6KE

82440 LX PCI Mainboard
User's Guide &
Technical Reference

SOYO™

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6KE SERIAL

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

Table of Contents

1 Introduction

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

Key Features

- Processor supports:
  - Intel Pentium II CPU up to 66 MHz host bus frequency (233 ~ 333 MHz)
  - **auto detection of CPU voltage**
- DRAM controller:
  - **supports 3 strips of 168-pin EDO/SDRAM Unbuffered DIMM**
  - supports auto detection of memory type
  - **supports ECC configuration**
  - has onboard memory configurations from 8MB to 384MB
- BUS controller:
  - complies with the PCI specifications v2.1
  - One 32-bit AGP slot onboard
  - four 32-bit PCI slots (Masters) and three ISA slots
  - **supports Universal Serial Bus—USB onboard**
- Peripheral controller:
  - System BIOS supports "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 support for IR function**
  - **onboard support for Keyboard WakeUp function.**

Unpacking the Mainboard

The mainboard package contains:

- The 82440LX Mainboard
- One CD (including Manuals/Drivers/Utilities)
- One Quick Installation Guide
  Notice that if the board comes with a driver disc and a manual, then the Quick Installation Guide and the CD-ROM will not be included in the package.

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

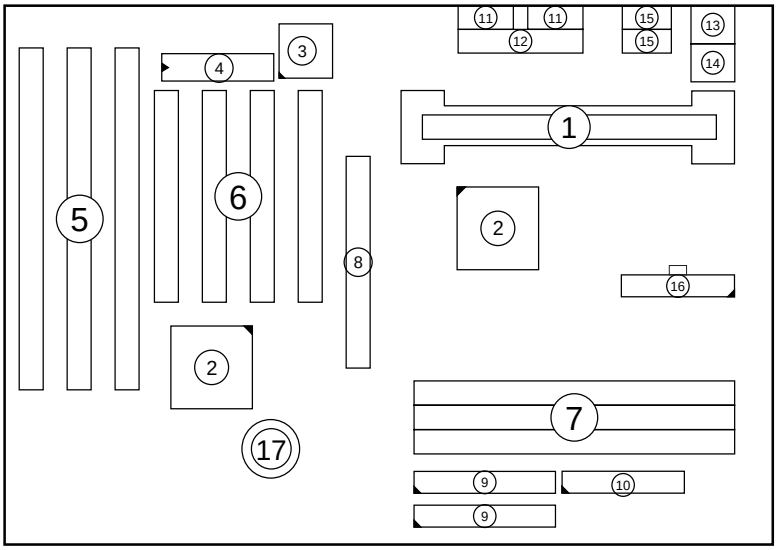


Figure 1–1. Mainboard Layout

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: Pentium II 233MHz* 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.

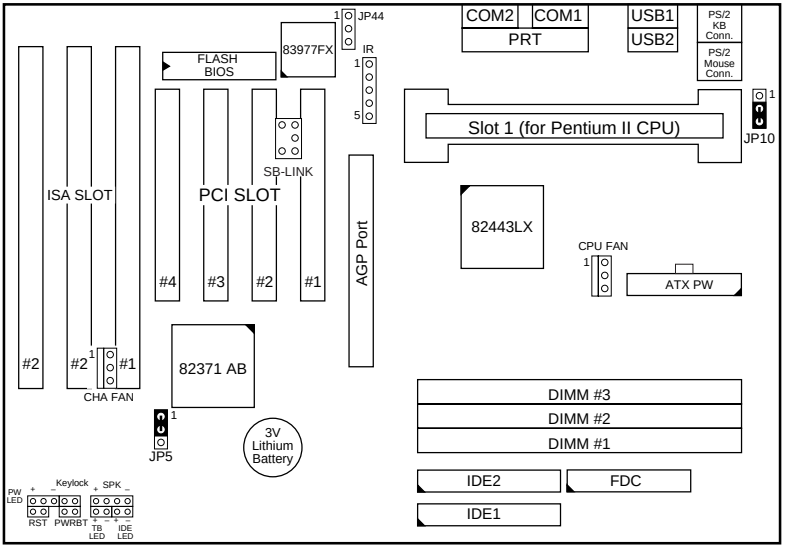


Figure 1–2. Mainboard Default Setting

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 shorting this jumper to 2–3; then set the jumper back to 1–2 retain new settings.

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

JP10: Keyboard Wake Up Selection Jumper

JP10 allows the user to eanble the keyboard/PS/2 Mouse/Password Wake Up function. If JP10 is set to enabled, the BIOS setting determines the exact response of the mainboard to a wake up event. (See the "integrated Peripherals" section).

JP10: Keyboard Wake up			
Wake Up Enabled		Wake Up Disabled (default)	

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, 166, 200, 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 three banks of **168-pin 3.3V EDO/SDRM Unbuffered DIMM**. The mainboard supports **from 8 to 384 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	SPP
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.

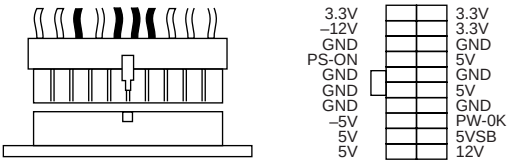
Note: Some sound cards have a default IRQ setting for IRQ7, which may conflict with printing functions. If this occurs do not use sound card functions at the same time you print.

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.

P2 – 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

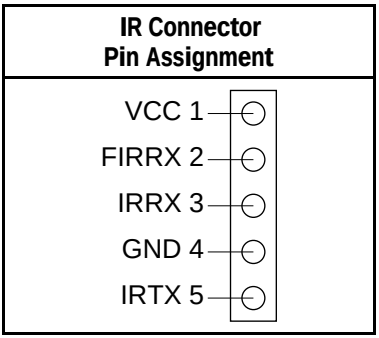
A six-pin female PS/2 keyboard connector is located at the rear of the board. Plug the keyboard jack into this connector.

