

## 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 kg/cm to avoid damaging the chips' pins.

### 1). Set System 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:



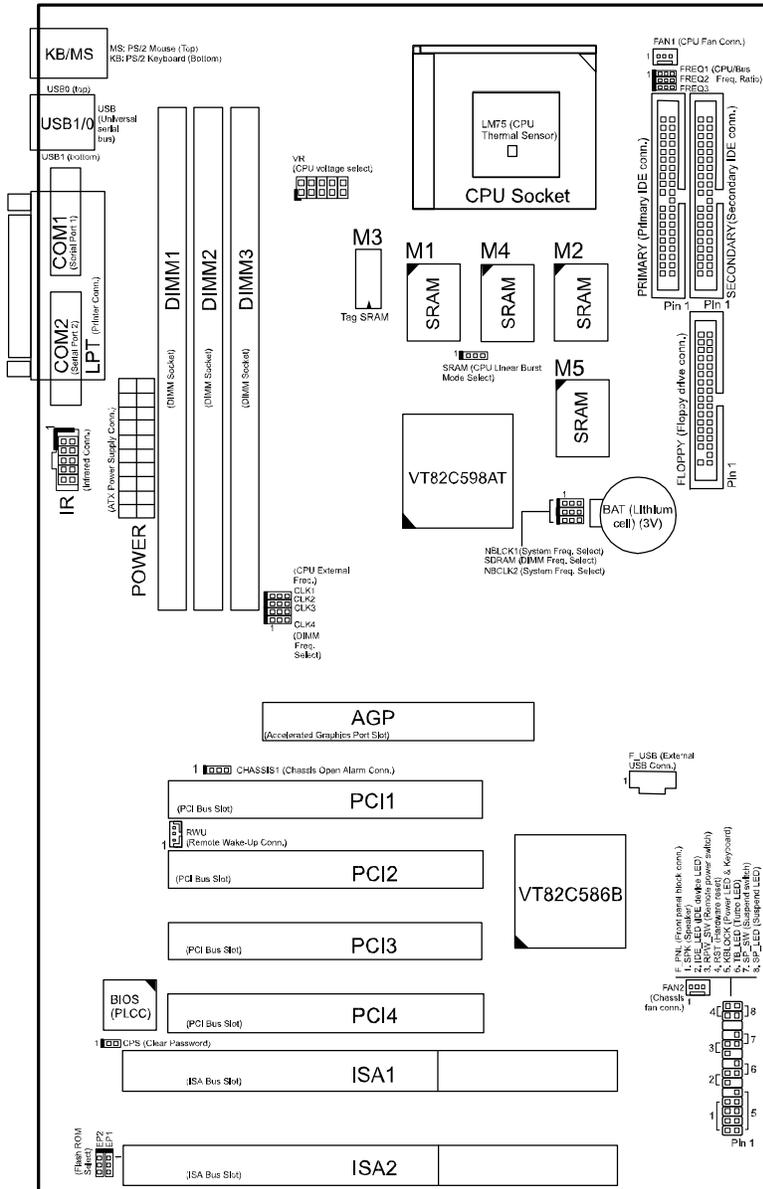
Jumper cap is shown as above



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.

