

Installation Procedures

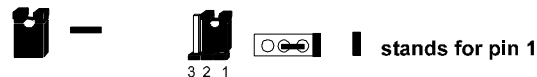
The motherboard has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. To set up your computer, you should follow these installation steps: 1). set system jumpers; 2). install RAM modules; 3). install the CPU; 4). install expansion cards; 5).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



Jumper cap is shown as above



Jumpers in a Block

used in this manual are shown below:

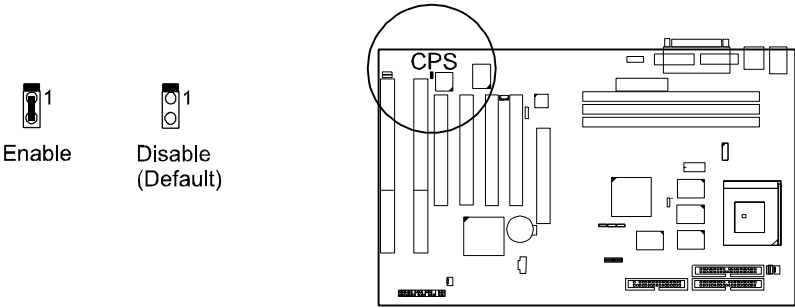
NOTE: Users are not encouraged to change the jumper settings not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.

| 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, SECONDRAY | 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.

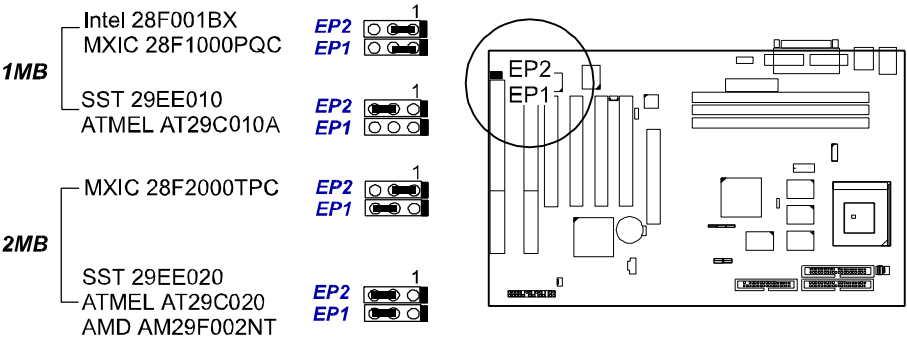
Clear Password: CPS

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, (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

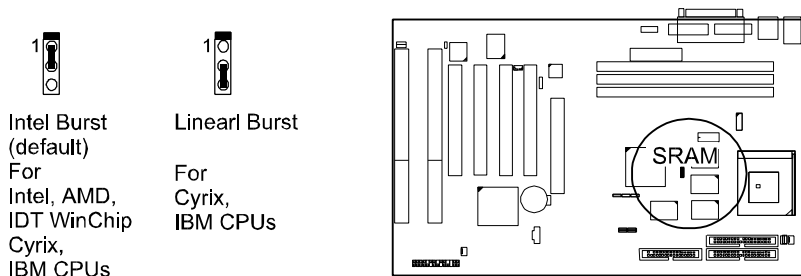
These two jumpers allow you to configure the type of flash ROM chip. This jumper setting is correct by manufactory default. If you want to know the flash ROM type installed on this motherboard, remove the sticker from the chip to see its type.



