

Chapter 2 Hardware Setup

To Get things ready for hardware setup !

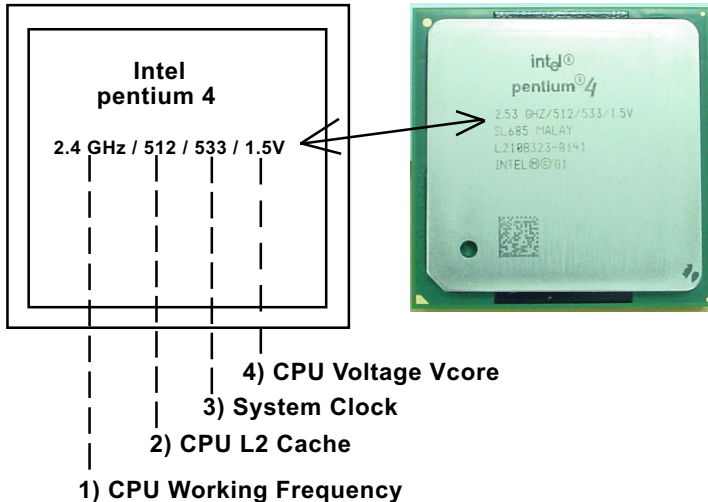
1. We recommend to install your CPU before any other components. For detailed installation instructions of processor, you can also refer to the pamphlet enclosed in your CPU package.
2. Installing a cooling fan with a good heatsink is a must for proper heat dissipation for your CPU. Get ready an appropriate fan with heatsink for proper installation. Improper fan and installation will damage your CPU.
3. In case CPU Vcore, CPU clock or Frequency Ratio is adjustable on board, please follow the instructions described in the User Manual for proper setup. Incorrect setting will cause damage to your CPU.

The following topics are included in this chapter:

- 2-1 Pentium 4 CPU Installation**
- 2-2 Pentium 4 CPU Fan Installation**
- 2-3 Memory Installation**
- 2-4 AGP4X Installed with Jumper and LED Safeguard**
- 2-5 IDE Connector Installation**
- 2-6 Floppy Drive Connector (FDC) Installation**
- 2-7 ATX 2.03 Power Supply Installation**
- 2-8 Jumper Settings**
- 2-9 Other Connectors Configuration**
- 2-10 IRQ Description**

2-1 Pentium 4 CPU and Installation

2-1.1 To Identify a Pentium 4 CPU



On the heatsink side of a Pentium 4 CPU, there printed is a line of figures to identify its specifications. The line consists of 4 parts:

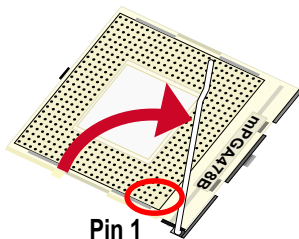
- 1) CPU Working Frequency: This part depicts the working frequency of the CPU. For example:
2.4 GHz depicts that this CPU is locked to 2.4 GHz working frequency (multiplier 18 x 133MHz CPU clock);
2A GHz depicts that this CPU is an A version, locked to 2.0 GHz working frequency (multiplier 20 x 100MHz CPU clock);
- 2) CPU L2 Cache: This part depicts the L2 Cache size. For Example:
512 stands for 512 MB L2 Cache; 256 stands for 256 MB L2 Cache;
- 3) System Clock: This part depicts the System Clock (Front Side Bus) to be provided by the CPU. For example:
533 stands for a 533MHz system bus provided by this 133MHz CPU times 4;
400 stands for a 400 system clock provided by a 100 MHz CPU x 4;
(Note: P4 CPU is a quadpumped CPU. The system bus is provided by the CPU clock x 4. Therefore, user can figure out the P4 CPU clock from the System Clock divided by 4.)
- 4) CPU Voltage Vcore: This part depicts the CPU Voltage. For example:
1.5V stands for a CPU of 1.5Vcore.

2-1.2 CPU Installation with Socket 478B

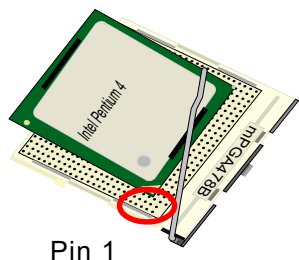
This mainboard is built with CPU Socket 478B (478-pin) supporting the Intel Pentium 4 CPU:

- Follow the steps described in this section to install the 478-pin Pentium 4 CPU into the on board Socket 478.
- After installation of Pentium 4 CPU, you must also install the specific Pentium 4 CPU fan designed in tandem with this CPU. This CPU Fan installation is described in next section.

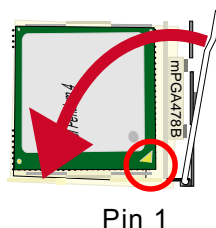
1. First pull sideways the lever of Socket 478, and then turn it up 90° so as to raise the upper layer of the socket from the lower platform.



2. Configure Pin 1 of CPU to Pin 1 of the Socket, just as the way shown in the diagram on the right. Adjust the position of CPU until you can feel all CPU pins get into the socket with ease.



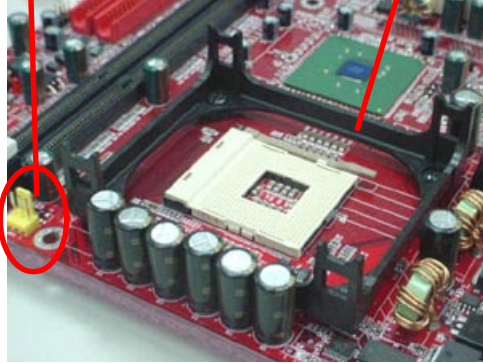
3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.



