EP-PT21

Motherboard for
Pentium MMX ™
User's Manual

Order Number 41010007
November, 1997

EC-CONFORMITY DECLARATION

CE (EC conformity marking)

FOR THE FOLLOWING EQUIPMENT:

Product Name : MOTHERBOARD

Model: EP-PT21

Manufacturer: ENPC TECHNOLOGY CORP.

Manufacturer Address: 6FL., No. 19, Wu Chuan 6 Rd.,
Wu-Ku Industrial Park, Taipei, Taiwan.

IS HEREWITH CONFIRMED TO COMPLY WITH THE EQUIPMENTS SET UP IN THE COUNCIL DIRECTIVE ON THE APPROXIMATION OF THE LAW OF MEMBER STATES RELATING TO ELECTROMAGNETIC COMPATIBILITY (89/336/EEC) AND LOW VOLTAGE DIRECTIVE 78/28/EEC. FOR THE EVALUATION REGARDING THE ELECTROMAGNETIC COMPATIBILITY AND SAFETY, THE FOLLOWING STANDARDS WERE APPLIED:

*	EN50081-1	(1992) : GENERIC EMISSION STANDARDS
	EN550022	(1994) : EMISSION
	EN60555-2	(1987) : HARMONICS
	EN60555-3	(1987) : VOLTAGE FLUCTUATIONS
*	EN50082-1	(1992) : GENERIC IMMUNITY STANDARD
	IEC 801-2	(1984) : ELECTROSTATIC DISCHARGE IMMUNITY
	IEC 801-3	(1984) : RADIATED IMMUNITY
	IEC 801-4	(1988) : ELECTRICAL FAST TRANSIENT

The manufacturer also declares the conformity of above mentioned product with the actual required safety standards in accordance with LVD 73/23 EEC.

Manufacturer/Importer

Date: Nov 16, 1997

Signature: _____ Signature: _____

Name: JEFF CHANG Name: KUNNAU CHEN

(Project Leader) (President)

EP-PT21

Motherboard
for
Compatible PC

User Manual Rev 1.3
Related Motherboard: EP-PT21 P.C.B. Rev 2.1
Date: Nov. 1997

FCC & DOC COMPLIANCE

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out the Radio Interference Regulations for the Canadian Department of Communications.

Table Of Contents

1. Introduction

1.1 About this Manual

This manual is arranged to help you set up and run this Pentium MMX™ Motherboard as quickly as possible.

Information is presented in the following two chapters:

Chapter 1.

Introduction: This chapter presents the features of the motherboard; what components and accessories should be included with it; and describes the specifications of this product, including a diagram of the motherboard layout.

Chapter 2.

Installation: This chapter shows how to install the motherboard, and how to configure its various features and functions.

1.2 Item Checklist

This product comes with the following components:

- ☑ Motherboard x 1
- ☑ 40-pin IDE connector flat cable x 1
- ☑ 34-pin floppy disk drive flat cable x 1
- ☑ User's manual x 1
- ☐ Flash ROM utility & Bus master IDE driver diskette (Optional)
- ☐ Rear panel shielding (Optional)
- ☐ IrDA module (Optional)

1.3 Specifications

- Processor:

  ZIF socket 7 support intel® Pentium MMX™; intel® P54C, P55C Series, Cyrix 6x86/M2 Series, and AMD K5/K6 Series. Supports current and future CPUs.

- Chipset:

  intel® 82430TX System Controller; intel® 82371AB PCI/ISA IDE Accelerator.

- BIOS:

  Award/AMI BIOS support DMI; Flash ROM with Green PC, Plug-and-Play, ACPI, and PC97

- System Memory:

  Four 72-pin SIMMs and two 168-pin DIMM Slots support up to 256MB. The system supports mixed memory technologies: Extended Data Out (EDO) RAM, Fast Page (FP) DRAM, and SDRAM (Synchronous DRAM).

