

**MODEL:  
IMBA-H810**

**ATX Motherboard Supports 4th Generation LGA1150  
Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU,  
Intel® H81 Chipset, DDR3, VGA, DVI-D, iDP, SATA 6Gb/s,  
USB 3.0, Dual Intel® PCIe GbE, HD Audio and RoHS**

# User Manual

# Revision

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Date	Version	Changes
April 1, 2015	1.00	Initial release

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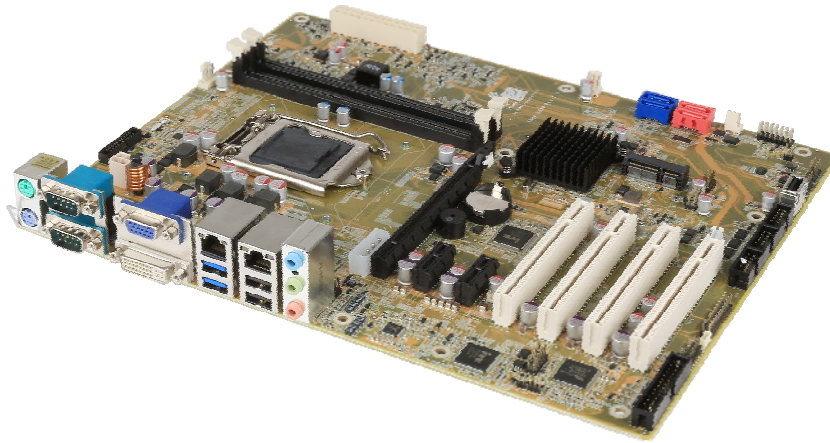
Chapter

1

# Introduction

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## 1.1 Introduction



**Figure 1-1: IMBA-H810**

The IMBA-H810 is an ATX motherboard. It accepts a Socket LGA1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor and supports two 240-pin 1600/1333 MHz dual-channel DDR3/DDR3L DIMMs up to 16 GB.

The IMBA-H810 provides two GbE interfaces through the Intel® I218-V (with Intel® AMT 9.0 support) and the Intel® I211-AT PCIe controllers. The integrated Intel® H81 chipset supports two SATA 6Gb/s and two SATA 3Gb/s drives. In addition, the IMBA-H810 includes VGA, DVI-Da and iDP interfaces for dual independent display.

Expansion and I/O include four PCI slots, one PCIe x16 slot, two PCIe x1 slots, one PCIe Mini slot with mSATA support, two USB 3.0 and two USB 2.0 on the rear panel, four USB 2.0 by pin headers, one USB 2.0 by internal Type A connector, five RS-232 and one RS-422/485. High Definition Audio (HDA) support ensures HDA devices can be easily implemented on the IMBA-H810.



## IMBA-H810 ATX Motherboard

### 1.2 Features

Some of the IMBA-H810 motherboard features are listed below:

- ATX form factor
- 4th generation LGA1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Intel® H81 chipset
- Two 240-pin 1600/1333 MHz dual-channel DDR3/DDR3L DIMMs support up to 16 GB
- Two Intel® PCIe GbE connectors (LAN1 with Intel® AMT 9.0 support)
- Dual independent display by VGA, DVI-D or iDP interfaces
- SATA 6Gb/s and USB 3.0 supported
- One PCIe Mini slot with mSATA support
- One PCIe x16 slot
- Two PCIe x1 slots
- Four PCI slots
- Six COM ports (five RS-232 and one RS-422/485)
- TPM V1.2 hardware security function supported by TPM module
- High Definition Audio
- RoHS compliant

### 1.3 Connectors

The connectors on the IMBA-H810 are shown in the figure below.

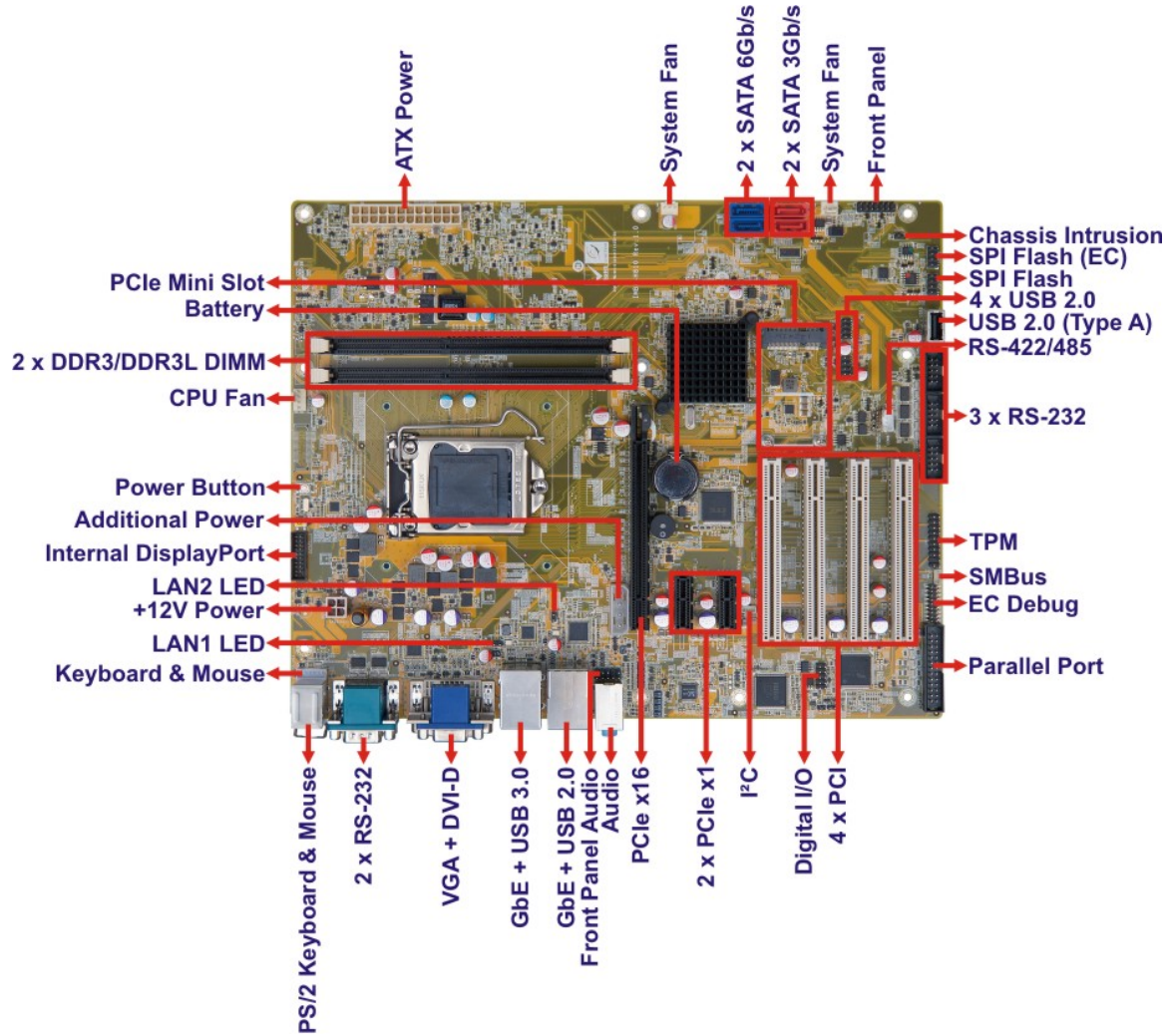


Figure 1-2: Connectors

IMBA-H810 ATX Motherboard

1.4 Dimensions

The main dimensions of the IMBA-H810 are shown in the diagram below.

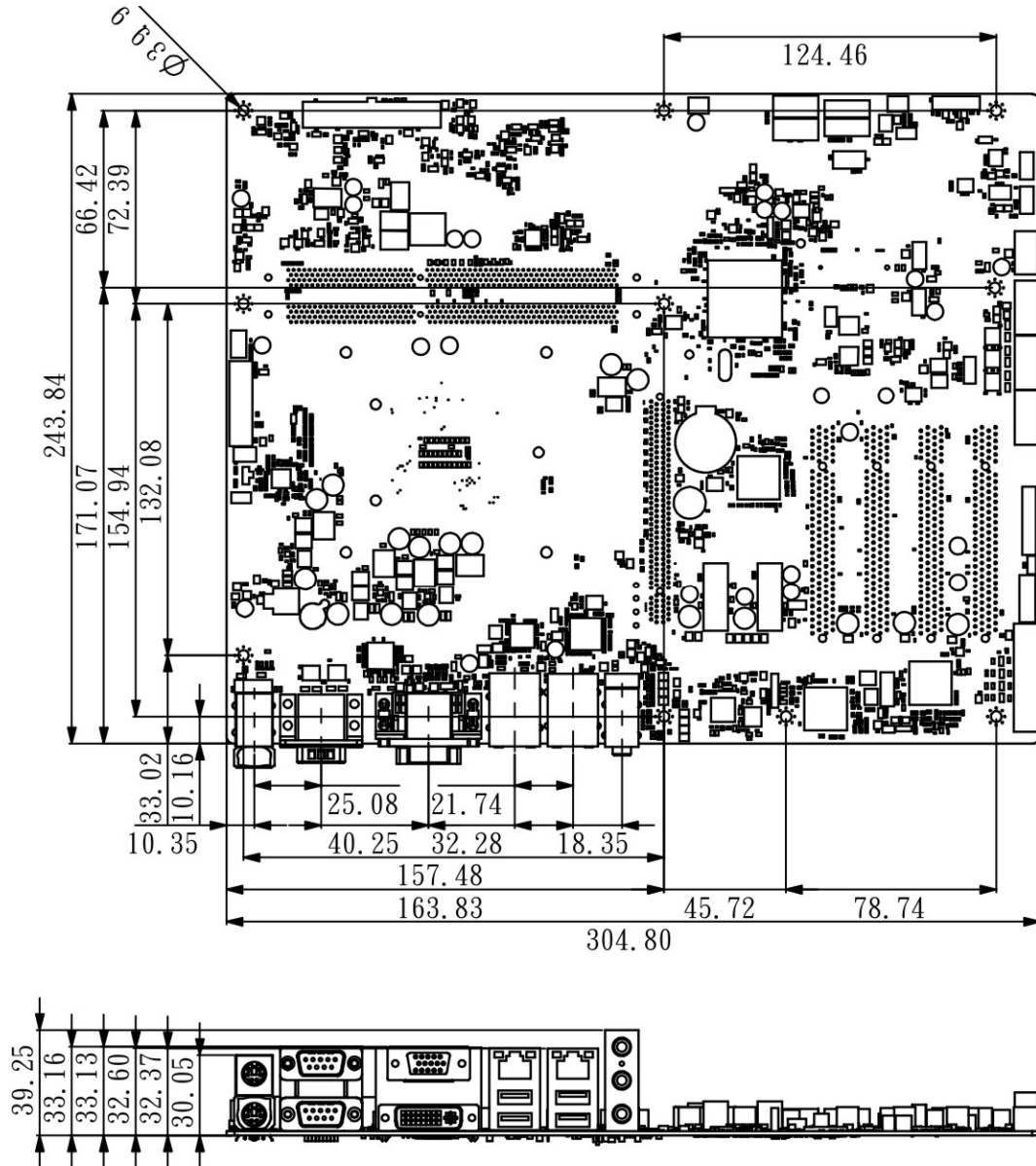


Figure 1-3: IMBA-H810 Dimensions (mm)

**1.5 Data Flow**

Figure 1-4 shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

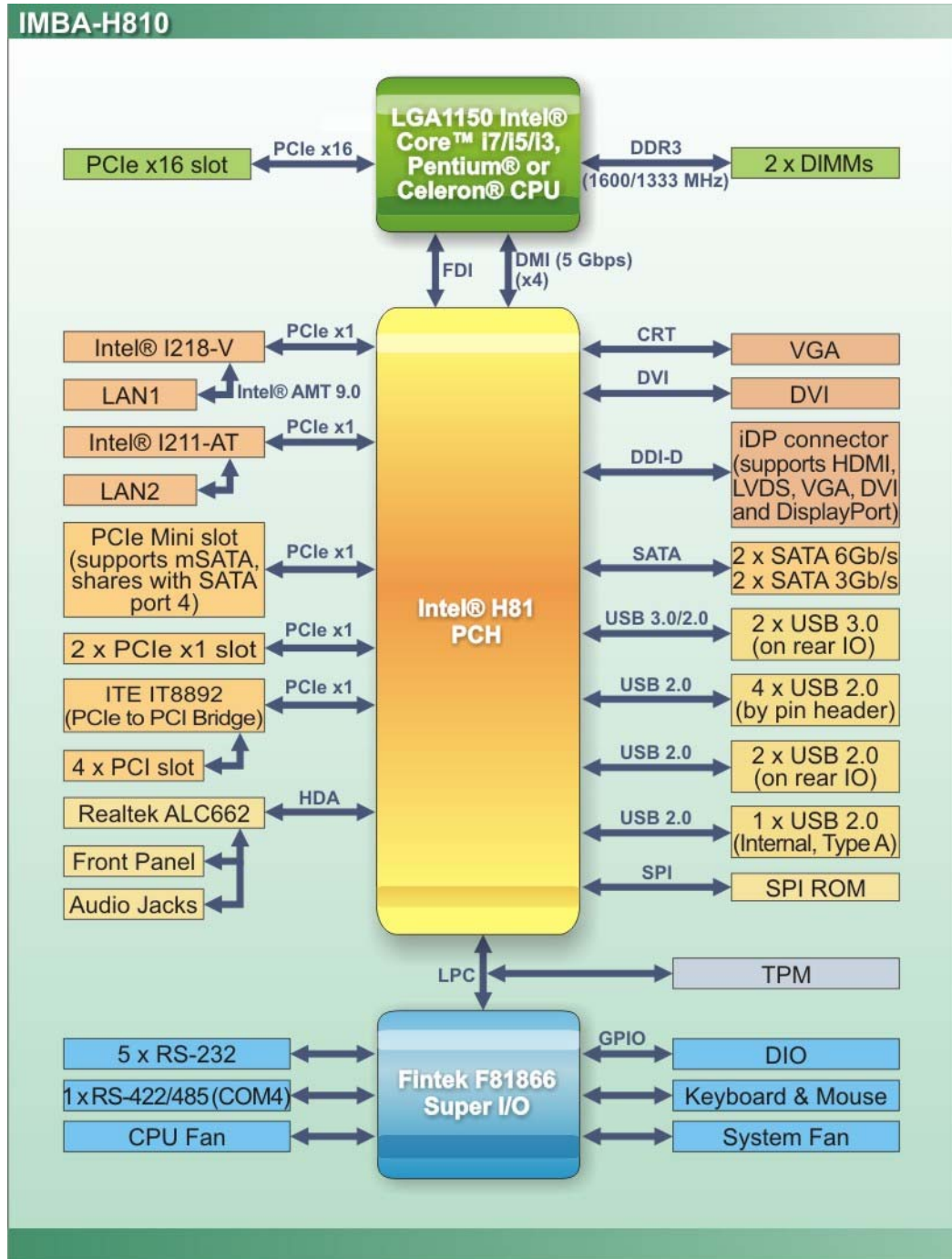


Figure 1-4: Data Flow Diagram

## IMBA-H810 ATX Motherboard

### 1.6 Technical Specifications

The IMBA-H810 technical specifications are listed below.

Specification/Model	IMBA-H810
<b>Form Factor</b>	ATX
<b>CPU Supported</b>	4th generation LGA1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU
<b>Chipset</b>	Intel® H81
<b>Memory</b>	Two 240-pin 1600/1333 MHz dual-channel unbuffered DDR3/DDR3L SDRAM DIMMs supported (system max. 16 GB)
<b>Graphics Engine</b>	Intel® HD Graphics Gen 7.5 supports DirectX 11.1, OpenCL 1.2, OpenGL 3.2, Full MPEG2, VC1, AVC Decode
<b>Display Output</b>	Dual independent display One VGA (up to 1920x1200@60 Hz) One DVI-D (up to 2560x1600@60 Hz) One iDP interface for HDMI, LVDS, VGA, DVI and DisplayPort (up to 3840x2160@60 Hz)
<b>Audio</b>	Supports 5.1 channel HD Audio by Realtek ALC662
<b>BIOS</b>	UEFI BIOS
<b>Ethernet Controllers</b>	<b>LAN1:</b> Intel® I218-V with Intel® AMT 9.0 support <b>LAN2:</b> Intel® I211-AT
<b>Super I/O Controller</b>	Fintek F81866
<b>Watchdog Timer</b>	Software programmable supports 1~255 sec. system reset
<b>Expansion</b>	One PCIe x16 slot Two PCIe x1 slots Four PCI slots One PCIe Mini slot (supports mSATA, shares with SATA port 4)

I/O Interface Connectors	
<b>Audio Connectors</b>	Line-in, line-out and mic-in audio jacks on rear panel One internal front panel audio connector (10-pin header)
<b>Chassis Intrusion</b>	One 2-pin header
<b>Digital I/O</b>	8-bit digital I/O
<b>Ethernet</b>	Two RJ-45 GbE ports
<b>Fan</b>	One 4-pin CPU smart fan connector One 3-pin system smart fan connector
<b>Front Panel</b>	One 14-pin header (power LED, HDD LED, speaker, power button, reset button)
<b>I<sup>2</sup>C</b>	One 4-pin wafer connector
<b>Keyboard and Mouse</b>	One PS/2 keyboard connector and one PS/2 mouse connector One internal keyboard and mouse connector (6-pin wafer)
<b>LAN LEDs</b>	Two 2-pin headers
<b>Parallel Port</b>	One parallel port via internal 26-pin box header
<b>Serial ATA</b>	Two SATA 6Gb/s connectors (support AHCI, no RAID) Two SATA 3Gb/s connectors (support AHCI, no RAID)
<b>Serial Ports</b>	Two external RS-232 serial ports Three RS-232 via internal box headers One RS-422/485 via internal 4-pin wafer connector
<b>SMBus</b>	One 4-pin wafer connector
<b>TPM</b>	One via 20-pin header
<b>USB Ports</b>	Two USB 3.0 ports on rear panel Two USB 2.0 ports on rear panel Four USB 2.0 ports by two internal pin headers One USB 2.0 port by internal Type A connector

## IMBA-H810 ATX Motherboard

Environmental and Power Specifications	
<b>Power Supply</b>	AT/ATX power supply
<b>Power Consumption</b>	3.3V@0.83A, 5V@2.2A, 12V@3.88A, 5VSB@0.3A (3.9 GHz Intel® Core™ i7-4770K CPU with two 4 GB 1333 MHz DDR3 memory)
<b>Operating Temperature</b>	-20°C ~ 60°C
<b>Storage Temperature</b>	-30°C ~ 70°C
<b>Operating Humidity</b>	5% ~ 95% (non-condensing)
Physical Specifications	
<b>Dimensions</b>	244 mm x 305 mm
<b>Weight (GW/NW)</b>	1200 g/700 g

**Table 1-1: IMBA-H810 Specifications**

Chapter

**2**

# Packing List

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## IMBA-H810 ATX Motherboard

### 2.1 Anti-static Precautions

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#### WARNING!

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

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Make sure to adhere to the following guidelines:

- **Wear an anti-static wristband:** Wearing an anti-static wristband can prevent electrostatic discharge.
- **Self-grounding:** Touch a grounded conductor every few minutes to discharge any excess static buildup.
- **Use an anti-static pad:** When configuring any circuit board, place it on an anti-static mat.
- **Only handle the edges of the PCB:** Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

### 2.2 Unpacking Precautions

When the IMBA-H810 is unpacked, please do the following:

- Follow the anti-static guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

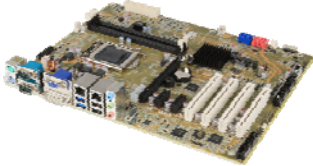





## 2.3 Packing List



**NOTE:**

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the IMBA-H810 was purchased from or contact an IEI sales representative directly by sending an email to [sales@ieiworld.com](mailto:sales@ieiworld.com).

The IMBA-H810 is shipped with the following components:





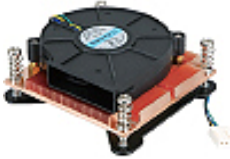

Quantity	Item and Part Number	Image
1	IMBA-H810 single board computer	
1	I/O shielding (P/N: 45014-0008C0-00-RS)	
2	SATA cable (P/N: 32000-062800-RS)	
1	Utility CD	
1	One Key Recovery CD	
1	Quick installation guide	







**Table 2-1: Packing List**

## IMBA-H810 ATX Motherboard

### 2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
RS-422/485 cable, 200 mm (P/N: 32205-003800-300-RS)	
Dual RS-232 cable, 230 mm, P=2.54 (P/N: 19800-000051-RS)	
PS/2 KB/MS Y-cable with bracket, 220 mm (P/N: 19800-000075-RS)	
Dual-port USB 3.0 cable with bracket (P/N: 19800-010500-200-RS)	
SATA power cable (P/N: 32102-000100-200-RS)	
LPT cable (P/N: 19800-000049-RS)	
LGA1155/LGA1156 cooler kit (1U chassis compatible, 73W) (P/N: CF-1156A-RS-R11)	
LGA1155/LGA1156 cooler kit (95W) (P/N: CF-1156E-R11)	

Item and Part Number	Image
DisplayPort to HDMI converter board (for IEI iDP connector) (P/N: DP-HDMI-R10)	
DisplayPort to LVDS converter board (for IEI iDP connector) (P/N: DP-LVDS-R10)	
DisplayPort to VGA converter board (for IEI iDP connector) (P/N: DP-VGA-R10)	
DisplayPort to DVI-D converter board (for IEI iDP connector) (P/N: DP-DVI-R10)	
DisplayPort to DisplayPort converter board (for IEI iDP connector) (P/N: DP-DP-R10)	
20-pin Infineon TPM module, software management tool, firmware v3.17 (P/N: TPM-IN01-R11)	

**Table 2-2: Optional Items**

Chapter

**3**

# Connectors

---

### 3.1 Peripheral Interface Connectors

This chapter details all the peripheral interface connectors.

#### 3.1.1 IMBA-H810 Layout

The figure below shows all the peripheral interface connectors.

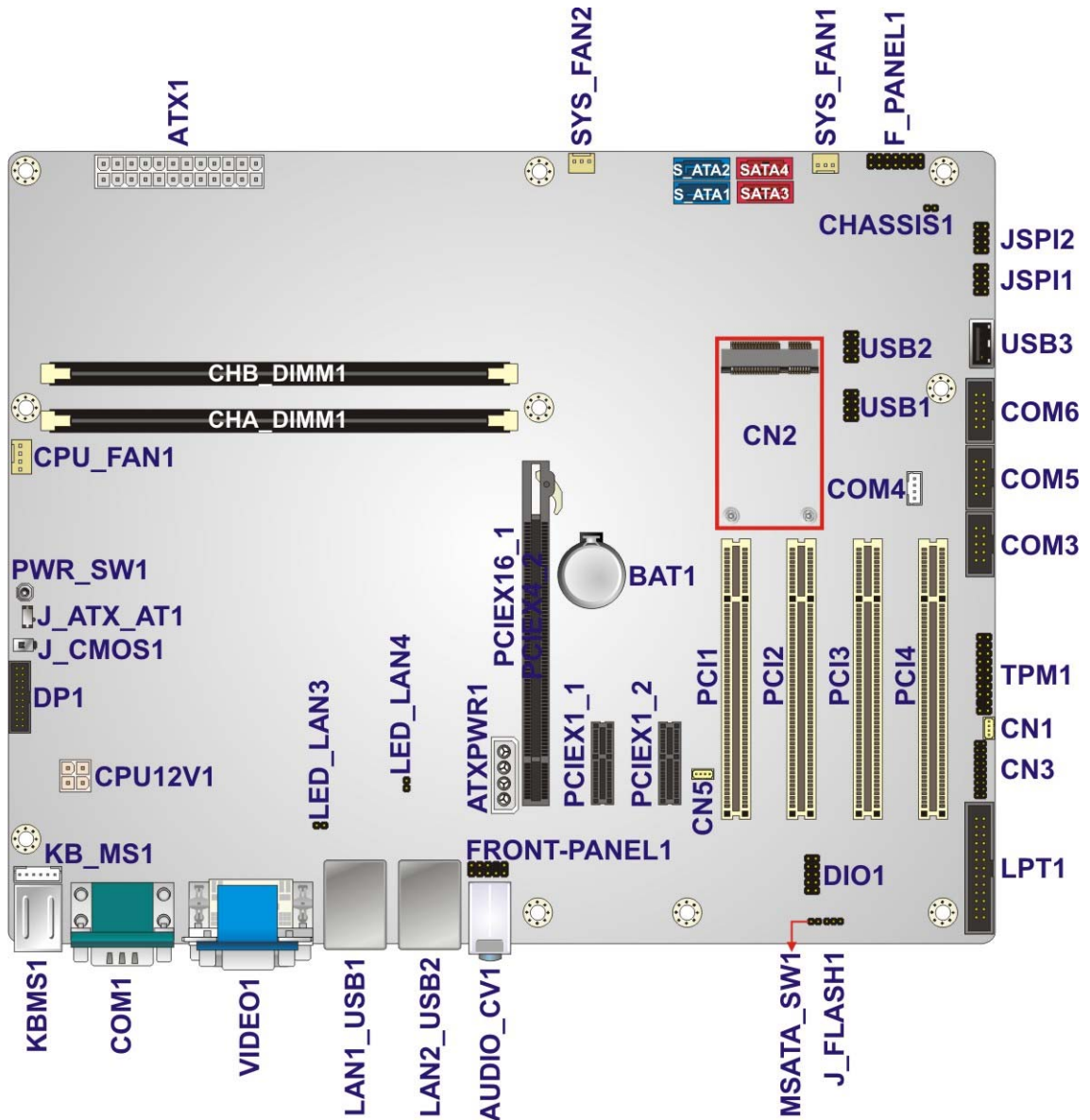


Figure 3-1: Peripheral Interface Connectors

## IMBA-H810 ATX Motherboard

### 3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
+12V power connector	4-pin Molex power connector	CPU12V1
Additional power connector	4-pin connector	ATXPWR1
ATX power connector	24-pin connector	ATX1
Battery connector	Battery holder	BAT1
Chassis intrusion connector	2-pin header	CHASSIS1
DDR3 DIMM sockets	240-pin socket	CHA_DIMM1, CHB_DIMM1
Digital I/O connector	10-pin header	DIO1
EC debug connector	18-pin header	CN3
Fan connector (CPU)	4-pin wafer	CPU_FAN1
Fan connectors (system)	3-pin wafer	SYS_FAN1, SYS_FAN2
Front panel audio connector	10-pin header	FRONT-PANEL1
Front panel connector	14-pin header	F_PANEL1
I <sup>2</sup> C connector	4-pin wafer	CN5
Internal DisplayPort connector	20-pin box header	DP1
Keyboard and mouse connector	6-pin wafer	KB_MS1
LAN1 LED connector	2-pin header	LED_LAN3
LAN2 LED connector	2-pin header	LED_LAN4
Parallel port connector	26-pin box header	LPT1
PCI slots	PCI slot	PCI1, PCI2, PCI3, PCI4
PCIe Mini slot	PCIe Mini slot	CN2
PCIe x1 slots	PCIe x1 slot	PCIEX1_1, PCIEX1_2

Connector	Type	Label
PCIe x16 slot	PCIe x16 slot	PCIEX16_1
Power button	Push button	PWR_SW1
SATA 3Gb/s drive connector	7-pin SATA connector	SATA3, SATA4
SATA 6Gb/s drive connector	7-pin SATA connector	S_ATA1, S_ATA2
Serial port, RS-232	10-pin box header	COM3, COM5, COM6
Serial port, RS-422/485	4-pin wafer	COM4
SMBus connector	4-pin wafer	CN1
SPI flash connector	8-pin header	JSPI1
SPI flash connector, EC	8-pin header	JSPI2
TPM connector	20-pin header	TPM1
USB 2.0 connector (Type A)	Type A	USB3
USB 2.0 connectors	8-pin header	USB1, USB2

**Table 3-1: Peripheral Interface Connectors**

### 3.1.3 External Interface Panel Connectors

The table below lists the connectors on the external I/O panel.

