Operating Instructions Edition 07/2006

Industrial PC

Panel PC 677

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Industrial PC
SIMATIC Panel PC 677

Operating instructions

Release 07/2006
A5E00877769-01

Safety Guidelines

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

Danger

indicates that death or severe personal injury **will** result if proper precautions are not taken.

Warning

indicates that death or severe personal injury **may** result if proper precautions are not taken.

Caution

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

Caution

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

Notice

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

Prescribed Usage

Note the following:

Warning

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

Trademarks

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Order No.: A5E00877769-01
Edition 07/2006

Table of contents

Tables

Foreword

1

1.1 Overview

Purpose of this manual

These operating instructions contain all the information you need for commissioning and using the SIMATIC Panel PC 677.

It is intended both for programming and testing personnel who commission the device and connect it with other units (automation systems, programming devices), as well as for service and maintenance personnel who install add-ons or carry out fault/error analyses.

Basic knowledge required

A solid background in personal computers and Microsoft operating systems is required to understand this manual. General knowledge in the field of automation control engineering is recommended.

Scope of this manual

This manual applies to devices with order numbers 6AV780.…

Approvals

For more information, please refer to the chapter "Certificates and Guidelines" in the appendix.

CE marking

For more information, please refer to "Directives and Declarations" in the "Certificates and Guidelines" section of the appendix.

Standards

Please refer to sections "Application planning" and "Technical data".

Position in the information landscape

The documentation for the Panel PC includes the following sections:

- SIMATIC Panel PC 677, Operating Instructions (compact) with the following information:
  - Commissioning
  - Legal information
- SIMATIC Panel PC 677, Operating Instructions

The documentation is supplied with the Panel PC in electronic form as a PDF file on the "Documentation and Drivers" CD. The documentation is available in German, English, French, Italian and Spanish.

Additional information about the Windows operating system is available in the Internet at the Microsoft homepage, "http://www.microsoft.com".

Conventions

The following text notation will facilitate reading this manual:

Representation	Validity
"File"	• Terminology that occurs in the user interface, e.g., dialog names, tabs, buttons, menu commands • Required parameters such as limit values, tag values • Path information
"File > Edit"	Operational sequences, e.g., menu commands/shortcut menu commands.
<F1>, <Shift>+<F1>	Keys and key combinations

The term "Panel PC 677", "control unit" and "computer unit" is uniformly referred to as the "device" in these operating instructions. The full term is only used when a concrete reference is necessary.

Note

A note is important information about the product, handling the product or a reference to specific sections of the documentation that require special consideration.

Trademarks

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SIMATIC WinCC®
SIMATIC WinCC flexible®
Panel PC 677®

Safety information

2

2.1 Safety information

Warning

Emergencies

In the event of a device fault, interrupt the power supply immediately. Inform the customer service personnel responsible. Malfunctions can occur when the operator controls or power cable are damaged or when liquids or foreign objects penetrate the device.

Warning

Following the results of a risk analysis, additional protection equipment on the machine or the system is necessary to avoid endangering persons. With this, especially the programming, configuration and wiring of the inserted I/O modules have to be executed, in accordance with the necessary risk analysis identified safety performance (SIL, PL or Cat.). The intended use of the device has to be ensured.

The proper use of the device has to be verified with a function test on the system. With this programming, configuration and wiring errors can be identified. The test results have to be documented and if necessary inserted into the relevant inputs.

Note

This device corresponds to the regulations of the EU low-voltage directive and the GPSG, verified by conformity with national and international standards (DIN EN, IEC) by a UL approval (cULuc). Please comply with all the information in these operating instructions when assembling the device.

Electrical connection

Warning

Disconnect the device from the mains before every intervention.

Do not touch power lines or data transmission lines during electrical storms and do not connect any cables.

System expansions

Only install system expansion devices designed for this device. If you install other expansions, you may damage the system or violate the safety requirements and regulations for radio frequency interference suppression. Contact your technical support team or where you purchased your PC to find out which system expansion devices may safely be installed.

Caution

If you install or exchange system expansions and damage your device, the warranty becomes void.

High frequency radiation

Caution

Unintentional operating situations

High frequency radiation, e.g. from cell phones, can cause unintentional operating situations under some circumstances. Further information is available in the section "EMC requirements" of the "Technical data" chapter.

Handling and disposal of lithium batteries

Warning

Danger of explosion and the release of harmful substances!

Do not throw lithium batteries into fire, do not solder onto the cell body, do not open, do not short circuit, do not reverse pole, do not heat above 100 °C, dispose of according to regulations, and protect from direct sunlight, moisture and condensation.

Replace lithium batteries with the same brand or a brand recommended by the manufacturer.

Dispose of used lithium batteries as hazardous waste, individually, in accordance with the local regulations.

Repairs

Only authorized personnel are permitted to repair the device.

Warning

Unauthorized opening of and improper repairs to the device may result in substantial damage to equipment or endanger the user.

2.2 General information

Overview

Caution

The device is approved for operation in closed rooms only. The guarantee is void if this stipulation is ignored.

Avoid extreme environmental operating conditions. Protect your device against dust, moisture and heat. For additional information, refer to the Technical data.

Do not place the device in direct sunlight.

Transport

Unpack the device at its installation location. Transport the device only in the original packaging. Do not transport the device when it is mounted.

Notice

Adhere to these stipulations each time the device is transported, otherwise the guarantee is void.

Caution

Condensation
When transporting the device at low temperatures, ensure that no moisture gets on or into the device. This also applies if the device is subjected to extreme changes in temperature.

Commissioning
Allow the device to slowly adjust to room temperature before commissioning the device. Do no place the device near heat radiation. If moisture condensation occurs, wait at least 12 hours before you switch on the device.

Vibration
Optical drives are sensitive to vibration. Inadmissible vibration during operation may result in loss of data or damage to the drive or data medium.

Before transporting the device, wait at least 20 seconds to allow the drive to stop completely.

Tools & downloads

Please check regularly if updates and hotfixes are available for download to your device.

Downloads are available on the Internet at http://www.siemens.com/asis under "Support". Click on "Software Tools & Downloads" on "Overview Panel PCs" Using the global search function, you can then also search for any downloads you require.

Processor and optical drive

Notice

An optical drive should only be operated in a mechanically undisturbed environment without vibrations and shock.

Safety-relevant applications

Warning

Maloperation

Do not perform safety-relevant functions of the user software with the touch screen.

Chemical stability

Caution

Adhere to the information regarding chemical resistance of the panel front. Please go to http://www.siemens.com/asis under "Tools & Downloads" for more information. Enter the article ID 16532108 as the search term. The available articles are displayed.

Sources of light

Notice

Position the screen so that it is not subject to direct sunlight or other strong sources of light.

Defective pixels in the display

At present, the manufacturing process of modern displays does not guarantee that all pixels of the display will be perfect. A small number of defective pixels in the display is therefore unavoidable. This does not present a functional problem as long as the defective pixels are not bunched in one location.

Further information is available in the section "General technical data" of the "Technical data" chapter.

Burn-in dffect on TFT displays

A permanent picture with bright images can lead to a burn-in effect on the TFT LCD.

If a screen saver is activated, please observe the following:

- The liquid crystals in screen savers which actuate active black when the backlighting is on, e.g. flying stars "starfield simulation," renew themselves. Pay attention to the length of time the backlighting is activated
- The following applies to screen savers which turn off the the backlighting: Each time the backlighting is turned on, its life is reduced by 50 minutes.

Consider the following carefully:

- Screen saver
- Switch off the backlighting regularly
- Permanent display of the customer application

Description

3

3.1 Design

Design

Figure 3-1 Panel PC 677

1 Computer unit
2 Control unit

Brief description

The device is available with different control units which are distinguished by the size of the display and by the membrane keyboard or touch screen.

Keyboard variants

- Color display with backlighting:
  - 12" TFT technology with 800 x 600 resolution
  - 15" TFT technology with 1024 x 768 resolution
- Membrane keyboard with alphanumeric keys, numeric keys, cursor keys and control keys
- Function keys and softkeys
- Integrated mouse
- LEDs for power supply, temperature, softkeys, <Shift> and <ACK> function keys and buttons
- Front-mounted USB 2.0 interface for connecting external I/O devices. All fronts are also available without USB interfaces accessible from the front

Touch screen variants

- Color display with backlighting
  - 12" TFT technology; 800 x 600 resolution
  - 15" TFT technology; 1024 x 768 resolution
  - 19" TFT technology; 1280 x 1024 resolution
- LEDs for power supply and temperature
- Front-mounted USB 2.0 interface for connecting external I/O devices. All fronts are also available without USB interfaces accessible from the front

For additional information, refer to the Technical data.

3.2 Technical features

General features	
Installation design	Panel-mounting device
Graphic	Part of the graphic memory is dynamically occupied in the system memory • VGA: 1600 x 1200 pixels, 85 Hz, 32-bit colors • DVI-I: 1600 x 1200 pixels, 60 Hz, 32-bit colors • LCD: 1280 x 1024 pixels, 18-bit color depth
Interfaces	
PROFIBUS/MPI	On board, 12 Mbps, electrically isolated, CP 5611-compatible
Ethernet	2x 10/100 Mbps, RJ45
USB	External: 4x USB 2.0 high current: A maximum of 2 USB interfaces can be operated simultaneously as high current interfaces.
COM	Serial interface V.24, 9-pin
Slots for add-ons	1x PCI 265 mm long 1x PCI 175 mm long
Compact Flash Card	512 MB, 1 GB and 2 GB
Monitor	1 x DVI-I, interface for connecting an additional monitor

Configuration options	
Power supply	• 100 - 240 V AC, autorange • DC 24 V, optional Both with bridging for short-time voltage failures as per NAMUR: maximum of 20 ms at 0.85 x V_{rated} (V_{rated} = rated voltage)
Processor	• Intel ® Celeron M 370, 1.5 GHz, 400 MHz Front Side Bus FSB, 1024 KB 2nd Level Cache • Intel ® Pentium M 730, 1.6 GHz 533 MHz Front Side Bus FSB, 2048 KB 2nd Level Cache • Intel ® Pentium M 760, 2.0 GHz 533 MHz Front Side Bus FSB, 2048 KB 2nd Level Cache
Main memory	2-socket SDRAM DDR2: 256 MB, 512 MB, 1 GB expandable up to 2 GB
Hard disk drives	• 1 x 3.5" hard disk Serial ATA, ≥ 40 GB • 1 x 3.5" hard disk Serial ATA, ≥ 80 GB • 2 x 2.5" hard disks, ≥ 60 GByte (RAID1 system configurable in BIOS; RAID controller onboard)
Disk drive	• Without • DVD-ROM • CD-RW/DVD drive
Operating system	Without Preinstalled, also provided on the Restore DVD and Microsoft Recovery CD • Windows 2000 Professional MUI* • Windows XP Professional MUI* *MUI: Multi-lingual user interface; German, English, French, Italian, Spanish, Japanese, Korean, Chinese simplified and Chinese traditional

3.3 Accessories

The accessories comprise the following components:

Accessories	Comment	Order No.
Direct control key module		6AV7671-7DA00-0AA0
Film for protecting the touch screen panel against dirt and scratches for the 12" touch screen variant for the 15" touch screen variant for the 19" touch screen variant		 6AV7671-2BA00-0AA0 6AV7671-4BA00-0AA0 6AV7672-1CE00-0AA0
Film for labeling function keys (slide-in labels)[1)]		6AV7672-0DA00-0AA0
DVI / VGA adapter		A5E00254532
Backing plate for screw fixing of the 19" touch front		6AV7672-8KE00-0AA0
External USB disk drive	1 m connecting cable	6FC5235-0AA05-1AA1
Multi IO module	Two parallel and two serial interfaces	6ES7648-2CA00-0AA0
SIMATIC PC DiagMonitor software V 2.2	Software for monitoring local and remote SIMATIC PCs: • Watchdog • Temperature • Fan speed • Hard disk monitoring, SMART • System monitoring, Ethernet monitoring: Heartbeat communication: • Ethernet interface, SNMP protocol • OPC for integrating in SIMATIC software • Client server architecture • Layout of log files	6ES7648-6CA02-2YX0
SIMATIC PC/PG Image Partition Creator	Software for local data backup	6ES7648-6AA03-0YX0
Module for DDR RAM memory expansion	256 MB 512 MB 1 GB	6ES7648-2AG20-0GA0 6ES7648-2AG30-0GA0 6ES7648-2AG40-0GA0
Remote Kit order variant		
Remote Kit, 24V DC, 5m Remote Kit, 24V DC, 10m Remote Kit, 24V DC, 20m **Remote Kit, 24V DC, 30m** Remote Kit, 100/240 V AC, 5m Remote Kit, 100/240 V AC, 10m Remote Kit, 100/240 V AC, 20m **Remote Kit, 100/240 V AC, 30m**		6AV7671-1EA00-5AA1 6AV7671-1EA01-0AA1 6AV7671-1EA02-0AA1 **6AV7671-1EA03-0AA1** 6AV7671-1EA10-5AA1 6AV7671-1EA11-0AA1 6AV7671-1EA12-0AA1 **6AV7671-1EA13-0AA1**

For further accessories, see Catalog or Siemens MALL

1) You can also find the print templates for the slide-in labels on the Internet at: *http://www.siemens.com/asis*

At *Tools & Downloads>Downloads>Produkt Support>Industrie*-PC, enter the entry ID. 8782947.

Application planning

4

4.1 Overview

Introduction

This section describes the first steps after unpackaging, the permitted mounting positions and the fixation. This section describes the necessary considerations for EMC.

Field of application

The Panel PC is an industry-standard PC platform for demanding tasks in the field of PC-based automation. The Panel PC is designed for on-site use on the machine, installed for example in:

- Switchgear cabinet installation
- Swivel arm installation
- Rack installation

Note

In the following, the term "switchgear cabinet" also refers to rack, mounting rack, switchboard, operator panel and console. The term "device" represents the Panel PC and its variants.

4.2 Unpacking and checking the delivery

Procedure

1. Please check the packaging material for transport damage upon delivery.
2. If any transport damage is present at the time of delivery, lodge a complaint at the shipping company in charge. Have the shipper confirm the transport damage immediately.
3. Unpack the device.

Caution

Do not lie the device on its back. This will avoid any damage to an optical drive which may be present. Lie the front side on a soft surface to avoid damaging the front panel USB port.

4. Keep the packaging material in case you have to transport the unit again.

Notice

The packaging protects the device during transport and storage. Therefore, never dispose of the original packaging material!

5. Please keep the enclosed documentation in a safe place. You will need the documentation when you start up the device for the first time.
6. Check the package contents for completeness and any visible transport damage. Check for completeness using the enclosed scope of delivery list.
7. Should the contents of the package be incomplete or damaged, please inform the responsible supply service immediately and fax us the enclosed form "SIMATIC IPC/PG quality control report".

Warning

Make sure that a damaged device is not installed nor put into operation.

8. Note the identification information as described in the chapter "Identification data of the device".

4.3 Device identification data

Procedure

1. Write down the Microsoft Windows Product Key of the Certificate of Authenticity COA in the table at the end of this section. The COA label is only present in preinstalled Windows 2000 Professional or XP Professional and is affixed to the back of the device. You will need the product key during the reinstallation of the operating system.

Figure 4-1 COA label, example

2. Write down the manufacturer's number SVP and the order number, for example "6AV...", and enter it in the table. If repairs are necessary, the device can be identified by the service center on the basis of the SVP number and order number.

   Both numbers are located on the rating label on the computer unit at the top of the fan side.

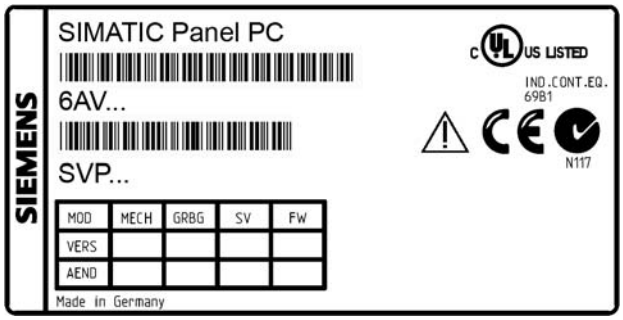


Figure 4-2 Rating label of the device, example

3. Enter the Ethernet address of the device: The Ethernet address is located in the "Main" menu of the BIOS setup, "Hardware Options > Ethernet Address."

	Identification	Number
1	Microsoft Windows Product Key COA	
2	SVP number	
3	Order number of the device	
4	Ethernet address	

4.4 Mounting Positions and Fastening

4.4.1 Installation guidelines

Before installing the device, read the following general notes relating to installation.

Warning

Danger, high voltage

Isolate the power supply to the switchgear cabinet before opening it. Ensure that the power to the switchgear cabinet cannot be turned on accidentally.

Caution

The device is approved for operation in closed rooms only.

- Ensure that the protective contact socket of the building installation is easily accessible and that there is a mains disconnect switch in switchgear cabinet installations.
- Position the screen in an ergonomic position favorable to the user. Choose a suitable installation height.
- Position the screen so that it is not subject to direct sunlight or other strong sources of light.
- Optical drives are susceptible to shock. Shocks during operation can lead to the loss of data or damage to the drive or data carrier. Optical drives are not only suitable for continuous operation.
- Applies to devices which are installed in swivel arm housings: Avoid rapid or jerky movements of the swivel arm during operation. The ensuing forces could lead to possible irreversible damage of the hard disk.
  The stops of the swivel arm must be damped in order to avoid any mechanical shock effect to the Panel PC on attachment.
- Applies to devices which are installed in cabinet doors: Prevent the doors being slammed shut. The ensuing forces could lead to possible irreversible damage of the hard disk.
- The device with DC power supply applies in the area of the computer unit and above all the power supply connection in accordance with the UL approval as "open type" or "open equipment". For this reason, the device must be installed in a control cabinet or housing that complies with fire-proofing requirements

Note

The computer unit with AC power supply satisfies fire protection requirements to EN60950-1. It may therefore be installed without additional fire-proofing measures.

- Provide adequate volume in the switchgear cabinet for air circulation and heat transport. Keep at least 10 cm distance between the device and switchgear cabinet.
- Ensure that the maximum air intake temperature, measured 10 cm before the air intake opening on the fan, does not exceed 45°C. The maximum air intake temperature must be accounted for especially when sizing closed switchgear cabinets.
- The minimum distance between the device and the housing is 10 cm on the air output side at the fan.
- Position the device in such a way that the air vents of the housing are not covered up following mounting.
- Ensure there is enough free space in the switchgear cabinet to allow the sheet metal cover to be removed. You will otherwise have to remove the device from the switchgear cabinet or swivel arm when replacing memory or the battery.
- Provide enough free space to add on to the device.
- Equip the switchgear cabinet with struts for stabilizing the mounting cut-out. Install struts where necessary.
- Avoid extreme environmental operating conditions. Protect your device against dust, moisture and heat.
- Install the device in such a way (see Chapter *Technical specifications*) that it poses no danger, e.g. by falling over.
- During assembly, please comply with the approved installation positions.

Notice

If you mount the device in an impermissible installation position or you do not observe the environmental conditions (see Chapter *Technical specifications*), you endanger the product safety provided by the UL-approval and compliance with the low-voltage directive (via EN 60950-1). In additional, the functionality of the device is no longer guaranteed.

