SIEMENS
NIXDORF

System board D823

EISA/PCI

Technical Manual

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Contents

Introduction

This description applies to the system board D823.

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.

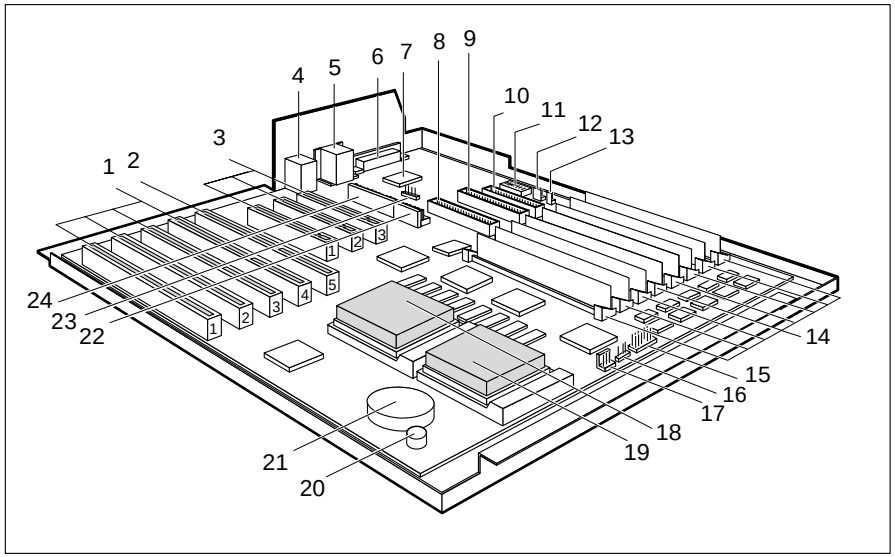
`Texts in this bold typeface` are the entries you make via the keyboard.

Texts in italics indicate commands or menu items.

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

Features

- Microprocessor Pentium (in ZIF socket), 3.3 V technology, 16 Kbytes internal cache memory (first level cache), math coprocessor
- Internal/external clock rates: 75/50, 90/60, 100/66, 133/66
- Prepared for Pentium OverDrive processor (OverDrive Ready)
- Dual processor system with second Pentium microprocessor (optionally)
- Neptun EISA-PCI chipset
- 64 bit data bus
- External (second level) cache memory on system board: 256 Kbytes
- Memory configuration: 8 Mbytes to 256 Mbytes RAM onboard (4 banks)
- 128 Kbytes Flash BIOS with password functions
- PCI bus
- Real-time clock/calendar with 114 Bytes CMOS RAM and integrated battery backup
- Hard disk controller connected to PCI bus for up to four IDE hard disk drives
- Floppy disk controller (up to 2.88 Mbyte format)
- 3 PCI slots
- 4 master capable EISA slots
- 1 ISA slot
- Connector for external loudspeaker
- Connector for floppy disk drive
- 2 connectors for IDE hard disk drives (2 x 2 IDE hard disk drives)
- Parallel interface (ECP- and EPP-compatible)
- Two serial interfaces
- PS/2 mouse interface
- PS/2 keyboard interface
- Piezoelectric beep facility
- Switch block for user settings
- Soft-off management



1 = EISA slots
2 = ISA slot
3 = PCI slots
4 = Mouse and keyboard interface
5 = Serial interfaces Ser1 and Ser2
6 = Parallel interface
7 = BIOS
8 = Connector for IDE hard disk drive (secondary)
9 = Connector for IDE hard disk drive (primary)
10 = Connector for floppy disk drive
11 = DIP switch S500
12 = Connector for soft-off (power supply)
13 = Connector for soft-off (power switch)
14 = 8 sockets for 36 Bit SIM modules
15 = Connector for indicators (system unit on, hard disk)
16 = Connector for loudspeaker
17 = Connector for fan
18 = First processor (at mono or dual) or upgrade processor
19 = Second processor (optionally)
20 = Piezoelectric beep facility
21 = Lithium battery
22 = Connector for 3.3 V power supply
23 = Connector for SCSI HD LED
24 = Connector for 5 V power supply

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 "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.

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.

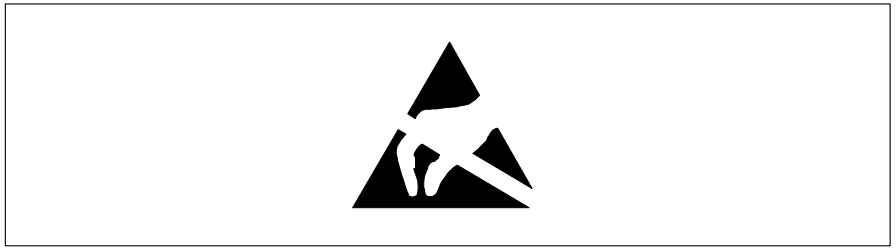
VARNING

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.

Modules with **e**lectrostatic **s**ensitive **d**evices (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

SCO-UNIX on devices with Pentium or OverDrive processor

If you upgrade the system board by adding a processor mentioned above, please note the following:
If you use the processor mentioned above, the Adaptec-SCSI controller cannot be addressed under SCO-UNIX 3.2.4 and ODT 2.0.
To solve this problem, you can order **from SCO** a set of **SLS (Support Level Supplement) floppies** (consisting of 3 floppy disks) under the number **uod361**, free of charge, or contact one of our IT Service Shops.

The problem no longer exists in the new releases of SCO-UNIX 3.2.4.2 and ODT 2.1.
There will be no support for older versions (SCO-UNIX versions lower than 3.2.4 and ODT versions lower than 2.0).

Settings

You can make settings in the setup menu or using the switch block on the system board.

Setup menu

The setup menu displays settings and technical information on the PC's configuration. The Operating Manual describes how to call the setup menu and change menu entries. Pressing the function key F1 provides help information on each entry field.

