Version 1.0X

Manual Rev: 1.0X
Release Date: April, 1997

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

Edition

April 1997

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Chapter 1: Introduction

Chapter 1

Introduction

The PCI Pentium™ II NA5 PCI/ISA system board is a high-performance personal computer system board based on the Pentium™ II microprocessor. The Pentium™ II CPU supports MMX™(Multimedia Extension) feature.

The system board utilizes the Intel® 83440FX PCI Chipset which has high integration and provides all system control functions. In addition there is an on-chipset USB and IDE controller which supports IDE PIO/Bus master operation mode for IDE HDD/CD-ROM. The PIO mode supports Mode 0,1,2,3 and 4, with a transfer rate up to 22 MB per/sec. It also support the Modem Ring wake-up functions.

CHAPTER 1 INTRODUCTION

1.1 System Board Features

CPU

- Slot 1 for Pentium™ II Processor .
- Intel® Provides 233MHz and 266MHz processors.
- Core/Bus ratios are x2, x2.5, x3, x3.5, x4, x4.5, x5, x5.5, x6, x6.5, x7, x7.5, x8.

Cache Memory

- Internal Level 1 Cache: 16KB instruction code and 16KB data cache.
- Internal Level 2 Cache: 256KB/512KB(depending on CPU)

VRM

- VRM(Voltage Regulator Module) is on board. It provides power for the processor. The adjustment mechanism is controlled by the five weighted input(VID0-VID4) from the processor.

Chip Set

- Intel® 82440FX PCI Chipset.

Clock Generator

- 60MHZ/66.6MHz clocks are supported. Both meet Pentium™ microprocessor and NATOMA(82440FX) Chipset specifications.

Main Memory

- Supports eight memory banks using four 168-pin DIMM sockets.
- Up to 1 Gbytes main memory.
- Supports symmetric or asymmetric memory with ECC(Error Check Correct) function
- Supports Fast Page (FP) Mode, Extended Data Output (EDO) Mode and Burst Extended Data Output (BEDO) Mode DRAM.

Slots

- Four 32-bit Master PCI Bus slots and Four 16-bit ISA bus slots. One shared slot that can be used as ISA or PCI.

On-Board Peripherals

- On-Board Peripherals include:
  - 1 floppy port supports 2FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
  - 2 serial ports (COMA + COMB)
  - 1 parallel port supports ECP or EPP mode
  - 1 IrDA connector or Fast IrDA(reserved).

On-Board IDE

- An IDE controller on the Intel® 82440FX PCI Chipset provides IDE HDD/ CD-ROM with PIO and Bus Master Operation Mode. The PIO Mode supports modes 0, 1, 2, 3 and 4 with a transfer rate of 22 Mbytes per second.

On-Board USB (Reserved)

- Supports dual port USB(Universal Serial Bus).

BIOS

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

RTC

- Non-Volatile RTC with 114 Kbytes of CMOS RAM.

Keyboard Connector

- PS/2 keyboard interface and PS/2 mouse interface (Reserved).

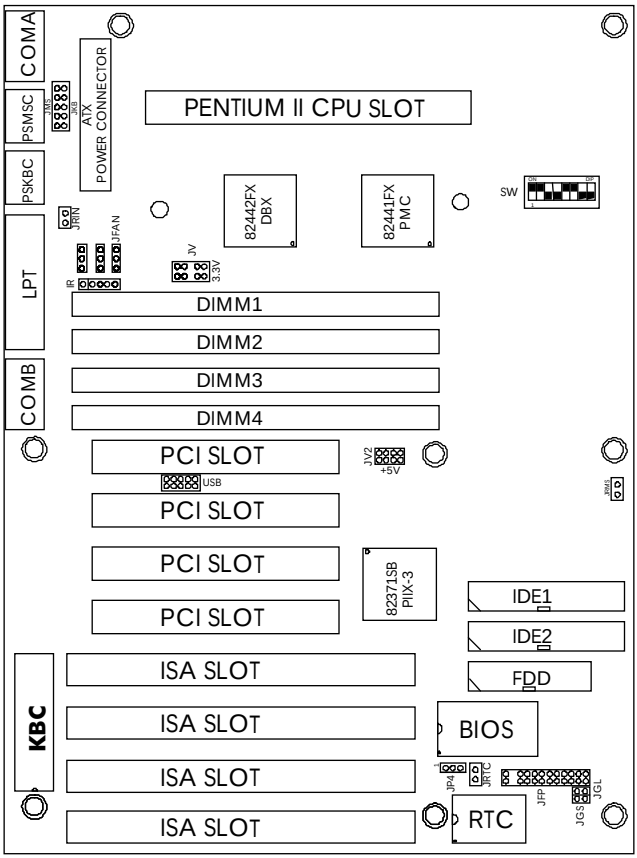
Dimension

- ATX Form Factor: 30.5cm(L) x 24.5cm(W) x 4 layer PCB.

Mounting

- 8 mounting holes.

1.3 System Board Layout



MS-6109

Chapter 2

Hardware Installation

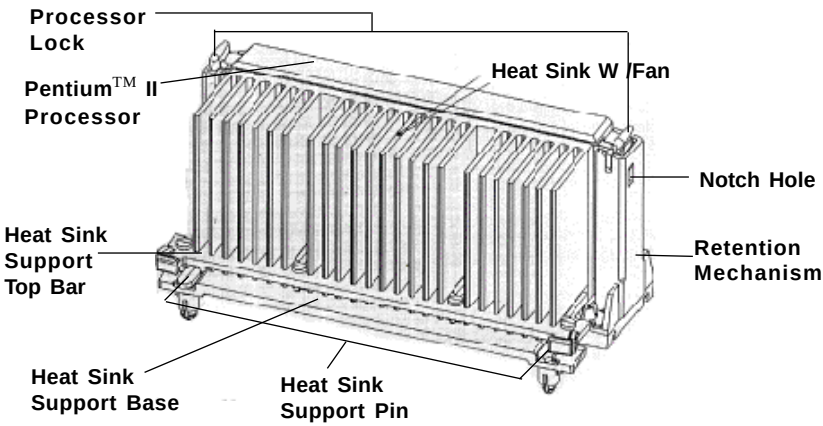
2.1 Central Processing Unit: CPU

The mainboard operates with **Intel® Pentium™ II Processor** with MMX™ Technology**.** The mainboard provides a CPU Slot called Slot 1 for easy CPU installation, a DIP switch (SW) to set the proper speed for the CPU. The CPU should always have a Heat Sink and a cooling fan attached to prevent overheating.

2.1-1 CPU Installation Procedure

There are two kinds of Pentium™ II Processor that is currently used. The OEM Pentium™ II Processor and the Boxed Pentium™ II Processor. OEM Pentium™ II Processor has no Heat Sink, Fan and Heat Sink Support, while the Boxed Pentium™ II Processor is provided with Heat Sink w/ fan and Heat Sink Support.

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.

***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.

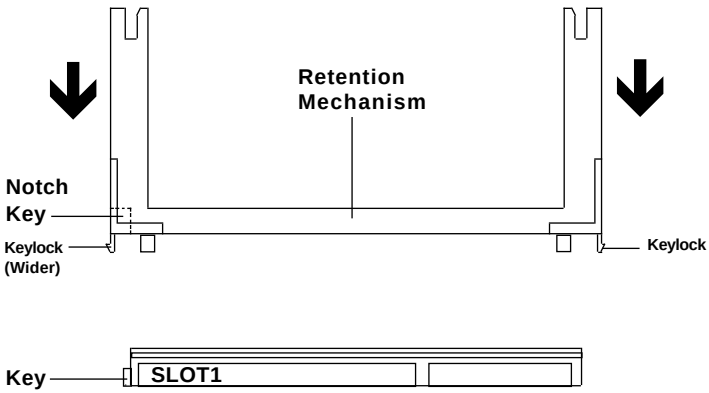
****Heat Sink w/ fan** - Heat Sink that can be attach to the **Pentium™ II Processor** with metal clip.

Note: * Provided by MSI mainboard.
** Provided by Special request.

Step 1: Place the bubble bag that came with your mainboard or use any soft material like Styrofoam underneath the mainboard. Find a flat surface to do the installation.

Step 2: Install the Retention Mechanism.

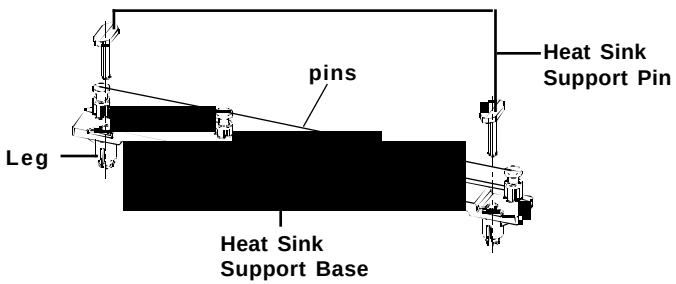
Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for the proper direction. Then, insert the Two Keylock of the Retention Mechanism into the two holes on the sides of Slot 1. Take note that one hole is wider than the other. The Retention Mechanism will only fit in one direction.



Push the Retention Mechanism onto the mainboard, until you hear a "click" sound. Check for a perfect fit.

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.



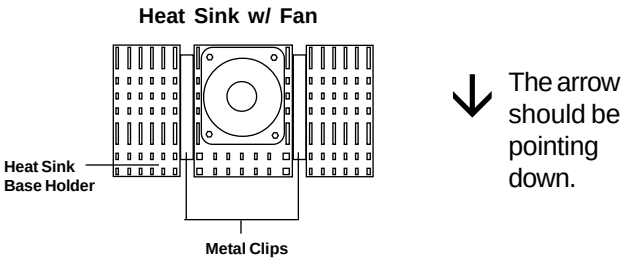
Push the Heat Sink Support Base onto the mainboard, until you hear a click sound. Check for a perfect fit.

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.