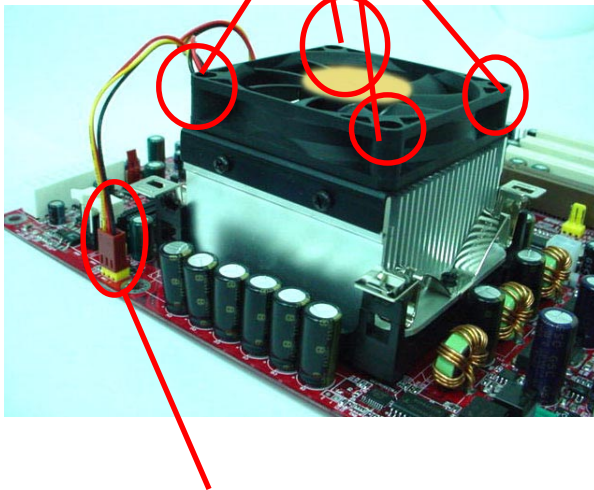
2-2 Pentium 4 CPU Fan Installation

CPU Fan Connector

Pentium 4 Fanbase



Press down 4 corners to lock fan to fanbase



Connect Fan Connector to CPU FAN connector

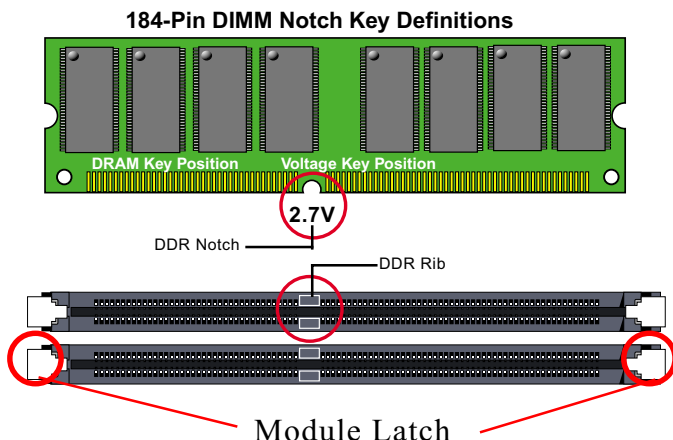
2-3 Memory Installation

How to tackle the memory Modules:

- Make sure to unplug your power supply before adding or removing memory module. Failure to do so may cause severe damage to both your mainboard and the memory module.
- Pay attention to the orientation of the DIMM slots. Forcing a DIMM into a slot improperly will damage the memory module and slot itself.
- Make sure you have the right type of memory module for your mainboard.

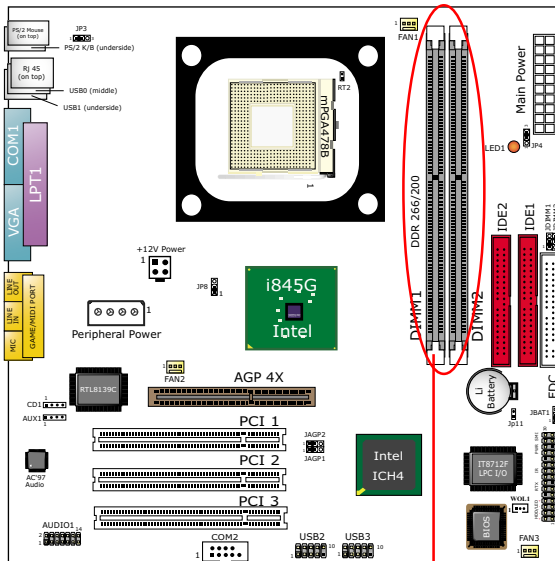
2-3.1 To Install DDR SDRAM Module for this Mainboard

- This Mainboard only supports up to 2GB unbuffered DDR 266/200 SDRAM, with 2 DDR DIMM slots on board. Do not insert other type of modules into these slots.
- DDR DIMM slot has 184-pins and one notch. Insert a DDR SDRAM vertically into the 184-pin slot with the notch-to-rib matching. Press the Module down in a gradual way until it surely reaches the bottom and clicks straight up the two latches on the left and right of the slot. If any one of the latches has not turned up completely, you should unplug the module and press it down a bit more firmly.



2-3.2 To Remove a DIMM

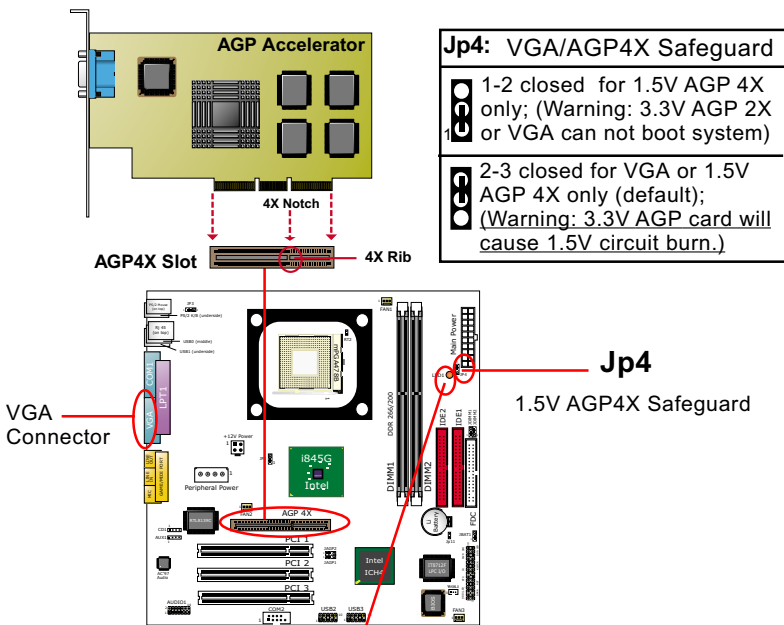
To remove a DIMM Module, first power off system and then press down the holding latches on both sides of slot to release the module from the DIMM slot.