For additional information, refer to the dimension diagrams in the appendix.

4.4.2 Installation information stainless steel front

Before you install the device, read the additional installation guidelines below:

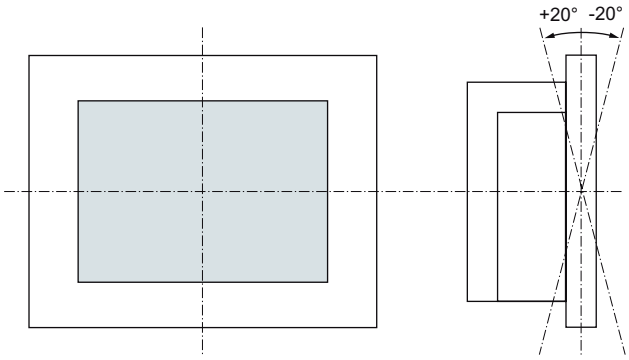
- Make sure that you can access the device from the rear.
- The installation cut-out should be deburred.
- When operating the device in a switch cabinet, ensure compliance with permitted ambient conditions and, in particular, that permitted ambient temperatures are not exceeded. Make allowances for the fact that the thermal conductivity of switch cabinets made of stainless steel is not as good as that of an aluminum cabinet.
- Check the flat seal on the device. Always install the device with this flat seal.
- Always use the included clamping frame and clamps to mount the device.

4.4.3 Permitted mounting positions

Approval

Certain mounting positions are approved for the equipment that comprises one control unit and one computer unit.

Permitted mounting positions



Vertical installation with deviations between +20° and -20° in the given directions is permissible.

4.4.4 Type of fixation

The computer unit is secured in the mounting cut-out either with clamps or screws.

Notice

Securing with screws is not possible with the 12" touch screen variant.

Select the type of fixation suitable to your requirements for the degree of protection (see Section *Protection against dust and water*) .

4.4.5 Stainless steel front type of fixation

Type of fixation

The device is fastened with the included clamps. Additional fastening bore holes or threaded bolts are not required for the control panel.

Type of protection

Caution

Degree of protection IP66 is only ensured if the flat gasket of the device is correctly positioned and evenly pressed on the control panel. Refer to the "Installation" section for more information.

4.4.6 Protection against dust and water

Principle

The degree of protection provided at the front is assured when the mounting seal lies completely against the mounting cut-out.

Caution

Please ensure that the material strength at the mounting cut-out is a maximum of 6 mm. Please follow the specifications for the dimensions in the "Mounting cut-out" section.

The degrees of protection are only guaranteed when the following is observed:

- The material strength at the mounting cut-out is at least 2 mm.
- The surface plane deviation of the mounting cut-out in relation to the external dimensions of the control unit amounts to ≤ 0.5 mm when the control unit is mounted.

IP65 degree of protection and NEMA4

IP65 degree of protection and compliance with the NEMA4 regulations are only ensured when clamp mounting together with a ring seal.

IP54 degree of protection

This degree of protection is achieved for screw fixing of all operator control units with a key front panel and the 15" and 19" operator control units with a touch front panel. This degree of protection is assured for the 19" operator control unit with a touch front panel when the mounting components for 19" rack accessories are used.

Note

For screw fixing of the 19" touch panel front, a backing plate is available as an accessory. For further information, see "http://mall.ad.siemens.com/".

4.5 Mounting cut-out

4.5.1 Preparing the mounting cut-out

The following illustration show the dimensions for the mounting cut-out.

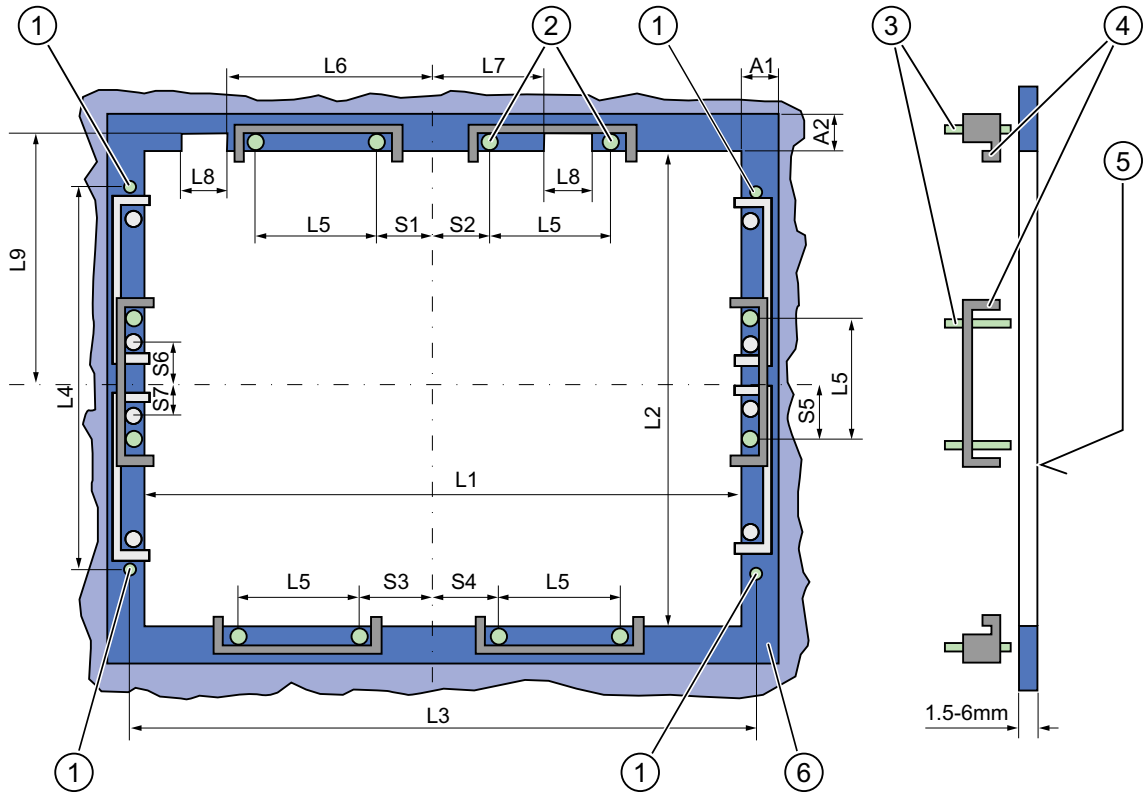


Figure 4-3 Drill holes for the screws and pressure points for the clamp screws

(1)	Drill hole for screw attachment	(4)	Clamp
(2)	Pressure points for clamp	(5)	R_Z 120 in the seal area
(3)	Setscrews	(6)	Seal area

Note

Installed dimensions can be read from the dimension overview or they can be transferred to the cabinet from the mounting template supplied.

Table 4-1 Dimensions for the mounting cut-out in mm

Control unit	L1	L2	L3 [1]	L4 [1]	L5	L6 [2]	L7 [2]	L8 [2]	L9 [2]	A1	A2	S1	S2 S3 S4	S5 [3]	S6 [3] S7 [3]
Tolerance	**+1**	**+1**	**±0.2**	**±0.2**	**±0.5**	**±0.5**	**±0.5**	**±0.5**	**+1**	**±1**	**±1**	**±1**	**±1**	**±1**	**±1**
Key panel															
12" TFT															
15" TFT	450	290	465	235	112	—	—	—	—	16	10	78	78	56	—
	450	321	465	279	112	186	135	25	165	16	17	51	51	56	—
Touch panel															
12" TFT	368	290	—	—	112	—	—	—	—	16	10	19	35	56	—
15" TFT	450	290	465	235	112	—	—	—	—	16	10	81	81	56	—
19" TFT	450	380	465	235	112	—	—	—	—	16	10	46	46	—	33

[1] M6 thread or drill hole with a diameter of 7 mm

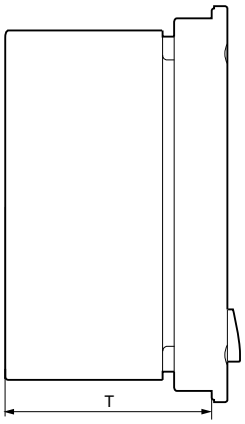
[2] Cut-outs for the shafts of the insert strip are only necessary for 15" key panels.

[3] Only for 19" touch panel fronts are two clamps necessary for vertically securing clamps.

Preparing the mounting cut-out

Steps for preparing the mounting cut-out	
1	Select a location suitable for mounting, taking into account the mounting position
2	On the basis of the dimension diagrams, check whether the required screw and pressure points on the rear and the seal area are easily accessible after the completion of the mounting cut-out. Otherwise the mounting cut-out is useless.
3	Complete the mounting cut-out in accordance with the dimensions

4.5.2 Mounting Depth of the Device



Panel PC with operator control units	Depth D
Key panel with 12" TFT	123 mm
Key panel with 15" TFT	121 mm
Touch panel with 12" TFT	105 mm
Touch panel with 15" TFT	124 mm
Touch panel with 19" TFT	130 mm

Note

Additional mounting depth with optical drive

The installation depth increases by 21 mm when an optical drive is installed in the device.

4.6 EMC directive

Electromagnetic compatibility

The device fulfills the requirements of the EMC law of the Federal Republic of Germany as well as the EMC directive of the Single European Market.

The device is designed as a built-in device. You ensure compliance with the EN 61000-4-2 (ESD) EMC standard by installing the device in grounded metal cabinets (e.g. 8 MC cabinets, Siemens catalog NV21).

Note

For additional information about EMC requirements, refer to the Specifications section.

Installing the device according to EMC directive

Basics for interference-free operation:

- Install the controller according to EMC directive
- Use interference immune cable

Note

The instructions "Guidelines for the assembly of interference immune programmable logic controllers" with the article ID 1064706 and the manual "PROFIBUS networks" with the article ID 1971286, which also applies to the installation of the device, is located on the "Documentation and Drivers" CD.

Installation

5

5.1 Securing the Device with Clamps

You require 6 clamps in order to mount the device with a 12"/15" display. A device with a 19" display must be mounted with 8 clamps. The required number of clamps is included in your Panel PC delivery package.

Required tool for fastening the clamps: 2.5 mm hexagonal spanner

Figure 5-1 Clamp assembly

Rack mounting

Steps for fastening the device with clamps	
1	Isolate the device from power supply.
2	Working from the front, insert the device into the 19" rack
3	Fasten the control unit in the rack from the rear using the clamps. Tighten the setscrews to a torque of 0.4-0.5 Nm

Swivel arm mounting

Steps for fastening the device with clamps	
1	Isolate the device from power supply.
2	Working from the front, place the device onto the swivel arm
3	Fasten the control unit on the swivel arm from the rear using the clamps. Tighten the setscrews to a torque of 0.4-0.5 Nm

Control cabinet installation

Steps for fastening the device with clamps	
1	Isolate the device from power supply.
2	Working from the front, insert the device into the mounting cut-out
3	Secure the control unit in the mounting cut-out from behind with the clamps, as shown in the mounting cut-out in the dimensions. Tighten the setscrews to a torque of 0.4-0.5 Nm

IP65 degree of protection

The plant builder is responsible for the correct installation of the device.
The degree of protection IP65 is only guaranteed for the front of the device if the ring seal is properly applied with the correct size of cutout, the unit has been clamped in place, and the instructions below are observed.

Notice

Control cabinet installation: Material strength at the mounting cut-out

Please ensure that the material strength at the mounting cut-out is a maximum of 6 mm. Please follow the specifications for the dimensions in the "Preparing the mounting cut-out" section.

The degree of protection can only be guaranteed when the following requirements are met:
1. The material strength at the mounting cut-out must be at least 2 mm.
2. The deviation from the plane in relation to the external dimensions for an installed HMI device is ≤ 0.5 mm

5.2 Securing the Device with Screws

Note

Securing with screws is not possible with the 12" touch screen variant. To secure the 19" front panel with screws, backing plates with Order No. 6AV7672-8KE00-0AA0 are required on the front.

Drilling Holes

Steps for drilling holes	
1	Drill holes (Ø approx. 2.5 mm) from the rear in the 4 recesses of the control unit 
2	Use a Ø 5.5 mm bit for M5 and a Ø 6.5 mm bit for M6
3	Deburr the holes from the front of the control unit

Notice

Risk of damage

Ensure that no metal cuttings enter the device when the holes are drilled. Cover the device with film or when drilling, use removal by suction.

Rack mounting

Steps for fastening the device with screws	
1	Make drill holes at the prepared mounting cut-out in accordance with the specifications for L4 and L5, as shown at the dimensions in the mounting cut-out
2	Working from the front, insert the device into the 19" rack
3	Secure the control unit by inserting suitable screws through the holes and attaching nuts

Swivel arm mounting

Steps for fastening the device with screws	
1	Make drill holes at the prepared mounting cut-out in accordance with the specifications for L4 and L5, as shown at the dimensions in the mounting cut-out
2	Working from the front, place the device onto the swivel arm
3	Secure the control unit by inserting suitable screws through the holes and attaching nuts

Control cabinet installation

Steps for fastening the device with screws	
1	Make drill holes at the prepared mounting cut-out in accordance with the specifications for L4 and L5, as shown at the dimensions in the mounting cut-out
2	Carefully drill the respective holes in the control unit at the designated location from the rear
3	Working from the front, insert the device into the mounting cut-out
4	Secure the control unit by inserting suitable screws through the holes and attaching nuts

IP54 degree of protection

The IP54 degree of protection is guaranteed for mounting together with the ring seal.

Caution

Observe the panel seal when mounting

Ensure you do not damage the panel seal when mounting the device.

Notice

Control cabinet installation: Material strength at the mounting cut-out

Please ensure that the material strength at the mounting cut-out is a maximum of 6 mm. Please follow the specifications for the dimensions in the "Preparing the mounting cut-out" section.

The degree of protection can only be guaranteed when the following requirements are met:
1. The material strength at the mounting cut-out must be at least 2 mm.
2. The deviation from the plane in relation to the external dimensions for an installed HMI device is ≤ 0.5 mm

5.3 Fix the device with stainless steel front using clamps

Introduction

This section describes how to mount the device in a control panel.

Caution

Mount the device as intended. This will avoid damage to the device and loss of warranty. Follow the installation instructions.

Procedure

1. Ensure that the flat gasket does not become twisted during mounting, otherwise the mounting cut-out may not be correctly sealed.
2. Working from the front, insert the device into the prepared and deburred mounting cut-out. Take the necessary precautions to ensure the device cannot drop out of the control panel before it has been secured in place.
3. Place the clamping frame with the centering bore holes onto the device. Make sure that the flat side of the frame makes contact with the back of the control panel.

Figure 5-2 Clamping frame with flat seal

4. Insert the hooks (1) of the clamps (2) into the recesses (3) of the device. Make sure that the centering points (4) of the clamps are inserted into the corresponding centering bore holes (5) of the clamping frame.

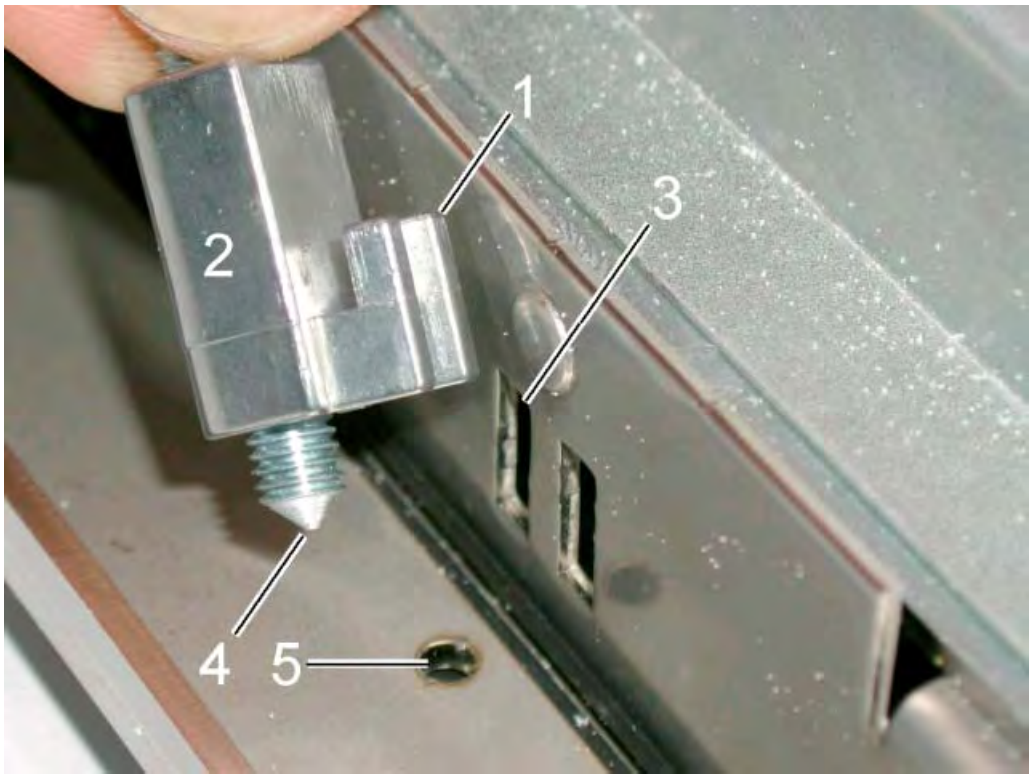


Figure 5-3 Inserting the clamps

5. Tighten the screws of the clamps.

Figure 5-4 Proper positioning of the clamp

Use a hexagonal head torque wrench set to a maximum tightening torque of 0,6 N/m in order to achieve an optimal sealing effect.

Caution

Any higher torque may warp the control panel or the switchboard panel. The specified degree of protection is not ensured otherwise.

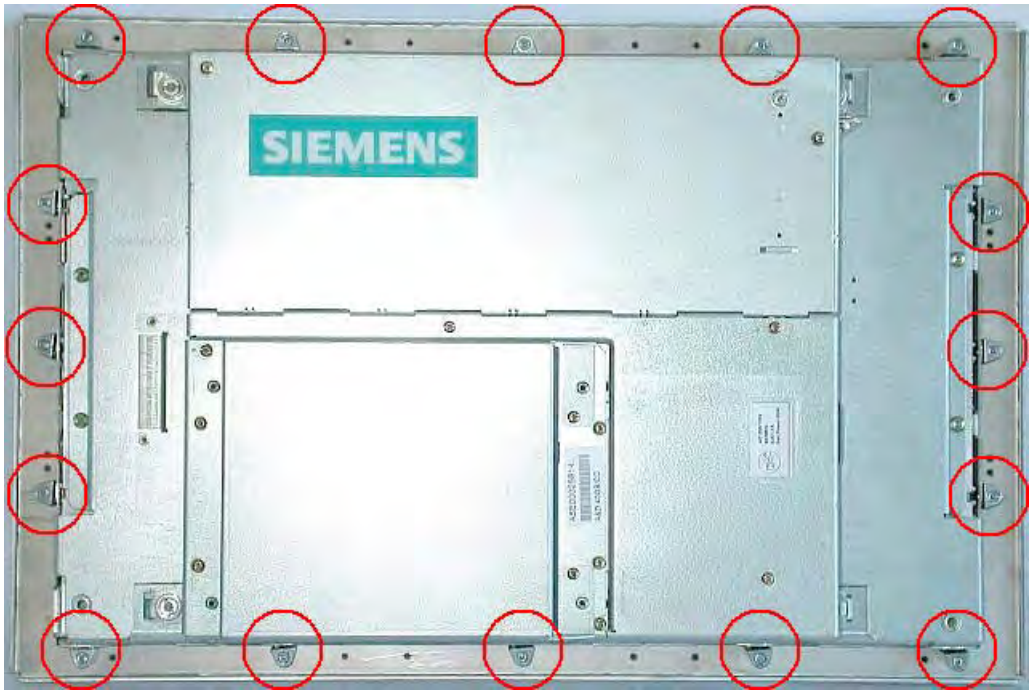


Figure 5-5 Position of the clamps

Check the proper seating of the flat gasket on the front side. If it is not seated properly, repeat the installation.

