

Chapter 2: Installation

Before You Begin

Before you begin to install your P5SD-B+ 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 P5SD-B+ mainboard has a power connector for an AT or an ATX power supply. The size of the board is small enough for a micro-ATX format case.

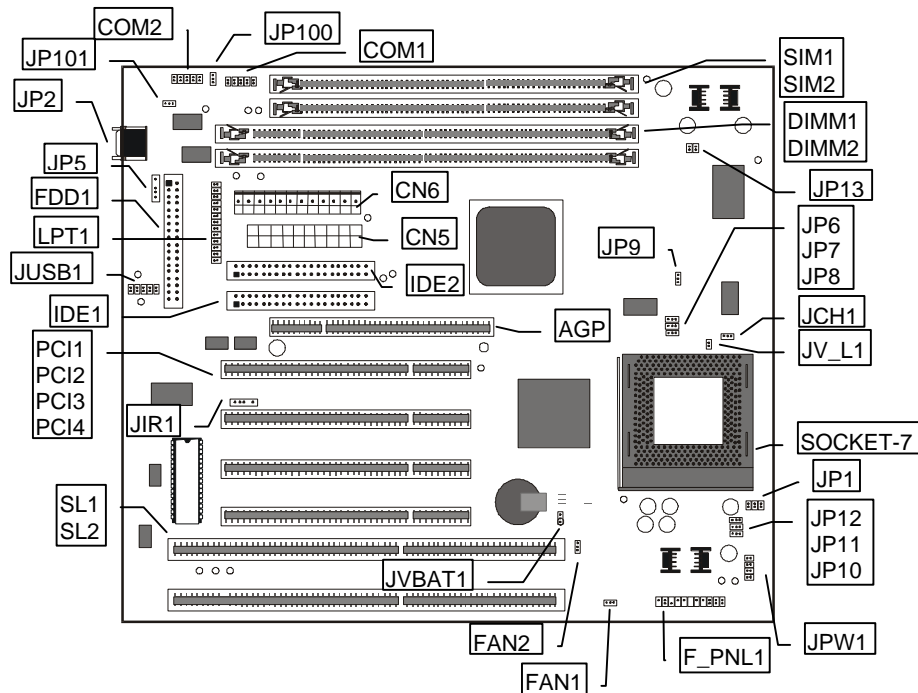
Some features on the mainboard are implemented by cabling connectors on the mainboard to indicators and switches on the system case. Ensure that your case supports all the features required.

The P5SD-B+ 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 single AT-keyboard port on the rear edge. All other ports use cables to connect to the case ports. In addition the mainboard supports 6 expansion slots (two shared). Make sure that your case supports all the I/O ports and expansion slots that you intend using.

Mainboard Guide

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



Key to Components

Component	Description
SL1, SL2	2 x 8/16-bit ISA expansion slots
PCI 1,2,3,4	4 x 32-bit PCI expansion slots
AGP	Slot for AGP graphics adapter
Socket-7	Processor socket
SIM1, SIM2	Slots for 72-pin memory module
DIMM1, DIMM2	Slots for 168-pin memory module
FDD1	Connector for floppy disk drives
IDE1, IDE2	Primary and secondary IDE channels
COM1, COM2	Connectors for serial ports 1 & 2
LPT1	Connector for parallel port
JP2	AT-keyboard socket
JUSB1	Connector for USB ports
CN6	Connector for AT power supply

Component	Description
CN5	Connector for ATX power supply
JIR1	Connector for infrared port
JP100	Modem wake up connector
JP101	LAN wake up connector
JP5	Connector for PS/2 mouse
FAN1	Power connector for CPU cooling fan
FAN2	Power connector for system cooling fan
JP 6,7,8	Speed setting for system bus, PCI bus, AGP bus jumpers
JP9	Clock setting for memory jumper
JP10	Clock setting for memory jumper
JP 11, 12	Clock setting for AGP and PCI jumpers
JPW1	Processor core voltage setting jumper
JP1	System bus multiplier for CPU clock jumper
JCH1	Burst mode select jumper
JV_L1	Single or dual voltage CPU select jumper
JVBAT1	Clear CMOS memory jumper
F_PNL1	Panel Connector
JP13	Set CPU I/O Voltage jumper

A Note on 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.

