



System board D882

ISA / PCI

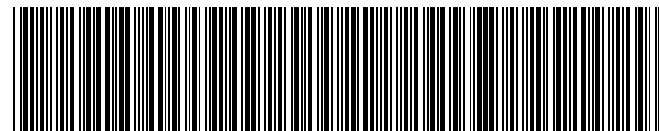
Technical Manual



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Published by
Siemens Nixdorf Informationssysteme AG
D-33094 Paderborn
D-81730 München

Order No.: **A26361-D882-Z129-1-7619**
Printed in the Federal Republic of Germany
AG 0396 03/96



A26361-D882-Z129-1-7619

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Technical Manual

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Introduction

This description applies for the system board D882 with PCI Bus (Peripheral Component Interconnect).

Notational conventions

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



This indicates instructions which it is essential to observe. Failure to do so may endanger your health, the operational integrity and electrical safety of your PC, or the security of your data.



This symbol is followed by supplementary information, remarks and tips.

► 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 from the PC.

Texts in this bold typeface are the entries you make via the keyboard.

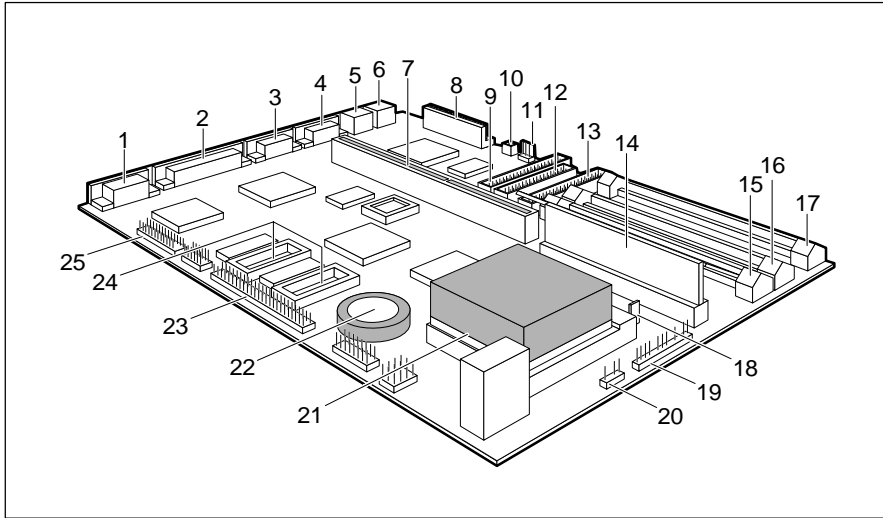
Texts in italics indicate commands or menu items.

"Quotation marks" indicate highlighted text and names of chapters.

Introduction

Features

- 32-bit microprocessor DX4 with internal cache (first-level cache)
- Math coprocessor: integrated in processor DX4
- Memory configuration on system board: 8 to 96 Mbyte RAM onboard
- Second-level cache on the system board: 0, 128 Kbyte or 256 Kbyte
- PCI-Bus
- Disk controller connected to PCI bus for up to four IDE drives (e.g. fast IDE hard disk drives, IDE CD ROM drive)
- Monitor controller connected to PCI bus; graphics processor TSENG ET4000/W32P with Windows accelerator and 1 Mbyte or 2 Mbyte DRAM video memory
- Real-time clock/calendar with integrated battery backup
- 128 Kbyte Flash-BIOS
- Floppy disk controller (up to 2.88 Mbyte format)
- Bus interface for platter
- Connector for external loudspeaker
- Connector for external monitor controller (VESA VGA pass-through)
- Image port
- Connector for remote on (optional)
- Parallel interface (ECP- and EPP-compatible)
- Two serial interfaces
- PS/2 mouse interface
- PS/2 keyboard interface
- Monitor interface



- | | |
|---|--|
| 1 = Monitor interface | 14 = Location for second-level Cache |
| 2 = Parallel interface | 15 = Location bank 0 for main memory |
| 3 = Serial interface (Ser 2) | 16 = Location bank 1 for main memory |
| 4 = Serial interface (Ser 1) | 17 = Location bank 2 for main memory |
| 5 = PS/2 mouse interface | 18 = Connector for power switch |
| 6 = PS/2 keyboard port | 19 = Connector for LED indicators |
| 7 = Bus interface | 20 = Connector for external loudspeaker |
| 8 = Connector for power supply 5 V | 21 = Processor with heat sink |
| 9 = Connector IDE 3/4 for IDE drives 3 and 4 | 22 = Lithium battery |
| 10 = Connector for remote on | 23 = Imageport connector |
| 11 = Connector for soft-off power supply | 24 = Sockets for video memory |
| 12 = Connector FD for floppy disk drive | 25 = Connector for external monitor controller (VESA VGA Pass-Through) |
| 13 = Connector IDE 1/2 for IDE drives 1 and 2 | |

Possible screen resolution

The screen resolutions in the following table refer to the monitor controller on the system board.

If you are using an external monitor controller, you will find details of supported screen resolutions in the Operating Manual or Technical Manual supplied with the controller.

You can use the *REFRATE* program (under Windows 95), the *WDSETUP* program (under MS-Windows) or the *SET-VGA* program (under MS-DOS) to set the screen resolution. Detailed information is provided in the associated help file.



You may set only those resolutions and refresh rates specified in the "Technical data" section of the monitor description. Otherwise you may damage your monitor. If you are in any doubt, contact your sales office or customer service.

Screen resolution	Refresh rate (Hz)	Horizontal rate (kHz)	Max. number of colors
640x350	70	31,3	16
640x350	84	38	16
640x480	60	31,3	16777216
640x480	75	38	16777216
640x480	90	48	65536
720x400	70	31,5	16
720x400	84	38	16
800x600	56	35	16777216 *)
800x600	56	35	65536
800x600	60	38	16777216 *)
800x600	60	38	65536
800x600	75	47	65536
800x600	90	60	256
1024x768	87 interlaced	36	65536 *)
1024x768	87 interlaced	36	256
1024x768	60	49	65536 *)
1024x768	60	49	256
1024x768	70	57	256
1024x768	75	60	256
1280x1024	87 interlaced	49	256 *)
1280x1024	87 interlaced	49	16
1280x1024	60	64	256 *)
1280x1024	75	80	256 *)

*) Only with 2 Mbyte of video memory

Important notes



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

Please note the information provided in the chapter "Safety" in the Operating Manual of the PC.

Incorrect replacement of the lithium battery may lead to a risk of explosion. It is therefore essential to observe the instructions in the section "Add-on modules - Replacing the lithium battery".

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. Your vendor or dealer or their authorized representatives will take used batteries back free of charge so that they can be recycled or disposed of in the proper manner.

Connecting cable for peripherals must be adequately insulated to avoid interference.

ADVARSEL



Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Lever det brugte batteri tilbage til leverandøren.

ADVARSEL



Eksplosjonsfare ved feilaktig skifte av batteri. Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten. Brukte batterier kasseres i henhold til fabrikantens instruksjoner.

WARNING



Eksplosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkarenfabrikanten. Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS



Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

Important notes

Modules with electrostatic sensitive devices (ESD) may be identified by labels.



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

- When you handle modules fitted with ESDs, 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 modules containing ESDs.
- Always hold modules with ESDs by their edges.
- Never touch pins or conductors on modules fitted with ESDs.

Notes on software

Program with time loops

Problems can occur with programs in which time loops have been implemented through software loops. This applies in particular to older programs which were written for 8 MHz processors.

Settings in BIOS Setup

The *BIOS Setup* menu allows you to set your hardware configuration and system functions. In addition, the *BIOS Setup* displays technical information on the PC's configuration. Pressing the function key **F1** provides help information on each entry field.

When it is supplied, the PC is set to factory default settings which you can alter in the *BIOS Setup* menus. Any changes you make take effect as soon as you save the settings and quit the *BIOS Setup*.

The Operating Manual describes how to call the setup menu and change menu entries.

You can select the following settings in the *BIOS Setup*:

Main - system functions

Advanced - advanced system configuration

Security - security features

Power - power-management features

Exit - save and quit

i The various menus are described below with all setting options. Since the setting options depend on your PC's hardware configuration, some of them may not be offered in the BIOS setup.

System settings - Main menu

In the *Main* menu you can set up the following:

- Time (in the field marked *System Time*)
- Date (in the field marked *System Date*)
- Floppy disk drive (in the field marked *Diskette A* or *Diskette B*)
- Hard disk drive (in the submenus of *Hard Disk*)
- Display device (in the field marked *Video Display*)
- System boot (in the submenus of *Boot Options*)



Settings in BIOS Setup

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd.	
Main	Advanced Security Power Exit
System Time:	[07:42:19]
System Date:	[02/28/1995]
Diskette A:	[1.4M]
Diskette B:	[None]
▶ Hard Disk 1:	540 Mbyte
▶ Hard Disk 2:	None
▶ Hard Disk 3:	None
▶ Hard Disk 4:	None
Video Display:	[EGA/VGA]
▶ Boot Options	
Base Memory:	640K
Extended Memory:	15M
----- Item Specific Help -----	
F1 Help	↑↓ Select Item -/+ Change Values
ESC Exit	←→ Select Menu Enter Execute Command
	F9 Setup Defaults
	F7 Previous Values

Example for *Main* menu

Time and Date - System Time / System Date

The *System Time* field and the *System Date* field show the time and date respectively according to the PC. The time is shown in the format *hh:mm:ss* (hours:minutes:seconds) and the date is shown in the format *mm/dd/yyyy* (month/day/year).



If the settings in the *System Time* and *System Date* fields are frequently wrong when you power up the computer, the lithium battery is dead. Change the battery as described in "Add-on modules - Replacing the lithium battery").

Floppy disk drive - Diskette A / Diskette B

These two fields are used to specify the type of floppy disk drive installed.

360K, 720K, 1.2M, 1.4M, 2.8M

The entry depends on the floppy disk drive installed.
(Default entry *Diskette A: 1.4M*).

None

A floppy disk drive is not installed.
(Default entry *Diskette B: None*)

Hard disk drives - Hard Disk 1 to Hard Disk 4

call the submenu to make corresponding settings of the IDE hard disk drive.

i You should change the default settings only if you are connecting an additional IDE drive to one of the two IDE connectors.

The maximum transfer rate of two IDE drives connected to the same connector is determined by the slower of the two. Fast hard disks should therefore be connected to the first IDE connector and identified as *Hard Disk 1* or *Hard Disk 2*; slower IDE drives (e.g. CD ROM drives) should be connected to the second IDE connector and identified as *Hard Disk 3* or *Hard Disk 4*. If you connect a CD ROM drive it is not necessary to make an entry.

The following description of the setting options for *Hard Disk 1* also applies to *Hard Disk 2*, *Hard Disk 3* and *Hard Disk 4*. The default settings depend on the installed drive.

