



**MODEL:
IMBA-C2060**

ATX LGA1155 Motherboard for Intel® Core™ i3 Quad/Dual Core CPU, Intel® C206 Chipset, DDR3, VGA/DVI/HDMI, Dual Intel® PCIe GbE, Intel® AMT 7.0 Support, Two USB 3.0 Ports, Five COM Ports, Two SATA 6Gb/s Ports and RoHS

User Manual

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Chapter

1

Introduction

1.1 Introduction

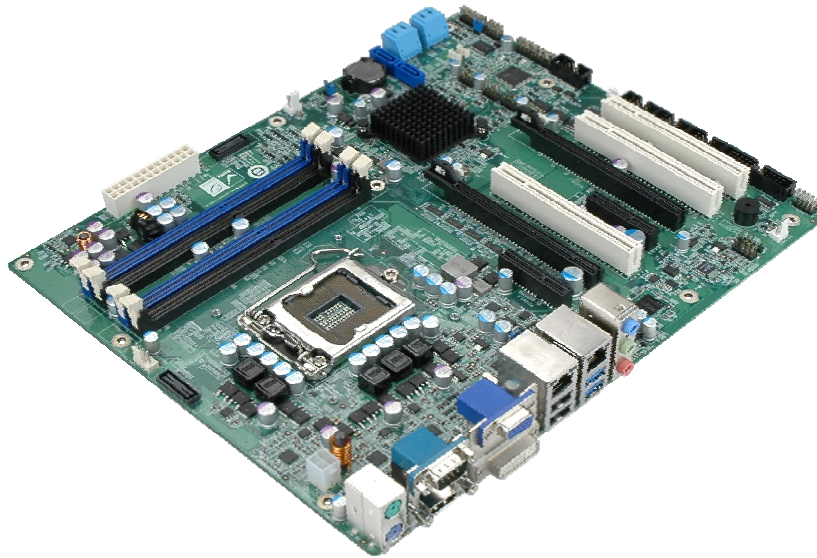


Figure 1-1: IMBA-C2060

The IMBA-C2060 is an ATX motherboard. It accepts a Socket LGA1155 Intel® Xeon® or Core™ i3 processor with quad or dual core and supports four 240-pin 1333/1066 MHz dual-channel DDR3 DIMM modules up to 32.0 GB maximum. The IMBA-C2060 includes a VGA, HDMI, and DVI-D port. Expansion and I/O include three PCI card slots, one PCIe x16 (x16 or x8 mode) slot, one PCIe x16 (x8 mode) slot, two PCIe x4 card slots, two USB 3.0 ports on the rear panel by ASMedia ASM1042, four USB 2.0 by rear panel, eight USB 2.0 by pin header, four SATA 3Gb/s connectors, two SATA 6Gb/s connectors, six COM ports, and two keyboard/mouse connectors.

1.2 Benefits

Some of the IMBA-C2060 motherboard benefits include:

- Powerful graphics with multiple monitors
- Staying connected with both wired LAN connections
- Speedy running of multiple programs and applications

IMBA-C2060 ATX Motherboard

1.3 Features

Some of the IMBA-C2060 motherboard features are listed below:

- ATX form factor
- RoHS compliant
- LGA1155 CPU socket
- Three PCI card expansion slots
- Multiple PCIe expansion card configurations:

Slot	PCIe x16	PCIe x8	PCIe x4	PCI
Configuration 1	1	N/A	2	3
Configuration 2	N/A	2	2	3
Configuration 3	N/A	1	2	3
- Supports four dual-channel DDR3 DIMMs
- One external RS-232 serial port
- Four internal RS-232 serial ports connectors
- One internal RS-422/485 serial port connector
- Two Intel® PCIe Gigabit Ethernet connectors (LAN2 with Intel® AMT 7.0 support)
- Four SATA 3Gb/s connectors
- Two SATA 6Gb/s connectors
- High Definition Audio
- Intel® C206 chipset

1.4 Connectors

The connectors on the IMBA-C2060 are shown in the figure below.

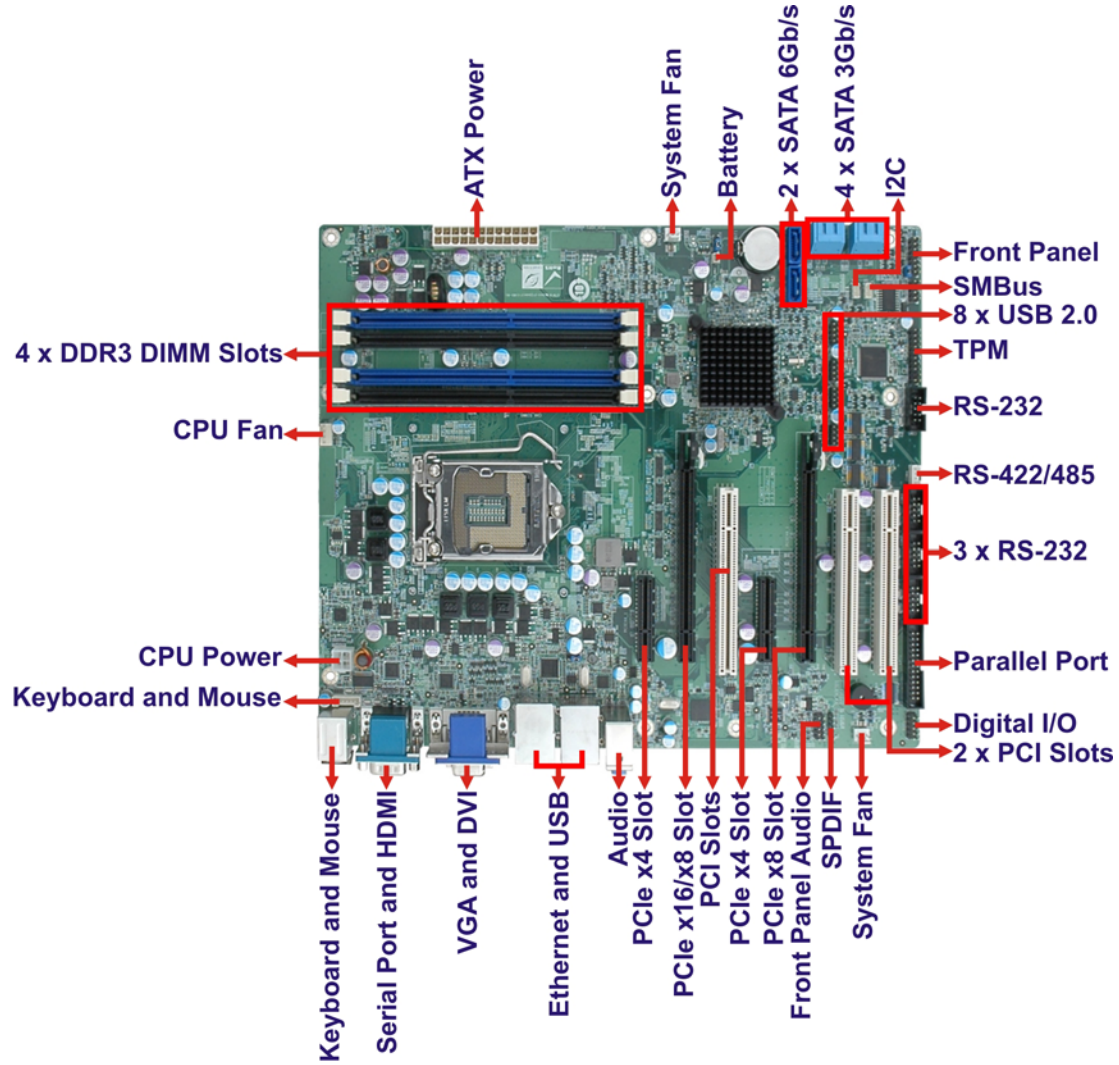


Figure 1-2: Connectors

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1.5 Dimensions

The main dimensions of the IMBA-C2060 are shown in the diagram below.

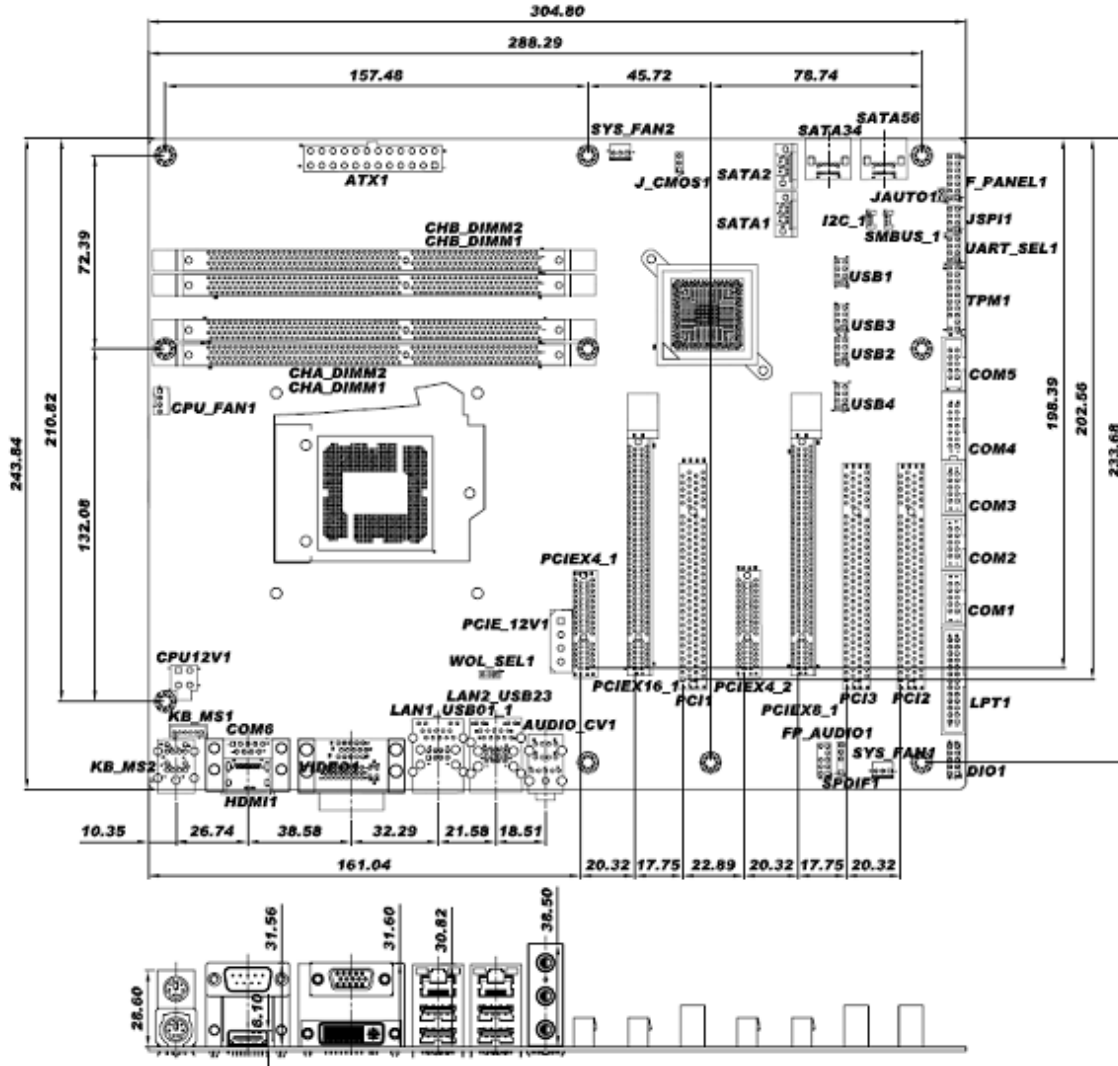


Figure 1-3: IMBA-C2060 Dimensions (mm)

1.6 Data Flow

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

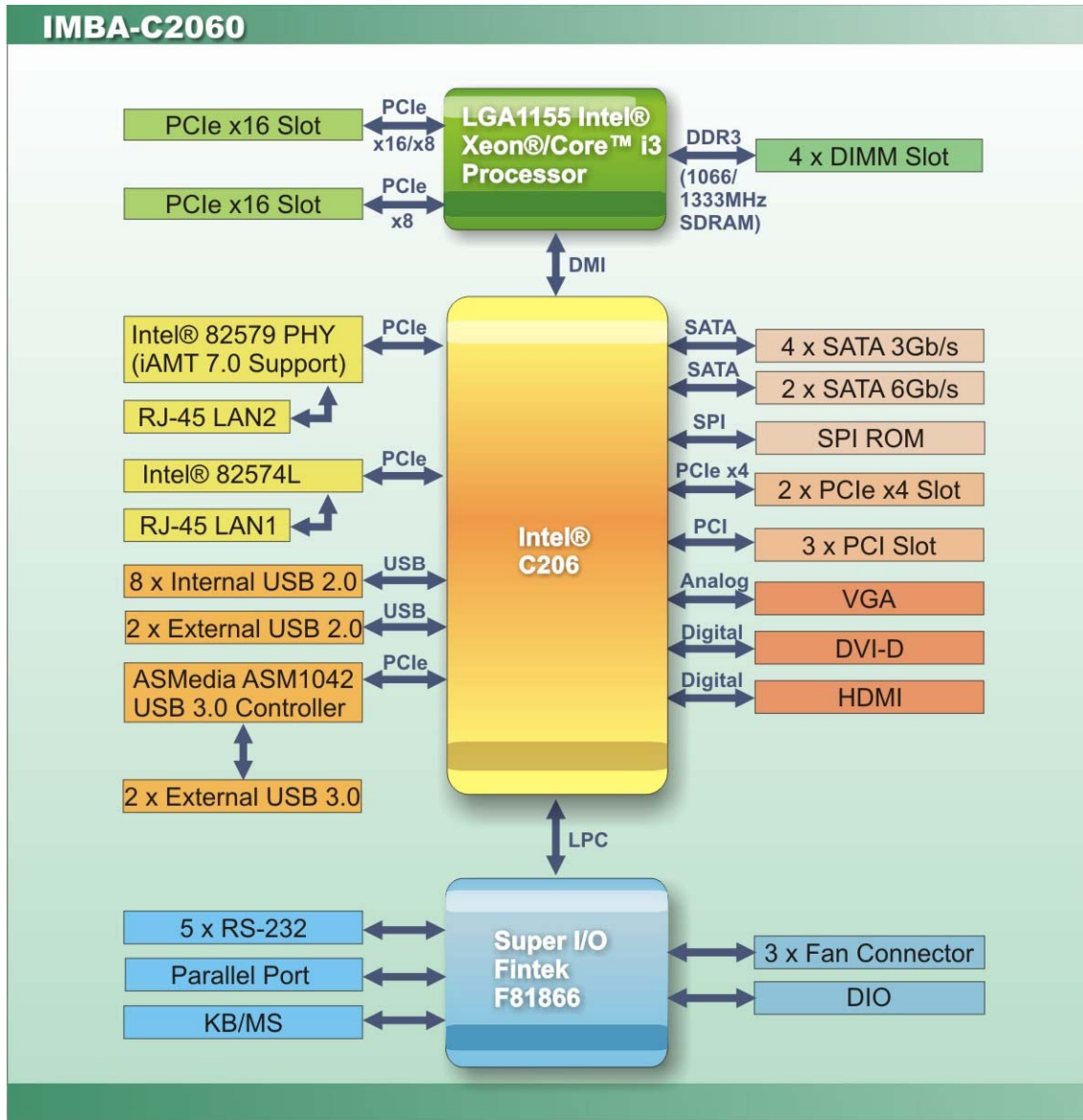


Figure 1-4: Data Flow Diagram

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1.7 Technical Specifications

IMBA-C2060 technical specifications are listed below.

Specification/Model	IMBA-C2060
Form Factor	ATX
CPU Supported	LGA1155 Intel® Xeon® or Core™ i3 processor with quad/dual core
Chipset	Intel® C206
Integrated Graphics	Supports DirectX 10.1/OpenGL 3.0 Full MPEG2, VC1, AVC Decode
Memory	Four 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM DIMMs support (system max. 32.0 GB)
Audio	Realtek ALC892 HD Audio codec (Line-in, Line-out, Mic)
BIOS	UEFI BIOS
Digital I/O	8-bit, 4-bit input/4-bit output
Ethernet Controllers	Intel® 82574L PCIe Ethernet controller Intel® 82579 PHY with Intel® AMT 7.0 support (LAN2)
Super I/O Controller	Fintek F81866
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Expansion	
PCI	Three PCI slot
PCIe	Two PCIe x4 slot One PCIe x16 (x8 mode) slot One PCIe x16 (x16 or x8 mode) slot
I/O Interface Connectors	
Audio Connectors	Three external audio jacks (line-in, line-out, mic-in) One internal front panel audio connector (10-pin header)
Display port	One VGA Integrated in the Intel® C206 One HDMI Integrated in the Intel® C206 One DVI-D Integrated in the Intel® C206

Specification/Model	IMBA-C2060
Ethernet	Two RJ-45 GbE ports
Keyboard/Mouse	Dual PS/2 port One internal keyboard and mouse connector via 6-pin wafer
TPM	One via 20-pin header
Serial Ports	One external RS-232 serial port Four RS-232 via internal box headers One RS-422/485 via internal 4-pin wafer
Parallel Port	One parallel port via internal 26-pin box header
USB ports	Two external USB 3.0 ports on rear IO by ASMedia ASM1042 Two external USB 2.0 ports on rear IO Four internal USB 2.0 ports by pin header
Serial ATA	Four SATA 3Gb/s channels with 3Gb/s data transfer rates Two SATA 6Gb/s channels with 6Gb/s data transfer rates
Environmental and Power Specifications	
Power Supply	ATX power supported
Power Consumption	3.3V@1.61A, 5V@2.79A, 12V@0.50A, Vcore@5.59A, 5VSB@0.16A (3.40 GHz Intel® Xeon® E3-1275 CPU with four 1333 MHz 2GB DDR3 memory)
Operating Temperature	-10°C – 60°C
Storage Temperature	-20°C – 70°C
Operating Humidity	5% – 95% (non-condensing)
Physical Specifications	
Dimensions	244 mm x 305 mm
Weight GW/NW	1200 g / 700 g

Table 1-1: IMBA-C2060 Specifications

Chapter

2

Packing List

2.1 Anti-static Precautions



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.

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-C2060 is unpacked, please do the following:

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

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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-C2060 was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com

The IMBA-C2060 is shipped with the following components:

Quantity	Item and Part Number	Image
1	IMBA-C2060 motherboard	
4	SATA cable (P/N: 32801-000703-400-RS)	
1	I/O shielding (P/N: 45014-0028C0-01-RS)	
1	Mini jumper pack (2.54mm) (P/N: 33101-000656-RS)	
1	Utility CD	






Quantity	Item and Part Number	Image
1	Quick Installation Guide	

Table 2-1: Packing List

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
Dual ports USB cable with bracket (P/N: 19800-003100-300-RS)	
SATA Power Cable (P/N: 32102-000100-200-RS)	
RS-422/485 cable (P/N: 32205-003800-300-RS)	
Parallel port cable (P/N: 19800-000049-RS)	
Dual RS-232 cable (P/N: 19800-000051-RS)	
LGA1155/LGA1156 cooler kit (1U Chassis compatible, 73W) (P/N: CF-1156A-RS-R11)	

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Item and Part Number	Image
LGA1155/LGA1156 cooler kit (95W) (P/N: CF-1156E-R11)	
20-pin Infineon TPM module, S/W management tool, firmware v3.17 (P/N: TPM-IN01-R11)	

Table 2-2: Optional Items

Chapter

3

Connectors

IMBA-C2060 ATX Motherboard

3.1 Peripheral Interface Connectors

This chapter details all the jumpers and connectors.

3.1.1 IMBA-C2060 Layout

The figures below show all the connectors and jumpers.

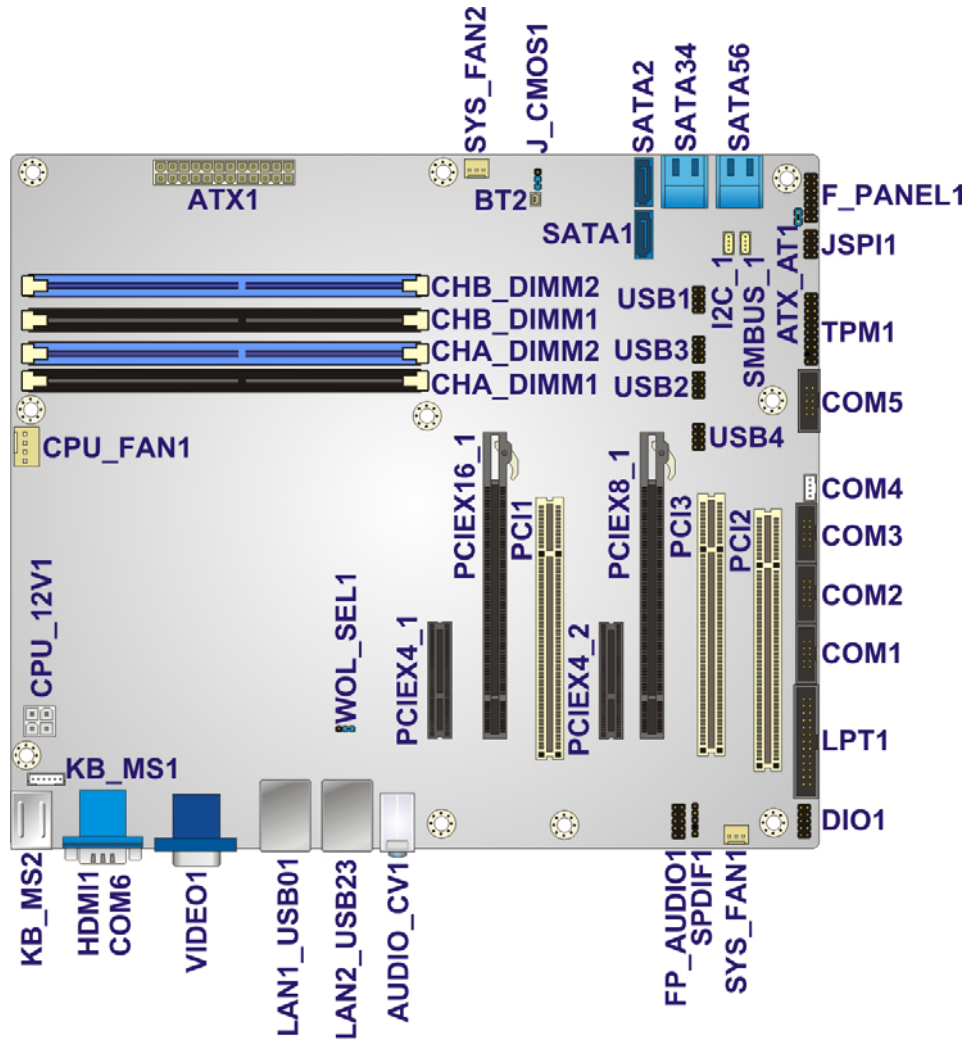


Figure 3-1: Connectors and Jumpers

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
ATX Power connector	24-pin ATX	ATX1
Battery connector	2-pin wafer	BT2
Battery holder	CR2032 battery holder	BAT1
CPU power connector	4-pin Molex	CPU12V1
DDR3 DIMM slots	DDR3 DIMM slot	CHA_DIMM1 CHA_DIMM2 CHB_DIMM1 CHB_DIMM2
Digital I/O	10-pin header	DIO1
Fan connector (system 1)	3-pin wafer	SYS_FAN1
Fan connector (system 2)	3-pin wafer	SYS_FAN2
Fan connector (CPU)	4-pin wafer	CPU_FAN1
Front panel audio connector	10-pin header	FP_AUDIO1
Front panel connector	14-pin header	F_PANEL1
I2C connector	4-pin wafer	I2C_1
Keyboard and mouse connector	6-pin wafer	KB_MS1
Parallel port connector	26-pin box header	LPT1
PCI slots	PCI slots	PCI1, PCI2, PCI3
PCIe x4 slot	PCIe x4 slot	PCIEX4_1
PCIe x16/x8 slot	PCIe x16 slot	PCIEX16_1
PCIe x4 slot	PCIe x4 slot	PCIEX4_2
PCIe x8 slot	PCIe x16 slot	PCIEX8_1
SATA 3Gb/s drive connector	14-pin SATA connector	SATA34, SATA56
SATA 6Gb/s drive connector	7-pin SATA connector	SATA1, SATA2

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Connector	Type	Label
Serial port, RS-422/485	4-pin wafer	COM4
Serial port, RS-232	10-pin box header	COM1, COM2, COM3, COM5
SMBus connector	4-pin wafer	SMBUS_1
SPDIF connector	5-pin header	SPDIF1
SPI ROM connector	8-pin header	JSPI1
TPM connector	20-pin header	TPM1
USB connectors	8-pin header	USB1, USB2, USB3, USB4

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 jack	AUDIO_CV1
Ethernet and USB 2.0 ports	RJ-45, USB	LAN1_USB01
Ethernet and USB 3.0 ports	RJ-45, USB	LAN2_USB23
HDMI connector	HDMI port	HDMI1
Keyboard and mouse connector	Dual PS/2	KB_MS2
Serial Port connector	9-pin male D-sub 9	COM6
VGA and DVI connector	15-pin female, 24-pin header	VIDEO1

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the IMBA-C2060.

