

## Chapter 2: Installation

### Quick Installation Table

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This chapter explains how to successfully install the mainboard into a computer case and build a working system. The installation procedure is as follows:

<b>Quick Jumper Setting Reference</b>	Provides a quick reference for the jumper settings on this mainboard.
<b>Before you Begin</b>	Provides advice on choosing a case, avoiding static electricity damage, and setting jumpers.
<b>Preparing the Mainboard</b>	Provides a guide to the mainboard and I/O port locations, full details on the jumper settings, and advice on installing the mainboard in the system case.
<b>Install Other Hardware</b>	Provides guidance on installing essential hardware: processor, memory, hard disk drive, CD-ROM, floppy disk drive, and expansion cards.
<b>Make the External Connections</b>	Provides advice on using the external I/O ports to install peripheral devices such as a keyboard, a monitor, a mouse, a printer, loudspeakers, and so on.

## Quick Jumper Setting Reference

If you are familiar with most of the material in this chapter, you can begin preparing the mainboard for installation by using this quick reference to begin the setting the jumpers. A detailed description of the jumper setting appears later in this chapter.

### ***JP1: Keyboard power on jumper***

Use this 3-pin jumper to enable keyboard power on with hot keys or password.

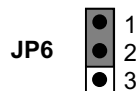
Function	Jumper Cap
Enable keyboard power on	Short pins 1-2
Disable keyboard power on	Short pins 2-3



### ***Jumper JP6: Clear CMOS Memory***

Use this 3-pin jumper to clear all the current data stored in the CMOS memory.

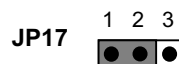
Function	Jumper Cap
Normal operation	Short pins 1-2
Clear CMOS	Short pins 2-3



### ***Jumper JP17: LAN Enable/disable Selector***

Use this jumper to enable or disable the LAN adapter integrated on the mainboard.

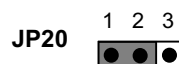
Function	Jumper Cap
Enable LAN	Short pins 1-2
Disable LAN	Short pins 2-3



### ***Jumper JP20: LAN Power Selector***

Use this 3-pin jumper to select the power setting for the onboard LAN adapter

Function	Jumper Cap
5 Volts	Short pins 1-2
SB 5 Volts	Short pins 2-3



### ***Jumper JP11: 8738 Audio Chip Enable/disable***

Use this 2-pin jumper to enable or disable the audio system integrated on this mainboard.

Function	Jumper Cap
Enable audio	Open pins 1-2
Disable audio	Short pins 1-2



**Note:** *If you disable the onboard audio system, you cannot use the onboard fax/modem.*

### ***Jumper JP25: Fax/modem Enable/disable***

Use this 2-pin jumper to enable or disable the onboard fax/modem.

Function	Jumper Cap
Enable modem	Open pins 1-2
Disable modem	Short pins 1-2



**Note:** *If you have disabled the onboard audio system with jumper JP11, the fax/modem will not function even if it is enabled.*

## **Before You Begin**

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Before you begin to install your P5SS-ML mainboard, take some precautions to ensure that you avoid the possibility of damage to the product from static electricity. Ensure too that you are installing the mainboard into a suitable case.

### ***Static Electricity***

In adverse conditions, static electricity can accumulate and discharge through the integrated circuits and silicon chips on this product. These circuits and chips are sensitive and can be permanently damaged by static discharge.

- ◆ If possible wear a grounding wrist strap clipped to a safely grounded device during the installation.
- ◆ If you don't have a wrist strap, discharge any static by touching the metal case of a safely grounded device before beginning the installation.

- ◆ Leave all components inside their static-proof bags until they are required for the installation procedure.
- ◆ Handle all circuit boards and electronic components carefully. Hold boards by the edges only. Do not flex or stress circuit boards.

### ***Choosing a Case***

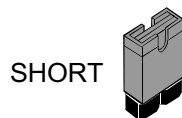
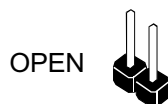
The mainboard complies with the specifications for the micro-ATX system case, although it can also be installed in most full-size ATX case designs. The micro-ATX specifications include a maximum size of 9.6" x 9.6" (244mm x 244mm), a reduced number of expansion slots, and support for a smaller power supply unit.

Some features on the mainboard are implemented by cabling connectors on the mainboard to indicators and switches on the system case. Ensure that your case supports all the features required. The P5SS-ML mainboard can support one or two floppy diskette drives and four enhanced IDE drives. Ensure that your case has sufficient power and space for all the drives that you intend to install.

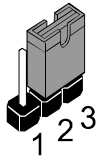
The mainboard has a set of I/O ports on the rear edge. Ensure that your case has an I/O template that supports the I/O ports and expansion slots.

### ***How to Set Jumpers***

A jumper consists of two or more pins mounted on the mainboard. Some jumpers might be arranged in a series with each pair of pins numbered differently. Jumpers are used to change the electronic circuits on the mainboard. When a jumper cap is placed on two jumper pins, the pins are SHORT. If the jumper cap is removed (or placed on just a single pin) the pins are OPEN.

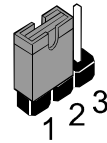


This illustration shows a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.



This illustration shows a 3-pin jumper. The jumper cap is placed on pins 2 and 3, so this jumper setting is SHORT PINS 2-3.

This illustration shows the same 3-pin jumper. The jumper cap is placed on pins 1 and 2, so this jumper setting is SHORT PINS 1-2.

