P4BGA

Motherboard
Users Manual

Product Name: P4BGA

Manual Revision: English, 1.0

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Table of Contents

Chapter 1   Introduction

1.1   Product Overview

Thanks for your purchasing the **P4BGA** motherboard. The new generation, 478-pin **FC-PGA2** Motherboard **P4BGA** supports a full range of the latest generation Intel Pentium 4 processors .The leading edge chipset **Intel 82C845G GMCH and FW82801DB ICH4** was designed for working with **Pentium 4**(1.4GHz-2.53GHz)**, Pentium 4** *Celeron, Willamette* and *Northwood* processor (min. 2GHz) in the 478-pin package based on the VRM 9.0 Spec. And support 400/533 MHz system Data Bus. Built using the leading edge technology the Intel Pentium 4 processors provide a significant performance over previous Pentium III processors.

> ***** WARNING! P4BGA support AGP 2.0 slot for external AGP 4X mode Graphics Card only.**

Two PC2100 DDR SDRAM sockets allow for up to 2.0GB memory capacity. We have conducted a motherboard compatibility test with a variety of hardware and software, such as CPUs, memory, display cards, CD ROMs, Novell, MS Office.... etc.

We have set high standards on our quality control, with absolute confidence; we believe this product is the wisest choice.

P4BGA User's Manual

This manual is composed of four sections. The first section is the introduction of this motherboard, and the second section explains the proper procedure to setup the motherboard, the third section provides information on how to setup the CMOS. The last section is the installation of the device drivers & utilities.

Ordering Codes

P4BGA: Uses **Intel 845G** and **FW82801DB ICH4** chipset. With
10/100Mbps Ethernet LAN and supports Socket 478 CPU.

1.2   Features

- Wake up on LAN.
- Wake on Keyboard.
- Modem Remote Ring On.
- Support NCR SCSI BIOS.
- Support Suspend to RAM.
- Support Ultra DMA 33/66/100.
- Support Hardware Monitor function.
- Realtek ALC201A Audio CODEC on board.
- Intel PRO/100+ Fast Ethernet Interface on board
- Support FSB frequency 400/533MHz.
- Allows CPU settings and easy over clocking of frequency.
- Support Advanced Configuration Power Interface (ACPI).
- Support Desktop Management Interface (DMI) through BIOS.
- Low-power sleep modes, and 2Mbits "Plug & Play" Flash ROM.
- RTC Wake up Alarm: Program the date/time to wake up your system.

- **Support AGP 2.0 slot for external AGP 4X Fast Write protocol graphics card upgrade. Note :(AGP 1.5V connector only, No support for 3.3V or Universal AGP connectors).**
- Both the BIOS and hardware levels of the motherboard meet PC '99 compliant.

1.3   Specifications

<u>CPU</u> :

- Support Socket 478 for Intel® Micro FC-PGA2 Pentium® 4 processor.
- Support Intel Socket 478 µFCPGA2 Pentium 4 *Northwood* CPU with 400/533MHz FSB frequency.
- Support Intel Socket 478 µFCPGA2 Pentium 4 *Willamette* CPU.
- Support for an Pentium 4 Celeron® processor in a µPGA478 socket with a 400 MHz system bus

<u>Chipset</u>:

- Intel FW82C845G (GMCH) and FW82801DB (ICH4)

<u>DIMM</u>:

- Supports 2.5V PC1600/2100 compliant DDR DRAM in 2 184-pin banks, each bank consists of 1x184-pin DIMM socket, which can support memory sizes of 64/128/256/512MB/1GB modules.
- Supports 2-banks up to 2.0GB DRAM for unbuffered DDR DRAM module.

<u>IDE</u>:

- Dual channel PIO and PCI Bus Master IDE ports support up to 4 EIDE devices for HDD, CD-ROM or DVD-ROM.
- Supports PIO Mode 4 with data transfer rate up to 14 MB/Sec.

- Supports Multiword DMA Mode 0, 1, 2.
- Supports Ultra DMA 33/66/100.

