

## Installation Procedures

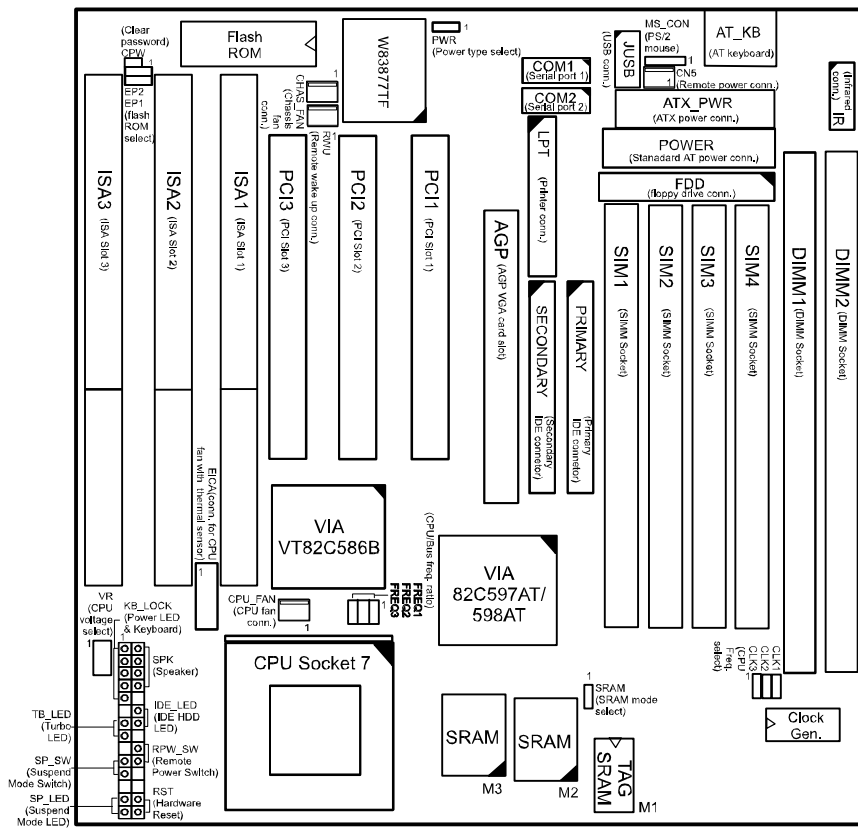
The VA-503 has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various jumper settings on your mainboard.

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.)

**CAUTION :** If you use an electric drill to install this mainboard on your chassis, please wear a static wrist strap. The recommended electric driver torque is from 5.0 to 8.0 kg/cm to avoid damaging the chips' pins.

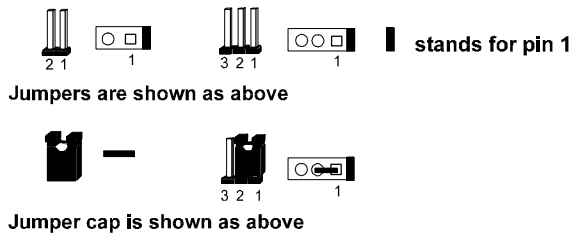
## Mainboard Layout



## 1). Set System Jumpers

### *Jumpers*

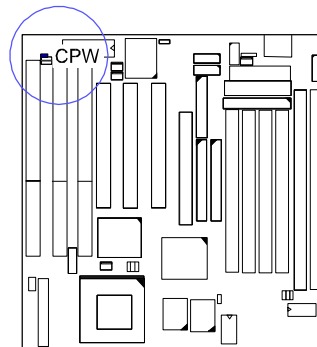
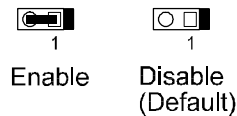
Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. To **set** a jumper, a black cap containing metal contacts is placed over the jumper pins according to the required configuration. A jumper 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:



**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*

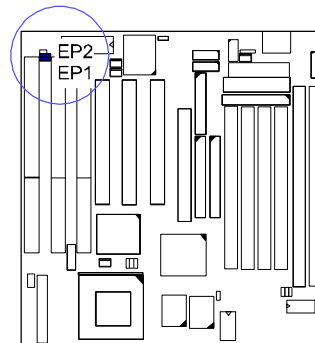
This jumper allows you to set the password configuration to Enabled or Disabled. You may need to enable this jumper if you forget your password.