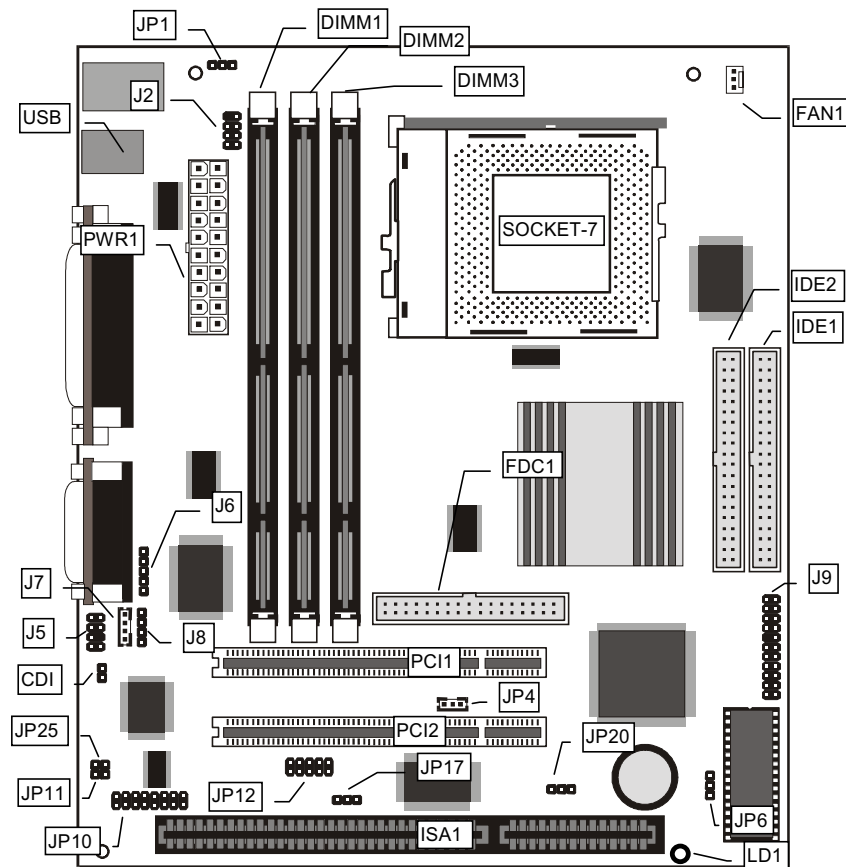


In this manual, all the jumper illustrations clearly show the pin numbers. When you are setting the jumpers, make sure that the jumper caps are placed on the correct pins to select the function or feature that you want to enable or disable.

## Preparing the Mainboard

### *Mainboard Guide*

Use the following illustration and key to identify the components on your mainboard.



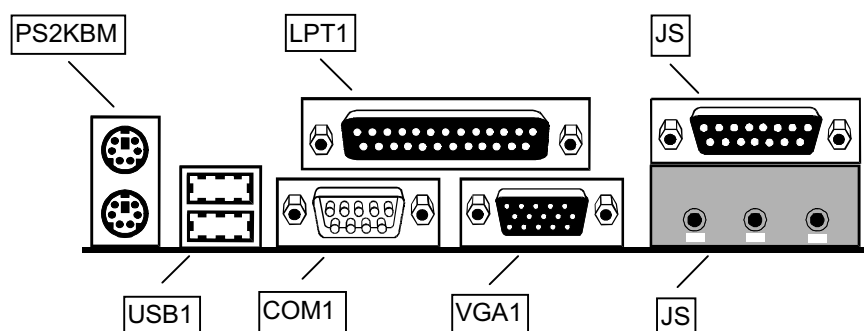
### ***Key to Mainboard Components***

<b>Component</b>	<b>Description</b>
Socket-7	Socket for socket-7 processor
PCI 1,2	Two 32-bit PCI slots
ISA1	One 8/16-bit ISA slot
DIMM 1, 2, 3	Three slots for 168-pin SDRAM memory modules
FDC1	Connector for floppy disk drives
IDE1, IDE2	Primary and secondary IDE channels
PWR1	Connector for ATX power supply
CDI	Audio-in connector for digital output from CD-ROM/DVD drive
FAN1	Power connector for CPU cooling fan
*LD1	Power indicator
J2	N/A Reserved for testing
J5	SPDIF digital audio connector
J6	Connector for optional infrared port
J7	Audio connector for CD-ROM/DVD drive
J8	Auxiliary audio connector for CD-ROM/DVD drive
J9	Panel connector for case switches and indicators
JP1	Keyboard power on jumper
JP4	Wake on LAN connector
JP6	Clear CMOS memory jumper
JP10	Connector for fax/modem card
JP11	Enable/disable onboard 8738 audio chip jumper
JP12	Connector for network adapter extension bracket
JP17	LAN enable/disable jumper
JP20	LAN power selector jumper
JP25	Enable/disable onboard fax/modem jumper

#### ***\*LD1***

This green indicator turns on whenever the system is turned on. The indicator warns users not to work on the mainboard, for example adding expansion cards or changing jumpers, because the system is still active.

### ***I/O Ports Side View***

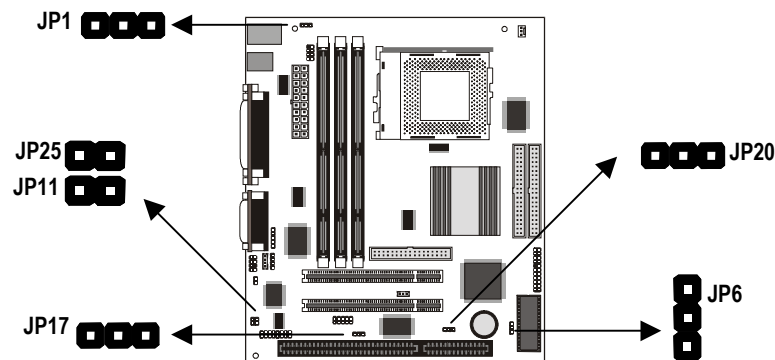


### ***Key to I/O Ports***

<b>Component</b>	<b>Description</b>
PS2KBM	PS/2 port for pointing device (upper port) PS/2 port for keyboard (lower port)
LPT1	External parallel port
JS (Upper)	External game/MIDI port
JS (Lower)	Audio jacks for (from left to right) line out, line in, microphone
VGA1	External monitor port
COM1	External serial port COM1/3
USB1	Two stacked Universal Serial Bus ports

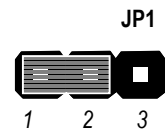
Check the Jumper Settings

Check all the mainboard jumpers to ensure that the board is configured correctly.



