USER'S MANUAL

PMB-1751LF

Pentium® 4
Motherboard
With VGA / Audio/ 2LAN

PMB-1751LF M1

PMB-1751LF
Pentium® 4
Motherboard
With VGA / Audio / Dual LAN

OPERATION MANUAL

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ACKNOWLEDGEMENTS

CE NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

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INTRODUCTION

CHAPTER

1

This chapter gives you the information for PMB-1751LF. It also outlines the System specifications.

Section includes:

- About This Manual
- System Specifications
- Safety Precautions

Experienced users can skip to chapter 2 on page 2-1 for a Quick Start.

1-1. ABOUT THIS MANUAL

Thank you for purchasing our PMB-1751LF Socket 478 Mainboard enhanced with VGA/Sound/Dual LAN, which is fully PC / AT compatible. The PMB-1751LF provides faster processing speed; greater expandability and can handle more tasks than before. This manual is designed to assist you how to install and set up the system. It contains four chapters. The user can apply this manual for configuration according to the following chapters:

Chapter 1 Introduction

This chapter introduces you to the background of this manual, and the specifications for this system. The final page of this chapter will indicate how to avoid damaging this board.

Chapter 2 Hardware Configuration

This chapter outlines the component locations and their functions. In the end of this chapter, you will learn how to set jumper and how to configure this card to meet your own needs.

Chapter 3 Software Utilities

This chapter contains helpful information for proper installations of the VGA utility, LAN utility, Sound utility, and Flash BIOS Update. It also describes the Watchdog-timer configuration.

Chapter 4 Award BIOS Setup

This chapter indicates you how to set up the BIOS configurations.

Appendix A Expansion Bus

This Appendix introduces you the expansion bus for ISA BUS and PCI BUS.

Appendix B Technical Summary

This section gives you the information about the Technical maps.

1-2. SYSTEM SPECIFICATIONS

- **CPU (mPGA478):**
  Intel® Pentium® 4 processor in mPGA478 Socket.
  1.5~3.06 GHz clock generator.
  Front Side Bus 533/400 MHZ.
  Auto detect voltage regulator.
  Support H-T Tech.

- **MEMORY :**
  Supports up to 2GB DDR SDRAM.
  Two 184-pin DDR DIMM sockets on board.

- **CACHE :**
  Built-in CPU.

- **REAL-TIME CLOCK :**
  256-byte battery backed CMOS RAM.
  Hardware implementation to indicate century rollover.

- **BIOS :**
  Phoenix-AwardBIOS™ for plug & play function.
  Easy update 512KB flash EEPROM.
  Support S/IO Setup.

- **KEYBOARD CONNECTOR :**
  Mini DIN connector.
  Supports for AT/PS2 keyboard.

- **MOUSE CONNECTOR :**
  Mini DIN connector.
  Supports for PS/2 Mouse.

- **BUS SUPPORT :**
  External 1 ISA, 6 PCI
  External 1 EPCI Bus

- **DISPLAY :**
  Built in Intel® 845GV
  Onboard 15-pin VGA D-SUB connector, support for resolution on SVGA Monitor.

- **WATCHDOG :**
  I / O port 0443H to Enable watchdog
  I / O port 0441H to Disable watchdog
  Selectable for NMI or Reset function by jumper setting
  Time-out timing select 16 / 24 / 32 / 40 / 48 / 56 / 64 / 72 / 80 / 88 / 96 / 104 / 112 / 120 sec +/- 25%.

- **IDE INTERFACE :**
  Two IDE ports support up to four IED devices.
  Supports Ultra DMA 33/66/100.

- **FLOPPY DISK DRIVER INTERFACE :**
  Support up to two Floppy Disk Drives, 3.5" (1.44M).

- **USB CONNECTOR :**
  Three sets of USB connector & USB power (+5.0V/+5.0V Stand By) selection.
  Support up to six USB 2.0 ports.

- **LAN ADAPTER :**
  Dual ports, Intel® 82562ET PHY & Intel® 82551QM or Intel 82541PI (Giga LAN)
  Two RJ-45 Jack onboard
  LAN1: 10BaseT/100 BaseTx Ethernet
  LAN2: 82541PI (10/100/1000)
  Support wake-on-LAN function, with ATX power.

- **SERIAL PORT :**
  Four high speed 16550 Compatible UARTs with Send / Receive 16 Byte FIFOs; COM1/3/4:RS-232; COM2:RS-232/422/485
  MIDI Compatible
  Programmable Baud Rate Generator

- **SOUND :**
  Realtek ALC202A (AC'97 Codec).
  Fully Compliant AC'97 Analog I/O Component
  16-Bit Stereo Full-Duplex Codec
  Four Analog Line-level Stereo Inputs for Connection.
  High Quality CD Input with Ground Sense
  Stereo Line-Level Output
  Interface: Line-In, Line-Out, Microphone, and CD Audio-In.

- **HARDWARE MONITORING FUNCTION :**
  Monitor Voltage, CPU temperature, & Cooling fan.
  If CPU Temperature is over setting, the buzzer will send out a warming.

- **IRDA PORT :**
  5-pin Infrared port, support IrDA v1.0 SIR protocol

- **PARALLEL PORT :**
  SPP / ECP / EPP Function.
  1 port, bi-directional parallel port.

- **GREEN FUNCTION :**
  Software supported by BIOS setup

- **LED INDICATOR :**
  System power
  Hard Disk access
  LAN LED indicator

- **DMA CONTROLLER :**
  82C37 x 2

- **DMA CHANNELS :**
  7

- **INTERRUPT CONTROLLERS :**
  82C59 x 2

- **INTERRUPT LEVELS :**
  15

- **OPERATING TEMPERATURE :**
  0 to 60°C.

- **BOARD DIMENSIONS :**
  305mm x 244mm, 12" x 9.61"

- **BOARD NET WEIGHT :**
  0.67 Kg.

1-3. SAFETY PRECAUTIONS

Follow the messages below to avoid your systems from damage:

1. Keep your system away from static electricity on all occasions.

2. Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.

3. Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

HARDWARE CONFIGURATION

CHAPTER

2

*** QUICK START ***

Helpful information describes the jumper & connector settings, and component locations.

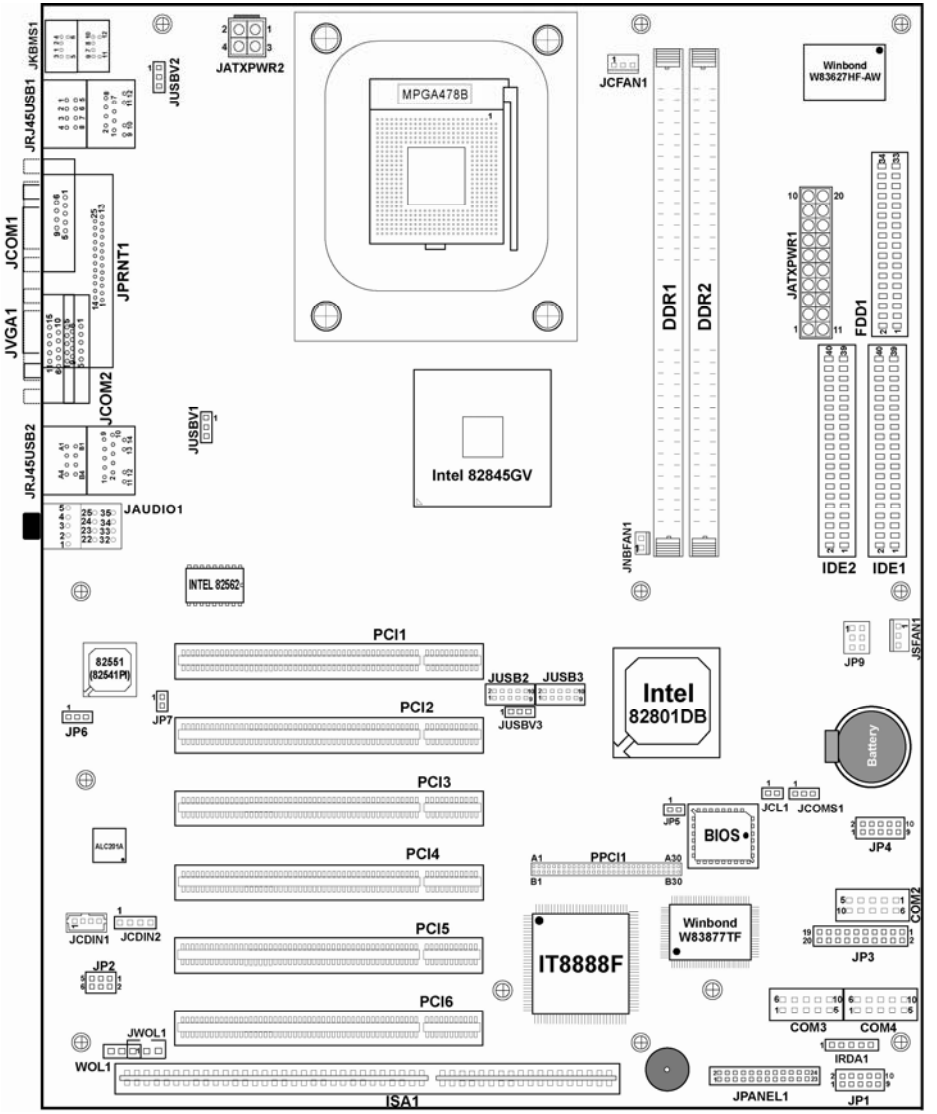
This section includes:

- Jumper & Connector Quick Reference Table
- Component Locations
- Configuration and Jumper settings
- Connector's Pin Assignments

2-1. JUMPER & CONNECTOR QUICK REFERENCE TABLE

COM Connector	JCOM1, COM2 COM3, COM4
RS232/422/485 (COM2) Selection	JP3
COM1 & COM2 RI & Voltage Selection	JP4
COM3 & COM4 RI & Voltage Selection	JP1
Keyboard & PS/2 Mouse Connector	JKBMS1
Reset Connector	JPANEL1 (13, 15)
External Speaker Connector	JPANEL1 (1, 3, 5, 7)
Hard Disk Drive LED Connector	JPANEL1 (9, 11)
Power LED Connector	JPANEL1 (8, 10, 12)
EXTSMI# Connector	JPANEL1 (2, 4)
ATX Power Button	JPANEL1 (14, 16)
KEYLOCK	JPANEL1 (17, 18)
IRDA Connector	IRDA1
Printer Connector	JPRNT1
ATX Power Connector	JATXPWR1, JATXPWR2
Clear CMOS Data Selection	JCMOS1
VGA Connector	JVGA1
USB & LAN Connector	JRJ45USB1, JRJ45USB2
Front USB Connector	JUSB3, JUSB2 (Optional)
USB Power Setting	JUSBV1, JUSBV2, JUSBV3
LAN2 Enable/Disable Selection	JP6
Wake-On-Modem Connector	WOL1 (JWOL1)
CPU Fan Connector	JCFAN1
System Fan Connector	JSFAN1, JSFAN2
Reset/NMI/Clear Watchdog Selection	JP2
Hard Disk Drive Connector	IDE1, IDE2
Floppy Disk Drive Connector	FDD1
Sound Connector	JAUDIO1
CD Audio-In Connector	JCDIN1, JCDIN2
Memory Installation	DDR1, DDR2
PPCI Connector	PPCI
EPPCI IRQ Selection	JP10
Reserved Pin	JP5,JP7

2-2. COMPONENT LOCATIONS



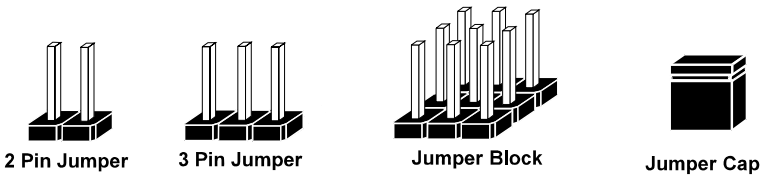
PMB-1751LF Connector, Jumper and Component locations

2-3. HOW TO SET THE JUMPERS

You can configure your board by setting the jumpers. Jumper is consists of two or three metal pins with a plastic base mounted on the card, and by using a small plastic "cap", Also known as the jumper cap (with a metal contact inside), you are able to connect the pins. So you can set-up your hardware configuration by "opening" or "closing" pins.

