PC

System board D943

Technical Manual

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System board D943

Technical Manual

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Introduction

This description applies for the System board D943 with PCI bus (Peripheral Component Interconnect).

i This system board is available in different configuration levels. Depending on the hardware configuration of your device, it may be that you cannot find several options in your version of the system board, even though they are described.

Further information to drivers is provided in the readme files on hard disk or on the supplied drivers diskettes or on the "Drivers & Utility" CD.

Notational conventions

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

⚠ Pay particular attention to texts marked with this symbol. Failure to observe this warning endangers your life, destroys the system, or may lead to loss of data.

i 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 item.

"Quotation marks" indicate names of chapters and terms that are being emphasized.

Features

- 64-bit microprocessor Intel Pentium with 16 Kbytes internal cache (first-level cache, 8 Kbytes data cache, 8 Kbytes address cache) or OverDrive-Processor for Pentium

  or
- AMD-K5

- Memory configuration on the system board: 8 to 128 Mbyte (FPM or EDO)

- Error recognition via ECC

- Second-level cache on the system board: 0, 256 or 512 Kbytes (PBSRAM)

- 256 Kbytes Flash BIOS

- PCI bus

- IDE hard disk controller connected to PCI bus for up to four IDE drives (e.g. IDE hard disk drives, ATAPI CD ROM drive)

- Real-time clock/calendar with integrated battery backup

- Floppy disk controller (up to 2.88 Mbytes format)

- Bus interface for platter

- Connector for feature connector, loudspeaker

- Parallel interface (ECP- and EPP-compatible)

- 2 serial ports

- PS/2 mouse port

- PS/2 keyboard port

- Security functions

Optional Components
- Monitor port

- Graphics controller connected to PCI bus, graphics processor Cirrus Logic CL-GD5436 with Windows accelerator and 1 Mbyte or 2 Mbytes DRAM video memory

- Audio controller on ISA-BUS (Creative VIBRA 16S; 16 bit; compatible with Sound Blaster 16, MPU401, Multimedia PC and Multimedia PC II; Stereo-FM synthesizer YAMAHA OPL3)

- USB (Universal Serial Bus)

- Energy saving functions

- Connector for remote-on (fax/modem board), chipcard reader and infrared interface

- Connector for CD-line in, wavetable module, Game/Midi, voice modem, AUX-in

- Microphone connector (via supplementary board)

- Audio port (line in) (via supplementary board)

- Headphone connector (via supplementary board)

i	The microphone connector, audio port and headphone connector are connected via a common plug (Game/Midi / Audio) on the system board.

Interfaces and connectors
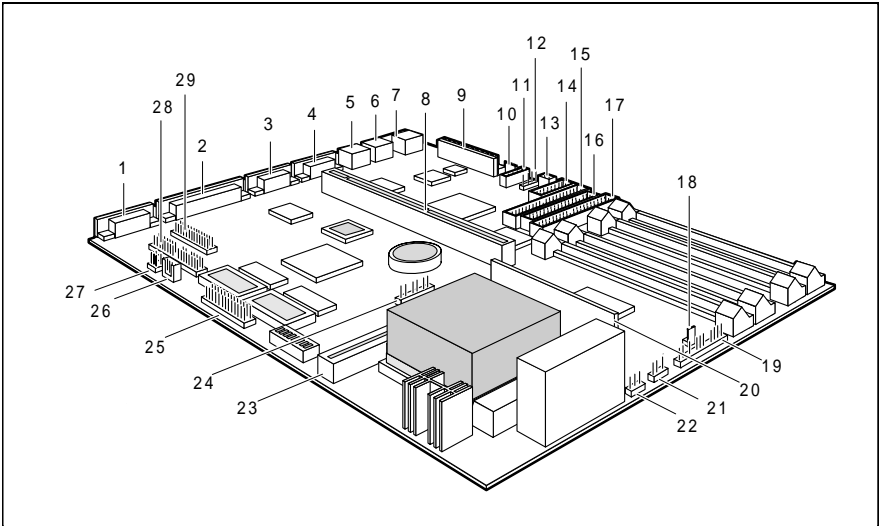
1 =	Monitor port	15 =	IDE drives 1 and 2 (primary)
2 =	Parallel port	16 =	Floppy disk drive
3 =	Serial port 2	17 =	IDE drives 3 and 4 (secondary)
4 =	Serial port 1	18 =	Power on switch
5 =	PS/2 mouse port	19 =	LED indicators in front panel
6 =	PS/2 keyboard port	20 =	Voltage converter
7 =	USB	21 =	External loudspeaker
8 =	Slot board	22 =	Fan
9 =	Power supply	23 =	Cache board (second-level)
10 =	Connector for soft-off power supply	24 =	LED indicators in front panel
11 =	CD audio (input)	25 =	Feature board
12 =	infrared interface	26 =	AUX IN
13 =	Remote on via fax/modem	27 =	Voice modem
14 =	Chipcard reader	28 =	Game/Midi/Audio
		29 =	Wavetable board

The connectors marked do not have to be present on the system board.

Possible screen resolution

Depending on the operating system used the screen resolutions in the following table refer to the screen controller on the system board. If you are using an external screen controller, you will find details of supported screen resolutions in the Operating Manual or Technical Manual supplied with the controller.
You can set the screen resolution under Windows 95 by selecting *Control Panel - Display - Settings*.
You can set the screen resolution under MS-DOS using the *SET-VGA* program.

Screen resolution	Refresh rate (Hz)	Horizontal-rate (kHz) **	Max. number of colors
640x350	70	31,5	16
640x350	84	38	16
640x480	60	31,5	16777216
640x480	75	37,5	16777216
640x480	85	43,4	16777216
640x480	100	50,6	16777216
720x400	70	31,5	16
720x400	84	38	16
800x600	60	38	65536
800x600	60	38	16777216
800x600	72	48	65536
800x600	72	48	16777216
800x600	75	47	65536
800x600	75	47	16777216
800x600	85	53,7	65536
800x600	85	53,7	16777216
800x600	100	63	65536
800x600	100	63	16777216
1024x768	87 interlaced	36	256
1024x768	87 interlaced	36	65536
1024x768	60	48,4	256
1024x768	60	48,4	65536
1024x768	75	60	256
1024x768	75	60	65536
1024x768	85	68,7	256 *
1024x768	85	68,7	65536 *
1024x768	100	81	256 *
1280x1024	87 interlaced	49	16
1280x1024	87 interlaced	49	256
1280x1024	60	63,7	256 *
1280x1024	75	80,4	256 *

*	no 16 color mode
**	
**	The horizontal rate values may have a tolerance range of ± 0.3 kHz.
***	not for graphics processor Cirrus Logic CL-GD5446

The values marked are only available with a 2-Mbytes video memory.

