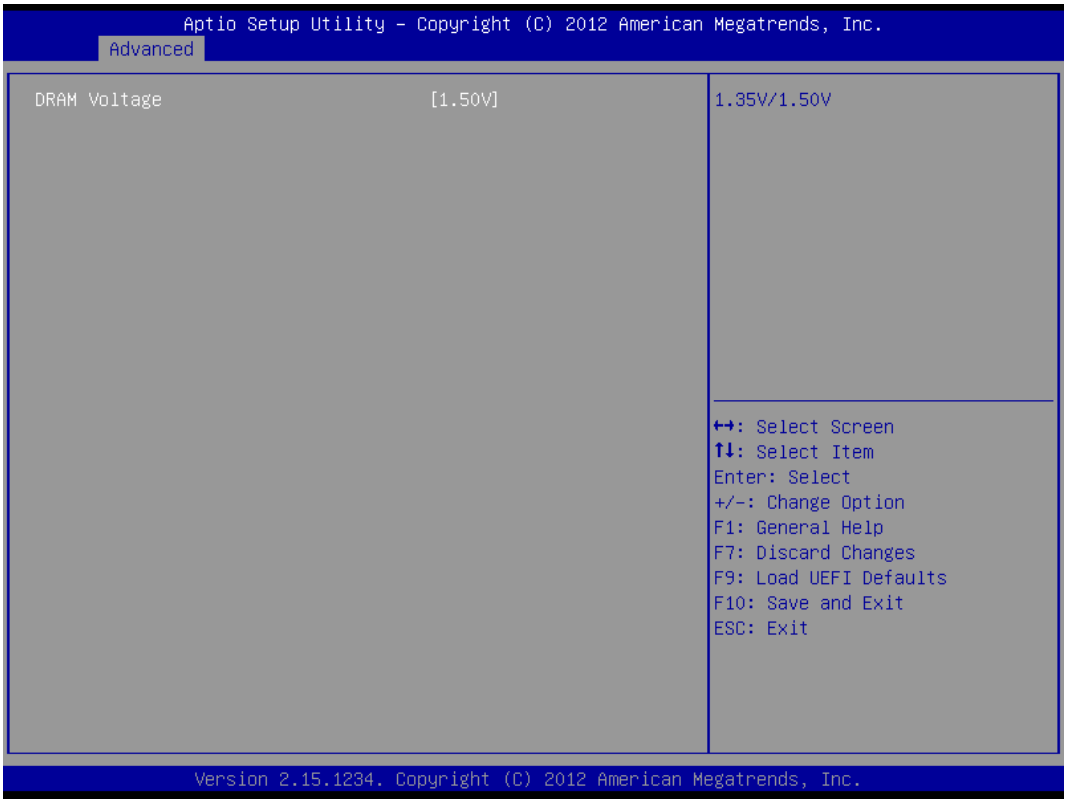
**Intel USB 3.0 Mode**
Use this item to enable or disable the use of Intel USB 3.0 mode.

**Legacy USB Support**
Use this option to select legacy support for USB devices. There are four configuration options: Enabled, Auto, Disabled and UEFI Setup Only. The default value is Enabled. Please refer to below descriptions for the details of these four options:

| | |
|---|---|
| [Enabled] - | Enable support for legacy USB. |
| [Auto] - | Enable legacy support if USB devices are connected. |
| [Disabled] - | USB devices are not allowed to use under legacy OS and UEFI setup when Disabled is selected. If you have USB compatibility issues, it is recommended to select Disabled to enter OS. |
| [UEFI Setup Only] - | USB devices are allowed to use only under UEFI setup and Windows® / Linux OS. |

**Legacy USB 3.0 Support**
Use this option to enable or disable legacy support for USB 3.0 devices. The default value is Enabled.