- On-board Multi-I/O:

  1 x FDD Port supports up to 2.88MB
  1 x Parallel Port (LPT) support ECP/EPP
  2 x High Speed Serial (16550 UART) Ports
  2 x Universal Serial Bus (USB) Ports
  1 x PS/2 Keyboard Port
  1 x PS/2 Mouse Port
  1 x Real Time Clock (RTC)
  2 x IrDA ports

- Cache Onboard:

  512KB Pipeline Burst SRAM Cache

- PCI Bus Master IDE:

  2 x PCI Bus Master IDE Controllers
  Support PIO Mode 3/4 EIDE Devices (HDD, CD-ROM, LS-120 FDD, etc.);
  Ultra DMA/33 mode; and HDD Auto-Detect

- Expansion Slots:

  4 x 32-bit PCI Bus Master Slots, 3 x 16-bit ISA Slots

- Options:

  Infrared (IrDA) Wireless Interface Kit
  LM75 CPU Temperature Gauge
  LM78 Hardware Monitor Chip

- Dimensions:

  210mm x 305mm

- Form Factor:

  ATX Form Factor

1.4 Notes On Installation

This motherboard has been designed with the Intel 82430TX, PCI chipset, which was developed by Intel Corporation to fully support the Pentium Processor PCI/ISA system. The Intel 82430TX PCI chipset provides increased integration and improved performance. The chipset provides an integrated IDE controller with two high performance IDE interfaces, for up to four IDE devices (hard devices, CD-ROM device, etc). The Super I/O controller provides standard I/O functions: floppy interface, two serial ports with 16-Byte FIFO buffers, and an EPP/ECP-capable parallel port.

Care must be taken when inserting memory modules, inserting the CPU, or even plugging PCI cards into associated slots to avoid damaging any circuits or sockets on the motherboard. A cooling fan is strongly recommended when installing P54C, P54CTB, P55C, K5, K6, 6x86, or M2 CPU, to avoid overheating.

The motherboard requires a minimum of 8MB of system memory, and can support a maximum of 256MB.

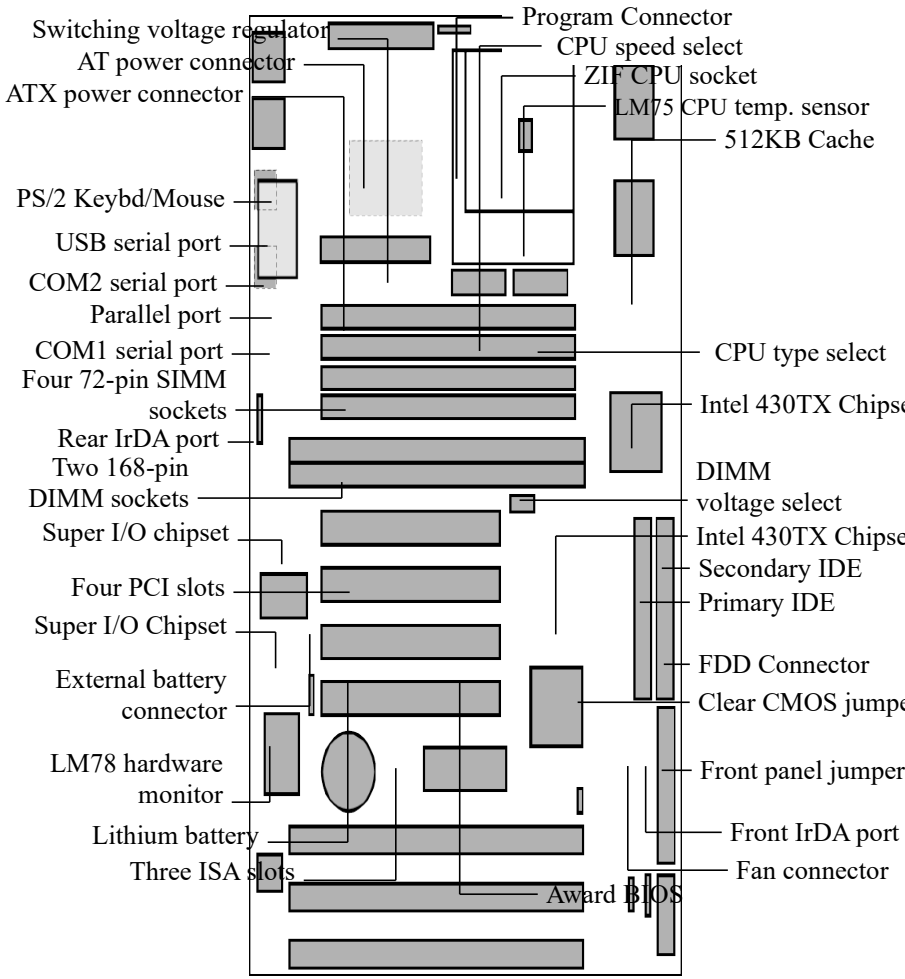
The onboard L2 Cache comprises 256KB or 512KB of static RAM (SRAM) to increase system performance.

