
Introduction



This system board is available in different configuration levels. Depending on the hardware configuration of your device, it may be that you cannot find several options in your version of the system board, even though they are described.

You may find further information in the description "BIOS Setup".

Further information to drivers is provided in the readme files on hard disk or on the supplied drivers diskettes or on the "Drivers & Utility" or "ServerStart" CD.

Notational conventions

The meanings of the symbols and fonts used in this manual are as follows:



Pay particular attention to texts marked with this symbol. Failure to observe this warning endangers your life, destroys the system, or may lead to loss of data.



This symbol is followed by supplementary information, remarks and tips.

- ▶ Texts which follow this symbol describe activities that must be performed in the order shown.
- ␣ This symbol means that you must enter a blank space at this point.
- ↵ This symbol means that you must press the Enter key.

Texts in this typeface are screen outputs.

Texts in this bold typeface are the entries you make via the keyboard.

Texts in italics indicate commands or menu items.

"Quotation marks" indicate names of chapters and terms that are being emphasized.

Important notes

Store this manual close to the device. If you pass on the device to third parties, you should also pass on this manual.



Be sure to read this page carefully and note the information before you open the PC.

You cannot access the components of the system board without first opening the device. How to dismantle and reassemble the device is described in the Operating Manual accompanying the device.

Please note the information provided in the chapter "Safety" in the Operating Manual of the PC.

Incorrect replacement of the lithium battery may lead to a risk of explosion. It is therefore essential to observe the instructions in the chapter "[Add-on modules](#)" - "[Replacing the lithium battery](#)".

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer (CR2032).

Do not throw lithium batteries into the trashcan. It must be disposed of in accordance with local regulations concerning special waste.



The shipped version of this board complies with the requirements of the EEC directive 89/336/EEC "Electromagnetic compatibility".

Compliance was tested in a typical PC configuration.

When installing the board, refer to the specific installation information in the Operating Manual or Technical Manual of the receiving device.

Connecting cables for peripherals must be adequately insulated to avoid interference.

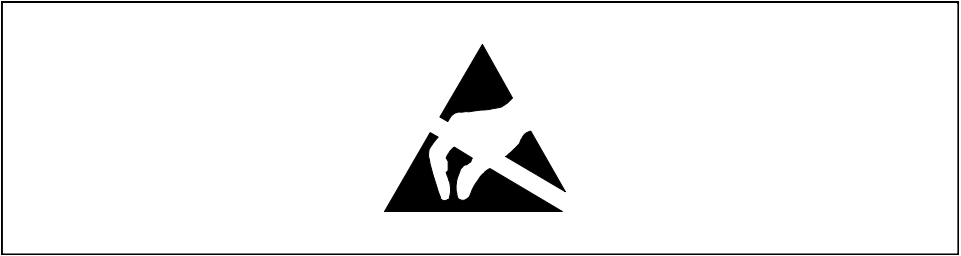


Components can become very hot during operation. Make sure you do not touch components when making extensions to the system board. There is a danger of burns!



The warranty expires if the device is damaged during the installation or replacement of system expansions. Information on which system expansions you can use is available from your sales office or the customer service.

Boards with electrostatic sensitive devices (ESD) may be identified by labels.



When you handle boards fitted with ESDs, you must observe the following points under all circumstances:

- You must always discharge yourself (e.g. by touching a grounded object) before working.
- The equipment and tools you use must be free of static charges.
- Pull out the power plug before inserting or pulling out boards containing ESDs.
- Always hold boards with ESDs by their edges.
- Never touch pins or conductors on boards fitted with ESDs.

Features

- LPX system board
 - Intel Pentium II processor with 66 MHz Front Side Bus for slot 1 processor socket
- or

- Intel Celeron processor with 66 MHz Front Side Bus for slot 1 processor socket

Intel Pentium II and Celeron processors support MMX technology. The size of first-level cache and second-level cache is depending on the processor used.