Connector	Type	Label
Audio connector	Audio jacks	AUDIO_CV1
Ethernet and USB 2.0 ports	RJ-45, USB 2.0	LAN2_USB2
Ethernet and USB 3.0 ports	RJ-45, USB 3.0	LAN1_USB1
Keyboard and mouse	Dual PS/2	KBMS1
VGA and DVI-D connector	15-pin female, 24-pin female	VIDEO1
Serial port connectors	9-pin male DB-9	COM1

**Table 3-2: Rear Panel Connectors**



## IMBA-H810 ATX Motherboard

### 3.2 Internal Peripheral Connectors

The section describes all of the connectors on the IMBA-H810.

#### 3.2.1 +12V Power Connector

- CN Label:** CPU12V1
- CN Type:** 4-pin Molex power connector, p=4.2 mm
- CN Location:** See **Figure 3-2**
- CN Pinouts:** See **Table 3-3**

This connector provides power to the CPU.



**Figure 3-2: +12V Power Connector Pinout Location**

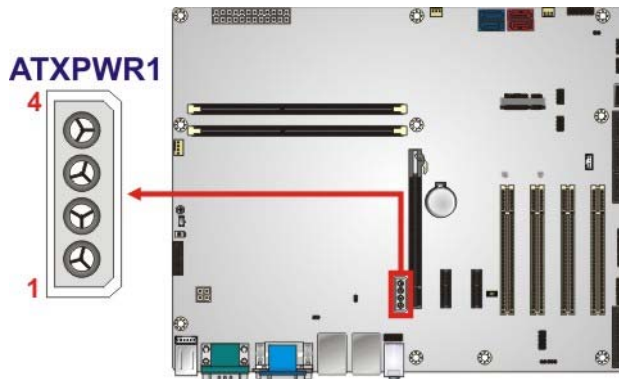
Pin	Description	Pin	Description
1	GND	2	GND
3	+12V	4	+12V

**Table 3-3: +12V Power Connector Pinouts**

#### 3.2.2 Additional Power Connector

- CN Label:** ATPWR1
- CN Type:** 4-pin connector, p=5.08 mm
- CN Location:** See **Figure 3-3**
- CN Pinouts:** See **Table 3-4**

The additional power connector provides extra +12V and +5V power to the system.



**Figure 3-3: Additional Power Connector Location**

Pin	Description
1	+12V
2	GND
3	GND
4	VCC

**Table 3-4: Additional Power Connector Pinouts**

### 3.2.3 ATX Power Connector

- CN Label:** ATX1
- CN Type:** 24-pin connector, p=4.2 mm
- CN Location:** See **Figure 3-4**
- CN Pinouts:** See **Table 3-5**

The ATX power connector connects to an ATX power supply.

IMBA-H810 ATX Motherboard

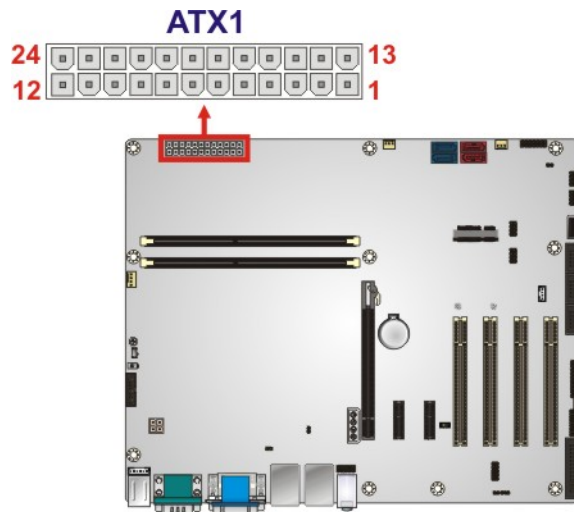


Figure 3-4: ATX Power Connector Location

Pin	Description	Pin	Description
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	Power good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

Table 3-5: ATX Power Connector Pinouts

### 3.2.4 Battery Connector

**CAUTION:**

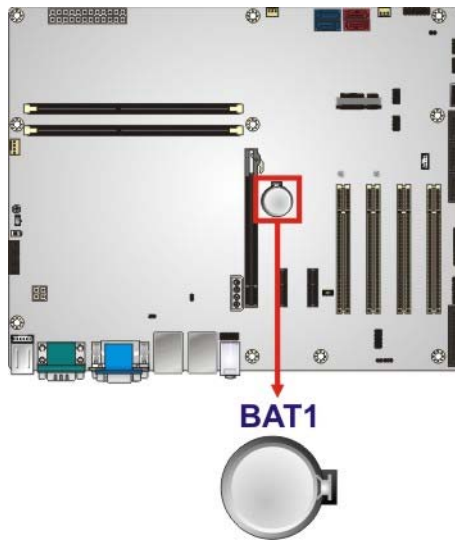
Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

---

<b>CN Label:</b>	<b>BAT1</b>
<b>CN Type:</b>	Battery holder
<b>CN Location:</b>	See <b>Figure 3-5</b>

A system battery is placed in the battery holder. The battery provides power to the system clock to retain the time when power is turned off.



**Figure 3-5: Battery Connector Location**

## IMBA-H810 ATX Motherboard

### 3.2.5 Chassis Intrusion Connector

- CN Label:** CHASSIS1
- CN Type:** 2-pin header, p=2.54 mm
- CN Location:** See **Figure 3-6**
- CN Pinouts:** See **Table 3-6**

The chassis intrusion connector is for a chassis intrusion detection sensor or switch that detects if a chassis component is removed or replaced.



**Figure 3-6: Chassis Intrusion Connector Location**

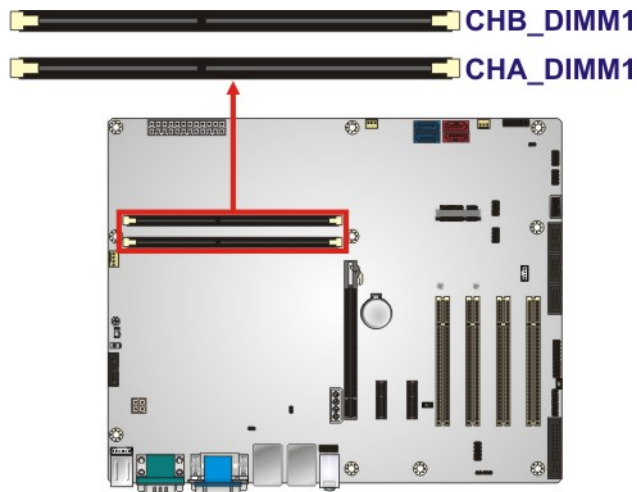
Pin	Description
1	+3.3VSB
2	CHASSIS OPEN

**Table 3-6: Chassis Intrusion Connector Pinouts**

### 3.2.6 DDR3 DIMM Slots

- CN Label:** CHA\_DIMM1, CHB\_DIMM1
- CN Type:** DDR3 DIMM slot
- CN Location:** See **Figure 3-7**

The DIMM slots are for DDR3/DDR3L DIMM memory modules.



**Figure 3-7: DDR3 DIMM Slot Locations**

### 3.2.7 Digital I/O Connector

- CN Label:** DIO1
- CN Type:** 10-pin header, p=2.54 mm
- CN Location:** See **Figure 3-8**
- CN Pinouts:** See **Table 3-7**

The digital I/O connector provides programmable input and output for external devices.



**Figure 3-8: Digital I/O Connector Location**

Pin	Description	Pin	Description
1	GND	2	VCC
3	Output 3	4	Output 2

## IMBA-H810 ATX Motherboard

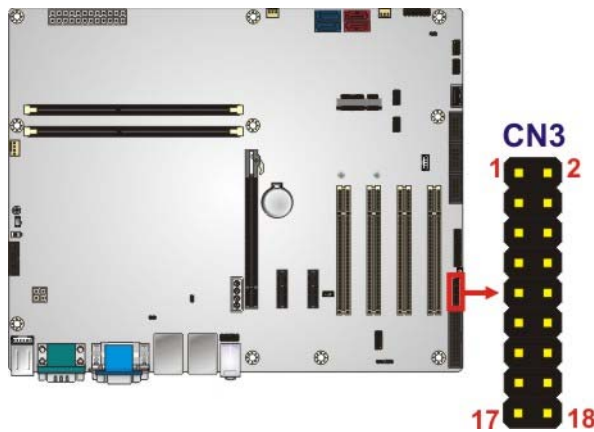
Pin	Description	Pin	Description
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

**Table 3-7: Digital I/O Connector Pinouts**

### 3.2.8 EC Debug Connector

- CN Label:** CN3
- CN Type:** 18-pin header, p=2 mm
- CN Location:** See **Figure 3-9**
- CN Pinouts:** See **Table 3-8**

The EC debug connector is used for EC debug.



**Figure 3-9: EC Debug Connector Location**

Pin	Description	Pin	Description
1	EC_EPP_STB#	2	EC_EPP_AFD#
3	EC_EPP_PDO	4	NC
5	EC_EPP_PD1	6	EC_EPP_INIT#
7	EC_EPP_PD2	8	EC_EPP_SLIN#
9	EC_EPP_PD3	10	GND
11	EC_EPP_PD4	12	NC
13	EC_EPP_PD5	14	EC_EPP_BUSY

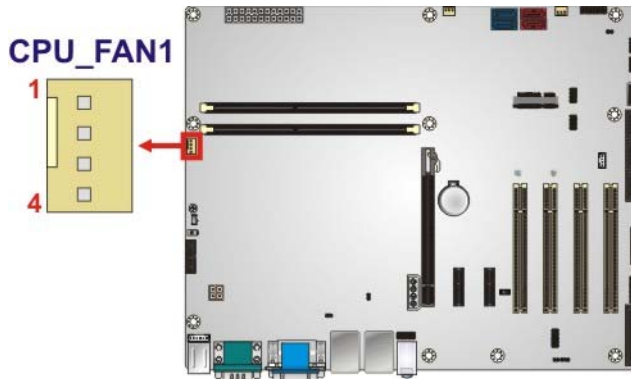
Pin	Description	Pin	Description
15	EC_EPP_PD6	16	EC_EPP_KSI5
17	EC_EPP_PD7	18	EC_EPP_KSI4

**Table 3-8: EC Debug Connector Pinouts**

### 3.2.9 Fan Connector (CPU)

- CN Label:** CPU\_FAN1
- CN Type:** 4-pin wafer, p=2.54 mm
- CN Location:** See **Figure 3-10**
- CN Pinouts:** See **Table 3-9**

The fan connector attaches to a CPU cooling fan.



**Figure 3-10: CPU Fan Connector Location**

Pin	Description
1	GND
2	+12V
3	FANIO
4	PWM

**Table 3-9: CPU Fan Connector Pinouts**

### 3.2.10 Fan Connectors (System)

- CN Label:** SYS\_FAN1, SYS\_FAN2
- CN Type:** 3-pin wafer, p=2.54 mm

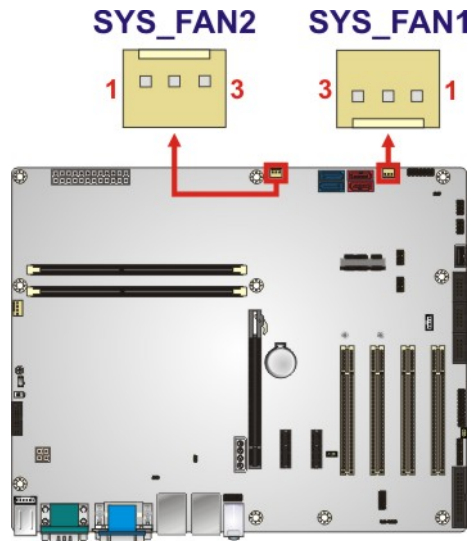


## IMBA-H810 ATX Motherboard

**CN Location:** See **Figure 3-11**

**CN Pinouts:** See **Table 3-10**

Each fan connector attaches to a system cooling fan.



**Figure 3-11: System Fan Connector Locations**

Pin	Description
1	FANIO
2	+12V (PWM)
3	GND

**Table 3-10: System Fan Connector Pinouts**

### 3.2.11 Front Panel Audio Connector

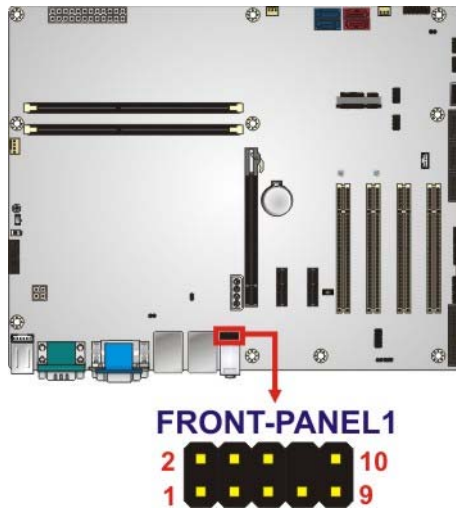
**CN Label:** FRONT-PANEL1

**CN Type:** 10-pin header, p=2.54 mm

**CN Location:** See **Figure 3-12**

**CN Pinouts:** See **Table 3-11**

This connector connects to speakers, a microphone and an audio input.



**Figure 3-12: Front Panel Audio Connector Location**

Pin	Description	Pin	Description
1	MIC2-L	2	GND
3	MIC2-R	4	Presence#
5	LINE2-R	6	MIC2-JD
7	FRONT-IO	8	NC
9	LINE2-L	10	LINE2-JD

**Table 3-11: Front Panel Audio Connector Pinouts**

### 3.2.12 Front Panel Connector

- CN Label:** F\_PANEL1
- CN Type:** 14-pin header, p=2.54 mm
- CN Location:** See **Figure 3-13**
- CN Pinouts:** See **Table 3-12**

The front panel connector connects to the indicator LEDs and buttons on the computer's front panel.

IMBA-H810 ATX Motherboard



Figure 3-13: Front Panel Connector Location

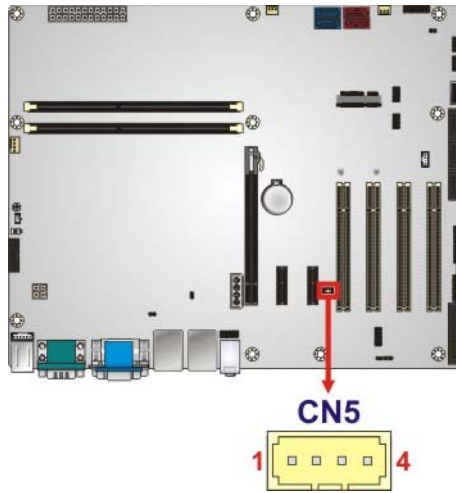
Function	Pin	Description	Function	Pin	Description
Power LED	1	+5V	Speaker	2	BEEP_PWR
	3	NC		4	NC
	5	GND		6	NC
Power Button	7	PWRBTN_SW#		8	PC_BEEP
	9	GND	10	NC	
HDD LED	11	+5V	Reset	12	EXTRST-
	13	SATA_LED#		14	GND

Table 3-12: Front Panel Connector Pinouts

3.2.13 I<sup>2</sup>C Connector

- CN Label:** CN5
- CN Type:** 4-pin wafer, p=1.25 mm
- CN Location:** See Figure 3-14
- CN Pinouts:** See Table 3-13

The I<sup>2</sup>C connector is used to connect I<sup>2</sup>C-bus devices to the mainboard.



**Figure 3-14: I<sup>2</sup>C Connector Location**

Pin	Description
1	GND
2	PCH_GP38
3	PCH_GP39
4	+5V

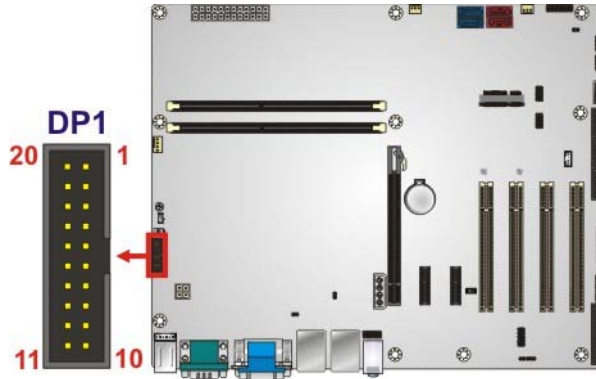
**Table 3-13: I<sup>2</sup>C Connector Pinouts**

### 3.2.14 Internal DisplayPort Connector

- CN Label:** DP1
- CN Type:** 20-pin box header, p=2 mm
- CN Location:** See **Figure 3-15**
- CN Pinouts:** See **Table 3-14**

The DisplayPort connector supports HDMI, LVDS, VGA, DVI and DisplayPort graphics interfaces with up to 3840x2160 resolutions.

## IMBA-H810 ATX Motherboard



**Figure 3-15: Internal DisplayPort Connector Location**

Pin	Description	Pin	Description
1	+5V	11	AUXP
2	LANE1N	12	AUXN
3	LANE1P	13	GND
4	GND	14	LANE2P
5	LANE3N	15	LANE2N
6	LANE3P	16	GND
7	GND	17	LANE0P
8	AUX_CTRL_DET_D	18	LANE0N
9	GND	19	+3.3V
10	HPD	20	NA

**Table 3-14: Internal DisplayPort Connector Pinouts**

### 3.2.15 Keyboard and Mouse Connector

- CN Label:** KB\_MS1
- CN Type:** 6-pin wafer, p=2 mm
- CN Location:** See **Figure 3-16**
- CN Pinouts:** See **Table 3-15**

The keyboard and mouse connector connects to a PS/2 Y-cable that can be connected to a PS/2 keyboard and mouse.



**Figure 3-16: Keyboard and Mouse Connector Location**

Pin	Description
1	VCC
2	Mouse Data
3	Mouse Clock
4	Keyboard Data
5	Keyboard Clock
6	GND

**Table 3-15: Keyboard and Mouse Connector Pinouts**

### 3.2.16 LAN1 LED Connector

- CN Label:** LED\_LAN3
- CN Type:** 2-pin header,  $p=2.54$  mm
- CN Location:** See **Figure 3-17**
- CN Pinouts:** See **Table 3-16**

The LAN1 LED connector is used to connect to the LAN1 LED indicator on the chassis to indicate users the link activities of the LAN1 port.

**IMBA-H810 ATX Motherboard**



**Figure 3-17: LAN1 LED Connector Location**

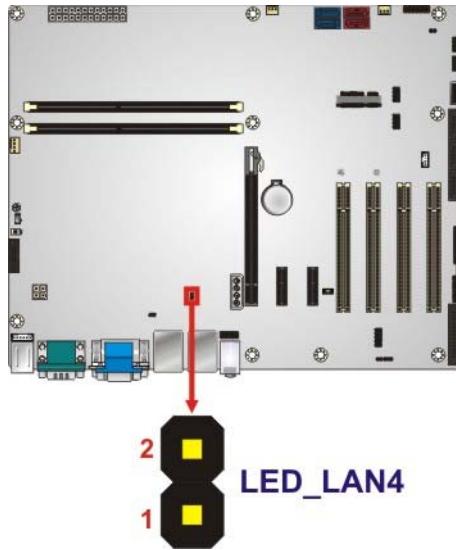
Pin	Description
1	+3.3V
2	LAN1_LED_LINK#_ACT

**Table 3-16: LAN1 LED Connector (LED\_LAN3) Pinouts**

**3.2.17 LAN2 LED Connector**

- CN Label:** LED\_LAN4
- CN Type:** 2-pin header, p=2.54 mm
- CN Location:** See **Figure 3-18**
- CN Pinouts:** See **Table 3-17**

The LAN2 LED connector is used to connect to the LAN2 LED indicator on the chassis to indicate users the link activities of the LAN2 port.



**Figure 3-18: LAN2 LED Connector Location**

Pin	Description
1	+3.3V
2	LAN2_LED_LINK#_ACT

**Table 3-17: LAN2 LED Connector (LED\_LAN4) Pinouts**

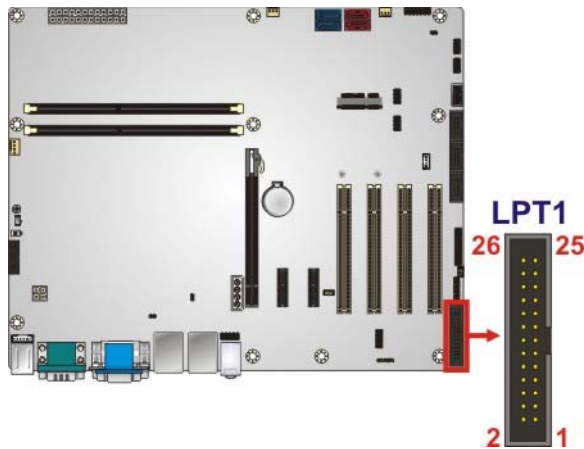
### 3.2.18 Parallel Port Connector

- CN Label:** LPT1
- CN Type:** 26-pin box header, p=2.54 mm
- CN Location:** See **Figure 3-19**
- CN Pinouts:** See **Table 3-18**

The parallel port connector connects to a parallel port connector interface or some other parallel port device such as a printer.



**IMBA-H810 ATX Motherboard**



**Figure 3-19: Parallel Port Connector Location**

Pin	Description	Pin	Description
1	STROBE#	2	DATA0
3	DATA1	4	DATA2
5	DATA3	6	DATA4
7	DATA5	8	DATA6
9	DATA7	10	ACKNOWLEDGE#
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE#
17	PRINTER SELECT LN#	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND		

**Table 3-18: Parallel Port Connector Pinouts**

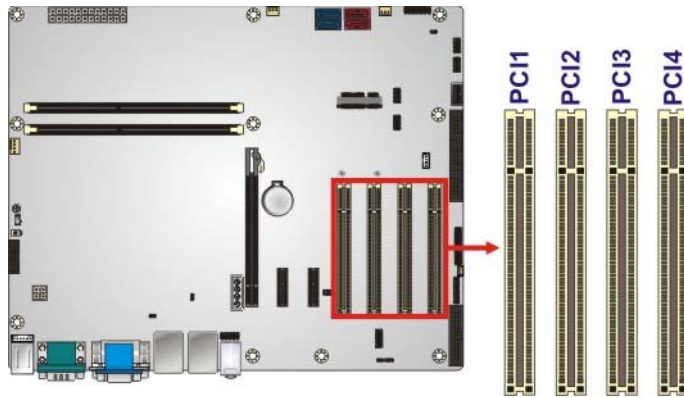
**3.2.19 PCI Slots**

**CN Label:** PCI1, PCI2, PCI3, PCI4

**CN Type:** PCI Slot

**CN Location:** See **Figure 3-20**

The PCI slot enables a PCI expansion module to be connected to the board.



**Figure 3-20: PCI Slot Locations**

### 3.2.20 PCIe Mini Slot

<b>CN Label:</b>	<b>CN2</b>
<b>CN Type:</b>	PCIe Mini slot
<b>CN Location:</b>	See <b>Figure 3-21</b>
<b>CN Pinouts:</b>	See <b>Table 3-19</b>

The PCIe Mini slot is for installing a full-size PCIe Mini expansion card, including an mSATA card.

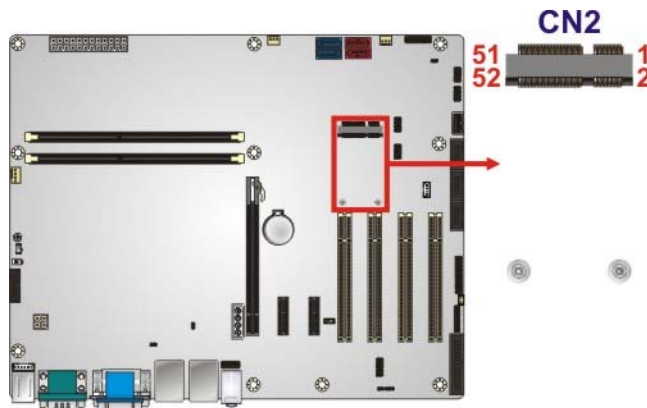


**NOTE:**

If the user shorts the mSATA setup jumper (MSATA\_SW1) to force the system to enable mSATA device or an mSATA device is detected, the SATA4 connector will be disabled. Please refer to **Section 0**.

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# IMBA-H810 ATX Motherboard



**Figure 3-21: PCIe Mini Slot Location**

Pin	Description	Pin	Description
1	PCIE_WAKE#	2	+3.3V
3	N/C	4	GND
5	N/C	6	1.5V
7	N/C	8	N/C
9	GND	10	N/C
11	MSATA_CLK#	12	N/C
13	MSATA_CLK	14	N/C
15	GND	16	N/C
17	PLTRST_N	18	GND
19	N/C	20	+3.3V
21	GND	22	PLTRST_N
23	SATA_RX+	24	+3.3V
25	SATA_RX-	26	GND
27	GND	28	1.5V
29	GND	30	SMB_CLK
31	SATA_TX-	32	SMB_DATA
33	SATA_TX+	34	GND
35	GND	36	USB_DATA-
37	GND	38	USB_DATA+
39	+3.3V	40	GND
41	+3.3V	42	N/C
43	+3.3V	44	N/C

Pin	Description	Pin	Description
45	CLINK_CLK	46	N/C
47	CLINK_DATA	48	1.5V
49	CLINK_RST#	50	GND
51	MSATA_DET	52	+3.3V

**Table 3-19: PCIe Mini Slot Pinouts**

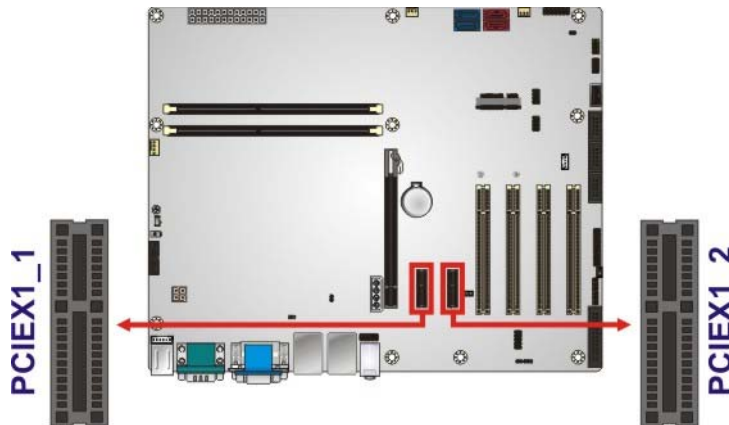
### 3.2.21 PCIe x1 Slot

**CN Label:** PCIEX1\_1, PCIEX1\_2

**CN Type:** PCIe x1 slot

**CN Location:** See **Figure 3-22**

The PCIe x1 slots are for PCIe x1 expansion cards.