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd.	
Main	
Hard Disk 1:	540 Mbyte
Item Specific Help	
Autotype Hard Disk: [Press Enter]	
Type:	[User] 850 Mbyte
Cylinders:	[1654]
Heads:	[16]
Sectors/Track:	[63]
Write Precomp:	[None]
Transfer Mode:	[Standard]
LBA Translation:	[Enabled]
PIO Mode:	[Fast PIO 3]
32 Bit I/O:	[Enabled]
F1 Help	↑↓ Select Item
ESC Exit	←→ Select Menu
-/+ Change Values	Enter Execute Command
F9 Setup Defaults	F7 Previous Values

Example for the submenu *Hard Disk 1*

If you have installed a new IDE hard disk drive, you should mark the Autotype Hard Disk field and press Enter. This has the effect of setting the optimum values for the IDE hard disk drive. You can change these values if you set the Type field to User.

Type - Hard Disk Type

This field is used to specify the type of hard disk drive installed.

- None* You cannot change the hard disk parameters (*Cylinders, Heads, Sector/Track* and *Write Precomp*). Either an IDE drive has not been installed, or the values have been set with *Autotype Hard Disk*.
- 1 to 39* The hard disk parameters (*Cylinders, Heads, etc.*) are preset.
- Auto* If the hard disk supports this mode, the setup menu reads the hard disk parameters from the disk itself and sets them automatically. You do not need to select the parameters yourself.
- User* You can enter the hard disk parameters (*Cylinders, Heads etc.*) yourself. If you have set the hard disk parameters with *Autotype Hard Disk*, you can only reduce the values.

Examples of user-defined entries (IDE drives):

Hard disk-parameter	Hard disk capacity in Mbyte						
	210	270	340	540	850	1 Gbyte	1,2 Gbyte
Cylinders	683	915	904	1046	1654	2097	2484
Heads	16	12	16	16	16	16	16
Sectors	38	48	46	63	63	63	63
Write Precomp	None	None	None	None	None	None	None

Cylinders, Heads, Sectors/Track, Write Precomp - hard disk parameter

These hard disk parameters are set in accordance with the IDE hard disk drive (e.g. automatically with *Autotype Hard Disk*). If you want to change the hard disk parameters manually, set the Type field to *User*.

Transfer Mode


This field specifies the transfer mode for the IDE hard disk drive.

Standard One block is transferred for each interrupt (default entry).
2 Sectors, 4 Sectors, 6 Sectors, 8 Sectors, 16 Sectors,
 The set number of blocks (sectors) is transferred for each interrupt.

LBA Translation - Addressing

This field enables and disables the LBA (Logical Block Addressing) mode. LBA mode allows you to install and use hard disks with a capacity of more than 528 Mbytes. If a hard disk supports LBA mode, you can use the full capacity of the IDE hard disk.

The default entry depends on the installed IDE hard disk drive. Change the default entries only if you are installing another hard disk drive.

 You may only use IDE drives in the LBA mode selected when they were set up. In other words, if you set up a hard disk with LBA mode *DISABLED*, you may only operate the hard disk with LBA mode *DISABLED*.

Enabled If the hard disk supports LBA and it has a capacity of more than 528 Mbytes, the BIOS translates the hard disk parameters, allowing the disk's full capacity to be used.
 If the hard disk does not support LBA, its parameters are not translated.

Disabled The BIOS uses the hard disk parameters and supports a maximum capacity of 528 Mbytes.

PIO Mode - Transfer rate

The PIO (**P**rogrammed **I**nput **O**utput) Mode defines the transfer rate of the IDE hard disk drive.

Standard 0,8 Mbyte/s to 2 Mbyte/s. (default entry)

Fast PIO 1 2 Mbyte/s to 4 Mbyte/s.

Fast PIO 2 4 Mbyte/s to 5 Mbyte/s.

Fast PIO 3 5 Mbyte/s to 8 Mbyte/s.

32 Bit I/O - Bus width for data transfer

specifies the width of data transmission between the processor and the IDE controller.

Enabled The data transfer is 32 bits in width at the PCI bus. This enhances performance (default entry).

Disabled The data transfer is 16 bits in width.

Type of monitor - Video Display

This field is used to specify the type of monitor connected.

EGA/VGA, Color 80, Monochrome
 Default entry: *EGA/VGA*

System Startup - Boot Options

calls a submenu in which you can select the settings for system startup of the PC.

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd.				
Main				Item Specific Help
Boot Options				Item Specific Help
POST Error Halt:	[Halt On All Errors]			
Quick Boot:	[Disabled]			
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults	
ESC Exit	←→ Select Menu	Enter Execute Command	F7 Previous Values	

Example for submenu *Boot Options*

POST Error Halt - Aborting system startup

defines whether the system startup is to be aborted and the system halted when an error is detected.

Halt On All Errors

If the self-test detects an error, system startup is aborted after the self-test, and the system is halted (default entry).

No Halt On Any Errors

The system startup is not aborted. The error is ignored as far as possible.

Quick Boot

can reduce the extent of the self-test and thus accelerate the system startup.

Enabled When the PC is switched on, the quick self-test is carried out, in which the floppy disk drives are not checked.

Disabled When the PC is switched on, the complete PC configuration is tested (default entry).

Base Memory

This field indicates the size of the available base memory below 1 Mbyte.

Extended Memory

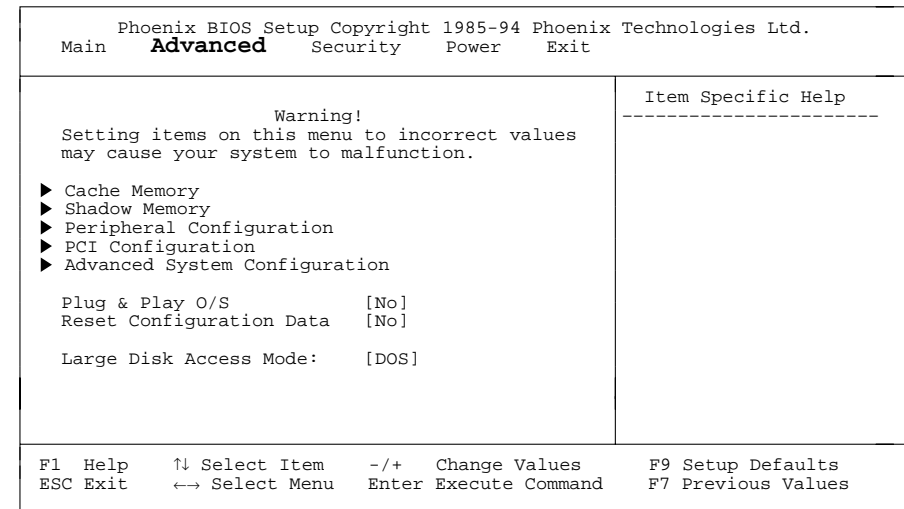
This field indicates the size of the memory above 1 Mbyte.

Making advanced system settings - Advanced menu

Change the default settings only for special applications. Incorrect settings can cause malfunctions.

You can make the following system settings in the *Advanced* menu:

- Internal cache and second-level cache (in the *Cache Memory* submenu)
- Copy BIOS sections to the RAM (in the *Shadow Memory* submenu)
- Interfaces and controllers (in the *Peripheral Configuration* submenu)
- Timers for PCI slots (in the *PCI Configuration* submenu)
- Data access to hard disk (in the *Advanced System Configuration* submenu)
- Plug&Play functionality (in the *Plug and Play O/S* field)
- Configuration data (in the *Reset Configuration Data* field)
- Hard disk access (in the *Large Disk Access Mode* field)



Example for the *Advanced* menu

Cache - Cache Memory

calls a submenu in which you can make the settings for the internal cache (in the processor) and the second-level cache (on the system module).

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd. Advanced	
Cache Memory	Item Specific Help
Cache: [Intern and Extern] Cache Mode: [Write Back]	
Cache System BIOS Area: [Enabled] Cache Video BIOS Area: [Enabled]	
Cache Memory Regions C800 - CFFF: [Disabled] D000 - D7FF: [Disabled] D800 - DFFF: [Disabled]	
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Execute Command F7 Previous Values	

Example for submenu *Cache Memory*

Cache - cache utilization

This field switches the cache (SRAM) on and off. The cache is a buffer to which parts of the main memory and BIOS can be temporarily copied. The PC's performance is higher when the cache is switched on.

You must disable the cache if:

- the access time is too short for older applications
- you are installing *OS/2 Warp*

Intern only only the internal cache is used.

Intern and Extern

Internal (first-level cache) and external cache (second-level cache) are enabled. If there is no external Cache, only the internal cache is used (Default entry).

Disabled Internal (first-level cache) and external cache (second-level cache) are disabled. All cache-related settings are then without effect.

Cache Mode

Condition: The *Cache* field must be set to *Intern only* or *Intern and Extern*.

Cache Mode sets the mode in which the CPU uses the cache.

In write-back mode the CPU writes information to the cache and the information is only written to main memory if necessary. Memory and cache contents are not identical. In write-back mode the performance is higher than in write-through mode. In write-through mode the processor writes the information to the cache and to main memory. The contents of memory and cache are identical.

Write Back The cache works in write-back mode (default entry).

Write Through The cache works in write-through mode.

Cache System BIOS Area / Cache Video BIOS Area

Condition: The *Cache* field must be set to *Intern only* or *Intern and Extern*.

Cache System BIOS Area and *Cache Video BIOS Area* lets you specify the BIOS that should be mapped to the cache. Mapping the BIOS to the cache increases system performance.

Enabled The specified BIOS is mapped to the cache (default entry).

Disabled The specified BIOS is not mapped to the cache.

Cache Memory Regions

Condition: The *Cache* field must be set to *Intern only* or *Intern and Extern*.

Cache Memory Regions lets you specify the BIOS ROM areas that should be mapped to the cache. Mapping the BIOS ROM areas to the cache increases system performance.

Enabled The relevant ROM area is mapped to the cache.

Disabled The relevant ROM area is not mapped to the cache (default entry).

ROM areas in the RAM - Shadow Memory

calls a submenu in which you can specify which parts of the ROM (Read Only Memory) are to be copied to the faster RAM (Random Access Memory) at system startup.

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd. Advanced			
Shadow Memory		Item Specific Help	
System Shadow:	Enabled		
Video Shadow:	[Enabled]		
Shadow Memory Regions			
C800 - CBFF:	[Disabled]		
CC00 - CFFF:	[Disabled]		
D000 - D3FF:	[Disabled]		
D400 - D7FF:	[Disabled]		
D800 - DBFF:	[Disabled]		
DC00 - DFFF:	[Disabled]		
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults
ESC Exit	←→ Select Menu	Enter Execute Command	F7 Previous Values

Example for submenu *Cache Memory*

System Shadow

This field is always Enabled, because the System BIOS is automatically copied to the faster RAM.