3.2.1 ATX Power Connector

- CN Label:** ATX1
- CN Type:** 24-pin ATX
- CN Location:** See **Figure 3-2**
- CN Pinouts:** See **Table 3-3**

The ATX power connector connects to an ATX power supply.

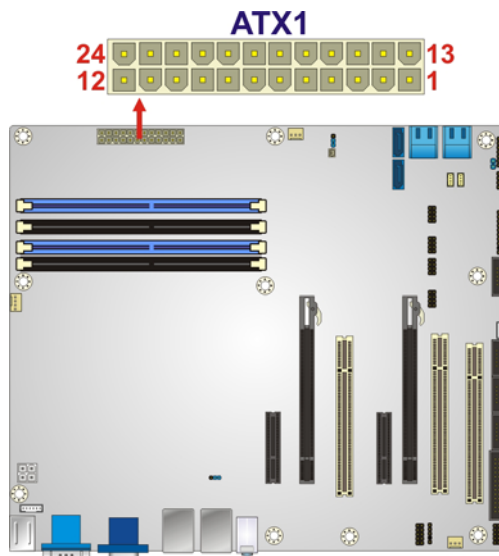


Figure 3-2: ATX Power Connector Pinout Location

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

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Pin	Description	Pin	Description
8	NC	20	NC
9	+5V	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

Table 3-3: ATX Power Connector Pinouts

3.2.2 Battery Connectors

**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.

CN Label: BAT1, BT2

CN Type: Battery holder and 2-pin wafer

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

CN Pinouts: See **Table 3-4**

This is connected to the system battery. The battery provides power to the system clock to retain the time when power is turned off.

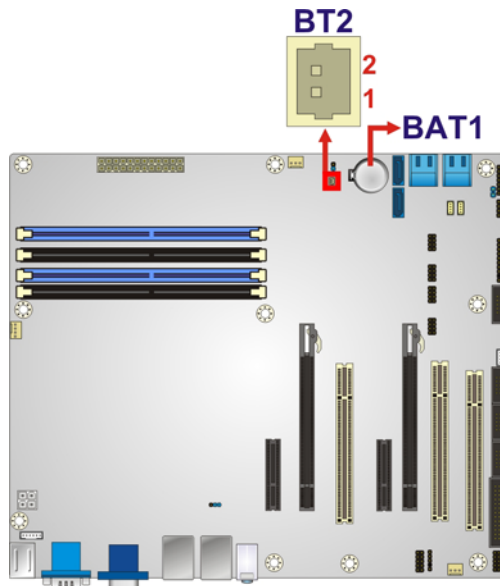


Figure 3-3: Battery Connector Locations

Pin	Description
1	GND
2	Battery+

Table 3-4: Battery Connector (BT2) Pinouts

3.2.3 CPU Power Connector

- CN Label:** CPU12V1
- CN Type:** 4-pin Molex
- CN Location:** See **Figure 3-4**
- CN Pinouts:** See **Table 3-5**

The CPU power input connector provides power to the CPU.

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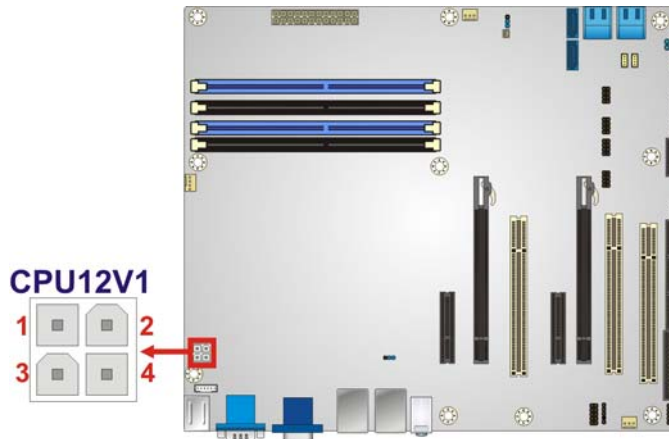


Figure 3-4: CPU Power Connector Location

PIN NO.	DESCRIPTION
1	GND
2	GND
3	+12V
4	+12V

Table 3-5: CPU Power Connector Pinouts

3.2.4 DDR3 DIMM Slots

CN Label: CHA_DIMM1, CHA_DIMM2, CHB_DIMM1, CHB_DIMM2

CN Type: DDR3 DIMM slot

CN Location: See **Figure 3-5**

The DIMM slots are for DDR3 DIMM memory modules.

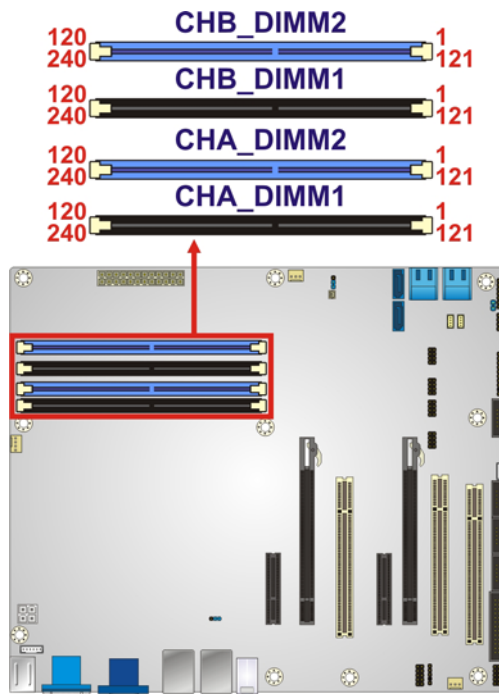


Figure 3-5: DDR3 DIMM Slot Locations

3.2.5 Digital I/O Connector

CN Label:	DIO1
CN Type:	10-pin header
CN Location:	See Figure 3-6
CN Pinouts:	See Table 3-6

The digital I/O connector provides programmable input and output for external devices. The digital I/O provides 4-bit output and 4-bit input.

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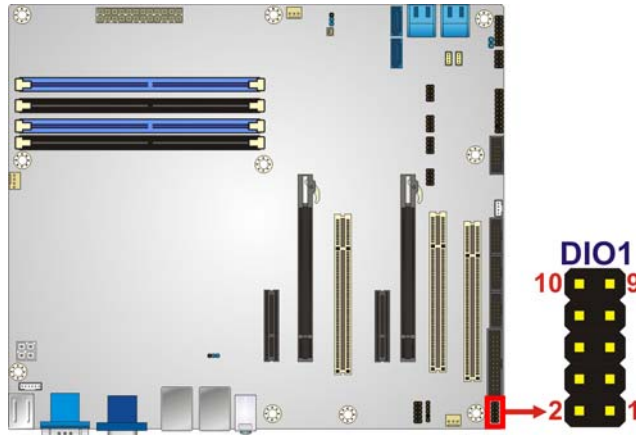


Figure 3-6: Digital I/O Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 3-6: Digital I/O Connector Pinouts

3.2.6 Fan Connector (CPU)

- CN Label:** CPU_FAN1
- CN Type:** 4-pin wafer
- CN Location:** See **Figure 3-7**
- CN Pinouts:** See **Table 3-7**

The fan connector attaches to a CPU cooling fan.

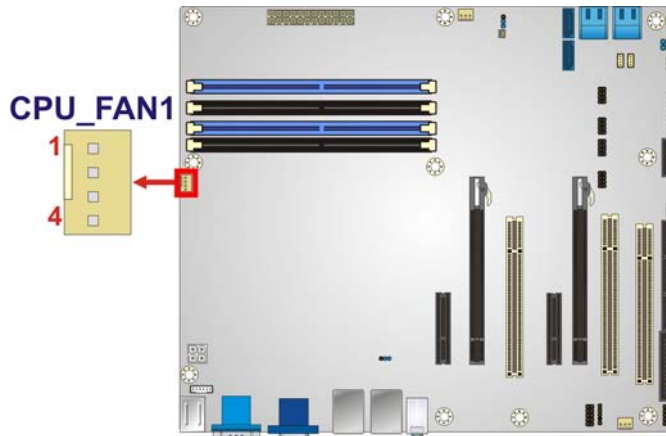


Figure 3-7: CPU Fan Connector Location

PIN NO.	DESCRIPTION
1	GND
2	+12 V
3	FANIO1
4	PWM

Table 3-7: CPU Fan Connector Pinouts

3.2.7 Fan Connectors (System)

CN Label: SYS_FAN1, SYS_FAN2

CN Type: 3-pin wafer

CN Location: See **Figure 3-8**

CN Pinouts: See **Table 3-8**

The fan connector attaches to a cooling fan.

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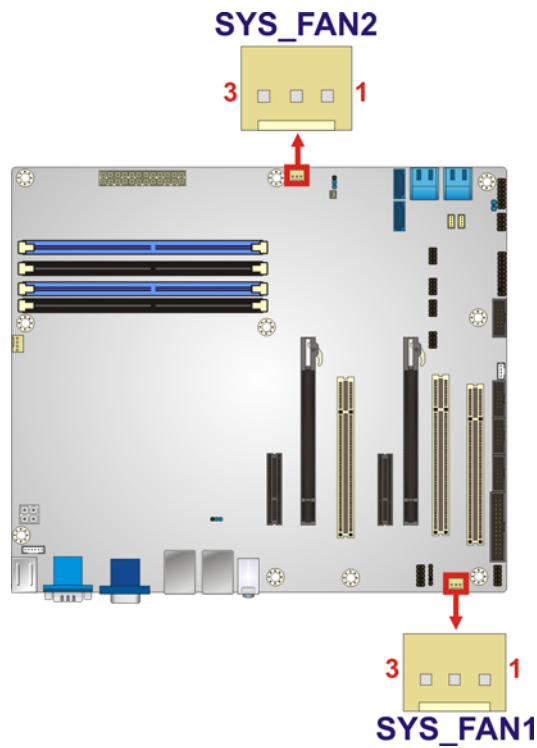


Figure 3-8: System Fan Connector Location

PIN NO.	DESCRIPTION
1	FANIO
2	+12 V (PWM)
3	GND

Table 3-8: System Fan Connector Pinouts

3.2.8 Front Panel Audio Connector

- CN Label:** FP_AUDIO1
- CN Type:** 10-pin header
- CN Location:** See Figure 3-9
- CN Pinouts:** See Table 3-9

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

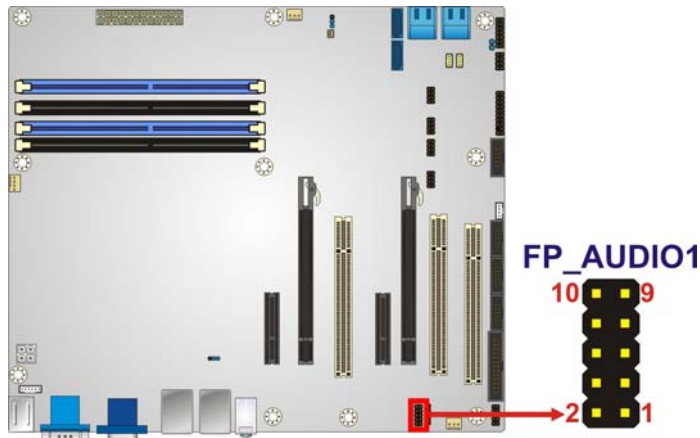


Figure 3-9: Front Panel Audio Connector Location

Pin	Description	Pin	Description
1	LMIC2_L	2	AUD GND
3	LMIC2_R	4	PRESENCE#
5	LLINE2-R	6	MIC2-JD
7	F_SENSE	8	NC
9	LLINE2-L	10	LINE2-JD

Table 3-9: Front Panel Audio Connector Pinouts

3.2.9 Front Panel Connector

- CN Label:** F_PANEL1
- CN Type:** 14-pin header
- CN Location:** See **Figure 3-10**
- CN Pinouts:** See **Table 3-10**

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

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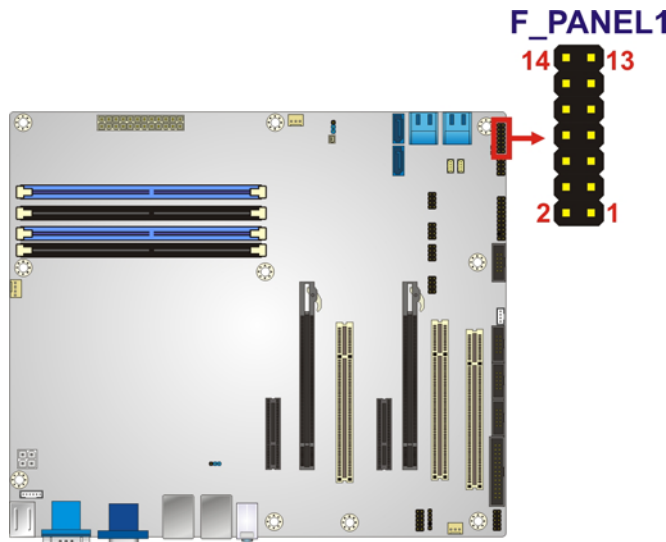


Figure 3-10: Front Panel Connector Location

FUNCTION	PIN	DESCRIPTION	FUNCTION	PIN	DESCRIPTION
Power LED	1	ACPILED	Speaker	2	Beep Power
	3	NC		4	NC
	5	GND		6	NC
Power Button	7	PWRBT_SW#_C	Reset	8	PC Beep
	9	GND		10	NC
HDD LED	11	HDDLED		12	EXTRST-
	13	HDDLED-		14	GND

Table 3-10: Front Panel Connector Pinouts

3.2.10 I2C Connector

- CN Label:** I2C_1
- CN Type:** 4-pin wafer
- CN Location:** See Figure 3-11
- CN Pinouts:** See Table 3-11

The I2C connector is for system debug.

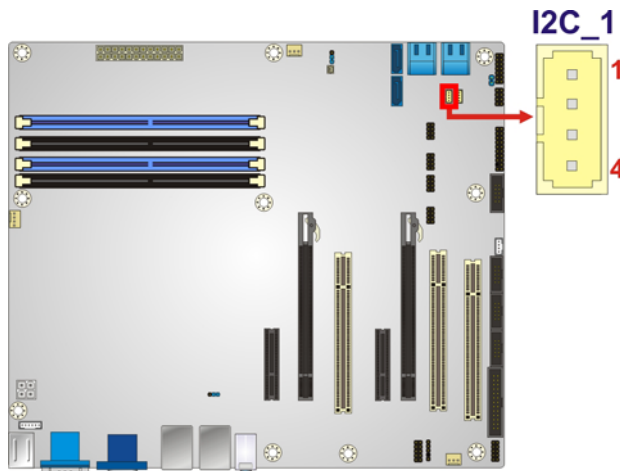


Figure 3-11: I2C Connector Location

Pin	Description
1	+5V_DUAL
2	PCH_GP38_PU
3	PCH_GP39_PU
4	GND

Table 3-11: I2C Connector Pinouts

3.2.11 Keyboard/Mouse Connector

- CN Label:** KB_MS1
- CN Type:** 6-pin wafer
- CN Location:** See **Figure 3-12**
- CN Pinouts:** See **Table 3-12**

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

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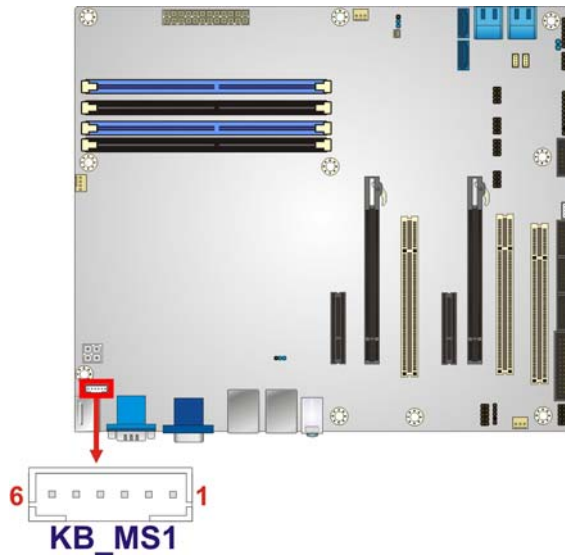


Figure 3-12: Keyboard/Mouse Connector Location

Pin	Description
1	+5 V KB DATA
2	MS DATA
3	MS CLK
4	KB DATA
5	KB CLK
6	GROUND

Table 3-12: Keyboard/Mouse Connector Pinouts

3.2.12 Parallel Port Connector

- CN Label:** LPT1
- CN Type:** 26-pin box header
- CN Location:** See **Figure 3-13**
- CN Pinouts:** See **Table 3-13**

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

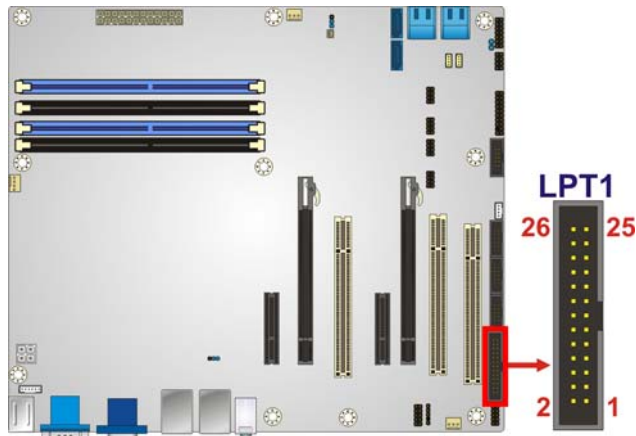


Figure 3-13: Parallel Port Connector Location

Pin	Description	Pin	Description
1	RSTROBE#	2	RPD0
3	RPD1	4	RPD2
5	RPD3	6	RPD4
7	RPD5	8	RPD6
9	RPD7	10	SIO_ACK#
11	SIO_BUSY	12	SIO_PE
13	SIO_SLCT	14	SIO_AFD#
15	SIO_ERR#	16	SIO_INIT#
17	SIO_SLIN#	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	NC

Table 3-13: Parallel Port Connector Pinouts

3.2.13 PCI Slots

CN Label: PCI1, PCI2, PCI3

CN Type: PCI Slot

CN Location: See **Figure 3-14**

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

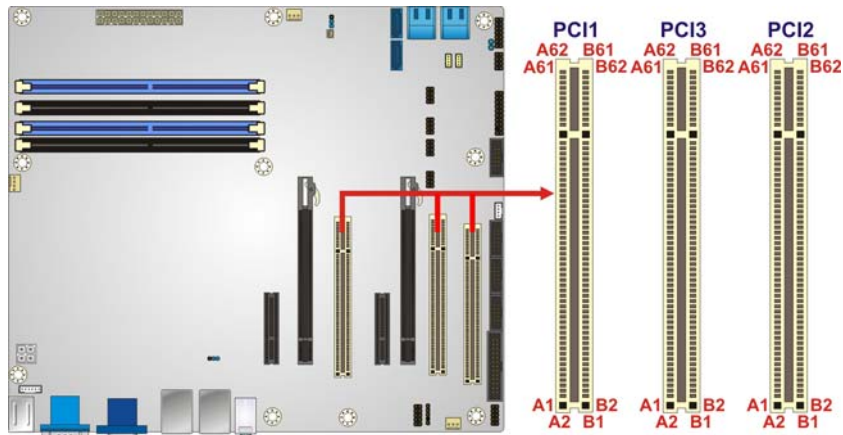


Figure 3-14: PCI Slot Locations

3.2.14 PCIe x4 Slots

CN Label: PCIEX4_1, PCIEX4_2

CN Type: PCIe x4 slot

CN Location: See Figure 3-18

The PCIe x4 slot is for PCIe x4 expansion cards.

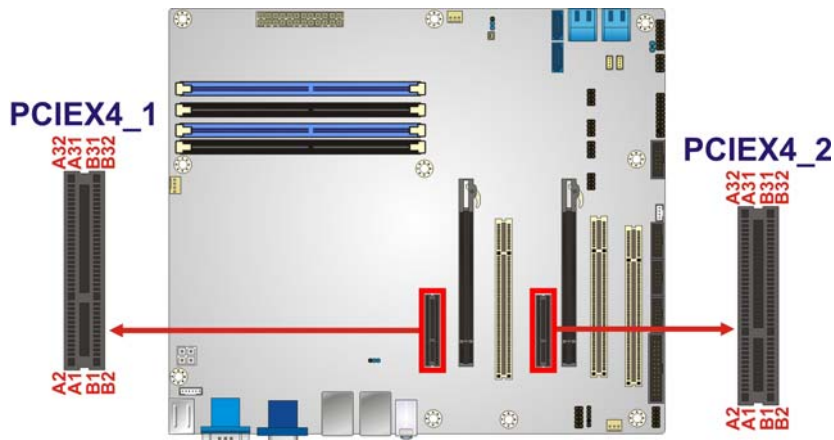


Figure 3-15: PCIe x4 Slot Locations

3.2.15 PCIe x8 Slot

CN Label:	PCIEX8_1
CN Type:	PCIe x16 slot
CN Location:	See Figure 3-18

The PCIe x8 slot provide PCIe x8 signal for PCIe expansion cards.

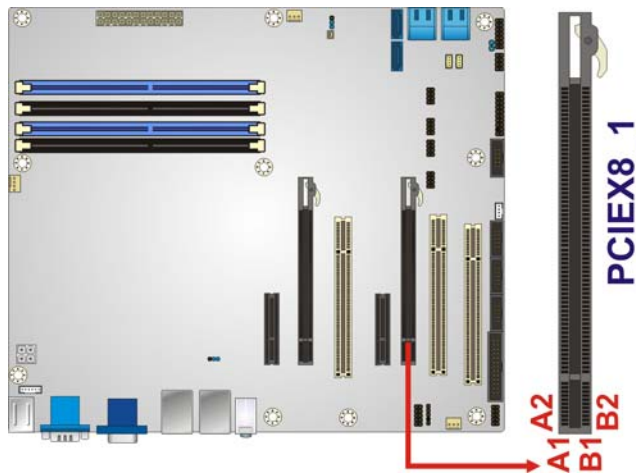


Figure 3-16: PCIe x8 Slot Location

3.2.16 PCI Express x16/x8 Slot

CN Label:	PCIEX16_1
CN Type:	PCIe x16 slot
CN Location:	See Figure 3-17

The PCIe x16 expansion card slot is for PCIe x16 or PCIe x8 expansion cards.

