

# Installation Procedures

The motherboard has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. To set up your computer, you should follow these installation steps: 1). set system jumpers; 2). install RAM modules; 3). install the CPU; 4). install expansion cards; 5). connect devices; 6). set up BIOS feature. 7). set up supporting software tools.

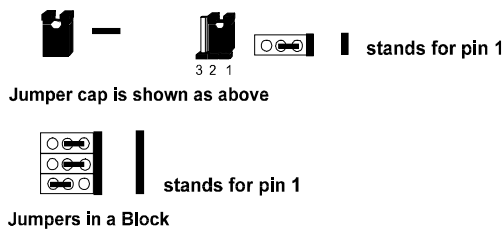


**CAUTION:** If you use an electric drill to install this motherboard on your chassis, please wear a static wrist strap. The recommended electric drill torque is from 5.0 to 8.0 kb/cm to avoid damaging the chip's pins.

## 1). Set System Switches/Jumpers

### Jumpers

Jumpers are used to select the operation modes for your system. 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.

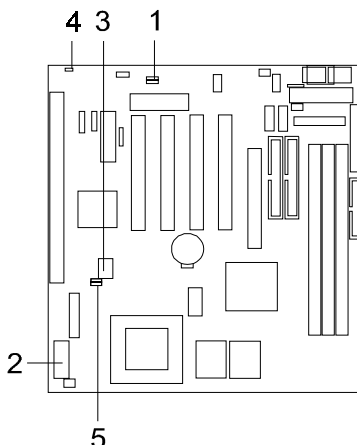
## Quick Reference (Jumpers)

### 1. BIOS ROM Type Select

1MB Flash ROM	EP1	EP2
Intel 28F001 MXIC 28F1000	2-3	1-2
ATMEL AT29C010 SST 29EE010 AMD AM29F001NT	1-2	1-2
2MB Flash ROM		
MXIC 28F2000	2-3	2-3
ATMEL AT29C020 SST 29EE020 AMD AM29F002NT	1-2	2-3

### 2. Ratio of CPU Freq. / Bus Freq.

Intel P55C/ Cyrix/IBM M2/ AMD K6	S2-1	S2-2	S2-3
2X	OFF	OFF	ON
2.5X	ON	OFF	ON
3X	ON	OFF	OFF
3.5X	OFF	OFF	OFF
4X	OFF	ON	ON
4.5X	ON	ON	ON
5X	ON	ON	OFF
5.5X	OFF	ON	OFF