The setup menu consists of the following screen pages:
System Configuration
System Security Options
Additional System Options
PCI Device Configuration
Additional Hard Disk Options

System Configuration page

```
                        CMOS Setup
                    System Configuration
-------------------------------------------------------------------------

Time (hh:mm:ss)   08:38:27              Date (mm/dd/yy)   08/13/1993

Diskette A:       1.4M
Diskette B:       NONE

                                Cyl    Hd   Pre    LZ   Sec  Mbyte
Hard Disk 1:      NONE
Hard Disk 2:      NONE
Hard Disk 3:      NONE
Hard Disk 4:      NONE

Base Memory:      640K                  Video Display:    EGA/VGA
Extended Memory:  15360K                Speed Select:     HIGH


Error Halt:       HALT ON ALL ERRORS

-------------------------------------------------------------------------

<F1> Help         <F8> System info    <F10> Store CMOS  <Esc> Exit  Page
<...> Edit field  <↑↓←→> Next field   <PgUp> Next page  <Ctrl> ...   01
```

Example of the *System Configuration* page

Time
Date

The *Time* field and the *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/yy* (month/day/year).

If the settings in the *Time* and *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. The possible settings are: *360K*, *1.2M*, *720K*, *1.4M*, *2.8M or NONE*.

Default entry for *Diskette A*:
3 1/2-inch floppy drive *1.4M*
5 1/4-inch floppy drive *1.2M*
Default entry for *Diskette B*: *NONE*

Hard Disk 1
Hard Disk 2
Hard Disk 3
Hard Disk 4

These fields are used to indicate the types of hard disks installed. The entries here may possibly not match the information printed on the hard disk drive by the manufacturer.
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 hard disks should be connected to the second IDE connector and identified as *Hard Disk 3* or *Hard Disk 4*.
Possible settings: *1* through *43*, *AUTO* or *NONE*.

Do not alter the default settings unless you mount a different hard disk drive. If the wrong hard disk type is entered, the operating system cannot be loaded.

Special entries for the hard disk type:
Entry for SCSI hard disks: *NONE*
Entry for ESDI hard disks: *1*

1 through *39*
The hard disk parameters (*cylinders*, *heads*, etc.) for types *1* through *39* are preset.

40 through *43*
The hard disk parameters (*cylinders*, *heads*, etc.) for types *40* through *43* are user-defined and are entered at the keyboard.

Examples of user-defined entries (IDE drives)

Size	Cyl	Hd	Pre*	Lz*	Sec	Mbytes	
540 Mbytes:	**1046**	**16**	**NONE**	**1046**	**63**	**540**	(LBA-mode)
340 Mbytes:	**1654**	**16**	**NONE**	**1654**	**63**	**850**	(LBA-mode)
1 Gbyte:	**2079**	**16**	**NONE**	**2079**	**63**	**1080**	(LBA-mode)

* These values are preset and cannot be modified.

It is also possible to display other values here if the option *AUTO SELECT* has been selected under *Additional Hard Disk Options* --> *Hard Disk x: Transfer Mode*.

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.

NONE
The computer either has no hard disk or is fitted with a SCSI hard disk.

Default entry for *Hard Disk 1*:
depends on the type of hard disk installed
Default entry for *Hard Disk 2*, *3*, *4*: *NONE*

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

512K
A module needs the memory between 512 and 640 Kbytes.

640K
The memory is used by the system board.

Default entry: *640K*

Extended Memory
This field indicates the size of the memory above 1 Mbyte. You can reduce the size of extended memory if necessary.

Video Display
This field is used to specify the type of monitor connected.
Possible entries are: *EGA/VGA*, *COLOR 40*, *COLOR 80*, *MONO*.

Default entry: *EGA/VGA*

Speed Select
This field is used to specify the system speed set at system startup. You might, for example, need to select a slower speed for certain software programs that use programmed time loops.

HIGH
Full system speed

LOW
Reduced system speed.

Default entry: *HIGH*

Error Halt

This field is used to specify which errors the self-test should not report. The default setting should only be changed if required by special applications.

HALT ON ALL ERRORS
The self-test reports all errors it encounters.

NO KEYBOARD ERROR HALT
The self-test ignores keyboard errors.

NO DISK ERROR HALT
The self-test ignores floppy disk and hard disk errors.

NO KEYBOARD OR DISK HALT
The self-test ignores keyboard, floppy disk and hard disk errors.

NO HALT ON ANY ERRORS
The self-test ignores all errors.

Default entry: *HALT ON ALL ERRORS*

The System Security Options page

```
                        CMOS Setup
                   System Security Options
--------------------------------------------------------------------------

Time (hh:mm:ss)   08:38:27               Date (mm/dd/yy)   08/13/1993


System Load:          STANDARD
Security Features:    DISABLED
Setup Password Lock:  STANDARD

Serial 1:         3F8h (IRQ4)       Diskette Write:   ENABLED
Serial 2:         2F8h (IRQ3)       Diskette Ctrlr:   ENABLED

Parallel:         LPT1 (378h)       Setup Prompt:     ENABLED
Par Mode:         PRINTER           Quick Load:       DISABLED
                                    Virus Warning:    DISABLED
Mouse Ctrlr       ENABLED
Flash Write:      ENABLED



--------------------------------------------------------------------------

<F1> Help         <F8> System info    <F10> Store CMOS  <Esc> Exit  Page
<+ -> Select item <↑↓←→> Next field   <PgUp> Next page  <Ctrl> ...   02
```

Example of the *System Security Options* page

Time / Date

The *Time* field shows the current time and the *Date* field shows the current date according to the PC.

System Load

This field allows you to disable booting from floppy disk or swap the drive letters assigned to the floppy disk drives.

STANDARD
The operating system can be loaded from floppy disk or hard disk.

