

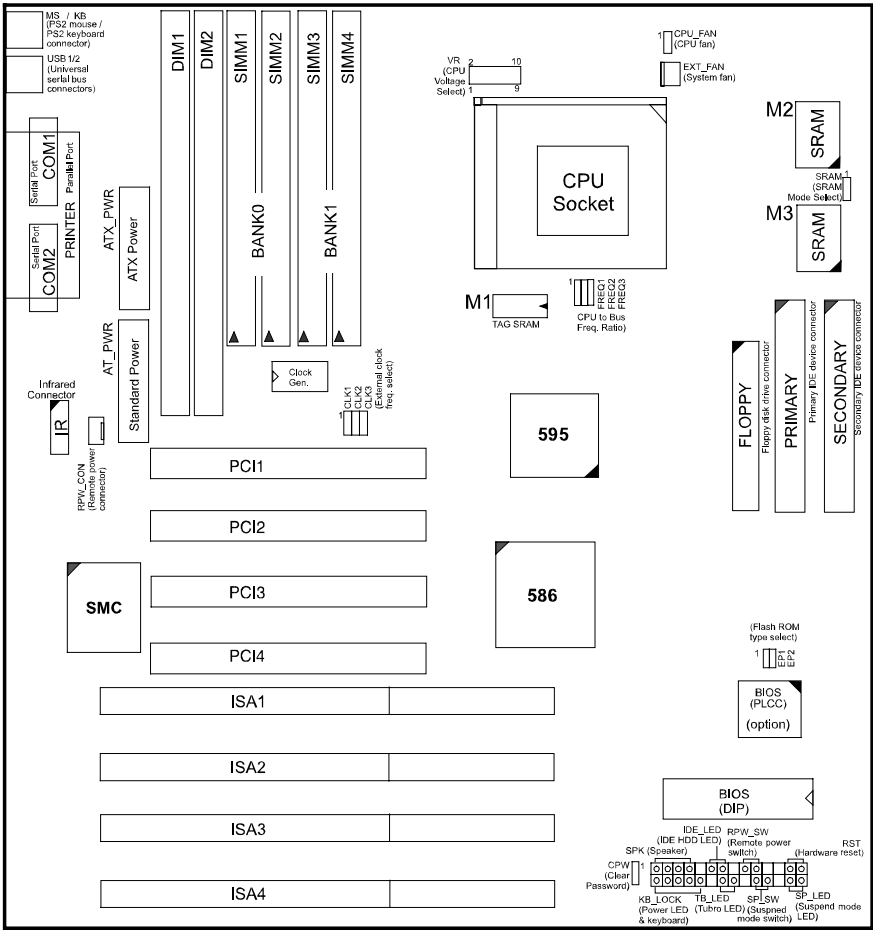
## Installation Procedures

The PA-2011 has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various jumper settings on your mainboard.

To set up your computer, you should follow these installation steps:

- Step 1 -  
Set system jumpers
- Step 2 -  
Install System RAM modules
- Step 3 -  
Install the CPU
- Step 4 -  
Install expansion cards
- Step 5 -  
Connect cables and power supply
- Step 6 -  
Set up BIOS feature (Please read Chapter Three.)

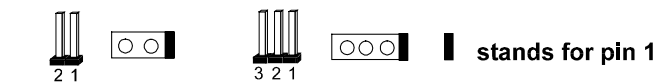
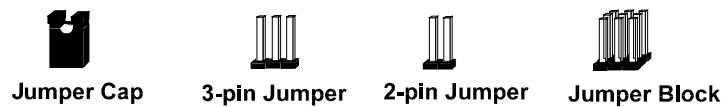
Mainboard Layout



## 1). Set System Jumpers

### *Jumpers*

Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. To set a jumper, a black cap containing metal contacts is placed over the jumper pins according to the required configuration. A jumper is said to be shorted when the black cap has been placed on one or two of its pins. The types of jumpers used in this manual are shown below:



Jumpers are shown as above



Jumper cap is shown as above

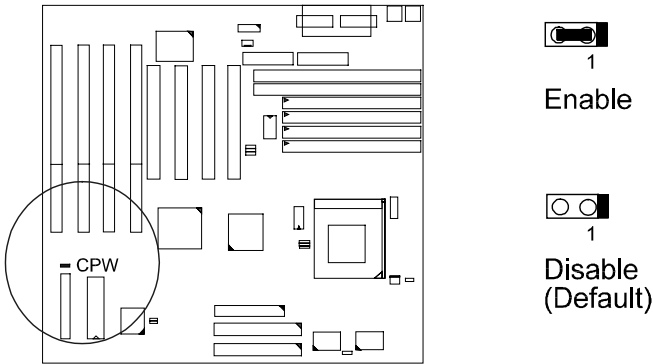


Jumpers in a Block

**NOTE :** Users are not encouraged to change the jumper settings not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.

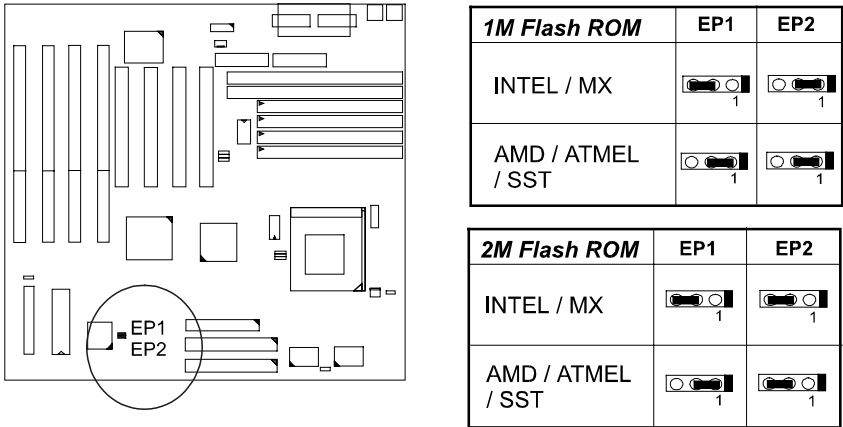
**Clear Password: CPW**

This jumper allows you to set the password configuration to Enabled or Disabled. You may need to enable this jumper if you forget your password.