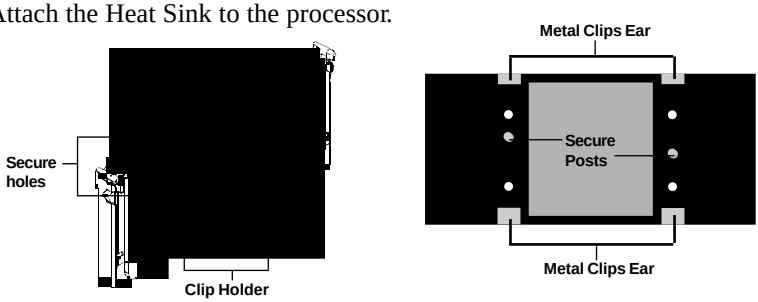
Step 5: Install the Heat Sink with Fan to the Processor.

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.



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.



- 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.

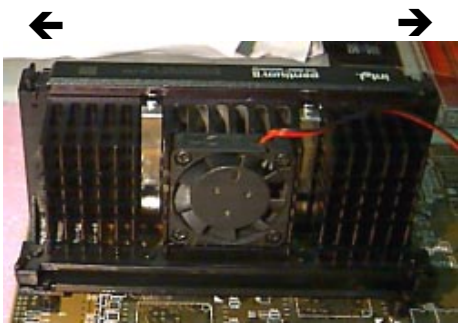
Step 6: Install the Processor.

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 pushing out the Processor Locks.



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.

The installation is now complete.

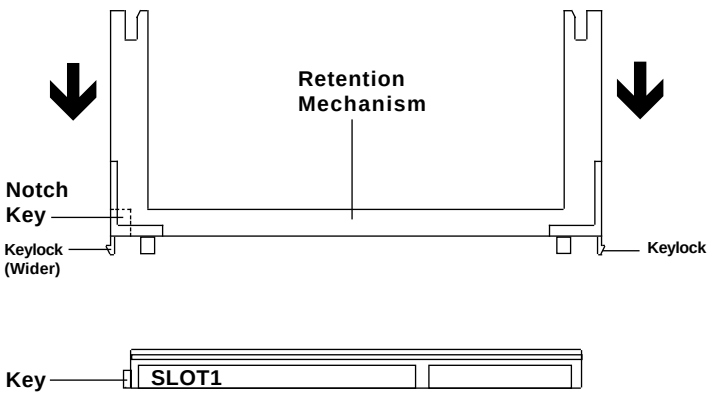
B. Boxed Pentium™ II Processor Installation Procedures

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: Place the bubble bag that came with your mainboard or use any soft material like Styrofoam underneath the mainboard. Find a flat surface to do the installation.

Step 2: Install the Retention Mechanism.

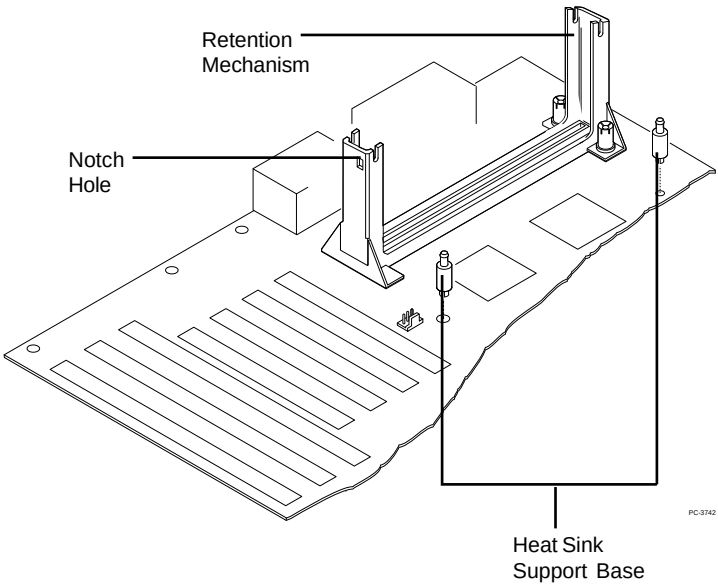
Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for the proper direction. Then, insert the Two Keylock of the Retention Mechanism into the two holes on the sides of Slot 1. Take note that one hole is wider than the other. The Retention Mechanism will only fit in one direction.



Push the Retention Mechanism onto the mainboard, until you hear a "click" sound. Check for a perfect fit.

Step 3: Install the Heat Sink Support Base.

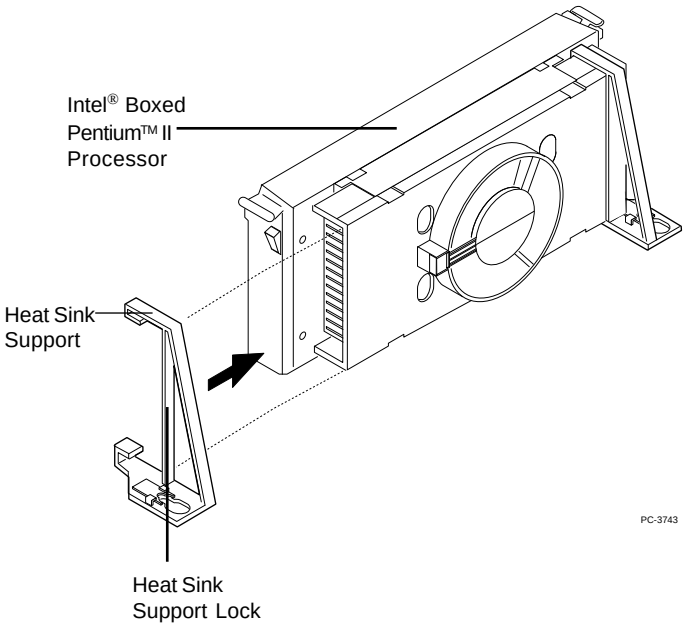
Look for the 2 holes across Slot 1, and match it with the 2 Heat Sink Support Base. Take note that one hole/base is bigger than the other.



Push the Heat Sink Support Base onto the mainboard, until you hear a click sound. Check for a perfect fit.

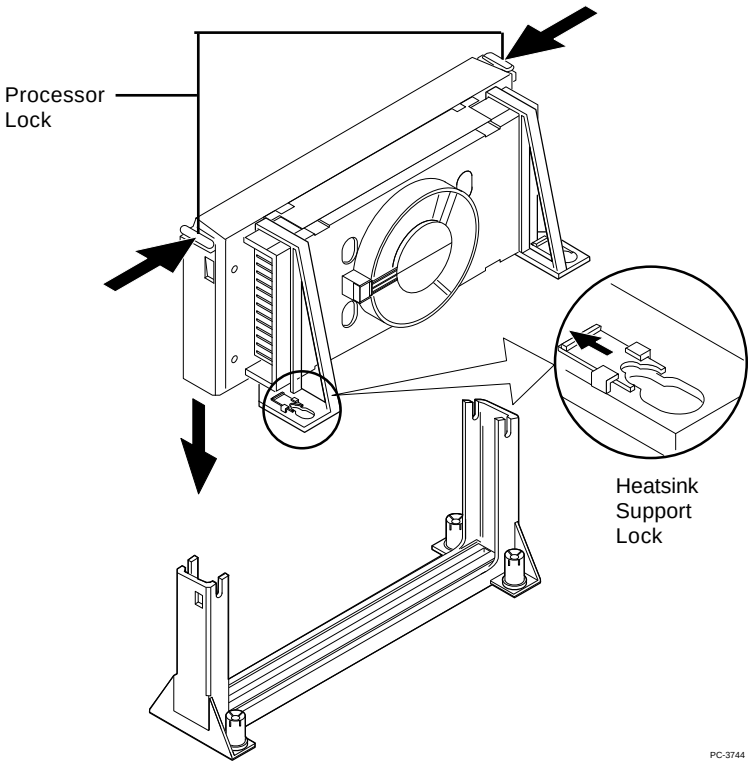
Step 4: Install the Heat Sink Support.

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.

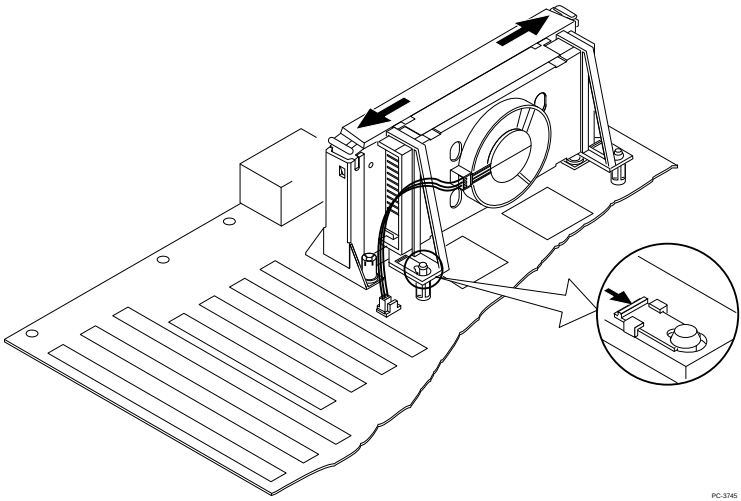


Step 5: Unlock the Processor Locks and Heat Sink Support Locks.

Push in the Processor Locks. Open the Heat Sink Support Locks.



Step 6: Insert the Processor like inserting a PCI or an ISA card.



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.

2.1-2 CPU Core Speed Derivation Procedure

1. The 2 CPU clock frequencies that the system supports are 60 MHz, 66MHz (To adjust SW1 pin 1, 2, 3 and 4). See the following chart to set the different Host Clock Frequencies.

