
Introduction

This Technical Manual applies for the System board D981.



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.

You may find further information in the description "BIOS Setup".

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



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

- System board in ATX format
- Intel Pentium II processor with MMX technology and 512 Kbyte second-level cache in the processor cache module
- Processor cache module with SEC contact technology for Intel Slot 1 processor slot (SEC = Single Edge Contact)
- 16 to 512 Mbytes main memory (SDRAM)
- Error identification and error recognition via ECC
- 2 or 4 Mbit Flash-BIOS
- 1 AGP slot for AGP graphics controller (AGP = Accelerated Graphics Port)
- 3 PCI slots (all with busmaster capability)
- 2 ISA slots
- 1 ISA/PCI lot (shared)
- 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)
- Parallel interface (ECP- and EPP-compatible)
- 2 serial ports (16C550 compatible with FIFO)
- PS/2 mouse port
- PS/2 keyboard port
- Security functions
- USB (Universal Serial Bus)
- Energy saving functions
- Connector for external loudspeaker
- Connector for chipcard reader

Optional Components

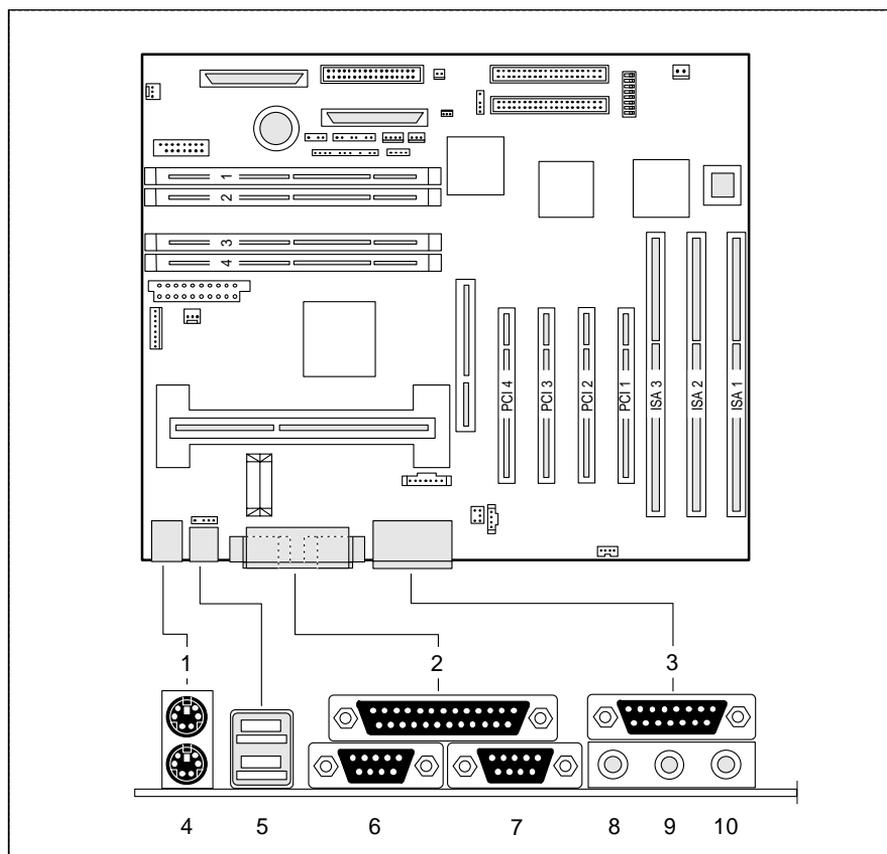
- Audio controller on ISA-BUS (PnP) Crystal CS 4235 Audio Codec or CS 4236 Audio Codec, 16 bit stereo; compatible with Soundblaster Pro™, Windows Sound System and MPU 401; 3D audio support; internal FM synthesis



The audio output can be set in the BIOS Setup in the screen *Advanced/Peripheral Configuration*, menu option *Audio Output* to *Line Level* or *Amplifier Level*. Use *Line Level* if you connect headphones or an active loudspeaker (with amplifier) to the audio output. Use *Amplifier Level* if you use passive loudspeakers.

- Connector for CD-line in, Game/Midi, Voice-Modem, AUX IN
- Microphone connector (via supplementary board)
- Audio input (Line in)
- Loudspeaker connector (active/passive)
- Socket for wavetable chip
- SCSI controller Adaptec 7880
- SCSI bus (termination)
- Fan connector
- Connector for remote-on (fax/modem board)
- Connector for infrared connection
- Wakeup on LAN (WOL)
- Prepared for Siemens Nixdorf system monitoring

External ports



1 = PS/2 mouse port

2 = Parallel port

3 = MIDI/Game port

4 = PS/2 keyboard port

5 = USB ports

6 = Serial port 1

7 = Serial port 2

8 = Audio port (Line out)

9 = Audio port (Line in)

10 = Audio port (Microphone)

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

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.