NONSTANDARD
System start-up is controlled by the operating system (terminal emulation).

DISKETTE LOCK
The operating system can only be loaded from hard disk.

DISKETTE SWAP
Drives A and B are switched.

Default entry: *STANDARD*

Security Features

This field allows you to define a password to prevent access to the data in your PC.

DISABLED
No passwords are in effect.

SYSTEM AND Setup LOCK
The setup menu and the operating system are protected by passwords.

SETUP LOCK
The setup menu is protected by a password.

KEYBOARD AND Setup LOCK
The setup menu is protected and the keyboard and the mouse are locked by passwords.

CHANGE PASSWORD
This option is only displayed if a password has already been defined. It enables you to alter the password.

Default entry: *DISABLED*

Setup Password Lock
can protect the BIOS of boards against access during booting.

STANDARD
Only the BIOS of the system board is protected.

EXTENDED
The BIOS of the system board and of all other boards is protected.

Default entry: *STANDARD*

Serial 1
Serial 2
sets the address and the interrupt of the corresponding serial interface.

3F8h (IRQ4), 2F8h (IRQ3), 3E8h (IRQ4), 2E8h (IRQ3)
The serial interface is set to the displayed address and to the displayed interrupt (edge-driven).

DISABLED
The serial interface has been disabled.

Default entry for Serial 1: *3F8h (IRQ4)*
Default entry for Serial 2: *2F8h (IRQ3)*

Parallel
The address and the interrupt used to access the parallel interface are selected here.

LPT1 (378h)
The parallel interface is set to the address 378h and IRQ7.

LPT2 (278h)
The parallel interface is set to the address 278h and IRQ5.

LPT3 (3BCh)
The parallel interface is set to the address 3BCh and IRQ7.

DISABLED
The parallel interface is disabled.

Default entry: *LPT1 (378h)*

Par 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 Mbytes/s. These modes will only work with peripheral devices which also support them.

PRINTER
The port functions as an output port only.

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

EPP
Enhanced Parallel Port transfer mode.

ECP
Enhanced Capability Port transfer mode.

ECP AND EPP
Enhanced Capability and Enhanced Parallel Port transfer mode.

Default entry: *PRINTER*

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

ENABLED
The mouse controller is enabled (IRQ12 used).

DISABLED
The mouse controller is disabled (IRQ12 free).

Default entry: *ENABLED*

Flash Write
This field is used to write-protect the flash BIOS.

ENABLED
The flash BIOS can be written or deleted, provided switch 3 on the system board is set to OPEN.

DISABLED
The flash BIOS cannot be written. The BIOS cannot be flash-upgraded from floppy disk.

Default entry: *ENABLED*

Diskette Write

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

ENABLED

Floppy disks can be read, written or deleted, provided switch 6 of the switch block S500 on the system board is set to OPEN.

DISABLED

Floppy disks can only be read.

Default entry: *ENABLED*

Diskette Ctrlr

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.

DISABLED

The floppy disk controller is disabled.

Default entry: *ENABLED*

Setup Prompt

This field specifies whether the *F2 FOR SETUP* prompt is displayed when the PC is started.

ENABLED

The *F2 FOR SETUP* prompt is displayed when the system is started.

DISABLED

The prompt is not displayed.

Default entry: *ENABLED*

Quick Load

This field allows you to shorten the duration of the self-test and speed up system start-up. If you choose the quick self-test option, only a minimum memory test is carried out.

ENABLED

The quick self-test is enabled.

DISABLED

The normal self-test is carried out.

Default entry: *DISABLED*

Virus Warning

This field enables and disables a check of the boot sector on the bootable hard disk for changes since the last system start-up. If changes are detected and the cause is unknown, you should run an appropriate virus checker to check for a virus.

ENABLED

If the boot sector has been modified since the system last booted (e.g,. a new operating system version has been installed or the hard disk has been infected by a virus), an on-screen warning appears.

```
     !!! HARD DISK WARNING !!!
   Boot sector has been modified.
Confirm the new boot sector in SETUP,
    and run a virus scan program.
```

This warning is re-displayed each time you restart the system until you acknowledge the message with CONFIRM or you disable the function by setting this field to DISABLED.

CONFIRM

By selecting this option, you indicate to the system that the modification to the boot sector was intentional (e.g., you have installed a new operating system version).

DISABLED

Boot sectors are not checked.

Default entry: *DISABLED*

Additional System Options page

```
                        CMOS Setup
                  Additional System Options
------------------------------------------------------------------------

Time (hh:mm:ss)   08:38:27               Date (mm/dd/yy)   08/13/1993


System BIOS:            128K
Shadow BIOS ROM:        SYSTEM AND VIDEO BIOS
                        C800  CC00  D000  D400  D800  DC00
Shadow Adaptor ROM:     NO    NO    NO    NO    NO    NO

Cache:                  INTERN AND EXTERN
Cache Mode:             WRITE BACK
Cache BIOS ROM:         VIDEO BIOS ONLY
                        C800  CC00  D000  D400  D800  DC00
Cache Adaptor ROM:      NO    NO    NO    NO    NO    NO




------------------------------------------------------------------------

<F1> Help         <F8> System info    <F10> Store CMOS  <Esc> Exit  Page
<+ -> Select item <↑↓←→> Next field   <PgUp> Next page  <Ctrl> ...   03
```

Example of the *Additional System Options* page

Time / Date

The *Time* field shows the current time and the *Date* field shows the current date according to the PC.

System BIOS

In this field you can make available a ROM address area of 32 Kbytes for requests via the ISA/PCI bus (e.g., SCSI BIOS).

Entry	Memory area / location
96K	E8000H - FFFFFH / system board
128K	E0000H - FFFFFH / system board

96K

A 96-Kbyte area is reserved for the system BIOS.
A 32-Kbyte area (E0000H - E7FFFH) is available for requests via the ISA/PCI bus.

