ICPMB-8650

SOCKET 478 PENTIUM 4
Motherboard with
SATA & Ethernet & USB 2.0

Manual Rev: 1.1

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Introduction

Welcome to the ICPMB-8650 SOCKET 478 PENTIUM 4 Single Board Computer. The ICPMB-8650 board is an AGP/PCI form factor board, which comes equipped with high performance Processor and advanced high performance multi-mode I/O, designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

It's AGP interface supports 0.8V/1.5V signaling with 8X/4X data transfers ,but it's not support any 3.3V AGP-card.
The integrated graphics controller provides 3D, 2D, and display capabilities.

ICPMB-8650 is supports one or two 64-bit wide DDR data channels. Available bandwidth up to 2.7GB/s for single-channel mode and 5.4GB/s in dual-channel mode.

For the application that needs high speed serial transmission, the ICPMB-8650 provides USB2.0 for your choice. The high speed USB2.0 host controller implements an ECHI interface that provides 480Mb/s bandwidth.

ICPMB-8650 is equipped with a high speed SATA disk interface. Besides its better performance than traditional IDE interface, it can also reduce the cabling of hard disk and supports longer cable.

1.1 Specifications

CPU(PGA 478)	Intel Pentium 4 Processor, supports 400/533/800 MHz PSB (set by BIOS)
Bus interface	AGP/PCI/ISA bus
Bus speed	PCI: 33Mhz,ISA: 8Mhz
DMA channels	7
Interrupt levels	15
Chipset	INTEL 865G / ICH5
RAM memory	Four 184-pin DIMM sockets support DDR333/400 SDRAM .Support one or four 64-bit wide DDR data channels. The max. Memory is up to 4GB.
Ultra DMA 100 IDE interface	Up to four PCI Enhanced IDE hard drives. The Ultra DMA 100 IDE can handle data transfer up to 100MB/s. Compatible with existing ATA IDE specifications its best advantage, so there is no need to do any changes for users' current accessories.
Floppy disk drive interface	Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)
Serial ports	Six RS232 ports with 16C550 UART (or compatible) with 16-byte FIFO buffer. Support up to 115.2Kbps. Ports can be individually configured to COM1,2,3,4,5,6 or disabled.
Bi-directional parallel port	Configurable to LPT1, LPT2, LPT3 or disabled. Supports EPP/ECP/SPP
Hardware monitor	Built-in to monitor power supply voltage, fan speed status and temperature
IrDA port	Supports Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface
USB 2.0/1.1 port	Supports 8 USB 2.0/1.1 ports for future

	expansion
Watchdog timer	Software Programmable, reset generated when CPU does not periodically trigger the timer.
Serial ATA	Supports two independent serial ATA channels. Data transfer rate is up to 150MB/s
Ethernet	PCI interface. INTEL 82540EM or Realtek RTL8110S Gigabit Ethernet controller. Supports full 10,100 and1000-bast-T Ethernet
Keyboard and PS/2 mouse connector	A connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse.
Audio	AC' 97 Audio CODEC
Compact flash	It can be used with a passive adapter (True IDE Mode) in a Type I/II CF Socket.
Power consumption	PENTIUM4: 3.0GHz, 2GB DDR400 DDR-SDRAM +5V @ 4.7A , +12V @ 6.1A , +3.3V @ 0.7A , -12V @ 0.2A , +5VSB @ 0.7A Recommended : 350-watt power supply or higher
Operating temperature	$0° \sim 60°$ C (*CPU needs Cooler & silicone heatsink paste*)

WARNING : 1. Use ATX-12V Power Connector (CN5)
to provide power for the CPU.

1.2 What You Have

In addition to this *User's Manual*, the ICPMB-8650 package includes the following items:

- ICPMB-8650 Single Board Computer X1.

- RS-232 Cable with bracket X3.

- FDD cable X1.

- PATA IDE cable X2.

- SATA IDE cable X2.

- SATA Power cable X1.

- Driver CD X1.

If any of these items are missing or damaged, contact the dealer from whom you purchased this product. Save the shipping materials and carton in case you want to ship or store the product in the future.

2

Installation

This chapter describes how to install the ICPMB-8650. First a
layout diagram of the ICPMB-8650 is shown, followed by
unpacking information that should be carefully followed. The
jumpers and switch settings for the ICPMB-8650 configuration,
such as CPU type selection, system clock setting, and
watchdog timer, are also listed.

