6KD

82440 LX PCI Mainboard
User's Guide &
Technical Reference

SOYO™

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FC Tested To Comply With FCC Standards
FOR HOME OR OFFICE USE

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1 Introduction

The 82440 LX PCI mainboard is a high-performance ATX architecture system board that supports the (Dual) Pentium II processor family. This mainboard is fully compatible with industry standards, and adds many technical enhancements.

Key Features

- Processor supports:
  - — Intel Pentium IICPU up to 66 MHz host bus frequency (233 ~ 333 MHz)
  - — **auto detection of CPU voltage**
  - — **supports (Dual) Intel Pentium II processors**
- DRAM controller:
  - — **supports 4 strips of 168-pin EDO /SDRAM Unbuffered DIMM**
  - — supports auto detection of memory type
  - — **supports ECC or Parity configuration**
  - — has onboard memory configurations from 8MB to 512MB
- BUS controller:
  - — complies with the PCI specifications v2.1
  - — five 32-bit PCI slots (Masters) and two ISA slots
  - — **supports Universal Serial Bus—USB onboard**
- Peripheral controller:
  - — System BIOS built-in NCR4.0 SCSI/SY-S8115 SCSI/SY-V325-2M Card BIOS and "Plug and Play" function
  - — onboard built-in PCI Master IDE controller and floppy controller
  - — onboard support for two high speed UARTS (w/i 16550 FIFO) and Multimode parallel port for Standard, Enhanced (EPP) and high speed (ECP) modes, PS/2 mouse function
  - — onboard FLASH Memory for easy upgrade BIOS
  - — **onboard supports for IR function**
  - — One 32-bit AGP slot onboard

Unpacking the Mainboard

The mainboard package contains:

- The 82440LX Mainboard
- This User's Guide
- One Triones IDE Bus Master Drivers Diskette

Note: Do not unpack the mainboard until you are ready to install it.

Follow the precautions below while unpacking the mainboard.

1. Before handling the mainboard, ground yourself by grasping an unpainted portion of the system's metal chassis.
2. Remove the mainboard from its anti-static packaging and place it on a grounded surface, component side up.
3. Check the mainboard for damage. If any chip appears loose, press carefully to seat it firmly in its socket.

Do not apply power if the mainboard appears damaged. If there is damage to the board contact your dealer immediately.

Electrostatic Discharge Precautions

Make sure you ground yourself before handling the mainboard or other system components. Electrostatic discharge can easily damage the components. Note that you must take special precaution when handling the mainboard in dry or air-conditioned environments.

Take these precautions to protect your equipment from electrostatic discharge:

- Do not remove the anti-static packaging until you are ready to install the mainboard and other system components.
- Ground yourself before removing any system component from its protective anti-static packaging. To ground yourself grasp the expansion slot covers or other unpainted portions of the computer chassis.
- Frequently ground yourself while working, or use a grounding strap.
- Handle the mainboard by the edges and avoid touching its components.

Mainboard Layout w/ Default Settings

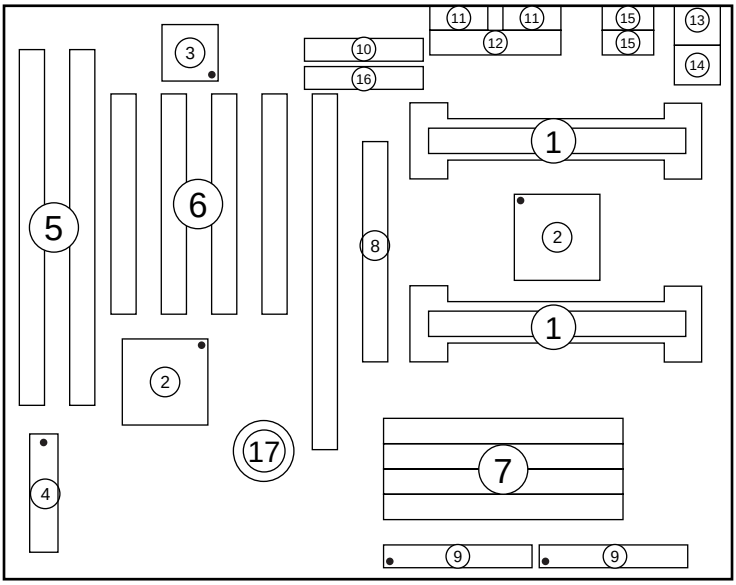


Figure 1–1. Mainboard Layout

1. Slot 1 for PII CPU
2. 82440LX Chipset
3. Ultra I/O Chip
4. PnP FLASH BIOS
5. ISA Slot
6. PCI Slot
7. DIMM Memory Bank
8. AGP Port
9. IDE1/IDE2 Connector
10. Floppy Connector
11. COM1/COM2 Connector
12. Parallel Port Connector
13. PS/2 Keyboard Connector
14. PS/2 Mouse Connector
15. USB 1/2 Connector
16. ATX Power Connector
17. CMOS Battery (Lithium battery, 3V)

Default settings are as follows: 686 (PII) 133MHz* CPU, On-board PCI Bus IDE Enabled, FDC Enabled, 2 high speed UARTS Enabled (w/ 16550 FIFO), 1 EPP/ECP port (ECP + EPP mode), and ATX Power Supply.

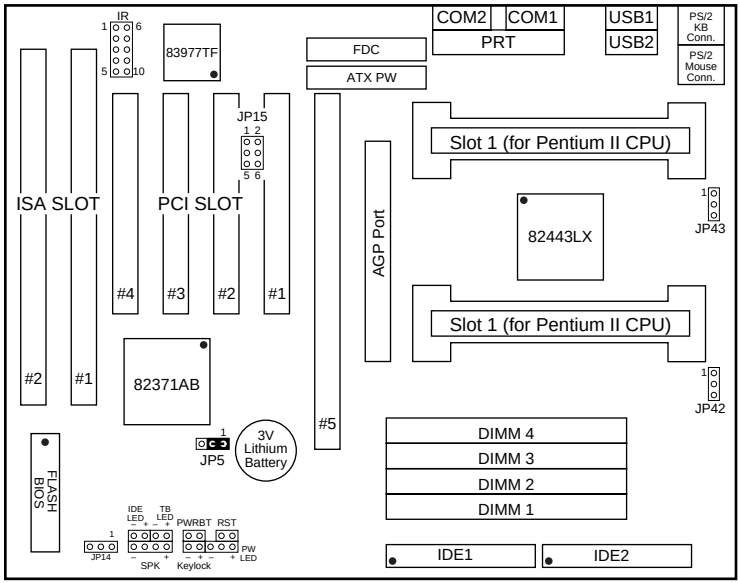


Figure 1–2. Mainboard Default Setting

* *There is no 133MHz in the Pentium II CPU family. 133MHz setting is used as default and as a "safe" frequency to allow the board to boot-up at any time when the BIOS settings are erased or reset. Refer to the "CPU Type Configuration" section of Chapter 2.*

Important: ***Make sure the system is well ventilated to prevent overheating and ensure system stability.***

2 Hardware Setup

This chapter explains how to configure the mainboard's hardware. After you install the mainboard, you can set jumpers, install memory on the mainboard, and make case connections. Refer to this chapter whenever you upgrade or reconfigure your system.

