# Chapter 2

Hardware Installation

2.1 Central Processing Unit: CPU
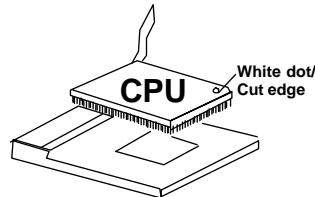
The **430 TX** motherboard operates with **Intel® P54C/P55C**, **Cyrix® 6x86/
M2** and **AMD® 5K86/K6** processors. It could operates with 2.8V to 3.52V
processors. The motherboard provides a 321-pin ZIF Socket 7 for easy CPU
installation, a DIP switch (SW1) to set the proper speed for the CPU and a
Jumper block (JV3 - JV7) for setting the CPU voltage. The CPU should
always have a cooling fan attached to prevent overheating.

### 2.1-1 CPU Installation Procedure
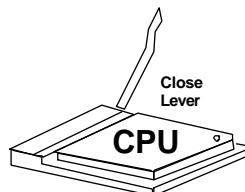
1. Pull the lever sideways away
   from the socket then raise
   the lever up to a 90-degree
   angle.

2. Locate Pin 1 in the socket
   and look for the white dot or
   cut edge in the CPU, match
   Pin 1 with the white dot/cut
   edge then insert the CPU. It
   should insert easily.

3. Press the lever down to
   complete the installation.

CHAPTER 2   HARDWARE INSTALLATION

2.1-2 CPU Core Speed Derivation Procedure

1. The 3 CPU clock frequencies that the system supports are 55MHz, 60MHz, 66MHz and 75MHz (To adjust SW1 pin 4, 5, and 6). See the following chart to set the different Host Clock Frequencies.

SW1			CPU
4	**5**	**6**	**Clock**
ON	ON	OFF	55MHz
ON	OFF	OFF	60MHz
OFF	OFF	OFF	66MHz
OFF	ON	OFF	75MHz

2. The DIP Switch SW1 (1,2, and 3) 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	=	3/2
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	66MHz x 3/2
		=	100MHz
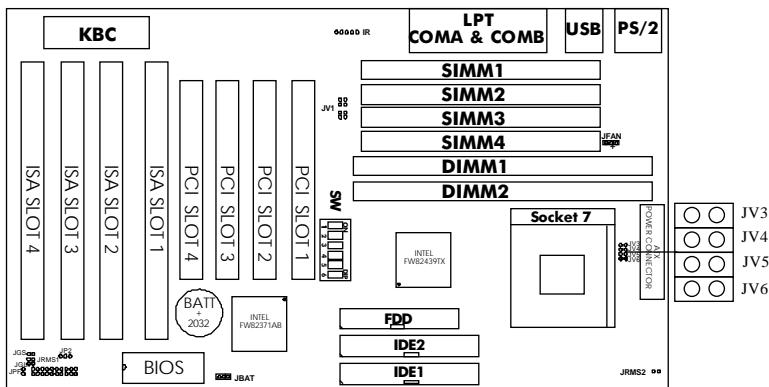
SW1			CPU
1	**2**	**3**	**Core/Bus Ratio**
OFF	OFF	OFF	1.5 /3.5
ON	OFF	OFF	2
ON	ON	OFF	2.5/1.75
OFF	ON	OFF	3

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

2.1-3 CPU Voltage Setting: JV3 - JV7

The system board can autodetect whether the CPU is single or dual voltage.
To adjust the Jumper setting of the CPU's Vcore, just look at table below and
set accordingly.

Single Voltage

| V I/O	Vcore	JV3~JV7	
3.38	3.38		JV3 JV4 JV5 JV6
3.52	3.52		JV3 JV4 JV5 JV6
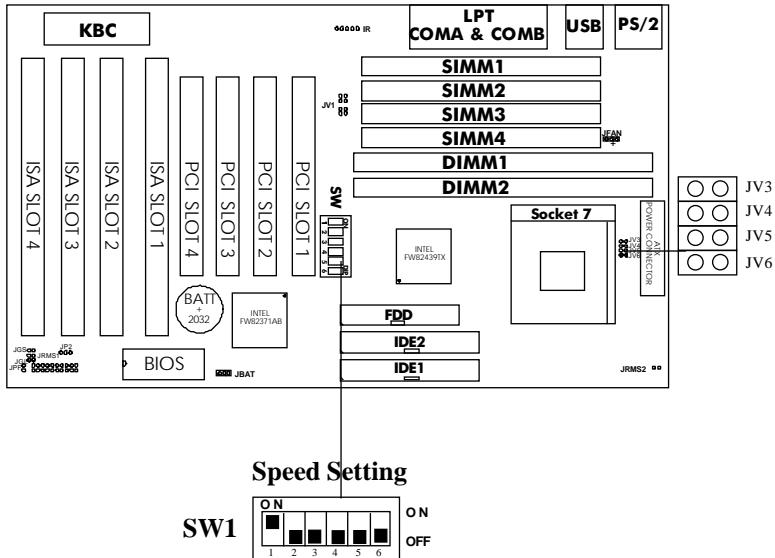
Dual Voltage

V I/O	Vcore	JV3~JV7	
3.3	2.8		JV3 JV4 JV5 JV6
3.3	2.9		JV3 JV4 JV5 JV6
3.3	3.2		JV3 JV4 JV5 JV6

CHAPTER 2   HARDWARE INSTALLATION

2.1-4 CPU Speed and Voltage Setting: SW1 & JV3-JV7

To adjust the speed and voltage of the CPU, you must know the specifica-
tion of your CPU (*always ask the vendor for CPU specificaton*) then look at
Table 2.1 (Intel® P54C/P55C-MMX), **Table 2.2 (Cyrix® 6x86/M2)** and
**Table 2.3 (AMD® 5K86/K6)** for proper setting.

