

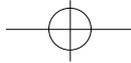
Table of Contents

- 1. Introduction**
 - Overview..... 1-1
 - Main Features 1-2
 - Motherboard Layout..... 1-5
- 2. Installation**
 - Check List 2-1
 - Installation Steps 2-1
 - Set Jumpers 2-2
 - 1. Clear CMOS RAM 2-2
 - 2. IOQ depth setting 2-2
 - 3. CPU Core:Bus Frequency Multiple 2-3
 - Installing the SystemMemory 2-3
 - 1. Adding Memory 2-3
 - 2. Memory Configuration 2-4
 - 3. Installing and Removing DIMMs 2-4
 - Installing the CPU 2-5
 - 1. Installing the CPU Retention Mechanism..... 2-5
 - 2. Installing a CPU 2-7
 - CPU Installation Overview..... 2-8
 - 3. Installing a CPU(Boxed version) 2-9
 - Installing Cables 2-10
 - 1. CPU Fan connector..... 2-10
 - 2. IDE connector 2-10
 - 3. FDD connector..... 2-10
 - 4. USB connector 2-10
 - 5. IR connector 2-10
 - 6. Front Panel Switch connector 2-11
 - 7. Power Switch connector 2-11
 - 8. Micro-ATX Power Supply connector 2-12
 - External Connectors 2-12

CB644M-EX

3. Built-in BIOS Setup Program

Starting SETUP 3-1
Standard CMOS Setup 3-6
BIOS Features Setup 3-8
Chipset Features Setup 3-11
Power Management Setup 3-15
PNP/PCI Configuration Setup 3-19
Load BIOS Defaults 3-21
Load Setup Defaults 3-21
Integrated Peripherals 3-21
Supervisor Password 3-24
User Password 3-24
IDE HDD Auto Detection 3-25
Quitting SETUP 3-26



About this Manual

This manual is designed to offer detailed information about the CB644M-EX Mainboard. The content includes the main features of the mainboard, the installation , and the BIOS settings. There are three chapters to offer clear and detailed information of CB644M-EX.

- Chapter **1** Introduction
Describes the main features and major components.
- Chapter **2** Installation
Describes the installation of hardware including jumpers, cables and connectors.
- Chapter **3** BIOS Setup
Describes the setup of BIOS. Briefly explain each item and show the selection of option.

Warning Marks

In this manual, **warning marks** are used to stress important parts or notices of text that require users attention. There are two kinds of warning marks in this manual:



Stress the important information or instructions that must pay more attentions to and should be noted.



Avoid the possible system error or damages , and offer detailed information.



CB644M-EX

Graphic Descriptions of Jumper Settings



means Pin 1 & Pin 2 are set as short



means Pin 1 & Pin 2 are set as open

1. Introduction

Overview

CB644M-EX motherboard integrates the latest advances in processor, memory, and I/O technologies into an Micro-ATX form factor(244 x 190mm) that combines performance, flexibility, and easy of use into high integrated capable of meeting a variety of price/performance levels.

CB644M-EX motherboard support Intel Pentium II processor and Celeron processor based on the Intel 440EX PCI sets(82443EX and 82371EB). Two standard 168-pin DIMM Sockets with memory size up to 256MB support EDO and Synchronous DRAM memory.

The Intel 82371EB PCI-to-ISA/IDE Xcelerator(PIIX4E) provides an integrated Bus Master IDE controller and Ultra DMA/33 with high performance IDE interfaces for up to four devices.

In addition, the CB644M-EX comes with an AGP(Accelerated Graphics Port) bus slot, a faster than the current 33MHz PCI bus. The AGP bus provides a direct connection between graphics subsystem and system memory.

CB644M-EX provides for the one low-cost USB(Universal Serial Bus) port to fit today and tomorrow's requirement.

Caution :

There is the danger of an explosion if the battery is incorrectly replaced. Replace the battery with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the battery manufacturer's instructions.