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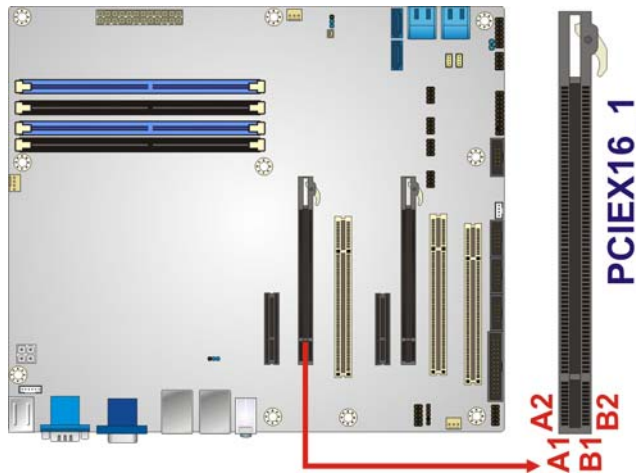


Figure 3-17: PCIe x16 Slot Location

3.2.17 SATA 3Gb/s Drive Connectors

- CN Label:** SATA34, SATA56
- CN Type:** 14-pin SATA connector
- CN Location:** See **Figure 3-18**
- CN Pinouts:** See **Table 3-14**

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

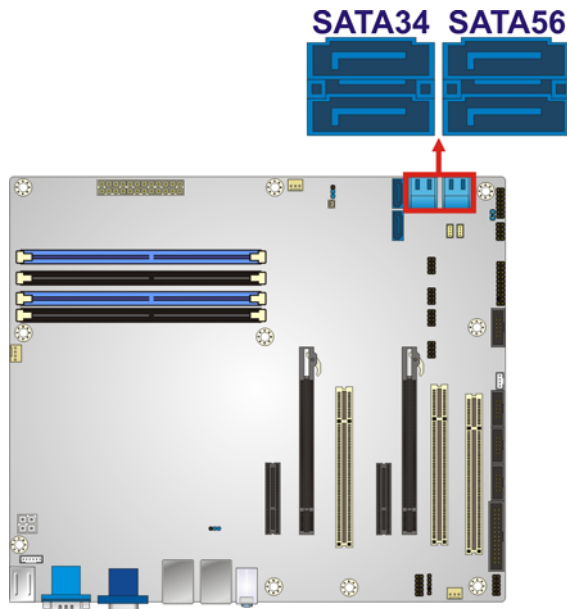


Figure 3-18: SATA 3Gb/s Drive Connector Location

Pin	Description	Pin	Description
1	GND	8	GND
2	SATATXP_A	9	SATATXP_B
3	SATATXN_A	10	SATATXN_B
4	GND	11	GND
5	SATARXN_A	12	SATARXN_B
6	SATARXP_A	13	SATARXP_B
7	GND	14	GND

Table 3-14: SATA 3Gb/s Drive Connector Pinouts

3.2.18 SATA 6Gb/s Drive Connectors

- CN Label:** SATA1, SATA2
- CN Type:** 7-pin SATA drive connectors
- CN Location:** See **Figure 3-19**
- CN Pinouts:** See **Table 3-15**

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

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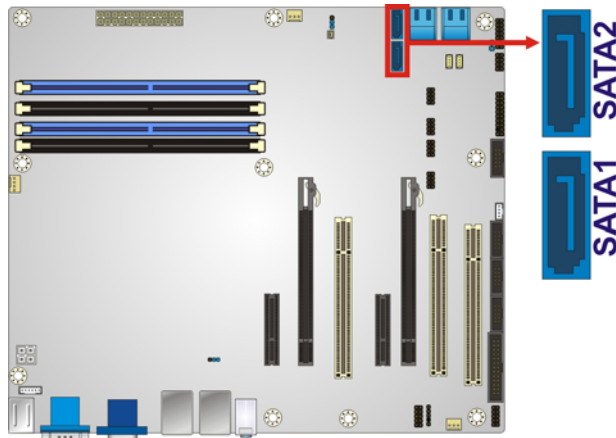


Figure 3-19: SATA 6Gb/s Drive Connector Location

Pin	Description
1	GND
2	SATATXP
3	SATATXN
4	GND
5	SATARXN
6	SATARXP
7	GND

Table 3-15: SATA 6Gb/s Drive Connector Pinouts

3.2.19 Serial Port Connector, RS-422/485

- CN Label:** COM4
- CN Type:** 4-pin wafer
- CN Location:** See Figure 3-20
- CN Pinouts:** See Table 3-16



NOTE:

These pins are shared with those on the main serial port. Use either the pins on the main connector, or on this connector, but not both.

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

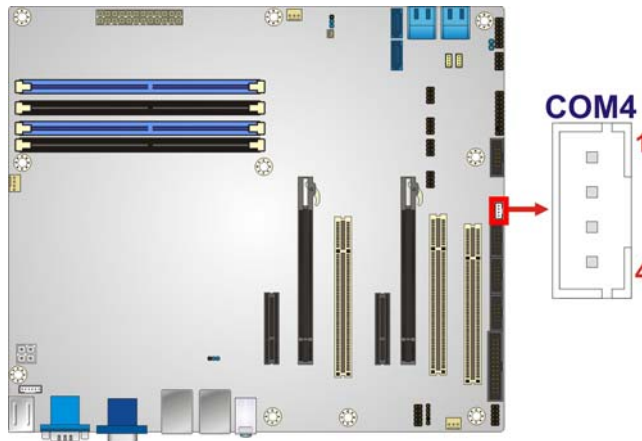


Figure 3-20: RS-422/485 Connector Location

PIN NO.	DESCRIPTION
1	RXD422-
2	RXD422+
3	TXD422+/TXD485+
4	TXD422-/TXD485-

Table 3-16: RS-422/485 Connector Pinouts

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

RS-422 Pinouts	RS-485 Pinouts

Table 3-17: D-sub 9 RS-422/485 Pinouts

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3.2.20 Serial Port Connectors, RS-232

CN Label: COM1, COM2, COM3, COM5

CN Type: 10-pin box header

CN Location: See **Figure 3-21**

CN Pinouts: See **Table 3-18**

Each of these connectors provides RS-232 connections.

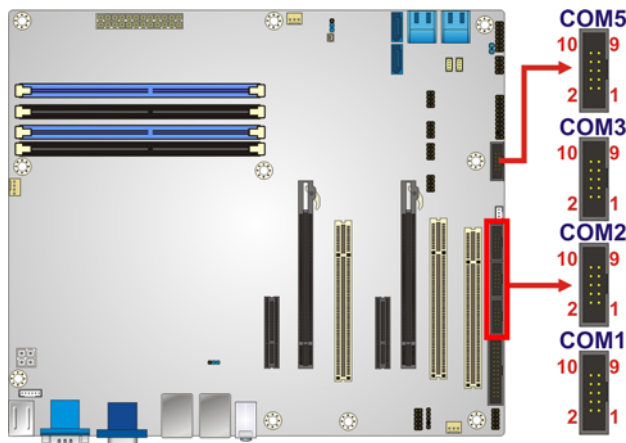


Figure 3-21: Serial Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	-NDCD1	6	-NCTS1
2	-NDSR1	7	-NDTR1
3	NSIN1	8	-XR11
4	-NRTS1	9	GND
5	NSOUT1	10	GND

Table 3-18: Serial Port Connector Pinouts

3.2.21 SMBus Connector

CN Label: SMBUS_1

CN Type: 4-pin wafer

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

CN Pinouts: See **Table 3-19**

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

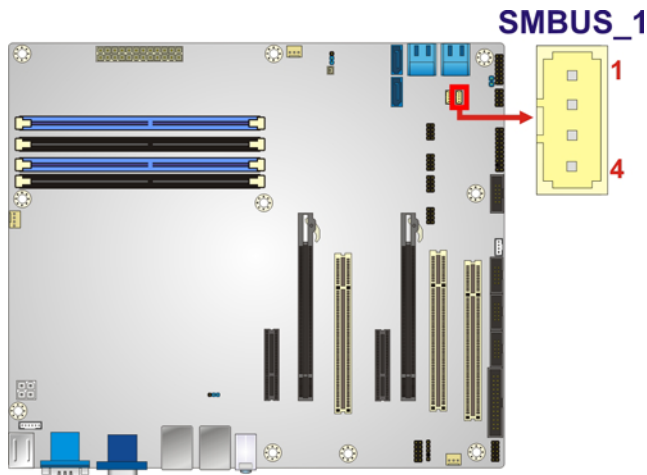


Figure 3-22: SMBus Connector Location

Pin	Description
1	+5V_DUAL
2	SMBCLK
3	SMBDATA
4	GND

Table 3-19: SMBus Connector Pinouts

3.2.22 SPDIF Connector

CN Label: **SPDIF1**

CN Type: 5-pin header

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

CN Pinouts: See **Table 3-20**

Use the SPDIF connector to connect digital audio devices to the system.

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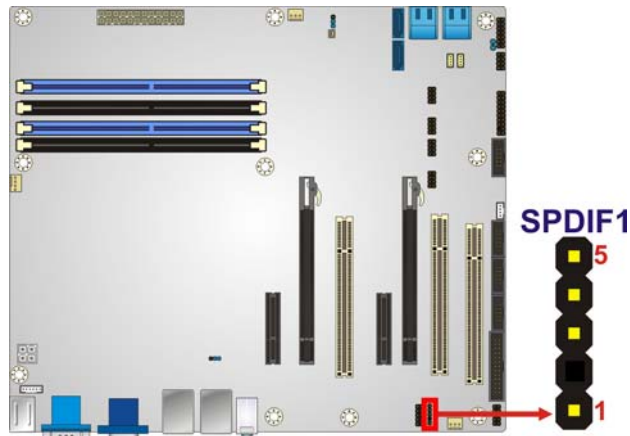


Figure 3-23: SPDIF Connector Location

PIN	DESCRIPTION
1	+5V
2	NC
3	SPDIFOUT
4	GND
5	SPDIFIN

Table 3-20: SPDIF Connector Pinouts

3.2.23 SPI ROM Connector

- CN Label:** JSPI1
- CN Type:** 8-pin header
- CN Location:** See **Figure 3-8**
- CN Pinouts:** See **Table 3-8**

The SPI connector is used to flash the BIOS.

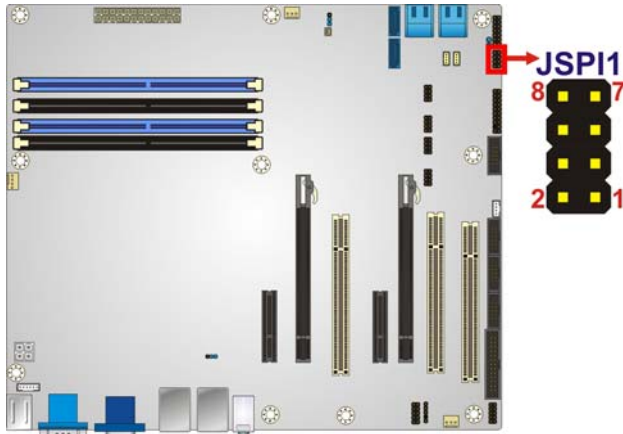


Figure 3-24: SPI Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	GND
3	SPI_CS0	4	SPI_CLK
5	SPI_S00	6	SPI_SI
7	NC	8	NC

Table 3-21: SPI Connector Pinouts

3.2.24 TPM Connector

- CN Label:** TPM1
- CN Type:** 20-pin header
- CN Location:** See **Figure 3-8**
- CN Pinouts:** See **Table 3-8**

The TPM connector connects to a TPM module.

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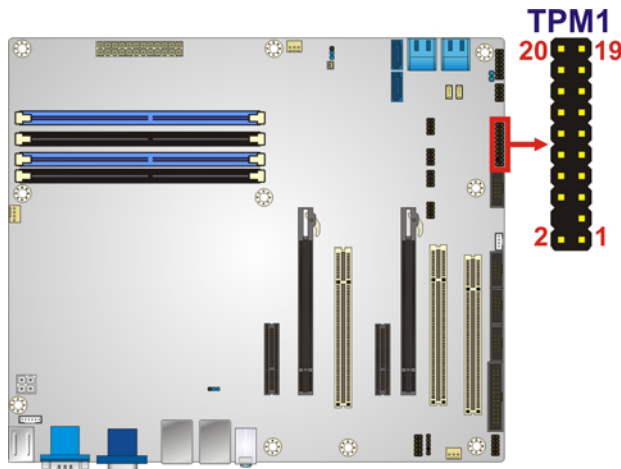


Figure 3-25: TPM Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LCLK	2	GND2
3	LERAME#	4	KEY
5	LRESRT#	6	+5V
7	LAD3	8	LAD2
9	+3V	10	LAD1
11	LAD0	12	GND3
13	SCL	14	SDA
15	SB3V	16	SERIRQ
17	GND1	18	GLKRUN#
19	LPCPD#	20	LDRO#

Table 3-22: TPM Connector Pinouts

3.2.25 USB Connectors

CN Label: USB1, USB2, USB3, USB4

CN Type: 8-pin header

CN Location: See Figure 3-26

CN Pinouts: See Table 3-23

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

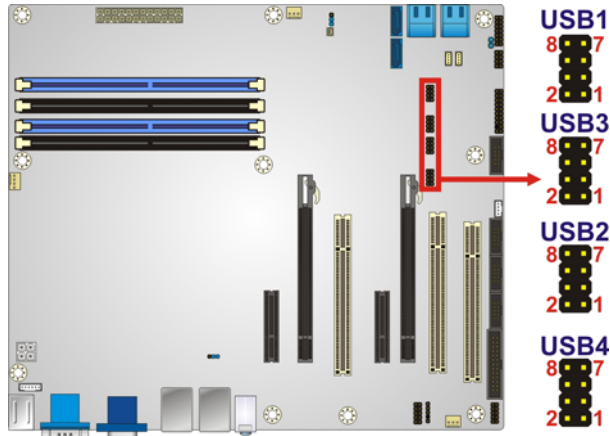


Figure 3-26: USB Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	+5V

Table 3-23: USB Port Connector Pinouts

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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:

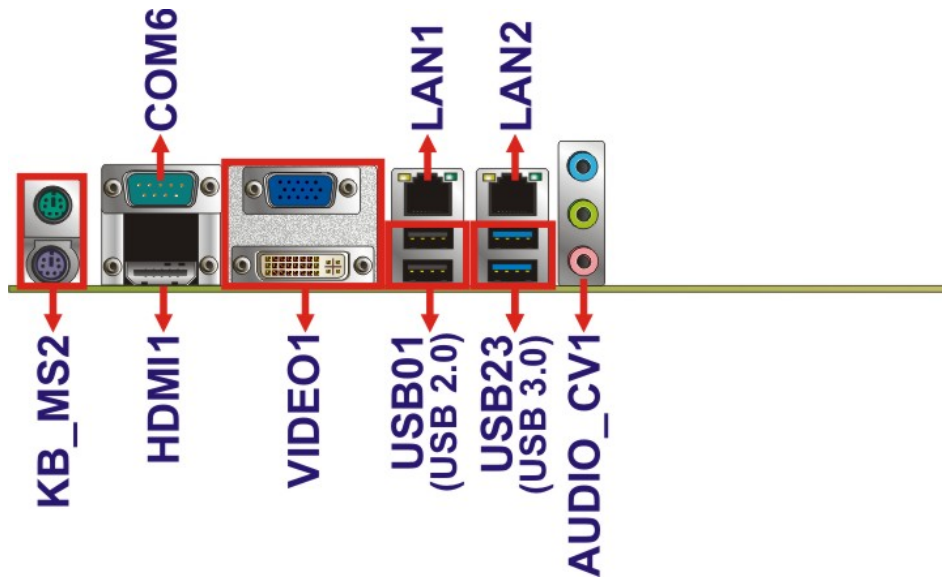


Figure 3-27: External Peripheral Interface Connector

3.3.1 Audio Connector

CN Label:	AUDIO_CV1
CN Type:	Audio jack
CN Location:	See Figure 3-27

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.

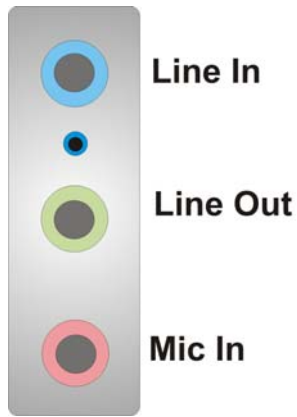


Figure 3-28: Audio Connector

3.3.2 Ethernet and USB Connector

- CN Label:** LAN1_USB01, LAN2_USB23
- CN Type:** RJ-45, USB 2.0 and USB 3.0 connectors
- CN Location:** See **Figure 3-27**
- CN Pinouts:** See **Table 3-24**

The LAN connector connects to a local network.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	MDIA3-	5	MDIA2+
2	MDIA3+	6	MDIA1+
3	MDIA1-	7	MDIA0-
4	MDIA2-	8	MDIA0+

Table 3-24: LAN Pinouts

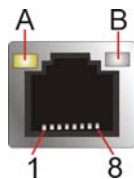


Figure 3-29: Ethernet Connector

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LED	Description	LED	Description
A	on: linked blinking: data is being sent/received	B	off: 10 Mb/s green: 100 Mb/s orange: 1000 Mb/s

Table 3-25: Connector LEDs

The USB connector can be connected to a USB device. The USB 2.0 ports are labeled as USB01 and the USB 3.0 ports are labels as USB23. Please refer to **Figure 3-27**.

PIN	DESCRIPTION
1	5 V
2	Data-
3	Data+
4	GND

Table 3-26: USB Port Pinouts

3.3.3 HDMI Port Connector

- CN Label:** HDMI1
- CN Type:** HDMI connector
- CN Location:** See **Figure 3-27**
- CN Pinouts:** See **Table 3-27**

The HDMI port connects to an HDMI device.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDMI_DATA2	13	N/C
2	GND	14	N/C
3	HDMI_DATA2#	15	HDMI_SCL
4	HDMI_DATA1	16	HDMI_SDA
5	GND	17	GND
6	HDMI_DATA1#	18	+5V
7	HDMI_DATA0	19	HDMI_HPD
8	GND	20	HDMI_GND

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
9	HDMI_DATA0#	21	HDMI_GND
10	HDMI_CLK	22	HDMI_GND
11	GND	23	HDMI_GND
12	HDMI_CLK#		

Table 3-27: HDMI Connector Pinouts

3.3.4 Keyboard/Mouse Connector

- CN Label:** KB_MS2
- CN Type:** Dual PS/2
- CN Location:** See **Figure 3-27**
- CN Pinouts:** See **Table 3-28**

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 3-28: PS/2 Connector Pinouts

3.3.5 Serial Port Connectors (COM6)

- CN Label:** COM6
- CN Type:** D-sub 9 connector
- CN Location:** See **Figure 3-27**
- CN Pinouts:** See **Table 3-29** and **Figure 3-30**

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

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PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NDCD	6	NDSR
2	NRXD	7	NRTS
3	NTXD	8	NCTS
4	NDTR	9	NRI
5	GND		

Table 3-29: Serial Port Connector Pinouts

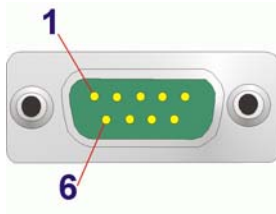


Figure 3-30: Serial Port Connector Pinouts

3.3.6 VGA and DVI Connector

- CN Label:** VIDEO1
- CN Type:** 15-pin Female, 24-pin header
- CN Location:** See **Figure 3-27**
- CN Pinouts:** See **Table 3-30** and **Table 3-31**

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

PIN	DESCRIPTION	PIN	DESCRIPTION
1	CRT_RED	2	CRT_GREEN
3	CRT_BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	+5V CRT	10	CRT_PLUG#
11	NC	12	CRT_DDC_DATA
13	CRT_HSYNC	14	CRT_VSYNC
15	CRT_DDC_CLK		

Table 3-30: VGA Connector Pinouts

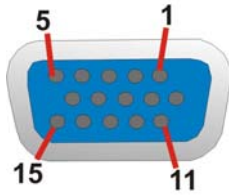


Figure 3-31: VGA Connector

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

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DVI_TMDS_C_DATA2#	2	DVI_TMDS_C_DATA2
3	GND	4	NC
5	NC	6	DVI_DDC_SCLK
7	DVI_DDC_SDATA	8	NC
9	DVI_TMDS_C_DATA1#	10	DVI_TMDS_C_DATA1
11	GND	12	NC
13	NV	14	+5V_DVI
15	GND	16	DVI_HPD
17	DVI_TMDS_C_DATA0#	18	DVI_TMDS_C_DATA0
19	GND	20	NC
21	NC	22	GND
23	DVI_TMDS_C_CLK	24	DVI_TMDS_C_CLK#

Table 3-31: DVI Connector Pinouts

Chapter

4

Installation

4.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the IMBA-C2060 may result in permanent damage to the IMBA-C2060 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMBA-C2060. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMBA-C2060 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-C2060, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMBA-C2060.
- **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.

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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-C2060 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-C2060 on an antistatic pad:
 - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the IMBA-C2060 off:
 - When working with the IMBA-C2060, 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-C2060 **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.

4.2.1 Socket LGA1155 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**.

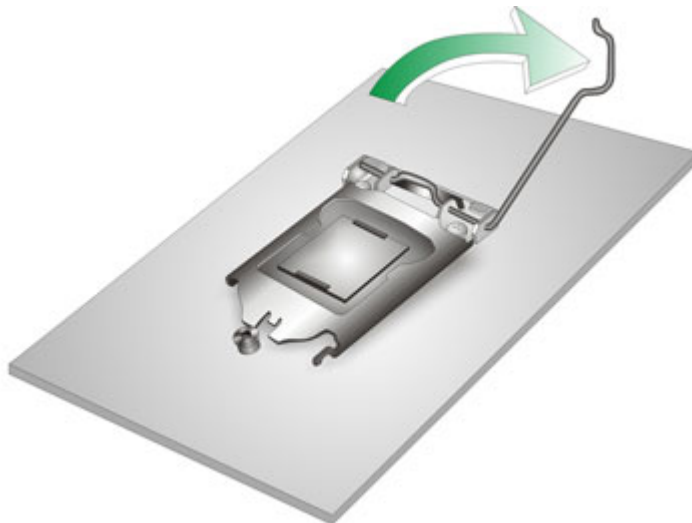


Figure 4-1: Disengage the CPU Socket Load Lever

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**.

IMBA-C2060 ATX Motherboard

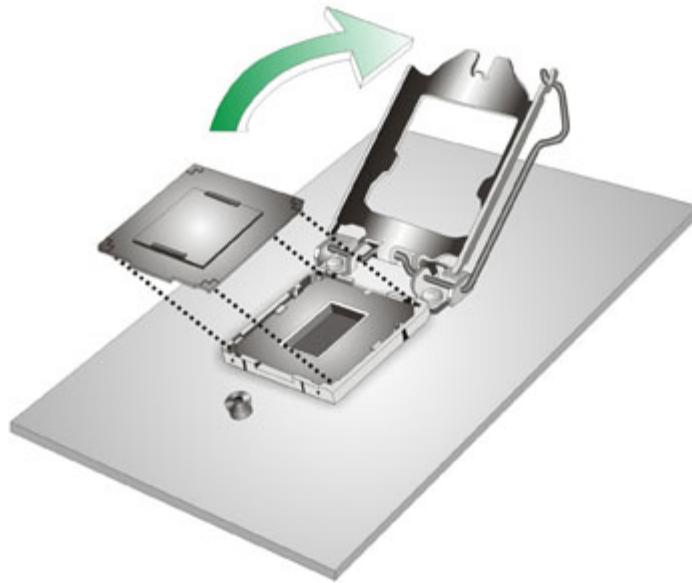


Figure 4-2: Remove Protective Cover

- 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.
- 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.
- 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**.

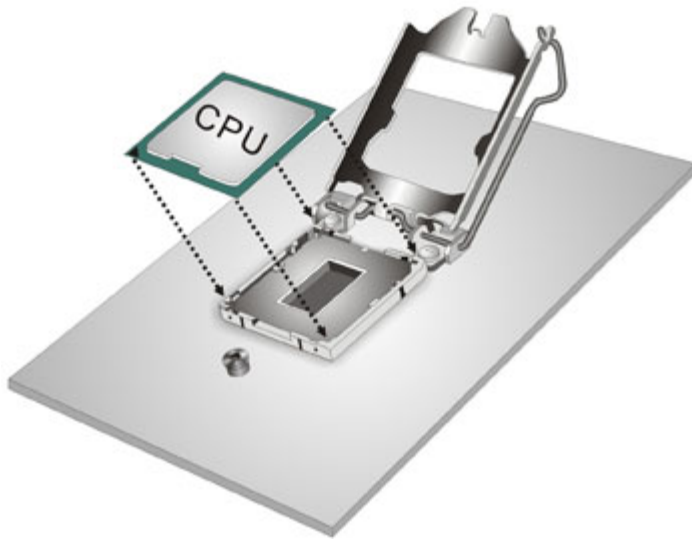


Figure 4-3: Insert the Socket LGA1155 CPU

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.