Preparing the Mainboard

Prepare the main board by installing the Pentium or Pentium-compatible processor and then installing memory modules. This board supports processors that run from 90MHz through to over 300 Mhz. Finally, review all the important jumper settings to ensure that the board is configured correctly.

Install the Processor

1. Locate the zero insertion force (ZIF) socket-7 for the processor. On the socket and on the processor, identify the pin 1 corner. You can identify the pin 1 corner by noting that in the rectangular matrix of pins and holes on the socket and processor, one pin and one hole is absent on the pin 1 corner.
2. Push the socket locking lever away from the socket to unhook it. Swing the lever into the upright position.
3. Insert the processor into the socket taking care that you have matched the pin 1 corners. No force is required, and the processor should seat smoothly into the socket.
4. Swing the locking lever down and hook it under the latch on the side of the socket to lock it in place.

5. If your processor includes a built-in cooling fan, connect the cable from the cooling fan to the CPU cooling fan connector on the mainboard FAN1.

Install the Memory Modules

On this mainboard, you can use 168-pin Dual In-line Memory Modules (DIMMs) or 72-pin Single In-Line Memory Modules (SIMMs). Two sockets are available for each kind of memory. The memory modules can be installed with Fast Page-mode RAM (FP), EDO RAM or SDRAM.

For maximum performance, you should use SDRAM DIMM modules which are PC-100 compliant, i.e. they will run up to 66MHz external clock not including 66MHz. However, you can reduce cost by using older FP or EDO SIMMs or DIMMs. You may have to configure your board for a slower system/memory bus in order to use slower kinds of memory.

The DIMMs can hold memory capacities from 8 MB through to 256 MB. The SIMMs are usually installed with a maximum of 64 MB. You can install two SIMM modules (SIMM1+SIMM2=BANK0), or one or two DIMM modules (DIMM1=BANK1, DIMM2=BANK2). You cannot install a combination of SIMMs and DIMMs. The memory modules must be installed with the same kind of RAM. You cannot install one module using SDRAM, and another module using EDO RAM.

Installing DIMMs

1. The DIMM sockets 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 edge connector matches the notches in the SDRAM socket.
2. Push the latches on each side of the SDRAM socket down.
3. Install the DIMM into the socket and press it carefully but firmly down so that it seats correctly. The latches at either side of the socket will be levered upwards and latch on the edges of the DIMM when it is installed correctly.

Installing SIMMs

1. Hold the SIMM over the SIMM socket. Hold the SIMM at an angle so that you can insert the edge connector side of the module into the socket.
2. When the edge connector side is fully inserted in to the socket, swing the SIMM into a vertical position. The latches at either side of the SIMM socket will snap onto the SIMM and hold it firmly in place.

Check all the Jumper Settings

Check all the mainboard jumpers to ensure that the board is configured correctly according to the speed and timing of your processor, the VGA sub-system you are using, and so on. **Regarding the CPU settings please refer to the 'Quick Jumper Setting Reference' on page 31.**

Set the System Bus Speed, AGP and PCI clocks: JP6 to JP12

Jumpers JP6, JP7, JP8, JP9, JP10, JP11, and JP12 are used to set the mainboard timing for the system bus, the AGP clock, and the PCI clock. The table below shows the settings that are available.

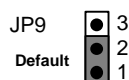
Speed Settings MHz			Short Pin Settings						
CPU CLK	AGP CLK	PCI CLK	JP6	JP7	JP8	JP9	JP10	JP11	JP12
112	74	37	1-2	2-3	2-3	1-2	2-3	1-2	2-3
100	66	33	1-2	1-2	2-3	1-2	2-3	1-2	2-3
95/90	63	31	2-3	1-2	2-3	1-2	2-3	1-2	2-3
83	55	27	2-3	2-3	1-2	1-2	2-3	1-2	2-3
75	75	37	1-2	2-3	1-2	1-2	2-3	2-3	1-2
68	68	34	2-3	2-3	2-3	1-2	2-3	2-3	1-2
66	66	33	1-2	1-2	1-2	1-2	2-3	2-3	1-2

Shaded row indicates the default values.

