AXIOMTEK

IMB202 Series
Intel[®] **Core**™ **2 Quad/Core**™ **2 Duo/**
Celeron[®]
ATX Industrial Motherboard
User's Manual

RoHS

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CAUTION

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

ESD Precautions

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

■ Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.

■ Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.

■ Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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MEMO

CHAPTER 1
INTRODUCTION

The IMB202 ATX industrial motherboard supports Intel$^®$ Core^{TM} 2 Quad, Core^{TM} 2 Duo, and Celeron$^®$ processors at 800/1066/1333 MT/s. The board integrates chipsets Intel$^®$ Q35 and ICH9/DO that delivers outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are four DDR2 DIMM sockets for dual channel DDR2 667/800 MHz memory, maximum memory capacity up to 8GB. The board also features Ethernet 10/100/1000Mb, dual *PCI E*xpress x1 Gigabit Ethernet, six Serial ATA channels (with ICH9-DO only) for total six Serial ATA hard drives at maximum transfer rate up to 3Gb/s, ten USB 2.0 high speed compliant, built-in high definition audio codec that can achieve the best stability and reliability for industrial applications.

1.1 Specifications

- **CPU: Intel® Core™ 2 Quad, Core™ 2 Duo and Celeron® processors**

- **System Chipset: Intel® Q35 & ICH9/DO**

- **CPU Socket: LGA775**

- **Front-Side Bus: 800/1066/1333 MT/s (200/266/333 MHz)**

- **BIOS**
  - Phoenix-Award PnP Flash BIOS

- **System Memory**
  - Four DDR2 DIMM sockets
  - Maximum up to 8GB DDR2 memory
  - Support Dual Channel DDR2 667/800 MHz memory

- **Onboard Multi-I/O**
  - Controller: Winbond W83627DHG and W83627HG
  - Serial Ports: 3 ports for RS-232 (COM2/3/4) and 1 port for RS-232/422/485 (COM1)
  - Parallel Port: One bi-directional with ECP/EPP/SPP support
  - Floppy Controller: Support for two drives (1.44MB for each)

- **USB Interface**
  - Twelve USB 2.0 high speed compliant

- **Display**
  - Integrated on Intel Q35 GMCH (For CRT Only)

- **Ethernet**
  - Inte l® i82566DM and Realtek RTL8111B PCI Express x1 gigabit Ethernet controllers support 10/100/1000Mb/s

- **Serial ATA**
  - Support Serial ATA/ ATA II
  - Six Serial ATA Channels for total of Six Serial ATA hard drive (with ICH9-DO only)
  - Maximum transfer rate could up to 3Gb/s
  - Support SATA RAID 0, 1, 0+1, 5 function (with ICH9-DO only)

● **Audio**
  ■ Realtek ALC888 HD Audio codec onboard
  ■ Audio jack supports Line-out and Mic-in

● **Expansion Slot**
  ■ 1 *PCIe*(x16) , 1 PCIe x4, 1PCIe (x1) , 4 PCI Slot
  (32bit/33MHZ)

● **Hardware Monitoring**
  ■ Controller: Winbond W83627DHG
  ■ Detection of CPU temperature, System temperature, Power
    failure and Fan speed

● **Watchdog Timer**
  ■ System reset
  ■ Software programmable timer (1-255 level)

● **Dimensions:** 305mm x 244mm (4 layer)

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

1.2   Utilities Supported

- Intel$^®$ Q35 Utility and Drivers
- VGA Drivers
- Ethernet Utility and Drivers
- Audio Utility and Drivers

1.3   Real Panel Connector
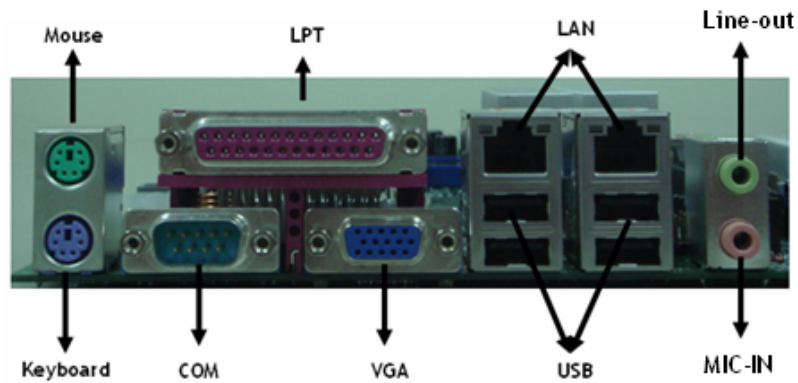
CHAPTER 2
JUMPERS AND CONNECTORS

2.1   Board Dimensions
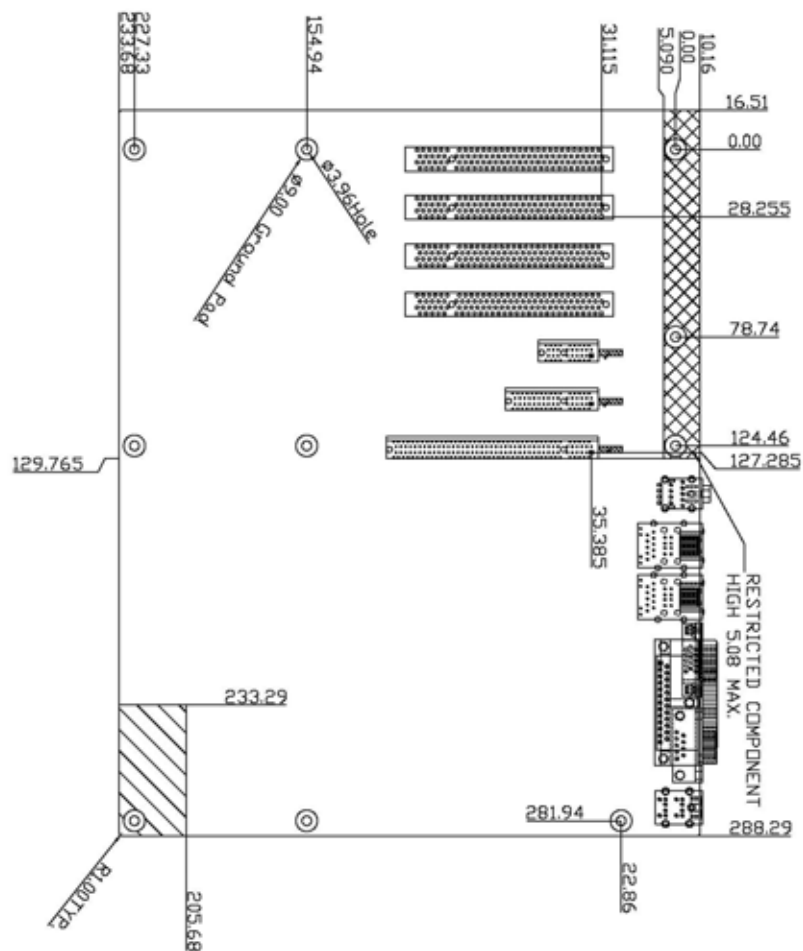
2.2 Board Layout
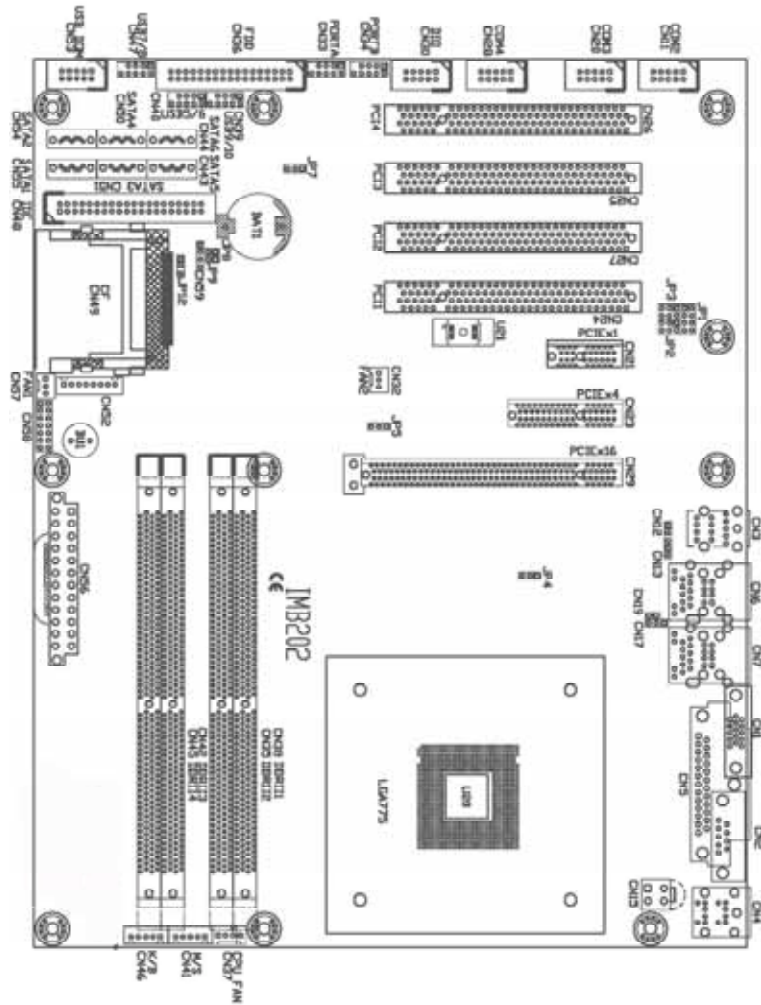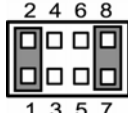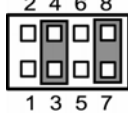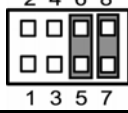
2.3   Jumper Settings

Proper jumper settings configure the **IMB202** to meet your application purpose.

2.3.1   COM1 Mode Select Jumpers (JP1, JP2, JP3)

These jumpers select the COM1 port's communication mode to operate RS-232 or RS-422/485.

Description	Function	Jumper Setting		
COM1	RS-232 (Default)	JP1	JP2	JP3
	RS-422	JP1	JP2	JP3
	RS-485	JP1	JP2	JP3
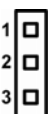
2.3.2 CMOS Clear Jumper (JP5)
You may need to use this jumper is to clear the CMOS memory if
incorrect settings in the Setup Utility.

Description	Function	Jumper Setting
Clear CMOS	Normal (Default)	
	Clear	

2.3.3 Watchdog Trigger Mode Jumper (JP4)
The watchdog timer performs the sensitive error detection and report
function.

Description	Function	Jumper Setting
Watchdog Trigger Mode	Disable	
	GPIO	
	Reset	

2.3.4 PCIe x4 Slot Function Select Jumper (JP8, JP9)

CN23 PCIe x4 slot function for PCIe x1 or PCIe x4

Function	JP8	JP9
CN21: PCIe x1 CN23: PCIe x1	1 ■ 2 □ (Open)	1 ■ 2 □ (Open)
CN21: Disable CN23: PCIe x4	1 ▮ 2 ▮ (Short)	1 ▮ 2 ▮ (Short)

NOTE The ICH9 supports only one PCIe x4 (via lane #0~4) or four PCIe x1, so these jumpers (JP8 & JP9) are to allow customer setting it as one PCIe x4 or PCIe x1 which could co-work with CN21 to have another PCIe x1 slot.

2.4 Connectors

Connectors connect the board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected.

Here is a summary table shows you all connectors on the board.

Function	Connector	Function	Connector
INTERNAL BATTERY	BAT1	DIO CONNECTOR	CN30
INTERNAL BUZZER	BU1	FAN2 CONNECTOR	CN32
VGA CONNECTOR	CN1	DIMM2 SOCKET	CN35
COM1 CONNECTOR	CN2	FDD CONNECTOR	CN36
AUDIO CONNECTOR	CN3	CPU FAN CONNECTOR	CN37
KEYBOARD/MOUSE DIN CONNECTOR	CN4	DIMM1 SOCKET	CN38
LPT CONNECTOR	CN5	USB CONNECTOR (8/9)	CN39
LAN2 CONNECTOR (INTEL)	CN6	USB CONNECTOR (4/5)	CN40
LAN1 CONNECTOR (REALTEK)	CN7	WAFER M/S CONNECTOR	CN41
COM2 CONNECTOR	CN11	DIMM3 SOCKET	CN42
LAN2 SPEED LED CONNECTOR	CN12	SATA4 CONNECTOR	CN43
LAN2 LINK LED CONNECTOR	CN13	SATA5 CONNECTOR	CN44
ATX 12V 4-PIN CONNECTOR	CN15	DIMM4 SOCKET	CN45
LAN1 SPEED LED CONNECTOR	CN17	WAFER K/B CONNECTOR	CN46

Function	Connector	Function	Connector
LAN1 LINK LED CONNECTOR	CN19	USB CONNECTOR (6/7)	CN47
COM3 CONNECTOR	CN20	SATA3 CONNECTOR	CN50
PCIe x 1 SLOT	CN21	SATA2 CONNECTOR	CN51
PCIe x 4 SLOT	CN23	USB CONNECTOR (10/11)	CN53
PCI1 SLOT	CN24	SATA1 CONNECTOR	CN54
PCI3 SLOT	CN25	SATA0 CONNECTOR	CN55
PCI4 SLOT	CN26	ATX POWER CONNECTOR	CN56
PCI2 SLOT	CN27	FAN1 CONNECTOR	CN57
COM4 CONNECTOR	CN28	FRONT PANEL CONNECTOR	CN58
PCIe x 16 SLOT	CN29		

2.4.1 VGA Connector (CN1)

CN1 is a standard 15-pin pin DB15 connector commonly used for the CRT VGA display.