DDR DIMM Slots
(184-pin)

2-4 Install VGA / AGP4X with LED1 & Jp4 Safeguard

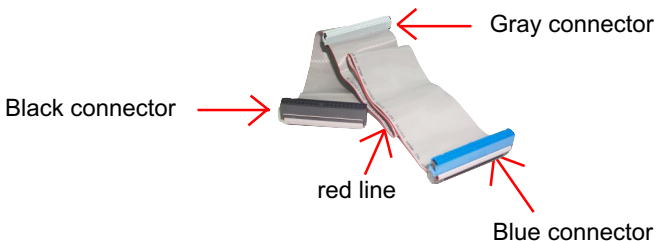
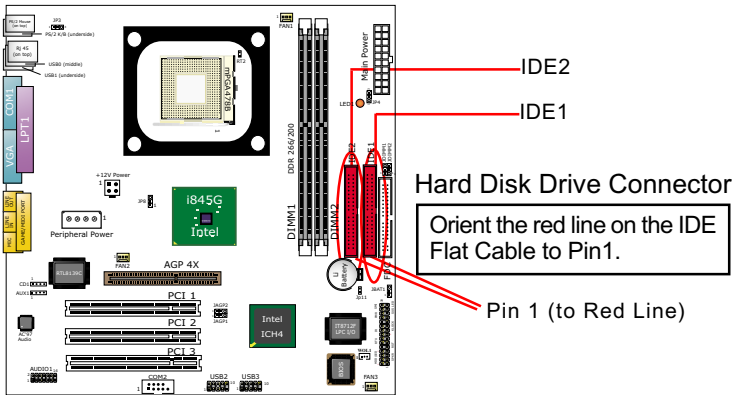
1. To install on-board VGA, please connect your monitor directly to VGA connector on board. Default Jp4 (2-3 closed) is designed to assure booting system with 1.5V on-board VGA or 1.5V AGP4X add-on card. User can choose either VGA or AGP4X as the initial display by changing BIOS Setup (see "PNP/PCI Configurations" in BIOS Setup). However, if 3.3V AGP 2X card is mistakenly inserted for booting the system, the high voltage will burn the 1.5V circuitry on board. Never use a 3.3V or an unknown AGP card in this case.
2. To install AGP4X add-on card, please insert AGP4X card into AGP slot on board and connect your monitor directly to the AGP4X card. To assure the use of a correct AGP4X card of 1.5V, please set Jp4 to 1-2 closed, resulting in that it will allow only 1.5V AGP 4X card to boot system. With Jp4 1-2 closed, system even cannot boot with on-board VGA. In this case, if user cannot boot with an AGP card inserted in AGP slot, it indicates that the AGP card is a wrong one. The AGP card should be changed until a 1.5V AGP4X card is inserted.
3. LED1 is a Warning LED. Whenever an AGP card is not inserted to the AGP slot, or if the card is not a correct one, LED1 will keep lighting up until a proper installation is done.



LED1: AGP Installation Failure LED

2-5 IDE Connector Installation

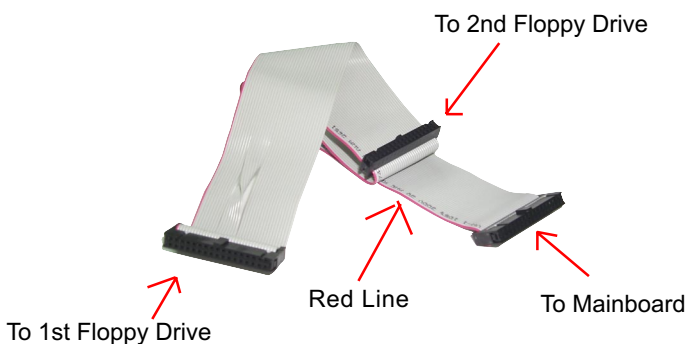
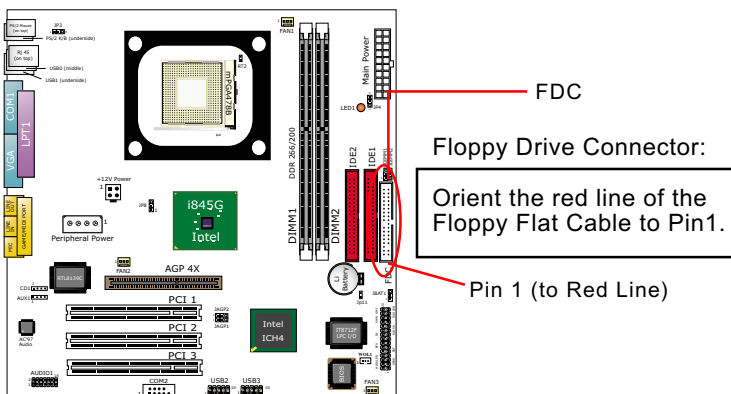
To install IDE Connector, you may connect the blue connector of IDE cable to the primary (IDE1) or secondary (IDE2) connector on board, and then connect the gray connector to your slave device and the black connector to your master device. If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers correctly. Please refer to your hard disk documentation for the jumper settings.



IDE Flat Cable

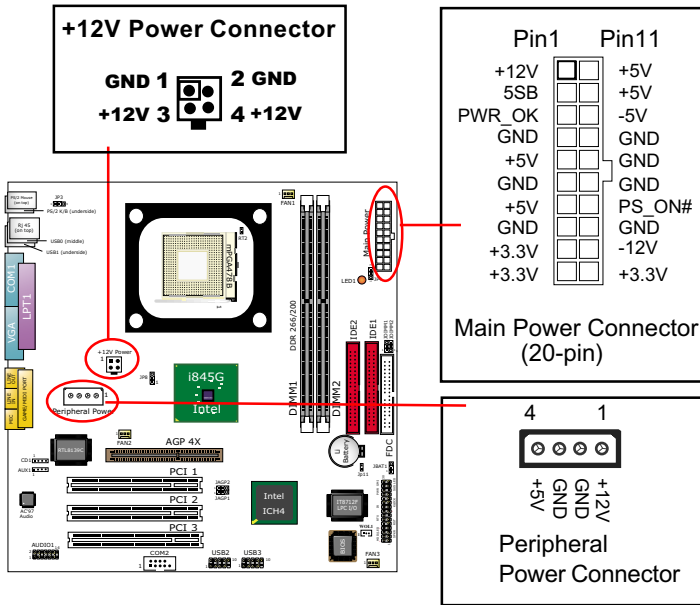
2-6 Floppy Drive Connector (FDC) Installation

To install FDC, you should connect the end of FDC cable with single connector to the board , and connect the other end with two connectors to the floppy drives.