The shipped version of 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.

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



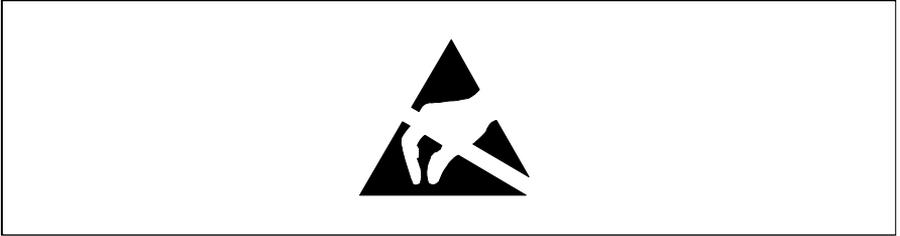
The heat sink can become very hot during operation. Make sure you do not touch modules when adding components to the system board. There is a danger of burns!



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.

Important notes

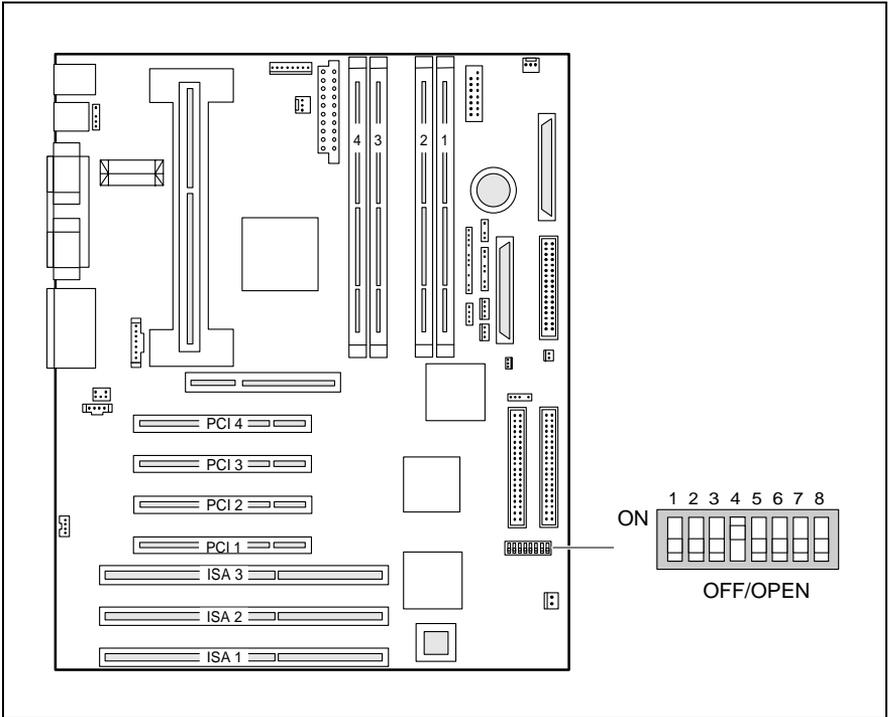
Boards with electrostatic sensitive devices (ESD) may be identified by labels.



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



Switch 1 = must be set to *off*
Switch 2 = System BIOS recovery
Switch 3 = Write protection for floppy disks

Switch 4 = reserved
Switch 5 - 8 = clock frequency

Recovering System BIOS - switch 2

Switch 2 enables recovery of the old system BIOS after an attempt to update has failed. To restore the old system BIOS you need a Flash BIOS Diskette (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 disks - switch 3

Switch 3 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).