### 4. Clear Password

Setting	CPW
Enable	ON
Disable	OFF

### 5. Power Type Select

Power Type	PWR
AT Power	1-2
ATX Power	2-3

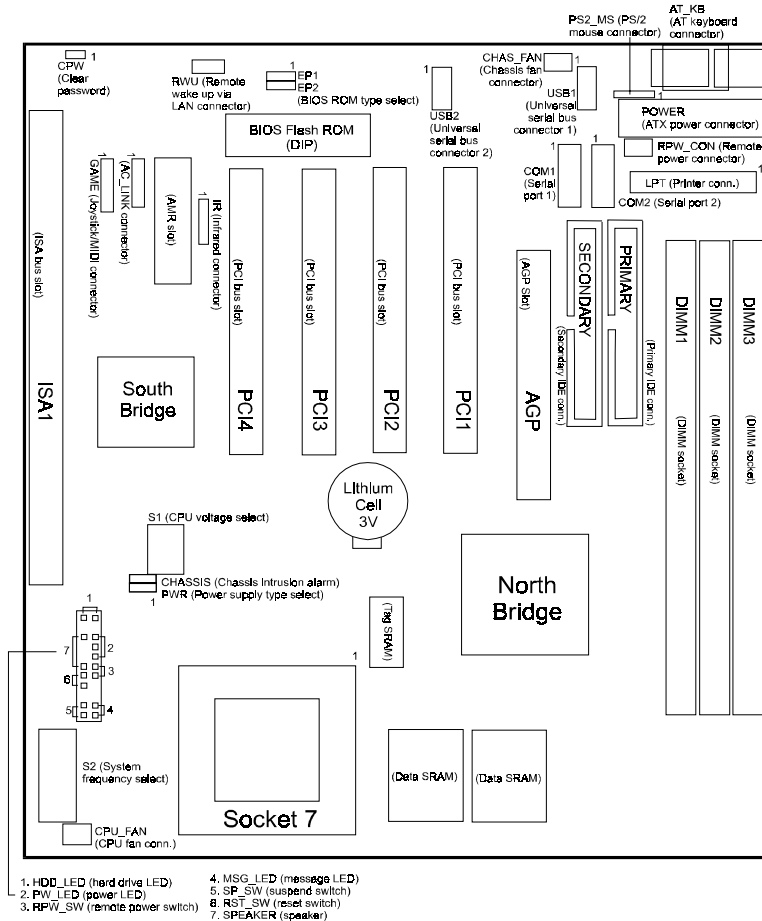
### CPU/SDRAM/PCI/AGP Frequency Select

CPU	SDRAM	PCI	AGP	S2-4	S2-5	S2-6	S2-7	S2-8	S2-9	S2-10
100M	100M	33.3M	66.6M	OFF	OFF	OFF	ON	OFF	ON	ON
100M	66M	33.3M	66.6M	OFF	OFF	ON	ON	OFF	OFF	ON
95.25M	95.25M	31.75M	63.5M	ON	OFF	OFF	ON	OFF	ON	ON
83.3M	83.3M	27.77M	55.53M	ON	ON	OFF	OFF	OFF	ON	ON
75M	75M	37.5M	75M	OFF	ON	OFF	OFF	ON	ON	ON
66M	66M	33.3M	33.3M	OFF	OFF	OFF	OFF	ON	ON	OFF
112M	112M	37.3M	74.6M	OFF	ON	OFF	ON	OFF	ON	ON
112M	74.6M	37.3M	74.8M	OFF	ON	ON	ON	OFF	OFF	ON
124M	124M	41.3M	82.6M	ON	OFF	OFF	OFF	OFF	ON	ON
124M	82.6M	41.3M	82.8M	ON	OFF	ON	OFF	OFF	OFF	ON

### 3. CPU Vcore Voltage Select

Vcc	S1-1	S1-2	S1-3	S1-4	S1-5	Vcc	S1-1	S1-2	S1-3	S1-4	S1-5
1.8V	OFF	ON	ON	OFF	ON	2.7V	ON	OFF	OFF	ON	ON
1.9V	OFF	ON	ON	ON	OFF	2.8V	OFF	OFF	ON	OFF	OFF
2.0V	OFF	ON	ON	ON	ON	2.9V	ON	OFF	ON	OFF	OFF
2.1V	ON	OFF	OFF	OFF	OFF	3.0V	OFF	OFF	ON	OFF	ON
2.2V	OFF	OFF	OFF	OFF	ON	3.1V	ON	OFF	ON	OFF	ON

## Quick Reference (Connectors)



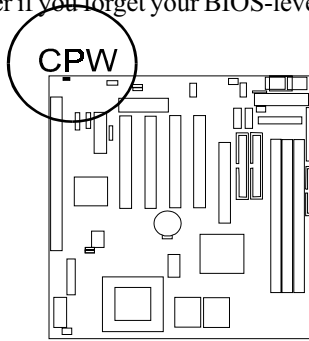
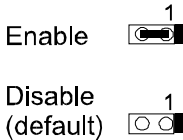
## VA-503A Mainboard Manual

### Chapter 2 Installation Procedures

<b>Onboard Mark</b>	<b>FUNCTION</b>	<b>PAGE</b>
CPW	Clear Password	2-5
SW1-6	Clear ROM Type Select	2-5
EP1/2	Flash ROM Type Select	2-6
DIMM1/2/3	DIMM 1/2/3 Socket	2-7
Socket 7	CPU Socket 7	2-9
S2-1-/2/-3	CPU to Bus Freq. Ratio Select	2-10
S2-4-/5/.../-10	CPU/SDRAM/AGP Freq. Select	2-10
S1-1-/2/.../-5	CPU Voltage Select	2-11
ISA	ISA Bus Expansion Slot (16-bit)	2-12
PCI1/2/3/4	PCI Bus Expansion Slot (32-bit)	2-12
AGP	AGP Bus Expansion Slot (32-bit)	2-12
AMR	Audio Riser Card Slot (optional)	2-13
AT-KB	AT Keyboard Connector	2-14
COM1/2	Serial Port	2-14
USB1/2	Universal Serial Bus Connector	2-15
CPU_FAN	CPU Fan Connector	2-16
LPT	Printer Connector	2-16
FDD	Floppy Disk Drive Connector	2-17
RPW_CON	Remote Power Connector	2-17
PRIMARY/		
SECONDARY	IDE HDD Device Connector	2-18
POWER	ATX Power Connector	2-18
IR	Infrared Connector	2-20
CHASSIS	Chassis Intrusion Alarm Connector	2-20
Front Panel Block Connector	Connectors to Front Panel	2-21

