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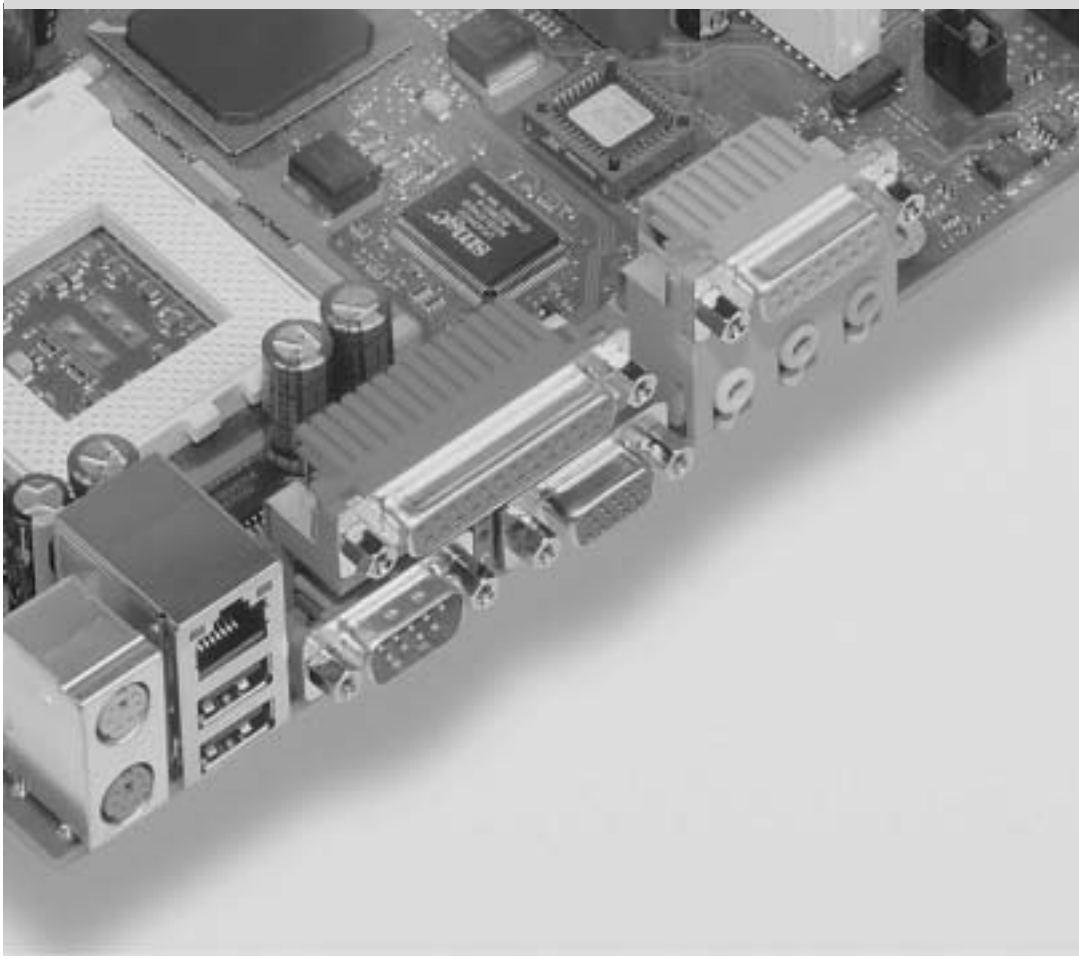
Technisches Handbuch / Technical Manual

Systembaugruppe / System board D1242



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Technisches Handbuch
Technical Manual

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Introduction

This Technical Manual describes the system board D1242, which can be equipped with up to two Intel Xeon processors.

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.

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.

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.

