Antares

P6F116/P6F116V 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 P6F116/P6F116V platform.

Quick Reference

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

Chapter 1—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 2—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 3—BIOS Configuration

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

Chapter 4—Driver and Utility

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

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1. Quick Reference

This section is for advanced users who want to get started using the mainboard right away.

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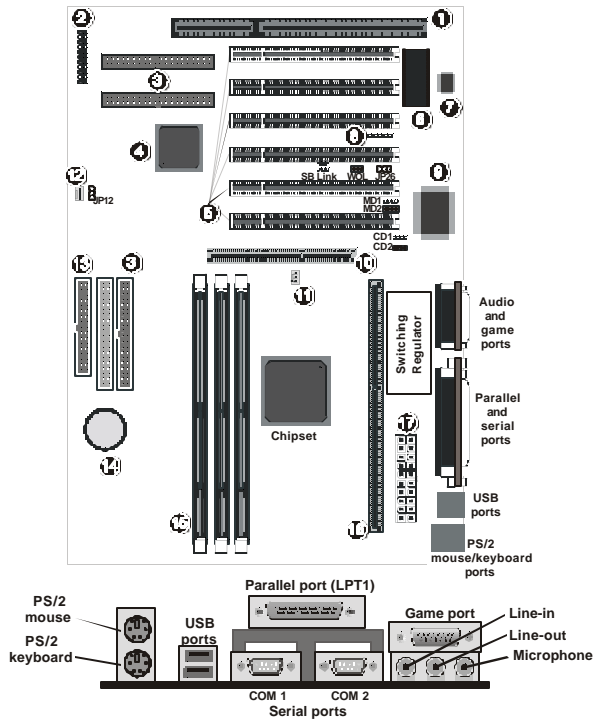
1. ISA expansion slot
2. Front panel connectors
3. IDE connectors
   (IDE 3, 4 are optional)
4. ATA66 controller
   (optional with IDE 3, 4)
5. PCI expansion slots
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15. DIMM module sockets
16. CPU Slot1
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1.2. Front Panel Connector
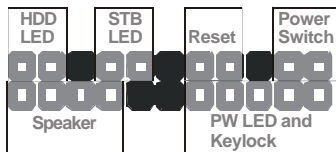
1.3. Jumpers

JP12	**1-2:** Normal mode
	2-3: Clear CMOS RAM
JP26	**1-2:** Enable onboard sound
	2-3: Disable onboard sound (optional)

1.4. Connectors

WOL	**Wake On LAN Connector:** This 3-pin header is used for remote wake up of the computer through a network card
SB-LINK	**Creative Lab SB-LINK Connector:** Creative Lab's side band connector that enables PCI sound cards to support old DOS games.

1.5. Memory Installation

168-Pin DIMM SDRAM Memory Configuration

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
Total	8 MB to 768 MB
Note 1:	The Intel BX chipset (P6F116) supports up to 100 MHz SDRAM and FSB.
Note 2:	The VIA chipset (P6F116V) supports up to 133 MHz SDRAM and FSB and also supports ATA66.
Note 3:	An 80-pin cable must be used with the ATA66 hard drive.

1.6. CPU Settings

You can change the clock speed of the CPU from the Chipset Features setup menu in the BIOS Setup program. Refer to the following table for information on CPU clock speed.

CPU Clock Speed Settings

CPU Speed	BIOS Soft-menu	
	CPU Frequency	CPU Ratio
500 MHz	66.6 MHz	X7.5
533 MHz	66.6 MHz	X8.0
566 MHz	66.6 MHz	X8.5
600 MHz	66.6 MHz	X9.0
633 MHz	66.6 MHz	X9.5
667 MHz	66.6 MHz	X10.0
700 MHz	66.6 MHz	X10.5
500 MHz	100 MHz	x5.0
550 MHz	100 MHz	x5.5
550E MHz	100 MHz	x5.5
600 MHz	100 MHz	x6.0
600E MHz	100 MHz	x6.0
650 MHz	100 MHz	x6.5
700 MHz	100 MHz	x7.0
750 MHz	100 MHz	X7.5
800 MHz	100 MHz	X8.0
850 MHz	100 MHz	X8.5
600 MHz	133 MHz	x4.5
677 MHz	133 MHz	x5.0
733 MHz	133 MHz	x5.5
800 MHz	133 MHz	X6.0
866 MHz	133 MHz	X6.5
933 MHz	133 MHz	X7.0

Note: 'E' indicates processors that feature an advance transfer cache. 'B' denotes support for a 133 MHz system bus. The items marked with an asterisk * are not available as of this writing.

2. Introduction

2.1. Overview

The P6F116/P6F116V is a high quality, high performance, function enhanced mainboard, based on the powerful Intel® Pentium II 66/100 MHz frontside bus (FSB) and Pentium III 133 FSB processors, and Intel® Celeron™ 66 MHz FSB processor with SEPP package. This mainboard is designed around the latest and fastest Intel 82440BX/VIA Apollo Pro 133 chipset in a standard ATX form factor. The Soft-menu (jumperless) design of the mainboard uses the onboard BIOS for clock frequency, and CPU multiplier-jumper settings are no longer needed.

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, Sleeping state indicator, Fan Off in sleeping state and BIOS upgradability are provided with this platform.

2.2. **Mainboard Specifications and Features**

2.2.1. **Hardware**

CPU	Supports Intel Pentium II processors at 233 ~ 333 MHz (66 MHz FSB), and 350 ~ 450 MHz (100 MHz FSB)
	Supports Intel Pentium III processors at 450 ~ 850+ MHz (100 MHz FSB), and 533 ~ 933+ MHz (133 MHz FSB)
	Supports Intel Celeron CPU at 300 ~ 700 MHz (66 MHz FSB)
VRM	Voltage Regulator Module onboard
	Provides 1.3V to 3.5V operating voltage
Coprocessor	CPU has built-in floating point unit
Speed	System bus clock 66/68/75/83 MHz
	System bus clock 100/103/112/133 MHz
	System bus clock 133/140/150 MHz (P6F116V)
	AGP clock 66/68/75/83 MHz
	PCI bus clock 33/34/37/40.1 MHz
	ISA bus clock 8.33~9.35 MHz
Chipset	Intel's 82440BX AGPset (P6F116)
	VIA's Apollo Pro 133 AGPset (P6F116V)
	Winbond's W83977 I/O chip
	Winbond's W83783S PC Environment Monitor chip
L2 Cache	CPU has built-in cache (or none)
DRAM	Three x 168-pin DIMM sockets
	Supports 8 MB to 768 MB memory
	Supports SDRAM memory
EIDE Controller	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 DMA33/66 drives (P6F116 supports to Ultra DMA33 only)

Enhanced I/O	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
	One sound controller (optional)
	One Creative ES1373 Sound chip
Mouse and Keyboard	PS/2 mouse connector
	PS/2 keyboard connector
Expansion Slots	One AGP slot
	Six 32-bit PCI slots
	One 16-bit ISA slots (one PCI/ISA shared slot)
Extra ATA66 Controller (Optional) Hi-Point 366	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 DMA33/66 drives (P6F116 supports to Ultra DMA33 only)
Power Management	Compliant with EPA, APM 1.2 and ACPI
	ATX soft-off power control
	Power – on by Keyboard
	Power – on by External Modem Ring
	Power – on by Alarm
	Power – on by Wake On LAN (WOL)
	Sleep state indicator
	Fan off in sleep mode
System Management	Winbond W83783S PC Environment Monitor
	CPU temperature warning and system temperature detection
	CPU and system voltage detection
	CPU and secondary fan RPM detection
Voltage Regulator	Switching regulator
	CPU voltage auto-detection
Form Factor	ATX form factor, 19 cm x 30.5 cm (7.5-inch x 12.0-inch)

2.2.2. Software

BIOS	Soft-menu (jumperless) design
	AWARD Pentium II AGP/PCI BIOS
	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 re-movable media drive
Driver and Utility	IDE Bus mastering Ultra DMA driver
	Flash utility for BIOS upgrade
	System Environment Monitoring Utility
Operating System	Operates with MS_DOS, Windows 3.x, Windows for Work Groups 3.x, Windows 95/98/2000/NT, OS/2, Novell Netware, Novell UnixWare 1.1 and SCO Unix 4.2

2.2.3. Environment

Ambient Temperature	0º C to 50º C (operating)
Relative Humidity	0 to 85% (operating)
Vibration	0 to 500 Hz
DC Voltage	4.9V to 5.2V
DC Voltage	3.15V to 3.50V
DC Voltage	-5V, +12V, -12V, +5VSB 5% tolerance

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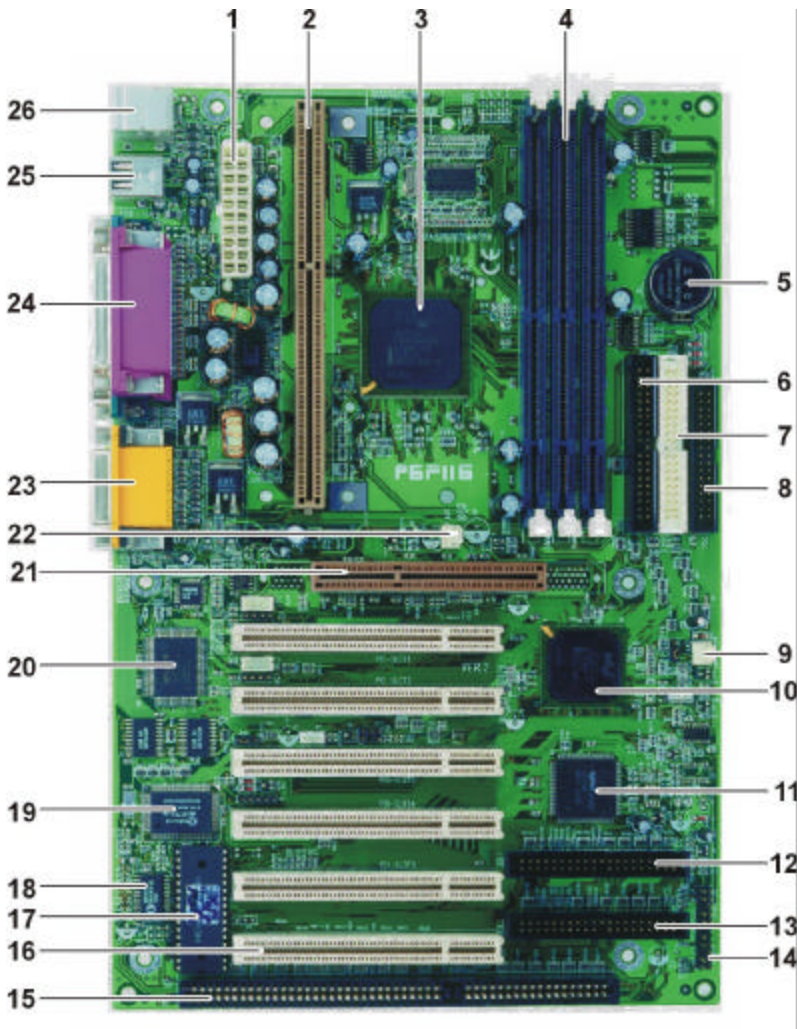
Note: Because of optional items and design changes, your mainboard may not be identical to the one shown in the illustration.

