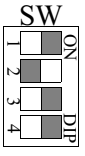
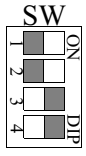
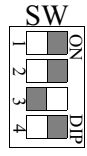
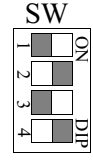
Quick Reference

Quick Switch Setup:

Pentium II DIP Switch settings.

CPU Core Frequency	200MHz	233MHz	266MHz	300MHz
DIP Switch Settings				

Quick BIOS Setup:

After hardware setup is completed, turn the power on, then press <**DEL**> key to access the AWARD BIOS SETUP program. A "**BIOS SETUP UTILITIES**" will display on the screen.

1. Select "**STANDARD CMOS SETUP**" to set Date /Time and Floppy drive type, also set Hard Disk Type to "Auto"
2. Select "**LOAD SETUP DEFAULTS**" and type "Y" to load BIOS default setup.
3. Select "**SAVE & EXIT SETUP**" and press the <Enter> key to save the setting information in the CMOS memory and continue with the booting process.

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1 Introduction

1.1 Overview

The P6F77 is a quality, high performance, function enhanced mainboard based on the powerful Intel Pentium II processor operating at 233, 266 or 300MHz. This mainboard is designed around the latest and fastest Intel 82440FX chipset in a standard ATX form factor.

The P6F77 mainboard delivers workstation level performance with its integrated Bus Mastering EIDE (Enhanced IDE) controller, concurrent PCI bus, and its ability to accommodate new technology EDO (Extended Data Out) and BEDO (Burst Extended Data Out) memory. When this high data stream bandwidth mainboard is equipped with a powerful 64-bit Pentium II processor with MMX technology and built-in 256/512KB level 2 cache, your system has the power to handle future demanding communication, multi-media, multi-tasking and intensive 32-bit applications on advanced 32-bit operating systems.

The P6F77 mainboard achieves the highest reliability by supporting the ECC (Error Checking and Correction) memory protections. This enables the P6F77 mainboard to have superior data integrity and be fault-tolerant in respect to memory errors while running applications.

The P6F77 mainboard offers outstanding I/O capabilities. It contains a full set of PC I/O, such as dual channel PCI EIDE interfaces, a floppy controller, two FIFOed serial ports, an EPP/ECP capable bidirectional parallel port, an IrDA compatible infrared port, two USB (Universal Serial Bus) connectors, a PS/2 keyboard connector and a PS/2 mouse connector. Five full length PCI local bus slots and three full length ISA bus slots provide expandability to add on peripheral cards.

The integrated power management features on the P6F77 mainboard enable the operating system and application to control the system power management. These features go far beyond the original vision of the “Green PC” to create exciting new application modules for the “Always ON” PC platform. An optional hardware SMM (System Management Module) with Intel LDCM (LandDesk Client Manager) enables the ability to monitor and control system features and functionality such as fan speed, system temperature, system operating voltages, and system configuration.

In addition to superior hardware capabilities, features like bus mastering EIDE driver, Plug and Play, Soft-off, APM (Advanced Power Management), Power on by Modem ring, Power on by Alarm, Power on by keyboard, Sleeping state indicator, fan off in sleeping state and BIOS upgradability are provided on the P6F77 platform.

1.2 P6F77 Specifications/Features

Hardware

CPU	Supports Intel Pentium II 233, 266 or 300 MHz on Slot 1 Processor Connector
VRM	Voltage Regulator Modules on board Provides 2.1V to 3.5V operating voltage.
Coprocessor	CPU built-in floating point unit
Speed	System bus clock 66 MHz PCI bus clock 33 MHz ISA bus clock 8.33/11 MHz
Chipset	Intel's 82440FX PCIset Winbond's 83977 I/O chip
L2 Cache	CPU built-in 256/512KB
DRAM	6 x 72-pin SIMM sockets Supports 8MB to 768MB memory Supports FPM, EDO, BEDO DRAMs Parity/ECC memory protection
EIDE Controller	Supports four IDE devices in two channels Supports PIO mode 0 through mode 4 drives Supports Bus Mastering DMA mode 2 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) port connectors
Mouse/Keyboard	PS/2 mouse connector PS/2 keyboard connector
Expansion Slots	Five 32-bit PCI slots Three 16-bit ISA slots (One PCI/ISA shared slot)

Options	External Infrared Module with cable and mounting bracket System Management Module (SMM)

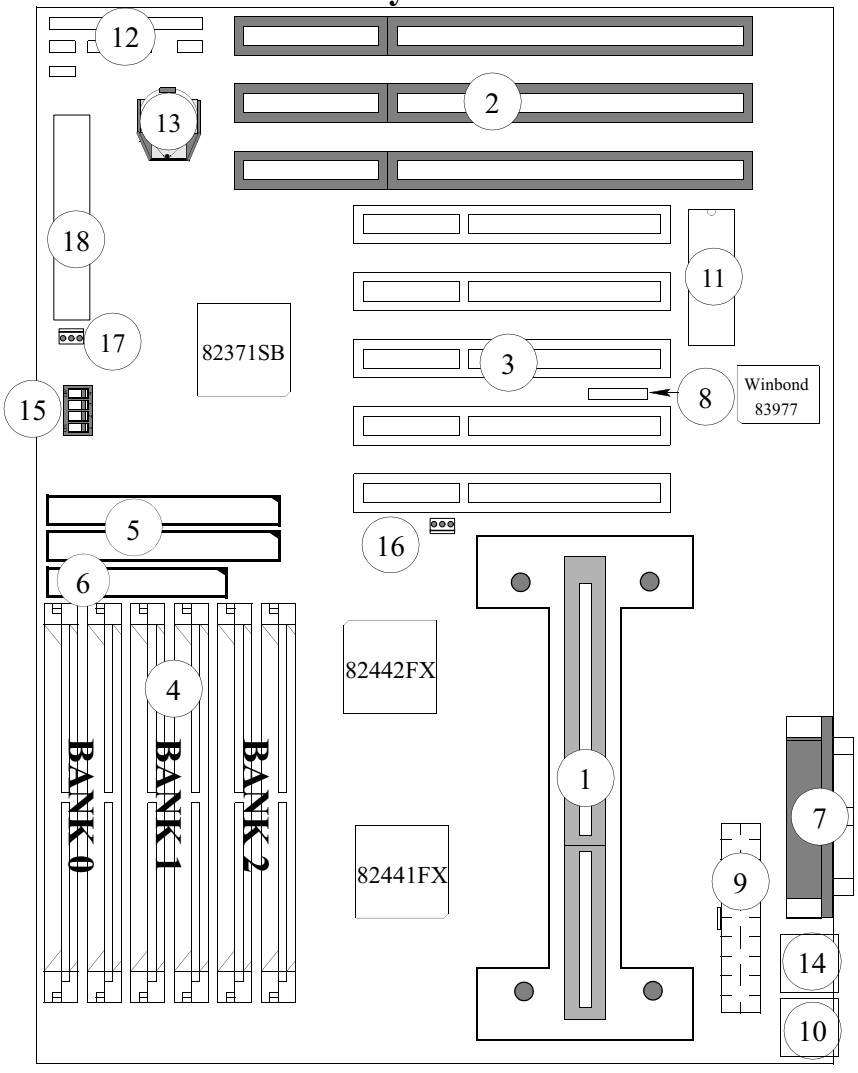
Software

BIOS	AWARD Pentium II PCI BIOS Flash BIOS with ESCD (Extended System Configuration Data) block Supports APM, PnP, Multi-Boot, DMI and EIDE devices Built-in NCR SCSI BIOS Support High-Capacity LS-120 Removable Media Drive
Driver	Bus mastering EIDE driver
Utilities	Flash utility to upgrade BIOS DMI utility to manage system resources
O.S.	Operates with MS_DOS, Windows 3.x, Windows for Work Groups 3.x, Windows 95, Windows NT, OS/2, Novell Netware, Novell UnixWare 1.1 and SCO Unix 4.2

