SYSTEMBAUGRUPPE D1173
SYSTEM BOARD D1173

TECHNISCHES HANDBUCH
TECHNICAL MANUAL

FUJITSU COMPUTERS
SIEMENS

Sie haben ...

... technische Fragen oder Probleme?

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

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

Is there ...

... any technical problem or other question you need clarified?

Please contact:
- one of our service partners
- your sales partner
- your sales office

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

A26361-D1173-Z120-1-7419

Deutsch

English

Systembaugruppe
D1173
System board D1173

Technisches Handbuch
Technical Manual

Ausgabe März 2000
March 2000 edition

Contents

Introduction

This Technical Manual describes the system board D1173, which can be equipped with up to four Intel Xeon processors.

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.
i	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

- RCC chipset CNB20HE, CIOB20HE and OSB4 high-end PCI
- four processor slots for Pentium III Xeon processors with 550 MHz or higher, with 100 MHz Front Side Bus
  512 Kbyte, 1 Mbyte or 2 Mbyte second-level cache
- 16 PC100 slots (SDRAM memory modules)
- two 64 bit hot-plug PCI slots with 66 MHz
- four 64 bit hot-plug PCI slots with 33 MHz
- two 32 bit PCI slots with 33 MHz
- one 64 bit extension PCI slot with 33 MHz (for optional I/O board)
- SCSI controller AIC7899 onboard with 2 x ultra3 port with 64 bit and 66 MHz
- Screen controller ATI Rage XL VGA with 32 bit and 33 MHz PCI
- Intel i82559 Ethernet LAN controller
- IDE hard disk controller connected to PCI bus
  ultra DMA33 mode capable, supports PIO modes 0-4
- one external parallel interface (ECP- and EPP-compatible)
- two external serial ports (COM1 and COM2)
- two external and one internal USB port (USB = Universal Serial Bus)
- external CAN bus port
- two external PS/2 interfaces for keyboard and mouse
- system monitoring

Interfaces and connectors
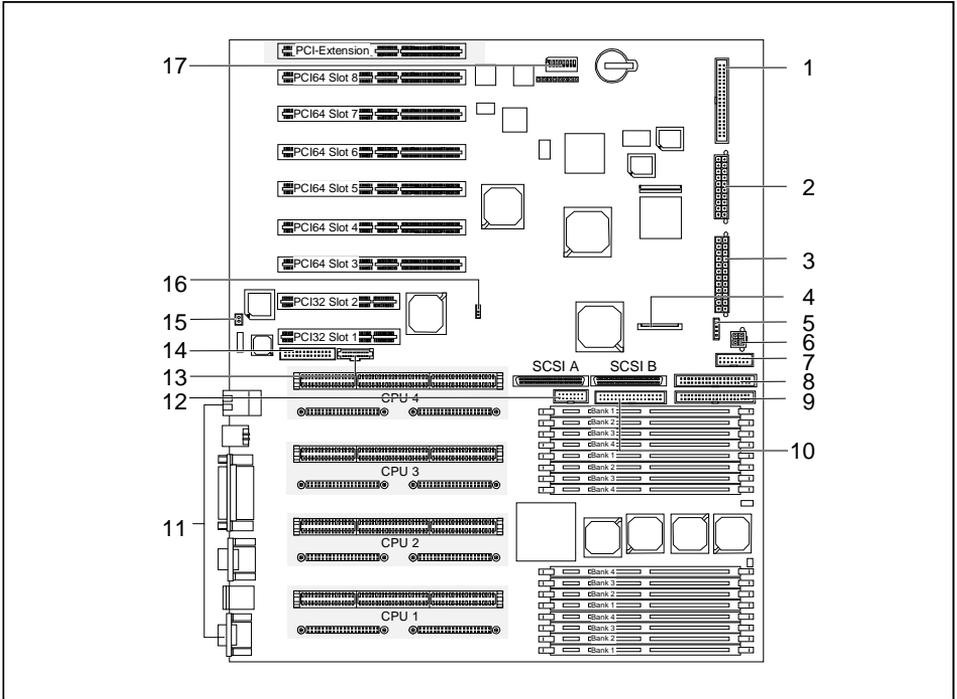
1 = Data cables to the power supply board
2 = Power supply I
3 = Power supply II
4 = Port for remote service board
5 = Power connector for chipdisk
6 = Power supply for remote service board
7 = 2. serial port

