AXIOMTEK

SBC81206 Series

**Intel® Core™ 2 Duo/ Pentium® D/
Pentium® 4/ Celeron® Processor
All-In-One**

PICMG 1.0 Full-Size Single Board Computer

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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CHAPTER 1
INTRODUCTION

The **SBC81206** PICMG 1.0 full-size Single Board Computer supports Intel® Core™ 2 Duo, Intel® Celeron® 400 Series, Intel® Pentium® 4 processor in the LGA775 Land Grid Array package or Intel® Pentium® D processor (supports 775-Land package) at FSB 533/800 MT/s (133/200 MHz). The board integrates chipsets Intel® 945GC and ICH7/7R (Optional) that deliver outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are two 240-pin unbuffered DIMM sockets for dual channel DDR2-400/533/667 MHz memory, maximum memory capacity up to 2GB. It also features Gigabit/Fast Ethernet, four serial ATA channels for total four Serial ATA hard drives at maximum transfer rate up to 300MB/sec, and six USB 2.0 high speed compliant.

1.1 Specifications

- **CPU**
    - **Intel® Core™ 2 Duo, Celeron® 400 series , Pentium® 4 processor in the LGA775 Land Grid Array package and Pentium® D processor (supports 775-Land package)**

- **System Chipset**
    - **Intel® 945GC & ICH7/7R(Optional)**

- **CPU Socket**
    - **LGA775**

- **Front-Side Bus**
    - **533/800 MT/s (133/200 MHz)**

- **BIOS**
    - Phoenix-Award BIOS, Y2K compliant
    - 8Mbit FWH Flash, DMI, Plug and Play
    - "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail

- **System Memory**
    - Two 240-pin unbuffered DDR2 DIMM sockets
    - Maximum to 2GB DDR2 400/533/667 MHz memory

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

- **USB Interface**
    - Six USB ports with fuse protection and complies with USB Spec. Rev. 2.0

- **Display**
    - Chipset Integrated VGA Controller and Supports up to 2048x1536 at 75 Hz resolution on non-interlaced CRT

monitors via 15-pin D-Sub connector on the edge

- **Watchdog Timer**
  - 1~255 seconds; up to 255 levels

- **Ethernet**
  - The LAN1/LAN2: Dual port with RTL8111B for Gigabit/Fast Ethernet
  - Via PCI Express x1 bus
  - Wake-on-LAN support

- **Serial ATA**
  - Built-in four SATA/SATA II ports onboard support the maximum transfer rate up to 3.0 Gb/sec and SATA RAID 0/1/5/10 by ICH7R

- **Hardware Monitoring**
  - Monitoring temperatures, voltages, and cooling fan status

- **Dimensions:** 338 x 122 mm (6 layers)

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

1.2 Utilities Supported

● Chipset Driver
● Ethernet Driver
● Graphic Driver
● Intel Matrix Storage manager

1.3 I/O Bracket

CHAPTER 2
JUMPERS AND CONNECTORS

2.1 Board Dimensions and Fixing Holes
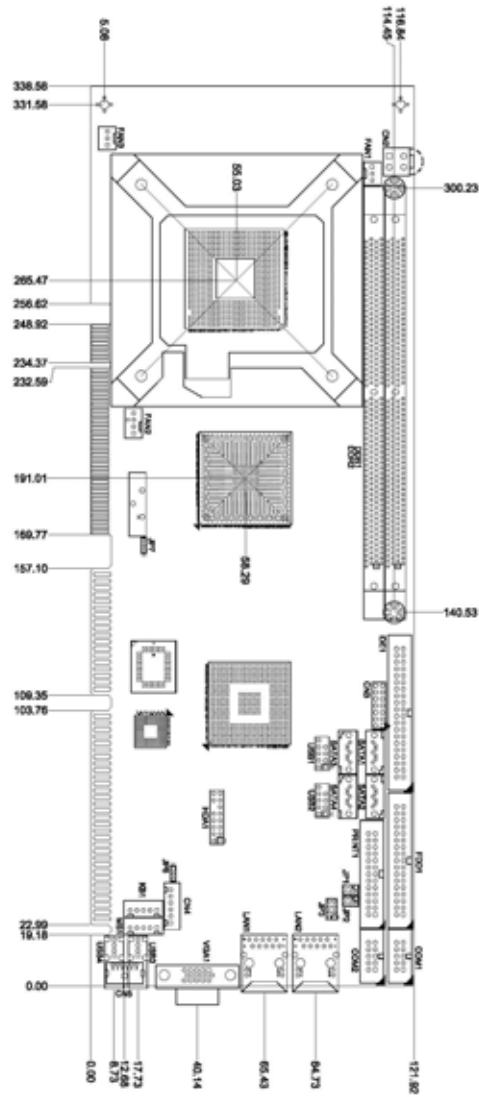
2.2 Board Layout
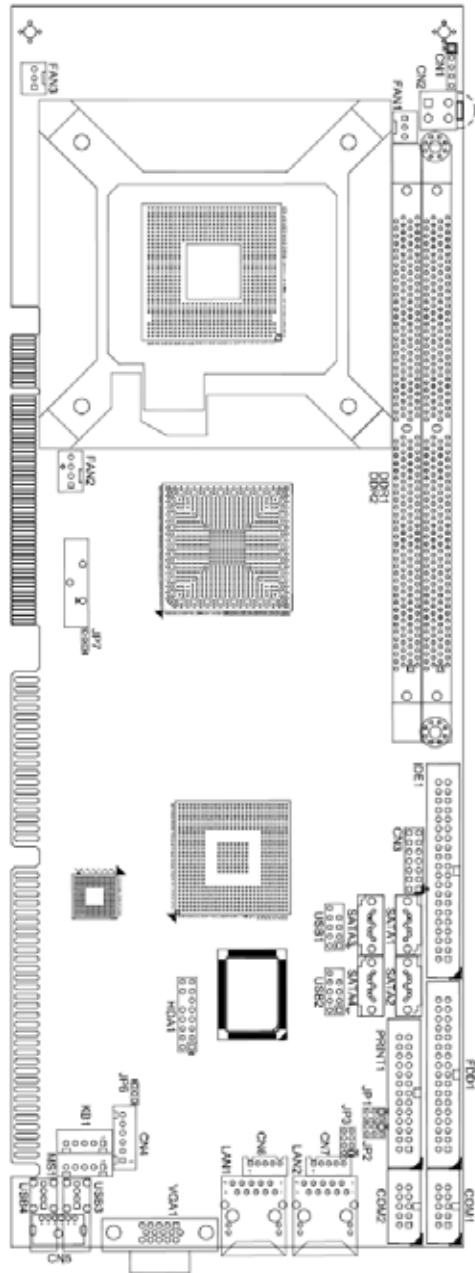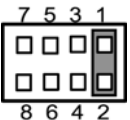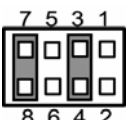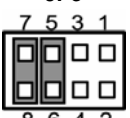
2.3   Jumper Settings

Proper jumer settings configure the **SBC81206** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Jumper	Default		Setting
JP1	COM2 Mode Select	COM2 Pin 1: DCD	Short 3-5
		COM2 Pin 8: RI	Short 4-6
JP2	COM2 Mode Select	COM2 Pin 1: DCD	Short 3-5
		COM2 Pin 8: RI	Short 4-6
JP3	COM2 Mode Select : RS-232		Short 1-2
JP6	ATX Auto Power On/Off : Disable		Short 1-2
JP7	Clear CMOS Setting : Normal		Short 1-2
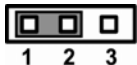
2.3.1　COM2 Mode Select for Type Jumpers (JP1, JP2, JP3)

These jumpers select the COM2 port's communication mode to operate RS-232 or RS-422/485.

Description	Function	Jumper Setting		
COM2 Mode Select	RS-232 (Default)	JP3	JP2	JP1
	RS-422	JP3	JP2	JP1
	RS-485	JP3	JP2	JP1

2.3.2   ATX Auto Power On/Off (JP6)

When Jumper JP6 is set 2-3 short for AC power input, the system will be automatically power ON without pressing soft power button; when JP6 is 1-2 short for AC power input, it is necessary to manually press soft power button to make the system power ON.
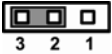
Description	Function	Jumper Setting
ATX Auto Power On/Off	Disable (Default)	1 2 3
	Enable	1 2 3

📎 ***Note***   *This function is similar to the feature of Power on after Power Failed, which is controlled by hardware circuitry instead of BIOS.*

2.3.3   CMOS Clear Jumper (JP7)

You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	3 2 1
	Clear CMOS	3 2 1
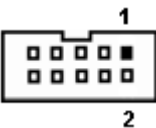
2.4   Connectors

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 **SBC81206** Series.