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N/A	5	GND	6	AGND
7	AGND	8	AGND	9	N/A
10	GND	11	N/A	12	DDC DAT
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK
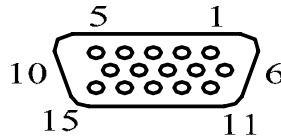
2.4.2 Serial Port Interface Connector (CN2) (RS232/RS422/RS485)

The board has four onboard serial ports .COM1 is a standard D-Sub 9 pin connector and support RS232 function
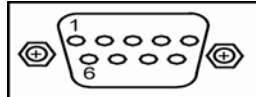
PIN Number	CN2		
	RS-232	RS-422	RS-485
1	Data Carrier Delect (DCD)	TX-	Data -
2	Receive Date (RXD)	TX+	Data +
3	Transmit Data (TXD)	RX+	NC
4	Data Terminal Ready (DTR)	RX-	NC
5	GND	GND	GND
6	Data Set Ready (DSR)	NC	NC
7	Request to Send (RTS)	NC	NC
8	Clear to Send (CTS)	NC	NC
9	Ring Indicator (RI)	NC	NC

2.4.3 Serial Port Interface Connectors (CN11, CN20, CN28) (RS232)

The serial interface for the board consists of COM2 port (CN11), COM3 (CN20) and COM4 (CN28) supports RS-232.

Connector: COM2 (CN11), COM3 (CN20), COM4 (CN28)

Pin	Signal
1	Data Carrier Detect (DCD)
2	Data Set Ready (DSR)
3	Receive Date (RXD)
4	Request to Send (RTS)
5	Transmit Data (TXD)
6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)
8	Ring Indicator (RI)
9	GND
10	NC

2.4.4 PS/2 Keyboard and Mouse Connectors (CN4)

CN4 is a DIN connector for PS/2 Mouse and PS/2 keyboard connection.

Pin	Signal	Pin	Signal
1	Keyboard Data	7	GND
2	GND	8	Mouse Data
3	GND	9	GND
4	VCC	10	VCC
5	GND	11	GND
6	Mouse Clock	12	Mouse Clock
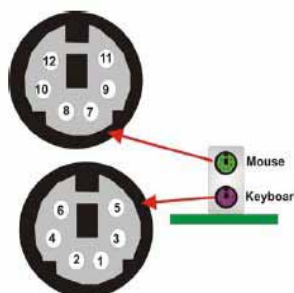
2.4.5 Ethernet Connectors (CN6, CN7)

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TXA+	5	TXC-
2	TXA-	6	TXB-
3	TXB+	7	TXD+
4	TXC+	8	TXD-

Table 4-26: LAN Pinouts

2.4.6 USB Port Connectors (CN6, CN7)

The Universal Serial Bus (USB) port connector on the board is for the installation of peripherals supporting the USB interface. Each USB port consists of two 4-pin standard USB ports.

Pin	Signal
1, 5	USB Vcc
2, 6	USB -
3, 7	USB +
4, 8	USB GND
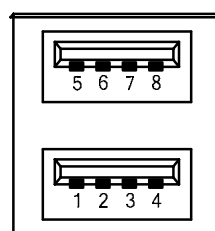
2.4.7 ATX 4 Pin 12V In Connector (CN15)

You can connect it to the ATX12V power supply for CPU Core Voltage.

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

2.4.8 Floppy Disk Port Connector (CN36)

The board provides a 34-pin header type connector, FDD1, supporting up to two floppy drives. The floppy drives may be any one of the following types: 5.25" 360KB/1.2MB and 3.5" 720KB/1.44MB/2.88MB.

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	Reduce write current	3	GND
4	N/C	5	GND	6	N/C
7	GND	8	Index #	9	GND
10	Motor enable A #	11	GND	12	Drive select B #
13	GND	14	Drive select A #	15	GND
16	Motor enable B #	17	GND	18	Direction #
19	GND	20	STEP #	21	GND
22	Write data #	23	GND	24	Write gate #
25	GND	26	Track #	27	GND
28	Write protect #	29	GND	30	Read data #
31	GND	32	Side 1 select #	33	GND
34	Disk change #				
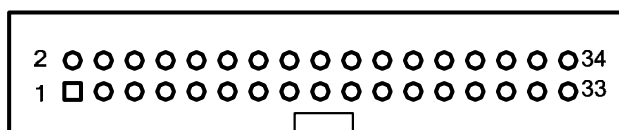
2.4.9 SATA Connectors (CN55, CN54, CN51, CN50, CN43, CN44)

These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND
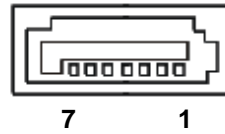
2.4.10 USB Connectors (CN40, CN47, CN39, CN53)

These Universal Serial Bus (USB) connectors on this board are for installing versatile USB interface peripherals. CN40, CN47 and CN39 are 9-pin USB connectors; CN53, a 10-pin USB connector.

Connector: CN47, CN40, CN39

Pin	Signal	Pin	Signal
1	USB POWER	2	USB POWER
3	USB P0-	4	USB P1-
5	USB P0+	6	USB P1+
7	USB GND	8	USB GND
9	NC	10	GND
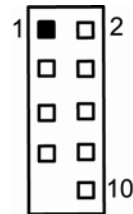
Connector: CN53

Pin	Signal	Pin	Signal
1	USB POWER	2	USB POWER
3	USB P0-	4	USB P1-
5	USB P0+	6	USB P1+
7	USB GND	8	USB GND
9	NC	10	GND

2.4.11 Front Panel Connector (CN58)
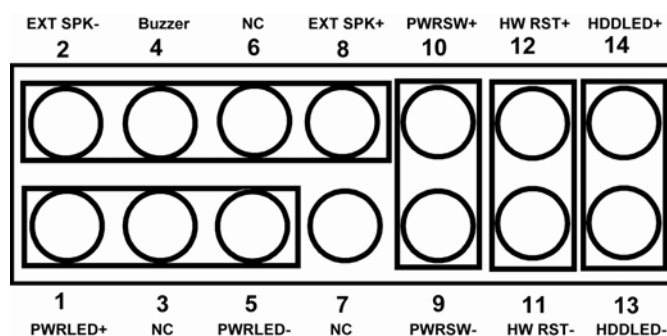
■ **Power LED**

Pins 1, 3, 5 connect the system power LED indicator to its respective switch on the case. Pin 1 is +, and pin 5 assigned to -. Pin 3 is defined as NC.

■ **External Speaker and Internal Buzzer Connector**

Pins 2, 4, 6, 8 can be connected to the case-mounted speaker unit or internal buzzer.

■ **Power Button**

Pins 9 and 10 connect the front panel's ATX power button to the card, which allows users to control ATX power supply on or off.

◼ **Hardware Reset**
Pins 11 and 12 are designed for Hardware Rese*t*.

◼ **HDD Activity LED**
This connector extends to the hard drive activity LED on the control panel. This LED will flash when the HDD is being accessed. Pins 13 and 14 can be connected to the hard disk drive and front panel HDD LED.

2.4.12 Internal Mouse/Keyboard Connectors (CN46, CN41)

The board provides a keyboard (CN46) and Mouse (CN41) interface with two 5-pin connectors.

Clock	1 ■
Data	2 □
No Connection	3 □
GND	4 □
Power	5 □
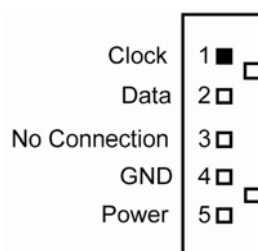
2.4.13 LAN1 (CN17)/LAN2 (CN12) Speed LED Connectors

Pin	Signal
1	100, Low Active
2	Speed LED power
3	Gigabit, Low Active

1 □
2 □
3 □
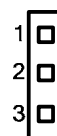
2.4.14 LAN1 (CN19)/LAN2 (CN13) Act/Link LED Connectors

Pin	Signal
1	Link active
2	Link active

1 □
2 □

2.4.15 DIO Port Connector (CN30)

The board is equipped a digital I/O connector CN30 that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming.

Pin	Signal	Pin	Signal
1	Out-1	2	In-1
3	Out-2	4	In-2
5	Out-3	6	In-3
7	Out-4	8	In-4
9	GND	10	GND
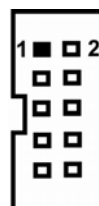
2.4.16 System Fan (CN57)/Fan 2 Connectors (CN32)

You can connect the system cooling fan cable to CN57/CN32 for system cooling fan power.

Pin	Signal
1	GND
2	+12V
3	SENSOR
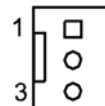
2.4.17 CPU Fan Connector (CN37)

A CPU fan is always needed for cooling CPU heat. The CPU fan connector CN37 provides power to the CPU fan.

Pin	Signal
1	GND
2	+12V
3	SENSOR
4	CONTROL
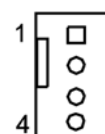
2.4.18 24-Pin ATX Power Connector (CN56)

CN56 is the 24-pin ATX Power connector on the board. Please refer to next page for detailed pin assignment table.

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

24	23	22	21	20	19	18	17	16	15	14	13
12	11	10	9	8	7	6	5	4	3	2	1

CHAPTER 3
HARDWARE INSTALLATION

Before installing the processor, please access Intel® website for more detailed information http://www.intel.com .

3.1   Installing the Processor

The LGA775 processor socket comes with a cover to protect the processor. Please install the processor into the CPU socket step by step as below:

1. Hold the hook (A) of the lever and push it down. Pull the lever (B) aside to unlock the cover.
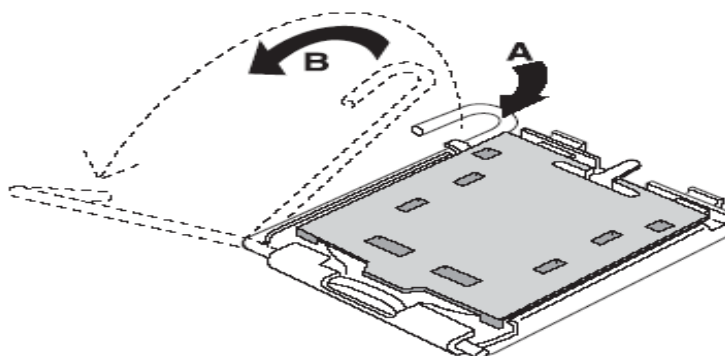
2. Open the cover (C), you can see the contact.
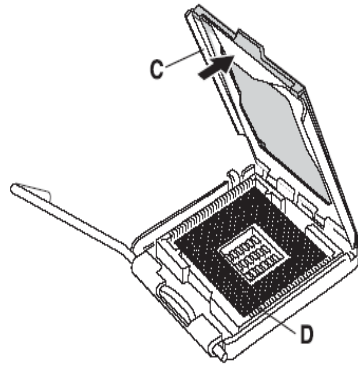
3. Be careful not to touch the contact (D).
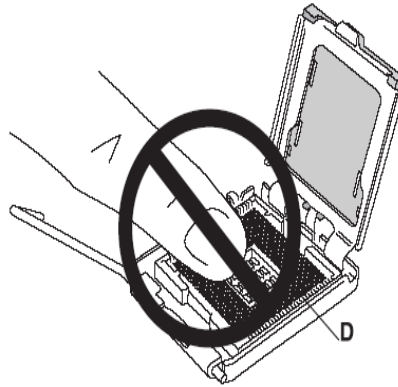
4. Remove the plastic cap (E) from the cover.
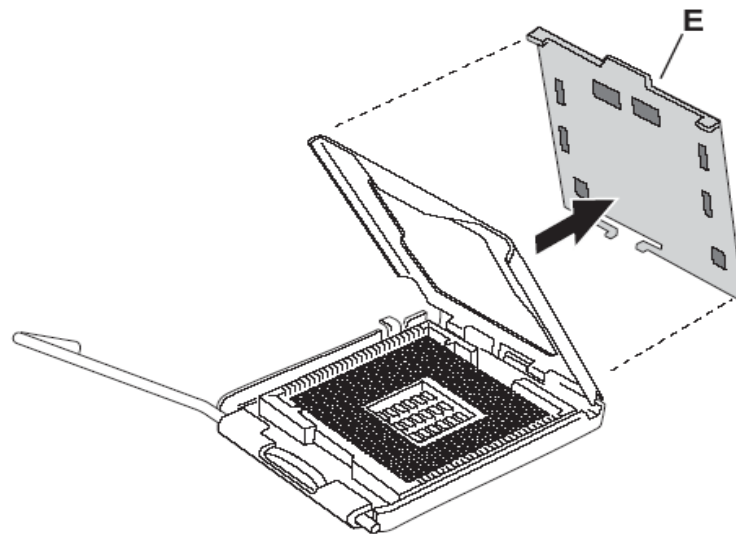
5. Place the CPU down into the socket. Be careful not to touch the contact.

