

**MODEL:
IMBA-Q770**

**ATX Motherboard for 22nm LGA 1155 Intel® Core™ i7/i5/i3
CPU, Intel® Q77 Chipset, DDR3, Dual HDMI/DVI-I, Dual Intel®
PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS**

User Manual

Revision

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23 April, 2014	1.03	Updated Section 2.4: Optional Items
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13 August, 2012	1.00	Initial release

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Chapter

1

Introduction

1.1 Introduction

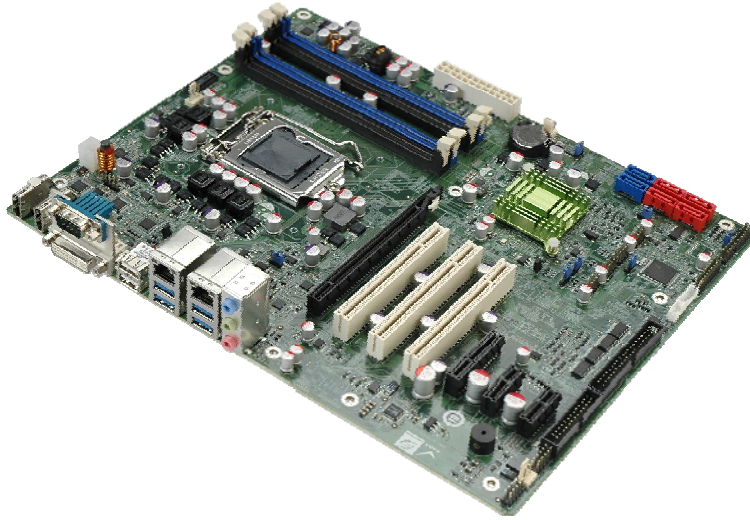


Figure 1-1: IMBA-Q770

The IMBA-Q770 is an ATX motherboard. It accepts a Socket LGA1155 Intel® Core™ i7/i5/i3 processor and supports four 240-pin 1600/1333 MHz DDR3 DIMM modules up to 32 GB. The IMBA-Q770 includes dual HDMI and DVI-I ports. Expansion and I/O include three PCI slots, one PCIe x16 slot, one PCIe x4 slot, two PCIe x1 slots, four USB 3.0 by rear panel, two USB 2.0 by rear panel, eight USB 2.0 by pin headers, two SATA 6Gb/s connectors, four SATA 3Gb/s connectors and six COM ports.

1.2 Features

Some of the IMBA-Q770 motherboard features are listed below:

- ATX form factor
- LGA1155 CPU socket
- Intel® Q77 chipset
- Dual-channel DDR3 DIMMs support up to 32 GB
- Dual Intel® PCIe GbE (LAN2 with Intel® AMT 8.0 support)
- Three independent displays via dual HDMI and DVI-I connectors
- Supports USB 3.0 and SATA 6Gb/s
- Supports PCI Express Generation 3.0 at 8 GT/s I/O bandwidth
- One PCIe x16 slot
- One PCIe x4 slot

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- Two PCIe x1 slots
- Three PCI card expansion slots
- One external RS-232 serial port
- Four internal RS-232 serial port connectors
- One internal RS-422/485 serial port connector
- High Definition Audio
- RoHS compliant

1.3 Connectors

The connectors on the IMBA-Q770 are shown in the figure below.

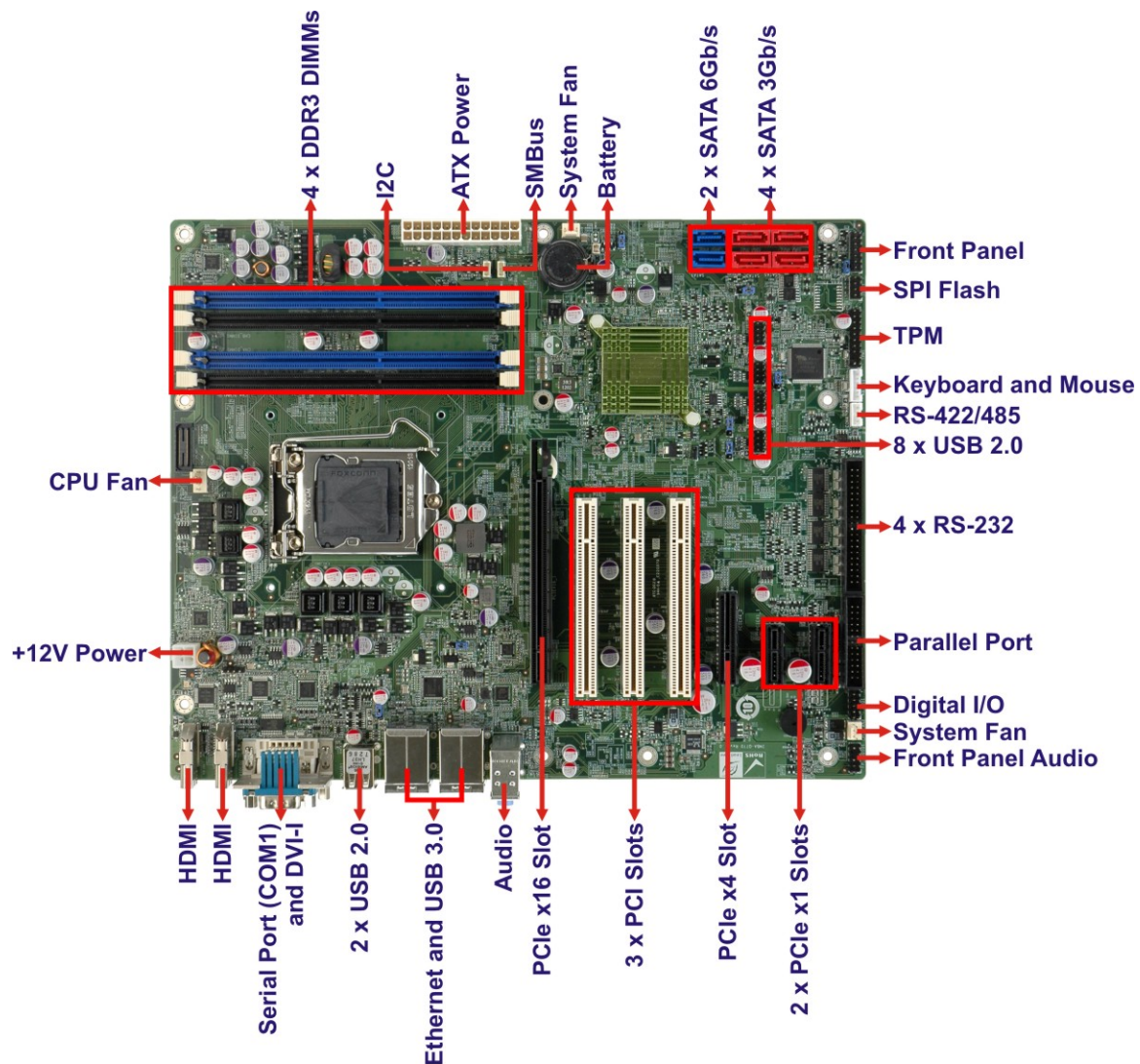


Figure 1-2: Connectors

1.4 Dimensions

The main dimensions of the IMBA-Q770 are shown in the diagram below.

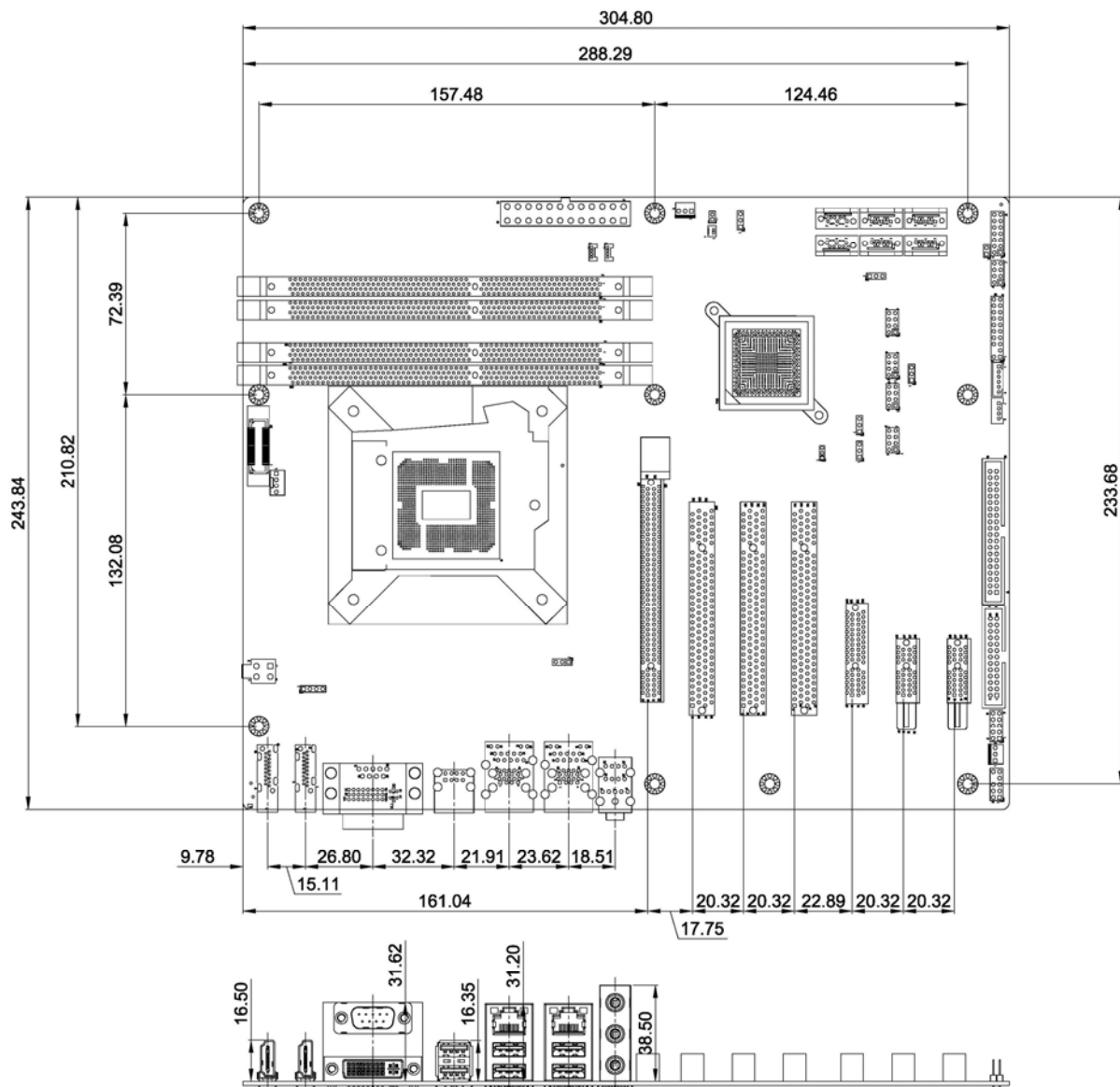


Figure 1-3: IMBA-Q770 Dimensions (mm)

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1.5 Data Flow

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

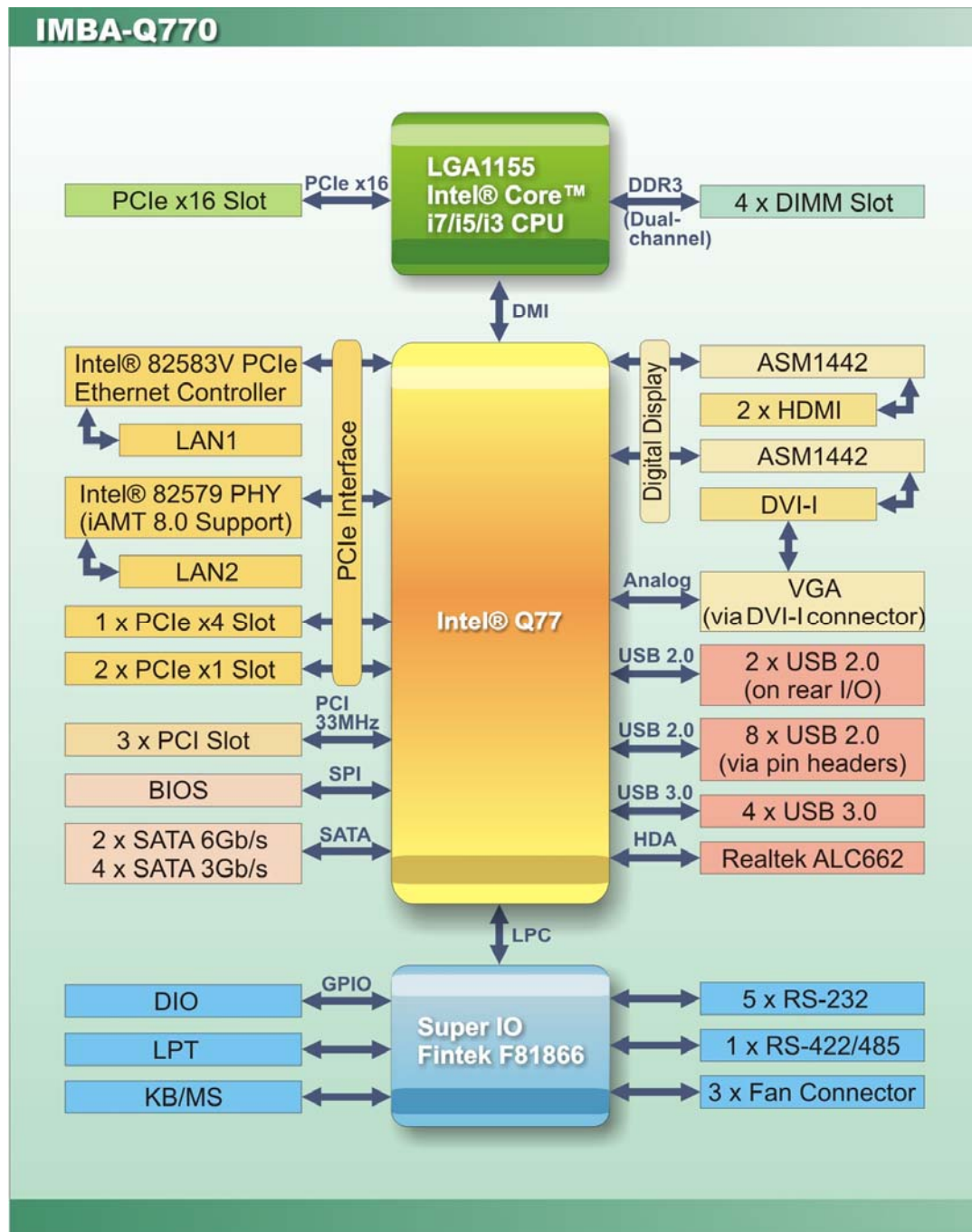


Figure 1-4: Data Flow Diagram



1.6 Technical Specifications

The IMBA-Q770 technical specifications are listed below.

Specification/Model	IMBA-Q770
Form Factor	ATX
CPU Supported	LGA1155 Intel® Core™ i7/i5/i3 quad/dual core CPU
Chipset	Intel® Q77
Memory	Four 240-pin 1600/1333 MHz dual-channel unbuffered DDR3 SDRAM DIMMs support (system max. 32 GB)
Graphics Engine	Intel® HD Graphics Gen 7 Supports DirectX 11 and OpenCL 1.1 Full MPEG-2, VC1, AVC Decode
Ethernet Controllers	LAN1: Intel® 82583V PCIe Ethernet controller LAN2: Intel® 82579L PHY with Intel® AMT 8.0 support
Audio	Realtek ALC662 HD Audio codec (line-in, line-out, mic-in)
BIOS	UEFI BIOS
Super I/O Controller	Fintek F81866
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Expansion	
PCI	Three PCI slots
PCIe	One PCIe x16 slot One PCIe x4 slot Two PCIe x1 slots
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)
Digital I/O	8-bit, 4-bit input/4-bit output
Display Ports	Two HDMI integrated in the Intel® Q77 One DVI-I integrated in the Intel® Q77



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Specification/Model	IMBA-Q770
Ethernet	Two RJ-45 GbE ports (LAN2 with Intel® AMT 8.0 support)
Fan Connectors	One 4-pin CPU fan connector Two 3-pin system fan connectors
Front Panel	One 14-pin header (power LED, HDD LED, speaker, power button, reset button)
I2C	One 4-pin wafer connector
Keyboard/Mouse	One internal keyboard and mouse connector via 6-pin wafer connector
Parallel Port	One parallel port via internal 26-pin box header
Serial ATA	Two SATA 6Gb/s connectors (RAID 0/1/5/10 support) Four SATA 3Gb/s connectors (RAID 0/1/5/10 support)
Serial Ports	One external RS-232 serial port (COM1) Four RS-232 via internal box headers One RS-422/485 via internal 4-pin wafer connector
SMBus	One 4-pin wafer connector
TPM	One via 20-pin header
USB Ports	Four external USB 3.0 ports on rear IO Two external USB 2.0 ports on rear IO Eight internal USB 2.0 ports by four pin headers
Environmental and Power Specifications	
Power Supply	ATX power supported
Power Consumption	3.3V@1.39A, 5V@4.63A, Vcore@2.25A, 12V@0.47A, 5VSB@0.14A (2.4 GHz Intel® Core™ i3 CPU with four 2 GB 1333 MHz DDR3 memory)
Operating Temperature	-10°C ~ 60°C
Storage Temperature	-20°C ~ 70°C
Humidity	5% ~ 95% (non-condensing)
Physical Specifications	
Dimensions	244 mm x 305 mm

Specification/Model	IMBA-Q770
Weight GW/NW	1200 g / 700 g

Table 1-1: IMBA-Q770 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-Q770 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-Q770 was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The IMBA-Q770 is shipped with the following components:

Quantity	Item and Part Number	Image
1	IMBA-Q770 motherboard	
1	DVI-I to VGA adapter (P/N: 33Z00-000031-RS)	
4	SATA cable (P/N: 32801-000703-200-RS)	
1	I/O shielding	
1	Mini jumper pack	
1	One Key Recovery CD	








Quantity	Item and Part Number	Image
1	Utility CD	
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-port USB cable with bracket (P/N: 19800-003100-300-RS)	
SATA power cable (P/N: 32102-000100-200-RS)	
PS/2 KB/MS Y-cable with bracket (220 mm) (P/N: 19800-000075-RS)	
LGA1155/LGA1156 cooler kit (1U chassis compatible, 73W) (P/N: CF-1156A-RS-R11)	
LGA1155/LGA1156 cooler kit (1U chassis compatible, 45W) (P/N: CF-1156C-RS)	

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Item and Part Number	Image
LGA1155/LGA1156 cooler kit (1U chassis compatible, 65W) (P/N: CF-1156D-RS)	
LGA1155/LGA1156 cooler kit (95W) (P/N: CF-1156E-R11)	
RS-422/485 cable (200 mm) (P/N: 32205-003800-300-RS)	
Parallel port cable (P/N: 19800-000049-RS)	
Quad-port RS-232 cable with bracket (400/400/400/400 mm) (P/N: 32205-001203-200-RS)	
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-Q770 ATX Motherboard

3.1 Peripheral Interface Connectors

This chapter details all the jumpers and connectors.

3.1.1 IMBA-Q770 Layout

The figures below show all the connectors and jumpers.

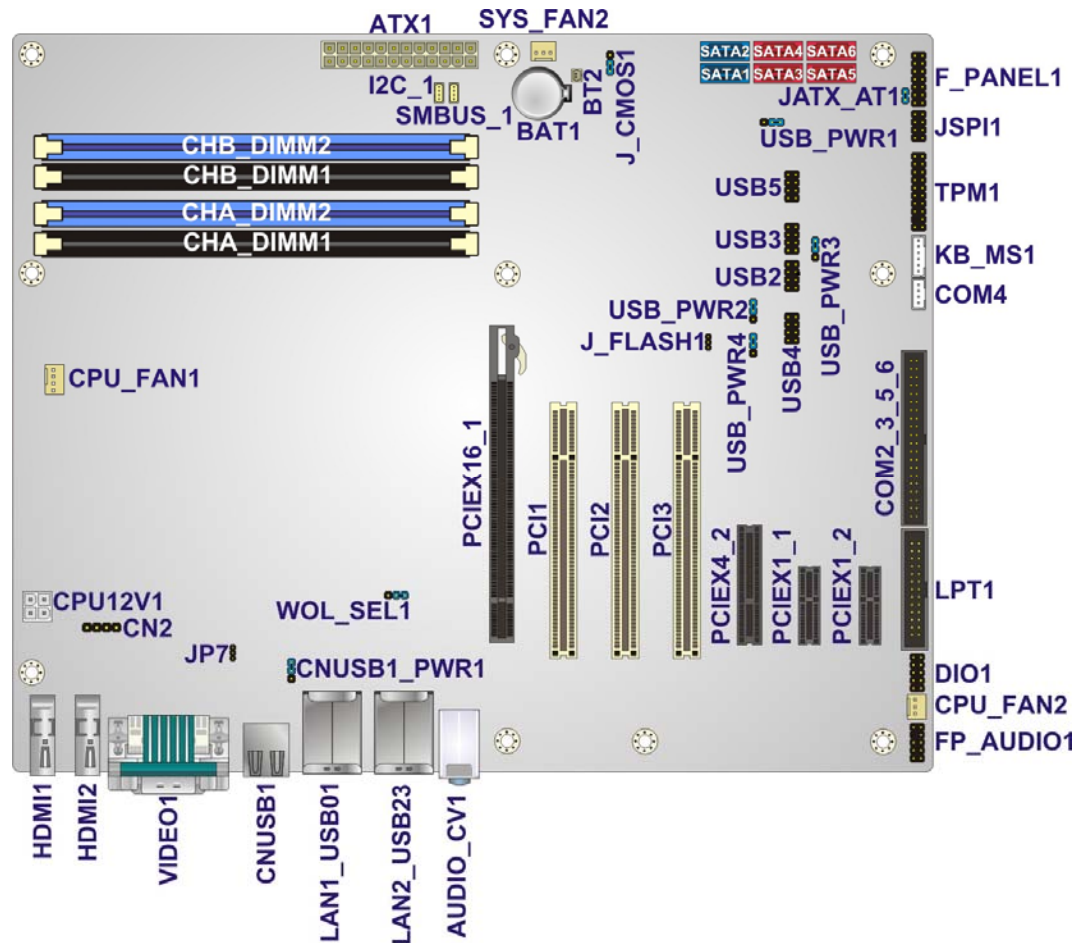


Figure 3-1: Connectors and Jumpers

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
+12V ATX power supply connector	4-pin Molex	CPU12V1
ATX Power connector	24-pin ATX	ATX1
Battery connector	2-pin wafer	BT2
Battery holder	CR2032 battery holder	BAT1
DDR3 DIMM slots	DDR3 DIMM slot	CHA_DIMM1 CHA_DIMM2 CHB_DIMM1 CHB_DIMM2
Digital I/O connector	10-pin header	DIO1
Fan connector (CPU)	4-pin wafer	CPU_FAN1
Fan connectors (system)	3-pin wafer	CPU_FAN2, SYS_FAN2
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/mouse connector	6-pin wafer	KB_MS1
Parallel port connector	26-pin box header	LPT1
PCI slots	PCI slots	PCI1, PCI2, PCI3
PCIe x1 slots	PCIe x1 slot	PCIEX1_1, PCIEX1_2
PCIe x4 slot	PCIe x4 slot	PCIEX4_2
PCIe x16 slot	PCIe x16 slot	PCIEX16_1
SATA 3Gb/s drive connector	7-pin SATA connector	SATA3, SATA4, SATA5, SATA6
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 ports, RS-232	40-pin box header	COM2_3_5_6
SMBus connector	4-pin wafer	SMBUS_1
SPI ROM connector	8-pin header	JSPI1
TPM connector	20-pin header	TPM1
USB 2.0 connectors	8-pin header	USB2, USB3, USB4, USB5

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 3.0 connectors	RJ-45, USB 3.0	LAN1_USB01 LAN2_USB23
HDMI connectors	HDMI	HDMI1, HDMI2
RS-232 serial port (COM1) and DVI-I connector	DB-9, DVI-I	VIDEO1
USB 2.0 connectors	USB 2.0	CNUSB1

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the IMBA-Q770.

3.2.1 +12V Power Connector

CN Label: CPU12V1
CN Type: 4-pin Molex
CN Location: See Figure 3-2

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

The connector supports the +12V power supply.

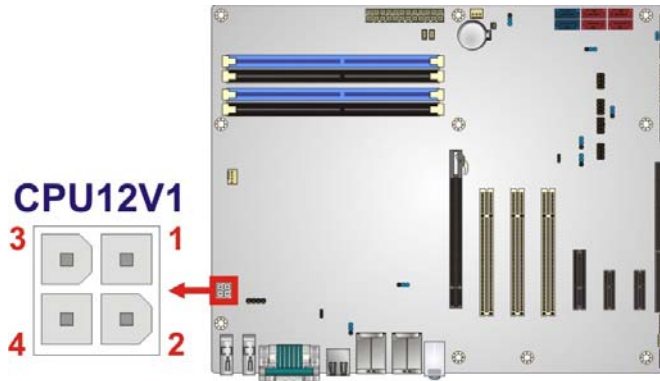


Figure 3-2: +12V Power Connector Location

Pin	Description
1	GND
2	GND
3	VREG_12V
4	VREG_12V

Table 3-3: +12V Power Connector Pinouts

3.2.2 ATX Power Connector

CN Label: **ATX1**

CN Type: 24-pin ATX

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

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

The ATX power connector connects to an ATX power supply.

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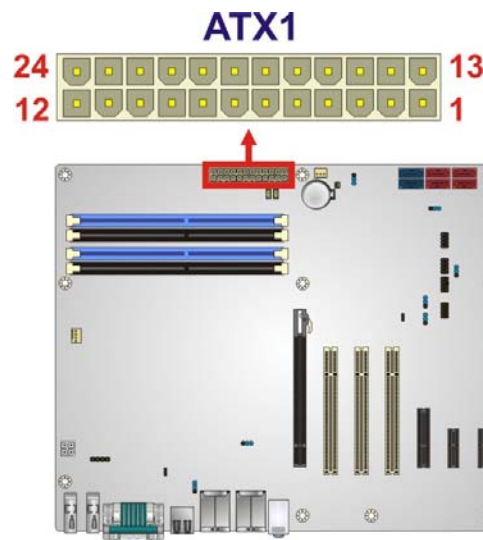


Figure 3-3: ATX Power Connector Pinout Location

Pin	Description	Pin	Description
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	-IO_PSON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWRGD_PS	20	NC
9	V_5P0_A	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

Table 3-4: ATX Power Connector Pinouts

3.2.3 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 3-4
CN Pinouts:	See Table 3-5

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

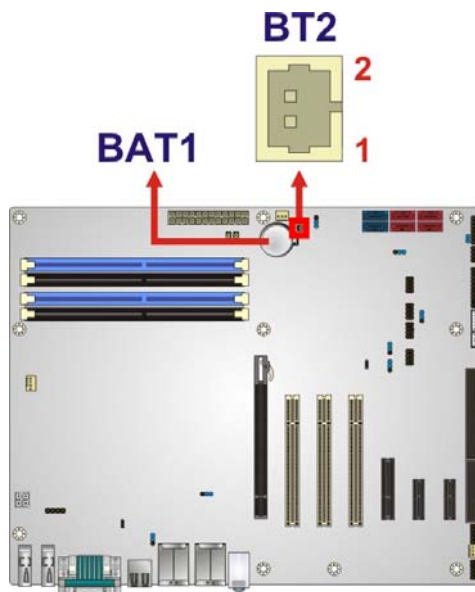


Figure 3-4: Battery Connector Locations

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Pin	Description
1	VBATT
2	GND

Table 3-5: Battery Connector (BT2) 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.

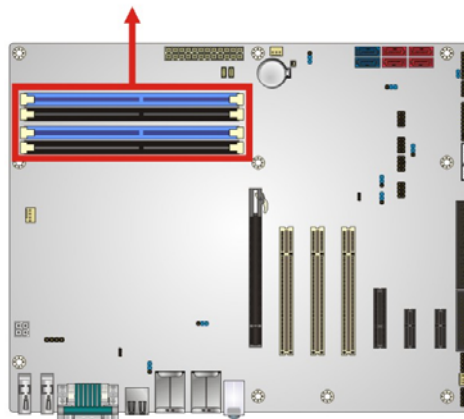


Figure 3-5: DDR3 DIMM Slot Locations

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.

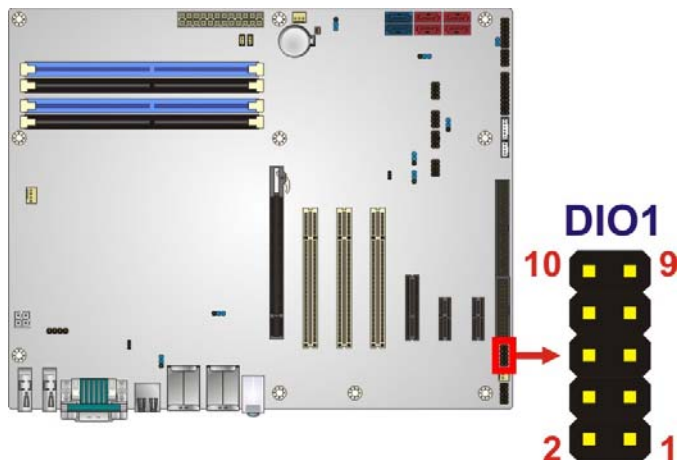


Figure 3-6: Digital I/O Connector Location

Pin	Description	Pin	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.

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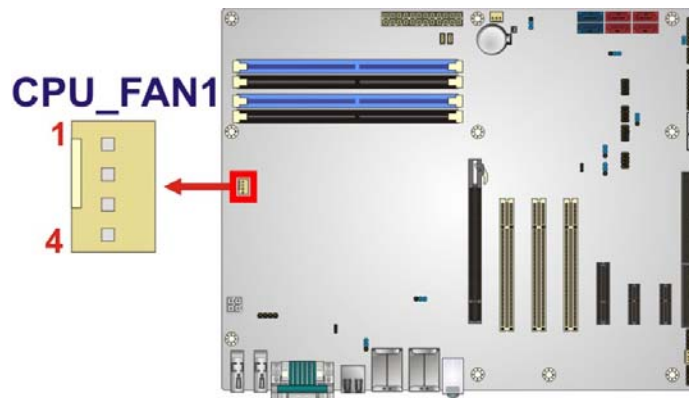


Figure 3-7: CPU Fan Connector Location

Pin	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: CPU_FAN2, SYS_FAN2

CN Type: 3-pin wafer

CN Location: See Figure 3-8

CN Pinouts: See Table 3-8

Each fan connector attaches to a cooling fan.

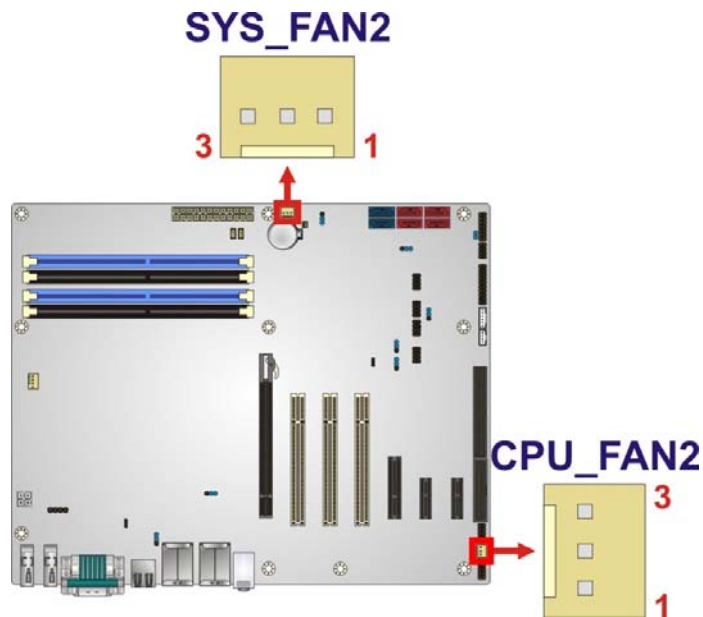


Figure 3-8: System Fan Connector Locations

Pin	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.

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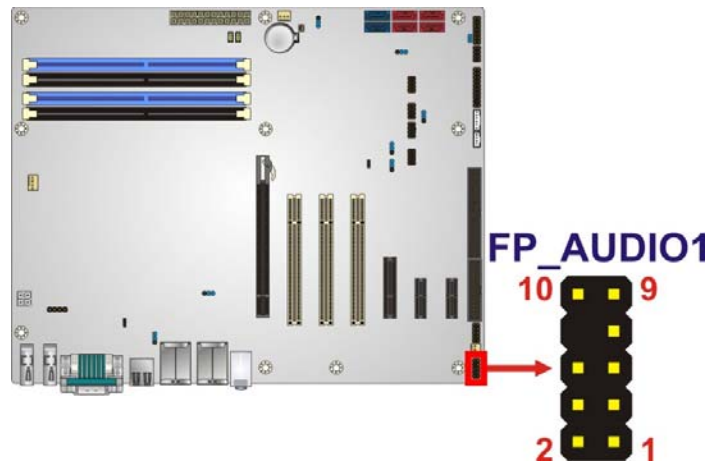


Figure 3-9: Front Panel Audio Connector Location

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.

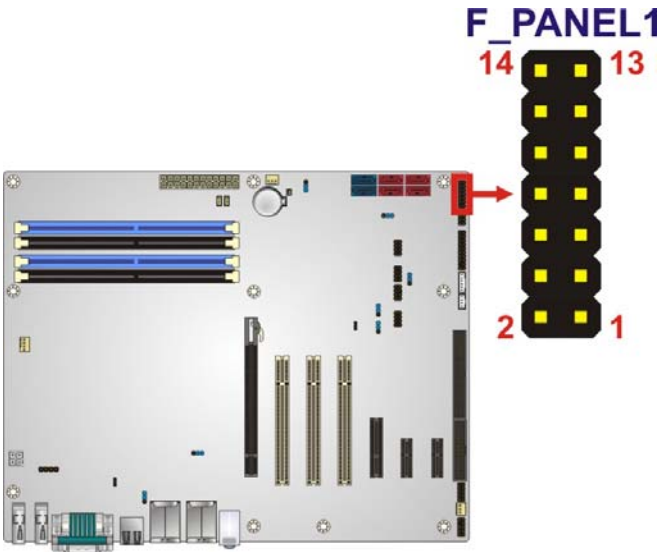


Figure 3-10: Front Panel Connector Location

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.

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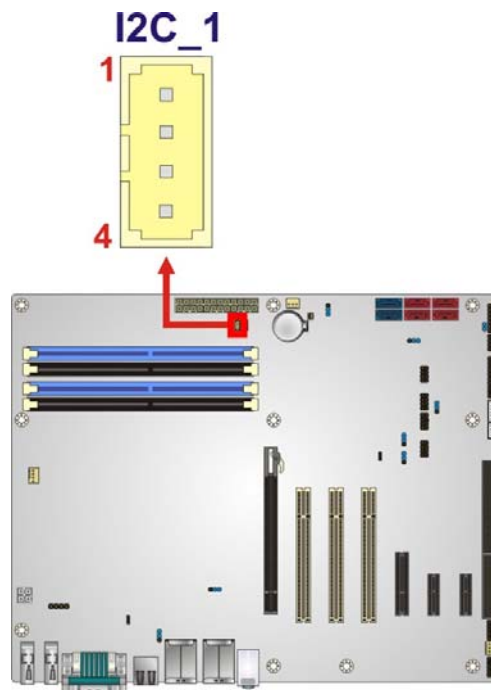


Figure 3-11: I2C Connector Location

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.

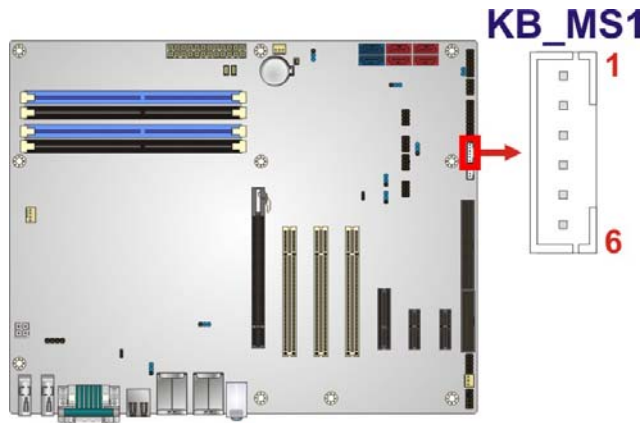


Figure 3-12: Keyboard/Mouse Connector Location

Pin	Description
1	VCC5_KBMS
2	MSDATA
3	MSCLK
4	KBDATA
5	KBCLK
6	KBGND

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.

