MBX8440-0S

User's Manual Version A

**Chapter 1
Introduction**

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

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

1-1   KeyFeatures

- Intel 440BX AGPset™ chipset

- Support 233~450 MHz PENTIUM™ II CPUs and 266/300 Celeron™ and 300/333 Mendocino™ with Slot 1.

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

- Supports SDRAM and 3.3V EDO DRAM.

- Provides single bit ECC capability.

- 4 PCI Local Bus slots, and 2 x 16 bits ISA Bus slots.

- All 4 PCI slots support Master mode.

- Supports 32-bits A.G.P. (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 Multi-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.

- On board support PS/2™ mouse Connector.

- On board support PS/2™ Keyboard Connector.

- 2 x Universal Serial Bus (U.S.B) on board

- Support Ir connector. (optional)

- System BIOS supports ACPI function and Green feature function, DMI, Plug and Play Flash ROM.

- Use switching regulator to support CPU core voltage.

- Supports LS-120 floppy disk drive (120MB).

- Supports WOL (Wake On LAN)and modem ring on.

- Supports YAMAHA YMF715 16-bits stereo audio controller. Sound Blaster 16/PRO compatible with stereo voice up to 48KHz sampling rates.

- Daul channel game port. (supports Microsoft game-pad up to 8 ports).

- 2 x Universal Serial Bus (U.S.B) on board

- Supports 3V, 5V and 12V 20-pins ATX power connector.

- ATX form factor : 180mm x 305 mm

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

- Poly switch resettable fuse over current protection for keyboard and mouse.

- Supports Password, Hot Key, PS/2 Mouse power on

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 protective 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 ground 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   What 's included in the package?

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

- The Mainboard

- The User's Guide

- The 440BX Utility

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**Chapter 2
Hardware Configuration**

**Before you install the
mainboard into the system
chassis, you may find it
convenient to first configure
the mainboard hardware.
This chapter describes how
to set jumpers and install
memory modules, and where
to attach components.**

2-1 Mainboard Component Locations
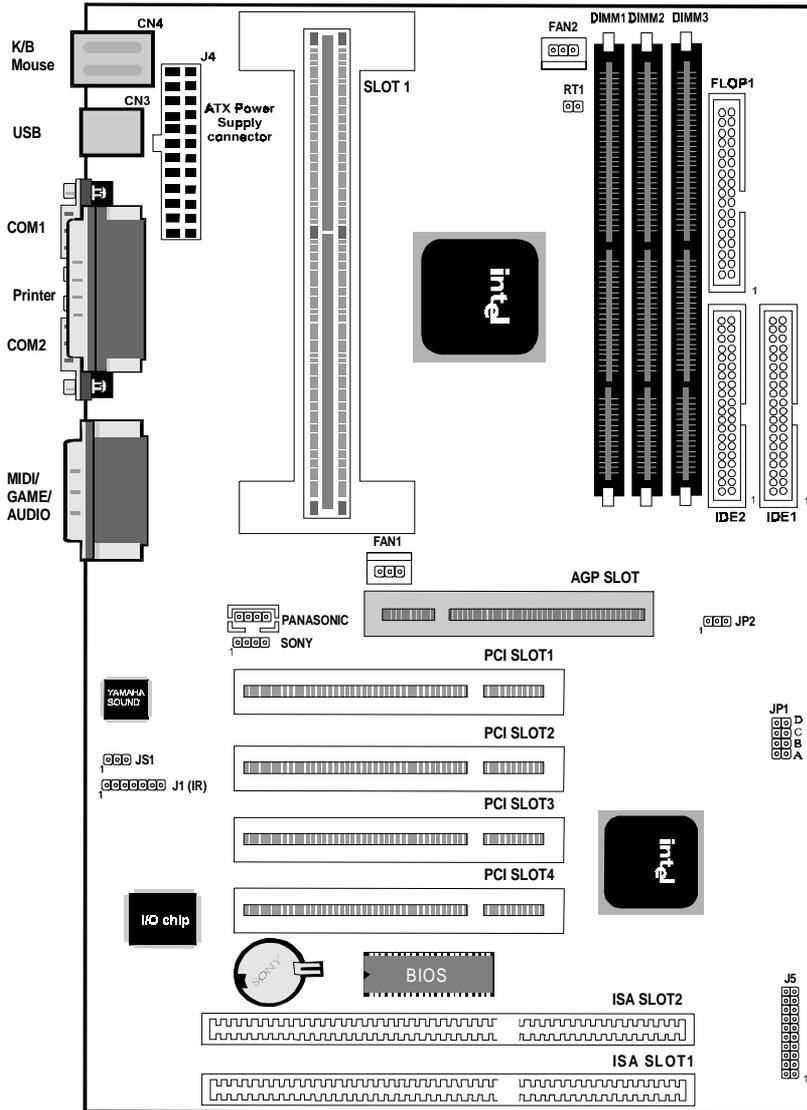
Figure 2-1 Mainboard Component Locations

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 devices.