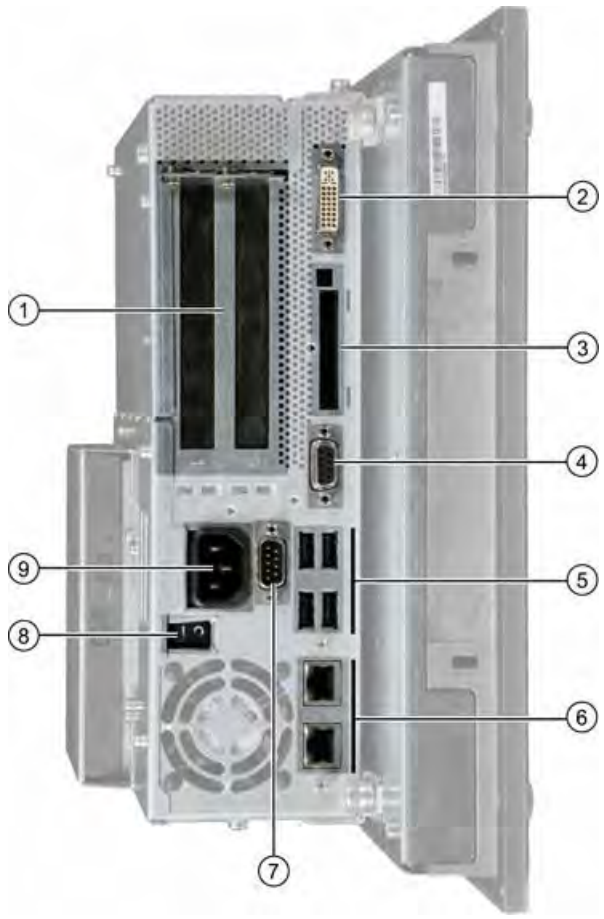
Connecting

6

6.1 Connection and Operator Control Components

Connection and Operator Control Components of the Computer Unit

Locations of connection and operator control components



Pos	Designation	Description
(1)	PCI	2 slots for PCI expansion module
(2)	DVI/VGA	DVI/VGA socket for CRT or LCD monitor with DVI interface or VGA monitor via DVI/VGA adapter
(3)	Compact Flash	1 slot for Compact Flash cards
(4)	PROFIBUS DP/MPI	MPI interface (RS485 electrically isolated) 9-pin Cannon connector
(5)	USB	4 USB 2.0 ports (2 ports can be simultaneously used as high current outputs / 500 mA)
(6)	Ethernet	2 RJ45 connections for 10/100 Mbps
(7)	COM 1	Serial port (RS232) 9-pin Cannon connector
(8)	On / Off switch	-
(9)	100 - 240 V AC or 24 V DC	Connection for AC or DC power supply (depending on the product variant, the figure shows the AC power plug) The relevant angle is included with the device for interlocking the connector.

Notice

On / Off switch

The On / Off switch does not disconnect the device from mains. When the switch is in the 0 position, the device is still connected to the auxiliary voltage.

Connection components of the control unit

USB connection control unit

Pos	Designation	Description
(1)	USB	1 connection USB 2.0 high current (500 mA) under sealed cover (not available with every product variant)

Notice

Guarantee for the IP 65 Degree of Protection

When the sealed cover over the USB port is removed in order to connect a USB component, the IP 65 degree of protection for the device is no longer guaranteed.

Note

Use of USB Devices

- Wait at least 10 seconds between the unplugging and replugging of USB devices. This also applies in particular to touch control in control units with touch screen panels.
- When using standard USB peripherals, bear in mind that their EMC immunity level is frequently designed for office applications only. These devices may be used for commissioning and servicing. However, only industry-standard devices are allowed for industrial operation.
- Peripherals are developed and marketed by individual vendors. The respective manufacturers offer support for the peripherals. Moreover, the terms of liability of the individual vendors or suppliers apply here.

6.2 Connecting the 100 V to 240 V AC power supply

General connection information

Note the following in order to operate the device safely and according to regulation:

Note

Voltage Range

The power supply is designed for 100 - 240 V AC networks. The device adjusts automatically to the voltage.

Notice

Risk of damage

Do not connect or disconnect power and data cables during a thunderstorm.

Notice

Power Supply Network

The device is designed for operation on grounded power supply networks (TN systems to VDE 0100, Part 300, or IEC 60364-3).

It is not permissible for operation on ungrounded or impedance-grounded power networks (IT networks).

Notice

Permitted Mains Voltage

The local rated voltage must be within the voltage range of the device.

Notice

Power Disconnection

The built-in switch does not disconnect the device from mains. The mains connector on the device must be disconnected to fully isolate the device from mains. The mains connector must be easily accessible.

If this cannot be guaranteed, in cabinet installation, for example, or the mains connector clamp is used, an easily accessible power switch **must** be built into the device.

Power Factor Correction

The power supply contains an active PFC (Power Factor Correction) circuit to conform to the EMC guidelines.

Uninterruptible AC power systems (UPS) must supply a sinusoidal output voltage in the normal and buffered mode when used with SIMATIC PCs with an active PFC.

UPS characteristics are described and classified in the standards EN 50091-3 and IEC 62040-3. Devices with sinusoidal output voltage in the normal and buffered mode are identified with the classification “VFI-SS-....” or “VI-SS-....”.

Notice

Risk of damage

Operation of the device on a non-sinusoidal mains voltage can cause damage to the power supply unit.

Country-specific Connection Information

For the USA and Canada

For the United States and Canada, a CSA or UL-listed power cord must be used. The connector must be compliant with NEMA 5-15.
Country-specific power cables are available as accessories.

- **120 V supply voltage**
  Use a flexible power cord with UL approval and with CSA label, and with the following features: Type SJT with three leads, min. 18 AWG conductor cross-section, max. 4.5 m in length and parallel ground contact connector 15 A, min. 125 V
- **230 V AC power supply**
  To be used is a flexible power cord approved to UL and with CSA label, and which has the following features: Type SJT with three leads, min. 18 AWG conductor cross-section, max. 4.5 m long and tandem ground contact connector 15 A, min. 250 V

For countries other than the USA and Canada

- **Please observe the country-specific supply voltage**
  This device is equipped with a safety-tested power cord which may only be connected to ground contact power outlet. If you choose not to use this cable, you must use a flexible cable of the following type: Min 18 AWG conductor cross-section and 15-A / 250-V shockproof connector. The cable set must be compliant with the safety regulations and stipulated IDs of the country where the system is to be installed.

Connecting the power supply

Steps for connecting the device to the 100 - 240 V AC power supply	
1	Switch off the AC power source
2	Connect the power supply using the connector

Power consumption

Depending on the size of the display and taking into account 15 W per PCI slot, the power consumption for devices with 12" and 15" operator control units is max. 140 W, and with 19" operator control units it is max. 163 W.

6.3 Connecting the 24 V DC power supply

General connection information

Note the following in order to operate the device safely and according to regulation:

Notice

Power supply

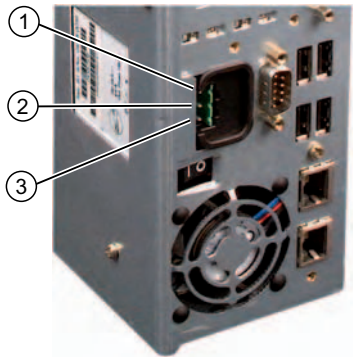
The device must only be connected to 24 V DC power supply systems or 24 V DC power supplies which meet the requirements of a safe extra-low voltage (SELV).
Use the supplied connector to connect it to the supply voltage.

Notice

Connecting the protective conductor

A protective conductor must be connected to the device. The conductors must withstand the short-circuit current of the 24 V DC power source, so that a short-circuit will not damage the cable. Only use cables with a minimum cross-section of 1.3 mm^2 (AWG16) and a maximum cross-section of 3.3 mm^2 (AWG12).

Connecting the power supply

Steps for connecting the device to the 24 V DC power supply		
1	Ensure that the ON/OFF switch is in the '0' (OFF) position to prevent unintentional startup of the device when connecting it to the 24 V power supply	
2	Switch off the 24 V DC power supply	
3	Connect the DC connector (1) 24 V DC (2) ground (3) protective conductor	

6.4 Connecting the equipotential bonding circuit

A low-impedance earth connection ensures that interference signals generated by external power supply cables, signal cables or cables to the I/O modules are safely discharged to earth.

The equipotential bonding connection of the device is located underneath the device and is identified by the following symbol:

Figure 6-1 Equipotential bonding

Connecting the equipotential bonding circuit

You require a TORX T20 screwdriver to connect the equipotential bonding conductor.

Steps for connecting the equipotential bonding		
(1)	Connect the equipotential bonding connection (M4 thread) (1) on the device (large surface, large-area contact) with the central grounding point of the control cabinet. The minimum permissible cross-section is 5 mm^2.	

Information on devices with stainless steel front

Caution

Ensure proper electrical contact between the enclosure of the device and the switchboard. The conductive surfaces of the clamping frame and of the switchboard should have proper contact.

6.5 Connecting Ethernet strain relief

The Ethernet strain relief provided in the package is used to prevent accidental removal of the Ethernet cable with Industrial EthernetFastConnect connector from the device. Two cable ties (not included in the package) are needed to use this accessory.

To fix the Ethernet strain relief with Industrial EthernetFastConnect connector, you will need a TORX T20 screwdriver.

Steps for connecting the Ethernet strain relief		
1	Fasten the Ethernet strain relief (2) to the device housing with two oval-head screws (M4 thread).	
2	Connect network cable and attach to the strain relief using cable ties (1) / (3)	

6.6 Connecting the power plug locking mechanism

The power plug locking mechanism is part of the scope of supply and prevents the power plug from being pulled out accidentally. The power plug locking mechanism is a metal bracket that is screwed onto the computer housing.

You require a TORX T20 screwdriver for attaching it to the housing.

The power plug locking mechanism is a safety-relevant part. To completely disconnect the device from mains see Chapter *AC power supply (AC 100 / 240 V)*, section *Power disconnection*.

Integration into an automation system

7

7.1 Overview

Introduction

The following options are available for integrating the device in existing or planned system environments and networks.

Ethernet

The integrated Ethernet interface can be used for communication and for data exchange with automation devices such as SIMATIC S7.

You require suitable software for this: STEP7, WinCC, WinCC flexible, WinAC, SIMATIC NET.

PROFIBUS / MPI

The potentially isolated Profibus interface can be used to connect distributed field devices or to couple with SIMATIC S7.

You require suitable software for this: STEP7, WinCC, WinCC flexible, WinAC, SIMATIC NET.

Additional information

For further information, refer to the catalog and to the online ordering system of Siemens A&D.

Internet address: https://mall.ad.siemens.com

7.2 Device in a SIMATIC S7 configuration

7.2.1 MPI/PROFIBUS-DP network

You can connect the device to a SIMATIC S7 automation system or a PROFIBUS DP network via the MPI/DP interface. You can connect up to 32 PC, PG, or AS devices to one network segment. The use of repeaters allows you to interconnect several MPI/PROFIBUS DP network segments. The complete MPI/PROFIBUS DP network consists of a maximum of 127 stations.

The device is physically connected to the MPI/PROFIBUS DP network via an electrically isolated RS485 interface on the PC motherboard. The potential is isolated within the safety low voltage circuit (SELV).

The transmission rate is limited to 187.5 Kbps with the 5-meter MPI cable for connecting to the SIMATIC S7-CPU. To achieve baud rates over 1.5 Mbps, you require a 12 Mbps PROFIBUS cable with the order number 6ES7901-4BD00-0XA0. In the PROFIBUS DP MPI network, you can achieve data transmission rates of 9.6 Kbps to 12 Mbps.

7.2.2 Connecting an S7 automation system

Coupling

The device is coupled via the MPI/DP interface as follows:

- With MPI networks S7-200, S7-300, and S7-400
- PROFIBUS DP networks with DP components

Hardware requirements

You can use the following components for coupling or networking with PROFIBUS:

- RS 485 interface, MPI/DP interface, onboard
- PROFIBUS cable

Note

Refer to the SIMATIC Net catalog IK PI for more information about SIMATIC Net PC cards.

Procedure

1. Disconnect the device from mains.

Caution

Risk of damage to the device!

Neutralize the static charge of your body, the device, and the connecting cables. You can do this by briefly touching the metal housing with the cable in your hand.

2. Insert the PROFIBUS cable in the MPI/DP socket.
3. Reconnect the device to the electrical power system.

7.3 Networking via Industrial Ethernet

You can establish a network between the device and other computers via Industrial Ethernet. The on-board LAN is a Twisted-Pair (TP) interface for data transfer rates of 10/100 Mbit/s.

The interface is Plug and Play-ready and is automatically detected in Windows. Protocol settings are made in the Windows control panel.

Notice

A Class 5, CAT 5 Ethernet cable is required for 100 Mbit/s operation.

Commissioning

8

8.1 Overview

Check list

Before starting up the device for the first time, go through the following checklist:

- Have you taken into account the proper ambient and environmental conditions for the device, as described in the Technical data?
- Have you connected the equipotential bonding if required?
- Have you checked that the power supply is connected correctly and that the values are appropriate?
- Read over this information in the respective "Connecting" chapter of the operating instructions. Please follow all guidelines

---

Caution

Condensation
When transporting the device at low temperatures, ensure that no moisture gets on or into the device. This also applies if the device is subjected to extreme changes in temperature. Wait 12 hours before switching the device on.

Allow the device to slowly adjust to room temperature before commissioning the device. Do not subject the device to direct heat radiation from devices such as heaters.

Requirement

- The equipotential bonding is connected.
- The cables are correctly plugged in
- A USB keyboard and a USB mouse are connected

8.2 Switch on the device

Procedure

1. Switch on the external AC or DC supply.
2. Connect the external keyboard and mouse.
3. Switch on the equipment using the switch next to the supply connector.
4. The "POWER" LED will light up: The device starts up and boots.

   Self-test

   After switching on, the device performs a self test. During the self test, the message "Press <F2> to enter SETUP" appears briefly. Do not press this key during this first start up.

   When the self-test is finished, the operating system will be loaded. You will see this from the screen display.
5. Before you install additional hardware in the SIMATIC Panel PC, such as a PCI card, please start up the equipment once without it.

8.3 Setting up the Microsoft Windows operating system

Introduction

The setup wizard appears immediately following the startup of the device. The wizard is used to set the parameters of the operating system.

Note

The dialogs of the setup wizards differ slightly in some places for the Windows 2000 Professional and Windows XP Professional operating systems.

In order to change to the next dialog, click on the ">>" button. In order to change the entry in the previous dialog, click on the "<<" button.

Procedure

1. Accept the Microsoft licensing agreement.
2. Leave the regional settings of the operating system unchanged. If required, adjust the regional settings of the operating system only after commissioning.
3. Enter the company names and user names.
4. If this PC name is already in use as you attempt to connect the device to a network: Enter a new PC name for identification.

   The operating system will restart automatically.

The system settings are updated. The desktop is set up. The setup of the operating system is complete.

8.4 Installing applications and drivers

Introduction

After the device is restarted, different dialogs appear on the screen. Drivers and applications can be installed from these dialogs.

Additional hardware and software components

You can install and configure additional hardware and software components. For additional information, refer to the documentation of the hardware and software.

Note

The directory "c:\i386" contains special Windows components for subsequent installation.

Procedure

1. In the "Panel Wizard" dialog, click the type of panel that corresponds to your device.

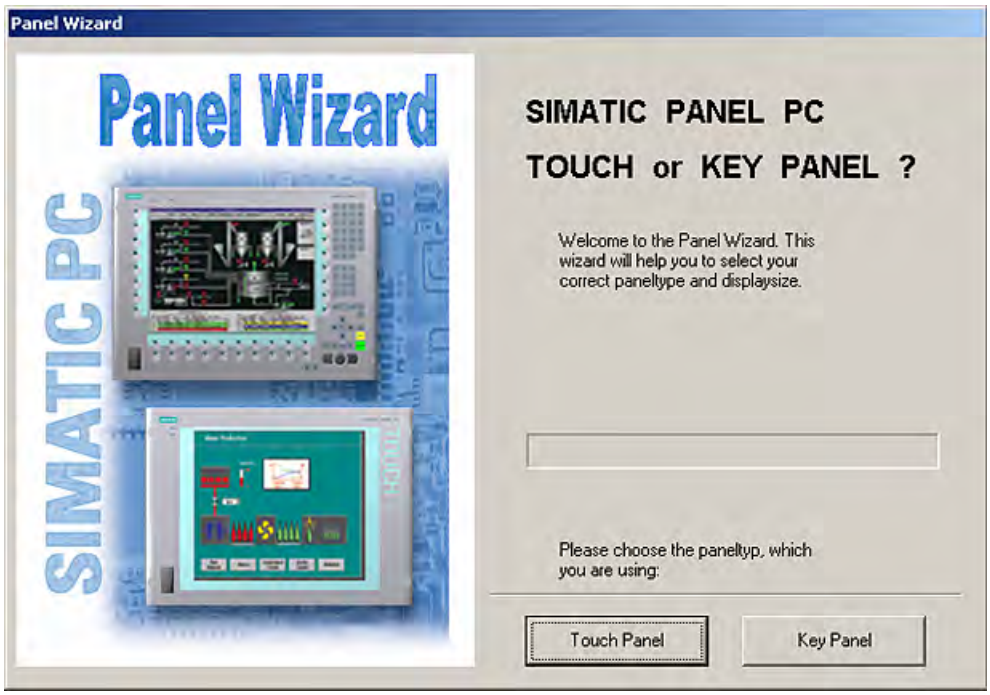


Figure 8-1 Panel Wizard, selection of the panel type

When selecting the Touch Panel, proceed according to the section Set Touchscreen. To select the Key Panel, proceed as described in the section Set key fron.

Setting the touch screen

This step only applies to control units with touch screen panels.

2. In the following dialog, click on the screen size that corresponds to your device. You will find details of the screen size on the rating plate for the control unit. The display resolution of the device will be adjusted correspondingly.