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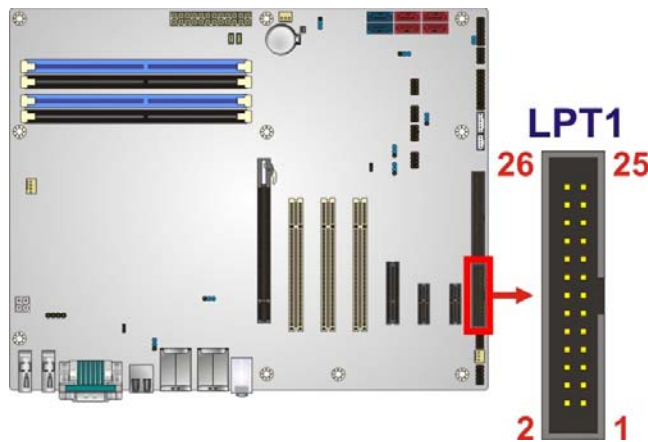


Figure 3-13: Parallel Port Connector Location

Pin	Description	Pin	Description
1	SIO_STB#_R	2	SIO_AFD#_R
3	SIO_PD0_R	4	SIO_ERR#
5	SIO_PD1_R	6	SIO_INIT#_R
7	SIO_PD2_R	8	SIO_SLIN#_R
9	SIO_PD3_R	10	GND
11	SIO_PD4_R	12	GND
13	SIO_PD5_R	14	GND
15	SIO_PD6_R	16	GND
17	SIO_PD7_R	18	GND
19	SIO_ACK#	20	GND
21	SIO_BUSY	22	GND
23	SIO_PE	24	GND
25	SIO_SLCT	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

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

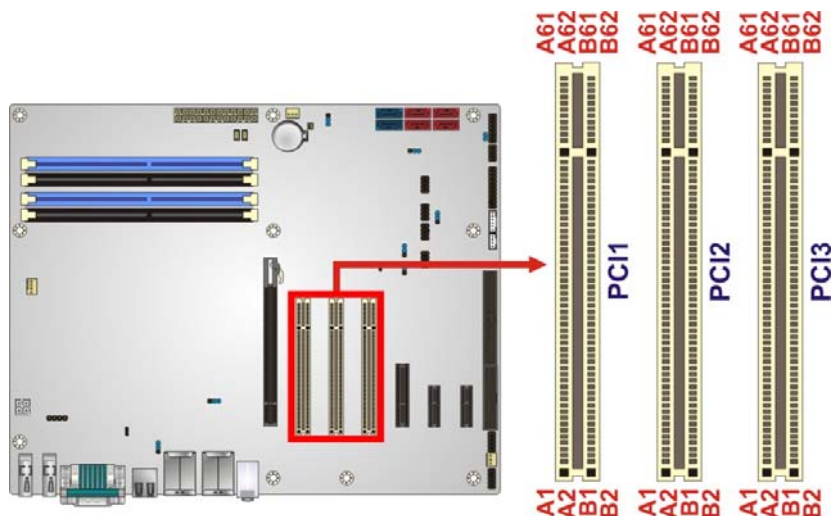


Figure 3-14: PCI Slot Locations

3.2.14 PCIe x1 Slots

CN Label: PCIEX1_1, PCIEX1_2

CN Type: PCIe x1 slot

CN Location: See **Figure 3-15**

The PCIe x1 slots are for PCIe x1 expansion cards.

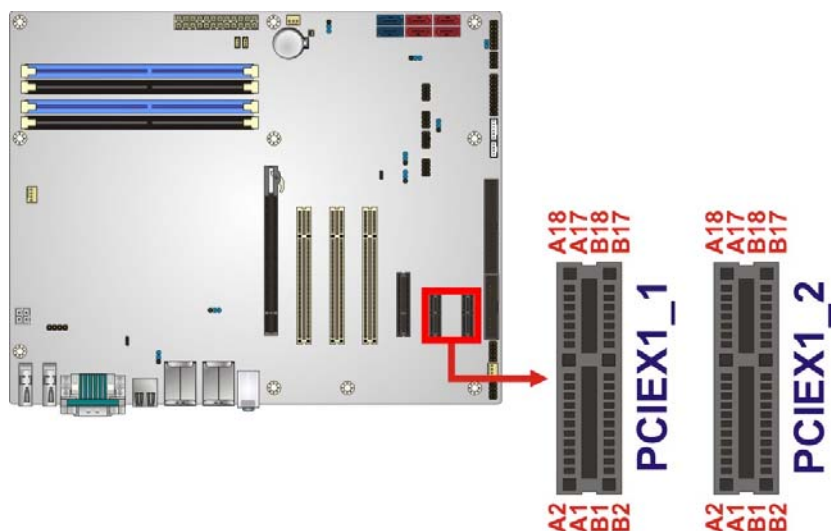


Figure 3-15: PCIe x1 Slot Locations

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3.2.15 PCI Express x4 Slot

CN Label: PCIEX4_2
CN Type: PCIe x4 slot
CN Location: See **Figure 3-16**

The PCIe x4 expansion card slot is for PCIe x4 expansion card.

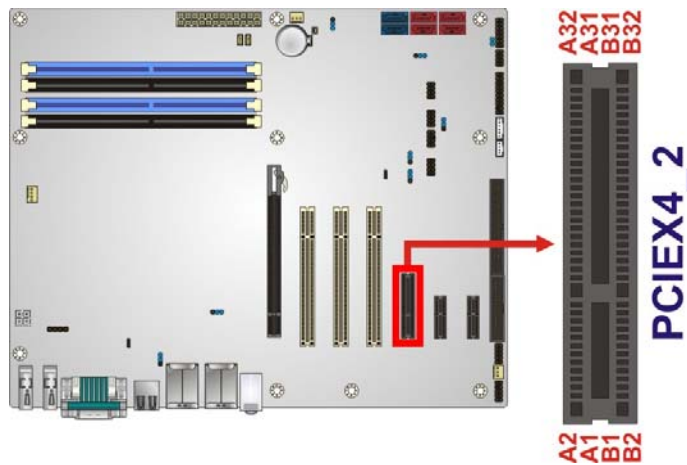


Figure 3-16: PCIe x4 Slot Location

3.2.16 PCI Express x16 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 expansion card.

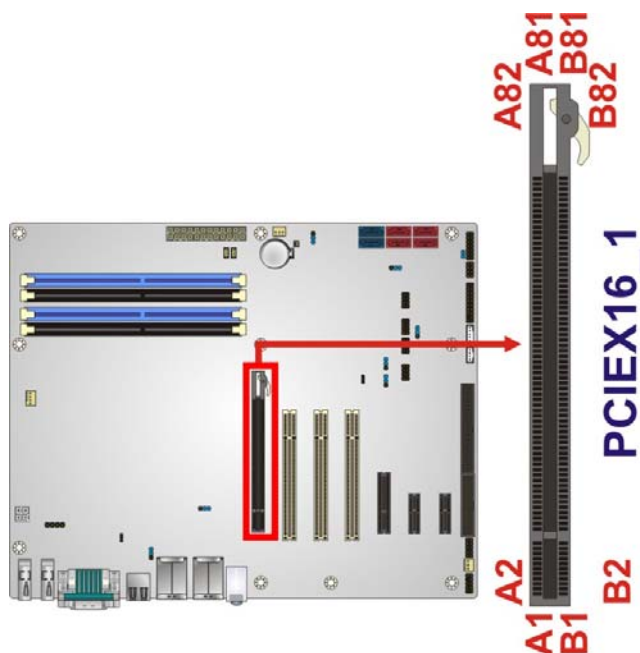


Figure 3-17: PCIe x16 Slot Location

3.2.17 SATA 3Gb/s Drive Connectors

CN Label: SATA3, SATA4, SATA5, SATA6

CN Type: 7-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.

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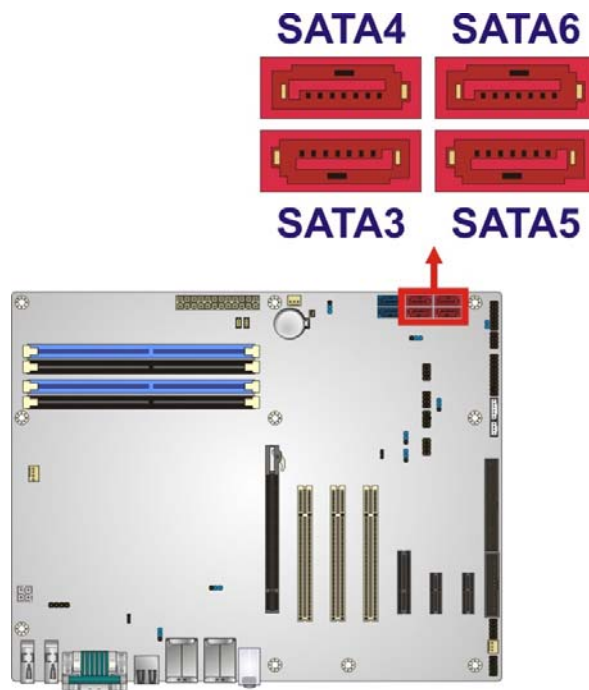


Figure 3-18: SATA 3Gb/s Drive Connector Locations

Pin	Description	Pin	Description
1	GND	5	RXN
2	TXP	6	RXP
3	TXN	7	GND
4	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 connector
- 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.

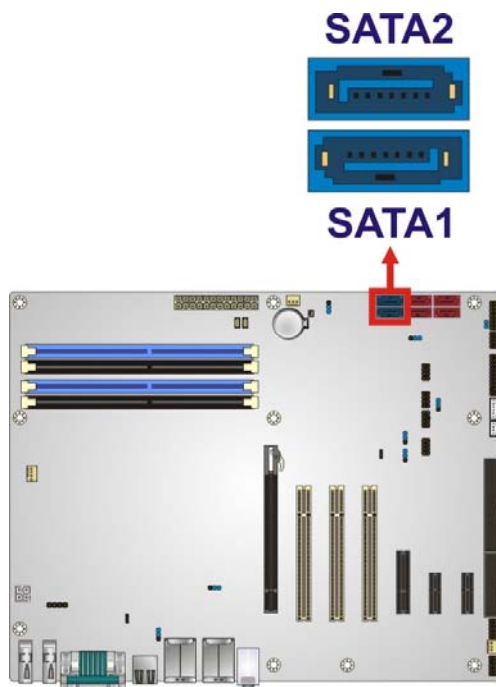


Figure 3-19: SATA 6Gb/s Drive Connector Locations

Pin	Description	Pin	Description
1	GND	5	RXN
2	TXP	6	RXP
3	TXN	7	GND
4	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**

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

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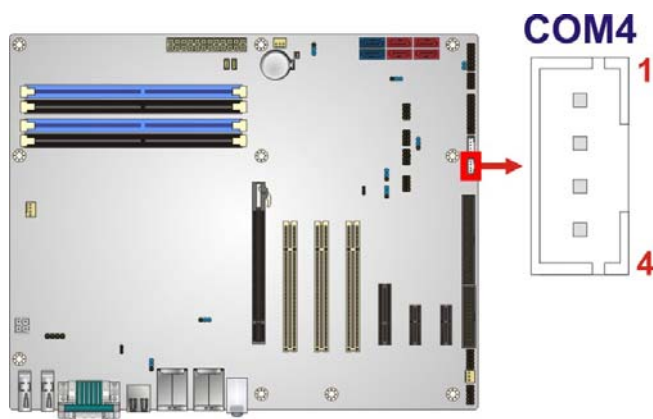


Figure 3-20: RS-422/485 Connector Location

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

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

3.2.20 Serial Port Connectors, RS-232

CN Label: COM2_3_5_6

CN Type: 40-pin box header

CN Location: See Figure 3-21

CN Pinouts: See Table 3-17

Each of these connectors provides RS-232 connections.

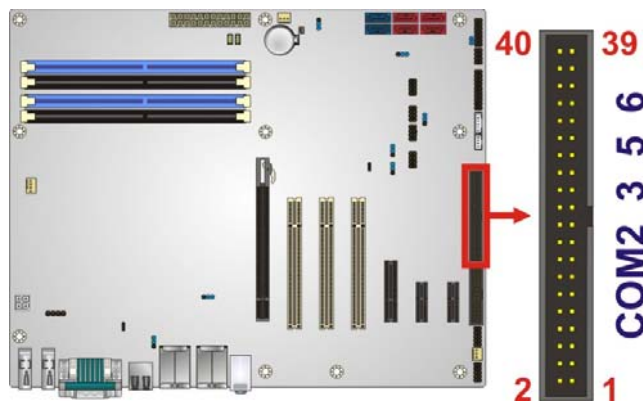


Figure 3-21: Serial Port Connector Location

Pin	Description	Pin	Description
1	-NDCD1	6	-NCTS1
2	-NDSR1	7	-NDTR1
3	NSIN1	8	-XRI1
4	-NRTS1	9	GND
5	NSOUT1	10	GND

Table 3-17: RS-232 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 3-18**

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

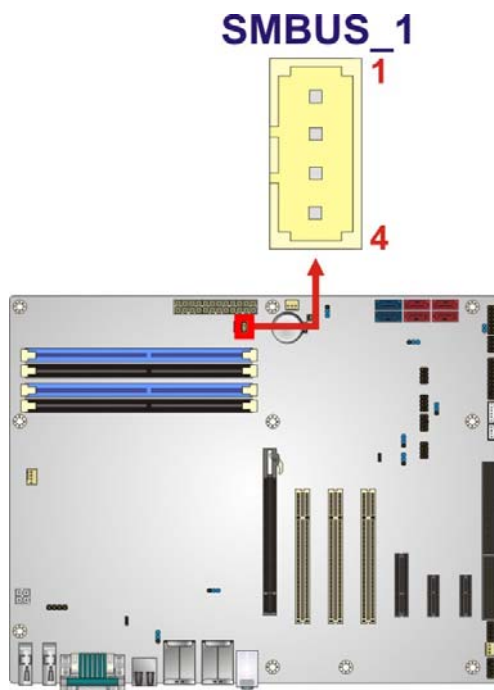


Figure 3-22: SMBus Connector Location

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

Table 3-18: SMBus Connector Pinouts

3.2.22 SPI ROM Connector

CN Label: JSPI1

CN Type: 8-pin header

CN Location: See Figure 3-23

CN Pinouts: See Table 3-19

The SPI connector is used to flash the BIOS.

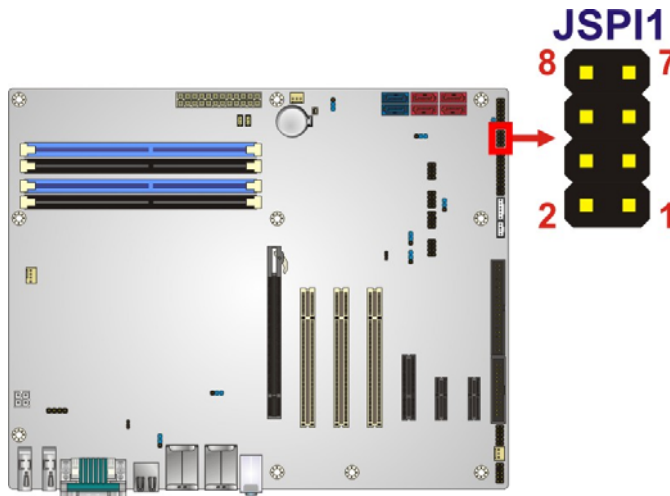


Figure 3-23: SPI Connector Location

Pin	Description	Pin	Description
1	+3.3V	2	GND
3	CS0	4	CLK
5	SO0	6	SI

Pin	Description	Pin	Description
7	NC	8	NC

Table 3-19: SPI Connector Pinouts

3.2.23 TPM Connector

- CN Label:** TPM1
- CN Type:** 20-pin header
- CN Location:** See **Figure 3-24**
- CN Pinouts:** See **Table 3-20**

The TPM connector connects to a TPM module.

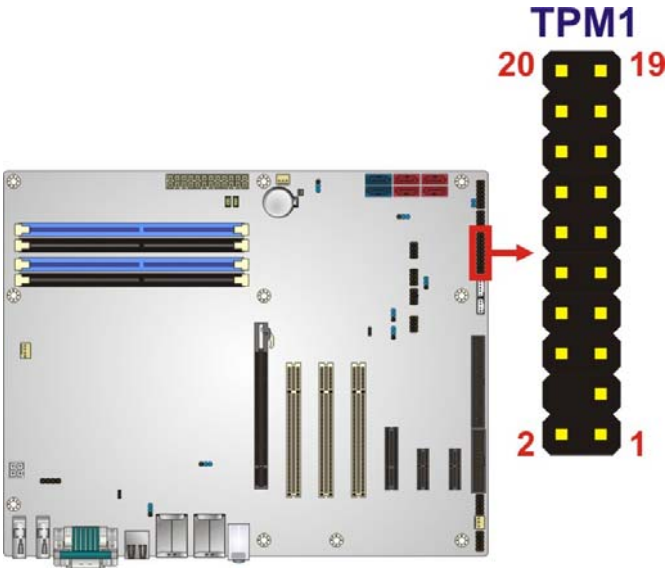


Figure 3-24: TPM Connector Location

Pin	Description	Pin	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

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Pin	Description	Pin	Description
13	SCL	14	SDA
15	SB3V	16	SERIRQ
17	GND1	18	GLKRUN#
19	LPCPD#	20	LDRQ#

Table 3-20: TPM Connector Pinouts

3.2.24 USB Connectors

CN Label: USB2, USB3, USB4, USB5

CN Type: 8-pin header

CN Location: See **Figure 3-25**

CN Pinouts: See **Table 3-21**

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

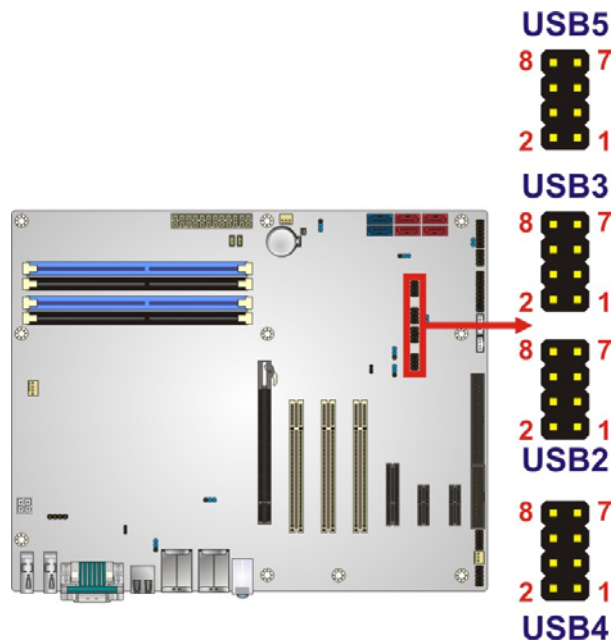


Figure 3-25: USB Connector Pinout Locations

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

Pin	Description	Pin	Description
5	DATA+	6	DATA-
7	GND	8	VCC

Table 3-21: USB Port Connector Pinouts

3.3 External Peripheral Interface Connector Panel

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

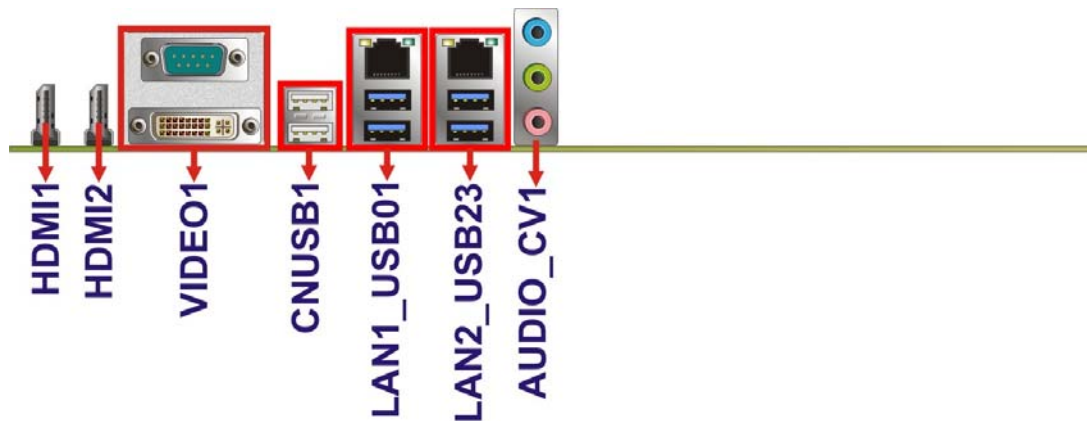


Figure 3-26: External Peripheral Interface Connector

3.3.1 Audio Connector

CN Label: AUDIO_CV1
CN Type: Audio jack
CN Location: See **Figure 3-26**

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.

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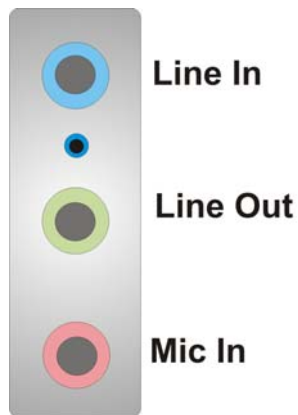


Figure 3-27: Audio Connector

3.3.2 Ethernet and USB 3.0 Connectors

- CN Label:** LAN1_USB01, LAN2_USB23
- CN Type:** RJ-45 and USB 3.0 ports
- CN Location:** See **Figure 3-26**
- CN Pinouts:** See **Table 3-22** and **Table 3-24**

Each LAN connector connects to a local network.

Pin	Description	Pin	Description
1	MDIA3-	2	MDIA3+
3	MDIA1-	4	MDIA2-
5	MDIA2+	6	MDIA1+
7	MDIA0-	8	MDIA0+

Table 3-22: LAN Pinouts

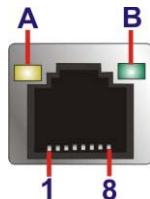


Figure 3-28: Ethernet Connector



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 3-23: Connector LEDs

The IMBA-Q770 has four external USB 3.0 ports. Each USB 3.0 port can be connected to a USB device.

Pin	Description	Pin	Description
1	VBUS	2	D-
3	D+	4	GND
5	STDA_SSRX_N	6	STDA_SSRX_P
7	GND_DRAIN	8	STDA_SSTX_N
9	STDA_SSTX_P		

Table 3-24: USB 3.0 Port Pinouts

3.3.3 HDMI Connectors

- CN Label: HDMI1, HDMI2
- CN Type: HDMI connector
- CN Location: See Figure 3-26
- CN Pinouts: See Table 3-25 and Figure 3-29

The HDMI connector connects to a display device with HDMI interface.

Pin	Description	Pin	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



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Pin	Description	Pin	Description
8	GND	20	HDMI_GND
9	HDMI_DATA0#	21	HDMI_GND
10	HDMI_CLK	22	HDMI_GND
11	GND	23	HDMI_GND
12	HDMI_CLK#		

Table 3-25: HDMI Connector Pinouts

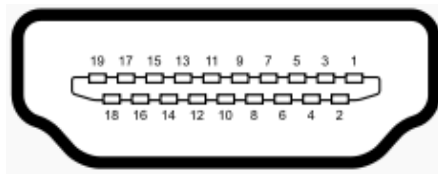


Figure 3-29: HDMI Connector

3.3.4 RS-232 Serial Port (COM1) and DVI-I Connector

CN Label: VIDEO1

CN Type: DB-9 and DVI-I connectors

CN Location: See **Figure 3-26**

CN Pinouts: See **Table 3-26**, **Figure 3-30**, **Table 3-27** and **Figure 3-31**

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

Pin	Description	Pin	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

Table 3-26: RS-232 Serial Port Connector Pinouts

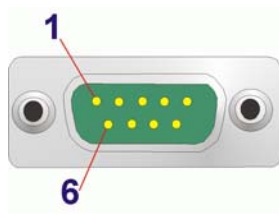


Figure 3-30: RS-232 Serial Port Connector Pinouts

The 24-pin Digital Visual Interface (DVI) connector connects to high-speed, high-resolution digital displays. The DVI-I connector supports both digital and analog signals.

Pin	Description	Pin	Description	Pin	Description
1	DVI_DATA2#	9	DVI_DATA1#	17	DVI_DATA0#
2	DVI_DATA2	10	DVI_DATA1	18	DVI_DATA0
3	GND	11	GND	19	GND
4	N/C	12	NC	20	NC
5	N/C	13	NC	21	NC
6	DDCCLK	14	+5V	22	GND
7	DDCDATA	15	GND	23	DVI_CLK
8	5V_VSYNC	16	DVI_HPD	24	DVI_CLK#
C1	BR	--	--	--	--
C2	BG	--	--	--	--
C3	BB	--	--	--	--
C4	5V_HSYNC	--	--	--	--
C5	GND	--	--	--	--

Table 3-27: DVI-I Connector Pinouts

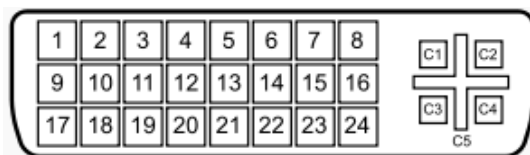


Figure 3-31: DVI-I Connector

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3.3.5 USB 2.0 Connector

CN Label:	CNUSB1
CN Type:	USB 2.0 port
CN Location:	See Figure 3-26
CN Pinouts:	See Table 3-22

The IMBA-Q770 has two external USB 2.0 ports. The ports connect to both USB 2.0 and USB 1.1 devices.

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

Table 3-28: USB 2.0 Port Pinouts

Chapter

4

Installation

IMBA-Q770 ATX Motherboard

4.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the IMBA-Q770 may result in permanent damage to the IMBA-Q770 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMBA-Q770. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMBA-Q770 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-Q770, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMBA-Q770.
- ***Only handle the edges of the PCB:-*** When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations



NOTE:

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

**WARNING:**

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

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

- Read the user manual:
 - The user manual provides a complete description of the IMBA-Q770 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-Q770 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-Q770 off:
 - When working with the IMBA-Q770, 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-Q770 **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.

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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**.

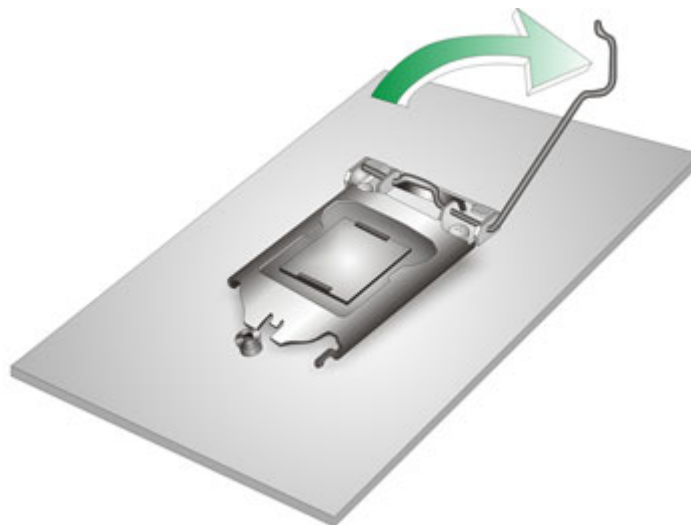


Figure 4-1: Disengage the CPU Socket Load Lever

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**.

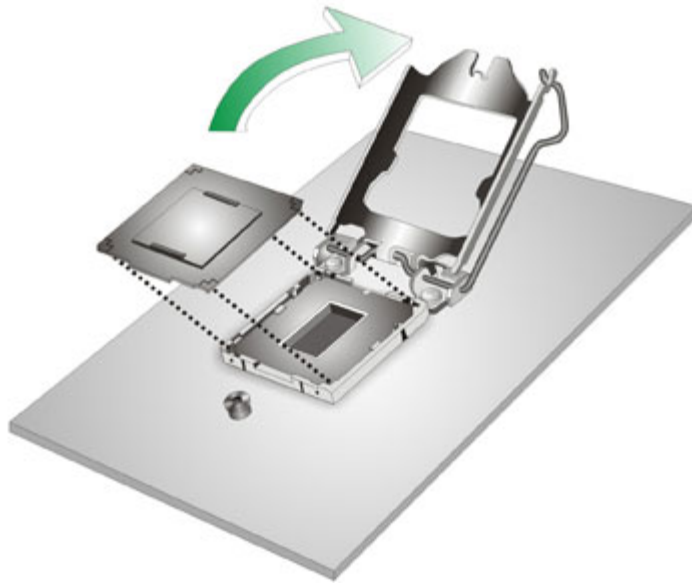


Figure 4-2: Remove Protective Cover

- 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**.

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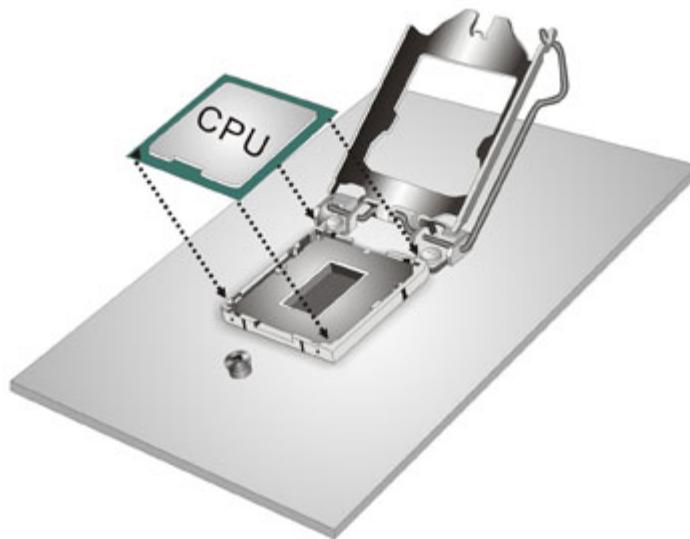


Figure 4-3: Insert the Socket LGA1155 CPU

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.

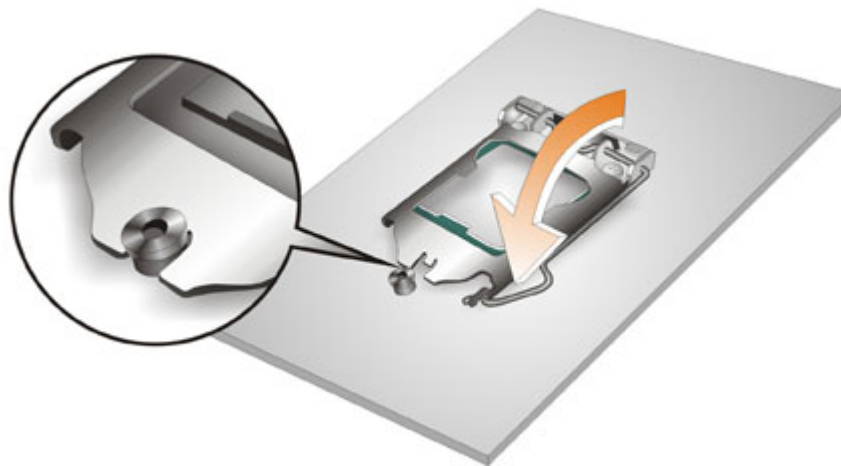


Figure 4-4: Close the Socket LGA1155

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

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

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**.

IMBA-Q770 ATX Motherboard

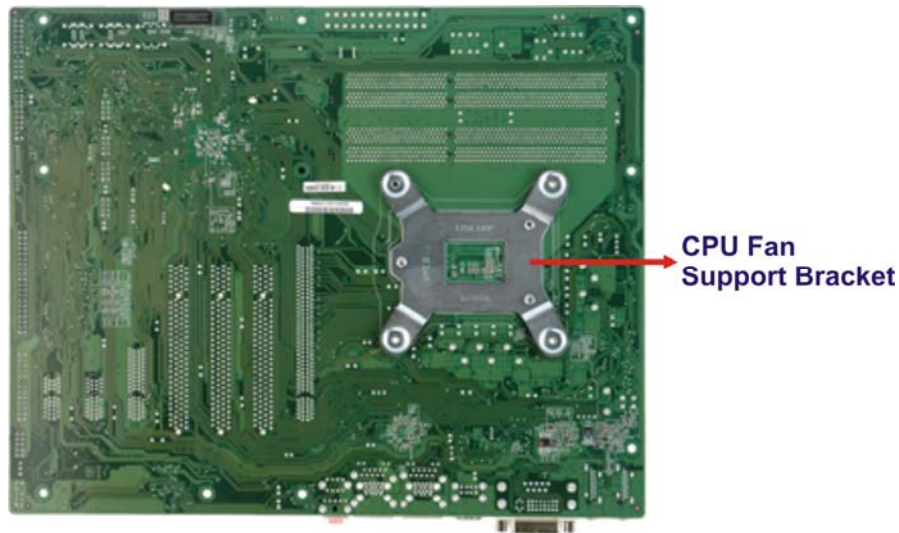


Figure 4-6: Cooling Kit Support Bracket

- 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-Q770. Carefully route the cable and avoid heat generating chips and fan blades.

4.2.3 DIMM Installation

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

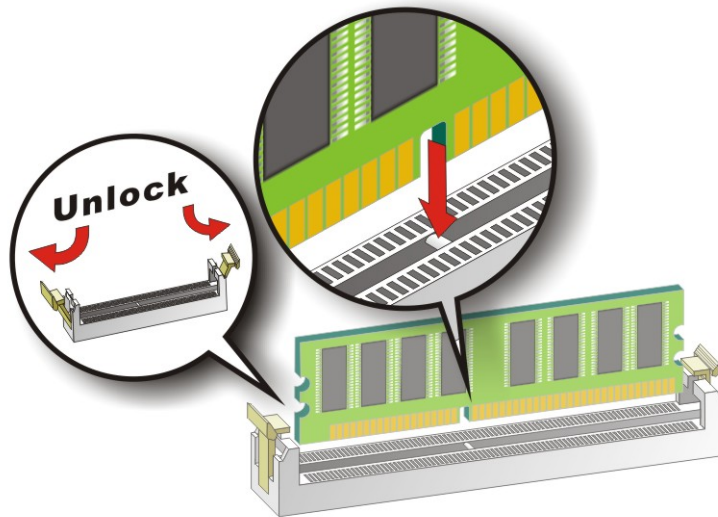


Figure 4-7: DIMM Installation

- 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.

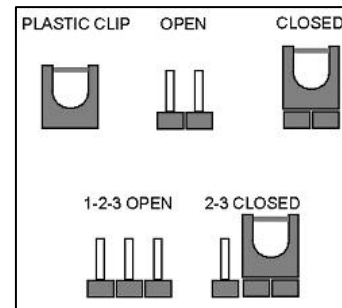
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4.3 Jumper Settings

**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	JATX_AT1	2-pin header
Clear CMOS jumper	J_CMOS1	3-pin header
DVI-I/VGA select	JP7	3-pin header
Flash descriptor security override	J_FLASH1	3-pin header
USB power select jumpers	CNUSB1_PWR1, USB_PWR2, USB_PWR3, USB_PWR4, USB_PWR5	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:

JATX_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.

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.

IMBA-Q770 ATX Motherboard

Setting	Description
Short 1-2	Normal (Default)
Short 2-3	Clear BIOS

Table 4-3: Clear BIOS Jumper Settings

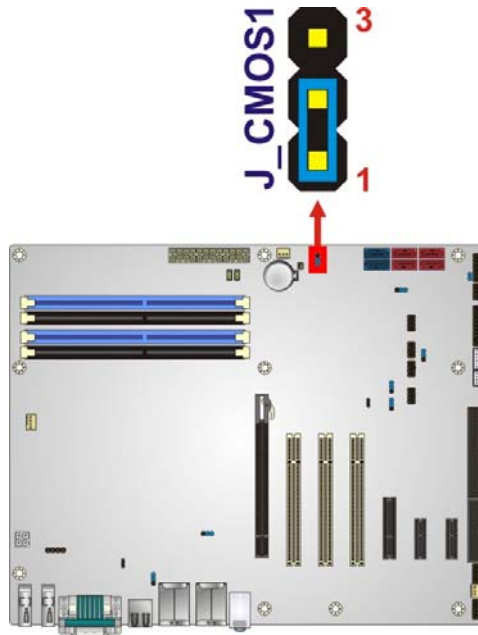


Figure 4-9: Clear BIOS Jumper Location

4.3.3 DVI-I/VGA Select Jumper

Jumper Label:	JP7
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-4
Jumper Location:	See Figure 4-10

The DVI-I/VGA Select jumper specifies the DVI-I connector as DVI-I or VGA.

