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# P8F137 Mainboard Manual

**Friday, October 5, 2001**



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## Using This Manual

This manual is designed to help you build a reliable Personal Computer based on the P8F137 platform.

### **Chapter 1—Quick Reference**

This chapter is for advanced users who want to quickly assemble a system. The mainboard layout along with jumper and switch settings, and memory configuration are provided.

### **Chapter 2—Introduction**

This chapter includes an introduction, a checklist of the items that ship with this mainboard, and a summary of the principal features and components.

### **Chapter 3—Hardware Installation**

This chapter explains how to prepare your mainboard for use and how to make the various connections to other computer components and peripheral items.

### **Chapter 4—BIOS Configuration**

This chapter explains how to use the system setup utility that is stored in the mainboard's firmware.

### **Chapter 5—Driver and Utility**

This chapter briefly describes the drivers and utility programs that are packaged with the mainboard.

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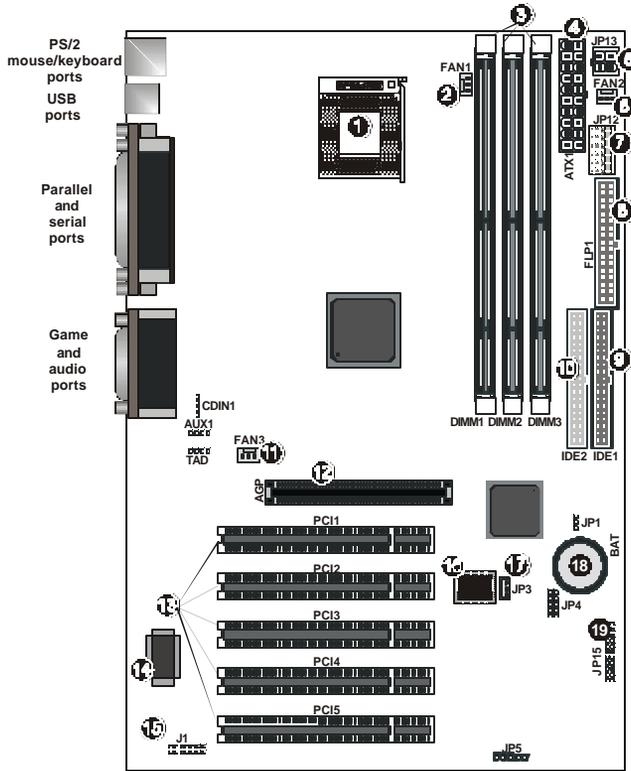
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# 1. P8F137 Quick Reference

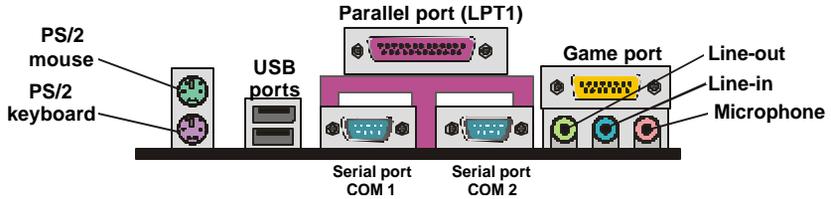
This section is for users to get started using the mainboard straight away.

## 1.1. Mainboard Layout



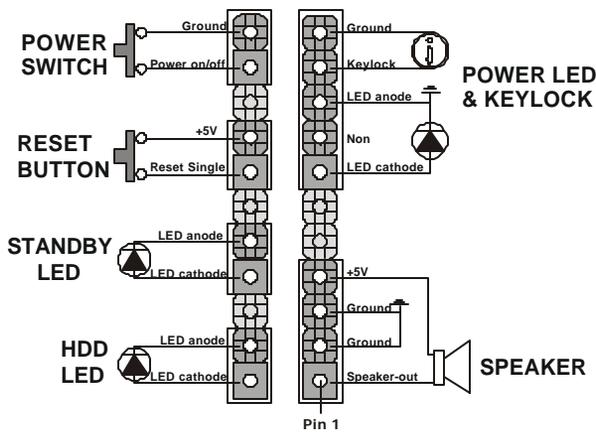
- |                                     |  |
|-------------------------------------|--|
| 1. mPGA478B CPU socket (mPGAB478)   | 11. System fan connector (FAN3)          |
| 2. CPU fan connector (FAN1)         | 12. Accelerated Graphics Port slot (AGP) |
| 3. DIMM module sockets (DIMM1~3)    | 13. PCI expansion slots (PC1~5)          |
| 4. ATX power connector (ATX1)       | 14. I/O Controller                       |
| 5. 12V connector (JP13)             | 15. Smart Card Reader (J1)               |
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| 7. 3V connector (JP12)              | 17. Wake-on-LAN (JP3)                    |
| 8. Floppy Disk Drive (FLP1)         | 18. RTC battery (BAT)                    |
| 9. IDE connector (IDE1)             | 19. Front Panel connectors (JP15)        |
| 10. IDE connector (IDE2)            |  |

## 1.2. I/O Ports



## 1.3. Panel Connector

The following illustration shows the front panel connector pin assignments:



## 1.4. Jumpers

JP1	1-2: Normal
Clear Password	2-3: Clear password

## 1.5. Connectors

<b>AUX1</b>	<b>Auxiliary Connector:</b> This 4-pin header is an auxiliary input connector.
<b>CDIN1</b>	<b>CD-in Connectors:</b> These 4-pin headers are used for connecting the CD ROM audio input to the sound card.
<b>FAN1</b>	<b>CPU FAN Connector:</b> This 3-pin header is used for connecting the CPU fan.
<b>FAN2</b>	<b>System Fan Connector:</b> This 3-pin header is for connecting the case fan that keeps the system cool.
<b>FAN3</b>	<b>CPU/Chipset FAN Connector:</b> This 3-pin header is used for connecting a CPU chipset fan.
<b>J1</b>	<b>Smart Card Reader:</b> This connector enables connection for a smart reader card. A smart card is a credit card with a built-in microprocessor and memory that, when inserted into a reader, enables you to exchange the card's data with a central computer.
<b>JP3</b>	<b>Wake On LAN Connector:</b> This 3-pin header is used for remote wake up of the computer through a network card.
<b>JP4</b>	<b>USB Connector:</b> This 8-pin header is used for connecting front panel USB ports 3 and 4.
<b>JP12</b>	<b>3V Connector:</b> Connect the power supply 3V plug to this connector to provide 3V power for devices.
<b>JP13</b>	<b>12V Connector:</b> Connect the power supply 12V plug to this connector to provide 12V power for devices.
<b>JP5</b>	<b>Infrared (IR) Connector:</b> This 5-pin header is used to connect an infrared (IR) port for use of IR devices.
<b>TAD</b>	<b>TAD Mono-phone mono-out:</b> This is for hooking up a telephone answering machine.

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*Note: The mainboard uses a special Pentium 4 power supply that has plugs for JP12 and JP13.*

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## 1.6. PCI and AGP Frequency Settings

The PCI and AGP frequency settings are automatically set by the system.

## 1.7. Memory Installation

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*Note: The Intel 845 chipset family used in this mainboard supports up to two double-sided or three single-sided DIMMs when the SDRAM interface is operating at 133 MHz. Installing DIMM modules that exceed these specifications requires that the BIOS down-shifts the SDRAM clocks to 100 MHz through a two-wire interface of the system clock generator.*

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### 168-Pin DIMM SDRAM Memory Configuration

<b>Bank 0 (DIMM1)</b>	8, 16, 32, 64, 128, 256, 512 MB
<b>Bank 1 (DIMM2)</b>	8, 16, 32, 64, 128, 256, 512 MB
<b>Bank 2 (DIMM3)</b>	8, 16, 32, 64, 128, 256, 512 MB
<b>Total</b>	8 MB to 1.5 GB

This concludes Chapter 1. Chapter 2 covers the mainboard's specifications and features.

# 2. Introduction

## 2.1. Overview

The high quality P8F137 is a high-performance, enhanced function mainboard that supports Socket 478 Intel® Pentium® 4 processors that support a 66/100/133 MHz front side bus (FSB). This mainboard is designed around the latest and fastest Intel® 845 chipset in a standard ATX form factor.

The mainboard delivers workstation-level performance with an integrated AGP (Accelerated Graphics Port), bus mastering EIDE (Enhanced IDE) controller, and concurrent PCI bus. The mainboard accommodates SDRAM (Synchronous DRAM) memory and supports ATA33/66/100.

The mainboard achieves the highest reliability by supporting ECC (Error Checking and Correction) memory protection, enabling the mainboard to achieve superior data integrity and fault-tolerance in respect to memory errors while running applications.