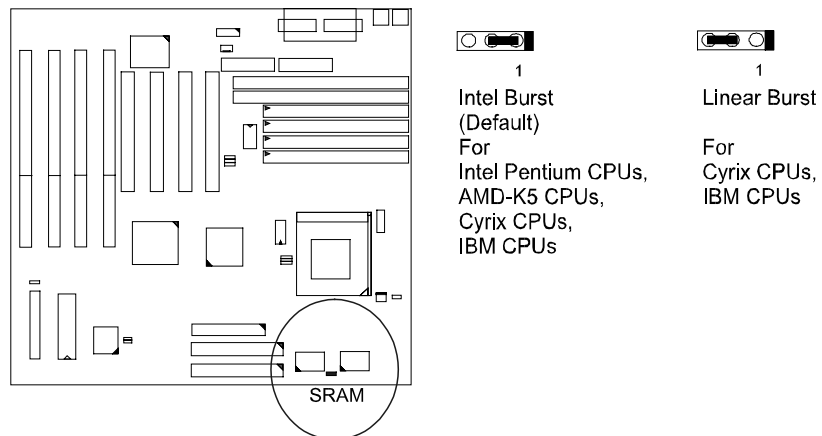
**Flash EPROM Type Selection: EP1, EP2**

These two jumpers allow you to configure the Flash EPROM chip



***CPU to SRAM Data Transacting Mode Selection: SRAM***

This jumper allows you to select the CPU to SRAM data read/write mode.



## 2). Install System RAM Modules

### DRAM and SDRAM

The working space of the computer is the Random Access Memory (RAM). The system cannot act upon data unless it is loaded into RAM. When more memory is added, the working memory of the computer is larger, thereby increasing total performance.

The PA-2011's RAM is comprised of four industry standard 72-pin Single In-line Memory Modules (SIMMs) and two 168-pin Dual In-line Memory Modules (DIMMs). Each SIMM socket supports from 4 to 64MB FPM (Fast Page Mode) and high-speed EDO (Extended Data Out) DRAM. Each DIMM socket is able to support up to 64MB EDO DRAM or lightning-fast SDRAM.

SDRAM is an advanced new memory technology that boosts overall system performance with its ability to synchronize all operations with the processor clock signal. This makes the implementation of control interfaces easier, and speeds up column access time. SDRAM features an on-chip burst counter that can be utilized to increment column addresses for very fast burst access, which means that SDRAM allows new memory access to be initiated before the preceding access has been finished.

Before making DRAM upgrades you should verify the type and speed of the RAM currently installed from your dealer. Installing mixtures of RAM types other than those described in this manual will have unpredictable results.

## RAM Module Configuration

SIMMs and DIMMs in Bank 0 and Bank 1 can be installed in many combinations. Some of them are listed in the following table.

(Unit : MB)

TOTAL MEMORY	SIMM 1 & 2 (Bank 0)	SIMM 3 & 4 (Bank 1)	DIM1 (Bank 0)	DIM2 (Bank 1)
8	4 & 4			
			8	
16	8 & 8			
			16	
32	16 & 16			
			32	
64	32 & 32			
			64*	
128	64 & 64			
			64*	64*
256	64 & 64	64 & 64		
512	128* & 128*	128* & 128*		

### NOTE :

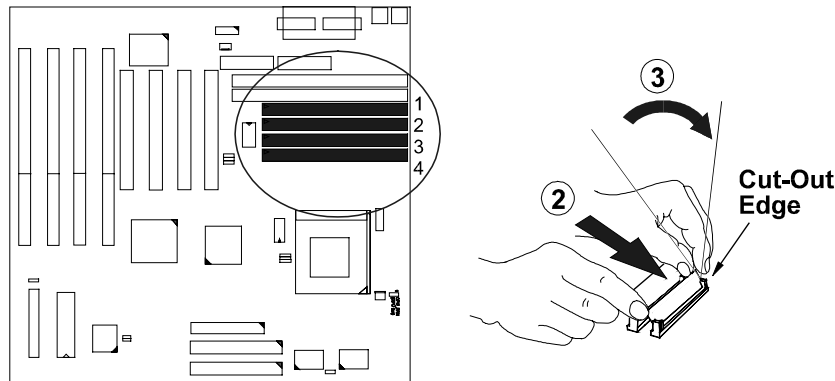
- \* A RAM module of this size was not available for testing at press time.
- DIM1 and DIM2 only support 3.3V (unbuffered) EDO and SDRAM modules.
- It is recommended that SIMMs and DIMMs are not installed at the same time on this mainboard to avoid unexpected failure.
- DIM2 and SIMM 1&2 are shared. That is, It is not allowed to install RAM modules on DIM2 and SIMM 1 & 2 at the same time.

## Install SIMMs

Complete the following procedures to install SIMMs:

**CAUTION :** Always turn the system power off before installing or removing any device; and see “Handling Precautions” at the start of this manual.