Setting	Description
Short 1-2	DVI-I (Default)
Short 2-3	VGA

Table 4-4: DVI-I/VGA Select Jumper Settings

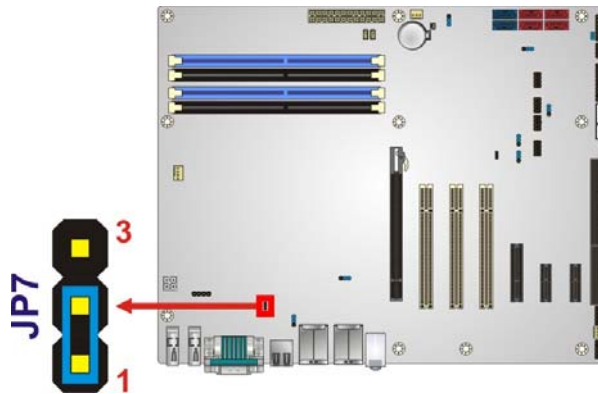


Figure 4-10: DVI-I/VGA Select Jumper Location

4.3.4 Flash Descriptor Security Override

Jumper Label:	J_FLASH1
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-5
Jumper Location:	See Figure 4-11

The Flash Descriptor Security Override jumper specifies whether to override the flash descriptor.

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

Table 4-5: Flash Descriptor Security Override Jumper Settings

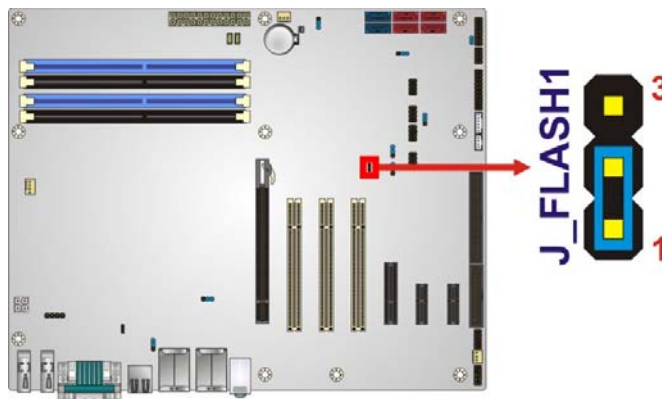


Figure 4-11: Flash Descriptor Security Override Jumper Location

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4.3.5 USB Power Select Jumpers

Jumper Label:	USB_PWR2, USB_PWR3, USB_PWR4, USB_PWR5, CNUSB1_PWR1
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-6
Jumper Location:	See Figure 4-12

The USB Power Select jumper specifies the USB power.

Setting	Description
Short 1-2	+5V_DUAL
Short 2-3	+5V (Default)

Table 4-6: USB Power Select Jumper Settings

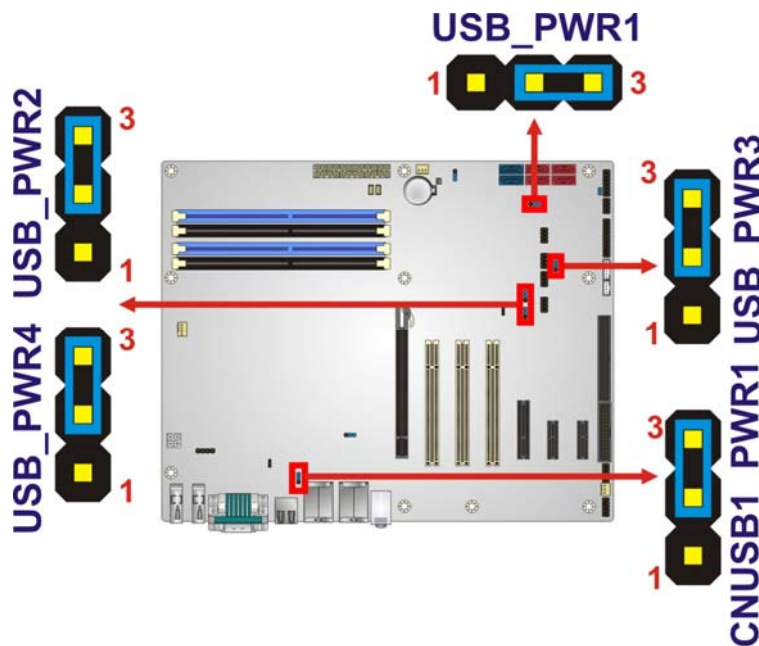


Figure 4-12: USB Power Select Jumper Locations

4.3.6 Wake-on LAN Jumper

- CN Label:** WOL_SEL1
- CN Type:** 3-pin header
- CN Location:** See **Figure 4-13**
- CN Pinouts:** See **Table 4-7**

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 4-7: Wake-on LAN Connector Pinouts

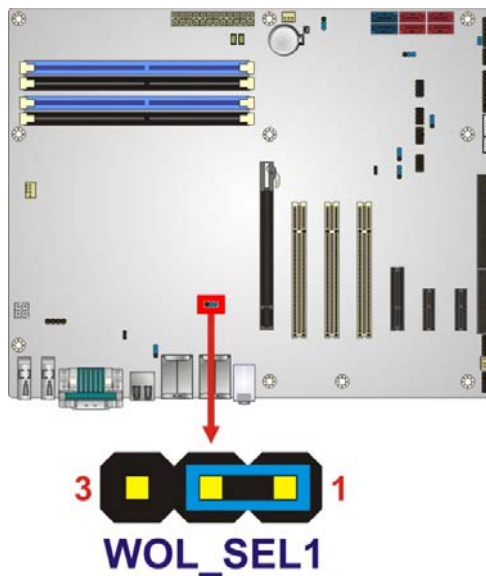


Figure 4-13: Wake-on LAN Connector Pinout Location

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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-Q770 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 until it clips into place. See **Figure 4-14**.

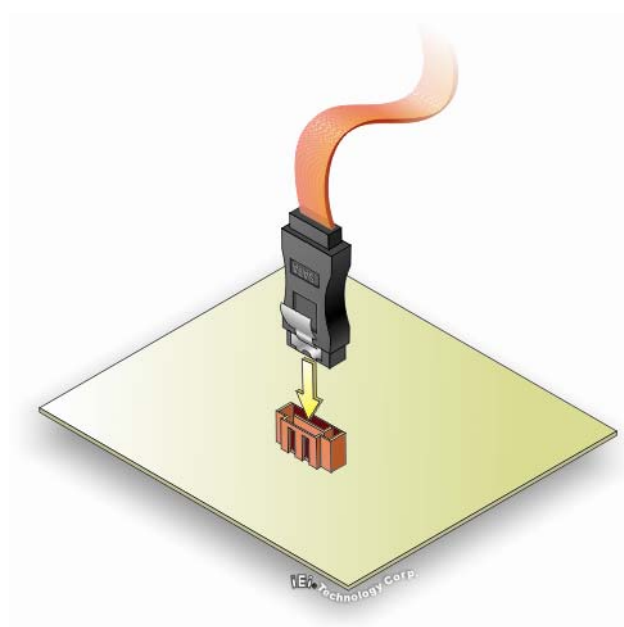


Figure 4-14: SATA Drive Cable Connection

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

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

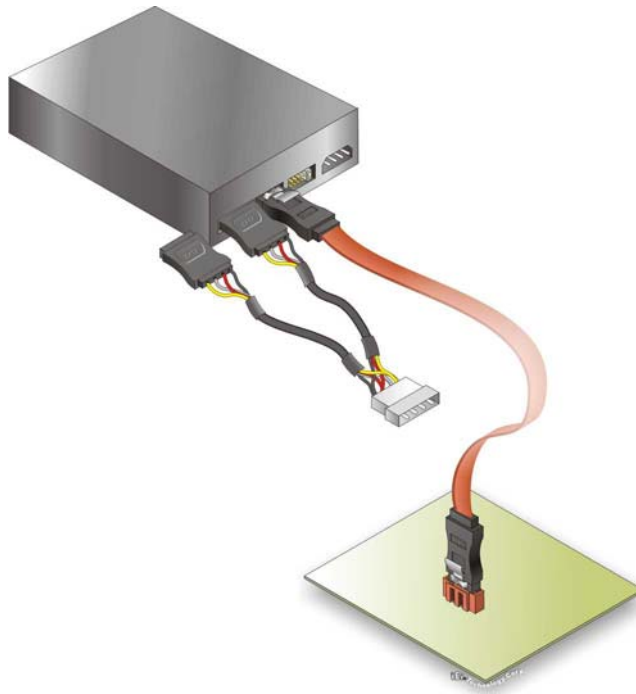


Figure 4-15: SATA Power Drive Connection

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-Q770.

4.5.1 Audio Connector

The audio jacks on the external audio connector enable the IMBA-Q770 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.

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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.

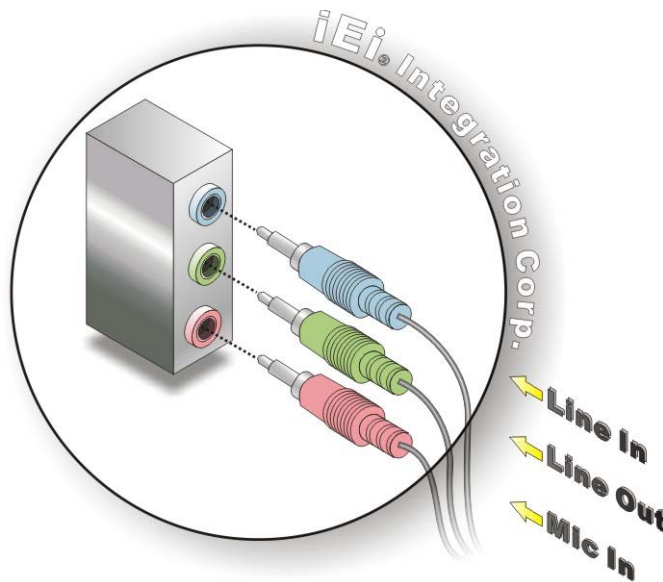


Figure 4-16: Audio Connector

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-I Display Device Connection

The IMBA-Q770 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-Q770, please follow the instructions below.

Step 1: Locate the DVI-I connector. The location of the DVI-I connector is shown in Chapter 3.

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-Q770. See **Figure 4-17**.

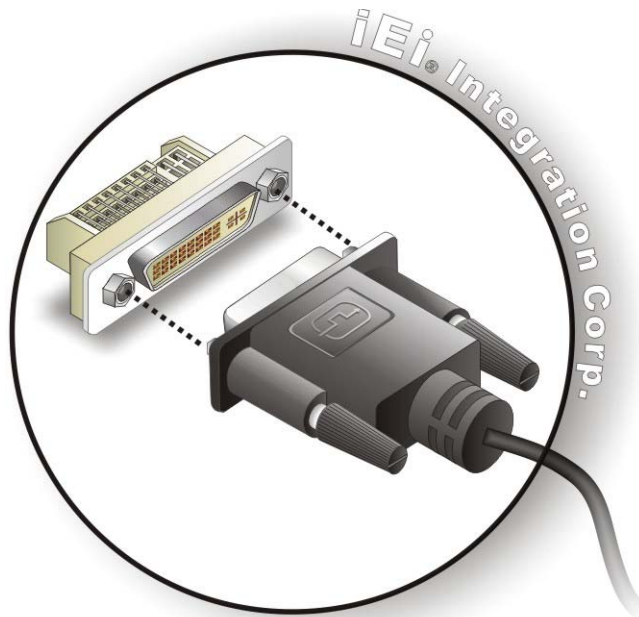


Figure 4-17: DVI-I Connection

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.

4.5.3 HDMI Display Device 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-Q770, follow the steps below.

Step 1: Locate the HDMI connectors. The locations are shown in **Chapter 3**.

Step 2: Align the connector. Align the HDMI connector with the HDMI port. Make sure the orientation of the connector is correct.

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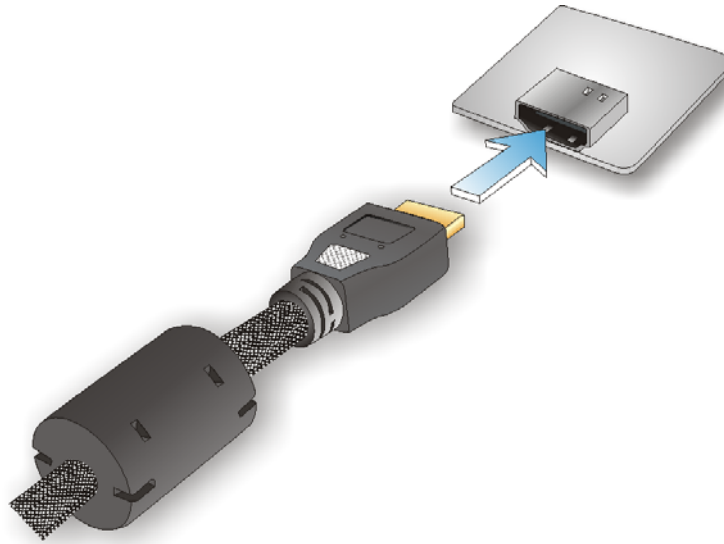


Figure 4-18: HDMI Connection

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.

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 USB 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-Q770. See **Figure 4-19**.

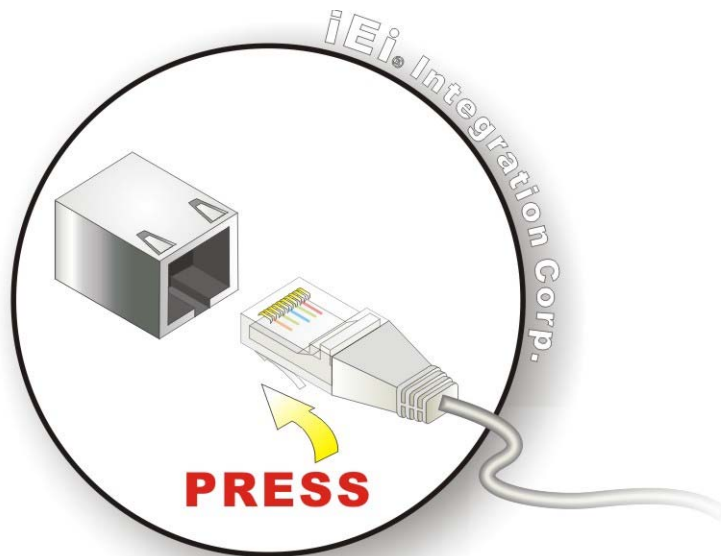


Figure 4-19: LAN Connection

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 Serial Device Connection

The IMBA-Q770 has one male DB-9 connector on the external peripheral interface panel for serial device connection. Follow the steps below to connect a serial device to the IMBA-Q770.

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

Step 2: Insert the serial connector. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See **Figure 4-20**.

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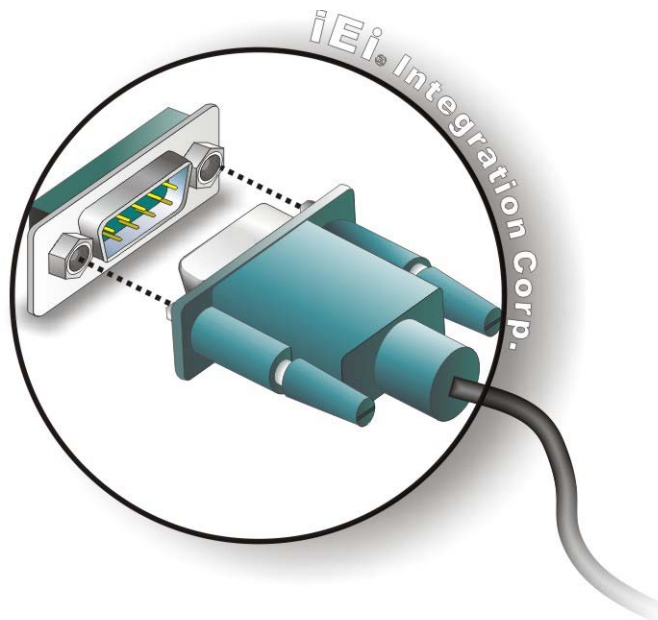


Figure 4-20: Serial Device Connection

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.

4.5.6 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-Q770.

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 4-21**.

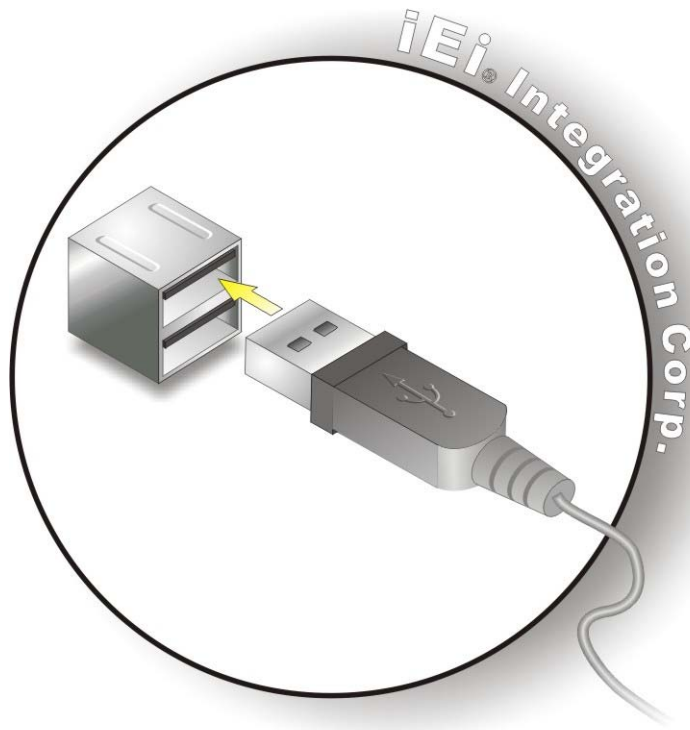


Figure 4-21: USB Connection

4.6 Intel® AMT Setup Procedure

The IMBA-Q770 is featured with the Intel® Active Management Technology (AMT). To enable the Intel® AMT function, follow the steps below.

- Step 1:** Make sure the DIMM socket is installed with one DDR3 memory.
- Step 2:** Connect an Ethernet cable to the RJ-45 connector labeled **LAN2**.
- Step 3:** The UEFI 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 6.9**.
- Step 5:** Configure the Intel® Management Engine BIOS extension (MEBx). To get into the Intel® MEBx settings, press <Ctrl+P> after a single beep during boot-up process. Enter the Intel® current ME password as it requires (the Intel® default password is **admin**).

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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-Q770 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 **Delete** or **F2** key as soon as the system is turned on or
2. Press the **Delete** or **F2** key when the “**Press Del or F2 to enter SETUP**” message appears on the screen.

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

5.1.2 Using Setup

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

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

Key	Function
-	Decrease the numeric value or make changes
Page Up key	Move to the next page
Page Dn key	Move to the previous page
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	Load previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** 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		
Compliance			UEFI 2.3; PI 1.2		
Project Version			B206AR10.ROM 0.18 x64		
Build Date and Time			04/03/2012 11:53:40		
Processor Information					
Name			SandyBridge		
Brand String			Intel(R) Celeron(R) C		
Frequency			2000 MHz		
Processor ID			206a7		
Stepping			D2		
Number of Processors			2Core(s) / 2Thread(s)		-----
Microcode Revision			25		
GT Info			GT2 (1000 MHz)		
IGFX VBIOS Version			2132		
Memory RC Version			1.2.2.0		
Total Memory			1024 MB (DDR3 1333)		
Memory Frequency			1067 MHz		
PCH Information					
Name			PantherPoint		
Stepping			04/C1		
TXT Capability of Platform/PCH			Unsupported		
LAN PHY Revision			C0		
ME FW Version			8.0.4.1441		→←: Select Screen
ME Firmware SKU			5MB		↑↓: Select Item
SPI Clock Frequency				Enter: Select	
DOFR Support			Unsupported		+/-: Change Opt.
Read Status Clock Frequency			33 MHz		F1: General Help
Write Status Clock Frequency			33 MHz		F2: Previous Values
Fast Read Status Clock Frequency			33 MHz		F3: Optimized Defaults
System Date				F4: Save & Exit	
System Time				ESC: Exit	
Access Level			Administrator		
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.					

BIOS Menu 1: Main

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The Main menu lists the following system details:

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

The Main menu has two user configurable fields:

➔ **System Date [xx/xx/xx]**

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

➔ **System Time [xx:xx:xx]**

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

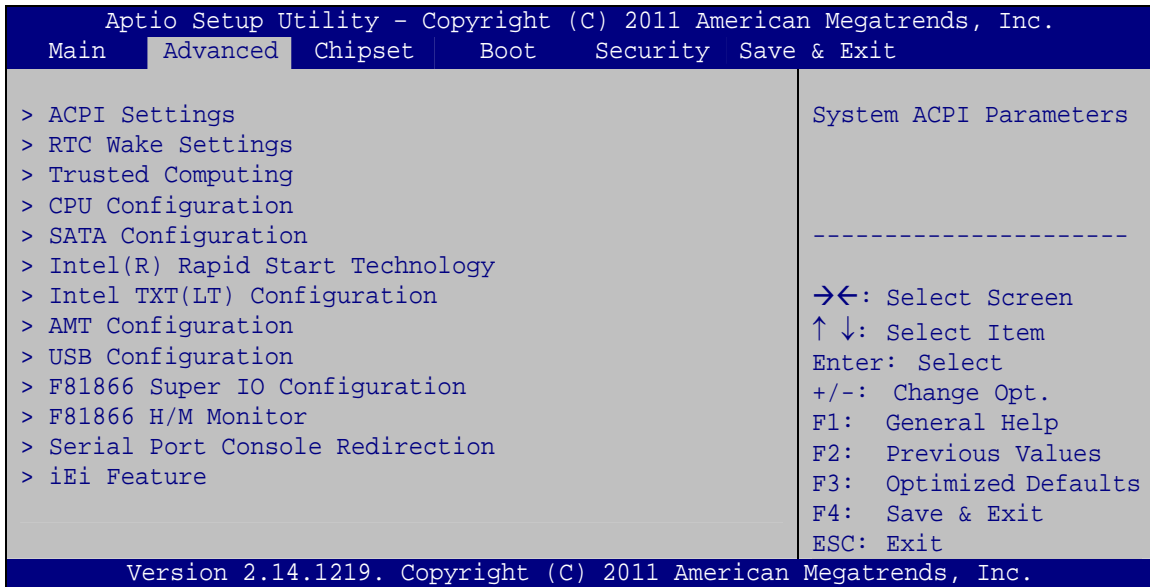
5.3 Advanced

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



WARNING!

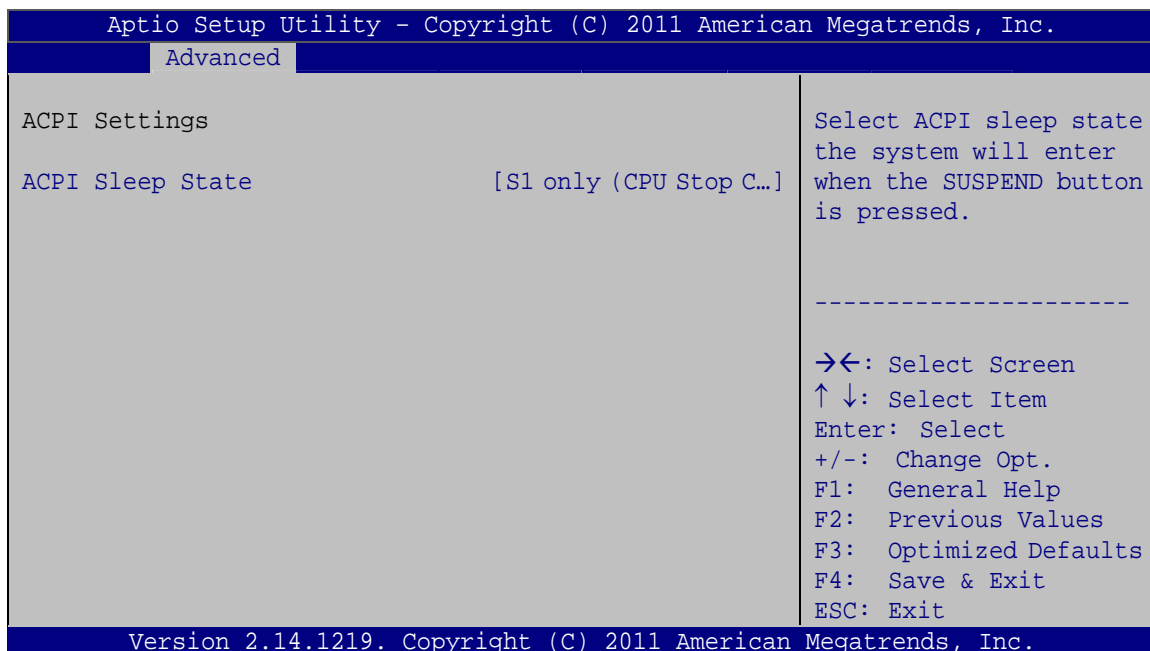
Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.



BIOS Menu 2: Advanced

5.3.1 ACPI Settings

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



BIOS Menu 3: ACPI Settings

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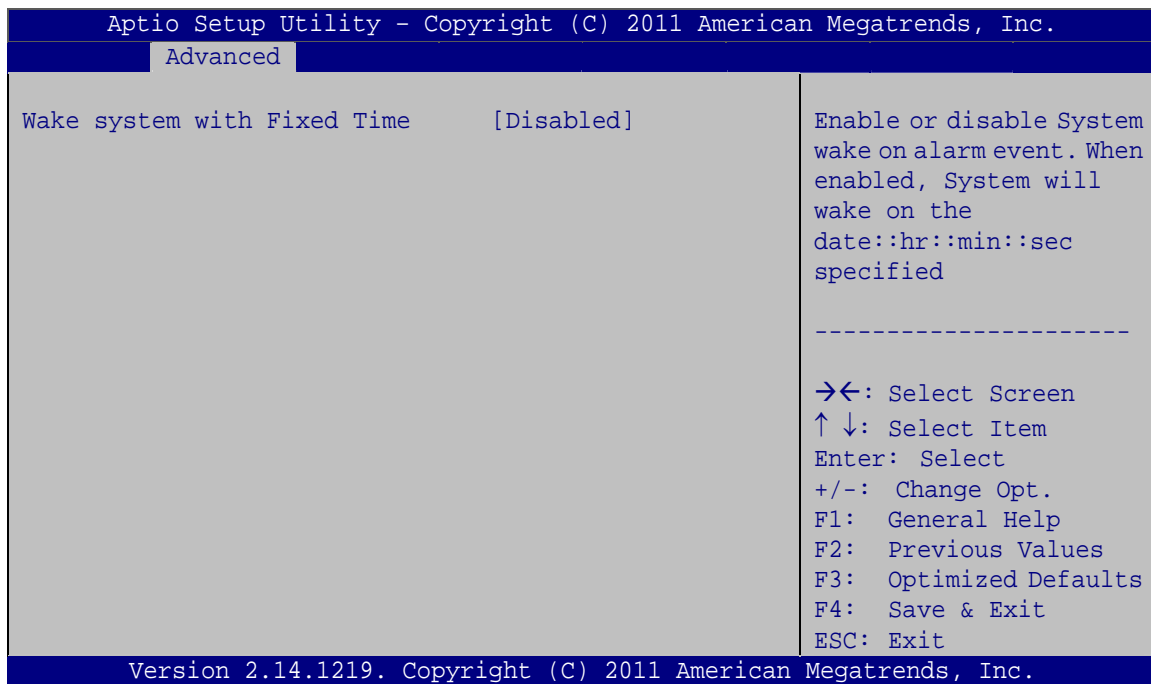
→ ACPI Sleep State [S1 only (CPU Stop Clock)]

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

- | | |
|--|--|
| <p>→ S1 only (CPU Stop Clock) DEFAULT</p> | <p>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.</p> |
| <p>→ S3 only (Suspend to RAM)</p> | <p>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.</p> |

5.3.2 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 4**) configures RTC wake event.



BIOS Menu 4: RTC Wake Settings

→ Wake System with Fixed Time [Disabled]

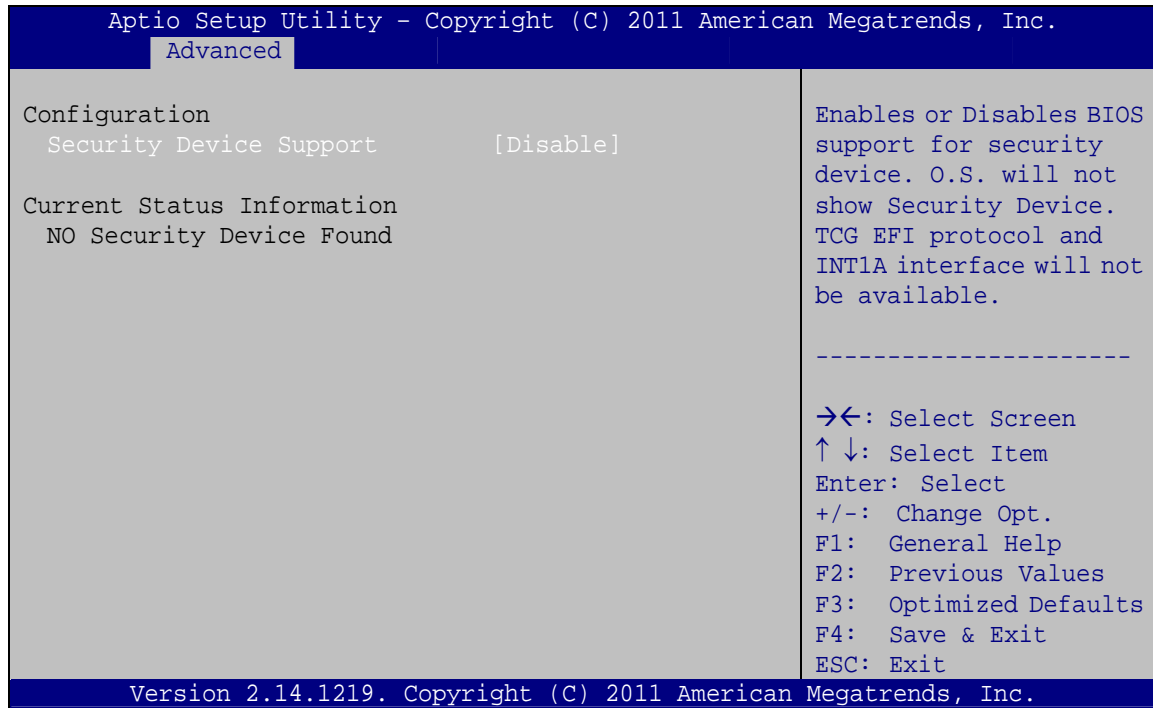
Use the **Wake System with Fixed Time** option to specify the time the system should be roused from a suspended state.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | DEFAULT | <p>The real time clock (RTC) cannot generate a wake event</p> |
| → | Enabled | | <p>If selected, the following appears with values that can be selected:</p> <ul style="list-style-type: none"> *Wake up every day *Wake up date *Wake up hour *Wake up minute *Wake up second <p>After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.</p> |

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: Trusted Computing

→ Security Device Support [Disable]

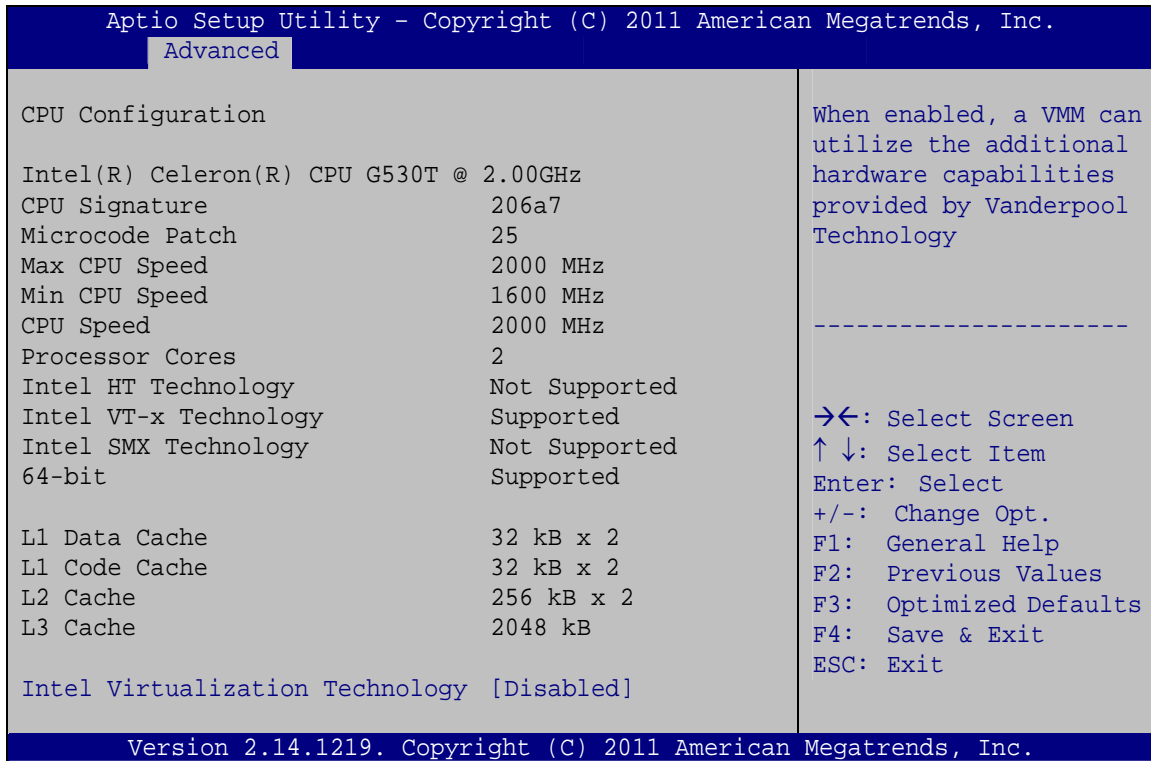
Use the **Security Device Support** option to configure support for the TPM.

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

→ **Enable** TPM support is enabled.

5.3.4 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 6**) to view detailed CPU specifications or enable the 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.
- CPU Speed: Lists the 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.
- 64-bit: Indicates if 64-bit is supported by the CPU.
- L1 Data Cache: Lists the amount of data storage space on the L1 cache.

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- L1 Code Cache: Lists the amount of code storage space on the L1 cache.
- L2 Cache: Lists the amount of storage space on the L2 cache.
- L3 Cache: Lists the amount of storage space on the L3 cache.

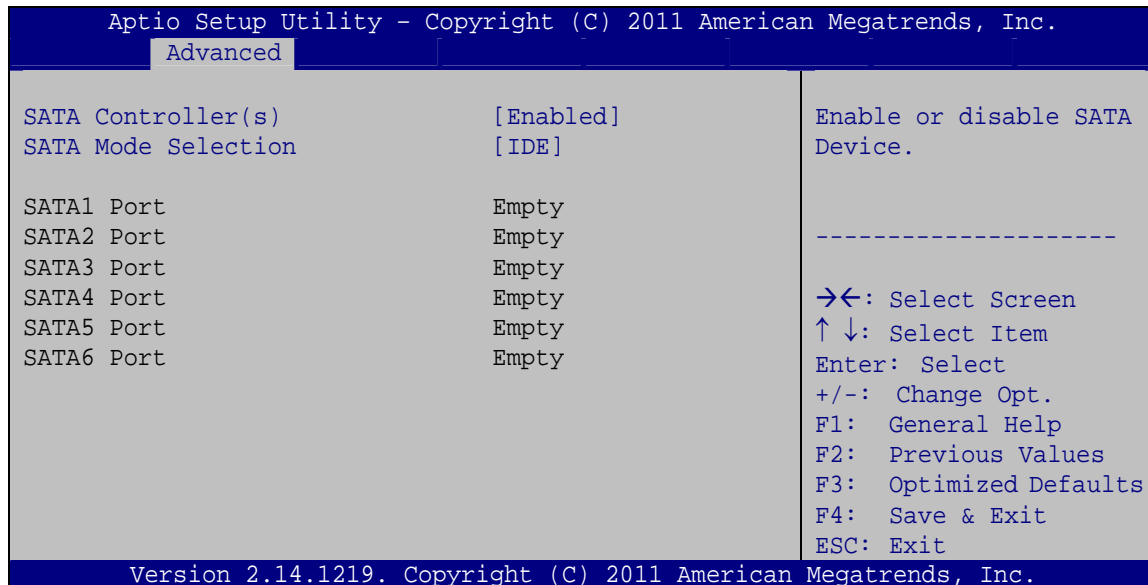
→ Intel Virtualization Technology [Disabled]

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 serial ATA controller.