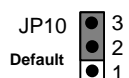
Set the Memory Bus Speed: JP9 and JP10

As a default, the memory bus uses the same clock speed as the CPU clock. If you are using slower memory that does not comply with the PC-100 standard, you can use JP9 and JP10 to make the memory bus the same speed as the AGP clock. The setting of JP9 and JP10 must be the same (Run CPU clock or Run AGP clock), otherwise the system will be fail.

JP9 Function	Jumper Cap
DRAM run CPU CLK	Short Pins 1-2
DRAM run AGP CLK	Short pins 2-3



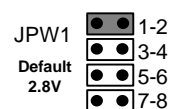
JP10Function	Jumper Cap
DRAM run CPU CLK	Short pins 2-3
DRAM run AGP CLK	Short Pins 1-2



Set CPU Core Voltage: JPW1

This mainboard supports a variety of CPUs with various core voltages. Use JPW1 to set the core voltage that is required by your CPU.

Core Voltage	Pins 1-2	Pins 3-4	Pins 5-6	Pins 7-8
3.5V	Short	Short	Short	Short
3.4V	Short	Short	Short	Open
3.3V	Short	Short	Open	Short
3.2V	Short	Short	Open	Open
3.1V	Short	Open	Short	Short
3.0V	Short	Open	Short	Open
2.9V	Short	Open	Open	Short

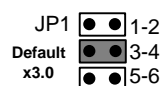


Core Voltage	Pins 1-2	Pins 3-4	Pins 5-6	Pins 7-8
2.8V	Short	Open	Open	Open
2.7V	Open	Short	Short	Short
2.6V	Open	Short	Short	Open
2.5V	Open	Short	Open	Short
2.4V	Open	Short	Open	Open
2.3V	Open	Open	Short	Short
2.2V	Open	Open	Short	Open
2.1V	Open	Open	Open	Short
2.0V	Open	Open	Open	Open

Set the Processor Clock Speed: JP1

The processor clock speed is determined by the product of the system bus speed (CPU CLK set by JP6-JP12) with the multiplier value set by the six pin jumper JP1.

Bus Multiplier	Pins 1-2	Pins 3-4	Pins 5-6
x1.5/x3.5	Open	Open	Open
x2.0	Short	Open	Open
x2.5	Short	Short	Open
x3.0	Open	Short	Open
x4.0	Close	Open	Close
x4.5	Close	Close	Close
x5.0	Open	Close	Close
x5.5	Open	Open	Close



Set for single voltage CPU or dual voltage CPU: JV_L1

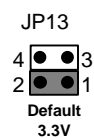
Some CPUs require dual voltages and some CPUs require single voltages. The table below shows the jumper setting with examples of the CPUs.

Function	Jumper Cap	Example CPUs
Single voltage CPU	Open Pins 1-2	Intel P54C, IDT C6, AMD K5, IBM/Cyrix 6x86
Dual voltage CPU	Short pins 1-2	Intel MMX, AMD K6/K6-2, IBM/Cyrix 6x86L/6x86MII

Set CPU I/O Voltage: JP13

Use this 4-pin jumper to set the CPU I/O voltage to either 3.3V or 3.52V.

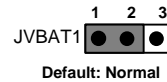
Voltage Setting	Jumper Cap
3.52 Volts	Short 1-2
3.3 Volts	Short 3-4



Clear CMOS Memory Jumper: JVBAT1

Locate the 3-pin Clear CMOS memory jumper JVBAT1. Ensure that the jumper cap is placed on pins 1-2. If you ever need to clear the system CMOS memory, you can do this by moving the jumper cap to short pins 2-3 for a few seconds. When you clear the CMOS memory, the system must be turned off and the power cord disconnected.

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



Install the Mainboard in the System Case

Use the screws and mounting brackets supplied with your system case to install the mainboard. Follow the instructions provided by the case manufacturer.

