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# P5F113 Mainboard Manual

**Friday, March 02, 2001**



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## Using This Manual

This manual is designed to help you build a reliable Personal Computer based on the P5F113 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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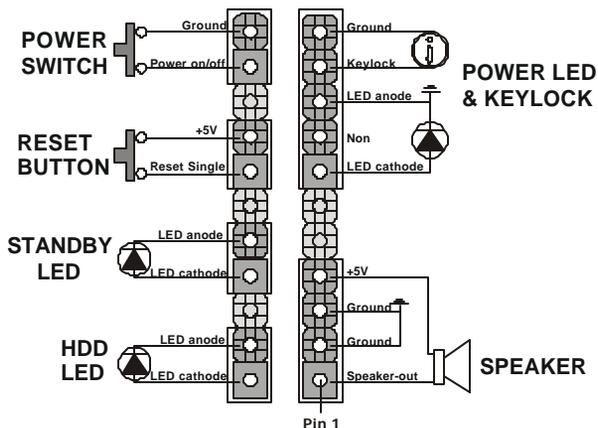
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## 1.2. Front Panel Connector

The following illustration shows the front panel connector pin assignments:



## 1.3. Jumpers

<b>JAGP1</b>	See section 1.4 "AGP Clock Jumper Settings."
<b>JAGP2</b>	<b>1-2:</b> DRAM Run 66 MHz
	<b>2-3:</b> DRAM Run CPU Clock
<b>JAGP3</b>	See section 1.4 "AGP Clock Jumper Settings."
<b>JP2</b>	<b>1-2:</b> Normal Mode
	<b>2-3:</b> Clear CMOS RAM
<b>FS2/FS1/FS0</b>	See section 1.5 "CPU, PCI, and AGP Frequency Settings."
<b>BF0/BF1/BF2</b>	See section 1.6 "CPU Ratio Setting."
<b>JPW1</b>	See section 1.7 "CPU VCORE Jumper Setting (JPW1)."

## 1.4. AGP Clock Jumper Settings

The following table shows the mainboard's AGP clock jumper settings:

JAGP1	JAGP3	CPU/AGP
2-3	X	66/66
1-2	2-3	100/66
1-2	1-2	83/66 (75/60)

**Note:** X = no shunt

## 1.5. CPU, PCI, and AGP Frequency Settings

The following table shows the mainboard's CPU, PCI, and AGP frequency settings:

Pin settings			Frequency settings		
FS2 (JP4)	FS1 (JP5)	FS0 (JP6)	CPU	PCI	AGP
1-2	1-2	1-2	100 MHz	33 MHz	66 MHz
1-2	1-2	2-3	95 MHz	31 MHz	63 MHz
1-2	2-3	1-2	83 MHz	33 MHz	66 MHz
1-2	2-3	2-3	75 MHz	30 MHz	60 MHz
2-3	1-2	1-2	75 MHz	37 MHz	75 MHz
2-3	1-2	2-3	68 MHz	34 MHz	68 MHz
2-3	2-3	1-2	66 MHz	33 MHz	66 MHz
2-3	2-3	2-3	60 MHz	30 MHz	60 MHz

## 1.6. CPU Ratio Setting

The following table allows you to set the CPU clock speed:

Pin settings			CPU ratio			
BF0	BF1	BF2	P54C/K5	P55C/M2	K6	M1
1-2	1-2	OP	1.5X	3.5X	3.5X	3X
2-3	1-2	OP	2X	2X	2X	2X
1-2	2-3	OP	3X	3X	3X	X
2-3	2-3	OP	2.5X	2.5X	2.5X	1X/2X
2-3	1-2	2-3	X	X	4X	X
2-3	2-3	2-3	X	X	4.5X	X
1-2	2-3	2-3	X	X	5X	X
1-2	1-2	2-3	X	X	5.5X	X

**Note:** O/P = open

## 1.7. CPU VCORE Jumper Setting (JPW1)

The following table shows the mainboard's CPU VCORE jumper settings:

VID3	VID2	VID1	VID0	VCORE
1	1	1	1	2.0V
1	1	1	0	2.1V
1	1	0	1	2.2V
1	1	0	0	2.3V
1	0	1	1	2.4V
1	0	1	0	2.5V
1	0	0	1	2.6V
1	0	0	0	2.7V
0	1	1	1	2.8V
0	1	1	0	2.9V
0	1	0	1	3.0V
0	1	0	0	3.1V
0	0	1	1	3.2V
0	0	1	0	3.3V
0	0	0	1	3.4V
0	0	0	0	3.5V

**Note:** 0 = short; 1 = open

## 1.8. Connectors

<b>WOL</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>WOM</b>	<b>Wake On Modem Connector:</b> This 3-pin header is used for remote wake up of the computer through a modem.

## 1.9. Memory Installation

168-Pin DIMM SDRAM Memory Configuration

<b>Bank 0 (DIMM1)</b>	8, 16, 32, 64, 128, 256 MB
<b>Bank 1 (DIMM2)</b>	8, 16, 32, 64, 128, 256 MB
<b>Bank 2 (DIMM3)</b>	8, 16, 32, 64, 128, 256 MB
<b>Total</b>	8 MB to 768 MB

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

## 2. Introduction

### 2.1. Overview

The P5F113 is a high quality, high performance, enhanced function mainboard that supports 64-bit Pentium-class Socket 7 and Super7 processors. This mainboard is designed around the latest and fastest VIA 598MVP Apollo MVP3 and VIA 686A chipsets 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.

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, features like bus mastering EIDE driver, Plug and Play, Soft-off, APM (Advanced Power Management), Keyboard Turn On, External Modem Ring On, Wake On LAN (WOL), Watchdog timer wake up, Fan Off in sleeping state and BIOS upgradability are provided with this platform.

## 2.2. Mainboard Specifications and Features

### 2.2.1. Hardware

<b>CPU</b>	Supports a Pentium CPU chip or Pentium chip clones such as the 5x86, 6x86, K5 and K6.
<b>VRM</b>	Onboard Voltage Regulator Module Provides 1.8V to 3.5V operating voltage
<b>Coprocessor</b>	CPU has built-in floating point unit
<b>Speed</b>	System bus clock 66/75/83/100 MHz AGP clock 60/66 MHz PCI bus clock 33/37/41 MHz ISA bus clock 8.33~9.35 MHz
<b>Chipset</b>	VT82C598MVP system controller VT82C686A PCI to ISA bridge
<b>L2 Cache</b>	Flexible cache size: 0K/256K/512K/1MB/2MB
<b>DRAM</b>	Three x 168-pin DIMM sockets Supports 8 MB to 768 MB memory Supports EDO and SDRAM memory
<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-33 drives Supports Iomega ZIP or LS-120 removable drives
<b>Enhanced I/O</b>	One floppy disk controller One Standard/EPP/ECP parallel port connector Two 16550 compatible serial port connectors One IrDA compatible Infrared port Two USB (Universal Serial Bus) connectors
<b>Mouse and Keyboard</b>	PS/2 mouse connector PS/2 keyboard connector
<b>Expansion Slots</b>	One AGP slot Four 32-bit PCI slots One 8/16-bit ISA slot

<b>Power Management</b>	Compliant with EPA, APM 1.2 and ACPI ATX soft-off power control Power – on by keyboard and PS/2 mouse Power – on by external modem ring Power – on by alarm Power – on by Wake On LAN (WOL) 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 20 cm x 30.5 cm (7.9-inch x 12.0-inch)