1. Locate the SIMM slots on the mainboard. (See figure below.)



**NOTE :** SIMMs in each bank must be of the same type; and the BIOS automatically configures the memory size.

2. Carefully fit a SIMM at a 45 degree angle into each empty socket to be populated. All the SIMMs must face the same direction.
3. Swing each SIMM into its upright, locked position.  
When locking a SIMM in place, push on each end of the SIMM - do not push in the middle, as shown above.

## Remove SIMMs

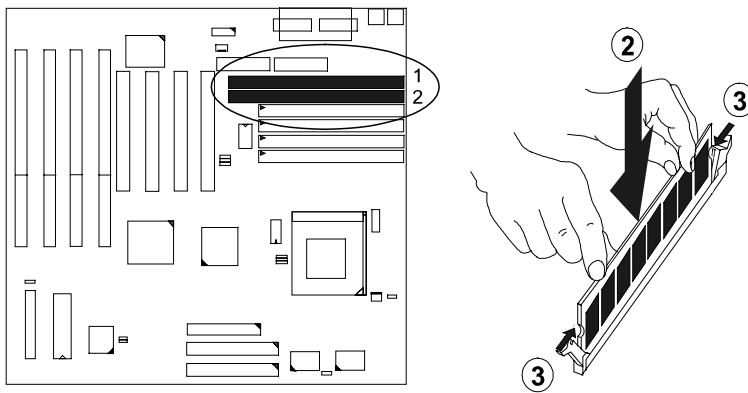
To remove the SIMMs, pull the retaining latch on both ends of the socket and reverse the procedure above.



## Install DIMMs

Complete the following procedures to install DIMMs:

1. Locate the DIMM slots on the mainboard. (See figure below.)



2. Install the DIMM straight down into the DIMM slot with both hands.
3. The clips of the slot will close up to hold the DIMM in place when the DIMM touches the slot's bottom.

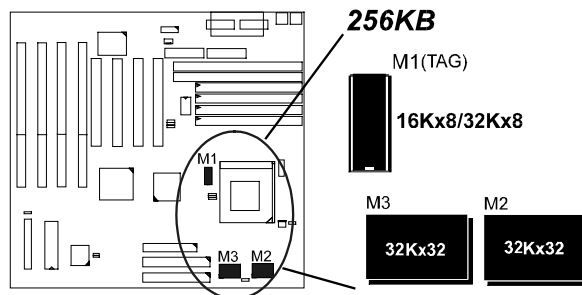
## Remove DIMMs

Press the clips with both hands to remove the DIMM.

## Cache Memory

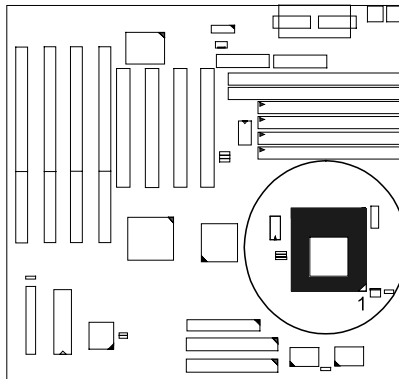
The PA-2011 comes with onboard 256KB (512KB is optional) synchronous 3V Pipeline Burst SRAMs. Cache memory access is very fast compared to main memory access. The cache holds data for imminent use. Since cache memory is from five to more than ten times faster than main memory, the CPU's access time is reduced, giving you better system performance.

Socket 7 mainboards may implement various types of L2 cache SRAMs. Pipeline Burst SRAM is one of them, delivering the best price performance ratio. They perform much better than asynchronous SRAMs.



### 3). Install the CPU

The CPU module resides in the Zero Insertion Force (ZIF) socket on the mainboard.



**CAUTION :**

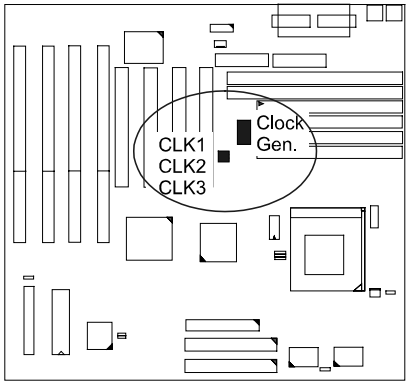
1. Always turn the system power off before installing or removing any device.
2. Always observe static electricity precautions.  
See "Handling Precautions" at the start of this manual.
3. Inserting the CPU chip incorrectly may damage the chip.

To install the CPU, do the following:













1. Lift the lever on the side of the CPU socket.
2. Handle the chip by its edges and try not to touch any of the pins.
3. Place the CPU in the socket. The chip has a notch to correctly orientate the chip. Align the notch with pin one of the socket. Pin one is located in the blank triangular area. Do not force the chip. The CPU should slide easily into the socket.
4. Swing the lever to the down position to lock the CPU in place.
5. See the following sections for information on the CPU jumpers settings.

**CPU External Clock (BUS) Frequency: CLK1, CLK2, CLK3**

The table below shows the jumper settings for the different CPU speed configurations.















**For IMI Clock Generator**

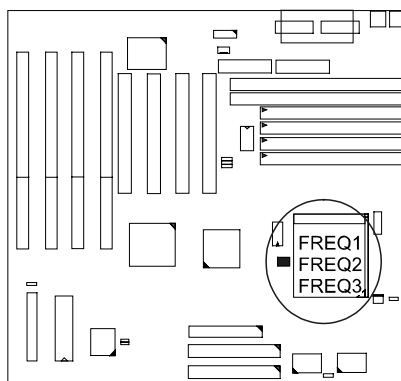
External (CPU/CLK)	CLK1	CLK2	CLK3
75 MHz	 1	 1	 1
66 MHz	 1	 1	 1
60 MHz	 1	 1	 1
55 MHz	 1	 1	 1

**NOTE :** There is one of three different types of clock generators onboard, either IMI, ICW, or PhaseLink, for CPU clock jumper settings. Please check your onboard clock generator before you set the CPU jumpers. The settings of ICW and PhaseLink are listed in Appendix B.