FDD Cable

2-7 ATX V 2.03 Power Supply Installation



ATX V2.03 power supply is strongly recommended for mainboard running with 2GMHz or higher CPU.



To set up Power Supply on this mainboard:

1. Connect the on-board Main Power Connector (20-pin) to the Main Power Connector (20-pin) of an ATX Power Supply which can be either of the latest version 2.03 or of earlier ATX format.
2. If you use an ATX Power Supply Version 2.03 or later, you can now connect the on-board square-shaped +12V Connector to the square-shaped +12V Connector of your ATX Power Supply. In this case, it is not necessary for you to connect the on-board 4-pin Peripheral Power Connector to your Power Supply.
3. If you use an ATX power Supply of an older version than V2.03, you cannot find a square-shaped +12V Connector with your Power Supply; you must then connect the on-board 4-pin Peripheral Power Connector to the 4-pin Peripheral Power Connector of your Power Supply.



2-8 Jumper Settings

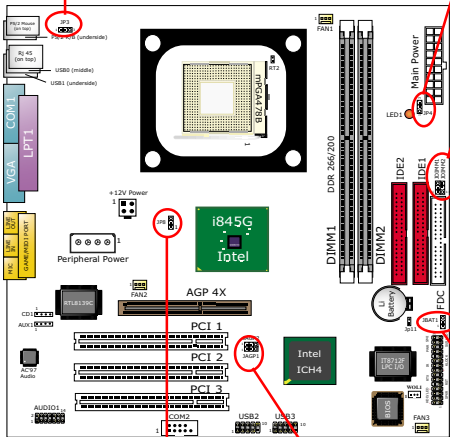
The following diagrams show the locations and settings of jumper blocks on the mainboard.

Jp3: K/B or Power Button Select







	1-2 closed (default) To power on by Power Button
	2-3 closed To power on by keyboard

Jp4: VGA/AGP4X Safeguard



	1-2 closed for 1.5V AGP 4X only; (Warning: 3.3V AGP 2X card will not boot system.)
	2-3 closed for VGA or 1.5V AGP 4X only (default); (Warning: 3.3V AGP card will cause 1.5V circuit burn.)









JDIMM1 & JDIMM2: DIMM Voltage Select

DIMM Voltage	JDIMM1	JDIMM2
2.5V		
2.6V		
2.7V (Default)		



Jp8 CPU Clock Select

	(Default) 1-2 closed CPU Autodetect
	2-3 closed 133MHz CPU Clock Selected

JAGP1 & JAGP2 AGP Voltage Select

AGP Voltage	Jumper Setting
1.5V (default)	 JAGP1 1-2
	 JAGP2 1-2
1.6V	 JAGP1 1-2
	 JAGP2 2-3
1.7V	 JAGP1 2-3
	 JAGP2 1-2

JBAT1 Clear CMOS

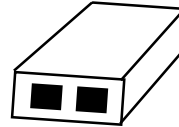
	1-2 closed (default) To hold data
	2-3 closed To clear CMOS

How to tackle the Jumpers:

A 3-pin Jumper



If a pin-header (of 2 or more pins) is designed in such a way that its pins can be closed or linked together to set up a specific function, this header is called a jumper in this manual.



A 2-pin Jumper cap to link two header-pins together.

- A Jumper is usually but not necessarily given a “JpX” legend.
- In the Jumper setting diagram, the jumper pins covered with black marks stand for closed pins with jumper cap.

Jp X 1 3

**Jumper with
Pin 2-3 closed**

1 3

**Jumper with
all pins open**

1 3

**Jumper with
Pin 1-2 closed**

- Do not remove any jumper cap when power is on. Always make sure the power is off before changing any jumper settings. Otherwise, the mainboard will be damaged.

2-8.1 JBAT1: Clear CMOS

When you have problem with rebooting your system, you can clear CMOS data and restore it to default value. To clear CMOS with Jumper JBAT1, please follow the steps below:

1. Power off system;
2. Set JBAT1 to Pin 2-3 closed.
3. After 2 or 3 seconds, return the JBAT1 setting to Pin1-2 closed.
4. CMOS data are restored to default. Remember never clear CMOS when system power is on.

JBAT1 Clear CMOS

1-2 closed
(default)
To hold data

2-3 closed
To clear CMOS

2-8.2 Jp8: CPU Clock/Overclock Select

Jp8 is designed on board as a jumper for CPU clock select and 100MHz to 133MHz CPU overclocking. With Jp8, user can choose the way for a 100MHz CPU to run an overclock on board.

1. Before setting the CPU clock, read the Identification Legend on the CPU, find the Max FSB and divide it by two. The result is the default CPU clock of your CPU.
2. If Jp8 is set to 1-2 closed, CPU clock will be autodetected by BIOS, indicating that overclock is not desired. The CPU will boot system with the default CPU clock on the CPU you use.
3. If Jp8 is set to 2-3 closed, CPU is set to 133MHz CPU clock, indicating that 133MHz overclock is desired. The CPU will try to boot system with 133MHz even if a 100MHz CPU is used.

However, if overclok fails, system will fail to boot. In such case, to clear CMOS is necessary for rebooting.