Speed Setting

CHAPTER 2   HARDWARE INSTALLATION

Table 2.1 Intel® P54C PENTIUM CPU

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	JV3~JV7	SW1
P54C-90	3.38		JV3 JV4 JV5 JV6	ON DIP / OFF (1 2 3 4 5 6)
	3.52		JV3 JV4 JV5 JV6	
P54C-100	3.38		JV3 JV4 JV5 JV6	ON DIP / OFF (1 2 3 4 5 6)
P54C-120	3.38			ON DIP / OFF (1 2 3 4 5 6)
P54C-133	3.52			ON DIP / OFF (1 2 3 4 5 6)
P54C-150	3.52		JV3 JV4 JV5 JV6	ON DIP / OFF (1 2 3 4 5 6)
P54C-166	3.52			ON DIP / OFF (1 2 3 4 5 6)
P54C-200	3.52			ON DIP / OFF (1 2 3 4 5 6)

Intel® P55C PENTIUM (MMX) CPU

P55C-166				ON DIP / OFF (1 2 3 4 5 6)
P55C-200	3.3	2.8	JV3 JV4 JV5 JV6	ON DIP / OFF (1 2 3 4 5 6)
P55C-233				ON DIP / OFF (1 2 3 4 5 6)

Note: If you encounter a CPU with different Voltage, just go to page 2-3 and look for the proper voltage settings.

CHAPTER 2   HARDWARE INSTALLATION

Table 2.2 Cyrix® 6x86 CPU

Cyrix® 6x86 CPU uses P to rate the speed of there processor base on Intel® CPU core speed , for example P150+ (120MHz) has 150MHz core speed of Intel® but has 120MHz core speed in Cyrix®. Cyrix® 6x86 CPU should always uses a more powerful fan (ask vendor for proper cooling fan).

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	JV3~JV7	SW1
M1 P133+ (110MHz)	3.52		JV3 JV4 JV5 JV6	[DIP switch diagram: ON/OFF, 1-6]
M1 P150+ (120MHz)				[DIP switch diagram: ON/OFF, 1-6]
M1 P166+ (133MHz)	3.3	2.8	JV3 JV4 JV5 JV6	[DIP switch diagram: ON/OFF, 1-6]
M1 P200+ (150MHz)	3.52		JV3 JV4 JV5 JV6	[DIP switch diagram: ON/OFF, 1-6]

Cyrix® M2 (MMX) CPU

CPU Type	VI/O	Vcore	JV3~JV7	SW1
M2 P166+ (166MHz)	3.3	2.8	JV3 JV4 JV5 JV6	[DIP switch diagram: ON/OFF, 1-6]
M2 P180+ (180MHz)				[DIP switch diagram: ON/OFF, 1-6]
M2 P200+ (200MHz)				[DIP switch diagram: ON/OFF, 1-6]
M2 P225+ (225MHz)				[DIP switch diagram: ON/OFF, 1-6]
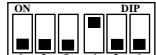
Note: We don't guarantee the performance of 75MHz Bus Clock.
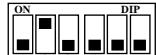
Table 2.3 AMD® 5K86 CPU

AMD® 5K86 CPU uses PR to rate the speed of there processor base on Intel® CPU core speed , for example PR133+ (100MHz) has 133MHz core speed of Intel® but has 100MHz core speed in AMD® 5K86 CPU.

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	JV3~JV7	SW1
PR90 (90MHz)	3.52		JV3 JV4 JV5 JV6	SW setting
PR100 (100MHz)				SW setting
PR120 (90MHz)				SW setting
PR133 (100MHz)				SW setting
PR150 (105MHz)				SW setting
PR166 (116.7MHz)				SW setting
PR200 (133MHz)	Reserved			

AMD® K6 (MMX) CPU

PR166 (166MHz)	3.3	2.9	JV3 JV4 JV5 JV6	SW setting
PR200 (200MHz)				SW setting
PR233 (233MHz)	3.3	3.2	JV3 JV4 JV5 JV6	SW setting

Note: If you encounter a CPU with different Voltage, just go to page 2-3 and look for the proper voltage settings.

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 the positive and should be connected to the +12V. If the system is in suspend mode, the fan will stop. You can change this setup on the **Power Management Setup** in the BIOS.