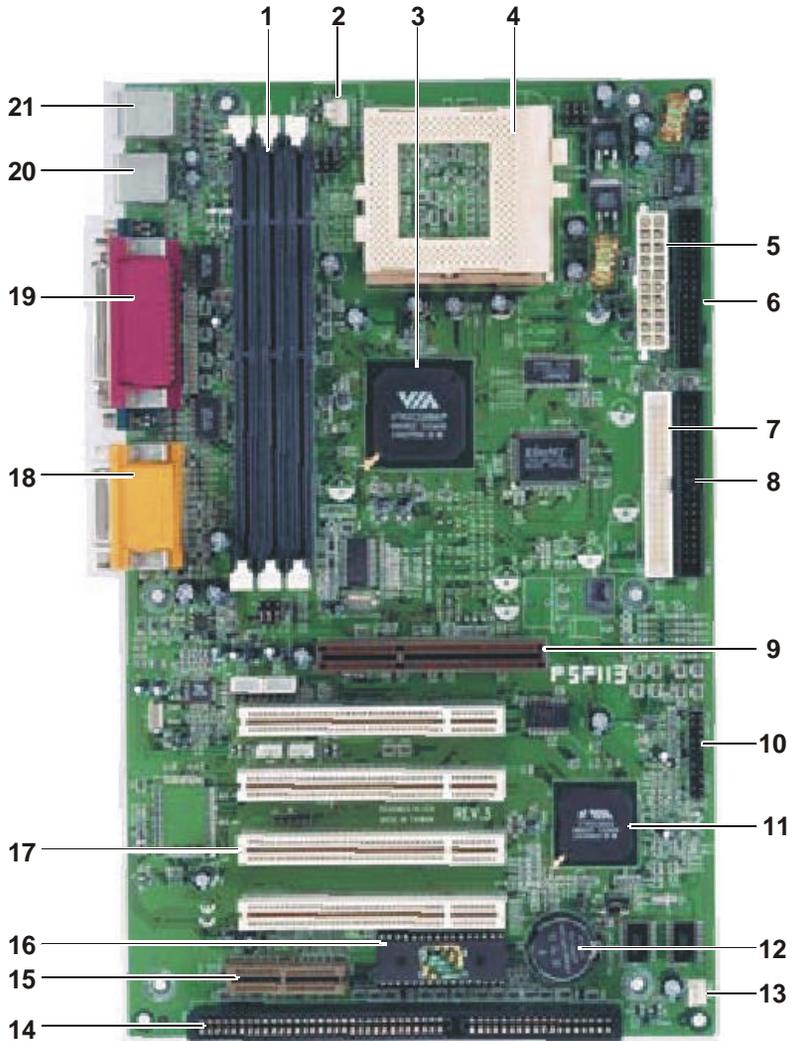
### **2.2.2. Software**

<b>BIOS</b>	AWARD Pentium II 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 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 Optional ES1373 audio drivers
<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>	1.8V to 3.50V
<b>DC Voltage</b>	-5V, +12V, -12V, +5VSB 5% tolerance

## 2.3. Mainboard Layout



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

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**Key to Mainboard Components**

No.	Name	Function
1	DIMM 1~3	Three DIMM module slots
2	FAN1	CPU fan connector
3		VIA VT82C598MVP AGPset
4		CPU Slot
5	PW	12V ATX power connector
6	FDC	Connector for floppy disk drives
7	IDE1	IDE 1 connector (white)
8	IDE2	IDE 2 connector (black)
9	AGP	AGP slot (3.3V)
10		Connector for front panel switches and indicators
11		VIA VT82C686A PCIset
12	BT	Backup battery for CMOS memory and real-time clock (RTC)
13	FAN2	Secondary CPU fan connector
14	ISA	ISA expansion slot
15	AMR	AMR slot
16		Flash BIOS
17	PCI 1~4	32-bit PCI expansion slots
18		Game port (top), audio ports (bottom)
19		Parallel port (top); two serial ports (bottom)
20		Two USB ports
21		PS/2 mouse (top); PS/2 keyboard (bottom)

## 2.4. Microprocessor

The mainboard is designed to operate with the following processors:

<b>Processor Type</b>	<b>Speed</b>	<b>FSB</b>
Intel Pentium	200/233 MHz	66 MHz
AMD 6x86, K6, K6-2, K6-3	233/266/300 MHz 300 ~ 550+ MHz 333/380/475 MHz	66 MHz 100 MHz 95 MHz
Cyrix/IBM 6x86/6x86MX	MIIPR 200/233 MHz MIIPR 266/333 MHz MIIPR 366 MHz	75 MHz 83 MHz 100 MHz

An onboard switching voltage regulator provides the required 1.8 to 3.5 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

Socket 7 and Super7 CPUs are packaged in an SPGA (Staggered Pin Grid Array) configuration. Socket 7 uses an SPGA socket, either a 296-pin LIF or a 321-pin ZIF.

The Super7 specification from AMD allows non-Intel CPU chips to take advantage of faster bus speeds and newer peripheral technologies. Super7 adds support for AGP, USB, Ultra ATA and the 100 MHz bus.

## 2.6. Chipset

The P5F113 supports the VIA 82C598MVP Apollo MVP3 chipset. The chipset comes in pairs—the North Bridge chip and the South Bridge chip.

- North Bridge**
  - CPU interface controller (66/100 MHz FSB)
  - AGP interface controller (AGP 2x)
  - Integrated DRAM controller (Synchronous 66/100 MHz SDRAM)
  - Fully synchronous PCI 2.1 bus interface
  - Data buffering:
    - ◆ CPU-to-AGP
    - ◆ CPU-to-DRAM
    - ◆ CPU-to-PCI
    - ◆ AGP-to-DRAM
    - ◆ AGP-to-PCI
    - ◆ PCI-to-AGP
    - ◆ PCI-to-DRAM
  
- Southbridge**
  - Interface between the PCI and ISA buses
  - Power Management Logic
  - USB controller
  - EIDE controller (ATA33)
  - Seven DMA channels
  - One timer/counter
  - Two 8-channel interrupt controllers
  - NMI logic and SMI interrupt logic
  - PCI/ISA bus arbitrator
  - SMBus interface
  - Power management Logic
  - Realtime clock (RTC)
  - ACPI controller

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
- Super7 processor
- One SDRAM memory module
- One floppy disk drive
- One UDMA-33 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 P5F113 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 P5F113 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.

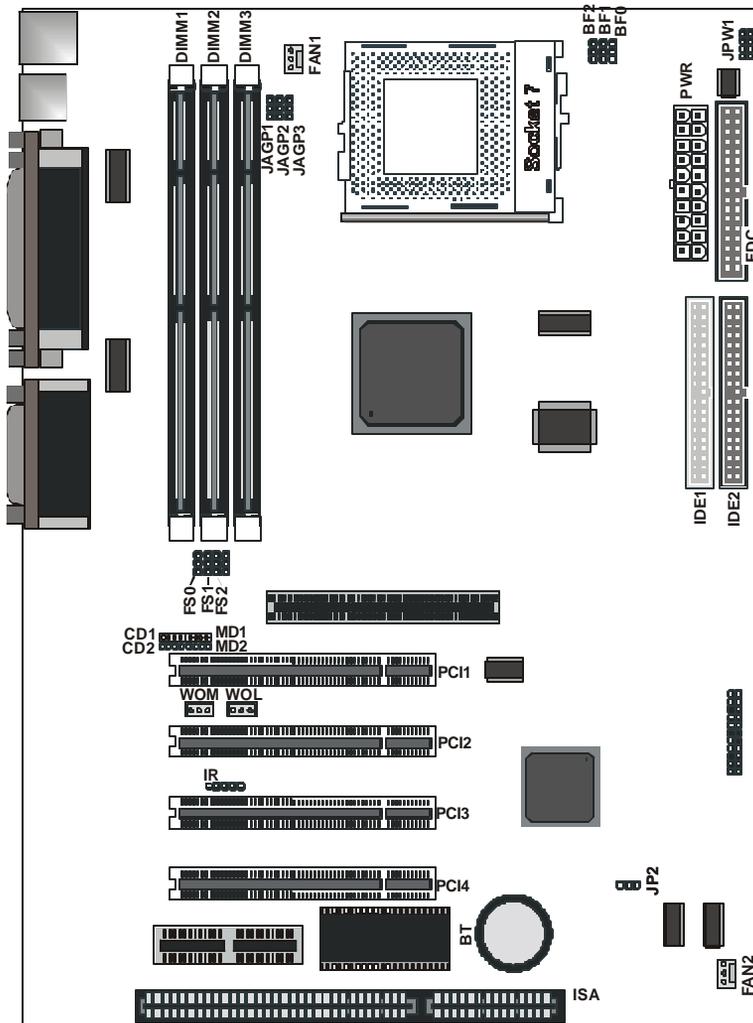
To install the mainboard you need to install the CPU and DIMM memory modules, attach the connectors, and set the correct CPU speed in the CMOS setup.