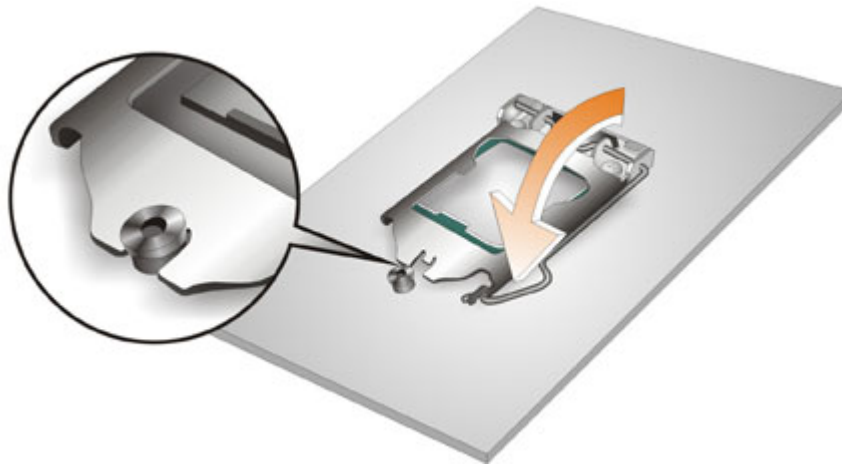


Figure 4-4: Close the Socket LGA1155

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

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4.2.2 Socket LGA1155 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.



Figure 4-5: Cooling Kits (CF-1156A-RS and CF-1156E-RS)

The cooling kit can be bought from IEI. The cooling kit has a heatsink 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 4-6**.

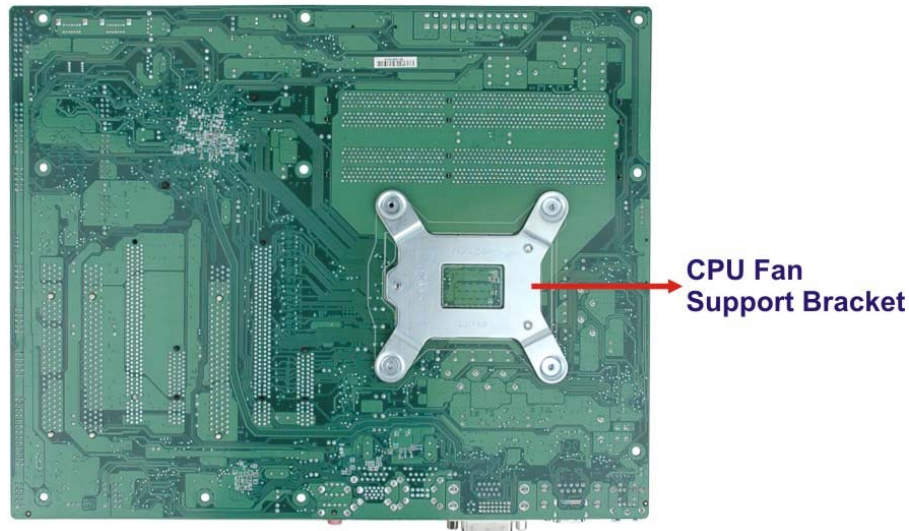


Figure 4-6: Cooling Kit Support Bracket

- Step 2:** Place the cooling kit onto the socket LGA1155 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 fan connector on the IMBA-C2060. Carefully route the cable and avoid heat generating chips and fan blades.

IMBA-C2060 ATX Motherboard

4.2.3 DIMM Installation

To install a DIMM, please follow the steps below and refer to **Figure 4-7**.

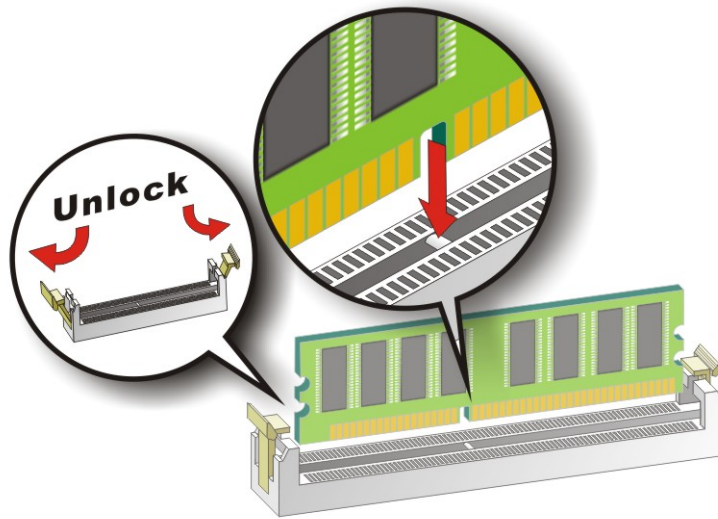


Figure 4-7: DIMM Installation

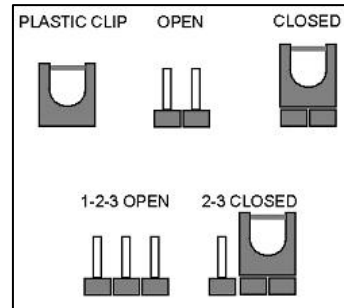
- Step 1: Open the DIMM socket handles.** Open the two handles outwards as far as they can. See **Figure 4-7**.
- Step 2: Align the DIMM with the socket.** Align the DIMM so the notch on the memory lines up with the notch on the memory socket. See **Figure 4-7**.
- Step 3: Insert the DIMM.** Once aligned, press down until the DIMM is properly seated. Clip the two handles into place. See **Figure 4-7**.
- 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 Jumper Settings



NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.



The hardware jumpers must be set before installation. Jumpers are shown in **Table 4-1**.

Description	Label	Type
AT/ATX power select	ATX_AT1	2-pin header
Clear CMOS jumper	J_CMOS1	3-pin header
Wake-on LAN	WOL_SEL1	3-pin header

Table 4-1: Jumpers

4.3.1 AT/ATX Power Select Jumper

- Jumper Label:** ATX_AT1
- Jumper Type:** 2-pin header
- Jumper Settings:** See **Table 4-2**
- Jumper Location:** See **Figure 4-8**

The AT/ATX Power Select jumper specifies the systems power mode as AT or ATX.

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Setting	Description
Closed	ATX power (Default)
Open	AT power

Table 4-2: AT/ATX Power Mode Jumper Settings

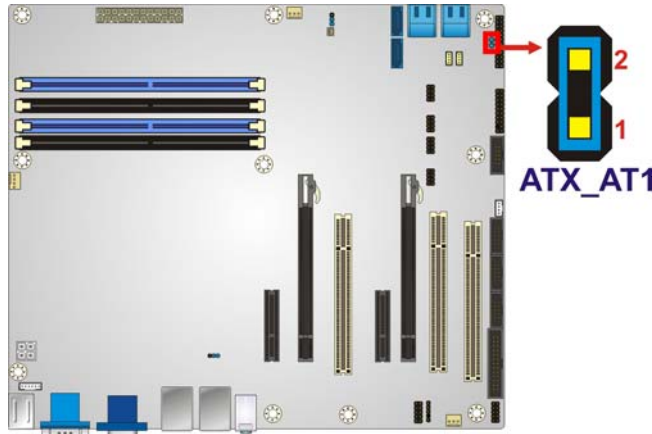


Figure 4-8: AT/ATX Power Mode Jumper Location

4.3.2 Clear CMOS Jumper

Jumper Label:	J_CMOS1
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-3
Jumper Location:	See Figure 4-9

To reset the BIOS, move the jumper to the "Clear BIOS" position for 3 seconds or more, and then move back to the default position.

Setting	Description
Short 1-2	Normal
Short 2-3	Clear BIOS

Table 4-3: Clear BIOS Jumper Settings

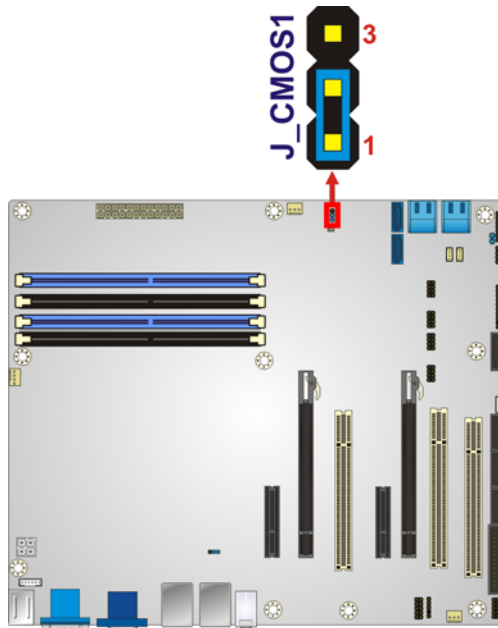


Figure 4-9: Clear BIOS Jumper Location

4.3.3 Wake-on LAN Jumper

- CN Label:** WOL_SEL1
- CN Type:** 3-pin header
- CN Location:** See **Figure 4-10**
- CN Pinouts:** See **Table 4-4**

The Wake-on LAN connector allows the user to enable or disable the Wake-on LAN (WOL) function.

PIN NO.	DESCRIPTION
Short 1-2	Enable Wake-on LAN (Default)
Short 2-3	Disable Wake-on LAN

Table 4-4: Wake-on LAN Connector Pinouts

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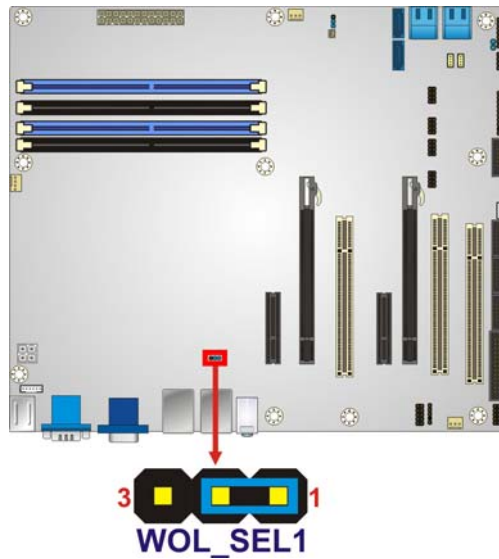


Figure 4-10: Wake-on LAN Connector Pinout Locations

4.4 Internal Peripheral Device Connections

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

4.4.1 SATA Drive Connection

The IMBA-C2060 is shipped with four 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. See **Figure 4-11**.

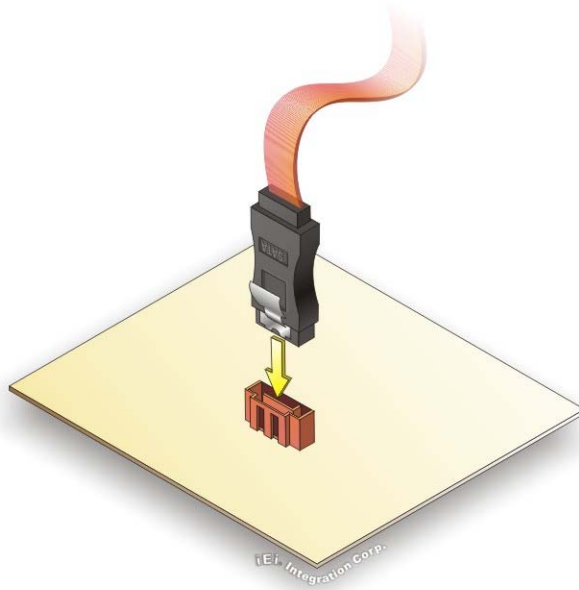


Figure 4-11: SATA Drive Cable Connection

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 4-12**.

Step 4: Connect the SATA power cable (optional). Connect the SATA power connector to the back of the SATA drive. See **Figure 4-12**.

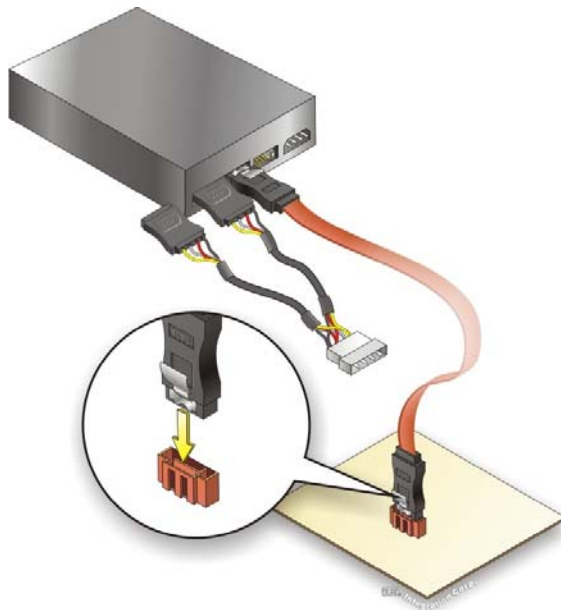


Figure 4-12: SATA Power Drive Connection

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

4.5 External Peripheral Interface Connection

This section describes connecting devices to the external connectors on the IMBA-C2060.

4.5.1 Audio Connector

The audio jacks on the external audio connector enable the IMBA-C2060 to be connected to a stereo sound setup. Each jack supports both input and output. When connecting a device, the High Definition Audio utility will automatically detect input or output. The lime green (top) audio jack does not support input from a microphone. To install the audio devices, follow the steps below.

- Step 1: Identify the audio plugs.** The plugs on your home theater system or speakers may not match the colors on the rear panel.
- Step 2: Plug the audio plugs into the audio jacks.** Plug the audio plugs into the audio jacks. If the plugs on your speakers are different, an adapter will need to be used to plug them into the audio jacks.

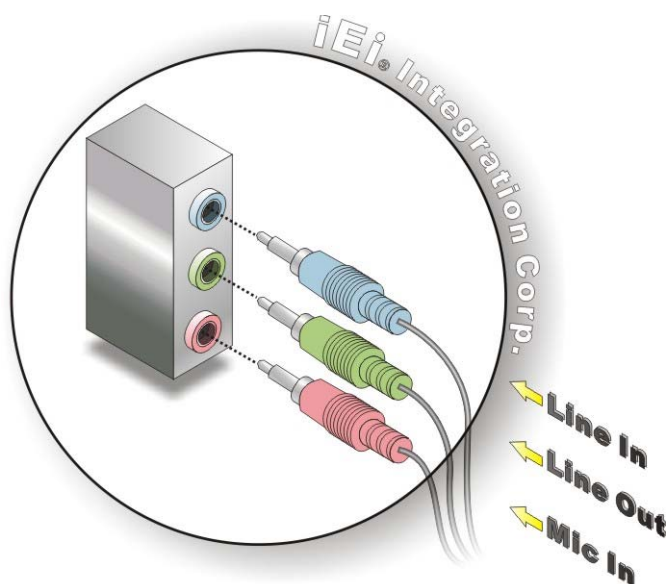


Figure 4-13: Audio Connector

- Step 3: Check audio clarity.** Check that the sound is coming through the right speakers by adjusting the balance front to rear and left to right.

4.5.2 DVI Display Device Connection

The IMBA-C2060 has a single female DVI-I connector on the external peripheral interface panel. The DVI-I connector is connected to a digital display device. To connect a digital display device to the IMBA-C2060, please follow the instructions below.

- Step 1:** **Locate the DVI-I connector.** The location of the DVI-I connector is shown in another chapter.
- Step 2:** **Align the DVI-I connector.** Align the male DVI-I connector on the digital display device cable with the female DVI-I connector on the external peripheral interface.
- Step 3:** **Insert the DVI-I connector** Once the connectors are properly aligned with the male connector, insert the male connector from the digital display device into the female connector on the IMBA-C2060. See Figure 4-14.

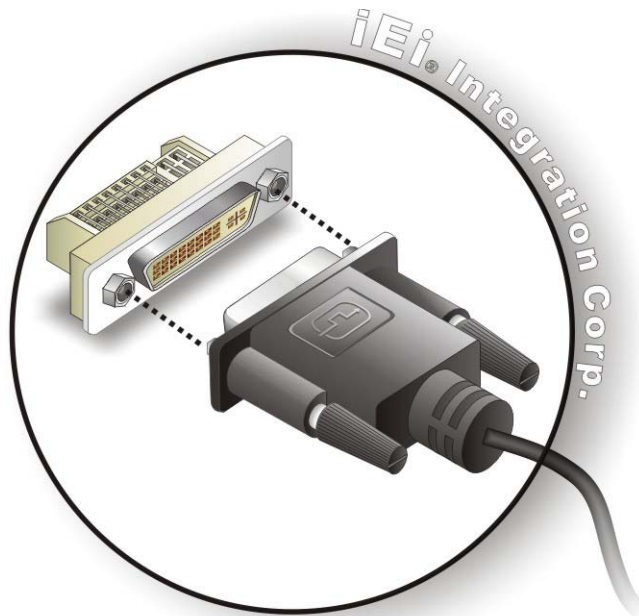


Figure 4-14: DVI Connector

- Step 4:** **Secure the connector.** Secure the DVI-I connector from the digital display device to the external interface by tightening the two retention screws on either side of the connector.

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4.5.3 HDMI Connection

The HDMI connector transmits a digital signal to compatible HDMI display devices such as a TV or computer screen. To connect the HDMI cable to the IMBA-C2060, follow the steps below.

- Step 1:** **Locate the HDMI connector.** The location is shown in a previous section.
- Step 2:** **Align the connector.** Align the HDMI connector with the HDMI port. Make sure the orientation of the connector is correct
- Step 3:** **Insert the HDMI connector.** Gently insert the HDMI connector. The connector should engage with a gentle push. If the connector does not insert easily, check again that the connector is aligned correctly, and that the connector is being inserted with the right way up.

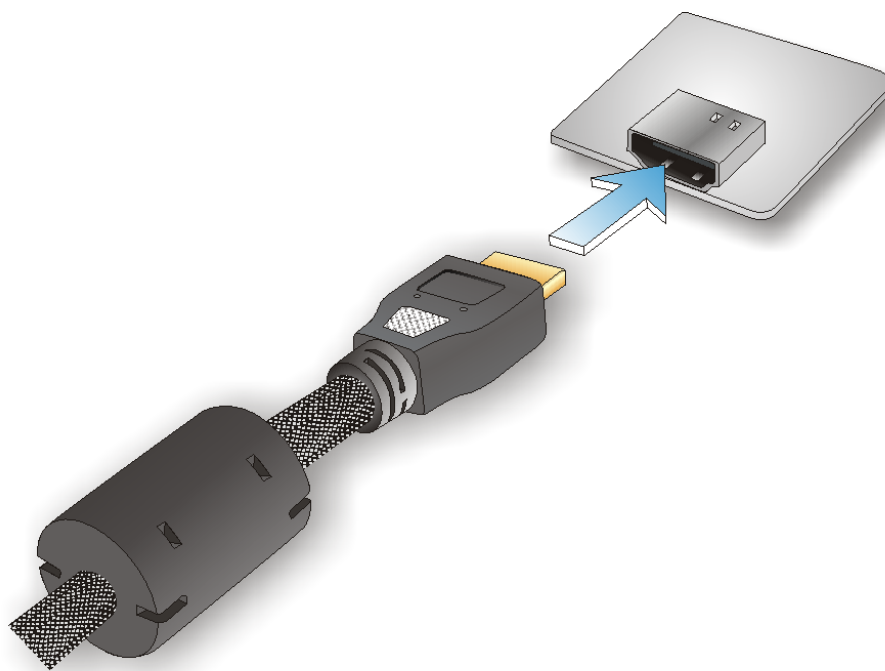


Figure 4-15: HDMI Connection

4.5.4 LAN Connection

There are two external RJ-45 LAN connectors. The RJ-45 connectors enable connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connectors.** The locations of the LAN connectors are shown in **Chapter 3**.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the IMBA-C2060. See **Figure 4-16**.

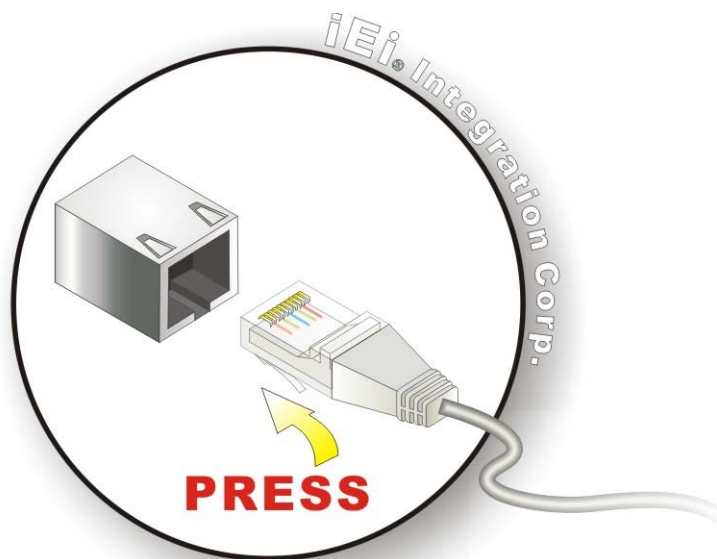


Figure 4-16: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector.

4.5.5 PS/2 Keyboard and Mouse Connection

The IMBA-C2060 has a dual PS/2 connector on the external peripheral interface panel. The dual PS/2 connector is used to connect to a keyboard and mouse to the system. Follow the steps below to connect a keyboard and mouse to the IMBA-C2060.

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Step 1: Locate the dual PS/2 connector. The location of the dual PS/2 connector is shown in **Chapter 3**.

Step 2: Insert the keyboard/mouse connector. Insert a PS/2 keyboard or mouse connector into the appropriate PS/2 connector on the external peripheral interface connector. See **Figure 4-17**.

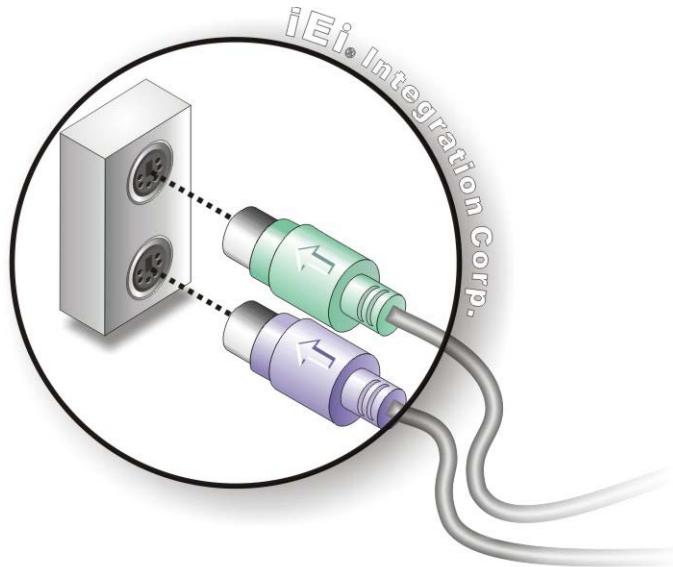


Figure 4-17: PS/2 Keyboard/Mouse Connector

4.5.6 Serial Device Connection

The IMBA-C2060 has a single male D-sub 9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the IMBA-C2060.

Step 1: Locate the D-sub 9 connector. The location of the D-sub 9 connector is shown in **Chapter 3**.

Step 2: Insert the serial connector. Insert the D-sub 9 connector of a serial device into the D-sub 9 connector on the external peripheral interface. See **Figure 4-18**.

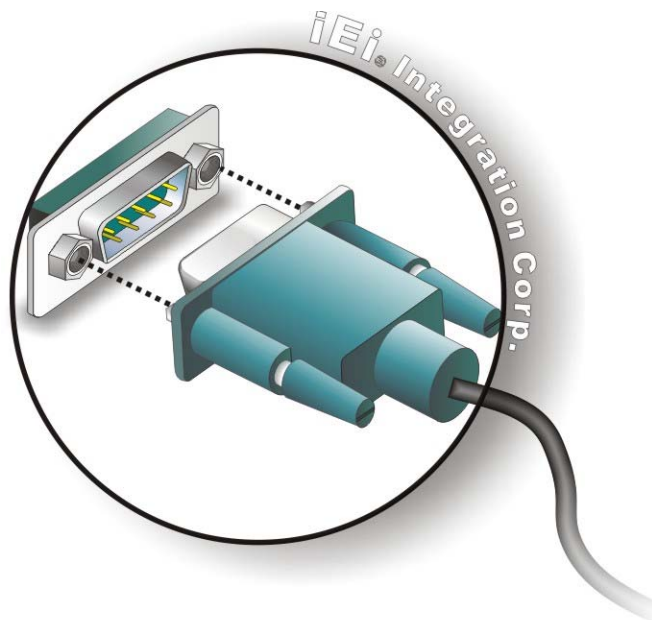


Figure 4-18: Serial Device Connector

Step 3: Secure the connector. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

4.5.7 USB Connection (Dual Connector)

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the IMBA-C2060.

Step 1: Locate the USB Series "A" receptacle connectors. The location of the USB Series "A" receptacle connectors are shown in **Chapter 3**.

