

**MODEL:
IMBA-C2260-i2**

ATX Motherboard Supports LGA1150 Intel® Xeon® E3, Core™ i3, Pentium® or Celeron® CPU, Intel® C226 Chipset, DDR3, VGA, iDP, Dual Intel® PCIe GbE, Six SATA 6Gb/s, Four USB 3.0, HD Audio, iRIS-2400 and RoHS

User Manual

Revision

Date	Version	Changes
18 February, 2014	1.01	Changed the PCIEX4_1 slot to a PCIe x1 slot
14 January, 2014	1.00	Initial release

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Chapter

1

Introduction

1.1 Introduction

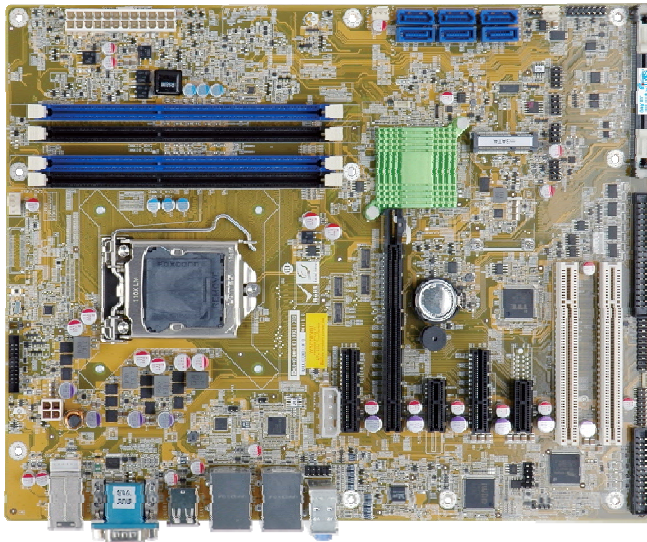


Figure 1-1: IMBA-C2260-i2

The IMBA-C2260-i2 is an ATX motherboard. It accepts a Socket LGA1150 Intel® Xeon® E3, Core™ i3, Pentium® or Celeron® processor and supports four 240-pin 1600/1333 MHz dual-channel DDR3 DIMM modules up to 32 GB.

The IMBA-C2260-i2 provides two GbE interfaces through the Intel® I217 (with Intel® AMT 9.0 support) and the Intel® I210 PCIe controllers. The integrated Intel® C226 chipset supports six SATA 6Gb/s drives. In addition, the IMBA-C2260-i2 includes VGA and iDP interfaces for dual independent display.

Expansion and I/O include two PCI slots, one PCIe x16 slot with x8 signal, two PCIe x4 slots, two PCIe x1 slots, four USB 3.0 and four USB 2.0 on the rear panel, four USB 2.0 by pin headers, six COM ports and one mSATA card slot. High Definition Audio (HDA) support ensures HDA devices can be easily implemented on the IMBA-C2260-i2.

IMBA-C2260-i2 ATX Motherboard

1.2 Features

Some of the IMBA-C2260-i2 motherboard features are listed below:

- ATX form factor
- LGA1150 Intel® Xeon® E3, Core™ i3, Pentium® or Celeron® processor supported
- Intel® C226 chipset
- Four 240-pin 1600/1333 MHz dual-channel DDR3 DIMMs support up to 32 GB
- Two Intel® PCIe GbE connectors (LAN1 with Intel® AMT 9.0 support)
- Supports PCI Express Generation 3.0 at 8 GT/s I/O bandwidth
- Dual independent display by VGA and iDP interfaces
- Supports IPMI 2.0 via iRIS-2400 module
- Six SATA 6Gb/s connectors support RAID 0, 1, 5, 10
- Four USB 3.0 ports on the rear panel
- One mSATA card slot
- One PCIe x16 slot with x8 signal
- Two PCIe x4 slots
- Two PCIe x1 slots
- Two PCI slots
- Six COM ports
- TPM V1.2 hardware security function supported by TPM module
- High Definition Audio
- RoHS compliant

1.3 Connectors

The connectors on the IMBA-C2260-i2 are shown in the figure below.

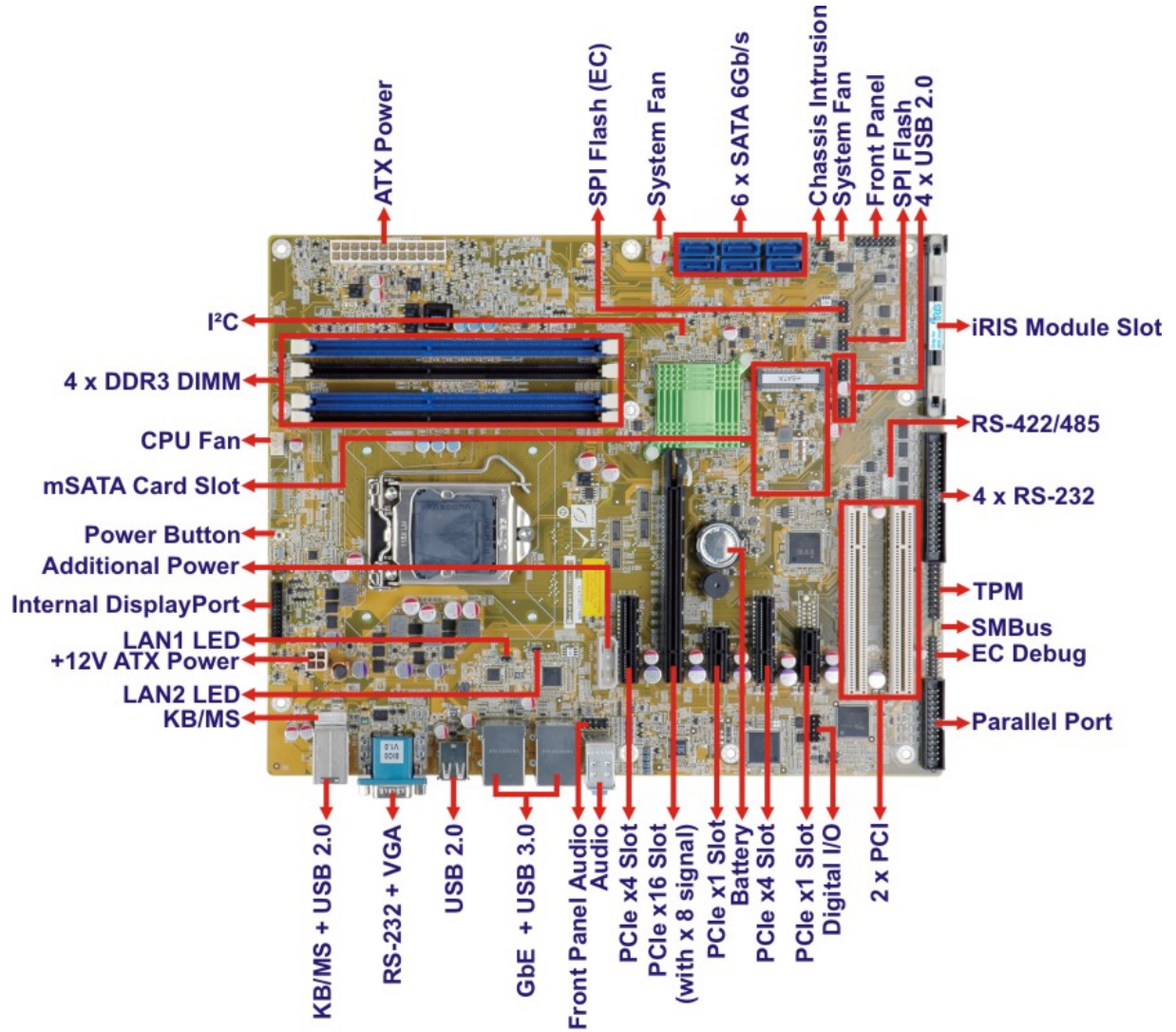


Figure 1-2: Connectors

IMBA-C2260-i2 ATX Motherboard

1.4 Dimensions

The main dimensions of the IMBA-C2260-i2 are shown in the diagram below.

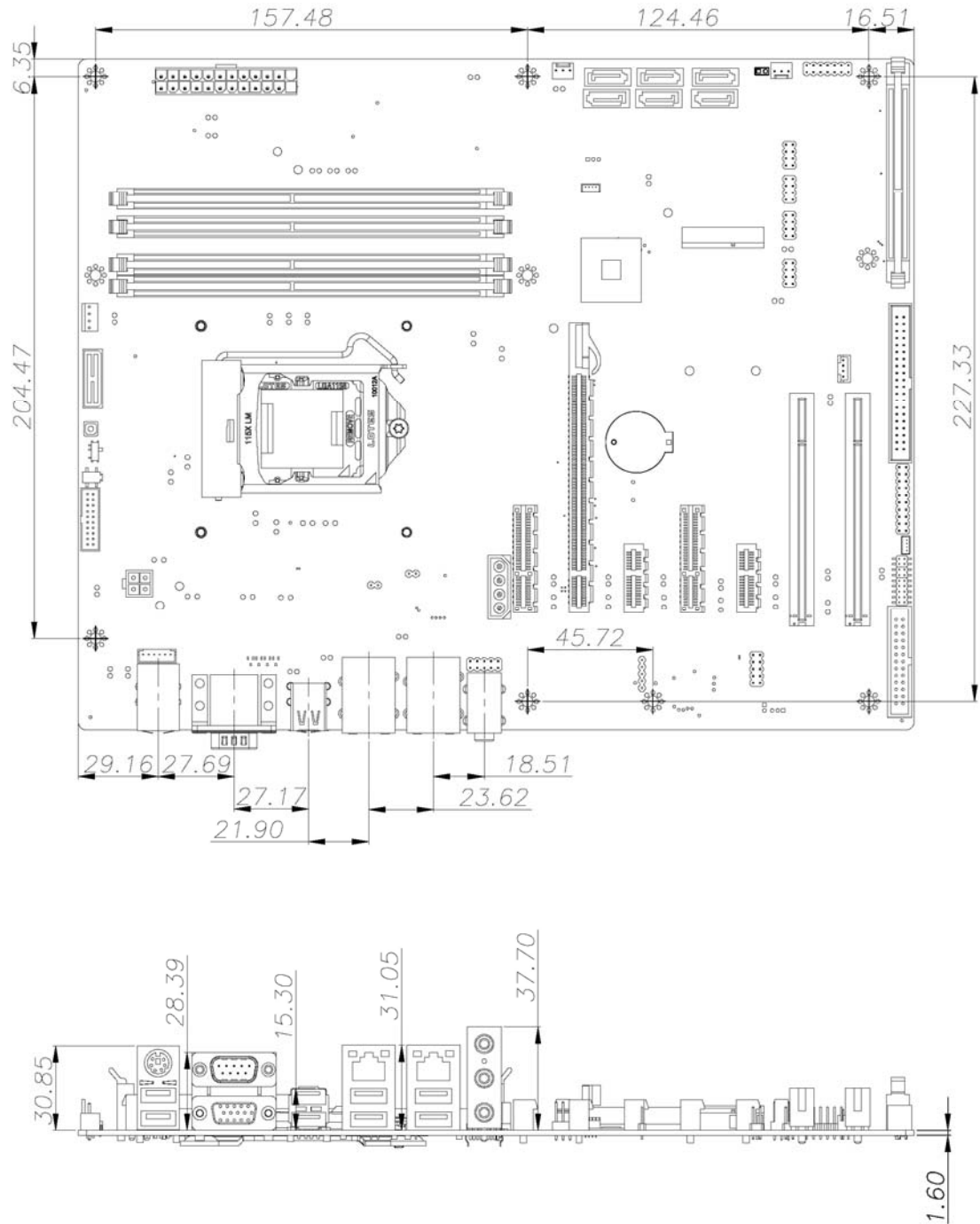


Figure 1-3: IMBA-C2260-i2 Dimensions (mm)

1.5 Data Flow

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

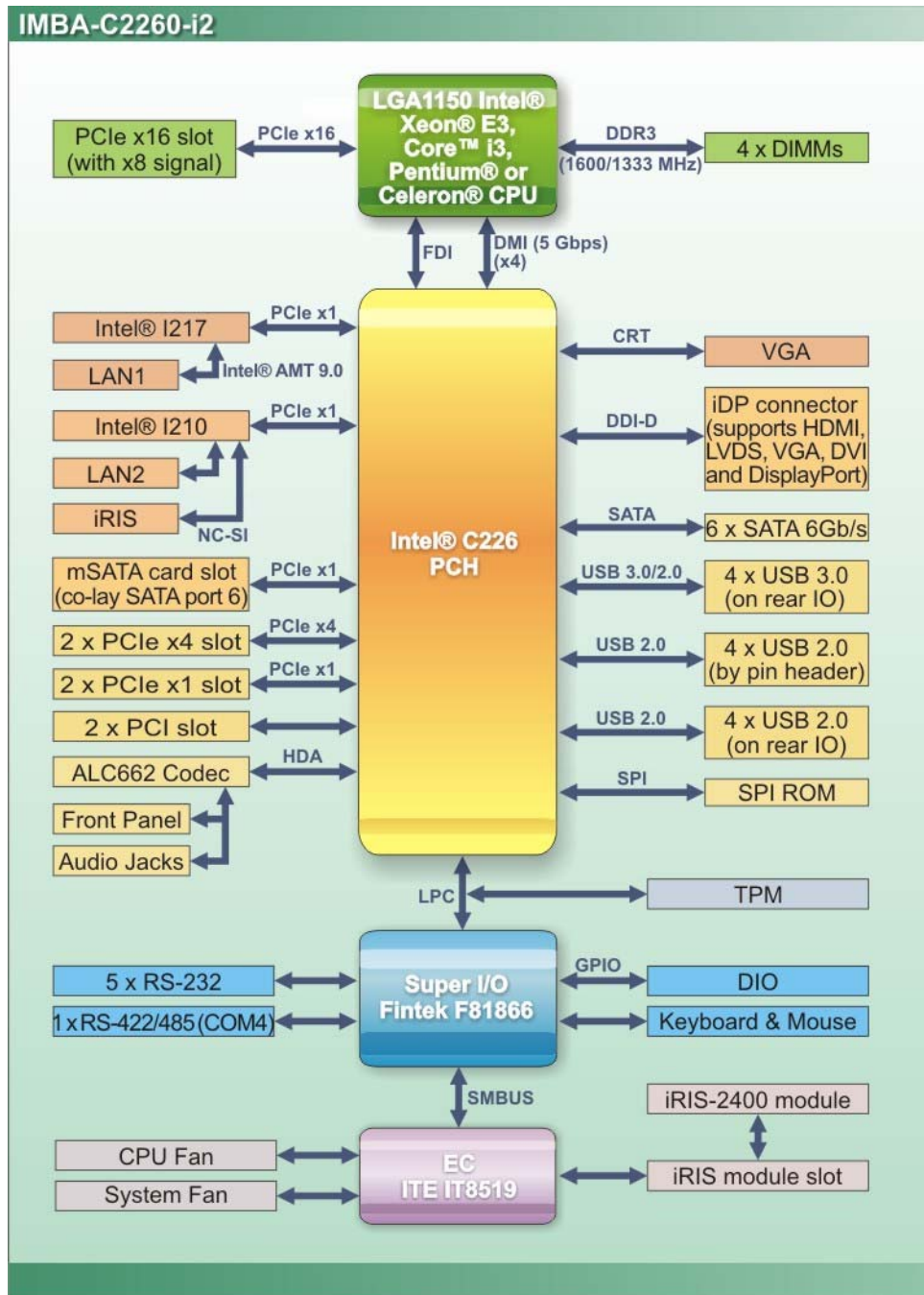


Figure 1-4: Data Flow Diagram

IMBA-C2260-i2 ATX Motherboard

1.6 Technical Specifications

The IMBA-C2260-i2 technical specifications are listed below.

Specification/Model	IMBA-C2260-i2
Form Factor	ATX
CPU Supported	LGA1150 Intel® Xeon® E3, Core™ i3, Pentium® or Celeron® CPU
Chipset	Intel® C226
Memory	Four 240-pin 1600/1333 MHz dual-channel ECC/non-ECC unbuffered DDR3 SDRAM DIMMs support (system max. 32 GB)
Graphics Engine	Intel® HD Graphics Gen 7.5 supports DirectX 11.1, OpenCL 1.2 and OpenGL 3.2 Full MPEG2, VC1, AVC Decode
Audio	Realtek ALC662 HD Audio codec (line-in, line-out, mic-in)
BIOS	UEFI BIOS
Ethernet Controllers	LAN1: Intel® I217 PHY with Intel® AMT 9.0 support (LAN1_USB1) LAN2: Intel® I210 PCIe Ethernet controller (LAN1_USB2)
Super I/O Controller	Fintek F81866
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Expansions	Two PCI slots One PCIe x16 slot (with x8 signal) Two PCIe x4 slots (support PCIe x1) Two PCIe x1 slots One mSATA card slot (co-lay SATA port 6)
I/O Interface Connectors	
Audio Connectors	Line-in, line-out and mic-in audio jacks on rear panel One internal front panel audio connector (10-pin header)
Chassis Intrusion	One 2-pin header
Digital I/O	8-bit, 4-bit input/4-bit output

Specification/Model	IMBA-C2260-i2
Display Output	One VGA (up to 1920 x 1200, 60 Hz) One iDP interface for HDMI, LVDS, VGA, DVI and DisplayPort (up to 3840 x 2160, 60 Hz)
Ethernet	Two RJ-45 GbE ports
Fan	One 4-pin CPU fan connector One 3-pin system fan connector
Front Panel	One 14-pin header (power LED, HDD LED, IPMI LED, speaker, power button, reset button)
I²C	One 4-pin wafer connector
IPMI 2.0	One iRIS module slot
Keyboard and Mouse	One PS/2 keyboard/mouse connector One internal keyboard and mouse connector (6-pin wafer)
LAN LED	Two 2-pin headers for LAN1 LED and LAN2 LED
Parallel Port	One parallel port via internal 26-pin box header
Serial ATA	Six SATA 6Gb/s connectors (support RAID 0, 1, 5, 10)
Serial Ports	One external RS-232 serial port Four RS-232 via internal box header 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 USB 3.0 ports on rear panel Four USB 2.0 ports on rear panel Four internal USB 2.0 ports by pin headers
Environmental and Power Specifications	
Power Supply	ATX power supply
Power Consumption	3.3V@0.57A, 5V@4.50A, 12V@0.14A, Vcore@5.20A, 5VSB@0.19A (3.1 GHz Intel® CPU with four 2 GB 1333 MHz DDR3 memory)

IMBA-C2260-i2 ATX Motherboard

Specification/Model	IMBA-C2260-i2
Operating Temperature	-20°C ~ 60°C
Storage Temperature	-30°C ~ 70°C
Humidity	5% ~ 95% (non-condensing)
Physical Specifications	
Dimensions	244 mm x 305 mm
Weight (GW/NW)	1200 g/700 g

Table 1-1: IMBA-C2260-i2 Specifications

Chapter

2

Packing List

IMBA-C2260-i2 ATX Motherboard

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-C2260-i2 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.

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-C2260-i2 was purchased from or contact an IEI sales representative directly by sending an email to sales@iei.com.tw.

The IMBA-C2260-i2 is shipped with the following components:







Quantity	Item and Part Number	Image
1	IMBA-C2260-i2 single board computer	
2	SATA cable (P/N: 32000-062800-RS)	
1	I/O shielding (P/N: 45014-0034C0-00-RS)	
1	Utility CD	
1	One Key Recovery CD	
1	Quick Installation Guide	

Table 2-1: Packing List

IMBA-C2260-i2 ATX Motherboard

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
iRIS-2400 module, IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface (P/N: iRIS-2400-R10)	
Dual-port USB cable with bracket (P/N: 19800-003100-200-RS)	
RS-422/485 cable, 200 mm (P/N: 32205-003800-100-RS)	
RS-232 cable, 230 mm (P/N: 19800-000051-RS)	
PS/2 KB/MS Y-cable with bracket (P/N: 19800-000075-RS)	
SATA power cable (P/N: 32102-000100-200-RS)	
LPT cable (P/N: 19800-000049-RS)	
LGA1155/LGA1156 cooler kit (1U chassis compatible, 73W) (P/N: CF-1156A-RS-R11)	








Item and Part Number	Image
LGA1155/LGA1156 cooler kit (95W) (P/N: CF-1156E-R11)	
DisplayPort to HDMI converter board for IEI IDP connector (P/N: DP-HDMI-R10)	
DisplayPort to LVDS converter board for IEI IDP connector (P/N: DP-LVDS-R10)	
DisplayPort to VGA converter board for IEI IDP connector (P/N: DP-VGA-R10)	
DisplayPort to DVI-D converter board for IEI IDP connector (P/N: DP-DVI-R10)	
DisplayPort to DisplayPort converter board for IEI iDP connector (P/N: DP-DP-R10)	
20-pin Infineon TPM module, software management tool, firmware v3.17 (P/N: TPM-IN01-R11)	

Table 2-2: Optional Items

Chapter

3

Connectors

3.1 Peripheral Interface Connectors

This chapter details all the peripheral interface connectors.

3.1.1 IMBA-C2260-i2 Layout

The figures below show all the peripheral interface connectors.

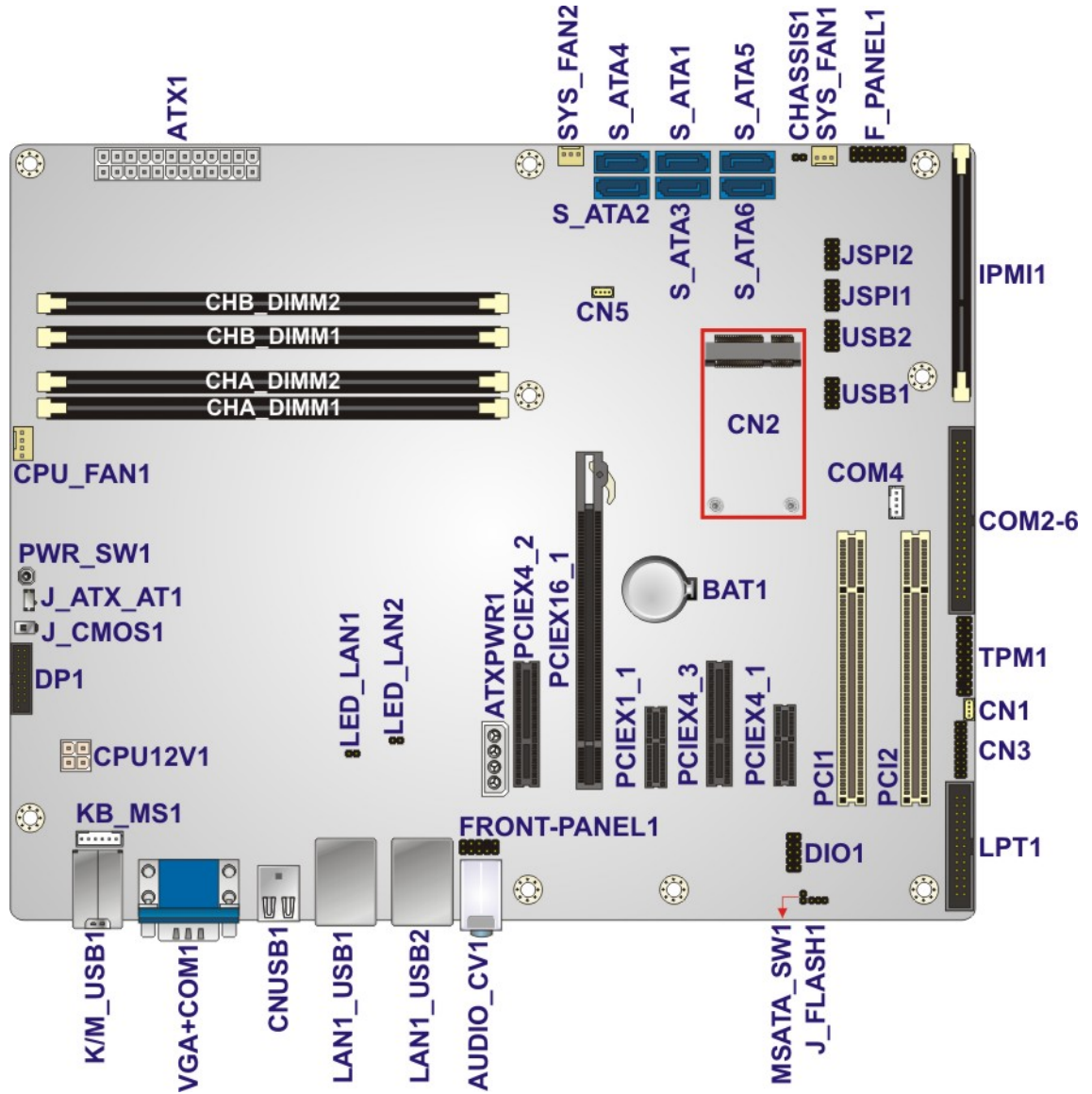


Figure 3-1: Peripheral Interface Connectors

IMBA-C2260-i2 ATX Motherboard

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
+12V ATX power connector	4-pin Molex power connector	CPU12V1
Additional power connector	4-pin connector	ATXPWR1
ATX power connector	24-pin connector	ATX1
Battery connector	Battery holder	BAT1
Chassis intrusion connector	2-pin header	CHASSIS1
DDR3 DIMM sockets	240-pin socket	CHA_DIMM1, CHA_DIMM2, CHB_DIMM1, CHB_DIMM2
Digital I/O connector	10-pin header	DIO1
EC debug connector	18-pin header	CN3
Fan connector (CPU)	4-pin wafer	CPU_FAN1
Fan connectors (system)	3-pin wafer	SYS_FAN1, SYS_FAN2
Front panel audio connector	10-pin header	FRONT-PANEL1
Front panel connector	14-pin header	F_PANEL1
I ² C connector	4-pin wafer	CN5
Internal DisplayPort connector	19-pin box header	DP1
iRIS module slot	iRIS module slot	IPMI1
Keyboard and mouse connector	6-pin wafer	KB_MS1
LAN1 LED connector	2-pin header	LED_LAN1
LAN2 LED connector	2-pin header	LED_LAN2
mSATA card slot	PCIe Mini slot	CN2
Parallel port connector	26-pin box header	LPT1

Connector	Type	Label
PCI slots	PCI slot	PCI1, PCI2
PCIe x1 slots	PCIe x1 slot	PCIEX1_1, PCIEX4_1
PCIe x4 slots	PCIe x4 slot	PCIEX4_2, PCIEX4_3
PCIe x16 slot (with x8 signal)	PCIe x16 slot	PCIEX16_1
Power button	Push button	PWR_SW1
SATA 6Gb/s drive connector	7-pin SATA connector	S_ATA1, S_ATA2, S_ATA3, S_ATA4, S_ATA5, S_ATA6
Serial port, RS-232	40-pin box header	COM2-6
Serial port, RS-422/485	4-pin wafer	COM4
SMBus connector	4-pin wafer	CN1
SPI flash connector	8-pin header	JSPI1
SPI flash connector, EC	8-pin header	JSPI2
TPM connector	20-pin header	TPM1
USB 2.0 connectors	8-pin header	USB1, USB2

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Panel Connectors

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

Connector	Type	Label
Audio connector	Audio jacks	AUDIO_CV1
Ethernet and USB 3.0 ports	RJ-45, USB 3.0	LAN1_USB1, LAN1_USB2
Keyboard/mouse and USB 2.0 ports	PS/2, USB 2.0	K/M_USB1

IMBA-C2260-i2 ATX Motherboard

Connector	Type	Label
Serial port and VGA connector	9-pin male DB-9, 15-pin female	VGACOM1
USB 2.0 ports	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-C2260-i2.

3.2.1 +12V ATX Power Connector

- CN Label:** CPU12V1
- CN Type:** 4-pin Molex power connector
- CN Location:** See **Figure 3-2**
- CN Pinouts:** See **Table 3-3**

This connector provides power to the CPU.

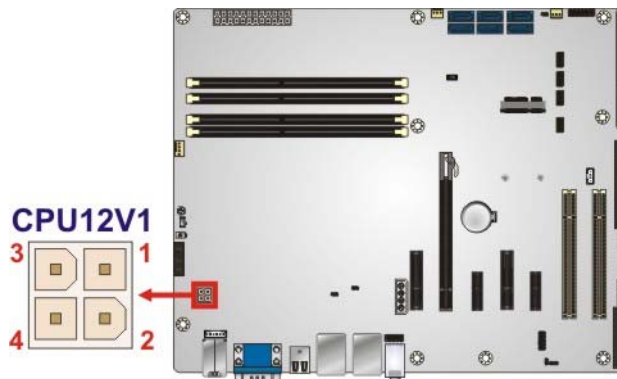


Figure 3-2: +12V ATX Power Connector Pinout Location

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

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

3.2.2 Additional Power Connector

- CN Label:** ATXPWR1
- CN Type:** 4-pin connector
- CN Location:** See **Figure 3-3**
- CN Pinouts:** See **Table 3-4**

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

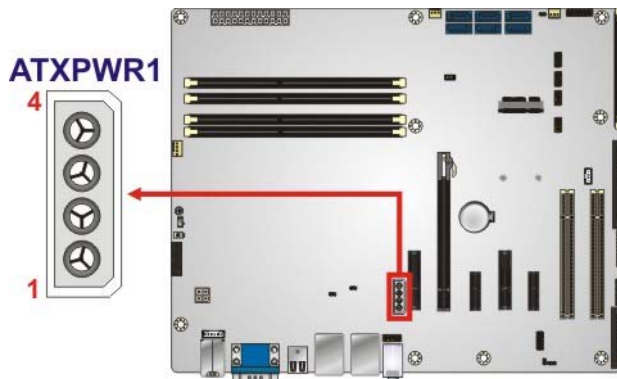


Figure 3-3: Additional Power Connector Location

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

Table 3-4: Additional Power Connector Pinouts

3.2.3 ATX Power Connector

- CN Label:** ATX1
- CN Type:** 24-pin connector
- CN Location:** See **Figure 3-4**
- CN Pinouts:** See **Table 3-5**

The ATX power connector connects to an ATX power supply.

IMBA-C2260-i2 ATX Motherboard

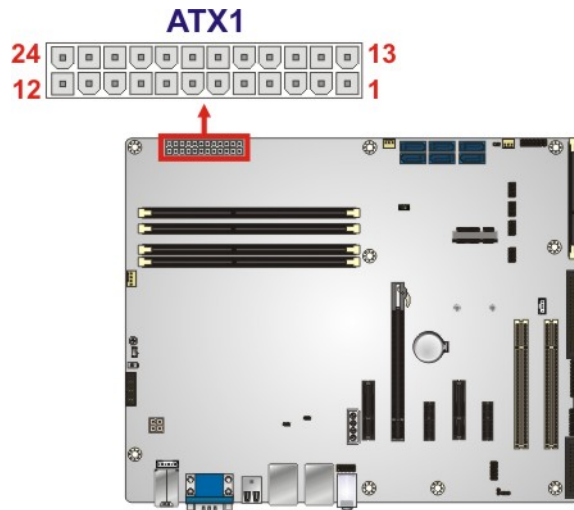


Figure 3-4: ATX Power Connector Location

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

Table 3-5: ATX Power Connector Pinouts

3.2.4 Battery Connector

**CAUTION:**

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

Dispose of used batteries according to instructions and local regulations.

