P6F99 Quick Reference

1. Jumpers

CPU Bus Clock	JP19	JP20	JP21
66MHz	2-3	1-2	1-2
75MHz	2-3	2-3	1-2
83MHz	2-3	1-2	2-3
95MHz	1-2	2-3	2-3
100MHz	2-3	2-3	2-3
112MHz	1-2	1-2	1-2
124MHz	1-2	2-3	1-2
133MHz	1-2	1-2	2-3

JP29: 1-2 CMOS Clearance
     2-3 Normal

JP4 : 1-2 Disable onboard audio
     2-3 Enable onboard audio

2. BIOS

1) Turn the system on, then press <**DEL>** key to access the AWARD BIOS SETUP program. A "**CMOS SETUP UTILITY**" will display on the screen. At "**CMOS SETUP UTILITY**" screen selects **"Chipset Features Setup"** and press **<Enter>**.

2) On the top right hand side of the **"Chipset Feature Setup"** screen, there is a **"Processor Core Frequency"** option. Refer to the table below and select the correct CPU speed

CPU SPEED	Bus Clock	Processor Core Frequency	JP19	JP20	JP21
233MHz	66.6MHz	x 3.5			
266MHz	66.6MHz	x 4.0			
300MHz	66.6MHz	x 4.5	2-3	1-2	1-2
333MHz	66.6MHz	x 5.0			
400MHz	100MHz	x 4.0			
450MHz	100MHz	x 4.5			
500MHz*	100MHz	x 5.0	2-3	2-3	2-3
600MHz*	100MHz	x 6.0			

Note: CPU with "*" mark is not available yet. Jumper setting is for reference only

3) After the **"Processor Core Frequency"** is set, Press **"F10"** to save the setting information in the CMOS memory and continue with the booting process.

4) You can press "Insert" key to clear CMOS Setup Value and setup again.

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Table Of Contents

1 Introduction

1.1 Overview

The P6F99 provides a high performance/cost Pentium II AGP mainboard. It can support the powerful Intel Pentium II processor operating at 233, 266, 300, 333, 350, 400, 450, 500MHz and Intel Celeron processor operating at 266, 300, 300A, 333, 366MHz. This mainboard is designed around the latest SiS 600/5595 chipset and optional 32-bit Creative ES1373+AC97 PCI sound chip in a ATX form factor.

The P6F99 mainboard delivers workstation level performance with its Pentium II FSB (front side bus) up to 100MHz, integrated AGP (Accelerated Graphics Port), Ultra DMA/33 IDE controller and its ability to accommodate variety memory like FPM (Fast Page Mode), EDO (Extended Data Out) and SDRAM (Synchronous DRAM) memory. The P6F99 can achieves the highest reliability by supporting the ECC (Error Checking and Correction) memory protection. This enables the P6F99 mainboard to achieve superior data integrity and fault-tolerance, in respect to memory errors while running applications.

The P6F99 mainboard offers outstanding I/O capabilities. It contains a full set of the I/O, such as dual channel PCI EIDE interfaces to support up to four EIDE devices., a floppy controller, two FIFOed serial port connector, an EPP/ECP capable bidirectional parallel port connector, an IrDA compatible infrared port, fully compliant to OHCI (Open Host Controller Interface) USB connector, and a PS/2 keyboard connector and mouse connector. One AGP slot, Four PCI local bus slots and three ISA bus slots provide expandability for add on peripheral cards.

The Assembly option Creative Lab ES1373 PCI sound provides 64 Voices Wavetable synthesizer, PCI Bus Master for fast DMA and 3D positional Audio. As a result, the produced music is more complete and closer to the actual sound. The ES1373 can interface to PCI bus and to AC97, an industry standard codec/mixer. This provides better overall performance for the system and audio quality and support Microsoft's DirectSound, DirectSound 3D and DirectMusic.

Note: PCI Slot4 doesn't support the Bus-mastering mode when onboard audio chip installed.

The P6F99 mainboard offers **optimized system performance,** i**ntegrated power management**, **Built-in TCAV program** and **SiS System Hardware Monitor(optional)**.

Optimized System Performance: AGP improves the Graphics performance dramatically, Ultra DMA/33 speeds up disk drive access, Enhanced SDRAM support for fastest access to memory, and Concurrent PCI enables simultaneous data transfer.

Integrated Power Management: ACPI (Advanced Configuration and Power Interface) support enables O/S and application programs to direct the system power management. The P6F99 support meet ACPI revision 1.0 specification.

Built-in TCAV program: The TCAV (Trend Chipaway Virus) program is a unique, specially designed solution stops boot viruses from infecting the boot sector or partition table during the "threat" period that exists before the boot sector loads and traditional anti-virus protection takes effect. Trend ChipAway Virus resides in the BIOS to prevent boot viruses from causing any damage to computers.

SiS System Hardware Monitor: The Data Acquisition interface offers P6F99 the ability of monitoring and reporting the environmental condition of your PC such as +5V, -5V, +3.3V, CPU Core voltage level, cooling fan speed and system temperature. This is an optional feature

In addition to superior hardware capabilities, features like Wake On LAN (WOL), RTC Alarm wake up, Keyboard Hot-key/password power up, Sleeping state indicator, fan off in sleeping state (requires Fan with tachometer output) and BIOS upgradability are provided on the P6F99 platform.

1.2 P6F99 Specifications/Features

1.2.1 Hardware

CPU	Supports Intel Pentium II 233, 266, 300 and 333MHz Supports Intel Pentium II 450, 500,550,600MHz Supports Intel Celeron 300A, 333, 366,400,433 and 466MHz
Clock Speed	System bus clock 66/75/83/95//100 MHz AGP clock 63/66/75/ MHz PCI bus clock 32/33/37 MHz ISA bus clock 8.33~ 9.25MHz
Chipset	SiS 600/5595 chipset Creative ES1373 Audio chip (Assembly option) AC97 Codec controller (Assembly option) ITE 8661F I/O chip
L2 Cache	CPU built-in 512KB for Pentium II none or less cache (128KB) for Celeron.
DRAM	3 x 168-pin DIMM sockets Supports 4MB to 768MB memory Supports 3.3V FPM, EDO and 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 DMA/33 drives
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
Mouse/Keyboard	PS/2 Mouse/Keyboard connector
Expansion Slots	One AGP Slot Four 32-bit PCI slots Three 16-bit ISA slots (one PCI/ISA shared slot)

Note: PCI Slot4 doesn't supports the Bus-mastering mode when onboard audio chip installed.

Power Management	Compliant with EPA, APM 1.2 and ACPI 1.0
	ATX soft-off power control
	Power - On by External Modem Ring
	Power - On by RTC Alarm
	Power - On by Wake On LAN (WOL)
	Sleep state indicator
	Fan off in sleep mode
PC health monitor	SiS 5595 System Hardware Monitor
Voltage Regulator	Switching regulator
	VID for CPU voltage auto-detection
Form Factor	ATX Form Factor, 30.5cmx19cm (12.0"x7.5")

1.2.2 Software

BIOS	Built-in Trend Chipaway Virus(TCAV)
	AWARD Pentium II AGP/PCI BIOS
	2M-bit Flash BIOS with ESCD block
	Supports APM 1.2, DMI2.0, ACPI 1.0
	Supports High-Capacity LS-120 and ZIP
	Removable Media Drive
	Support Multi-boot function
Driver	IDE Bus mastering Ultra DMA driver
Utility	Flash utility for BIOS upgrade
O.S.	Operates with MS_DOS 6.x, Windows 3.1x, Windows95/98, Windows NT, OS/2 Warp 4.x, Novell Netware/UnixWare and SCO Unix 5.x

1.2.3 Environment

Ambient Temperature	0^0C to 50^0C (Operating)
Relative Humidity	0 to 85% (Operating)
Vibration	0 to 500 Hz
DC Voltage	4.9V to 5.2V
DC Voltage	1.80V to 3.50V
DC Voltage	-5V, +12V, -12V, +5V$_{SB}$ 5% tolerance.

1.3 P6F99 Mainboard Layout
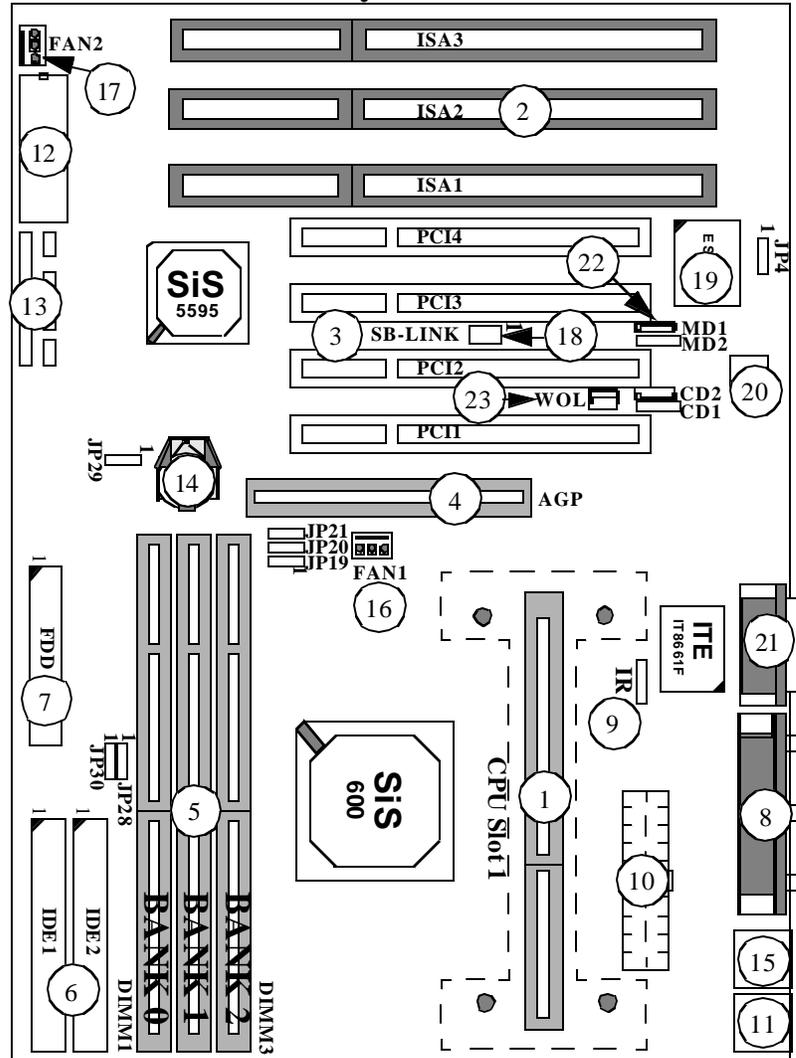
1. CPU Slot1	9. IR Port Header	17. Secondary FAN Connector
2. ISA Expansion Slots	10. ATX Power Connector	18. Creative Lab SB-Link
3. PCI Expansion Slots	11. PS/2 Keyboard/Mouse(TOP) Connector	19. ES1373 Audio Chip(optional)
4. AGP Slot	12. Flash BIOS	20. AC97 Codec Controller(optional)
5. DIMM Module Sockets	13. Front panel Connectors	21. GAME/Audio port.(optional)
6. IDE Connectors	14. Battery (CR2032 Lithium)	22. Voice Modem speaker connector
7. Floppy Drive Connector	15. Dual USB Connector	23. Wake On Lan (WOL) header
8. Parallel Port (TOP)/Serial Port Connector	16. CPU FAN Connector	

Note: PCI Slot4 doesn't supports the Bus-mastering mode when onboard audio chip installed.