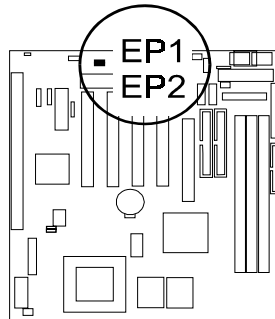
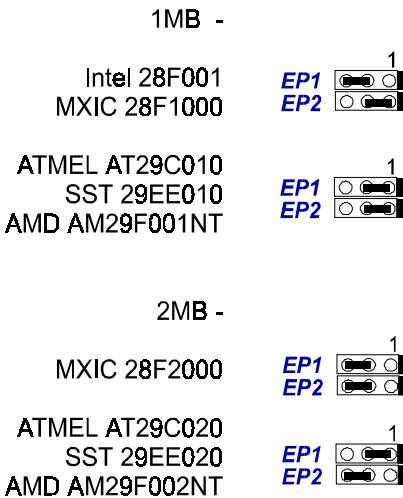
### ***Clear Password: CPW***

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



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

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



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

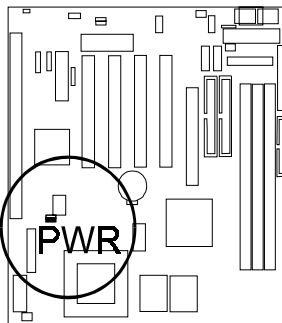
This jumper allows you to select the power supply type that you use: an AT or ATX power supply while both power supply connectors onboard. If only one type of power supply connector onboard, this jumper will be wired by the manufacturer.



ATX Power Supply  
AT Power Supply with Remote Feature



AT Power Supply without Remote Feature  
(default)



## **2). Install RAM Modules**

### **SDRAM Memory**

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. Occasionally the system must break apart data files because the entire file does not fit into the RAM area. Consequently, when the system needs data that is not in RAM, it must access the disk where the balance of the data is stored.

Compared to the lightning speed access of the system has to RAM, accessing a mechanical disk drive is a slow process. The board's RAM is comprised of three industry standard 168-pin Dual In-line Memory Modules (DIMMs). Each DIMM socket is able to support up to 256MB 3.3V (unbuffered) with data access time of 12ns, 10ns, 8ns or less EDO DRAM or lightning-fast SDRAM.

ECC memory and parity check are also supported. If the DIMM runs at the speed of 100MHz, it must meet the PC100 specifications. Use the same memory size of DIMM on each socket for better performance. The maximum total memory supported is up to 768MB\* (a RAM module of this size was not available for testing).

PC100 DIMMs may have a serial EEPROM containing a number of critical timing parameters and data regarding the chip and DIMM vendor. This guarantees that the onboard core chipset will properly recognize the DIMM by reading all of the important timing parameters specified in the EEPROM on the serial presence detect interface. The DIMM supplier must understand these differences in detail and provide the correct information so that the core chipset will be programmed properly to control memory. Before making SDRAM 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.

Socket	Acceptable Memory Module		Total Memory
	8/16/32/64/128/256MB 168-pin 3.3V SDRAM	X1	
	8/16/32/64/128/256MB 168-pin 3.3V SDRAM	X1	
	8/16/32/64/128/256MB 168-pin 3.3V SDRAM	X1	

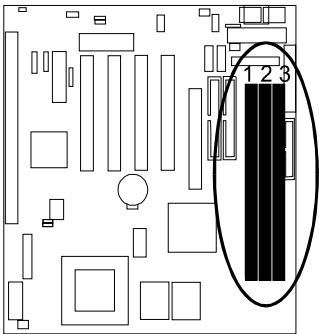
Total System Memory allowed up to 768MB

## Install and Remove DIMMs

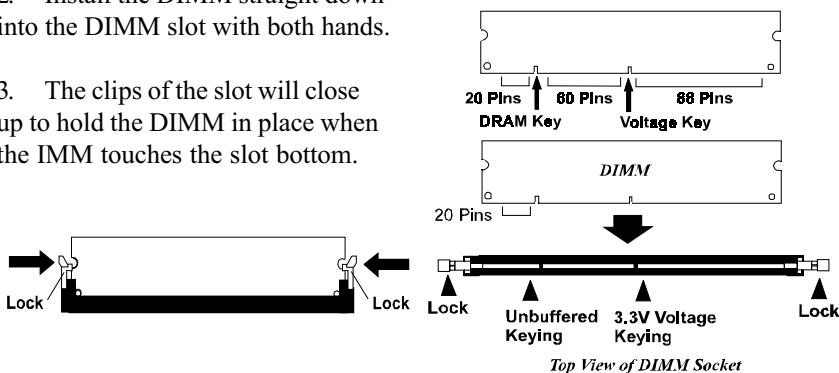
This mainboard supports 100MHz SDRAM DIMMs; when the system frequency set to 100MHz, PC100-compliant SDRAM should be used.

