6BE

**82440 BX PCI Mainboard
User's Guide &
Technical Reference**

SOYO™

About This Guide

This User's Guide is for assisting system manufacturers and end users in setting up and installing the mainboard. Information in this guide has been carefully checked for reliability; however, no guarantee is given as to the correctness of the contents. The information in this document is subject to change without notice.

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6BE SERIAL

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

Table of Contents

1   Introduction

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

Key Features

- Processor supports:
    - Intel Pentium II CPU up to 100 MHz host bus frequency from 233 to 550 MHz (Notice that 450 to 550 MHz CPUs were not available at the time of this mainboard was released so proper functioning can not be guaranteed.)
    - **auto detection of CPU voltage**
- DRAM controller:
    - **supports 3 strips of 168-pin SDRAM Unbuffered DIMM (8MB/16MB/32MB/64MB/128MB)**
    - supports auto detection of memory type
    - **supports ECC or Parity 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**
- Peripheral controller:
    - System BIOS supports "Plug and Play" function
    - onboard built-in PCI Master IDE controller and floppy controller
    - onboard supports 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 supports FLASH Memory for easy upgrade BIOS
    - **onboard support for IR function**
    - **onboard support for Wake on Keyboard Function**
    - **Onboard Hardware monitor with temperature, voltage, and FAN speed monitoring functions.**

Unpacking the Mainboard

The mainboard package contains:

*   The 82440BX 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
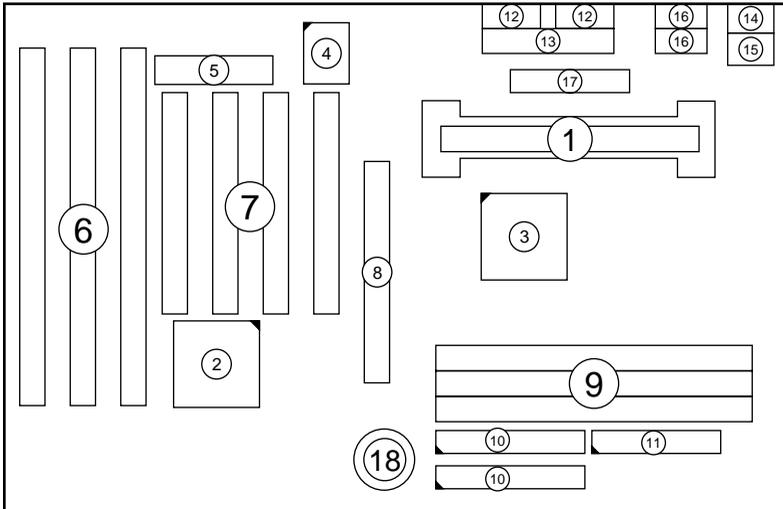
Figure 1–1. Mainboard Layout

1. Slot 1 for PII CPU
2. 82371EB Chipset
3. 82443BX Chipset
4. Super I/O Chip
5. PnP FLASH BIOS
6. ISA Slots
7. PCI Slots
8. AGP Port
9. DIMM Memory Bank
10. IDE1/IDE2 Connector
11. Floppy Connector
12. COM1/COM2 Connector
13. Parallel Port Connector
14. PS/2 Keyboard Connector
15. PS/2 Mouse Connector
16. USB 1/2 Connector
17. ATX Power Connector
18. 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.
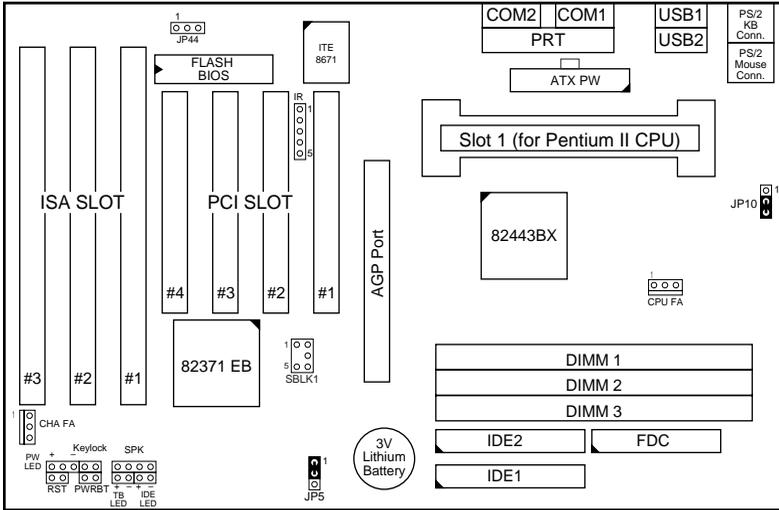
Figure 1–2. Mainboard Default Setting