SW1				CPU
1	2	3	4	CLOCK
OFF	OFF	ON	ON	60MHz
ON	ON	OFF	OFF	66MHz

2. The DIP Switch SW1 (5, 6, 7 and 8) is used to set the Core/Bus (Fraction) ratio of the CPU. The actual core speed of the CPU is the Host Clock Frequency multiplied by the Core/Bus ratio. For example:

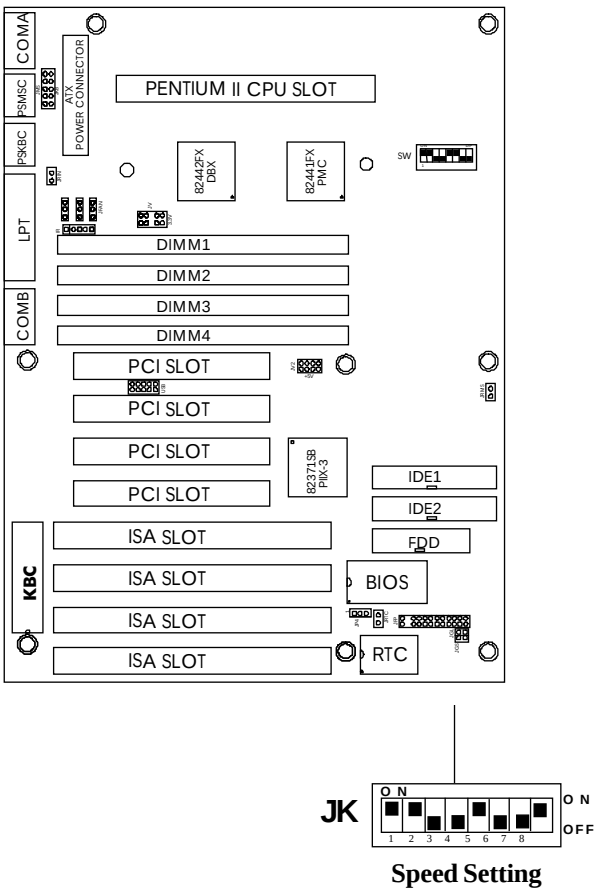
If CPU Clock = 66MHz
Core/Bus ratio = 7/2
then CPU core speed = Host Clock x Core/Bus ratio
= 66.6MHz x 7/2
= 233MHz

SW1				CPU
5	6	7	8	CORE/BUS RATIO
ON	ON	ON	OFF	4/1
ON	ON	OFF	OFF	5/1
ON	OFF	OFF	ON	7/2
ON	OFF	ON	OFF	9/2
ON	OFF	OFF	OFF	11/2
OFF	ON	ON	ON	6/1
OFF	ON	OFF	ON	7/1
OFF	ON	ON	OFF	8/1
OFF	OFF	ON	ON	13/2
OFF	OFF	OFF	ON	15/2

3. The PCI Bus Clock is the CPU Clock Frequency divided by 2.

2.1-3 CPU Speed Setting: JK

To adjust the speed of the CPU, you must know the specification of your CPU (*always ask the vendor for CPU specification*) then look at **Table 2.1 (Intel® 233 ~ 266MHz Pentium™ II Processor Card)** for proper setting.



Speed Setting

Table 2.1 Intel® 233 ~ 266MHz Pentium™ II Processor Card

Intel® Pentium™ II Processor is currently available in two speed setting: 233MHz and 266MHz . For future reference, refer to the CPU core speed derivation procedure on **Section 2.1-2**.

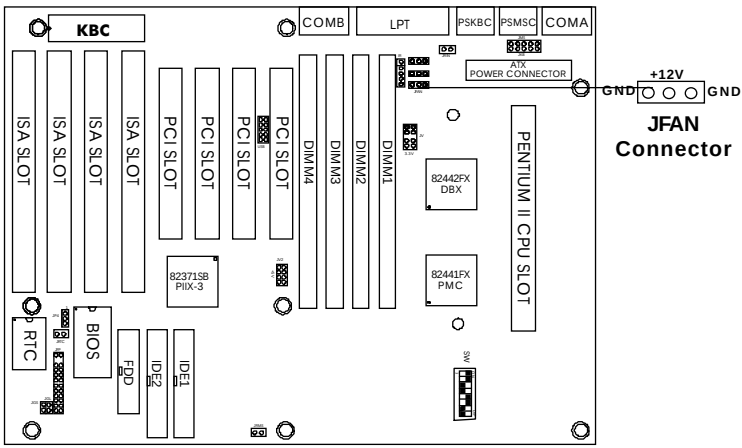
SPEED SETTING

Intel® 233MHz Pentium™ II Processor Card

Intel® 266MHz Pentium™ II Processor Card

2.1-5 CPU Fan Power Connector: JFAN

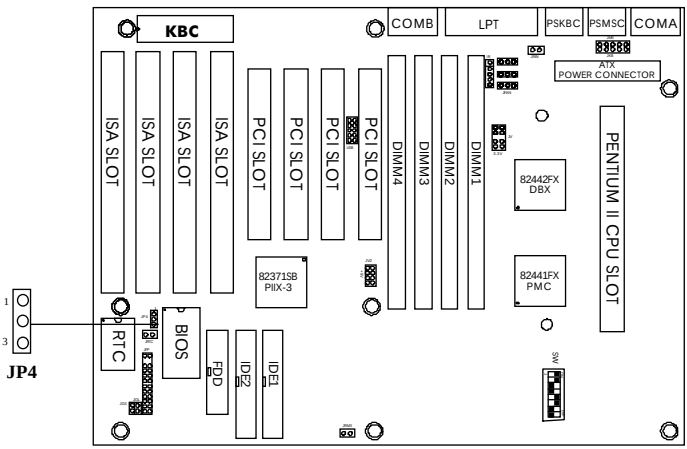
This connector supports CPU cooling fan with +12V. It supports both two and three pin head connector. When connecting the wire to the connector, always take note that the red wire is positive and should be connected to the +12V.



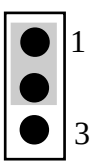
Note: *Always consult vendor for proper CPU cooling fan.*

2.2 Flash ROM Programming Voltage: JP4

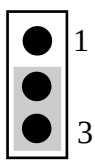
This jumper is for setting the Voltage of the Flash ROM BIOS.



Voltage Setting



+12V

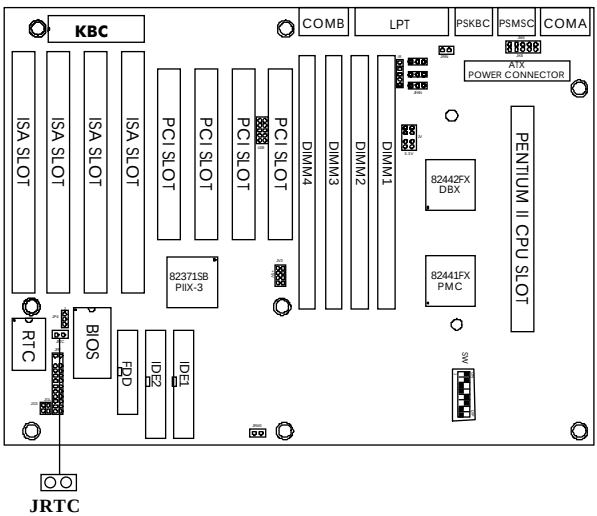


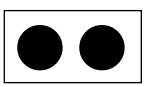
+5V (default)

Note: SST & Winbond Flash ROM are set in +5V
MXIC & Intel Flash ROM are set in +12V.

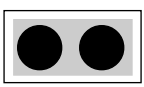
2.3 CMOS RAM Clear: JRTC

This jumper is for clearing the RTC data.





Keep Data (default)

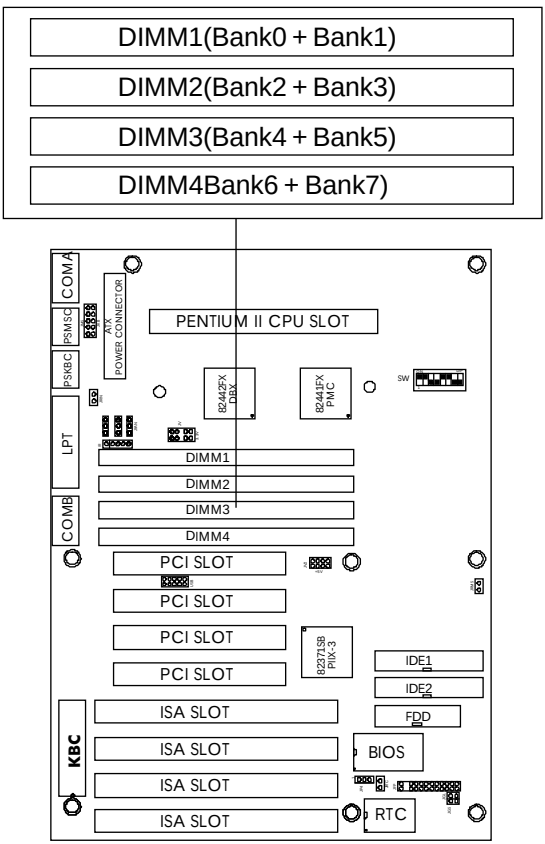


Clear

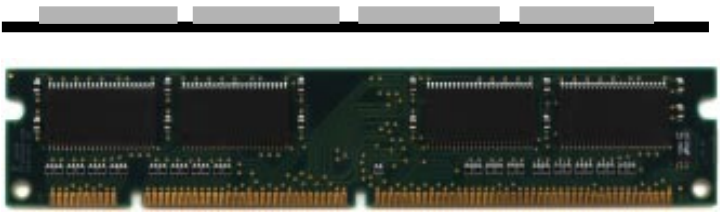
2.4 Memory Installation

2.4-1 Memory Bank Configuration

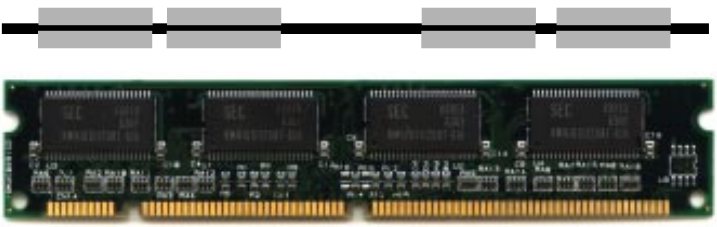
The system board supports a maximum of 1 GB of memory: It provides Four 168-pin unbuffered DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB up to 256 MB of memory. The memory module can be either FP (Fast Page), EDO (Extended Data Output) or BEDO (Burst Extended Data Output) Mode DRAM. A DIMM consist of two Banks and may have a maximum of 256 MB of memory.