6. Hold the edges of the CPU, and orientate it as the marked direction (G) down into the socket to match the (H) and (F) locations.
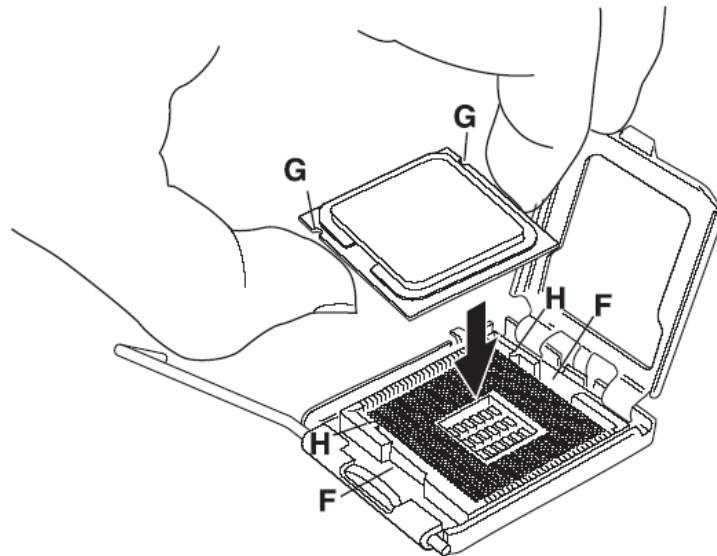
7. Slightly push down the cover and hook the lever (I~J). The CPU is completely locked.
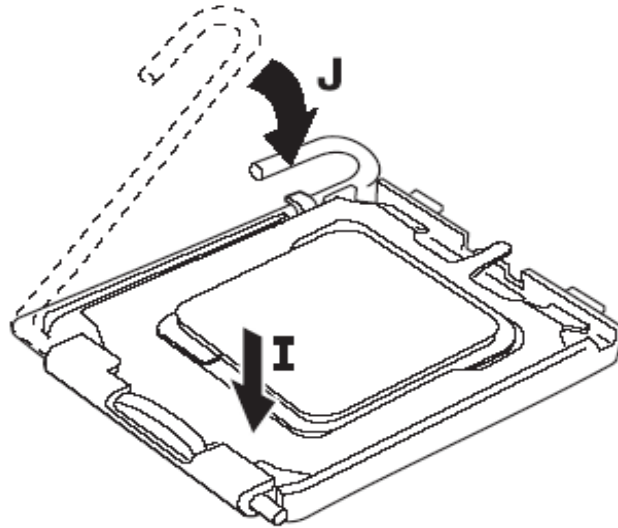
8. Orientate the CPU cooling fan to fixing holes on the board.
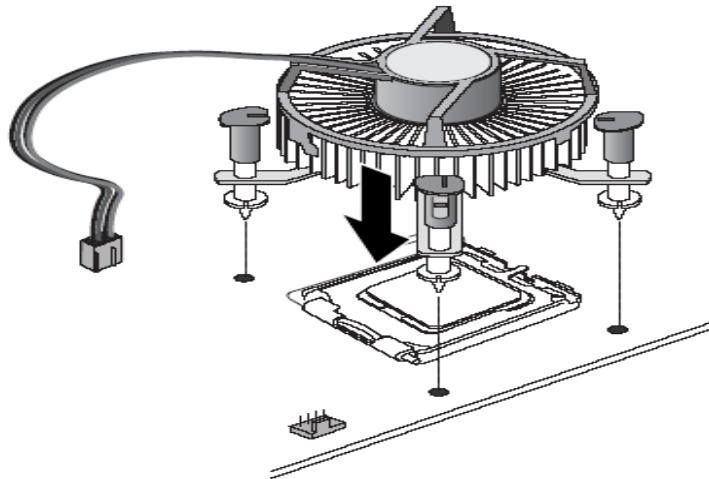
9. Screw the CPU cooling fan onto the board.
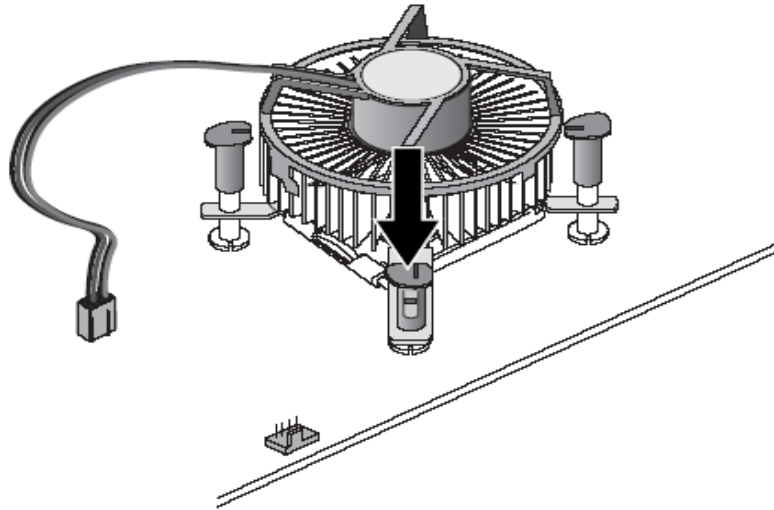
10. Make sure the CPU fan is plugged to the CPU fan connector.
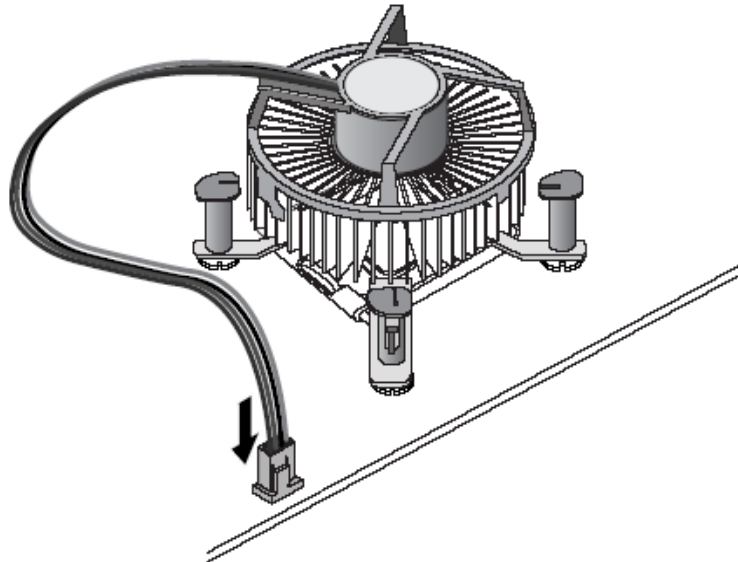
3.2   Installing the Memory

The board supports four 240-pin DDR2 DIMM memory sockets with maximum memory capacity up to 8GB.

Please follow steps below to install the memory modules:

1   Push down latches on each side of the DIMM socket.
2   Align the memory module with the socket that notches of memory module must match the socket keys for a correct installation.
3   Install the memory module into the socket and push it firmly down until it is fully seated. The socket latches are levered upwards and clipped on to the edges of the DIMM.
4   Install any remaining DIMM modules.
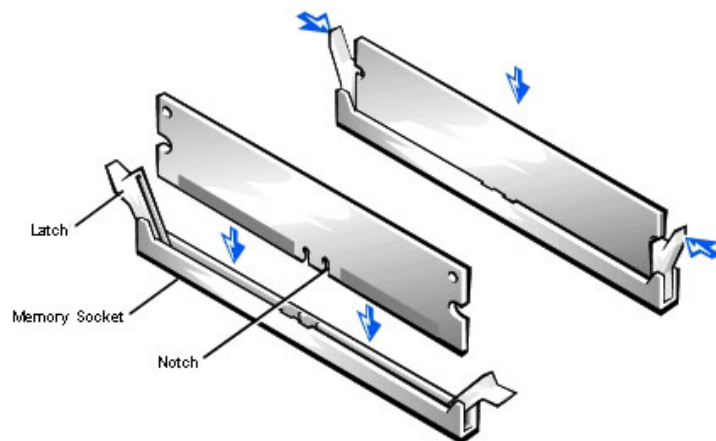
CHAPTER 4
HARDWARE DESCRIPTION

4.1   Microprocessors

The IMB202 Series supports Intel$^®$ Core^{TM} 2 Quad, Core^{TM} 2 Duo and Celeron$^®$ processors, which make your system operated under Windows$^®$ 2000/XP and Linux environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

4.2   BIOS

The IMB202 Series uses Award Plug and Play BIOS with a single 8Mbit Flash.

4.3   System Memory

TheIMB202 Series industrial CPU card supports four 240-pin DDR2 DIMM sockets for a maximum memory of 8GB DDR2 SDRAMs. The memory module can come in sizes of 256MB, 512MB, 1GB and 2GB.

4.4 I/O Port Address Map

The Intel® Core™ 2 Quad, Core™ 2 Duo and Celeron® CPUs can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
040-05F	Timer
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0A0-0BF	Interrupt controller #2
0F0	Clear math coprocessor busy signal
0C0-0DF	DMA controller #2
0F1	Reset math coprocessor
0F8-0FF	Math processor
120	Disable watchdog timer operation (read)
121	Enable watchdog timer operation (read)
122	Watchdog
1F0-1F8	Fixed disk controller
200-207	Game port
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel port #1
3B0-3BF	MDA video card (including LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port #1 (COM1)
2F8-2FF	Serial port #2 (COM2)

CHAPTER 5

PHOENIX-AWARD BIOS UTILITY

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

5.1   Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

<div align="center">TO ENTER SETUP PRESS DEL KEY</div>

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

5.2   Control Keys

Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

5.3   Getting Help

● **Main Menu**
The online description of the highlighted setup function is displayed at the bottom of the screen.

● **Status Page Setup Menu/Option Page Setup Menu**
Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

5.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

```
          Phoenix - AwardBIOS CMOS Setup Utility

  ► Standard CMOS Features      ► Frequency/Voltage Control
  ► Advanced BIOS Features        Load Fail-Safe Defaults
  ► Advanced Chipset Features     Load Optimized Defaults
  ► Integrated Peripherals        Set Supervisor Password
  ► Power Management Setup        Set User Password
  ► PnP/PCI Configurations        Save & Exit Setup
  ► PC Health Status              Exit Without Saving


  Esc : Quit     F9 : Menu in BIOS    ↑ ↓ → ← : Select Item
  F10 : Save & Exit Setup

              Time, Date, Hard Disk Type...
```

NOTE *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

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

5.5   Standard CMOS Setup Menu

The Standard CMOS Setup Menu displays basic information about your system. Use arrow keys to highlight each item, and use <PgUp> or <PgDn> key to select the value you want in each item.

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    Standard CMOS Features
                                               Item Help
  Date (mm:dd:yy)       Mon, Aug 4 2008        Menu Level ►
  Time (hh:mm:ss)       19 : 3 : 2
                                               Change the day, month,
                                               year and century.
  ► IDE Channel 0 Master   [WDC WD1200JD-00GBB0]
  ► IDE Channel 0 Slave    [None]
  ► IDE Channel 1 Master   [None]
  ► IDE Channel 1 Slave    [None]
  ► IDE Channel 2 Master   [None]
  ► IDE Channel 3 Master   [None]

    Drive A                [1.44M, 3.5 in.]
    Halt On                [All , But Keyboard]

    Base Memory              639K
    Extended Memory          2085888K
    Total Memory             2086912K

  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

● **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	It is determined by the BIOS and read only, from Sunday to Saturday.
date	It can be keyed with the numerical/ function key, from 1 to 31.
month	It is from January to December.
year	It shows the current year of BIOS.

● **Time**
  This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

● **IDE Primary Master/Primary Slave**
These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<−> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.
If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
If the HDD interface controller supports ESDI, select "Type 1".
If the HDD interface controller supports SCSI, select "None".
If the HDD interface controller supports CD-ROM, select "None".

CYLS.	number of cylinders	LANDZONE	landing zone
HEADS	number of heads	SECTORS	number of sectors
PRECOMP	write precom	MODE	HDD access mode

If there is no hard disk drive installed, select NONE and press <Enter>.
● **Video**
Select the display adapter type for your system.
● **Halt On**
This item determines whether the system will halt or not, if an error is detected while powering up.

No errors	The system booting will halt on any errors detected. (default)
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error; it will stop for other errors.
All, But Diskette	The system booting will not stop for a disk error; it will stop for other errors.
All, But Disk/Key	The system booting will not stop for a keyboard or disk error; it will stop for other errors.

Press <Esc> to return to the Main Menu page.