2.1 ICPMB-8650's Layout
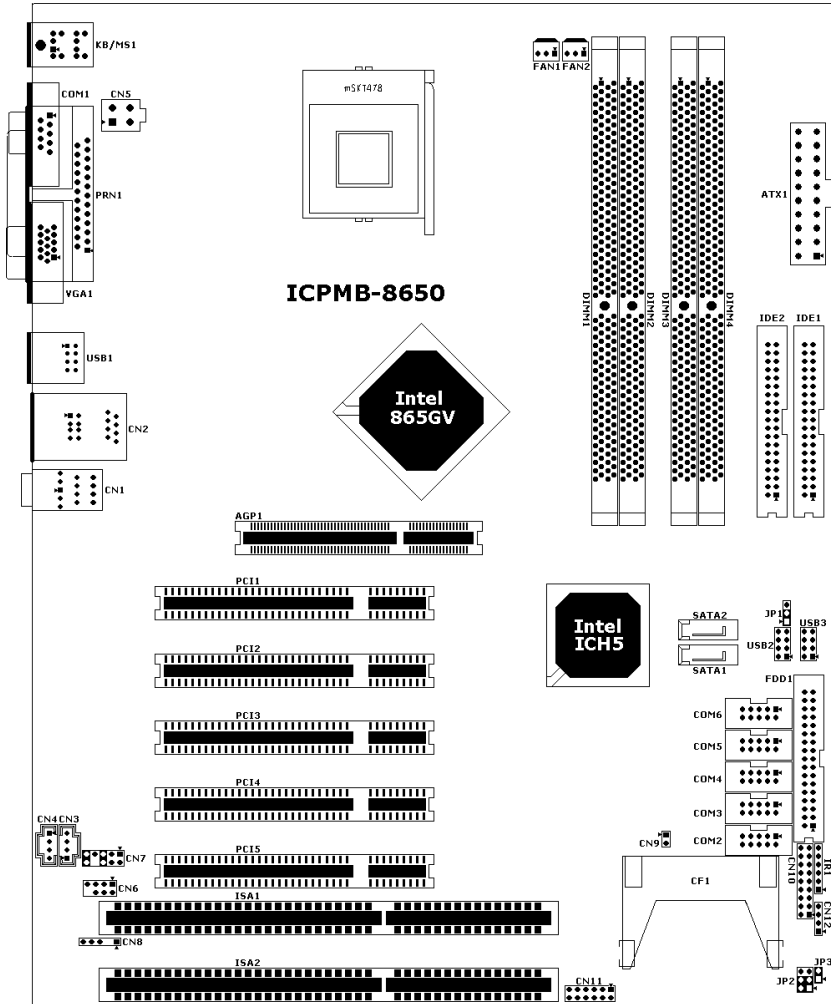
2.2 ICPMB-8650's Dimensions (Unit : mm)
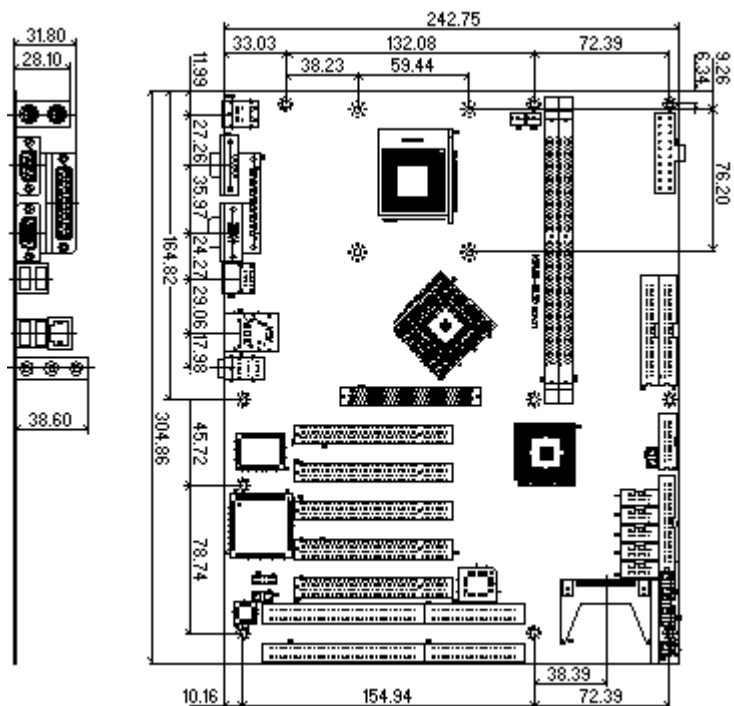
2.3   Unpacking Precautions

Some components on ICPMB-8650 are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to follow these precautions:

✓   Ground yourself to remove any static charge before touching your ICPMB-8650. You can do it by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.

✓   Handle your ICPMB-8650 by its edges. Don't touch IC chips, leads or circuitry if not necessary.

✓   Do not plug any connector or jumper while the power is on.

Note: All shaded rows in tables of this manual are the default settings for the ICPMB-8650.

2.4 Clear CMOS Setup

To clear the CMOS Setup (e.g., you have forgotten the password, you must clear the CMOS to reset the password), you have to close the JP1 (pin 2-3) for about 3 seconds, then open it. After that, pin 1-2 has to be short for normal operation.

● **JP1 : Clear CMOS Setup**

JP1	Description
1-2 (default)*	Keep CMOS Setup (Normal Operation)
Short 2-3	Clear CMOS Setup

2.5 COM3 RS232/RS422/485 Selection

· **JP2: COM3 RS232/RS422/485 Selection**

JP2	Description
1-3 Short (default)*	RS232
3-5 Short 2-4 Short	RS422
3-5 Short 4-6 Short	RS485

Note: When RS422/485 is in use, the COM3's RS232 port will be disabled.

2.6 Compact Flash Master/Slave Function Setting

● **JP3 : Compact Flash Master/Slave Function Setting**

JP3	Description
Short*	Master
Open	Slave

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the ICPMB-8650 board.

Label	Function
IDE1 & IDE2	Ultra ATA100 Primary & Secondary IDE connectors
FDD1	Floppy connector
PRN1	Parallel port connector
COM1,2,3,4,5,6	Serial port connectors
CF1	Compact Flash Storage Card Type II connector
IR1	IRDA infrared interface port
USB1	USB port connector
USB2	USB dual port connector
USB3	USB dual port connector
KB/MS1	Keyboard & Mouse connector
FAN1 & FAN2	FAN connectors
SATA1 & SATA2	Serial ATA connectors
VGA1	VGA connector
CN1	Audio connector
CN2	USB dual port & LAN RJ45 connectors
CN3	Audio AUX in connector
CN4	Audio CD in connector
CN5	ATX +12V Power connector
CN6	5.1 Channel Audio connector
CN7	Front Panel Audio connector
CN8	S/PDIF connector
CN9	iButton connector
CN10	Digital I/O connector
CN11	External switches and indicators
CN12	RS422/485 connector
PCI1,2,3,4,5	PCI slots
ISA1,2	ISA slots
ATX1	ATX Power connector

3.1 PCI E-IDE Disk Drive Connector

You can attach up to four IDE(Integrated Device Electronics) devices.