8 = IDE drives (primary)
9 = IDE drives (primary)
10 = Floppy disk drive
11 = External ports
12 = Internal USB port for chipcard reader
13 = For test purposes only
14 = Connector for hot plug panel
15 = Wake On Fax
16 = Wake On LAN
17 = Switch block

External ports
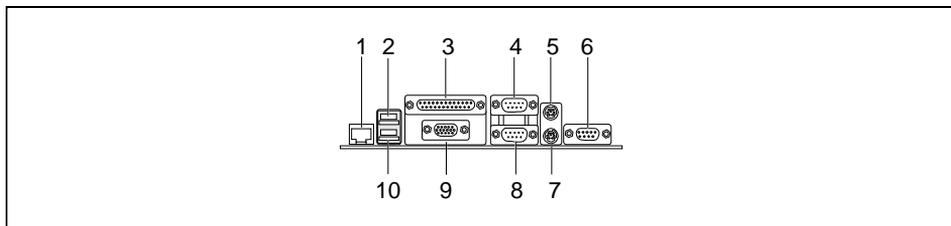
1 = LAN port
2 = USB port 1
3 = Parallel port
4 = Serial port COM2
5 = PS/2 mouse port

6 = CAN port
7 = PS/2 keyboard port
8 = Serial interface COM1
9 = VGA port
10 = USB port 2

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

Please use the current driver from the mailbox for the chipcard reader.

ISA bus resources

Device	IRQ	Address	DMA
Keyboard	1		
Serial port COM2	3	03F8, **02F8**, 03E8, 02E8	
Serial interface COM1	4	**03F8**, 02F8, 03E8, 02E8	
	5		
Floppy disk drive controller	6		2
Parallel interface LPT1	7	0278, 0378, 03BC	0, 1, 3
Real-time clock (RTC)	8		
free	9, 10, 11		
Mouse controller	12		
Numeric processor	13		
IDE controller	14	1F0-1F7	
free	15		

"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	Hot plug	Description
1	32 bit	yes	32 bit PCI bus slot
2	32 bit	yes	32 bit PCI bus slot
3	64 bit	yes	64 bit hot-plug PCI bus slot
4	64 bit	yes	64 bit hot-plug PCI bus slot
5	64 bit	yes	64 bit hot-plug PCI bus slot
6	64 bit	yes	64 bit hot-plug PCI bus slot
7	64 bit	yes	64 bit hot-plug PCI bus slot
8	64 bit	yes	64 bit hot-plug PCI bus slot
9	64 bit	no	PCI extension slot

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	7	8	9*	10*	11*	12*	13*
PCI IRQ Line for INTA#	11	9	5	7	13	14	15	16	9	10	11	12	9

*: The assignment of the PCI slots is only valid for the K400 system with installed extension board.

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	7	8	9*	10*	11*	12*	13*
PCI IRQ Line for INTA#	11	9	5	7	13	14	15	16	9	10	11	12	9
PCI IRQ Line for INTB#	12	10	6	8	14	15	16	13	10	11	12	9	10
PCI IRQ Line for INTC#	9	11	7	5	15	16	13	14	11	12	9	10	11
PCI IRQ Line for INTD#	10	12	8	6	16	13	14	15	12	9	10	11	12

*: The assignment of the PCI slots is only valid for the K400 system with installed extension board.

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

PCI Device	USB	Ethernet	Copernicus	SCSI A	SCSI B
PCI IRQ Line	-	1	2	3	4

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, 12, 14, 15
          The selected ISA interrupt is assigned to the PCI 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.

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)	Max. number of colors
640x480	60	16.7 mio.
640x480	75	16.7 mio.
640x480	85	16.7 mio.
640x480	100	16.7 mio.
800x600	60	16.7 mio.
800x600	72	16.7 mio.
800x600	75	16.7 mio.
800x600	85	16.7 mio.
800x600	100	16.7 mio.
1024x768	60	16.7 mio.
1024x768	72	16.7 mio.
1024x768	75	16.7 mio.
1024x768	90	16.7 mio.
1024x768	100	16.7 mio.
1280x1024	43	16.7 mio.
1280x1024	60	16.7 mio.
1280x1024	70	16.7 mio.
1280x1024	72	16.7 mio.
1600x1200	60	65 K
1600x1200	66	65 K
1600x1200	76	65 K
1600x1200	85	65 K

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

Shaded screen resolutions are not supported by LCD monitors (TFT).