Jp8 CPU Clock Select	
1	(Default) 1-2 closed CPU Autodetect
	2-3 closed 133MHz CPU Clock Selected







Notes on CPU Overclocking:

1. If you have successfully booted system with or without CPU overclock, you still can do another CPU overclock in BIOS Setup. Please enter BIOS Setup, choose "Frequency/Voltage Control" menu, and take the "Use Linear" option of the "Use CPU Linear Frequency". Then configure the "CPU Clock" item to raise your CPU clock.
2. CPU overclocking should take all components on board into account. If you fail in BIOS overclocking, you will not be able to restart system. In such case, power off system and clear CMOS by JBAT1 as stated below and then restart your system. And remember to reconfigure whatever should be reconfigured.
3. If your system is already fixed in a cabinet or case, you may not like to take the trouble to clear CMOS. Then power on your system with the power button on the case and simultaneously press down the "Insert" key on the keyboard until you see the initial bootup screen appear. And remember you should also enter CMOS BIOS Setup and choose "Load Optimized Defaults" to restore default BIOS .

2-8.3 JAGP1 & JAGP2: AGP Voltage Select

The default voltage 1.5V at AGP slot is for normal operation of the supported AGP 4X. In some case, when you try to do CPU overclocking, you then may also need to raise the transfer rate of the AGP interface. JAGP1 & JAGP2 are designed on board to provide settings for selecting a higher AGP voltage so as to raise the speed of the AGP interface.













Warning: Selecting a higher voltage than the default , you are risking the stability of your system.

JAGP1 & JAGP2 AGP Voltage Select		
AGP Voltage	Jumper Setting	
1.5V (default)	1  JAGP1	1-2
	1  JAGP2	1-2
1.6V	1  JAGP1	1-2
	1  JAGP2	2-3
1.7V	1  JAGP1	2-3
	1  JAGP2	1-2

2-8.4 JDIMM1 & JDIMM2: DIMM Voltage Select



The default voltage 2.7V at DIMM sockets is for the optimum operation of the supported DDR SDRAM. In some case, when you are not doing any overclocking, you may find a lower DIMM voltage would work better. JDIMM1 & JDIMM2 are designed on board to provide settings for adjusting the DIMM voltage so as to optimize the operation stability.

Warning: In selecting a higher voltage than the default , you are risking the stability of your system.

JDIMM1 & JDIMM2: DIMM Voltage Select		
DIMM Voltage	JDIMM1	JDIMM2
2.5V	3  1 	3  1 
2.6V	3  1 	3  1 
2.7V (Default)	3  1 	3  1 

2-8.5 Jp3: K/B or Power Button Select

Jp3 is designed to select keyboard or the Power button as the power-on controller. Setting Jp3 to 1-2 closed will allow user to power on system by power button. Setting Jp3 to 2-3 closed will allow user to power up system by keyboard. Yet user still has to enter BIOS Setup for choosing the K/B Power-on mode. (See Integrated Peripherals" in BIOS Setup.)

Jp3 K/B or Power Button Select	
	1-2 closed (default) To power on by Power Button
	2-3 closed To power on by keyboard


2-8.6 Jp4: VGA/AGP4X Safeguard


1. Boot system with on-board VGA:

Default Jp4 (2-3 closed) is designed to assure booting system with 1.5V on-board VGA or 1.5V AGP4X add-on card. User can choose either VGA or AGP4X as the initial display by changing BIOS Setup (see "PNP/PCI Configurations" in BIOS Setup).

However, if 3.3V AGP 2X card is mistakenly inserted for booting the system, the high voltage will burn the 1.5V circuitry on board. Never use a 3.3V or an unknow AGP card in this case.

Jp4: VGA/AGP4X Safeguard

 1-2 closed for 1.5V AGP 4X only; (Warning: 3.3V AGP 2X or VGA can not boot system)

 2-3 closed for VGA or 1.5V AGP 4X only (default); (Warning: 3.3V AGP card will cause 1.5V circuit burn.)

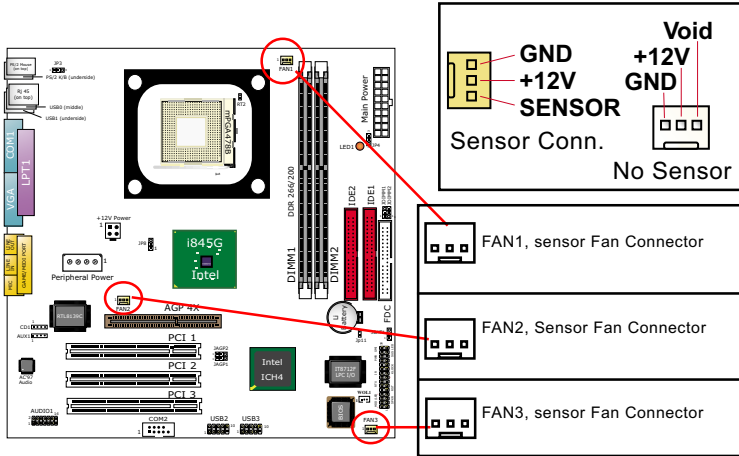
2. Boot system with AGP4X add-on card:

To assure the use of a correct AGP4X card of 1.5V, please set Jp4 to 1-2 closed, resulting in that it will allow only 1.5V AGP 4X card to boot system. With Jp4 1-2 closed, system even cannot boot with on-board VGA. In this case, if user cannot boot with an AGP card inserted in AGP slot, it indicates that the AGP card is a wrong one. The AGP card should be changed until a 1.5V AGP4X card is inserted.

2-9 Other Connectors Configuration

This section lists out all connectors configurations for users' reference.