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) of 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:

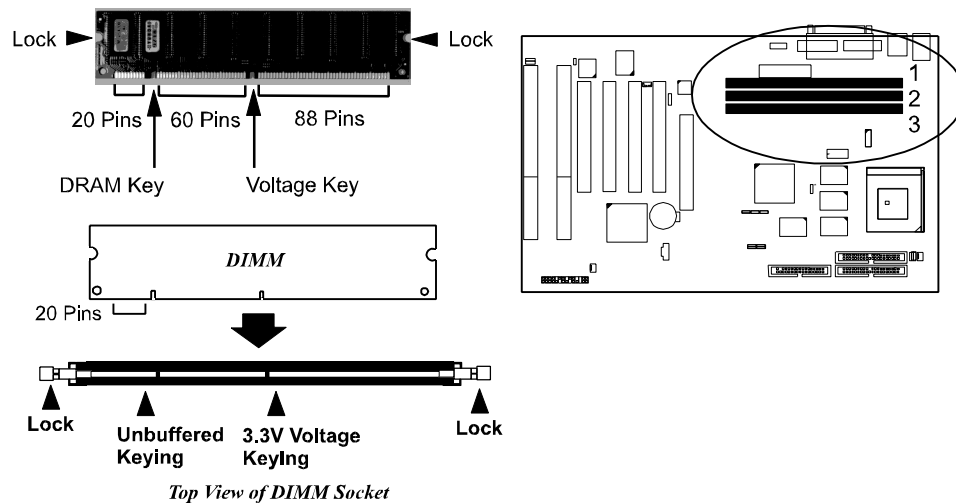
- * A RAM module of this size was not available for testing at time of printing.
- This motherboard supports DIMMs with data access time of 15ns, 12ns, 10ns, 8ns or less. ECC memory and parity check is also supported. Please also refer to the feature of **Memory ECC Check** (Page 33, Chipset Features 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.



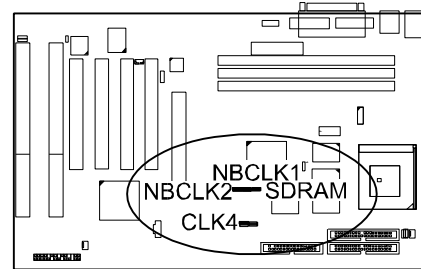
2. Install the DIMM straight down into the DIMM slot with both hands.
3. The clips of the slot will close up to hold the DIMM in place when the DIMM touches the slot's bottom.



Press the clips with both hands to remove the DIMM.

**DIMM Frequency: CLK4,
SDRAM**

**System Frequency: NBCLK1,
NBCLK2**



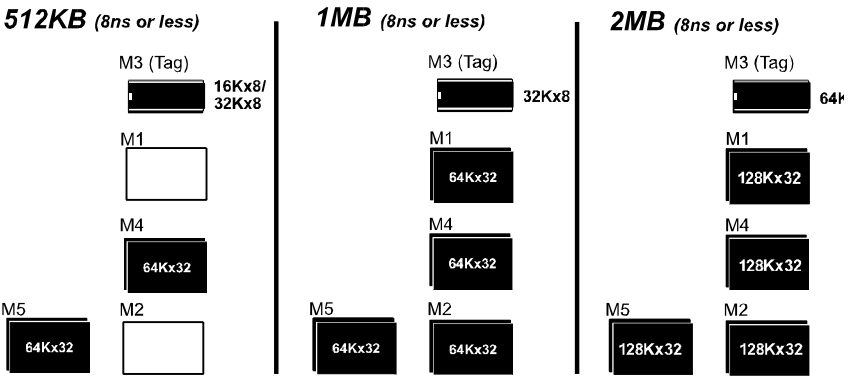
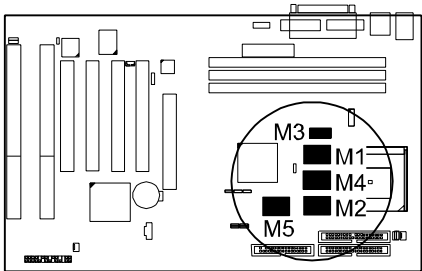
| CPU External Freq. | DIMM Freq. | PC-100 -7ns, -8ns | Non PC-100 -8ns, -10ns, -12ns, above | |
|--------------------------|---------------|----------------------|---|--|
| | | | | |
| 100MHz | | | | |
| 83MHz | | | | |
| 75MHz | | | | |
| 66MHz | | | <p>(Default)</p> | |