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

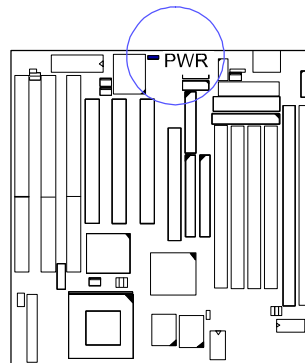
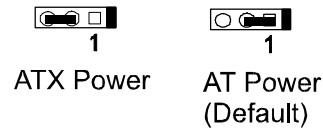
These two jumpers allow you to configure the Flash ROM chip. This jumper setting is correct by manufactory default. If you want to know the Flash ROM type installed on this mainboard, remove the sticker from the chip to see its type.

Type	EP1	EP2
<b>1MB</b>		
Intel 28F001		
MXIC 28F1000		
SST 29EE010		
ATMEL AT29C010		
<b>2MB</b>		
Winbond 29C020		
SST 29EE020		
ATMEL AT29C020		



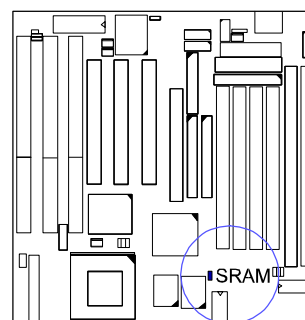
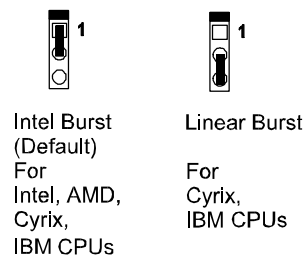
***Power Supply Type Selection: PWR***

This jumper allows you to select your power supply type: an AT power supply or ATX power supply while both types of connector onboard. If only one type of power supply onboard, this jumper will be wired by the manufactory.



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

This jumper allows you to select the CPU to SRAM data read/write mode. If you install a Cyrix or IBM processor on this mainboard, please set at 2-3 pin pair. Please also read Linear Burst Mode feature of BIOS Setup, Page 42, Chapter 3 for more information.

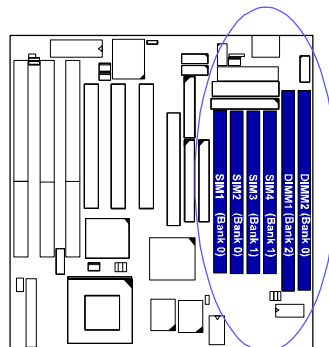


## 2). Install System RAM Modules

### RAM Module Configuration

SIMMs and DIMMs in Bank 0 and 1 can be installed in many combinations. Some of them are listed in the following table. Please note that SIMMs and DIMMs should not be installed at the same time.

(Unit : MB)



TOTAL MEMORY	SIM1 & 2 (Bank 0)	SIM3 & 4 (Bank 1)	DIMM1 (Bank 2)	DIMM2 (Bank 0)
8	4 & 4			
			8	
16	8 & 8			
	4 & 4	4 & 4		
			16	
			8	8
32	16 & 16			
			32	
	8 & 8	8 & 8		
			16	16
64	32 & 32			
	16 & 16	16 & 16		
			64	
			32	32
128	64 & 64			
			64	64
256	128* & 128*			
			128*	128*
512	128* & 128*	128* & 128*		
			256*	256*

