

SYSTEMBAUGRUPPE D1064
SYSTEM BOARD D1064

TECHNISCHES HANDBUCH
TECHNICAL MANUAL

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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.



Supplementary information, remarks and tips follow this symbol.

- ▶ 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 is invalidated 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 outlet or the customer service center.

Notes on installing and removing boards



Boards with electrostatic sensitive devices (ESD) are identifiable by the label shown.

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

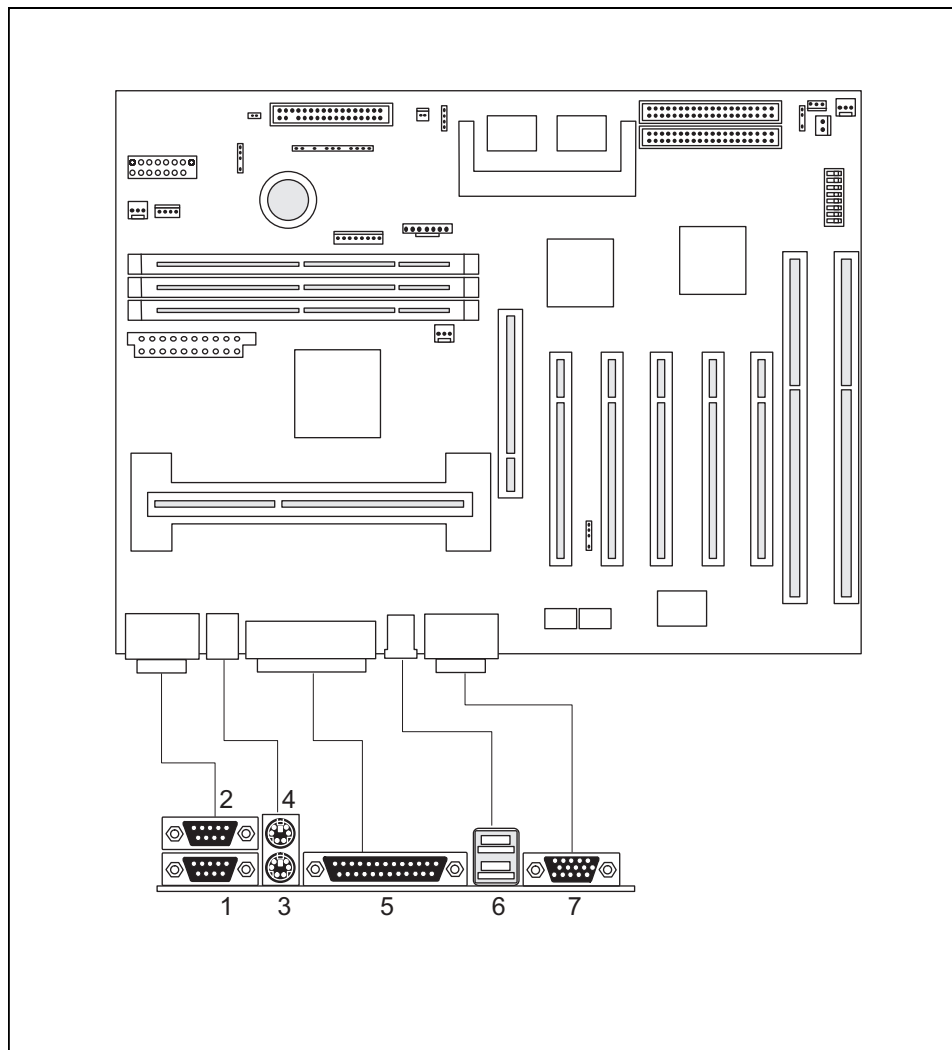
- You must always discharge yourself (e.g. by touching a grounded object) before working.
- The equipment and tools you use must be free of static charges.
- Pull out the power plug before inserting or pulling out boards containing ESDs.
- Always hold boards with ESDs by their edges.

