COMPONENTS

Mainboard D1171

FUJITSU COMPUTERS
SIEMENS

Sie haben ...

... technische Fragen oder Probleme?

Wenden Sie sich bitte an:
- Ihren zuständigen Vertriebspartner
- Ihre Verkaufsstelle

Weitere Informationen finden Sie in den Handbüchern "Sicherheit" und "Ergonomie".

Aktuelle Informationen zu unseren Produkten, Tipps, Updates usw. finden Sie im Internet:
http://www.fujitsu-siemens.com

Are there ...

... any technical problems or other questions you need clarified?

Please contact:
- your sales partner
- your sales outlet

You will find further information in the manuals "Safety" and "Ergonomics".

The latest information on our products, tips, updates, etc., can be found on the Internet under:
http://www.fujitsu-siemens.com

A26361-D1171-Z120-1-7419

Deutsch

English

Mainboard D1171

Technisches Handbuch
Technical Manual

Contents

Introduction

| i |

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

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

Notational conventions

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

| ⚠ |

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

| i |

Supplementary information, remarks, and tips follow this symbol.

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

␣   This symbol indicates that you must enter a blank space (press the Space Bar) at this point.

⏎   This symbol indicates that you must press the Enter key.

`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 device. If you pass the device on to third parties, you should pass this manual on with it.

| ⚠ |

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

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

Please observe the safety information provided in the "Important notes" chapter in the device'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.

CE 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.

⚠ 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 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 centre.

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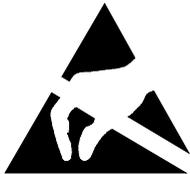
Boards with electrostatic sensitive devices (ESD) are identifiable by the label shown.

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 micro ATX format
- PGA 370 Celeron processor with 66 MHz/100 MHz Front Side Bus for PGA 370 socket and Pentium III with 100 / 133 MHz Front Side Bus for PGA 370 socket.

Celeron and Pentium III processors support MMX technology and Intel Streaming SIMD Extensions. The size and frequency of first-level cache and second-level cache are dependent upon the processor used.

- Intel chipset 810E
  consisting of GMCH 82810E, ICH 82801 and FWH82802
- Intel 82559 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.
- AC'97 Audio Codec
  internal: Stereo CD-In, Stereo AUX-In
  external: Mono Micro-In, Stereo Line-In, Game/Midi-Port, Stereo Line-Out (max. 2 x 0,5 W/8 Ω)
  external: Game/Midi-Port
- Fujitsu Siemens system monitoring and temperature monitoring
- 2 DIMM slots for 16 to 512 Mbyte main memory (SDRAM memory modules meet the PC100 specification) without ECC
- Flash BIOS
- 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
  - Wake on RTC
  - Wake on LAN
  - Wake on PCI Cards
- Security functions:

  Chipcard reader interface
  - Detection of unauthorised opening of the casing
  - System, Setup and Keyboard password
  - parallel and serial ports can be deactivated
  - Floppy disk write-protection
  - Boot hard disk virus warning function
  - Flash BIOS and EEPROMs (on the memory modules) virus protection function.
- 4 PCI slots
  PCI slots support 3.3 V main and auxiliary voltages.
- IDE hard disk controller connected to PCI bus for up to four IDE drives
  (e.g. IDE hard disk drives, ATAPI CD-ROM drives)
  The IDE hard disk controller are ATA33/66, ultra DMA capable and support PIO modes 0-4.
- Floppy disk drive controller (possible formats: 720 KB, 1.44 MB, 2.88 MB)
- The system board supports booting from a 120 MB IDE floppy disk drive.

- 2D/3D graphics processor, 24 bit 230 MHz RAMDAC
  133 MHz display cache for increased 3D graphics performance
- Monitor connector: Sub D
- 1 external parallel interface (ECP- and EPP-compatible)

1 external serial port (16C550 compatible with FIFO)

- 1 internal chipcard reader interface. This interface can also be used as a second serial port (16C550 compatible with FIFO). This port does not support the ring indicator signal.
- 1 internal WOL interface
- 2 external PS/2 interfaces for keyboard and mouse
- 2 external USB ports
- 1 internal USB interface
- Real-time clock/calendar with integrated battery backup

