# MLX8440

# User Manual

# Table of Contents

# CHAPTER 1  INTRODUCTION

The mainboard is a high-performance mainboard based on the advanced PENTIUM™ II microprocessor, the PCI Local Bus and the Intel 440LX chipset.

The mainboard offers a high degree of flexibility in configuration and is fully IBM PC/AT compatible.

## 1.1  KEYFEATURES

√ Intel 440LX AGPset™ chipset .

√ Support either 233~333 MHz PENTIUM™ II CPUs with Slot 1.

√ Uses 168-pin DIMM modules x 3 auto banking in multiple configuration up to 384MB.

√ Support SDRAM and 3.3V EDO DRAM.

√ 4 PCI Local Bus slots, and 3 x 16 bits ISA Bus slots.

√ Supports 32-bit AGP (Accelerated Graphics Port) Slot x 1.

√ System BIOS support 4 IDE harddisk drivers that don't need device driver for S/W application, the capacity each harddisk can large than 528MB up to 8.4GB.

√ PCI Bus master IDE interface on board with two connectors support 4 IDE devices in 2 channel, the PCI IDE Controller supports PIO Mode 0 to Mode 4, Bus master IDE DMA Mode 2 and Ultra DMA 33MB/SEC.

√ On board super Muti-I/O chip that support 2 serial port with 16550 Fast UART compatible, 1 parallel port with EPP and ECP capabilities, and a floppy disk drive interface.

√ Support LS-120 floppy Disk Drive (120MB).

√ Support the Universal Serial Bus (U.S.B)(optional).

√ Support Ir connector (optional).

√ System BIOS supports NCR BIOS firmware and Green feature function, Plug and Play Flash ROM.

√ Use switching regulator to support CPU core voltage.

√ Hardware Monitor: Support CPU/System FAN status monitoring and alarm, CPU voltage, system temperature monitoring.

√ Support 3V, 5V and 12V 20-pin ATX power connector.

√ ATX form factor 18.0 cm x 30.5 cm.

## 1.2 STATIC ELECTRICITY PRECAUTIONS

Static electricity can easily damage your mainboard.

Observing a few basic precautions can help you safeguard against damage that could result in expensive repairs.  Follow the measures below to protect your equipment from static discharge:

√ Keep the mainboard and other system components in their anti-static packaging until you are ready to install them.

√ Touch a grounded surface before you remove any system component from its protecive anti-static packaging.  A grounded surface within easy reach is the expansion slot covers at the rear of the system case, or any other unpainted portion of the system chassis.

√ During configuration and installation, touch a grounded surface frequently to discharge any static electric charge that may build up in your body.  Another option is to wear a grounding wrist strap.

√ When handling a mainboard or an adapter card, avoid touching its components.  Handle the mainboard and adapter cards either by the edges or by the mounting bracket that attaches to the slot opening in the case.

## 1.3 UNPACKING THE MAINBOARD

The mainboard comes packed in a sturdy cardboard shipping carton. The carton contains:

- The Mainboard
- The User's Guide
- The 440LX Utility

*Note: Do not remove the mainboard from its original packing until you are ready to install it.*

The mainboard is easily damaged by static electricity.

Observe the following precautions while unpacking and installing the mainboard.

1   Touch an unpainted area of the system chassis before handling the mainboard or any component. Doing so discharge the static charge your body may have built.

2   Remove the mainboard for appearance checking. Shipping may have lossened integrated circuits from their sockets. If any integrated circuit 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, or items are missing, contact your dealer immediately.

# CHAPTER 2 HARDWARE CONFIGURATION

Before y ou install the mainboard into the system chassis, you may find it convenient to first configure the mainboard's hardware.

This chapter describes how to set jumpers and install memory modules, and where to attach components.