Note:

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

2-3   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.

J4 ATX Power Supply Connector

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 aligned.

Pin	Description	Pin	Description
1	3.3V	2	3.3V
3	GND	4	5V
5	GND	6	5V
7	GND	8	PW-OK
9	5VSB	10	12V
11	3.3V	12	-12V
13	GND	14	PS-ON
15	GND	16	GND
17	GND	18	-5V
19	5V	20	5V

Note:

Make sure that the ATX power supply can take at least 10mA load on the 5 volt standby lead (5VSB).
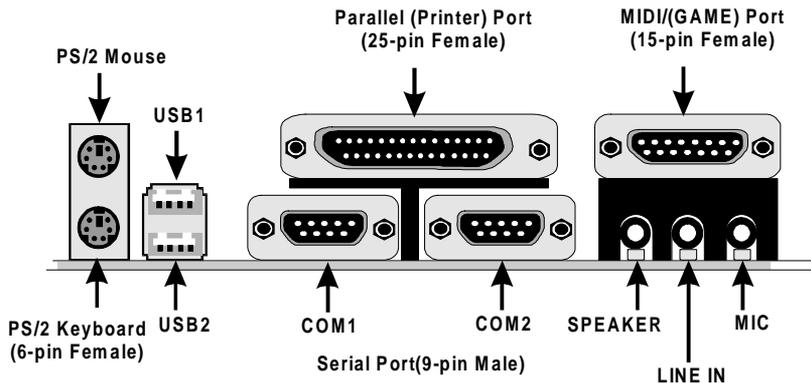
Keyboard Connector (6-Pin)

This connector supports a PS/2 keyboard (mini DIN).

Pin	Description	Pin	Description
1	Keyboard Data	2	N.C.
3	Ground	4	+5VDC
5	Keyboard Clock	6	N.C.

PS/2 Mouse Connector (6-Pin)

The BIOS will direct IRQ12 to the PS/2 Mouse.

Pin	Description	Pin	Description
1	Mouse Data	2	N.C.
3	Ground	4	+5VDC
5	Mouse CLK	6	N.C.

USB (Universal Serial Bus Connector) (two 4-pin)

This connector supports two port USB Bus.

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

COM1, COM2   Serial Port Connectors (two 9-pin)

This connectors support serial mouse and modem..

LPT1 Parallel (Printer) Connector (25-pin)

This connector support printer or other parallel devices.

J5 KBLOCK, SPK, RST, HDLED, ATXSW, SUSLED, Power LED
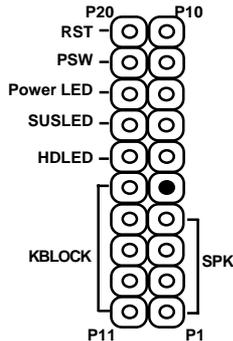
SPK Speaker Connector
Attach the system speaker to connector SPK.

Pin	Description
1	DATA Out
2	NC
3	Ground
4	+5V

KBLOCK Keylock + Power LED Connectors (3-pin)
KBLock is a keylock connector that enables and disables the keyboard and the Power-LED on the case.

Pin	Description
11	LED Output
12	NC
13	Ground
14	Keylock
15	GND

HDLED Hard Disk LED Connector
This will cause the LED to lighten when an IDE(HDD, CD-ROM)device is active.

Pin	Description
6	5V
16	Active Low

SUSLED Suspend Switch LED Connector
The connector connects to the case-mounted suspend LED, which lights when the system into a suspend mode or Green mode .

P17 (O O) **P7**

Pin	Description
7	5V
17	Active Low

Power LED Connector(2-pin)

P18 (O O) **P8**

Pin	Description
8	5V
18	GND

ATX SW Power Switch Connector
Attrach the power suspend switch cable to this connector. Holding the power switch for more than 4 seconds will power off the system. Pushing the power button for less than 4 seconds the system is into sleep mode.

P19 (O O) **P9**

Setting	Description
Open	Normal mode (Default)
Short	Suspend mode

RST Reset Switch Connector
The connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch.

