

Installation Procedures

The VA-502 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 Memory
- Step 3 -
Install the CPU
- Step 4 -
Connect cables and power supply
- Step 5 -
Set up BIOS feature (Please read Chapter Three.)

1). Set System Jumpers

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.

CPW

It allows you to clear password configuration.



Enable



Disable
(Default)

EP1

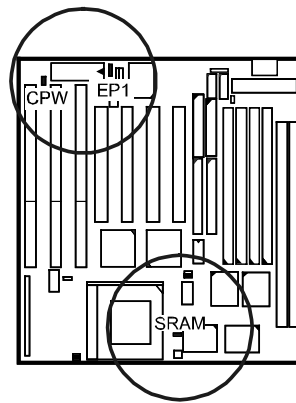
It allows you to select flash ROM voltage.



5V



12V



SRAM

It allows you to select CPU-to-SRAM data read/write mode.



Intel Burst (Default)
for
Intel Pentium, AMD,
Cyrix, IBM CPUs



Linear Burst
For
Cyrix, IBM CPUs

2). Install System Memory

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 VA-502'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 :

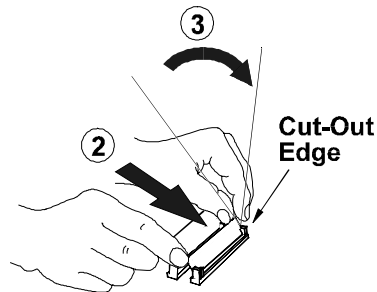
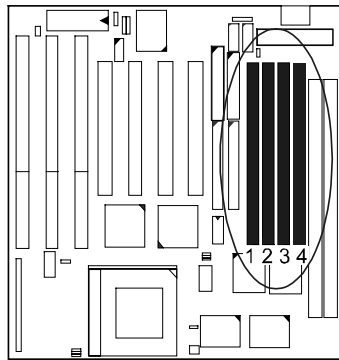
- * A RAM module of this size was not available for testing at press time.
- DIM1 and DIM2 only support 3.3V (unbuffered) EDO and SDRAM modules.
- It is recommended that SIMMs and DIMMs are not installed at the same time on this mainboard to avoid unexpected failure.
- DIM2 and SIMM 1&2 are shared. That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

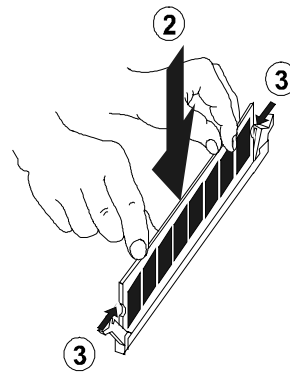
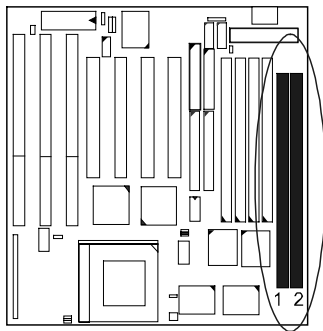
Remove SIMMs

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.

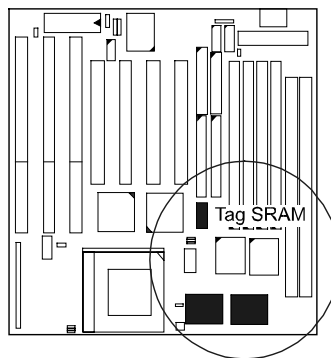
Remove DIMMs

Press the clips with both hands to remove the DIMM.

Cache Memory

The VA-502 comes with onboard 512KB (256KB 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.

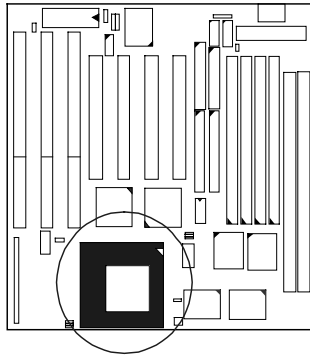
Socket 7 mainboards may implement various types of L2 cache SRAMs. Pipeline Burst SRAM is one of them, delivering the best price performance ratio. They perform much better than asynchronous SRAMs.



NOTE: The cache memory can not be upgraded by end users.