Connector	Label	Connector	Label
SM BUS Connector	CN1	LAN1 Link/Active & Speed LED Connector	CN6
LAN2 Link/Active & Speed LED Connector	CN7	USB Port2 Connector	USB4
ATX 4 Pin 12V In	CN2	LAN1 Connector	LAN1
Front Panel Connector	CN3	LAN2 Connector	LAN2
AXIOMTEK ACPI Connector	CN4	VGA Connector	VGA1
PS/2 KB/MS Connector (Optional)	CN5	DDRII Long-DIMM Sockets	DDR1~2
Parallel IDE Connector	IDE1	System FAN Connector 1	FAN1
Floppy Connector	FDD1	CPU FAN Connector	FAN2
Printer Port Connector	PRINT1	System FAN Connector 2	FAN3
Serial Port1 Connector	COM1	Internal PS/2 Keyboard Connector	KB1
Serial Port2 Connector	COM2	Internal PS/2 Mouse Connector	MS1
USB Port4/5 Connector	USB1	Intel® HD Audio Digital Header (Optional)	HDA1
USB Port2/3 Connector	USB2	Serial ATA Port Connectors	SATA1~4
USB Port1 Connector	USB3		

2.4.1 COM1, COM2 Port Connectors

The serial interface for the board consists of COM1 port (COM1) support for RS-232 and COM2 (COM2) for RS-232/RS422/RS485. Please refer to the RS-232 pin assignment as listed below:

Pin	Signal	Pin	Signal	
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)	
3	Receive Data (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	Ground (GND)	10	Ground (GND)	
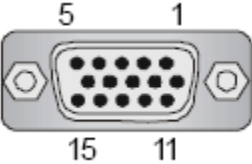
COM2 Serial Port 10-pin (Box-header) Connector Pin Assignment list

Pin #	Signal Name	
	RS-422	**RS-485**
1	TX-	DATA-
2	No connector	No connector
3	TX+	DATA+
4	No connector	No connector
5	RX+	No connector
6	No connector	No connector
7	RX-	No connector
8	No connector	No connector
9	GND	GND
10	GND	GND

2.4.2 VGA Connector (VGA1)

The VGA connector **VGA1** is a standard 15-pin connector commonly used for the CRT VGA display.

Pin	Signal
1	Red
2	Green
3	Blue
4	N.C
5	Ground
6	Ground
7	Ground
8	Ground(GND)
9	+5V
10	Ground (GND)
11	N.C
12	DDC DATA
13	Horizontal Sync
14	Vertical Sync
15	DDC CLK
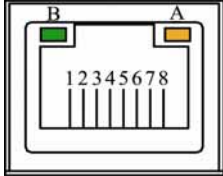
2.4.3 Ethernet RJ-45 Connectors with LED (LAN1, LAN2)

The board is equipped with two high performance Plug and Play Ethernet interface fully compliant with the IEEE 802.3 standard. To connect the board to 10-Base-T, 100-Base-T or 1000 Base-T hub, just plug one end of cable to the Ethernet connector and connect the other end (phone jack) to a 10-Base-T, 100-Base-T or 1000 Base-T hub.
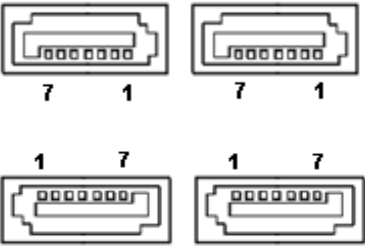
Pin	Signal
1	RJ-1(For 1000 base T-Only)
2	RJ-1(For 1000 base T-Only)
3	Rx- (Data reception negative)
4	RJ-1(For 1000 base T-Only)
5	RJ-1(For 1000 base T-Only)
6	Rx+(Data reception positive)
7	Tx- (Data transmission negative)
8	Tx+ (Data transmission positive)
A	Active LED
B	100 LAN LED(Green)/ 1000 LAN LED(Orange)

2.4.4 SATA Connectors (SATA1~4)

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

2.4.5   USB Connectors (USB1, USB2)

These Universal Serial Bus (USB) connectors on this board are for installing versatile USB interface peripherals. These are 10-pin standard USB connectors.

Pin	Signal	Pin	Signal	
1	+5V	2	+5V	
3	USB D4-	4	USB D5-	**USB1**
5	USB D4+	6	USB D5+	
7	Ground (GND)	8	Ground (GND)	
9	NC	10	Ground (GND)	

Pin	Signal	Pin	Signal	
1	+5V	2	+5V	
3	USB D2-	4	USB D3-	**USB2**
5	USB D2+	6	USB D3+	
7	Ground (GND)	8	Ground (GND)	
9	NC	10	Ground (GND)	

2.4.6   USB Port Connector (USB3/USB4)

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

Pin	Signal	
1	USB POWER	**USB3/4**
2	USB -	
3	USB +	
4	GND	

2.4.7   Flat Panel Bezel Connector (CN3)
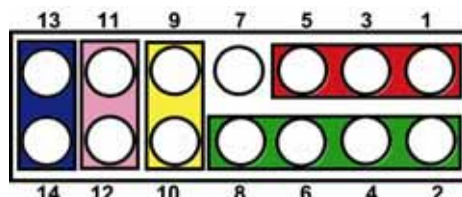
- **Power LED**

  This 3-pin connector named as Pin 1, 3 and Pin 5 connect the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 3, Pin 5 as -. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector**

  Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 6 (-).

- **ATX Power On/Off Button**

  This 2-pin connector named as Pin 9 and 10 connect the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**
  Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer, not turns OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

- **HDD Activity LED**
  This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

2.4.8   ATX 12V Power Connector (CN2)

Connect the power cable to **CN2** for +12V ATX power supply.

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

2.4.9   Internal PS/2 Keyboard and Mouse Connector (KB1, MS1)
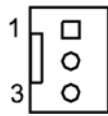
The board provides the Keyboard (KB1)/ Mouse (MS1) interface with a 5-pin connector

Clock	1 ■	
Data	2 ☐	
No Connection	3 ☐	
GND	4 ☐	
Power	5 ☐	
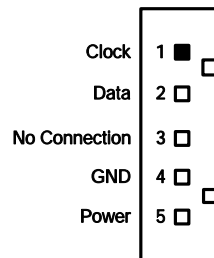
2.4.10 3 Pin Fan Connectors (FAN1, FAN3)

You can connect the system cooling fan cable to **FAN1, FAN3**.
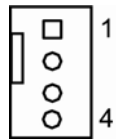
Pin	Signal
1	Ground
2	+12V
3	Sensor

2.4.11 4 Pin CPU Fan Connector (FAN2)

You can connect the CPU cooling fan cable to **FAN2**. It is for CPU cooling fan power.

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

2.4.12 Parallel IDE Connector (IDE1)
 IDE1 is a 40-pin IDE interface connector for standard 3.5" IDE device.

Pin	Signal	Pin	Signal	Pin	Signal
1	Reset #	2	GND	3	Data 7
4	Data 8	5	Data 6	6	Data 9
7	Data 5	8	Data 10	9	Data 4
10	Data 11	11	Data 3	12	Data 12
13	Data 2	14	Data 13	15	Data 1
16	Data 14	17	Data 0	18	Data 15
19	GND	20	NC	21	DREG#
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IOCHRDY
28	CSEL	29	DACK#	30	GND

Pin	Signal	Pin	Signal	Pin	Signal
31	Interrupt	32	NC	33	SA1
34	PDIAG#	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	GND				
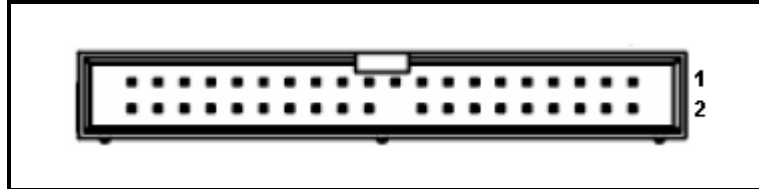
2.4.13 Floppy Disk Port Connector (FDD1)

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	Drive Density Select	3	GND
4	No connector	5	GND	6	No connector
7	GND	8	Index#	9	GND
10	Motor enable A#	11	GND	12	No connector
13	GND	14	Drive select A#	15	GND
16	No connector	17	GND	18	Direction#
19	GND	20	STEP#	21	GND
22	Write data#	23	GND	24	Write gate#
25	GND	26	Track 0 #	27	GND
28	Write protect#	29	No connector	30	Read data#
31	GND	32	Head selection#	33	No connector
34	Disk change#				
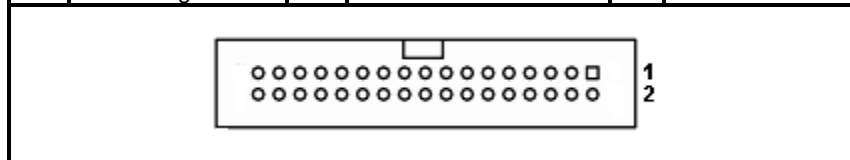
2.4.14 Parallel Port Connector (PRINT1)

Print Port Connector [Default]
This board has a multi-mode parallel port to support:

1. **Standard Mode:**
   IBM PC/XT, PC/AT and PS/2™ are compatible with bi-directional parallel port.

2. **Enhanced Mode:**
   Enhance parallel port (EPP) is compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant).

3. **High Speed Mode:**
   Microsoft and Hewlett Packard extended capabilities port (ECP) is IEEE 1284 compliant.

Pin	Signal	Pin	Signal
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND
15	Data 6	16	GND
17	Data 7	18	GND
19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	GND

2.4.15 AXIOMTEK ACPI Connector (CN4)

Advanced Configuration and Power Interface (ACPI) defines a flexible and extensible interface that allows system designers to select appropriate cost/feature trade-offs for power management. The interface enables and supports reliable power management through improved hardware and operating system coordination. The specification enables new power management technology to evolve independently in operating systems and hardware while ensuring that they continue to work together.
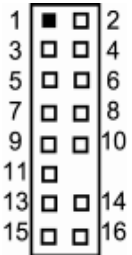
CN4 is a 6-pin header connector that provides ACPI interface.