**Figure 3-22: PCIe x1 Slot Locations**

### 3.2.22 PCI Express x16 Slot

**CN Label:** PCIEX16\_1

**CN Type:** PCIe x16 slot

**CN Location:** See **Figure 3-23**

The PCIe x16 expansion card slot is for PCIe x16 expansion card.

## IMBA-H810 ATX Motherboard

PCIEX16\_1

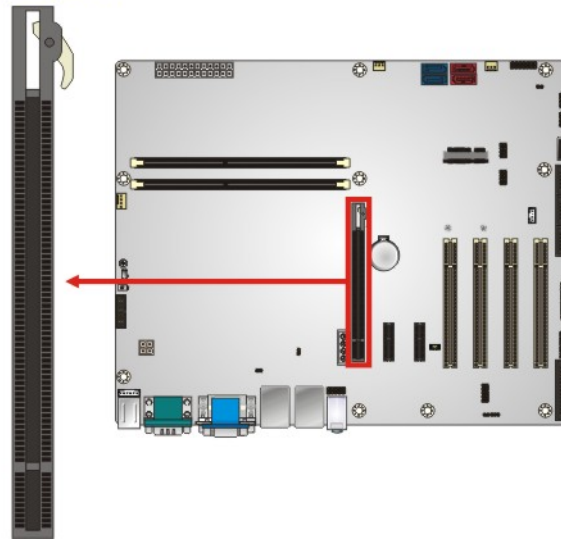


Figure 3-23: PCIe x16 Slot Location

### 3.2.23 Power Button

- CN Label: PWR\_SW1
- CN Type: Push button
- CN Location: See Figure 3-24

The on-board power button controls system power.

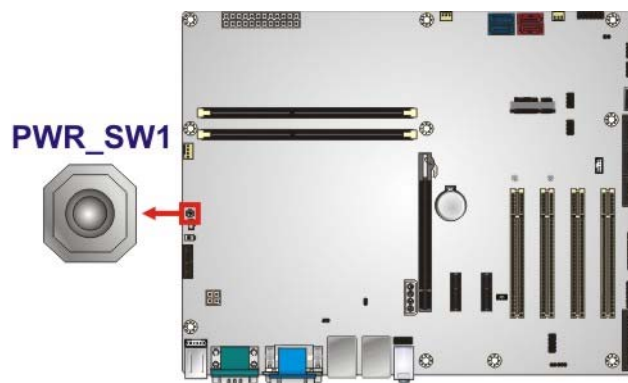


Figure 3-24: Power Button Location

**3.2.24 SATA 3Gb/s Drive Connector**

- CN Label:** SATA3, SATA4
- CN Type:** 7-pin SATA drive connector
- CN Location:** See **Figure 3-25**
- CN Pinouts:** See **Table 3-20**

The SATA drive connectors can be connected to SATA drives and supports up to 3Gb/s data transfer rate.



**Figure 3-25: SATA 3Gb/s Drive Connector Locations**

Pin	Description	Pin	Description
1	GND	2	TX+
3	TX-	4	GND
5	RX-	6	RX+
7	GND		

**Table 3-20: SATA 3Gb/s Drive Connector Pinouts**

## IMBA-H810 ATX Motherboard



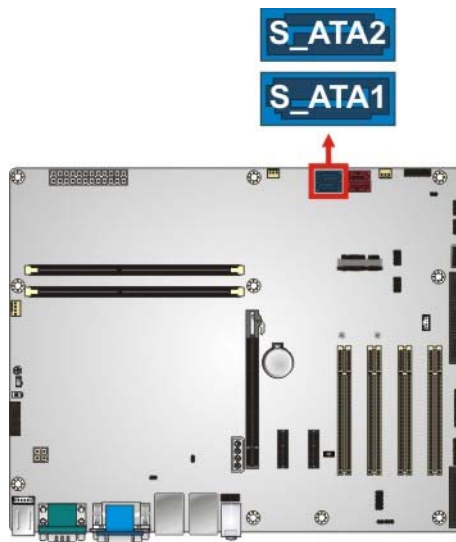
### NOTE:

If the user shorts the mSATA setup jumper (MSATA\_SW1) to force the system to enable mSATA device or an mSATA device is detected, the SATA4 connector will be disabled. Please refer to **Section 0**.

### 3.2.25 SATA 6Gb/s Drive Connector

<b>CN Label:</b>	<b>S_ATA1, S_ATA2</b>
<b>CN Type:</b>	7-pin SATA drive connector
<b>CN Location:</b>	See <b>Figure 3-26</b>
<b>CN Pinouts:</b>	See <b>Table 3-21</b>

The SATA drive connectors can be connected to SATA drives and support up to 6Gb/s data transfer rate.



**Figure 3-26: SATA 6Gb/s Drive Connector Location**

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

**Table 3-21: SATA 6Gb/s Drive Connector Pinouts**

### 3.2.26 Serial Port Connector, RS-232

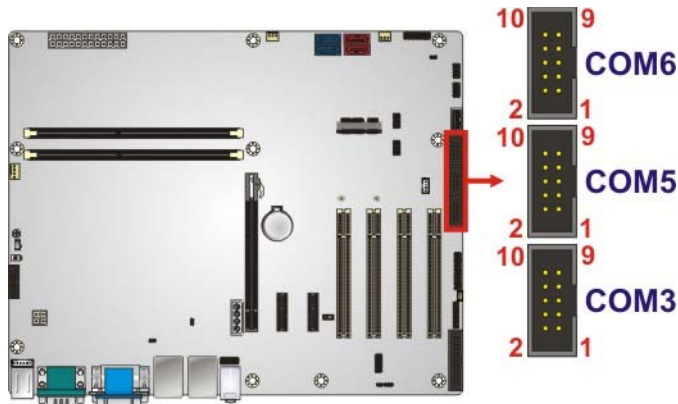
**CN Label:** COM3, COM5, COM6

**CN Type:** 10-pin box header, p=2.54 mm

**CN Location:** See **Figure 3-27**

**CN Pinouts:** See **Table 3-22**

Each of these connectors provides RS-232 connections.



**Figure 3-27: RS-232 Serial Port Connector Locations**

Pin	Description	Pin	Description
1	DCD	2	DSR
3	RXD	4	RTS



## IMBA-H810 ATX Motherboard

Pin	Description	Pin	Description
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	N/C

**Table 3-22: RS-232 Serial Port Connector Pinouts**

### 3.2.27 Serial Port Connector, RS-422/485

- CN Label:** COM4
- CN Type:** 4-pin wafer, p=2 mm
- CN Location:** See Figure 3-28
- CN Pinouts:** See Table 3-23

This connector provides RS-422 or RS-485 communications.



**Figure 3-28: RS-422/485 Connector Location**

Pin	Description	Pin	Description
1	RXD422-	3	TXD422+/TXD485+
2	RXD422+	4	TXD422-/TXD485-

**Table 3-23: RS-422/485 Connector Pinouts**

Use the optional RS-422/485 cable to connect to a serial device. The pinouts of the DB-9 connector are listed below.

RS-422 Pinouts	RS-485 Pinouts

**Table 3-24: DB-9 RS-422/485 Pinouts**

### 3.2.28 SMBus Connector

- CN Label:** CN1
- CN Type:** 4-pin wafer, p=1.25 mm
- CN Location:** See **Figure 3-29**
- CN Pinouts:** See **Table 3-25**

The SMBus (System Management Bus) connector provides low-speed system management communications.



**Figure 3-29: SMBus Connector Location**

Pin	Description
1	GND
2	SMB_DATA
3	SMB_CLK
4	+5V

**Table 3-25: SMBus Connector Pinouts**

## IMBA-H810 ATX Motherboard

### 3.2.29 SPI Flash Connector

- CN Label:** JSPI1
- CN Type:** 8-pin header, p=2.54 mm
- CN Location:** See **Figure 3-30**
- CN Pinouts:** See **Table 3-26**

The SPI flash connector is used to flash the SPI ROM.



**Figure 3-30: SPI Flash Connector Location**

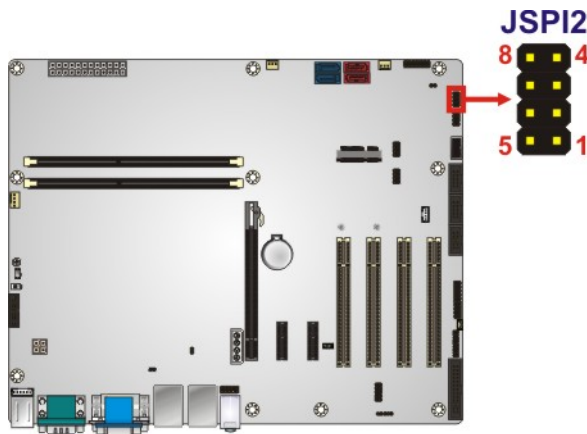
Pin	Description	Pin	Description
1	+3.3V	2	SPI_CS#
3	SPI_SO	4	NC
5	GND	6	SPI_CLK
7	SPI_SI	8	NC

**Table 3-26: SPI Flash Connector Pinouts**

### 3.2.30 SPI Flash Connector, EC

- CN Label:** JSPI2
- CN Type:** 8-pin header, p=2.54 mm
- CN Location:** See **Figure 3-31**
- CN Pinouts:** See **Table 3-27**

The SPI flash connector is used to flash the EC ROM.



**Figure 3-31: SPI EC Flash Connector Location**

Pin	Description	Pin	Description
1	+3.3V	2	SPI_CS#
3	SPI_SO	4	NC
5	GND	6	SPI_CLK
7	SPI_SI	8	NC

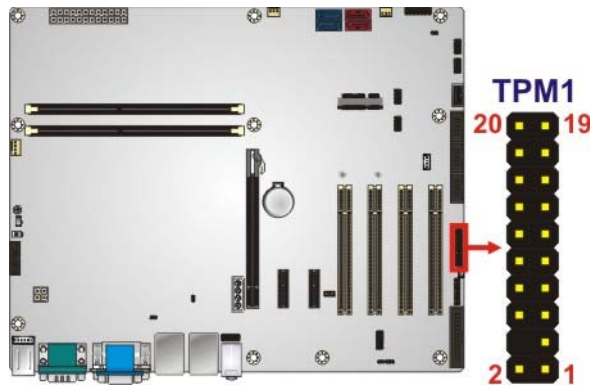
**Table 3-27: SPI EC Flash Connector Pinouts**

### 3.2.31 TPM Connector

- CN Label:** TPM1
- CN Type:** 20-pin header, p=2.54 mm
- CN Location:** See **Figure 3-32**
- CN Pinouts:** See **Table 3-28**

## IMBA-H810 ATX Motherboard

The TPM connector connects to a TPM module.



**Figure 3-32: TPM Connector Location**

Pin	Description	Pin	Description
1	LCLK	2	GND
3	LFRAME#	4	KEY
5	LRRST#	6	+5V
7	LAD3	8	LAD2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SCL	14	SDA
15	SB3V	16	SERIRQ
17	GND	18	GLKRUN#
19	LPCPD#	20	LDRO#

**Table 3-28: TPM Connector Pinouts**

### 3.2.32 USB 2.0 Connector (Type A)

- CN Label:** USB3
- CN Type:** USB Type A
- CN Location:** See **Figure 3-33**
- CN Pinouts:** See **Table 3-29**

The USB Type A connector connects to a USB 2.0/1.1 device.



**Figure 3-33: USB 2.0 Connector (Type A) Pinout Location**

Pin	Description
1	VCC
2	DATA-
3	DATA+
4	GROUND

**Table 3-29: USB 2.0 Connector (Type A) Pinouts**

### 3.2.33 USB 2.0 Connectors

- CN Label:** USB1, USB2
- CN Type:** 8-pin header, p=2.54 mm
- CN Location:** See **Figure 3-34**
- CN Pinouts:** See **Table 3-30**

The USB 2.0 connectors connect to USB 2.0 devices. Each pin header provides two USB 2.0 ports.

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Figure 3-34: USB 2.0 Connector Pinout Locations

Pin	Description	Pin	Description
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

Table 3-30: USB 2.0 Connector Pinouts

### 3.3 External Peripheral Interface Connector Panel

The figure below shows the external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

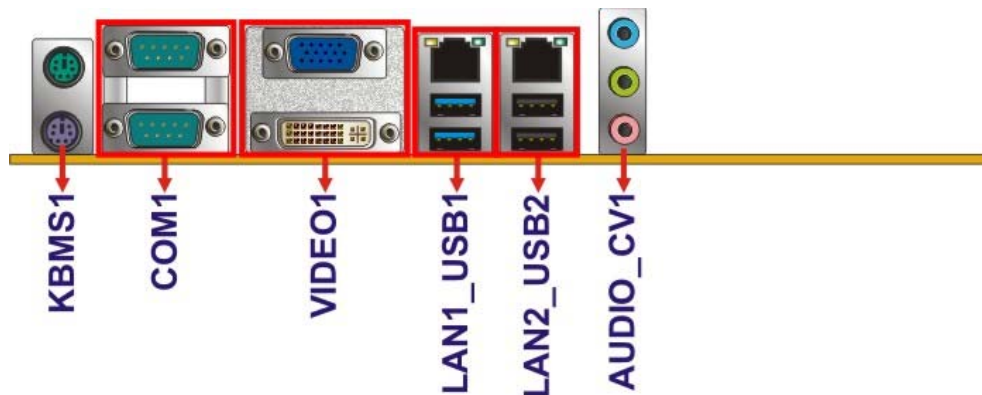


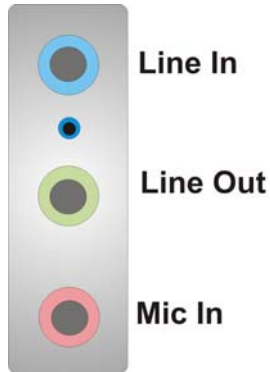
Figure 3-35: External Peripheral Interface Connector

### 3.3.1 Audio Connector

- CN Label:** AUDIO\_CV1  
**CN Type:** Audio jack  
**CN Location:** See **Figure 3-35**

The audio jacks connect to external audio devices.

- **Line In port (Light Blue):** Connects a CD-ROM, DVD player, or other audio devices.
- **Line Out port (Lime):** Connects to a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.
- **Microphone (Pink):** Connects a microphone.



**Figure 3-36: Audio Connector**

### 3.3.2 Ethernet and USB 2.0 Connectors

- CN Label:** LAN2\_USB2  
**CN Type:** RJ-45, USB 2.0  
**CN Location:** See **Figure 3-35**  
**CN Pinouts:** See **Table 3-31** and **Table 3-32**

There are two external USB 2.0 connectors on the IMBA-H810.

Pin	Description	Pin	Description
1	VCC	5	VCC
2	USB_DATA-	6	USB_DATA-



## IMBA-H810 ATX Motherboard

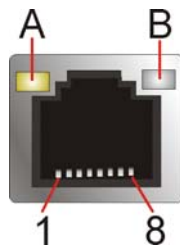
Pin	Description	Pin	Description
3	USB_DATA+	7	USB_ DATA+
4	GND	8	GND

**Table 3-31: USB 2.0 Port Pinouts**

Each LAN connector connects to a local network

Pin	Description	Pin	Description
P2	TRD2P0	P6	TRD2P2
P3	TRD2N0	P7	TRD2N2
P4	TRD2P1	P8	TRD2P3
P5	TRD2N1	P9	TRD2N3

**Table 3-32: LAN2 Pinouts**



**Figure 3-37: Ethernet Connector**

### 3.3.3 Ethernet and USB 3.0 Connectors

**CN Label:** LAN1\_USB1

**CN Type:** RJ-45, USB 3.0

**CN Location:** See **Figure 3-35**

**CN Pinouts:** See **Table 3-33** and **Table 3-34**

There are two external USB 3.0 connectors on the IMBA-H810.

Pin	Description	Pin	Description
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_ DATA+
4	GND	13	GND

Pin	Description	Pin	Description
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

**Table 3-33: USB 3.0 Port Pinouts**

Each LAN connector connects to a local network

Pin	Description	Pin	Description
20	LAN1_MDI0P	24	LAN1_MDI2P
21	LAN1_MDI0N	25	LAN1_MDI2N
22	LAN1_MDI1P	26	LAN1_MDI3P
23	LAN1_MDI1N	27	LAN1_MDI3N

**Table 3-34: LAN1 Pinouts**

### 3.3.4 PS/2 Keyboard and Mouse Connectors

- CN Label:** KBMS1
- CN Type:** Dual PS/2
- CN Location:** See **Figure 3-35**
- CN Pinouts:** See **Table 3-35** and **Figure 3-38**

The PS/2 ports are for connecting a PS/2 mouse and a PS/2 keyboard.

Pin	Description	Pin	Description
1	Keyboard Data	7	Mouse Data
2	NC	8	NC
3	GND	9	GND
4	VCC	10	VCC
5	Keyboard Clock	11	Mouse Clock
6	NC	12	NC

**Table 3-35: PS/2 Keyboard and Mouse Connector Pinouts**

IMBA-H810 ATX Motherboard

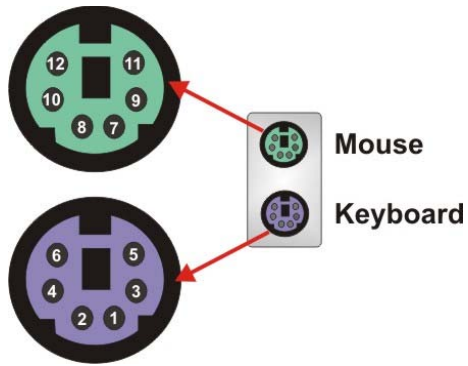


Figure 3-38: PS/2 Keyboard and Mouse Connectors

3.3.5 Serial Port Connector (COM1)

- CN Label:** COM1 (top)
- CN Type:** DB-9 connector
- CN Location:** See Figure 3-35
- CN Pinouts:** See Table 3-36 and Figure 3-39

The serial port connects to a RS-232 serial communications device.

Pin	Description	Pin	Description
1	DATA CARRIER DETECT	6	DATA SET READY
2	RECEIVE DATA	7	REQUEST TO SEND
3	TRANSMIT DATA	8	CLEAR TO SEND
4	DATA TERMINAL READY	9	RING INDICATOR
5	GND		

Table 3-36: Serial Port Connector (COM1) Pinouts

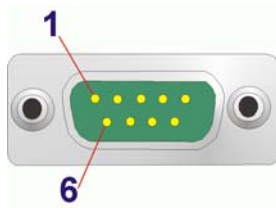


Figure 3-39: Serial Port Connector (COM1) Pinouts

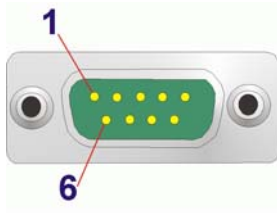
**3.3.6 Serial Port Connector (COM2)**

- CN Label:** COM1 (bottom)
- CN Type:** DB-9 connector
- CN Location:** See **Figure 3-35**
- CN Pinouts:** See **Table 3-37** and **Figure 3-40**

The serial port connects to a RS-232 serial communications device.

Pin	Description	Pin	Description
1	DATA CARRIER DETECT	6	DATA SET READY
2	RECEIVE DATA	7	REQUEST TO SEND
3	TRANSMIT DATA	8	CLEAR TO SEND
4	DATA TERMINAL READY	9	RING INDICATOR
5	GND		

**Table 3-37: Serial Port Connector (COM2) Pinouts**



**Figure 3-40: Serial Port Connector (COM2) Pinouts**

**3.3.7 VGA and DVI-D Connectors**

- CN Label:** VIDEO1
- CN Type:** 15-pin VGA and 24-pin DVI-D
- CN Location:** See **Figure 3-35**
- CN Pinouts:** See **Table 3-38** and **Table 3-39**

The DVI connector connects to a monitor that supports DVI video input.

## IMBA-H810 ATX Motherboard

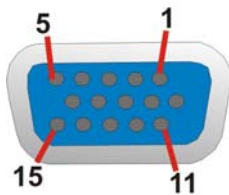
Pin	Description	Pin	Description
1	DVI_DATA2#	2	DVI_DATA2
3	GND	4	NC
5	NC	6	DDC CLK
7	DDC DATA	8	VS
9	DVI_DATA1#	10	DVI_DATA1
11	GND	12	NC
13	NC	14	+5V
15	Hot Plug Detect	16	HPDET
17	DVI_DATA0#	18	DVI_DATA0
19	GND	20	NC
21	NC	22	NC
23	DVI_CLK	24	DVI_CLK#

**Table 3-38: DVI-D Connector Pinouts**

The 15-pin VGA connector connects to a monitor that accepts a standard VGA input.

Pin	Description	Pin	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDCDA
13	HSYNC	14	VSYNC
15	DDCCLK		

**Table 3-39: VGA Connector Pinouts**



**Figure 3-41: VGA Connector**

Chapter

4

# Installation

---

## IMBA-H810 ATX Motherboard

### 4.1 Anti-static Precautions

---



#### WARNING:

Failure to take ESD precautions during the installation of the IMBA-H810 may result in permanent damage to the IMBA-H810 and severe injury to the user.

---

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMBA-H810. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMBA-H810 or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- **Wear an anti-static wristband:** - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- **Self-grounding:**- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad:** When configuring the IMBA-H810, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMBA-H810.
- **Only handle the edges of the PCB:-:** When handling the PCB, hold the PCB by the edges.

### 4.2 Installation Considerations

---



#### NOTE:

The following installation notices and installation considerations should be read and understood before installation. All installation notices must be strictly adhered to. Failing to adhere to these precautions may lead to severe damage and injury to the person performing the installation.

---

**WARNING:**

The installation instructions described in this manual should be carefully followed in order to prevent damage to the components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
  - The user manual provides a complete description of the IMBA-H810 installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the IMBA-H810 on an anti-static pad:
  - When installing or configuring the motherboard, place it on an anti-static pad. This helps to prevent potential ESD damage.
- Turn all power to the IMBA-H810 off:
  - When working with the IMBA-H810, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the IMBA-H810, **DO NOT**:

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.



## IMBA-H810 ATX Motherboard

### 4.2.1 Socket LGA1150 CPU Installation



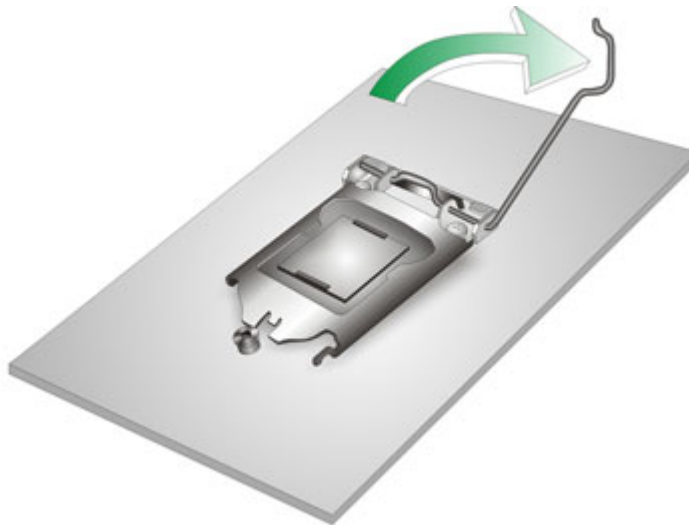
#### **WARNING:**

CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure the correct cooling kit is properly installed.

DO NOT touch the pins at the bottom of the CPU. When handling the CPU, only hold it on the sides.

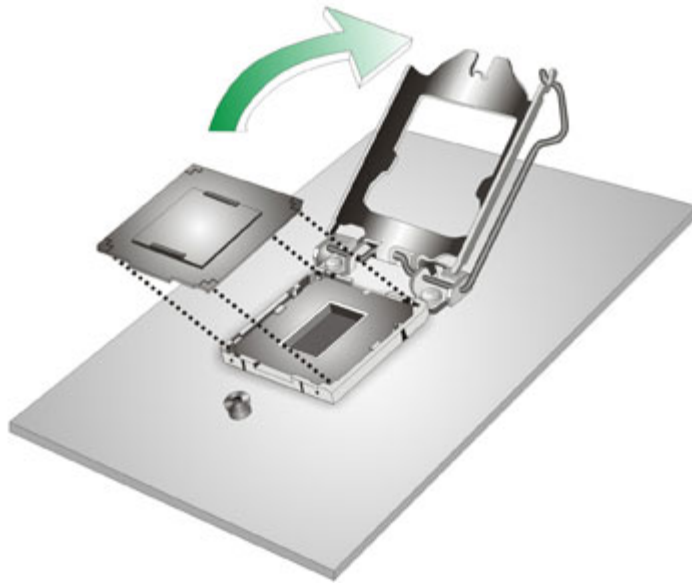
To install the CPU, follow the steps below.

**Step 1:** **Disengage the load lever** by pressing the lever down and slightly outward to clear the retention tab. Fully open the lever. See **Figure 4-1**.



**Figure 4-1: Disengage the CPU Socket Load Lever**

**Step 2:** **Open the socket and remove the protective cover.** The black protective cover can be removed by pulling up on the tab labeled "Remove". See **Figure 4-2**.



**Figure 4-2: Remove Protective Cover**

- Step 3: Inspect the CPU socket.** Make sure there are no bent pins and make sure the socket contacts are free of foreign material. If any debris is found, remove it with compressed air.
- Step 4: Orientate the CPU properly.** The contact array should be facing the CPU socket.



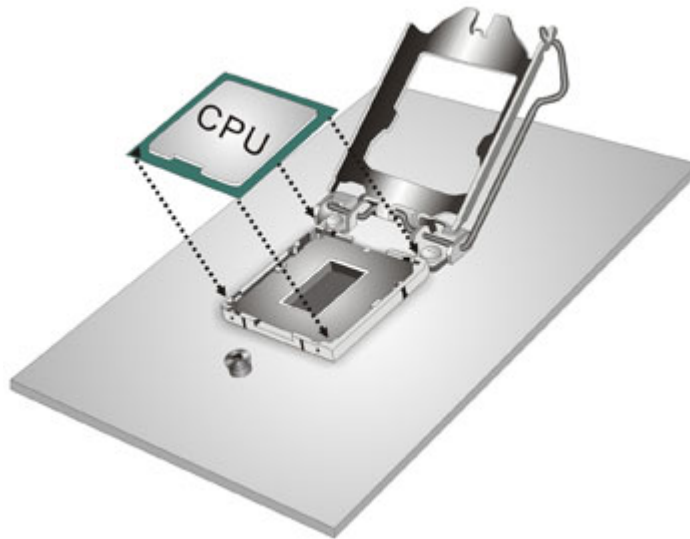
**WARNING:**

DO NOT touch the pins at the bottom of the CPU. When handling the CPU, only hold it on the sides.