5.6   Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.

```
           Phoenix - AwardBIOS CMOS Setup Utility
                   Advanced BIOS Features
  ► CPU Feature                   [Press Enter]      Item Help
  ► Removable Device Priority     [Press Enter]    Menu Level  ►
  ► Hard Disk Boot Priority       [Press Enter]
    Virus Warning                 [Disabled]
    External Cache                [Enabled]
    Quick Power On Shelf Test     [Enabled]
    First Boot Device             [Removable]
    Second Boot Device            [Hard Disk]
    Third Boot Device             [CDROM]
    Boot Other Device             [Enabled]
    Boot Up NumLock Status        [On]
    Security Option               [Setup]
    APIC Mode                     [Enabled]
    MPS Version Control For OS    [1.4]
    OS Select For DRAM>64MB       [Non-OS2]

 ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

● **CPU Feature**

Scroll to this item and press <Enter> to view the CPU Feature sub menu.
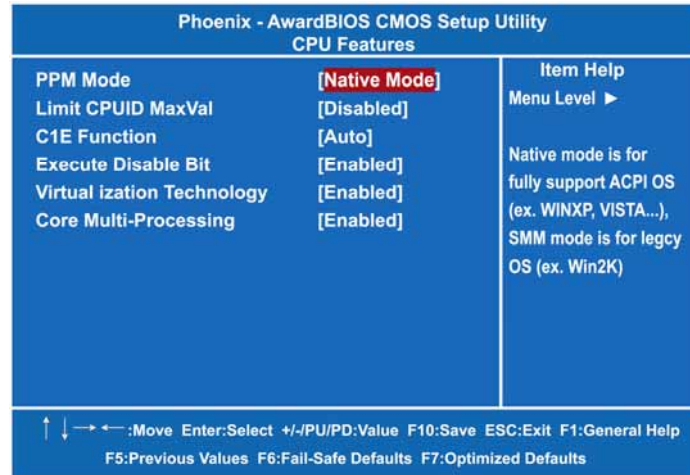
● **Removable Device Priority**

Scroll to this item and press <Enter> to view the sub menu to decide the removable device priority.
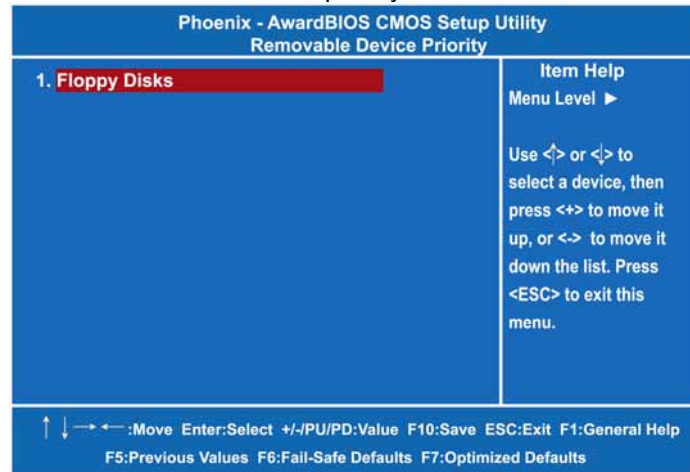
Press <Esc> to return to the Advanced BIOS Features page.

● **Hard Disk Boot Priority**
Scroll to this item and press <Enter> to view the sub menu to decide the disk boot priority.
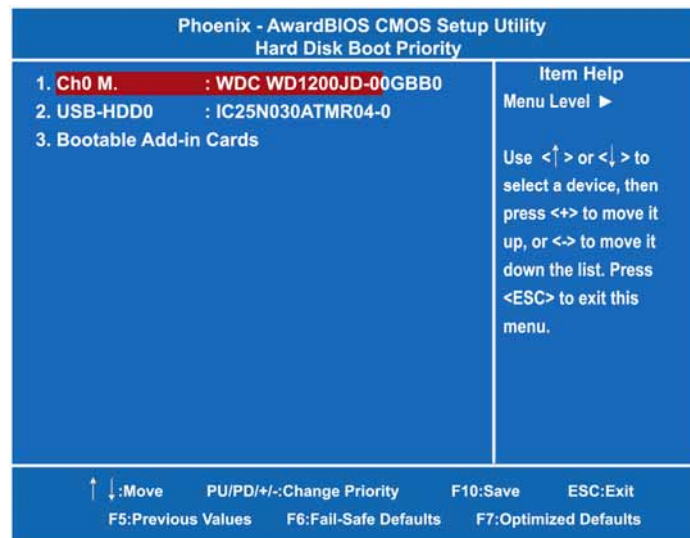
● **Virus Warning**
This option flashes on the screen. During and after the system boot up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system with the following message. You can run an anti-virus program to locate the problem. The default setting is "Disabled".

> *! WARNING !*
>
> *Disk boot sector is to be modified*
> *Type "Y" to accept write or "N" to abort write*
> *Award Software, Inc.*

Enabled	It automatically activates while the system boots up and a warning message appears for an attempt to access the boot sector or hard disk partition table.
Disabled	No warning message will appear for attempts to access the boot sector or hard disk partition table.

NOTE *This function is only available with DOS and other operating systems that do not trap INT13.*

● **External Cache**
The external cache is the cache that sits between the processor and the system memory.

● **Quick Power On Self Test**
This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is "Enabled".

Enabled	Enable Quick POST
Disabled	Normal POST

● **First/Second/Third Boot Device**
These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. There is a wide range of options for your selection.

● **Boot Other Device**
This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is "*Enabled*".

● **Boot Up NumLock Status**
Set the the Num Lock status when the system is powered on. The default value is *"On"*.

● **Security Option**
This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either.
Setup	If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied.

NOTE *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.*

● **APIC Mode**
Use this item to enable or disable APIC (Advanced Programmable
Interrupt Controller) mode that provides symmetric multi-
processing (SMP) for systems.

● **MPS Version Control For OS**
This item specifies the version of the Multiprocessor Specification
(MPS). Version 1.4 has extended configuration tables to improve
support for multiple PCI bus configurations and provide future
expandability.

Press <Esc> to return to the Main Menu page.

5.7   Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.

```
            Phoenix - AwardBIOS CMOS Setup Utility
                   Advanced Chipset Features

   DRAM Timing By SPD          [By SPD]           Item Help
   CAS Latency Time             Auto           Menu Level ►
   DRAM RAS# to CAS# Delay      Auto
   DRAM RAS# Precharge          Auto
   Precharge delay (tRAS)       Auto
   System Memory Frequency      By SPD
   System BIOS Cacheable       [Enabled]
   Memory Hole At 15M-16M      [Disabled]
 ► PCI Express Root Port Func   [Press Enter]
   VT-d                        [Disabled]

   ** VGA Setting **
   Onchip VGA Control          [Auto]
   On-Chip Frame Buffer Size   [ 8MB]
   DVMT Mode                   [DVMT]
   DVMT/FIXED Memory Size      [128MB]



↑ ↓ → ←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

- **DRAM Timing By SPD**
  Use this item to enable or disable the SDRAM timing, which can be defined by Serial Presence Detect.

- **CAS Latency Time**
  You can select CAS latency time to "HCLKs 2", "3", or "Auto". The board designer should have set up these values in accordance with the installed DRAM. Do not change these values unless you have to change the specifications of the installed DRAM or CPU.

- **DRAM RAS# to CAS# Delay**
  When DRAM is refreshed, both rows and columns are addressed separately. This field lets you insert a timing delay between the

CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed.

● **DRAM RAS# Precharge**
The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.

● **Precharge Delay <tRAS>**
The precharge time is the number of cycles it takes for DRAM to accumulate its charge before refresh.

● **System Memory Frequency**
This item helps you set main memory frequency. When using an external graphics card, it can be adjusted to enable the best performance for your system.

● **System BIOS Cacheable**
Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The default value is "Disabled".

● **Memory Hole At 15M-16M**
Enabling this feature reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB.

● **PCI Express Root Port Func**
Scroll to this item and press <Enter> to view the sub menu to decide the PCI Express Port.

```
            Phoenix - AwardBIOS CMOS Setup Utility
                   PCI Express Root Port Func

  PCI Express Port 1        [Auto]          Item Help
  PCI Express Port 2        [Auto]        Menu Level ►
  PCI Express Port 3        [Auto]
  PCI Express Port 4        [Auto]
  PCI Express Port 5        [Auto]
  PCI Express Port 6        [Auto]
  PCI-E Compliancy Mode     [ v1.0a]




  ↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
      F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults
```
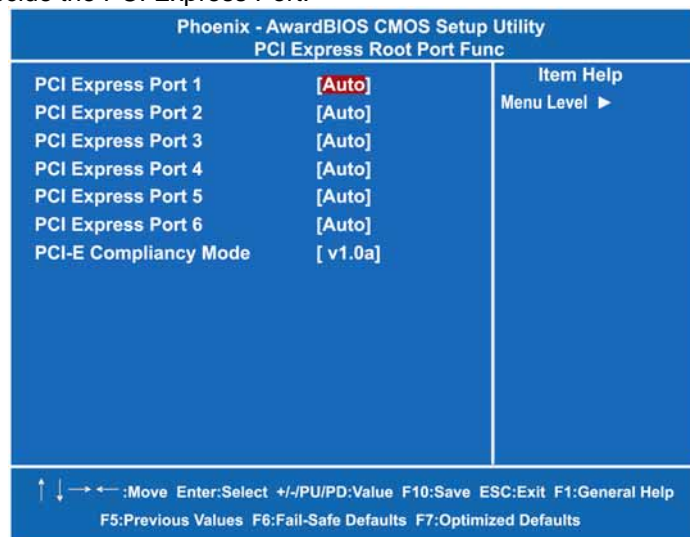
Press <Esc> to return to the Advanced Chipset Features page.

*** VGA Setting ***

● **Onchip VGA Control**
Use this item to choose the primary display card.

● **On-Chip Frame Buffer Size**
Use this item to set the VGA frame buffer size.

● **DVMT Mode**
DVMT (Dynamic Video Memory Technology) helps you select the video mode.

● **DVMT/Fixed Memory Size**
DVMT (Dynamic Video Memory Technology) allows you to select a maximum size of dynamic amount usage of the video memory. The system would configure the video memory dependent on your application.

Press <Esc> to return to the Main Menu page.

5.8 Integrated Peripherals

This section allows you to configure your SuperIO Device, IDE Function and Onboard Device.
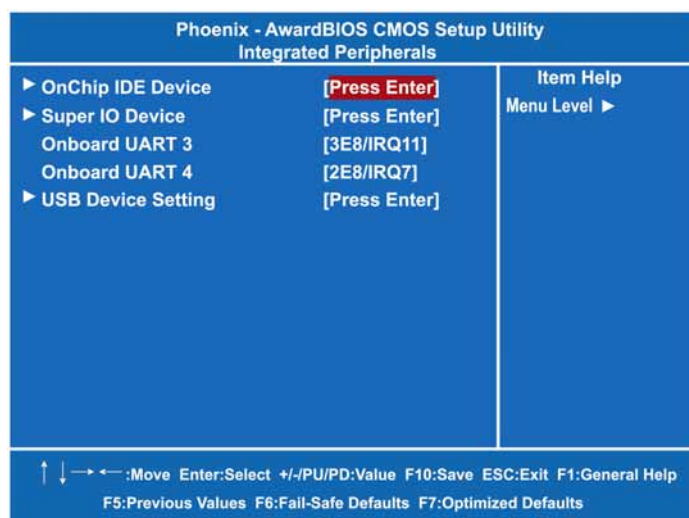
● **OnChip IDE Device**
Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.
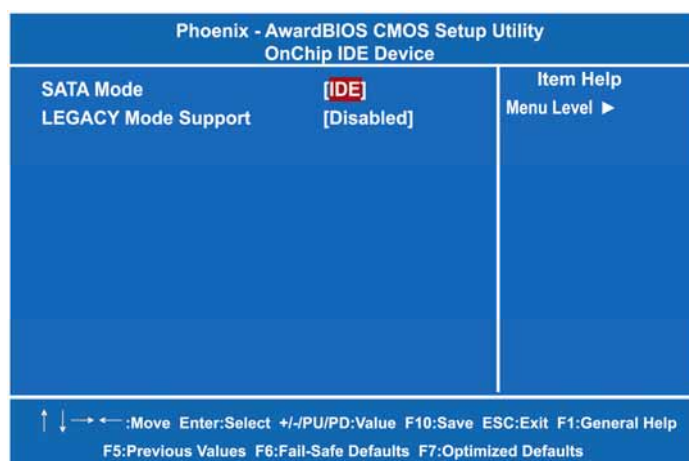
> **SATA Mode**
  There are these options for you to set up SATA mode: IDE, RAID or AHCI.
> **LEGACY Mode Support**
  Legacy mode support allows devices to function in an operating environment that is not USB-aware.

Press <Esc> to return to the Integrated Peripherals page.

● **Super IO Device**

Scroll to this item and press <Enter> to view the sub menu Super IO Device.
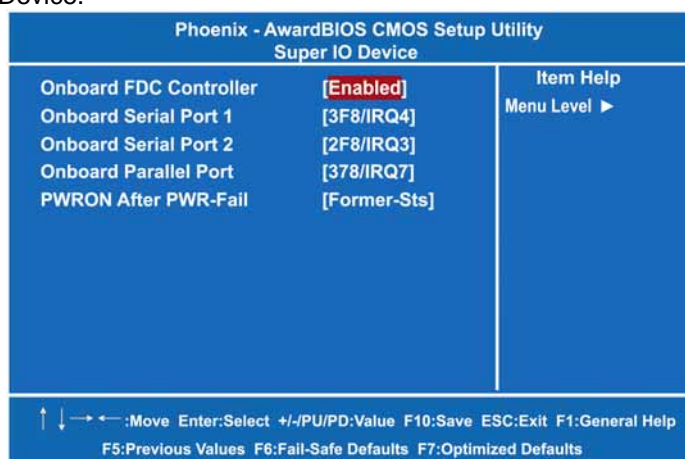
> **Onboard FDC Controller**
  Select Enabled, if your system has a floppy disk controller (FDC) installed on the system board and you want to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. Options: "*Enabled*" and "*Disabled*".
> **Onboard Serial Port 1/2**
  Select an address and corresponding interrupt for the serial port. Options: *3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.*
> **Onboard Parallel Port**
  This item allows you to determine access onboard parallel port controller with which I/O address. The options available

are 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled. *The 3BC option does not support any EPP modes.*

➢ **PWRON After PWR-Fail**
This item enables your computer to automatically restart or return to its operating status.