P20 (O O) **P10**

Setting	Description
Open	Normal Mode
Short	Reset System

JP2 CPU Speed Selectors

The mainboard has a clock generator that lets you choose the CPU frequency by settings jumper JP2. You can set CPU speed to 66/100 MHz as shown below :

P1 P2 P3
JP2

CPU	JP2
100 MHz	1-2
66 MHz	2-3

JP1 CPU Internal Clock Speed Selectors

D
C
B
A
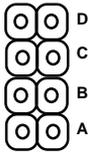
CPU	A	B	C	D
x 3.0	Short	Open	Short	Short
x 3.5	Open	Open	Short	Open
x 4.0	Short	Short	Open	Short
x 4.5	Open	Short	Open	Short
x 5.0	Short	Open	Open	Short
x 6.0	Short	Short	Short	Open

Intel CPU	Ratio	Bus Freq.
Pentium II-233	3.5 x	66MHz
Pentium II-266	4.0 x	66MHz
Pentium II-300	4.5 x	66MHz
Pentium II-333	5.0 x	66MHz
Pentium II-300	3.0 x	100MHz
Pentium II-350	3.5 x	100MHz
Pentium II-400	4.0 x	100MHz
Pentium II-450	4.5 x	100MHz
Celeron-266	4.0 x	66MHz
Celeron-300	4.5 x	66MHz
Mendocino-300	4.5 x	66MHz
Mendocino-300	4.5 x	66MHz

FAN2 CPU FAN POWER

The connector supports 12 Volt Cooling Fan .

P1 P2 P3

Pin	Description
1	Ground
2	+12VDC
3	FAN Speed Sensor

FAN1 System FAN POWER

Pin	Description
1	Ground
2	+12VDC
3	FAN Speed Sensor

P1 P2 P3

J1 IR Connector

The connector supports wireless transmitter and infrared module . You must configure the setting for "UART Mode Select :IrDA " in INTEGRATED PERIPHERALS.

Pin	Description
1	VCC
2	N.C.
3	IRRX
4	Ground
5	IRTX
6	Fast IR

P1 P2 P3 P4 P5 P6

WOL Wake On LAN Connector

The connector connects to LAN card, LAN activity will power on the system.

Pin	Description
1	+5VSB
2	GND
3	CTRL-Signal

P1 P2 P3

JS1 On Board Sound Selector

You can select to enable or disable onboard sound function .

Pin	Description
1-2	Enable Sound
2-3	Disable Sound

P1 P2 P3

FLOP1 Floppy Drive Connector (34-pin)

The connector supports floppy disk drive cable. Please orient the red stripe to Pin 1.

IDE1 Primary IDE Connector/IDE2 Secondary IDE Connector (Two 40-pin)

The connector supports IDE hard disk drive cable. Please orient the red stripe to Pin 1.

RT1 Thermistor Connector

(See Appendix Hardware Monitor Setup)

2-5 Installing Pentium II Processor in Slot 1

Heatsink Support Base

Pentium II Retention Base

Heatsink Support Top Bar

Attach Mount Bridges
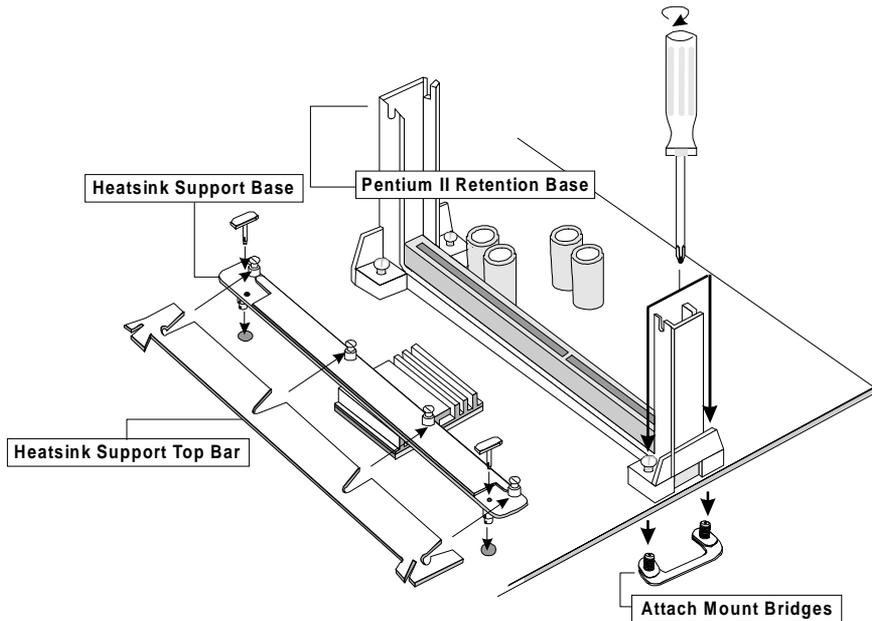
1. Find the complementary indentation at the bottom of the <u>Pentium II retention base</u> and insert the <u>Pentium II retention base</u> onto Slot 1 accordingly.

