6KL

**82440 LX 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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Edition: july 1998
Version 1.1
6KL 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 AT architecture system board that supports Intel Pentium II family CPUs. This mainboard is fully compatible with industry standards, and adds many technical enhancements.

Key Features

¥   Processor supports:
  - Ñ   Intel Pentium II CPU up to 83 MHz host bus frequency (233 ~ 333 MHz)
  — **auto detection of CPU voltage**
  — **Slot 1 support**

¥   DRAM controller:
  — **supports 3 strips of 168-pin EDO /SDRAM Unbuffered DIMM and 2 strips of EDO SIMM**
  - Ñ   supports auto detection of memory type
  — **supports ECC or Parity configuration**
  - Ñ   onboard memory configurations from 8MB to 384MB

¥   BUS controller:
  - Ñ   complies with the PCI specifications v2.1
  - Ñ   three 32-bit PCI slots (Masters), three ISA slots, one 32-bit AGP slot, and 4-layer PCB
  — **supports Universal Serial Bus—USB (Optional)**

¥   Peripheral controller:
  - Ñ   System BIOS built-in 1M ÒPlug and PlayÓ function
  - Ñ   onboard built-in PCI Master IDE controller and floppy controller
  - Ñ   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
  - Ñ   onboard FLASH Memory for easy upgrade of BIOS
  — **onboard support for IR function**
  - Ñ   AT/ATX power supply connectors available.

Unpacking the Mainboard

The mainboard package contains:

¥ The 82440LX Mainboard

¥ One CD (including Manuals/Drivers/Utilities)

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 systemÕs 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
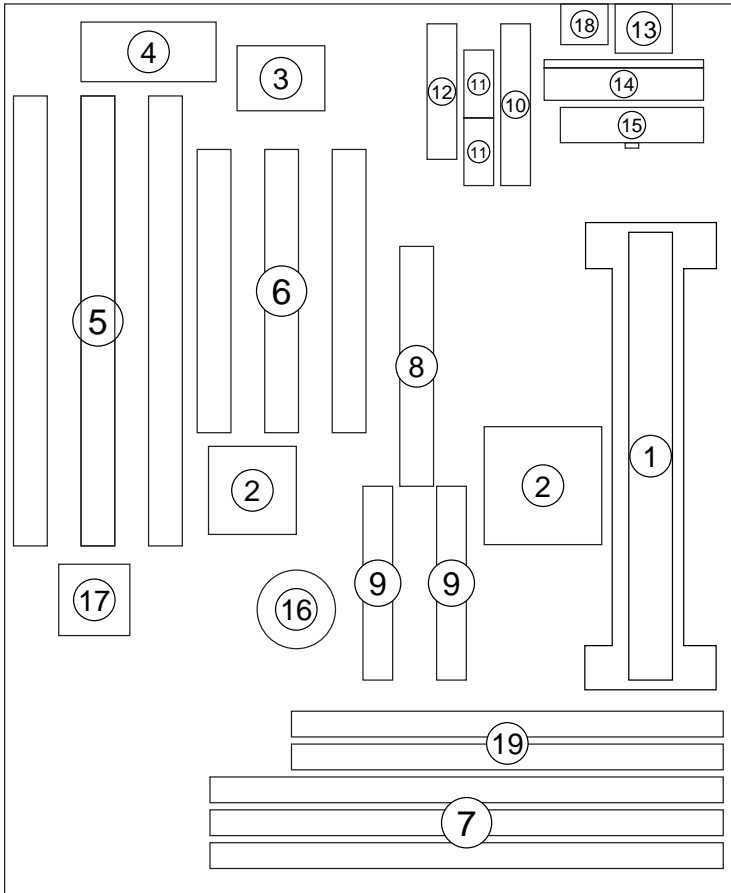
Figure 1–1. Mainboard Layout

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. Keyboard Connector
14. AT Power Connector
15. ATX Power Connector
16. CMOS Battery (Lithium battery, 3V)
17. Winbond 781D (optional)
18. PS/2 Mouse Connector
19. 2 SIMM slots