Features

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

- ATX system board
- Intel Pentium II processor with MMX technology
- Processor cache module for Intel 100 MHz slot 1 processor socket
- Second-level cache in processor cache module
- 16 to 384 Mbytes main memory (SDRAM memory modules)
- Error recognition and error correction via ECC
- Flash BIOS
- 5 PCI slots (with busmaster capability), 1 ISA/PCI slot (shared)
- 1 ISA slot
- AGP slot for AGP graphics controller (AGP = Accelerated Graphics Port)
- 64 bit AGP screen controller, graphics processor Matrox MGA G100 with Windows accelerator, 3D accelerator and 2 Mbyte SGRAM video memory
- 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")
- IDE hard disk controller connected to PCI bus for up to four IDE drives (e.g. IDE hard disk drives, ATAPI CD-ROM drives), (ultra DMA33 mode capable), supports PIO modes 0-4
- Energy saving functions
- Floppy disk controller (up to 2.88 Mbytes format)
- Supports system boot from a 120 Mbyte IDE floppy disk drive
- Real-time clock/calendar with integrated battery backup
- Parallel port (ECP- and EPP-compatible)
- 2 serial ports (16C550 compatible with FIFO)
- Monitor connector D-SUB (15-pin)
- PS/2 mouse port
- PS/2 keyboard port
- USB (Universal Serial Bus)
- Connector for internal infrared connection
- Prepared for Fujitsu Siemens Computers system monitoring
- Internal connector for Wake On LAN (WOL)
- Cover detection

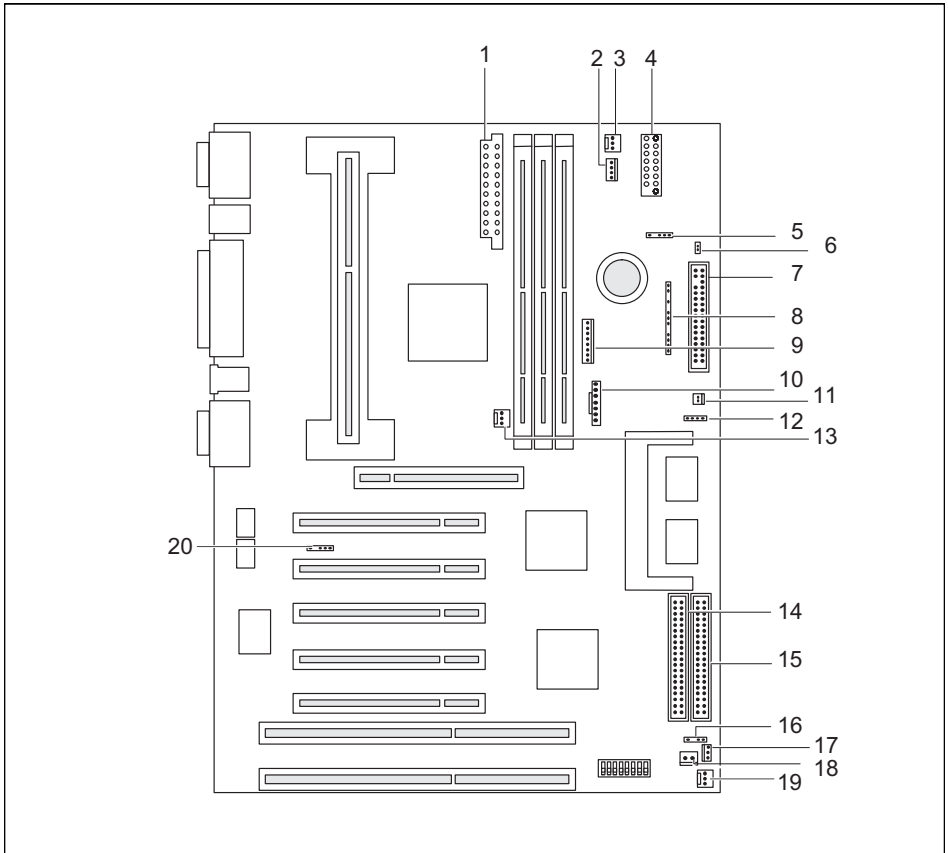
Interfaces and connectors



- 1 = Serial port 1
- 2 = Serial port 2
- 3 = PS/2 keyboard port
- 4 = PS/2 mouse port

- 5 = Parallel port
- 6 = USB ports
- 7 = Video connector

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



- | | |
|-----------------------------------|-------------------------------------|
| 1 = Power supply 1 | 11 = ON/OFF button |
| 2 = I ² C | 12 = SCSI indicator |
| 3 = Fan 2 | 13 = Fan 1 |
| 4 = Connector for chipcard reader | 14 = IDE drives 1 and 2 (primary) |
| 5 = IrDA | 15 = IDE drives 3 and 4 (secondary) |
| 6 = Connector for reset switch | 16 = Loudspeakers |
| 7 = Floppy disk drive | 17 = Wake On LAN (WOL) |
| 8 = Connector for front panel | 18 = Connector for fax boards |
| 9 = Power supply 2 | 19 = Fan 3 |
| 10 = Cover detection | 20 = USB chipcard reader |