2-9.1 On-board FAN Connectors

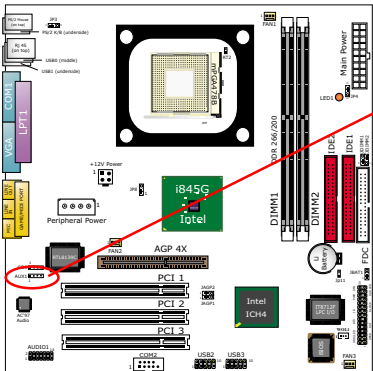



Both Sensor and No-sensor Fan Connectors support CPU/AGP/System/Case cooling fan with +12V mode. Sensor Fan Connector is yellow in color on board. When connecting the wire to any Fan Connector, user should make sure that the red wire is for the positive current and should be connected to pin +12V, and the black wire is Ground and should be connected to pin GND. A Hardware Monitor chipset is on board, with which user can install a Hardware Monitor Utility and read the fan speed transmitted from the sensor fan. Otherwise, user can read the fan speed from the "Hardware Monitor Status" in CMOS BIOS.

A running fan will send out 2 electric pulses per rotation of its fan blade. A Sensor Fan Connector will count the electric pulses and send the information to the System Hardware Monitor which in turn will work out the fan rotation speed and display it with the monitoring program.

2-9.2 Connector AUX1

This connector connects to the Video Tuner Card and acts as Audio Input connector.



1 

Connector AUX 1

Pin 1 R-Channel

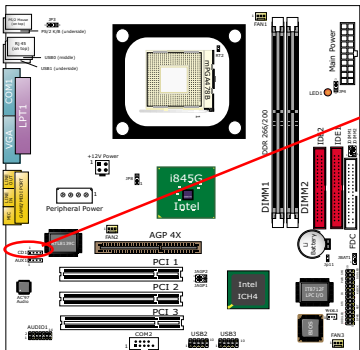
Pin 2 GND

Pin 3 GND


Pin 4 L-Channel

2-9.3 CD-ROM Audio Connectors (CD 1)

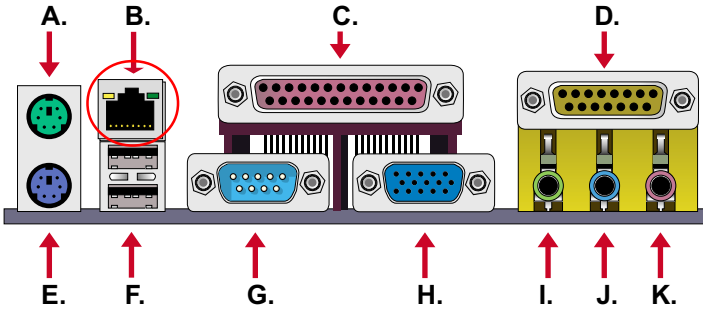
CD 1 is an audio connector connecting CD-ROM audio to mainboard.



CD-ROM Audio Pin Assignment

	Pin 1	Pin 2	Pin 3	Pin 4
1 	Left Channel	GND	GND	Right Channel

2-9.4 Chassis Panel Connectors



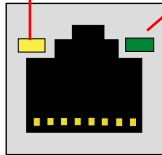
- | | |
|----------------------------------|----------------------|
| A : PS/2 MOUSE | F : USB0 (middle) |
| B : LAN Port RJ45 (85MIR-L only) | G : COM1 |
| C : LPT1 PORT | H : VGA |
| D : GAME/MIDI | I : LINE/SPEAKER OUT |
| E : PS/2 KEYBOARD | J : LINE IN |
| F : USB 1 (underside) | K : MICROPHONE INPUT |

2-9.5 LAN Connector RJ45 (85MIR-L only)

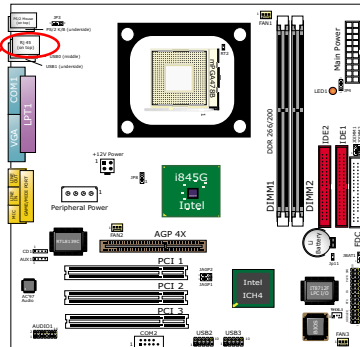
One RJ45 connector is on board for network connection and also provide support for Wake On LAN function.

Yellow LED "On" to indicate Network hub is in connection with the system.

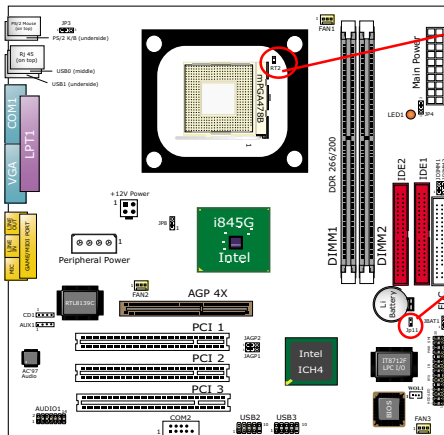
Green LED blinks to indicate that data transmission is undergoing in 10/100 Base T mode.



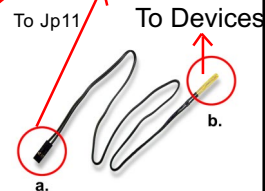
Rj45 Connector



2-9.6 Thermal Sensor Connectors RT2 and Jp11



RT2 to be mounted with Thermal Resistor by default.