Default settings are as follows: Intel 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 AT Power Supply.
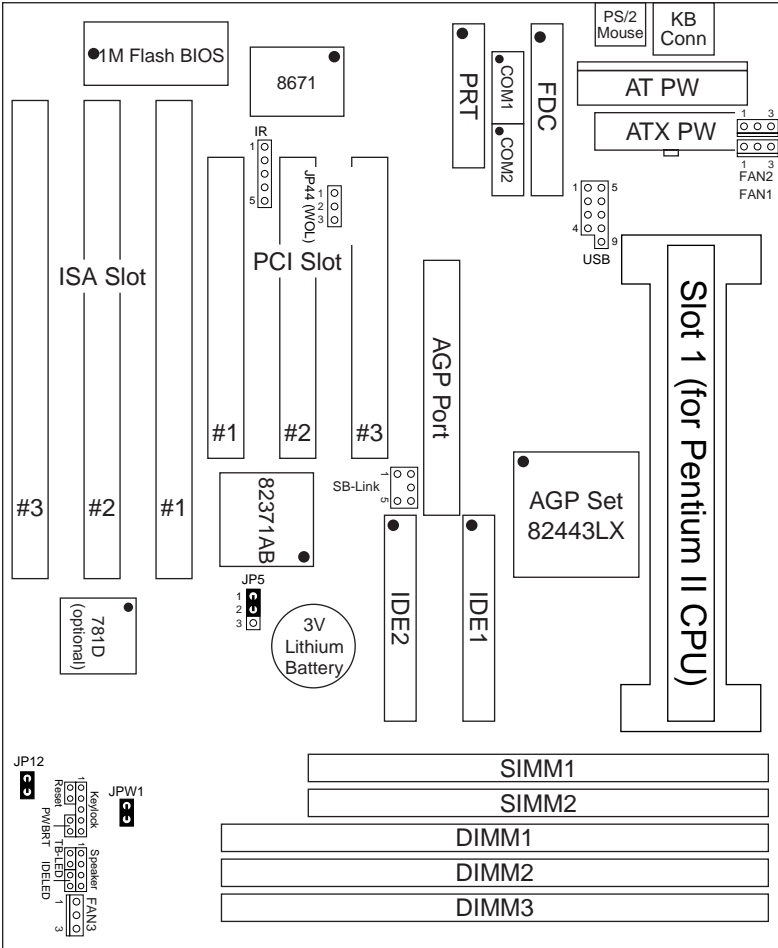
Figure 1–2. Mainboard Default Setting

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

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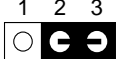
This chapter explains how to configure the mainboardõs hardware. After you install the mainboard, you can set jumpers, install memory on the mainboard, and make case connections. Refer to this chapter whenever you upgrade or reconfigure your system.

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 setting this jumper to 2Ð3, then set the jumper back to 1Ð2 to retain the new settings.

CMOS Setting	JP5
Retain CMOS data (default)	1 2 3
Clear CMOS data	1 2 3

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 familyõs 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 ÒChipset Features SetupÓ menu. There is an item called ÒCPU SpeedÓ 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, and 333 MHz. The 133 MHz setting is used as default and as a ÒsafeÓ 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/SDRAM 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 Ò**Table-Free**Ó in any bank. The SIMM bank can not be used together with the DIMM banks. The SIMM bank takes two EDO SIMM modules that have to be of the same size. FTP modules can not be used. The SIMM bank supports up to a maximum of 128MB of memory (2x 64KB modules).

Multi I/O Port Addresses

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

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

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

Connectors

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

ATX PW — ATX Power Supply Connectors

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

3.3V	3.3V
–12V	3.3V
GND	GND
PS-ON	5V
GND	GND
GND	5V
GND	GND
–5V	PW-0K
5V	5VSB
5V	12V
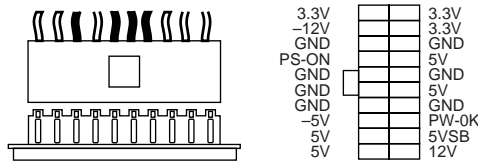
AT PW — Power Supply Connectors

The mainboard requires a power supply of at least 200 watts and a Òpower goodÓ signal. AT PW has two 6-pin male header connectors. Plug the dual connectors from the power directly onto the board connector while making sure the black leads are in the center.
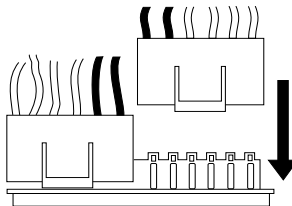
Keyboard Connector

A six-pin female 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

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

IR Connector Pin Assignment
VCC 1
FIRRX 2
IRRX 3
GND 4
IRTX 5
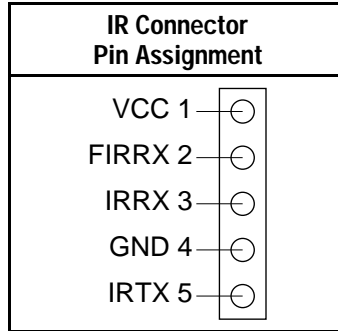
Keylock & Power LED Connector

This connector is for a lock that may be present 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.

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

Attach hard disk cables to these connectors.

COM1/COM2 Connectors

Connect COM1/COM2 devices to these connectors.

IDE LED – IDE HDD LED Connector

Attach the HDD LED from the case to this connector. The LED will light up when an IDE device is active.