**NOTE :**

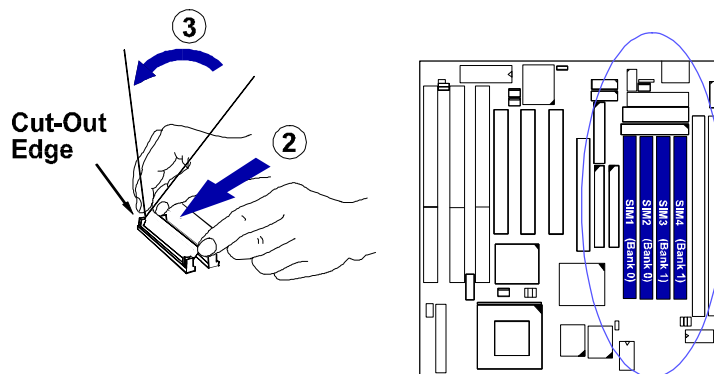
1. \* A RAM module of this size was not available for testing at time of printing.
2. DIM1 and DIM2 only support 3.3V (unbuffered) EDO and SDRAM modules.
3. DIM2 and SIMM1&2 are shared. That is, it is not allowed to install RAM modules on DIM2 and SIMM1&2 at the same time.
4. The different size of DIM1 and DIM2 is allowed. For example, 16MB is installed on DIM1 socket, 32MB is installed on DIM2 socket.
5. It is recommended that SIMMs and DIMMs are not installed at the same time on this mainboard to avoid unexpected failure.
6. This mainboard supports DIMMs with access speeds of 10ns and 12ns. ECC memory and parity check are not supported.
7. This mainboard supports SIMMs with access speeds of 70ns and 60ns. ECC memory and parity check are not supported.

## 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

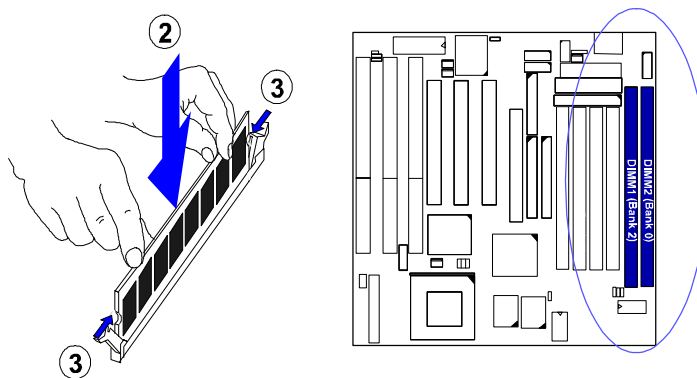
To remove the SIMMs, pull the retaining latch on both ends of the socket and reverse the procedure above.



## 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.

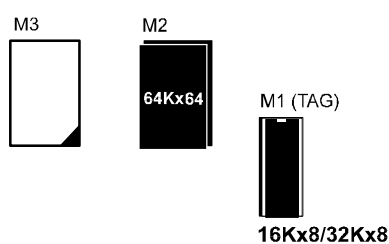
## Cache Memory

The mainboard comes with onboard **512KB (1MB 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.

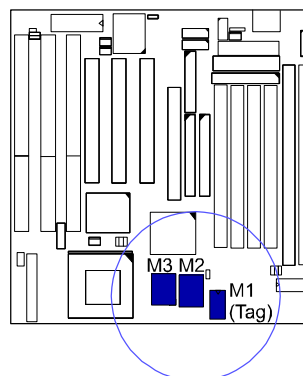
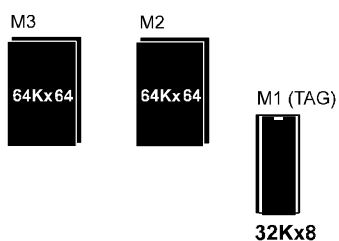
Pentium mainboards may implement various types of L2 cache SRAMs. Pipeline Burst SRAM is one of them, delivering the best price performance ratio. They perform much better than asynchronous SRAMs.

<b>NOTE:</b> The cache memory can not be upgraded.
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### 512KB

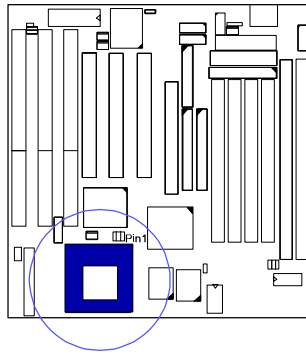


### 1MB



### 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.

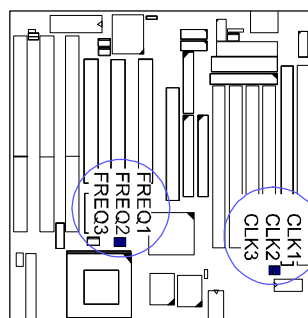
To install the CPU, do the following:

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 jumper settings.