1.4 Microprocessor

The P6F99 mainboard is designed to operate with the Intel Pentium II processor that runs at 233, 266, 300, 333, 350, 400, 450 and 500 MHz and Intel Celeron at 266, 300, 300A, 333, 366, 400, 433 and 466 MHz. On board switching voltage regulator provides the required 1.8 to 3.5 volts for the processor. The Pentium II or Celeron processor will send 5 VID (Voltage Identification) signals to the switching voltage regulator, and the switching regulator will generate the correct voltage for the processor.

The Pentium II or Celeron processor implements MMX technology and maintains full backward compatibility with the 486 and Pentium processors. The processor's numeric coprocessor significantly increases the speed of floating-point operations.

1.5 Pentium II Packaging

The Pentium II is packaged in an S.E.C. (Single-edge Contact) cartridge/SECC2. The S.E.C. cartridge/SECC2 includes the processor core, the second-level cache, a thermal plate, and a back cover. The Pentium II processor connects to the P6F99 mainboard through the Slot 1 processor connector, a 242-pin 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.

1.6 Celeron Packaging

The Celeron is packaged in an S.E.P.P. (Single Edge Processor Package), which is similar to the Single Edge Contact (SEC) cartridge form factor that the Pentium II processor uses, and maintains compatibility with Slot 1. This packaging technology features a P6-microarchitecture-based core processor on a single-sided substrate without BSRAM componentry. It does not have a thermal plate or cover. The 0.25 micron manufacturing process, which reduces processor heat, enables the Intel Celeron processor to use a smaller heat sink. Also, the Intel Celeron processor uses newer Retention Mechanisms that are designed to fit the SEPP form factor.

1.7 Chipset

The SiS 600/5595 AGPset consists of one 600 PCI/AGP Controller, and one 5595 PCI system I/O.

600 PCI/AGP Controller:
- CPU/AGP interface controller
- Integrated DRAM controller
- 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

5595 PCI system I/O:
- Integrated PCI-to-ISA Bridge
- Power Management Logic
- USB Host controller
- EIDE controller
- Enhanced DMA functions
- Integrated two 8259A IRQ Controllers
- Integrated Keyboard Controller
- support I^2C Serial Bus
- Integrated Real-Time clock
- System Hardware Monitor controller

1.8 Main Memory

The P6F99 mainboard provides three 3.3volt 168-pin DIMM sockets, it supports up to 768MB of DRAM and each bank could be single or double sided 64-bit or 72-bit (64-bit memory data plus 8-bit ECC) FPM/EDO/SDRAM. The P6F99 permit up to six rows (3 double banks) of DRAM. The sockets support 512K x 64(4M), 1M x 64 (8MB), 2M x 64 (16MB), 4M x 64 (32MB), 8M x 64 (64MB), 16Mx64 (128MB) and 32Mx64(256MB) DIMM in single or double-sided modules.

Memory Timing requires 60ns or faster for FPM/EDO, and 66.6 or 100MHz (depends on CPU speed) speed grade for SDRAMs. Each DIMM belongs to different banks, each bank can have different size and type of memory. SDRAM and EDO DIMMs can be mixed within the memory array. There are no jumper settings required for the memory size and type, which are automatically detected by the BIOS.

1.9 Accelerated Graphics Port (AGP) Slot

The P6F99 mainboard is equipped with an Accelerated Graphic Port which is compliant to the AGP specification 1.0. The AGP runs at 66.6MHz clock and supports both 1x and 2x mode for 66.6MHz and 133MHz 3.3V devices. The data transfer rate on the AGP bus can be 4 times faster than PCI bus.

The following is a clock frequency for different system clock operating modes:

System Clock	AGP Clock	PCI Clock	ISA Clock
66MHz	66MHz	33MHz	8.3MHz
75MHz	75MHz	37.5MHz	9.4MHz
83MHz	66MHz	33MHz	8.3MHz
95MHz	63.5MHz	31.8MHz	7.8MHz
100MHz	66MHz	33MHz	8.3MHz
112MHz	75MHz	37.5MHz	9.4MHz
124MHz	83MHz	41MHz	10MHz
133MHz	88MHz	44MHz	11MHz

Note: The shaded area is over SiS 600 chipset designed speed which may caused system unstable.

1.10 Enhanced IDE Support

The P6F99 mainboard provides two EIDE interfaces capable of supporting four devices with PIO mode 0 ~ 4, bus-mastering DMA mode 2, and bus-mastering Ultra DMA/33 ATAPI devices. Detection of IDE device type and transfer rate is automatically performed by the BIOS. The traditional IDE device requires a substantial amount of CPU bandwidth to handle all the activities of IDE access. The Bus Master logic designed in the SiS 600/5595 chipset is intended to reduce the workload of the CPU, hence increasing CPU efficiency. The Bus Master takes care of the data transfer between IDE and memory, and lets the CPU handle other tasks. In true multi-tasking operating systems such as Windows 95/98, Windows NT, and OS/2, by using bus-mastering IDE, the CPU workload can be reduced to complete other tasks while disk data transfers are occurring.

The following is a data transfer rate comparison for different IDE operating modes
:

Operating Mode	Maximum Data Transfer Rate
PIO Mode 3	11.1 MB/Second
PIO Mode 4	16.6 MB/Second
DMA Mode 1	13.3 MB/Second
DMA Mode 2	16.6 MB/Second
Ultra DMA/33	33.2MB/Second

1.11 Keyboard, Mouse and USB Interface

PS/2 keyboard, PS/2 mouse, and USB connectors are located on the back panel of the P6F99 mainboard. The 5V line to the PS/2 Keyboard and PS/2 Mouse connectors are protected with a 3Amp +125V surface mounted fuse.

The built-in USB connector which is fully compliant to OHCI (Open Host Controller Interface), provides two USB ports capable of running full/low speed USB device. The USB is a serial bus interface standard that is designed to bring the "Plug and Play" concept to the outside of the computer system chasis. The bus allows devices to be attached, configured, used and detached while the host system is in operation.

The USB will allow as many as 63 devices to be daisy chained in any combination per port. With up to 12Mbits/sec transfer rate, the USB is suitable for devices such as keyboard, mouse, digital joystick, game pad, fax/modem, scanner, printer, ISDN and Digicam device.

1.12 Real-time Clock, CMOS RAM and Battery

The integrated real-time clock (RTC) provides a time of day clock, and an 85-year calendar with alarm features. P6F99 also has 242 bytes battery backed CMOS RAM which stores the system setup information and password. The RTC and CMOS RAM can be set via the BIOS SETUP program. The contents of the CMOS RAM can be cleared by placing a shunt to short pin1 and pin2 of JP29 for 5 seconds when the system power is off. A coin-cell style Lithium CR2032 battery is used to provide power to the RTC and CMOS memory. The battery has a three year life if the system is not powered up. When the system powers up, the power for the RTC and CMOS RAM is supplied from the 5 V power supply to extend the life of the battery.

1.13 IrDA Infrared Support

A 5-pin header connector is used to connect a Hewlett Packard HSDSL-1000 compatible IrDA or Sharp ASKIR Infrared module. Once the module is installed, the user can use application software such as Microsoft Infrared (MSIR) to transfer files between the computer system and portable devices such as laptops and printers.

1.14 Power Management

The integrated DPMA (Dynamic Power Management Architecture) features in the SiS 600/5595 AGPset go far beyond the original vision of the "Green PC" to create exciting new application models for the "OnNow" PC platform. The "OnNow" PC is a PC which is always on and ready for use but appears to be off when not in use. The P6F99 not only complies with EPA, APM1.2 and ACPI (Advanced Configuration and Power Interface) 1.0, but also provides the following power management features.

- *Power-on by an external modem ring in or a watchdog timer (Alarm)*
  System could be powered on by phone ring, or by software that has requested the PC to wake up at a preset time.(required ATX power supply)

- *Suspend mode indicator*
  The power LED becomes dim when system is in suspend mode.

- Fan off in suspend mode

The CPU cooling fan will be turned off when the system is in suspend mode. (required cooling FAN cable connect to motherboard FAN connector).

1.15 System Power On/Off Control

System power can be turned on by a power button, an external modem ring, an RTC alarm, or a PS/2 Keyboard. To enable the modem ring on feature, the option "Resume by Ring" in the BIOS Power Management Setup has to be set to "Enabled". To enable the RTC alarm on feature, the option "Resume by Alarm" in the BIOS Power Management Setup has to be set to "Enabled". To enable the "Power - On by PS/2 Keyboard" feature, the feature "KB Power ON Password" in the BIOS Power Management Setup has to be set to "Enabled".

System power can be turned off in one of two ways: a front panel power button or soft-off control. When the option "Soft-Off by PWR-BTTN" in the BIOS Power Management Setup is set to "Instant-Off", pressing the power button will immediately turn off the system power. But if the "Soft-Off by PWR-BTTN" option is 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. The system power can also be turned off via software control. The system BIOS will turn the system power off when it receives the proper APM command from the Operating System. For example, Windows 95/98 will issue Soft Off APM command when the user selects "Shutdown" in Start Menu. In order for the Soft Off feature to work properly, Power Management/APM must be enabled in the system BIOS and Operating System.

1.16 System Sleep / Resume

When Advanced Power Management (APM) is activated in the system BIOS and the Operating System's APM/ACPI driver is loaded, Sleep mode (Suspend) can be entered in one of three ways: press the front panel power button, select "Suspend" in Windows 95/98 Start Menu or no system activity for a pre-defined length of time. To use the power button to control system sleep/resume, the option "Soft-Off by PWR-BTTN" in the BIOS Power Management Setup has to be

set to "Delay 4 Sec."