JFAN Connector

Recommended CPU cooling fan specification:
- Metallic Clip
- RPM 5000
- CFM 10
- +12V
- 52x52x10mm
- Ball Bearing
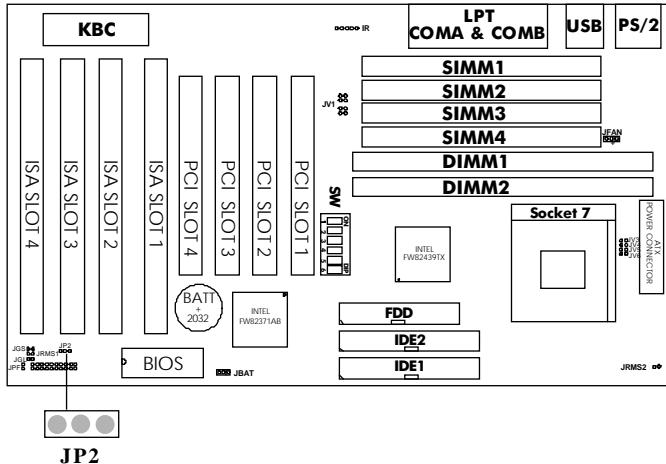
Note: *Always consult vendor for proper CPU cooling fan.*
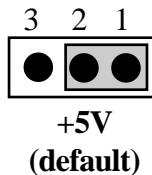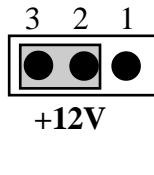
2.2 Flash ROM Programming Voltage: JP2

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

KBC

IR

LPT
COMA & COMB

USB

PS/2

SIMM1
SIMM2
SIMM3
SIMM4
DIMM1
DIMM2

JV1

JFAN

ISA SLOT 4
ISA SLOT 3
ISA SLOT 2
ISA SLOT 1
PCI SLOT 4
PCI SLOT 3
PCI SLOT 2
PCI SLOT 1

SW

INTEL
FW82439TX

Socket 7

ATX
POWER CONNECTOR

BATT
2032

INTEL
FW82371AB

FDD
IDE2
IDE1

JGS
JRMS1
JGL
JPF
JP2
BIOS
JBAT
JRMS2

JP2

Voltage Setting

3   2   1

+12V

3   2   1

+5V
(default)
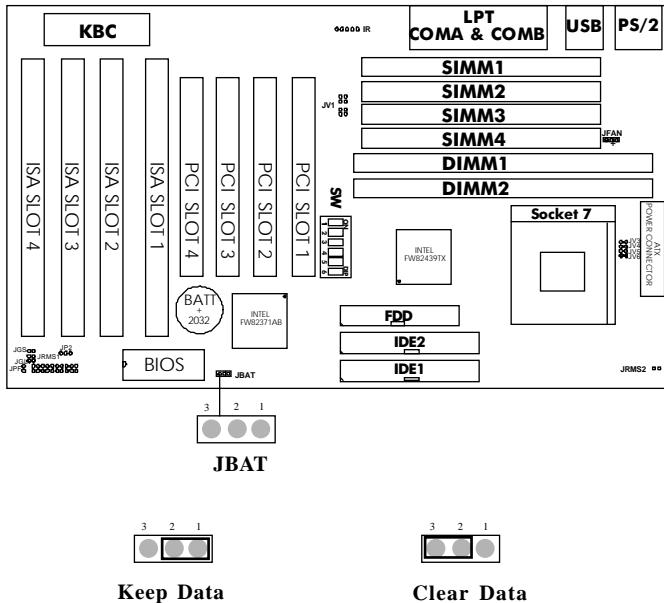
Note: a. If you use Winbond , SST Flash ROM short 1-2 pin.
b. If you use Intel or MXIC Flash ROM short 1-2 pin, if you want to
flash the ROM data, short 2-3 pin , then put it back to 1-2 pin.

CHAPTER 2   HARDWARE INSTALLATION

2.3 External Battery Connector: JBAT
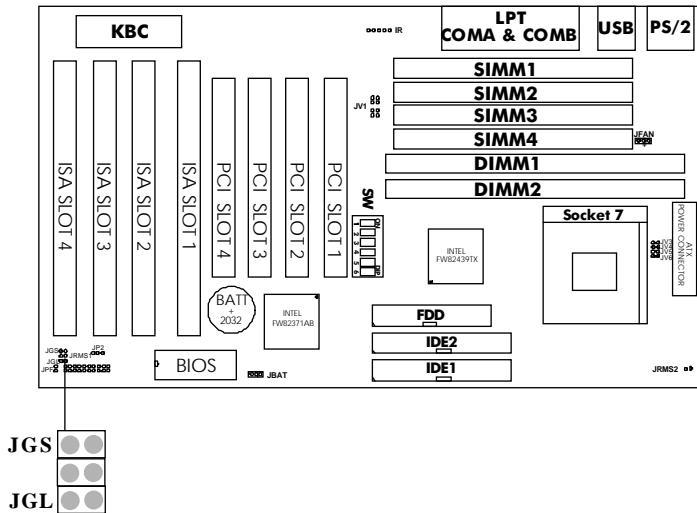
A battery must be used to retain the system board configuration in CMOS
RAM.   If you use the on-board battery you must short pins 1,2 of JBAT to
keep the CMOS data.