Clock speed - switch 5, 6, 7 and 8

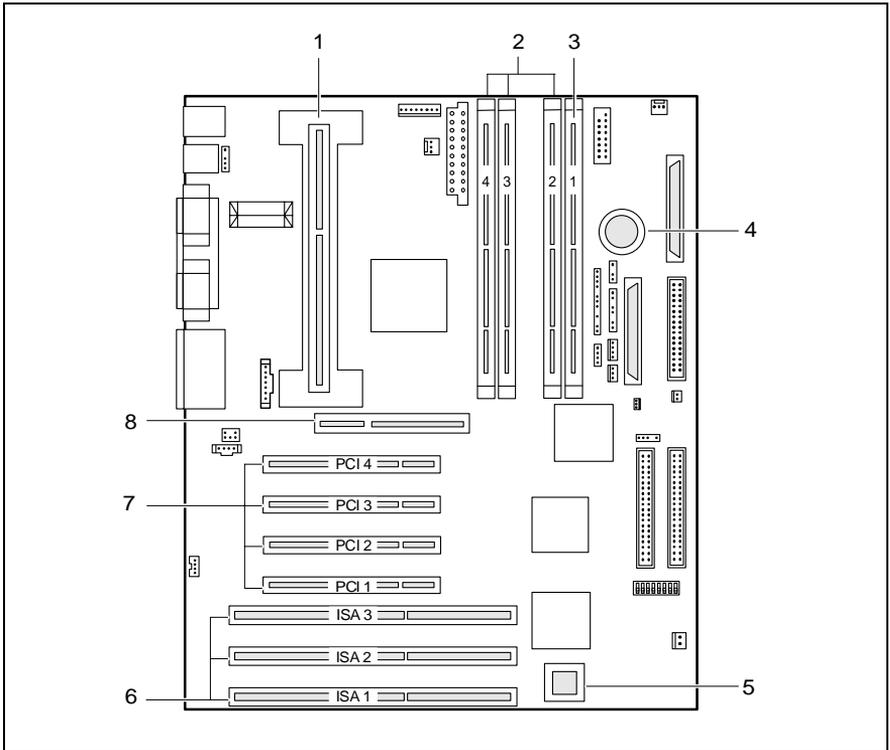


The switches may only be set as specified in the table below for the particular processor used.

This system board you may use only with processors with a host bus frequency of 66 MHz. Do not use processors with a host bus frequency of 100 MHz!

processor	switch 5	switch 6	switch 7	switch 8
233/66 MHz	on	on	off	off
266/66 MHz	on	off	on	on
300/66 MHz	on	off	on	off
333/66 MHz	on	off	off	on
366/66 MHz	on	off	off	off
Reserved	off	x	x	x

Add-on modules



- 1 = Pentium II with heat sink
- 2 = 3 locations for main memory (DIMM)
- 3 = 1 optional locations for main memory (DIMM)
- 4 = Lithium battery
- 5 = Socket for wavetable chip (optional)
- 6 = 3 ISA slots
- 7 = 4 PCI slots
- 8 = 1 AGP slot

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

Upgrading main memory

The system board incorporates three or four locations for installing memory modules in DIMM format. The board supports a maximum of 512 Mbytes. SDRAM memory modules can be used.

You may use memory modules of different size.

DIMM = Dual Inline Memory Module

SDRAM = Synchronous Dynamic Random Access Memory



You may only use unbuffered 3.3V memory modules. Buffered memory modules are not permitted.

SDRAM memory modules must have a cycle time of 15 ns or less or be designed for a clock frequency of 66 MHz.

Installing memory modules

- ▶ Flip the holders on each side of the relevant location outwards.
- ▶ Insert the memory module into the location.
- ▶ At the same time flip the lateral holders upwards until the memory module snaps in place.

Removing a memory module

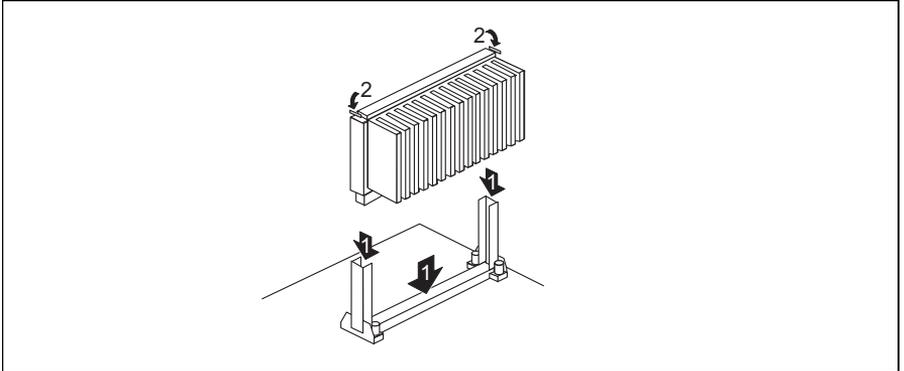
- ▶ Flip the holders to the right and left of the location outwards.
- ▶ Pull the memory module out of its location.

Installing/removing the Pentium II



This system board you may use only with processors with a host bus frequency of 66 MHz. Do not use processors with a host bus frequency of 100 MHz!

Installing the Pentium II



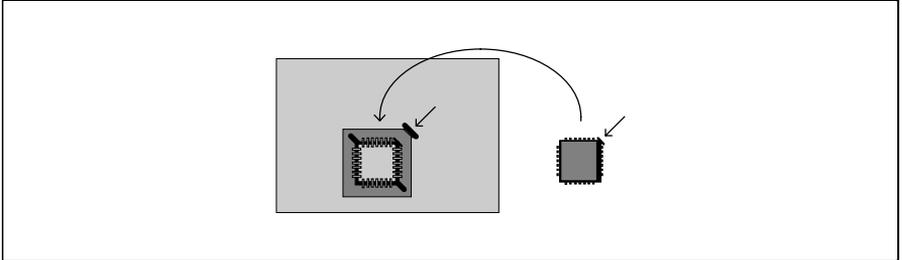
- ▶ Place the Pentium II in the holder (1).
- ▶ Push the Pentium II down in the holder and press it into the slot until the clamps (2) to the left and right snap into place.
- ▶ Set the clock frequency of the new Pentium II using switches 5 to 8 of the switch block.
- ▶ If the Pentium II has a fan, attach the associated cable to the connector for the processor fan on the system board.