The jumper can be combined into sets that called jumper blocks. When the jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows how this looks like.

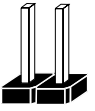
JUMPERS AND CAPS



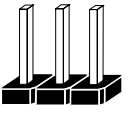
If a jumper has three pins (for example, labelled PIN1, PIN2, and PIN3), You can connect PIN1 & PIN2 to create one setting and shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagram looks like and what they represent.

JUMPER DIAGRAMS

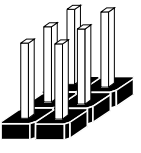
Jumper Cap looks like this



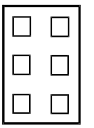
2 pin Jumper looks like this



3 pin Jumper looks like this

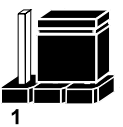


Jumper Block looks like this



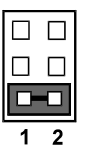
JUMPER SETTINGS

2 pin Jumper close(enabled)
looks like this



3 pin Jumper
2-3 pin close(enabled)
looks like this

Jumper Block
1-2 pin close(enabled)
looks like this

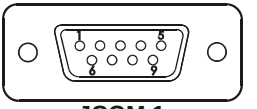


2-4. COM PORT CONNECTOR

Four COM ports are enhanced in this board namely: JCOM1, COM2, COM3 and COM4. JCOM1, COM3 and COM4 are fixed for RS-232 while COM2 is selectable for RS-232/422/485.

JCOM1 : COM1 Connector, DB9 male connector
The JCOM1 Connector assignments are as follows :

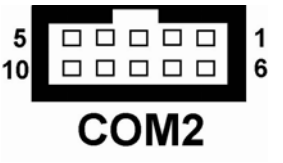
PIN	ASSIGNMENT
1	NDCD1
2	RXD1
3	TXD1
4	NDTR1
5	GND
6	NDSR1
7	NRTS1
8	NCTS1
9	NRI1



JCOM 1

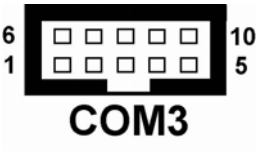
COM2 : COM2 Connector
The COM2 Connector assignments are as follows :

PIN	ASSIGNMENT		
	RS-232	RS-422	RS-485
1	NDCD2	TX-	TX-
2	RXD2	TX+	TX+
3	TXD2	RX+	RX+
4	NDTR2	RX-	RX-
5	GND	GND	GND
6	NDSR2	RTS-	NC
7	NRTS2	RTS+	NC
8	NCTS2	CTS+	NC
9	NRI2	CTS-	NC
10	NC	NC	NC



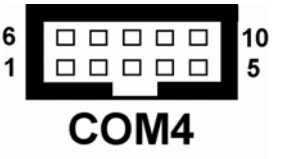
COM3 : COM3 Connector
The COM3 Connector assignments are as follows :

PIN	ASSIGNMENT
1	NDCD3
2	RXD3
3	TXD3
4	NDTR3
5	GND
6	NDSR3
7	NRTS3
8	NCTS3
9	NRI3
10	NC



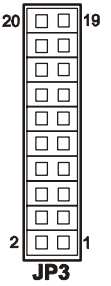
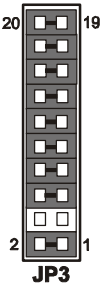
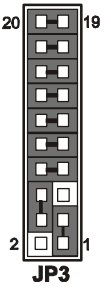
COM4 : COM4 Connector
The COM4 Connector assignments are as follows :

PIN	ASSIGNMENT
1	NDCD4
2	RXD4
3	TXD4
4	NDTR4
5	GND
6	NDSR4
7	NRTS4
8	NCTS4
9	NRI4
10	NC



2-5. RS232/422/485 (COM2) SELECTION

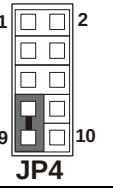
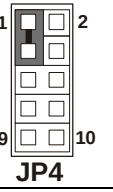
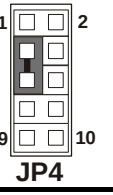
JP3 : RS-232/422/485 Selection
COM1, COM3, & COM4 is fixed for RS-232 function only.
COM2 is selectable for RS-232, 422, 485 function.
The jumper settings are as follows :

COM 2 Function	Jumper Setting (pin closed)	Jumper Illustration
RS-232	Open	
RS-422	1-2, 5-6, 7-8, 9-10 11-12,13-14,15-16 17-18, 19-20	
RS-485	1-3, 4-6, 7-8, 9-10 11-12,13-14,15-16 17-18, 19-20	

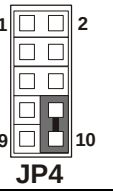
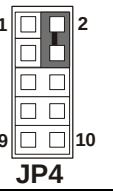
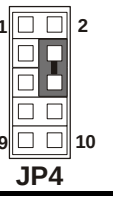
*** Manufactory default --- RS-232.

2-6. JCOM1 & COM2(JCOM2) RI & VOLTAGE SELECTION

JP4: JCOM1 & COM2(JCOM2) RI & Voltage Selection
The selections are as follows:

COM PORT	SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
JCOM1	RI	7-9	
	5V	1-3	
	12V	3-5	

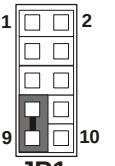
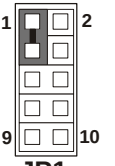
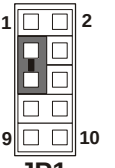
*** Manufactory default -- RI.

COM PORT	SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
COM2 (JCOM2)	RI	8-10	
	5V	2-4	
	12V	4-6	

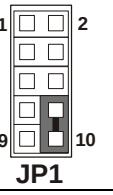
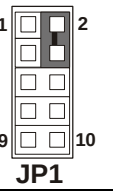
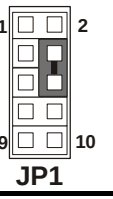
*** 1. Manufactory default – RI.
2. JCOM2 is shared with COM2.

2-7. COM3 & COM4 RI & VOLTAGE SELECTION

JP1: COM3 & COM4 RI & Voltage Selection
The selections are as follows:

COM PORT	SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
COM3	RI	7-9	
	5V	1-3	
	12V	3-5	

*** Manufactory default -- RI.

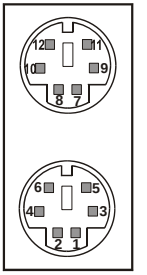
COM PORT	SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
COM4	RI	8-10	
	5V	2-4	
	12V	4-6	

*** Manufactory default -- RI.

2-8. KEYBOARD & PS/2 MOUSE CONNECTOR

JKBMS1 : Keyboard & PS/2 Mouse Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
1	L_KDAT
2	NC
3	GND
4	VCC
5	L_KCLK
6	NC
7	L_MDAT
8	NC
9	GND
10	VCC
11	L_MCLK
12	NC

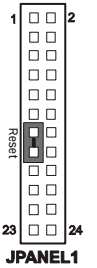


JKBMS1

2-9. RESET CONNECTOR

JPANEL1 (13-15) : Reset Connector.
The pin assignments are as follows :

PIN	ASSIGNMENT
13	GND
15	RST_BUTT

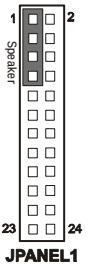


JPANEL1

2-10. EXTERNAL SPEAKER CONNECTOR

JPANEL1 (1,3,5,7) : External Speaker Connector
The pin assignments are as follows :

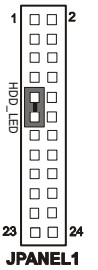
PIN	ASSIGNMENT
1	SPK3
3	NC
5	NC
7	SPK VCC



2-11. HARD DISK DRIVE LED CONNECTOR

JPANEL1 (9-11) : Hard Disk Drive LED Connector
The pin assignments are as follows :

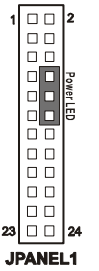
PIN	ASSIGNMENT
9	VCC3_3
11	HD_LED



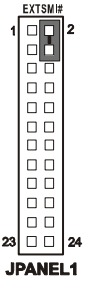
2-12. POWER LED CONNECTOR

JPANEL1 (8,10,12) : Power LED Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
8	LED+
10	LED+
12	LED-



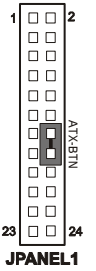
2-13. EXTSMI# CONNECTOR



JPANEL1 (2,4) : EXTSMI# Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
2	GPIO7
4	GND

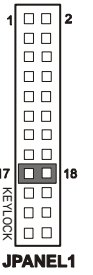
2-14. ATX POWER BUTTON



JPANEL1 (14,16) : ATX Power Button
The pin assignments are as follows :

PIN	ASSIGNMENT
14	PW_BN1
16	PW_BN2

2-15. KEYLOCK CONNCETOR



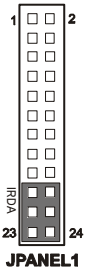
JPANEL1 (19,20,21,22,23,24) : KEYLOCK Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
17	KEYLOCK
18	GND

2-16. IRDA CONNECTOR

JPANEL1 (19,20,21,22,23,24) : Infrared Connector.
Share with IRDA1.
The pin assignments are as follows :

PIN	ASSIGNMENT
19	GND
20	NC
21	VCC5
22	GND
23	IRTX2
24	IRRX2



JPANEL1

2-17. PRINTER CONNECTOR

JPRNT1 : Printer Connector
The pin assignments are as follows :


JPRNT1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STB	14	AFD
2	P0	15	ERR
3	P1	16	INIT
4	P2	17	SLIN
5	P3	18	GND
6	P4	19	GND
7	P5	20	GND
8	P6	21	GND
9	P7	22	GND
10	ACK	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT		

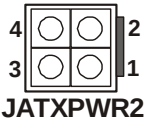
2-18. ATX POWER CONNECTOR

JATXPWR1 : ATX Power Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
1	+3.3V
2	+3.3V
3	GND
4	+5.0V
5	GND
6	+5.0V
7	GND
8	Power Good
9	+5.0V Standby
10	+12.0V
11	+3.3V
12	-12.0V
13	GND
14	Power On
15	GND
16	GND
17	GND
18	-5.0V
19	+5.0V
20	+5.0V

JATXPWR2 : ATX Power Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
1	VCC12
2	VCC12
3	GND
4	GND



2-19. CLEAR CMOS DATA SELECTION

JCMOS1 : Clear CMOS Data Selection
The selection are as follows :

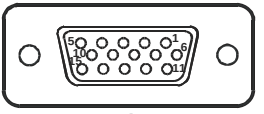
FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
Normal	1-2	
Clear CMOS	2-3	

*** Manufacturing Default is set as Normal.

Note: To clear CMOS data, user must power-off the computer and set the jumper to “Clear CMOS” as illustrated above. After five to six seconds, set the jumper back to “Normal” and power-on the computer.