Resource table

	possible IRQ	Possible Address	Possible DMA
Keyboard	IRQ1		
Serial port COM2 / IrDA	IRQ3, IRQ4	02F8, 03F8 02E8, 03E8	
Serial interface COM1 / Chip card reader	IRQ4, IRQ3	03F8, 02F8 03E8, 02E8	
Floppy disk drive controller	IRQ6		DMA2
Parallel interface LPT1	IRQ5, IRQ7	0278, 0378	DMA1, DMA3
RTC	IRQ8		
Audio controller Joystick: Base address: MPU 401: Adlib:	IRQ5, IRQ7, IRQ9, IRQ10	 0200-0207 0220-022F 0240-024F 0260-026F 0280-028F 0300-0301 0330-0331 0338-038B	DMA1, DMA3, DMA5, DMA7
USB controller	IRQ11		
Mouse controller	IRQ12		
Numeric processor	IRQ13		
IDE controller 1	IRQ14		
IDE controller 2	IRQ15		

The interrupts, addresses and DMAs set in the factory are underlined.

„Possible IRQ" = these interrupts can be used for your particular application

„Possible address" = this address can be used for your particular application

„Possible DMA" = this DMA can be used for your particular application

i	Please note that a resource cannot be used by two applications at the same time.

Important notes

Store this manual close to the device. If you pass on the device to third parties, you should also pass on this manual.

⚠ Be sure to read this page carefully and note the information before you open the 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 chapter „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. It must be disposed of in accordance with local regulations concerning special waste.

CE This board complies with the requirements of the EEC directive 89/336/EEC with regard to "Electromagnetic compatibility". Compliance was tested in a typical PC configuration.

When installing the board, refer to the specific installation information in the Operating Manual or Technical Manual of the receiving device.

Data cables to peripheral devices must be adequately shielded.

⚠ Modules can become very hot during operation. Make sure you do not touch modules when adding components to the system board. There is a danger of burns!

ⓘ The warranty expires if the device is damaged during the installation or replacement of system expansions. Information on which system expansions you can use is available from your sales office or the customer service.

Boards with electrostatic sensitive devices (ESD) may be identified by labels.
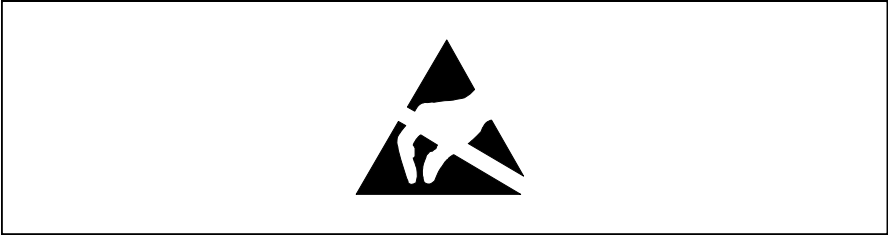
When you handle boards fitted with ESDs, you must observe the following points under all circumstances:
- You must always discharge yourself (e.g. by touching a grounded object) before working.
- The equipment and tools you use must be free of static charges.
- Pull out the power plug before inserting or pulling out boards containing ESDs.
- Always hold boards with ESDs by their edges.
- Never touch pins or conductors on boards fitted with ESDs.

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.

When it is supplied, the PC is set to factory default settings which you can alter in the *BIOS Setup* menus. You can change these settings in *BIOS Setup*. 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 *BIOS Setup* 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
BIOSFaX - quick start functions
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.*

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*)

```
      Phoenix BIOS Setup
  Main    Advanced    Security    Power    BIOSFaX    Exit

  System Time:          [07:42:19]              Item Specific Help
  System Date:          [08/11/1995]          ─────────────────────

  Diskette A:           [1.4M]
  Diskette B:           [None]

► Hard Disk 1:          1 Gbyte
► Hard Disk 2:          None
► Hard Disk 3:          None
► Hard Disk 4:          None

► Boot Options

  Video Display:        [EGA/VGA]

  Base Memory:            640K
  Extended Memory:          7M

 F1  Help    ↑↓ Select Item   -/+  Change Values      F9 Setup Defaults
 ESC Exit    ←→ Select Menu   Enter Execute Command    F7 Previous Values
```

Example for *Main* menu

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").

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*).
    (Default entry Diskette A : *1.4M*).
None   A floppy disk drive is not installed.
    (Default entry for Diskette B:).

Hard Disk 1 to Hard Disk 4 - Hard disk drives

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 slowest one. Fast hard disks should therefore be connected to the first IDE connector and identified as *Hard Disk 1* or *Hard Disk 2*. Slower hard disks or other 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*.

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
  Main

        Hard Disk 1:        1 Gbyte              Item Specific Help

   Autotype Hard Disk:      [Press Enter]

   Type:                    [User]
   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   -/+   Change Values    F9 Setup Defaults
 ESC Exit    ←→ Select Menu    Enter Execute Command   F7 Previous Values
```

Example for the submenu *Hard Disk*

Autotype Hard Disk

⚠️ Only if you have installed a new unrecorded IDE hard disk drive, you should mark the *Autotype Hard Disk* field.
If you have set the hard disk parameters with *Autotype Hard Disk*, you can only reduce the values.

If you have installed a new unrecorded 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.

None   You cannot change the hard disk parameters (*Cylinders, Heads, Sector/Track* and *Write Precomp*). An IDE drive has not been installed.

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. 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		
	850 Mbyte	1,2 Gbyte	1,6 Gbyte
Cylinders	1654	2484	3148
Heads	16	16	16
Sectors	63	63	63
Write Precomp	None	None	None

CD   If an ATAPI CD-ROM drive is installed, this entry enables you to boot from the CD-ROM drive.

Cylinders, Heads, Sectors/Track, Write Precomp - hard disk parameter
These hard disk parameters are set in accordance with the IDE hard disk drive. 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 IDE 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. This allows 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 (Programmed Input Output) Mode defines the transfer rate of the IDE
hard disk drive.
Standard   0,8 Mbyte/s to 2 Mbytes/s (default entry)
Fast PIO 1   2 Mbytes/s to 4 Mbytes/s
Fast PIO 2   4 Mbytes/s to 5 Mbytes/s
Fast PIO 3   5 Mbytes/s to 10 Mbytes/s
Fast PIO 4   more than 10 Mbyte/s

32 Bit I/O - Bus width for data transfer
This field 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.

Boot Options

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

```
     Phoenix BIOS Setup
  Main

        Boot Options                         Item Specific Help

  POST Error Halt:    [Halt On All Errors]
  Quick Boot:         [Disabled]
  Quiet Boot:         [Disabled]

  Boot Sequence:      1. Diskette
                      2. Hard Disk
                      3. CD ROM



 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. 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).