A. How to install a DIMM Module



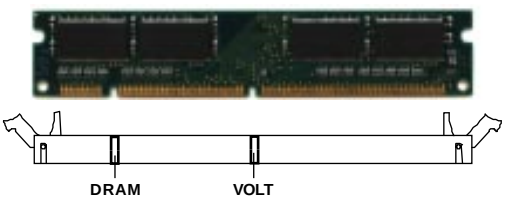
Single Sided DIMM



Double Sided DIMM

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

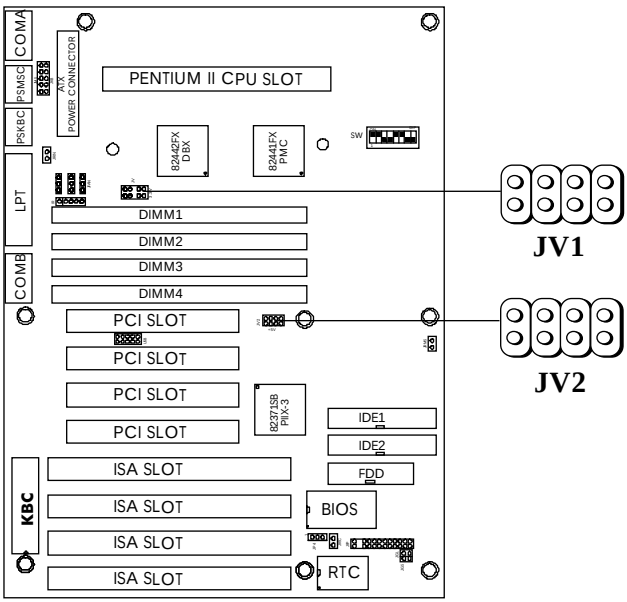
2. Insert the DIMM memory module vertically into the DIMM slot then push it in.



3. Close the plastic clip at the side of the DIMM slot.

Note: You can use a 5 volt or a 3.3 volt DIMM module (EDO, FP or BEDO), but cannot mixed 5 volt with 3 volt of DIMM module.

A.1 DIMM Power Voltage Selector : JP1



DIMM Voltage	
5V	JV2
3.3V	JV1

DIMM Power Level : 3.3V or 5V

2.2-1 Memory Population Rule

1. You can use any kind of DIMM **except for BEDO.**
2. To operate properly at least one 168-pin DIMM module must be installed.
3. This mainboard supports Table Free so memory can be installed on DIMM1, DIMM2, or DIMM 3.
4. The DRAM addressing and the size supported by the system board is shown below.

Memory Mapping Options

DRAM Tech.	Memory Org.	Addressing	Address Size	MB/DIMM	
				Single Side	Double Side
4M	1M x 4	Symmetric	10 x 10	8MB	16MB
16M	1M x 16	Symmetric	10 x 10	8MB	16MB
	2M x 8	Asymmetric	11 x 10	16MB	32MB
	4M x 4	Symmetric	11 x 11	32MB	64MB
64M	4M x 16	Symmetric	11 x 11	32MB	64MB
	8M x 8	Asymmetric	12 x 11	64MB	128MB
	16M x 4	Symmetric	12 x 12	128MB	256MB

2.5 Case Connector: JFP

The Turbo LED, Hardware Reset, Key Lock, Power LED, Power Saving LED, Power Saving Switch, Speaker and HDD LED are all connected to the JFP connector block.

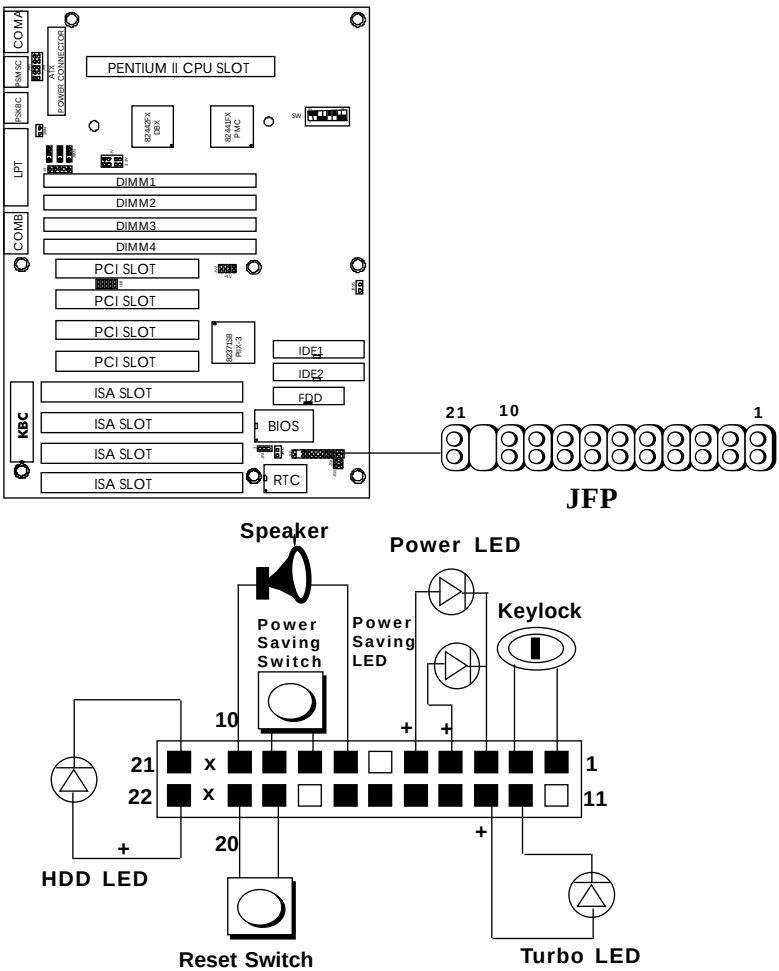


Figure 2.1

2.5-1 Turbo LED

The Turbo LED is always lit. You can connect the Turbo LED from the system case to this pin. (See Figure 2.1)

2.5-2 Hardware Reset

Reset switch are use to reboot the system rather than turning the power ON/ OFF. You can connect the Reset switch from the system case to this pin. Avoid rebooting while the HDD LED is lit. (See Figure 2.1)

2.5-3 Keylock

Keylock allows you to disable the keyboard for security purposes. You can connect the keylock. (See Figure 2.1)

2.5-4 Power LED

The Power LED is always lit while the system power is on. You can connect the Power LED from the system case to this pin. (See Figure 2.1)

2.5-5 Speaker

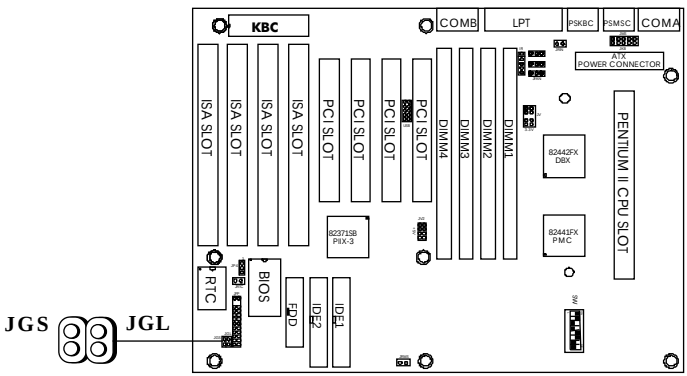
Speaker from the system case are connected to this pin. (See Figure 2.1)

2.5-6 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. (See Figure 2.1).

2.6 Power Saving Switch Connector: JGS/ Power Saving LED Connector: JGL

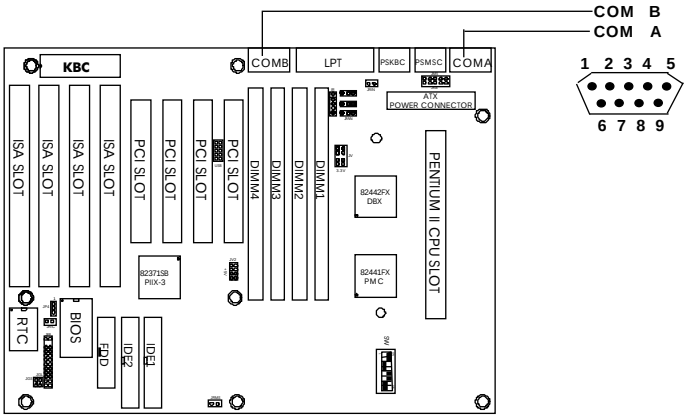
Attach a power saving switch to **JGS**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up. **JGL** are used to monitor the **JGS**, you could attach a LED indicator to this connector.



Note: You should enable the Power Management Mode (at BIOS setup) to use this function.

2.7 Serial Port Connectors: COM A & COM B

The system board has two 9-pin male DIN connectors for serial ports COM A and COM B. These two ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into these connectors.