JBAT

Keep Data   Clear Data

CHAPTER 2   HARDWARE INSTALLATION

2.4 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 can be connected with LED to monitor the JGS.
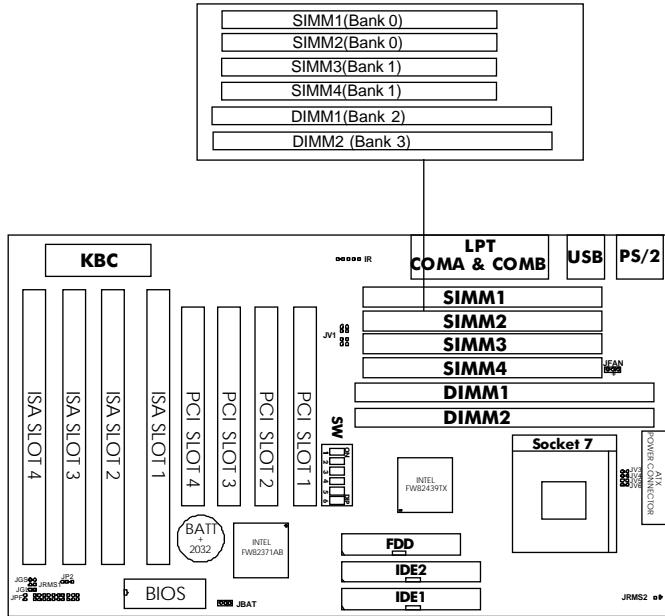
CHAPTER 2   HARDWARE INSTALLATION

2.5 Memory Installation

2.5-1 Memory Bank Configuration
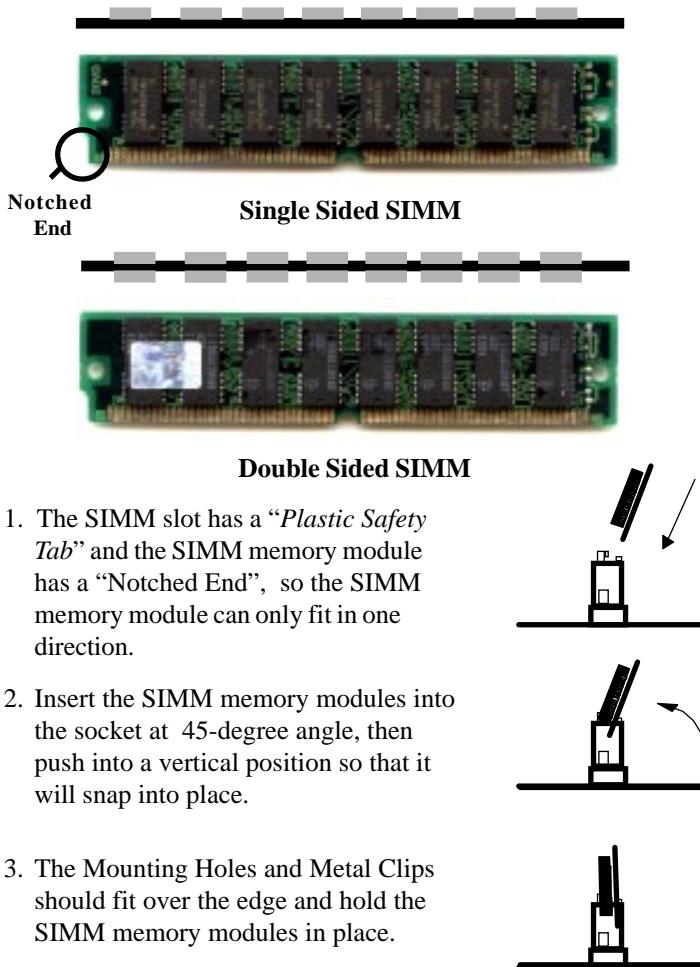
The system board provides four 72-pin SIMMs (Single In-Line Memory Module) and two 168-pin DIMM(Double In-Line Memory) sockets, supports a maximum of 256MB of memory. You can use SIMM from 4MB, 8MB, 16MB, 32MB, 64MB or 128MB. And DIMM from 8MB, 16MB, 32MB, 64MB, 128MB, or 256MB. A Bank consist of 2 SIMM socket or One DIMM socket. It also consist of 2 RAS, each RAS supports memory up to 128MB.This board support 6 RAS.

2.5-2 Memory Installation Procedures:
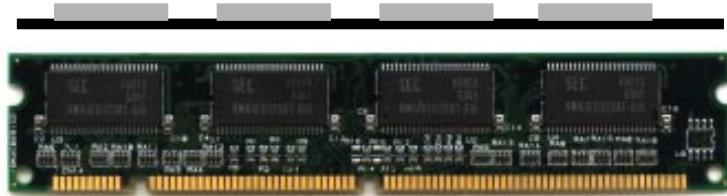
A. How to install a SIMM Module

Notched End

Single Sided SIMM

Double Sided SIMM
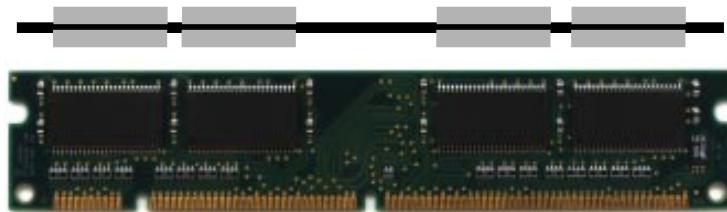
1. The SIMM slot has a "*Plastic Safety Tab*" and the SIMM memory module has a "Notched End", so the SIMM memory module can only fit in one direction.