Expansion Slots:

- One 32-bit PCI expansion slots (Rev. 2.2)
- One 32-bit AGP expansion slot (Rev. 2.0)

BIOS :

- Award BIOS v6.00PG with built-in Anti-Virus, DMI, ACPI support, and green function (Plug-and-Play BIOS)
- Supports CD-ROM/HD/SCSI/Floppy/LS120/ZIP and LAN boot up.
- Supports NCR SCSI BIOS.

USB Ports :

- Two Universal Serial Bus (USB) ports Rev.2.0, support up to 127 peripheral devices.

Sound :

- Realtek ALC201A Audio Codec
- AC '97 Rev 2.2 compliant
- 18-bit Stereo Full-Duplex Codex
- Full Duplex Variable Sample Rates from 7kHz to 48kHz with 1Hz Resolution
- Take advantage of CPU to implement audio synthesis and 3D effects processing
- Stereo Headphone Amplifier
- Three Analog Line-Level Stereo Inputs for LINE-IN, CDIN and AUX
- Two Analog Line-Level Mono Inputs for Speakerphone and PC BEEP
- Inside Phat^{TM} Stereo 3D sound enhancement technology
- Power Management support
- Meet performance requirements for audio on PC2001 systems

- MC' 97 Chained in allowed for multi-channel application

LAN :

- IEEE 802.3 10BASE-T/100BASE-TX compliant physical layer interface.
- IEEE 802.3u Auto-Negotiation support and IEEE 802.3x Full Duplex Flow Control standard.
- Digital Adaptive Equalization control.
- Link status-interrupt capability.
- Baseline Wander correction.
- 10/100Mbps BASE-T auto-polarity correction.
- Automatic detection of "unplugged mode"
- Reduced power in "unplugged mode" (less than 50mW).

I/O Devices :

- One FDD control port supports two of the 5.25" or 3.5" floppy drives up to 2.88 MB.
- Two high-speed 16550 UART compatible serial ports
- One parallel ports with SDP/ECP/ EPP compatibility.
- One PS/2 mouse port
- One PS/2 Keyboard connector

IR Port :

- One IrDA/ASKIR compatible Infrared interface port. (Cable optional)

ATX Power :

- Supports Modem remote Ring-On function
- Supports software power off function
- Supports RTC Wake-Up.
- Supports Wake up on LAN.
- Supports Keyboard Wake-Up.

Others :

- Supports Creative Sound Blaster 16 compatibility for real-mode DOS games.

Operating System :

- Supports Windows 3.x/95/98/ME/2000/XP, Windows NT, MS-DOS V6.22, OS/2, Novell, Unix, SCO UNIX.....
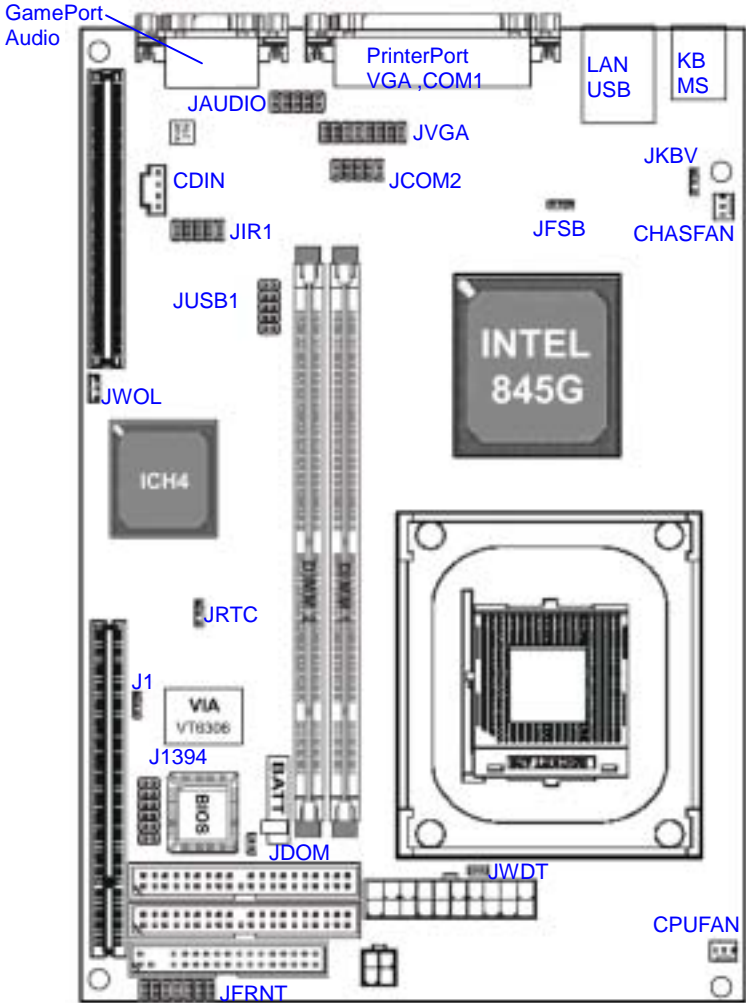
Dimension :

