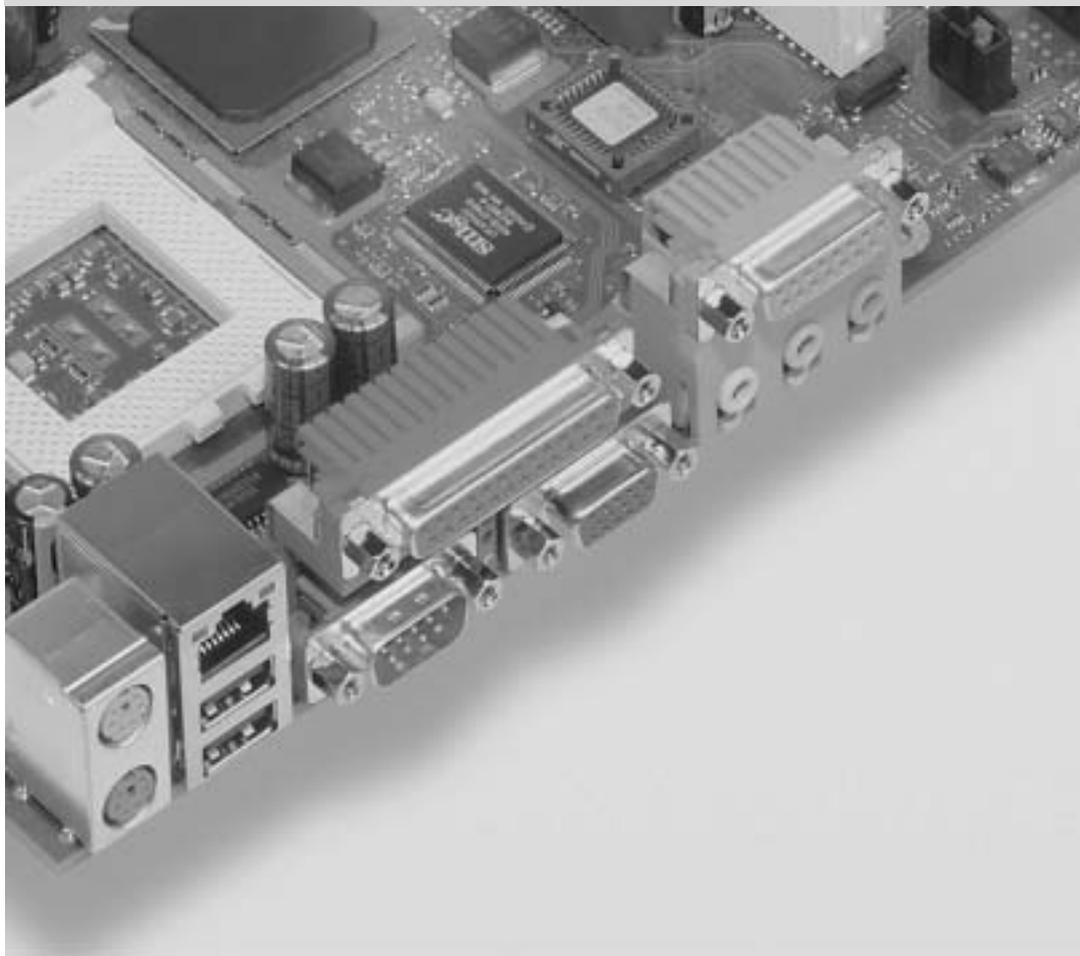


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Technisches Handbuch / Technical Manual

Systembaugruppe / Systemboard D1372



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**Systembaugruppe
D1372
System Board D1372**

**Technisches Handbuch
Technical Manual**

**Ausgabe Juni 2002
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Introduction



Depending on the configuration chosen, some of the hardware components described may not be available on your system board.

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

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

Notational conventions

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



indicates information which is important for your health or for preventing physical damage.



indicates additional information which is required to use the system properly.

► Text which follows this symbol describes activities that must be performed in the order shown.

Text in this typeface indicates screen outputs.

Text in this bold typeface indicates the entries you make via the keyboard.