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

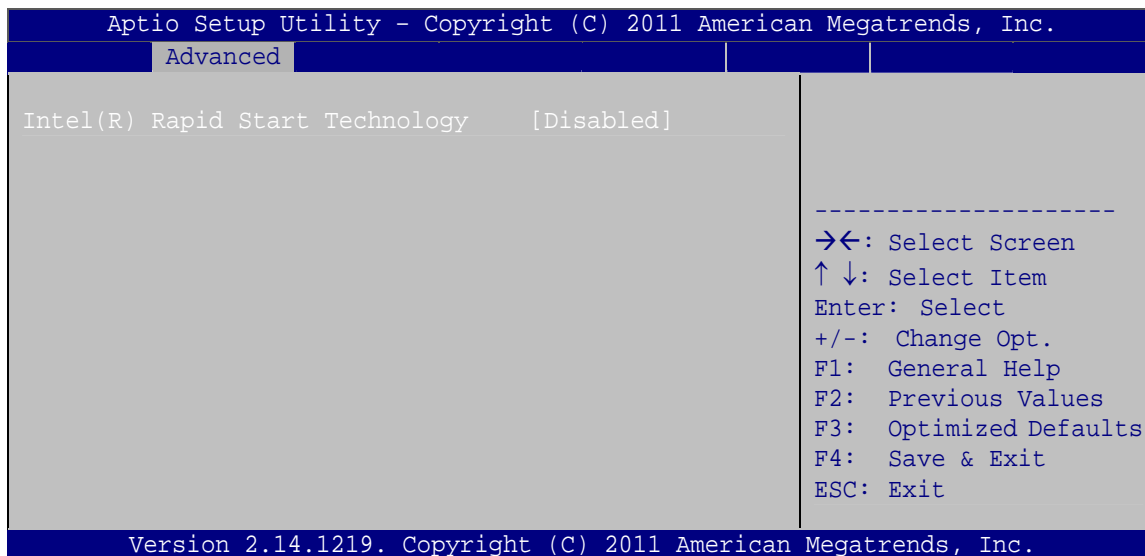
→ **SATA Mode Selection [IDE]**

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

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

5.3.6 Intel(R) Rapid Start Technology

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



BIOS Menu 8: Intel(R) Rapid Start Technology

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

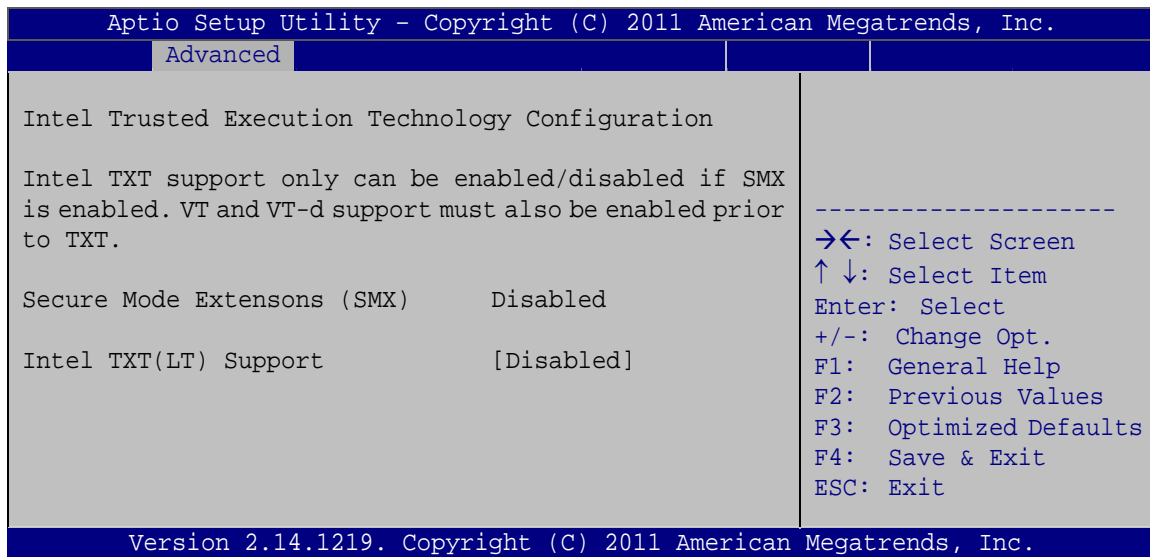
Use **Intel(R) Rapid Start Technology** option to enable or disable the Intel® Rapid Start Technology function.

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

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5.3.7 Intel TXT(LT) Configuration

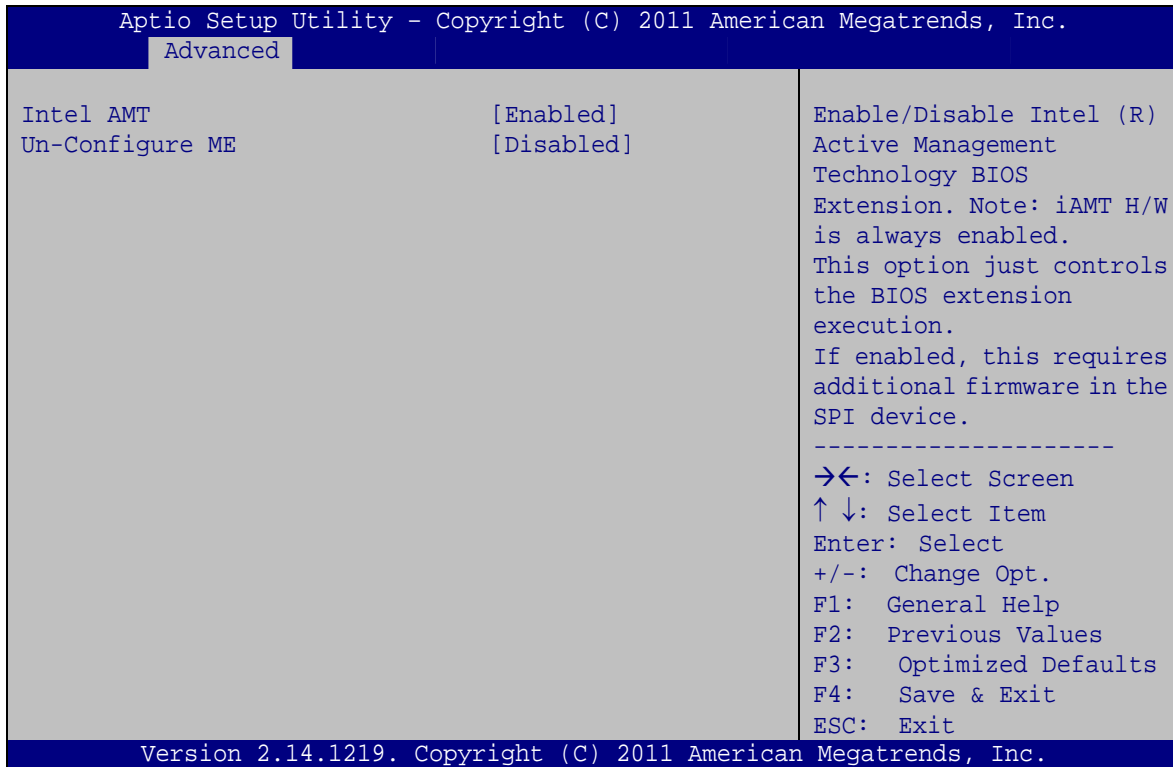
Use the **Intel TXT(LT) Configuration (BIOS Menu 9)** menu to configure Intel Trusted Execution Technology support.



BIOS Menu 9: Intel TXT(LT) Configuration

5.3.8 AMT Configuration

The **AMT Configuration** menu (**BIOS Menu 10**) allows the advanced power management options to be configured.



BIOS Menu 10: 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]

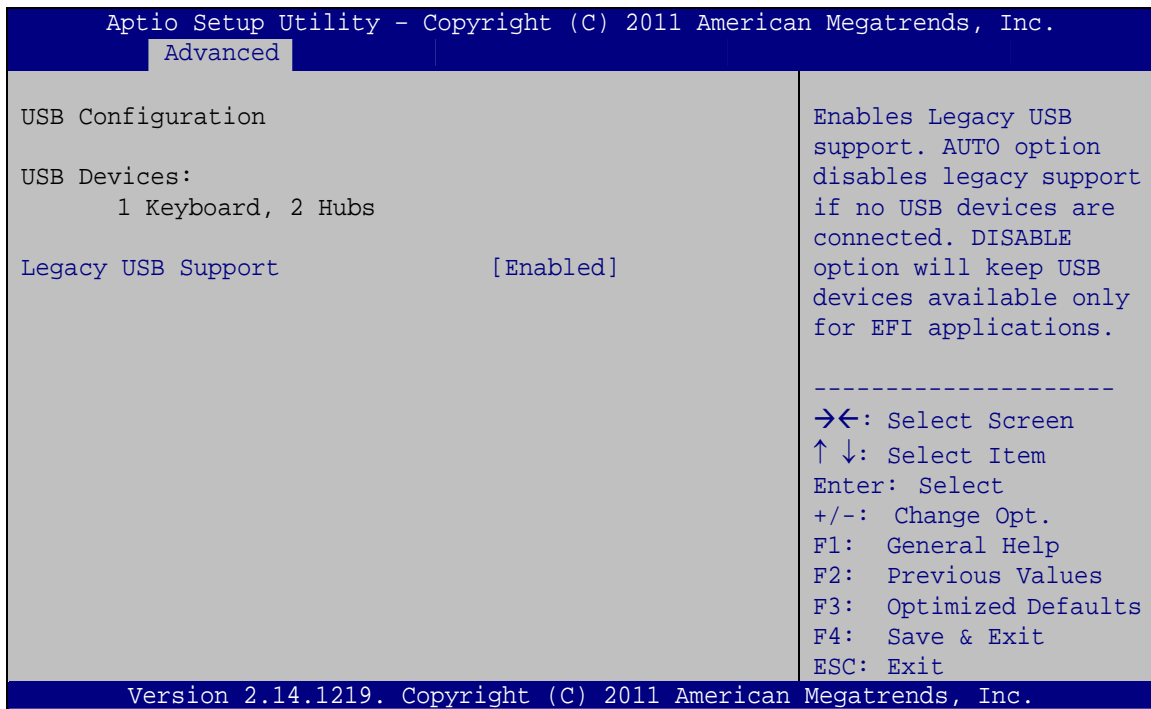
Use the **Un-Configure ME** option to perform ME unconfigure without password operation.

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

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5.3.9 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 11**) to read USB configuration information and configure the USB settings.



BIOS Menu 11: USB Configuration

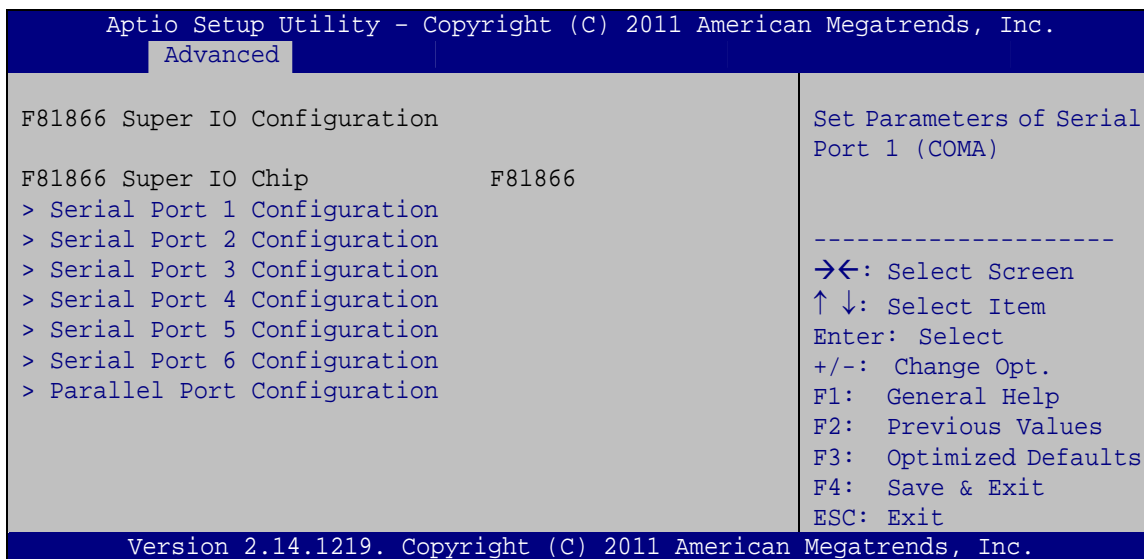
➔ Legacy USB Support [Enabled]

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

5.3.10 F81866 Super IO Configuration

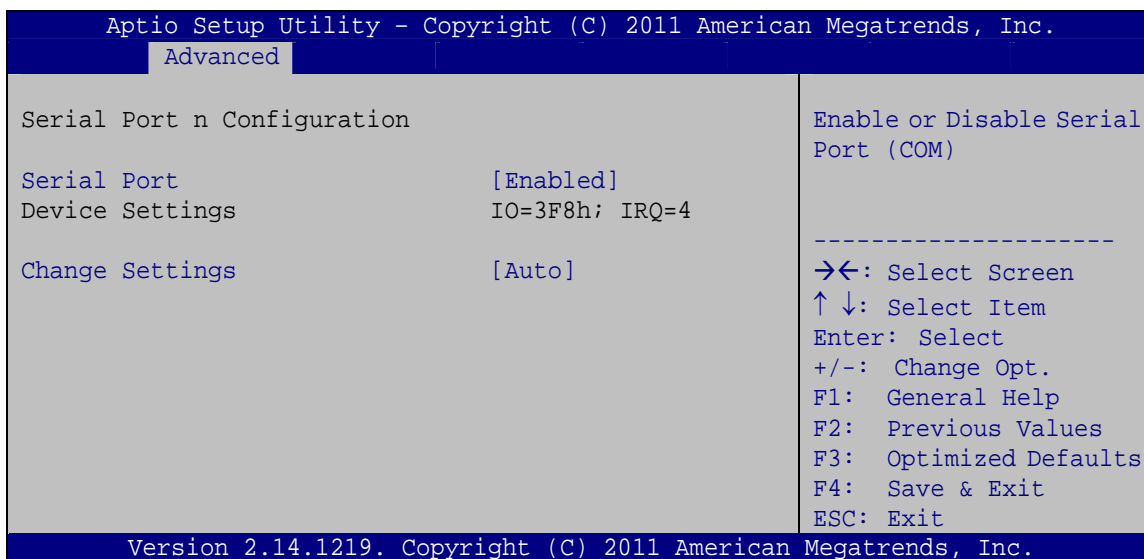
Use the **F81866 Super IO Configuration** menu (**BIOS Menu 12**) to set or change the configurations for the parallel port and serial ports.



BIOS Menu 12: F81866 Super IO Configuration

5.3.10.1 Serial Port n Configuration

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



BIOS Menu 13: Serial Port n Configuration Menu

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5.3.10.1.1 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 |

5.3.10.1.2 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
→	IO=2C8h; IRQ=3, 4		Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

5.3.10.1.3 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.
---	------	---------	---

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

5.3.10.1.4 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=3E8h;**
IRQ=10, 11 Serial Port I/O port address is 3E8h 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

5.3.10.1.5 Serial Port 5 Configuration

➔ Serial Port [Enabled]

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

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

➔ Change Settings [Auto]

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

- ➔ **Auto** **DEFAULT** The serial port IO port address and interrupt address are automatically detected.
- ➔ **IO=2C0h;**
IRQ=10 Serial Port I/O port address is 2C0h 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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5.3.10.1.6 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 |

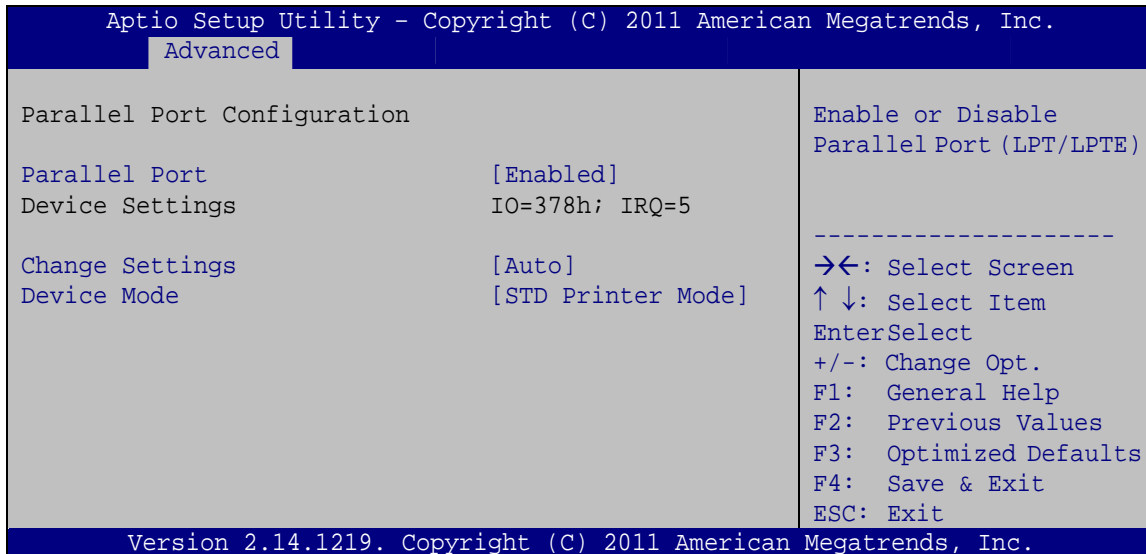
→ Change Settings [Auto]

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 |

5.3.10.2 Parallel Port Configuration

Use the **Parallel Port Configuration** menu (**BIOS Menu 14**) to configure the parallel port.



BIOS Menu 14: 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; Parallel Port I/O port address is 378h and the**
IRQ=5 interrupt address is IRQ5
- ➔ **IO=378h; Parallel Port I/O port address is 378h and the**
IRQ=5, 7 interrupt address is IRQ5, 7

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

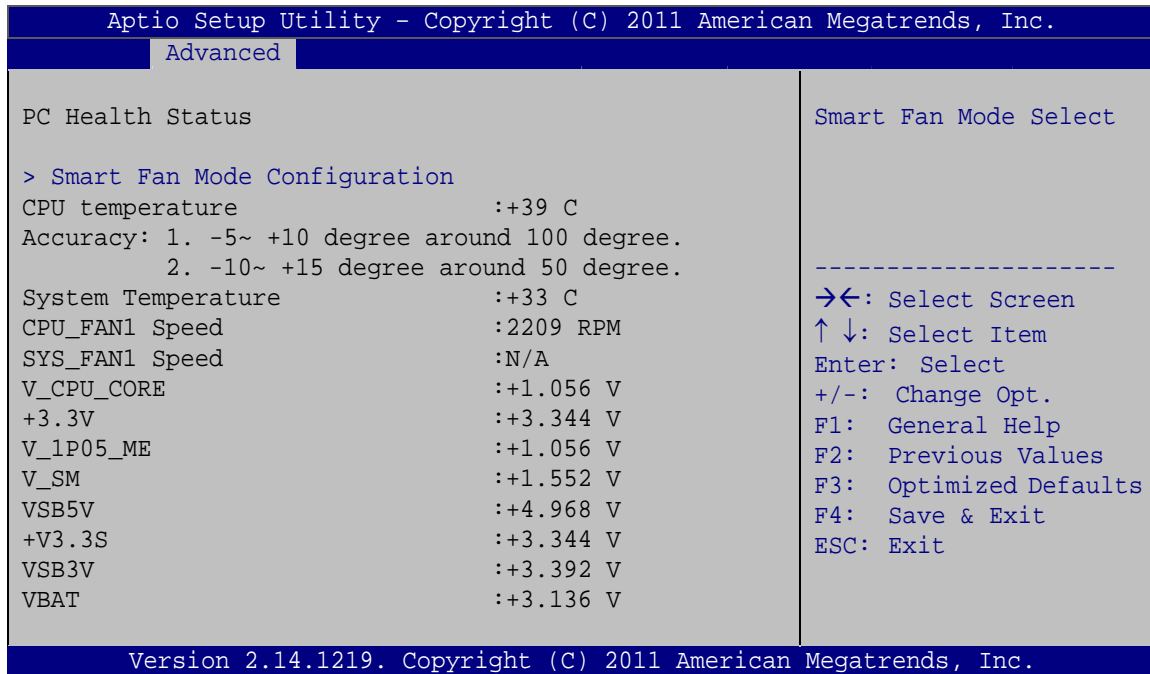
➔ Device Mode [STD Printer Mode]

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

- | | | |
|---|----------------------|----------------|
| ▪ | STD Printer Mode | Default |
| ▪ | SPP Mode | |
| ▪ | EPP-1.9 and SPP Mode | |
| ▪ | EPP-1.7 and SPP Mode | |
| ▪ | ECP Mode | |
| ▪ | ECP and EPP 1.9 Mode | |
| ▪ | ECP and EPP 1.7 Mode | |

5.3.11 F81866 H/W Monitor

The **F81866 H/W Monitor** menu (**BIOS Menu 15**) contains the fan configuration submenus and displays operating temperature, fan speeds and system voltages.



BIOS Menu 15: H/W Monitor

→ PC Health Status

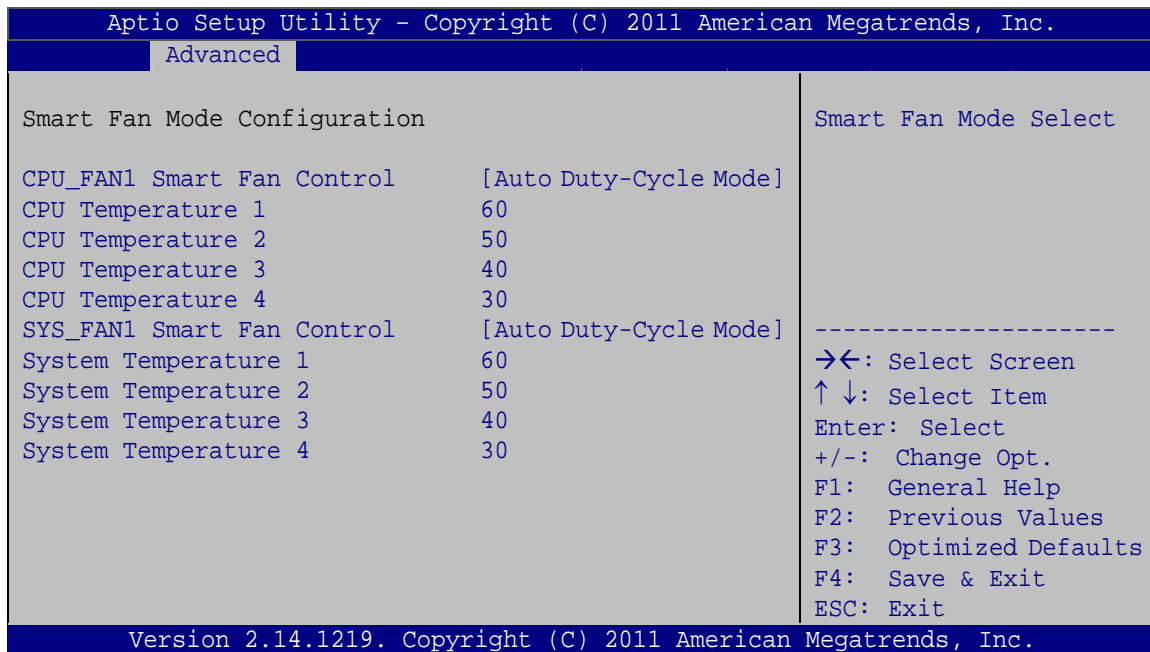
The following system parameters and values are shown. The system parameters that are monitored are:

- 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

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5.3.11.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 16**) to configure fan temperature and speed settings.



BIOS Menu 16: Smart Fan Mode Configuration

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

Use the **CPU_FAN1 Smart Fan Control** option to configure the CPU Smart Fan (CPU_FAN1).

- **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 fan **CPU Temperature n** value. Enter a decimal number between 1 and 100.

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

Use the **SYS_FAN1 Smart Fan Control** option to configure the System Smart Fan (SYS_FAN1).

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

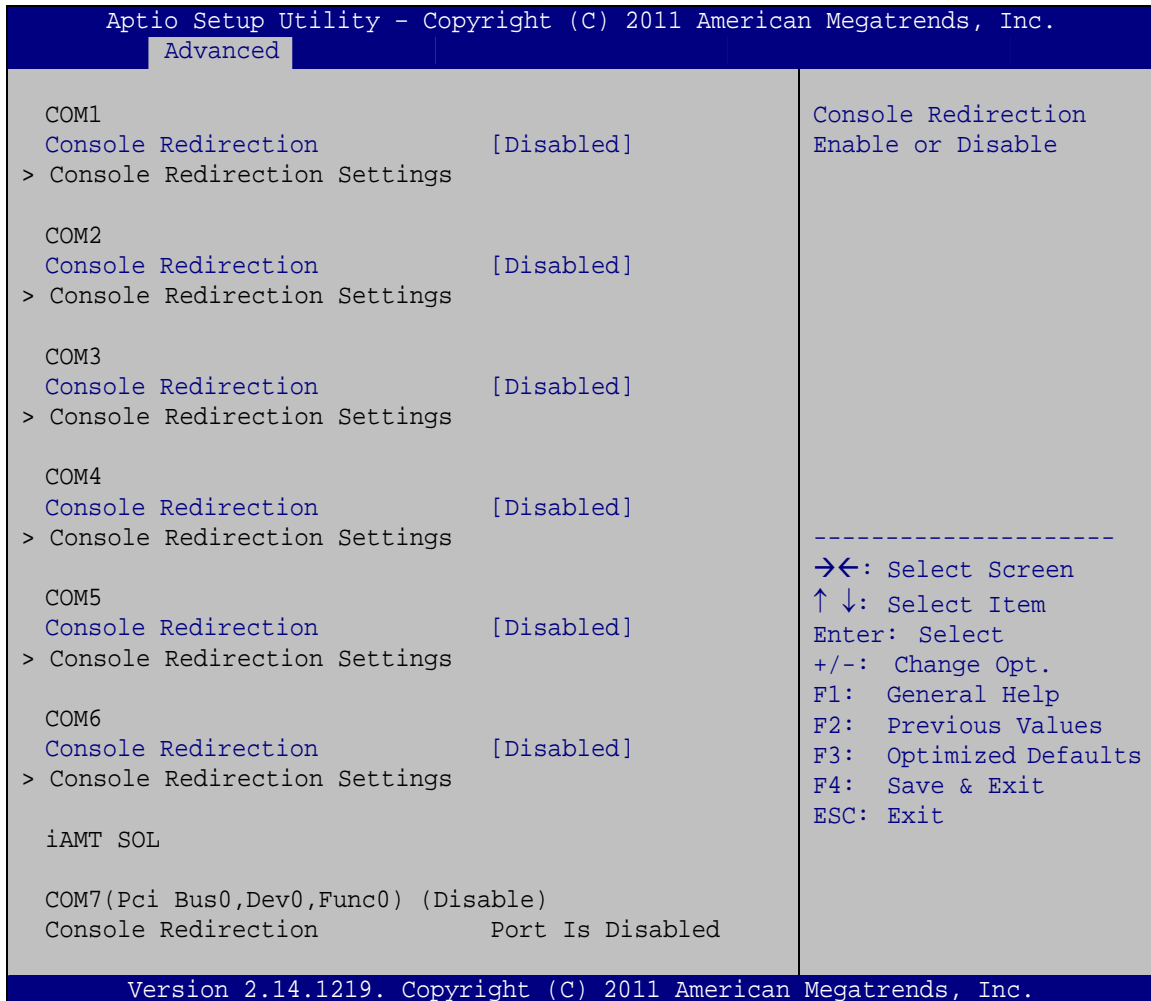
→ **System Temperature n**

Use the + or – key to change the fan **System Temperature n** value. Enter a decimal number between 1 and 100.

5.3.12 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 17**) 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.

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BIOS Menu 17: 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

→ Terminal Type [ANSI]

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

- **VT100** The target terminal type is VT100

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

→ **Bits per second [115200]**

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

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

→ **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.

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➔ **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]**

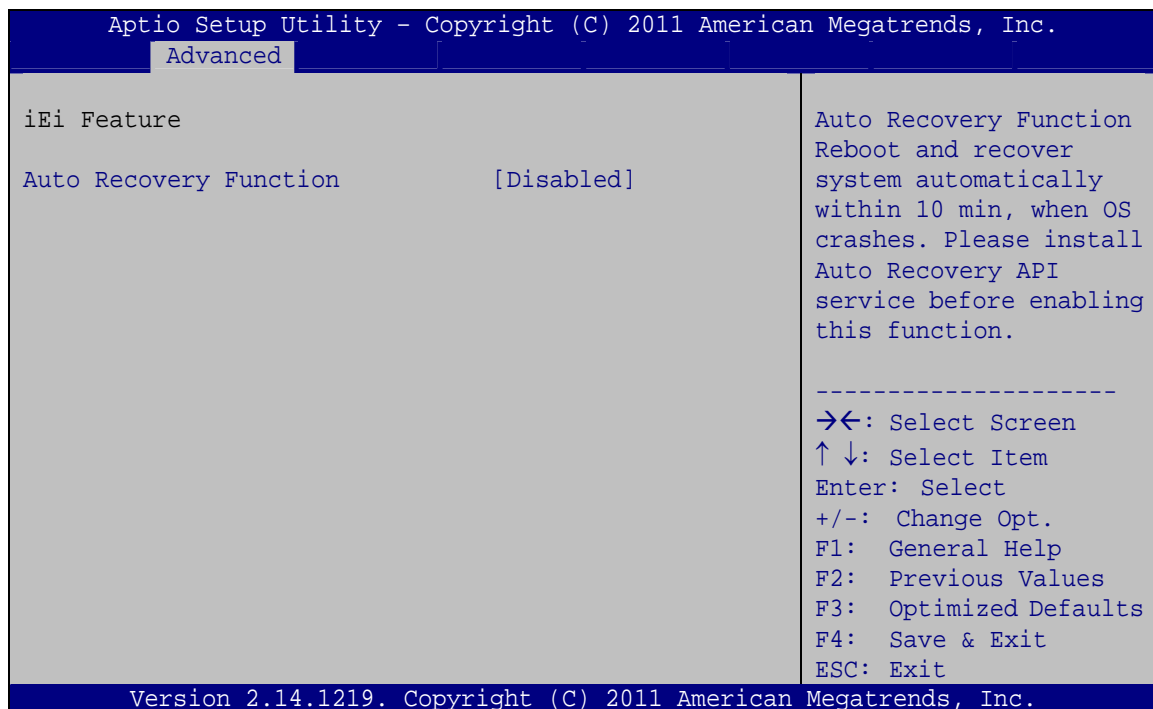
Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

➔ **1** **DEFAULT** Sets the number of stop bits at 1.

➔ **2** Sets the number of stop bits at 2.

5.3.13 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 18**) to configure One Key Recovery function.



BIOS Menu 18: 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

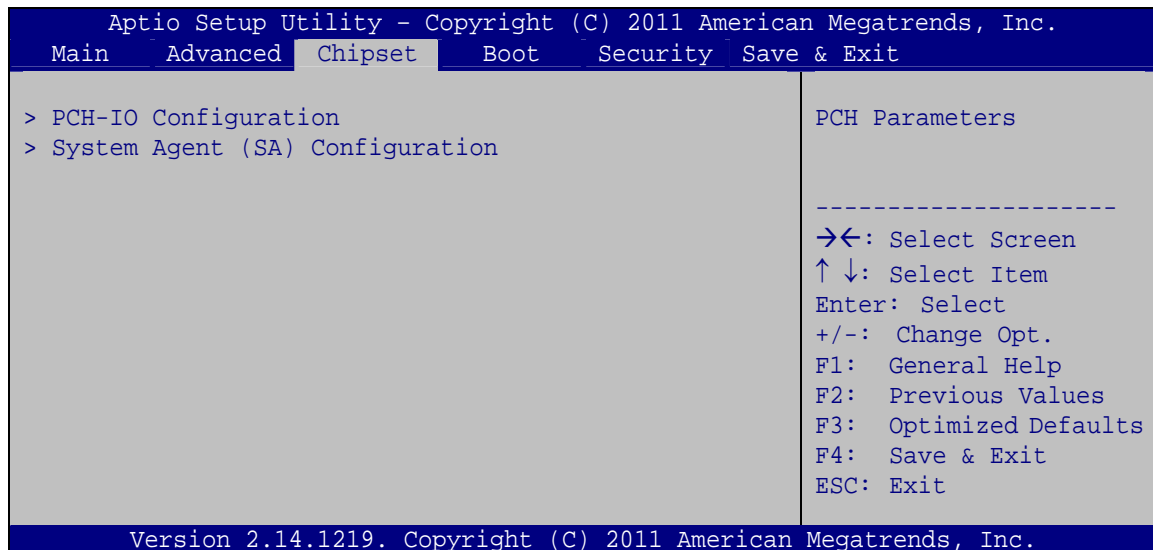
5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 19**) to access the Hostbridge and Southbridge configuration menus.



WARNING!

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

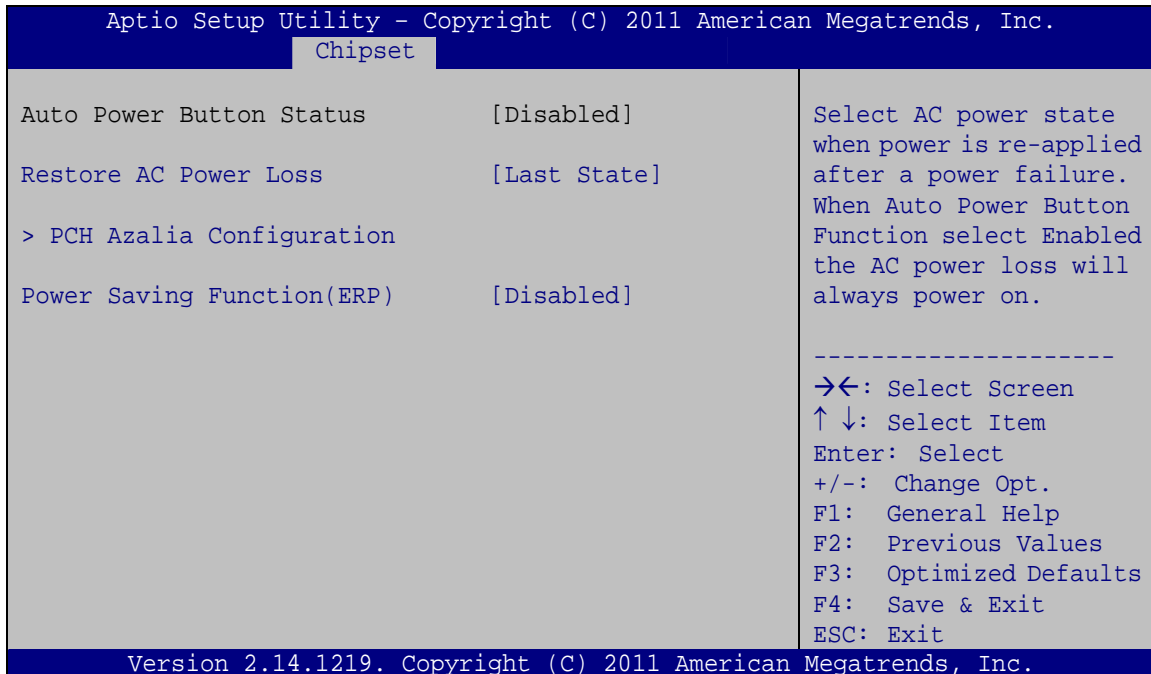


BIOS Menu 19: Chipset

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5.4.1 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 20**) to configure the PCH parameters.