Quiet Boot
Instead of a start information a logo is displayed on the screen.

Enabled	The logo is displayed on the screen. A switch to the start information is made if you press the **Esc** key or if errors occur.
Disabled	The start information is displayed on the screen (default entry).

Boot Sequence
defines the sequence in which the system BIOS searches the drives for system files
to start the operating system. If you wish to change this sequence, place the cursor
on the entry for the drive you to which wish to move forward (⊞ key) or back (⊟
key).
Default entry:
> *1. 1. Diskette*
> *2. Hard Disk*
> *3. CD ROM*

Video Display

This field is used to specify the type of monitor connected.
EGA/VGA, Color 80, Monochrome
> Default entry: *EGA/VGA*

Base Memory

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

Extended Memory

indicates the size of the memory above 1 Mbyte.

Advanced menu - Making advanced system settings

⚠️ 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)
- PCI functionality (in the *PCI Configuration* submenu)
- System settings (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)

```
      Phoenix BIOS Setup
  Main    Advanced   Security   Power   BIOSFaX   Exit
┌─────────────────────────────────────────────┬──────────────────────────┐
│                   Warning!                   │    Item Specific Help    │
│  Setting items on this menu to incorrect     │ ──────────────────────── │
│ values                                       │                          │
│  may cause your system to malfunction.       │                          │
│                                              │                          │
│ ► Cache Memory                               │                          │
│ ► Shadow Memory                              │                          │
│ ► Peripheral Configuration                   │                          │
│ ► PCI Configuration                          │                          │
│ ► Advanced System Configuration              │                          │
│                                              │                          │
│  Plug & Play O/S:            [Yes]           │                          │
│  Reset Configuration Data:   [No]            │                          │
│                                              │                          │
│  Large Disk Access Mode:     [DOS]           │                          │
│                                              │                          │
│                                              │                          │
├─────────────────────────────────────────────┴──────────────────────────┤
│ F1  Help     ↑↓  Select Item   -/+   Change Values    F9 Setup Defaults  │
│ ESC Exit     ←→  Select Menu    Enter  Execute Command  F7 Previous Values│
└──────────────────────────────────────────────────────────────────────────┘
```

Example for the *Advanced* menu

Cache Memory

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

```
Phoenix BIOS Setup
          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 - 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*

Cache - cache utilization
This field switches the cache 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.

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.

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

Cache Mode - Transfer Mode
Requirement: 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. The field is set to *Write Back* and can not be changed
In write-back mode the processor writes information to the cache and the information is only written to the main memory if necessary. The information is only written to the main memory if necessary. Main memory and cache contents are not identical.

Cache System BIOS Area / Cache Video BIOS Area
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
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).

⚠ If your ISA board uses a dual ported RAM in the associated ROM area, set the entry to *Disabled.*

Shadow Memory

calls the 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
          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 Shadow 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 with an external screen controller connected to the PCI
                bus.

Shadow Memory Regions - ROM areas
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).

⚠️ If your ISA board uses a dual ported RAM in the associated ROM area, set the entry to *Disabled.*

Peripheral Configuration - Ports and Controllers

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

```
      Phoenix BIOS Setup
          Advanced

      Peripheral Configuration                  Item Specific Help

 Serial 1:               [Auto]
 Serial 2:               [Auto]
 Serial 2 Mode:          [Standard]
 Parallel:               [Auto]
 Parallel Mode:          [Printer]

 Diskette Controller:    [Enabled]
 Hard Disk Controller:   [Primary And
Secondary]

 Mouse Controller:       [Enabled]

 Audio Controller:       [Enabled]
 USB Controller:         [Disabled]

 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 the relevant serial interface.
3F8h, IRQ4, *2F8h, IRQ3*, *3E8h, IRQ4*, *2E8h, IRQ3*,
              The serial port 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.

Serial 2 Mode - Serial interfaces
This field defines whether the second serial port is used as the standard port or as the infrared interface.
If you wish to use infrared data transfer, an infrared interface with the associated hardware must be incorporated in the device.
Standard   The port operates as a serial port (default). Standard
IRDA   (Infra-Red Data Association) The serial port permits infrared data
              transfer up to 115 kbit/s. External serial port 2 does not function.

Parallel - parallel interface
This field selects the address and the interrupt used to access the parallel interface.
378h, IRQ7, *278h, IRQ5*, *3BCh, IRQ7*
              The parallel port 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.

Parallel Mode

This field is used to specify whether the parallel interface is to be used as a bi-directional input/output port or just as an output port. *ECP* and *EPP* transfer modes allow faster transfer rates of 2 and 2.4 Mbytes/s. These modes will only work with peripheral devices which support them. In addition, 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 Mbytes/s), can output and receive data. The mode requires a peripheral device which supports the EPP (Enhanced Parallel Port) transfer mode.
ECP	Fast transfer mode (up to 2.4 Mbytes/s), can output and receive data. The mode requires a peripheral device which supports the EcP (Enhanced Capability Port) transfer mode. The DMA channel required is determined by the system in accordance with Plug & Play.

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 IDE hard disk drive 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 two IDE hard disk controller are 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 (default entry)- IRQ 12 is used. .
Disabled   The mouse controller is disabled - IRQ 12 is free.

Audio Controller
This field sets the base address for the audio controller on the system board or
disables the audio controller.
Enabled   The system BIOS determines which system resources (interrupts,
                addresses, DMAs) are occupied (default entry).
Disabled   The audio controller is disabled.

USB Controller
switches the USB controller (Universal Serial Bus) of the system board on or off.
Enabled   The system BIOS determines which system resources (interrupts,
                addresses) are occupied.
Disabled   The USB controller is disabled (default entry).