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.

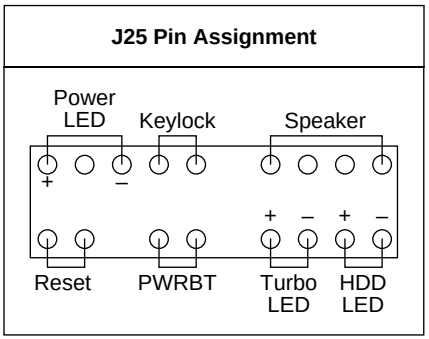
IR – IR Connector

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



J25 – Front Panel Connectors

This set of connectors includes: Keylock/Power LED connector, Speaker connector, Reset Connector, PWRBT, and Turbo/HDD LED Connector. The features of each of these connectors are explained below.



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.

IDE LED – IDE HDD LED Connectors

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

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.

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.

FDC Connector

Attach floppy cable to this connector.

PRT – Parallel Port Connector

Attach parallel port cable to this connector.

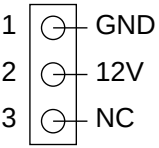
USB1/USB2 – Universal Serial Bus Connector

Attach USB cable to these connectors for external USB device.

CPUFAN, CHAFAN: Cooling Fan Connectors

These 3-pins connectors provide 12V power for the CPU and chasis cooling fans which matche the pin assignment of these connectors. If you enable the Suspend Mode function in BIOS setup, these fans will stop when the system is into the suspend mode.

CPUFAN, CHAFAN Cooling Fan Connectors (Pin Assignment)

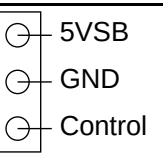


Note: Make sure the pin assignment of our CPU Cooling Fan is matched with this connector before connecting it, otherwise, you may damage either the mainboard or the cooling fan.

JP44 – Wake-On-LAN (WOL) Header

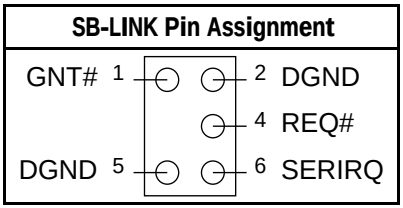
Attach a 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function. This function lets users wake up the connected computer through the LAN card. (The cable should be included with the LAN card.)

JP44 Pin Assignment



SB-LINK – 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 (pin3 is left empty to make sure that you can insert the connector only in one way.)

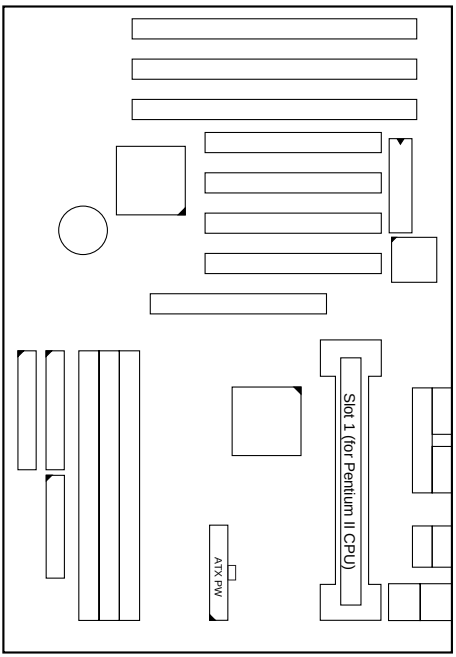


Slot 1 Installation Guide

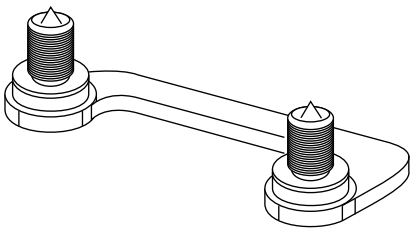
This mainboard provides a non-boxed Pentium II CPU retention set to secure the CPU on this board. Follow the steps below to secure this type of CPU on to your motherboard.

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.

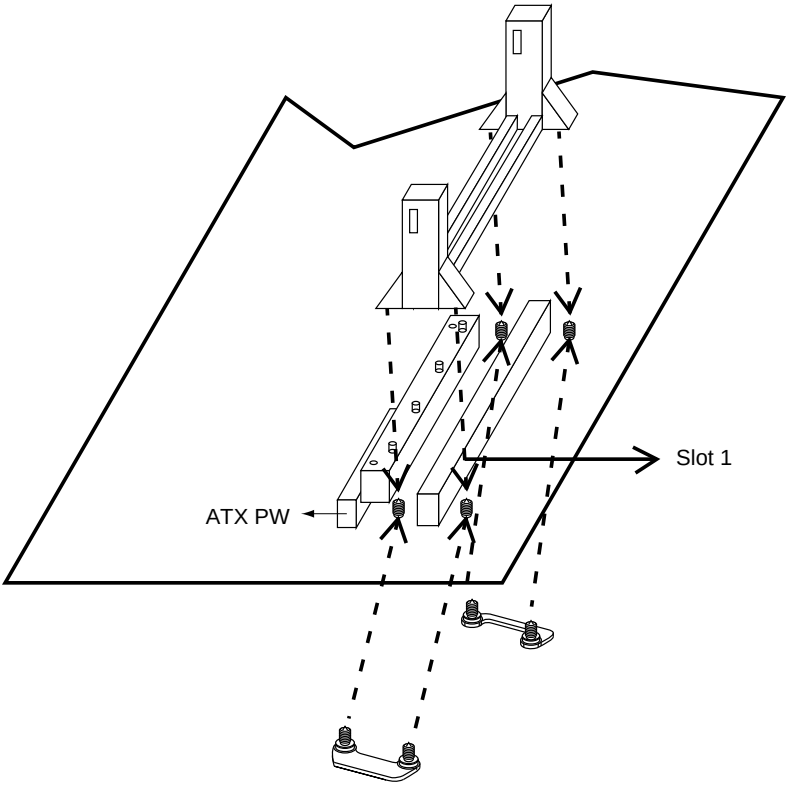


Install the 2 pairs of screws, as shown in the following figure, from the bottom of the motherboard upward onto the mainboard.