Text in italics indicates commands or menu items.

"Quotation marks" indicate names of chapters or terms.

Important notes

Store this manual close to the system board. If you pass the system board on to third parties, you should pass this manual on with it.

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



Please observe the safety information provided in the "Important notes" chapter in the system's operating manual.

Incorrect replacement of the lithium battery may lead to a risk of explosion. It is therefore essential to observe the instructions in the "Add-on modules" - "Replacing the lithium battery" section.

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



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 for the receiving device.

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



The warranty is invalidated if the system is damaged during the installation or replacement of system expansions. Information on which system expansions you can use is available from your sales outlet.

Information about boards

To prevent damage to the system board or the components and conductors on it, please take great care when you insert or remove boards. Take great care to ensure that extension boards are slotted in straight, without damaging components or conductors on the system board, or any other components, for example EMI spring contacts.

Be especially careful with the locking mechanisms (catches, centring pins etc.) when you replace the system board or components on it, for example memory modules or processors.

Never use sharp objects (screwdrivers) for leverage.



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

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

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

Features

The components and connectors marked are not necessarily present on the system board.

- System board in μ -ATX format
- Intel FC-PGA2 Celeron with 100 MHz Front Side Bus or Intel FC PGA370 Celeron with 66 MHz or 100 MHz Front Side Bus

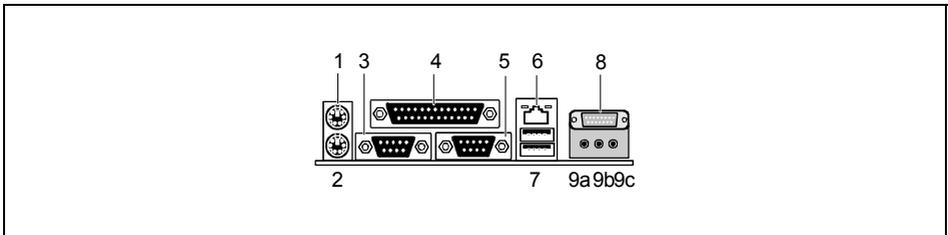
The size and frequency of first-level cache and second-level cache are dependent upon the processor used.

- Intel chipset i810E2
- Intel 82562EM LAN controller (10/100 Mbit/s) with RJ45 interface
WOL with Magic Packet™ is supported, as is booting from LAN with Bootix LAN BootP or Intel PXE.
- Analogue Devices AD1981A or AD1885 Audio Codec
internal: Stereo CD-In
external: Mono Micro-In, Stereo Line-In, Game/Midi port
Stereo Line-out / headphones
- 2 DIMM slots for 32 to 512 Mbyte main memory (SDRAM memory modules meet the PC100/133 specification)
- Flash BIOS
- Graphic Controller 2D/3D i 8281E with Dynamic Video technology
- Power-on functions:
 - Wake on RTC
 - Wake on LAN
 - Wake on PCI Cards
 - Wake on USB
 - COM1 wake up support
- Energy saving functions:
 - APM and ACPI (requires an operating system that supports ACPI)
 - Switching on/off, standby mode, suspend mode via on/off switch
 - Switching on/off via software
- Security functions:
 - Processor serial number
 - Cover monitoring: cover monitoring reports when the cover has been opened without authorisation.
 - System, setup and hard disk password
 - parallel and serial ports can be deactivated
 - Floppy disk write-protection via *BIOS Setup*
 - Boot hard disk virus warning function
 - SystemLock via *BIOS-Setup*
 - Flash BIOS and EEPROMs (on the memory modules) virus protection function.
- 3 PCI slots
PCI slots support 3.3 V main and auxiliary voltages.
- 1 CNR slot (shared with PCI slot)
- IDE hard disk controller connected to PCI bus for up to four IDE drives
The IDE hard disk controller are ATA33/66/100, ultra DMA capable and support PIO modes 0-

4.