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)	1
Clear CMOS data	1

JP10: Wake on Keyboard Selection Jumper

JP10: Keyboard Wake up			
Wake Up Enabled	1	Wake Up Disabled (default)	1

Note: If you enable this function, refer to chapter 3 BIOS setup— Integrated Peripherals section for more information.

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 ~ 550 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 Speed" under this setup section and it allows you to set the frequency according to the speed of the Pentium II CPU that you have, which should be clearly indicated on the outer cover. The choices of settings are 133, 233, 266, 300, 333, 350, 400, 450, 500, and 550 MHz. Notice that the fastest CPU available was 400MHz at the time of this board was released, therefore we can guarantee proper functioning only up to 400 MHz. The 133 and 200 MHz settings are used as default and as a "safe" frequency, which means that the board can be boot-up at any time even if the BIOS settings are erased or reset, there is however no Pentium II CPU of those frequencies. The 133MHz value is used for CPUs with a 66MHz Bus Clock, and the 200 MHz value is used for CPUs with a 100MHz Bus Clock. The BIOS will automatically detect the Bus Clock of your CPU.

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 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 SDRM Unbuffered DIMM**. The mainboard supports **from 8 to 384 Mbytes** with no other restrictions on memory configurations. Use 12ns or faster DIMM modules for 66MHz and use 8ns modules for 100MHz host bus CPUs.

DIMM Configuration

Number of Memory Modules	DIMM1	DIMM2	DIMM3
1			1st
2		2nd	1st
3	3rd	2nd	1st

Note: It is very important that you install DIMM modules as outlined in the table above in order to preserve the signal integrity on 100MHz host bus systems.

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.

P1 — 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.

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.

```
┌─────────────────────────────────────────┐
│          J25 Pin Assignment              │
│                                          │
│   Power                                  │
│    LED    Keylock      Speaker           │
│   ┌──┐   ┌──┐       ┌──────┐             │
│   ⊕ ○ ⊕ ⊕ ⊕       ⊕ ○ ○ ⊕             │
│   +     −                                │
│                     + − + −              │
│   ⊕ ⊕   ⊕ ⊕       ⊕ ⊕ ⊕ ⊕             │
│   Reset   PWRBT     Turbo  HDD           │
│                      LED   LED           │
└─────────────────────────────────────────┘
```
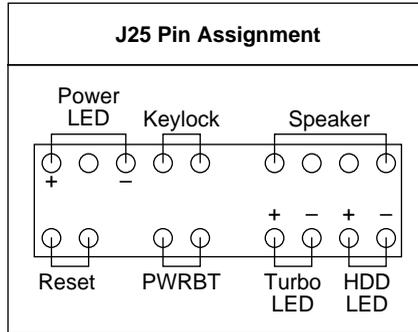
HD LED – IDE Device LED Connector

Attach a 2-pin IDE drive LED cable to this connector. The LED lights when an IDE device is active.

TB LED – Turbo LED Connector

Attach a 2-pin turbo LED cable to it. The LED lights when the system is in turbo mode. Manufacture default has set the board in turbo mode due to most of hardware and software are compliance to turbo mode.

IDE LED – IDE HDD LED Connectors

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

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.

RESET – Hardware Reset Control

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

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.

