2.1-2 CPU Core Speed Derivation Procedure

1. The Switch SW1 (4 & 5) is used to adjust the CPU clock frequency.

| SW1		CPU
4	5	Clock
ON	ON	60MHz
OFF	ON	66MHz
ON	OFF	75MHz
OFF	OFF	83.3MHz

2. The 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	ON	OFF	3
ON	ON	OFF	2.5
ON	OFF	OFF	2
OFF	OFF	OFF	1.5/3.5

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

2.1-3 CPU Voltage Setting: SW2
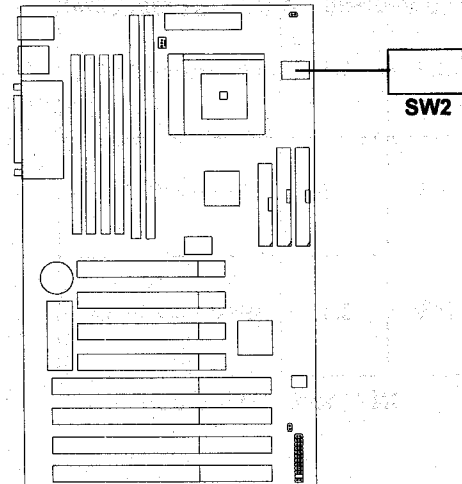
V I/O	Vcore	SW2
3.5	3.5	OFF ON ON ON ON
3.3	3.3	OFF ON ON OFF ON
3.3	3.2	OFF ON ON OFF OFF
3.3	2.9	OFF ON OFF OFF ON

ON-Short   OFF-Open

V I/O	Vcore	SW2
3.3	2.8	OFF ON OFF OFF OFF
3.3	2.5	OFF OFF ON OFF ON
3.3	2.1	OFF OFF OFF OFF ON

ON-Short   OFF-Open

2.1-4 CPU Speed and Voltage Setting: SW1 & SW2

To set the proper speed and voltage of the CPU, you must know the specifications of your CPU (*always ask the vendor for CPU specifications*).
Then refer to **Table 2.1 (Intel® Pentium® Processor/Pentium® Processor with MMX™ technology), Table 2.2 (Cyrix® 6x86/6x86L/6x86MX processor)** and **Table 2.3 (AMD® K5/K6 processor)** for proper setting.

SW2

SW1

Table 2.1 Intel® Processor

a. Intel® Pentium® Processor

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	SW2	SW1
90 MHz	3.38		OFF ON ON OFF ON	OFF OFF OFF ON ON
	3.52		OFF ON ON ON ON	
100 MHz	3.38			OFF OFF OFF OFF ON
120 MHz	3.38		OFF ON ON OFF ON	ON OFF OFF ON ON
133 MHz	3.52			ON OFF OFF OFF ON
150 MHz	3.52			ON ON OFF ON ON
166 MHz	3.52		OFF ON ON ON ON	ON ON OFF OFF ON
200 MHz	3.52			OFF ON OFF OFF ON

b. Intel® Pentium® Processor with MMX™ Technology

166 MHz				ON ON OFF OFF ON
200 MHz	3.3	2.8	OFF ON OFF OFF OFF	OFF ON OFF OFF ON
233 MHz				OFF OFF OFF OFF ON

Note: If you encounter a CPU with different voltage, just go to **Section 2.1-3** and look for the proper voltage settings.

Table 2.2 Cyrix® Processor

Cyrix® 6x86 processor uses PR to rate the speed of their processors based Intel® Pentium® processor core speed. For example, PR150 (120MHz) 150MHz core speed of Intel® Pentium® processor, but it has120MHz speed in Cyrix® processor. Cyrix® 6x86 processor should always uses more powerful fan (ask vendor for proper cooling fan).