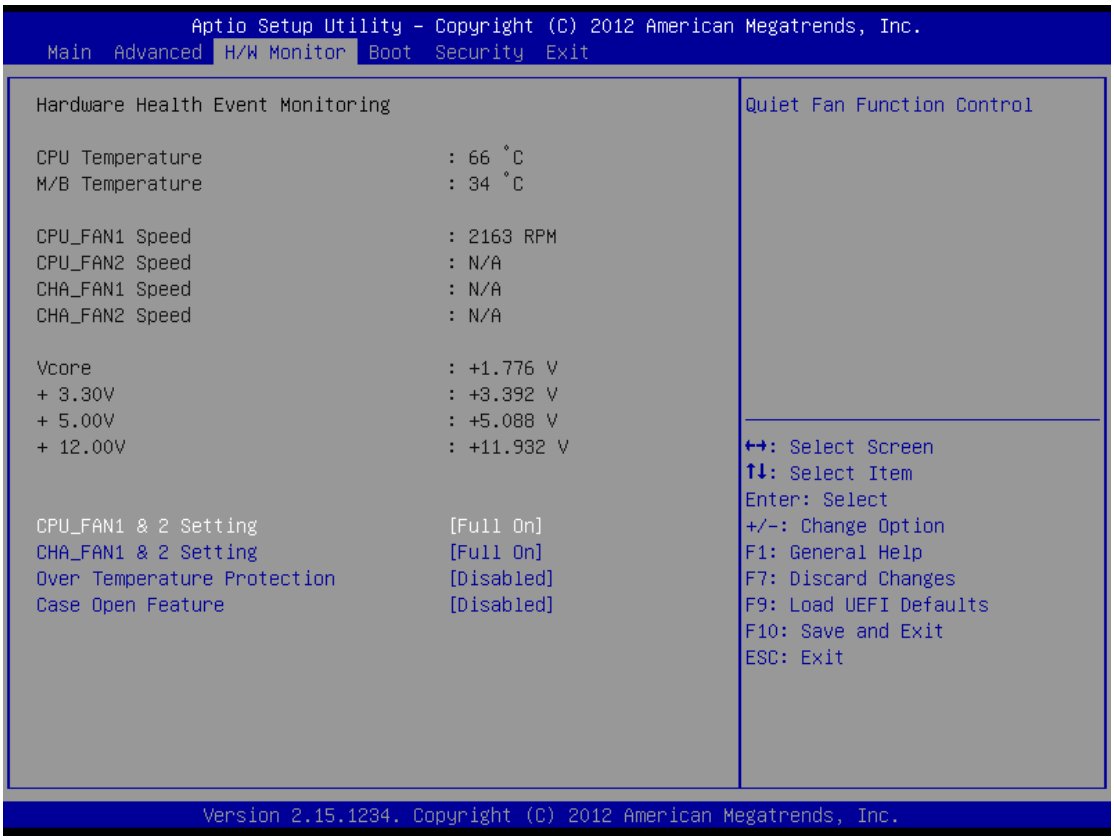
- **Voltage Configuration**




**DRAM Voltage**
Use this to select DRAM Voltage. The default value is Auto.

## 5.6 H/W Monitor Menu

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.




**CPU_FAN1/2 Setting**
This allows you to set CPU fan 1/2's speed. Configuration options are Full On and Automatic Mode. The default value is Full On.

**CHA_FAN1/2 Setting**
This allows you to set chassis fan 1/2's speed. Configuration options are Full On and Automatic Mode. The default value is Full On.