3). Install the CPU

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



CAUTION :

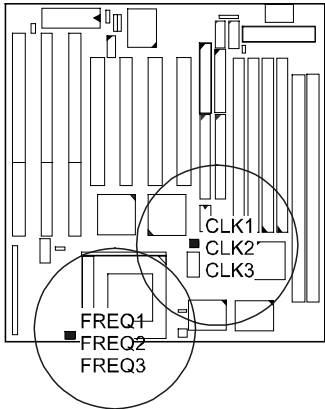
1. Always turn the system power off before installing or removing any device.
2. Always observe static electricity precautions.
See "Handling Precautions" at the start of this manual.
3. Inserting the CPU chip incorrectly may damage the chip.
















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.



| 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 |
| 50 MHz |  1 |  1 |  1 |

CPU to Bus Frequency Ratio: FREQ1, FREQ2, FREQ3

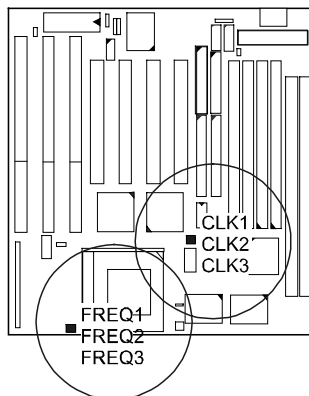
These three jumpers are used in combination to decide the ratio of the internal frequency of the CPU to the bus clock.

| 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 |

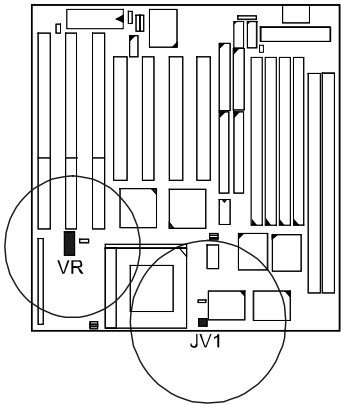
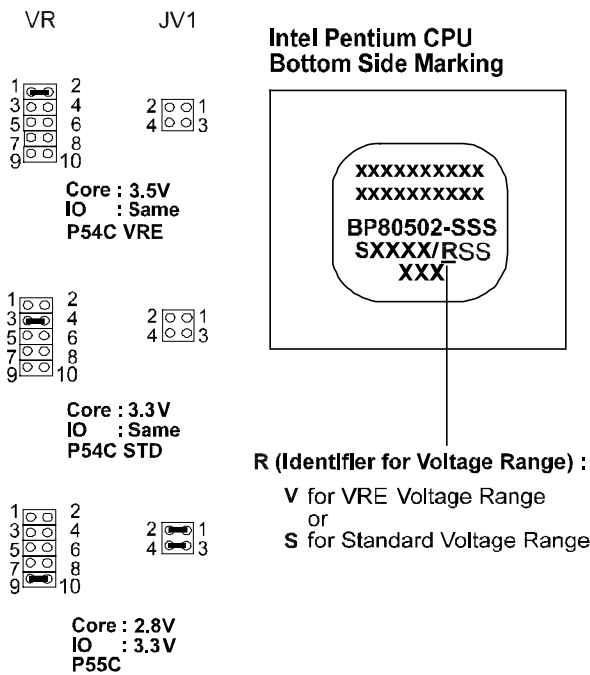
Intel Pentium CPUs

Frequency

| CPU Speed (MHz) | External (CPU/CLK) (MHz) | CLK1 | CLK2 | CLK3 | Internal | CPU Clock Rate | | |
|--------------------|--------------------------------|------|------|------|----------|----------------|-------|-------|
| | | | | | | 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 | | | |