The motherboard supports standard Fast Page (FP), EDO (Extended Data Out), or SDRAM (Synchronous DRAM) memory, and provides four 72-pin SIMMs and two 168-pin DIMMs. The sockets support 1Mx32(32MB) single-sided or double-sided memory modules. Memory timing requires 70ns Fast Page devices or 60ns EDO RAM. Memory parity generation and checking is not supported. (DRAM Modules may be parity (x36) or non-parity (x32).

The board also has two onboard PCI IDE connectors, and detects the IDE hard disk type through an automatic BIOS utility. The system also supports Award Plug & Play BIOS for the ISA and PCI cards.

2. Installation

2.1 Motherboard Layout

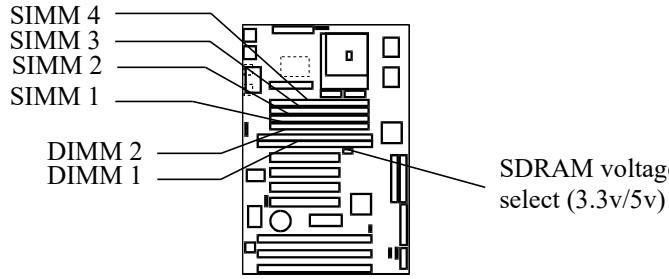


2.2 Installation Steps

1. Set jumpers on the motherboard
2. Install DRAM (and SDRAM) memory modules
3. Install the CPU
4. Install Expansion Card(s)
5. Install the External Connectors

2.3 System Memory

This motherboard supports four 72-pin SIMMs (Single Inline Memory Modules) of 4MB, 8MB, 16MB, 32MB, and/or 64MB to form a memory size between 8MB to 256MB. The DRAM can be either 60ns or 70ns Fast Page Mode (FPM, Asymmetric or Symmetric), Extended Data Output (EDO). SIMMs must be installed in pairs so that each bank contains two of the same size memory modules.



Install memory in any or all of the banks at any combination as shown in the table below:

Item	Bank	Memory Module
1	DIMM 1	8-128MB
2	DIMM 1, 2	8-128MB
3	DIMM 2 SIMM 3, 4	8-128MB 4-64MB
4	DIMM 1 SIMM 1, 2	8-128MB 4-64MB
5	SIMM 1, 2	4-64MB
6	SIMM 3, 4	4-64MB
7	SIMM 1, 2, 3, 4	4-64MB

NOTE: You cannot mix two *types* (FPM, EDO, or SDRAM) or sizes of memory in a single bank. After installing any memory modules, setup is required using "Auto Configuration" in the Chipset Features section of BIOS setup.