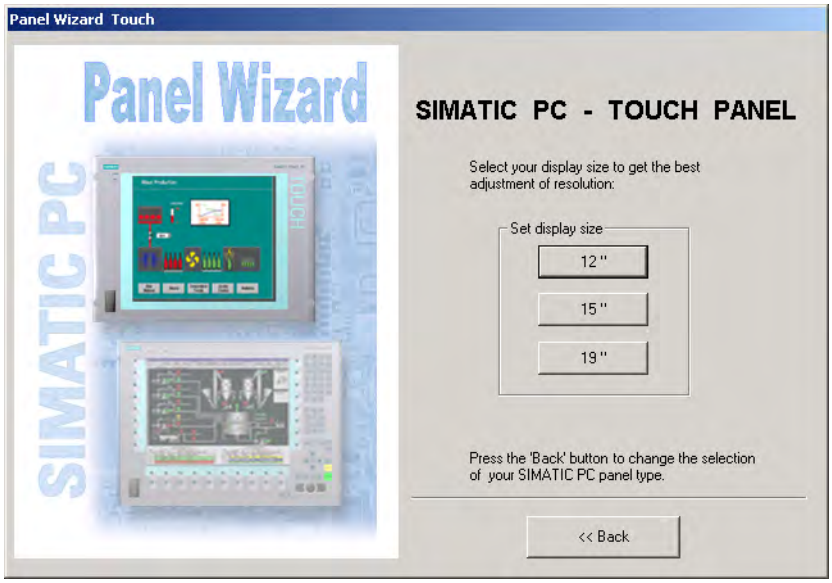


Figure 8-2 Touch screen panel, selecting the screen size

3. Click on "Finish" to end the Panel Wizard.

Note

Screen keyboard

The check-box is activated by default. You enter the administrator password, for example, using a screen keyboard which appears at every Windows startup. An external keyboard is then not necessary.

If you deactivate the check-box, the screen keyboard does not appear. It will, however, be installed.

Figure 8-3 Touch screen panel, end Panel Wizard

4. New hardware, the touch controller, is found. In order to start the touch calibration, click on "OK". Carry out the following steps carefully:

Figure 8-4 Start touch screen calibration

5. Briefly touch the touch screen at every cross hair.

   Continue from Point 7.

Setting the key panel

This section applies only to control units with key panels.

6. Click on "Finish" to end the Panel Wizard.

Figure 8-5 Keyboard panel, end Panel Wizard

7. Exit the operating system session and restart the device. Otherwise the "Security features" from "KeyTools" will not be activated.

Warning

Use "KeyTools" as described in the "Additional drivers and applications/KeyTools (for device with key front only)" section of the "Operation and configuration" chapter.

The following applies when the "Security features" of "KeyTools" is deactivated:

When the additional function keys F13 and S16 are used, or when using your own key code table, serious malfunctions of the user software can occur because the key codes behind the function keys can also be activated by activating keys other than the configured ones. Further information is available in the description of "KeyTools" on the supplied "Documentation and Drivers" CD.

8. No administrator password is assigned in the factory state. When the logon dialog appears the next time the device starts up, therefore, leave the field empty and close the dialog with the "OK" button.

Notice

Then configure an administrator password for security.

The installation of the drivers and applications is complete. Further information is available in the "Operation and configuration" chapter in the section, "Additional drivers and applications."

Notice

After starting up your device, find out more about the particulars of the operating system in the chapter "Commissioning" in the section, "Microsoft Windows operating systems". Further information is available in the chapter "Service and maintenance" under the section, "Installing software."

8.5 BIOS settings

The BIOS setting "USB legacy Support" is enabled by default. Thus, the complete functionality of a USB keyboard is available prior to starting up Windows. You can also adjust the BIOS settings with the USB keyboard.

Note

To edit the BIOS on an operator device equipped with a touch screen, connect a USB keyboard.

8.6 Microsoft Windows operating systems

8.6.1 Approvals

The device is approved for use with the following operating systems:

Approvals

- Windows 2000 Professional Multi-Language SP4 and higher, German, English, French, Italian, Spanish, Japanese, Korean, Chinese Simplified and Chinese Traditional
- Windows XP Professional Multi-Language, German, English, French, Italian, Spanish, Japanese, Korean, Chinese Simplified and Chinese Traditional

  Windows XP Professional is only approved as of Service Pack 2.

  The operating system is provided with the Windows function modes "Hibernate" and "Standby" deactivated when shutting down the operating system and with "Fast User Switch" (Windows XP Professional) deactivated.

8.6.2 Windows 2000 Professional

Service pack

After a new installation of Windows 2000 Professional, install at least Service Pack 4. Service Pack 4 is supplied in the product package.

Note

If you are using SIMATIC WinCC or SIMATIC WinCC flexible, pay heed to the operating system releases and hotfixes. For additional information, refer to the SIMATIC WinCC and SIMATIC WinCC flexible documentation.

Automatic logon

When automatic logon is used, a defined user is automatically logged on with a defined password. No logon dialog appears when starting the operating system. For additional information, refer to the Windows help.

Automatic updates

The "Automatic updates" function is deactivated when installing Service Pack 3 or later.

Call

Start menu "Start", command "Settings > Control panel > Automatic Updates"

So that updates are automatically installed on the device via the Internet, activate "Keep my computer up to date" in the "Automatic Updates" dialog. With this setting enabled, …".

Notice

When the check box is activated, updates will be installed automatically on the device even when they have not be released by Siemens AG.

8.7 USB

Introduction

Commercially available USB peripherals can be easily and flexibly connected via the USB interface. For example, you can connect an external USB keyboard and a USB mouse. If the USB keyboard has a USB interface, you can connect other USB peripherals, such as a USB mouse, directly to the keyboard.

USB interface

There are several types of USB peripherals:

- Low power devices: maximum 100 mA power consumption, e.g. mouse and keyboard
- High power devices maximum 500 mA power consumption, e.g. hard disk and floppy drive

Note

The general USB specifications apply to the USB interfaces on the computer unit.

The USB interface on the front panel has been approved for a maximum of one additional USB hub.

Using USB peripherals

Notice

When installing a USB device for the first time, make sure you have the required device driver.
Before removing an intelligent USB device, deactivate the device in the operating system using the dialog "Unplug or Eject Hardware". For additional information, refer to the documentation for the operating system.

Operation and Configuration

9

9.1 Normal operation

9.1.1 Switch on the device

Requirements

- The peripheral devices are connected.

Caution

To comply with the EMC guideline of the device with I/O, ensure that the manufacturer or supplier of the components used guarantees compliance with the regulations. Connect the I/O devices via shielded cables with metal connectors. In doing so, the shield must be connected over a wide area with the metal connector and the connector must be firmly connected with the device housing.

- The operating system and the service packs have been installed and set up on the hard disk of the device. Refer to the "Commissioning" chapter for more information.
- The pre-installed drivers and applications have been set up appropriately. Further information is available in the "Operation and configuration" chapter in the section, "Additional drivers and applications."
- The proper ambient and environmental conditions according to the specifications for the device and the connected I/O modules have been observed.

Procedure

Warning

Danger of incorrect operations!

The following applies to external input devices or combinations of external input devices and control units with key panels: Ambiguous key codes can cause serious malfunctions of the application program.

Always activate the "Security features" of "KeyTools." Please note the applicable safety information in the "Operation and configuration" chapter in the section, "Additional drivers and applications."

Caution

The device must not be switched on if there is condensation. Switch it on only after it has been stored in a (heated) room for at least 12 hours for temperature adjustment.

9. Connect the AC device to a sockeet with protective conductor with a cable suitable for the application. You connect the DC device to your 24 V DC power supply using the supplied special connector.
10. Switch on the power switch of the device.

    The "POWER" LED will light up. The device is now in operation and booting.

Caution

Risk of data loss!

Do not switch off the power supply when the device is in operation. Disconnect the power only after the device has been correctly shut down.

After switching on the power supply, the device performs a self-test. During the self-test, the message "Press <F2> to enter SETUP" appears briefly.

When the self-test is finished, the operating system will be loaded and the desktop will be displayed.

The booting process has been completed successfully.

9.1.2 Logging on to the operating system via the onscreen keyboard (OSK)

The logon dialog is displayed when you have assigned an administrator password.

Note

A screen keyboard appears for devices with touch screen panels. You can enter the administrator password directly on the touch screen using the screen keyboard or using the mouse. For additional information, refer to the Microsoft help on screen keyboards.

9.1.3 Switching off the device

Introduction

To turn off the device, shut it down and disconnect the device from the power supply.

Procedure

1. Exit the operating system session of the device properly.

Caution

When using the operating systems Windows 2000 Proofessional and Windows XP Professional, wait until the display has turned dark.

2. Switch the device off using the On/Off switch.
3. In order to isolate the power supply completely, turn off the power at the power supply switch and pull out the plug from the device.

Warning

Always pull out the plug to isolate the device from the mains.

In the case of the direct key module, make sure the keys of the membrane keyboard that are configured as direct control keys remain operable until the voltage of the entire device has been switched off.

9.2 Additional drivers and applications

9.2.1 Overview

The necessary drivers and applications are contained in the supplied "Documentation and Drivers" CD.

Note

The supplied drivers and applications have been system-tested and are approved for this device. No warranty can be provided for other software.

Press the "Help" button to obtain information concerning the buttons of a dialog.

9.2.2 Calibrating the touch screen, UPDD

Call

- Start menu "Start", command "Programs > UPDD > Settings"

Function

Recalibrates the touch screen.

If the touch screen does not react as expected when touched, repeat the calibration. To do this, first activate the 25 point calibration and then calibrate the touch screen.

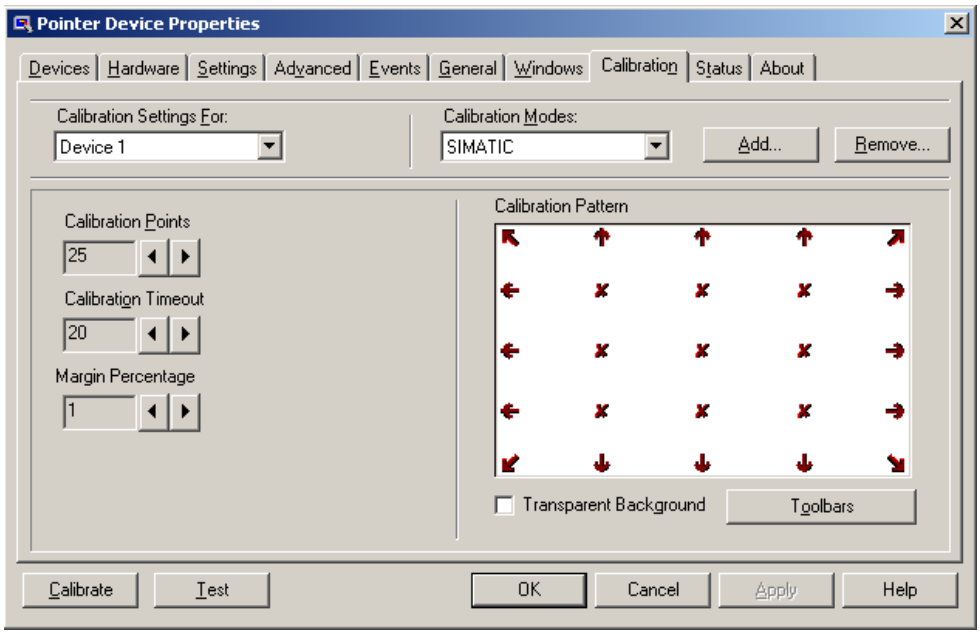


Figure 9-1 25-point calibration

Note

For further information press the "Help" button.

Warning

Maloperation

If you touch the touch screen while the screen saver is active, the SIMATIC process visualization software, e.g. WinCC, will carry out the functions which happen to be behind it.

Caution

Only touch one point on the touch screen and not several points at one time. You may otherwise trigger unintended reactions.

Do not touch the screen in the following situations:

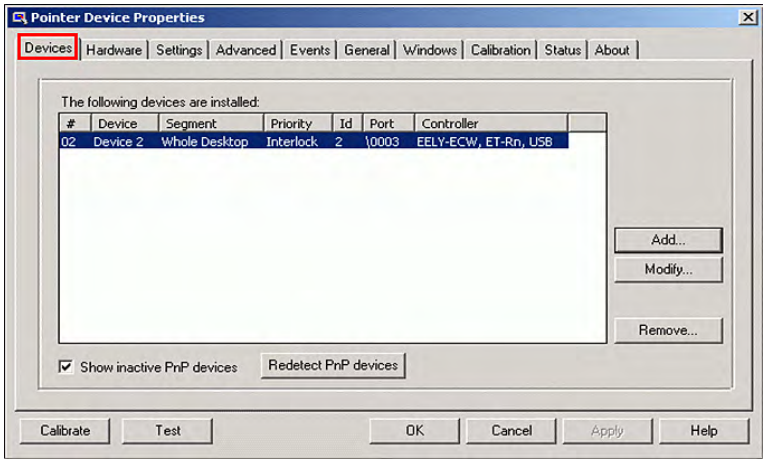
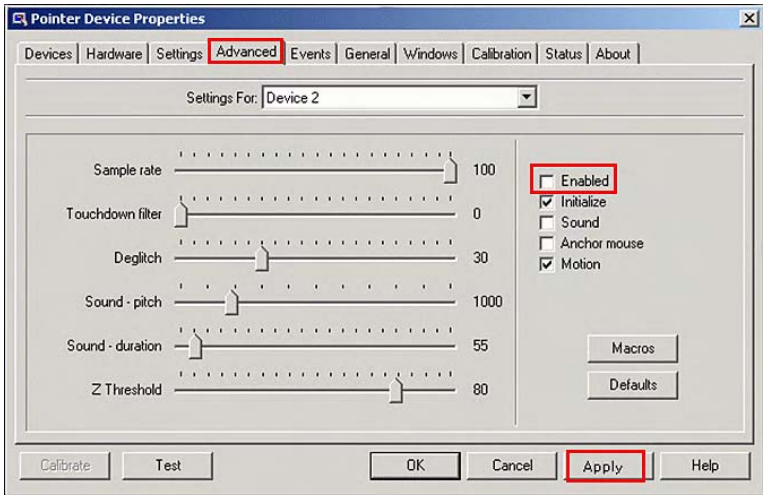
— When the device is booting until the boot process is completed

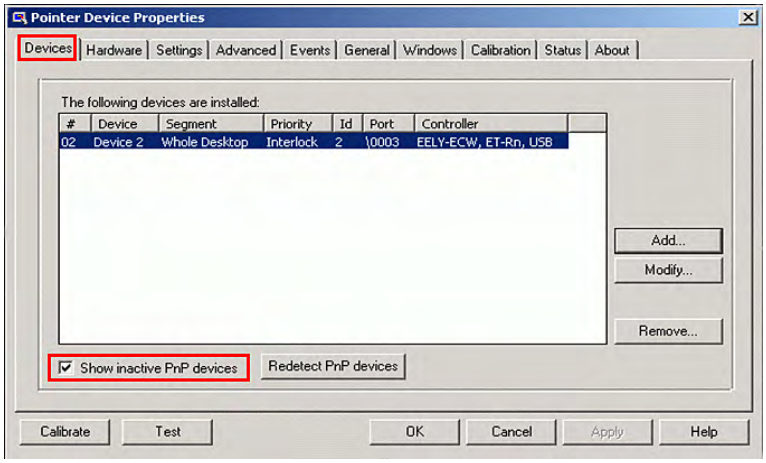
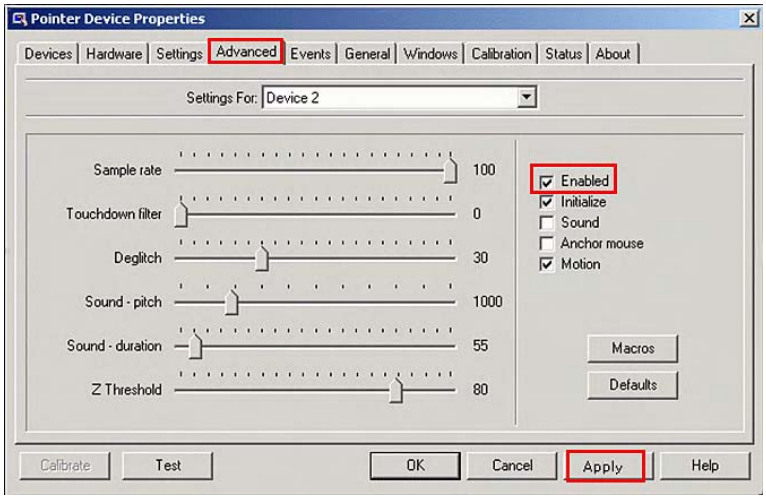
— When plugging or unplugging USB components

— While Scandisk is running

9.2.3 Enable/disable touch functionality

The procedure for deactivating and reactivating the touch functionality using the "UPDD" software is described in the table below.

No.	Procedure	
1	Open the Control Panel menu in the Windows operating system	
2	Open the properties of the "Pointer Device" application in the Control Panel to access the "Pointer Device Properties" dialog.	
3	In the "Devices" tab in the "Pointer Device Properties" dialog, there is a list of devices (also known as DCUs). As shown in the figure, mark the device 02 or the active touch controller of the system and open the "Advanced" tab.	
4	In the "Advanced" tab, deactivate the "Enabled" option and load the settings by clicking the "Apply" button. The touch screen is now deactivated.	

No.	Procedure	
5	To start up the touch functionality again, you must mark the corresponding touch controller in the "Devices" tab and activate the option "Show inactive PnP devices". Then select the "Advanced" tab again.	
6	In the "Advanced" tab, deactivate the "Enabled" option and load the settings by clicking the "Apply" button. The touch functionality is now activated again.	

9.2.4 Windows Security Center (Windows XP Professional only)

Call

- Start menu "Start", command "Settings > Control panel > Security Center"

Function

The Windows Security Center has the following functions with the corresponding default settings: Activates and deactivates the following functions on the device:

Function	Default setting
Firewall	on
Automatic updates	off
Virus protection	off
Alarms	on

The default settings can be activated and deactivated.

Figure 9-2 Windows Security Center

Alarms

Click on "Change the way Security Center alerts me" to switch off security alarms upon switching on the device. The "Alert Settings" dialog appears. Deactivate the desired alarms.

Figure 9-3 "Alert Settings" Dialog

9.2.5 KeyTools (for key panel devices only)

SIMATIC KeyTools is one selection of the applications for your Panel PC. These applications allow you to adapt key codes that are sent by the key panel of the control unit. SIMATIC KeyTools consists of the following applications:

- Key code table: Loading and editing of key code tables
- WinCC hotkey function: WinCC hotkey function activation and deactivation
- Security features: Lock function that prevents two function keys from being activated simultaneously. This prevents incorrect operations and undefined states of the user program.

Note

For a detailed description of the SIMATIC KeyTools please refer to the help menu and the application description on the "Documentation and Drivers" CD.

Calling up KeyTools

1. Call KeyTools using the "Start" menu and command "Settings > Control Panel > SIMATIC KeyTools"
2. Select the desired application and follow the instructions on the screen.