128K

A 128-Kbyte area is reserved for the system BIOS.

Default entry: *128K*

Shadow BIOS ROM

This field allows you to copy the video BIOS to fast RAM in addition to the system BIOS at system start-up. Copying the BIOS to RAM increases CPU performance.

SHADOW BIOS ROM memory areas:

Entry	RAM area used
SYSTEM BIOS ONLY	E8000H - FFFFFH
SYSTEM AND VIDEO BIOS	C0000H - C7FFFH/F0000H - FFFFFH

SYSTEM AND VIDEO BIOS

The system BIOS and the video BIOS are both copied to RAM area C0000H - C7FFFH and F0000H - FFFFFH.

SYSTEM BIOS ONLY

Only the system BIOS is copied to RAM area E8000H - FFFFFH.

Default entry: *SYSTEM AND VIDEO BIOS*

Shadow Adaptor ROM

This field allows you to copy 16-Kbytes adaptor ROMs to RAM. If ROM code executes from RAM it increases your PC's performance. The ROM of PCI adaptors is always copied to RAM, regardless of the setting in this field.

NO

The relevant ROM area is not copied to RAM.

YES

The relevant ROM area is copied to RAM.

Default entry: *NO*

Cache

This field is used to specify which cache memory the CPU should use. Cache memory greatly increases performance. If the system runs too fast for certain older software, you can slow it down by disabling the cache (DISABLED).

INTERN ONLY
Only the internal cache is enabled.

INTERN AND EXTERN
The internal cache and the external cache are enabled.

DISABLED
Both the internal cache and the external cache are disabled. All cache-related settings are then without effect.

Default entry: *INTERN AND EXTERN*

Cache Mode

Condition: *Cache* must be enabled.

Cache Mode sets the mode in which the CPU uses the cache; write operations to the cache are carried out either in write-back mode or write-through mode. 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-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.

WRITE THROUGH
The cache works in write-through mode.

Default entry: *WRITE BACK*

Cache BIOS ROM

Condition: *Cache* must be enabled.

Cache BIOS ROM lets you specify BIOS ROM areas that should also be mapped to the cache in addition to main memory.

SYSTEM BIOS ONLY
The system BIOS is mapped to the cache.

VIDEO BIOS ONLY
The video BIOS is mapped to the cache.

SYSTEM AND VIDEO BIOS
The system BIOS and the video BIOS are mapped to the cache.

DISABLED
BIOS ROM areas are not mapped to the cache.

Default entry: *SYSTEM AND VIDEO BIOS*

Cache Adaptor ROM

Condition: *Cache* must be enabled.

Cache Adaptor ROM allows you to specify whether the relevant 16-Kbyte ROM area should be mapped to the cache. Mapping the ROM area to RAM increases system performance.

NO
The relevant ROM area is not mapped to the cache.

YES
The relevant ROM area is mapped to the cache.

Default entry: *NO*

PCI Device Configuration page

```
                        CMOS Setup
                   PCI Device Configuration
--------------------------------------------------------------------------

Time (hh:mm:ss)   08:38:27               Date (mm/dd/yy)   08/13/1993

Memory Base Address:    44000000h   Color Palette Snoop:    DISABLED
I/O Base Address:       D000h       Parity Checking:        ENABLED


                        INTA#      INTB#      INTC#      INTD#
PCI Interrupt Mapping:  AUTO       AUTO       AUTO       AUTO

Latency Timer Slot1:    AUTO
Latency Timer Slot2:    AUTO
Latency Timer Slot3:    AUTO


--------------------------------------------------------------------------

<F1> Help         <F8> System info    <F10> Store CMOS  <Esc> Exit  Page
<...> Select item <↑↓←→> Next field   <PgUp> Next page  <Ctrl> ...   04
```

Example of the *PCI Device Configuration* page

Time / Date

The *Time* field shows the current time and the *Date* field shows the current date according to the PC.

Memory Base Address

This field shows the base address used to map memory areas of PCI boards.

I/O Base Address

This field shows the base address for PCI adapter input/output operations.

Latency Timer Slot1 / Slot2 / Slot3

defines the length of time (as a number of clock cycles) which a PCI master board can be active at the PCI bus without being interrupted.

AUTO

The value specified by the PCI board is used.

STANDARD

The value specified by the PCI board is ignored and the default value (64 clock cycles) is used.

16 clk, ... , 240 clk

The value specified by the PCI board is ignored and the value that has been set is used.

Color Palette Snoop

This field is used to specify whether setting of the color palette is to be available on the ISA bus.

ENABLED

Setting of the color palette is available simultaneously on the PCI bus and the ISA bus. This setting can be of relevance when operating video or multimedia boards on the ISA bus.

DISABLED

Setting of the color palette is only available on the PCI bus.

Default entry: *DISABLED*

Parity Checking

Here you specify whether the PCI bus is to be parity-checked.

ENABLED

A parity check is performed on the PCI bus.

DISABLED

No parity check is performed on the PCI bus.

