# Chapter 2

# Hardware Setup

If your mainboard has already been installed in your computer you may still need to refer to this chapter if you plan to upgrade your system's hardware.

**Be sure to disconnect the power cable from the power source before performing any work on your mainboard, i. e. installing a CPU, memory module, changing a jumper setting, etc. Not doing so may result in electrical shock!**

## 2-1 Introduction to Jumpers

Jumpers are used to select between various operating modes. A jumper consists of a row of gold colored pins that protrude from the surface of the mainboard. It is important not to confuse jumpers with connectors or headers.

**Putting jumper caps on anything that is not a jumper may result in damaging your mainboard. Please refer to Section 1-3, Mainboard Layout, for the location of jumpers on your mainboard.**

As indicated in Figure 2-1 below, a cap is used to cover the pins of a jumper, resulting in shorting those pins that it covers. If the cap is removed from the top of the pins, the jumper is left "open." The number 1 shown both in the diagram below and in all multiple pin jumper and header diagrams in this manual indicates the pin designated with the number 1. The numbering of the remaining pins follows in sequence.

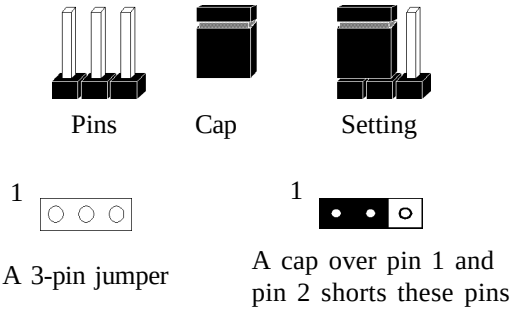



**Figure 2-1**

## 2-2 Installing a PGA type CPU in a ZIF Socket

The Intel Socket 7, designed for the Pentium processor, has been incorporated as a standard mainboard specification and is compatible with AMD and Cyrix CPUs. To insert your CPU into Socket 7 please do the following:

1. Locate a small dot marked on the top surface of the CPU close to one if it's corners. The same corner will also be cut off, leaving a noticeable notch in the CPU's corner. These markings indicate Pin 1 of the CPU. See Figure 2-2.

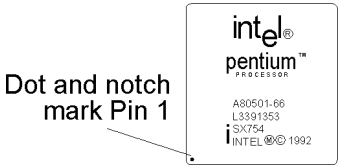



**Figure 2-2 The markings on top of a CPU**

2. Pull up the lever of Socket 7 so that it is perpendicular with the surface of the mainboard. Gently insert the CPU with Pin 1 at the same corner of Socket 7 that contains the end of the lever. Allow the the weight of the CPU to push itself into place. Do not apply extra pressure as doing so may result in damaging your CPU. Snap the lever back into place. See Figure 2-3.

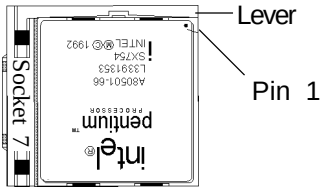



**Figure 2-3 Inserting a CPU into Socket 7**

Installing a heat sink and cooling fan on top of your CPU is necessary for proper heat dissipation. Failing to install these items may result in overheating and possible burn-out of your CPU.

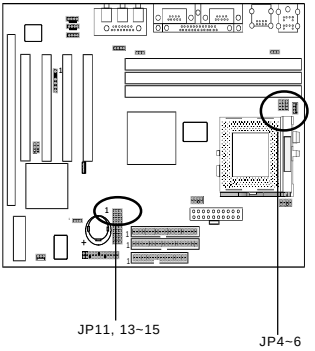
# 2-3 CPU Jumper Configuration

## Frequency Configuration

If you install a CPU on this mainboard, you must set JP11, 13~15 for **System Frequency** and JP4~6 for **CPU Bus Frequency Ratio.** See Figure 2-4 CPU/System Frequency Jumper Settings.