Video Shadow

This field allows you to copy the video BIOS to fast RAM. Copying the video BIOS to fast RAM increases system performance.

Enabled The video BIOS is copied to fast RAM (default entry).

Disabled The video BIOS is not copied to fast RAM. This setting is not effective unless an external terminal controller is used.

Shadow Memory Regions

Shadow Memory Regions allows you to copy ROM areas to fast RAM. Copying ROM areas to fast RAM increases system performance.

Enabled The ROM area is copied to fast RAM.

Disabled The ROM area is not copied to fast RAM (default entry).

Peripheral Configuration

calls a submenu in which you can set the interfaces and controllers.

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd. Advanced			
Peripheral Configuration		Item Specific Help	
Serial 1:	[Auto]		
Serial 2:	[Auto]		
Parallel:	[Auto]		
Parallel Mode:	[Printer]		
Diskette Controller:	[Enabled]		
Hard Disk Controller:	[Primary And Secondary]		
Mouse Controller:	[Enabled]		
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults
ESC Exit	←→ Select Menu	Enter Execute Command	F7 Previous Values

Example for submenu *Peripheral Configuration*

Serial 1 / Serial 2 - Serial interfaces

This field selects the address and the interrupt used to access serial interface.

3F8h, IRQ4; 2F8h, IRQ3; 3E8h, IRQ4; 2E8h, IRQ3;

The serial interface is set to the shown address and interrupt.

Auto The serial interface is automatically set to the next available combination (address, interrupt) (Default entry).

Disabled The serial interface is disabled. There is no interrupt used.

Parallel - parallel interface

This field selects the address and the interrupt used to access parallel interface.

378h, IRQ7; 278h, IRQ5; 3BCh, IRQ7

The parallel interface is set to the shown address and interrupt.

Auto The parallel interface is automatically set to the next available combination (address, interrupt) (Default entry).

Disabled The parallel interface is disabled. There is no interrupt used

Parallel Mode

This field is used to specify whether the parallel interface is to be used as a bidirectional input/output port or just as an output port.

In addition, LPT1 and LPT2 can be configured for *ECP*, *EPP*, and *ECP and EPP* transfer modes, which allow transfer rates of 2 and 2.4 Mbyte/s. These modes will only work with peripheral devices which also support them. The field *Parallel* must be set to *378h* or *278h*.

Printer The port functions as an output port only (default entry).

Bidirection Data can be transferred in both directions across the port.

EPP Fast transfer mode (up to 2 Mbyte/s), can output and receive data. Requires a peripheral device which supports the EPP (Enhanced Parallel Port) transfer mode.

ECP Fast transfer mode (up to 2.4 Mbyte/s), can output and receive data. Requires a peripheral device which supports the ECP (Enhanced Capability Port) transfer mode.

Diskette Controller

This field is used to enable and disable the built-in floppy disk controller on the system board.

Enabled The floppy disk controller is enabled - IRQ 6 is used. (default entry)

Disabled The floppy disk controller is disabled - IRQ 6 is free.

Hard Disk Controller

This field allows you to enable and disable the built-in IDE hard disk controller. The associated interrupts (IRQ 14 for the first connector, IRQ 15 for the second connector) will only be available if no hard disk is physically connected.

Primary The first IDE hard disk controller is enabled (default entry). Two IDE drives (preferably high-speed hard disks) can be attached to the first (primary) connector. IRQ14 is occupied.

Primary And Secondary

Primary and secondary IDE drive controllers are activated (default entry). Up to four IDE drives can be connected. Low-speed drives are preferred for the second (secondary) connector (e.g. CD-ROM). IRQ14 and IRQ15 are occupied.

Disabled The IDE hard disk controller is disabled.

Mouse Controller

This field is used to enable and disable the built-in mouse controller on the system board.

Enabled The mouse controller is enabled - IRQ 12 is used. (default entry)

Disabled The mouse controller is disabled - IRQ 12 is free.

PCI Configuration

calls a submenu in which you can make the settings for the PCI slots.

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd. Advanced	
PCI Configuration	Item Specific Help
PCI Interrupt Mapping INTA#: [Auto] PCI Interrupt Mapping INTB#: [Auto] PCI Interrupt Mapping INTC#: [Auto] PCI Interrupt Mapping INTD#: [Auto] Target Abort Error: [Disabled] PCI Burst: [Disabled] VGA Interrupt: [Enabled] PCI Device, Slot #1 Default Latency Timer: [Yes] Latency Timer: [0040] PCI Device, Slot #2 Default Latency Timer: [Yes] Latency Timer: [0040]	
F1 Help ↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ← Select Menu Enter Execute Command F7 Previous Values	

Example for submenu *PCI Configuration*

PCI Interrupt Mapping INTx# - Assignment of the PCI interrupts

defines which PCI interrupt is switched to which ISA interrupt.

With multifunctional PCI boards, all PCI interrupts can be used. The controllers on the system board do not need any PCI interrupts.

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

With monofunctional PCI boards, the PCI interrupts are designed as follows:

PCI slot 1 = INTA#, PCI slot 2 = INTB#, PCI slot 3 = INTC#

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

Disabled No PCI interrupt is used for the PCI board in the assigned PCI slot.

IRQ03, IRQ04, IRQ05, IRQ06, IRQ07, IRQ09, IRQ10, IRQ11, IRQ12, IRQ14, IRQ15

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.

Target Abort Error

specifies whether the PCI bus is to be parity-checked.

Enabled A parity check is performed on each access to the PCI data bus or the PCI address bus. If a bit failure is detected an error message is displayed. (Default entry)

Disabled No parity check is performed on the PCI bus.

PCI Burst - transfer mode

specifies the transfer mode for the PCI bus.

Enabled You should use this entry only if the PCI module supports this transfer mode. Several processor accesses (read/write accesses) are combined together to a burst and transferred in a PCI cycle. This enhances e.g. the graphics performance.

Disabled Processor accesses are not combined. (Default entry)

VGA interrupt

assigns an available PCI VGA controller to the interrupt.

Enabled IRQ 9 is assigned to the PCI VGA controller (if it exists).

Disabled IRQ 9 can be used for other add-on modules.

To enable a change to take effect, exit the Setup menu, switch the device off and then back on again.

PCI Device, Slot #1: Default Latency Timer**PCI Device, Slot #2: Default Latency Timer**

specifies the lowest number of clock cycles in which a PCI master module can be active at the PCI bus.

Yes The value predefined by the PCI module is accepted. The entry in the corresponding field for *PCI Device, Slot #n: Latency Timer* is ignored. (Default entry)

No The value predefined by the PCI module is ignored. The value set in the corresponding field for *PCI Device, Slot #n: Latency Timer* determines the number of clock cycles.

PCI Device, Slot #1: Latency Timer**PCI Device, Slot #2: Latency Timer**

Requirement: the corresponding field for *PCI Device, Slot #n: Latency Timer* must be set to No.

The field specifies the lowest number of clock cycles in which a PCI master module can be active at the PCI bus.

0000h through 0280h Number of clock cycles (default entry = 0040h)

Advanced System Configuration

calls a submenu in which you can make additional system settings.

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd.			
Advanced			
Advanced System Configuration		Item Specific Help	
Video Subsystem: [Auto]			
Hard Disk Read Ahead 1: [Disabled]			
Hard Disk Read Ahead 2: [Disabled]			
F1 Help	↓ Select Item	-/+ Change Values	F9 Setup Defaults
ESC Exit	↔ Select Menu	Enter Execute Command	F7 Previous Values

Example for submenu *Advanced System Configuration*

Video subsystem - Monitor controller

defines settings for the monitor controller. If you are using your own monitor controller and are encountering problems, this setting may be the cause.

Auto Default entry

3C3h, 46E8h further possible settings



Have settings changed only by a service technician or have the service technician instruct you in how to make changes.

Hard Disk Read Ahead x - hard disk access

defines hard disk access for the relevant hard disk drive.

Enabled More data is read in than necessary each time the hard disk is accessed. The additional data is buffered and is available for the next data access. This enhances the performance of hard disk access.

Disabled The data required is read in each time the hard disk is accessed. You must select this setting if you install Windows NT or OS/2 Warp. (Default entry)

Plug&Play functionality - Plug & Play O/S

defines the Plug&Play functionality. Plug&Play means that inserted modules are automatically recognized and installed if they support Plug&Play.

- Yes* The operating system (e.g. Windows 95) takes over some of the Plug&Play functions. You should select this setting only if the operating system supports Plug&Play.
- No* The BIOS takes over the complete Plug&Play functionality (default entry).

Reset Configuration Data

This field specifies whether the configuration data is reinitialized when the PC is started or not.

- YES* When the PC is started the old configuration data is reset. The new configuration data is determined by means of the Plug&Play functionality. The mounted modules and drives are then initialized with this data.
- NO* The mounted modules and drives are initialized with the existing configuration data. The data is not updated when the PC is booted (default entry).

Hard disk access - Large Disk Access Mode

specifies the type of hard disk access for large hard disks (more than 1024 cylinders, 16 heads). The default setting depends on the operating system being used.

- DOS* If the operating system uses MS-DOS-compatible hard disk accesses.
- Other* If the operating system uses hard disk accesses which are not MS-DOS-compatible (e.g. Novell, SCO Unix).

Setting up the security features - Menu Security

You can set up the following security features in the *Security* menu:

- Protecting BIOS Setup (in the field marked *Set Setup Password*)
- Protecting add-on module settings (in the field marked *Setup Password Lock*)
- Protecting system boots (in the field marked *Set System Password*)
- Locking input devices (in the field marked *System Password Mode*)
- Prevention of system boots from floppy disk (in the field marked *System Load*)
- Virus Warning (in the field marked *Virus Warning*)
- Prevention of write operations to floppy disk (in the field marked *Diskette Write*)
- Write protection of BIOS Setup (in the field marked *Flash Write*)
- Switching off by software (in the field marked *Soft Power Off*)
- Remote Power On (in the field marked *Remote Power On*)

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd.				
Main	Advanced	Security	Power	Exit
Setup Password		Not installed		Item Specific Help -----
System Password		Not installed		
Set Setup Password:		[Press Enter]		
Setup Password Lock:		[Standard]		
Set System Password:		[Press Enter]		
System Password Mode:		[System]		
System Load:		[Standard]		
Setup Prompt:		[Enabled]		
Virus Warning:		[Disabled]		
Diskette Write:		[Enabled]		
Flash Write:		[Enabled]		
Soft Power Off:		[Enabled]		
Remote Power On:		[Enabled]		
F1 Help	↑ Select Item	-/+ Change Values	F9 Setup Defaults	
ESC Exit	← Select Menu	Enter Execute Command	F7 Previous Values	

Example for menu *Security*

Setup Password / System Password

This field indicates whether the appropriate password is installed or not.