JP1: Keyboard Power On Jumper

This jumper lets you use a typed-in password as a power switch to turn your system on. If you enable this property, you need to define the password or the hot keys using the setup utility. See Chapter 3.

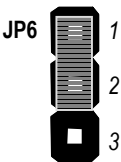


Function	Jumper Cap
Enable keyboard power on	Short pins 1-2
Disable keyboard power on	Short pins 2-3

JP6: Clear CMOS Memory Jumper

This jumper lets you erase the system setup settings that are stored in CMOS memory. You might need to erase this data if incorrect settings are preventing your system from operating correctly. To clear the CMOS memory, turn off the system, disconnect the power cable from the mainboard, and short the appropriate pins for at least 3 seconds.

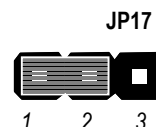
Function	Jumper Cap
Normal Operation	Short pins 1-2
Clear CMOS	Short pins 2-3



#### **JP17: LAN Enable/disable Jumper**

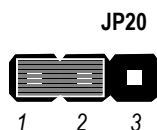
This 3-pin jumper can be used to enable or disable the onboard network adapter. If you prefer to install a different LAN adapter on a third party expansion card, you must disable the onboard LAN.

Function	Jumper Cap
Enable onboard LAN	Short pins 1-2
Disable onboard LAN	Short pins 2-3



#### **JP20: LAN Power Selector**

Use this 3-pin jumper to select the power setting for the onboard LAN adapter.



Function	Jumper Cap
5 Volts	Short pins 1-2
SB 5 Volts	Short pins 2-3

#### **JP11: 8738 Audio Chip Enable/disable Jumper**

This 2-pin jumper can be used to enable or disable the onboard audio system. If you prefer to install a different audio system on a third-party expansion card, you must disable the onboard audio.

Function	Jumper Cap
Enable audio system	Open pins 1-2
Disable audio system	Short pins 1-2



**Note:** If you disable the onboard audio system, you cannot use the onboard fax/modem.

### ***JP25: Modem Enable/disable Jumper***

This 2-pin jumper can be used to enable or disable the onboard modem. If you prefer to install a different modem on a third-party expansion card, you must disable the onboard modem.



Function	Jumper Cap
Enable modem	Open pins 1-2
Disable modem	Short pins 1-2

**Note:** *If you have disabled the onboard audio system with jumper JP11, the fax/modem will not function even if it is enabled.*

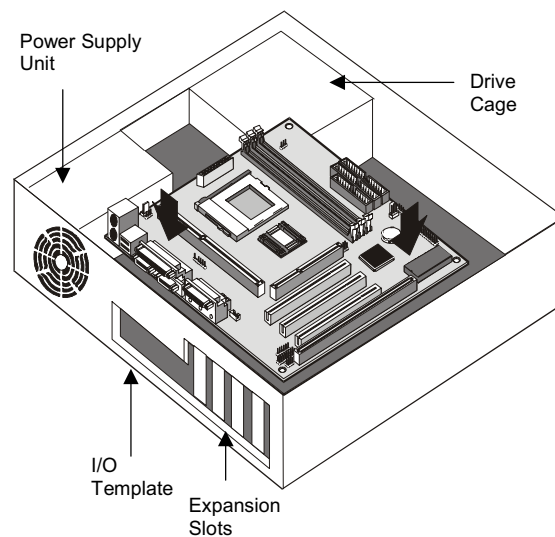
## Install the Mainboard in the Case

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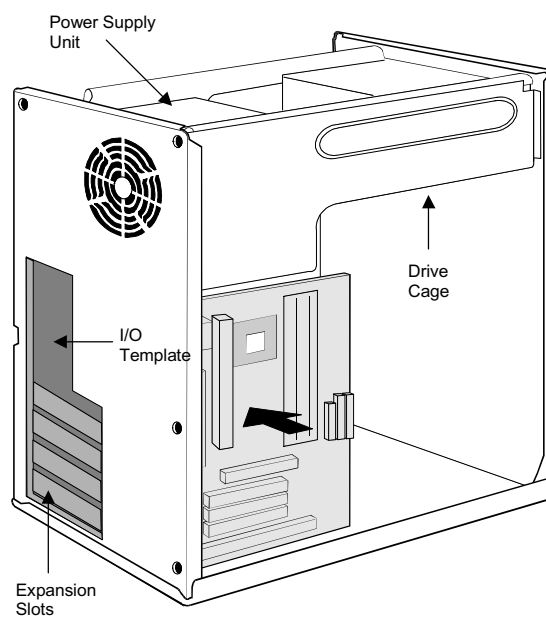
The mainboard is drilled with a series of holes. Most system cases have mounting brackets installed in the case which correspond to the holes in the mainboard. You can secure the mainboard in the system case by placing the mainboard over the mounting brackets and driving screws through the mainboard into the mounting brackets.

**Note:** Do not overtighten the screws as this can stress the mainboard.

The illustration below shows a mainboard installing in a standard desktop case.

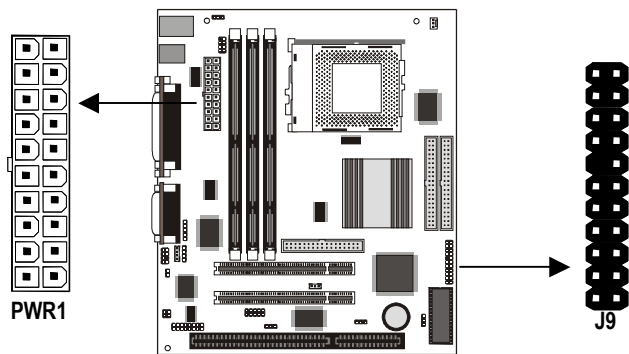


The illustration below shows the mainboard installing into a tower-type case.