- Second-level cache in processor cache module
- 16 to 384 Mbytes main memory (SDRAM memory modules)
- Flash BIOS
- IDE hard disk controller connected to PCI bus for up to four IDE drives (e.g. IDE hard disk drives, ATAPI CD-ROM drives), (prepared for ultra DMA33 mode), supports PIO modes 0-4
- Supports booting from a 120 Mbyte IDE floppy disk drive
- Floppy disk controller (up to 2.88 Mbytes format)
- Real-time clock/calendar with integrated battery backup
- Parallel interface (ECP- and EPP-compatible)
- 1 serial port (16C550 compatible with FIFO)
- PS/2 mouse port
- PS/2 keyboard port
- Audio controller on ISA-BUS (PnP) Crystal CS 4235 or CS 4236, 16 bit stereo; compatible with Soundblaster Pro™, Windows Sound System and MPU 401; 3D audio support (only for CS 4235); internal FM synthesis



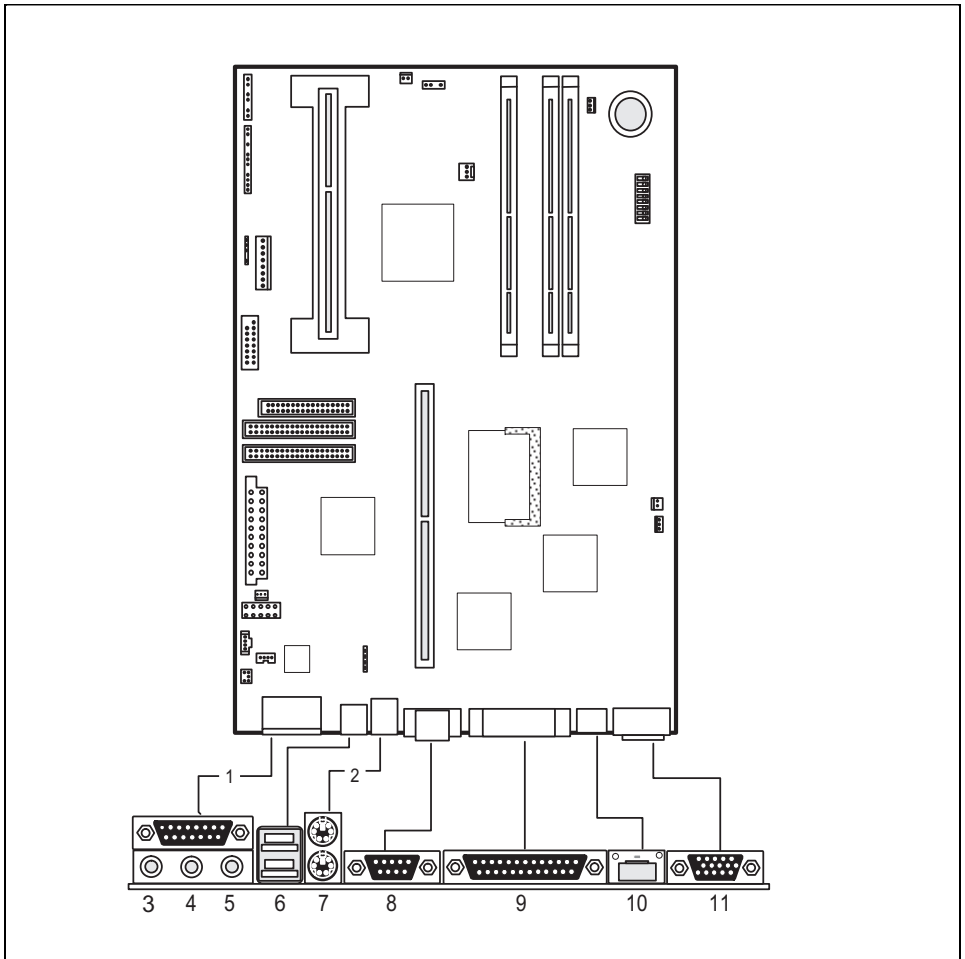
The audio output can be set in the *BIOS-Setup* in the screen *Advanced/Peripheral Configuration*, menu option *Audio Output* to *Line Level* or *Amplifier Level*. Use *Line Level* if you connect headphones or an active loudspeaker (with amplifier) to the audio output. Use *Amplifier Level* if you use passive loudspeakers.

- Energy saving functions

Optional Components

- 64 bit AGP screen controller, graphics processor Matrox MGA-G100 with Windows accelerator, 3D accelerator and 2 Mbyte SGRAM video memory
- Monitor connector D-SUB (15-pin)
- Video memory upgrade to 4 or 6 Mbyte SGRAM possible (with Jedec 144-pin 125 MHz SGRAM-SO-DIMM memory modules with "Serial Presence Detect")
- Internal connector for PC loudspeaker
- Internal connector for remote-on (fax/modem board), chipcard reader and infrared interface
- Internal connectors for CD-Line in, voice modem, AUX-in (e. g. MPG, TV)
- 3.5 mm jacks for microphone, audio input (line in), connector for headphones or active speakers
- Connector for GAME / MIDI (D-SUB)
- Prepared for Siemens system monitoring
- Intel 82558 LAN controller (10/100 Mbit/s), Wake On LAN (WOL) with Magic Packet™
- LAN connector (RJ45)
- Internal connector for Wake On LAN (WOL)
- Cover detection
- 2. serial interface (alternative to the chipcard reader)
- USB (Universal Serial Bus)