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

























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

<b>CPU Freq.</b>	<b>CLK1</b>	<b>CLK2</b>	<b>CLK3</b>
66 MHz			
60 MHz			
55 MHz			
50 MHz			

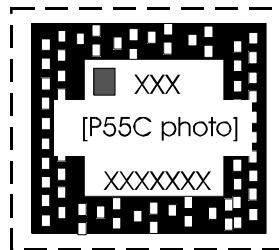


### ***CPU to Bus Frequency Ratio: FREQ1, FREQ2, FREQ3***

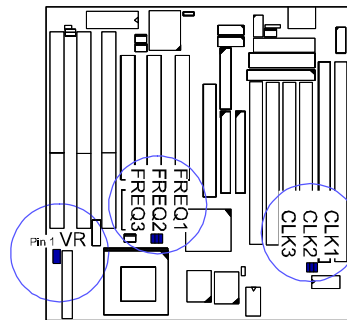
These three jumpers are used in combination to decide the ratio of the internal frequency of the CPU to the bus clock.

<b>Ratio</b>		<b>FREQ1</b>	<b>FREQ2</b>	<b>FREQ3</b>
<b>Pentium MMX/ K6/6x86MX</b>	<b>6x86L</b>			
3 x	4 x			
2.5 x	1 x			
2 x	2 x			
3.5 x	3 x			
4 x	-----			
4.5 x	-----			
5x	-----			
5.5 x	-----			

## Intel Pentium MMX CPUs



**A Pentium MMX Processor**



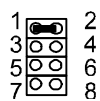
## Frequency

CPU Freq. (MHz)	Bus Freq. (MHz)	CLK1	CLK2	CLK3	Ratio	FREQ1	FREQ2	FREQ3
233	66				3.5 x			
200	66				3 x			
166	66				2.5 x			

**NOTE :** Please refer to the marking on the CPU about the actual CPU speed and ratio.

## Voltage

### VR



Core : 2.8V  
IO : 3.3V  
Pentium MMX

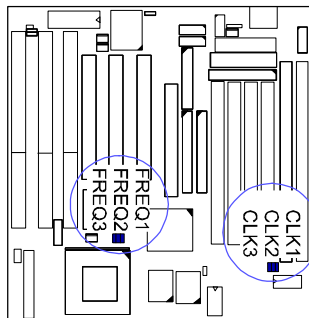
## AMD-K6 CPUs

### Frequency

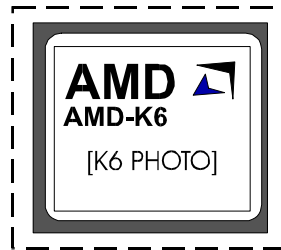
Model	CPU Freq. (MHz)	Bus Freq. (MHz)	CLK1	CLK2	CLK3	Ratio	FREQ1	FREQ2	FREQ3
K6-300 *	300	66				4.5 x			
K6-266 *	266	66				4 x			
K6-233	233	66				3.5 x			
K6-200	200	66				3 x			
K6-166	166	66				2.5x			

**NOTE :**

- \* This CPU was not available for testing at time of printing.
- Please refer to your AMD CPU top marking about the actual CPU speed and ratio.