TB LED – Turbo LED Connector

Attach the turbo led from the case to this connector.

FDC Connector

Attach floppy cable to this connector.

PRT – Parallel Port Connector

Attach parallel port cable to this connector.

USB – Universal Serial Bus Connector

Attach a 9-pinUSB cable to this connector for external USB devices.

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.

FAN1, FAN2, FAN3: CPU Cooling Fan Connectors

These 3-pins connectors provide 12V power for cooling fans that match the pin assignment of this connector. If you enable the Suspend Mode function in BIOS setup, these fans will stop when the system enters suspend mode.

CPU Cooling Fan Connector (Pin Assignment)	
1	⊖– GND
2	⊖– 12V
3	⊖– SENSOR

FAN1: CPU Cooling Fan

FAN2: Power Supply Fan (Optional)

FAN3: Case Fan (Optional)

Note: Make sure the pin assignment of your CPU Cooling Fan is matched with this connector before connecting it, otherwise, you may damage either the mainboard or the cooling fan. Fan1 must be installed for this motherboard,, fan2 and fan3 are optional.

JP44 – Wake-On-LAN (WOL) Header

Attach a 3-pin connector from a LAN card that 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   5V
2   GND
3   SENSOR
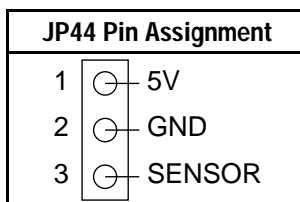
SB-LINK – PCI Audio Card Connector

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.

SB-LINK Pin Assignment	
GNT# 1	2 DGND
	4 REQ#
DGND 5	6 SERIRQ
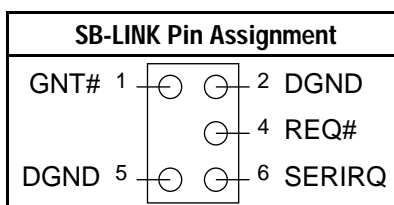
JPW1 – Power Supply Adjustment Jumper

This jumper should be closed (default) with standard ATX power supplies. There are ATX power supplies that do not comply to the standard, if you have problems with your power supply, please set this jumper to open.

JP12: PS/2 Keyboard WakeUp

JP12 allows the user to enable the keyboard/mouse wake up function. If JP12 is set to Enabled, the BIOS setting determines the exact response of the mainboard to a wake up event. (See the ÒIntegrated PeripheralsÓ section.)

JP12: PS/2 Keyboard Wake up	
Wake Up Enabled	
Wake Up Disabled	

Note: The wakeup function can ONLY be used if you have an ATX power supply. If you use an AT power supply, set JP12 to open (wake up is disabled).

Slot 1 Installation Guide

Step 1:

Find the ATX PW and the Slot 1 on the board and set the board in the direction as follows before doing any installation.
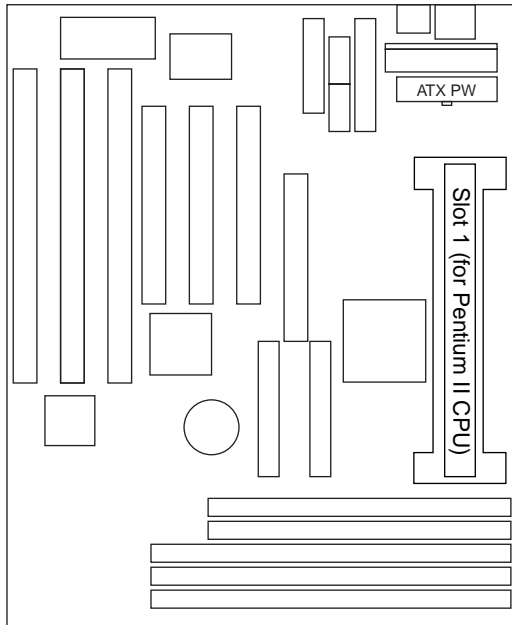
Install the 2 pairs of screws, as shown in the following figure, from the bottom of the motherboard upward onto the mainboard.
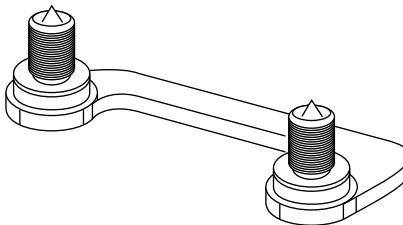
Step 2:

Insert the supporting base, which is shown below, into the two holes directly to the left of the 2 sets of screws that have just been inserted on to the board.
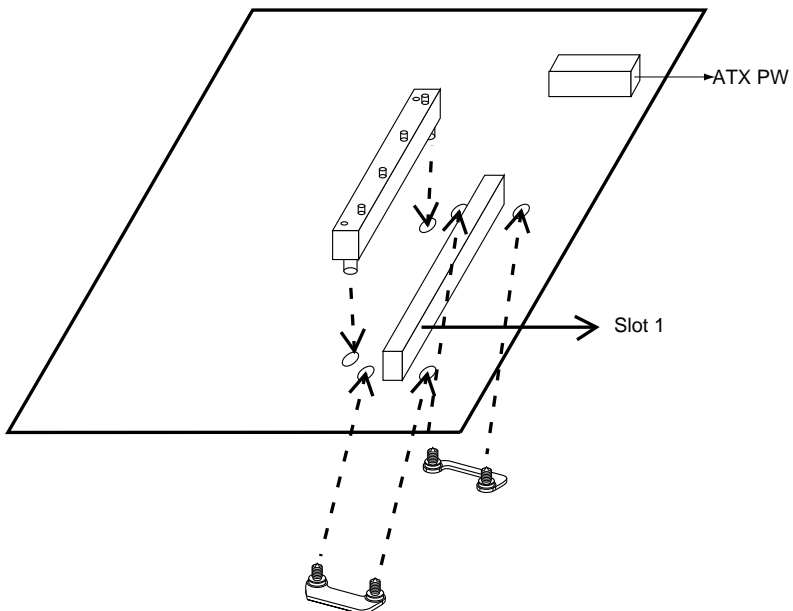
Step 3:

Insert the 2 latches into the two holes of the supporting base to secure the CPU.
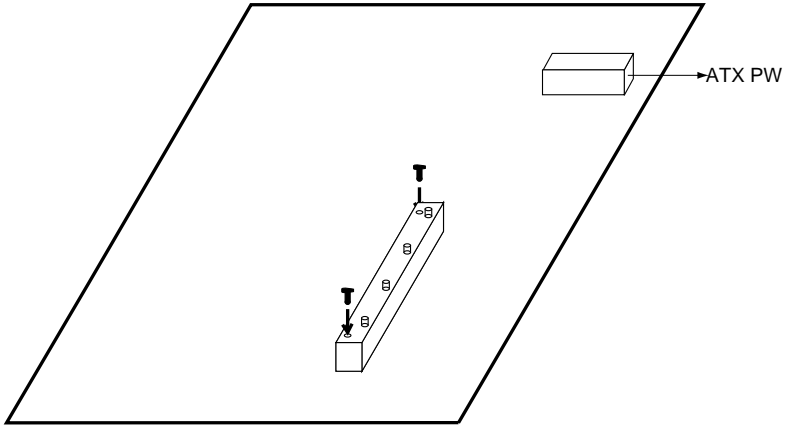
Step 4:

Set the retention clip right on the top of the 2 sets of screws which are along the sides of Slot1 and then tighten the 4 screws on the retention clip.
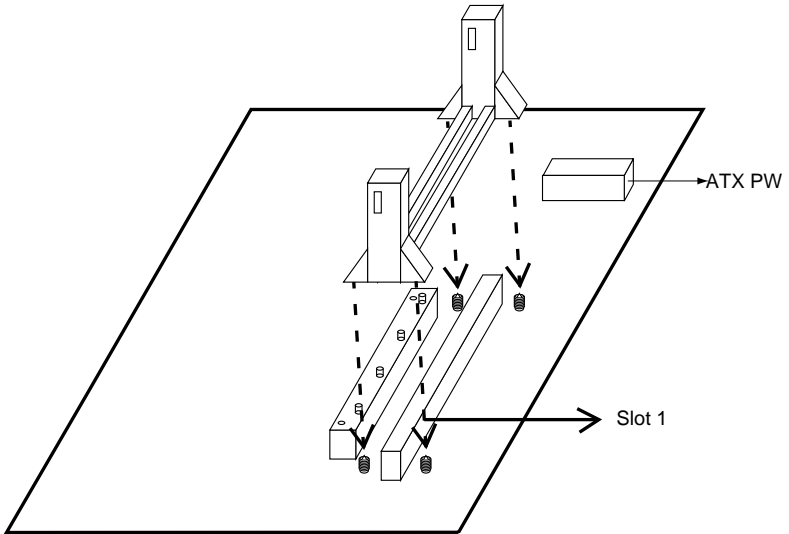
Step 5:

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

Non-boxed Pentium II

Golden Finger

ATX PW

Slot 1
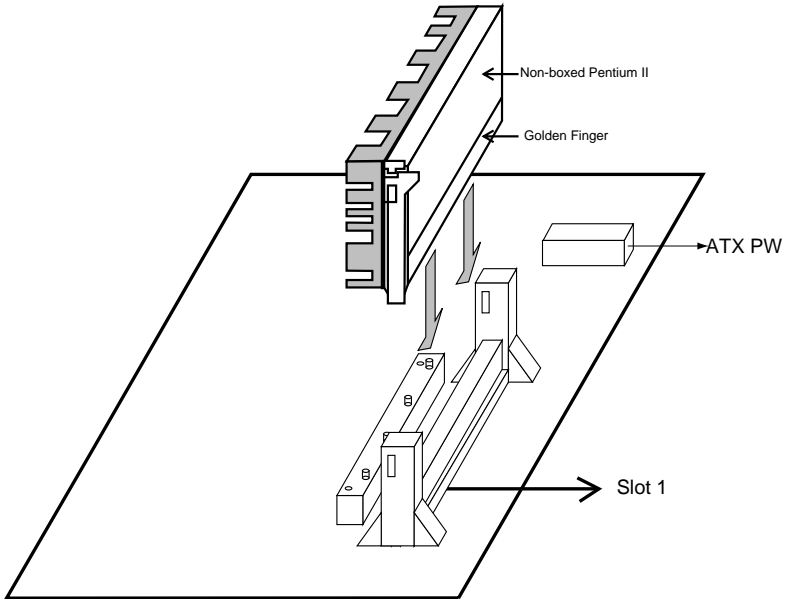
Step 6:

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
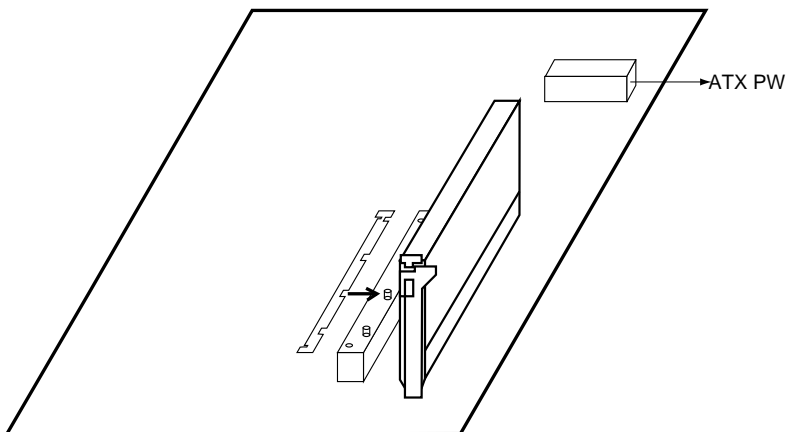
3   BIOS Setup

The mainboard̃s BIOS setup program is the ROM PCI/ISA BIOS from Award Software Inc. Enter the Award BIOS program̃s 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              │
│                                                                   │
│    LOAD BIOS DEFAULTS                                             │
│                                                                   │
├─────────────────────────────────────────────────────────────────┤
│  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 òSTANDARD CMOS SETUPÓ 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/+/Đ keys. Some fields let you enter values directly.

Date (mm/dd/yy)	Type the current date.
Time (hh:mm:ss)	Type the current time.
Primary (Secondary) Master & Slave	Choose from the standard hard disk types 1 to 46. Type 47 is user definable. If a hard disk is not installed choose òNot installed.Ó (default)
Drive A & B	Choose 360KB , 5 1/4 **in**., 1.2MB , 5 1/4 **in**., 720KB , 3 1/2 **in**., 1.4M , 3 1/2 **in**.(default), 2.88 MB, 3 1/2 **in**. or Not installed

| **Video** | Choose | Monochrome, Color 40x25, VGA/EGA (default), Color 80x25 |

| **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 that is 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 ÒBIOS FEATURES SETUPÓ 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
Quick Power on Self Test : Enabled │ D0000-D3FFF Shadow  : Disabled
Boot Sequence           : A,C,SCSI │ D4000-D7FFF Shadow  : Disabled
Swap Floppy Drive       : Disabled │ D8000-DBFFF Shadow  : Disabled
Boot Up NumLock Status  : On       │ DC000-DFFFF Shadow  : Disabled
Gate A20 Option         : Fast     │
Typematic Rate Setting  : Disabled │
Typematic Rate (Chars/Sec) : 6     │
Typematic Delay (Msec)  : 250      │
Security Option         : Setup    │ ESC : Quit      ↑↓→←: Select Item
PCI/VGA Palette Snoop   : Disabled │ F1  : Help      PU/PD/+/- : Modify
OS Select for DRAM >64MB : Non-OS2 │ F5  : Old Values (Shift)F2 : Color
Report No FDD for Win95 : No       │ 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/+/Ð keys. <F> keys are explained below:

<F1>:   ÒHelpÓ 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 CPUÕs 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, òA, C, SCSIó 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, CD-ROM, A; CD-ROM, C, A; D, A, SCSI; E, A, SCSI; F, A, SCSI; SCSI, A, C; SCSI, C, A; C only; LS/ZJP.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) o 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.
ôSystemõ Ð Each time the system is booted the password prompt appears.
ôSetupõÐ 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.