Cyrix® 6x86/6x86L processor

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	SW2	SW1
6x86 PR150	3.5		OFF ON ON ON ON	ON OFF OFF ON ON
6x86 PR166				
6x86L PR166	3.3	2.8	OFF ON OFF OFF OFF	ON ON OFF ON ON
6x86 PR200	3.5		OFF ON ON ON ON	ON ON OFF OFF ON
6x86L PR200	3.3	2.8	OFF ON OFF OFF OFF	

b. Cyrix® 6x86MX Processor

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	SW2	SW1
PR166 (60 x 2.5)				ON ON OFF ON ON
PR200 (66 x 2.5)				ON ON OFF OFF ON
PR233 (75 x 2.5)	3.3	2.9	OFF ON OFF OFF ON	ON ON OFF ON OFF
(66 x 3)				OFF ON OFF OFF ON
PR266 (75 x3)				OFF ON OFF ON OFF
(66 x 3.5)				OFF OFF OFF OFF ON

Note: If you encounter a CPU with different voltage, just go to **Section 2.1-3** and look for the proper voltage settings.

2.3 AMD® Processor

AMD® K5/K6 processor uses PR to rate the speed of their processors based on Intel® Pentium® processor core speed . For example, PR133(100MHz) has 133MHz core speed of Intel® Pentium® processor but has 100MHz core speed in AMD® processor.

a. AMD® K5 Processor

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	SW2	SW1
PR90				OFF OFF OFF ON ON
PR100				OFF OFF OFF OFF ON
PR120				ON OFF OFF ON ON
PR133	3.52		OFF ON ON ON ON	ON OFF OFF OFF ON
PR150				ON ON OFF ON ON
PR166				ON ON OFF OFF ON

b. AMD® K6 Processor

CPU Type	VI/O	Vcore	SW2	SW1
PR166	3.3	2.9	OFF ON OFF OFF ON	ON ON OFF OFF ON
PR200				OFF ON OFF OFF ON
PR233	3.3	3.2	OFF ON ON OFF OFF	OFF OFF OFF OFF ON

Note: If you encounter a CPU with different voltage, just go to **Section 2.1-3** and look for the proper voltage settings.

2.6-3 Memory Population Rules

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. The system cannot operate with only one 72-pin SIMM module.

3. Each RAS cannot exceed 16 pcs of DRAM.

4. It is not recommended to mix SIMM with DIMM, for it may cause unreliability.

5. You can only use a 3.3V unbuffered DIMM.

Table 2.6-1   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 2.6-2   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
6M	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

2.7 Case Connector: JFP1

The Turbo LED, Hardware Reset, Key Lock, Power LED, Power Saving
LED, Sleep Switch, Speaker and HDD LED are all grouped in JFP1
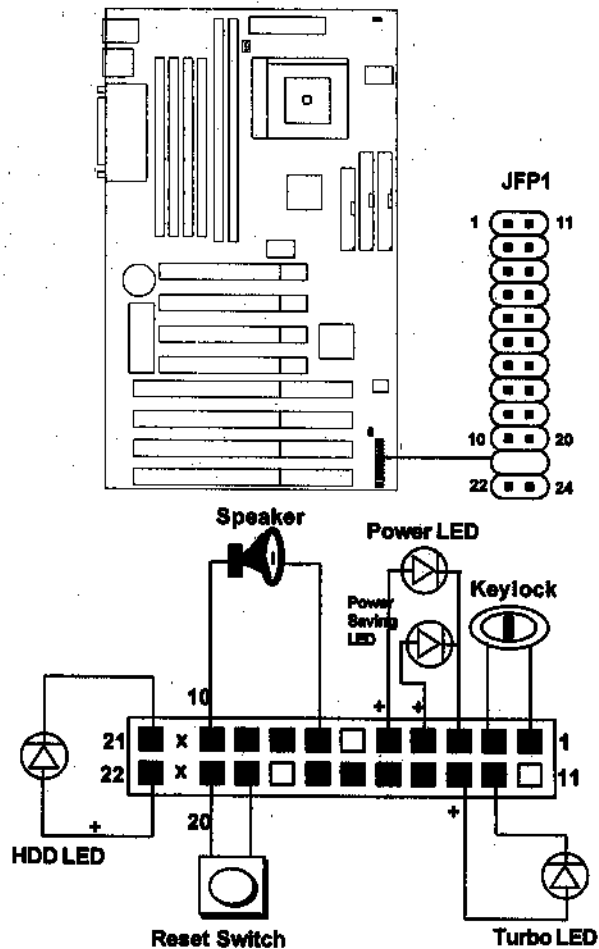connector block for easy installation.