2. Insert the SIMM memory modules into the socket at 45-degree angle, then push into a vertical position so that it will snap into place.

3. The Mounting Holes and Metal Clips should fit over the edge and hold the SIMM memory modules in place.

CHAPTER 2   HARDWARE INSTALLATION

B. How to install a DIMM Module
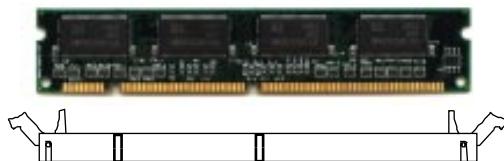
Single Sided DIMM

Double Sided DIMM

1. The DIMM slot has a two key mark "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.
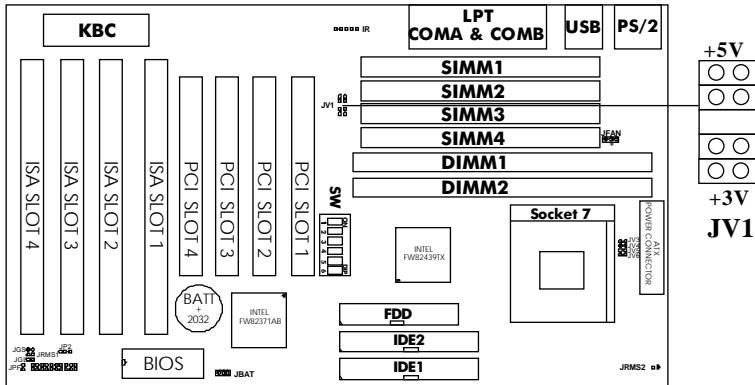
3. Close the plastic clip at the side of the DIMM slot.

Note: If you have installed SIMM and DIMM at the same time. You must use a 3.3 volt DIMM with 5 volt I/O signal tolerance or a full 5 volt DIMM module (EDO, FP or SDRAM). Look for JV1 to select the DIMM voltage.

CHAPTER 2   HARDWARE INSTALLATION

B.1 DIMM Power Voltage Selector : JV1

DIMM Voltage	JV1
5V	
3.3V	

SIMM Power Level : 5 Volts   DIMM Power Level : 3.3V or 5V

2.5-3 Memory Population Rule

1. Make sure that the SIMM banks are using the same type and equal size density memory.

2. To operate properly at least two 72-pin SIMM module must be installed in the same bank or one 168-pin DIMM module must be installed.

3. Look at the table below:

S = Single Density   D = Double Density   N = None

BANK0	BANK1	BANK2	BANK3
S	S/D/N	S/D/N	S/N
D	S/D/N	S/D/N	N
N	S/D/N	S/D/N	D

4. Before using SIMM and DIMM modules, look at the chart next page.

5. Each RAS can not exceed 16 pcs of DRAM.

6. It is not recommended to mix 3V SDRAM with 5V EDO/FP, for it may cause unreliability.

6. If SDRAM and EDO/FPM are mixed in a system, then the configuration is limited to a maximum of four RAS(two RAS of x4 EDO/FPM and two RAS of x8 or x16 SDRAM). If only x8 or x16 EDO/FPM and SDRAM devices are used(i.e. not x4's), then five RAS can be supported.

7. If you use a 64M DRAM of SDRAM, then Bank0 can not be use.

CHAPTER 2   HARDWARE INSTALLATION

**Table 2.5-1 Minimum (upgradeable) and Maximum
Memory Size for each configuration for SIMM**

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/SIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
4M	1Mx4	SYMM	10	10	4MBx8	8MBx16
16M	1Mx16	SYMM	10	10	4MBx2	8MBx4
	1Mx16	ASYM	12	8	4MBx2	8MBx4
	2Mx8	ASYM	11	10	8MBx4	16MBx8
	4Mx4	SYMM	11	11	16MBx8	32MBx16
	4Mx4	ASYM	12	10	16MBx8	32MBx16
64M	2Mx32	ASYM	12	9	8MBx1	16MBx2
	4Mx16	SYMM	11	11	16MBx2	32MBx4
	4Mx16	ASYM	12	10	16MBx2	32MBx4
	8Mx8	ASYM	12	11	32MBx4	64MBx8
	16Mx4	SYMM	12	12	64MBx8	128MBx16

**Table 2.5-2 Minimum (upgradeable) and Maximum
Memory Size for each configuration for DIMM**

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	12	8	8MBx4	16MBx8
	2Mx8	ASYM	12	9	16MBx8	32MBx16
	4Mx4	ASYM	12	10	32MB	64MB
64M	2Mx32	ASYM	12	10	32MBx2	64MBx4
	2Mx32	ASYM	13	8	16MBx2	32MBx4
	4Mx16	ASYM	14	8	32MB	64MB
	8Mx8	ASYM	14	9	64MB	128MB
	16Mx4	ASYM	14	10	128MB	256MB