***CPU to Bus Frequency Ratio:  $FREQ1$ ,  $FREQ2$ ,  $FREQ3$***

These three jumpers are used in combination to decide the ratio of the internal frequency of the CPU to the bus clock.

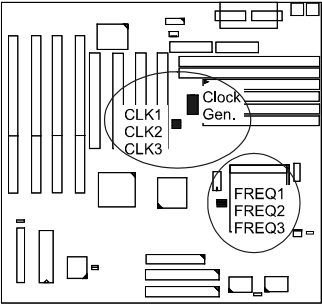
FREQ1	FREQ2	FREQ3	Ratio			
			P54C	P55C/ M2/K6	K5	M1
 1	 1	 1	3 x	3 x	2 x	4 x
 1	 1	 1	2.5 x	2.5 x	1.75 x	1 x
 1	 1	 1	2 x	2 x	---	2 x
 1	 1	 1	1.5 x	3.5 x	1.5 x	3 x



Intel Pentium CPUs

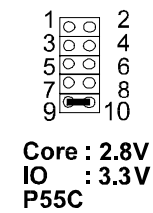
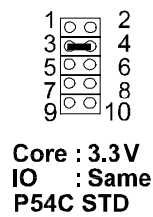
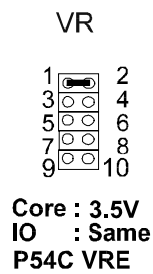
Frequency

CPU Speed (MHz)	External (CPU/CLK) (MHz)	IMI			Internal	CPU Clock Rate		
		CLK1	CLK2	CLK3		FREQ1	FREQ2	FREQ3
P55C								
233	66				3.5 x			
200	66				3 x			
166	66				2.5 x			
P54C								
200	66				3 x			
166	66				2.5 x			
150	60				2.5 x			
133	66				2 x			
120	60				2 x			
100	66				1.5 x			
90	60				1.5 x			

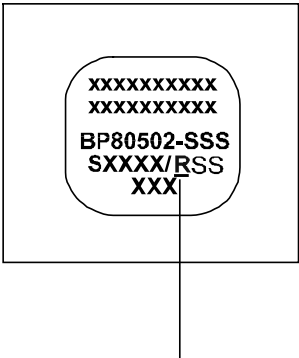




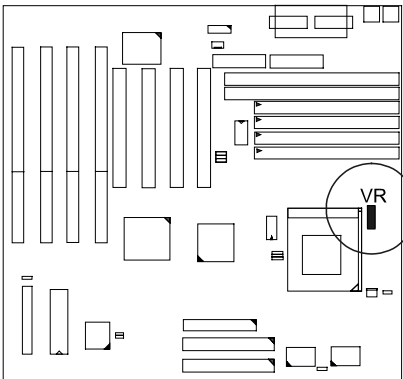
Voltage



Intel Pentium CPU  
Bottom Side Marking



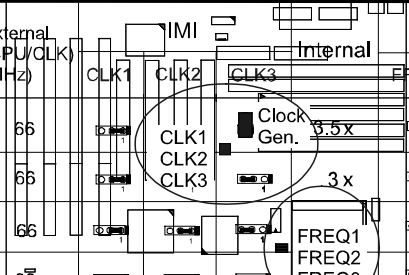
R (Identifier for Voltage Range) :  
V for VRE Voltage Range  
or  
S for Standard Voltage Range





## AMD-K5/K6 CPUs

### *Frequency*



Model	CPU Speed (MHz)	External (CPU/CLK) (MHz)	Internal						CPU Clock Rate		
			CLK1	CLK2	CLK3	FREQ1	FREQ2	FREQ3	FREQ1	FREQ2	FREQ3
K6-233	233	66	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3	3.5x					
K6-200	200	66	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3	3x					
K6-166	166	66	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3						
K5-PR200	133	66	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3	FREQ1 FREQ2 FREQ3					
K5-PR166	116	66	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3	1.75x					
K5-PR150	105	60	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3	1.75x					
K5-PR133	100	66	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3	1.5x					
K5-PR120	90	60	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3	1.5x					
K5-PR100	100	66	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3	1.5x					
K5-PR90	90	60	CLK1 CLK2 CLK3	CLK1 CLK2 CLK3	CLK3	1.5x					

Voltage

VR

1

3

5

7

9

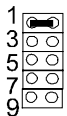
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4

6

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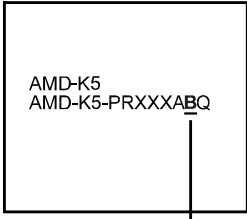
10



Core : 3.5V  
IO : Same  
AMD-K5 - B

AMD-K5 CPU  
Top Side Marking

AMD-K5  
AMD-K5-PRXXXABQ



V (Identifler for Operation Voltage)

1

3

5

7

9

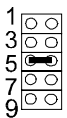
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4

6

8

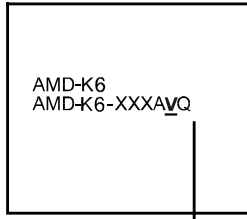
10



Core : 3.2V  
IO : 3.3V  
AMD-K6 (233 MHz)