- 175 mm x 310 mm ATX Form Factor

1.4   Content

The motherboard box contains the following items:

- One Motherboard
- One 80-pin IDE Ribbon Cable
- One Floppy Ribbon Cable
- One Driver CD
- User's Manual

1.5   MotherBoard Layout

Chapter 2   Hardware Setup

2.1   Installation Procedure

1. Jumper settings

2. Installation of CPU

3. Installation of Memory

4. I/O Connections & Panel Connections

2.1.1   Jumper Settings

Reset the Function of Flash CMOS   JRTC

Sets the Keyboard Voltage   JKBV

Sets the The FSB/Core ratio   JFSB

WARNING:

- Electronic parts are Static sensitive. To prevent damage to the computer and its parts please take the following measures.

- Work on a surface such as concrete, linoleum or hard wood floor.

- Ground your self with either a properly installed grounding strap or by touching a major electrical appliance long enough to discharge the static.

2.1.2   CMOS Operation(JRTC)

How to Clear the CMOS Setting

1. Turn off the power.

2. Remove ATX power cable from connector J1.

3. Remove Jumper Cap from JRTC (2-3) and put on JRTC (1-2) to

    remove the CMOS setting.

4. Remove Jumper Cap from JRTC (1-2) and put on JRTC (2-3).

5. Connect ATX power cable back to ATX connector.

6. Turn on the power.

While the system reboots, press <DEL> key to set the BIOS setup.

JRTC	
1-2	Clear CMOS
2-3	Normal (Default)
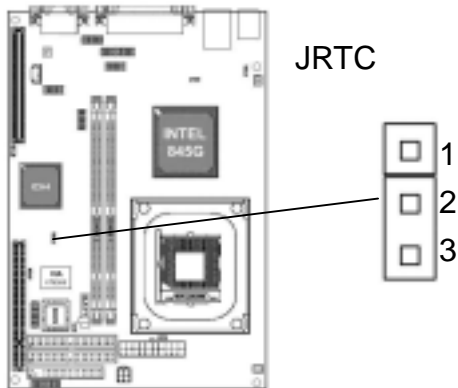
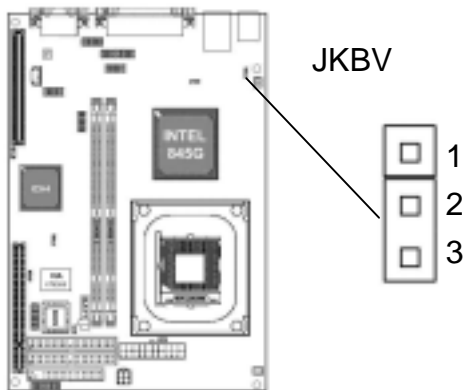## 2.1.3   Keyboard Voltage Setting

This motherboard supports wake on keyboard function. This feature

requires that your system have an ATX power supply with at least

300mA +5V standby power and set this jumper to 2 & 3 pin short.

JKBV	
1-2	5V
2-3	5V Stand by (Default)

2.1.4   CPU FSB Frequency Setting

The JFSB jumper provides FSB frequency settings for the CPU. Auto

Detect, 400MHz or 533MHz FSB frequency can be selected with this

jumper. The over specification operation is not recommended. **Default**

setting in the 400MHz FSB Frequency.