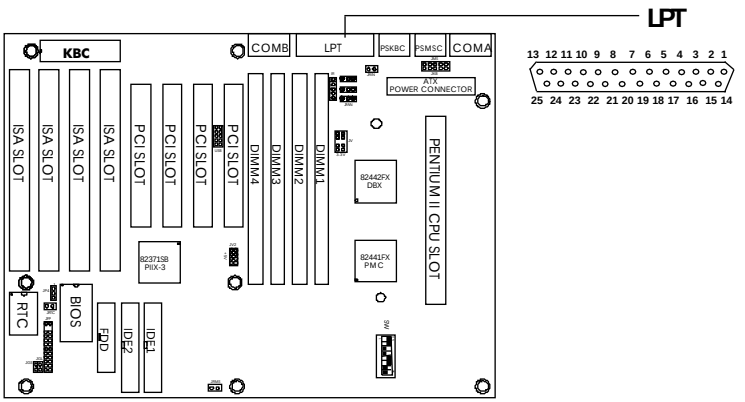


PIN DEFINITION

Pin #	Definition
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)

2.8 Parallel Port Connectors: LPT

The system board 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:

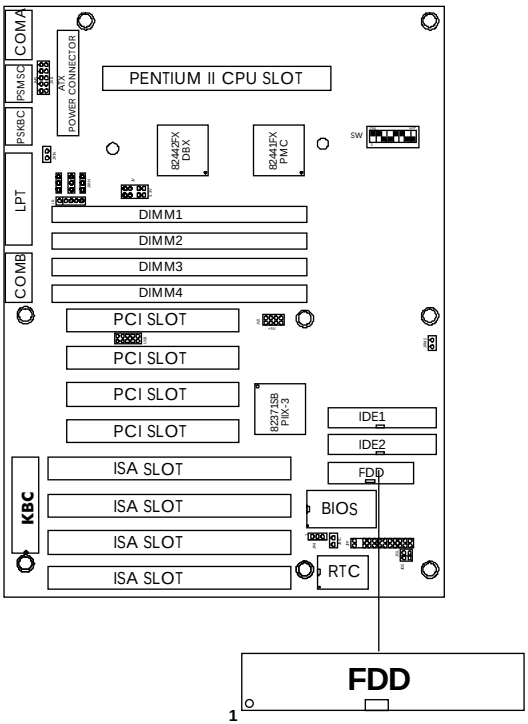


PIN DEFINITION

PIN #	DEFINITION	PIN #	DEFINITION
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		

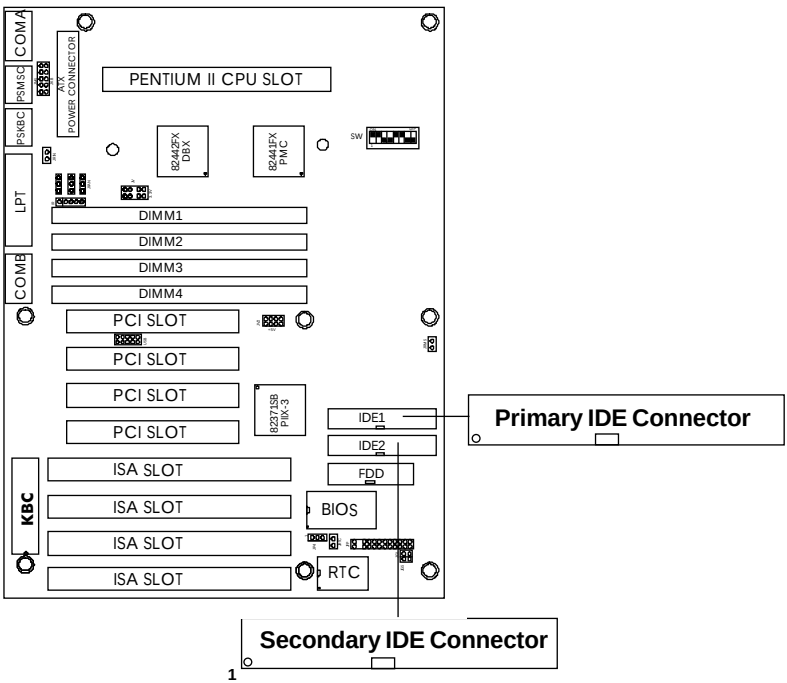
2.9 Floppy Disk Connector: FDD

The system board also provides a standard floppy disk connector(FDD) that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. You can attach a floppy disk cable directly to this connector.



2.10 Hard Disk Connector: IDE1 & IDE2

The system board has a 32-bit Enhanced PCI IDE Controller that provides for 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.



IDE1(Primary IDE connector)

The first hard disk should always be connected to IDE1. IDE1 can connect a Master and a Slave drive.

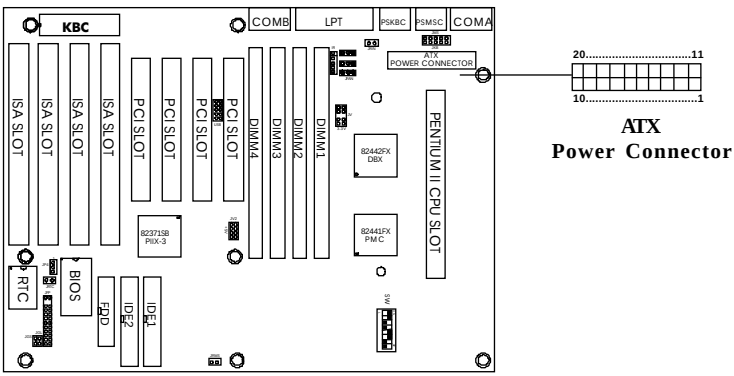
IDE2(Secondary IDE connector)

IDE2 can connect a Master and a Slave drive.

2.11 Power Supply

2.11-1 ATX 20-pin Power Connector: PWR20

This type of connector already supports the remote ON/OFF function. If you use an ATX power supply you don't need to connect the JRMC. But need to connect the **Remote Power On/OFF switch JRMS (J10)**.

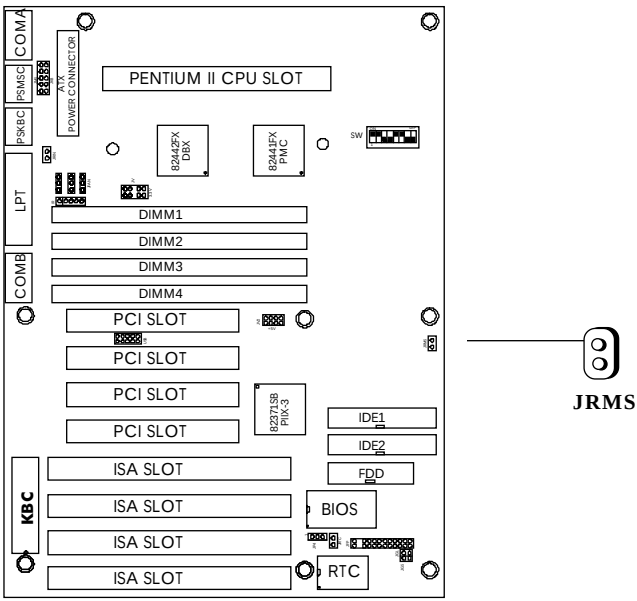


ATX Power Connector Pin Description

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

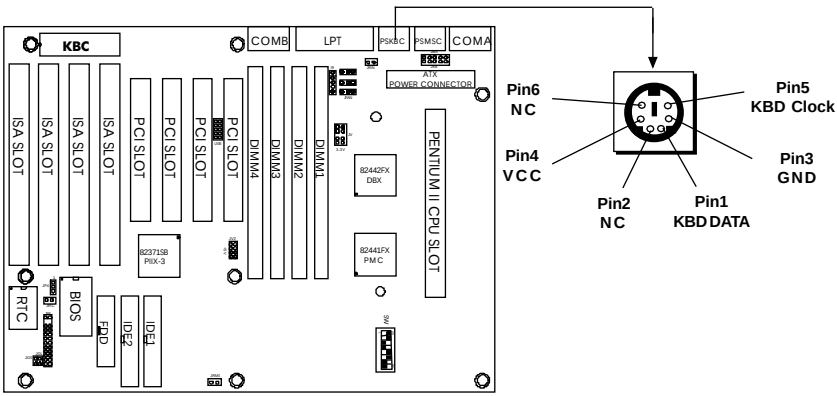
2.11-2 Remote Power On/Off Switch: JRMS(J10)

Connect to a 2-pin push button switch. Every time the switch is shorted by pushing it once, the power supply will change its status from OFF to ON and On to OFF. This is use for ATX type power supply.



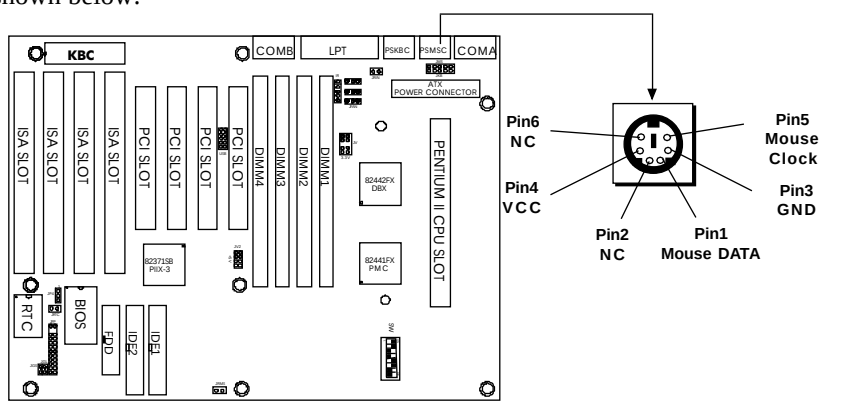
2.12 Keyboard Connector: PSKBC

The system board provides a standard PS/2 style keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.



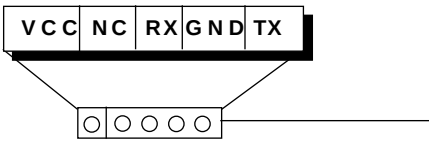
2.13 Mouse Connector: PSMSC

The system board provides a standard PS/2 style mouse mini DIN connector for attaching a PS/2 style mouse. You can plug a PS/2 style mouse directly into this connector. The connector location and pin definition as shown below:

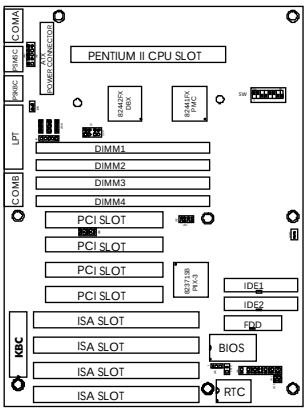


2.14 IrDA Infrared Module Connector: IR

The system board provides a 5-pin infrared connector(IR) for IR module. This connector is for optional wireless transmitting and receiving infrared module. You must configure the setting through BIOS setup.

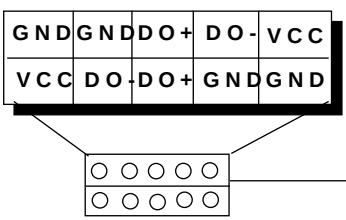


IR

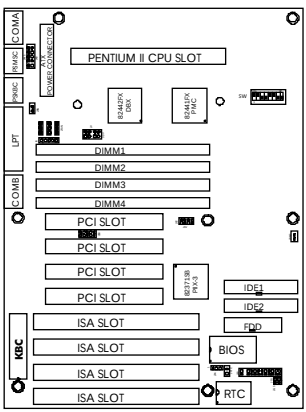


2.15 USB Connector: USB (Reserved)

This 10-pin connector supports USB devices. This function is a reserved function.