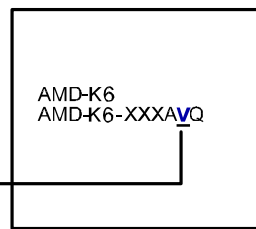
## Voltage



An AMD-K6 Processor

**VR**

### AMD-K6 CPU Top Side Marking



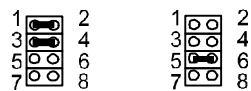
**V** (Identifier for Operation Voltage) :

**N** 3.1-3.3V Core/3.135-3.6V I/O

**L** 2.755-3.045V Core/3.135-3.6V I/O



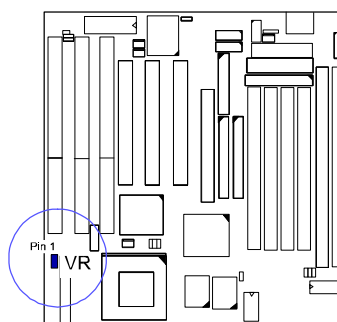
Core : 2.9V  
IO : 3.3V  
AMD-K6  
(166, 200 MHz)



Core : 3.2V    Core : 2.2V  
IO : 3.3V    IO : 3.3V  
AMD-K6  
(233 MHz)



Core : 2.2V  
IO : 3.3V  
AMD-K6  
(266, 300 MHz)



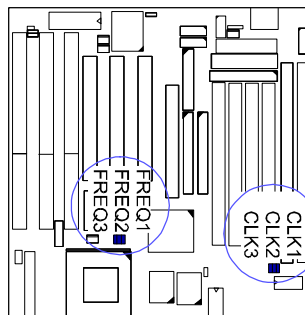
## Cyrix 6x86L/6x86MX CPUs

### Frequency

Model	CPU FREQ. (MHz)	Bus FREQ. (MHz)	CLK1	CLK2	CLK3	Ratio	FREQ1	FREQ2	FREQ3
6x86MX-PR266*	233	66				3.5 x			
6x86MX-PR233	200	66				3 x			
6x86MX-PR200	180	60				3 x			
	166	66				2.5 x			
6x86MX-PR166	150	60				2.5 x			
	133	66				2 x			
	150	50				3 x			
6x86L-PR166+	133	66				2 x			
6x86L-PR150+	120	60				2 x			
6x86L-PR133+	110	55				2 x			

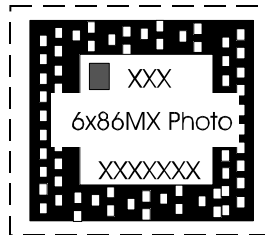
#### NOTE :

- \* This CPU was not available for testing at time of printing.
- Please refer to your Cyrix CPU top marking about the actual CPU speed and ratio.



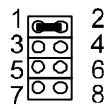


## Voltage

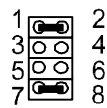


**A Cyrix 6x86 MMX Processor**

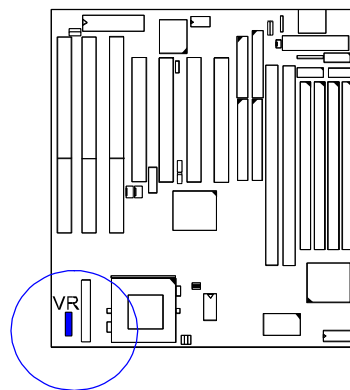
## VR



Core : 2.8V  
IO : 3.3V  
Cyrix 6x86L



Core : 2.9V  
IO : 3.3V  
Cyrix 6x86MX



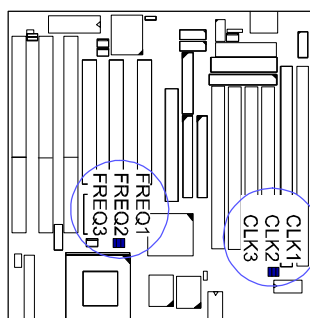
## IBM 6x86L/6x86MX CPUs

### Frequency

Model	CPU FREQ. (MHz)	Bus FREQ. (MHz)	CLK1	CLK2	CLK3	Ratio	FREQ1	FREQ2	FREQ3
6x86MX-PR266*	233	66				3.5 x			
6x86MX-PR233	200	66				3 x			
6x86MX-PR200	180	60				3 x			
	166	66				2.5 x			
6x86MX-PR166	150	60				2.5 x			
	133	66				2 x			
	150	50				3 x			
6x86L-PR166+	133	66				2 x			
6x86L-PR150+	120	60				2 x			
6x86L-PR133+	110	55				2 x			

**NOTE :**

- \* This CPU was not available for testing at time of printing.
- Please refer to your IBM CPU top marking about the actual CPU speed and ratio.