Key to Mainboard Components

No.	Name	Function
1	PW	12V ATX power connector
2		CPU Slot 1
3		Intel 440BX AGPset
4	DIMM 1~3	Three DIMM module slots
5	BT	Backup battery for CMOS memory and real-time clock (RTC)
6	IDE2	IDE2 connectors (black)
7	IDE1	IDE2 connectors (white)
8	FDC	Connector for floppy disk drives
9	FAN2	Secondary CPU fan connector
10		Intel PIIX4 PCIset
11		ATA supported by HighPoint HPT366 chip (option for BX chip only)
12	IDE3	IDE3 connectors (blue) for ATA 66 (option)
13	IDE4	IDE4 connectors (blue) for ATA 66 (option)
14		Connector for front panel switches and indicators
15	ISA1	ISA expansion slots
16	PCI Slot 1~6	32-bit PCI expansion slots
17		Flash BIOS
18		System monitor chip W83783S
19		Winbond I/O chip
20		Audio chip (optional)
21	AGP	AGP slot (3.3V)
22	FAN1	CPU fan connector
23		Game port (top); audio ports (bottom)
24		Parallel port (top); two serial ports (bottom)
25		Two USB ports
26		PS/2 mouse (top); PS/2 keyboard (bottom)

2.4. Microprocessor

The P6F116/P6F116V mainboard is designed to operate with the fol-
lowing processors:

Processor Type	Speed	FSB
Intel Pentium II	233, 266, 300, 333 MHz	66 MHz
	350, 400, 450 MHz	100 MHz
Intel Pentium III	450 ~ 850+ MHz	100 MHz
	533 ~ 933+ MHz	133 MHz (P6F116V)
Intel Celeron	300A ~ 700 MHz	66 MHz

An onboard switching voltage regulator provides 1.3 to 3.5 volts for
the processor. The Pentium II processor sends five VID (Voltage
Identification) signals to the switching voltage regulator. The
switching regulator generates the correct voltage for the processor.

Pentium II and Pentium III processors implement MMX technology
and maintain full backward compatibility with the 486 and Pentium
processors. The processor's numeric coprocessor significantly in-
creases the speed of floating-point operations.

2.5. Pentium II/Pentium Packaging

The Pentium II, and Pentium III are packaged in an SEC (Single
Edge Connector) cartridge. The SEC cartridge includes the processor
core, the second-level cache, a thermal plate, and a back cover. The
Pentium II connects to the mainboard through the 242-pin Slot 1
edge connector.

When the Pentium II is installed in Slot 1, it is secured by a retention
mechanism attached to the mainboard. The Pentium II heatsink is
stabilized by a heatsink support, which is attached to the mainboard.

2.6. Chipset

2.6.1.   Intel 82440BX (P6F116)

The Intel 82440BX AGPset consists of one 82443BX (PAC) system controller, and one 82371EB (PIIX4E) PCI ISA/IDE accelerator.

82443BX (PAC)
- 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
- Extensive CPU-to-AGP, CPU-to-DRAM, CPU-to-PCI, AGP-to-DRAM, AGP-to-PCI, PCI-to-AGP and PCI-to-DRAM data buffering

82371EB (PIIX4E)
- Interface between the PCI and ISA buses
- Power Management Logic
- USB controller
- EIDE controller (ATA33)
- Seven DMA channels, one timer/counter, two eight-channel interrupt controllers, NMI logic, SMI interrupt logic, and PCI/ ISA bus arbitrator
- SMBus interface
- Realtime clock (RTC)

2.6.2. VIA Apollo Pro 133 (P6F116V)

The VIA Apollo Pro AGPset consists of one 82C693A system controller, and one 82C596B PCI ISA/IDE accelerator.

82C693A
- CPU interface controller (66/100/133 MHz FSB)
- AGP interface controller (AGP 2X, AGP 2.0 compatibility)
- Integrated DRAM controller (asynchronous 66/100/133 MHz SDRAM)
- Fully synchronous PCI 2.1 bus interface
- Extensive CPU-to-AGP, CPU-to-DRAM, CPU-to-PCI, AGP-to-DRAM, AGP-to-PCI, PCI-to-AGP and PCI-to-DRAM data buffering

82C596B
- Interface between the PCI and ISA buses
- Power management logic
- USB controller
- EIDE controller (ATA33/66)
- Seven DMA channels, one timer/counter, two eight-channel interrupt controllers, NMI logic, SMI interrupt logic, and PCI/ ISA bus arbitrator
- SMBus interface
- Realtime clock (RTC)

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
- Intel Slot 1 Celeron/Pentium processor
- One SDRAM memory module
- One floppy disk drive
- One UDMA 33/66 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 essential items listed above.

3.1. Unpacking

The P6F116/P6F116V mainboard package contains the following items:

- ❑ One P6F116/P6F116V mainboard
- ❑ One IDE 40-pin (P6F116) or 80-pin (P6F116V) ribbon cable
- ❑ One floppy 34-pin ribbon cable
- ❑ Driver and utility CD
- ❑ User's manual
- ❑ CPU retention mechanism

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 P6F116/P6F116V 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 may come 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. Don't 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

Fan1

CD2
CD1

MD2
MD1

JP26   WOL   SB Link

IR

JP12   Fan2

Front panel
connectors
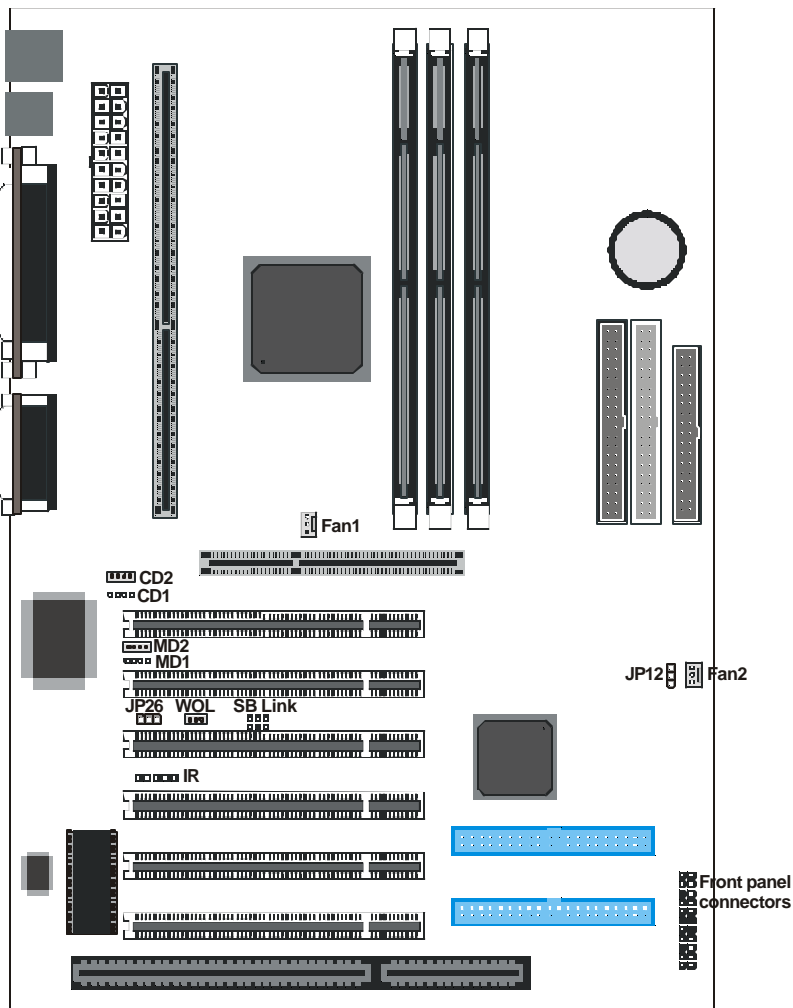
3.5. Attaching Connectors

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.

Front panel connectors

PW SW	Ground		Ground	LED and Keylock
	Power on/off		Keylock	
			LED anode	
RESET	Ground		N.C.	
	Power good		LED cathode	
STB LED	LED cathode			
	LED anode		+5V	
HDD LED			Ground	Speaker
	LED cathode		Ground	
	LED anode		Speaker-out	
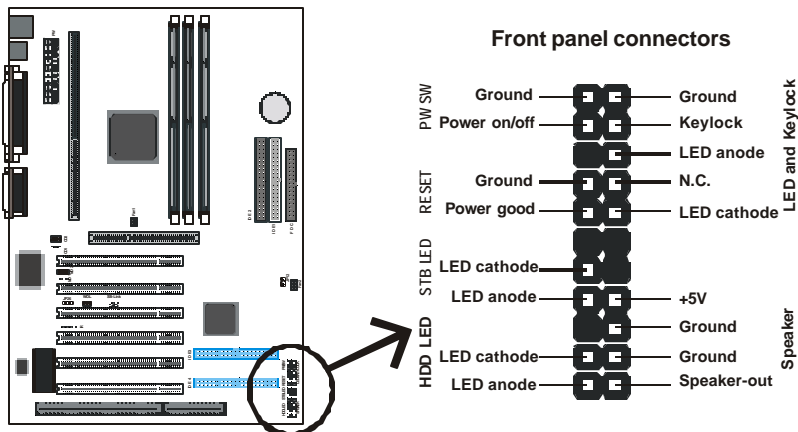
Speaker	This 4-pin connector connects to the case-mounted speaker.
LED & Keylock	This 5-pin connector connects to the case-mounted key-lock switch and the power LED. The keylock switch is used to lock the keyboard for security purposes.
HDD LED	This 2-pin connector connects to the case-mounted HDD LED to indicate hard disk activity.
STB LED	This 2-pin connector connects to the case-mounted STB LED to indicate a standby status.
Reset	This 2-pin connector connects to the case-mounted reset switch and is used to reboot the system.
PW SW	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 Intel 82440BX (P6F116) and VIA Apollo Pro (P6F116V) chipsets do 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.

Infrared connector

+5V   IR Receiver   IR Transmitter

Pin 1   IR

IRM_IRR   Ground
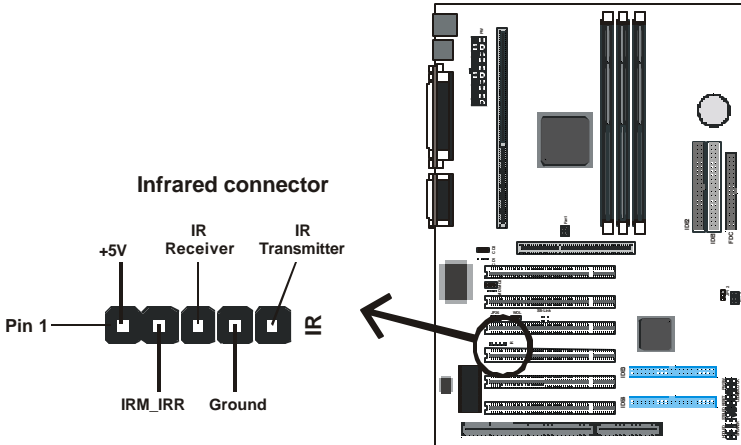
CD-ROM Connectors

These connectors enable you to connect a CD-ROM to the mainboard and receive stereo audio input.
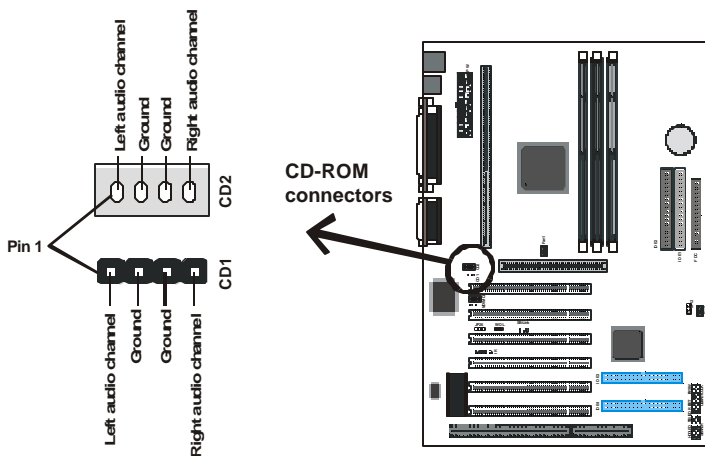
Left audio channel   Ground   Ground   Right audio channel   CD2

Pin 1

Left audio channel   Ground   Ground   Right audio channel   CD1

CD-ROM connectors

Wake on LAN Connector:

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

Wake On LAN connector

WOL

Pin 1

+5VSB

Ground

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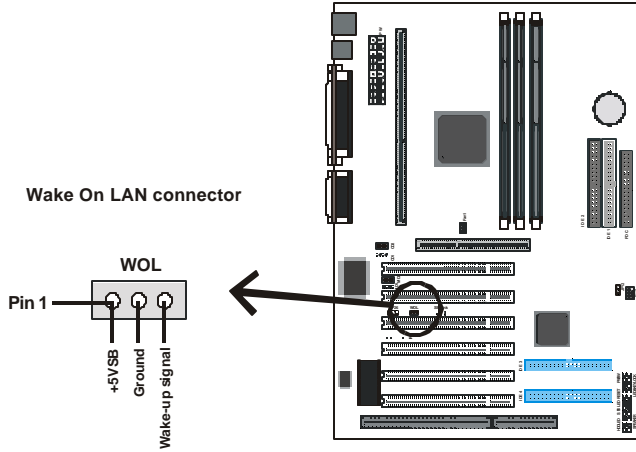
Note: You must enable the Wake On LAN feature in the BIOS setup if you use this feature. Refer to the Power Management section in Chapter 4 for details.