Press <Esc> to return to the Integrated Peripherals page.

● **USB Device Setting**

Scroll to this item and press <Enter> to view the sub menu USB Device Setting.

Press <Esc> twice to return to the Main Menu page.

5.9   Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.
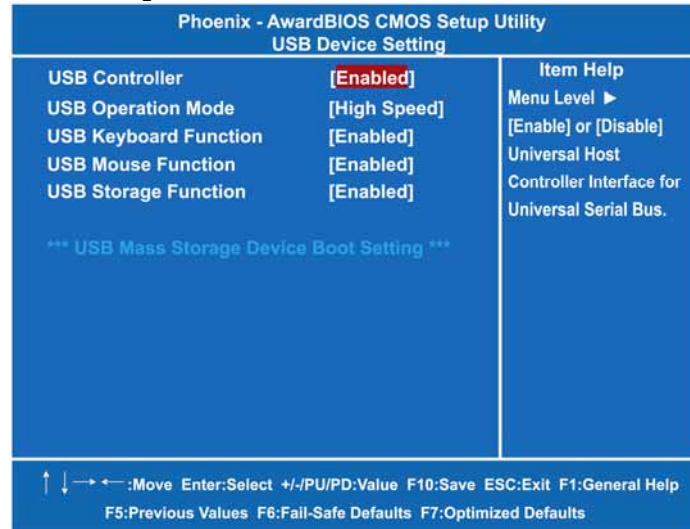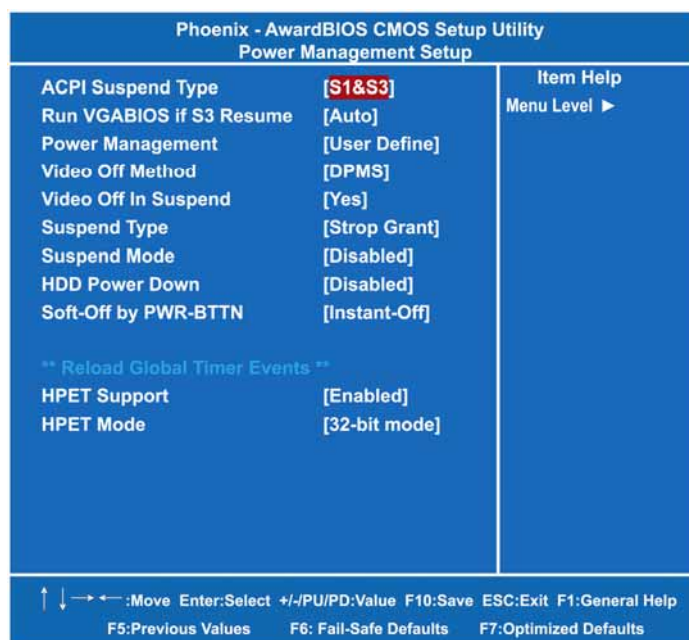
```
        Phoenix - AwardBIOS CMOS Setup Utility
               Power Management Setup

  ACPI Suspend Type          [S1&S3]          Item Help
  Run VGABIOS if S3 Resume    [Auto]          Menu Level ▶
  Power Management           [User Define]
  Video Off Method           [DPMS]
  Video Off In Suspend       [Yes]
  Suspend Type               [Strop Grant]
  Suspend Mode               [Disabled]
  HDD Power Down             [Disabled]
  Soft-Off by PWR-BTTN       [Instant-Off]

  ** Reload Global Timer Events **
  HPET Support               [Enabled]
  HPET Mode                  [32-bit mode]


  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5:Previous Values      F6: Fail-Safe Defaults    F7:Optimized Defaults
```

● **ACPI Suspend Type**
This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

[S1(POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system contexts.

[S3(STR)] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used

to restore the system when a "wake up" event occurs.

● **Run VGABIOS if S3 Resume**
When this item is set Auto, the system will run VGA BIOS if it is resumed from the S3 state.

● **Power Management**
This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The table below describes each power management mode:

Max Saving	It is maximum power savings, only available for SL CPUs. The inactivity period is 1 minute in each mode.
User Define	It sets each mode. Select time-out periods in the PM Timers section.
Min Saving	It is minimum power savings. The inactivity period is 1 hour in each mode (except the hard drive).
Disabled	Default value

● **Video Off Method**
This setting determines the manner in which the monitor is blanked.

V/H SYNC+Blank	Turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.
Blank Screen	System only writes blanks to the video buffer.

● **Video Off In Suspend**
This item defines if the video is powered down when the system is put into suspend mode.

● **Suspend Type**
If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.

● **Suspend Mode**
After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	System will never enter SUSPEND mode
1/2/4/6/8/10/2 0/30/40 Min/1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded

- **HDD Power Down**
  If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active.

- **Soft-Off by PWR-BTTN**
  This option only works with systems using an ATX power supply. It also allows the user to define which type of soft power OFF sequence the system will follow. The default value is "Instant-Off".

Instant-Off	This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF
Delay 4 Sec.	Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once.

- **Power On by Ring**
  This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is *"Enabled"*.

- **Resume by Alarm**
  If enable this item, the system can automatically resume after a fixed time in accordance with the system's RTC (realtime clock).

** Reload Global Timer Events **
Global Timer (power management) events can prevent the system from entering a power saving mode or can awaken the system from such a mode.

- **HPET Support**
  Use this item to enable or disable HPET (High Precision Event Timer), which is designed to have very fine-grained resolution, fast access times, and support for a periodic behavior.

● **HPET Mode**
Use this item to configure the HPET (High Precision Event Timer) mode.

Press <Esc> to return to the Main Menu page.

5.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.

● **Init Display First**
This item allows you to decide whether PCI Slot or AGP to be the first primary display card.

● **Reset Configuration Data**
Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a

serious conflict that the operating system can not boot. Options are: "*Enabled, Disabled*".

● **Resources Controlled By**
The Phoenix-Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is "*Manual*".

● **IRQ Resources**
When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:
   1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
   2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.
The default value is "*PCI/ISA PnP*".

● **DMA Resources**
When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:
Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel.
PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.
The default value is "*PCI/ISA PnP*".

● **PCI/VGA Palette Snoop**
Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

** PCI Express relative items **

● **Maximum Payload Size**
When using DDR SDRAM and Buffer size selection, another consideration in designing a payload memory is the size of the

buffer for data storage. Maximum Payload Size defines the maximum TLP (Transaction Layer Packet) data payload size for the device.

Press <Esc> to return to the Main Menu page.