## Motherboard Layout



## Installation Procedures

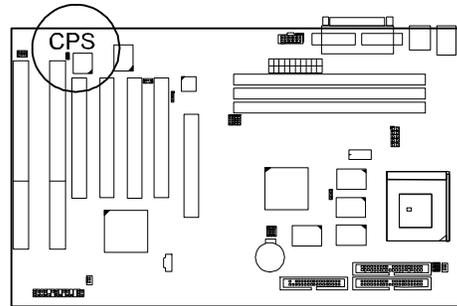
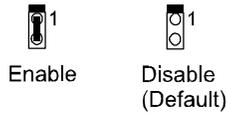
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Onboard Mark	Meaning	Page
CPS	Clear Password	10
EP1, 2	Flash ROM Type Selection	10
SRAM	CPU to SRAM Data Transacting Mode Selection	11
CLK4, SDRAM	DIMM Frequency Selection	13
NBCLK1, NBCLK2	System Frequency Selection	13
CLK1, 2, 3	CPU External (Bus) Frequency Selection	16
FREQ1, 2, 3	CPU to Bus Frequency Ratio Selection	16
VR	CPU Voltage Selection	18
DIMM1, 2, 3	Memory Module Socket	11
CPU ZIF Socket 7	ZIF Socket7 for Processor	15
AGP	Accelerated Graphic Port Slot	19
PCI1, 2, 3, 4	PCI Bus Expansion Slot (32-bit)	19
ISA1, 2	ISA Bus Expansion Slot (16-bit)	19
FLOPPY	Floppy Diskette Drive Connector	20
PRIMARY, SECONDARY	IDE Device Connector	20
POWER	ATX Power Connector	20
FAN1	CPU Fan Connector	21
RWU	Wake-On-LAN Connector	21
F_PNL*	Connectors for LEDs & Switches on Front Panel	22
FAN2	System Case Fan Connector	24
CHASSIS1	Chassis Open Alarm Connector	24
KB	PS/2 Keyboard Connector	25
MS	PS/2 Mouse Connector	25
LPT	Parallel Port	25
USB0, USB1, F_USB	Universal Serial Bus Connector	25
COM1, COM2	Serial Port	26
IR	Infrared Connector	26

*\* includes PWR\_LED, KB\_LOCK, TB\_LED, SP\_SW, SPK, SP\_LED, IDE\_LED, RPW\_SW, and RST connectors.*

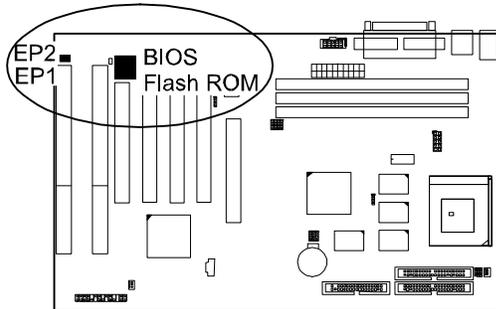
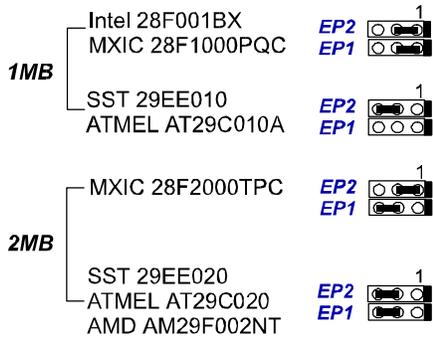
**Clear Password: CPS**

This jumper allows you to enable or to disable the password configuration. You may need to enable this jumper by shorting it with a jumper cap if you forget your password. To clear the password setting: (1). Turn off your computer, (2). Short this jumper by placing a jumper cap on it, (3). Turn on your computer. The message “Password Cleared By Jumper (CPS)” will appear on the screen. (4). Hold down the Delete key during boot and enter BIOS Setup to re-enter user preferences, (5) Turn off your computer, (6) Remove the jumper cap, (7) Turn on your computer for the new settings to take effect.



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

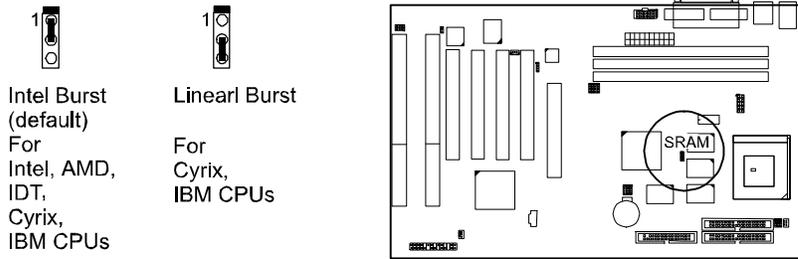
These two jumpers allow you to configure the type of flash ROM chip. This jumper setting is correct by manufactory default. If you want to know the flash ROM type installed on this motherboard, remove the sticker from the chip to see its type.



***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 motherboard, please set at 2-3 pin pair. Please also read Linear Burst feature (Page 33) Chipset Features Setup, Chapter 3 for more information.