Connecting Power and Case Switches & Indicators

After you have installed the mainboard into the system case, connect the power cable from the case power supply unit to the mainboard power connector PWR1. Then connect the case switches and indicators to the J9 connector on the mainboard.



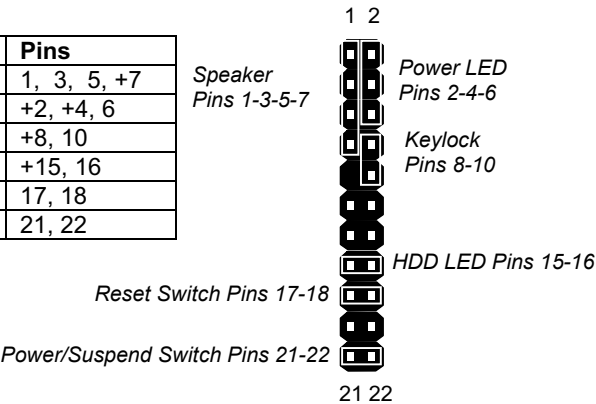
Power Connector

Locate the power cable from the case power supply unit and plug it into the PWR1 power connector.

J9 Panel Connector

The mainboard J9 PANEL connector has a standard set of switch and indicator connectors that are commonly found on ATX system cases. Use the illustration below to make the correct connections to the case switches and indicators.

Function	Pins
Speaker	1, 3, 5, +7
Power Indicator	+2, +4, 6
Keylock	+8, 10
Hard Disk Indicator	+15, 16
Reset Switch	17, 18
Power Switch	21, 22



## Install Other Hardware

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Start installing the essential hardware required to get your system started.

### ***Install the Processor***

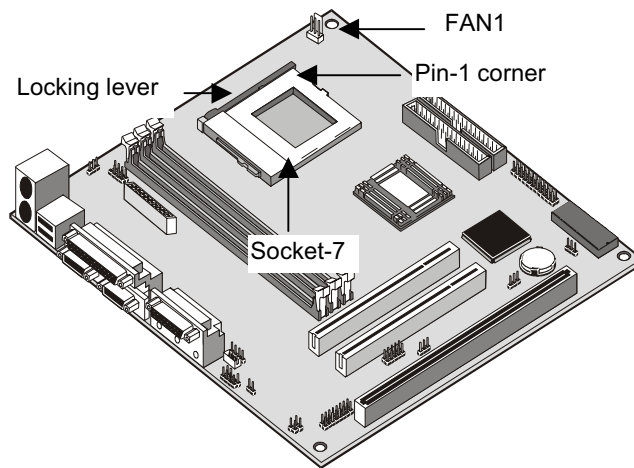
This mainboard has a socket-7 processor socket for the installation of a socket-7 processor. There are many different kinds of socket-7 processors shipping currently, and many legacy socket-7 processors can be found in older computers. This mainboard can support the latest socket-7 processors that are designed to operate over a 100 MHz system bus. Faster system bus frequencies produce higher performance so we recommend that you choose this kind of processor.

Other factors that affect performance are the clock speed of the processor and the internal cache memory of the processor. Generally, the higher the clock speed, the better the performance. The more internal cache memory, the better the performance. See Appendix 2 for a list of some the socket-7 processors that can be installed in this mainboard.

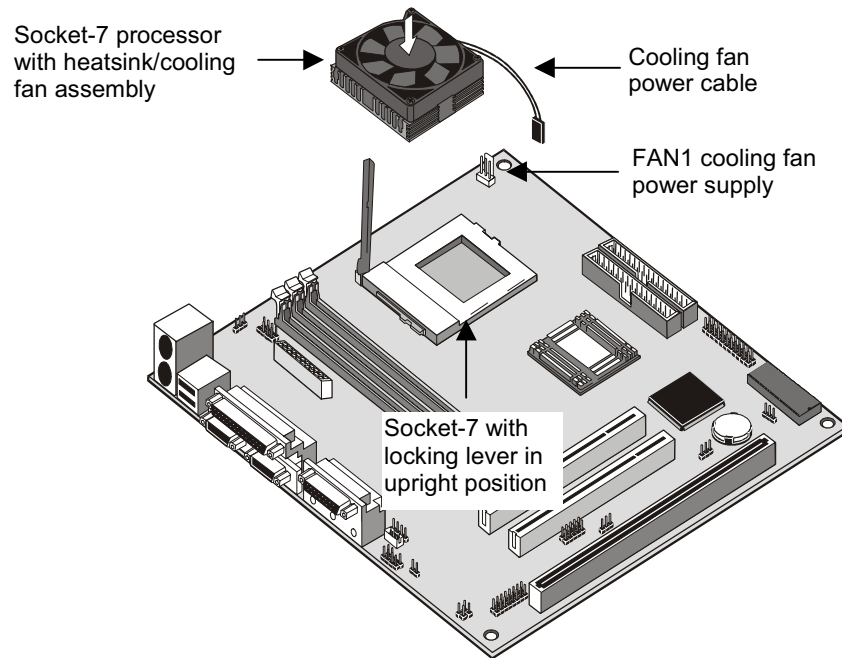
No matter which processor you choose, make sure that it is installed with a heatsink/cooling fan assembly. All modern processors require a cooling system to ensure reliability.

## ***Installing a Socket-7 Processor***

On the mainboard, locate the socket-7 for the processor and the FAN1 12V power supply connector for the processor's heatsink/cooling fan assembly.



1. On the socket-7, pull the locking lever away from the socket to unhook it and then raise the locking lever to the upright position.
2. Identify the pin-1 corner on the socket-7 and the pin-1 corner on the processor. The socket pin-1 corner is adjacent to the handle of the locking lever. The processor pin-1 corner is beveled.
3. Matching the pin-1 corners, drop the processor into the socket. No force is required and the processor should seat into the socket easily.
4. Swing the locking lever down and hook it under the latch on the edge of the socket. This locks the processor in place.
5. Locate the power cable on the heatsink/cooling fan assembly that is attached to the top of the processor.
6. Plug the power cable into the FAN1 12V power supply on the mainboard.