Default entry: *ENABLED*

PCI Interrupt Mapping

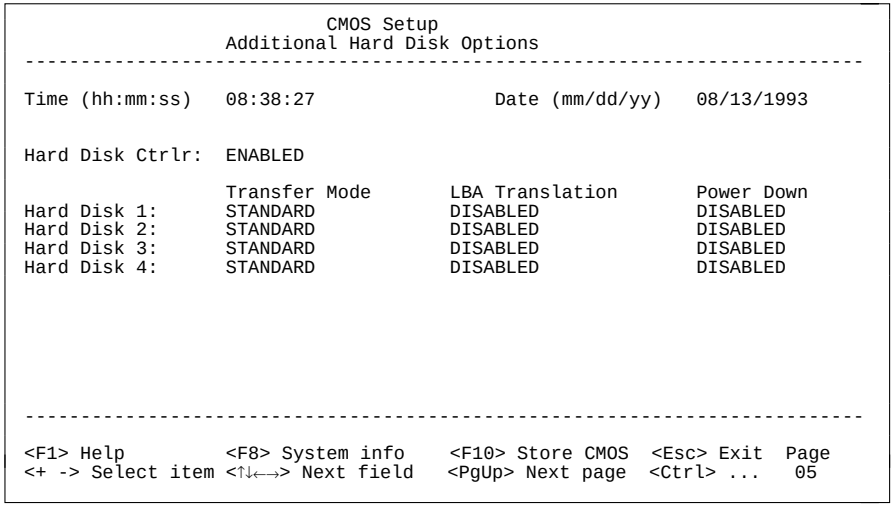
Here you specify which PCI interrupt is to be mapped to which ISA interrupt. With multifunctional PCI adaptor boards you may use all PCI interrupts.
If you require ISA interrupts, you have to set the unneeded PCI interrupts to NONE.
The PCI interrupts INTA#, INTB# and INTC# are normally assigned to the three PCI slots as follows:
PCI slot 1 = INTA#
PCI slot 2 = INTB#
PCI slot 3 = INTC#

Possible entries: *NONE*, *AUTO*, *3*, *4*, *5*, *6*, *7*, *9*, *10*, *11*, *12*, *14*, *15*

Default entry:

INTA#	*AUTO*
INTB#	*AUTO*
INTC#	*AUTO*
INTD#	*AUTO*

Additional Hard Disk Options page



Example of the *Additional Hard Disk Options* page

Time / Date

The *Time* field shows the current time and the *Date* field shows the current date according to the PC.

Hard Disk Ctrlr

This fields allows you to enable and disable the built-in IDE hard disk controller. The associated interrupt will only be available if no hard disk is physically connected.

ENABLED

The IDE hard disk controller is enabled.

DISABLED

The IDE hard disk controller is disabled.

Default entry: *ENABLED*

Hard Disk 1: Transfer Mode
Hard Disk 2: Transfer Mode
Hard Disk 3: Transfer Mode
Hard Disk 4: Transfer Mode

Here you specify the transfer rate for the IDE hard disks.

STANDARD

The system transfers 512 bytes per interrupt

AUTO SELECT

If fast hard disks are installed, the highest possible transfer rate is selected. If the hard disk supports this mode, the setup menu prompts for the maximum number of blocks to be transferred per interrupt. The maximum is 32 blocks of 512 bytes each. In addition, the hard disk's PIO modes 0 through 4 (Processor Input Output modes) are used.

8K BLOCK XFER

Eight Kbytes are transferred per interrupt.

Default entry: *STANDARD*

Hard Disk 1: LBA Translation
Hard Disk 2: LBA Translation
Hard Disk 3: LBA Translation
Hard Disk 4: LBA Translation

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 its full capacity.

Do not change the default value unless you are incorporating a different 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*.

DISABLED

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

AUTO SELECT

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.

Default entry: *DISABLED*

Hard Disk 1: Power Down
Hard Disk 2: Power Down
Hard Disk 3: Power Down
Hard Disk 4: Power Down

Here you specify the period of hard disk inactivity after which the hard disk's motor is power down. The next hard disk read or write operation powers up the hard disk again automatically.
The hard disk requires roughly 15 seconds to run up.
Possible entries: *DISABLED*, *5 min*, *10 min*, *15 min*

Default entry: *DISABLED* (the hard disk does not power down)

Switch block S500

The 8 switches of the DIP switch S500 serve to set various board functions. The list below shows switch numbers and associated functions.

Switch 1: Recovery mode

Places the PC in recovery mode. This mode enables the PC to boot from the floppy disk drive via a second, non-erasable rudimentary BIOS after an error BIOS update (BIOS flash). The BIOS update can be repeated after rebooting.

Switch open

BIOS operates in normal mode.

Switch closed

BIOS operates in recovery mode.

Default setting: Switch open

Switch 2: Password protection

Switch open

Setup menu can only be called if the correct password is entered.

Switch closed

Setup menu can be called irrespective of the assigned password.

Default setting: Switch open

Switch 3: freely definable

The position of the switch can be queried via the port 0C91H (bit 2).

Switch open

Bit 2 is set to 1.

Switch closed

Bit 2 is set to 0.

Default setting: Switch open

Switch 4: freely definable

The position of the switch can be queried via the port 0C91H (bit 3).

Switch open

Bit 3 is set to 1.

Switch closed

Bit 3 is set to 0.

Default setting: Switch open

Switch 5: Flash EPROM Write Protection

Switch open

The Flash EPROM can be written to.

Switch closed

The Flash EPROM cannot be written to.

Default setting: Switch open

Switch 6: Floppy Disk Write Protect

Floppy disks can be read in any switch setting.

Switch open

Floppy disks may be read, written to or deleted.

Switch closed

Floppy disks may only be read.

Default setting: Switch open

Switch 7: Reserved for manufacturer

Default setting: Switch open

Do not change the default setting!