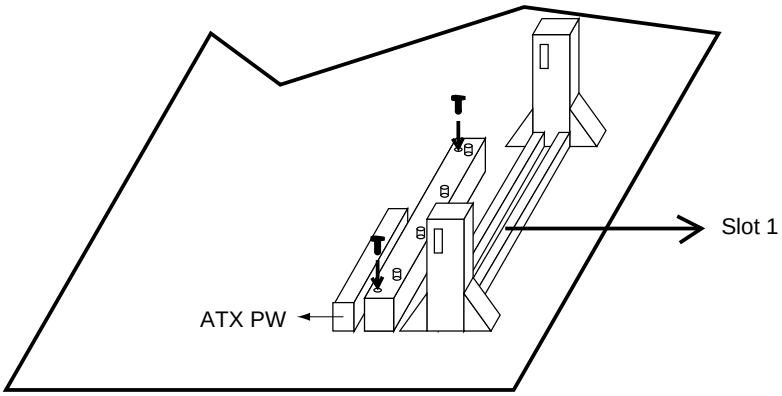
Step 2:

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. 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.



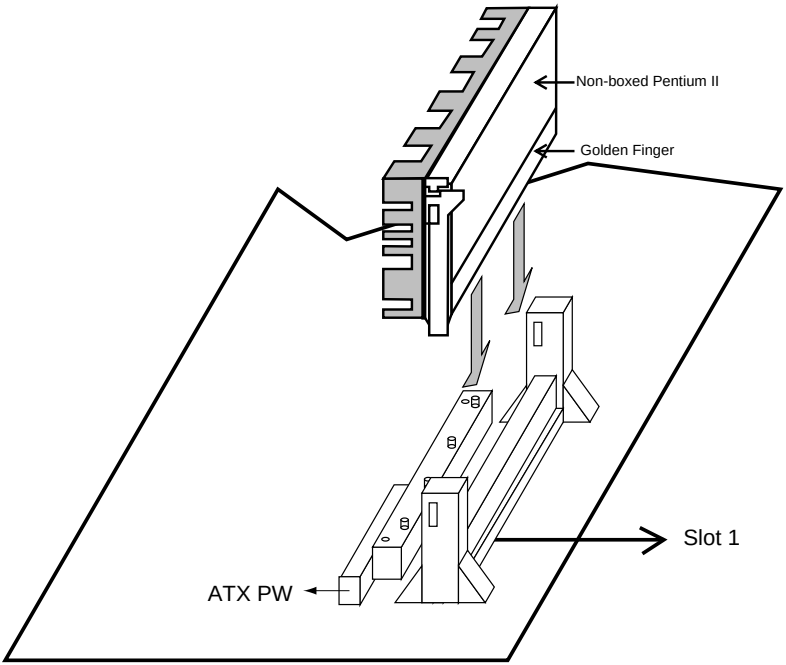
Step 3:

Insert the 2 latches into the two holes of the supporting base to secure the CPU.



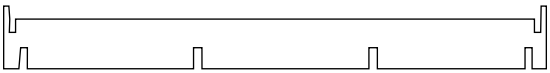
Step 4:

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.

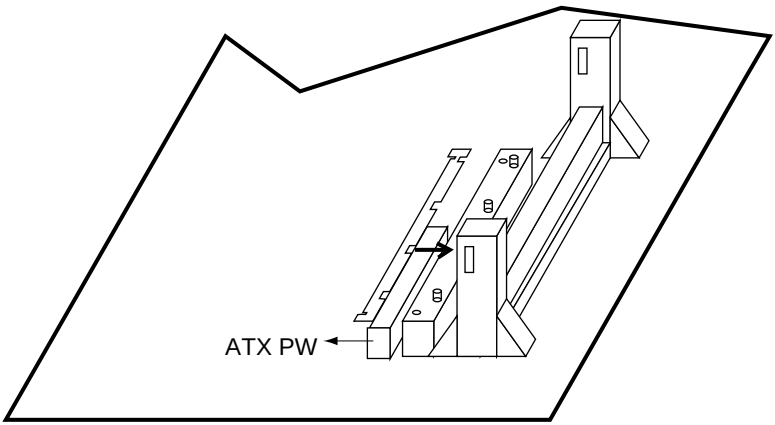


Step 5:

Now 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. Only Intel specification compliant heatsinks can be fixed this way.



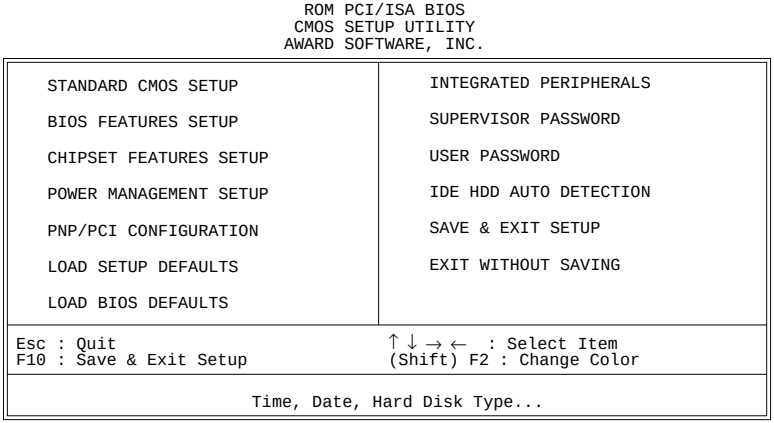
Top View of CPU Support Clip



3 BIOS Setup

The mainboard's BIOS setup program is the ROM PCI/ISA BIOS from Award Software Inc. Enter the Award 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 Award BIOS program and the main screen appears:



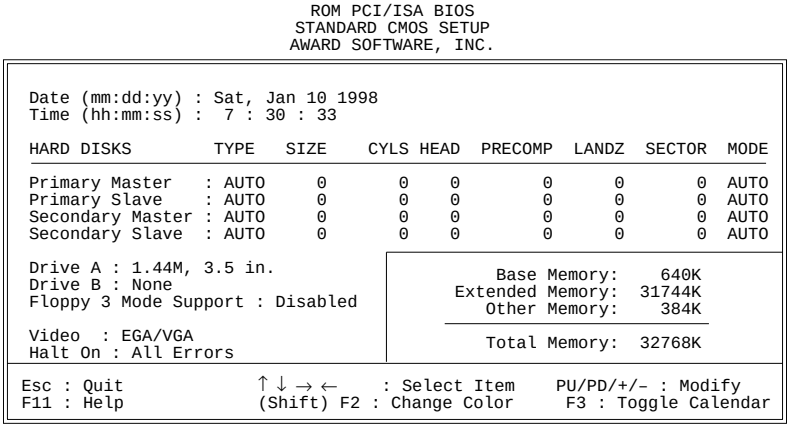
3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (See the following sections.)
4. Press <ESC> at anytime to return to the Main Menu.
5. In the Main Menu, choose "SAVE AND EXIT SETUP" to save your changes and reboot the system. Choosing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

The Main Menu options of the Award BIOS are described 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

First, choose the type of hard disk that you already installed:

Auto – BIOS detects hard disk type automatically (default)
1 ~ 45 – Selects standard hard disk type
User – User defines the type of hard disk. Choose "None" when there is no hard disk installed.

Next, choose hard disk mode:
Auto – BIOS detects hard disk mode automatically (default)
Normal – Normal IDE hard disk (smaller than 528MB)
LBA – Enhanced–IDE hard disk (larger than 528MB)

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
None

Video

Choose MONO, EGA/VGA (default),
CGA40, CGA80

Floppy 3 Mode Support

Choose Disabled (default) or Enabled. When enables this function, the system will support 720KB/1.25MB/1.44MB 3 different modes floppy diskette.

Note: This function is for a special disk drive which happens to be popular in Japan.

Halt On

Choose halt mode when BIOS detects system errors:

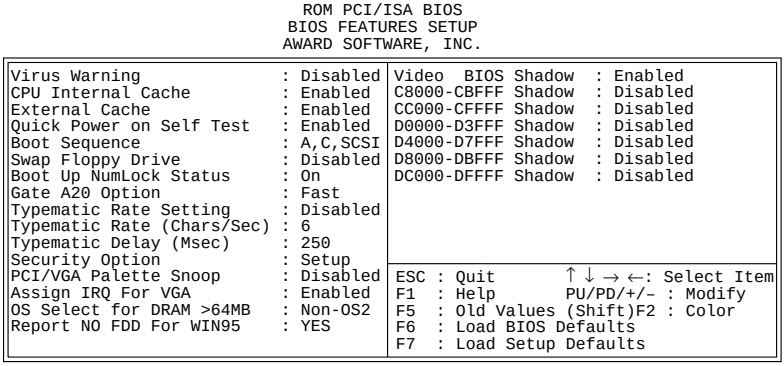
All Errors (default)	All, But Diskette
No Errors	All, But Keyboard
	All, But Disk/Key

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.**)



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:

Virus Warning Enable this option will allow BIOS to protect the boot sectors and partition tables of your hard disk. Any attempt to write to them will cause the system to halt and display a warning message.

CPU Internal Cache This option enables/disables the CPU's internal cache. (The Default setting is Enabled.)

External Cache This option enables/disables the external cache memory. (The Default setting is Enabled.)

Quick Power On Self Test	Enabled provides a fast POST at boot-up .
Boot Sequence	Choose the boot device sequence as your need. For example, "A, C, SCSI" means that BIOS will look for an operating system first from drive A, drive C, then SCSI device. Options of this function are: A, C, SCSI; C,A, SCSI; C, CDROM, A; CDROM, C, A; D, A, SCSI; E, A, SCSI; F, A, SCSI; SCSI, A, C; SCSI, C, A; C only; LS/ZIP, C.
Swap Floppy Drive	Enabled changes the sequence of the A: and B: drives. (The Default setting is Disabled.)
Boot Up Num Lock Status	Choose On or Off. On puts numeric keypad in Num Lock mode at boot-up. Off puts this keypad in arrow key mode at boot-up.
Gate A20 Option	Choose Fast (default) or Normal. Fast allows RAM accesses above 1MB using the fast gate A20 line.
Typematic Rate Setting	Enable this option to adjust the keystroke repeat rate.
Typematic Rate (Chars/Sec)	Choose the rate a character keeps repeating.
Typematic Delay (Msec)	Choose how long after you press a key that a character begins repeating.

Security Option Choose Setup or System. Use this feature to prevent unauthorized system boot-up or use of BIOS Setup.
"System" – Each time the system is booted the password prompt appears.
"Setup"– If a password is set, the password prompt only appears if you attempt to enter the Setup program.

PCI/VGA Palette Snoop
Enabled: The color of the monitor may be incorrect if uses with MPEG card. Enable this option to make the monitor normal.
Disabled: Default setting.

Assign IRQ for VGA Choose Enabled (default) or Disabled to enable or disable VGA IRQ.