2.4 Central Processing Unit (CPU)

The motherboard provides a 321-pin ZIF Socket 7. The CPU should have a fan attached to it to prevent overheating. If the CPU did not come with a fan then purchase a fan before you turn on your system. Apply thermal jelly to the CPU top and then install the fan onto the CPU.

NOTE: Without a fan, the CPU can overheat and cause damage to both the CPU and the motherboard

2.4.1 Installing the CPU

To install a CPU, locate the ZIF socket and open it by first pulling the lever sideways away from the socket's "Lock" then upwards to a 90-degree angle. Insert the CPU with the correct orientation as shown. Look to see that the pins are denser on one half compared to the other half. You should have a CPU fan that will cover the face of the CPU. With the added weight of the CPU fan, no force is required to insert

the CPU. Once completely inserted, hold down the fan and close the socket's lever.

2.4.2 Setting CPU Speed with "Easy-Jumpers"

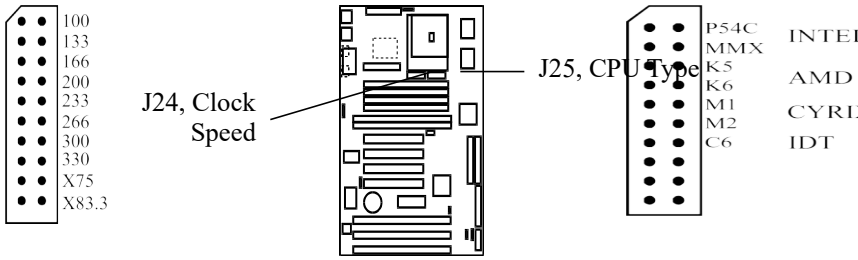
The *Easy-Jumpers* system greatly simplifies the task of setting the proper CPU type and speed. All the information you need is clearly marked right on the motherboard.

First, set the CPU type (P54C, MMX, K5, ... etc.) with one jumper cap on the J25 pin block.

Next, set the bus speed. The default value (with no jumpers added) is 66Mhz. If you need to use 75MHz or 83.3MHz, then place a jumper cap over the appropriate pins on block J24. Pins 17-18 set 75MHz; and pins 19-20 set 83.3MHz.

Finally, set the CPU speed as a *multiple* of the bus speed on J24.

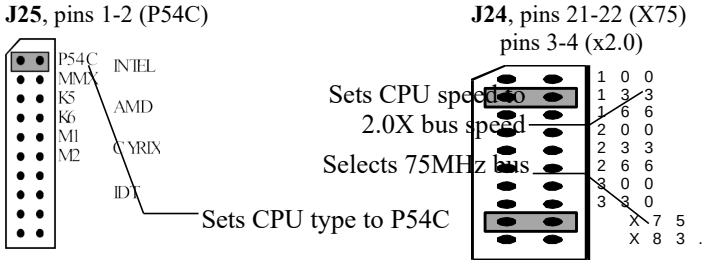
Note that there are *two* captions next to each pair of pins in J24. The first one is a *multiplication factor*, such as 意2.0"; and the second is a CPU speed based on the *default* bus speed of 66MHz.



Thus, if you set a bus speed other than the default, you should pay attention only to the *multiplication factor* and ***NOT*** the pre-printed CPU speeds.

For example, suppose you have a Pentium-150 CPU, and you wish to run with a bus speed of 75MHz. You would place three jumper caps, as follows:

1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0



This would give you a bus speed of 75MHz, and a CPU speed of 150MHz.

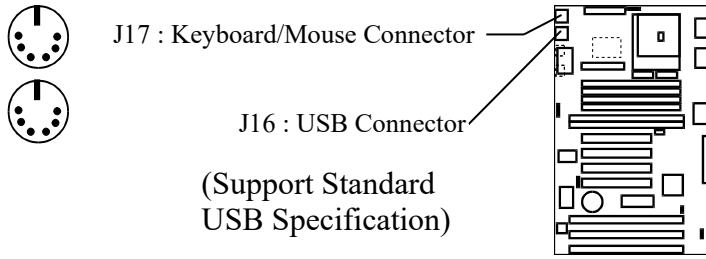
Note: although the caption next to the jumper in this example reads **x2.0 | 133**, the actual speed is **75MHz X 2.0**, or **150MHz**.