AMD-K6 CPU  
Top Side Marking

AMD-K6  
AMD-K6-XXXAVQ



V (Identifier for Operation Voltage) :

N 3.1-3.3V Core/3.135-3.6V I/O  
L 2.755-3.045V Core/3.135-3.6V I/O

1

3

5

7

9

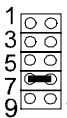
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4

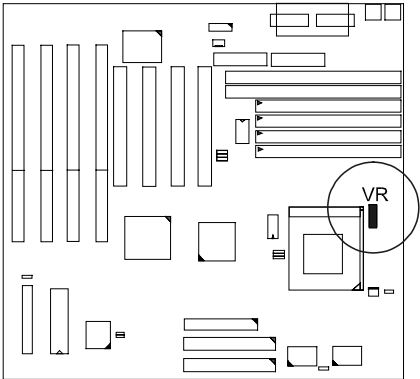
6

8

10



Core : 2.9V  
IO : 3.3V  
AMD-K6 (166, 200 MHz)

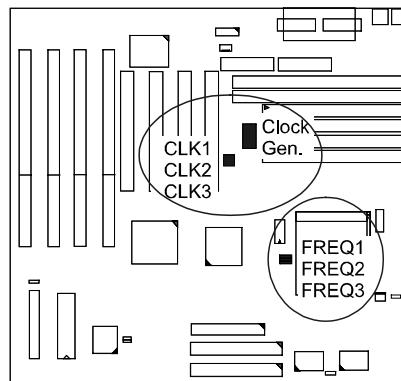


## Cyrix 6x86 CPUs

### Frequency

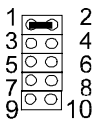
Model	CPU Speed (MHz)	External (CPU/CLK) (MHz)	IMI			Internal	CPU Clock Rate		
			CLK1	CLK2	CLK3		FREQ1	FREQ2	FREQ3
M2*	233	66				3.5 x			
M2*	225	75				3 x			
M2*	200	66				3 x			
M2*	188	75				2.5 x			
M2*	166	66				2.5 x			
M2*	150	60				2.5 x			
6x86-PR200+ 6x86L-PR200+	150	75				2 x			
6x86-PR166+ 6x86L-PR166+	133	66				2 x			
6x86-PR150+ 6x86L-PR150+	120	60				2 x			
6x86-PR133+ 6x86L-PR133+	110	55				2 x			

**NOTE :** \* This CPU had not been tested when this manual was printed.

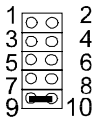


*Voltage*

VR

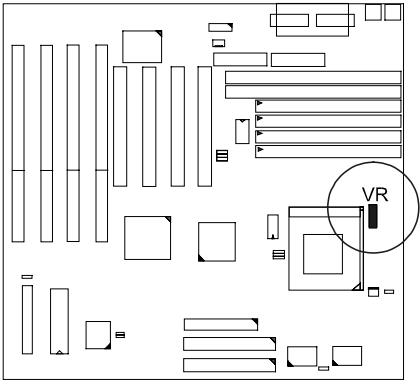
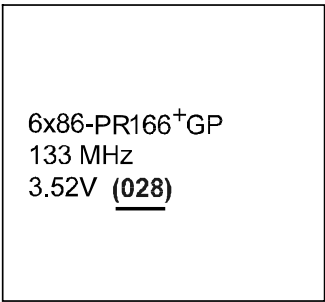


Core : 3.5V  
IO : Same  
Cryix 6x86-028



Core : 2.8V  
IO : 3.3V  
Cryix 6x86L

**Cyrix 6x86 CPU**  
**Top Side Marking**

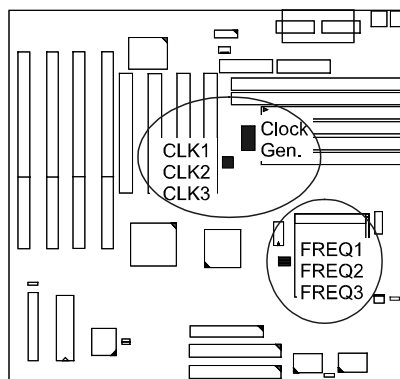


## IBM 6x86 CPUs

### *Frequency*

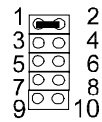
Model	CPU Speed (MHz)	External (CPU/CLK) (MHz)	IMI			Internal	CPU Clock Rate		
			CLK1	CLK2	CLK3		FREQ1	FREQ2	FREQ3
M2 <sup>*</sup>	233	66				3.5 x			
M2 <sup>*</sup>	225	75				3 x			
M2 <sup>*</sup>	200	66				3 x			
M2 <sup>*</sup>	188	75				2.5 x			
M2 <sup>*</sup>	166	66				2.5 x			
M2 <sup>*</sup>	150	60				2.5 x			
6x86-PR200+ 6x86L-PR200+	150	75				2 x			
6x86-PR166+ 6x86L-PR166+	133	66				2 x			
6x86-PR150+ 6x86L-PR150+	120	60				2 x			
6x86-PR133+ 6x86L-PR133+	110	55				2 x			