**2). Install System RAM Modules**

**RAM Module Configuration**

This motherboard provides three onboard DIMM sockets for allowing only 3.3V (unbuffered) EDO/SDRAM DIMM modules. Either 8, 16, 32, 64, 128MB, or 256\*MB DIMM can be installed on these three sockets. The maximum total memory supported is up to 768MB\*.

<i>Socket</i>	<i>Accepted Memory Module</i>		<i>Total Memory</i>
1	8/16/32/64/128/256MB 168-pin 3.3V EDO/SDRAM	x1	
2	8/16/32/64/128/256MB 168-pin 3.3V EDO/SDRAM	x1	
3	8/16/32/64/128/256MB 168-pin 3.3V EDO/SDRAM	x1	

*Total System Memory allowed up to 768MB =*

**NOTE:**

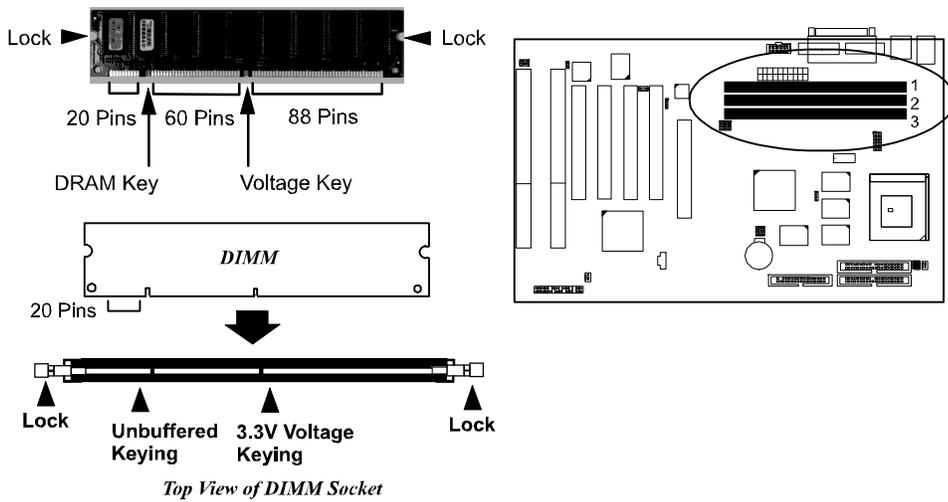
- \* A RAM module of this size was not available for testing at time of printing.
- This motherboard supports DIMMs with data access time of 15ns, 12ns, 10ns, 8ns or less. ECC memory and parity check is also supported. Please also refer to the feature of **Memory ECC Check** (Page 33, Chipset Features Setup) of Chapter 3 for more information.
- If DIMM runs at the speed of 100MHz, it must meet the PC100 Specification.

## Install and Remove DIMMs

This motherboard 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 motherboard.



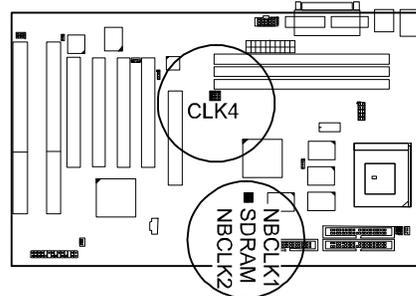
2. Install the DIMM straight down into the DIMM slot with both hands.
3. The clips of the slot will close up to hold the DIMM in place when the DIMM touches the slot's bottom.



Press the clips with both hands to remove the DIMM.