- Floppy disk drive controller (possible formats: 720 Kbyte, 1.44 Mbyte)
- The system board supports booting from a 120 MB IDE floppy disk drive.
- Real-time clock/calendar with integrated battery backup
- 1 internal WOL interface
- 2 internal USB ports (C / D) with USB chipcard reader support
- 1 external parallel port (ECP- and EPP-compatible)
- 1 external serial port (16C550 compatible with FIFO)
- 2 external PS/2 ports for keyboard and mouse
- 2 external USB ports (A / B)

External ports

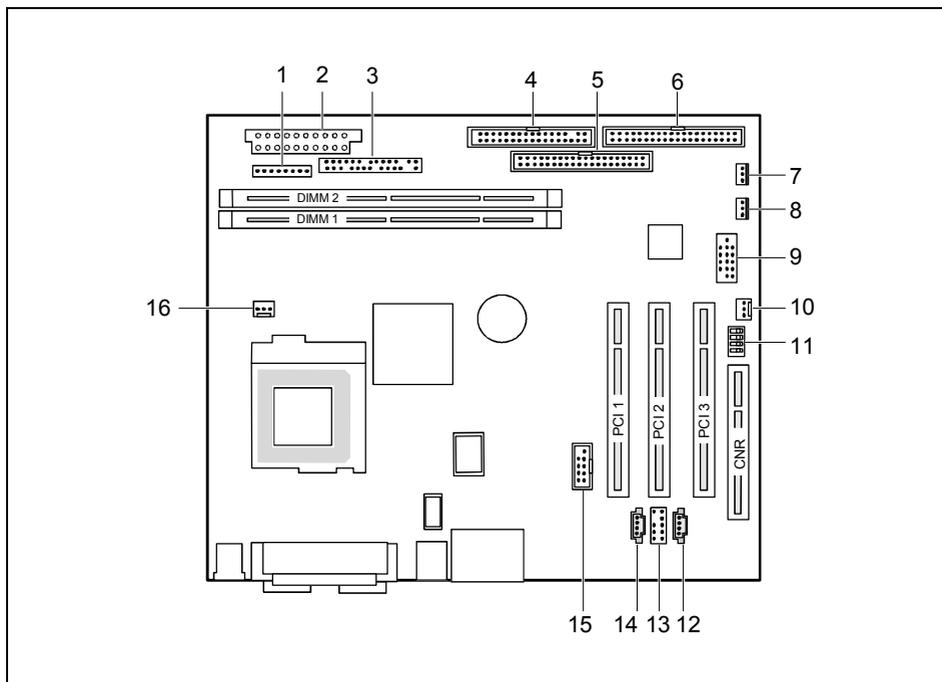


- 1 = PS/2 mouse port
2 = PS/2 keyboard port
3 = Serial port
4 = Parallel port
5 = VGA interface
6 = LAN port

- 7 = USB ports A and B
8 = Game/Midi port
9a = Audio Line-Out / Headphones
9b = Audio Line-In
9c = Audio Micro-In

The components and connectors marked are not necessarily present on the system board.

Internal ports and connectors



- | | |
|-------------------------------------------------|-------------------------------------|
| 1 = Power supply monitoring | 10 = Fan 2 (e.g. for the processor) |
| 2 = Power supply | 11 = Switch block |
| 3 = Connector for control panel and loudspeaker | 12 = AUX audio input |
| 4 = Floppy Disk Drive | 13 = Audio front panel |
| 5 = IDE drives 3 and 4 (secondary) | 14 = CD audio input |
| 6 = IDE drives 1 and 2 (primary) | 15 = Serial port 2 |
| 7 = Wake On LAN | 16 = Fan 1 (e.g. for the processor) |
| 8 = Cover monitoring | |
| 9 = USB port C and D | |

The components and connectors marked are not necessarily present on the system board.

Temperature / System monitoring

Temperature and system monitoring aim to reliably protect the computer hardware against damage caused by overheating. In addition, any unnecessary noise is also prevented by reducing the fan speed, and information is provided about the system status. Cover monitoring protects the system from unauthorised opening.

An onboard controller developed by Fujitsu Siemens Computers controls the temperature and system monitoring.