Interfaces and connectors
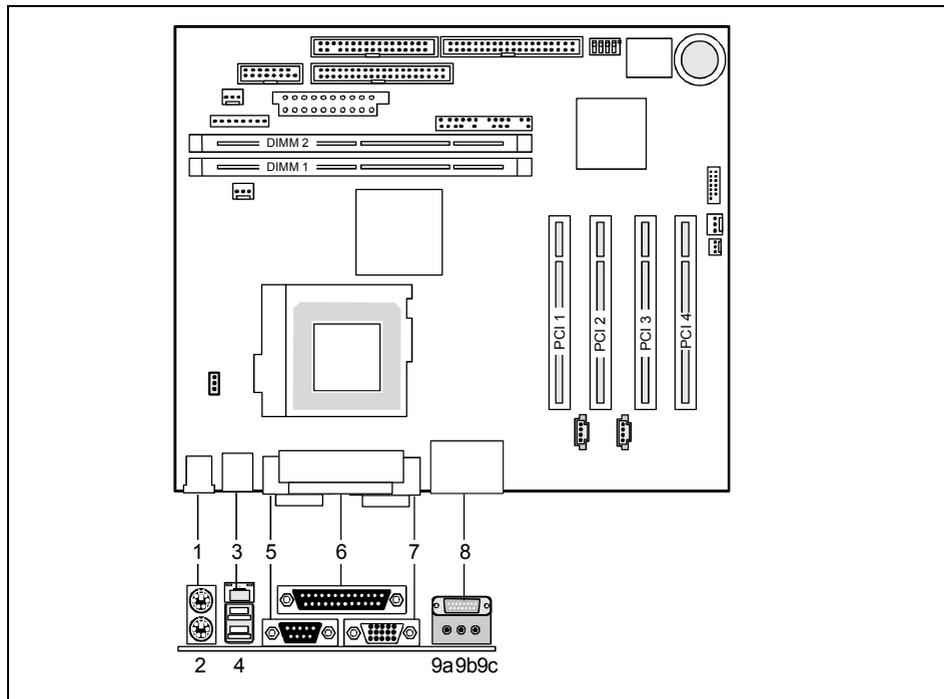
1 = PS/2 mouse port
2 = PS/2 keyboard port
3 = LAN connector
4 = USB port 1 and 2
5 = Serial port 1
6 = Parallel port

7 = VGA port
8 = Game/Midi port
9a = Audio Line-Out
9b = Audio Line-In
9c = Audio Micro-In

The components and connectors marked are not necessarily present on the system board.
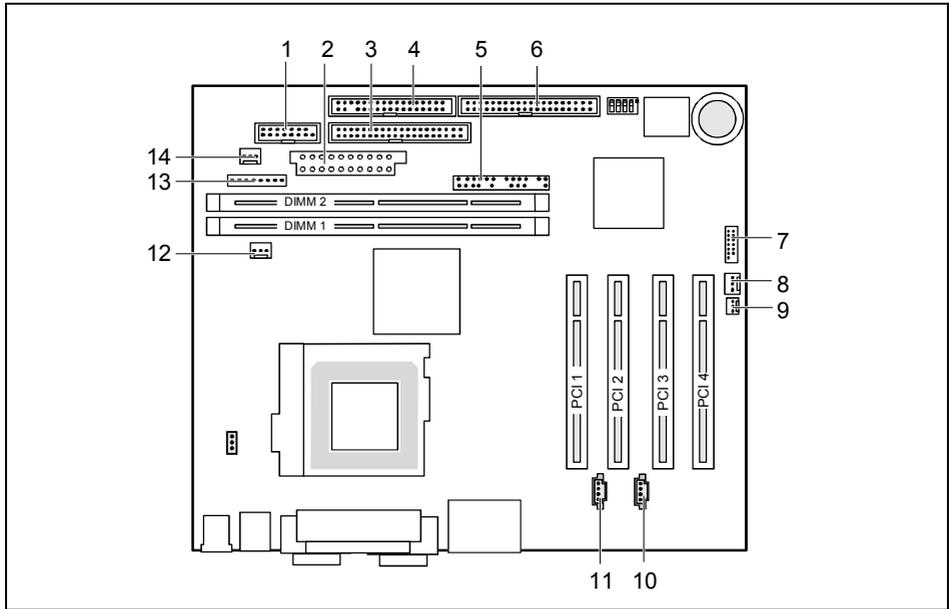
1 = Chipcard reader interface or serial port 2
2 = Power supply
3 = IDE drives 3 and 4 (secondary)
4 = Floppy Disk Drive
5 = Connector for control panel and loudspeaker
6 = IDE drives 1 and 2 (primary)

7 = USB chipcard reader
8 = Fan 2 (e.g. for the processor)
9 = Wake On LAN
10 = CD audio input
11 = AUX audio input
12 = Fan 1 (e.g. for the processor)
13 = Power supply monitoring
14 = Cover monitoring

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.