PCI Configuration

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

```
      Phoenix BIOS Setup
        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]

 VGA Interrupt:              [Disabled]

 PCI Device, Slot #1
    Default Latency Timer:   [Yes]
    Latency Timer:           [0040]

 PCI Device, Slot #2
    Default Latency Timer:   [Yes]
    Latency Timer:           [0040]

 PCI Device, Slot #3
    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. For the change to
take effect, you must switch your PC off and then on again after the Setup BIOS
has terminated.
A multifunctional PCI board can use all PCI interrupts, if need be.
If you use a setting other than *Auto*, the Plug&Play functionality of the system
BIOS for PCI boards is deactivated.
The PCI interrupts INTA#, INTB#and INTC# are assigned 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.

VGA Interrupt - Assigning PCI-VGA interrupt
assigns PCI interrupt to the screen controller on the built-in PCI board. If you have
not defined any other interrupt with *PCI Interrupt Mapping*, IRQ9 is assigned.

Enabled   The interrupt is assigned to the screen controller on the built-in
                PCI board (default entry).
Disabled   The interrupt can be used for other add-on boards.

PCI Device, Slot #n: Default Latency Timer
specifies the lowest number of clock cycles in which a PCI master board can be active at the PCI bus; *n* stands for the number of the PCI slot. For the change to take effect, you must switch your PC off and then on again after the Setup BIOS has terminated.

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

PCI Device, Slot #n: Latency Timer
Requirement: The relevant field of *PCI Device, Slot #n: Default Latency Timer* must be set to *No*.
The field defines the lowest number of clock cycles in which a burst can be transferred on the PCI bus. *n* stands for the number of the PCI slot.
0000h to *0280h* Number of clock cycles (default entry = *0040h*).

Advanced System Configuration

calls the submenu in which you can make additional settings.

```
        Phoenix BIOS Setup
          Advanced

        Advanced System Configuration          Item Specific Help


   ISA Memory Gap:            [Disabled]
   Parity Mode:               [Disabled]
   Memory Performance:        [Fast]
   Cache Performance:         [Fast]
   Memory Current:            [8mA]
   Feature Connector:         [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*

ISA Memory Gap
inserts a contiguous ISA memory area of 1 Mbyte into the main memory area of 15 to 16 Mbytes.
Enabled   The ISA memory area is inserted.
Disabled   The ISA memory area is not inserted (default).

Parity Mode - DRAM Parity Check
Determines whether a parity check is carried out in the case of DRAM modules. If the system BIOS detects that at least one DRAM module does not have a parity bit, the parity check is generally disabled.
Disabled   No parity check is performed.
Parity   The parity check is set in parity mode. A bit corruption is recognized and an error message is issued (default entry).
ECC   A bit corruption is corrected (no error message). An error message is issued for two or more bit corruptions.

Memory Performance
determines whether greater tolerances should be permitted for memory timing.
Standard   Memory timing is programmed for EDO memory modules which takes account of all possible tolerances.
Fast   Setting performance of system.

Cache Performance
determines whether greater tolerances should be permitted for cache timing.
Standard   Greater tolerances are permitted for cache timing.
Fast   Setting performance of system.

Memory Current
defines the memory current to be supplied to the memory modules.
8mA   The memory modules are supplied with 8mA memory current.
12mA   The memory modules are supplied with 12mA memory current. The 12mA setting is only necessary if you are using memory modules with a large storage capacity (upwards of 64 Mbyte), which have a large number of memory chips.

Feature Connector - Enabling of Feature Connectors
This field is used to enable and disable the feature connector on the system board.
Enabled   The feature connector is enabled.
Disabled   The feature connector is disabled (default entry).

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 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 setting).

Reset Configuration Data

This field specifies whether the configuration data is reset and reinitialized when the PC is started.

Yes   When the PC is started the old configuration data is reset and the entry in this field is set to NO. 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 Plug&Play functionality ascertains the current configuration data and uses it to initialize the installed modules and drives. There is no update when the system is started (default entry).

Large Disk Access Mode - Hard disk access

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 used.

DOS   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).

Menu Security - Setting up the security features

You can set up the following security features in the *Security* menu:
- Protecting BIOS Setup   (in the field marked *Set Setup Password*)
- Protecting BIOS of add-on modules (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*)
- Displaying Setup message (in the *Setup Prompt* field)
- Virus Warning   (in the field marked *Virus Warning*)
- Prevention of write operations to floppy disk (in the field marked *Diskette Write*)
- Write protection of System BIOS (in the field marked *Flash Write*)
- On/Off functionality (in the submenu *Power On/Off*)

```
Phoenix BIOS Setup
   Main    Advanced   Security    Power    BIOSFaX    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]

 ► Power On/Off


 F1  Help    ↑↓  Select Item   -/+   Change Values     F9 Setup Defaults
 ESC Exit    ←→  Select Menu    Enter  Execute Command   F7 Previous Values
```

Example for *Security* menu

Setup Password / System Password

These fields indicate 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 Operating Manual).

Setup Password Lock

specifies the effect of the Setup Password. The setting in this field takes effect as soon as a Setup Password has been installed.

Standard   The setup password prevents unauthorized callup of the *BIOS setup* (Default entry).

Extended   The Setup Password prevents unauthorized calls of the BIOS Setup and locks the keyboard when the PC is initialized. This prevents unauthorized access to settings for installed boards with a BIOS of their own.

Set System Password

Requirement: The setup password is 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 Operating Manual).

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.

System   When the PC is started, the system password enables the operating
                  system to be booted.
Keyboard   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.

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

Setup Prompt- Setup message

specifies whether the setup message Press F2 to enter SETUP is displayed
when the system is rebooted.

Enabled   The setup message Press F2 to enter SETUP is displayed
                  when the system is started (default entry).
Disabled   The setup 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.

Enabled   If the boot sector has been changed since the previous system startup (e.g. new operating system or virus attack), a warning is displayed. The warning stays on the screen until you acknowledge the changes with Confirm or deactivate the function (Disabled).

Confirm   This entry confirms a required change in a boot sector (e.g. new operating system).

Disabled   The boot sectors are not checked (default entry).

Diskette Write

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

Enabled   Floppy disks can be read, written or deleted, the write protection in *BIOS setup* must be disabled (switch 8 *off*, default entry).

Disabled   Floppy disks can only be read.

Flash Write

This field can assign write protection to the System BIOS.