Set Setup Password

This field enables you to install the setup password. The setup password prevents unauthorized callup of the *BIOS setup*.

Mark the field and press the Return key. You can then enter and confirm the setup password (see also the PC user guide).

Setup Password Lock

defines the function of the Setup Password. The setting in this field becomes effective as soon as a Setup Password is installed.

Standard	The Setup Password prevents unauthorized calls of the BIOS Setup. (Default entry)
Extended	The keyboard is locked while add-on modules with a supplementary ROM are initialized. This prevents unauthorized access to the settings of the add-on modules. The keyboard is unlocked again after initialization.

This setting is supplementary to the protection of the BIOS Setup from unauthorized calls.

Set System Password

Requirement: the setup password must be installed.

This field enables you to install the system password. The system password prevents unauthorized access to your system.

Mark the field and press the Return key. You can then enter and confirm the system password (see also the PC user guide).

System Password Mode

specifies the effect of the system password. The setting in this field becomes effective as soon as a system password is installed.

<i>System</i>	When the PC is started, the system password enables the operating system to be booted. (Default)
<i>Keyboard</i>	When the PC is started, the operating system is booted and the keyboard and mouse are locked. The system password unlocks the keyboard and mouse.

System Load

This field specifies the drive from which the operating system can be loaded.

<i>Standard</i>	The operating system can be loaded from floppy disk or hard disk (default entry).
<i>Diskette Lock</i>	The operating system can only be loaded from hard disk.

Setup Prompt

This field specifies whether the message `Press F2 to enter SETUP` is displayed when the PC is rebooted.

<i>Enabled</i>	The message <code>Press F2 to enter SETUP</code> is displayed when the system is started (default entry).
<i>Disabled</i>	The message is not displayed.

Virus Warning

This field checks the boot sectors of the hard disk drive to see if any changes have been made since the previous system startup. If they have been changed and the reason for this is unknown, a program for finding computer viruses should be loaded.

<i>Enabled</i>	If the boot sector has been changed since the previous system startup (e.g. new operating system or virus attack), a warning is output on the monitor. The warning stays on the monitor until you acknowledge the changes with <i>Confirm</i> or deactivate the function (<i>Disabled</i>).
<i>Confirm</i>	This entry confirms a required change in a boot sector (e.g. new operating system).
<i>Disabled</i>	The boot sectors are not checked (default entry).

Diskette Write

This field is used to enable and disable floppy disk write-protection.

<i>Enabled</i>	Floppy disks can be read, written or deleted, provided jumper FDP on the system board is not inserted (default entry).
<i>Disabled</i>	Floppy disks can only be read.

Write protection for System BIOS - Flash Write

This field can assign write protection to the System BIOS.

<i>Enabled</i>	The System BIOS can be written to or deleted, provided jumper FDP on the system board is not inserted (default entry).
<i>Disabled</i>	The System BIOS can neither be written to nor deleted. BIOS updates from floppy disk are not possible.

Soft Power Off

This field specifies whether the PC can be switched off with a program (e.g. *SWOFF*).

<i>Enabled</i>	The PC can be switched off with a program (default entry).
<i>Disabled</i>	Der PC cannot be switched off with a program.

Remote Power On

specifies whether the PC can be switched on from an external device (e.g. fax).

<i>Enabled</i>	The PC can be switched on from an external device (default entry).
<i>Disabled</i>	Der PC cannot be switched on from an external device.

Setting energy saving functions - Power menu

Programs for power management (e.g. *POWER.EXE*) can change the settings for the energy saving functions.

You can set the following functions in the *Power* menu:

- Extent of energy saving functions (in the *Power Management Mode* field)
- Standby mode (in the *Standby Timeout* field)
- Suspend mode (in the *Suspend Timeout* field)
- Hard disk energy saving functions (in the *Hard Disk Timeout* field)
- Processor speed in standby mode (in the *Standby CPU Speed* field)
- Save system status (in the *Save to Disk* field)
- Terminate energy saving functions (in the *WakeUp Event* field)

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd.	
Main	Advanced Security Power Exit
Advanced Power Management	[Enabled]
Power Management Mode	[Customize]
Standby Timeout:	[15 min]
Suspend Timeout:	[30 min]
Hard Disk Timeout:	[15 min]
Standby CPU Speed:	[Low]
Save To Disk:	[Disabled]
▶ Suspend Wakeup Event	
Item Specific Help -----	
F1 Help	↑↓ Select Item
ESC Exit	←→ Select Menu
-/+ Change Values	Enter Execute Command
F9 Setup Defaults	F7 Previous Values

Example for submenu *Power*

Advanced Power Management

specifies whether the energy saving functions are determined by the operating system.

Enabled permits operating systems that support APM (e. g. Win95) Entries in the BIOS (default entry).

Disabled operating system access to the BIOS is not permitted. The Setup entries under Power Management apply.

Extent of energy saving functions - Power Management Mode

This field defines the extent of the energy saving functions.

Customize The functions set in the fields *Standby Timeout*, *Suspend Timeout*, *Hard Disk Timeout*, *Standby CPU Speed* and *Save to Disk* are effective in power management (default entry).

Maximum, Medium or Minimum Power Savings These entries call predefined settings, thus determining the extent of energy saving.

Disabled None of the energy saving functions is effective.

Standby mode - Standby Timeout

Requirement: the *Power Management Mode* must be set to *Customize*.

This field defines the amount of time without system activity the PC is to wait before switching to standby mode. In standby mode, the screen is dark and the processor clock is set in accordance with the entry in the *Standby CPU Speed* field. The next system activity (*wakeup event*) terminates suspend mode again.

2 min, 5 min, 10 min, 15 min

Default entry = *15 min*.

Disabled The PC does not switch to standby mode.

Suspend mode- Suspend Timeout

Requirement: the *Power Management Mode* must be set to *Customize*.

This field defines the amount of time without system activity the PC is to wait before switching to suspend mode. In suspend mode, the screen is dark, the processor clock is stopped and the drives and controllers are switched off. The next system activity (*wakeup event*) terminates standby mode again.

15 min, 30 min, 60 min

If there is no system activity after the set time, the PC switches to suspend mode (default entry = *30 min*).

Disabled The PC does not switch to suspend mode.

Hard disk energy saving functions - Hard Disk Timeout

Requirement: the *Power Management Mode* must be set to *Customize*.

This field defines the amount of time without system activity before the motor of the hard disk drive is switched off. As soon as there is system activity, the motor is switched back on.

2 min, 5 min, 10 min, 15 min

Default entry = *10 min*.

Disabled The hard disk drive does not switch off.

Processor clock - Standby CPU Speed

Requirement: the *Power Management Mode* must be set to *Customize*.

This field specifies the processor's clock speed in standby mode.

<i>Max</i>	Maximum clock speed.
<i>Low</i>	Minimum clock speed - this causes programs to run more slowly (default entry).

Terminating energy saving functions - Wakeup Event

This field calls a submenu in which you can set the interrupts which are to be evaluated as system activities. When one of these interrupts occurs, the active energy saving mode is terminated.

<i>Enabled</i>	The associated interrupt is evaluated as a system activity.
<i>Disabled</i>	The associated interrupt has no effect on the active energy saving mode.

Save system status - Save To Disk

.i.system status, saving

Requirements: the *Power Management Mode* must be set to *Customize*, and there must be sufficient storage space on the hard disk.

This field specifies whether the current system status (active programs, files, memory contents) is saved to file *SAVETO.DSK* when the PC switches to suspend mode. If the system status is saved, it is restored when you restart the PC; in other words, you can carry on working in the same application.

<i>Enabled</i>	The contents of the main memory, working memory, video memory and cache are saved to the hard disk.
<i>Disabled</i>	The memory contents are not saved (default entry).

Exiting BIOS Setup - Exit menu

In the *Exit* menu, you can save your settings and exit BIOS Setup.

Phoenix BIOS Setup Copyright 1985-94 Phoenix Technologies Ltd.			
Main	Advanced	Security	Power Exit
Save Changes & Exit Discard Changes & Exit Get Default Values Load Previous Values Save Changes			Item Specific Help -----
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults
ESC Exit	←→ Select Menu	Enter Execute Command	F7 Previous Values

Example for submenu *Exit*

Save Changes & Exit

saves the settings you have made and exits BIOS Setup.

Discard Changes & Exit

exits BIOS Setup without saving the new settings.

Get Default Values

reverts all settings to the default values.

Load Previous Values

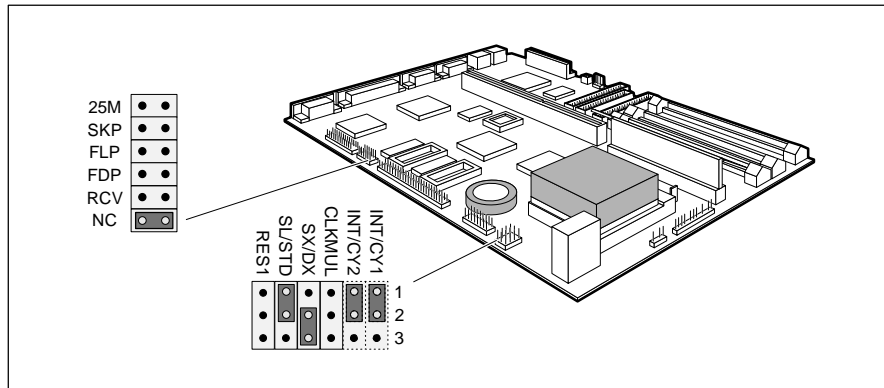
sets the values which were in effect when BIOS Setup was called.

Save Changes

saves the settings you have made.



Settings with jumper



25M = external clock speed
 FLP = System BIOS write-protection
 FDP = Floppy disk write-protection
 RCV = System BIOS recovery

INT/CY1, INT/CY2 = optional; do not change
 CLKMUL = internal clock speed for DX4 processor
 SX/DX = processor type
 SL/STD = processor technology

External clock speed - 25M

The 25M jumper sets the processor's external clock speed (25 MHz or 33 MHz). The default setting depends on the processor.

inserted The external clock speed is 25 MHz.

not inserted The external clock speed is 33 MHz.

Write protection for System BIOS - FLP

The FLP jumper enables and disables updates of the System BIOS. Before an update of the System BIOS can be carried out, write protection for the System BIOS must also be disabled in the *BIOS setup* (in the *Security* menu, the *Flash Write* field must be set to *Enabled*). If you want to carry out an update of the System BIOS, please contact customer service.

inserted The System BIOS is write protected.

not inserted The System BIOS can be overwritten (default setting).

Write protection for floppy disk drive - FDP

The jumper FDP 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*).

inserted The floppy disk drive is write protected.

not inserted Read, write and delete floppy disks is (default setting).