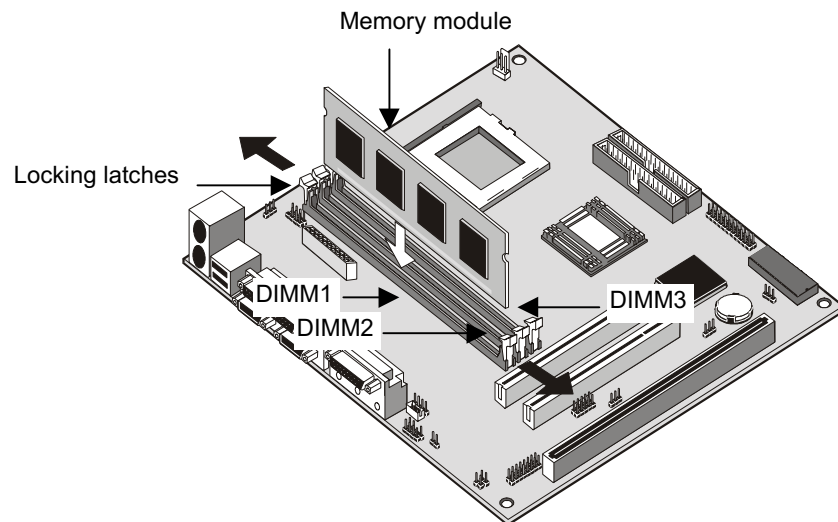
The mainboard must be configured to deliver the correct clock speed and the correct system bus for the kind of processor that you have installed. You can do this by using the system setup utility. The first time you start the system, immediately enter the setup system and make the appropriate settings. Usually, you can automatically configure the CPU by using the BIOS Features Setup page of the setup utility. See Chapter 3 for more information.

## ***Install the Memory Modules***

For this mainboard, you must use 168-pin 3.3V non-buffered Dual In-line Memory Modules (DIMMs). The memory chips must be standard or registered SDRAM (Synchronous Dynamic Random Access Memory). The memory bus can run at 66 MHz or 100 MHz. If your processor operates over a 100 MHz system bus, you must install PC-100 memory that also operates over a 100 MHz bus. If you install a processor that operates over a 66 MHz bus, you can install memory chips that operate at 66 MHz.

You must install at least one memory module. The first memory module must be installed in DIMM1 so that a portion of the memory can be shared with the graphics adapter. A second module can be installed in either DIMM2 or DIMM3. Each module may be installed with up to 512 MB of memory so the maximum capacity is 1.5 GB. The mainboard supports memory chips that have EC (Error Correction) or ECC (Error Correction Code).

1. Locate the DIMM slots on the mainboard.



2. The DIMM slots are keyed with notches and the DIMMs are keyed with cut-outs so that they can only be installed correctly. Check that the cut-outs on the DIMM module edge connector match the notches in the DIMM slot.

3. Push the latches on each side of the DIMM slot down.
4. Install the DIMM into the slot and press it carefully but firmly down so that it seats correctly. The latches at either side of the slot will be levered upwards and latch on to the edges of the DIMM when it is installed correctly.

### ***Install a Hard Disk Drive and CD-ROM***

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

**Note:** *Ribbon cable connectors are usually keyed so that they can only be installed correctly on the device connector. If the connector is not keyed make sure that you match the pin-1 side of the cable connector with the pin-1 side of the device connector. Each connector has the pin-1 side clearly marked. The pin-1 side of each ribbon cable is always marked with a colored stripe on the cable.*

#### ***About IDE Devices.***

Your mainboard has a primary IDE channel interface (IDE1) and a secondary IDE interface (IDE2). The mainboard ships with one IDE ribbon cable which supports one or two IDE devices. All IDE devices have jumpers or switches that can be used to set the IDE device as MASTER or SLAVE.

If you install two IDE devices on one cable, you must make sure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

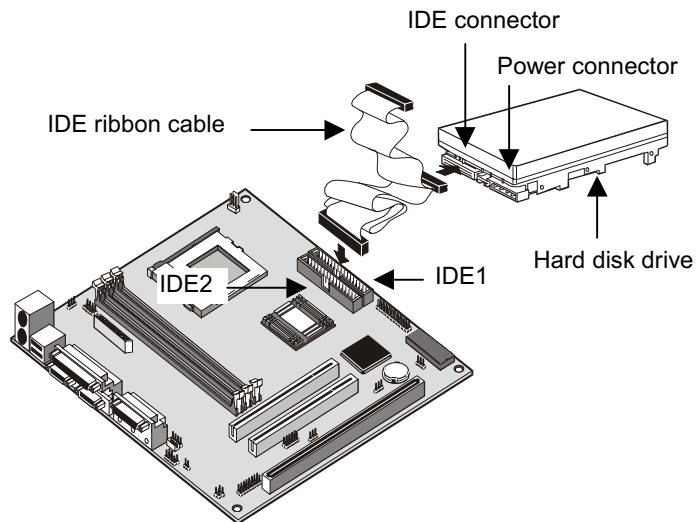
If you want to install more than two IDE devices, obtain a second IDE cable and you can add two more devices to the secondary IDE channel. If there are two devices on the cable, make one is MASTER and one is SLAVE.

#### ***UDMA 33/66***

This mainboard supports Ultra DMA 33 and 66. UDMA 33/66 technology delivers faster access for IDE devices that support it. We recommend that you install devices that support UDMA 33/66. Also, please use an IDE cable that is specified to support UDMA 33/66. Older IDE cables cannot reliably support UDMA 33/66.