2-20. VGA CONNECTOR

JVGA1 : VGA Connector
The pin assignments are as follows:



JVGA1

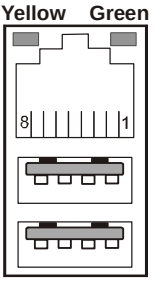
PIN	ASSIGNMENT
1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	GND
7	GND
8	GND
9	VGA_P5V
10	GND
11	NC
12	DDCDA
13	HSYNC
14	VSYNC
15	DDCLK

2-21. USB & LAN CONNECTOR

JRJ45USB1: USB & LAN Connector
This connector contains two USB ports and one LAN.
The pin assignments are as follows:

LAN

PIN	ASSIGNMENT
1	TX+
2	TX-
3	RX+
4	ISOLATED GND
5	ISOLATED GND
6	RX-
7	ISOLATED GND
8	ISOLATED GND
11	Pull Hi
12	LED - Yellow
13	Pull Hi
14	LED - Green



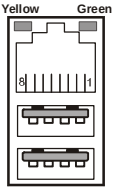
JRJ45USB1

USB

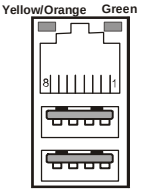
PIN	ASSIGNMENT
A1	+5.0V or +5.0V Standby
A2	USBP0–
A3	USBP0+
A4	GND
B1	+5.0V or +5.0V Standby
B2	USBP1–
B3	USBP1+
B4	GND

JRJ45USB2: USB & LAN Connector

This connector contains two USB ports and one LAN. The pin assignments are as follows:



JRJ45USB2
(For INTEL 82551QM)



JRJ45USB2
(For INTEL 82540EM Giga Lan)

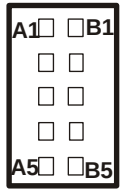
LAN

PIN	ASSIGNMENT	
	INTEL82551QM	**INTEL 82540**
1	TX+	MDIO+
2	TX-	MDIO-
3	RX+	MDI1+
4	ISOLATED GND	MDI1-
5	ISOLATED GND	MDI2+
6	RX-	MDI2-
7	ISOLATED GND	MDI3+
8	ISOLATED GND	MDI3-
11	Pull Hi	Orange-
12	LED – Yellow	Yellow-
13	Pull Hi	Pull Hi
14	LED - Green	LED - Green

INTEL 82540 Giga Lan Selection	
10 MB	No Display
100MB	Yellow Display
1000MB	Orange Display

USB

PIN	ASSIGNMENT
A1	+5.0V or +5.0V STAND BY
A2	USBP0–
A3	USBP0+
A4	GND
B1	+5.0V or +5.0V STAND BY
B2	USBP1–
B3	USBP1+
B4	GND

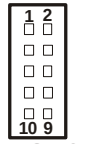


JUSB2

Note: JUSB2 share the JRJ45USB2 for cable with rear USB bracket.

JUSB3: Front USB Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	+5.0V or +5.0V STAND BY
2	+5.0V or +5.0V STAND BY
3	USB_D4--
4	USB_D5--
5	USB_D4++
6	USB_D5++
7	GND
8	GND
9	NC
10	NC



JUSB3

2-22. USB POWER SETTING

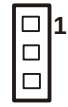
JUSBV2: JRJ45USB1 POWER SELECTION

PIN	ASSIGNMENT
1	+5.0V
2	PIN#A1 PIN#B1
3	+5.0V STAND BY

JUSBV2

JUSBV1: JRJ45USB2 POWER SELECTION

PIN	ASSIGNMENT
1	+5.0V
2	PIN#A1 PIN#B1
3	+5.0V STAND BY



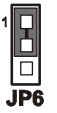
JUSBV1

JUSBV3: JRJ45USB2 POWER SELECTION

PIN	ASSIGNMENT
1	+5.0V
2	USB_Power
3	+5.0V STAND BY

2-23. LAN2 ENABLE / DISABLE SELECTION

JP6: LAN2 Enable / Disable Selection (for JRJ45USB2)
The selections are as follows:

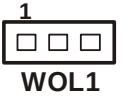
SELECTION	JUMPER SETTINGS (pins closed)	JUMPER ILLUSTRATION
Enabled	1-2	
Disabled	2-3	

*** 1. Manufactory default --- Enabled.
2. LAN1 Enable/Disable Selection (for JRJ45USB1) by BIOS Setting.

2-24. WAKE-ON-LAN CONNECTOR

WOL1 : Wake-On-LAN Connector
The pin assignments are as follows:

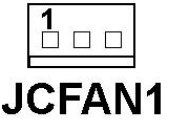
PIN	ASSIGNMENT
1	5V STANDBY
2	GND
3	ACTIVE SIGNAL



2-25. CPU FAN CONNECTOR

JCFAN1 : CPU Fan connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	GND
2	+12V
3	FAN1



2-26. SYSTEM FAN CONNECTOR

JSFAN1 : System Fan connector
The pin assignments are as follows:

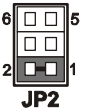
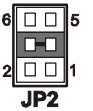
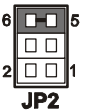
PIN	ASSIGNMENT
1	GND
2	+12V
3	FAN0

JSFAN2 : System Fan connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	GND
2	+12V
3	FAN2

2-27. RESET/NMI/CLEAR WATCHDOG SELECTION

JP2 : Reset/NMI/Clear Watchdog Selection
The selections are as follows:

FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
RESET	1-2	
NMI	3-4	
CLEAR WATCHDOG	5-6	

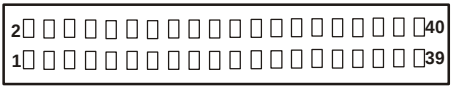
***Manufacturing Default is set as NMI.

User may select to use the Reset or NMI watchdog. NMI, also known as Non-Maskable Interrupt, is used for serious conditions that demand the processor's immediate attention; it cannot be ignored by the system unless it is shut off specifically. To clear NMI command, user should short the "Clear Watchdog" pin via push button.

2-28. HARD DISK DRIVE CONNECTOR

The PMB-1751LF possesses two HDD connectors, IDE1 and IDE2.

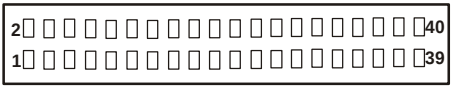
IDE1: Hard Disk Drive Connector
The pin assignments are as follows:



IDE1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	IDERST	21	IDEREQ
2	GND	22	GND
3	IDED7	23	IDEIOW
4	IDED8	24	GND
5	IDED6	25	IDEIOR
6	IDED9	26	GND
7	IDED5	27	IDE ORDY
8	IDED10	28	GND
9	IDED4	29	IDEACK
10	IDED11	30	GND
11	IDED3	31	IRQ14
12	IDED12	32	NC
13	IDED2	33	IDEA1
14	IDED13	34	P66 DETECT
15	IDED1	35	IDEA0
16	IDED14	36	IDEA2
17	IDED0	37	IDECS1P
18	IDED15	38	IDECS3P
19	GND	39	IDEACTP
20	NC	40	GND

IDE2: Hard Disk Drive Connector
The pin assignments are as follows:

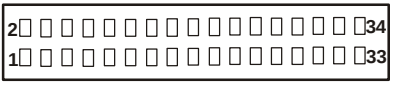


IDE2

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	IDERST	21	IDEREQ
2	GND	22	GND
3	IDED7	23	IDEIOW
4	IDED8	24	GND
5	IDED6	25	IDEIOR
6	IDED9	26	GND
7	IDED5	27	IDE ORDY
8	IDED10	28	GND
9	IDED4	29	IDEACK
10	IDED11	30	GND
11	IDED3	31	IRQ14
12	IDED12	32	NC
13	IDED2	33	IDEA1
14	IDED13	34	S66 DETECT
15	IDED1	35	IDEA0
16	IDED14	36	IDEA2
17	IDED0	37	IDECS1P
18	IDED15	38	IDECS3P
19	GND	39	IDEACTS
20	NC	40	GND

2-29. FLOPPY DISK DRIVE CONNECTOR

FDD1 : Floppy Disk Drive Connector
You can use a 34-pin daisy-chain cable to connect two FDD. On one end of this cable there is a 34-pin flat cable to attach the FDD on the board; the other side is attaches to two FDD.
The pin assignments are as follows :



FDD1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	DENSEL
3	GND	4	NC
5	NC	6	DENSEL1
7	GND	8	INDEX
9	GND	10	MOTEA
11	GND	12	DRVB
13	GND	14	DRVA
15	GND	16	MOTEB
17	GND	18	DIR
19	GND	20	STEP
21	GND	22	WDATA
23	GND	24	WGATE
25	GND	26	TK00
27	GND	28	WPT
29	GND	30	RDATA
31	GND	32	SIDE1
33	GND	34	DSKCHG

2-30. SOUND CONNECTOR

JAUDIO1 : Sound Connector, including Line-In, Line-Out & Mic. Also can support only MIC connector. The pin assignments are as follows :

Line-In

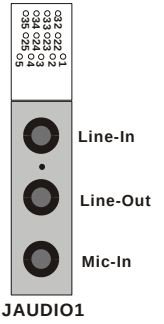
PIN	ASSIGNMENT
32	LINE_L
33	AUD_GND
34	AUD_GND
35	LINE_R

Line-Out

PIN	ASSIGNMENT
22	SPK-L
23	NC
24	NC
25	SPK-R

Mic-In

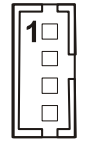
PIN	ASSIGNMENT
1	CGND
2	MIC_IN
3	CGND
4	NC
5	+5VAUDIO



2-31. CD AUDIO-IN CONNECTOR

JCDIN1 : CD Audio-in Connector
The pin assignments are as follows:

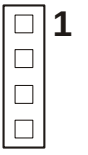
PIN	ASSIGNMENT
1	CDL
2	CD_GND
3	CDR
4	CD_GND



JCDIN1

JCDIN2 : CD Audio-in Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	CDL
2	CD_GND
3	CD_GND
4	CDR



JCDIN2

2-32. MEMORY INSTALLATION

The PMB-1751LF embedded board supports two DDR memory sockets for a maximum total memory of 2GB in DDR memory type. The memory module capacities supported are 64MB, 128MB, 256MB, 512MB and 1GB. The following table lists the supported DDR DIMM configurations. Intel 845G supports configurations defined in the JEDEC DDR DIMM specification only (A,B,C). Non-JEDEC standard DIMMs such as double-sided x 16 DDR SDRAM DIMMs are not supported.

Supported DDR DIMM Configurations.

Density	64Mbit		128Mbit		256Mbit		512Mbit	
Device Width	X8	X16	X8	X16	X8	X16	X8	X16
Single/ Double	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS
184-pin DDR	64/128 MB	32MB/ NA	128/256MB	64MB/ NA	256/512MB	128MB/NA	512/1024M	256MB/NA

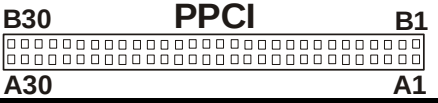
Installing and Removing Memory Modules

To install the DDR modules, locate the memory slot on the embedded board and perform the following steps:

1. Hold the DDR module so that the key of the DDR module align with those on the memory slot.
2. Gently push the DDR module in an upright position until the clips of the slot close to hold the DDR module in place when the DDR module touches the bottom of the slot.
3. To remove the DDR module, press the clips with both hands.