Enabled   The system BIOS can be written or deleted, if write protection for the System BIOS is disabled in the BIOS setup (switch 5 = *off*). BIOS update from floppy disk is possible (default entry).

Disabled   The System BIOS can neither be written to nor deleted. BIOS update from floppy disk is not possible

Power On/Off

calls the submenu in which you can specify how the system can be powered on and off. These settings cause the to be switched on and off in the same way as using the on/off button on the system unit. The on/off button is always operable and cannot be disabled.

```
                        Phoenix BIOS Setup
              Security

           Power On/Off                        Item Specific Help

 Power Off Source
  Software:                [Enabled]
  Keyboard:                [Enabled]

 Power On Source
  Remote:                  [Enabled]
  Keyboard:                [Enabled]
  Timer:                   [Enabled]
  Chipcard:                [Enabled]


 F1  Help    ↑↓  Select Item   -/+   Change Values     F9 Setup Defaults
 ESC Exit    ←→ Select Menu     Enter Select ► Sub-Menu  F7 Previous Values
```

Example for submenu *Power On/Off*

⚠ If you have assigned a system password in *System Mode*, the boot procedure is suspended during remote power on of the system (using *Remote Power On* or *Timer On*) as the system waits for entry of the system password. For this reason you should not assign a system password in *System Mode* if you want to use remote power-on.

Power Off Source: Software
specifies whether the system can be switched off with a program (*DeskOff, SWOFF*) or an operating system (*Windows 95, Windows NT with Siemens Nixdorf HAL*).
Enabled   The system can be switched off with the *SWOFF* program (default entry).
Disabled   The system cannot be switched off with a program.

Power Off Source: Keyboard
specifies whether the system can be switched off using a special on/off button on
the keyboard.

Enabled   The system can be switched off using a special on/off button on the
                 keyboard.
Disabled   The system cannot be switched off using a special on/off button on
                 the keyboard (default).

Power On Source: Remote
specifies whether the system can be switched on by an incoming message (e. g.
modem). The signal can be supplied externally via serial interface 1 or internally
via the remote on connector.

Enabled   The system can be switched on from an incoming message (default
                 entry).
Disabled   The system cannot be switched on from an incoming message.

Power-on Source: Keyboard
specifies whether the system can be switched on using a special on/off button on
the keyboard.

Enabled   The system can be switched on using a special on/off button on the
                 keyboard (default entry).
Disabled   The system cannot be switched on using a special on/off button on
                 the keyboard.

Power-on Source: Timer
specifies whether the system can be timed to switch on at a particular time or after
a particular period of time.
The switch-on time cannot be specified in BIOS Setup. You require a suitable
program for setting this switch-on time.

Enabled	The system can be switched on at set times.
Disabled	The system cannot be switched on under timer control (default entry).

⚠️ Rebooting after a critical system error (*ASR&R Boot Delay* field in the
Server menu) is not affected by this setting.

Chipcard
specifies whether the system can be switched on via the chipcard reader.

Enabled	The system can be switched on via the chipcard reader (default). (Default entry.)
Disabled	The system cannot be switched on via the chipcard reader.

Power menu - Setting energy saving functions

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:
- Enabling of APM interface (in the *Advanced Power Management* field)
- 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)
- Defining system activities (in the *Wakeup Event* field)

```
Phoenix BIOS Setup
  Main     Advanced     Security     Power     BIOSFaX      Exit

  APM                        [Enabled]              Item Specific Help
  Power Management Mode:     [Customize]          ───────────────────────

  Standby Timeout:           [15 min]
  Suspend Timeout:           [10 min]
  Hard Disk Timeout:         [10 min]
  Standby CPU Speed:         [Medium]
  Save To Disk:              [Disabled]

► Wakeup Event


  F1  Help     ↑↓  Select Item   -/+  Change Values     F9 Setup Defaults
  ESC Exit     ←→ Select Menu    Enter Execute Command   F7 Previous Values
```

Example for menu *Power*

APM - Enabling the APM Interface

Determines whether an operation system can change the power management settings in the system BIOS.

Enabled   The operating system has access to the power management settings and can change these if necessary (default entry).

Disabled   Changes can not be made to power management setting by an operating system.

Power Management Mode - Extent of energy saving functions

This field defines the extent of the energy saving functions.

Customize   The functions set in the fields *Standby Timeout*, *Hard Disk Timeout*
                    and *Standby CPU Speed* are effective in power management (default
                    entry). (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 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 wakeup event terminates standby mode again

2 min, *5 min*, *10 min*, *15 min*, *30 min*
                    Default entry = *15 min.*

Disabled   The PC does not switch to standby mode.

Suspend Timeout - Suspend mode

Requirement: The *Power Management Mode* must be set to *Customize*.
This field defines the amount of time without system activity the system is to wait
before switching to standby mode. In standby mode, the screen is dark and the
processor is switched off.
The next wakeup event terminates suspend mode again.
In a network environment *Suspend Timeout* must be disabled, otherwise data transfer
will be aborted.

2 min, *15 min*, *30 min*, *1 Std*, *2 Std*, *3 Std*, *4 Std*
                    Default entry = *15 min.*

Disabled   The PC does not switch to suspend mode

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 a hard disk access, the
motor is switched back on.
2 min, *5 min*, *10 min*, *15 min*
                    Default entry = *10 min.*

Disabled   The PC does not switch off the hard disk drive.

Standby CPU Speed

Requirement: The *Power Management Mode* must be set to *Customize*.
This field specifies the processor's clock speed in standby mode. The entries *High*,
Medium and *Low* cause programs to run more slowly.
In a network environment the processor's clock speed must be set to *Max*,
otherwise data transfer will take place at reduced speed.

Max   Maximum clock speed

High   1/4 of maximum clock speed

Medium   1/8 of maximum clock speed (default entry)

Low   1/16 of maximum clock speed

Save To Disk

Requirement: The *Power Management Mode* must be set to *Customize*. 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 system switches to
suspend mode. This system status is restored when you restart the system; in other
words, you can carry on working in the same application.

Enabled   The contents of the main memory, working memory, video
                    memory and cache are saved to the hard disk.

Disabled   The memory contents are not saved (default entry).

The *Enabled* setting only works with:
- Controllers integrated on the system board (e. g. graphics and audio controllers)
- Add-on boards indicated in the price list.

Other add-on boards are not supported at present.