Removing the Pentium II

- ▶ If the Pentium II has a fan, pull out the associated cable.
- ▶ Press the clamps (2) on either side of the Pentium II inwards and pull the Pentium II up and out.

Upgrading the wavetable module

If the system board is prepared for upgrading with a single-chip wavetable module (Crystal CS9236), the upgrade is carried out as shown in the figure.



Replacing the lithium battery

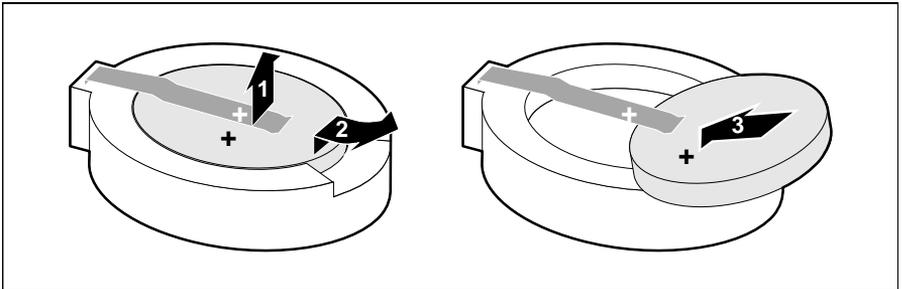


Incorrect replacement of the lithium battery may lead to a risk of explosion.

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.

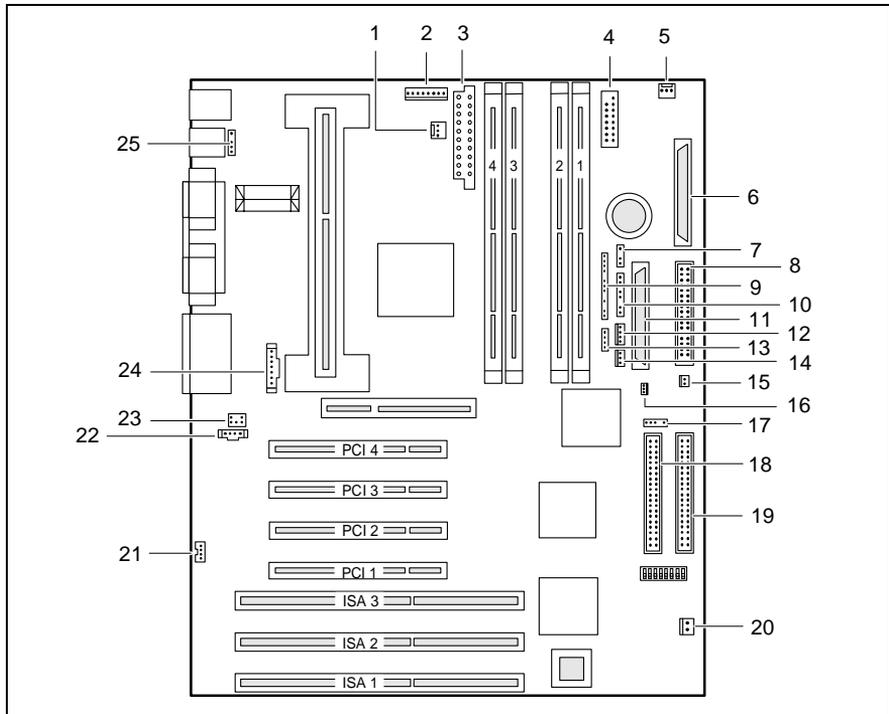
Make sure that you insert the battery the right way round. The plus pole must be on the top!



- ▶ 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).

Connectors and resources

Overview of connections



- | | |
|---|-------------------------------------|
| 1 = Processor fan | 14 = Wake-up on LAN |
| 2 = Power supply monitor | 15 = ON/OFF switch |
| 3 = Power supply | 16 = Intrusion plug |
| 4 = Chipcard reader | 17 = Infrared receiver (IrDA) |
| 5 = System fan | 18 = IDE drives 1 and 2 (primary) |
| 6 = SCSI bus (termination) | 19 = IDE drives 3 and 4 (secondary) |
| 7 = Loudspeaker | 20 = Remote on via fax/modem |
| 8 = Floppy disk drive | 21 = AUX-Line in (AUX input) |
| 9 = Control panel 1 | 22 = CD-Line in (Audio input) |
| 10 = Control panel 1 | 23 = Voice modem |
| 11 = SCSI bus (controller) | 24 = Device ID and temperature |
| 12 = System Management / I ² C-Bus | 25 = USB connection (internal) |
| 13 = SCSI LED input for SCSI adapter | |

The marked connectors are optional and may therefore not be included on your system board.