### CPU Bus Frequency & Frequency Ratio Configuration

* CPU Speed = Frequency ratio x System Frequency




| SYS. Freq | JP1 | JP13 | JP14 | JP15 |
|---|---|---|---|---|
| 66/Async | | | | |
| 66/Sync | | | | |
| 75 | | | | |
| 83 | | | | |
| 90 | | | | |
| 95 | | | | |
| 100 | | | | |

| Freq. Ratio | JP4~JP6 |
|---|---|
| x1.5/x3.5 | |
| x2.0 | |
| x2.5 | |
| x3.0 | |
| x4.0 | |
| x4.5 | |
| x5.0 | |
| x5.5 | |

**Figure 2-4 System Frequency Jumper Settings**

### PCI Frequency & SDRAM Frequency

| CPU Freq. (MHz) | SDRAM Freq. (MHz) | PCI Freq. (MHz) |
|---|---|---|
| 66 | 100 | 33 |
| 66 | 66 | 33 |
| 75 | 75 | 30 |
| 83 | 83 | 33 |
| 90 | 90 | 30 |
| 95 | 95 | 32 |
| 100 | 100 | 33 |

## Overclocking

Operating a CPU at a higher frequency than its specification allows is called overclocking. If the CPU frequency is set at a higher frequency than its specification allows, it may or may not run at that freqency, depending on the quality of your CPU and the extent to which the frequency has been overset. The mainboard manufacturer highly discourages overclocking as it may result in data loss, CPU burn-out, system failure, etc.

Many processors are frequency locked processors and are not able to perform overclocking. Regardless of whether the processor is a frequency locked, overclocking may cause some processors to hang when turning on the system. When the processor hangs, the screen remains blank and the system does not boot. To solve this problem, do the following:

1. Turn off the computer and then press the Home key on your keyboard
2. Turn on your computer, wait for five seconds and then release the Home key. (Pressing the Home key allows the computer to boot at a low system speed. For example, 66MHz external clock CPUs boot-up at 133MHz.)
3. Enter BIOS and reconfigure your CPU parameters as described in this section.

### Voltage Configuration

There are two major processor types in general use--single and dual voltage processors. Most single voltage processors such as Pentium, AMD-K5, and Cyrix 6x86 processors use a single voltage value of 3.5v for both core and I/O voltage settings. Most dual voltage processors such as Pentium processors with MMX technology and Cyrix 6x86L processors use a dual voltage value of 2.8v for core and 3.3v for I/O voltage settings. To make the voltage setting for single and dual voltage processors, simply set **JP16~20** according to the table on the next page. The voltage range supported by this mainboard is detailed in Figure 2-5 below.

| Vcore | JP16~20 | Vcore | JP16~20 |
|---|---|---|---|
| 1.8V | | 2.9V | |
| 2V | | 3.1V | |
| 2.2V | | 3.2V | |
| 2.4V | | 3.3V | |
| 2.5V | | 3.5V | |
| 2.8V | | | |