CHAPTER 2   HARDWARE INSTALLATION

2.6 Case Connector: JFP

The Turbo LED, Hardware Reset, Key Lock, Power LED, Power Saving LED, Sleep Switch, Speaker and HDD LED all connected to the JFP connector block.
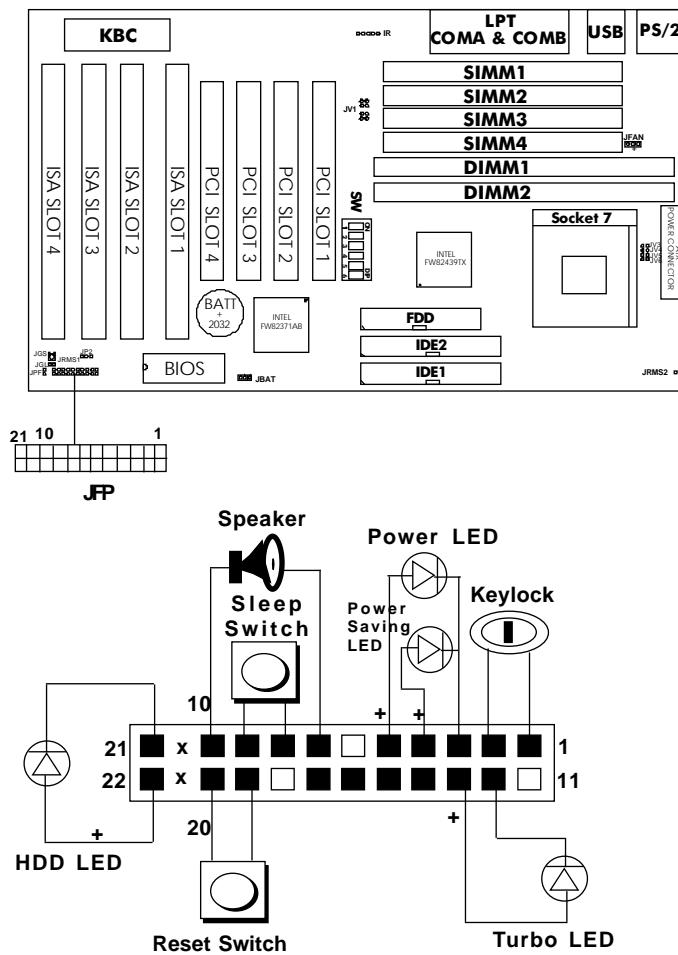
Figure 2.1

CHAPTER 2   HARDWARE INSTALLATION

2.6-1 Turbo LED

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

2.6-2 Hardware Reset

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

2.6-3 Keylock

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

2.6-4 Power LED

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

2.6-5 Suspend Switch

The Suspend Switch can be set in the BIOS Power Management Setup. When used as a Suspend Switch, this allows the user to suspend the system when not in use. (See Figure 2.1)

2.6-6 Speaker

Speaker from the system case are connected to this pin. (See Figure 2.1)
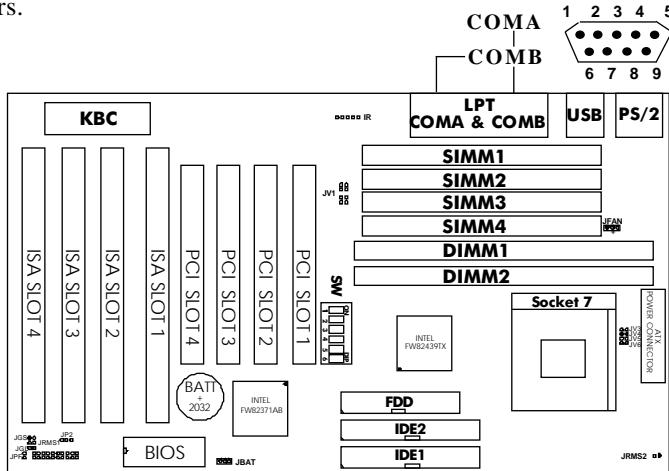
2.6-7 HDD LED

HDD LED shows the activity of a hard disk drive. Avoid tuning 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).

CHAPTER 2   HARDWARE INSTALLATION

2.7 Serial Port Connectors: COMA & COMB

The system board has two serial ports COMA and COMB. 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.
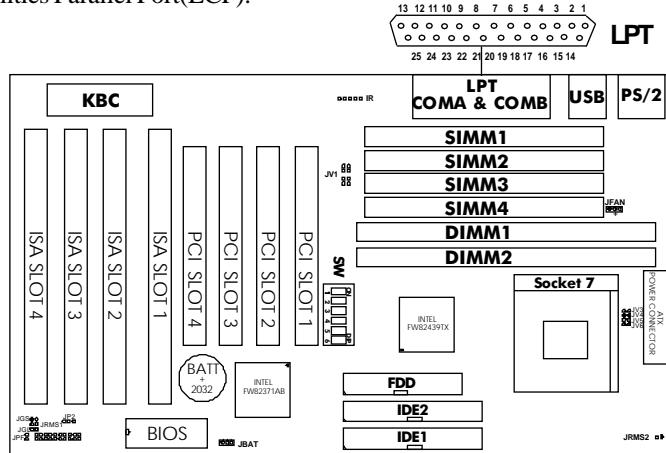
PIN   DEFINITION