CAUTION*: *Turn off power to the mainboard, system chassis, and peripheral devices before performing any work on the mainboard or system.

Jumpers

JP5: CMOS Clear Jumper

Clear the CMOS memory by momentarily shorting this jumper; then open the jumper to retain new settings.

CMOS Setting	JP5
Retain CMOS data (default)	
Clear CMOS data	

CPU Type Configuration

This mainboard is designed so that it is not necessary to use any jumpers to set the CPU frequency and multipliers onboard. Instead of using jumpers, the settings for the CPU frequency are set through the BIOS Setup which allows you to use any type of CPU from the Pentium II family's 233-333 range.

In order to change the CPU type, you need to enter the BIOS by pressing the <Delete> key during boot-up and then select the "Chipset Features Setup" menu. There is an item called "CPU Frequency Pentium II" under this setup section and it allows you to set the frequency according tot the speed of the Pentium II CPU that you have, which should be clearly indicated on the case. The choices of settings are 133, 233, 266,

300, and 333 MHz. The 133 MHz setting is used as default and as a "safe" frequency which means the board can be boot-up at any time even if the BIOS settings are erased or reset, however, there is no Pentium II CPU of that frequency.

If the frequency is set too high, the CPU will not be able to function properly and the board will not boot up. By pressing the <Insert> key a few times while turning on the computer, the frequency will be set back to the default value, 133MHz, and you will be able to enter the BIOS Setup to correct the CPU frequency value.

Memory Configuration

The mainboard supports four banks of **168-pin 3.3V EDO/SDRM Unbuffered DIMM**. The mainboard supports **from 8 to 512 Mbytes** with no other restrictions on memory configurations. You can install DRAM in any combination without having to rely on a memory configuration table. Memory configuration is thus "**Table-Free**" in any bank.

Multi I/O Port Addresses

Default settings for multi-I/O port addresses are shown in the table below.

Port	I/O Address	IRQ	Status
LPT1*	378H	7	ECP + EPP
COM1	3F8H	4	
COM2	2F8H	3	

* If default I/O port addresses conflict with other I/O cards (e.g. sound cards or I/O cards), you must adjust one of the I/O addresses to avoid address conflict. (You can adjust these I/O addresses from the BIOS.

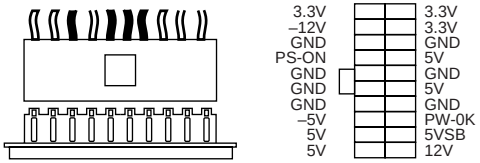
Note: Some sound cards have a default IRQ setting for IRQ7, which may conflict with printing functions. If this occurs do not use sound card functions at the same time you print.

Connectors

Attach the mainboard to case devices, or an external battery, via connectors on the mainboard. Refer to Figure 1-1 for connector locations and connector pin positions.

ATX PW — ATX Power Supply Connectors

The motherboard provides an ATX power supply connector. It is a twenty-pin male header connector. Plug the connector from the power directly onto the board connector while making sure the pin1 is in its position.



PS/2 Keyboard Connector

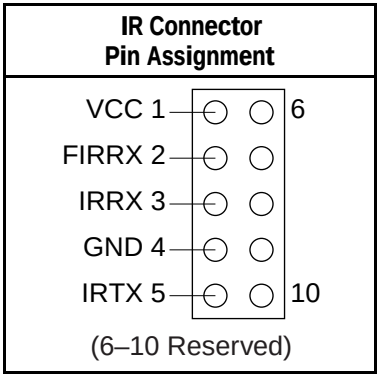
A six-pin female PS/2 keyboard connector is located at the rear of the board. Plug the keyboard jack into this connector.

PS/2 Mouse Connector

A six-pin female PS/2 mouse connector is located at the rear of the board. Plug the mouse jack into this connector.

IR – IR Connector

A five-pin wafer connector is for connecting to the IR device. Use the device that has the ASKIR or HPSIR specification and choose ASKIR/HPSIR from the BIOS setup.



Keylock & Power LED Connector

This connector is for a lock that may be installed on the system case for enabling or disabling the keyboard. This connector also attaches to the case's Power LED. (Pin 1, 3 for power LED, pin 4, 5 for keylock.)

SPK – Speaker Connector

Attach the system speaker to connector SPK.

RST – Hardware Reset Control

Attach the Reset switch to RST. Closing the Reset switch restarts the system.

IDE1/IDE2 – On-board Primary/Secondary IDE HDD Connectors

Attach on-board hard disk drives to these connectors.

COM1/COM2 Connectors

Connect COM1/COM2 devices to these connectors.

IDE LED – IDE HDD LED Connectors

Attach on-board IDE device LEDs to this connector. The LED lights when an IDE device is active.

FDC Connector

Attach floppy cable to this connector.

PRT – Parallel Port Connector

Attach parallel port cable to this connector.

USB1/USB2 – Universal Serial Bus Connector

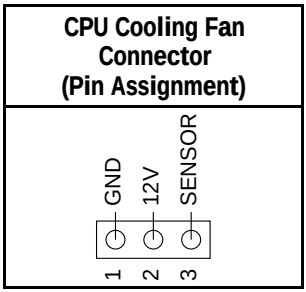
Attach USB cable to these connectors for external USB device.

PWRBT – ATX Power Supply On/Off Switch Connector (Momentary Type)

Attach a two-pin switch to this connector for turning the ATX power supply on/off.

JP42, JP43: CPU Cooling Fan Connector

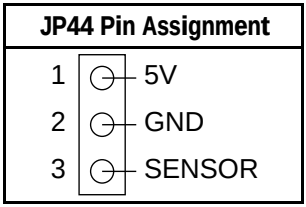
This 3-pins connector provides 12V power for the CPU cooling fan which matches the pin assignment of this connector. If you enable the Suspend Mode function in BIOS setup, this fan will stop when the system is into the suspend mode.



Note: Make sure the pin assignment of our CPU Cooling Fan is matched with this connector before connecting it, otherwise, you may damage either the mainboard or the cooling fan.

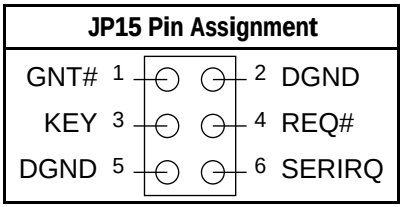
JP14 – Wake-On-LAN (WOL) Header

Attach a 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function. This function lets users wake up the connected computer through the LAN card. (The cable should be included with the LAN card.)



JP15 – PCI Audio Card Connector

This 6-pin connector is used for plugging the PCI Audio card's PCI request/grant sideband signals connector into. Through this connector requests for legacy DMA channel support as needed by some soundcards are forwarded to the PCI Bus. Your soundcard package should include a cable for this feature if it requires it.