## Installation Procedures

**DIMM Frequency: CLK4,  
SDRAM**  
**System Frequency: NBCLK1,  
NBCLK2**

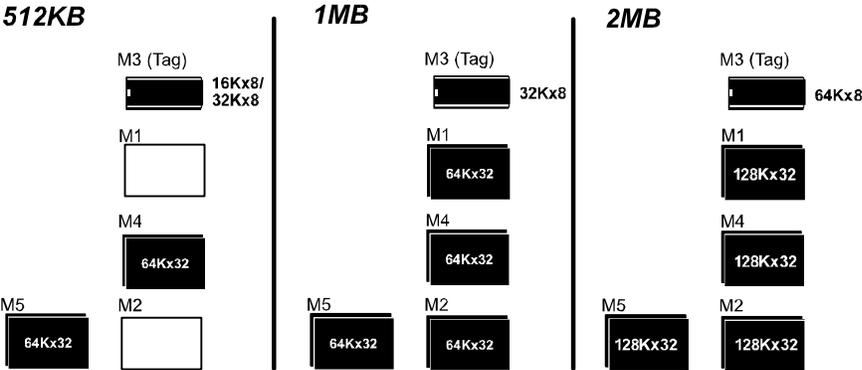
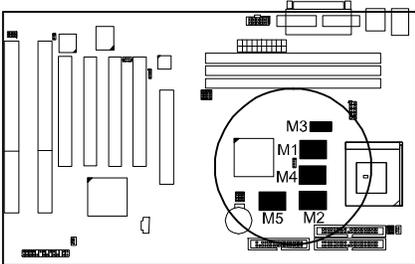


CPU External Freq. \ DIMM Freq.	PC-100 -7ns, -8ns	Non PC-100 -8ns, -10ns, -12ns, above
124MHz 112MHz	N/A	
100MHz 95MHz 83MHz		
75MHz 68MHz		
66MHz		<p>(Default)</p>

\* set for stable performance,  
\*\*set for high performance, but some SDRAM may make the system unstable.

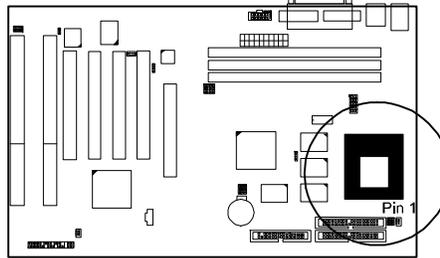
**Cache Memory**

The PA-2013 comes with onboard 512KB (1MB/2MB is manufacturing optional) 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.



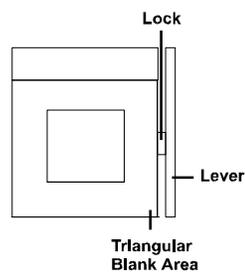
**CAUTION:**

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 CPU chip incorrectly may damage the chip.

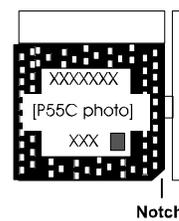
To install the CPU, do the following:

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 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.

**Socket Without CPU**

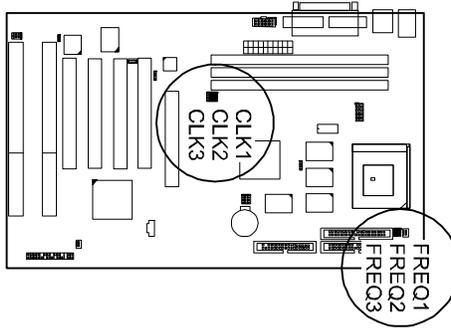


**Socket With CPU**



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

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



66MHz		68MHz		75MHz		83MHz	
95MHz		100MHz		112MHz*		124MHz*	

**NOTE:** \* when it selected, the system performance will not be guaranteed.

**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.

2 x		3 x (2 x for AMD-K5)		4 x		5 x	
2.5 x (1.75 x for AMD-K5)		3.5 x (1.5 x for AMD-K5)		4.5 x		5.5 x	