* set for stable performance,

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

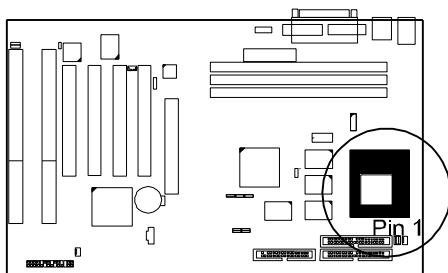
Cache Memory

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.



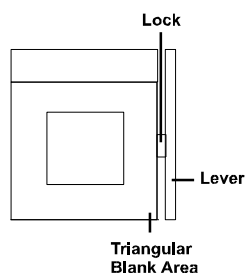
CAUTION:

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.

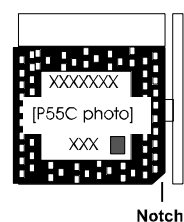
To install the CPU, do the following:

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

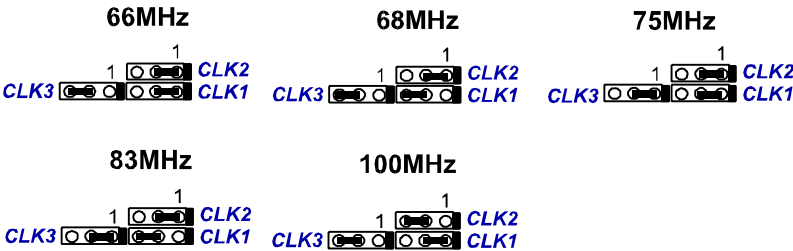
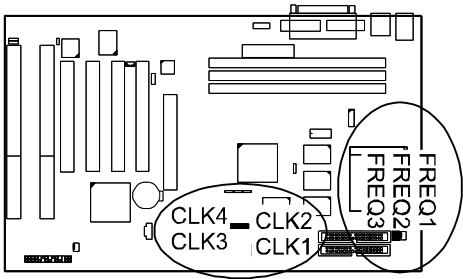


Socket With CPU



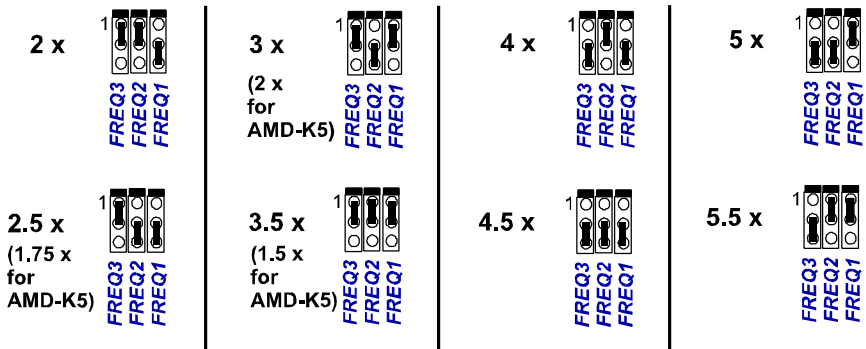
CPU External (BUS) Frequency: CLK1, CLK2, CLK3

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



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.



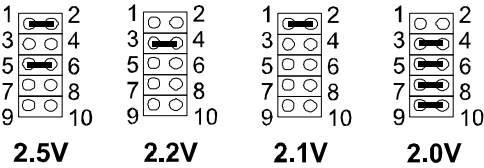
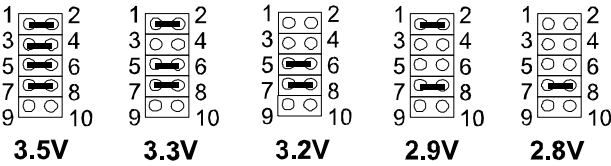
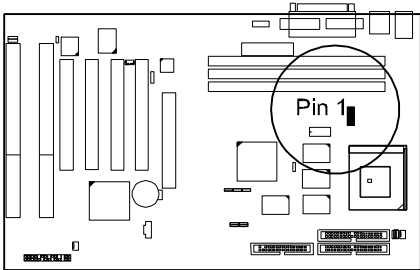
Set CPU Frequency

