

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 heat sink is a must for proper heat dissipation for your CPU. Get ready an appropriate fan with heat sink 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's manual for proper setup. Incorrect setting will cause damage to your CPU.

The following topics are included in this chapter:

2-1 CPU Installation with Socket 478B

2-2 Pentium 4 CPU Fan Installation

2-3 Memory Installation

2-4 AGP 8X/4X Slot Installation

2-5 IDE Connectors Installation

2-6 Serial ATA Connectors Installation

2-7 Serial ATA / Parallel ATA RAID Connectors

2-8 Floppy Drive Connector Installation

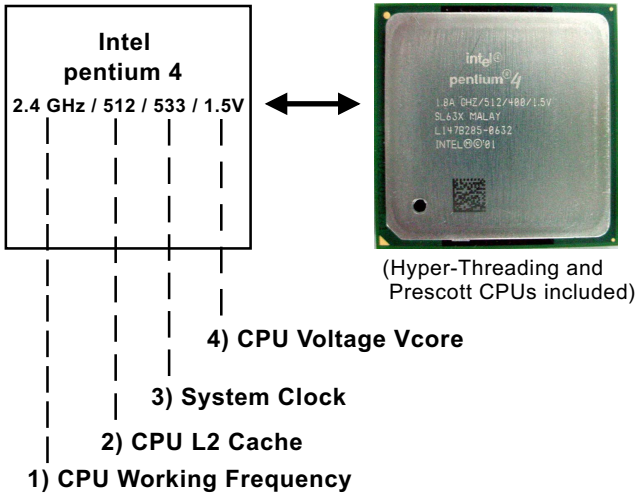
2-9 ATX V2.03 Power Supply Installation

2-10 Jumper Settings

2-11 Other Connectors Configuration

2-1 CPU Installation with Socket 478B

2-1.1 To Identify a Pentium 4 CPU



On the heatsink side of a Pentium 4 CPU, there printed 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 (18 x 133MHz CPU clock);
2A GHz depicts that this CPU is an A version, locked to 2.0 GHz working frequency (20 x 100MHz CPU clock)
3.06GHz depicts that this is a 3.06GHz hyper-threading CPU
2. CPU L2 Cache: this part depicts the L2 Cache size. For example,
512 stands for 512 KB L2 Cache; 256 stands for 256 KB L2 Cache
3. System Clock: this part depicts the System Clock (Front Side Bus) provided by the CPU. For example,
533 stands for a 533MHz system clock provided by a 133MHz CPU times 4;
400 stands for a 400 system clock provided by a 100 MHz CPU x 4.
4. CPU Voltage Vcore: this part depicts the CPU Voltage. For example,
1.5V stands for a CPU of 1.5V Vcore.

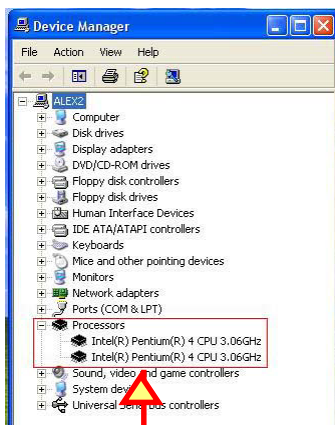
Note: System Clock vs CPU Clock

P4 CPU is a quadpumped CPU. The system bus is provided by the CPU clock x 4. Therefore, users can figure out the P4 CPU clock by the System Clock divided by 4.

2-1.2 CPU Installation with Socket 478B

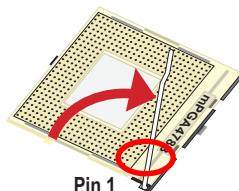
This mainboard is built with CPU Socket 478B (478-pin) supporting the Intel Pentium 4 CPU:

- 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.
- This mainboard supports Hyper-threading dual-in-one CPU, the function of which can be enabled by Windows XP. (See illustration on the right.)

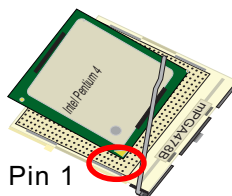


(If Hyper-threading CPU is installed successfully with O/S Win XP, the O/S will enable the dual-in-one CPU function.)

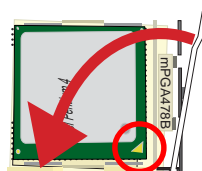
1. First pull sideways the lever of Socket 478, and then turn it up 90° so as to raise the upper layer of the socket from the lower platform.



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.



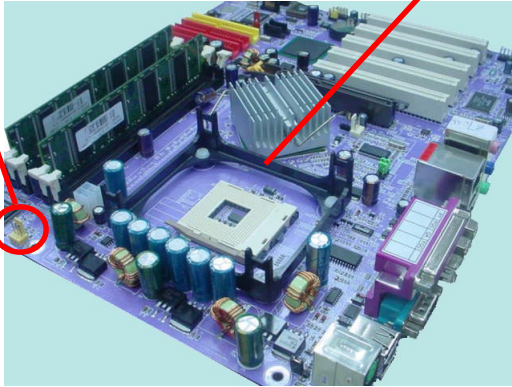
3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.



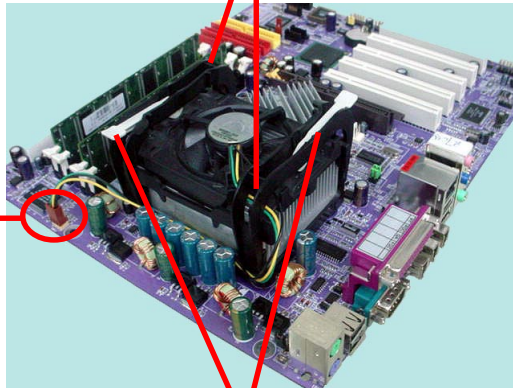
2-2 Pentium 4 CPU Fan Installation:

CPU Fan Connector

Pentium 4 Fanbase



1. Press down 4 latches.



2. Press down the 2 levers to lock fan to fanbase

3. Connect Fan Connector to CPU FAN connector

The above pictures are taken from sample mainboards as installation illustration. The layout in the pictures may be different from your mainboard.