CB644M-EX

Main Features

1. Processor :

- Single Intel Slot 1 connector
- Support to Intel Pentium II - 233/266/300/333 MHz processor and Celeron processor
- Integrated Voltage Regulator Module

2. Chipsets :

2-1. 82443EX PCI/AGP Controller

- Processor interface control
 - ▶ Processor host bus speed up to 66MHz
- Integrated DRAM controller
 - ▶ Support for synchronous DRAM(SDRAM)
 - ▶ Support for 4-, 16-, 64-Mbit DRAM devices
- Accelerated Graphics Port interface
- Fully-synchronous PCI bus interface
- Data Buffering
 - ▶ Host-to-DRAM, PCI-to-DRAM, and AGP-to-DRAM write-data buffering

2-2. 82371EB PCI ISA/IDE Xcelerator(PIIX4E)

- Multifunction PCI-to-ISA bridge
- USB controller
 - ▶ One USB port
 - ▶ Support for UHCI design guide revision 1.1 interface
- Integrated Dual-channel enhanced IDE interface
 - ▶ Support for up to four IDE devices
 - ▶ Support for PIO Mode 4 transfer(up to 16MB/s)and Ultra DMA/33 synchronous
 - ▶ DMA mode transfer(up to 33MB/s)
- Enhanced DMA controller
- Interrupt controller based on 82C59
- Power management logic
- Real-Time Clock
- 16-bit counters/timers based 82C54





Introduction

2-3. ITE 8679F Super I/O Controller

- Serial ports : Two 16550 compatible UARTs
- Parallel port : Standard / EPP / ECP mode support
- Floppy disk controller
- Keyboard and Mouse controller
- Support an IrDA and Consumer IR-compliant infrared interface

3. System BIOS :

- Award flash BIOS(4.51PG)

4. DIMM Memory Socket :

- Provide 2 pieces of 168-pin DIMM socket.
- Support to 8/16/32/64/128 MB unbuffered EDO or Synchronous DRAM (SDRAM) Module.
- Support the single- or double-sided DIMMs.

5. Expansion Slots :

- Two 16-bit ISA slots with 100% ISA compatible function.
- Two 32-bit PCI slots all support PCI master.
 - ▶ PCI specification version 2.1.
- One 32-bit A.G.P slot support up to 528MB/s transfer rate
 - ▶ A.G.P specification revision 1.0.
 - ▶ Synchronous coupling to the host bus frequency.

6. PS/2 Keyboard and PS/2 Mouse Set :

- PS/2 keyboard & PS/2 mouse connector are located on the back panel. The 5V lines to these connectors are protected with a PolySwitch circuit that, like a self-healing fuse, reestablishes the connection after over-current condition is removed.

7. Serial / Parallel Ports :

- One multi-mode parallel port with chip-protect circuitry supports standard, enhanced (EPP), high speed(ECP) mode(25-pin D-Sub).





CB644M-EX

- Two high speed 16C550 UART compatible buffer fast serial port(9-pin D-Sub). One provides for the port, The other provides the 10-pin Header for the port module

8. IDE Support :

- Provide two independent bus-mastering PCI IDE interfaces(Primary and Secondary IDE).
- Support PIO Mode 4 transfer(up to 16MB/s) and Ultra DMA/33 synchronous-DMA mode transfers(up to 33MB/s).
- The BIOS automatically detects the IDE device transfer rate and translation mode.

9. FDD Support :

- Provides 34-pin right angle box header.
- Supports 360K/720K/1.2M/1.44M/2.88M or 3 mode floppy drives.

10. Power Supply Connector :

- Provides the connectors for Micro-ATX PC power supply(20 pin).

11. USB Connector :

- Provides the single USB port.
- Fully supports Universal Host Controller Interface(UHCI) and uses UHCI-compatible software drivers.

12. RTC & Back-up Battery :

- Integrated into 82371EB(PIIX4E) chipset.
- An external coin-cell battery powers the real-time clock and CMOS memory
- When the computer is not plugged into a wall socket, the battery has an established life of three years. When the computer is plugged in, the 3.3V standby current from the power supply extends the life of the battery.