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

IR Connector Pin Assignment
VCC 1
FIRRX 2
IRRX 3
GND 4
IRTX 5
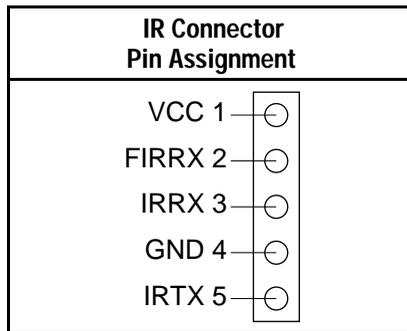
IDE1/IDE2 – On-board Primary/Secondary IDE HDD Connectors

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.

CPU FA, CHA FA: CPU Cooling Fan Connectors

These 3-pins connectors provide 12V power for the CPU, and chasis cooling fans which match 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.

CPU FA, CHA FA Cooling Fan Connectors (Pin Assignment)	
1	⊖ GND
2	⊖ 12V
3	⊖ Sensor

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 pins 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	
1	⊖ 5VSB
2	⊖ GND
3	⊖ Control

SBLK1 – PCI Audio Card Connector

This 5-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.

SBLK1 Pin Assignment	
GNT# 1 ⊖ ⊖ 2 DGND	
⊖ 4 REQ#	
DGND 5 ⊖ ⊖ 6 SERIRQ	

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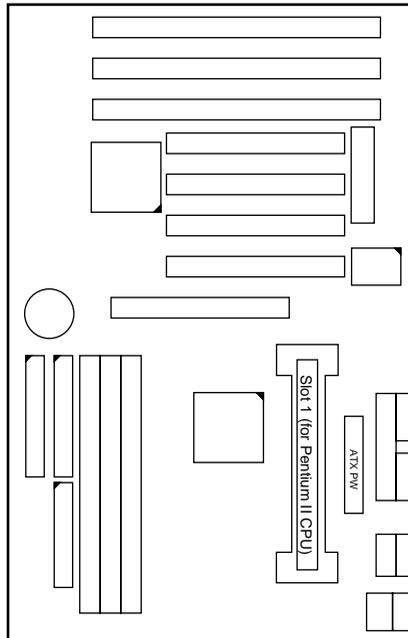
Install the 2 pairs of screws, as shown in the following figure, from the bottom of the motherboard upward onto the mainboard.
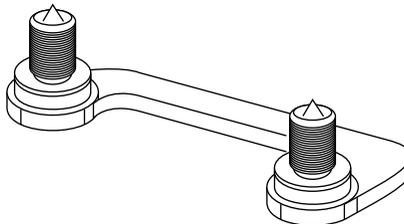
Step 2:

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.

ATX PW
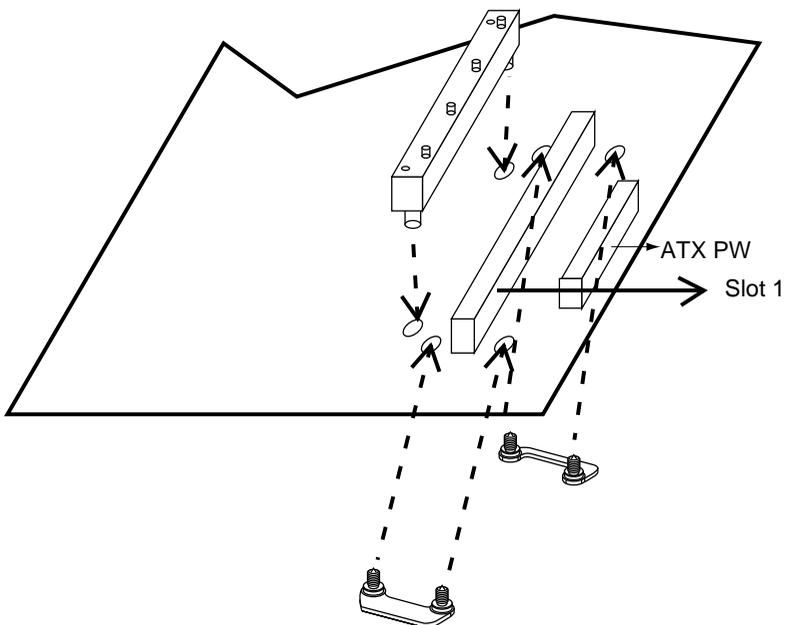
Slot 1

Step 3:

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

ATX PW
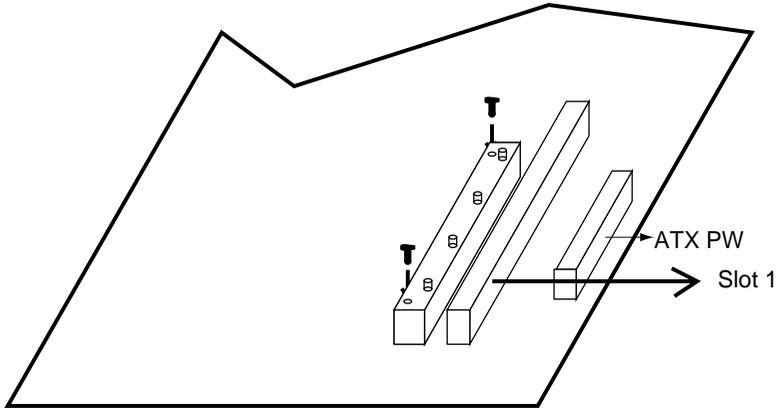
Slot 1

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.

ATX PW

Slot 1
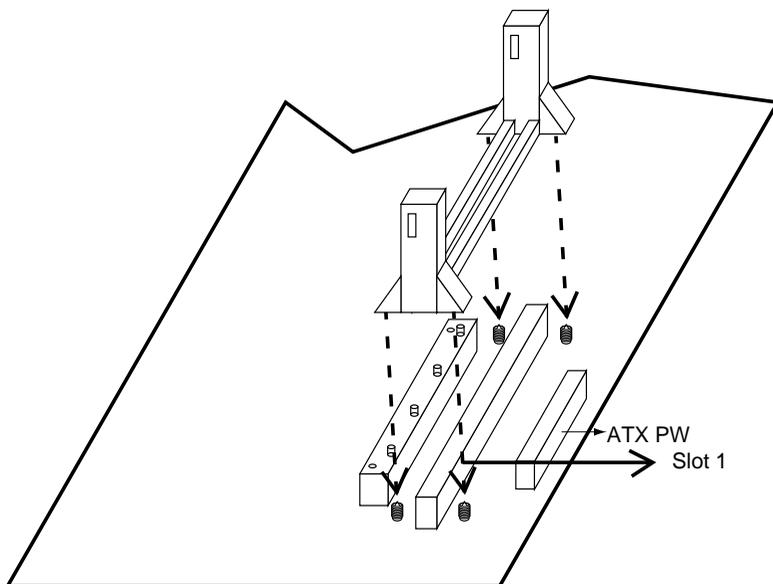
Step 5:

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.

Non-boxed Pentium II
Golden Finger
ATX PW
Slot 1
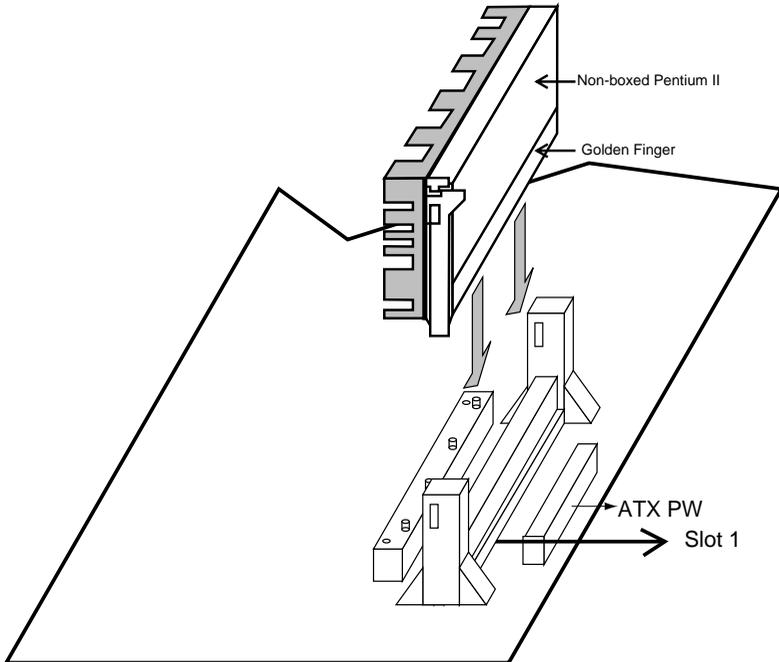
Step 6:

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

ATX PW
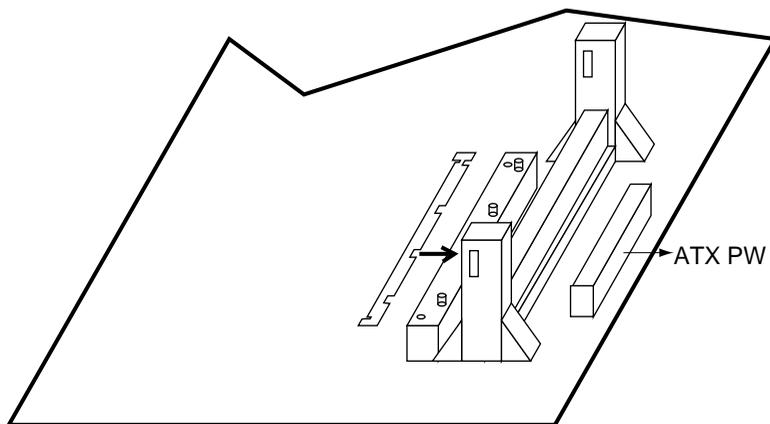
3　BIOS Setup

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:

```
                        ROM PCI/ISA BIOS
                       CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.
 ┌────────────────────────────────────────────────────────────────┐
 │                                                                  │
 │    STANDARD CMOS SETUP          INTEGRATED PERIPHERALS           │
 │                                                                  │
 │    BIOS FEATURES SETUP          SUPERVISOR PASSWORD              │
 │                                                                  │
 │    CHIPSET FEATURES SETUP       USER PASSWORD                    │
 │                                                                  │
 │    POWER MANAGEMENT SETUP       IDE HDD AUTO DETECTION           │
 │                                                                  │
 │    PNP/PCI CONFIGURATION        SAVE & EXIT SETUP                │
 │                                                                  │
 │    LOAD SETUP DEFAULTS          EXIT WITHOUT SAVING              │
 │                                                                  │
 │                                                                  │
 ├────────────────────────────────────────────────────────────────┤
 │ Esc : Quit                      ↑ ↓ → ←  : Select Item          │
 │ F10 : Save & Exit Setup         (Shift) F2 : Change Color        │
 ├────────────────────────────────────────────────────────────────┤
 │               Time, Date, Hard Disk Type...                      │
 └────────────────────────────────────────────────────────────────┘
```

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.

```
                          ROM PCI/ISA BIOS
                         STANDARD CMOS SETUP
                        AWARD SOFTWARE, INC.

 Date (mm:dd:yy) : Sat, Jan 10 1998
 Time (hh:mm:ss) :  7 : 30 : 33

 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                         Base Memory:    640K
 Floppy 3 Mode Support : Disabled    Extended Memory:  31744K
                                        Other Memory:    384K
 Video  : EGA/VGA
 Halt On : All Errors                   Total Memory:  32768K

 Esc : Quit            ↑ ↓ → ←   : Select Item   PU/PD/+/- : Modify
 F11 : Help           (Shift) F2 : Change Color    F3 : Toggle Calendar
```

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.**)