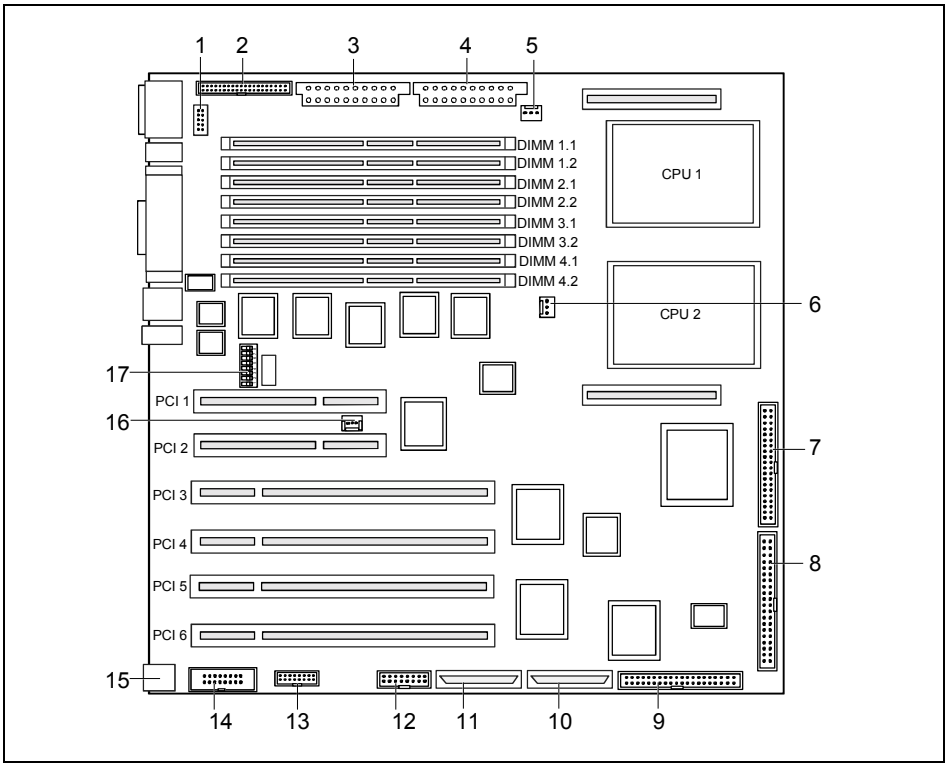
When you handle boards fitted with ESDs, you must, under all circumstances, observe the following points:

- 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

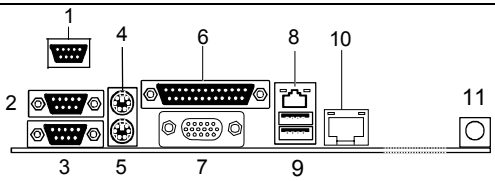
- two processor slots for Intel Xeon processors with 1.8 GHz or higher, with 100/400 MHz Front Side Bus, quad pumped data and double pumped address bus
  512 Kbyte on-die cache
- two 64 bit hot-plug PCI-X slots with 100 MHz
- two 64 bit PCI slots with 66 MHz
- two 32 bit PCI slots with 33 MHz
- 8 PC1600 slots (DDR DIMM memory modules) with minimum 256 MB, maximum 16 GB possible memory configuration
- SCSI controller AIC7899W SCSI 160
- Screen controller ATI Rage XL VGA with 32 bit and 33 MHz PCI
- Intel 82559C Ethernet LAN controller
- IDE hard disk controller connected to PCI bus for up to four IDE hard disks
  ultra DMA66 mode capable, supports PIO modes 3 and 4
- 1 internal serial port for chipcard reader (COM2)
- 1 external parallel port (ECP- and EPP-compatible)
- two external serial ports (COM1 and COM2)
- two external USB ports (USB = Universal Serial Bus)
- 1 RJ45 LAN port for Rompilot/OS
- 1 VGA port
- two external PS/2 ports for keyboard and mouse
- 1 RJ45 LAN port for System Management
- 1 serial port for System Management
- 1 power supply connector for System Management
- 1 port for an accumulator card for System Management