USB



Chapter 3

AWARD BIOS SETUP

Award's 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.

CHAPTER 3 AWARD BIOS SETUP

3.1 Entering Setup

Power on the computer and press <Del> immediately to allow you to enter Setup.

PRESS <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

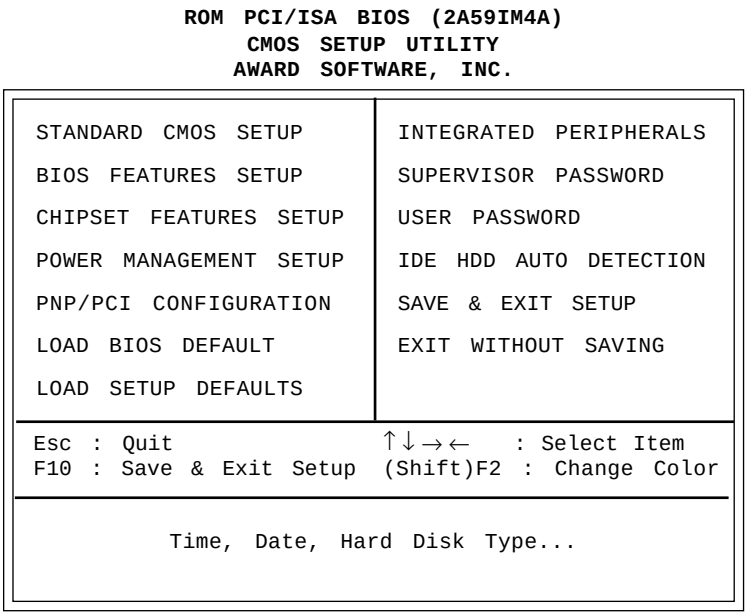
Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <F1> or <Esc>.

CHAPTER 3 AWARD BIOS SETUP

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 ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

Figure 1 Main Menu



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.

PCI Configuration Setup

This category specifies the value (in units of PCI bus clocks) of the latency timer for this PCI bus master and the IRQ level for PCI device.

Supervisor Password/User Password

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

Load BIOS Default

BIOS default indicates the values required by the system for maximum performance.

Load Setup Defaults

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

IDE HDD Auto Detection

Automatically configure hard disk parameters.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

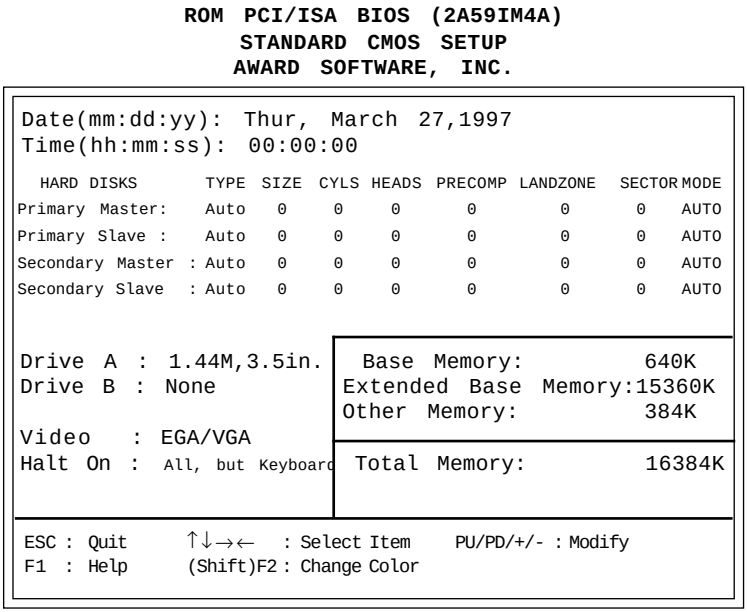
Exit Without Save

Abandon all CMOS value changes and exit setup.

3.4 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes none, 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.

Figure 2 Standard CMOS Setup Menu (Support Enhanced IDE)



Date

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

Day	Day of the week, from Sun to Sat, determine. By BIOS, read only
month	The month Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric func tion keys
year	The year, depends on the year of the BIOS

Time

The time format is <hour> <minute> <second>. Which accepts both function key or numerical key.

PrimaryMaster/PrimarySlave SecondaryMaster/Secondary Slave

The categories identify the types of 2 channels that have been installed in the computer. There are 45 pre-defined types and 4 user definable types are 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.
```

Virus Warning : Disabled	Video BIOS Shadow :Enabled
CPU Internal Cache : Enabled	C8000-CBFFF Shadow :Disabled
External Cache : Enabled	CC000-CFFFF Shadow :Disabled
Quick power on Self Test: Disabled	D0000-D3FFF Shadow :Disabled
Boot Sequence : A,C,SCSI	D4000-D7FFF Shadow :Disabled
Swap Floppy Drive : Disabled	D8000-DBFFF Shadow :Disabled
Boot up Floppy Seek : Enabled	DC000-DFFFF Shadow :Disabled
Boot up NumLock status : On	
Boot up System Speed : High	
Gate A20 Option : Fast	
Typematic Rate Setting : Disabled	
Typematic Rate(char/sec): 6	
Typematic Delay(Msec) : 250	
Security Option : Setup	
PCI/VGA palette snoop : Disabled	
OS select for DRAM>64MB: Non-OS2	