Resource table

	assigned IRQ	possible IRQ	Possible Address	Possible DMA
Keyboard	IRQ1			
IrDA / WOL / Serial port COM2	IRQ3		02F8, 03F8 02E8, 03E8	
Serial interface COM1 / Chip card reader	IRQ4		03F8, 02F8 03E8, 02E8	
Floppy disk drive controller	IRQ6			DMA2
Parallel interface LPT1	IRQ7	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			

„Assigned IRQ“ = Interrupts assigned as shipped

„Possible IRQ/Address/DMA“ = can be used for your particular application



MPU 401: If you want to use external MIDI devices (for example a MIDI keyboard), you must assign an interrupt for the MPU 401 (MIDI interface). Detailed information is provided in the audio documentation on the driver and utility CD.

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

SCSI Setup

SCSI is the abbreviation for **S**mall **C**omputer **S**ystem **I**nterface.

The onboard ultra-wide SCSI controller (host adapter) is the interface between the internal bus (PCI bus) and devices with SCSI interfaces (SCSI devices).

The onboard ultra-wide SCSI controller is a PCI chip which uses Bus Master technology. This allows your SCSI controller to independently manage data transfer between your SCSI peripherals and the computer system memory, without requiring the involvement of your computer system CPU (Central Processing Unit).

All the information you require to install the SCSI Utility Software (e. g. drivers for MS-DOS, Windows 3.x) is contained in the User Guide for the SCSI Utility Software EZ-SCSI.

Details of how you install and operate your SCSI device may be found in the associated Manual.

Setting SCSI addresses (IDs)

Each device which is connected to the ultra-wide SCSI controller must be set to a separate SCSI address (ID 0 through ID 15).

The ultra-wide SCSI controller has ID 7. ID 7 has the highest priority, SCSI-ID 0 has the lowest. The priority of the remaining IDs, in descending order, is 15 to 8.

- ▶ Ensure that each SCSI device is assigned it's own address.

Details how you set the SCSI address of your SCSI devices may be found in the associated manual.

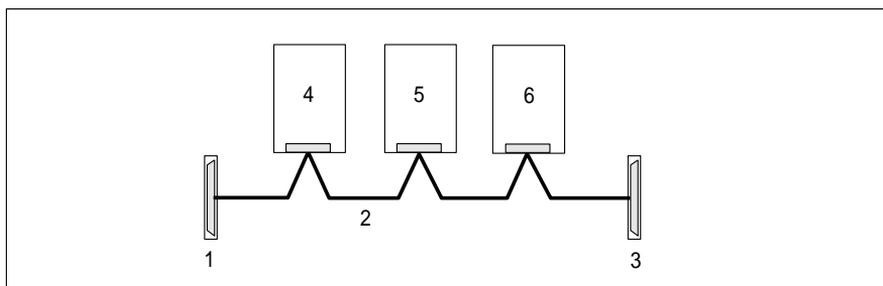
Connecting SCSI devices

SCSI devices and controllers are connected together via a common cable (SCSI bus).

The termination (terminating resistors) must be enabled (or installed) on the last device connected to the SCSI cable. The termination must be disabled (or removed) from all other SCSI devices.

How you activate or deactivate the termination of the SCSI devices, see description of your SCSI devices.

The system board provides the *SCSI bus termination* port to terminate the SCSI bus. Instead of terminating the last drive on the SCSI line, you can also plug the free end of the SCSI line into the *SCSI bus termination* port.



1 = SCSI bus port (controller)

2 = SCSI line

3 = SCSI bus port (termination)

4 = SCSI drive 1 (not terminated)

5 = SCSI drive 2 (not terminated)

6 = SCSI drive 3 (not terminated)

- ▶ Be sure the ends of the SCSI bus are correctly terminated.
- ▶ Connect the SCSI devices to the SCSI connector on the system board by means of the SCSI cable.



Only single-ended SCSI devices may be linked to the ultra-wide SCSI controller. Most SCSI devices meet this requirement. If you are in any doubt, contact your sales office or customer service.

How you install internal devices in the system unit and connect them to the power supply is described in the Operating Manual or Technical Manual for your device in the chapter "System unit" (paragraph "Installing a disk drive").

Further information is provided in the descriptions of your SCSI devices.

The following hints are only for the connectors at the onboard ultra-wide SCSI controller.

Connectors and cables

The connector of the ultra-wide SCSI controller is 68pin.