**Set CPU Frequency**

Model	Freq.	Bus Freq.	Ratio
Intel Pentium MMX-233	233	66	3.5 x
Intel Pentium MMX-200	200	66	3 x
Intel Pentium MMX-166	166	66	2.5 x
Intel Pentium-200	200	66	3 x
Intel Pentium-166	166	66	2.5 x
Intel Pentium-133	133	66	2 x
Intel Pentium-100	100	66	1.5 x
AMD-K6-2-400*	400	100	4 x
AMD-K6-2-366*	366	66	5.5 x
AMD-K6-2-350	350	100	3.5 x
AMD-K6-2-333	333	95	3.5 x
AMD-K6-2-300	300	66	4.5 x
		100	3 x
AMD-K6-300	300	66	4.5 x
AMD-K6-266	266	66	4 x
AMD-K6-233	233	66	3.5 x
AMD-K6-200	200	66	3 x
AMD-K6-166	166	66	2.5 x
AMD-K5-PR200	133	66	2 x
AMD-K5-PR166	116	66	1.75 x
AMD-K5-PR133	100	66	1.5 x
AMD-K5-PR100	100	66	1.5 x
Cyrix M II-350*	300	100	3 x
IBM 6x86MX-PR350*	291	83	3.5 x
	300	75	4 x
Cyrix M II-333	266*	66*	4 x*
IBM 6x86MX-PR333	263*	75*	3.5 x*
	250	83	3 x
	250*	100*	2.5 x*
Cyrix M II-300	225	75	3 x
IBM 6x86MX-PR300	233	66	3.5 x

(be continued on the next page)

**NOTE:**

1. \* This type of CPU was not available for testing at time of printing.
2. For most up-to-date information, please visit the FIC web site at <http://www.fic.com.tw>.

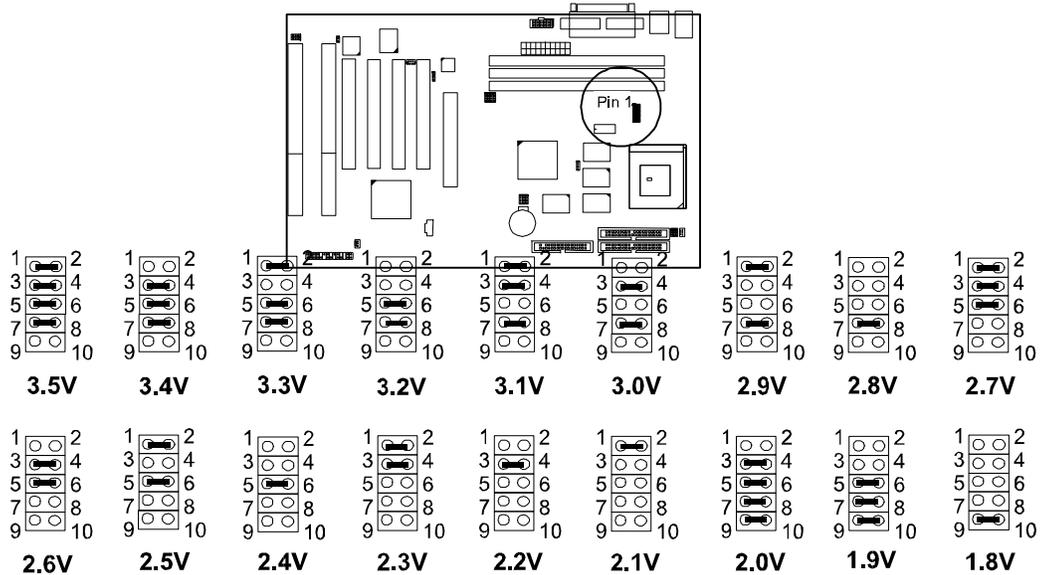
(Continued from previous page)

Model	Freq.	Bus Freq.	Ratio
Cyrix/IBM 6x86MX-PR266	208	83	2.5 x
Cyrix/IBM 6x86MX-PR233	166	83	2 x
	188	75	2.5 x
Cyrix/IBM 6x86MX-PR200	166	66	2.5 x
	150	75	2 x
Cyrix/IBM 6x86MX-PR166	133	66	2 x
Cyrix/IBM 6x86L-PR200+	150	75	2 x
Cyrix/IBM 6x86L-PR166+	133	66	2 x
Cyrix/IBM 6x86-PR200+	150	75	2 x
Cyrix/IBM 6x86-PR166+	133	66	2 x
IDT WinChip2-200	200	66	3 x
IDT WinChip-200	200	66	3 x

### Set CPU Voltage

This section lists all possible CPU voltages that this board supports. There are two rows of CPU voltage (core voltage) jumper setting in the diagram below.

**NOTE:** Please refer to your CPU top marking about the actual CPU voltage. (It is core voltage, the IO voltage is 3.3V.)