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	**G N D**
6	**DSR**(Data Set Ready)
7	**RTS**(Request To Send)
8	**CTS**(Clear To Send)
9	**RI**(Ring Indicate)

CHAPTER 2   HARDWARE INSTALLATION

2.8 Parallel Port Connectors: LPT

The system board provides a connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP).
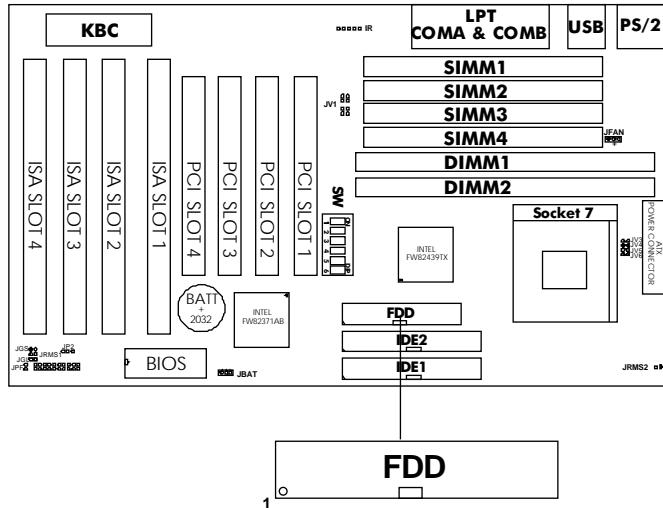
PIN   DEFINITION

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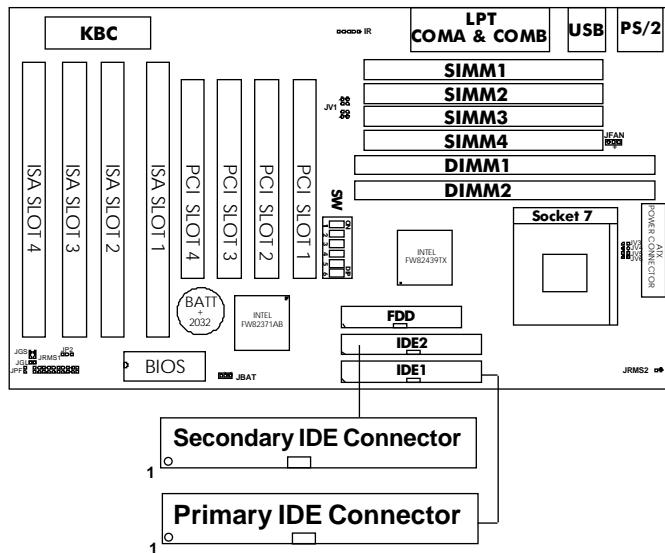
The system board also provides a standard floppy disk connector FDD that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. You can attach a floppy disk cable directly to this connector.

CHAPTER 2   HARDWARE INSTALLATION

2.10 Hard Disk Connector: IDE1 & IDE2

The system board has a 32-bit Enhanced PCI IDE Controller that provide PIO mode 4 Ultra DMA33 speed. It has two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floopy (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)
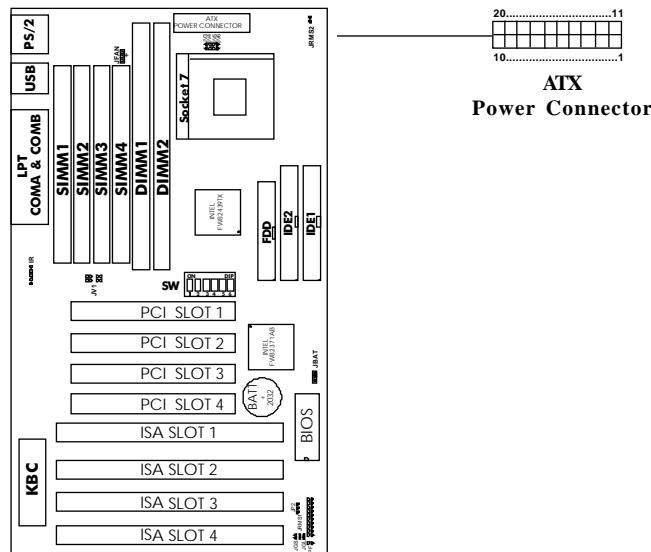
IDE2 can also connect a Master and a Slave drive.