## 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.

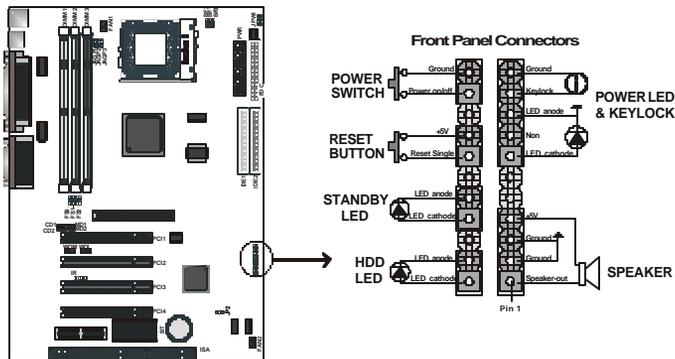
### 3.4. Connector/Jumper Location



## 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.

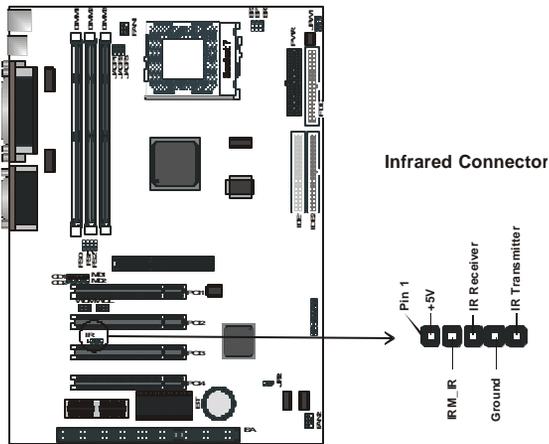


<b>Speaker</b>	This 4-pin connector connects to the case-mounted speaker.
<b>Power LED &amp; Keylock</b>	This 5-pin connector connects to the case-mounted keylock switch and the power LED. The keylock switch is used to lock the keyboard for security purposes.
<b>HDD LED</b>	This 2-pin connector connects 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.

The front panel on your case may have a turbo switch to deactivate Turbo mode when a slower speed is required for a specific application. The P5F113 series does not support the hardware turbo deactivation function. Use <CTRL><ALT><+/-> keys to change the speed if necessary.

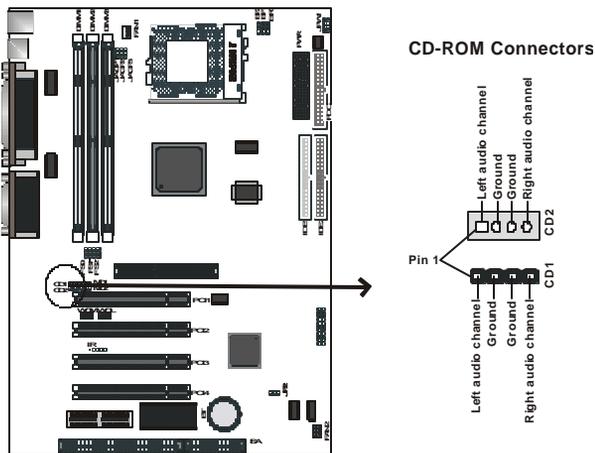
### IrDA-compliant (Infrared) Connector

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.



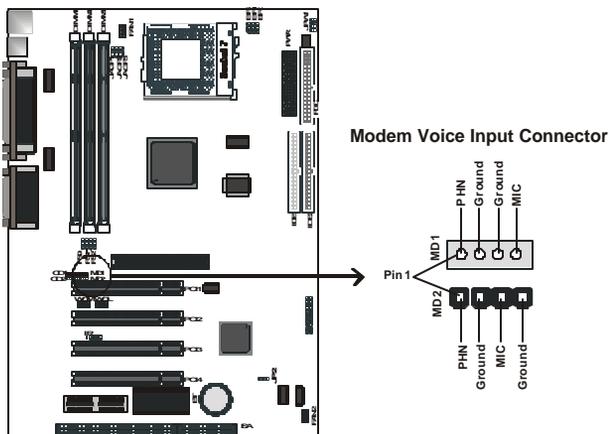
### CD-ROM Connectors

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



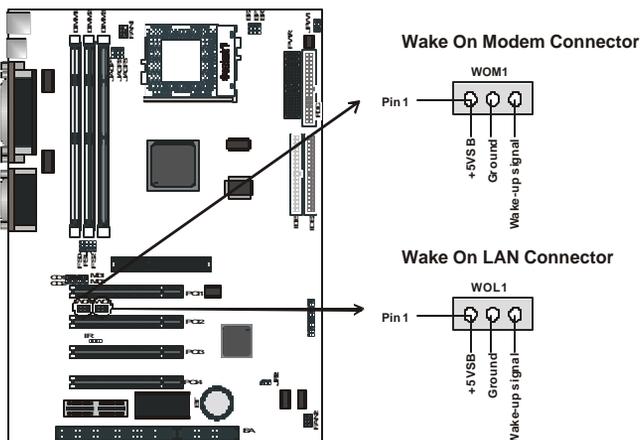
### Modem Voice Input Connector

This 4-pin header is used for the Voice Modem's internal connector.



### Wake on LAN Connector:

This 3-pin header is used for remote wake up of the computer through a network.



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

**Wake on Modem Connector:**

This 3-pin header is used for remote wake up of the computer through a modem.

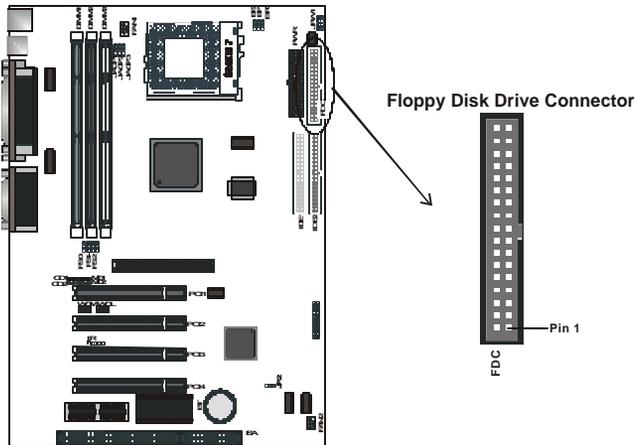
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**Note:** You must enable the Wake On Modem feature in the BIOS setup if you use this feature. Refer to the Power Management section in Chapter 4 for details.

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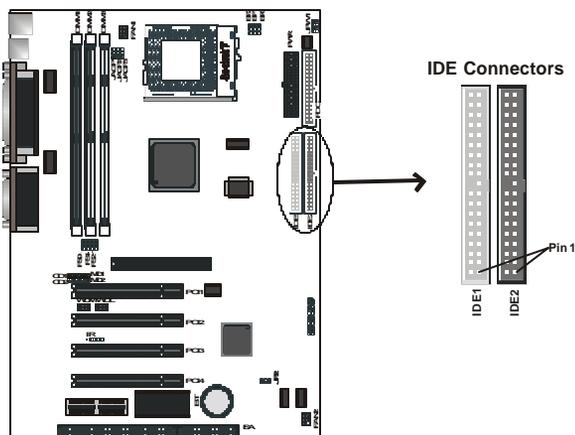
**Floppy Drive Connector (One 34-pin Block)**

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.



### ***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.



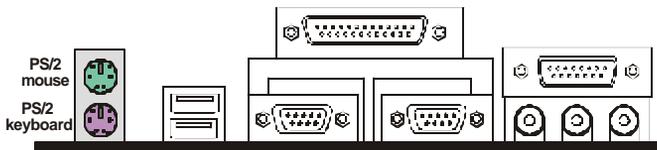
Consult the documentation that came with your IDE drive for details on jumper locations and settings. You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to pin 1 of the I/O port connector.

### 3.5.2. Back Panel Connectors

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

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

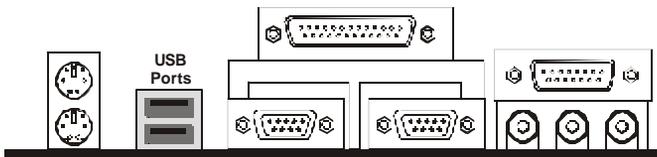
Connect a PS/2 mouse to the green 6-pin mini DIN connector. The system will automatically assign IRQ 12 to the PS/2 mouse if one is connected.



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*

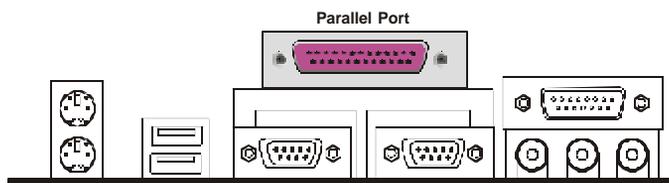
You can connect two USB devices or USB hubs to the USB ports.



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 subchannel.

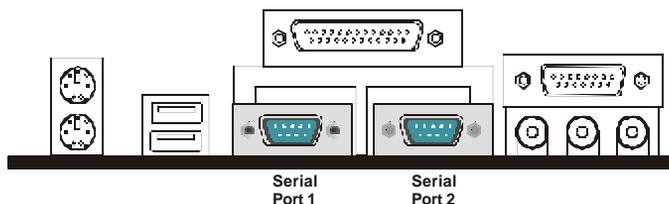
### ***Parallel Port Connector***

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 Port Connectors***

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.



