Chapter 1

INTRODUCTION

The MS-6163VA ATX VIA mainboard is a high-performance personal computer mainboard based on the Intel® Pentium® II processor. The Intel® Pentium® II processor supports MMX™ (Multimedia Extension) technology.

The mainboard uses the highly integrated VIA® VT82C693 chipset to support the PCI/ISA and Green standards, and to provide the Host/AGP bridge. TheVIA® VT82C596A chipset integrates all system control functions such as ACPI (Advanced Configuration and Power Interface). The ACPI provides more Energy Saving Features for the OSPM(OS Direct Power Management) function. The VIA® VT82C596A chipset also improves the IDE transfer rate by supporting Ultra DMA/33 IDE that transfers data at the rate of 33MB/s.

1.1 Mainboard Features

CPU
- Slot 1 for Intel® Pentium® II/Pentium® III/Celeron™ processor.
- Supports 233MHz, 266MHz, 300MHz, 333MHz, 350MHz, 400MHz, 450MHz, 500MHz and faster.

Chipset
- VIA® VT82C693 chipset

FSB (Front Side Bus)
- 66.6MHz, 100MHz and faster clocks are supported.

Main Memory
- Supports six memory banks using three 168-pin unbuffered DIMM.
- Supports a maximum memory size of 384MB (8M x 8) or 768MB (16M x 4) registered DIMM only.
- Supports ECC(1-bit Error Code Correct) function.
- Supports 3.3v SDRAM DIMM.

Slots
- One AGP slot.
     - AGP specification compliant
     - AGP 66/133MHz 3.3v device support
- Five 32-bit Master PCI Bus slots and two 16-bit ISA Bus slots (wherein one slot is shared).
  *See Chapter 2-48 for further details on PCI slots.
- Supports 3.3v/5v PCI bus Interface.

On-Board IDE
- An IDE controller on the Intel® PIIX4E PCI Chipset provides IDE HDD/ CD-ROM with PIO, Bus Master and Ultra DMA/33 operation modes.
- Can connect up to four IDE devices.

On-Board Peripherals
- On-Board Peripherals include:
    - 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
    - 2 serial port (COM A) + (COM B)
    - 1 parallel port supports SPP/EPP/ECP mode
    - 2 USB ports
    - 1 IrDA connector
    - 1 Audio port (Line_Out, Line_In, and Mic_In Jack) and 1 MIDI/ Game Port

Audio (Optional)
- Creative® ES1373
    - Running on PCI BUS.
    - 64 Voice and AC3 Capable
    - Support Direct Sound and Direct Sound 3D
    - AC97' Compliant
    - Support SPDIF™ output

BIOS
- The mainboard BIOS provides "Plug & Play" BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The mainboard provides a Desktop Management Interface(DMI) function which records your mainboard specifications.
- ACPI(Advanced Configuration and Power Interface) feature.

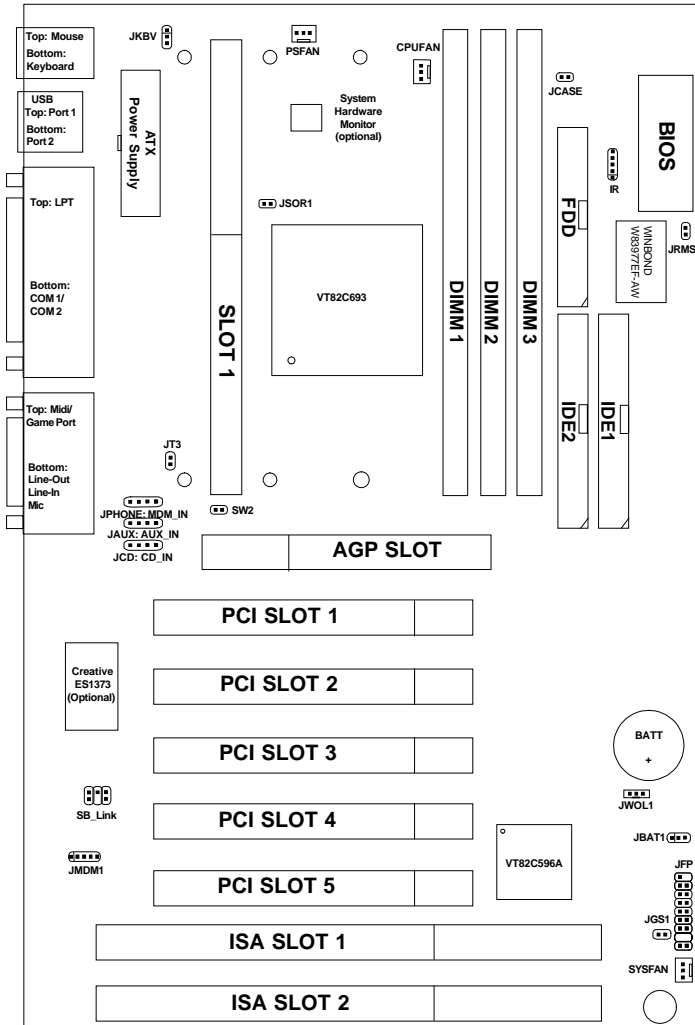**Dimension**
- ATX Form Factor : 30cm(L) x 19.2cm(W) x 4 layers PCB

Mounting
- 6 mounting holes.

Other Features
- Keyboard Password Wake-Up
- LAN Wake-Up
- Internal/External Modem Wake-Up

1.2 Mainboard Layout

Top: Mouse	JKBV
Bottom: Keyboard	PSFAN
	CPUFAN
USB Top: Port 1	ATX Power Supply
Bottom: Port 2	

System Hardware Monitor (optional)

JCASE

BIOS

Top: LPT

FDD

IR

JSOR1

WINBOND W83977EF-AW

JRMS1

Bottom: COM 1/ COM 2

VT82C693

SLOT 1

DIMM 1

DIMM 2

DIMM 3

Top: Midi/ Game Port

JT3

IDE2

IDE1

Bottom: Line-Out Line-In Mic

JPHONE: MDM_IN
JAUX: AUX_IN
JCD: CD_IN

SW2

AGP SLOT

PCI SLOT 1

Creative ES1373 (Optional)

PCI SLOT 2

PCI SLOT 3

BATT +

PCI SLOT 4

JWOL1

VT82C596A

JBAT1

SB_Link

JFP

JMDM1

PCI SLOT 5

JGS1

ISA SLOT 1

SYSFAN

ISA SLOT 2

MS-6163VA ATX VIA Mainboard

Chapter 2

HARDWARE INSTALLATION

2.1 Central Processing Unit: CPU

This mainboard operates with **Intel® Pentium® II/Celeron™ processor.** The mainboard uses a CPU Slot called Slot 1 for easy CPU installation. The CPU should always have a Heat Sink and a cooling fan attached to prevent overheating.

2.1-1 CPU Installation Procedures

Different kinds of Pentium® II processor that is currently used: the OEM version, the Boxed version, and Celeron™. OEM Pentium® II Processor has no Heat Sink, Fan and Heat Sink Support, the Boxed Pentium® II Processor is provided with Heat Sink w/ fan and Heat Sink Support, while the Celeron™ processor is a plain processor card without cover or heatsink.

A. OEM Pentium® II Processor Installation Procedures
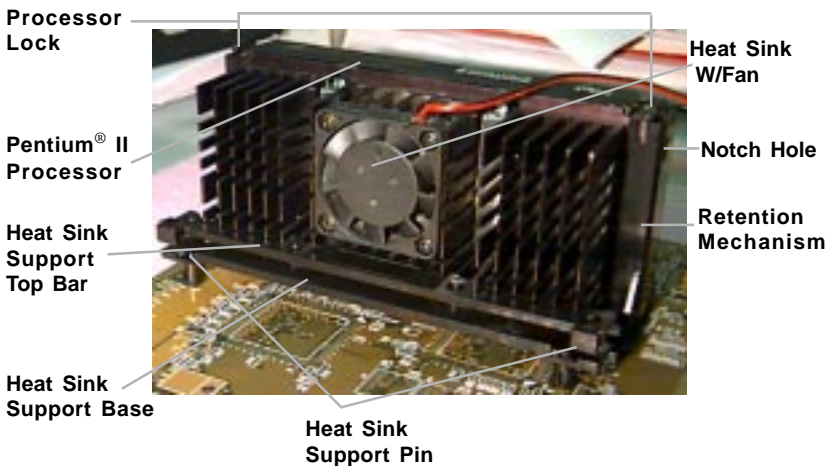
Required Things:

    Pentium® II processor - Processor.

    *Retention Mechanism(RM) - Plastic Guide that holds the S.E.C. Catridge in the Slot 1 connector.

    *Retention Mechanism Attach Mount(RMAM) - Bolt/Bridge assemblies inserted up through the bottom of the motherboard. RM secures to RMAM (2 RMAM required per RM).

    *Heat Sink Support Base (HSSBASE) - Plastic support bar mounted to the mainboard under the ATX heatsink. (One leg is always bigger than the other one)

*Heat Sink Support Pin (HSSPIN) - Plastic pins inserted through the
HSSBASE to secure it to the mainboard (2
required per Assembly).
*Heat Sink Support Top Bar (HSSTOP) - Plastic bar that clips onto the
HSSBASE through the fins on the ATX
heatsink.
Heat Sink w/ fan - Heat Sink that can be attached to the **Pentium® **II**
processor with metal clip.
**Note:** * Provided by MSI mainboard.
** Provided by Special request.
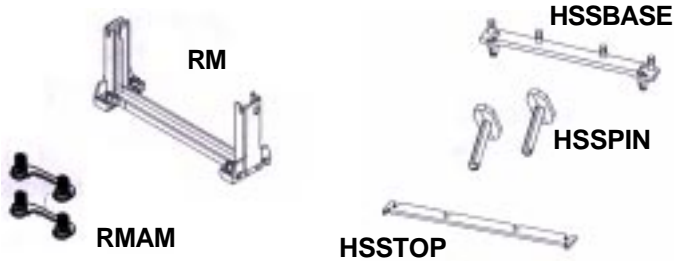
Step 1: Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

Step 2: Install the Retention Mechanism.

Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for proper direction. Then, attach the Retention Mechanism to the Retention Mechanism Attach Mount. Use a Screwdriver to secure the Retention Mechanism.
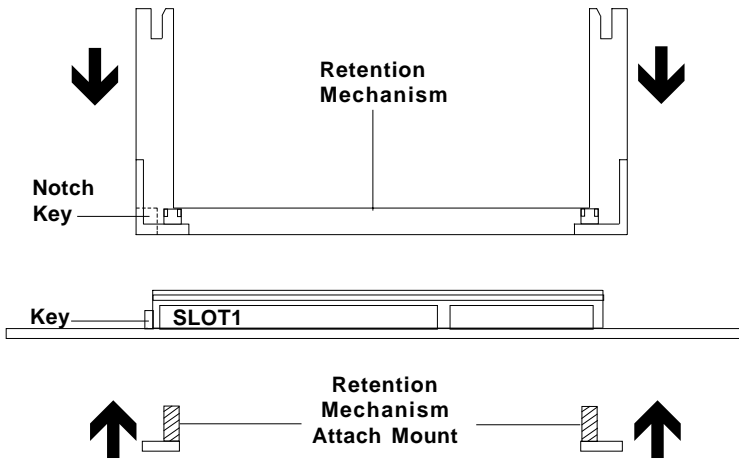
Step 3: Install the Heat Sink Support Base.

Look for the Two holes across Slot 1, and match it with the Two legs
of the Heat Sink Support Base for the proper direction. Take note
that one hole/leg is bigger than the other. The Four top pins of the
Heat Sink Support Base should also be oriented towards Slot 1.
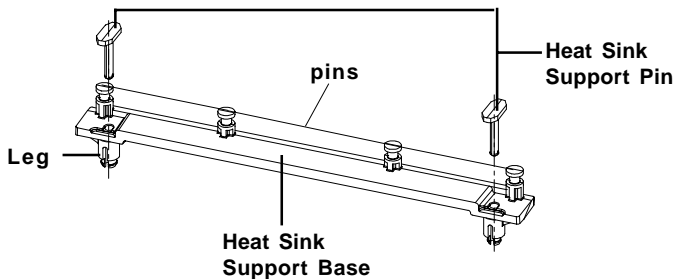
Push the Heat Sink Support Base onto the mainboard, until you hear
a click sound. Check for a perfect fit.