**BIOS Menu 20: PCH-IO Configuration**➔ **Restore on AC Power Loss [Last State]**

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

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

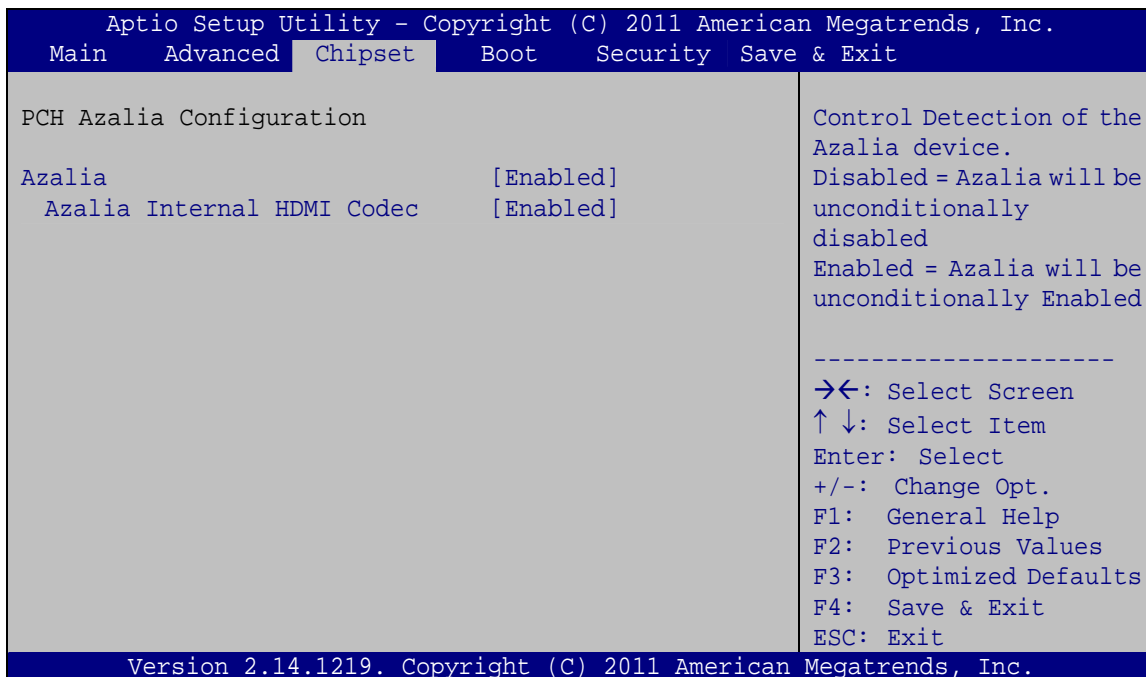
➔ **Power Saving Function(ERP) [Disabled]**

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

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

5.4.1.1 PCH Azalia Configuration

Use the **PCH Azalia Configuration** menu (**BIOS Menu 21**) to configure the PCH Azalia settings.



BIOS Menu 21: PCH Azalia Configuration Menu

➔ **Azalia [Enabled]**

Use the **Azalia** 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

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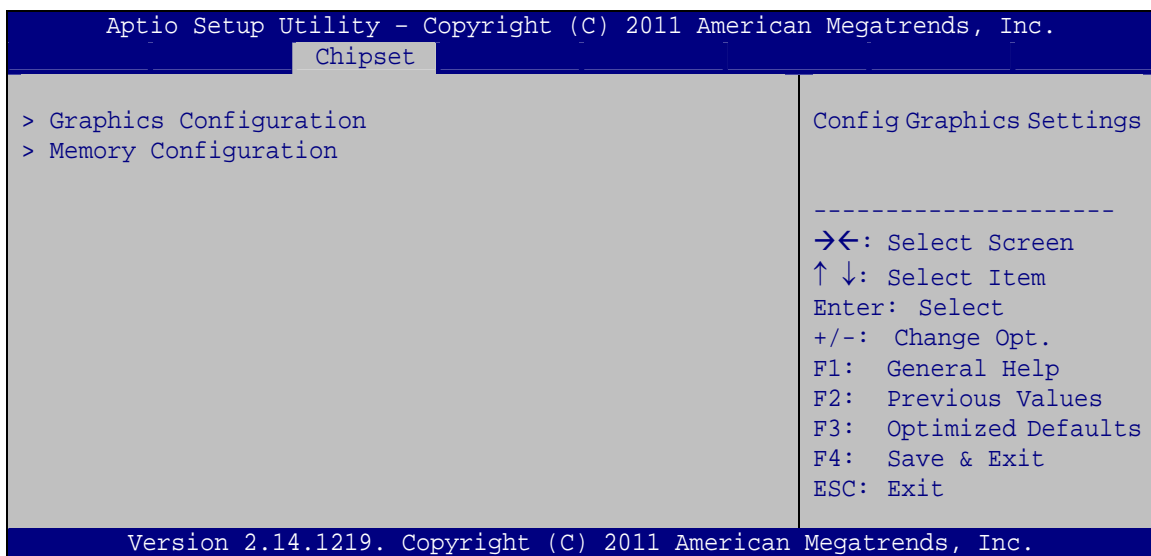
→ Azalia Internal HDMI Codec [Enabled]

Use the **Azalia Internal HDMI Codec** option to enable or disable the internal HDMI codec for High Definition Audio.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | | Disable internal HDMI codec for High Definition Audio |
| → | Enabled | DEFAULT | Enable internal HDMI codec for High Definition Audio |

5.4.2 System Agent (SA) Configuration

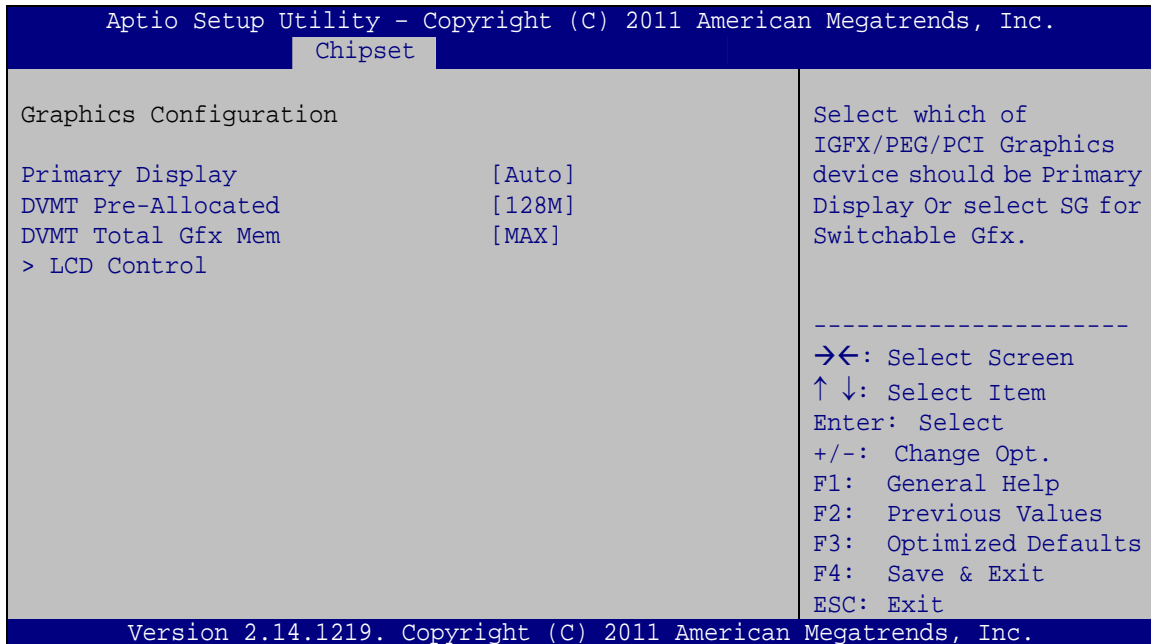
Use the **System Agent (SA) Configuration** menu (**BIOS Menu 22**) to configure the System Agent (SA) parameters.



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
- PCI

→ 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

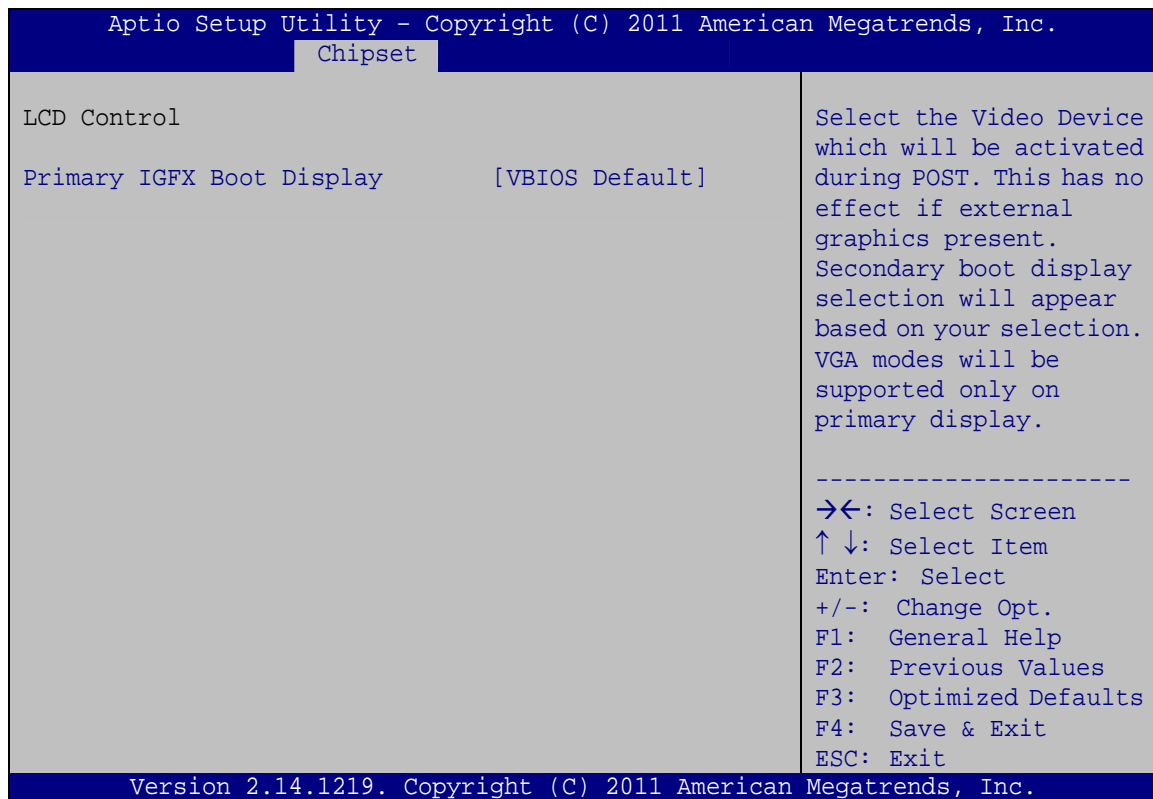
IMBA-Q770 ATX Motherboard

→ DVMT Total Gfx Mem [MAX]

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

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

5.4.2.1.1 LCD Control



BIOS Menu 24: LCD Control

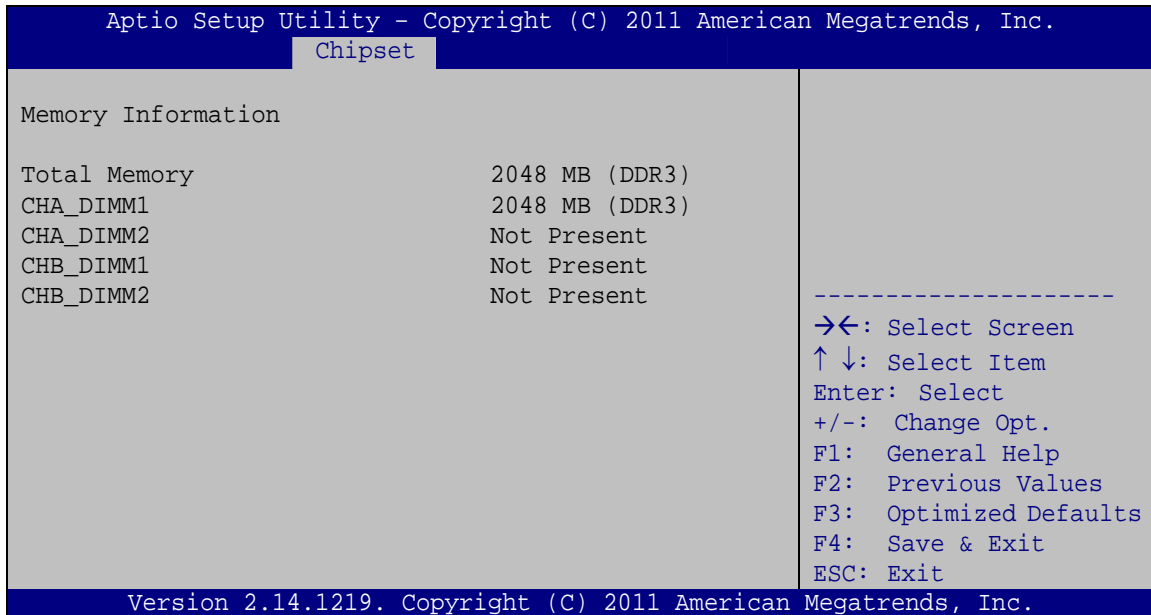
→ Primary IGFX Boot Display [VBIOS Default]

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

- VBIOS Default **DEFAULT**
- DVI
- HDMI 1
- HDMI 2

5.4.2.2 Memory Configuration

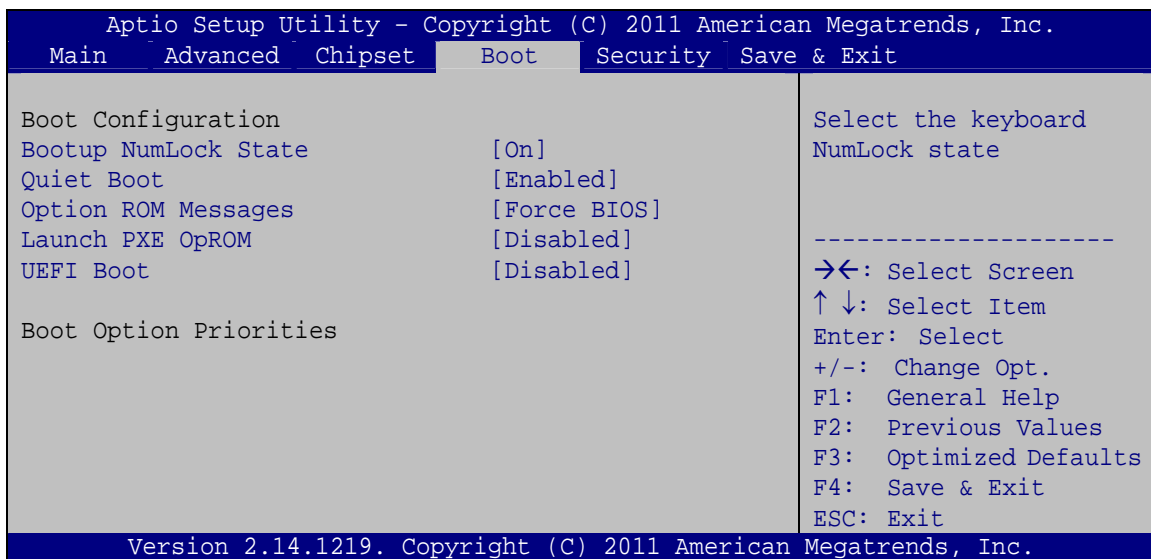
Use the **Memory Configuration** submenu (**BIOS Menu 25**) to view memory information.



BIOS Menu 25: Memory Configuration

5.5 Boot

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



BIOS Menu 26: Boot

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→ **Bootup NumLock State [On]**

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

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

→ **Quiet Boot [Enabled]**

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

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

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

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

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

→ Launch PXE OpROM [Disabled]

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

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

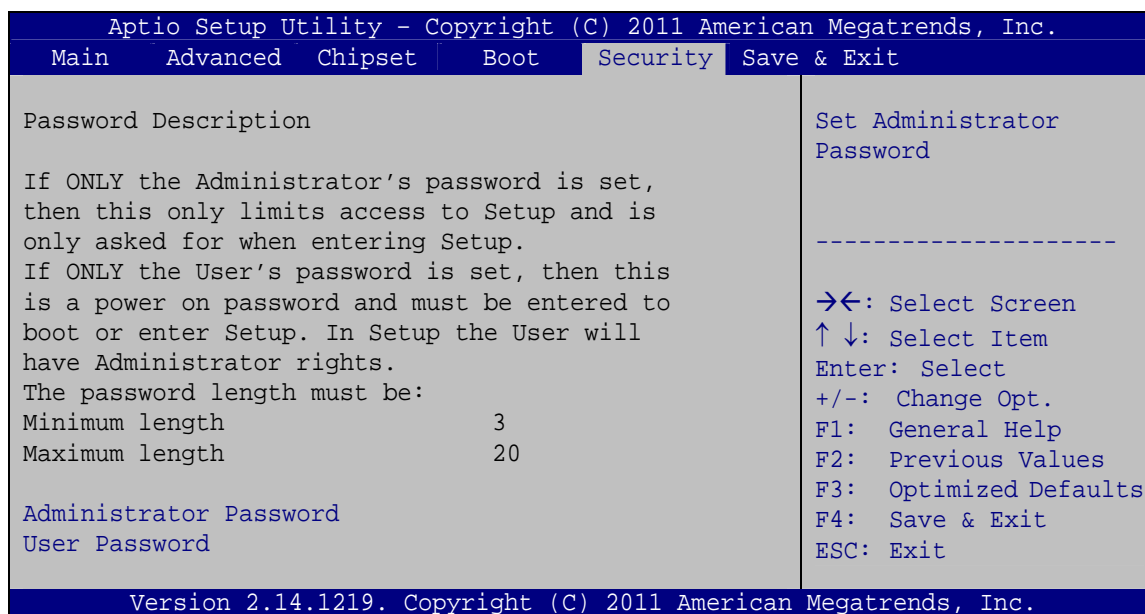
→ UEFI Boot [Disabled]

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

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

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 a administrator password.

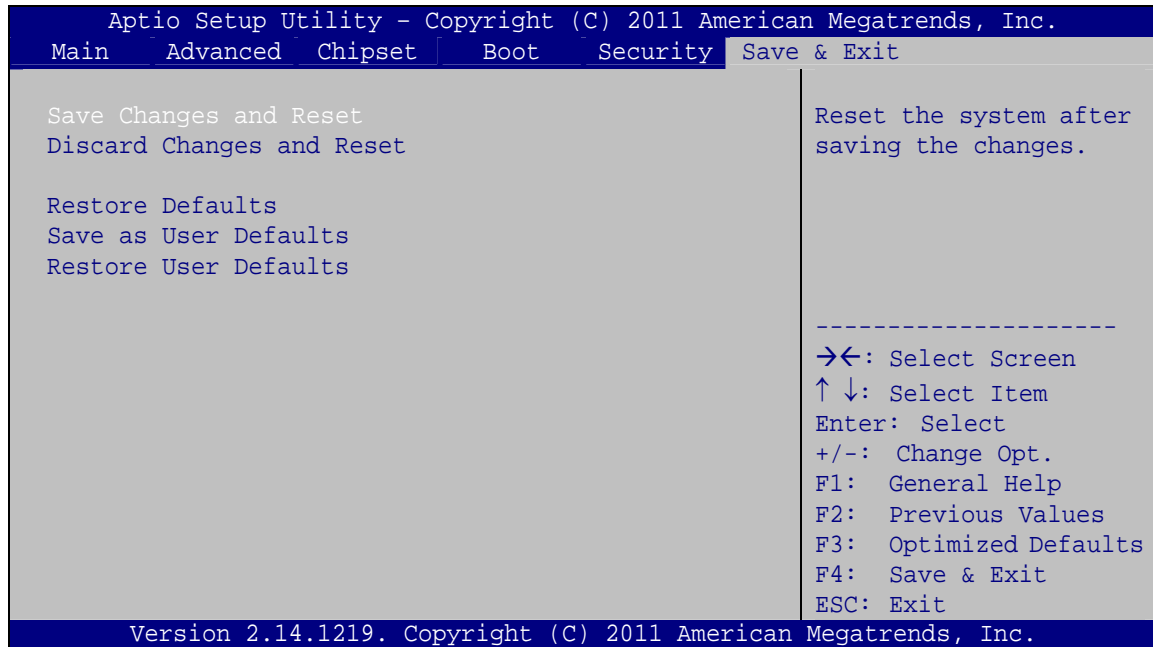
IMBA-Q770 ATX Motherboard

→ 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.



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

6.1 Available Software Drivers



NOTE:

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

The following drivers can be installed on the system:

- Chipset
- Graphics
- LAN
- Audio
- SATA (Intel® Rapid Storage Technology)
- USB 3.0
- Intel® AMT

Installation instructions are given below.

6.2 Software Installation

All the drivers for the IMBA-Q770 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**).

IMBA-Q770 ATX Motherboard



Figure 6-1: Introduction Screen

Step 3: Click IMBA-Q770.

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

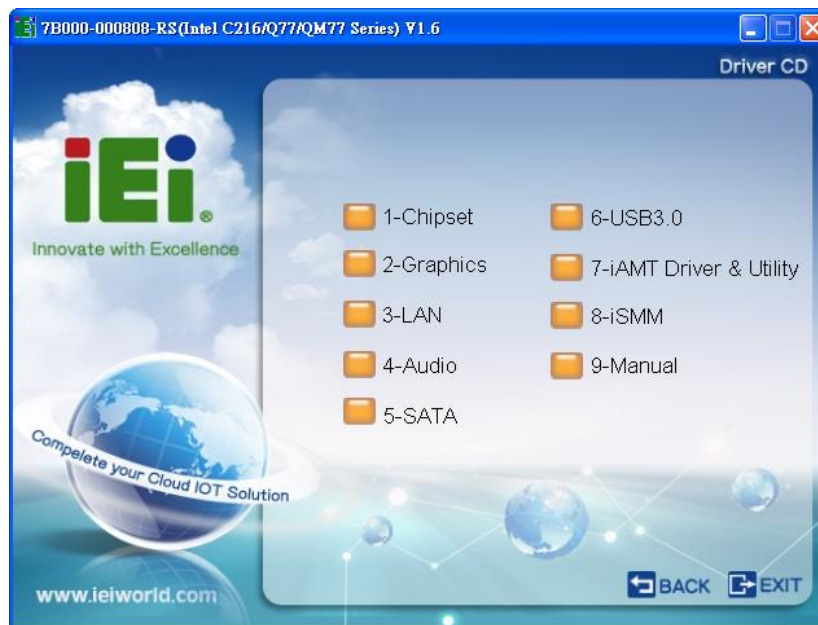


Figure 6-2: Available Drivers

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

6.3 Chipset Driver Installation

To install the chipset driver, please do the following.

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

Step 2: Click “**Chipset**”.

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

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

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



Figure 6-3: Chipset Driver Welcome Screen

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

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

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

IMBA-Q770 ATX Motherboard



Figure 6-4: Chipset Driver License Agreement

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

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

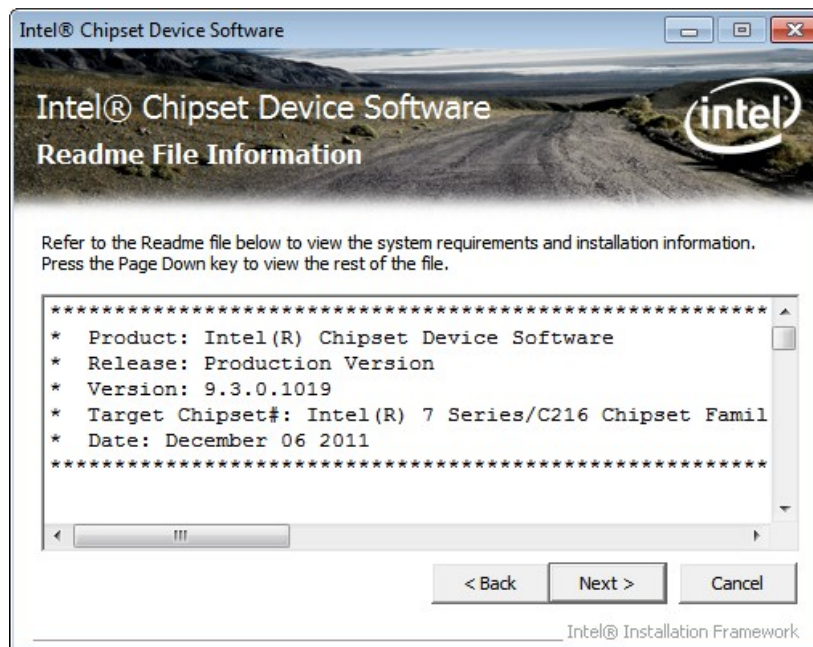


Figure 6-5: Chipset Driver Read Me File

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

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

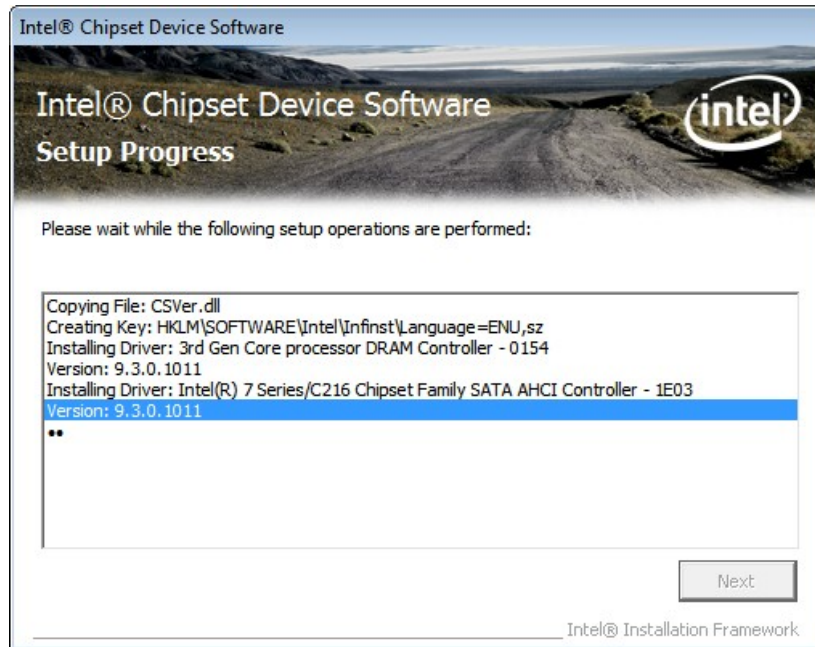


Figure 6-6: Chipset Driver Setup Operations

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

Step 14: Select “**Yes, I want to restart this computer now**” and click **Finish**.

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Figure 6-7: 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 "**Graphics**" and select the folder which corresponds to the operating system.
- Step 3:** Double click the setup file.
- Step 4:** The **Welcome Screen** in **Figure 6-8** appears.
- Step 5:** Click **Next** to continue.

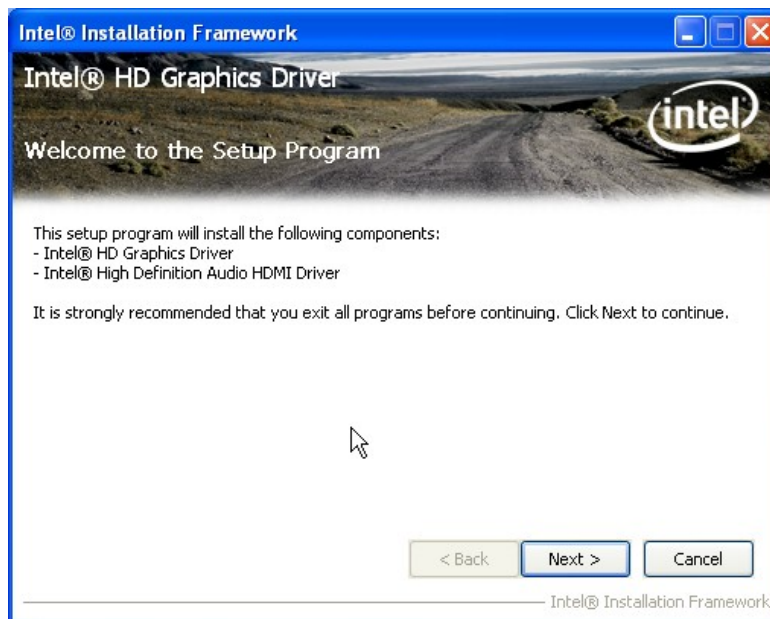


Figure 6-8: Graphics Driver Welcome Screen

Step 6: The License Agreement in Figure 6-9 appears.

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



Figure 6-9: Graphics Driver License Agreement

Step 8: Setup Operations are performed as shown in Figure 6-10.

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

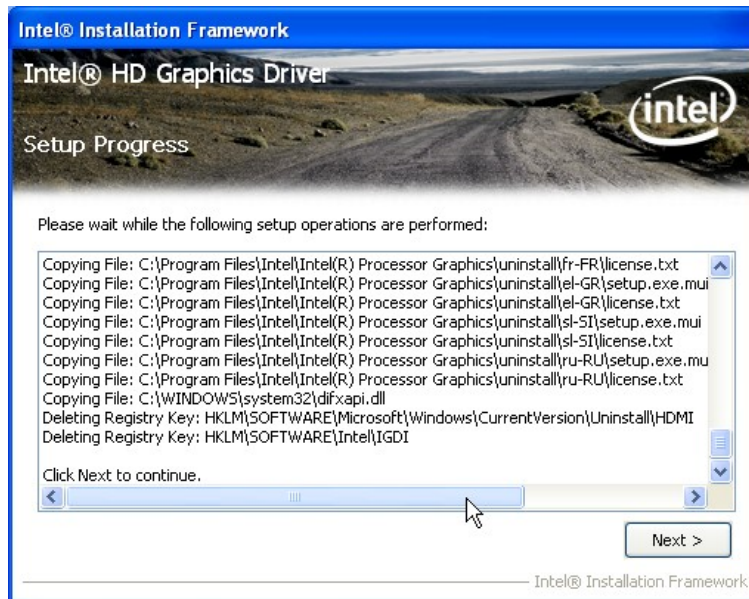


Figure 6-10: Graphics Driver Setup Operations

Step 10: The **Finish** screen in Figure 6-11 appears.

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



Figure 6-11: Graphics Driver Installation Finish Screen

6.5 LAN Driver Installation

Step 1: Right-click the Computer button from the start menu and select **Properties**.

(Figure 6-12).

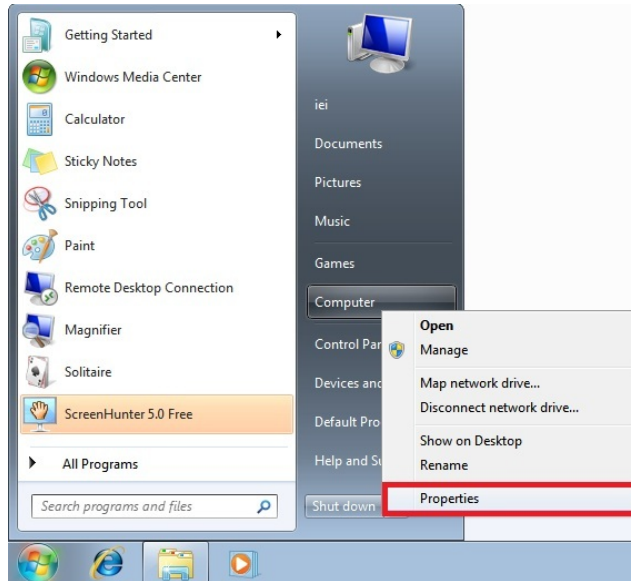


Figure 6-12: Windows Control Panel

Step 2: The system control panel window in **Figure 6-13** appears.

Step 3: Click the Device Manager link (**Figure 6-13**).

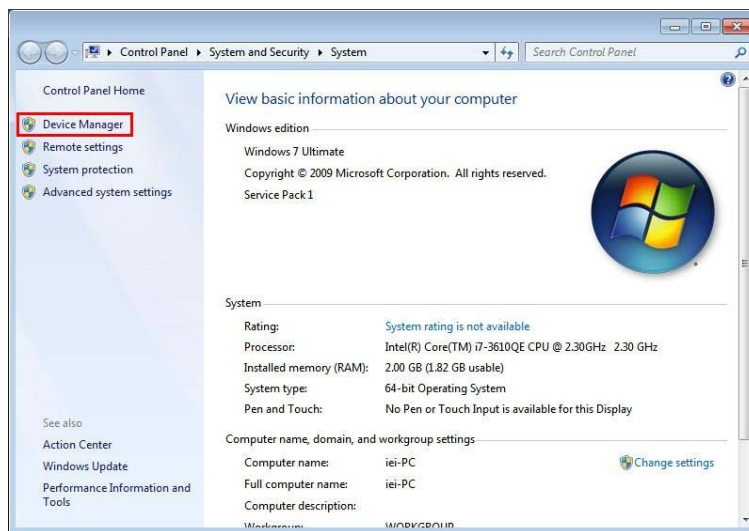


Figure 6-13: System Control Panel

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- Step 4:** A list of system hardware devices appears (**Figure 6-14**).
- Step 5:** Right-click the Ethernet Controller that has question marks next to it (this means Windows does not recognize the device).
- Step 6:** Select **Update Driver Software**.

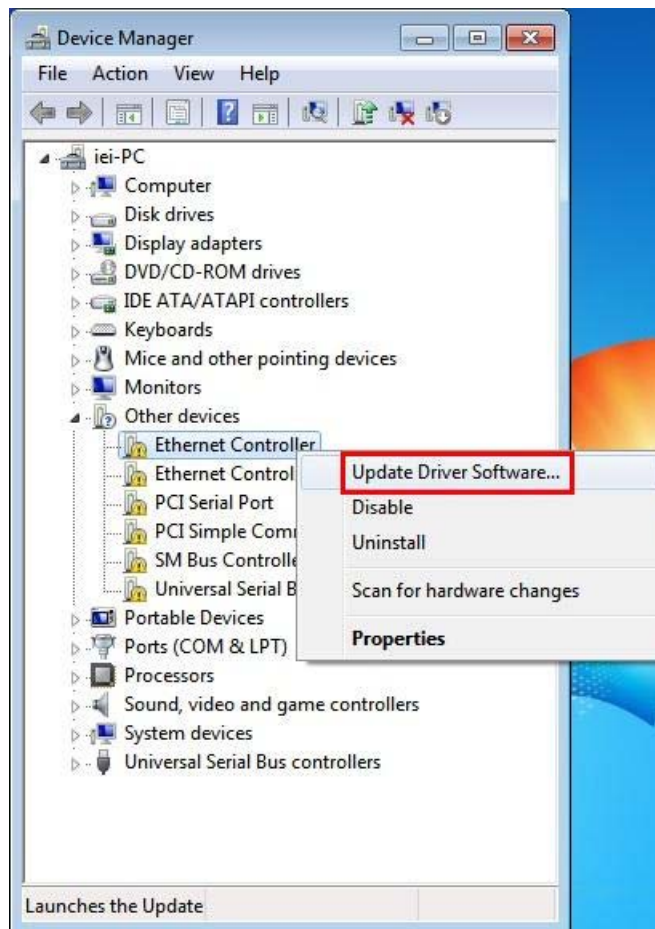


Figure 6-14: Device Manager List

- Step 7:** The Update Driver Software Window appears (**Figure 6-15**).

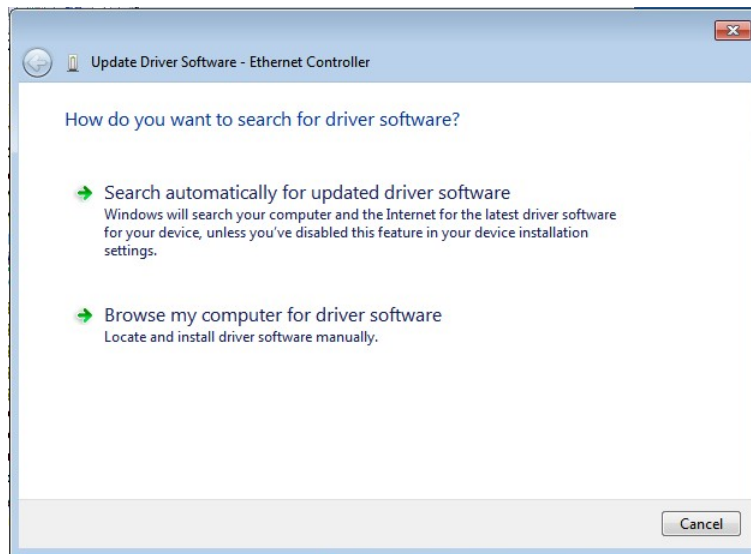


Figure 6-15: Update Driver Software Window

Step 8: Select “Browse my computer for driver software” and click **NEXT** to continue.