JFSB	
1-2	533 Mhz
2-3	400 Mhz
N/C	Auto Detect

JFSB
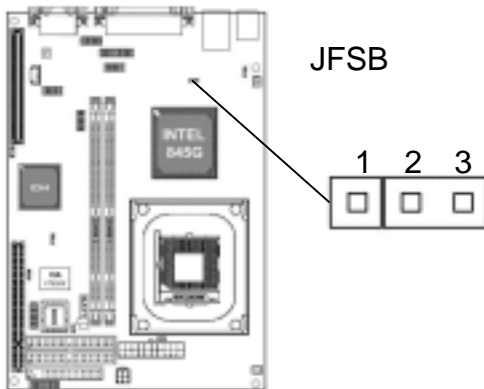
2.1.5   CPU Voltage Setting

The motherboard supports CPU VID function. It can automatically

detect CPU VID signal and generates proper CPU core voltage.

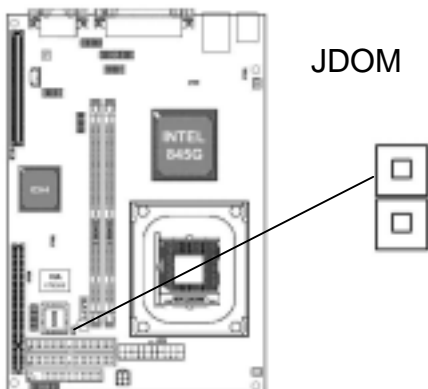## 2.1.6   Disk on memory (JDOM)
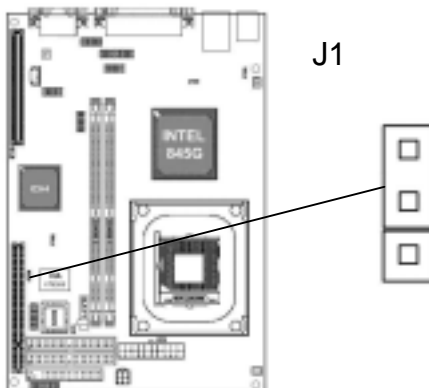
JDOM	
ON	Enable
OFF	Disable(Default)

JDOM

2.1.7   Enabling the 1394 (J1)

J1	
1-2	Enable(Default)
2-3	Disable

J1

2.2 Installation of CPU (For Socket 478 CPU)

Before installing CPU, make sure the power is off. Locate the level bar on the PGA478 ZIF socket. Push level bar away from the socket and pull upward 90 degrees. Insert the CPU into the socket. Be careful of CPU orientation. Make sure the notch of the CPU corresponds with the white dot on the ZIF socket (the corner without pin socket). Do not push in the CPU. Make sure all pins are aligned with the CPU socket. on the level bar.

2.3 Installation of Memory

This motherboard has 2x184-pin 64-bit Dual Inline Memory Module (DIMM) sockets divided into 4 banks. You can install 2.5V Unbuffered PC1600/2100-compliant Synchronous DRAM (DDR DRAM) memory. **Some DIMM memory has SPD (Serial Presence Detect) 8-pin IC on module. It is not recommended the SPD (Serial Presence Detect) DIMM blends and non-SPD DIMM.**

2.3.1 Installation of 184-pin DIMM (Dual Inline Memory Module)

1. Before inserting the DIMM, make sure the pin1 of the DIMM matches with the pin1 on the DIMM socket.
2. Insert DIMM into the DIMM sockets at a 90-degree angle and press down.

2.3.2   Removal of 184-pin DIMM

1. Press the holding clips on both sides of the socket outward to release

   the DIMM.

2. Gently pull the DIMM out of the socket.
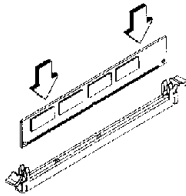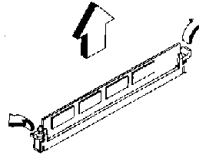
Install DIMM   Remove DIMM

2.3.3   Memory Configuration

There is no jumper setting required for the memory size

or type. It is automatically detected by the system BIOS,

and the total memory size is to add them together

DIMM Socket	DIMM Modules
DIMM1	PC1600/2100 DDR DRAM 64, 128, 256, 512MB,1GB
DIMM2	PC1600/2100 DDR DRAM 64, 128, 256, 512MB,1GB

