

Basisinformationen Mainboard

Basic information on mainboard



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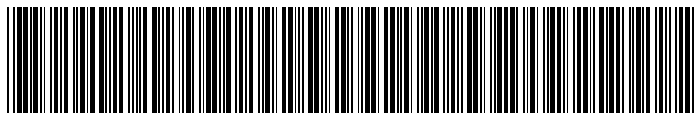
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Basisinformationen Mainboard

This manual contains supplemental information to the "Short Description" manual of your mainboard. The mainboards are available in different configuration levels. Depending on your mainboard, you will not find several hardware components, although they are described in the manual. Details on your mainboard are contained in the "Short Description" manual.

Additional information

Information on the *BIOS Setup* and additional descriptions of the drivers are contained:

- in the "BIOS Setup" manual on the CDs "Drivers & Utilities Collection", "Drivers & Utilities", "ServerStart" or "User Documentation"
- in the readme files on your hard disk
- on the driver floppy disks included
- on the CDs "Drivers & Utilities Collection", "Drivers & Utilities", "ServerStart" or "User Documentation".



The programme *Acrobat Reader* must be installed to be able to open the manuals. For more details please read the according readme.txt files.

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.
- 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

With the mainboard installed you must open the system to access the mainboard. How to dismantle and reassemble the system is described in the operating manual accompanying the system.

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



Observe the safety notes in the operating manual of your system.

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 / Upgrading" - "Replacing the lithium battery" chapter.

Components can become very hot during operation. Ensure you do not touch components when making extensions to the mainboard. 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 manual for the receiving device.



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

Information about boards

To prevent damage to the mainboard, 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 mainboard, or any other components, for example EMI spring contacts.

Remove the plug from the mains outlet so that system and mainboard are totally disconnected from the mains voltage.

Be careful with the locking mechanisms (catches, centring pins etc.) when you replace the mainboard 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:

- 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.

Special features

Your mainboard is available in different configuration levels. Depending on your mainboard, the mainboard is equipped with or supports the features described in the following.

Silent Fan



A micro controller developed by Fujitsu Siemens Computers monitors and controls the fans in the PC and thus prevents any unnecessary noise annoyance. Should the processor become in spite of full turning ventilator too hot, then the processor clock rate will automatically be reduced so that the system continues to run stably. The microcontroller operates independently of the operating system and the processor. Therefore the micro controller protects your PC reliably against overheating and loss of data or even damage of the processor. In addition, the microcontroller offers monitoring of, for example, system voltages (12 V, 5 V, CMOS), opening of the case and a watchdog function.

Silent Fan LT



A controller regulates the processor fan in the PC and thus prevents unnecessary noise pollution. The controller operates independently of the operating system and the processor.

SystemGuard



With *SystemGuard* the function of the onboard Silent Fan Controller is displayed. *SystemGuard* indicates temperature, rotational speed of the fan and voltages, which are measured by the Silent Fan Controller. Moreover the software offers various setting options to optimise the noise level. *SystemGuard* is a freeware-tool, which is available on the internet.

Silent Drives



Hard disks and optical drives (CD-ROM, CD-RW, DVD etc.) are besides the fans some of the greatest sources of noise in a PC. The *BIOS-Setup* can be used to switch these drives into a quieter mode.

Recovery BIOS



If an error occurs during a BIOS update (e. g. due to a power failure), the system BIOS will be destroyed. All Fujitsu Siemens Computers mainboards are equipped with a recovery BIOS. With it a destroyed BIOS can easily be restored. Exact instructions are provided in the chapter "BIOS Recovery - Recovering System BIOS".

DeskUpdate



DeskUpdate enables simple, automatic driver installation. The function is available both on the CD "Drivers & Utilities" and on the Internet.

Multi Boot



The BIOS of the Fujitsu Siemens Computers mainboards enables booting from all types mass storage devices. In addition to IDE hard disks, this also includes optical drives, such as CD-ROM, DVD and external drives that can be connected to USB or FireWire.

Safe Standby



With *Safe Standby* the content of the main memory is saved to the hard disk when the PC switches into the Standby mode. In case of an unexpected power failure, the content of the main memory is loaded during booting from the hard disk.

Additional information is available on the Internet at www.fujitsu-siemens.com/manageability.

Harddisk Password



A password assignment for the hard disk is only possible with suitable hard disks and prevents unauthorised access to the stored data.

For up to four hard disks one password each can be assigned in the *BIOS-Setup* (e. g. for up to four different users).

Additional information is contained in the "BIOS Setup" manual.

Brief instructions on installing mainboard

If you have purchased a separate mainboard, you can install the mainboard in your system in accordance with the following brief instructions.

The activities described here assume a basic knowledge of PCs and cannot be carried out by a layperson. If you are not sure whether you have the necessary specialised knowledge, then leave this work to an expert.

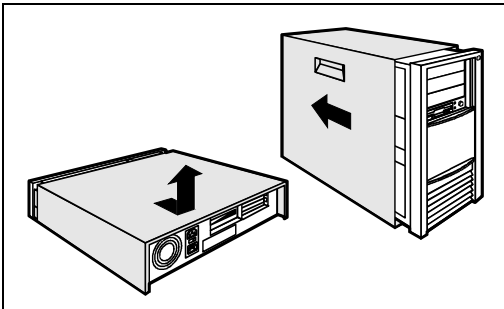
The illustrations of the system show examples of possible cases.

Prior to installation

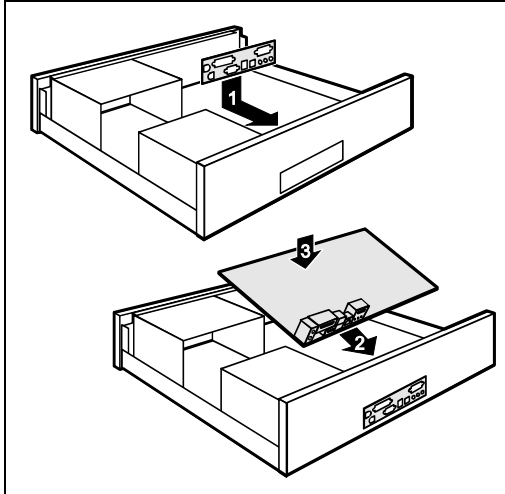
- ▶ Please take note of the safety information in the "Important notes" chapter.
- ▶ Check whether the processor, memory modules and power supply are suitable for this mainboard:
 - processor (see "Installing and removing processors" chapter).
 - memory modules (see "Upgrading main memory" chapter).
- ▶ Make sure the current requirement of the fans (processor, case) does not exceed the loadability of the fan connections.
- ▶ First only install the components absolutely necessary (graphics card, processor and heat sink, one memory module) and only connect the required connections (power supply unit, case connections such as ATX on/off switch, hard disk or floppy disk drive). You should not install additional cards and devices until this minimum configuration successfully boots (see chapter entitled "Add-on modules / Upgrading").