Interfaces and connectors



1 = Serial port for Server Management
2 = Connection for floppy disk drive
3 = Power supply II
4 = Power supply I
5 = Fan connector for CPU 1
6 = Fan connector for CPU 2
7 = IDE drives (secondary)
8 = IDE drives (primary)
9 = Port for powerbackplane support
10 = Connector for SCSI B
11 = Connector for SCSI A
12 = Serial port for chipcard reader
13 = Port for accumulator card
14 = Connector for hot plug panel
15 = Power supply connector for System Management
16 = Wake On LAN
17 = Switch block

External ports



1 = Serial port Server Management
2 = Serial port COM2
3 = Serial port COM1
4 = PS/2 mouse port
5 = PS/2 keyboard port
6 = Parallel port
7 = VGA port
8 = LAN connector
9 = USB ports
10 = LAN port for Server Management
11 = DC power external for Server Management

If a chipcard reader is installed, no device may be connected to serial interface 2 (COM2).

Please use the current driver from the internet under *http://www.fujitsu-siemens.com – "Service & Support"* for the chipcard reader.

ISA bus resources

Device	IRQ	Address	DMA
Keyboard	1	0060	
Serial port COM2	4, **3**, 4, 3	03F8, **02F8**, 03E8, 02E8	
Serial port COM1	**4**, 3, 4, 3	**03F8**, 02F8, 03E8, 02E8	
Floppy disk drive controller	6	03F2	2
Parallel interface LPT1	5, **7**	0278, **0378**, 03BC	1
Real-time clock (RTC)	8	0070	
free	9, 10, 11		
Mouse controller	12		
Numeric processor	13		
IDE controller (primary)	14	1F0-1F7, 3F6	
IDE controller (secondary)	15	170-177, 376	

"IRQ" = interrupt assigned as shipped
"Address" = this address can be used for your particular device
"Address" = this DMA can be used for your particular device
Default settings are shown in bold print.

PCI bus resources

PCI slots

The following table shows an overview of the PCI slots:

PCI slot	64bit/32bit	Description
1	32 bit	PCI bus slot 33 MHz
2	32 bit	PCI bus slot 33 MHz
3	64 bit	Hot Plug PCI-X bus slot 100 MHz
4	64 bit	Hot Plug PCI-X bus slot 100 MHz
5	64 bit	PCI bus slot 66 MHz
6	64 bit	PCI bus slot 66 MHz

PCI IRQ line x - Assignment of the PCI interrupts

Defines which ISA interrupts are used for the separate PCI slots.

Multifunctional PCI boards or boards with an integrated PCI-to-PCI bridge can use several PCI interrupts (INTA#, INTB#, INTC#, INTD#). Monofunctional PCI boards (default) only use one PCI interrupt (INTA#) per PCI slot.

The PCI interrupts INTA#, INTB#, INTC# and INTD# are available for every PCI slot.

With monofunctional PCI boards, the following *PCI IRQ Line* is assigned for INTA# of each PCI slot:

PCI slot	1	2	3	4	5	6
PCI IRQ Line for INTA#	1	3	5	7	9	11

With multifunctional PCI boards, the following *PCI IRQ Line* is assigned for INTA# to INTD# of each PCI slot:

PCI slot	1	2	3	4	5	6
PCI IRQ Line for INTA#	1	3	5	7	9	11
PCI IRQ Line for INTB#	2	4	6	8	10	12
PCI IRQ Line for INTC#	3	5	7	9	11	13
PCI IRQ Line for INTD#	4	6	8	10	12	14

PCI devices on the system board use the following *PCI IRQ Line*:

PCI Device	USB	Ethernet	Copernicus	SCSI A	SCSI B	VGA
PCI IRQ Line	-	15	1, 2, 3, 4	13	14	16

The same interrupt can be assigned simultaneously to several PCI boards. You should avoid this condition due to reduced performance.

If you use a setting other than *Auto*, the Plug&Play functionality of the system BIOS for the corresponding PCI boards is deactivated.

Auto The PCI interrupts are assigned automatically in accordance with the Plug&Play guidelines.

Disabled No ISA interrupt is assigned to the PCI interrupt.