**Figure 2-5 Voltage Jumper Settings**

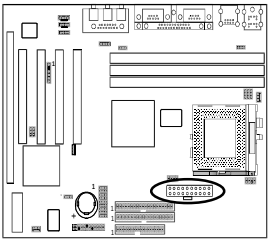
| CPU-type | | CPU Power Voltage | | | | | System freq. | | Freq. ratio | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | I/O Vcc | Core Vcc | JP8 | JP9 | JP16~20 | MHz | JP11, 13~15 | Speed rate | JP4~ |
| Intel | P54C-166 | 3.5 | | | | 1 | 66 | 1 | x2.5 | 1 |
| | P54C-200 | | | | | | | | x3 | 1 |
| | Pentium w/MMX @166MHz | 3.3 | 2.8 | | | 1 | | | x2.5 | 1 |
| | Pentium w/MMX @200MHz | | | | | | | | x3 | 1 |
| | Pentium w/MMX @233MHz | | | | | | | | x3.5 | 1 |
| Cyrix /IBM | 6x86L-PR166 @133MHz | 3.3 | 2.8 | | | 1 | 66 | 1 | x2 | 1 |
| | 6x86L-PR200 @150MHz | | | | | | 75 | 1 | | |
| | 6x86MX-PR166 | | 2.9 | | | 1 | 66 | 1 | | |
| | 6x86MX-PR200 | | | | | | | | x2.5 | 1 |
| | 6x86MX-PR200 | | | | | | 75 | 1 | x2 | 1 |
| | 6x86MX-PR233 | | | | | | | | x2.5 | 1 |
| | | | | | | | 83 | 1 | x2 | 1 |
| | MII-300 | | | | | | 66 | 1 | x3.5 | 1 |
| | | | | | | | 75 | 1 | x3 | 1 |
| AMD | K6/166 | 3.3 | 2.9 | | | 1 | 66 | 1 | x2.5 | 1 |
| | K6/200 | | | | | | | | x3 | 1 |
| | K6/233 | | 3.2 | | | 1 | | | x3.5 | 1 |
| | | | 2.2 | | | 1 | | | | |
| | K6/266 | | | | | | | | x4 | 1 |
| | K6-2/266 | | | | | | | | | |
| | K6-2/300 | | | | | | 100 | 1 | x3 | 1 |
| | K6-2/333 | | | | | | 95 | 1 | x3.5 | 1 |
| | K6-2/350 | | | | | | 100 | 1 | | |
| | K6-2/366 | | | | | | 66 | 1 | x5.5 | 1 |
| | K6-2/380 | | | | | | 95 | 1 | | 1 |
| | | | | | | 1 | | 1 | | 1 |
| | | | | | | 1 | | 1 | | |
| | | | | | | | | 1 | | 1 |

# 2-4 Connector and Jumper Settings

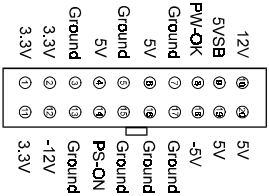
Connectors are used to link the system board with other parts of the system, including the power supply, the keyboard, and the various controllers on the front panel of the system case.

**The power supply connector is the last connection to be made while installing a mainboard. Before connecting the power supply, please make sure it is not connected to the power source.**

## ATX Power Supply Connector (J8)



This mainboard requires a power supply of at least 200 watts. **The power cord leading from the system's power supply to the external power source must be the very last part connected when assembling a system.**




The ATX power supply provides a single 20-pin connector interface which incorporates standard +/-5V, +/-12V, optional 3.3V and Soft-power signals. The Soft-power signal, a 5V trickle supply is continuously supplied when AC power is available. When the system is in the Soft-Off mode, this trickle supply maintains the system in it's minimum power state.

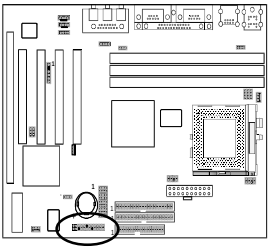
## Software Power-Off Control

This mainboard can be powered down using theWindows 95 Software Power-Off function. To power down your computer, click the START button on the Windows 95 Task Bar. Select "Shut Down The Computer" and the system turns off. The message "It is now safe to turn off your computer" will not be shown when using this function.

## Power-On By Modem

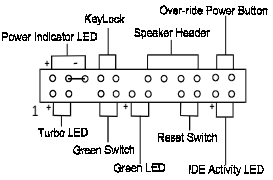
While in Soft-off state, if an external modem ring-up signal occurs, the system wakes up and can be remotely accessed. Enable this function in BIOS's Power Management Setup menu. (See section 3-4)

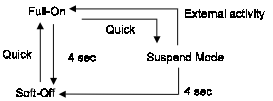
## Front Panel Connector Set (J5) A through G



### A. Over-ride Power Button Connector

The power button on the ATX chassis can be used as a normal power switch as well as a button to activate Advanced Power Management Suspend mode. This mode is used for saving electricity when the computer is not in use for long periods of time. The Power Button Over Ride function in BIOS's Power Management Setup menu must be set to "Delay 4 Sec." to activate this function. (See section 3-4)




Over-ride Power Button Operation

When the Power Button Over Ride function is enabled, pushing the power button rapidly will switch the system to Suspend mode. Any occurence of external activity such as pressing a key on the keyboard or moving the mouse will bring the system back to Full-On. Pushing the button while in Full-On mode for more than 4 seconds will switch the system completely off. See Over-ride Power Button Operation diagram.