Creative Lab SB (Side-band) Link Connector:

This 2x3 ways, straight-3 header is used for a Creative Lab PCI sound card. In order to migrate the legacy Sound Blaster compatible audio to the PCI bus, the following signals have to be delivered to the PCI audio card through a flat cable:

Creative Lab SB-Link connector

Pin 2 - Ground
Pin 4 - Request
Pin 6 - SER_IRQ

SB-Link

Pin 1

Pin1 - Grant
Pin1 - Grant
Pin 5 - Ground
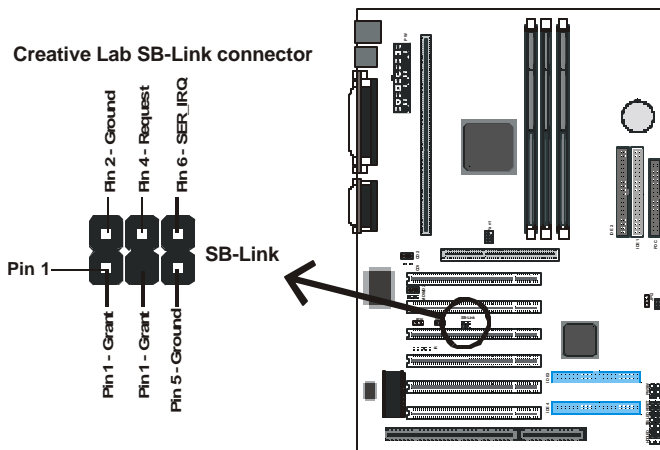
Floppy Drive Connector (One 34-pin Block)

A floppy disk drive ribbon cable has 34 wires and 2 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.

Floppy disk drive connector

Pin 1

FDC
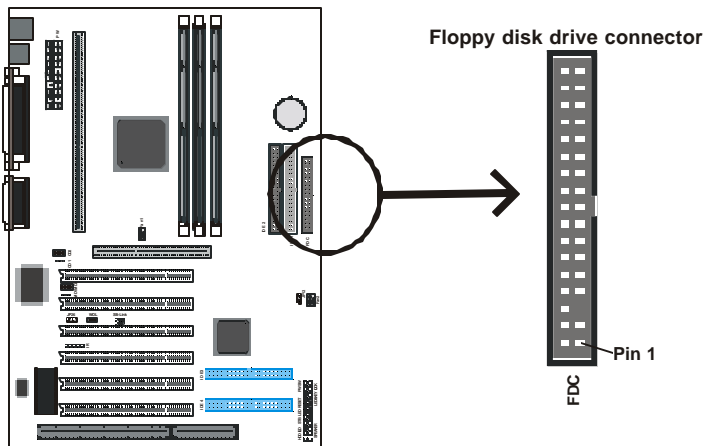
IDE Connectors

An IDE drive ribbon cable has 40 wires (P6F116) or 80 wires (P6F116V) and 2 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.
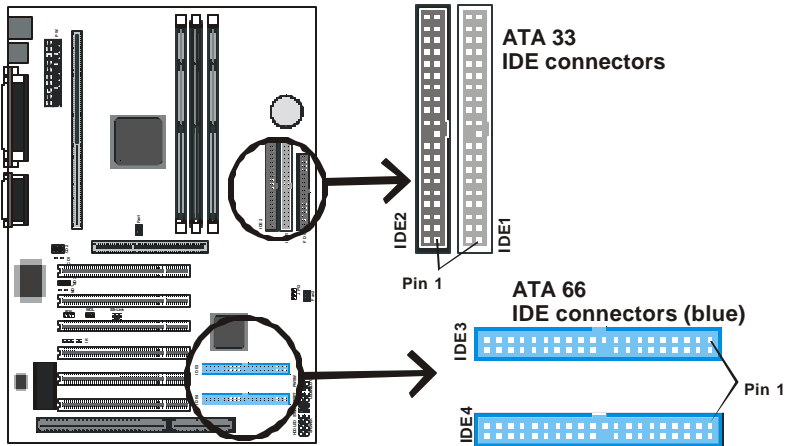
Note: IDE3 and IDE4 are only available on the P6F116 model.

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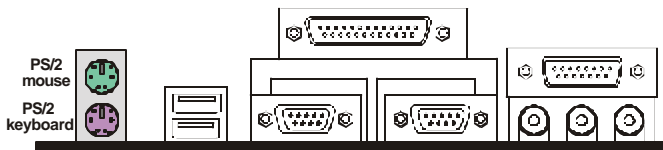
Connect a PS/2 keyboard to the purple 6-pin mini DIN connector. If you want to connect a standard AT size (large DIN) connector, you must use an adapter.

Universal Serial Bus Ports

You can connect two USB devices or USB hubs to the USB ports.
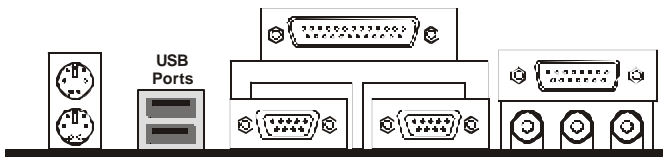
The USB ports provide a hardware interface for low-speed peripherals such as the keyboard, mouse, joystick, scanner, printer and telephony devices, and also support MPEG-1 and MPEG-2 digital video. The USB ports have a maximum bandwidth of 12 Mbits/sec (equivalent to 1.5 Mbytes/sec), and up to 127 devices 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.

Parallel Port
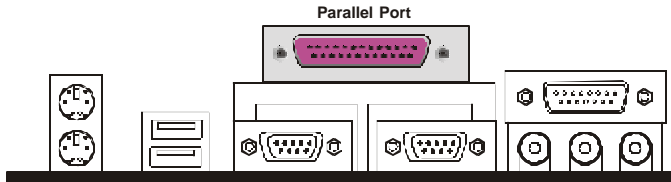
Serial Port Connectors

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.

Serial
Port 1
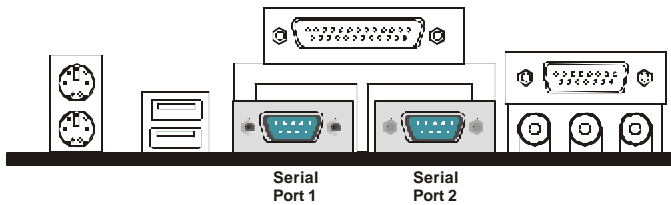
Serial
Port 2

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

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.

Game Port
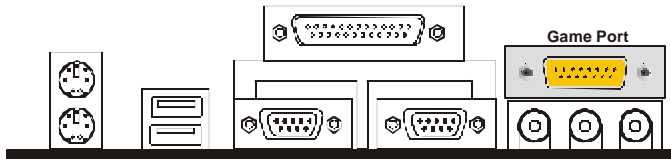
Audio Port Connectors

You can connect various audio devices to these [1]⁄[8]-inch audio jacks. Connect headphones or powered speakers to the lime-colored Line-out 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.
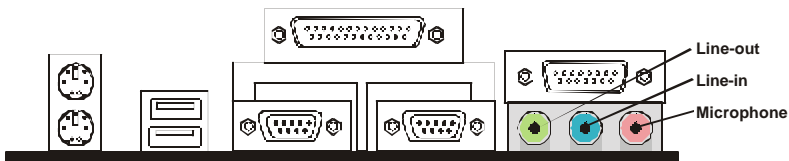
Power Supply Connector

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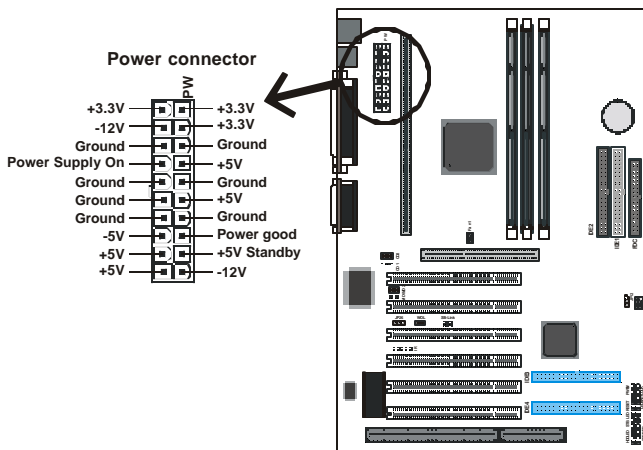
> **Warning:** Incorrect installation of the power supply could result in serious damage to the mainboard and connected peripherals. Make sure the power supply is unplugged from the AC outlet before connecting the leads from the power supply.

CPU 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 W83783S 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.

CPU fan power supply
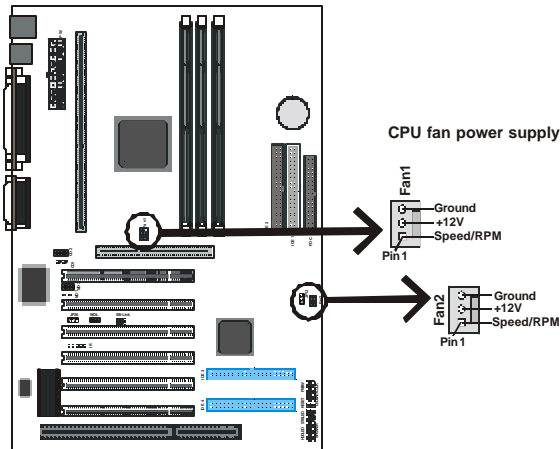
3.6. Installing the CPU

3.6.1. Before You Begin

1. Be sure that your Intel processor kit includes the following items:
   - ♦ One processor with the fan or heatsink attached
   - ♦ One retention mechanism (two black plastic supports)
   - ♦ 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. Installing the Boxed Processor

1. Insert the two retention mechanism supports into the mainboard. Each support has two plastic pegs that insert into holes in the mainboard. Push each peg into its hole firmly until you hear it "click" into place.

Plastic pegs

Retention mechanism
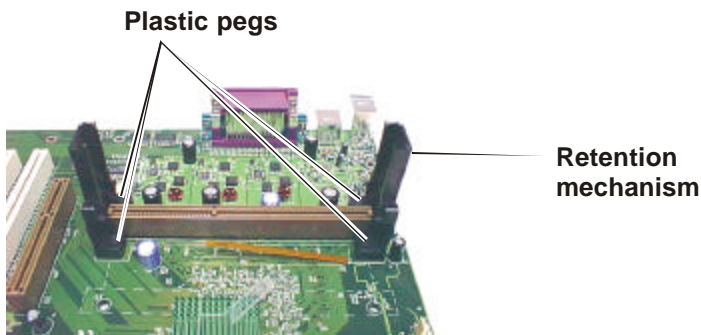
2. Slide the processor into the retention mechanism supports. The CPU fan faces towards the DIMM slots. Push the processor down firmly into the Slot 1 with even pressure on both sides of the top until it is securely seated.

CPU fan connector FAN1

Insert CPU

CPU fan

DIMM slots
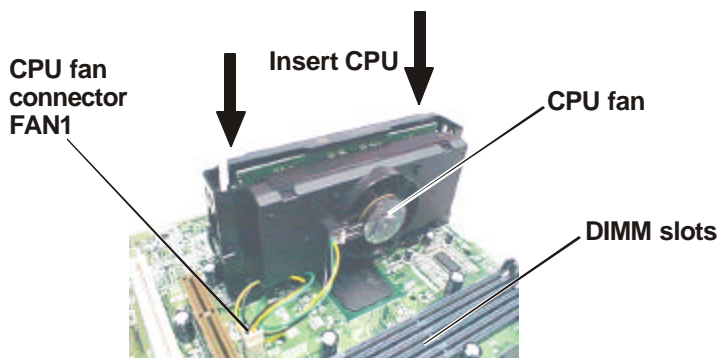
   3.   Connect the CPU cooling fan to CPU fan connector FAN1.