3, 4, 5, 7, 10, 11
The PCI interrupt is switched to the selected ISA interrupt. You may not select an ISA interrupt that is used by a component on the system board (e.g. controller) or an ISA board.

i With the *Auto* setting, you can use the *ICU* (*ISA Configuration Utility*) utility to check how the interrupts are assigned.

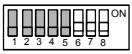
Screen resolution

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)	Max. number of colours
640x480	60	32 bit True Color
640x480	72	32 bit True Color
640x480	75	32 bit True Color
640x480	85	32 bit True Color
640x480	90	32 bit True Color
640x480	100	32 bit True Color
640x480	120	32 bit True Color
640x480	160	32 bit True Color
640x480	200	32 bit True Color
800x600	47	32 bit True Color
800x600	56	32 bit True Color
800x600	60	32 bit True Color
800x600	70	32 bit True Color
800x600	72	32 bit True Color
800x600	75	32 bit True Color
800x600	85	32 bit True Color
800x600	90	32 bit True Color
800x600	100	32 bit True Color
800x600	120	32 bit True Color
800x600	160	32 bit True Color
1024x768	43	32 bit True Color
1024x768	60	32 bit True Color
1024x768	70	32 bit True Color
1024x768	72	32 bit True Color

Screen resolution	Refresh rate (Hz)	Max. number of colours
1024x768	75	32 bit True Color
1024x768	85	32 bit True Color
1024x768	90	32 bit True Color
1024x768	100	32 bit True Color
1152x864	43	32 bit True Color
1152x864	47	32 bit True Color
1152x864	60	32 bit True Color
1152x864	70	32 bit True Color
1152x864	75	32 bit True Color
1152x864	80	32 bit True Color
1280x1024	43	32 bit True Color
1280x1024	47	32 bit True Color
1280x1024	60	32 bit True Color
1280x1024	70	24 bit True Color
1280x1024	74	24 bit True Color
1280x1024	75	24 bit True Color
1600x1200	52	16 bit High Color
1600x1200	58	16 bit High Color
1600x1200	60	16 bit High Color
1600x1200	66	16 bit High Color
1600x1200	70	16 bit High Color
1600x1200	75	16 bit High Color
1600x1200	76	16 bit High Color
1600x1200	85	16 bit High Color

Settings with switches



Switches 1, 3, 4 = must always be set to Off
Switch 2 = New configuration of the memory
Switch 5 = Server Management controller
Switch 6 = Write protection for floppy disks
Switch 7 = Skipping password query
Switch 8 = Recovering system BIOS

New configuration of the memory - switch 2

Switch 2 is used to define whether the memory configuration saved in CMOS is ignored and the physical memory size is redetermined.

on The memory configuration saved in CMOS is ignored and the physical memory size is redetermined.

off The memory configuration from CMOS is used.

Server Management controller - switch 5

Switch 5 activates or deactivates the Server Management controller on the system board.

on The Server Management controller on the system board is deactivated.

off The Server Management controller on the system board is activated.

Write protection for floppy disks - switch 6

Switch 6 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).

Skipping the password query - switch 7

Switch 7 is used to define whether the password is queried at system startup, if the password protection is enabled in *BIOS Setup* (in *Security* menu , the *Password* field must be set to *Enabled*).

on The password query is skipped.

off The password query is effective (default setting).