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

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 (4Mbytes / 8Mbytes)
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.
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	0, 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	

"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

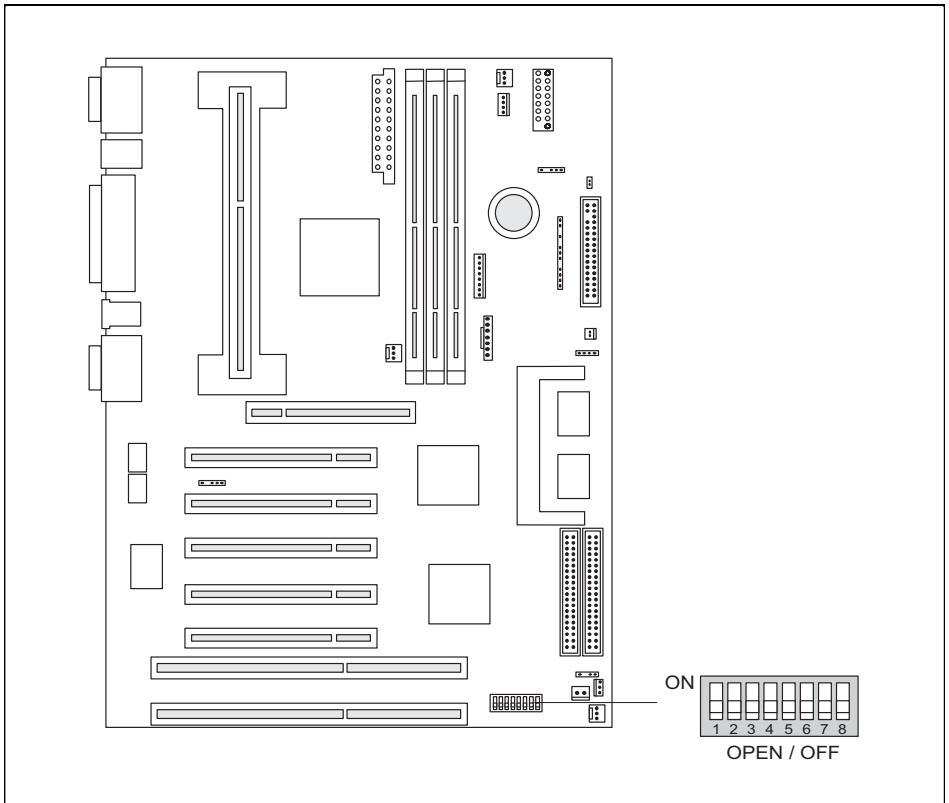
"Possible DMA" = these DMAs can be used for your particular application

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, 5	A	AGP graphics controller
2	B	
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 disk

Switch 4 = reserved
 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 center).

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).

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 with processors with 66 MHz and 100 MHz Front Side Bus.

Pentium II with 66 MHz Front Side Bus:

processor	switch 5	switch 6	switch 7	switch 8
233 MHz	off	off	on	on
266 MHz	on	on	off	on
300 MHz	off	on	off	on
333 MHz	on	off	off	on