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 IRQ line 6 (normally used by the Floppy Disk Drive) if you disable your onboard FDD and set this item to ôYesõ If you set it to ôNoõ 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 ÒCHIPSET FEATURES SETUPÓ 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     │ SDRAM CAS Latency Time  : 3        │
│ DRAM Speed Selection   : 60 ns       │ CPU Speed            : 233MHz (66x3.5)│
│ MA Wait State          : Slow        │                                  │
│ EDO RAS# To CAS# Delay : 3           │                                  │
│ EDO RAS# Precharge Time : 3          │ Spread Spectrum     : Disabled    │
│ 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    │ ESC : Quit      ↑↓→←  : Select Item│
│ Passive Release        : Enabled     │ F1  : Help    PU/PD/+/- : Modify   │
│ Delay Transaction      : Disabled    │ F5  : Old Values (Shift)F2 : Color │
│ AGP Aperture Size (MB) : 64          │ F6  : Load BIOS Defaults           │
│ SDRAM RAS-to-CAS Delay : Fast        │ F7  : Load Setup Defaults          │
│ SDRAM RAS Precharge Time : Fast      │                                  │
└─────────────────────────────────────┴──────────────────────────────────┘
```

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/Ð 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 ÒManualÓ setting, however, since some combinations fall outside of the INTEL specifications. Refer to the table on page 26 for CPU freuqency settings.

Spread Spectrum Modulated Enable when you want to run the FCC or DOC test.

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.

CPU Frequency:

		Bus Frequency					
		50MHz	60MHz	66MHz	68MHz	75MHz	83MHz
	2.0	100MHz	120MHz	133MHz	137MHz	150MHz	166MHz
	2.5	125MHa	150MHz	166MHz	171MHz	188MHz	208MHz
	3.0	150MHz	180MHz	200MHz	205MHz	225MHz	250MHz
Multiplier	3.5	175MHz	210MHz	233MHz	239MHz	263MHz	291MHz
	4.0	200MHz	240MHz	266MHz	274MHz	300MHz	333MHz
	4.5	225MHz	270MHz	300MHz	308MHz	338MHz	374MHz
	5.0	250MHz	300MHz	333MHz	342MHz	375MHz	416MHz

Notes:
1. If you use Bus Frequencies of 75 or 83 MHz, make sure that your PCI cards can cope with the higher PCI clock.

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 Define │ ** Relead Global Timer Events ** │
│ PM Control by APM  : Yes         │ IRQ [3-7.9-15], NMI    : Enabled │
│ Video Off Method   : V/H SYNC+Blank│ Primary IDE 0        : Disabled│
│ Video Off After    : Standby     │ Primary IDE 1          : Disabled│
│ Modem Use IRQ      : 3           │ Secondary IDE 0        : Disabled│
│                                  │ Secondary IDE 1        : Disabled│
│ Doze Mode          : Disabled    │ Floppy Disk            : Disabled│
│ Standby Mode       : Disabled    │ Serial Port            : Enabled │
│ Suspend Mode       : Disabled    │ Parallel Port          : Disabled│
│ HDD Power Down     : Disabled    │                                  │
│ Throttle Duty Cycle : 62.5%      │                                  │
│ VGA Active Monitor : Enabled     │                                  │
│ Soft-Off by PWR-BTN : Instant-Off│                                  │
│ 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         │
│ IRQ 8 Break Suspand : Disabled   │ 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 system — Let's you define the HDD and power down times.

Disabled — 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 or No (default). 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 the mode you want video to goes off after the modeis being active. Options are Standby, Suspend, and Doze.
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.
Throttle Duty Cycle	Using the default setting.
ZZ Active in suspend	Using the default setting.
VGA Active Monitor	Choose Enabled (default) or Disabled. Enabled Ðenables the power management timers when a Ðno activityÐ event is detected.
Soft-Off by PWR-BTN	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	*Enable* will switch off the CPU Fan when the system enters suspend mode.

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 Clock Event	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 activities. If activity occurs from the Enabled item the system then wakes up.
Primary/ Secondary IDE0 Primary/ Secondary IDE1	Choose **Enabled** or **Disabled** (default).
	Enabled: enables the power management timers when 0no activity0 event is detected.
Floppy Disk/serial Port/Parallel Port	Choose **Enabled** or **Disabled**.
	Enabled: enables the power management timers when 0no activity0 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        PCI IDE IRQ Map To  : PCI-AUTO
Resources Controlled By : Manual    Primary   IDE INT# : A
Reset Configuration Data : Disabled  Secondary IDE INT# : B

IRQ-3  assigned to : PCI/ISA PnP*
IRQ-4  assigned to : PCI/ISA PnP*
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*
DMA-1  assigned to : PCI/ISA PnP*
DMA-3  assigned to : PCI/ISA PnP*
DMA-5  assigned to : PCI/ISA PnP*
DMA-6  assigned to : PCI/ISA PnP*
DMA-7  assigned to : PCI/ISA PnP*
```