## 2.1  MAINBOARD COMPONENT LOCATIONS
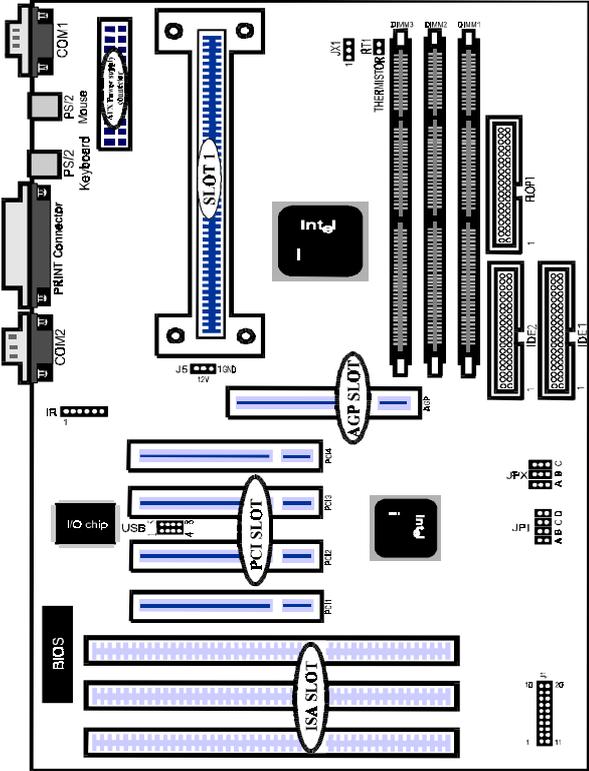


Figure 2-1 Mainboard Component Locations

## 2.2  POWER PRECAUTIONS

Before you begin configuration, make sure you are working with an unplugged mainboard.  Many components are powered by low-voltage current, but there still may be a dangerous electric current coming from the leads and power supply.  You should take the following precautions:

√    Turn off the power supply, and unplug the power cord before you begin.

√    Unplug all cables that connect the mainboard to any external device.

## 2.3  CONNECTORS

Attach system components and case devices to the mainboard via the mainboard connectors.  A description of each .I.connector; and its connector pins follows.  See Figure 2-1 for the location of the connectors on the mainboard.

*Note: Before making connections to the board, make sure that power to the system is turned off.*

## 2.4  JUMPER SETTINGS

You can configure hardware options by setting jumper on the mainboard.  See Figure 2-1 for jumper locations.  Set a jumper as follows:

√    Short a jumper by placing the plastic jumper cap over two pins of the jumper.

√    Open the pins of a jumper by removing the jumper cap.

*Note: When you open the jumper, attach the plastic jumper cap to one of the pins so you won't lose it.*

*Symbols:*

For setting 3-pin jumpers, the symbols below are used:

Pins 1 and 2 are Shorted with a jumper cap.

Pins 2 and 3 are Shorted with a jumper cap.

For setting 2-pin jumpers, the following symbols are used:

The jumper is Shorted when the jumper cap is placed over the two pins of the jumper.

The jumper is Open when the jumper cap is removed from the jumper.

▲ *P1 : Power Supply Connectors*

This connector connects to a ATX power supply. The plug from the power supply will only insert in one orientation because of the different hole sizes.

Find the proper orientation and push down firmly making sure that the pins are aligne

| P10 | | P20 |
|---|---|---|
| 12.0V | | 5.0V |
| 5VSB | | 5.0V |
| PW-0K | | -5.0V |
| GND | | GND |
| 5.0V | | GND |
| GND | | GND |
| 5.0V | | PS-ON |
| GND | | GND |
| 3.3V | | -12.0V |
| 3.3V | | 3.3V |
| P1 | | P11 |
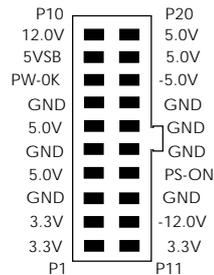
*Important : Make sure that the ATX power supply can take at least 10mA load on the 5 volt standby lead (5VSB). You may experience difficulty in powering on your system without this.*

▲ *PS/2 Keyboard Connector*

A standard six female DIN keyboard connector is located at the rear of the board PS1KEYB.

▲ *PS/2 Mouse Connector*

▲ *Universal Serial Bus Connector (USB)*

This connector supports two port USB Bus.

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | +5 VDC | 5 | Ground |
| 2 | DATA- | 6 | DATA+ |
| 3 | DATA+ | 7 | DATA- |
| 4 | Ground | 8 | +5VDC |

▲ *J1 : Key Lock, Speaker, HDD LED, Suspend LED, Suspend Switch, Power Switch, Reset*
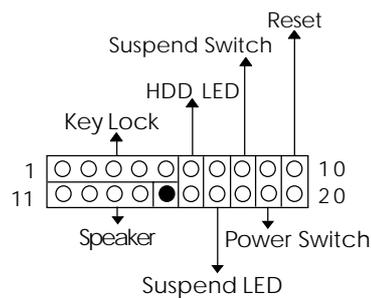


▲ *Hard Disk LED Connector*

| Pin | Description |
|-----|-------------|
| 6 | 5V |
| 16 | Active Low |

P6
P16

▲ *Reset Switch Connector*

Attach the Reset switch cable to this connector.