- 
- Step 5: Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket.
- Step 6: Align the CPU pins.** Locate pin 1 and the two orientation notches on the CPU. Carefully match the two orientation notches on the CPU with the socket alignment keys.

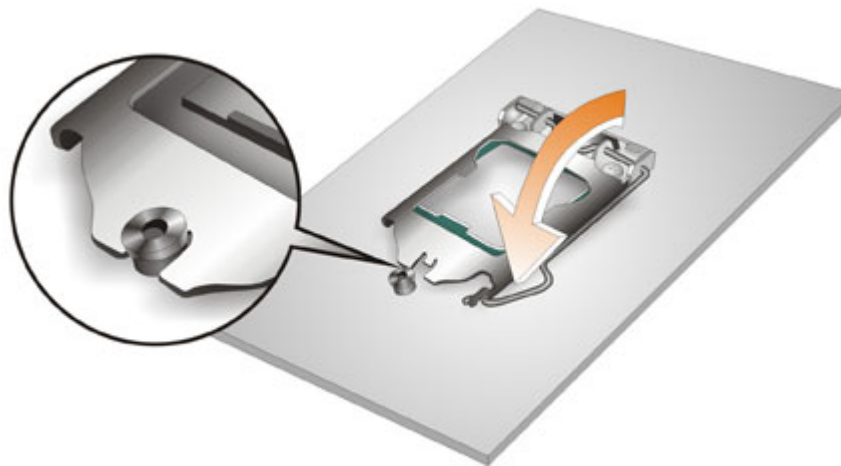
## IMBA-H810 ATX Motherboard

**Step 7: Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly. See **Figure 4-3**.



**Figure 4-3: Insert the Socket LGA1150 CPU**

**Step 8: Close the CPU socket.** Close the load plate and pull the load lever back a little to have the load plate be able to secure to the knob. Engage the load lever by pushing it back to its original position (**Figure 4-4**). There will be some resistance, but will not require extreme pressure.



**Figure 4-4: Close the Socket LGA1150**

**Step 9:** Connect the 12 V power to the board. Connect the 12 V power from the power supply to the board.

#### 4.2.2 Socket LGA1150 Cooling Kit Installation

---



**WARNING:**

**DO NOT** attempt to install a push-pin cooling fan.

The pre-installed support bracket prevents the board from bending and is **ONLY** compatible with captive screw type cooling fans.

---

The cooling kit can be bought from IEI. The cooling kit has a heat sink and fan.

---



**WARNING:**

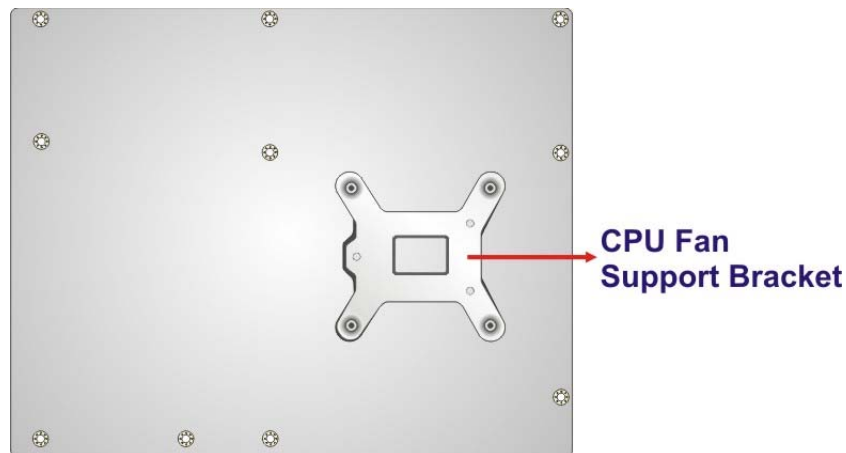
Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

---

To install the cooling kit, follow the instructions below.

**Step 1:** A cooling kit bracket is pre-installed on the rear of the motherboard. See **Figure 4-5**.

## IMBA-H810 ATX Motherboard

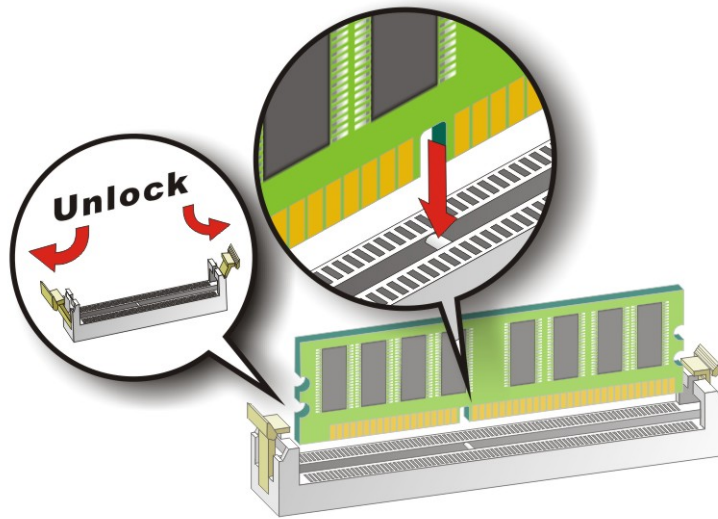


**Figure 4-5: Cooling Kit Support Bracket**

- Step 2:** Place the cooling kit onto the socket LGA1150 CPU. Make sure the CPU cable can be properly routed when the cooling kit is installed.
- Step 3:** Mount the cooling kit. Gently place the cooling kit on top of the CPU. Make sure the four threaded screws on the corners of the cooling kit properly pass through the holes of the cooling kit bracket.
- Step 4:** Secure the cooling kit by fastening the four retention screws of the cooling kit.
- Step 5:** Connect the fan cable. Connect the cooling kit fan cable to the CPU fan connector on the IMBA-H810. Carefully route the cable and avoid heat generating chips and fan blades.

### 4.2.3 DIMM Installation

To install a DIMM, please follow the steps below and refer to **Figure 4-6**.



**Figure 4-6: DIMM Installation**

- Step 1:** **Open the DIMM socket handles.** Open the two handles outwards as far as they can. See **Figure 4-6**.
- Step 2:** **Align the DIMM with the socket.** Align the DIMM so the notch on the memory lines up with the notch on the memory socket. See **Figure 4-6**.
- Step 3:** **Insert the DIMM.** Once aligned, press down until the DIMM is properly seated. Clip the two handles into place. See **Figure 4-6**.
- Step 4:** **Removing a DIMM.** To remove a DIMM, push both handles outward. The memory module is ejected by a mechanism in the socket.

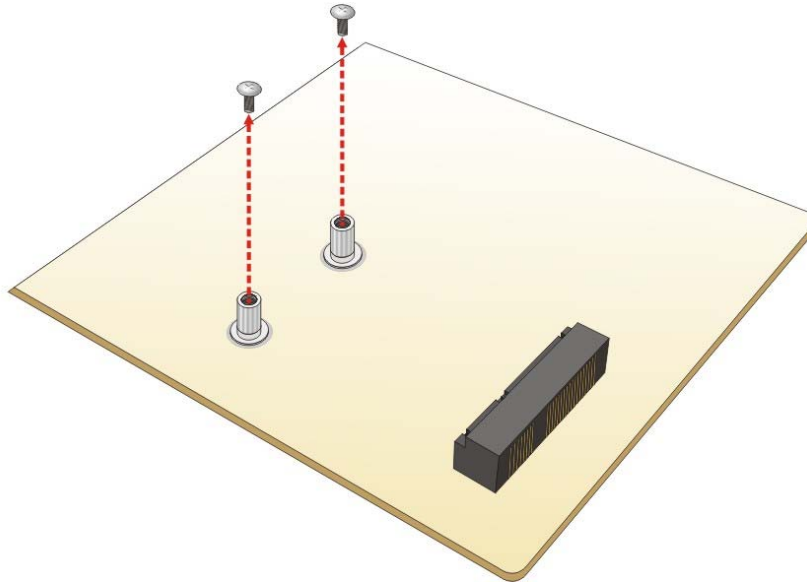
### 4.3 PCIe Mini Card Installation

To install a PCIe Mini card, please follow the steps below.

- Step 1:** **Locate the PCIe Mini card slot.** The location of the PCIe Mini card slot is shown in **Figure 3-21**.

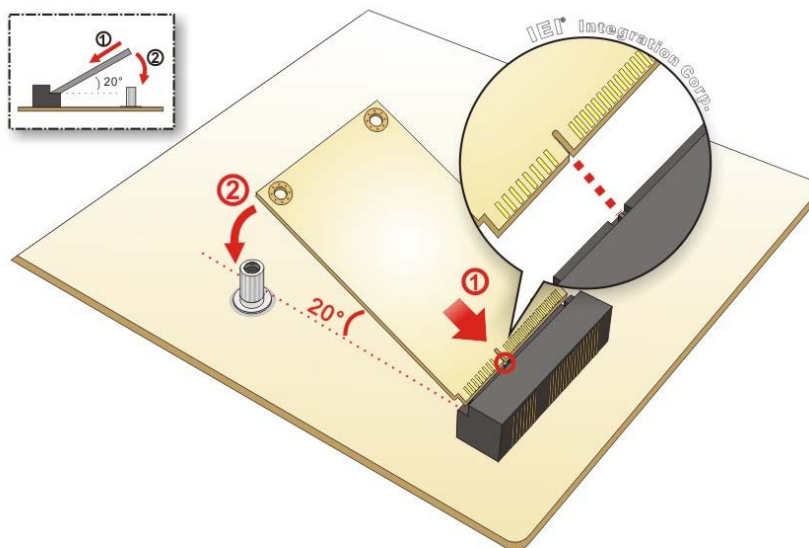
## IMBA-H810 ATX Motherboard

**Step 2:** Remove the retention screws. Remove the two retention screws secured on the motherboard as shown in **Figure 4-7**.



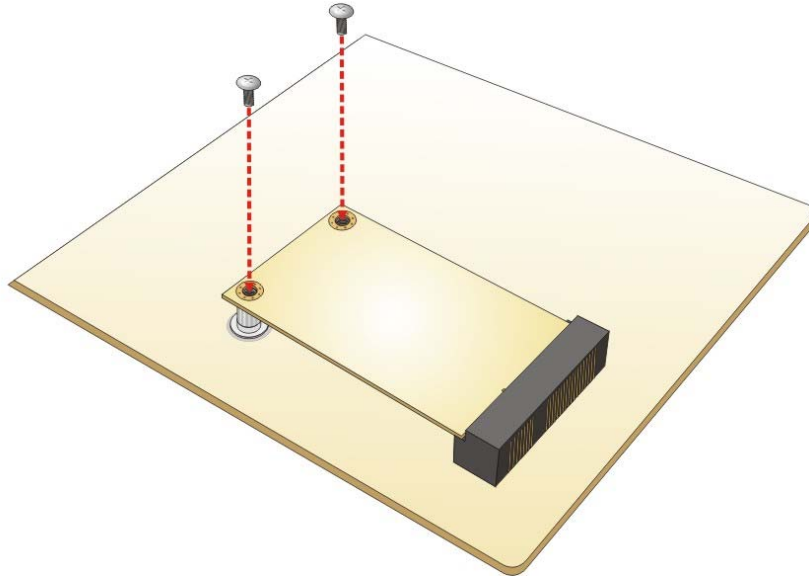
**Figure 4-7: Remove the Retention Screws for the PCIe Mini Card**

**Step 3:** Insert into the socket at an angle. Line up the notch on the card with the notch on the connector. Slide the PCIe Mini card into the socket at an angle of about 20° (**Figure 4-8**).



**Figure 4-8: Insert the PCIe Mini Card into the Socket at an Angle**

**Step 4:** **Secure the PCIe Mini card.** Secure the PCIe Mini card with the retention screws previously removed (**Figure 4-9**).



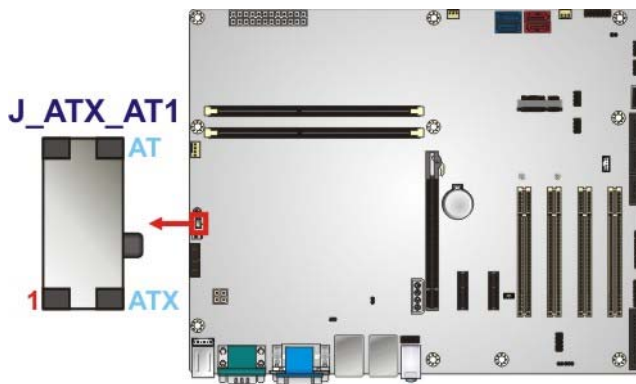
**Figure 4-9:** Secure the PCIe Mini Card

## 4.4 System Configuration

The system configuration should be performed before installation.

### 4.4.1 AT/ATX Power Mode Setting

The AT and ATX power mode selection is made through the AT/ATX power mode switch which is shown in **Figure 4-10**.



**Figure 4-10:** AT/ATX Power Mode Switch Location



## IMBA-H810 ATX Motherboard

Setting	Description
1-2	ATX power mode (default)
2-3	AT power mode

**Table 4-1: AT/ATX Power Mode Switch Settings**

### 4.4.2 Clear CMOS Button

To reset the BIOS, remove the on-board battery and press the clear CMOS button for three seconds or more. The clear CMOS button location is shown in **Figure 4-11**.



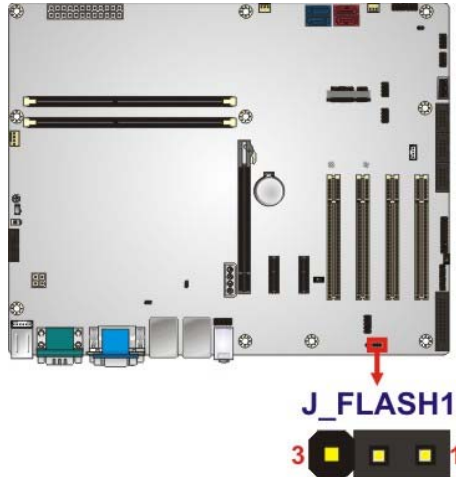
**Figure 4-11: Clear CMOS Button Location**

### 4.4.3 Flash Descriptor Security Override

The Flash Descriptor Security Override jumper (J\_FLASH1) allows to enable or disable the ME firmware update. Refer to **Figure 4-12** and **Table 4-2** for the jumper location and settings.

Setting	Description
Short 1-2	Disabled (default)
Short 2-3	Enabled

**Table 4-2: Flash Descriptor Security Override Jumper Settings**



**Figure 4-12: Flash Descriptor Security Override Jumper Location**

To update the ME firmware, please follow the steps below.

- Step 1:** Before turning on the system power, short pin 2-3 of the Flash Descriptor Security Override jumper.
- Step 2:** Update the BIOS and ME firmware, and then turn off the system power.
- Step 3:** Remove the metal clip on the Flash Descriptor Security Override jumper or return to its default setting (short pin 1-2).
- Step 4:** Restart the system. The system will reboot 2 ~ 3 times to complete the ME firmware update.

#### 4.4.4 mSATA Setup Jumper

The mSATA setup jumper specifies whether to automatically detect the mSATA device installed in the PCIe Mini slot (CN2). If the user shorts the mSATA setup jumper to force the system to enable mSATA device, the SATA4 connector will be disabled.

Setting	Description
Open	Automatically detect mSATA device (Default)
Short 1-2	Force to enable mSATA device (The SATA4 connector will be disabled)

**Table 4-3: mSATA Setup Jumper Settings**

## IMBA-H810 ATX Motherboard

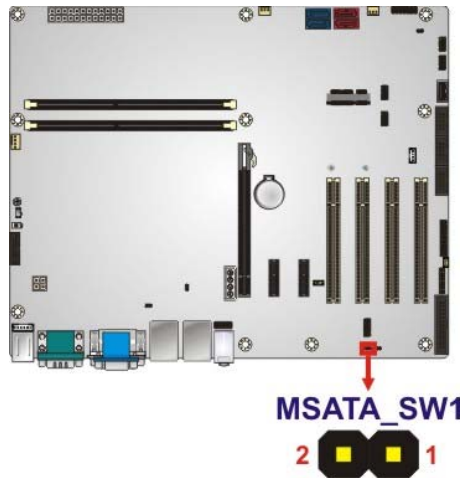


Figure 4-13: mSATA Setup Jumper Location

### 4.4.5 USB Power Selection

The USB power selection is made through the BIOS menu in “Chipset → PCH-IO Configuration”. Use the **USB Power SW1** and the **USB Power SW2** BIOS options to configure the correspondent USB ports (see **Table 4-4**) and refer to **Table 4-5** to select the USB power source.

BIOS Options	Configured USB Ports
USB Power SW1	LAN1_USB1 (external USB 3.0 ports) LAN2_USB2 (external USB 2.0 ports)
USB Power SW2	USB1 (internal USB 2.0 ports) USB2 (internal USB 2.0 ports) USB3 (internal USB 2.0 port, Type A)

Table 4-4: BIOS Options and Configured USB Ports

Options	Description
+5V DUAL	+5V dual (default)
+5V	+5V

Table 4-5: USB Power Source Setup

Please refer to **Section 5.4.1** for detailed information.

## 4.5 Internal Peripheral Device Connections

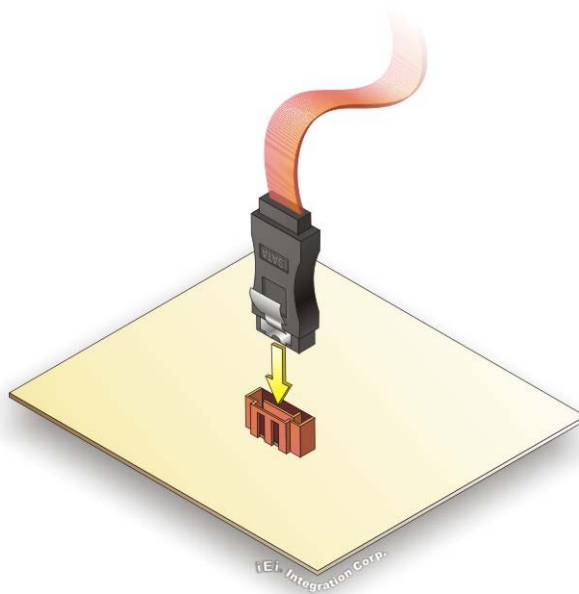
This section outlines the installation of peripheral devices to the onboard connectors.

### 4.5.1 SATA Drive Connection

The IMBA-H810 is shipped with two SATA drive cables. To connect the SATA drives to the connectors, please follow the steps below.

**Step 1: Locate the connectors.** The locations of the SATA drive connectors are shown in **Chapter 3**.

**Step 2: Insert the cable connector.** Insert the cable connector into the on-board SATA drive connector until it clips into place. See **Figure 4-14**.

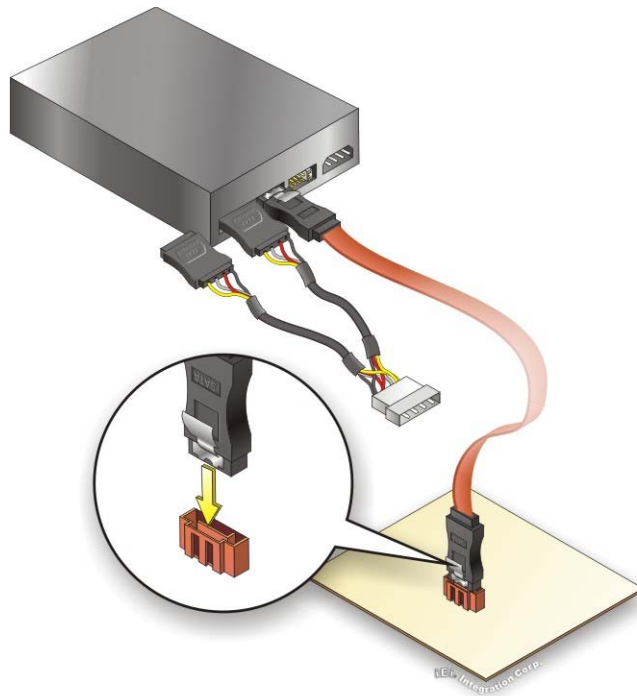


**Figure 4-14: SATA Drive Cable Connection**

**Step 3: Connect the cable to the SATA disk.** Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 4-15**.

**Step 4: Connect the SATA power cable.** Connect the SATA power connector to the back of the SATA drive. See **Figure 4-15**.

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**Figure 4-15: SATA Power Drive Connection**

The SATA power cable can be bought from IEI. See Optional Items in Section 2.4.

### 4.6 Intel® AMT Setup Procedure

The IMBA-H810 is featured with the Intel® Active Management Technology (AMT). To enable the Intel® AMT function, follow the steps below.

- Step 1:** Make sure at least one of the memory sockets is installed with a DDR3/DDR3L DIMM.
- Step 2:** Connect an Ethernet cable to the RJ-45 connector labeled **LAN1\_USB1**.
- Step 3:** The AMI BIOS options regarding the Intel® ME or Intel® AMT must be enabled.
- Step 4:** Properly install the Intel® Management Engine Components drivers from the iAMT Driver & Utility directory in the driver CD. See **Section 6.8**.
- Step 5:** Configure the Intel® Management Engine BIOS extension (MEBx). To get into the Intel® MEBx settings, press <Ctrl+P> after a single beep during boot-up

process. Enter the Intel® current ME password as it requires (the Intel® default password is **admin**).



### NOTE:

To change the password, enter a new password following the strong password rule (containing at least one upper case letter, one lower case letter, one digit and one special character, and be at least eight characters).

---

Chapter

**5**

**BIOS**

---

## 5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.



### NOTE:

Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

---

### 5.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DEL** or **F2** key as soon as the system is turned on or
2. Press the **DEL** or **F2** key when the “**Press DEL or F2 to enter SETUP**” message appears on the screen.

If the message disappears before the **DEL** or **F2** key is pressed, restart the computer and try again.

### 5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in the following table.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes



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Key	Function
Page Up	Move to the previous page
Page Dn	Move to the next page
Esc	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Load previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS

**Table 5-1: BIOS Navigation Keys**

### 5.1.3 Getting Help

When **F1** is pressed, a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window, press **Esc**.

### 5.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the clear CMOS button described in **Chapter 4**.

### 5.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Save & Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

### 5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
BIOS Information					Set the Date. Use Tab to switch between Data elements.  ----- →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
BIOS Vendor		American Megatrends			
Core Version		4.6.5.4			
Compliance		UEFI 2.3.1; PI 1.2			
Project Version		B333AR10.ROM			
Build Date and Time		01/28/2015 11:53:40			
iWDD Vendor		iEi			
iWDD Version		B333ER01.bin			
IPMI Module		N/A			
Processor Information					
Name		Haswell			
Brand String		Intel(R) Core(TM) i3-433			
Frequency		3500 MHz			
Processor ID		306c3			
Stepping		C0			
Number of Processors		2Core(s) / 4Thread(s)			
Microcode Revision		17			
GT Info		GT2 (700 MHz)			
IGFX VBIOS Version		2178			
Memory RC Version		1.6.2.1			
Total Memory		4096 MB (DDR3)			
Memory Frequency		1333 MHz			
PCH Information					
Name		LynxPoint			
PCH SKU		H81			
Stepping		05/C2			
LAN PHY Revision		N/A			
ME FW Version		9.1.10.1005			
ME Firmware SKU		1.5MB			
SPI Clock Frequency					
DOFR Support		Supported			
Read Status Clock Frequency		50 MHz			
Write Status Clock Frequency		50 MHz			
Fast Read Status Clock Frequency		50 MHz			
System Date		[Wed 02/25/2015]			
System Time		[15:10:27]			
Access Level		Administrator			
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.					