Installation

- ▶ Equip the mainboard with the processor, heat sink and memory modules before installation if possible. Further information can be found in "Installing and removing processors" chapter.



- ▶ Open the casing as described in the operating manual.



- ▶ Should no suitable connection field be provided in the case, then you must install the connection field (1) provided.

Ensure the plate is aligned properly so that the connections are suitable for the mainboard later.

- ▶ Set the mainboard on the edge on which the connection field is located (2) and then insert the board in the case (3).

Make sure that spacers in the housing are only mounted at points at which there are mounting holes in the mainboard.

- ▶ Fasten the mainboard with the screws.

- ▶ Connect the plugs for the power supply, control panel and drives to the corresponding connections on the mainboard.

Driver installation

- ▶ Install the drivers for the chipset. You may find the driver on the "Drivers & Utilities" CD. Please refer to chapter "Drivers" for a description of installing drivers.

Interfaces and connectors

The location of the connections and connectors of your mainboard is specified in the "Short Description" manual.

External ports

The locations of the external connections are usually marked with the following symbols.



PS/2 keyboard port, purple



Audio input (Line in), light blue



Serial interface, turquoise



PS/2 mouse port, green



Monitor port, blue



Parallel port/Printer, burgundy

LAN

LAN port



USB - Universal Serial Bus, black



Audio output (Line out), light green



Microphone jack (mono), pink

1394

FireWire™, grey

S/PDIF

digital 6-channel audio output, orange

Internal ports and connectors

The location of the internal connections and connectors of your mainboard is specified in the "Short Description" manual.

Audio front panel

If you want to use the internal connection for the audio front panel for the front side of the system, then proceed as follows:

- ▶ Remove all jumpers from the audio front panel connection, if present.
- ▶ Connect the cable for the audio front panel.

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Only for mainboards with AC97 audio controller

If you connect audio devices on both the front and the back of the system, you can only use the connections Line out and Microphone once each.

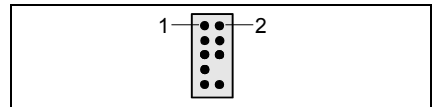
If you have connected audio devices to both Line out connections, only the connection on the front of the system is active.

If you have connected audio devices to both Microphone connections, only the connection on the back of the system is active.

AC97 Audio - 2, 4 or 6-channel audio mode

Audio port front

AC97 audio (black)



Pin	Signal	Pin	Signal
1	Micro input	2	Analogue GND
3	Micro bias	4	Analogue VCC
5	Right line output	6	Right line return
7	not connected	8	Key
9	Left line output	10	Left line return

If the audio front panel is not used, you must plug the jumpers on pin pairs 5/6 and 9/10.

When equipped with an AC97 audio controller, the mainboard can support a 6-channel audio output via the analogue audio channels (2 front, 2 rear, 1 centre and 1 subwoofer channel). This makes it possible to connect 4 or 6 loudspeakers, and therefore to achieve a better surround-sound effect.

i

Some mainboards with an AC97 audio controller only support stereo audio. The audio functions your mainboard supports are specified in the "Short Description" manual for your mainboard.

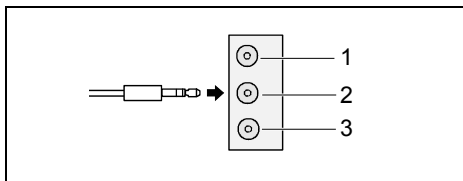
Drivers

A corresponding driver must be installed for the 2, 4 or 6-channel audio mode. If the drive is not installed yet, proceed as described in the chapter "Add-on modules / Upgrading", in the section "Drivers".

Connecting loudspeakers

The number of loudspeakers connected should match the number of audio channels you select in the driver software.

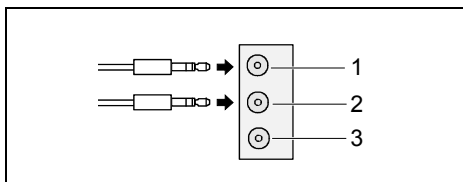
Using external audio connections



Analogue 2-channel audio output

With the 2-channel configuration the functions Line-Out, Line-In and MIC are available.

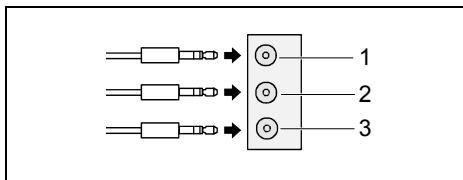
- 1 = Line-In (blue)
- 2 = Line-Out (front channels, green)
- 3 = MIC (red)



Analogue 4-channel audio output

Line-In is converted into the Rear-Out function with the 4-channel configuration.

- 1 = Line-In (rear channels, blue)
- 2 = Line-Out (front channels, green)
- 3 = MIC (red)



Analogue 6-channel audio output

Line-In and MIC are converted into the function Line-Out with the 6-channel configuration.

- 1 = Line-In (rear channels, blue)
- 2 = Line-Out (front channels, green)
- 3 = MIC (centre and subwoofer channel, red)



Depending on driver version and operating system the functions may differ from this presentation. If necessary, further information is provided in the respective help system of drivers and software.

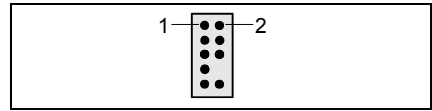
Selecting settings for 2, 4 or 6-channel audio mode

Depending on the driver for the audio mode and from the operating system used, you can configure the audio properties, e.g. with Windows 2000 under *Start - Settings - Control Panel - Sounds and Multimedia*.

High Definition Audio - 2, 4 or 6-channel audio mode

Audio port front

High Definition Audio (yellow)



Pin	Signal	Pin	Signal
1	Micro input Left	2	Analogue GND
3	Micro input Right	4	Presence Detect
5	Right line / Headphone output	6	Sense 1 return
7	Jack sense Send	8	Key
9	Left line / Headphone output	10	Sense 2 return

When equipped with a high-definition audio controller the mainboard can support an 8-channel audio output via the analogue audio channels (2 front, 2 side, 2 rear, 1 centre and 1 subwoofer channel). This makes it possible to connect up to 8 loudspeakers, and therefore to achieve a better surround-sound effect.