Notice

Malfunctions of the user software

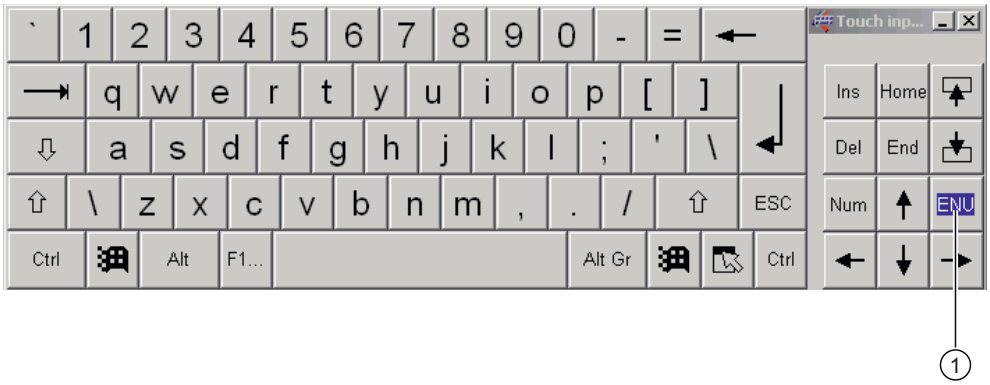
For security reasons always use the "Security features". If you deactivate it nevertheless, serious malfunctions of the user software may occur when the additional function keys and softkeys F11 to F20 and S1 to S16 are used or if own key code tables are used.

9.2.6 Screen keyboard (for touch panel device only)

You can operate the device by means of a virtual screen keyboard. You can use it to enter the characters directly on the touch screen or with an externally connected mouse.

Calling up TouchInput

Call up the "TouchInput" application on the desktop. The screen keyboard is displayed.



(1) Key for selecting the keyboard layouts for specific countries: German, English, Italian, Spanish, French

9.2.7 Setbrightness

Aufruf

Symbol "Setbrightness" auf dem Desktop.

Funktion

Mit "Setbrightness" stellen Sie die Intensität der Hintergrundbeleuchtung ein.

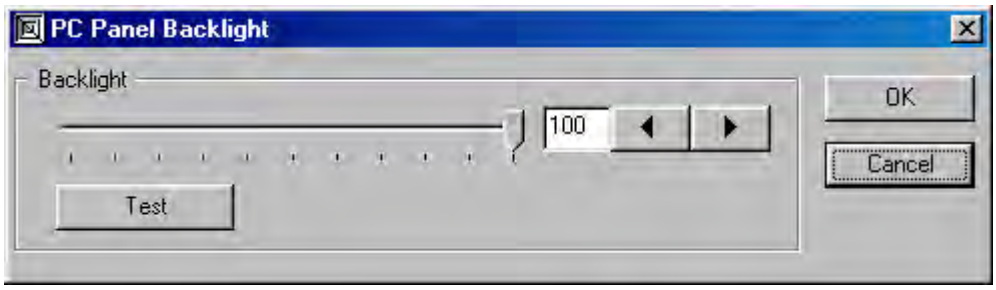


Figure 9-4 Setbrightness

9.2.8 CheckLanguageID

Scope

The following applies to Windows 2000 Professional Multi-Language and Windows XP Professional Multi-Language.

Call

c:\drivers\checklang\checklangid.exe or reinstallation from the "Documentation and Drivers" CD.

Function

"CheckLanguageID" displays the currently installed languages.

Figure 9-5 CheckLanguageID

- SystemDefaultLangID: System language
- UserDefaultLangID: Standard language
- UserDefaultUILangID: User interface language

Notice

All three languages displayed should have the same ID assigned.

9.2.9 Multilingual settings for the operating system

Windows MultiLanguage MUI operating system enables users to set the language of the GUI to their individual preference. Some elements are not localized, however, and remain in the original language of the system - English.

You should therefore always install English language service packs. Further information about the language of the GUI, regional settings and inputs is available in the Internet at http://support.microsoft.com.

Setting up the language selection for Windows 2000 Professional

The **M**ultilanguage **U**ser **I**nterface (MUI) allows you to set up the Windows 2000 Professional menus and dialogs for additional languages.

To set the required languages for the Windows 2000 Professional menus, dialogs and keyboard layout, select:

Start > Settings > Control Panel > Regional Options > General tab, **Setting for current user** field and **Language settings for the system** field and the **Keyboard layout** field in the **Input locales** tab.

In addition to the menu and dialog language settings, you also need to set the default language by selecting **Set Default...** from the **Regional Options** dialog box.

The default language setting of your Windows 2000 Professional installation is English and a US keyboard layout. To change to another language and keyboard layout, open the Control Panel and select:

Start > Settings > Control Panel > Regional Options >General tab, **Setting for current user** field and **Language settings for the system** field and the **Input language** field in the **Input Locales** tab.

Setting up the language selection for Windows XP Professional

The **M**ultilanguage **U**ser **I**nterface (MUI) allows you to set up the Windows XP Professional menus and dialogs for additional languages.

Default language of your Windows XP Professional MUI installation is English and a US keyboard layout. You can change the language in the Control Panel. Select:

Start > Control Panel > Date, Time, Language, and Regional Options > Add other languages > Languages tab,Language used in menus and dialogs field.

For the **Date, Time, Language and Regional Options** set the default as **non-Unicode programs** under **Advanced** in addition to the language for menus and dialogs.

9.2.10 DVD ROM/CD RW

The DVD-ROM/CD-RW drive is an optional feature. Recording methods supported by the disk drive: Disc at once, Track at once, Session at once, Packet writing, whereby Disc at once und Track at once are recommended due to their compatibility to other optical drives. DVD-ROM, CD-ROM, CD-R and Video CDs can be read.

Burner/DVD player software

To utilize the full functionality of our DVD-ROM/CD-RW drive, you need to install additional software (burning or DVD player software). This software is included on the CD supplied with the device. Insert the CD in the drive, run setup and follow the instructions on the screen.

Information on burning CD-Rs/CD-RWs

Caution

Data may be corrupted when burning CD-R or CD-RW!

Burning is permissible only in an undisturbed environment, i.e. shock and vibration stress must be avoided. Because of heavy fluctuation in the quality of CD-Rs, data may be corrupted in a burning session, even if no error message is initially displayed. The written data can only be verified by comparing these with the source. To be on the safe side, data should be verified after every burning session. When backing up an image, the data should be restored to the hard disk and the system should be rebooted from the hard disk.

9.2.11 USB keyboard controller

The USB keyboard controller supports the following additional functions for key models:

- Keyboard programming with the "KeyTools" application
- Adjustment of the backlighting brightness with the application "SetBrightness."
- Control of the key LEDs

The USB keyboard controller must be installed before this function can be used. For installation instructions, see the description on the "Documentation and Drivers" CD.

Operating

10

10.1 Status displays

The two LEDs on the upper left hand side of the front panel display the operating status:

- LED "POWER" green: Active voltage
- LED "TEMP" orange: The temperature threshold has been exceeded; the maximum value is preset and cannot be changed.

Refer to the "Functions" chapter for more information.

10.2 General control elements

On / Off switch

On / Off switch	Description
	The On/Off switch does not disconnect the device from supply voltage. When the switch is in 0 position (Off), the device is still connected to the auxiliary voltage.

Warning

The On/Off switch does not disconnect the device from supply voltage.

10.3 Device with key panel

10.3.1 Overview

The device has the following keypads:

- 2 x 8 vertical keypads with softkey functions
- 2 x 10 horizontal keypads with function keys F1 -F20

The number of keys, their labeling and function is the same on all key panels. The various panel types differ only in the arrangement of the keys and in the size and type of the display. The following figure is therefore only an example using the front view of the 12" variant.

Figure 10-1 Key panel device with 12" display

(1) Display
(2) Alphanumeric keys, numeric keys, cursor keys and control keys
(3) Integrated mouse
(4) Function keys, softkeys (to the left and right of the display)
(5) USB interface (in some device variants, the front USB interface cannot be used)

10.3.2 Using the keyboard

The membrane keyboard is divided into different functional groups:

- Function keys and softkeys with LEDs
- Control keys
- Alphanumeric keys
- Numeric keys
- Cursor keys

Function keys

The function keys are arranged in a double row below the display.

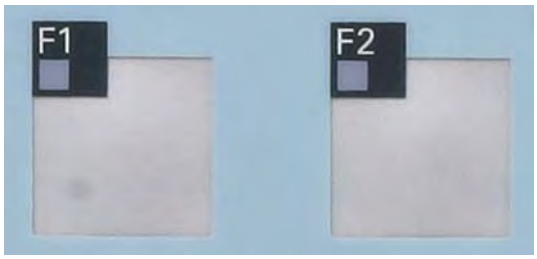


Figure 10-2 Function keys with LEDs, taking the 15" control unit as an example

Softkeys

The softkeys are arranged on the left and the right of the display.

Figure 10-3 Softkeys with LEDs, taking the 15" control unit as an example

Control keys

The control keys activate editing functions and control functions in different applications:

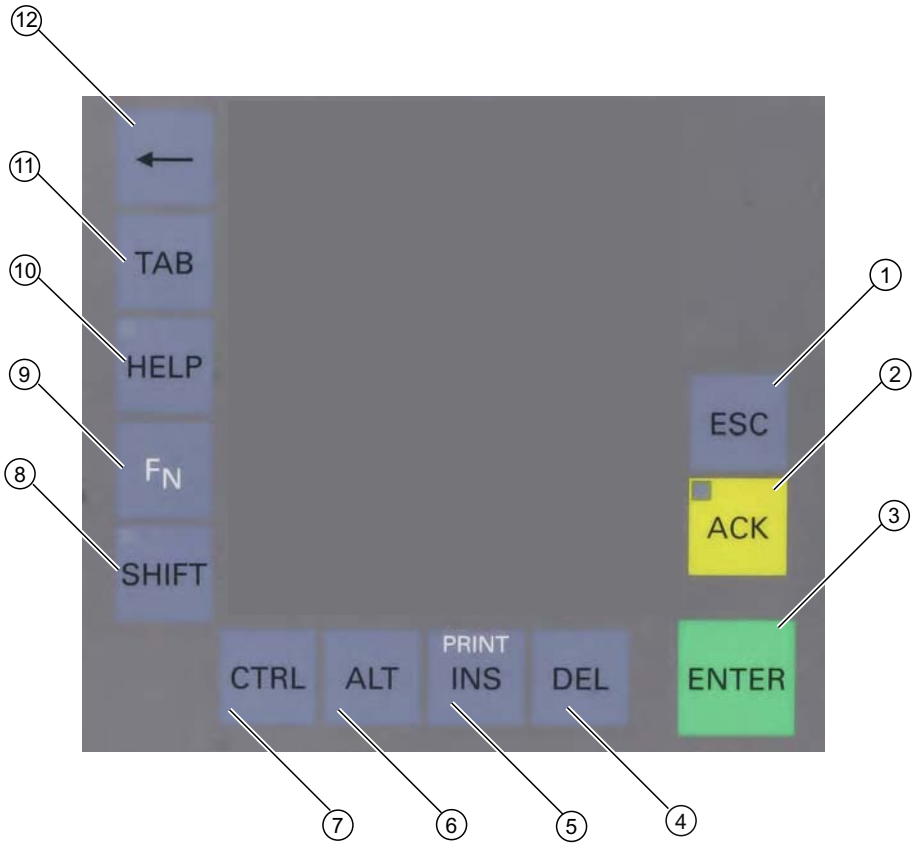


Figure 10-4 Control keys, taking the 15" control unit as an example

(1) Cancel
(2) Acknowledge
(3) Enter
(4) Delete
(5) Insert/Print screen (in combination with F_N)
(6) Application-specific functions and special key codes, compare keyboard table in the appendix
(7) Application-specific functions and special key codes, compare keyboard table in the appendix
(8) Toggling between lower-case letters and upper-case letters
(9) Function key
(10) Call Help
(11) Tabulator
(12) Backspace

Alphanumeric keys

Enter letters, special characters, blank spaces and underline using the alphanumeric keys.

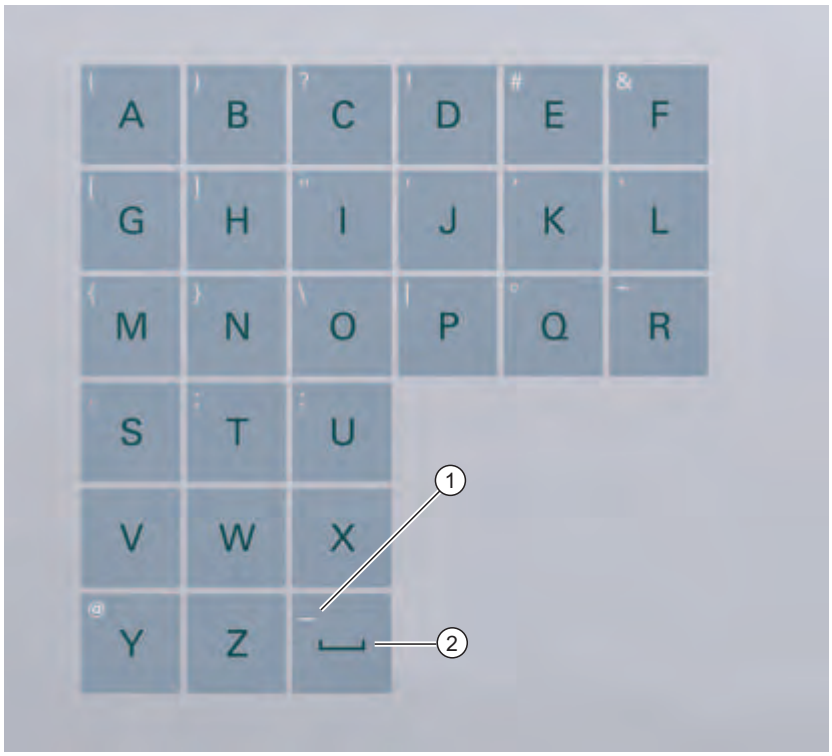


Figure 10-5 Alphanumeric keys

(1) Underline
(2) space character

Toggling between lower-case and upper-case letters

Enter the lower-case letters using the pre-defined assignment of the alphanumeric keys. To enter an upper-case letter, proceed as follows:

1. Hold down the <Shift> key.
2. Activate the desired alphanumeric key at the same time. The displayed upper case letter will be entered.
3. To enter lower case letters, release the <Shift> key.
4. You can, however, also activate the Caps Lock function using the F_N and Shift keys. The LED on the Shift key is then also lit.

Numeric keys

Enter the numerals "0" to "9" and special characters, e.g. the decimal point, using the pre-defined assignment of the numeric keys.

Figure 10-6 Numeric keys

Enter special characters, arithmetic signs and signs

Special characters, arithmetic signs and signs are also assigned to most of the alphanumeric and numeric keys. These signs are indicated by white symbols on the top left of the keys. To enter such a sign, proceed as follows:

1. Hold down the <FN> key.
2. Activate the desired alphanumeric or numeric key at the same time. The displayed special character, arithmetic sign or signs will be entered.
3. To enter the signs of the pre-defined assignment again, release the <FN> key.

Cursor keys

Navigate, scroll or move the writing mark using the cursor keys. The cursor keys correspond to the usual keys of the PC keyboard.

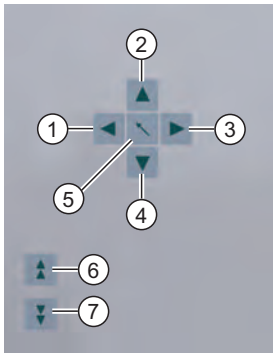


Figure 10-7 Cursor keys

(1) <Left> key
(2) <Up> key
(3) <Right> key
(4) <Down> key
(5) Position 1 key (Home)
(6) <Page up> key
(7) <Page down> key

External keyboards

The keyboard layout has been set to "English/USA international." If you use a keyboard with a layout other than the "English/USA international" layout, the key codes of the internal and external keyboards might no longer correspond.

Notice

Maloperation

If you activate several keys simultaneously, a malfunction on the device cannot be excluded. Activate function keys and softkeys only in sequence!

Notice

Malfunctions of the user software

For security reasons, always use "Security features" of the KeyTools. If you deactivate it nevertheless, serious malfunctions of the user software may occur when the additional function keys and softkeys F13 to S16 are used or if own key code tables are used.

Notice

Risk of damage

Activating a key using a hard or pointed object, e.g. a screwdriver, reduces the life of the key or can damage it.

10.3.3 Using the direct control key module

The direct control key module is a module that is intended for use with the SIMATIC Panel PC 677 (exclusively for variants with an integral membrane keyboard). Digital events can be assigned to the function keys and softkeys (F1-F20 and S1-S16) of the membrane keyboard via this module. This means that a digital input of a PLC can be activated at the press of a key over PROFIBUS. The module is implemented as a PROFIBUS DP slave.

Functionality

The direct control key module is used to expand the functional scope of the SIMATIC Panel PC 677 with the following features:

- Up to 32 function keys/softkeys on the membrane keyboard of the Panel PC can be scanned over PROFIBUS as direct keys.
- Up to 16 additional keys from an external operator panel can be connected if required.
- There are 16 digital outputs for activating checkback signal lamps (by the PLC over PROFIBUS DP) in external operator panels.

All direct control keys can be scanned over PROFIBUS DP from the PLC.

Software control

At the Panel PC end, the direct control keys are programmed using the "Key pad" software tool. The codes for all keys of the Panel PC 677 can be changed using this tool. Furthermore, direct key functions can be assigned to all function and control keys. As of start of delivery, the Key-Pad software is supplied on diskette with the direct control key module and on the Documentation and Drivers CD with all Panel PC 677.

Assembly

The direct control key module can be ordered separately from the Panel PC. It can be retrofitted in the immediate vicinity of the Panel PC: Either on a standard mounting rail (the mounting equipment required is included in the package with the direct control key module) or directly using 4 screws on a wall /front panel / control panel. Detailed mounting instructions are included with every direct control key module on paper and with every Panel PC 677 on the "Documentation & Drivers" CD.

Example:

The keyboard codes, that are sent when any key is operated, are stored in a code table. The initial status of the table is as follows:

Table 10-1 Keyboard codes

Keys:	Keyboard code:
All standard PC keys	"English international"
Additional keys for Panel PC 677	
F13 - F20	SHIFT+F1 - SHIFT+F8
S1 - S4	SHIFT+F9 - SHIFT+F12
S5 - S16	CTRL+F1 - CTRL+F12

This default setting for additional function keys corresponds to the specifications required for using the keys (for example, from the HMI software package SIMATIC WinCC flexible).

Changing the defaults

The program "KeyPad.exe" can be used to assign each key individually with special key codes.