Recovering System BIOS - RCV

The jumper RCV enables recovery of the old BIOS after an attempt to update has failed. Write protection for the System BIOS must be disabled in the *BIOS setup* before the System BIOS can be recovered (the FLP jumper must not be inserted and the *Flash Write* field must be set to *Enabled* in the *Security* menu). To restore the old BIOS you need a recovery disk (call customer service).

inserted The System BIOS executes from floppy drive A: and restores the System BIOS on the system board.

not inserted The System BIOS is started from the system module (default setting).

COM2

On the Multimedia Star a cable is connected at this pin connector. On all other devices the two jumpers shown must be inserted.

CLKMUL

If you have installed a DX4 processor, the jumper CLKMUL must not be inserted.

If you have installed a 133-MHz processor, jumper CLKMUL must be inserted at 2-3.

Processor type - SX/DX

The SX/DX jumper sets the processor type. The default setting depends on the processor which is installed.

1-2 inserted SX processor

2-3 inserted All other processors (including SX2)

Processor technology - SL/STD

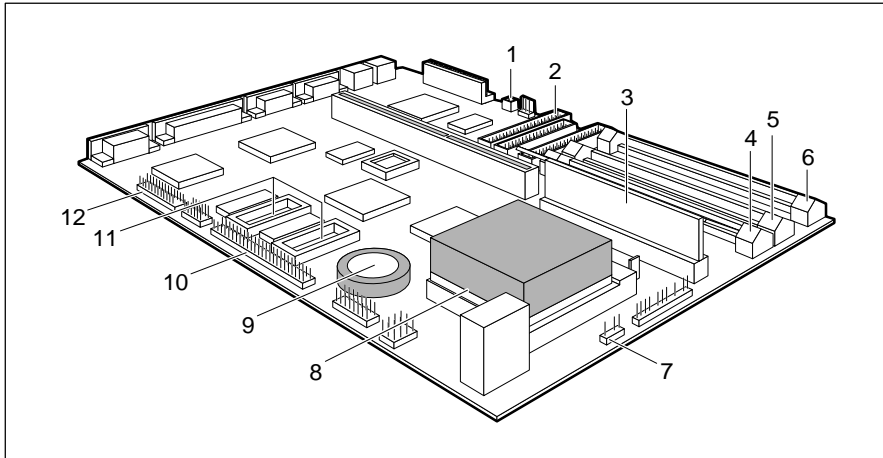
The SL/STD jumper sets the processor technology. The default setting depends on the processor which is installed.

1-2 inserted SL Enhanced

2-3 inserted All other processors



Add-on modules



- | | |
|--|--|
| 1 = Connector remote power-on | 8 = Socket for processor |
| 2 = Connector 3/4 for IDE drives 3 and 4 | 9 = Lithium battery |
| 3 = Location for Second-level Cache | 10 = connector Imageport |
| 4 = Location bank 0 for main memory | 11 = Socket for video memory |
| 5 = Location bank 1 for main memory | 12 = Connector for external monitor controller (VESA VGA pass through) |
| 6 = Location bank 2 for main memory | |
| 7 = Connector for external loudspeaker | |

Upgrading main memory

Three locations (bank 0, bank 1 and bank 2) are available on the system board for installing memory modules. The board supports a maximum of 96 Mbytes. You may use memory modules of 4, 8, 16 or 32 Mbyte.

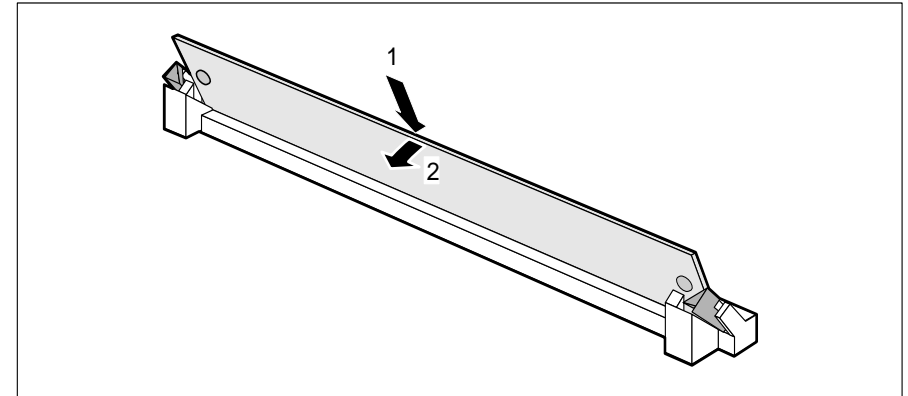


You may only use fast memory modules (access time = 70ns or less). All memory modules must have the same access time.

The memory modules in bank 0 and bank 1 must have the same capacity. The memory module in bank 2 may have another capacity.

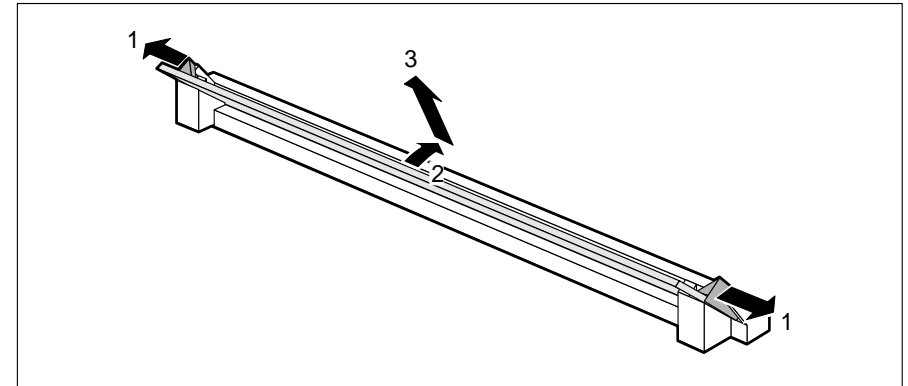
Add-on modules

Installing memory modules



- ▶ Insert the memory module at an angle into the appropriate location (1). Ensure that the key notch and the two holes are correctly aligned with the retaining pins.
- ▶ Tilt the module down until it snaps into place (2).

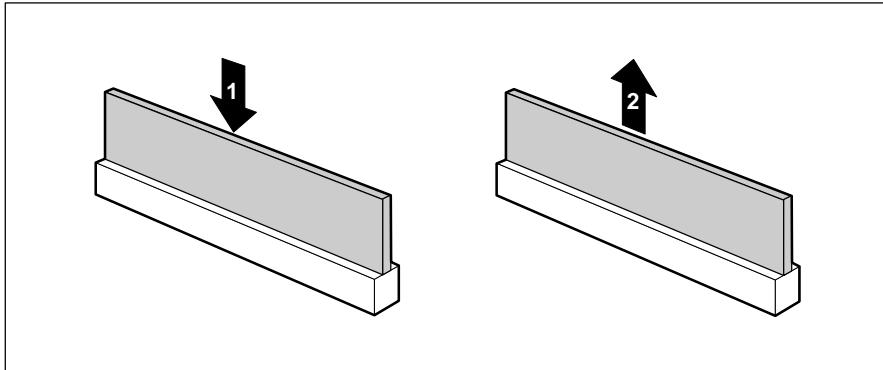
Removing a memory module



- ▶ Carefully push the retaining clips at each end of the module outwards (1).
- ▶ Tilt the memory module forwards (2), and pull it upwards and at an angle out of the mounting location (3).

Second-level cache

The system board has a socket for second-level cache. You can install a second-level cache module with 128 Kbyte or 256 Kbyte.



1 = Installing second-level cache

2 = Removing second-level cache

Installing second-level cache

- ▶ If a second-level cache is already installed, pull it out of the mounting location in the direction of the arrow (2).
- ▶ Insert the new second-level cache module into the mounting location, making sure it snaps into place (1).


i To be able to use the second-level cache, you must set the Cache field in the *Advanced / Cache Memory menu of the BIOS Setup to Intern and Extern*. You can enhance the performance by setting the *Cache System BIOS Area* and *Cache Video BIOS Area* fields in the same menu to *Enabled* and copying ROM sections with *cache memory regions* to the cache.

Removing second-level cache modules

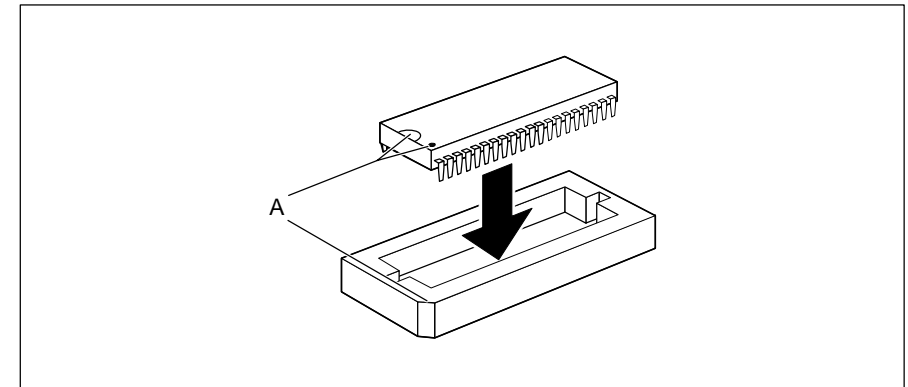
- ▶ Pull the second-level cache module out of the mounting location in the direction of the arrow (2).

Upgrading the video memory

If your PC is supplied with a video memory configuration of 1 Mbyte, you may enlarge the video memory up to 2 Mbytes.

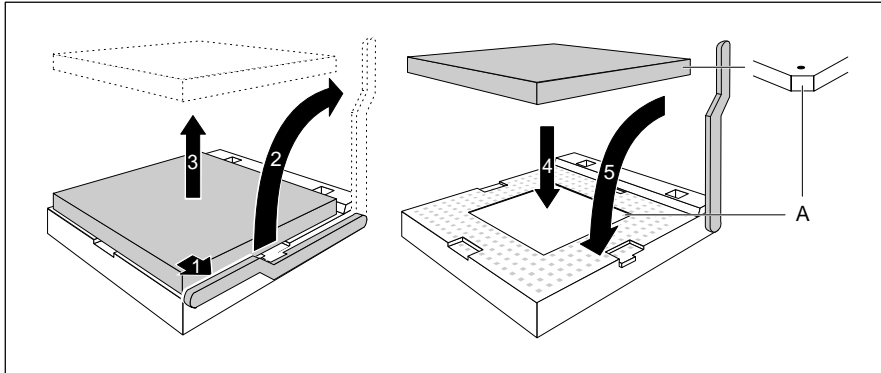
 Information on which DRAM components (DRAM 256K*16 16ns) you can use is available from your sales office or the customer service.

Note the location of the DRAM chip when you plug in DRAM chip!




- ▶ Insert the DRAM component in such a way that the mark on the upper side of the DRAM component (A) matches the position of the mark on the socket.

Replacing the 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 mark on the upper side of the processor matches the mark (A) on the socket (4).