CN Label:	BAT1
CN Type:	Battery holder
CN Location:	See Figure 3-5

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

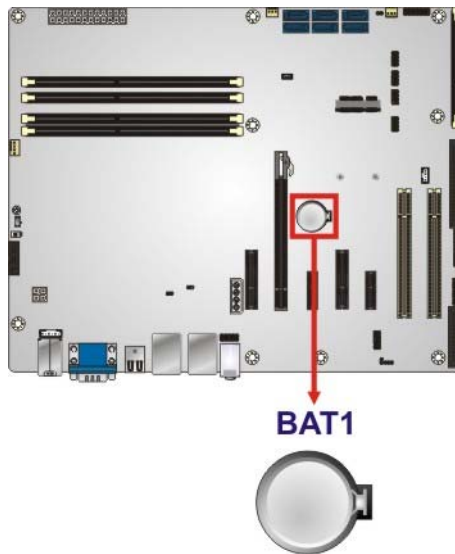


Figure 3-5: Battery Connector Location

IMBA-C2260-i2 ATX Motherboard

3.2.5 Chassis Intrusion Connector

- CN Label:** CHASSIS1
- CN Type:** 2-pin header
- CN Location:** See **Figure 3-6**
- CN Pinouts:** See **Table 3-6**

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

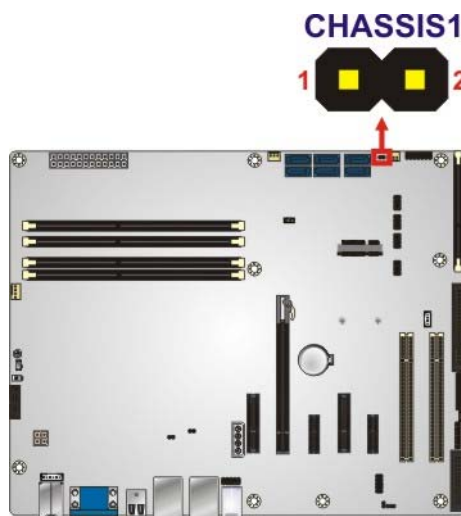


Figure 3-6: Chassis Intrusion Connector Location

Pin	Description
1	+3.3VSB
2	CHASSIS OPEN

Table 3-6: Chassis Intrusion Connector Pinouts

3.2.6 DDR3 DIMM Slots

- CN Label:** CHA_DIMM1, CHA_DIMM2, CHB_DIMM1, CHB_DIMM2
- CN Type:** DDR3 DIMM slot
- CN Location:** See **Figure 3-7**

The DIMM slots are for DDR3 DIMM memory modules.

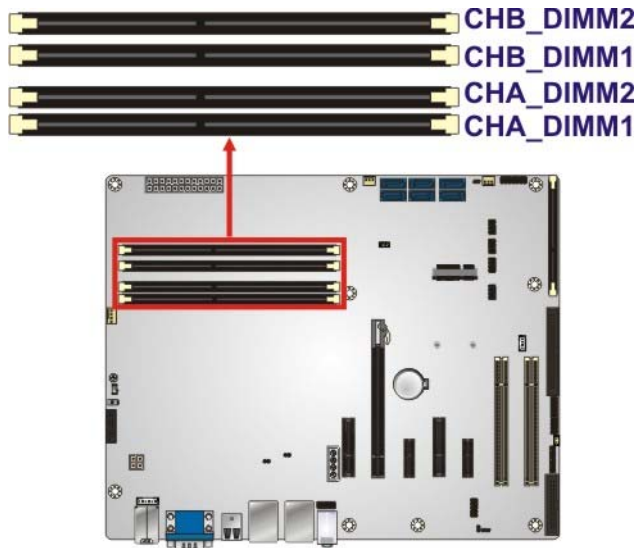


Figure 3-7: DDR3 DIMM Slot Locations

3.2.7 Digital I/O Connector

- CN Label:** DIO1
- CN Type:** 10-pin header
- CN Location:** See **Figure 3-8**
- CN Pinouts:** See **Table 3-7**

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



Figure 3-8: Digital I/O Connector Location

IMBA-C2260-i2 ATX Motherboard

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 3-7: Digital I/O Connector Pinouts

3.2.8 EC Debug Connector

- CN Label:** CN3
- CN Type:** 18-pin header
- CN Location:** See **Figure 3-9**
- CN Pinouts:** See **Table 3-8**

The EC debug connector is used for EC debug.

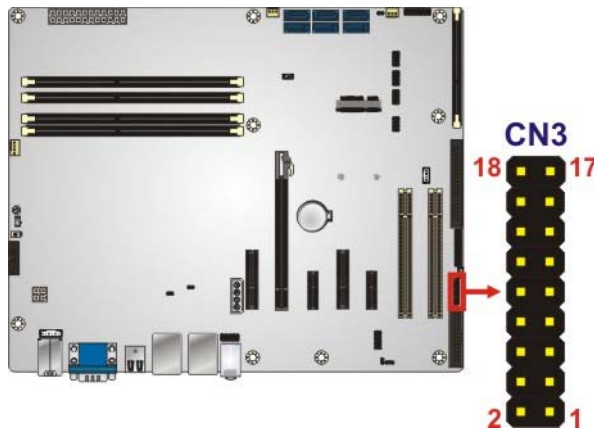


Figure 3-9: EC Debug Connector Location

Pin	Description	Pin	Description
1	EC_EPP_STB#	2	EC_EPP_AFD#
3	EC_EPP_PDO	4	NC
5	EC_EPP_PD1	6	EC_EPP_INIT#
7	EC_EPP_PD2	8	EC_EPP_SLIN#
9	EC_EPP_PD3	10	GND

Pin	Description	Pin	Description
11	EC_EPP_PD4	12	NC
13	EC_EPP_PD5	14	EC_EPP_BUSY
15	EC_EPP_PD6	16	EC_EPP_KSI5
17	EC_EPP_PD7	18	EC_EPP_KSI4

Table 3-8: EC Debug Connector Pinouts

3.2.9 Fan Connector (CPU)

- CN Label:** CPU_FAN1
- CN Type:** 4-pin wafer
- CN Location:** See **Figure 3-10**
- CN Pinouts:** See **Table 3-9**

The fan connector attaches to a CPU cooling fan.



Figure 3-10: CPU Fan Connector Location

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

Table 3-9: CPU Fan Connector Pinouts

IMBA-C2260-i2 ATX Motherboard

3.2.10 Fan Connectors (System)

CN Label: SYS_FAN1, SYS_FAN2

CN Type: 3-pin wafer

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

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

Each fan connector attaches to a system cooling fan.

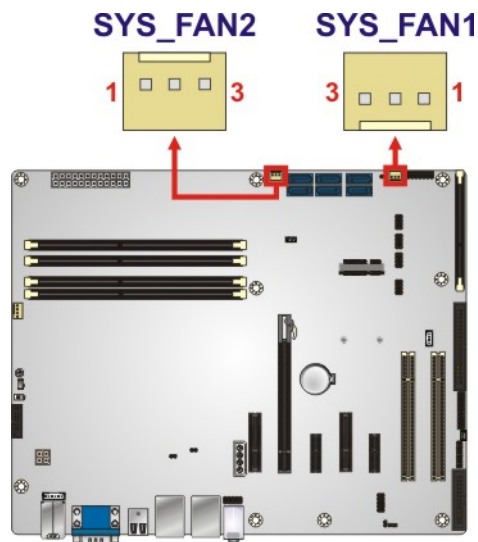


Figure 3-11: System Fan Connector Locations

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

Table 3-10: System Fan Connector Pinouts

3.2.11 Front Panel Audio Connector

CN Label: FRONT-PANEL1

CN Type: 10-pin header

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

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

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

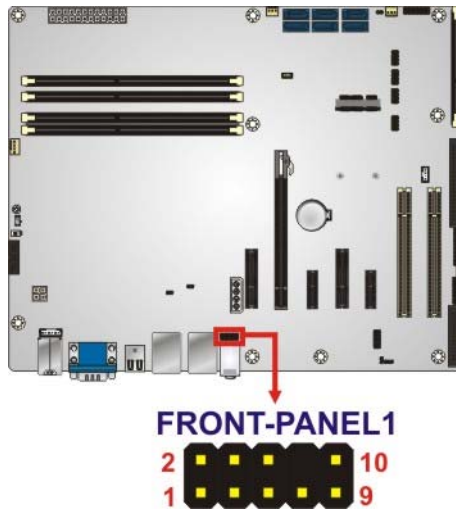


Figure 3-12: Front Panel Audio Connector Location

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

Table 3-11: Front Panel Audio Connector Pinouts

3.2.12 Front Panel Connector

- CN Label:** F_PANEL1
- CN Type:** 14-pin header
- CN Location:** See **Figure 3-13**
- CN Pinouts:** See **Table 3-12**

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

IMBA-C2260-i2 ATX Motherboard

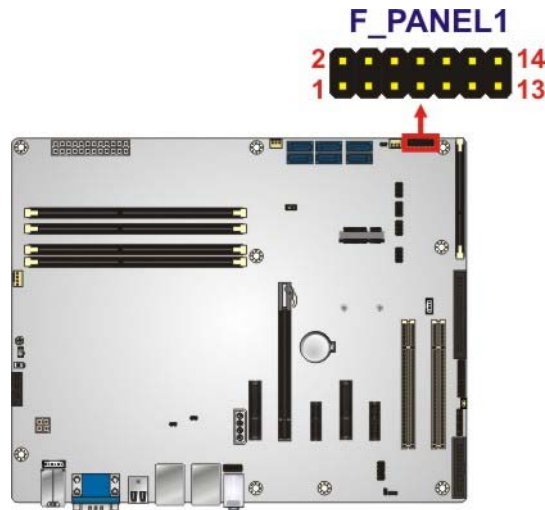


Figure 3-13: Front Panel Connector Location

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

Table 3-12: Front Panel Connector Pinouts

3.2.13 I²C Connector

- CN Label:** CN5
- CN Type:** 4-pin wafer
- CN Location:** See Figure 3-14
- CN Pinouts:** See Table 3-13

The I²C connector is used to connect I²C-bus devices to the mainboard.

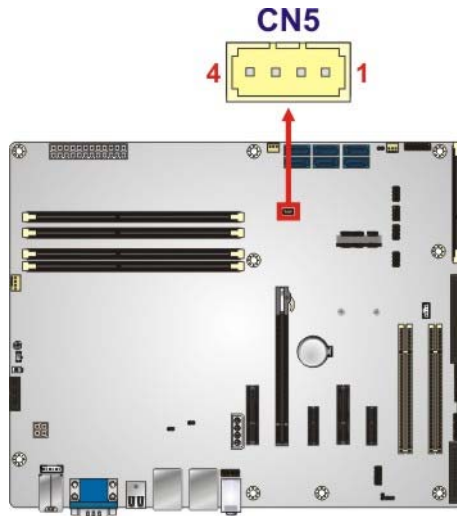


Figure 3-14: I²C Connector Location

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

Table 3-13: I²C Connector Pinouts

3.2.14 Internal DisplayPort Connector

- CN Label:** DP1
- CN Type:** 19-pin box header
- CN Location:** See **Figure 3-15**
- CN Pinouts:** See **Table 3-14**

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

IMBA-C2260-i2 ATX Motherboard

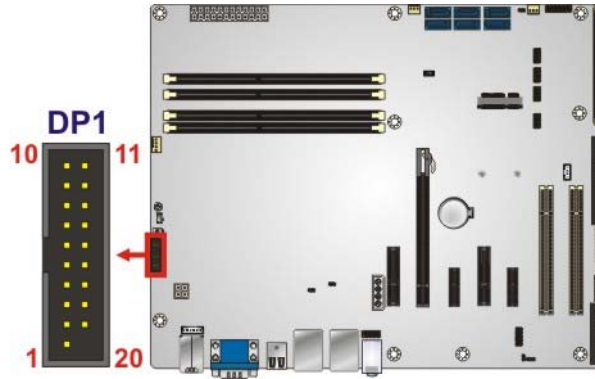


Figure 3-15: Internal DisplayPort Connector Location

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

Table 3-14: Internal DisplayPort Connector Pinouts

3.2.15 iRIS Module Slot

- CN Label:** IPMI1
- CN Type:** iRIS module slot
- CN Location:** See **Figure 3-16**

The iRIS module slot allows installation of the iRIS-2400 module.

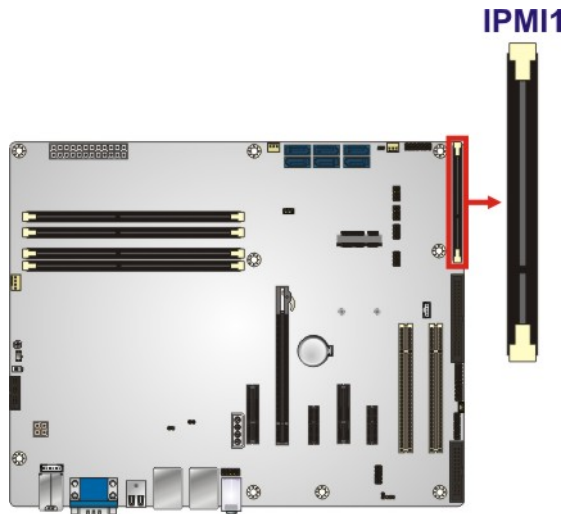


Figure 3-16: iRIS Module Slot Location



WARNING:

The iRIS module slot is designed to install the iRIS-2400 module only. DO NOT install other modules into the iRIS module slot. Doing so may cause damage to the IMBA-C2260-i2.

3.2.16 Keyboard and Mouse Connector

CN Label:	KB_MS1
CN Type:	6-pin wafer
CN Location:	See Figure 3-17
CN Pinouts:	See Table 3-15

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

IMBA-C2260-i2 ATX Motherboard



Figure 3-17: Keyboard and Mouse Connector Location

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

Table 3-15: Keyboard and Mouse Connector Pinouts

3.2.17 LAN LED Connectors

- CN Label:** LED_LAN1, LED_LAN2
- CN Type:** 2-pin header
- CN Location:** See **Figure 3-18**
- CN Pinouts:** See **Table 3-16** and **Table 3-17**

The LAN LED connectors are used to connect to the LAN LED indicators on the chassis to indicate users the link activities of the two LAN ports.

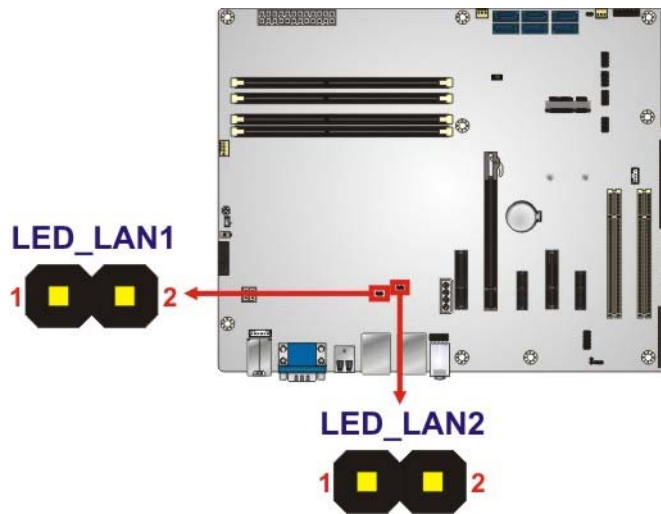


Figure 3-18: LAN LED Connector Locations

Pin	Description
1	+3.3V
2	LAN1_LED_LINK#_ACT

Table 3-16: LAN1 LED Connector (LED_LAN1) Pinouts

Pin	Description
1	+3.3V
2	LAN2_LED_LINK#_ACT

Table 3-17: LAN2 LED Connector (LED_LAN2) Pinouts

3.2.18 mSATA Card Slot

- CN Label:** CN2
- CN Type:** PCIe Mini slot
- CN Location:** See **Figure 3-19**
- CN Pinouts:** See **Table 3-18**

The mSATA card slot is for installing mSATA cards or USB devices only

IMBA-C2260-i2 ATX Motherboard



NOTE:

If the user shorts the mSATA Slot Setup jumper (MSATA_SW1) to force the system to enable mSATA device, the S_ATA6 connector will be disabled. Please refer to **Section 4.5.4**.

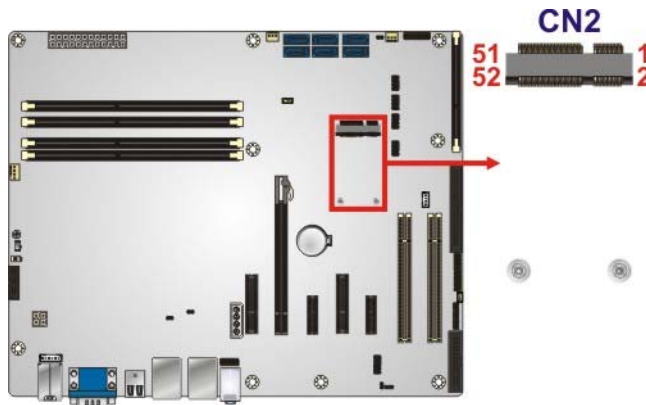


Figure 3-19: mSATA Card Slot Location

Pin	Description	Pin	Description
1	PCIE_WAKE#	2	+3.3V
3	N/C	4	GND
5	N/C	6	1.5V
7	N/C	8	N/C
9	GND	10	N/C
11	MSATA_CLK#	12	N/C
13	MSATA_CLK	14	N/C
15	GND	16	N/C
17	PLTRST_N	18	GND
19	N/C	20	+3.3V
21	GND	22	PLTRST_N
23	SATA_RX+	24	+3.3V
25	SATA_RX-	26	GND
27	GND	28	1.5V
29	GND	30	SMB_CLK

Pin	Description	Pin	Description
31	SATA_TX-	32	SMB_DATA
33	SATA_TX+	34	GND
35	GND	36	USB_DATA-
37	GND	38	USB_DATA+
39	+3.3V	40	GND
41	+3.3V	42	N/C
43	+3.3V	44	N/C
45	CLINK_CLK	46	N/C
47	CLINK_DATA	48	1.5V
49	CLINK_RST#	50	GND
51	MSATA_DET	52	+3.3V

Table 3-18: mSATA Card Slot Pinouts

3.2.19 Parallel Port Connector

- CN Label:** LPT1
- CN Type:** 26-pin box header
- CN Location:** See **Figure 3-20**
- CN Pinouts:** See **Table 3-19**

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

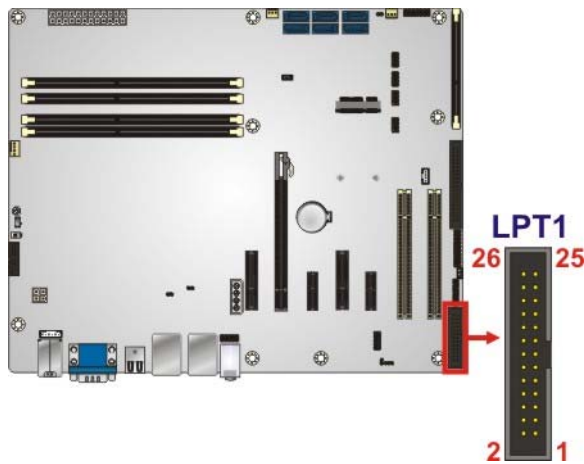


Figure 3-20: Parallel Port Connector Location

IMBA-C2260-i2 ATX Motherboard

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

Table 3-19: Parallel Port Connector Pinouts

3.2.20 PCI Slots

- CN Label:** PCI1, PCI2
- CN Type:** PCI Slot
- CN Location:** See **Figure 3-21**

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

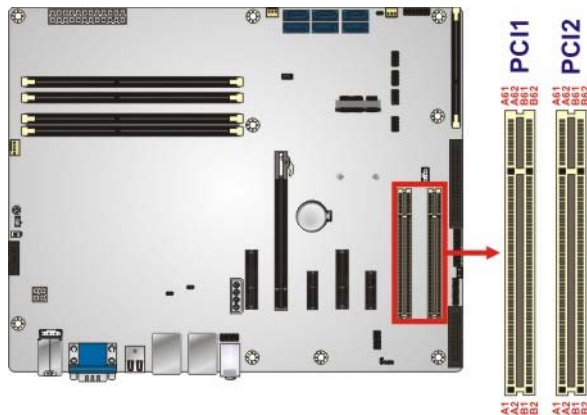


Figure 3-21: PCI Slot Locations

3.2.21 PCIe x1 Slots

CN Label: **PCIEX1_1, PCIEX4_1**

CN Type: **PCIe x1 slot**

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

The PCIe x1 slot is for PCIe x1 expansion card.

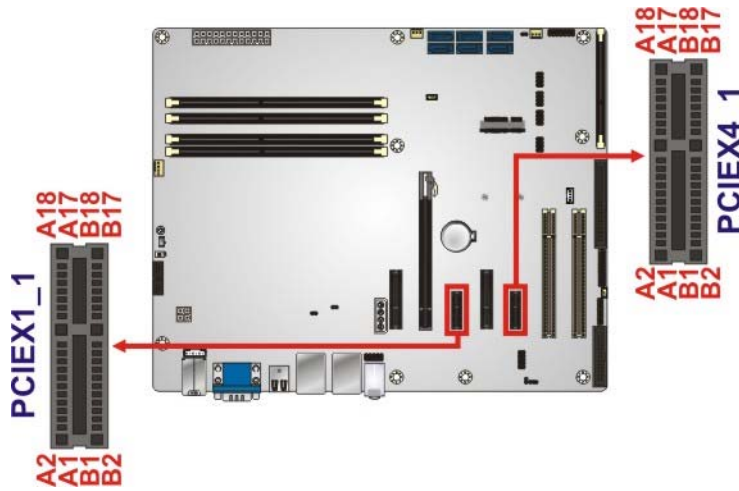


Figure 3-22: PCIe x1 Slot Locations

3.2.22 PCIe x4 Slots

CN Label: **PCIEX4_2, PCIEX4_3**

CN Type: **PCIe x4 slot**

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

The PCIe x4 expansion card slots are for PCIe x4 expansion cards.

IMBA-C2260-i2 ATX Motherboard

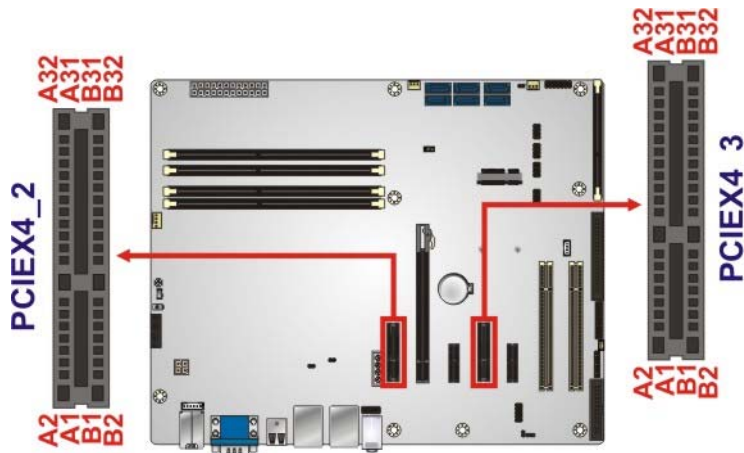


Figure 3-23: PCIe x4 Slot Locations

3.2.23 PCI Express x16 Slot

CN Label:	PCIEX16_1
CN Type:	PCIe x16 slot
CN Location:	See Figure 3-24



NOTE:

The PCIe x16 interface setup is made through the BIOS menu in “Chipset → PCH-IO Configuration”. Use the **PEG port configuration** BIOS option to configure the PCIe x16 channel mode. Please refer to **Section 5.4.1** for detailed information.

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

PCIEX16_1

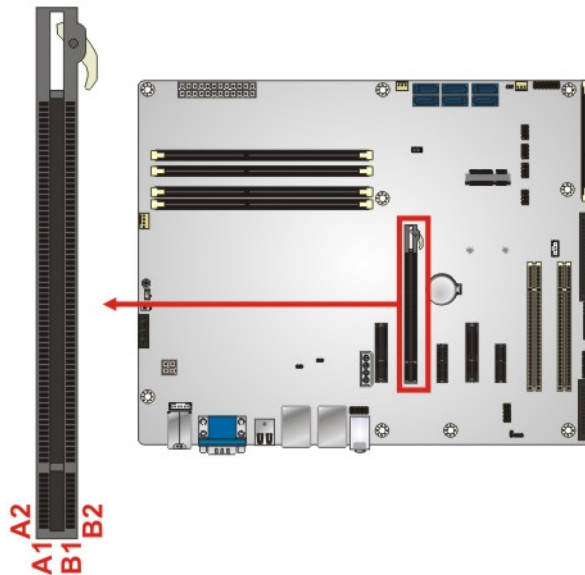


Figure 3-24: PCIe x16 Slot Location

3.2.24 Power Button

- CN Label:** PWR_SW1
- CN Type:** Push button
- CN Location:** See **Figure 3-25**

The on-board power button controls system power.



Figure 3-25: Power Button Location

IMBA-C2260-i2 ATX Motherboard

3.2.25 SATA 6Gb/s Drive Connector

CN Label: S_ATA1, S_ATA2, S_ATA3, S_ATA4, S_ATA5, S_ATA6

CN Type: 7-pin SATA drive connector

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

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

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

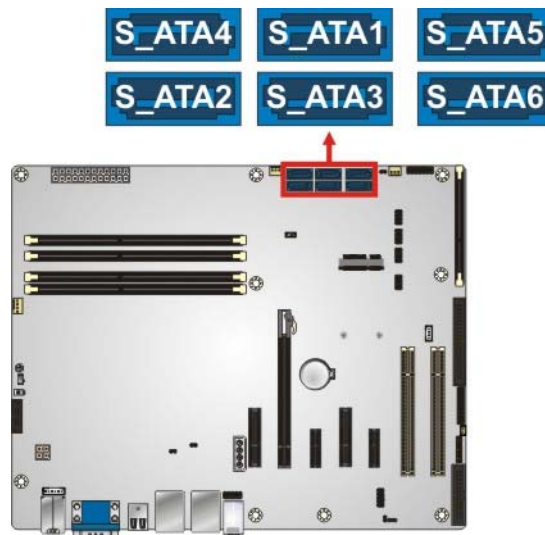


Figure 3-26: SATA 6Gb/s Drive Connector Location

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

Table 3-20: SATA 6Gb/s Drive Connector Pinouts



NOTE:

If the user shorts the mSATA Slot Setup jumper (MSATA_SW1) to force the system to enable mSATA device, the S_ATA6 connector will be disabled. Please refer to **Section 4.5.4**.

3.2.26 Serial Port Connector, RS-232

- CN Label:** COM2-6
- CN Type:** 40-pin box header
- CN Location:** See **Figure 3-27**
- CN Pinouts:** See **Table 3-21**

The connector provides four RS-232 ports connection.



Figure 3-27: RS-232 Serial Port Connector Location

	Pin	Description	Pin	Description
COM2	1	DCD	2	DSR
	3	RXD	4	RTS
	5	TXD	6	CTS
	7	DTR	8	RI
	9	GND	10	GND

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	Pin	Description	Pin	Description
COM3	11	DCD	12	DSR
	13	RXD	14	RTS
	15	TXD	16	CTS
	17	DTR	18	RI
	19	GND	20	GND
COM5	21	DCD	22	DSR
	23	RXD	24	RTS
	25	TXD	26	CTS
	27	DTR	28	RI
	29	GND	30	GND
COM6	31	DCD	32	DSR
	33	RXD	34	RTS
	35	TXD	36	CTS
	37	DTR	38	RI
	39	GND	40	GND

Table 3-21: RS-232 Serial Port Connector Pinouts

3.2.27 Serial Port Connector, RS-422/485

- CN Label:** COM4
- CN Type:** 4-pin wafer
- CN Location:** See **Figure 3-28**
- CN Pinouts:** See **Table 3-22**

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



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

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

Table 3-22: RS-422/485 Connector Pinouts

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

RS-422 Pinouts	RS-485 Pinouts

Table 3-23: DB-9 RS-422/485 Pinouts

3.2.28 SMBus Connector

- CN Label:** CN1
- CN Type:** 4-pin wafer
- CN Location:** See **Figure 3-29**
- CN Pinouts:** See **Table 3-24**

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

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Figure 3-29: SMBus Connector Location

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

Table 3-24: SMBus Connector Pinouts

3.2.29 SPI Flash Connector

- CN Label:** JSPI1
- CN Type:** 8-pin header
- CN Location:** See Figure 3-30
- CN Pinouts:** See Table 3-25

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



Figure 3-30: SPI Flash Connector Location

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

Table 3-25: SPI Flash Connector Pinouts

3.2.30 SPI Flash Connector, EC

- CN Label:** JSPI2
- CN Type:** 8-pin header
- CN Location:** See **Figure 3-31**
- CN Pinouts:** See **Table 3-26**

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

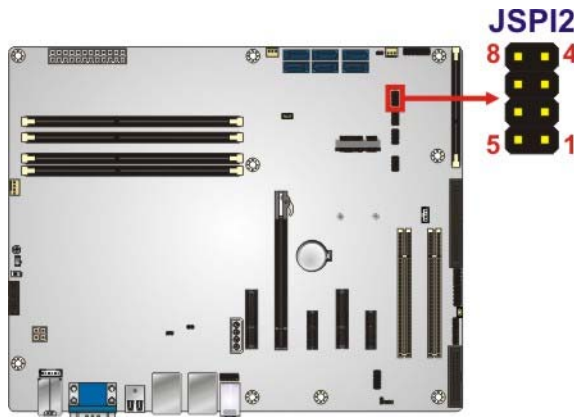


Figure 3-31: SPI EC Flash Connector Location

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

Table 3-26: SPI EC Flash Connector Pinouts

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3.2.31 TPM Connector

- CN Label:** TPM1
- CN Type:** 20-pin header
- CN Location:** See **Figure 3-32**
- CN Pinouts:** See **Table 3-27**

The TPM connector connects to a TPM module.



Figure 3-32: TPM Connector Location

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

Table 3-27: TPM Connector Pinouts

3.2.32 USB 2.0 Connectors

- CN Label:** USB1, USB2
- CN Type:** 8-pin header
- CN Location:** See **Figure 3-33**
- CN Pinouts:** See **Table 3-28**

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

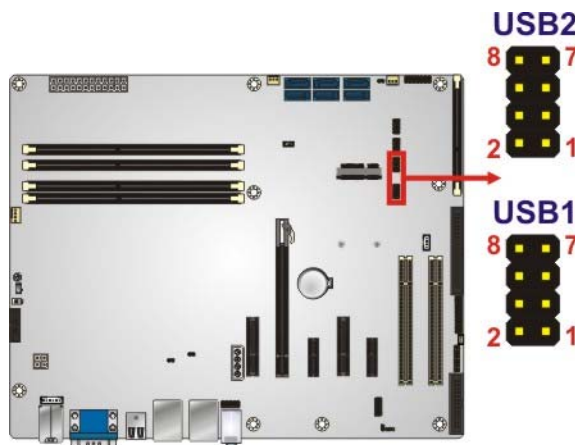


Figure 3-33: USB 2.0 Connector Pinout Locations

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

Table 3-28: USB 2.0 Connector Pinouts

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3.3 External Peripheral Interface Connector Panel

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

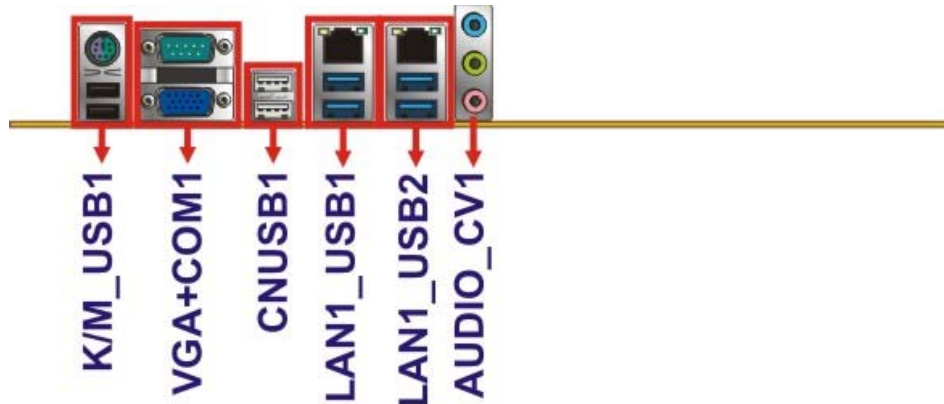


Figure 3-34: External Peripheral Interface Connector

3.3.1 Audio Connector

CN Label:	AUDIO_CV1
CN Type:	Audio jack
CN Location:	See Figure 3-34

The audio jacks connect to external audio devices.