2.4   I/O Connections/Panel Connections

I/O Connections

|	
ATXPWR	ATX Power series Connector
ATXR1	ATX Power +12V Connector
CPUFAN	CPU Fan connector
CHASFAN	Chassis Fan connector
JIR1	Infrared Connector (Cable optional)
JWOL	Wake up on LAN connector
JAUDIO	For link with Sound Blaster
FLOPPY	Floppy Disk Drive Connector
IDE1, 2	Primary/ Secondary IDE Connectors
MS	PS/2 Mouse Port
KB	PS/2 Keyboard Connector
COM1/JCOM2	Serial Ports 1 & 2
PRINTER	Printer Port
USB	USB Connector
LAN	LAN Connector
GAME	Game/MIDI Connectors
LINE_OUT	Line out Connector
LINE_IN	Line in Connector
MIC	Microphone in Connector
CDIN	The Connector is for CDIN audio cable
AUX	The Connector is for AUX audio cable

2.4.1   ATX Power Connector (20-pin ATXPWR)

Make sure that the power supply is off before connecting or

disconnecting the power cable.

PIN assignment			
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V
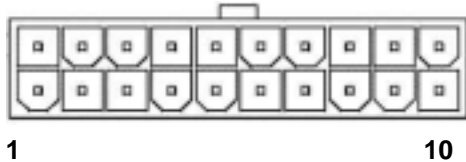
This connector (ATXR1) supplies the CPU operation voltage

(Vcore) , you must be insert below power connector in your

motherboard.

Pin assignment	
1	GND
2	GND
3	+12V
4	+12V
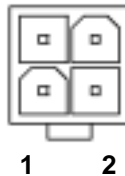
2.4.2   CPU, Chassis Fan Connector (3-pin CPUFAN, CHASFAN)
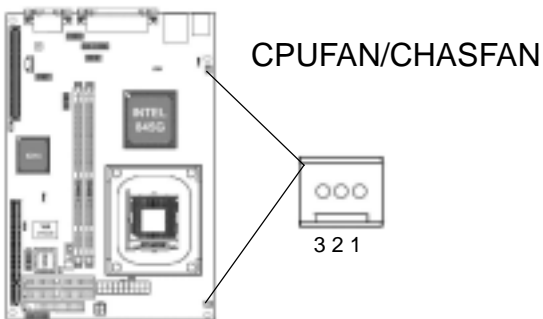
Connect the fan's plug to the board taking into consideration the polarity of the connector.

Pin assignment	
1	GND
2	+12V
3	FAN_CTL

CPUFAN/CHASFAN

3 2 1

21

2.4.3   Infrared Connector (5*2-pin JIR1)

This connector supports the optional wireless transmitting and receiving
infrared module, with this module and application software such as
Laplink or Win95 Direct Cable Connection, user can transfer files to or
from their laptops, notebooks, PDA, PCs and printers. The connector
supports IrDA (115.2Kbps, 2 meters) and ASK-IR (56Kbps). An optional
consumer infrared (CIR) set connects to the CIR and SIR connectors
simultaneously for both wireless transmitting and remote control
functions through one external infrared module. Install infrared module
onto Infrared connector and configure the setting through "UART Mode
Select" in **Integrated Peripherals** to select whether UART is directed
for use with COM2 or Infrared.

| Pin assignment			
1	VCC	6	N.C
2	N.C	7	CIRRX
3	IRRXD	8	5VSB
4	GND	9	N.C
5	IRTXD	10	N.C

JIR1
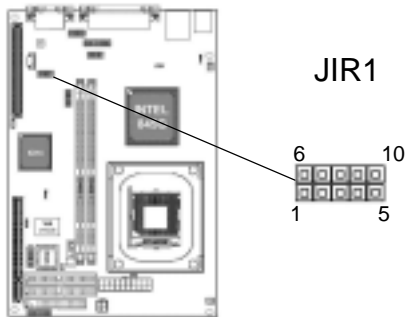
2.4.4   Wake on LAN Connector (3-pin JWOL)

The JWOL connector powers up the system when a wakeup packet or signal is received from the network. This feature requires the **Wake up on LAN** function in BIOS is set to Enabled and that your system has an ATX power supply with at least 720mA +5V standby power.