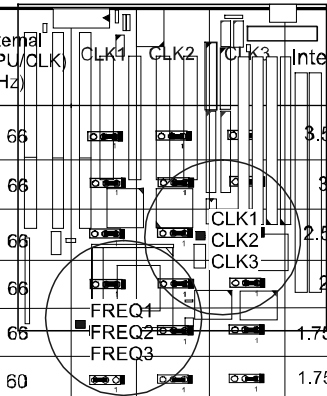


Voltage



AMD-K5/K6 CPUs

Frequency

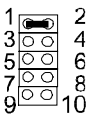


| Model | CPU Speed (MHz) | External (CPU/CLK) (MHz) | CLK1 | CLK2 | CLK3 | Internal | CPU Clock Rate | | |
|----------|-----------------|--------------------------|------|------|------|----------|----------------|-------|-------|
| | | | | | | | FREQ1 | FREQ2 | FREQ3 |
| K6-233 | 233 | 66 | | | | 3.5 x | | | |
| K6-200 | 200 | 66 | | | | 3 x | | | |
| K6-166 | 166 | 66 | | | | 2.5 x | | | |
| K5-PR200 | 133 | 66 | | | | 2 x | | | |
| K5-PR166 | 116 | 66 | | | | 1.75 x | | | |
| K5-PR150 | 105 | 60 | | | | 1.75 x | | | |
| K5-PR133 | 100 | 66 | | | | 1.5 x | | | |
| K5-PR120 | 90 | 60 | | | | 1.5 x | | | |
| K5-PR100 | 100 | 66 | | | | 1.5 x | | | |
| K5-PR90 | 90 | 60 | | | | 1.5 x | | | |

Voltage

VR

JV1

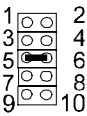


Core : 3.5V
IO : Same
AMD-K5 - B

AMD-K5 CPU
Top Side Marking

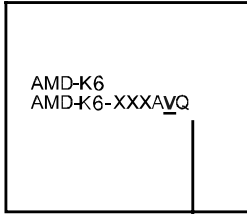


V (Identifier for Operation Voltage)

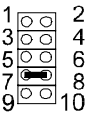


Core : 3.2V
IO : 3.3V
AMD-K6 (233 MHz)

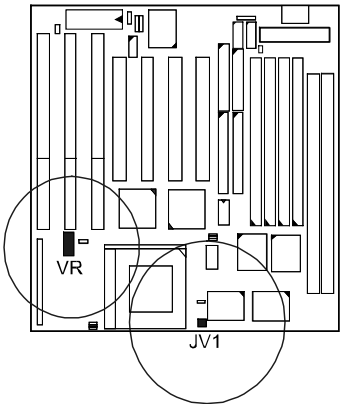
AMD-K6 CPU
Top Side Marking



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)

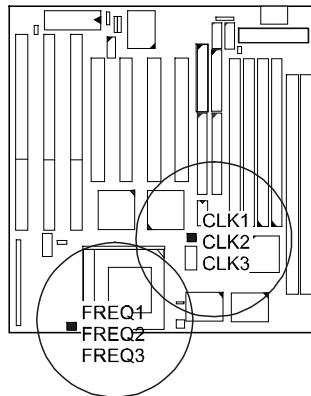


Cyrix 6x86 CPUs

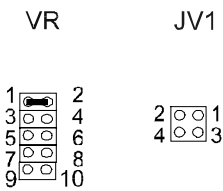
Frequency

| Model | CPU Speed (MHz) | External (CPU/CLK) (MHz) | CLK1 | CLK2 | CLK3 | Internal | CPU Clock Rate | | |
|-----------------------------|-----------------|--------------------------|------|------|------|----------|----------------|-------|-------|
| | | | | | | | 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 | | | |

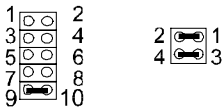
NOTE : * This CPU had not been tested when this manual was printed.



Voltage

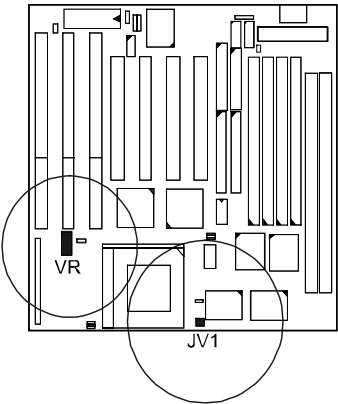
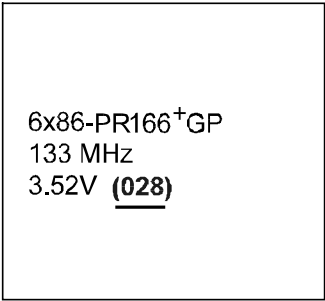