| Type | Freq. | Bus Freq. | Ratio |
|-------------------|-------|-----------|--------|
| Intel Pentium MMX | 233 | 66 | 3.5 x |
| | 200 | 66 | 3 x |
| | 166 | 66 | 2.5 x |
| Intel Pentium | 200 | 66 | 3 x |
| | 166 | 66 | 2.5 x |
| | 133 | 66 | 2 x |
| | 100 | 66 | 1.5 x |
| AMD-K6-2-300 | 300 | 66 | 4.5 x |
| | | 100 | 3 x |
| AMD-K6-2-266 | 266 | 66 | 4 x |
| | 250 | 100 | 2.5 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 |
| IBM 6x86MX-PR333 | 333 | 83 | 3 x |
| Cyrix M II-300 | 300 | 66 | 3.5 x |
| | 300 | 75 | 3 x |
| 6x86MX-PR266 | 208 | 83 | 2.5 x |
| 6x86MX-PR233 | 166 | 83 | 2 x |
| | 188 | 75 | 2.5 x |
| 6x86MX-PR200 | 166 | 66 | 2.5 x |
| | 150 | 75 | 2 x |
| 6x86MX-PR166 | 133 | 66 | 2 x |
| 6x86L-PR200+ | 150 | 75 | 2 x |
| 6x86L-PR166+ | 133 | 66 | 2 x |
| 6x86-PR200+ | 150 | 75 | 2 x |
| 6x86-PR166+ | 133 | 66 | 2 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.)

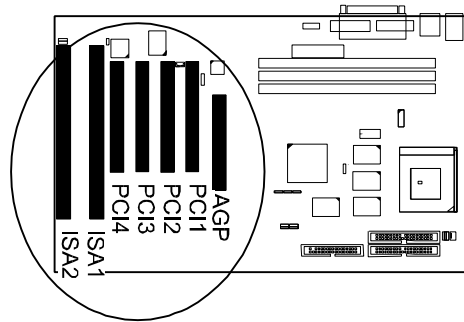


4). Install Expansion Cards

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.

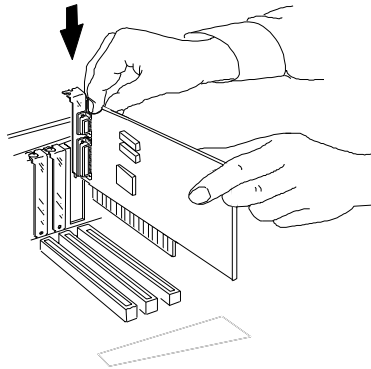
CAUTION:

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.)



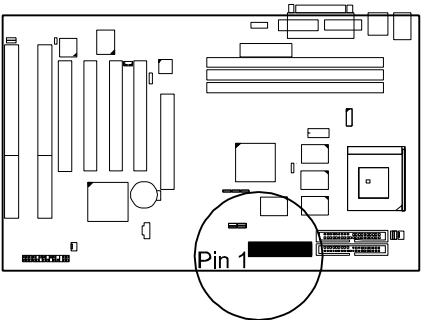
4. Push the card firmly into the slot. Push down on one end of the expansion card, then the other. Use this “rocking” motion until the add-in card is firmly seated inside the slot.
5. Secure the board with the mounting screw removed in Step 2. Make sure that the card has been placed evenly and completely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