When the system enters the sleep mode, the CPU stops running, the SiS 600/5595 AGPset and related circuits stay in the lowest power state, the HDD stops spinning, the monitor screen becomes blank, the power LED indicator on the front panel dims, and the CPU cooling fan and secondary fan are turned off (Note: in order to turn off the fan in sleep mode, you need to connect the CPU cooling fan or Chassis fan to the on-board fan power connectors marked FAN1 or FAN2).

1.17 Wake On LAN (WOL)

Wake on LAN (WOL) is a 1x3 pin header for remote wake up of the computer through a network. Wake on LAN requires an PCI add-in network interface card (NIC) with remote wake up capabilities. The remote wake up header on the NIC must be connected to the onboard Wake on LAN header. The NIC monitors network traffic at the MII interface and when it detects a Magic Packet (MP Wake-up) it asserts a wake up signal that powers up the computer.

Note:
For WOL (Wake on LAN), the 5Vsb (5V standby) line of the ATX power supply must be capable of delivering 5V with 5% tolerance at 720mA or higher.

1.18 System Monitoring

The SiS 5595 with software, allows user to monitor system environment such as system and CPU fan speed (requires fan with tachometer output), CPU warning temperature, system temperature and system operating voltages. This function is an optional feature.

2 Hardware Installation

☀ Static Electricity Precautions

Before removing the Mainboard from its anti-static bag, you need to eliminate any static electricity that may be accumulated on your body. The charge that can build up in your body may be more than enough to damage integrated circuits on the system board. Therefore, it is important to observe basic precautions whenever you handle or use computer components. Although areas with humid climate are much less prone to static build-up, it is best to always safeguard against accidental damage that may lead to costly repairs. The following measures should be sufficient to protect your equipment from static discharge:

● After removing the system cover, discharge any static electricity that might have accumulated in your body by touching a grounded or anti-static surface (e.g. anti-static pads or using a grounding wrist strap). If nothing is available, touch the power supply housing. This assumes the system unit is plugged into the AC outlet. Be certain to do this before removing components from their anti-static coverings.

● When handling separate cards, boards or modules, be cautious to avoid contacting with the components on them, and also with the "gold finger" connectors that plug into the expansion slot. It is best to handle them either by their edges or by mounting brackets that attach to the slot opening in the system cases. However, the above recommendation are just intended to avoid the static discharge problem.

● Make certain that everything connects to the system case, including the power supply, is unplugged before doing the installation work.

2.1 Unpacking

The P6F99 mainboard package contains the following:

- ☑ P6F99 mainboard
- ☑ One IDE 40-pin ribbon cable
- ☑ One floppy 34-pin ribbon cable
- ☑ Driver and Utility Compact Disk or diskettes
- ☑ User's manual
- ☑ CPU retention mechanism

2.2 Installation

The P6F99 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 CPU, DIMM memory modules and attach the connectors.

P6F99 Mainboard Connector/Jumper Location

FAN2

ISA3

ISA2

Onboard Audio Chip Selection

ISA1

PCI4

ES1371

JP4

PCI3

Creative Lab SB-Link Connector SB-LINK

MD1
MD2 **Voice Modem Connector**

PCI2

Front Panel Connector

Wake On LAN Connector WOL

CD2
CD1
CD Audio Connector

PCI1

JP29

CMOS RAM Clearance

AGP

**JP21
JP20
JP19 FAN1**

System Clock Selection

IR

FDD Connector

**JP30
JP28**

Memory Address Selection

CPU Slot 1

ATX Power Connector

Game/MIDI Port(TOP) Parallel Port(TOP)

MIC IN OUT

COM2 COM1

USB PS/2 PS/2 Mouse (TOP) PS/2 Keyboard

IDE1 Connector | **IDE2 Connector**

BANK 0 BANK 1 BANK 2

DIMM1 DIMM3

FDD LED SPD LED RESET PWR SW
SPEAKER
KEYLOCK&POWER LED

2.2.1 Attaching Connectors

1. Front Panel Connectors

There are 6 connectors on the mainboard for speaker, switches and indicator lights on the system's front panel.
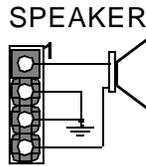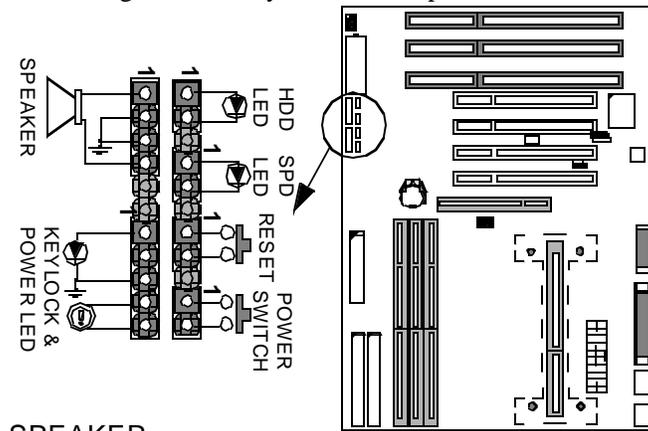
SPEAKER

Pin Assignment
1. Speaker out
2. Ground
3. Ground
4. +5V

This 4-pin connector connects to the case-mounted speaker.

KEYLOCK & Power LED
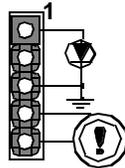
Pin Assignment
1. LED Cathode
2. N. C.
3. LED Anode (Ground)
4. KEYLOCK
5. Ground

This 5-pin connector connects to the case-mounted keylock switch and the power LED. The keylock switch is used to lock the keyboard for security purposes.

HDD LED Connector

Pin Assignment
1. LED Anode
2. LED Cathode

This 2-pin connector connects to the case-mounted HDD LED to indicate hard disk activity.

SPD LED Connector

Pin Assignment
1. LED Cathode
2. LED Anode (Ground)

This 2-pin connector connects to the case-mounted STANDBY LED to indicate a standby status.

Reset Connector
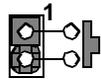
Pin Assignment
1. Power Good
2. Ground

This 2-pin connector connects to the case-mounted reset switch and is used to reboot the system.

Power Switch Connector

Pin Assignment
1. Power On/Off
2. Ground

This 2-pin connector connects to the case-mounted Power button.

The front panel on your case may have a turbo switch to deactivate the Turbo mode when a slower speed is required for a specific application. The SiS 600/5595 chipset does not support the hardware deturbo function. An alternative method of using <CTRL><ALT><+/-> keys to change the speed may be used if necessary.

2. Fan Connectors

1
2
3

There are two fan connectors on
the P6F99 mainboard for the
cooling fans. The connectors
support fans of 12V DC/
500mAMP (6 WATT) or less.
When the system goes into
sleep state, fan should be shut
down to eliminate audible noise
and reduce power consumption.
You can monitor the fan speed
by way of SiS 5595 built-in
monitor and the fan must come
with a tachometer output.

FAN2

FAN1
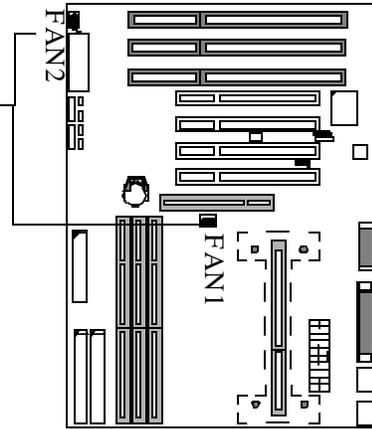
Pin Assignment
1. GND
2. +12V
3. SPEED / RPM

3. IrDA-compliant IR (Infrared) Connector

Pin Assignment
1. +5V
2. IRM_IRR
3. IR Receiver
4. Ground
5. IR Transmitter

IrDA
Module

1
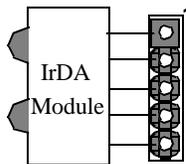
This 5-pin connector connects to an
optional wireless transmitting and
receiving infrared module via a cable
and a bracket.

IR
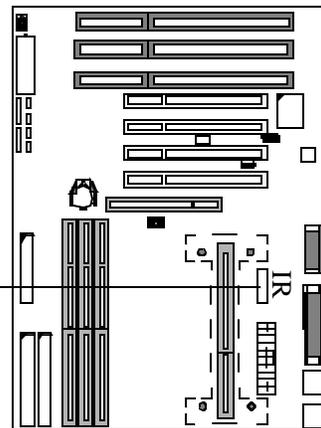
4. Floppy Drive Connector (One 34-pin Block)

A floppy disk drive ribbon cable has 34 wires
and 2 connectors to support 2 floppy disk
drives. The connector with twisted wires
always connects to drive A, and 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 is at the pin 1 of the
I/O port connector.
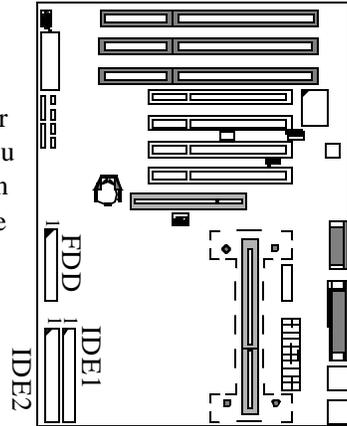
5. IDE Connectors (Two 40-pin Block)

An IDE drive ribbon cable has 40 wires 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.
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 is at the pin 1 of the I/O port con-
nector.

6. Back Panel Connectors

The back panel provides external access to PS/2 keyboard/mouse
connectors, two serial port connectors, one parallel port connector, dual
USB port connectors, game/MIDI port connector and microphone/Line-
in/Line-out connectors which are integrated on the mainboard.