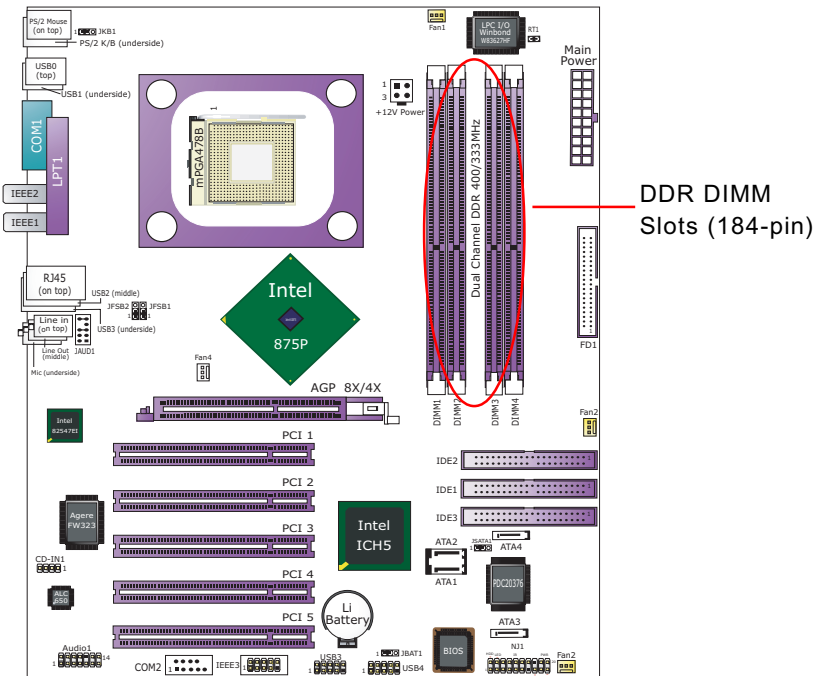
2-3 Memory Installation

How to tackle the memory Modules:

- Make sure to unplug your power supply before adding or removing memory module.
- Pay attention to the orientation of the DIMM slots.

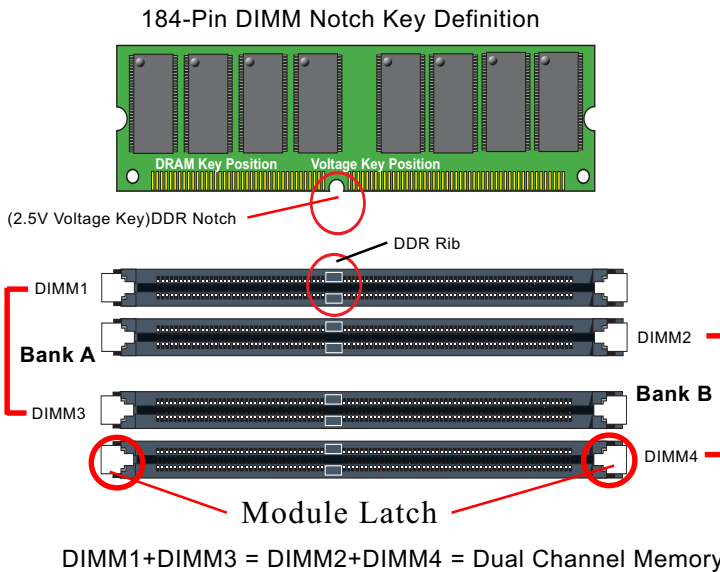
Dual Channel Memory Features

- Dual Channel memory configuration provides higher performance than Single Channel configurations
- Matched DIMMs need to have identical density, DRAM technology, DRAM bus width, and equal number of memory banks.
- This series supports up to 4GB unbuffered Dual-channel DDR 400/333/266 SDRAM, with 4 DDR DIMM slots on board. Do not insert other type of modules into these slots.
- The dual memory controller can double the DDR memory bandwidth up to 6.4GB/s with DDR400, 5.4GB/s with DDR333 and 4.2GB/s with DDR266.



2-3.1 To Install DDR SDRAM Module

- To enable Dual-channel memory function, users should insert totally identical (size and frequency) DDR module pair into the bank-pair. In this series, DIMM1 and DIMM3 is a pair, and DIMM2 and DIMM4 is another.
- 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.



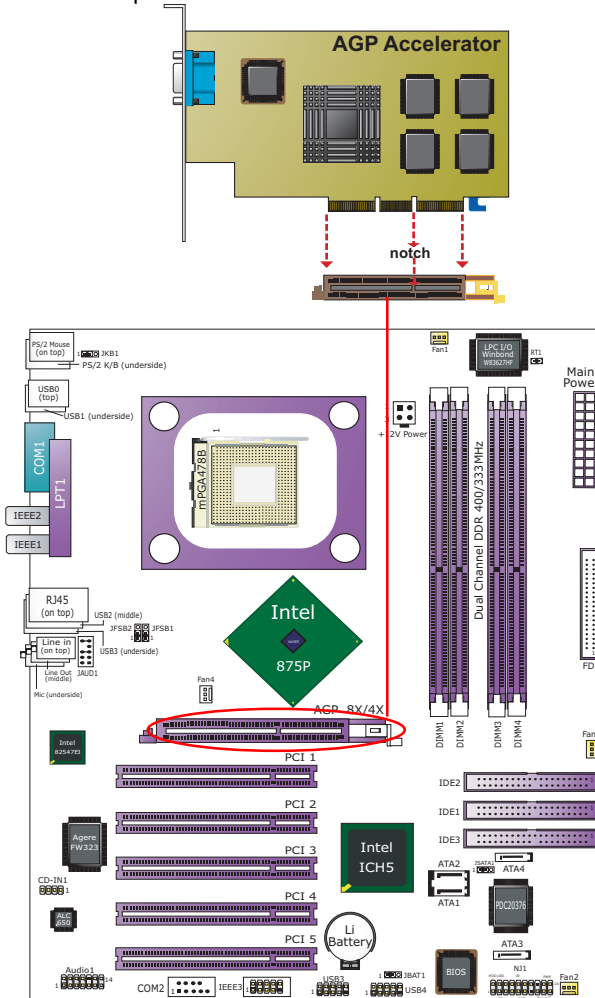
2-3.2 To Remove a Memory Module

Before removing a memory module from the DIMM slot, we must first power off system. After the system is powered off, you can now press down the two module latch at both sides of the module and release it from the slot.