Core : 3.5V
IO : Same
Cryix 6x86-028



Core : 2.8V
IO : 3.3V
Cyrrix 6x86L

Cyrix 6x86 CPU
Top Side Marking

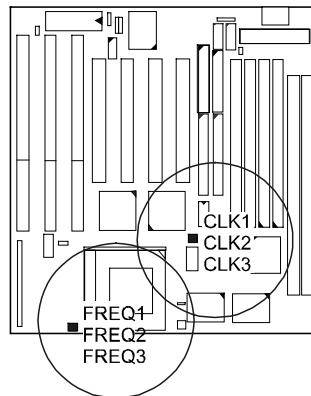


IBM 6x86 CPUs

Frequency

| Model | CPU Speed (MHz) | External (CPU/CLK) (MHz) | CLK1 | CLK2 | CLK3 | Internal | CPU Clock Rate | | |
|-----------------------------|-----------------|--------------------------|------|------|------|----------|----------------|-------|-------|
| | | | | | | | 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

1 2

3 4

5 6

7 8

9 10

Core : 3.5V

IO : Same

IBM 6x86-028

JV1

2 1

4 3

Core : 2.8V

IO : 3.3V

IBM 6x86L

IBM 6x86 CPU

Top Side Marking

6x86-PR166⁺GP

133 MHz

3.52V (028)

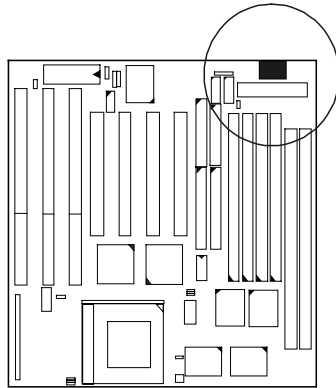
The diagram shows a top-down view of the VA-502 mainboard. Two components are highlighted with circles: VR, located on the left side near the bottom, and JV1, located at the bottom center. The board features several vertical slots for expansion cards and various integrated circuits.

20

4). Connector Cables and Power Supply

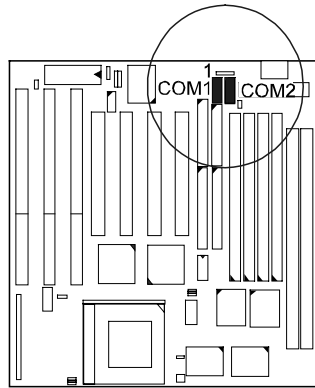
AT Keyboard Connector: AT_KB

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



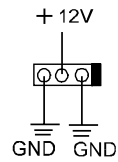
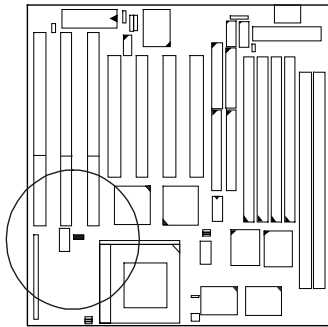
Serial Port Connectors: COM1, COM2

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. 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 36 of this manual for more information.



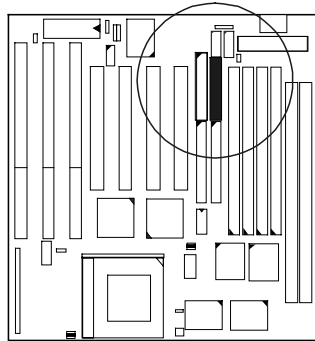
CPU Fan Connector: FAN

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



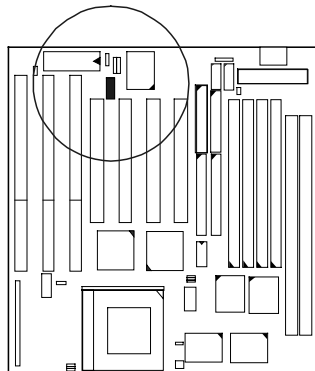
Floppy Diskette Drive Connector: FLOPPY

This connector provides the connection with your floppy disk drive.