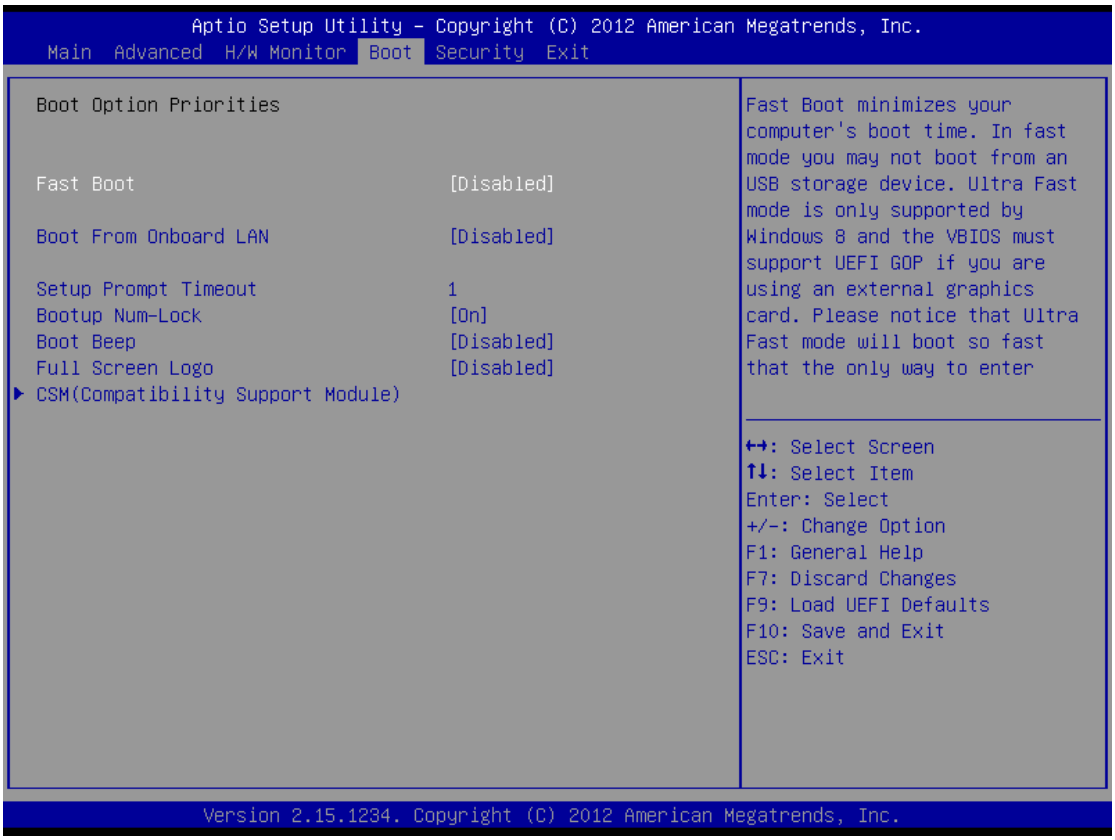
**Over Temperature Protection**
Use this to enable or disable Over Temperature Protection. The default value is Enabled.

**Case Open Feature**
This allows you to enable or disable case open detection feature. The default value is Disabled.

**Clear Status**
This option appears only when the case open has been detected. Use this option to keep or clear the record of previous chassis intrusion status.

## 5.7 Boot Menu

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.




**Fast Boot**
Fast Boot minimizes your computer's boot time. There are three configuration options: Disabled, Fast and Ultra Fast. The default value is Disabled. Please refer to below descriptions for the details of these three options:

Disabled - Disable Fast Boot.
Fast - The only restriction is you may not boot by using an USB flash drive.
Ultra Fast - There are a few restrictions.

1. Only supports Windows® 8 UEFI operating system.
2. You will not be able to enter BIOS Setup (Clear CMOS or run utility in Widows® to enter BIOS Setup).
3. If you are using an external graphics card, the VBIOS must support UEFI GOP in order to boot.

**Boot From Onboard LAN**
Use this item to enable or disable the Boot From Onboard LAN feature.

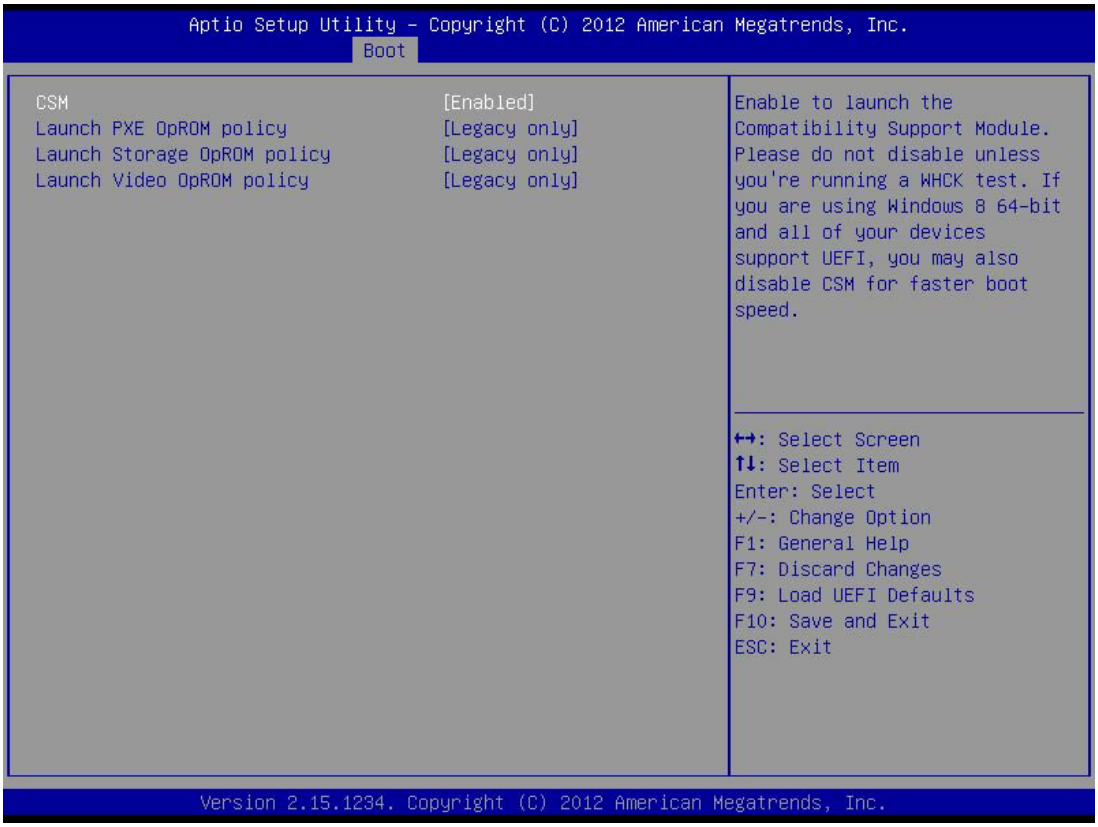
**Setup Prompt Timeout**
This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means indefinite waiting.