CHAPTER 2   HARDWARE INSTALLATION

2.12 Power Supply

2.12-1   ATX 20-pin Power Connector: JWR12

This connector support the power button on board soft power off and modem ring wakeup. you neeed to use the **push button JRMS1 and JRMS2.**

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
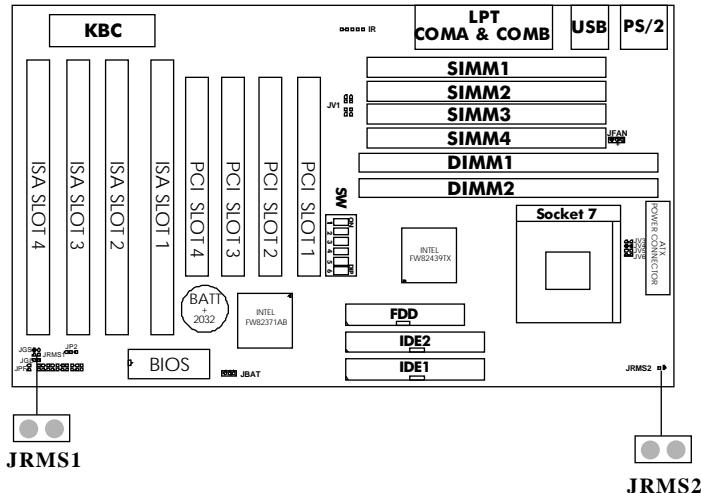
2.12-2 Power On/Off Switch: JRMS1/JRMS2

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. **During ON stage push once and the system goes to sleep mode, push it more than 4 seconds will change its status from ON to OFF**. If you want to change the setup, you could go the BIOS setup and look for Power Management Setup.
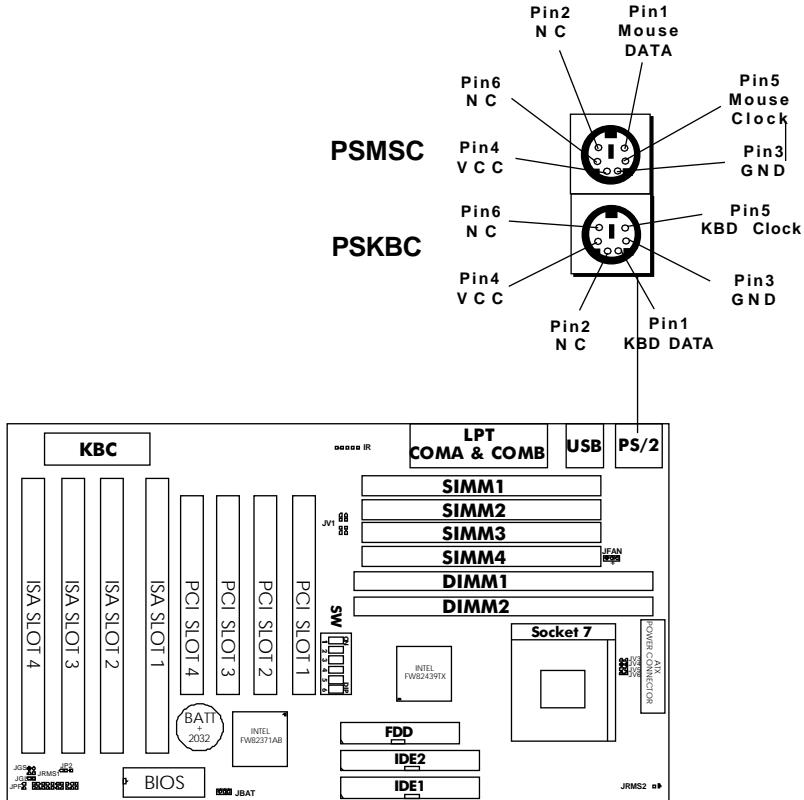
Note: The two switch provided by the board is just for your convenience, The two switch has the same feature.

CHAPTER 2   HARDWARE INSTALLATION

2.13 Keyboard Connector: PSKBC
Mouse Connector: PSMSC

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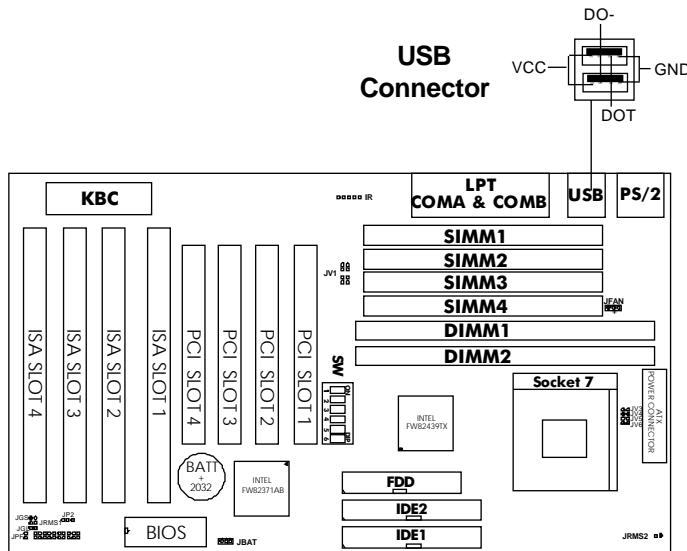
It also provides a standard PS/2 style mouse mini DIN connector for attaching a PS/2 style mouse. You can plug a PS/2 style mouse directly into this connector. The connector location and pin definition as shown below:

2.14 USB Connector: USB

The system board provide a **USB(Universal Serial Bus)** connector for attaching a keyboard, mose or etc. You can plug it directly to this connectro.

CHAPTER 2   HARDWARE INSTALLATION

2.15 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.