Interfaces and connectors



1 = GAME/MIDI port

2 = PS/2 mouse port

3 = Audio port (Headphones, Line out)

4 = Audio port (Line in)

5 = Audio port (Microphone)

6 = USB ports

7 = PS/2 keyboard port

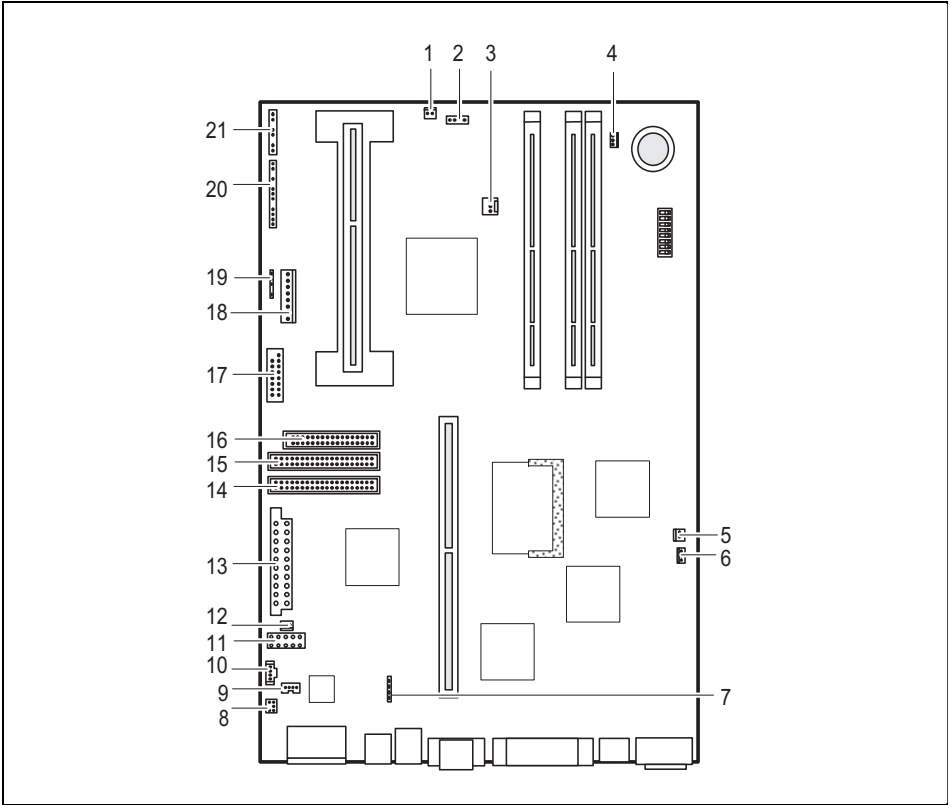
8 = Serial port 1

9 = Parallel port

10 = LAN connector with LEDs

11 = Video connector

The connectors marked do not have to be present on the system board.



- | | |
|-------------------------------|-------------------------------------|
| 1 = ON/OFF button | 12 = Power supply 3V |
| 2 = Loudspeaker | 13 = Power supply 1 |
| 3 = Fan | 14 = IDE drives 3 and 4 (secondary) |
| 4 = ServerManagement bus | 15 = IDE drives 1 and 2 (primary) |
| 5 = Connector for fax boards | 16 = Floppy disk drive |
| 6 = Wake On LAN (WOL) | 17 = Connector for chipcard reader |
| 7 = USB connection (internal) | 18 = Power supply 2 |
| 8 = Voice modem | 19 = IrDA |
| 9 = AUX IN | 20 = Connector 1 for control panel |
| 10 = CD Line in | 21 = Connector 2 for control panel |
| 11 = DSP | |

The connectors marked do not have to be present on the system board.

LAN port

The LAN RJ45 connector is equipped with a yellow and a green LED (light emitting diode).

Normal mode

Yellow indicator Signals that a connection exists (e.g. hub).

Green indicator Signals that activity is present on the LAN port.

WOL mode

Yellow indicator Signals that a connection exists (e.g. hub).

Green indicator Signals that a Magic Packet™ is being received.

Possible screen resolution

Depending on the operating system used the screen resolutions in the following table refer to the screen controller on the system board. If you are using an external screen controller, you will find details of supported screen resolutions in the Operating Manual or Technical Manual supplied with the controller.