Recovering System BIOS - switch 8

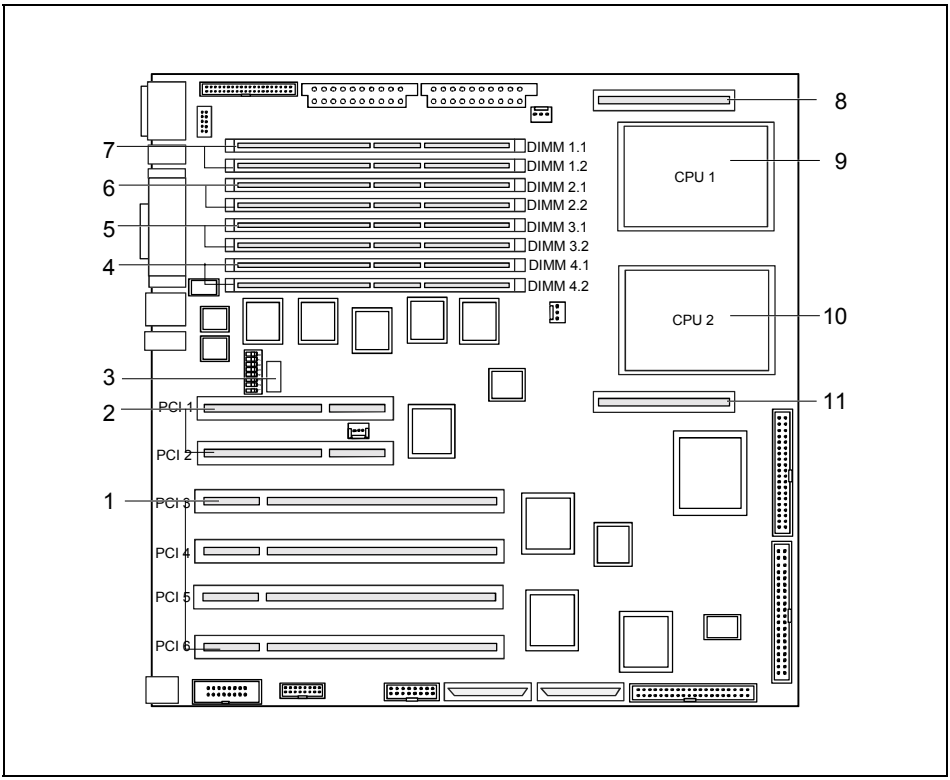
Switch 8 enables recovery of the old system BIOS after an attempt to update has failed. To restore the old system BIOS you need a Flash BIOS Diskette (please call our customer service centre).

on The system boots from the "Flash BIOS floppy disk" from Drive A and reprograms the system BIOS on the board.

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

Add-on modules

For all steps described in this chapter pull the power plug out of the mains outlet!



1 = PCI slots 3 to 6
2 = PCI slots 1 and 2
3 = Lithium battery
4 = Locations for main memory (memory bank 4)
5 = Locations for main memory (memory bank 3)
6 = Locations for main memory (memory bank 2)
7 = Locations for main memory (memory bank 1)
8 = Voltage regulator module (VRM) for CPU 1
9 = Slot for processor 1
10 = Slot for processor 2
11 = Voltage regulator module (VRM) for CPU 2

PCI slots 3 to 6 have 3.3 V signal voltage, PCI slots 1 and 2 have 5 V signal voltage.

Slot sequence

- An additional screen controller must always be inserted into PCI slot 1 or 2.
- Insert 32 bit / 33 MHz adapter first into PCI slots 5, 2 and then into PCI slots 1, 6.
- Insert 64 bit / 66 MHz adapter first into PCI slots 5, 6 and then into PCI slots 1, 2.
- Insert 64 bit / 100 MHz adapter first into PCI slots 5, 3 and then into PCI slots 6, 2.

Upgrading main memory

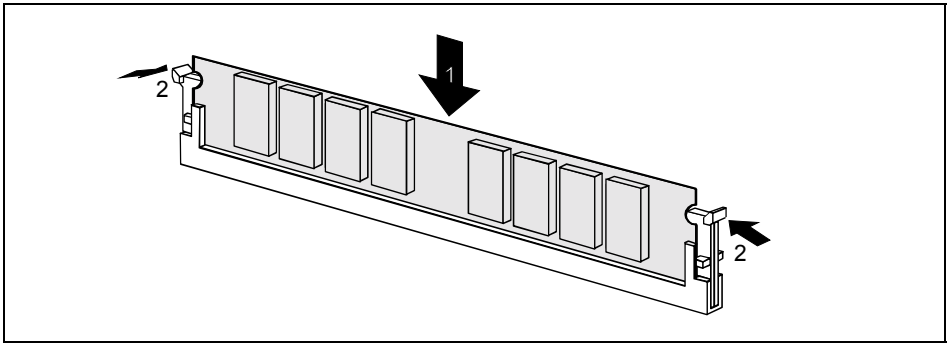
These slots are suitable for DIMM format 128, 256, 512 MB and 1 and 2 GB DDR DRAM memory modules. The organisation in four memory banks 1 to 4 enables fast memory access with two-fold interleave. The board supports a maximum of 16 Gbytes.