● **IDE1 : Primary IDE Connector**
● **IDE2 : Secondary IDE Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RESET#	2	GROUND
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	GROUND	20	N/C
21	DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	CHRDY	28	REV. PULL LOW
29	DACK	30	GROUND-DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

3.2 Floppy Connector

The ICPMB-8650 board is equipped with a 34-pin daisy-chain drive connector cable.

- **FDD1 : Floppy Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GROUND	2	RWC0-
3	GROUND	4	NC
5	GROUND	6	RWC1-
7	GROUND	8	INDEX-
9	GROUND	10	MO-A
11	GROUND	12	DS-B
13	GROUND	14	DS-A
15	GROUND	16	MO-B
17	GROUND	18	DIR-
19	GROUND	20	STEP-
21	GROUND	22	WD-
23	GROUND	24	WGATE-
25	GROUND	26	TRK0-
27	GROUND	28	WP-
29	GROUND	30	RDATA-
31	GROUND	32	HEAD-
33	GROUND	34	DSKCHG-

3.3   Parallel Port Connector

Usually, a printer is connected to the parallel port. The ICPMB-8650 includes an on-board parallel port

● **PRN1 : Parallel Port Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND		

3.4 Serial Port

The ICPMB-8650 offers Six high speed NS16C550 compatible UART' s with 16-byte Read/Receive FIFO serial ports.

- **COM1: D-SUB Serial Port Connector**
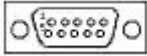
PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GROUND		

- **COM2,3,4,5,6: Serial Port Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GROUND	10	GROUND

3.5 Compact Flash Storage Card Socket

The ICPMB-8650 configures Compact Flash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

● **CF1 : Compact Flash Storage Card Socket pin assignment**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	PULL DOWN
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	VCC
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	N/C
19	A1	44	VCC
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	PULL DOWN	50	GROUND

3.6 IrDA Infrared Interface Port

The ICPMB-8650 comes with an integrated IrDA port which supports either a Serial Infrared(SIR) or an Amplitude Shift Keyed IR(ASKIR) interface.

● **IR1: IrDA connector**

PIN	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	Ground
5	IR-TX
6	CIRRX

3.7 USB Port Connector

The ICPMB-8650 is equipped with Eight USB(Version. 2.0) ports for the future new I/O bus expansion.

● **USB1 : 2 ports USB Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	5	VCC
2	DATA0-	6	DATA1-
3	DATA0+	7	DATA1+
4	GROUND	8	GROUND

USB0
USB1

● **USB2 : 2 ports USB Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	2	GROUND
3	DATA2-	4	DATA3+
5	DATA2+	6	DATA3-
7	GROUND	8	VCC

1 2
7 8

- **USB3 : 2 ports USB Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	2	GROUND
3	DATA4-	4	DATA5+
5	DATA4+	6	DATA5-
7	GROUND	8	VCC

- **CN2 : 2 ports USB Connector**
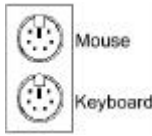
PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	5	VCC
2	DATA6-	6	DATA7-
3	DATA6+	7	DATA7+
4	GROUND	8	GROUND

3.8 Keyboard/Mouse Connector

The ICPMB-8650 has a keyboard/mouse connector

- **KB/MS1 : Keyboard/Mouse Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	KB DATA	7	MS DATA
2	NC	8	NC
3	GROUND	9	GROUND
4	KB VCC	10	MS VCC
5	KB CLOCK	11	MS CLOCK
6	NC	12	NC

3.9 Fan Connector

The ICPMB-8650 also has a CPU with cooling fan connector and chassis fan connector, which can supply 12V/500mA to the cooling fan. There is a "rotation" pin in the fan connector, which transfers the fan's rotation signal to the system BIOS in order to recognize the fan speed. Please note that only specific fans offer a rotation signal.

● **FAN1,FAN2 : CPU Fan Connector**

PIN	DESCRIPTION
1	Ground
2	+12V
3	Rotation Signal

3.10 Serial ATA Connector

The ICPMB-8650 provide 2 Serial ATA ports to connect with Serial ATA devices.

● **SATA1, SATA2 : Serial ATA Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	S_TXP	3	S_RXN
2	S_TXN	4	S_RXP

3.11 VGA Connector

- **VGA1: 15-pin Female Connector**
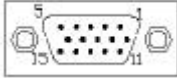
PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	VCC / NC	10	GROUND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

3.12 LAN Connector

The ICPMB-8650 is equipped with Ethernet Controllers 10/100Mbps, which are connected to the LAN via an RJ45 LAN connector. The pin assignments are as follows:

- **CN2 : RJ45 Connector (10/100/1000)**
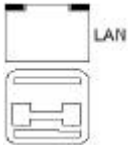
PIN	DESCRIPTION	PIN	DESCRIPTION
L1	TX0+	L7	TX3+
L2	TX0-	L8	TX3-
L3	TX1+	L9	Active +
L4	TX2+	L10	Active -
L5	TX2-	L11	LINK +
L6	TX1-	L12	LINK -

3.13 Audio Connector

The onboard AC' 97 CODEC supports several audio functions.
The audio connectors are described below.
- **CN1 : Audio connector**
  (Line in, Line out, MIC in)