2-4 AGP 8X/4X Slot Installation

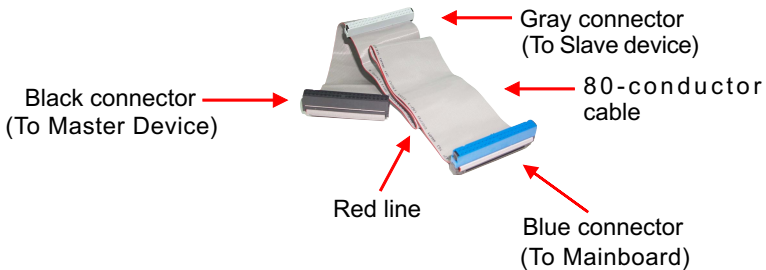
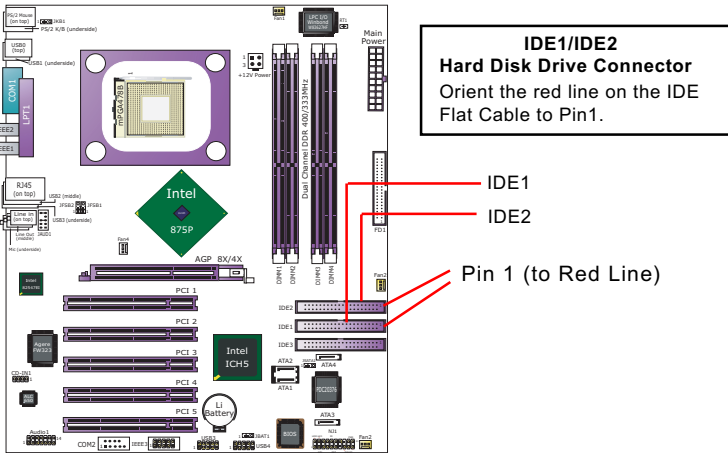
The AGP slot on board supports 1.5V AGP 8X/4X card only. A Rib is specifically added to the 8X/4X slot so as to match the AGP 8X/4X card. To insert a 3.3V AGP 2X card into the AGP 4X slot will damage the system chip and burn the 1.5V circuitry.

An AGP 8X card will support a data transfer rate up to 2GB/sec, while an AGP 4X card will provide 1GB/sec transfer rate.



2-5 IDE Connectors 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.

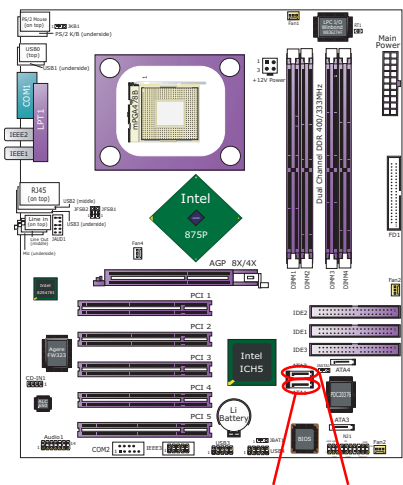


IDE Flat Cable

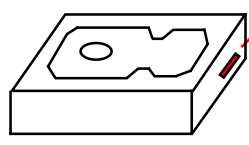
2-6 Serial ATA Connectors Installation

The Serial ATA is designed to improve the Parallel ATA with the capability of Hot Plug and offer a data bandwidth of 150Mbytes/second. It also reduce voltage and pin count and can be implemented with thin cables which improve the inner ventilation of PC cases.

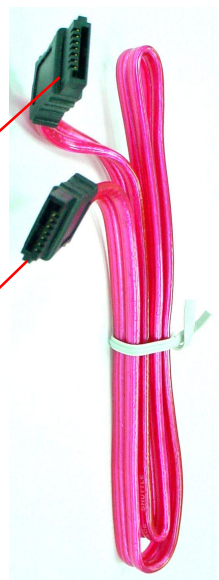
2 Serial ATA connectors are built on board, supported by the Intel ICH5 for SATA Hard Disk Drives.