The temperature and system monitoring are controlled by an onboard controller developed by Fujitsu Siemens.

The following functions are supported:

Temperature monitoring:

Measurement of the processor temperature, measurement of the system temperature with an onboard temperature sensor, measurement of the device temperature with an optional temperature sensor (AUX).

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 that are no longer available, blocked or sticky fans are detected. Blocked or sticky fans are operated with 12 V pulse voltage. Fans removed while the system is switched off are signaled by the *Display news* LED when the system is switched on again and processed by the BIOS or the application.

Fan control:

The fans are regulated according to temperature (exception: auxiliary fan (AUX)).

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. Temperature sensors removed while the system is switched off are signaled by the *Display news* LED 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 reliability, 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 hard disk must be connected with a cable especially designed for the ATA/66 mode.

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

LAN connector

This system board has an optional Intel 82559 LAN controller. 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 device without its own boot hard disk via LAN. Here Bootix LAN BootP and Intel PXE are supported.

The LAN RJ45 connector is equipped with a yellow and a green LED (light emitting diode).
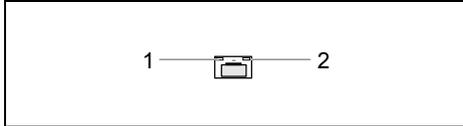
1 = Yellow indicator
2 = Green indicator

Green   a connection exists (e.g. to a hub).

Yellow   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:
A	PCI bus slot 1
B	PCI bus slot 2
C	PCI bus slot 3
D	PCI bus slot 4
D	USB controller
D	LAN controller
A	Graphics processor
B	SMBus
B	AC'97 Audio

Settings with switches and jumpers
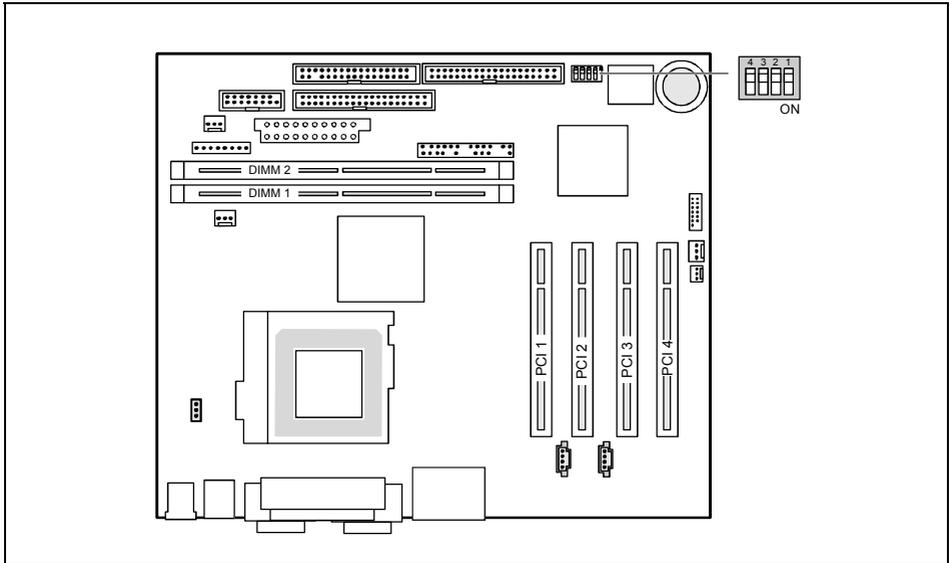
Switch 1 = must be set to *off*
Switch 2 = System BIOS recovery

Switch 3 = Write-protection for floppy disk
Switch 4 = must be set to *off*

i   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).

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   Floppy disks can be read, written and deleted (default setting).