The following example shows the layout of the 15" Panel PC keyboard variant after starting the relevant program for the device "keypads15.exe":

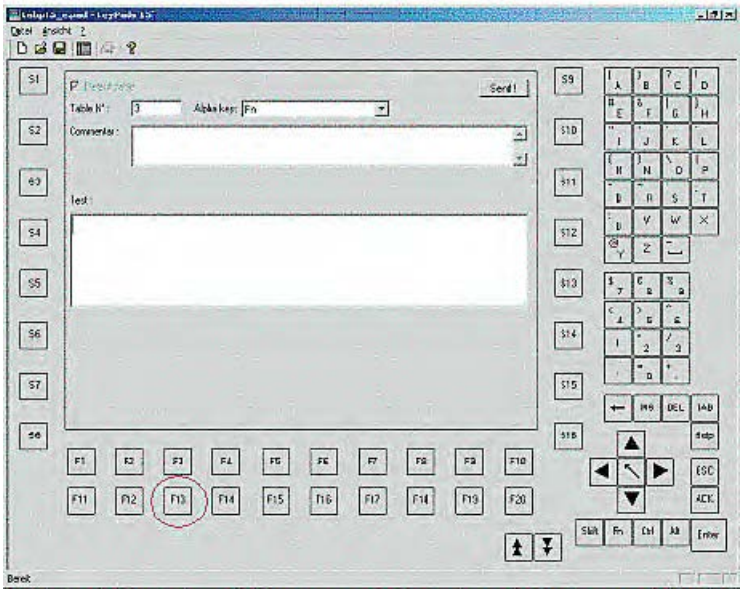


Figure 10-8 KeyPad

The individual key fields can be clicked to open a configuration form for the respective key. In the example, the form for standard assignment of the F13 key is shown:

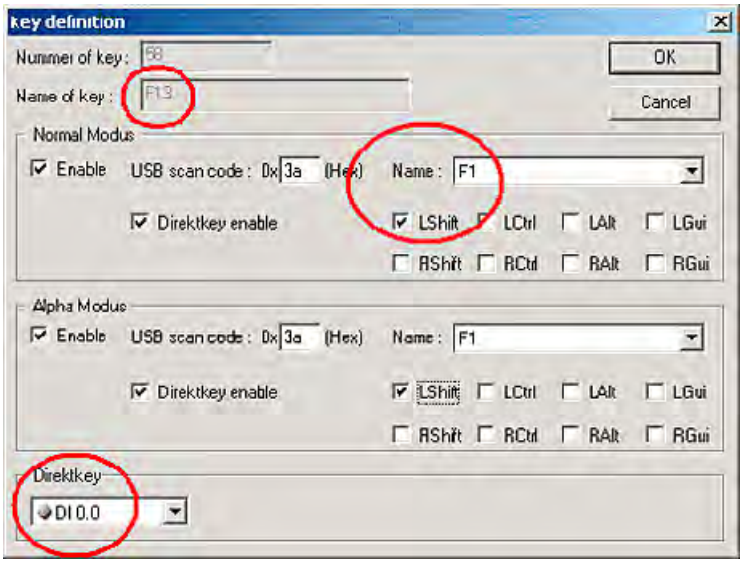


Figure 10-9 Standard assignment of the F13 key

Explanation:

The key labelled **F13** outputs the key code **LSHIFT+F1** and sets digital input DI 0.0 when the direct key module is used.

For further information about using the tool, visit the Internet page http://www.siemens.com/asis. Search here under "Download" using the term "Keypad".

The self-unpacking file F_KEY_Total.exe contains extensive information (description in English and German, examples) on using the additional function keys of the Panel PC 677.

10.3.4 Labelling function keys and softkeys

Area of application

This section applies only to control units with key panels.

Introduction

The control unit has two horizontal and two vertical keypads Assign user specific functions to the keys as needed. Label the keys with labelling strips from the options.

DIN A4 film is available for the production and insertion of the labeling strips, as described in chapter 3 "Description".

Warning

Labeling

Label the function keys and softkeys to conform with the project. Labeling without reference to a project leads to incorrect operations on the system to be observed.

Procedure

1. Label the DIN A4 film with a laser printer, for example, using the print format templates for MS Word on the Documentation and Drivers CD.
2. Cut the labeling strips along the pre-printed lines.

Note

Do not insert handwritten labeling strips until the ink has dried.

3. Insert the labeling strips into the slots provided on the rear side of the control unit.

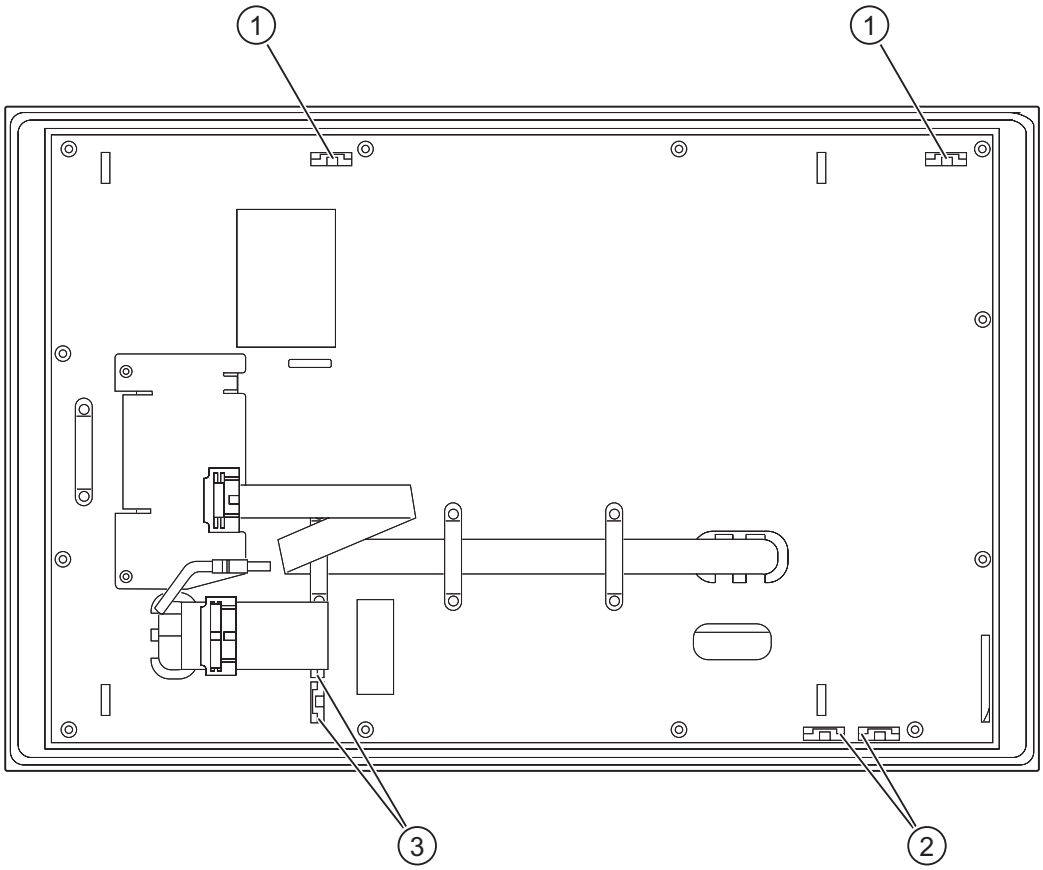


Figure 10-10 Rear side of the control unit with connections and slots for the labeling strips for the example of a 12" touch panel front.

1 Slots for long labeling strips, vertical keypads
2 Slots for short labeling strips, horizontal keypads
3 Slots for labeling strips, horizontal keypads

10.3.5 Using the integrated mouse

The position on which you press the middle round button of the integrated mouse determines the direction in which the cursor moves. The amount of pressure determines the speed of the cursor.

Alternatively to using the integrated mouse you can also connect an external mouse to the front USB port.

Figure 10-11 Integrated mouse

10.4 Device with touch screen

The 12", 15" and 19" variants differ in their dimensions and the size of the display. The 12" and 19" variants do not have side drill hole covers.

The following figure is only an example using the front view of the 15" variant.

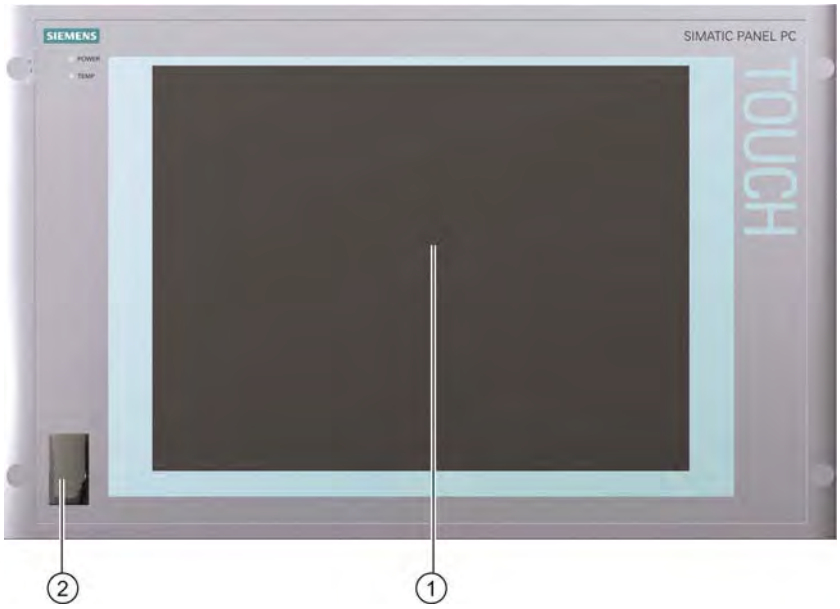


Figure 10-12 Example of a 15" touch screen front

(1) Display with touch screen
(2) USB interface (in some device variants, the front USB interface is not accessible)

10.4.1 Using the touch screen

On the display that is touch-sensitive due to the touch sensor, application-specific user interface elements, for example buttons, are displayed. When you tap the command button with your finger, the function assigned to the button is activated.

The following types of pressure are permissible:

- Using a plastic pen with a 1 mm radius at the point: 25 g.
- Using a silicone finger with a diameter of 1.6 cm: 50 g.

Caution

Only touch one point on the touch screen and not several points at one time. You may otherwise trigger unintended reactions.

Do not touch the screen in the following situations:

- During the booting process

- When plugging or unplugging USB components

- While Scandisk is running

Notice

Touching the touch screen with hard or pointed objects can damage the screen and thus impair its functionality. Only operate the touch screen with your fingers (even with gloves) or approved touch pens.

10.5 Transferring authorizations

Note

The device has no floppy disk drive. Therefore, where necessary, transfer the authorizations for SIMATIC HMI software from a USB floppy disk drive.

The following devices have been tested:

SINUMERIK FLOPPY DISK DRIVE, order number 6FC5235-0AA05-1AA2

Caution

The USB floppy disk drive is only suitable when mounted in a switchgear cabinet.

Functions

11

11.1 Overview

The following individual functions are implemented:

- Temperature monitoring and over/under temperature indication
- Watchdog
- Fan monitoring

Messages can be output from the monitoring modules to the applications.

The SOM software (Safecard On Motherboard) and DiagMonitor software are provided on the devices for this.

The "DiagMonitor Software" CD contains the monitoring software, the software for the stations to be monitored, and a library for creating user-specific applications. The DiagMonitor software can be ordered as an accessory with a separate order number.

The description of the driver and the SOM program are available on the "Documentation and Drivers" CD.

11.2 Safecard on Motherboard (SOM)

The "Safecard On Motherboard" software is available on the "Documentation and Drivers" CD. Before this software is installed, previously installed DiagMonitor software must be deinstalled.

This application is used to monitor PC hardware (temperature, watchdog and fans) and to display the current measured values. A GUI is used to configure the application and also to activate the temperature monitoring watchdog function and fan monitoring function.

Your device is equipped with three temperature sensors, which are automatically detected by the application.

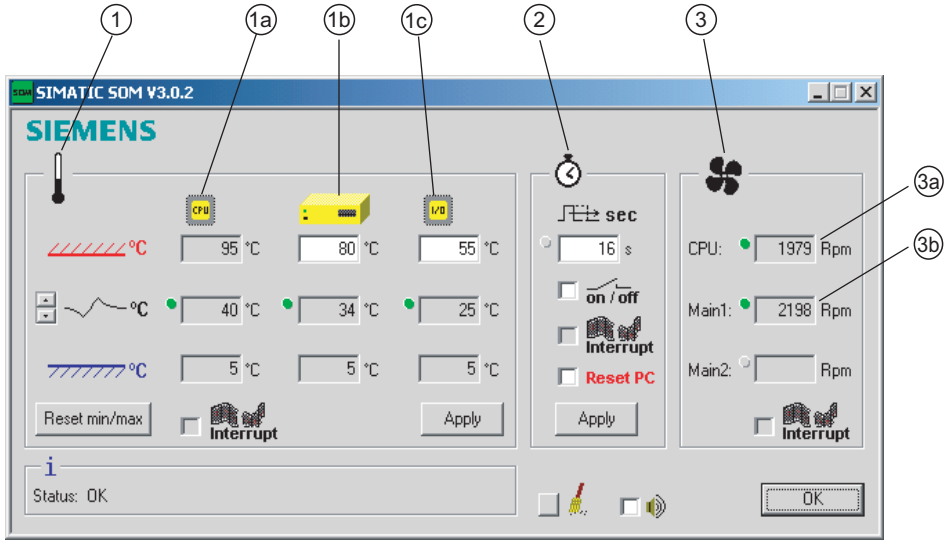


Figure 11-1 Safecard On Motherboard with three temperature sensors

(1)	Temperature range	Here the current temperature and limit values are shown. You can toggle the temperature display mode to indicate either the current temperature, or the min./max. values measured since the start of the application.	
		(1a)	Internal processor temperature
		(1b)	Device temperature beneath the power supply: upper threshold can be set from 30°C to 80°C
		(1c)	Cooling air temperature surrounding the DVI connector: - depending on device 3°C to 5°C higher than the ambient temperature - upper threshold can be set from 25°C to 55°C
(2)	Watchdog range	Here, you can configure the watchdog function in your monitoring application. You can specify the watchdog time, activate a PC reset and activate / deactivate the watchdog.	
(3)	Fan area	You can read the current fan speed in this area.	
		(3a)	Fan speed in the area close to the processor
		(3b)	Fan speed on the power supply

The description of the drivers and SOM software for Windows is available on the "Documentation and Drivers" CD under **Drivers/Tools >Tools>PPC877.**

From the CD, run **Install.bat** and follow the instructions on your screen.

11.3 Temperature monitoring

Temperature monitoring

The temperature is recorded by means of three thermocouples. One thermocouple monitors the processor temperature, another the temperature in the area near the power supply, and a third the air intake temperature next to the DVI interface.

When the temperature is out of the range of one of the three set temperature thresholds, the following error reactions are triggered:

Response	Option
Device and CPU fans accelerate to maximum speed.	None
SOM or DiagMonitor software is activated	None

The temperature error is retained until the temperatures have fallen below the thresholds and are reset by one of the following measures:

- Error acknowledgement in the SOM program (manually by means of the broom icon)
- Restart of the device.

Notice

When an error occurs, the "TEMP" LED also illuminates with the status indicators.

11.4 Watchdog (WD)

Function

The watchdog monitors the program execution and reports a program crash to the user by means of various reactions.

The watchdog is idle when the PC is switched on or after a HW-RESET(cold restart), i.e., no reaction of the WD is triggered.

WD reactions

If the WD is not triggered again within the set time (by driver or SOM program), the following reactions are initiated:

Response	Option
WD acknowledgement	None
Trigger a PC reset	Configurable
SOM or DiagMonitor software is activated	None

WD monitor times (TWD)

The TWD are adjustable in increments of one second in a range from 3 to 255 seconds.

Note

If the watchdog time is changed after the watchdog was enabled (i.e., while the watchdog is running), the watchdog is retriggered!

11.5 Fan monitoring

The function monitors operation of the enclosure and power supply fans. When a fan fails, the following reactions are triggered:

Response	Option
SOM or DiagMonitor software is activated	None

The temperature error is retained until the cause of the fan failure has been rectified and the error is reset in one of the following ways:

- Acknowledgement of the error message by means of the SOM program
- Restart of the device

Maintenance and service

12

12.1 Servicing

Scope of maintenance

When working in areas where there is dust that may be hazardous to functionality, the device must be operated in a control cabinet with a heat exchanger or with suitable supply air.

Note

Dust deposits must be removed at regular intervals.

Maximum dust content in the air circulating in the cabinet	
Suspended component	0.2 mg/m^3
Deposits	1.5 mg/m^3/h

Cleaning agents

Use dish soap or foaming screen cleaner only as cleaning agents.

Caution

Do not clean the device with aggresive solvents or scrubbing agents or with pressurized air or steam cleaner.

Chemical stability

Caution

Adhere to the information regarding chemical resistance of the panel front. Please go to http://www.siemens.com/asis under "Tools & Downloads" for more information. Enter the article ID 16532108 as the search term. The available articles are displayed.

Procedure for cleaning the device

1. Switch off the device. This prevents the accidental triggering of functions when the screen is touched.
2. Dampen the cleaning cloth.
3. Spray the cleaning agent on the cloth and not directly on the device.
4. Clean the device with the cleaning cloth.

12.2 Maintenance and care of devices with stainless steel front

Scope of maintenance

The device is designed for low-maintenance operation. You should nonetheless clean the screen and the control panel at regular intervals. These measures and proper handling of the device increase the useful life of the front membrane and of the stainless steel front panel.

General information on cleaning

Caution

Do not clean the device using aggressive cleaners or detergents, greasing or abrasive detergents, concentrated acids or caustic solutions, leather, scratching or rough rags and equipment. For further information, refer to the section "Chemical resistance."

Do not clean the device with chlorine or chloride, for example, active chlorine, with laser or ultrasonic equipment, or with cardice.

You damage the control panel if you clean it with high pressure equipment. Do not clean the device thermally, for example, using hot steam equipment, because this would inevitably damage the control panel and, in particular, the touch sensor system.

The front panel is protected in accordance with the degree of protection against the ingress of water which is directed towards the device at a defined jet force.

Observe the permitted ambient temperatures. For additional information, refer to the chapters:

- *Application planning*, Section *Mounting positions and fastening*
- *Technical data*, Section *General technical data* and *Permissible temperature ranges depending on the type of installation*

Cleaning the front membrane

Clean the front membrane using the equipment described below:

- Soft, non-abrasive window wipers or a soft, clean rag
- Rubber window wipers
- Liquid glass cleaners
- Kitchen or household paper

For further information, refer to the section *Chemical resistance of stainless steel fronts*.

Cleaning the stainless steel front

For information, refer to the section "Handling of stainless steel surfaces."

Procedure

Warning

Always switch off the device before you clean it, or set it to a defined state, for example, by activating a cleaning screen. This avoids the risk of triggering unwanted functions when you touch the screen or when a water jet contacts the screen.

Caution

Do not rub off the front membrane in dry state.

Always avoid the return of food stuff splashes to the production process.

Follow the general cleaning guidelines.

5. Switch off the device. When the system is in operation, you can also activate a cleaning screen on the touch screen.
6. Always dilute glass cleaners with water before you apply these. Use clean water.
7. Use a window wiper or a cloth to wipe off the front membrane. Work from top to bottom. Rinse off the dirt particles when doing so.
8. Rinse the window wiper or cloth several times.
9. Clean the edges with a cloth or household paper.
10. Moisten the front membrane once again.
11. Strip off the moisture with the window wiper, working from top to bottom and without leaving any streaks. After each pass, wipe off the window wiper with soft household paper. Wipe off any water accumulating on the bottom edge of the front membrane using soft household paper.
12. Wipe off the edges using household paper.
13. Clean the stainless steel surface with a neutral, alkaline cleaner or, if necessary, with a caustic cleaner which does not contain active chlorine. For further information, refer to the section *Handling of stainless steel surfaces*.