◎ LINE IN
◎ LINE OUT
◎ MIC IN
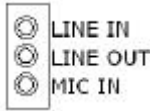
- **CN3 : Audio AUX In connector**

PIN	DESCRIPTION
1.	AUX (LEFT)
2.	GROUND
3.	GROUND
4.	AUX (RIGHT)

AUX IN

- **CN4 : Audio CD In connector**

PIN	DESCRIPTION
1.	CD SIGNAL (LEFT)
2.	GROUND
3.	GROUND
4.	CD SIGNAL (RIGHT)

CD IN

- **CN6 : 5.1 Channel Audio connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	SUR OUT(L)	2	CEN OUT
3	GROUND	4	GROUND
5	SUR OUT(R)	6	LFE OUT
7	GROUND		

1 2
7

- **CN7 : Front Panel Audio connector**
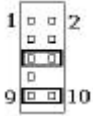
PIN	DESCRIPTION	PIN	DESCRIPTION
1	MIC IN	2	GROUND
3	MIC BIAS	4	5V
5	LINE OUT(R)	6	LINE OUT (R) Return
7	NC		
9	LINE OUT(L)	10	LINE OUT (L) Return

- **CN8 : S/PDIF connector**

PIN	DESCRIPTION
1.	5V
3.	S/PDIF OUT
4.	GROUND
5.	S/PDIF IN

3.14 ATX +12V Power connector

- **CN5: ATX +12V Power connector**

PIN	DESCRIPTION
1.	GROUND
2.	GROUND
3.	+12V
4.	+12V

3.15 iButton connector

- **CN9: I button connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	iButton input/output	2	GROUND

3.16 Digital I/O connector

- **CN10: Digital I/O connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DGPI0	2	DGPO0
3	DGPI1	4	DGPO1
5	DGPI2	6	DGPO2
7	DGPI3	8	DGPO3
9	DGPI4	10	DGPO4
11	DGPI5	12	DGPO5
13	DGPI6	14	DGPO6
15	DGPI7	16	DGPO7
17	GROUND	18	VCC

3.17 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling your CPU board. All functions are in the CN11connector.

● **CN11 : Pin Assignment and Functions**
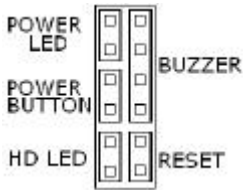
FUNCTION	PIN	DESCRIPTION
BUZZER	2	BUZZER-
	4	NC
	6	NC
	8	VCC
RESET	10	RESET
	12	GROUND
HDD LED	9	IDE_LED+
	11	IDE_LED-
POWER LED	1	LED+
	3	LED-(GROUND)
POWER BUTTON	5	VCC
	7	POWER BUTTON

3.18 RS422/485 connector

● **CN12: RS422/485 connector**

PIN	DESCRIPTION
1.	TX+
2.	TX-
3.	RX+
4.	RX-

3.19 ATX Power connector

• **ATX1: ATX Power connector**
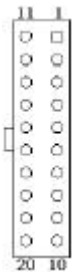
PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC3	11	VCC3
2	VCC3	12	-12V
3	GROUND	13	GROUND
4	5V	14	PS-ON
5	GROUND	15	GROUND
6	5V	16	GROUND
7	GROUND	17	GROUND
8	POWER GOOD	18	NC
9	5VSB	19	5V
10	+12V	20	5V

4

Award BIOS Setup

4.1 Introduction

This chapter discusses the Setup program written in the BIOS. It will give you a step-by-step guidance to configure your system. The user-defined configuration is then stored in battery-backed CMOS RAM, which retains the customized information while the power is off.

4.2 Starting Setup

The BIOS is immediately active when you turn on the computer. While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or

2. By pressing the <Del> key when the following message appears at the bottom of the screen during POST (Power On Self-Test):

    Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

    PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

In general, you can use the arrow keys to highlight items, press <Enter>
to select, use the PageUp and PageDown keys to change entries, press
<F1> for help and press <Esc> to quit. The following table provides more
details about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and save no changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.4 Main Menu

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to go through the items and press <Enter> to accept and enter the 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 Password                    │
│  ▶ Power Management Setup            │    Save & Exit Setup               │
│  ▶ PnP/PCI Configurations            │    Exit Without Saving             │
│  ▶ PC Health Status                  │                                    │
├─────────────────────────────────────┴────────────────────────────────────┤
│  Esc : Quit        F9 : Menu in BIOS        ↑ ↓ → ←   : Select Item        │
│  F10 : Save & Exit Setup                                                   │
├───────────────────────────────────────────────────────────────────────────┤
│                     Time, Date, Hard Disk Type...                          │
└───────────────────────────────────────────────────────────────────────────┘
```

Note that a brief description of each highlighted selection appears at the bottom of the screen.

4.4.1 Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Features

Use this menu for basic system configuration. See Section 4.5 for the details.

Advanced BIOS Features

Use this menu to set the Advanced Features available on your system. See Section 4.6 for the details.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance. See section 4.7 for the details.

Integrated Peripherals

Use this menu to configure your settings for integrated peripherals. See section 4.8 for the details.

Power Management Setup

Use this menu to configure your settings for power management. See section 4.9 for the details.

PnP / PCI Configuration

This entry appears if your system supports PnP / PCI. See section 4.10 for the details.

PC Health Status

Use this menu to monitor your hardware. See section 4.11 for details.

Frequency/Voltage Control

Use this menu to configure your settings for frequency/voltage control. See section 4.12 for the details.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate. See section 4.13 for the details.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to

change these defaults to meet their needs. See section 4.14 for the details.

Set Password

Use this menu to set Passwords. See section 4.15 for the details.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup. See section 4.16 for the details.

Exit Without Save

Abandon all CMOS value changes and exit setup. See section 4.15 for the details.

4.5 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