5.11 PC Health Status

This section supports hardware monitoring that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.

```
           Phoenix - AwardBIOS CMOS Setup Utility
                      PC Health Status

   Current System1 Temp      39°C/102°F        Item Help
   Current CPU Temp          55°C/131°F      Menu Level  ►
   Current System2 Temp      40°C/104°F
   FAN1 Speed                0 RPM
   FAN2 Speed                0 RPM
   FAN3 Speed                1896 RPM
   Vcore                     1.16 V
    + 3.3 V                  3.26 V
    + 12 V                   11.77 V
    5VSB (V)                 4.99 V
    VCC (V)                  5.02V
    VBAT (V)                 3.15V




   ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

● **Current SYSTEM1/2 Temperature**
  Show you the current system1/2 temperature.

● **Current CPU Temperature**
  These read-only fields show the functions of the hardware thermal sensor by CPU thermal diode that monitors the chip blocks to ensure a stable system.

● **FAN1/2/3 Speed**
   Show you the current system fan1/2/3 speed.

● **Vcore +3.3V/+5V/+12V/VBAT(V)/5VSB**
   Show you the voltage of +3.3V/+5V/+12V.

Press <Esc> to return to the Main Menu page.

5.12 Frequency/Voltage Control

This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.
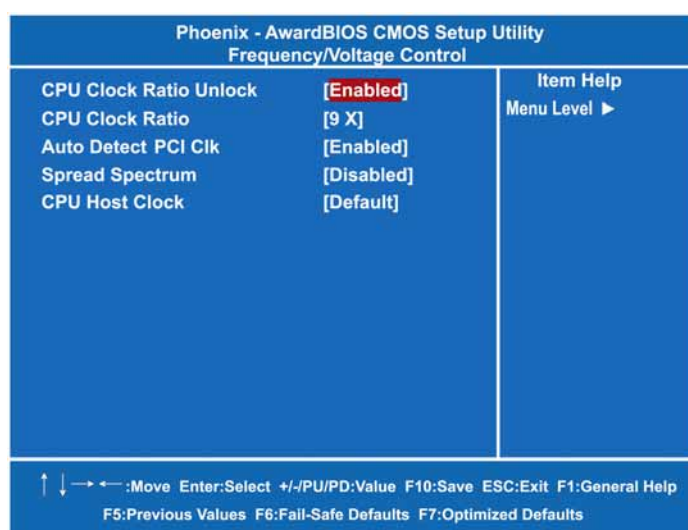

● **CPU Clock Ratio Unlock**
   Use this item to unlock CPU multiplier.

● **CPU Clock Ratio**
   Use this item to select the CPU's frequency.

● **Auto Detect PCI Clk**
   The enabled item can automatically disable the clock source for a PCI slot without a module, to reduce EMI (ElectroMagnetic Interference).

● **Spread Spectrum**
   If spread spectrum is enabled, EMI (ElectroMagnetic Interference) generated by the system can be significantly reduced.

● **CPU Host Clock**
   Use this item value to setup CPU frequency value.

Press <Esc> to return to the Main Menu page.

5.13 Load Fail-Safe Defaults

When you press <Enter> on this item, a confirmation dialog box pops out to show you such a message:
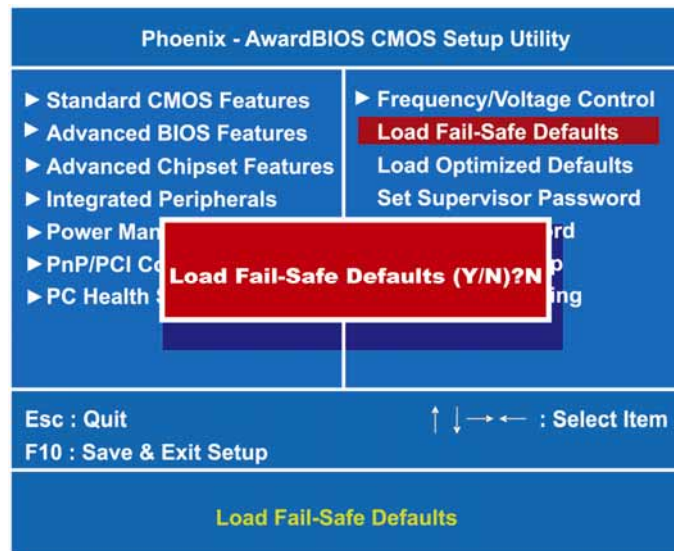
Please press "Y" to load default values that will be factory settings for accomplishing the optimal performance of system operations.

5.14 Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.
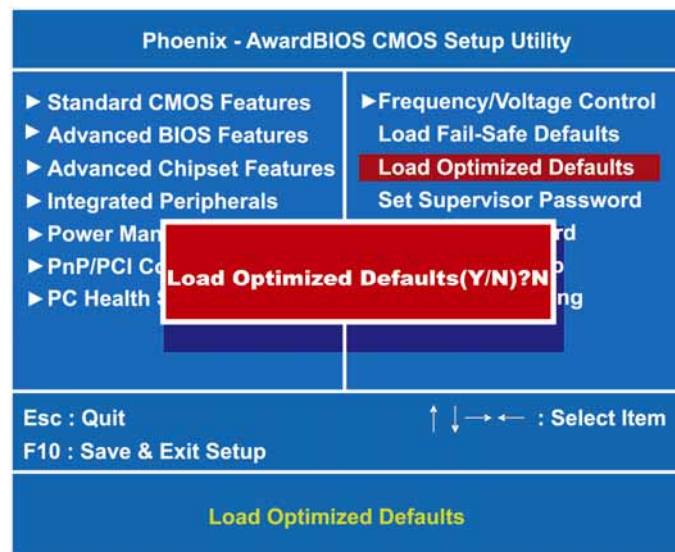
To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

5.15 Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **User password:** You can just enter, but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

5.16 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.
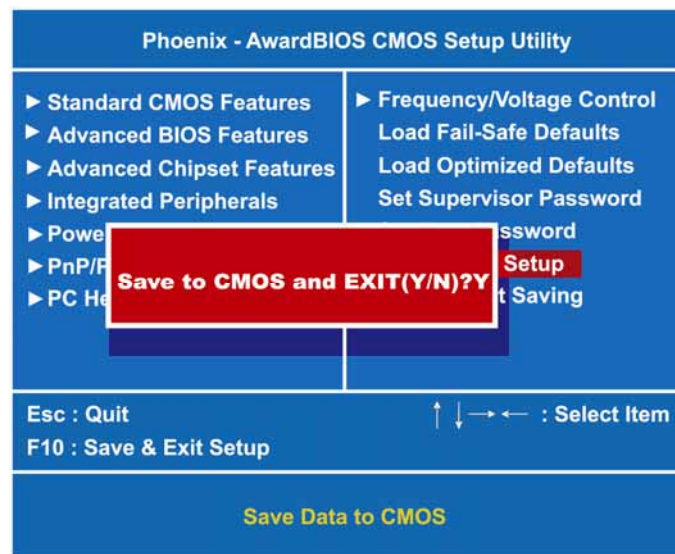
5.17 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type "Y", and it will quit the Setup utility without saving your modifications. Type "N" to return to the Setup utility.
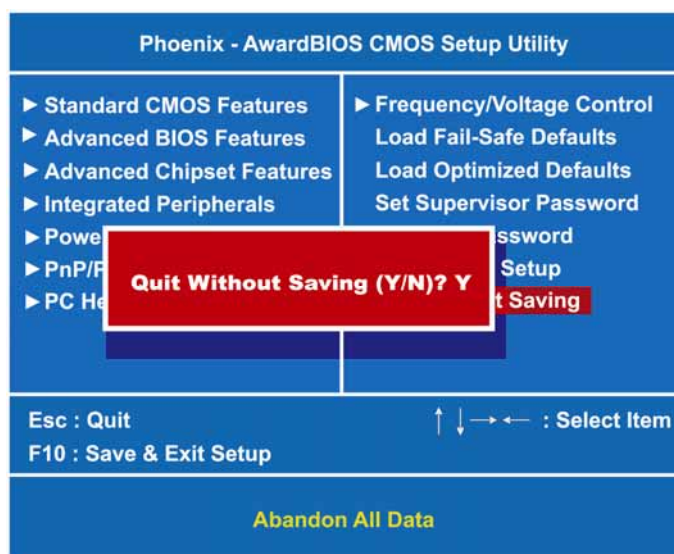
CHAPTER 6
INSTALLATION OF DRIVERS

The device drivers are located on the Product Information CD-ROM that comes with the IMB202 Series package. The auto-run function of drivers will guide you to install the utilities and device drivers under a Windows system. You can follow the onscreen instructions to install these devices:

- Chipset
- VGA
- LAN
- Audio

6.1   Installing Chipset Driver

1.   Run the SETUP.EXE program from the driver directory in your driver CD. Click "Next" to next step.

2. An Intel® License Agreement appears to show you the important information. Click "Yes" to next step.

3. Please wait while running the following setup operations.

(3-1)

(3-2)

4. Click "Finish" to complete the setup process.

5. You will be asked to reboot your computer when the installation is completed. Please click "Yes, I want to restart my computer now" if you don't need to install any other drivers. Otherwise, please click "No, I will restart my computer later", and go on next step.

6.2 Installing VGA Driver

1. Run the SETUP.EXE program from the driver directory in your driver CD. Click "Next" to next step.
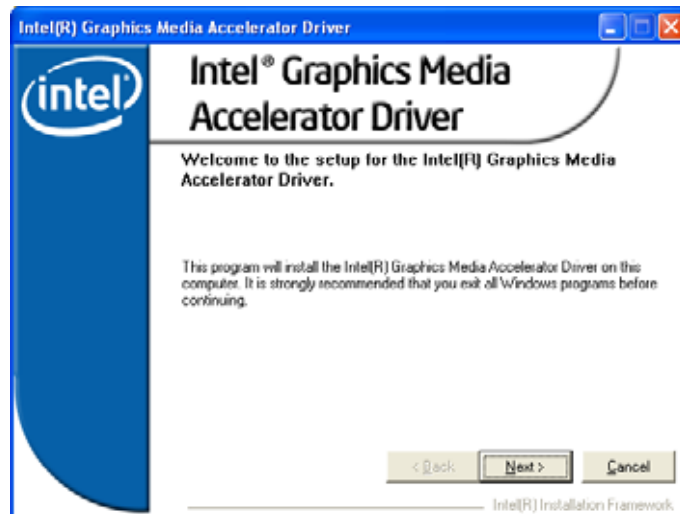
2. An Intel® License Agreement appears to show you the important information. Click "Yes" to next step.

3. The message of Readme File Information appears to show you the system requirements and installation information. Please click "Next".
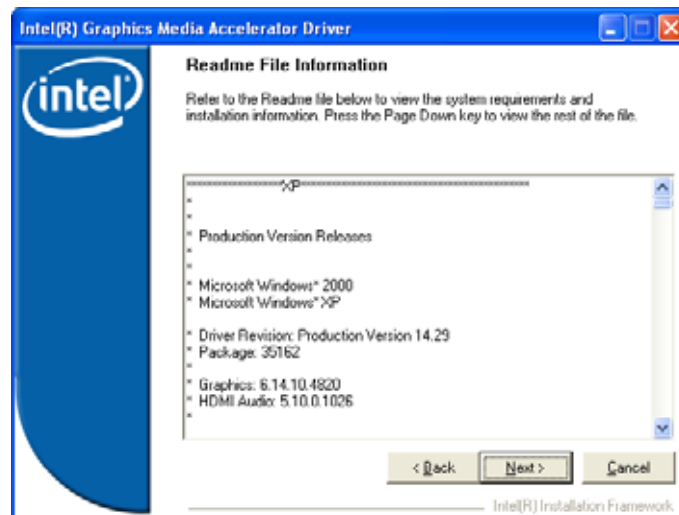
4. Please wait while running the following setup operations.
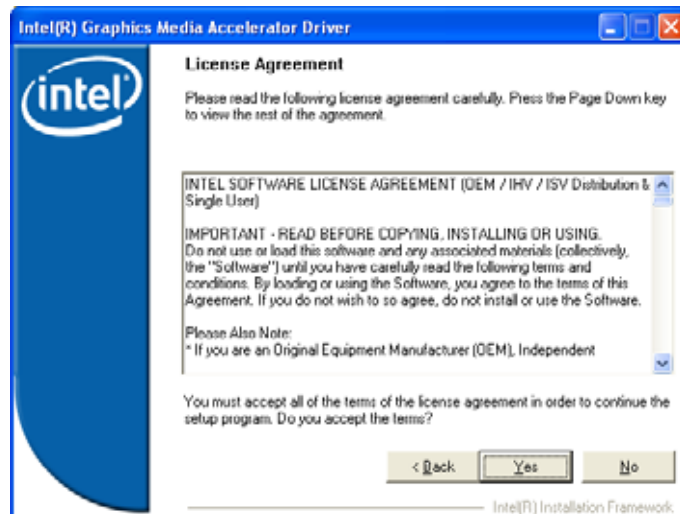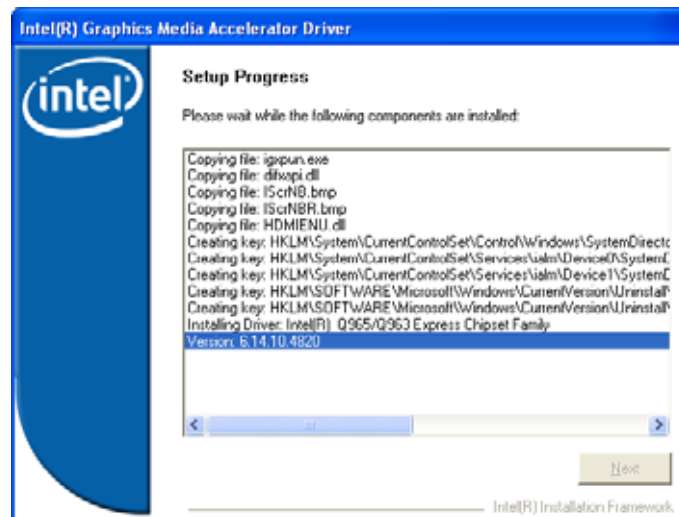

5. When this message appears, please click "Next".
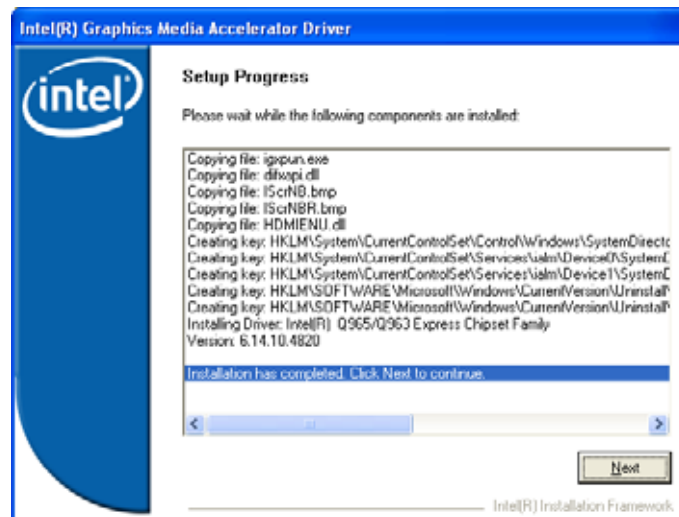
6. You will be asked to reboot your computer when the installation is completed. Please click "Yes, I want to restart my computer now" if you don't need to install any other drivers. Otherwise, please click "No, I will restart my computer later", and click "Finish" to complete the installation.
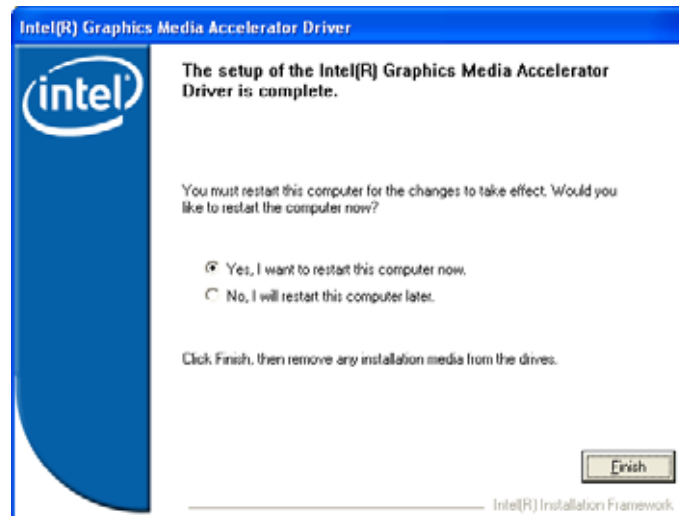
6.3 Installing LAN Driver

1. Run the InstallShield Wizard for Ethernet from the driver directory in your driver CD. Click "Next" to next step.
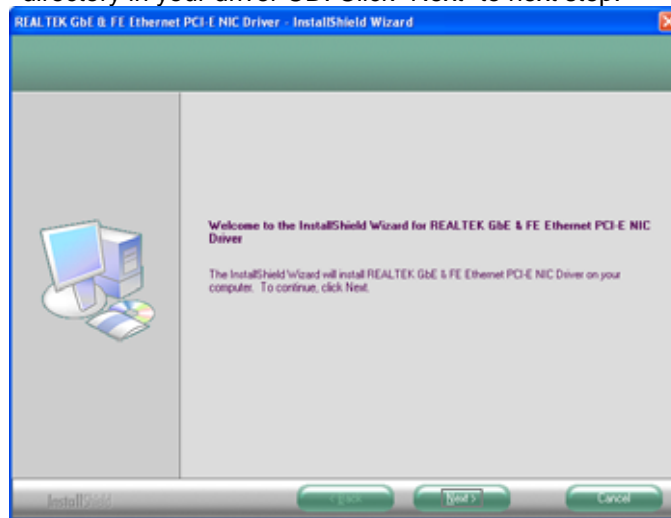
2. Click "Install" to start the installation.
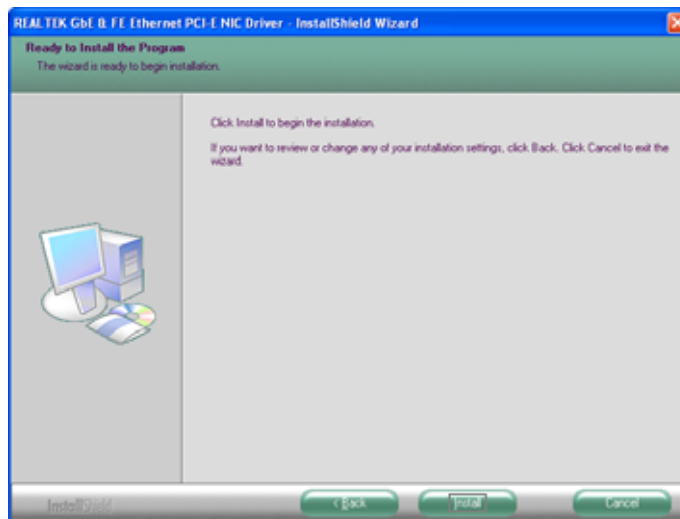
3.   Please wait while running the following installation operation.