In addition to superior hardware capabilities, provided with this platform are these features:

- Supports Intel Pentium 4, processors in a 478-pin package
- Supports a 66/100/133 memory bus
- Support for 4xAGP
- Supports up to 1.5 GB of PC66/100/133 SDRAM
- Bus mastering EIDE driver
- Supports four USB ports accommodating Plug and Play devices
- Soft-off APM (Advanced Power Management)
- ACPI (Advanced Configuration and Power Interface)
- Keyboard power on
- External modem ring on
- LAN wake up
- BIOS upgradability

## 2.2. Mainboard Specifications and Features

### 2.2.1. Hardware

<b>CPU</b>	Intel® Pentium®4 processor in a 478-pin package
<b>VRM</b>	Onboard Voltage Regulator Module (VRM) provides 1.05V to 1.825V operating voltage
<b>Coprocessor</b>	CPU has built-in floating point unit
<b>Speed</b>	Front side bus: 66/100/133 MHz AGP: 4x PCI bus clock: 33 MHz
<b>Chipset</b>	Intel 845 chipset supporting: <ul style="list-style-type: none"><li>• 4xAGP mode</li><li>• PC 133 memory</li><li>• Ultra ATA 100</li></ul>
<b>DRAM</b>	Three 168-pin DIMM sockets Supports 8 MB to 1.5 GB memory SDRAM memory types
<b>EIDE Controller</b>	Supports four IDE devices in two channels Supports PIO mode 0 through mode 4 drives Supports Bus Mastering DMA mode 2 drives Supports Bus Mastering Ultra DMA-66/100 drives Supports Iomega ZIP or LS-120 removable drives
<b>Sound Chip</b>	Chip integrated direct sound AC 97
<b>Enhanced I/O</b>	One floppy disk controller One Standard/EPP/ECP parallel port connector Two 16550 compatible serial port connectors Two USB (Universal Serial Bus) ports
<b>I/O Options</b>	One IrDA compatible infrared (IR) connector One connector for front panel USB ports 3/4
<b>Mouse and Keyboard</b>	PS/2 mouse connector PS/2 keyboard connector
<b>Expansion Slots</b>	One 32-bit 4xAGP (V2.0) slot Five 32-bit PCI slots

<b>Power Management</b>	Compliant with EPA, APM 1.2 and ACPI Power on by keyboard and PS/2 mouse Power on by external modem ring Power on by alarm Power on by LAN wake up Fan off in sleep mode
<b>System Management</b>	CPU temperature warning and system temperature detection CPU and system voltage detection CPU and secondary fan RPM detection
<b>Voltage Regulator</b>	Switching regulator CPU voltage auto-detection
<b>Form Factor</b>	ATX form factor
<b>Board Size</b>	20 cm x 30.5 cm (7.9-inch x 12.0-inch)

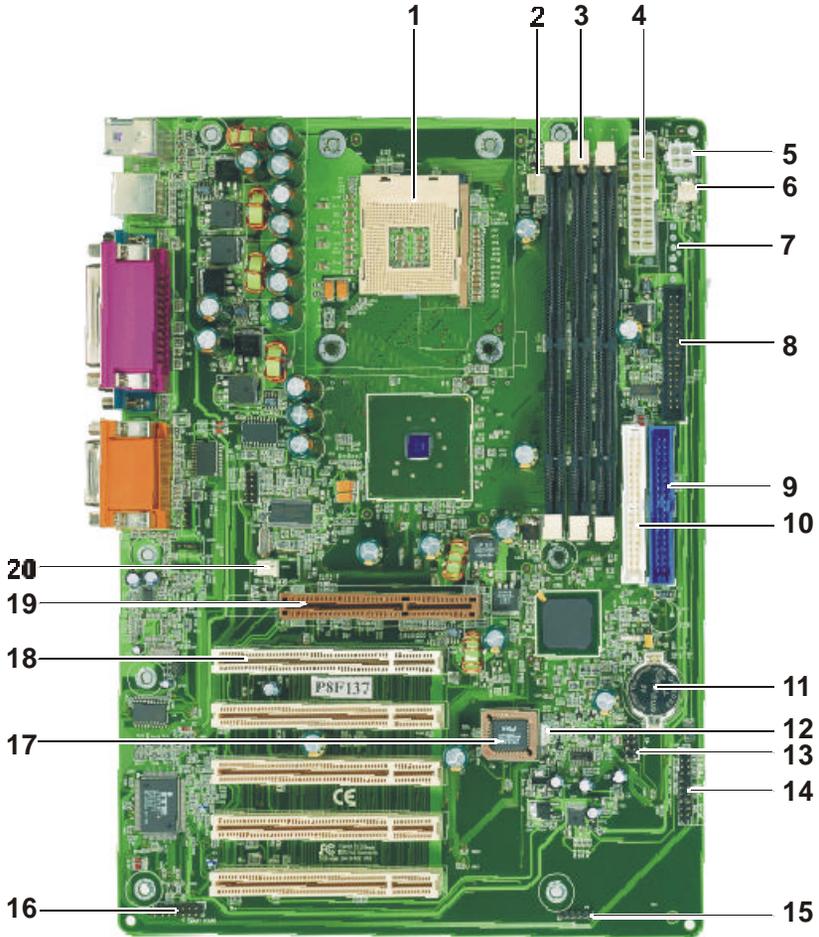
### **2.2.2. Software**

<b>BIOS</b>	AWARD AGP/PCI BIOS 2M-bit Flash BIOS with ESCD (Extended System Configuration Data) block Supports APM, Plug and Play, Multi-Boot, DMI and EIDE devices Supports ACPI Supports high-capacity LS-120 and ZIP removable media drive
<b>Driver and Utility</b>	IDE Bus mastering Ultra DMA driver Flash utility for BIOS upgrade System Environment Monitoring Utility
<b>Operating System</b>	Operates with MS_DOS, Windows 3.x/95/98/2000/NT, OS/2, Novell Netware/UnixWare 1.1, and SCO Unix 4.2

### **2.2.3. Environment**

<b>Ambient Temperature</b>	0°C to 50°C (operating)
<b>Relative Humidity</b>	0 to 85% (operating)
<b>Vibration</b>	0 to 500 Hz
<b>DC Voltage</b>	4.9V to 5.2V
<b>DC Voltage</b>	1.05V to 1.825V
<b>DC Voltage</b>	-5V, +12V, -12V, +5VSB 5% tolerance

## 2.3. Mainboard Layout



*Note: Because of optional items and design changes, your mainboard may not be identical to the one shown in the illustration.*

**2.3.1. Key to Mainboard Components**

No.	Name	Function
1	MPGA478B	CPU socket
2	FAN1	CPU cooling fan
3	DIMM1~3	Memory module slots
4	ATX1	ATX power connector
5	JP13	12V connector for 12V devices
6	FAN2	CPU/chipset fan connector
7	JP12	3V connector for 3V devices (not pictured)
8	FLP1	Floppy drive connector
9	IDE1	IDE1 connector (blue)
10	IDE2	IDE2 connector (black)
11	BAT	RTC battery
12	JP3	Wake on LAN connector
13	USB	Front panel USB connector
14	JP15	Front panel connectors
15	JP5	IrDA compliant Infrared (IR) connector
16	J1	Smart Card connector
17	BIOS	BIOS ROM chip
18	PCI	32-bit expansion slots
19	AGP	Accelerated Graphics Port (AGP) slot
20	FAN3	System fan connector

## 2.4. Microprocessor

The mainboard is designed to operate with the following processor:

Processor Type	Speed	FSB
Intel Pentium 4	800+ MHz	100 MHz

An onboard switching voltage regulator provides the required 1.05 to 1.825 volts for the processor. The processor sends five VID (Voltage Identification) signals to the switching voltage regulator. The switching regulator generates the correct voltage for the processor.

## 2.5. CPU Packaging

The mainboard's CPU socket is a surface mount, mPGA478B type ZIF (Zero Insertion Force) socket. The socket has 478 pins with 50 mil pin pitch.

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*Note: ZIF sockets are sockets designed for easy insertion of pin grid array (PGA) chips. The chip is dropped into the socket, and a lever is used to secure the chip in place.*

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## 2.6. AC 97 Codec

This mainboard features the AC 97 codec. The AC 97 Audio codec is compliant with the AC 97 2.1 specification, and supports 18-bit ADC (Analog Digital Converter) and DAC (Digital Analog Converter) resolution as well as 18-bit stereo full-duplex codec with independent and variable sampling rates. Further features include support for four analog line-level stereo inputs.

## 2.7. Chipset

The P8F137 supports the Intel 845 chipset. The Intel 845 chipset is optimized for the Pentium 4 processor, and incorporates NetBurst micro-architecture. NetBurst architecture doubles the instruction pipeline to 20 stages, runs the ALU (Arithmetic Logic Unit) at twice the core frequency and improves performance in the Level 1 and 2 caches.

The 845 chipset consists of two controller hubs, the 82845 Memory Controller Hub (MCH) and the 82801BA I/O Controller Hub (ICH2):

- The 82845 Memory Controller Hub supports a 400 MHz front side bus, PC133 SDRAM memory, and the 4xAGP interface.
- The 82801BA I/O Controller Hub provides direct connection to graphics and memory components for faster access to peripherals and provides the features and bandwidth required for high performance PCs.

In addition to future application support, the 845 chipset was designed with the following features:

- Advanced packaging technology and industry leading electrical design innovations ensure long-term system reliability over wide operating conditions.
- The AGP4X interface providing the most advanced graphics support available, enabling graphics bandwidth of over 1 GB/s.
- Two USB controllers provide high-performance peripherals with 24 Mbps of bandwidth, while enabling support for up to four USB ports.
- AC 97 implementation delivers six channels of audio for enhanced sound quality and full surround sound capability.
- Dual Ultra ATA/100 controllers support faster IDE transfers to storage devices.

This concludes Chapter 2. Chapter 3 covers hardware installation.

# 3. Hardware Installation

This chapter explains how to use your mainboard to build a powerful computer system. At a minimum, you will need the following components in order to build a fully functioning system.

- Computer case with ATX power supply
- mPGA478B Processor
- One SDRAM memory module
- One floppy disk drive
- One UDMA-66 IDE hard disk drive
- One CD-ROM drive
- One display monitor
- One PS/2 mouse
- One PS/2 keyboard
- One set of loudspeakers

Of course, you can use the system I/O ports and expansion slots to add many more features and components to your system than the items listed above.

## 3.1. Unpacking

The P8F137 mainboard package contains the following items:

- One mainboard
- One IDE 40-pin ribbon cable
- One floppy 34-pin ribbon cable
- Driver and utility CD
- User's manual

After removing the mainboard from its anti-static bag, place it on a grounded or anti-static surface (component side up). Inspect the mainboard and contact your vendor immediately if it is damaged.