Drivers

A corresponding driver including the configuration tool must be installed for the 2, 4, 6 or 8-channel audio mode. If the drive is not installed yet, proceed as described in the chapter "Add-on modules / Upgrading", in the section "Drivers".

Connecting loudspeakers

The configuration tool detects the connection of loudspeakers for other audio devices. The Audio Wizard of the configuration tool assures itself by asking about each connected audio device. Follow the instructions on the screen.

The number of connected loudspeakers must match the selected number of audio channels which you have set in the configuration tool (*Speaker Configuration*).

Special feature of sound recording

To record sound of a connected audio device, proceed as follows:

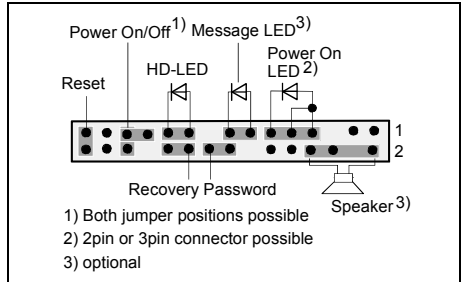
- ▶ Connect the audio device if necessary.
- ▶ Answer the query of the Audio Wizard.
- ▶ Select the corresponding audio input for sound recording (see following table) as the standard recording device (*Control Panel - Sounds and Audio Devices - Audio* tab).
- ▶ Select the corresponding *Audio Input Mixer* in the Windows volume control (*Options - Audio Properties*).
- ▶ Set the desired recording level in the Windows volume control (for recordings).

The following mixers or input devices are available:

Realtek HD Front Green Jack	Front (green) jack
Realtek HD Front Pink Jack	Front (pink) jack
Realtek HD Audio Rear Input	Rear (pink) jack (microphone) Rear (blue) jack (Line-In) Audio-In (internal jack on mainboard)

Front panel

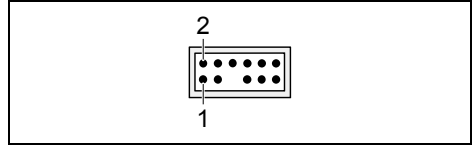
Watch the poling of the LEDs. The positive pole of the connection cables is often indicated with a coloured wire.



Port	Note
Reset	Connector for reset switch
Power On/Off	Connection for ATX On/Off switch
HD LED	Indicates HDD (hard disk) activity
Message LED	Optional: Indicates system management error
Power On LED	Indicates the system state APM or ACPI
Recovery	see "Settings with switches and jumpers" chapter
Password	see "Settings with switches and jumpers" chapter
Speaker	Optional: 0,5 W at 8 Ohm

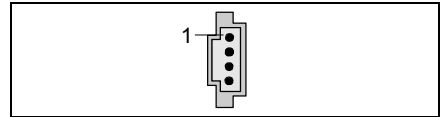
Pin	Signal	Pin	Signal
1	GND	2	Speaker -
3	"Stand by" LED +	4	Key
5	Key	6	GND
7	"Power On" LED +	8	Speaker +
9	"Power On" LED +	10	Reserved
11	"Power On" LED - / "Stand by" LED - / (GND)	12	Reserved
13	"Message" LED +	14	Key
15	"Message" LED -	16	Password Skip
17	Key	18	GND
19	"HD" LED +	20	GND
21	"HD" LED -	22	Recover BIOS
23	GND	24	Key
25	Power-Button (low asserted)	26	GND
27	reserved	28	GND
29	Reset-Button (low asserted)	30	GND

LCD display



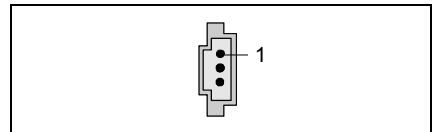
Pin	Signal	Pin	Signal
1	SMB CLK	8	LAN Link Icon
2	GND	9	Harddisk Action Icon
3	SMB DATA	10	BMC Alert Icon
4	GND	11	Message Icon
5	Key	12	Sleep Icon
6	RFU Reserved for Future use	13	Power Icon
7	LAN Active Icon	14	P3V3P_DUAL

Audio In



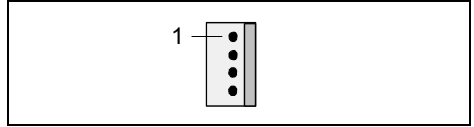
Pin	Signal
1	Left audio input
2	Analogue GND
3	Analogue GND
4	Right audio input

Audio S/PDIF (optional)



Pin	Signal
1	VCC
2	SPDIF out
3	GND

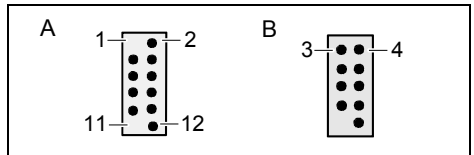
Temperature sensor SMB



Pin	Signal
1	P3V3P DUAL
2	SMB CLK
3	SMB DATA
4	GND

USB - dual channel

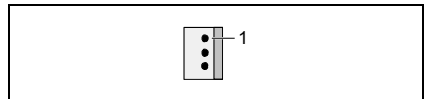
A = with chipcard reader support
 B = without chipcard reader support



Pin	Signal	Pin	Signal
1	Key	2	Chipcard reader on or not connected
3	VCC x	4	VCC y
5	Data negative x	6	Data negative y
7	Data positive x	8	Data positive y
9	GND	10	GND
11	Key	12	not connected

Fan

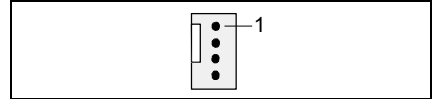
(only for 3 pin fans)



Pin	Signal
1	GND
2	Controlled FAN voltage (0V, +6V, ... +12V, max. 1A) or fix Fan voltage (+12 V, max. 1 A)
3	Fan sense

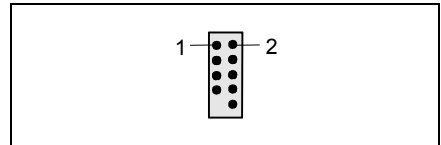
Fan

(only for 4 pin fans)



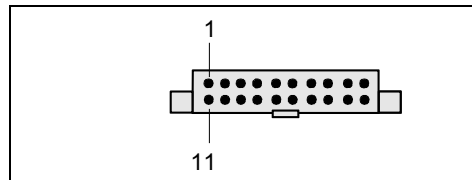
Pin	Signal
1	GND
2	+12 V
3	Fan sense
4	Fan control (PWM)

1394 connector (internal header)



Pin	Signal	Pin	Signal
1	TPA+	2	TPA-
3	GND	4	GND
5	TPB+	6	TPB-
7	+12 V	8	+12 V
9	Key	10	GND