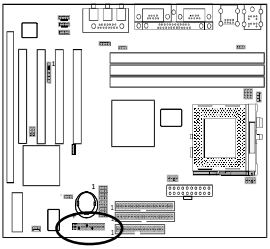
### B. Keyboard Lock & Power Indicator LED Connector

Plugging this connector into the lock on the front panel of the system case allows the lock to enable or disable the keyboard. This function provides limited security against casual intruders. The power indicator LED shows the system's power status. It is important to pay attention to the correct cable and pin orientation (i.e., not to reverse the order of these two connectors.)

| | Pin | Definition |
|---|---|---|
| Power Good LED | 1 | +5V DC |
| | 2 | No Connect |
| | 3 | Ground |
| Keyboard Lock | 4 | Keylock |
| | 5 | Ground |

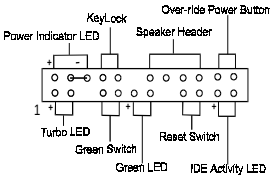
## Blinking LED in Suspend Mode(optional)

While in Suspend mode, the LED light on the front panel of your computer will flash. Suspend mode is entered by pressing the Override Power Button, pushing the Green button on your ATX case, or enabling the Power Management and Suspend Mode options in BIOS's Power Management menu. (See section 3-4)



## C. Green Switch/Green LED Connector

Some ATX cases provide a Green switch which is used to put the system in Suspend mode. In Suspend mode, the power supply to the system is reduced to a trickle, the CPU clock is stopped, and the CPU core is in its minimum power state. The system is woken up whenever the keyboard or mouse is touched. The system resumes in different ways as defined by Power Management Setup screen in BIOS.




## D. System Reset Switch Connector

This connector should be connected to the reset switch on the front panel of the system case. The reset switch allows you to restart the system without turning the power off.

| Pin | Definition |
|---|---|
| 1 | System |
| 2 | GND |

## E. Speaker Connector

| PIN | Definition |
|---|---|
| 1 | Speaker Signal |
| 2 | NC |
| 3 | NC |
| 4 | +5V DC |

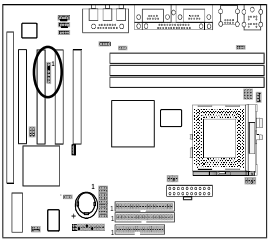
## F. IDE Activity LED Connector

The IDE activity LED lights up whenever the system reads/writes to the IDE devices.

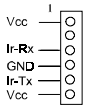
## G. Turbo LED Connector

This mainboard does not have a Turbo/De-turbo speed modes. Even though this function does not exist, the turbo LED will light when the LED is connected and turbo button pressed.

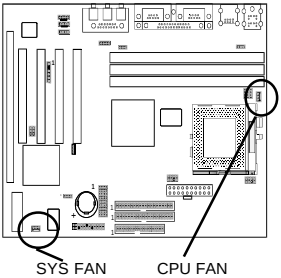
## Infrared Connector



If you enable the IR Address Select in BIOS's Integrated Peripherals menu the IR port will let you select the IRQ and IR Mode to support IR functions. (See section 3-8)

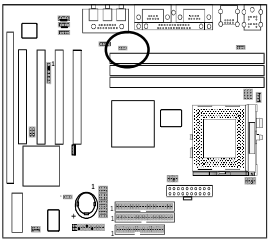



## CPU/System Cooling Fan Connectors




These added connectors allow the fan to draw their power from the mainboard instead of the disk drive connector. The mainboard's management extension hardware is able to detect the CPU and system fan speed in rpm (revolutions per minute). These connectors supports 3-pin cooling fans with minimum of 3500 RPM. The wiring and plug may vary depending on the manufacturer. On standard fans, the red is positive (+12V), the black is ground, and the yellow wire is the rotation signal.