The connector of 8-bit SCSI devices is 50pin; the connector of 16-bit SCSI devices is 68pin.

If you want to connect 8-bit SCSI devices to the ultra-wide SCSI controller you need an adapter (from 68pin to 50pin).

If you want to operate an 8-bit SCSI device as the last device on a SCSI line you need an adapter (from 68pin to 50pin) with high-byte termination.

If you have set the *Support for Ultra SCSI Speed* menu item to *Enabled*, you may only connect 7 SCSI devices with a maximum cable length of 1.50 m.



Only use good quality SCSI lines, otherwise you may have transmission problems.

SCSI Setup

The BIOS of the ultra-wide SCSI controller includes a menu-driven *SCSI Setup*. This program allows you to change almost all of the option settings of the SCSI controller and the connected SCSI devices.

When you boot the system a SCSI-BIOS message listing the SCSI devices connected is displayed.



If an SCSI-BIOS error message appears or problems arise with SCSI devices, please refer to the chapter entitled "[Eliminating errors on the SCSI controller](#)" and "[SCSI BIOS messages](#)".

You may find further information in the documentation of your SCSI device.

If you are unable to trace or rectify the error, please contact your dealer or our service.

Starting the SCSI Setup

You must enable the ultra-wide SCSI controller in the system BIOS to be able to call the *SCSI Setup*. Call the *BIOS Setup* and set the *SCSI Controller* field in the *Peripheral Configuration* menu to *enabled*.

- ▶ Start your PC and press key combination **[Ctrl]** and **[A]**, when the following message appears:

Press <Ctrl> <A> for SCSI Select (TM) Utility!

The first menu of the *SCSI setup*, *Configure/View Host Adapter Settings* and *SCSI Disk Utilities* is displayed.

Working with the keyboard

Use the following keys when running the program:

- [↑]** **[↓]** to make selections
- [↓]** to accept a selection
- [Esc]** to call the previous menu and to terminate the *SCSI setup*.
- [F6]** to reset to the default settings
- [F5]** to toggle display between color and monochrome mode

Also note the status line at the bottom of the screen.

Terminating the SCSI setup

Depending on the current menu level, you can display the previous menu by pressing the **[ESC]** key. If you have made changes in the current menu you will be prompted to store them.

- ▶ Keep pressing **[ESC]** until you arrive at the first menu (*Configure/View Host Adapter Settings*).
- ▶ Press the **[ESC]** key in the first menu and then follow the instructions on the screen to terminate the *SCSI Setup*.

Default Settings in the SCSI setup

SCSI Bus Interface Definitions	Default setting
Host Adapter SCSI ID	7
SCSI Parity Checking	Enabled
Host Adapter SCSI Termination	LowON/HighON
Additional Options	Default setting
Boot Device Options	
Boot Target ID	0
Boot LUN Number*	0
SCSI device configuration (for each SCSI device)	
SCSI device ID	1 to 15
Initiate Sync Negotiation	Yes
Maximum Sync Transfer Rate	40 Mbyte/s
Enable disconnection	Yes
Initiate wide negotiation	Yes
Send Start Unit Command**	Yes
Include in BIOS Scan	Yes
Advanced Configuration Options	Default setting
Reset SCSI Bus at IC Initialization	Enabled
Host Adapter BIOS	Enabled
Support Removable Disks Under BIOS as Fixed Disks**	Boot only
Extended BIOS Translation for DOS Drives >1 Gbyte**	Enabled
Display [Ctrl] - [A] Message During BIOS Initialization**	Enabled
Multiple LUN Support**	Disabled
BIOS Support for Bootable CD-ROM**	Enabled
BIOS Support for Int 13 Extensions**	Enabled
Support for Ultra SCSI Speed	Enabled
* The setting is valid only if <i>Multiple LUN Support</i> is <i>enabled</i> .	
** The setting is valid only if SCSI controller BIOS is <i>Enabled</i> .	

SCSI Bus Interface Definitions

Host Adapter SCSI ID

All SCSI devices on one SCSI bus, including the Ultra-Wide SCSI controller, must be set to separate SCSI IDs.

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

The ultra-wide SCSI controller is set to the displayed SCSI address (default entry: 7).

SCSI Parity Checking

The ultra-wide SCSI controller uses parity bits on the SCSI bus to verify the data from your SCSI devices. Parity checking may not be supported on older SCSI devices. You must disable the option in this case.

Enabled Parity checking is enabled (default setting).

Disabled Parity checking is disabled.



If parity checking is disabled, this applies to all SCSI devices on the SCSI bus.

Host Adapter SCSI Termination

If the ultra-wide SCSI controller is the last device on the SCSI cable, its termination must be enabled. If the ultra-wide SCSI controller is not the last device on the SCSI cable, its terminator must be disabled.

LowON/HighON

The termination is enabled (default entry).