Settings with switches
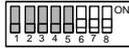
Switch 1 to 5 = must always be set to *Off* Switch 7 = Skipping password query
Switch 6 = Write protection for floppy disks Switch 8 = Recovering system BIOS

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   Read, write and delete floppy disks is possible (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 effective.

off   The password query is skipped (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 center).
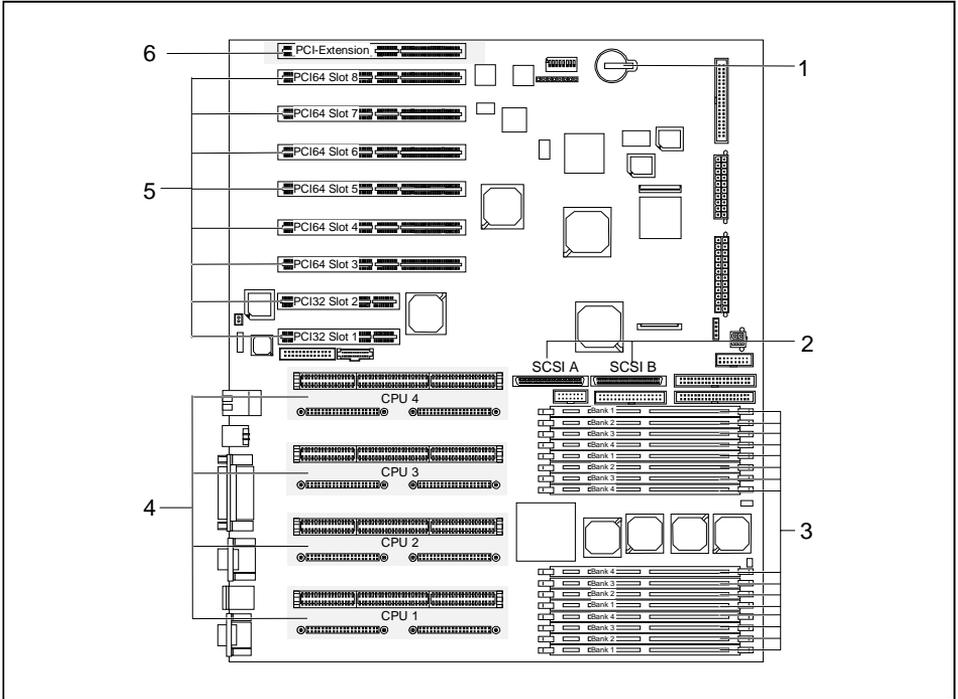
on   The system boots from the "Flash BIOS floppy disk" from Drive A and reprograms the system BIOS on the board.

off   The system is started with the system BIOS from the system board. The system BIOS cannot be reprogrammed (default setting).

Add-on modules

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

1 = Lithium battery
2 = SCSI connection
3 = Locations for main memory (memory bank 1-4)

4 = Slots for processors
5 = PCI slots 1 to 8
6 = PCI extension

i PCI slots support 3.3 V main and auxiliary voltages.

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 1, 2 and then into PCI slots 5, 6, 7, 8.
- Insert 64 bit / 33 MHz adapter first into PCI slots 5, 6, 7, 8 and then into PCI slots 1, 2.
- Insert 64 bit / 66 MHz adapter first into PCI slots 3, 4 and then into PCI slots 5, 6, 7, 8.

Upgrading main memory

These slots are suitable for 128, 256, 64, 512 and 1024 Mbyte SDRAM memory modules of the DIMM format. The organization in four memory banks 1 to 4 enables fast memory access with four-fold interleave. The board supports a maximum of 16 Gbytes.

Four 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 3.3V memory modules. Unbuffered memory modules are not permitted.
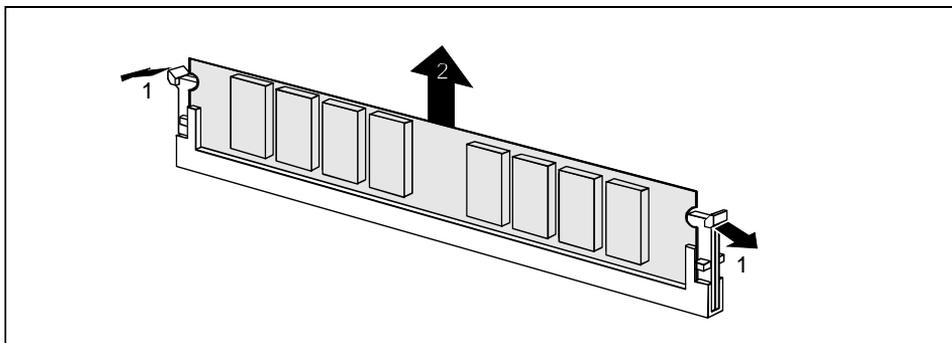
SDRAM memory modules must be designed for a clock frequency of 100 MHz (meets PC100 specification).