> ⚠️ Do not set the entry in the *Save to Disk* field to *Enabled*, if you are using boards other than those listed above. This applies, for example, to add-on boards such as SCSI controllers and graphics controllers.
> These restrictions also apply if you activate the *Quickstart* function (Save to disk) under Windows using *DeskEnergy*.
> Before starting the *Save to Disk* function, you should first close all documents located on network drives.

Wakeup Event - Defining system activities

This field calls the 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, for example.
In a network environment the *Wakeup Event* for the network controller interrupt must be disabled, otherwise the system will not switch to *Standby Mode.*

```
     Phoenix BIOS Setup
        Power

          Wakeup Event                            Item Specific Help

 IRQ 1:          Enabled
 IRQ 3:         [Disabled]
 IRQ 4:         [Disabled]
 IRQ 5:         [Disabled]
 IRQ 6:         [Enabled]
 IRQ 7:         [Disabled]
 IRQ 8:         [Disabled]
 IRQ 9:         [Disabled]
 IRQ 10:        [Disabled]
 IRQ 11:        [Disabled]
 IRQ 12:        [Enabled]
 IRQ 13:         Disabled
 IRQ 14:        [Enabled]
 IRQ 15:        [Enabled]


 F1  Help    ↑↓  Select Item   -/+  Change Values     F9 Setup Defaults
 ESC Exit    ←→ Select Menu    Enter Select ► Sub-Menu F7 Previous Values
```

Example for *Wakeup Event* submenu

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

BIOSFaX menu - quick start functions

With the *BIOSFaX* menu you can select whether your system can be switched on via modem and whether an abbreviated system startup is executed. During this system startup any incoming call or fax is stored.

```
      Phoenix BIOS Setup
  Main    Advanced    Security    Power    BIOSFaX      Exit


   Receive Mode:            [Disabled]          Item Specific Help
                                             _____

   Ring Count:              [Auto]
   Fax Tone Count:          [Auto]
   Fax Modem Port:            COM3





 F1  Help     ↑↓  Select Item    -/+  Change Values      F9 Setup Defaults
 ESC Exit     ←→  Select Menu     Enter Select ► Sub-Menu F7 Previous Values
```

Example for *BIOSFaX* menu

Receive Mode

Requirement: Remote on functionality (*Remote on*) must be enabled.
This field determines the mode in which the modem is operated. Depending on the setting, any incoming message will be recorded.

Voice and Fax   Any incoming call or fax will be recorded.
Voice   Only an incoming call will be recorded.
Fax   Only an incoming fax will be recorded.
Disabled   Modem functionality is not available when the system is switched off (default entry).

Ring Count

Defines how often a ring tone should sound before the modem answers. Possible settings: *2, 3, 4, 5, 6, 7* or *Auto* (default entry).

Fax Tone Count

Defines how often a fax tone should sound before the modem answers. Possible settings: 1, *2, 3, 4, 5, 6, 7* or *Auto* (default entry).

Fax Modem Port - Serial port

Shows which serial interface is used for the modem. This setting is assigned by the system and cannot be changed.
Possible displays: *COM1*, *COM2*, *COM3* or *COM4*.

Exit menu

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

```
      Phoenix BIOS Setup
  Main    Advanced    Security    Power    BIOSFaX    Exit

  Save Changes & Exit                              Item Specific Help
  Discard Changes & Exit                          ————————————————————
  Get Default Values
  Load Previous Values
  Save Changes




 F1  Help    ↑↓  Select Item    -/+   Change Values       F9 Setup Defaults
 ESC Exit    ←→ Select Menu     Enter Execute Command      F7 Previous Values
```

Example for menu *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 switch block S180
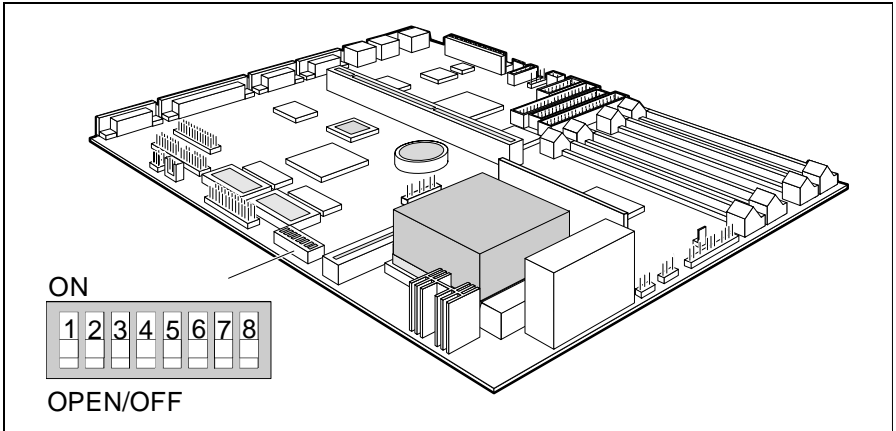
Switch 1, 2, 3 and 4 = clock speed   Switch 7 = recovering System BIOS
Switch 5 = write protection for system BIOS   Switch 8 = write protection for
Switch 6 = must be set to *off*   floppy disk drive

Clock speed - switch 1, 2, 3 and 4

The switches may only be set as specified in the table below for the particular processor used.
If you want to replace the processor, contact your sales outlet or our service center, since you may require a voltage converter.

processor	switch 1	switch 2	switch 3	switch 4
75 MHz	on	on	off	off
90 MHz	on	off	off	off
100 MHz	off	on	off	off
120 MHz	on	off	on	off
133 MHz	off	on	on	off
150 MHz	on	off	on	on
166 MHz	off	on	on	on
200 MHz	off	on	off	on

Write protection for System BIOS - switch 5

Switch 5 enables and disables system BIOS updating. 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 wish to update your system BIOS, please consult our customer service.

on   System BIOS is write protected.

off   System BIOS can be overwritten (default setting).

⚠️ If you change the configuration of your system (for example by installing new add-on boards), you must set switch 5 to *off*. Only then you can change the configuration data in the system BIOS.

Recovering System BIOS - switch 7

Switch 7 enables recovery of the old system BIOS after an attempt to update has failed. Write protection for the System BIOS must be disabled in the BIOS setup and before the System BIOS can be recovered (switch 5 = *off*). To restore the old BIOS you need a Flash BIOS Diskette (call customer service).