```
Esc : Quit    ↑↓→← : Select item
F1 : Help      PU/PD/+/- : modify
F5 : Old Value(Shift) F2 : Color
F6 : Load BIOS Defaults
F7 : Load Setup Defaults
```

Virus Warning

This category flashes on the screen. 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, in the meantime, you can run an anti-virus program to locate the problem.

!WARNING!
Disk boot Sector is to be modified
Type “Y” to accept write or “N” to abort write
Award Software, Inc.

Disabled (default)	No warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Enabled	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.

Note: *This function is available only for DOS and other OS that do not trap INT13.*

CPU Internal Cache

The default value is Enabled. If your CPU is without Internal Cache, then this item "CPU Internal Cache" will not be shown.

Enabled (default)	Enable cache
Disabled	Disable cache

Note: The internal cache is a built in the processor.

CPU External Cache

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

Quick Power On Self Test

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

Enabled	Enable quick POST
Disabled (default)	Normal POST

Boot Sequence

This category determines which drive the computer searches first for the disk operating system. 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 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 720K, 1.2M and 1.44M are all 80 tracks.

Enabled(default)	BIOS searches for floppy disk drive to deter mine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

Boot Up NumLock Status

The default value is On.

On (default)	Keypad is number keys
Off	Keypad is arrow keys

Boot Up System Speed

It selects the default system speed - the speed that the system will run at immediately after power up.

High (default)	Set the speed to high
Low	Set the speed to low

Gate A20 Option

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

Typematic Rate Setting

This determines the typematic rate.

Enabled	Enable typematic rate and typematic delay programming
Disabled(default)	Disable typematic rate and typematic delay programming. The system BIOS will use default value of this 2 items and the default is controlled by keyboard.

Typematic Rate (Chars/Sec)

6 (default)	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay

Choose the length of delay from the time you press a key and the character starts repeating. (Units are mil-secs)

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.

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter the password twice. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

PCI VGA Palette Snooping

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.

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 - CFFFF Shadow/E8000 - EFFFF Shadow

Determines whether the optional RAM will be copied to RAM for faster execution.

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

Note: For C8000-DFFFF option-ROM on PCI BIOS , BIOS will automatically enable the shadow RAM. User does not have to select the item.

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(2A59IM4A)
CMOS SETUP UTILITY
CHIPSET FEATURES SETUP

Auto Configuration	:Enabled	8 Bit I/O Recovery Time	:1
		16 Bit I/O Recovery Time	:1
DRAM Speed Selection	:70ns	Memory Hole At 15M-16M	:Disabled
DRAM RAS# Precharge Time	:Enabled	DRAM Fast Leadoff	:Disabled
MA Additional Wait State	:Enabled	Passive Release	:Enabled
RAS# to CAS# Delay	:Enabled	Delayed Transaction	:Enabled
DRAM Read Burst (B/E/F)	:x2/2/3		
DRAM Write Burst (B/E/F)	:x2/2/3		
ISA Bus Clock	:PCICLK/4		
DRAM Refresh Queue	:Enabled		
DRAM RAS Only Referesh	:Enabled		
DRAM ECC/PARITY Select	:Disabled		
Fast Dram Refresh	:Disabled		
Read-Around-Write	:Disabled		
PCI Burst Write Combine	:Enabled		
PCI-TO-DRAM Pipeline	:Enabled	Esc : Quit	↑↓→← : Select item
CPU-TO-PCI Write Post	:Disabled	F1 : Help	PU/PD/+/- : modify
CPU-TO-PCI IDE Posting	:Enabled	F5 : Old Value(Shift)	F2 : Color
System BIOS Cacheable	:Disabled	F6 : Load BIOS Defaults	
Video RAM Cacheable	:Disabled	F7 : Load Setup Defaults	

Note: Change these settings only if you are familiar with the chipset.

Auto Configuration

Choosing Enabled (default) will automatically configure chipset features using default settings. Choose Disable to customize setup.

DRAM Speed Selection

Sets the DRAM speed at 70ns (default) or 60ns. It will set the speed of the EDO/FP DRAM.

DRAM RAS# Pre-charge Time

Choose 4(default) or 3. Example: For 60MHz Bus speed (4 is about [4 clock x 16.6 ns/clock] 66.4ns), (3 is about [3 clock x 16.6 ns/clock] 49.8ns). And for 66.6MHz Bus speed (4 is about [4 clock x 15 ns/clock] 60ns) and 3 is about 45ns.

MA Additional Wait State

Choose Enable to insert 3 clock delay between the RAS# and CAS#. There will be 2 clock delay if disabled(default) is chosen.

RAS# to CAS# Delay

Choosing Enabled will insert one clock delay between the RAS# and CAS#. And if you choose Disabled(default), no clock delay will be inserted.

DRAM Read Burst (B/E/F)

Under Autoconfig the BIOS will identify which type of DRAM is being used. Choose the setting accordingly. To customize, use this option which sets the Read Burst time for accessing the DRAM. The timing used depends on the type of DRAM and access time being used. The settings are x2/3/4, x2/2/3, x1/2/3 or x3/4/4.

Note: B stands for BEDO (Burst Extended Data Output) DRAM.
E stands for EDO (Extended Data Output) DRAM.
F stands for FP (Fast Page) DRAM.

Example: If the user chooses DRAM Read Burst (B/E/F):
x2/3/4 it signifies that:
2 is used by BEDO
3 is used by EDO
4 is used by FP.
Slower rates may be required to support slower memory.

DRAM Write Burst Timing

This option chooses the Write Burst Timing for accessing DRAM. See: DRAM Read Burst Option. Choose x3/3/4, x3/3/3, x2/2/3 or x4/4/4.

ISA Bus Clock

DRAM Refresh Queue

If Enabled, the system chipset's internal 4-deep refresh queue will be enabled, with 4th request being the priority request and all refresh requests are queued. If Disabled, the refresh queue will be disabled and all refresh will be priority requests.

DRAM Enhanced Paging

Choose Enable(default) or Disable.

DRAM RAS Only Refresh

This setting provides the RAS only refresh or CAS before RAS (CBR) refresh. Disable(default) will utilize the CBR mode and the system will have better performance.

DRAM ECC/PARITY Select

Set this option to Enabled to ECC(Error Checking and Correction)DRAM integrity mode. The settings are Enabled or Disabled. The default settings are Disabled.

Note: To enable this function, you have to use SIMM/DIMM with Parity.

Fast DRAM Refresh

Choosing Disabled(default) will select the normal mode, where the refresh rate is every 15ns. Choosing Enabled will call for a refresh cycle every 32 host clocks, and the system will implement a refresh cycle every 531ns/480ns for 60 MHz and 66 MHz respectively.

Read-Around-Write

Choosing Disabled(default) will retire all the DBX(Data Bus Accelerator) before a CPU or PCI read access is serviced. If Enabled , the DBX won't retire before a CPU or PCI read access is serviced.

PCI Burst Write Combine

Choosing Enabled(default) allows the DBX to do back to back sequential CPU to PCI writes (Dword or larger) within a single PCI write Burst. When Disabled, back to back sequential CPU to PCI writes (Dword or larger) will be split into several single PCI write cycles.

PCI-To-DRAM Pipeline

Choosing Disabled will restrict pipelining of PCI DRAM write cycles. Enabled is the default.

CPU-To-PCI Write Post

Choosing Enabled will enable CPU to PCI posting.

CPU-To-PCI IDE Posting

Choosing Disabled will allow the I/O Write port and the 1F0h and 170h to be treated as normal I/O Write Transactions. During Enabled (default), I/O Write cycles will be posted.

System BIOS Cacheable

By choosing Disabled (default) the system BIOS will be shadowed into DRAM only. Enabled will have the system BIOS shadowed and cacheable.

Video RAM Cacheable

Same as system BIOS Cacheable

8-bit I/O recovery time: 1/2/3/4/5/6/7/NA
16-bit I/O recovery time: 1/2/3/NA

Choose the recovery time for 8-bit and 16-bit I/O cycles respectively.

Note: NA is not available and so the recovery time of 3.5 SYSCLK is inserted.

8-bit recovery time

Choose the recovery time for 8-bit I/O cycle . The settings are 1, 2, 3, 4, 5, 6, 7, or NA.

16-bit recovery time

Choose the recovery time for 16-bit I/O cycle. The settings are 1, 2, 3, or NA.

Memory Hole At 15M-16M

Choosing Enabled will enable a memory hole in the DRAM space. The CPU cycle matching the enabled hole will be passed on to the PCI. PCI cycles matching an enabled hole are ignored. Disabled (default) will disable this function.

Note: A selected (Enabled) hole is not remapped.

DRAM Fast Leadoff

Choose Enabled, one additional wait state is added to the DRAM leadoff timing for page/row miss cycles. The leadoff controls the MA setup to the first CAS# assertion.

Passive Release/Delayed Transaction

The Settings are Enable or Disable. During Enable those PCI add-on cards with PCI 2.1 compliance will perform better. But some PCI card does not meet PCI 2.1 compliance, so the default setting is Disabled.

3.7 Power Management Setup

The Power Management Setup will appear on your screen like this:

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

Power Management : Disabled PM Control by APM : Yes Video Off Method : DPMS MODEM Use IRQ : 3 Doze Mode : Disabled Standby Mode : Disabled Suspend Mode : Disabled HDD Power Down : Disabled **Wake Up Events in Doze & Standby** IRQ3 (Wake-Up Event) : ON IRQ4 (Wake-Up Event) : ON IRQ12(Wake-Up Event) : ON	** Power Down & Resume Events ** IRQ3 (COM 2) : ON IRQ4 (COM 1) : ON IRQ5 (LPT 2) : OFF IRQ6 (Floppy Disk) : OFF IRQ7 (LPT 1) : ON IRQ9 (IRQ2 Redir) : OFF IRQ10(Reserved) : OFF IRQ11(Reserved) : OFF IRQ12(PS/2 Mouse) : ON IRQ13(CoProcessor) : ON IRQ14(Hard Disk) : ON IRQ15(Reserved) : OFF Esc : Quit ↑↓→← : Select item F1 : Help PU/PD/+/- : modify F5 : Old Value(Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

Power Management

This category determines the power consumption for system after selecting below items. Default value is Disable. The following pages tell you the options of each item & describe the meanings of each options.

Power Management

Disable	Global Power Management will be disabled.
User Define	Users can configure their own power management.
Min Saving	Pre-defined timer values are used such that all timers are in their MAX value.
Max Saving	Pre-defined timer values are used such that all timers MIN value.

PM Control by APM

No	System BIOS will ignore APM when power managing the system.
Yes	System BIOS will wait for APM's prompt before it enter any PM mode

Note : Enable this for OS with APM like Windows™95, Windows™ NT, etc.

Video Off Method

Blank Screen	The system BIOS will only blanks off the screen when disabling video.
V/H SYN C+Blank	In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals from VGA card to monitor.
DPMS	This function is enabled only for VGA card supporting DPMS.

Note: Green monitors detect the V/H SYNC signals to turn off its electron gun.

MODEM Use IRQ

This indicates which IRQ No. will be used by the MODEM (if there is a MODEM). The settings are 3, 4, 5, 7, 9, 10, or NA. The default setting is 3.

Doze Mode

Disable	System will never enter DOZE mode.
1 Min/2 Min/ 4 Min/6 Min/ 8 Min/10 Min/ 20 Min/30 Min/ 40 Min/1 Hr	Defines the continuous idle time before the system entering DOZE mode. If any item defined in the options of "Power Down and Resume events" is enabled & active, DOZE timer will be reloaded. When the system have entered Doze mode, any of the items enabled in "Wake Up Events in Doze and Standby" will trigger the system to wake up.

Standby Mode

Disable	System will never enter STANDBY mode.
1 Min/2 Min/ 4 Min/6 Min/ 8 Min/10 Min/ 20 Min/30 Min/ 40 Min/1 Hr	Defines the continuous idle time before the system entering STANDBY mode. If any item defined in the options of "Power Down and Resume events" is enabled & active, STANDBY timer will be reloaded. When the system has entered Standby mode , any of the items that are enabled in "Wake Up Events of Doze and Standby" will trigger the system to wake up.