Serial ATA Connector ATA1 and ATA2



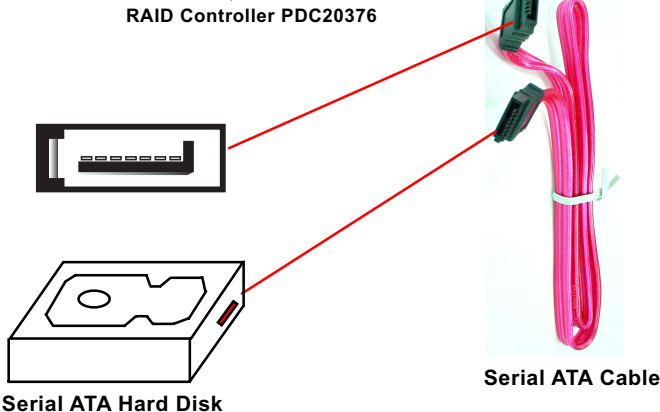
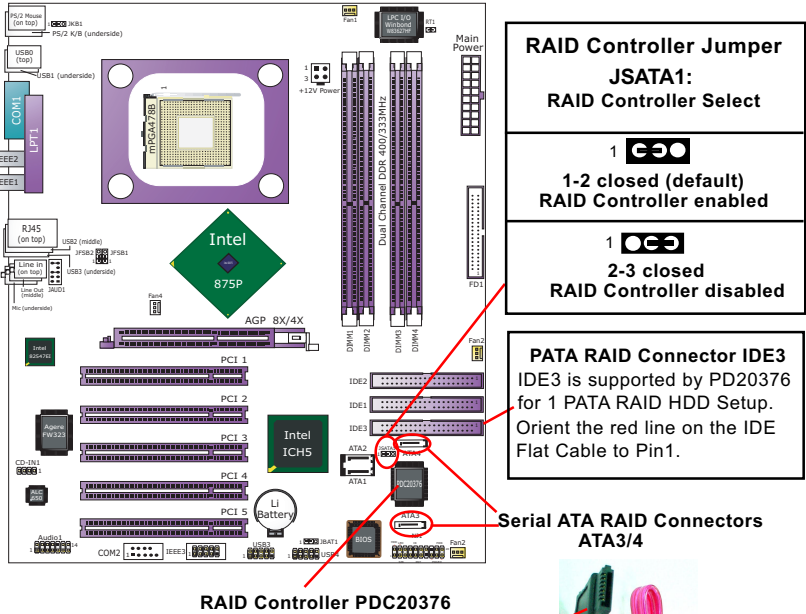
Serial ATA Hard Disk



Serial ATA Cable

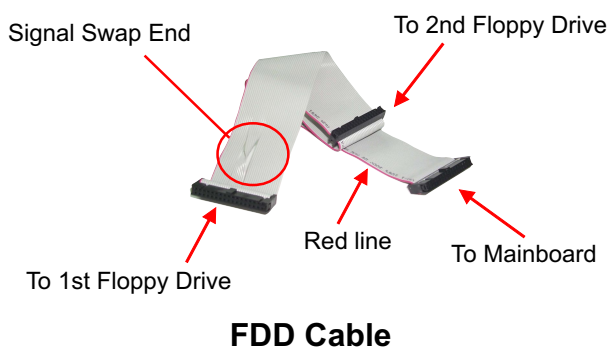
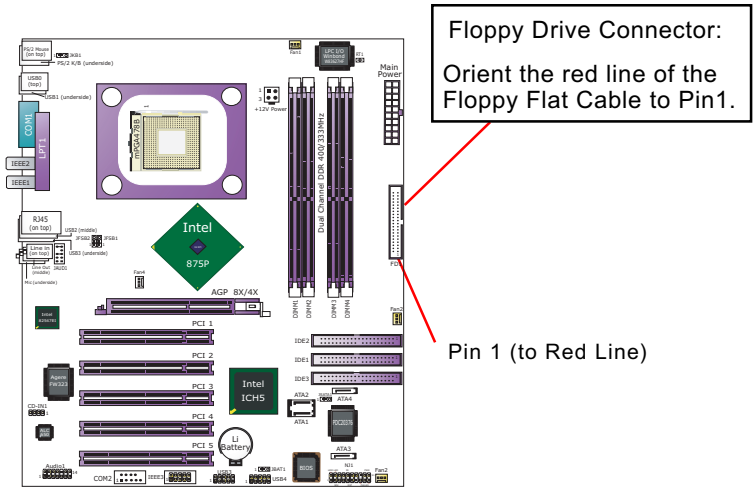
2-7 Serial ATA / Parallel ATA RAID Connectors

2 Serial ATA RAID and 1 Parallel ATA RAID connectors are built on board, supported by the RAID Controller PDC20376. Before we install RAID disk drives to the these Connectors, we must first enable the controller PDC20376 by Jumper JSATA1 1-2 closed and then install the RAID Controller Driver (see Chapter 5 Disk Array Installation).

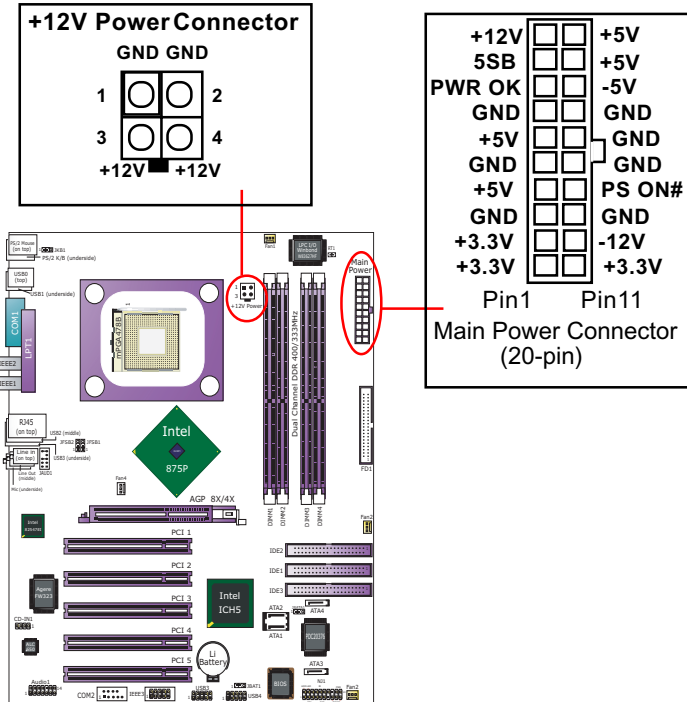


2-8 Floppy Drive Connector Installation

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.



2-9 ATX V2.03 Power Supply Installation



ATX V2.03 Power Supply is strongly recommended for mainboard running with 2GHz or higher CPU.