To select the appropriate setting for your monitor, please use the Matrox VGA drivers supplied.

In Windows 95 you can select your monitor type (you should possibly use the standard type) and the resolution in the *Control Panel* under *Display Properties* in the tabs *MGA-Monitor* and *MGA settings* after these drivers have been installed.

Screen resolution	Refresh rate (Hz)	Horizontal-rate (kHz)	Max. number of colors (2MB)	Max. number of colors (4MB / 8MB)
640x480	120	31 to 51	256	256
640x480	120	31 to 51	65 K	65 K
640x480	120	31 to 51	16,7 mio.	16,7 mio.
800x600	120	37 to 77	256	256
800x600	120	37 to 77	65 K	65 K
800x600	120	37 to 77	16,7 mio.	16,7 mio.
1024x768	120	48 to 98	256	256
1024x768	120	48 to 98	65 K	65 K
1024x768	120	48 to 98	--	16,7 mio.
1152x864	110	57 to 100	256	256
1152x864	110	57 to 100	65 K	65 K
1152x864	93	57 to 100	--	16,7 mio.

Possible screen resolution (continued)

Screen resolution	Refresh rate (Hz)	Horizontal-rate (kHz)	Max. number of colors (2MB)	Max. number of colors (4MB / 8MB)
1280x1024	100	62 to 107	256	256
1280x1024	100	62 to 107	--	65 K
1280x1024	83	62 to 107	--	16,7 mio.
1600x1024	90	71 to 96	256	256
1600x1024	90	71 to 96	--	65 K
1600x1024	89	71 to 96	--	16,7 mio.*
1600x1200	83	71 to 105	256	256
1600x1200	83	71 to 105	--	65 K
1600x1200	75	71 to 105	--	16,7 mio.*

-- Not available; * : this value is only available with 6 MB.
64 K: high color (16 bit); 16 million: true color (24 bit)

Resource table

	assigned IRQ	possible IRQ	Possible Address	Possible DMA
Keyboard	IRQ1			
IrDA / chip card reader		3 4	02F8, 03F8 02E8, 03E8	
Serial interface COM1		3 4	03F8, 02F8 03E8, 02E8	
Floppy disk drive controller	IRQ6			2
Parallel interface LPT1		5, 7	0278, 0378, 03BC	1, 3
RTC	IRQ8			
USB controller			PnP	
Mouse controller	IRQ12			
Numeric processor	IRQ13			
IDE controller 1	IRQ14		1F0-1F7	
IDE controller 2	IRQ15		170-177	
LAN			PnP	

Resource table (continued)

	assigned IRQ	possible IRQ	Possible Address	Possible DMA
Audio controller		5, 7, 9, 11, 12, 15 (PnP)	PnP	0, 1, 3 (PnP)
MPU 401		5, 7, 9, 11, 12, 15 (PnP)	0300-0301 0330-0331	
Adlib			0388-038B	
Joystick			0200-0207 0208-020F	
Sound Blaster		5, 7, 9, 11, 12, 15 (PnP)	0220-022F 0240-024F 0260-026F 0280-028F 02A0-02BF 02C0-02DF 02E0-02FF	0, 1, 3 (PnP)
Windows Sound System		5, 7, 9, 11, 12, 15 (PnP)	0534-0FFC (PnP)	

"assigned IRQ" = interrupts assigned as shipped

"Possible IRQ" = these interrupts can be used for your particular application

"Possible address" = this address can be used for your particular application

"Possible DMA" = these DMAs can be used for your particular application



MPU 401: If you want to use external MIDI devices (for example a MIDI keyboard), you must assign an interrupt for the MPU 401 (MIDI interface). Detailed information is provided in the audio documentation on the driver and utility CD.