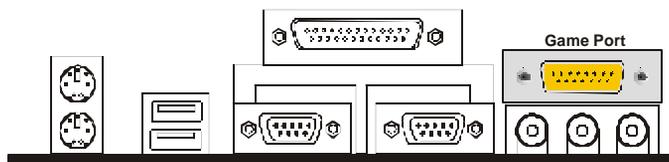
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***Note: Serial printers must be connected to the serial port.***

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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.

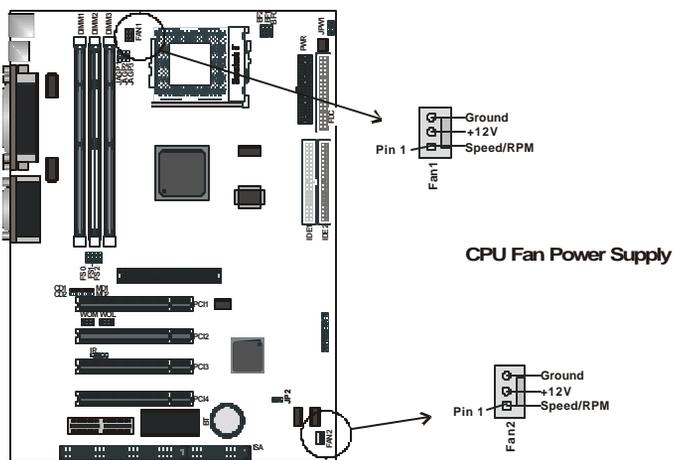




### **CPU Fan Power Supply**

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 VT82C686A chip (providing the fan comes with a tachometer output).

You can monitor the fans' RPM with the Hardware Doctor utility. Refer to *System Environment Monitor* in Chapter 5 for details.



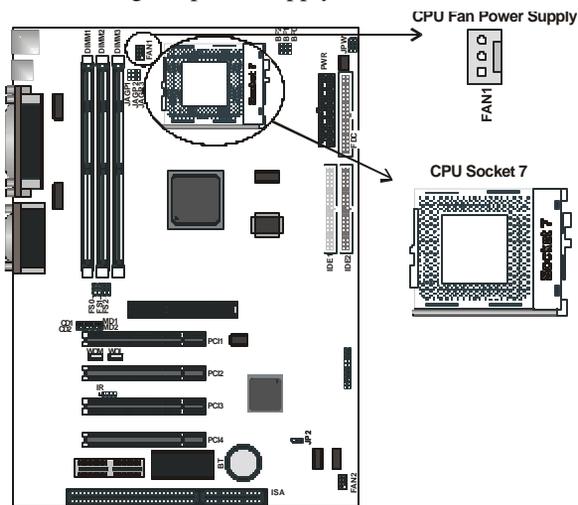
## 3.6. Installing the CPU

### 3.6.1. Before You Begin

1. Be sure that your Intel Pentium-class processor kit includes the following items:
  - ◆ One processor with the fan or heat sink 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 heat sink support pegs are empty.

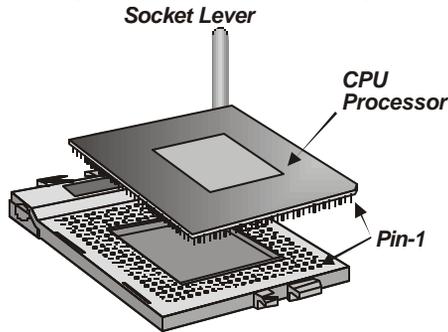
### 3.6.2. Installation Procedure

1. On the motherboard, identify the CPU Socket 7 and the cooling fan power-supply connector FAN1.



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 Socket 7. 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 7. 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 heat sink/cooling fan assembly into the processor cooling fan power supply FAN1.
8. Configuration of the processor is carried out using the system setup utility as described in Chapter 4. Configure the processor the first time you turn on the assembled computer.

### 3.6.3. Removing the Processor

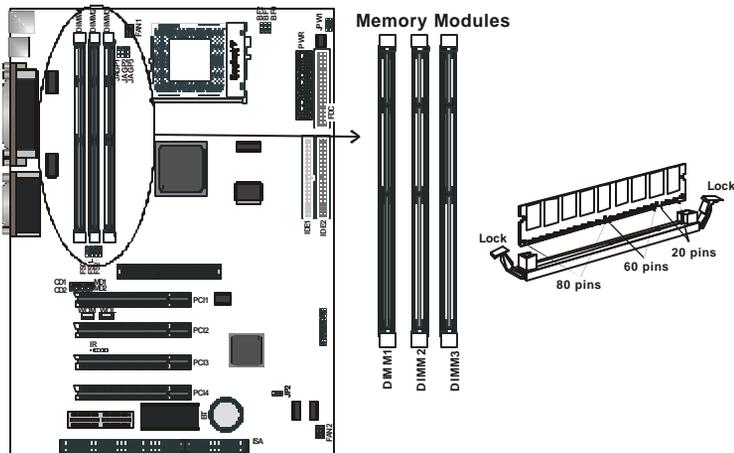
First, remove the mainboard from the chassis. To remove the processor from the mainboard, follow these steps:

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

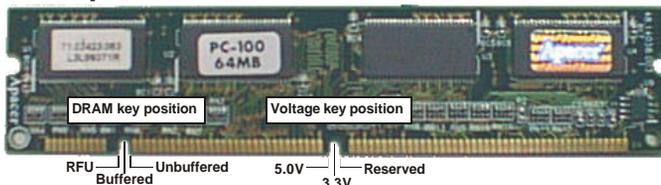
Maximum system memory supported by the mainboard is 768 MB.

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:

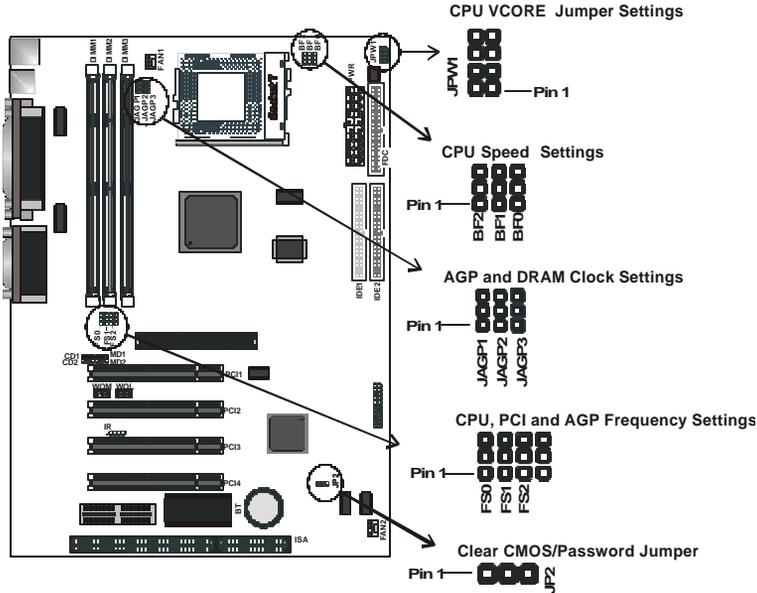
<b>DRAM TYPE</b>	<b>SDRAM (Synchronous DRAM)</b>	
Module Size	<i>Single Sided Asymmetric</i> 1Mx64, 4Mx64, 8Mx64, 16Mx64	
	<i>Double-Sided Asymmetric</i> 2Mx64, 4Mx64, 8Mx64, 16Mx64, 32Mx64	
Requirements	<b>EDO Extended Data Output</b>	<b>SDRAM Synchronous DRAM</b>
	<ul style="list-style-type: none"> <li>• <i>DRAM Speed</i> 60 ns or faster</li> <li>• <i>RAS Access Time</i> 60 ns or faster</li> <li>• <i>CAS Access Time</i> 20 ns or faster</li> </ul>	<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 MB
BANK 1 (DIMM2)	8/16/32/64/128/256 MB
BANK 2 (DIMM3)	8/16/32/64/128/256 MB
<i>Total System Memory</i>	8 ~ 768 MB

### 3.6.5. Setting Jumpers

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



#### Clear CMOS/Password Jumper

You may need to clear the CMOS if your system cannot boot up because you forgot your password, or the CMOS settings need to be reset to default values after the system BIOS has been updated.