Step 2: Insert a USB Series "A" plug. Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See **Figure 4-19**.

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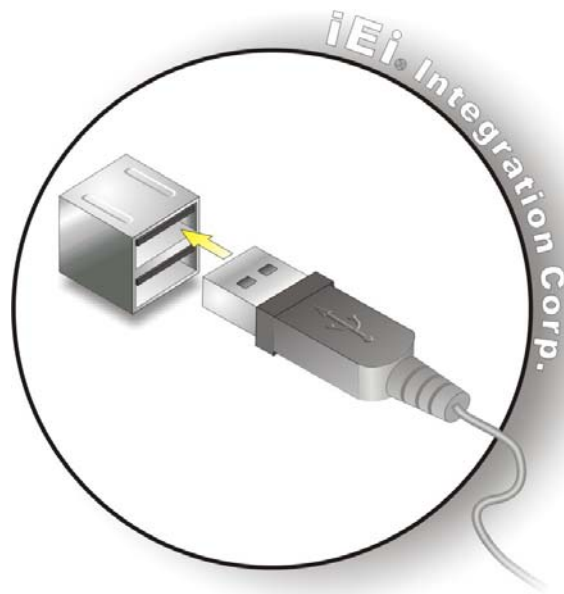


Figure 4-19: USB Connector

4.5.8 VGA Monitor Connection

The IMBA-C2060 has a single female D-sub 15 connector on the external peripheral interface panel. The D-sub 15 connector is connected to a CRT or VGA monitor. To connect a monitor to the IMBA-C2060, please follow the instructions below.

- Step 1:** **Locate the female D-sub 15 connector.** The location of the female D-sub 15 connector is shown in **Chapter 3**.
- Step 2:** **Align the VGA connector.** Align the male D-sub 15 connector on the VGA screen cable with the female D-sub 15 connector on the external peripheral interface.
- Step 3:** **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the IMBA-C2060. See **Figure 4-20**.

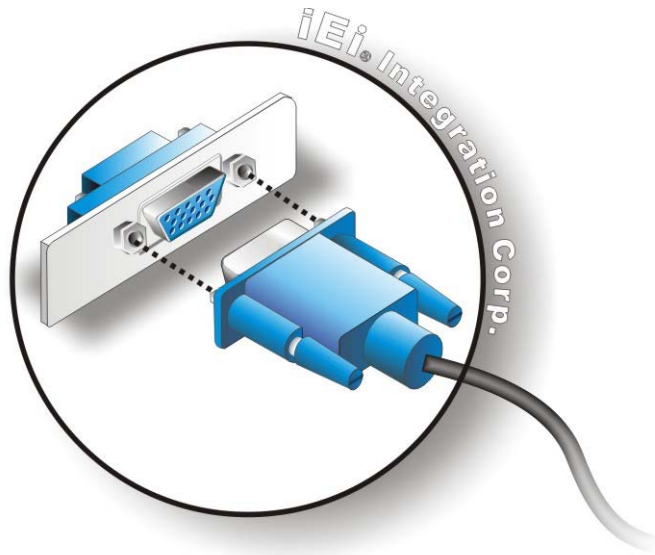


Figure 4-20: VGA Connector

Step 4: **Secure the connector.** Secure the D-sub 15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

4.6 Intel® AMT Setup Procedure

The IMBA-C2060 is featured with the Intel® Active Management Technology (AMT). To enable the Intel® AMT function, follow the steps below.

- Step 1:** Make sure the **CHA_DIMM1** socket is installed with one DDR3 DIMM.
- Step 2:** Connect an Ethernet cable to the RJ-45 connector labeled **LAN2**.
- 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

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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

IMBA-C2060 ATX Motherboard

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.

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

Key	Function
-	Decrease the numeric value or make changes
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes
Esc key	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	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** or the **F1** key again.

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 jumper 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.

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- 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) 2011 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
BIOS Information				Set the Date. Use Tab to switch between Data elements.	
BIOS Vendor			American Megatrends		
Core Version			4.6.5.3		
Compliancy			UEFI 2.0		
Project Version			B199AR23.ROM		
Build Date			09/17/2013 16:55:28		
Processor Information					
Name			SandyBridge		
Brand String			Intel(R) Core(TM) i3-		
Frequency			3300 MHz		
Processor ID			206a7		
Stepping			D2		
Number of Processors			2Core(s) / 4Thread(s)		
Microcode Revision			28		
GT Info			GT2 (1100 MHz)		
IGFX VBIOS Version					
Memory RC Version					
Total Memory					
Memory Frequency					
PCH Information					
Name			CougarPoint		
Stepping			05/B3		
TXT Capability of Platform/PCH					
LAN PHY Revision					
ME FW Version					
ME Firmware SKU					
SPI Clock Frequency					
DOFR Support					
Read Status Clock Frequency					
Write Status Clock Frequency					
Fast Read Status Clock Frequency					
System Date					
System Time					
Access Level					

				←→: Select Screen	
				↑↓: Select Item	
				EnterSelect	
				+ - Change Opt.	
				F1 General Help	
				F2 Previous Values	
				F3 Optimized Defaults	
				F4 Save & Exit	
				ESC Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.					

BIOS Menu 1: Main

IMBA-C2060 ATX Motherboard

→ System Overview

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- BIOS Information
- Processor Information
- Memory Information
- PCH Information
- SPI Clock Frequency

The System Overview field also 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) 2011 American Megatrends, Inc.
Main  Advanced  Chipset  Boot  Security  Save & Exit
-----
> ACPI Settings
> RTC Wake Settings
> Trusted Computing
> CPU Configuration
> SATA Configuration
> Intel TXT(LT) Configuration
> AMT Configuration
> USB Configuration
> F81866 Super IO Configuration
> F81866 H/M Monitor
> Serial Port Console Redirection
> iEi Feature

System ACPI Parameters
-----
<=>: Select Screen
↑↓: Select Item
EnterSelect
+ - Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit

Version 2.14.1219. Copyright (C) 2011 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.

```

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Advanced
-----
ACPI Settings
ACPI Sleep State          [S1 only (CPU Stop C...
Clock)]

Select ACPI sleep state
the system will enter
when the SUSPEND button
is pressed.
-----
<=>: Select Screen
↑↓: Select Item
EnterSelect
+ - Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit

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```

BIOS Menu 3: ACPI Configuration

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

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

- **Suspend Disabled**
- **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.

5.3.2 RTC Wake Settings

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

```

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Advanced
Wake system with Fixed Time      [Disabled]
Enable or disable System
wake on alarm event. When
enabled, System will
wake on the
date:hr::min::sec
specified
-----
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.
  
```

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 every day

Wake up date

Wake up hour

Wake up minute

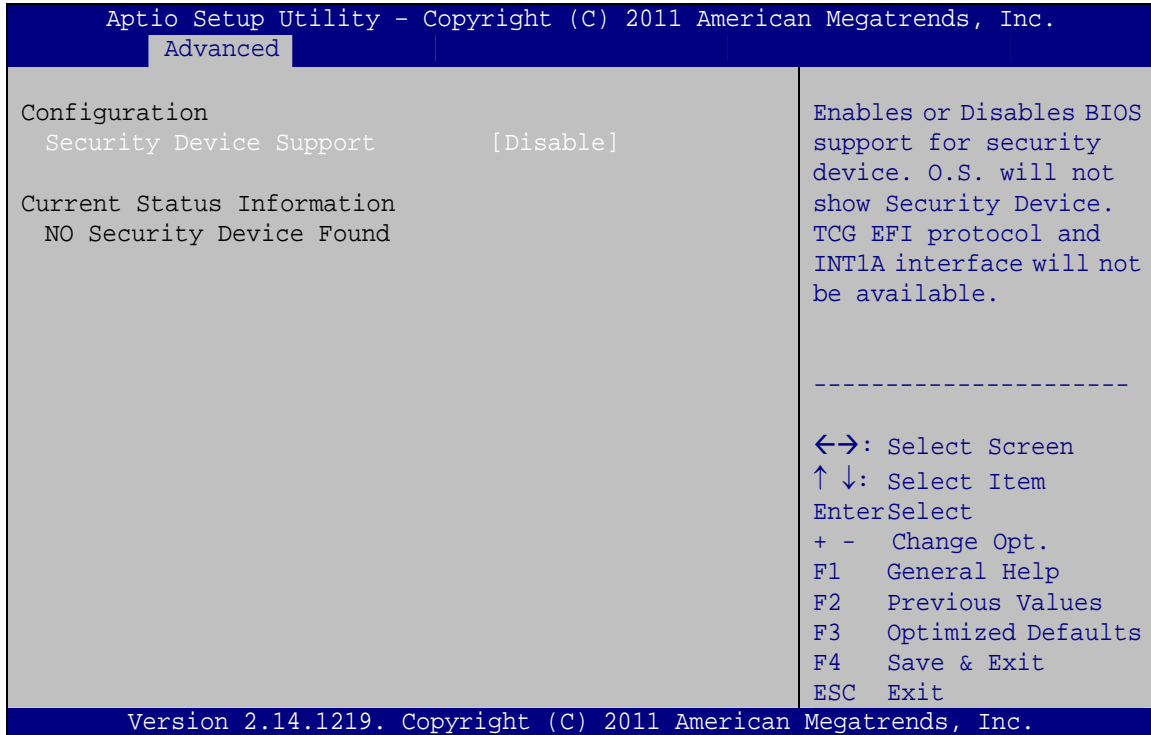
Wake up second

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).

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BIOS Menu 5: TPM Configuration

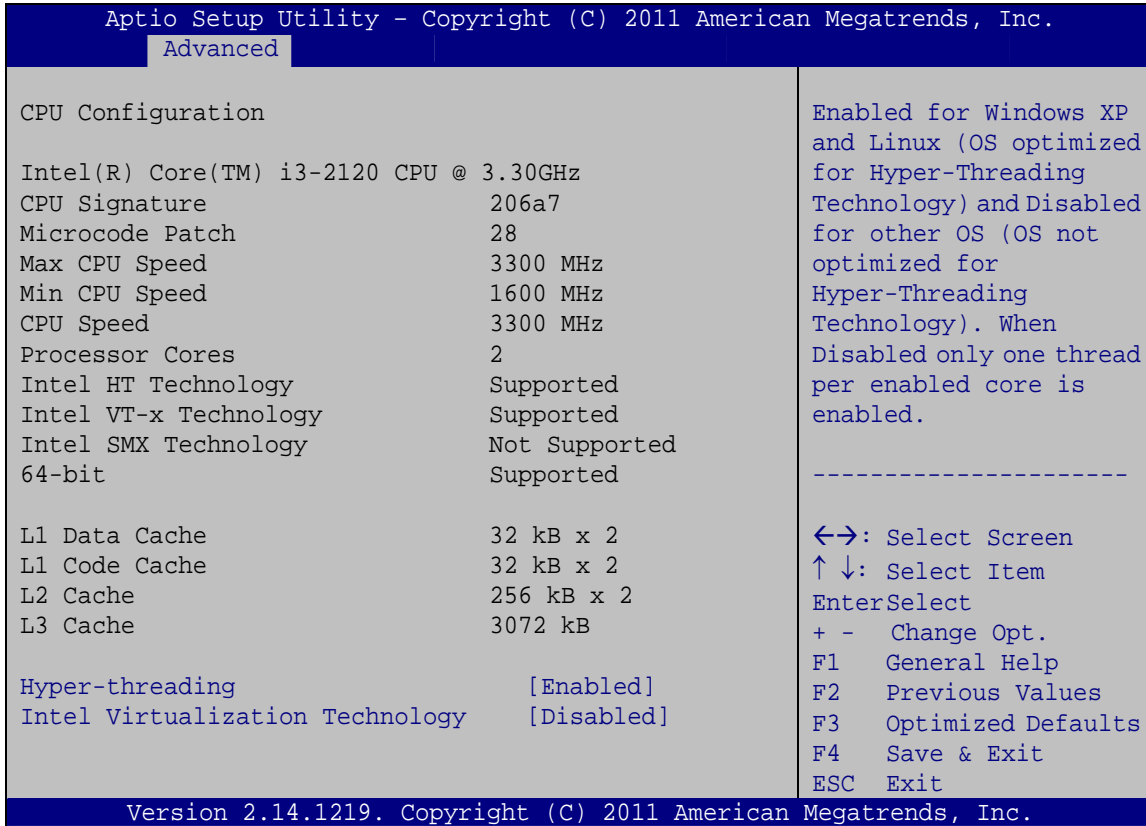
→ Security Device Support [Disable]

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

- **Disable** DEFAULT TPM support is disabled.
- **Enable** TPM support is enabled.

5.3.4 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 6**) to view the CPU Information or enable Hyper-threading and Intel Virtualization Technology.



BIOS Menu 6: CPU Configuration

The CPU Configuration menu (**BIOS Menu 6**) lists the following CPU details:

- Processor Type: Lists the brand name of the CPU being used
- CPU Signature: Lists the CPU signature value.
- Microcode Patch: Lists the microcode patch being used.
- Max CPU Speed: Lists the maximum CPU processing speed.
- Min CPU Speed: Lists the minimum CPU processing speed.
- Processor Cores: Lists the number of the processor core
- Intel HT Technology: Indicates if Intel HT Technology is supported by the CPU.
- Intel VT-x Technology: Indicates if Intel VT-x Technology is supported by the CPU.
- Intel SMX Technology: Indicates if Intel SMX Technology is supported by the CPU.
- L1 Data Cache: Lists the amount of data storage space on the L1 cache.
- L1 Code Cache: Lists the amount of code storage space on the L1 cache.

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- L2 Cache: Lists the amount of storage space on the L2 cache.
- L3 Cache: Lists the amount of storage space on the L3 cache.

→ Hyper-threading [Enabled]

Use the **Hyper-threading** function to enable or disable the CPU hyper threading function.

- **Disabled** **DEFAULT** Disables the use of hyper threading technology
- **Enabled** Enables the use of hyper threading technology

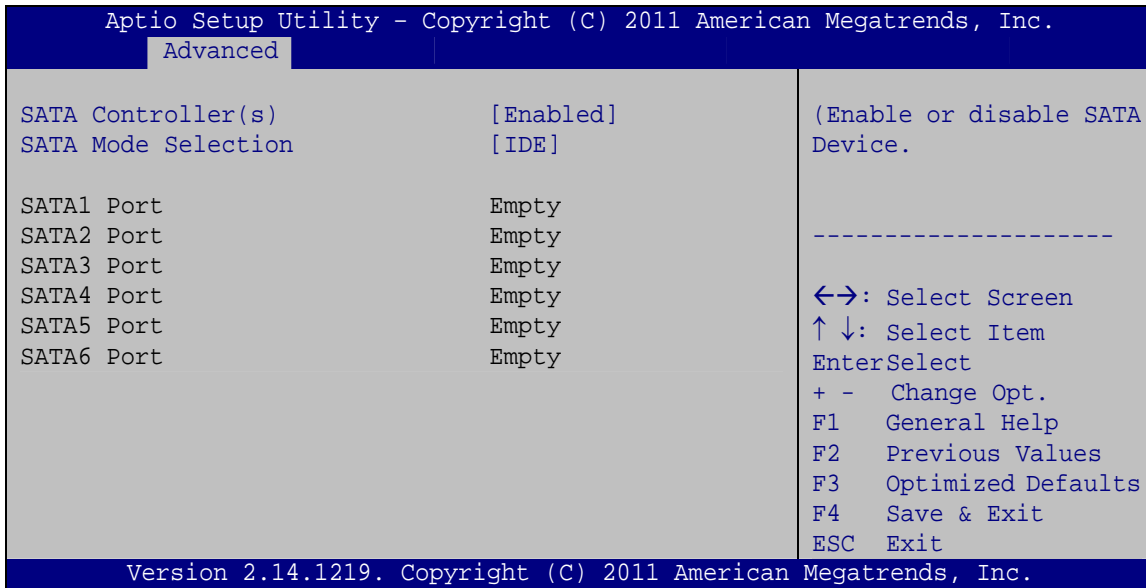
→ Intel Virtualization Technology [Disabled]

Use the **Intel Virtualization Technology** option to enable or disable virtualization on the system. When combined with third party software, Intel® Virtualization technology allows several OSs to run on the same system at the same time.

- **Disabled** **DEFAULT** Disables Intel Virtualization
Technology.
- **Enabled** Enables Intel Virtualization Technology.

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.

- **Enabled** **DEFAULT** Enable SATA controller.
- **Disabled** Disable SATA controller.

→ SATA Mode Selection [IDE]

Use the **SATA Mode Selection** option to configure SATA devices.

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

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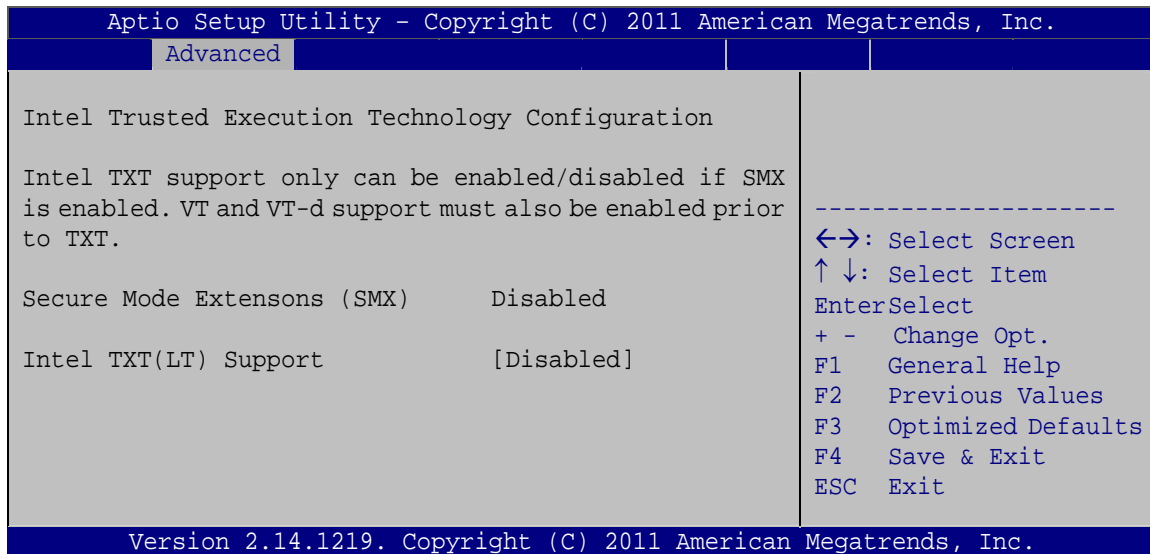


NOTE:

Before accessing the RAID configuration utility, ensure to set the **Option ROM Messages** BIOS option in the **Boot** menu to **Force BIOS**. This is to allow the “Press <CTRL+I> to enter Configuration Utility.....” message to appear during POST. Press Ctrl+I when prompted to enter the RAID configuration utility.

5.3.6 Intel TXT(LT) Configuration

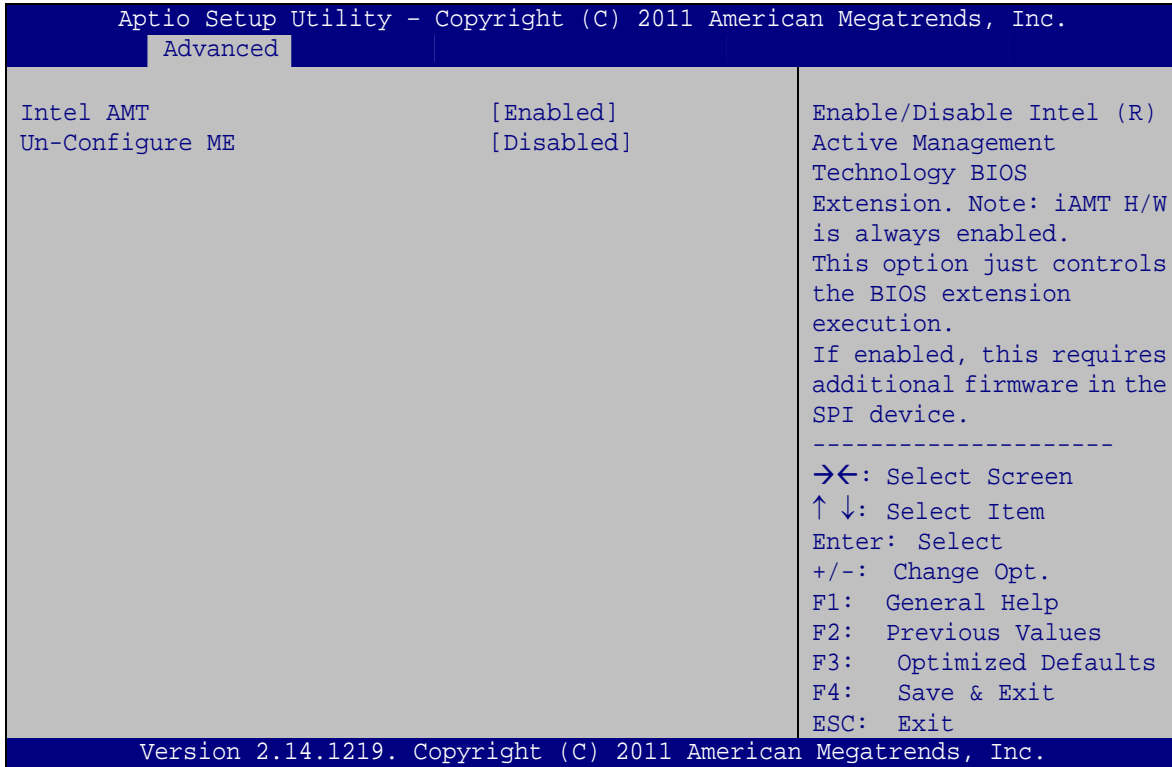
Use the **Intel TXT(LT) Configuration** menu to configure Intel Trusted Execution Technology support.



BIOS Menu 8: Intel TXT(LT) Configuration

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

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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) 2011 American Megatrends, Inc.
  Advanced
-----
USB Configuration
USB Devices:
    2 Hubs
Legacy USB Support          [Enabled]
-----
Enables Legacy USB
support. AUTO option
disables legacy support
if no USB devices are
connected. DISABLE
option will keep USB
devices available only
for EFI applications.

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

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
  
```

BIOS Menu 10: USB Configuration

➔ USB Devices

The **USB Devices Enabled** 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

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.

```

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Advanced
F81866 Super IO Configuration
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

Set Parameters of Serial
Port 1 (COMA)
-----
<->: Select Screen
↑ ↓: Select Item
Enter>Select
+ - Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit

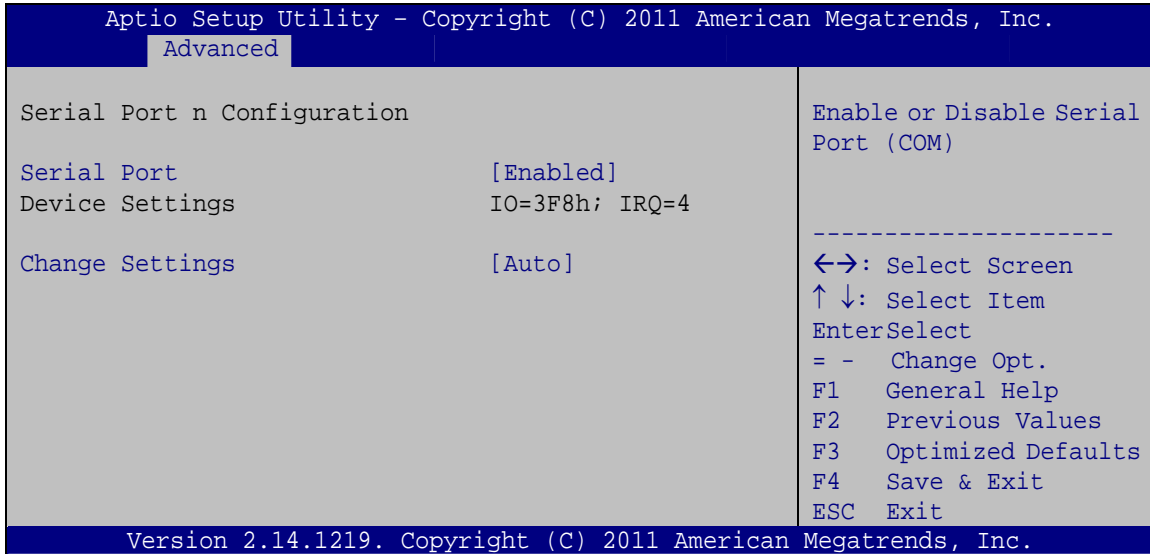
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
  
```

BIOS Menu 11: F81866 Super IO Configuration

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5.3.9.1 Serial Port n Configuration

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



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=2F8h;**
IRQ=3, 4 Serial Port I/O port address is 2F8h 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

→ 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=2F8h;**
IRQ=3 Serial Port I/O port address is 2F8h and the interrupt address is IRQ3
- **IO=3F8h;**
IRQ=3, 4 Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
- **IO=2F8h;**
IRQ=3, 4 Serial Port I/O port address is 2F8h 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

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- ➔ **IO=2C8h;** Serial Port I/O port address is 2C8h and the interrupt
IRQ=3, 4 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.