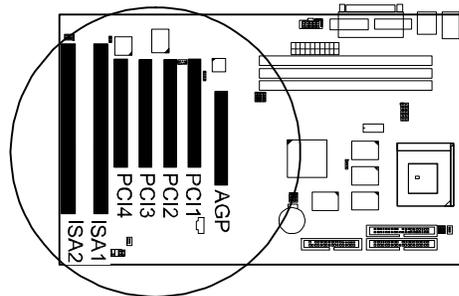


## 4). Install Expansion Cards

Expansion cards are printed circuit boards that, when connected to the motherboard, increase the capabilities of your system. For example, expansion cards can provide video and sound capabilities. Your PA-2013 features [one 32-bit AGP Bus](#), [two 16-bit ISA Bus](#), and [four 32-bit PCI Bus](#) expansion slots.

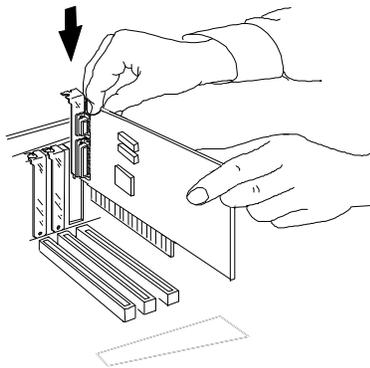
**CAUTION:**

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.)

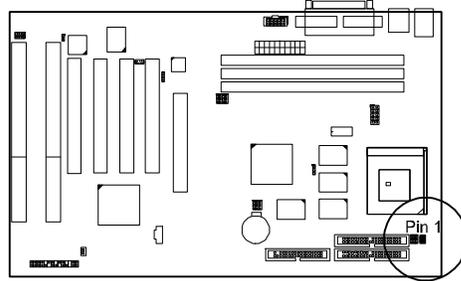
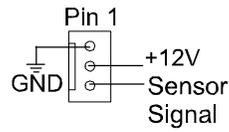


4. Push the card firmly into the slot. Push down on one end of the expansion card, then the other. Use this “rocking” motion until the add-in card is firmly seated inside the slot.
5. Secure the board with the mounting screw removed in Step 2. Make sure that the card has been placed evenly and completely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



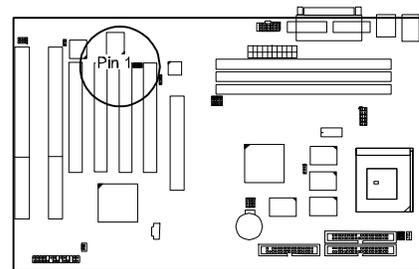
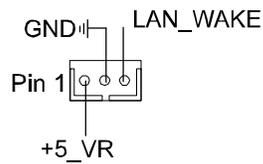
***CPU Fan Connector: FANI***

This connector is linked to the CPU fan for cooling the processor temperature. Please read the CPU fan installation guide before connection.



***Wake-ON-LAN (WOL) Connector: RWU***

This 3-pin connector allows LAN servers to manage the system that installed this board via network adapters support WOL. Please read the network card's guide for details and Page 37 **Resume on Ring & LAN**