*: 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.
	PCI/ISA PnP: BIOS auto assigns IRQ/DMA to the device.
	Legacy ISA: User assigns IRQ/DMA to the device.
PCI IRQ Activated By	Choose Edge or Level. Most PCI trigger signals are Level. This setting must match the PCI card.
PCI IDE IRQ Map To	Select PCI-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#.

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:

ÒLoad SETUP Defaults (Y/N)? NÓ

To use the SETUP defaults, change the prompt to ÒYÓ 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:

ⁿLoad BIOS Defaults (Y/N)?Nⁿ

To use the BIOS defaults, change the prompt to ⁿYⁿ 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 ⁿIntegrated Peripheralsⁿ 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 Parrallel Port  : 378/IRQ7
IDE Primary Master PIO  : Auto      Parallel Port Mode      : SPP
IDE Primary Slave  PIO  : Auto      ECP Mode Use DMA        : 3
IDE Secondary Master PIO : Auto
IDE Secondary Slave  PIO : Auto
IDE Primary Master UDMA  : Auto
IDE Primary Slave  UDMA  : Auto
IDE Secondary Master UDMA: Auto
IDE Secondary Slave  UDMA: Auto
On-Chip Primary PCI IDE  : Enabled
On-Chip Secondary PCI IDE: Enabled
USB keyboard Support     : Disabled
POWERON Function         : BUTTON ONLY
Keyboard PowerOn Password: ----
Hot Key Power ON       : Ctrl-F1   ESC : Quit       ↑↓ → ←: Select Item
KBC Input Clock        : 12MHz     F1  : Help       PU/PD/+/- : Modify
Onboard FDC Controller : Enabled   F5  : Old Values (Shift)F2 : Color
Onboard Serial Port 1  : Auto      F6  : Load BIOS Defaults
Onboard Serial Port 2  : Auto      F7  : Load Setup Defaults
UR2 Mode               : Standard
```

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/Đ 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**	Auto: if you want to use a hard disk that is capable of making use of UDMA (Ultra DMA 33). Disabled: will make sure that the UDMA protocol is not used in communicating with the harddisk *Auto (Default)* is recommended.

On-chip Primary/ Secondary PCI IDE	Enabled: Use the on-board IDE (default) Disabled: Turn off the on-board IDE
USB Keyboard Support	Set to *Enabled* if you want to make use of an USB keyboard.
POWER On Function	If you enable the PS/2 keyboard wake up function by closing JP12 (possible only if you use an ATX power supply), you can set the appropriate action through this item. Refer to the table on the next page for details.
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 ÒHot KeyÓ 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.

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 ÒKB Power On PasswordÓ 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 ÒHot key Power OnÓ item below.
Note: Please open JP12 if you choose "BUTTON ONLY."	

KBC Input Clock   This item controls the frequency of the
                             clock signal to the Keyboard. Default is
                             12MHz. Set this item to 8MHz if you
                             experience problems with your keyboard.

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

Onboard Serial Port 1   Choose serial port 1 & 2Õs I/O address.
Onboard Serial Port 2   Do no set port 1 & 2 to the same value
                             except for Disabled.
                             COM 1/3F8H | COM3/3E8H
                             COM 2/2F8H | COM4/2E8H
                             (default) |

UR 2 Mode   Standard: Use standard UART mode
                                       (default).
                             ASK IR: Use UART with ASK.   IR
                                     function enable.
                             HPSIR: Use UART with HP.. Serial IR
                                      function enable.

Onboard Parallel Port	Choose the printer I/O address: 378H/IRQ7 (default), 3BCH/IRQ7, 278H/IRQ5
Parallel Port Mode	Choose SPP, ECP, EPP/SPP, or ECP/EPP mode. The mode depends on your external device that connects to this port.
ECP Mode Use DMA	If you set your parallel port to ECP mode, please select either DMA Channel 3 (default) or 1.

Supervisor Password

Based on the setting you made in the ôSecurity Optionó of the ôBIOS FEATURES SETUPó, 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 ôSUPERVISOR PASSWORDó 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 ôPassword disabledó 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 ôCMOS SETUP UTILITY.ó

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 ÒSecurity OptionÓ of the ÒBIOS FEATURES SETUPÓ, 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 ÒUSER PASSWORDÓ 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 ÒPassword disabledÓ 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 ÒCMOS SETUP UTILITYÓ except change userÕs 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
```
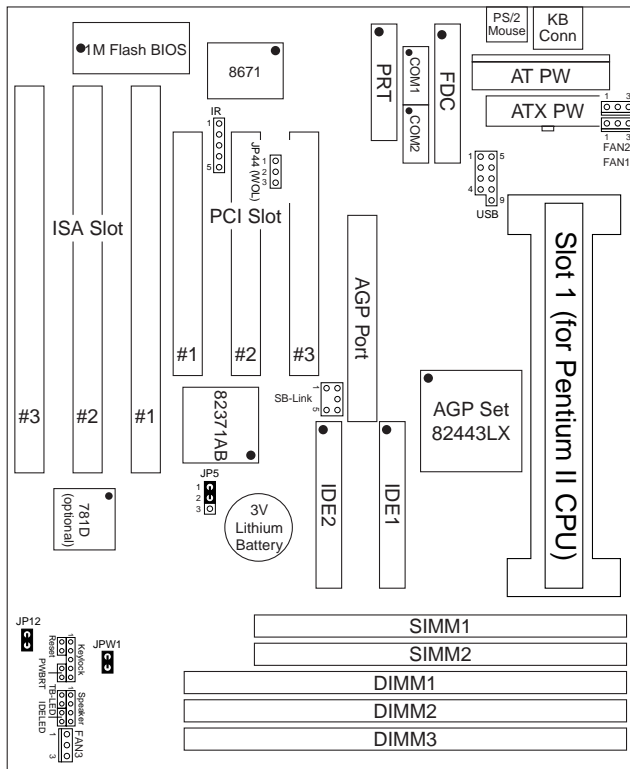
Quick Installation Guide