2. Insert the <u>attach mount bridges</u> (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 <u>heatsink support base</u> into the holes on either side of the 440BX 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 <u>heat sink support base</u> 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 <u>Pentium II retention base</u> with the processor's 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 <u>heatsink support top bar</u> into the <u>heatsink support base</u> 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.

2-6   Memory Installation

The mainboard lets you add up to 384MB of system memory via DIMM sockets on the mainboard. The mainboard supports the following memory configurations and DIMM socket consists of three 168-pin DIMM Modules.

BANK	MEMORY MODULE
DIMM 1	8MB, 16MB, 32MB, 64MB, 128MB 168PIN DIMM (Single Side, Double Side)
DIMM 2	8MB, 16MB, 32MB, 64MB, 128MB 168PIN DIMM (Single Side, Double Side)
DIMM 3	8MB, 16MB, 32MB, 64MB, 128MB 168PIN DIMM (Single Side, Double Side)

Notes:

DRAM type : 3.3V , 64/72-bit EDO DRAM(50/60ns) and SDRAM(8/10/12ns)

3

**Chapter 3
AWARD 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 types 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.

3-1 Award BIOS Setup

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.

3-2   Main Menu Options

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

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)  : Tue, Jun 2 1998
 Time (hh:mm:ss)  : 14 : 59 :  44
 HARDDISKS       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
                                 Extended Memory  :    97280K
 Video   : EGA/VGA               Other Memory     :      384K
 Halt On : All, But Keyboard     Total Memory     :    98304K
 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

   Hard Disk Configurations
   TYPE   : Select from 1 to 45 to fill remaining fields with predefined
              values of disk drives. Select user to fill the remaining
              fields. Select auto to detect the HDD type automatically.
   SIZE   : The hard disk size. The unit is Mega Bytes.
   CYLS   : The Cylinder number of the hard disk.
   HEAD   : The read/write head number of hard disk.
   PRECOMP : The cylinder number at which the disk drive changes
              the write timing.
   LANDZ   : Landing zone.
   SECTOR   : Number of sectors

MODE   : Select auto to detect the mode type automatically. If your hard disk supports the LBA mode, select LBA or Large. However, if your hard disk cylinder is more than 1024 and does not support the LBA function, set at Large. Select Normal if your hard disk supporting cylinders is below 1024.

Note :

> **You can select Auto under the TYPE and MODE fields. This will enable auto detection of your IDE drives during bootup.**

Drive A & B
Choose		
	360KB 5 1/4"	1.2MB 5 1/4"
	720KB 3 1/2"	1.44MB 3 1/2"
	Not installed	2.88MB 3 1/2"

Video
Choose		
	Monochrome	Color 40x25
	VGA/EGA	Color 80x25
	Not installed	

Halt On
The items determines whether the computer will stop if an error is detected during power up.

Choose		
	All Errors (Default)	No Errors
	All, But Keyboard	All, But Diskette
	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.