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

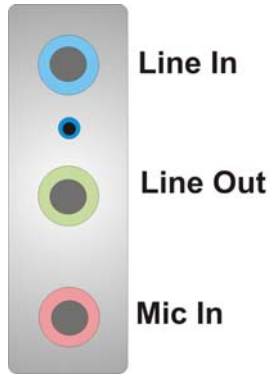


Figure 3-35: Audio Connector

3.3.2 Ethernet and USB 3.0 Connectors

- CN Label:** LAN1_USB1, LAN1_USB2
- CN Type:** RJ-45, USB 3.0
- CN Location:** See **Figure 3-34**
- CN Pinouts:** See **Table 3-29** and **Table 3-30**

There are four external USB 3.0 connectors on the IMBA-C2260-i2.

Pin	Description	Pin	Description
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

Table 3-29: USB 3.0 Port Pinouts

Each LAN connector connects to a local network

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

Table 3-30: LAN Pinouts

3.3.3 Keyboard/Mouse and USB 2.0 Connectors

CN Label: K/M_USB1

CN Type: PS/2, USB 2.0

CN Location: See **Figure 3-34**

CN Pinouts: See **Table 3-31** and **Table 3-32**

The USB 2.0 connector can be connected to a USB device.

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

Table 3-31: USB 2.0 Port Pinouts

The PS/2 port is for connecting a PS/2 mouse and a PS/2 keyboard.

Pin	Description
9	GND
10	Keyboard Data
11	Mouse Data
12	VCC
13	Keyboard Clock
14	Mouse Clock

Table 3-32: PS/2 Connector Pinouts

3.3.4 Serial Port and VGA Connector

- CN Label:** VGACOM1
- CN Type:** DB-9 and 15-pin VGA connector
- CN Location:** See **Figure 3-34**
- CN Pinouts:** See **Table 3-33**

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

Pin	Description	Pin	Description
1	DCD1	6	DSR1
2	RXD1	7	RTS1
3	TXD1	8	CTS1
4	DTR1	9	RI1
5	GND		

Table 3-33: Serial Port Connector Pinouts

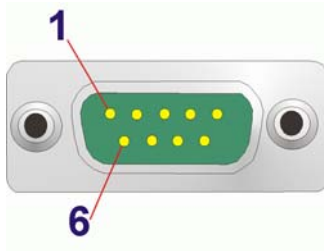


Figure 3-36: Serial Port Connector Pinouts

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

Pin	Description	Pin	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DCCDA

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Pin	Description	Pin	Description
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 3-34: VGA Connector Pinouts

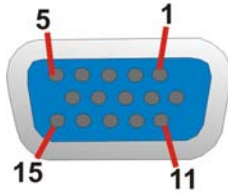


Figure 3-37: VGA Connector

3.3.5 USB 2.0 Connectors

- CN Label:** CNUSB1
- CN Type:** USB 2.0
- CN Location:** See **Figure 3-34**
- CN Pinouts:** See **Table 3-35**

Each USB 2.0 connector can be connected to a USB 2.0 device.

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

Table 3-35: USB 2.0 Port Pinouts

Chapter

4

Installation

IMBA-C2260-i2 ATX Motherboard

4.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the IMBA-C2260-i2 may result in permanent damage to the IMBA-C2260-i2 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMBA-C2260-i2. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMBA-C2260-i2 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-C2260-i2, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMBA-C2260-i2.
- ***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-C2260-i2 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-C2260-i2 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-C2260-i2 off:
 - When working with the IMBA-C2260-i2, 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-C2260-i2, **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 LGA1150 CPU Installation



WARNING:

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

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

To install the CPU, follow the steps below.

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

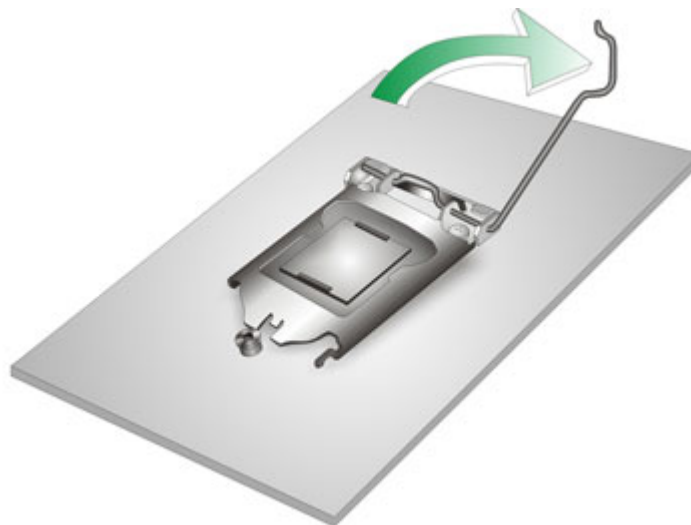


Figure 4-1: Disengage the CPU Socket Load Lever

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

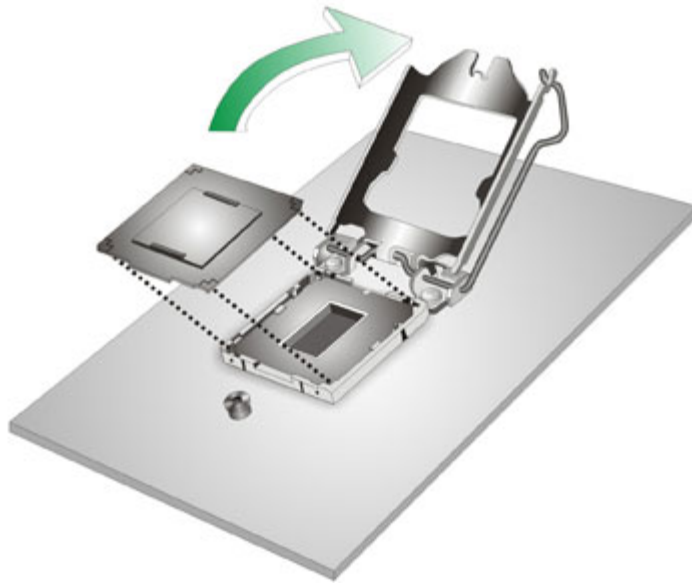


Figure 4-2: Remove Protective Cover

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



WARNING:

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

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

IMBA-C2260-i2 ATX Motherboard

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

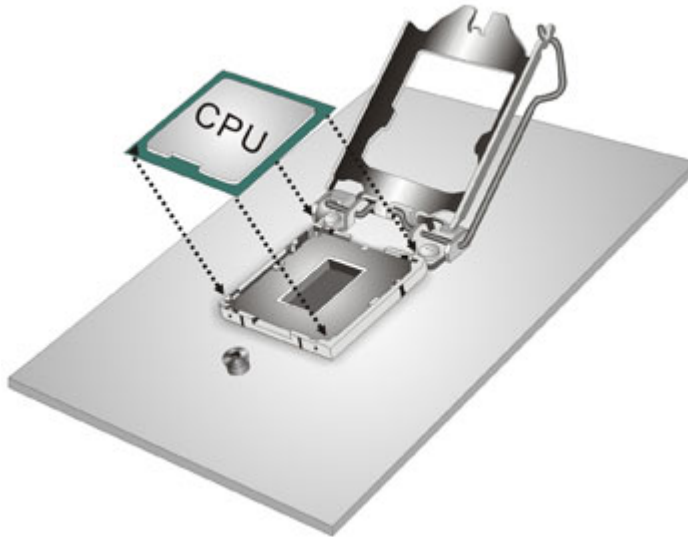


Figure 4-3: Insert the Socket LGA1150 CPU

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

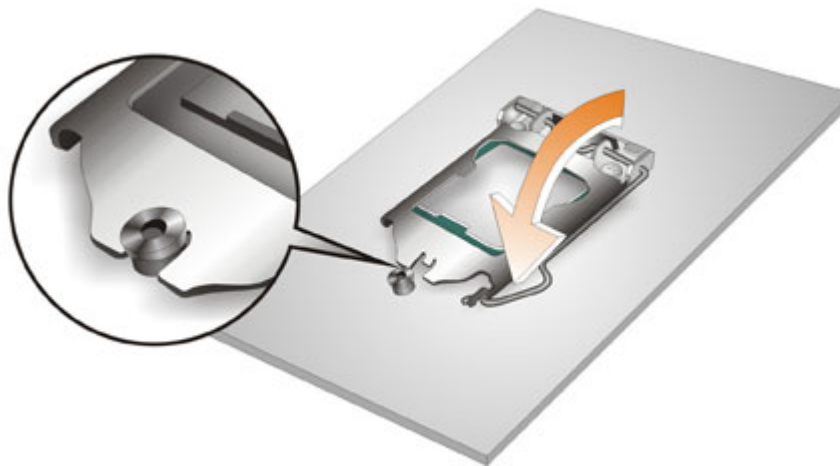


Figure 4-4: Close the Socket LGA1150

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

4.2.2 Socket LGA1150 Cooling Kit Installation



WARNING:

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

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

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



WARNING:

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

To install the cooling kit, follow the instructions below.

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

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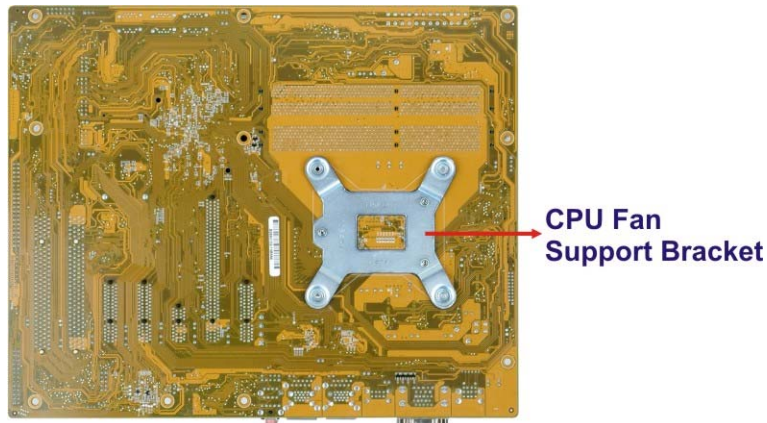


Figure 4-5: Cooling Kit Support Bracket

- Step 2:** Place the cooling kit onto the socket LGA1150 CPU. Make sure the CPU cable can be properly routed when the cooling kit is installed.
- Step 3:** Mount the cooling kit. Gently place the cooling kit on top of the CPU. Make sure the four threaded screws on the corners of the cooling kit properly pass through the holes of the cooling kit bracket.
- Step 4:** Secure the cooling kit by fastening the four retention screws of the cooling kit.
- Step 5:** Connect the fan cable. Connect the cooling kit fan cable to the CPU fan connector on the IMBA-C2260-i2. Carefully route the cable and avoid heat generating chips and fan blades.

4.2.3 DIMM Installation

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

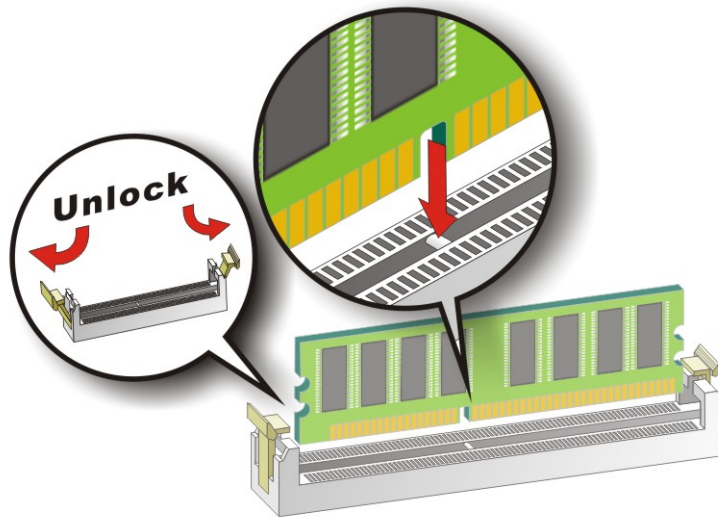


Figure 4-6: DIMM Installation

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

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4.3 iRIS Module Installation

**WARNING:**

The iRIS module slot is designed to install the iRIS-2400 module only. DO NOT install other modules into the iRIS module slot. Doing so may cause damage to the IMBA-C2260-i2.

To install the iRIS-2400 module, please follow the steps below and refer to **Figure 4-7**.

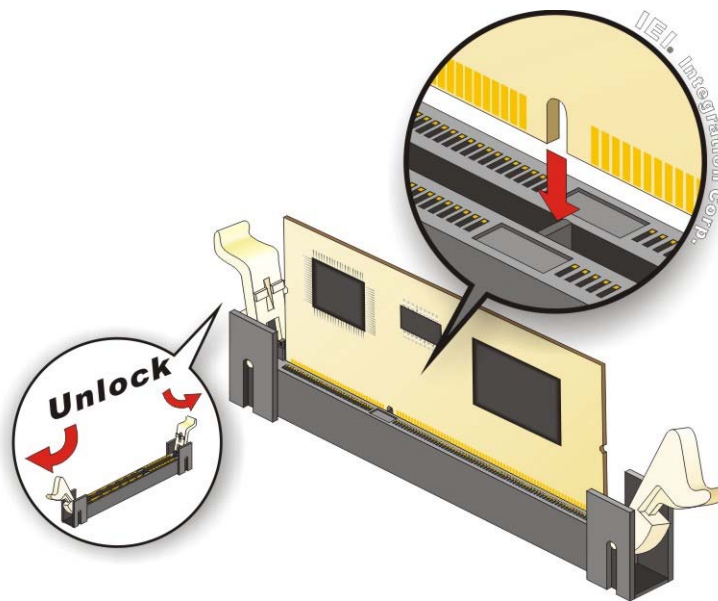


Figure 4-7: iRIS Module Installation

- Step 1:** Locate the iRIS module slot. See **Figure 3-16**.
- Step 2:** **Open the socket handles.** Open the two handles outwards as far as they can. See **Figure 4-7**.
- Step 3:** **Align the iRIS-2400 module with the socket.** Align the iRIS-2400 module so the notch on the module lines up with the notch on the socket. See **Figure 4-7**.
- Step 4:** **Insert the iRIS-2400 module.** Once aligned, press down until the iRIS-2400 module is properly seated. Clip the two handles into place. See **Figure 4-7**.

Step 5: Removing the iRIS-2400 module. To remove the iRIS-2400 module, push both handles outward. The module is ejected by a mechanism in the socket.

**NOTE:**

After installing the iRIS-2400 module, use **LAN1_USB2** port to establish a network connection. Please refer to **Section 4.9** for IPMI setup procedures.

4.4 mSATA Card Installation

To install an mSATA card, please follow the steps below.

Step 1: Locate the mSATA card slot. The location of the mSATA card slot is shown in **Chapter 3**.

Step 2: Remove the retention screws. Remove the two retention screws secured on the motherboard as shown in **Figure 4-8**.

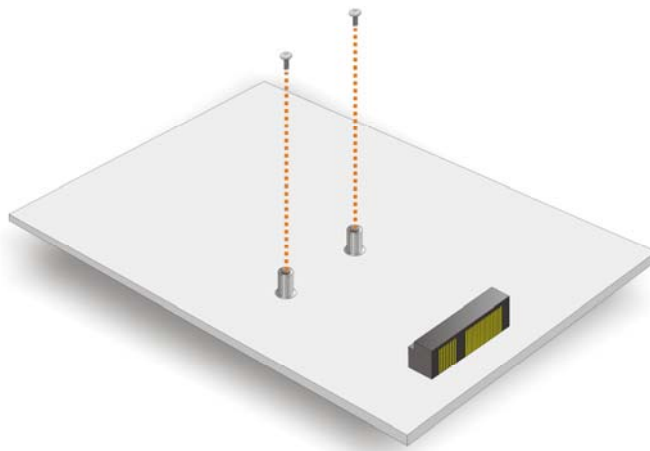


Figure 4-8: Remove the Retention Screws for the mSATA Card

Step 3: Insert into the socket at an angle. Line up the notch on the card with the notch on the connector. Slide the mSATA card into the socket at an angle of about 20° (**Figure 4-9**).

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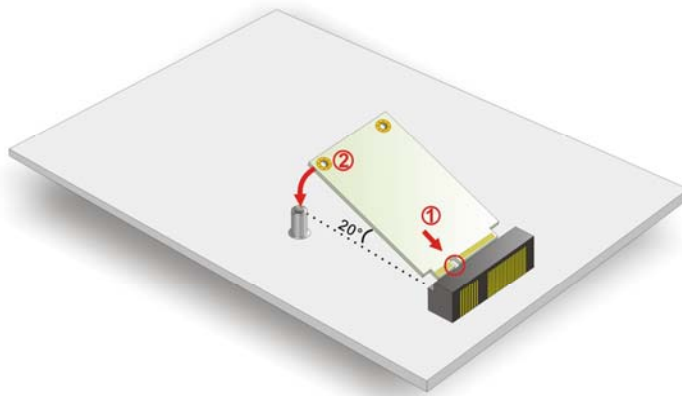


Figure 4-9: Insert the mSATA Card into the Socket at an Angle

Step 4: Secure the mSATA card. Secure the mSATA card with the retention screws previously removed (Figure 4-10).

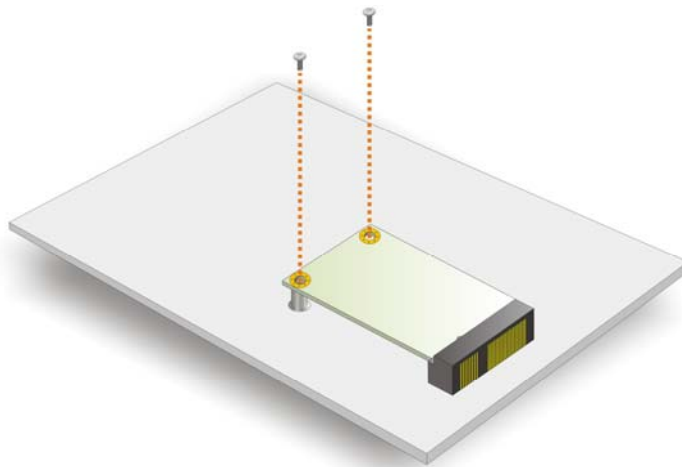


Figure 4-10: Secure the mSATA Card

4.5 System Configuration

The system configuration should be performed before installation.

4.5.1 AT/ATX Power Mode Setting

The AT and ATX power mode selection is made through the AT/ATX power mode switch which is shown in **Figure 4-11**.

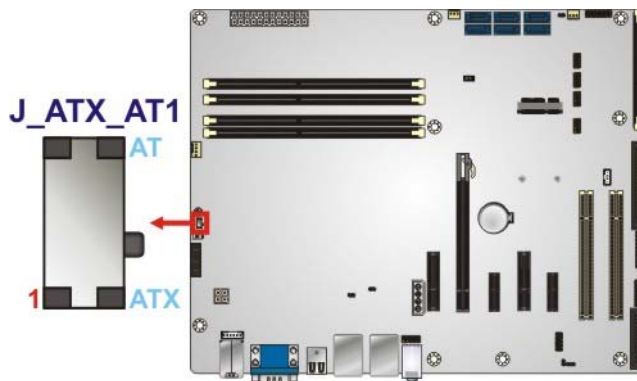


Figure 4-11: AT/ATX Power Mode Switch Location

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

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

4.5.2 Clear CMOS Button

To reset the BIOS, remove the on-board battery and press the clear CMOS button for three seconds or more. The clear CMOS button location is shown in **Figure 4-12**.

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Figure 4-12: Clear CMOS Button Location

4.5.3 Flash Descriptor Security Override

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

Setting	Description
Short 1-2	No override (default)
Short 2-3	Override

Table 4-2: Flash Descriptor Security Override Jumper Settings



Figure 4-13: Flash Descriptor Security Override Jumper Location

4.5.4 mSATA Slot Setup

The mSATA Slot Setup jumper specifies whether to automatically detect the mSATA device installed in the mSATA card slot (CN2). If the user shorts the mSATA Slot Setup jumper to force the system to enable mSATA device, the S_ATA6 connector will be disabled.

Setting	Description
Open	Automatically detect mSATA device (Default)
Short 1-2	Force to enable mSATA device (The S_ATA6 connector will be disabled)

Table 4-3: mSATA Slot Setup Jumper Settings



Figure 4-14: mSATA Slot Setup Jumper Location

4.5.5 PCIe x16 Interface Setup

The PCIe x16 interface setup is made through the BIOS menu in “Chipset → PCH-IO Configuration”. Use the **PEG port configuration** BIOS option to configure the PCIe x16 channel mode.

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Options	Description
1 x16 PCIE	Sets the PCIe x16 slot as one PCIe x16
2 x8 PCIE	Sets the PCIe x16 slot as two PCIe x8
1 x8, 2 x4 PCIE	Sets the PCIe x16 slot as one PCIe x8 or two PCIe x4 (default)

Table 4-4: PCIe x16 Interface Setup



NOTE:

When setting to **1 x16 PCIE** option, the PCIEX4_2 and PCIEX4_3 slots will be disabled.

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

4.5.6 USB Power Selection

The USB power selection is made through the BIOS menu in “Chipset → PCH-IO Configuration”. Use the **USB Power SW1** and the **USB Power SW2** BIOS options to configure the correspondent USB ports (see **Table 4-5**) and refer to **Table 4-6** to select the USB power source.

BIOS Options	Configured USB Ports
USB Power SW1	K/M_USB1 (external USB 2.0 ports) LAN1_USB1 (external USB 3.0 ports)
USB Power SW2	USB1 (internal USB 2.0 ports) USB2 (internal USB 2.0 ports) LAN1_USB2 (external USB 3.0 ports)

Table 4-5: BIOS Options and Configured USB Ports

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

Table 4-6: USB Power Source Setup

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

4.6 Internal Peripheral Device Connections

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

4.6.1 SATA Drive Connection

The IMBA-C2260-i2 is shipped with two SATA drive cables. To connect the SATA drives to the connectors, please follow the steps below.

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

Step 2: Insert the cable connector. Insert the cable connector into the on-board SATA drive connector until it clips into place. See **Figure 4-15**.

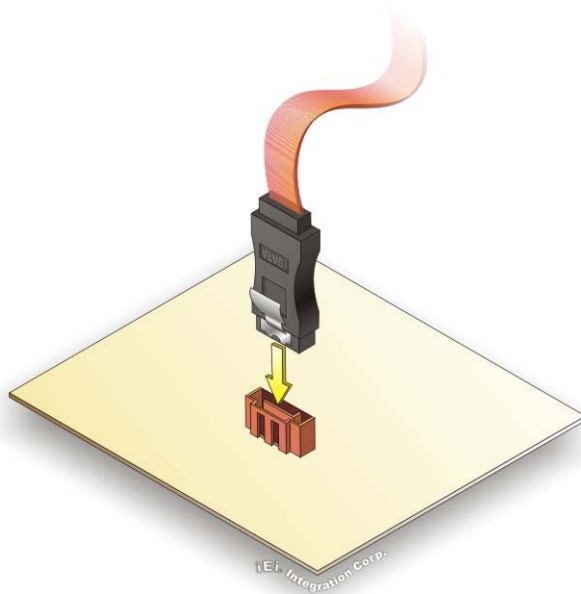


Figure 4-15: SATA Drive Cable Connection

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 4-16**.

Step 4: Connect the SATA power cable. Connect the SATA power connector to the back of the SATA drive. See **Figure 4-16**.

IMBA-C2260-i2 ATX Motherboard

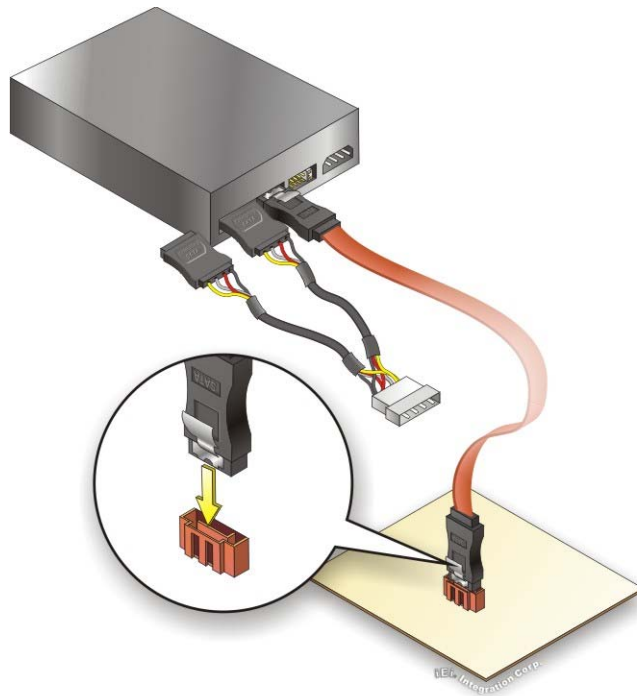


Figure 4-16: SATA Power Drive Connection

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

4.7 External Peripheral Interface Connection

This section describes connecting devices to the external connectors on the IMBA-C2260-i2.

4.7.1 Audio Connector

The audio jacks on the external audio connector enable the IMBA-C2260-i2 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 audio jack does not support input from a microphone. To install the audio devices, follow the steps below.

Step 1: Identify the audio plugs. The plugs on your home theater system or speakers may not match the colors on the rear panel.

Step 2: Plug the audio plugs into the audio jacks. Plug the audio plugs into the audio jacks. If the plugs on your speakers are different, an adapter will need to be used to plug them into the audio jacks.

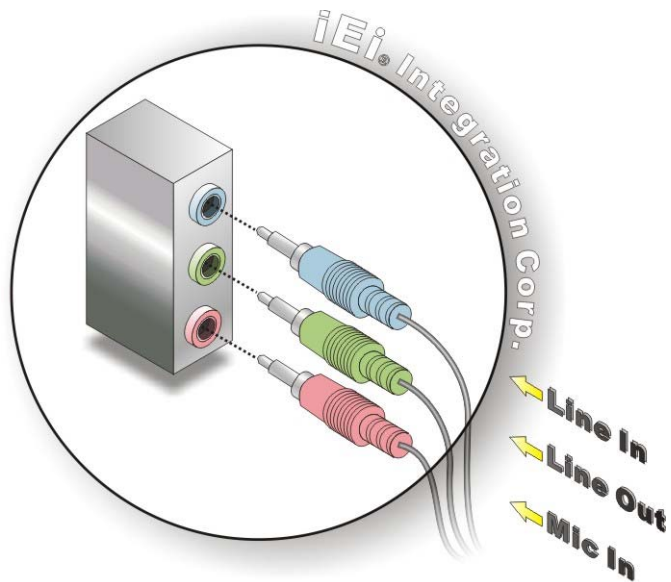


Figure 4-17: Audio Connector

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.

4.7.2 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-C2260-i2. See **Figure 4-18**.

IMBA-C2260-i2 ATX Motherboard

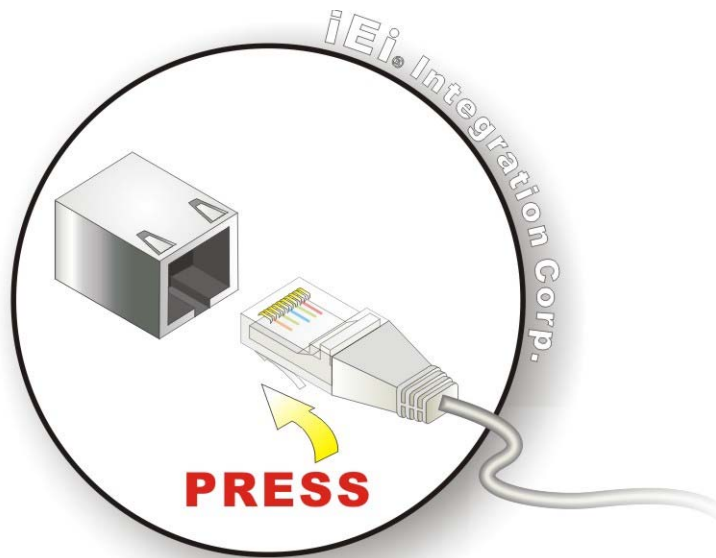


Figure 4-18: LAN Connection

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.

4.7.3 PS/2 Keyboard and Mouse Connection

The IMBA-C2260-i2 has a PS/2 connector on the external peripheral interface panel. The PS/2 connector is used to connect to a keyboard or a mouse to the system. Follow the steps below to connect a keyboard or a mouse to the IMBA-C2260-i2.

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

Step 2: Insert the keyboard/mouse connector. Insert a PS/2 keyboard or mouse connector into the PS/2 connector on the external peripheral interface connector. See Figure 4-19.

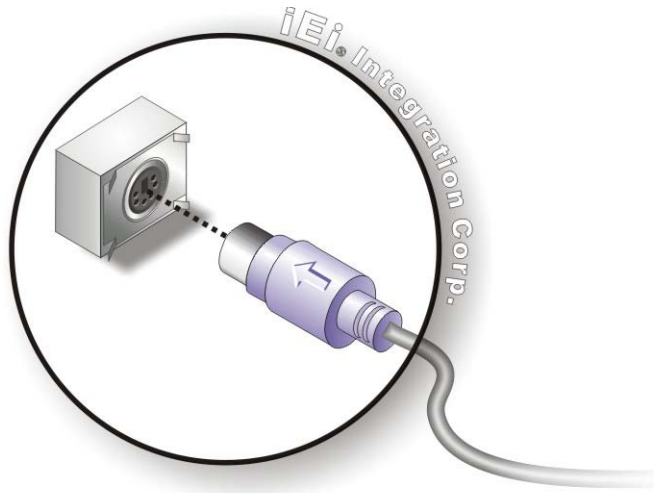


Figure 4-19: PS/2 Keyboard/Mouse Connector

4.7.4 Serial Device Connection

The IMBA-C2260-i2 has a single female DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the IMBA-C2260-i2.

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**.

IMBA-C2260-i2 ATX Motherboard

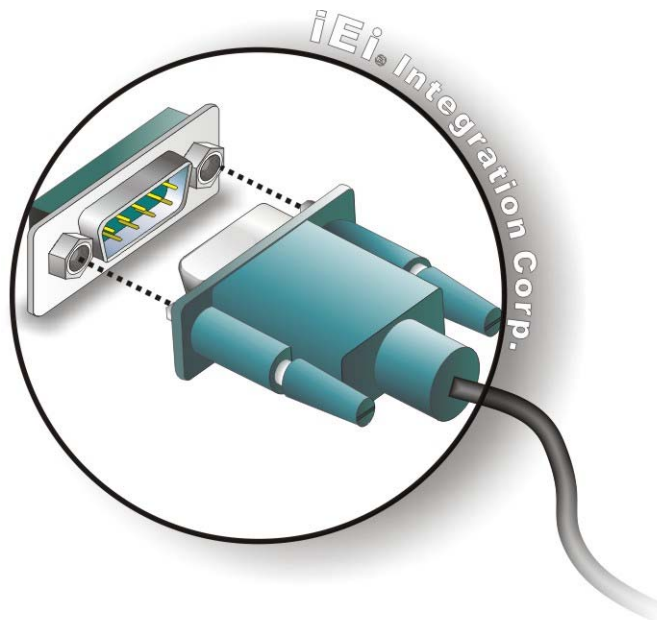


Figure 4-20: Serial Device Connector

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

4.7.5 USB Device Connection

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-C2260-i2.