Step 4: Install the Heat Sink Support Pin.

Push the Heat Sink Support Pins onto the two holes of the Heat Sink
Support Base. Check for a perfect fit. These pins are used to secure
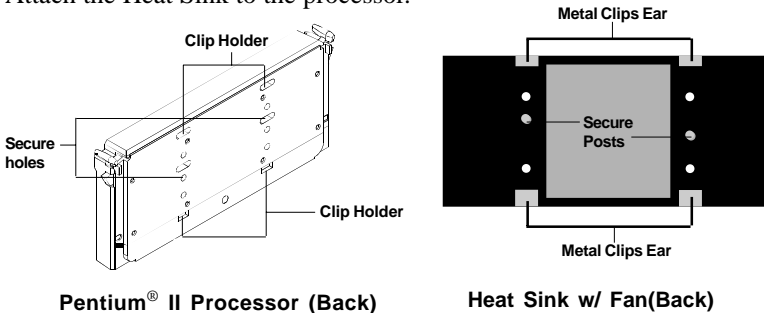the Heat Sink Support Base.

Step 5: Install the Heat Sink with Fan to the Processor.

Push down the metal clips, so that they are in line with the back of the Heat Sink. Be careful, so as not detach the metal clips from the Heat Sink.

Heat Sink w/ Fan

Heat Sink
Base Holder

Metal Clips

The arrow should be pointing down.
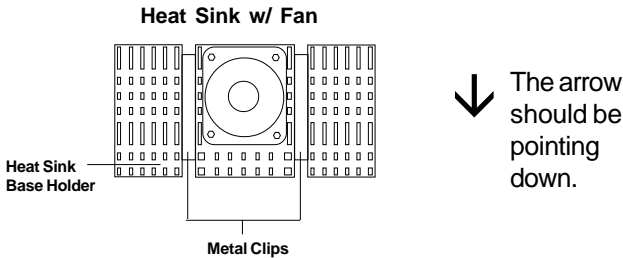
In case the metal clips are detached from the Heat Sink, re-attach them. Look for the arrow on the metal clip. This arrow should be pointing down and aligned with the Heat Sink Support Base Holder.

Attach the Heat Sink to the processor.

Clip Holder

Secure holes

Clip Holder

Metal Clips Ear

Secure Posts

Metal Clips Ear

Pentium® II Processor (Back)   **Heat Sink w/ Fan(Back)**

- Look at the back of the Heat Sink and take note of the 2 secure posts. Insert these 2 Secure posts to the 2 secure holes on the back of the processor.

- Align the ears of the metal clips with the clip holders on the back of the processor. Use a screw driver to push the metal clips onto the clip holders. Check for a perfect fit.

Step 6: Install the Processor.

Unlock the Processor by pushing in the Processor Locks.

Insert the Processor like inserting a PCI or an ISA card.

Step 7: Lock the Processor Locks.

Secure the CPU by pulling the Processor Locks out.

Step 8: Install the Heat Sink Support Top Bar.

Push the Heat Sink Support Top Bar to the Heat Sink Support Base,
Until you hear a "click" sound. Check for a perfect fit.

**Heatsink
Support Top
Bar**

The installation is now complete.

B. Boxed Pentium® II Processor Installation Procedures

The Boxed Pentium® II Processor has a built- in Fan and Heat Sink. It also has a Heat Sink Support. So if you're going to use a Boxed Pentium™ II Processor, all you need is the Retention Mechanism.

Step 1: Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

Step 2: Install the Retention Mechanism.

Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for proper direction. Then, attach the Retention Mechanism to the Retention Mechanism Attach Mount. Use a Screwdriver to secure the Retention Mechanism.
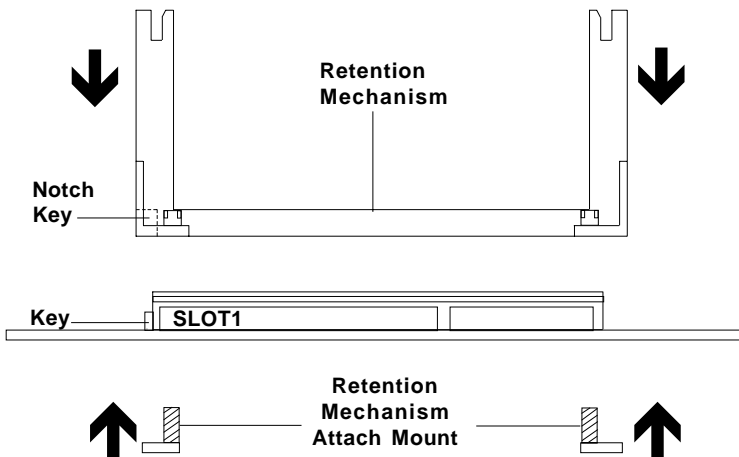
Step 3: Install the Heat Sink Support Base.

Look for the 2 holes across Slot 1, and match it with the 2 Heat Sink Support Base. Take note that one hole/base is bigger than the other.
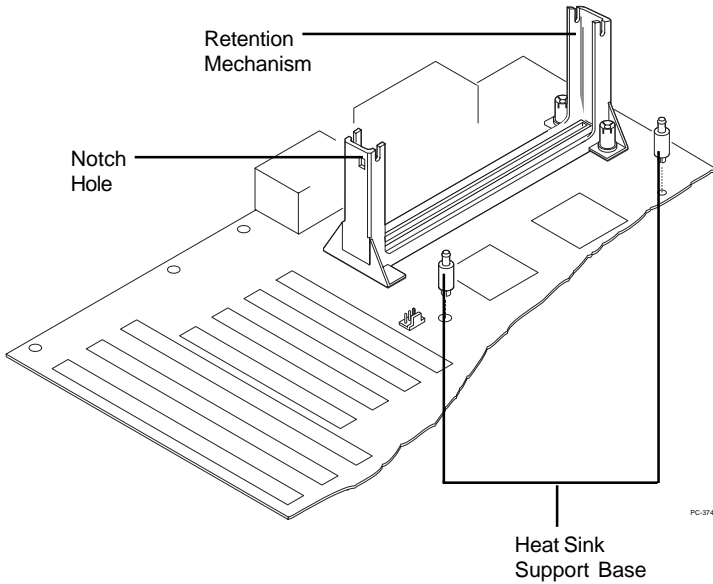
Push the Heat Sink Support Base onto the mainboard, until you hear a click sound. Check for a perfect fit.

Step 4: Install the Heat Sink Support.

Attach the 2 Heat Sink Supports to the sides of the Processor. These Heat Sink Supports will fit in any direction, so be sure that the Heat Sink Support Locks are oriented outwards for the proper direction.
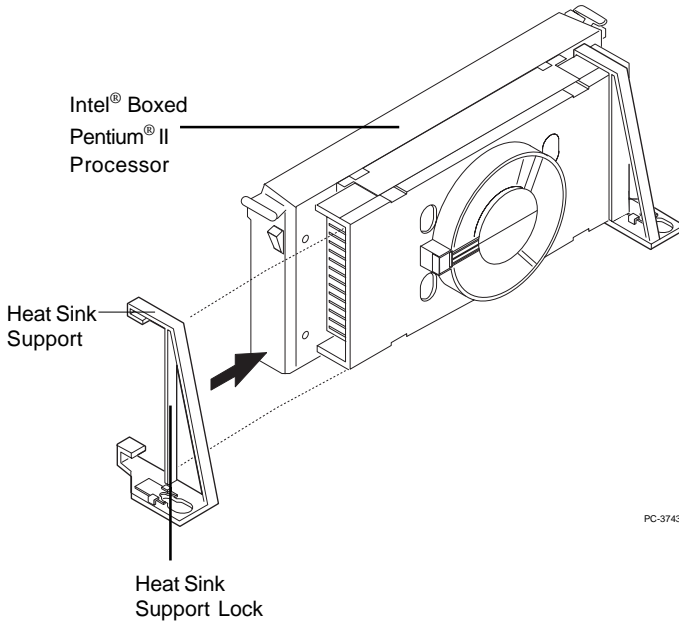
Step 5: Unlock the Processor Locks and Heat Sink Support Locks.

Push in the Processor Locks. Open the Heat Sink Support Locks.
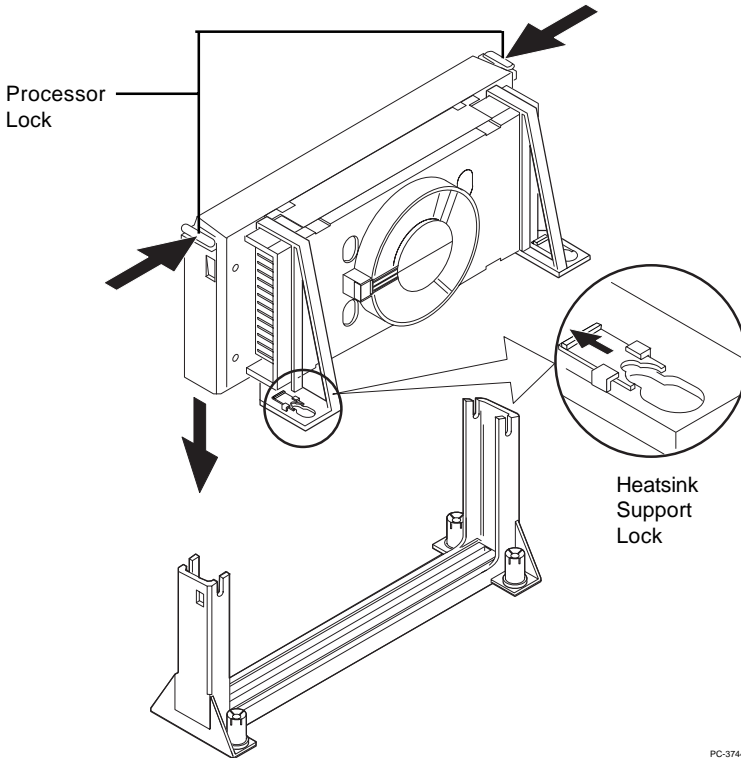
Step 6: Insert the Processor like inserting a PCI or an ISA card.
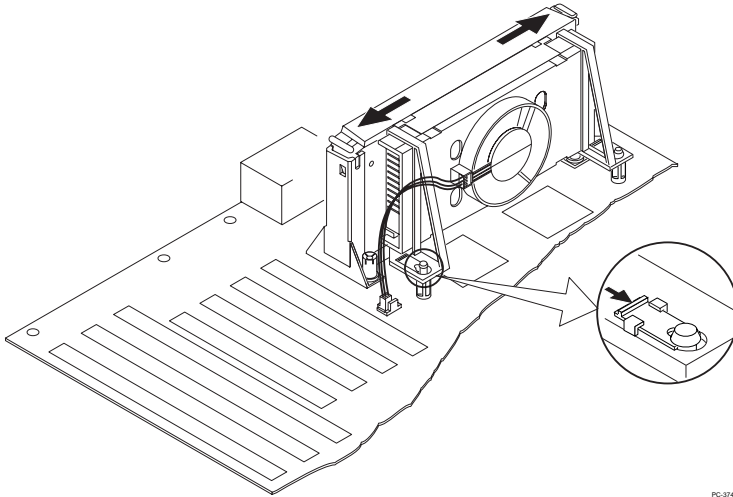
PC-3745

Step 7: Lock the Processor Locks and Heat Sink Support Locks

Secure the CPU by pushing out the Processor Locks. Close the Heat Sink Support Locks.

The installation is now complete.

C. OEM Celeron™ Processor Installation Procedures

Step 1: Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

Step 2: Install the Retention Mechanism.

Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for proper direction. Then, attach the Retention Mechanism to the Retention Mechanism Attach Mount. Use a Screwdriver to secure the Retention Mechanism.
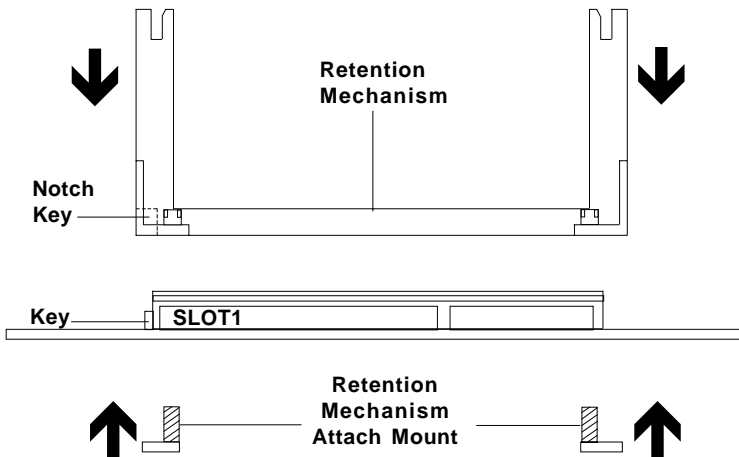
Step 3: Install the MSI Heat Sink (optional) to the Processor.

Celeron™ processor

Heat Sink

The instruction procedure may vary depending on the Heat Sink that you're using.
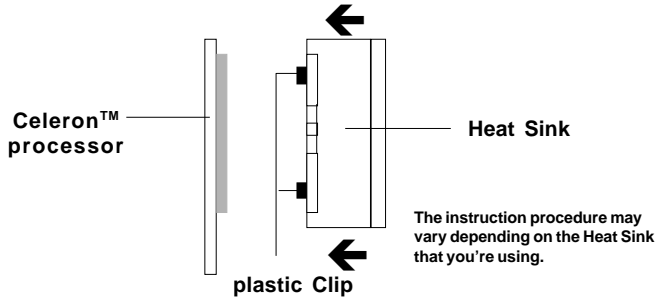
plastic Clip

Push down the plastic clips, so that they are in line with the hole on the processor. Check for perfect fit.

Step 4: Install the Processor.

Insert the Processor like inserting a PCI or an ISA card.

Step 5: Lock the Processor.

MSI Retention Cap

Notch Hole

Notch Hole
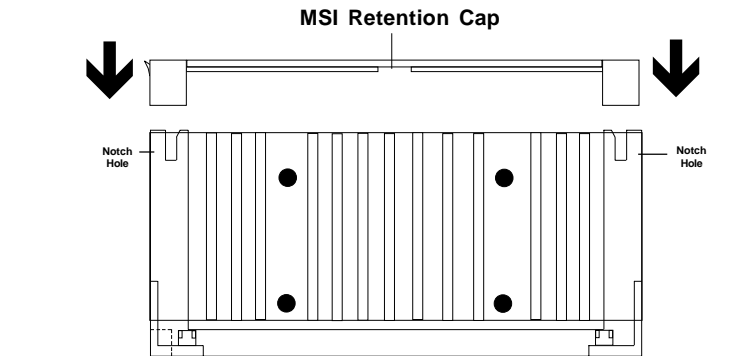
Lock the processor by putting the MSI Retention Cap provided. The MSI Retention Cap will only fit in one direction. The MSI Retention Cap is only used with Intel® Celeron™ processor and Intel® Penitum® II processor (S.E.C.C. 2).

Procedure for detaching the MSI Retention Cap:

Retention
Cap Lock

MSI Retention Cap
(Top View)
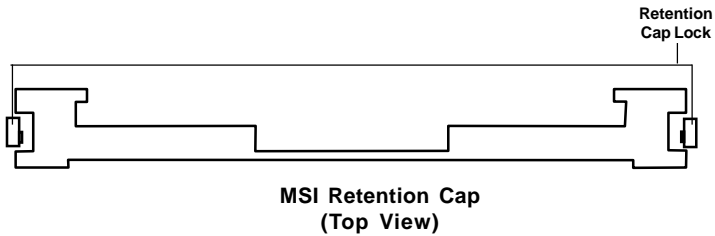
To remove the Retention Cap.
- Pull the the Retention Cap Lock outward.
- Pull one side upward at a time.

2.1-2 CPU Core Speed Derivation Procedure

1. This mainboard can auto-detect the Core/Bus (Fraction) ratio of the CPU

If	CPU Clock	=	66MHz
	Core/Bus ratio	=	3.5
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	66MHz x 3.5
		=	233MHz

SW1				CPU
1	**2**	**3**	**4**	**Core/Bus Ratio**
ON	OFF	ON	ON	2.5
ON	ON	OFF	ON	3
ON	OFF	OFF	ON	3.5
ON	ON	ON	OFF	4
ON	OFF	ON	OFF	4.5
ON	ON	OFF	OFF	5
ON	OFF	OFF	OFF	5.5
OFF	ON	ON	ON	6
OFF	OFF	ON	ON	6.5
OFF	ON	OFF	ON	7
OFF	OFF	OFF	ON	7.5
OFF	ON	ON	OFF	8

ON - Short   OFF - Open

Note: SW1 will not exist on Jumperless motherboard.

2.1-3 CPU Bus Frequency Selector: SW2

The SW2 is used to set the CPU Bus Frequencies from 66MHz to 100MHz. When SW2 is shorted, this will automatically detect the CPU Bus Frequency. When SW2 is open, if you used 66MHz CPU Bus Frequency, this will set it virtually into 100MHz.

SW2
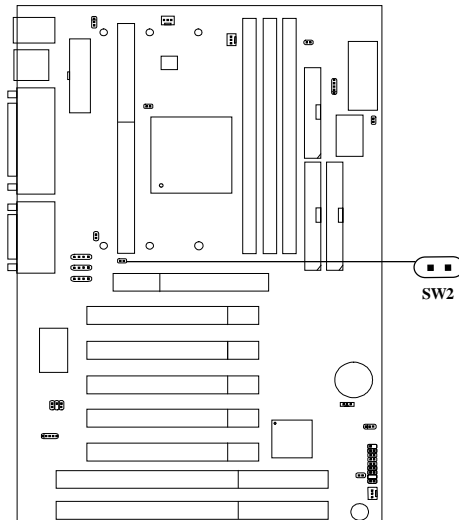
SW2	Feature
▣	**Automatically detect 66MHz and 100MHz CPU Bus Frequency**
⊡	**Virtually set 66MHz CPU Bus Frequency into 100MHz**

NOTE: 1. This feature works with 66MHz FSB only.
2. If your CPU FSB supports 66MHz and you want to run it on   100MHz FSB, the SW2 should be open. The AGP Bus will be set to run at 100MHz x 2/3=66MHz to make it stable.

2.1-4 Fan Power Connectors: CPUFAN/PSFAN/SYSFAN

These connectors support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard has System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of this function.
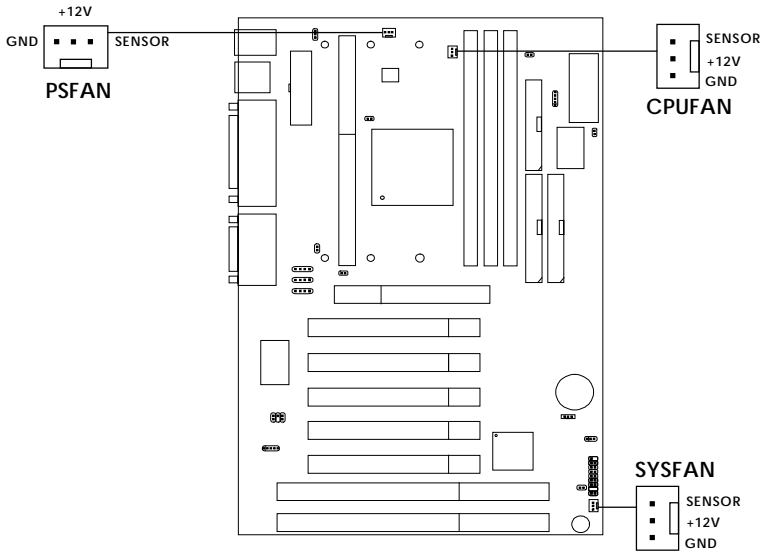
PSFAN   : Power Supply Fan
CPUFAN : Processor Fan
SYSFAN : System(Chassis) Fan

For fans with fan speed sensor, every rotation of the fan will send out 2 pulses. System Hardware Monitor will count and report the fan rotation speed.

Note: **1.** Always consult vendor for proper CPU cooling fan.

       2. CPU FAN supports the FAN control. You can install PC Alert utility to automatically set the CPU FAN Speed based on the CPU temperature.

2.2 Clear CMOS Jumper: JBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. Short 1-2 pins of JBAT1 to store the CMOS data.

JBAT1
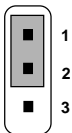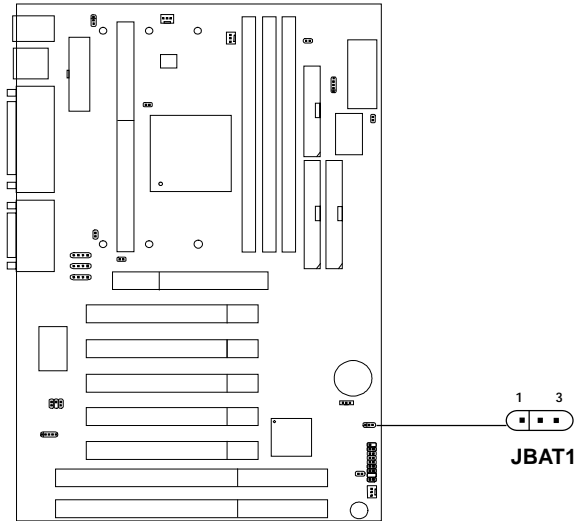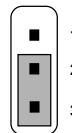
Keep Data   **Clear Data**

Note: You can clear CMOS by shorting 2-3 pin, while the system is off. Then, return to 1-2 pin position. Avoid clearing the CMOS while the system is on, it will damage the mainboard. Always unplug the power cord from the wall socket.

2.3 Memory Installation

2.3-1   Memory Bank Configuration

The mainboard supports a maximum memory size of 384MB (8M x 8) or 768MB (16M x 4) registered DIMM for SDRAM: It provides three 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 256 Mbytes DIMM memory module.
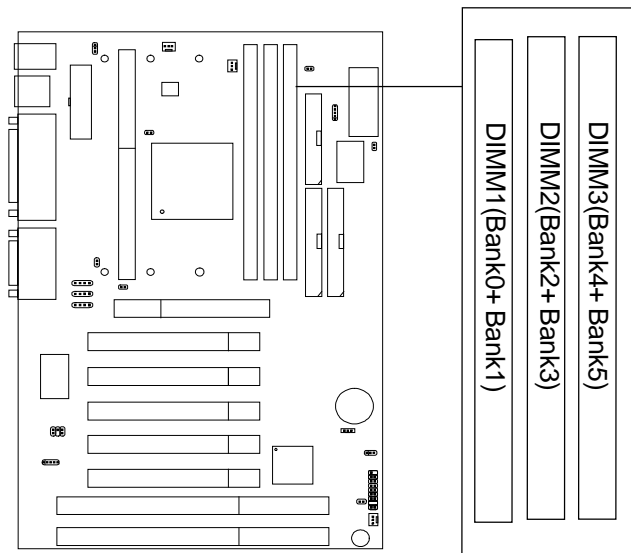
⚠ WARNING!	There are two kinds of DIMM specification supported by this mainboard: PC100 and PC66. If you use 66MHz CPU Bus Frequency, these two DIMM Specs. is supported. If you use 100 MHz CPU Bus Frequency, only PC100 DIMM Specs. is supported.

2.3-2 Memory Installation Procedures

A. How to install a DIMM Module
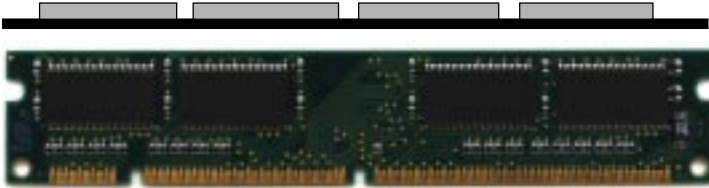
Single Sided DIMM
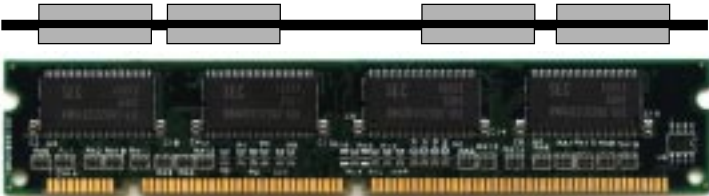
Double Sided DIMM

1. The DIMM slot has 2 Notch Keys "VOLT and DRAM", so the DIMM memory module can only fit in one direction.

2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in.
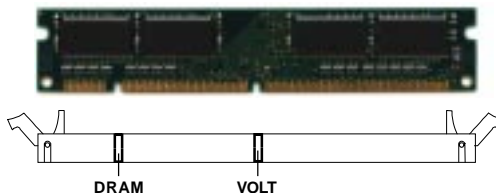
3. The plastic clip at the side of the DIMM slot will automatically close.