 The mark on the processor may be covered by a 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).
- ▶ Insert the jumpers 25M, CLKMUL, SX/DX and SL/STD depending on the processor which is installed.

Replacing the lithium battery



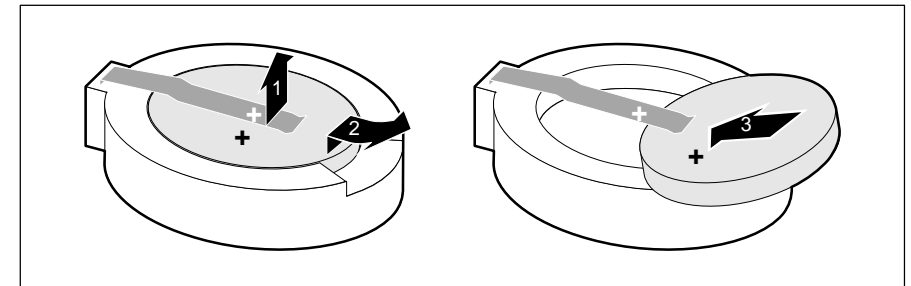
Please note the hints in the chapter "Important notes".

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. Your vendor or dealer or their authorized representatives will take used batteries back free of charge so that they can be recycled or disposed of in the proper manner.

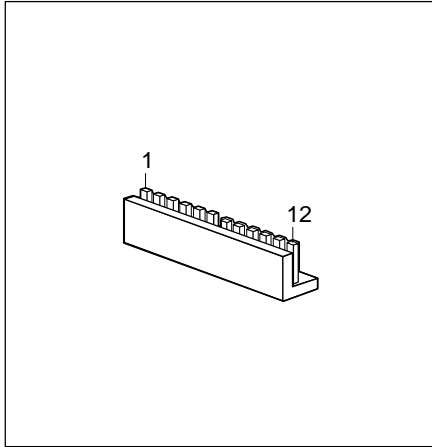
Make sure that you insert the battery the right way round. The plus pole must be on the top.



- ▶ 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).

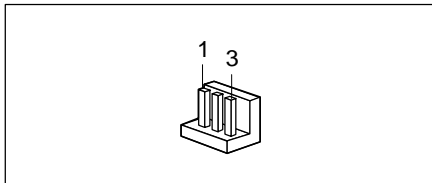
Interface pinouts and interrupts

Connector for 5 V power supply



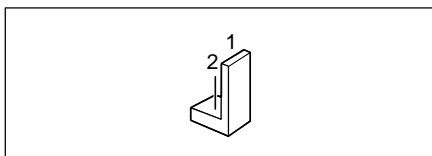
	1	Power good
2		+5 V
3		+12 V
4		-12 V
5		0 V
6		0 V
7		0 V
8		0 V
9		-5 V
10		+5 V
11		+5 V
12		+5 V

Connector for soft-off power supply



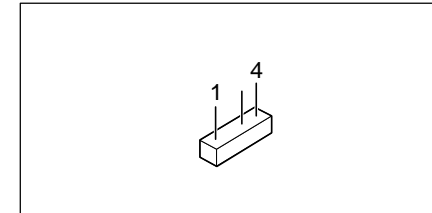
	Pin	Meaning
1		+5 V (auxiliary voltage)
2		Power Supply ON
3		0 V

Connector for power switch



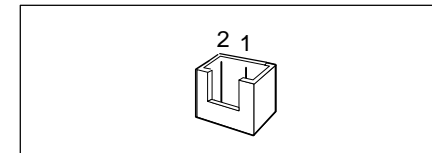
	Pin	Meaning
1		+5 V (auxiliary voltage)
2		Power switch input

Connector for external loudspeaker



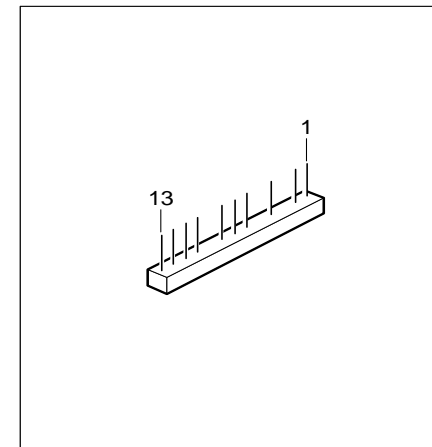
Pin	Meaning
1	loudspeaker coded
2	0 V
3	0 V
4	+5 V

Connector for remote power-on



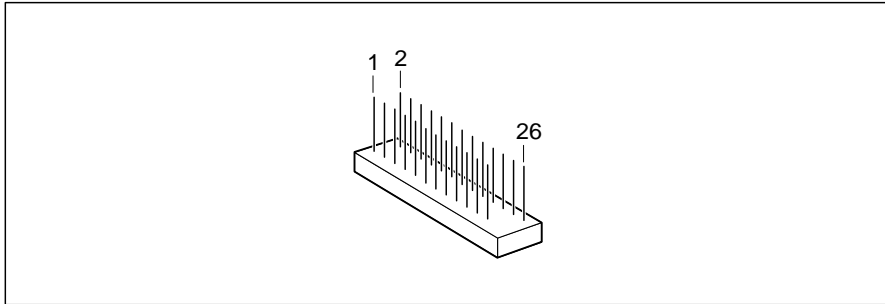
	Pin	Meaning
1		0 V
2		Remote power-on

Connector for LED indicators



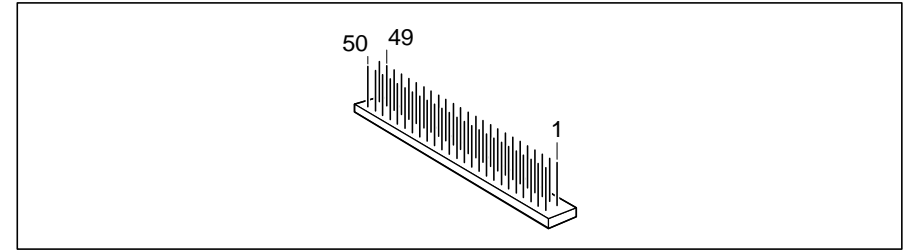
	Pin	Signal name
1		not used
2		LED status (yellow) coded
3		LED status (green) coded
4		0 V
5		not used
6		0 V
7		0 V
8		0 V
9		coded
10		+5 V
11-12		Hard disk drive LED
13		+5 V

Connector for external monitor controller (VESA VGA pass-through)



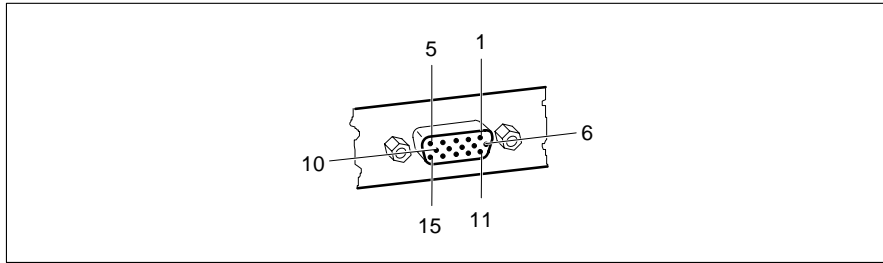
Pin	Meaning	Pin	Meaning
1	0 V	14	Data 6
2	Data 0	15	0 V
3	0 V	16	Data 7
4	Data 1	17	0 V
5	0 V	18	Clock
6	Data 2	19	0 V
7	not used	20	Blanking
8	Data 3	21	0 V
9	not used	22	Horizontal Sync.
10	Data 4	23	not used
11	not used	24	Vertical Sync.
12	Data 5	25	keyed
13	not used	26	0 V

Connector for Imageport



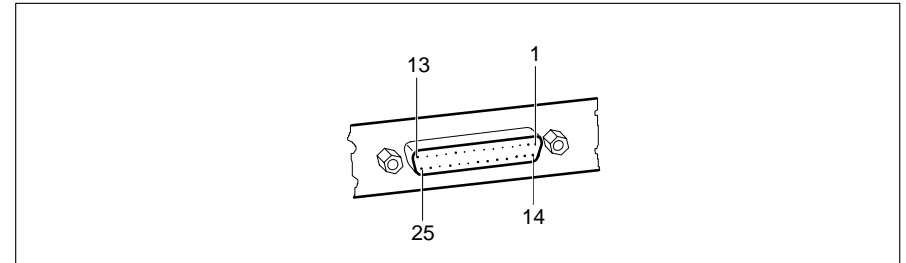
Pin	Meaning	Pin	Meaning
1	+5 V	26	not used
2	+5 V	27	Host Data 0
3	0 V	28	0 V
4	0 V	29	Host Data 1
5	+12 V	30	Ext. Command
6	0 V	31	Image Write Strobe
7	Write Request	32	0 V
8	0 V	33	Reset
9	Image Data Mask0	34	0 V
10	not used	35	Host Data 2
11	Image Data 0	36	Host Data 3
12	0 V	37	Host Data 4
13	Image Data 1	38	Host Data 5
14	Image Frame Sync	39	Host Data 6
15	Image Data 2	40	Host Data 7
16	Image Line Sync	41	not used
17	Image Data 3	42	not used
18	0 V	43	not used
19	Image Data 4	44	not used
20	Image Data Ready	45	not used
21	Image Data 5	46	not used
22	0 V	47	not used
23	Image Data 6	48	not used
24	Odd Image Data	49	0 V
25	Image Data 7	50	0 V

Connector for monitor



Pin	Meaning	Pin	Meaning
1	Red	9	keyed (no pin)
2	Green	10	Sync. ground
3	Blue	11	Monitor ID bit 0
4	Display ID bit 2	12	Monitor ID bit 1
5	Ground	13	Horizontal synchronization
6	Red ground	14	Vertical synchronization
7	Green ground	15	Monitor ID bit 3
8	Blue ground		

Parallel interface



The parallel interface supports three transfer modes: SPP, EPP and ECP. SPP mode (standard parallel port) is the mode traditionally used to drive a printer. The EPP (Enhanced Parallel Port) and ECP (Extended Capabilities Port) modes are transfer modes that allow transfer rates of 2 and 2.4 Mbytes/s. These modes will only work in connection with peripheral devices which specifically support them. The new transfer modes are used among other things for connecting to SCSI or IDE peripherals. The pinouts are different in all three modes.