**BIOS Menu 1: Main**

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The **Main** menu has two user configurable fields:

→ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

→ **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

### 5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:



#### WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main  Advanced  Chipset  Boot  Security  Save & Exit
-----
> ACPI Settings
> RTC Wake Settings
> Trusted Computing
> CPU Configuration
> SATA Configuration
> Intel(R) Rapid Start Technology
> AMT Configuration
> USB Configuration
> F81866 Super IO Configuration
> iWDD H/M Monitor
> Serial Port Console Redirection
> iEi Feature

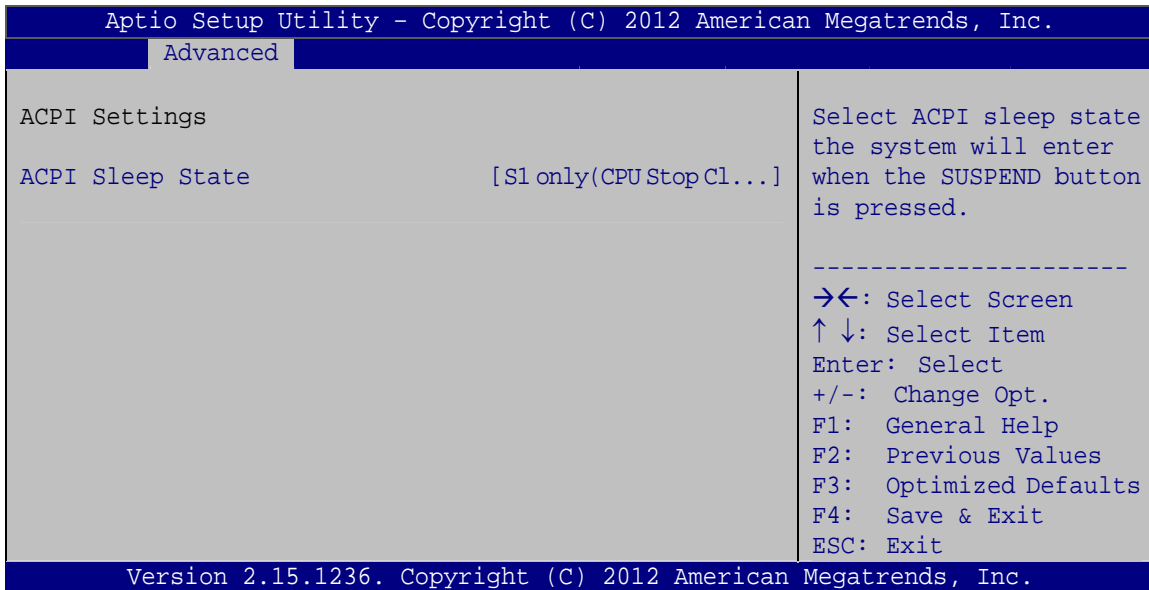
System ACPI Parameters
-----
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
    
```

**BIOS Menu 2: Advanced**

### 5.3.1 ACPI Settings

The **ACPI Settings** menu (**BIOS Menu 3**) configures the Advanced Configuration and Power Interface (ACPI) options.



#### BIOS Menu 3: ACPI Configuration

##### → **ACPI Sleep State [S1 only (CPU Stop Clock)]**

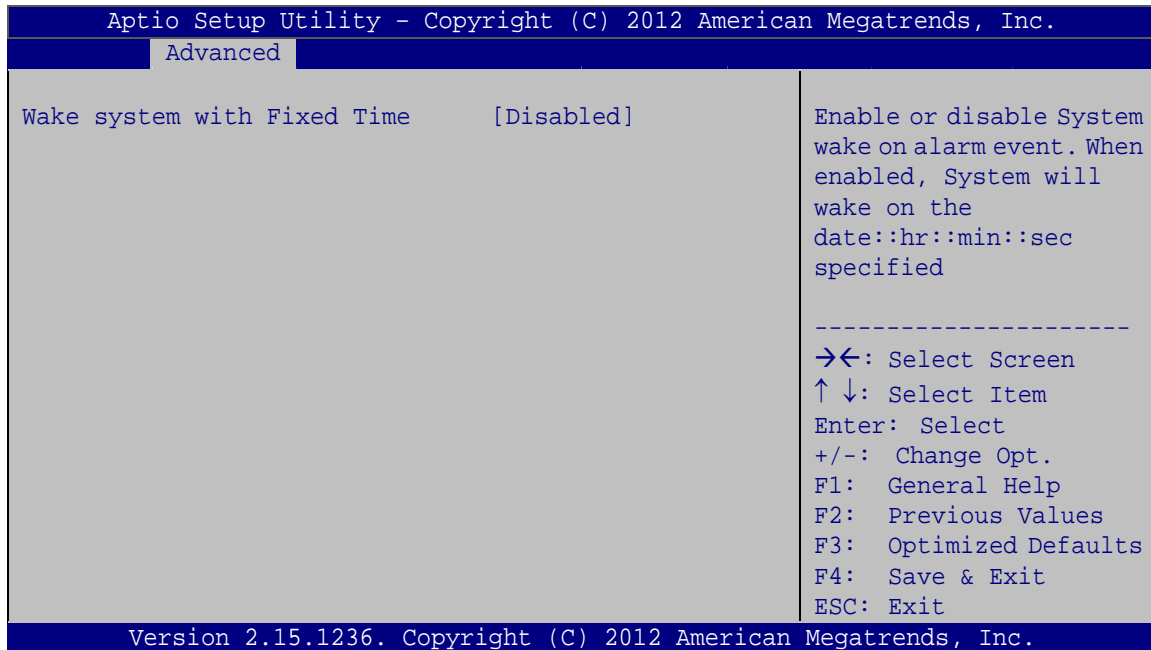
Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

- **S1 only (CPU Stop Clock) DEFAULT** The system enters S1(POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.
- **S3 only (Suspend to RAM)** The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

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### 5.3.2 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 4**) enables the system to wake at the specified time.



#### BIOS Menu 4: RTC Wake Settings

##### → Wake system with Fixed Time [Disabled]

Use the **Wake system with Fixed Time** option to enable or disable the system wake on alarm event.

- **Disabled**      **DEFAULT**      The real time clock (RTC) cannot generate a wake event.
- **Enabled**      If selected, the **Wake up every day** option appears allowing you to enable to disable the system to wake every day at the specified time. Besides, the following options appear with values that can be selected:

Wake up date

Wake up hour

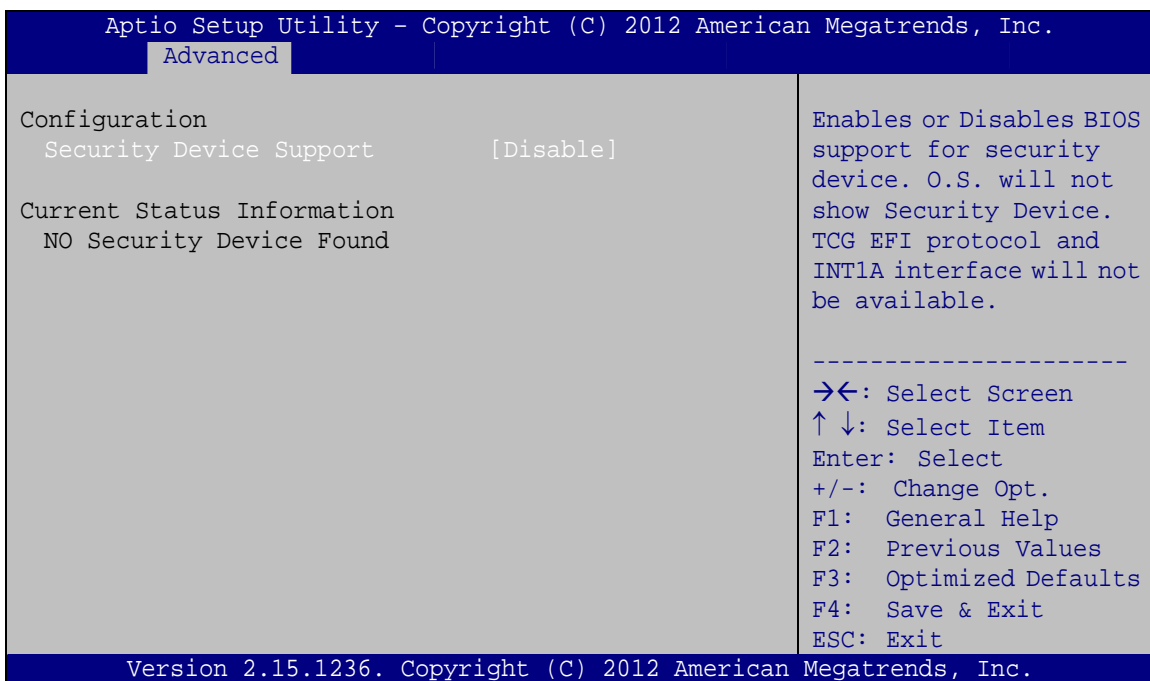
Wake up minute

Wake up second

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

### 5.3.3 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 5**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



#### BIOS Menu 5: Trusted Computing

##### → Security Device Support [Disable]

Use the **Security Device Support** option to configure support for the TPM.

→ **Disable** **DEFAULT** TPM support is disabled.

→ **Enable** TPM support is enabled.

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### 5.3.4 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 6**) to view detailed CPU specifications or enable the Intel Virtualization Technology.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
  Advanced
CPU Configuration
Intel(R) Core(TM) i3-4330 CPU @ 3.50GHz
CPU Signature          306c3
Microcode Patch       17
Max CPU Speed         3500 MHz
Min CPU Speed         800 MHz
CPU Speed             3500 MHz
Processor Cores       2
Intel HT Technology    Supported
Intel VT-x Technology Supported
Intel SMX Technology   Not Supported
64-bit                Supported
EIST Technology        Supported

L1 Data Cache         32 kB x 2
L1 Code Cache         32 kB x 2
L2 Cache              256 kB x 2
L3 Cache              4096 kB

Hyper-threading       [Enabled]
Active Processor Cores [All]
Intel Virtualization Technology [Disabled]
EIST                  [Enabled]

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

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```

#### BIOS Menu 6: CPU Configuration

##### → Hyper-threading [Enabled]

Use the **Hyper-threading** BIOS option to enable or disable the Intel Hyper-Threading Technology.

- **Disabled**                      Disables the Intel Hyper-Threading Technology.
- **Enabled**    **DEFAULT**        Enables the Intel Hyper-Threading Technology.

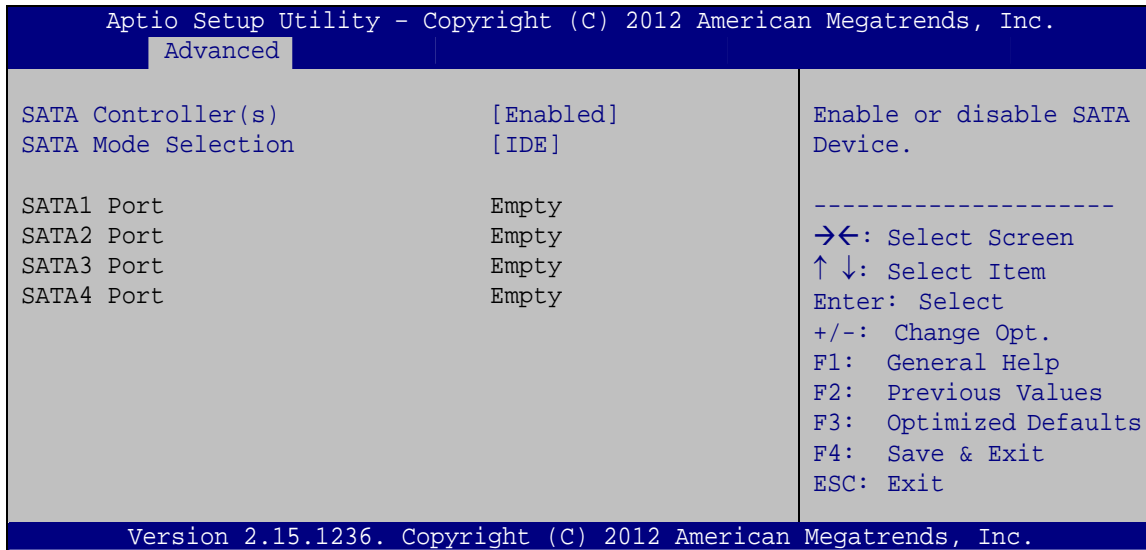




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### 5.3.5 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 7**) to change and/or set the configuration of the SATA devices installed in the system.



#### BIOS Menu 7: SATA Configuration

##### → SATA Controller(s) [Enabled]

Use the **SATA Controller(s)** option to configure the SATA controller(s).

- **Enabled**      **DEFAULT**      Enables the on-board SATA controller(s).
- **Disabled**                      Disables the on-board SATA controller(s).

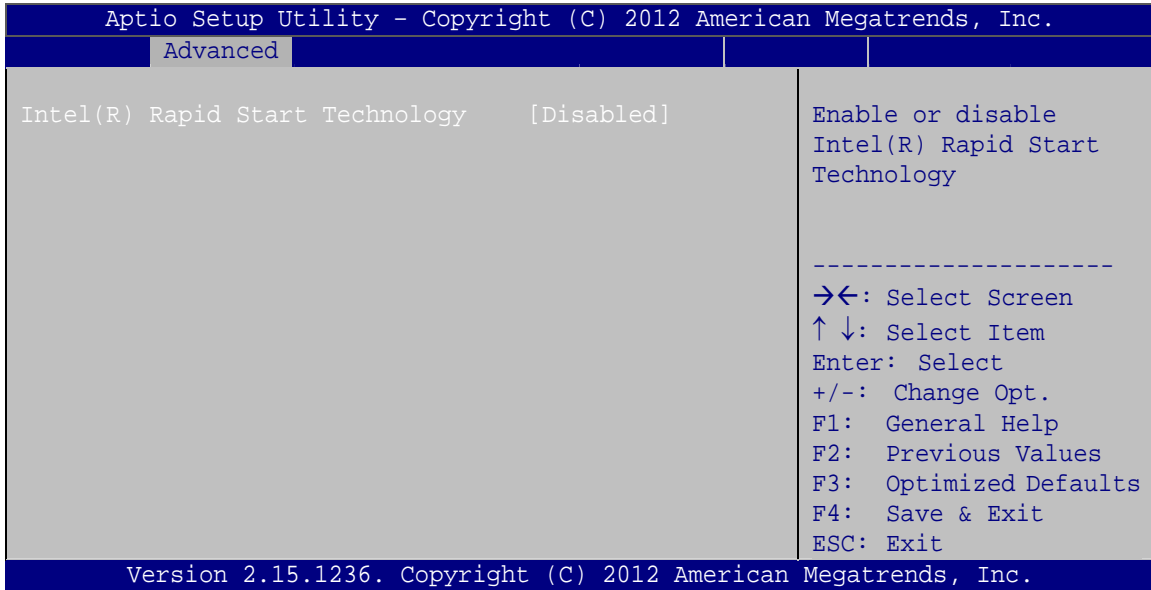
##### → SATA Mode Selection [IDE]

Use the **SATA Mode Selection** option to configure SATA devices as normal IDE devices.

- **IDE**              **DEFAULT**      Configures SATA devices as normal IDE device.
- **AHCI**                      Configures SATA devices as AHCI device.

### 5.3.6 Intel(R) Rapid Start Technology

Use the **Intel(R) Rapid Start Technology (BIOS Menu 8)** menu to configure Intel® Rapid Start Technology support.



#### BIOS Menu 8: Intel(R) Rapid Start Technology

##### → Intel(R) Rapid Start Technology [Disabled]

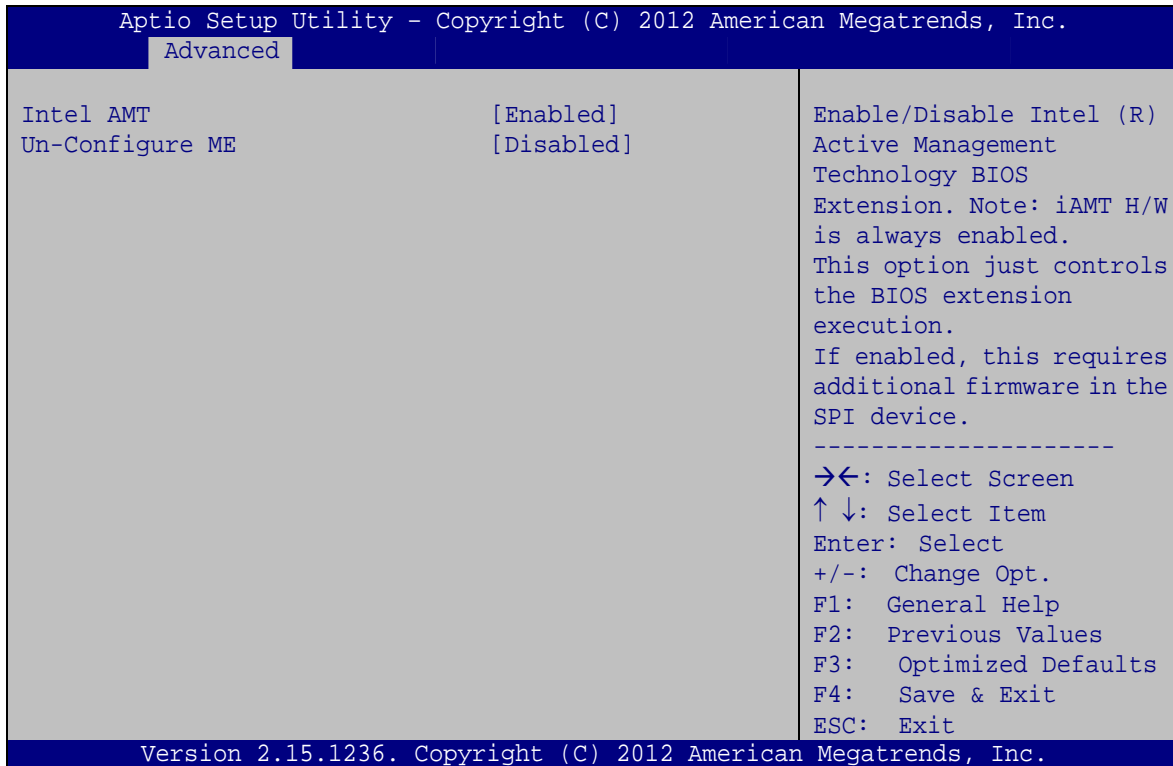
Use **Intel(R) Rapid Start Technology** option to enable or disable the Intel® Rapid Start Technology function.

- **Disabled**      **DEFAULT**      Intel® Rapid Start Technology is disabled
- **Enabled**                      Intel® Rapid Start Technology is enabled

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### 5.3.7 AMT Configuration

The **AMT Configuration** menu (**BIOS Menu 9**) allows the Intel® AMT options to be configured.



#### BIOS Menu 9: AMT Configuration

##### → Intel AMT [Enabled]

Use **Intel AMT** option to enable or disable the Intel® AMT function.

- **Disabled** Intel® AMT is disabled
- **Enabled** **DEFAULT** Intel® AMT is enabled

##### → Un-Configure ME [Disabled]

Use the **Un-Configure ME** option to perform ME unconfigure without password operation.

- **Disabled** **DEFAULT** Not perform ME unconfigure
- **Enabled** To perform ME unconfigure

### 5.3.8 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 10**) to read USB configuration information and configure the USB settings.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
  Advanced
-----
USB Configuration
USB Devices:
  1 Keyboard, 2 Hubs
Legacy USB Support          [Enabled]
-----
-><: Select Screen
↑ ↓: Select Item
Enter: Select
+/-: Change Opt.
F1:  General Help
F2:  Previous Values
F3:  Optimized Defaults
F4:  Save & Exit
ESC: Exit
-----
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```

#### BIOS Menu 10: USB Configuration

##### ➔ USB Devices

The **USB Devices** field lists the USB devices that are enabled on the system

##### ➔ Legacy USB Support [Enabled]

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

- ➔ **Enabled**      **DEFAULT**      Legacy USB support enabled
- ➔ **Disabled**                      Legacy USB support disabled
- ➔ **Auto**                              Legacy USB support disabled if no USB devices are connected

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### 5.3.9 F81866 Super IO Configuration

Use the **F81866 Super IO Configuration** menu (**BIOS Menu 11**) to set or change the configurations for the serial ports and parallel port.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
  Advanced
F81866 Super IO Configuration                               Set Parameters of Serial
                                                           Port 1 (COMA)
F81866 Super IO Chip                                     F81866
> Serial Port 1 Configuration
> Serial Port 2 Configuration
> Serial Port 3 Configuration
> Serial Port 4 Configuration
> Serial Port 5 Configuration
> Serial Port 6 Configuration
> Parallel Port Configuration
                                                           -----
                                                           →←: Select Screen
                                                           ↑ ↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
    
```

**BIOS Menu 11: F81866 Super IO Configuration**

#### 5.3.9.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 12**) to configure the serial port n.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
  Advanced
Serial Port n Configuration                               Enable or Disable Serial
                                                           Port (COM)
Serial Port                                             [Enabled]
Device Settings                                         IO=3F8h; IRQ=4
Change Settings                                         [Auto]
                                                           -----
                                                           →←: Select Screen
                                                           ↑ ↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
    
```

**BIOS Menu 12: Serial Port n Configuration Menu**

**5.3.9.1.1 Serial Port 1 Configuration**

→ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

- **Disabled**                      Disable the serial port
- **Enabled**      **DEFAULT**      Enable the serial port

→ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- **Auto**              **DEFAULT**      The serial port IO port address and interrupt address are automatically detected.
- **IO=3F8h;**  
**IRQ=4**                      Serial Port I/O port address is 3F8h and the interrupt address is IRQ4
- **IO=3F8h;**  
**IRQ=3, 4**                      Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
- **IO=2C0h;**  
**IRQ=3, 4**                      Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4
- **IO=2C8h;**  
**IRQ=3, 4**                      Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

**5.3.9.1.2 Serial Port 2 Configuration**

→ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

- **Disabled**                      Disable the serial port
- **Enabled**      **DEFAULT**      Enable the serial port

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### → Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- |   |                              |                |   |
|---|------------------------------|----------------|---|
| → | <b>Auto</b>                  | <b>DEFAULT</b> | The serial port IO port address and interrupt address are automatically detected. |
| → | <b>IO=2F8h;<br/>IRQ=3</b>    |                | Serial Port I/O port address is 2F8h and the interrupt address is IRQ3            |
| → | <b>IO=3F8h;<br/>IRQ=3, 4</b> |                | Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4         |
| → | <b>IO=2F8h;<br/>IRQ=3, 4</b> |                | Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4         |
| → | <b>IO=2C0h;<br/>IRQ=3, 4</b> |                | Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4         |
| → | <b>IO=2C8h;<br/>IRQ=3, 4</b> |                | Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4         |

### 5.3.9.1.3 Serial Port 3 Configuration

#### → Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- |   |                 |                |                         |
|---|-----------------|----------------|-------------------------|
| → | <b>Disabled</b> |                | Disable the serial port |
| → | <b>Enabled</b>  | <b>DEFAULT</b> | Enable the serial port  |

#### → Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- |   |             |                |   |
|---|-------------|----------------|---|
| → | <b>Auto</b> | <b>DEFAULT</b> | The serial port IO port address and interrupt address are automatically detected. |
|---|-------------|----------------|---|

- **IO=2D0h;**  
**IRQ=11**                      Serial Port I/O port address is 2D0h and the interrupt address is IRQ11
- **IO=2D0h;**  
**IRQ=10, 11**                  Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
- **IO=2E8h;**  
**IRQ=10, 11**                  Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
- **IO=2D8h;**  
**IRQ=10, 11**                  Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11

### 5.3.9.1.4 Serial Port 4 Configuration

#### → Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- **Disabled**                      Disable the serial port
- **Enabled**                      **DEFAULT**                  Enable the serial port

#### → Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- **Auto**                      **DEFAULT**                  The serial port IO port address and interrupt address are automatically detected.
- **IO=2E8h;**  
**IRQ=10**                      Serial Port I/O port address is 2E8h and the interrupt address is IRQ10
- **IO=2E8h;**  
**IRQ=10, 11**                  Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
- **IO=2D0h;**  
**IRQ=10, 11**                  Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
- **IO=2D8h;**  
**IRQ=10, 11**                  Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11



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### → Device Mode [RS422/485]

The serial port 4 is set to RS-422/485 mode.

### 5.3.9.1.5 Serial Port 5 Configuration

#### → Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- **Disabled**                      Disable the serial port
- **Enabled**            **DEFAULT**      Enable the serial port

#### → Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- **Auto**            **DEFAULT**      The serial port IO port address and interrupt address are automatically detected.
- **IO=2C0h;**  
**IRQ=11**                      Serial Port I/O port address is 2C0h and the interrupt address is IRQ11
- **IO=2C0h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 2C0h and the interrupt address is IRQ10, 11
- **IO=2C8h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 2C8h and the interrupt address is IRQ10, 11
- **IO=2D0h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
- **IO=2D8h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11
- **IO=2E0h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11
- **IO=2E8h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11

### 5.3.9.1.6 Serial Port 6 Configuration

→ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

- **Disabled**                      Disable the serial port
- **Enabled      DEFAULT**      Enable the serial port

→ **Change Settings [Auto]**

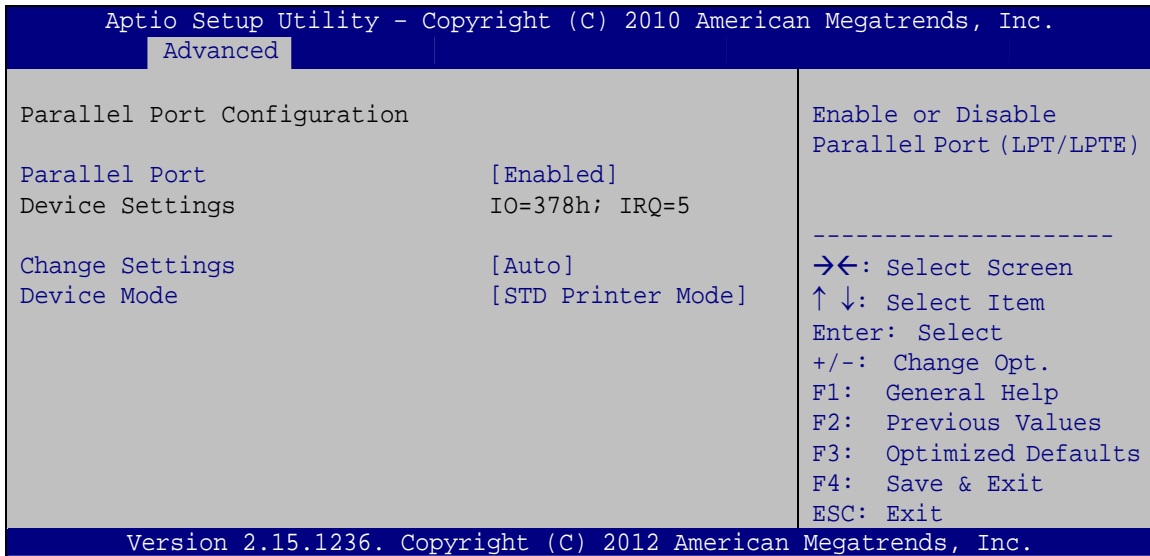
Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- **Auto              DEFAULT**      The serial port IO port address and interrupt address are automatically detected.
- **IO=2D8h;  
IRQ=10**                      Serial Port I/O port address is 2D8h and the interrupt address is IRQ10
- **IO=2C0h;  
IRQ=10, 11**                      Serial Port I/O port address is 2C0h and the interrupt address is IRQ10, 11
- **IO=2C8h;  
IRQ=10, 11**                      Serial Port I/O port address is 2C8h and the interrupt address is IRQ10, 11
- **IO=2D0h;  
IRQ=10, 11**                      Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
- **IO=2D8h;  
IRQ=10, 11**                      Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11
- **IO=2E0h;  
IRQ=10, 11**                      Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11
- **IO=2E8h;  
IRQ=10, 11**                      Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11

## IMBA-H810 ATX Motherboard

### 5.3.9.2 Parallel Port Configuration

Use the **Parallel Port Configuration** menu (**BIOS Menu 13**) to configure the serial port n.



#### BIOS Menu 13: Parallel Port Configuration Menu

##### → Parallel Port [Enabled]

Use the **Parallel Port** option to enable or disable the parallel port.

- **Disabled**                      Disable the parallel port
- **Enabled**            **DEFAULT**      Enable the parallel port

##### → Change Settings [Auto]

Use the **Change Settings** option to change the parallel port IO port address and interrupt address.

- **Auto**            **DEFAULT**      The parallel port IO port address and interrupt address are automatically detected.
- **IO=378h;**  
**IRQ=5**                      Parallel Port I/O port address is 378h and the interrupt address is IRQ5
- **IO=378h;**  
**IRQ=5, 7**                      Parallel Port I/O port address is 378h and the interrupt address is IRQ5, 7

- ➔ **IO=278h;** Parallel Port I/O port address is 278h and the  
**IRQ=5, 7** interrupt address is IRQ5, 7
- ➔ **IO=3BCh;** Parallel Port I/O port address is 3BCh and the  
**IRQ=5, 7** interrupt address is IRQ5, 7

### ➔ Device Mode [STD Printer Mode]

Use the **Device Mode** option to select the mode the parallel port operates in. Configuration options are listed below.

- STD Printer Mode **Default**
- SPP Mode
- EPP-1.9 and SPP Mode
- EPP-1.7 and SPP Mode
- ECP Mode
- ECP and EPP 1.9 Mode
- ECP and EPP 1.7 Mode

### 5.3.10 iWDD H/W Monitor

The **iWDD H/W Monitor** menu (**BIOS Menu 14**) contains the fan configuration submenu, and displays operating temperature, fan speeds and system voltages..