The following functions are supported:

Temperature monitoring:

Measurement of the processor and the system temperature with an onboard temperature sensor.

Temperature control:

The temperature is controlled by adjusting the fan speed and/or by reducing the clock frequency of the processor. The clock frequency of the processor is dependent upon the setting in the *BIOS Setup*. Temperature-dependent processor speed control enables a reduced fan speed, decreasing noise.

Fan monitoring:

Fans which have been removed, blocked or sticky fans are detected. Blocked or sticky fans are operated with 12 V pulse voltage. If the system has a monitored fan removed while the system is switched off this is indicated by the message LED when the system is switched on again and processed by the BIOS or the application.

Fan control:

With the exception of the auxiliary fan (AUX), the fans are regulated according to temperature.

Sensor monitoring:

The removal of, or a fault in, a temperature sensor is detected. Should this happen all fans monitored by this sensor run at maximum speed, to achieve the greatest possible protection of the hardware. If the system has a monitored fan removed while the system is switched off this is indicated by the message LED when the system is switched on again and processed by the BIOS or the application.

Cover monitoring:

Unauthorised opening of the cover is detected, even when the system is switched off. However, this will only be indicated when the system is switched on again.

Voltage monitoring:

The voltages 12 V, 5 V and the CMOS battery are monitored.

With hardware monitoring - regardless of the operating system and processor - the advantages compared to conventional software monitoring are clear:

- suitable for all operating systems and processor types
- no additional load on processor (performance)
- optimum temperature protection, even if process faults or faults are present in the operating system
- optimum noise reduction

Three different operating modes are available and can be configured in *BIOS Setup - System Management*.

Hard disk connection

An ultra ATA/66 or ultra ATA/100 hard disk must be connected with a cable especially designed for the ultra ATA/66 or ultra ATA/100 mode.

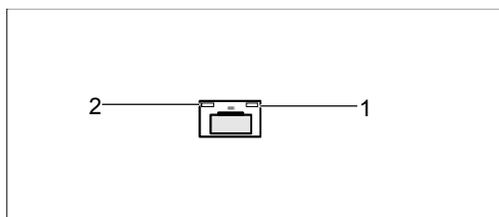
- ▶ Connect the end of the cable marked with blue to the system board.

LAN connector

This system board has an optional Intel 82550ET LAN controller which supports transfer speeds of 10 Mbit/s and 100 Mbit/s. The LAN controller is equipped with a 3 KB transmission and receiving buffer (FIFO) and supports WOL function through Magic Packet™.

It is also possible to boot a system without its own boot hard disk via LAN. Here Bootix LAN BootP and Intel PXE are supported.

The LAN RJ45 connector has two LEDs (light emitting diode).



- 1 a connection exists (e.g. to a hub).
- 2 Link Mode: the LAN connection is active.
WOL mode: a Magic Packet™ is being received.

Screen resolution

Depending on the operating system used, the screen resolutions in the following table refer to the system board screen controller.

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.

| Screen resolution | Refresh rate (Hz) | Horizontal-rate (kHz) ** | Max. number of colours |
|-------------------|-------------------|--------------------------|------------------------|
| 640x480 | 60 - 85 | 31,5 - 43,3 | 256 |
| 640x480 | 60 - 85 | 31,5 - 43,3 | 65 K |
| 640x480 | 60 - 85 | 31,5 - 43,3 | 16,7 mio. |
| 800x600 | 60 - 85 | 35,1 - 53,7 | 256 |
| 800x600 | 60 - 85 | 35,1 - 53,7 | 65 K |
| 800x600 | 60 - 85 | 35,1 - 53,7 | 16,7 mio. |
| 1024x768 | 60 - 85 | 48,8 - 68,7 | 256 |
| 1024x768 | 60 - 85 | 48,8 - 68,7 | 65 K |
| 1024x768 | 60 - 85 | 48,8 - 68,7 | 16,7 mio. |
| 1152x864 | 60 - 85 | 54,4 - 76,9 | 256 |
| 1152x864 | 60 - 85 | 54,4 - 76,9 | 65 K |
| 1152x864 | 60 - 85 | 54,4 - 76,9 | 16,7 mio. |
| 1280x1024 | 60 - 85 | 64,0 - 91,1 | 256 |
| 1280x1024 | 60 - 85 | 64,0 - 91,1 | 65 K |
| 1280x1024 | 60 - 85 | 64,0 - 91,1 | 16,7 mio. |
| 1600x1200 | 60 - 75 | 75,0 - 93,8 | 256 |