Complete the following procedures to install DIMMs:

1. Locate the DIMM slots on the mainboard.



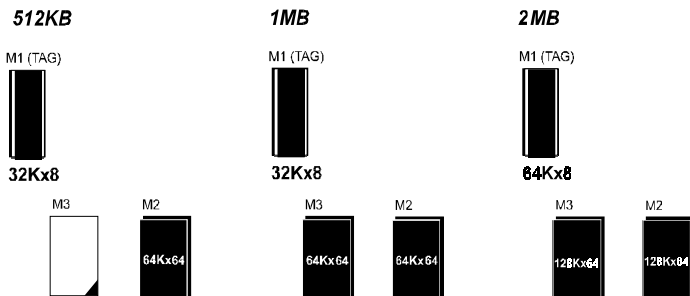
2. Install the DIMM straight down into the DIMM slot with both hands.
3. The clips of the slot will close up to hold the DIMM in place when the DIMM touches the slot bottom.



Press the clips with both hands to remove the DIMM.

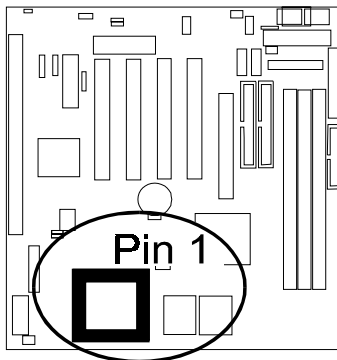
## Cache Memory

The board can support onboard **512KB/1MB/2MB synchronous 3.3V Pipeline Burst SRAMs**. Cache memory access is very fast compared to main memory access. Since cache memory is from five to more than ten times faster than main memory, the system performance is better.



### 3). Install the CPU

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

**CAUTION:**

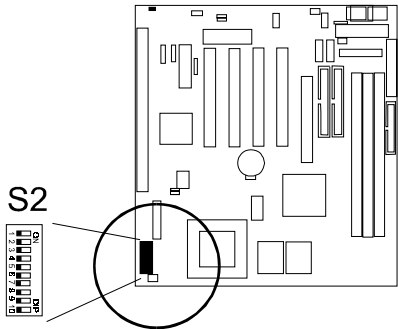
1. Always turn the system power off before installing or removing any device.
2. Always observe static electricity precautions. See “Handling Precautions” at the start of this manual.
3. Inserting the chip incorrectly may damage the chip.

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 locate 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/SDRAM/AGP Frequency Selection: S2-4/-5/.../-10**

The table below shows the switch settings for the combinations about different CPU speeds with SDRAM and AGP frequencies.

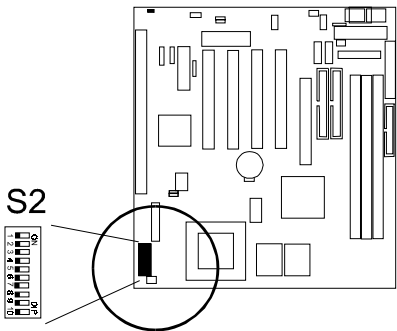


CPU	SDRAM	PCI	AGP	S2-4	S2-5	S2-6	S2-7	S2-8	S2-9	S2-10
100M	100M	33.3M	66.6M	OFF	OFF	OFF	ON	OFF	ON	ON
100M	66M	33.3M	66.6M	OFF	OFF	ON	ON	OFF	OFF	OFF
95.25M	95.25M	31.75M	63.5M	ON	OFF	OFF	ON	OFF	ON	ON
83.3M	83.3M	27.77M	55.53M	ON	ON	OFF	OFF	OFF	ON	ON
75M	75M	37.5M	75M	OFF	ON	OFF	OFF	ON	ON	ON
66M	66M	33.3M	33.3M	OFF	OFF	OFF	OFF	ON	ON	ON
112M	112M	37.3M	74.6M	OFF	ON	OFF	ON	OFF	ON	ON
112M	74.6M	37.3M	74.6M	OFF	ON	ON	ON	OFF	OFF	OFF
124M	124M	41.3M	82.6M	ON	OFF	OFF	OFF	OFF	ON	ON
124M	82.6M	41.3M	82.6M	ON	OFF	ON	OFF	OFF	OFF	OFF

**CPU to Bus Frequency Ratio: S2-1/-2/-3**

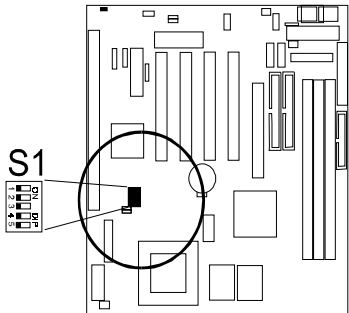
These switch settings are used in combination to decide the ratio of the internal frequency of the CPU to the bus clock.