Pin	Signal
1	EXTSMI
2	GND
3	Power Button
4	GND
5	PSON
6	+5VSB

2.4.16 Intel® HD Audio Digital Header (HDA1)

Pin	Signal	Pin	Signal
1	BCLK	2	GND
3	RST#	4	VCC3
5	SYNC	6	GND
7	SDOUT	8	VCC3
9	SDI0	10	+12V
11	No connector		
13	No connector	14	3VDUAL
15	No connector	16	GND

Note   *It is an optional function by request.*

2.4.17 SMBUS Connector (CN1)

This connector CN1 is for SMBUS interface support.

Pin	Signal
1	SMBUS_CLOCK
2	NC
3	GND
4	SMBUS_DATA
5	+5V

2.4.18 LAN1/LAN2 Link/Active & Speed LED Connectors (CN6, CN7)

Pin	Signal
1	Link/Active LED (+)
2	Link/Active LED (-)
3	Speed LED-10/100, Low Active
4	+ 3.3V
5	Speed LED-1000, Low Active

MEMO

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.
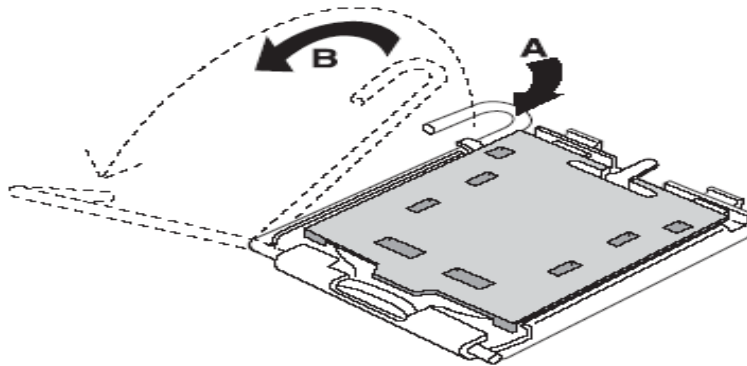
2. Open the cover (C), you can see the contact.
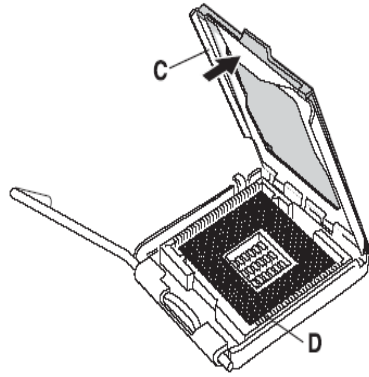
3. Be careful not to touch the contact (D).
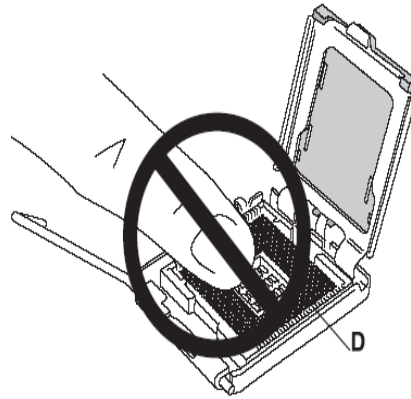
4. Remove the plastic cap (E) from the cover.
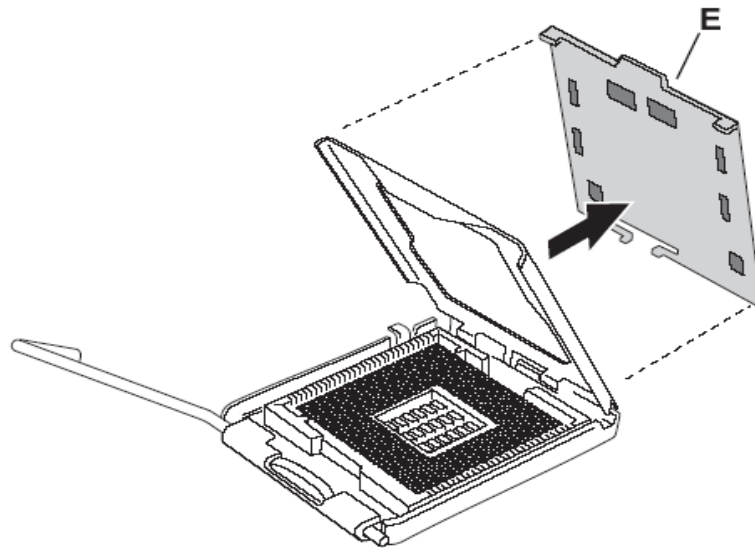
5. Place the CPU down into the socket. Be careful not to touch the contact.
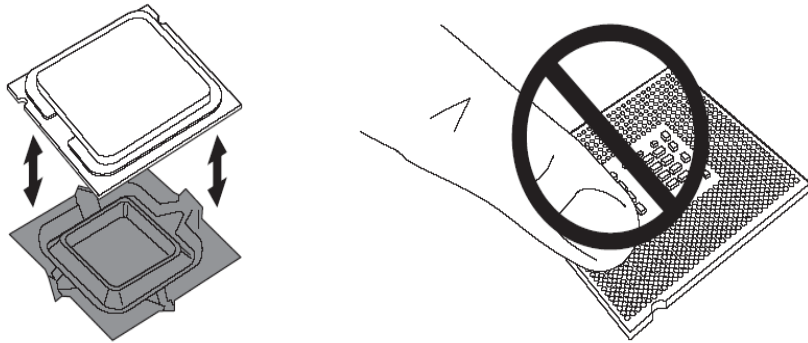
6. Hold the edges of the CPU, and orientate it as the marked direction (G) down into the socket to match the (H) and (F) locations.
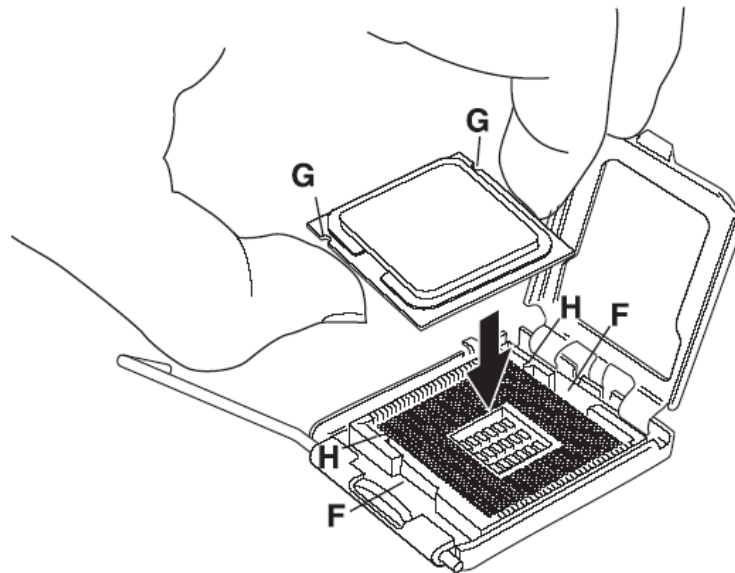
7. Slightly push down the cover and hook the lever (I~J). The CPU is completely locked.
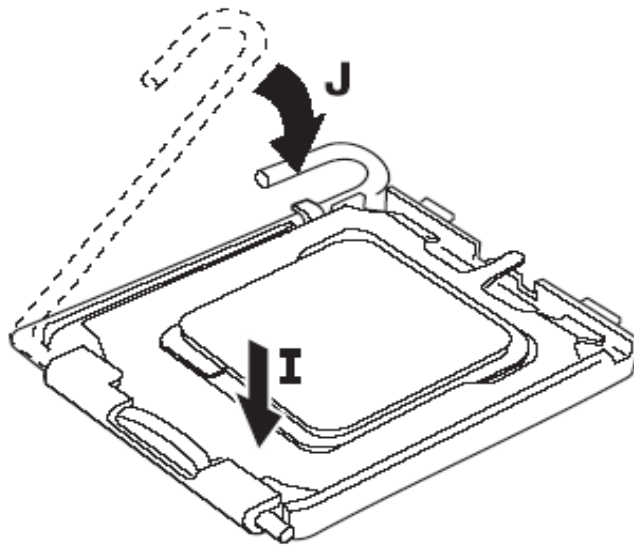
8. Orientate the CPU cooling fan to fixing holes on the board.
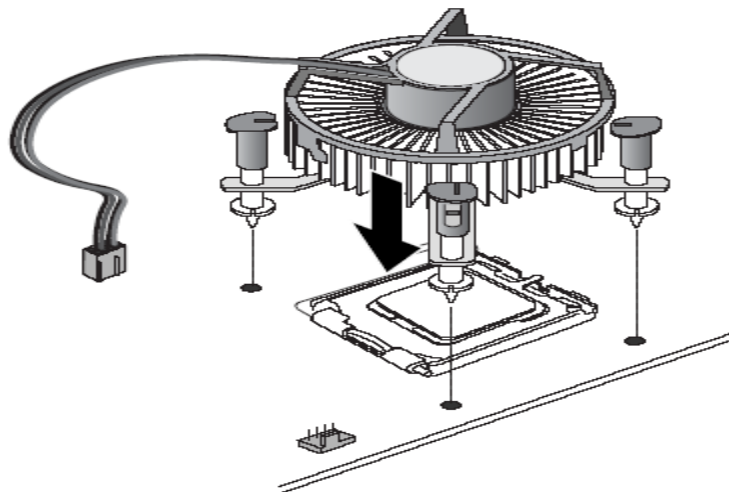
9. Screw the CPU cooling fan onto the board.
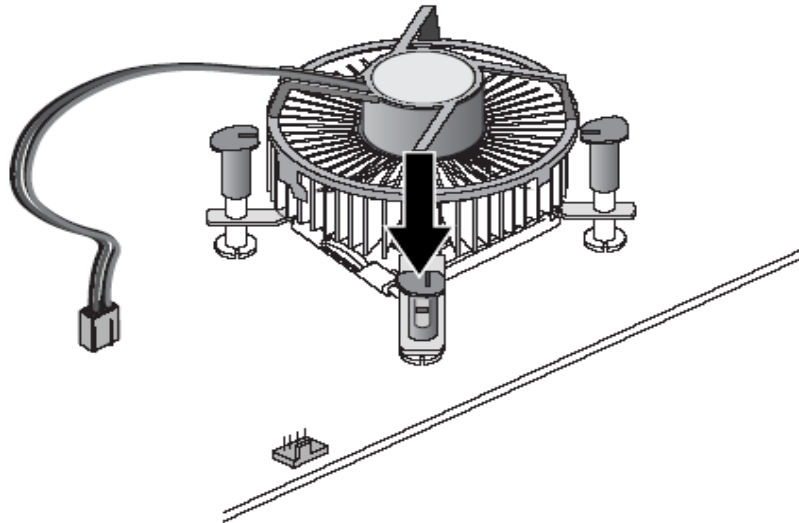
10. Make sure the CPU fan is plugged to the CPU fan connector.
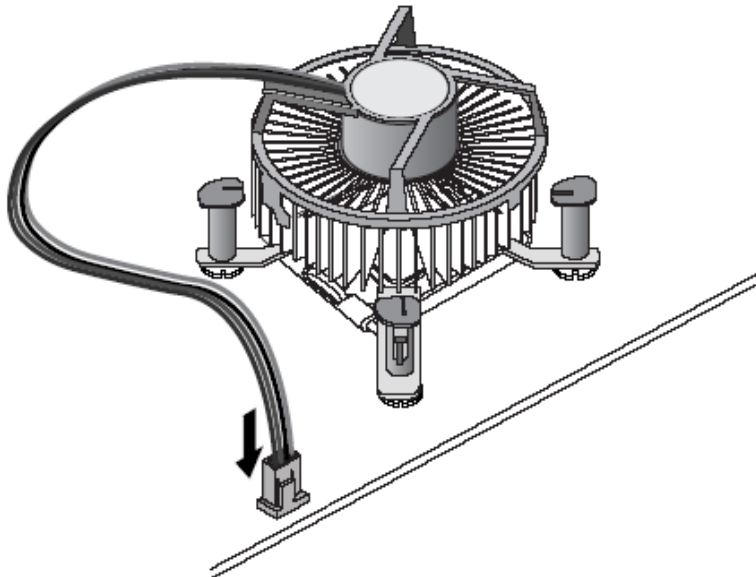
3.2   Installing the Memory