2.3-3   Memory Population Rules

1. Supports only SDRAM DIMM.

2. To operate properly, at least one 168-pin DIMM module must be in-
stalled.

3. This mainboard supports Table Free memory, so memory can be installed
on DIMM1 or DIMM 2 in any order.

4. Supports 3.3 volt DIMM.

5. The DRAM addressing and the size supported by the mainboard is
shown below:

Table 2.3-1 SDRAM Memory Addressing

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
	4Mx4	ASYM	11	10	32MB	64MB
64M	2Mx32	ASYM	11	9	32MBx2	64MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB
64M	2Mx32	ASYM	12	8	16MB	32MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB

2.4 Case Connector: JFP

The Power Switch, Reset Switch, Power LED, Speaker, Keylock and HDD LED are all connected to the JFP connector block.
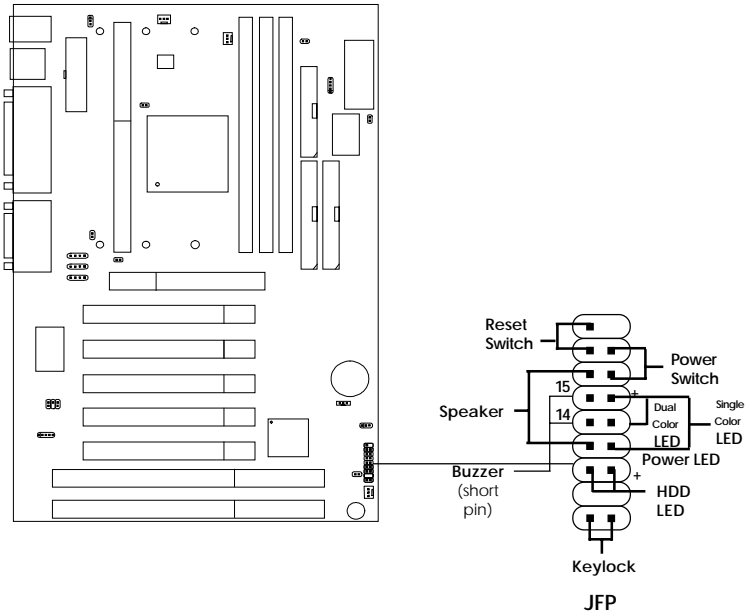
2.4-1 Power Switch
Connect to a 2-pin push button switch. This switch has the same feature with JRMS1.

2.4-2 Reset Switch
Reset switch is used to reboot the system rather than turning the power ON/ OFF. Avoid rebooting while the HDD LED is lit. You can connect the Reset switch from the system case to this pin.

2.4-3 Power LED
The Power LED is lit while the system power is on. Connect the Power LED from the system case to this pin. There are two types of LED that you can use: 3-pin single color LED or 2-pin dual color LED(ACPI request).

       a. 3 pin single color LED connect to pin 4, 5, & 6. This LED will lit when the system is on.

       b. 2 pin dual color LED connect to pin 5 & 6.

             GREEN Color: Indicate the system is in full on mode.

             ORANGE Color: Indicate the system is in suspend mode.

2.4-4 Speaker
Speaker from the system case is connected to this pin.

If on-board Buzzer is available:

Short pin 14-15:   On-board Buzzer Enabled.

Open pin 14-15:   On-board Buzzer Disabled.

2.4-5 HDD LED
HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

2.4-6 Keylock
Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin.

2.5 Floppy Disk Connector: FDD

The mainboard also provides a standard floppy disk connector (FDC) that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. This connector supports the provided floppy drive ribbon cables.
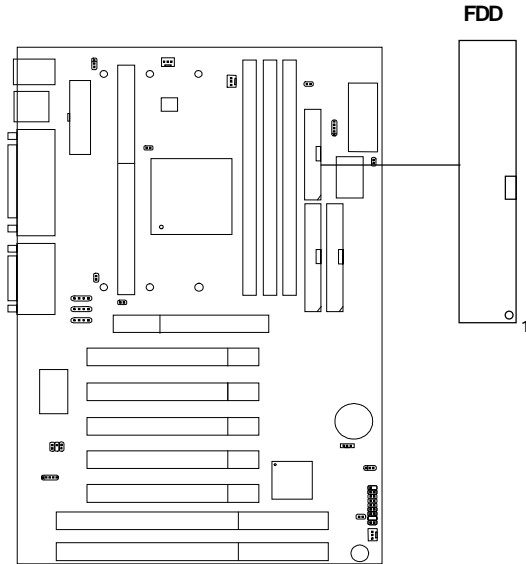
2.6 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33 function. It has two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to IDE1 and IDE2. These connectors support the provided IDE hard disk cable.
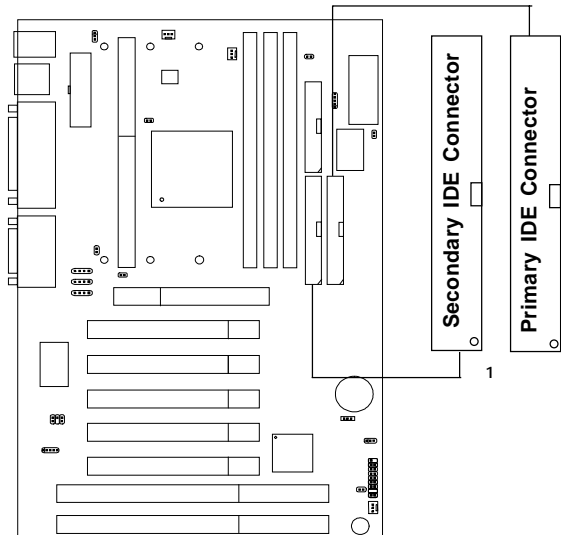
IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

2.7 Power Supply

2.7-1   ATX 20-pin Power Connector: JWR1

This connector supports the power button on-board. Using the ATX power supply, functions such as Modem Ring Wake-Up and Soft Power Off are supported by this mainboard. This power connector supports instant power on function which means that system will boot up instantly when the power connector is inserted on the board.

**ATX
Power Connector**
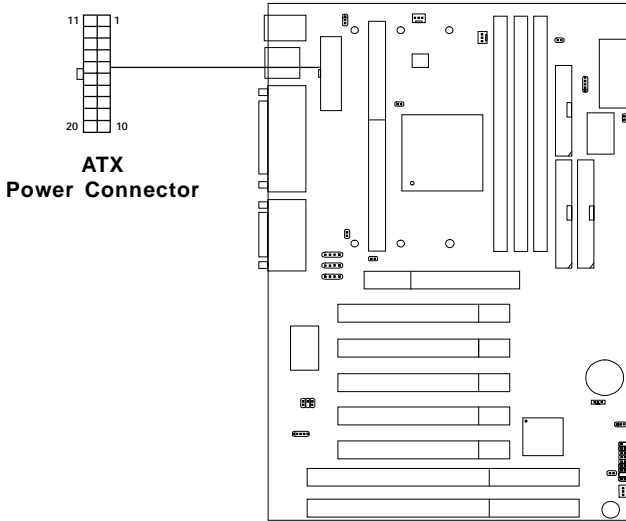
PIN DEFINITION

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

Warning: Since the mainboard has the instant power on function, make sure that all components are installed properly before inserting the power connector to ensure that no damage will be done.

2.7-2 Remote Power On/Off Switch: JRMS1

Connect to a 2-pin push button switch. During OFF state, press once and the system turns on. **During ON stage, push once and the system goes to sleep mode: pushing it more than 4 seconds will change its status from ON to OFF**. If you want to change the setup, you could go to the BIOS Power Management Setup.

JRMS1
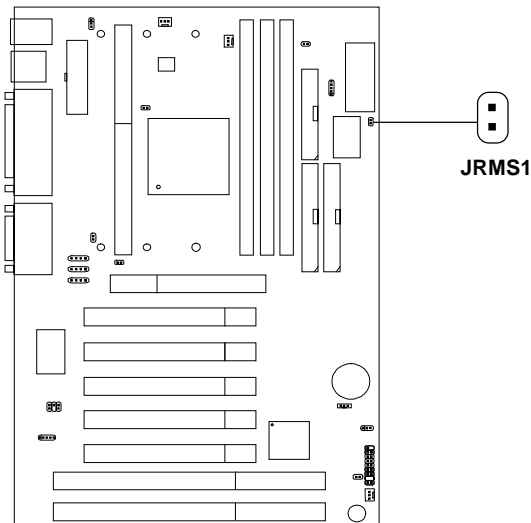
2.8 IrDA Infrared Module Connector: IR

The mainboard provides one 5-pin infrared (IR) connector for IR modules.
This connector is for optional wireless transmitting and receiving infrared
module. You must configure the setting through the BIOS setup to use the
IR function.
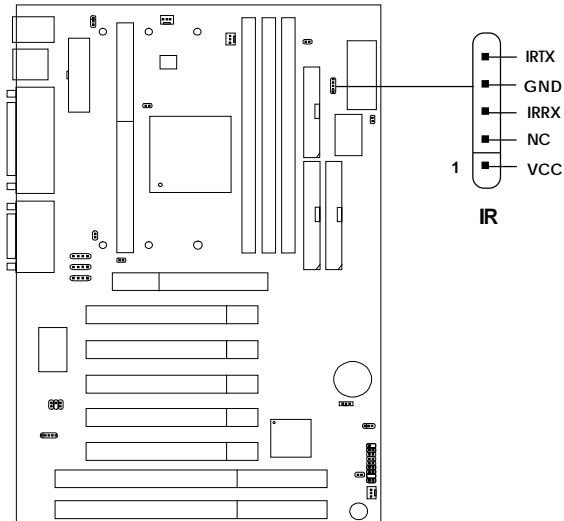
2.9 Serial Port Connectors: COM A and COM B

The mainboard has two 9-pin male DIN connectors for serial port COM A and COM B. These ports are 16550A high speed communication port that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into this connector.
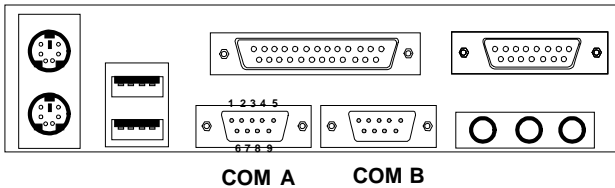
Serial Port (9-pin Male)

PIN DEFINITION

PIN	SIGNAL
1	**DCD**(Data Carry Detect)
2	**SIN**(Serial In or Receive Data)
3	**SOUT**(Serial Out or Transmit Data)
4	**DTR**(Data Terminal Ready)
5	**GND**
6	**DSR**(Data Set Ready)
7	**RTS**(Request To Send)
8	**CTS**(Clear To Send)
9	**RI**(Ring Indicate)

2.10 Parallel Port Connector: LPT1

The mainboard provides a 25 pin female centronic connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP). See connector and pin definition below:

Parallel Port (25-pin Female)

LPT 1
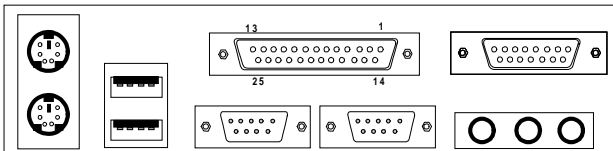
PIN DEFINITION

PIN	SIGNAL	PIN	SIGNAL
1	STROBE	14	AUTO FEED#
2	DATA0	15	ERR#
3	DATA1	16	INIT#
4	DATA2	17	SLIN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT		

2.11 Mouse Connector: JKBMS1

The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin definition are shown below:
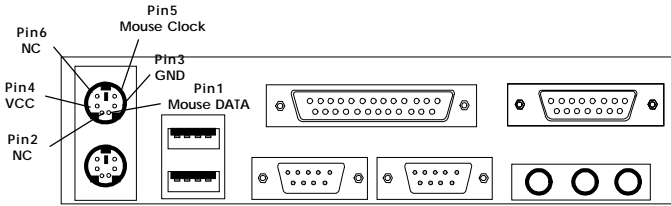
PS/2 Mouse (6-pin Female)

2.12 Keyboard Connector: JKBMS1

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.
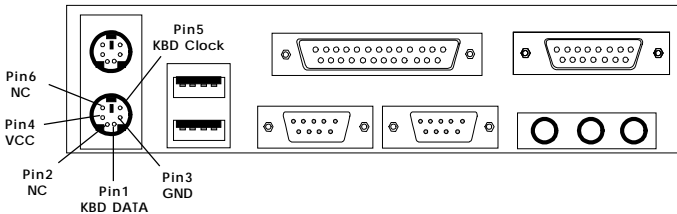
PS/2 Keyboard (6-pin Female)

2.13 Joystick/Midi Connectors

You can connect joystick or game pad to this connector.