13. Keyboard Controller :

- It's function compatible with Intel 8042 Keyboard Controller, which provides enhanced gate A20 switching & PS/2 compatible mouse.
- AMI keyboard BIOS
- Integrated into Super I/O chipset.



Motherboard Layout

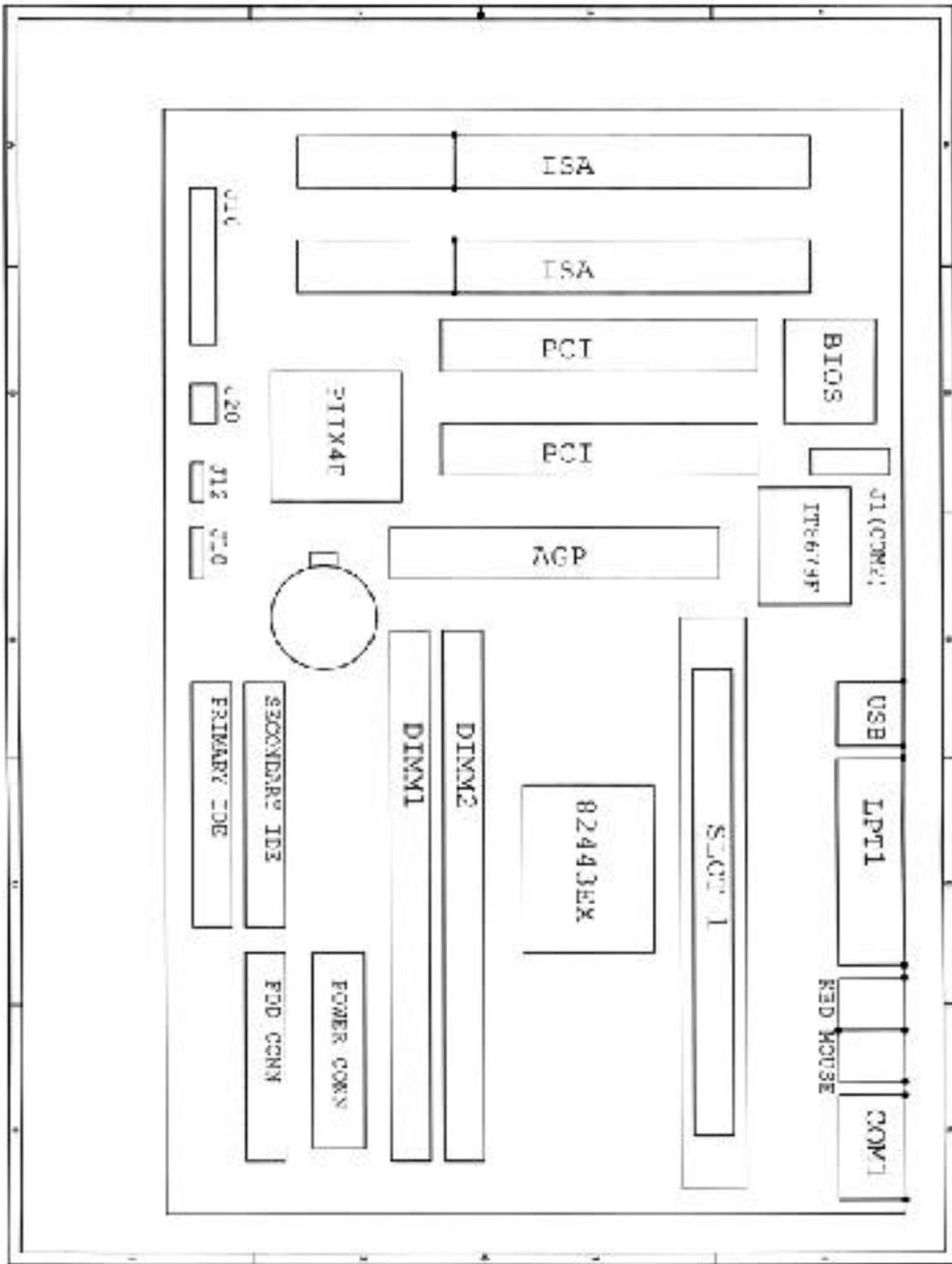


Figure 1-1. CB644M-EX Motherboard Layout

CB644M-EX

2. Installation

This Chapter provides information on how to install and configure CB644M-EX motherboard.