To set up Power Supply on this mainboard:

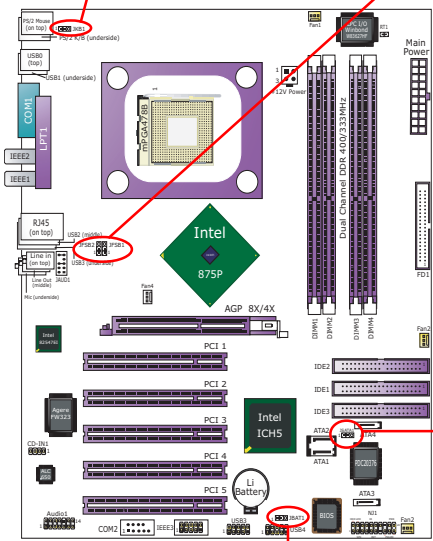
1. Connect the on-board Main Power Connector (20-pin) to the Main Power Connector (20-pin) of an ATX Power Supply which can be of the latest version 2.03 model, and then connect the square-shaped +12V Power Connector on board to the square-shaped +12V Power Connector of the Power Supply.

Warning: Both the Main Power Connector and the +12V Power Connector should be connected to Power Supply; otherwise, the system may either not start or be damaged.

2-10 Jumper Settings

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

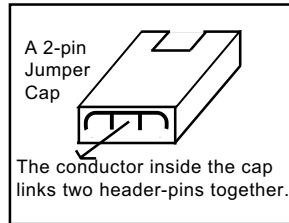
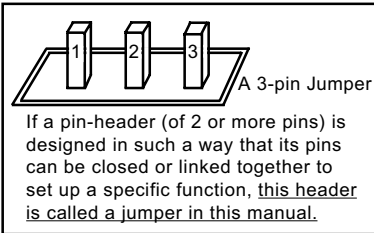
JKB1: Keyboard / Mouse Wake Up		JFSB1&JFSB2: CPU Frequency Select			
<div>1-2 closed (default) Disabled</div>		(default) CPU Auto- Detection	100MHz	133MHz (FSB533)	200MHz
<div>2-3 closed Enabled</div>		JFSB2 1 1	JFSB2 1 1	JFSB2 1 1	JFSB2 1 1



JSATA1: RAID Controller Select	
1	1-2 closed (default) Enabled
1	2-3 closed Disabled

JBAT1 Clear CMOS	
1-2 closed (default) To hold data	
2-3 closed To clear CMOS	

How to tackle the Jumpers:



- 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 opened









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.

2-10.1 JFSB1 & JFSB2: CPU Frequency Select

JFSB1 and JFSB2 are designed on board for CPU frequency select.

1. Setting JFSB1 1-2 closed and JFSB2 to 1-2 closed will allow CPU on board to Auto Detect CPU frequency and apply it to the System Bus.
2. Setting JFSB1 2-3 closed and JFSB2 2-3 closed is for 100 MHz CPU.
3. Setting JFSB1 open and JFSB2 2-3 closed is for 133 MHz CPU.
4. Setting JFSB1 2-3 closed and JFSB2 open is to select a CPU clock at 200 MHz for your CPU. If 200MHz is an overclock for your CPU, it may or may not boot your system. If an overclock fails to boot system, you should restore the default setting and then clear CMOS to reboot your system. (See Clear CMOS in next paragraph.)

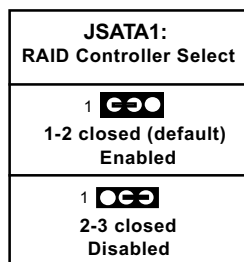
JFSB1&JFSB2: CPU Frequency Select			
(default) CPU Auto- Detection	100MHz	133MHz (FSB533)	200MHz
JFSB2  1	JFSB2  1	JFSB2  1	JFSB2  1
JFSB1  1	JFSB1  1	JFSB1  1	JFSB1  1

Further Notes on CPU Overclocking:

1. If you have successfully booted system, with or without CPU overlock, you still can try another CPU overlock in BIOS Setup. Please enter BIOS Setup, choose "Frequency/Voltage Control" of Advanced BIOS Features, and 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 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 PC 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 instantly and choose "Load Optimized Defaults" to restore default BIOS .

2-10.2 JSATA1: Raid Controller Select

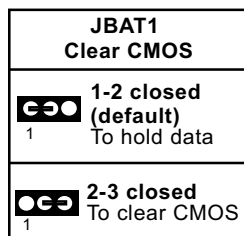
JSATA1 is a 3-pin jumper for enabling or disabling the on-board RAID Controller PDC20376. Setting JSATA1 1-2 CLOSED will allow user to enable on-board RAID Controller so as to allow user to set up the Disk Array.



2-10.3 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, restore the JBAT1 setting to Pin1-2 closed.
4. CMOS data are restored to default now. Remember never clear CMOS when system power is on.



2-10.4 JKB1: Keyboard / Mouse Wake Up

JKB1 is designed on board as a jumper to enable/disable the PS/2 keyboard/mouse Wake Up from suspend mode.

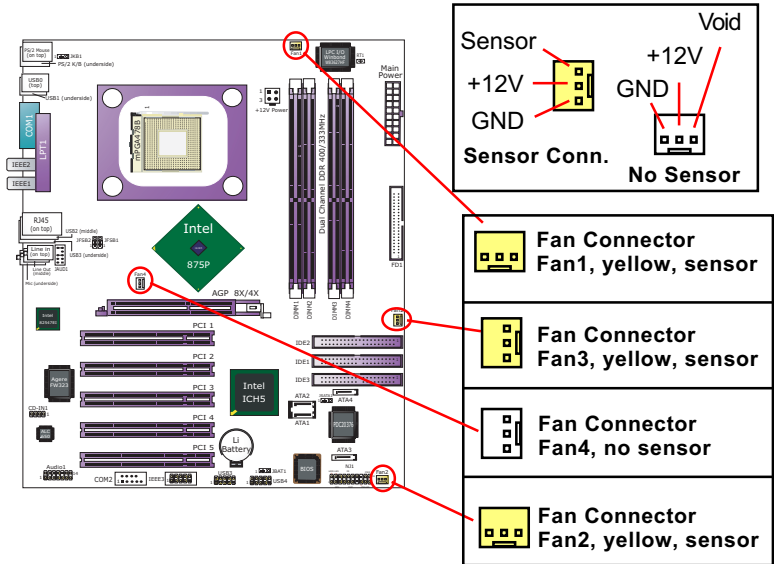
USB keyboard/mouse Wake Up function is also supported on this mainboard.