Two identical memory modules must be installed per memory bank. Partial equipping of a memory bank is not possible. The equipping sequence of the memory banks is arbitrary.

You may only use buffered 2.5 V memory modules. Unbuffered memory modules are not permitted.

DDR SDRAM memory modules must be designed for a clock frequency of 100 MHz (meets PC1600 specification).

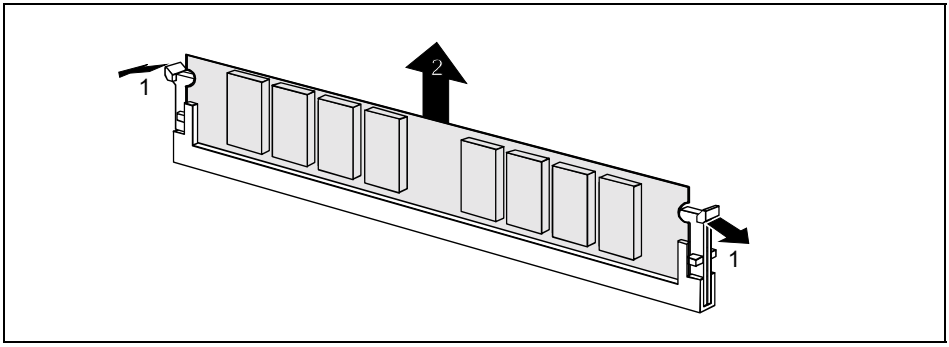
Installing a memory module



► Push the holders on each side of the memory compartment outwards.

► Insert the memory module in the slot while folding the side holders up until the memory module engages (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).

Replacing the lithium battery

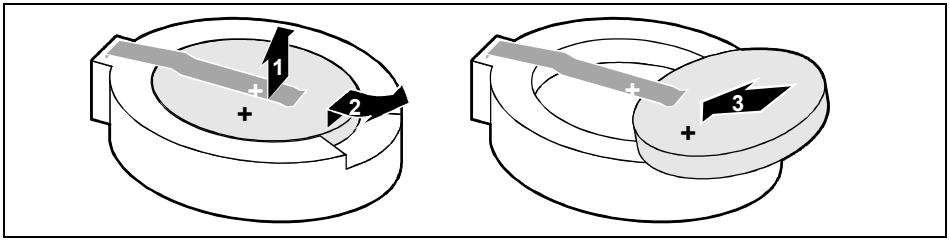
Incorrect replacement of the lithium battery may lead to a risk of explosion.

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!

- **VAROITUS**
  Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.
- **VARNING**
  Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.
- **ADVARSEL**
  Lithiumbatteri - Explosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Lever det brugte batteri tilbage til leverandøren.
- **ADVARSEL**
  Explosionsfare ved feilaktig skifte av batteri. Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten. Brukte batterier kasseres i henhold til fabrikantens instruksjoner.



► 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 Interface
AC'97	Audio Codec '97
AGP	Accelerated Graphics Port
AIMM	AGP Inline Memory Module
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
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^2C	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
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
SCSI	Small Computer System Interface
SDRAM	Synchronous Dynamic Random Access Memory
SGRAM	Synchronous Graphic Random Access Memory
SIMD	Streaming Mode Instruction (**S**ingle **I**nstruction **M**ultiple **D**ata)
SMBus	System Management Bus
SVGA	Super Video Graphic Adapter
USB	Universal Serial Bus
VGA	Video Graphic Adapter
WOL	Wake On LAN