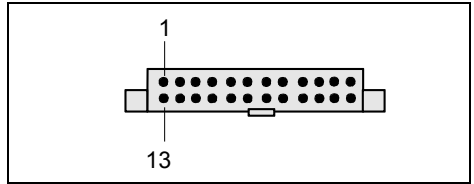
Power supply ATX



Pin	Signal	Pin	Signal
1	+3.3V(P3V3P)	11	+3.3V(P3V3P)
2	+3.3V(P3V3P)	12	-12V (P12VN)
3	GND	13	GND
4	+5V (VCC)	14	PS on (low asserted)
5	GND	15	GND
6	+5V (VCC)	16	GND
7	GND	17	GND
8	Powergood (high asserted)	18	-5V (5PVN)
9	+5V Auxiliary (VCC Aux)	19	+5V (VCC)
10	+12V (P12VP)	20	+5V (VCC)

Power supply BTX

(ATX compatible)



24-Pin BTX connector

Pin	Signal	Pin	Signal
1	+3.3 V (P3V3P)	13	+3.3 V (P3V3P)
2	+3.3 V (P3V3P)	14	-12 V (P12VN)
3	GND	15	GND
4	+5V (VCC)	16	PS on (low asserted)
5	GND	17	GND
6	+5V (VCC)	18	GND
7	GND	19	GND
8	Powergood (high asserted)	20	-5 V (P5VN)
9	+5 V Auxiliary (VCC Aux)	21	+5 V (VCC)
10	+12 V (P12VP)	22	+5 V (VCC)
11	+12 V (P12VP)	23	+5 V (VCC)
12	+3.3 V (P3V3P)	24	GND

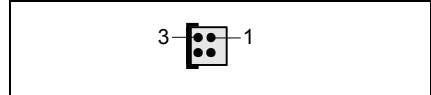
24-Pin connector for D216x



Do not connect this connector with a standard power supply!

Pin	Signal	Pin	Signal
1	+3.3 V (P3V3P)	13	+3.3 V (P3V3P)
2	+3.3 V (P3V3P)	14	-12 V (P12VN)
3	GND	15	GND
4	+5V (VCC)	16	PS on (low asserted)
5	GND	17	GND
6	+5V (VCC)	18	GND
7	GND	19	GND
8	Powergood (high asserted)	20	-5 V (P5VN)
9	+5 V Auxiliary (VCC Aux)	21	+5 V (VCC)
10	+12 V (P12VP)	22	+5 V (VCC)
11	Fan sense	23	GND
12	Fan PWM	24	Power Supply Monitoring

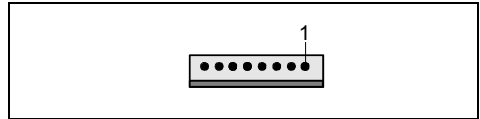
Additional power supply ATX12 V



Pin	Signal	Pin	Signal
1	GND	2	GND
3	+12 V	4	+12 V

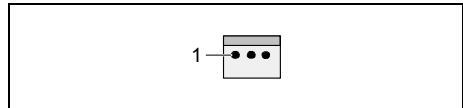
Power supply control

(System monitoring)



Pin	Signal
1	Power Guard Control
2	PS FAN Control
4	PS FAN Sense

Intrusion



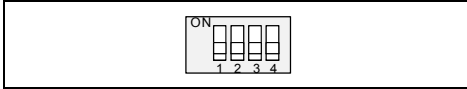
Pin	Signal
1	GND
2	Case open (low asserted)
3	Intrusion switch present (low asserted)

Settings with switches and jumpers

Switches and jumpers

Your mainboard is optionally equipped with switches or jumpers. The location of the switches or jumpers is specified in the "Short Description" manual.

Setting with switches



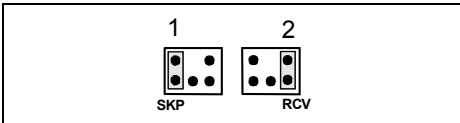
Switch 1 = Skipping system and BIOS Setup password

Switch 2 = System BIOS recovery

Switch 3 = must be set to *off*

Switch 4 = must be set to *off*

Setting with jumpers



Pin pair 1 inserted =

Skipping system and BIOS Setup password

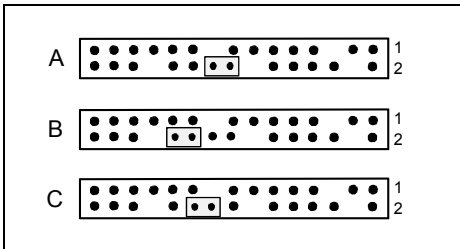
Pin pair 2 inserted =

System BIOS recovery

Any other setting =

State of supply; jumper has no function

Setting via control-panel plug connector



Pin pair A inserted =

Skipping system and BIOS Setup password

Pin pair B inserted =

System BIOS recovery

Pin pair C inserted =

factory setting



Please pay attention on the exact position of the pin pairs!

Skipping system and BIOS Setup password - switch 1 / pin pair 1 / pin pair A

Switch 1 / pin pair 1 / pin pair A enables skipping the system and BIOS Setup password.

Inserted System and BIOS Setup password are skipped when the device is switched on and may be changed.

Not inserted System and BIOS Setup password must be entered when the device is switched on.

Recovering System BIOS - switch 2 / pin pair 2/ pin pair B

Switch 2 / pin pair 2 / pin pair B enables recovery of the old system BIOS after an attempt to update has failed. To restore the old BIOS you need a Flash BIOS Diskette (see "BIOS update" chapter).

Inserted The System BIOS executes from floppy drive A: and the inserted "Flash-BIOS-Diskette" restores the System BIOS on the mainboard.

Not inserted Normal operation (default setting).

Reserved - switch 3 and switch 4 (if present)

Switch 3 and 4 are reserved. The position of the switch doesn't matter.