JKB1: Keyboard / Mouse Wake Up	
 1	1-2 closed (default) Disabled
 1	2-3 closed Enabled

2-11 Other Connectors Configuration

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

2-11.1 On Board Fan Connectors



Both Sensor and No-sensor Fan Connectors support CPU/AGP/System/Case cooling fan with +12V mode. A Hardware Monitor chipset is on board, with which users can install a Hardware Monitor Utility and read the fan speed transmitted from the sensor fan. Otherwise, users can read the fan speed from the "Hardware Monitor Status" via 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 on screen.

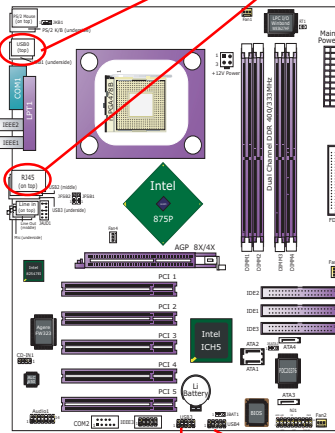
2-11.2 USB Ports and USB Pin-headers

This series provides four USB ports USB0 to USB3 on board supporting various USB devices. In addition, two USB pin-headers are added on board to provide expansion of four more optional USB ports by using two additional USB cables. Users can order the optional USB cables from your mainboard dealer or vendor.

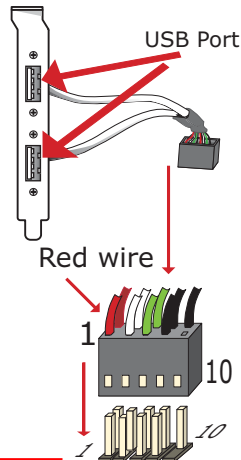
When plugging the USB cable to USB Header, users must make sure the red wire is connected to Pin 1.

All 8 USB ports are compliant with 1.1 / 2.0 USB Bus. USB 2.0 supports Windows 2000 and up (no support for Windows 9X/ME). Please see Chapter 3 for USB2.0 Installation.

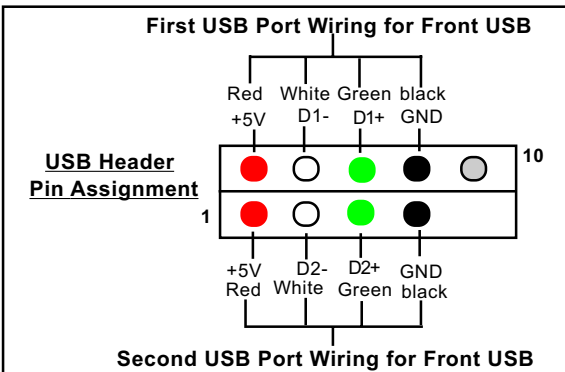
USB connectors USB0 to USB3



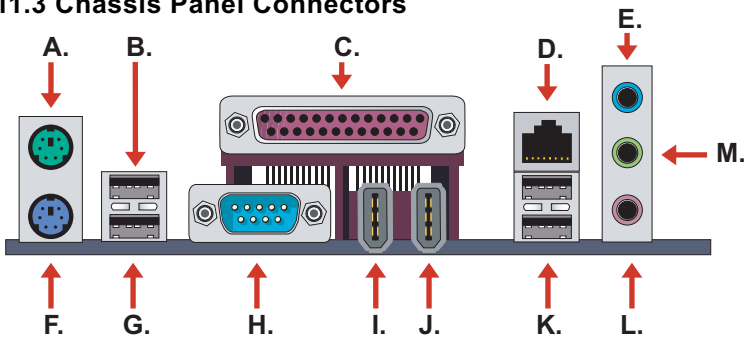
USB Cable (Optional)



USB Pin-headers USB3 and USB4



2-11.3 Chassis Panel Connectors

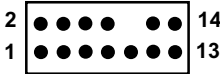


- | | |
|---------------------------|-------------------------------------|
| A : PS/2 Mouse | H : COM1 Connector |
| B : USB 0 (top) | I : IEEE2 Connector(87CW-F/FL only) |
| C : LPT1 Port | J : IEEE1 Connector(87CW-F/FL only) |
| D : RJ45 (87CW-L/FL only) | K : USB 2 (middle) |
| E : Line in/ | USB 3 (underside) |
| Rear Speaker Out | L : Microphone Input / |
| F : PS/2 Keyboard | Center Subwoofer Out |
| G : USB 1 (underside) | M : Line Out / |
| | Front Speaker Out |

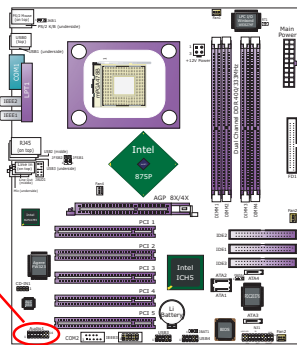
2-11.4 6-channel Sound Output Connector (Optional)

This series is designed with an optional 6-channel Audio-out connector “Audio1”. If this option is chosen, it will provide 3 additional audio-out ports for the 6-channel sound.