Joystick/MIDI
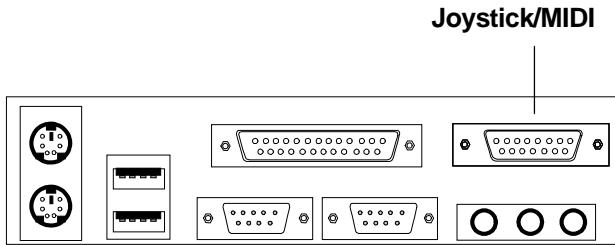
2.14 Audio Port Connectors

Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape layer, or other audio devices. **Mic** is a connector for the microphones.

Line Out   Line In   Mic
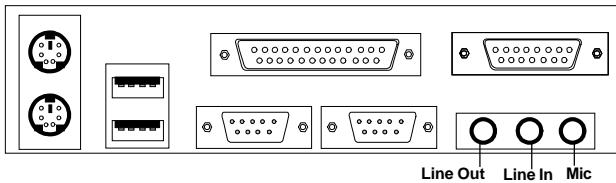
1/8" Stereo Audio Connectors

NOTE: Line Out supports SPDIF converter. In case, you use the SPDIF converter, change the output mode to digital on the audio driver setting.

2.15 USB Connectors

The mainboard provides a **UHCI(Universal Host Controller Interface) Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.

USB Port 2

USB Port 1
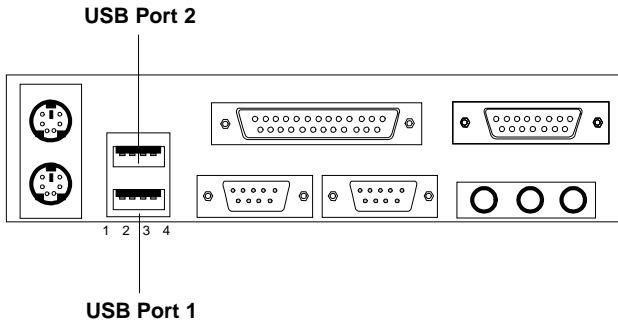
PIN	SIGNAL
1	VCC
2	-Data0
3	GND
4	+Data0

2.16   Power Saving Switch Connector: JGS1

Attach a power saving switch to **JGS1**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.
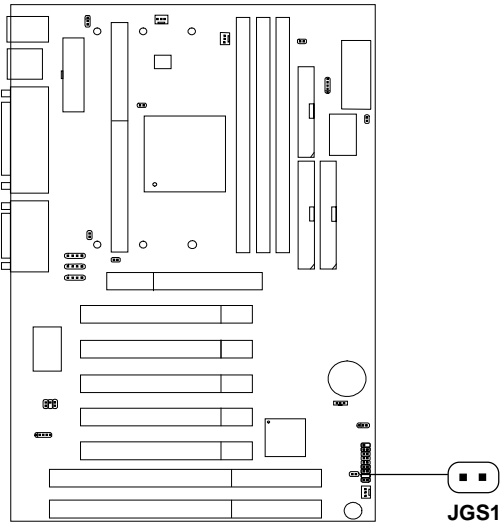
2.17 Wake-Up on LAN Connector: JWOL1

The JWOL1 connector is for use with LAN add-on cards that supports Wake Up on LAN function. To use this function, you need to set the "Wake-Up on LAN" to enable at the BIOS Power Management Setup.
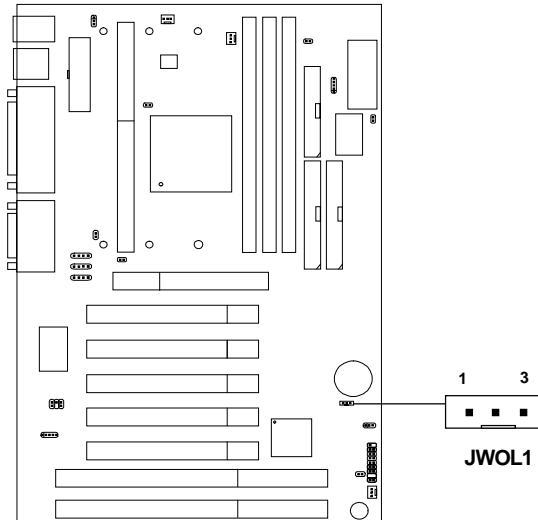
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

Note: LAN wake-up signal is active "high".

Note: To be able to use this function, you need a power supply that provide enough power for this feature.
(Power supply with 750 mA 5V Stand-by)

2.18 Modem Wake Up Connector: JMDM1

The JMDM1 connector is for use with the Modem add-on card which supports the Modem Wake Up function. To use this function, you need to set the "Resume By Ring" to enable at the BIOS Power Management Setup.
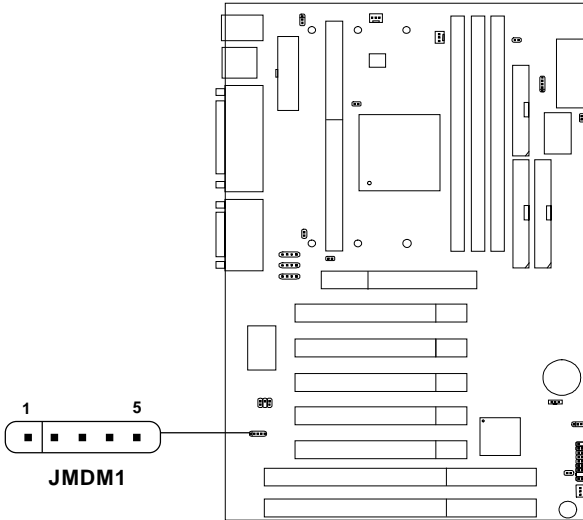
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

Note: Modem wake-up signal is active "low".

Note: To be able to use this function, you need a power supply that provide enough power for this feature.
(Power supply with 750 mA 5V Stand-by)

2.19 SB_Link™ Card Sound Connector: SB_Link

The mainboard provides a distributed DMA connector for PCI sound card with this feature, such as Creative® PCI 3D sound card.

SB_Link
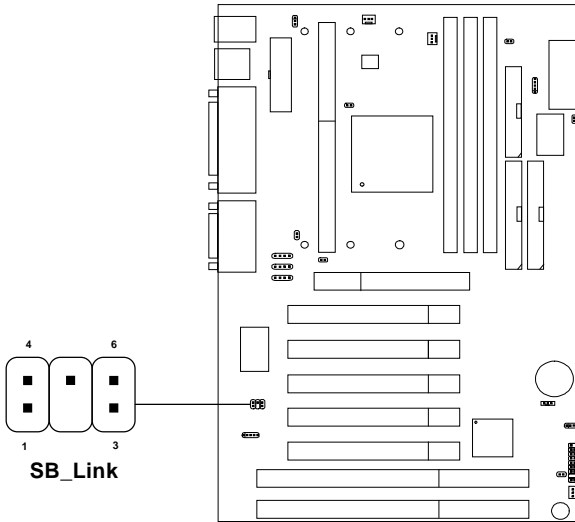
Pin	Definition
1	DMA Grand Signal
2	NC
3	GND
4	GND
5	DMA Request Signal
6	Serial Interrupt Signal

2.20 Modem-In: JPHONE (Optional)

The connector is for Modem with internal voice connector.
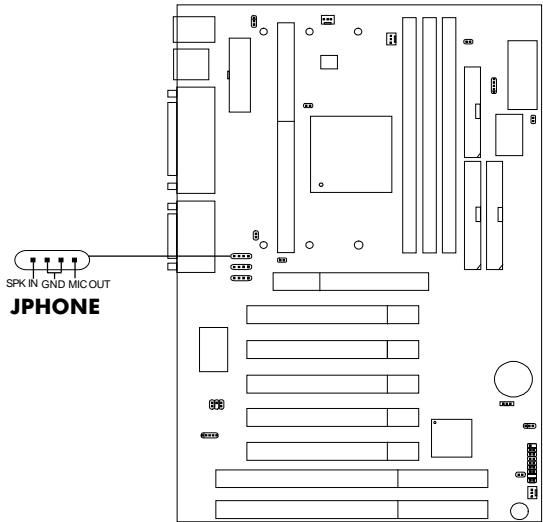
SPK IN is connected to the Modem Speaker Out connector.
MIC_OUT is connected to the Modem Microphone In connector.

2.21 AUX Line In Connector: JAUX (Optional)

This connector is used for DVD Add on Card with Line In connector.
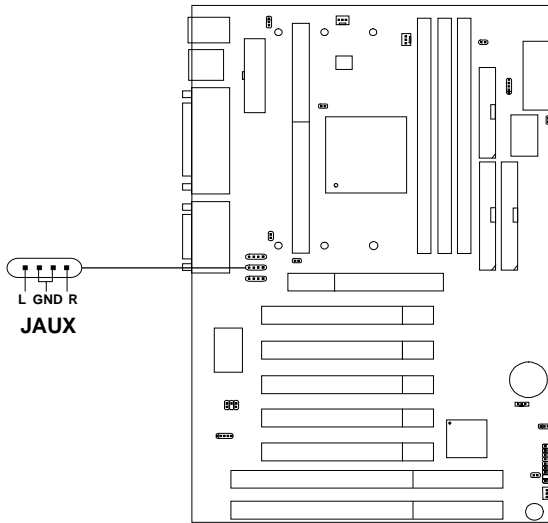
2.22 CD-In Modem Connector: JCD (Optional)

This connector is for CD-ROM voice connector.

LGND R

JCD
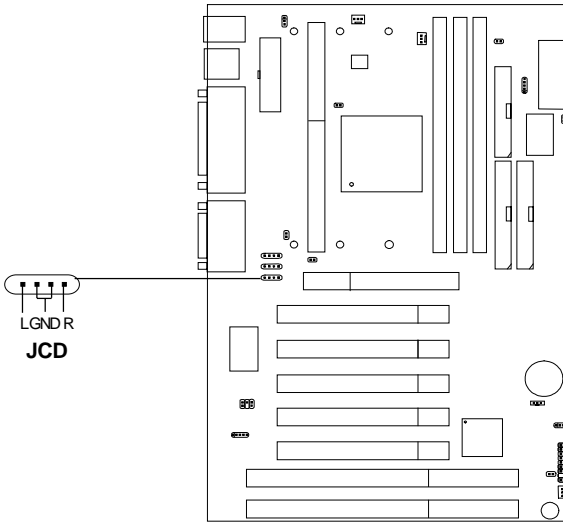
2.23 CPU Temperature Sensor: JSOR1

This is used to check the CPU temperature. The JSOR1 is a sensor that is placed near the processor heatsink. This will monitor the CPU temperature.

JSOR1
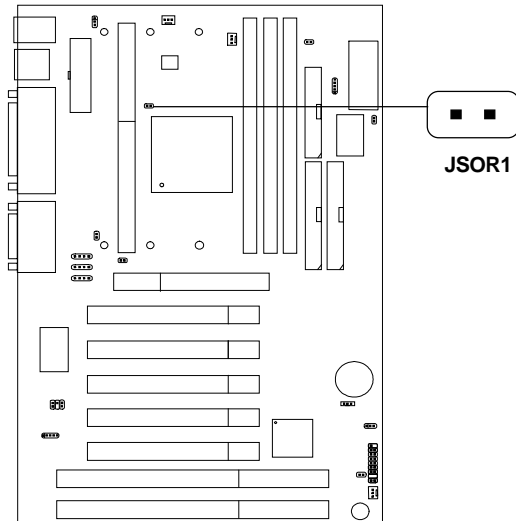
2.24 TOP TECH. II: JT3 (Optional)

This is used to check the AGP card or BX chipset temperature. The JT3 is a
2-pin connector which can be inserted with a 20cm length thermistor. It is
located near the chipset heatsink that monitors the chipset temperature. The
BIOS setup for "TOP TECH. II" should be set to enabled.