Add-on modules / Upgrading



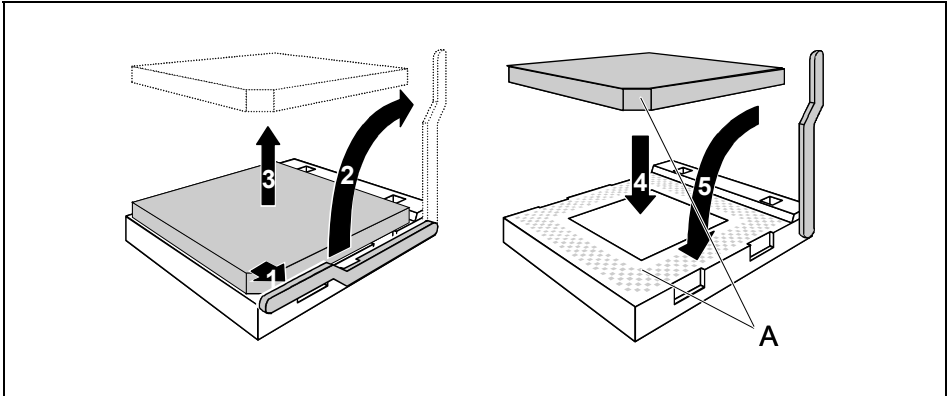
Exit energy-saving mode, switch off the system and remove the power plug from the mains outlet, before carrying out any of the procedures described in this chapter! Even when you have run down the device, parts of the device (e.g. memory modules, PCI extension boards) are still energised.

Installing and removing processors

There are different socket types for the processor, resulting in different procedures for processor installation and removal.

Socket type mPGA478, mPGA754 and mPGA939

- ▶ Remove the fan that there may be and the heat sink.



- ▶ 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 can also be at a different location than shown in the illustration.

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

Mounting heat sink

Be sure to use heat conducting material between the processor and the heat sink. If a heat conducting pad (rubber-like foil) is already applied to the heat sink, then use it. Otherwise you must apply a very thin layer of heat conducting paste.

Heat conducting pads can only be used once. If you remove the heat sink, you must clean it and apply new heat conducting paste before you remount it.

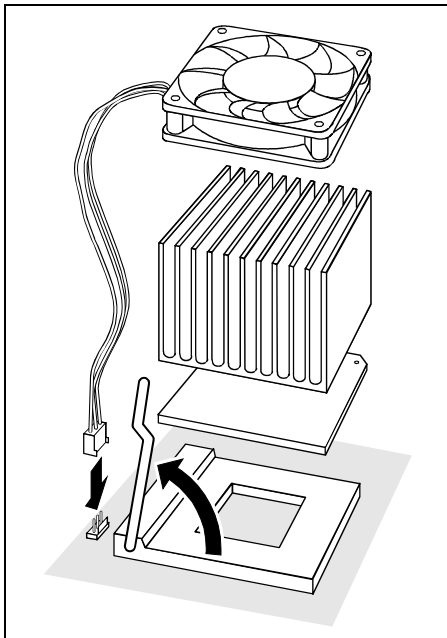
Please note that, depending on the heat sink used, different heat sink mounts are required on the mainboard.

i

If a counter-plate is mounted on the underside of the mainboard for reinforcement, no heat sinks of the type "Intel Boxed" may be used. Otherwise the retaining clips of the heat sink will be damaged.

When using an "Intel Boxed" heat sink, the mainboard must be converted. The conversion kit is either included with the mainboard or is available separately.

If no counter-plate is mounted, you can use both "Intel Boxed" heat sinks and standard heat sinks. If you use the "Intel Boxed" heat sink, the mainboard will bend due to the high pressure of the retaining clips. This behaviour is specified by Intel.



- ▶ Depending on the configuration variant, you must pull a protective foil off the heat sink or coat the heat sink with heat conducting paste before fitting it.

Depending on the processor variant, clips may also be supplied for mounting the heat sink that fix it in place.

- ▶ When you have mounted the optional fan, connect the fan plug to the corresponding connection on the mainboard.

Socket type LGA775



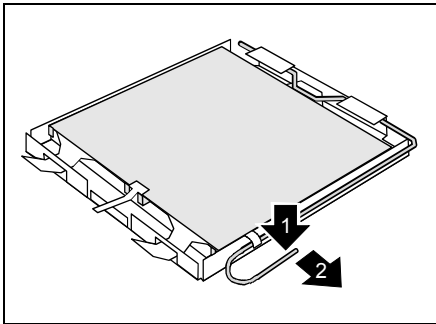
The processor socket is covered with a protective cap to protect the spring contacts

In a warranty case the mainboard can only be taken back by Fujitsu Siemens Computers with the protective cap secured!

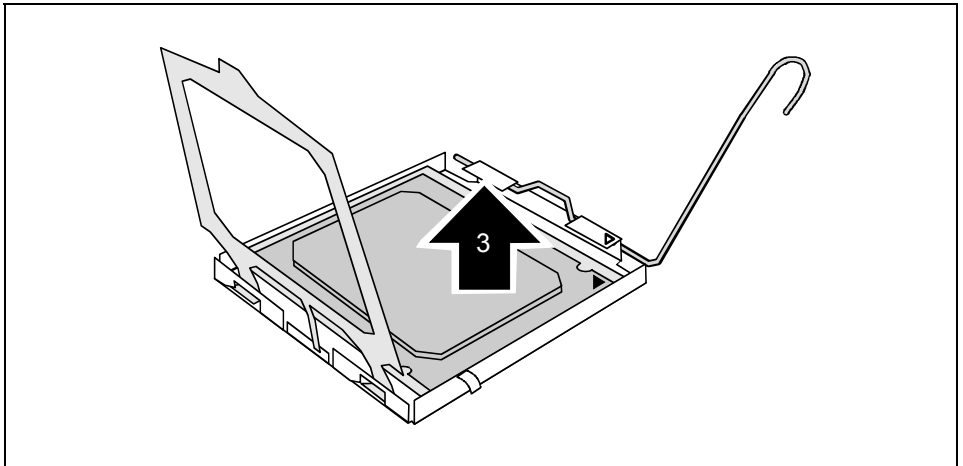
Never touch the underside of the processor. Even minor soiling such as grease from the skin can impair the processor's operation or destroy the processor.

Place the processor in the socket with extreme care, as the spring contacts of the socket are very delicate and must not be bent.

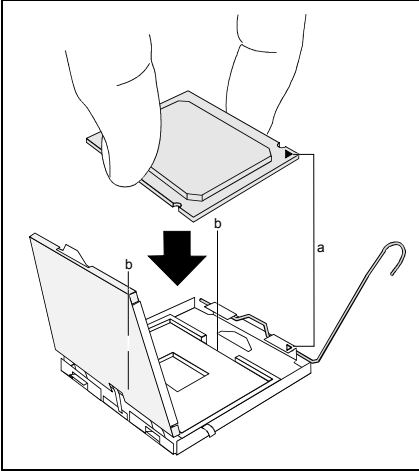
- ▶ Remove the heat sink.