- ➔ **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=3E8h;** Serial Port I/O port address is 3E8h and the interrupt
IRQ=10 address is IRQ10
- ➔ **IO=3E8h;** Serial Port I/O port address is 3E8h and the interrupt
IRQ=10, 11 address is IRQ10, 11
- ➔ **IO=2E8h;** Serial Port I/O port address is 2E8h and the interrupt
IRQ=10, 11 address is IRQ10, 11
- ➔ **IO=2D0h;** Serial Port I/O port address is 2D0h and the interrupt
IRQ=10, 11 address is IRQ10, 11
- ➔ **IO=2D8h;** Serial Port I/O port address is 2D8h and the interrupt
IRQ=10, 11 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=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
- **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

→ **Device Mode [RS422/485]**

Use the **Device Mode** option to enable or disable the serial port.

- **RS422/485 DEFAULT** Enables serial port RS-422/485 support.

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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=2D0h;**
IRQ=10 Serial Port I/O port address is 2D0h 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

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]**

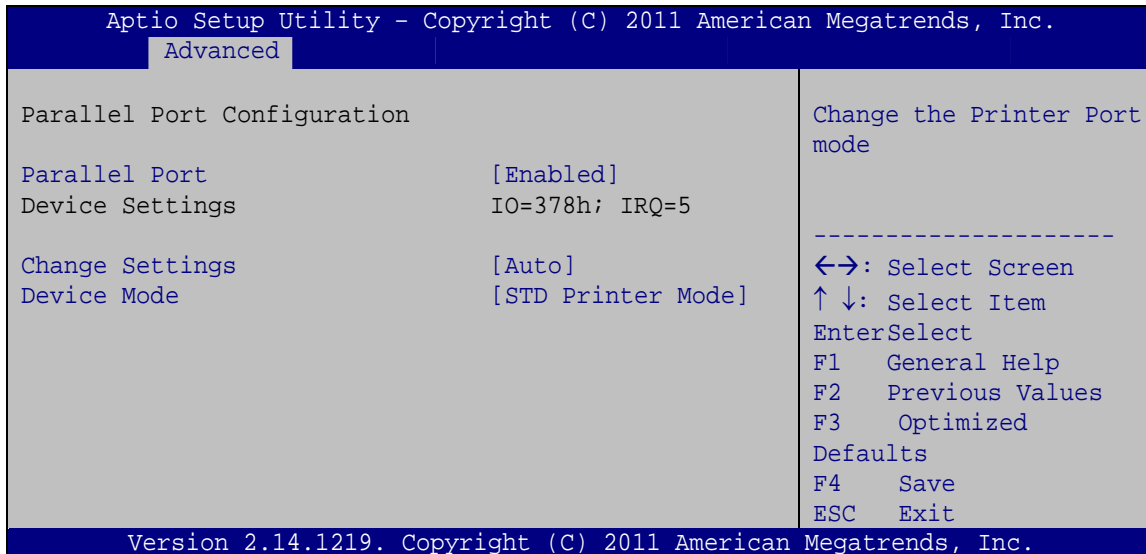
Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- ➔ **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

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5.3.9.2 Parallel Port Configuration

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



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 [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 F81866 H/W Monitor

The **F81866 H/W Monitor** menu (**BIOS Menu 14**) contains the fan configuration submenus and displays operating temperature, fan speeds and system voltages.

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```

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Advanced
PC Health Status
Smart Fan Mode Select

> Smart Fan Mode Configuration
CPU Temperature           : +44 C
SYS Temperature          : +31 C
CPU_FAN1 Speed           : 4983 RPM
SYS_FAN1 Speed           : N/A
V_CPU_CORE                : +1.144 V
+3.3V                    : +3.344 V
V_1P05_ME                : +1.072 V
V_SM                      : +1.632 V
VSB5V                    : +4.992 V
+V3.3S                   : +3.344 V
VSB3V                    : +3.424 V
VBAT                     : +3.280 V

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

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

```

BIOS Menu 14: F81866 H/W Monitor

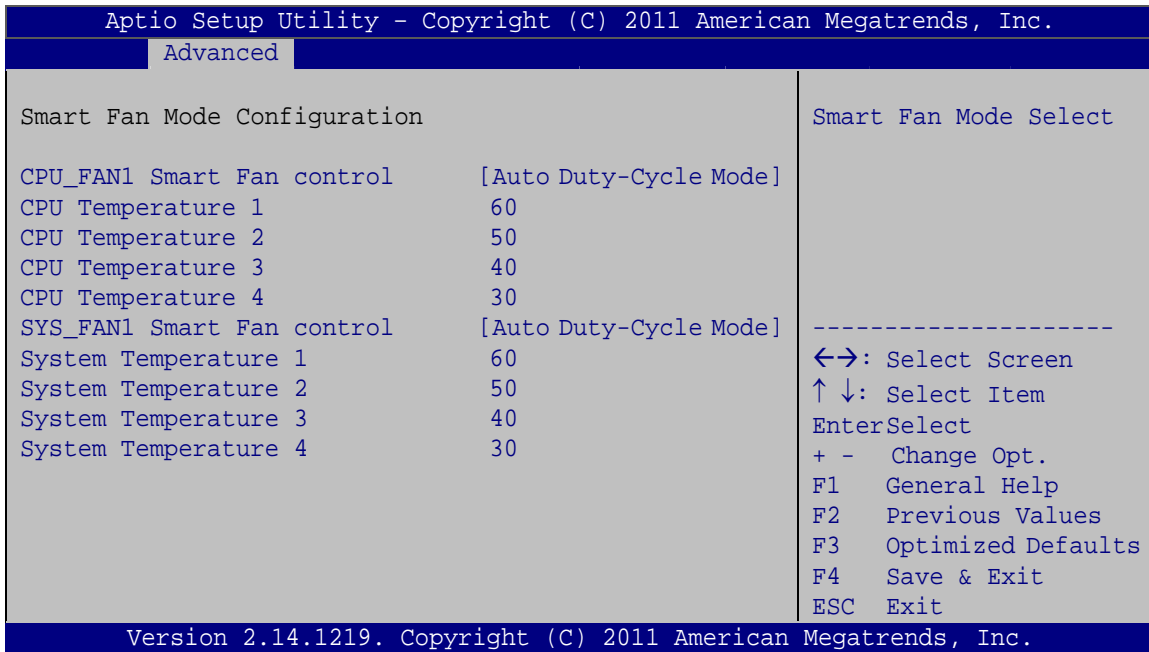
→ PC Health Status

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:
 - V_CPU_CORE
 - +3.3V
 - V_1P05_ME
 - V_SM
 - VSB5V
 - +V3.3S
 - VSB3V
 - VBAT

5.3.10.1 Smart Fan Mode Configuration

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



BIOS Menu 15: Smart Fan Mode Configuration

→ CPU_FAN1/SYS_FAN1 Smart Fan Control [Auto Duty-Cycle Mode]

Use the **Fan 1 Smart Fan Control** option to configure the CPU Smart Fan.

- **Manual Duty Mode** The fan spins at the speed set in Manual by Duty Cycle settings
- **Auto Duty-Cycle Mode** DEFAULT The fan adjusts its speed using Auto by Duty-Cycle settings

→ CPU Temperature n

Use the + or – key to change the **CPU Temperature n** value. Enter a decimal number between 0 and 100.

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→ System Temperature n

Use the + or – key to change the **System Temperature n** value. Enter a decimal number between 0 and 100.

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) 2011 American Megatrends, Inc.
  Advanced
COM1
  Console Redirection          [Disabled]
> Console Redirection Settings
  Console Redirection          [Disabled]
> Console Redirection Settings
  Console Redirection          [Disabled]
> Console Redirection Settings
  Console Redirection          [Disabled]
> Console Redirection Settings
  Console Redirection          [Disabled]
> Console Redirection Settings
  Console Redirection          [Disabled]
> Console Redirection Settings
iAMT SOL
COM7(Pci Bus0, Dev0,Func0) (Disabled)
  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 2.14.1219. Copyright (C) 2011 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



NOTE:

The following five options appear 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+** **DEFAULT** The target terminal type is VT100+
- **VT-UTF8** The target terminal type is VT-UTF8
- **ANSI** 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.
- **38400** Sets the serial port transmission speed at 38400.
- **57600** Sets the serial port transmission speed at 57600.
- **115200** **DEFAULT** Sets the serial port transmission speed at 115200.

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→ 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.

→ Parity [None]

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

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

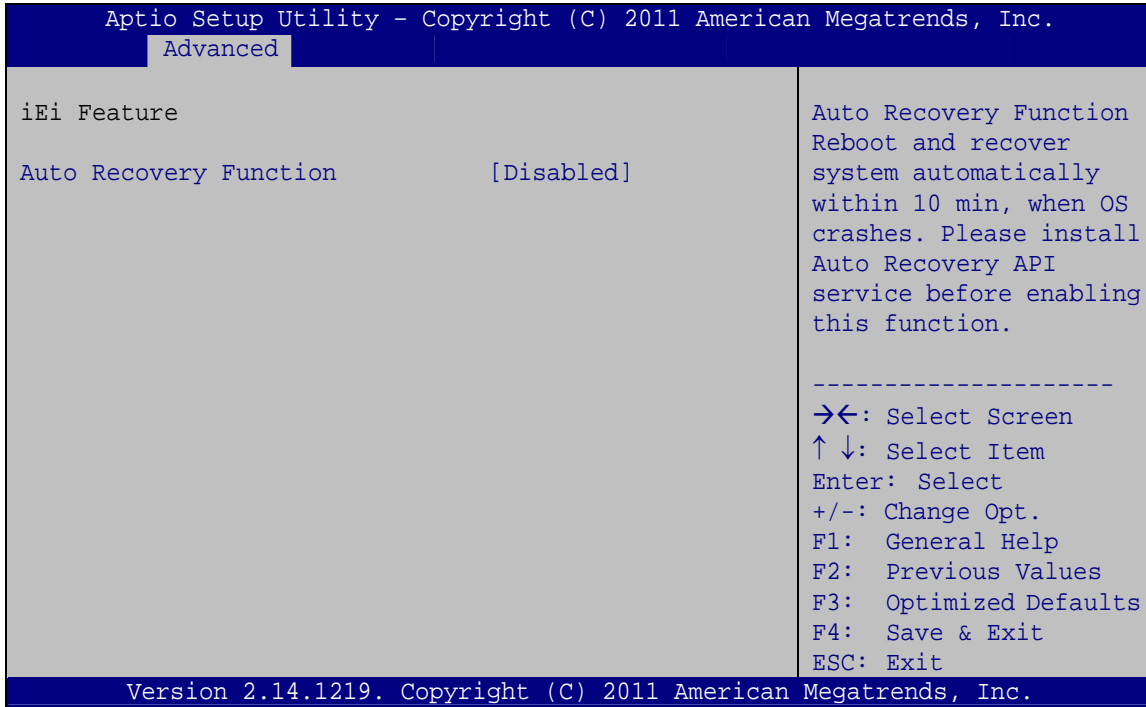
→ Stop Bits [1]

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.

- 1 **DEFAULT** Sets the number of stop bits at 1.
- 2 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) 2011 American Megatrends, Inc.
Main   Advanced  Chipset  Boot   Security  Save & Exit
-----
> PCH-IO Configuration
> System Agent (SA) Configuration

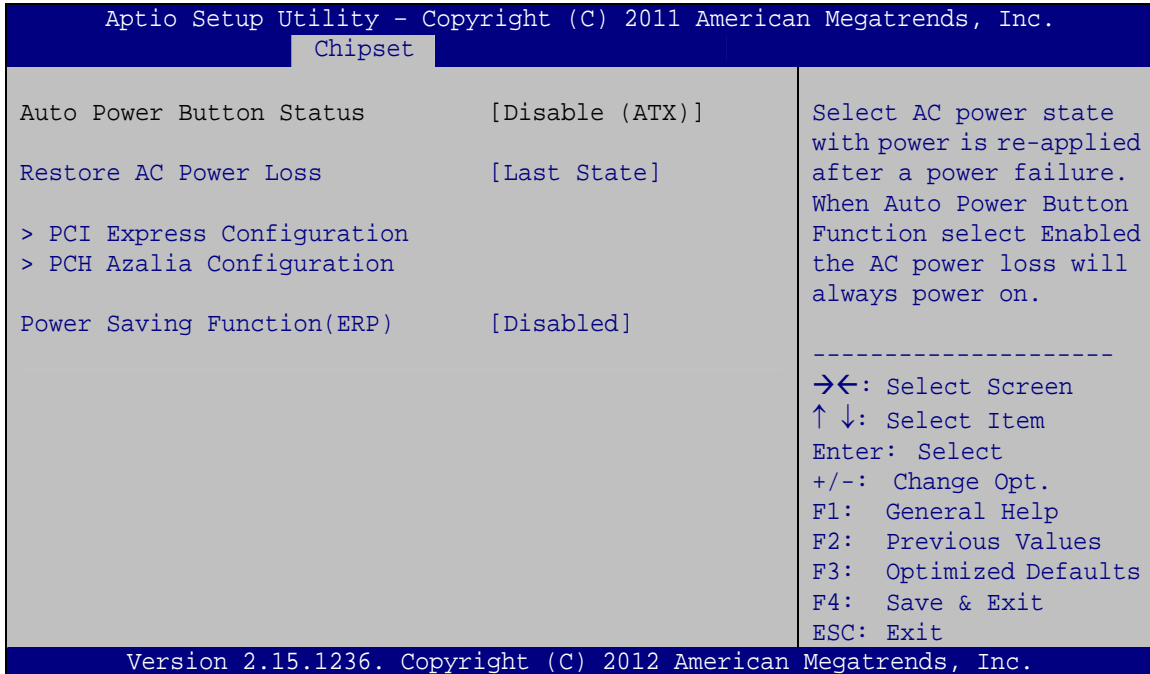
PCH Parameters
-----
<->: Select Screen
↑ ↓: Select Item
EnterSelect
+ - Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

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 [Disabled]

Use the **Power Saving Function** option to enable or disable power saving function.

- **Disabled** **DEFAULT** Power saving function is disabled

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➔ **Enabled** Enable to reduce power consumption in system off state.

5.4.1.1 PCI Express Configuration

Use the **PCI Express Configuration** menu (**BIOS Menu 20**) to configure the PCIe x4 expansion slot.

```

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Chipset
PCI Express Configuration
> PCIEX4_2 Slot

PCIEX4_2 Setting
-----
-><: Select Screen
↑ ↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
    
```

BIOS Menu 20: PCI Express Configuration

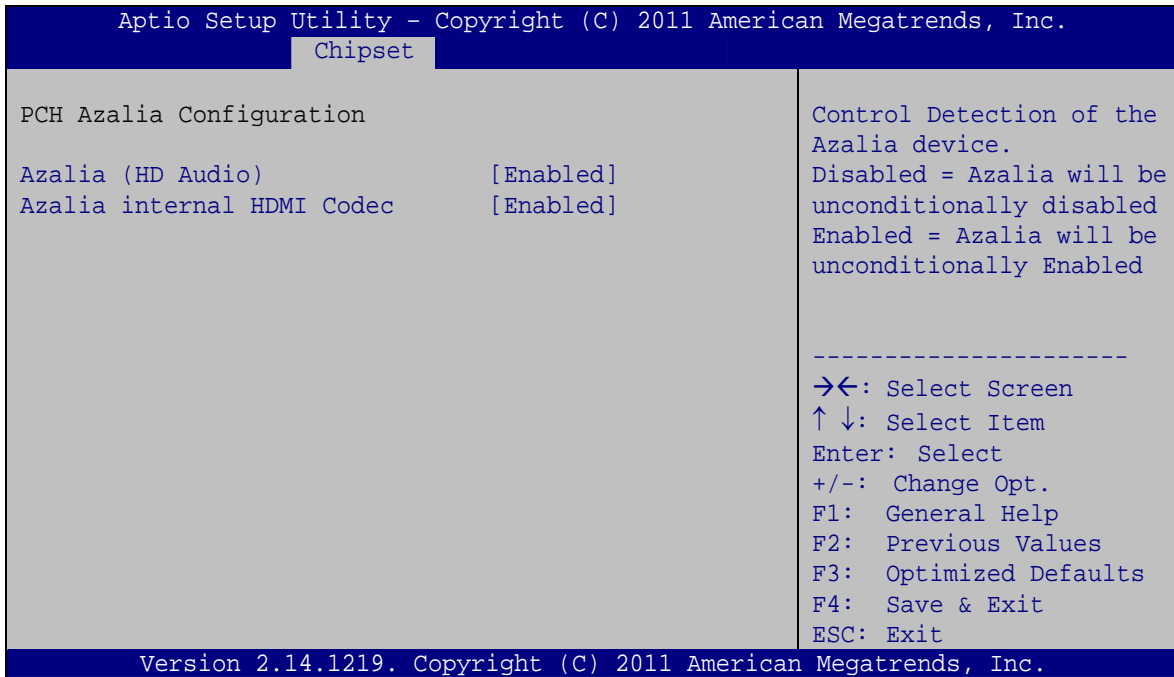
➔ **PCIe Speed [Gen1]**

Use PCIe Speed option to select the speed type of the PCIe x4 slot (PCIEX4_2). The following options are available:

- Auto
- Gen1 **Default**
- Gen2

5.4.1.2 PCH Azalia Configuration

Use the **PCH Azalia Configuration** menu (**BIOS Menu 21**) to configure the HD Audio controller.



BIOS Menu 21: 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

→ Azalia internal HDMI Codec [Enabled]

Use the **Azalia internal HDMI Codec** option to enable or disable the internal HDMI codec for Azalia.

- **Disabled** The internal HDMI codec is disabled

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- ➔ **Enabled** **DEFAULT** The internal HDMI codec automatically detected and enabled.

5.4.2 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 22**) to configure the System Agent (SA) parameters.

```

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Chipset
> Graphics Configuration
> NB PCIe Configuration
> Memory Configuration

Config Graphics Settings.

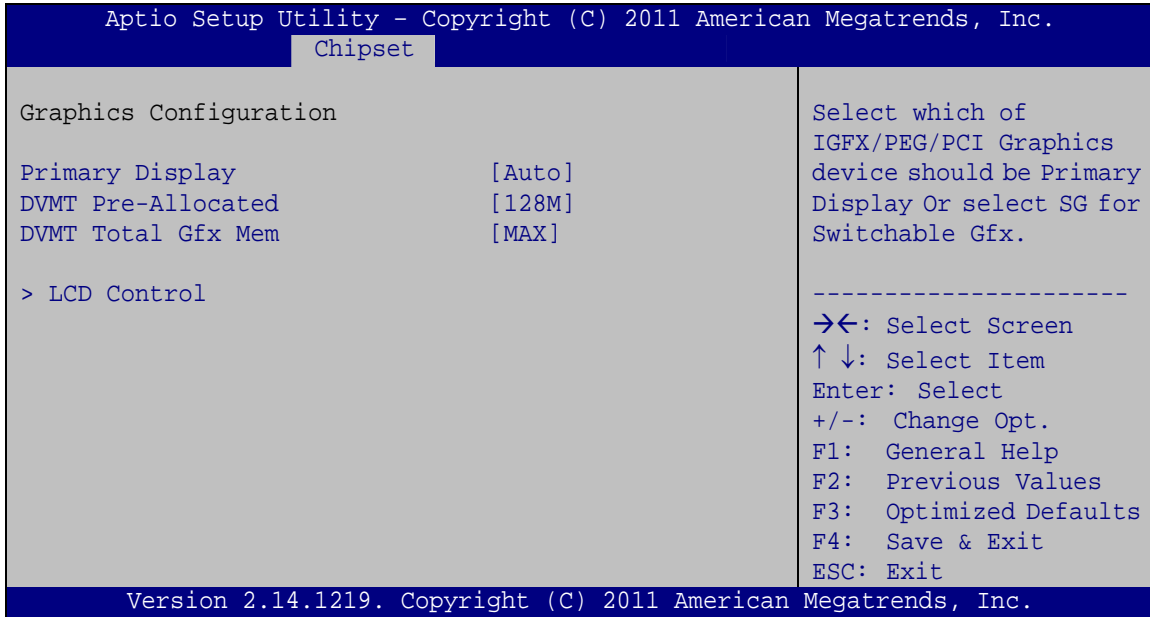
-----
-><: Select Screen
↑ ↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
  
```

BIOS Menu 22: System Agent (SA) Configuration

5.4.2.1 Graphics Configuration

Use the **Graphics Configuration** (**BIOS Menu 23**) menu to configure the video device connected to the system.



BIOS Menu 23: 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

→ DVMT Pre-Allocated [128M]

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 **Default**
- 256M
- 512M

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→ 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:

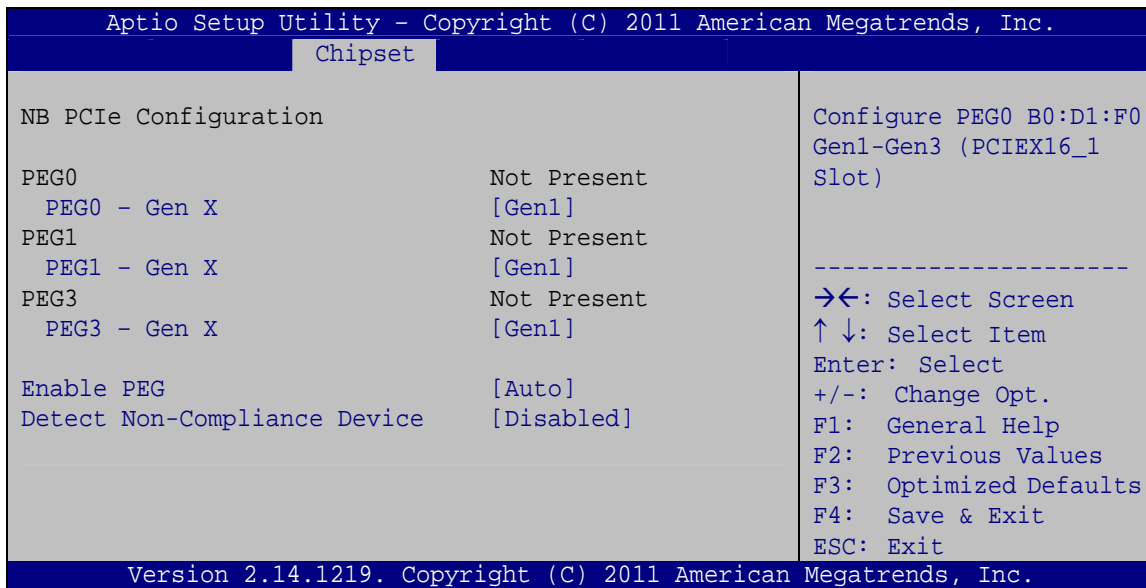
- 128M
- 256M
- MAX **Default**

→ 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
- HDMI

5.4.2.2 NB PCIe Configuration



BIOS Menu 24: NB PCIe Configuration

→ PEG0 – Gen X [Gen1]

Use the **PEG0 – Gen X** option to select the support type of the PCI Express x16 slot (PCIEX16_1). The following options are available:

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

→ PEG1 – Gen X [Gen1]

Use the **PEG1 – Gen X** option to select the support type of the PCI Express x8 slot (PCIEX8_1). The following options are available:

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

→ PEG3 – Gen X [Gen1]

Use the **PEG3 – Gen X** option to select the support type of the PCI Express x4 slot (PCIEX4_1). The following options are available:

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

→ Enable PEG [Enabled]

Use the **Enable PEG** option to enable or disable the PCI Express controller. The following options are available:

- Disabled
- Enabled **Default**
- Auto

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→ Detect Non-Compliance Device [Enabled]

Use the **Detect Non-Compliance Device** option to enable or disable detecting a non-compliance PCI Express device in the PEG. The following options are available:

- Disabled
- Enabled **Default**

5.4.2.3 Memory Configuration

Use the **Memory Configuration** submenu (**BIOS Menu 25**) to view memory information.