Pinout in SPP mode

Pin	Signal name	Description
1	STROBE	Data message
2-9	Data Lines 0-7	Data lines 0-7
10	ACKNOWLEDGE	Data acknowledgement
11	BUSY	Not ready to receive
12	PE	End of paper
13	SELECT	Device selection
14	AUTO	Automatic new line
15	ERROR	Device error
16	INIT	Reset/initialize
17	SELECT IN	Printer selection
18-25	GROUND	Ground

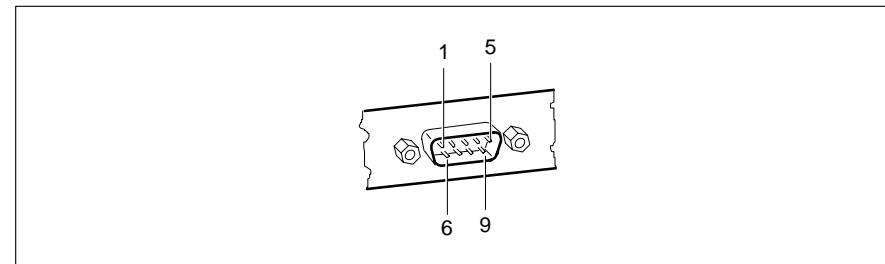
Pinout in EPP mode

Pin	Signal	Signal direction
1	Write	Output
2-9	Data Lines 0-7	Input/output
10	Intr	Input
11	Wait	Input
12	not used	---
13	not used	Input
14	DStrb	Output
15	not used	---
16	not used	---
17	AStrb	Output
18-25	Ground	

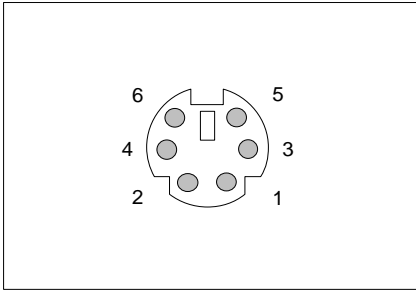
Pinout in ECP mode

Pin	Signal	Signal direction
1	HostClk	Output
2-9	Data Lines 0-7	Input/output
10	PeriphClk	Input
11	PeriphAck	Input
12	AckReverse	Input
13	Xflag	Input
14	HostAck	Output
15	PeriphRequest	Input
16	ReverseRequest	Output
17	ECP-Mode	Output
18-25	Ground	

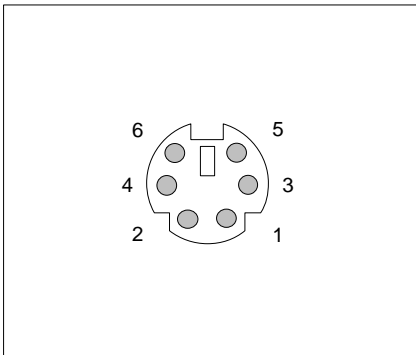
Serial interface



Pin	Signal	Meaning
1	DCD	Data Carrier Detect
2	RxD	Receive Data
3	TxD	Transmit Data
4	DTR	Data Terminal Ready
5	Signal Ground	Ground
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	Ri	Ring Indicator

PS/2 mouse port

Pin	Signal
1	Mouse data
2	not used
3	0 V
4	+5 V
5	Mouse clock
6	not used

PS/2 keyboard port

Pin	Signal
1	Keyboard data
2	not used
3	0 V
4	+5 V
5	Keyboard clock
6	not used or power on switch

Interrupt Request Levels and DMA channels

Interrupt Request Levels and DMA channels are listed below.

Interrupt Request Levels

IRQ0 = timer 0
 IRQ1 = keyboard
 IRQ2 = interrupt cascading
 IRQ3 = serial interface 2 (COM2/COM4)
 IRQ4 = serial interface 1 (COM1/COM3)
 IRQ5 = free or parallel interface (LPT2)
 IRQ6 = floppy disk controller
 IRQ7 = parallel interface (LPT1/LPT3)
 IRQ8 = real-time clock interrupt
 IRQ9 = free, or VGA controller
 IRQ10 = free
 IRQ11 = free
 IRQ12 = mouse
 IRQ13 = math coprocessor
 IRQ14 = IDE disk controller (connector IDE 1/2)
 IRQ15 = IDE disk controller (connector IDE 3/4)

DMA channels

DMA0 = free
 DMA1 = free
 DMA2 = floppy disk controller
 DMA3 = free/ECP mode
 DMA4 = DMA channel cascading
 DMA5 = free
 DMA6 = free
 DMA7 = free

Error messages

This chapter contains error messages generated by the system board.

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.

Extended RAM Failed at offset: nnnn

System RAM Failed at offset: nnnn

Failing Bits: nnnn

Restart the PC. If the message is still displayed, please contact your sales office or customer service.

Fixed Disk 0 Failure

Fixed Disk 1 Failure

Fixed Disk Controller Failure

Check the entries for the hard disk drive in the Main 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

Restart the PC. If the message is still displayed, please contact your sales office or customer service.

Keyboard controller error

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

Keyboard error

Check that the keyboard is connected properly.

Keyboard error nn

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

Monitor type does not match CMOS

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

Operating system not found

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

Parity Check 1

Error messages

Parity Check 2

Restart the PC. If the message is still displayed, please contact your sales office or customer service.

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 PC starts with incomplete system configuration. If the message is still displayed, please contact your sales office or customer service.

Real time clock failure

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

Shadow RAM Failed at offset: nnnn

Restart the PC. If the message is still displayed, please contact your sales office or customer service.

System battery is dead

Replace the lithium battery on the system module and redo the settings in the BIOS Setup.

System Cache Error - Cache disabled

Restart the PC. If the message is still displayed, please contact your sales office or customer service.

System CMOS checksum bad

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

System timer error

Restart the PC. If the message is still displayed, please contact your sales office or customer service.

Messages d'erreur

Ce chapitre vous donne les messages d'erreur générés par le BIOS du système.

Diskette drive A error

Diskette drive B error

Vérifiez dans le menu Main du *BIOS setup* l'entrée correspondant au lecteur de disquettes. Vérifiez les connecteurs du lecteur de disquettes.

Extended RAM Failed at offset: nnnn

System RAM Failed at offset: nnnn

Failing Bits: nnnn

Redémarrez votre PC. Si le message réapparaît, adressez-vous à votre revendeur ou à notre S.A.V.

Fixed Disk 0 Failure

Fixed Disk 1 Failure

Fixed Disk Controller Failure

Vérifiez dans le menu Main du *BIOS setup* l'entrée correspondant au lecteur de disque dur. Vérifiez les connecteurs et les cavaliers du lecteur de disque dur.

Incorrect Drive A - run Setup

Incorrect Drive B - run Setup

Entrez dans le menu Main du *BIOS setup* et paramétrez correctement l'entrée correspondant au lecteur de disquettes.

Invalid NVRAM media type

Redémarrez votre PC. Si le message réapparaît, adressez-vous à votre revendeur ou à notre S.A.V.

Keyboard controller error

Connectez un autre clavier. Si le message réapparaît, adressez-vous à votre revendeur ou à notre S.A.V.

Keyboard error

Assurez-vous que le clavier est correctement connecté.

Keyboard error nn

Libérez la touche du clavier (nn est le code hexadécimal de cette touche).

Monitor type does not match CMOS

Entrez dans le menu Main du *BIOS setup* et paramétrez correctement l'entrée correspondant au type d'écran.

Operating system not found

Vérifiez dans le menu Main du *BIOS setup* les entrées correspondant au

Messages d'erreur

lecteur de disque dur et au lecteur de disquettes.

Parity Check 1

Parity Check 2

Redémarrez votre PC. Si le message réapparaît, adressez-vous à votre revendeur ou à notre S.A.V.

Previous boot incomplete - Default configuration used

Appuyez la touche de fonction **F2** pour vérifier et corriger les valeurs dans BIOS Setup. Si vous appuyez la touche de fonction **F1** le PC démarre en configuration incomplète. Si le message réapparaît, adressez-vous à votre revendeur ou à notre S.A.V.

Real time clock failure

Appelez le *BIOS setup* et entrez l'heure exacte dans le menu *Main*. Si le message réapparaît, adressez-vous à votre revendeur ou à notre S.A.V.

Shadow RAM Failed at offset: nnnn

Redémarrez votre PC. Si le message réapparaît, adressez-vous à votre revendeur ou à notre S.A.V.

System battery is dead

Remplacez la batterie au lithium sur la carte système et procédez à de nouveaux réglages dans le BIOS setup.

System Cache Error - Cache disabled

Redémarrez votre PC. Si le message réapparaît, adressez-vous à votre revendeur ou à notre S.A.V.

System CMOS checksum bad

Appelez le *BIOS setup* et corrigez les réglages effectués en dernier lieu ou activez les réglages standard.

System timer error

Redémarrez votre PC. Si le message réapparaît, adressez-vous à votre revendeur ou à notre S.A.V.

Mensajes de error

Aquí se describen los mensajes de error que son generados por el *BIOS-Setup*.

Diskette drive A error

Diskette drive B error

Compruebe en el menú principal del *BIOS-Setup* (programa de instalación del BIOS) el registro para la unidad de disquete. Compruebe las conexiones de dicha unidad.

Extended RAM Failed at offset: nnnn

System RAM Failed at offset: nnnn

Failing Bits: nnnn

Arranque de nuevo el PC. Si sigue visualizándose este mensaje, diríjase a su distribuidor o a nuestro servicio de postventa.

Fixed Disk 0 Failure

Fixed Disk 1 Failure

Fixed Disk Controller Failure

Compruebe en el menú principal del *BIOS-Setup* los registros para la unidad de disco duro. Compruebe las conexiones y puentes enchufables de la unidad de disco duro.

Incorrect Drive A - run Setup

Incorrect Drive B - run Setup

Defina correctamente el registro de la unidad de disquete en el menú principal del *BIOS-Setup*.

Invalid NVRAM media type

Arranque de nuevo el PC. Si sigue visualizándose este mensaje, diríjase a su distribuidor o a nuestro servicio de postventa.

Keyboard controller error

Conecte otro teclado. Si sigue visualizándose este mensaje, diríjase a su distribuidor o a nuestro servicio de postventa.

Keyboard error

Compruebe si el teclado está conectado correctamente.

Keyboard error nn

Desbloquee la tecla del teclado (nn es el código hexadecimal para la tecla).

Monitor type does not match CMOS

Defina correctamente en el menú principal del *BIOS-Setup* el registro para el tipo de pantalla.

Mensajes de error

Operating system not found

Compruebe en el menú principal del *BIOS-Setup* los registros de la unidad de disco duro y de la unidad de disquete.

Parity Check 1

Parity Check 2

Arranque de nuevo el PC. Si sigue visualizándose este mensaje, diríjase a su distribuidor o a nuestro servicio de postventa.

Previous boot incomplete - Default configuration used

Pulsando la tecla **F2** puede verificar y corregir los registros del *BIOS-Setup*. Pulsando la tecla **F1**, el sistema arranca con la configuración incompleta. Si sigue visualizándose este mensaje, diríjase a su distribuidor o a nuestro servicio de postventa.

Real time clock failure

Active el *BIOS-Setup* y registre la hora correcta en el menú principal. Si sigue visualizándose este mensaje, diríjase a su distribuidor o a nuestro servicio de postventa.