## **3.2. Installation**

The P8F137 is designed to fit into a standard ATX form factor chassis. The pattern of the mounting holes and the position of the back panel connectors meet the ATX system board specification. The chassis comes with various mounting fasteners, which are made of metal or plastic. It is highly recommended to use as many metal fasteners as possible to mount the mainboard in the chassis for better grounding.

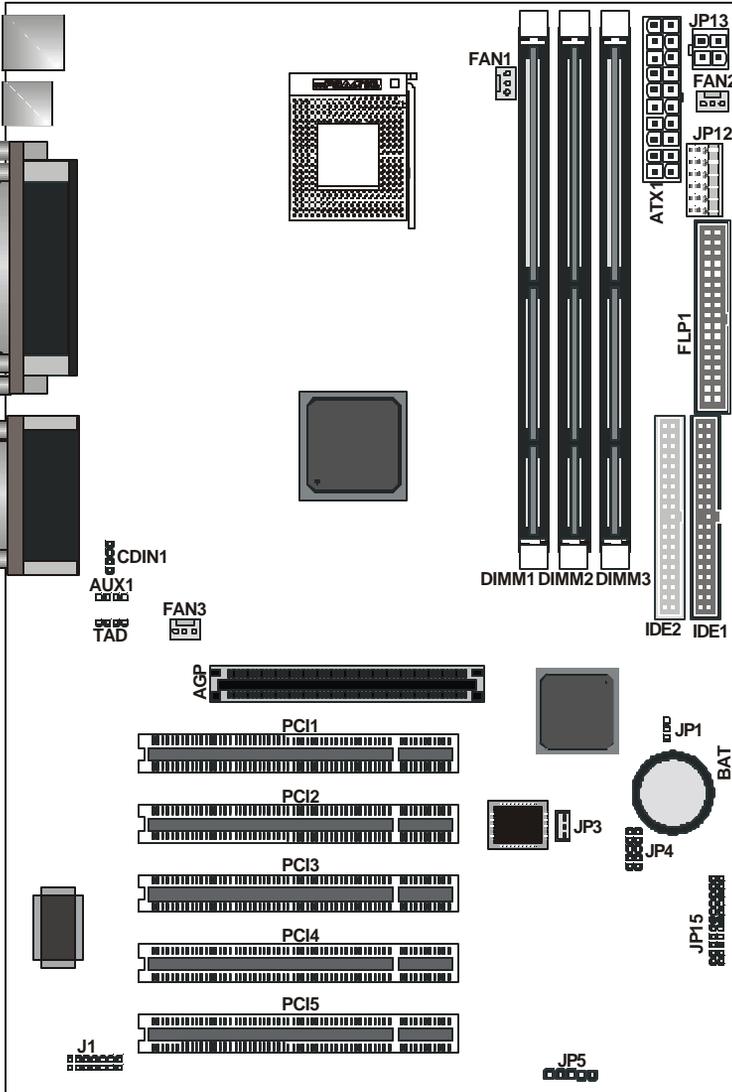
To install the mainboard you need to install the CPU and DIMM memory modules, attach the connectors, and set the correct CPU speed in the CMOS setup.

## **3.3. Safety Measures**

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous. Follow the simple guidelines below to avoid damaging your computer:

- Always disconnect the mainboard from the ATX power supply, and disconnect the computer from the power outlet whenever you are working inside the computer case.
- If possible, wear a grounded wrist strap when you are installing the mainboard or working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the computer case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- Leave each component inside the static-proof packaging that it ships with until you are ready to use the component for the installation.

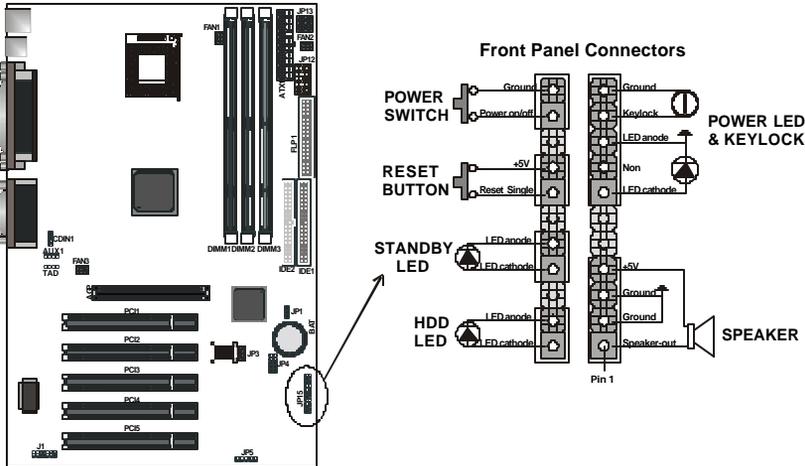
### 3.4. Connector/Jumper Location



## 3.5. Attaching Connectors

### 3.5.1. Front Panel Connectors

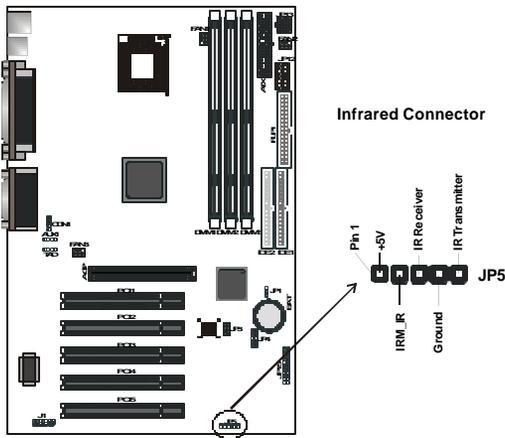
There are six connectors on the mainboard for speaker, switches, and indicator lights on the system's front panel.



<b>Speaker</b>	This 4-pin connector connects to the case-mounted speaker.
<b>Power LED and Keylock</b>	This 5-pin connector connects to the case-mounted keylock switch and the power LED. The keylock switch is used to lock the keyboard for security purposes.
<b>HDD LED</b>	This 2-pin connector connects to the case-mounted HDD LED to indicate hard disk activity.
<b>STB LED</b>	This 2-pin connector connects to the case-mounted STB LED to indicate a standby status. The LED remains lit even when the system is off to indicate that AC power is available. When the system enters standby mode, the LED starts blinking.
<b>Reset</b>	This 2-pin connector connects to the case-mounted reset switch and is used to reboot the system.
<b>PW SW</b>	This 2-pin connector connects to the case-mounted Power button.

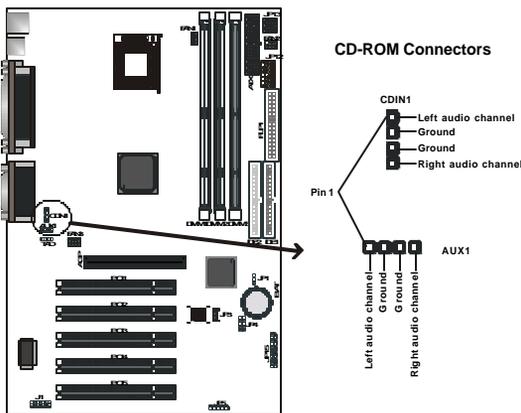
### 3.5.2. Infrared (IR) Connectors

This 5-pin connector connects to an optional wireless transmitting and receiving infrared module via a cable and a bracket. Configure BIOS to enable the IrDA port if you attach an infrared module to this connector. Refer to *Integrated Peripherals* in Chapter 4 for details.



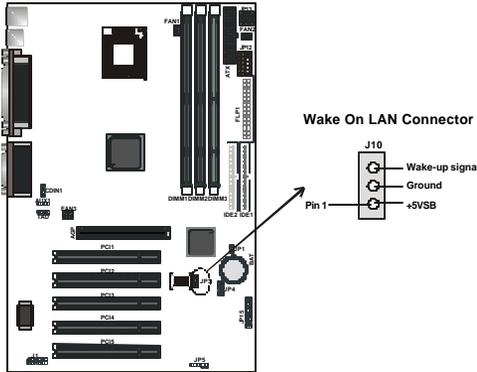
### 3.5.3. CD-ROM Connectors

These connectors enable you to connect a CD-ROM to the mainboard and receive stereo audio input.



### 3.5.4. LAN/Modem Wake Up Connectors

These 3-pin headers are used for remote wake up of the computer through a network or modem signal.



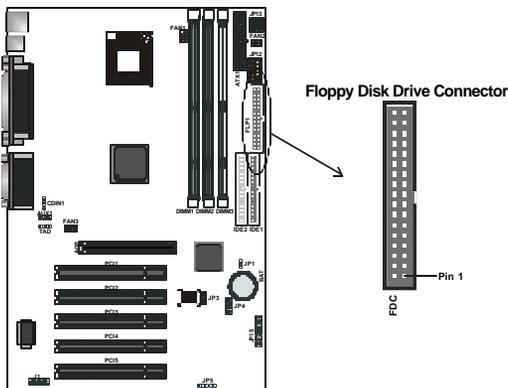

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*Note: You must enable the Wake On LAN/Wake On Modem features in the BIOS setup if you use this feature. Refer to the Power Management section in Chapter 4 for details.*

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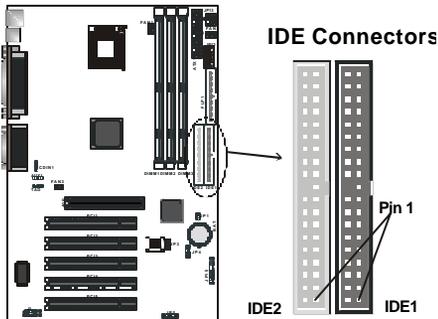
### 3.5.5. Floppy Drive Connector

A floppy disk drive ribbon cable has two connectors to support two floppy disk drives. The connector with twisted wires always connects to drive A; the connector with untwisted wires connects to drive B. You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds with pin 1 of the I/O port connector.