REAR VIEW

---
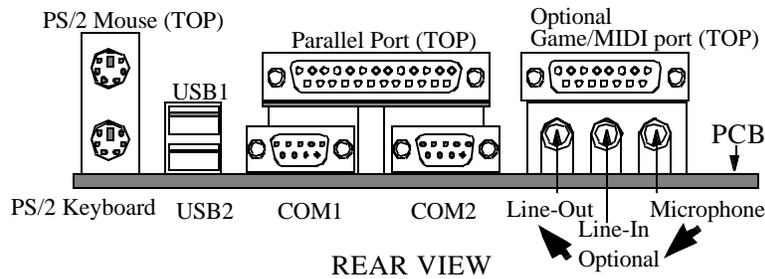
7. Power Supply Connector

+3.3V			+3.3V
+3.3V			-12V
Ground			Ground
+5V			Power ON/OFF
Ground			Ground
+5V			Ground
Ground			Ground
Power Good			-5V
+5VSB			+5V
+12V			+5V
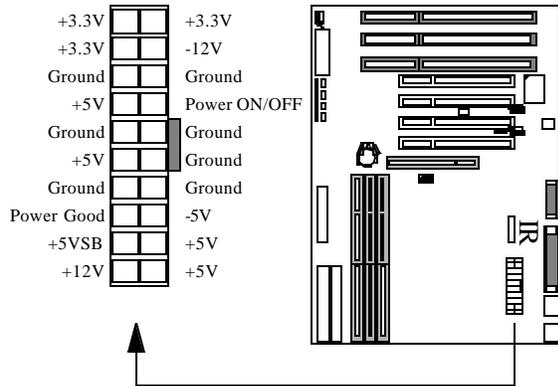
The ATX power supply has a single lead connector with a clip on one side of the plastic housing. There is only one way to plug the lead into the ATX power connector. Press the lead connector down until the clip snaps into place and secures the lead onto the connector

💣 *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.*

8. Wake on LAN Connector:
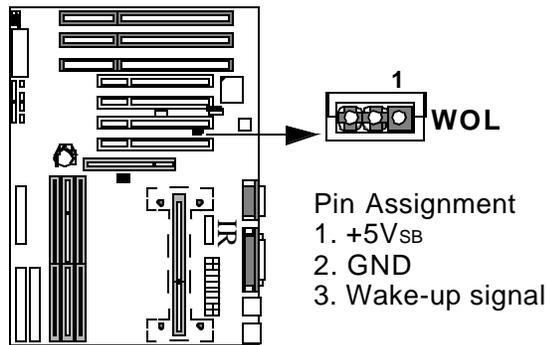
This 3-pin header is used for remote wake up of the computer through a network card with WOL function.

1

WOL

Pin Assignment
1. +5V$_{SB}$
2. GND
3. Wake-up signal

9. Creative Lab SB (Sideband)-Link Connector:
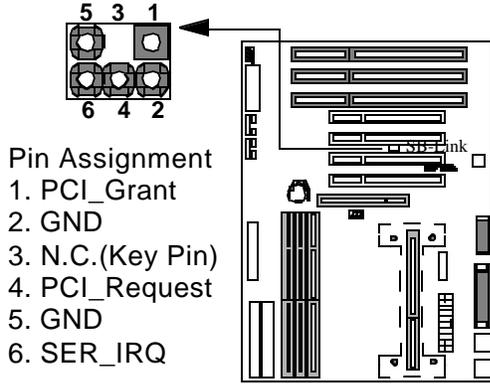
This 2x3 ways, straight-3 header is used for Creative Lab PCI sound card (Ex. AWE64D PCI Audio Wave Table Card). In order to migrate the legacy Sound Blaster compatible audio to the PCI bus, the following signals have to be delivered to the PCI audio card through a flat cable.

Pin Assignment
1. PCI_Grant
2. GND
3. N.C.(Key Pin)
4. PCI_Request
5. GND
6. SER_IRQ

10. CD-ROM Audio Input Connector:

CD2 Pin Assignment
1. L_Input
2. GND
3. R_Input
4. GND

CD1 Pin Assignment
1. L_Input
2. GND
3. GND
4. R_Input
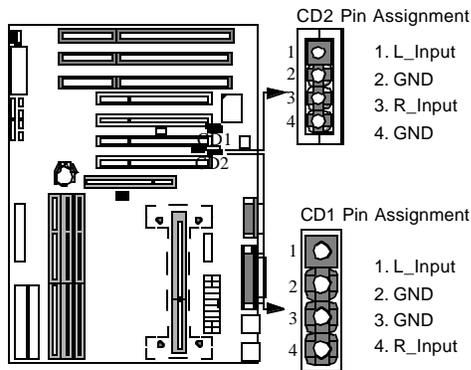
This 1x4 header is used for CD-ROM Audio input signal. The pin out and connect type are different between CD1 and CD2. CD1 is JST type connector which is for MITSUMI/PANASONIC CD-ROM. CD2 is MPC2 type connector which is for SONY/ ATAPI CD-ROM.

11. Modem Connector:

MD1 Pin Assignment
1. GND
2. PHN
3. GND
4. MIC

MD2 Pin Assignment
1. MIC
2. GND
3. GND
4. PHN
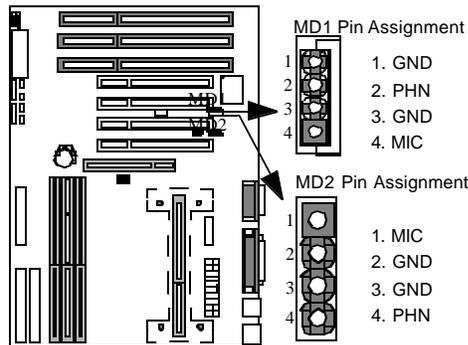
This 1x4 header is used for Voice Modem's internal connector. This allows modem's voice can be direct to the onboard sound chip and amplified by speaker.The pin out and connect type are different between MD1 and MD2. MD1 is a JST type connector and MD2 is a MPC2 type connector.

2.2.2 Installing CPU

Before You Begin
1. Be sure that your Intel processor kit includes the following items:
   · the processor with the fan or heatsink attached
   · one heatsink support set containing two black plastic pegs and
     two black plastic supports.
   · one power cable (for CPU with cooling fan attached only)

2. Place the motherboard on a workbench (not in a chassis). Be sure
   that the motherboard is bare (that is, no DIMMs, cables, or cards
   are installed) and that the holes for the fan or heatsink support pegs
   are empty.

3. Install the retention mechanism onto the motherboard by following
   the manufacturer's instructions. (Shown installed in the following
   figure.)

Installing the Boxed Processor

1. Mount the two black plastic pegs onto the motherboard. These pegs
   will be used to attach the fan or heatsink supports. Notice that one
   hole and the base of one peg are larger than the other hole and peg
   base. Push each peg into its hole firmly until you hear it "click" into
   place.
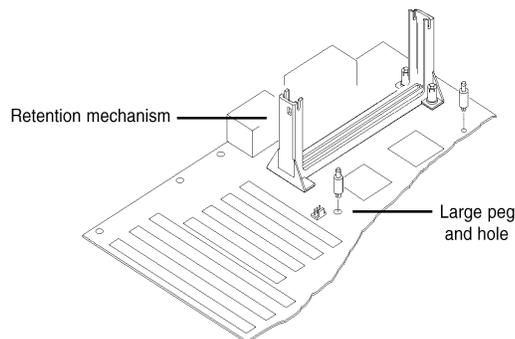
2. Slide a black plastic support onto each end of the fan or heatsink,
   making sure that the hole and clip are on the outside edge of the sup-
   port. (If supports are reversed, the holes will not line up with the pegs
   on the motherboard.) Slide each support toward the center of the pro-
   cessor until the support is seated in the outside groove of the fan
   housing.

Top of processor

Hole and clip
on outside edge

Groove in fan housing
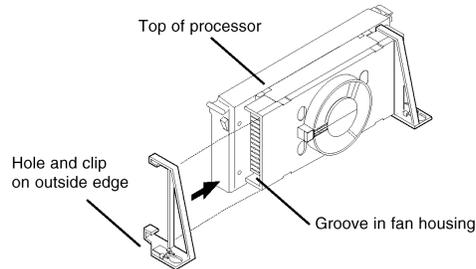
3. Slide the clip (A) on each support toward the processor, exposing the hole that will fit over the peg on the motherboard. Push the latches (B) on the processor toward the center of the processor until they click into place. (Refer to the figure below.)

4. Hold the processor so that the fan shroud is facing toward the pegs on the motherboard. Slide the processor (C) into the retention mecha-nism and slide the supports onto the pegs. Ensure that the pegs on the motherboard slide into the holes in the heatsink support and that the alignment notch in the processor fits over the plug in Slot 1. Push the processor down firmly, with even pressure on both sides of the top, until it is seated.

B

C

A
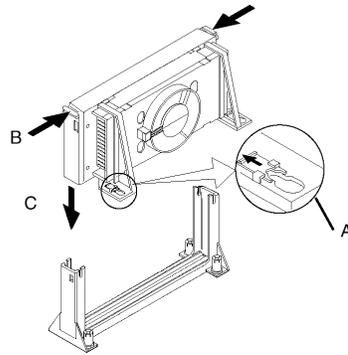
5. Slide the clips on the supports (D) forward until they click into places to hold the pegs securely. (Apply slight pressure on the peg and push the peg toward the clip while pushing the clip forward.) Push the latches on the processor (E) outward until they click into place in the retention mechanism. The latches must be secured for proper electri-cal connection of the processor.

6. Attach the small end of the power cable (F) to the three-pin connector on the processor, then attach the large end to the three-pin connector on the motherboard, which is marked FAN1.
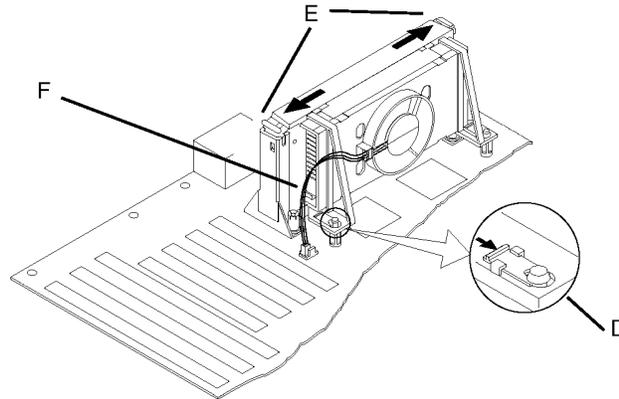
Installing the Celeron (S.E.P Processor)

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

SEPP with Heatsink Attached

Slot 1 Connector

Retention Mechanism
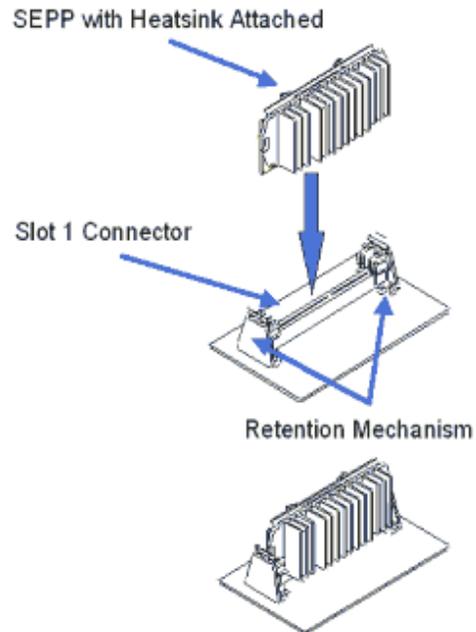
2.2.3 Removing the Processor

First, remove the motherboard from the chassis. To remove the processor from the motherboard, follow these steps (the reverse of the installation procedure).