Intel P55C/ Cyrix&IBM M2/ AMD K6	S2-1	S2-2	S2-3
2X	OFF	OFF	ON
2.5X	ON	OFF	ON
3X	ON	OFF	OFF
3.5X	OFF	OFF	OFF
4X	OFF	ON	ON
4.5X	ON	ON	ON
5X	ON	ON	OFF
5.5X	OFF	ON	OFF



**Set CPU Voltage: S1-1/-2/.../-5**

This section lists all possible CPU voltages (core voltage) that this motherboard supports. Please refer to your CPU top marking about the actual CPU voltage.



Vcc	S1-1	S1-2	S1-3	S1-4	S1-5
1.8V	OFF	ON	ON	OFF	ON
1.9V	OFF	ON	ON	ON	OFF
2.0V	OFF	ON	ON	ON	ON
2.1V	ON	OFF	OFF	OFF	OFF
2.2V	OFF	OFF	OFF	OFF	ON
2.3V	ON	OFF	OFF	OFF	ON
2.4V	OFF	OFF	OFF	ON	OFF
2.5V	ON	OFF	OFF	ON	OFF
2.6V	OFF	OFF	OFF	ON	ON

Vcc	S1-1	S1-2	S1-3	S1-4
2.7V	ON	OFF	OFF	ON
2.8V	OFF	OFF	ON	OFF
2.9V	ON	OFF	ON	OFF
3.0V	OFF	OFF	ON	OFF
3.1V	ON	OFF	ON	OFF
3.2V	OFF	OFF	ON	ON
3.3V	ON	OFF	ON	ON
3.4V	OFF	OFF	ON	ON
3.5V	ON	OFF	ON	ON

## 4). Install Expansion Cards

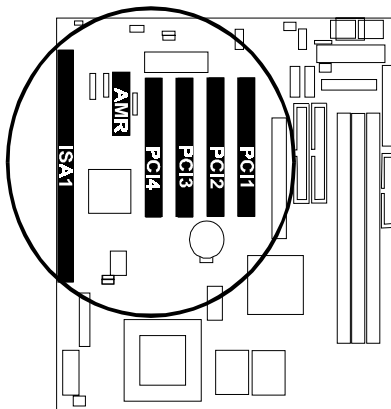
This section describes how to connect an expansion card to one of your system's expansion slots. Expansion cards are printed circuit boards that, when connected to the mainboard, increase the capabilities of your system. For example, expansion cards can provide video and sound capabilities.

Your mainboard features **one AGP Bus slot, one ISA bus slot, four PCI bus slot, and one optional AMR expansion slots.**



### CAUTION:

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



To install an expansion card, follow the steps below:

1. Remove the chassis cover and select an empty expansion slot.
2. Remove the corresponding slot cover from the computer chassis. Unscrew the mounting screw that secures the slot cover and pull the slot cover out from the computer 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-on card is firmly seated inside the expansion 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.

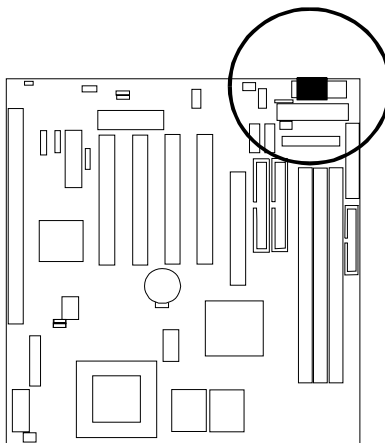
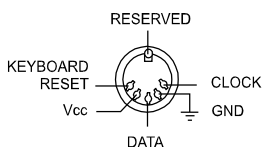
### **Audio Riser Card (optional)**

The mainboard offers an optional AMR slot for using the audio riser card to utilize the onboard audio features. The riser card owns CD\_IN1 and CD\_IN2 connector for different specifications of the audio cable which the other end plugged into your CD drive. The riser card does not provide modem functions.