### 3.5.6. IDE Connectors

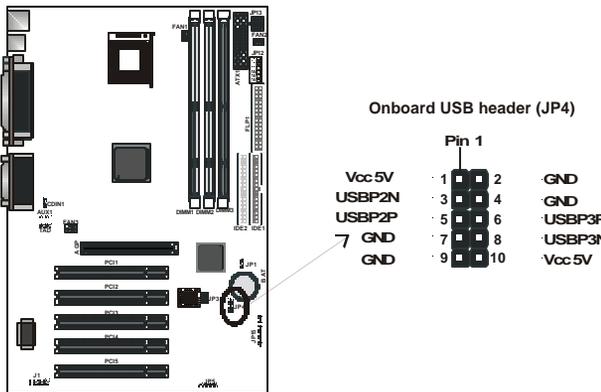
An IDE drive ribbon cable has two connectors to support two IDE drives. If a ribbon cable connects to two IDE drives at the same time, one of them has to be configured as Master and the other has to be configured as Slave by setting the drive select jumpers on the drive.



Consult the documentation that came with your IDE drive for details on jumper locations and settings. You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to pin 1 of the I/O port connector.

### 3.5.7. Onboard USB Connectors

The mainboard has an onboard USB connector (JP4) that enables you to connect front panel USB ports. Refer to the following illustration for pin assignments:

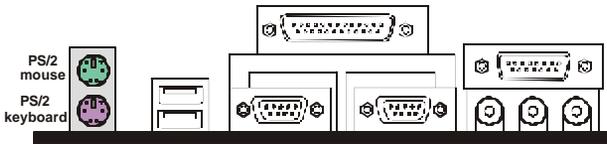


### 3.5.8. Back Panel Connectors

The back panel provides external access to PS/2 style keyboard and mouse connectors, two serial ports, one parallel port, dual USB ports, a game port and audio ports which are integrated on the mainboard. The figures below show the location of the back panel I/O connectors.

#### *PS/2 Mouse and PS/2 Keyboard Ports*

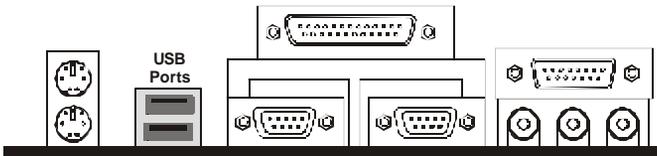
Connect a PS/2 mouse to the green 6-pin mini DIN connector. The system will automatically assign IRQ 12 to the PS/2 mouse if one is connected.



Connect a PS/2 keyboard to the purple 6-pin mini DIN connector. If you want to connect a standard AT size (large DIN) connector, you must use an adapter.

#### *Universal Serial Bus Ports*

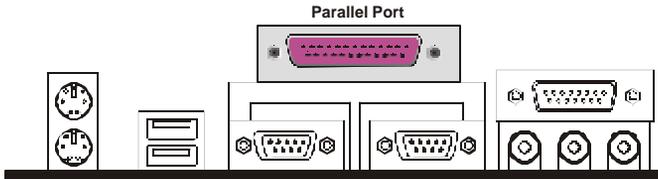
You can connect two USB devices or USB hubs to the USB ports.



The USB ports provide a hardware interface for low-speed peripherals such as the keyboard, mouse, joystick, scanner, printer and telephony devices, and also support MPEG-1 and MPEG-2 digital video. The USB ports have a maximum bandwidth of 12 Mbits/sec (equivalent to 1.5 Mbytes/sec), and up to 127 devices can be attached. Fast devices can use the full bandwidth, while lower-speed ones can transfer data using a 1.5 Mbits/sec sub-channel.

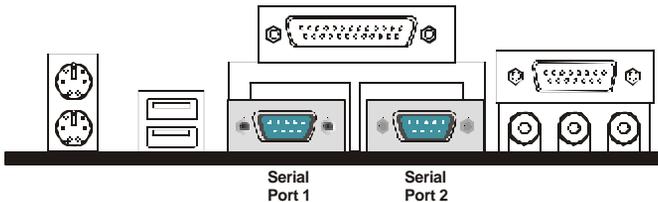
### ***Parallel Port***

Connect a printer or other parallel device to the burgundy-colored 25-pin parallel port. You can set the parallel port IRQ and parallel port mode in BIOS. Refer to *Integrated Peripherals* in Chapter 4 for details.



### ***Serial Ports***

Connect a serial device such as a mouse or modem to the turquoise 9-pin serial ports. You can set the serial port IRQs in BIOS. Refer to *Integrated Peripherals* in Chapter 4 for details.



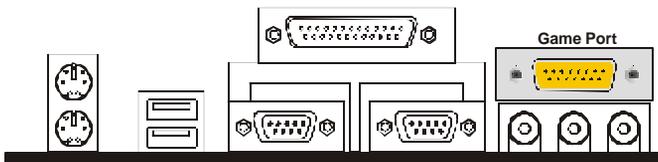
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***Note: Serial printers must be connected to the serial port.***

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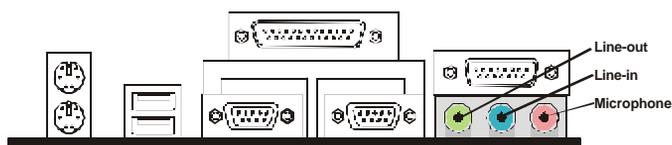
### ***Game Port***

You can connect a joystick, game pad, or other game device to the gold 15-pin game port. You can also connect a MIDI device for playing or editing audio.



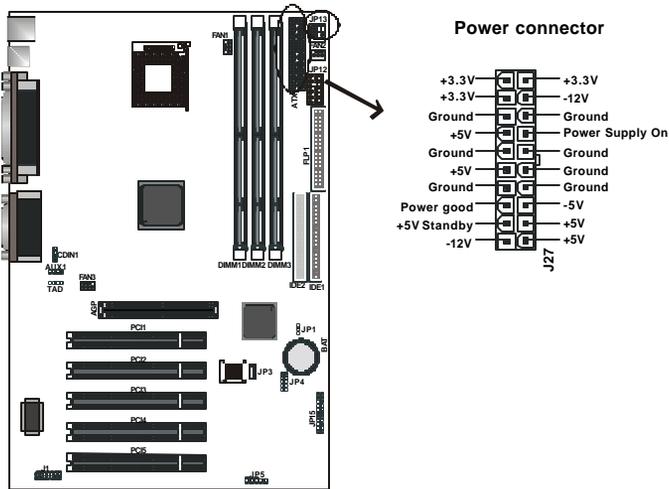
### ***Audio Port Connectors (AC97)***

You can connect various audio devices to these audio jacks. Connect headphones or powered speakers to the lime-colored lineout connector. Connect a tape player or another audio source to the light blue Line-in connector to record audio on your computer or to play audio through your computer's sound chip and speakers. Connect a microphone to the pink microphone connector to record audio to your computer.



### Power Supply Connector

The ATX power supply has a single lead connector with a clip on one side of the plastic housing. There is only one way to plug the lead into the ATX power connector. Press the lead connector down until the clip snaps into place and secures the lead onto the connector.

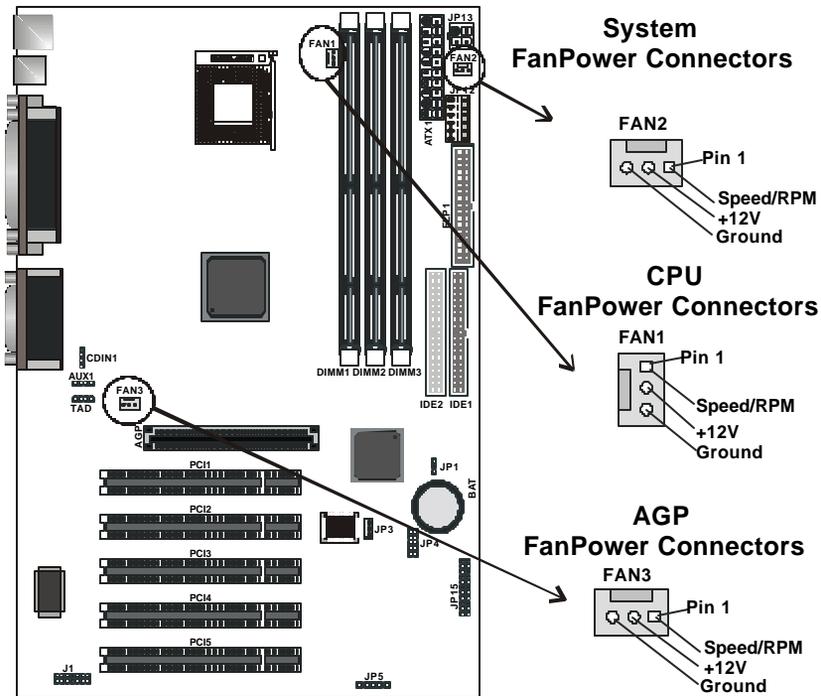


**Warning:** Incorrect installation of the power supply could result in serious damage to the mainboard and connected peripherals. Make sure the power supply is unplugged from the AC outlet before connecting the leads from the power supply.

### CPU/System Fan Power Supplies

There are two fan connectors on the mainboard for the cooling fans. The connectors support fans of 12V DC/500mAMP (six watt) or less. When the system goes into sleep state, fans should be shut down to eliminate audible noise and reduce power consumption. You can monitor the fan speed by way of the ITE8712F chip (providing the fan comes with a tachometer output).