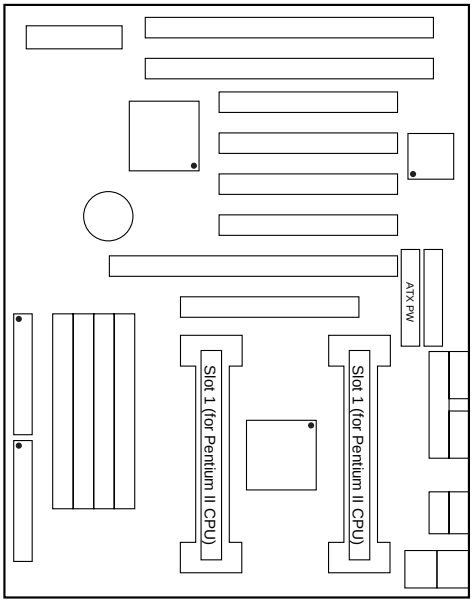


Slot 1 Installation Guide

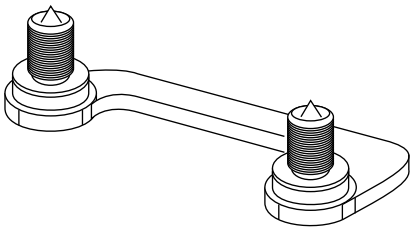
This mainboard provides a non-boxed 686 (PII) CPU retention set to secure the CPU on this board. Follow the steps below to secure this type of CPU on to your motherboard. These steps are the same for both Slot 1 CPUs.

Step 1:

Find the ATX PW and the Slot 1 on the board and set the board in the direction as follows before doing any installation.

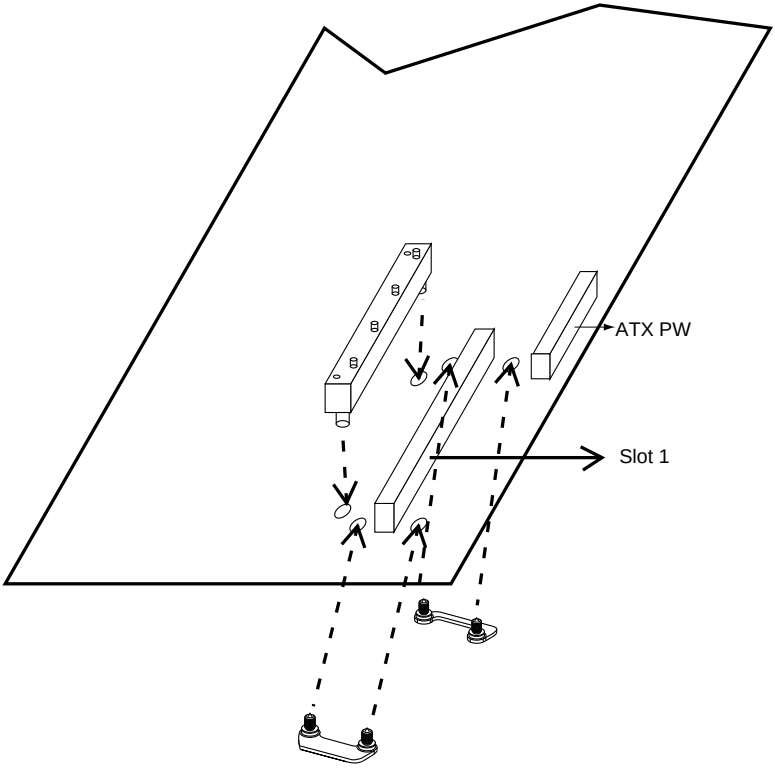


Install the 2 pairs of screws, as shown in the following figure, from the bottom of the motherboard upward onto the mainboard.



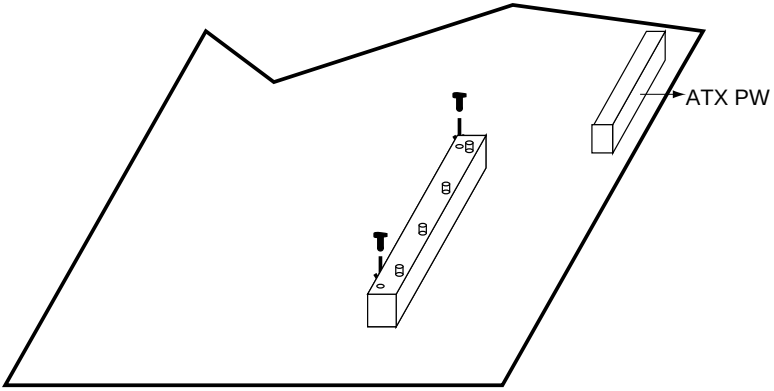
Step 2:

Insert the supporting base, which is shown below, into the two holes directly to the left of the 2 sets of screws that have just been inserted on to the board.



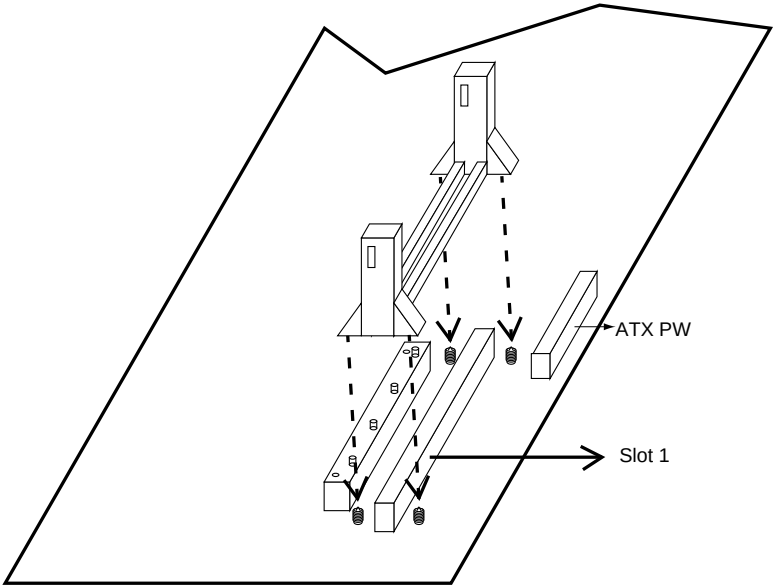
Step 3:

Insert the 2 latches into the two holes of the supporting base and then turn them 90° to secure the CPU.