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
CPU L2 Cache ECC Checking : Enabled D0000-D3FFF Shadow : Disabled
Quick Power On Self Test : Enabled  D4000-D7FFF Shadow : Disabled
Boot Sequence           : C,A,SCSI  D8000-DBFFF Shadow : Disabled
Swap Floppy Drive       : Disabled  DC000-DFFFF Shadow : Disabled
Boot Up Floppy Seek     : Enabled
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
Report no FDD for Win95 : No        F5 : Old Values (Shift)F2 : Color
                                    F7 : Load Setup Defaults
```

2. **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."

   CPU L2 Cache ECC Checking

   The defaults of item to check CPU L2 cache ECC function. If your Pentium II CPU's QDF/S-Spec. is **SL264, SL265, SL2HD,SL2HC SL28K, SL28L, SL2QA, SL2QB**, to set this field disabled. Otherwise leave this on the setup default setting of enabled.
   Enabled : ECC
   Disabled : Non-ECC

Quick Power On Self Test

Choose Enabled or Disabled. Enabled provides a fast POST(Power On Self Test) and boot-up speed.

Boot Sequence

The default setting first to boot from drive C: You can reverse this sequence with " A:C:", 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. Enabled puts BIOS searchs for floppy disk drive to determine it is 40 or 80 tracks(360K type is 40 tracks, 720K/1.2M/1.44M are all 80 tracks.)

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

This determines the typematic rate.

Enabled : Enable typematic rate and typematic delay programming.

Disabled : Disable typematic rate and typematic delay programming.
The system BIOS will use default value of these 2 items and the default is controlled by keyboard.

Typematic Rate(Chars/Sec)

Choose the rate a character keeps repeating(6-30 Chars/Sec).

Typematic Delay (Msec)

Choose how long after you press a key that a character begins repeating. (250-1000)

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.

PCI/VGA Palette Snoop
Some display cards that are nonstandard VGA such as graphics accelerators or MPEG Video Cards may not show colors properly. The setting Enabled should correct this problem. Otherwise leave this on the setup default setting of Disabled.

OS/2 Onboard Memory >64M
When using OS/2 operating systems with installed DRAM of greater than 64MB, you need to set this option to Enabled otherwise leave this on Disabled.

Video BIOS Shadow
Choose enabled(default) . let the VGA BIOS map to system RAM.

C8000-CBFFFF to DC000-DFFFF
These fields are used for shadowing others expansion card ROMs. If you install other expansion cards with ROMs on them, you will need to know which addresses the ROMs use to shadow them specifically. Shadowing a ROM reduces the memory available between 640KB and 1024KB by the amount used for this purpose.

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.

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.

EDO DRAM Speed Selection  : 60ns    CPU Warning Temperature :70°C/158°F
SDRAM CAS latency Time    : 3       Current CPU Temperature :16°C/60°F
DRAM Data Integrity Mode  : Non-ECC Current System Temp.    :26°C/78°F
Auto Detect DIMM/PCI Clk  : Enabled Current CPUFAN1 Speed  :4705 RPM
Spread Spectrum Modulated : Disabled Current CPUFAN2 Speed  :5000 RPM
                                    Current 5.0V (V)        :5.07 V
System BIOS Cacheable     : Disabled Current 3.3V (V)       :3.32 V
Video BIOS Cacheable      : Disabled Current +12V (V)       :12.26 V
Video RAM Cacheable       : Disabled Current CPU Voltage(V) :2.01V
8 Bit I/O Recovery Time   : 1
16 Bit I/O Recovery Time  : 1
Memory Hole At 15M-16M    : Disabled
AGP Aperture Size (MB)    : 64
                                    ESC : Quit  ←→↑↓:Select Item
                                    F1  : Help PU/PD/+/- : Modify
                                    F5  : Old Values (Shift)F2 : Color
                                    F7  : Load Setup Defaults
```

EDO DRAM Speed Selection
The DRAM speed selection is controlled by the DRAM Timing Register
60ns : DRAM Timing (default)

SDRAM CAS Latency Time
The SDRAM Timing type : 2, 3 (Default)

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.

System BIOS Cacheable
When enabled, access to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled.

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

Video RAM Cacheable
Choose enabled or disabled(default).
When enabled, the access to the VGA RAM addressed is cached.

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

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 unavailable to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to Disabled.

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.

CPU Warning Temperature
When CPU temperature is over the setting value, the speaker will sound an alarm and the clock will drop until the temperature is within optimum the temperature range.

Current CPU Temperature
Detect CPU temperature automatically.

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

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 hardware 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          IRQ3 (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
Doze Mode         : Disable      Secondary IDE 0      : Disabled
Standby Mode      : Disable      Floppy Disk          : Disabled
Suspend Mode      : Disable      Serial Port          : Enabled
HDD Power Down    : Disable      Parallel Port        : Disabled
Throttle Duty Cycle : 62.5%
VGA Active Monitor  : Disabled
Soft-Off by PWR-BTTN : Delay 4 Sec.
Resume by Ring    : Enabled
Resume by Alarm   : Disabled
                                 ESC : Quit     ←→↑↓:Select Item
Wake Up On LAN    : Enabled      F1 : Help      PU/PD/+/- : Modify
IRQ 8 Break Suspend : Disabled   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..

   #### Power Management :User Define
   Disabled   : The system operates in NORMAL conditions (Non-
                 GREEN), and the Power Management function is
                 disabled.
   Max.saving : This mode will maximize the power saving capability.
   Min.saving : This mode will minimize the power saving capability.
   User define : Allow user to define time out parameters to control power
                 saving timing. Refer to item B shown below.

PM Control by APM

The option "No" allows the BIOS to ignore the APM (Advanced Power Management) specification. Selecting "Yes" will allow the BIOS wait for APM's prompt before it enters Doze mode, Standby mode, or Suspend mode. If the APM is installed, it will prompt the BIOS to set the system into the power saving mode after all tasks are done.

Video Off Method

The option "V/H SYNC+Blank" allows the BIOS to blank off screen display by turning off the V-Sync signals sent from add-on VGA card. "DPMS Supported" allows the BIOS to blank off screen displayby your add-on VGA card which supports DPMS (Display Power Management Signaling Function.) "Blank Screen" allows the BIOS to blank screen display by turning off the red-green-blue signals.