You can monitor the fan speed with the BIOS Setup Utility. Refer to PC Health Status Option in Chapter 4 for details.



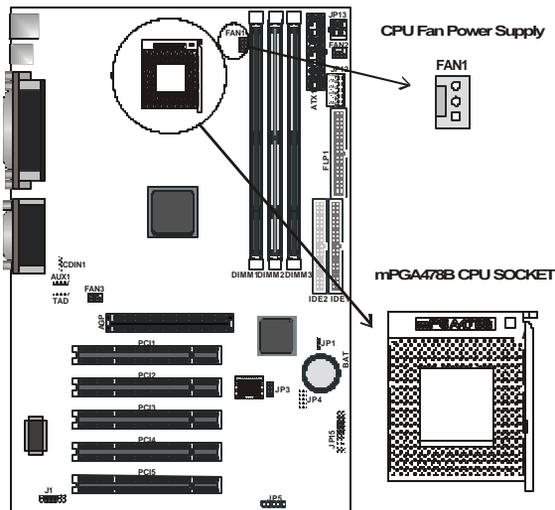
## 3.6. Installing the CPU

### 3.6.1. Before You Begin

1. Be sure that your processor kit includes the following items:
  - ◆ One processor with the fan or heatsink attached
  - ◆ One power cable (for CPU with cooling fan attached)
2. Place the mainboard on a workbench (not in a chassis). Be sure that the mainboard is empty (that is, no DIMMs, cables, or cards are installed) and that the holes for the fan or heatsink support pegs are empty.

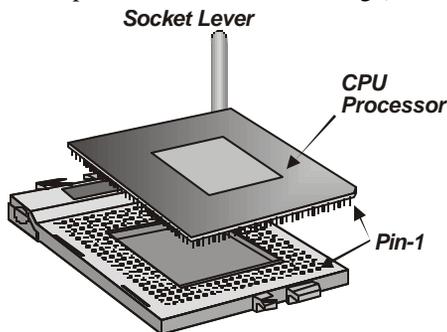
### 3.6.2. Installation Procedure

1. On the motherboard, identify the mPGA478B CPU socket and the cooling fan power-supply connector CPU FAN.



2. Push the CPU socket lever slightly to the side and then raise it as far as it can go.
3. Identify the pin-1 corner of the mPGA478. The pin-1 corner is on the same side as the locking lever, as shown in the illustration below.

4. Identify the pin-1 corner of the processor (the pin-1 corner on the processor has a beveled edge).



5. Align the pin-1 corners and drop the processor into the socket. The processor should drop into place without any force. If it doesn't seat properly, check that you have the pin-1 corner in the correct position.
6. Swing the locking lever down to lock the processor in place and latch the lever under the catch on the side of the socket.
7. Plug the cable from the heatsink/cooling fan assembly into the processor cooling fan power supply CPU FAN.
8. Configuration of the processor is carried out using the BIOS utility as described in Chapter 4, (Frequency/Voltage Control. Configure the processor the first time you turn on the assembled computer.

### **3.6.3. Removing the Processor**

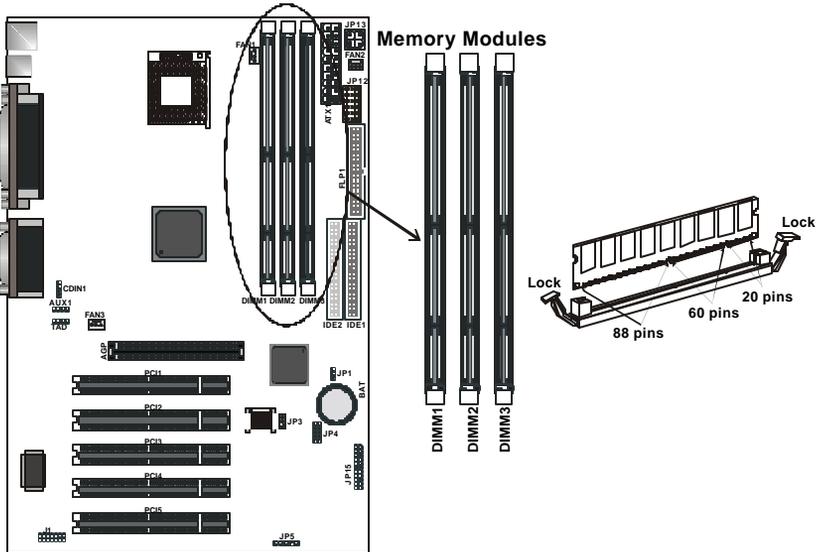
First, remove the mainboard from the chassis. To remove the processor from the mainboard, follow these steps:

1. Disconnect the fan power cable from the mainboard.
2. Push the CPU socket lever slightly to the side and then raise it as far as it can go. You will feel a resistance as the processor is freed from the socket.
3. Remove the processor.

### 3.6.4. Installing System Memory

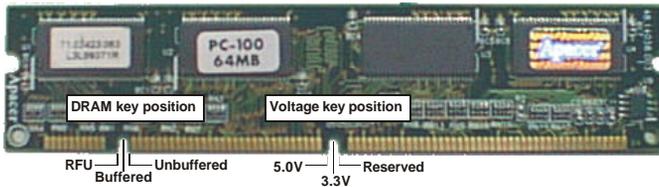
Maximum system memory supported by the mainboard is 1.5 GB.

The mainboard has three DIMM Sockets. Memory can be installed using 168-pin SDRAM DIMM memory modules. There are no jumper settings required for the memory size or type, which is automatically detected by the BIOS.



You must use 3.3V unbuffered DIMMs in the mainboard. To determine the DIMM type, check the notches on the DIMMs.

#### 168-pin DIMM



Due to the high-speed design of the mainboard, the memory modules must meet the following requirements:

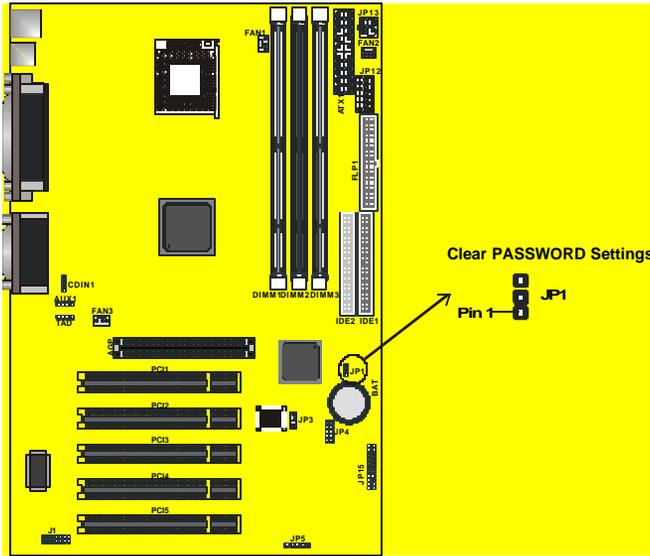
<b>DRAM TYPE</b>	<b>SDRAM (Synchronous DRAM)</b>
Module Size	<i>Single Sided Asymmetric</i> 1Mx64, 4Mx64, 8Mx64, 16Mx64
	<i>Double-Sided Asymmetric</i> 2Mx64, 4Mx64, 8Mx64, 16Mx64, 32Mx64
Requirements	<b>SDRAM Synchronous DRAM</b>
	<ul style="list-style-type: none"> <li>• <i>DIMM module</i> 3.3V unbuffered</li> <li>• <i>Speed Grade</i> 66.6 MHz or faster</li> <li>• <i>CAS latency</i> 3 or faster</li> </ul>

Install the 168-pin SDRAM modules in any combination as follows:

BANK 0 (DIMM1)	8/16/32/64/128/256/512 MB
BANK 1 (DIMM2)	8/16/32/64/128/256/512 MB
BANK 2 (DIMM3)	8/16/32/64/128/256/512 MB
<i>Total System Memory</i>	8 ~ 1.5 GB

### 3.6.5. Setting Jumpers

Refer to the following illustration and instructions to set the jumpers on your mainboard.



#### ***Clear Password Jumper JP1***

You may need to clear the CMOS if your system cannot boot up because you forgot your password.

Refer to the following solutions to clear the password:

#### **Solution A**

1. Power off the system and disconnect the power cable.
2. Place a shunt to short pin 2 and pin 3 of JP1 for five seconds.
3. Place the shunt back to pin 1 and pin 2 of JP1.
4. Power on the system.

### **Solution B**

If the CPU clock setup is incorrect, you may not be able to boot up. In this case, follow these instructions:

1. Turn the system off, then on again. The CPU will automatically boot up using standard parameters.
2. As the system boots, enter BIOS and set up the CPU clock.

### **3.6.6. Auto Power On**

After losing AC power, the system will not turn on automatically when the power comes back unless you set the options in BIOS.

This concludes Chapter 3. Chapter 4 covers the BIOS setup program.

# 4. BIOS Configuration

After the hardware configuration of the mainboard is finished, and the system hardware has been assembled, the system may be powered up. At this point, CMOS setup should be run to ensure that system information is correct.

The mainboard employs the latest Award BIOS CMOS chip with support for Windows Plug and Play. This CMOS chip contains the ROM Setup instructions for configuring the mainboard's BIOS. The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. A ROM-based configuration utility displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

Using easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the Setup program intimately affect how the computer performs. It is important, therefore, first to try to understand all the Setup's options, and second, to make settings appropriate for the way you use the computer. This chapter provides clear explanations for all Setup options.