**Bootup Num-Lock**
If this item is set to On, it will automatically activate the Numeric Lock function after boot-up.

**Boot Beep**
Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

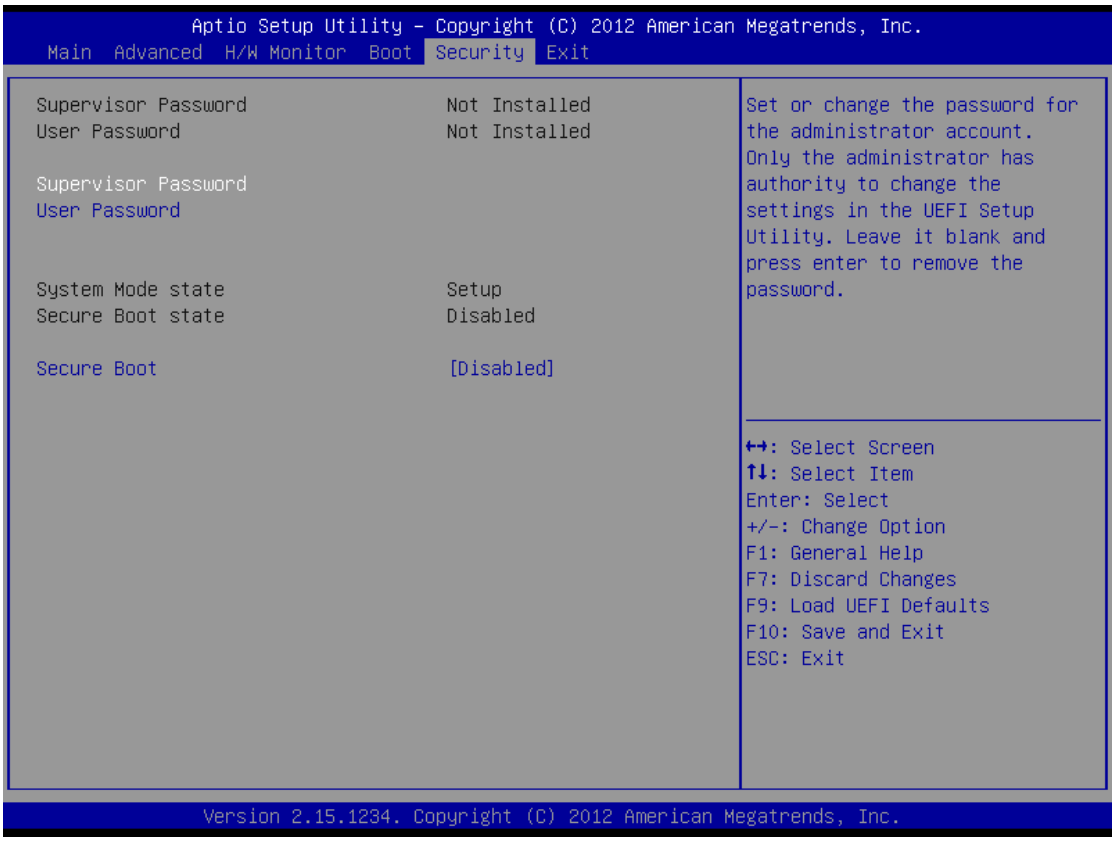
**Full Screen Logo**
Use this item to enable or disable OEM Logo. The default value is Enabled.

