SYSTEMBAUGRUPPE D1184
SYSTEM BOARD D1184

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TECHNICAL MANUAL

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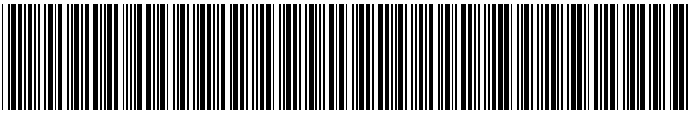

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Deutsch

English

Systembaugruppe D1184
System Board D1184

Technisches Handbuch
Technical Manual

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Contents

Introduction

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

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 & Utilities" 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 device.

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 device.

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 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.

Information on 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 care above all 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, centering 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 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

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

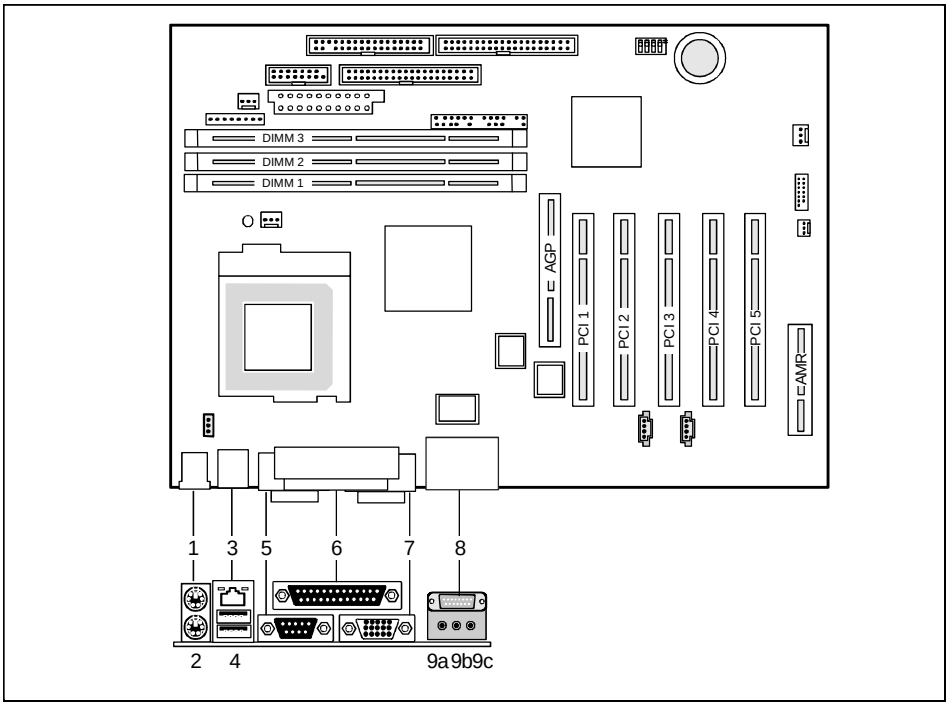
- System board in ATX format
- PGA 370 Celeron processor with 66 /100 MHz Front Side Bus for PGA 370 socket and Pentium III with 100 / 133 MHz Front Side Bus for PGA 370 socket.

Celeron and Pentium III processors support MMX technology and Intel Streaming SIMD Extensions. Size and frequency of first-level cache and second-level cache are depending on the processor used.

- Intel chipset 815
  consisting of GMCH 82815, 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)
- Fujitsu Siemens system monitoring and temperature monitoring
- 3 DIMM slots for 32 to 512 Mbyte main memory (SDRAM memory modules meet the PC100/PC133 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
  - Wake on USB
- Security functions:
  - Chipcard reader interface
  - Processor serial number
  - Detection of unauthorized opening of the housing
  - System, Setup and Keyboard password
  - parallel and serial ports can be deactivated
  - Floppy disk write-protection
  - Virus warning function for the boot hard disk
  - Virus protection function for the flash BIOS and the EEPROMs on the memory modules
- 5 PCI slots
  PCI slots support 3.3 V main and auxiliary voltages.
- 1 AGP slot
  The AGP slot supports the 1x, 2x and 4x AGP mode or GPA memory modules. AGP slot supports 3.3 V main and auxiliary voltages.
- 1 AMR slot