This program should be executed under the following conditions:

- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the Setup program
- When resetting the system clock
- When setting the CPU clock speed so that it automatically runs either fast or slow
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

## **4.1. Entering Setup**

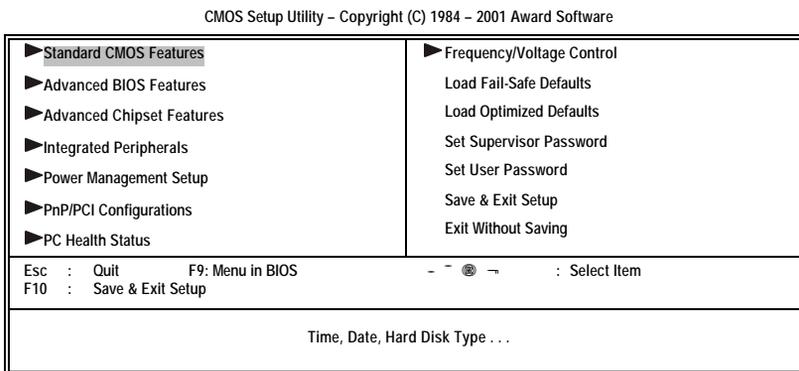
When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

1. If the error occurs before the display device is initialized, a series of beeps will be transmitted.
2. If the error occurs after the display device is initialized, the screen will display the error message.

After the POST routines are completed, the following message appears:

**"Press DEL to enter SETUP"**

To access the AWARD BIOS SETUP program, press the <DEL> key to display the "CMOS SETUP UTILITY" screen:



These screens provide access to the utility's various functions.

Listed below are explanations of the keys displayed at the bottom of the screen:

<b>Key</b>	<b>Function</b>
Esc	<b>Escape key:</b> Exits the current menu
← - - ®	<b>Cursor keys:</b> Scroll through the items on a menu
+/-/PU/PD	<b>Plus, minus, Page Up and Page Down keys:</b> Modify the selected field's values
F10	<b>F10 key:</b> Saves the current configuration and exits setup
F1	<b>F1 key:</b> Displays a screen that explains all key functions
F5	<b>F5 key:</b> Loads previously saved values to CMOS
F6	<b>F6 key:</b> Loads a minimum configuration for troubleshooting.
F7	<b>F7 key:</b> Loads optimum set of values for peak performance

## 4.2. Standard CMOS Setup

Standard CMOS Setup is the same for all three chipsets. Selecting “STANDARD CMOS FEATURES” on the main program screen displays the following menu:

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

Date (mm:dd:yy)	Wed, Sep 19 2001	Item Help
Time (hh:mm:ss)	5 : 8 : 59	
▶ IDE Primary Master		Menu Level ▶ Change the day, month, year and century.
▶ IDE Primary Slave	[ None ]	
▶ IDE Secondary Master	[ None ]	
▶ IDE Secondary Slave	[ None ]	
Drive A	[1.44M, 3.5 in.]	
Drive B	[ None ]	
Video	[ EGA/VGA ]	
Halt On	[ All , But Keyboard ]	
Base Memory	640K	
Extended Memory	31744K	
Total Memory	32768K	

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

The Standard CMOS Setup utility is similar for all three chipsets and is used to configure the following features:

**Date:** Month, Day, Year

**Time:** Hour, Minute, and Second. Use 24 Hour clock format (for PM numbers, add 12 to the hour, you would enter 4:30 p.m. As 16:30).

**Video:** Set this field to the type of graphics card installed in your system. If you are using a VGA or higher resolution card, choose the “EGA/VGA” option. The options are:

- EGA/VGA (default)
- MONO
- CGA 40
- CGA 80

**Floppy Drive A and Floppy Drive B:** Options for these fields are:

- 360K, 5.25 in.
- 1.2M, 5.25in.
- 720K, 3.5in.
- 1.44M, 3.5in.
- 2.88M, 3.5in.
- None (Not Installed)

The “Not Installed” option could be used as an option for diskless workstations.

**Halt On:** This setting determines which type of errors will cause the system to halt during boot. The options are:

- All Errors
- No Errors
- All, But Keyboard (default)
- All, But Diskette
- All, But Disk/Key

**IDE Devices:** Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel. Press **Enter** to display the IDE sub-menu:

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software  
IDE Primary Master

IDE HDD Auto Dash Detection	Press Enter]	Item Help
IDE Primary Master	[ Auto ]	
Access Mode	[ Auto ]	
Capacity	0 MB	Menu Level ▶▶
Cylinder	0	To auto-detect the HDD's size head... on this channel
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

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

**IDE HDD Auto-Detection:** Press <Enter> while this item is high-lighted if you want the Setup Utility to automatically detect and configure a hard disk drive on the IDE channel.

If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.

If the auto-detected parameters displayed do not match the ones that should be used for your hard drive, do not accept them. Press the <N> key to reject the values and enter the correct ones manually in the Standard CMOS Setup screen.

---

*Note: If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for an LBA drive.*

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Do not choose “Large” or “Normal” if the hard disk drive is already fully formatted when you installed it. Select the mode that was used to format it.

**IDE Primary/Secondary Master/Slave:** If you leave this item at “Auto,” the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to “Manual” and then manually configure the drive by entering the characteristics of the drive in the items below (Capacity, Cylinder, Head, Precomp, etc.). Refer to your drive’s documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to “None.”

**Access Mode:** This item defines some special ways that can be used to access IDE hard disks such as LBA (Large Block Addressing). Leave this value at “Auto” and the system will automatically decide the fastest way to access the hard disk drive.

Press <Esc> to close the IDE device sub-menu and return to the Standard CMOS Features page.

**Base/Extended/Total Memory:** These items are automatically detected by the system at start up time. These are display-only fields. You cannot make changes to these fields.

After you have made your selections in the Standard CMOS Setup screen, press <ESC> to go back to the main screen.

### 4.3. BIOS Features Setup

Selecting “BIOS Features Setup” on the main program screen displays this menu, which allows you to define advanced information about your system. You can make modifications to most of these items without introducing fatal errors to your system. Note that the page has a scroll-bar to scroll down to more items.

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software  
Advanced BIOS Features

Virus Warning	[Disabled]		Item Help
CPU L1 & L2 Cache	[Enabled]		
Quick Power On Self Test	[Enabled]		
First Boot Device	[Floppy]		
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 For OS	[1.4]		
OS Select For DRAM > 64MB	[Non-OS2]		
Report No FDD For Win95	[No]		
			Menu Level ►
			Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and alarm beep

- /PU/PD:Value: F10: Save ESC: Exit F1:General  
 Help F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

The following explains the options for each feature:

**Virus Warning:** When enabled, you can choose the VIRUS warning feature for IDE hard disk boot. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and alarm beep. The default setting is “Disabled.”

*Note: Install virus protection and regularly update it to provide maximum protection against viruses.*

**CPU L1 & L2 Cache:** These settings enable the CPU internal (L1) and external (L2) cache. Enabling these items provides better performance. The default setting is “Enabled.”

**Quick Power On Self Test:** This will skip some diagnostic checks during the Power On Self Test (POST) to speed up the booting process. The default setting is “Enabled.”

**First/Second/Third Boot Device:** Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time. The default settings are “Floppy,” “HDD-0,” and “LS120,” respectively.

**Boot Other Device:** If you enable this item, the system will search all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second, and Third boot devices. The default setting is “Enabled.”

**Swap Floppy Drive:** If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A. The default setting is “Disabled.”

**Boot Up Floppy Seek:** If this item is enabled, it checks the geometry of the floppy disk drives at start-up time. You don’t need to enable this item unless you have an old diskette drive with 360K capacity. The default setting is “Enabled.”

**Boot Up Numlock Status:** If set to “Off,” the cursor controls will function on the numeric keypad. The default setting is “On.”

**Gate A20 Option:** This option accesses memory above 1 MB using the fast gate A20 line when set to “Fast” (default). The other option is “Normal.”

**Typematic Rate Setting:** If set to “Enabled,” enables you to set the Typematic Rate and Typematic Delay. The default setting is “Disabled.”

- **Typematic Rate (Chars/Sec):** This setting controls the speed at which the system registers repeated keystrokes. The choices range from 6 to 30 Chars/Sec. The default setting is “6” Chars/Sec.
- **Typematic Delay (Msec):** This setting controls the time between the display of the first and second characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms. The default setting is “250” ms.

**Security Option:** This setting controls the password feature. The options are “Setup” and “System.” Selecting “Setup” will protect the configuration settings from being tampered with. Select “System” if you want to use the password feature every time the system boots up. The default setting is “Setup.” You can create your password by using the “SUPERVISOR/USER PASSWORD” utility in the main program screen.

**APIC Mode:** Enables or disables APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multiprocessing (SMP) for systems, allowing support for up to up to 60 processors.

**OS Select For DRAM > 64MB:** Set to “OS2” if the system memory size is greater than 64 MB and the operating system is OS/2. The default setting is “Non-OS2.”

**Report No FDD For WIN 95:** If you are running a system with no floppy drive and using Windows 95, select “Yes” for this item to ensure compatibility with the Windows 95 logo certification. Otherwise, select “No.”

**Small Logo (EPA) Show:** Enables and disables the EPA logo when booting up.

After you have made your selections in the BIOS Features Setup screen, press <ESC> to go back to the main screen.