OS Select for DRAM >64MB
OS2: Choosing this when you are using OS/2 operation system.
Non-OS/2: Choosing this when you are using no-OS/2 operation system.

Report No FDD for Windows This item has the following function: Windows will release INT line 6 (normally used by the Floppy Disk Drive) if you disable your onboard FDD and set this item to 'Yes' (default). If you set it to 'No', windows will reserve INT 6 for your FDD, whether it is disabled or not.

Video or Adapter BIOS Shadow BIOS shadow copies BIOS code from slower ROM to faster RAM. BIOS can then execute from RAM. These 16K segments can be shadowed from ROM to RAM. BIOS is shadowed in a 16K segment if it is enabled and it has BIOS present.

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. These registers control system options in the computer.

Note: Change these settings only if you are familiar with the Chipset.
Run the Chipset Features Setup as follows.

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

```
                    ROM PCI/ISA BIOS
                CHIPSET FEATURES SETUP
                AWARD SOFTWARE, INC.

Auto Configuration        : Enabled      CPU Speed                : 233MHz (66x3.5)
DRAM Speed Selection      : 60 ns
MA Wait State             : Slow
EDO RAS# To CAS# Delay    : 3            Spread Spectrum          : Disabled
EDO RAS# Precharge Time   : 4
EDO DRAM Read Burst       : x3/3/3
EDO DRAM Write Burts      : x2/2/2
DRAM Data Integrity Mode  : Non-ECC
CPU-TO-PCI IDE Posting    : Enabled
System BIOS Cacheable     : Disabled
Video BIOS Cacheable      : Disabled
Video RAM Cacheable       : Disabled
8 Bit I/O Recovery Time   : 1
16 Bit I/O Recovery Time  : 1
Memory Hole At 15M-16M    : Disabled
Passive Release           : Enabled      ESC : Quit     ↑ ↓ → ←  : Select Item
Delay Transaction         : Disabled     F1  : Help     PU/PD/+/- : Modify
AGP Aperture Size (MB)    : 64           F5  : Old Values (Shift)F2 : Color
SDRAM RAS-to-CAS Delay    : Fast         F6  : Load BIOS Defaults
SDRAM RAS Precharge Time  : Fast         F7  : Load Setup Defaults
SDRAM CAS Latency Time    : 3
```

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 Configuration — Enable this option (strongly recommended) and the system automatically sets all options on the left side of the screen (except cache update mode & BIOS cacheable).
If this option is Enabled you must boot from Turbo mode.

MA Wait State — Use the default setting.

EDO RAS# to CAS# Delay — Use the default setting.

EDO RAS# Precharge Time	Use the default setting.
EDO DRAM Read Burst	Use the default setting.
DRAM Write Burst	Use the default setting.
DRAM Data Integrity Mode	Choose Non-ECC (default) or ECC according to the DRAM type you have.
CPU-TO-PCI IDE Posting	Use the default setting.
System BIOS Cacheable	Disabled: The ROM area F0000H-FFFFFH is not cached. Enabled: The ROM area F0000H-FFFFFH is cacheable if cache controller is enabled.
Video BIOS Cacheable	Disabled: The video BIOS C0000H-C7FFFH is not cached. Enabled: The video BIOS C0000H-C7FFFH is cacheable if cache controller is enabled.
8Bit I/O Recovery Time	Use the default setting.
16Bit I/O Recovery Time	Use the default setting.
Memory Hole At 15M-16M	Choose Enabled or Disabled (default). Some interface cards will map their ROM address to this area. If this occurs, you should select Enabled, otherwise use Disabled.
Passive Release	Use the default setting.
Delayed Transaction	Use the default setting.
AGP Aperture Size	AGP could use the DRAM as its video RAM. Choose the DRAM size that you want it to be used as video RAM. The range is from 4MB to 256MB.

SDRAM RAS-to-CAS Delay Use the default setting.

SDRAM RAS Precharge Time Use the default setting.

SDRAM CAS Latency Time Use the default setting.

CPU Speed Select the frequency of your Pentium II CPU from the following: *133, 233, 266, 300, 333 MHz*, or *Manual*.

133MHz: default setting which allows the board to boot up at any time if a wrong CPU frequency setting crashes the system. Press <Insert> during boot-up to load the BIOS default values.

Manual: User can select the frequency and multiplier values if so desired. SOYO does not guarantee proper functioning of the system if the user selects "Manual" setting, however, since some combinations fall outside of the INTEL specifications. Refer to the table on page 26 for CPU freuqency settings.

CPU Ratio If you choose "Manual" in the CPU Speed item above, then you can choose the multiplier here. The multiplier can be chosen from a range of 2.0 to 5.

CPU Host Clock Select If you choose "Manual" in the CPU Speed item above, then you can set your CPU's Host Clock Frequency here. The choices for 66MHz Host Clock CPUs are: 50, 60, 66, 68, 75, and 83MHz.

Spread Spectrum Enabled it when you want to run the FCC or DOC testing.

CPU Frequency:

		Bus Frequency				
		50MHz	60MHz	66MHz	68MHz	75MHz
CPU Ratio	2.0	100MHz	120MHz	133MHz	137MHz	150MHz
	2.5	125MHa	150MHz	166MHz	171MHz	188MHz
	3.0	150MHz	180MHz	200MHz	205MHz	225MHz
	3.5	175MHz	210MHz	233MHz (default)	239MHz	263MHz
	4.0	200MHz	240MHz	266MHz	274MHz	300MHz
	4.5	225MHz	270MHz	300MHz	308MHz	338MHz
	5.0	250MHz	300MHz	333MHz	342MHz	375MHz

Notes: If you use Bus Frequencies of 75MHz, make sure that your PCI cards can cope with the higher PCI clock.