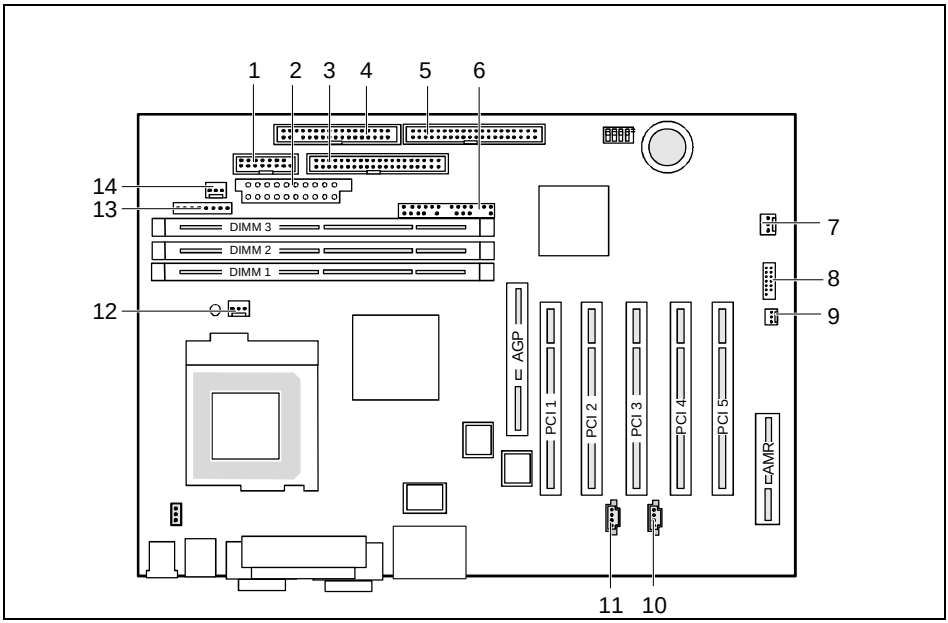
- IDE hard disk controller connected to PCI bus for up to four IDE drives
  (e.g. IDE hard disk drives, ATAPI CD-ROM drives)
  The IDE hard disk controller are ATA33/66, ultra DMA capable and support PIO modes 0-4.
- Floppy disk drive controller (possible formats: 720 Kbyte, 1.44 Mbyte, 2.88 Mbyte)
- The system board supports booting from a 120 Mbyte IDE floppy disk drive.
- 2D/3D graphics processor, 24 bit 230 MHz RAMDAC
  GPA memory modules for enhanced 3D graphics performance is supported.
- 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. As an alternative 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 port
4 = USB ports 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 = Serial chipcard reader interface or serial port 2
2 = Power supply
3 = IDE drives 3 and 4 (secondary)
4 = Floppy disk drive
5 = IDE drives 1 and 2 (primary)
6 = Connector for control panel and loudspeaker
7 = Fan 2 (e. g. for the processor)
8 = USB chipcard reader
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 monitoring / system monitoring

One goal of temperature and system monitoring is to reliably protect the computer hardware against damage caused by overheating. In addition, any unnecessary noise is also to be prevented with a reduced fan speed, and information is to be provided on the system state. The cover monitoring protects the system from unauthorized 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 with the fan speed and/or by reducing the clock frequency of the processor. The clock frequency of the processor is dependent on 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:

A fault or removal of a temperature sensor is detected. In this case all fans affected 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:

Unauthorized opening of the cover is detected, even when the system is switched off. However, this will not be indicated until the system is operating 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 hard disk must be connected with a cable especially designed for the ATA/66 mode.

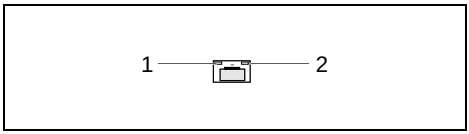
► Connect the blue marked end of the cable to the system board.