## On-board VGA Jumper (JP2)

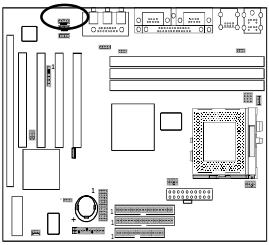


Enabled

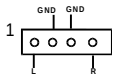
Disabled

Short pin 1-2 to enabled the on-board VGA and short pin 2-3 to disabled.

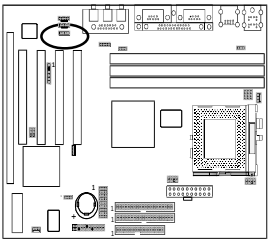
## CD-ROM Audio-in (J3)



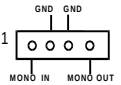
Use the cable enclosed with your CD-ROM disk drive to connect the CD-ROM to your mainboard. This will enable your CD-ROM's audio function.



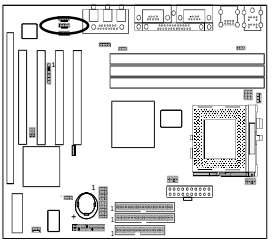
## Modem Telephony Connector (J1)



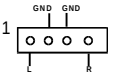
This connector must be connected to the cable from the voice modem card to support modem audio signals.



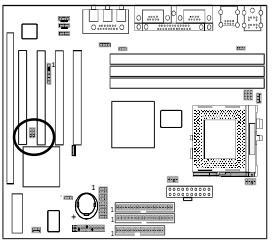

## AUX- IN Connector (J2)



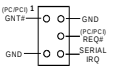
This connector supports Aux-input for connecting DVD or other audio devices.



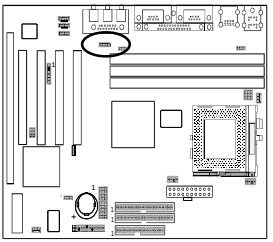

## Creative SB-LINK Sound Connector (JP7)



The SB-LINK serves as a bridge between the mainboard and Creative's PCI sound card. This connector delivers Sound Blaster 16 compatility for real-mode DOS games.



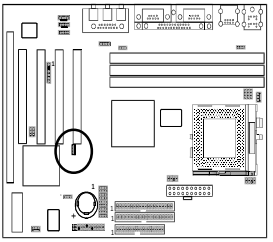

## Volume Control Connector (JP1)



1 Volume up  1 Volume down

This function, enable you to select volume up or down option. You must set this jumper's cap to pins 1-2 to turn the volume up and to 3-4 to turn the volume down.

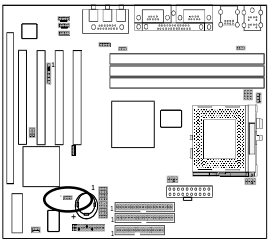
## WOL (Wake-on-LAN) Connector (J4)



Enable the Wake Up On LAN selection in BIOS's Power Management Menu to use this function. The capability to remotely manage PCs on a network is a significant factor in reducing administrative and ownership costs. Magic Packet technology is designed to give WOL (Wake-on-LAN) capability to the LAN controller. When a PC capable of receiving wake up command goes to sleep, the Magic Packet mode in the LAN controller is enabled. When the LAN controller receives a Magic Packet frame, the LAN controller will wake up the PC. This header is used to connect an add-in NIC (Network Interface Card) which gives WOL capability to the mainboard.

To support this function, a switching power supply with a minimum of **750mA** 5VSB is required.

## Clear CMOS Data Jumper (JP12)

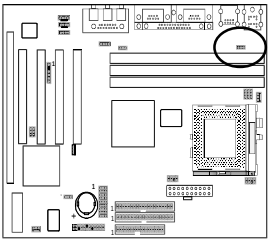


1 Normal (default)  1 Clear CMOS data

To clear the contents of the CMOS, please follow the steps below.