6-channel Audio-out Pin Assignment

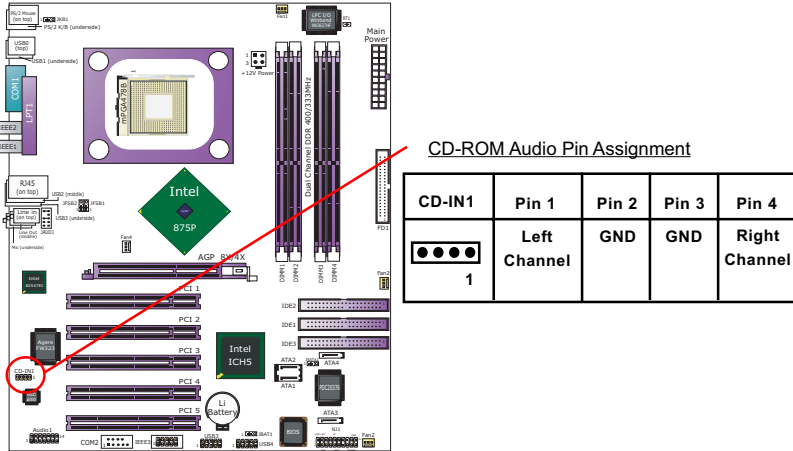


- | | |
|----------------------|--------------|
| Pin 1 LFE-out | Pin 2 Gnd |
| Pin 3 Center-out | Pin 4 Gnd |
| Pin 5 Surround-out-R | Pin 6 Gnd |
| Pin 7 Surround-out-L | Pin 8 Gnd |
| Pin 9 Jack-detect | Pin10 (Void) |
| Pin11 SPDIFI | Pin12 Gnd |
| Pin13 SPDIFO | Pin14 Gnd |



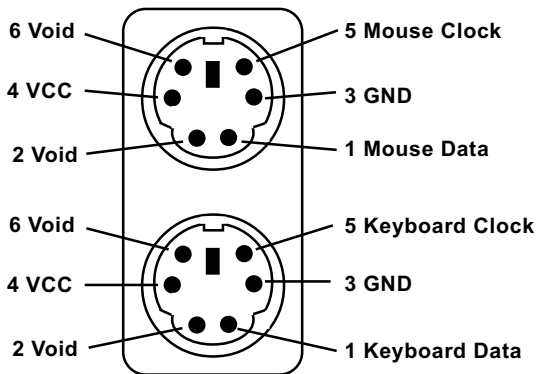
2-11.5 CD-ROM Audio Connectors

CD-IN1 is an audio connector connecting CD-ROM audio to mainboard.



2-11.6 PS/2 Mouse And PS/2 Keyboard

(PS/2 Mouse: On top of keyboard connector, green)

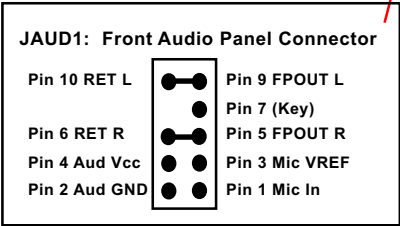
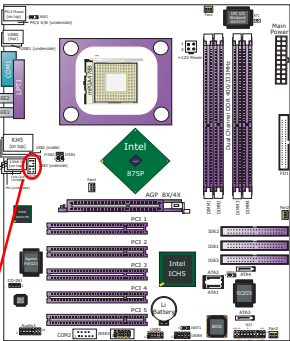


(PS/2 Keyboard Connector: Underside, purple)

2-11.7 Front Panel Audio Connector

This Mainboard is designed with a Front Panel Audio connector “JAUD1” which provides connection to your chassis.

- 1. When JAUD1 is set to 5-6 closed and 9-10 closed, this default setting disables this connector and leaves the Back Panel Audio enabled.
- 2. To use this Front Panel Audio Connector, please open all pins of JAUD1 and connect it to your chassis.

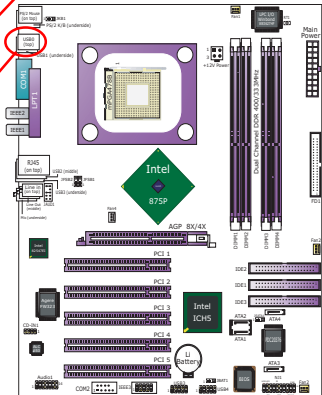
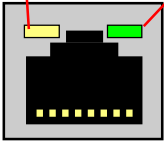


2-11.8 LAN Connector (87CW-L/FL Only)

One RJ45 connector is on board for network connection.

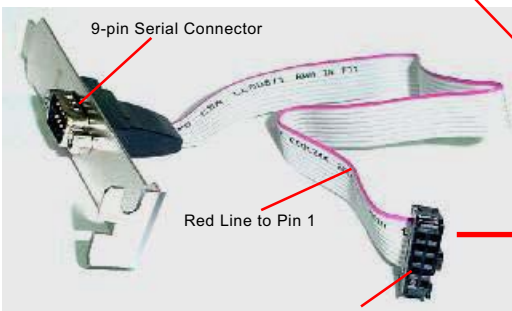
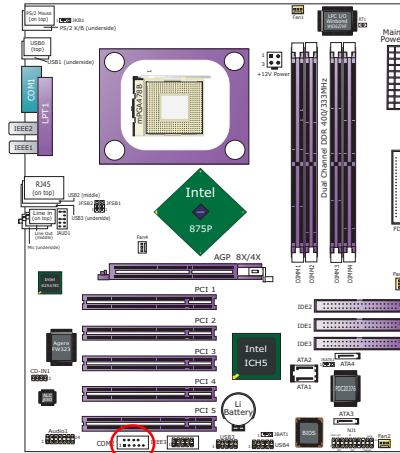
Yellow LED “On” to indicate Network hub is in connection with the system.

Green LED blinks to indicate that data transmission is undergoing in 10/100/1000 Base T mode.



2-11.9 COM 2 Header 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. 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 header.