LowOFF/HighOFF

The termination is disabled.

LowON/HighON

Not supported.

Additional Options

Boot Device Options

Boot Target ID

The ultra-wide SCSI controller can start the operating system from a drive with any SCSI address (ID). The SCSI ID selected here must correspond to the ID configured on the boot device.

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

The ultra-wide SCSI controller boots from the drive with the displayed SCSI ID (default entry: 0).

Boot LUN Number

If your boot device has multiple LUNs (Logical Unit Numbers) and *Multiple LUN Support* is *Enabled*, this option allows you to specify which LUN to boot from on your boot device.

0, 1, 2, 3, 4, 5, 6, 7

The ultra-wide SCSI controller boots with the displayed LUN (default entry: 0).

SCSI Device Configuration

Initiate Sync Negotiation

Devices on the SCSI bus (including the SCSI controller) communicate intelligently with each other. Before data is transferred across the bus, the sending (initiating) and receiving (target) devices negotiate and agree on how long each piece of data will be, and how many pieces will be sent at a time - that is, they agree on how fast to talk.

If you have operating problems with older SCSI devices, you should disable *Initiate Sync Negotiation*. You may have to make settings on your SCSI devices (see the SCSI device description).

When *Sync Negotiation* is disabled, the Ultra-Wide SCSI controller will automatically go into synchronous mode if it receives a request from one of your SCSI devices. It can, however, also exchange data with slow SCSI devices.

Yes The function is enabled (default entry).

No The function is disabled.



Synchronous data transfer is required for fast and ultra SCSI operation.

Initiate wide negotiation

This option determines whether the SCSI controller attempts 16-bit data transfer (Wide SCSI) instead of 8-bit data transfer.

Only disable *Initiate Wide Negotiation* if you do not use any wide SCSI devices or if 8 bit SCSI devices have problems during operation. You may have to make settings on your SCSI devices. (refer to the documentation supplied with your SCSI device).

Fast SCSI devices, including the ultra-wide SCSI controller, are capable of transferring data to and from the SCSI bus at speeds ranging up to 40 Mbyte/s.

Yes The function is enabled (default entry).

No The function is disabled.

Maximum Sync Transfer Rate

Fast SCSI devices (ultra-wide), including the ultra-wide SCSI controller, are capable of transferring data to and from the SCSI bus at speeds ranging up to 40 Mbyte/s at synchronous data transfer. If you have entered *Enabled* in the *Support for Ultra SCSI Speed* menu item, the transfer rate of 40 Mbyte/s is entered automatically.

Enable disconnection

SCSI devices can release the SCSI bus during command execution with this function. A typical example of this is a tape device that has no need to access the SCSI bus during rewinding and can be "disconnected" from the SCSI bus for this period.

You can disable the function if you have only connected one SCSI device. In this case, disconnection improves performance.

Yes The function is enabled (default entry).

No The function is disabled.

Send Start Unit Command

If the function is enabled, SCSI devices which support it are only started when they receive the "Start-Unit" command from the SCSI BIOS. This allows the SCSI devices to be activated consecutively. This is used if your system power supply is too weak to start several drives simultaneously or for preventing switchon current peaks.

You may have to make settings on your SCSI devices to enable support for this function (see the documentation for the SCSI devices).

Yes The function is enabled.

No The function is disabled (default entry).

Include BIOS Scan

The SCSI device can be used as the boot drive if this function is enabled. The SCSI device is accessed by the SCSI BIOS and is assigned a drive identifier. A message is displayed on the screen.

Yes The SCSI device can be the boot drive and is assigned a drive identifier (default entry).

No The SCSI device is not accessed by the SCSI BIOS.



This function should be set to *No* for drives which you know will never be used as the boot drive (e.g. DAT drives). This saves time during system startup.

Advanced Configuration Options

RESET SCSI Bus at IC

The SCSI bus is reset if you activate this menu item.

Enabled The SCSI bus will be reset (default entry).

Disabled The SCSI bus will not be reset.

Host Adapter BIOS



If the SCSI BIOS is disabled, the system cannot be booted from any of the SCSI devices connected to the SCSI bus.

The SCSI BIOS can be disabled if the SCSI devices can only be operated with additionally loaded drivers. This saves 16 Kbytes of system memory as well as time during system startup.

If you disable the SCSI BIOS, you can still call the *SCSI Setup* with the **Ctrl** + **A** keys during system startup and modify settings.

Enabled The SCSI-BIOS is enabled (default setting).

Disabled The SCSI BIOS is disabled.



Note that you will have to install additional drivers for your devices if the SCSI BIOS is disabled.

Support Removable Disks under BIOS as Fixed Disks

This option allows you to use removable-media drives, such as MO drives, without installing additional drivers.