Environment

Ambient Temperature	0^0C to 50^0 C (Operating)
Relative Humidity	0 to 85% (Operating)
Vibration	0 to 500 Hz
DC Voltage	4.9V to 5.25V
DC Voltage	3.15V to 3.50V
DC Voltage	-5V, +12V, -12V, $+5V_{SB}$ 5% tolerance

1.3 P6F77 Mainboard Layout



1:CPU Slot 1
2:ISA Expansion Slots
3:PCI Expansion Slots
4:Memory Module Sockets
5:IDE Connectors
6:Floppy Drive Connector
7:Serial Port Connectors
Parallel Port Connector
8:IR Port Connector
9:ATX Power Connector
10:PS/2 Keyboard Connector
PS/2 Mouse Connector
11: FLASH BIOS
12:Front panel Connectors
13:Battery (CR2032 Lithium)
14:USB Connectors
15: DIP Switch
16: Fan Connector 1
17: Fan Connector 2
18: SMM Connector

1.4 Microprocessor

The P6F77 mainboard is designed to operate with the Intel Pentium II processor that runs at 233, 266 or 300 MHz and has either 256KB or 512KB level 2 cache. An on board switching voltage regulator provides the required 2.1 to 3.5 volts for the processor. The Pentium II processor will send 5 VID (Voltage Identification) signals to the switching voltage regulator, and the switching regulator will generate correct voltage for the processor accordingly.

The Pentium II 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 Connector) cartridge. The S.E.C. cartridge includes the processor core, the second-level cache, a thermal plate, and a back cover. The Pentium II connects to the P6F77 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 Level 2 Cache

The level 2 cache is located on the substrate of the S.E.C cartridge. The cache includes 256KB or 512KB pipelined burst synchronous static RAM (PBSRAM) and tag RAM. All onboard system memory can be cached.

1.7 Chipset

The Intel 82440FX PCIset consists of 82441FX PCI/Memory Controller (PMC), 82442FX Data Bus Accelerator (DBX), and 82371SB PCI ISA/IDE Accelerator (PIIX3).

82441FX (PMC):	- CPU interface controller - Integrated DRAM controller - Fully synchronous PCI bus interface
82442FX (DBX):	- Extensive CPU-to-DRAM, PCI-to-DRAM and CPU-to-PCI data buffering
82371SB (PIIX3):	- Interface between the PCI and ISA buses - USB controller - EIDE controller - Seven DMA channels, one timer/ counter, two eight-channel interrupt controllers, NMI logic, SMI interrupt logic, and PCI/ISA bus arbitrator.

1.8 Main Memory

The P6F77 mainboard provides six 72-pin SIMM sockets to support up to 768MB of system memory. The sockets support 1M x 32/36 (4MB), 2M x 32/36 (8MB), 4M x 32/36 (16MB), 8M x 32/36 (32MB), 16M x 32/36 (64MB), and 32M x 32/36 (128MB) single- or double-sided modules. The minimum memory size, using two 1M x 32/36 SIMM modules is 8MB and the maximum memory size, using six 32M x 32/36 SIMM modules, is 768MB.

The P6F77 supports three types of DRAMs, Fast Page Mode (FPM), Extended Data Out (EDO), and Burst Extended Data Out (BEDO). Memory Timing requires 70ns or faster for FPM and 60ns or faster for EDO and BEDO DRAMs.

Both parity and non-parity as well as ECC (Error Checking and Correction) are supported. ECC is a hardware scheme used to

achieve superior system main memory data integrity. ECC detects all single and dual-bit errors, and corrects all single-bit errors during main memory access. The Parity scheme can only do single-bit error detection. ECC or Parity can only be supported properly if all DRAMs are 72-bit wide (by 36).

The six SIMM sockets are divided into three banks of two sockets each. The sockets are designated Bank 0, Bank 1 and Bank 2. Each bank provides a 64-bit non-parity or 72-bit parity/ECC data path. **Both SIMMs in a bank must be of the same memory size, type and speed.** There are no jumper settings required for the memory size or type, which are automatically detected by the BIOS.

EDO DRAM holds the memory data valid until the next falling edge of CAS# signal. This makes the CAS# precharge overlap the data-valid time and allow the CAS# signal to negate earlier while still satisfying the memory data-valid window.

BEDO DRAM provides burst accesses during read and write cycles, increasing system performance by 3 - 7% when compared with EDO.

1.9 Enhanced IDE Support

The P6F77 mainboard provides two enhanced high performance PCI IDE interfaces capable of supporting four PIO mode 0 through mode 4 and bus-mastering DMA mode 2 ATAPI devices. Detection of IDE device type and transfer rate (PIO mode) are automatically determined by the BIOS.

The traditional PIO IDE requires a substantial amount of CPU bandwidth to handle all the activities of IDE access including waiting for mechanical activity. The Bus Master logic designed in the Intel 82440FX chipset is intended to reduce the workload of the CPU and to increase the CPU efficiency. The Bus Master will take care of the data transfer between IDE and memory and let the CPU to handle other tasks. In true multi-tasking operating systems such as Windows 95, Windows NT, and OS/2, by using bus-mastering IDE, the CPU bandwidth can be freed up to complete other tasks while

disk data transfers are occurring. The bus-mastering driver must be loaded in order to make the EIDE drive operate in the bus-mastering DMA mode.

The following is a data transfer rate comparison table 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

1.10 Keyboard, Mouse and USB Interface

PS/2 keyboard, PS/2 mouse, and USB connectors are located on the back panel of the P6F77 mainboard. The 5V line to the connector is protected with a PolySwitch circuit that acts much like a self-healing fuse, re-establishing the connection after an over-current condition is removed. While this device eliminates the possibility of having to replace a fuse, you still need to be sure to turn off the system power before installing or removing a keyboard or mouse.

The P6F77 mainboard has two USB connectors to support two USB ports. 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 chassis. The USB 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. Up to 12Mbits/sec transfer rate, makes it suitable for devices such as keyboard, mouse, digital joystick, game pad, fax/modem, scanner, printer, ISDN and telephony device.

1.11 Real-time Clock, CMOS RAM and Battery

The real-time clock (RTC) provides a time of day clock and 100-year calendar with alarm features. The RTC 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 pin2 and pin3 of JP10 for 5 seconds when the system power is off.

An external battery is used to provide power to the RTC and CMOS memory. The power for the RTC and CMOS RAM is supplied from the $5V_{SB}$ (standby +5V) power supply to extend the life of the battery. The battery has a three year life expectancy if the mainboard does not have $5V_{SB}$ from the ATX power supply.

1.12 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 Laplink to transfer files between the computer system and portable devices such as laptops and printers.