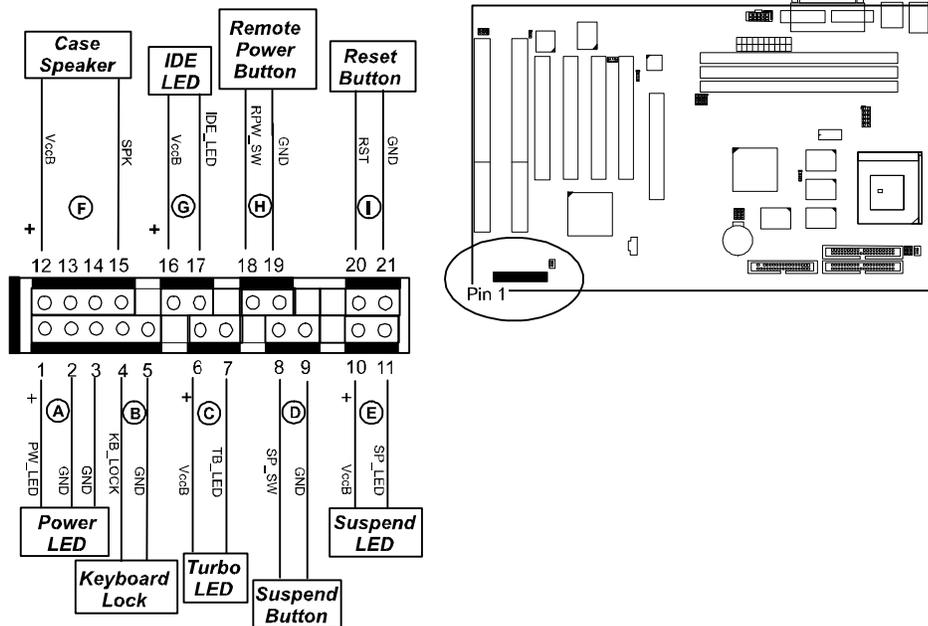


## Connectors to System Case

### Front Panel Block Connector: F\_PNL

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

Usually, the plugs with wires for above LEDs (indicators), speaker and switches come with the system case. Please identify polarities of plug wires for the case speaker and LEDs; that is, which wires are positive (+). Please ask vendor about this information when you buy them and install the system by yourself. The switches are called *Miniature Push Switches*. The plug wires' polarities of this switches will not affect the function.



**PWR\_LED (A) & KB\_LOCK (B)**

PWR\_LED is connected with the system power indicator to indicate whether the system is on/off and the case-mounted keyboard lock to lock keyboard. KB\_LOCK prevents keyboard access to the system (this feature is used in combination with the case-mounted keyboard lock).

**TB\_LED (C)** is connected with turbo indicator. It always lights.

**SP\_SW (D)** is connected with suspend mode switch.

**SP\_LED (E)** is connected with suspend mode indicator.

**SPK (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.

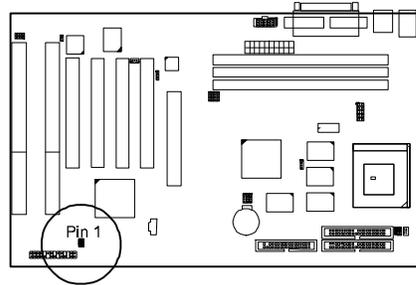
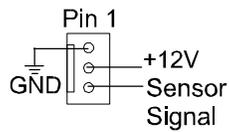
**RPW\_SW (H)** is connected with remote power (soft power) switch.

Push this switch will turn off and on the system instead of turning the power switch on the power supply.

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

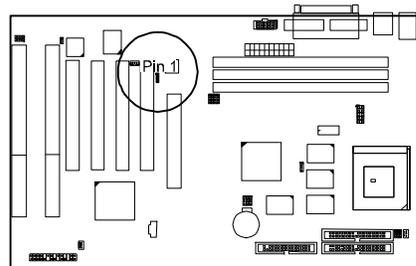
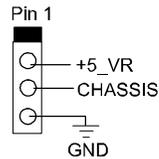
***System Case Fan Connector: FAN2***

This 3-pin connector links to your cooling fan on the system case to lower the system temperature.



***Chassis Intrusion Alarm Connector: CHASSIS1***

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.

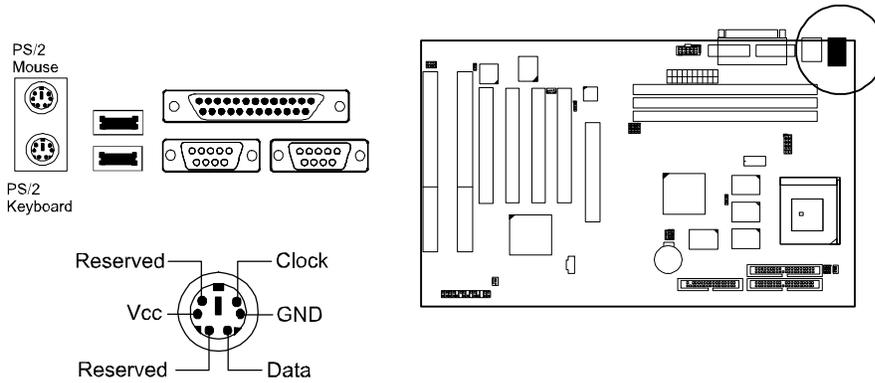


This feature is cooperated with the system case either by optical or mechanical way. If you purchase a case that supports the intrusion alarm by mechanical means; please check with your vendor carefully if it can work with this board.