20CM length
Thermistor

JT3
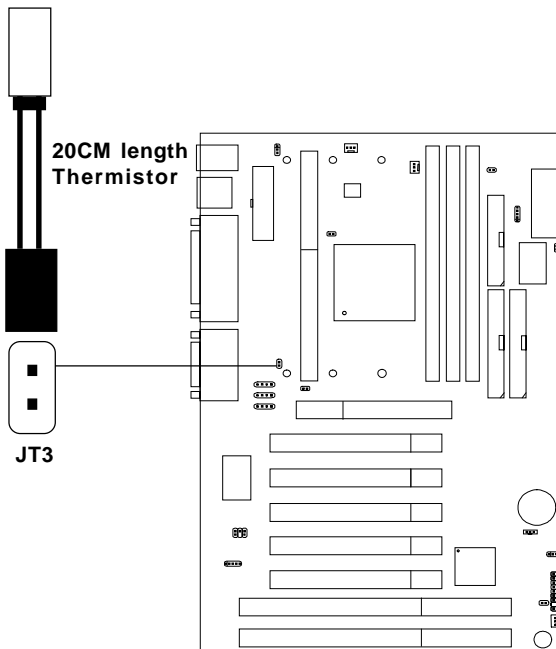
2.25 Chassis Intrusion Switch Case: JCASE

This connector is connected to 2-pin connector chassis switch. If the Chassis is open, the switch will be short. The system will record this status. To clear the warning, you must enter the BIOS settting and clear the status.

JCASE
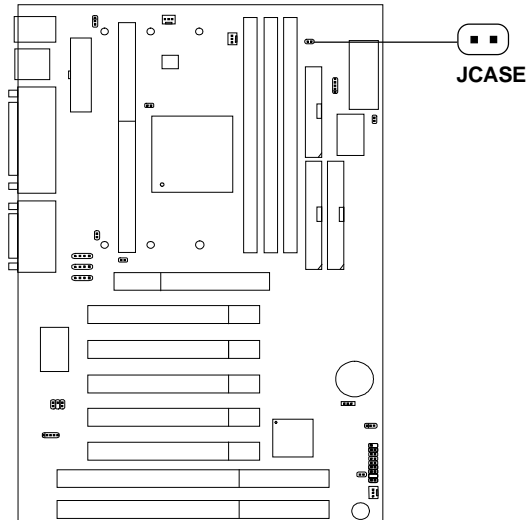
2.26 Keyboard Power: JKBV

The JKBV jumper is for setting keyboard power. This function should be set in the BIOS for the keyboard and PS/2 mouse Wake-up function.
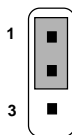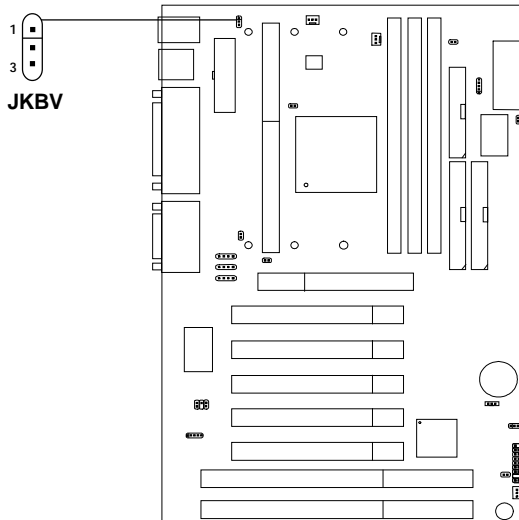
5V Standby
Enable keyboard
power on function
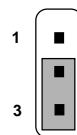
5V (default)
Disable keyboard
power on function

Note: To be able to use this function, you need a power supply that provide enough power for this feature.
(Power supply with 750 mA 5V Stand-by)

2.27 PCI and ISA Slots

There are 5 PCI slots and 2 ISA slots. All PCI slots can be used as master. But since the 1st and 5th PCI slots share the same bus master signal, only one of these slots can be used as a master at a time; which means that if a master card is installed in PCI slot 1, PCI Slot 5 can only accomodate a slave card, and vice versa.
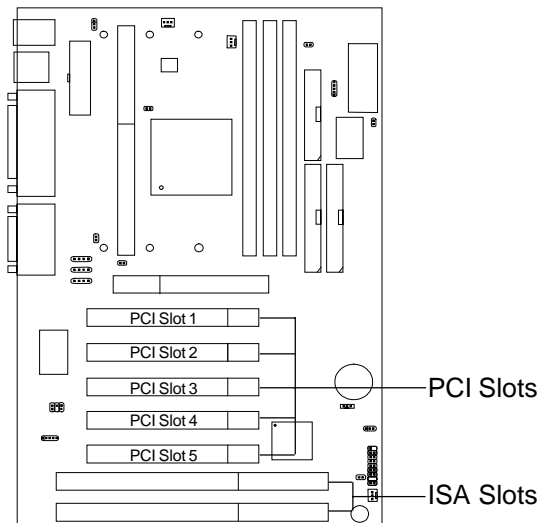
NOTE: 1. If on-board Creative sound is not installed, then all 5 PCI slots can use Bus Master cards.
2. If on-board Creative sound is installed, then PCI slots 2, 3 and 4 can still use Bus Master cards. However, only one of PCI slots 1 and 5 can use a Bus Master card at a time.

Chapter 3

AWARD® BIOS SETUP

Award® BIOS ROM has a built-in Setup program that allows users to modify
the basic system configuration. This type of information is stored in
battery-backed RAM (CMOS RAM), so that it retains the Setup information
when the power is turned off.

3.1 Entering Setup

Power on the computer and press <Del> immediately to allow you to enter Setup. The other way to enter Setup is to power on the computer. When the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC> OR <DEL> KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to,

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

3.2 Getting Help

Main Menu
The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu
Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <F1> or <Esc>.

3.3 The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from eleven setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

```
                  ROM  PCI/ISA  BIOS  (2A59IM4C)
                     CMOS  SETUP  UTILITY
                   AWARD  SOFTWARE,  INC.

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

Standard CMOS Setup

This setup page includes all the items in a standard compatible BIOS.

BIOS Features Setup

This setup page includes all the items of Award® special enhanced features.

Chipset Features Setup

This setup page includes all the items of chipset special features.

Power Management Setup

This category determines the power consumption for system after setting the specified items. Default value is Disable.

PNP/PCI Configuration Setup

This category specifies the IRQ level for PCI and ISA devices.

Load Setup Defaults

Chipset defaults indicates the values required by the system for the maximum performance.

CPU Plug & Play II

This function supports CPU Plug & Play II and Special Hardware Monitor.

Integrated Peripherals

Change, set or disable onboard I/O, IRQ, and DMA assignment.

Supervisor Password/User Password

Change, set or disable password. This function allows the user access to the system and setup or just setup.

IDE HDD Auto Detection

Automatically configure hard disk parameters.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

3.4 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 catego-ries. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

```
              ROM  PCI/ISA  BIOS  (2A59IM4A)
                    STANDARD  CMOS  SETUP
                    AWARD  SOFTWARE,  INC.
```

```
Date(mm:dd:yy): Fri, Feb 28,1997
Time(hh:mm:ss): 00:00:00

 HARD DISKS      TYPE SIZE CYLS HEADS PRECOMP LANDZONE  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,3.5in.   Base  Memory:           640K
Drive  B : None            Extended  Base  Memory:15360K
                           Other  Memory:          384K
Video     : EGA/VGA
Halt  On : All, but Keyboard  Total  Memory:      16384K


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

Date

The date format is <day><month> <date> <year>.

Day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year, depends on the year of the BIOS

Time

The time format is <hour> <minute> <second>.

PrimaryMaster/PrimarySlave
SecondaryMaster/Secondary Slave

These categories identify the types of 2 channels that have been installed in the computer. There are 45 pre-defined types and 4 user defin-able types for Enhanced IDE BIOS. Type 1 to Type 45 are pre-defined. Type User is user-definable.

Press PgUp/<+> or PgDn/<-> to select a numbered hard disk type or type the number and press <Enter>.   Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be
"Type 1".
If the controller of HDD interface is SCSI, the selection shall be
"None".
If the controller of HDD interface is CD-ROM, the selection shall be
"None".

CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE HDD	access mode

3.5 BIOS Features Setup

```
              ROM PCI/ISA BIOS (2A59IM4A)
                  BIOS FEATURES SETUP
                  AWARD SOFTWARE, INC.
```

```
┌─────────────────────────────────┬──────────────────────────────────┐
│ Anti-Virus Protection By : 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 : Disabled│ D4000-D7FFF  Shadow      :Disabled│
│ Boot From LAN First     : Disabled│ D8000-DBFFF  Shadow      :Disabled│
│ Boot  Sequence          : A,C,SCSI│ DC000-DFFFF  Shadow      :Disabled│
│ Swap Floppy Drive       : Disabled│                                  │
│ Boot Up Floppy Seek     : Enabled │                                  │
│ Floppy FIFO Control     : Disabled│                                  │
│ Boot up NumLock status  : On      │                                  │
│ Gate A20 Option         : Fast    │                                  │
│ Security Option         : Setup   │                                  │
│ PCI/VGA palette snoop   : Disabled│                                  │
│ OS select for DRAM>64MB : Non-OS2 │                                  │
│ Report No FDD For WIN 95 : Yes    │                                  │
│                                   ├──────────────────────────────────┤
│                                   │ Esc : Quit   ↑↓→←: Select item   │
│                                   │ F1 : Help       PU/PD/+/- : modify│
│                                   │ F5 : Old Value(Shift) F2 : Color │
│                                   │ F6 : Load BIOS Defaults          │
│                                   │ F7 : Load Setup Defaults         │
└─────────────────────────────────┴──────────────────────────────────┘
```

Anti-Virus Protection

During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear. For the meantime, you can run an anti-virus program to locate the problem.

Disable(default)	No warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Enable	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

CPU Internal Cache

The default value is Enabled.

Enabled (default)   Enable cache
Disabled   Disable cache

Note: The internal cache is built in the processor.

External Cache

Choose Enabled or Disabled. This option enables the level 2 cache memory.

CPU L2 Cache ECC Checking

Choose Enabled or Disabled. This option enables the level 2 cache memory ECC(error check correction). Using 66MHz CPU BUS Pentium® II processor, set to Enabled or Disabled. Using 100MHz CPU BUS Pentium® II processor, always set to Enabled. For Celeron™ processor w/o Cache, always set to Disabled.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled, BIOS will shorten or skip some check items during POST.

Enabled   Enable quick POST
Disabled (default)   Normal POST

Boot From LAN First

During Enabled, if there's a LAN card onboard, the priority from booting will be from the LAN.

Boot Sequence

This category determines which drive the computer searches first for the disk operating system (i.e., DOS). The settings 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,LS/ZIP,C only. Default value is A,C,SCSI.

Swap Floppy Drive

Switches the floppy disk drives between being designated as A and B. Default is Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Floppy FIFO Control

During Enabled, the FDD disk will perform better.

Boot Up NumLock Status

The default value is On.

On (default)	Keypad is numeric keys.
Off	Keypad is arrow keys.

Gate A20 Option

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast(default)	The A20 signal is controlled by port 92 or chipset specific method.

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup(default)	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

PCI VGA Palette Snooping

Choose Disabled or Enabled. Some graphic controllers which are not VGA compatible, take the output from a VGA controller and map it to their display as a way to provide the boot information and the VGA compatibility.

However, the color information coming from the VGA controller is drawn from the palette table inside the VGA controller to generate the proper colors, and the graphic controller needs to know what is in the palette of the VGA controller. To do this, the non-VGA graphic controller watches for the Write access to the VGA palette and registers the snoop data. In PCI based systems, where the VGA controller is on the PCI bus and a non-VGA graphic controller is on an ISA bus, the Write Access to the palette will not show up on the ISA bus if the PCI VGA controller responds to the Writes.