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

Virus Warning             : Disabled  Video  BIOS Shadow  : Enabled
CPU Internal Cache        : Enabled   C8000-CBFFF Shadow   : Disabled
External Cache            : Enabled   CC000-CFFFF Shadow   : Disabled
CPU L2 Cache ECC Checking : Enabled   D0000-D3FFF Shadow   : Disabled
Quick Power on Self Test  : Enabled   D4000-D7FFF Shadow   : Disabled
Boot Sequence             : A,C,SCSI  D8000-DBFFF Shadow   : Disabled
Swap Floppy Drive         : Disabled  DC000-DFFFF Shadow   : Disabled
Boot Up NumLock Status    : On
Typematic Rate Setting    : Disabled
Typematic Rate (Chars/Sec): 6
Typematic Delay (Msec)    : 250
Security Option           : Setup
PCI/VGA Palette Snoop     : Disabled  ESC : Quit        ↑↓→←: Select Item
Assign IRQ For VGA        : Enabled   F1  : Help       PU/PD/+/- : Modify
OS Select for DRAM >64MB  : Non-OS2   F5  : Old Values (Shift)F2 : Color
HDD S.M.A.R.T. Capability : Disabled  F6  : Load BIOS Defaults
Report NO FDD For WIN95   : YES       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>: which 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.)

CPU L2 Cache ECC Checking	Choose Enabled (default) for checking CPU L2 Cache ECC Function or Disabled to disable this function.
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 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.
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.
HDD S.M.A.R.T. Capability	Choose *Enabled* only with SMART enabled harddisks and to make use of the failure warning system that some new harddisk types provide.
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)
  SDRAM CAS Latency Time : 3
  DRAM Data Integrity Mode : Non-ECC
  System BIOS Cacheable  : Disabled  CPU Warning Temperature  : Disabled
  Video BIOS Cacheable   : Disabled  Current CPU Temperature  : 29OC/84OF
  Video RAM Cacheable    : Disabled  Current System Temp.     : 24OC/75OF
  8 Bit I/O Recovery Time : 1        Current CPUFAN Speed     : 6553 RPM
  16 Bit I/O Recovery Time : 1       Current CHAFAN Speed     : 5723 RPM
  Memory Hole At 15M-16M : Disabled  VID(V) : 2.78 V   VTT(V) : 1.50V
  Passive Release        : Enabled   3.3(V) : 3.31 V   +5 (V) : 4.97V
  Delay Transaction      : Enabled   +12(V) : 11.84V   -12(V) : -11.45V
  AGP Aperture Size (MB) : 64        -5(V)  : -4.88V
  Spread Spectrum Modulated: Disabled

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

Note: The 6KBE does not support the temperature and voltage monitoring functions.

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.
SDRAM CAS Latency Time	Use the default setting.
DRAM Data Integrity Mode	Choose Non-ECC (default) or ECC according to the DRAM type you have.

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.
Video RAM Cacheable Disabled	The video RAM A0000H-BFFFFH is not cached.	
	Enabled:	The video RAM A0000H-BFFFFH 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.	
Spread Spectrum Modulated	Enabled it when you want to run the FCC or DOC testing.	

CPU Speed	Select the proper frequency your Pentium II CPU works on in this item. Frequencies range is from 133MHz (66 x 2) to 550MHz (100 x 5.5). The default setting is 233MHz (66 x 3.5). The fastest CPU available was 400MHz at the time of this mainboard was released, so that we can guarantee proper functioning only up to 400 MHz.
	If "Manual" is chosen in this item, then you need to select the CPU Bus (Host) Clock and Multiplier settings in the two items below.
	133 and 200MHz are the BIOS default settings for respectively 66 and 100MHz Bus clock CPUs. If an incorrect CPU frequency setting causes the system to crash, simply press <INSERT> during boot-up to load the BIOS default values.
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: 66, 68, and 75MHz; and for 100MHz Host Clock CPUs are: 100, 103, and 112MHz.
	Caution: *SOYO does not guarantee proper functioning of your system if you overclock your board. (Only 66 and 100MHz are guaranteed frequencies.)*
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 5.5.

CPU Warning Temperature	Choose **Disabled** (default) or **Enabled**. Set CPU temperature from 50ºC to 70ºC. The system will slow down automatically when CPU temperature goes beyond the preset value. CPU will continue to run slow until the CPU temperature returns back within the safe range.
Current CPU Temperature; System Temp; CPUFAN & CHAFAN Speeds; Vcore	Show the current status of CPU.