5). Connect Devices

Connectors to Internal Devices

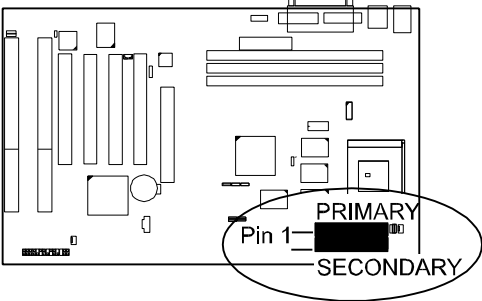
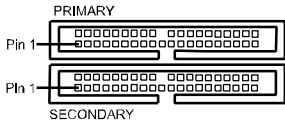
Floppy Diskette Drive Connector: FLOPPY

This connector provides the connection with your floppy disk drive. The red stripe of the ribbon cable must be the same side with the Pin 1.



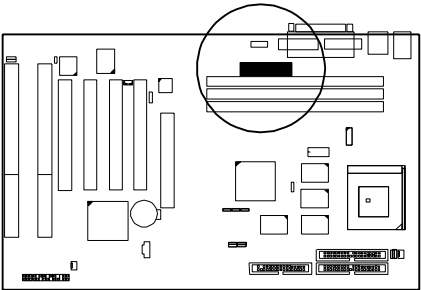
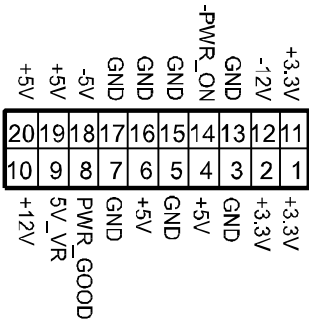
IDE HDD Device Connectors: PRIMARY, SECONDARY

These two connectors are used for your IDE hard disk drives, CD drives, LS-120 drives, or IDE ZIP drives. The red stripe of the ribbon cable must be the same side with the Pin 1.



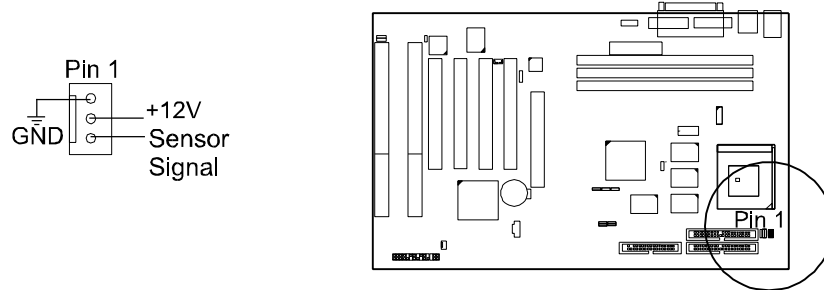
ATX Power Connector: POWER

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



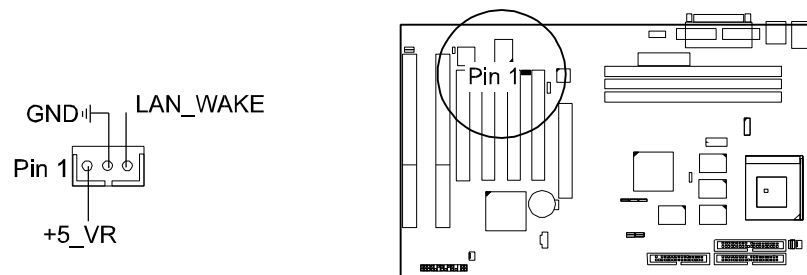
CPU Fan Connector: FAN1

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**.