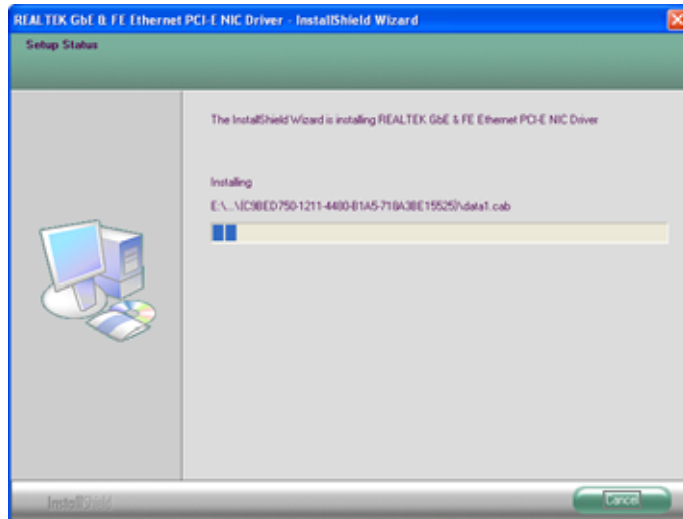
4.   Click "Finish" to complete the installation.
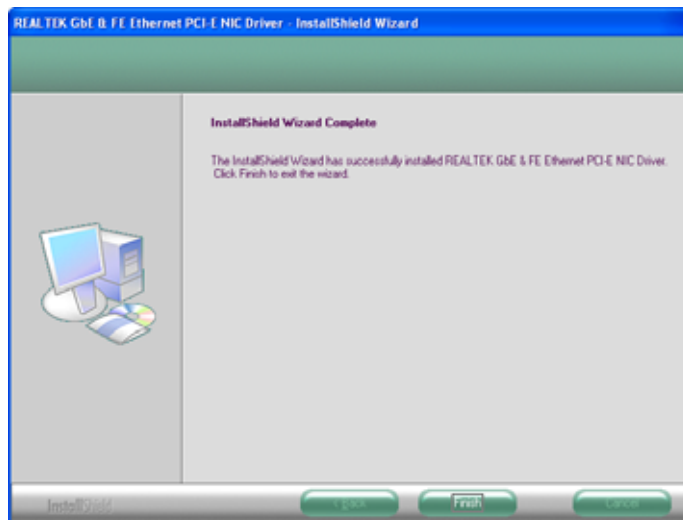
MEMO

APPENDIX A
WATCHDOG TIMER

Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start

↓

Un-Lock WDT   **:O 2E 87 ; Un-lock super I/O**
                                   O 2E 87 ; Un-lock super I/O

↓

Set WDT Function
                                   O 2E 2D
                                   O 2F 20

Select Logic device
                                   O 2E 07
                                   O 2F 08

↓

Activate WDT   **:O 2E 30**
                                   O 2F 01

Set Second or Minute
                                   O 2E F5
                                   O 2F N   N=00 or 08(See below table)

↓

Set base timer   **:O 2E F6**
                                   O 2F M=00,01,02,…FF(Hex) ,Value=0 to
       255

↓

WDT counting

re-set timer   **:O 2E F6**
                                   O 2F M ; M=00,01,02,…FF(See below
table)

↓

IF No re-set timer   **:WDT time-out, generate RESET**

IF to disable WDT   **:O 2E 30**
                                       O 2F 00 ; Can be disable at any time

N=00

M= 00h: Time-out Disable
    01h: Time-out occurs after 1 second
    02h: Time-out occurs after 2 second
    03h: Time-out occurs after 3 second
…………………….....................................
    FFh: Time-out occurs after 255 second

N=08

M= 00h: Time-out Disable
    01h: Time-out occurs after 1 minute
    02h: Time-out occurs after 2 minutes
    03h: Time-out occurs after 3 minutes
…………………….....................................
    FFh: Time-out occurs after 255 minutes

APPENDIX B
CONFIGURING SATA FOR RAID FUNCTION

Configuring SATA Hard Drive(s) for RAID Function (Controller: Intel® ICH9R/DO only)

Please follow up the steps below to configure SATA hard drive(s):
(1) Install SATA hard drive(s) in your system.
(2) Enter the BIOS Setup to configure SATA controller mode and boot sequence.
(3) Configure RAID by the RAID BIOS.
(4) Create a floppy disk for the SATA controller driver.
(5) Install the SATA controller driver during the OS installation.

Before you begin the SATA configuration, please prepare:
(a) Two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID with the SATA controller, you may prepare only one hard drive.
(b) An empty formatted floppy disk
(c) Windows XP setup disk

(1) Installing SATA hard drive(s) in your system
Connect one end of the SATA signal cable to the rear of the SATA hard drive, and the other end to available SATA port(s) on the board. Then, connect the power connector of power supply to the hard drive.

(2) Configuring SATA controller mode and boot sequence by the BIOS Setup
You have to make sure whether the SATA controller is configured correctly by system BIOS Setup and set up BIOS boot sequence for the SATA hard drive(s).

(IMB202 LGA775 ATX Board User's Manual)

(2)-1 Turn on your system and press the Del button to enter BIOS
Setup during running POST (Power-On Self Test). If you want
to create RAID, just select **RAID** for **SATA Mode** (default **IDE**)
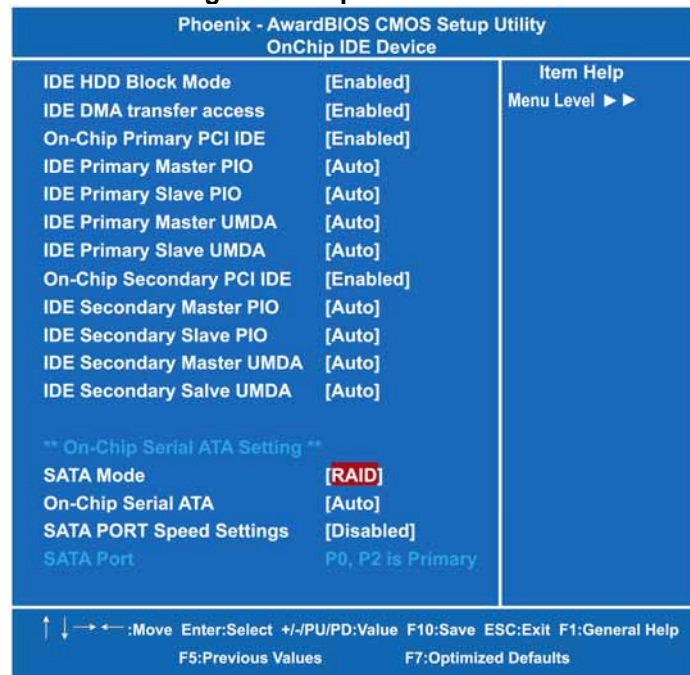under the **Integrated Peripherals** menu.

Figure 1

(2)-2   Set **CDROM** for **First Boot Device** under the **Advanced BIOS Features** menu to boot CD-ROM after system restarts (Figure 2).

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

		Item Help
► CPU Feature	[Press Enter]	Menu Level ►
► Hard Disk Boot Priority	[Press Enter]	
CPU L1 & L2 Cache	[Enabled]	
Quick Power On Shelf Test	[Enabled]	Select Your Boot
First Boot Device	[CDROM]	Device Priority
Second Boot Device	[Hard Disk]	
Third Boot Device	[LS120]	
Boot Other Device	[Enabled]	
Onboard Lan Boot ROM	[Disabled]	
Swap Floppy Drive	[Disabled]	
Boot Up Floppy Seek	[Disabled]	
Boot Up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
Typematic Rate (Chars/Sec)	6	
X Typematic Delay (Msec)	250	
X Security Option	[Setup]	
APIC Mode	[Enabled]	
MPS Version Control For OS	[1.4]	

↑ ↓ → ← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
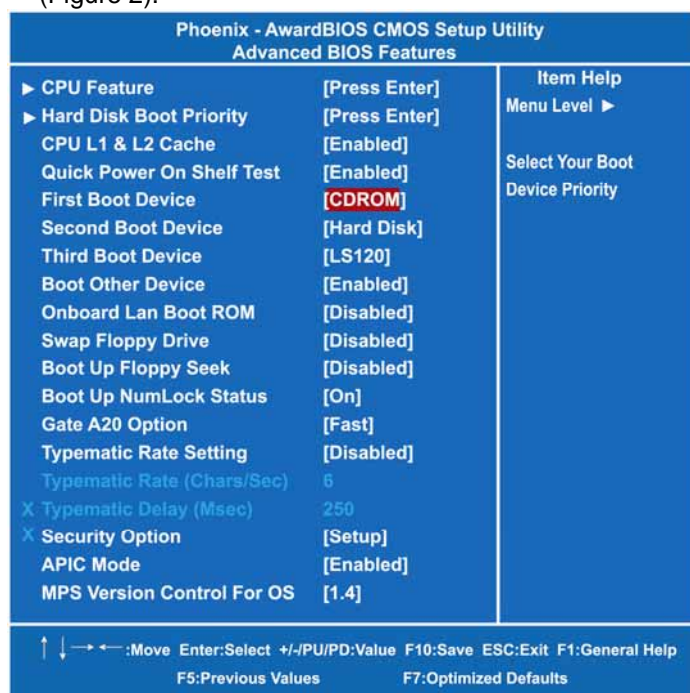F5:Previous Values   F7:Optimized Defaults

Figure 2

(2)-3   Save and exit the BIOS Setup.

(3) Configuring RAID by the RAID BIOS
Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed to Section 4 if you do not want to create a RAID.

(3)-1 After the POST memory testing and before the operating system booting, a message "*Press <Ctrl-I> to enter Configuration Utility*" (as Figure 3) shows up, accordingly, press <CTRL+ I> to enter the RAID BIOS setup utility.

Figure 3

(3)-2 After you press <CTRL+ I>, the **Create RAID Volume** screen will appear (as Figure 4). If you want to create a RAID array, select the **Create RAID Volume** option in the Main Menu and press ENTER.
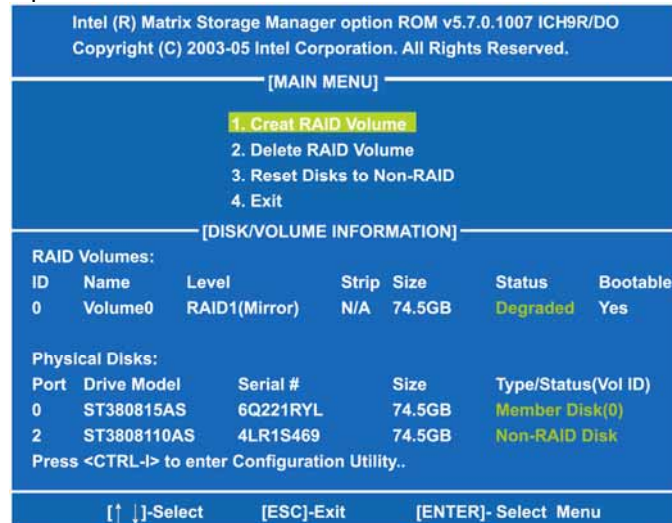

Figure 4

(3)-3   After entering the **CREAT VOLUME MENU** screen, you can
type the disk array name with 1~16 letters (letters cannot be
special characters) in the item "Name". When finished, press
ENTER to select a RAID level (as Figure 5). There are three
RAID levels, RAID0, RAID1 and RAID5&RAID10. Select a
RAID level and press ENTER.
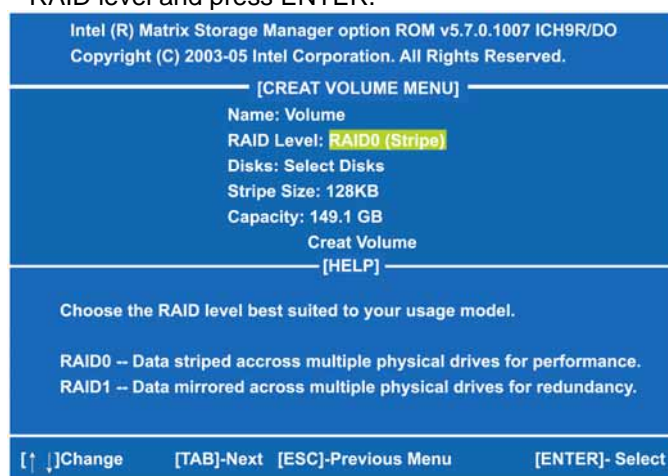

Figure 5

(3)-4   Set the stripe block size (as Figure 6). The *KB* is the standard