In this case, the PCI VGA controller should not respond to the Write. It should only snoop the data and permit the access to be forwarded to the ISA bus. The non-VGA ISA graphic controller can then snoop the data on the ISA bus. Unless you have the above situation, you should disable this option.

Disabled (default)	Disables the function
Enabled	Enables the function

OS Selection for DRAM > 64MB

Allows OS2® to be used with > 64 MB of DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2®.

Report No FDD For WIN 95

This function is only used when you are testing SCT for Windows® 95 Logo.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM for faster execution. Video shadow will increase the video performance.

Enabled (default)	Video shadow is enabled
Disabled	Video shadow is disabled

C8000-CBFFF/DC000-DFFFF Shadow

Determines whether the optimal ROM will be compiled to RAM for faster execution.

Enabled	Optional shadow is enabled
Disabled (default)	Optional shadow is disabled

3.6 Chipset Features Setup

The Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Choose the "CHIPSET FEATURES SETUP" from the Main Menu and the following screen will appear.

```
              ROM  PCI/ISA  BIOS(2A6LG009)
                 CHIPSET  FEATURES  SETUP
                  AWARD  SOFTWARE,  INC.
```

```
┌─────────────────────────────────────────────────────────────────────┐
│Bank 0/1 DRAM Timing    :SDRAM 10ns Auto Detect DIMM/PCI CLK  :Enabled │
│Bank 2/3 DRAM Timing    :SDRAM 10ns Spread Spectrum Modulated :Enabled │
│Bank 4/5 DRAM Timing    :SDRAM 10ns                                    │
│SDRAM Cycle Length      :3                                             │
│DRAM Data Integrity Mode :Non-ECC                                      │
│Memory Hole             :Disabled                                      │
│Read Around write       :Disabled                                      │
│Concurrent PCI/Host     :Disabled                                      │
│System BIOS Cacheable   :Disabled                                      │
│Video RAM Cacheable     :Disabled                                      │
│AGP Aperture Size       :128M                                          │
│AGP-2X Mode             :Disabled                                      │
│OnChip USB              :Enabled                                       │
│USB Keyboard Support    :Disabled                                      │
│                                                                       │
│                                    Esc : Quit   ↑↓→←: Select item     │
│                                    F1 : Help PU/PD/+/- : modify       │
│                                    F5 : Old Value(Shift) F2 : Color   │
│                                    F6 : Load BIOS Defaults            │
│                                    F7 : Load Setup Defaults           │
└─────────────────────────────────────────────────────────────────────┘
```

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

Bank 0/1, 2/3, 4/5 DRAM Timing

This item allows you to select the value in this field, depending on whether the board has EDO (extended data output) DRAMs or SDRAMs.

The Choice: EDO 50ns, EDO 60ns,Slow, Medium, Fast, Turbo.

The Choice: SDRM 10ns, SDRAM 8ns.

DRAM Data Integrity Mode

Select Non-ECC or ECC(error-correcting code), according to the type of installed DRAM.

The Choice: Non-ECC, ECC.

SDRAM Cycle Length

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

The Choice: 2, 3.

Memory Hole

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The Choice: 15M-16M, Disabled.

Read Around write

DRAM optimization feature: If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM

The Choice: Enabled, Disabled.

Concurrent PCI/Host

When disabled, CPU bus will be occupied during the entire PCI operation period.

The Choice: Enabled, Disabled

Video RAM Cacheable

Select Enabled allows caching of the video RAM , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

AGP Aperture Size (MB)

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

The choice: 4M, 8M, 16M, 32M, 65M, 128M, and 256M.

AGP-2x Mode

This item allows you to enable / disable the AGP-2X (Clock 133MHz) Mode.

The choice: Enabled, Disabled.

OnChip USB

This should be enabled if your system has a USB installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

The choice: Enabled, Disabled.

USB Keyboard Support

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

The choice: Enabled, Disabled.

Auto Detect DIMM/PCI Clk

This item allows you to select the DIMM/PCI clock. The other sockets will not generate when DIMM/PCI cards are not installed. The setting should be set to enabled which works better for EMI.

Spread Spectrum Modulated

This item allows you to select the clock generator Spread Spectrum function. The default is enabled. This item should always be set to Disabled, if you over-clock the processor.

3.7 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

```
                    ROM  PCI/ISA  BIOS  (2A6LG009)
                       POWER  MANAGEMENT  SETUP
                        AWARD  SOFTWARE,  INC.

┌─────────────────────────────────────┬──────────────────────────────────────┐
│ Power Management  :User Define       │ CPU Fan In Suspend     :Enabled       │
│ PM Control by APM :Yes               │ IRQ3   (COM 2)         :Primary       │
│ Video Off After   :NA                │ IRQ4   (COM 1)         :Primary       │
│ Video Off Method  :V/H SYNC+Blank    │ IRQ5   (LPT 2)         :Primary       │
│ MODEM Use IRQ     :NA                │ IRQ6   (Floppy Disk)   :Primary       │
│ Reserve IRQ 9     :NA                │ IRQ7   (LPT 1)         :Primary       │
│ Soft-Off by PWRBTN :Delay 4 Sec      │ IRQ8   (RTC Alarm)     :Disabled      │
│       ** PM Timers **                │ IRQ9   (IRQ2 Redir)    :Secondary     │
│ HDD Power Down    :Disable           │ IRQ10  (Reserved)      :Secondary     │
│ Doze Mode         :Disable           │ IRQ11  (Reserved)      :Secondary     │
│ Suspend Mode      :Disable           │ IRQ12  (PS/2 Mouse)    :Primary       │
│       ** PM Events **                │ IRQ13  (Coprocessor)   :Primary       │
│ VGA               :Off               │ IRQ14  (Hard Disk)     :Primary       │
│ LPT & COM         :LPT/COM           │ IRQ15  (Reserved)      :Disabled      │
│ HDD & FDD         :ON                │                                       │
│ Wake Up On LAN    :Disabled          │                                       │
│ DMA/master        :OFF               │                                       │
│ Modem Ring Resume :Disabled          │ Esc : Quit    ↑↓→←: Select item       │
│ RTC Alarm Resume  :Disabled          │ F1 : Help      PU/PD/+/- : modify     │
│ Date (of Month)   :0                 │ F5 : Old Value(Shift) F2 : Color      │
│ Timer (hh:mm:ss)  :0: 0: 0           │ F6 : Load BIOS Defaults               │
│                                      │ F7 : Load Setup Defaults              │
└─────────────────────────────────────┴──────────────────────────────────────┘
```

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

PM Control by APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.

If the Max. Power Saving is not enabled, this will be preset to No.

Video Off After

The settings are N/A, Standby, Doze, or Suspend. This option is for choosing the setting in which the monitor will turn off.

N/A	Always turn on.
Doze	During Doze mode, the monitor will be turned off.
Standby	During Standby mode, the monitor will be turned off.
Suspend	During Suspend mode, the monitor will be turned off.

The default setting is Standby.

Video Off Method

This determines the manner in which the monitor blanked.

V/H SYNC=Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.
The choices: 3, 4, 5, 7, 9, 10, 11, NA.

Soft-Off by PWR-BTTN

The settings are Delay 4 sec or Instant-off. During Delay 4 sec, if you push the switch once, the system goes into suspend mode. If you push it more than 4 seconds, the system will be turned off. During instant-off, the system will turn off once you push the switch.

PM Timers

The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Doze Mode

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

PM Events

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *On*, even when the system is in a power down mode.

VGA

When Enabled, you can set the VGA to awaken the system.

LPT & COM

When you choose either LPT or COM, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

HDD & FDD

When you choose either HDD or FDD, any activity from one of the listed system peripheral devices wakes up the system.

Wake Up On LAN

To use this function, you need a LAN add-on card which support power on functions. It should also support the wake-up on LAN jumper (JWOL1).

Enabled   Wake up on LAN is supported.
Disabled   Wake up on LAN is not supported.

Modem Ring Resume

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

RTC Alarm Resume

When *Enabled,* your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

CPU Fan In Suspend

During Enabled, if the system goes into suspend mode, the CPU fan will stop. During Disabled, if the system goes into suspend mode, the CPU fan will resume.

The following is a list of IRQ's Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the services.

- **IRQ3 (COM 2)**
- **IRQ4 (COM 1)**
- **IRQ5 (LPT 2)**
- **IRQ6 (Floppy Disk)**
- **IRQ7 (LPT 1)**
- **IRQ8 (RTC Alarm)**
- **IRQ9 (IRQ2 Redir)**
- **IRQ10 (Reserved)**
- **IRQ11 (Reserved)**
- **IRQ12 (PS / 2 Mouse)**
- **IRQ13 (Coprocessor)**
- **IRQ14 (Hard Disk)**
- **IRQ15 (Reserved)**

3.8 PNP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
            ROM  PCI/ISA  BIOS  (2A6LG009)
            PNP/PCI  CONFIGURATION  SETUP
                 AWARD  SOFTWARE,  INC.

┌─────────────────────────────────────┬────────────────────────────────────┐
│ PnP OS Installed       :No          │ CPU to PCI Write Buffer: Enabled   │
│ Resources Controlled By :Manual     │ PCI Dynamic Bursting   : Enabled   │
│ Reset Configuration Data :Disabled  │ PCI Master 0 WS Write  : Enabled   │
│                                     │ PCI Delay Transaction  : Enabled   │
│ IRQ-3 assigned to      :PCI/ISA PnP │ PCI#2 Access #1 Retry  : Disabled  │
│ IRQ-4 assigned to      :PCI/ISA PnP │ AGP Master 1 WS Write  : Enabled   │
│ IRQ-5 assigned to      :PCI/ISA PnP │ AGP Master 1 WS Read   : Disabled  │
│ IRQ-7 assigned to      :PCI/ISA PnP │                                    │
│ IRQ-9 assigned to      :Legacy ISA  │ PCI IRQ Actived By     : Edge      │
│ IRQ-10assigned to      :PCI/ISA PnP │ Assign IRQ For USB     : Enabled   │
│ IRQ-11assigned to      :PCI/ISA PnP │ Assign IRQ For VGA     : Enabled   │
│ IRQ-12assigned to      :PCI/ISA PnP │                                    │
│ IRQ-14assigned to      :PCI/ISA PnP │                                    │
│ IRQ-15assigned to      :PCI/ISA PnP │                                    │
│ DMA-0assigned to       :PCI/ISA PnP │                                    │
│ DMA-1assigned to       :PCI/ISA PnP ├────────────────────────────────────┤
│ DMA-3assigned to       :PCI/ISA PnP │ Esc : Quit    ↑↓→←: Select item   │
│ DMA-5assigned to       :PCI/ISA PnP │ F1 : Help      PU/PD/+/- : modify  │
│ DMA-6assigned to       :PCI/ISA PnP │ F5 : Old Value(Shift) F2 : Color   │
│ DMA-7assigned to       :PCI/ISA PnP │ F6 : Load BIOS Defaults            │
│                                     │ F7 : Load Setup Defaults           │
└─────────────────────────────────────┴────────────────────────────────────┘
```

PnP OS Installed
This item allows you to determine install PnP OS or not.
The choice: Yes, No.

Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95.

The choice: Auto, Manual.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

The choice: Enabled, Disabled .

IRQ3/4/5/9/10/11/12/13/15

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt.

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The choice: Legacy ISA, PCI/ISA PnP.

DMA0/1/3/5/6/7 assigned to

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The choice: Legacy ISA, PCI/ISA PnP.

CPU to PCI Write Buffer

When this field is *Enabled,* writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When *Disabled*, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle..

The choice: Enabled, Disabled.

PCI Dynamic Bursting

When *Enabled,* every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus and nonburstable transactions don't.

The choice: Enabled, Disabled

PCI Master 0 WS Write

When *Enabled,* writes to the PCI bus are executed with zero wait states.

The choice: Enabled, Disabled

PCI Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1.

The choice: Enabled, Disabled

PCI #2 Access #1 Retry

When PCI#2 (AGP bus) access to PCI#1 (PCI bus) has an error occurred, this operation will set to retry.

The choice: Enabled, Disabled

AGP Master 1 WS Write

When Enabled, writes to the AGP(Accelerated Graphics Port) are executed with one wait states.

The choice: Enabled, Disabled

AGP Master 1 WS Read

When *Enabled,* read to the AGP (Accelerated Graphics Port) are executed with one wait states.

The choice: Enabled, Disabled

PCI IRQ Actived By

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.

The choice: Level, Edge.

Assign IRQ For USB/VGA

Enable/Disable to assign IRQ for USB/VGA.

The choice: Enabled, Disabled

Assign IRQ For ACPI

Assign a IRQ for ACPI.

The choice: IRQ9, IRQ10, IRQ11.

3.9 Load BIOS/Setup Defaults

This Main Menu item loads the default system values. If the CMOS is corrupted, the defaults are loaded automatically. Choose this item and the following message appears:

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

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

Note: The Setup defaults can be customized to increase performance. However the BIOS defaults can always be used as a back up if there is some problem with the mainboard operation.

3.10 CPU Plug & Play II

This Special Features Setup is used by System Hardware Monitor chipset. You can manually change the value of each option.