```

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

PC Health Status
> Smart Fan Mode Configuration
CPU Temperature      :+47°C
SYS Temperature     :+29°C
CPU_FAN1 Speed      :990 RPM
SYS_FAN1 Speed      :N/A
CPU_CORE            :+1.743 V
+5V                 :+5.142 V
+12V                :+12.175 V
DDR                 :+1.507 V
+5VSB               :+4.937 V
+3.3V               :+3.301 V
+3.3VSB             :+3.329 V

Smart Fan Mode Select
-----
-><: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
  
```

**BIOS Menu 14: iWDD H/W Monitor**

## IMBA-H810 ATX Motherboard

### → PC Health Status

The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
  - CPU Temperature
  - System Temperature
- Fan Speeds:
  - CPU Fan Speed
  - System Fan Speed
- Voltages:
  - CPU\_CORE
  - +5V
  - +12V
  - DDR
  - +5VSB
  - +3.3V
  - +3.3VSB

### 5.3.10.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration submenu (BIOS Menu 15)** to configure fan speed settings.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
Smart Fan Mode Configuration
CPU_FAN1 Smart Fan Control      [Auto Mode]
Fan start temperature           50
Fan off temperature             40
Fan start PWM                   30
Fan slope PWM                   1
SYS_FAN1 Smart Fan Control      [Auto Mode]
Fan start temperature           50
Fan off temperature             40
Fan start PWM                   30
Fan slope PWM                   1

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

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```

### BIOS Menu 15: Smart Fan Mode Configuration

→ **CPU\_FAN1 Smart Fan Control/SYS\_FAN1 Smart Fan Control [Auto Mode]**

Use the **CPU\_FAN1 Smart Fan Control/SYS\_FAN1 Smart Fan Control** option to configure the CPU/System Smart Fan.

→ **Auto Mode**      **DEFAULT**      The fan adjusts its speed using Auto Mode settings.

→ **Manual Mode**      The fan spins at the speed set in Manual Mode settings.

→ **Fan start/off temperature**

Use the + or – key to change the **Fan start/off temperature** value. Enter a decimal number between 1 and 100.

→ **Fan start PWM**

Use the + or – key to change the **Fan start PWM** value. Enter a decimal number between 1 and 100.

→ **Fan slope PWM**

Use the + or – key to change the **Fan slope PWM** value. Enter a decimal number between 1 and 8.

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### 5.3.11 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 16**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
  Advanced
COM1
  Console Redirection          [Disabled]
  > Console Redirection Settings
  Console Redirection          [Disabled]
  > Console Redirection Settings
COM2
  Console Redirection          [Disabled]
  > Console Redirection Settings
COM3
  Console Redirection          [Disabled]
  > Console Redirection Settings
COM4
  Console Redirection          [Disabled]
  > Console Redirection Settings
COM5
  Console Redirection          [Disabled]
  > Console Redirection Settings
COM6
  Console Redirection          [Disabled]
  > Console Redirection Settings
COM7 (BMC) (Disabled)
  Console Redirection          Port IS Disabled
iAMT SOL
COM8(Pci Bus0,Dev22,Func3)
  Console Redirection          Port IS Disabled

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

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
  
```

#### BIOS Menu 16: Serial Port Console Redirection

##### ➔ Console Redirection [Disabled]

Use **Console Redirection** option to enable or disable the console redirection function.

- **Disabled**      **DEFAULT**      Disabled the console redirection function
- **Enabled**                      Enabled the console redirection function

The following options are available in the **Console Redirection Settings** submenu when the **Console Redirection** option is enabled.

→ **Terminal Type [ANSI]**

Use the **Terminal Type** option to specify the remote terminal type.

- **VT100**                      The target terminal type is VT100
- **VT100+**                      The target terminal type is VT100+
- **VT-UTF8**                      The target terminal type is VT-UTF8
- **ANSI**                      **DEFAULT**      The target terminal type is ANSI

→ **Bits per second [115200]**

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match the other side. Long or noisy lines may require lower speeds.

- **9600**                      Sets the serial port transmission speed at 9600.
- **19200**                      Sets the serial port transmission speed at 19200.
- **57600**                      Sets the serial port transmission speed at 57600.
- **115200**                      **DEFAULT**      Sets the serial port transmission speed at 115200.

→ **Data Bits [8]**

Use the **Data Bits** option to specify the number of data bits.

- **7**                      Sets the data bits at 7.
- **8**                      **DEFAULT**      Sets the data bits at 8.



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### → Parity [None]

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

- |   |              |                |   |
|---|--------------|----------------|---|
| → | <b>None</b>  | <b>DEFAULT</b> | No parity bit is sent with the data bits.                                 |
| → | <b>Even</b>  |                | The parity bit is 0 if the number of ones in the data bits is even.       |
| → | <b>Odd</b>   |                | The parity bit is 0 if the number of ones in the data bits is odd.        |
| → | <b>Mark</b>  |                | The parity bit is always 1. This option does not provide error detection. |
| → | <b>Space</b> |                | The parity bit is always 0. This option does not provide error detection. |

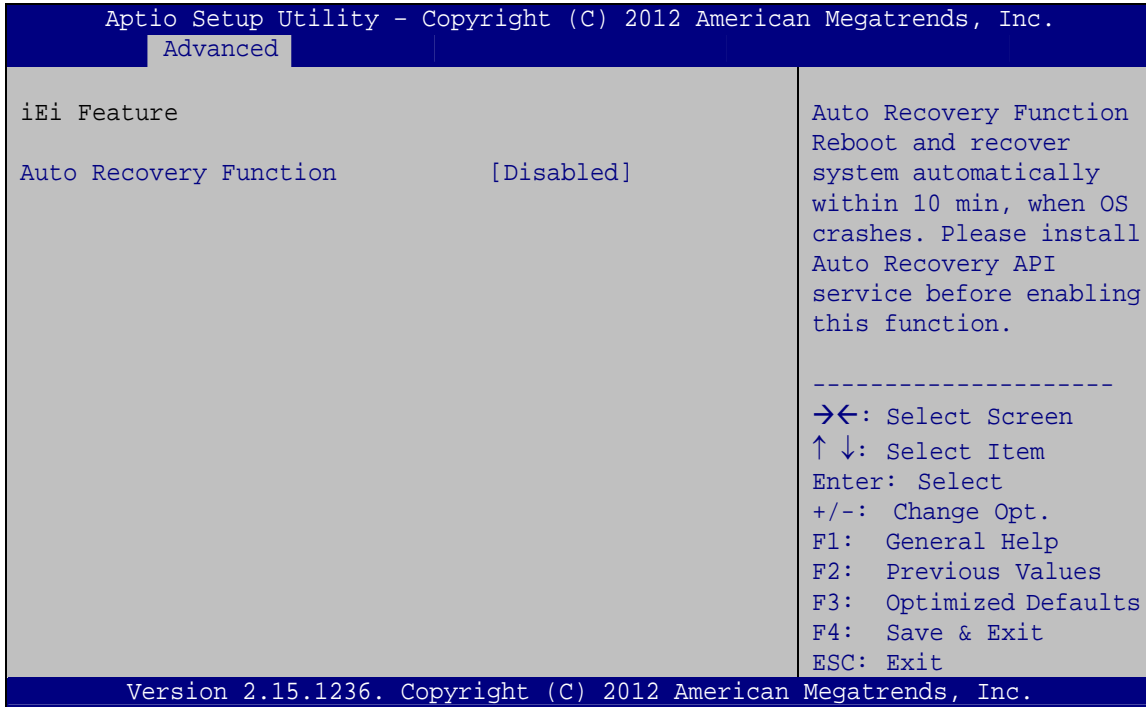
### → Stop Bits [1]

Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

- |   |          |                |                                    |
|---|----------|----------------|------------------------------------|
| → | <b>1</b> | <b>DEFAULT</b> | Sets the number of stop bits at 1. |
| → | <b>2</b> |                | Sets the number of stop bits at 2. |

**5.3.12 iEi Feature**

Use the **iEi Feature** menu (**BIOS Menu 17**) to configure One Key Recovery function.



**BIOS Menu 17: iEi Feature**

➔ **Auto Recovery Function [Disabled]**

Use the **Auto Recovery Function** BIOS option to enable or disable the auto recovery function of the IEI One Key Recovery.

- ➔ **Disabled**      **DEFAULT**      Auto recovery function disabled
- ➔ **Enabled**         Auto recovery function enabled

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### 5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 18**) to access the PCH IO and System Agent (SA) configuration menus.



#### **WARNING!**

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main   Advanced  Chipset  Boot   Security  Save & Exit
-----
> PCH-IO Configuration          PCH Parameters
> System Agent (SA) Configuration

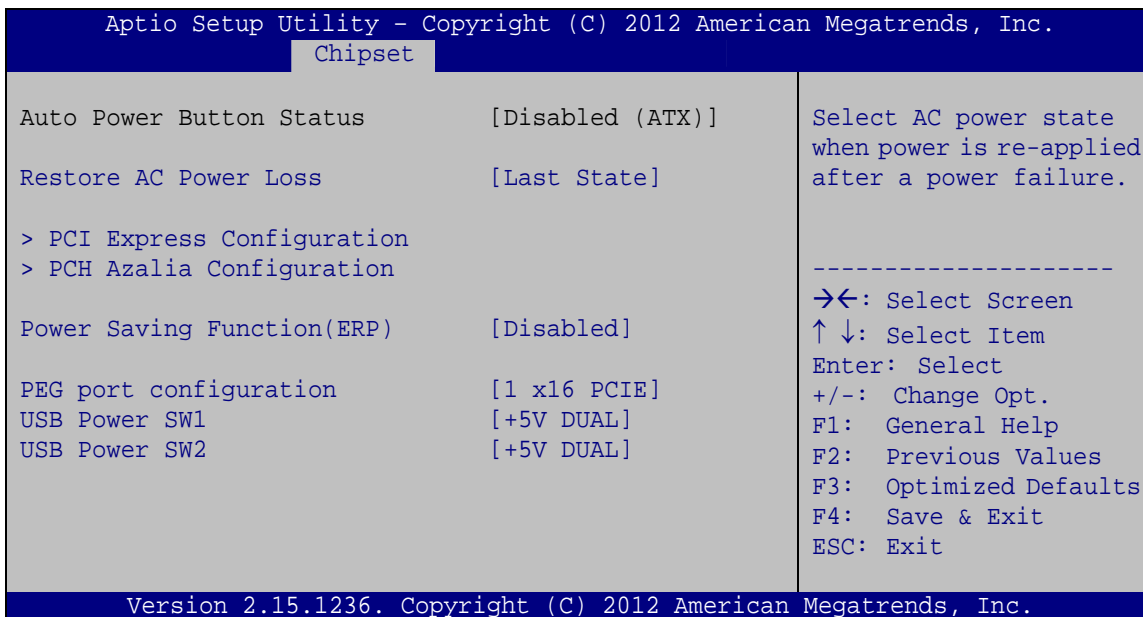
-----
-><: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```

**BIOS Menu 18: Chipset**

### 5.4.1 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 19**) to configure the PCH parameters.



#### BIOS Menu 19: PCH-IO Configuration

##### → Restore AC Power Loss [Last State]

Use the **Restore AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

- **Power Off**                      The system remains turned off
- **Power On**                        The system turns on
- **Last State**    **DEFAULT**    The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

##### → Power Saving Function(ERP) [Disabled]

Use the **Power Saving Function(ERP)** BIOS option to enable or disable the power saving function.

- **Disabled**            **DEFAULT**    Power saving function is disabled.
- **Enabled**                Power saving function is enabled. It will reduce power consumption when the system is off.

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### → PEG port configuration [1 x16 PCIE]

Use the **PEG port configuration** BIOS option to configure the PCIe x16 slot.

→ **1 x16 PCIE**      **DEFAULT**      Sets the PCIe x16 slot as one PCIe x16

### → USB Power SW1 [+5V DUAL]

Use the **USB Power SW1** BIOS option to configure the USB power source for the corresponding USB connectors (**Table 5-2**).

→ **+5V**      Sets the USB power source to +5V

→ **+5V DUAL**      **DEFAULT**      Sets the USB power source to +5V dual

### → USB Power SW2 [+5V DUAL]

Use the **USB Power SW2** BIOS option to configure the USB power source for the corresponding USB connectors (**Table 5-2**).

→ **+5V**      Sets the USB power source to +5V

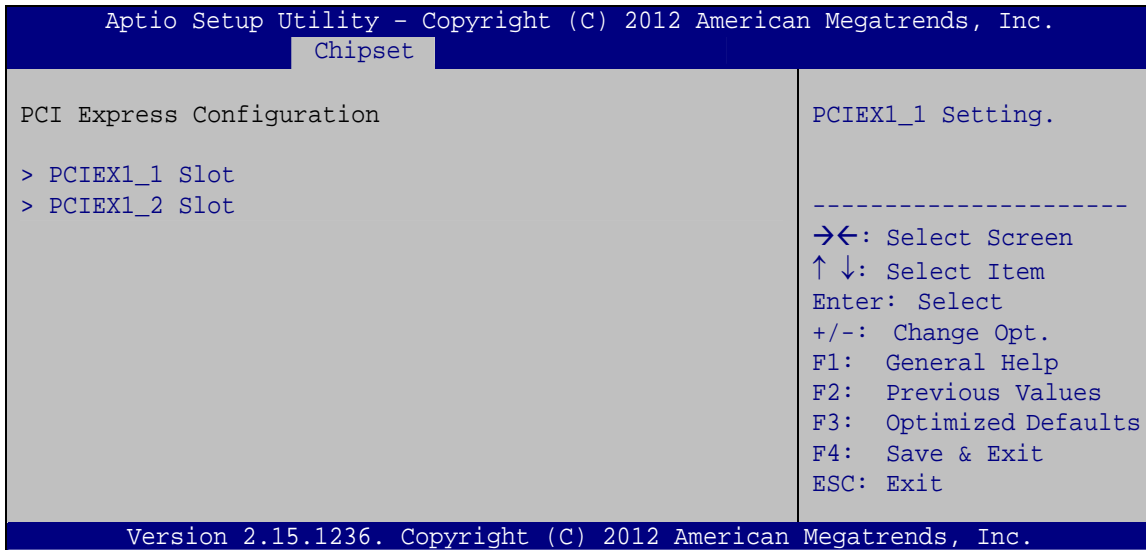
→ **+5V DUAL**      **DEFAULT**      Sets the USB power source to +5V dual

BIOS Options	Configured USB Ports
USB Power SW1	LAN1_USB1 (external USB 3.0 ports) LAN2_USB2 (external USB 2.0 ports)
USB Power SW2	USB1 (internal USB 2.0 ports) USB2 (internal USB 2.0 ports) USB3 (internal USB 2.0 port, Type A)

**Table 5-2: BIOS Options and Configured USB Ports**

### 5.4.1.1 PCI Express Configuration

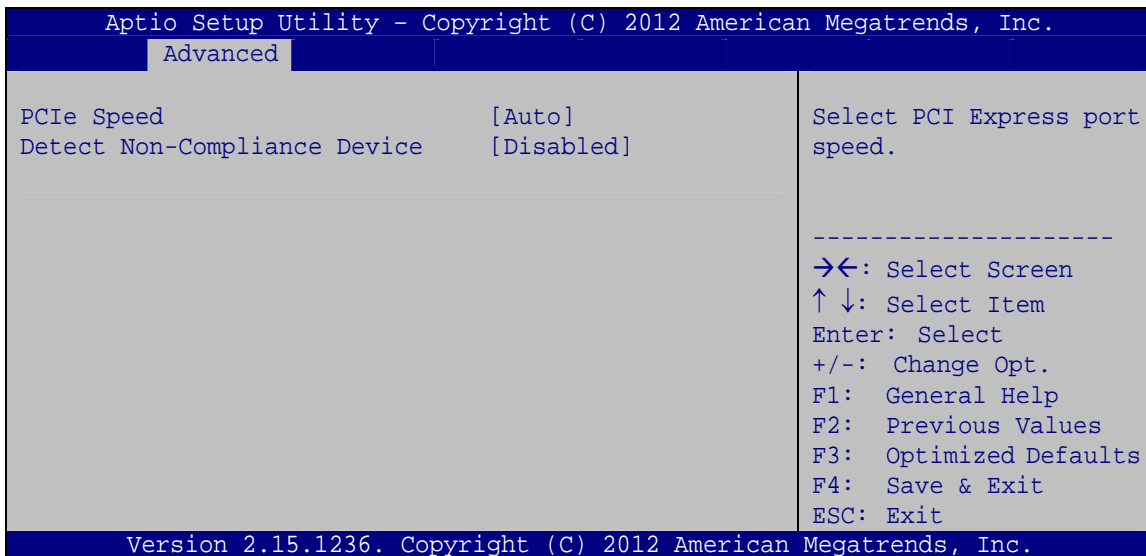
Use the **PCI Express Configuration** menu (**BIOS Menu 20**) to configure the PCI Express slots.



**BIOS Menu 20: PCI Express Configuration**

#### 5.4.1.1.1 PCIEX1\_1 Slot/PCEIX1\_2 Slot

Use the **PCIEX1\_1 Slot/PCIEX1\_2 Slot** menus (**BIOS Menu 21**) to configure the **PCIEX1\_1** and **PCIEX1\_2** slot settings.



**BIOS Menu 21: PCIEX1\_1 Slot and PCIEX4\_1 Slot Configuration Menu**

## IMBA-H810 ATX Motherboard

### → PCIe Speed [Gen1]

Use this option to select the support type of the PCI Express slots. The following options are available:

- Auto                      **Default**
- Gen1
- Gen2

### → Detect Non-Compliance Device [Disabled]

Use the **Detect Non-Compliance Device** option to enable or disable detecting if a non-compliance PCI Express device is connected to the PCI Express slot.

- **Disabled**                      **DEFAULT**      Disables to detect if a non-compliance PCI Express device is connected to the PCI Express slot.
- **Enabled**                              Enables to detect if a non-compliance PCI Express device is connected to the PCI Express slot.

### 5.4.1.2 PCH Azalia Configuration

Use the **PCH Azalia Configuration** menu (**BIOS Menu 22**) to configure the PCH Azalia settings.



**BIOS Menu 22: PCH Azalia Configuration**

### → Azalia (HD Audio) [Enabled]

Use the **Azalia (HD Audio)** option to enable or disable the High Definition Audio controller.

- **Disabled**                      The onboard High Definition Audio controller is disabled
- **Enabled**    **DEFAULT**      The onboard High Definition Audio controller automatically detected and enabled

## 5.4.2 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 23**) to configure the System Agent (SA) parameters.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
  Chipset
-----
> Graphics Configuration
> NB PCIe Configuration
> Memory Configuration

Config Graphics Settings.

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

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```

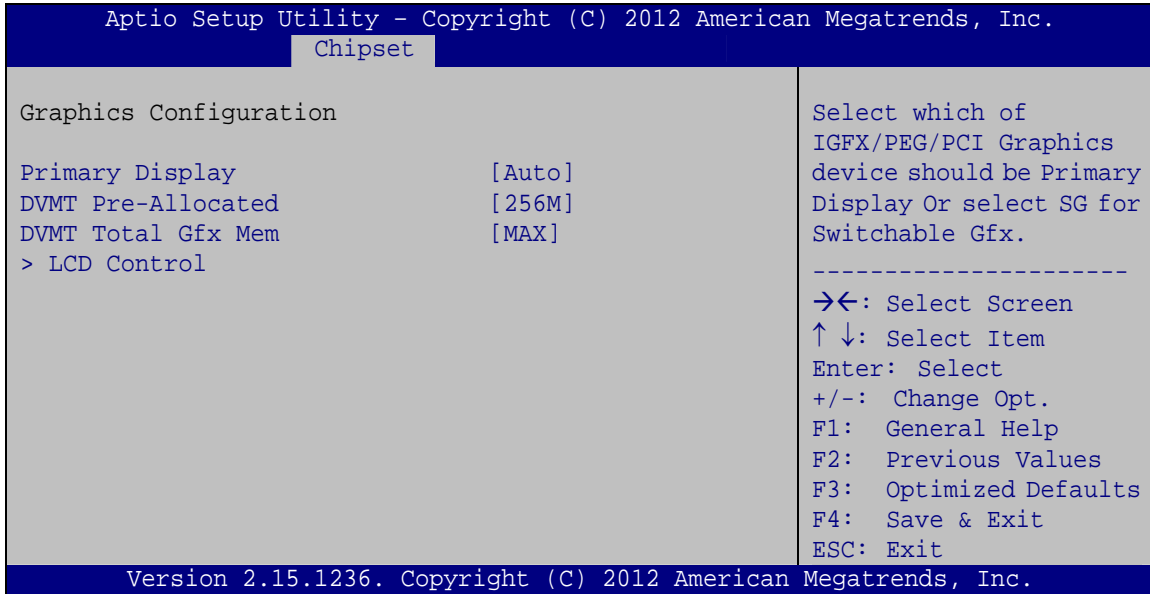
**BIOS Menu 23: System Agent (SA) Configuration**

### 5.4.2.1 Graphics Configuration

Use the **Graphics Configuration (BIOS Menu 24)** menu to configure the video device connected to the system.



## IMBA-H810 ATX Motherboard



### BIOS Menu 24: Graphics Configuration

#### → Primary Display [Auto]

Use the **Primary Display** option to select the primary graphics controller the system uses.

The following options are available:

- Auto **Default**
- IGFX
- PEG
- PCIE/PCI

#### → DVMT Pre-Allocated [256M]

Use the **DVMT Pre-Allocated** option to set the amount of system memory allocated to the integrated graphics processor when the system boots. The system memory allocated can then only be used as graphics memory, and is no longer available to applications or the operating system. Configuration options are listed below:

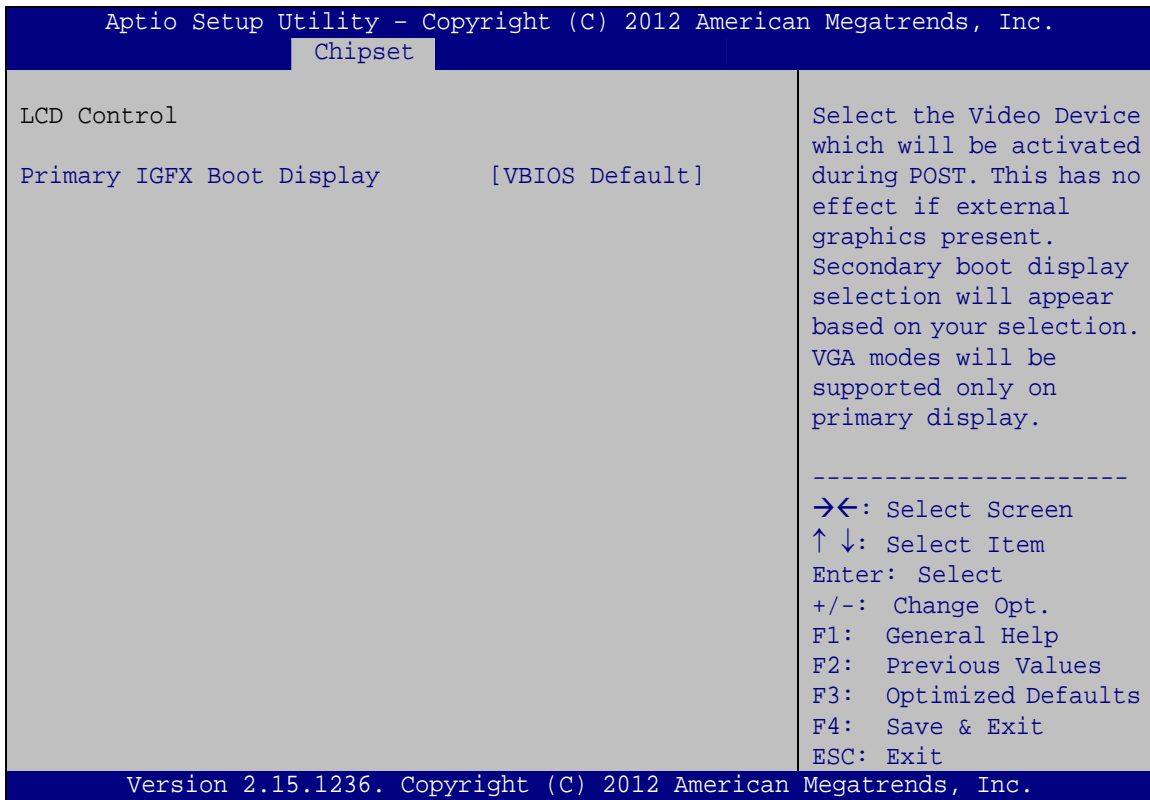
- 32M
- 64M
- 128M
- 256M **Default**
- 512M

### → DVMT Total Gfx Mem [MAX]

Use the **DVMT Total Gfx Mem** option to select DVMT5.0 total graphic memory size used by the internal graphic device. The following options are available:

- 128M
- 256M
- MAX                      **Default**

### 5.4.2.1.1 LCD Control



#### BIOS Menu 25: LCD Control

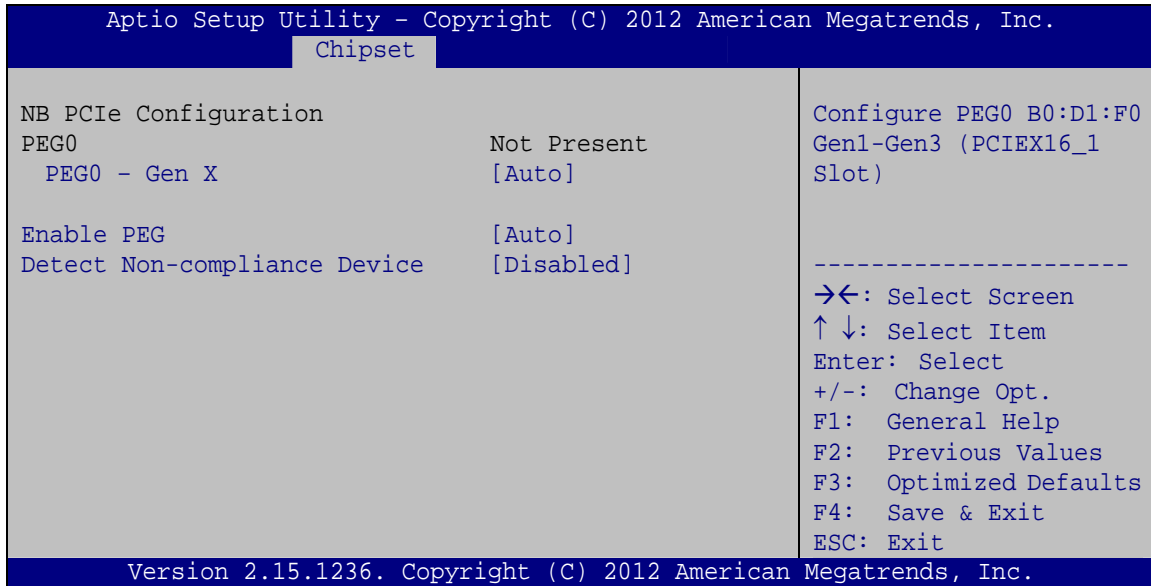
### → Primary IGFX Boot Display [VBIOS Default]

Use the **Primary IGFX Boot Display** option to select the display device used by the system when it boots. Configuration options are listed below.

- VBIOS Default                      **DEFAULT**
- CRT
- DVI
- DP

## IMBA-H810 ATX Motherboard

### 5.4.2.2 NB PCIe Configuration



#### BIOS Menu 26: NB PCIe Configuration

##### → PEG0 – Gen X [Auto]

Use the **PEG0 – Gen X** option to select the support type of the PCI Express x16 slot. The following options are available:

- Auto **Default**
- Gen1
- Gen2
- Gen3

##### → Enable PEG [Auto]

Use the **Enable PEG** option to enable or disable the PCI Express (PEG) controller.

- **Disabled** Disables the PCI Express (PEG) controller.
- **Enabled** Enables the PCI Express (PEG) controller.
- **Auto** **DEFAULT** The PCI Express (PEG) controller is disabled if no PCI Express devices are connected.