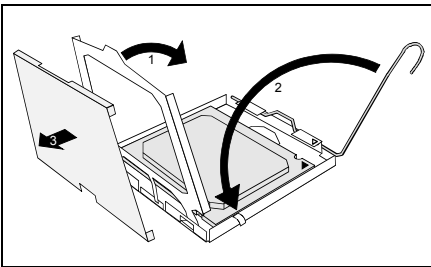
- ▶ Press down the lever (1) and unhook it (2).
- ▶ Fold up the frame.



- ▶ Remove the old processor (3) from the socket.



Hold the new processor between your thumb and index finger and insert it into the socket (b) so that the marking of the processor is aligned with the marking on the socket (a).



- ▶ Fold down the frame (1).
- ▶ Press the lever downward (2) until it is hooked in again.
- ▶ Remove the protective cap (3) and keep it.

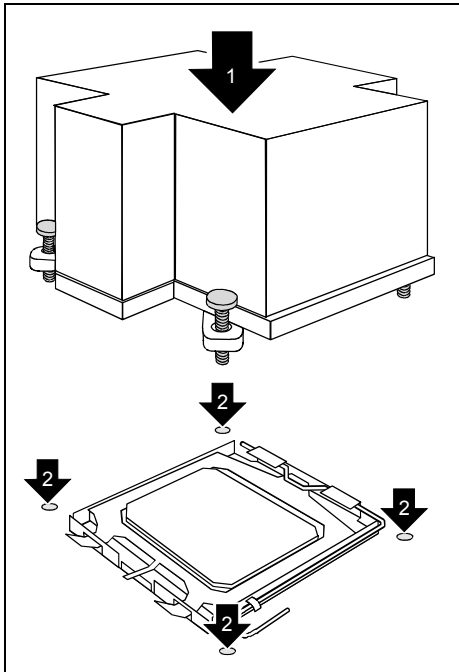
Mounting heat sink



Use only the heat sink supplied with your system!

Be sure to use heat conducting material between the processor and the heat sink. If a heat conducting pad (rubber-like foil) is already applied to the heat sink, then use it. Otherwise you must apply a very thin layer of heat conducting paste.

Heat conducting pads can only be used once. If you remove the heat sink, you must clean it and apply new heat conducting paste before you remount it.



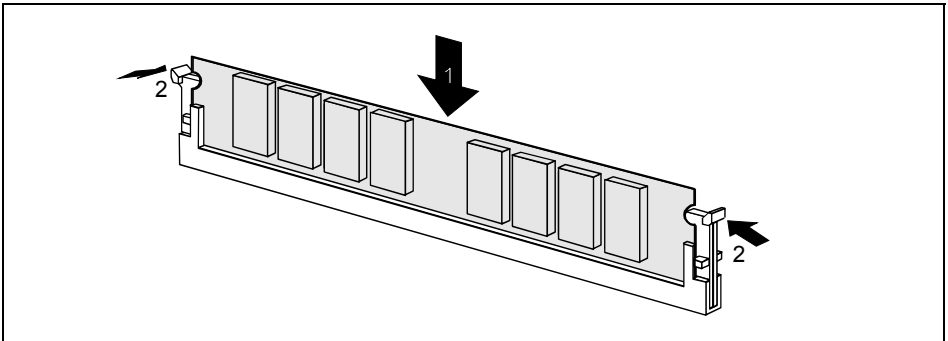
- ▶ Depending on the configuration variant, you must pull a protective foil off the heat sink or coat the heat sink with heat conducting paste before fitting it.
- ▶ Secure the heat sink - depending on the model - with four screws or push it into the mounts.

Upgrading main memory

Information on equipment, memory modules, module sizes and memory expansion is contained in the "Short Description" manual.

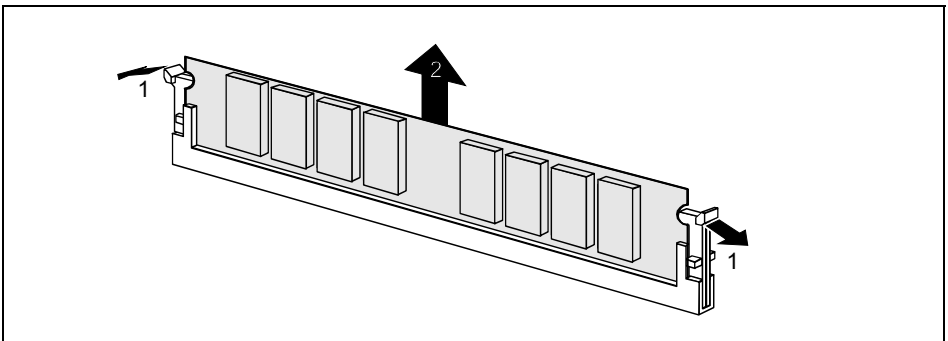
A current list of the memory modules recommended for this mainboard is available on the Internet at: www.fujitsu-siemens.com.

Installing a memory module



- ▶ Push the holders on each side of the memory slot 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 memory slot outward (1).
- ▶ Pull the memory module out of the memory slot (2).

Replacing the lithium battery

In order to permanently save the system information, a lithium battery is installed to provide the CMOS-memory with a current. A corresponding error message notifies the user when the charge is too low or the battery is empty. The lithium battery must then be replaced.



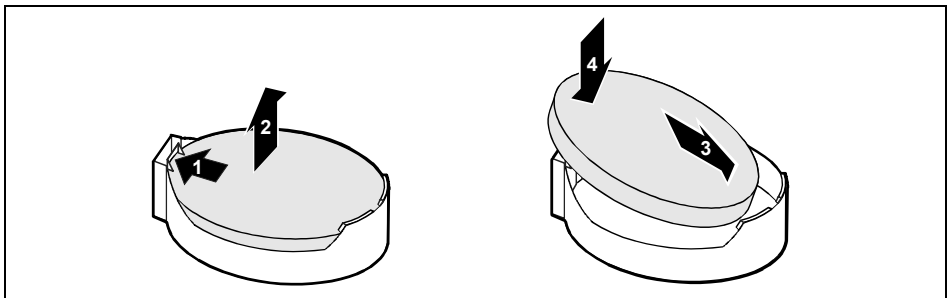
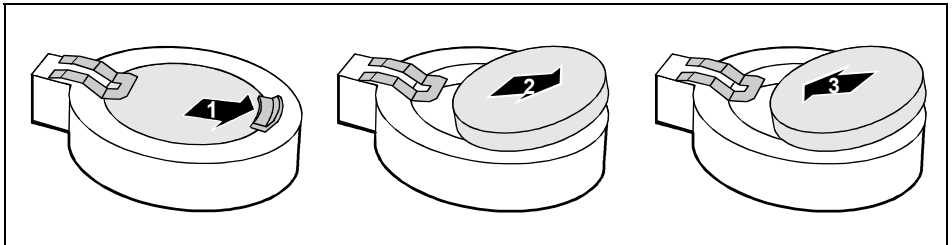
Incorrect replacement of the lithium battery may lead to a risk of explosion!