Installing memory modules
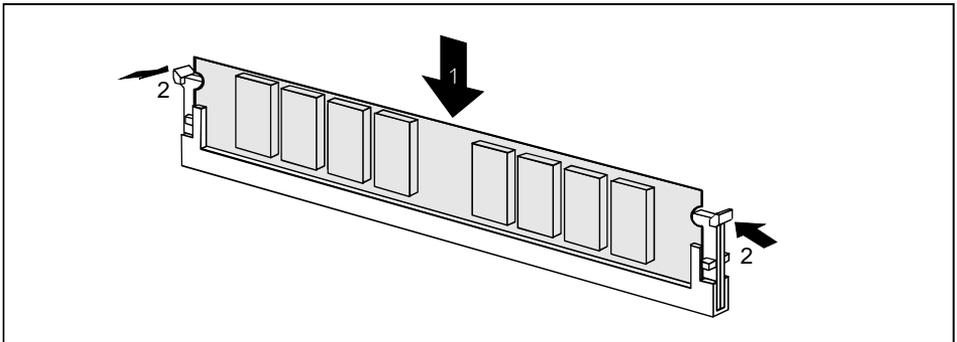
► Flip the holders on each side of the relevant location outwards.

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

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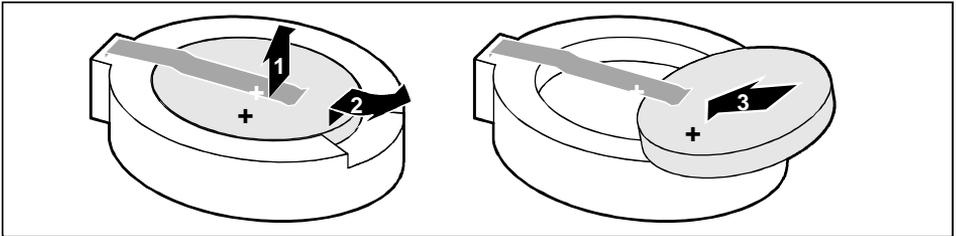
► Lift the contact (1) a few millimeters and remove the battery from its socket (2).

► 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		ISA	Industrial Standard Architecture
AC'97	Audio Codec '97		LAN	Local Area Network
AGP	Accelerated Graphics Port		LSA	LAN Desk Service Agent
AIMM	AGP Inline Memory Module		MCH	Memory Controller Hub
AMR	Audio Modem Riser		MMX	MultiMedia eXtension
AOL	Alert On LAN		P64H	PCI64 Hub
APM	Advanced Power Management		PCI	Peripheral Component Interconnect
ATA	Advanced Technology Attachment		PXE	Preboot eXecution Environment
BIOS	Basic Input Output System		RAM	Random Access Memory
CAN	Controller Area Network		RAMDAC	Random Access Memory Digital Analog Converter
CPU	Central Processing Unit		RDRAM	Rambus Dynamic Random Access Memory
CNR	Communication Network Riser		RIMM	Rambus Inline Memory Module
C-RIMM	Continuity Rambus Inline Memory Module		RTC	Real Time Clock
DIMM	Dual Inline Memory Module		SB	Soundblaster
ECC	Error Correcting Code		SDRAM	Synchronous Dynamic Random Access Memory
EEPROM	Electrical Erasable Programmable Read Only Memory		SGRAM	Synchronous Graphic Random Access Memory
FDC	Floppy Disk Controller		SIMD	Streaming Mode Instruction (**S**ingle **I**nstruction **M**ultiple **D**ata)
FIFO	First-In First-Out		SMBus	System Management Bus
FSB	Front Side Bus		SVGA	Super Video Graphic Adapter
FWH	Firmware Hub		USB	Universal Serial Bus
GMCH	Graphics and Memory Controller Hub		VGA	Video Graphic Adapter
I²C	Inter Integrated Circuit		WOL	Wake On LAN
IAPC	Instantly Available Power Managed Desktop PC Design			
ICH	I/O Controller Hub			
IDE	Intelligent Drive Electronics			
IPSEC	Internet Protocol Security			