Check List

The standard packing of CB644M-EX should include :

- CB644M-EX motherboard
- 1 IDE cable
- 1 Floppy cable
- CB644M-EX User's Manual
- Device driver diskette
- Retention Mechanism Kit

Installation Steps

Installing of the CB644M-EX motherboard depends on the type of case you use. The CB644M-EX motherboard is designed for the Micro-ATX form factor and must be installed in an Micro-ATX chassis.

Before using your computer, you must complete the following steps :

1. Set Jumpers
2. Installing the System Memory
3. Installing the CPU
4. Installing Cables

Set Jumpers

Several hardware settings are made through the use of jumper cap to connect jumper pins on the motherboard. See motherboard layout on page 1-5 for location of jumpers. The jumper settings will be described numerically such as '1-2', '2-3' or 'On(Short)', 'Off(Open)'.

Warning!

Computer motherboards and Add-on cards contain very delicate IC chips. To protect them against damage from static electricity, you should follow some precaution whenever you work on your computer.

1. Unplug your computer when working on the inside.
2. Use a grounded wrist strap before handling computer components. If you do not have one, touch both of your hands to a safely grounded object or to a metal object, such as the power supply case.
3. Hold components by the edges and try not to touch such the IC chips, leads or connectors, or other components.
4. Place components on a grounded anti-static pad or on the bag that came with the component whenever the components are separated from the system.

1. Clear CMOS RAM

The CMOS RAM is powered by the onboard coin-cell battery or power supply. To clear the CMOS Data : (1) Turn off your computer and unplug your AC power, (2) Close pins 2-3, wait five seconds and place the jumper back on pins 1-2. (The jumper must be placed back on pins 1-2 for the system to function properly), (3) Turn on your computer.

2. IOQ depth setting

Jumper	Function	Settings
JP5	1	1-2
	Max. (Default)	2-3

CB644M-EX

3. CPU Core : BUS Frequency Multiple

To install the CPU at its correct frequency, Please refer the following table to set up CPU frequency.

CPU Freq.	Clock Multiplier	Host Clock	JP6	JP7	JP8	JP9
233MHz	3.5	66MHz	Short	Open	Open	Short
266MHz	4	66MHz	Short	Short	Short	Open
300MHz	4.5	66MHz	Short	Open	Short	Open
333MHz	6	66MHz	Short	Short	Open	Short

Table 2-1. Pentium II CPU Frequency

Installing the System Memory

The CB644M-EX motherboard has three 3.3V unbuffered 64/72-bit, 168-pin DIMM socket for maximum of 256MB of EDO and SDRAM memory.

1. Adding Memory

The following is a list of rules to follow when installing DIMMs. If you follow these rules, your upgrade should be trouble-free :

- Use 10ns or faster SDRAM or 60ns or faster EDO DIMMs.
- Single-side and double-side memory module are supported.
- Different memory types and sized in separate banks will cause the performance of the memory to run at the speed of the slowest RAM installed, and/or cause operating system stability problems.

2. Memory Configuration

DIMM memory configuration is auto-banking and therefore does not need to be installed in any particular order. The following table lists a number of possible memory configurations.

DIMM		TOTAL
DIMM1	DIMM2	
8MB	8MB	DIMM1+DIMM2 The combination of memory size is from 8MB to maximum 256MB. All DIMM sockets can use either SDRAM or EDO memory.
16MB	16MB	
32MB	32MB	
64MB	64MB	
128MB	128MB	

Table 2-2. CB644M-EX Memory Configurations

3. Installing and Removing DIMMs

To install the DIMMs, locate the memory banks on the motherboard and perform the following steps :

1. Hold the DIMM so that notched edge is aligned with the notch on the DIMM socket(Figure 2-1).
2. Insert the DIMM at a 90 degree angle.
3. Gently push the DIMM straight down until it locks into place(past the release tabs).