3.6.3.   Installing the Celeron (S.E.P Processor)

1. Line up the SEPP and heatsink, ensuring that the substrate key is lined up with the Slot 1 connector.
2. Insert the SEPP into the guide rails along the retention mechanism.
3. Place one hand on the SEPP/heatsink combination and push into the Slot 1 connector. Insertion and extraction forces are specified at 25 lbs.
4. You will hear a click as the retention mechanism pops back, firmly locking the processor into the Slot 1 connector.

3.6.4.   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 latches at the ends of the processor towards the center of the processor to release it from the retention mechanism support struts.
3. Lift one end of the processor until it is free from Slot 1 and then lift the other end of the processor until it is also free. Lift the entire processor (with the fan or heatsink supports attached) until it is free from the retention mechanism.

> **Warning: When handling the processor, avoid placing direct pressure on the label area of the fan.**
>
> **When removing the processor, avoid pressing down on the mainboard or components. Instead, press down on the plastic connectors.**

3.6.5.   Installing System Memory

Maximum system memory supported by the mainboard is 768 MB. When using the 133 MHz FSB (available in the P6F116V model), the end user must use the PC133's memory at the same time.

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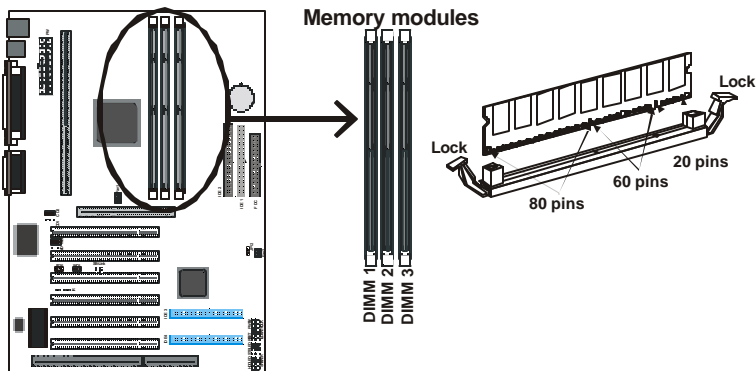
You must use 3.3V unbuffered DIMMs in the mainboard. To determine the DIMM type, check the notches on the DIMMs.

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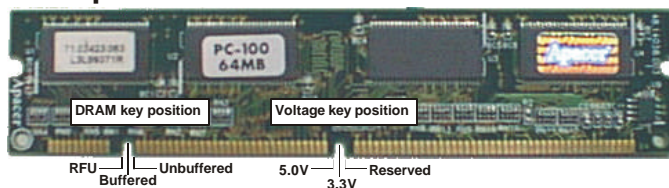
Due to the high-speed design of the mainboard, the memory modules must meet the following requirements:

DRAM TYPE	SDRAM (Synchronous DRAM)
Module Size	*Single Sided Asymmetric* 1Mx64, 4Mx64, 8Mx64, 16Mx64
	Double-Sided Asymmetric 2Mx64, 4Mx64, 8Mx64, 16Mx64, 32Mx64
Requirements	3.3V unbuffered DIMM module
	Speed grade: Memory must match the CPU Bus clock speed (66 MHz or 100 MHz in P6F116V). CAS latency: 3 or faster

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
Total System Memory	8 ~ 768 MB

3.6.6. Clear CMOS and Password

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.

There are two methods for resetting your CMOS setting.

Method 1: Press and hold the <INS> key and then power on the computer. The BIOS will clear the CMOS RAM and reset the CMOS settings to the default values.

Method 2: Through jumper setting. Follow these instructions:

1. Power off the system.
2. Place a shunt to short pin 2 and pin 3 of JP12 for five seconds.
3. Place the shunt back to pin 1 and pin 2 of JP12.
4. Power on the system.

3.6.7. 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.

3.6.8. Intel Pentium II/III CPU Soft-menu Setting

The Soft-menu (jumperless) design of the mainboard enables the user to set CPU Bus Clock and CPU core to a Bus clock multiplier through the BIOS.

CPU Bus Clock: The CPU Bus Clock is defined as the CPU input clock. Refer to the following table for CPU Bus Clock information:

CPU Core to Bus Clock Multiplier: The CPU internal core clock is equal to the "CPU Bus Clock" times the "CPU Core to Bus Clock Multiplier". For example, if the CPU Bus Clock is 100 MHz and the CPU Core to Bus clock Multiplier is 3.5, the actual CPU core clock will be 350 MHz.

CPU Voltage: There are no hardware or BIOS settings needed for the CPU operating voltage. The switching regulator circuit auto-detects the CPU type on the mainboard and generates the proper operating voltage for the CPU.

Setting CPU Speed (P6F116 chipset)

Follow these steps to configure the CPU speed for the P6F116 chipset:

1. Turn the system on.
2. During the POST, press the <DEL> key to access the AWARD BIOS SETUP program. The "CMOS SETUP UTILITY" is displayed on the screen.
3. In the CMOS SETUP UTILITY screen select "Chipset Features Setup" and press <Enter>.

```
                    ROM PCI/ISA BIOS (2A69KF20)
                        CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.

    STANDARD CMOS SETUP              BIOS FEATURES SETUP

    IDE HDD AUTO DETECTION           CHIPSET FEATURES SETUP

    LOAD SETUP DEFAULTS              POWER MANAGEMENT SETUP

    SAVE & EXIT SETUP                PNP/PCI CONFIGURATION

    EXIT WITHOUT SAVING              INTEGRATED PERIPHERALS

                                     SUPERVISOR PASSWORD

                                     USER PASSWORD

    Esc :  Quit                      ‒ ¯ ◉ ¬      :  Select Item
    F10 :  Save & Exit Setup         (Shift) F2   :  Change Color

              Time, Date, Hard Disk Type . . .
```

4. On the top right-hand side of the "CPU Speed Setting" screen, there is a "CPU Speed" option.

```
                    ROM PCI/ISA BIOS (2A69KF20)
                      CHIPSET FEATURES SETUP
                       AWARD SOFTWARE, INC.

Auto Configuration        : Enabled    CPU Speed          : Manual
EDO DRAM Speed Selection  : 60ns       CPU Ratio          : X 3
EDO CASx# MA Wait State   : 2          CPU Frequency      : 75 MHz
EDO RASX# Wait State      : 1          Spread Spectrum         : Enabled
SDRAM RAS-to-CAS Delay    : 3          Auto Detect DIMM/PCI Clk : Enabled
SDRAM RAS Precharge Time  : 3          CPU Vcore Select        : Default
SDRAM CAS Latency Time    : 2          Current System Temp.    : 60°
SDRAM Precharge Control   : Disabled   CPU Warning Temperature : 66°C/151°F
DRAM Data Integrity Mode  : Non-ECC    Current System Temp.    : 60°
                                       Current CPU FAN Speed   :
System BIOS Cacheable     : Enabled    Current FAN2 Speed      :
Video BIOS Cacheable      : Enabled    Vccp   : +         Vcc3 : +
Video RAM Cacheable       : Enabled    + 5 V  : +         +12 V : +
Power-Supply Type         : AT         -12 V  : -
8 Bit I/O Recovery Time   : NA         Shutdown Temperature :    Disabled
16 Bit I/O Recovery Time  : NA
                                       Esc  : Quit      ‒ ¯ ◉ ¬ : Select Item
Memory Hole At 15M-16M    : Enabled    F1   : Help     PU/PD/+/-  : Modify
Passive Release           : Disabled   F5   : Old Values  (Shift) F2 : Color
Delayed Transaction       : Disabled   F7   : Load Setup Defaults
```

---

5. The following table shows what settings are available:

CPU Bus Clock = 66/100 MHz

CPU SPEED	Soft-menu Setting	
	CPU Clock/Spread Spectrum	*CPU Ratio*
200 MHz	Default (66.6 MHz)	X3.0
233 MHz	Default (66.6 MHz)	X3.5
266 MHz	Default (66.6 MHz)	X4.0
300 MHz	Default (66.6 MHz)	X4.5
333 MHz	Default (66.6 MHz)	X5.0
300 MHz	Default (100 MHz)	X5.0
350 MHz	Default (100 MHz)	X3.5
400 MHz	Default (100 MHz)	X4.0
450 MHz	Default (100 MHz)	X4.5
500 MHz	Default (100 MHz)	X5.0

Manual settings are described below.

6. After the CPU speed has been set, return to the CMOS SETUP UTILITY screen:

```
              ROM PCI/ISA BIOS (2A69KF20)
                 CMOS SETUP UTILITY
                AWARD SOFTWARE, INC.

  STANDARD CMOS SETUP          BIOS FEATURES SETUP
  IDE HDD AUTO DETECTION       CHIPSET FEATURES SETUP
  LOAD SETUP DEFAULTS          POWER MANAGEMENT SETUP
  SAVE & EXIT SETUP            PNP/PCI CONFIGURATION
  EXIT WITHOUT SAVING          INTEGRATED PERIPHERALS
                               SUPERVISOR PASSWORD
                               USER PASSWORD

  Esc : Quit                   – ¯ ® ¬    : Select Item
  F10 : Save & Exit Setup      (Shift) F2 : Change Color

              Time, Date, Hard Disk Type . . .
```

7. Select "SAVE & EXIT SETUP" and press the <Enter> key to save the information in the CMOS memory and continue with the booting process.

System Clock (CPU Bus Clock)

Set "CPU SPEED" to manual if you want to manually configure the CPU Ratio and CPU Frequency. Refer to the following tables for setting options:

CPU Type	CPU Speed	CPU Frequency
Pentium II	233 ~ 333 MHz	66/68/75/83 MHz
Pentium II	350 ~ 450 MHz	100/103/112/133 MHz
Pentium III	450 ~ 850+ MHz	100/103/112/133 MHz
Pentium III	533 ~ 933+ MHz	133/140/150 MHz (P6F116V)

CPU Bus Clock = 66 MHz

CPU SPEED	Soft-menu Setting	
	CPU Clock/Spread Spectrum	*CPU Ratio*
200 MHz	Default (66.6 MHz)	X3.0
233 MHz	Default (66.6 MHz)	X3.5
266 MHz	Default (66.6 MHz)	X4.0
300 MHz	Default (66.6 MHz)	X4.5
300A MHz	Default (66.6 MHz)	X4.5
333 MHz	Default (66.6 MHz)	X5.0
400 MHz	Default (66.6 MHz)	X6.0
433 MHz	Default (66.6 MHz)	X6.5
466 MHz	Default (66.6 MHz)	X7.0
500 MHz	Default (66.6 MHz)	X7.5
533 MHz	Default (66.6 MHz)	X8.0

CPU Bus Clock = 66/100 MHz

CPU SPEED	Soft-menu Setting	
	CPU Clock/Spread Spectrum	*CPU Ratio*
300 MHz	Default (100 MHz)	X3.0
350 MHz	Default (100 MHz)	X3.5
400 MHz	Default (100 MHz)	X4.0
450 MHz	Default (100 MHz)	X4.5
500 MHz	Default (100 MHz)	X5.0
550 MHz	Default (100 MHz)	X5.5
550E MHz	Default (100 MHz)	X5.5
600 MHz	Default (100 MHz)	X6.0
600E MHz	Default (100 MHz)	X6.0
650 MHz	Default (100 MHz)	X6.5
700 MHz	Default (100 MHz)	X7.0
750 MHz	Default (100 MHz)	X7.5
800 MHz	Default (100 MHz)	X8.0

*Note: 'E' indicates processors that feature an advance transfer cache. 'B' denotes support for a 133 MHz system bus. The items marked with an asterisk * are not available as of this writing.*

Setting CPU Speed (P6F116V chipset)

Follow these steps to configure the CPU speed for the P6F116V (VIA) chipset:

1. Turn the system on.

2. During the POST, press the <DEL> key to access the AWARD BIOS SETUP program. The "CMOS SETUP UTILITY" is displayed on the screen.