Switch 8: Manufacturing Test

Switch open

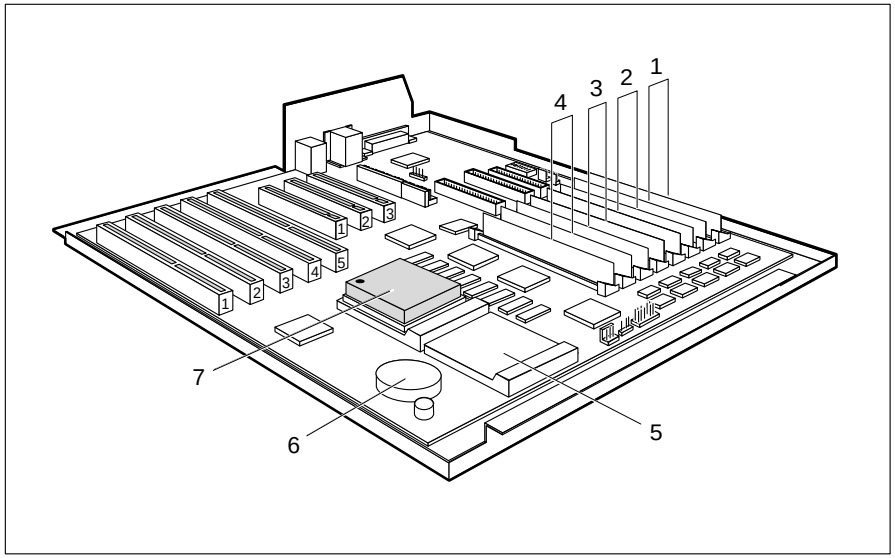
The PC operates in normal mode.

Switch closed

The PC runs through the tests of the POST routines of the BIOS in an endless loop. (POST = Power-On Self Test)

Default setting: Switch open

Add-on modules

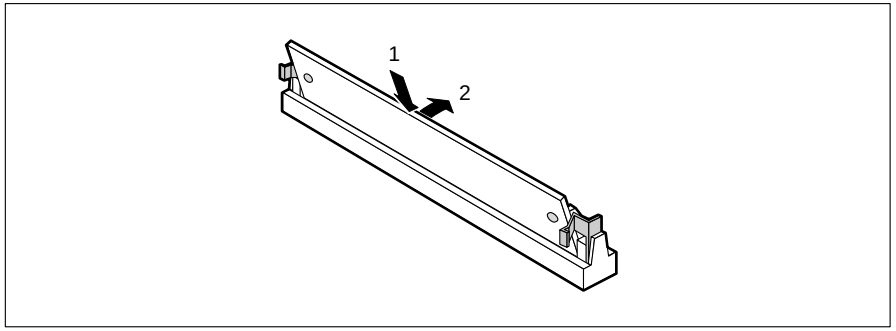


1 = Location bank 1 for main memory
2 = Location bank 2 for main memory
3 = Location bank 3 for main memory
4 = Location bank 4 for main memory
5 = ZIF socket for second processor
6 = Lithium battery
7 = ZIF socket for first processor or OverDrive processor

Upgrading main memory

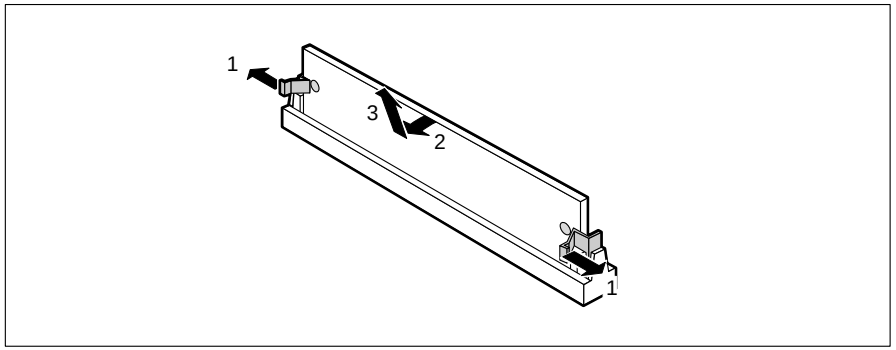
The system board has 8 sockets for memory modules (SIMM, Single Inline Memory Module / PS/2 modules), which are divided into 4 banks with two sockets each. Memory modules have a capacity of 4, 8, 16 and 32 Mbytes. A memory bank must always be fully occupied and equipped with memory modules of the same capacity. Thus, a memory capacity of 8, 16, 32 or 64 Mbytes is possible for each memory bank, which permits a maximum memory expansion of 256 Mbytes. The size of the memory modules may vary between memory banks. Only fast memory modules (with an access time of 70 ns or less) can be used. The order of the 4 memory banks is not relevant. There may be empty memory banks between occupied memory banks.

Installing memory modules



- Insert the memory module at 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



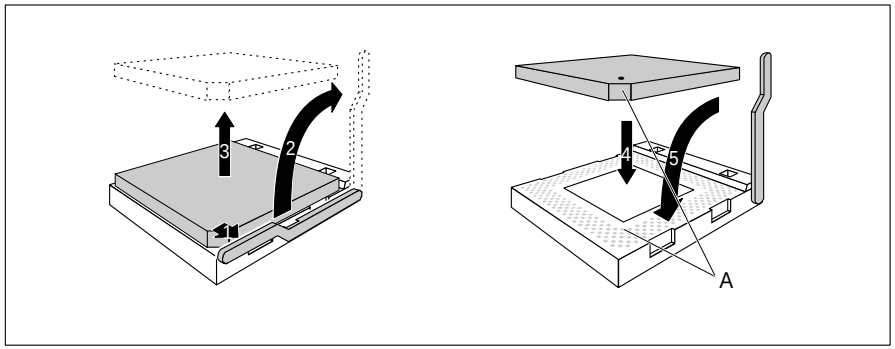
- Carefully push the retaining clips at each end of the module outwards (1).
- Tilt the module upwards (2) and pull it at an angle out of the location (3).

Second processor or OverDrive processor

The second processor and the OverDrive processor must have the same clock rate as the first processor. A suitable MP operating system must be used for dual mode.

The second processor is fitted in the free socket provided for it.

The OverDrive processor is fitted in the socket for the first processor after the first processor has been removed. The OverDrive processor cannot be operated with a second processor (dual mode). It is therefore necessary to remove a second processor before using the OverDrive processor.