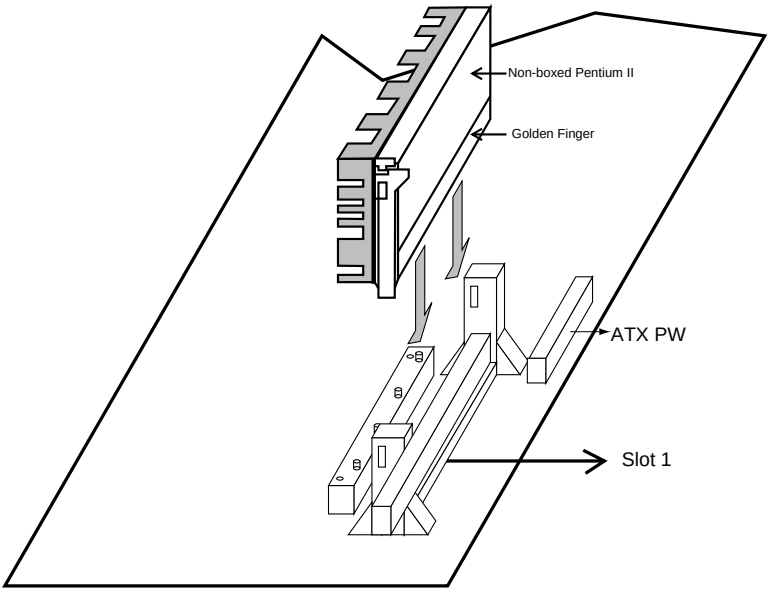
Step 4:

Set the retention clip right on the top of the 2 sets of screws which are along the sides of Slot1 and then tighten the 4 screws on the retention clip.



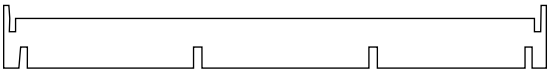
Step 5:

Insert the CPU into the retention clip and notice that the heat sink is on the left hand side of the board. Lock the two latches on the sides of the CPU to secure the CPU.

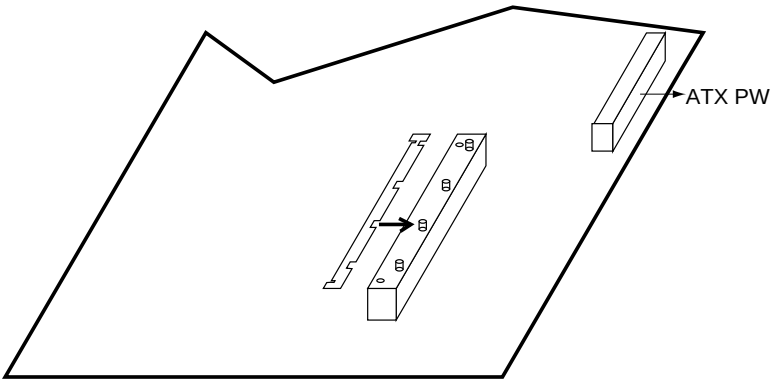


Step 6:

Insert the clip portion of the CPU supporter, which is shown below, so that the heat sink can sit on the top of the whole CPU supporter.



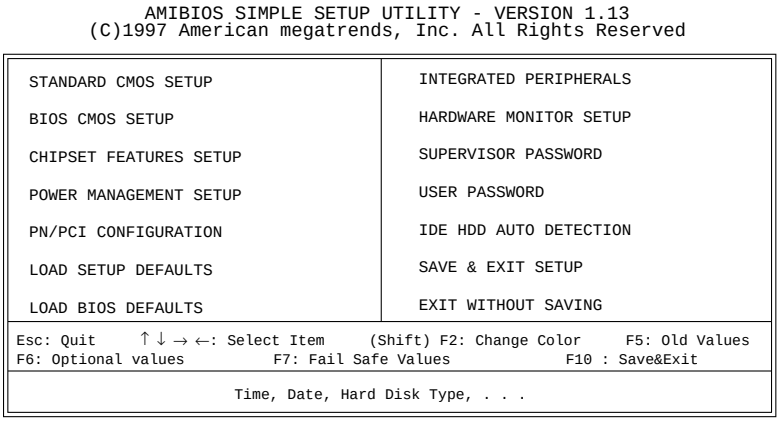
Top View of CPU Support Clip



3 BIOS Setup

The mainboard's BIOS setup program is the PCI/ISA BIOS from AMI Software Inc. Enter the AMI BIOS program's Main Menu as follows:

1. Turn on or reboot the system. After a series of diagnostic checks, you are asked to press <DEL> to enter Setup.
2. Press the <DEL> key to enter the AMI BIOS program and the main screen appears:



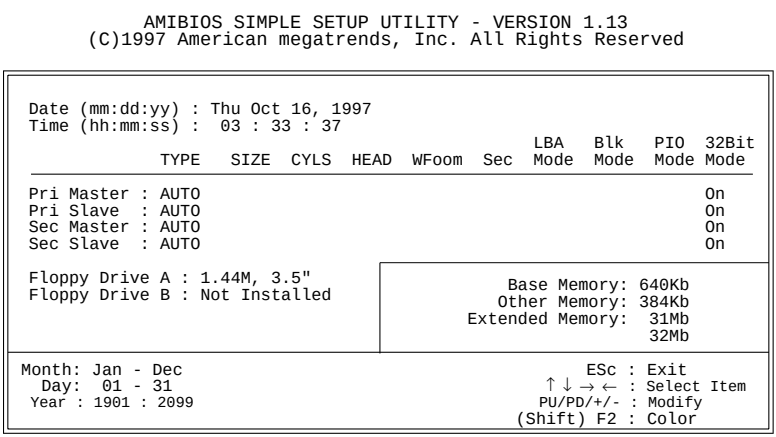
3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (See the following sections.)
4. Press <ESC> at anytime to return to the Main Menu.
5. In the Main Menu, choose "SAVE AND EXIT SETUP" to save your changes and reboot the system. Choosing "EXIT WITHOUT SAVING" ignores your changes and exits the program.

The Options listed in the Main menu will be described in more detail in the sections that follow.

Standard CMOS Setup

Run the Standard CMOS Setup as follows.

1. Choose “STANDARD CMOS SETUP” from the Main Menu. A screen appears.



2. Use arrow keys to move between items and select values. Modify selected fields using PgUp/PgDn/+/– keys. Some fields let you enter values directly.

Date (mm/dd/yy) Type the current date.

Time (hh:mm:ss) Type the current time.

Primary (Secondary) Master & Slave Choose from the standard hard disk types 1 to 46. Type 47 is user definable. If a hard disk is not installed choose “Not installed.” (default)

Drive A & B Choose 360KB , 5 1/4 **in**.,
1.2MB , 5 1/4 **in**.,
720KB , 3 1/2 **in**.,
1.4M , 3 1/2 **in.**(default),
2.88 MB, 3 1/2 **in**. or
Not installed

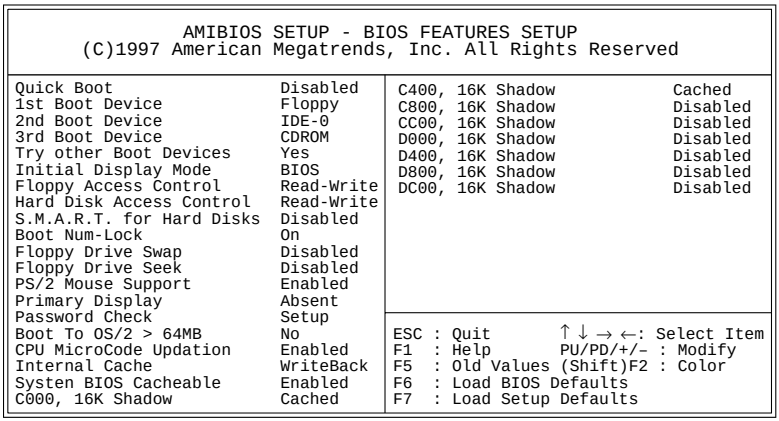
Boot Sector Virus Protection Setting this item to Enabled will make the BIOS verify that the boot sector of your harddisk is not corrupted by a virus, by warning you when a change of the boot sector is detected.