Pin assignment	
1	5VSB
2	GND
3	Wakeup
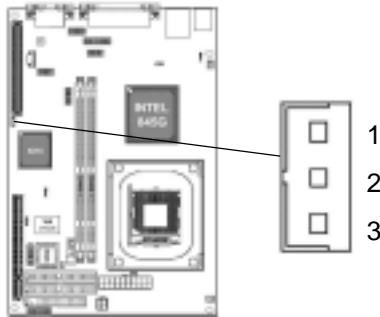
2.4.5   Floppy Disk Drive Connector (34-pin FLOPPY)

This connector supports the provided floppy disk drive ribbon cable.

Orient the red stripe to pin 1
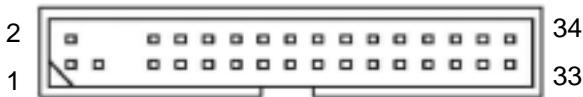
2.4.6   Primary/Secondary IDE Connector (Two 40-pin IDE)

These connectors support the provided IDE hard disk ribbon cable. Connect your first IDE hard disk to master mode of the primary channel. If you have second IDE device to install in your system, connect it as slave mode on the same channel, and the third and fourth device can be connected on secondary channel as master and slave mode respectively.

There are three connectors on the 80-pin IDE ribbon cable. **The blue connector must connect with motherboard's IDE connector** and the other connectors must connect with HDD. In order to get the better performance the Ultra DMA 66/100 HDD must connect with 80-pin IDE ribbon cable.
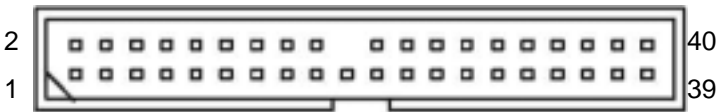
2.4.7   **Back I/O Panel Introduction**
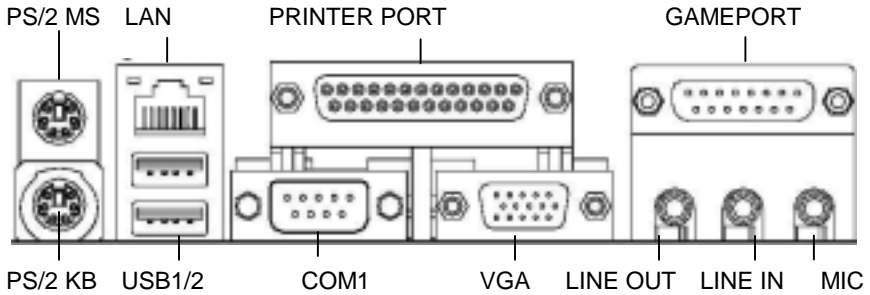
2.4.8   **PS/2 Mouse Port (6-pin Mini-Din MS)**

The system will direct IRQ12 to the PS/2 mouse.

2.4.9   **PS/2 Keyboard Connector (6-pin Mini-Din KB)**

This connection is for a standard keyboard using a PS/2 plug. You may use a Din to Mini-Din adapter on standard AT keyboards.

2.4.10   **Serial Port (9-pin D-Sub. COM1)**

This connection is for standard serial ports COM1.

2.4.11   **VGA Connector (15-pin D-sub.)**

This connector is for standard VGA port on board.

2.4.12   **Printer Port (25-pin D- Sub. PRINTER)**

You can enable the parallel port and choose the IRQ through the "Onboard Parallel Port" setting in Integrated Peripherals of the CMOS SETUP UTILITY.

2.4.13   **USB Connectors (USB1 & USB2)**

You can attach USB devices to the USB1 or USB2 connector.

2.4.14   LAN Connector

The LAN Connector is used to attach RJ-45 cable. For 100Base-TX, your network cable must be category 5, twisted-pair wiring with RJ-45 connectors. If you plan on running the adapter at 100Mbps, it must be connected to a 100Base-TX hub. For 10Base-T, use category 3, 4 or 5 twisted-pair wiring.