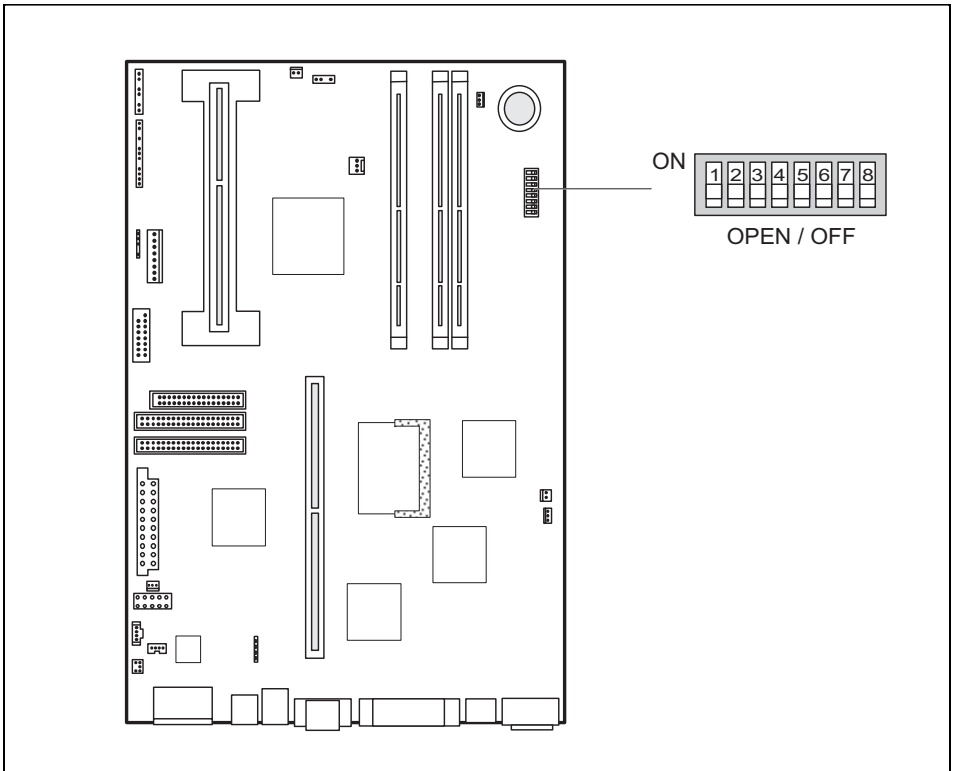
Please note that a resource cannot be used by two applications at the same time.

PCI bus interrupts

The following table shows which PCI bus slot shares the primary PCI bus interrupt with a PCI bus or AGP bus component on the system board.

PCI bus slot	PCI bus interrupt	Component on system board:
1	A	Graphics controller
2	B	LAN controller
3	C	
4	D	USB controller

Settings with switch block



Switch 1 = must be set to *off*
Switch 2 = System BIOS recovery
Switch 3 = Write protection for floppy disks

Switch 4 = Wake On LAN
Switch 5, 6, 7 and 8 = clock speed

Recovering System BIOS - switch 2

Switch 2 enables recovery of the old system BIOS after an attempt to update has failed. To restore the old system BIOS you need a Flash BIOS Diskette (please call our customer service).

on The System BIOS executes from floppy drive A: and restores the System BIOS on the system board.

off The System BIOS is started from the system board (default setting).

Write protection for floppy disks - switch 3

Switch 3 is used to define whether floppy disks can be written or deleted in the floppy disk drive. To write and delete floppy disks, the write-protection in *BIOS setup* must be disabled (in menu *Security*, the field *Diskette Write* must be set to *Enabled*).

on The floppy disk drive is write-protected.

off Read, write and delete floppy disks is possible (default setting).

Wake On LAN (WOL) - switch 4

Switch 4 is only important when the optional LAN controller is mounted on the system board. It switches the WOL function of the LAN controller on the system board off and on.



The following conditions must be met for the WOL function:

- The power supply must provide a 5V auxiliary voltage of at least 500 mA.
- The WOL plug connector may not be used.

If one or both of these conditions are not met, then Wake On LAN must be switched off. Otherwise malfunctions may occur. Please contact our customer service.

on The Wake On LAN of the LAN controller on the system board is switched on.

off The Wake On LAN of the LAN controller on the system board is switched off.