12.3 Chemical resistance of stainless steel fronts

Front membrane

The resistance of the front membrane to various chemicals was tested to DIN 42 115, section 2. The front membrane is resistant to the chemicals listed below:

- Alcohol
- Diluted acids
- Diluted caustic solutions
- Ester
- Hydrocarbons
- Household cleaners

12.4 Handling of stainless steel surfaces

Resistance

Information on the resistance of stainless steel:

- The stainless steel surface is not fully resistant against the chemicals listed below:
  - Hydrochloric acid
  - Sulphuric acid
  - Caustic soda
  - Chlorine
  - Chloride

Do not clean the stainless steel surface with these chemicals or with similar acids or caustic solutions.

- Acid steam develops, for example, when tiles are cleaned with hydrochloric acid, and is also harmful to the stainless steel. If the stainless steel parts are unintentionally contaminated with hydrochloric acid, rinse these off immediately with plenty of water.
- Clean the stainless steel surface with a neutral, alkaline cleaner or, if necessary, with a caustic cleaner which does not contain active chlorine.

Cleaning guidelines

Further information on stainless steel surfaces:

- The surface should be properly ventilated.
- Keep the surface clean. Remove cleaners and food residue immediately. Always avoid the return of food stuff splashes to the production process.
- If mechanical cleaning is necessary, do not use cleaning equipment made of metal.
  - Use brushes made of plastic or natural materials, or a microfiber pad.
  - Use plenty of water to clean the surface.
  - Remove cleaners without leaving any residue, including corners and confined areas.
- Make sure surface is not damaged: Do not damage the device during operation, or by cleaning or repairing it using hard tools, in particular tools made of corrosive materials.
- Avoid an contact of the surface with corrosive parts: Auxiliary rust of water lines, file chips, residue of wire brushes or steel wool and rust films have a corrosive effect on parts made of stainless steel.
  - Remove any stains or auxiliary rust immediately.
  - Remove new rust spots with a mild abrasive detergent in order to prevent any further corrosion.
  - Rinse the part thoroughly after you cleaned it.

12.5 Spare parts

The device has the following replacement parts:

Replacement part	Order No.
Key panel 12"-TFT 15"-TFT Touch panel 12"-TFT 15"-TFT 19"-TFT	 6AV7672-1AB00-0AA0 6AV7672-1AD00-0AA0 6AV7672-1AA00-0AA0 6AV7672-1AC00-0AA0 6AV7672-1AE00-0AA0
Key front, without front USB interface*) 12" TFT 15" TFT Touch front, without front USB interface*) 12" TFT 15" TFT 19" TFT	 6AV7672-1AB10-0AA0 6AV7672-1AD10-0AA0 6AV7672-1AA10-0AA0 6AV7672-1AC10-0AA0 6AV7672-1AE10-0AA0
Set of clamps	6FC5248-0AF06-0AA0
Plastic cap USB interface	A5E00378392
Lithium battery	A5E00331143

*) For more information, please refer to the chapter "Description."

Use only Siemens spare parts or spare parts released by Siemens, otherwise the warranty, CE declaration of conformity and UL approval will be invalidated.

12.6 Separating the control unit from the computer unit

Introduction

The control unit is separated from the computer unit to carry out repairs or to replace the control unit, for example.

Procedure

1. Disconnect the device from mains
2. Open the switchgear cabinet. The device is now accessible from the back
3. To swing away the computer unit (1): Loosen the four captive knurled screws (2) which attach the computer unit to the rear of the control unit (3)

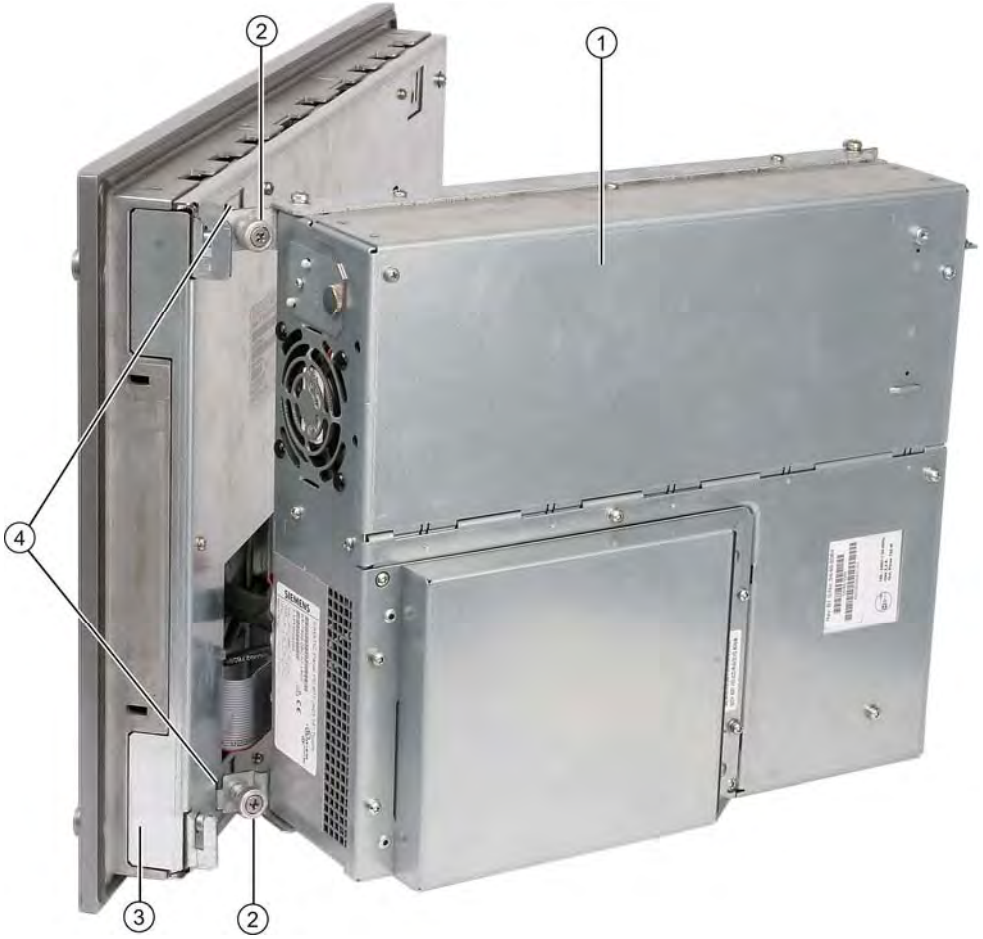


Figure 12-1 Separating the control unit from the computer unit

4. Swing the computer unit (1) away. The connectors on the back of the control unit (3) are now accessible.
5. Loosen cables K1 to Kx and the USB cable between the computer unit and the control unit

6. Two mounting rails are screwed onto the computer unit whose angled ends (4) are located in the corresponding recesses in the computer unit. Lift the computer unit vertically out of these recesses
7. Put the computer unit down carefully
8. Where necessary, also remove the control unit depending on its design: Secure the control unit against falling out and unscrew it. Or remove the clamps which secure the control unit to the installation wall, as shown in the mounting cut-out in the dimension diagram.

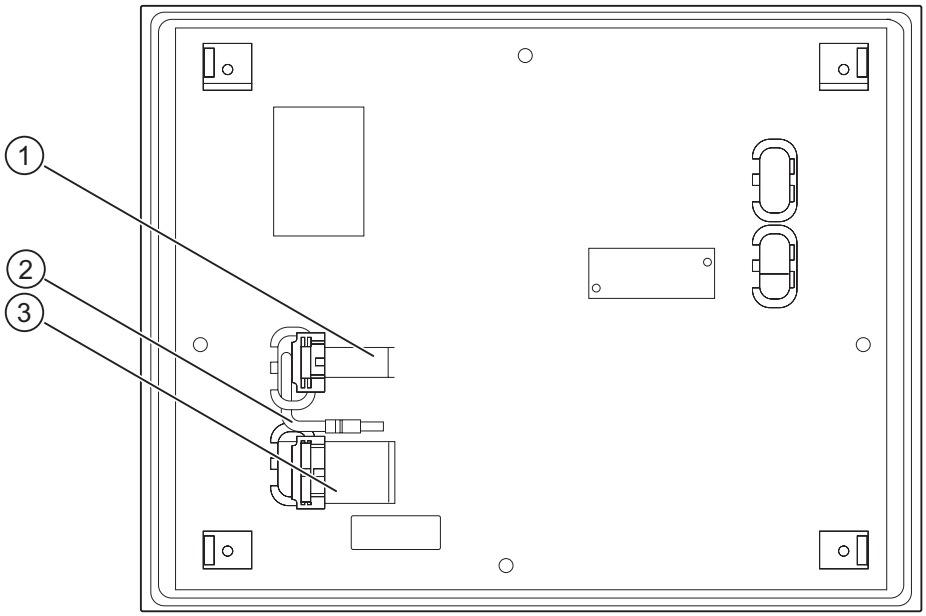


Figure 12-2 Other interfaces on the computer unit

1 Display cable K2 and display cable K3 *)
2 USB cable
3 IO/USB cable K1

*) Only for 19" touch panel fronts.

Separating the device in an uninstalled state

As an alternative, dismount the device completely and separate the control unit and computer unit from one another in an uninstalled state. So that the processing unit, which is swung away from the control unit, does not bend the lugs (4), place a surface under the processing unit.

Mounting operator control unit on computer unit

To mount the operator control unit on the computer unit, perform the steps in reverse:

Caution

When you swing the control unit and processing unit together, make sure that the flatband cables are correctly folded together and do not get squished.

In order to do this, fold the flatband cables gently with specific spacing, as shown. The bend dimensions are specified in the following table. The USB cable does not have to be folded because it is stored as a loop in the computer unit.

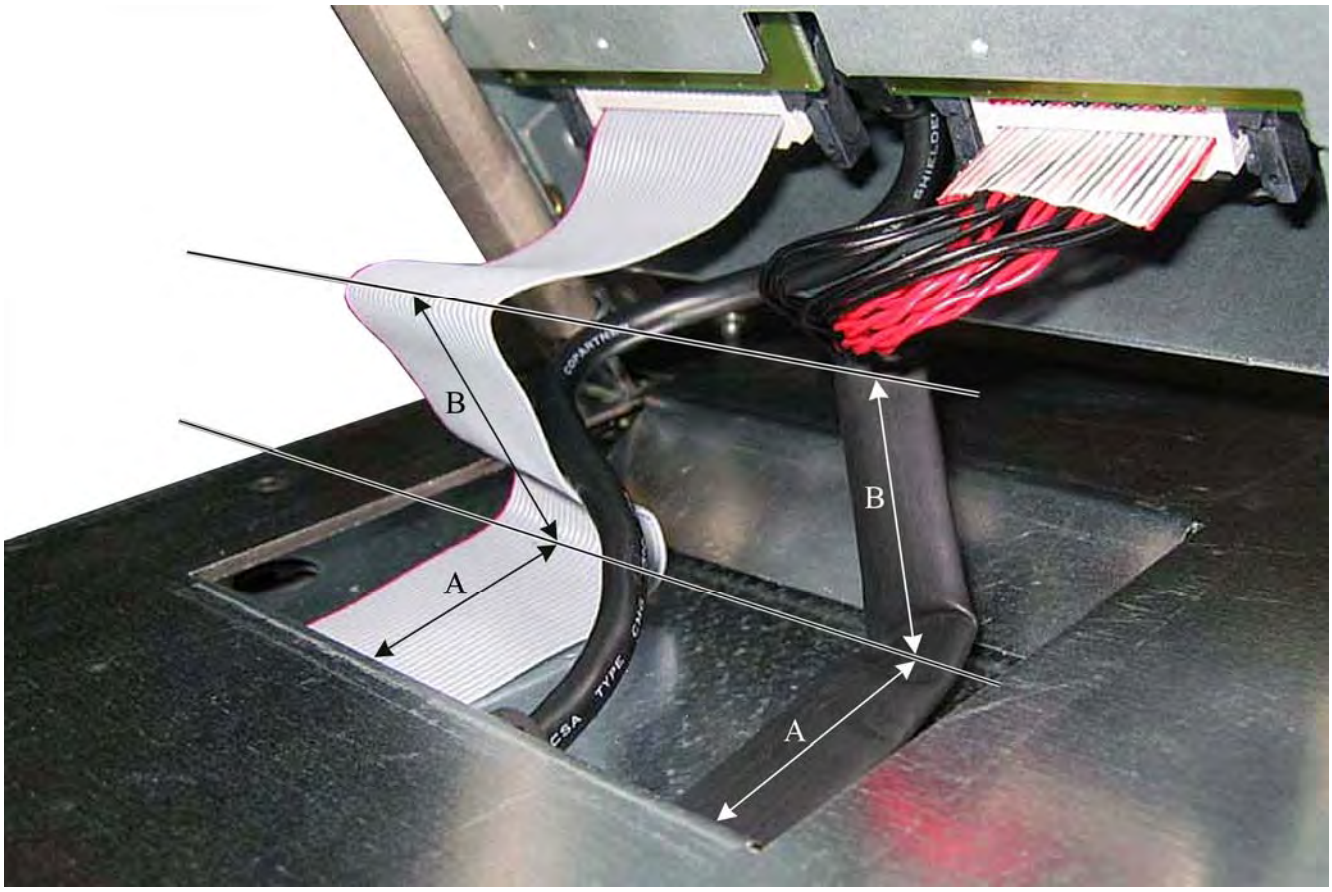


Figure 12-3 Separate the control unit from the computer unit, example regarding folding cables

Position	Bend dimension
A	4.5 cm
B	4 cm

12.7 Removing and installing hardware components

12.7.1 Repairs

Notice

Similar to figure

The images presented below deviate slightly from the actual device in some respects.

Carrying out repairs

Only authorized personnel are permitted to repair the device.

Warning

Unauthorized opening and improper repairs on the device may result in substantial damage to equipment or endanger the user.

- Before you open the device, always disconnect the power plug.
- Install only system upgrades designated for this computer and released by SIEMENS. All technical data and licenses apply only to upgrades approved by SIEMENS. Installation of unsuitable components violates the regulations for UL approval and EMC. Impermissible expansions can damage the system. Contact your technical support team or your sales outlet to find out which system upgrades are suitable for installation.

If you install or exchange system expansions that damage your device, or if you use unsuitable components, the warranty becomes void.

Notice

Note the ESD instructions.

Limitation of Liability

No liability can be accepted for impairment of functions caused by the use of third-party devices or components.

Tools

You can perform all installation tasks on the device using Torx T6, Torx T10, and Torx T20 screwdrivers and a Philips screwdriver.

12.7.2 Open the device

Caution

Work on the open device may only be carried out by authorized and qualified personnel. Within the warranty time, you are only allowed to install expansions for memory and expansion card modules.

Caution

The device contains electronic components which may be destroyed by electrostatic charge.

You therefore need to take precautionary measures before you open the device. Refer to the (ESD) directives for handling components which are sensitive to electrostatic charge.

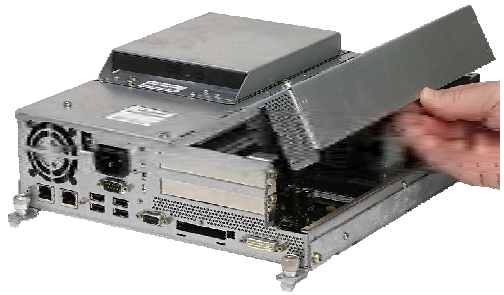
Tools

All mechanical installation tasks on the device can be carried out with Torx T6, T10 and T25 screwdrivers.

Preparation

Disconnect the device from mains.

Open the device

Steps for opening the device		
1	Remove the two screws (1)	
2	Swing the cover up and remove it	

12.7.3 Removing/Installing Memory Module

Memory expansion options

The motherboard is equipped with 2 slots for memory modules. For 184-pin DDR2 RAM chips, unbuffered, no ECC. This allows you to expand the memory capacity of your PC to a maximum of 2 GB. One or two modules can be installed.

Combination	Slot X1	Slot X2	Maximum expansion
1	256 MB/512 MB/1 GB		1 GB
2	256 MB/512 MB/1 GB	256 MB/512 MB/1 GB	2 GB

Note

Any module can be plugged into any slot.

Preparation

Disconnect the device from mains and unplug all cables.

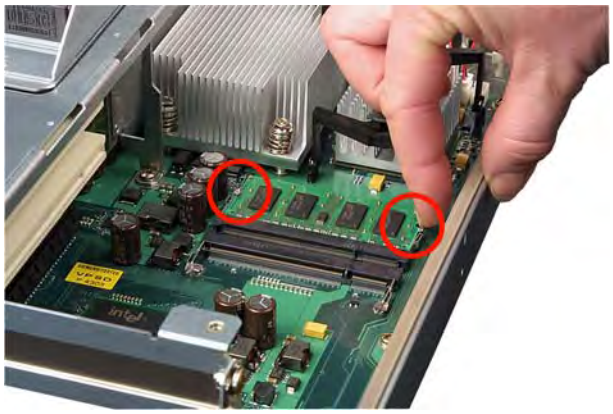
Caution

The electronic components on the PCBS are highly sensitive to electrostatic discharge. It is therefore vital to take precautionary measures when handling these components. Refer to the directives for handling electrostatic sensitive components.

Installing a memory module

How to install a memory module		
1	Open the device	
2	Note where the (polarized) cutout is on the pin side of the RAM chip before inserting it	
3	Push the module carefully into the slot until the interlocks engage	
4	Close the device.	

Removing a memory module

How to remove a memory module		
1	Open the device	
2	Open the left and right interlocks	
3	Pull the memory module out of the slot	
4	Close the device.	

Display of the current memory configuration

A new memory module is automatically detected. The allocation of the ”base memory and extended memory” is automatically displayed when you switch on the device.

12.7.4 PCI cards

12.7.4.1 Notes on the modules

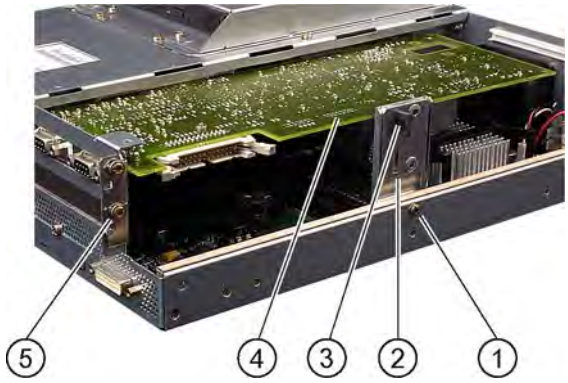
The device is designed for use with modules conforming to PCI specifications V 2.2. PCI modules with 5 V and 3.3 V supply voltage can be operated. The permitted dimensions of the modules are found in the dimensional drawings section.