1.13 Power Supply

It is highly recommended that you use a high quality power supply. As with all computer products a stable power source is necessary for reliable operation. It is even more important for the Pentium II processor which operates at up to 300 MHz. To achieve the highest system reliability be sure that your power supply will provide 5V DC voltage, ranging between 4.95V and 5.25V and also 3.3V DC voltage, ranging between 3.15V and 3.50V.

1.14 Power Management

The P6F77 is not only compliant with EPA, APM1.2 and ACPI (Advanced Configuration and Power Interface), but also provides the following power management features.

- Power-on by a modem ring or a watchdog timer (Alarm) or a keystroke. System could be powered on by a phone ring or by a keystroke or by software that has requested the PC to wake up at some predetermined time.

- Sleep mode indicator
  The power LED will blink when the system is in sleep mode.

- Fan off in sleep mode
  The CPU cooling fan and system chassis fan will be turned off when the system is in sleep mode.

1.15 System Power On/Off Control

System power can be turned on by a power button, a modem ring, a keystroke or an alarm. To enable the "modem ring Power on", "Alarm Power On "and "Keystroke Power On" features, the options "Power On by Ring", "Power On By Alarm" and "Power On by keystroke" in the BIOS "**Integrated Peripherals 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. Pressing the power button will immediately turn off the system power. The system power can also be turned off via software control with ATX power supply. The system BIOS will turn the system power off when it receives the proper APM command from the Operating System. For example, Windows 95 will issue this Soft Off APM command when the user selects "Shutdown" in Start Menu. In order for the Soft Off

feature to work correctly, 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 break button, select “Suspend” in Windows 95 Start Menu, or no system activity for a predetermind length of time.

When the system enters the sleep mode, the CPU stops running, the HDD stops spinning, the monitor screen becomes blank, the power LED indicator starts blinking, and the CPU cooling fan and chassis fan are turned off (Note: in order to turn off fans in sleep mode, you need to connect the CPU cooling fan and chassis fan to the on-board fan power connectors marked FAN1 and FAN2)

1.17 System Manageability

An optional System Management Module with software LDCM (LandDesk Client Manager) allows the local client or system administrator to monitor and control system features and functionality such as fan speed (requires fan with tachometer output), system temperature, system operating voltages and system configuration.

2 Hardware Installation

2.1 Unpacking

The P6F77 mainboard package contains the following:

* P6F77 mainboard
* One IDE 40-pin ribbon cable
* One floppy 34-pin ribbon cable
* User's manual
* One driver/utility diskette

Before removing the mainboard from its anti-static bag, you need to discharge any static electricity that may be accumulated on your body by touching a grounded or anti-static surface. If nothing is available, touch the housing of the power supply which is plugged into the AC outlet.

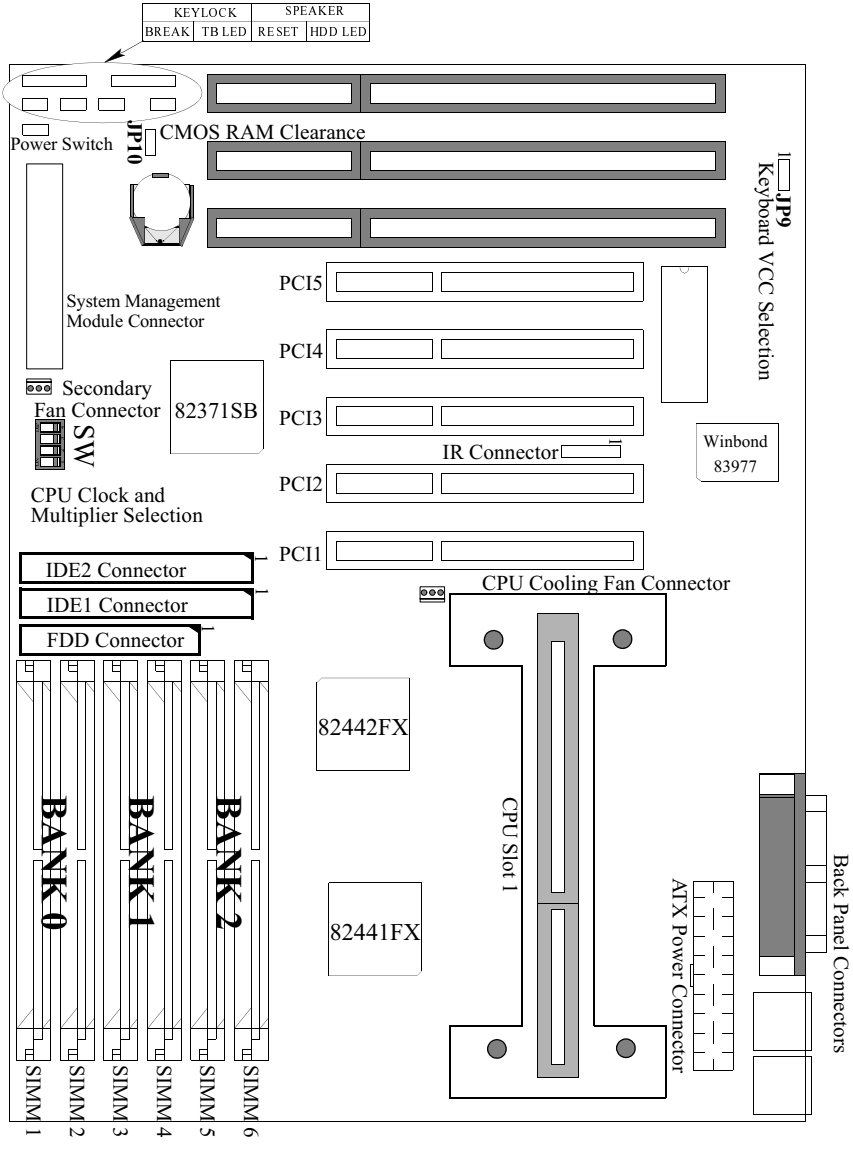
After removing the mainboard from its anti-static bag, place it only on a grounded or anti-static surface, component side up. Inspect the mainboard to see if it is damaged, call the vender immediately if it is damaged.

2.2 Installation

The P6F77 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 match 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 set DIP switches, set jumpers, attach connectors and install CPU and SIMM memory modules.

P6F77 Mainboard DIP Switch and Connector Location



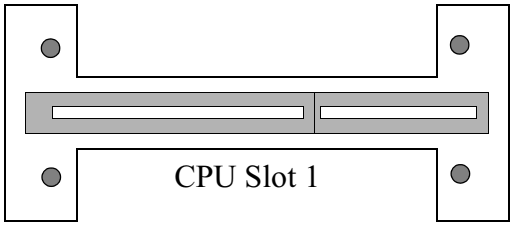
2.2.1. Setting DIP Switch

This section provides the DIP Switch settings for the P6F77 main-board.

You need to configure a DIP Switch to set the CPU core to bus clock multiplier.

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 66.6MHz and the CPU Core to Bus Multiplier is 4, the actual CPU core clock will be 66.6 x 4 = 266MHz.

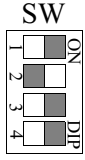
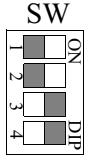
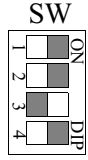
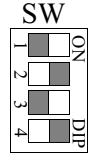
CPU Bus Clock: The CPU Bus Clock is defined as the CPU input clock. For example: the CPU Bus Clock for the Intel Pentium II 200, 233 and 266 MHz are 66.6 MHz. The CPU bus clock on P6F77 is fixed at 66.6MHz.