COM 2 Header

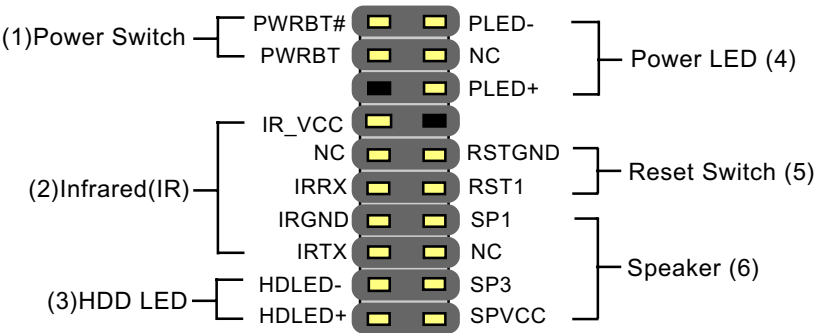
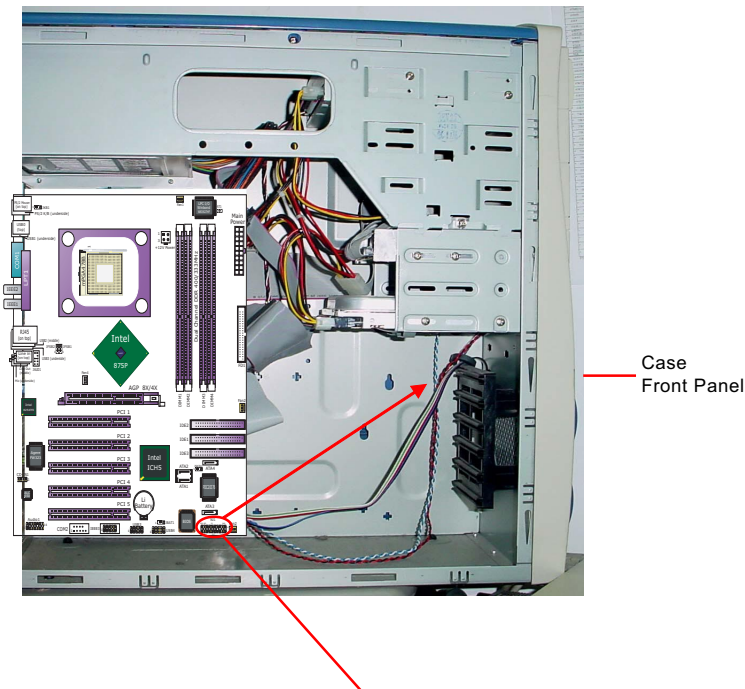


COM 2 female Header

COM 2 Cable (RS232) (optional)

2-11.10 Complex Pin-header

This complex Pin-header consists of the following connectors for various supports. When you have fixed the mainboard to the case, join the connectors of this Complex Pin-header to the case Front Panel.



(1) 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.

(2) IR Connector (Infrared Connector):

Connection: Connected to Connector IR on board.

Function: Supporting wireless transmitting and receiving module on board.

(3) HDD LED Connector:

Connection: Connected to HDD LED.

Function: To supply power to HDD LED.

(4) Power LED Connector:

Connection: Connected to System Power LED.

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

(5) Reset Switch Connector:

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

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

(6) Speaker Connector:

Connection: Connected to the case-mounted Speaker.

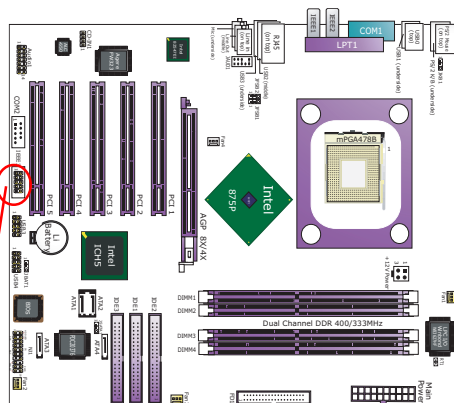
Function: To supply power to the case-mounted Speaker.



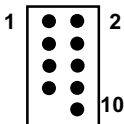
2-11.11 IEEE 1394 Connectors (87CW-F/FL only)

IEEE 1394 controller, FW323 chipset on board, supports up to 400MB/s transfer rate with Plug and Play expansion interface.

IEEE1394 Header is built on board, which requires an IEEE 1394 cable (optional) to provide a 9-pin serial connector for a device. Because of the same pin allocation between the IEEE 1394 Header and the USB Header, **please do not insert a USB cable to the IEEE 1394 Header.** The devices may be damaged or burned for the sake of mistakenly inserting the wrong cable.

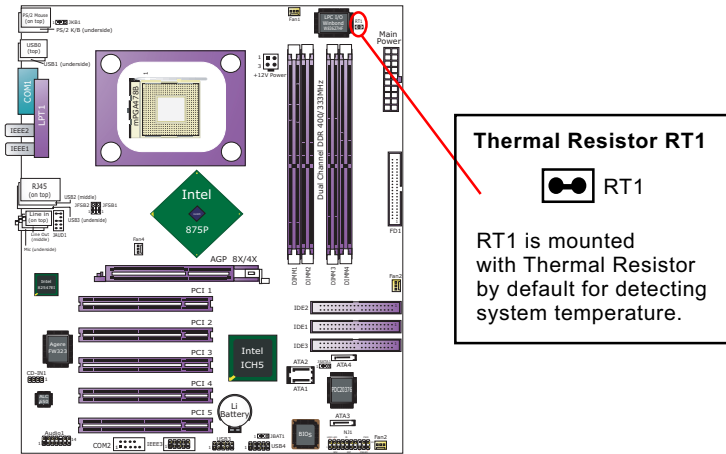


IEEE 3 Header Assignment



Pin 1 TPA+	Pin 2 TPA-
Pin 3 Gnd	Pin 4 Gnd
Pin 5 TPB+	Pin 6 TPB-
Pin 7 +12V(Fused)	Pin 8 +12V(Fused)
Pin 9 Key (no pin)	Pin10 Gnd

2-11.12 Thermal Resistor



Resistor RT1: A thermal resistor is mounted by default to connector RT1 so as to detect the temperature of the system. What RT1 does is to transmit the thermal signal to Hardware Monitor.