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.

```
                    ROM PCI/ISA BIOS
                  CMOS SETUP UTILITY
                POWER MANAGEMENT SETUP

Power Management       : User Defined      IRQ 8 Break Suspend   : Disabled
PM Control by APM      : Yes
Video Off Method       : V/H SYNC+Blank    ** Reload Global Timer Events **
Video Off After        : Standby           IRQ [3-7, 9-15],NMI   : Enabled
Modem Use IRQ          : 3                 Primary IDE 0         : Disabled
Doze Mode              : Disabled          Primary IDE 1         : Disabled
Standby Mode           : Disabled          Secondary IDE 0       : Disabled
Suspend Mode           : Disabled          Secondary IDE 1       : Disabled
HDD Power Down         : Disabled          Floppy Disk           : Disabled
                                           Serial Port           : Enabled
Soft-Off by PWR-BTTN   : Instant-Off       Parallel Port         : Disabled
VGA Active Monitor     : Enabled
CPU Fan Off In Suspend: Enabled            ESC : Quit       ↑ ↓ → ←: Select Item
Resume by Ring         : Disabled          F1  : Help       PU/PD/+/- : Modify
Resume by Alarm        : Disabled          F5  : Old Values (Shift)F2 : Color
                                           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 Options are as follows:
User Define – Let's you define the HDD and system power down times (default).
Disable – Disables the Green PC Features.
Min Saving Doze timer = 1 Hour
Standby timer = 1 Hour
Suspend timer = 1 Hour
HDD Power Down = 15 Min
Max Saving Doze timer = 1 Min
Standby timer = 1 Min
Suspend timer = 1 Min
HDD Power Down = 1 Min

PM Control by APM Choose **Yes** (default) or **No**. APM stands for Advanced Power Management. To use APM, you must run "power.exe" under DOS v6.0 or later version.

Video Off Method Choose **V/H Sync+Blank** (default), **Blank screen**, or **DPMS** for the selected PM mode.

Video Off After Choose **Standby** (default), **Suspend**, **Doze**, or **N/A mode**.

Modem Use IRQ Choose Modem IRQ Setting.

Doze Mode When the set time has elapsed, the BIOS sends a command to the system to enter doze mode (system clock drops to 33MHz). Time is adjustable from 1 Min to 1 Hour.

Standby Mode The default is Disabled. Time is adjustable from 1 Min to 1 Hour.

Suspend Mode The default is Disabled. Only an SL-Enhanced (or SMI) CPU can enter this mode. Time is adjustable from 1 Min to 1 Hour. Under Suspend mode, the CPU stops completely (no instructions are executed.)

HDD Power Down When the set time has elapsed, the BIOS sends a command to the HDD to power down, which turns off the motor. Time is adjustable from 1 to 15 minutes. The default setting is Disabled. Some older model HDDs may not support this advanced function.

Soft-Off by PWR-BTTN Choose **Instant-off** (default) or **Delay 4 Sec**. **Delay 4 Sec** turns off the system power 4 seconds after pushing the power button

VGA Active Monitor Choose Enabled (default) or Disabled.
Enabled – enables the power management timers when a "no activity" event is detected.

CPU Fan Off In Suspend Choose Enabled to stop the CPU fan when the system runs into the suspend mode (refer to Power Management Setup.)

Resume by Ring Choose **Enabled** or **Disabled** (default). This function only works when the computer is powered on.
Enabled – The system will resume active when modem is ringing.
Disabled – The system will not resume when modem is ringing.

Resume by Alarm Choose **Enabled** or **Disabled** (default).
Enabled – Set alarm to wake up the system either by the date (1-31) or time (hh:mm:ss), and if the date is set to 0, it means that the system will wake up by the alarm everyday.
Disabled – The system ignores the alarm.

IRQ8 Break Suspend Choose **Enabled** or **Disabled** (default). Alarm function will be activated when this function is enabled.

IRQ[3-7,9-15], NMI Choose **Enabled** (default) or Disabled. The BIOS monitors these items for activity. If activity occurs from the Enabled item the system wakes up.

Primary/Secondary IDE 0 **Primary/Secondary IDE 1**	Choose **Enabled** or **Disabled** (default). Enabled – Enables the power management timers when "no activity" event is detected.
Floppy Disk/ Serial Port/ Parallel Port	Choose **Enabled** or **Disabled**. Enabled – enables the power management timers when "no activity" event is detected.

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 option sets the mainboard's PCI Slots. 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.)

```
                    ROM PCI/ISA BIOS
                PNP/PCI CONFIGURATION
                AWARD SOFTWARE, INC.

Resources Controlled By  : Manual      PCI IDE IRQ Map To   : PCI-AUTO
Reset Configuration Data : Disabled     Primary   IDE INT#  : A
                                        Secondary IDE INT#  : B
IRQ-3  assigned to : Legacy ISA*
IRQ-4  assigned to : Legacy ISA*       Used MEM Base Addr   : N/A
IRQ-5  assigned to : PCI/ISA PnP*
IRQ-7  assigned to : PCI/ISA PnP*      Assign IRQ for USB   : Disabled
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 : PCI/ISA PnP*
IRQ-15 assigned to : PCI/ISA PnP*