P10 ○
P20 ○

| Setting | Descriptio |
|---------|------------|
| Open | Normal Mode |
| Short | Reset System |

▲ *Key Lock*

KB Lock is a keylock connector that enables and disables the keyboard and the Power-LED on the case.

○ ○ ○ ○ ○
P1 P2 P3 P4 P5
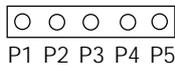
| Pin | Description |
|-----|-------------|
| 1 | LED Output |
| 2 | NC |
| 3 | Ground |
| 4 | Keylock |
| 5 | GND |

▲ *Speaker Connectors*

Attach the system speaker to connector SPKR.

○ ○ ○ ○
P11 P12 P13 P14

| Pin | Description |
|-----|-------------|
| 11 | DATA Out |
| 12 | NC |
| 13 | Ground |
| 14 | + 5 V |

▲ *Suspend Switch Connector*

Attrach the suspend switch cable to this connector.

P8 ○
P18 ○

| Setting | Description |
|---------|-------------|
| Open | Normal Mode (Default) |
| Short | Suspend Mode |

▲ *Power Switch*

Attrachthe power switch cable to thisconnector. Holding the power switch for more than 4 seconds will power off the system.

▲ *JPX : CPU Speed Selectors*

The mainboard has a clock generator that lets you choose the CPU frequency by settings jumper JPX. You can set the CPU speed to 50/55/60/66/68/75 MHz as shown below.
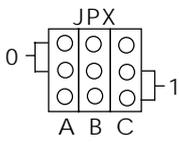
| JPX | A | B | C |
|------|---|---|---|
| 50MHz | 0 | 0 | 0 |
| 55MHz | 1 | 0 | 0 |
| 60MHz | 1 | 1 | 0 |
| 66MHz | 1 | 1 | 1 |
| 68MHz | 0 | 1 | 1 |
| 75MHz | 1 | 0 | 1 |

▲ *JP1 : CPU Internal Clock Speed Selectors*
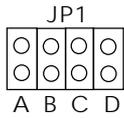
| JP1 | A | B | C | D |
|------|-----|-----|-----|-----|
| x 3 | ON | OFF | ON | ON |
| x 3.5 | OFF | OFF | ON | ON |
| x 4 | ON | ON | OFF | ON |
| x 4.5 | OFF | ON | OFF | ON |
| x 5 | ON | OFF | OFF | ON |
| x 6 | ON | ON | ON | OFF |

▲ *RT1 : Thermistor*

▲ *J4 : IR Connector*

|  | PIN | Description |
|---|---|---|
| P1 ○ | 1 | VCC |
| ○ | 2 | N.C. |
| ○ | 3 | IRRX |
| ○ | 4 | Ground |
| ○ | 5 | IRTX |
| P6 ○ | 6 | Fast IR |

▲ *COM1, COM2 : Onboard serial port connector*

▲ *IDE 1 : Onboard primary IDE connector*

▲ *IDE 2 : Onboard secondary IDE connector*

▲ *FLOP1 : Onboard floppy drive connector*

▲ *PRN 1 : Onboard parallel (printer) connector*

▲ *J5,JX1 : CPU FAN Power*

## 2.5  MEMORY INSTALLATION

The mainboard lets you add up to 384MB of system memory DIMM sockets on the mainboard.

| BANK | MEMORY MODULE |
|---|---|
| DIM 1 | 8MB, 16MB, 32MB, 64MB, 128MB<br>168PIN DIMM  (Single Side or Double Side) |
| DIM 2 | 8MB, 16MB, 32MB, 64MB , 128MB<br>168PIN DIMM  (Single Side, Double Side) |
| DIM 3 | 8MB, 16MB, 32MB, 64MB , 128MB<br>168PIN DIMM  (Single Side, Double Side) |

**Notes:**
1.   DRAM Type : 3.3V, 64/72-bit EDO DRAM and SDRAM.
2.   DRAM Speed : 60ns or faster for EDO DRAM. 10/12 ns for SDRAM.

## 2.6   INSTALLING PENTIUM II PROCESSOR IN SLOT 1

To Install the retention base on Slot 1 refer to the figures and instructions below:

1   Locate the protruding, toothed edge at the end of Slot I closest to the edge of the mainboard. Find the complementary indentation at the bottom of the retention base and insert the retention base onto Slot 1 accordingly.

2   Insert the retention support bridges (For the remaining instructions) into the bottom of the mainboard with the curved edges facing outwards, toward the edge of the mainboard.

3   Use a screw driver to lightly tighten the retention base screws.

4   Insert the heatsink support base into the holes on either side of the 440LX PCIset located next to Slot 1. Note that one hole is bigger than the other to prevent backwards insertion.