2-33. PPCI CONNECTOR

You will find a PPCI connector in our PMB-1751LF. This connector is used to connect our SCSI daughter boards.
The pin assignments are as follows:

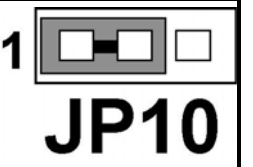
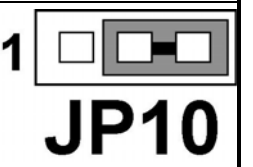


PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	GND	B1	GND
A2	AD0	B2	AD1
A3	AD2	B3	AD3
A4	AD4	B4	AD5
A5	AD6	B5	AD7
A6	AD8	B6	AD9
A7	AD10	B7	AD11
A8	VCC	B8	VCC
A9	AD12	B9	AD13
A10	AD14	B10	AD15
A11	AD16	B11	AD17
A12	AD18	B12	AD19
A13	AD20	B13	AD21
A14	AD22	B14	AD23
A15	VCC	B15	VCC
A16	AD24	B16	AD25
A17	AD26	B17	AD27
A18	AD28	B18	AD29
A19	AD30	B19	AD31
A20	PIRQ#B	B20	PAR
A21	PP CLK	B21	IRDY#
A22	ID SEL	B22	TRDY#
A23	CBE#0	B23	CBE#1
A24	CBE#2	B24	CBE#3
A25	PGNT#3	B25	PREQ#3
A26	SERR#	B26	PERR#
A27	PIRQ#A	B27	PCI_RST#
A28	STOP#	B28	PLOCK#
A29	DEVSEL#	B29	FRAME#
A30	GND	B30	GND

- The PPCI expansion connector of this Card is designed based on PCI Bus Master. That means when the PPCI expansion connector is used, the 4th PCI slot on the backplane is occupied.

2-34. EPPCI IRQ SELECTION

JP10 : EPPCI IRQ Selection. This jumper is for PMB-1751LFG2 only.
The selections are as follows:

FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
PCI-IRQB	1-2	
PCI-SERIRQ	2-3	

** Manufacturing default: PCI-IRQB.

SOFTWARE UTILITIES

CHAPTER

3

This chapter comprises the detailed information of VGA driver, LAN driver, Sound driver, and flash BIOS update. It also describes on how to install the watchdog timer.

Section includes:

- VGA Driver Utility
- Flash BIOS Update
- LAN Driver Utility
- SOUND Driver Utility
- Intel® Chipset Software Installation Utility
- USB2.0 Chipset Software Installation Utility
- Watchdog Timer Configuration

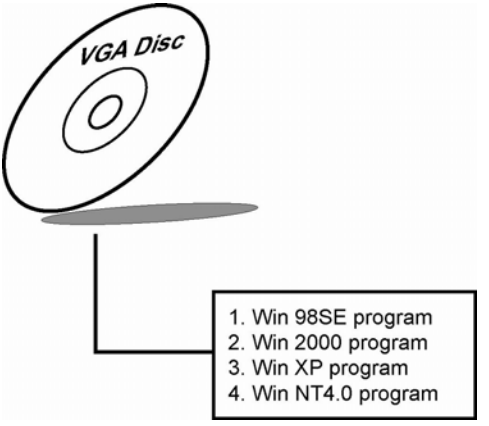
3-1. INTRODUCTION

Enclosed with our PMB-1751LF package, you will find a CD ROM disk containing all types of drivers we have. As a PMB-1751LF user, you will only need the some of files contained in the CD ROM disk, please take note of the following chart :

File name (Assume that CD ROM drive is D:)	Purpose
D:\Driver\VGA	Intel 845GV For VGA driver installation
D:\Driver\FLASH	For BIOS update utility
D:\Driver\LAN	For LAN Driver installation
D:\Driver\Sound	Realtel ALC202A AC97 For Sound driver installation
D:\Driver\UTILITY	Intel® Chipset Software Installation Utility For Win 2000, XP
D:\Driver\USB 2.0	USB 2.0 Software Installation Utility For Win 98SE, 2000, ME, XP

3-2. VGA DRIVER UTILITY

The VGA interface is embedded with our PMB-1751LF system to support CRT display. The following illustration briefly shows you the content of VGA driver in D:\VGA\:



3-2-1. Installation of VGA Driver

(1) Start the computer (Win 9x/NT4.0/2K/XP).
(2) Insert the Utility Disk into the CD ROM drive or drive A/B.
(3) Double-click "D:\VGA\WIN9X\SETUP.EXE
(if D is not your CD ROM drive and substitute D with the right drive) in the text entry area and press OK.
(4) Click "Next" on the Welcome screen.
(5) Read the license agreement and click "Yes" to continue.
(6) The driver files will now be installed. When finished, choose the "Yes" to reboot option, and click "Finished" to restart your computer. The driver should now be loaded.

⌛ For more information on VGA driver installation, please refer to the readme.txt found on the sub-directory of the VGA driver utility.

3-3. FLASH BIOS UPDATE

3-3-1. System BIOS Update:

Users of PMB-1751LF can use the program "Awdflash.exe" contained in CD ROM for BIOS update. This is found in D:\flash\Awdflash.exe.

3-3-2. To update BIOS :

(1) Install "Awdflash.exe" from the CD ROM Disk into your system.
(2) Insert the new BIOS file you have obtained from PMB-1751LF vendor.
(3) Type the pathname to Awdflash.exe and execute the BIOS update with file b55xxxxx.bin
C:\UTIL\AWDFLASH\AWARDFLASH H50xxxxx.bin
(4) The screen will display the table below:

FLASH MEMORY WRITER v7.xx (C) Award Software 2000 All Rights Reserved
For i845-ITE8712-6A69RP69C-0 DATE : 05/06/01 Flash Type - SST 49LF004A /3.3V File Name to Program : B55xxxxx.bin Checksum : XXXXX
Error Message : Do You Want To Save BIOS (Y/N)

If you want to save up the original BIOS, enter “Y ”and press < Enter > .
If you choose “N”, the following table will appear on screen.

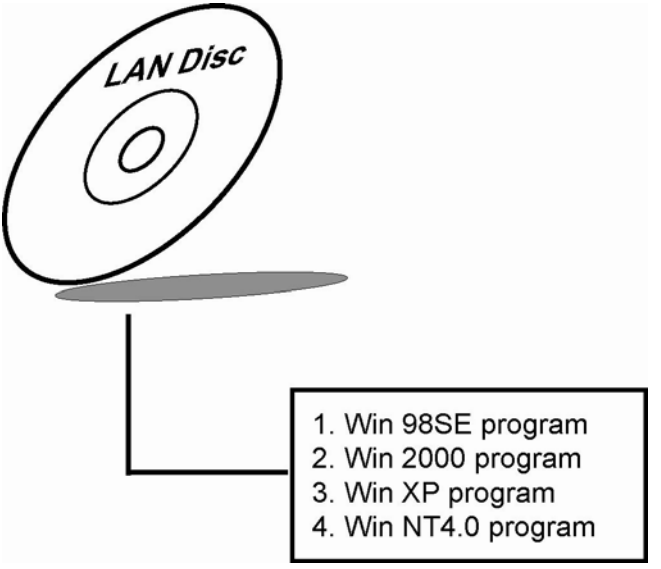
FLASH MEMORY WRITER v7.xx (C) Award Software 2000 All Rights Reserved
For i845-ITE8712-6A69RP69C-0 DATE : 05/06/01 Flash Type - SSL 49LF004A /3.3V File Name to Program : H50xxxxx.bin Checksum : XXXXX
Error Message : Are You Sure To Program (Y/N)

Select “Y”, and the BIOS will be renewed. When you are refreshing your BIOS, do not turn off or reset the system, or you will damage the BIOS. After you have completed all the programming, you will see the line: “Reset System or power off to accomplish update process!”. Please turn off or reset the system. Then the Flash BIOS is fully implemented.

3-4. LAN DRIVER UTILITY

3-4-1. Introduction

The PMB-1751LF Mainboard is enhanced with LAN function that can support various network adapters. The content of the LAN driver is found as follows :



3-4-2. Installation Procedure for Windows 9x/2000/XP

(1) Insert the LAN Driver disk into Drive A or CD ROM drive.
(2) In the "My computer", select the "Control Panel" icon.
(3) In the "Control Panel" windows, select the "System" icon.
(4) The "System Properties" window will appear, select the "Device Manager" and look for the "Network Adapter – PCI Fast Ethernet Adapter".
(5) Click "Properties" and then "PCI Fast Ethernet Adapter Properties", choose the "Driver" icon.
(6) Click "Update Driver" icon, and follow the remaining instruction.

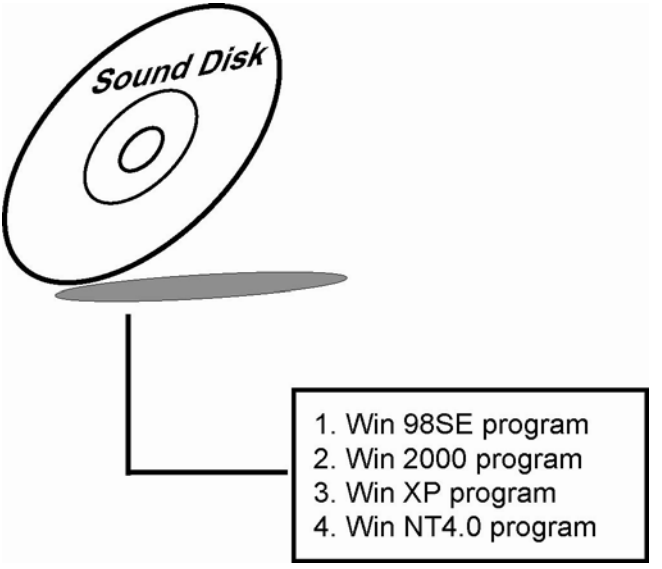
3-4-3. Installation Procedure for Windows NT4.0

1. In the Main group to NT, select the “Control Panel” icon.
2. In the Control Panel window, choose the “Network” icon.
3. In the Network Settings dialog box, choose the “Add adapter” button. The Add Network Adapter dialog box appears.
4. In the list of network cards, select “<Other> requires disk from manufacturer”, and then press <Enter> button.
5. Insert the LAN Driver disk in Drive A or CDROM drive, and type D:\LAN, and then choose OK button.
6. Follow the remaining instruction, and re-boot your system to complete the installation process.

3-5. SOUND DRIVER UTILITY

3-5-1. Introduction

The ALC202A sound function enhanced in this system is fully compatible with Windows 98SE, Windows NT 4.0, Windows 2000 and Windows XP. Below, you will find the content of the Sound driver :



3-5-2. Installation Procedure for Windows 9x/NT/2000

(1) From the task bar, click on Start, and then Run.
(2) In the Run dialog box, type D:\Sound\path\setup, where "D:\Sound\path" refers to the full path to the source files.
(3) Click on the OK button or press the ENTER key.
(4) Click on the "Next" and OK prompts as they appear.
(5) Reboot the system to complete the driver installation.

3-6. INTEL® CHIPSET SOFTWARE INSTALLATION UTILITY

3-6-1. Introduction

The Intel® Chipset Software Installation Utility installs to the target system the Windows* INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

- Core PCI and ISAPNP Services
- AGP Support
- IDE/ATA33/ATA66/ATA100 Storage Support
- USB Support
- Identification of Intel® Chipset Components in Device Manager

3-6-2. Installation of Utility for Windows 98SE/2000/XP

The Utility Pack is to be installed only for Windows 98SE, Windows 2000 and XP program.
It should be installed right after the OS installation, kindly follow the following steps:

1. Place insert the Utility Disk into Floppy Disk Drive A/B or CD ROM drive.
2. Under Windows 98SE/2000/XP system, go to the directory where Utility Disc is located.
3. Click **Setup.exe** file for utility installation.
4. Follow the instructions on the screen to complete the installation.
5. Once installation is completed, shut down the system and restart in order for the changes to take effect.

3-7. USB2.0 SOFTWARE INSTALLATION UTILITY

3-7-1. Installation of Utility for Windows 98SE/ 2000/XP

Intel USB 2.0 Enhanced Host Controller driver can only be used on Windows 98SE, Windows 2000 and Windows XP on Intel Desktop boards. It should be installed right after the OS installation, kindly follow the following steps:

1. Place insert the Utility Disk into Floppy Disk Drive A/B or CD ROM drive.
2. Under Windows 98SE, 2000, and XP system, go to the directory where Utility Disc is located.
3. Start the "System" wizard in control panel. (Click Start/Settings/Control Panel).
4. Select "Hardware" and click "Device Manager " button.
5. Double Click "USB Root Hub".
6. Select "Driver".
7. Click "Install" to install the driver.
8. Follow the instructions on the screen to complete the installation.
9. Click "Finish" after the driver installation is complete.