The lithium battery may be replaced only with an identical battery or with a type recommended by the manufacturer.

Do not throw lithium batteries into the household waste. 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!

The lithium battery holder exists in different designs that function in the same way.



- ▶ Press the locking lug in the direction of the arrow; the battery jumps somewhat out of the holder (1).
- ▶ Remove the battery (2).
- ▶ Push the new lithium battery of the identical type into the holder (3) and press it downward until it engages (4).

PCI slots

Die meisten von Fujitsu Siemens Computers entwickelten Mainboards entsprechen der Intel Spezifikation Revision 2.3. Es können weiterhin 5V PCI-Karten in den PCI-Steckplätzen verwendet werden. Die Verlustleistung von 25 W darf dabei nicht überschritten werden.

Drivers

Only when no drivers are installed on your system, or you want to update these, proceed as follows:

- ▶ Insert the CD "Drivers & Utilities Collection" into the CD-ROM drive.
- ▶ If the CD does not start automatically, run the *START.EXE* programme in the main directory of the CD.
- ▶ Select *DeskUpdate - Fully automatic installation*.
- ▶ Follow the instructions on screen.

BIOS update

When should a BIOS update be carried out?

Fujitsu Siemens Computers makes new BIOS versions available to ensure compatibility to new operating systems, new software or new hardware. In addition, new BIOS functions can also be integrated.

A BIOS update should always also be carried out when a problem exists that cannot be solved with new drivers or new software.

Where can I obtain BIOS updates?

The BIOS updates are available on the Internet at www.fujitsu-siemens.com/mainboards.

How does a BIOS update work?

You have two ways of doing this:

1. BIOS update under DOS with bootable BIOS update floppy disk - brief description

- ▶ Download the update file from our website to your PC.
- ▶ Insert an empty floppy disk (1.44 MB).
- ▶ Run the update file (e.g. *1858103.EXE*).
- ▶ A bootable update floppy disk is created. Leave this floppy disk in the drive.
- ▶ Restart the PC.
- ▶ Follow the instructions on screen.



Detailed information on the *BIOS Setup* and the BIOS update under DOS is contained in the "BIOS Setup" manual (on the "Drivers & Utilities Collection", "Drivers & Utilities", "ServerStart" or "User Documentation" CDs).

2. BIOS update under Windows with DeskFlash utility

A BIOS update can also be carried out directly under Windows with the *DeskFlash* utility. *DeskFlash* is contained on the "Drivers & Utilities" CD (under *DeskUpdate*).

BIOS Recovery - Recovering System BIOS



All BIOS settings are reset to the default values.

- ▶ Open the casing as described in the operating manual.
- ▶ On the mainboard set the jumper to the appropriate setting to restore the system BIOS (see chapter "Settings with switches and jumpers").
- ▶ Close the casing as described in the operating manual.
- ▶ Insert a BIOS update floppy disk and start the PC.
- ▶ Note the signals issued from the loudspeaker. You have successfully restored the BIOS if you hear the signal sequence "short-short- long- long- long" and the diskette access indicator is dark. This can take a few minutes.
- ▶ Open the casing as described in the operating manual.
- ▶ Restore the switch or jumper settings.
- ▶ Close the casing as described in the operating manual.
- ▶ Remove the floppy disk from the drive.
- ▶ Start the PC and invoke *BIOS Setup*.
- ▶ Select the menu item *Reset Configuration* in the menu *Advanced* and change the setting to *Yes*.
- ▶ Save the change and terminate *BIOS Setup*.

The BIOS recovery has now been completed. The system restarts.



Detailed information on the *BIOS Setup* and the BIOS recovery is contained in the "BIOS Setup" manual (on the "Drivers & Utilities Collection", "Drivers & Utilities", "ServerStart" or "User Documentation" CDs).

Microcode update (Intel processors only)

What is a microcode update?

As there are no drivers for processors, Intel offers the possibility from the P6 family (Pentium Pro) on to update the command set (microcode) of the processor. This enables minor errors to be corrected and the performance to be increased.

To guarantee the best possible performance and error-free operation, Intel recommends updating the microcode for every new processor. Intel refers to the use of the processor without microcode updates as operation outside the specifications.

Safety for processor on Fujitsu Siemens Computers mainboards

If the processor uses an old or incorrect microcode, error-free operation cannot be ensured. Fujitsu Siemens Computers has therefore implemented a function on its mainboards that interrupts the booting process if no suitable microcode is available for the installed processor. The output error message is

```
Patch for installed CPU not loaded. Please run the bios flash update
diskette.
```

This message appears until the microcode update has been carried out. If the computer is nevertheless operated without a microcode update, error-free operation is not ensured.

When should a microcode update be carried out?

A microcode update should be carried out after the installation of a new processor.

In contrast to the BIOS update, only an updated version of the processor command set is stored. The system BIOS remains unaffected by this.

Microcode update under DOS with bootable microcode update floppy disk - brief description

- ▶ Download the update file from our website to your PC.
- ▶ Insert an empty floppy disk (1.44 MB).
- ▶ Run the update file under DOS (e.g. *1858101.EXE*).
- ▶ A bootable update floppy disk is created. Leave the floppy disk in the drive.
- ▶ Restart the PC.
- ▶ Follow the instructions on screen.

To determine whether the latest microcode update has been loaded, the so-called Patch-ID of the processor can be read out.

- ▶ Press the **F1** key in the *BIOS Setup*.

The entry *CPU / Patch ID* is shown on the displayed information page.

A list with the current processors and the related Patch-IDs is available on the Internet.



If the processor is not recognised, you also require the microcode update tool for processors of the P6 family.

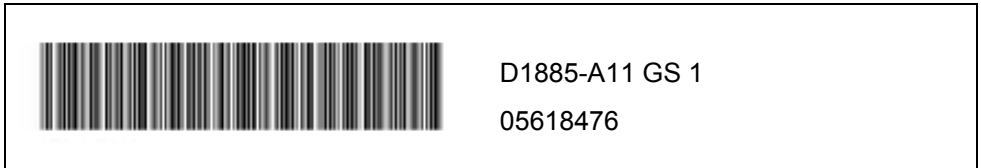
Annex

Mainboard Revision and BIOS Version

The compatibility, e.g. with new processors, can be independent of the BIOS version or the revision status of the mainboard used. The CPU and BIOS compatibility lists are available on the Internet at www.fujitsu-siemens.com/mainboards.