1. Disconnect the fan power cable from the motherboard. (We recommend that you leave the cable connected to the processor.)

2. Slide the clips on the supports backward to release the pegs in the motherboard. Push the latches on the processor toward the center of the processor until they click into place.

3. Lift one end of the processor until it is freed from Slot 1. Lift the other end of the processor until it is freed from Slot 1. Lift the entire processor (with the fan or heatsink supports attached) until it is free from the retention mechanism.

4. Remove the heatsink support pegs from the motherboard and discard them. With one hand, squeeze together the two halves of the peg on the bottom side of the motherboard. With the other hand, pull the peg out of the hole in the motherboard. Do not reuse the pegs.

💣 When handling the processor, avoid placing direct pressure on the label area of the fan.

💣 When removing the processor, avoid pressing down on the motherboard or components. Instead, press down on plastic connectors.

2.2.4 Installing System Memory

The maximum system memory supported by the P6F99 is 768MB. If more than 768MB memory are populated on the P6F99 mainboard, the portion of the memory which exceed the 768MB boundary will be invalidated.

The P6F99 Mainboard has three DIMM Sockets. Memory can be installed by using 3.3V 168-pin SDRAM DIMM or EDO DIMM or FPM DIMM memory modules. There are no jumper settings required for the memory size or type, which is automatically detected by the BIOS. Due to the P6F99 Mainboard high speed design, the memory modules for the P6F99 must meet all of the following requirement:
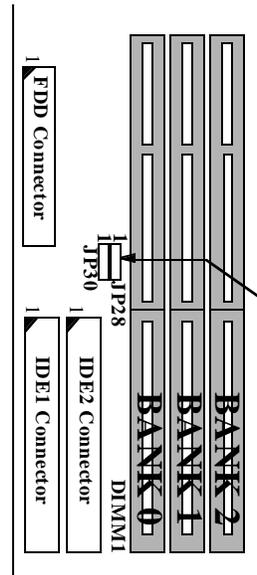
DRAM TYPE	FPM/EDO	SDRAM (Synchronous DRAM)
Module Size	Single-Sided Symmetric: 1Mx64, 4Mx64, 16Mx64 Asymmetric: 1Mx64, 2Mx64, 4Mx64, 8Mx64 Double-Sided Symmetric: 2Mx64, 8Mx64 Asymmetric: 2Mx64, 4Mx64, 8Mx64, 16Mx64, 32Mx64	Single-sided Asymmetric: 1Mx64, 2Mx64, 4Mx64, 8Mx64, 16Mx64, Double-Sided Asymmetric: 2Mx64, 4Mx64, 8Mx64, 16Mx64, 32Mx64
Requirements	DRAM Speed: 60ns or faster RAS Access Time: 60ns or faster CAS Access Time: 20ns or faster	**3.3V unbuffered DIMM module** Speed grade: Have to match the CPU Bus clock speed (66MHz or 100MHz) or faster. CAS latency: 3 or faster

Install 168-pin DIMM modules in any combination as follows:

168-Pin DIMM Modules Memory Configuration.

BANK 0 (DIMM1)	SDRAM/EDO 8MB, 16MB, 32MB, 64MB, 128MB, 256MB
BANK 1 (DIMM2)	SDRAM/EDO 8MB, 16MB, 32MB, 64MB, 128MB, 256MB
BANK 2 (DIMM3)	SDRAM/EDO 8MB, 16MB, 32MB, 64MB, 128MB, 256MB
Total System Memory	8MB to Max. 768MB

Note: The maximum memory size support by the SiS 600/5595 is 1.5GB. You need to install the 128M-bit memory chip in order to support 1.5GB. The memory chip technology is only up to 64M-bit so far, the 128M-bit memory chip is not available in the market yet. There are two jumper (JP28, JP30) need to be changed in order to support 128M-bit memory.

16M-bit/64M-bit memory chip	128M-bit memory chip
JP28: 2-3 (default) JP30: 2-3 (default)	JP28: 1-2 JP30: 1-2
Max. Memory=768MB	Max. Memory=1.5GB

2.2.5 Clear CMOS and Password

If your system can not boot up because you forget your password, or the CMOS settings need to be reset to default values after the system BIOS has been updated, the following instructions can be performed to clear the CMOS and password.

1. Power off the system
2. Place a shunt to short pin1 and pin2 of JP29 for 5 seconds
3. Put the shunt back to pin2 and pin3 of JP29
4. Power on the system

2.2.6 Intel Pentium II CPU Setting

User need to set the "CPU Bus Clock" and "CPU core to Bus clock multiplier" according to installed CPU.

CPU Bus Clock: The CPU Bus Clock is defined as the CPU input clock. For example; the CPU Bus Clock for Intel Pentium II 350, 400, 450 and 500MHz is 100MHz and 66.6MHz for Intel Pentium II 233, 266, 300 and 333MHz.

CPU Bus Clock	JP19	JP20	JP21
66MHz	2-3	1-2	1-2
75MHz	2-3	2-3	1-2
83MHz	2-3	1-2	2-3
95MHz	1-2	2-3	2-3
100MHz	2-3	2-3	2-3
112MHz	1-2	1-2	1-2
124MHz	1-2	2-3	1-2
133MHz	1-2	1-2	2-3

NOTE: Shaded area over the SiS 600/5595 chipset's design speed (100MHz). Over clock may cause system intermittent lock up or fail to boot-up (no video).

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 100MHz and the CPU Core to Bus clock Multiplier is 3.5, the actual CPU core clock will be 350MHz.

Follows these steps to setup CPU speed.

1) Turn the system on, then press **<DEL>** key to access the AWARD BIOS SETUP program. A "**CMOS SETUP UTILITY**" will display on the screen. At "**CMOS SETUP UTILITY**" screen selects **"Chipset Features Setup"** and press **<Enter>**.

```
                ROM PCI/ISA BIOS (2A6ILF2A)
                    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

                             PASSWORD SETTING


  Esc: Quit                  ↑↓ → ←        : Select Item
  F10: Save & Exit Setup     <Shift>F2     : Change Color
```

2) On the top right hand side of the **"Chipset Feature Setup"** screen, there is a **"Processor Core Frequency"** option. Refer to the table below and select the correct CPU speed.

```
                ROM PCI/ISA BIOS (2A6ILF2A)
                   CHIPSET FEATURES SETUP
                   AWARD SOFTWARE, INC.

 Auto Configuration       : Enabled
 RAS Pulse Width Refresh  : 5T      Processor Core Frequency  : x 4.5   ☞
 RAS Precharge Time       : 4T
 RAS to CAS Delay         : 3T      AGP Aperture Size (MB)    : 64MB
 CPU to PCI Post Write     : Enabled Concurrent function(MEM)  : Disabled

 ECC Function for Bank 0  : Disabled CPU Pipeline Control      : Enabled
 ECC Function for Bank 1  : Disabled CPU to PCI Burst Mem. WR  : Disabled
 ECC Function for Bank 2  : Disabled PCI delay Transaction     : Enabled

 RAMW# Assertion Timing   : 3T      Auto Detect DIMM/PCI Clk  : Enabled
                                    Spread Spectrum           : Disabled
 SDRAM CAS Latency        : 3T
 SDRAM WR Retire Rate     : X-2-2-2
 SDRAM Wait State Control : 1 WS
                                    ESC: Quit   ↑↓ → ←    :Select Item
 System BIOS Cacheable    : Enabled F1: Help            PU/PD/+/-:Modify
 Video BIOS Cacheable     : Enabled F5: Old Values       (Shift) F2: Color
 Memory Hole at 15M-16M   : Disabled F7: Load Setup Defaults
```

CPU Bus Clock=100MHz:

CPU SPEED	Bus Clock	Processor Core Frequency
450MHz	100MHz	4.5
500MHz	100MHz	5.0
550MHz	100MHz	5.5
600MHz	100MHz	6.0

CPU Bus Clock=66MHz:

CPU SPEED	Bus Clock	Processor Core Frequency
333MHz	66.6MHz	5.0
366MHz	66.6MHz	5.5
400MHz	66.6MHz	6.0
433MHz	66.6MHz	6.5

3) After the **"Processor Core Frequency"** is set, go back to "**CMOS SETUP UTILITY**" screen and select **"SAVE & EXIT SETUP"** and press the <Enter> key to save the setting information in the CMOS memory and continue with the booting process.

```
            ROM PCI/ISA BIOS (2A6ILF2A)
                 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
```
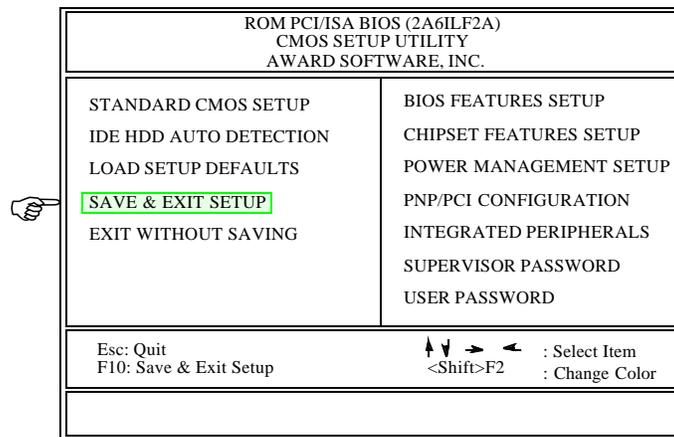
CPU Voltage: There is no hardware or BIOS settings needed for CPU operating voltage. The switching regulator circuit can auto-detect the CPU type on the P6F99 mainboard and generate the proper operating voltage for the CPU.

3 BIOS Configuration

After hardware configuration of P6F99 Mainboard is completed, and system hardware has been assembled, the completed system may be powered up. At this point, CMOS setup should be run to ensure that system information is correct.

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.

3.1 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. If the error occurs before the display device is initialized, a series of beeps will be transmitted. 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. The "CMOS SETUP UTILITY" screen will be displayed at this time.

3.2 CMOS SETUP UTILITY

Main Program Screen

```
ROM PCI/ISA BIOS (2A6ILF2A)
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

                             PASSWORD SETTING


Esc: Quit                    ↑↓ → ←        : Select Item
F10: Save & Exit Setup       <Shift>F2     : Change Color
```

This screen provides access to the utility's various functions.

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

<ESC>: Exit the utility.