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
 ┌─────────────────────────────────────┬──────────────────────────────────────┐
 │ ACPI Function       : Disabled       │ IRQ 8 Break Suspand   : Disabled     │
 │ Power Management    : Disabled       │                                      │
 │ PM Control by APM   : Yes            │ ** Relead Global Timer Events **     │
 │ Video Off Method    : V/H SYNC+Blank │ IRQ [3-7, 9-15], NMI    : Disabled   │
 │ Video Off After     : Standby        │ Primary IDE 0           : Disabled   │
 │ Modem Use IRQ       : 3              │ Primary IDE 1           : Disabled   │
 │ Doze Mode           : Disabled       │ Secondary IDE 0         : Disabled   │
 │ Standby Mode        : Disabled       │ Secondary IDE 1         : Disabled   │
 │ Suspend Mode        : Disabled       │ Floppy Disk             : Disabled   │
 │ HDD Power Down      : Disabled       │ Serial Port             : Enabled    │
 │                                      │ Parallel Port           : Disabled   │
 │ VGA Active Monitor  : Disabled       │                                      │
 │ Soft-Off by PWR-BTN : Instant-Off    ├──────────────────────────────────────┤
 │ CPU Fan Off In Suspend: Enabled      │ ESC : Quit       ↑↓→←: Select Item   │
 │ Resume by Ring      : Enabled        │ 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:

ACPI Function	Choose Enabled or Disabled (default) to turn on or off ACPI function.
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.
VGA Active Monitor	Choose Enabled (default) or Disabled. Enabled – enables the power management timers when a "no activity" event is detected.
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
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** (default) or **Disabled**. 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.
┌─────────────────────────────────────┬───────────────────────────────────┐
│ PnP OS Installed      : No           │ Used MEM Base Addr    : N/A        │
│ Resources Controlled By : Manual     │                                   │
│ Reset Configuration Data : Disabled  │ Assign IRQ for USB    : Disabled   │
│                                      │                                   │
│ IRQ-3   assigned to : Legacy ISA*    │                                   │
│ IRQ-4   assigned to : Legacy ISA*    │                                   │
│ IRQ-5   assigned to : PCI/ISA PnP*   │                                   │
│ IRQ-7   assigned to : PCI/ISA PnP*   │                                   │
│ 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:

PNP OS Installed   Set this item to 'No' (default) if the OS you are running does not support PnP configuration. Window 95 is PnP compatible, set this item to 'Yes' in the case you run Windows 95. In case of doubt, set this item to 'No'.

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.
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:)

```
                    ROM PCI/ISA BIOS
                  INTEGRATED PERIPHERALS
                   AWARD SOFTWARE, INC.

 IDE HDD Block Mode      : Enabled    Onboard Serial Port1   : 3F8/IRQ4
 IDE Primary Master PIO  : Auto       Onboard Serial Port2   : 2F8/IRQ3
 IDE Primary Slave  PIO  : Auto       UR2 Mode               : Standard
 IDE Secondary Master PIO : Auto
 IDE Secondary Slave  PIO : Auto      Onbaord Parallel Port  : 378/IRQ7
 IDE Primary Master UDMA  : Auto      Parallel Port Mode     : SPP
 IDE Primary Slave  UDMA  : Auto
 IDE Secondary Master UDMA: Auto
 IDE Secondary Slave  UDMA: Auto
 OnChip Primary PCI IDE   : Enabled
 OnChip Secondary PCI IDE : Enabled
 USB Keyboard Support     : Disabled
 init AGP Display First   : Disabled

 Power On Function       : Button Only  ESC : Quit      ↑↓→←: Select Item
                                        F1  : Help      PU/PD/+/- : Modify
                                        F5  : Old Values (Shift)F2 : Color
                                        F6  : Load BIOS Defaults
 Onboard FDC Controller  : 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:

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.
Init AGP Display First	If you use two VGA cards (one PCI/one AGP) on your system, set this item to Enabled will use the AGP VGA card to boot up the system. If Disabled (default) is chosen, the system will bootup using the PCI VGA card.
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	COM4/2E8H
(default)	

UR2 Mode Select   Choose Standard (default), IrDA 1.0, ASK IR, MIR0.57M, MIR1.15M, or FIR to meet the specification of your Infra Red device.

UR2 Duplex Mode   Choose Half (default) or Fall. 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.

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:

<div align="center">

"Enter Password:"

</div>

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:

<div align="center">

"Confirm Password:"

</div>

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.*

```
                    ROM PCI/ISA BIOS
                   CMOS SETUP UTILITY
                  AWARD SOFTWARE, INC.