LAN port

This system board is equipped with the Intel 82559 LAN controller as an option. This LAN controller supports the transfer speeds 10 Mbit/s and 100 Mbit/s. The LAN controller is equipped with a 3 Kbyte transmission and receiving buffer (FIFO) and supports the 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.

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.

Screen resolution	Refresh rate (Hz)	Horizontal-rate (kHz) **	Max. number of colors
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 color mode

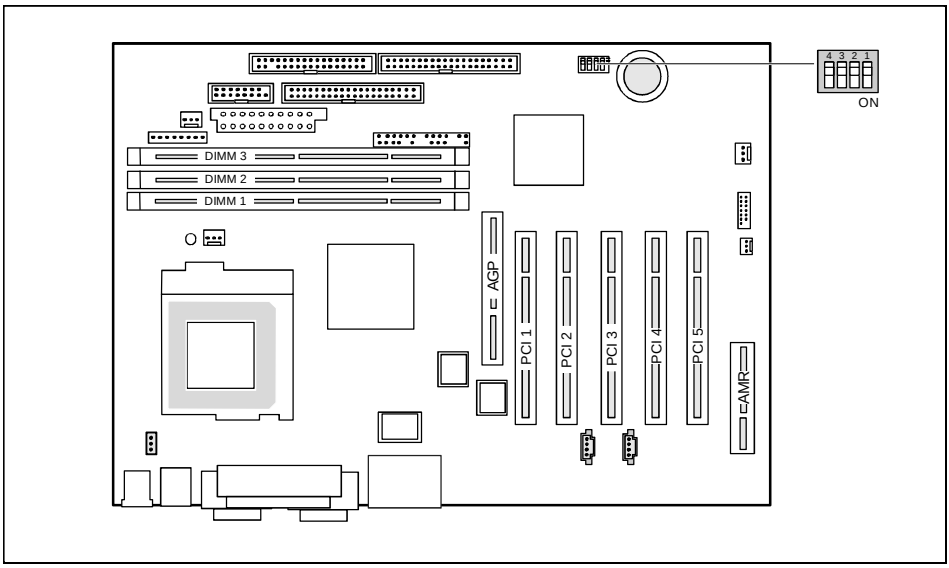
** The horizontal rate values may have a tolerance range of ±0.3 kHz.

PCI bus interrupts

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

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
A, B, C, D	PCI bus slot 4
B, C, D, A	PCI bus slot 5
A, B	AGP slot
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*

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 center).

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

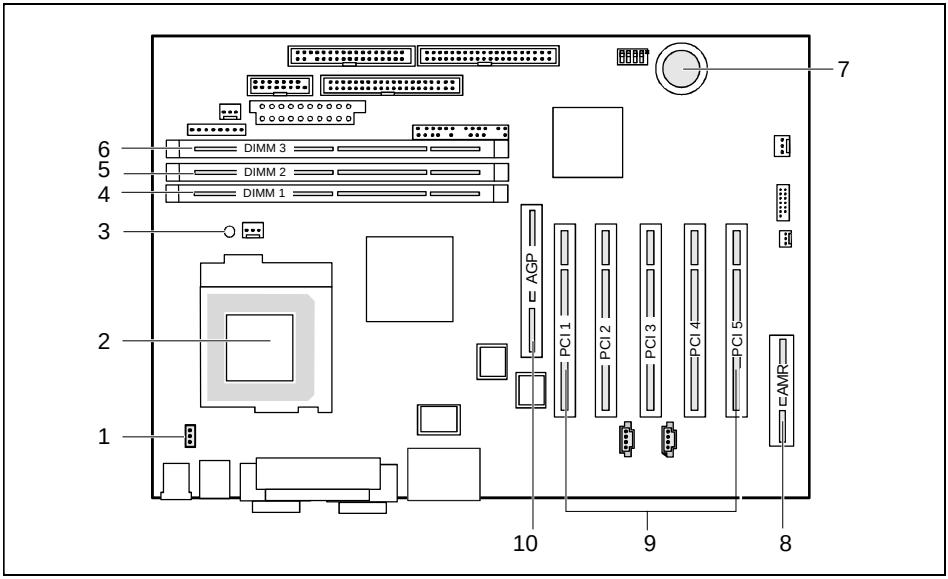
Switch 3 is used to define whether floppy disks can be written or deleted in the floppy disk drive. To write and delete floppy disks, the write-protection in *BIOS Setup* must be disabled (in menu *Security*, the field *Diskette Write* must be set to *Enabled*).