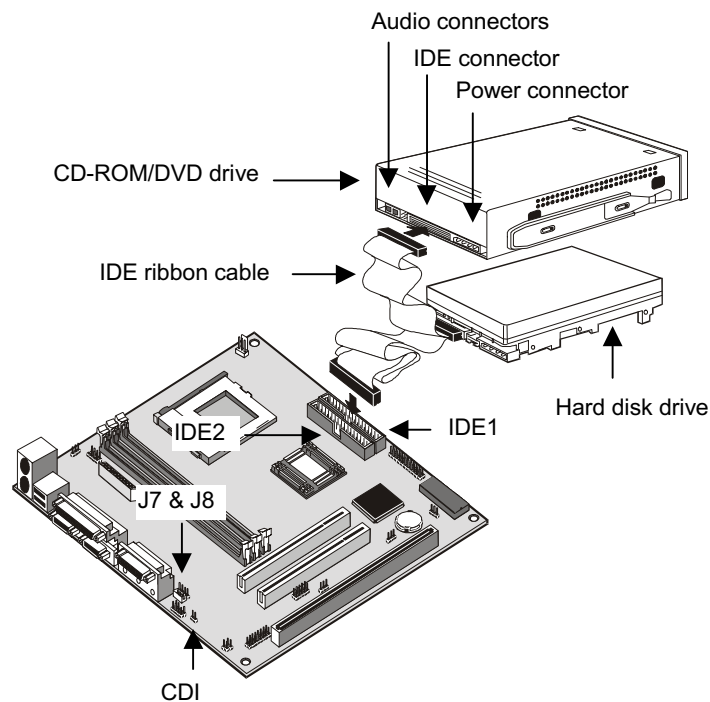
### ***Installing an IDE Hard Disk Drive***

1. Install the IDE hard disk drive into the drive cage in your system case.
2. Plug the IDE cable into the primary IDE channel on the mainboard IDE1.
3. Plug one of the connectors on the IDE cable into the IDE connector on the back edge of the hard disk drive. It doesn't matter which connector on the cable that you use. Make sure that you have the pin-1 side of the cable matched with the pin-1 side of the connector.
4. Plug a power cable from the case power supply unit into the power connector on the back edge of the hard disk drive.
5. When you first start up your system, go immediately to the setup utility and use the IDE HDD Auto Detection feature to configure the IDE devices that you have installed. See Chapter 3 for more information.



### ***Installing an IDE CD-ROM/DVD Drive***

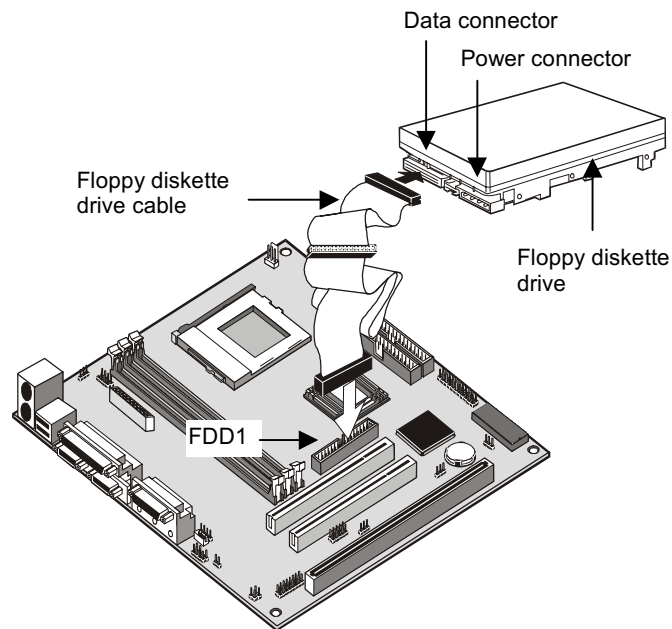
1. Install the IDE CD-ROM/DVD drive into the drive cage in your system case. Plug the IDE cable into the primary IDE channel on the mainboard IDE1.
2. Plug one of the connectors on the IDE cable into the IDE connector on the back edge of the CD-ROM/DVD drive. It doesn't matter which connector on the cable that you use. Make sure that you have the pin-1 side of the cable matched with the pin-1 side of the connector.
3. Plug a power cable from the case power supply unit into the power connector on the back edge of the CD-ROM/DVD drive.
4. Use the audio cable provided with the CD-ROM/DVD drive to connect the audio connector on the rear edge of the CD-ROM/DVD drive to the one of the two audio-in connectors J7 and J8 on the mainboard. If the drive has digital audio output, you can connect it to the digital audio connector CDI.
5. When you first start up your system, go immediately to the setup utility and use the IDE HDD Auto Detection feature to configure the IDE devices that you have installed. See Chapter 3 for more information.



## ***Installing a Floppy Diskette Drive***

The mainboard has a floppy diskette drive interface and it ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25" drive or a 3.5" drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25" drive and another type of connector for a 3.5" drive

1. Install the floppy diskette drive into the drive cage in your system case. Plug the diskette drive cable into the diskette drive interface on the mainboard FDD1.
2. Plug one of the connectors on the diskette drive cable into the data connector on the back edge of the floppy diskette drive. Make sure that you have the pin-1 side of the cable matched with the pin-1 side of the connector.
3. Plug a power cable from the case power supply unit into the power connector on the back edge of the diskette drive.
4. When you first start up your system, go immediately to the setup utility and use the Standard page to configure the floppy diskette drives that you have installed. See Chapter 3 for more information.

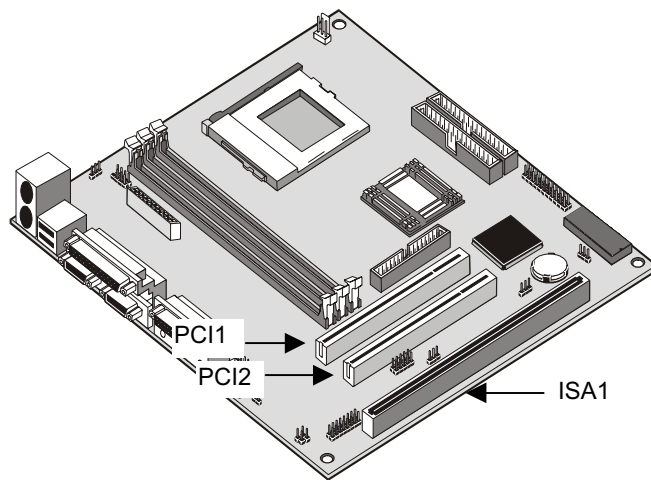


## ***Using the Expansion Slots***

This mainboard has two 32-bit PCI expansion slots and one 8/16-bit legacy ISA slot.