## Connectors to External Devices

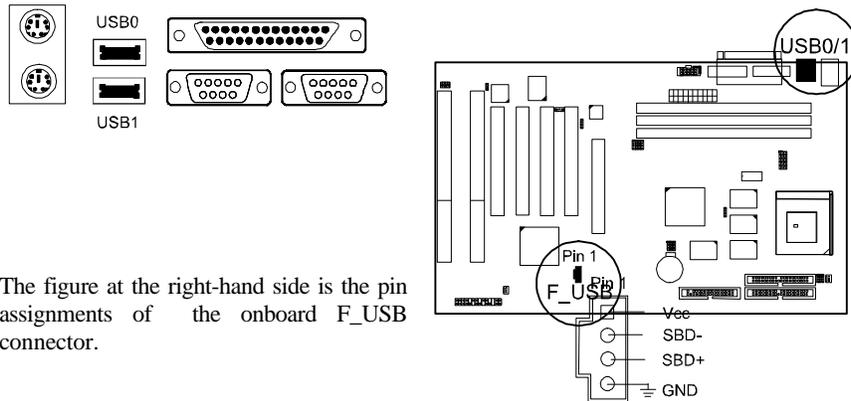
### *PS/2 Keyboard and Mouse Connector: KB/ MS*

These two 6-pin female connectors are used for your PS/2 keyboard and PS/2 mouse.



### *Universal Serial Bus Connectors: USB0, USB1, F\_USB*

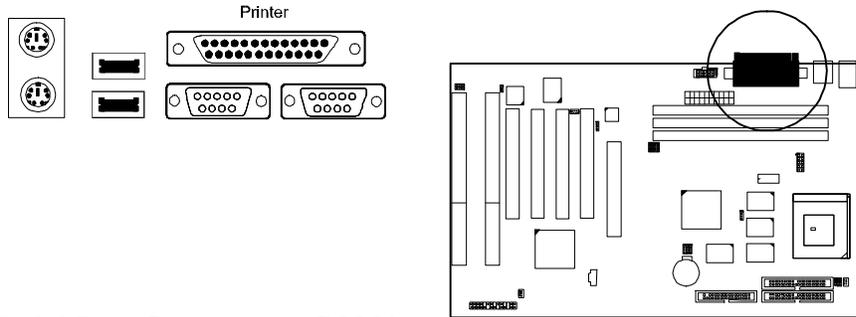
These two connectors that integrated on the edge of the board are used for linking with USB peripheral devices. Also, this board provides an manufacturing optional connector F\_USB (shared with USB0) for linking with the USB socket on the front panel of some system cases. If this connector is onboard and is used, the USB0 connector is disabled.



The figure at the right-hand side is the pin assignments of the onboard F\_USB connector.

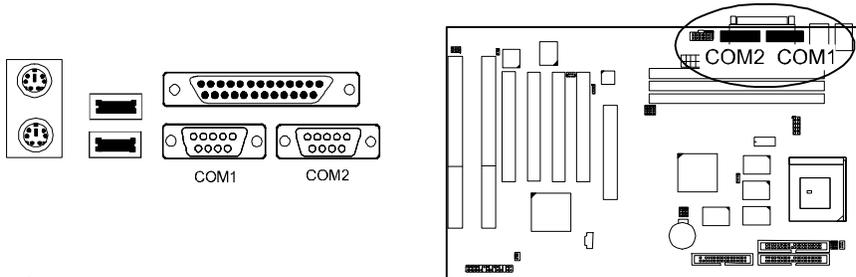
**Printer Connector: LPT**

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



**Serial Port Connectors: COM1, COM2**

These two 9-pin D-Sub male connectors allow you to connect with your devices that use serial ports, such as a serial mouse or a modem.



**Infrared Connector: IR**

This connector supports the connection to your IR device.