**NOTE :** \* This CPU had not been tested when this manual was printed.

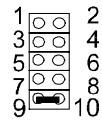


*Voltage*

VR

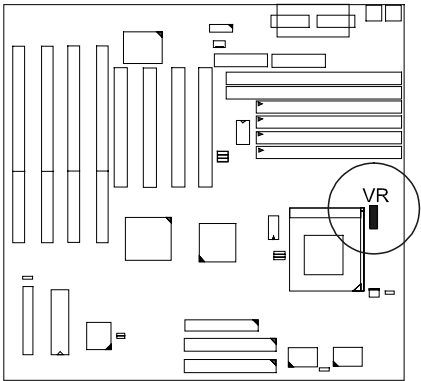
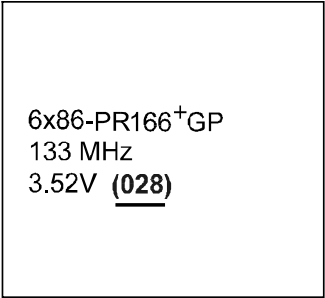


Core : 3.5V  
IO : Same  
IBM 6x86-028



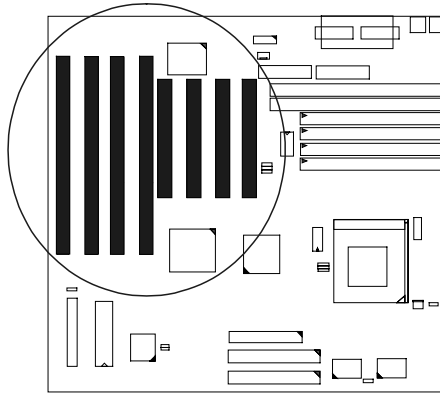
Core : 2.8V  
IO : 3.3V  
IBM 6x86L

**IBM 6x86 CPU  
Top Side Marking**



## 4). Install Expansion Cards

Your PA-2011 features four 16-bit ISA Bus and four 32-bit PCI Bus expansion slots.



This section describes how to connect an expansion card to one of your system's expansion slots. Expansion cards are printed circuit boards that, when connected to the mainboard, increase the capabilities of your system. For example, expansion cards can provide video and sound capabilities.

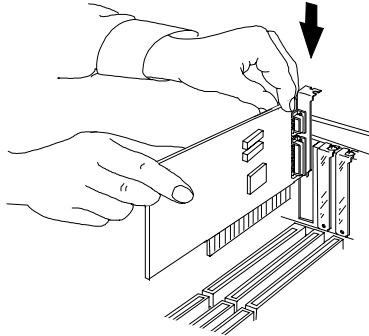
### **CAUTION :**

1. Always turn the system power off before installing or removing any device.
2. Always observe static electricity precautions.  
See "Handling Precautions" at the start of this manual.

To install an expansion card, do the following:

1. Remove the chassis cover and select an empty expansion slot.
2. Remove the corresponding slot cover from the chassis.  
Unscrew the mounting screw that secures the slot cover and pull the slot cover out from the chassis. Keep the slot cover mounting screw nearby.

3. Holding the edge of the peripheral card, carefully align the edge connector with the expansion slot. (See figure below.)



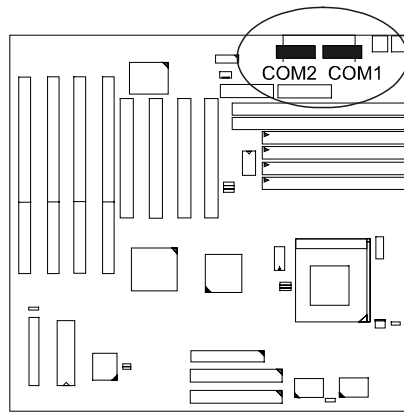
4. Push the card firmly into the slot. Push down on one end of the expansion card, then the other. Use this “rocking” motion until the add-in card is firmly seated inside the slot.
5. Secure the board with the mounting screw removed in Step 2. Make sure that the card has been placed evenly and completely into the expansion slot.



## 5). Connector Cables and Power Supply

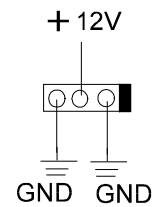
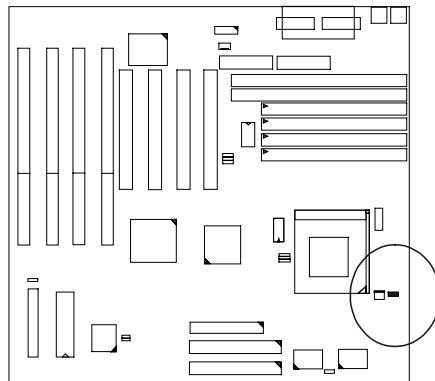
### *Serial Port Connectors: COM1 and COM2*

These two connectors allow you to connect with your devices that take serial ports, such as a serial mouse or a modem. Usually, it is recommended to connect your serial mouse to COM1 and your fax/modem to COM2. Because COM2 and IR utilizes the same IRQ, COM2 will not work if an IR device is connected to the IR connector. Please read page 56 of this manual for more information.



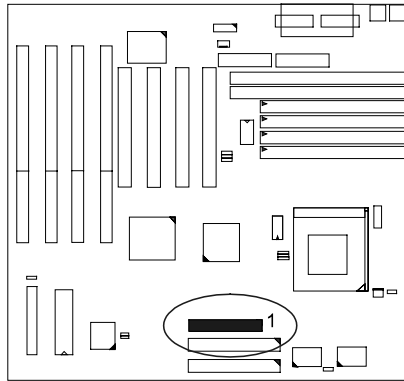
### *CPU Fan Connector: CPU\_FAN*

This connector is linked to the CPU fan.