Step 1: Locate the USB Series "A" receptacle connectors. The locations 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**.

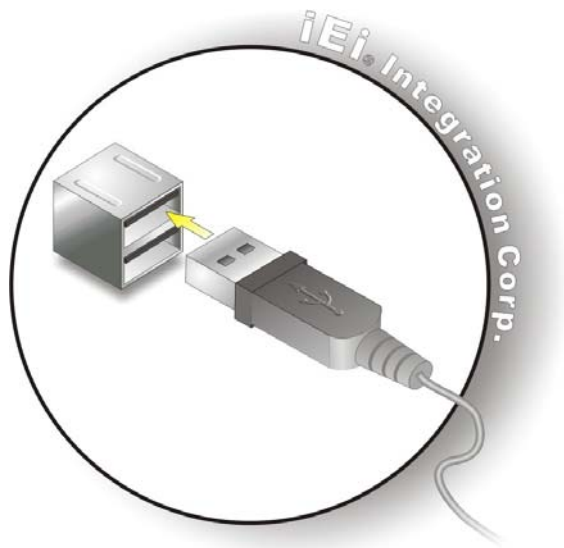


Figure 4-21: USB Device Connection

4.7.6 VGA Monitor Connection

The IMBA-C2260-i2 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the IMBA-C2260-i2, please follow the instructions below.

- Step 1: Locate the female DB-15 connector.** The location of the female DB-15 connector is shown in **Chapter 3**.
- Step 2: Align the VGA connector.** Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.
- Step 3: Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the IMBA-C2260-i2. See **Figure 4-22**.

IMBA-C2260-i2 ATX Motherboard

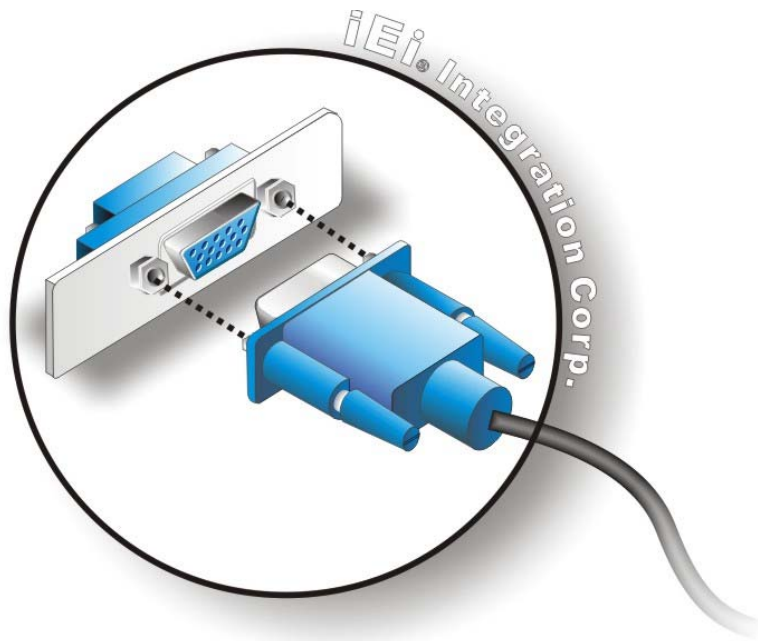


Figure 4-22: VGA Connector

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

4.8 Intel® AMT Setup Procedure

The IMBA-C2260-i2 is featured with the Intel® Active Management Technology (AMT). To enable the Intel® AMT function, follow the steps below.

- Step 1:** Make sure at least one of the memory sockets is installed with a DDR3 DIMM.
- Step 2:** Connect an Ethernet cable to the RJ-45 connector labeled **LAN1_USB1**.
- Step 3:** The AMI BIOS options regarding the Intel® ME or Intel® AMT must be enabled,
- Step 4:** Properly install the Intel® Management Engine Components drivers from the iAMT Driver & Utility directory in the driver CD. See **Section 6.8**.
- Step 5:** Configure the Intel® Management Engine BIOS extension (MEBx). To get into the Intel® MEBx settings, press <Ctrl+P> after a single beep during boot-up

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

**NOTE:**

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

4.9 IPMI Setup Procedure

The IMBA-C2260-i2 features Intelligent Platform Management Interface (IPMI) that helps lower the overall costs of server management by enabling users to maximize IT resources, save time and manage multiple systems. The IMBA-C2260-i2 supports IPMI 2.0 through the optional iRIS-2400 module. Follow the steps below to setup IPMI.

4.9.1 Managed System Hardware Setup

The hardware configuration of the managed system (IMBA-C2260-i2) is described below.

Step 1: Install an iRIS-2400 module to the IPMI module socket (refer to **Section 4.3**).

Step 2: Make sure at least one DDR3 DIMM is installed in one of the DIMM sockets. If multiple DIMMs are installed, all of the DIMMs must be same size, same speed and same brand to get the best performance.

Step 3: Connect an Ethernet cable to the RJ-45 connector labeled **LAN1_USB2** (Figure 3-34).

4.9.2 Using the IEI iMAN Web GUI

To manage a client system from a remote console using IEI iMAN Web GUI, follow the steps below.

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- Step 1:** Obtain the IP address of the managed system. It is recommended to use the IPMI Tool on the managed system to obtain the IP address. To use IPMI Tool to obtain IP address, follow the steps below:
- Copy the **ipmitool.exe** file to a bootable USB flash drive.
 - Insert the USB flash drive to the IMBA-C2260-i2
 - The IMBA-C2260-i2 boots from the USB flash drive
 - Enter the following command: **ipmitool 20 30 02 01 03 00 00**
(there is a space between each two-digit number)
 - A serial of number shows. The last four two-digit hexadecimal numbers are the IP address. Convert the hexadecimal numbers to decimal numbers.
- Step 2:** On the remote management console, open a web browser. Enter the managed system IP address in the web browser (**Figure 4-23**).

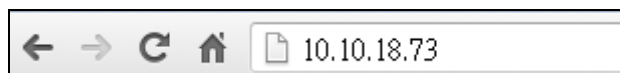


Figure 4-23: IEI iMAN Web Address

- Step 3:** The login page appears in the web browser.
- Step 4:** Enter the user name and password to login the system. The default login username and password are:
- Username: **admin**
 - Password: **admin**
- Step 5:** Press the login button to login the system.
- Step 6:** The IEI iMAN Web Interface appears.

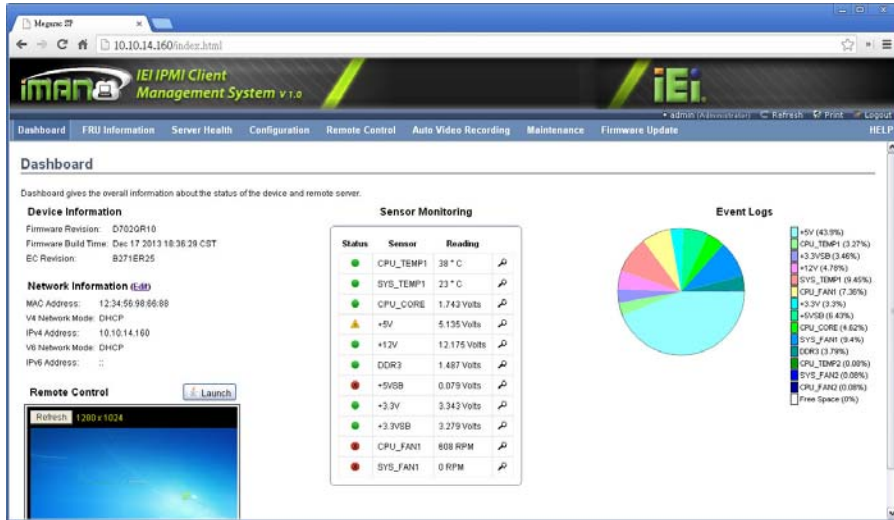


Figure 4-24: IEI iMAN Web GUI



NOTE:

To understand how to use the IEI iMAN Web GUI, please refer to the iRIS-2400 Web GUI user manual in the utility CD came with the IMBA-C2260-i2. The user manual describes each function in detail.

Chapter

5

BIOS

5.1 Introduction

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



NOTE:

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

5.1.1 Starting Setup

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

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

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

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in **Table 5-1**.

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

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

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** 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 clear CMOS button described in Chapter 4.

5.1.5 BIOS Menu Bar

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

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Boot – Changes the system boot configuration.

- Security – Sets User and Supervisor Passwords.
- Save & Exit – Selects exit options and loads default settings

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

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5.2 Main

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

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

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
BIOS Information				Set the Date. Use Tab to switch between Data elements.	
BIOS Vendor	American Megatrends				
Core Version	4.6.5.4				
Compliance	UEFI 2.3.1; PI 1.2				
Project Version	B269AR10.ROM				
Build Date and Time	12/23/2013 11:53:40				
iWDD Vendor		iEi			
iWDD Version		B271ER18.bin			
Processor Information					
Name	Haswell				
Brand String	Intel(R) Xeon(R) CPU E3-				
Frequency	2700 MHz				
Processor ID	306c3				
Stepping	C0		-----		
Number of Processors	4Core(s) / 8Thread(s)				
Microcode Revision	16				
GT Info	GT2 (700 MHz)				
IGFX VBIOS Version		2164			
Memory RC Version		1.6.2.1			
Total Memory		4096 MB (DDR3)			
Memory Frequency		1333 MHz			
PCH Information					
Name	LynxPoint				
PCH SKU	C226				
Stepping	05/C2				
LAN PHY Revision	A3				
ME FW Version		9.0.20.1447		→←: Select Screen	
ME Firmware SKU		5MB		↑ ↓: Select Item	
SPI Clock Frequency				Enter: Select	
DOFR Support		Supported		+/-: Change Opt.	
Read Status Clock Frequency		50 MHz		F1: General Help	
Write Status Clock Frequency		50 MHz		F2: Previous Values	
Fast Read Status Clock Frequency		50 MHz		F3: Optimized Defaults	
				F4: Save & Exit	
				ESC: Exit	
System Date		[Thu 12/26/2013]			
System Time		[15:10:27]			
Access Level		Administrator			
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.					

BIOS Menu 1: Main

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

→ **System Date [xx/xx/xx]**

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

→ **System Time [xx:xx:xx]**

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

5.3 Advanced

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



WARNING!

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

```

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

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

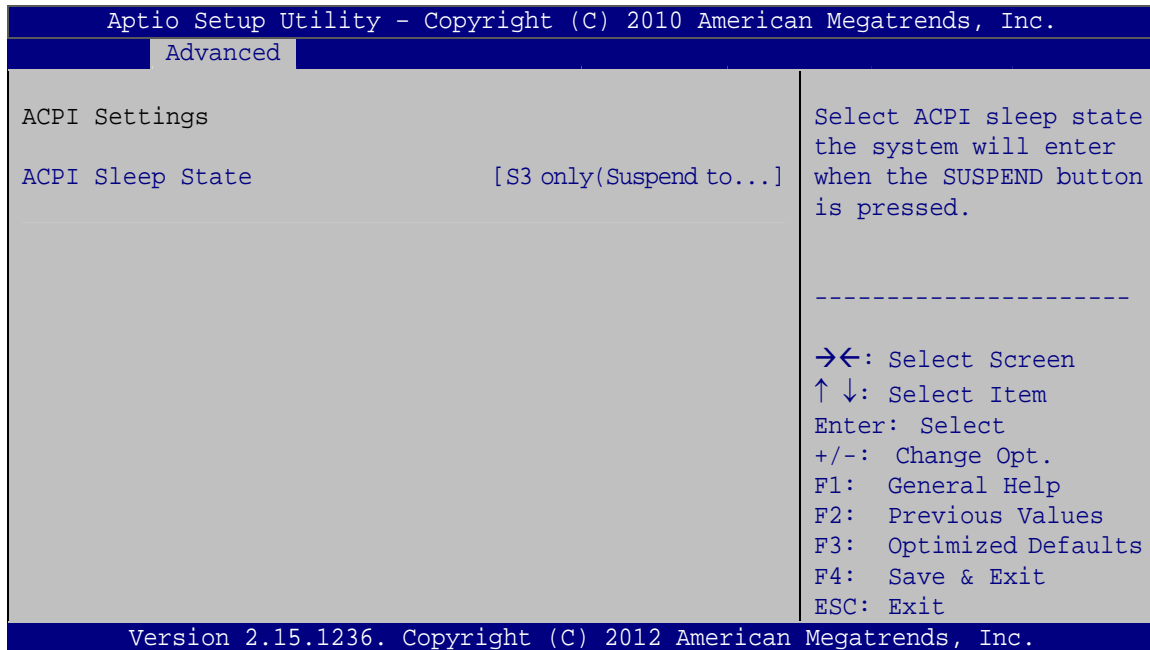
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
    
```

BIOS Menu 2: Advanced

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5.3.1 ACPI Settings

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



BIOS Menu 3: ACPI Configuration

→ **ACPI Sleep State [S3 only (Suspend to RAM)]**

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

→ **Suspend Disabled**

→ **S1 only (CPU Stop Clock)**

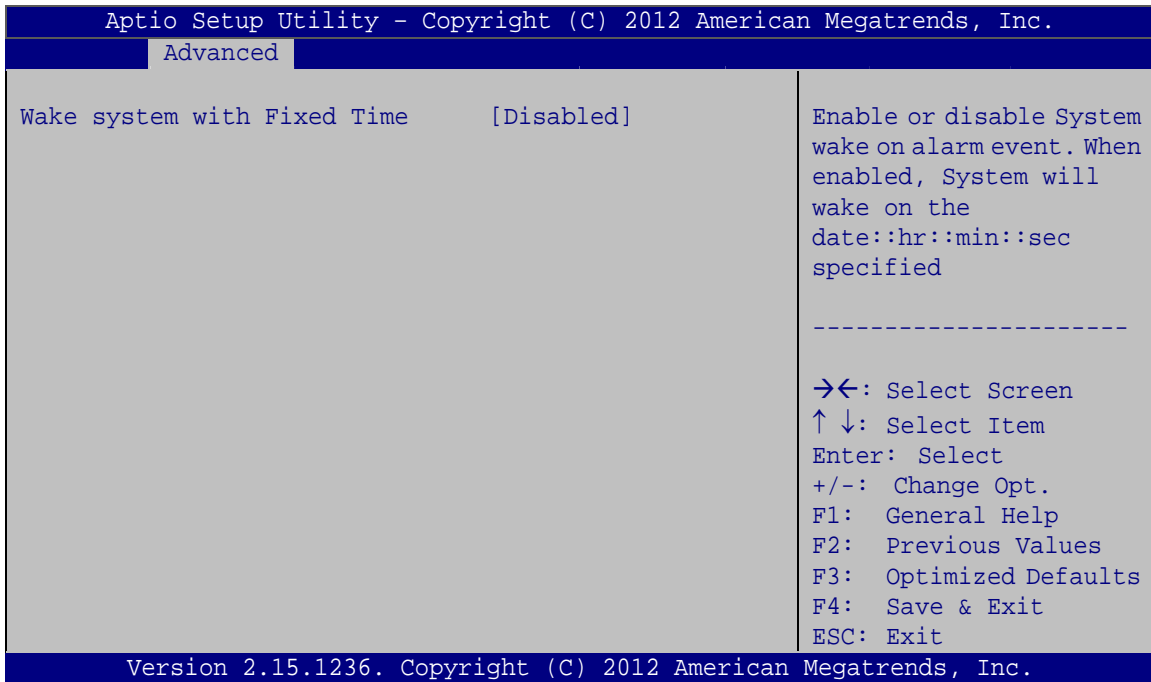
The system enters S1(POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

→ **S3 only (Suspend to RAM) DEFAULT**

The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

5.3.2 RTC Wake Settings

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



BIOS Menu 4: RTC Wake Settings

→ Wake system with Fixed Time [Disabled]

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

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

Wake up date

Wake up hour

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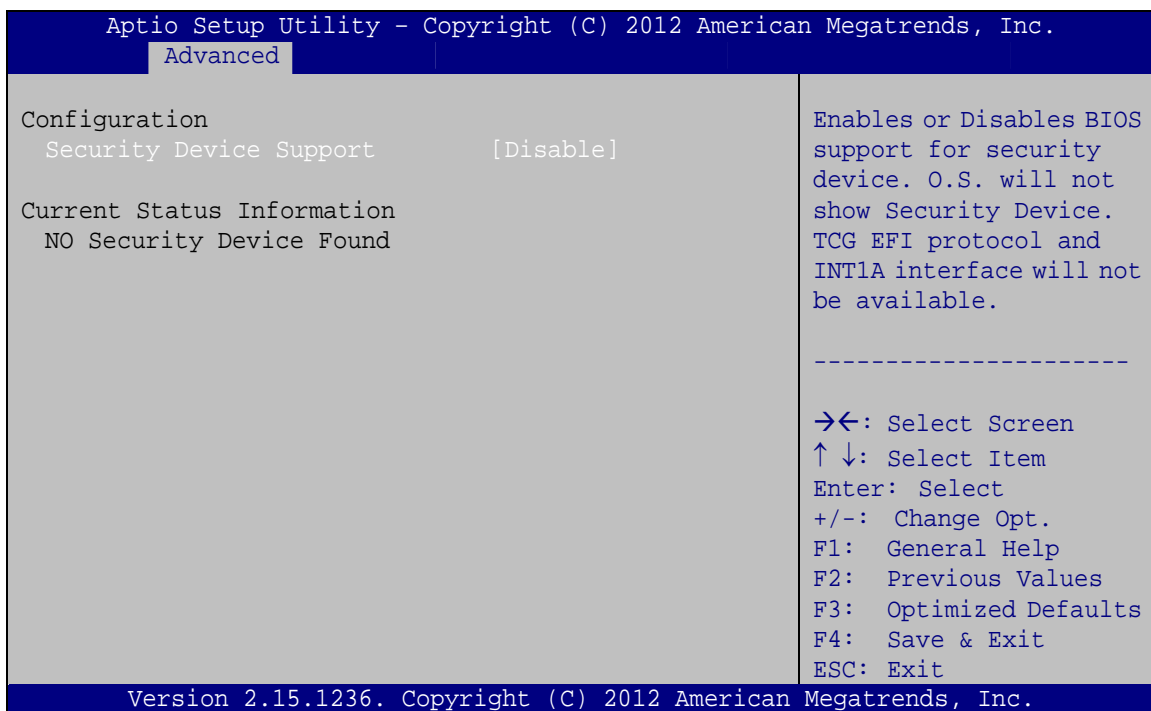
Wake up minute

Wake up second

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

5.3.3 Trusted Computing

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



BIOS Menu 5: Trusted Computing

→ Security Device Support [Disable]

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

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

→ **Enable** TPM support is enabled.

5.3.4 CPU Configuration

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

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
  Advanced
CPU Configuration
Intel(R) Xeon(R) CPU E3-1268L v3 @ 2.30GHz
CPU Signature          306c3
Microcode Patch       16
Max CPU Speed         2300 MHz
Min CPU Speed         800 MHz
CPU Speed             2700 MHz
Processor Cores       4
Intel HT Technology    Supported
Intel VT-x Technology Supported
Intel SMX Technology  Supported
64-bit                Supported
EIST Technology       Supported

L1 Data Cache        32 kB x 4
L1 Code Cache        32 kB x 4
L2 Cache             256 kB x 4
L3 Cache             8192 kB

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

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

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```

BIOS Menu 6: CPU Configuration

→ Hyper-threading [Enabled]

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

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

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→ Active Processor Cores [All]

Use the **Active Processor Cores** BIOS option to enable numbers of cores in the processor package.

- **All** **DEFAULT** Enable all cores in the processor package.
- **1** Enable one core in the processor package.
- **2** Enable two cores in the processor package.
- **3** Enable three cores in the processor package.

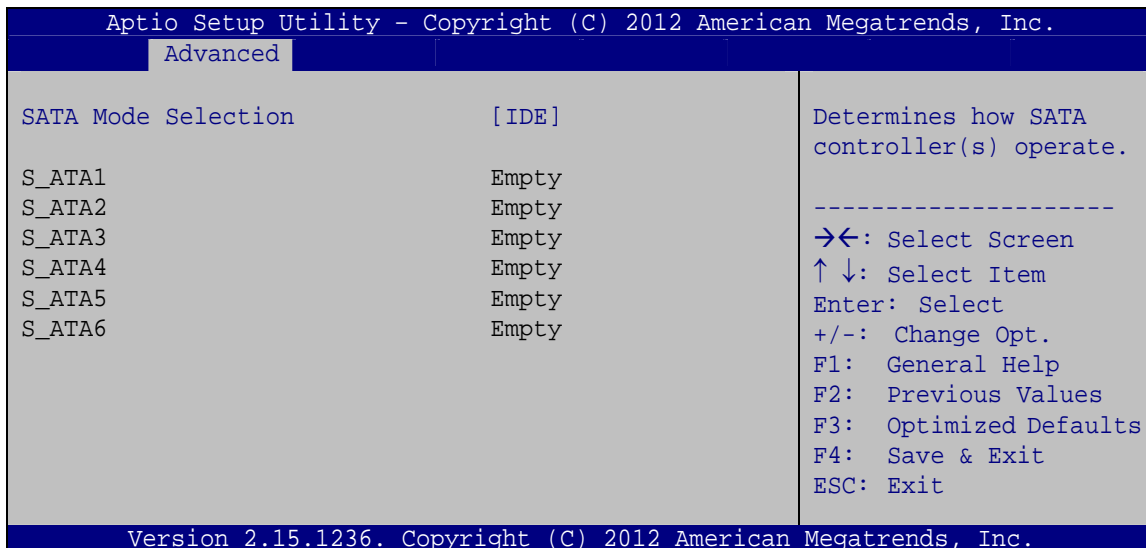
→ Intel Virtualization Technology [Enabled]

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

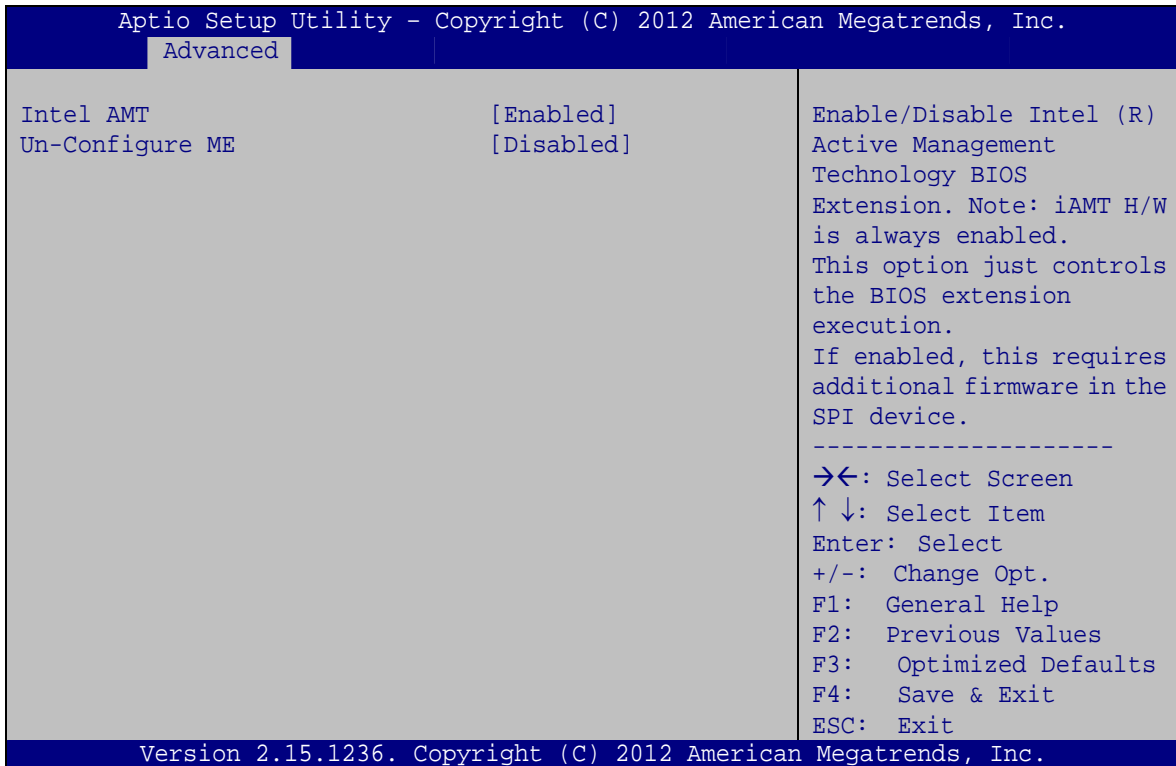


BIOS Menu 7: SATA Configuration

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5.3.7 AMT Configuration

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



BIOS Menu 9: AMT Configuration

→ Intel AMT [Enabled]

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

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

→ Un-Configure ME [Disabled]

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

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

5.3.8 USB Configuration

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

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
  Advanced
-----
USB Configuration                               Enables Legacy USB
                                                support. AUTO option
USB Module Version                             8.10.27                    disables legacy support
                                                if no USB devices are
USB Devices:                                    connected. DISABLE
    1 Keyboard, 1 Mouse, 2 Hubs                option will keep USB
                                                devices available only
Legacy USB Support                             [Enabled]                  for EFI applications.
-----
                                                -----
                                                →←: Select Screen
                                                ↑↓: Select Item
                                                Enter: Select
                                                +/-: Change Opt.
                                                F1:  General Help
                                                F2:  Previous Values
                                                F3:  Optimized Defaults
                                                F4:  Save & Exit
                                                ESC: Exit
-----
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

```

BIOS Menu 10: USB Configuration

→ USB Devices

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

→ Legacy USB Support [Enabled]

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

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

5.3.9 F81866 Super IO Configuration

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

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
  Advanced
F81866 Super IO Configuration
F81866 Super IO Chip          F81866
> Serial Port 1 Configuration
> Serial Port 2 Configuration
> Serial Port 3 Configuration
> Serial Port 4 Configuration
> Serial Port 5 Configuration
> Serial Port 6 Configuration
> Parallel Port Configuration

Set Parameters of Serial
Port 1 (COMA)

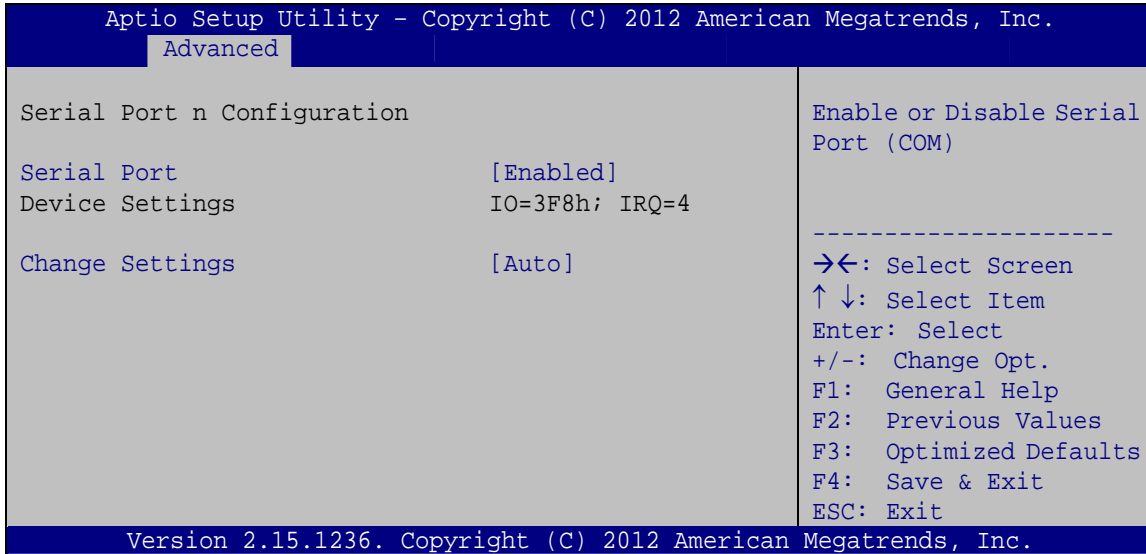
-----
-><: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```

BIOS Menu 11: F81866 Super IO Configuration

5.3.9.1 Serial Port n Configuration

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



BIOS Menu 12: Serial Port n Configuration Menu

5.3.9.1.1 Serial Port 1 Configuration

→ Serial Port [Enabled]

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

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

→ Change Settings [Auto]

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

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

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- **IO=3F8h;**
IRQ=3, 4 Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
- **IO=2C0h;**
IRQ=3, 4 Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4
- **IO=2C8h;**
IRQ=3, 4 Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

5.3.9.1.2 Serial Port 2 Configuration

→ Serial Port [Enabled]

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

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

→ 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

5.3.9.1.3 Serial Port 3 Configuration

→ **Serial Port [Enabled]**

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

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

→ **Change Settings [Auto]**

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

- **Auto** **DEFAULT** The serial port IO port address and interrupt address are automatically detected.
- **IO=3E8h;**
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

5.3.9.1.4 Serial Port 4 Configuration

→ **Serial Port [Enabled]**

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

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

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→ 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 |

→ Device Mode [RS422/485]

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

5.3.9.1.5 Serial Port 5 Configuration

→ Serial Port [Enabled]

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

- | | | | |
|---|-----------------|----------------|-------------------------|
| → | Disabled | | Disable the serial port |
| → | Enabled | DEFAULT | Enable the serial port |

→ Change Settings [Auto]

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

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

5.3.9.1.6 Serial Port 6 Configuration

→ Serial Port [Enabled]

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

- | | | | |
|---|-----------------|----------------|-------------------------|
| → | Disabled | | Disable the serial port |
| → | Enabled | DEFAULT | Enable the serial port |

→ Change Settings [Auto]

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

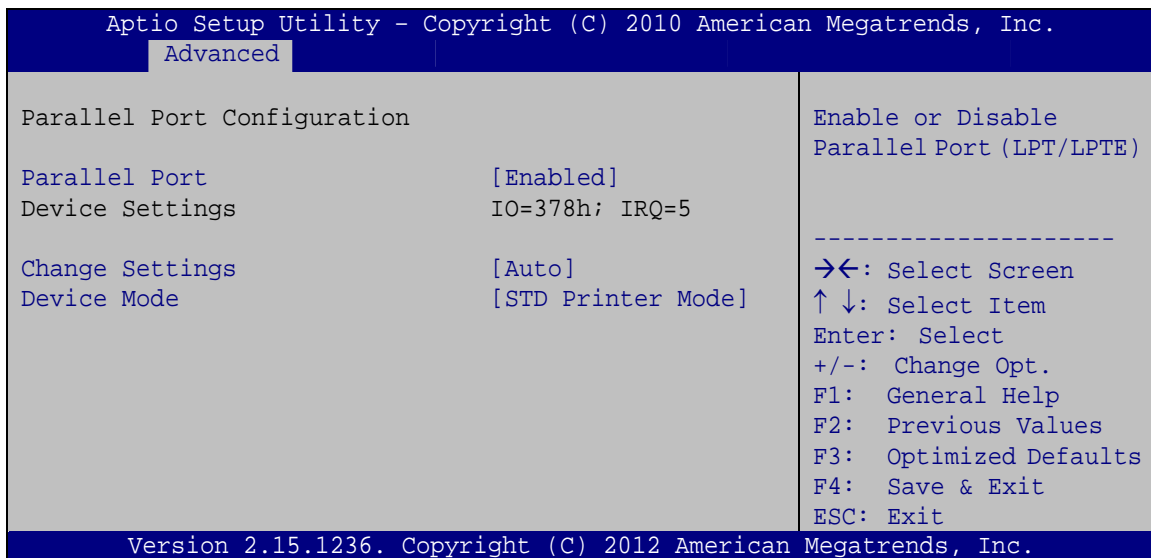
- | | | | |
|---|----------------------------|----------------|---|
| → | Auto | DEFAULT | The serial port IO port address and interrupt address are automatically detected. |
| → | IO=2D8h;
IRQ=10 | | Serial Port I/O port address is 2D8h and the interrupt address is IRQ10 |

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- ➔ **IO=2C0h;** Serial Port I/O port address is 2C0h and the interrupt address is IRQ10, 11
IRQ=10, 11
- ➔ **IO=2C8h;** Serial Port I/O port address is 2C8h and the interrupt address is IRQ10, 11
IRQ=10, 11
- ➔ **IO=2D0h;** Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
IRQ=10, 11
- ➔ **IO=2D8h;** Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11
IRQ=10, 11
- ➔ **IO=2E0h;** Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11
IRQ=10, 11

5.3.9.2 Parallel Port Configuration

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



BIOS Menu 13: Parallel Port Configuration Menu

- ➔ **Parallel Port [Enabled]**

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

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

→ Change Settings [Auto]

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

- | | | | |
|---|------------------------------|----------------|---|
| → | Auto | DEFAULT | The parallel port IO port address and interrupt address are automatically detected. |
| → | IO=378h;
IRQ=5 | | Parallel Port I/O port address is 378h and the interrupt address is IRQ5 |
| → | IO=378h;
IRQ=5, 7 | | Parallel Port I/O port address is 378h and the interrupt address is IRQ5, 7 |
| → | IO=278h;
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 | |

5.3.10 iWDD H/W Monitor

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

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```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
PC Health Status
Smart Fan Mode Select

> Smart Fan Mode Configuration
CPU temperature           :+40 C
System temperature       :+36 C
CPU_FAN1 Speed           :3456 RPM
SYS_FAN1 Speed           :N/A
CPU_CORE                 :N/A
+5V                      :N/A
+12V                     :N/A
DDR                      :N/A
+5VSB                    :+6.120 V
+3.3V                    :N/A
+3.3VSB                  :N/A
VBAT                     :N/A

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

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

```

BIOS Menu 14: iWDD H/W Monitor

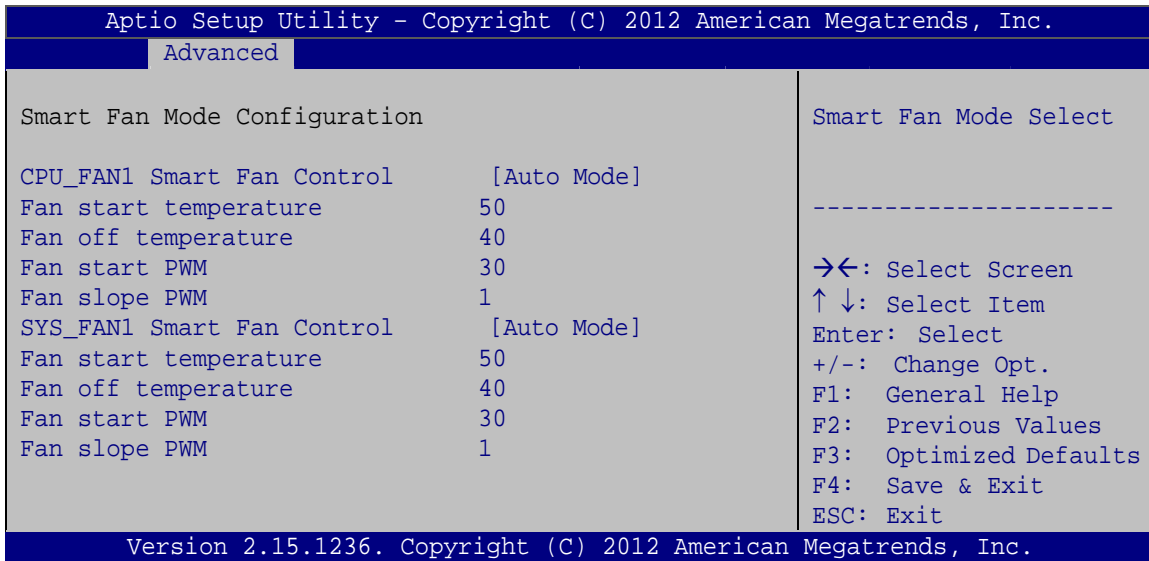
→ PC Health Status

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

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

5.3.10.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration submenu (BIOS Menu 15)** to configure fan 1 temperature and speed settings.