5   Insert the heatsink support pins into the heat sink support base with the long axis of the pins parallel to the wide axis of the mainboard. The ends of the pins will protrude through the bottom of the heatsink support base when fully inserted.

6   Insert the Pentium II processor into the retention base with the processor heatsink fitting over the heatsink support base. Press evenly and gently until the snaps on the upper side of the processor have been inserted into the holes at the top of the retention base. Note that when removing the processor, these snaps can be clicked into a completely vertical position, leaving your hands free to stabilize the board and pull the processor evenly and gently out of the board. Also note that like PCI and ISA slots, Slot 1 has a divider that prevents backwards insertion.

7   Insert the heatsink support bar into the heatsink support base in a horizontal fashion, allowing it to click in place. The heatsink support bar has no directionality (can be inserted with the top facing up or down).

*Note: Installing a heatsink and cooling fan is necessary for proper heat dissipation from your CPU. Failing to install these items may result in overheating and possible burn-out of your CPU.*

Indentation to fit toothed
edge of Slot 1

Bottom view of
the retention mechanism

Toothed edge of Slot 1

Top view of Slot 1

Retention base

Heatsink support pin

Retention base screw

Heatsink support base

Heatsink support bar

Retention support bridge
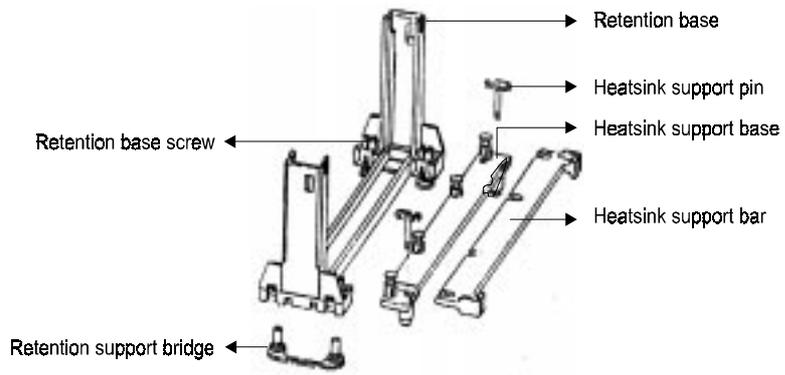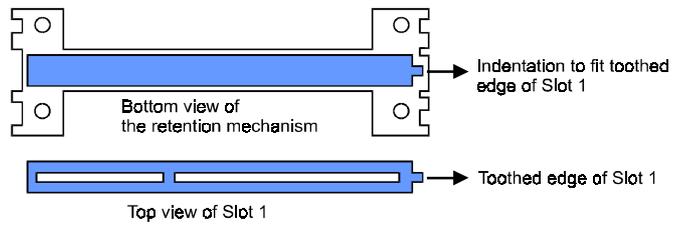
**The retention mechanism and heatsink support for Slot 1**

# CHAPTER 3   BIOS SETUP

This chapter explains how to configure the mainboard's BIOS setup program.

After you have configured the mainboard, and have assembled the components, you can turn on the completed system.  At this point, run the software setup to ensure that the system information is correct.

The software setup of the system board is achieved through Basic Input-Output System (BIOS) programming.  You use the BIOS setup program to tell the operating system what type of devices are connected to your system board.

The system setup is also called CMOS setup.  Normally, you need to run system setup if either the hardware is not identical with information contained in the CMOS RAM, or if the CMOS RAM has lost power.

Enter the Award Setup program's Main Menu as follows:

1    Turn on or reboot the system. The following message appears at the bottom of the screen:

   **"Press <DEL> to enter setup, ESC to skip memory test"**

2    Press the <DEL> key to enter the Award BIOS setup program and the following screen appears:

```
                        ROM PCI/ISA BIOS
                       CMOS SETUP UTILITY
                      AWARD SOFTWARE INC.
   STANDARD CMOS SETUP            INTEGRATED PERIPHERALS
   BIOS FEATURES SETUP            USER PASSWORD
    CHIPSET FEATURES SETUP        IDE HDD AUTO DETECTION
   POWER MANAGEMENT SETUP         SAVE & EXIT SETUP
   PNP/PCI CONFIGURATION          EXIT WITHOUT SAVING
   LOAD SETUP 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 for more information.)

4.  Press <ESC> at anytime to return to the Main Menu.

5.  In the Main Menu, choose "SAVE AND EXIT SETUP" or <F10> to save your changes and reboot the system. Choosing "EXIT WITHOUT SAVING" or <ESC> ignores your changes and exits the program.

The Main Menu options of the Award BIOS are as below.

## 3.1   STANDARD CMOS SETUP

Run the Standard CMOS Setup as follows:

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

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

Date (mm:dd:yy) : Thu, Sep 4 1997
Time (hh:mm:ss) : 12 : 23 : 24
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 :            0K
                                   Extended Memory :     15360K
Video : EGA/VGA                    Other Memory :          384K
Halt On : All Errors               Total Memory :        16384K

  ESC  : Quit            ←→↓↑ : Select Item      PU/PD/+/- : Modify
  F1   : Help            (Shift) F2 : Change Color
```