Clock speed - switch 5, 6, 7 and 8

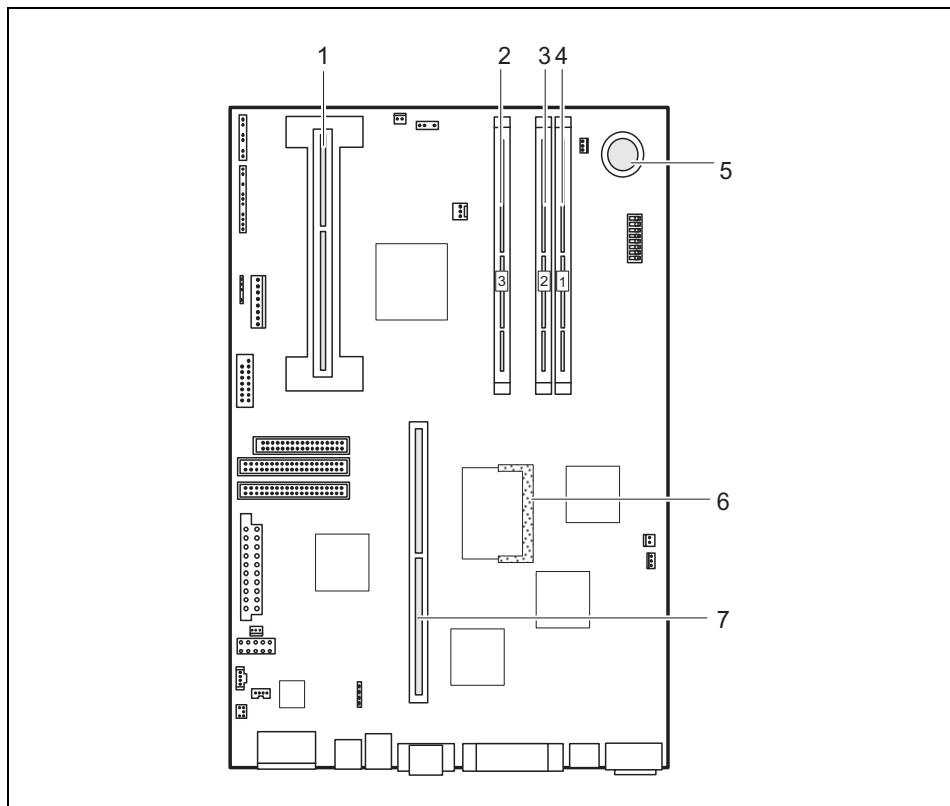


The switches may only be set as specified in the table below for the particular Pentium II used.

This system board you may use only with processors with a host bus frequency of 66 MHz. Do not use processors with a host bus frequency of 100 MHz!

processor	switch 5	switch 6	switch 7	switch 8
233/66 MHz	on	on	off	off
266/66 MHz	on	off	on	on
300/66 MHz	on	off	on	off
333/66 MHz	on	off	off	on
366/66 MHz	on	off	off	off
400/66 MHz	off	on	on	on
Reserved	off	x	x	x

Add-on modules



1 = Pentium II with heat sink

2 = Locations bank 3 for main memory

3 = Locations bank 2 for main memory

4 = Locations bank 1 for main memory

5 = Lithium battery

6 = Socket for video memory board

7 = Slot for platter

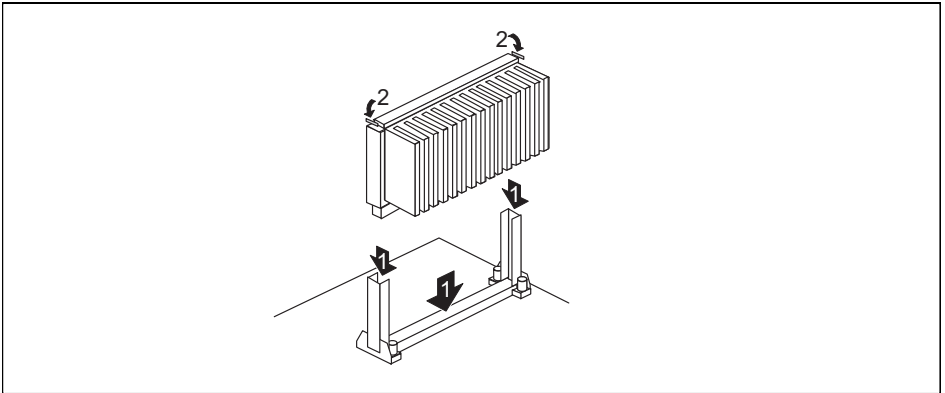
The connectors marked do not have to be present on the system board.



All PCI slots have bus master capability.

Installing/removing the processor

Installing the Pentium II

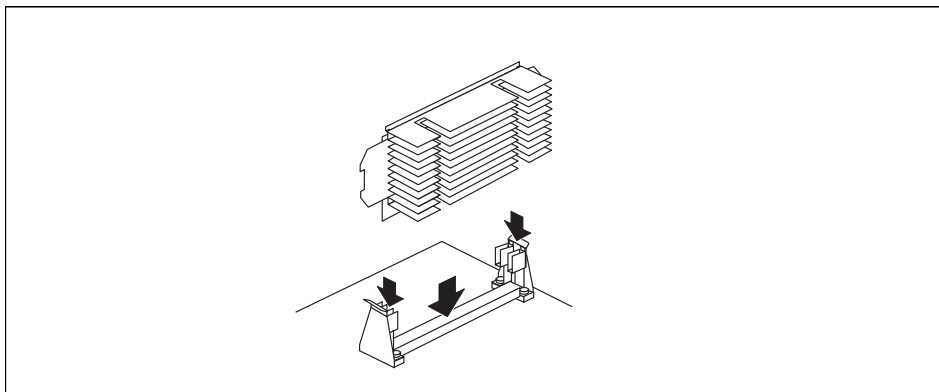


- ▶ Place the Pentium II in the holder (1).
- ▶ Push the Pentium II down in the holder and press it into the slot until the clamps (2) to the left and right snap into place.
- ▶ Set the clock frequency of the new Pentium II using switches 5 to 8 of the switch block.
- ▶ If the Pentium II has a fan, attach the associated cable to the fan connector (FAN) on the system board.