Add-on modules

⚠ Exit Suspend mode, switch off the device and remove the power plug from the mains supply, before carrying out any of the procedures described in this chapter!
Even when you have run down the device, parts of the device (e.g. memory modules, PCI extension boards) are still energised. The voltage indicator LED will glow if this is the case.
PCI slots support 3.3 V main and auxiliary voltages.
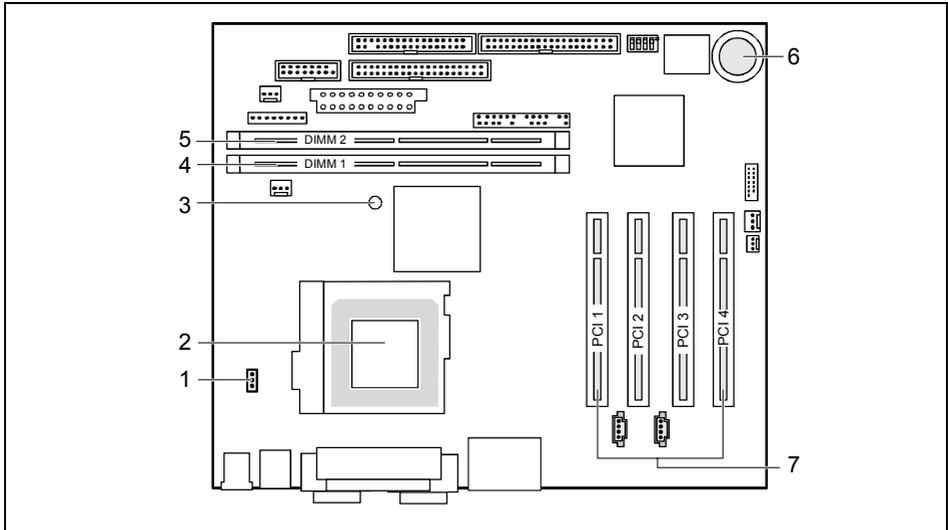
1 = USB power jumper (must always be connected to 2-3)	4 = Location bank 1 for main memory
	5 = Location bank 2 for main memory
2 = Socket for processor with heat sink	6 = Lithium battery
3 = Voltage indicator LED	7 = PCI slots 2, 3, 4, 1

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

Installing and removing processors
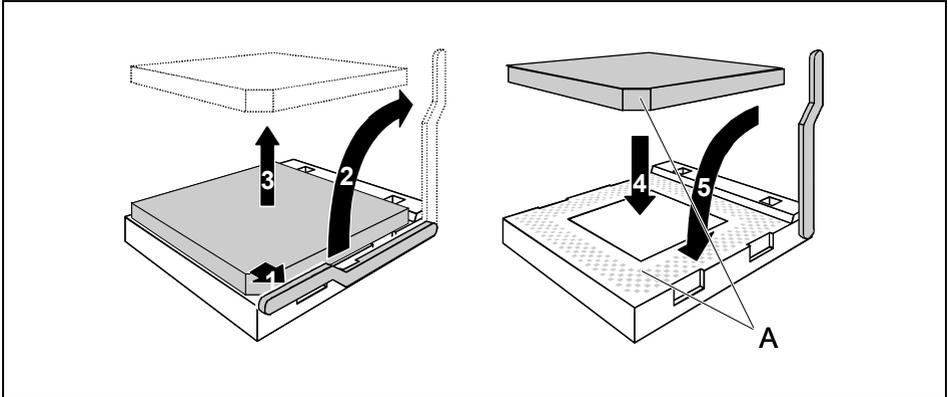
► Pull the lever in the direction of the arrow (1) and lift it as far as it will go (2).

► 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 so that it snaps into place.

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).
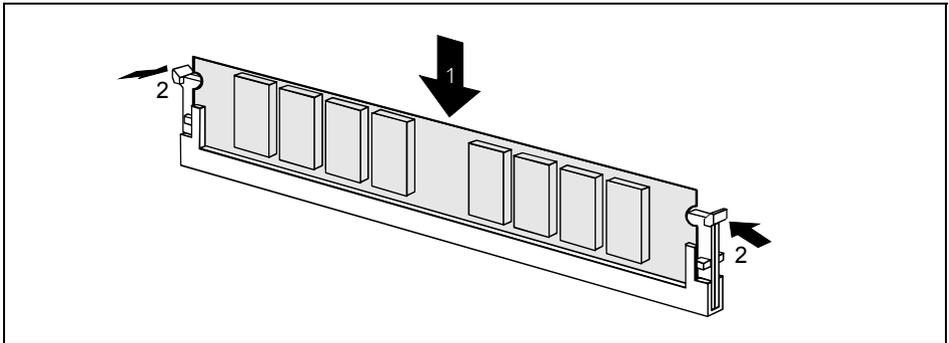
Memory modules with different memory capacities can be combined.

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

SDRAM memory modules must be designed for a clock frequency of 100 MHz (meets PC100 specification).