DMA-0  assigned to : PCI/ISA PnP*      ESC : Quit     ↑ ↓ → ←  : Select Item
DMA-1  assigned to : PCI/ISA PnP*      F1  : Help     PU/PD/+/- : Modify
DMA-3  assigned to : PCI/ISA PnP*      F5  : Old Values (Shift)F2 : Color
DMA-5  assigned to : PCI/ISA PnP*      F6  : Load BIOS Defaults
DMA-6  assigned to : PCI/ISA PnP*      F7  : Load Setup Defaults
DMA-7  assigned to : PCI/ISA PnP*
```

**: These items will disappear when Resource Controlled. is Auto.*

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:

Resources Controlled By

Manual – BIOS doesn't manage PCI/ISA PnP card (i.e., IRQ) automatically.

Auto – BIOS auto manage PCI and ISA PnP card (recommended).

Reset Configuration Data

Disabled – Retain PnP configuration data in BIOS.

Enabled – Reset PnP configuration data in BIOS.

IRQX and DMAX assigned to	Choose **PCI/ISA PnP** or **Legacy ISA**. If the first item is set to **Manual**, you could choose IRQX and DMAX assigned to PCI/ISA PnP card or ISA card.
PCI IDE IRQ Map To	Select P**CI-AUTO, ISA**, or **assign a PCI SLOT number** (depending on which slot the PCI IDE is inserted). The default setting is PCI-AUTO. If PCI-AUTO does not work, then assign an individual PCI SLOT number.
Primary IDE INT#	Choose INTA#, INTB#, INTC#, or INTD#. The default setting is INTA#.
Secondary IDE INT#	Choose INTA#, INTB#, INTC#, or INTD#. The default setting is INTB#.
Used MEM Base Addr	Choose C800, CC00, D000, D400, D800, or DC00 for setting the I/O address of your add-on card. You should ask your add-on card dealer for the exactly I/O address. Use this function only when problems occur while using the add-on card.
Assign IRQ for USB	Choose Enabled or Disabled (default) to enable or disable USB IRQ.

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 Setup Defaults

This item loads the system values you have previously saved. Choose this item and the following message appears:

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

To use the SETUP defaults, change the prompt to "Y" and press <Enter>.

Note: The SETUP Defaults are optimized for the most stabilized performance.

Load BIOS Defaults

Choose this item and the following message appears:

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

To use the BIOS defaults, change the prompt to "Y" and press <Enter>.

Note: BIOS DEFAULTS values are adjusted for high performance. If you run into any problems after loading BIOS DEFAULTS, please load the SETUP DEFAULTS for the stable performance.

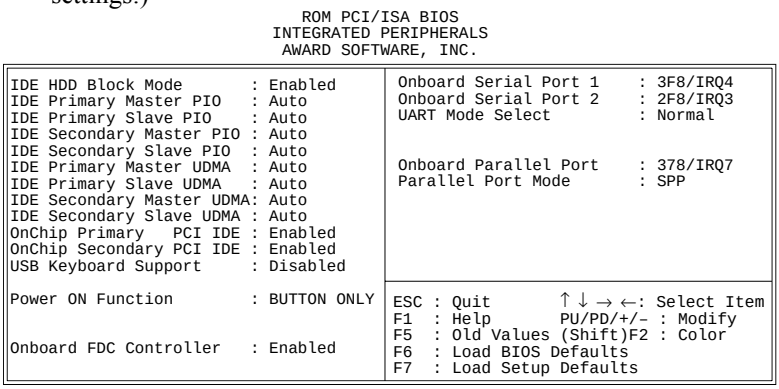
Integrated Peripherals

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:)



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:

IDE HDD Block Mode — Choose **Enabled** (default) or **Disabled**. Enabled invokes multi-sector transfer instead of one sector per transfer. Not all HDDs support this function.

IDE Primary Master PIO/ IDE Primary Slave PIO/ IDE Secondary Master PIO/ IDE Secondary Slave PIO — Choose **Auto** (default) or **mode 0~4**. Mode 0 is the slowest speed, and HDD mode 4 is the fastest speed. For better performance and stability, we suggest you use the Auto setting to set the HDD control timing.

IDE Primary Master UDMA/
IDE Primary Slave UDMA/
IDE Secondary Master UDMA/
IDE Secondary Slave UDMA

Choose **Auto** (default) or **Disabled**.
Auto – Supports Ultra DMA mode.

On-chip Primary PCI IDE/
On-chip Secondary PCI IDE

Enabled –Use the on-board IDE (default)
Disabled – Turn off the on-board IDE

USB Keyboard Support

Choose **Disabled** (default) or **Enabled**. You need to use the regular keyboard to get in the BIOS Setup to enable this function before using the USB keyboard.

POWER On Function

If you enable the PS/2 keyboard wake up function by setting JP10 to 1–2, you can set the appropriate action through this item. Refer to the table below for details:

Setting	Explanation
BUTTON ONLY (default)	This setting disables the wake-up function.
Password	If you choose this option, you will have to set your password in the "KB Power On Password" item below. You will be able to wake up the system by entering the password or by pressing the power button.
Hot Key	If you choose this option, you will have to set the key combination that will wake up the system in the "Hot key Power On" item below.
Note: Please set JP10 to 2–3 if you choose "BUTTON ONLY."	

KB POWER On Password If you selected password from the item above, you can set your password through this item.

Hot Key Power On If you select "Hot Key" from the item above, you will have to choose a key combination that will wake up the system here. Choose from Ctrl-F1 to Ctrl-F12.