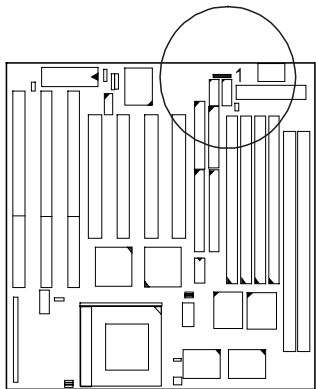
Infrared Connector: IR

This connector supports the connection to your IR device. The IR port uses the same IRQ as COM2 port, therefore you need to adjust this BIOS option when an IR device is installed. Please read page 36 of this manual for more information.

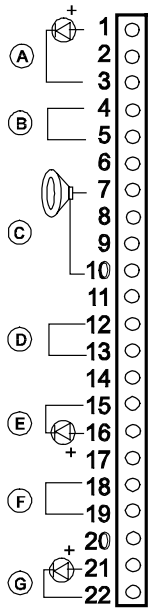
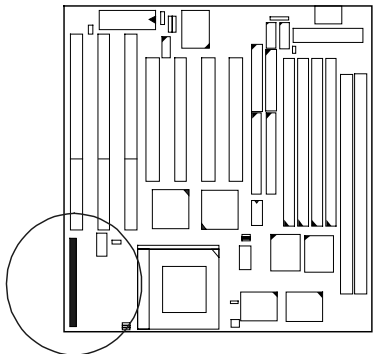


PS/2 Mouse Connector: MS_CON

This connector is connected to the PS/2 mouse.



Front Panel Block Connector: F_PNL
This block connector concludes : Power LED, Keylock, Speaker, Reset, Turbo LED, Turbo switch, IDE HDD LED connectors.



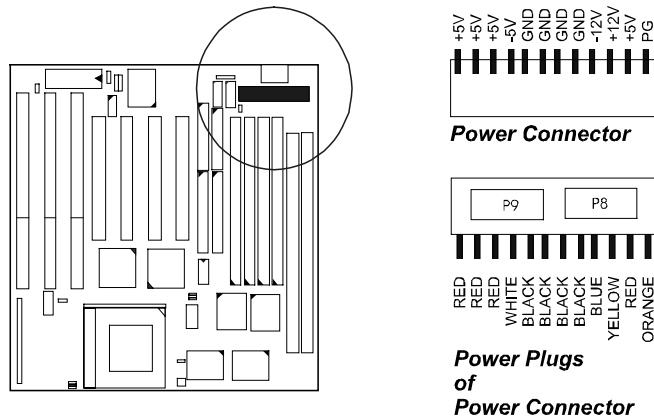
| Item | Connector | Pin Type | Feature |
|------|--------------|------------|--|
| A | Power LED | 2-pin male | indicates the system power status |
| B | Keylock | 2-pin male | allows the keyboard to access the system |
| C | Speaker | 4-pin male | connects to speaker |
| D | Reset | 2-pin male | allows you to reset the system |
| E | Turbo LED | 2-pin male | indicates the system speed is in normal or turbo speed |
| F | Turbo Switch | 2-pin male | set the system speed is in normal or |

| | | | |
|---|---------|------------|---|
| | | | turbo speed |
| G | HDD LED | 2-pin male | indicates the IDE HDD I/O access LED lit |

NOTE : Software Turbo Speed feature is not supported. The only way to enter the system into turbo speed is pressing the turbo switch.

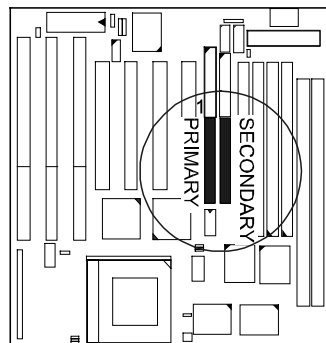
Standard Power Connector: POWER

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.



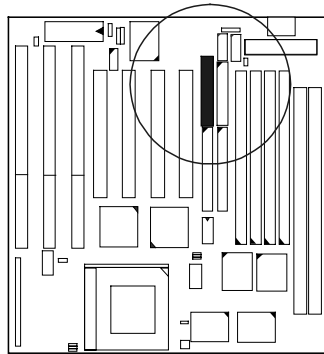
IDE HDD Device Connectors: PRIMARY, SECONDARY

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.



Printer Connector: PRINTER

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



Universal Serial Bus Connectors: USB1, USB2

These two connectors link with USB peripheral devices via an optional USB riser card.