3. When you finish, press the <ESC> key to return to the Main Menu.

BIOS Features Setup

Run the BIOS Features Setup as follows.

1. Choose "BIOS FEATURES SETUP" from the Main Menu and a screen with a list of items appears. (**The screen below shows the BIOS default settings.**)



```
                AMIBIOS SETUP - BIOS FEATURES SETUP
        (C)1997 American Megatrends, Inc. All Rights Reserved

Quick Boot                  Disabled    C400, 16K Shadow            Cached
1st Boot Device             Floppy      C800, 16K Shadow            Disabled
2nd Boot Device             IDE-0       CC00, 16K Shadow            Disabled
3rd Boot Device             CDROM       D000, 16K Shadow            Disabled
Try other Boot Devices      Yes         D400, 16K Shadow            Disabled
Initial Display Mode        BIOS        D800, 16K Shadow            Disabled
Floppy Access Control       Read-Write  DC00, 16K Shadow            Disabled
Hard Disk Access Control    Read-Write
S.M.A.R.T. for Hard Disks   Disabled
Boot Num-Lock               On
Floppy Drive Swap           Disabled
Floppy Drive Seek           Disabled
PS/2 Mouse Support          Enabled
Primary Display             Absent
Password Check              Setup
Boot To OS/2 > 64MB         No          ESC : Quit       ↑ ↓ → ←: Select Item
CPU MicroCode Updation      Enabled     F1  : Help       PU/PD/+/- : Modify
Internal Cache              WriteBack   F5  : Old Values (Shift)F2 : Color
Systen BIOS Cacheable       Enabled     F6  : Load BIOS Defaults
C000, 16K Shadow            Cached      F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/– keys. <F> keys are explained below:

<F1>: "Help" gives options available for each item.

Shift <F2>: Change color.

<F5>: Get the old values. These values are the values with which the user started the current session.

<F6>: Load all options with the BIOS Setup default values.

<F7>: Load all options with the Power-On default values.

A short description of screen items follows:

Quick Boot	Set this option to *Enabled* to shorten the boot-up time. (Some of the Power On Self Tests will not be performed.)
1st Boot Device **2nd Boot Device** **3rd Boot Device**	Set these options to select the device that you want the system to boot from. Choices are: Floppy, Floptical (RS 120), CD ROM, SCSI device, network, IDE 0, IDE 1, IDE 2, and IDE 2.
Try Other Boot Device	Set this option to *Yes* if you want the system to further check for boot devices if it doesn't find anything in the three options specified above.
Initial Display Mode	Set this option to either Silent or BIOS.
Floppy Access Control	Set this option to enable to write to floppy disks. Choices are either *Read/Write* or *Read Only*.
Hard Disk Access Control	Set this option to enable to write to hard disks. Choices are either *Read/Write* or *Read Only*.
SMART for Harddisks	Choose *Enabled* only with SMART enabled harddisks and to make use of the failure warning system that some new harddisk types provide.
Boot-Up Numlock	Set this option to *On* if you want to automatically set your keyboard to numlock on boot-up.
Floppy Drive Swap	Set this option to *Enabled* will switch you original Drive A to Drive B.
Floppy Drive Seek	Set this option to either *Enabled* or *Disabled*.
PS/2 Mouse Support	Enable this option to use a PS/2 Mouse.
Primary Display	Set this option to either *Absent* or *VGA, EBA*.

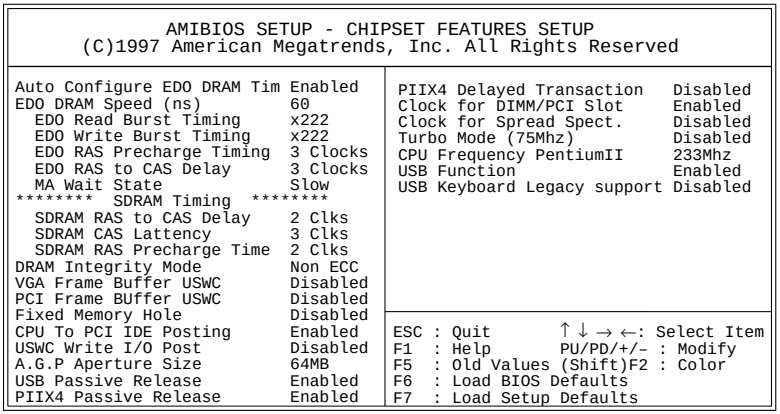
Password Check	Always:	the system will ask you to enter your password both at boot-up and on entering the BIOS Setup.
	Setup:	the system only asks you for the password on entering the BIOS Setup.
Boot to OS/2 > 64Mb	Set this option to *Yes* when your operating system is OS/2.	
CPU Microcode Updating	Set this option to either *Disabled* or *Enabled.*	
Internal Cache	Select the Internal Cache Mode from *Disabled*, *Write Through*, or *Write Back*.	
System BIOS Cacheable	Setting this option to *Enabled* speeds up the BIOS operations by keeping the most frequent used routines in cache memory.	
Shadow Segments	These segments allow you to load the BIOS ROM into RAM (shadowing) to improve BIOS speed. Select one of the following settings for each segment: Disabled, Enabled (load into RAM), Cached (make the segment cacheable.)	

3. After you have finished with the BIOS Features Setup program, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Chipset Features Setup

The Chipset Features Setup option changes the values of the chipset registers. It is recommended that you change these settings only if you are familiar with teh chipset.

1. Choose "CHIPSET FEATURES SETUP" from the Main Menu and the following screen appears. (The screen below shows default settings.)



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              AMIBIOS SETUP - CHIPSET FEATURES SETUP
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Auto Configure EDO DRAM Tim Enabled      PIIX4 Delayed Transaction   Disabled
EDO DRAM Speed (ns)         60           Clock for DIMM/PCI Slot     Enabled
  EDO Read Burst Timing     x222         Clock for Spread Spect.     Disabled
  EDO Write Burst Timing    x222         Turbo Mode (75Mhz)          Disabled
  EDO RAS Precharge Timing  3 Clocks     CPU Frequency PentiumII     233Mhz
  EDO RAS to CAS Delay      3 Clocks     USB Function                Enabled
  MA Wait State             Slow         USB Keyboard Legacy support Disabled
********  SDRAM Timing  ********
  SDRAM RAS to CAS Delay    2 Clks
  SDRAM CAS Lattency        3 Clks
  SDRAM RAS Precharge Time  2 Clks
DRAM Integrity Mode         Non ECC
VGA Frame Buffer USWC       Disabled
PCI Frame BUffer USWC       Disabled
Fixed Memory Hole           Disabled
CPU To PCI IDE Posting      Enabled      ESC : Quit       ↑ ↓ → ←: Select Item
USWC Write I/O Post         Disabled     F1  : Help       PU/PD/+/- : Modify
A.G.P Aperture Size         64MB         F5  : Old Values (Shift)F2 : Color
USB Passive Release         Enabled      F6  : Load BIOS Defaults
PIIX4 Passive Release       Enabled      F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/– keys.

A short description of screen items follows:

Auto Configure EDO DRAM — Enable this option (strongly recommended) and the system automatically sets all options for memory management.

EDO RAM Speed(ns) — Select the speed of your memory: 70, 60, or 50ns.

EDO Read Burst Timing; **EDO Write Burst Timing;** **EDO RAS Precharge Timing;** **EDO RAS to CAS Delay;** **MA Wait State;** **SDRAM RAS to CAS Delay;** **SDRAM CAS Latency;** **SDRAM RAS Precharge Timing;**	Use the default setting for all these options.
DRAM Integrity Mode	Non ECC: No error checking at all. EC Only: Checks for parity errors (parity memory necessary) ECC: Checks for and corrects errors (ECC memory necessary)
VGA Frame Buffer USWC; **PCI Frame Buffer USWC**	Set these options to either *Enabled* or *Disabled.*
Fixed Memory Hole	Set this option to *Disabled*, *512Kb-640Kb*, or *15Mb – 16Mb.*
CPU To PCI IDE Posting; **USWC Write I/O Post**	Use the default setting for these two options.
AGP Aperture Size	Choose from: 4, 8, 16, 21, 64, or 128Mb.
USB Passive Release: **PIIX4 Passive Release;** **PIIX4 Delayed Transaction;** **Clock for DIMM//PCI Slot**	Set these options to either *Enabled* or *Disabled.*

Clock for Spread Spect.	Set this option to either *Disabled* or one of the following spread percentages: 0.5%, 1.0%, 1.5%, or 3.0%.
Turbo Mode (75Mhz)	Enabled: Your Pentium II CPU will run on a 75Mhz busclock which will increase the speed of your system. This busclock falls without the specifications of INTEL, however, so no guarantees of proper functioning are made. In addition you have to use high quality Add-On cards and memory Modules when running the system at a busclock of 75Mhz to avoid problems. Disabled: Your system will run on the INTEL specified busclock of 66Mhz.
CPU Frequency	Select the frequency of your Pentium II CPU from the following: 233, 266, 300, or 333 MHz. The 133MHz setting is the default setting and it allows you to boot-up the system at any time when a wrong setting does not allow the board to boot up.
USB Function	Enable this option if you plan to use the USB ports.
USB Keyboard Legacy Support	Set this option to *Enabled* if you use a USB keyboard.

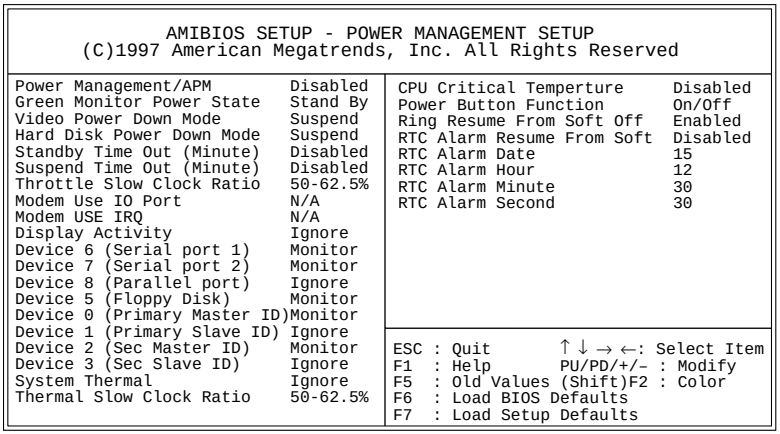
3. After you have finished with the Chipset Features Setup, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Power Management Setup

The Power Management Setup option sets the system's power saving functions.

Run the Power Management Setup as follows.

1. Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen with a list of items appears.