MODEM use IRQ

When the system is in green function, modem wakes up the system through IRQ.

Doze Mode

When disabled, the system will not enter Doze mode. The specified time option defines the idle time the system takes before it enters Doze mode.

Suspend Mode

When disabled, the system will not enter Suspend mode. The specified time option defines the idle time the system takes before it enters Suspend mode.

HDD Power Down

Selecting Disabled "will turn off the hard disk drive (HDD) motor. Selecting "1 Min..15Min" allows you to define the HDD idle time before the HDD enters Power Saving Mode. The option "When Suspend" lets the BIOS turns the HDD motor off when the system is in Suspend mode.

The options "1Min..15Min" and "When Suspend" will not work concurrently. When HDD is in Power Saving Mode, any access to the HDD will wake the HDD up.

Throttle duty Cycle
Choose the duty cycle time : 12.5%, 25%, 37.5%, 50%, 62.5%(default), 75%, or 87.5%. The bigger of the percentage, the more saving power it gets.

VGA Active Monitor
Enabled : the system can not enter the power saving mode when monitor is on.
Disabled : the system can enter the power saving mode when monitor is on.

Soft-Off by PWRBTN
When enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

Resume by Ring
The system will resume active when the modem is ringing.
Enabled : Wake up the system from ring signal.
Disabled : (default) Ring signal can not wake up the system.

Resume by Alarm
Set alarm to wake up the system by the dateor time.
Enabled : Wake up by the alarm
Disabled :(default) The system ignores the alarm.

Wake Up On LAN
You must make sure your network software and LAN card support such a function.

IRQ 8 Break Suspend
Support RTC alarm wake up from suspend function via IRQ 8.

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 CONFIGRUATION
           AWARD SOFTWARE, INC.
┌─────────────────────────────┬──────────────────────────┐
│ PNP OS Installed       : Yes │                          │
│ 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. **PNP OS Installed**

   If your operating system is a Plug-and-Play one, such as Windows NT, Windows 95, select Yes. The options are : No (Default), Yes.

   Resource Controlled By

   Manual : The field defines that the PNP Card's resource is controlled by manual. You can set which IRQ-X and DMA-X assigned to PCI/ISA PNP or Legacy ISA cards.

   Auto : If your ISA card and PCI card are all PNP cards. To set this field Auto.
   The BIOS will be assigned the interrupt resource automatically.

   Reset Configuration Data

   Disabled : Normal Setting

   Enabled : If you had plugged some Legacy cards in the system and there were records into ESCD (Extended System Configuration Data). You can set this field to Enabled and to clear ESCD one time . When some Legacy cards were removed.

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)? Y"

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

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   Onboard FDC Controller:Enabled
 IDE Primary Master PIO   : Auto      Onboard Serial Port 1 :3F8/IRQ4
 IDE Primary Slave PIO    : Auto      Onboard Serial Port 2 :2F8/IRQ3
 IDE Secondary Master PIO : Auto      UART Mode Select      :Normal
 IDE Secondary Slave PIO  : Auto
 IDE Primary Master UDMA  : Auto
 IDE Primary Slave UDMA   : Auto      Onboard Parallel Port  :378/IRQ7
 IDE Secondary Master UDMA : Auto     Parallel Port Mode     :SPP
 IDE Secondary Slave UDMA : Auto
 On-Chip Primary PCI IDE  : Enabled
 On-Chip Secondary PCI IDE : Enabled
 USB Keyboard Support     : Disabled
 Init Display First       :PCI Slot

 Power On Function       :Button only
                                      ESC : Quit    ←→↑↓:Select Item
 KBC input clock         : 8 MHz      F1  : Help    PU/PD/+/- : Modify
                                      F5  : Old Values (Shift)F2 : Color
                                      ESC : Quit    ←→↑↓:Select Item
```

Note:

> **If you don't use the Onboard IDE connector, than use On-card (PCI or ISA card) IDE connector, you will set Onboard Primary PCI IDE : Disabled and Onbard Secondary PCI IDE : Disabled from CHIPSETFEATURES SETUP UTILITY.**
> **The Onboard PCI IDE cable should be equal to or less than 18 inches (45cm).**

IDE HDD Block Mode:

The default value is Enabled.

Enabled : Enabled IDE HDD Block Mode. The HDD transfer rate is better than Disable.

Disabled : Disable IDE HDD Block Mode.

IDE Primary Master PIO /IDE Primary Slave PIO

The default value is Auto.

Auto : BIOS will automatically detect the Onboard PCI IDE HDD Accessing mode.

Mode0-4 : Manually set the IDE Accessing mode.

IDE Secondary Master PIO /IDE Secondary Slave PIO

The default value is Auto.

Auto : BIOS will automatically detect the Onboard PCI IDE HDD Accessing mode.

Mode0-4 : Manually set the IDE Accessing mode.

IDE Primary Master UDMA/IDE Primary Slave UDMA

Allows you to select the first PCI IDE channel of the first master hard disk mode or to detect it by the BIOS if the hard disk supports UDMA (Ultra DMA, faster than DMA).

IDE Secondary Master UDMA/IDE Secondary Slave UDMA

Allows you to select the second PCI IDE channel of the secondary master hard disk mode or to detect it by the BIOS if the hard disk supports UDMA (Ultra DMA, faster than DMA).

On-Chip Primary/Secondary PCI IDE

Turn on(enable)/Turn off(disable) the onboard IDE function.

USB Keyboard Support

Enable : USB keyboard. Disable : AT keyboard.

Power On Function

Choose the item and a screen with a list of items appears.