- Boot Only* Only the removable-media drive designated as the boot device is treated as a hard disk (default setting).
- All Disks* All removable-media drives supported by the BIOS are treated as hard disk drives.
- Disabled* No removable-media drives are treated as hard disk drives. In this situation, software drivers are needed because the drives are not controlled by the BIOS.



If a removable-media device is controlled by the SCSI controller BIOS, do not remove the media while the system is switched on.

Extended BIOS Translation for DOS Drives > 1Gbyte

Enabling this option allows drives of up to 8 Gbyte capacity (2 Gbyte/partition) to be supported under MS-DOS 5.0 or higher. The SCSI BIOS must be enabled.

In earlier days, it was only possible to use drives with a capacity of up to 1 Gbyte under MS-DOS 5.0.

- Enabled* Drives up to 8 Gbytes can be used under MS-DOS 5.0 (default entry).
- Disabled* Drives up to 1 Gbyte can be used under MS-DOS 5.0.



Back up the data on your large capacity drive before enabling the option. After enabling this option, the drive must be re-partitioned and high-level formatted with the DOS *FDISK* and *FORMAT* programs.

Display **[Ctrl] + [A] Message During BIOS Initialization**

This option determines whether the

Press <Ctrl> <A> for SCSISelect (TM) Utility!

message appears on your screen during system startup.

If this setting is disabled, you can still invoke the *SCSI Setup* by pressing **[Ctrl] + [A]** at system startup.

Enabled The message is displayed during startup (default entry).

Disabled The message is not displayed during startup.

Multiple LUN Support

This option determines whether booting from a SCSI device that has multiple LUNs (Logical Unit Numbers) is supported.

Enabled The SCSI device will be used as the startup drive.

Disabled The SCSI device will not be used as the startup drive (default entry).

BIOS Support for Bootable CD-ROM

This option determines for booting from a CD-ROM drive. The CD-ROM must emulate a floppy disk or hard disk drive.

Enabled It is possible to boot from the CD-ROM (default entry).

Disabled It is not possible to boot from the CD-ROM.

BIOS Support for Int 13 Extensions

This option determines whether the SCSI BIOS supports disks with more than 1024 cylinders. The default setting is *Enabled*.

Enabled Hard disk drives with more than 1024 cylinders are supported (default entry).

Disabled Hard disk drives with more than 1024 cylinders are not supported.

Support for Ultra SCSI Speed

This option determines whether the SCSI controller BIOS supports the fast transfer rate 40 Mbyte/s at 16-bit data transfer.

Enabled 40 Mbyte/s transfer rate is supported (default entry).

Disabled The function is disabled.



Change the default setting if you have connected ultra-wide SCSI devices to the SCSI controller.

SCSI Disk Utilities

When you select the *SCSI Disk Utilities* menu item, you are shown a list of all the devices connected to the SCSI bus. You are also offered two menus for hard disk drives: *Verify* and *Format Disk*.

Verify

With *Verify* you can have a selected hard disk drive checked. All defects that are detected will be entered in the existing error list for the hard disk.

Format Disk

With *Format Disk* a selected hard disk is formatted in low-level format. Normally hard disks are already formatted in low-level format. You should use this menu item only if you want to erase the hard disk completely and regenerate the error list.

Eliminating errors on the SCSI controller

Most problems with the onboard ultra-wide SCSI controller occur when SCSI devices are prepared (e.g. termination) and connected to the SCSI bus. Check the following points if you have problems with the ultra-wide SCSI controller or the connected SCSI devices:

- Are all SCSI devices supplied with power?
- Are the SCSI and power cables connected correctly on the SCSI device?
- Is the SCSI cable connected correctly to the system board?
- Has each SCSI device and the onboard SCSI controller been set to a different SCSI ID?
- Are the SCSI devices and the onboard SCSI controller correctly terminated?
- Is the SCSI controller activated in the system BIOS (*BIOS Setup*)?
- Is parity checking either enabled or disabled on all SCSI devices on the SCSI bus?

SCSI BIOS messages

The following messages can appear during system startup if you have enabled the SCSI BIOS:

Device connected, but not ready

The SCSI device connected to the ultra-wide SCSI controller is not ready (for example because the drive motor for hard disks does not rotate). Set *Send Start Unit Command* to *Yes* in the *SCSI Setup* for the SCSI device concerned. If the message still appears, check the settings required for the SCSI device in its documentation.

Start unit request failed

The SCSI BIOS could not issue a start unit command to the SCSI device. Call the *SCSI Setup* and set *Send Start Unit* to *No* for the SCSI device concerned.

Time-out failure during ...

A timeout has occurred. Check the SCSI bus termination. Remove the SCSI cable from the ultra-wide SCSI controller and restart the system. If system startup is successful, check the SCSI cable. One of the SCSI devices may be defective. Check the SCSI devices.

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System board D981

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