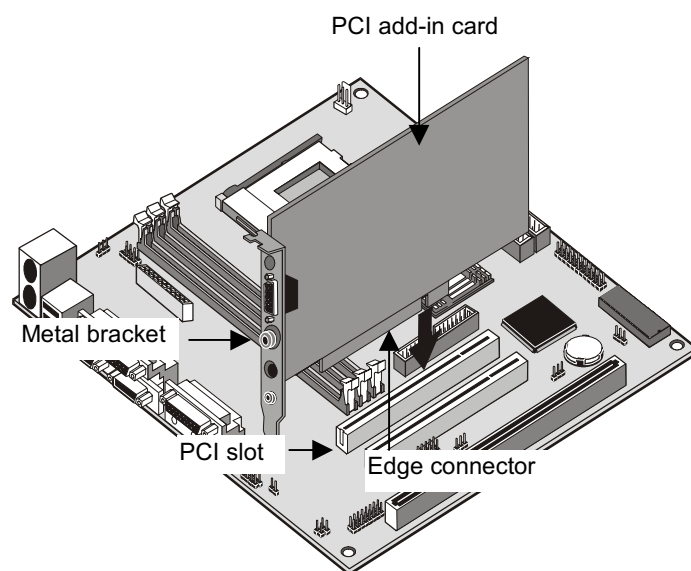
**PCI Slots:** The PCI slots can be used to install add-in cards that have the 32-bit PCI (Peripheral Components Interconnect) edge connector.

**ISA Slot:** The ISA slot can be used to install add-in cards that have the legacy 8/16-bit ISA (Industry Standard Architecture) edge connector.



1. Before installing an expansion card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.
2. Select which expansion slot you are going to use for your add-in card.
3. In the system case, remove the blanking plate from the slot in the system case that corresponds to the expansion slot that you are going to use.
4. Position the edge connector of the add-in card over the expansion slot. Position the metal bracket of the card in the empty slot in the system case.
5. Install the edge connector of the add-in card into the expansion slot. Press down quite firmly so that you are sure that the edge connector is correctly seated in the slot.

6. Secure the metal bracket of the card in the empty slot in the system case with a screw.
7. For some add-in cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-in card.

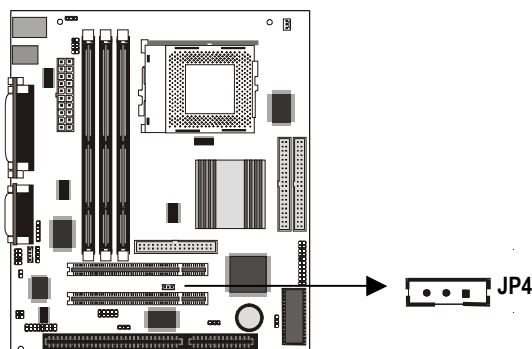


## ***Add-in Card Options***

The mainboard has one feature that can be used if you have installed a network adapter card.

### ***JP4: Wake on LAN Connector***

If you have installed a network adapter (LAN adapter), you can use the cable provided with the card to plug into the JP4 connector on the mainboard. This is the Wake On LAN feature. When your system is in a power-saving mode or a software powerdown, any traffic through the network automatically resume the system. You normally enable this item using the Power Management Setup page of the setup utility. See Chapter 3 for more information.



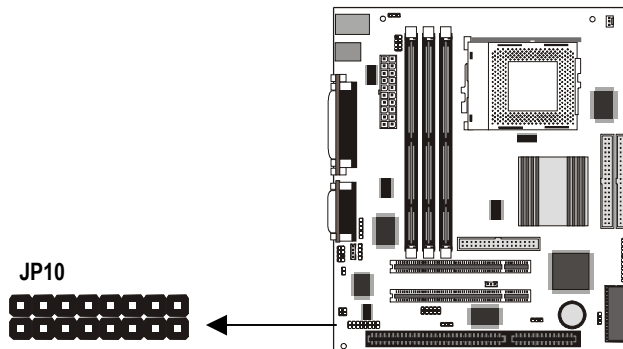
## ***Install Options and Extension Brackets***

This mainboard has a number of special connectors that allow you to add optional features to your system. You can install any of the following items:

- ◆ Fax/modem card
- ◆ Network adapter extension bracket
- ◆ Infrared port
- ◆ 24-bit digital audio extension bracket (SPDIF)

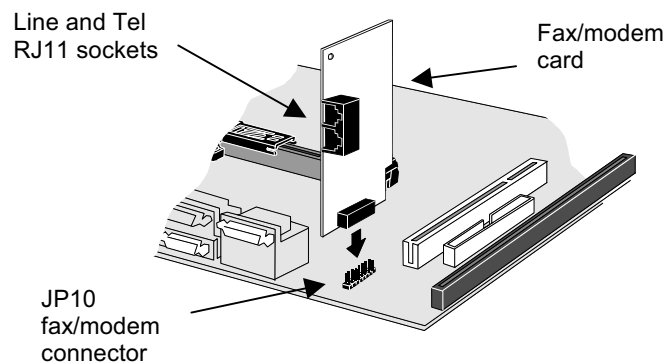
### ***Fax/modem Card***

You must install the fax/modem card in order to use the built-in fax/modem.