```
        AMIBIOS SETUP - POWER MANAGEMENT SETUP
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Power Management/APM          Disabled   CPU Critical Temperture     Disabled
Green Monitor Power State     Stand By   Power Button Function       On/Off
Video Power Down Mode         Suspend    Ring Resume From Soft Off   Enabled
Hard Disk Power Down Mode     Suspend    RTC Alarm Resume From Soft  Disabled
Standby Time Out (Minute)     Disabled   RTC Alarm Date              15
Suspend Time Out (Minute)     Disabled   RTC Alarm Hour              12
Throttle Slow Clock Ratio     50-62.5%   RTC Alarm Minute            30
Modem Use IO Port             N/A        RTC Alarm Second            30
Modem USE IRQ                 N/A
Display Activity              Ignore
Device 6 (Serial port 1)      Monitor
Device 7 (Serial port 2)      Monitor
Device 8 (Parallel port)      Ignore
Device 5 (Floppy Disk)        Monitor
Device 0 (Primary Master ID)  Monitor
Device 1 (Primary Slave ID)   Ignore
Device 2 (Sec Master ID)      Monitor    ESC : Quit       ↑ ↓ → ←: Select Item
Device 3 (Sec Slave ID)       Ignore     F1  : Help       PU/PD/+/- : Modify
System Thermal                Ignore     F5  : Old Values (Shift)F2 : Color
Thermal Slow Clock Ratio      50-62.5%   F6  : Load BIOS Defaults
                                         F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/- keys.

A short description of selected screen items follows:

Power Management — Set this option to *Disabled* to disable all power saving functions and many of the options on this menu will be unavailable.

Green Monitor Power State; Video Power Down Mode; Harddisk Power Down Mode — These three options can be set to *Disabled*, *Stand by*, or *Suspend* to determine which mode will be entered when the standby and suspend timers run out. *Stand by* is entered when the Standby timer runs out and the clock will be slowed down to a x% of the original clock speed. X is determined by the 'Throttle Slow clock Ratio' setting. Suspend mode stops the CPU and is entered when the suspend timer runs out.

Standby Time out (Minute) Sets the Standby Timer, ranges from 1 to 60 minutes.

Suspend Time out (Minute) Sets the Suspend Timer, ranges from 1 to 60 minutes.

Throttle Slow Clock Ratio Sets the percentage of the original clock speed to which the CPU will slow down when entering the Standby mode.

Modem Use I/O Port Set this option to the I/O address that your modem is using. Choose from 3F8,/COM1, 2F8/COM2, 3E8/COM3, 2E8/COM4, or N/A.

Modem Use IRQ Set this option to the IRQ number that your modem is using. Choose from 3, 4, 5, 7, 9, 10, 11, or N/A.

Display Activity; Device 6, 7, 8, 5, 0, 1, 2, 3 Choose either *Monitor* or *Ignore* for all these devices.
Monitor: Makes the BIOS check for activity on these devices, resetting the standby and suspend timers if activity is detected.

System Thermal Choose *Ignore* or *Monitor.*
Monitor: CPU slows down to a frequency of x% of the original clock speed. X can be set by changing the *Thermal Slow Clock Ratio* option below and the critical temperature at which the CPU will slow down can be set by changing the *CPU Critical Temperature* option.