Multiplier	SW-P1	SW-P2	SW-P3	SW-P4
x 3	ON	OFF	ON	ON
x 3.5	OFF	OFF	ON	ON
x 4	ON	ON	OFF	ON
x 4.5	OFF	ON	OFF	ON

.

Pentium II DIP Switch settings

Core to Bus Clock Multiplier	66.6MHz x3 200MHz	66.6MHzx3.5 233MHz	66.6MHzx4 266MHz	66.6MHzx4.5 300MHz
DIP Switch Setting				

2.2.2 Setting Jumpers

1. Clear CMOS RAM 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 RAM and password.

1. Power off the system
2. Place a shunt to short pin2 and pin3 of JP10 for 5 seconds
3. Move the shunt to short pin1 and pin2 of JP10
4. Power on the system

2. Select Keyboard Vcc(5V) Source

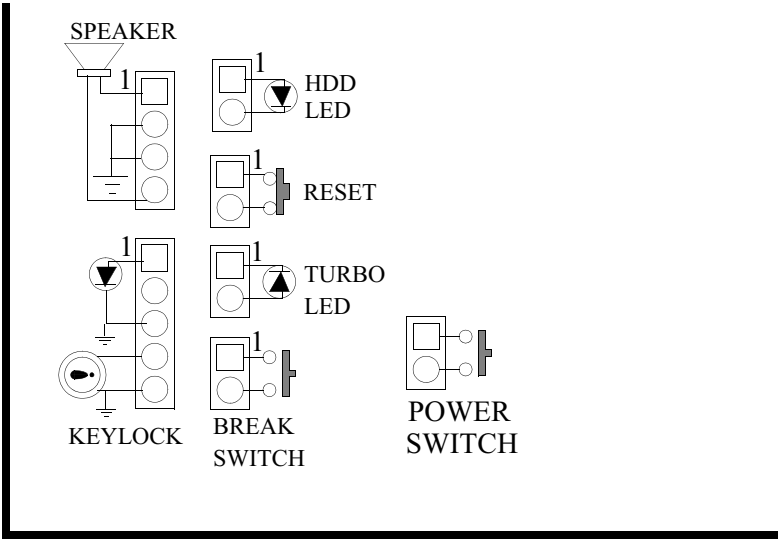
Vcc for Keyboard	JP9
+5V	
+5VSB	

To enabled the "**Keystroke Power On**" feature not only the option "Power On by Keystroke" in the BIOS **"Integrated Peripheral Setup"** has to be "Enabled", also the power source of the keyboard has to be connected to the +5VSB(Standby +5V) that comes from the system power supply which should be capable of delivering a minimum of 700mA.

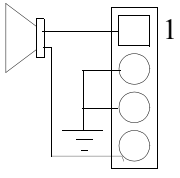
2.2.3 Attaching Connectors

1. Front Panel Connectors

There are 7 connectors on the Mainboard for switches and indicator lights on the system's front panel.



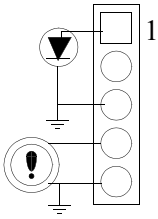
Speaker Connector



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

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

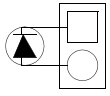
Keylock Connector



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. The power LED continuously blinks when the system is in sleep mode.

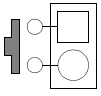
HDD LED Connector



Pin Assignment
1. LED Anode
2. LED Cathode

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

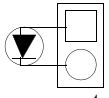
Reset Connector



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.

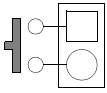
Turbo LED Connector



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

This 2-pin connector connects to the case-mounted turbo LED indicator

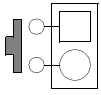
Break Switch Connector



Pin Assignment
1. Break
2. Ground

This 2-pin connector connects to the case-mounted break switch and can be used to suspend the system

Power Switch Connector

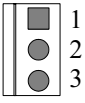


Pin Assignment
1. Power On/Off
2. Ground

This 2-pin connector connects to the case-mounted power switch and is used to turn system power on/off.

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 Intel 82440FX 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.

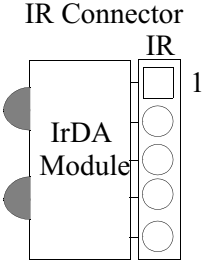
2. Fan Connectors



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

There are two fan connectors on the P6F77 mainboard for the CPU cooling fan and system secondary fan. These connectors support fans of 500mAMP (6 WATT) or less. When the system goes into its sleep state, those fans will be shut down to eliminate audible noise and reduce power consumption. For P6F77 to monitor the fan speed, you need an optional System Management Module, and the fan must have a tachometer output.

3. IrDA-compliant IR (Infrared) Connector



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

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

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 which does not have twisted 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.

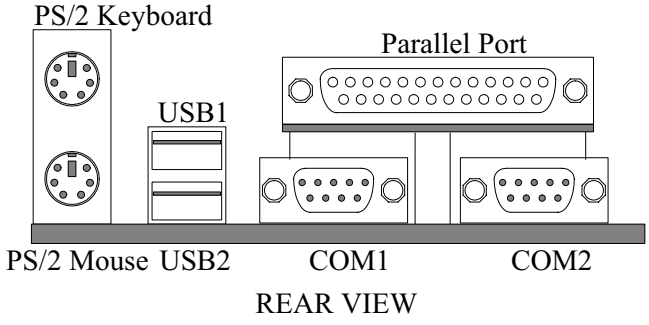
5. IDE Connectors (Two 40-pin Block)

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 one has to be configured as Slave by setting the jumpers on the drive. Consult the documentation that comes 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 connector.

6. Back Panel Connectors

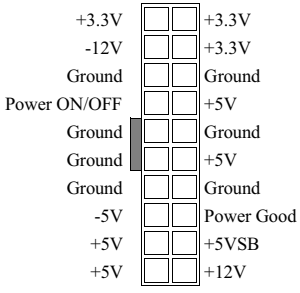
The back panel provides external access to PS/2 style keyboard and mouse connectors as well as two serial ports, one parallel port, and two USB ports, which are integrated on the mainboard. The figure below shows the location of the back panel I/O connectors.



7. Power Supply 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 before connecting the leads from the power supply.

ATX Power 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.

2.2.4 Installing CPU

Before You Begin

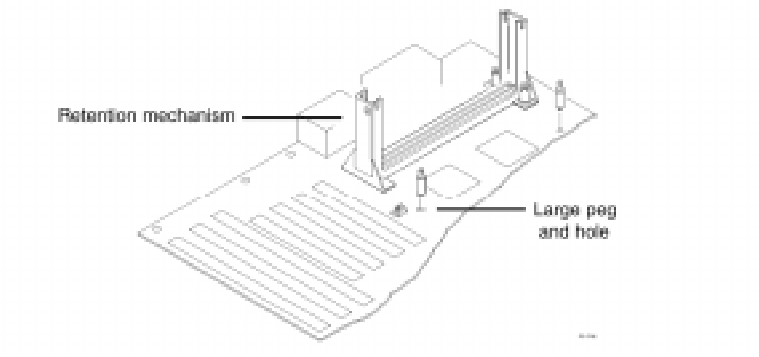
1. Be sure that your Intel boxed processor kit includes the following items:
   · the processor with the fan heatsink attached
   · one heatsink support set containing two black plastic pegs and two black plastic supports
   · one power cable
   · one Intel Inside ® Pentium II processor program label

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

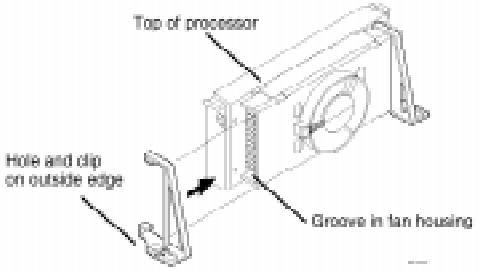
3. Install the retention mechanism onto the motherboard by following the manufacturer's instructions. (Shown installed in the following figure.)