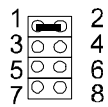


*Voltage*

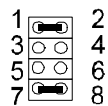


**An IBM 6x86MX  
Processor**

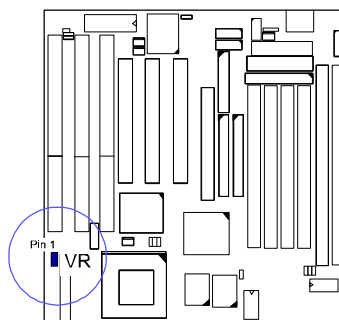
**VR**



**Core : 2.8V  
IO : 3.3V  
IBM 6x86L**



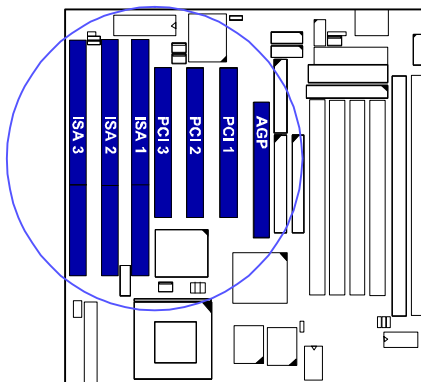
**Core : 2.9V  
IO : 3.3V  
IBM 6x86MX**



## 4). Install Expansion Cards

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.

Your VA-503 features **one 32-bit AGP Bus, three 16-bit ISA Bus, and three 32-bit PCI Bus** expansion slots. All PCI and ISA Bus slots are non-shared. ISA1 slot and PCI3 slot can not accept expansion cards at the same time because there is no room for two cards there.



### 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.

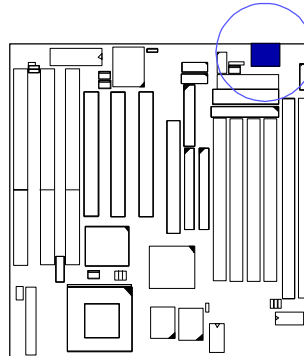
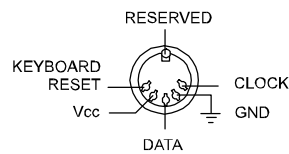
To install an expansion card, do the following:

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.
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). Connect Cables and Power Supply

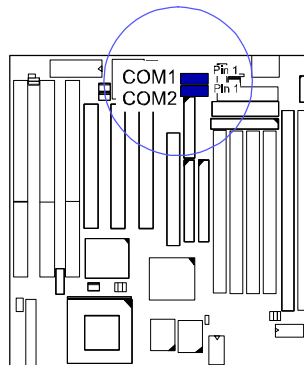
### **Keyboard Connector: AT\_KB**

The cable of your 101-key enhanced keyboard or 106-key Windows 95 keyboard is plugged into this connector.



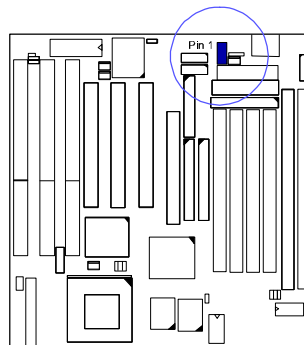
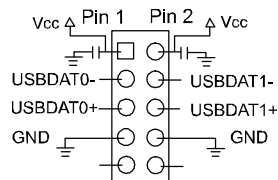
### **Serial Port Connectors: COM1, COM2**

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.



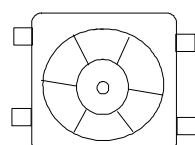
### **Universal Serial Bus Connector: JUSB**

This 2x5 connector links with USB peripheral devices via an optional USB riser card.

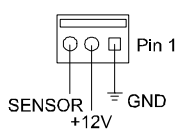


### ***CPU Fan Connector: CPU\_FAN***

This connector is linked to the CPU fan for cooling the processor temperature.