ARROW KEYS: Use arrow keys to move cursor to the desired selection.

<F10>: Saves all changes made to Setup and exits program.

<Shift> <F2>: Changes background and foreground colors.

3.3 STANDARD CMOS SETUP

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

Standard CMOS Setup Screen

```
ROM PCI/ISA BIOS (2A6ILF2A)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.
```

Date (mm:dd:yy): Wed, Nov 25 1998
Time (hh:mm:ss): 10:10:10

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: Auto	0	0	0	0	0	0	Auto
Primary Slave	: Auto	0	0	0	0	0	0	Auto
Secondary Master	: Auto	0	0	0	0	0	0	Auto
Secondary Slave	: Auto	0	0	0	0	0	0	Auto

Drive A: 1.44M, 3.5 in.
Drive B: None
Floppy 3 Mode Support: Disabled

Video: EGA/VGA
Halt On: All Errors But Keyboard

Base Memory: 640K
Extended Memory: 15360K
Other Memory: 384K

Total Memory: 16384K

ESC: Quit   ↑↓ → ← : Select Item   PU/PD/+/-:Modify
F1: Help   (Shift) F2   : Change Color

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" is IDE HDD auto detection; Type "User" is user definable, and Type "None" is not installed (e.g. SCSI).

There are six categories of information you must enter for a HDD: "CYLS" (number of cylinders), "HEAD" (number of heads), "PRE-COMP" (write pre-compensation), "LANDZ" (landing zone), "SEC-TOR" (number of sectors) and "MODE" (Normal, LBA, LARGE and 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. The "MODE" has four options: NORMAL, LBA, LARGE and AUTO. Set MODE to NORMAL for IDE hard disk drives smaller than 528MB. Set MODE to LBA for IDE

hard disk drives over 528MB which support Logical Block Addressing mode. Set MODE to LARGE for IDE hard disk drives over 528MB which 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 528MB 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: The options are: "360K, 5.25 in.", "1.2M, 5.25in.", "720K, 3.5in.", "1.44M, 3.5in.", "2.88M, 3.5in." and "None (Not Installed)". Not Installed could be used as an option for diskless workstations.

Floppy 3 Mode Support: The options are "Disabled" (default), "Drive A", "Drive B" and "Both". This is the Japanese standard floppy drive which stores 1.2MB in a 3.5" diskette.

Video: Set it 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" and "CGA 80".

Halt On: The options are "All Errors" (default), "No Errors", "All, But Keyboard", "All, But Diskette" and "All, But Disk/Key". This setting determines which type of errors will cause the system to halt during bootup.

3.4 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 on the Standard CMOS Setup screen.

Note: If you are setting up a new hard disk drive (nothing on it) 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 for-matted when you install it, choose the mode which is used to format it

3.5 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.

3.6 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.

3.7 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.

3.8 BIOS FEATURES SETUP

Selecting "BIOS FEATURES SETUP" on the main program screen displays this menu:

BIOS Features Setup Screen

```
┌─────────────────────────────────────────────────────────────┐
│              ROM PCI/ISA BIOS (2A6ILF2A)                     │
│                BIOS FEATURES SETUP                           │
│                AWARD SOFTWARE, INC.                          │
├─────────────────────────────────────────────────────────────┤
│ Trend Chipaway Virus    : Disabled   Video BIOS Shadow      : Enabled  │
│                                      C8000 - CBFFF Shadow   : Disabled │
│ CPU Internal Cache      : Enabled    CC000 - CFFFF Shadow   : Disabled │
│ External Cache          : Enabled    D0000 - D3FFF Shadow   : Disabled │
│ CPU L2 Cache ECC Checking Disabled   D4000 - D7FFF Shadow   : Disabled │
│                                      D8000 - DBFFF Shadow   : Disabled │
│ Quick Power On Self Test : Enabled   DC000 - DFFFF Shadow   : Disabled │
│ Boot Sequence           : C, A, SCSI PCI/VGA Palette Snoop  : Disabled │
│ Swap Floppy Drive       : Disable                           │
│ Boot Up Floppy Seek     : Disable    Assign IRQ For VGA     : Enabled  │
│ Boot Up NumLock Status  : On                                │
│                                      OS Select For DRAM > 64MB : Non-OS2 │
│ Floppy Disk Access Control : R/W                            │
│                                      Report No FDD For WIN 95 : Yes    │
│ 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│
│ Memory Parity Check     : Enabled    F7: Load Setup Defaults           │
│ Security Option         : Setup                             │
└─────────────────────────────────────────────────────────────┘
```

The following explains the options for each feature:

Trend Chipaway Virus: The Trend Chipaway Virus's default setting is "Enabled". Presently, one solution provided by some BIOS venders to protect against boot viruses involves a BIOS function used to write-protect the partition table. This solution prevents viruses from writing to the partition table but also prevents computer users from doing legitimate modifications e.g. using FDISK to re-configure hard drive partitions. Also this function will be disabled whenever the BIOS has been reset. Trend ChipAway Virus (TCAV) is unique, specially designed solution stops boot viruses from infecting the boot sector or partition table during the "threat" period that exists before the boot sector loads and traditional anti-virus protection takes effect. Trend ChipAway Virus resides in the BIOS to prevent boot viruses from causing any damage to computers.

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

External Cache: The default setting is "Enabled". This setting enables the Level 2 cache.

CPU L2 Cache ECC Checking: The default setting is "Disable". Set to "Enabled" only if CPU L2 cache ECC function is available and support.

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

Boot Sequence: The default setting is "C, A, SCSI"; the other options are "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" and "C only". The BIOS will load the operating system from the disk drives in the sequence selected here.

Swap Floppy Drive: The default setting is "Disable". This setting gives you an option to swap A and B floppy disks. Normally the floppy drive A is the one at the end of the cable, if you set this option to "Enabled", the drive at the end of the cable will be swapped to B.

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

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

Floppy Disk Access Control: The default setting is "R/W" which is means READ&Write. If set to "Read Only", the data can not write into onboard floppy disk.

Typematic Rate Setting: The default setting is "Disable". If set to "Enabled", you can set the typematic Rate and typematic Delay.

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 "PASSWORD SETTING" utility on the main program screen.

Video BIOS Shadow: The default setting is "Enabled" which will copy the VGA BIOS into system DRAM.

C8000-CBFFF Shadow to DC000-DFFFF Shadow: The default setting for the shadow feature is "Disable". When set to enable, the ROM with the specific address is copied into system DRAM. It will also reduce the size of memory available to the system.

PCI/VGA Palette Snoop: If there are two VGA cards in your system (one PCI and one ISA) and this option is set to "Disable", data read and written by 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 improper color problem.

Assign IRQ For VGA: The default setting is "Enabled". When set to "Disable" BIOS will not assign any IRQ (Interrupt request line) for PCI VGA card. If your VGA card requires IRQ then set this option to "Enabled".

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

After you have made your selection(s) in the BIOS FEATURES SETUP, press the <ESC> key to go back to the main program screen.

3.9 CHIPSET FEATURES SETUP

Selecting "CHIPSET FEATURES SETUP" on the main program screen displays this menu:

Chipset Features Setup Screen

```
                    ROM PCI/ISA BIOS (2A6ILF2A)
                      CHIPSET FEATURES SETUP
                       AWARD SOFTWARE, INC.

 Auto Configuration          :  Enabled
 RAS Pulse Width Refresh     :  5T          Processor Core Frequency    :  x 4.5
 RAS Precharge Time          :  4T
 RAS to CAS Delay            :  3T          AGP Aperture Size (MB)      :   64MB
 CPU to PCI Post Write       :  Enabled     Concurrent function(MEM)    :  Disabled

 ECC Function for Bank 0     :  Disabled    CPU Pipeline Control        :  Enabled
 ECC Function for Bank 1     :  Disabled    CPU to PCI Burst Mem. WR    :  Disabled
 ECC Function for Bank 2     :  Disabled    PCI delay Transaction       :  Enabled

                                           Auto Detect DIMM/PCI Clk    :  Enabled
 RAMW# Assertion Timing      :  3T          Spread Spectrum             :  Disabled

 SDRAM CAS Latency           :  3T
 SDRAM WR Retire Rate        :  X-2-2-2
 SDRAM Wait State Control    :  1 WS
                                           ESC: Quit      ↑↓→←   :Select Item
 System BIOS Cacheable       :  Enabled     F1: Help            PU/PD/+/-:Modify
 Video BIOS Cacheable        :  Enabled     F5: Old Values        (Shift) F2: Color
 Memory Hole at 15M-16M      :  Disabled    F7: Load Setup Defaults
```

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 change unless you are familiar with the chipset.

Auto Configuration: This item allows you selects pre-determined optimal values of chipset parameters. The default setting is "Enabled" which will set optimal DRAM timing automatically depending on type of the DRAM. The other option is "Disabled" which allows you to change DRAM timing manually.

RAS Pulse Width Refresh: This option selects the number of CPU clock cycles allotted for the RAS pulse refresh, according to DRAM specifications. The options are "3T", "4T", "5T", "6T" and "7T".

RAS Precharge Time: The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allows, refresh may be incomplete and the DRAM may fail to retain data. The options are "2T", "3T", "4T" and "5T".

RAS to CAS Delay: When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (Column address strobe). The options are "2T", "3T", "4T" and "5T".

CPU to PCI Post write: Select enabled to use a fast buffer for posting write to memory. Using a fast buffer release the CPU before completion of a write cycle to DRAM. The options are "3T", "4T" and "Disabled".

ECC Function for Bank 0~2: This option Enabled/Disabled the DRAM ECC (Error Check or Correction) function on Bank 0~2. To enabled this feature, you need to have DRAM with ECC chip on it (72-bit instead of 64-bit)

RAMW# Assertion Timing: RAMW is an output signal to enabled local memory writes. Set this option to Normal(3T) or Fster(2T, by one timer tick) according to the DRAM specification. The options are "2T" and "3T".

SDRAM CAS Latency Time: The options are "2T" and "3T". Slower rate "3T" may be required for slower SDRAMs or more than 2 banks of SDRAM DIMMs are installed. The default setting is "3T".

SDRAM WR Retire Rate: This option selects the correct timing for data transfers from the write buffer to memory, according to SDRAM specification. The options are "x-222" and "x-333".

SDRAM Wait State Control: This option selects the data read/ write wait state according to SDRAM specification. The options are "0 ws" and "1 ws".

System BIOS Cacheable: When set to "Enabled", the System BIOS will be cached for faster execution. The default setting is "Enabled".

Video BIOS Cacheable: When set to "Enabled", the Video BIOS will be cached for faster execution. The default setting is "Enabled".