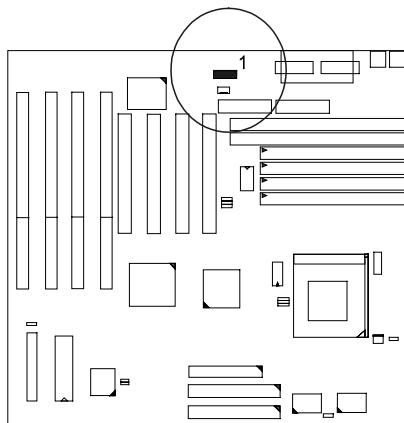
***Floppy Diskette Drive Connector: FLOPPY***

This 34-pin block connector connects to your floppy diskette drive (FDD) using the cable that is provided with this mainboard.



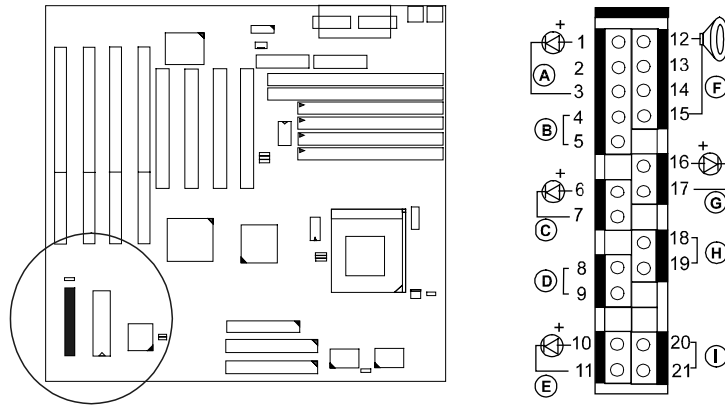
***Infrared Connector: IR***

This 10-pin male connector is used for connecting to the infrared (SIR) port and allows transmission of data to another system which also supports the SIR feature.



**Front Panel Block Connector: F\_PNL**

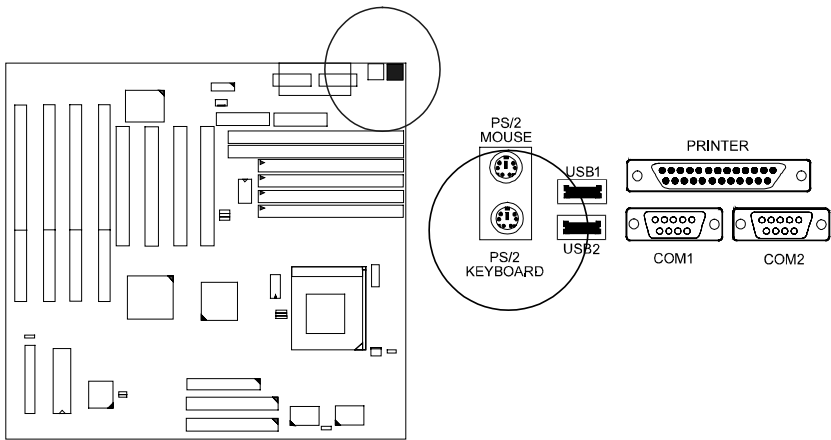
This block connector concludes : PW\_LED, KB\_LOCK, TB\_LED, SP\_SW, SPK, SP\_LED, IDE\_LED, RPW\_SW, and RST connectors.



Item	Connector	Pin Type	Feature
A	PW_LED	2-pin male	indicates the system power status
B	KB_LOCK	2-pin male	allows the keyboard to access the system
C	TB_LED	2-pin male	indicates the system speed is in normal or turbo speed
D	SP_SW	2-pin male	Suspend mode switch
E	SP_LED	2-pin male	indicates the system into Suspend mode when LED lit
F	SPK	4-pin male	connects to speaker
G	IDE_LED	2-pin male	indicates the IDE HDD I/O access LED lit
H	RPW_SW	2-pin male	remote power switch
I	RST	2-pin male	allows you to reset the system

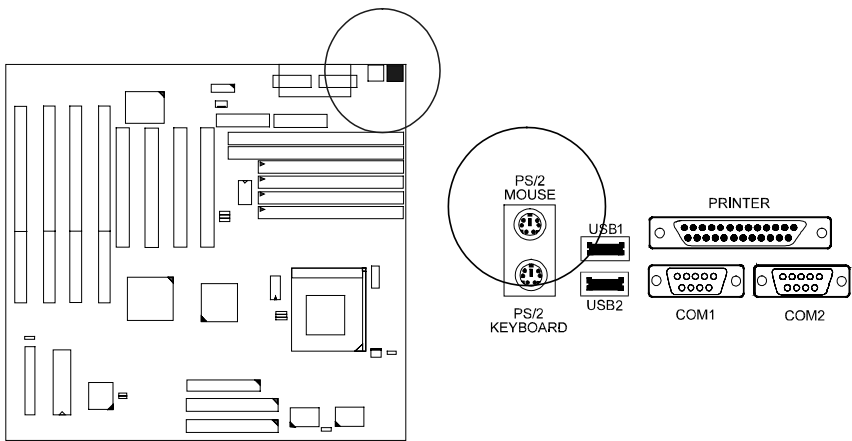
***PS/2 Keyboard Connector: PS2\_KB***

This 6-pin female connector is used for your PS/2 keyboard.