Suspend Mode

Disable	System will never enter SUSPEND mode.
1 Min/2 Min/ 4 Min/6 Min/ 8 Min/10 Min/ 20 Min/30 Min/ 40 Min/1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in the options of "Power Down & Resume Events" is enabled & active, SUSPEND timer will be reloaded. When the system has entered SUSPEND mode, any of the items enabled in the "Power Down & Resume Events" will trigger the system to wake up.

HDD Power Down

Disable	HDD's motor will not shut off.
1 Min/2 Min/ 3 Min/4 Min/ 5 Min/6 Min/ 7 Min/8 Min/ 9 Min/10 Min/ 11 Min/12 Min/ 13 Min/14 Min/ 15 Min	Defines the continuous HDD idle time before the HDD enters the power saving mode (motor off). BIOS will turn off the HDD's motor when time is out.

IRQ3/IRQ4/IRQ12

During Enabled, if any interrupt event happened the system will turn on from the suspend mode. And during Disabled, the system will not monitor any interrupt event.

IRQ3/IRQ4/IRQ5/IRQ6/IRQ7/IRQ8/IRQ9/IRQ10/IRQ11/ IRQ12/IRQ13/IRQ14/IRQ15

When set to Monitor, these options enable event monitoring on the specified hardware interrupt request line. If set to Monitor and the computer is in a power saving state, AWARD BIOS watches for activity on the specified IRQ line. The computer enters the full on power state if any activity occurs.

AWARD BIOS reloads the Standby and Suspend timeout timers if activity occurs on the specified IRQ line.

The settings for each of these options are Monitor or Ignore. The Optimal and Fail-Safe default settings are Disabled for all the above options except IRQ3, IRQ4, IRQ7, IRQ12, IRQ14 or IRQ15. The Optimal default settings for these options is Monitor.

3.8 PNP/PCI Configuration Setup

You can manually configure the PCI Device's IRQ. The following pages tell you the options of each item & describe the meanings of each options.

ROM PCI/ISA BIOS (2A69HM4D)
PNP/PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PnP OS Installed :No	PCI IRQ Actived By : Level
Resources Controlled By :Manual	PCI IDE IRQ Map To : PCI-Auto
Reset Configuration Data :Disabled	Primary IDE INT# : A
	Secondary IDE INT# : B
IRQ-3 assigned to :Legacy ISA	
IRQ-4 assigned to :Legacy ISA	Assign IRQ for VGA : Disabled
IRQ-5 assigned to :PCI/ISA PnP	
IRQ-7 assigned to :PCI/ISA PnP	Used MEM base addr : C800
IRQ-9 assigned to :PCI/ISA PnP	Used MEM Length : 8K
IRQ-10assigned to :PCI/ISA PnP	
IRQ-11assigned to :PCI/ISA PnP	
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	Esc : Quit ↑↓→← : Select item
DMA-3assigned to :PCI/ISA PnP	F1 : Help PU/PD/+/- : modify
DMA-5assigned to :PCI/ISA PnP	F5 : Old Value(Shift) F2 : Color
DMA-6assigned to :PCI/ISA PnP	F6 : Load BIOS Defaults
DMA-7assigned to :PCI/ISA PnP	F7 : Load Setup Defaults

PnP OS Installed

When set to YES, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows™ 95. When set to NO, BIOS will initialize all the PnP cards. So, for non-PnP operating system (DOS, Netware), this option must set to NO.

Resources Controlled By

By Choosing "Auto" the system BIOS will detect the system resource and automatically assign the relative IRQ and DMA Channel for each peripheral.

By Choosing "Manual"(default), the user will need to assign IRQ & DMA for add-on cards. Be sure that there is no conflict for IRQ/DMA and I/O ports.

Note: When choosing "Auto" you must be sure that all of the system add-on cards are PnP type.

Reset Configuration Data

The system BIOS supports the PnP feature so the system needs to record which resource is assigned and protect resources from conflict. Every peripheral device has a node which is called ESCD. This node records which resources are assigned to it. The system needs to record and update ESCD to the memory locations. These locations (4K) are reserved at the system BIOS.

If Disabled (default) is chosen the system's ESCD will update only when the new configuration varies from the last one.

If Enabled is chosen the system will be forced to update ESCDs if the system configuration has changed and then auto set this option to the "Disabled" mode.

IRQ-3 assigned to : Legacy ISA
IRQ-4 assigned to : Legacy ISA
IRQ-5 assigned to : PCI/ISA PnP
IRQ-7 assigned to : PCI/ISA PnP
IRQ-9 assigned to : PCI/ISA PnP
IRQ-10 assigned to : PCI/ISA PnP
IRQ-11 assigned to : PCI/ISA PnP
IRQ-12 assigned to : PCI/ISA PnP
IRQ-14 assigned to : PCI/ISA PnP

IRQ-15 assigned to : PCI/ISA PnP
DMA-0 assigned to : PCI/ISA PnP
DMA-1 assigned to : PCI/ISA PnP
DMA-3 assigned to : PCI/ISA PnP
DMA-5 assigned to : PCI/ISA PnP
DMA-6 assigned to : PCI/ISA PnP
DMA-7 assigned to : PCI/ISA PnP

The above settings will be shown on the screen only if "Manual" is chosen for the *Resources Controlled By* function.

Legacy is the term which signifies that a resource is assigned to the ISA Bus and provides for non PnP ISA add-on card. PCI/ISA PnP signifies that a resource is assigned to the PCI Bus or provides for ISA PnP add-on cards and peripherals.

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 manufacturer. The settings are Level(default) and Edge.

PCI IDE IRQ Map To

PCI-Auto: This setting is for off-board PCI IDE card and is fully compatible with PCI specifications.

PCI-Slot 1-4: This setting is used if off-board PCI IDE card is not fully compatible with PCI specifications. You must specify which PCI slot the PCI IDE Card is installed in.

ISA: This setting is used if the off-board PCI IDE card uses an edge trigger and IRQ routes directly to the ISA Bus.

Note: The user will need to disable the on-board on-chipset PCI IDE controller when installing off-board PCI IDE add-on cards. (See the INTEGRATED PERIPHERALS SETUP) These two options choose the primary and secondary IDE Channel interrupts when the user installs off-board PCI IDE add-on cards.

Assign IRQ for VGA

Lets the user choose which IRQ to assign for VGA use.

Used MEM base addr

Lets the user choose the Legacy ISA addr. The settings are NA#, C800, CC00, D000, D400, D800 OR DC00.

Used MEM Length

Choose 8K, 16K, 32K, or 64K.

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 system board operation.

3.10 Integrated Peripherals

ROM PCI/ISA BIOS (2A69HM4D)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	:Enabled	USB Controller	:Disabled
IDE Primary Master PIO	:Auto	USB Keyboard Support	:Disabled
IDE Primary Slave PIO	:Auto		
IDE Secondary Master PIO	:Auto		
IDE Secondary Slave PIO	:Auto		
On-Chip Primary PCI IDE	:Enabled		
On-Chip Primary PCI IDE	:Enabled		
PCI Slot IDE 2nd Channel	:Enabled		
Onboard FDD controller	:Enabled		
FDC Write Protect	:Disabled		
Onboard Serial Port 1	:3F8/IRQ4		
Onboard Serial Port 2	:2F8/IRQ3		
UART 2 Mode	:ASKIR		
IR Function Duplex	:Half		
RxD , TxD Active	:Hi , Hi	Esc : Quit	↑↓→← : Select item
Onboard Parallel Port	:378H/IRQ7	F1 : Help	PU/PD/+/- : modify
Onboard Parallel Mode	:ECP/EPP	F5 : Old Value(Shift) F2 : Color	
ECP Mode Use DMA	:3	F6 : Load BIOS Defaults	
Parallel Port EPP Type	:EPP1	F7 : Load Setup Defaults	

IDE HDD Block Mode

Enabled/Disabled Enabled allows the Block mode access for the IDE HDD.

IDE Primary Master PIO

Auto/Mode0/Mode1-4

IDE Primary Slave PIO

Auto/Mode0/Mode1-4

IDE Secondary Master PIO

Auto/Mode0/Mode1-4

IDE Secondary Slave PIO

Auto/Mode0/Mode1-4

For these 4 IDE option choose "Auto" to have the system BIOS auto detect the IDE HDD operation mode for PIO access.

Note: Some IDE HDD can not operate at the responding HDD's mode. When the user has selected "Auto" and the system BIOS has accepted the HDD response mode the user may degrade the HDD's operation mode. Ex: IF the HDD reported it can operate in mode 4 but it is not operating properly the user will have to manually change the operation mode to mode 3.

Choosing Mode 1-4 will have the system ignore the HDD's reported operation mode and use the selected mode instead.

Note: According to ATA specs. Mode 4 transfer rate is > Mode 3 > Mode 2 > Mode 1 > Mode 0. If the user's HDD can operate at Mode 3 the user can also select a slower Mode (i.e. Mode 0-2) but not a faster Mode (ie Mode 4).

On-Chip Primary PCI IDE

Enabled/Disabled

On-Chip Secondary PCI IDE

Enabled/Disabled The system provides for a On-Board On-Chipset PCI IDE controller that supports Dual Channel IDE (Primary and Secondary). A maximum of 4 IDE devices can be supported. If the user install the Off-Board PCI IDE controller (i.e. add-on cards), the user must choose which channels will be disabled. This will depend on which channel will be used for the Off-Board PCI IDE add-on card.

PCI Slot IDE 2nd Channel

Enabled/Disabled Choosing Enabled will allow the system to access the 2nd IDE channel without a device driver. If the Off-Board PCI IDE add-on card is installed the 2nd IDE channel will need to be used.

Onboard FDD Controller

Enabled/Disabled The system has an on-board Super I/O chip with a FDD controller that supports 2 FDDs for 360K/720K/1.2M/1.44M/2.8M.Choose "Ena bled" to use the on-board FDD controller for accessing the FDD. Otherwise choose "Disa bled" to use the off-board FDD controller.

FDC Write Protect

Enabled /Disabled Choosing Enabled will write protect the Disk that is being use. And during Disabled the Disk will not be write protected.

Onboard Serial Port 2/Onboard Serial Port 1

Disabled/(3F8/IRQ4)/(2F8/IRQ3)/(3E8/IRQ4)/(2E8/IRQ3)

The system has an On-board Super I/O chipset with 2 serial ports. The On-board serial ports can be selected as:

Disabled	
3F8/IRQ4	COMM1 uses IRQ4
2F8/IRQ3	COMM2 uses IRQ3
3E8/IRQ4	COMM3 uses IRQ4
2E8/IRQ3	COMM4 uses IRQ4

Note: Because the ISA Bus Interrupt accepts low to high edge trigger, the interrupt request line can not be shared by multiple sources. If an off-board ISA add-on card with a serial port is installed the user may have to disable the on-board serial port because it will conflict with IRQ request line for the off-board serial port.

UART 2 MODE

Standard/ASKIR/ HPSIR(i.e. IRDA) The system's built-in IR (Infra Red) is on the on-board Super I/O chipset and is shared with serial port 2 with UART 2. Only one option can be selected for serial port 2, either the IR or UART. Selecting the IR mode will prompt the following message:

IR Function Duplex

Half/Full Users can choose between operating the IR in Half duplex or Full duplex mode. Half duplex designates one IR as a receiver and one as a transmitter simultaneously. Full duplex mode designates that the two IRs receive and transmit data together simultaneously.

RxD , TxD Active

Hi-Hi/Hi-Lo/ Lo-Hi/Lo-Lo The user can choose between the preceding RxD (Receive Data), TxD (Transmit Data) activity levels.

Onboard Parallel Port

Disabled/ (3BCH/IRQ7)/ (278H/IRQ5)/ (378H/IRQ5) There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

Disable	
3BCH/IRQ7	Line Printer port 0
278H/IRQ5	Line Printer port 2
378H/IRQ5	Line Printer port 1

Onboard Parallel Mode

SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port

SPP/(EPP/SPP)/ ECP(ECP/EPP) To operate the onboard parallel port as Standard Parallel Port only choose "SPP." To operate the onboard parallel port in the ECP and SPP modes simultaneously choose "ECP/SPP." By choosing "ECP" the onboard parallel port will operate in ECP mode only. Choosing "ECP/EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously. The ECP mode has to use the DMA channel so choose the onboard parallel port with the ECP feature. After selecting it, the following

message will appear: "ECP Mode Use DMA" At this time the user can choose between DMA channels 3 or 1. The onboard parallel port is EPP Spec. compliant so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "Parallel Port EPP Type." At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

USB Controller

Enabled/Disabled Choosing Enabled, will enable on board USB port.

USB Keyboard Support

Enabled/Disabled Choosing Enabled, will enable the USB key board support.

3.11 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 only 8 characters and press <Enter>. The screen does 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 exact the same password you just typed again 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.

3.12 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.