## 5). Connect Cables and Power Supply

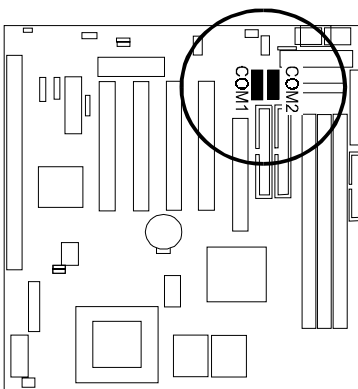
### *AT Keyboard Connector: AT\_KB*

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.

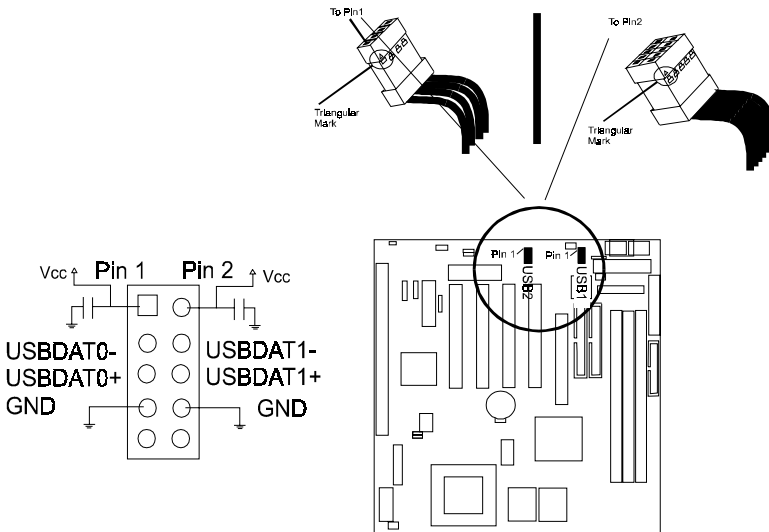


## Universal Serial Bus Connectors: USB1, USB2

These two 2x5 pinheads link with USB peripheral devices via either a dual-port USB cable that one bracket with a 2x5-hole plug (the photo below right), or a single-port USB cable that has a 1x 4-hole plug (the photo below left).

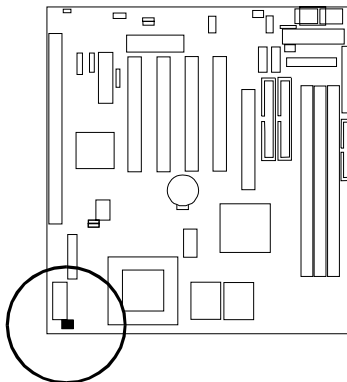
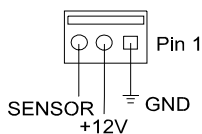


The pin 1 of the connector must be matched with the hole of the 1x4-hole plug that with a triangular mark; the pin 2 of the connector must be matched with the hole of the 2x5-hole plug that with a triangular mark.



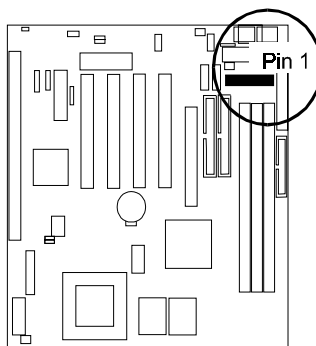
### ***CPU Fan Connector: CPU\_FAN***

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



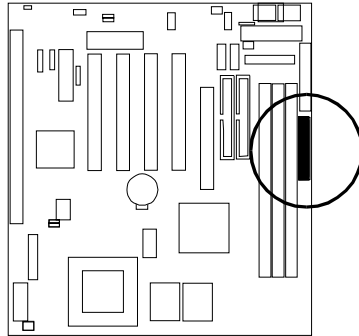
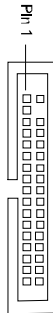
### ***Printer Connector: LPT***

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



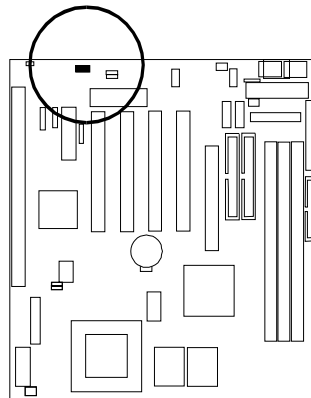
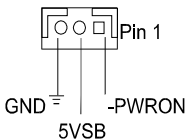
### ***Floppy Diskette Drive Connector: FDD***

This 26-pin block connector connects to your slim floppy disk drive using the FFC-cable that is provided with this mainboard. Insert one end of the silver-finger contact and press down the FDD connector on both sides to lock it in place. After connecting the single end to the mainboard, connect the other end to the floppy drive.