The board supports four 240-pin DDR2 DIMM memory sockets with maximum memory capacity up to 2GB.

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 intallation.
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.
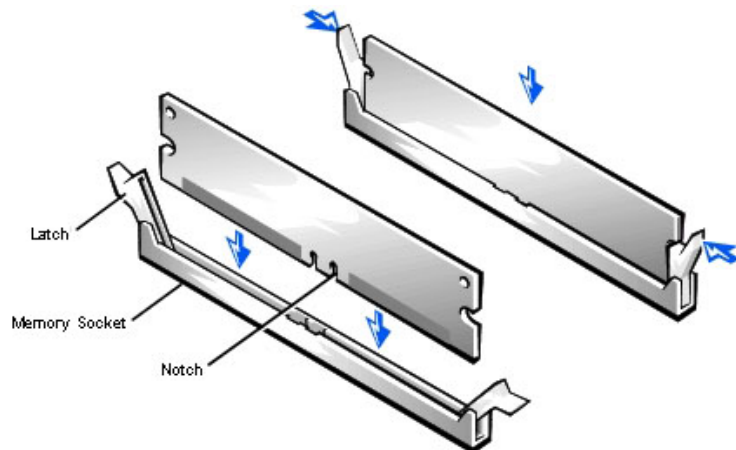
CHAPTER 4
HARDWARE DESCRIPTION

4.1 Microprocessors

The **SBC81206** Series supports Intel$^{®}$ Core™ 2 Duo, Intel$^{®}$ Celeron$^{®}$ 400 Series, Intel$^{®}$ Pentium$^{®}$ 4 processor in the LGA775 Land Grid Array package or Intel$^{®}$ Pentium$^{®}$ D processor (supports 775-Land package), which make your system operated under Windows 2000/XP and Windows VISTA 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 **SBC81206** Series uses Award Plug and Play BIOS with a single 8Mbit FWH Flash, DMI, Plug and Play.

4.3 System Memory

The **SBC81206** Series industrial CPU card supports two 240-pin unbuffered DDR2 DIMM sockets for a maximum memory of 2GB DDR2 SDRAMs. The memory module can come in sizes of 128MB, 256MB, 512MB, 1GB and 2GB.

4.4   I/O Port Address Map

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

```
[00000000 - 0000000F]  Direct memory access controller
[00000000 - 00000CF7]  PCI bus
[00000010 - 0000001F]  Motherboard resources
[00000020 - 00000021]  Programmable interrupt controller
[00000022 - 0000003F]  Motherboard resources
[00000040 - 00000043]  System timer
[00000044 - 0000005F]  Motherboard resources
[00000060 - 00000060]  Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061]  System speaker
[00000062 - 00000063]  Motherboard resources
[00000064 - 00000064]  Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F]  Motherboard resources
[00000070 - 00000073]  System CMOS/real time clock
[00000074 - 0000007F]  Motherboard resources
[00000080 - 00000090]  Direct memory access controller
[00000091 - 00000093]  Motherboard resources
[00000094 - 0000009F]  Direct memory access controller
[000000A0 - 000000A1]  Programmable interrupt controller
[000000A2 - 000000BF]  Motherboard resources
[000000C0 - 000000DF]  Direct memory access controller
[000000E0 - 000000EF]  Motherboard resources
[000000F0 - 000000FF]  Numeric data processor
[00000170 - 00000177]  Secondary IDE Channel
[000001F0 - 000001F7]  Primary IDE Channel
[00000274 - 00000277]  ISAPNP Read Data Port
[00000279 - 00000279]  ISAPNP Read Data Port
[00000294 - 00000297]  Motherboard resources
[000002F8 - 000002FF]  Communications Port (COM2)
[00000376 - 00000376]  Secondary IDE Channel
[00000378 - 0000037F]  Printer Port (LPT1)
[000003B0 - 000003BB]  Intel(R) 82945G Express Chipset Family
[000003C0 - 000003DF]  Intel(R) 82945G Express Chipset Family
[000003F0 - 000003F5]  Standard floppy disk controller
[000003F6 - 000003F6]  Primary IDE Channel
[000003F7 - 000003F7]  Standard floppy disk controller
[000003F8 - 000003FF]  Communications Port (COM1)
```

4.5 Interrupt Controller

The **SBC81206 Series** is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

IRQ	Parity check error
IRQ0	System timer
IRQ1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ6	Standard floppy disk controller
IRQ7	Parallel port
IRQ8	System CMOS/real time clock
IRQ9	Microsoft ACPI-Conpliant System
IRQ12	PS/2 Compatible Mouse
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel

MEMO

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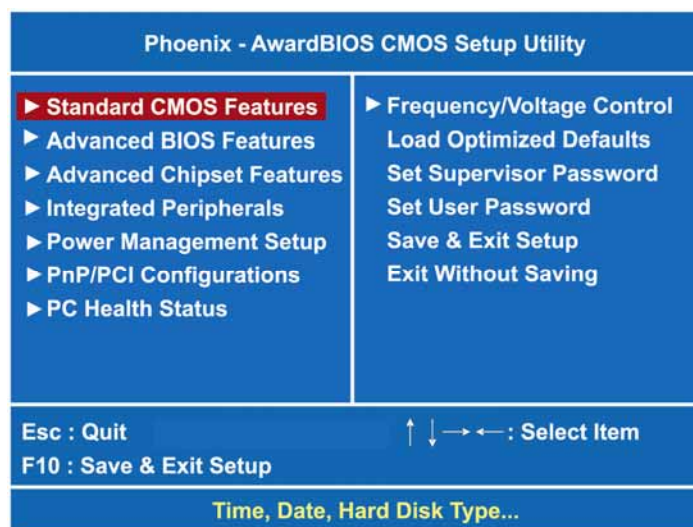
NOTE   *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

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)         Thu,Nov 18 2008
      Time (hh:mm:ss)         17 : 2 : 57            Menu Level  ▶
                                                    Change the day, month,
                                                    year and century.
     ▶ IDE Channel 0 Master   [None]
     ▶ IDE Channel 0 Slave    [None]
     ▶ IDE Channel 1 Master   [None]
     ▶ IDE Channel 1 Slave    [None]

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

      Base Memory                    640K
      Extended Memory               64512K
      Total Memory                  65536K


    ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
             F5:Previous Values              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 Channel 0/1 Master/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>.

● **Drive A**
Select the type of floppy drive installed in your system, and the default is "None".