BIOS Menu 15: Smart Fan Mode Configuration

→ CPU_FAN1 Smart Fan Control/SYS_FAN1 Smart Fan Control [Auto Mode]

Use the **CPU_FAN1 Smart Fan Control/SYS_FAN1 Smart Fan Control** option to configure the CPU/System Smart Fan.

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

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

→ Fan start/off temperature

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

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→ Fan start PWM

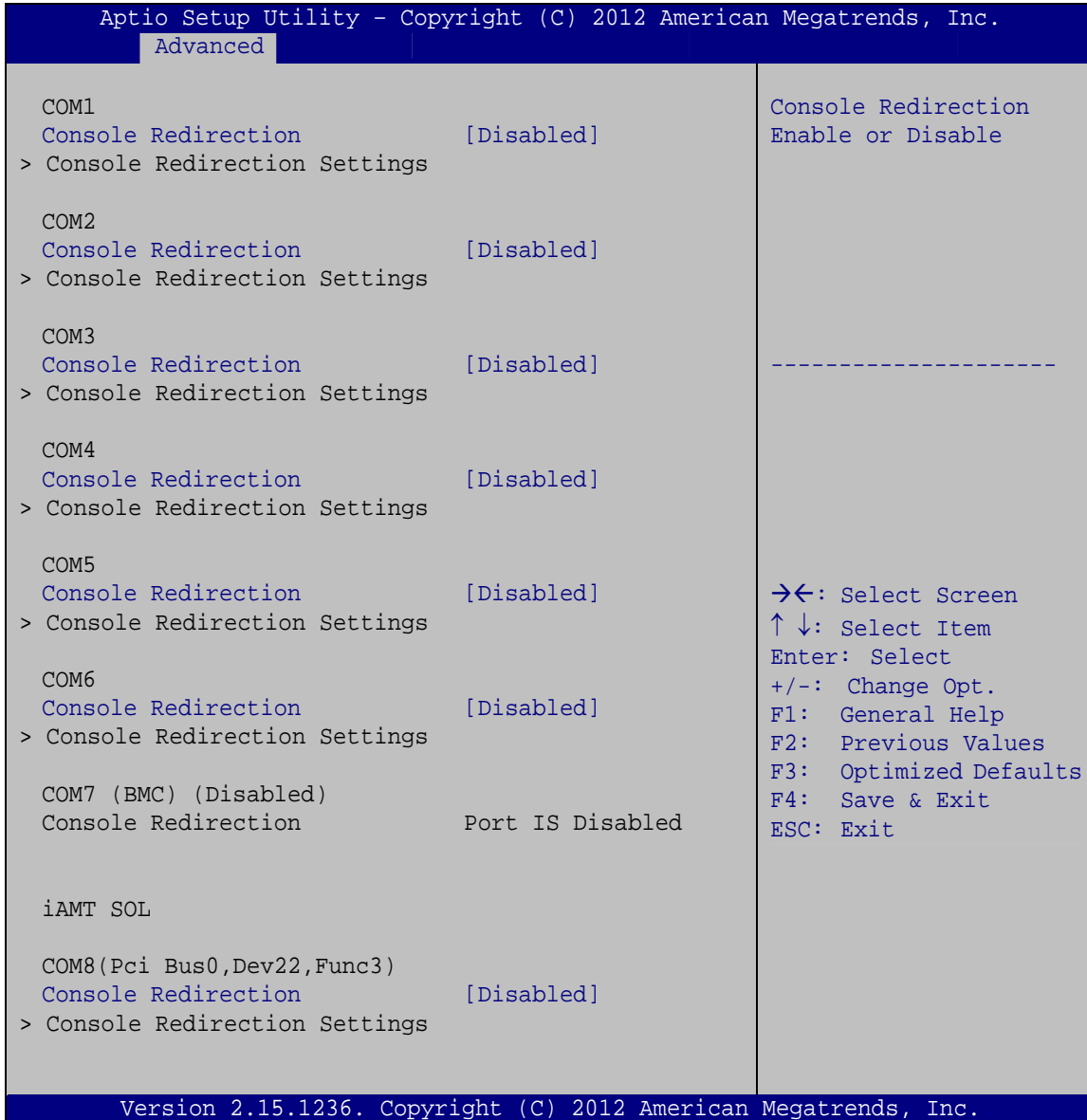
Use the + or – key to change the **Fan start PWM** value. Enter a decimal number between 1 and 128.

→ Fan slope PWM

Use the + or – key to change the **Fan slope PWM** value. Enter a decimal number between 1 and 64.

5.3.11 Serial Port Console Redirection

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



BIOS Menu 16: Serial Port Console Redirection

➔ **Console Redirection [Disabled]**

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

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

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

→ **Stop Bits [1]**

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

- **1** **DEFAULT** Sets the number of stop bits at 1.
- **2** Sets the number of stop bits at 2.

→ **Flow Control [None]**

Use the **Flow Control** option to report the flow control method for the console redirection application.

- **None** **DEFAULT** No control flow.
- **Hardware
RTS/CTS** Hardware is set as the console redirection.

→ **VT-UTF8 Combo Key Support [Enabled]**

Use the **VT-UFT8 Combo Key Support** option to enable additional keys that are not provided by VT100 for the PC 101 keyboard.

The VT100 Terminal Definition is the standard convention used to configure and conduct emergency management tasks with UNIX-based servers. VT100 does not support all keys

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on the standard PC 101-key layout, however. The VT-UTF8 convention makes available additional keys that are not provided by VT100 for the PC 101 keyboard.

- **Disabled** Disables the VT-UTF8 terminal keys.
- **Enabled** **DEFAULT** Enables the VT-UTF8 combination key. Support for ANSI/VT100 terminals.

→ **Recorder Mode [Disabled]**

Use the **Recorder Mode** option to enable or disable the recorder mode.

- **Disabled** **DEFAULT** Disables the recorder mode.
- **Enabled** Enables the recorder mode.

→ **Resolution 100x31 [Disabled]**

Use the **Resolution 100x31** option to enable or disable 100x31 resolution of the extended terminal.

- **Disabled** **DEFAULT** Disables 100x31 resolution of the extended terminal.
- **Enabled** Enables 100x31 resolution of the extended terminal.

→ **Legacy OS Redirection Resolution [80x24]**

Use the **Legacy OS Redirection Resolution** option to specify the resolution of the remote terminal.

- **80x24** **DEFAULT** Sets the resolution of the remote terminal at 80x24.
- **80x25** Sets the resolution of the remote terminal at 80x25.

→ **Putty KeyPad [VT100]**

Use the **Putty KeyPad** option to select the function keys and keypad in Putty. Configuration options are listed below.

- VT100 **Default**
- LINUX

- XTERMR6
- SC0
- ESCN
- VT400

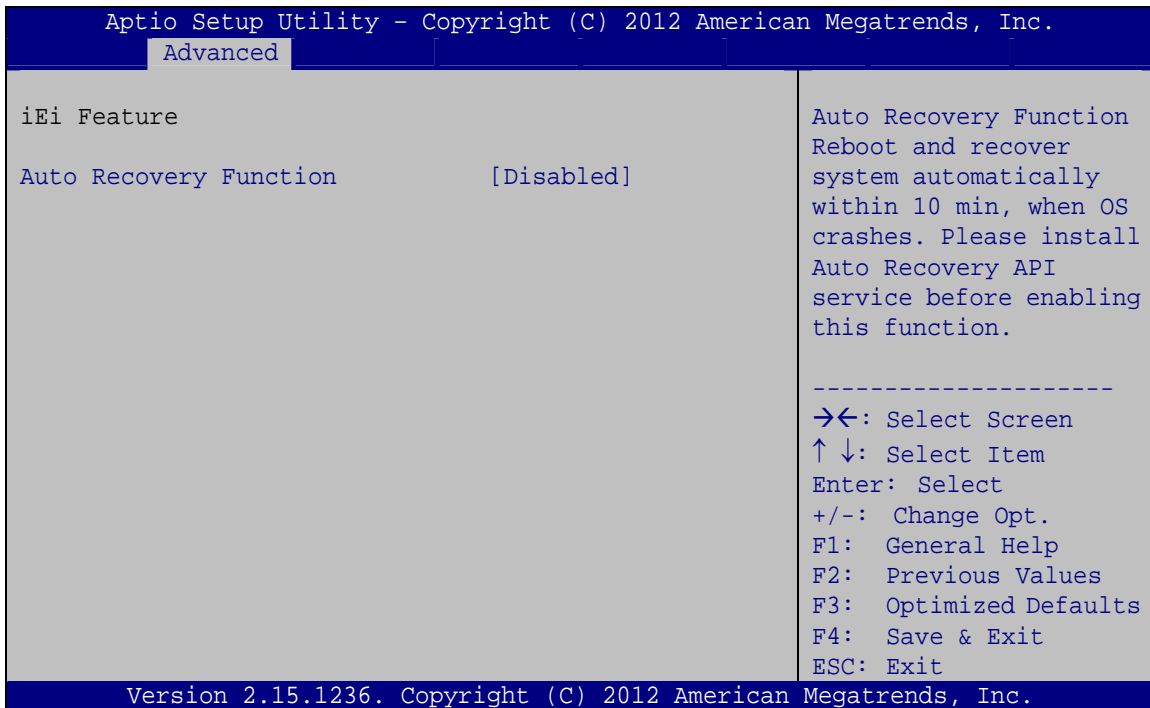
➔ Redirection After BIOS POST [Always Enable]

Use the **Redirection After BIOS POST** option to enable or disable the legacy console redirection.

- ➔ **Always Enable** **DEFAULT** Legacy console redirection is enabled for legacy OS.
- ➔ **BootLoader** Legacy console redirection is disabled before booting to legacy OS.

5.3.12 iEi Feature

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



BIOS Menu 17: iEi Feature

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→ 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 18**) to access the PCH IO and System Agent (SA) configuration menus.



WARNING!