3-8. WATCHDOG TIMER CONFIGURATION

This board has watchdog timer function for monitoring whether the system is still work or not after a period of time. The user can select watchdog timer to system reset or NMI (Non Maskable interrupt) depending on the jumper set in "Reset/NMI/Clear Watchdog Selection" as described in chapter 2. This is defined at I/O port **443H**. When you want to enable the watchdog timer, please write I/O port **443H**, then the system will either reset itself or perform the NMI function. Likewise, when you want to disable the function, write I/O port **441H**, the system will run the command to stop the Watchdog function.

In PMB-1751LF watchdog function, You must write your program so when it writes I/O port address 443 for enable watchdog and write I/O port address 441 for disable watchdog. The timer's intervals have a tolerance of 25% so you should program an instruction that will refresh the timer about every second.

The following program shows you how to program the watch timer in your program.

Watchdog enable program:

```
MOV     AX, 000FH       (choose the values you need; start from 0)
MOV     DX, 0443H
OUT     DX, AX
```

Watchdog disable program:

```
MOV     AX, 000FH       (this value can be ignored)
MOV     DX, 0441H
OUT     DX, AX
```

The Watchdog Timer control table is as follows:

Level	Value	Time/sec	Level	Value	Time/sec
1	F	0	9	7	64
2	E	8	10	6	72
3	D	16	11	5	80
4	C	24	12	4	88
5	B	32	13	3	96
6	A	40	14	2	104
7	9	48	15	1	112
8	8	56	16	0	120

AWARD BIOS SETUP

CHAPTER

4

This chapter shows how to set up the Award BIOS.

Section includes:

- Introduction
- Entering Setup
- The Standard CMOS Features
- The Advanced BIOS Features
- The Advanced Chipset Features
- Integrated Peripherals
- Power Management Setup
- PnP/PCI Configurations
- PC Health Status
- Frequency/Voltage Control
- Load Fail-Safe Defaults
- Password Setting
- Save and Exit Setup
- Exit Without Saving

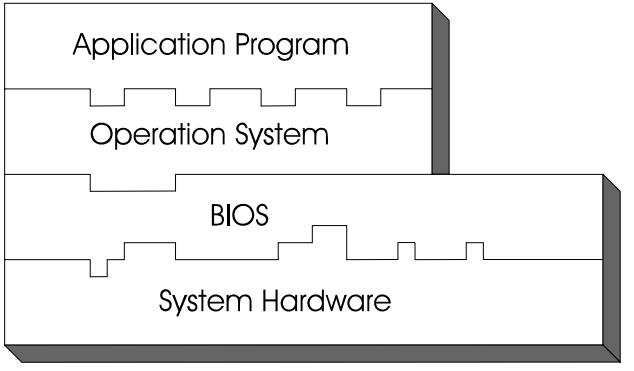
4-1. INTRODUCTION

This chapter will show you the function of the BIOS in managing the features of your system. The PMB-1751LF Socket 478 Mainboard is equipped with the BIOS for system chipset from Award Software Inc. This page briefly explains the function of the BIOS in managing the special features of your system. The following pages describe how to use the BIOS for system chipset Setup menu.

Your application programs (such as word processing, spreadsheets, and games) rely on an operating system such as DOS or OS/2 to manage such things as keyboard, monitor, disk drives, and memory.

The operating system relies on the BIOS (Basic Input and Output system), a program stored on a ROM (Read-only Memory) chip, to initialize and configure your computer's hardware. As the interface between the hardware and the operating system, the BIOS enables you to make basic changes to your system's hardware without having to write a new operating system.

The following diagram illustrates the interlocking relationships between the system hardware, BIOS, operating system, and application program:



4-2. ENTERING SETUP

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines and the following message will appear on the lower screen:

PRESS <DEL> TO ENTER SETUP, ESC TO SKIP MEMORY TEST

As long as this message is present on the screen you may press the <Del> key (the one that shares the decimal point at the bottom of the number keypad) to access the Setup program. In a moment, the main menu of the Award Setup Program will appear on the screen:

Phoenix - AwardBIOS CMOS Setup Utility

►Standard CMOS Features	►Frequency/Voltage Control
►Advanced BIOS Features	Load Fail-Safe Defaults
►Advanced Chipset Features	Load Optimized Defaults
►Integrated Peripherals	Set Supervisor Password
►Power Management Setup	Set User Password
►PnP/PCI Configurations	Save & Exit Setup
►PC Health Status	Exit Without Saving
Esc : Quit F10 : Save & Exit Setup	↑↓→← : Select Item
Time, Date, Hard Disk Type . . .	

Setup program initial screen

You may use the cursor the up/down keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear at the bottom of the screen.

4-3. THE STANDARD CMOS FEATURES

Highlight the "STANDARD CMOS FEATURES" and press the <ENTER> key and the screen will display the following table:

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Wed, Aug 7 2002	Item Help
Time (hh:mm:ss)	10 : 50 : 17	
► IDE Primary Master	[None]	Menu Level ►
► IDE Primary Slave	[IBM-DHEA-36481]	
► IDE Secondary Master	[None]	
► IDE Secondary Slave	[CD-540E]	Change the day, month, year and century
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Video	[EGA/VGA]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	

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

Standard CMOS Setup Screen

In the above Setup Menu, 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. Note that as you highlight each item, the description of the selected item is found on the right side of the screen.

Date:

< Month >, < Date > and <Year >. Ranges for each value are in the CMOS Setup Screen, and the week-day will skip automatically.

Time:

< Hour >, < Minute >, and < Second >. Use 24 hour clock format, i.e., for PM numbers, add 12 to the hour. For example: 4: 30 P.M. You should enter the time as 16:30:00.

IDE Primary Master / Slave:
IDE Secondary Master / Slave:

The options for these items are found in its sub menu. By pressing the <ENTER> key, you are prompt to enter the sub menu of the detailed options as shown below:

Phoenix - AwardBIOS CMOS Setup Utility
IDE Primary Master

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Primary Master	[Auto]	Menu Level ►►
Access Mode	[Auto]	
Capacity	37511 MB	To auto-detect the HDD's size, head…on this channel
Cylinder	17956	
Head	16	
Precomp	65535	
Landing Zone	17955	
Sector	255	

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

Table 1 – IDE Primary Master sub menu

Descriptions on each item above are as follows:

1. IDE HDD Auto-detection
   Press the enter key to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
2. IDE Primary Master
   There are three available option on this category, namely: None, Auto, and Manual. By selecting "Manual", you can set the remaining fields on this screen, such as -
   a. Cylinder – Set the number of cylinders for this hard disk.
   b. Head – Set the number of read/write heads.
   c. Precomp - ******Warning!** Setting a value of 65535 means no HDD.
   d. Landing Zone
   e. Sector – Set the number of sector per track

3. Access Mode
   There are four available options for this item, namely: Normal, LBA, Large and Auto. Choose the access mode for this hard disk.
4. Capacity
   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.

DRIVE A AND DRIVE B:

Select the type of floppy disk drive installed in your system. The available options are 360KB 5.25in, 1.2KB 5.25in, 720KB 3.5in, 1.44MB 3.5in, 2.88MB 3.5in and None.

VIDEO:

This category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in Setup. Available Options are Mono, Color 40, VGA/EGA, and Color 80.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode.
CGA 80	Color Graphics Adapter, power up in 80 column mode.
MONO	Monochrome adapter, includes high resolution monochrome adapters.

HALT ON:

This category allows user to choose whether the computer will stop if an error is detected during power up. Available options are “All errors”, “No errors”, “All, But keyboard”, “All, But Diskette”, and “All But Disk/Key”.

BASE MEMORY:

Displays the amount of conventional memory detected during boot up.

EXTENDED MEMORY:

Displays the amount of extended memory detected during boot up.

TOTAL MEMORY:

Displays the total memory available in the system.

HARD DISK ATTRIBUTES:

Type	Cylinders	Heads	V-P comp	LZone	Sect	Capacity
1	306	4	128	305	17	10
2	615	4	300	615	17	20
3	615	6	300	615	17	30
4	940	8	512	940	17	62
5	940	6	512	940	17	46
6	615	4	65535	615	17	20
7	642	8	256	511	17	30
8	733	5	65535	733	17	30
9	900	15	65535	901	17	112
10	820	3	65535	820	17	20
11	855	5	65535	855	17	35
12	855	7	65535	855	17	49
13	306	8	128	319	17	20
14	733	7	65535	733	17	42
15	000	0	0000	000	00	00
16	612	4	0000	663	17	20
17	977	5	300	977	17	40
18	977	7	65535	977	17	56
19	1024	7	512	1023	17	59
20	733	5	300	732	17	30
21	733	7	300	732	17	42
22	733	5	300	733	17	30
23	306	4	0000	336	17	10
24	977	5	65535	976	17	40
25	1024	9	65535	1023	17	76
26	1224	7	65535	1223	17	71
27	1224	11	65535	1223	17	111
28	1224	15	65535	1223	17	152
29	1024	8	65535	1023	17	68
30	1024	11	65535	1023	17	93
31	918	11	65535	1023	17	83
32	925	9	65535	926	17	69
33	1024	10	65535	1023	17	85
34	1024	12	65535	1023	17	102
35	1024	13	65535	1023	17	110
36	1024	14	65535	1023	17	119
37	1024	2	65535	1023	17	17
38	1024	16	65535	1023	17	136
39	918	15	65535	1023	17	114
40	820	6	65535	820	17	40
41	1024	5	65535	1023	17	42
42	1024	5	65535	1023	26	65
43	809	6	65535	852	17	40
44	809	6	65535	852	26	61
45	776	8	65335	775	33	100
47			AUTO			

Award Hard Disk Type Table

4-4. THE ADVANCED BIOS FEATURES

Choose the "ADVANCED BIOS FEATURES" in the main menu, the screen shown as below.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

CPU Feature	[Press Enter]	Item Help
Virus Warning	[Disabled]	Menu Level ►
CPU L1 & L2 Cache	[Enabled]	
External Cache	[Enabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Floppy]	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
Second Boot Device	[HDD-0]	
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]	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	[Setup]	
APIC Mode	[Enabled]	
MPS Version Control For OS	[1.4]	
OS Select For DRAM > 64MB	[Non-OS2]	
HDD S.M.A.R.T. Capability	[Disabled]	
Small Logo (EPA) Show	[Disabled]	

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

Advanced BIOS Features Setup Screen

The "ADVANCED BIOS FEATURES SETUP" allow you to configure your system for basic operation. The user can select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

A brief introduction of each setting in the BIOS FEATURES SETUP program is given below.

CPU FEATURE :

You could expand the whole menu by pressing <ENTER>, and you will see a screen like the one listed below.

Phoenix – AwardBIOS CMOS Setup Utility
CPU Feature

Thermal Management	[Thermal Monitor 1]	Item Help
		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		

Table 1 – CPU Feature sub menu

Descriptions of each item in the above chart are listed below:

1. Thermal Management
   The used Thermal Monitor.

VIRUS WARNING :

This item allows you to choose the Virus Warning feature for IDE Hard Disk boot sector protection. When this function is enabled, the BIOS will supervise the boot sector and partition table of the hard disk drive for any attempt for modification.

CPU L2 CACHE ECC CHECKING :

This item allows you to enable or disable CPU L2 Cache ECC checking.

QUICK POWER ON SELF TEST:

This item allows you to speed up Power On Self Test (POST) after power-up the computer. When enabled, the BIOS will shorten or skip some check items during POST.