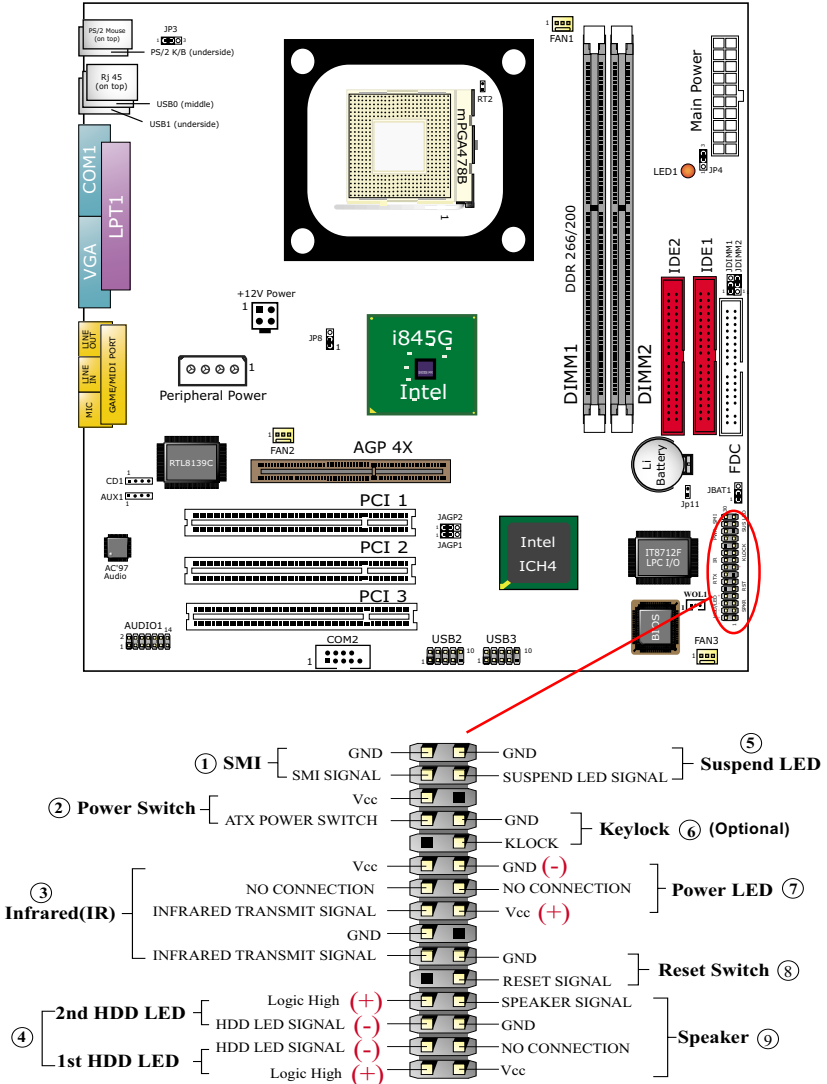


Thermal Cable

1. Connector RT2: A thermal resistor is to be mounted by default to connector RT2 so as to detect the temperature of the CPU. What RT1 does is to transmit the thermal signal to BIOS or Hardware Monitor.
2. Connector Jp11: A thermal cable is needed to connect Jp11 to on-board devices such as HDD, Graphics card etc., so as to detect the temperature generated therein. Please connect the end (a) of the thermal cable to Jp11, and tape another end (b) of thermal cable on to the device which you want to monitor. After you have finished the thermal cable installation, you will **see the detected temperature in BIOS setup or Hardware Monitor utility.**

2-9.7 Complex Header

This complex Header consists of the following connectors for various supports:



(1) SMI Connector (Optional):

Connection: Connected to the case-mounted Suspend Switch.

Function: Manually selecting system into the Suspend Mode or “Green Mode” by System management interrupt.

(2) Power Switch Connector:

Connection: Connected to a momentary button or switch.

Function: Manually switching the system between “On” and “Soft Off”. Pressing the momentary button for more than 4 seconds will also turn the system off.

(3) IR Connector (Infrared Connector):

Connection: Connected to Connector IR on board.

Function: Supporting wireless transmitting and receiving module on board.

(4) 1st HDD LED Connector/2nd HDD LED Connector:

Connection: Connected to HDD LED.

Function: To supply power to HDD LED.

(5) Suspend LED Connector:

Connection: Connected to Suspend Indicator.

Function: To supply power to “Suspend Indicator”.

(6) keylock Connector (Optional):

Connection: Connected to keyboard.

Function: To lock keyboard and disable keyboard function.

(7) Power LED Connector:

Connection: Connected to System Power LED.

Function: To supply power to “System Power LED”.

(8) Reset Switch Connector:

Connection: Connected to case-mounted “Reset Switch”.

Function: To supply power to “Reset Switch” and support system reboot function.

(9) Speaker Connector:

Connection: Connected to the case-mounted Speaker.

Function: To supply power to the case-mounted Speaker.

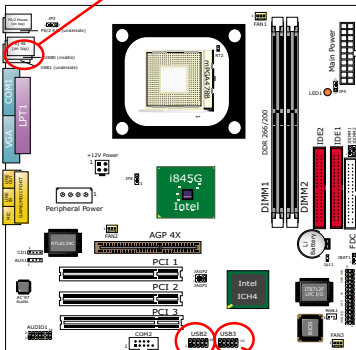
2-9.8 USB Ports and USB Headers (Header USB2 & USB3)

This mainboard provides two USB ports USB0 and USB1 on board supporting various USB devices. In addition, two USB headers are added on board to provide expansion of four more optional USB ports by using two additional USB Cables. User can order the optional USB cables from your mainboard dealer or vender.

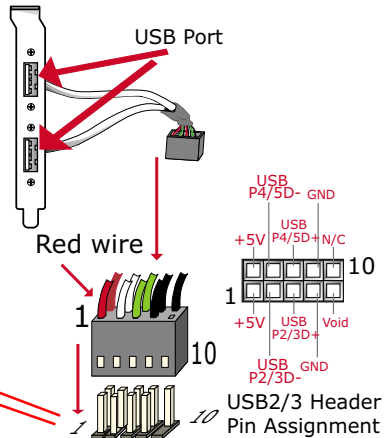
When plugging the USB cable to USB Header USB2,or 3, user must make sure the red wire is connected to Pin 1.

All 6 USB ports are compliant with V2.0 USB Bus, supporting operating systems Win 2000 and Win XP. USB V2.0 drivers are provided in Support CD for user's installation.