Figure 2.1

Turbo LED

mainboard is always on Turbo speed. Connecting a Turbo LED will just
LED. (See Figure 2.1)

Hardware Reset

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

Keylock

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

Power LED

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

Speaker

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

HDD LED

HDD shows the activity of a hard disk drive. Avoid turning the
off while the HDD led is lit. You can connect the HDD LED from
case to this pin. (See Figure 2.1).

2.10 ATX 20-pin Power Connector: JWR1

This type of connector already supports the remote ON/OFF function.
However, you need to connect the **Remote Power ON/OFF switch**
(JRMS1 or JRMS2).

**ATX
Power Connector**
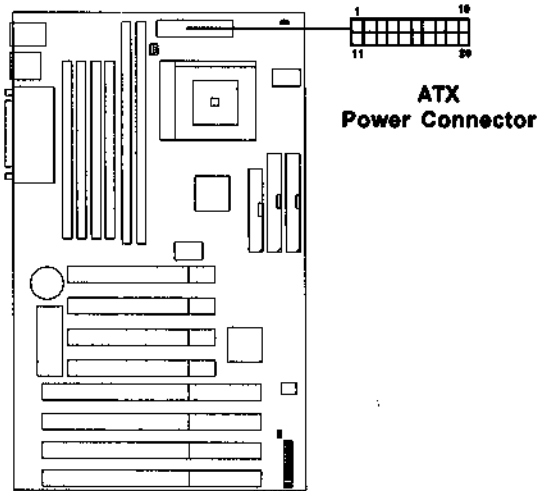
ATX Power Connector Pin Description

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

## Remote Power On/Off Switch: JRMS1/JRMS2

2-pin push button switch to JRMS1 or JRMS2. Every time the
shorted by pushing it once, the power supply will change its status
to ON. During ON stage: push once and the system goes to sleep
push it more than 4 seconds will change its status from ON to OFF.
used for ATX type power supply. You can program this through
refer to Soft-Off by PWR-BTTN in BIOS.

JRMS1

**JRMS2
(reserved)**
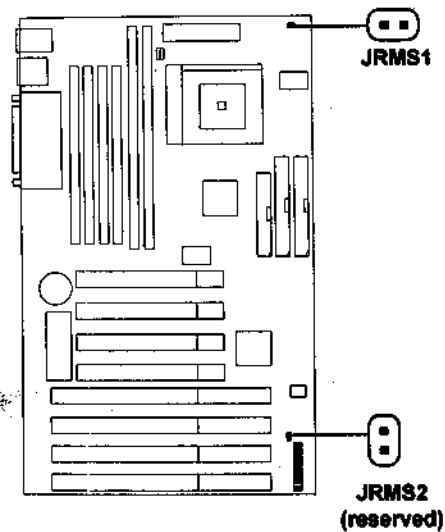
2.12 Serial Port Connectors: COM A & COM B

The mainboard 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.
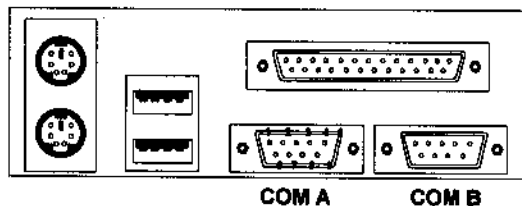
Serial Ports (9-pin Male)

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)

3 Parallel Port Connector: LPT

mainboard provides a connector for LPT. A parallel port is a standard port that also supports Enhanced Parallel Port(EPP) and Extended abilities Parallel Port(ECP).

Parallel Port (25-pin Female)
LPT
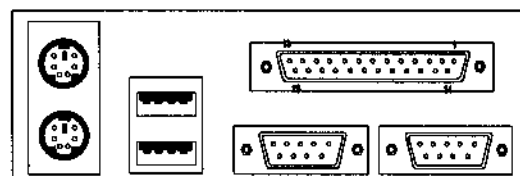
PIN DEFINITION

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		