Removing the Pentium II

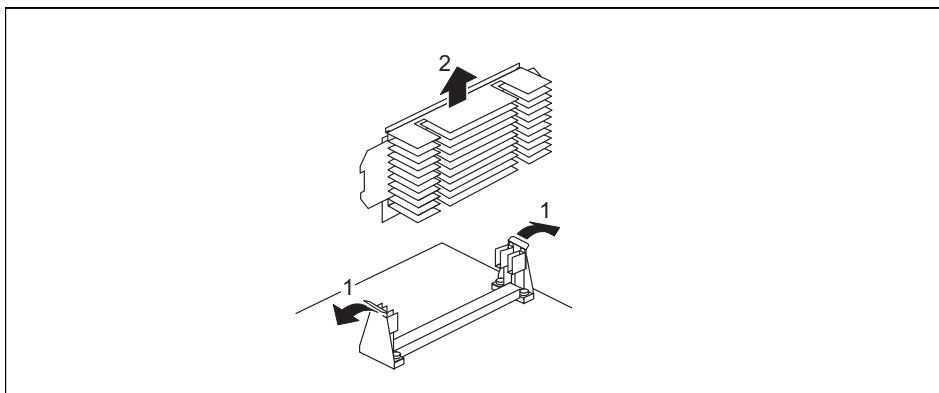
- ▶ If the Pentium II is equipped with a fan, then disconnect the plug-in connection of the related cable.
- ▶ Press the clamps (2) on either side of the Pentium II inwards and pull the Pentium II up and out.

Installing the Celeron



- ▶ Place the Celeron in the holder.
- ▶ Push the Celeron down in the holder and press it into the slot until it snaps into place.
- ▶ Set the clock frequency of the new processor using switches 5 to 8 of the switch block.
- ▶ If the Celeron has a fan, attach the associated cable to the fan connector (FAN) on the system board.

Removing the Celeron



- ▶ If the Celeron is equipped with a fan, then disconnect the plug-in connection of the related cable.
- ▶ Press the two side holders somewhat outward while pulling the Celeron upward out of the socket.

Upgrading main memory

The system board incorporates two or three locations for installing memory modules in DIMM format. The board supports a maximum of 384 Mbytes. SDRAM memory modules are used. You may use memory modules of different size.

DIMM = Dual Inline Memory Module

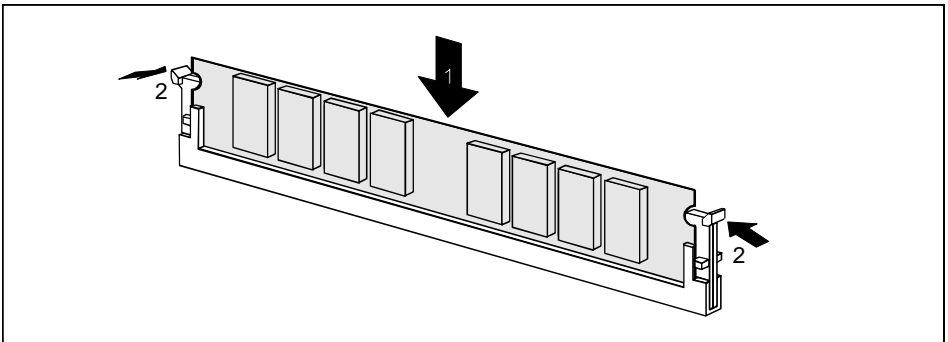
SDRAM = Synchronous Dynamic Random Access Memory



You may only use unbuffered 3.3V memory modules. Buffered memory modules are not permitted.