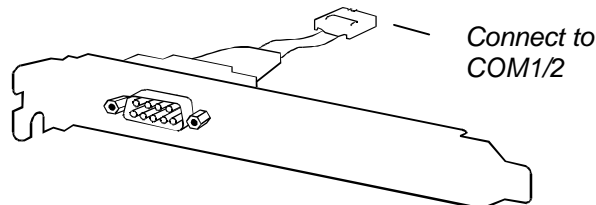
Connect Devices, Switches and Indicators to the Mainboard

***Note:** You might not need to carry out every step in the following procedure. It depends on the options you are installing, and the features that are supported by your system case.*

***Note:** Ribbon cables are usually keyed so that they can only be installed correctly on the device connector. If there is no key on a connector, you must manually ensure that the cable is installed correctly. Each connector has the pin-1 side clearly marked. The pin-1 side of each ribbon cable is always marked with a red stripe on the cable.*

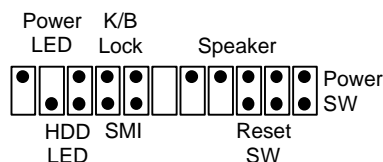
Internal Connections

1. Locate the floppy diskette drive connector FDD1. Use the ribbon cable to connect the one or two floppy diskettes to the mainboard.
2. Locate the Enhanced IDE connectors IDE1 (primary IDE) and IDE2 (secondary IDE). A single IDE cable is provided with the mainboard. Connect the cable to IDE1. The cable has two connectors for IDE devices. If you connect two devices, you must configure one device as Master, and one device as Slave. See the documentation provided with the devices for information on this. If you need to install more drives, obtain another IDE cable and connect one or two devices to IDE2 following the same procedure as you used with IDE1.
3. Connect the serial port connectors to the serial ports. The serial ports may be fixed on your system case, or one or two serial ports may be provided on a bracket as shown in the illustration below. Connect the cables to the connectors on the motherboard COM1 and COM2.



Note: If you install and use both serial ports, you cannot use the infrared connector JIR1 to install an optional infrared port.

4. Connect the parallel port connector to the parallel port. The parallel port may be fixed on your system case, or it may be provided on a bracket like the serial port bracket shown above. Connect the cable to the connector on the motherboard LPT1.
5. Connect the USB port connectors to the USB ports. The USB ports may be fixed on your system case, or they may be provided on a bracket like the serial port bracket shown above. Connect the cable to the connector on the motherboard JUSB1.
6. Connect the PS/2 mouse connectors to the PS/2 mouse port. The PS/2 mouse port may be fixed on your system case, or it may be provided on a bracket like the serial port bracket shown above. Connect the cable to the connector on the motherboard JP5.
7. Locate the bank of switch and indicator Panel connectors F_PNL1. These connectors provide control functions to your system case. Use the illustration below to make the connections. The SMI connector functions as a suspend switch on systems with an AT power supply and ATX power supply, besides it must be delayed up to 4 sec., then SMI will function. When the system is on, push the power button rapidly to switch the system to suspend mode. When the system is in suspend mode, push the power button rapidly to turn the system on.



8. Locate the power connectors CN6 and CN5. If you are using an AT power unit, connect the power cable harness to CN6. If you are using an ATX power unit, connect the power cable harness to CN5.
9. Locate the expansion slots SL1, SL2, (for 8/16-bit ISA cards) and PCI 1,2,3,4 (for 32-bit PCI cards). Install any expansion cards you want to add to your system into the appropriate slot and secure the card bracket to the system case.
10. Locate the AGP slot. If you are adding an AGP display adapter to your system, insert the card into the AGP slot.
11. If you have installed an internal modem card, connect the modem to the Wake On Modem connector JP100.

12. If you have installed a network adapter card, connect the adapter to the Wake On LAN connector JP101.
13. If you have installed an infrared port, connect the port to the Standard Infrared connector JIR1.
Note: if you install and use an infrared port, you cannot use both of the serial ports COM1 and COM2
14. If your system case is installed with a separate cooling fan, you can connect the fan to the cooling fan power connector, FAN2.
15. Finally, complete the installation by connecting a keyboard to the AT-enhanced keyboard connector.