```
            ROM PCI/ISA BIOS (2A69HM4C)
               INTEGRATED PERIPHERALS
                AWARD SOFTWARE, INC.

┌──────────────────────────────┬──────────────────────────────┐
│ *******CPU PLUG & PLAY II******** │                              │
│ Adjust CPU Voltage :2.00V    │                              │
│ CPU Speed        :350MHz (100x3.5) │                        │
│ CPU Ratio        : x3        │                              │
│ CPU Frequency    : 68/34MHz  │                              │
│                              │                              │
│                              │                              │
│                              │                              │
│                              │                              │
│                              │                              │
│                              ├──────────────────────────────│
│                              │ Esc : Quit   ↑↓→←: Select item │
│                              │ F1 : Help PU/PD/+/- : modify  │
│                              │ F5 : Old Value(Shift) F2 : Color │
│                              │ F6 : Load BIOS Defaults       │
│                              │ F7 : Load Setup Defaults      │
│                              │                              │
└──────────────────────────────┴──────────────────────────────┘
```

Adjust CPU Voltage

This function is used to adjust the CPU voltage. During overclocking, the processor might get unstable. Try adjusting the CPU voltage to lessen the heat generated by the CPU voltage.

NOTE: We do not guarantee that Motherboard or other components will work properly after overclocking.

CPU Speed

This item is for Jumperless BIOS.

Check your processor and set this function accordingly. If you set this to Manual, you can set the CPU Ratio and CPU Frequency accordingly. CPU Frequencies are: 66, 68, 75, 83 and 100, 103, 112, 117, 124, 129, 133, 138, 143, 148, 153. **Though 68, 75, 83, 103, 112, 117, 124, 129, 133, 138, 143, 148 and 153 frequencies are available, it is advised that you use these only for testing since this is not stable as the CPU is not designed for these frequencies.** CPU ratio are: 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, or 8.

Note: If you set the CPU Ratio and CPU Frequency to be too high, and the system will not turn on, then restart the system. Press "F10" until bootup. This will set the default setting.

CPU Host/PCI Clock

This item occurs when SWI is installed. CPU Frequencies are available at: 66Mhz, 68Mhz, 75Mhz, 83Mhz and 100Mhz, 103MHz, 112Mhz, 117MHz, 124MHz, 129MHz, 133MHz, 138MHz, 143MHz, 148MHz, 153MHz. The default setting is either 100MHz or 66Mhz depending on your CPU.

3.11 Integrated Peripherals

```
               ROM PCI/ISA BIOS (2A6LG009)
                  INTEGRATED PERIPHERALS
                  AWARD SOFTWARE, INC.
┌──────────────────────────────────┬──────────────────────────────────┐
│ On-Chip IDE Channel10   :Enabled │ Onboard Serial Port 1   :Disabled│
│ On-Chip IDE Channel11   :Enabled │ Onboard Serial Port 2   :        │
│ IDE Prefetch Mode       :Enabled │ UART Mode Select        :        │
│ IDE HDD Block Mode      :Enabled │ RxD , TxD Active        :Hi,Hi   │
│ CDROM Set PIO Mode      :Enabled │ IR Transmittion Delay   :Disabled│
│ Primary Master PIO      :Auto    │ Onboard Parallel Mode   :        │
│ Primary Slave PIO       :Auto    │ Parallel Port Mode      :        │
│ Secondary Master PIO    :Auto    │ ECP Mode Use DMA        :1       │
│ Secondary Slave PIO     :Auto    │ EPP Mode Select         :EPP1.9  │
│ Primary Master UDMA     :Auto    │                                  │
│ Primary Slave UDMA      :Auto    │                                  │
│ Secondary Master UDMA   :Auto    │ PWRON After PWR-Fail    :Off     │
│ Secondary Slave UDMA    :Auto    │ Power Status Led        :Blinking│
│ Init Dislay First       :PCI slot│                                  │
│                                  ├──────────────────────────────────┤
│                                  │ Esc : Quit    ↑↓→←: Select item  │
│ Power ON Function   :Button Only │ F1 : Help      PU/PD/+/- : modify│
│                                  │ F5 : Old Value(Shift) F2 : Color │
│                                  │ F6 : Load BIOS Defaults          │
│ Onboard FDC controller  :Enabled │ F7 : Load Setup Defaults         │
└──────────────────────────────────┴──────────────────────────────────┘
```

OnChip IDE Channel 0

　　The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface

　　The choice: Enabled, Disabled.

OnChip IDE Channel 1

　　The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the secondary IDE interface. Select Disabled to deactivate this interface

　　The choice: Enabled, Disabled.

IDE Prefetch Mode

The onboard IDE drive interfaces supports IDE prefetching, for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to Disabled if the interface does not support prefetching.

The choice: Enabled, Disabled.

IDE HDD Block Mode

Enabled allows the Block mode access for the IDE HDD.

The choice: Enabled, Disabled.

CDROM Set PIO Mode

Enabled allows the CDROM operation mode to set the PIO mode.

The choice: Enabled, Disabled.

Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Primary/Secondary Master/Slave UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

The choice: Auto, Mode 0, Mode 1, Mode 2.

Init Display First

This item allows you to decide to activate PCI Slot or AGP first.

The choice: PCI Slot, AGP.

Power ON Function

This function allows you to select Button only, Keyboard 98 Password, Mouse Left or Mouse Right and Hot Key (Ctrl F1 to Ctrl F12) to Power ON the system.

Note: If you choose Mouse Left or Mouse Right, you must exit & save from the BIOS. Let the system boot up until it goes to the BIOS table configuration, before this function will work. During Power OFF, double click the left or right mouse button to Power ON the system.

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an external FDC or the system has no floppy drive, select Disabled in this field.
The choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.
The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

This item allows you to determine which Infra Red (IR) function of onboard I/O chip.
The choice: IrDA 1.0, Standard, ASKIR, HPSIR.

RxD , TxD Active

This item allows you to determine the active of RxD, TxD.
The choice: "Hi, Hi", "Lo, Lo", "Lo, Hi", "Hi, Lo".

IR Transmition delay

This item allows you to enable/disable IR transmission delay.
The choice: Enabled, Disabled.

Onboard Parallel Port

This item allows you to determine the I/O address of the onboard parallel port controller.

The choice: 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field.

The choice: EPP1.9, ECP, SPP, ECPEPP1.7, EPP1.7.

ECP Mode Use DMA

Select a DMA channel for the parallel port for use during ECP mode.

The choice: 3, 1.

EPP Mode Select

Select EPP port type 1.7 or 1.9.

The choice: EPP1.7, 1.9.

PWRON After PWR-Fail

During ON, after every AC power loss, the system will be turned on. During Former Status, after every AC power loss, whatever the system status, it will be the same when the AC power returns. During OFF, after every AC power loss, the system will be shutdown.

The choice: ON, OFF, Former-Sts

Power Status Led

During Blink, the power LED will blink when the system enters the suspend mode. When the mode is in Dual Color, the power LED will change its color during suspend mode. Choose the Single Color and the power LED will always remain lit.

The choice: Blink, Dual Color, Single Color.

3.12 Supervisor/User Password Setting

This Main Menu item lets you configure the system so that a password is required each time the system boots or an attempt is made to enter the Setup program. Supervisor Password allows you to change all CMOS settings but the User Password setting doesn't have this function. The way to set up the passwords for both Supervisor and User are as follow:

1. Choose "Change Password" in the Main Menu and press <Enter>. The following message appears:

"Enter Password:"

2. The first time you run this option, enter your password up to 8 characters only and press <Enter>. The screen will not display the entered characters. For no password, just press <Enter>.

3. After you enter the password, the following message appears prompting you to confirm the password:

"Confirm Password:"

4. Enter exactly the same password you just typed in to confirm the password and press <Enter>.

5. Move the cursor to Save & Exit Setup to save the password.

6. If you need to delete the password you entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you had before.

7. Move the cursor to Save & Exit Setup to save the option you did. Otherwise, the old password will still be there when you turn on your machine next time.

3.13 IDE HDD Auto Detection

You can use this utility to automatically detect the characteristics of most hard drives.

When you enter this utility, the screen asks you to select a specific hard disk for Primary Master. If you accept a hard disk detected by the BIOS, you can enter "Y" to confirm and then press <Enter> to check next hard disk. This function allows you to check four hard disks and you may press the <Esc> after the <Enter> to skip this function and go back to the Main Menu.

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

HARD DISKS	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	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

Select Primary Master   Option (N=Skip) : N

OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
2	2112	1023	64	0	4094	63	LBA
1	2113	4095	16	65535	4094	63	NORMAL
3	2113	2047	32	65535	4094	63	LARGE

[ESC: Skip]

Chapter 4

CREATIVE® AUDIO DRIVER (Optional)

1. Overview

The Creative® ES1373 digital controller provides the next generation of audio performance to the PC market.

1.1 Features

- SoundScape WaveTable Synthesizer.
- Full DOS Game Compatibility.
- PCI Bus Master for fast DMA.
- Fully Compliant with PC97 Power Management Specification.

1.2 System Requirements

This section describes system requirements for the Audio Driver installation and Usage.

Computer	Intel® Pentium® II/Celeron™ processor or higher
Operating system	DOS 5.0 or higher, Windows® 95/98, Windows® NT 3.51 or 4.0, or OS/2®
CD-ROM	Double Speed or Higher
Chipset	Creative® ES1373

2. Audio Driver Setup & Usage Procedures

Insert the CD-title into your CD-ROM drive. This CD will auto-run. This will display installation for VGA driver and sound driver. Also included are Intel® PIIX4 patch for Windows® 95/98, Trend PC-cillin 98, and Bus Master driver. Just click the button for automatic installation for audio driver.

2.1 Windows® 95/98

If you start Windows® 95/98, this will automatically detect this hardware onboard "PCI Multimedia Audio Device" and "Gameport Joystick". You need to click "Next", then "Finish". Do not click on the "Cancel". The driver need these ID.

2.1-1 Audio Driver Installation Procedure:
Step 1: Insert the provided CD_ROM disk into the CD-ROM drive.
Step 2: Look for the CD_ROM drive, double click on the CD_ROM icon. This will show the setup screen.
Step 3: Click on "Creative AudioPCI" sound drivers icon.
Step 4: This will copy the audio drivers into the hard drive.
Step 5: A message will appear stating you must restart the Windows® 95/98 system, select **yes** to restart.

2.2 Windows® NT 4.0

2.2-1 Audio Driver Installation Procedure:
Step 1: Click **Start** menu and select **Control Panel** from **Settings**
            group.
Step 2: Select **Multimedia** icon.
Step 3: Click on the **Devices** tab.
Step 4: Click **Add**.
Step 5: Double click on **Unlisted or Updated Driver** in the list.
Step 6: Insert the **CD-ROM Disk** into the CD-ROM Drive.
Step 7: When the Install from Disk dialog box appears, look for your
            CD-ROM drive :**\Sound\ Creative\AudioPCI\Drivers
            \NT40\English\I386\CD**
Step 8: Click **OK**.
Step 9: Click **OK**.
Step 10: A message will appear stating that the drivers were
            succesfully installed. Click OK. You must now restart
            Windows® NT 4.0.

2.3 Detailed User's Manual

The detailed user's manual can be found on following path of the
CD-ROM provided:

PATH: Sound\Creative\AudioPCI\Docs\Manual.doc