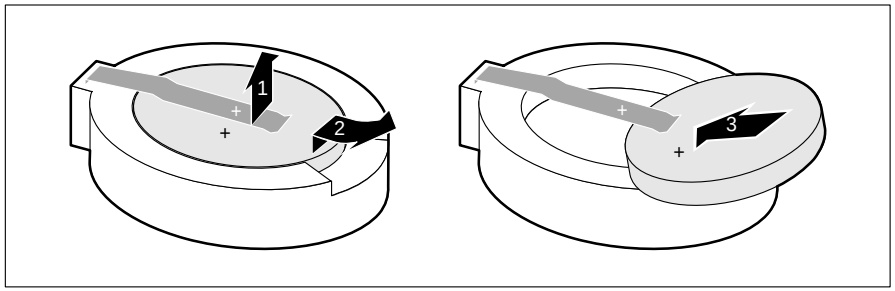
- Push the lever in the direction of the arrow (1) and lift it as far as it will go (2).
- Remove the old processor from the socket (3).
- Insert the new processor in the socket so that the mark on the upper side of the processor matches the mark (A) on the socket (4).

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).

Replacing the lithium battery

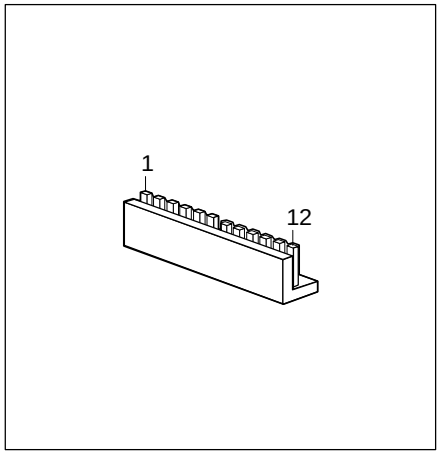
Incorrect replacement of the lithium battery may lead to a risk of explosion. The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer (CR2032).
Do not throw lithium batteries into the trashcan. Your vendor or dealer or their authorized representatives 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).

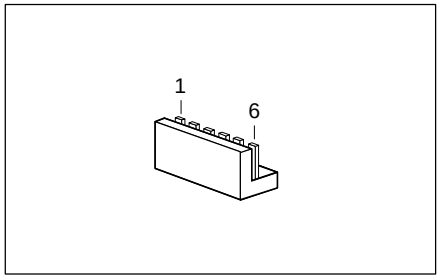
Interface pinouts and interrupts

Connector X800 for 5 V power supply



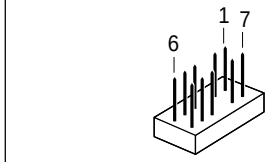
Pin	Meaning
1	power good
2	+ 5 V
3	+ 12 V
4	- 12 V
5	0 V
6	0 V
7	0 V
8	0 V
9	- 5 V
10	+ 5 V
11	+ 5 V
12	+ 5 V

Connector X802 for 3.3 V power supply



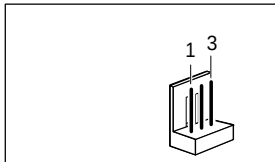
Pin	Meaning
1	0 V
2	0 V
3	0 V
4	+ 3.3 V
5	+ 3.3 V
6	+ 3.3 V

Connector X805 for indicators at the front



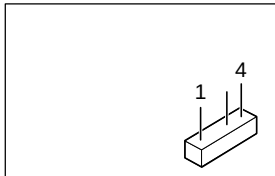
Pin	Signal
1	system unit ON
2	free
3	coded
4	free
5	reset switch
6	+5 V
7	0 V
8	0 V
9	coded
10	0 V
11	0 V
12	hard disk drive

Connector X806 for fan



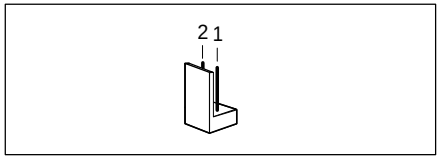
Pin	Meaning
1	0 V
2	+ 12 V
3	free

Connector X809 for loudspeaker



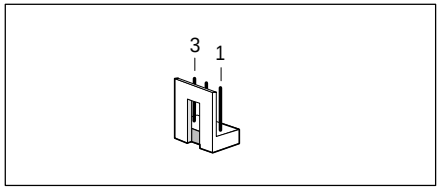
Pin	Meaning
1	loudspeaker
2	free
3	coded
4	+5 V

Connector X810 for soft-off (power switch)



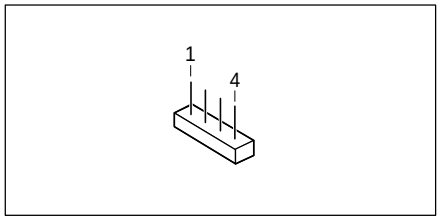
Pin	Meaning
1	0 V
2	Power switch input

Connector X811 for soft-off (power supply)



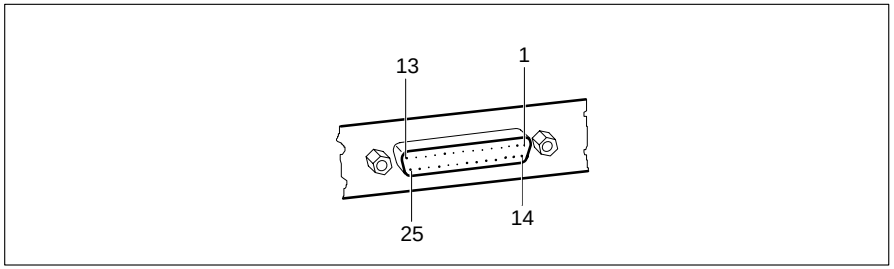
Pin	Meaning
1	+5 V (auxiliary voltage)
2	Power Supply ON
3	0 V