Refer to the following to reset your CMOS setting.

1. Power off the system and disconnect the power cable.
2. Place a shunt to short pin 2 and pin 3 of JP2 for five seconds.
3. Place the shunt back to pin 1 and pin 2 of JP2.
4. Power on the system.

**CPU, PCI, and AGP Frequency Settings**

The following table shows the CPU, PCI, and AGP frequency settings:

Pin settings			Frequency settings		
FS2 (JP4)	FS1 (JP5)	FS0 (JP6)	CPU	PCI	AGP
1-2	1-2	1-2	100 MHz	33 MHz	66 MHz
1-2	1-2	2-3	95 MHz	31 MHz	63 MHz
1-2	2-3	1-2	83 MHz	33 MHz	66 MHz
1-2	2-3	2-3	75 MHz	30 MHz	60 MHz
2-3	1-2	1-2	75 MHz	37 MHz	75 MHz
2-3	1-2	2-3	68 MHz	34 MHz	68 MHz
2-3	2-3	1-2	66 MHz	33 MHz	66 MHz
2-3	2-3	2-3	60 MHz	30 MHz	60 MHz

**AGP and DRAM Clock Settings**

The following table shows the AGP clock jumper settings:

JAGP1	JAGP3	CPU/AGP
2-3	X	66/66
1-2	2-3	100/66
1-2	1-2	83/66 (75/60)

**Note:** X = no shunt

The following table shows the DRAM clock jumper settings:

<b>JAGP2</b>	<b>1-2:</b> DRAM Run 66 MHz
	<b>2-3:</b> DRAM Run CPU Clock

**CPU Speed Settings**

Refer to the following table to set the CPU speed for your processor

Pin settings			CPU ratio			
BF0	BF1	BF2	P54C/K5	P55C/M2	K6	M1
1-2	1-2	OP	1.5X	3.5X	3.5X	3X
2-3	1-2	OP	2X	2X	2X	2X
1-2	2-3	OP	3X	3X	3X	X
2-3	2-3	OP	2.5X	2.5X	2.5X	1X/2X
2-3	1-2	2-3	X	X	4X	X
2-3	2-3	2-3	X	X	4.5X	X
1-2	2-3	2-3	X	X	5X	X
1-2	1-2	2-3	X	X	5.5X	X

**Note:** O/P = open

### **CPU VCORE Jumper Setting**

The following table shows the mainboard's CPU VCORE jumper settings:

VID3	VID2	VID1	VID0	VCORE
1	1	1	1	2.0V
1	1	1	0	2.1V
1	1	0	1	2.2V
1	1	0	0	2.3V
1	0	1	1	2.4V
1	0	1	0	2.5V
1	0	0	1	2.6V
1	0	0	0	2.7V
0	1	1	1	2.8V
0	1	1	0	2.9V
0	1	0	1	3.0V
0	1	0	0	3.1V
0	0	1	1	3.2V
0	0	1	0	3.3V
0	0	0	1	3.4V
0	0	0	0	3.5V

**Note:** 0 = short; 1 = open

### **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. It is a ROM-based configuration utility that 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**

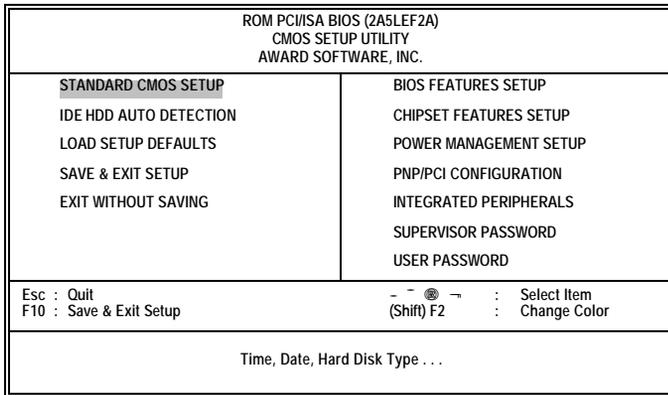
When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

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:



**Figure 4-1: Setup utility main 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	Exits the current menu.
↑ ↓ → ←	Select item.
SHIFT +F2	Change color.
PgUp	Modify
PgDn	Modify
F10	Save and Exit Setup

## 4.2. Standard CMOS Setup

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

ROM PCI/ISA BIOS (2A5LEF2A)								
STANDARD CMOS SETUP								
AWARD SOFTWARE, INC.								
Date (mm:dd:yy) : Fri, March 17 2000								
Time (hh:mm:ss) : 8 : 38 : 16								
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: 0	0	0	0	0	0	0	NORMAL
Primary Slave	: 0	0	0	0	0	0	0	NORMAL
Secondary Master	: 0	0	0	0	0	0	0	NORMAL
Secondary Slave	: 0	0	0	0	0	0	0	NORMAL
Drive A : None								
Drive B : None								
Video : EGA/VGA								
Halt On : All Errors								
Esc : Quit			- - - - - : Select Item			PU/PD/+/- : Modify		
F10 : Save & Exit Setup			(Shift) F2 : Change Color					

Figure 4-2: Standard CMOS setup screen

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

**Set Date:** Month, Day, Year

**Set 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).

**Hard Disks:** There are four hard disks listed—Primary Master, Primary Slave, Secondary Master and Secondary Slave. For Each IDE channel, the first device is the “Master” and the second device is “Slave.”

Hard disk Types from 1 to 45 are standard ones. Type “Auto” enables BIOS to perform IDE HDD auto detection. Type “User” is defined by the user. Type “None” is not installed (for example, a SCSI device).

There are six categories of information you must enter for a HDD:

- CYLS (number of cylinders)
- HEAD (number of heads)
- PRECOMP (write pre-compensation)
- LANDZ (landing zone)
- SECTOR (number of sectors)
- MODE (Normal, LBA, LARGE or AUTO)

The hard disk vendor's or system manufacturer's documentation should provide you with the information needed. The MODE option is for IDE hard disk drives only. MODE has four options:

- NORMAL
- LBA
- LARGE
- AUTO

Set MODE to "NORMAL" for IDE hard disk drives smaller than 528 MB. Set MODE to "LBA" for IDE hard disk drives larger than 528 MB which support Logical Block Addressing mode. Set MODE to "LARGE" for IDE hard disk drives larger than 528 MB that do not support LBA mode. The LARGE type of drive is very uncommon and can only be used under MS-DOS. Currently most IDE hard disk drives over 528 MB support LBA mode. Set MODE to AUTO to enable auto detection of your IDE hard disk drive during bootup.

**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.

**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

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

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

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

## 4.3. IDE HDD Auto Detection

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.*

---

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.

## 4.4. BIOS Features Setup

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

ROM PCI/ISA BIOS (2A5LEF2A)			
BIOS FEATURES SETUP			
AWARD SOFTWARE, INC.			
Virus Warning	: Enabled	Video BIOS Shadow	: Disabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Disabled	CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D0000-D3FFF Shadow	: Disabled
		D4000-D7FFF Shadow	: Disabled
		D8000-DBFFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	DC000-DFFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	Processor Number Feature	: Enabled
Boot Up Floppy Seek	: Disabled	PCI/VGA Palette Snoop	: Disabled
Boot Up NumLock Status	: On	OS Select For DRAM > 64 MB	: Non-0S2
Gate A20 Option	: Fast	Esc : Quit	- - - - - : Select Item
Memory Parity/ECC Check	: Disabled	F1 : Help	PU/PD +/- : Modify
Typematic Rate Setting	: Disabled	F5 : Old Values	(Shift) F2 : Color
Typematic Rate (Chars/Sec)	: 6	F7 : Load Setup Defaults	
Typematic Delay (Msec)	: 250		
Security Option	: Setup		

Figure 4-3: BIOS features setup

The following explains the options for each feature:

**Virus Warning:** When enabled, any attempt to write to the boot sector or partition table will halt the system and cause a warning message to appear. If this happens, you can use an anti-virus utility on a virus free, bootable floppy diskette to reboot and clean your system. The Virus Warning’s default setting is “Disabled.”

**CPU Internal Cache:** This Setting enables the CPU internal cache. The default setting is “Enabled.”

**External Cache:** This setting enables the Level 2 cache. 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.”

**Boot Sequence:** The BIOS will load the operating system from the disk drives in the sequence selected here. Options are:

- C, A, SCSI (default)
- CDROM, C, A
- C, CDROM, A
- A, C, SCSI
- D, A, SCSI
- E, A, SCSI
- F, A, SCSI
- SCSI, A, C
- SCSI, C, A
- LS/ZIP, C
- C only

**Swap Floppy Drive:** This setting enables you to swap A and B floppy disk drives. Floppy drive A is usually connected to the end of the FDD cable. If you set this option to “Enabled,” the drive at the end of the cable will be swapped to B. The default setting is “Disabled.”