## 4.4. Chipset Features Setup

Selecting “Chipset Features Setup” on the main program screen displays this menu:

CMOS Setup Utility – Copyright (C) 1984 – 2000Award Software  
Advanced Chipset Features

DRAM Timing Selectable	[By Spd]	Item Help
CAS Latency Time	[1.5]	
Active to Precharge Delay	[7]	Menu Level ▶
DRAM RAS# to CAS# Delay	[3]	
DRAM RAS# Precharge	[3]	
DRAM Data Integrity Mode	[Non-ECC]	
Memory Frequency For	[Auto]	
Dram Read Thermal Mgmt	[Enabled]	
System BIOS Cacheable	[Enabled]	
Video BIOS Cacheable	[Enabled]	
Video RAM Cacheable	[Enabled]	
Memory Hole At 15M-16M	[Disabled]	
Delayed Transaction	[Enabled]	
AGP Aperture Size <MB>	[64]	
Delay Prior to Thermal	[16 Min]	

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

This screen controls the board’s chipset settings. All entries related to the DRAM timing on the screen are automatically configured. Do not make any changes unless you are familiar with the chipset.

**DRAM Timing Selectable:** Enables you to set the DRAM timing manually, or automatically using SPD (Serial Presence Detect). SPD is an EEPROM chip on the memory module that stores information about the memory chips it contains, including size, speed, voltage, row and column addresses, and manufacturer. We recommend setting this field to By SPD.

**CAS Latency Time:** This item enables you to optimize the speed at which data is accessed in a column by defining CAS latency time. The CAS latency defines the time delay (in CLKs) before SDRAM starts a read command after receiving it.

Because reading data in a row is twice as fast, reducing this number can increase performance at the expense of stability. We recommend that you leave this item at the default value.

**Active to Precharge Delay:** This item enables you to set the number of DRAM clocks for TRAS. TRAS indicates the time required for the memory to restore data and come to a full charge.

**DRAM RAS# to CAS# Delay:** Enables you to select the RAS to CAS delay time in HCLKs of 2/2 or 3/3. The value is set at the factory depending on the DRAM installed. Do not change the values in this field unless you have changed the specifications of the installed DRAM or the installed CPU.

**DRAM RAS# Precharge:** DRAM must continually be refreshed or it will lose its data. Normally, DRAM is refreshed entirely as the result of a single request. This option allows you to determine the number of CPU clocks allocated for the Row Address Strobe (RAS) to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

**DRAM Data Integrity Mode:** Set this to “ECC” (error-correcting code-default) or “Non-ECC,” according to the type of installed DRAM.

**Memory Frequency For:** Enables you to set the memory frequency for the installed memory. Select Auto to enable the system to set the memory frequency automatically according to the installed DRAM.

**DRAM Read Thermal Mgmt:** Enables and disables the DRAM read thermal management function.

**System/Video BIOS Cacheable:** When set to “Enabled” (default), the System and Video BIOS will be cached for faster execution.

**Video RAM Cacheable:** When enabled, the graphics card's local memory will be cached for faster execution. However, if any program writes to this memory area, a system error may result. The default is “Enabled.”

**Memory Hole At 15M-16M:** If Set to “Enabled”, when the system memory size is equal to or greater than 16M bytes, the physical memory address from 15M to 16M will be passed to PCI or ISA and there will be a 1 MB hole in your system memory. This option is designed for some OS with special add-in cards which need 15-16 MB memory space. The default setting is “Disabled.”

**AGP Aperture Size (MB):** This option determines the effective size of the AGP Graphic *Aperture*, where memory-mapped graphic data structures are located.

**Delay Prior To Thermal:** This item allows you to select the delay time to enable the Pentium 4 CPU Thermal feature. Enable this feature when using Windows NT 4.0 to prevent the system from hanging.

After you have made your selections in the Chipset Features Setup screen, press <ESC> to go back to the main screen.

## 4.5. Integrated Peripherals

Selecting “Integrated Peripherals” on the main program screen displays this menu:

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

On-Chip Primary	PCI IDE	[Enabled]		Item Help
IDE Primary Master	PIO	[Auto]		Menu Level ▶
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]		
IDE Secondary Slave	PIO	[Auto]		
IDE Secondary Master	UDMA	[Auto]		
IDE Secondary Slave	UDMA	[Auto]		
USB Controller		[Enabled]		
USB Keyboard Support		[PCI Slot]		
AC97 Audio		[Enabled]		
AC97 Modem		[Enabled]		
Init Display First		[PCI Slot]		
IDE HDD Block Mode		[Enabled]		
POWER ON Function		[BUTTON ONLY]		
KB Power ON Password		[Enter]		
Hot Key Power ON		[Ctrl-F1]		

- : MoveEnter : Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

**OnChip Primary/Secondary PCI IDE:** This option enables or disables the onboard IDE controller. The default setting is “Enabled.”

**IDE Primary/Secondary Master/Slave PIO:** When set to “Auto” the BIOS will automatically set the mode to match the transfer rate of the hard disk.

If the system won't boot up when set to “Auto” set it manually to a lower mode, e.g., from Mode 3 to Mode 2. All IDE drives should work with PIO mode 0. There are six options:

- Auto (default)
- Mode 0
- Mode 1
- Mode 2
- Mode 3
- Mode 4

**IDE Primary/Secondary Master/Slave UDMA:** When set to “Auto” the BIOS will automatically load the Ultra DMA 33 driver to match the transfer rate of IDE hard disk drives that support Ultra DMA 33 mode. The options are “Auto” (default) and “Disabled.”

**USB Controller:** Enables the USB controller. Leave this at the default “Enabled” if you want to connect USB devices to your computer.

**USB Keyboard Support:** Enables USB keyboard support for legacy operating systems.

**AC97 Audio/Modem:** Enables or disables the onboard AC 97 audio and modem chips.

**Init Display First:** This item sets whether the PCI Slot or AGP is activated first. The options are “PCI Slot” and “AGP” (default).

**IDE HDD Block Mode:** Enable this field if your IDE hard drive supports block mode. Block mode enables BIOS to automatically detect the optimal number of block read and writes per sector that the drive can support. The default setting is “Enabled.”

**POWER ON Function:** Enables you to define actions that will power on the computer. When set to “Button Only” (default), the system power can be turned on by the power button. You can set the mouse and keyboard activity, and a password to power on the computer from this field.

**KB Power ON Password:** Enables you to set a password when powering on the computer by means of keyboard activity.

**Hot Key Power On:** Enables you to set the key combination that will power on the computer. You must enable “Hot Key” in the Power On Function field for this item to work.

**Onboard FDC Controller:** This option enables the onboard floppy disk drive controller. The default setting is “Enabled.”

**Onboard Serial Port 1/2:** These options are used to assign the I/O addresses and IRQs for the two onboard serial ports. Leave these items at Auto to let the system automatically assign the values.

**UART Mode Select:** Enables you to select the infrared communication protocol—Normal (default), IrDA, ASKIR, or SCR.

**UR2 Duplex Mode:** This field is available when UART 2 Mode is set to either ASKIR or SCR. This item enables you to determine the infrared (IR) function of the onboard infrared chip. Full-duplex means that you can transmit and send information simultaneously. Half duplex (default) is the transmission of data in both directions, but only one direction at a time.

**Onboard Parallel Port:** This option is used to assign the I/O address and IRQ for the onboard parallel port. The default value is 378/IRQ7.

**Parallel Port Mode:** There are four options—“Normal” (default), “EPP” (Enhanced Parallel Port), “ECP” (Extended Capabilities Port), and “ECP+EPP.” Change the mode from “Normal” to the enhanced mode only if your peripheral device can support it.

**ECP Mode Use DMA:** When the onboard parallel port is set to ECP mode, the parallel port has the option to use DMA “3” (default) or DMA “1.”

**Game Port Address:** This item enables you to set the I/O address for the game port.

**Midi Port Address:** This item enables you to set the I/O address for the Midi port.

**Midi Port IRQ:** This item enables you to set the IRQ for the Midi port.

If you make any changes to the onboard FDD controller, serial ports or parallel ports in this setup, save the changes and turn off the system. After powering up the system, ensure that the changes have taken effect.

After you have made your selections in the Integrated Peripherals Setup screen, press <ESC> to go back to the main screen.

## 4.6. Power Management

Power Management Setup controls the mainboard's "Green" features. Selecting "Power Management Setup" on the main program screen displays this menu:

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 PM	[V/H SYNC+Blank]		
Video Off in Suspend	[Yes]		
Suspend Type	[Stop Grant]		
Modem Use IRQ	[3]		
Suspend Mode	[Disabled]		
HDD Power Down	[Disabled]		
Soft-Off by PWR-BTTN	[Instant-Off]		
Wake-Up by PCI Card	[Enabled]		
Power On by Ring	[Enabled]		
Wake Up on LAN	[Enabled]		
X USB KB Wake-Up From S3	Disabled		
Resume by Alarm	[Disabled]		
X Date <of Month> Alarm	0		
X Time <hh:mm:ss> Alarm	0: 0: 0		
**Reload Global Timer Events**			

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

**ACPI Function:** When set to "Enabled," turns on the ACPI Function. The default setting is "Disabled."

*Note: ACPI (Advanced Configuration and Power Interface) is a power management specification that makes hardware status information available to the operating system. ACPI enables a PC to turn its peripherals on and off for improved power management. It also allows the PC to be turned on and off by external devices, so that mouse or keyboard activity wakes up the computer.*

---

**ACPI Suspend Type:** Use this item to define how your system suspends. In the default, S1(POS), the suspend mode is equivalent to a software power down. If you select S3 (STR), the suspend mode is a suspend to RAM - the system shuts down with the exception of a refresh current to the system memory.

**Power Management:** This item acts like a master switch for the power-saving modes and hard disk timeouts. If this item is set to Max Saving, power-saving modes occur after a short timeout. If this item is set to Min Saving, power-saving modes occur after a longer timeout. If the item is set to User Define, you can insert your own timeouts for the power-saving modes.