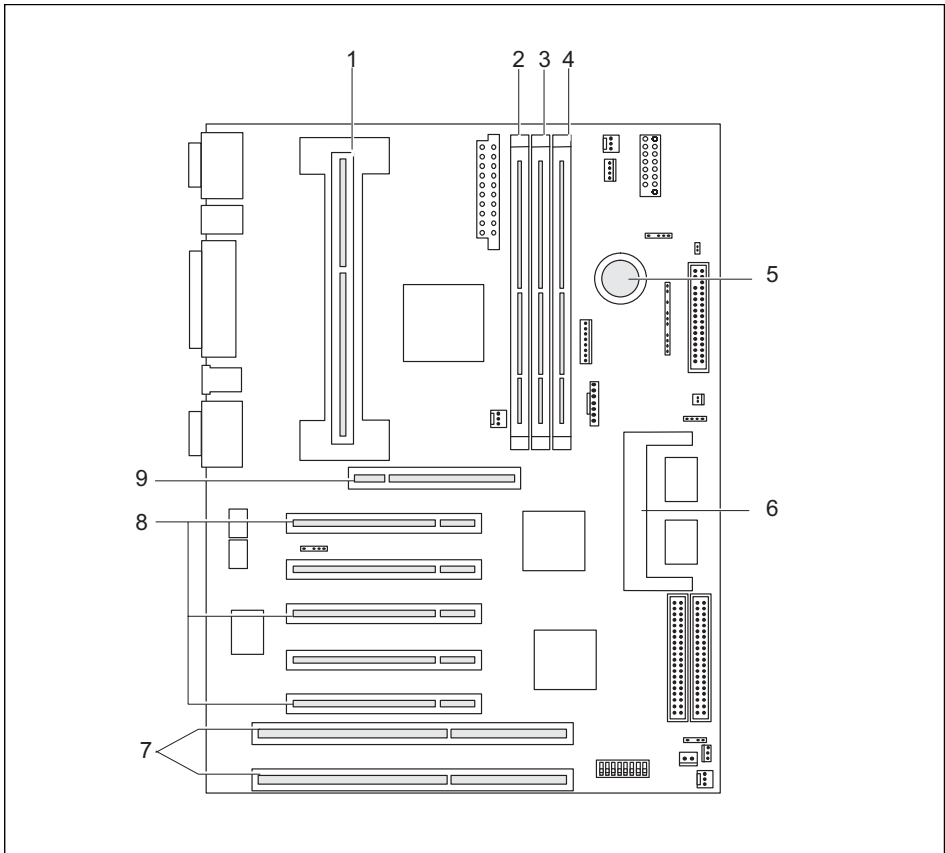
Pentium II with 100 MHz Front Side Bus:

processor	switch 5	switch 6	switch 7	switch 8
350 MHz	off	off	on	on
400 MHz	on	on	off	on
450 MHz	off	on	off	on

Add-on modules



For all steps described in this chapter exit the suspend mode before switching off the device and then pull the power plug out of the power outlet!



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 = ISA slots 1 and 2 (from below)

8 = PCI slots 1, 2, 3, 4, 5 (from below)

9 = AGP slot

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



All PCI slots have bus master capability.

Replacing the processor

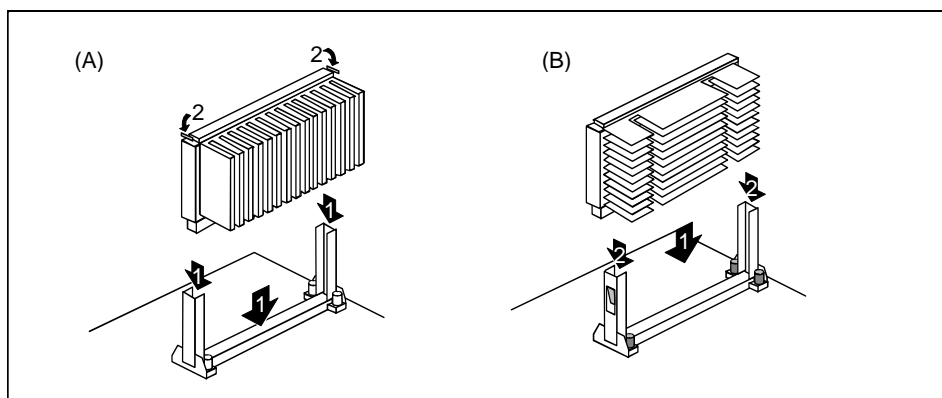
Installing the processor

i If you wish to upgrade your system with a new processor, the processor bracket on the system board may need to be replaced beforehand. Should it be necessary to replace the bracket, please contact our customer service center.

Depending on the design of the processor housing, the heat sink can be moved on the processor and the processor in the bracket. This is not an assembly error, but instead complies with the manufacturer's specifications. This floating suspension in the installed state ensures reliable contact between the processor and the heat sink. Detents in the bracket prevent the processor from slipping out.

If the heat sink on the processor can be moved, then it must also be possible to move the mounted processor in the bracket. This ensures optimum cooling.

If you replace the processor, grasp the processor housing by the processor and the heat sink.



The illustration shows two bracket and processor models.

- ▶ Remove the old processor if necessary.
- ▶ Slide the processor into the bracket (1).
- ▶ Push the processor down in the bracket 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 processor using switches 5 to 8 of the switch block.
- ▶ If the processor has a temperature sensor or a fan, attach the associated cable to the connector for the temperature sensor or the fan on the system board.