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

```

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

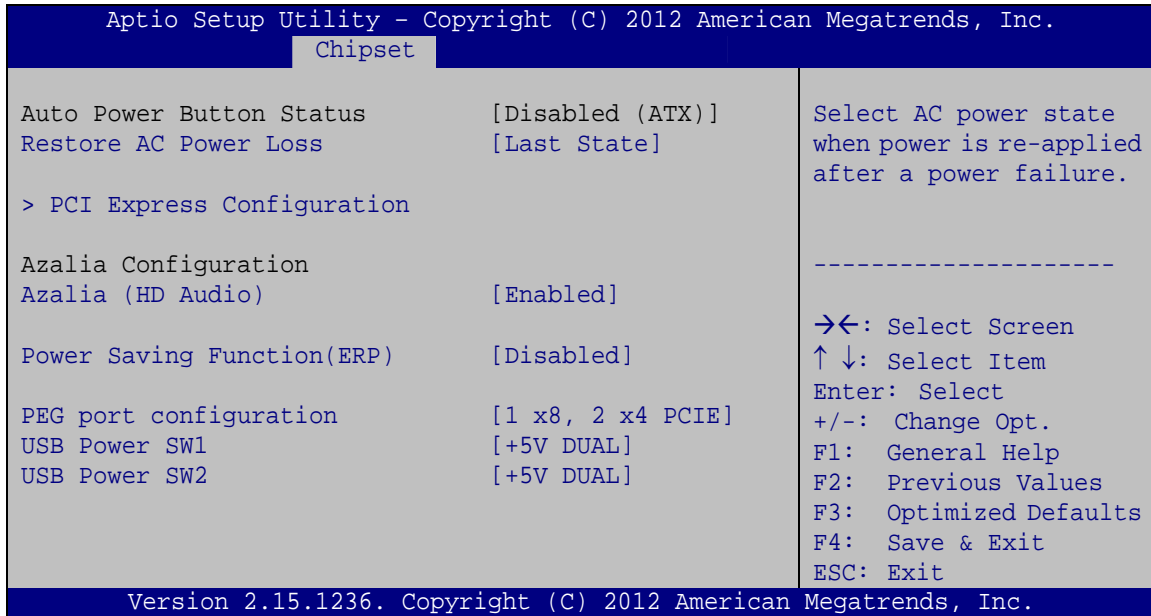
PCH Parameters
-----
→←: Select Screen
↑ ↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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

BIOS Menu 18: Chipset

5.4.1 PCH-IO Configuration

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



BIOS Menu 19: PCH-IO Configuration

→ Restore AC Power Loss [Last State]

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

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

→ Azalia (HD Audio) [Enabled]

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

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

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→ Power Saving Function(ERP) [Disabled]

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

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

→ PEG port configuration [1 x16 PCIE]

Use the **PEG port configuraiton** BIOS option to configure the channel mode for the PCIe x16 slot. When setting to **1 x16 PCIE** option, the PCIEX4_2 and PCIEX4_3 slots will be disabled.

- **1 x16 PCIE** **DEFAULT** Sets the PCIe x16 slot as one PCIe x16
- **2 x8 PCIE** Sets the PCIe x16 slot as two PCIe x8
- **1 x8, 2 x4 PCIE** Sets the PCIe x16 slot as one PCIe x8 or two PCIe x4

→ USB Power SW1 [+5V DUAL]

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

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

→ USB Power SW2 [+5V DUAL]

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

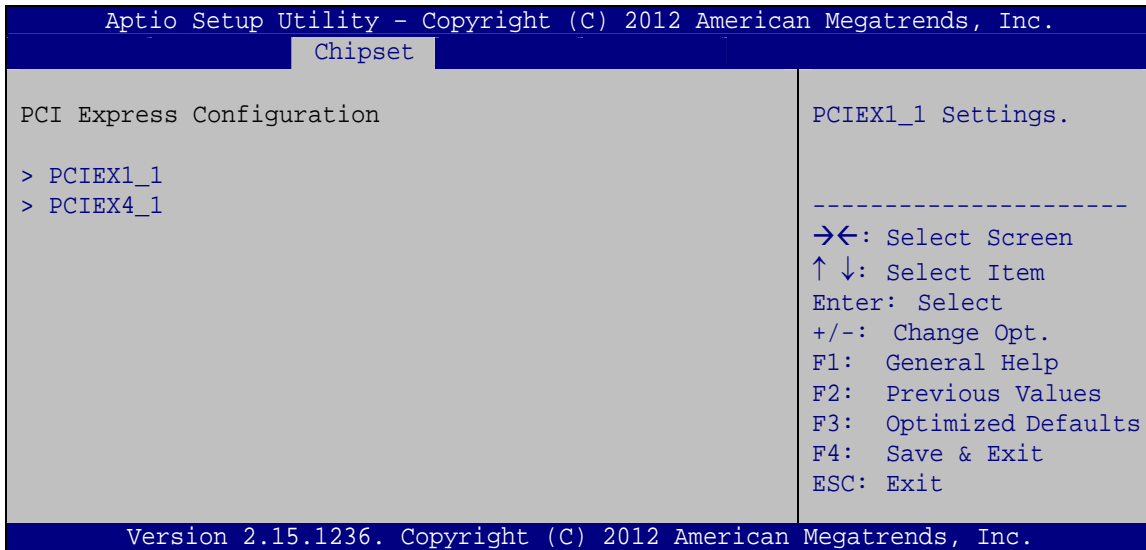
- **+5V** Sets the USB power source to +5V
- **+5V DUAL** **DEFAULT** Sets the USB power source to +5V dual

BIOS Options	Configured USB Ports
USB Power SW1	K/M_USB1 (external USB 2.0 ports) LAN1_USB1 (external USB 3.0 ports)
USB Power SW2	USB1 (internal USB 2.0 ports) USB2 (internal USB 2.0 ports) LAN1_USB2 (external USB 3.0 ports)

Table 5-2: BIOS Options and Configured USB Ports

5.4.1.1 PCI Express Configuration

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



BIOS Menu 20: PCI Express Configuration

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5.4.1.1.1 PCIEX1_1 and PCEIX4_1

Use the **PCIEX1_1** and **PCIEX4_1** menus (**BIOS Menu 21**) to configure the **PCIEX1_1** and **PCIEX4_1** slot settings.



BIOS Menu 21: PCIEX1_1 and PCIEX4_1 Configuration Menu

→ PCIe Speed [Gen1]

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

- Auto
- Gen1 **Default**
- Gen2

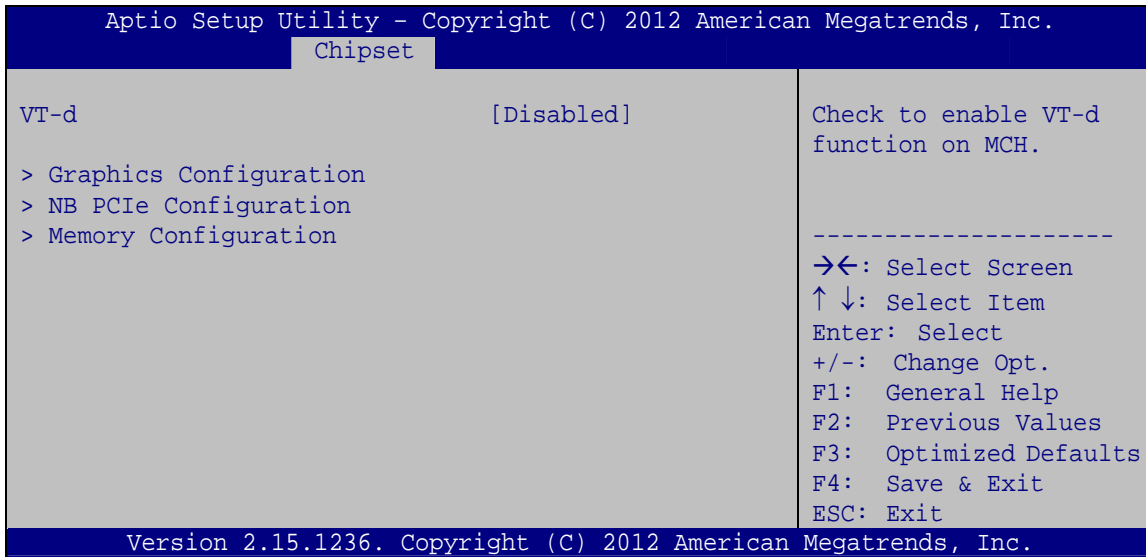
→ Detect Non-Compliance Device [Enabled]

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

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

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

→ VT-d [Disabled]

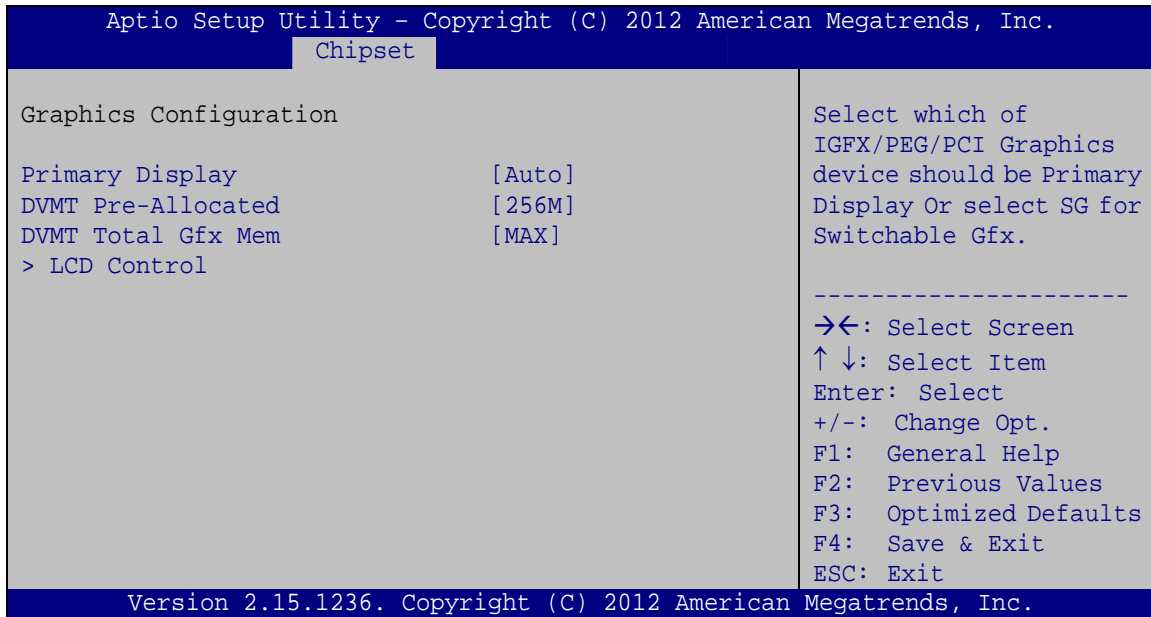
Use the **VT-d** option to enable or disable VT-d support.

- **Disabled** **DEFAULT** Disables VT-d support.
- **Enabled** Enables VT-d support.

5.4.2.1 Graphics Configuration

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

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**BIOS Menu 23: Graphics Configuration****→ Primary Display [Auto]**

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

The following options are available:

- Auto **Default**
- IGFX
- PEG
- PCIE

→ DVMT Pre-Allocated [256M]

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

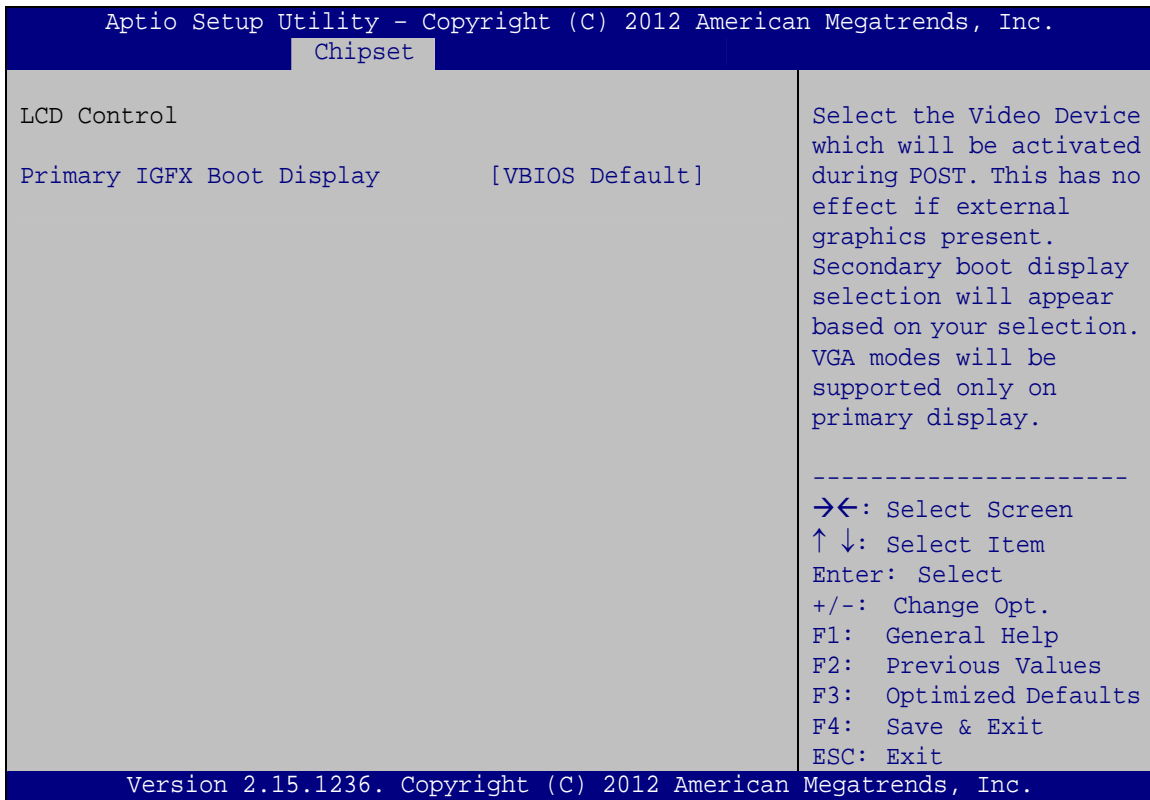
- 32M
- 64M
- 128M
- 256M **Default**
- 512M

→ DVMT Total Gfx Mem [MAX]

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

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

5.4.2.1.1 LCD Control



BIOS Menu 24: LCD Control

→ Primary IGFX Boot Display [VBIOS Default]

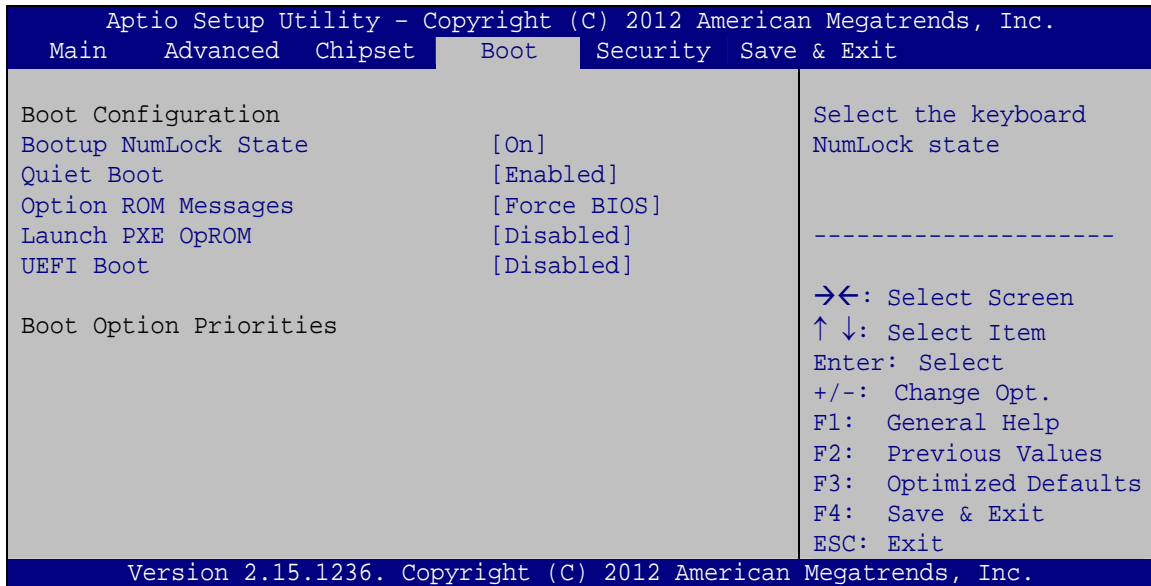
Use the **Primary IGFX Boot Display** option to select the display device used by the system when it boots. Configuration options are listed below.

- VBIOS Default **DEFAULT**
- CRT

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5.5 Boot

Use the **Boot** menu (**BIOS Menu 27**) to configure system boot options.



BIOS Menu 27: Boot

→ Bootup NumLock State [On]

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

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

→ **Quiet Boot [Enabled]**

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

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

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

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

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

→ **Launch PXE OpROM [Disabled]**

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

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

→ **UEFI Boot [Disabled]**

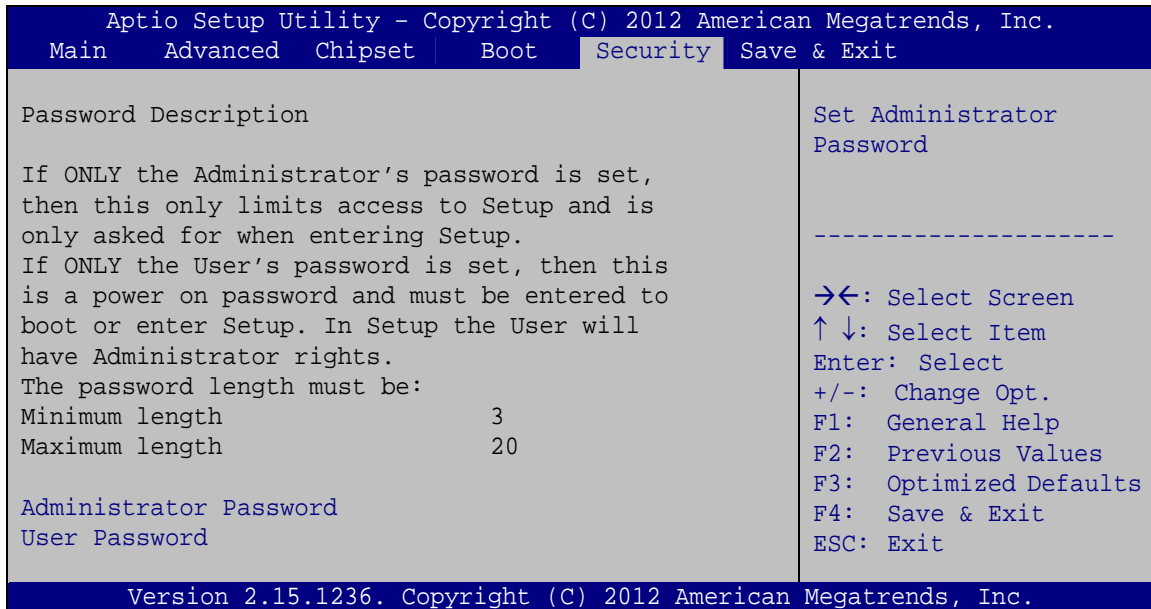
Use the **UEFI Boot** option to enable or disable to boot from the UEFI devices.

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

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5.6 Security

Use the **Security** menu (**BIOS Menu 28**) to set system and user passwords.



BIOS Menu 28: Security

→ Administrator Password

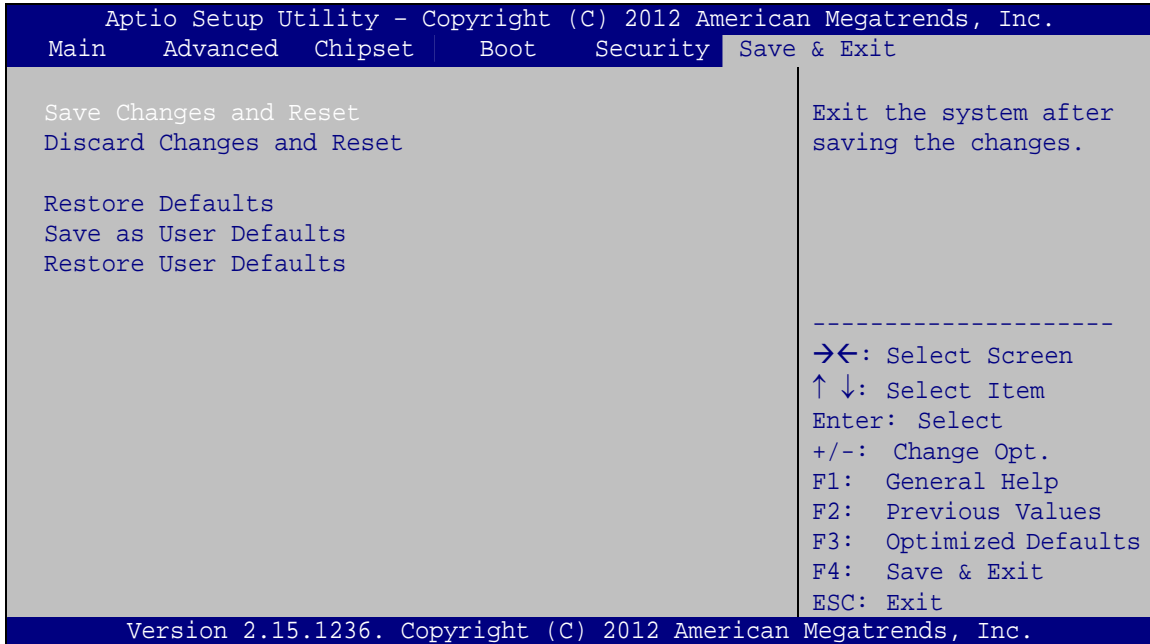
Use the **Administrator Password** to set or change a administrator password.

→ User Password

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

5.7 Save & Exit

Use the **Safe & Exit** menu (**BIOS Menu 29**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 29: 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
- VGA
- LAN
- USB 3.0
- Audio
- Intel® AMT

Installation instructions are given below.

6.2 Software Installation

All the drivers for the IMBA-C2260-i2 are on the CD that came with the system. To install the drivers, please follow the steps below.

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



NOTE:

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

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

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Figure 6-1: Introduction Screen

Step 3: Click IMBA-C2260.

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

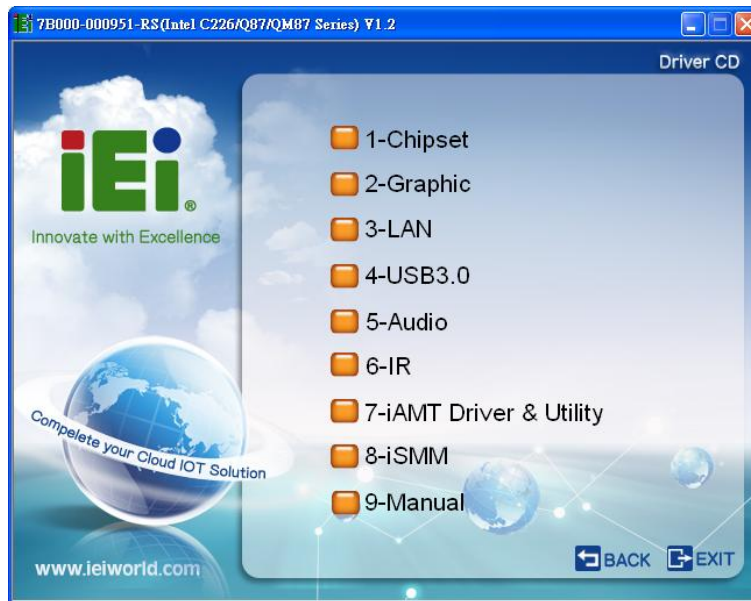


Figure 6-2: Available Drivers

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

6.3 Chipset Driver Installation

To install the chipset driver, please do the following.

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

Step 2: Click “1-Chipset”.

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

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

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



Figure 6-3: Chipset Driver Welcome Screen

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

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

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

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Figure 6-4: Chipset Driver License Agreement

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

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

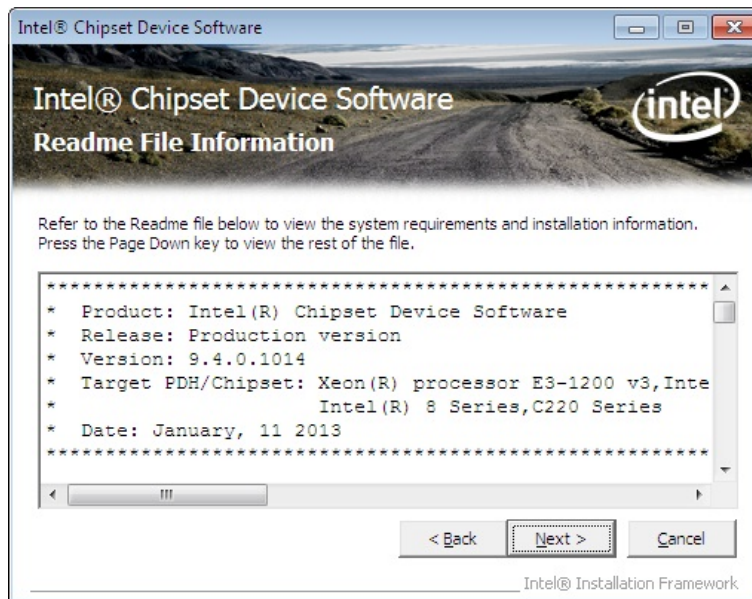


Figure 6-5: Chipset Driver Read Me File

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

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

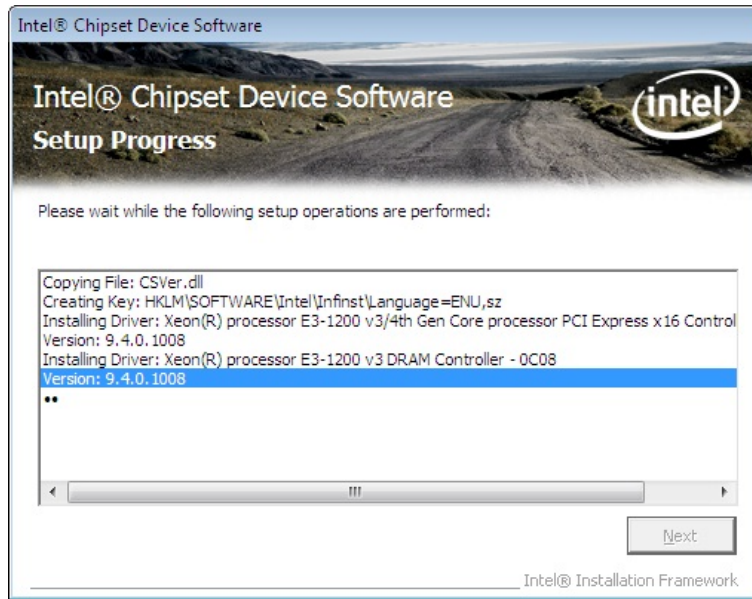


Figure 6-6: Chipset Driver Setup Operations

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

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



Figure 6-7: Chipset Driver Installation Finish Screen

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6.4 Graphics Driver Installation

To install the Graphics driver, please do the following.

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



Figure 6-8: Graphics Driver Welcome Screen

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



Figure 6-9: Graphics Driver License Agreement

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

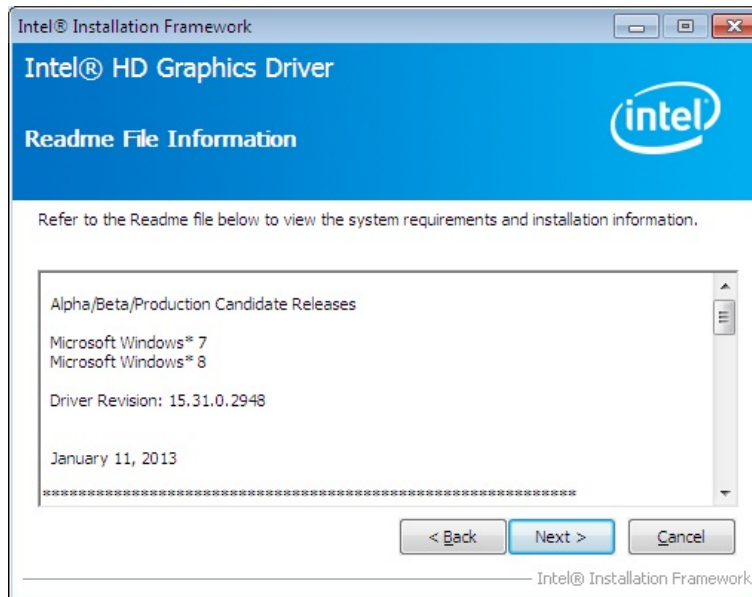


Figure 6-10: Graphics Driver Read Me File

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

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

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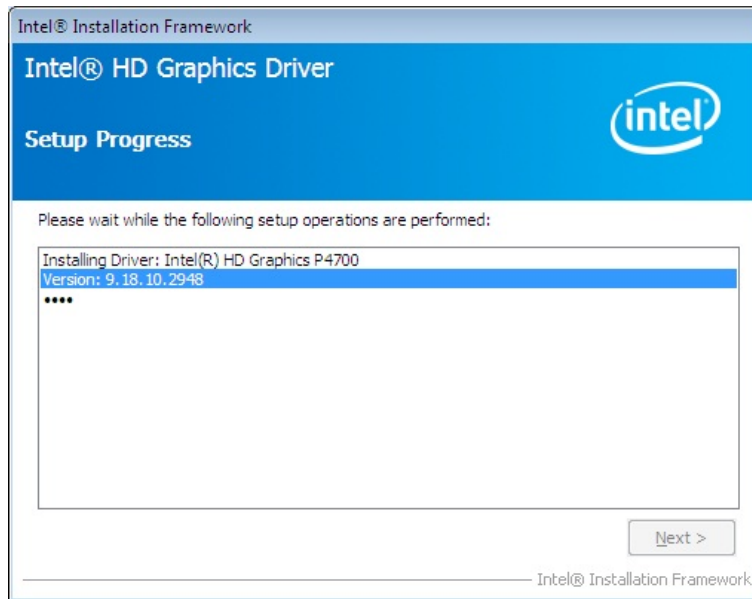


Figure 6-11: Graphics Driver Setup Operations

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

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

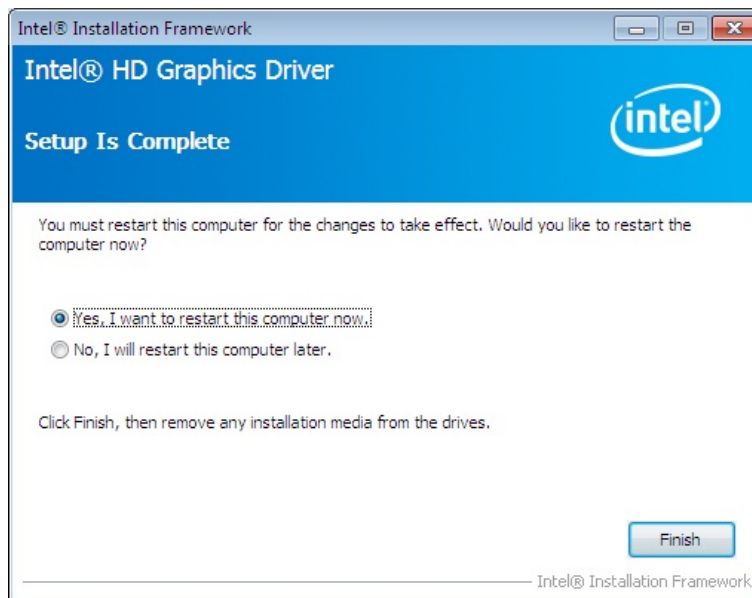


Figure 6-12: Graphics Driver Installation Finish Screen

6.5 LAN Driver Installation

To install the LAN driver, please do the following.

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

Step 2: Click “**3-LAN**”.

Step 3: Select the folder with the driver of correspondent LAN controller.

Step 4: Locate the Autorun file and double click on it.

Step 5: The Intel® Network Connection menu in **Figure 6-13** appears.

Step 6: Click **Install Drivers and Software**.

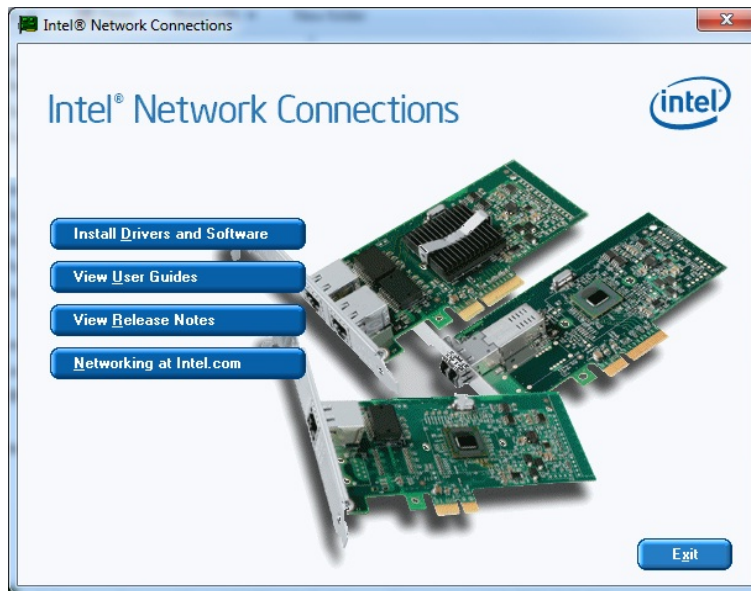


Figure 6-13: Intel® Network Connection Menu

Step 7: The **Welcome** screen in **Figure 6-14** appears.

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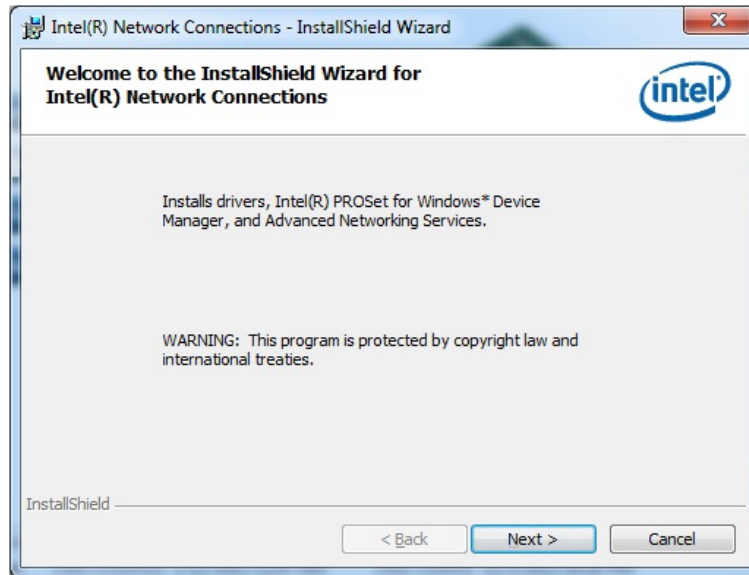


Figure 6-14: LAN Driver Welcome Screen

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

Step 9: The **License Agreement** in Figure 6-15 appears.

Step 10: Accept the agreement by selecting "I accept the terms in the license agreement".

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



Figure 6-15: LAN Driver License Agreement

Step 12: The **Setup Options** screen in **Figure 6-16** appears.

Step 13: Select program features to install.

Step 14: Click **Next** to continue.

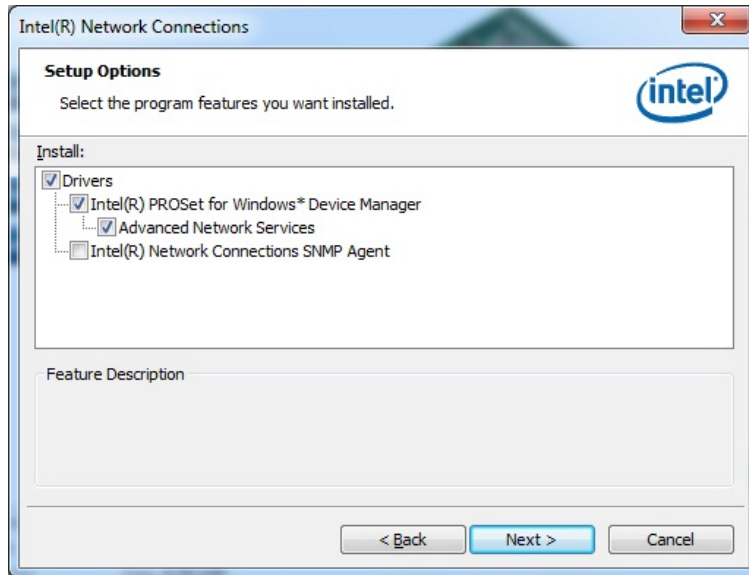


Figure 6-16: LAN Driver Setup Options

Step 15: The **Ready to Install the Program** screen in **Figure 6-17** appears.

Step 16: Click **Install** to proceed with the installation.

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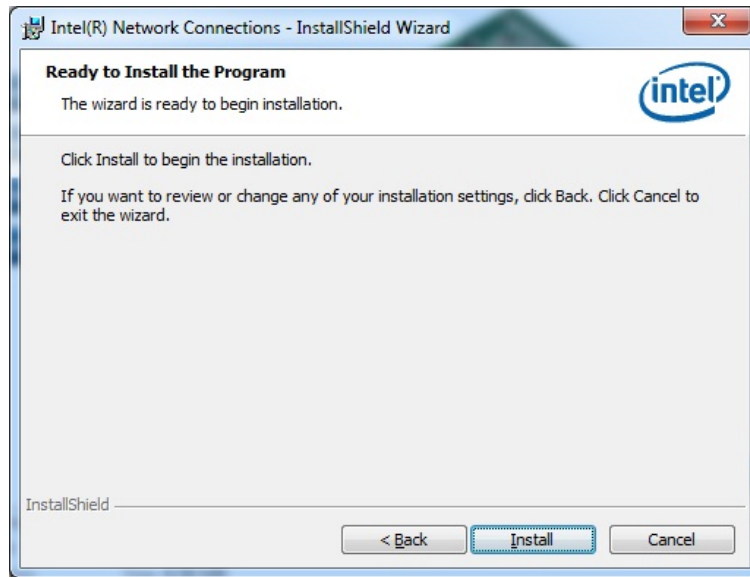


Figure 6-17: LAN Driver Installation

Step 17: The program begins to install.

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

Step 19: Click **Finish** to exit.

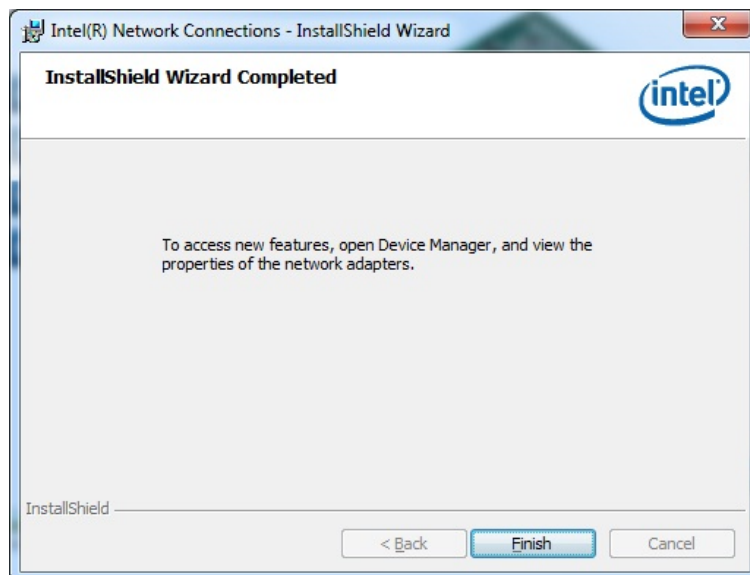


Figure 6-18: LAN Driver Installation Complete

6.6 USB 3.0 Driver Installation



WARNING:

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

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

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



Figure 6-19: USB 3.0 Driver Welcome Screen

- Step 6:** The license agreement in **Figure 6-20** appears.

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

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



Figure 6-20: USB 3.0 Driver License Agreement

Step 9: The **Read Me** file in **Figure 6-21** appears.

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



Figure 6-21: USB 3.0 Driver Read Me File

Step 11: Setup Operations are performed as shown in **Figure 6-22**.

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

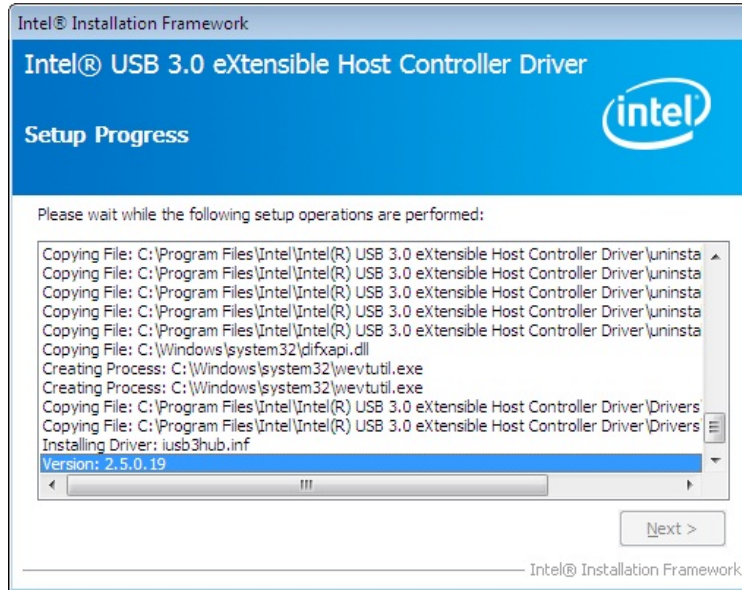


Figure 6-22: USB 3.0 Driver Setup Operations

Step 13: The **Finish** screen in **Figure 6-23** appears.

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

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Figure 6-23: USB 3.0 Driver Installation Finish Screen

6.7 Audio Driver Installation

To install the audio driver, please do the following.

- Step 1:** Access the driver list. (See **Section 6.2**)
- Step 2:** Click “**5-Audio**” and select the folder which corresponds to the operating system.
- Step 3:** Double click the setup file.
- Step 4:** The **InstallShield Wizard** is prepared to guide the user through the rest of the process.
- Step 5:** Once initialized, the **InstallShield Wizard** welcome screen appears (**Figure 6-24**).

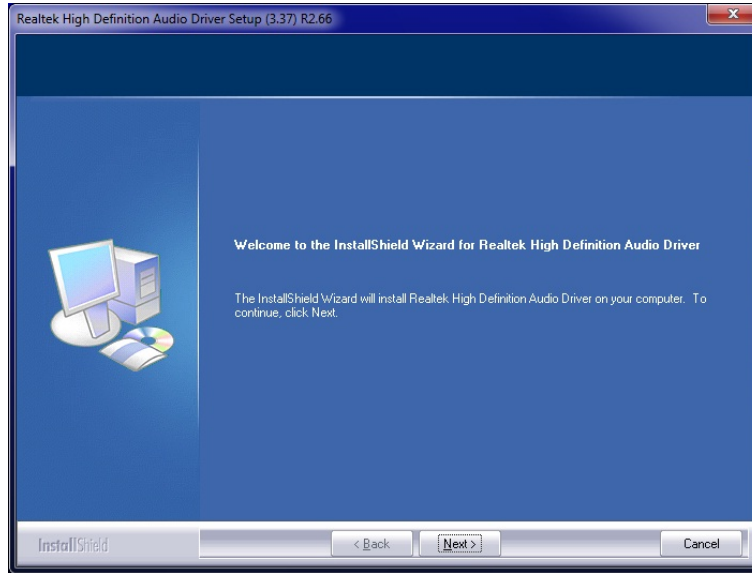


Figure 6-24: InstallShield Wizard Welcome Screen

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

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

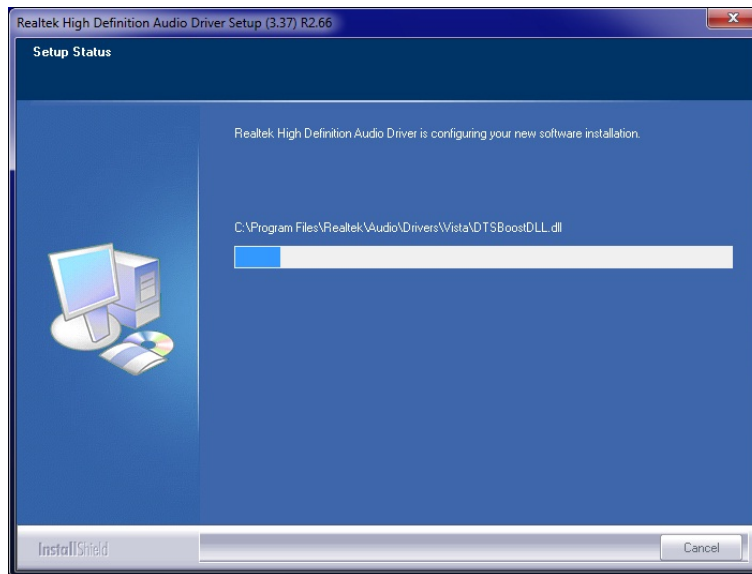


Figure 6-25: Audio Driver Software Configuration

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

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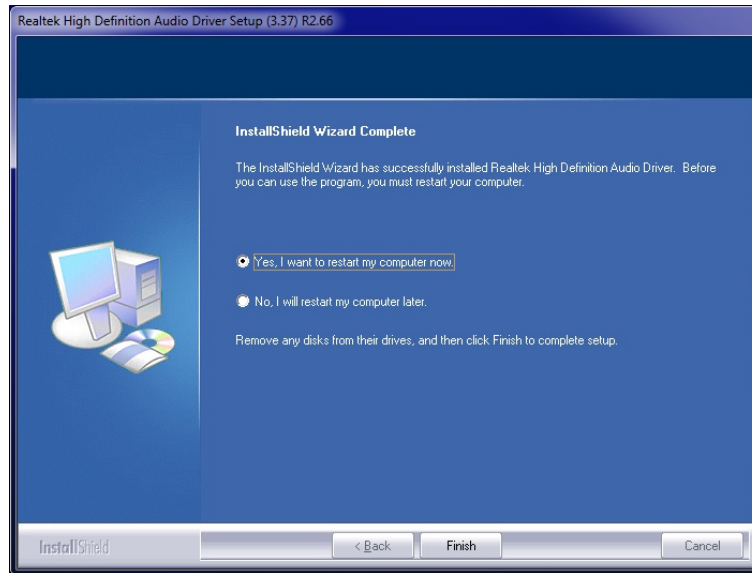


Figure 6-26: Restart the Computer

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

6.8 Intel® AMT Driver Installation

The package of the Intel® ME components includes

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

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

- Step 1:** Access the driver list. (See **Section 6.2**)
- Step 2:** Click “7-iAMT Driver & Utility”.
- Step 3:** Double click the setup file in the **ME_SW** folder.

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

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

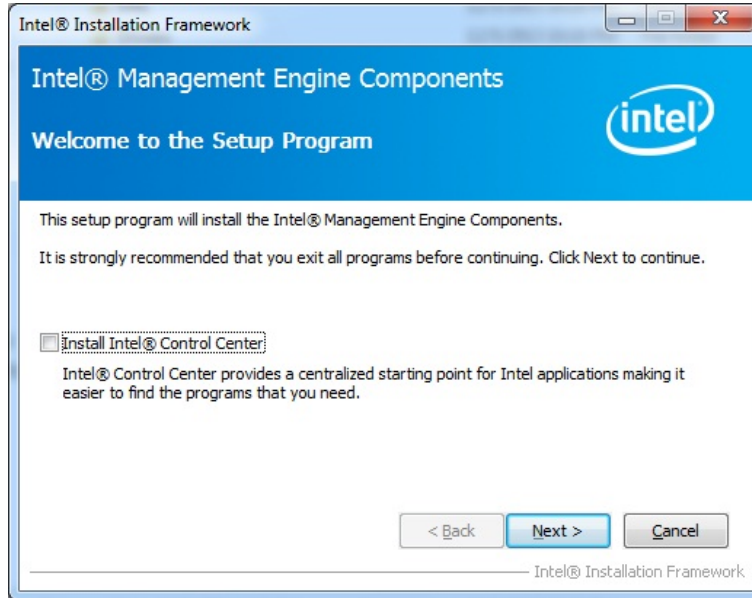


Figure 6-27: Intel® ME Driver Welcome Screen

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

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

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

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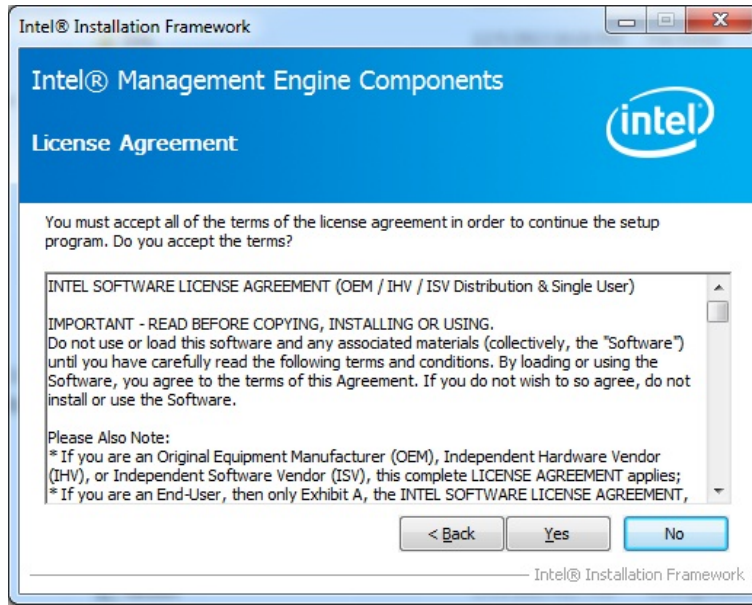


Figure 6-28: Intel® ME Driver License Agreement

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

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

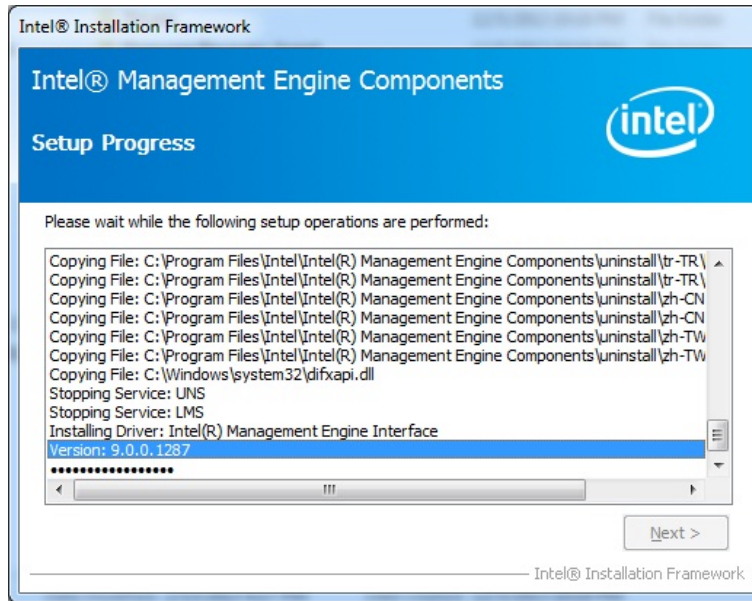


Figure 6-29: Intel® ME Driver Setup Operations

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

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

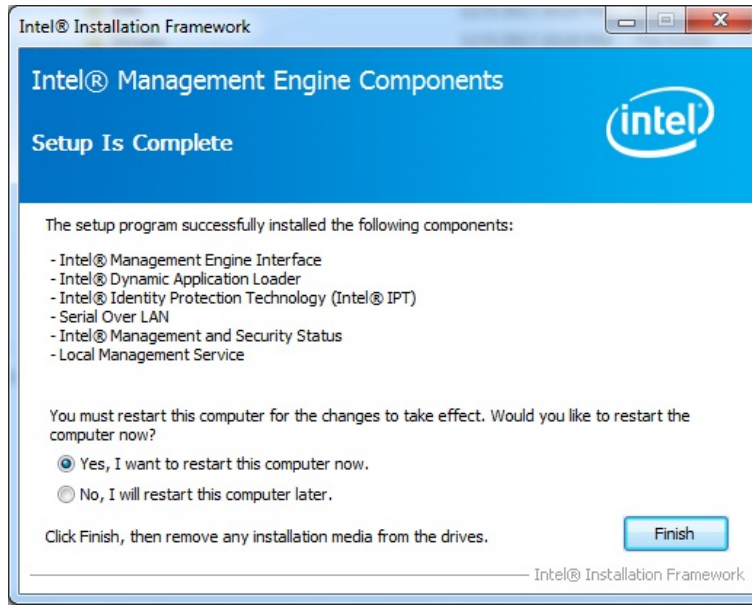


Figure 6-30: Intel® ME Driver Installation Finish Screen

Appendix

A

BIOS Options

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

System Date [xx/xx/xx]	86
System Time [xx:xx:xx]	86
ACPI Sleep State [S3 only (Suspend to RAM)]	87
Wake system with Fixed Time [Disabled]	88
Security Device Support [Disable]	89
Hyper-threading [Enabled]	90
Active Processor Cores [All]	91
Intel Virtualization Technology [Enabled]	91
SATA Mode Selection [IDE]	92
Intel(R) Rapid Start Technology [Disabled]	92
Intel AMT [Enabled]	93
Un-Configure ME [Disabled]	93
USB Devices	94
Legacy USB Support [Enabled]	94
Serial Port [Enabled]	96
Change Settings [Auto]	96
Serial Port [Enabled]	97
Change Settings [Auto]	97
Serial Port [Enabled]	98
Change Settings [Auto]	98
Serial Port [Enabled]	98
Change Settings [Auto]	99
Device Mode [RS422/485]	99
Serial Port [Enabled]	99
Change Settings [Auto]	99
Serial Port [Enabled]	100
Change Settings [Auto]	100
Parallel Port [Enabled]	101
Change Settings [Auto]	102
Device Mode [STD Printer Mode]	102
PC Health Status	103
CPU_FAN1 Smart Fan Control/SYS_FAN1 Smart Fan Control [Auto Mode]	104
Fan start/off temperature	104

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Fan start PWM	105
Fan slope PWM	105
Console Redirection [Disabled]	106
Terminal Type [ANSI].....	107
Bits per second [115200].....	107
Data Bits [8]	107
Parity [None].....	107
Stop Bits [1].....	108
Flow Control [None].....	108
VT-UTF8 Combo Key Support [Enabled].....	108
Recorder Mode [Disabled]	109
Resolution 100x31 [Disabled].....	109
Legacy OS Redirection Resolution [80x24]	109
Putty KeyPad [VT100].....	109
Redirection After BIOS POST [Always Enable]	110
Auto Recovery Function [Disabled].....	111
Restore AC Power Loss [Last State]	112
Azalia (HD Audio) [Enabled]	112
Power Saving Function(ERP) [Disabled].....	113
PEG port configuration [1 x16 PCIE]	113
USB Power SW1 [+5V DUAL].....	113
USB Power SW2 [+5V DUAL].....	113
PCIe Speed [Gen1].....	115
Detect Non-Compliance Device [Enabled]	115
VT-d [Disabled].....	116
Primary Display [Auto]	117
DVMT Pre-Allocated [256M]	117
DVMT Total Gfx Mem [MAX].....	118
Primary IGFX Boot Display [VBIOS Default]	118
PEG0 – Gen X [Gen1].....	119
Enable PEG [Enabled]	119
Detect Non-Compliance Device [Enabled]	120
Bootup NumLock State [On].....	121
Quiet Boot [Enabled]	122
Option ROM Messages [Force BIOS].....	122

Launch PXE OpROM [Disabled]	122
UEFI Boot [Disabled]	122
Administrator Password	123
User Password	123
Save Changes and Reset	124
Discard Changes and Reset	124
Restore Defaults	124
Save as User Defaults	124
Restore User Defaults	124

Appendix

B

One Key Recovery

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.

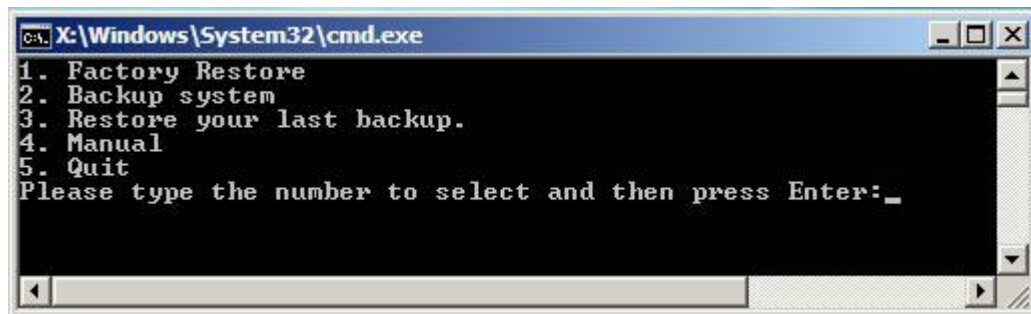


Figure B-1: IEI One Key Recovery Tool Menu

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**)

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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:

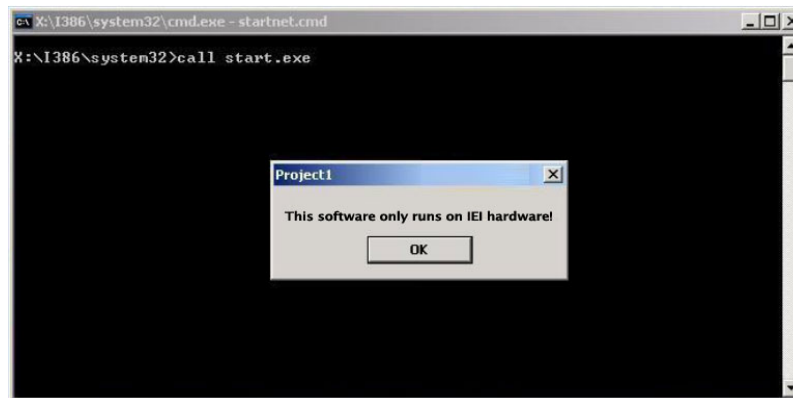
The initial setup procedures for Linux system are described in **Section B.3**.

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

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.

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- 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**)

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.

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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!

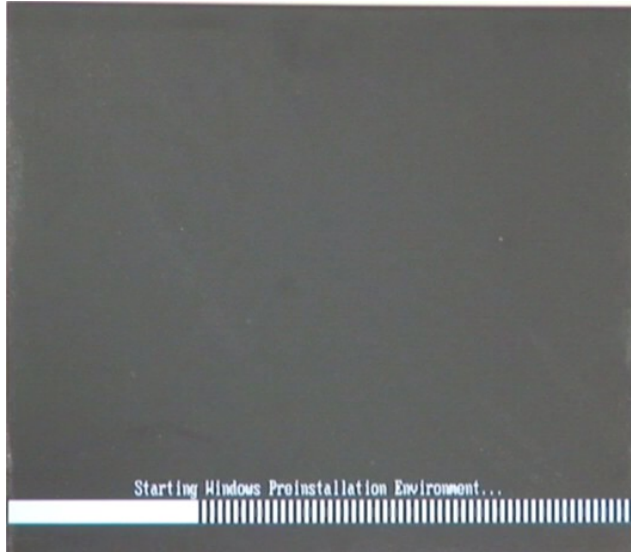


Figure B-2: Launching the Recovery Tool

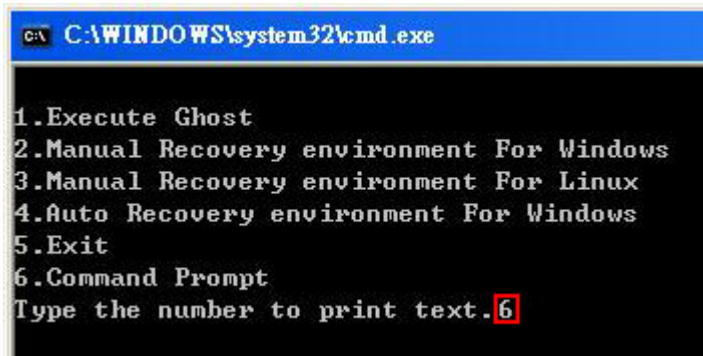
Step 3: The recovery tool setup menu is shown as below.