```
Available Options :
                              Default    Type
Password
Hot KEY
Mouse Left
Mouse Right
BUTTON ONLY          <BIOS>   <Setup>



        Press F1 or ESC to exit help
```

KBC input clock

Choose the item and a screen with a list of items appears.

Onboard FDC Controller

Choose disabled when you use an ISA card with FDD function, or choose enabled to use the onboard FDD connector.

Onboard Serial Port 1/ 2

Auto : The BIOS will automatically setup the port1/2 address
3F8/IRQ4 : Enable onboard serial port 1/2 and address is 3F8.
2F8/IRQ3 : Enable onboard serial port 1/2 and address is 2F8.
3E8/IRQ4 : Enable onboard serial port 1/2 and address is 3E8.
2E8/IRQ3 : Enable onboard serial port 1/2 and address is 2E8.

Onaboard Parallel Port

Select from a given set of parameters if the parallel port uses the onboard I/O controller.
The options are : 278/IRQ5 , 3BC/IRQ7, 378/IRQ7(Default).

Parallel Port Mode

Allows you to connect with an advanced printer. Select SPP for standard parallel port (SPP) used on IBM PC/XT, PC/AT and bi-directional parallel port found on PS/2 system.
Select ECP Mode for Microsoft and HP Extended Capabilities Parallel Port. Select ECP+EPP Mode for both ECP and EPP Modes ports.
The options are SPP (Default), EPP+SPP Mode, ECP Mode, ECP+EPP Mode.

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. If CMOS is corrupted or the option was not used, a default password stored in the ROM will be used. The screen will display the following message:

```
Enter Password :
```

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.

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:

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

 HARDDISKS    TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE



 OPTION    SIZE CYLS HEAD PRECOMP LANDZ SECTOR    MODE
   2        521  530   32    0     1059    63      LBA
   1        521 1060   16  65535   1059    63    NORMAL
   3        521  530   32  65535   1059    63     LARGE



 Note : Some Oses (like SCO UNIX) must use "NORMAL" for installation
                    ESC : Skip
```

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 up to 8.4GB that use logic block addressing mode. Normally we recommend to select LBA Mode if your HDD drivers large than 528MB.

3. This utility wills auto detect as many as four IDE drivers.

SAVE & EXIT SETUP

After you have made changes under Setup, press "Esc" to return to the main menu.Move cursor to "Save and Exit Setup" or press "F10" and then press "Y" to change the CMOS Setup. If you did not change anything, press "Esc" again or move cursor to Exit Without Saving and press "Y" to retain the Setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility.

Save to CMOS and EXIT (Y/N)?

EXIT WITHOUT SAVING

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications

Quit Without Saving (Y/N)?

4

Chapter 4
Audio Installation

The Audio is a stereo 16 bit PnP
sound device. It is compatible
with Sound Blaster 16
and Microsoft
WindowsSoundSystem.

The Audio supports 3D
surround sound function.

4-1 Product Features

- Supports industry standard PC game compatibility.

- Supports Sound Blaster Pro and Windows Sound System compatibility.

- Supports Plug and Play ISA 1.0a compatibility.

- Rigisters the compatibility with YMF715.

- Built-in 16-bit Sigma-Delta Stereo CODEC.

- Programmable sampling rates from 5.5 KHz to 48KHz for recording /playback.

- Hardware and software master volume control.

- Dual DMA (supporting DMA Demand Mode) with FIFO for Full Duplex.

- Supports IMA ADPCM, A-Law and u-Law Compression/ Decompression.

- MPU-401 Compatible MIDI Interface.

- Joystick Port with the timer function (NE558).

- Supports 3D surround effects.

- Supports the Soft Synthesizer (hereafter refered to as Softsynth).

4-2 DOS and Windows 3.1and Windows 95 Applications Installation

The sound driver and associated software are supplied on a 3.5-inch floppy disk or CD-ROM.