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

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

Write protection for floppy disk drive - switch 8

Switch 8 is used to define whether floppy disks can be written or deleted in the floppy disk drive. To write and delete floppy disks, the write protection in *BIOS setup* must be disabled (in menu *Security*, the field *Diskette Write* must be set to *Enabled*).

on   The floppy disk drive is write-protected.

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

Add-on modules
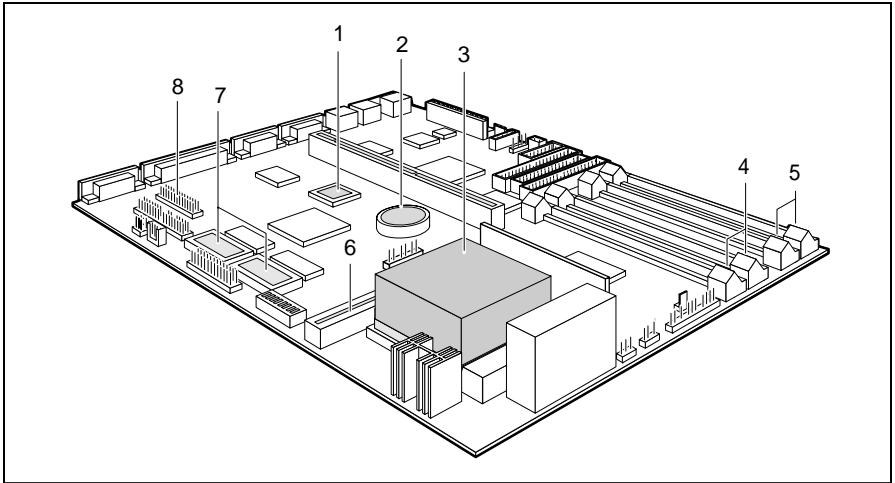
1 = Flash BIOS
2 = Lithium battery
3 = Processor with heat sink
4 = Locations bank 0 for main memory

5 = Locations bank 1 for main memory
6 = Location for second-level cache
7 = Socket for video memory
8 = Slot for wavetable board

Upgrading main memory

Four locations (bank 0 and bank 1) are available on the system board for installing memory modules. The board supports a maximum of 128 Mbytes.
You may use memory modules of 4, 8, 16 or 32 Mbytes with or without parity check.

⚠️ You may only use fast memory modules (access time = 70ns or less) or EDO memory modules (access time = 60ns or less)
In other words, you fit the first pair to bank 0, and the second pair in bank 1. Pairs of memory modules must have the same capacity and the same access time.

ℹ️ The ECC error identification is only possible for modules with parity checks

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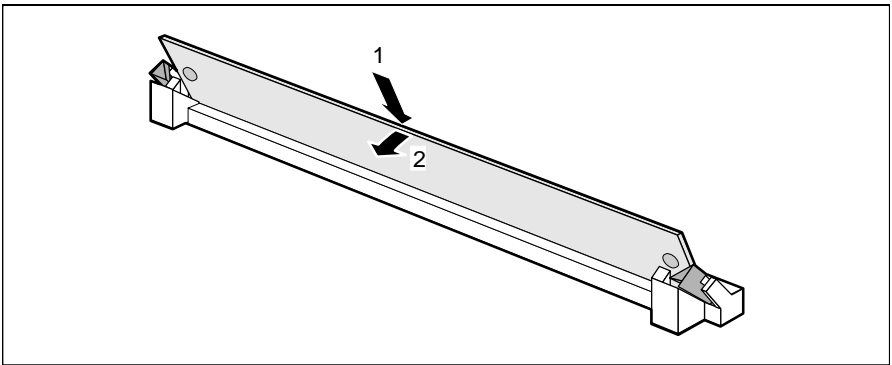
► Insert the memory module at an angle into the appropriate location (1). Ensure that the key notch and the two holes are correctly aligned with the retaining pins.
► Tilt the module down until it snaps into place (2).

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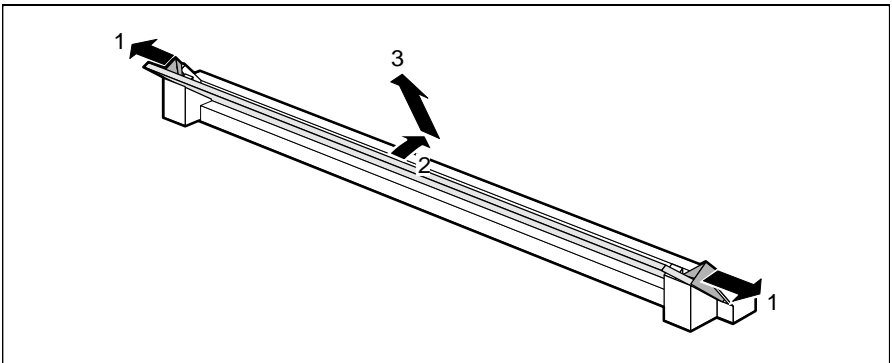
► Carefully push the retaining clips at each end of the module outwards (1).
► Tilt the memory module forwards (2), and pull it upwards and at an angle out of the mounting location (3).

Replacing the processor
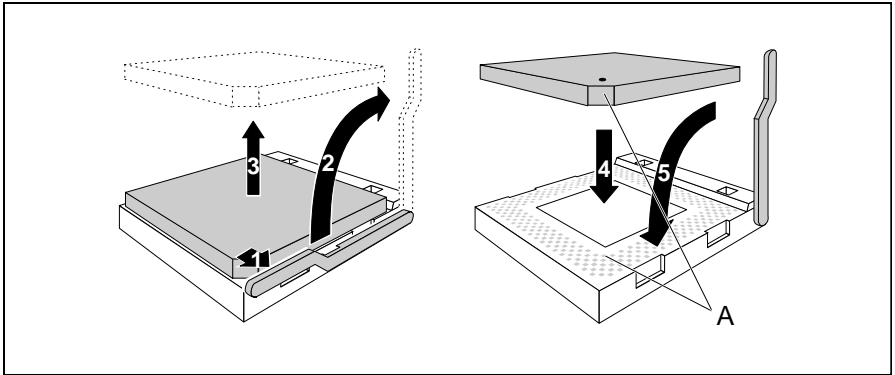
► Push the lever in the direction of the arrow (1) and lift it as far as it will go (2).
► Remove the old processor from the socket (3).
► Insert the new processor in the socket so that the mark on the upper side of the processor matches the mark (A) on the socket (4).