USB Ports USB 0 & 1

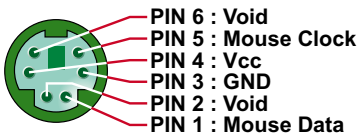


USB Cable (Optional)

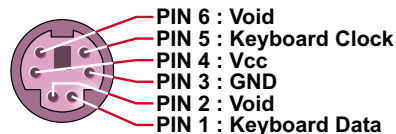


Pin Header USB 2, 3

2-9.9 PS/2 Mouse And PS/2 Keyboard



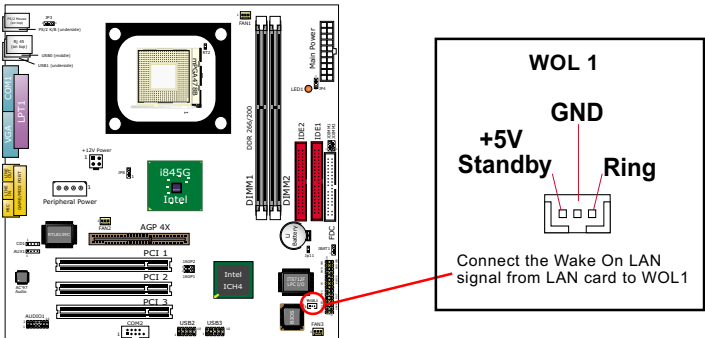
PS/2 MOUSE



PS/2 KEYBOARD

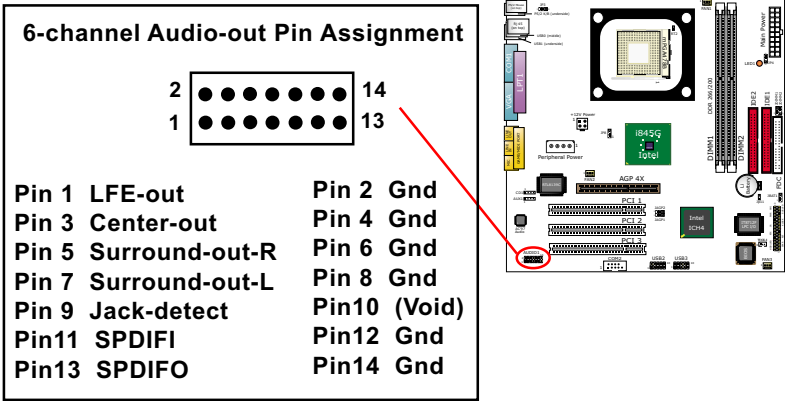
2-9.10 Connector WOL1: Wake On LAN

- 1. This connector connects to a LAN card with a Ring signal output. The connector powers up the system when it receives a wake-up packet or signal through the LAN card.
- 2. This feature requires that Resume On Ring feature is enabled in the BIOS setting "Power Management Setup" and that your system must be on ATX power supply with at least 720mA / +5V standby power.



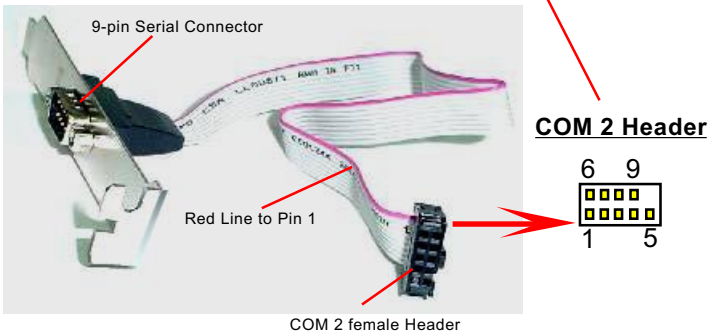
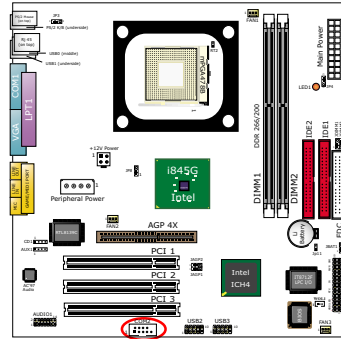
2-9.11 Audio 1: 6-channel Sound Output Connector (optional)

This series is designed with an optional 6-channel Audio-out connector "Audio1". If this option is chosen, an Audio-out card will be enclosed in package to provide 3 additional audio-out ports for the 6-channel sound.



2-9.12 Pin-header COM 2: for one serial port

COM 2 Header is built on board , which requires a serial COM 2 cable to provide a 9-pin serial connector for a serial device connection. One RS232 COM 2 Cable is enclosed in the mainboard package. When you insert COM 2 cable to COM 2 header, take notice that the red line of the cable must connect to Pin 1 of COM 2.



2-10 IRQ Description

IRQ	Function Description	Priority
IRQ 0	System Timer	1
IRQ 1	Keyboard Controller	2
IRQ 2	Programmable Interrupt	N/A
IRQ 3	Serial Port (COM 2)	11
IRQ 4	Serial Port (COM 1)	12
IRQ 5	Free	13
IRQ 6	Floppy Disk Controller	14
IRQ 7	Parallel Port (LPT1)	15
IRQ 8	Real Time Clock (RTC)	3
IRQ 9	Free	4
IRQ 10	Free	5
IRQ 11	Free	6
IRQ 12	PS/2 Mouse Port	7
IRQ 13	Coprocessor	8
IRQ 14	Primary IDE Channel	9
IRQ 15	Secondary IDE Channel	10

- Both ISA and PCI expansion cards may require IRQs. System IRQs are available to cards installed in the ISA expansion bus first, then any remaining IRQs are available to PCI cards. Currently, there are two types of ISA cards.
- The original ISA expansion card design, now referred to as “Legacy” ISA card, requires you to configure the card’s jumpers manually and then install it in any available slot on the ISA bus. To see a map of your used and free IRQs in Windows 98, the **Control Panel** in *My Computer*, contains a **System** icon, which gives you a **Device Manager** tab. Double-Clicking on a specific hardware device gives you a **Resources** tab which shows the Interrupt number and address. Double-Clicking **Computers** to see all the interrupts and addresses for your system. Make sure that each ISA device should be assigned to one IRQ respectively. If ISA device share IRQ with any other device, your computer will easily get into trouble.