```
                Phoenix - AwardBIOS CMOS Setup Utility
                         Standard CMOS Features
 ┌──────────────────────────────────────────────┬──────────────────────┐
 │  Date (mm:dd:yy)              Aug  6 2003      │      Item Help       │
 │  Time (hh:mm:ss)          13 : 35 : 53        ├──────────────────────┤
 │                                               │  Menu Level   ►      │
 │ ► IDE Channel 0 Master                        │                      │
 │ ► IDE Channel 0 Slave         [ None]         │  Change the day, month,│
 │ ► IDE Channel 1 Master        [ None]         │  year and century     │
 │ ► IDE Channel 1 Slave         [ None]         │                      │
 │                                               │                      │
 │  Drive A                    [1.44M, 3.5 in.]  │                      │
 │  Drive B                    [None]            │                      │
 │                                               │                      │
 │  Video                      [EGA/VGA]         │                      │
 │  Halt On                    [All , But Keyboard]│                    │
 │                                               │                      │
 └──────────────────────────────────────────────┴──────────────────────┘
  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

Item	Options	Description
Date	MM DD YYYY	Set the system date.

Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on

	this menu.
IDE Primary Master	None Auto Manual	Selecting ' manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk

4.6 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

```
► Hard Disk Boot Priority    [Press Enter]           ▲        Item Help
  CPU L1 & L2 Cache          [Enabled]
  Hyper-Threading Technology [Enabled]            Menu Level  ►
  Quick Power On Self Test   [Enabled]
  First Boot Device          [Floppy]             Select Hard Disk Boot
  Second Boot Device         [Hard Disk]          Device Priority
  Third Boot Device          [LS120]
  Boot Other Device          [Enabled]
  Swap Floppy Drive          [Disabled]
  Boot Up Floppy Seek        [Enabled]
  Boot Up NumLock Status     [On ]
  Gate A20 Option            [Fast]
  Typematic Rate Setting     [Disabled]

  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
```

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

Hard Disk Boot Priority

This setting is to select hard disk boot priority

CPU L1 & L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

Hyper-Threading Technology

This setting is to enable or disable hyper threading CPU support

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

| Enabled | Enable quick POST |
| Disabled | Normal POST |

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS120, HDD0-3, SCSI, CDROM, ZIP 100 , LAN, Disabled.

Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignments.

The choice: Enabled/Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

The choice: Enabled/Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: On/Off.

Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

| Normal | A pin in the keyboard controller controls GateA20 |
| Fast | Lets chipset control GateA20 |

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller.
When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled/Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down.

The choice: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750, 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

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

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Small Logo(EPA) Show

Disabled/Enabled Small Logo(EPA) Show

4.7 Advanced Chipset Features

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

   DRAM Timing Selectable    [By SPD]              Item Help
   CAS Latency Time          [2]
   Active to Precharge Delay [8]          Menu Level    ►
   DRAM RAS# to CAS# Delay   [4]
   DRAM RAS# Precharge       [4]
   Memory Frequency For      [Auto]
   System BIOS Cacheable     [Enabled]
   Video  BIOS Cacheable     [Disabled]
   Memory Hole At 15M-16M    [Disabled]
   Delay Prior to Thermal    [16 Min]
   AGP Aperture Size (MB)    [128]
   Init Display First        [PCI Slot]

   On-Chip UGA               [Enabled]
   On-Chip Frame Buffer Size [16MB]
   Boot Display              [Auto]

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

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system.

DRAM Timing Selectable

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 1.5 , 2, 2.5 , 3

DRAM RAS# to CAS# Delay

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. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

DRAM RAS# Precharge

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

DRAM Frequency For

This field displays the capability of the memory modules that you are using either H/W TRAP.

The choice: Auto, DDR266, DDR333, DDR400.

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 choice: Enabled, Disabled.

Video BIOS Cacheable

Select Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choice: Enabled, Disabled.

Memory Hole At 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The Choice: Enabled, Disabled.

AGP Aperture Size (MB)

Select the on-chip video window size for VGA drive use.

The Choice: 4MB, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB

On-chip VGA

Enabled/Disabled On-chip VGA

4.8 Integrated Peripherals

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Integrated Peripherals

 ▶ OnChip IDE Device         [Press Enter]          Item Help
 ▶ Onboard Device            [Press Enter]
 ▶ SuperIO Device            [Press Enter]     Menu Level    ▶
   Watch Dog Timer Unit      [Second]
   Onboard Serial Port 3     [3E8]
   Serial Port 3 Use IRQ     [IRQ11]
   Onboard Serial Port 4     [2E8]
   Serial Port 4 Use IRQ     [IRQ10]
   Onboard Serial Port 5     [4F8]
   Serial Port 5 Use IRQ     [IRQ11]
   Onboard Serial Port 6     [4E8]
   Serial Port 6 Use IRQ     [IRQ10]
   Digital I/O Port          [280h]