unit of stripe block size. The stripe block size can be 4KB to
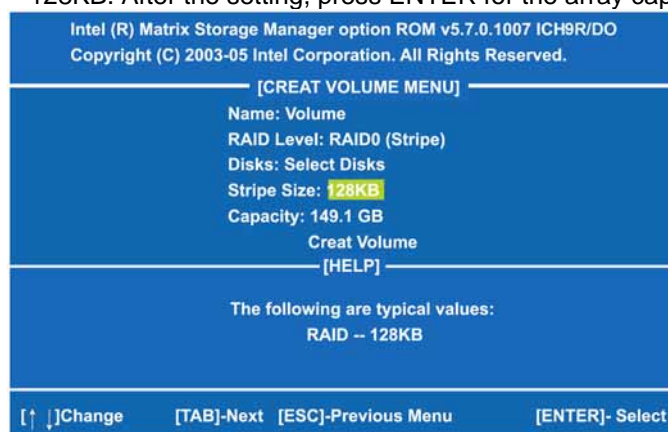128KB. After the setting, press ENTER for the array capacity.

Figure 6

(3)-5 After setting all the items on the menu, select **Create Volume** and press ENTER (as Figure 7) to start creating the RAID array.
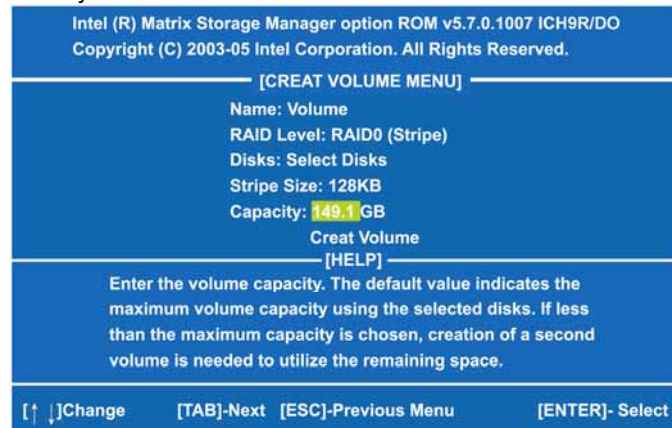

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH9R/DO
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.

======== [CREAT VOLUME MENU] ========
Name: Volume
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
Creat Volume
======== [HELP] ========
Enter the volume capacity. The default value indicates the maximum volume capacity using the selected disks. If less than the maximum capacity is chosen, creation of a second volume is needed to utilize the remaining space.

[↑ ↓]Change   [TAB]-Next [ESC]-Previous Menu   [ENTER]- Select

Figure 7

(3)-6 When prompting the confirmation, press "*Y*" to create this volume, or "*N*" to cancel the creation.

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH9R/DO
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.

======== [CREAT VOLUME MENU] ========
Name: Volume
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB

WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.
Are you sure you want to creat this volume? (Y/N):

Press "Enter" to Creat the specified volume.

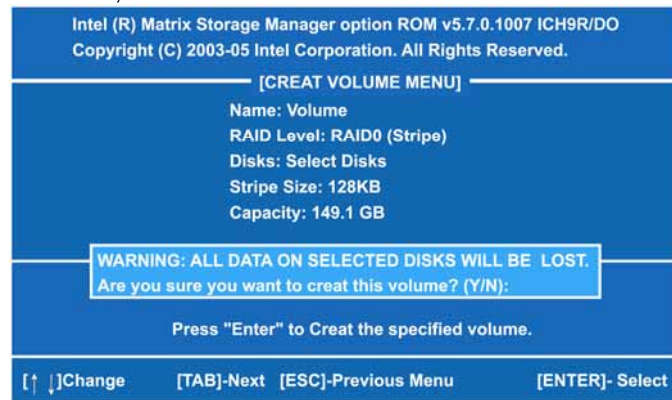[↑ ↓]Change   [TAB]-Next [ESC]-Previous Menu   [ENTER]- Select

Figure 8

After the creation is completed, you can see detailed information about the RAID Array in the DISK/VOLUME INFORMATION section, including RAID mode, disk block size, disk name, and disk capacity.
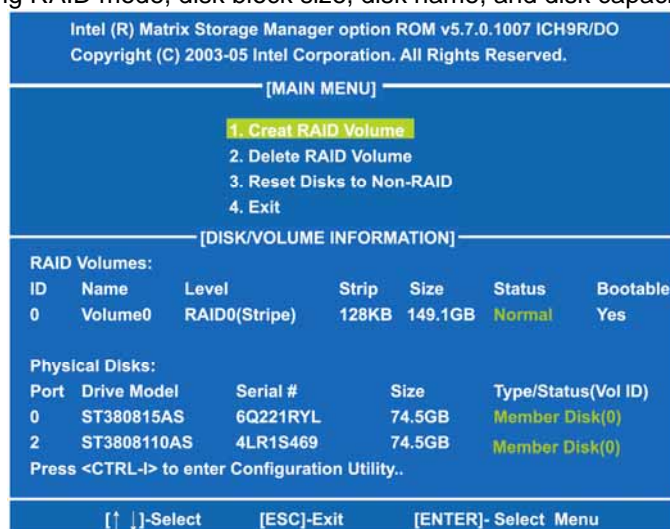

Figure 9

Delete RAID Volume

If you want to delete a RAID volume, select the **Delete RAID Volume** option in Main Menu. Press ENTER and follow on-screen instructions.
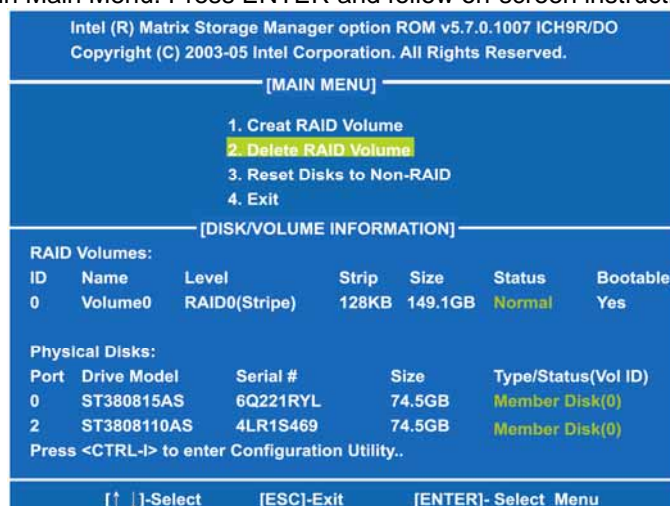

Figure 10

Please press [ESC] to exit theICH9R RAID BIOS utility.

Now, you can proceed to install a SATA driver controller and the operating system.

(4) Making a SATA Driver Disk
To install the operating system onto a serial ATA hard disk successfully, you need to install the SATA controller driver during the OS installation. Without the driver, the hard disk may not be recognized during the Windows setup process. First of all, please format a blank floppy disk. Secondly, follow up these steps below to produce a SATA driver disk.
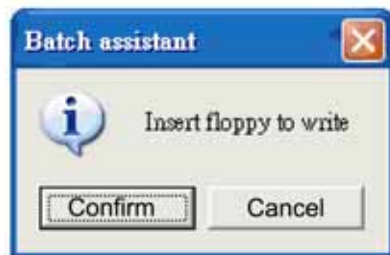
(4)-1   Users can insert the Driver CD and the formatted blank floppy disk in another system. And then, please execute the f6flpy32.exe file in the folder of the Driver CD.

> ***Note***   *Please execute the f6flpy64.exe file, if installing 64-bit Windows Operating System.*
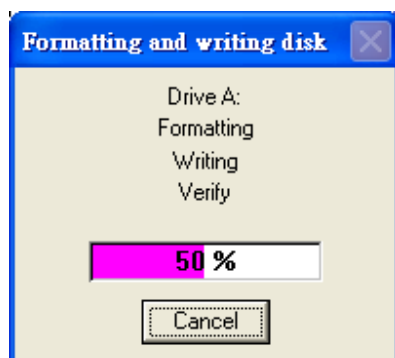

f6flpy32.exe

(4)-2   When this screen pops out, please click the "**CONFIRM**" button.

(4)-3   When the RAID Driver is written to the floppy disk, the SATA
             driver disk is completed.

> *Note*   *Please execute the f6flpy64.exe file, if installing 64-bit*
>   *Windows Operating System.*

(5) Installing the SATA controller driver during the OS installation
Now, the SATA driver disk is ready, and BIOS settings configured, you
can proceed to install Windows 2000/XP onto your SATA hard drive
using the SATA driver. Here is an example for Windows XP installation.

(5)-1 Restart your system to boot the Windows 2000/XP Setup disk, and press F6 button as soon as you see the message "*Press F6 if you need to install a 3rd party SCSI or RAID driver*" (as Figure 11). After pressing the F6 button, there will be a few moments for some files being loaded before next screen appears.
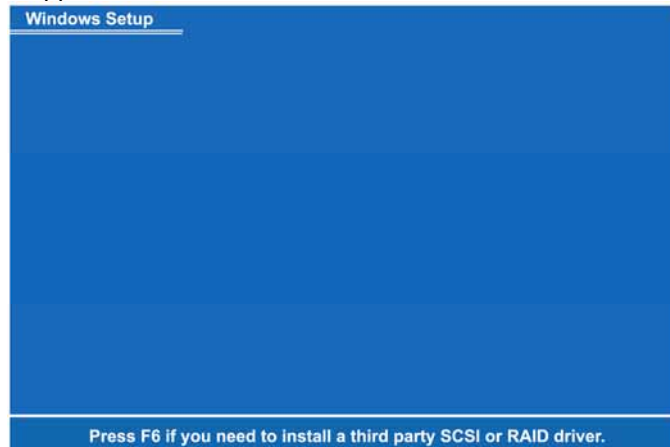

Figure 11

(5)-2 When you see the screen below, insert the floppy disk containing the SATA driver and press "*S*" (as Figure 12).

Figure 12

(5)-3 If the Setup correctly recognizes the driver of the floppy disk, a controller menu (as Figure 13) will appear below. Use the ARROW keys to select **Intel(R) 82801IR/ IHO SATA RAID Controller** and press ENTER**.** Then it will begin to load the SATA driver from the floppy disk.
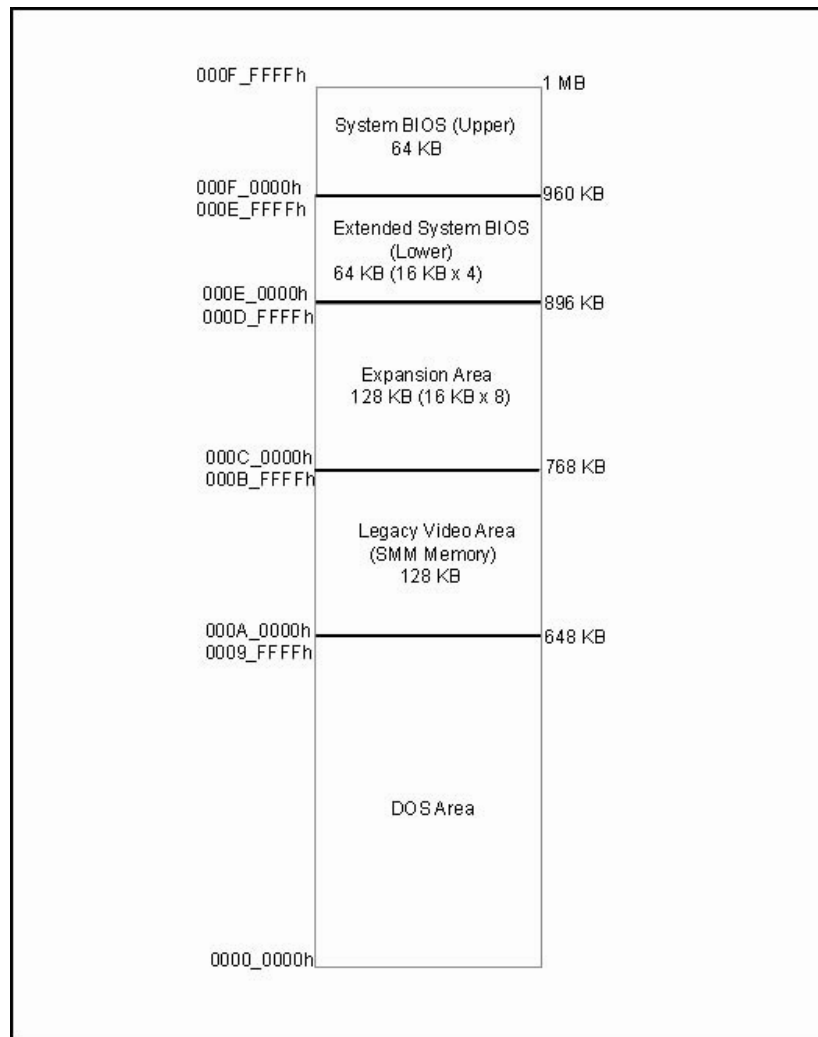

Figure 13

Note If a message on the screen saying that one or some file(s) cannot be found, please check the floppy disk or copy the correct SATA driver again from the driver CD.

MEMO

APPENDIX C
MEMORY I/O ADDRESS

MEMO

APPENDIX D
DIGITAL I/O

Digital I/O Software Programming

Program Sample

GPI	GPO
O 4E 87	O 4E 87
O 4E 87	O 4E 87
O 4E 2A	O 4E 2A
O 4F FC	O 4F FC
O 4E 07	O 4E 07
O 4F 07	O 4F 07
O 4E 30	O 4E 30
O 4F 01	O 4F 01
O 4E F0	O 4E F0
O 4F F0	O 4F F0
O 4E F1	O 4E F1
I 4F	O 4F 0M (Note)

Pin	Description	Pin	Description
1	Out-1	2	In-1
3	Out-2	4	In-2
5	Out-3	6	In-3
7	Out-4	8	In-4
9	GND	10	GND

Digital Input				Digital Output			
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
In-1	In-2	In-3	In-4	Out-1	Out-2	Out-3	Out-4

Note

status	Out-1	Out-2	Out-3	Out-4
M=0	0	0	0	0
M=1	0	0	0	1
M=2	0	0	1	0
M=3	0	0	1	1
M=4	0	1	0	0
M=5	0	1	0	1
M=6	0	1	1	0
M=7	0	1	1	1
M=8	1	0	0	0
M=9	1	0	0	1
M=A	1	0	1	0
M=B	1	0	1	1
M=C	1	1	0	0
M=D	1	1	0	1
M=E	1	1	1	0
M=F	1	1	1	1