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

| | |
|---|---|
| Date (mm/dd/yy) | Type the current date |
| Time (hh:mm:ss) | Type the current time |
| Primary master and slave<br>Secondary master and slave | Choose from the standard hard disk type 1 to 46, or "User"defined. If you choose "User" run the IDE HDD Auto detection function from the Main Menu, or enter the HDD information directly from the keyboard and press <Enter>. If you use Auto mode the BIOS can Auto detect HDD type and do not enter any HDD information from the keyboard |
| Drive A & B | Choose     360KB  5 1/4"<br>1.2MB  5 1/4"<br>720KB  3 1/2"<br>1.44MB 3 1/2"<br>2.88MB 3 1/2"<br>Not installed |
| Video | Choose     Monochrome,<br>Color 40x25,<br>VGA/PGA/EGA,<br>Color 80x25, or<br>Not installed |
| Halt On | Choose     All Errors (Default)<br>No Errors<br>All, But Keyboard<br>All, But Diskette<br>All, But Disk/Key |

3. After you have finished with the Standard CMOS Setup program, press the <**ESC**> key to return to the Main Menu.

## 3.2  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.

```
                        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              :  C,A,SCSI    D4000-D7FFF Shadow       :  Disabled
   Swap Floppy Drive          :  Disabled    D8000-DBFFF Shadow       :  Disabled
   Boot Up Floppy Seek        :  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
   OS Select For DRAM>64MB    :  Non OS2     F1   : Help        PU/PD/+/-:Modify
                                             F5   : Old Values  (Shift)F2 : Color
                                             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. An explanation of <F> keys
    follows:

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

    **<F2>** :  Change color.

    **<F5>** :  Get the old values.  The user started the current session with these
    values.

    **<F6>** :  Load all options in the BIOS Features Setup with the BIOS Default
    values.

    **<F7>** :  Load all options in the BIOS Features Setup with the Setup Default
    values.

     A short description of the screen items follows:

Virus Warning

Choose Enabled or Disabled. Enable this option and a SYSTEM WARNING MESSAGE appears when the system detects a virus.

CPU Internal Cache

Choose Enabled or Disabled. This option lets you enable the CPU's internal cache memory.

External Cache

Choose Enabled or Disabled. This option lets you enable the external cache memory. For better performance, make sure you always choose "Enabled."

Quick Power On Self Test

Choose Enabled or Disabled. Enabled provides a fast POST and boot-up speed.

Boot Sequence

The default setting first to boot from drive C:. You can reverse this sequence with " A, C, SCSI", will then drive A: boot directly.

Swap Floppy Driver

Choose Enabled or Disabled. When Enabled Floppy drives A & B are swapped under DOS.

Boot Up Floppy Seek

Choose "Enabled" or "Disabled". "Disabled" provides a fast boot and reduces the possibility of damage to the heads.

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

Choose Enabled or Disabled. 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 unauthorized use of BIOS Setup.

"System"   -   Each time the system boots the password prompt appears.

"Setup"    -   Password prompt only appears if you attempt to  enter the Setup program.

Video BIOS Shadow

VIDEO shadow copies BIOS code from slower ROM to faster RAM.  BIOS can then execute from RAM.

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

## 3.3  CHIPSET FEATURES SETUP

The "CHIPSET FEATURES SETUP" is used to control the values of the chipset registers.  These registers control most of the system options in the computer.

Run the Chipset Features Setup as follows:

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

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

 DRAM Speed Selection      : 60ns    System BIOS Cacheable    : Disabled
 DRAM Data Integrity Mode  : NonECC  Video BIOS Cacheable     : Disabled
 SDRAM RAS-to-CAS Delay    : Slow    Video RAM Cacheable      : Disabled
 SDRAM RAS Precharge Time  : Slow    8 Bit I/O Recovery Time  : 1
 SDRAM CAS Latency Time    : 3       16 Bit I/O Recovery Time : 1
                                     Memory Hole At 15M-16M   : Disabled
                                     AGP aperture Size (MB)   : 64

                                     CPU Warning Temperature  : 70°C/158°F
                                     Current CPU Temperature  : 30°C/86°F
                                     Current CPU FAN Speed     : 4285 RPM
                                     Current system FAN Speed  : 4285 RPM
                                     Current CPU Voltage (V)   : 2.86V

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

2.  The first ten items are optimal setting for this mainboard, you should not change them unless you are familiar with the intel chipset.

    DRAM  Speed  Selection
    The DRAM speed selection is controlled by the DRAM Timing Register
    50ns :  DRAM Timing
    60ns :  DRAM Timing

    DRAM  Data  Integrity  Mode
    These bits provide software configurability of selecting between ECC mode or non-ECC mode of operating of the DRAM interface following manner :

NON-ECC(default) : Byte-Wise Writes supported

ECC : Generation and Checking / Correction.

SDRAM RAS-to-CAS Delay

The SDRAM Timing type : SLOW (Default), FAST

SDRAM RAS Precharge Time

The SDRAM Timing type : SLOW (Default), FAST.

SDRAM CAS Latency Time

The SDRAM Timing type : 2, 3 (Default).

System BIOS Cacheable

When enabled, access to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided thatthe cache controller isenabled.

Video BIOS Cacheable

When enabled, access to video BIOS addressedat C0000H to C7FFFH are cached, provided that the cache controller is enabled.

Memory Hole at 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This field allows you to reserve 15MB to 16MB memory address space to ISA expansion cards. This makes memory from 15MB and up unavail ble to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to Disabled.

8 Bit I/O Recovery Time

The timing for 8-bit ISA card.

16 Bit I/O Recovery Time

The timing for 16-bit ISA cards.

AGP Aperture Size (MB)

Memory-mapped, graphics data structures can reside in a graphics aperture. The AGP Aperture Size register allows the selection of an aperture size of 4MB, 8MB, 16MB, 32MB, 64MB, 128MB and 256MB.

## 3.4  POWER MANAGEMENT SETUP

The Power Management controls the mainboard'a "green" features that for the power saving Mode, Display turn off and HDD power down that together form the hardwave power conservation scheme.

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
                     POWER MANAGEMENT SETUP
                       AWARD SOFTWARE INC.

   Power Management    : User Define    **Reload 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%
   ZZ Active in Suspend: Disabled
   VGA Active Monitor  : Enabled
   Soft-Off by PWR-BTTN: Instant Off
   Resume by Ring      : Enabled
   IRQ 8 Break Suspend : Disabled
                                        ESC : Quit      ←→↓↑ Select Item
                                        F1  : Help      PU/PD/+/- :Modify
                                        F5  : Old Values (Shift) F2: Color
                                        F7  : Load Setup Defaults
```