Memory Hole At 15M-16M: The default setting is "Disable". Set to "Enabled" means that 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 1MBytes hole in your system memory. This option is designed for some OS with special add-in cards which need 15M-16M memory space.

Processor Core Frequency: This option sets the Pentium II CPU Core to Bus Clock Multiplier. The options are "x 3", "x 3.5", "x 4", "x 4.5", "x 5", "x 5.5", "x 6", "x 6.5" and "x 7". The default setting is "x 3.5". This option may not work with celeron CPU, because the CPU Core to Bus Clock Multiplier on celeron CPU is fixed which can not be change through the jumper or BIOS.

AGP Aperture Size (MB): This option determines the effective size of the AGP Graphic Aperture, which memory-mapped graphic data structures can reside in. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. The options are "4MB", "8MB", "16MB", "32MB", "64MB", "128MB" and "256MB".

Concurrent Function(MEM): This option enabled/disabled the concurrent function for the memory. The options are Enabled and disabled.

CPU Pipeline Control: Pipeline allows the chipset to signal the CPU for a new memory address even before all data transfers for the current cycle are completed, resulting in increased throughput. The options are "Enabled" and "Disabled".

CPU To PCI Burst Mem. Wr: This option enabled/disabled the CPU data can be burst write into system memory. The options are "Enabled" and "Disabled".

PCI Delayed Transaction: This termination is used by targets that can't complete the initial data phase within the requirement of this specification. One advantage of a Delay Transaction is that the bus is not held in wait states while completing an access to a slow device. While the originating master rearbitrates for the bus, other bus masters are allowed to use the bus bandwidth that would normally be wasted holding the master in wait states. Another advantage is that all

posted memory write data is not required to be flushed before the request is accepted. Chipset has an embedded 32-bit post write buffer to support delay transactions cycles. Select "Enabled" to support compliance with PCI specification version 2.1.

Auto Detect DIMM/PCI Clk: When set to "Enabled", system will automatically turn off PCI and DIMM clock which is not use and reduce electromagnetic interference.

Spread Spectrum: When set to "Enabled", system clock frequency will automatically be modulated which helps reducing electromagnetic interference. Default is "Enabled".

After you have made your selections in the CHIPSET FEATURES SETUP, press the <ESC> key to go back to the main program screen.

3.10 POWER MANAGEMENT SETUP

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

Power Management Setup Screen

```
                    ROM PCI/ISA BIOS (2A6ILF2A)
                    POWER MANAGEMENT SETUP
                    AWARD SOFTWARE, INC.

ACPI function          : Enabled            ** PM Events **
                                      HDD Ports Activity   : Disabled
Power Management       : User Define   COM Ports Activity   : Disabled
PM Control by APM      : Yes           LPT Ports Activity   : Disabled
Video Off Option       : Susp, stby --> off  VGA Activity        : Disabled
Video Off Method       : V/H SYNC+Blank  IRQ [3-7, 9-15], NMI    : Enabled
                                      IRQ8 Break Suspend     : Disabled
    ** PM Timers **                   Resume by Alarm        : Disabled
Doze Mode              : Disable
Standby Mode           : Disable
Suspend Mode           : Disable
HDD Off After          : Disable

MODEM Use IRQ          : 3

Hot Key Function As    : Power Off
                                      ESC: Quit    ↑↓ → ←  :Select Item
Soft-Off by PWR-BTTN   : Instant - Off  F1: Help
                                                  PU/PD/+/-:Modify
Resume by Ring         : Disabled      F5: Old Values    (Shift) F2: Color
WOL Power Up Control    : Disabled      F7: Load Setup Defaults
```

ACPI function: ACPI (Advanced Config. Power Interface) controls system power management through the operating system. Windows98 is the first operating system to support ACPI.

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: This is the recommended setting for general use.

Test/Demo: This is for test/demonstration purposes.

Disable: Disables the power management features.

PM Control by APM: The default setting is "Yes". When set to "Yes", system BIOS will wait for APM's prompt before it enters any PM 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 time out. 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 DEVICE=C:\DOS\POWER.EXE in your CONFIG.SYS. For Windows 3.1x and Windows 95, you need to install Windows with the APM feature. Double-click a 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 will disable 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: Options are from "30 Sec" to "1 Hour" and "Disable". 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.

Standby Mode: Options are from "30 Sec" to "1 Hour" and "Disable". The system speed will change from turbo to slow and the video signals 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.

Suspend Mode: Options are from "30 Sec" to "1 Hour" and "Disable". 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.

HDD Off After: Options are from "1 Min" to "15 Min" and "Disable". The IDE hard drive will spin down if it is not accessed within a specified length of time.

Modem Use IRQ: Name the interrupt request(IRQ) line assigned to the PnP modem (if any) on your system. Activity of the selected IRQ will always awaken your system.

Hot Key Power Off: Select "Enabled" if your system has a hot key for soft power off. The options are "Disabled" and "Enabled".

Soft-Off by PWR-BTTN: The options are "Instant-Off" and "Delay 4 Sec.". When set to "Instant-Off", 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 to the suspend mode. Note: During the booting process, the power button is ignored. The default setting is "Instant-Off".

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

WOL Power Up Control: If "Enabled", the system power will be turned on if the network card receives an incoming Wake On LAN(WOL) signal.

PM Events: When a hardware event is enabled, the occurrence of a corresponding event will reload global timer to prevent the system from entering any Power Management mode.

IRQ 8 Break Suspend: When this option and the option of "Power-On by alarm" are both set to "Enabled", you may set the date (day of month), hour, minute and second to wake up your system from suspend mode.

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

Press the <ESC> key to go back to the main program screen, after you have made your selection

3.11 PnP / PCI CONFIGURATION

Both the ISA and PCI buses on the Mainboard use system IRQs &
DMAs. You must set up the IRQ and DMA assignments correctly
thru the PnP/PCI Configuration Setup utility, otherwise the Main-
board will not work properly. Selecting "PnP / PCI CONFIGURA-
TION" on the main program screen displays this menu:

PnP / PCI Configuration

```
ROM PCI/ISA BIOS (2A6ILF2A)
PNP / PCI CONFIGURATION
AWARD SOFTWARE, INC.

Resources Controlled By        : Manual       PCI IDE  IRQ  Map To  : PCI - AUTO
Reset Configuration Data       : Disabled       Primary    IDE  INT#  :  A
                                                 Secondary  IDE  INT#  :  B
IRQ-3 assigned to       :  PCI/ISA PnP
IRQ-4 assigned to       :  PCI/ISA PnP        Used MEM base addr.      :  N/A
IRQ-5 assigned to       :  PCI / ISA PnP
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
DMA-0 assigned to       :  PCI / ISA PnP
DMA-1 assigned to       :  PCI / ISA PnP
DMA-3 assigned to       :  PCI / ISA PnP
DMA-5 assigned to       :  PCI / ISA PnP     ESC: Quit        ↑↓ → ←   :Select Item
DMA-6 assigned to       :  PCI / ISA PnP     F1: Help                 PU/PD/+/-:Modify
DMA-7 assigned to       :  PCI / ISA PnP     F5: Old Values             (Shift) F2: Color
                                             F7: Load Setup Defaults
```

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 which is located in the system
flash EEPROM. If this option is set to "Disable" the ESCD will
update automatically when the new configuration varies from the
last one. If set to "Enabled", the ESCD will be cleared and forced to
update and then automatically set this option to "Disable".

IRQ and DMA Assigned to.: 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 to PCI/ISA PnP.

PCI IDE IRQ Map To, Primary IDE INT#, Secondary IDE INT#: If you disable onboard PCI IDE controller and install a PCI IDE card on the Mainboard, you need to set this option. If a PCI IDE Card uses ISA IRQ directly thru a paddle card installed on an ISA slot, select "ISA" for the option "PCI IDE IRQ Map To". If a PCI IDE Card uses PCI "INT" and is compliant to PCI Plug and Play specification, select "PCI-AUTO" for the option "PCI IDE IRQ Map To". Otherwise select "PCI-SLOT n" (PCI-SLOT 1, PCI-SLOT 2, PCI-SLOT 3 or PCI-SLOT4) depending on which slot the PCI IDE Card is installed.

Only INT A and INT B are available for a PCI IDE Card, therefore you must set the PCI IDE Card's primary interrupt to INT A and secondary interrupt to INT B. The INT A is routed to IRQ 14 and the INT B is routed to IRQ 15 thru a hardware router in the chipset.

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

3.12 INTEGRATED PERIPHERALS

Selecting "INTEGRATED PERIPHERALS" on the main program
screen displays this menu:

Integrated Peripherals Screen

```
ROM PCI/ISA BIOS (2A6ILF2A)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

Internal PCI/IDE          : Enabled      IR Address Selection       : Disable
IDE Primary Master PIO    : Auto
IDE Primary Slave PIO     : Auto
IDE Secondary Master PIO  : Auto         PS/2 mouse function        : Enabled
IDE Secondary Slave  PIO  : Auto         USB Controller             : Enabled
Primary Master Ultra DMA  : Auto         USB Keyboard Support       : Disabled
Primary Slave Ultra DMA   : Auto
Secondary Slave Ultra DMA : Auto
Secondary Master Ultra DMA : Auto

IDE Burst Mode            : Enabled
IDE HDD Block Mode        : Enabled

Onboard FDC Controller    : Enabled
Onboard Serial Port 1     : Auto         ESC: Quit        ↑↓ → ◄     :Select Item
Onboard Serial Port 2     : Auto         F1: Help
                                         F5: Old Values      PU/PD/+/-:Modify
Onboard Parallel Port     : 378/IRQ7                         (Shift) F2: Color
Parallel Port Mode        : Normal       F7: Load Setup Defaults
```

Internal PCI/IDE: The SiS 5595 contains an internal PCI IDE inter-
face with support for two IDE channels. The options are "Primary",
"Secondary" and "Both".

**IDE Primary Master PIO, IDE Primary Slave PIO, IDE Second-
ary Master PIO, IDE Secondary Slave PIO:** There are six options
"Auto", "Mode 0", "Mode 1", "Mode 2", "Mode 3" and "Mode 4".
The default setting is "Auto". When set to "Auto" the BIOS will auto-
matically 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 the lower
mode, e.g, from Mode 3 to Mode 2. All IDE drives should work with
PIO mode 0.

**IDE Primary Master UDMA, IDE Primary Slave UDMA, IDE
Secondary Master UDMA, IDE Secondary Slave UDMA:** The
options are "Auto" (default) and "Disabled". When set to "Auto" the

BIOS will automatically load Ultra DMA 33 driver to match the transfer rate of IDE hard disk drive which supports Ultra DMA 33 mode. The default setting is "Auto".