2.5 External Connectors

NOTE: Please refer to the diagram on page 1 and to the markings on the motherboard to be sure that connectors and jumper caps are placed correctly. Placing jumper caps on *connector* pin-blocks can cause damage to your motherboard.

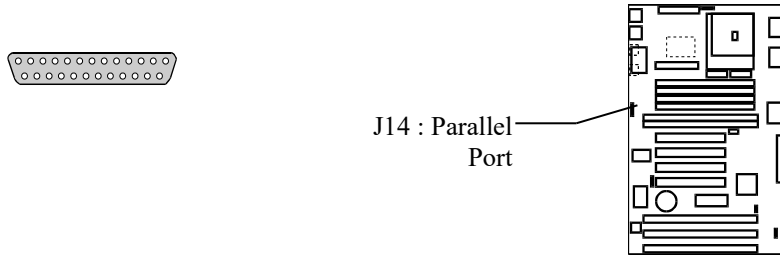
2.5.1 PS/2 Keyboard/Mouse Connector and USB Port

(J17, 2x 6-pin Female and J16, 6-pin Female)



2.5.2 Parallel Printer Port (J14, 25-pin Female)

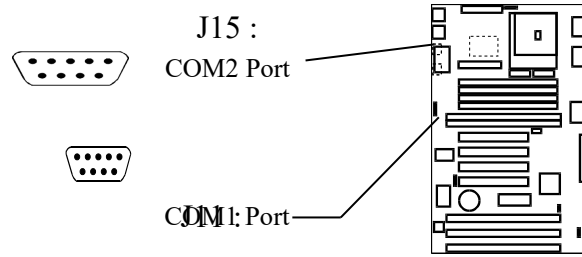
You can enable or disable the parallel port (LPT1) and choose its IRQ number in the BIOS setup.



2.5.3

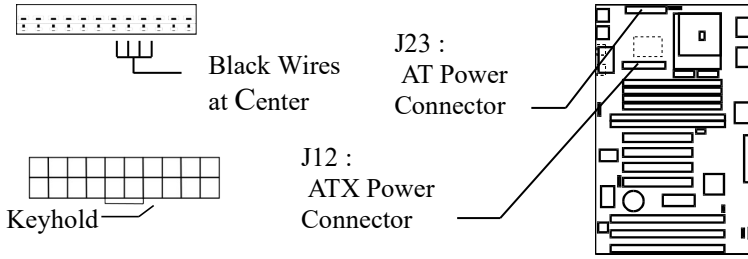
2.5.4 Serial Ports (COM1, COM2, 9-pin Male Connector)

The two serial ports (COM1 & COM2) can be used for pointing devices or other serial devices. See *Onboard Serial Port* in *Chipset Features Setup* in the BIOS setup software to configure.



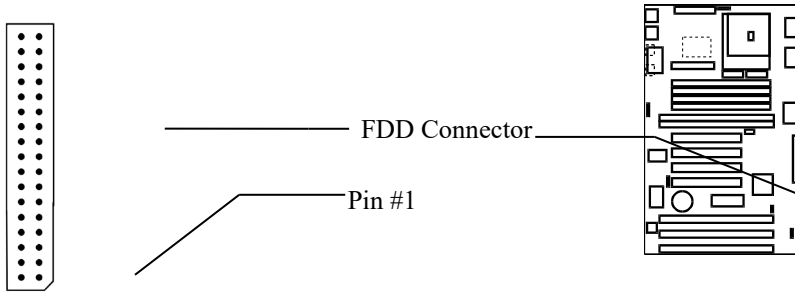
2.5.5 AT & ATX Power Supply Connectors

J23 is a standard 12-pin AT-type or PS/2 type socket. Be sure to attach the two connectors with the four black wires next to each other, at the centre. J12 is a standard ATX-type power connector. (The ATX power connector can *only* be inserted the correct way.)