2.  A short description of the screen items follows:

    "POWER MANAGEMENT" is the master control for the four power saving modes, doze, standby, suspend mode and HDD power down mode.

    Min Saving
    The "Min saving" defaults as "1 hour","1 hour","1 hour"and "15 Min" respectively.

Max Saving
The "Max Saving" defaults are all "1 Min".

User define(default)
Allows you to set the power mode time-out by yourself.

Disable
Turn off all power saving time-outs.

Doze mode
Put the system performance down to 20%.

Stand by mode
Turn off  the video signal and cause CPU enter SMM mode.

Suspend mode
Turn off  the video signal and cause CPU enter SMM mode and shut down any IDE hard disk drivers connected to the system.

HDD Power down
Shut down any IDE hard disk drivers in the system if they are not accessed.

*Note: HDD Power down does not effect SCSI hard disks.*

VGA Active Monitor
This option specifies if the BIOS is to monitor activity on the display monitor for power conservation purposes.

Resume by Ring
This allows a computer to be turned on remotely through a modem.  By default, this field is set to Enabled.

IRQ 8 Break Suspend
This section sets the wake-up call of the system.  If activity is detected from the enabled IRQ 8, the system wakes up from suspend mode.

Reload Global Timer Events
This section determines the reloading of the "timers" after entering the Full On mode.  When enabled, the item reloads the set time of inactivity before entering the power saving mode.

## 3.5 PNP/PCI SLOT CONFIGURATION

The "PNP/PCI SLOT CONFIGURATION" sets the system for use with PCI bus cards.