⚠ 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.
► Set the switches 1, 2 , 3 and 4 depending on the processor which is installed.

⚠ If you want to replace the processor, contact your sales outlet or our service center, since you may require a voltage converter.

Upgrading the second-level cache

The system board has a socket for second-level cache. You can install a Pipelined-Burst second-level cache module with 128 Kbytes, 256 Kbytes or 512 Kbytes.

⚠️ To avoid damage to the system board only cache modules released by Siemens Nixdorf should be used.
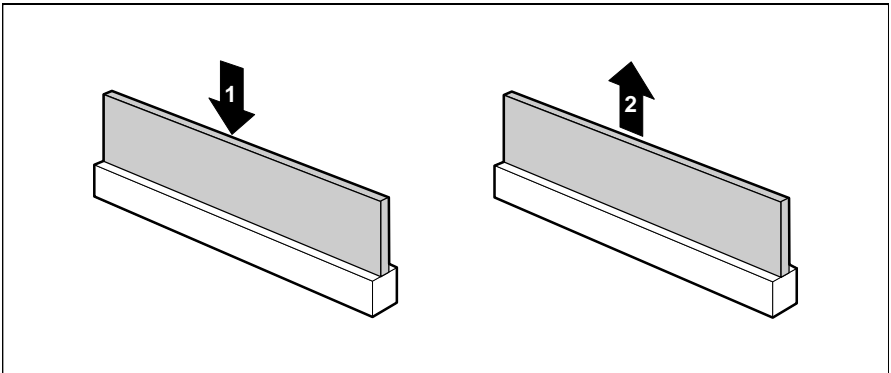
1 = Installing second-level cache   2 = Removing second-level cache

▶ 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).

ℹ️ 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.

Upgrading the video memory

If your system board 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!
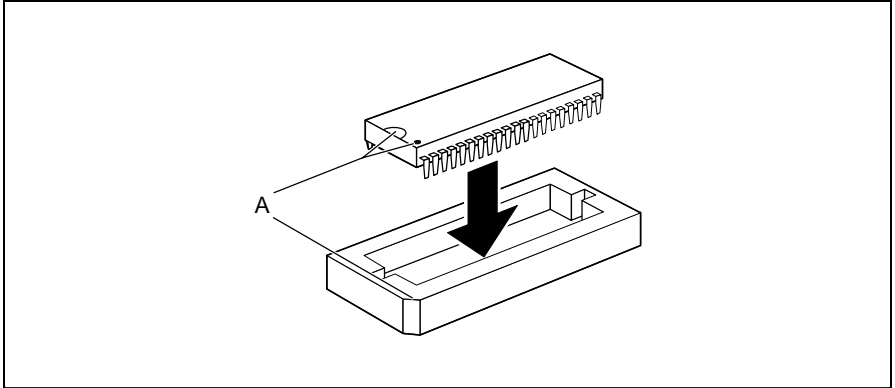
► Insert the DRAM component in such a way in the socket for video memory that the mark on the upper side of the DRAM component (A) matches the position of the mark on the socket.

Connecting an audio board

If an audio board is installed at the front of your system or you install one at the front, you must attach the connecting line to the Game/Midi / Audio port on the system board. The Game/Midi / Audio port is a combined plug.
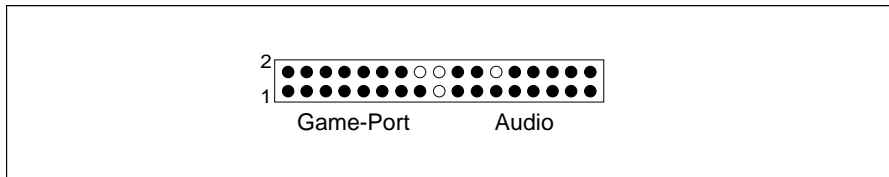
► Plug the connecting line onto the side marked with *Audio*.

If an audio board is installed at the back of your system or you install one at the back, you must attach the connecting line to the Game/Midi / Audio port on the system board. The plug on the connecting line is exactly the same width as the Game/Midi / Audio port.

► Plug the connecting line into the Game/Midi / Audio port.

Replacing the lithium battery

⚠ Incorrect replacement of the lithium battery may lead to a risk of explosion.
The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer (CR2032).
Do not throw lithium batteries into the trashcan. It must be disposed of in accordance with local regulations concerning special waste.
Make sure that you insert the battery the right way round. The plus pole must be on the top!
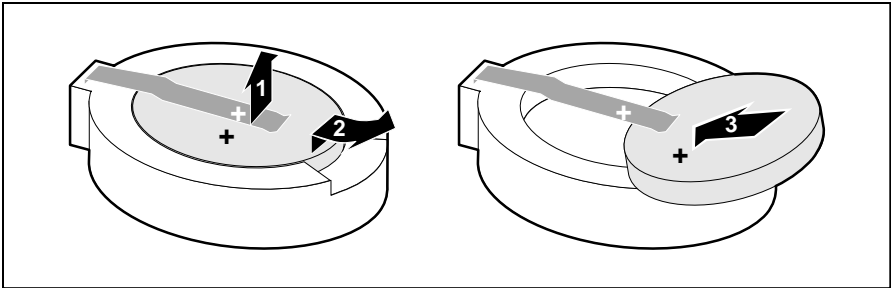
► Lift the contact (1) a few millimeters and remove the battery from its socket (2).
► Insert a new lithium battery of the same type in the socket (3).

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
Failing Bits: nnnn
System RAM Failed at offset: nnnn
```
   Switch the PC off and on again. 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 Setu*p.

```
Invalid NVRAM media type
```
   Switch the PC off and on again. If the message is still displayed, please
   contact your sales office or customer service.

```
Invalid System configuration Data
```
   In the *Advanced* menu of the *BIOS Setup* set the entry for *Reset Config Data* to
   Yes.

```
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 - RUN SETUP
```
   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
Parity Check 2
```
Switch the PC off and on again. 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.

```
System battery is dead - Replace and run SETUP
```
Replace the lithium battery on the system board and redo the settings in the *BIOS Setup*.

```
System Cache Error - Cache disabled
```
Switch the PC off and on again. If the message is still displayed, please contact your sales office or customer service.

```
System CMOS checksum bad - run SETUP
```
Call the *BIOS Setup* and correct the previously made entries or set the default entries.

```
System timer error
```
Switch the PC off and on again. If the message is still displayed, please contact your sales office or customer service.

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