Installing the Boxed Processor

1. Mount the two black plastic pegs onto the motherboard. These pegs will be used to attach the fan 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.

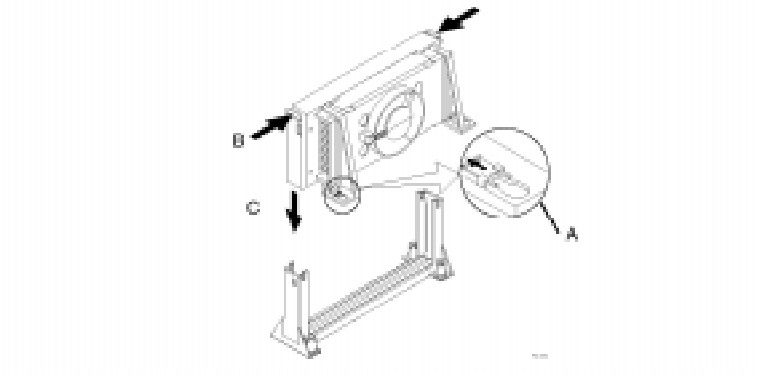


2. Slide a black plastic support onto each end of the fan heatsink, making sure that the hole and clip are on the outside edge of the support. (If the supports are reversed, the holes will not line up with the pegs on the motherboard.) Slide each support toward the center of the processor until the support is seated in the outside groove in the fan housing.



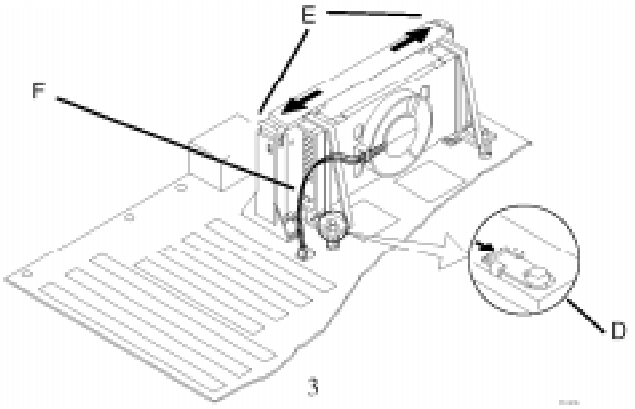
3. Slide the clip (A) on each support toward the processor, exposing the hole that will fit over the peg on the motherboard. Push the latches (B) on the processor toward the center of the processor until they click into place. (Refer to the first figure on the next page.)

4. Hold the processor so that the fan shroud is facing toward the pegs on the motherboard. Slide the processor (C) into the retention mechanism 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.



5. Slide the clips on the supports (D) forward until they click into place 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 electrical 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. Consult the motherboard documentation to find the connector.



2.2.5 Removing the Processor

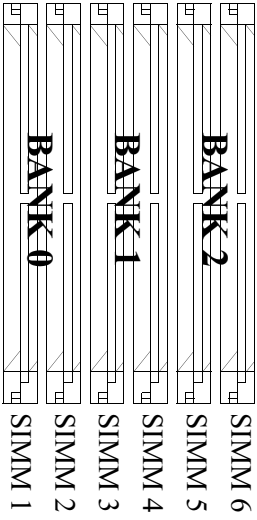
First, remove the motherboard from the chassis. To remove the processor from the motherboard, follow these steps (the reverse of the installation process).

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 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.

2.2.6 Installing System Memory



The P6F77 Mainboard has six SIMM Sockets to support up to 768MB of system memory. The six SIMM sockets (SIMM1 ~ SIMM6) are divided into 3 Banks, Bank0 (SIMM1, SIMM2), Bank1 (SIMM3, SIMM4) and Bank2 (SIMM5, SIMM6).

Memory can be installed by using 72-pin FPM/EDO/BEDO SIMM memory modules. There are no jumper settings required for the memory size or type, which is automatically detected by the BIOS. Due to the P6F77 Mainboard high speed design, the memory modules for the P6F77 must meet all of the following requirements.

DRAM TYPE	FPM (Fast Page Mode) EDO (Extended Data Output) BEDO (Burst Extended Data Output)	
DATA INTEGRITY	None	Supports ECC/Parity
MODULE SIZE	**Single-sided** 1Mx32, 4Mx32, 16Mx32 **Double-sided** 2Mx32, 8Mx32, 32Mx32	**Single-sided** 1Mx36, 4Mx36, 16Mx36 **Double-sided** 2Mx36, 8Mx36, 32Mx36
REQUIREMENTS	DRAM Speed : 60ns or 70ns RAS Access Time : 60ns ~ 70ns CAS Access Time : 10ns ~ 25ns Two SIMM modules must be installed at a time and each pair of modules must be of the same size, type and speed.	

The following table shows the system memory configuration which **does not** support ECC/Parity feature.

BANK SIMM	DRAM TYPE	DRAM SIZE
BANK 0 (SIMM1 & SIMM2)	FPM EDO BEDO	Empty, 1Mx32 (4M), 2Mx32 (8M), 4Mx32 (16M), 8Mx32 (32M), 16Mx32 (64M), 32Mx32 (128M)
BANK 1 (SIMM3 & SIMM4)	FPM EDO BEDO	Empty, 1Mx32 (4M), 2Mx32 (8M), 4Mx32 (16M), 8Mx32 (32M), 16Mx32 (64M), 32Mx32 (128M)
BANK 2 (SIMM5 & SIMM6)	FPM EDO BEDO	Empty, 1Mx32 (4M), 2Mx32 (8M), 4Mx32 (16M), 8Mx32 (32M), 16Mx32 (64M), 32Mx32 (128M)
Total System Memory	FPM EDO BEDO	8MB to Max. 768MB

The following table shows the system memory configuration which support ECC/Parity feature

BANK SIMM	DRAM TYPE	DRAM SIZE
BANK 0 (SIMM1 & SIMM2)	FPM EDO BEDO	Empty, 1Mx36 (4M), 2Mx36 (8M), 4Mx36 (16M), 8Mx36 (32M), 16Mx36 (64M), 32Mx36 (128M)
BANK 1 (SIMM3 & SIMM4)	FPM EDO BEDO	Empty, 1Mx36 (4M), 2Mx36 (8M), 4Mx36 (16M), 8Mx36 (32M), 16Mx36 (64M), 32Mx36 (128M)
BANK 2 (SIMM5 & SIMM6)	FPM EDO BEDO	Empty, 1Mx36 (4M), 2Mx36 (8M), 4Mx36 (16M), 8Mx36 (32M), 16Mx36 (64M), 32Mx36 (128M)
Total System Memory	FPM EDO BEDO	8MB to Max. 768MB

3 BIOS Configuration

After hardware configuration of P6F77 Mainboard is completed, and system hardware has been assembled, the completed system may be powered up. At this point, software setup should be run to ensure that system information is correct.