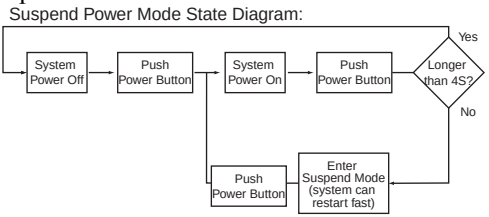
Thermal Slow Clock Ratio Sets the percentage of the original clock speed to which the CPU will slow down when overheating.

CPU Critical Temperature Sets the temperature at which the CPU slows down to avoid overheating problems, however, the system thermal has to be *Enabled*. The choices are 45, 50, 55, 60, 65, 70, or 75°C.

Power Button Function

On/Off: the system will power on and power off with a short touch on the power button.

Suspend:



Ring Resume from Soft Off

Setting this option to *Enabled* will cause the system to wake up when the modem detects an incoming call.

RTC Alarm Resume from Soft Off

Set this option to *Enabled* will enable the system to wake up at a predetermined time as set by the next four items. The system will compare the settings of the options below to the time in the RTC (as displayed in the Standard CMOS Setup) and wake up at the desired time.

RTC Alarm Date; RTC Alarm Hour; RTC Alarm Minute; RTC Alarm Second

These four options set the date and the time for the system to wake up at a desired moment.

3. After you have finished with the Power Management Setup, press the <ESC> key to return to the Main Menu.

PNP/PCI Configuration Setup

This menu controls the system resources. Run this option as follows:

1. Choose "PNP/PCI CONFIGURATION SETUP" from the Main Menu and the following screen appears. (The screen below shows default settings.)

```
        AMIBIOS SETUP - PNP/PCI CONFIGURATION
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Plug and Play Aware O/S     No      Reserved Memory Size      Disabled
Clear NVRAM on Every Boot   No      Reserved Memory Address   C8000
PCI Latency Timer           64
PCI VGA Palette Snoop       Disabled
Allocate IRQ to PCI VGA     Yes
DMA Channel 0               PnP
DMA Channel 1               PnP
DMA Channel 3               PnP
DMA Channel 5               PnP
DMA Channel 6               PnP
DMA Channel 7               PnP
IRQ3                        PCI/PnP
IRQ4                        PCI/PnP
IRQ5                        PCI/PnP
IRQ7                        PCI/PnP
IRQ9                        PCI/PnP
IRQ10                       PCI/PnP   ESC : Quit       ↑ ↓ → ←: Select Item
IRQ11                       PCI/PnP   F1  : Help       PU/PD/+/- : Modify
IRQ12                       PCI/PnP   F5  : Old Values (Shift)F2 : Color
IRQ14                       PCI/PnP   F6  : Load BIOS Defaults
IRQ15                       PCI/PnP   F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/– keys.

A short description of screen items follows:

Plug and Play Aware O/S — Choose *Yes* or *No*. When this option is set to *No*, the DMA and IRQ settings will have to be set manually.

Clear NVRAM on Every Boot — *Yes*: PnP information will be erased and collected again at every boot.

PCI Latency Timer — Choices are 32, 64, 96, 128, 160, 192, 224, or 248.

PCI VGA Palette snoop — This option should be set to *Enabled* when video cards, such as 3D accelerators and MPEG decoders, are used to allow a correct decoding of colors.

Allocate IRQ to PCI VGA	Choose either *Disabled* or *Enabled* depending on whether or not your VGA card requires an IRQ.
DMA Channel List	Each option on this list can be set to either *PnP* or *ISA/EISA*. Default is *PnP*. If you have an ISA card that requires a DMA channel, set it to *ISA/EISA* here.
IRQ List	Each option on this list can be set to either *PCI/PnP* or *ISA/EISA*. Default is *PnP*. If you have an ISA card that requires an IRQ, set it to *ISA/EISA* here.
Reserved Memory Size	Choose from the following settings: 16k, 32k, 64k, or Disabled.
Reserved Memory Address	Set the address through this option.

3. After you have finished with the PCI Slot Configuration, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Load BIOS Defaults & Load Setup Defaults

These two items both set the BIOS settings back to their default values. The difference between the two is that *BIOS Defaults* loads the most conservative values, meaning that it is best to load the BIOS defaults whenever you are experiencing problems; on the other hand, *Setup Defaults* setting are optimized for speed and are usually the best settings to load.

Default settings can be loaded through choosing one of two items after which a message appears:

"Load SETUP Defaults (Y/N)? N"

OR

"Load BIOS Defaults (Y/N)?N"

Pressing <Enter> key will not load the defaults, you need to press Y and then <Enter> key to load the default values.

Integrated Peripherals

The Integrated Peripherals option changes the values of the chipset registers. These registers control system options in the computer.

Note: Change these settings only if you are familiar with the Chipset.

Run the Integrated Peripherals as follows.

1. Choose "Integrated Peripherals" from the Main Menu and the following screen appears. (The screen below shows default settings.)

```
        AMIBIOS SETUP - INTEGRATED PERIPHERALS
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OnBoard FDC                 Auto
OnBoard Serial PortA        Auto
OnBoard Serial PortB        Auto
  Serial PortB Mode         N/A
    IR Duplex Mode          N/A
    IrDA Protocol           N/A
IR Port Support             Disabled
  IR Mode Select            N/A
  IR Base Address Select    N/A
  IR IRQ Select             N/A
  IR DMA Select             N/A
OnBoard Parallel Port       Auto
  Parallel Port Mode        ECP
  EPP Version               N/A
  Parallel Port IRQ         Auto
  Parallel Port DMA         Auto
K/B Wake-up Function        N/A
Mouse Wake-up Function      N/A
OnBoard IDE                 Both

ESC : Quit       ↑ ↓ → ←: Select Item
F1  : Help       PU/PD/+/- : Modify
F5  : Old Values (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/– keys.

A short description of screen items follows:

On Board FD

Auto: System detects the floppy drive automatically.

Disabled: Disable the onboard floppy controller.

On Board Serial Port A	Auto: System detects the Serial Port A and assign an address to it automatically. Disabled: Disable the onboard floppy controller. The serial port address can also be chosen manually from the following: 3F8/COM1, 2F8/COM2, 3E8/COM3, 2E8/COM4.
On Board Serial Port A	Auto: System detects the Serial Port B automatically. Disabled: Disable the onboard floppy controller. The serial port address options are the same as those for serial port A, however, do not select the same address for both serial port A and B.
IR Port Support	Select either *Enabled* or *Disabled*. Set to *Enabled* when IR port options below needed to be changed.
IR Mode Select	Select from the following protocols: IrDA, ASK IR, FIR, or CIR.
IR Base Address Select	Select the Base Address from the following addresses: 3E8, 2E8, 3E0, or 2E0.
IR IRQ Select	Choose the IR port IRQ from : 3, 4, 9, 10, or 11.
IR DMA Select	Choose the DMA channel from: 0, 1, 3, or Disabled.