FIRST/SECOND/THIRD/OTHER BOOT DEVICE:

The BIOS load the operating system in a sequence selected by these items.

SWAP FLOOPY DRIVE:

This field is effective only in systems with two floppy drives. Selecting Enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

BOOT UP FLOPPY SEEK:

You may enable / disable this item to define whether the system will look for a floppy disk drive to boot at power-on, or proceed directly to the hard disk drive.

BOOT UP NUMLOCK STATUS:

Select power on state for NumLock.

GATE 20A OPTION:

This entry allows you to select how the gate A20 is handled. When Normal was set, a pin in the keyboard controller controls Gate A20. And when Fast was set, the chipset controls Gate A20.

TYPEMATIC RATE SETTING:

Enable this item if you wish to be able to configure the characteristics of your keyboard. Typematic refers to the way in which characters are entered repeatedly if a key is held down. For example, if you press and hold down the "A" key, the letter "a" will repeatedly appear on your screen on your screen until you release the key. When enabled, the typematic rate and typematic delay can be selected.

TYPEMATIC RATE (CHARS/SEC):

This item sets the number of times a second to repeat a key stroke when you hold the key down. The choices are 6, 8, 10, 12, 15, 20, 24, and 30.

TYPEMATIC DELAY (MSEC):

The item sets the delay time after the key is held down before it begins to repeat the keystroke. The choices are 250, 500, 750, and 1000.

SECURITY OPTION:

This category allows you to limit access to the system and Setup, or just to 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.

🔔 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.

MPS VERSION CONTROL FOR OS :

The BIOS supports versions 1.1 and 1.4 of the Intel multiprocessor specification. Select the version supported by the operating system running on this computer.

OS SELECT FOR DRAM >64MB :

Select the operating system that is running with greater than 64MB or RAM on the system. You may choose OS2 or Non-OS2.

4-5. ADVANCED CHIPSET FEATURES

Choose the〝ADVANCED CHIPSET FEATURES〞from the main menu, the screen shown as below.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Timing Selectable	[By SPD]	Item Help
X CAS Latency Time	[2.5]	
X Active to Precharge Delay	[6]	
X DRAM RAS-to-CAS Delay	[3]	Menu Level ►
X DRAM RAS Precharge	[3]	
Turbo Mode	[Disabled]	
Memory Frequency For	[Auto]	
System BIOS Cacheable	[Enabled]	
Video BIOS Cacheable	[Disabled]	
Memory Hole At 15M-16M	[Disabled]	
Delayed Transaction	[Enabled]	
AGP Aperture Size	[64MB]	
** On-Chip VGA Setting **		
On-Chip VGA	[Enabled]	
On-Chip Frame Buffer Size	[8MB]	
I/O Channel Check NMI	[Disabled]	

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

Advanced Chipset Features Setup

The parameters in this setup screen are for system designers, service personnel, and technically competent users only. Do not reset these values unless you understand the consequences of your changes.

DRAM TIMEING SELECTABLE:

The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

CAS LATENCY TIME:

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

DRAM RAS-TO-CAS DELAY:

This item let 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 choices are 2 and 3.

DRAM RAS PRECHARGE TIME:

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 choices are 2 & 3.

SYSTEM BIOS CACHEABLE:

This item allows you to enable 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.

VIDEO BIOS CACHEABLE:

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

MEMORY HOLE AT 15M-16M:

You may 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.

DELAY TRANSACTION:

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

AGP APERTURE SIZE:

The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

ON-CHIP Frame Buffer SIZE:

Select the on-chip frame buffer size for VGA drive use. The available choices are 8MB, and Disabled.

IO CHANNEL CHECK NMI:

This field enable or disable IO channel check NMI. Before selecting this function, the user should check first that NMI function is enabled as described in chapter 2 (Reset/NMI/Clear Watchdog Selection)

4-6. INTEGRATED PERIPHERALS

Choose "INTEGRATED PERIPHERALS" from the main setup menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

On-Chip Primary PCI IDE	[Enabled]	Item Help
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	
IDE Primary Master UDMA	[Auto]	
IDE Primary Slave UDMA	[Auto]	
On-Chip Secondary PCI IDE	[Enabled]	
IDE Secondary Master PIO	[Auto]	Menu Level ►
IDE Secondary Slave PIO	[Auto]	
IDE Secondary Master UDMA	[Auto]	
IDE Secondary Slave UDMA	[Auto]	
USB Controller	[Enabled]	
USB 2.0 Controller	[Enabled]	
USB Keyboard Support	[Disabled]	
USB Mouse Support	[Disabled]	
AC97 Audio	[Auto]	
Onboard LAN	[Enabled]	
Init Display First	[Onboard/AGP]	
BIOS Flash Function	[Enabled]	
IDE HDD Block Mode	[Enabled]	
POWER ON Function	[BUTTON ONLY]	
x KB Power ON Password	[Enter]	
x Hot Key Power ON	[Ctrl-F1]	
Onboard FDC Controller	[Enabled]	
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	
UART Mode Select	[Normal]	
x RxD, TxD Active	[Hi, Lo]	
x IR Transmission Delay	[Enabled]	
x UR2 Duplex Mode	Half	
x Use IR Pins	IR-Rx2Tx2	
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	[Off]	
Onboard Serial Port 3	[3E8]	
Serial Port 3 Use IRQ	[IRQ10]	
Onboard Serial Port 4	[2E8]	
Serial Port 4 Use IRQ	[IRQ11]	

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

INTEGRATED PERIPHERALS

By moving the cursor to the desired selection and pressing <F1> key, the all options for the desired selection will be displayed for choice.

ON-CHIP PRIMARY PCI IDE
ON-CHIP SECONDARY PCI IDE:

The Integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.

IDE PRIMARY MASTER/SLAVE PIO:
IDE SECONDARY MASTER/SLAVE PIO:

The four IDE PIO fields allow you to 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.

IDE PRIMARY MASTER/SLAVE UDMA:
IDE SECONDARY MASTER/SLAVE UDMA:

UDMA (Ultra DMA) is a DMA data transfer protocol, that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. The implementation of UDMA is possible only if your IDE hard drive supports it and the operating environ-ment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If you hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

USB CONTROLLER:

Select enabled if the system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

USB KEYBOARD SUPPORT:

Select enabled if the system contains a Universal Serial Bus (USB) controller and you have a USB Keyboard.

USB MOUSE SUPPORT:

Select enabled if the system contains a Universal Serial Bus (USB) controller and you have a USB Mouse.

INIT DISPLAY FIRST:

This item allows you to decide to active whether PCI Slot or on-chip VGA first.

AC97 AUDIO:

This item allows you to decide to enable or disable the 810 chipset family to support AC97 Audio.

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.

ONBOARD FDC CONTROLLER:

Select Enabled if the 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.

ONBOARD SERIAL PORT 1
ONBOARD SERIAL PORT 2:

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

UART MODE SELECT:

Select an operating mode for the second serial port. The choices are IrDA, Normal and ASK IR.

RxD, TxD ACTIVE:

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

UR2 DUPLEX MODE:

This item allows you to select the IR half/full duplex function.

ONBOARD PARALLEL PORT:

This field determine access onboard parallel port controller with which I/O address.

PARALLEL PORT MODE:

Select an operating mode for the onboard parallel port. The available choices are *SPP, EPP, ECP, or ECP+EPA* modes.

EPP MODE SELECT:

This item allows you to configure the parallel port for the selected EPP mode. The Selection of EPP port type is 1.7 or 1.9.

ECP MODE USE DMA:

This item allows you to configure the parallel port DMA channel for the selected ECP mode. This selection is only available when ECP or ECP+EPP is selected in *Parallel Port mode*.

PWRON AFTER PWR-FAIL:

This item allows you to select if you want to power on the system after power failure.

ONBOARD SERIAL PORT 3:
ONBOARD SERIAL PORT 4:

Select a logical COM port name and matching address for the third and forth serial ports. Select an address and corresponding interrupt for third and forth serial port.

SERIAL PORT 3 USE IRQ:
SERIAL PORT 4 USE IRQ:

The items set the IRQ address of the serial ports.

4-7. POWER MANAGEMENT SETUP

Choose "POWER MANAGEMENT SETUP" option on the main menu, a display will be shown on screen as below :

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

	ACPI Function	[Enabled]	Item Help
	Power Management	[User Define]	
	MODEM Use IRQ	[3]	Menu Level ►
	Suspend Mode	[Disabled]	
	Soft-Off by PWR-BTTN	[Instant-Off]	
	Wake-Up by PCI card	[Enabled]	
	Wake up On LAN	[Enabled]	
	Resume by Alarm	[Disabled]	
x	Date (of Month) Alarm	[0]	
x	Time (hh:mm:ss) Alarm	[0 : 0 : 0]	
	** Reload Global Timer Events **		
	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 F6:Fail-Safe Defaults F7:Optimized Defaults

Power Management Setup Screen

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

ACPI FUNCTION:

Users are allowed to enable or disable the Advanced Configuration and Power Management (ACPI).

POWER MANAGEMENT:

This item allows the user to select the type or degree of power saving and is directly related to the following modes:

a. HDD Power Down

b. Suspend Mode

MODEM USE IRQ:

This item enable you to name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

SUSPEND MODE:

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

SOFT-OFF BY PWR-BTTN:

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung". The choices are Delay 4 Sec and Instant-Off.

WAKE-UP BY PCI CARD:

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from the soft-off state.

RESUME BY ALARM:

When enabled, you can set the date and time at which the RTC alarm awakens the system from Suspend mode.

PM EVENTS:

PM Events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything, which occurs to a device, which is configured as Enabled, even when the system is in a power down mode.

❶Primary IDE 0
❷Primary IDE 1
❸Secondary IDE 0
❹Secondary IDE 1
❺FDD, COM, LPT Port
❻PCI PIRQ[A-D]#

4-8. PNP/PCI CONFIGURATION

Choose "PNP/PCI CONFIGURATION" from the main menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

PNP OS Installed	[Yes]	Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto(ESCD)]	Menu Level ►
x IRQ Resources	Press Enter	
x DMA Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices

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

PNP/PCI CONFIGURATION

This section describes how to configure PCI bus system. PCI, also known as Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components. This section covers technical items, which is strongly recommended for experienced users only.

PNP OS INSTALLED:

This item allows you to determine install PnP OS or not.

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 configuration has caused such a serious conflict that the operating system can not boot.

RESOURCE CONTROLLED BY:

The Award Plug and Play Bios can automatically configure all of the booth 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. By choosing "manual", you are allowed to configure the *IRQ Resources*, *DMA Resources* and *Memory Resources*. The choices are Auto(ESCD) and Manual.

IRQ RESOURCES:

You may assign each system interrupt a type, depending on the type of device using the interrupt.

IRQ3/4/5/7/9/10/11/12/14/15 ASSIGNED TO:

This item allows you to determine the IRQ assigned to ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

DMA RESOURCES:

When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DMA channel.

DMA 0/1/3/5/6/7 ASSIGNED TO:

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

PCI/VGA PALETTE SNOOP:

Leave this field at disabled.

4-9. PC HEALTH STATUS

Choose "PC HEALTH STATUS" from the main menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status

DOS Shutdown Temperature	[Disabled]	Item Help
CPU Warning Temperature	[50℃/122℉]	
Current CPU Temperature	[49℃/120℉]	
Current CPU Fan Speed	2481 RPM	
Current System FAN 1 Speed	0 RPM	
Current System FAN 2 Speed	0 RPM	
Vcore	1.42V	
3.3 V	3.34V	Menu Level ►
+5 V	5.05V	
+12 V	11.79V	
-12 V	(-)12.52V	
-5 V	(-) 4.99V	
VBAT (V)	3.18V	
5VSB (V)	4.96V	
Shutdown Temperature	[60℃/140℉]	

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

PC Health Status Setup Screen

CPU WARMING TEMPERATURE:

Select the combination of lower and upper limits for the CPU temperature. If the CPU temperature extends beyond either limit, any warning mechanism programmed into your system will be activated.