● **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

                                              Item Help
                                          Menu Level ▶
  ▶ CPU Feature                [Press Enter]
  ▶ Hard Disk Boot Priority    [Press Enter]
    CPU L1 & L2 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 Floppy Seek        [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]
    Report No FDD For WIN 95   [No]

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

● **CPU Feature**

Scroll to this item and press <Enter> to view the CPU Feature sub menu.
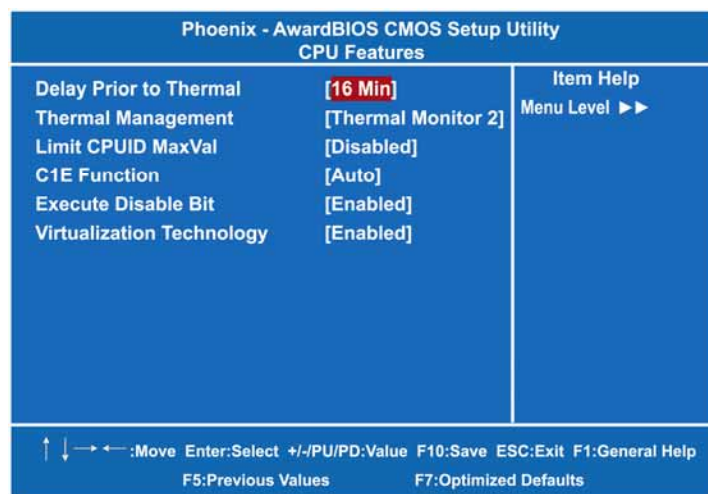
> ➢ **Delay prior to Thermal**
> This filed is used to select the time that would force the CPU to a 50% duty cycle when it exceeds its maximum operating temperature therefore protecting the CPU and the system board from overheating to ensure a safe computing environment.
> ➢ **Thermal Management**
> Thermal Monitor 1   On-die throttling
> Thermal Monitor 2   Ratio and VID transition
> ➢ **Limit CPUID MaxVal**
> The CPUID instruction if some newer CPUs will return a value greater than 3. The default is "*Disabled*", because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, you can enable this field to limit the return value to 3 or lesser than 3.
> ➢ **C1E Function**
> The Intel® CPU Enhanced Halt (C1E) function is a CPU power-saving function in system halt state. When enabled,

the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption.

➢ **Execute Disable Bit**
Use this item to enable the hardware-based security feature that reduces exposure to viruses and malicious-code attacks.

➢ **Virtualization Technology**
Wnen this feature is enabled, the computer system can operate as multiple "virtual" systems.

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.
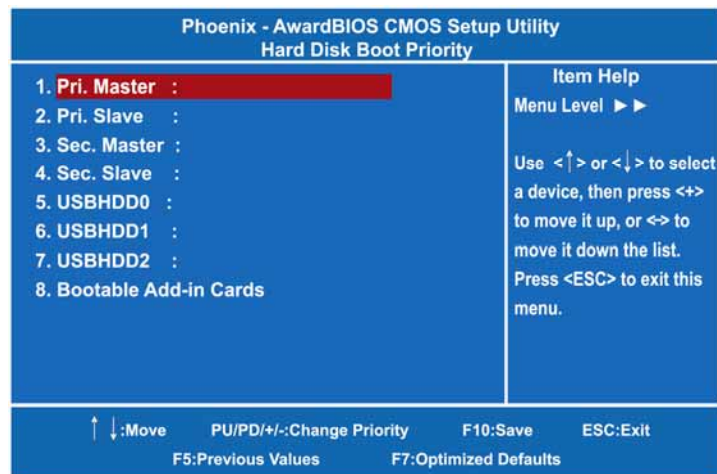
Press <Esc> to return to the Advanced BIOS Features page.

● **CPU L1 & L2 Cache**
These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is "Enabled". CPUs without built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

Enabled	Enable cache
Disabled	Disable cache

● **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 Floppy Seek**
   During POST, BIOS will determine the floppy disk drive type, 40 or
   80 tracks. The 360Kb type is 40 tracks while 720Kb, 1.2MB and
   1.44MB are all 80 tracks. The default value is "Enabled".

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Please be noted BIOS can not differentiate 720K, 1.2M or 1.44M drive types as they all are 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the installed drive is 360K.

● **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.

- **OS Select for DRAM >64MB**
  This item allows you to access the memory over 64MB in OS/2.

- **Report No FDD For WIN 95**
  Select *Yes* to release an IRQ when the system doesn't have any floppy drive, for compatibility with Windows 95 logo certification. In the Integrated Peripherals screen, select Disabled for the Onboard FDC Controller field.

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

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

   ** VGA Setting **

  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              F7:Optimized Defaults
```

● **PCI-E Compliancy Mode**
   This item allows users to set the version of the PCI Express based on the specification by which the motherboard has to comply.

*** VGA Setting ***

● **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 OnChip IDE Device, Onboard Device and SuperIO Device.
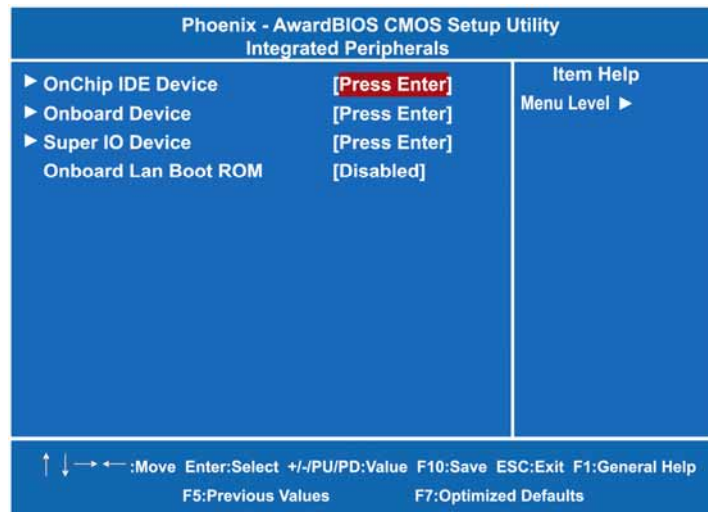
- **OnChip IDE Device**
  Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.
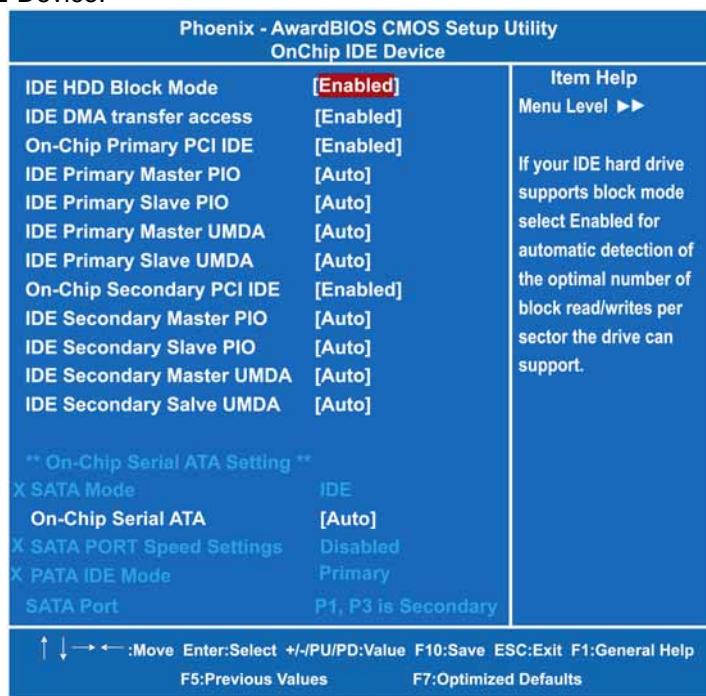
> **IDE HDD Block Mode**
> Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

> **IDE DMA transfer access**
> Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.

> **On-Chip Primary/Secondary PCI IDE**
> The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is *"Enabled"*.

NOTE *Choosing Disabled for these options will automatically remove the IDE Primary Master/ Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.*

➢ **IDE Primary/Secondary Master/Slave PIO**
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 to 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

➢ **IDE Primary/Secondary Master/Slave UDMA**
Select the mode of operation for the IDE drive. Ultra DMA-33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If the hard drive and system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.

*** On-Chip Serial ATA Setting ***

➢ **SATA Mode**
There are these options for you to set up SATA mode: IDE or RAID.

➢ **On-Chip Serial ATA**
Use this item to enable or disable the built-in on-chip serial ATA.

➢ **SATA PORT Speed Settings**
Use this item to select SATA I or SATA II device support forcedly.

➢ **PATA IDE Mode**
Use this item to set the PATA IDE mode. When the PATA IDE mode is set for Primary, P1 and P3 are Secondary; on the other hand, when set for Secondary, P0 and P2 are Primary.

➢ **SATA Port**
When the "PATA IDE Mode" is Primary, SATA Port will be " P1, P3 is Secondary" that means SATA 2 and SATA 4 are Secondary; when Secondary, it will be "P0, P2 is Primary ", SATA 1 and SATA 3 are Primary.

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

●   **Onboard Device**
Scroll   to   this   item   and   press   <Enter>   to   view   the   sub   menu
Onboard Device.
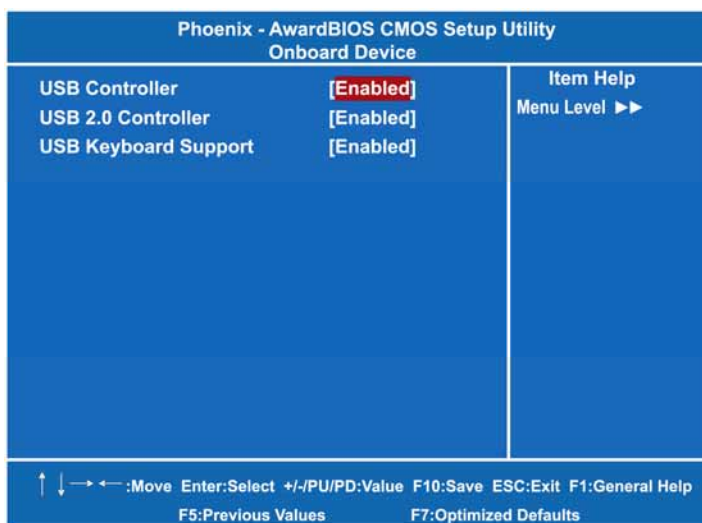
> **USB Controller**
Enable this item if you are using the USB in the system. You
should disable this item if a higher-level controller is added.
> **USB 2.0 Controller**
Enable this item if you are using the EHCI (USB2.0)
controller in the system.
> **USB Keyboard Support**
Enable this item if the system has a Universal Serial Bus
(USB) controller, and you have a USB keyboard.

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.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                      SuperIO Device

   Onbaord FDC Controller      [Enabled]         Item Help
   Onboard Serial Port 1       [3F8/IRQ4]     Menu Level  ▶▶
   Onboard Serial Port 2       [2F8/IRQ3]
   Onboard Parallel Port       [378/IRQ7]
   Parallel Port Mode          [SPP]
  X EPP Mode Select            EPP1.7
  X ECP Mode Use DMA           3
   PWRON After PWR-Fail        [Former-Sts]




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

➢ **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.

➢ **Parallel Port Mode**
Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require another mode in this field. There are several options for your selection, *"EPP1.9", "ECP", "SPP", "ECPEPP1.7", "EPP1.7",* etc.

➢ **EPP Mode Select**
Select EPP port type 1.7 or 1.9.

➢ **ECP Mode Use DMA**
Select a DMA channel for the parallel port while using the ECP mode.

> ➢ **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.

● **Onboard Lan Boot ROM**
  Use this item to enable or disable the Boot ROM function of the
  onboard LAN chip when the system boots up.

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 Function              Enabled            Item Help
  ACPI Suspend Type        [S1(POS)]          Menu Level ►
  Power Management         [User Define]
  Video Off Method         [dpms]
  Video Off In Suspend     [Yes]
  Suspend Type             [Stop Grant]
  Suspend Mode             [Disabled]
  HDD Power Down           [Disabled]
  Soft-Off by PWR-BTTN     [Instant-Off]
  PowerOn by Ring          [Enabled]
  Resume by Alarm          [Disabled]
X Date <of Month> Alarm       0
X Time <hh:mm:ss> Alarm       0 : 0 : 0
  Primary IDE 0            [Disabled]
  Primary IDE 1            [Disabled]
  Secondary IDE 0          [Disabled]
  Secondary IDE 1          [Disabled]
  FDD, COM, LPT Port       [Disabled]

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

● **ACPI Function**
This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always "*Enabled*".

● **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 context.

> [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.

● **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).

● **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).

● **Primary/Secondary IDE 0/1**
  Use this item to configure the IDE devices monitored by the system.

● **FDD, COM, LPT Port**
  Use this item to configure the FDD, COM and LPT ports monitored
  by the system.

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.