3. In the CMOS SETUP UTILITY screen select "CPU Speed Setting" and press <Enter>.

```
ROM PCI/ISA BIOS (2A6LGF2D)
                        CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.

     STANDARD CMOS SETUP              BIOS FEATURES SETUP

     CPU SPEED SETTING                CHIPSET FEATURES SETUP

     IDE HDD AUTO DETECTION           POWER MANAGEMENT SETUP

     LOAD SETUP DEFAULTS              PNP/PCI CONFIGURATION

     SAVE & EXIT SETUP                INTEGRATED PERIPHERALS

     EXIT WITHOUT SAVING              SUPERVISOR PASSWORD

                                      USER PASSWORD

  Esc  :  Quit                        – ⁻ ◉ ¬      :   Select Item
  F10  :  Save & Exit Setup           (Shift) F2   :   Change Color

               Time, Date, Hard Disk Type . . .
```

4. On the top left-hand side of the "CPU Features Setup" screen, there is a "CPU Ratio" option.

```
ROM PCI/ISA BIOS (2A6LGF2D)
                        CPU FEATURES SETUP
                      AWARD SOFTWARE, INC.

  CPU Ratio            : X 3
  Auto Detect DIMM/PCI Clk    : Enabled
  Spread Spectrum             : Disabled
  CPU Host Clock (CPU/PCI)    : Default

                                Esc  : Quit        – ⁻ ◉ ¬ : Select Item
                                F1   : Help        PU/PD/+/-   : Modify
                                F5   : Old Values  (Shift) F2  : Color
                                F7   : Load Setup Defaults
```
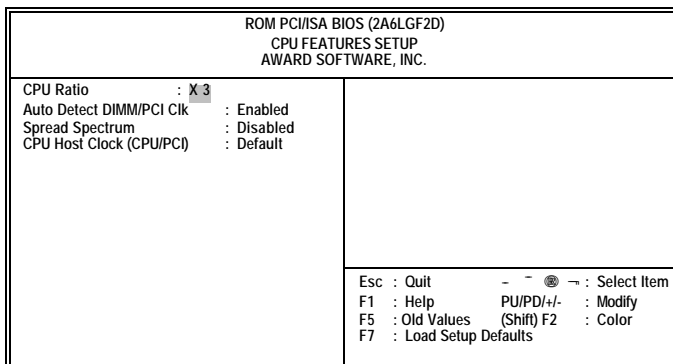
5.   Refer to the tables that follow to select the correct CPU speed:

CPU Bus Clock = 66 MHz

CPU SPEED	Soft-menu Setting	
	CPU Clock/Spread Spectrum	*CPU Ratio*
200 MHz	Default (66.6 MHz)	X3.0
233 MHz	Default (66.6 MHz)	X3.5
266 MHz	Default (66.6 MHz)	X4.0
300 MHz	Default (66.6 MHz)	X4.5
300A MHz	Default (66.6 MHz)	X4.5
333 MHz	Default (66.6 MHz)	X5.0
400 MHz	Default (66.6 MHz)	X6.0
433 MHz	Default (66.6 MHz)	X6.5
466 MHz	Default (66.6 MHz)	X7.0
500 MHz	Default (66.6 MHz)	X7.5
533 MHz	Default (66.6 MHz)	X8.0
566 MHz	Default (66.6 MHz)	X8.5

CPU Bus Clock = 100 MHz

CPU SPEED	Soft-menu Setting	
	CPU Clock/Spread Spectrum	*CPU Ratio*
300 MHz	Default (100 MHz)	X3.0
350 MHz	Default (100 MHz)	X3.5
400 MHz	Default (100 MHz)	X4.0
450 MHz	Default (100 MHz)	X4.5
500 MHz	Default (100 MHz)	X5.0
550 MHz	Default (100 MHz)	X5.5
550E MHz	Default (100 MHz)	X5.5
600 MHz	Default (100 MHz)	X6.0
600E MHz	Default (100 MHz)	X6.0
650 MHz	Default (100 MHz)	X6.5
700 MHz	Default (100 MHz)	X7.0
750 MHz	Default (100 MHz)	X7.5
800 MHz	Default (100 MHz)	X8.0
850 MHz	Default (100 MHz)	X8.5

CPU Bus Clock = 133 MHz (available in P6F116V)

CPU SPEED	Soft-menu Setting	
	CPU Clock/Spread Spectrum	*CPU Ratio*
533B MHz	Default (133 MHz)	X4.0
533BEMHz	Default (133 MHz)	X4.0
600B MHz	Default (133 MHz)	X4.5
600BE MHz	Default (133 MHz)	X4.5
677 MHz	Default (133 MHz)	X5.0
733 MHz	Default (133 MHz)	X5.5

*Note: 'E' indicates processors that feature an advance transfer cache. 'B' denotes support for a 133 MHz system bus. The items marked with an asterisk * are not available as of this writing.*

6. After the CPU speed has been set, return to the CMOS SETUP UTILITY screen:

```
                ROM PCI/ISA BIOS (2A6LGF2D)
                   CMOS SETUP UTILITY
                   AWARD SOFTWARE, INC.

  STANDARD CMOS SETUP          BIOS FEATURES SETUP

  CPU SPEED SETTING            CHIPSET FEATURES SETUP

  IDE HDD AUTO DETECTION       POWER MANAGEMENT SETUP

  LOAD SETUP DEFAULTS          PNP/PCI CONFIGURATION

  SAVE & EXIT SETUP            INTEGRATED PERIPHERALS

  EXIT WITHOUT SAVING          SUPERVISOR PASSWORD

                               USER PASSWORD

  Esc :  Quit                  - ¯ ® ¬   :  Select Item
  F10 :  Save & Exit Setup     (Shift) F2 :  Change Color

              Time, Date, Hard Disk Type . . .
```

7. Select "SAVE & EXIT SETUP" and press the <Enter> key to save the information in the CMOS memory and continue with the booting process.

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.

Note: There are some differences in the BIOS settings between P6F116 and P6F116V. In the following descriptions, ensure that you are reading the instructions for your platform.

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:

```
                    ROM PCI/ISA BIOS (2A69KF20)
                       CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP           BIOS FEATURES SETUP

   IDE HDD AUTO DETECTION        CHIPSET FEATURES SETUP

   LOAD SETUP DEFAULTS           POWER MANAGEMENT SETUP

   SAVE & EXIT SETUP             PNP/PCI CONFIGURATION

   EXIT WITHOUT SAVING           INTEGRATED PERIPHERALS

                                 SUPERVISOR PASSWORD

                                 USER PASSWORD

 Esc : Quit                       ─ ¯ ◉ ¬    :  Select Item
 F10 : Save & Exit Setup         (Shift) F2   :  Change Color

                 Time, Date, Hard Disk Type . . .
```

Figure 4-1:   P6F116 setup utility main screen

```
                    ROM PCI/ISA BIOS (2A6LGF2D)
                       CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP           BIOS FEATURES SETUP

   CPU SPEED SETTING             CHIPSET FEATURES SETUP

   IDE HDD AUTO DETECTION        POWER MANAGEMENT SETUP

   LOAD SETUP DEFAULTS           PNP/PCI CONFIGURATION

   SAVE & EXIT SETUP             INTEGRATED PERIPHERALS

   EXIT WITHOUT SAVING           SUPERVISOR PASSWORD

                                 USER PASSWORD

 Esc : Quit                       ─ ¯ ◉ ¬    :  Select Item
 F10 : Save & Exit Setup         (Shift) F2   :  Change Color

                 Time, Date, Hard Disk Type . . .
```

Figure 4-2:   P6F116V 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:

Key	Function
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 (P6F116/P6F116V)

Selecting "STANDARD CMOS SETUP "on the main program screen displays the following menu:

```
                    ROM PCI/ISA BIOS (2A6LGF2D)
                        STANDARD CMOS SETUP
                        AWARD SOFTWARE, INC.

 Date  (mm:dd:yy)  : Mon, Feb 7  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 4-3: **P6F116/P6F116V standard CMOS setup screen**

The Standard CMOS Setup utility 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. CPU Speed Setting (P6F116V)

In the Main Program screen, scroll to the "CPU SPEED SETTING" item and press <Enter>. The following menu is displayed:

```
              ROM PCI/ISA BIOS (2A6LGF2D)
                  CPU FEATURES SETUP
                 AWARD SOFTWARE, INC.

 CPU Ratio            : X 3
 Auto Detect DIMM/PCI Clk   : Enabled
 Spread Spectrum            : Disabled
 CPU Host Clock (CPU/PCI)   : Default




                             Esc  : Quit        –  ¯  ⊕  ¬ : Select Item
                             F1   : Help        PU/PD/+/-    : Modify
                             F5   : Old Values  (Shift) F2   : Color
                             F7   : Load Setup Defaults
```
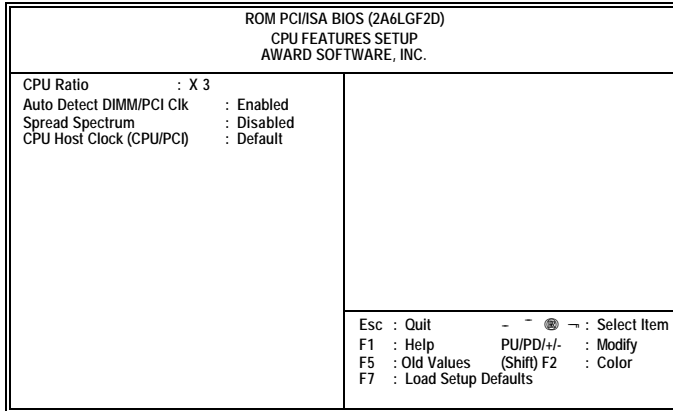
Figure 4-4:   P6F116V CPU features setup utility

CPU Ratio: This option sets the CPU speed. The speed is set in a ratio of bus speed times a multiplier, from 3 to 8, in 0.5 increments. The following table displays the options:

Option	CPU Bus Clock (MHz)	CPU Speed (MHz)	CPU Bus Clock (MHz)	CPU Speed (MHz)
X 3	66	200	100	300
X 3.5	66	233	100	350
X 4	66	266	100	400
X 4.5	66	300	100	450
X 5	66	333	100	500
X 5.5	66	366	100	550
X 6	66	400	100	600
X 6.5	66	433	100	650
X 7	66	466	100	700
X 7.5	66	500	100	750
X 8	66	533	100	800

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 Modulated: When set to "Enabled", the system clock frequency will automatically be modulated to help reduce electromagnetic interference. Default is "Enabled".

CPU Host Clock (CPU/PCI): This item allows you to select the CPU/PCI frequency. Options are:

- Default
- 66/33 MHz
- 75/37 MHz
- 133/33 MHz
- 83/41 MHz
- 100/33 MHz
- 103/34 MHz
- 112/37 MHz
- 124/41 MHz
- 133/44 MHz
- 100/33 MHz
- 124/31 MHz
- 133/33 MHz
- 140/35 MHz
- 150/37 MHz

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

4.4. 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.

4.5. BIOS Features Setup (P6F116)

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

```
              ROM PCI/ISA BIOS (2A69KF20)
                  BIOS FEATURES SETUP
                 AWARD SOFTWARE, INC.