IDE Burst Mode: Selecting "Enabled" reduces latency between each driver read/write cycle, but may cause unstability in IDE subsystem that can not support such fast performance. If you are getting disk errors try setting this option to "Disabled".

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

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

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

> 3F8/ IRQ4 (Serial Port 1)
> 2F8/ IRQ3 (Serial Port 2)
> 3E8/ IRQ4
> 2E8/ IRQ3
> Auto (default setting for serial port 1 and 2)
> Disabled (Disable the onboard serial port)

IR Address Select: The options are "Hi, Hi" (default), "Hi, Lo", "Lo, Hi" and "Lo, Lo". It will define voltage level for your Infrared module RxD (receive) mode and TxD (transmit) mode. This setting has to match the infrared module used in the system.

Onboard Parallel Port: This option is used to assign the I/O address for the onboard parallel port. The options are "378/IRQ7" (defaults), "278/IRQ5", "3BC/IRQ7" and "Disabled" (disable the onboard parallel port).

Parallel Port Mode: There are four options "Normal" (default), "EPP", "ECP", "ECP+EPP". Change the mode from "Normal" to the enhanced mode only if your peripheral device can support it.

EPP Mode Select: There are two options "EPP1.9" (default), "EPP1.7".

ECP Mode Use DMA: When set on-board parallel port to ECP mode, the parallel port has option to use DMA "3"(default) or "1". When set to "Hot KEY", system power can be turned on by pressing keyboard function key,i.e., <Ctrl>+<F1> through <Ctrl>+<F12>.

USB Keyboard Support: Set this option to "Enabled" if an Universal Serial Bus (USB) keyboard is used in your system. The default setting is "Disable".

If you make any changes to the onboard FDD controller, serial ports or parallel port in this setup, save the changes and turn off the system. After turning the system on again the change will be in effect.

3.13 PASSWORD SETTING

The "PASSWORD SETTING" 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 and you can use up to 8 alphanumeric characters, press <Enter> after entering the password. At the next prompt, confirm the new password by typing it and pressing <Enter> again.

To disable the password, press the <Enter> key instead of enter-ing a new password when the "Enter Password" dialog box appears. A message will appear confirming that the password is disabled.

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 JP29 to short pin 1 and pin 2 for 5 seconds, then putting the shunt back to pin2 and pin3 of JP29.

4 Driver and Utility

4.1 Creative Lab Sound Blaster AudioPCI 64V

There is a Sound Blaster AudioPCI 64V CD comes with the
mainboard which is the driver for onboard ES1373 audio chip. The
driver supports Windows95/98 and WindowsNT 4.x operating system.

:\Audio\English\NTdrv SB AudioPCI 64V driver for Windows Nt4.x.
\\Audio\English\win95drv SB AudioPCI 64V driver for Windows95/98

Install SB AudioPCI 64V driver

1) The driver installation screen is not pop-out automatically,
please use the windows explorer and go to the
DRIVER\SOUND\CREATIVE\CTRUN directory and
executes the **CTRUN.EXE** command, which will force the
installation screen pop-out.

2) After the driver installation screen pop-out, just follows the
instruction on the screen to create the directory and finished the
installation.

3) For windows Nt4.x installation, please use the **multimedia icon**
which is under the control panel and selects "Add Audio
Device". The WindowsNT 4.x driver can be found in the
DRIVER\SOUND\CREATIVE\Audio\English\NTdrv
directory of the CD.

4) There are eight category will create after the driver installation:
Creative CD   For CD Audio tools
Creative MIDI   For the MIDI audio edit tools
Creative Remote   **This function is not support yet**.
Creative Wave   For the WAV audio edit tools
SB Audio 64V Mixer   For Audio Mixer
Sound 's LE   For Line-in or Microphone record
User's Guide   The instruction for each function
Wave Studio   The Editor tools for Audio wave file

4.2 Flash Utility

The BIOS of the P6F99 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 2M-bit Flash EEPROM which can be erased and reprogrammed by the Flash utility.

There are two files in the FLASH directory.

FLASH.EXE	The Flash utility for AWARD BIOS upgrade
README.TXT	A 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 <F5> function key while the "Starting MS-DOS..." message appearing on the screen to bypass the CONFIG.SYS and AUTOEXEC.BAT.

4.3 EIDE Bus Master Driver

The Bus Master EIDE logic designed in the SiS 600/5595 chipset is intended to reduce the workload of the CPU and make the CPU running more efficiently. It will take care the data transfer between IDE drives and system memory and let CPU handle other tasks. The driver must be loaded in order to make the EIDE drive operating at bus-mastering DMA or Ultra DMA33 mode.

4.4 SiS 600 AGP GART Driver

There is a AGP driver for onboard SiS 600 chipset to proper support the AGP VGA chip. The function of this driver is like the bridge between the AGP VGA chip and onboard memory access. You do not

need to install this driver, if you have PCI VGA card. Here are the installation procedure:

1)Click the setup.exe program under the SiS AGP directory. the following screen will appears. Click "Next to continue setup.
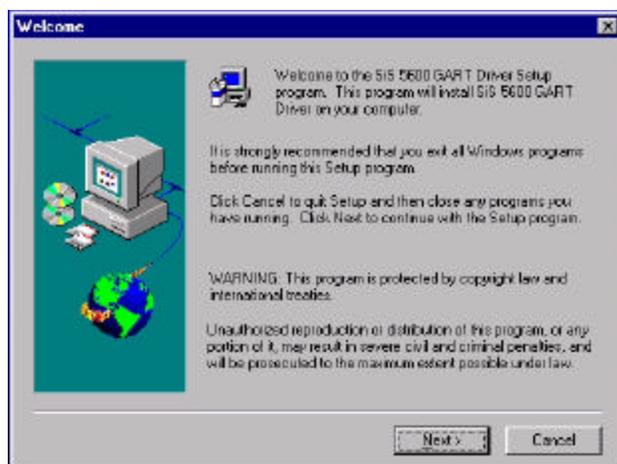
2) You can change the installation directory by click at "Browser" and enter different directory or click "NEXT" for default directory
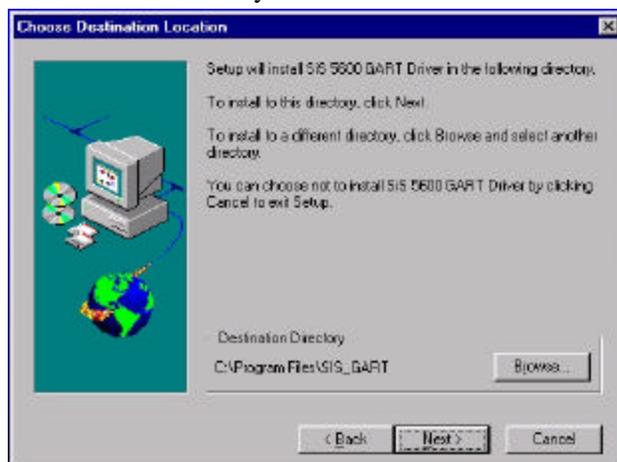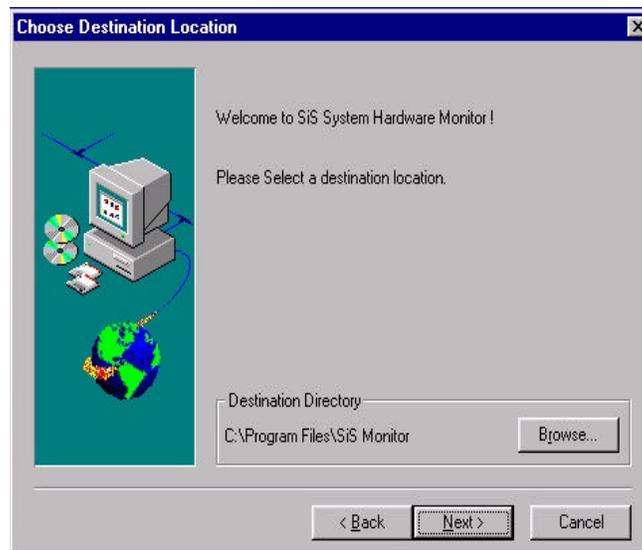

3) After setup is completed, you need to restart the computer before you can activate the program.

SiS System Hardware Monitor (optional)

The SiS System Hardware Monitor utility with the SiS 5595 system monitor chip allow you to monitor your system's temperature, Fan speed and CPU voltage. Using this utility, you can setup the upper and lower limits of these monitored parameters. A pre-warning message will pop up on the screen when the monitored parameters is out of the preset range.

1.0.1 SiS System Hardware Monitor Setup

1) Insert the diskette label with DISK1 into the 1.44M floppy drive and run setup.exe under Windows95 or 98.

2) The following screen will appear

You may change to different directory by click at "Browser" or click "NEXT" and continue setup procedure.

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

4) After system enter windows, Click at "Start\program\SiS Hardware Monitor" the follows screen will pop-out.
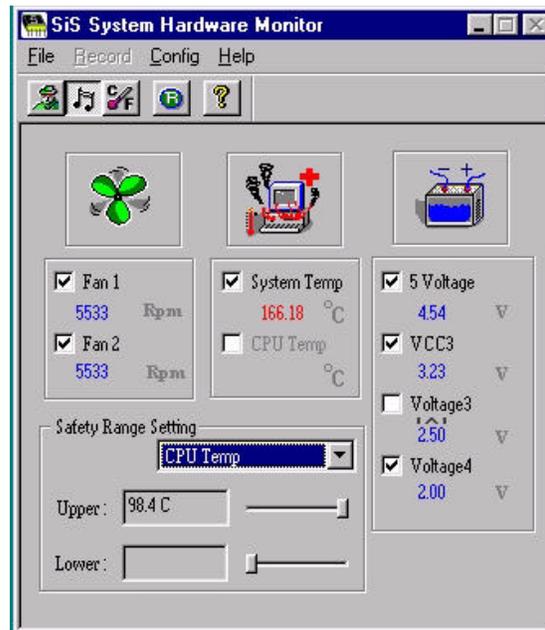
5) You can enabled or disabled each monitor function by check the diagonix box in each item. You may set the threshold you want for system temperature, voltages and FAN speeds, by selects monitor item in the **safety range setting** box and moving the slide bars to the **upper/lower** level.

Online Services

Freetech is a leading designer and manufacturer of high performance system boards for desktop PCs, workstations and network servers. Since its inception in the heart of Silicon Valley in 1990, it has continued to provide valued products to its customers by focusing on service, quality and technology.

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