**Video Off Method:** This setting controls the video off method in power saving mode. The default setting is "V/H SYNC+Blank" which disables V/H SYNC signals and blanks the screen. Other options are "DPMS" and "Blank Screen." The "DPMS" option allows the BIOS to control the video card if it has the DPMS (Display Power Management System) feature. The "Blank Screen" option is used when you do not have a "Green" monitor.

**Video Off In Suspend:** This setting enables system to turn the video off when entering suspend mode.

**Suspend Type:** If this item is set to the default "Stop Grant," the CPU will go into the Idle Mode during suspend mode.

**MODEM Use IRQ:** If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the mainboard Wake On Modem connector for this feature to work. The default is "3."

**Suspend Mode:** Enables you to set the idle time before the system goes into suspend mode. Default is “Disabled.”

**HDD Power Down:** The IDE hard drive will spin down if it is not accessed within a specified length of time. Options are from “1 Min” to “15 Min” and “Disable.” The default is “Disable.”

**Soft-Off by PWRBTN:** When set to “Instant-Off” (default), pressing the power button will turn off the system power. When set to “Delay 4 Sec.” you have to press the power button and hold it for more than 4 seconds to turn off the system power. Otherwise, the system just goes into suspend mode. The options are “Instant-Off” and “Delay 4 Sec.”

**Wake Up by PCI Card:** Enables PCI slot to wake the system from suspend mode.

**Power On by Ring:** When set to “Enabled,” any activity on the Modem port will wake up the system from a power saving mode. The options are “Enabled” and “Disabled” (default).

**Wake Up on LAN:** Enables LAN activity wake the system from suspend mode.

**USB KB Wake-Up From S3:** If the ACPI Suspend Type is set to S3(STR) or S1&S3, you can enable this field to allow USB keyboard activity to wake the system from suspend mode.

**Resume by Alarm:** When set to “Enabled,” you may set the date (day of the month), hour, minute and second to turn on your system. When set to set “0” (zero) for the day of the month, the alarm will power on your system every day at the specified time.

### ***Reload Global Timer Events***

These fields determine which events waken the system from power saving mode.

**Primary/Secondary IDE 0/1:** When enabled, the system power will resume the system from a power saving mode if there is any activity on primary or secondary IDE channels 0 or 1.

**FDD, COM, LPT Port:** When this item is enabled, the system will restart the power-saving timeout counters when any activity is detected on the floppy disk drive, serial ports, or the parallel port.

**PCI PIRQ[A-D]#:** When set to “On,” any activity from one of the listed devices wakes up the system.

Press the <ESC> key to go back to the main program screen after you have made your selections in the Power Management Setup screen.

## 4.7. PnP/PCI Configuration

Both the ISA and PCI buses on the Mainboard use system IRQs (Interrupt ReQuests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configuration Setup utility; otherwise, the mainboard will not work properly. Selecting “PnP/PCI CONFIGURATION” on the main program screen displays this menu:

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software  
PnP/PCI Configurations

Reset Configuration Data	[Disabled]	Item Help Menu Level ► Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.
Resources Controlled by xIRQ Resources	[Auto(ESCD)] Press Enter	
PCI/VGA Palette Snoop	[Disabled]	

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

**Reset Configuration Data:** The system BIOS supports the Plug and Play feature so the resources assigned to each peripheral have to be recorded to prevent them from conflicting.

The location to store the assigned resources is called ESCD (Extended System Configuration Data) which is located in the system flash EEPROM. If this option is set to “Disabled,” the ESCD will update automatically when the new configuration varies from the last one. If set to “Enable,” the ESCD will be cleared and updated and then this option will automatically be set to “Disabled.”

**Resources Controlled By:** BIOS can automatically configure all the boot and Plug and Play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.

**IRQ Resources:** These fields only become available if the Resources Controlled By field is set to “Manual.” If there is a legacy ISA device which uses an, set the corresponding IRQ to “Legacy ISA”; otherwise, you should set this field to “PCI/ISA PnP.”

**PCI/VGA Palette Snoop:** This item is designed to overcome some problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

After you have made your selections in the PNP/PCI Configuration Setup, press the <ESC> key to go back to the main program screen.

## 4.8. PC Health Status Option

On mainboards that support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds. Selecting “PC Health Status” on the main program screen displays this menu:

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software  
PC Health Status

Shutdown Temperature	[60°C/140°F]	Item Help
Voltage 0		Menu Level ►
Voltage 1		
Voltage 2		
Voltage 3		
Voltage 4		
Voltage 5		
Voltage 6		
Voltage Battery		
CPU Temp 1 [ON BOARD]		
CPU Temp 2 [ON CPU]		
System Temp.		
CPU Fan Speed		
System Fan1 Speed		
System Fan2 Speed		

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

These fields provide you with information about the systems current operating status. You cannot make changes to these fields. The following information is displayed:

- CPU temperature
- System temperature
- CPU FAN speed (in RPMs)
- FAN2 speed (in RPMs)
- Vccp (CPU Core voltage)
- 2.5V (power supply’s 2.5 volt)
- Vcc3 (onboard 3.3 volt)
- 5V (power supply’s 5 volt)
- 12V (power supply’s 12 volt)

After you have made your selections in the PC Health Status Setup, press the <ESC> key to go back to the main program screen.

## 4.9. Frequency/Voltage Control

This item enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software  
Frequency/Voltage Control

CPU Clock Ratio	[ 8X ]	Item Help
Auto Detect PCI Clk	[Enabled]	Menu Level ▶
Spread Spectrum	[Disabled]	
CPU Host/3V66/ PCI Clock	[Default]	

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

**Auto Detect DIMM/PCI Clk:** When this item is enabled, BIOS will disable the clock signal of free DIMM and PCI slots.

**Spread Spectrum:** If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.

**CPU Host/PCI Clock:** This item appears if you have set the CPU Internal Core Speed to Manual. Use the CPU/PCI Clock to set the system bus frequency for the installed processor. The values for this field range from 100/66/33 MHz to 130/87/43 MHz.

After you have made your selections in the Frequency/Voltage Control Setup, press the <ESC> key to go back to the main program screen.

## 4.10. Load Optimized Defaults Option

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the whole Setup Utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <F7> key.

## 4.11. Supervisor/User Password

The “Supervisor/User Password” utility sets the password. The mainboard is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <Enter> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <Enter> again.

To disable the password, press <Enter> instead of entering a new password when the “Enter Password” dialog box appears. A message appears confirming that the password has been disabled.

If you have set supervisor and user passwords, only the supervisor password allows you to enter the BIOS Setup Program.

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*Note: If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt on jumper JP1 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP1.*

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## **4.12.Save & Exit Setup**

Selecting this option and pressing <Enter> will save the new setting information in the CMOS memory and continue with the booting process.

## **4.13.Exit Without Saving**

Selecting this option and pressing <Enter> will exit the Setup Utility without recording any new values or changing old ones.

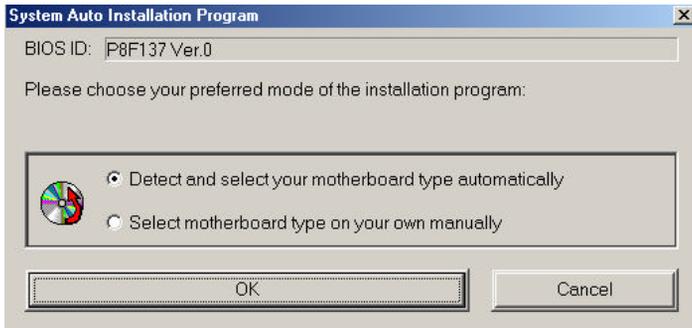
This concludes Chapter 4. Chapter 5 describes the drivers and utility programs that are packaged with the mainboard.

# 5. Driver and Utility

## 5.1. Intel 845 Drivers

The mainboard has drivers and utilities designed for the Intel 845 chipset. You can install AGP, IRQ, ACPI and IDE drivers together from the manufacturer's support CD. The support CD has an easy to use menu that enables you to automatically install the drivers and software that you want.

1. Insert the support CD into your CD-ROM drive. The auto-run program begins and you see the following screen:



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**Note:** When inserting the CD in a computer with an unsupported mainboard, the following screen appears:



**Do not attempt to install the software on PCs with unsupported mainboards.**

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2. Click OK. The following screen appears:



Click the links to install the listed software, read the online manual, read a list of the mainboard's features, or browse to the Freetech homepage. You can also browse the CD and install the software manually from Windows Explorer.

We recommend that you install all of the supplied software and drivers items for maximum performance.

## 5.2. ATA66/100 Controller Options

When using the ATA66/100 controller, the BIOS setting will allow users to "Set Device Mode" and "Select Boot Sequence."

**Setting Device Mode:** Choose UDMA (0~4), PIO (0~4), and MW DMA (0~2) setting options transfer mode for any hard disks (ATA66/100) controlled by VT82C686A/VT82C686B.

**Select Boot Sequence:** This option allows users to choose the boot sequence for the hard disk(s). (No options will be shown if there is a bootable disk on default IDE channels.)

## **5.3. Online Services**

Flexus Computer Technology, under the Freetech brand name, has consistently won recognition for excellence in the design and manufacturing of high quality mainboards!

Our products are globally recognized among the leading cost-performance mainboards in the industry today and we are a certified ISO-9002 manufacturer!

Our customers are our partners! Flexus practices partnership service “not customer service”! Our attention to partnership service is aggressive and proactive, by using our global partnership service system. We create value for our partners in the high-end market and we are always ready to see to our partners’ requirements, because at Flexus, we believe our partners’ success is our success!

If you need technical support, information on products, or updated versions of the BIOS, drivers and utilities access the Internet and point your browser to:

***[www.freetech.com](http://www.freetech.com)***