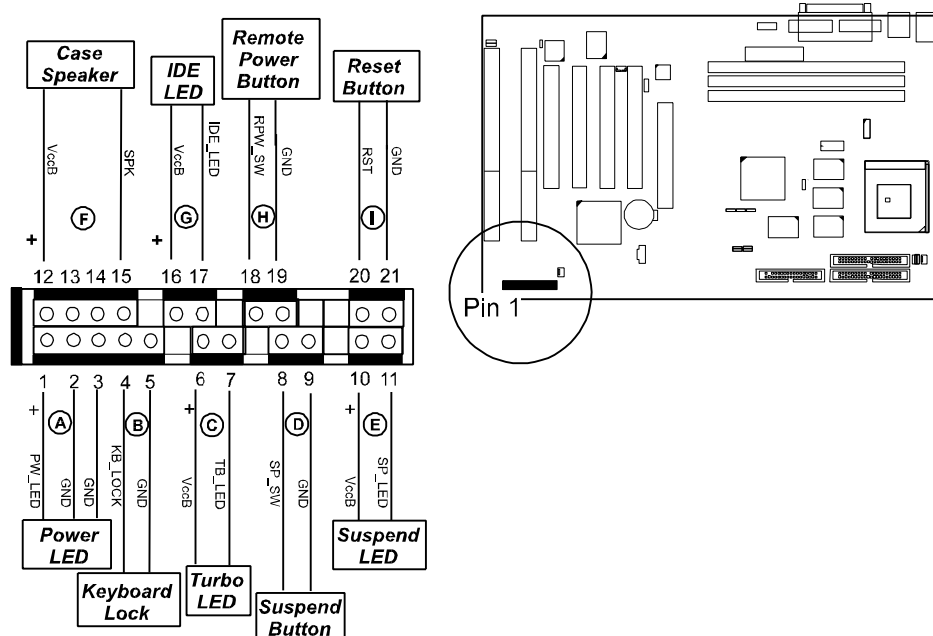


Connectors to System Case

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 keylock).

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.

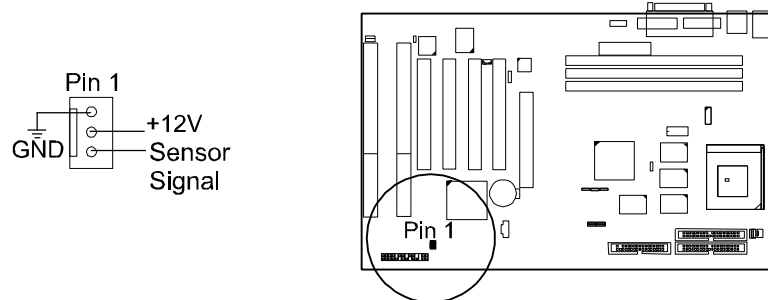
IDE_LED (G) is connected IDE device indicator. This LED will blink when the hard disk drives are activated.

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.

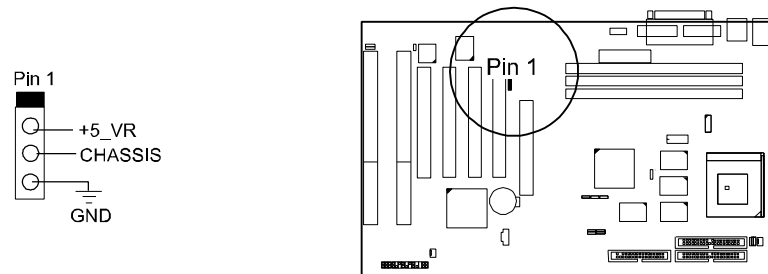
System Case Fan Connector: FAN2

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.