Figure 2-1. Installing a 168-pin DIMM

CB644M-EX

To remove DIMMs, follow the steps below:

1. With both thumbs (or fingers), press the release tabs away from the socket.
2. With the DIMM free from the release tabs, lift the memory module up and place in the anti-static bag or package.

Installing the CPU

The CB644M-EX are designed to support single Pentium II and Celeron processor. The Pentium II and Celeron processor come installed in a Single Edge Contact (SEC) cartridge that connects into "Slot 1" on the motherboard.

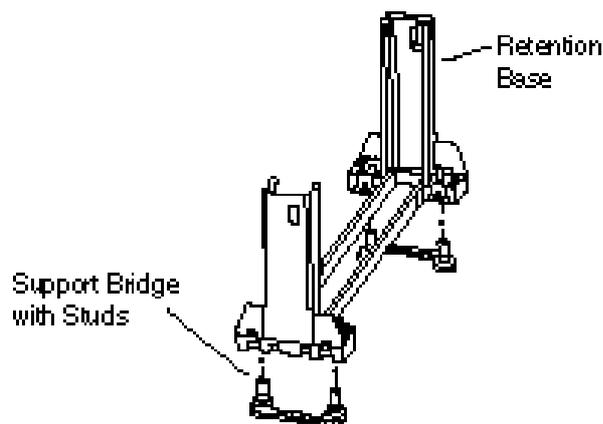
A Retention Mechanism is supplied to anchor the processor to the motherboard.

Attach the Retention Mechanism before inserting the processor.

1. Installing the CPU Retention Mechanism

Before you begin, verify that your Retention Mechanism Kit contains the following items:

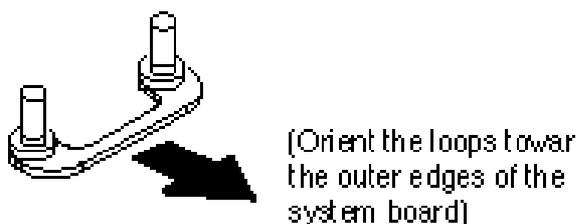
- Retention Base (black plastic module)
- Support Bridges with Studs (plastic mounts)



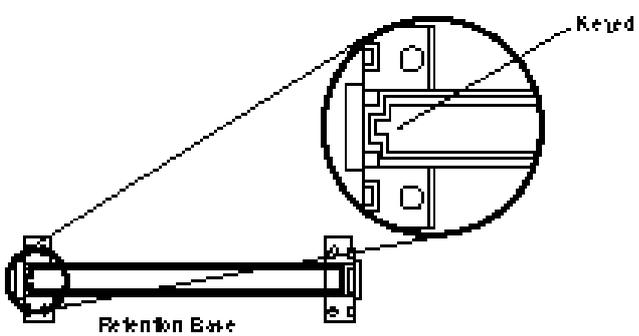
Installation

Follow the steps below to install the kit:

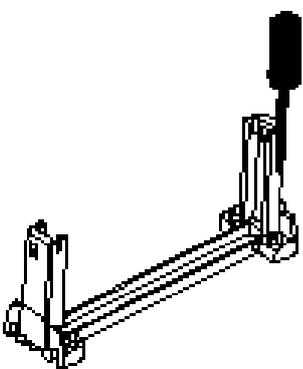
- 1. Locate the four Retention Base holes (near each end of the Slot 1 socket).
Insert the two Support Bridges with studs (plastic mounts) from the bottom side of the motherboard toward the component side until they snap into place.



- 2. Place the Retention Base over the Slot 1 connector and insert it down the Support Bridge with studs. Note the "Keyed" location of both Slot 1 and the Retention Base.



- 3. Using a screwdriver, tighten all four sides of Retention Base.