Shadow RAM Failed at offset: nnnn

Arranque de nuevo el PC. Si sigue visualizándose este mensaje, diríjase a su distribuidor o a nuestro servicio de postventa.

System battery is dead

Sustituya la pila de litio en el módulo de sistema y repita las operaciones de ajuste en el *BIOS-Setup*.

System Cache Error - Cache disabled

Arranque de nuevo el PC. Si sigue visualizándose este mensaje, diríjase a su distribuidor o a nuestro servicio de postventa.

System CMOS checksum bad

Active el *BIOS-Setup* y corrija los últimos registros hechos o ajuste los registros estándar.

System timer error

Arranque de nuevo el PC. Si sigue visualizándose este mensaje, diríjase a su distribuidor o a nuestro servicio de postventa.

Messaggi di errore

I messaggi di errore emessi dal system BIOS sono descritti qui in seguito.

Diskette drive A error

Diskette drive B error

Controllate il valore indicato per il drive per dischetti nel *BIOS-Setup* del menu principale. Controllate i collegamenti del drive per dischetti.

Extended RAM Failed at offset: nnnn

System RAM Failed at offset: nnnn

Failing Bits: nnnn

Riavviate nuovamente il PC. Se il messaggio ricompare rivolgetevi al Vostro rivenditore o al nostro servizio di assistenza tecnica.

Fixed Disk 0 Failure

Fixed Disk 1 Failure

Fixed Disk Controller Failure

Controllate nel *BIOS-Setup* del menu principale i valori indicati per il drive del disco rigido. Controllate i collegamenti ed i ponticelli del drive del disco rigido.

Incorrect Drive A - run Setup

Incorrect Drive B - run Setup

Impostate nel *BIOS-Setup* del menu principale il valore corretto per il drive per dischetti.

Invalid NVRAM media type

Riavviate nuovamente il PC. Se il messaggio ricompare rivolgetevi al Vostro rivenditore o al nostro servizio di assistenza tecnica.

Keyboard controller error

Collegate un'altra tastiera. Se il messaggio ricompare rivolgetevi al Vostro rivenditore o al nostro servizio di assistenza tecnica.

Keyboard error

Controllate che la tastiera sia collegata correttamente.

Keyboard error nn

Liberate il tasto dalla tastiera (nn indica il codice esadecimale del tasto).

Monitor type does not match CMOS

Impostate nel *BIOS-Setup* del menu principale il valore corretto per il tipo di monitor.

Operating system not found

Controllate nel *BIOS-Setup* del menu principale i valori indicati per il drive per il disco rigido e per il drive per dischetti.

Messaggi di errore

Parity Check 1

Parity Check 2

Riavviate nuovamente il PC. Se il messaggio ricompare rivolgetevi al Vostro rivenditore o al nostro servizio di assistenza tecnica.

Previous boot incomplete - Default configuration used

Premendo il tasto funzione **F2** potete verificare e correggere le impostazioni nel *BIOS-Setup*. Premendo il tasto funzione **F1**, il PC viene avviato con la configurazione di sistema completa. Se il messaggio ricompare rivolgetevi al Vostro rivenditore o al nostro servizio di assistenza tecnica.

Real time clock failure

Richiamate il *BIOS-Setup* ed inserite nel menu principale l'ora esatta. Se il messaggio ricompare rivolgetevi al Vostro rivenditore o al nostro servizio di assistenza tecnica.

Shadow RAM Failed at offset: nnnn

Riavviate nuovamente il PC. Se il messaggio ricompare rivolgetevi al Vostro rivenditore o al nostro servizio di assistenza tecnica.

System battery is dead

Sostituite la batteria al litio dell'unità di sistema ed inserite nuovamente i valori di impostazione nel *BIOS-Setup*.

System Cache Error - Cache disabled

Riavviate nuovamente il PC. Se il messaggio ricompare rivolgetevi al Vostro rivenditore o al nostro servizio di assistenza tecnica.

System CMOS checksum bad

Richiamate il *BIOS-Setup* e correggete gli ultimi valori impostati oppure indicati i valori standard.

System timer error

Riavviate nuovamente il PC. Se il messaggio ricompare rivolgetevi al Vostro rivenditore o al nostro servizio di assistenza tecnica.

Felmeddelanden

Nedan beskrivs de felmeddelanden som system-BIOS matar ut på systemkomponenten.

Diskette drive A error

Diskette drive B error

Kontrollera inställningen för diskettenheten i menyn *Main* i *BIOS-Setup-menyn*.
Kontrollera diskettenhetens anslutningar.

Extended RAM Failed at offset: nnnn

System RAM Failed at offset: nnnn

Failing Bits: nnnn

Starta upp PCn på nytt. Om meddelandet fortfarande visas bör du kontakta din återförsäljare eller vår kundservice.

Fixed Disk 0 Failure

Fixed Disk 1 Failure

Fixed Disk Controller Failure

Kontrollera inställningarna för hårddisken i menyn *Main* i *BIOS-Setup-menyn*.
Kontrollera hårddiskens anslutningar och insticksbryggorna.

Incorrect Drive A - run Setup

Incorrect Drive B - run Setup

Korriger inställningen för diskettenheten i menyn *Main* i *BIOS-Setup-menyn*.

Invalid NVRAM media type

Starta upp PCn på nytt. Om meddelandet fortfarande visas bör du kontakta din återförsäljare eller vår kundservice.

Keyboard controller error

Anslut ett annat tangentbord. Om meddelandet fortfarande visas bör du kontakta din återförsäljare eller vår kundservice.

Keyboard error

Kontrollera att tangentbordet är korrekt anslutet.

Keyboard error nn

Frigör den angivna tangenten (nn är tangentens hexadecimalkod).

Monitor type does not match CMOS

Korriger inställningarna för bildskärmtypen i menyn *Main* i *BIOS-Setup-menyn*.

Operating system not found

Kontrollera inställningarna för hårddisken och diskettenheten i menyn *Main* i *BIOS-Setup-menyn*.

Felmeddelanden

Parity Check 1

Parity Check 2

Starta upp PCn på nytt. Om meddelandet fortfarande visas bör du kontakta din återförsäljare eller vår kundservice.

Previous boot incomplete - Default configuration used

Om du trycker på funktionstangenten **F2**, kan du kontrollera och korrigera inställningarna i *BIOS-Setup*. Om du trycker på funktionstangenten **F1** startas PCn med den ofullständiga systemkonfigurationen. Om meddelandet fortfarande visas bör du kontakta din återförsäljare eller vår kundservice.

Real time clock failure

Ropa upp *BIOS-Setup-menyn* och ställ in korrekt klockslag i menyn *Main*. Om meddelandet fortfarande visas bör du kontakta din återförsäljare eller vår kundservice.

Shadow RAM Failed at offset: nnnn

Starta upp PCn på nytt. Om meddelandet fortfarande visas bör du kontakta din återförsäljare eller vår kundservice.

System battery is dead

Byt ut litiumbatteriet på systemkomponenten och genomför inställningarna i *BIOS-Setup-menyn* på nytt.

System Cache Error - Cache disabled

Starta upp PCn på nytt. Om meddelandet fortfarande visas bör du kontakta din återförsäljare eller vår kundservice.

System CMOS checksum bad

Ropa upp *BIOS-Setup-menyn*. Korriger de senast gjorda inställningarna eller ställ in standardvärdena igen.

System timer error

Starta upp PCn på nytt. Om meddelandet fortfarande visas bör du kontakta din återförsäljare eller vår kundservice.

Foutmeldingen

Vervolgens worden de foutmeldingen beschreven die het BIOS-systeem op de systeembouwgroep geeft.

Diskette drive A error

Diskette drive B error

Controleer in de setup van het *BIOS*, in het menu *Main*, de instelling van het diskettestation. Controleer de aansluitingen van het diskettestation.

Extended RAM Failed at offset: nnnn

System RAM Failed at offset: nnnn

Failing Bits: nnnn

Start de PC opnieuw. Als de melding opnieuw verschijnt, neem dan a.u.b. contact op met uw dealer of met onze klantendienst.

Fixed Disk 0 Failure

Fixed Disk 1 Failure

Fixed Disk Controller Failure

Controleer in de setup van het *BIOS*, in het menu *Main*, de instellingen van de harde schijf. Controleer de aansluitingen en de jumpers van de harde schijf.

Incorrect Drive A - run Setup

Incorrect Drive B - run Setup

Stel in de setup van het *BIOS*, in het menu *Main*, het diskettestation op de juiste wijze in.

Invalid NVRAM media type

Start de PC opnieuw. Als de melding opnieuw verschijnt, neem dan a.u.b. contact op met uw dealer of met onze klantendienst.

Keyboard controller error

Sluit een ander toetsenbord aan. Als de melding opnieuw verschijnt, neem dan contact op met uw dealer of met onze klantendienst.

Keyboard error

Controleer of het toetsenbord goed is aangesloten.

Keyboard error nn

Laat de toets van het toetsenbord los (nn is de hexadecimale code voor de toets).

Monitor type does not match CMOS

Stel in de setup van het *BIOS*, in het menu *Main*, het monitortype op de juiste wijze in.

Foutmeldingen

Operating system not found

Controleer in de setup van het *BIOS*, in het menu *Main*, de instellingen van de harde schijf en het diskettestation.

Parity Check 1

Parity Check 2

Start de PC opnieuw. Als de melding opnieuw verschijnt, neem dan a.u.b. contact op met uw dealer of met onze klantendienst.

Previous boot incomplete - Default configuration used

Als u op de functietoets **F2** drukt, kunt u in de setup van het *BIOS* de instelling uittesten en verbeteren. Als u op de functietoets **F1** drukt, start de PC met de onvolledige systeemconfiguratie. Als de melding opnieuw verschijnt, neem dan a.u.b. contact op met uw dealer of met onze klantendienst.

Real time clock failure

Roep de setup van het *BIOS* op en stel in het menu *Main* de juiste tijd in. Als de melding opnieuw verschijnt, neem dan a.u.b. contact op met uw dealer of met onze klantendienst.

Shadow RAM Failed at offset: nnnn

Start de PC opnieuw. Als de melding opnieuw verschijnt, neem dan a.u.b. contact op met uw dealer of met onze klantendienst.

System battery is dead

Vervang de lithiumbatterij op het motherboard en stel de setup van het *BIOS* opnieuw in.

System Cache Error - Cache disabled

Start de PC opnieuw. Als de melding opnieuw verschijnt, neem dan a.u.b. contact op met uw dealer of met onze klantendienst.



System CMOS checksum bad

Roep de setup van het *BIOS* op en corrigeer wat u voor het laatst heeft ingesteld of stel de defaultwaarden in.

System timer error

Start de PC opnieuw. Als de melding opnieuw verschijnt, neem dan a.u.b. contact op met uw dealer of met onze klantendienst.

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