```

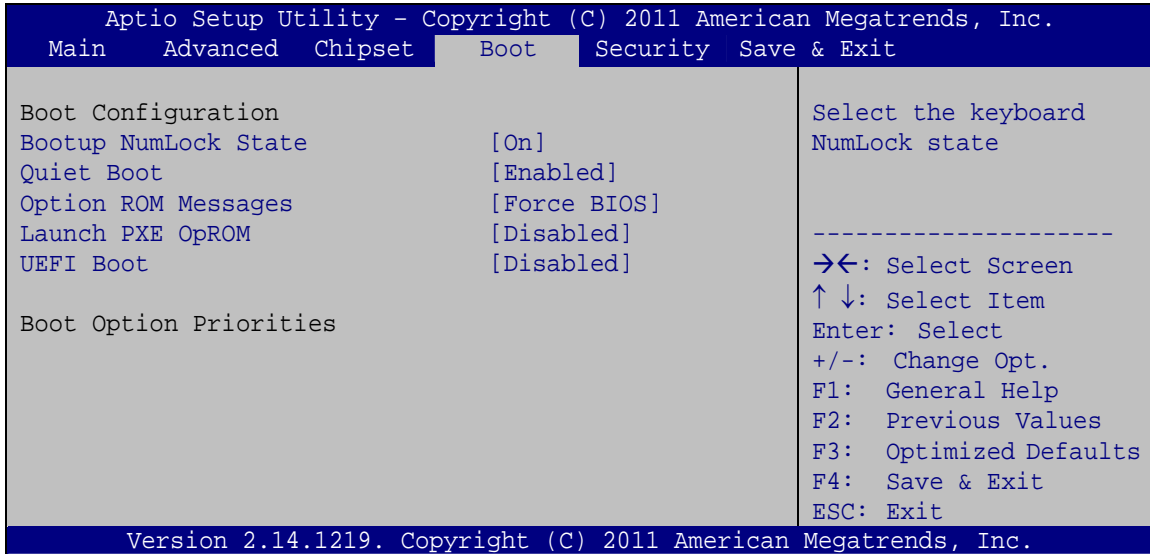
Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Chipset
Memory Information
Total Memory                2048 MB (DDR3)
CHA_DIMM1                   2048 MB (DDR3)
CHA_DIMM2                   Not Present
CHB_DIMM1                   Not Present
CHB_DIMM2                   Not Present
-----
-><: Select Screen
↑ ↓: Select Item
Enter: Select
+/-: Change Opt.
F1:  General Help
F2:  Previous Values
F3:  Optimized Defaults
F4:  Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

```

BIOS Menu 25: Memory Configuration

5.5 Boot

Use the **Boot menu (BIOS Menu 26)** to configure system boot options.



BIOS Menu 26: 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.

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→ 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.

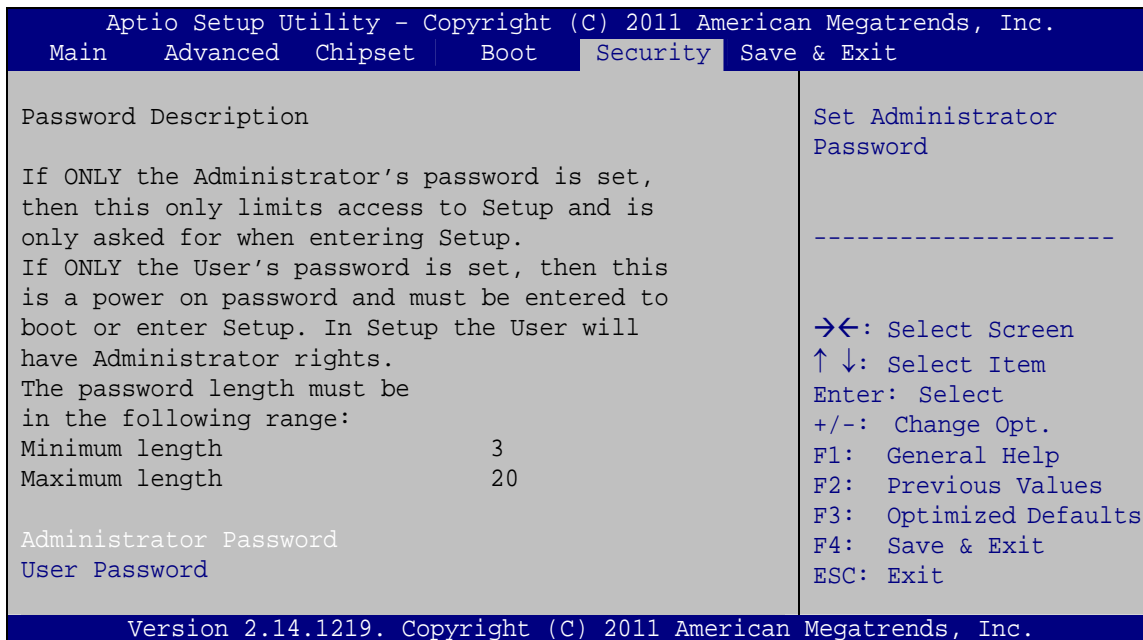
→ UEFI Boot [Disabled]

Use the **UEFI Boot** BIOS option to allow the system to boot from the UEFI devices.

- **Disabled** **DEFAULT** Disables to boot from the UEFI devices.
- **Enabled** Enables to boot from the UEFI devices.

5.6 Security

Use the **Security** menu (**BIOS Menu 27**) to set system and user passwords.



BIOS Menu 27: Security

→ Administrator Password

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

→ User Password

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

5.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 28**) to load default BIOS values, optimal failsafe values and to save configuration changes.

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```

Aptio Setup Utility - Copyright (C) 2011 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

Reset 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

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

```

BIOS Menu 28: 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

IMBA-C2060 ATX Motherboard

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
- Graphic
- LAN
- Audio
- USB 3.0
- Intel® AMT
 - Intel® Management Engine Components driver
 - Intel® IT Director application

Installation instructions are given below.

6.2 Software Installation

All the drivers for the IMBA-C2060 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**).



Figure 6-1: Introduction Screen

Step 3: Click IMBA-C2060.

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.

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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 “**Chipset**”.

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

Step 4: The setup files are extracted as shown in **Figure 6-3**.



Figure 6-3: Chipset Driver Screen

Step 5: When the setup files are completely extracted the **Welcome Screen** in **Figure 6-4** appears.

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



Figure 6-4: Chipset Driver Welcome Screen

Step 7: The license agreement in **Figure 6-5** appears.

Step 8: Read the **License Agreement**.

Step 9: Click **Yes** to continue.



Figure 6-5: Chipset Driver License Agreement

Step 10: The **Read Me** file in **Figure 6-6** appears.

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Step 11: Click **Next** to continue.

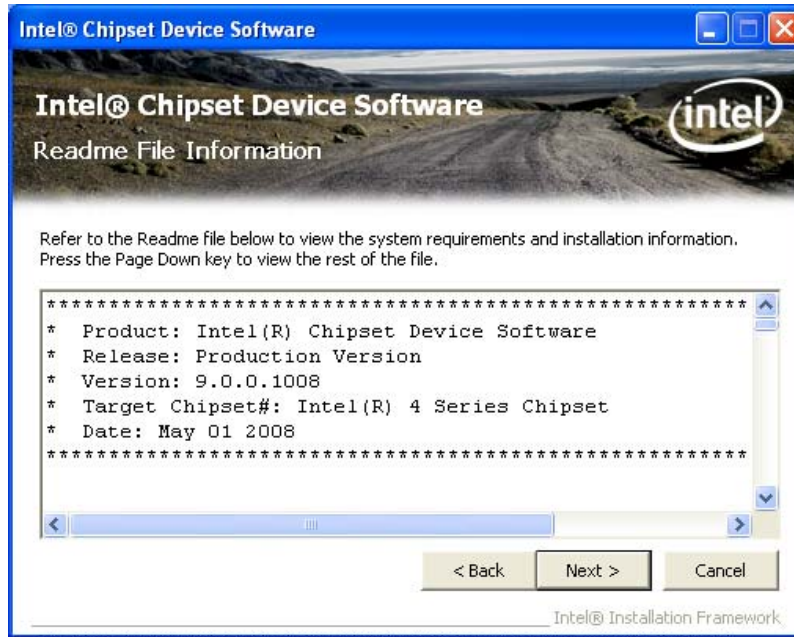


Figure 6-6: Chipset Driver Read Me File

Step 12: **Setup Operations** are performed as shown in **Figure 6-7**.

Step 13: Once the **Setup Operations** are complete, click **Next** to continue.



Figure 6-7: Chipset Driver Setup Operations

Step 14: The **Finish** screen in **Figure 6-8** appears.

Step 15: Select “**Yes, I want to restart this computer now**” and click **Finish**.



Figure 6-8: Chipset Driver Installation Finish Screen

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 “**VGA**” and select the folder which corresponds to the operating system.

Step 3: Double click the setup file.

Step 4: The **Welcome Screen** in **Figure 6-9** appears.

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

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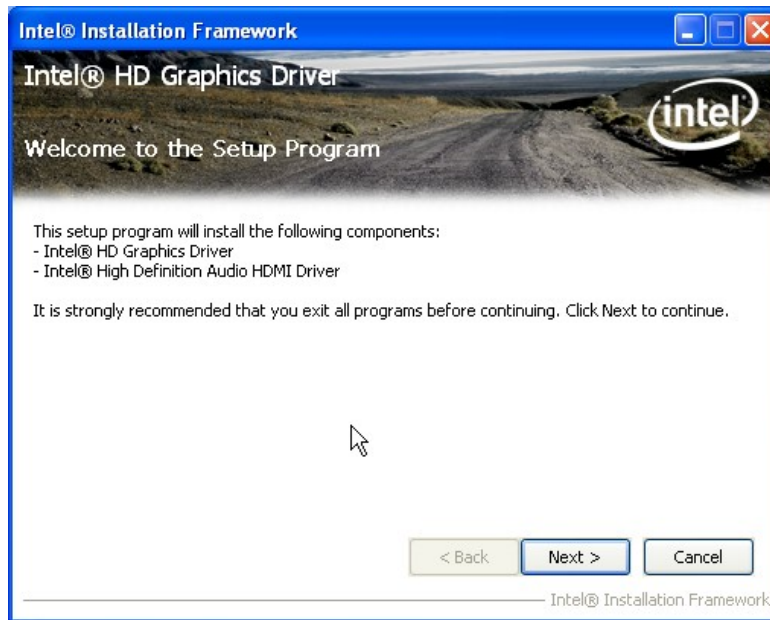


Figure 6-9: Graphics Driver Welcome Screen

Step 6: The License Agreement in Figure 6-10 appears.

Step 7: Click Yes to accept the agreement and continue.



Figure 6-10: Graphics Driver License Agreement

Step 8: Setup Operations are performed as shown in Figure 6-11.

Step 9: Once the **Setup Operations** are complete, click **Next** to continue.

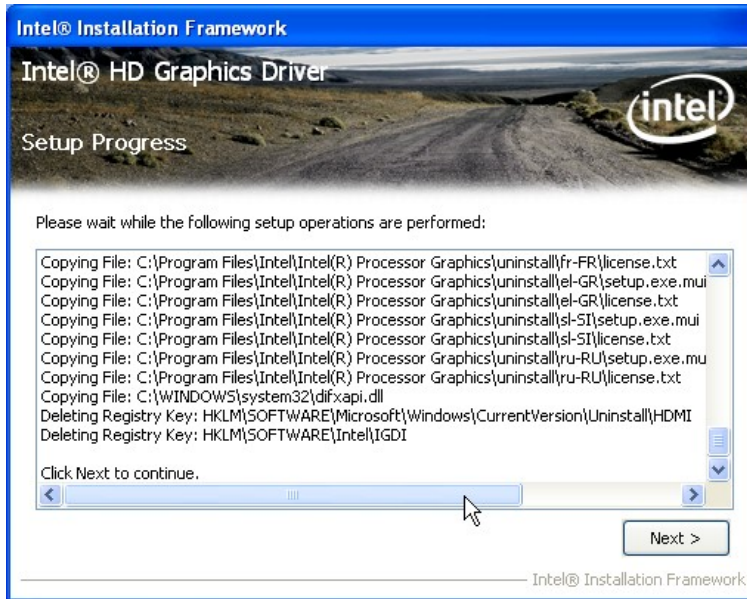


Figure 6-11: Graphics Driver Setup Operations

Step 10: The **Finish** screen in **Figure 6-12** appears.

Step 11: Select “**Yes, I want to restart this computer now**” and click **Finish**.

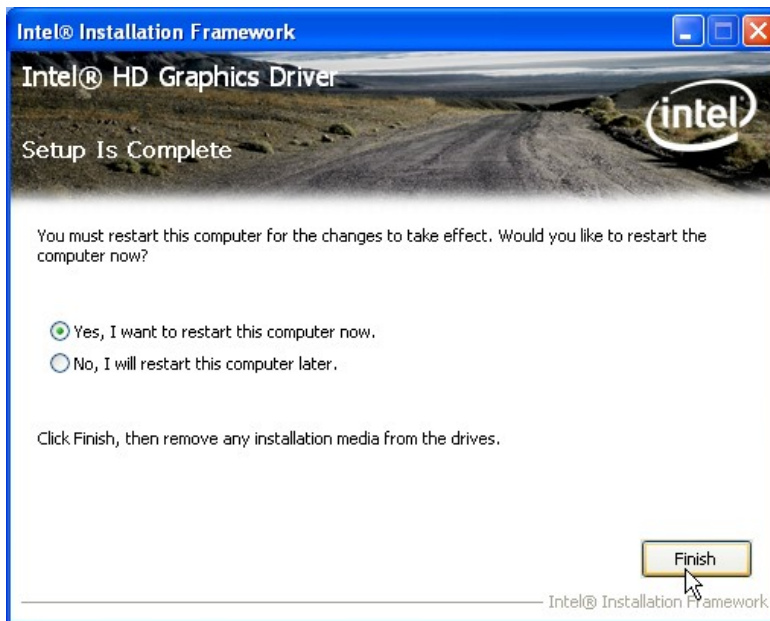


Figure 6-12: Graphics Driver Installation Finish Screen

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6.5 LAN Driver Installation

To install the LAN driver, please do the following.

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

Step 2: Click “LAN”.

Step 3: Locate the Autorun file and double click it.

Step 4: The Intel® Network Connection menu in **Figure 6-13** appears.

Step 5: Click **Install Drivers and Software**.

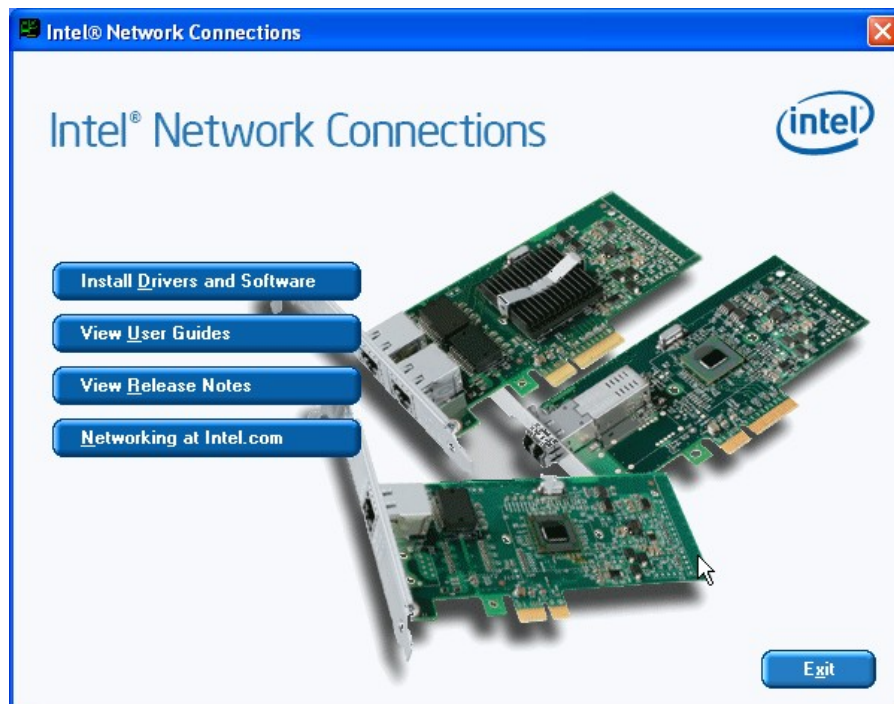


Figure 6-13: Intel® Network Connection Menu

Step 6: The **Welcome** screen in **Figure 6-14** appears.

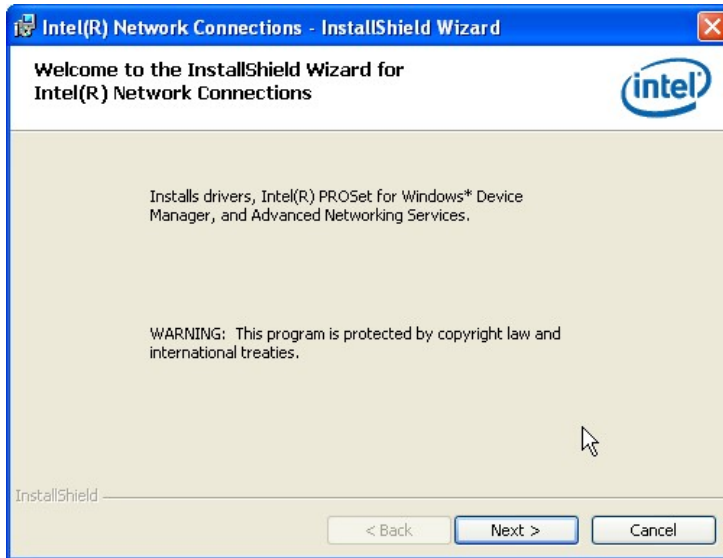


Figure 6-14: LAN Driver Welcome Screen

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

Step 8: The **License Agreement** in **Figure 6-15** appears.

Step 9: Accept the agreement by selecting "I accept the terms in the license agreement".

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



Figure 6-15: LAN Driver License Agreement

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Step 11: The **Setup Options** screen in **Figure 6-16** appears.

Step 12: Select program features to install.

Step 13: Click **Next** to continue.

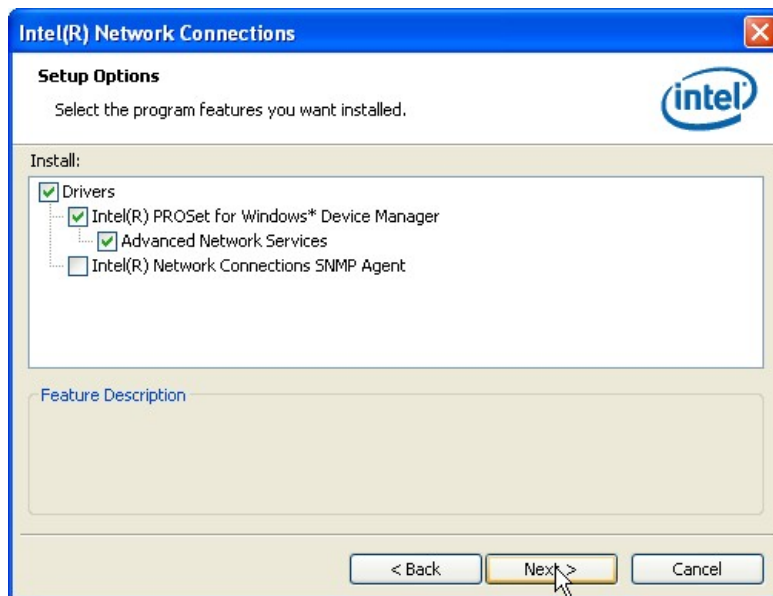


Figure 6-16: LAN Driver Setup Options

Step 14: The **Ready to Install the Program** screen in **Figure 6-17** appears.

Step 15: Click **Install** to proceed with the installation.



Figure 6-17: LAN Driver Installation

Step 16: The program begins to install.

Step 17: When the driver installation is complete, the screen in **Figure 6-18** appears.

Step 18: Click **Finish** to exit.

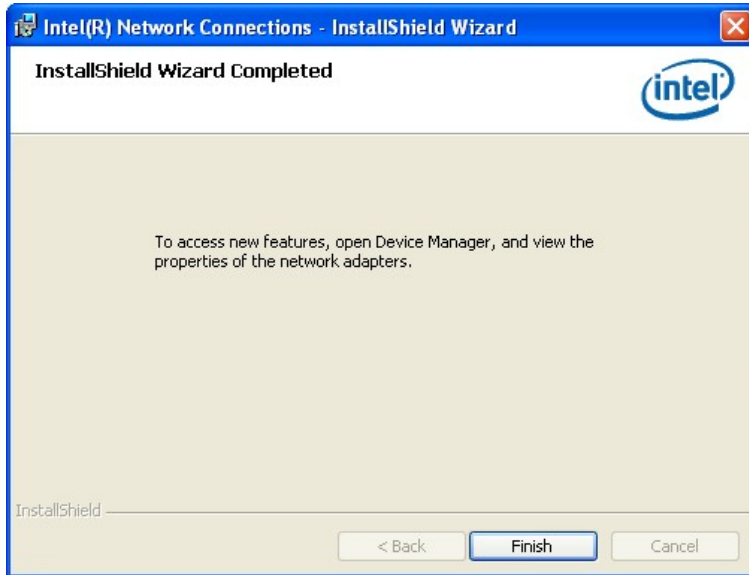


Figure 6-18: LAN Driver Installation Complete

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6.6 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 **“Audio”** and select the folder which corresponds to the operating system.

Step 3: Double click the setup file.

Step 4: The InstallShield Wizard starts to extracting files (**Figure 6-19**).

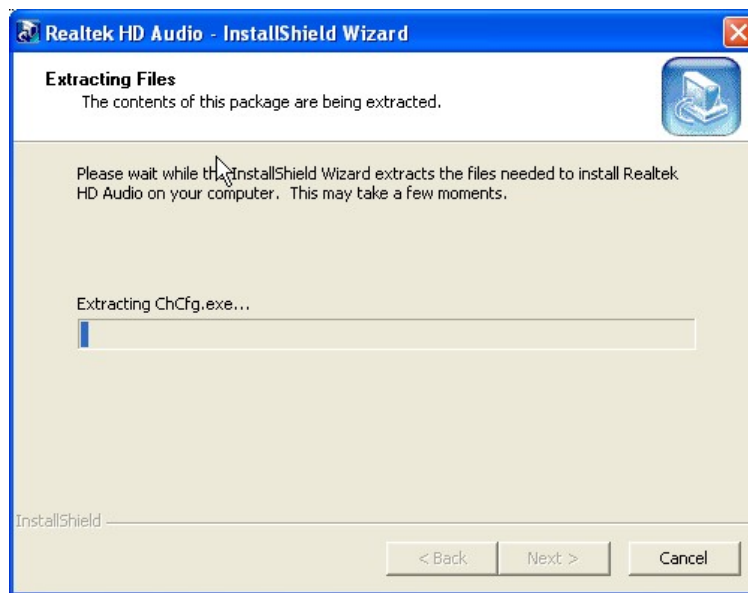


Figure 6-19: Audio Driver - Extracting Files

Step 5: The **Audio Driver Welcome** message in **Figure 6-20** appears.

Step 6: Click **Yes** to install the audio driver.



Figure 6-20: Audio Driver Welcome Screen

Step 7: The audio driver installation begins. See **Figure 6-21**.

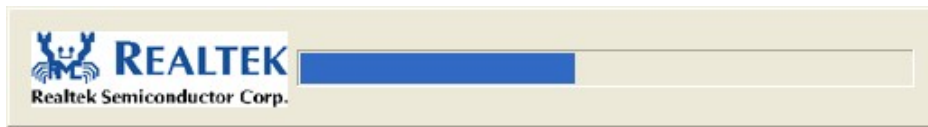


Figure 6-21: Audio Driver Installation

Step 8: When the installation is complete, the screen in **Figure 6-22** appears.

Step 9: Select “Yes, I want to restart my computer now” and click **Finish**.



Figure 6-22: Audio Driver Installation Complete

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6.7 USB 3.0 Driver Installation

To install the touch panel software driver, please follow the steps below.