On The floppy disk drive is write-protected.

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

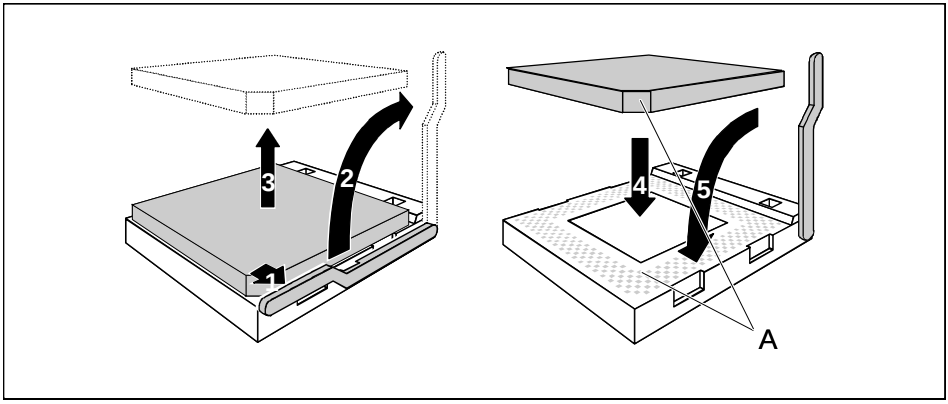
Add-on modules

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!
Even when you have run down the device, parts of the device (e. g. memory modules, AGP and PCI extension boards) are still energized. Should this be the case, the voltage indicator LED glows.
All AGP and PCI slots support 3.3 V main and auxiliary voltages.



1 = USB power jumper (must always be connected to 2-3)
2 = Slot for processor with heat sink
3 = Voltage indicator LED
4 = Location bank 1 for main memory
5 = Location bank 2 for main memory
6 = Location bank 3 for main memory
7 = Lithium battery
8 = AMR slot
9 = PCI slots 1, 2, 3, 4, 5
10 = AGP slot

Installing / removing processor



- ► Push 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 (5).

Upgrading main memory

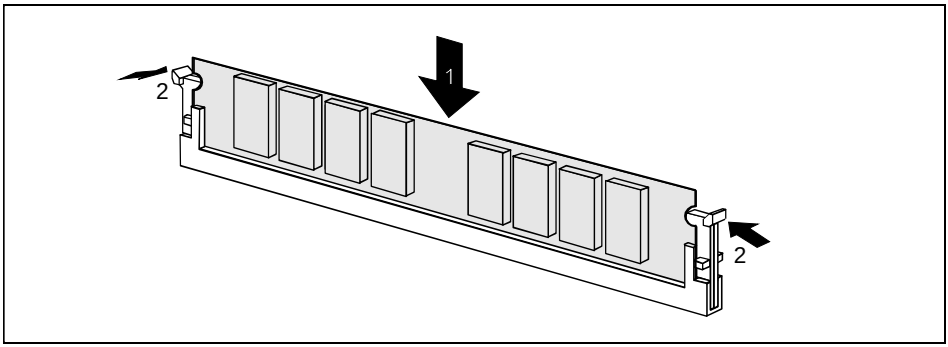
These slots are suitable for 16, 32, 64, 128 and 256 Mbyte SDRAM memory modules of the DIMM format.

Memory modules with different memory capacities can be combined.