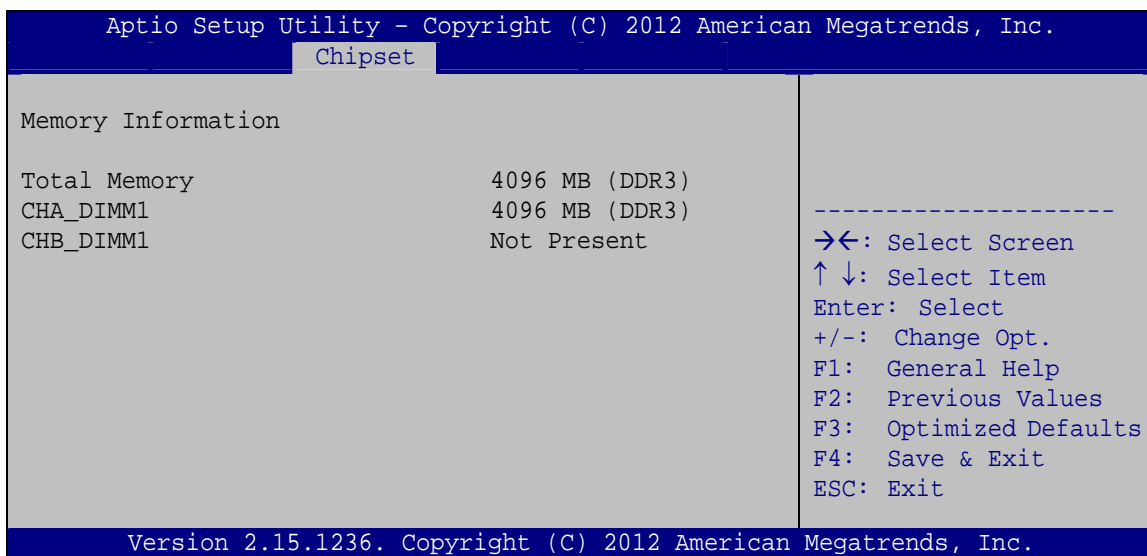
### → Detect Non-Compliance Device [Disabled]

Use the **Detect Non-Compliance Device** option to enable or disable detecting if a non-compliance PCI Express device is connected to the PCI Express port.

- **Disabled**                      **DEFAULT**      Disables to detect if a non-compliance PCI Express device is connected to the PCI Express port.
- **Enabled**                                      Enables to detect if a non-compliance PCI Express device is connected to the PCI Express port.

### 5.4.2.3 Memory Configuration

Use the **Memory Configuration** submenu (**BIOS Menu 27**) to view memory information.

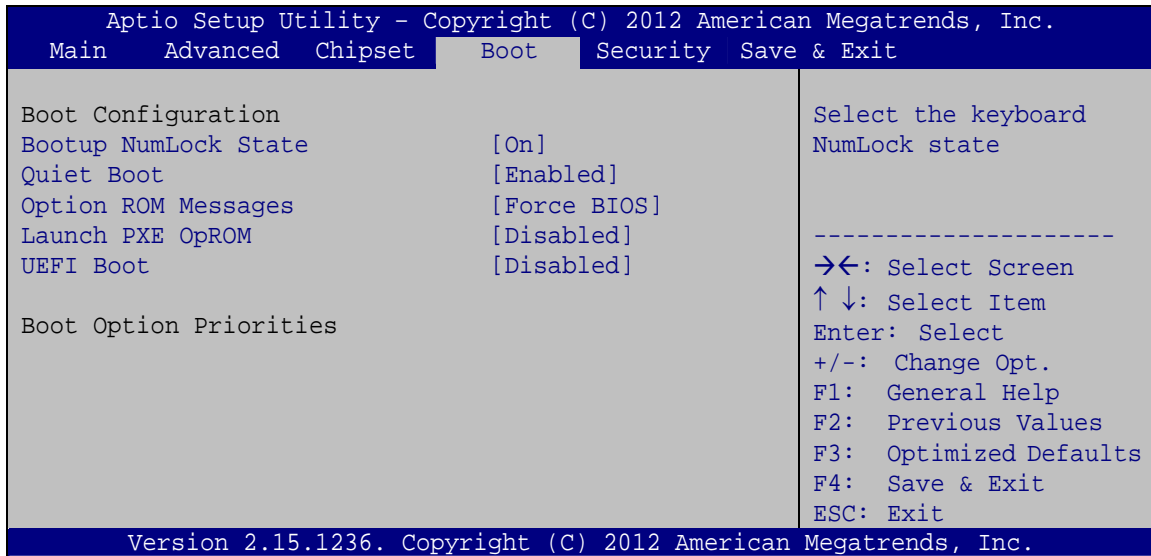


**BIOS Menu 27: Memory Configuration**

## IMBA-H810 ATX Motherboard

### 5.5 Boot

Use the **Boot** menu (**BIOS Menu 28**) to configure system boot options.



#### BIOS Menu 28: Boot

##### → Bootup NumLock State [On]

Use the **Bootup NumLock State** BIOS option to specify if the number lock setting must be modified during boot up.

- **On**                      **DEFAULT**                      Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.
- **Off**                                      Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

→ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

- **Disabled** Normal POST messages displayed
- **Enabled** **DEFAULT** OEM Logo displayed instead of POST messages

→ **Option ROM Messages [Force BIOS]**

Use the **Option ROM Messages** option to set the Option ROM display mode.

- **Force BIOS** **DEFAULT** Sets display mode to force BIOS.
- **Keep Current** Sets display mode to current.

→ **Launch PXE OpROM [Disabled]**

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

- **Disabled** **DEFAULT** Ignore all PXE Option ROMs
- **Enabled** Load PXE Option ROMs.

→ **UEFI Boot [Disabled]**

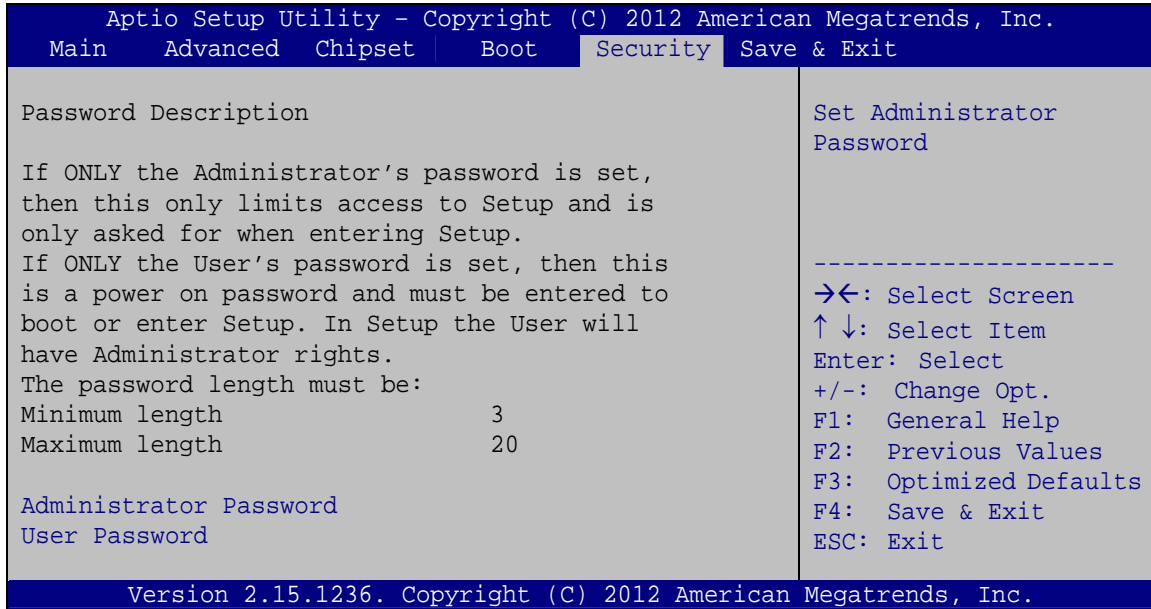
Use the **UEFI Boot** option to enable or disable to boot from the UEFI devices.

- **Enabled** Boot from UEFI devices is enabled.
- **Disabled** **DEFAULT** Boot from UEFI devices is disabled.

## IMBA-H810 ATX Motherboard

### 5.6 Security

Use the **Security** menu (**BIOS Menu 29**) to set system and user passwords.



#### BIOS Menu 29: Security

##### → Administrator Password

Use the **Administrator Password** to set or change a administrator password.

##### → User Password

Use the **User Password** to set or change a user password.

### 5.7 Save & Exit

Use the **Safe & Exit** menu (**BIOS Menu 30**) to load default BIOS values, optimal failsafe values and to save configuration changes.

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

Restore Defaults
Save as User Defaults
Restore User Defaults

Exit the system after
saving the changes.

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

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```

### BIOS Menu 30: Save & Exit

#### → Save Changes and Reset

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

#### → Discard Changes and Reset

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

#### → Restore Defaults

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

#### → Save as User Defaults

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

#### → Restore User Defaults

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.



Chapter

**6**

# Software Drivers

---

## 6.1 Available Software Drivers

---



### NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

---

The following drivers can be installed on the system:

- Chipset
- Graphics
- LAN
- USB 3.0
- Audio
- Intel® AMT

Installation instructions are given below.

## 6.2 Software Installation

All the drivers for the IMBA-H810 are on the CD that came with the system. To install the drivers, please follow the steps below.

**Step 1:** Insert the CD into a CD drive connected to the system.

---



### NOTE:

If the installation program doesn't start automatically:  
Click "Start->My Computer->CD Drive->autorun.exe"

---

**Step 2:** The driver main menu appears (**Figure 6-1**).

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**Figure 6-1: Introduction Screen**

**Step 3:** Click IMBA-H810.

**Step 4:** A new screen with a list of available drivers appears (**Figure 6-2**).



**Figure 6-2: Available Drivers**

**Step 5:** Install all of the necessary drivers in this menu.

### 6.3 Chipset Driver Installation

To install the chipset driver, please do the following.

**Step 1:** Access the driver list. (See **Section 6.2**)

**Step 2:** Click “1-Chipset”.

**Step 3:** Locate the setup file and double click on it.

**Step 4:** When the setup files are completely extracted, the **Welcome Screen** in **Figure 6-3** appears.

**Step 5:** Click **Next** to continue.



**Figure 6-3: Chipset Driver Welcome Screen**

**Step 6:** The license agreement in **Figure 6-4** appears.

**Step 7:** Read the **License Agreement**.

**Step 8:** Click **Yes** to continue.

IMBA-H810 ATX Motherboard



Figure 6-4: Chipset Driver License Agreement

**Step 9:** The Read Me file in Figure 6-5 appears.

**Step 10:** Click **Next** to continue.

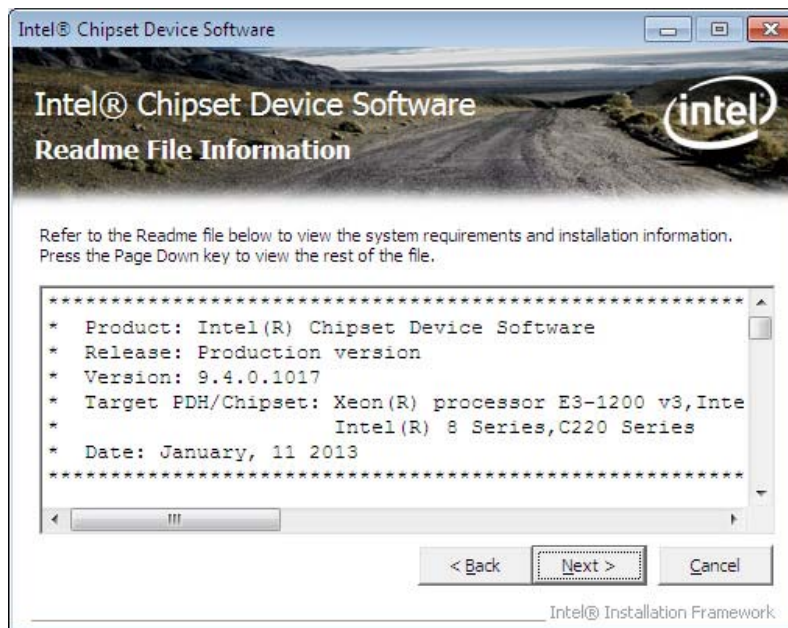
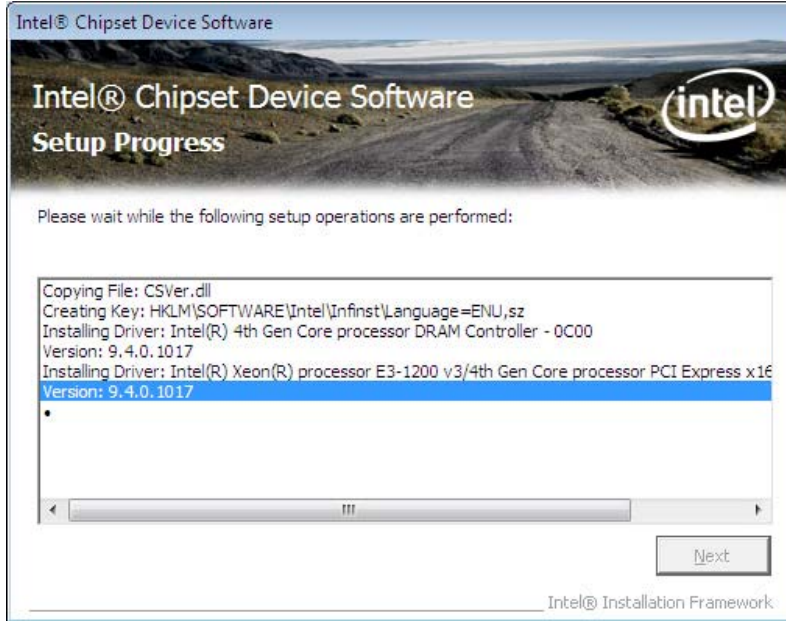


Figure 6-5: Chipset Driver Read Me File

**Step 11:** Setup Operations are performed as shown in Figure 6-6.

**Step 12:** Once the Setup Operations are complete, click **Next** to continue.



**Figure 6-6: Chipset Driver Setup Operations**

**Step 13:** The Finish screen in Figure 6-7 appears.



**Figure 6-7: Chipset Driver Installation Finish Screen**

## IMBA-H810 ATX Motherboard

### 6.4 Graphics Driver Installation

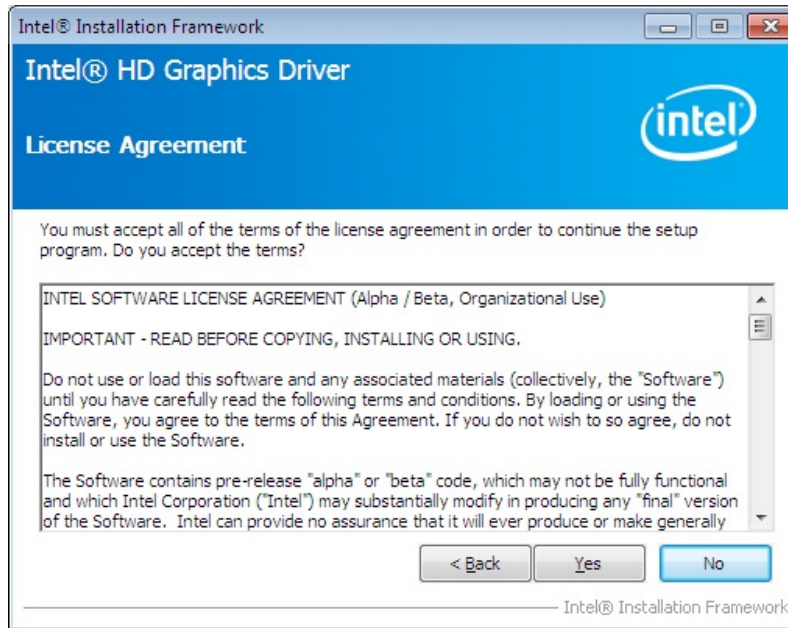
To install the Graphics driver, please do the following.

- Step 1:** Access the driver list. (See **Section 6.2**)
- Step 2:** Click “**2-Graphic**” and select the folder which corresponds to the operating system.
- Step 3:** Locate the setup file and double click on it.
- Step 4:** The **Welcome Screen** in **Figure 6-8** appears.
- Step 5:** Click **Next** to continue.



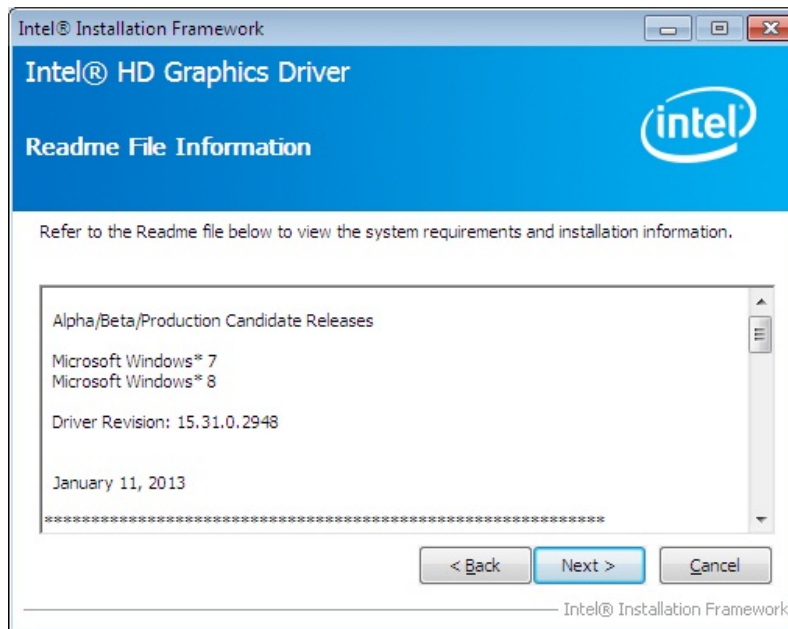
**Figure 6-8: Graphics Driver Welcome Screen**

- Step 6:** The **License Agreement** in **Figure 6-9** appears.
- Step 7:** Click **Yes** to accept the agreement and continue.



**Figure 6-9: Graphics Driver License Agreement**

**Step 8:** The Read Me file in **Figure 6-10** appears. Click **Next** to continue.



**Figure 6-10: Graphics Driver Read Me File**

**Step 9:** **Setup Operations** are performed as shown in **Figure 6-11**.

**Step 10:** Once the **Setup Operations** are complete, click **Next** to continue.



## IMBA-H810 ATX Motherboard

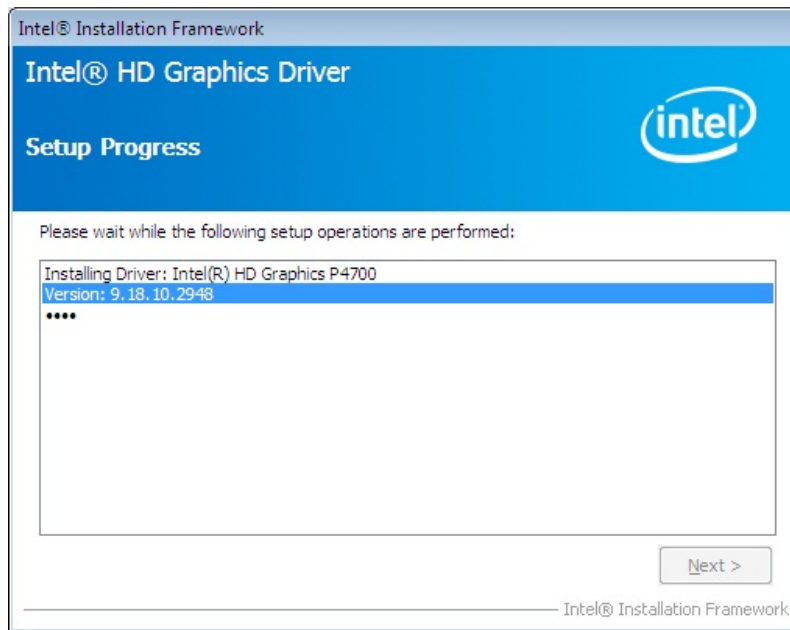


Figure 6-11: Graphics Driver Setup Operations

**Step 11:** The **Finish** screen in Figure 6-12 appears.

**Step 12:** Select **“Yes, I want to restart this computer now”** and click **Finish**.

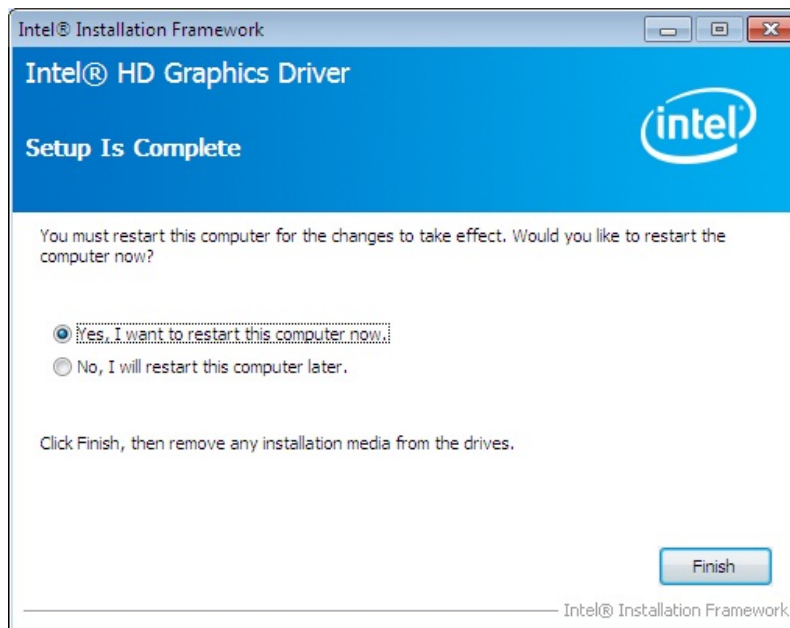
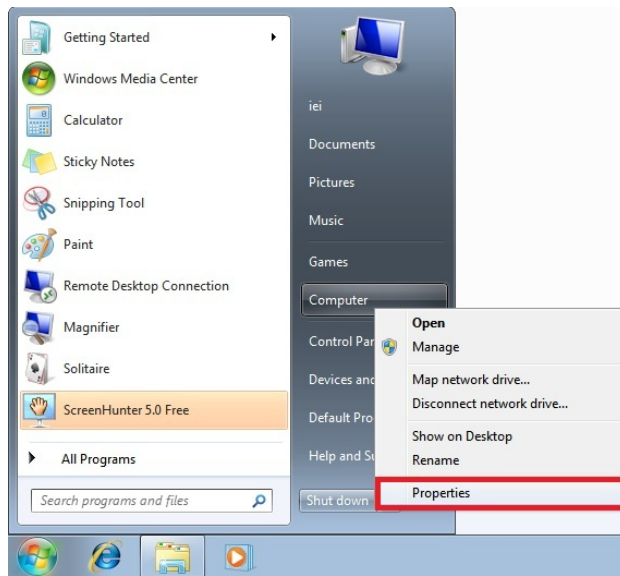


Figure 6-12: Graphics Driver Installation Finish Screen

## 6.5 LAN Driver Installation

To install the LAN driver, please do the following.

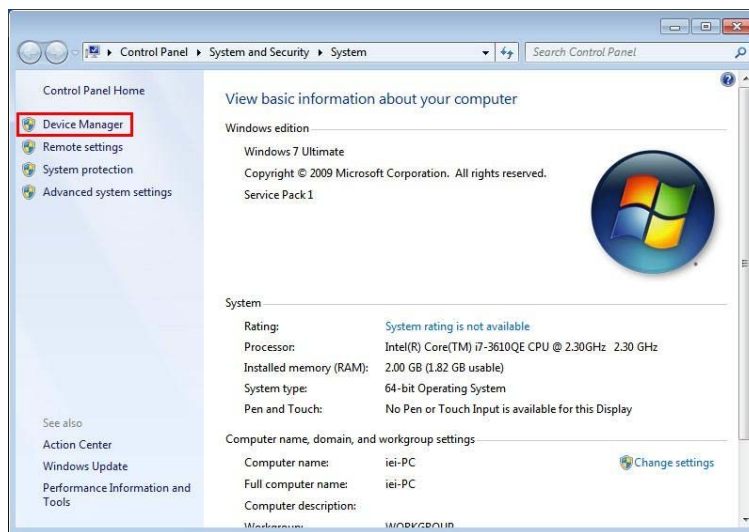
- Step 1:** Right-click the Computer button from the start menu and select **Properties** (Figure 6-13).



**Figure 6-13: Windows Control Panel**

- Step 2:** The system control panel window in Figure 6-14 appears.

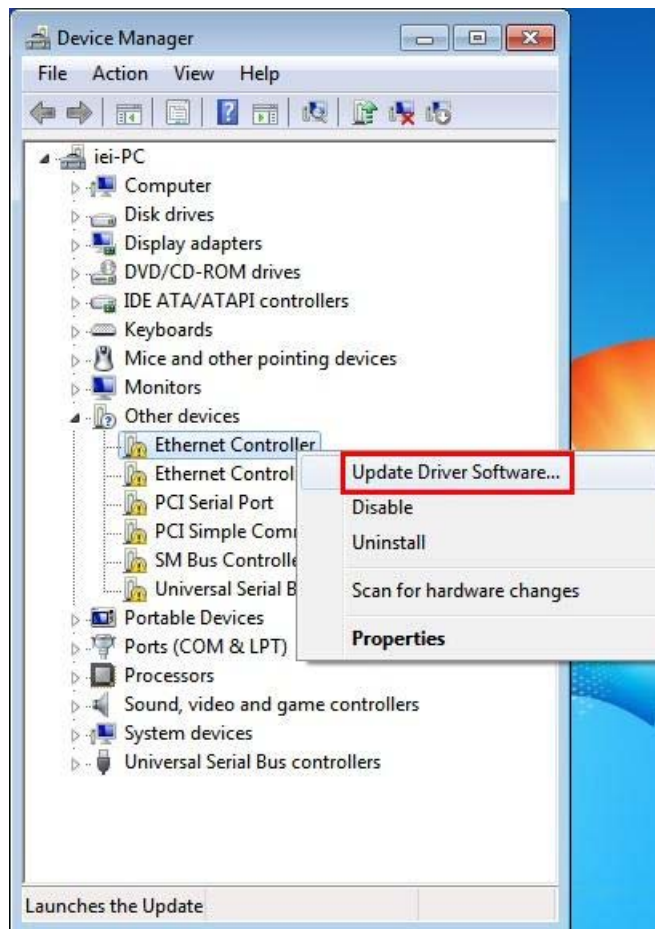
- Step 3:** Click the **Device Manager** link (Figure 6-14).