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

Step 2: Click “**USB 3.0**”.

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

Step 4: A **Welcome Screen** appears (**Figure 6-23**).

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

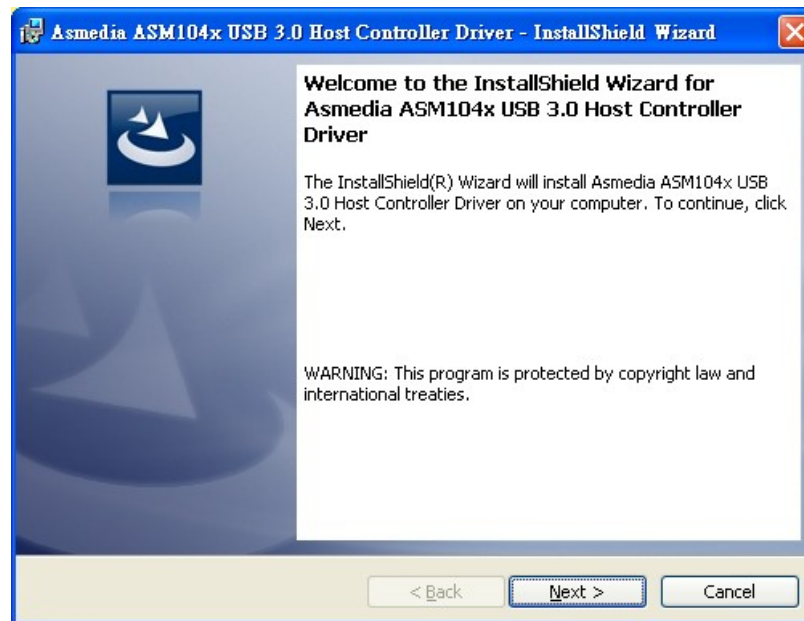


Figure 6-23: USB 3.0 Driver Welcome Screen

Step 6: The **License Agreement** shown in **Figure 6-24** appears.

Step 7: Click “**I accept the terms in the license agreement**” to accept and continue.



Figure 6-24: USB 3.0 Driver License Agreement

Step 8: The **Install** screen appears and displays the progress of the installation (Figure 6-25).

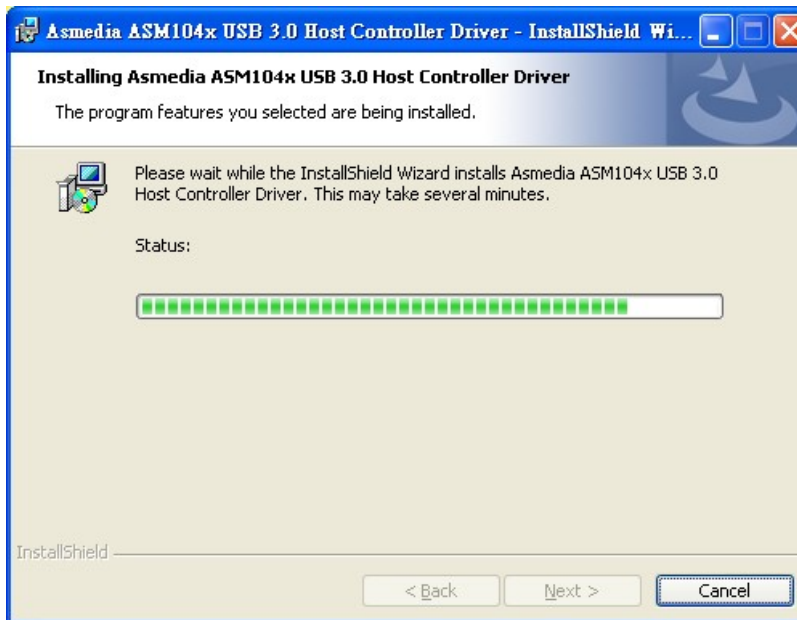


Figure 6-25: USB 3.0 Driver Installation Screen

Step 9: When the installation is complete, click **FINISH** to exit setup. (Figure 6-26).

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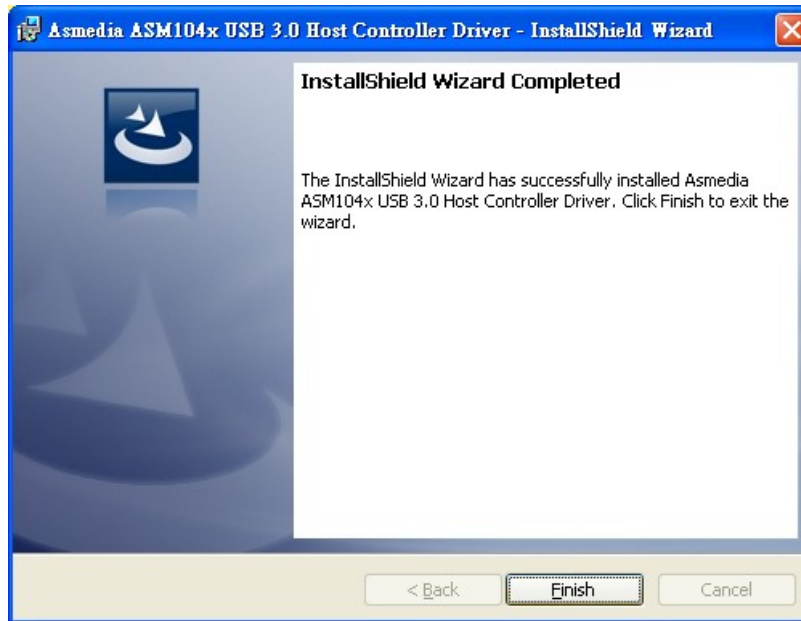


Figure 6-26: USB 3.0 Driver Update Complete

6.8 Intel® AMT Driver and Application

6.8.1 Intel® Management Engine Components Installation

The package of the Intel® ME components includes

- Intel® Management Engine Interface (Intel® ME Interface)
- Serial Over LAN (SOL) driver
- Local Manageability Service (LMS)
- User Notification Service (UNS)
- Intel® ME WMI provider
- Intel® Active Management Technology NAC Posture Plug-in
- Intel Control Center
- Intel® Management and Security Status Application

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

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

Step 2: Click “iAMT”.

Step 3: Double click the setup file in the **ME_SW_IS** folder.

Step 4: Locate the setup file and double click it.

Step 5: When the setup files are completely extracted the **Welcome Screen** in **Figure 6-27** appears.

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

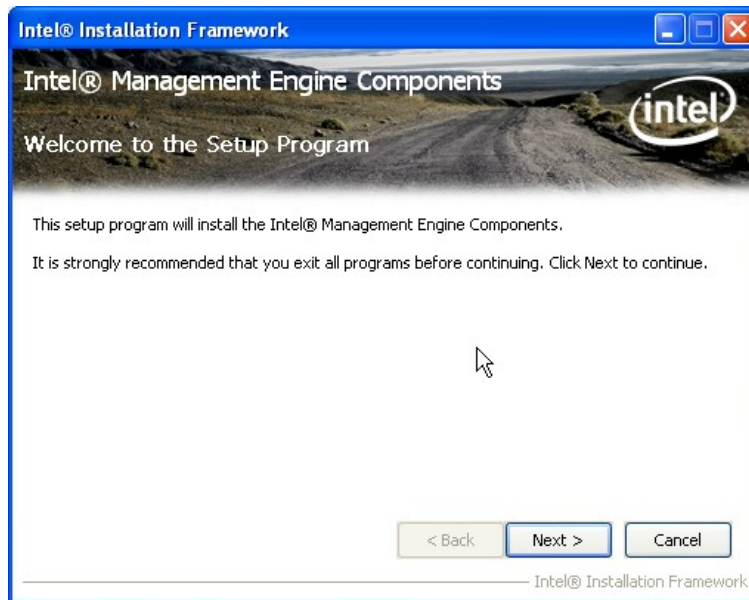


Figure 6-27: Intel® ME Driver Welcome Screen

Step 7: The license agreement in **Figure 6-28** appears.

Step 8: Read the **License Agreement**.

Step 9: Click **Yes** to continue.

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Figure 6-28: Intel® ME Driver License Agreement

Step 10: The Read Me file in Figure 6-29 appears.

Step 11: Click **Next** to continue.

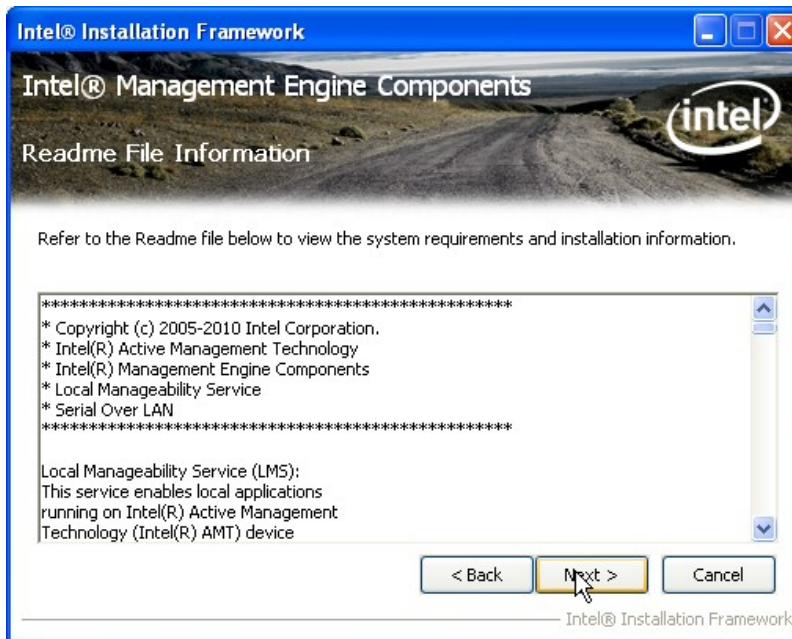


Figure 6-29: Intel® ME Driver Read Me File

Step 12: Setup Operations are performed as shown in Figure 6-30.

Step 13: Once the Setup Operations are complete, click **Next** to continue.

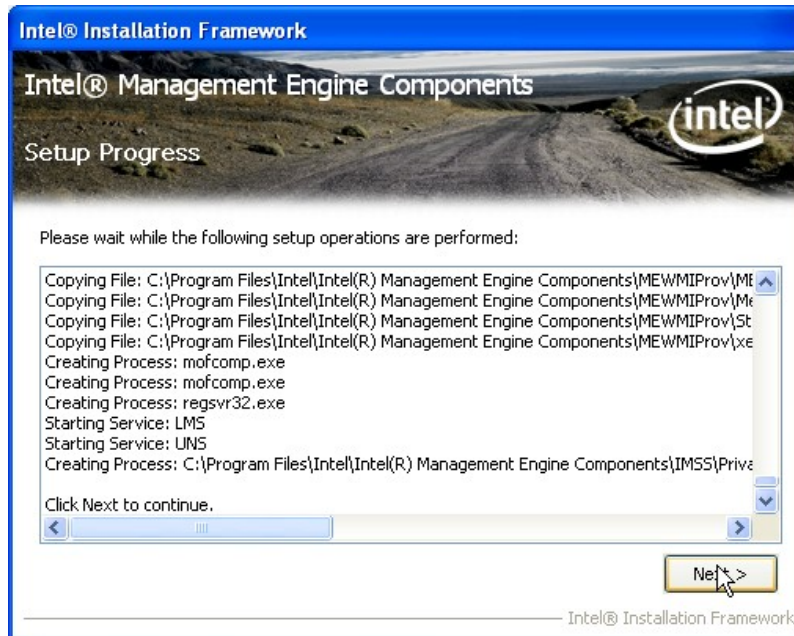


Figure 6-30: Intel® ME Driver Setup Operations

Step 14: The **Finish** screen in Figure 6-31 appears.

Step 15: Select “**Yes, I want to restart this computer now**” and click **Finish**.

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Figure 6-31: Intel® ME Driver Installation Finish Screen

6.8.2 Intel® IT Director Application Installation

Intel® IT Director is an application that helps address key IT security, data protection and network health concerns of small businesses. To install the Intel® IT Director application, please do the following.



NOTE:

For Windows XP system, please make sure to install the .net Framework 3.5 before installing the Intel® IT Director application. The .net Framework 3.5 setup file is located at \7-iAMT, iTPM Driver & Utility\Microsoft .NET Framework 3.5 of the driver CD.

-
- Step 1:** Access the driver list. (See **Section 6.2**)
 - Step 2:** Click “iAMT”.
 - Step 3:** Double click the setup file in the **Intel_ IT Director** folder.
 - Step 4:** Locate the **ITDirector_Setup.exe** setup file and double click it.

Step 5: The **Welcome Screen** in **Figure 6-32** appears.

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



Figure 6-32: IT Director Welcome Screen

Step 7: The license agreement in **Figure 6-33** appears.

Step 8: Accept the agreement by selecting “I accept the terms in the license agreement”.

Step 9: Click **Next** to continue.

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Figure 6-33: IT Director License Agreement

Step 10: Continue to choose the installation type and the destination folder for the IT Director application.

Step 11: The **Ready to Install the Program** screen in **Figure 6-34** appears.

Step 12: Click **Install** to proceed with the installation.

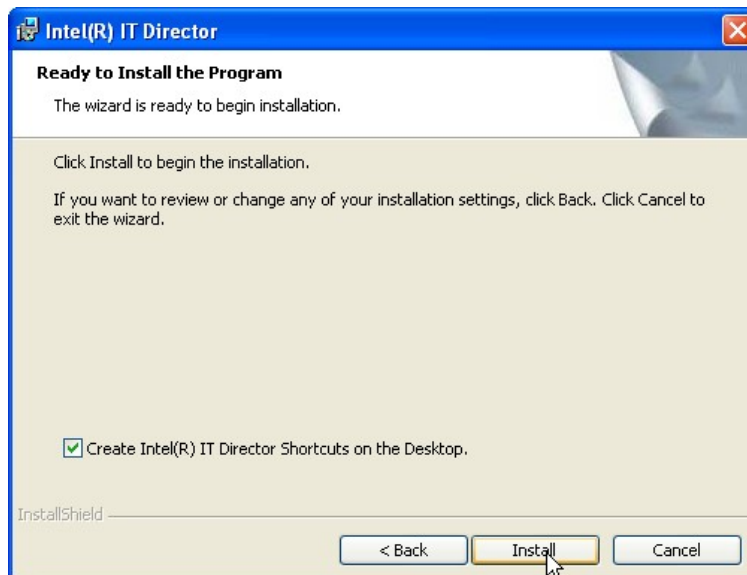


Figure 6-34: IT Director Installation

Step 13: The program begins to install.

Step 14: When the driver installation is complete, the screen in **Figure 6-35** appears.

Step 15: Click **Next** to configure the system for remote monitoring or Cancel to exit the program and configure the system later.



Figure 6-35: IT Director Installation Complete

Step 16: The Welcome Screen of the IT Director Configuration Tool in **Figure 6-36** appears.

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Figure 6-36: IT Director Configuration Tool Welcome Screen

**NOTE:**

It is recommended to open the Intel® IT Director Getting Started Guide shown in **Figure 6-36** to fully understand the configuration process.

Step 17: Select whether this is the first computer you are creating a password for IT Director. (**Figure 6-37**).

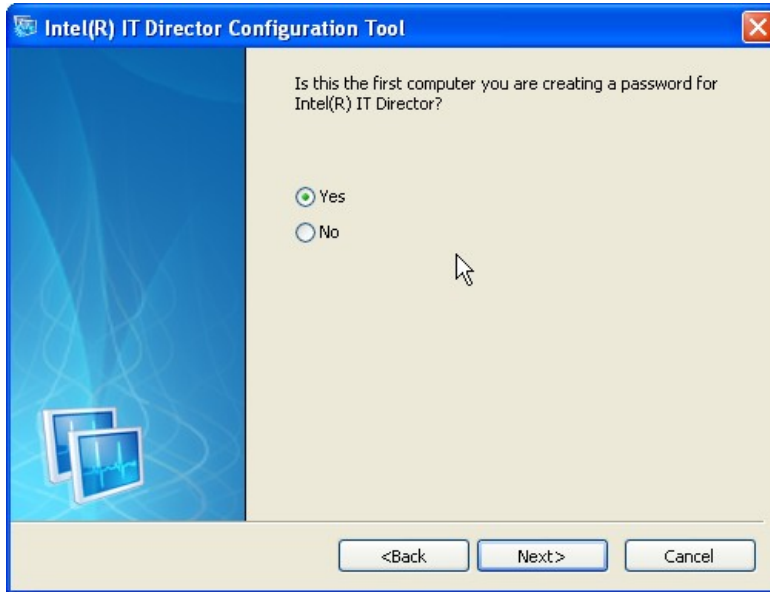


Figure 6-37: IT Director – Creating Password

Step 18: Follow the instructions to create a new password or enter the password created previously.

Step 19: When the configuration is complete, the screen in **Figure 6-38** appears.

Step 20: Click **Finish** to exit.



Figure 6-38: IT Director Configuration Complete



NOTE:

If the network connection doesn't work after installing the Intel® IT Director in a Windows Vista system, please install the network adapter driver. The driver is located at \7-iAMT, iTPM Driver & Utility\AMT Hot Fix\V1.0C0206 of the driver CD. Follow the instruction in the Intel Website Message PDF file in the same folder to install the driver.

Appendix

A

BIOS Options

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

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System Date [xx/xx/xx]	77
System Time [xx:xx:xx]	77
ACPI Sleep State [S1 (CPU Stop Clock)]	79
Wake system with Fixed Time [Disabled]	80
Security Device Support [Disable]	81
Hyper-threading [Enabled]	83
Intel Virtualization Technology [Disabled]	83
SATA Controller(s) [Enabled]	84
SATA Mode Selection [IDE]	84
Intel AMT [Enabled]	86
Un-Configure ME [Disabled]	86
USB Devices	87
Legacy USB Support [Enabled]	87
Serial Port [Enabled]	89
Change Settings [Auto]	89
Serial Port [Enabled]	90
Change Settings [Auto]	90
Serial Port [Enabled]	91
Change Settings [Auto]	91
Serial Port [Enabled]	92
Change Settings [Auto]	92
Device Mode [RS422/485]	92
Serial Port [Enabled]	93
Change Settings [Auto]	93
Serial Port [Enabled]	94
Change Settings [Auto]	94
Parallel Port [Enabled]	95
Change Settings [Auto]	95
Device Mode [Printer Mode]	96
PC Health Status	97
CPU_FAN1/SYS_FAN1 Smart Fan Control [Auto Duty-Cycle Mode]	98
CPU Temperature n	98

System Temperature n	99
Console Redirection [Disabled]	100
Terminal Type [ANSI].....	100
Bits per second [115200].....	100
Data Bits [8]	101
Parity [None].....	101
Stop Bits [1].....	101
Auto Recovery Function [Disabled].....	102
Restore AC Power Loss [Last State]	104
Power Saving Function [Disabled].....	104
PCIe Speed [Gen1].....	105
Azalia (HD Audio) [Enabled]	106
Azalia internal HDMI Codec [Enabled].....	106
Primary Display [Auto]	108
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PEG0 – Gen X [Gen1].....	110
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Enable PEG [Enabled]	110
Detect Non-Compliance Device [Enabled]	111
Bootup NumLock State [On].....	112
Quiet Boot [Enabled]	113
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Launch PXE OpROM [Disabled]	113
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Discard Changes and Reset	115
Restore Defaults	115
Save as User Defaults	115
Restore User Defaults	115

Appendix

B

Terminology

AC '97	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	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.
BIOS	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
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male D-sub 9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.
DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.

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DIMM	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.
DIO	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.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
EIDE	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.
EIST	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.
FSB	The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.
GbE	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
HDD	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
ICH	The Input/Output Control Hub (ICH) is an Intel® Southbridge chipset.
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.
LCD	Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.

LVDS	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
RAM	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.
SATA	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.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	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.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

C

Digital I/O Interface

C.1 Introduction

The DIO connector on the IMBA-C2060 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.

C.2 DIO Connector Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 6-1: Digital I/O Connector Pinouts

C.3 Assembly Language Samples

C.3.1 Enable the DIO Input Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O input functions is listed below.

MOV	AX, 6F08H	Sets the digital port as input
INT	15H	Initiates the INT 15H BIOS call

C.3.2 Enable the DIO Output Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O output functions is listed below.

MOV	AX, 6F09H	Sets the digital port as output
MOV	BL, 09H	
INT	15H	Initiates the INT 15H BIOS call

Appendix

D

Watchdog Timer

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**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 D-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.

**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

E

Intel® Matrix Storage Manager

E.1 Introduction

The IMBA-C2060 can provide data protection for serial ATA (SATA) disks via the Intel® Matrix Storage Manager using one of three fault-tolerant RAID levels: RAID 1, 5 or 10. When using two hard drives, matrix RAID allows RAID 0 and RAID 1 functions to be combined, where critical files can be stored on RAID 1, and RAID 0 can be used for non-critical items such as software. RAID 5 and RAID 0 can be combined to provide higher performance, capacity, and fault tolerance.



CAUTION!

A configured RAID volume (which may consist of multiple hard drives) appears to an operating system as a contingent storage space. The operating system will not be able to distinguish the physical disk drives contained in a RAID configuration.

E.1.1 Precautions

One key benefit a RAID configuration brings is that a single hard drive can fail within a RAID array without damaging data. With RAID1 array, a failed drive can be replaced and the RAID configuration restored.



WARNING!

Irrecoverable data loss occurs if a working drive is removed when trying to remove a failed drive. It is strongly recommended to mark the physical connections of all SATA disk drives. Drive locations can be identified by attaching stickers to the drive bays. If a drive member of a RAID array should fail, the failed drive can then be correctly identified.

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CAUTION!

Do not accidentally disconnect the SATA drive cables. Carefully route the cables within the chassis to avoid system down time.

E.2 Features and Benefits

- Supports RAID levels 0, 1, 5 and 10
- Supports connectivity to two or more disk drives
- Supported Operating Systems include: Windows XP, Windows Server 2003 and Windows Vista

E.3 Accessing the Intel® Matrix Storage Manager

To access the Intel® Matrix Storage Manager, please follow the steps below.

Step 1: Connect SATA drives to the system. Connect two or more SATA drives to the system. Make sure the drives have the same capacity, are the same type and have the same speed.



NOTE:

Make sure the SATA drives are EXACTLY the same when they are configured in a RAID configuration. If they are not the same size, disk drive capacity is sacrificed and overall performance affected.

Step 2: Enable SATA drives in BIOS. Start the computer and access the BIOS setup program. Enable RAID support for all SATA devices. Refer to the applicable BIOS configuration section in this user manual.

Step 3: Configure “Option ROM Messages” BIOS option to Force BIOS. This is to allow the “Press <CTRL+I> to enter Configuration Utility.....” message to

appear during the POST. Refer to the applicable BIOS configuration section in this user manual.

- Step 4: Save and Exit BIOS.** After the SATA support option is enabled, save and exit the BIOS.
- Step 5: Reboot the system.** Reboot the system after saving and exiting the BIOS.
- Step 6: Press Ctrl+I.** during the system boot process, press Ctrl+I when prompted to enter the RAID configuration software.
- Step 7: Configure the RAID settings.** Use the Intel® Matrix Storage Manager to configure the RAID array. Brief descriptions of configuration options are given below.

E.4 Installing the Operating System to the RAID Array

To install the operating system to the RAID array some extra steps are necessary during the installation process.

- Step 1: Prepare a RAID driver floppy disk on another computer.** If installing on the RAID array a RAID driver floppy disk must be made. The RAID driver floppy disk utility is on the CD in the “5-SATA/Floppy Configuration Utility” folder. The floppy disk will be formatted and the drivers installed.
- Step 2: Restart the system with a floppy drive attached.** Attach a normal floppy drive or USB floppy drive to the system.
- Step 3: Press F6 when prompted.** During the installation process, Windows OS prompts the user to press F6 to install the RAID drivers. Press F6 and choose from the drivers on the floppy disk.
- Step 4: Install the OS.** Continue with OS installation as usual.

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.

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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

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	○	○	○	○	○	○
显示	○	○	○	○	○	○
印刷电路板	○	○	○	○	○	○
金属螺帽	○	○	○	○	○	○
电缆组装	○	○	○	○	○	○
风扇组装	○	○	○	○	○	○
电力供应组装	○	○	○	○	○	○
电池	○	○	○	○	○	○

○: 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。