**CSM**
Please disable CSM when you enable Fast Boot option. The default value is Enabled.



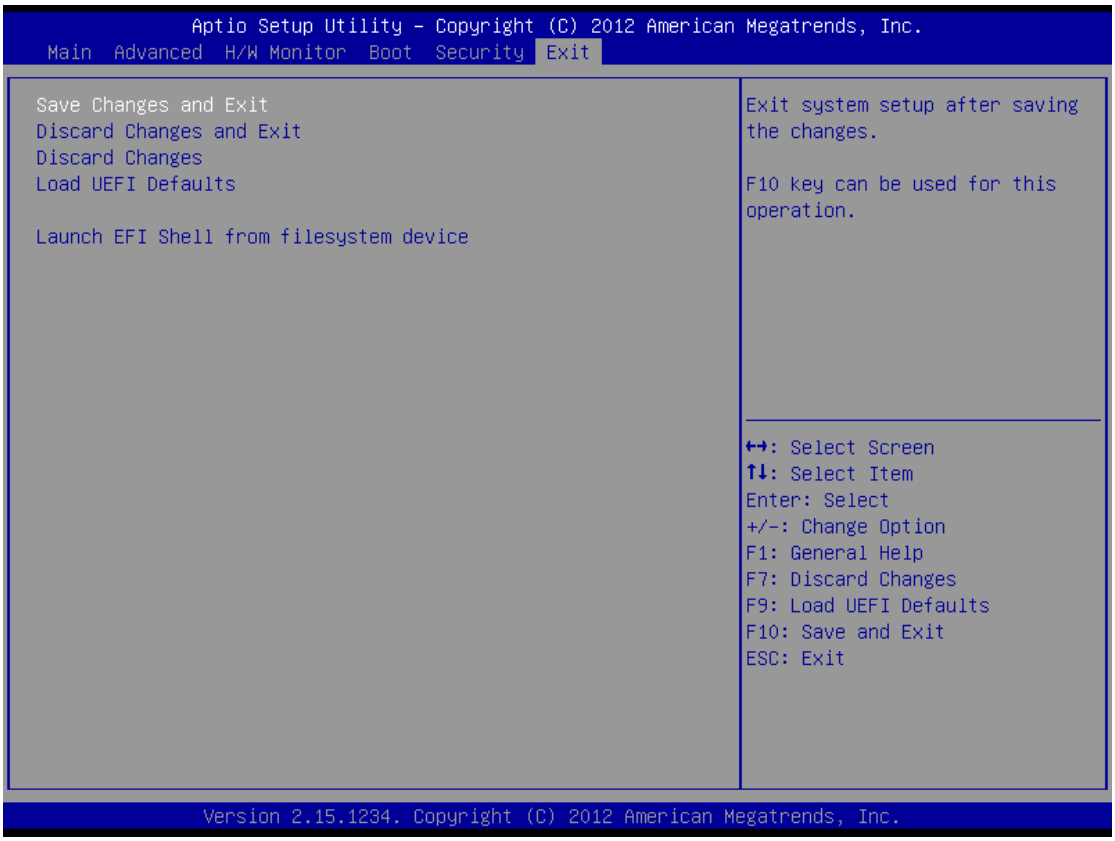
## 5.8 Security Menu

In this section, you may set, change or clear the supervisor/user password for the system.




**Secure Boot**
Use this to enable or disable Secure Boot. The default value is Disabled.

## 5.9 Exit Menu




**Save Changes and Exit**
When you select this option, it will pop-out the following message, "Save configuration changes and exit setup?". Select OK to save the changes and exit the UEFI setup utility.

**Discard Changes and Exit**
When you select this option, it will pop-out the following message, "Discard changes and exit setup?". Select OK to exit the UEFI setup utility without saving any changes.

**Discard Changes**
When you select this option, it will pop-out the following message, "Discard changes?". Select OK to discard all changes.

**Load UEFI Defaults**
Load UEFI default values for all the setup questions. F9 key can be used for this operation.

**Launch EFI Shell from filesystem device**
Attempt to Launch EFI Shell application (Shell64.efi) from one of the available filesystem devices.