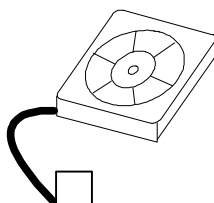


[CPU fan photo]

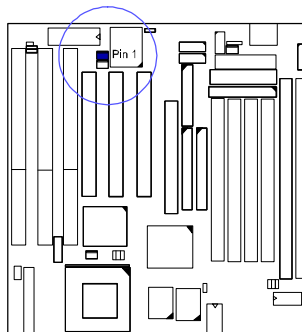
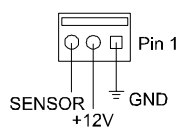


### ***Chassis Fan Connector: CHAS\_FAN***

This connector is for linking to your cooling fan on the system case to lower the temperature of the system case.

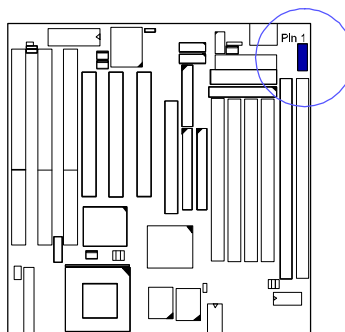
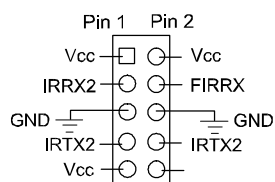


[case fan photo]



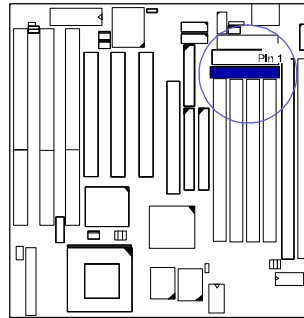
### ***Infrared Connector: IR***

This connector supports the connection to your IR device.



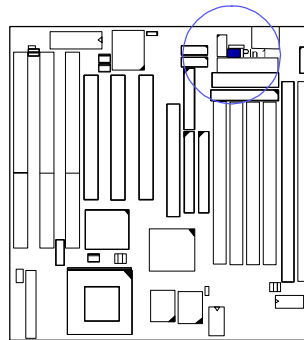
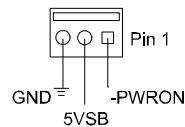
### ***Floppy Diskette Drive Connector: FDD***

This connector provides the connection with your floppy disk drive, LS-120 drive, or IDE ZIP drive.



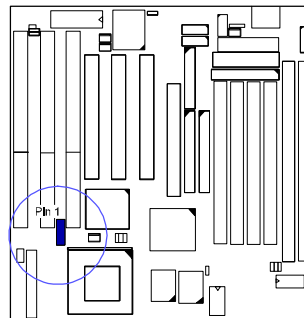
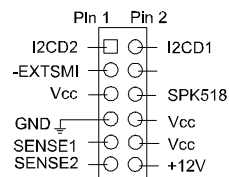
### ***Remote Power Connector: CN5***

This 3-pin male connector allows you to enable (or disable) the system power if the RPW\_SW is on (or off). Please refer to PWR in page 13 of this manual when your system uses an AT power supply.



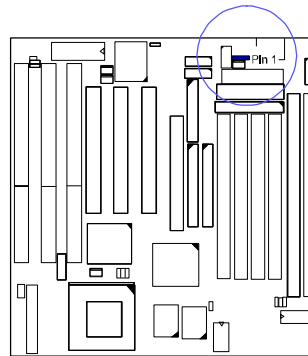
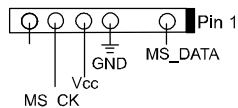
### ***EICA CPU Fan Connector: EICA***

Your EICA cooling fan is installed on this 2x6 male connector. This type CPU fan is equipped with a thermal sensor for hardware monitoring. The Genesys Logic (Taiwan) offers this product. For more information call 886-2-664-6655.