**Boot Up Floppy Seek:** If set to “Enabled”, BIOS will check for installed bootup disk in the floppy disk drives during bootup. The default setting is “Disabled.”

**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.

**Video BIOS Shadow:** When set to “Enabled” (default), copies the VGA BIOS into system DRAM.

**C8000-CBFFF Shadow to DC000-DFFFF Shadow:** When set to “Enable,” the ROM with the specified address is copied into system DRAM. It will also reduce the size of memory available to the system. The default setting for the shadow feature is “Disabled.”

**Processor Number Feature:** Some new processors are installed with a unique processor number. This number may be used for verification in Internet transactions and e-commerce. If you prefer not to use or distribute the unique processor number, set this item to “Disabled” to suppress the processor number.

**PCI/VGA Palette Snoop:** If there are two VGA cards in your system (one PCI and one ISA) and this option is set to “Disabled,” data read and written by the CPU is only directed to the PCI VGA card's palette registers.

If set to “Enabled,” data read and written by CPU will be directed to both the palette registers of the PCI VGA and ISA VGA cards. This option must be set to “Enabled” if any ISA VGA card installed in your system requires VGA palette snooping to fix color problems.

**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.”

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

## 4.5. Chipset Features Setup

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

ROM PCI/ISA BIOS (2A5LEF2A) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.			
Bank 0/1 DRAM Timing	: FP/EDO 60ns	Auto Detect DIMM/PCI Clk	: Enabled
Bank 2/3 DRAM Timing	: FP/EDO 70ns	Spread Spectrum	: Disabled
Bank 4/5 DRAM Timing	: FP/EDO 70ns	Current CPU Temp.	:
SDRAM Cycle Length	: 3	Current System Temp.	:
DRAM Read Pipeline	: Enabled	Current CPU FAN Speed	:
Sustained 3T Write	: Enabled	Current FAN2 Speed	:
Cache Rd+CPU Wt Pipeline	: Enabled	Vccp	: 2.5V
Cache Timing	: Enabled	Vcc3	: 5V
		12V	:
Video BIOS Cacheable	: Enabled	Esc : Quit - - - - - : Select Item	
System BIOS Cacheable	: Enabled	F1 : Help PUPD/+- : Modify	
Memory Hole At 15Mb Addr.	: Disabled	F5 : Old Values (Shift) F2 : Color	
AGP Aperture Size	: 64M	F7 : Load Setup Defaults	
OnChip USB	: Enabled		
USB Keyboard Support	: Disabled		
OnChip Sound	: Enable		
OnChip Modem	: Disable		

Figure 4-4: Chipset features setup

This screen controls the settings for the board’s chipset. 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.

**Bank 0/1 2/3 4/5 DRAM Timing:** This item allows you to select the value in the field, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs. The following options are allowed:

- FP/EDO 70ns
- FP/EDO 70ns
- Normal
- Medium
- Fast
- Turbo

**SDRAM Cycle Length:** This field enables you to set the CAS latency time in HCLKs of 2/2 or 3/3. The system board designer should have set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

**DRAM Read Pipeline:** You may select *Enabled* for this field when DRAMs are installed. Pipelining improves system performance.

**Sustained 3T Write:** This item allows you to enable or disable direct map write back/write through secondary cache. The default is “Enabled.”

**Cache Rd+CPU Wt Pipeline:** This item allows you to enable or disable the cache timing. The default is “Enabled.”

**Cache Timing:** This item allows you to set the cache timing. The options are “Fast” (default) and “Disabled.”

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

Caching of the video BIOS ROM occurs at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

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

**Memory Hole:** 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.

**OnChip USB:** This should be enabled if your system has a USB installed on the system board and you wish to use it. Options are “Disabled” (default) and “Enabled.”

**USB Keyboard Support:** Enables function when the USB keyboard is being used. Set to “Disabled” (default) when an AT keyboard is used.

**OnChip Sound:** When set to “Disable,” the onboard audio chip is turned off. The default is “Enable.”

**OnChip Modem:** This should be enabled if your system has a modem installed on the system board and you wish to use it. The default is “Disable.”

**Auto Detect DIMM/PCI Clk:** When set to “Enabled”, the system will automatically turn off the PCI and DIMM clock when not in use to reduce electromagnetic interference.

**Spread Spectrum:** When set to “Enabled,” the system clock frequency will automatically be modulated to help reduce electromagnetic interference. Default is “Enabled”.

**Current CPU Temp:** This field displays the current CPU temperature. This feature gives you the ability to monitor your system’s temperature without opening the chassis.

**Current System Temperature:** This field displays the current system temperature. This feature gives you the ability to monitor your system’s temperature without opening the chassis.

**Current CPU FAN/FAN2 Speed:** These fields display the CPU FAN or FAN2 RPM (Revolution Per Minute) reading. You cannot make changes to these fields. This feature gives you the ability to monitor CPU FAN and FAN2 conditions.

**Vccp, Vcc3, 2.5V, 5V, 12V:** This feature gives you the ability to monitor the condition of the system’s power. These fields display the voltages of the following components

- Vccp (CPU Core voltage)
- Vcc3 (onboard 3.3 volt)
- 2.5V (power supply’s 2.5 volt)
- 5V (power supply’s 5 volt)
- 12V (power supply’s 12 volt)

After you have made your selections in the Chipset Features 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:

ROM PCI/ISA BIOS (2A5LEF2A) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.			
ACPI function	: Disabled	Primary INTR	: ON
Power Management	: User Define	IRQ3 (COM 2)	: Primary
PM Control by APM	: Yes	IRQ4 (COM 1)	: Primary
Video Off Option	: Suspend  off	IRQ5 (LPT 2)	: Primary
Video Off Method	: V/H SYNC+Blank	IRQ6 (Floppy Disk)	: Primary
MODEM Use IRQ	: 3	IRQ7 (LPT 1)	: Primary
Doze Mode	: Disable	IRQ8 (RTC Alarm)	: Disabled
Suspend Mode	: Disable	IRQ9 (IRQ2 Redir)	: Secondary
HDD Power Down	: Disable	IRQ10 (Reserved)	: Secondary
Fan Off In Suspend	: Off	IRQ11 (Reserved)	: Secondary
Soft-Off by PWRBTN	: Instant-Off	IRQ12 (PS/2 Mouse)	: Primary
VGA	: OFF	IRQ13 (Coprocessor)	: Primary
LPT & COM	: LPT/COM	IRQ14 (Hard Disk)	: Primary
HDD & FDD	: ON	IRQ15 (Reserved)	: Disabled
PCI Master	: OFF	Esc : Quit	- - c - : Select Item
Resume by Ring/LAN	: Disabled	F1 : Help	PU/PD/+/- : Modify
RTC Alarm Resume	: Disabled	F5 : Old Values (Shift)	F2 : Color
		F7 : Load Setup Defaults	

Figure 4-5: Power management setup

**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.*

---

**Power Management:** This setting controls the System Doze Mode, Standby Mode and Suspend Mode Timer features. There are four options:

- **User Define:** allows you to customize all power saving timer features
- **Optimize:** recommended setting for general use
- **Test/Demo:** for test/demonstration purposes
- **Disable:** disables the power management features

**PM Control by APM:** When set to “Yes” (default), the system BIOS will wait for APM’s prompt before it enters any power management mode. If your system power management is controlled by APM and there is a task running, the APM will not prompt the BIOS to enter any power saving mode after the time out period.

---

*Note: If APM is not installed, this option has no effect.*

---

APM (Advanced Power Management) should be installed to keep the system’s time updated when the computer enters suspend mode activated by the BIOS Power Management. For DOS environments, you need to add the line “DEVICE=C:\DOS\POWER.EXE” in your CONFIG.SYS file. For Windows 3.1x and Windows 95, you need to install Windows with the APM feature. Double-click the battery and power cord icon labeled “Power” in the Control Panel and choose “Advanced” in the Power Management field.

**Video Off Option:** This setting controls the video power saving parameters. There are three options:

- Always On
- Suspend → Off
- All Modes → Off

**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.

**MODEM Use IRQ:** This determines which IRQ the MODEM can use. Options are 3, 4, 5, 7, 9, 10, 11, and NA.

**Doze Mode:** The system speed will change from turbo to slow if no Power Management events occur for a specified length of time. Full power function will return when a Power Management event is detected. Options are from “30 Sec” to “1 Hour” and “Disabled.”