2.4.15   ACT/LNK LED (Green color)

This LED lights when there is network packets sent or received through the RJ45 port. It also lights to indicate a successful network connection and remains steady if the connection is stable. The rate of flashing is proportional to the amount of network traffic.

2.4.16   Speed LED (Orange color)

This LED lights when connection is made to a 100Base-TX or 10Base-T host.

2.4.17   Line Out Connector

The Line Out phone-jack provides the audio outputs for the left and right stereo channels.

2.4.18   Line In Connector

The Line In phone-jack is used to attach monaural or stereo devices such as a cassette, Digital Audio Tape, or Minidisc players for playback, mixing, or recording.

2.4.19   Microphone In Connector

The Microphone In phone-jack is used to attach a monaural microphone for live audio input for playback, mixing, or recording.

2.4.20　Game/MIDI Port

The Game/MIDI Port connector is used to attach a joystick for game interaction or to attach an external MIDI device for playback, mixing, or recording.

2.4.21　CDIN Audio (4-pin Black color Connector)

The CD_ROM Audio connector is used to connect the audio cable from either an ATAPI IDE or Sony CD-ROM drive for playback, mixing, and recording.

Pin assignment	
1	CD_Left
2	GND
3	GND
4	CD_Right

CDIN

1
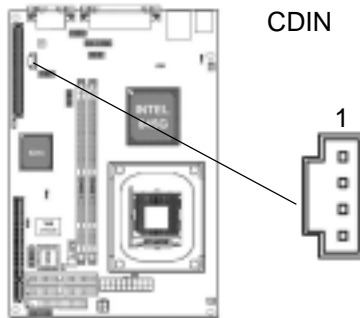
2.4.22　Panel Connection (24-pin JFRNT)

JFRNT Connector	Function
PWRLED	Power LED
SPKR	Speaker
RESET	Reset Switch
IDELED	HDD LED
PWRBNT	ATX Power Button Connector

WARNING: To avoid the system from failing, turn off the power before connecting any devices to the system.

JFRNT

2 □□□□□□□ 14
1 □□□□□□□ 13
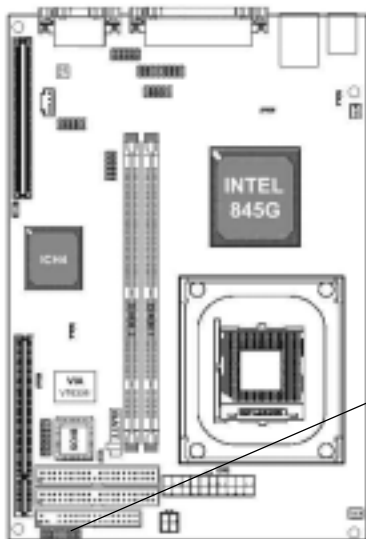
Pin assignment

1	Vcc	2	Vcc
3	IDELED	4	N/C
5	RST_PD	6	GND
7	GND	8	Vcc
9	N/C	10	N/C
11	PWRBTN	12	N/C
13	GND	14	SPK_IN

14   13

Speaker   Power Switch

Reset Switch

Power LED   IDE LED

2   1
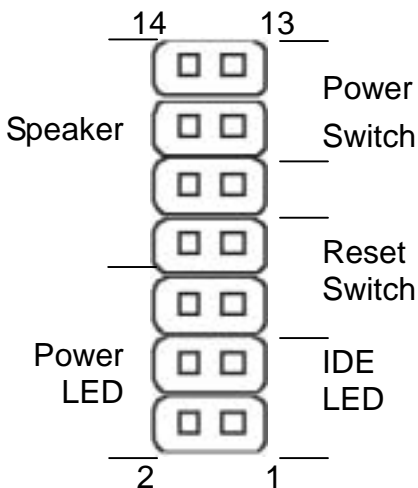
Chapter 3   Appendix

Using the Suspend to RAM Function

1. Select "**Power Management Setup**" in the main menu screen and

   press <Enter>.