1. Disconnect the system power supply from the power source.
2. Set the jumper cap at location 2~3 for 5 seconds, then set it back to the default position.
3. Connect the system's power and then start the system.
4. Enter BIOS's CMOS Setup Utility and choose Load Setup Defaults. Type Y and press enter.
5. Set the system configuration in the Standard CMOS Setup menu.

## Power-on by Keyboard Jumper (JP3)

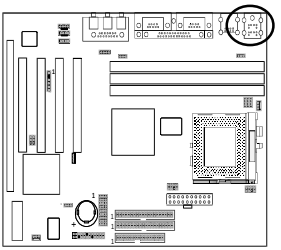


Default

Enable

This board is able to be turned on by the keyboard. To use this function, enable the Power On By Keyboard option in BIOS Power Management Setup screen . You must also set this jumper cap to pins 2-3 to use this function. Some out-of-date keyboards may require larger current than supplied by the Suspend 5V of modern power supplies. When using older keyboards disable this function.

## PS/2 Mouse and Keyboard Ports



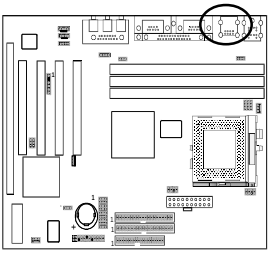
If a PS/2 mouse is used, BIOS will automatically detect and assign IRQ12 to the PS/2 mouse.

| Pin | Definition |
|---|---|
| 1 | Data |
| 2 | No Connect |
| 3 | Ground |
| 4 | +5V (fused) |
| 5 | Clock |
| 6 | No Connect |

## Poly-fuse Over Current Protection

The poly-fuse protects the system from dangerous voltages the system might be exposed to via the keyboard or USB connectors. In case of such exposure, the poly-fuse will immediately be disconnected from the circuit, just like a normal fuse. After being disconnected for a short period of time, the poly-fuse will return to its normal state, after which the keyboard or USB can function properly. Unlike conventional fuses, the poly-fuse does not have to be replaced, relieving the user of wasted time and inconvenience.

## USB(Universal Serial Bus) Ports



If you want to use a USB keyboard, you must enable the USB keyboard support function in BIOS's Integrated Peripherals menu (See Section 3-8). USB is an open industry standard, providing a simple and inexpensive way to connect up to 125 devices to a single computer port. Keyboards, mice, tablets, digitizers, scanners, bar-code readers, modems, printers and many more can all be used at the same time.

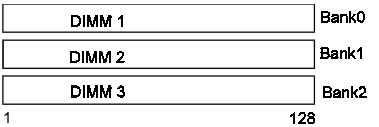
USB is a dynamically reconfigurable serial bus with an elementary data rate of 12Mbps. Based on off the shelf, low cost micro-controller technology, its modular layered software protocol supports sophisticated devices and application programs.

This board contains a USB Host controller and includes a root hub with two USB ports (meets USB Rev 1.0 spec.). Two USB peripherals or hub devices are able to be connected.

Compatibility with different USB peripherals is still being tested.

## 2-5 Main Memory Configuration

The DRAM memory system consists three banks and the memory size ranges from **16~384 MBytes**. If you only use one bank it does not matter which one you use and if you use two or more banks, it does not matter which bank you install first.




***DRAM Specifications***

| | |
|---|---|
| DIMM type: | 3.3V, 64/72-bit Synchronous DRAM |
| Module size: | Single/double-sided 16/32/64/128 MBytes |
| DRAM speed: | 10/12ns for Synchronous DRAM |
| Parity: | Either parity or non-parity |

**Note :** The ECC parity check function is not supported yet in SiS 530/5595 Chipset

The compatibility of 256MB DIMM is still under testing and cannot be 100% guaranteed.

This mainboard supports 3.3v, unbuffered, 4-clock, SDRAM DIMM only. Buffered, 5V, or 2-clock SDRAM DIMMs should not be used.

Install the first DIMM in DIMM3 socket due to shared memory architecture limitation

"VGA Memory clock (MHz)" in BIOS's Integrated peripherals page needs to be set to the same frequency as " SDRAM frequency"