Installing a memory module

► Push the holders on each side of the memory compartment 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
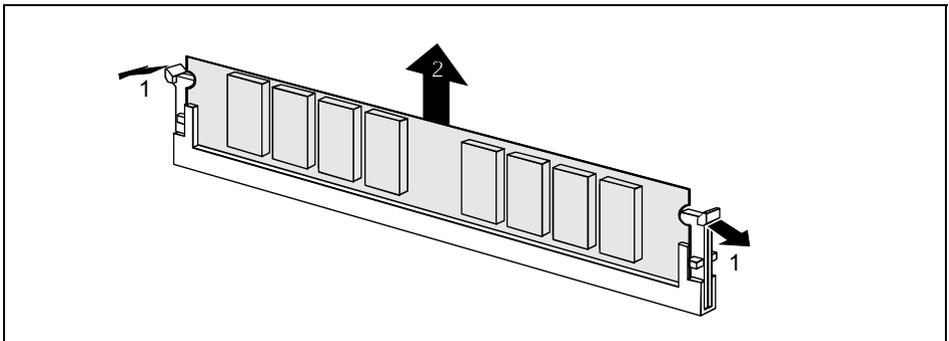
► Flip the holders to the right and left of the location outwards.

► Pull the memory module out of its location.

Installing network board with WOL

► 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.

i	To use the WOL functionality of a network board the power supply must provide a 5 V auxiliary voltage of at least 1 A. If the system board was not already incorporated in a device when you bought it you must check whether your power supply can provide the auxiliary voltage.

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!
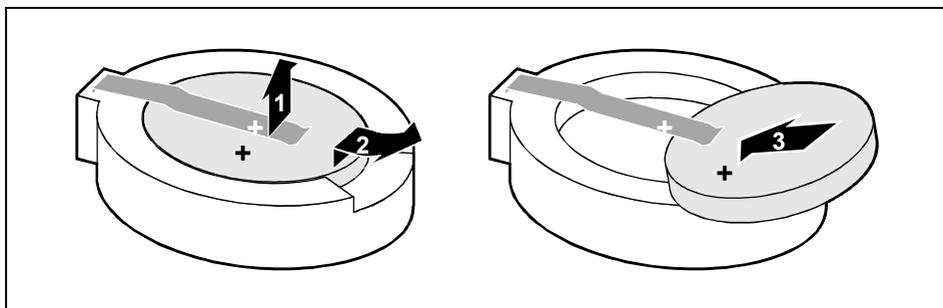
► Lift the contact (1) a few millimetres and remove the lithium battery from its socket (2).

► 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		ISA	Industrial Standard Architecture
AC'97	Audio Codec '97		LAN	Local Area Network
AGP	Accelerated Graphics Port		LSA	LAN Desk Service Agent
AMR	Audio Modem Riser		MCH	Memory Controller Hub
AOL	Alert On LAN		MMX	MultiMedia eXtension
APM	Advanced Power Management		P64H	PCI64 Hub
ATA	Advanced Technology Attachment		PCI	Peripheral Component Interconnect
BIOS	Basic Input Output System		PXE	Preboot eXecution Environment
CAN	Controller Area Network		RAM	Random Access Memory
CPU	Central Processing Unit		RAMDAC	Random Access Memory Digital Analogue Converter
CNR	Communication Network Riser		RDRAM	Rambus Dynamic Random Access Memory
C-RIMM	Continuity Rambus Inline Memory Module		RIMM	Rambus Inline Memory Module
DIMM	Dual Inline Memory Module		RTC	Real Time Clock
ECC	Error Correcting Code		SB	Soundblaster
EEPROM	Electrical Erasable Programmable Read Only Memory		SDRAM	Synchronous Dynamic Random Access Memory
FDC	Floppy Disk Controller		SGRAM	Synchronous Graphic Random Access Memory
FIFO	First-In First-Out			
FSB	Front Side Bus		SIMD	Streaming Mode Instruction (**S**ingle **I**nstruction **M**ultiple **D**ata)
FWH	Firmware Hub		SMBus	System Management Bus
GMCH	Graphics and Memory Controller Hub		SVGA	Super Video Graphic Adapter
GPA	Graphics Performance Accelerator		USB	Universal Serial Bus
I^{2}C	Inter Integrated Circuit		VGA	Video Graphic Adapter
IAPC	Instantly Available Power Managed Desktop PC Design		WOL	Wake On LAN
ICH	I/O Controller Hub			
IDE	Intelligent Drive Electronics			
IPSEC	Internet Protocol Security			