```
             Phoenix - AwardBIOS CMOS Setup Utility
                      PnP/PCI Configurations
 ┌──────────────────────────────────────────────┬─────────────────────┐
 │ PNP OS Installed              [No]            │      Item Help      │
 │ Init Display First            [Onboard]       │  Menu Level  ▶      │
 │ Reset Configuration Data      [Disabled]      │                     │
 │                                               │                     │
 │ Resources Controlled By       [Auto(ESCD)]    │  Select Yes if you are │
 │ x IRQ Resources               Press Enter     │  using a Plug and Play │
 │ x DMA Resources               Press Enter     │  capable operating  │
 │                                               │  system Select No if │
 │ PCI/VGA Palette Snoop         [Disabled]      │  you need the BIOS to │
 │                                               │  configure non-boot │
 │ ** PCI Express relative items **              │  devices            │
 │ Maximum Payload Size          [4096]          │                     │
 │                                               │                     │
 ├──────────────────────────────────────────────┴─────────────────────┤
 │ ↑ ↓ → ← :Move  Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help │
 │         F5:Previous Values           F7:Optimized Defaults          │
 └─────────────────────────────────────────────────────────────────────┘
```

- **PNP OS Installed**
  Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95). The default value is "No".
- **Init Display First**
  This item allows you to decide whether PCI Slot or Onboard 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: Enabled, Disabled.
- **Resources Controlled By**
  The 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 *"Auto (ESCD)"*.

● **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 monitering 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 GMCH Temp                       Item Help
 Current CPU Temp                      Menu Level ▶
 Current SYS Temp
 Current CPU FAN Speed
 Current System FAN1 Speed
 Current System FAN2 Speed
 Vcore
  + 3.3 V
   + 5 V
   + 12 V
 VBAT(V)
 5VSB(V)



 ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
           F5:Previous Values            F7:Optimized Defaults
```
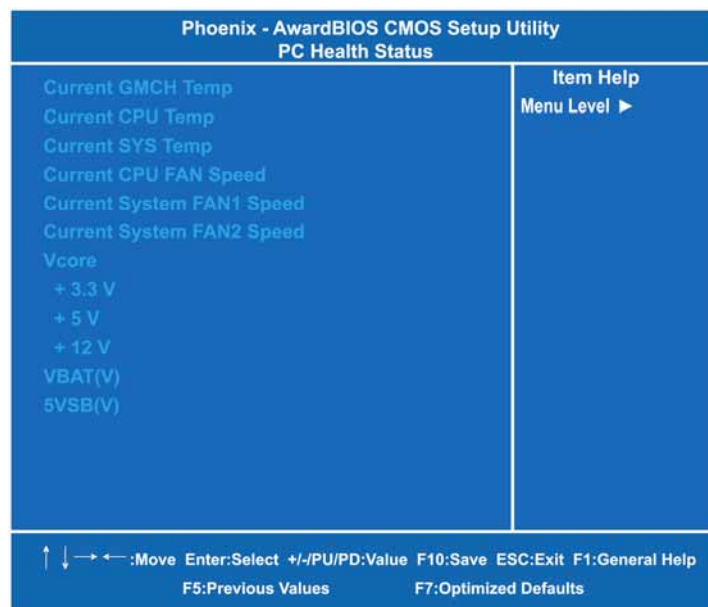
- **Current GMCH Temperature**
  The current GMCH temperature will be automatically detected by the system.

- **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.

- **Current SYS Temperature**
  Show you the current system temperature.

- **Current CPU FAN Speed**
  These optional and read-only items show current speeds in RPM (Revolution Per Minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.

● **Current SYSTEM FAN1 Speed**
   Show you the current system fan1 speed.

● **Current SYSTEM FAN2 Speed**
   Show you the current system fan2 speed.

● **Vcore +3.3V/+5V/+12V/VBAT(V)/5VSB**
   It shows 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.
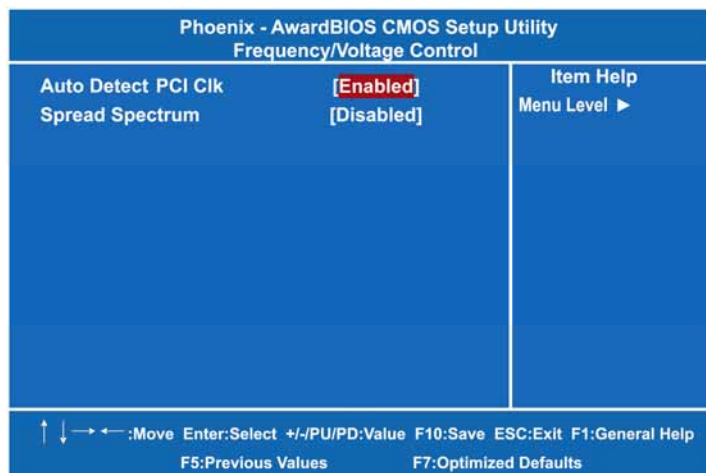
● **Auto Detect PCI Clk**
   The enabled item can automatically disable the clock source for a PCI slot without a module, to reduce EMI (ElectroMagnetic Interference).

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

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

5.13 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.
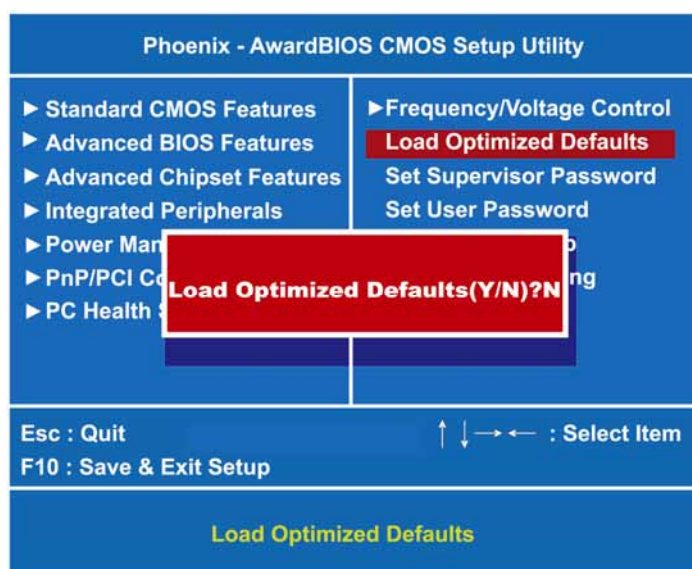
To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

5.14 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.