Virus Warning            : Enabled      Video BIOS    Shadow     : Disabled
                                        C8000-CBFFF Shadow       : Disabled
CPU Internal Cache       : Enabled      CC000-CFFFF Shadow       : Disabled
External Cache           : Disabled     D0000-D3FFF Shadow       : Disabled
CPU L2 Cache ECC Checking : Default     D4000-D7FFF Shadow       : Disabled
Processor Number Feature : Enabled      D8000-DBFFF Shadow       : Disabled
Quick Power On Self Test : Enabled      DC000-DFFFF Shadow       : Disabled
Boot Sequence            : A, C, SCSI
Swap Floppy Drive        : Disabled     PCI/VGA Palette Snoop        : Disabled
Boot Up Floppy Seek      : Disabled     Assign IRQ For VGA           : Disabled
Floppy Disk Access Control : R/W        OS Select For DRAM > 64 MB   : Non-0S2
Boot Up NumLock Status   : On
                                        Report No FDD For WIN 95     : No
Gate A20 Option          : Fast
                                       ┌──────────────────────────────────────
Typematic Rate Setting   : Disabled    │ Esc  : Quit        ─ ⁻ ⊛ ┐ : Select Item
Typematic Rate (Chars/Sec) : 6         │ F1   : Help      PU/PD/+/-  : Modify
Typematic Delay (Msec)   : 250         │ F5   : Old Values  (Shift) F2  : Color
                                       │ F7   : Load Setup Defaults
Security Option          : Setup
```

Figure 4-5:   P6F116 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."

CPU L2 Cache ECC Checking: Set to "Enabled" only if the CPU L2 cache has ECC (Error Checking and Correction). The default setting 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.

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 the 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."

Floppy Disk Access Control: Enables you to set the floppy disk drive access to read and write, or read only. The options are "R/W" (read and write - default) and "Read Only."

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

Memory Parity/ECC Check: This item allows you to select between three methods of memory error checking: "Auto," "Enabled" and "Disabled." Enable this item to allow BIOS to perform a parity check to the POST memory tests. Select "Enabled" only if the system DRAM supports parity checking.

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."

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.

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

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."

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

4.6. BIOS Features Setup (P6F116V)

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

```
                    ROM PCI/ISA BIOS (2A6LGF2D)
                        BIOS FEATURES SETUP
                        AWARD SOFTWARE, INC.

Virus Warning              : Enabled     Video BIOS    Shadow    : Disabled
                                         C8000-CBFFF Shadow      : Disabled
CPU Internal Cache         : Enabled     CC000-CFFFF Shadow      : Disabled
External Cache             : Disabled    D0000-D3FFF Shadow      : Disabled
CPU L2 Cache ECC Checking  : Default     D4000-D7FFF Shadow      : Disabled
                                         D8000-DBFFF Shadow      : Disabled
Quick Power On Self Test   : Enabled     DC000-DFFFF Shadow      : Disabled
Boot Sequence              : A, C, SCSI
Swap Floppy Drive          : Disabled    Processor Number Feature   : Enabled
Boot Up Floppy Seek        : Disabled    IDE HDD Block Mode         : Disabled
                                         PCI/VGA Palette Snoop      : Disabled
Boot Up NumLock Status     : On
Memory Parity/ECC Check    : Disabled    OS Select For DRAM > 64 MB : Non-0S2
Gate A20 Option            : Fast        HDD S.M.A.R.T. capability  : Disabled

Typematic Rate Setting     : Disabled    ┌─────────────────────────────────────
Typematic Rate (Chars/Sec) : 6           Esc : Quit       ─ ‾ ⊕ ┐ : Select Item
Typematic Delay (Msec)     : 250         F1  : Help       PU/PD/+/- : Modify
                                         F5  : Old Values  (Shift) F2 : Color
Security Option            : Setup       F7  : Load Setup Defaults
```

Figure 4-6:   P6F116V 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."

CPU L2 Cache ECC Checking: Set to "Enabled" only if the CPU L2 cache has ECC (Error Checking and Correction). The default setting is "Disabled."

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 the 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."

Memory Parity/ECC Check: This item allows you to select between three methods of memory error checking: "Auto," "Enabled" and "Disabled." Enable this item to allow BIOS to perform a parity check to the POST memory tests. Select "Enabled" only if the system DRAM supports parity checking.

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.

IDE HDD Block Mode: This feature enhances hard disk performance by making multi-sector transfers instead of one sector per transfer. Most IDE drives, except those of very early design have the Block Mode transfer feature. The Default setting is "Enabled."

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."

HDD S.M.A.R.T. capability: The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer. The disk drive software monitors the internal performance of the motors, media, heads, and electronics of the drive. The host software monitors the overall reliability status of the drive. If a device failure is predicted, the host software, through the Client WORKS S.M.A.R.T applet, warns the user of the impending condition and advises appropriate action to protect the data.

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

4.7. Chipset Features Setup (P6F116)

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

```
                    ROM PCI/ISA BIOS (2A69KF20)
                      CHIPSET FEATURES SETUP
                       AWARD SOFTWARE, INC.

 Auto Configuration       : Enabled    CPU Speed          : 266 MHz (66x4)
 EDO DRAM Speed Selection : 60ns       Spread Spectrum          : Enabled
 EDO CASx# MA Wait State  : 2          Auto Detect DIMM/PCI Clk : Enabled
 EDO RASX# Wait State     : 1          CPU Vcore Select         : Default
 SDRAM RAS-to-CAS Delay   : 3          Current System Temp.     : 60°
 SDRAM RAS Precharge Time : 3          CPU Warning Temperature  : 66°C/151°F
 SDRAM CAS Latency Time   : 2          Current System Temp.     : 60°
 SDRAM Precharge Control  : Disabled   Current CPU FAN Speed    :
 DRAM Data Integrity Mode : Non-ECC    Current FAN2 Speed       :
                                       Vccp  : +        Vcc3   : +
 System BIOS Cacheable    : Enabled    + 5 V : +        +12 V  : +
 Video BIOS Cacheable     : Enabled
 Video RAM Cacheable      : Enabled    -12 V : -
 Power-Supply Type        : AT         Shutdown Temperature :   Disabled
 8 Bit I/O Recovery Time  : NA
 16 Bit I/O Recovery Time : NA         Esc  : Quit      – ¯ ® ¬ : Select Item
                                       F1   : Help      PU/PD/+/-  : Modify
 Memory Hole At 15M-16M   : Enabled    F5   : Old Values (Shift) F2 : Color
 Passive Release          : Disabled   F7   : Load Setup Defaults
 Delayed Transaction      : Disabled
```

Figure 4-7:   P6F116 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.

Auto Configuration: Enable this field to allow BIOS to set the Chipset features for your system automatically. Auto Configuration selects predetermined optimal values of chipset parameters. When set to "Disabled," chipset parameters revert to setup information stored in CMOS. Some fields in this screen are not available when Auto Configuration is enabled. The options are "Disabled" and "Enabled" (default).

EDO DRAM Speed Selection: Enables you to set the speed of the EDO (Extended Data Out) DRAM. This field becomes available when Auto Configuration is enabled.

DRAM timing is controlled by the DRAM Timing Registers. The timings programmed into this register are dependent on the system design. Slower rates may be required in certain system designs to support loose layouts or slower memory. The options "50ns" and "60ns" (default)

EDO CASx# MA Wait State: Enables you to select the timing control type of EDO DRAM CAS (Column Address Strobe) MA (memory address) bus. This field is unavailable when Auto Configuration is enabled. Options are "1", and "2" (default).

EDO RASx# Wait State: Enables you to select the timing control type of EDO DRAM RAS (Row Address Strobe) MA (memory address) bus. This field is unavailable when Auto Configuration is enabled. Options are "1" (default), and "2."

SDRAM 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. The options are "2" and "3" default.

SDRAM RAS Precharge Time: 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. Options are "2" and "3" (default).

SDRAM CAS Latency Time: Enables you to select the CAS latency 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 change specifications of the installed DRAM or the installed CPU. The options are "2" and "3" default.

SDRAM Precharge Control: This field enables or disables the SDRAM precharge control. The default setting is "Disabled."

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

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

Caching of the system BIOS ROM occurs at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

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.

Video RAM Cacheable: When set to "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 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.

8 Bit I/O Recovery Time: This item allows you to determine the recovery time allowed for 8-bit I/O. The recovery time is the length of time (measured in CPU clocks) in which the system delays after the completion of an input/output request. This delay occurs because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O. Options are "NA" and "1" (default) through "8."

16 Bit I/O Recovery Time: This item allows you to determine the recovery time allowed for 16-bit I/O. Options are "NA" and "1" (default) through "4."

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."

Passive Release: When set to "Enabled" (default), CPU to PCI bus access is allowed during passive release. Otherwise, only PCI master access to local DRAM is permitted.

Delayed 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 default setting is "Disabled."

CPU Speed: Enables you to set the CPU clock speed. When set to "Manual," the CPU Ratio and CPU Frequency fields become available. The Options for this field are:

- Manual
- 200 MHz (66x3)
- 233 MHz (66x3.5)
- 266 MHz (66x4)
- 300 MHz (66x4.5)
- 333 MHz (66x5)
- 300 MHz (100x3)
- 350 MHz (100x3.5)
- 400 MHz (100x4)
- 450 MHz (100x4.5)
- 500 MHz (100x5)

CPU Ratio: This field becomes available when CPU Speed is set to "Manual." The options are outlined in the following table:

Option	CPU Bus Clock (MHz)	CPU Speed (MHz)	CPU Bus Clock (MHz)	CPU Speed (MHz)
X 3	66	200	100	300
X 3.5	66	233	100	350
X 4	66	266	100	400
X 4.5	66	300	100	450
X 5	66	333	100	500
X 5.5	66	366	100	550
X 6	66	400	100	600
X 6.5	66	433	100	650
X 7	66	466	100	700
X 7.5	66	500	100	750
X 8	66	533	100	800

CPU Frequency: Enables you to set the CPU frequency. Options are from "66 MHz" to "150 MHz."

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

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.

CPU Vcore Select: Enables you to set the CPU Vcore voltage. Options are:

- Default (default)
- +0.05V
- +0.1V
- +0.2V
- +0.3V
- +0.4V
- -0.05V
- -0.1V

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.

CPU Warning Temperature: This feature enables you to set the warning temperature for CPU overheating. When the CPU temperature exceeds the set temperature, the PC speaker will beep. The beep sound will not turn off unless you power down the computer and allow your CPU to cool down.

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.

Vcc3, Vccp, +5V, -5V, +12V, -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

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

Shutdown Temperature: This field enables you to set the temperature at which the system shuts down to prevent overheating. The options are:

- Disabled (default)
- 60°C/140°F
- 65°C/149°F
- 70°C/158°F
- 75°C/167°F

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

4.8. Chipset Features Setup (P6F116V)

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

```
                      ROM PCI/ISA BIOS (2A6LGF2D)
                        CHIPSET FEATURES SETUP
                         AWARD SOFTWARE, INC.