Normally, system 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.

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks at the time the system is powered up. 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.

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:

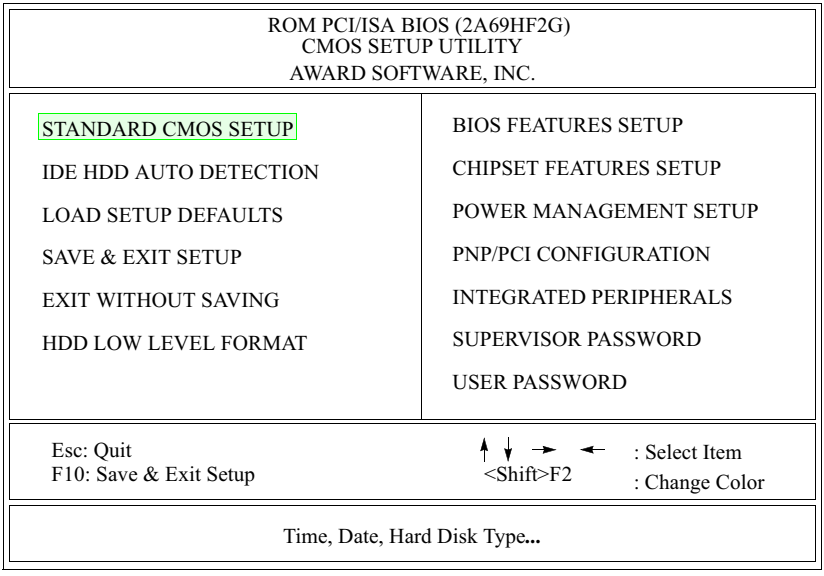
“Press DEL to enter SETUP”

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

The CMOS Setup Utility allows you to select from nine setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> key to enter the sub-menu.

Main Program Screen



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 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 (2A69HF2G)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy): Sun, Mar 23 1997
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

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:
Cylinders: The number of cylinders in the disk drive.

Heads: The number of heads.

Write Precompensation: The size of a sector gets progressively smaller as the track diameter diminishes. But each sector must still hold 512 bytes. Write precompensation circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current for sectors on inner tracks. This parameter is the cylinder number where write precompensation begins.

Landing Zone: This number is the cylinder location where the heads will normally park when the system is shut down.

Sectors: The number of sectors per cylinder. MFM drives have 17 sectors per track. RLL drives have 26 sectors per track. ESDI drives have 34 sectors per track. SCSI and IDE drives have more sectors per track.

Size: The formatted capacity of the drive is (Number of heads) x (Number of cylinders) x (Number of sectors per cylinder) x (512 bytes per sector)

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 formatted 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 HDD LOW LEVEL FORMAT

Selecting this option and pressing the <Enter> key will enable you to perform a low level format of the hard disk drive.

3.9 BIOS FEATURES SETUP

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

BIOS Features Setup Screen

ROM PCI/ISA BIOS (2A69HF2G)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled
CPU Internal Cache	: Enabled
External Cache	: Enabled
Quick Power On Self Test	: Enabled
Boot Sequence	: C, A, SCSI
Swap Floppy Drive	: Disabled
Boot Up Floppy Seek	: Disabled
Boot Up NumLock Status	: On
Gate A20 Option	: Fast
Typematic Rate Setting	: Disabled
Typematic Rate (Chars/Sec)	: 6
Typematic Delay (Msec)	: 250
Security Option	: Setup
PCI/VGA Palette Snoop	: Disabled

Video BIOS Shadow	: Enabled
C8000 - CBFFF Shadow	: Disabled
CC000 - CFFFF Shadow	: Disabled
D0000 - D3FFF Shadow	: Disabled
D4000 - D7FFF Shadow	: Disabled
D8000 - DBFFF Shadow	: Disabled
DC000 - DFFFF Shadow	: Disabled
OS Select For DRAM > 64MB	: Non-OS2

ESC: Quit ↑↓→← :Select Item
F1: Help PU/PD/+/-:Modify
F5: Old Values (Shift) F2: Color
F7: Load Setup Defaults

The following explains the options for each feature:

Virus Warning: The Virus Warning's default setting is "Disabled". 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.

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 external cache.

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 option 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” 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 “Disabled”. 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 “Disabled”. If set to “Enabled” during bootup the BIOS will check for an installed floppy disk drive.

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

Gate A20 Option: the defaults setting is “Fast”. This is the optimal setting for the Mainboard. The other option is “Normal”.

Typematic Rate Setting: The default setting is “Disabled”. 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 “SUPERVISOR/USER PASSWORD” utility on the main program screen.

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 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.

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 “Disabled”. 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.

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.

3.10 CHIPSET FEATURES SETUP

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

Chipset Features Setup Screen

ROM PCI/ISA BIOS (2A69HF2G)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	8 Bit I/O Recovery Time	: 1
DRAM Timing	: 60 ns	16 Bit I/O Recovery Time	: 1
DRAM RAS# Precharge Time	: 3	DRAM Fast Leadoff	: Disabled
MA Additional Wate State	: Enabled	Passive Release	: Enabled
RAS# To CAS# Delay	: Disabled	Delay Transaction	: Disabled
DRAM Read Burst (B/E/F)	: x 2/2/3	CPU Bus Clock Turbo	: Disabled
DRAM Write Burst (B/E/F)	: x 2/2/3		
ISA Bus Clock	: PCICLK/4		
DRAM ECC/Parity Select	: Disabled		
DRAM Refresh Queue	: Enabled		
DRAM RAS Only Refresh	: Enabled		
DRAM Fast Refresh	: Disabled		
Read-Around-Write	: Enabled		
PCI Burst Write Combine	: Enabled		
PCI-To-DRAM Pipeline	: Enabled		
CPU-To-PCI Write Post	: Enabled		
CPU-To-PCI IDE Posting	: Enabled		
System BIOS Cacheable	: Enabled		
Video RAM Cacheable	: Enabled		

ESC: Quit	↑ ↓ → ← :Select Item
F1: Help	PU/PD/+/-:Modify
F5: Old Values	(Shift) F2: Color
F7: Load Setup Defaults	

This screen controls the settings for the board's chipset. All the entries related to the DRAM timing and ISA clock on the screen are automatically configured. Do not make any change unless you are familiar with the chipset.

Auto Configuration: The default setting is "Enabled" which will set optimal DRAM timing automatically depending on whether the DRAM used is 70ns or 60ns. The other option is "Disabled" which allows you to change DRAM timing manually.

DRAM Timing: This option should be set according to the speed of the DRAM in the system. The options are "60ns" and "70ns".

DRAM RAS# Precharge Time: The options are "3 Clks" and "4 CLKs ". This option set the number of clocks RAS# is asserted for DRAM precharge. The default setting is "3". "4" clocks may be required in the system that use slower memories.

RAS# to CAS# Delay: The options are "1 Clks" and "0 Clks" (default). This option controls the number of clocks for row miss leadoff timing delay.