Run the PNP/PCI Slot Configuration program as follows:

1. Choose "PNP/PCI CONFIGURATION" from the Main Menu and a screen with a list of items appears.
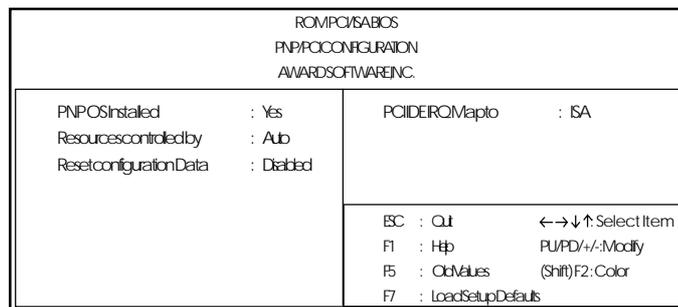
```
                          ROM PCI/ISA BIOS
                         PNP/PCI CONFIGURATION
                         AWARD SOFTWARE INC.

   PNP OS Installed        : Yes      PCI IDE IRQ Map to      : ISA
   Resources controlled by : Auto
   Reset configuration Data : Disabled


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

   **<F2>** : Change color.

   **<F5>** : Get the old values.  The user started the current session with these values.

   **<F6>** : Load all options in the BIOS Features Setup with the BIOS Default values.

   **<F7>** : Load all options in the BIOS Features Setup with the Setup Default values.

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

## 3.6  LOAD SETUP DEFAULTS

This Main Menu item loads the default system values.  **These settings are recommended for optimum performance**.  If the CMOS is corrupted **when enter BIOS setup utility you must load setup default again**.  Choose this item and the following message appears:

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

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

## 3.7   INTEGRATED PERIPHERALS SETUP

The "INTEGRATED PERIPHERALS" is used to control the values of the I/O chipset registers.  These registers control the mode of HDD type and I/O address port.

Run the Integrated Peripherals as follows:

1.   Choose "INTEGRATED PERIPHERALS" from the Main Menu and a screen with a list of items appears.

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

  IDE HDD Block Mode      :   Enabled       UR2 Mode Select          :   Normal
  IDE Primary Master PIO  :   Auto
  IDE Primary Slave PIO   :   Auto
  DE 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
  KBC input Clock         :   8 MHz
  Onboard FDD Controler   :   Enabled
  Onboard Serial Port 1       3F8/IRQ4
  Onboard Serial Port 2       2F8/IRQ3
  Onboard Parallel Port       378/IRQ7    ESC : Quit        ←→↓↑  : Select Item
  Parallel Port Mode      :   SPP         F1  : Help     PU/PD/+/- : Modify
                                          F5  : Old Values  (Shift) F2 : Color
                                          F7  : Load Setup Defaults
```

<u>IDE Hard Block Mode</u>
This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

<u>IIDE Primary Master /Slave PIO and Secondary Master/Slave PIO</u>
These field  allow your system hard disk controller to work faster.  Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with controller and CPU directly.

The system supports five modes, numbered from 0 to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary Master/Slave UDMA and Secondary Master/Slave UDMA
This field allows your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are Auto and Disabled.

On-Chip Primary /Secondary PCI IDE
These field allow you either to enable or disable the Primary/Secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

USB Keyboard Support
This field allows your system to support a USB keyboard.

Onboard FDC Controller
The field allows you to select the onboard FDD port.

Onboard Serial/Parallel Port
There fields allow you to select the onboard serial/parallel port and its adddress. The default value for these ports are:
Serial Port 1    : 3F8/IRQ4
Serial Port 2    : 2F8/IRQ3
Parallel Port    : 378H/IRQ7

## 3.8 USER PASSWORD SETTING

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. The password cannot be longer than 8 characters.

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

     STANDARD CMOS SETUP            INTEGRATED PERIPHERALS
     BIOS FEATURES SETUP            USER PASSWORD
     CHIPSET FEATURES SETUP         IDE HDD AUTO DETECTION
     POWER MANAGEMENT SETUP         SAVE & EXIT SETUP
     PNP/PCI CONFIGURATION    Enter Password:    WITHOUT SAVING
     LOAD SETUP DEFAULTS

     Esc    : Quit                  ← → ↓ ↑ : Select Item
     F10    : Save & Exit Setup     (Shift) F2 : Change Color