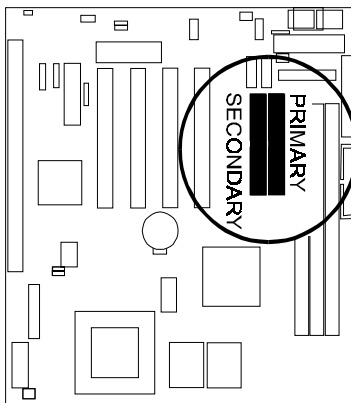
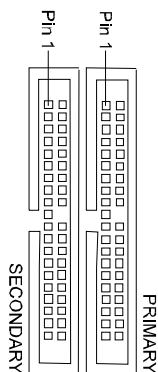


### ***Remote Power Connector: RPW\_CON***

This 3-pin connector allows you to enable (or disable) the system power if the RPW\_SW is on (or off) *when an AT power supply is installed*. Some of AT power supply come with a 3-pin plug, plug it on this connector. If you use an ATX power supply, ignore this connector. It allows soft power off in Windows 95/98.

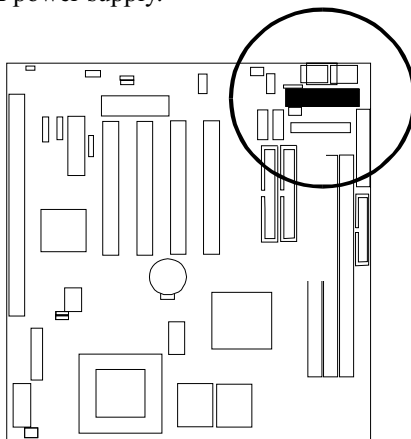


These two connectors are used for your IDE hard disk drives, CD drives, LS-120 drives, or IDE ZIP drives. The support the provided IDE hard disk ribbon cable is used for your IDE hard disk drive. After connecting the single end to the mainboard, connect the other plug to the other end of your hard disk . Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged.



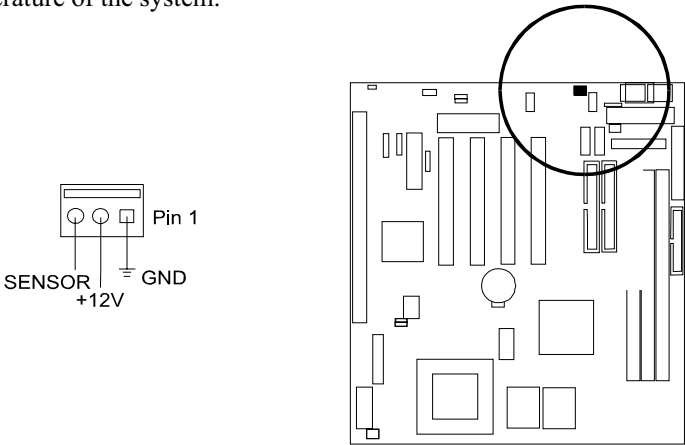
This connector is connected to the ATX power supply.

+12V	10	+5V
5V_VR	9	+5V
PWR_GOOD	8	-5V
GND	7	GND
+5V	6	GND
GND	5	GND
+5V	4	-PWR_ON
GND	3	GND
+3.3V	2	-12V
+3.3V	1	+3.3V



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

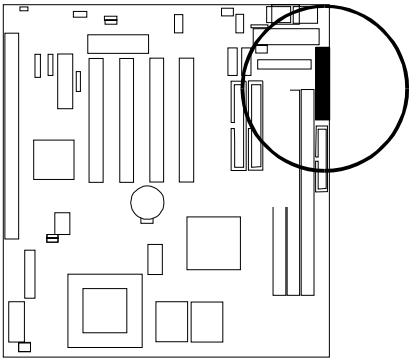
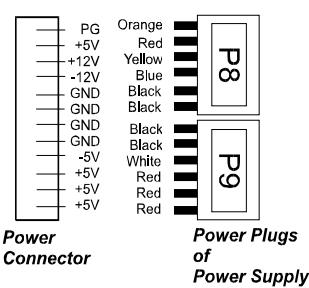
This connector is for linking to your cooling fan on the system case to lower the temperature of the system.