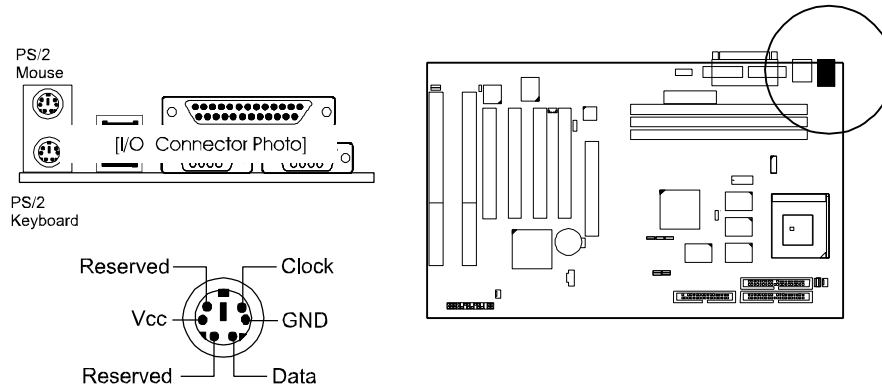


This feature is cooperated with the system case either by optical or mechanical way. If you purchase a case that supports the intrusion alarm by mechanical means; please check with your vendor carefully if it can work with this board.

Connectors to External Devices

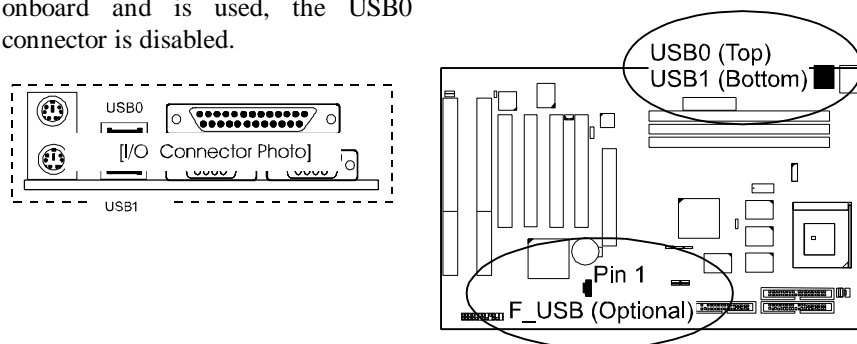
PS/2 Keyboard and Mouse Connector: KB/ MS

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

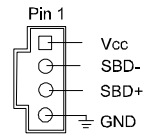


Universal Serial Bus Connectors: USB0, USB1, F_USB

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.

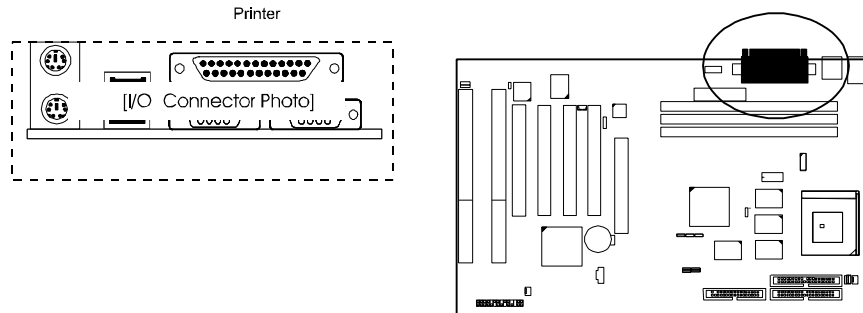


The figure at the right-hand side is the pin assignments of the onboard F_USB connector.



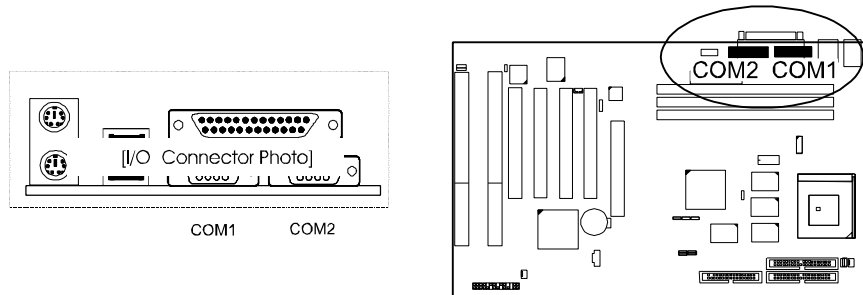
Printer Connector: LPT

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.