DRAM Read Burst (B/ E/ F): The Options are "x1/2/3", "x2/2/3", "x2/3/4" and "x3/4/4". The timing used depends on the type of DRAM (B=BEDO, E=EDO, F=FPM) on per-bank basis. Slower rates may required for slower memories. Normally set this option to "x2/2/3" for 60ns DRAM and set to "x2/3/4" for 70ns DRAMs.

DRAM Write Burst (B/ E/ F): The Options are "x2/2/3", "x3/3/3", "x3/3/4" and "x4/4/4". The timing used depends on the type of DRAM (B=BEDO, E=EDO, F=FPM) on per-bank basis. Slower rates may required for slower memories. Normally set this option to "x2/2/3" for 60ns DRAM and set to "x3/3/4" for 70ns DRAMs.

ISA Bus Clock: The options are "PCICLK/4" and "PCICLK/3". This option set the ISA bus clock rate. The PCI bus clock in the P6F77 mainboard is fixed at 33.3MHz, therefore the ISA bus clock will be 8.33MHz if set to "PCICLK/4" and will be 11.11MHz if set to "PCICLK/3".

DRAM ECC/PARITY Selection: The options are "Disabled" (default), "Parity" and "ECC". This option is used to enable the system memory protection scheme: ECC (Error Checking and Correction) or Parity. The ECC scheme detects single-bit and dual-bit errors and corrects single-bit error during system memory access. The Parity scheme can only do single-bit error detection. The ECC or Parity can only be supported for SIMM modules with parity chips (by 36).

DRAM Refresh Queue: The options are "Enabled" (default) and "Disabled". When set to "Enabled", the internal 4-deep refresh queue is enabled and all refresh requests are queued.

DRAM RAS Only Refresh: The options are "Enabled" (default) and "Disabled". When set to "Disabled", the DRAM controller will use CAS before RAS scheme to refresh the system memory.

DRAM Fast Refresh: The options are "Disabled" (default) and "Enabled". The fast refresh mode implements a refresh cycle every 32 CPU bus clocks. Do not set this option to "Enabled" unless the DRAM modules in your system support fast refresh mode.

Read-Around-Write: The options are "Enabled" (default) and "Disabled". When set to "Disabled", all posted writes in the data buffer (DBX) are retired before a CPU or PCI read access is serviced.

PCI Burst Write Combine: The options are "Enabled" (default) and "Disabled". When set to "Enabled", the data buffer (DBX) is allowed to combine back-to back sequential CPU-to PCI writes (Dword or larger) into a single PCI write burst.

PCI-To-DRAM Pipeline: The options are "Enabled" (default) and "Disabled". If set to "Disabled", the pipelining of PCI-to-DRAM write cycles is restricted.

CPU-to-PCI Write Post: The options are "Enabled" and "Disabled". The default setting is "Enabled" to enable the CPU-to-PCI write posting.

CPU-To-PCI/IDE Post: The options are "Enabled" and "Disabled". The default setting is "Enabled" to enable the CPU-to-PCI IDE posting.

System BIOS Cacheable: The options are "Enabled" (default) and "Disabled". When set to "Enabled", the system BIOS will cached for faster execution.

Video BIOS Cacheable: The options are "Enabled" and "Disabled". When set to "Enabled", the system BIOS will cached for faster execution.

8 Bit I/O Recovery Time: This option sets the delay between back-to-back 8-bit I/O instructions. The options are 1, 2, 3, 4, 5, 6, 7, 8 Sysclks and NA. The default setting is "1".

16 Bit I/O Recovery Time: This option sets the delay between back-to-back 16-bit I/O instructions. The options are 1, 2, 3, 4 Sysclks and NA. The default setting is "1".

DRAM Fast Leadoff: If set to "Enabled", this enables fast timing EDO read cycles. This results in a 1 hclk pull-in for all read leadoff latencies for EDO DRAMs. This option has to be set to "Disabled", if any of the DRAMs rows is populated with FPM DRAMs. The default setting is "Disabled".

Passive Release, Delayed Transaction: To enable PCI concurrency, both two options have to be set to "Enabled". The default setting for "Passive Release" is "Enabled" and the default setting for "Delayed Transaction" is "Disabled".

CPU Bus Clock Turbo: The options are "Disabled" (default) and "Enabled". When set to "Enabled", the CPU Bus Clock will be 68.4 MHz instead of normal 66.6MHz. This option is used for burn-in test, do not enable this option in normal operation.

3.11 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 (2A69HF2G)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	:	USER DEFINE
PM Control by APM	:	Yes
Video Off Method	:	DPMS
Doze Mode	:	Disable
Standby Mode	:	Disable
Suspend Mode	:	Disable
HDD Power Down	:	Disable
MODEM Use IRQ	:	3
Fan off in Suspend	:	Disabled
** Wake Up Events **		
IRQ3 (Wake-Up Event)	:	OFF
IRQ4 (Wake-Up Event)	:	OFF
IRQ8 (Wake-Up Event)	:	OFF
IRQ12 (Wake-Up Event)	:	OFF

** Power Down/Resume Events **

IRQ3 (COM 2)	:	OFF
IRQ4 (COM 1)	:	OFF
IRQ5 (LPT 2)	:	OFF
IRQ6 (Floppy Disk)	:	OFF
IRQ7 (LPT 1)	:	OFF
IRQ8 (RTC Alarm)	:	OFF
IRQ9 (IRQ2 Redir)	:	OFF
IRQ10 (Reserved)	:	OFF
IRQ11 (Reserved)	:	OFF
IRQ12 (PS/2 Mouse)	:	OFF
IRQ13 (Coprocessor)	:	OFF
IRQ14 (Hard Disk)	:	OFF
IRQ15 (Reserved)	:	OFF

ESC: Quit ↑ ↓ → ← :Select Item
F1: Help PU/PD/+/-:Modify
F5: Old Values (Shift) F2: Color
F7: Load Setup Defaults

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 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 Widows 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 "DPMS" (Display Power Management System) which allows the BIOS to control the video card if it has the DPMS feature. Other options are "V/H SYNC+Blank" and "Blank Screen". The "V/H SYNC+Blank" option disables V/H SYNC signals and blanks the screen. The "Blank Screen" option is used when you do not have a "Green" monitor.

Doze Mode: The time setting options are "1 Min", "2 Min", "4 Min", "6 Min", "8 Min", "10 Min", "20 Min", "30 Min", "40 Min", "1 Hour" or "Disabled". 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: The time setting options are "1 Min", "2 Min", "4 Min", "6 Min", "8 Min", "10 Min", "20 Min", "30 Min", "40 Min", "1 Hour" or "Disabled". The system speed will change from turbo to slow 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.

Suspend Mode: The time setting options are "1 Min", "2 Min", "4 Min", "6 Min", "8 Min", "10 Min", "20 Min", "30 Min", "40 Min", "1 Hour" or "Disabled". 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 Power Down: The time setting range from "1 Min" to "15 Min" or "Disabled". The IDE hard drive will spin down if it is not accessed within a specified length of time.

Fan off in Suspend: If set to "Enabled" CPU fan will be turned off in Suspend Mode.

Wake-Up Events: When a hardware events is set to "ON", the occurrence of a corresponding events will wake up the system from the suspend mode.

Power Down/Resume Events: When a hardware events is set to "ON", the occurrence of a corresponding events will reload PM (Power Management) timer and prevent the system from entering any PM mode.

3.12 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 Mainboard will not work properly.