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

```
              Phoenix - AwardBIOS CMOS Setup Utility
                       OnChip IDE Device
┌──────────────────────────────────────────────┬─────────────────────────┐
│   IDE HDD Block Mode         [Enabled]        │      Item Help          │
│   On-Chip Primary   PCI IDE  [Enabled]        ├─────────────────────────┤
│   IDE Primary Master PIO     [Auto]           │  Menu Level   ►►        │
│   IDE Primary Slave  PIO     [Auto]           │                         │
│   IDE Primary Master UDMA    [Auto]           │  If your IDE hard drive │
│   IDE Primary Slave  UDMA    [Auto]           │  supports block mode    │
│   On-Chip Secondary PCI IDE  [Enabled]        │  select Enabled for     │
│   IDE Secondary Master PIO   [Auto]           │  automatic detection of │
│   IDE Secondary Slave  PIO   [Auto]           │  the optimal number of  │
│   IDE Secondary Master UDMA  [Auto]           │  block read/writes per  │
│   IDE Secondary Slave  UDMA  [Auto]           │  sector the drive can   │
│                                               │  support                │
│   *** On-Chip Serial ATA Setting ***          │                         │
│   SATA Mode                  [IDE]            │                         │
│   On-Chip Serial ATA         [Auto]           │                         │
│   Serial ATA Port0 Mode      [Primary Master] │                         │
│   Serial ATA Port1 Mode       Primary Master  │                         │
│                                               │                         │
└──────────────────────────────────────────────┴─────────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

```
              Phoenix - AwardBIOS CMOS Setup Utility
                       Onboard Device
┌──────────────────────────────────────────────┬─────────────────────────┐
│   USB Controller             [Enabled]        │      Item Help          │
│   USB 2.0 Controller         [Enabled]        ├─────────────────────────┤
│   USB Keyboard Support       [Disabled]       │  Menu Level   ►►        │
│   AC97 Audio                 [Auto]           │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
└──────────────────────────────────────────────┴─────────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

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```
                    Phoenix - AwardBIOS CMOS Setup Utility
                               SuperIO Device

      POWER ON Function          [BUTTON ONLY]            Item Help
      KB Power ON Password       [Enter]
      Hot Key Power ON           [Ctrl-F1]          Menu Level    ▶▶
      Onboard FDC Controller     [Enabled]
      Onboard Serial Port 1      [3F8/IRQ4]
      Onboard Serial Port 2      [2F8/IRQ3]
      UART Mode Select           [Normal]
      RxD , TxD Active           [Hi,Lo]
      IR Transmission Delay      [Enabled]
      UR2 Duplex Mode            [Half]
      Use IR Pins                [IR-Rx2Tx2]
      Onboard Parallel Port      [378/IRQ7]
      Parallel Port Mode         [SPP]
      EPP Mode Select            [EPP1.7]
      ECP Mode Use DMA           [3]
      PWRON After PWR-Fail       [Off]



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

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 choice: Enabled, Disabled.

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 through 4 provide successively increased performance.
In Auto mode, the system automatically determines the best mode for
each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA-33/66 implementation is possible only if your IDE hard drive
supports it and the operating environment includes a DMA driver
(Windows 95 OSR2 or a third-party IDE bus master driver). If your hard
drive and your system software both support Ultra DMA-33/66, select
Auto to enable BIOS support.

The Choice: Auto, Disabled.

On-Chip Serial ATA

[Disable] : Disable SATA controller.

[Combined] : SATA and PATS are combined. Max. of 2 IDE drivers in each channel.

[Enhanced] : Enhanced both SATA and PATA. Max. of 6 IDE drivers are support.

[SATA only] : SATA is operating in legacy mode.

USB Controller

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

The Choice: Enabled, Disabled.

USB Keyboard Support

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

The Choice: Enabled, Disabled.

AC97 Audio

This item allows you to decide to enable/disable the ALC202A chipset

The choice: Auto, Disabled.

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field.

The choice: Enabled, Disabled

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled,

Auto

UART Mode Select

Select a serial port 2 operation mode.

The choice: Normal, IrDA, ASKIR, SCR

Onboard Parallel Port

Select an address and corresponding interrupt for the parallel ports.

The choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled,

Parallel Port Mode

Select a parallel operation mode.

The choice: SPP, EPP, ECP,ECP+EPP

Watchdog Timer Unit Select

Select the WatchDog Timer unit.

The choice: Second, Minute

4.9 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

```
                Phoenix - AwardBIOS CMOS Setup Utility
                       Power Management Setup
┌─────────────────────────────────────────────┬──────────────────────┐
│    ACPI Function           [Enabled]      ▲  │      Item Help       │
│    ACPI Suspend Type       [S1(POS)]         │                      │
│  x Run VGABIOS if S3 Resume  Auto            │  Menu Level   ▶      │
│    Power Management        [User Define]      │                      │
│    Video Off Method        [DPMS]            │                      │
│    Video Off In Suspend    [Yes]             │                      │
│    Suspend Type            [Stop Grant]      │                      │
│    MODEM Use IRQ           [3]               │                      │
│    Suspend Mode            [Disabled]        │                      │
│    HDD Power Down          [Disabled]        │                      │
│    Soft-Off by PWR-BTTN    [Instant-Off]     │                      │
│    Wake-Up by PCI card     [Enabled]         │                      │
│    Power On by Ring        [Enabled]         │                      │
│  x USB KB Wake-Up From S3    Disabled        │                      │
│    Resume by Alarm         [Disabled]        │                      │
│  x  Date(of Month) Alarm     0               │                      │
│  x  Time(hh:mm:ss) Alarm     0 :  0 :  0     │                      │
│                                           ▼  │                      │
│    ** Reload Global Timer Events **          │                      │
├─────────────────────────────────────────────┴──────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults    │
└─────────────────────────────────────────────────────────────────────┘
```

ACPI Function

This feature is switch of ACPI function. Configuration options: Enable/Disable.

ACPI Suspend Type

This feature is switch of POS (S1) or STR (S3) function. Configuration options: [S1<POS>] [S3<STR>] [S1&S3].