 HARD DISKS        TYPE  SIZE    CYLS HEAD  PRECOMP  LANDZ  SECTOR  MODE

 Primary Master  : None    0       0    0        0      0       0  ----
 Primary Slave   : None    0       0    0        0      0       0  ----
 Secondary Master : None   0       0    0        0      0       0  ----
 Secondary Slave : None    0       0    0        0      0       0  ----


              Do you accept this drive C (Y/N)? N


                       ESC : Skip
```
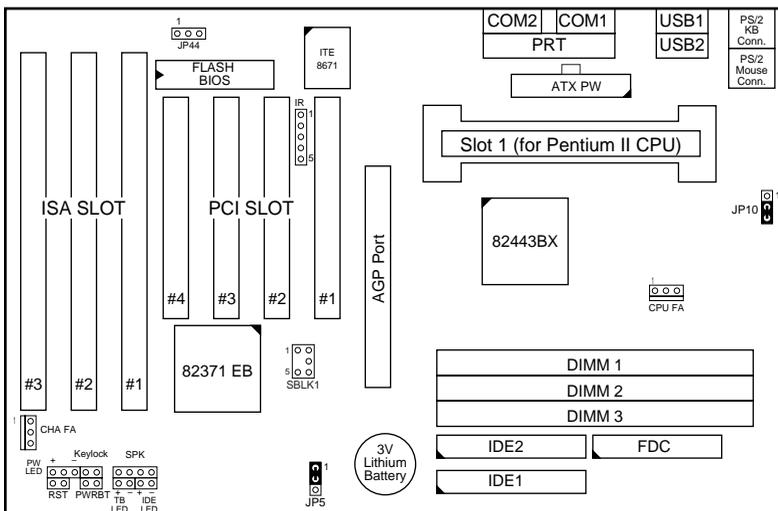
Quick Installation Guide

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	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.

DIMM Configuration

Number of Memory Modules	DIMM1	DIMM2	DIMM3
1			1st
2		2nd	1st
3	3rd	2nd	1st

Note: It is very important that you install DIMM modules as outlined in the table above in order to preserve the signal integrity on 100MHz host bus systems.

Connectors and Jumper Settings

CMOS clear: JP5		ATX Power Supply: P1			Cooling Fans: CPUFA, CHAFA			
Retain CMOS data (default)	1-2	please insert the ATX power supply plug into this header.			pin	1	2	3
					function	GND	12V	Sensor
Clear CMOS data	2-3	**Wake on LAN jumper: JP44**			**RESET**		**HD LED**	
		Please connect the WOL cable from your LAN card to this jumper.			Connect the reset button to this jumper.		Connect the HDD led to this jumper.	
USB1 and 2				**PRT**	**SPK**		**Keylock**	
Connect your USB devices to these headers				printer cable header	Connect the cable		Connect keyboard	
ATX Power Supply On/Off Switch: PWRBT					of speakers to this		lock switch to this	
Connect your power switch to this jumper (momentary switct type).					jumper		jumper	
IrDA (Infrared Devices Connector: IR					**TB Led**		**PW Led**	
pin	1	2	3	4	5	Connect your		Connect the
function	Vcc	FIRRX	IRRX	GND	IRTX	Turbo led to this jumper.		power led to this jumper.
PCI Audio Card Connection: SBLK1						**Keyboard Wake Up: JP10**		
1	2	3	4	5	6	Wake Up Enabled		1-2
GNT#1	DGND	Empty	REQ#	DGND	SERIRQ	Wake Up Disabled (default)		2-3

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".