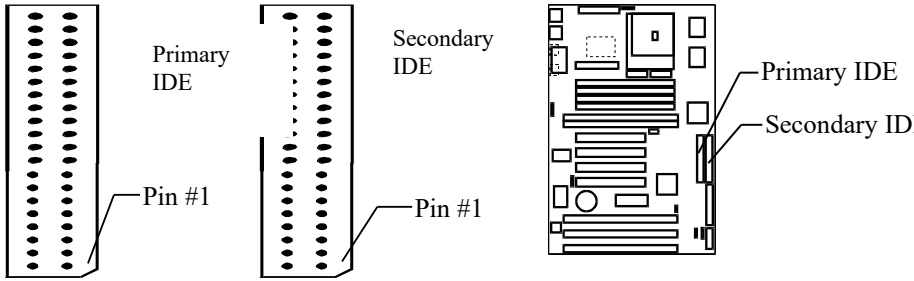
2.5.6 Floppy Drive Connector (J9, 34-pin block)

The motherboard provides a standard floppy disk driver (FDD) connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. You can attach a floppy disk cable directly to this connector.



2.5.7 Primary/Secondary IDE connectors. (J6 & J7: 40-pin blocks)

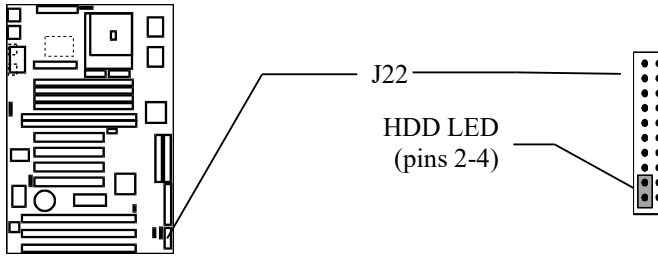
These connectors support the provided IDE hard disk ribbon cable. After connecting the single end to the board, connect the plug(s) at the other end to your hard disk drive(s). If you install two hard disks, you must configure the second drive to *slave mode* by setting its jumper accordingly. Please refer to your hard disk documentation for the jumper settings. The BIOS now supports SCSI device or IDE CD-ROM boot-up (see "Boot Sequence" in the BIOS Features Setup of the BIOS Software)



2.5.8

2.5.9 IDE Activity LED (J22, pins 2-4)

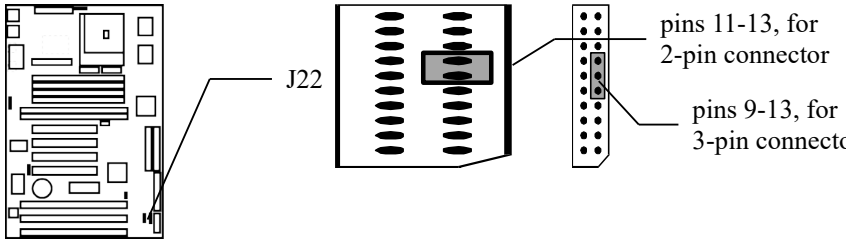
These pins connect to the IDE (hard disk) activity indicator light on the system cabinet.



2.5.10 Front Panel Connector

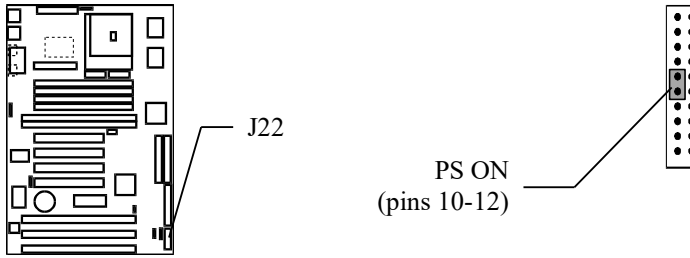
2.5.10.1 System Power LED (J22, pins 9/11-13)

This 2-pin connector lights the system power LED when the motherboard has power



2.5.10.2 SMI Suspend Switch & ATX Power Switch (J22, pins 10-12)

Marked as ”PS-ON” on the motherboard, this switch supports different modes of operation, in conjunction with a standard ATX-type power supply.