**Chapter 2**  
**Installation**  
**Procedures**

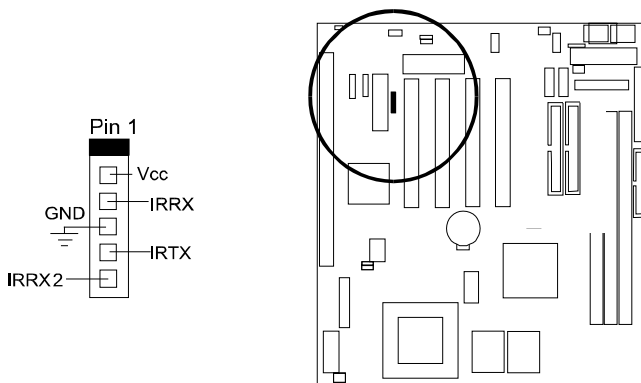
***AT Power Supply Connector: POWER***

This 12-pin block connector is used for connecting to the standard 5V power supply. There are two marks “P8” and “P9” on the surface of the connector. You have to insert the “P8” plug into the “P8” section, and so forth for “P9”. Please read PWR jumper in Page 11 if an AT power supply is used.



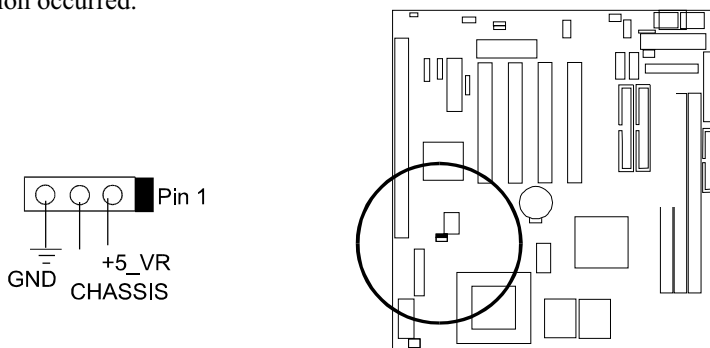
### ***Infrared Connector: IR***

This 5-pin connector is used to link with your IR device to allow transmission of data to another system that also supports the IR feature. This module mounts to a small opening on system cases that supports this feature.



### ***Chassis Intrusion Alarm Connector: CHASSIS***

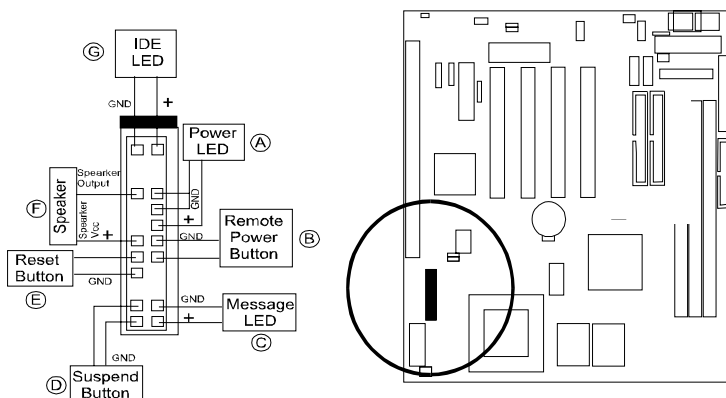
This 3-pin pinhead provides users with the functions that messages from the operating systems and system cases which support LDCM if the system cases intrusion occurred.



This feature is cooperated with the system case either by optical or mechanical way. If you purchase a case that supports the intrusion alarm by mechanical means; please check with your vendor carefully if it can work with this board.

### Front Panel Block Connector

This block connector concludes the connectors for linking with IDE LED, power LED, remote power button, message LED, suspend button, reset button and speaker on the front panel of the system case. Please identify polarities of plug wires for the case speaker and LEDs. Please ask vendor about this information when you buy them and install the system by yourself. The plug wires' polarities of this buttons will not affect the function.



**Power LED (A)** is connected with the system power indicator to indicate whether the system is on/off. When the system enter the suspend mode, it blinks.

**Remote Power Button (B)** is connected with remote power (soft power) switch. Push this switch will turn off and on the system instead of turning the power switch on the power supply.

**Message LED (C)** is connected with the message LED. When the system is running normally, the indicator is off. It is controlled by the operating system or application software.

**Suspend Button (D)** is connected with suspend mode switch.

**Reset Button (E)** is connected to the reset switch. Push this switch to reboot the system instead of turning power switch off and on.

**Speaker (F)** is connected with the case speaker.

**IDE LED (G)** is connected IDE device indicator. This LED will blink when the hard disk drives are activated.