* no 16 colour mode

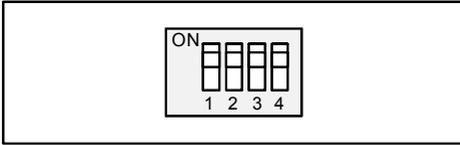
** Horizontal values tolerance ± 0.3 kHz.

PCI bus interrupts

The following table shows which PCI bus interrupts are assigned on the system board.

| PCI bus interrupt | Component on system board: |
|-------------------|----------------------------|
| B, C, D, A | PCI bus slot 1 |
| C, D, A, B | PCI bus slot 2 |
| D, A, B, C | PCI bus slot 3 / CNR |
| A | Screen controller |
| D | First USB controller |
| H | Second USB controller |
| E | LAN controller |
| B | SMBus |
| B | AC'97 Audio |

Settings with switches and jumpers



Switch 1 = must be set to *off*
 Switch 2 = System BIOS recovery
 Switch 3 = Front Side Bus frequency
 Switch 4 = define auxiliary voltage



The clock frequency of the processor is set automatically.

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 centre).

On The System BIOS executes from floppy drive A: and the inserted "Flash-BIOS-Diskette" restores the System BIOS on the system board.

Off Normal operation (default setting).

Setting frequency for Front Side Bus - Switch 3

Switch 3 enables you to set the Front Side Bus frequency for future Celeron processors with 133 MHz.

On 133 MHz Front Side Bus.

Off 100/66 MHz Front Side Bus (default setting)

Defining auxiliary voltage - Switch 4

Switch 4 enables you to switch off partly the auxiliary voltage for functions of the system board. Auxiliary voltage of some power supplies is not sufficient to supply all functions of the system board with auxiliary voltage.

On Wake up on USB is switched off.

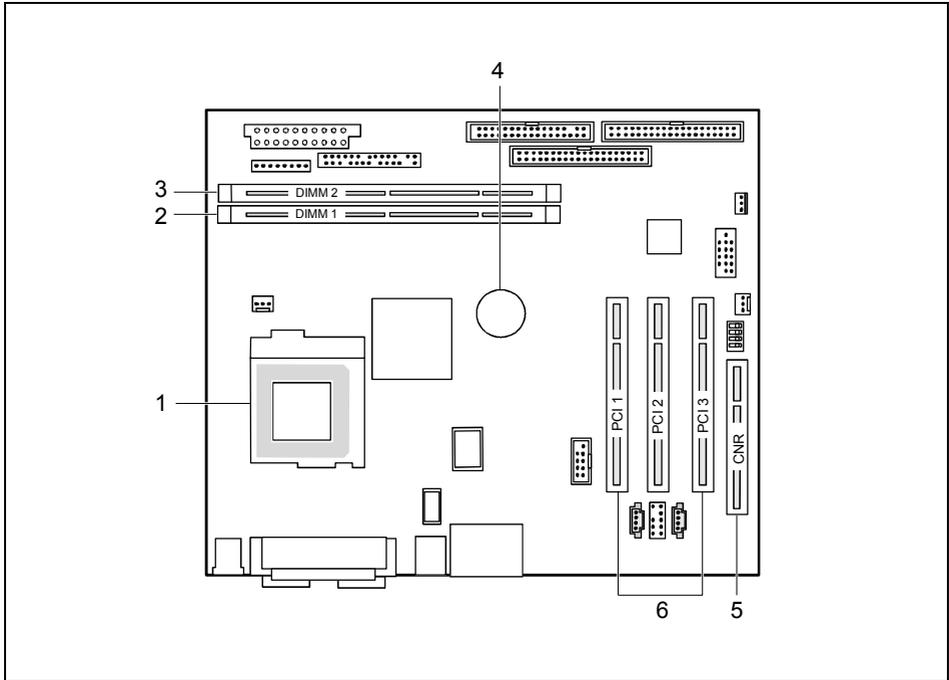
Off Normal operation (default setting). All functions are supplied with auxiliary voltage.