**Figure 6-14: System Control Panel**

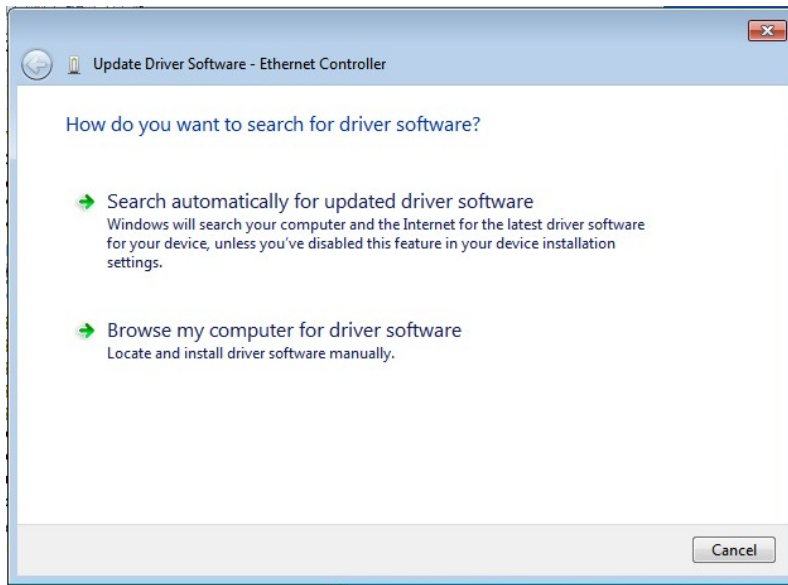
## IMBA-H810 ATX Motherboard

- Step 4:** A list of system hardware devices appears (**Figure 6-15**).
- Step 5:** Right-click one of the Ethernet controllers that has question marks next to it (this means Windows does not recognize the device).
- Step 6:** Select **Update Driver Software**. See **Figure 6-15**.



**Figure 6-15: Device Manager List**

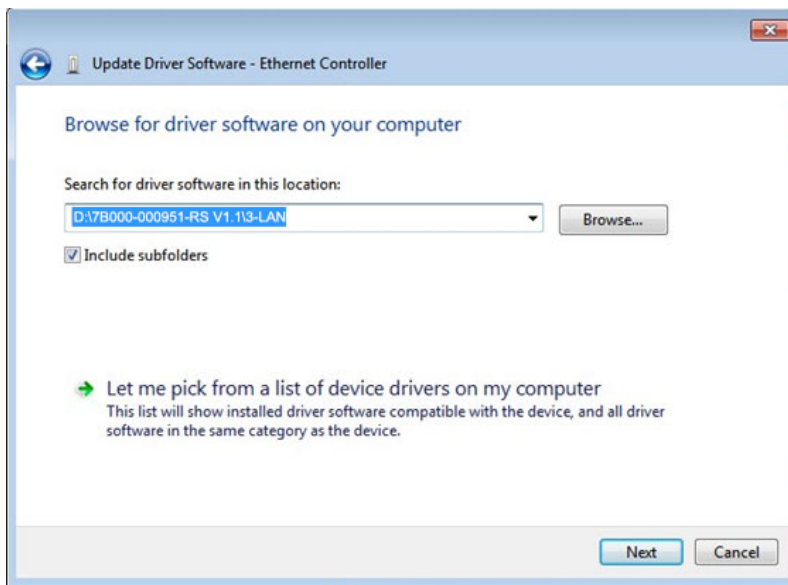
**Step 7:** The Update Driver Software Window appears (Figure 6-16).



**Figure 6-16: Update Driver Software Window**

**Step 8:** Select “Browse my computer for driver software”.

**Step 9:** Click **Browse** to select “X:\13-LAN” directory in the **Locate File** window, where “X:\” is the system CD drive. (Figure 6-17).

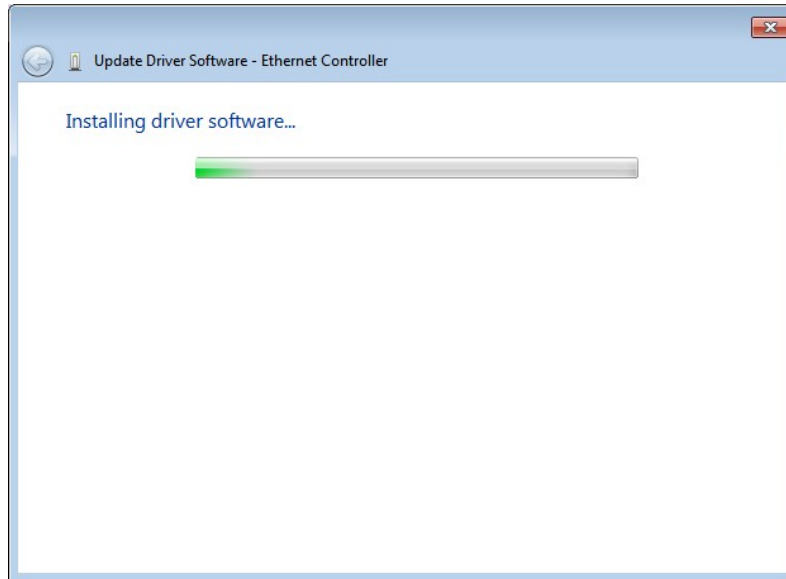


**Figure 6-17: Locate Driver Files**

## IMBA-H810 ATX Motherboard

**Step 10:** Click **NEXT** to continue.

**Step 11:** Driver Installation is performed as shown in **Figure 6-18**.



**Figure 6-18: LAN Driver Installation**

**Step 12:** The **Finish** screen appears. Click **Close** to exit.

**Step 13:** Right-click the other Ethernet controller that has question marks next to it as shown in **Figure 6-15**. Repeat **Step 6 ~ Step 12** to install the second Ethernet controller driver.

## 6.6 USB 3.0 Driver Installation



### WARNING:

Do not run this driver's installer (Setup.exe) from a USB storage device (ie. external USB hard drive or USB thumb drive). For proper installation, please copy driver files to a local hard drive folder and run from there.

To install the USB 3.0 driver, please follow the steps below.

- Step 1:** Access the driver list. (See **Section 6.2**)
- Step 2:** Click “4-USB3.0”.
- Step 3:** Locate the setup file and double click on it.
- Step 4:** A **Welcome Screen** appears (**Figure 6-19**).
- Step 5:** Click **Next** to continue.



Figure 6-19: USB 3.0 Driver Welcome Screen

## IMBA-H810 ATX Motherboard

**Step 6:** The license agreement in **Figure 6-20** appears. Read the **License Agreement**.

**Step 7:** Click **Yes** to continue.



**Figure 6-20: USB 3.0 Driver License Agreement**

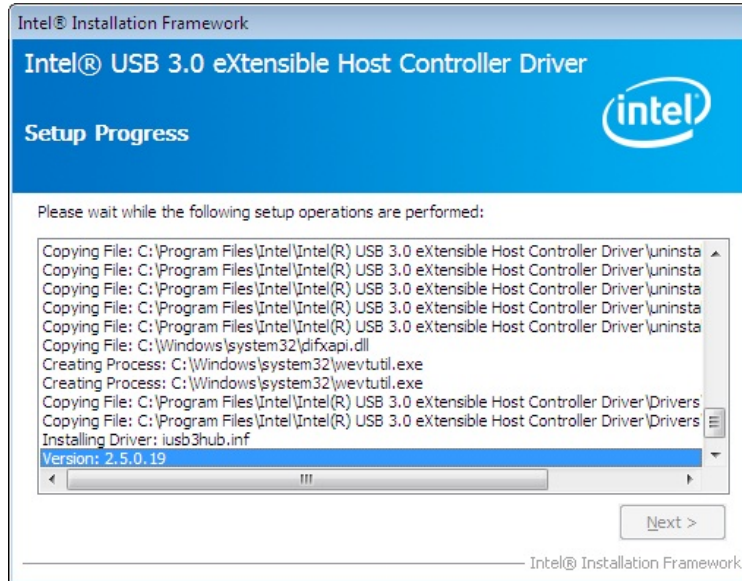
**Step 8:** The **Read Me** file in **Figure 6-21** appears. Click **Next** to continue.



**Figure 6-21: USB 3.0 Driver Read Me File**

**Step 9:** Setup Operations are performed as shown in Figure 6-22.

**Step 10:** Once the Setup Operations are complete, click **Next** to continue.



**Figure 6-22: USB 3.0 Driver Setup Operations**

**Step 11:** The Finish screen in Figure 6-23 appears.

**Step 12:** Select “Yes, I want to restart this computer now” and click **Finish**.



**Figure 6-23: USB 3.0 Driver Installation Finish Screen**



## IMBA-H810 ATX Motherboard

### 6.7 Audio Driver Installation

To install the audio driver, please do the following.

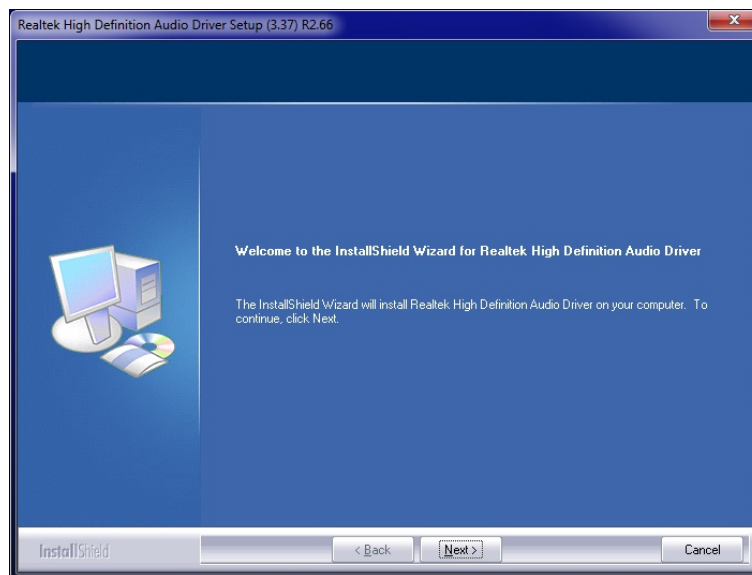
**Step 1:** Access the driver list. (See **Section 6.2**)

**Step 2:** Click **"5-Audio"** and select the folder which corresponds to the operating system.

**Step 3:** Double click the setup file.

**Step 4:** The **InstallShield Wizard** is prepared to guide the user through the rest of the process.

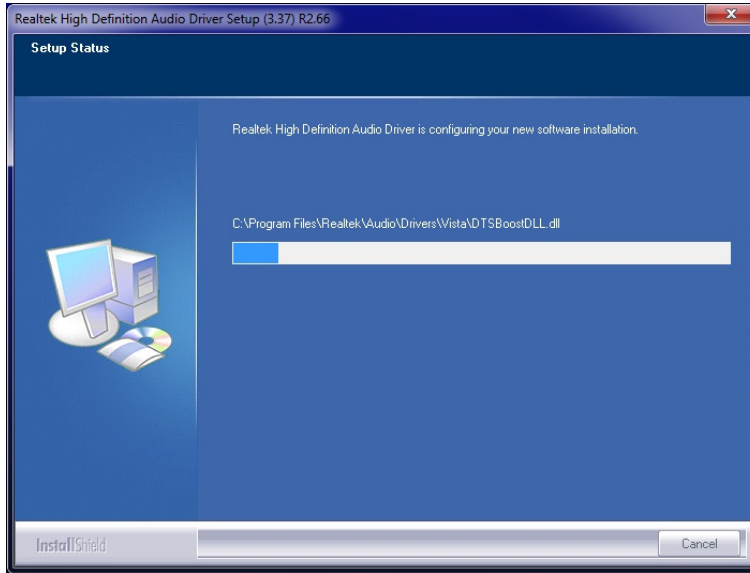
**Step 5:** Once initialized, the **InstallShield Wizard** welcome screen appears (**Figure 6-24**).



**Figure 6-24: InstallShield Wizard Welcome Screen**

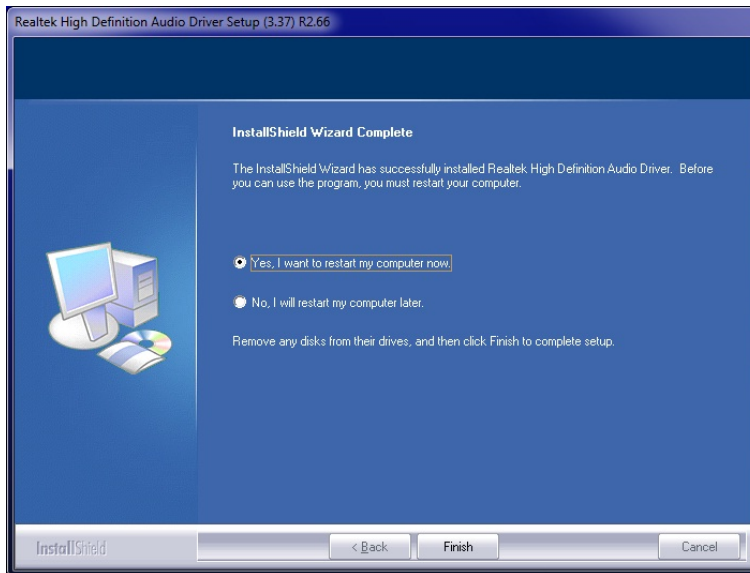
**Step 6:** Click **Next** to continue the installation.

**Step 7:** InstallShield starts to install the new software as shown in **Figure 6-25**.



**Figure 6-25: Audio Driver Software Configuration**

**Step 8:** After the driver installation process is complete, a confirmation screen appears (Figure 6-26).



**Figure 6-26: Restart the Computer**

**Step 9:** The confirmation screen offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **Finish** to restart the computer.

## IMBA-H810 ATX Motherboard

### 6.8 Intel® AMT Driver Installation

The package of the Intel® ME components includes

- Intel® Management Engine Interface (Intel® ME Interface)
- Intel® Dynamic Application Loader
- Intel® Identity Protection Technology (Intel® IPT)
- Serial Over LAN (SOL) driver
- Intel® Management and Security Status Application
- Local Manageability Service (LMS)

To install these Intel® ME components, please do the following.

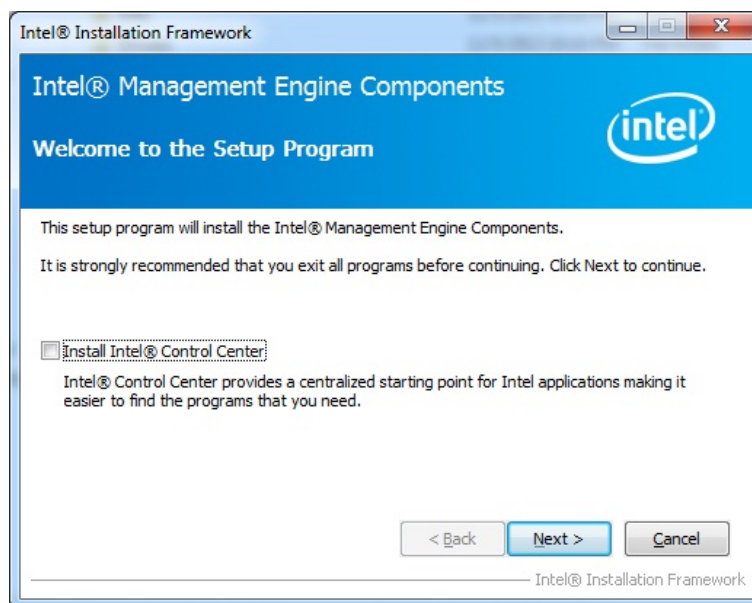
**Step 1:** Access the driver list. (See **Section 6.2**)

**Step 2:** Click “7-iAMT Driver & Utility”.

**Step 3:** Double click the setup file in the **ME\_SW** folder.

**Step 4:** When the setup files are completely extracted the **Welcome Screen** in **Figure 6-27** appears.

**Step 5:** Click **Next** to continue.

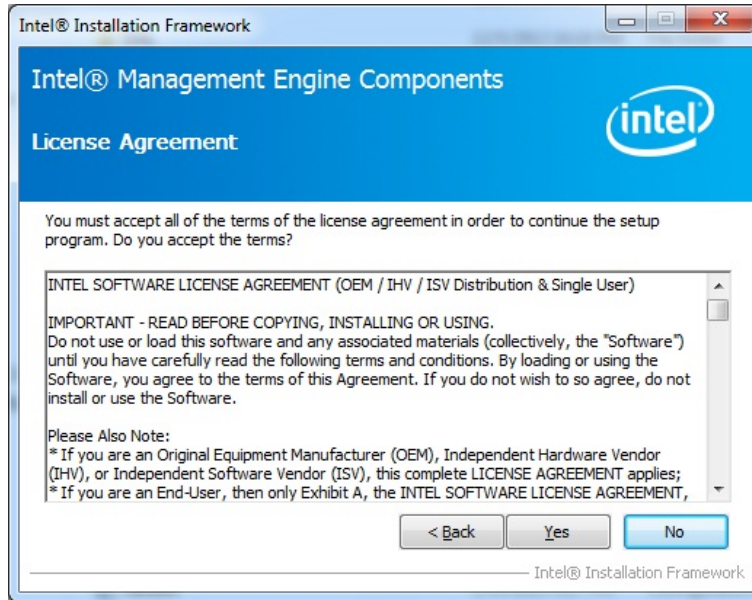


**Figure 6-27: Intel® ME Driver Welcome Screen**

**Step 6:** The license agreement in **Figure 6-28** appears.

**Step 7:** Read the **License Agreement**.

**Step 8:** Click **Yes** to continue.



**Figure 6-28: Intel® ME Driver License Agreement**

**Step 9:** **Setup Operations** are performed as shown in **Figure 6-29**.

**Step 10:** Once the **Setup Operations** are complete, click **Next** to continue.

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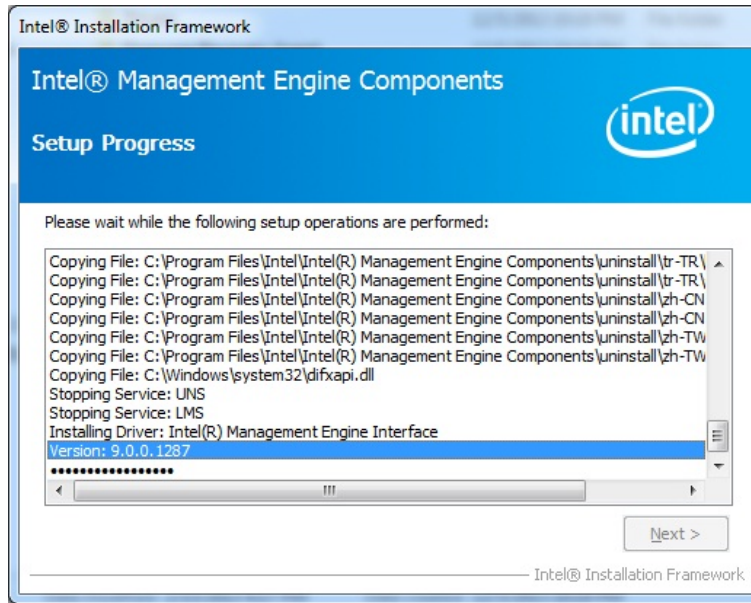


Figure 6-29: Intel® ME Driver Setup Operations

**Step 11:** The **Finish** screen in **Figure 6-30** appears.

**Step 12:** Select **“Yes, I want to restart this computer now”** and click **Finish**.



Figure 6-30: Intel® ME Driver Installation Finish Screen

Appendix

**A**

# Regulatory Compliance

---

### DECLARATION OF CONFORMITY



This equipment has been tested and found to comply with specifications for CE marking. If the user modifies and/or installs other devices in the equipment, the CE conformity declaration may no longer apply.

### FCC WARNING



This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Appendix

**B**

# BIOS Options

---



## IMBA-H810 ATX Motherboard

Below is a list of BIOS configuration options in the BIOS chapter.

<b>System Date [xx/xx/xx]</b> .....	<b>77</b>
<b>System Time [xx:xx:xx]</b> .....	<b>77</b>
<b>ACPI Sleep State [S1 only (CPU Stop Clock)]</b> .....	<b>78</b>
<b>Wake system with Fixed Time [Disabled]</b> .....	<b>79</b>
<b>Security Device Support [Disable]</b> .....	<b>80</b>
<b>Hyper-threading [Enabled]</b> .....	<b>81</b>
<b>Active Processor Cores [All]</b> .....	<b>82</b>
<b>Intel Virtualization Technology [Disabled]</b> .....	<b>82</b>
<b>EIST [Enabled]</b> .....	<b>82</b>
<b>SATA Controller(s) [Enabled]</b> .....	<b>83</b>
<b>SATA Mode Selection [IDE]</b> .....	<b>83</b>
<b>Intel(R) Rapid Start Technology [Disabled]</b> .....	<b>84</b>
<b>Intel AMT [Enabled]</b> .....	<b>85</b>
<b>Un-Configure ME [Disabled]</b> .....	<b>85</b>
<b>USB Devices</b> .....	<b>86</b>
<b>Legacy USB Support [Enabled]</b> .....	<b>86</b>
<b>Serial Port [Enabled]</b> .....	<b>88</b>
<b>Change Settings [Auto]</b> .....	<b>88</b>
<b>Serial Port [Enabled]</b> .....	<b>88</b>
<b>Change Settings [Auto]</b> .....	<b>89</b>
<b>Serial Port [Enabled]</b> .....	<b>89</b>
<b>Change Settings [Auto]</b> .....	<b>89</b>
<b>Serial Port [Enabled]</b> .....	<b>90</b>
<b>Change Settings [Auto]</b> .....	<b>90</b>
<b>Device Mode [RS422/485]</b> .....	<b>91</b>
<b>Serial Port [Enabled]</b> .....	<b>91</b>
<b>Change Settings [Auto]</b> .....	<b>91</b>
<b>Serial Port [Enabled]</b> .....	<b>92</b>
<b>Change Settings [Auto]</b> .....	<b>92</b>
<b>Parallel Port [Enabled]</b> .....	<b>93</b>
<b>Change Settings [Auto]</b> .....	<b>93</b>
<b>Device Mode [STD Printer Mode]</b> .....	<b>94</b>
<b>PC Health Status</b> .....	<b>95</b>

CPU_FAN1 Smart Fan Control/SYS_FAN1 Smart Fan Control [Auto Mode].....	96
Fan start/off temperature .....	96
Fan start PWM .....	96
Fan slope PWM .....	96
Console Redirection [Disabled] .....	97
Terminal Type [ANSI].....	98
Bits per second [115200].....	98
Data Bits [8] .....	98
Parity [None].....	99
Stop Bits [1].....	99
Auto Recovery Function [Disabled].....	100
Restore AC Power Loss [Last State] .....	102
Power Saving Function(ERP) [Disabled].....	102
PEG port configuration [1 x16 PCIE] .....	103
USB Power SW1 [+5V DUAL].....	103
USB Power SW2 [+5V DUAL].....	103
PCIe Speed [Gen1].....	105
Detect Non-Compliance Device [Disabled] .....	105
Azalia (HD Audio) [Enabled] .....	106
Primary Display [Auto] .....	107
DVMT Pre-Allocated [256M] .....	107
DVMT Total Gfx Mem [MAX].....	108
Primary IGFX Boot Display [VBIOS Default] .....	108
PEG0 – Gen X [Auto] .....	109
Enable PEG [Auto].....	109
Detect Non-Compliance Device [Disabled] .....	110
Bootup NumLock State [On].....	111
Quiet Boot [Enabled] .....	112
Option ROM Messages [Force BIOS].....	112
Launch PXE OpROM [Disabled] .....	112
UEFI Boot [Disabled] .....	112
Administrator Password .....	113
User Password .....	113
Save Changes and Reset .....	114
Discard Changes and Reset .....	114

## IMBA-H810 ATX Motherboard

Restore Defaults .....	114
Save as User Defaults .....	114
Restore User Defaults .....	114

Appendix

C

# Terminology

---

## IMBA-H810 ATX Motherboard

<b>AC '97</b>	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
<b>ACPI</b>	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
<b>AHCI</b>	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
<b>ATA</b>	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
<b>ARMD</b>	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
<b>ASKIR</b>	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude (“volume”) of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
<b>BIOS</b>	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
<b>CODEC</b>	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
<b>CMOS</b>	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
<b>COM</b>	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
<b>DAC</b>	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
<b>DDR</b>	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.
<b>DMA</b>	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.

<b>DIMM</b>	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
<b>DIO</b>	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
<b>EHCI</b>	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
<b>EIDE</b>	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.
<b>EIST</b>	Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage.
<b>FSB</b>	The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.
<b>GbE</b>	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
<b>GPIO</b>	General purpose input
<b>HDD</b>	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
<b>ICH</b>	The Input/Output Control Hub (ICH) is an Intel® Southbridge chipset.
<b>IrDA</b>	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
<b>L1 Cache</b>	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
<b>L2 Cache</b>	The Level 2 Cache (L2 Cache) is an external processor memory cache.
<b>LCD</b>	Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.

## IMBA-H810 ATX Motherboard

<b>LVDS</b>	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.
<b>POST</b>	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
<b>RAM</b>	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
<b>SATA</b>	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps.
<b>S.M.A.R.T</b>	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
<b>UART</b>	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
<b>UHCI</b>	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
<b>USB</b>	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates.
<b>VGA</b>	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

**D**

# Digital I/O Interface

---



## IMBA-H810 ATX Motherboard

### D.1 Introduction

The DIO connector on the IMBA-H810 is interfaced to GPIO ports on the Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.



#### NOTE:

For further information, please refer to the datasheet for the Super I/O chipset.

---

The BIOS interrupt call **INT 15H** controls the digital I/O.

#### INT 15H:

<b>AH – 6FH</b>	
<u>Sub-function:</u>	
<b>AL – 8</b>	: Set the digital port as INPUT
<b>AL</b>	: Digital I/O input value

### D.2 Assembly Language Sample 1

```
MOV     AX, 6F08H      ;setting the digital port as input
INT     15H           ;
```

AL low byte = value

AH – 6FH
<u>Sub-function:</u>
AL – 9 : Set the digital port as OUTPUT
BL : Digital I/O input value

### D.3 Assembly Language Sample 2

```
MOV     AX, 6F09H      ;setting the digital port as output
MOV     BL, 09H        ;digital value is 09H
INT     15H           ;
```

Digital Output is 1001b

Appendix

**E**

# Watchdog Timer

---



**NOTE:**

The following discussion applies to DOS environment. Contact IEI support or visit the IEI website for specific drivers for other operating systems.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer’s period.
BL:	Time-out value (Its unit-second is dependent on the item “Watchdog Timer unit select” in CMOS setup).

**Table E-1: AH-6FH Sub-function**

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

## IMBA-H810 ATX Motherboard

**NOTE:**

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

**EXAMPLE PROGRAM:**

**; INITIAL TIMER PERIOD COUNTER**

;

**W\_LOOP:**

;

```

MOV      AX, 6F02H      ;setting the time-out value
MOV      BL, 30         ;time-out value is 48 seconds
INT      15H

```

;

**; ADD THE APPLICATION PROGRAM HERE**

;

```

CMP      EXIT_AP, 1     ;is the application over?
JNE      W_LOOP        ;No, restart the application

```

```

MOV      AX, 6F02H      ;disable Watchdog Timer
MOV      BL, 0         ;
INT      15H

```

;

**; EXIT ;**

Appendix

**F**

# Hazardous Materials Disclosure

---

## **F.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury**

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Display	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Printed Circuit Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Metal Fasteners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cable Assembly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fan Assembly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Power Supply Assemblies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Battery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006



## IMBA-H810 ATX Motherboard

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯 醚 (PBDE)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。  
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。