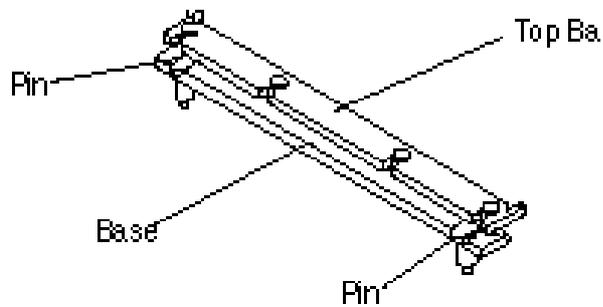


CB644M-EX

2. Installing a CPU

Follow the steps below to install the Pentium II processor:

1. Locate the Slot 1 connector.
2. If you are installing the boxed version of the Pentium II processor, follow the instructions in the section “3. Installing a CPU (Boxed version)”
3. The Heat sink supporters consist of a top bar, base and two pins. Gently insert the Heatsink base into the holes next to the Slot 1 socket. Push down until the base snaps into place.

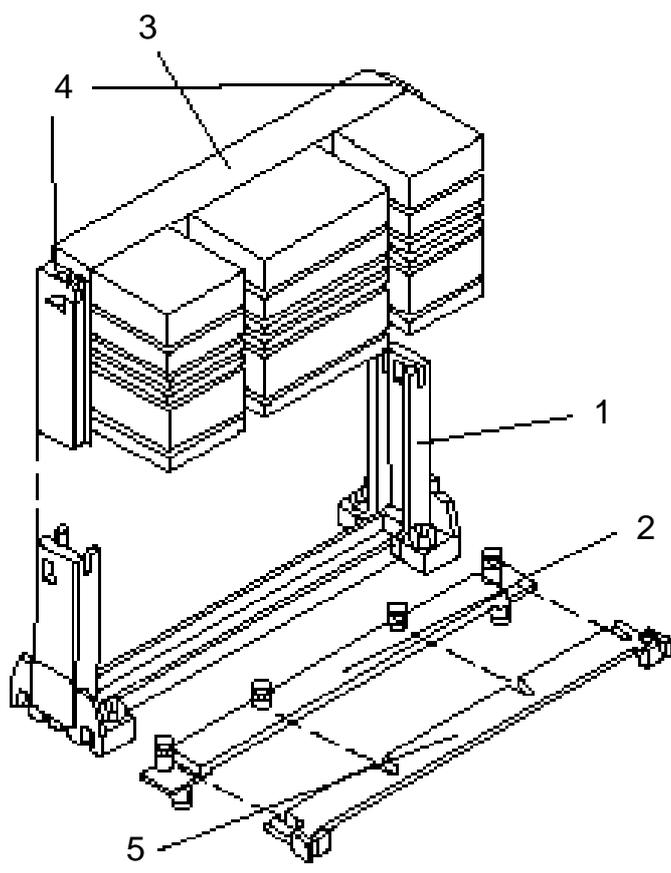


4. Lock the base into place by inserting a pin down into the base on the both sides.
5. Gently insert the processor cartridge down into the Retention Module, making sure the connector on the processor cartridge and Slot 1 connector are aligned.
6. Push the processor cartridge down until it snaps into place.
7. Lock the processor cartridge into place by pushing outward on the tabs located on both sides of the processor cartridge. The processor cartridge is locked when the tabs snap into the holes on the side of the Retention Mechanism.
8. After the processor cartridge is locked into place, connect the Heatsink's top bar to the base.