**Suspend Mode:** The CPU clock will be stopped and the video signal will be suspended if no Power Management events occur for a speci-

fied length of time. Full power function will return when a Power Management event is detected. Options are from “30 Sec” to “1 Hour” and “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 “Disabled.”

**Fan Off In Suspend:** If set to “On,” the fan will be powered off during suspend mode. Options are “On” and “Off” (default).

**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.”

**VGA:** When enabled, VGA activity wakes up the system.

**LPT & COM:** When set to “On,” any activity from one of the listed system peripheral devices or IRQs wakes up the system.

**HDD & FDD:** When set to “On,” any activity from one of the listed system peripheral devices wakes up the system.

**PCI Master:** When set to “On,” any activity from one of the listed devices wakes up the system.

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

**RTC Alarm Resume:** 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.

**Primary INTR:** When set to “On” (default), any event occurring at the specified IRQ will awaken a system which has been powered down.

The following is a list of IRQs (Interrupt ReQuests) which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service. Options are “On,” and “Off” (default).

When set to On, activity will not prevent the system from going into a power management mode and will not awaken it.

- IRQ3 (COM2)
- IRQ4 (COM1)
- IRQ5 (LPT2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)
- IRQ14 (Reserved)
- IRQ15 (Reserved)

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:

ROM PCI/ISA BIOS (2A5LEF2A)					
PNP/PCI CONFIGURATION					
AWARD SOFTWARE, INC.					
PnP OS Installed	:	No	CPU to PCI Write Buffer	:	Disabled
Resources Controlled by	:	Manual	PCI Dynamic Bursting	:	Disabled
Reset Configuration Data	:	Disabled	PCI Master 0 WS Write	:	Enabled
IRQ-3 assigned to	:	PCI/ISA PnP	PCI Delay Transaction	:	Disabled
IRQ-4 assigned to	:	PCI/ISA PnP	PCI#2 Access #1 Retry	:	Disabled
IRQ-5 assigned to	:	PCI/ISA PnP	AGP Master 1 WS Write	:	Disabled
IRQ-7 assigned to	:	PCI/ISA PnP	AGP Master 1 WS Read	:	Disabled
IRQ-9 assigned to	:	PCI/ISA PnP	Assign IRQ For USB	:	Disabled
IRQ-10 assigned to	:	PCI/ISA PnP	Assign IRQ For VGA	:	Disabled
IRQ-11 assigned to	:	PCI/ISA PnP			
IRQ-12 assigned to	:	PCI/ISA PnP			
IRQ-14 assigned to	:	PCI/ISA PnP			
IRQ-15 assigned to	:	PCI/ISA PnP			
DMA-0 assigned to	:	PCI/ISA PnP	Esc : Quit	- -	⊕ → : Select Item
DMA-1 assigned to	:	PCI/ISA PnP	F1 : Help	PU/PD/+-	: Modify
DMA-3 assigned to	:	PCI/ISA PnP	F5 : Old Values	(Shift) F2	: Color
DMA-5 assigned to	:	PCI/ISA PnP	F7 : Load Setup Defaults		
DMA-7 assigned to	:	PCI/ISA PnP			

Figure 4-6: PNP/PCI configuration

**PnP OS Installed:** Setting this option to “Yes” allows the PnP OS (instead of BIOS) to assign the system resources such as IRQ and I/O address to the ISA PnP device. The default setting is “No.”

**Resources Controlled By:** The default setting is “Manual” which allows you to control IRQs and DMAs individually. The other option is “Auto” which will detect the system resources and automatically assign the relative IRQs and DMAs for each peripheral.

**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.”

**IRQ and DMA Assigned to:** 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 IRQ or a DMA, set the corresponding IRQ or DMA to “Legacy ISA”; otherwise, you should set this field to “PCI/ISA PnP.”

**CPU to PCI Write Buffer:** When enabled, up to four words of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus signals that it is ready to receive the data.

**PCI Dynamic Bursting:** When set to “Enabled,” every write transaction goes to the write buffer. “Burstable” transactions then burst on the PCI bus and “nonburstable” transactions do not. The options are “Enabled,” and “Disabled.”

**PCI Master 0 WS Write:** When set to “Enabled,” writes to the PCI bus are executed with zero wait states. The options are “Enabled,” and “Disabled.”

**PCI Delay Transaction:** The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select “Enabled” to support compliance with PCI specification version 2.1. The options are “Enabled,” and “Disabled.”

**PCI #2 Access #1 Retry:** This item allows you enable/disable the PCI#2 Access #1 Retry.

**AGP Master 1 WS Write:** This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability. The options are “Enabled,” and “Disabled.”

**AGP Master 1 WS Read:** This implements a single delay when reading to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability. The options are “Enabled,” and “Disabled.”

**Assign IRQ for USB/VGA:** Names the interrupt request (IRQ) line assigned to the USA/VGA (if any) on your system. Activity of the selected IRQ always awakens the system.

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. Integrated Peripherals

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

ROM PCI/ISA BIOS (2A5LEF2A)			
INTEGRATED PERIPHERALS			
AWARD SOFTWARE, INC.			
OnChip IDE Channel0	: Enabled	IR Function Duplex	: Half
OnChip IDE Channel1	: Enabled	TX, RX inverting enable	: Yes, No
IDE Prefetch Mode	: Enabled	Onboard Parallel Port	:
IDE HDD Block Mode	: Enabled	Onboard Parallel Mode	:
IDE Primary Master PIO	: Auto	ECP Mode User DMA	: 3
IDE Primary Slave PIO	: Auto	Parallel Port EPP Type	: EPP1.9
IDE Secondary Master PIO	: Auto	Onboard Legacy Audio	: Enabled
IDE Secondary Slave PIO	: Auto	Sound Blaster	: Disabled
IDE Primary Master UDMA	: Auto	SB I/O Base Address	: 220H
IDE Primary Slave UDMA	: Auto	SB IRQ Select	: IRQ 5
IDE Secondary Master UDMA	: Auto	SB DMA Select	: DMA 1
IDE Secondary Slave UDMA	: Auto	MPU-401 I/O Address	: 330-333H
Init Display First	: AGP	Game Port (200-207H)	: Enabled
Onboard FDC Controller	: Enabled	Esc : Quit	- - - - : Select Item
Onboard Serial Port 1	: Auto	F1 : Help	PU/PD/+/- : Modify
Onboard Serial Port 2	: Auto	F5 : Old Values	(Shift) F2 : Color
UART 2 Mode	: Standard	F7 : Load Setup Defaults	

Figure 4-7: Integrated peripherals

**OnChip IDE Channel 0/1:** This option enables or disables the on-board IDE controller. The default setting is “Enabled.”

**IDE Prefetch Mode:** The onboard IDE drive interfaces supports IDE prefetching, for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to “Disabled” if the interface does not support prefetching. The default setting is “Enabled.”

**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.”

**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.”

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

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

**Onboard Serial Port 1 and Onboard Serial Port 2:** These options are used to assign the I/O addresses for the two onboard serial ports. They can be assigned as follows:

- 3F8/IRQ4 (Serial Port 1 default)
- 2F8/IRQ3 (Serial Port 2 default)
- 3E8/IRQ4
- 2E8/IRQ3
- Auto
- Disabled (disables the onboard serial port)

**UART 2 Mode Select:** Enables you to select the infrared communication protocol—Normal (default), IrDA, or ASKIR. IrDA is Hewlett Packard's infrared communication protocol with a maximum baud rate up to 115.2K bps. ASKIR is Sharp's infrared communication protocol with a maximum baud rate up to 57.6K bps.

**IR Function Duplex:** This item enables you to determine the type of infrared (IR) transmission of the onboard infrared chip. The options are “Half” (default) and “Full.”

Full duplex mode means that information can be transmitted and received simultaneously. Half duplex means that data can be transmitted in both directions, but only one direction at a time.

**TX, RX inverting enable:** Defines the voltage level for Infrared module RX (receive) mode and TX (transmit) mode. This setting has to match the requirements of the infrared module used in the system. The options are:

- Yes, No (default)
- No, Yes
- No, No
- Yes, Yes

**Onboard Parallel Port:** This option is used to assign the I/O address for the onboard parallel port. The options are:

- 378/IRQ7 (default)
- 278/IRQ5
- 3BC/IRQ7
- Disabled (disables the onboard parallel port).