Bank 0/1 DRAM Timing    : SDRAM 10ns    CPU Warning Temperature  : 66°C/151°F
Bank 2/3 DRAM Timing    : SDRAM 10ns    Current System Temp.     : 60°
Bank 4/5 DRAM Timing    : SDRAM 10ns
                                        Current CPU FAN Speed    :
SDRAM Cycle Length      : 3             Current FAN2 Speed       :
                                        Vccp  : +        Vcc3    : +
DRAM Clock              : Host CLK      + 5 V : +        +12 V   : +
Memory Hole             : Disabled      -12 V : -
Read Around Write       : Disabled      Shutdown Temperature     : Disabled
Concurrent PCI/Host     : Disabled      CPU Vcore Select         : Default

System BIOS Cacheable   : Enabled
System RAM Cacheable    : Enabled

AGP Aperture Size       : 128M          Esc : Quit       − ¯ ⊕ ¬ : Select Item
AGP-2X Mode             : Disabled      F1  : Help       PU/PD/+/-  : Modify
                                        F5  : Old Values (Shift) F2 : Color
OnChip USB              : Enabled       F7  : Load Setup Defaults
USB Keyboard Support    : Disabled
```

Figure 4-8:   P6F116V 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 SDRAMs. The following options are allowed:

- SDRAM 10ns
- SDRAM 8ns
- 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 Clock: Enables you to select the DRAM Clock. The options are:

- Host CLK
- HCLK +33
- HCLK -33

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."

Read Around Write: Optimizes DRAM. If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM. The options are "Enabled" (default), and "Disabled."

Concurrent PCI/Host: When set to "Disabled", the CPU bus will be occupied during the entire PCI operation period. The options are "Enabled" (default), and "Disabled."

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

Video RAM Cacheable: When set to "Enabled", the graphics card's local memory will be cached for faster execution. 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.

AGP-2X Mode: Set this to "Enabled" to allow AGP to transfer data at 528 MB/sec (2x AGP—clock 133MHz). The default setting is "Disabled" (AGP transfers data at 264 MB/sec).

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.

CPU Warning Temperature: This feature enables you to set the warning temperature for CPU overheating. When the CPU temperature exceeds the set temperature, the PC speaker will beep. The beep sound will not turn off unless you power down the computer and allow your CPU to cool down.

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.

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

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

Shutdown Temperature: This field enables you to set the temperature at which the system shuts down to prevent overheating. The options are:

- Disabled (default)
- 60°C/140°F
- 65°C/149°F
- 70°C/158°F
- 75°C/167°F

CPU Vcore Select: Enables you to set the CPU Vcore voltage. Options are:

- Default (default)
- +0.05V
- +0.1V
- +0.2V
- +0.3V
- +0.4V
- -0.05V
- -0.1V

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

4.9. Power Management Setup (P6F116)

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 (2A69KF20)
                      POWER MANAGEMENT SETUP
                         AWARD SOFTWARE, INC.

ACPI function         : Enabled      ** Reload Global Timer Events **
Power Management      : User Define
PM Control by APM     : Yes          IRQ[3 -7,9-15],NMI      : Disabled
Video Off Method      : V/H          Primary IDE 0           : Disabled
SYNC+Blank                           Primary IDE 1           : Disabled
                                     Secondary IDE 0         : Disabled
Doze Mode             : Disable      Secondary IDE 1         : Disabled
Standby Mode          : Disable      Floppy Disk             : Disabled
Suspend Mode          : Disable      Serial Port             : Disabled
HDD Power Down        : Disable      Parallel Port           : Disabled
HDD Down When Suspend : Disable
Fan Off in Suspend    : Off          Mouse Break Suspend     : Yes
Throttle Duty Cycle   : 62.5X
MODEM Use IRQ         : 3            IRQ 8 Break Suspend     : Disabled
PCI/VGA Act-Monitor   : Disabled
Soft-Off by PWRBTN    : Instant-Off  Esc  : Quit        –  ¯  ®  ¬ : Select Item
PowerOn by Ring       : Disabled     F1   : Help        PU/PD/+/-    : Modify
Resume by Alarm       : Enabled      F5   : Old Values  (Shift) F2  : Color
Date (of Month) Alarm :    0         F7   : Load Setup Defaults
Time  (hh:mm:ss) Alarm : 7: 0: 0
Wake Up On LAN        : Disabled
```

Figure 4-9:   P6F116 power management setup

ACPI Function Enabled: 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
- *Max Power Savings:* 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 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.

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".

Standby Mode: When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed. Options are from "1 Min" to "1 Hour" and "Disabled".

Suspend Mode: When enabled and after the set time of system inactivity, all devices except the CPU will be shut off. Options are from "1 Min" 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."

HDD Down When Suspend: If set to "Enabled," the IDE hard drive will spin down during suspend mode. Options are from "Enabled" and "Disabled" (default).

FAN Off in Suspend: Enables you to set the CPU fan to turn off during suspend mode. The options are "OFF" (default), and "ON."

Throttle Duty Cycle: When the system enters Doze mode, the CPU clock runs only part of the time. You can select the percent of time that the clock runs. Options are:

- 12.5%
- 25.0%
- 37.5%
- 50.0%
- 62.5%
- 75.0%

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

PCI/VGA ACT-Monitor: When set to "Enabled," any video activity restarts the global timer for Standby mode. Options are "Enabled" and "Disabled" (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."

Note: During the booting process, the power button is ignored.

PowerOn by Ring: When set to "Enabled," any incoming phone call on the modem will power on the system. The options are "Enabled" and "Disabled" (default).

Resume by Ring: When set to "Enabled", the system power will be turned on if the FAX/Modem receives an incoming telephone call.

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.

Wake Up On LAN: When set to "Enabled," any activity on the LAN port will wake up the system from a power saving mode. The options are "Enabled" and "Disabled" (default).

** Reload Global Timer Events **

This section enables you to set timer events for power management.

IRQ[3-7,9-15],NMI: When set to "Enabled" (default), any event occurring at IRQs 3 through 15 (excluding IRQ 8) will awaken a system which has been powered down.

Primary/Secondary IDE 0/1: When set to "Enabled", any activity from one of the listed system peripheral devices wakes up the system.

Floppy Disk: When set to "Enabled", any activity from the floppy disk drive wakes up the system.

Serial/Parallel Port: When set to "Enabled", any activity from one of the listed system ports wakes up the system.

Mouse Break Suspend: This field allows you to enable or disable monitoring of the mouse so it does not awaken the system from Suspend mode. Options are "Yes" (default) and "No."

IRQ 8 Break Suspend: This field allows you to enable or disable monitoring of IRQ8 so that it does not awaken the system from Suspend mode. Options are "Enabled" and "Disabled" (default).

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

4.10. Power Management Setup (P6F116V)

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 (2A6LGF2D)
                    POWER MANAGEMENT SETUP
                      AWARD SOFTWARE, INC.

ACPI function          : Enabled      Primary INTR            : ON
Power Management       : User Define   IRQ3    (COM 2)        : Primary
PM Control by APM      : Yes          IRQ4    (COM 1)        : Primary
Video Off Method       : V/H SYNC+Blank IRQ5   (LPT 2)        : Primary
MODEM Use IRQ          : 3            IRQ6    (Floppy Disk)   : Primary
                                      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
DMA/master             : OFF
Resume by Ring         : Disabled     Esc : Quit       – ¯ ® ¬ : Select Item
Resume by Alarm        : Enabled      F1  : Help       PU/PD/+/-  : Modify
Date (of Month)        :   0          F5  : Old Values  (Shift) F2  : Color
Timer (hh:mm:ss)       : 7: 0: 0      F7  : Load Setup Defaults
Wake Up On LAN         : Disabled
```

Figure 4-10: P6F116V power management setup

ACPI Function Enabled: 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 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 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".

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: Enables you to set the CPU fan to turn off during suspend mode. The options are "OFF" (default), and "ON."

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."

> *Note: During the booting process, the power button is ignored.*

PM Events: PM events are I/O events whose occurrence prevents the system from entering a power saving mode or awakens the system from a power saving mode. The following options are available:

- *VGA:* when enabled, LAN 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
- *DMA/master:* when set to "On", any activity from one of the listed devices wakes up the system

- *Resume by Ring:* when set to "Enabled", the system power will be turned on if the FAX/Modem receives an incoming telephone call
- *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.

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.

4.11.PnP/PCI Configuration (P6F116)

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 (2A69KF20)
                      PNP/PCI CONFIGURATION
                       AWARD SOFTWARE, INC.

PNP OS Installed          : No        Slot 1 Use IRQ No.      : Auto
Resources Controlled by   : Manual    Slot 2 Use IRQ No.      : Auto
Reset Configuration Data  : Disabled  Slot 3 Use IRQ No.      : Auto
                                      Slot 4 Use IRQ No.      : Auto
IRQ-3    assigned to  : PCI/ISA PnP
IRQ-4    assigned to  : PCI/ISA PnP   Used MEM base addr      : DC00
IRQ-5    assigned to  : PCI/ISA PnP   Used MEM Length         : 8K
IRQ-7    assigned to  : Legacy ISA    Assign IRQ For USB      : Enabled
IRQ-9    assigned to  : PCI/ISA PnP
IRQ-10   assigned to  : PCI/ISA PnP
IRQ-11   assigned to  : PCI/ISA PnP
IRQ-12   assigned to  : PCI/ISA PnP
IRQ-14   assigned to  : Legacy ISA
IRQ-15   assigned to  : Legacy ISA    Esc  : Quit       – ¯ ® ¬ : Select Item
DMA-0    assigned to  : PCI/ISA PnP   F1   : Help     PU/PD/+/-  : Modify
DMA-1    assigned to  : PCI/ISA PnP   F5   : Old Values  (Shift) F2  : Color
DMA-3    assigned to  : PCI/ISA PnP   F7   : Load Setup Defaults
DMA-5    assigned to  : PCI/ISA PnP
DMA-7    assigned to  : PCI/ISA PnP
```

Figure 4-11: P6F116 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."

Slot 1/2/3/4 Use IRQ No.: These fields let you select the PCI IDE IRQ mapping or PC AT (ISA) interrupts. If your system does not have one or two PCI IDE connectors on the system board, select values according to the type of IDE interface(s) installed in your system (PCI or ISA). Standard ISA interrupts for IDE channels are IRQ14 for primary and IRQ15 for secondary

Used MEM base addr: Select a base address for the memory area used by any peripheral that requires high memory. Options are:

- C800
- CC00
- D000
- D400
- D800
- DC00
- N/A (default)

Used MEM Length: Select a length for the memory area specified in the previous field. This field does not appear if no base address is specified. Options are:

- 8K
- 16K
- 32K
- 64K

Assign IRQ for USB: Names the interrupt request (IRQ) line assigned to the USB 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.

4.12. PnP/PCI Configuration (P6F116V)

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 (2A6LGF2D)
                       PNP/PCI CONFIGURATION
                        AWARD SOFTWARE, INC.

PNP OS Installed          : No          CPU to PCI Write Buffer    : Disabled
Resources Controlled by   : Manual
Reset Configuration Data  : Disabled    PCI Dynamic Bursting       : 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
IRQ-7    assigned to  : PCI/ISA PnP     AGP Master 1 WS Write      : Disabled
IRQ-9    assigned to  : PCI/ISA PnP     AGP Master 1 WS Read       : Disabled
IRQ-10   assigned to  : PCI/ISA PnP
IRQ-11   assigned to  : PCI/ISA PnP     Assign IRQ For USB         : Disabled
IRQ-12   assigned to  : PCI/ISA PnP     Assign IRQ For VGA         : Disabled
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 4-12: P6F116V 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.

4.13.Integrated Peripherals (P6F116)

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

```
            ROM PCI/ISA BIOS (2A69KF20)
               INTEGRATED PERIPHERALS
                AWARD SOFTWARE, INC.

IDE HDD Block Mode      : Disabled    UART Mode Select         : IrDA
                                      UART2 Duplex Mode        : Full
Primary Master     PIO  : Auto        RxD , TxD Active         : Hi,Hi
Primary Slave      PIO  : Auto        IR Transmission delay    : Disabled
Secondary Master   PIO  : Auto        Onboard Parallel Port    : 378/IRQ7
Secondary Slave    PIO  : Auto        Parallel Port Mode       : half
IDE Primary Master  UDMA : Auto       ECP Mode User DMA        : 3
IDE Primary Slave   UDMA : Auto       EPP Mode Select          : EPP1.9
IDE Secondary Master UDMA : Auto
IDE Secondary Slave  UDMA : Auto      POWER ON Function        :
On-Chip Primary   PCI IDE : Auto      KB Power ON Password     : Enter
On-Chip Secondary PCI IDE : Auto      Hot Key Power ON         : Ctrl-F12
USB Keyboard Support    : Disabled
KBC input clock         : 8 MHz       PWERON After PWR-Fail    : Off

Init Display First      : AGP         ┌──────────────────────────────────┐
                                      │ Esc : Quit    – ¯ ⊛ ¬: Select Item│
Onboard FDC Controller  : Disabled    │ F1  : Help   PU/PD/+/-  : Modify  │
                                      │ F5  : Old Values  (Shift) F2 : Color│
Onboard Serial Port 1   : Auto        │ F7  : Load Setup Defaults          │
Onboard Serial Port 2   :             └──────────────────────────────────┘
```

Figure 4-13: P6F116 integrated peripherals

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 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."

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

USB Keyboard Support: Enable this item if you are using a keyboard connected through the USB Port. The default setting is "Disabled."

KBC input clock: Enables you to set the KBC input clock. Options are:

- 6 MHz
- 8 MHz (default)
- 12 MHz
- 16 MHz

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 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.

UART2 Duplex Mode: 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.