CPU Installation Overview

CPU Installation Overview

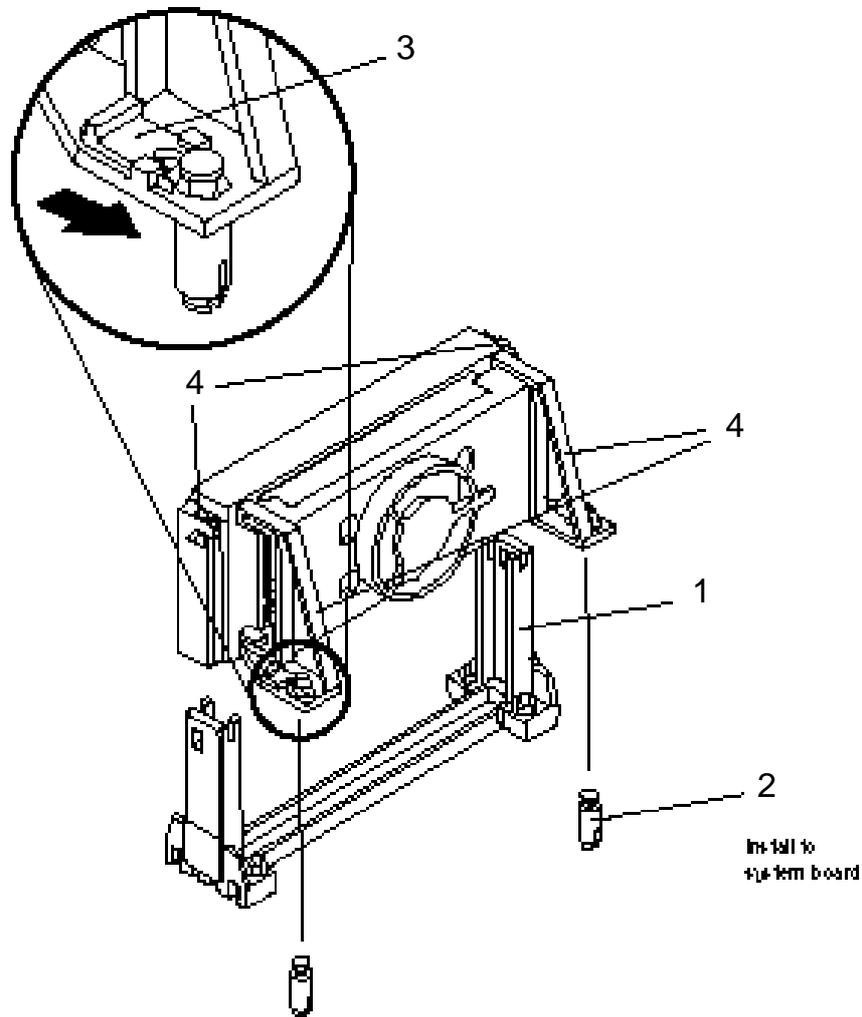
1. Mount the Retention Mechanism for the CPU.
2. Mount the (optional) heat sink support base onto the system board.
3. Slide the CPU into the Retention Mechanism.
4. Lock the CPU into the Retention mechanism using the tabs.
5. Slide in the Heatsink Top Bar, then insert the pins to lock it in place.



CB644M-EX

3. Installing the CPU (Boxed version)

A boxed version of the CPU is offered through Intel. This packing uses an active cooling fan. The mounting hardware is described below. For detailed instructions, please refer to the documentation that is supplied with your CPU.



Installing Cables

1. CPU Fan connector (JP4)

If you are installing the boxed version of the Pentium II processor, you can use this header to connect the CPU's fan cable (3-pin or 2-pin)

2. Primary / Secondary IDE connectors (J18 / J19)

These connectors support the provided 40-pin ribbon cable. After connecting the single end to the motherboard, connect the two plugs at the other end to your hard disk(s).

3. FDD connector (J17)

This connector supports the provided 34-pin ribbon cable. After connecting the single end to the motherboard, connect the two plugs on the other end to the floppy drives. The CB644M-EX uses the right angle box header for the long PCI card.

4. USB connector (J21)

The CB644M-EX motherboard provides for the single USB port.