Mainboard Revision

The revision status of the mainboard exactly identifies which mainboard you have. It is indicated on a sticker on the edge of the mainboard:



Example Mainboard-Revision

BIOS version

The BIOS version can be displayed in the *BIOS Setup*.

- ▶ Press **F2** during booting to open the *BIOS Setup*.
- ▶ Press **F1**.

The BIOS version is specified on the displayed information page under the entry *BIOS Release*.

Error messages

This chapter contains error messages generated by the mainboard.

```
Available CPUs do not support the same bus frequency - System halted!  
Memory type mixing detected  
Non Fujitsu Siemens Memory Module detected - Warranty void  
There are more than 32 RDRAM devices in the system
```

Check whether the system configuration has changed. If necessary, correct the settings.

BIOS update for installed CPU failed

This message appears if the microcode update required for the connected processor is not contained in the system BIOS.

- ▶ Boot the system with the inserted *Flash BIOS floppy disk*.
- ▶ Abort the normal Flash BIOS update by answering the question about whether you want to perform the update with

n

- ▶ To carry out the Flash BIOS update for the processor, enter:

flashbio /p6

Check date and time settings

The system date and time are invalid. Set the current date and time in the *Main* menu of the *BIOS Setup*.

CPU ID 0x failed

Switch the server off and on again. If the message is still displayed, go into the *BIOS setup* and set the corresponding processor to *Disabled* in the *Server - CPU Status* menu; please contact your sales outlet or customer service centre.

CPU mismatch detected

You have replaced the processor or changed the frequency setting. As a result, the characteristic data of the processor have changed. Confirm this change by running the *BIOS Setup* and exiting it again.

Diskette drive A error

Diskette drive B error

Check the entry for the diskette drive in the *Main* menu of the *BIOS Setup*. Check the connections to the diskette drive.

DMA test failed
EISA CMOS not writable
Extended RAM Failed at offset: nnnn
Extended RAM Failed at address line: nnnn
Failing Bits: nnnn
Fail-Safe Timer NMI failed
Multiple-bit ECC error occurred
Memory decreased in size
Memory size found by POST differed from EISA CMOS
Single-bit ECC error occurred
Software NMI failed
System memory exceeds the CPU's caching limit
System RAM Failed at offset: nnnn
Shadow RAM Failed at offset: nnnn

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

Failure Fixed Disk 0
Failure Fixed Disk 1
Fixed Disk Controller Failure

Check the entry for the hard disk drive in the *Main* menu and the entry for the IDE drive controller in the *Advanced - Peripheral Configuration* menu of the *BIOS Setup*. Check the hard disk drive's connections and jumpers.

Incorrect Drive A - run SETUP
Incorrect Drive B - run SETUP

Correct the entry for the diskette drive in the *Main* menu of the *BIOS Setup*.

Invalid NVRAM media type

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

Invalid System Configuration Data

In the *Advanced* menu of the *BIOS Setup* set the entry *Reset Configuration Data* to *Yes*.

Invalid System Configuration Data - run configuration utility
Press F1 to resume, F2 to Setup

This error message may be displayed if the machine was switched off during system start-up.

Call *BIOS Setup* and switch to the *Advanced* menu. Select the menu item *Reset Configuration Data* and change the setting to *Yes*. Save the change and terminate *BIOS Setup*. Reboot the device.

Keyboard controller error

Connect another keyboard or another mouse. If the message is still displayed, please contact your sales outlet or customer service centre.

Keyboard error

Check that the keyboard is connected properly.

Keyboard error nn
nn Stuck Key

Release the key on the keyboard (*nn* is the hexadecimal code for the key).

Missing or invalid NVRAM token

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

Monitor type does not match CMOS - RUN SETUP

Correct the entry for the monitor type in the *Main* menu of the *BIOS Setup*.

On Board PCI VGA not configured for Bus Master

In the *BIOS Setup*, in the *Advanced* menu, submenu *PCI Configuration*, set the *Shared PCI Master Assignment* entry to *VGA*.

One or more RDRAM devices are not used

One or more RDRAM devices have bad architecture/timing

One or more RDRAM devices are disabled

Contact your system administrator or contact our customer service centre.

Operating system not found

Check the entries for the hard disk drive and the floppy disk drive in the *Main* menu and the entries for *Boot Sequence* submenu of the *BIOS Setup*.

Parity Check 1

Parity Check 2

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

Previous boot incomplete - Default configuration used

By pressing function key **F2** you can check and correct the settings in *BIOS Setup*. By pressing function key **F1** the system starts with incomplete system configuration. If the message is still displayed, please contact your sales outlet or customer service centre.

Real time clock error

Call the *BIOS Setup* and enter the correct time in the *Main* menu. If the message is still displayed, please contact your sales outlet or customer service centre.

System battery is dead - Replace and run SETUP

Replace the lithium battery on the mainboard and redo the settings in the *BIOS Setup*.

System Cache Error - Cache disabled

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

System CMOS checksum bad - Default configuration used

Call the *BIOS Setup* and correct the previously made entries or set the default entries.

System Management Configuration changed or Problem occurred

A system fan or system sensor has failed. Check the hardware operation.

System timer error

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

Uncorrectable ECC DRAM error

DRAM Parity error

Unknown PCI error

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

Verify CPU frequency selection in Setup

The frequency setting for the processor is invalid. Correct the *BIOS Setup* and the setting.

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 mainboard.

AC'97	Audio Codec '97
ACPI	Advanced Configuration and Power Management Interface
AOL	Alert On LAN
APM	Advanced Power Management
ATA	Advanced Technology Attachment
BIOS	Basic Input Output System
BMC	Baseboard management controller
CAN	Controller Area Network
CPU	Central Processing Unit
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 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
LAN	Local Area Network
LSA	LAN Desk Service Agent
MCH	Memory Controller Hub
MMX	MultiMedia eXtension
P64H	PCI64 Hub
PCI	Peripheral Component Interconnect
PCI Express	Peripheral Component Interconnect Express
PXE	Preboot eXecution Environment
RAM	Random Access Memory
RAMDAC	Random Access Memory Digital Analogue Converter
RTC	Real Time Clock
SATA	Serial Advanced Technology Attachment
SB	Soundblaster
SDRAM	Synchronous Dynamic Random Access Memory
SIMD	Streaming Mode Instruction (Single Instruction Multiple Data)
SMBus	System Management Bus
SVGA	Super Video Graphic Adapter
USB	Video Graphic Adapter
WOL	Wake On LAN