Add-on modules



Exit energy-saving mode, switch off the system and remove the power plug from the mains outlet, before carrying out any of the procedures described in this chapter! Even when you have switched off the system, parts (e.g. memory modules, AGP and PCI extension boards) are still supplied with power.

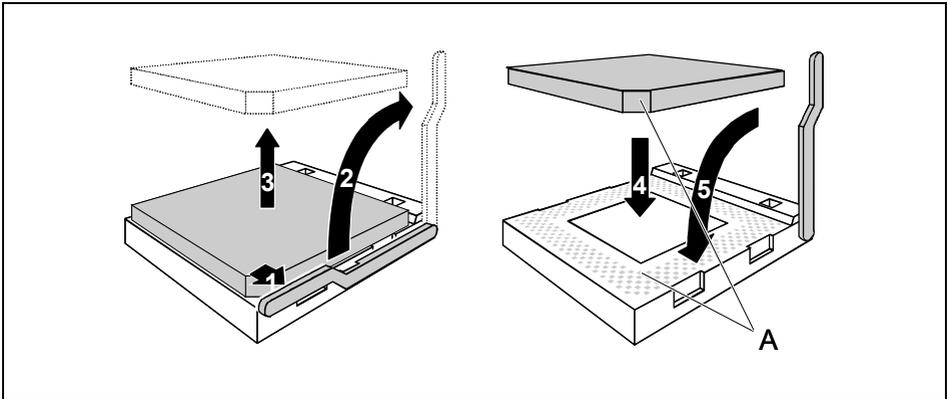
All AGP and PCI slots support 3.3 V main and auxiliary voltages.



- 1 = Socket for processor with heat sink
- 2 = Location bank 1 for main memory
- 3 = Location bank 2 for main memory

- 4 = Lithium battery
- 5 = CNR slot
- 6 = PCI slots 1, 2, 3

Installing and removing processors



- ▶ Pull the lever in the direction of the arrow (1) and lift it as far as it will go (2).
- ▶ Remove the old processor from the socket (3).
- ▶ Insert the new processor in the socket so that the angled corner of the processor matches the coding on the socket (A) with regard to the position (4).



The angled corner of the processor may be covered by the heat sink. In this case let yourself be guided by the marking in the rows of pins on the underside of the processor.

- ▶ Push the lever back down until it clicks into place (5).

Upgrading main memory

These slots are suitable for memory modules with 16, 32, 64, 128 and 256 Mbyte of the DIMM format. Therefore the memory capacity of one component on the memory module may not exceed 128 Mbit (= 16 MB).

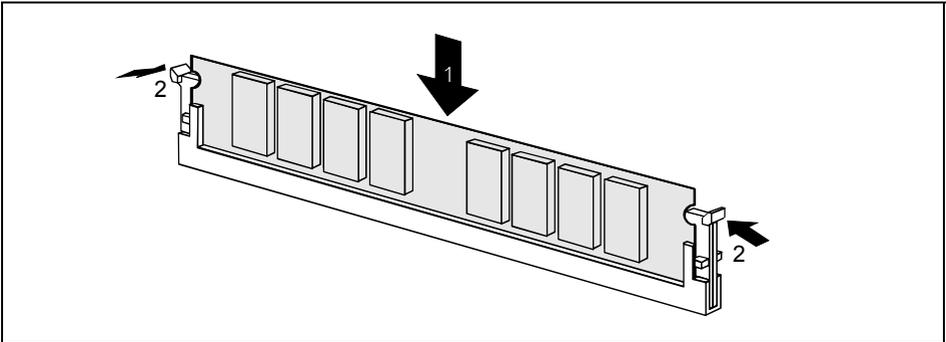
Memory modules with different memory capacities can be combined.