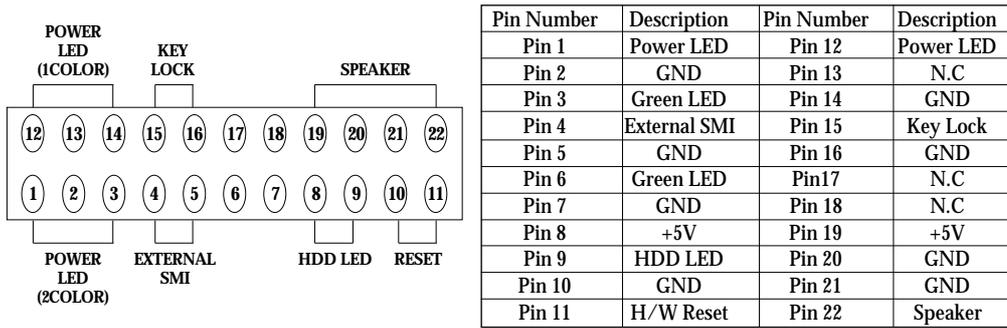
5. IR connectors (JP1 & JP2)

CB644M-EX provide two connectors which can support IrDA (JP1) and Fast IR (JP2) receiver module. It gives users IR wireless data exchange directly from mobile computers, printers and PDAs,...etc.

CB644M-EX

6. Front Panel Switch connector (J16)

This connector supports the signals of the Power LED, HDD LED, Reset Switch, Suspend/Resume Switch, Internal Speaker and Key Lock.



7. Power Switch connector (JP12)

This connector is used to provide a way of the user to turn the system on. Connect it to the power on push button on the front panel.

<Note>
 In order to prevent the system from shut down by mistake, the CB644M-EX motherboard provides one optional item of the BIOS setup (refer to "3-4 Power Management Setup").
 This item is called "Soft-Off by PWR-BTTN". The function is as follows:

Delay 4 sec:

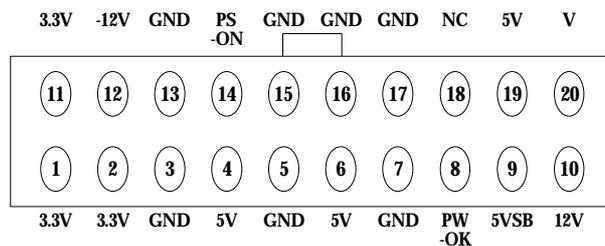
1. Pushing the button one time will change the system from Normal operation mode to Suspend mode. Pushing the button again will wake up the system.
2. Pushing the power button more than 4 seconds will shut down the system.

Instant-Off:

Pushing the power button one time will turn the system on, pushing again will turn the system off.

8. Micro-ATX Power Supply Connector (J6)

This connector connects to an Micro-ATX power supply. The plug from the power supply will only insert in one orientation because of the different hole-size. Find the proper orientation and push down firmly but gently making sure that the pins aligned.



External Connectors

1. PS/2 Keyboard & Mouse Connector (J3 & J4)

The CB644M-EX provides one PS/2 keyboard and one PS/2 mouse connector. Refer to the Figure 2-2 for the direction of keyboard (mouse) cable to install on keyboard (mouse) connector.

2. Serial Port COM1 and COM2 (J5 & J1)

The CB644M-EX provides two sets of high speed serial port. Each serial port is 16550 UART compatible. COM1 provides for the port and COM2 provides 10-pin Header for the module. COM2 port module is optional part.

3. Parallel Port Printer Connector (J2)

The CB644M-EX provides one set of high speed parallel port. The parallel port can support bi-direction / EPP / ECP mode.

CB644M-EX

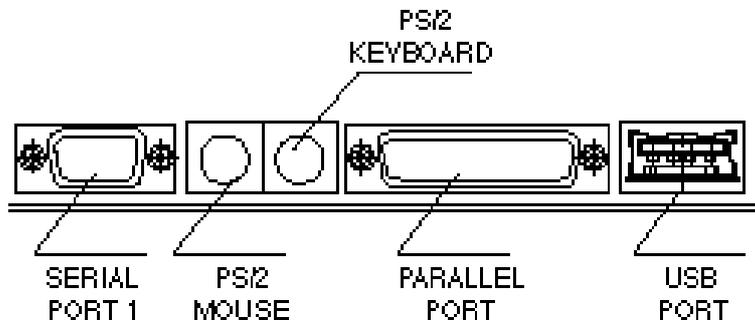


Figure 2-2 External connectors