Step 9: Click Browse to select “X:\3-LAN” directory in the **Locate File** window, where “X:\” is the system CD drive. (Figure 6-16).

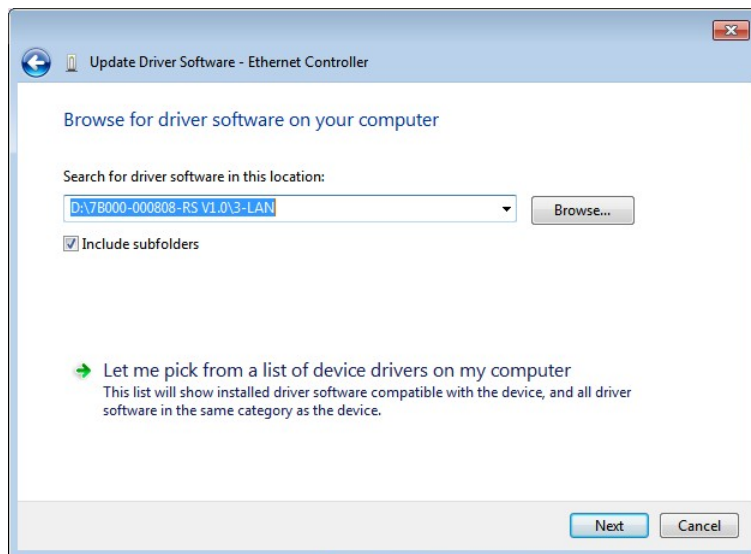


Figure 6-16: Locate Driver Files

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

Step 11: Driver Installation is performed as shown in Figure 6-17.

IMBA-Q770 ATX Motherboard

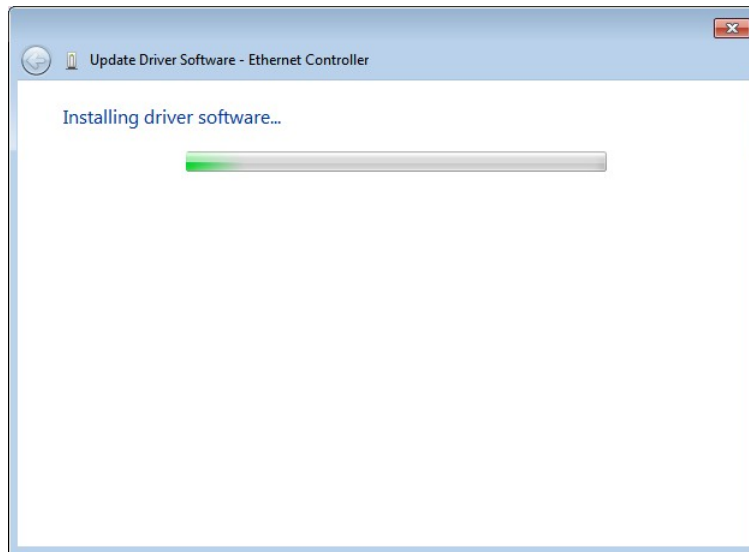


Figure 6-17: LAN Driver Installation

Step 12: The **Finish** screen in **Figure 6-18** appears. Click **Close** to exit.

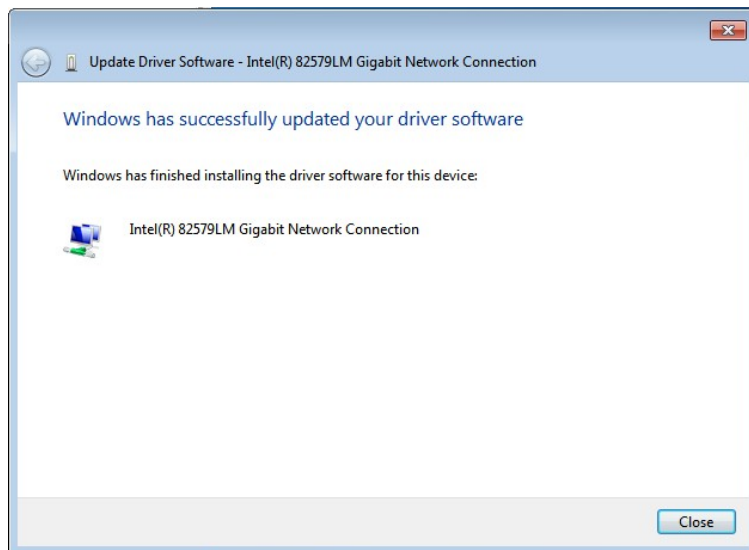


Figure 6-18: LAN Driver Installation Complete

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** is prepared to guide the user through the rest of the process.

Step 5: Once initialized, the **InstallShield Wizard** welcome screen appears (**Figure 6-19**).

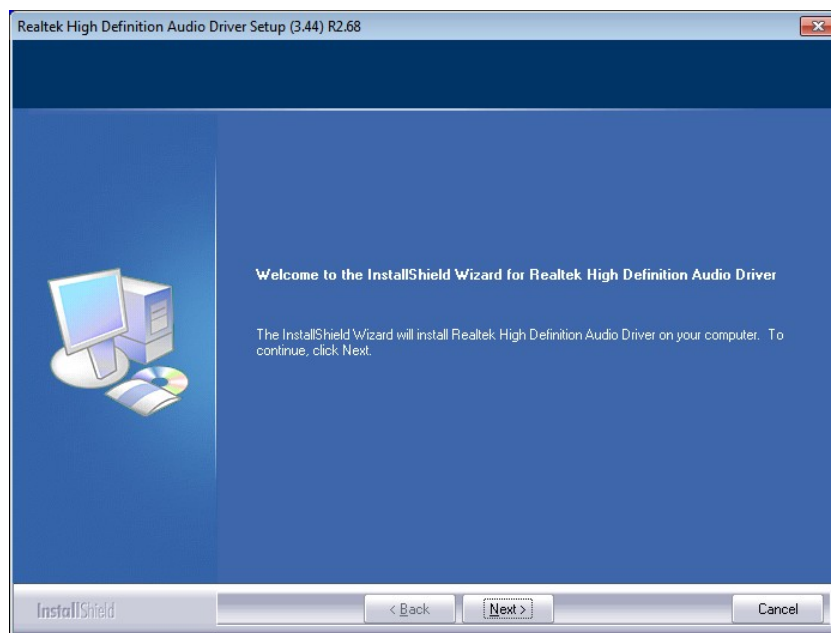
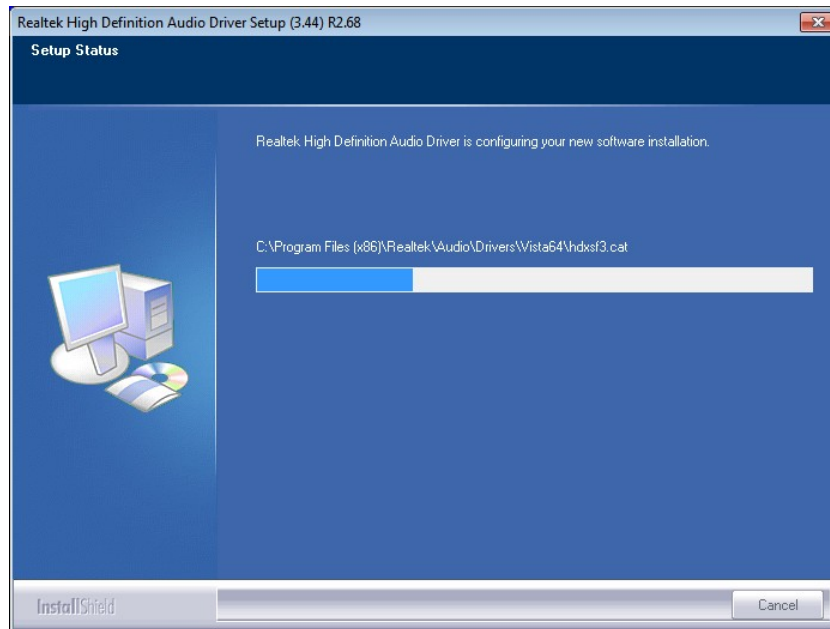


Figure 6-19: InstallShield Wizard Welcome Screen

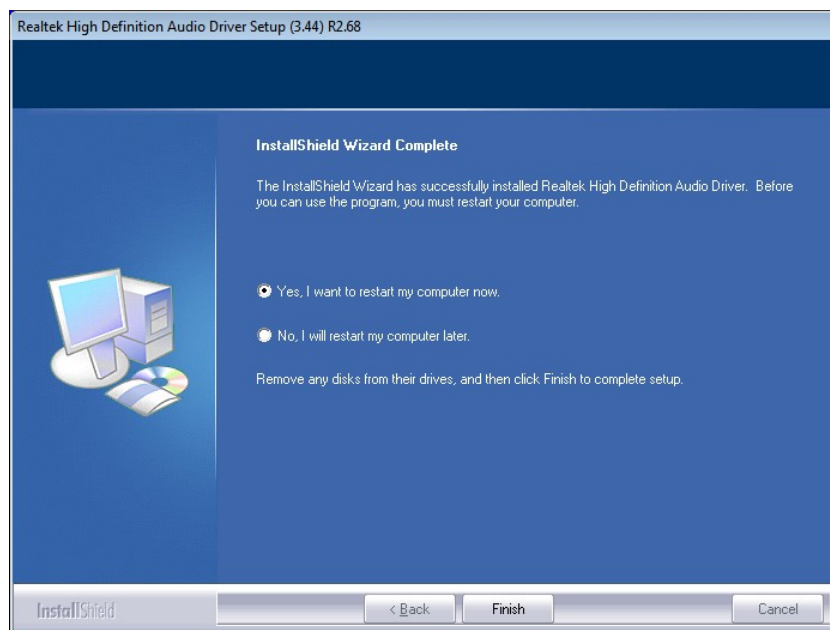
Step 6: Click **NEXT** to continue the installation.

Step 7: InstallShield starts to install the new software as shown in **Figure 6-20**.

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**Figure 6-20: Audio Driver Software Configuration**

Step 8: After the driver installation process is complete, a confirmation screen appears (Figure 6-21).

**Figure 6-21: Restart the Computer**

Step 9: The confirmation screen offers the option of restarting the computer now or later.

For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

6.7 Intel® Rapid Storage Technology Driver Installation

To install the Intel® Rapid Storage Technology driver, please do the following.

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

Step 2: Click “**SATA**”.

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

Step 4: The **Welcome Screen** in **Figure 6-22** appears.

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

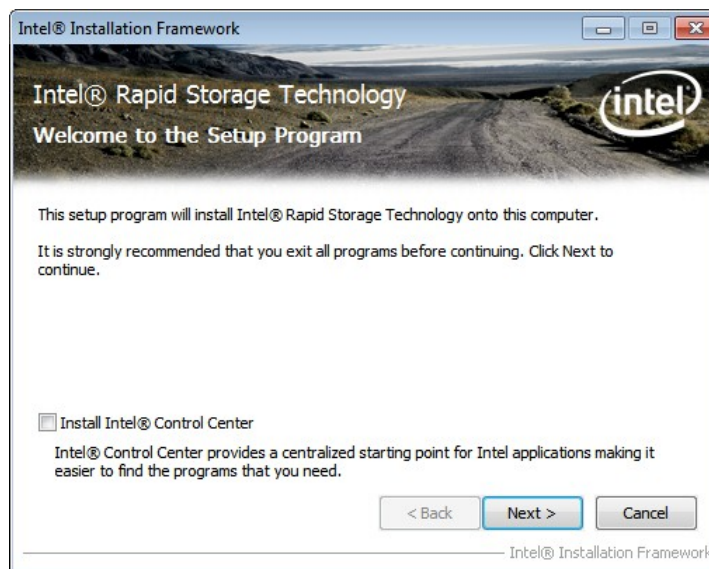


Figure 6-22: SATA RAID Driver Welcome Screen

Step 6: The license agreement in **Figure 6-23** appears.

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

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

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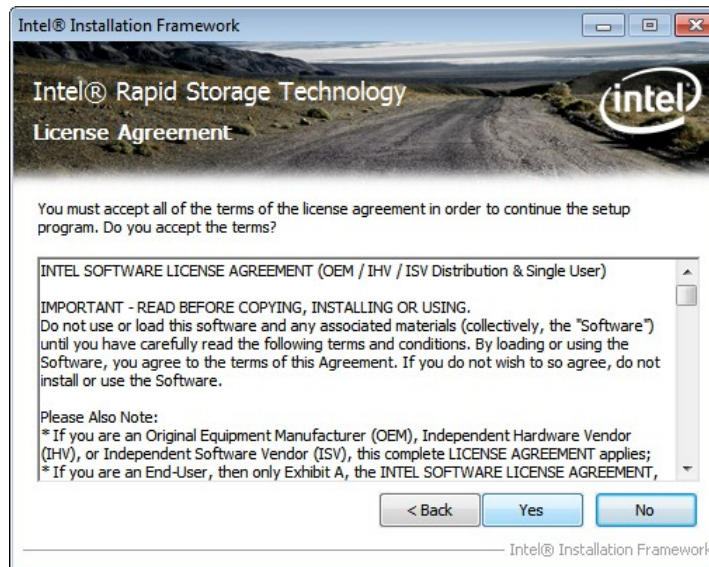


Figure 6-23: SATA RAID Driver License Agreement

Step 9: The **Read Me** file in **Figure 6-24** appears.

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

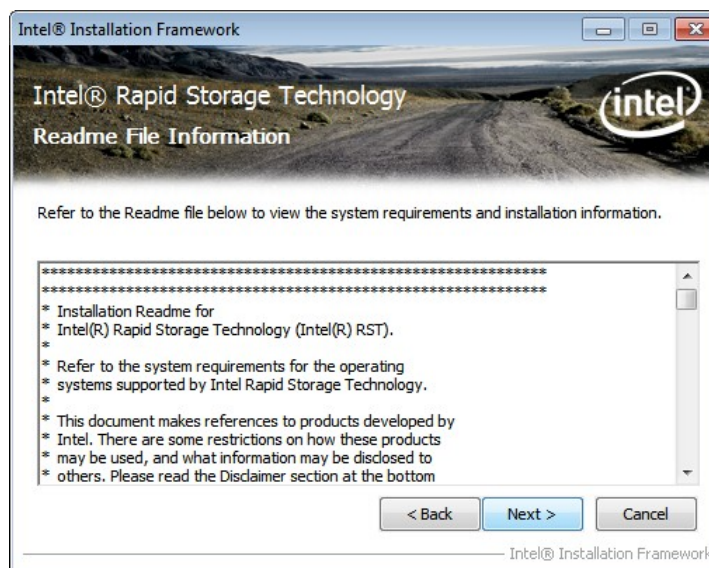


Figure 6-24: SATA RAID Driver Read Me File

Step 11: **Setup Operations** are performed as shown in **Figure 6-25**.

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

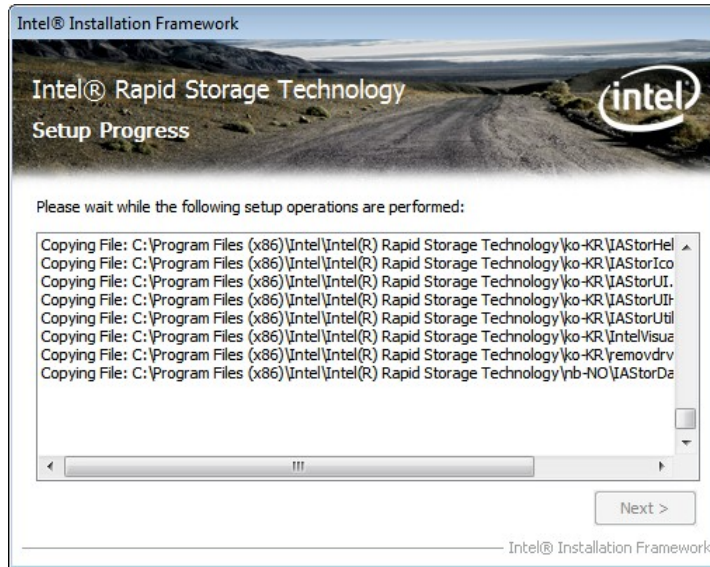


Figure 6-25: SATA RAID Driver Setup Operations

Step 13: The **Finish** screen in **Figure 6-26** appears.

Step 14: Select “**Yes, I want to restart this computer now**” and click **Finish**.



Figure 6-26: SATA RAID Driver Installation Finish Screen

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6.8 USB 3.0 Driver Installation

**WARNING:**

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

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

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

Step 2: Click "**USB 3.0**".

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

Step 4: The **Welcome Screen** in **Figure 6-27** appears.

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



Figure 6-27: USB 3.0 Driver Welcome Screen

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

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

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



Figure 6-28: USB 3.0 Driver License Agreement

Step 9: The **Read Me** file in **Figure 6-29** appears.

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



Figure 6-29: USB 3.0 Driver Read Me File

Step 11: **Setup Operations** are performed as shown in **Figure 6-30**.

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

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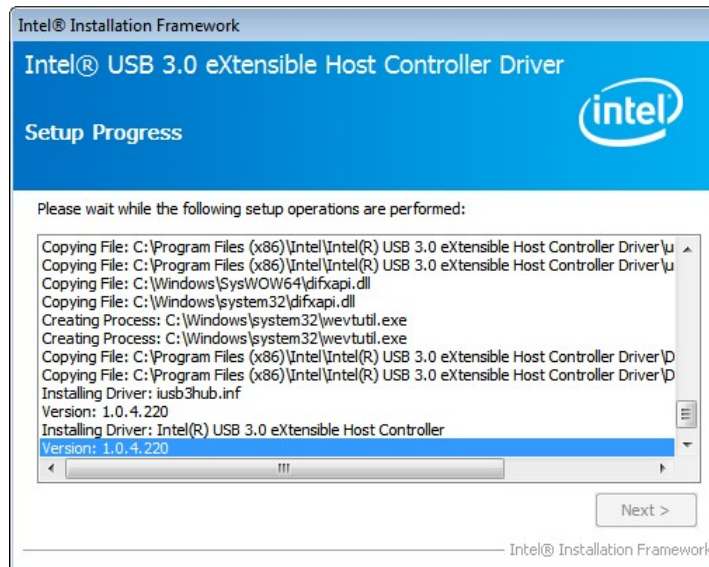


Figure 6-30: USB 3.0 Driver Setup Operations

Step 13: The **Finish** screen in Figure 6-31 appears.

Step 14: Select “Yes, I want to restart this computer now” and click **Finish**.



Figure 6-31: USB 3.0 Driver Installation Finish Screen

6.9 Intel® AMT Driver Installation

The package of the Intel® AMT components includes

- Intel® Management Engine Interface (Intel® ME Interface)
- Intel® Dynamic Application Loader
- Intel® Identity Protection Technology (Intel® IPT)
- Serial Over LAN (SOL)
- Intel® Manageability Engine Firmware Recovery Agent
- Intel® Management and Security Status
- Local Management Service (LMS)
- User Notification Service (UNS)

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

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

Step 2: Click “iAMT”.

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

Step 4: When the setup files are completely extracted the **Welcome Screen** in **Figure 6-32** appears.

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

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Figure 6-32: Intel® ME Driver Welcome Screen

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

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

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

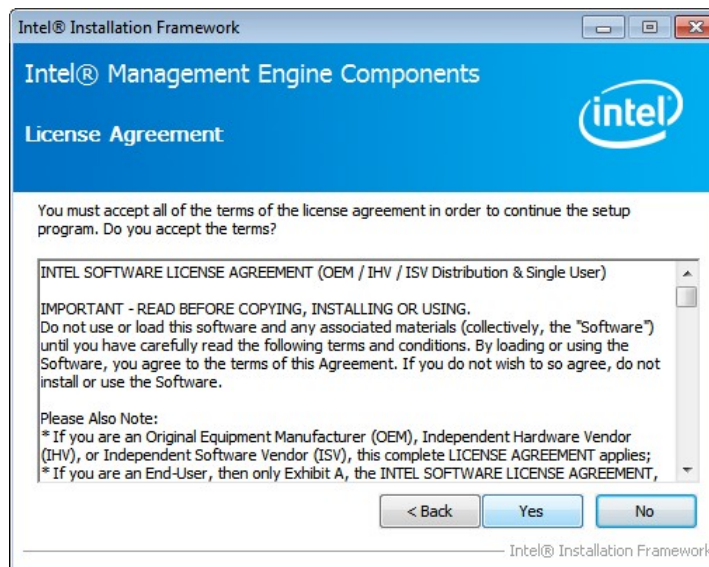


Figure 6-33: Intel® ME Driver License Agreement

Step 9: **Setup Operations** are performed as shown in **Figure 6-34**.

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

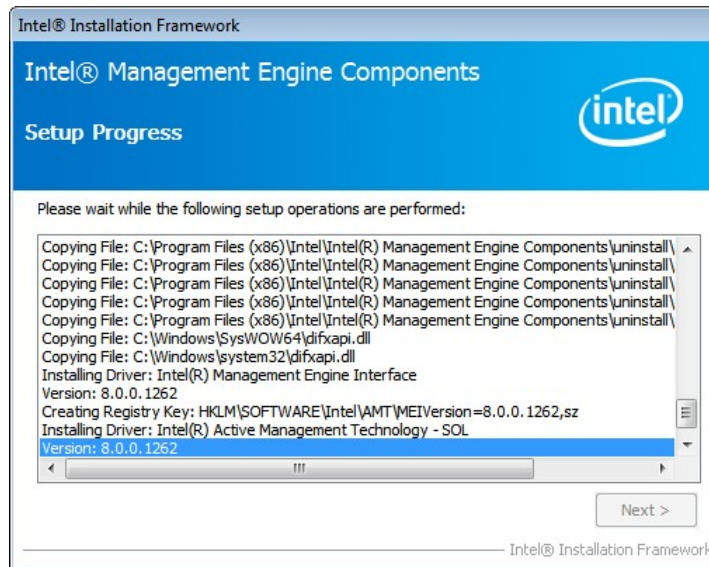


Figure 6-34: Intel® ME Driver Setup Operations

Step 11: The **Finish** screen in **Figure 6-35** appears.

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

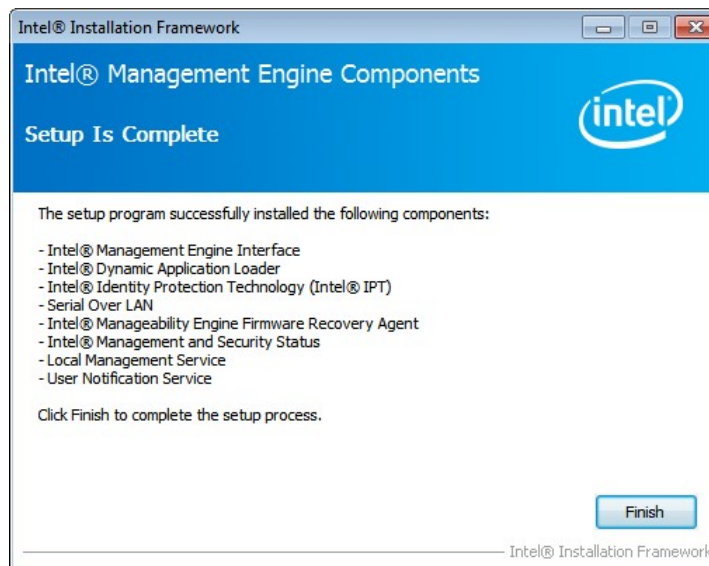


Figure 6-35: Intel® ME Driver Installation Finish Screen

Appendix

A

BIOS Options

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

System Date [xx/xx/xx]	75
System Time [xx:xx:xx]	75
ACPI Sleep State [S1 only (CPU Stop Clock)]	77
Wake System with Fixed Time [Disabled]	78
Security Device Support [Disable]	79
Intel Virtualization Technology [Disabled]	81
SATA Controller(s) [Enabled]	81
SATA Mode Selection [IDE]	82
Intel(R) Rapid Start Technology [Disabled]	82
Intel AMT [Enabled]	84
Un-Configure ME [Disabled]	84
Legacy USB Support [Enabled]	85
Serial Port [Enabled]	87
Change Settings [Auto]	87
Serial Port [Enabled]	87
Change Settings [Auto]	88
Serial Port [Enabled]	88
Change Settings [Auto]	88
Serial Port [Enabled]	89
Change Settings [Auto]	89
Serial Port [Enabled]	90
Change Settings [Auto]	90
Serial Port [Enabled]	91
Change Settings [Auto]	91
Parallel Port [Enabled]	92
Change Settings [Auto]	92
Device Mode [STD Printer Mode]	93
PC Health Status	94
CPU_FAN1 Smart Fan Control [Auto Duty-Cycle Mode]	95
CPU Temperature n	95
SYS_FAN1 Smart Fan Control [Auto Duty-Cycle Mode]	96
System Temperature n	96
Console Redirection [Disabled]	97

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Terminal Type [ANSI].....	97
Bits per second [115200].....	98
Data Bits [8]	98
Parity [None].....	98
Stop Bits [1]	99
Auto Recovery Function [Disabled].....	100
Restore on AC Power Loss [Last State]	101
Power Saving Function(ERP) [Disabled].....	101
Azalia [Enabled]	102
Azalia Internal HDMI Codec [Enabled].....	103
Primary Display [Auto]	104
DVMT Pre-Allocated [128M]	104
DVMT Total Gfx Mem [MAX].....	105
Primary IGFX Boot Display [VBIOS Default]	105
Bootup NumLock State [On].....	107
Quiet Boot [Enabled]	107
Option ROM Messages [Force BIOS].....	107
Launch PXE OpROM [Disabled]	108
UEFI Boot [Disabled]	108
Administrator Password	108
User Password	109
Save Changes and Reset	109
Discard Changes and Reset	109
Restore Defaults	109
Save as User Defaults	110
Restore User Defaults	110

Appendix

B

One Key Recovery

IMBA-Q770 ATX Motherboard

B.1 One Key Recovery Introduction

The IEI one key recovery is an easy-to-use front end for the Norton Ghost system backup and recovery tool. This tool provides quick and easy shortcuts for creating a backup and reverting to that backup or reverting to the factory default settings.



NOTE:

The latest One Key Recovery software provides an auto recovery function that allows a system running Microsoft Windows OS to automatically restore from the factory default image after encountering a Blue Screen of Death (BSOD) or a hang for around 10 minutes. Please refer to **Section B.3** for the detailed setup procedure.

The IEI One Key Recovery tool menu is shown below.

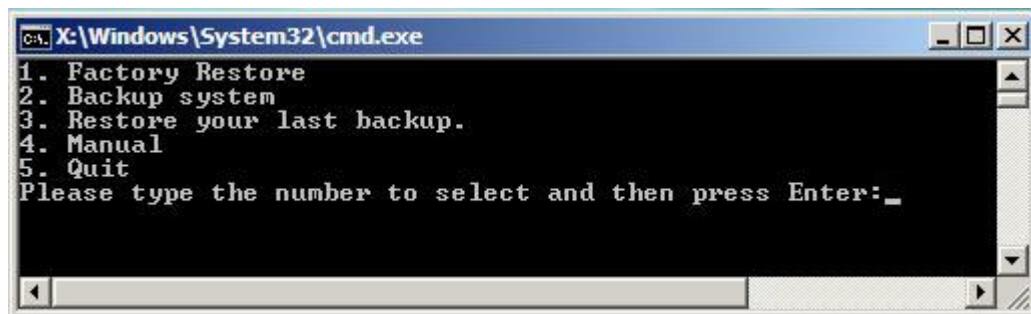


Figure B-1: IEI One Key Recovery Tool Menu

Prior to using the IEI One Key Recovery tool (as shown in **Figure B-1**) to backup or restore Windows system, five setup procedures are required.

1. Hardware and BIOS setup (see **Section B.2.1**)
2. Create partitions (see **Section B.2.2**)
3. Install operating system, drivers and system applications (see **Section B.2.3**)
4. Build-up recovery partition (see **Section B.2.4**)
5. Create factory default image (see **Section B.2.5**)

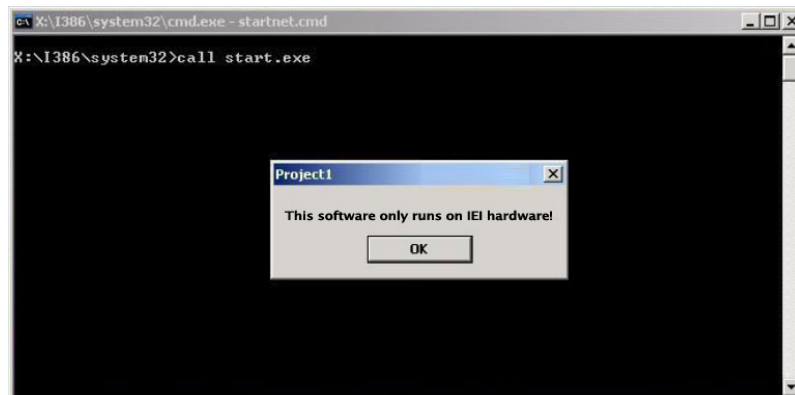
After completing the five initial setup procedures as described above, users can access the recovery tool by pressing <F3> while booting up the system. The detailed information of each function is described in **Section B.5**.

**NOTE:**

The initial setup procedures for Linux system are described in **Section B.3**.

B.1.1 System Requirement**NOTE:**

The recovery CD can only be used with IEI products. The software will fail to run and a warning message will appear when used on non-IEI hardware.



To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

The partition created for recovery images must be big enough to contain both the factory default image and the user backup image. The size must be calculated before creating the

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partitions. Please take the following table as a reference when calculating the size of the partition.

	OS	OS Image after Ghost	Compression Ratio
Windows® 7	7 GB	5 GB	70%
Windows® XPE	776 MB	560 MB	70%
Windows® CE 6.0	36 MB	28 MB	77%



NOTE:

Specialized tools are required to change the partition size if the operating system is already installed.

B.1.2 Supported Operating System

The recovery CD is compatible with both Microsoft Windows and Linux operating system (OS). The supported OS versions are listed below.

- Microsoft Windows
 - Windows 2000
 - Windows XP (Service Pack 2 or 3 required)
 - Windows Vista
 - Windows 7
 - Windows CE 5.0
 - Windows CE 6.0
 - Windows XP Embedded
 - Windows Embedded Standard 7
-



NOTE:

The auto recovery function (described in **Section B.3**) and the restore through LAN function (described in **Section B.6**) are not supported in the Windows CE 5.0/6.0 operating system environment.

- Linux
 - Fedora Core 12 (Constantine)
 - Fedora Core 11 (Leonidas)
 - Fedora Core 10 (Cambridge)
 - Fedora Core 8 (Werewolf)
 - Fedora Core 7 (Moonshine)
 - RedHat RHEL-5.4
 - RedHat 9 (Ghirke)
 - Ubuntu 8.10 (Intrepid)
 - Ubuntu 7.10 (Gutsy)
 - Ubuntu 6.10 (Edgy)
 - Debian 5.0 (Lenny)
 - Debian 4.0 (Etch)
 - SuSe 11.2
 - SuSe 10.3

**NOTE:**

Installing unsupported OS versions may cause the recovery tool to fail.

B.2 Setup Procedure for Windows

Prior to using the recovery tool to backup or restore, a few setup procedures are required.

Step 1: Hardware and BIOS setup (see **Section B.2.1**)

Step 2: Create partitions (see **Section B.2.2**)

Step 3: Install operating system, drivers and system applications (see **Section B.2.3**)

Step 4: Build the recovery partition (see **Section B.2.4**) or build the auto recovery partition (see **Section B.3**)

Step 5: Create factory default image (see **Section B.2.5**)

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The detailed descriptions are described in the following sections.



NOTE:

The setup procedures described below are for Microsoft Windows operating system users. For Linux, most of the setup procedures are the same except for several steps described in **Section B.3**.

B.2.1 Hardware and BIOS Setup

- Step 1:** Make sure the system is powered off and unplugged.
- Step 2:** Install a hard drive or SSD in the system. An unformatted and unpartitioned disk is recommended.
- Step 3:** Connect an optical disk drive to the system and insert the recovery CD.
- Step 4:** Turn on the system.
- Step 5:** Press the <DELETE> key as soon as the system is turned on to enter the BIOS.
- Step 6:** Select the connected optical disk drive as the 1st boot device. (**Boot → Boot Device Priority → 1st Boot Device**).
- Step 7:** Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

B.2.2 Create Partitions

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

- Step 1:** Put the recovery CD in the optical drive of the system.

Step 2: Boot the system from recovery CD. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

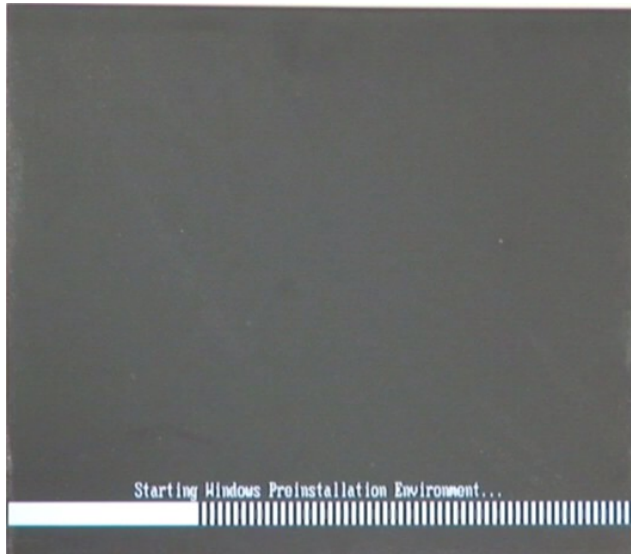


Figure B-2: Launching the Recovery Tool

Step 3: The recovery tool setup menu is shown as below.

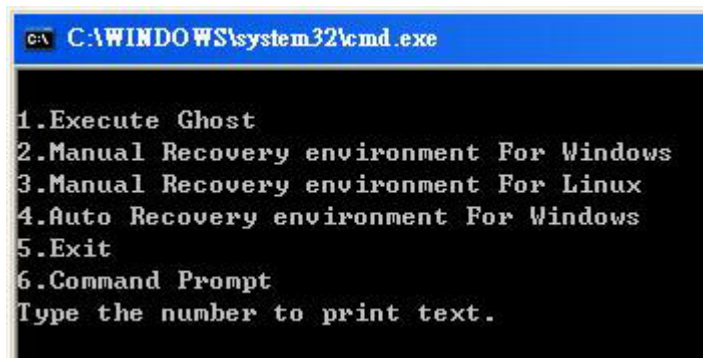
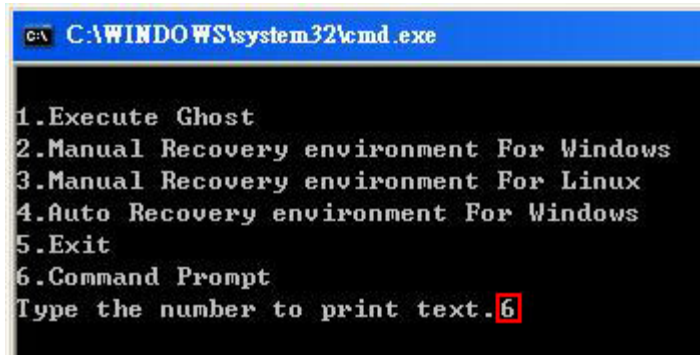


Figure B-3: Recovery Tool Setup Menu

Step 4: Press <6> then <Enter>.

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```
C:\WINDOWS\system32\cmd.exe

1. Execute Ghost
2. Manual Recovery environment For Windows
3. Manual Recovery environment For Linux
4. Auto Recovery environment For Windows
5. Exit
6. Command Prompt
Type the number to print text. 6
```

Figure B-4: Command Prompt

Step 5: The command prompt window appears. Type the following commands (marked in red) to create two partitions. One is for the OS installation; the other is for saving recovery files and images which will be an invisible partition.

(Press <Enter> after entering each line below)

```
system32>diskpart
```

```
DISKPART>list vol
```

```
DISKPART>sel disk 0
```

```
DISKPART>create part pri size= ____
```

```
DISKPART>assign letter=N
```

```
DISKPART>create part pri size= ____
```

```
DISKPART>assign letter=F
```

```
DISKPART>exit
```

```
system32>format N: /fs:ntfs /q /y
```

```
system32>format F: /fs:ntfs /q /v:Recovery /y
```

```
system32>exit
```



```

X:\I386\SYSTEM32\CMD.EXE

X:\I386\SYSTEM32>diskpart → Starts the Microsoft disk partitioning tool.

Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JUC

DISKPART>list vol → Show partition information

   Volume ###  Ltr  Label        Fs      Type          Size      Status       Info
   -----
   Volume 0          X  CD_ROM        CDFS     DVD-ROM        405 MB    Healthy      Boot
   Volume 1          D                FAT32    Removeable    3854 MB    Healthy

DISKPART>sel disk 0 → Select a disk

Disk 0 is now the selected disk.

DISKPART>create part pri size=2000 → Create partition 1 and assign a size.
                                     This partition is for OS installation.
DiskPart succeeded in creating the specified partition.

DISKPART>assign letter=N → Assign partition 1 a code name (N).
DiskPart successfully assigned the drive letter or mount point.

DISKPART>create part pri size=1800 → Create partition 2 and assign a size.
                                     This partition is for recovery images.
DiskPart succeeded in creating the specified partition.

DISKPART>assign letter=F → Assign partition 2 a code name (F).
DiskPart successfully assigned the drive letter or mount point.

DISKPART>exit → Exit diskpart

X:\I386\SYSTEM32>format n: /fs:ntfs /q /y → Format partition 1 (N) as NTFS format.
The type of the file system is NTFS.
QuickFormatting 2000M
Creating file system structures.
Format complete.
2048254 KB total disk space.
2035620 KB are available.

X:\I386\SYSTEM32>format f: /fs:ntfs /q /v:Recovery /y → Formate partition 2 (F) as NTFS formate and
                                                         name it as "Recovery".
The type of the file system is NTFS.
QuickFormatting 1804M
Creating file system structures.
Format complete.
1847474 KB total disk space.
1835860 KB are available.

X:\I386\SYSTEM32>exit → Exit Windows PE

```

Figure B-5: Partition Creation Commands

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**NOTE:**

Use the following commands to check if the partitions were created successfully.

```
X:\I386\SYSTEM32>diskpart
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JUC

DISKPART> sel disk 0
Disk 0 is now the selected disk.

DISKPART> list part

  Partition ###  Type              Size      Offset
  -----
  Partition 1    Primary           2000 MB    32 KB
  Partition 2    Primary          1804 MB   2000 MB

DISKPART> exit
```

Step 6: Press any key to exit the recovery tool and automatically reboot the system.

Please continue to the following procedure: Build the Recovery Partition.

B.2.3 Install Operating System, Drivers and Applications

Install the operating system onto the unlabelled partition. The partition labeled "Recovery" is for use by the system recovery tool and should not be used for installing the operating system or any applications.

**NOTE:**

The operating system installation program may offer to reformat the chosen partition. DO NOT format the partition again. The partition has already been formatted and is ready for installing the new operating system.

To install the operating system, insert the operating system installation CD into the optical drive. Restart the computer and follow the installation instructions.

B.2.4 Build-up Recovery Partition

Step 1: Put the recover CD in the optical drive.

Step 2: Start the system.

Step 3: **Boot the system from the recovery CD.** When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

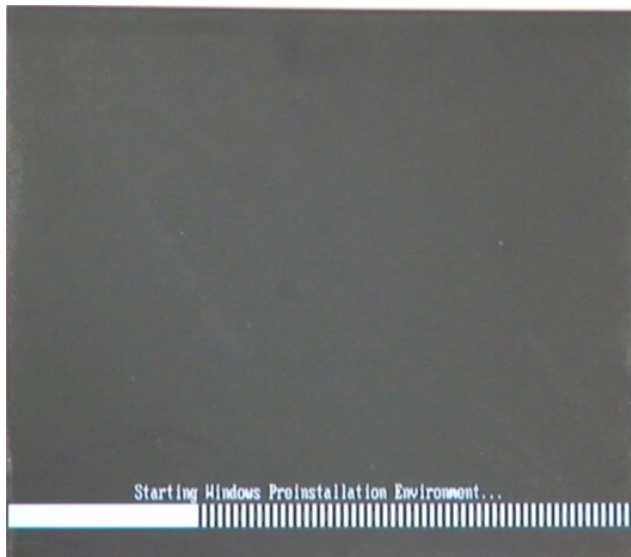


Figure B-6: Launching the Recovery Tool

Step 4: When the recovery tool setup menu appears, press <2> then <Enter>.

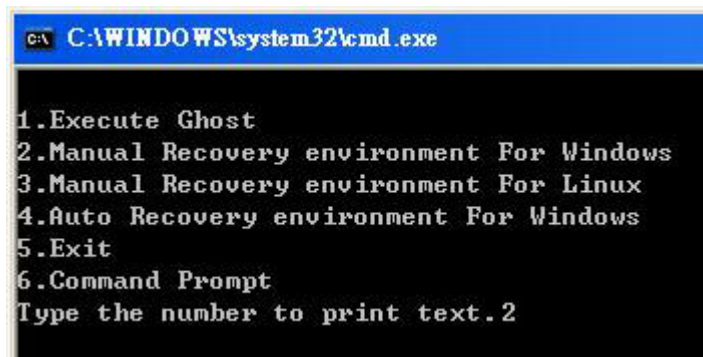


Figure B-7: Manual Recovery Environment for Windows

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Step 5: The Symantec Ghost window appears and starts configuring the system to build a recovery partition. In this process the partition created for recovery files in **Section B.2.2** is hidden and the recovery tool is saved in this partition.

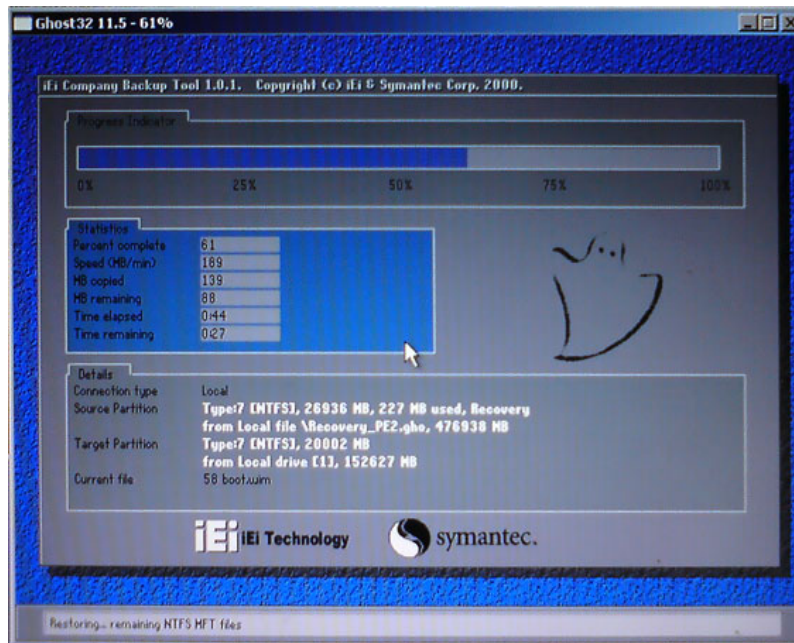


Figure B-8: Building the Recovery Partition

Step 6: After completing the system configuration, press any key in the following window to reboot the system.

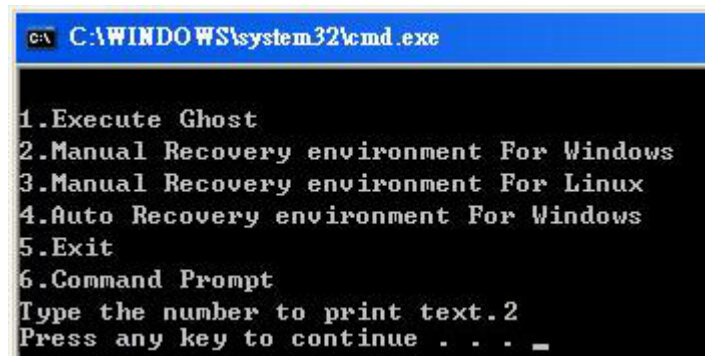


Figure B-9: Press Any Key to Continue

Step 7: Eject the recovery CD.

B.2.5 Create Factory Default Image

**NOTE:**

Before creating the factory default image, please configure the system to a factory default environment, including driver and application installations.

To create a factory default image, please follow the steps below.

Step 1: Turn on the system. When the following screen displays (**Figure B-10**), press the <**F3**> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.

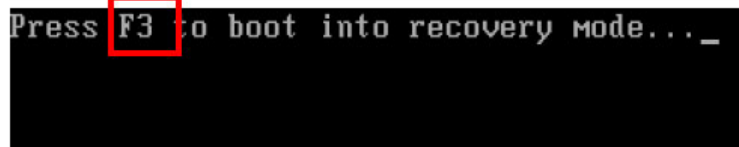


Figure B-10: Press F3 to Boot into Recovery Mode

Step 2: The recovery tool menu appears. Type <**4**> and press <**Enter**>. (**Figure B-11**)

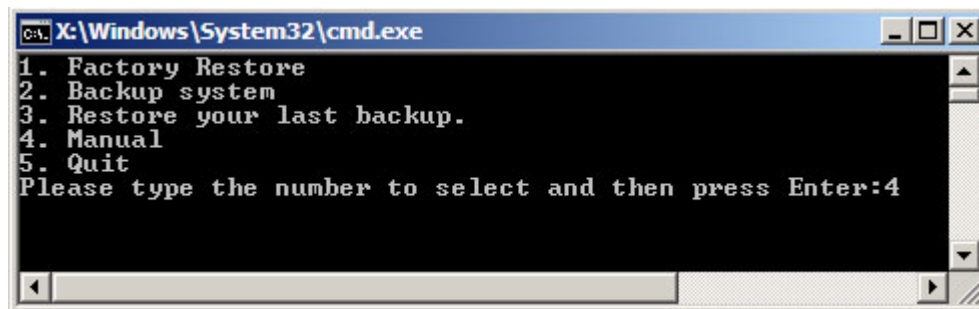


Figure B-11: Recovery Tool Menu

Step 3: The About Symantec Ghost window appears. Click **OK** button to continue.

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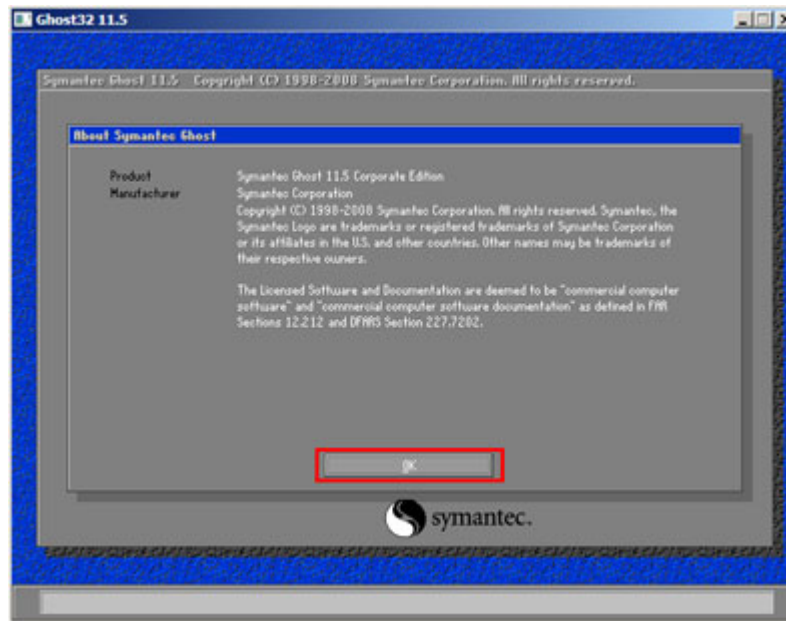


Figure B-12: About Symantec Ghost Window

Step 4: Use mouse to navigate to the option shown below (Figure B-13).

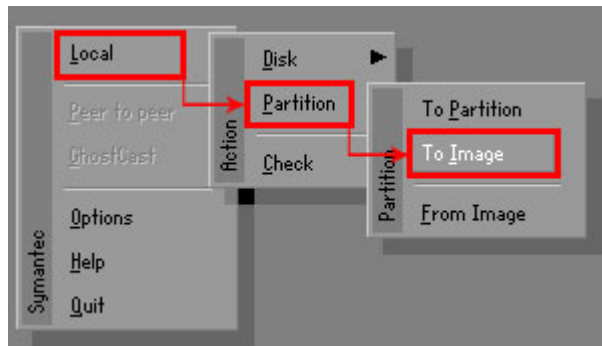


Figure B-13: Symantec Ghost Path

Step 5: Select the local source drive (Drive 1) as shown in Figure B-14. Then click OK.

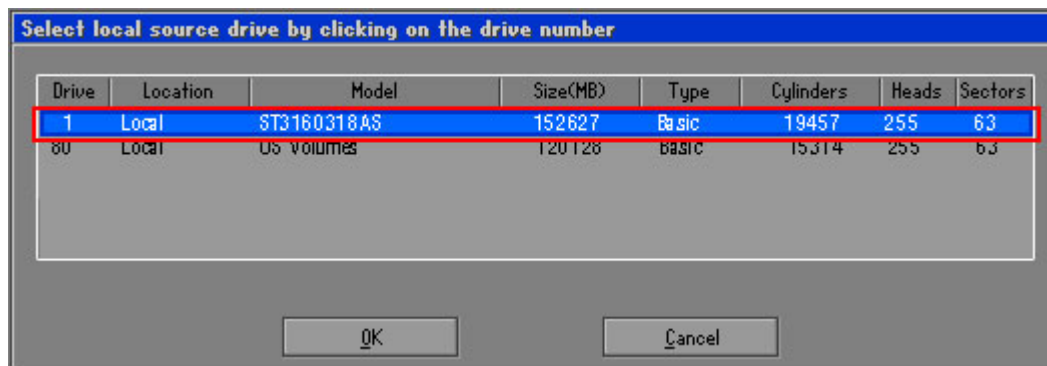


Figure B-14: Select a Local Source Drive

Step 6: Select a source partition (Part 1) from basic drive as shown in **Figure B-15**.
Then click OK.

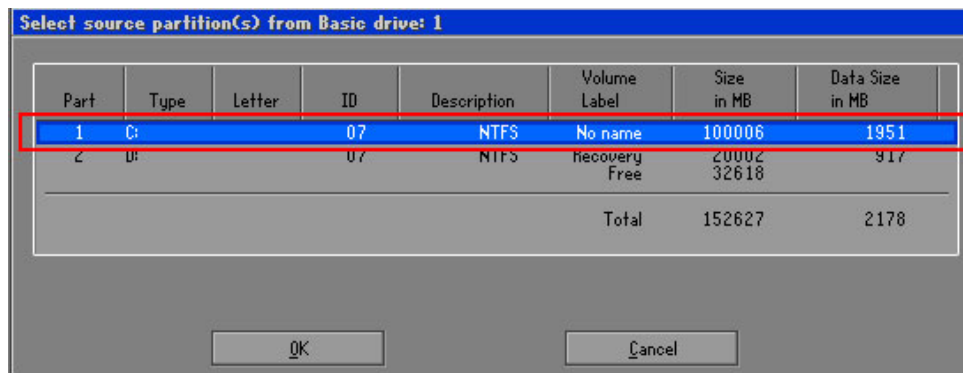


Figure B-15: Select a Source Partition from Basic Drive

Step 7: Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei** (Figure B-16). Click **Save**. The factory default image will then be saved in the selected recovery drive and named **IEI.GHO**.



WARNING:

The file name of the factory default image must be **iei.GHO**.

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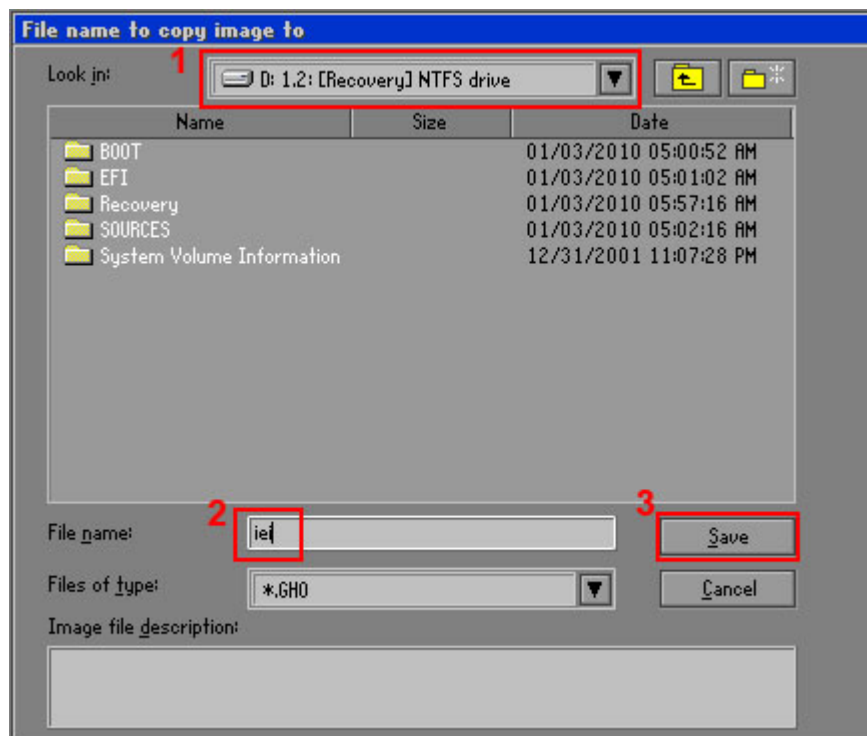


Figure B-16: File Name to Copy Image to

Step 8: When the Compress Image screen in **Figure B-17** prompts, click **High** to make the image file smaller.

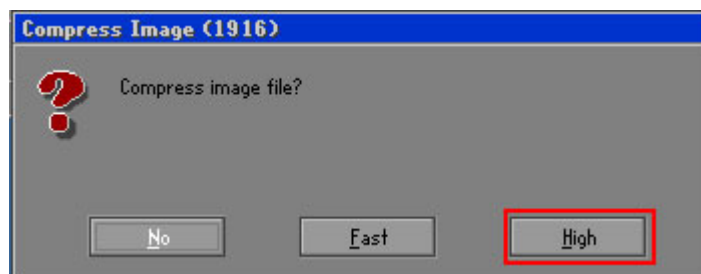


Figure B-17: Compress Image

Step 9: The Proceed with partition image creation window appears, click **Yes** to continue.

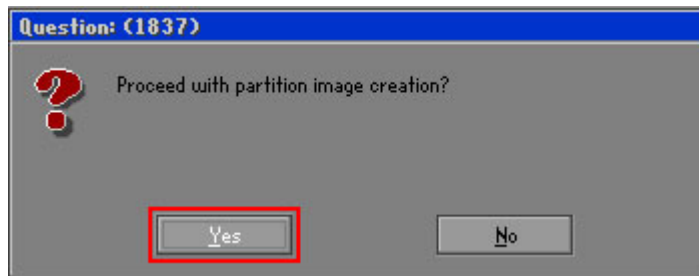


Figure B-18: Image Creation Confirmation

Step 10: The Symantec Ghost starts to create the factory default image (**Figure B-19**).

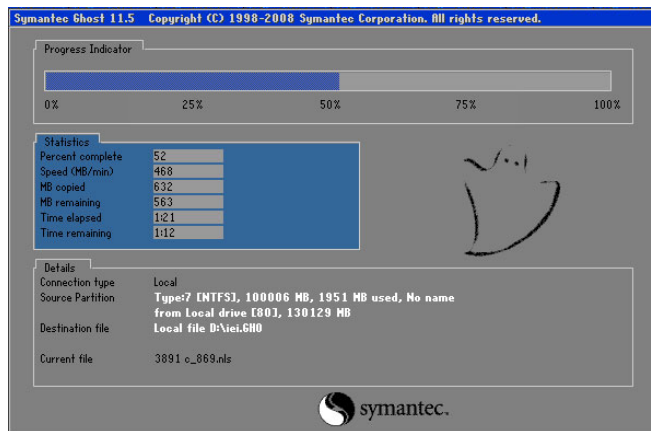


Figure B-19: Image Creation Complete

Step 11: When the image creation completes, a screen prompts as shown in **Figure B-20**.

Click **Continue** and close the Ghost window to exit the program.

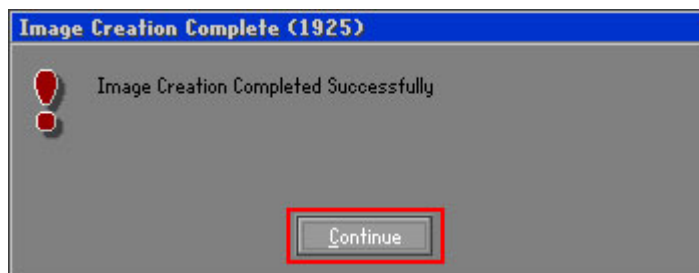


Figure B-20: Image Creation Complete

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Step 12: The recovery tool main menu window is shown as below. Press any key to reboot the system.

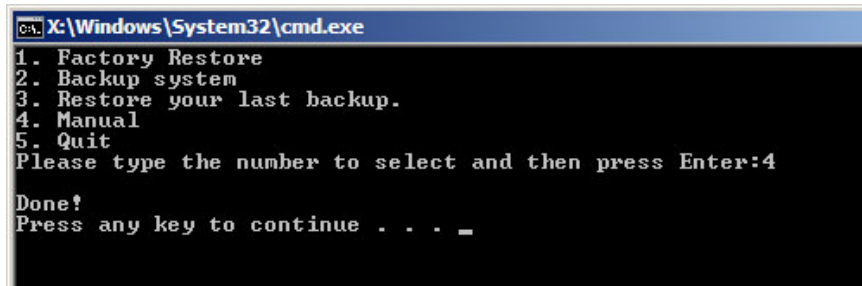


Figure B-21: Press Any Key to Continue

B.3 Auto Recovery Setup Procedure

The auto recovery function allows a system to automatically restore from the factory default image after encountering a Blue Screen of Death (BSoD) or a hang for around 10 minutes. To use the auto recovery function, follow the steps described in the following sections.



CAUTION:

The auto recovery function can only run on a Microsoft Windows system with the following OS versions:

- Windows 2000
- Windows 7
- Windows XP
- Windows XP Embedded
- Windows Vista
- Windows Embedded Standard 7



CAUTION:

The setup procedure may include a step to create a factory default image. It is suggested to configure the system to a factory default environment before the configuration, including driver and application installations.

Step 1: Follow the steps described in **Section B.2.1 ~ Section B.2.3** to setup BIOS, create partitions and install operating system.

Step 2: Install the auto recovery utility into the system by double clicking the **Utility/AUTORECOVERY-SETUP.exe** in the One Key Recovery CD. This utility **MUST** be installed in the system, otherwise, the system will automatically restore from the factory default image every ten (10) minutes.



Figure B-22: Auto Recovery Utility

Step 3: **Disable the automatically restart function before creating the factory default image.** Go to: My Computer → Properties → Advanced. Click the Settings button of Startup and Recovery. Deselect “Automatically restart”. Click OK to save the settings and exit. (See **Figure B-23**)

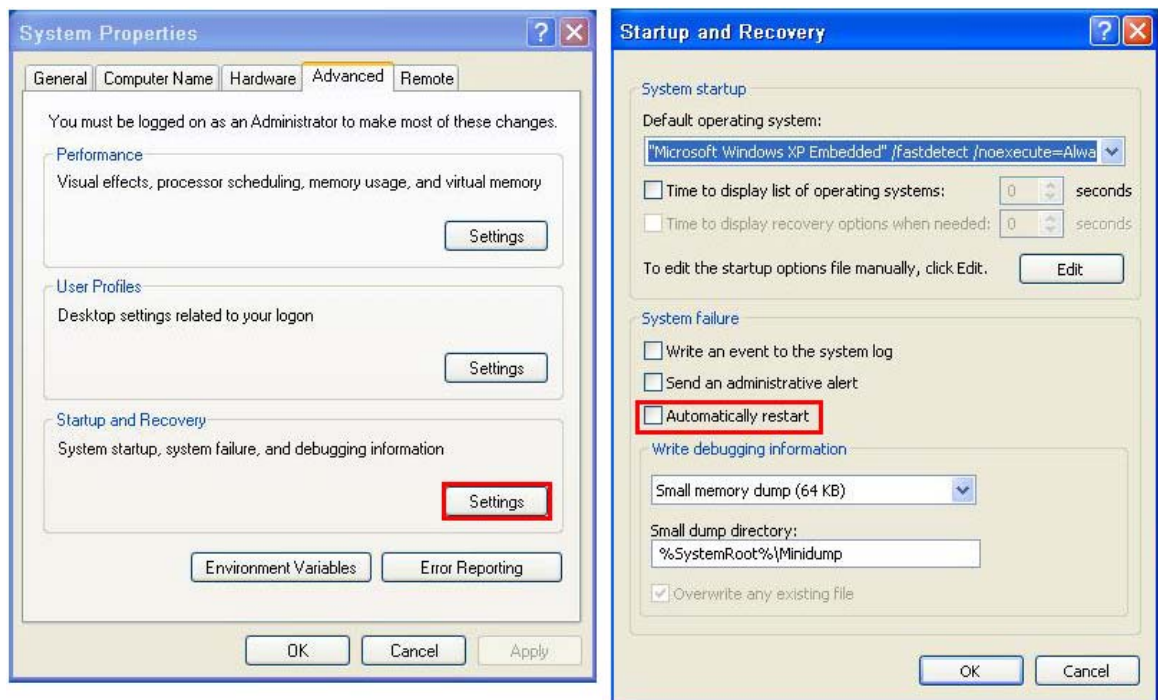


Figure B-23: Disable Automatically Restart

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Step 4: Reboot the system from the recovery CD. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

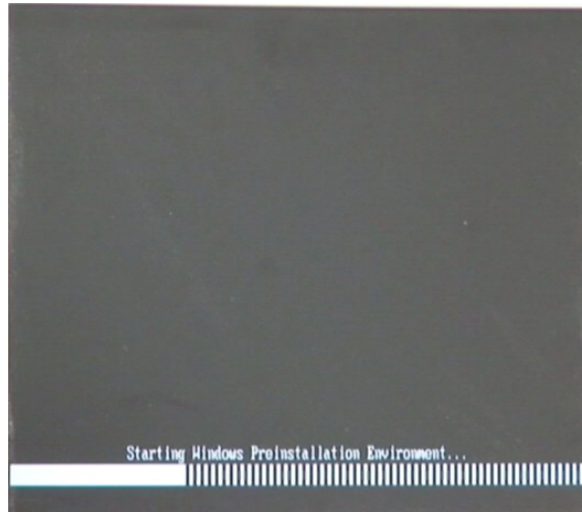


Figure B-24: Launching the Recovery Tool

Step 5: When the recovery tool setup menu appears, press <4> then <Enter>.

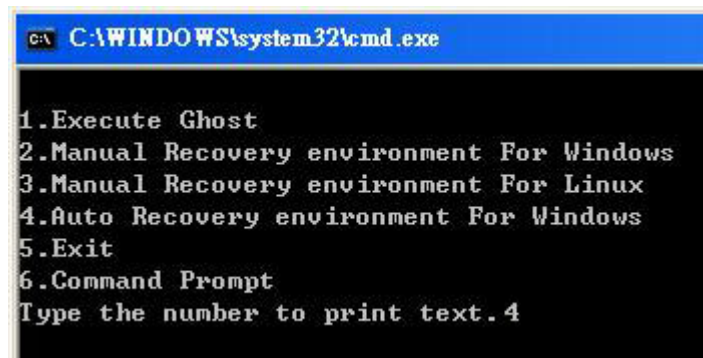


Figure B-25: Auto Recovery Environment for Windows

Step 6: The Symantec Ghost window appears and starts configuring the system to build an auto recovery partition. In this process the partition created for recovery files in **Section B.2.2** is hidden and the auto recovery tool is saved in this partition.

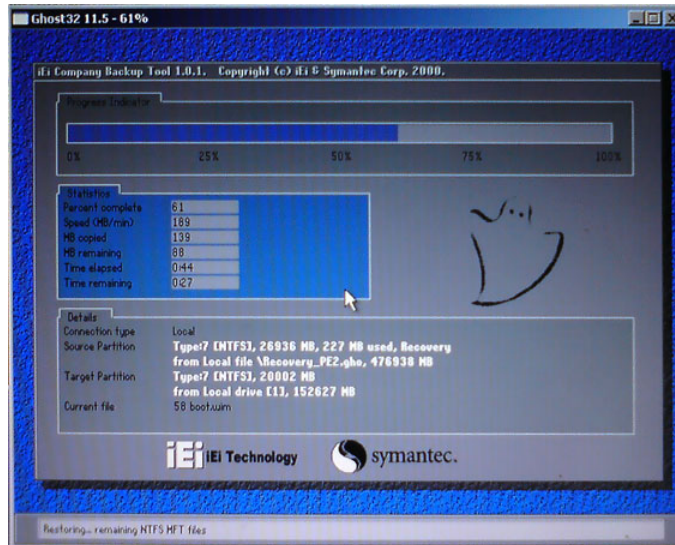


Figure B-26: Building the Auto Recovery Partition

Step 7: After completing the system configuration, the following message prompts to confirm whether to create a factory default image. Type **Y** to have the system create a factory default image automatically. Type **N** within 6 seconds to skip this process (The default option is YES). It is suggested to choose YES for this option.



Figure B-27: Factory Default Image Confirmation

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Step 8: The Symantec Ghost starts to create the factory default image (Figure B-28).

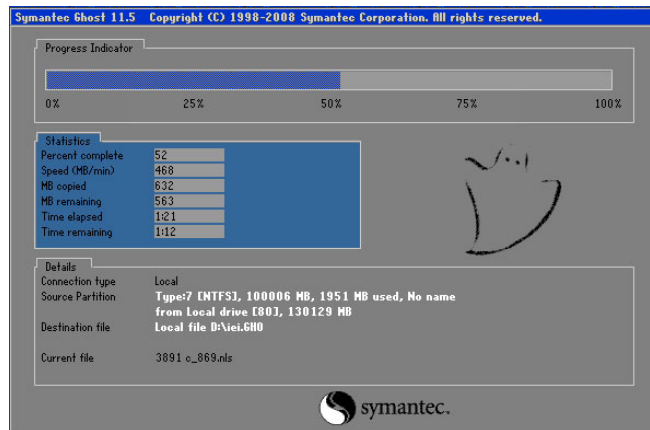


Figure B-28: Image Creation Complete

Step 9: After completing the system configuration, press any key in the following window to restart the system.

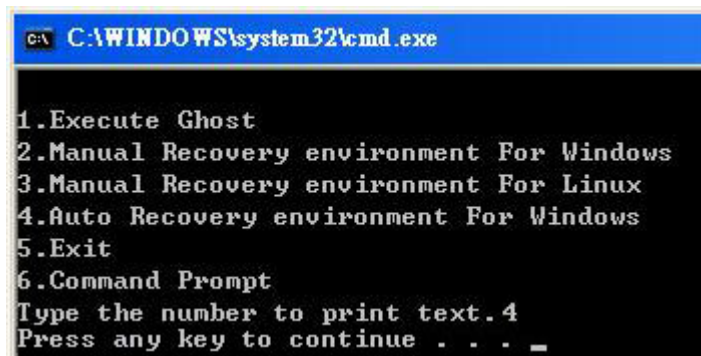


Figure B-29: Press any key to continue

Step 10: Eject the One Key Recovery CD and restart the system.

Step 11: Press the <DELETE> key as soon as the system is turned on to enter the BIOS.

Step 12: Enable the Auto Recovery Function option (**Advanced** → **iEi Feature** → **Auto Recovery Function**).

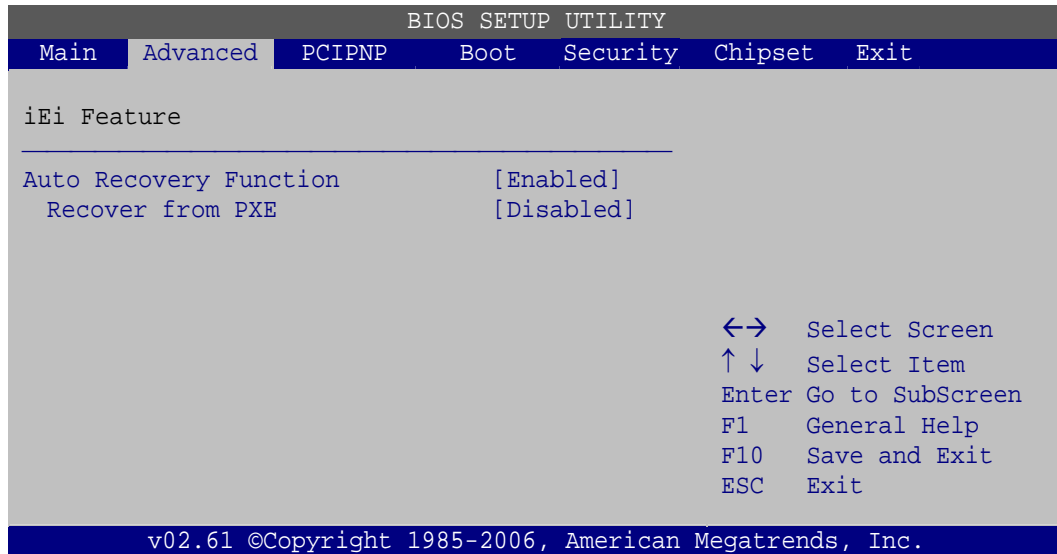


Figure B-30: IEI Feature

Step 13: Save changes and restart the system. If the system encounters a Blue Screen of Death (BSoD) or a hang for around 10 minutes, it will automatically restore from the factory default image.

B.4 Setup Procedure for Linux

The initial setup procedures for a Linux system are mostly the same with the procedure for Microsoft Windows. Please follow the steps below to setup the recovery tool for Linux OS.

Step 1: **Hardware and BIOS setup.** Refer to **Section B.2.1**.

Step 2: **Install Linux operating system.** Make sure to install GRUB (v0.97 or earlier) MBR type and Ext3 partition type. Leave enough space on the hard drive to create the recover partition later.



NOTE:

If the Linux OS is not installed with GRUB (v0.97 or earlier) and Ext3, the Symantec Ghost may not function properly.

While installing Linux OS, please create two partitions:

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- Partition 1: /
- Partition 2: **SWAP**

**NOTE:**

Please reserve enough space for partition 3 for saving recovery images.

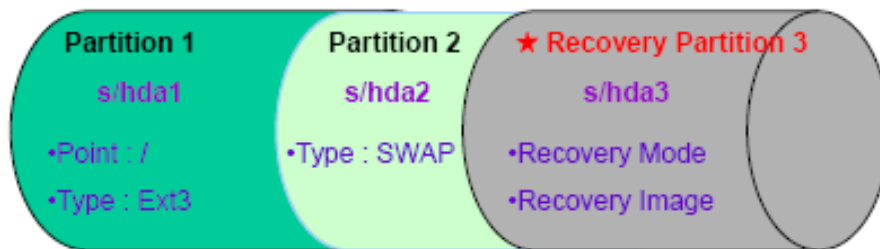


Figure B-31: Partitions for Linux

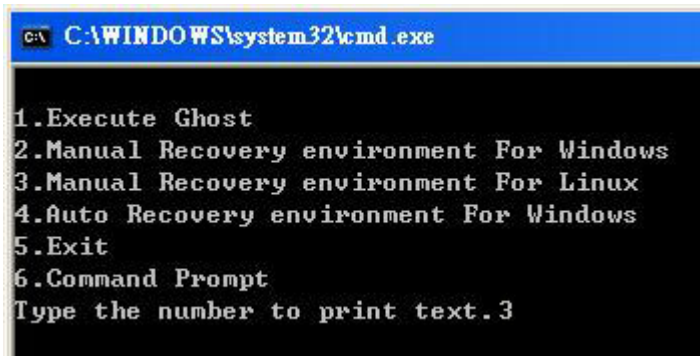
Step 3: Create a recovery partition. Insert the recovery CD into the optical disk drive.

Follow **Step 1 ~ Step 3** described in **Section B.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

```
system32>diskpart
DISKPART>list vol
DISKPART>sel disk 0
DISKPART>create part pri size= ____
DISKPART>assign letter=N
DISKPART>exit
system32>format N: /fs:ntfs /q /v:Recovery /y
system32>exit
```

Step 4: Build-up recovery partition. Press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient. When the recovery tool setup menu appears, type <3> and press <Enter> (**Figure B-32**). The Symantec Ghost window appears and starts configuring the system to build-up a

recovery partition. After completing the system configuration, press any key to reboot the system. Eject the recovery CD.