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

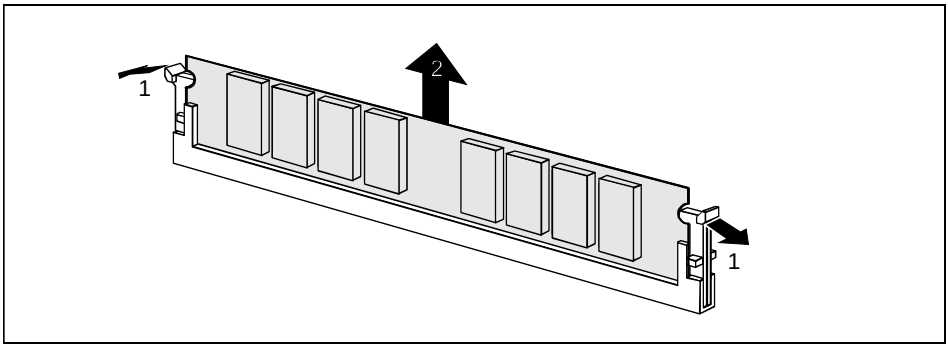
SDRAM memory modules must meet the PC100/PC133 specification. If PC133 memory modules are used it is only allowed to apply 3 single sided or 2 double sided memory modules.

Installing memory modules



- ► Flip the holders on each side of the relevant location 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).

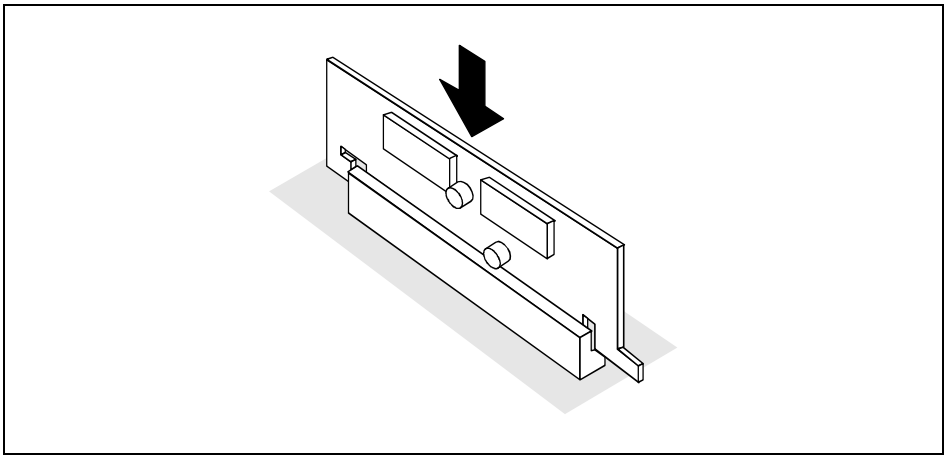
Removing a memory module



- ► Flip the holders to the right and left of the location outwards (1).
- ► Pull the memory module out of its location (2).

Upgrading GPA memory

The GPA memory (AIMM memory) improves the speed of the screen controller on the system board with 3D applications.



► Insert the memory module into the AGP slot (1)

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

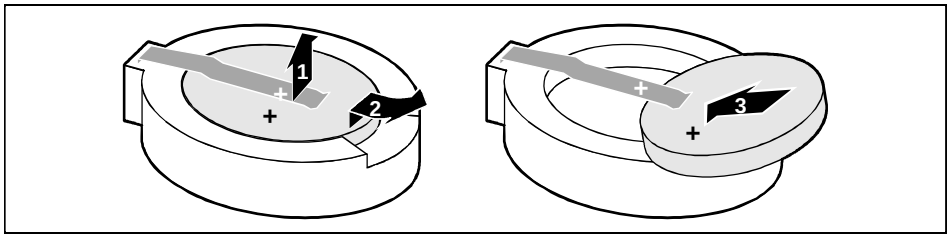
Incorrect replacement of the lithium battery may lead to a risk of explosion.

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 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!

- **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 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 Management 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
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
GPA	Graphics Performance Accelerator
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 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
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