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

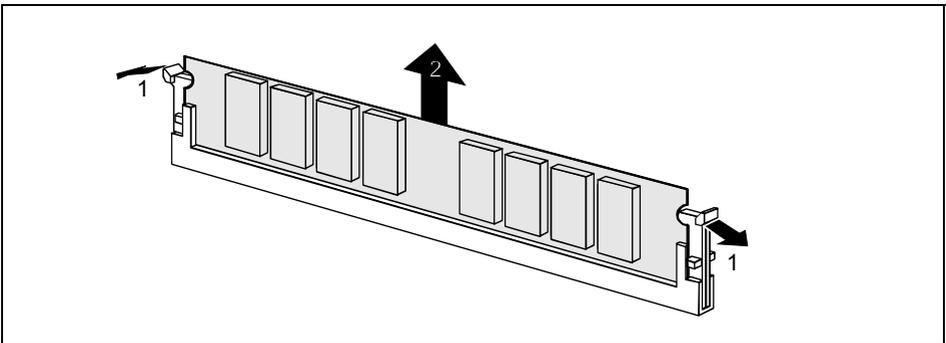
SDRAM memory modules must meet the PC100/133 specification.

Installing a memory module



- ▶ Push the holders on each side of the memory compartment outwards.
- ▶ Insert the memory module into the location (1).
- ▶ At the same time flip the lateral holders upwards until the memory module snaps in place (2).

Removing a memory module



- ▶ Push the clips on the right and left of the compartment outward (1).
- ▶ Carefully remove the memory module from the compartment (2).

Installing network board with WOL

- ▶ Install the network board as described in the operating manual for your system.
- ▶ Push the WOL cable onto the WOL plug connector of the system board.



To use the WOL functionality of a network board the power supply must provide a 5 V auxiliary voltage of at least 1 A.

You may find further information in the supplied description of the network board.

Replacing the lithium battery



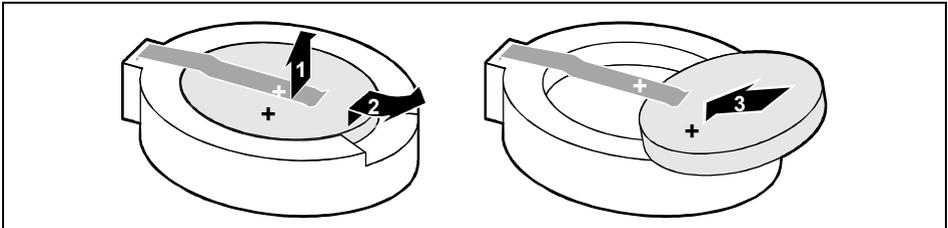
Incorrect replacement of the lithium battery may lead to a risk of explosion.

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 household waste. They must be disposed of in accordance with local regulations concerning special waste.

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

This representation is also valid for a vertically built-in lithium battery.



- ▶ Lift the contact (1) a few millimetres and remove the battery from its socket (2).
- ▶ Insert a new lithium battery of the same type into 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 Management 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 |
| CAN | Controller Area Network |
| CPU | Central Processing Unit |
| CNR | Communication Network Riser |
| C-RIMM | Continuity Rambus Inline Memory Module |
| DDR | Double Data Rate |
| DIMM | Dual Inline Memory Module |
| DRAM | Dynamic Random Access Memory |
| 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 |
| GPA | Graphics Performance Accelerator |
| 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 |
| NIC | Networking Interface Card |
| P64H | PCI64 Hub |
| PCI | Peripheral Component Interconnect |
| PXE | Preboot eXecution Environment |
| RAM | Random Access Memory |
| RAMDAC | Random Access Memory Digital Analogue 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 |
| SIMD | Streaming Mode Instruction (Single Instruction Multiple Data) |
| SMBus | System Management Bus |
| SVGA | Super Video Graphic Adapter |
| USB | Universal Serial Bus |
| VGA | Video Graphic Adapter |
| WOL | Wake On LAN |
| | |
| | |
| | |