```
C:\WINDOWS\system32\cmd.exe

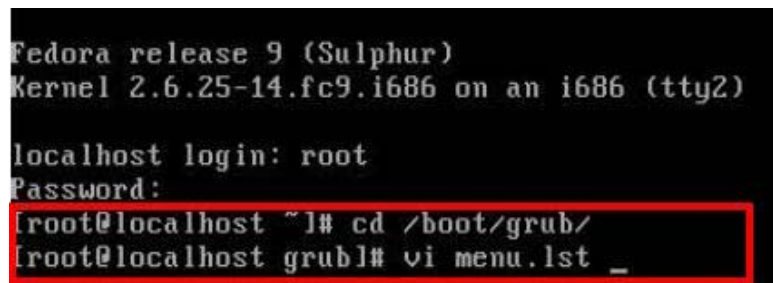
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.3
```

Figure B-32: System Configuration for Linux

Step 5: Access the recovery tool main menu by modifying the “menu.lst”. To first access the recovery tool main menu, the menu.lst must be modified. In Linux, enter Administrator (root). When prompt appears, type:

cd /boot/grub

vi menu.lst



```
Fedora release 9 (Sulphur)
Kernel 2.6.25-14.fc9.i686 on an i686 (tty2)

localhost login: root
Password:
[root@localhost ~]# cd /boot/grub/
[root@localhost grub]# vi menu.lst _
```

Figure B-33: Access menu.lst in Linux (Text Mode)

Step 6: Modify the menu.lst as shown below.

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```
#boot=/dev/sda
default=0
timeout=10 ← Modify timeout=10
splashimage=(hd0,0)/grub/splash.xpm.gz
hiddenmenu
title Fedora (2.6.25-14.fc9.i686)
    root (hd0,0)
    kernel /vmlinuz-2.6.25-14.fc9.i686 ro root=UUID=10f1acd
    ac38b5c78910 rhgb quiet
    initrd /initrd-2.6.25-14.fc9.i686.img

title Recovery Partition
    root (hd0,2)
    makeactive
    chainloader +1 ← Type command
```

- Type command:
title Recovery Partition
root (hd0,2)
makeactive
chainloader +1

Step 7: The recovery tool menu appears. (Figure B-34)

```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:
```

Figure B-34: Recovery Tool Menu

Step 8: Create a factory default image. Follow **Step 2 ~ Step 12** described in **Section B.2.5** to create a factory default image.

B.5 Recovery Tool Functions

After completing the initial setup procedures as described above, users can access the recovery tool by pressing **<F3>** while booting up the system. However, if the setup procedure in Section B.3 has been completed and the auto recovery function is enabled, the system will automatically restore from the factory default image without pressing the F3 key. The recovery tool main menu is shown below.

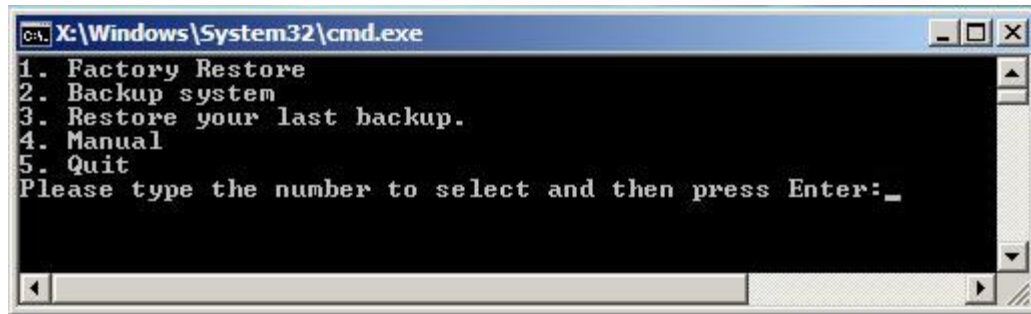


Figure B-35: Recovery Tool Main Menu

The recovery tool has several functions including:

1. **Factory Restore:** Restore the factory default image (iei.GHO) created in **Section B.2.5**.
2. **Backup system:** Create a system backup image (iei_user.GHO) which will be saved in the hidden partition.
3. **Restore your last backup:** Restore the last system backup image
4. **Manual:** Enter the Symantec Ghost window to configure manually.
5. **Quit:** Exit the recovery tool and restart the system.



WARNING:

Please do not turn off the system power during the process of system recovery or backup.



WARNING:

All data in the system will be deleted during the system recovery. Please backup the system files before restoring the system (either Factory Restore or Restore Backup).

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B.5.1 Factory Restore

To restore the factory default image, please follow the steps below.

Step 1: Type <1> and press <Enter> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the factory default. A factory default image called **iei.GHO** is created in the hidden Recovery partition.

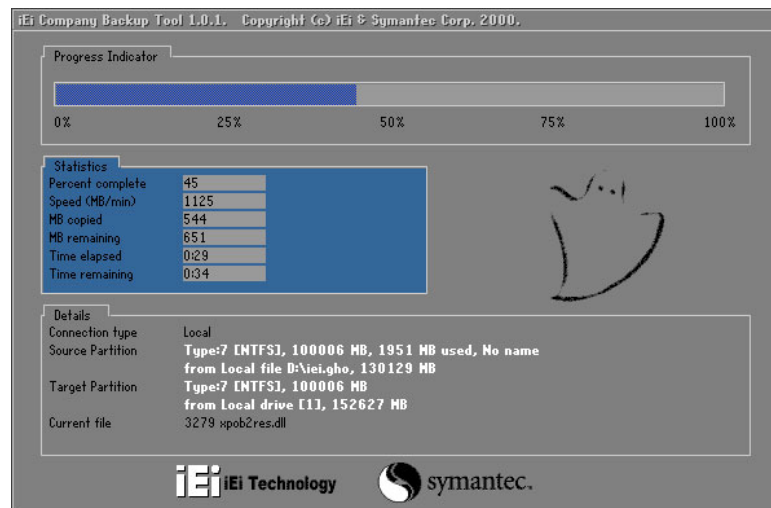


Figure B-36: Restore Factory Default

Step 3: The screen is shown in **Figure B-37** appears when completed. Press any key to reboot the system.

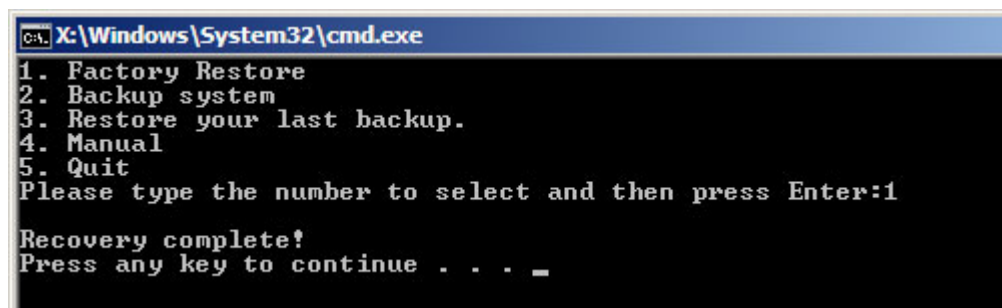


Figure B-37: Recovery Complete Window

B.5.2 Backup System

To backup the system, please follow the steps below.

Step 1: Type <2> and press <Enter> in the main menu.

Step 2: The Symantec Ghost window appears and starts to backup the system. A backup image called **iei_user.GHO** is created in the hidden Recovery partition.

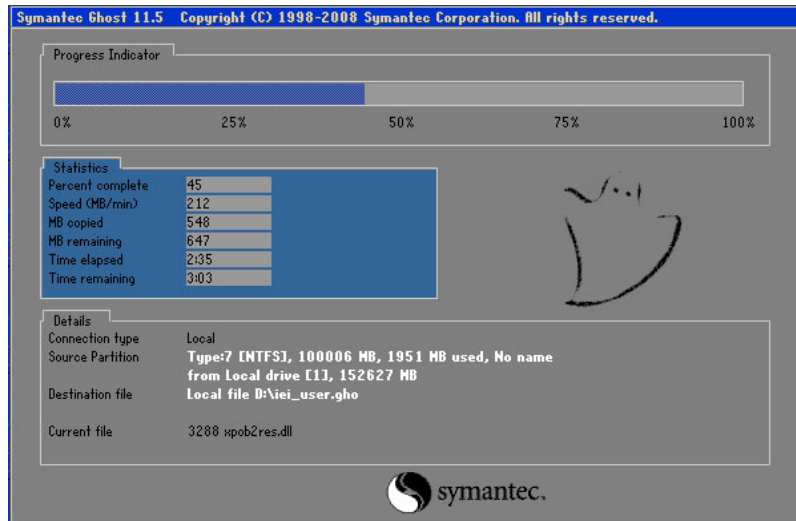


Figure B-38: Backup System

Step 3: The screen is shown in **Figure B-39** appears when system backup is complete. Press any key to reboot the system.

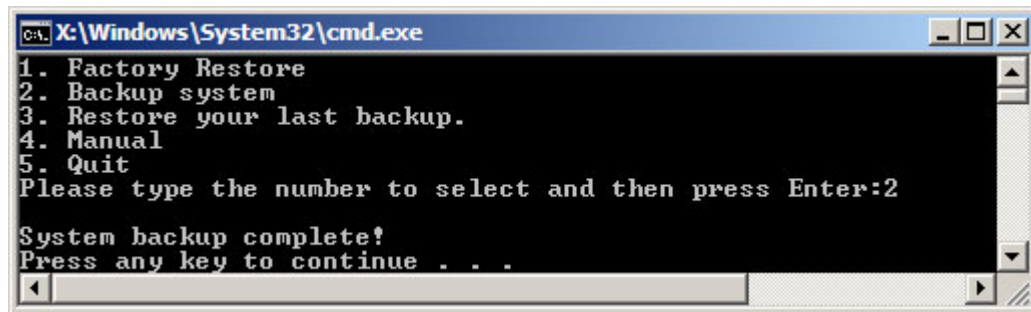


Figure B-39: System Backup Complete Window

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B.5.3 Restore Your Last Backup

To restore the last system backup, please follow the steps below.

Step 1: Type <3> and press <Enter> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the last backup image (iei_user.GHO).

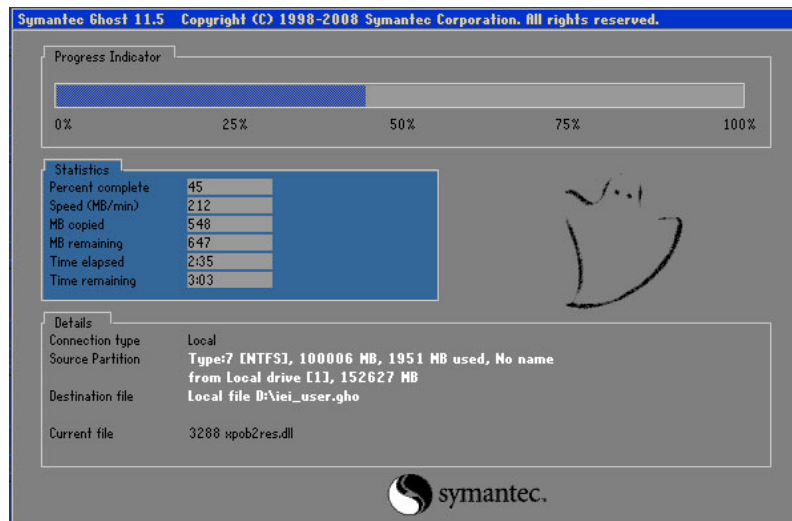


Figure B-40: Restore Backup

Step 3: The screen shown in **Figure B-41** appears when backup recovery is complete. Press any key to reboot the system.

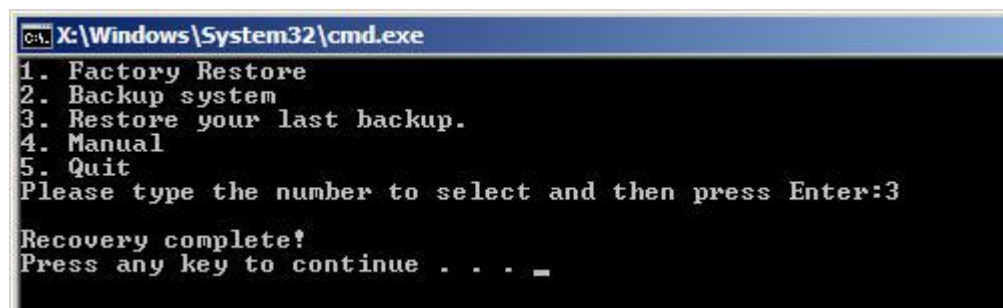


Figure B-41: Restore System Backup Complete Window

B.5.4 Manual

To restore the last system backup, please follow the steps below.

Step 1: Type <4> and press <Enter> in the main menu.

Step 2: The Symantec Ghost window appears. Use the Ghost program to backup or recover the system manually.

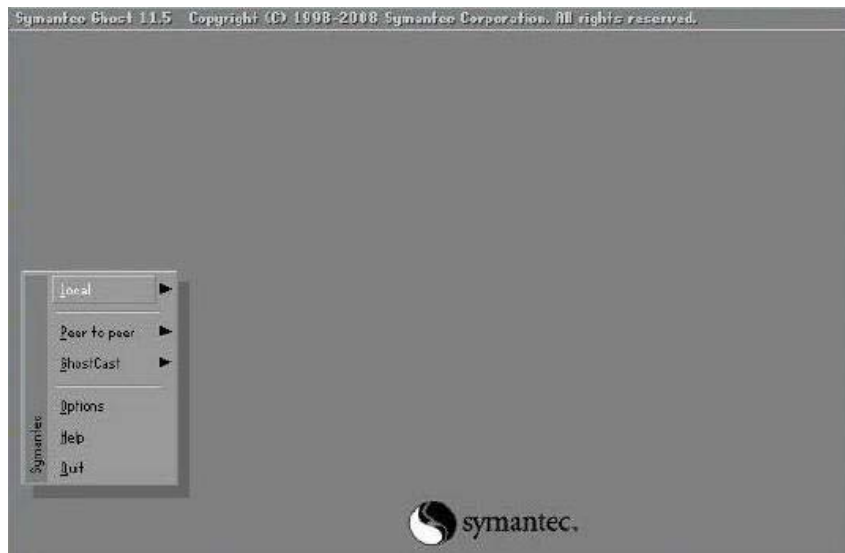
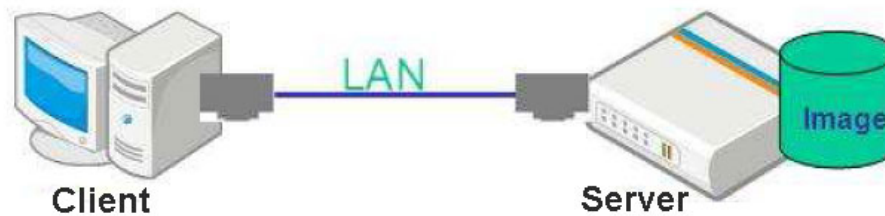


Figure B-42: Symantec Ghost Window

Step 3: When backup or recovery is completed, press any key to reboot the system.

B.6 Restore Systems from a Linux Server through LAN

The One Key Recovery allows a client system to automatically restore to a factory default image saved in a Linux system (the server) through LAN connectivity after encountering a Blue Screen of Death (BSOD) or a hang for around 10 minutes. To be able to use this function, the client system and the Linux system MUST reside in the same domain.



CAUTION:

The supported client OS includes:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7
- Windows XP Embedded
- Windows Embedded Standard 7

Prior to restoring client systems from a Linux server, a few setup procedures are required.

Step 1: Configure DHCP server settings

Step 2: Configure TFTP settings

Step 3: Configure One Key Recovery server settings

Step 4: Start DHCP, TFTP and HTTP

Step 5: Create a shared directory

Step 6: Setup a client system for auto recovery

The detailed descriptions are described in the following sections. In this document, two types of Linux OS are used as examples to explain the configuration process – CentOS 5.5 (Kernel 2.6.18) and Debian 5.0.7 (Kernel 2.6.26).

B.6.1 Configure DHCP Server Settings

Step 1: Install the DHCP

`#yum install dhcp` (CentOS, commands marked in red)

`#apt-get install dhcp3-server` (Debian, commands marked in blue)

Step 2: Confirm the operating system default settings: dhcpd.conf.

CentOS

Use the following command to show the DHCP server sample location:

`#vi /etc/dhcpd.conf`

The DHCP server sample location is shown as below:

```
# DHCP Server Configuration file.
# see /usr/share/doc/dhcp*/dhcpd.conf.sample
#
```

Use the following command to copy the DHCP server sample to etc/dhcpd.conf:

`#cp /usr/share/doc/dhcp-3.0.5/dhcpd.conf.sample /etc/dhcpd.conf`

`#vi /etc/dhcpd.conf`

```
ddns-update-style interim;
ignore client-updates;

subnet 192.168.0.0 netmask 255.255.255.0 {
# --- default gateway
    option routers                192.168.0.2;
    option subnet-mask            255.255.255.0;

    option nis-domain             "domain.org";
    option domain-name            "domain.org";
    option domain-name-servers   192.168.0.1;
    next-server 192.168.0.6;
    filename "pxelinux.0";
    option time-offset            -18000; # Eastern Standard Time
    option ntp-servers            192.168.1.1;
    option ntp-servers            192.168.1.1;
}
```

Debian

`#vi /etc/dhcpd.conf`

Edit “/etc/dhcpd.conf” for your environment. For example, add

`next-server PXE server IP address;`

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```
filename "pxelinux.0";
```

```
ddns-update-style interim;
ignore client-updates;

subnet 192.168.0.0 netmask 255.255.255.0 {

# --- default gateway
    option routers                192.168.0.2;
    option subnet-mask            255.255.255.0;

    option nis-domain             "domain.org";
    option domain-name            "domain.org";
    option domain-name-servers    192.168.0.1;
    next-server 192.168.0.6;
    filename "pxelinux.0";
    option time-offset            -18000; # Eastern Standard Time
    option ntp-servers            192.168.1.1;
}
```

B.6.2 Configure TFTP Settings

Step 1: Install the tftp, httpd and syslinux.

```
#yum install tftp-server httpd syslinux (CentOS)
```

```
#apt-get install tftpd-hpa xinetd syslinux (Debian)
```

Step 2: Enable the TFTP server by editing the "/etc/xinetd.d/tftp" file and make it use the remap file. The "-vvv" is optional but it could definitely help on getting more information while running the remap file. For example:

CentOS

```
#vi /etc/xinetd.d/tftp
```

Modify:

```
disable = no
```

```
server_args = -s /tftpboot -m /tftpboot/tftpd.remap -vvv_
```

```
socket_type      = dgram
protocol         = udp
wait             = yes
user             = root
server           = /usr/sbin/in.tftpd
server_args      = -s /tftpboot -m /tftpboot/tftpd.remap -vvv
disable          = no
per_source       = 11
cps              = 100 2
flags            = IPv4
```


Debian

Replace the TFTP settings from “inetd” to “xinetd” and annotate the “inetd” by adding “#”.

`#vi /etc/inetd.conf`

Modify: `#tftp dgram udp wait root /usr/sbin/.....` (as shown below)

```
#:BOOT: TFTP service is provided primarily for booting. Most sites
#      run this only on machines acting as "boot servers."
#tftp  dgram  udp    wait  root  /usr/sbin/in.tftpd /usr/sbin/in.tftpd -s
#      /var/lib/tftpboot
```

`#vi /etc/xinetd.d/tftp`

```
socket_type      = dgram
protocol         = udp
wait            = yes
user            = root
server          = /usr/sbin/in.tftpd
server_args      = -s /tftpboot -m /tftpboot/tftpd.remap -vvv
disable         = no
per_source      = 11
cps             = 100 2
flags           = IPv4
```

B.6.3 Configure One Key Recovery Server Settings

Step 1: Copy the **Utility/RECOVERYR10.TAR.BZ2** package from the One Key Recovery CD to the system (server side).



Step 2: Extract the recovery package to /.

`#cp RecoveryR10.tar.bz2 /`

`#cd /`

`#tar -xvjf RecoveryR10.tar.bz2`

Step 3: Copy “pxelinux.0” from “syslinux” and install to “tftpboot”.

`#cp /usr/lib/syslinux/pxelinux.0 /tftpboot/`

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B.6.4 Start the DHCP, TFTP and HTTP

Start the DHCP, TFTP and HTTP. For example:

CentOS

```
#service xinetd restart
```

```
#service httpd restart
```

```
#service dhcpd restart
```

Debian

```
#/etc/init.d/xinetd reload
```

```
#/etc/init.d/xinetd restart
```

```
#/etc/init.d/dhcp3-server restart
```

B.6.5 Create Shared Directory

Step 1: Install the samba.

```
#yum install samba
```

Step 2: Create a shared directory for the factory default image.

```
#mkdir /share
```

```
#cd /share
```

```
#mkdir /image
```

```
#cp iei.gho /image
```



WARNING:

The file name of the factory default image must be **iei.gho**.

Step 3: Confirm the operating system default settings: smb.conf.

```
#vi /etc/samba/smb.conf
```

Modify:

[image]

comment = One Key Recovery

path = /share/image

browseable = yes

writable = yes

public = yes

create mask = 0644

directory mask = 0755

Step 4: Edit “/etc/samba/smb.conf” for your environment. For example:

```
# "security = user" is always a good idea. This will require a Unix account
# in this server for every user accessing the server. See
# /usr/share/doc/samba-doc/htmldocs/Samba3-HOWTO/ServerType.html
# in the samba-doc package for details.
security = share
```

```
[image]
comment = One Key Recovery
path = /share/image
browseable = yes
writable = yes
public = yes
create mask = 0644
directory mask = 0755
```

Step 5: Modify the hostname

#vi /etc/hostname

Modify: RecoveryServer

```
RecoveryServer
~
```

B.6.6 Setup a Client System for Auto Recovery

Step 1: Disable the automatically restart function before creating the factory

default image. Go to: My Computer → Properties → Advanced. Click the Settings button of Startup and Recovery. Deselect “Automatically restart”. Click OK to save the settings and exit. (See **Figure B-43**)

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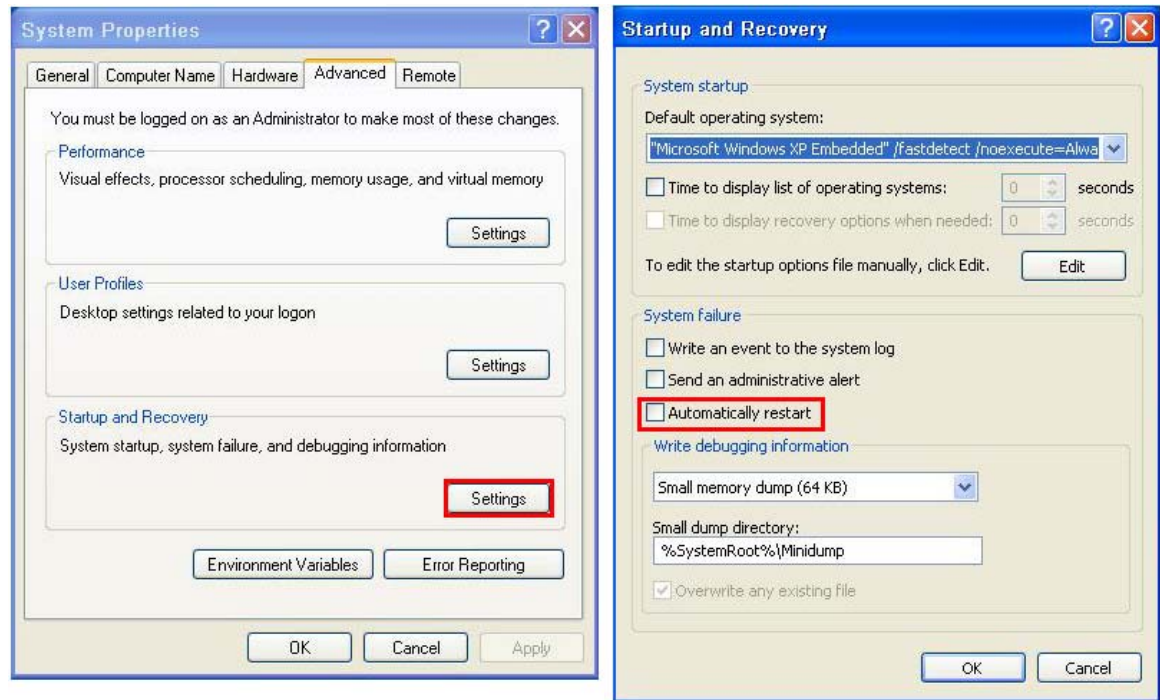


Figure B-43: Disable Automatically Restart

Step 2: Configure the following BIOS options of the client system.

Advanced → iEi Feature → Auto Recovery Function → **Enabled**

Advanced → iEi Feature → Recover from PXE → **Enabled**

Boot → Launch PXE OpROM → **Enabled**

Step 3: Continue to configure the **Boot Option Priorities** BIOS option of the client system:

Boot Option #1 → remain the default setting to boot from the original OS.

Boot Option #2 → select the boot from LAN option.

Step 4: Save changes and exit BIOS menu.

Exit → **Save Changes and Exit**

Step 5: Install the auto recovery utility into the system by double clicking the **Utility/AUTORECOVERY-SETUP.exe** in the One Key Recovery CD. This utility

MUST be installed in the system, otherwise, the system will automatically restore from the factory default image every ten (10) minutes.



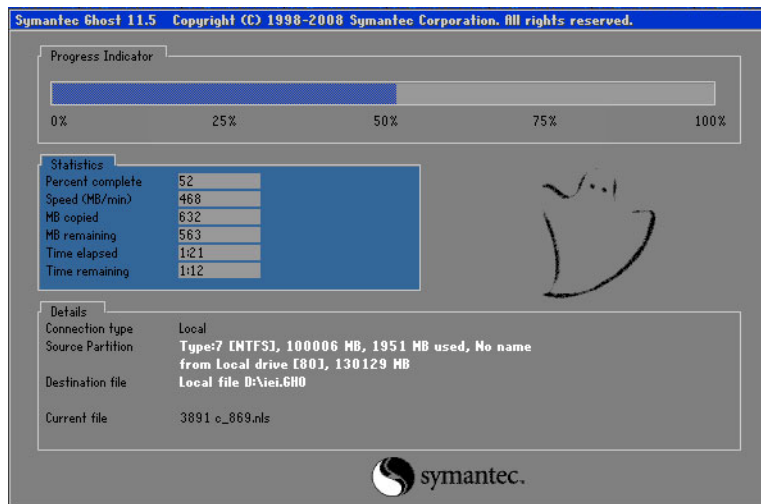
Step 6: Restart the client system from LAN. If the system encounters a Blue Screen of Death (BSoD) or a hang for around 10 minutes, it will automatically restore from the factory default image. The following screens will show when the system starts auto recovering.

```
Realtek PCIe GBE Family Controller Series v2.35 (06/14/10)
CLIENT MAC ADDR: 00 18 7D 13 E6 89  GUID: 00020003-0004-0005-0006-0007000000
DHCP.._
```

```
My IP address seems to be C0A80009 192.168.0.9
ip=192.168.0.9:192.168.0.8:192.168.0.2:255.255.255.0
TFTP prefix:
Trying to load: pxelinux.cfg/00020003-0004-0005-0006-000700000009
Trying to load: pxelinux.cfg/01-00-18-7d-13-e6-89
Trying to load: pxelinux.cfg/C0A80009
Trying to load: pxelinux.cfg/C0A80000
Trying to load: pxelinux.cfg/C0A8000
Trying to load: pxelinux.cfg/C0A800
Trying to load: pxelinux.cfg/C0A80
Trying to load: pxelinux.cfg/C0A8
Trying to load: pxelinux.cfg/C0A
Trying to load: pxelinux.cfg/C0
Trying to load: pxelinux.cfg/C
Trying to load: pxelinux.cfg/default
boot:
```

```
Windows is loading files...
IP: 192.168.0.8, File: \Boot\WinPE.wim
```


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**NOTE:**

A firewall or a SELinux is not in use in the whole setup process described above. If there is a firewall or a SELinux protecting the system, modify the configuration information to accommodate them.

B.7 Other Information

B.7.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller

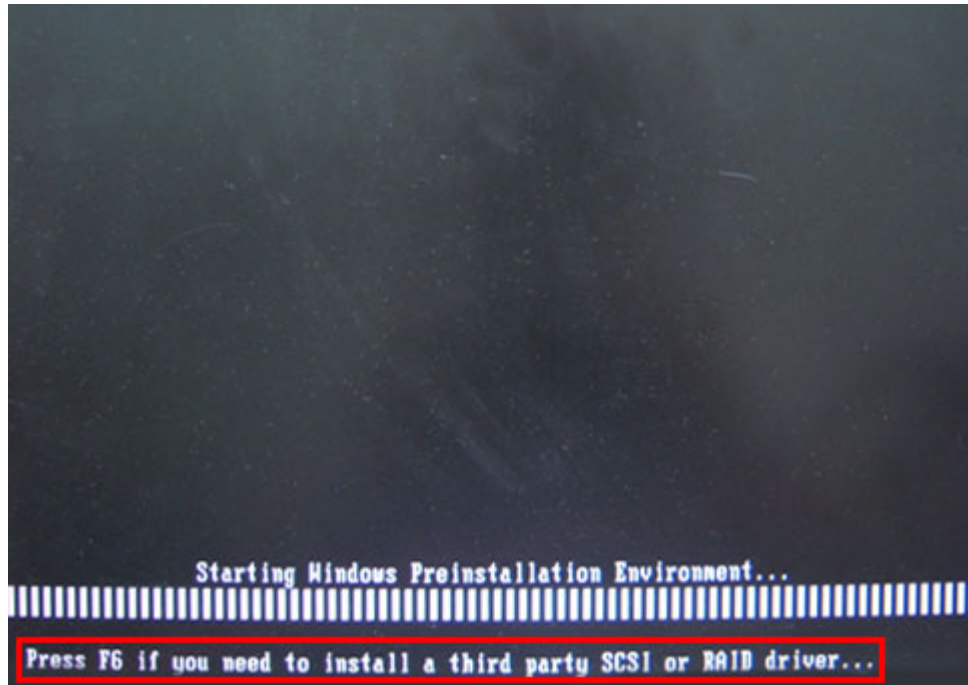
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

Step 1: Copy the SATA RAID/AHCI driver to a floppy disk and insert the floppy disk into a USB floppy disk drive. The SATA RAID/AHCI driver must be especially designed for the on-board SATA controller.

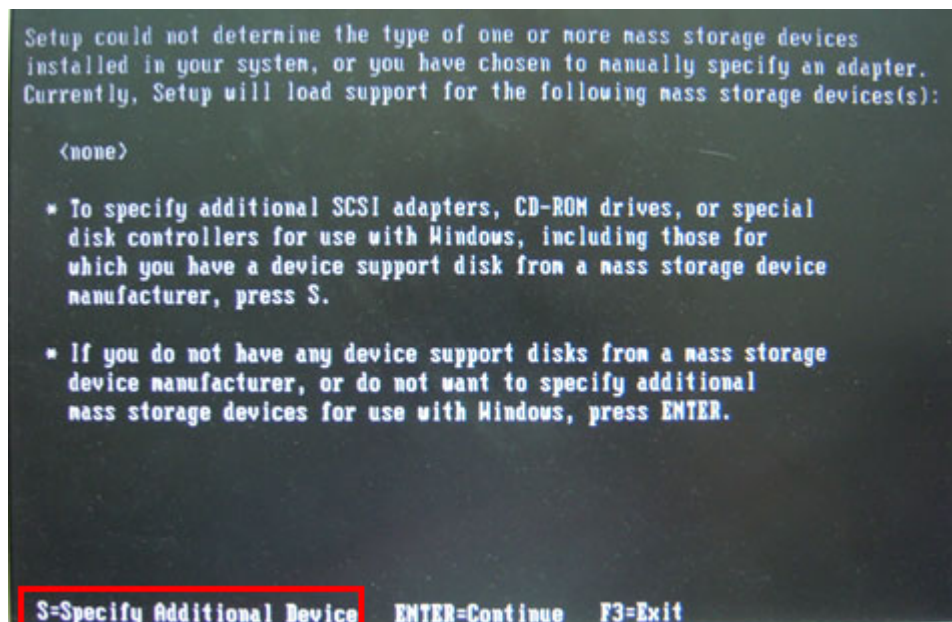
Step 2: Connect the USB floppy disk drive to the system.

Step 3: Insert the One Key Recovery CD into the system and boot the system from the CD.

Step 4: When launching the recovery tool, press <F6>.

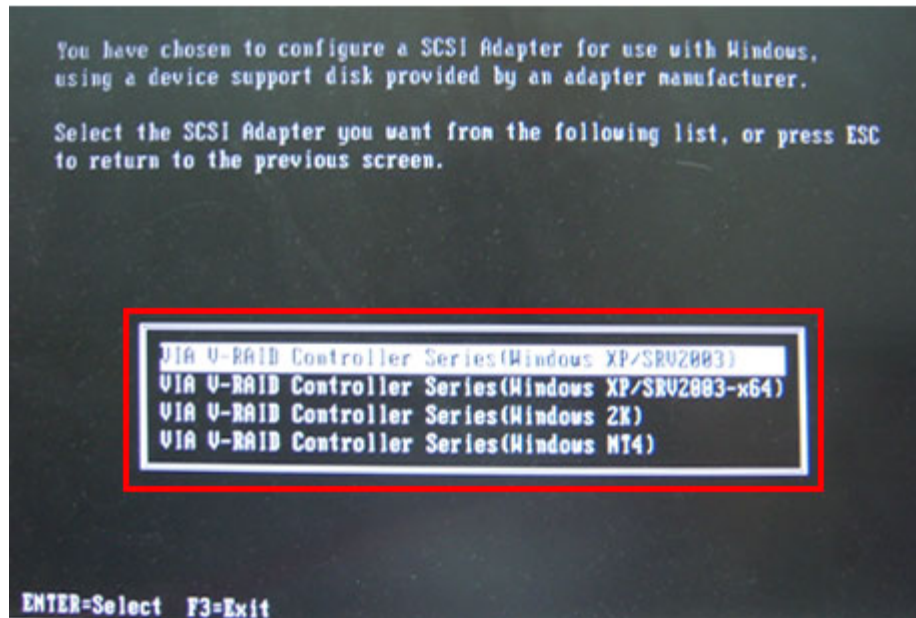


Step 5: When the following window appears, press <S> to select "Specify Additional Device".



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Step 6: In the following window, select a SATA controller mode used in the system. Then press <Enter>. The user can now start using the SATA HDD.



Step 7: After pressing <Enter>, the system will get into the recovery tool setup menu. Continue to follow the setup procedure from **Step 4** in **Section B.2.2 Create Partitions** to finish the whole setup process.

B.7.2 System Memory Requirement

To be able to access the recovery tool by pressing <F3> while booting up the system, please make sure to have enough system memory. The minimum memory requirement is listed below.

- **Using Award BIOS:** 128 MB system memory
- **Using AMI BIOS:** 512 MB system memory.

Appendix

C

Terminology

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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 DB-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.

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.

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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

D

Digital I/O Interface

IMBA-Q770 ATX Motherboard

D.1 Introduction

The DIO connector on the IMBA-Q770 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.

D.2 DIO Connector Pinouts

Pin	Description	Super I/O Pin	Super I/O Pin Description
1	Ground	N/A	N/A
2	VCC	N/A	N/A
3	Output 3	GP27	General purpose I/O port 2 bit 7.
4	Output 2	GP26	General purpose I/O port 2 bit 6.
5	Output 1	GP25	General purpose I/O port 2 bit 5.
6	Output 0	GP24	General purpose I/O port 2 bit 4.
7	Input 3	GP23	General purpose I/O port 2 bit 3.
8	Input 2	GP22	General purpose I/O port 2 bit 2.
9	Input 1	GP21	General purpose I/O port 2 bit 1.
10	Input 0	GP20	General purpose I/O port 2 bit 0.

Table D-1: Digital I/O Connector Pinouts

D.3 Assembly Language Samples

D.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

D.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

E

Watchdog Timer

**NOTE:**

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

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

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

INT 15H:

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

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

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

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

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**NOTE:**

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

EXAMPLE PROGRAM:

; INITIAL TIMER PERIOD COUNTER

;

W_LOOP:

;

```

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

```

;

; ADD THE APPLICATION PROGRAM HERE

;

```

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

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

```

;

; EXIT ;

Appendix

F

Intel® Matrix Storage Manager

IMBA-Q770 ATX Motherboard

F.1 Introduction

The IMBA-Q770 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.

F.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.

**CAUTION!**

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

F.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, Windows Server 2008, Windows Vista and Windows 7

F.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

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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.

F.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

G

Hazardous Materials Disclosure

G.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	O	O	O	O	O	O
Display	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O
Battery	O	O	O	O	O	O
<p>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</p> <p>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</p>						



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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。						