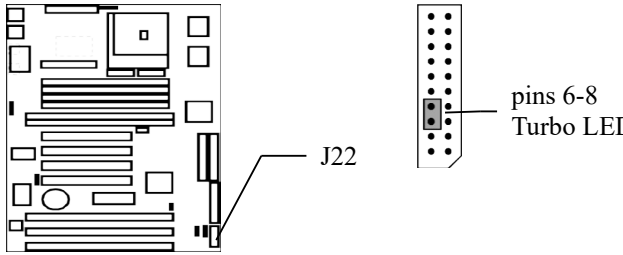
A push-button switch connected to this lead controls the system power. Pushing the button once will turn on the system and pushing another time will turn it off. The system power LED shows the system's on/off power status. If Power Management is enabled under BIOS setup, this allows the user to manually place the system into a suspend mode (often called “green mode”) where system activity will be instantly decreased to save electricity and prolong the life of certain components when the system is not in use. In this case, the user must press and hold the Power Switch for a preset *delay period* to turn the system power off completely. The *delay* and other Power Management parameters are determined in BIOS Setup.

This connection does not have a function when a standard power supply is used

NOTE: If the power to the ATX power supply is interrupted while the motherboard is on, standby power will remember that the motherboard should be on and boot the computer when power is reapplied to the ATX power supply.

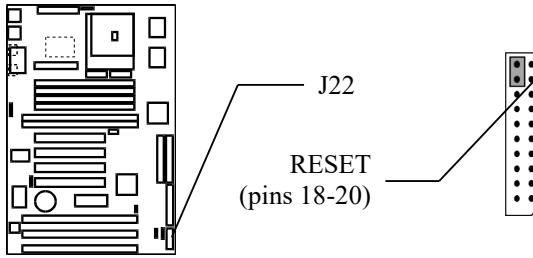
2.5.10.3 Turbo LED (J22, pins 6-8)

This 2-pin connector connects to the case-mounted Turbo LED.



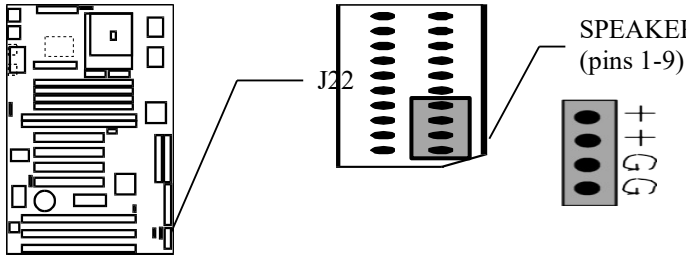
2.5.10.4 Reset Switch Lead (J22, pins 18-20)

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off power switch. This method of *cold-booting* is preferred in order to prolong the life of the system's power supply.



2.5.10.5 Speaker Connector (J22, pins 1-7)

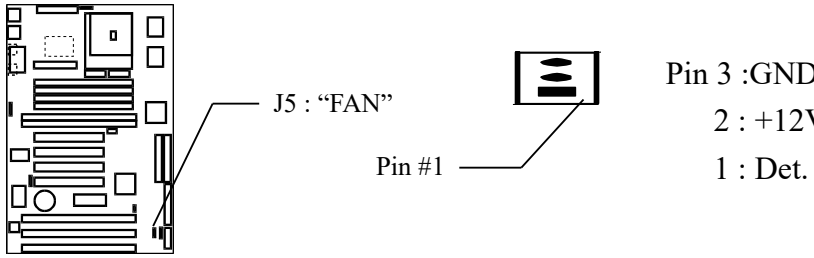
This 4-pin connector connects to the case-mounted speaker.