On Board Parallel Port	Choose from: Auto, Disabled, 378, 278, or 3BC. Auto: Set the parallel port to an IO address automatically. Disabled: Disable the onboard parallel port and the parallel port options below will not be available for change.
Parallel Port Mode	Choose from: Normal, Bi-Dir, EPP, or ECP.
EPP Version	If EPP is selected rom the above option, choose either 1.7 or 1.9 version here.
Parallel Port IRQ	Choose either IRQ 5 or 7 for the parallel port.
Parallel Port DMA Channel	Choose either DMA channel 1 or 3 if appropriate.
K/B Wake Up Function	Set this option to *Enabled* to enable the Keyboard Wake Up function.
Mouse Wake-up Function	Set this option to *Enabled* to enable the Mouse Wake Up function.
Onboard IDE	Set this option to *Both* for normal use. If need to disable the onboard IDE controllers, choose from the following: Disabled, Primary (disable secondary), Secondary (disable primary).

Hardware Monitor

The hardware Monitor allows you to monitor your system variables, such as temperature, FAN speed, and voltages, all can be monitored through this page. There are no settings that can be changed on this page.

Supervisor Password

The main difference between the User and Supervisor Password is that the Supervisor Password allows access to all BIOS settings, however on

the other hand, the User Password offers only restricted access which means that the Chipset Features Setup, Power Management Setup, and PnP/PCI Configuration are all restricted for a user that entering the BIOS Setup by using only a User Password. The User Password is set to Disabled by default and only after defining a supervisor password the User Password can be defined. The following procedure shows you how to set or change a supervisor password:

1. Choose "SUPERVISOR PASSWORD" from the Main Menu and press <Enter>. If you have already defined a password, type in the password first in order to proceed. The following message appears:

   "Enter Password:"

2. Enter a password and press <Enter>.

   (If you do not wish to use the password function, you can just press <Enter> and a "Password disabled" message appears.)

3. After you enter your password, the following message appears prompting you to confirm the new password:

   "Confirm Password:"

4. Re-enter your password and then Press <ESC> to exit to the Main Menu.

The User Password option is available only after setting the Supervisor password and the procedure of setting the User Password is done the same way as the Supervisor Password.

Important: ***If you forget or lose the password, the only way to access the system is to set jumper JP5 to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.***

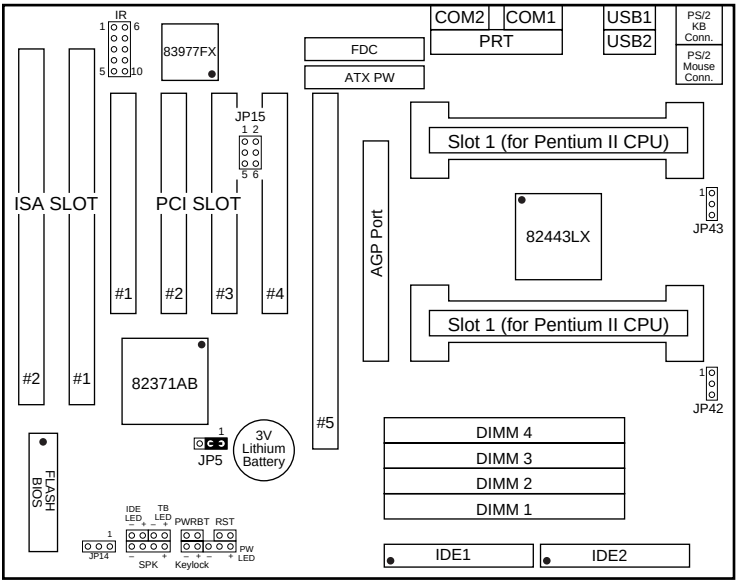
IDE HDD Auto Detection

Selecting this item will make the system automatically scan for all the IDE compatible devices, such as Harddisks and CD ROM drives, which are connected to the system. The correct settings will automatically be stored into Standard CMOS Setup and after finishing the auto detection process, the Standard CMOS Setup page is then displayed for the user to see the results.

Quick Installation Guide

This Quick Installation Guide leaflet is designed for those people who are familiar with motherboard settings to set up this new motherboard in order to boot up the system. Refer back to the proper chapters if you have run in to any problems.

Motherboard Layout



Memory Configurations

	DIMM BANKS			
	DIMM1	DIMM2	DIMM3	DIMM4
RAM Type	FPM/EDO/SDRAM			
Size	8/16/32/64/128			

Note: This mainboard requires 3.3V DIMM with an access time of 70ns or less, it supports memory size from 8 to 512MB and you may use any combination of DIMMs in the banks.

Connectors and Jumper Settings

<table>
<tr><td colspan="2">CMOS clear: J5</td><td colspan="3">ATX Power Supply: JP15</td><td colspan="4">CPU Cooling Fan: JP42 and JP43</td></tr>
<tr><td rowspan="2">Retain CMOS data (default)</td><td rowspan="2">1-2</td><td colspan="3" rowspan="2">please insert the ATX power supply plug into this header.</td><td>pin</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>function</td><td>GND</td><td>12V</td><td>sensor</td></tr>
<tr><td colspan="2" rowspan="2">Clear CMOS data</td><td rowspan="2">2-3</td><td colspan="3">wake on LAN jumper: J14</td><td colspan="2">RST</td><td colspan="2">IDE Led</td></tr>
<tr><td colspan="3">Please connect the WOL cable from your LAN card to this jumper.</td><td colspan="2">Connect the reset button to this jumper.</td><td colspan="2">Connect the HDD led to this jumper.</td></tr>
<tr><td colspan="4">USB1 and 2</td><td>PRT</td><td colspan="2">SPK</td><td colspan="2">Keylock</td></tr>
<tr><td colspan="4">Connect your USB devices to these headers</td><td>printer cable header</td><td colspan="2" rowspan="2">Connect the cable of speakers to this jumper</td><td colspan="2" rowspan="2">Connect keyboard lock switch to this jumper</td></tr>
<tr><td colspan="5">ATX Power Supply On/Off Switch: PWRBT</td></tr>
<tr><td colspan="5">Connect your power switch to this jumper (momentary switct type).</td><td colspan="2">TB Led</td><td colspan="2">PW Led</td></tr>
<tr><td colspan="5" rowspan="2">IrDA (Infrared Devices Connector: IR (pin 6-10 reserved)
pin 1 2 3 4 5
function Vcc FIRRX IRRX GND IRTX</td><td colspan="2" rowspan="2">Connect your Turbo led to this jumper.</td><td colspan="2" rowspan="2">Connect the power led to this jumper.</td></tr>
<tr></tr>
</table>

Default I/O Settings

PORT	I/O Address	IRQ	Functionality
LPT1	378H	7	ECP + EPP
COM1	3F8H	4	–
COM2	2F8H	3	–

Note: If the default I/O settings conflict with those of other I/O cards, such as soundcards you will have to adjust the settings of one of them. The default settings for the onboard I/O can be changed in the BIOS setup. Enter BIOS Setup by pressing <Delete> key during boot-up. The I/O settings can be found under "Integrated Peripherals".