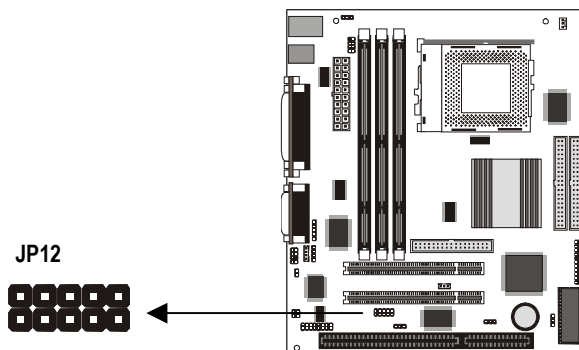
The fax/modem card is an optional item supplied with this mainboard.

1. Locate the JP10 fax/modem connector on the mainboard.
2. Remove the expansion slot blanking plate from the system chassis that is adjacent to the fax/modem connector.
3. Install the fax/modem card onto the JP10 connector as shown below. The RJ11 Line and Telephone sockets on the bracket are positioned in the expansion slot with the removed blanking plate.



### ***Network Adapter Extension Bracket***

You must install the network adapter extension bracket in order to use the built-in 10BaseT/100BaseTX LAN adapter.

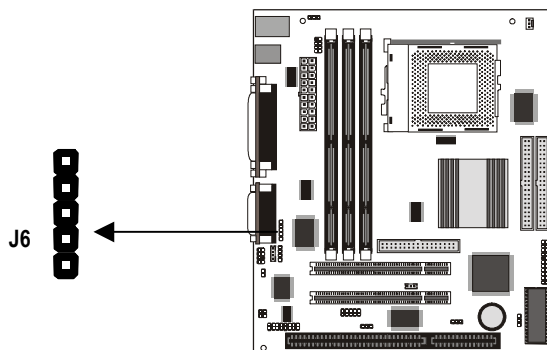


The network adapter extension bracket is supplied with this mainboard.

1. Locate the JP12 network extension bracket connector on the mainboard.
2. Remove a blanking plate from a free expansion slot in the system chassis.
3. Plug the cable from the network adapter extension bracket onto the JP12 connector.
4. Install the metal bracket into the expansion slot in the system chassis from which you removed the blanking plate.
5. Secure the bracket by driving a screw through the slot in the top of the metal bracket into the system chassis.

### ***Infrared Port***

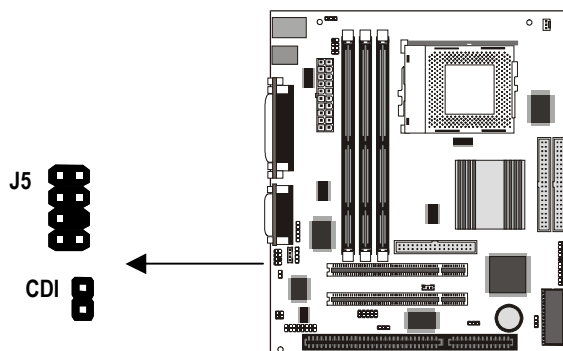
This option can be purchased from third-party vendors.



1. If you are installing an optional serial infrared port, connect the cable from the optional IR port to the J6 connector on the mainboard.
2. After you have connected the cable, secure the optional IR port to the appropriate place on your system case.

### ***Digital Audio Extension Bracket***

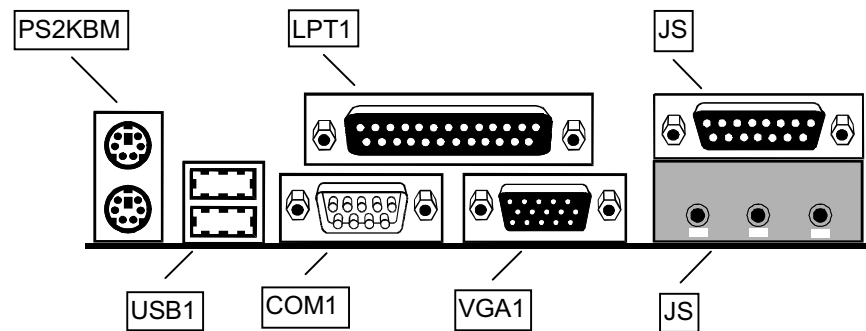
You can purchase an optional 24-bit digital audio extension bracket from a third-party vendor. You can use the audio RCA jacks to connect to digital audio devices. Plug the cable from the digital audio extension bracket onto the digital audio connector J5. If you have already used the digital input connector CDI to input digital sound from a CD-ROM/DVD drive, you cannot use J5. You can only use one of these connectors at one time.



## Make the External Connections

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After you have installed the mainboard, make the connections to the external ports.



1. PS2KBM is a stack of two PS/2 mini-DIN ports. The upper port can be used by a PS/2 mouse or pointing device. The lower port can be used by a PS/2 keyboard.
2. LPT1 is a parallel port that can be used by printers or other parallel communications devices. The system identifies the parallel port as LPT1.
3. The upper 15-pin port JS is a game/MIDI port. You can use this port to connect a joystick or a MIDI device to your system.
4. The lower part of JS is three audio jacks. The left side jack is for a stereo line out signal. The middle jack is for a stereo line in signal. The right side jack is for a microphone.
5. VGA1 is the connector for a display monitor. Plug the data cable from the monitor into VGA1.
6. COM1 is a serial port that can be used by serial devices such as a mouse, a fax/modem and so on. This serial port is identified by the system as COM1/3.
7. USB1 is a stack of two Universal Serial Bus ports. Use these ports to connect to USB devices.

### ***External Connector Color Coding***

To help identify the external connectors, many connectors now use standard colors as shown in the table below.

<b>Connector</b>	<b>Color</b>
Analog VGA	Blue
Audio line in	Light blue
Audio line out	Lime
Digital monitor / flat panel	White
IEEE 1394	Grey
Microphone	Pink
MIDI/Game	Gold
Parallel	Burgundy
PS/2 compatible keyboard	Purple
PS/2 compatible mouse	Green
Serial	Teal or Turquoise
Speaker out / subwoofer	Orange
Right-to-left speaker	Brown
USB	Black
Video out	Yellow
SCSI, network, telephone, modem, and so on	None