2.5.11 CPU Cooling Fan Connector (J5)

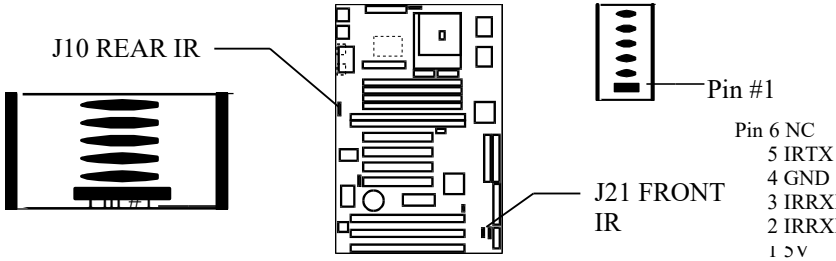
This connector supports a CPU cooling fan of 500mAMP (6WATT) or less. Orient the fan so that the heat sink fins allow airflow to go across the onboard heat sink(s) instead of the expansion slots. Depending on the fan manufacturer, the wiring and plug maybe different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of the connector.

NOTE: The CPU and/or motherboard will overheat if there is no airflow across the CPU and onboard heatsinks. Damage may occur to the motherboard and/or the CPU if these pins are incorrectly used. These are not jumpers. Do not place jumper caps over these pins!



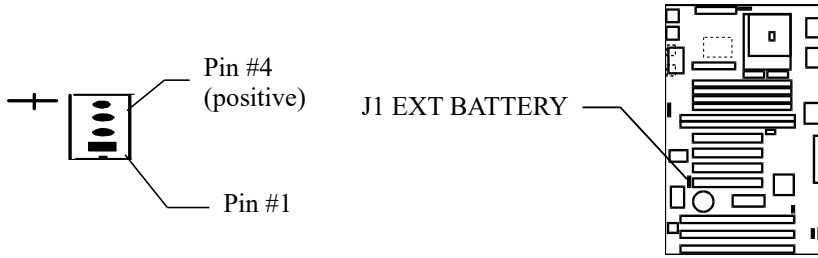
2.5.12 IrDA Connector (J21: Front IR; J10: Rear IR)

These connectors support optional wireless infrared transmit/receive modules. The IrDA module mounts to a small opening on the system cabinet. To use this feature, you must also configure UART2. to "set Infrared" under *Chipset Features* in the BIOS Setup to select whether UART2 is directed for use with COM2 or IrDA. When IrDA is selected in BIOS, COM2 will be disabled. Use the six pins as shown on the Back View and connect a ribbon cable from the module to the motherboard to the pin definitions.



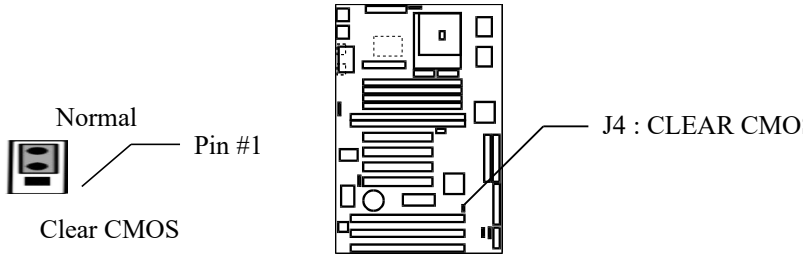
2.5.13 External Battery Connector (J1)

When using the external battery connector, be very careful of the polarity (positive and negative poles). Also, be sure to use only batteries rated at 4.5~6.0V.



2.5.14 Clear CMOS Connector (J4)

Temporarily placing a jumper across pins 1-2 of this pin block will erase all user-defined BIOS setting. Be certain that system power is OFF before using this feature!



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