Connector X812 for SCSI HD LED indicators



Pin	Meaning
1	free
2	SCSI Hard Disk LED
3	SCSI Hard Disk LED
4	free

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

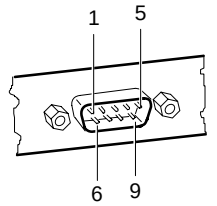
Pinout in EPP mode

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

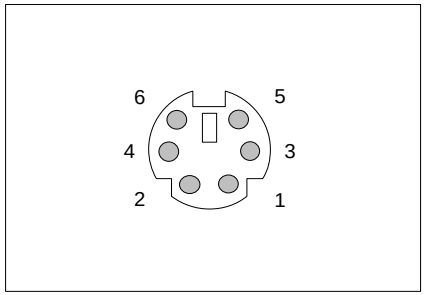
Pin	Signal	Signal direction
1	HostClk	Output
2-9	Data Lines 0-7	Input/output
10	PeriphClk	Input
11	PeriphAck	Input
12	AckReverse	Input
13	Xflag	Input
14	HostAck	Output
15	PeriphRequest	Input
16	ReverseRequest	Output
17	ECP-Mode	Output
18-25	Ground	

Serial interface



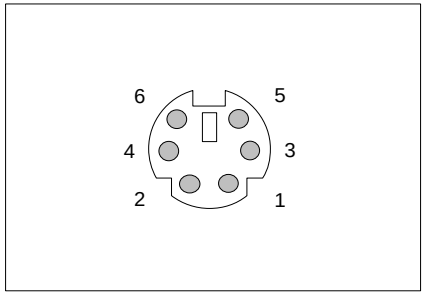
Pin	Signal	Meaning
1	DCD	Data Carrier Detect
2	RxD	Receive Data
3	TxD	Transmit Data
4	DTR	Data Terminal Ready
5	Signal Ground	Ground
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	Ri	Ring Indicator

PS/2 mouse port



Pin	Signal
1	data
2	free
3	0 V
4	+5 V
5	clock
6	free

PS/2 keyboard port



Pin	Signal
1	data
2	free
3	0 V
4	+5 V
5	clock
6	keyboard - on/off

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)/free
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 hard disk controller (first connector)
IRQ15 = IDE hard disk controller (second connector)

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.

`Access Denied - System Halted`
: You have entered an illegal password three times. Restart the PC.

`Access Denied - Press Any Key to Continue`
: You have entered an illegal password three times. Press any key. The PC reboots.

`Bus Timeout NMI, Slot x`
`No Fail Safe Timer NMI`
`Fail Safe Timer NMI`
`No Software NMI`
`Software NMI`
`Expansion Board was disabled`
: Switch the system off and check the EISA boards to ensure that function and connection are not faulty. If this message is displayed every time the system is switched on, please contact the appropriate sales outlet or our service staff.

`Diskette drive failure`
`Diskette drive 0 failure`
`Diskette drive 1 failure`
: Check the entry defining the drive type in the *Diskette* field in the setup menu. Check the floppy disk drive's connecting cables.

`Fixed disk configuration error`
`Fixed disk controller failure`
`Fixed disk 0 failure`
`Fixed disk 1 failure`
: Check the entries defining the hard disk type in the *Hard Disk Ctrlr*, *Hard Disk 1*, *Hard Disk 2*, *Hard Disk 3*, *Hard Disk 4* in the setup menu. Check the drive's connecting cables and jumper and switch settings.

`Incorrect Password`
: You have entered an illegal password. Enter the password again and press the Enter key.

`Invalid configuration information`
: Check all the entries in the setup menu. If this error occurs each time you power up the PC, contact your sales office or customer service.

`I/O Expansion board NMI`
`I/O Expansion board NMI, Slot x`
: Restart your PC. If the error persists, contact your sales office or customer service

```
 !!! HARD DISK WARNING !!!
Boot sector has been modified.
Confirm the new boot sector in SETUP,
and run a virus scan program.
```
: The boot sector of your bootable hard disk drive has been modified since the last boot-up (e.g., a new operating system has been installed of the system has been infected by a virus). If the change to the boot sector was intentional (e.g., you have installed a new operating system), then acknowledge the Virus Warning function in the *System Security Options* page of the setup menu by selecting *CONFIRM*.

  If you are not sure what modified the boot sector, you should check your computer for virus infection with the aid of an appropriate virus scanner program.

`Keyboard is locked - unlock`
: Unlock the PC and restart the system.

`Keyboard failure`
`Keyboard stuck key failure`
: Check whether a key is sticking and whether the keyboard is connected correctly.

`Memory parity error at ...`
`Unresolved memory parity error`
: Restart your PC. If the system reports this error each time you switch it on, contact your sales office or customer service.

`Memory failure at` *xxxx* `read` *xxxxx* `expecting` *xxxxx*
: Restart your PC. If the system reports this error each time you switch it on, contact your sales office or customer service.

`Not a boot diskette -`
`No boot device available -`
`No boot sector on hard disk -`
`Diskette read failure -`
`Hard disk read failure -`
: Insert the operating system floppy disk in the floppy disk drive and press Enter.
  Check the entries for the floppy disk and hard disk types in the setup menu.

`No timer tick interrupt`
`Timer 2 failure`
`Shutdown failure`
`Gate A20 failure`
`Unexpected interrupt in protected mode`
Restart your PC. If the system reports this error each time you switch it on, contact your sales office or customer service.

`Passwords entered do not match`
The password you entered in confirmation was different from the first password. Enter the password again and press the Enter key.

`Pointing device failure`
Check whether the mouse is properly connected.

`Real time clock failure`
`Time-of-day not set - run SETUP program`
Access the setup menu and enter the correct time in the *Time* field. If the system reports this error each time you switch it on, contact your sales office or customer service.

`Security Features Not Changed - Press Any Key to Continue`
You have failed three times in succession to correctly confirm the password. The password has not been set. Press any key. The PC will reboot.

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