Removing the processor

- ▶ If the processor has a temperature sensor or a fan, pull out the associated cable.
- ▶ Press the clamps (2) on either side of the processor slightly inwards (A) or outwards (B) and pull the processor up and out. Use a screwdriver if necessary.

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

SDRAM memory modules must have a cycle time of 10 ns or less or be designed for a clock frequency of 100 MHz or higher.

Installing memory modules

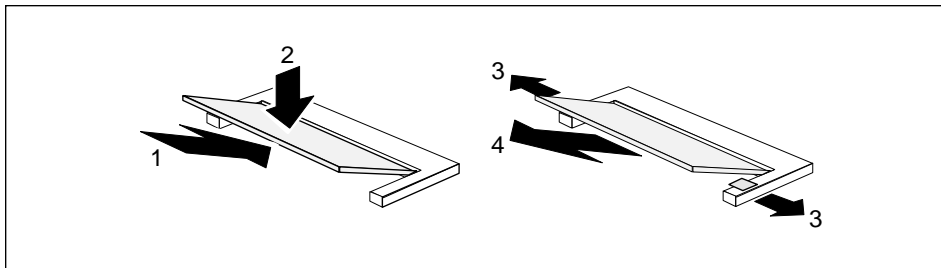
- ▶ Flip the holders on each side of the relevant location outwards.
- ▶ Insert the memory module into the location.
- ▶ At the same time flip the lateral holders upwards until the memory module snaps in place.

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 push the memory module downwards (2) until you feel it latch into 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).

Replacing the lithium battery

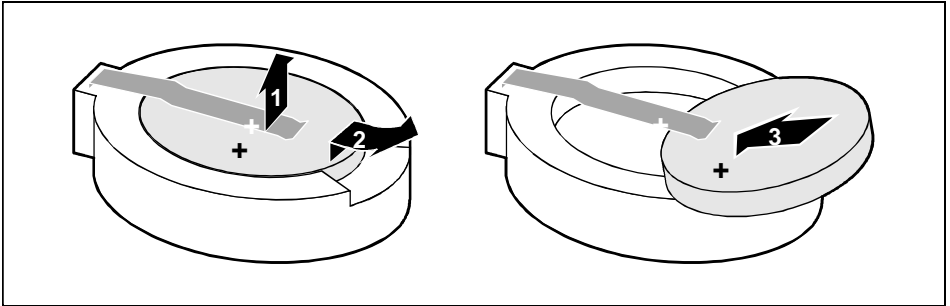


Incorrect replacement of the lithium battery may lead to a risk of explosion.

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).

Glossary

The technical terms and abbreviations given below represent only a selection of the full list of common technical terms and abbreviations.

Not all technical terms and abbreviations listed here are valid for the described system board.

ACPI	Advanced Configuration and Power Interface
AC'97	Audio Codec '97
AGP	Accelerated Graphics Port
AMR	Audio Modem Riser
AOL	Alert on LAN
APM	Advanced Power Management
ATA	Advanced Technology Attachment
BIOS	Basic Input Output System
CPU	Central Processing Unit
C-RIMM	Continuity Rambus Inline Memory Module
DIMM	Dual Inline Memory Module
ECC	Error Correcting Code
EEPROM	Electrical Erasable Programmable Read Only Memory
FDC	Floppy Disk Controller
FIFO	First-In First-Out
FSB	Front Side Bus
FWH	Firmware Hub
GMCH	Graphics and Memory Controller Hub
I ² C	Inter Integrated Circuit
IAPC	Instantly Available Power Managed Desktop PC Design
ICH	I/O Controller Hub
IDE	Intelligent Drive Electronics
IPSEC	Internet Protocol Security
ISA	Industrial Standard Architecture
LAN	Local Area Network
LSA	LAN Desk Service Agent
MCH	Memory Controller Hub
MMX	MultiMedia eXtension
PCI	Peripheral Component Interconnect
PXE	Preboot eXecution Environment

RAM	Random Access Memory
RAMDAC	Random Access Memory Digital Analog Converter
RDRAM	Rambus Dynamic Random Access Memory
RIMM	Rambus Inline Memory Module
RTC	Real Time Clock
SB	Soundblaster
SDRAM	Synchronous Dynamic Random Access Memory
SGRAM	Synchronous Graphic Random Access Memory
SMBus	System Management Bus
SVGA	Super Video Graphic Adapter
USB	Universal Serial Bus
VGA	Video Graphic Adapter
WOL	Wake On LAN