                       Change/Set/Disable Password
```

## 3.9 IDE HDD AUTO DETECTION

1. If your system has an IDE hard drive, you can use this utility to detect its parameters and automatically enter them into the Standard CMOS Setup.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ROM PCI/ISA BIOS | | | | | | | | |
| CMOS SETUP UTILITY | | | | | | | | |
| AWARD SOFTWARE INC. | | | | | | | | |
| HARD DISKS | TYPE | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTOR | MODE |
| Primary Master: | | | | | | | | |
| | | | | | | | | |
| Sekect Primary Master Option (N=Skip):N | | | | | | | | |
| OPTIONS | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTOR | MODE |
| 2(Y) | 721 | 699 | 32 | 0 | 1398 | 63 | LBA |
| 1 | 722 | 1399 | 16 | 65535 | 1398 | 63 | NORMAL |
| 3 | 721 | 699 | 32 | 65535 | 1398 | 63 | LARGE |
| Note : Some OSes (like SCO-UNIX) must use "NORMAL" for installation | | | | | | | | |
| ESC : Skip | | | | | | | | |

2. For IDE hard disk driver, the BIOS provide three modes to support both normal IDE hard disk and also drivers large than 528MB, a short description of three modes as follows:

   a. Normal mode:  For drivers small than 528MB.

   b. Large Mode:  For drives larger than 528MB that do not use LBA. There can only be used with MS-Dos operating system.

   c. LBA mode:  For drivers larger than 528MB and upto 8.4GB that use logic block addressing mode.  Normally we recommand to select LBA Mode if your HDD drivers large than 528MB.

3. This utility will autodetect as many as four IDE drivers.

## 3.10   SAVE & EXIT SETUP

Select this item from the main menu and type  to save the values entered during the current session and then exit the BIOS Setup program.  Type  to return to the Setup program.

## 3.11   EXIT WITHOUT SAVING

Select this item from the main menu and type to exit the BIOS Setup program without saving the values entered during the current session.  Type  to return to the Setup program.

# CHAPTER 4   HARDWARE MONITOR

## 4.1  System Health Monitor Utility

The system board comes with a System Health Monitor utility contained in the provided CD/diskette.  This utility shows the current temperature of the processor, power voltages, and processor/chassis fan speed.

The utility also allows you to manually set the range of the processors temperature, power voltages, and processor/chassis fan speed.  If the settings/values are over or under the set range, an error message will pop-up and an alarm will sound.  There are three types of sound for the three different failure alarms (temperature, voltage and fan).  Refer to the Chipset Features Setup (Chapter 3.3) section for details.

When you hear a failure alarm, you must power off your computer and check the following: processor fan/heatsink, chassis fan and power supply.  We recommend that you use the "Default Setting" which is the ideal setting that would keep the system in good working condition.

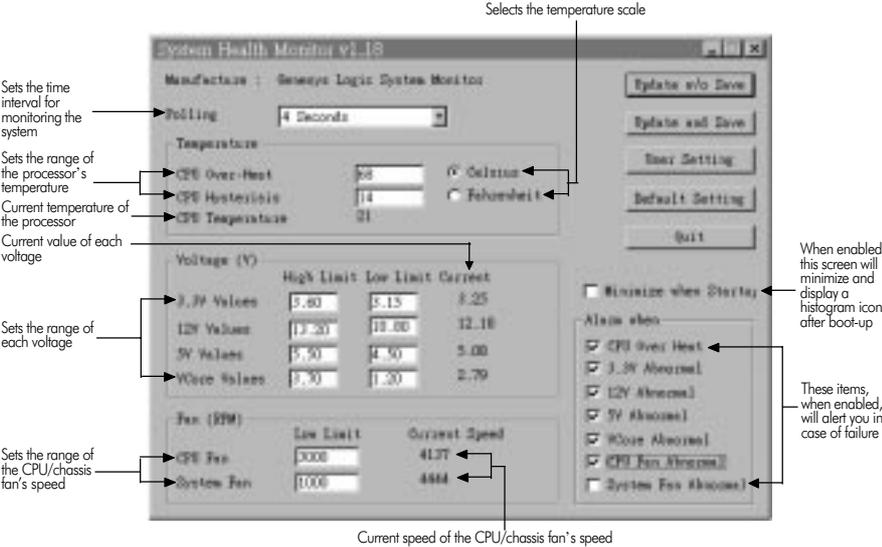
*Important:*
*Once this utility is installed, the system will ignore the settings in the*
*"System Health Monitor" field of the Chipset Features Setup. If you are*
*using Windows® 95 or Windows NT® 4.0, you may select between using*
*the utility and the Chipset Features Setup. For other operating systems,*
*you may only use the Chispset Features Setup.*

## 4.2  INSTALLING THE UTILITY

Insert the CD/diskette that came with the system board. Run SETUP.EXE of the
System Health Monitor utility. After completing installation, you will find this
utility in "StartUp" under "Programs" of Windows®95 / NT 4.0. Please refer to the
"Readme" file for details on using the utility.

## 4.3  APPLICATION

This is for INTEL SOLT 1 BOX Pentium II CPU temperature sensing.