CURRENT CPU TEMPERATURE:

This field displays the current CPU temperature, if your computer contains a monitoring system.

CURRENT SYSTEM FAN 1/ FAN 2 SPEED:

This item displays the System FAN1/FAN 2 operating speed.

SHUTDOWN TEMPERATURE:

User is allowed to set the temperature on which the system automatically shutdown when reaches or exceeds the temperature set.

4-10. FREQUENCY/VOLTAGE CONTROL

Choose "FREQUENCY/VOLTAGE CONTROL" from the main menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

Spread Spectrum	[Disabled]	Item Help
		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

Frequency / Voltage Control Setup Screen

This setup menu allows you to specify your settings for frequency/voltage control.

SPREAD SPECTRUM:

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

4-11. LOAD FAIL-SAFE DEFAULTS

By pressing the <ENTER> key on this item, you get a confirmation dialog box with a message similar to the following:

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

To use the BIOS default values, change the prompt to "Y" and press the <Enter > key. CMOS is loaded automatically when you power up the system.

4-12. LOAD OPTIMIZED DEFAULTS

When you press <Enter> on this category, you get a confirmation dialog box with a message similar to the following:

```
Load Optimized Defaults ( Y/N ) ? N
```

Pressing "Y" loads the default values that are factory setting for optimal performance system operations.

4-13. PASSWORD SETTING

User is allowed to set either supervisor or user password, or both of them. The difference is that the supervisor password can enter and change the options of the setup menus while the user password can enter only but do not have the authority to change the options of the setup menus.

TO SET A PASSWORD

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 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 the < Enter > key. You may also press < Esc > to abort the selection and not enter a password.

User should bear in mind that when a password is set, you will be asked to enter the password everything you enter CMOS setup Menu.

TO DISABLE THE PASSWORD

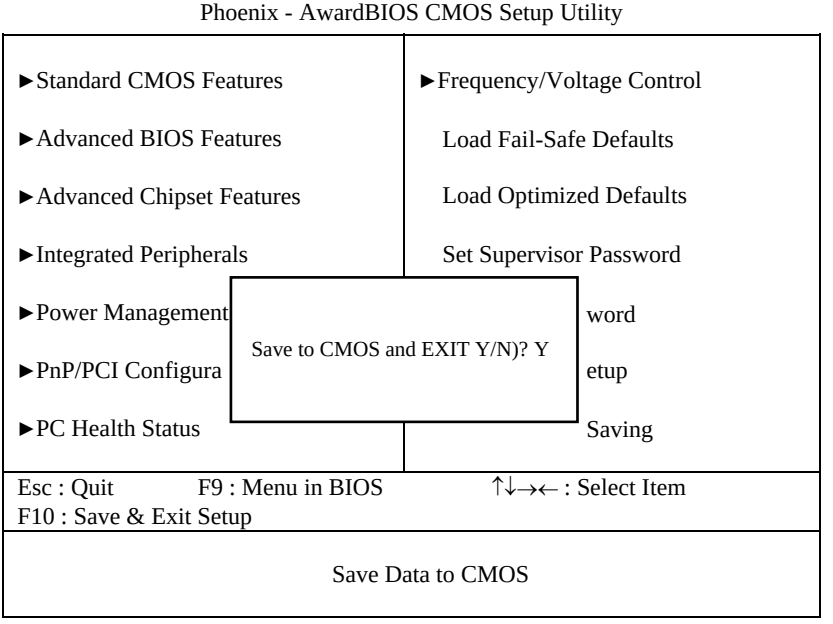
To disable the password, select this function (do not enter any key when you are prompt to enter a password), and press the <Enter> key and a message will appear at the center of the screen:

PASSWORD DISABLED!!!
Press any key to continue...

Press the < Enter > key again and the password will be disabled. Once the password is disabled, you can enter Setup freely.

4-14. SAVE & EXIT SETUP

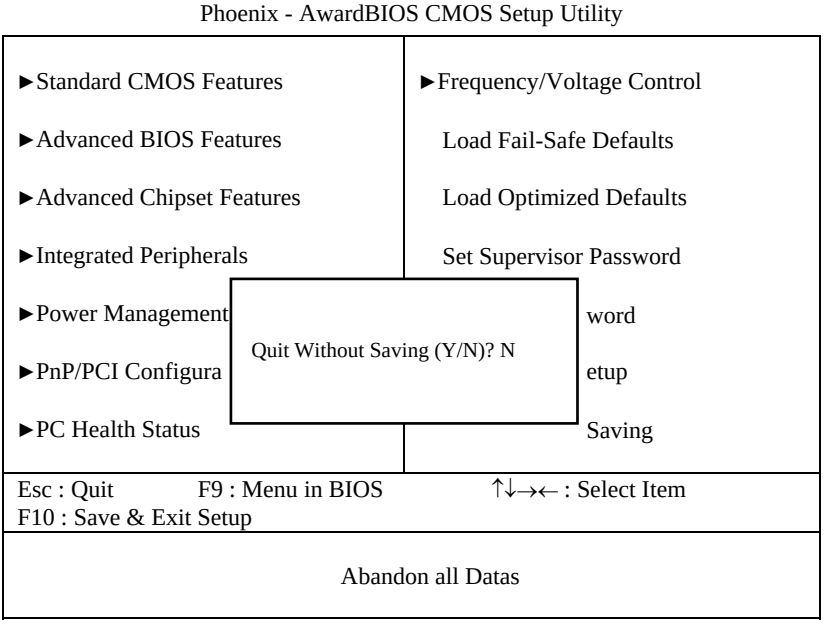
After you have completed adjusting all the settings as required, you must remember to save these setting into the CMOS RAM. To save the settings, select "SAVE & EXIT SETUP" and press <Enter>, a display will be shown as follows:



When you confirm that you wish to save the settings, your system will be automatically restarted and the changes you have made will be implemented. You may always call up the setup program at any time to adjust any of the individual items by pressing the <Del> key during boot up.

4-15. EXIT WITHOUT SAVING

If you wish to cancel any changes you have made, you may select the "EXIT WITHOUT SAVING" and the original setting stored in the CMOS will be retained. The screen will be shown as below:



EXPANSION BUS

APPENDIX

A

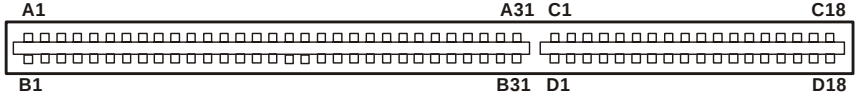
This appendix indicates the pin assignments.

Section includes:

- ISA BUS Pin Assignment
- PCI BUS Pin Assignment

ISA BUS PIN ASSIGNMENT

The ISA-bus connector is divided into two sets : one consists of 62 pins; the other consists of 36 pins.

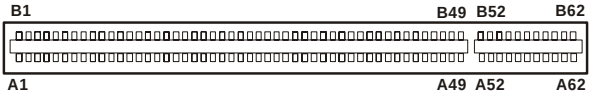


The pin assignments as follows :

B		A		D		C	
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
B1	GND	A1	-I/O CH CHK	D1	-MEMCS16	C1	SBHE
B2	RESET	A2	SD07	D2	-I/OCS16	C2	LA23
B3	+5V	A3	SD06	D3	IRQ10	C3	LA22
B4	IRQ9	A4	SD05	D4	IRQ11	C4	LA21
B5	-5V	A5	SD04	D5	IRQ12	C5	LA20
B6	DRQ2	A6	SD03	D6	IRQ15	C6	LA19
B7	-12V	A7	SD02	D7	IRQ14	C7	LA18
B8	OWS	A8	SD01	D8	-DACK0	C8	LA17
B9	+12V	A9	SD00	D9	DRQ0	C9	-MEMR
B10	GND	A10	-I/O CH RDY	D10	-DACK5	C10	-MEMW
B11	-SMEMW	A11	AEN	D11	DRQ5	C11	SD08
B12	-SMEMR	A12	SA19	D12	-DACK6	C12	SD09
B13	-IOW	A13	SA18	D13	DRQ6	C13	SD10
B14	-IOR	A14	SA17	D14	-DACK7	C14	SD11
B15	-DACK3	A15	SA16	D15	DRQ7	C15	SD12
B16	-DRQ3	A16	SA15	D16	+5V	C16	SD13
B17	-DACK1	A17	SA14	D17	-MASTER	C17	SD14
B18	-DRQ1	A18	SA13	D18	GND	C18	SD15
B19	-REFRESH	A19	SA12				
B20	BCLK	A20	SA11				
B21	IRQ7	A21	SA10				
B22	IRQ6	A22	SA09				
B23	IRQ5	A23	SA08				
B24	IRQ4	A24	SA07				
B25	IRQ3	A25	SA06				
B26	-DACK2	A26	SA05				
B27	T/C	A27	SA04				
B28	BALE	A28	SA03				
B29	+5V	A29	SA02				
B30	OSC	A30	SA01				
B31	GND	A31	SA00				

PCI BUS PIN ASSIGNMENT

Like ISA-BUS connector, the PCI-BUS edge connector is also divided into two sets: one consists of 98-pin; the other consists of 22-pin.
The pin assignments are as follows :



B		A		B		A	
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
B1	-12V	A1	TRST#	B31	+3.3V	A31	AD18
B2	TCK	A2	+12V	B32	AD17	A32	AD16
B3	GND	A3	TMS	B33	C/BE2#	A33	+3.3V
B4	TDO	A4	TDI	B34	GND	A34	FRAME#
B5	+5V	A5	+5V	B35	IRDY#	A35	GND
B6	+5V	A6	INTA#	B36	+3.3V	A36	TRDY#
B7	INTB#	A7	INTC#	B37	DEVSEL#	A37	GND
B8	INTD#	A8	+5V	B38	GND	A38	STOP#
B9	REQ3#	A9	CLKC	B39	LOCK#	A39	+3.3V
B10	REQ1#	A10	+5V(I/O)	B40	PERR#	A40	SDONE
B11	GNT3#	A11	CLKD	B41	+3.3V	A41	SB0#
B12	GND	A12	GND	B42	SERR#	A42	GND
B13	GND	A13	GND	B43	+3.3V	A43	PAR
B14	CLKA	A14	GNT1#	B44	C/BE1#	A44	AD15
B15	GND	A15	RST#	B45	AD14	A45	+3.3V
B16	CLKB	A16	+5V(I/O)	B46	GND	A46	AD13
B17	GND	A17	GNT0#	B47	AD12	A47	AD11
B18	REQ0#	A18	GND	B48	AD10	A48	GND
B19	+5V(I/O)	A19	REQ2#	B49	GND	A49	AD09
B20	AD31	A20	AD30	B52	AD08	A52	C/BE0#
B21	AD29	A21	+3.3V	B53	AD07	A53	+3.3V
B22	GND	A22	AD28	B54	+3.3V	A54	AD06
B23	AD27	A23	AD26	B55	AD05	A55	AD04
B24	AD25	A24	GND	B56	AD03	A56	GND
B25	+3.3V	A25	AD24	B57	GND	A57	AD02
B26	C/BE3#	A26	GNT2#	B58	AD01	A58	AD00
B27	AD23	A27	+3.3V	B59	+5V(I/O)	A59	+5V(I/O)
B28	GND	A28	AD22	B60	ACK64#	A60	REQ64#
B29	AD21	A29	AD20	B61	+5V	A61	+5V
B30	AD19	A30	GND	B62	+5V	A62	+5V