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPU' s**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This determines the manner in which the monitor is blanked.

The choice: Yes, No.

Suspend Type

Select the Suspend Type.

The choice: PWRON Suspend, Stop Grant.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: 1Min, 2Min, 4Min, 8Min, 12Min, 20Min, 30Min, 40Min, 1Hour, Disabled

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: 1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min, 8Min, 9Min, 10Min, Disabled.

Soft-off By PWR-BTTN

Instant-off allows the system to switch off immediately the power button is pressed. Otherwise, it will only so after you press the power switch for more 4 seconds.

Wakeup By PCI Card

When this option is set enabled, system will wakeup then wakeup event from PCI Card.

Resume By Alarm

When this option is set enabled, system will according to you set time then wakeup from soft off mode.

4.10 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                         PnP/PCI Configurations
┌──────────────────────────────────────────────┬──────────────────────┐
│    Reset Configuration Data   [Disabled]      │      Item Help       │
│                                               ├──────────────────────┤
│    Resources Controlled By    [Auto(ESCD)]    │  Menu Level    ▶     │
│  x IRQ Resources               Press Enter    │                      │
│                                               │  Default is Disabled.│
│    PCI/VGA Palette Snoop       [Disabled]     │  Select Enabled to   │
│                                               │  reset Extended System│
│                                               │  Configuration Data  │
│                                               │  ESCD) when you exit │
│                                               │  Setup if you have   │
│                                               │  installed a new add-on│
│                                               │  and the system      │
│                                               │  reconfiguration has │
│                                               │  caused such a serious│
│                                               │  conflict that the OS│
│                                               │  cannot boot         │
│                                               │                      │
│                                               │                      │
│                                               │                      │
├──────────────────────────────────────────────┴──────────────────────┤
│  ↑↓→←:Move   Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
│     F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults │
└──────────────────────────────────────────────────────────────────────┘
```

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

The choice: Enabled, Disabled .

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However,

this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➤").

The choice: Auto(ESCD), Manual.

PCI/VGA Palette Snoop

Leave this field at *Disabled*.

Choices are Enabled, Disabled.

4.11 PC Health Status

Note: normal CPU Fan RPM is over than 5000 RPM. If your CPU Fan RPM is less than that figure, something is wrong and the CPU will be in overheat condition. Make sure that the connection at Fan1/Fan2 is correct.

```
               Phoenix - AwardBIOS CMOS Setup Utility
                        PC Health Status
┌─────────────────────────────────────────────┬──────────────────────┐
│  CPU Temperature                             │      Item Help       │
│  System Temperature                          │                      │
│  VCore (From VID)                            │  Menu Level    ►     │
│  Vcore                                       │                      │
│  +1.5V                                       │                      │
│  +3.3 V                                      │                      │
│  +5 V                                        │                      │
│  +12 V                                       │                      │
│  -12 V                  -                    │                      │
│  Fan1 Speed                                  │                      │
│  Fan2 Speed                                  │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
└─────────────────────────────────────────────┴──────────────────────┘
  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