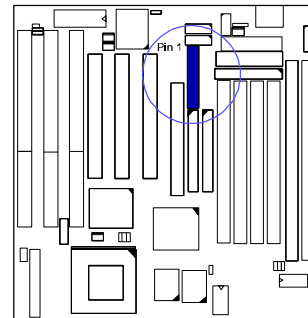
### ***PS/2 Mouse Connector: MS\_CON***

This connector is connected to the PS/2 mouse.



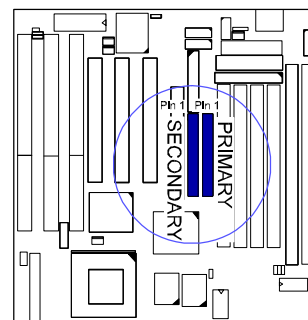
### ***Printer Connector: LPT***

This connector is featured onboard for the connection with your printer.



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

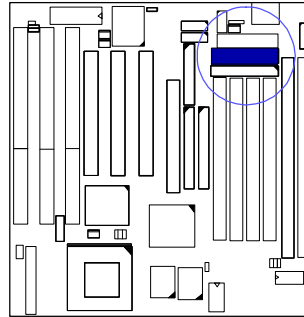
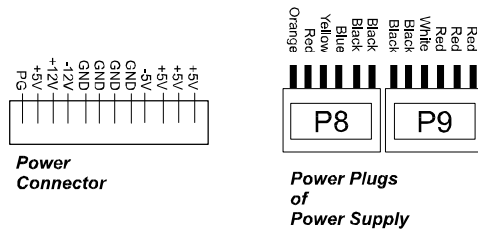
These two connectors are used for your IDE hard disks. If you have one IDE hard disk, connect it to the PRIMARY connector using the IDE HDD flat cable provided with the mainboard. The BIOS auto detection sets it to be a “Primary Master” disk. If you want to install another IDE hard disk or CD-ROM, please use the SECONDARY connector.





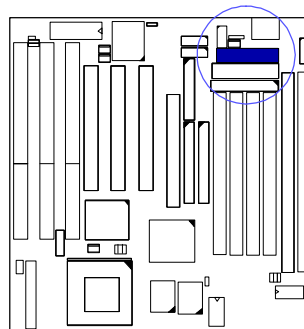
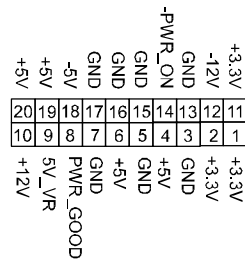
### AT Power Supply Connector: **POWER**

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.



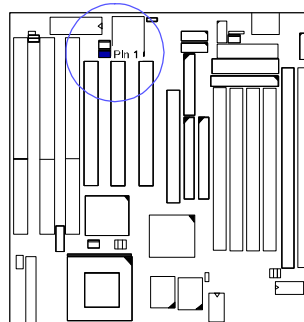
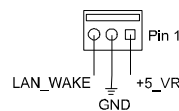
### ATX Power Supply Connector: **ATX\_PWR**

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



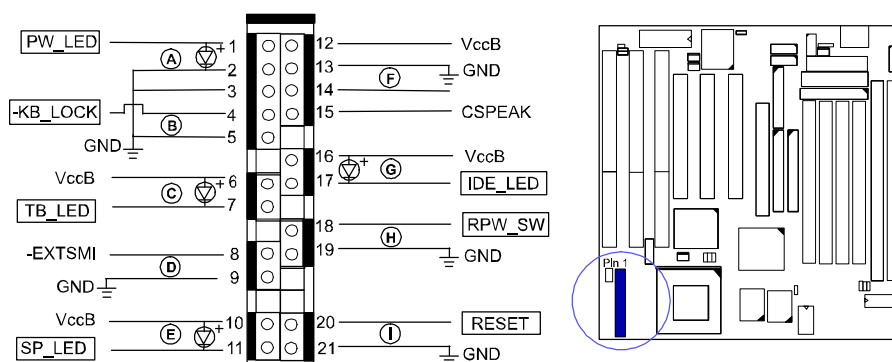
### Remote Wake-Up Connector: **RWU**

This 3-pin pinhead connector allows the remote LAN server to wake up your system.



### 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