2. In the "**ACPI Function**" field, select "**Enabled**".

3. In the "**ACPI Suspend Type**" field, select "**S3 (STR)**".

CMOS Setup Utility - Copyright (C) 1984 – 2001 Award Software

Power Management Setup

ACPI function	Enabled	Item Help
ACPI Suspend Type	S1 (POS)	Menu Level >
Power Management	User Define	
Video Off Method	DPMS	
Video Off In Suspend	Yes	
Suspend Type	Stop Grant	
MODEM Use IRQ	3	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
Soft-Off by PWR-BTTN	Instant-off	
CPU Thermal-Throttling	50.0%	
Wake-up by PCI card	Enabled	
Power on by Ring	Disabled	
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	***	
Primary IDE 0	Disabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	
FDD, COM, LPT Port	Disabled	
PCI PIRQ [A-D] #	Disabled	

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

(Scroll down items , as shown here)

4.Select "**Save & Exit Setup**" and press <Enter>. Type <Y> and press
  <Enter>.

5.Install Windows 98 by typing the following parameter. This is to ensure
  that the ACPI function is supported. There is a space between the P
  and the J.

   [drive]:>setup /p j

If you have previously installed Windows 98, you need to upgrade the
  system in order to support ACPI. Please contact Microsoft for upgrade
  information.

6. Boot Windows 98. In the Windows 98 desktop, click the Start button.
  Move the cursor to Setting, then click Control Panel. To check
  whether ACPI was properly installed, double-click the System icon. In
  the System Properties dialog box, click the "**Device Manager**" tab. In
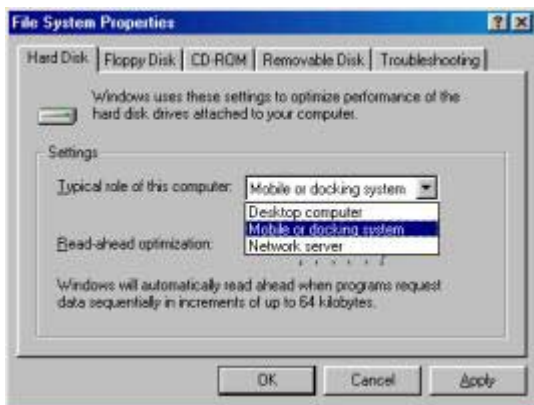 "**View devices by type**", click "**System devices**".
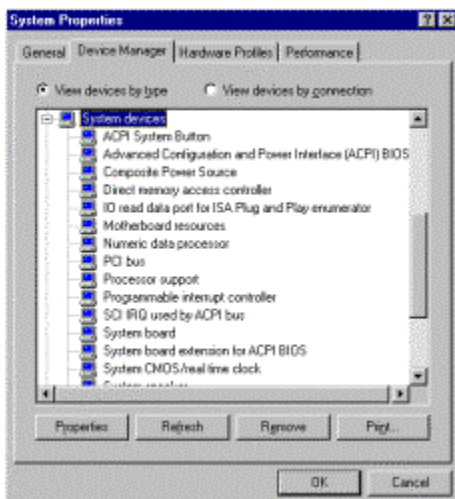
8.Double-click the System icon. In the System Properties dialog box,
  click the **Performance** tab.

9. Click File System. In the "**Typical role of this computer**" field, select

   "**Mobile or docking system**". Click **Apply**, then click **OK**. Restart the

   computer.

10. Repeat step 7 to open the **Control Panel** dialog box. Double-click

    the **Power Management icon**.

11. Click the Advanced tab. In the "When I press the power button on my

    computer" field, select "Standby".

After completing the steps above and you want to power-off the computer, you do not need to go through the process of closing files, applications and operation system. You can power off the computer at once by pressing the power button or selecting "**Standby**" when you shut down Windows 98.

To power-on the computer, just press the power button. The operating session where you left off when you power-off the computer will resume in not more than 8 seconds. However, the power button will not function if a keyboard password has been set in the "**KB Power ON Password**" field of the Integrated Peripherals submenu. You must type the password to power-on the computer.

If you have changed the color or resolution (in the Display Properties dialog box), do not apply the settings without restarting. You must restart the computer.

Shut Down Windows ⊠

What do you want the computer to do?

- ⊙ Stand by
- ○ Shut down
- ○ Restart
- ○ Restart in MS-DOS mode

| OK | Cancel | Help |