**Onboard Parallel 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.”

**Parallel Port EPP Type:** Sets the EPP specification. There are two options—“EPP1.9” (default) and “EPP1.7.”

**Onboard Legacy Audio:** Enables the onboard legacy audio function. If this item is enabled the following items become available.

**Sound Blaster:** Enables or disables a Sound Blaster card if installed.

**SB I/O Base Address:** This item lets you set the I/O base address for the Sound Blaster card. There are four options:

- 220H (default)
- 240H
- 260H
- 280H

**SB IRQ Select:** This item lets you set the Interrupt Request (IRQ) for the Sound Blaster card. There are four options:

- IRQ 5 (default)
- IRQ 7
- IRQ 9
- IRQ 10

**SB DMA Select:** This item lets you select the DMA for the Sound Blaster card. There are four options:

- DMA 0
- DMA 1 (default)
- DMA 2
- DMA 3

**MPU-401:** Use this item to enable or disable the MPU-401 function for the game port. The default is “Disabled.”

**MPU-401 I/O Address:** Use this item to set the I/O address for the game port. There are four options:

- 300-303H
- 310-313H
- 320-323H
- 330-333H (default)

---

*Note: To use the MPU-401 standard on the game port you need to use a MIDI adapter.*

---

**Game Port (200-207H):** This item shows the I/O address for the game 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.

## 4.9. 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.

---

*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 JP12 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP12.*

---

## 4.10. Load Setup Defaults

“Load Setup Defaults” loads optimal settings, which are stored in the BIOS ROM.

The defaults loaded only affect the BIOS Features Setup, Chipset Features Setup, Power Management Setup, PnP/PCI configuration setup and Integrated Peripherals Setup. There is no effect on the Standard CMOS Setup. To use this feature, highlight on the main screen and press <Enter>. A line will appear on the screen asking if you want to load the Setup default values. Press <Y> and then press <Enter> if you want to load the Setup defaults. Press <N> if you don't want to proceed.

## **4.11.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.

## **4.12.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. Flash Utility

The BIOS of the P5F113 mainboard can be upgraded by using a Flash utility. A new version of the BIOS can be downloaded from the factory's BBS and Web site. The system BIOS is stored in a 1 M-bit Flash EEPROM that can be erased and reprogrammed by the Flash utility.

There are two files in the FLASH directory:

- FLASH.EXE Flash utility for AWARD BIOS upgrade
- README.TXT Text file of instructions

The Flash utility will not work with any memory manager software running in the system. In order to make sure no memory manager software is running, boot your system from a bootable floppy diskette which does not contain CONFIG.SYS and AUTOEXEC.BAT files. If you are using MS-DOS 6.x, you can press the <F5> function key when the “Starting MS-DOS...” message appears on the screen to bypass the CONFIG.SYS and AUTOEXEC.BAT.

## 5.2. VIA 4-in-1 Driver

A 4-in-1 driver has been designed for the VIA Apollo Pro chipset. You can install AGP, IRQ, ACPI and IDE drivers together from the manufacturer's support CD. The installation file is “4-in-1/Setup.exe.” You do not need to install the drivers one by one—the VIA 4-in-1 installation program will automatically detect and install the drivers.

Installation is in two steps:

**Step 1:** Insert the manufacturer's CD-ROM into your PC's CD-ROM drive.

**Step 2:** Run “4-in-1\Setup.exe” from your operating system to start the installation. Follow the instructions on your screen.

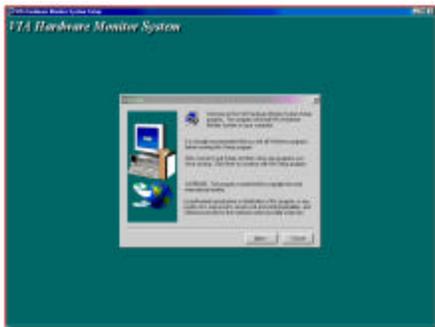
## 5.3. System Environment Monitor

The System Environment Monitoring utility along with the onboard VT82C686A system monitor chip enables you to monitor your system's operating characteristics such as temperature, fan speed and CPU voltage. Using this utility, you can define the upper and lower limits of these monitored parameters. A pre-warning message will pop up on the screen when the monitored parameters move out of the preset range. This software must be installed under Windows 9x. However, the feature version may run on different operating systems, such as Windows NT.

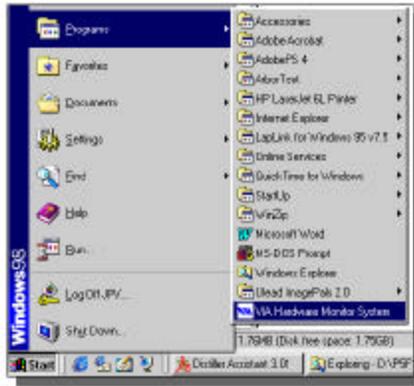
### 5.3.1. Hardware Monitor System Setup

#### The Installation Steps:

1. Insert the manufacturer's CD-ROM into your CD-ROM drive.
2. Install Hardware Monitor System from the directory "Monitor\Setup.exe" on the CD-ROM to start the installation.



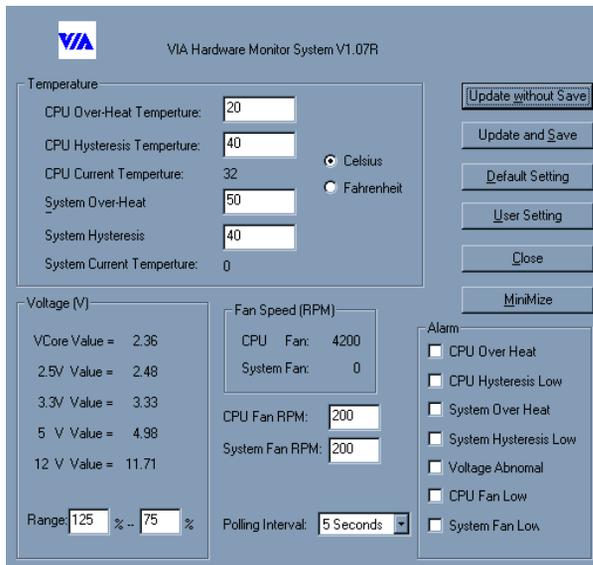
3. Follow the instructions on the screen to complete the installation. After setup is completed, you need to restart the computer before you can activate the program.



4. Click on the “VIA Hardware Monitor System” icon to access the program.

### 5.3.2. Setting the Threshold

Set the threshold for system temperature, voltages and fan speeds.



## 5.4. Creative Lab SB AudioPCI 128V (optional)

The compact disc that comes with your mainboard may have the Sound Blaster AudioPCI 128V utility, which is the driver for the optional onboard VIA Codec audio chip. The driver supports Windows 95/98/NT4.x operating systems. The drivers are located on the CD-ROM in the following locations:

D:\Audio\English\NTdrvSB	AudioPCI 128V driver for Windows NT4.x
D:\Audio\English\win95drvSB	AudioPCI 128V driver for Windows95/98

*Note: D is the letter that corresponds to your CD-ROM drive.*

### Installing the SB AudioPCI 128V driver

1. Insert the CD-ROM into your CD-ROM drive. If the installation screen does not display automatically, check that "auto insert notification" has been enabled in the Control Panel System Device Manager. Alternatively, you can use the Windows Explorer and go to the \CTRUN directory in the CD-ROM. Execute the CTRUN.EXE command to display the installation screen:



2. Click OK and follow the instructions on your screen to start the installation. After the driver installation has been completed, Windows will prompt you to restart the system. As the system restarts, Windows will detect the new hardware.
3. For the Windows NT4.x installation, double-click the multimedia icon that is in the Control Panel and select “Add Audio Device.” Follow the instructions on the screen to add the drivers. The Windows NT 4.x driver can be found in the \Audio\English\NTdrv directory of the CD.

After the drivers have been installed, you will be able to use the following audio programs:

<b>Creative CD</b>	CD audio tools
<b>Creative MIDI</b>	MIDI audio edit tools
<b>Creative Remote</b>	(not supported)
<b>Creative Wave</b>	WAV audio edit tools
<b>SB Audio 128V Mixer</b>	Audio Mixer
<b>Sound LE</b>	Line-in or Microphone recording

## 5.5. ATA66 Controller Options

When using the ATA66 controller, the HPT366 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 attached to the HPT366.

**Select Boot Sequence:** This option allows users to choose the boot sequence for the hard disk(s) attached to the HPT366. (No options will be shown if there is a bootable disk on default IDE channels.)

## **5.6. 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)*