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

CPU Settings

The 6KL does not use any jumpers to set the CPU frequency, CPU settings are changed through the BIOS. In order to change your CPU type , please press the <Delete> key during boot up. Select the ôChipset Features setupõ menu. There you will find an item called ôCPU speed and this item will allow you to set your board to the correct CPU frequency. The Pentium II should have a clear indication on itôs cover

that specifies it(s working frequency. The possible settings are: 133, 233, 266, 300, and 333. The 133 MHz setting is used as default so whenever the BIOS settings are erased or reset the board will be able to boot up. There is however no Pentium II of that frequency. If the CPU frequency was set too high and the board refuses to start up, you can always load the default values by pressing the <Insert> key during boot up.

Memory Configurations

	SIMM Bank	DIMM Bank		
	SIMM 1	DIMM 1	DIMM 2	DIMM 3
RAM Type	EDO	EDO/SDRAM	EDO/SDRAM	EDO/SDRAM
Size (MB)	2 x 8/16/32/64	8/16/32/64/128	8/16/32/64/128	8/16/32/64/128

Note: The 6KL requires DIMMs with an access time of 70 ns or less, it supports memory of a size from 8 to 384Mb and you may use any combination of DIMMs in the banks. The SIMM bank can not be used together with DIMM banks. The SIMM bank requires 2 EDO SIMM modules of the same size (max 64MB for a 128MB total.)

Connectors and Jumper Settings

CMOS clear: JP5		PCI Audio Card Connector: SB-Link	CPU Cooling Fans: FAN 1/2/3			
Retain CMOS data (default)	2Ð3	Some PCI Audio cards need a DMA channel, connect the cable to SB-Link	pin	1	2	3
			function	GND	12V	sensor
		Wake on LAN jumper: JP44	**FAN 1:**	**FAN 2:**		**FAN 3:**
Clear CMOS data	1Ð2	Please connect the WOL cable from your LAN card to this jumper.	CPU fan	Power Supply fan		CASE fan

USB	TB Led	SPK	RESET	IDE Led
Connector your USB devices to this header	Connect your Turbo LED this jumper	Connect the cable of speakers to this jumper	Connect the reset button to this jumper	Connect HDD led to this jumper

IrDA (Infrared Devices Connector): IR						JPW1: ATX Power Select	Keylock	.JP12: Keyboard Wake Up	
pin	1	2	3	4	5	Open this jumper if your ATX power supply is non-standard	For connecting the power LED and the keyboard lock switch	Wake Up Enabled	1Ð2
function	+5V	FIRRX	IRRX	GND	IRTX			Wake Up Disabled	2Ð3

ATX Power On/Off: PWRBT	ATX PW	AT PW	
Connect your power switch to this jumper (momentary switch type)	Connector for the ATX power supply plug	Connector for the AT power supply plug	

Default I/O Settings

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

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".