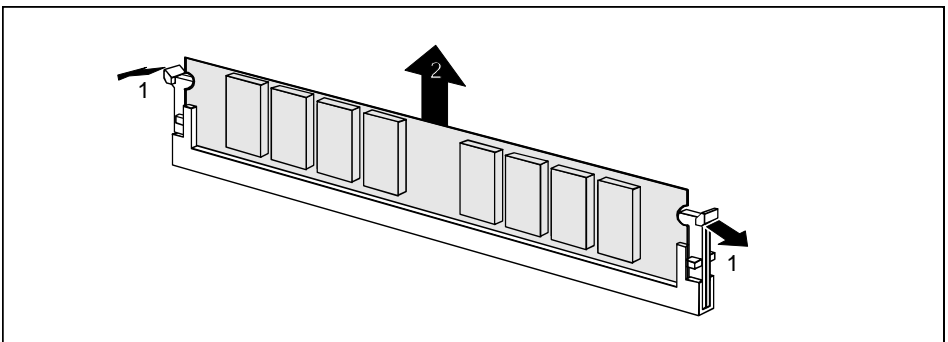
SDRAM memory modules must have a cycle time of 15 ns or less or be designed for a clock frequency of 66 MHz or higher.

Installing memory modules



- ▶ Flip the holders on each side of the relevant location outwards.
- ▶ Insert the memory module into the location.
- ▶ At the same time flip the lateral holders upwards until the memory module snaps in place.

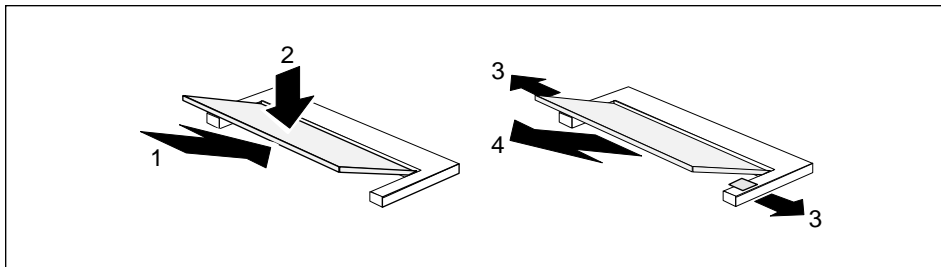
Removing a memory module



- ▶ Flip the holders to the right and left of the location outwards.
- ▶ Pull the memory module out of its location.

Upgrading the video memory

If 2 MB of video memory is installed on the system board, you can increase the video memory to 4 or 6 Mbytes (with Jedec 144-pin 125 MHz SGRAM-SO-DIMM memory modules with "Serial Presence Detect").



- ▶ Insert the memory modules, contacts first, into the slot (1).
- ▶ Carefully flap the memory module down (2) until you feel it latch in place.

Removing memory modules

- ▶ Carefully push the two mounting clips outwards (3).
The memory module flaps upwards.
- ▶ Pull the memory module out of the carrier (4).

Installing network board with WOL

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Observe the enclosed description for the network board.

The condition for using the WOL function of a network board is a power supply which provides a 5V auxiliary voltage of at least 500 mA.

- ▶ Switch off the Wake On LAN (WOL) (see "[Wake On LAN \(WOL\) - switch 4](#)").
- ▶ Install the network board as described in the operating manual for your unit.
- ▶ Push the WOL cable onto the WOL plug connector of the system board.

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It is not possible to use the WOL function of the LAN controller on the system board and a WOL-capable network board simultaneously.

Replacing the lithium battery

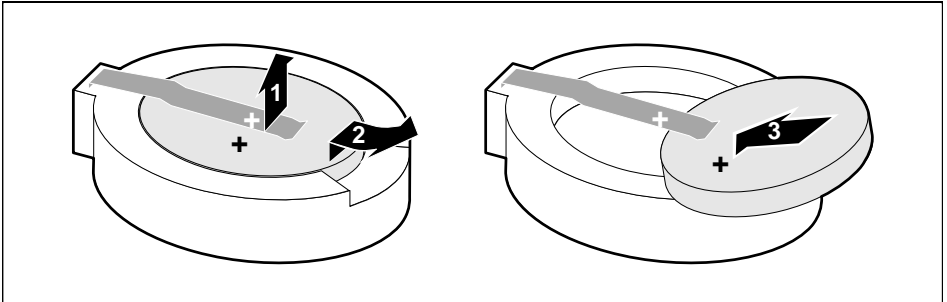


Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer (CR2032).

Do not throw lithium batteries into the trashcan. It must be disposed of in accordance with local regulations concerning special waste.

Make sure that you insert the battery the right way round. The plus pole must be on the top!



- ▶ Lift the contact (1) a few millimeters and remove the battery from its socket (2).
- ▶ Insert a new lithium battery of the same type in the socket (3).

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System board D1026

Technical Manual

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