TECHNICAL SUMMARY

APPENDIX

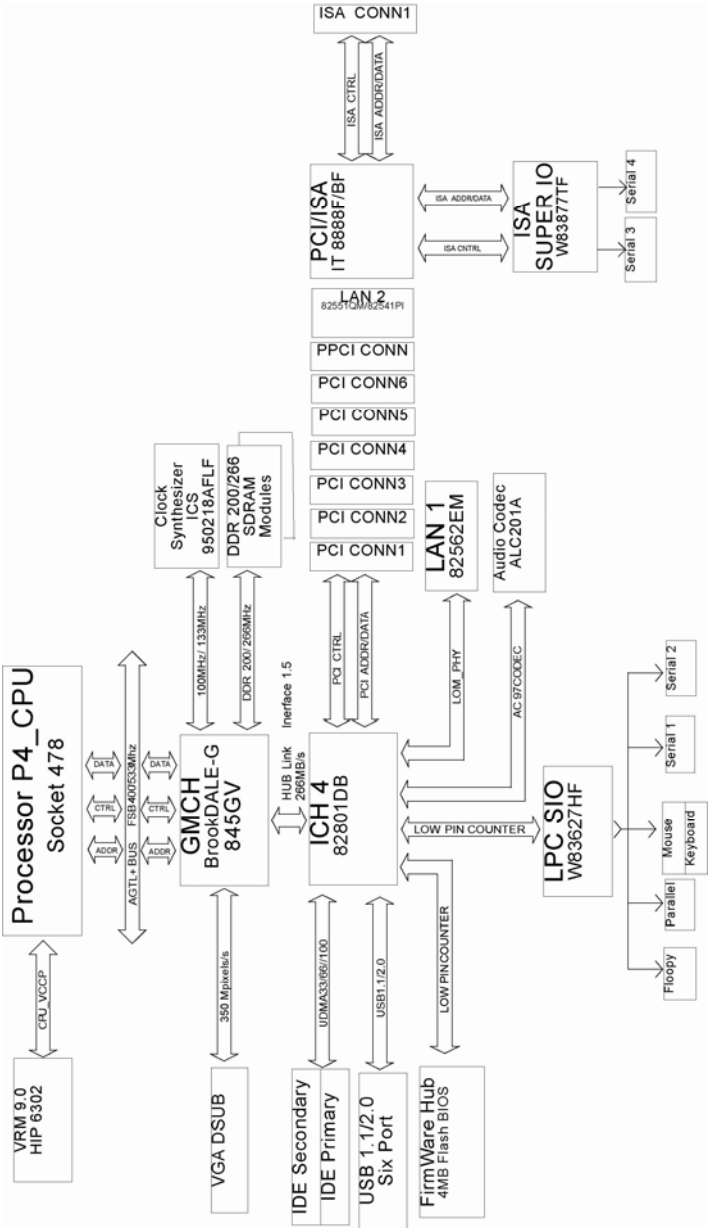
B

This section introduce you the maps concisely.

Sections include:

- Block Diagram
- Interrupt Map
- RTC (Standard) RAM Bank
- Timer & DMA Channels Map
- I / O & Memory Map

BLOCK DIAGRAM



INTERRUPT MAP

IRQ	ASSIGNMENT
0	System TIMER interrupt from TIMER-0
1	Keyboard output buffer full
2	Cascade for IRQ 8-15
3	Serial port 2
4	Serial port 1
5	Parallel Port 2
6	Floppy Disk adapter
7	Parallel port 1
8	RTC clock
9	Available
10	Serial port 3
11	Serial port 4
12	Available
13	Math coprocessor
14	Hard Disk adapter
15	Available

RTC (STANDARD) RAM BANK

CODE	ASSIGNMENT
00h	Seconds
01h	Second alarm
02h	Minutes
03h	Minutes alarm
04h	Hours
05h	Hours alarm
06h	Day of week
07h	Day of month
08h	Month
09h	Year
0Ah	Status register A
0Bh	Status register B
0Ch	Status register C
0Dh	Status register D
0Eh-7Fh	114 Bytes of User RAM

TIMER & DMA CHANNELS MAP

Timer Channel Map :

Timer Channel	Assignment
0	System timer interrupt
1	DRAM Refresh request
2	Speaker tone generator

DMA Channel Map :

DMA Channel	Assignment
0	Available
1	Available
2	Floppy Disk adapter
3	Available
4	Cascade
5	Available
6	Available
7	Available

I/O & MEMORY MAP

Fixed I/O Ranges Decoded by ICH2 :

I/O Address	Read Target	Write Target	Internal Unit
00h-08h	DMA Controller	DMA Controller	DMA
09h-0Eh	Reserved	DMA Controller	DMA
0Fh	DMA Controller	DMA Controller	DMA
10h-18h	DMA Controller	DMA Controller	DMA
19h-1Eh	Reserved	DMA Controller	DMA
1Fh	DMA Controller	DMA Controller	DMA
20h-21h	Interrupt Controller	Interrupt Controller	Interrupt
24h-25h	Interrupt Controller	Interrupt Controller	Interrupt
28h-29h	Interrupt Controller	Interrupt Controller	Interrupt
2Ch-2Dh	Interrupt Controller	Interrupt Controller	Interrupt
2Eh-2Fh	LPC SIO	LPC SIO	Forwarder to LPC
30h-31h	Interrupt Controller	Interrupt Controller	Interrupt
34h-35h	Interrupt Controller	Interrupt Controller	Interrupt
38h-39h	Interrupt Controller	Interrupt Controller	Interrupt
3Ch-3Dh	Interrupt Controller	Interrupt Controller	Interrupt
40h-42h	Timer/Counter	Timer/Counter	PIT (8254)
43h	Reserved	Timer/Counter	PIT
4E-4F	LPC SIO	LPC SIO	Forwarder to LPC
50h-52h	Timer/Counter	Timer/Counter	PIT
53h	Reserved	Timer/Counter	PIT
60h	Microcontroller	Microcontroller	Forwarder to LPC
61h	NMI Controller	NMI Controller	Processor I/F
62h	Microcontroller	Microcontroller	Forwarder to LPC
63h	NMI Controller	NMI Controller	Processor I/F
64h	Microcontroller	Microcontroller	Forwarder to LPC
65h	NMI Controller	NMI Controller	Processor I/F
66h	Microcontroller	Microcontroller	Forwarder to LPC
67h	NMI Controller	NMI Controller	Processor I/F
70h	Reserved[5]	NMI & RTC controller	RTC
71h	RTC Controller	RTC Controller	RTC
72h	RTC Controller	NMI & RTC controller	RTC
73h	RTC Controller	RTC Controller	RTC
74h	RTC Controller	NMI & RTC controller	RTC
75h	RTC Controller	RTC Controller	RTC
76h	RTC Controller	NMI & RTC controller	RTC
77h	RTC Controller	RTC Controller	RTC

I/O Address	Read Target	Write Target	Internal Unit
80h	DMA Controller	DMA controller & LPC/PCI	DMA
81h-83h	DMA Controller	DMA Controller	DMA
84h-86h	DMA Controller	DMA Controller & LPC or PCI	DMA
87h	DMA Controller	DMA Controller	DMA
88h	DMA Controller	DMA Controller & LPC or PCI	DMA
89h-8Bh	DMA Controller	DMA Controller	DMA
8Ch-8Eh	DMA Controller	DMA Controller & LPC or PCI	DMA
08Fh	DMA Controller	DMA Controller	DMA
90h-91h	DMA Controller	DMA Controller	DMA
92h	Reset Generator	Reset Generator	Processor I/F
93h-9Fh	DMA Controller	DMA Controller	DMA
A0h-A1h	Interrupt Controller	Interrupt Controller	Interrupt
A4h-A5h	Interrupt Controller	Interrupt Controller	Interrupt
A8h-A9h	Interrupt Controller	Interrupt Controller	Interrupt
ACh-ADh	Interrupt Controller	Interrupt Controller	Interrupt
B0h-B1h	Interrupt Controller	Interrupt Controller	Interrupt
B2h-B3h	Power Management	Power Management	Power Management
B4h-B5h	Interrupt Controller	Interrupt Controller	Interrupt
B8h-B9h	Interrupt Controller	Interrupt Controller	Interrupt
BCh-BDh	Interrupt Controller	Interrupt Controller	Interrupt
C0h-D1h	DMA Controller	DMA Controller	DMA
D2h-DDh	Reserved	DMA Controller	DMA
DEh-DFh	DMA Controller	DMA Controller	DMA
F0h	See Note 3	FERR# /IGNNE#/ Interrupt Controller	Processor interface
170h-177h	IDE Controller[1]	IDE Controller[1]	Forwarded to IDE
1F0h-1F7h	IDE Controller[2]	IDE Controller[2]	Forwarded to IDE
376h	IDE Controller[1]	IDE Controller[1]	Forwarded to IDE
3F6h	IDE Controller[2]	IDE Controller[2]	Forwarded to IDE
4D0h-4D1h	Interrupt Controller	Interrupt Controller	Interrupt
CF9h	Reset Generator	Reset Generator	Processor interface

Notes:

1. Only if IDE Standard I/O space is enabled for Primary Drive. Otherwise, the target is PCI.
2. Only if IDE Standard I/O space is enabled for Secondary Drive. Otherwise, the target is PCI.
3. If POS_DEC_EN bit is enabled, reads from F0h will not be decoded by the ICH2. If POS_DEC_EN is not enabled, reads from F0h will forward to LPC.

Memory Decode Ranges From Processor Perspective :

Memory Range	Target	Dependency/Comments
0000 0000h-000D FFFFh 0010 0000-TOM (Top of Memory)	Main Memory	TOM registers in Host Controller
000E 0000h-000F FFFFh	FWH	Bit 7 in FWH Decode Enable Register is set
FEC0 0000h-FEC0 0100h	I/O APIC inside ICH2	
FFC0 0000h-FFC7 FFFFh FF80 0000h-FF87 FFFFh	FWH	Bit 0 in FWH Decode Enable Register
FFC8 0000h-FFCF FFFFh FF88 0000h-FF8F FFFFh	FWH	Bit 1 in FWH Decode Enable Register
FFD0 0000h-FFD7 FFFFh FF90 0000h-FF97 FFFFh	FWH	Bit 2 in FWH Decode Enable Register is set
FFD8 0000h-FFDF FFFFh FF98 0000h-FF9F FFFFh	FWH	Bit 3 in FWH Decode Enable Register is set
FFE0 0000h-FFE7 FFFFh FFA0 0000h-FFA7 FFFFh	FWH	Bit 4 in FWH Decode Enable Register is set
FFE8 0000h-FFEF FFFFh FFA8 0000h-FFAF FFFFh	FWH	Bit 5 in FWH Decode Enable Register is set
FFF0 0000h-FFF7 FFFFh FFB0 0000h-FFB7 FFFFh	FWH	Bit 6 in FWH Decode Enable Register is set
FFF8 0000h-FFFF FFFFh FFB8 0000h-FFBF FFFFh	FWH	Always Enabled. The top two 64K blocks of this range can be swapped as described in Section 6.4.1.
FF70 0000h-FF7F FFFFh FF30 0000h-FF3F FFFFh	FWH	Bit 3 in FWH Decode Enable 2 Register is set
FF60 0000h-FF6F FFFFh FF20 0000h-FF2F FFFFh	FWH	Bit 2 in FWH Decode Enable 2 Register is set
FF50 0000h-FF5F FFFFh FF10 0000h-FF1F FFFFh	FWH	Bit 1 in FWH Decode Enable 2 Register is set
FF40 0000h-FF4F FFFFh FF00 0000h-FF0F FFFFh	FWH	Bit 0 in FWH Decode Enable 2 Register is set
Anywhere in 4GB range	D110 LAN Controller	Enable via BAR in Device 29:Function 0 (D110 LAN Controller)
All Other	PCI	None