```
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.
```

Figure B-3: Recovery Tool Setup Menu

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



```
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 Mode

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
```

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```

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        DUD-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 RAW.
The new 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 RAW.
The new 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

**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.

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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!

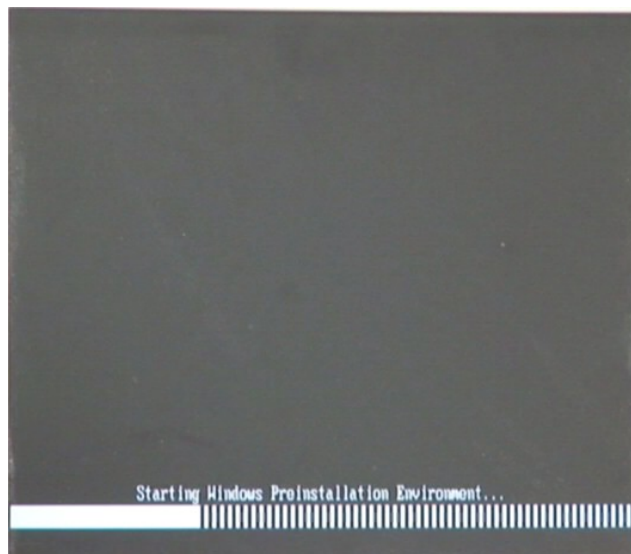


Figure B-6: Launching the Recovery Tool

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

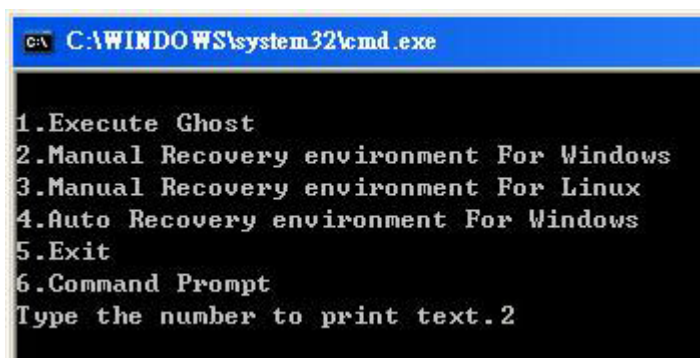


Figure B-7: Manual Recovery Environment for Windows

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.

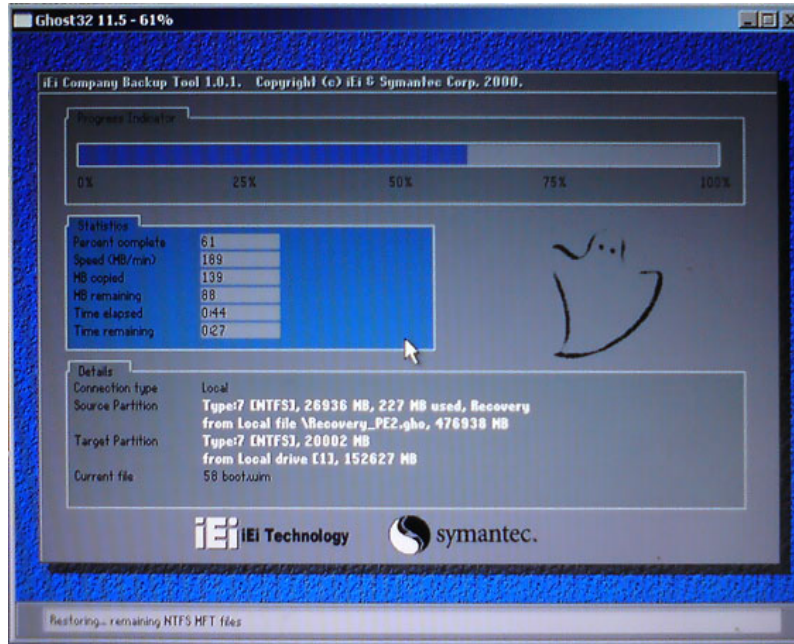


Figure B-8: Building the Recovery Partition

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

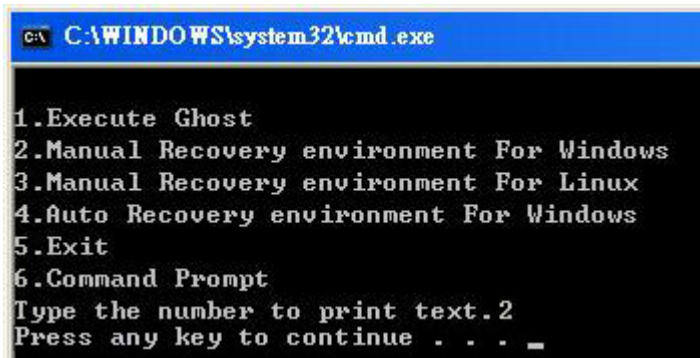


Figure B-9: Press Any Key to Continue

Step 7: Eject the recovery CD.

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B.2.5 Create Factory Default Image

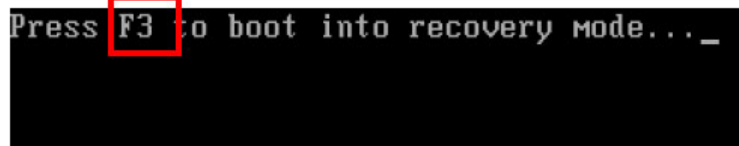


NOTE:

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.



```
Press F3 to boot into recovery mode... _
```

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**)

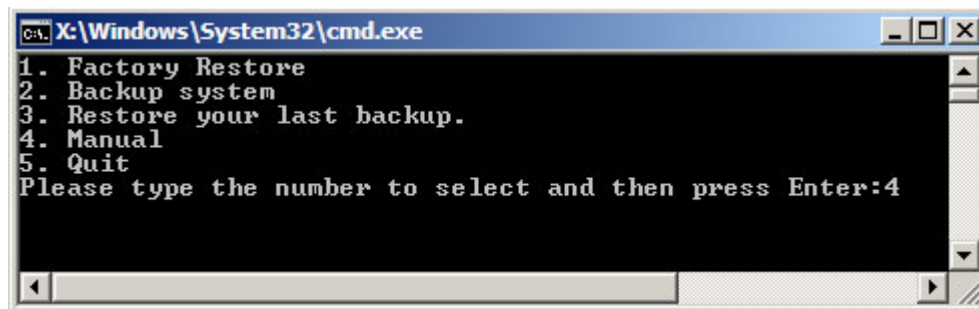


Figure B-11: Recovery Tool Menu

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

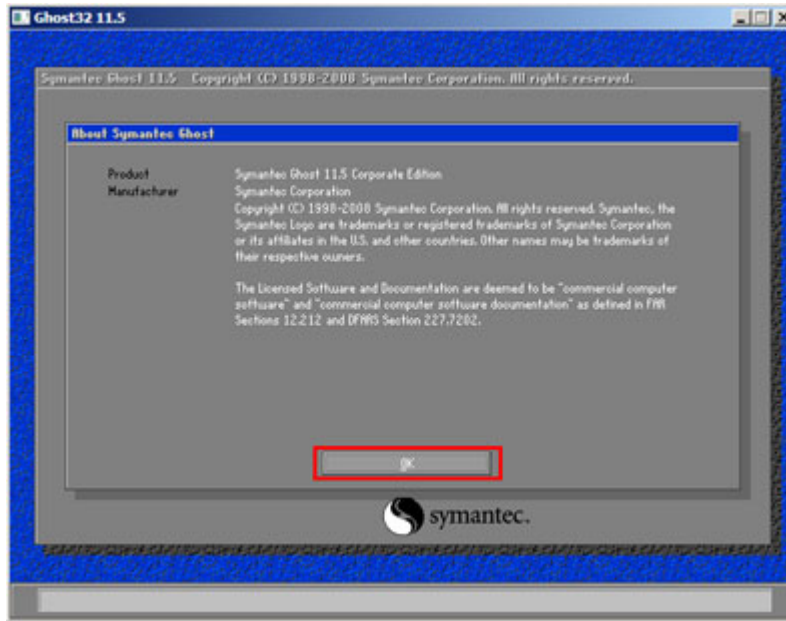


Figure B-12: About Symantec Ghost Window

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

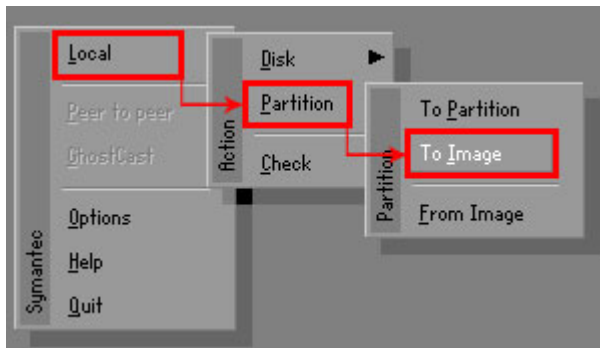


Figure B-13: Symantec Ghost Path

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

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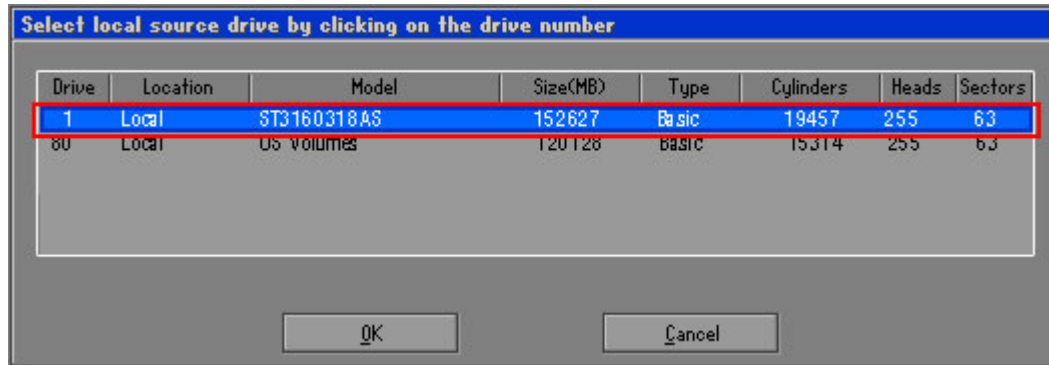


Figure B-14: Select a Local Source Drive

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

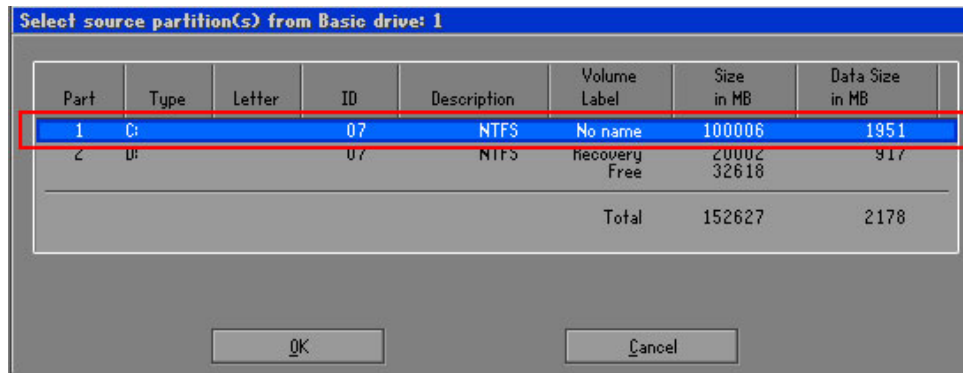


Figure B-15: Select a Source Partition from Basic Drive

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**.

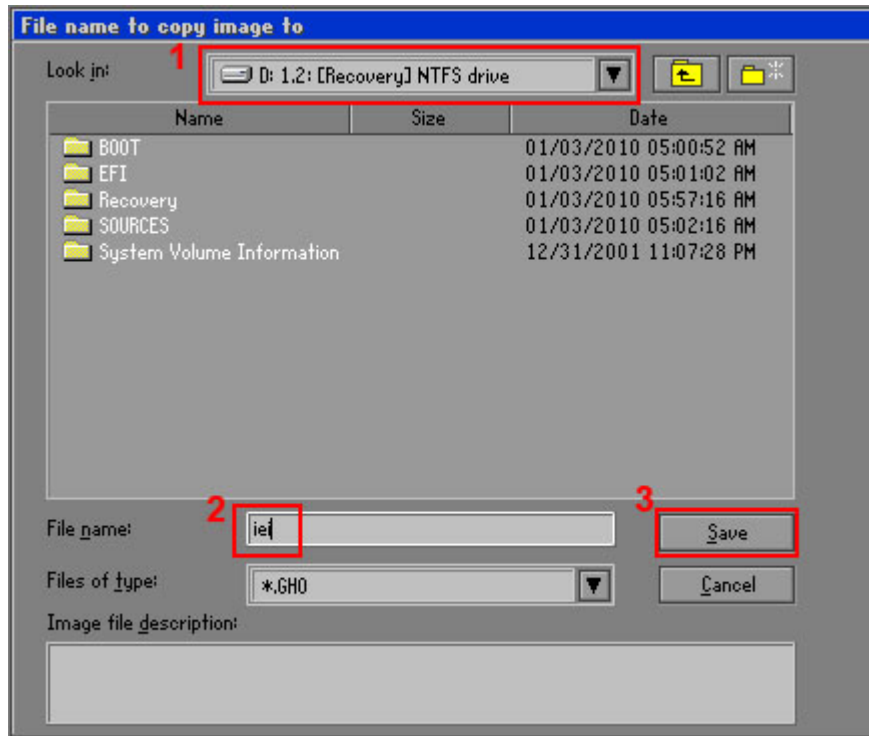


Figure B-16: File Name to Copy Image to

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

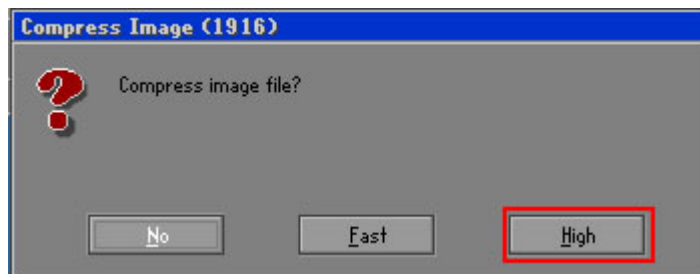


Figure B-17: Compress Image

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

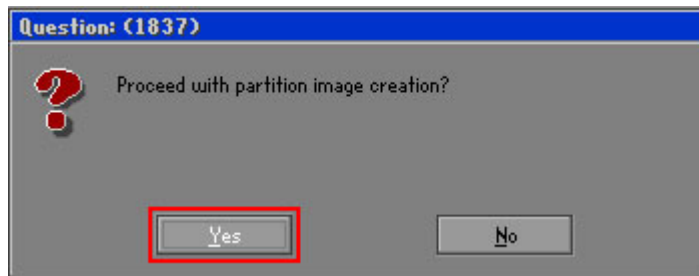


Figure B-18: Image Creation Confirmation

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

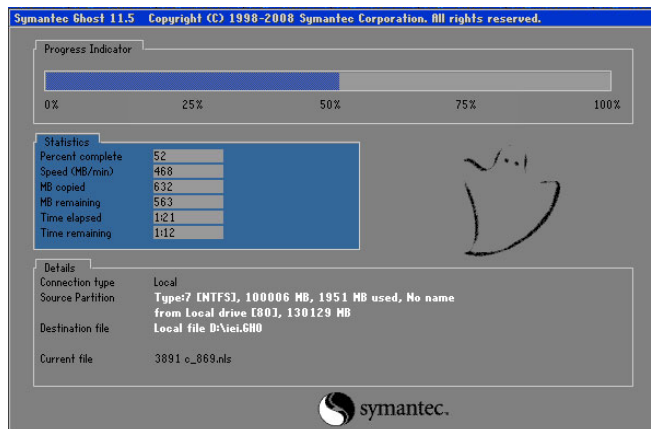


Figure B-19: Image Creation Complete

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.

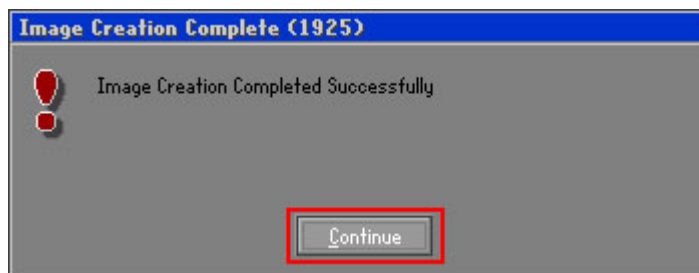
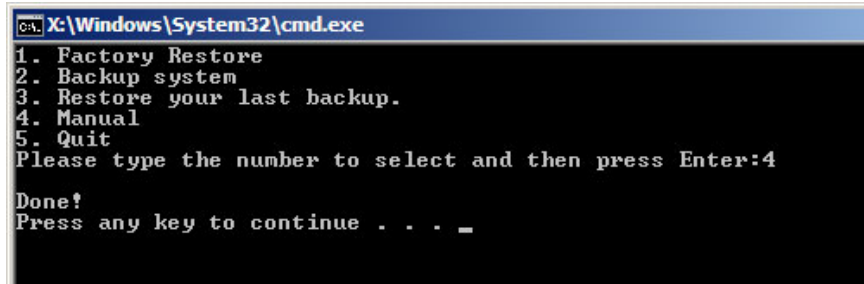


Figure B-20: Image Creation Complete

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