Onboard FDC Controller Enabled – Use the on-board floppy controller (default).
Disabled – Turn off the on-board floppy controller.

Onboard Serial Port 1/ Onboard Serial Port 2 Choose serial port 1 & 2's I/O address. Do no set port 1 & 2 to the same value except for Disabled. Choose Auto for automatic setting for the I/O address and IRQ.

COM1/3F8H	COM3/3E8H
COM2/2F8H (default)	COM4/2E8H

UART Mode Select Choose Normal (default), IrDA 1.0, or ASKIR to meet the specification of your Infra Red device.

RxD, TxD Active Choose Hi, Hi; Hi, Lo (default); Lo, Hi; or Lo, Lo. Ask your IR provider when you use this function.

IR Transmission Delay Choose Enabled or Disabled. Ask your IR provider when you use this function.

Onboard Parallel Port Choose the parallel port I/O address: 378H/IRQ7 (default), 3BCH/IRQ7, 278H/IRQ5, or Disabled to disable this port.

Parallel Port Mode	Choose **ECP+EPP, SPP** (default), **EPP**, or **ECP.** The mode depends on your external device that connects to this port.
ECP Mode Use DMA	Choose **DMA3** or **DMA1**. This setting only works when the Onboard Printer Mode is set at the ECP mode.
EPP Mode Select	Choose EPP1.7 or EPP1.9 when useing the EPP Mode printer.

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

Supervisor Password

Based on the setting you made in the "Security Option" of the "BIOS FEATURES SETUP", this Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. Change the password as follows:

1. Choose "SUPERVISOR PASSWORD" in the Main Menu and press <Enter>. 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.
5. You have the right to change any changeable settings in the "CMOS SETUP UTILITY."

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.

User Password

Based on the setting you made in the "Security Option" of the "BIOS FEATURES SETUP", this Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. Change the password as follows:

1. Choose "USER PASSWORD" in the Main Menu and press <Enter>. 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:"

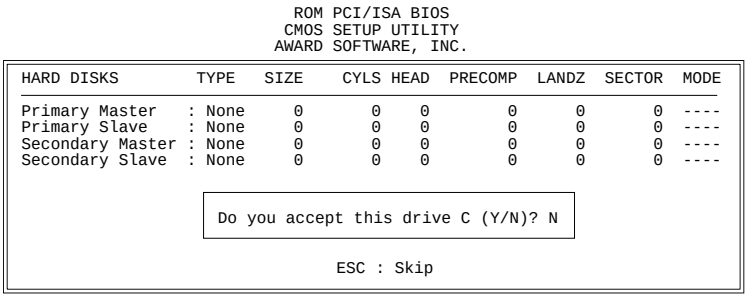
4. Re-enter your password and then Press <ESC> to exit to the Main Menu.
5. You are not allowed to change any setting in "CMOS SETUP UTILITY" except change user's password.

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

This Main Menu item automatically detects the hard disk type and configures the STANDARD CMOS SETUP accordingly.

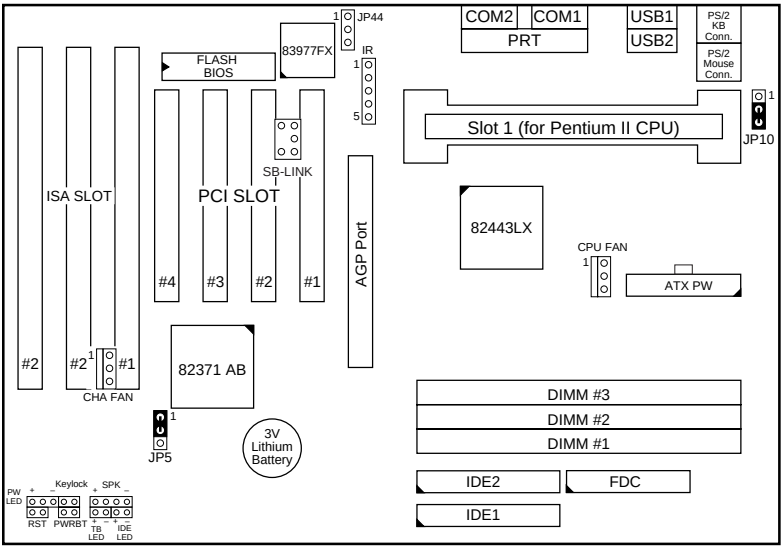
*Note: This function is only valid for **IDE** hard disks.*



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
RAM Type	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 384MB and you may use any combination of DIMMs in the banks.

Connectors and Jumper Settings

<table>
<tr><td colspan="2">CMOS clear: JP5</td><td colspan="3">ATX Power Supply: P2</td><td colspan="4">CPU, CHA Cooling Fan</td></tr>
<tr><td>Retain CMOS data (default)</td><td>1-2</td><td colspan="3">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 rowspan="2">Clear CMOS data</td><td rowspan="2">2-3</td><td colspan="3">Wake on LAN jumper: JP44</td><td>function</td><td>GND</td><td>12V</td><td>NC</td></tr>
<tr><td colspan="3">Please connect the WOL cable from your LAN card to this jumper.</td><td colspan="2">RST</td><td colspan="2">IDE Led</td></tr>
<tr><td colspan="3">USB1 and 2</td><td>PRT</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="3">Connect your USB devices to these headers</td><td>printer cable header</td><td colspan="2">SPK</td><td colspan="2">Keylock</td></tr>
<tr><td colspan="4">ATX Power Supply On/Off Switch: PWRBT</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="4">Connect your power switch to this jumper (momentary switch type).</td></tr>
<tr><td colspan="6">IrDA (Infrared Devices Connector): IR</td><td colspan="2">TB Led</td><td colspan="2">PW Led</td></tr>
<tr><td>pin</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td colspan="2" rowspan="2">Connect the Turbo led to this jumper</td><td colspan="2" rowspan="2">Connect the power led to this jumper</td></tr>
<tr><td>function</td><td>Vcc</td><td>FIRRX</td><td>IRRX</td><td>GND</td><td>IRTX</td></tr>
<tr><td colspan="6">PCI Audio Card Connector: SB-LINK</td><td colspan="4">JP10: Keyboard Wake Up</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td colspan="2">Wake Up Enabled</td><td colspan="2">1–2</td></tr>
<tr><td>GNT#1</td><td>DGND</td><td>Empty</td><td>REQ#</td><td>DGND</td><td>SERIRQ</td><td colspan="2">Wake Up Disabled</td><td colspan="2">2–3 (default)</td></tr>
</table>

Default I/O Settings

PORT	I/O Address	IRQ	Functionality
LPT1	378H	7	SPP
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".