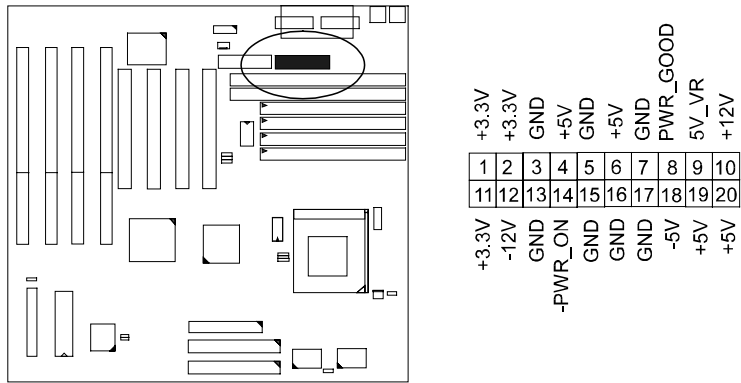
***PS/2 Mouse Connector: PS2\_MS***

This connector is connected to the PS/2 mouse.



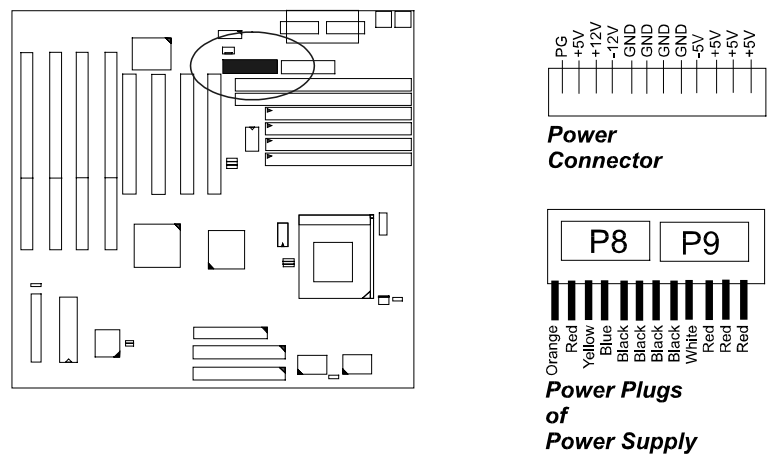
**ATX Power Connector: ATX\_PWR**

This 20-pin male block connector is connected to the ATX power supply.



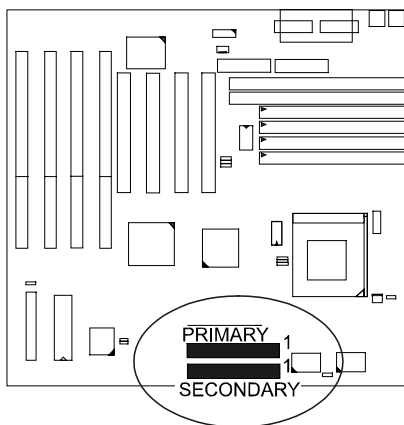
**Standard Power Supply Connector: AT\_PWR**

This 12-pin block connector is used for connecting to the standard 5V power supply. In the picture below, notice that, in most cases, there are two marks “P8” and “P9” on the surface of the connector. You have to insert the “P8” plug into the “P8” section of the connector, and so forth for “P9”. Two black wires must be in the middle.



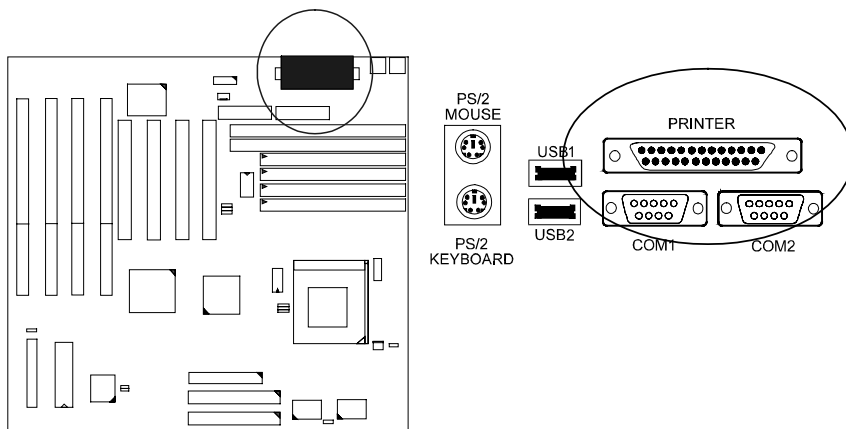
### ***IDE HDD Device Connectors: PRIMARY and SECONDARY***

These two 40-pin block connectors are used for your IDE hard disks. If you have one IDE hard disk, connect it to the PRIMARY connector using the IDE HDD flat cable provided with the mainboard. The BIOS auto detection sets it to be a “Primary Master” disk. If you want to install another IDE hard disk or CD-ROM, please use the SECONDARY connector. If two hard disks are connected to the PRIMARY connector using the same cable, one of them is the master drive, the other one is the slave drive. You may need to set jumpers for the slave drive; please refer to the HDD manual for details.



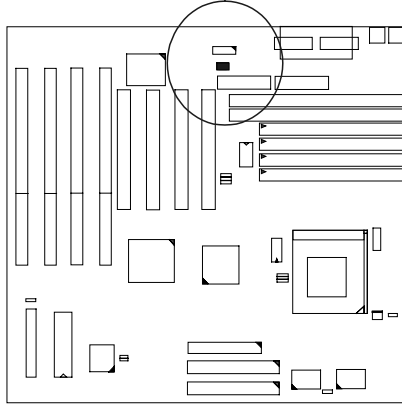
### ***Printer Connector: PRINTER***

This 25-pin D-Sub female connector is attached to your printer.



***Remote Power Supply Connector: RPW\_CON***

This 3-pin male connector allows you to enable (or disable) the system power if the RPW\_SW is on (or off).



***Universal Serial Bus Connectors: USB1 and USB2***

These two connectors are for linking with the peripherals devices that support Universal Serial Bus connection.