5.15 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.
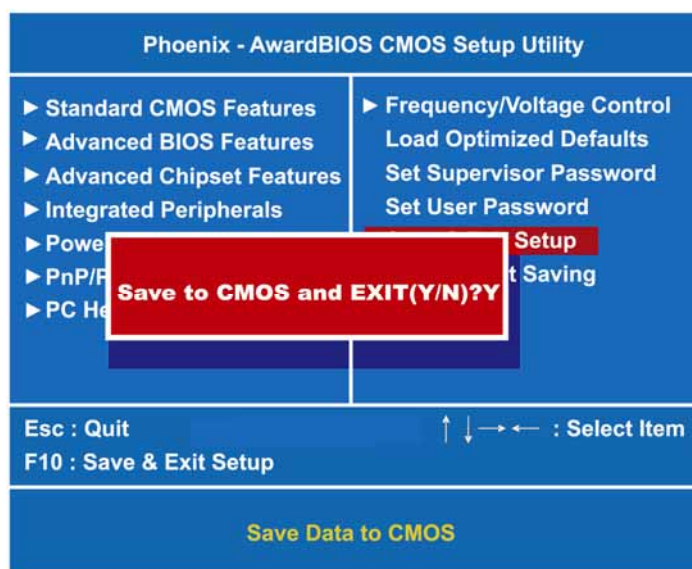
5.16 Exit Without Saving

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.
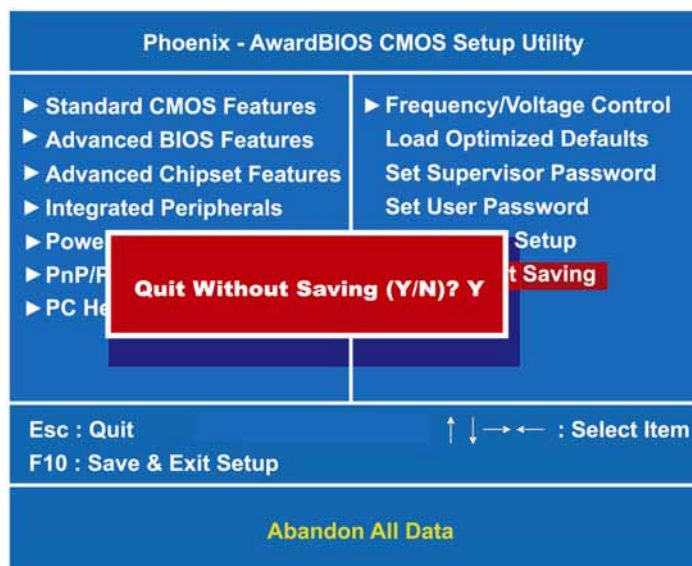
APPENDIX A
WATCHDOG TIMER

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

↓
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 (Note#)

↓
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

; IF to disable WDT:

                           O 2E 30
                           O 2F 00; Can be disable at any time

● Timeout Value Range
  ■ 1 to 255
  ■ Minute / Second

● Program Sample

2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F5	
2F, N	Set Minute or Second N=08 (Min),00(Sec)
2E, F6	
2F, M	Set Value M = 00 ~ FF

Note#:

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$^®$ ICH7R 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).
(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).

(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.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                       OnChip IDE Device

 IDE HDD Block Mode           [Enabled]         Item Help
 IDE DMA transfer access      [Enabled]       Menu Level ► ►
 On-Chip Primary PCI IDE      [Enabled]
 IDE Primary Master PIO       [Auto]
 IDE Primary Slave PIO        [Auto]
 IDE Primary Master UMDA      [Auto]
 IDE Primary Slave UMDA       [Auto]
 On-Chip Secondary PCI IDE    [Enabled]
 IDE Secondary Master PIO     [Auto]
 IDE Secondary Slave PIO      [Auto]
 IDE Secondary Master UMDA    [Auto]
 IDE Secondary Salve UMDA     [Auto]

 ** On-Chip Serial ATA Setting **
 SATA Mode                    [RAID]
 X On-Chip Serial ATA          Enhance Mode
 SATA PORT Speed Settings     [Disabled]
 X PATA IDE Mode               Primary
 SATA Port                     P0, P2 is Secondary

 ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
         F5:Previous Values              F7:Optimized Defaults
```
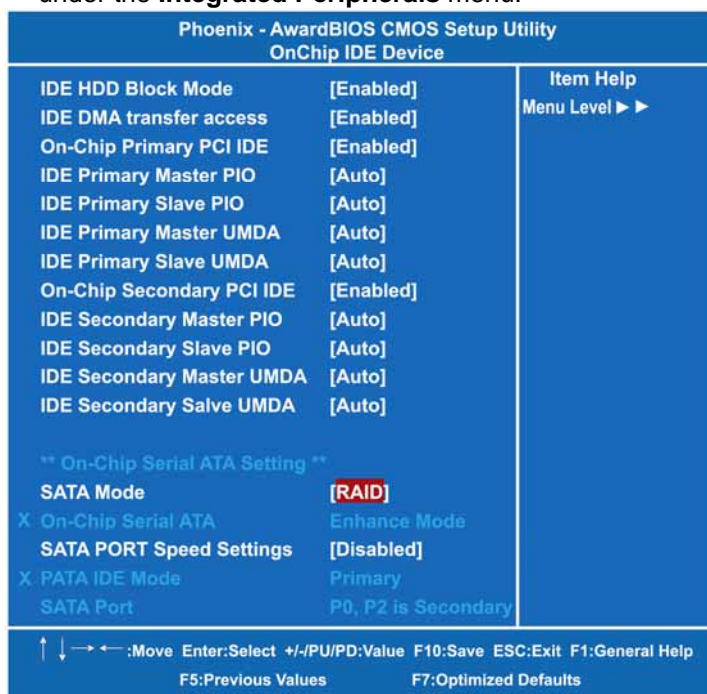
Figure 1

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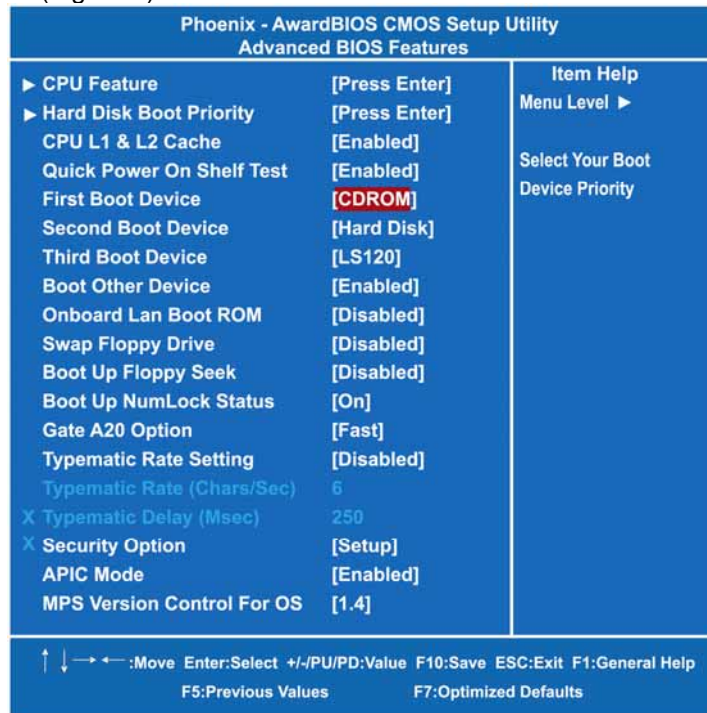

Phoenix - AwardBIOS CMOS Setup Utility		
Advanced BIOS Features		
▶ CPU Feature	[Press Enter]	**Item Help**
▶ Hard Disk Boot Priority	[Press Enter]	Menu Level ▶
CPU L1 & L2 Cache	[Enabled]	
Quick Power On Shelf Test	[Enabled]	Select Your Boot
First Boot Device	[CDROM]	Device Priority
Second Boot Device	[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.

(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.
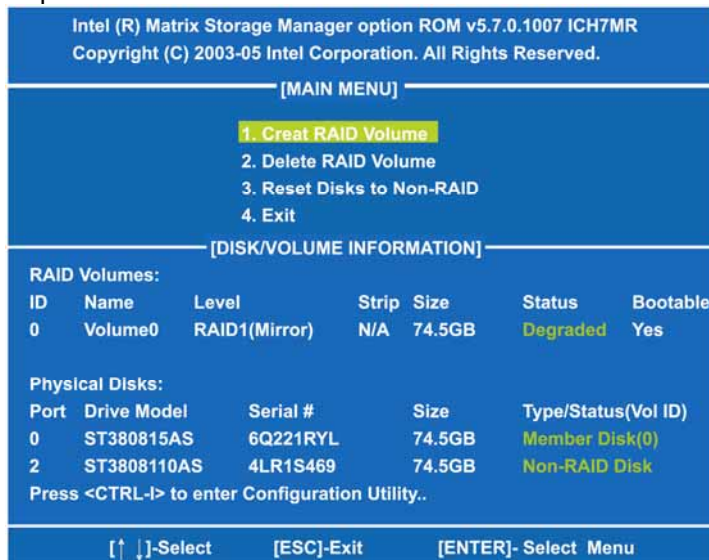

Figure 4

(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 two RAID levels, RAID0 and RAID1. Select a RAID level and press ENTER.
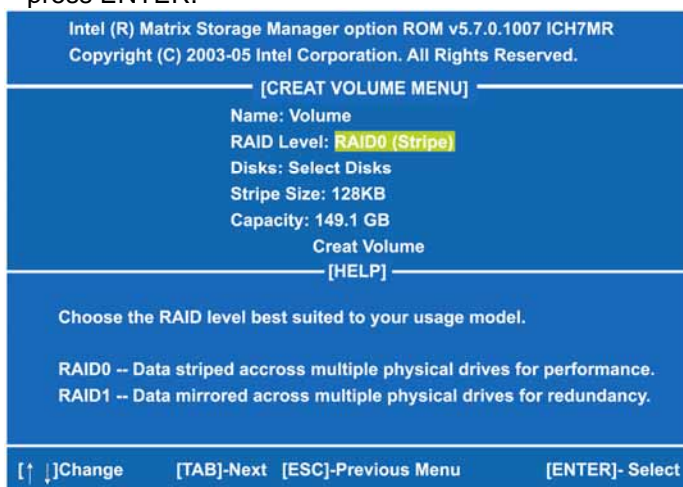

Figure 5

(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.
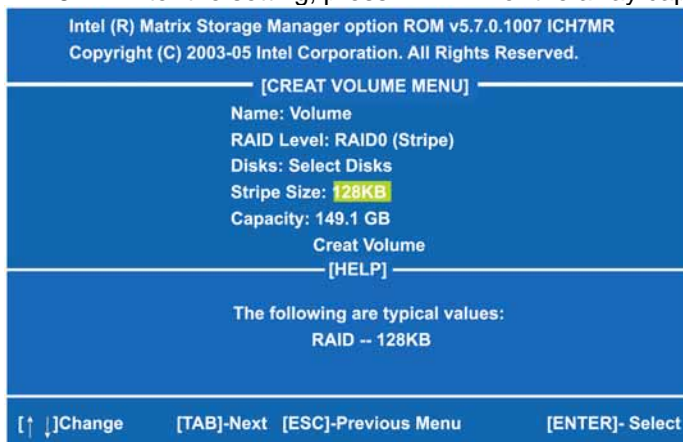

Figure 6

(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.
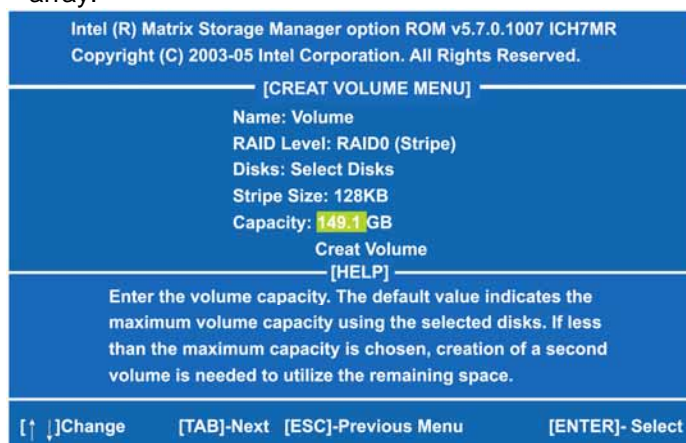

Figure 7

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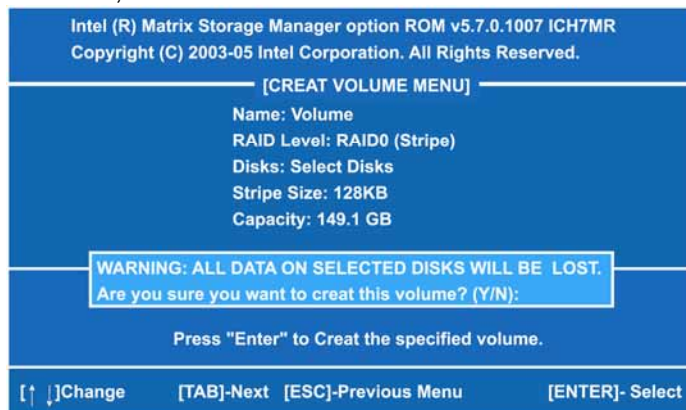

Figure 8

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, etc.
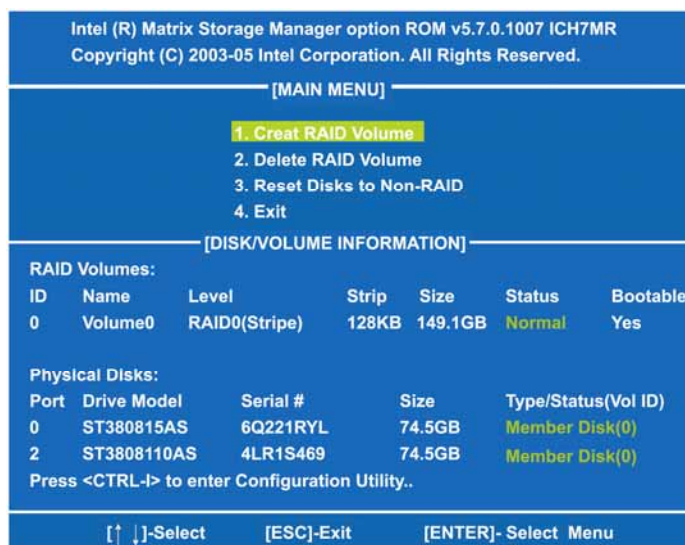
Figure 9

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.
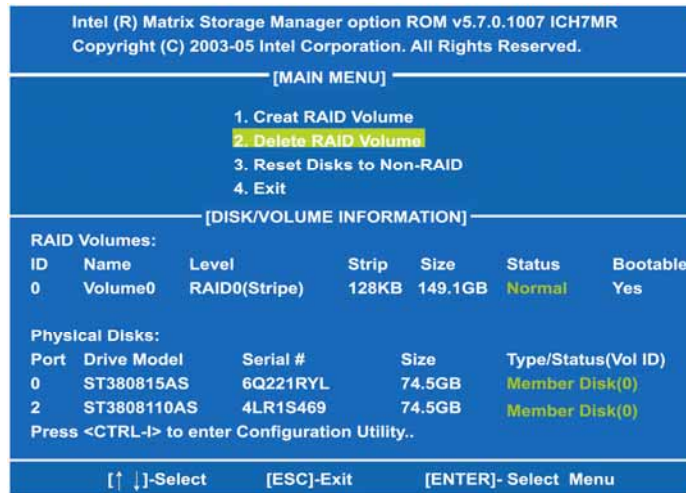
Figure 10

Please press [ESC] to exit the ICH7MR RAID BIOS utility.

Now, you can proceed to install a SATA 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.
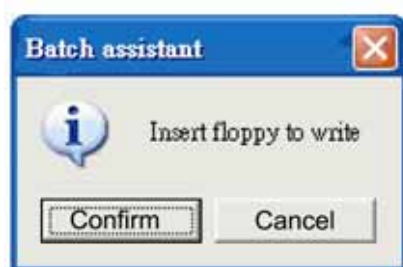
(4)-3   When the Driver is written to the floppy disk, the SATA driver disk is completed.
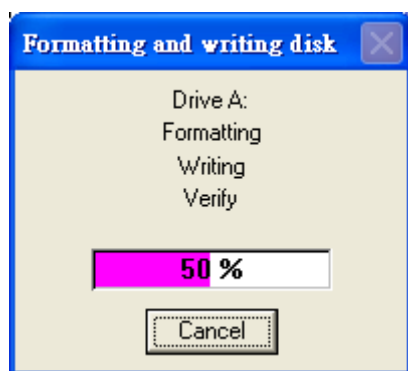
(5) Installing the SATA controller driver during the OS installation
Now, the SATA driver disk is ready, and BIOS settings configured, you can proceed to install Windows XP onto your SATA hard drive using the SATA driver. Here is an example for Windows XP installation.

(5)-1   Restart your system to boot the Windows 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).

Windows Setup

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices(s):

      <none>

* To specify additional SCSI adapters, CD-ROM drives, or special
  disk controllers for use with Wiindows, including those for
  which you have a device support disk from a mass storage device
  manufacturer, press S.

* If you do not have any device support disks from a mass storage
  device manufacturer, or do not want to specify additional
  mass storage devices for use with Windows, press ENTER.

    S=Specify Additional Device   ENTER=Continue F3=Exit

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) 82801GR/GH SATA RAID Controller (Desktop ICH7R/DH)** and press ENTER**.** Then it will begin to load the SATA driver from the floppy disk.

Windows Setup

You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer.

Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.

Intel(R) 631xESB/632xESB SATA RAID Controller (Server/Workstation ESB2)
Intel(R) 82801GHM SATA RAID Controller (Mobile ICH7R/DH)
Intel(R) 82801GR/GH SATA RAID Controller (Desktop ICH7R/DH)
Intel(R) 82801GR/GH SATA AHCI Controller (Desktop ICH7R/DH)

ENTER=Continue F3=Exit

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.

(5)-4 When the screen appears as below, press ENTER to continue installing the SATA driver through the floppy disk. It will take about one minute to finish the driver installation.

Figure 14

After the SATA controller driver installation is completed, you can proceed to install the Windows XP.