RxD, TxD Active: Defines the voltage level for Infrared module RxD (receive) mode and TxD (transmit) mode. This setting has to match the requirements of the infrared module used in the system. The options are:

- Hi, Hi (default)
- Hi, Lo
- Lo, Hi
- Lo, Lo

IR Transmission Delay: When set to "Enabled", utilizes the capability of the mainboard to allow faster infrared transmission rates. The options are "Enabled" and "Disabled."

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).

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."

EPP Mode Select: Sets the EPP specification. There are two options—"EPP1.9" (default) and "EPP1.7."

Power On Function: When set to "Button Only" (default), the system power can be turned on by the power button. When set to "Password", system power can be turned on by entering password. You have to enter a password to activate this option.

> *Note: If "Password" is selected for this option, the power button will not be able to turn on the system. If you forget the password, then you need to clear CMOS RAM. Refer to* **Clear CMOS and Password** *on page 29 for details.*

When set to "Hot KEY", system power can be turned on by pressing a keyboard function key <Ctrl>+<F1> through <Ctrl>+<F12>.

PWERON After PWR-Fail: Set this item to "On" to enable your computer to automatically restart after a power failure. The default setting is "Off."

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.

4.14.Integrated Peripherals (P6F116V)

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

```
                    ROM PCI/ISA BIOS (2A6LGF2D)
                       INTEGRATED PERIPHERALS
                        AWARD SOFTWARE, INC.

OnChip IDE Channel 0   : Enabled     UART Mode Select        : IrDA
OnChip IDE Channel 1   : Enabled     UART2 Duplex Mode       : Full
IDE Prefetch Mode      : Enabled     RxD , TxD Active        : Hi,Hi
                                     IR Transmission delay   : Disabled
Primary Master    PIO  : Auto
Primary Slave     PIO  : Auto        Onboard Parallel Port   : 378/IRQ7
Secondary Master  PIO  : Auto        Parallel Port Mode      : half
Secondary Slave   PIO  : Auto        ECP Mode User DMA       : 3
Primary Master    UDMA : Auto        EPP Mode Select         : EPP1.9
Primary Slave     UDMA : Auto
Secondary MasterUDMA   : Auto        POWER ON Function       :
Secondary Slave  UDMA  : Auto        KB Power ON Password    : Enter
Init Display First     : PCI Slot    Hot Key Power ON        : Ctrl-F12

Onboard FDC Controller : Disabled    Esc  : Quit      – ‾ ◉ ¬ : Select Item
KBC input clock        : 8 MHz       F1   : Help    PU/PD/+/-  : Modify
Onboard Serial Port 1  : Auto        F5   : Old Values  (Shift) F2  : Color
Onboard Serial Port 2  :             F7   : Load Setup Defaults
```

Figure 4-14:   P6F116V 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 Primary/Secondary Master/Slave PIO: When set to "Auto" the BIOS will automatically set the mode to match the transfer rate of 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."

KBC input clock: Enables you to set the KBC input clock. Options are:

- 6 MHz
- 8 MHz (default)
- 12 MHz
- 16 MHz

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 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.

UART2 Duplex Mode: 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.

RxD, TxD Active: Defines the voltage level for Infrared module RxD (receive) mode and TxD (transmit) mode. This setting has to match the requirements of the infrared module used in the system. The options are:

- Hi, Hi (default)
- Hi, Lo
- Lo, Hi
- Lo, Lo

IR Transmission Delay: When set to "Enabled", utilizes the capability of the mainboard to allow faster infrared transmission rates. The options are "Enabled" and "Disabled."

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).

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."

EPP Mode Select: Sets the EPP specification. There are two options—"EPP1.9" (default) and "EPP1.7."

Power On Function: When set to "Button Only" (default), the system power can be turned on by the power button. When set to "Password", system power can be turned on by entering password. You have to enter a password to activate this option.

> *Note: If "Password" is selected for this option, the power button will not be able to turn on the system. If you forget the password, then you need to clear CMOS RAM. Refer to* **Clear CMOS and Password** *on page 29 for details.*

When set to "Hot KEY", system power can be turned on by pressing a keyboard function key <Ctrl>+<F1> through <Ctrl>+<F12>.

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.

4.15.   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 the <Enter> key 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 the JP12 to short pin 2 and pin 3 for 5 seconds, then putting the shunt back to pin1 and pin2 of JP12.*

4.16.   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 the <Y> key and then press the <Enter> key if you want to load the Setup defaults. Press <N> if you don't want to proceed.

4.17.   Save & Exit Setup

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

4.18.   Exit Without Saving

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

5. Driver and Utility

5.1. Flash Utility

The BIOS of the P6F116/ P6F116V 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 1M-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. PIIX Bus Master IDE Driver (P6F116)

The Bus Master EIDE logic designed in the Intel 82440BX chipset is intended to reduce the workload of the CPU and make the CPU run more efficiently by handling data transfer tasks between IDE drives and the system memory and letting the CPU handle other tasks. The driver must be loaded in order to enable the EIDE drive to operate in bus-mastering DMA or Ultra DMA33 mode.

There are three self-extracting archive files in the BMIDE directory:

- BMIDE_95.EXE   For Windows 95
- BMIDE_NT.EXE   For Windows NT
- BMIDEOS2.EXE   For OS/2

Execute the file corresponding to your operating system to extract files for the driver and a set of installation instructions.

5.3. ATA 66 Driver

This section describes installing the updated ATA 66 (HPT366) device driver for Microsoft Windows 95/98/NT. For more information about the drivers for Windows NT and Windows 95/98, please refer to the README.TXT on the driver disks.

5.3.1.   Installing the Driver for Windows 95/98

NOTE: The driver (HPT366.MPD) and installation file (HPT366.INF) must be located on the same directory of the installation floppy diskette.

When you plug the HPT366 Ultra DMA host adapter into your system and boot up a Windows 95/98 system, the system will be able to detect the HPT366 Ultra DMA host adapter automatically and ask you to install the driver for HPT366. Follow the instructions prompted by the system to install the driver.

If you want to install the driver manually, follow these steps:

1. Install Windows 95/98 if you haven't already done so.
2. Close any running applications.
3. Open "My Computer."
4. Double click the Control Panel icon.
5. Double click "Add New Hardware." The Add New Hardware wizard opens.
6. Click *Next*.

7. A screen appears promp ting you to allow Windows to search for your new hardware. Choose "No" then click *Next*.

8. A Window appears listing hardware types. Select "SCSI controllers" then click *Next*.

9. Put the installation diskette into drive A and then click *Have Disk*.

10. Click *OK*.

11. Click *Next*.

12. If a window appears showing the settings (resources) to be used by the driver, click *Next* again. At this point, the system will install the driver.

13. Click *Finish*. The system will prompt you to restart the system. If the settings reported in step 12 do not correspond to the host adapter, you must adjust the settings by using the device manager in the system Control Panel before restarting your computer.

Note: The driver for the ACPI function is useful only if your hardware supports this function.

Un-installing the Driver

Use the device manager in the system Control Panel to remove the driver.

5.3.2.   Installing the driver for Windows NT

Follow these instructions to install the HPT366 device driver in Windows NT:

1. Open My Computer

2. Open the Control Panel

3. Double click "SCSI Adapters", then click "Drivers."

4. Click *Add*.

5. Click *Have Disk*.

6. Insert the floppy diskette containing the HPT366 Windows NT 4.0 device driver into drive A. Type "A:\", then click *OK*.

7. Select "HPT366 Ultra DMA Controller." You will be prompted to enter the full path to the HPT366 Ultra DMA Controller files. Type "A:\" and then click *Continue*.

8. When prompted to restart your computer, click *Yes*.

5.4. VIA 4-in-1 Driver (P6F116V)

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.

5.5. System Environment Monitor

The System Environment Monitoring utility along with the onboard Winbond 83783S 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 Windows9x. However, the feature version may run on different operating systems, such as Windows NT.

5.5.1.   Hardware Doctor Setup

The Installation Steps:

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

Step 2: Install Hardware Doctor from the directory "Monitor\Setup.exe" on the CD-ROM to start the installation.
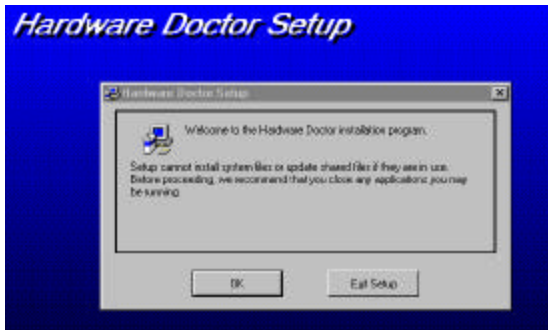

Step 3: Follow the instructions on the screen to complete the installation.   After setup is completed, you need to restart the computer before you can activate the program.

The "Hardware Doctor" option will be added to the "program" directory. Click on the "Hardware Doctor" icon to access the program.

5.5.2.   Setting the Threshold

Set the threshold for system temperature, voltages and fan speeds by moving the slide bars or by clicking the increase/decrease buttons.
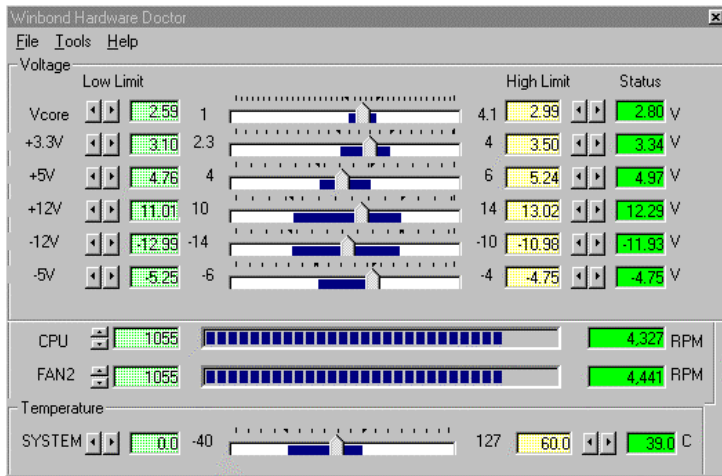
5.6. Creative Lab SB AudioPCI 64V (optional)

The compact disc that comes with your mainboard may have the Sound Blaster AudioPCI 64V utility, which is the driver for the optional onboard ES1373 audio chip. The driver supports Windows95/98/NT4.x operating systems. The drivers are located on the CD-ROM in the following locations:

| D:\Audio\English\NTdrvSB	AudioPCI 64V driver for Windows NT4.x
D:\Audio\English\win95drvSB	AudioPCI 64V driver for Windows95/98

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

Installing the SB AudioPCI 64V 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 "Install" and follow the instructions on the screen to finish the installation.

3. After the driver installation has been completed, Windows will prompt you to restart the system. As the system restarts, the new hardware will be detected by Windows.
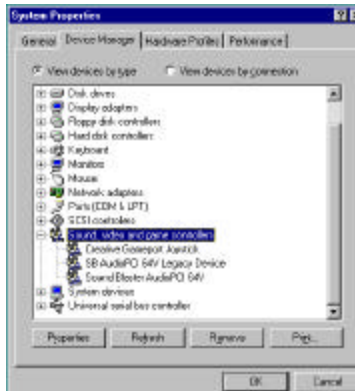
4. For the Windows NT4.x installation, double-click the mul-timedia icon which in the Control Panel and select "Add Audio Device." Follow the instructions on the screen to add the drivers. The Windows NT 4.x driver can be found in the \Audio\English\NTdrv directory of the CD.

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

Creative CD	CD audio tools
Creative MIDI	MIDI audio edit tools
Creative Remote	(not supported)
Creative Wave	WAV audio edit tools
SB Audio 64V Mixer	Audio Mixer
Sound LE	Line-in or Microphone recording

5.7. 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.)

5.8. Online Services

Flexus Computer Technology, under the FREETECH brand name, has consistently won recognition for excellence in the design and manufacturing of high quality - feature rich mainboards for the last eight years!

We aggressively push the edge of technology to encompass our products with the most reliability, superior innovation, and enhanced longevity. Our products are globally recognized as one of the leading cost-performance mainboards in the industry today and we are recognized as an 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 professional partnership service system. We create value for our partners in the high-end market and we are always ready to service 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