- Windows 3.x & DOS

  1. Insert the Driver disk, select med3700\win31\english directory of CD-ROM.

  2. Type "install" (for Windows) or "install-d" (for DOS) and press enter.

- Windows 95

  The sound supports Windows 95 Plug and Play.

  1. Start Windows 95.

  2. Select "Driver from disk provided by hardware manufacturer"

  3. Insert the Driver disk, select med3700\win95\english directory of CD-ROM.

Note :

Detail information for the installation is described on the readme of CD-ROM

4-3 YAMAHA Audio Rack Software

The Yamaha Audio Rack Software consists of CD, MIDI, and WAVE players. The WAVE component can record and playback WAV format files. Insert the Driver disk, select asession\Setup of CD-ROM. System Requirements :

1. At least 1MB of available hard disk space.

2. Windosn 3.x, Windows 95 or higher.

3. Sound board and its Windows driver

4. MCI extensions must be installed in the Windows driver section.

A
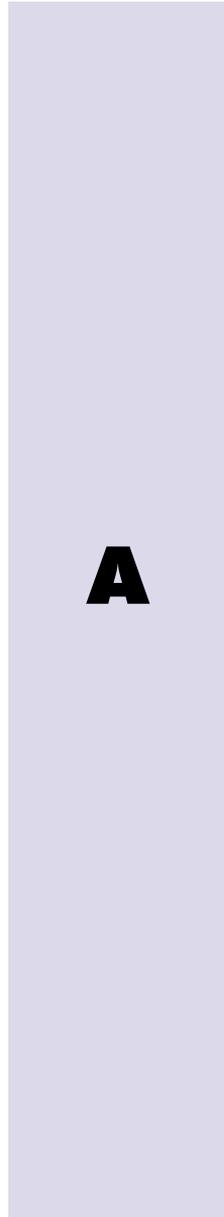
**Appendix
Hardware Monitor Setup/
AGP Utility**

**This chapter explains how to
configure the mainboard's
hardware mointor setup
program and AGP utility.**

A-1 System Health Monitor Utility

Selects the temperature scale

Sets the time interval for monitoring the system

Sets the range of the processor's temperature

Current temperature of the processor

Current value of each voltage

When enabled,this screen will minimize and display a histogram icon after boot-up

Sets the range of each voltage

These items, when enabled, will alert you in case of failure

Sets the range of the CPU/chassis fan's speed

Current speed of the CPU/ chassis fan's speed

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) 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^R 95 or Windows NT^R 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.

A-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^R 95 / NT 4.0. Please refer to the "Readme" file for details on using the utility.

A-3 Application

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

RT1
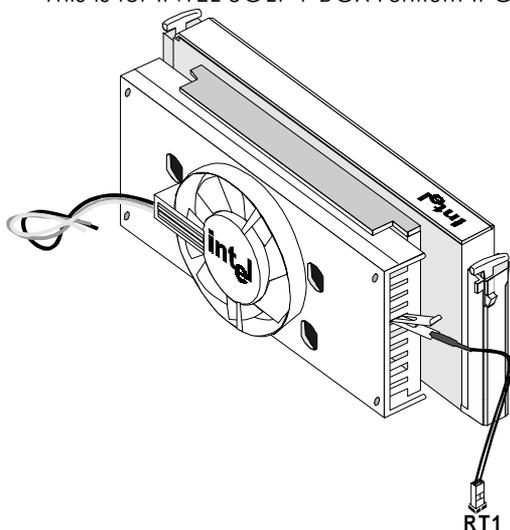
A-4 AGP and BX Chip Utility

Microsoft 95 system not support the AGP controller by Intel 440BX.
Please install winp2x4.exe to upgrade inf file under Win95 DOS prompt.

1. Start Win95.

2. Run MS-DOS prompt.

3. Insert CD/diskette , run winp2x4.exe.

A-5 Updating your Mainboard's BIOS

Updating BIOS procedures (only when necessary):

1. Create a directory from hard disk, copy the utility driver and files from disk or CD.

2. Download an updated AWARD BIOS file from FTP, or internet (WWW) and save to the directory you created above.

3. Type : [AWDFLASH] and then the <Enter> key.

5. Type in the complete file name of the new BIOS, and then press the <Enter> key. The utility will be update the BIOS file .
(You can save the old BIOS or not, please follow the screen message)

6. After updating the new BIOS file, Select F1 for reset your system or exit (F10).

7. Turn on your computer and hold down the <Delete> key to enter BIOS setup. You must select "LOAD SETUP DEFAULTS" to affect the new BIOS setting, then you may set other item's from the Main Menu.