```
C:\Windows\System32\cmd.exe
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:4
Done!
Press any key to continue . . . _
```

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 XP
- Windows Vista
- Windows 7
- Windows XP Embedded
- 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.

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- 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)

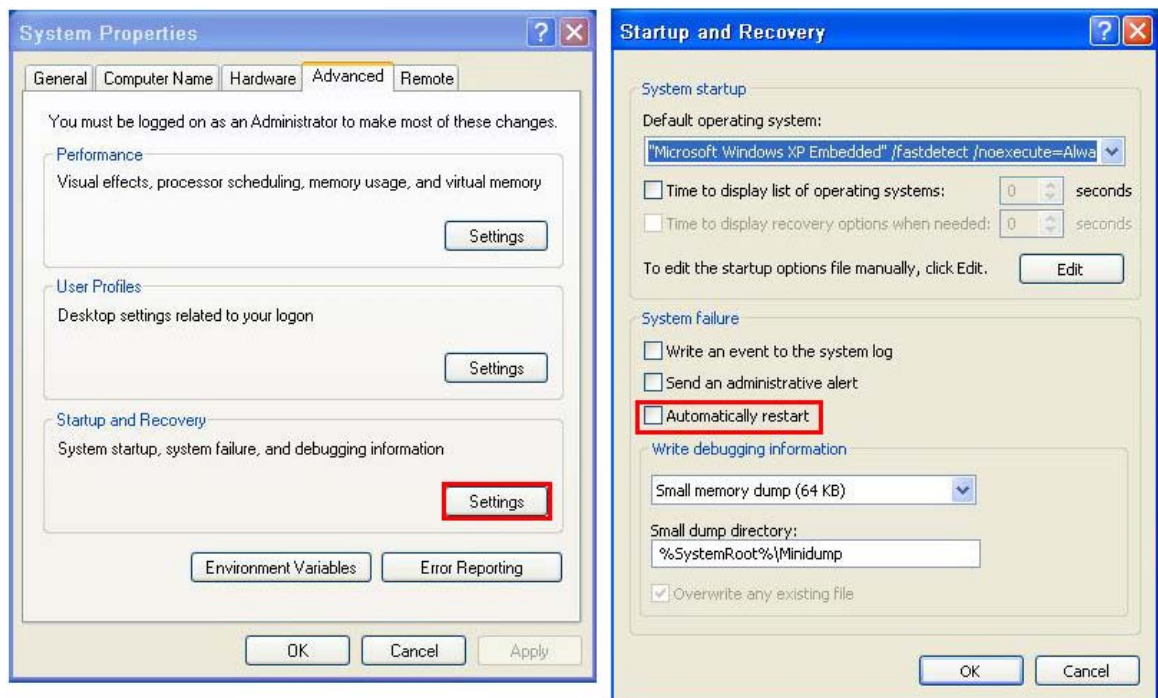


Figure B-23: Disable Automatically Restart

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!

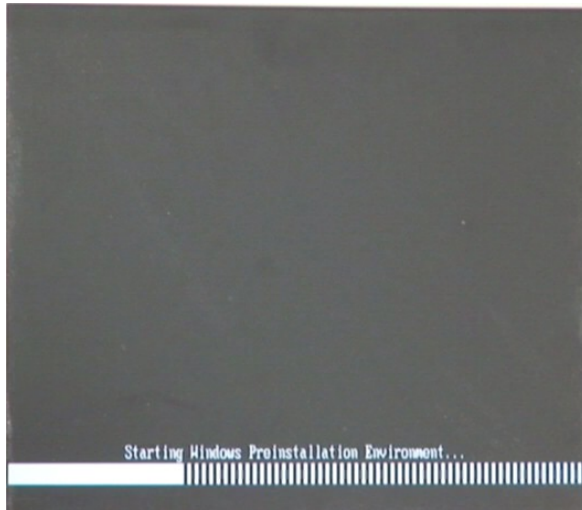


Figure B-24: Launching the Recovery Tool

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

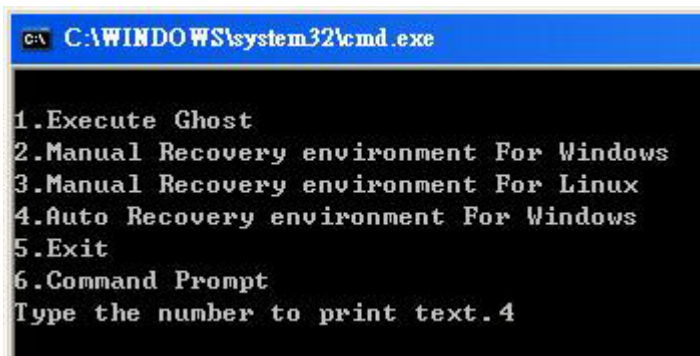


Figure B-25: Auto Recovery Environment for Windows

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.

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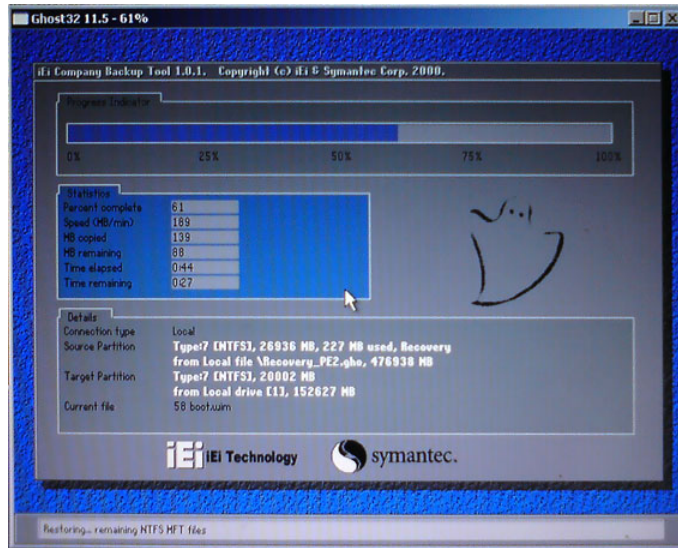


Figure B-26: Building the Auto Recovery Partition

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

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

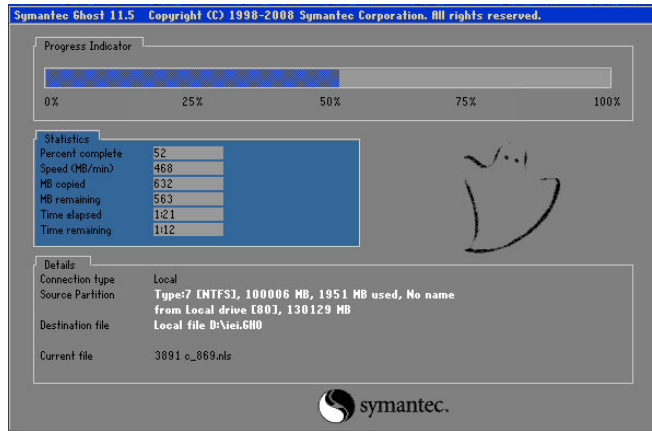


Figure B-28: Image Creation Complete

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

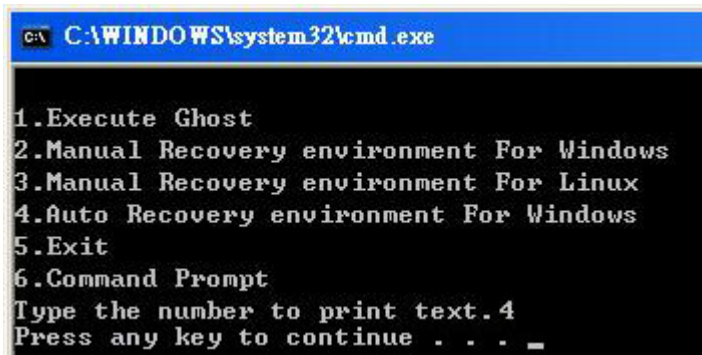


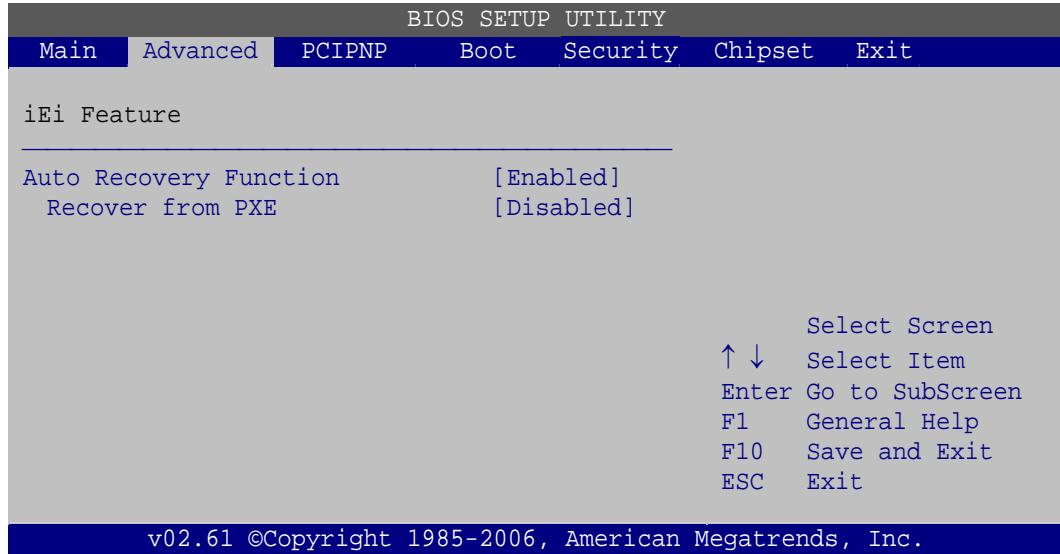
Figure B-29: Press any key to continue

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**).

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**BIOS Menu 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:

- Partition 1: /
- Partition 2: SWAP

**NOTE:**

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

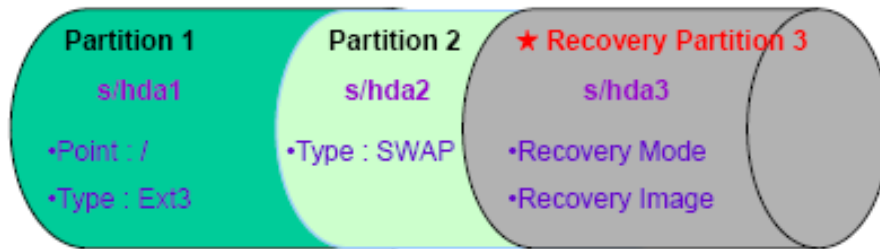


Figure B-30: Partitions for Linux

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

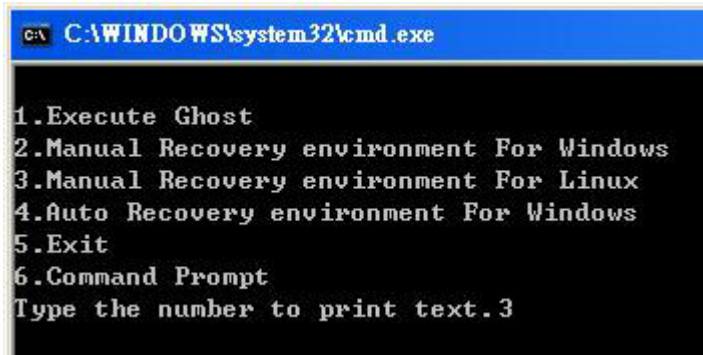
Follow **Step 1 ~ Step 3** described in **Section B.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

```
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-31**). The Symantec Ghost window appears and starts configuring the system to build-up a

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



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

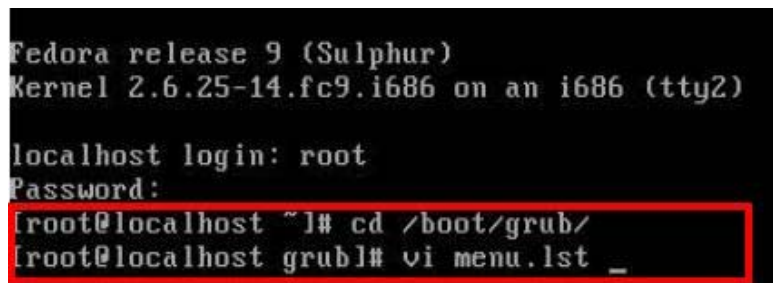
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.3
```

Figure B-31: 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-32: Access menu.lst in Linux (Text Mode)

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


```
#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 ← Type command
    chainloader +1
```

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

Step 7: The recovery tool menu appears. (Figure B-33)

```
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-33: 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.

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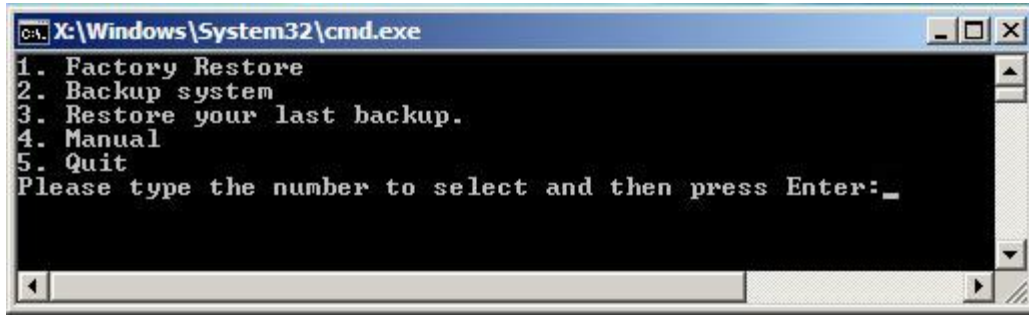


Figure B-34: Recovery Tool Main Menu

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).

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.

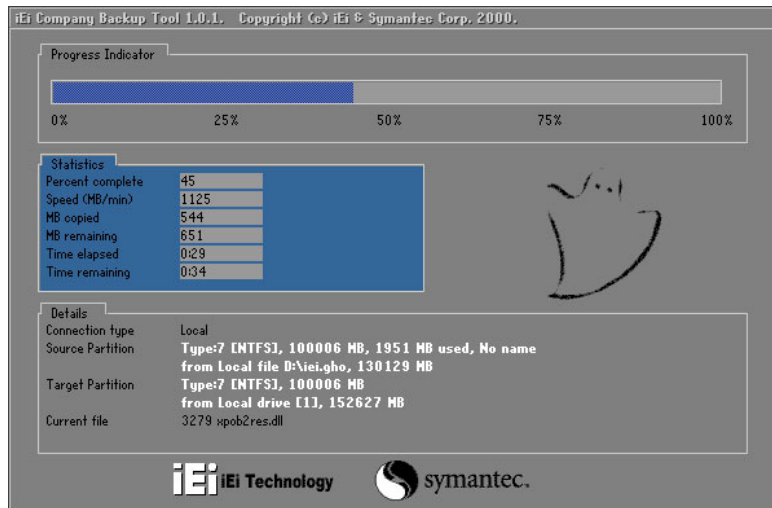


Figure B-35: Restore Factory Default

Step 3: The screen is shown in **Figure B-36** appears when completed. Press any key to reboot the system.

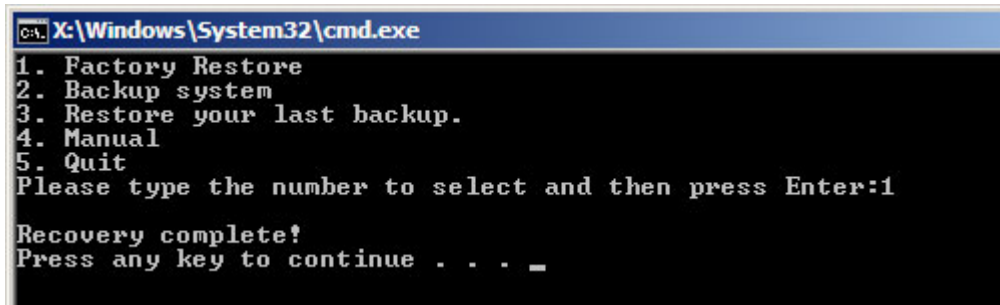


Figure B-36: Recovery Complete Window

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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.

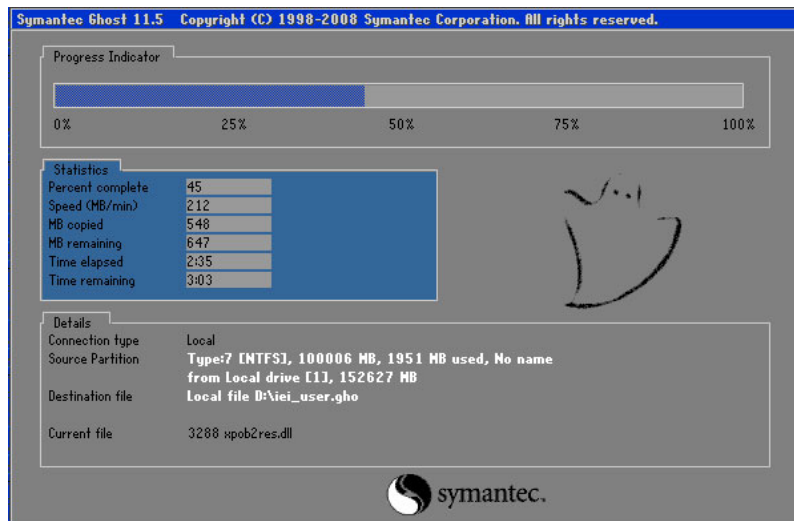


Figure B-37: Backup System

Step 3: The screen is shown in **Figure B-38** appears when system backup is complete. Press any key to reboot the system.

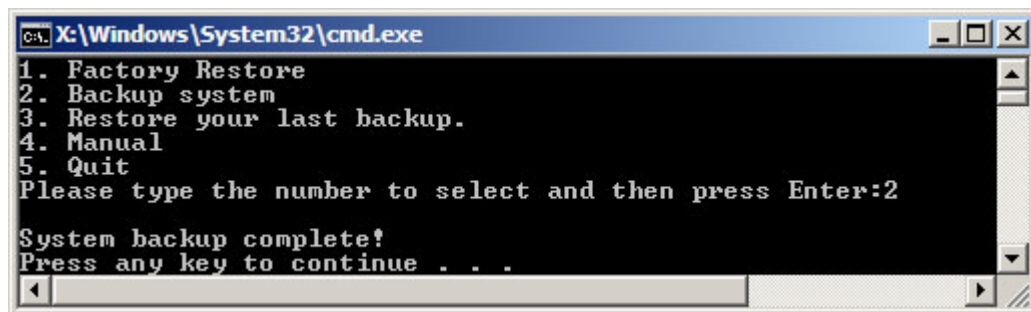


Figure B-38: System Backup Complete Window

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).

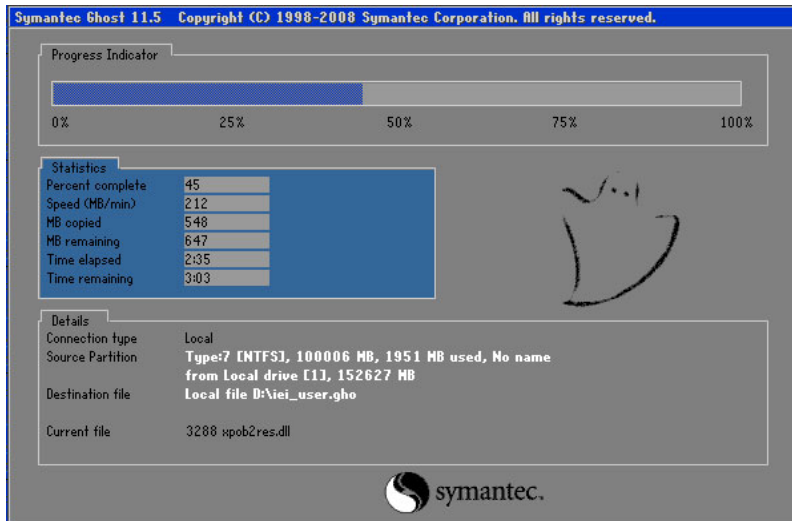


Figure B-39: Restore Backup

Step 3: The screen shown in **Figure B-40** appears when backup recovery is complete. Press any key to reboot the system.

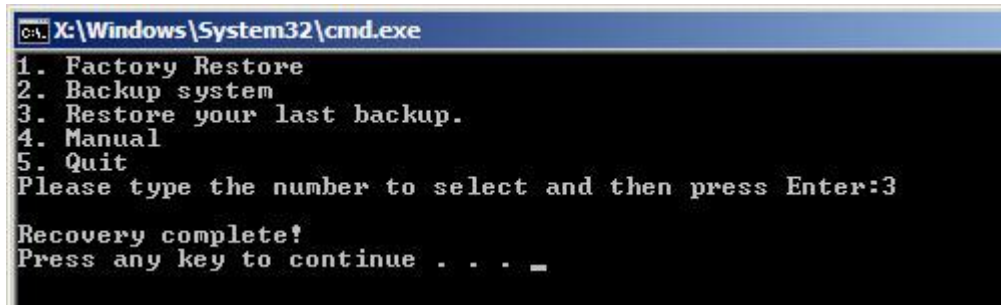


Figure B-40: Restore System Backup Complete Window

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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.

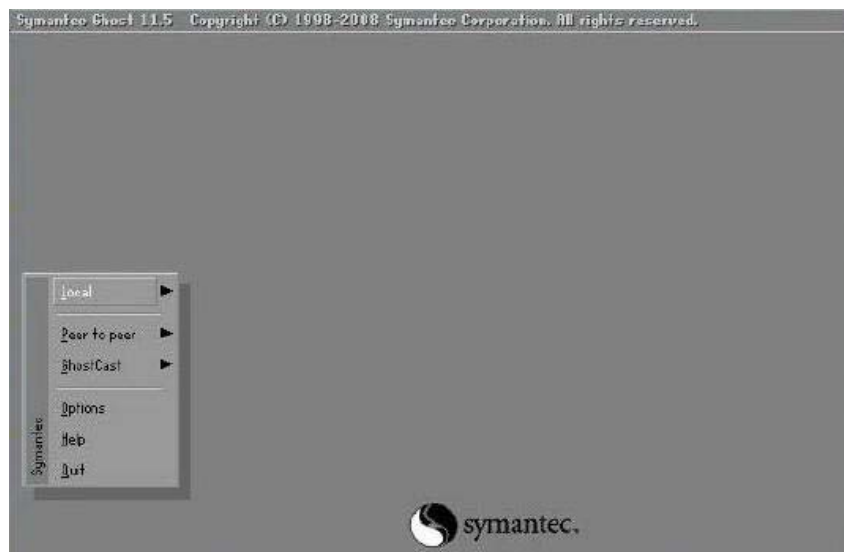
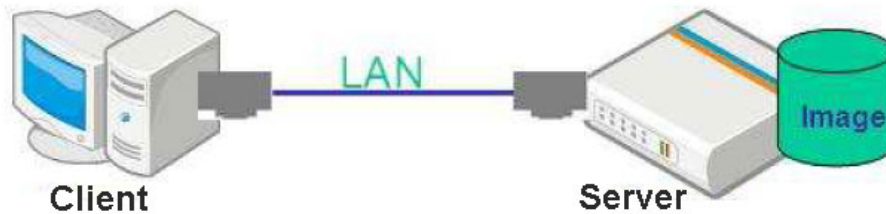


Figure B-41: Symantec Ghost Window

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).

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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;
}
```

Debian

`#vi /etc/dhcpd.conf`

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

`next-server PXE server IP address;`

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
```

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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 -n /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/
```

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
```

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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-23)

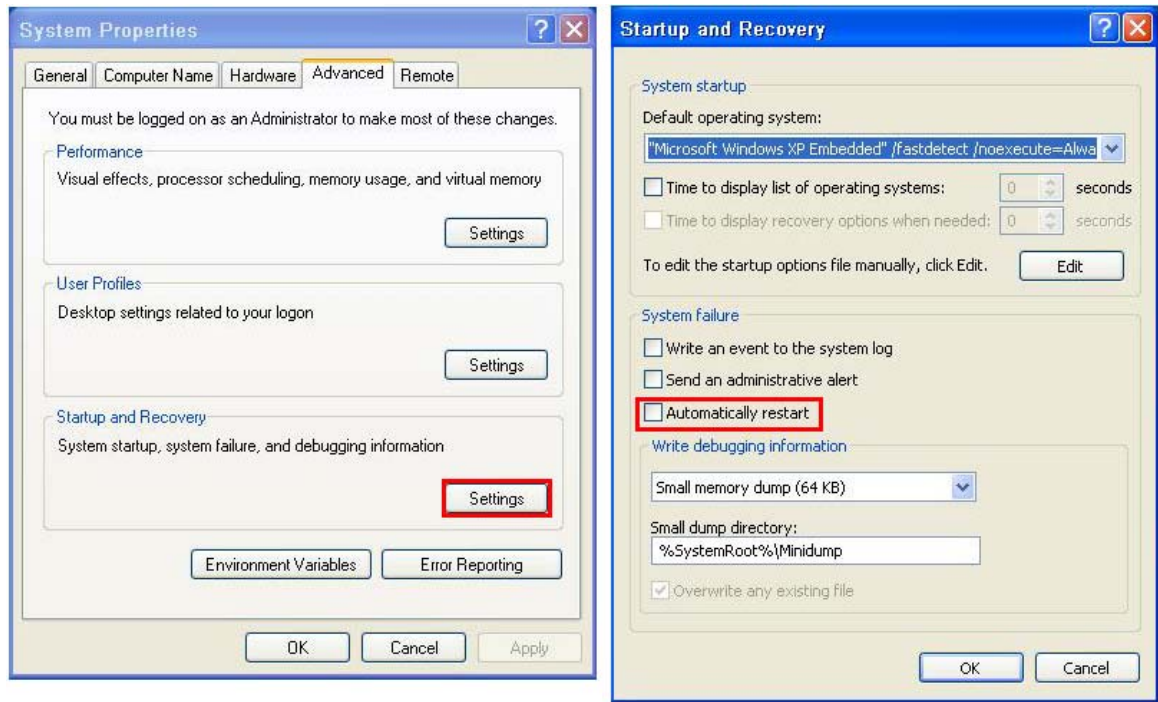


Figure B-42: Disable Automatically Restart

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.

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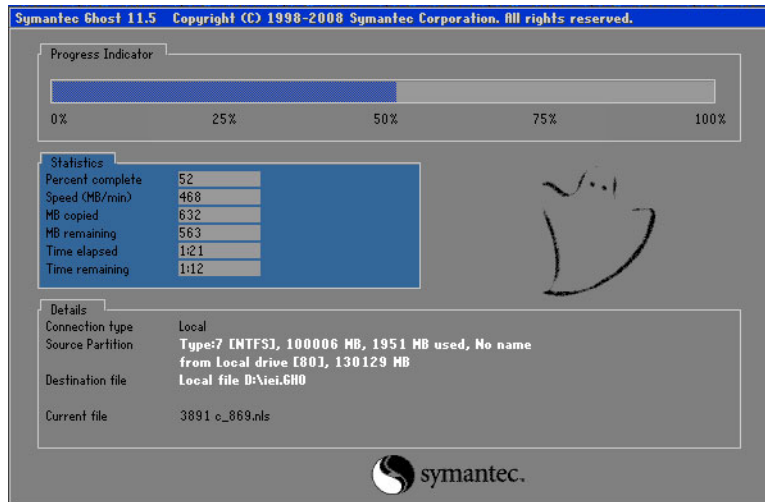


Step 6: Restart the client system from LAN. If the system encounters a Blue Screen of Death (BSoD) or a hang for around 10 minutes, it will automatically restore from the factory default image. The following screens will show when the system starts auto recovering.

```
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=192.168.0.9:192.168.0.8:192.168.0.2:255.255.0
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/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
```

**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.

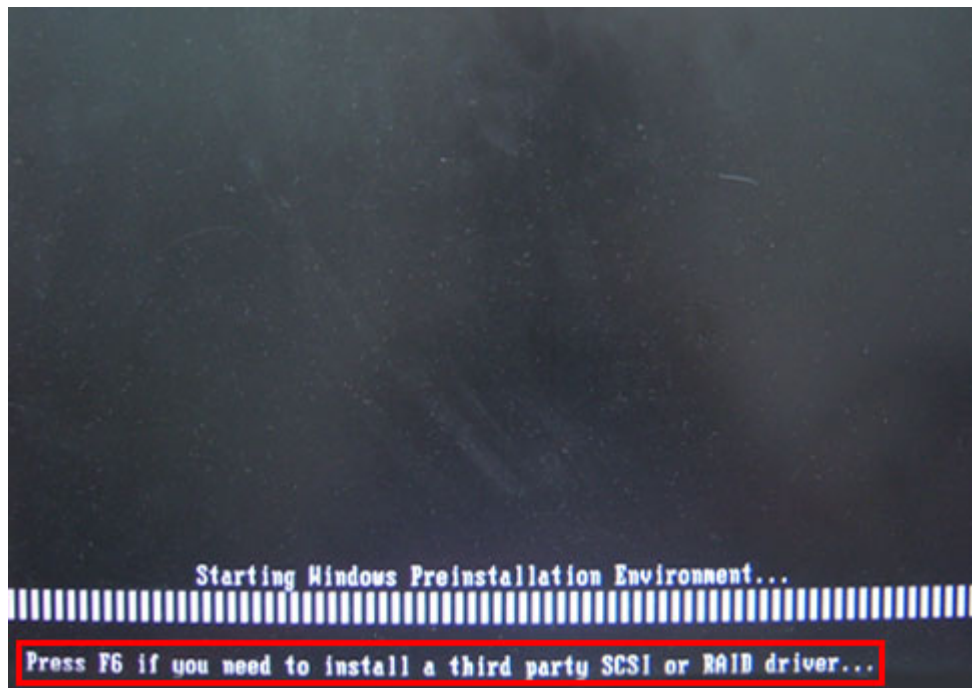
Step 1: Copy the SATA RAID/AHCI driver to a floppy disk and insert the floppy disk into a USB floppy disk drive. The SATA RAID/AHCI driver must be especially designed for the on-board SATA controller.

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

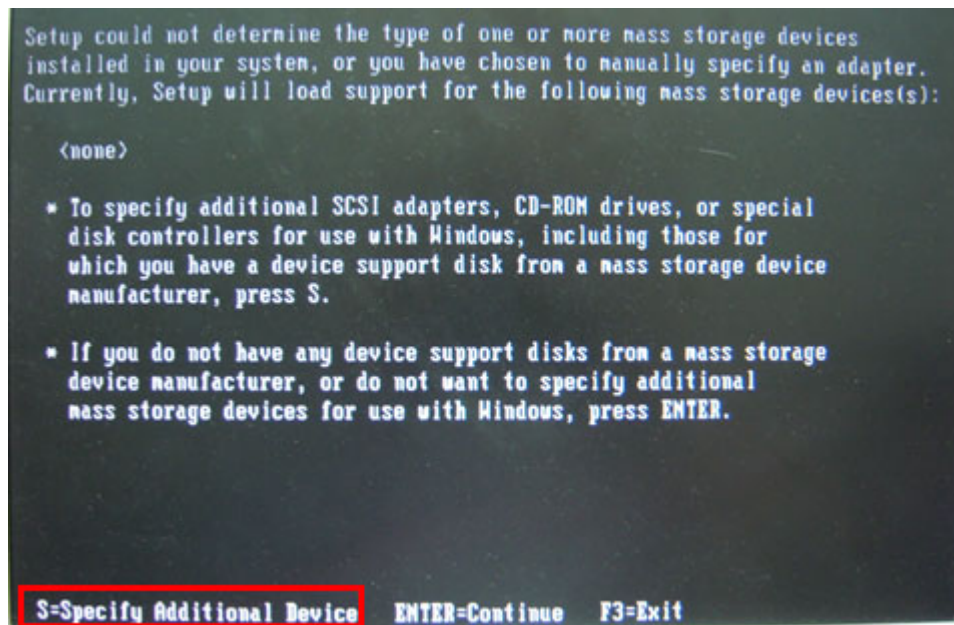
Step 3: Insert the One Key Recovery CD into the system and boot the system from the CD.

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

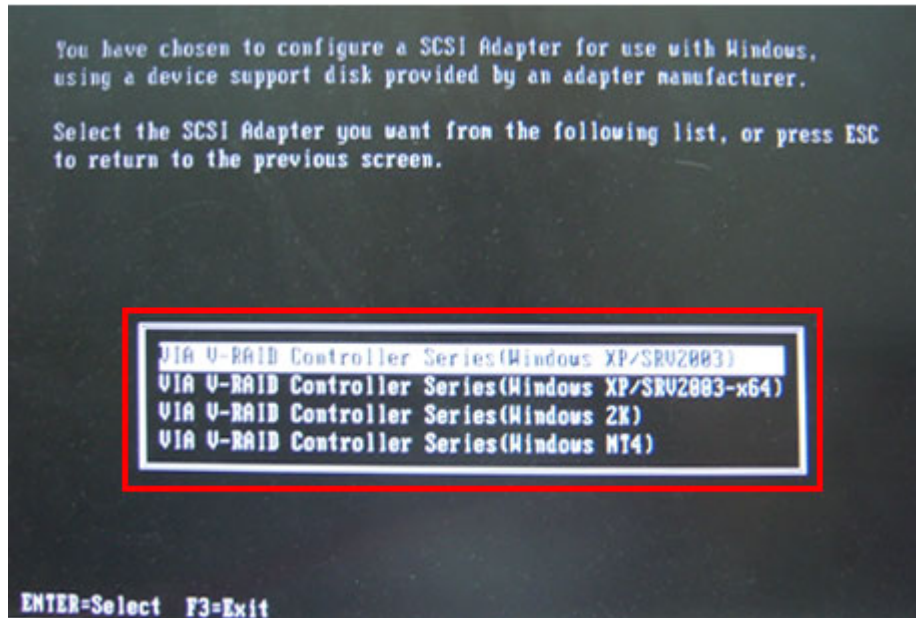
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Step 5: When the following window appears, press <S> to select "Specify Additional Device".



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

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.

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

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

Appendix

D

Digital I/O Interface

D.1 Introduction

The DIO connector on the IMBA-C2260-i2 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 6-1: 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.

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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

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NOTE:

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

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

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

INT 15H:

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

Table 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.

**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

F.1 Introduction

The IMBA-C2260-i2 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.

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CAUTION!

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

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

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	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

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

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

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

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

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

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