4.12 Frequency/Voltage Control

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                           Frequency/Voltage Control
 ┌─────────────────────────────────────────────┬───────────────────────────┐
 │ Auto Detect DIMM/PCI Clk   [Enabled]         │         Item Help         │
 │ Spread Spectrum            [Disabled]        ├───────────────────────────┤
 │                                              │ Menu Level    ▶           │
 │                                              │                           │
 │                                              │                           │
 │                                              │                           │
 │                                              │                           │
 │                                              │                           │
 │                                              │                           │
 │                                              │                           │
 │                                              │                           │
 │                                              │                           │
 │                                              │                           │
 └─────────────────────────────────────────────┴───────────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values      F6: Fail-Safe Defaults   F7: Optimized Defaults
```

Auto Detect DIMM/PCI Clk

This item allows you to enable/disable auto detect DIMM/PCI Clock.

The choice: Enabled, Disabled.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate.

The choice: Enabled, Disabled.

4.13 Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

4.14 Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.15 Set Password

can enter and change the options of the setup menus.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

PASSWORD DISABLED:

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

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

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.16 Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Appendix A. Watchdog Timer

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

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

INT 15H:

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

You have to call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start counting down. While the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, the Watchdog Timer must be periodically refreshed by calling sub-function 2. However the Watchdog timer will be disabled if you set the time-out value to be zero.

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

Note: when exiting a program it is necessary to disable the Watchdog Timer, otherwise the system will reset.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

    MOV    AX, 6F02H          ;setting the time-out value
    MOV    BL, 30             ;time-out value is 48 seconds
    INT    15H
;
; ADD YOUR APPLICATION PROGRAM HERE
;
    CMP    EXIT_AP, 1         ;is your application over?
    JNE    W_LOOP             ;No, restart your application

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

Appendix B. Address Mapping

IO Address Map

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-05F	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channal
2E8-2EF	Serial Port 4 (COM4)
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	Intel(R) 82865 Graphics Controller
3C0-3DF	Intel(R) 82865 Graphics Controller
3E8-3EF	Serial Port 3 (COM3)
3F6-3F6	Primary IDE Channal
3F7-3F7	Standard floopy disk controller
3F8-3FF	Serial Port 1 (COM1)
4E8-4EF	Serial Port 5 (COM5)
4F8-4FF	Serial Port 6 (COM6)

1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

*Default setting

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	AUDIO/SMBus Cntrlr
IRQ2	Available	IRQ10	COM4/COM6
IRQ3	COM2	IRQ11	COM3/COM5
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	VGA/SMBus Cntrlr	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Appendix C. How to Upgrade a New BIOS

\<Note\> Before flashing BIOS , please enable the item "FLASH BIOS" in BIOS setting.

You can install an upgrade BIOS for the SAGP-865EVG that you can download from the manufacturer's web site (http://www.ieiworld.com). New BIOS may provide support for new peripherals ,improvements in performance or fixes to addressed known bugs.

BIOS Update Procedure:

1. Make a boot disk. Go to the DOS command prompt in MS-DOS or Windows 9x and, with an available floppy disk in "A", type "format A: /s" That will format the floppy and transfer the needed system files to it.

NOTES:
A. This procedure will erase any prior data on that floppy, so please Proceed accordingly.
B. Typically four files will be transferred, only COMMAND.COM being visible when running a simple directory listing.
C. Please leave the diskette UN-write protected for the balance of this procedure.

2. Download the BIOS upgrade file and awdflash.exe utility from a ICP web site to a temp directory on your hard drive, or directly to the floppy you made in step 1..

3. Copy (BIOS file and awdflash.exe)two files to the boot floppy.

4. Reboot the system to the DOS command prompt using the boot diskette you just made.

5. At the DOS command prompt type , "awdflash filename.xxx", where filename.xxx is the file name of the BIOS file . Hit enter.

6. Your first option, in sequence, will be to save the old BIOS. We recommend that you do that in case, for whatever reason, you decide you don't wish to use the new version once it is installed.
NOTES:
A. If you decide to save the old BIOS, PLEASE make sure you do NOT save it to the same file name as the new BIOS - if you use the same BIOS name the old file will be written over the new file with NO warning prompt. A simple file name to save the old BIOS to is OLDBIOS.BIN.
B. If you do NOT decide to save the old BIOS, PLEASE at least write down the version number of the old BIOS and store that information with your important computer documents. Enter N (for "no") and skip to step 9.

7. To save the old BIOS, hit Y (for "yes")

8. Enter a name for the OLD BIOS file and hit enter.
NOTE:PLEASE be sure you do NOT save the old BIOS file to the same file name as the new BIOS - if you use the same BIOS name, the old file will write over the new BIOS file WITHOUT a warning prompt. A simple file name for saving the old BIOS to is OLDBIOS.BIN.

9. Your second option, in sequence, will be whether you want to flash your BIOS. Enter Y (for "yes").
NOTE: This is the critical step. Once you kit the enter key, do NOT touch the keyboard, the reset button, or power switch while the flashing is in progress. There will be bar progressing across the screen while the flashing is progressing.

10. When the flashing process is complete, you will be asked to reset or power off the system. Remove the floppy diskette from the floppy drive and either hit the reset button or the power button.

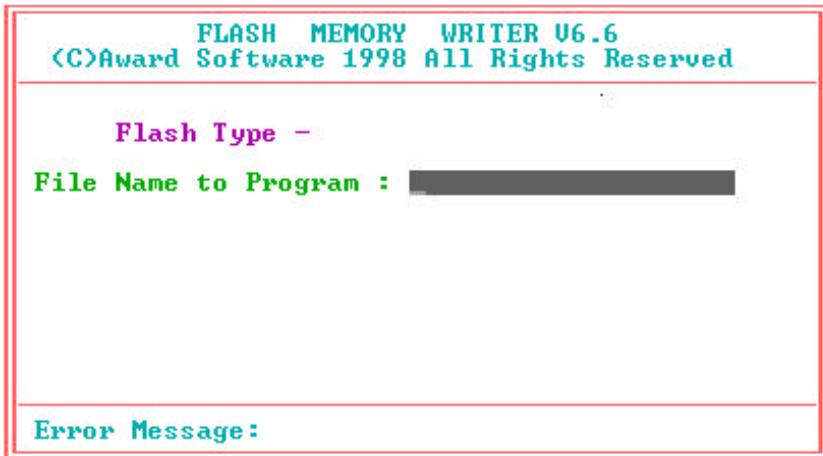11. Reboot the system and note that the BIOS version on the

initial boot-up screen has changed to the new BIOS version. Your BIOS upgrade is now complete.

Recovering Your Old BIOS:
1. Assuming you have the floppy made during the upgrade procedure noted above, boot the system with that diskette in the floppy drive. If you do not have floppy made during the upgrade procedure noted above, you will need to repeat steps 1 though 3 (above) for the version of the BIOS you wish to recover to.

2. Complete steps 4, 5, 6B, 9, 10, and 11 (above) substituting the name of the BIOS you wish to recover for the upgrade BIOS at step 5.

Install screen :

```
        FLASH   MEMORY   WRITER V6.6
   (C)Award Software 1998 All Rights Reserved


      Flash Type -

File Name to Program : ████████████████



Error Message:
```

Appendix D. Install memory modules

ICPMB-8650 has four dual in line memory module (DIMM) sockets . The BIOS will automatically detects memory type and size. To ins tall the memory module, just push it vertically into the DIMM socket. The DIMM module can only fit in one direction due to the notch. Memory size can vary between sockets.

ICPMB-8650 supports the Dual Channel Technology. After operating the Dual Channel Technology, the bandwidth of   Memory Bus will add double up to 6.4GB/s.
ICPMB-8650 includes 4 DIMM sockets, and each Channel has two DIMM socket.

If you want to operate the Dual Channel Technology, please note the following explanations due to the limitation of Intel®chipset specifications.

1. Only one DDR memory module is installed: The Dual Channel Technology can't operate when only one DDR memory module is installed.

2. Two DDR memory modules are installed (the same memory size and type): The Dual Channel Technology will operate when two memory modules are inserted individually into Channel A and B