Selecting "PNP / PCI CONFIGURATION" on the main program screen displays this menu:

PNP / PCI Configuration

ROM PCI/ISA BIOS (2A69HF2G)
PNP / PCI CONFIGURATION
AWARD SOFTWARE, INC.

Resources Controlled By	:	Manual	
Reset Configuration Data	:	Disabled	
IRQ-3 assigned to	:	Legacy ISA	
IRQ-4 assigned to	:	Legacy ISA	
IRQ-5 assigned to	:	PCI / ISA PnP	
IRQ-7 assigned to	:	Legacy ISA	
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	
DMA-6 assigned to	:	PCI / ISA PnP	
DMA-7 assigned to	:	PCI / ISA PnP	

PCI IRQ Actived By	:	Level
PCI IDE IRQ Map To	:	PCI - AUTO
Primary IDE INT#	:	A
Secondary IDE INT#	:	B
Reserved Memory Addr	:	N/A
Reserved Memory Size	:	8K

ESC: Quit ↑↓→← :Select Item
F1: Help PU/PD/+/-:Modify
F5: Old Values (Shift) F2: Color
F7: Load Setup Defaults

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

Reset Configuration Data: The system BIOS supports the Plug and Play feature so the resource assigned to each peripheral has to be recorded to prevent resources 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 "Disabled" 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 auto set this option to "Disabled".

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 IRQ Actived By: Options are "Level" or "Edge". The default setting is "Level". This option is used to select the IRQ's trigger method.

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 an 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 or PCI-SLOT 3) 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.

Reserved Memory Address: This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards. The options are "NA" (default), "C8000", "CC000", "D0000", "D4000", "D8000" and "DC000".

Reserved Memory Size: This option specifies the size of the memory area reserved for legacy ISA adapter cards. The options are "8K" (default), "16K", "32K" and "64K".

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

3.13 INTEGRATED PERIPHERALS

Selecting "INTEGRATED PERIPHERIALS" on the main program screen displays this menu

Integrated Peripheral Screen

ROM PCI/ISA BIOS (2A69HF2G)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	:	Enabled
PCI Slot IDE 2nd Channel	:	Enabled
IDE Primary Master PIO	:	Auto
IDE Primary Slave PIO	:	Auto
IDE Secondary Master PIO	:	Auto
IDE Secondary Slave PIO	:	Auto
On-Chip Primary PCI IDE	:	Enabled
On-Chip Secondary PCI IDE	:	Enabled
Onboard FDC Controller	:	Enabled
Onboard Serial Port 1	:	3F8 / IRQ4
Onboard Serial Port 2	:	2F8 / IRQ3
Onboard IR Controller	:	Enabled
IR Address Select	:	2E8H
IR Mode	:	IrDA
IR Transmission Delay	:	Enabled
IR IRQ Select	:	IRQ10
Onboard Parallel Port	:	378 / IRQ7

Parallel Port Mode	:	ECP+EPP
ECP Mode Use DMA	:	3
Power-On by Keystroke	:	Disabled
Power-On by Ring	:	Disabled
Power-On by Alarm	:	Enabled
Alarm Year	:	NA
Alarm Month	:	NA
Alarm Date	:	NA
Alarm Day	:	NA
Alarm Hour	:	NA
Alarm Minute	:	0
USB Controller	:	Disabled

ESC: Quit ↑↓→← :Select Item
F1: Help PU/PD/+/-:Modify
F5: Old Values (Shift) F2: Color
F7: Load Setup Defaults

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.

PCI Slot IDE 2nd Channel
The default setting is "Enabled". This option enables the Secondary PCI IDE controller of the PCI IDE adapter.

IDE Primary Master PIO, IDE Primary Slave PIO, IDE Secondary 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 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 the lower mode. (e.g. From Mode 3 to Mode 2). All IDE drives should work with PIO mode 0.

On-Chip Primary/Secondary PCI IDE: The default setting is "Enabled". This option enables the onboard Primary / Secondary PCI IDE controller.

Onboard FDD Controller: The default setting is "Enabled". This option enables the onboard FDD controller.

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 (Disable the onboard serial port)

Onboard IR Controller: The options are "Enabled" (default) or "Disabled". When set to "Enabled" that will enabled the following IR setting. Disabled will turn off the IR function.

IR Address Select: The options are "2E8" (default), "3E8", "2F8", "3F8", "2E0" and "3E0".

IR Mode: The options are "IrDA" (default) and "ASKIR". The IrDA is Hewlett Packard infrared communication protocol with maximum baud rate up to 115.2K bps, and the ASKIR is Sharp infrared communication protocol with maximum baud rate up to 57.6K bps. The IR mode setting depends on which type of infrared module is used in the system.

IR Transmission Delay: The options are "Enabled" (default) and "Disabled". When set to "Enabled", the IR controller will delay 4 characters-time (40 bit-time) when changing from RX (Receive) mode to TX (Transmit) mode.

IR IRQ Select: The options are "IRQ 3", "IRQ 4", "IRQ 10" (default) and "IRQ 11".

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/IRQ7", "3BC/IRQ7" and "Disabled" (disable the onboard parallel port). Note: Printer port always use IRQ7 when set "378/IRQ7" or "278/IRQ7" or "3BC/IRQ7" to "Enabled".

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

ECP Mode Use DMA: When on-board parallel port set to ECP mode, the parallel port has option to use DMA "3"(default) or "1".

Power-On by Keystroke: If set to "Enabled" and 5V for Keyboard is supplied by 5VSB (pin-2 and pin-3 of JP10 is shorted by a shunt), the system power will be turned on if you press any key. Note: you need to use a ATX power supply which is capable of delivering min. 700mA for 5VSB.

Power-On by Ring: If set to "Enabled", the system power will be turned on if an FAX/Modem receives an incoming telephone ringing.

Power-On by Alarm: If set to "Enabled", you may set year (range from 1997 to 2025 or NA), month (range from 1 to 12 or NA), date (range from 1 to 31 or NA), day (range from Monday to Sunday or NA), hour (range from 1 to 24 or NA) and minute (range from 0 to 55 at 5 minutes interval) to turn on your system power.

USB Controller: The options are "Disabled" (default) and "Enabled". To activate the Universal Serial Bus function, this option has to be set to "Enabled".

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

3.14 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 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 entering a new password when the “Enter Password” dialog box appears. A message will appear confirming that the password is disabled.

If you have set both supervisor and user password, 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 JP10 to short pin2 and pin3 for 5 seconds, then move the shunt to short pin1 and pin2 of JP10.

4 Driver and Utility

4.1 Flash Utility

The BIOS of the P6F77 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 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 disk which does not contain CONFIG.SYS nor AUTOEXEC.BAT files. If you are using MS-DOS 6.x, you can press <F5> function key while the “Starting MS-DOS...” appears on the screen to bypass the CONFIG.SYS and AUTOEXEC.BAT.

4.2 EIDE Bus Master Driver

The Bus Master EIDE logic designed in the Intel 82440FX chipset is intended to reduce the workload of the CPU and make the CPU run 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 operate at bus-mastering DMA mode.

There are three self-extracting archives files in the BMIDE directory.

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

Execute the BMIDE_95.EXE to extract files for driver and installation instructions for Windows 95. Execute the BMIDE_NT.EXE to extract files for driver and installation instructions for Windows NT. Execute the BMIDEOS2.EXE to extract files for driver and installation instructions for OS/2.

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