12.7.4.2 Installing / removing expansion modules

Preparation

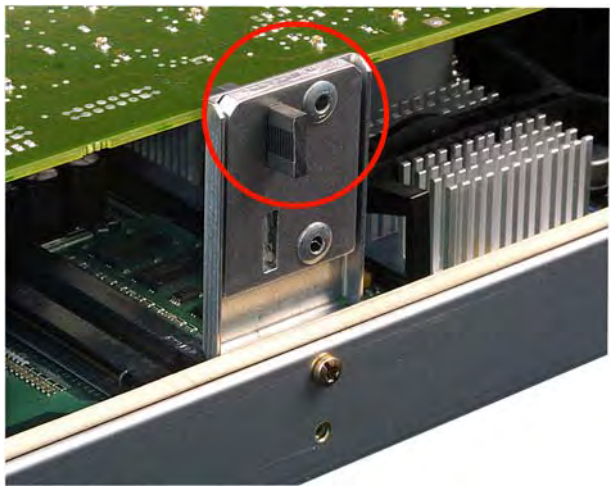
Disconnect the device from mains.

Installing expansion modules

How to install an expansion module (PCI):		
1	Open the device.	
2	Remove 1 fastening screw (1) and lift out the module bracket (2)	
3	Remove the relevant steel slot cover (5).	
4	Insert expansion module (4) into the slot provided. With long PCI modules, please observe the guide rail	
5	Install the module bracket and insert the slider (3)	
6	Screw down the steel slot cover (5) for the expansion module.	
7	Close the device.	

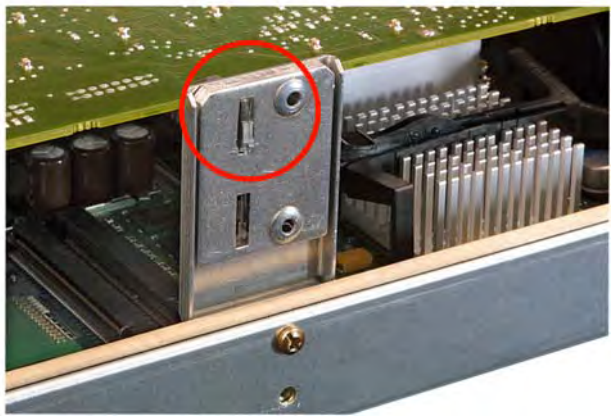
Inserting the slider

To insert the slider:

How to install a slider		
1	Push the slider through the guide slot until it is seated firmly on the module. Insert the module into the slot	

Caution

Do not apply any pressure on the module Therefore, do not apply excessive force to the slider when you push it onto the module.

2	Cut off the rest of the slider: Use a knife to notch the slider at the upper edge of the bracket and then break this section off. Cut off the residual element using a side cutter.	

Notes on the Allocation of Resources

The two slots for the PCI cards each have an exclusive interrupt. Information on the assignment of PCI IRQs to the PCI slots is available in the "Advanced Menu" section of the chapter "Detailed Descriptions/BIOS Setup" and in the chapter "Detailed Descriptions/Bus Board".

12.7.5 Drives

12.7.5.1 Options of installing disk drives

Drive bay module for hard disk drives and optical drives

DVD-ROM/CD-RW drive bay	Pos	Description
	(1)	DVD-ROM/CD-RW drive bay
	(2)	Mounting slot for DVD-ROM or DVD-ROM/CD-RW drive

Hard disk drive bay for one 3.5" drive	Pos	Description
	(1)	Hard disk drive bay for one 3.5" drive
	(2)	Mounting slot for a 3.5" hard disk drive bay

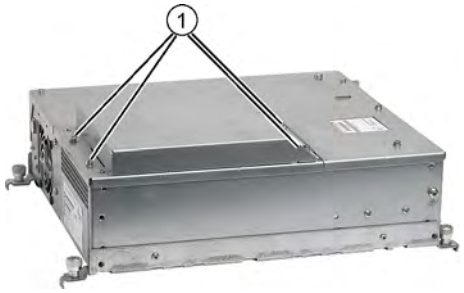
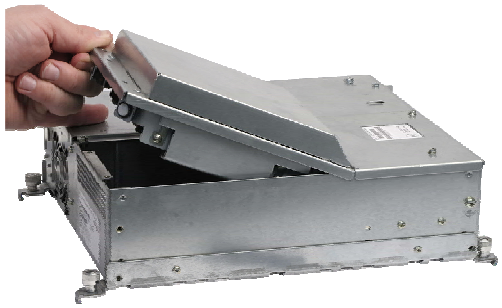
Drive bays for 2.5" hard disks	Pos	Description
	(1)	Hard disk drive bay for two 2.5" hard disks
	(2)	Two mounting slots for 2.5" hard disks

12.7.5.2 Installing/removing a drive bay module

Preparations

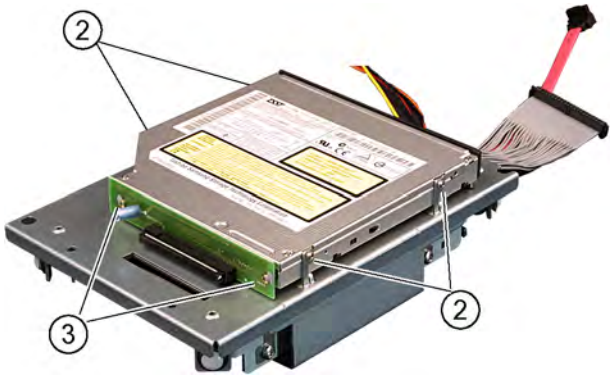
Disconnect the device from mains and unplug all cables.

Removing a drive bay for hard disks / DVD/CD-RW

Steps for removing the drive bay		
1	Remove the four screws (1)	
2	Lift out the drive bay module for hard disks and DVD / CD-RW drives and set it down on the device	

12.7.5.3 Installing and removing DVD-ROM/CD-RW drives

Removing a DVD-ROM/CD-RW

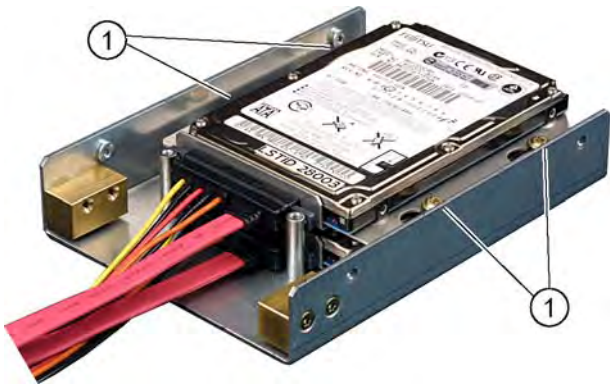
How to remove the DVD-ROM/CD-RW drive		
1	Remove the drive bay module.	
2	Remove the 2 screws (1) on the DVD-ROM/CD-RW drive bay	
3	Remove the 3 fastening screws (2) of the drive	
4	Remove the 2 screws (3) of the adapter board	
5	Pull out the adapter board	
6	Lift out the drive	

Required tools

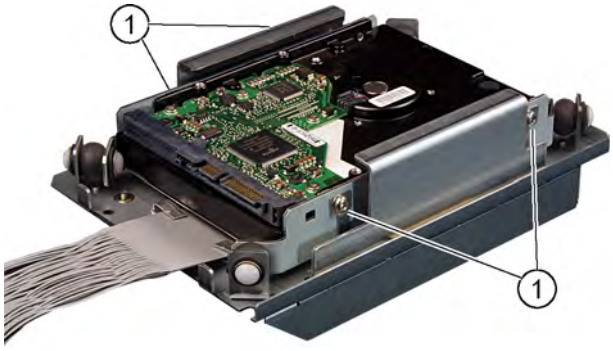
You need a Torx 6 screwdriver to remove the the DVD-ROM/CD-RW drive.

12.7.5.4 Installing / removing hard disks

Removing 2.5" drives

How to remove 2.5" drives		
1	Remove the drive bay module.	
2	Unscrew the four screws of the drive (1)	
3	Remove the hard disk drive and the steel mounting bracket from the bay	
4	Disconnect the cable and the power supply adapter from the drive	

Removing a 3.5" drive

How to remove a 3.5" drive		
1	Remove the drive bay module.	
2	Disconnect the power supply and the data cable from the drive	
3	Remove the 4 screws (1) of the drive	
4	Take the drive out of the bay	

Note

Note that special screws with inch threads (6-32 x 3/16" St G3E) are used!

12.7.6 Installing/removing a Compact Flash card

Memory expansion options

The device features a card reader slot for Compact Flash cards (types I / II). We recommend Compact Flash cards for industrial application (industrial grade cards from the company SANDISK, for example). These have distinguished themselves with especially good data security, a long life and excellent data transmissions rates.

Notice

This slot is not hot-plug capable. The Compact Flash card must be installed before the PC is switched on and should only be removed when the device is switched off.

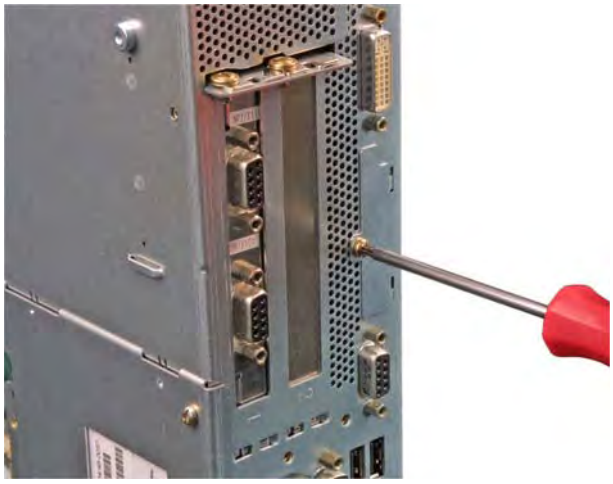
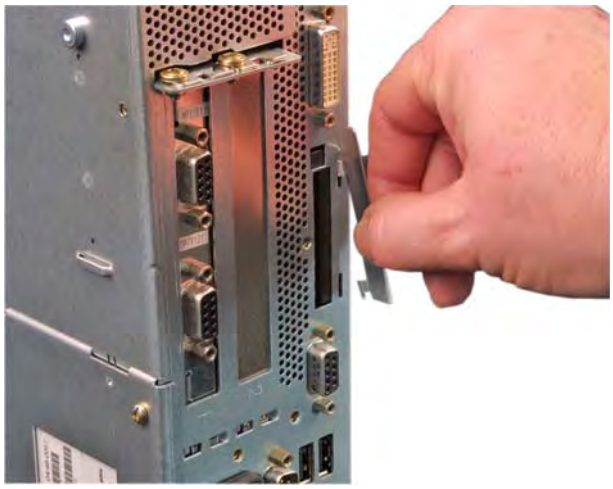
Preparation

Disconnect the PC from mains.

Caution

The electronic components on the PCBS are highly sensitive to electrostatic discharge. It is therefore vital to take precautionary measures when handling these components. Refer to the directives for handling electrostatic sensitive components.

Opening the board slot

Steps for installing a Compact Flash card		
1	Remove the screw	
2	Slide the cover of the board slot in the direction of the DVI connector and lift it up	

Installing a Compact Flash card

Steps for installing a Compact Flash card		
1	Open the board slot.	
2	Insert the Compact Flash card in the slot with the connector facing in until it locks into place	

Note

The Compact Flash slot is coded against reversed insertion. Insert the Compact Flash card so that its label side is facing the front panel of the PC.

Caution

If the Compact Flash card meets resistance, flip it over. Never insert the Compact Flash card with force.

3	Close the board slot again.

Removing a Compact Flash card

Steps for removing a Compact Flash card		
1	Opening the board slot	
2	Press the eject button, for example with the cover of the board slot, and remove the Compact Flash card	
3	Close the board slot again	

12.7.7 Replacing the backup battery

Note

Batteries are wearing parts and should be replaced every five years in order to ensure proper functioning of the PC.

To be noted before you replace the battery

Caution

Risk of damage!

The lithium battery may only be replaced with an identical battery or with a type recommended by the manufacturer (Order No.: A5E00331143).

Warning

Risk of explosion and release of harmful substances!

Therefore, do not throw Lithium batteries into an open fire, do not solder or open the cell body, do not short-circuit or reverse polarity, do not heat up above 100° C, dispose as regulated and protected against direct exposure to sunlight, humidity and dewing.

Disposal

Caution

Batteries must be disposed of in accordance with local regulations.

Preparation

Note

For the BIOS setting "Profile: Standard" the configuration data of the device is deleted when the battery is replaced.
For the BIOS setting "Profile: User" the configuration data of the device is retained; only the date and time has to be reconfigured.

9. Note down the current settings of the BIOS setup.
   A list in which you can note down your entries is found in the BIOS manual.
10. Disconnect the device from mains and unplug all cables.

Notice

The battery can also be exchanged when the device is operating. However, we recommend switching off the device, beforehand.

Replacing the battery

Procedure:

Steps for replacing the battery		
1	Opening the battery compartment	
2	Removing the battery holder	

Steps for replacing the battery		
3	Unplugging the cable	
4	Remove the old battery from the holder	
5	Place a new battery in the holder and reconnect the battery plug	
6	Close the battery compartment	

Reconfiguring the BIOS Setup

When a battery is exchanged, the configuration data of the device are lost and must be reentered in the BIOS setup.

12.7.8 Removing/Installing the Power Supply

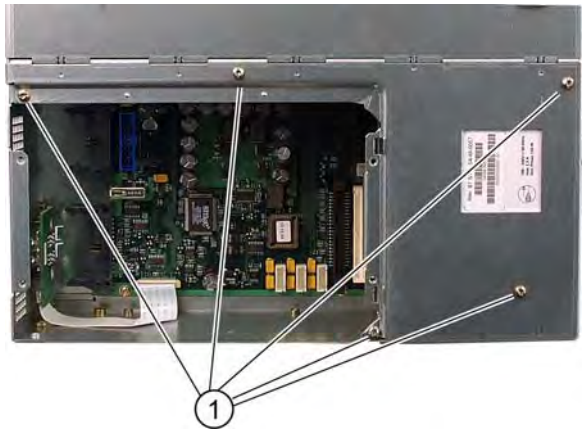
Warning

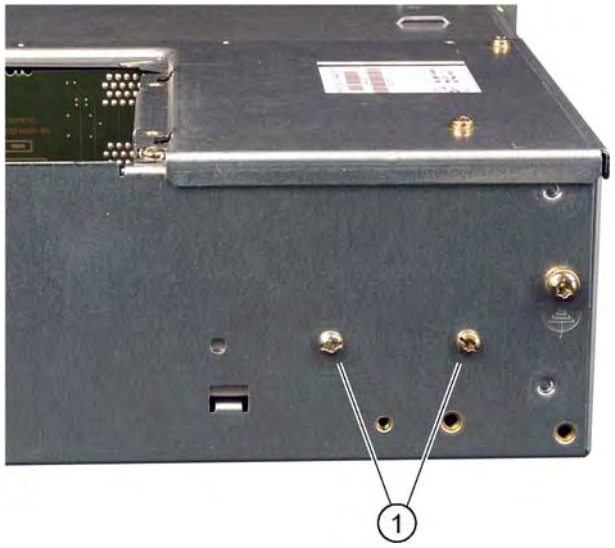
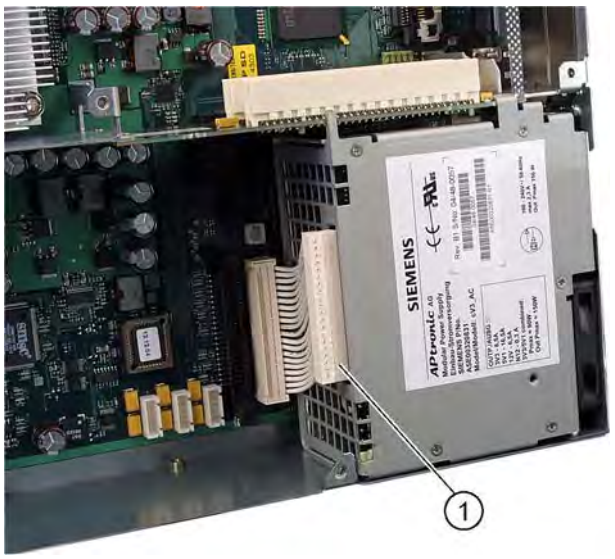
Only qualified personnel is authorized to exchange the power supply module.

Preparations

1. Disconnect the device from mains and unplug all cables from the device
2. Open the device

Removing the power supply module

How to remove the power supply module		
1	Remove the hard disk, DVD-ROM/CD-RW drive bay module	
2	Remove the 5 screws (1) and the cover of the power supply module	

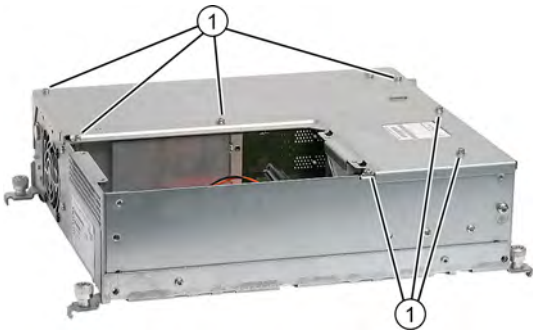
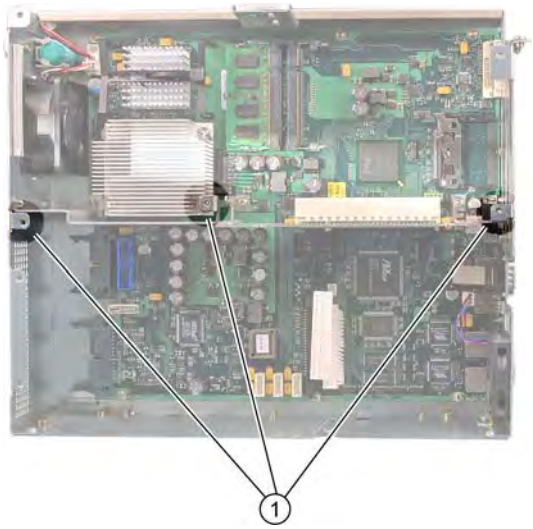
How to remove the power supply module		
3	Remove the 2 fastening screws (1) (Torx T10)	
4	Pull out the plug (1) from the power supply module	
5	Lift out the power supply module	

12.7.9 Installing / removing the bus board

Preparation

1. Disconnect the device from mains and unplug all cables.
2. Open the device.

Removing the bus board

How to remove the bus board		
1	Remove all modules from their slots	
2	Remove the drive bay module for hard disks and DVD-ROM/CD-RW	
3	Remove the power supply cover: Remove the seven screws (1)	
4	Remove the power supply module.	
5	Remove the 3 screws (1) on the bus board	

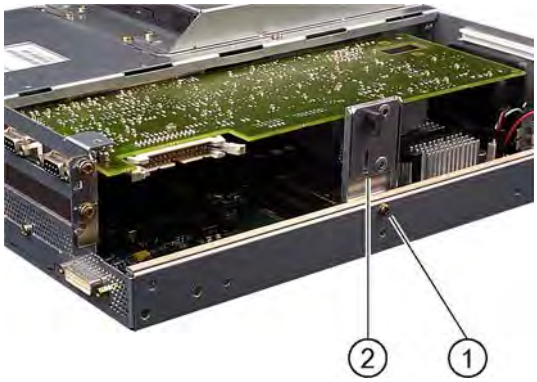
How to remove the bus board		
6	Remove the 2 screws on the housing	
7	Remove the bus board from the motherboard	

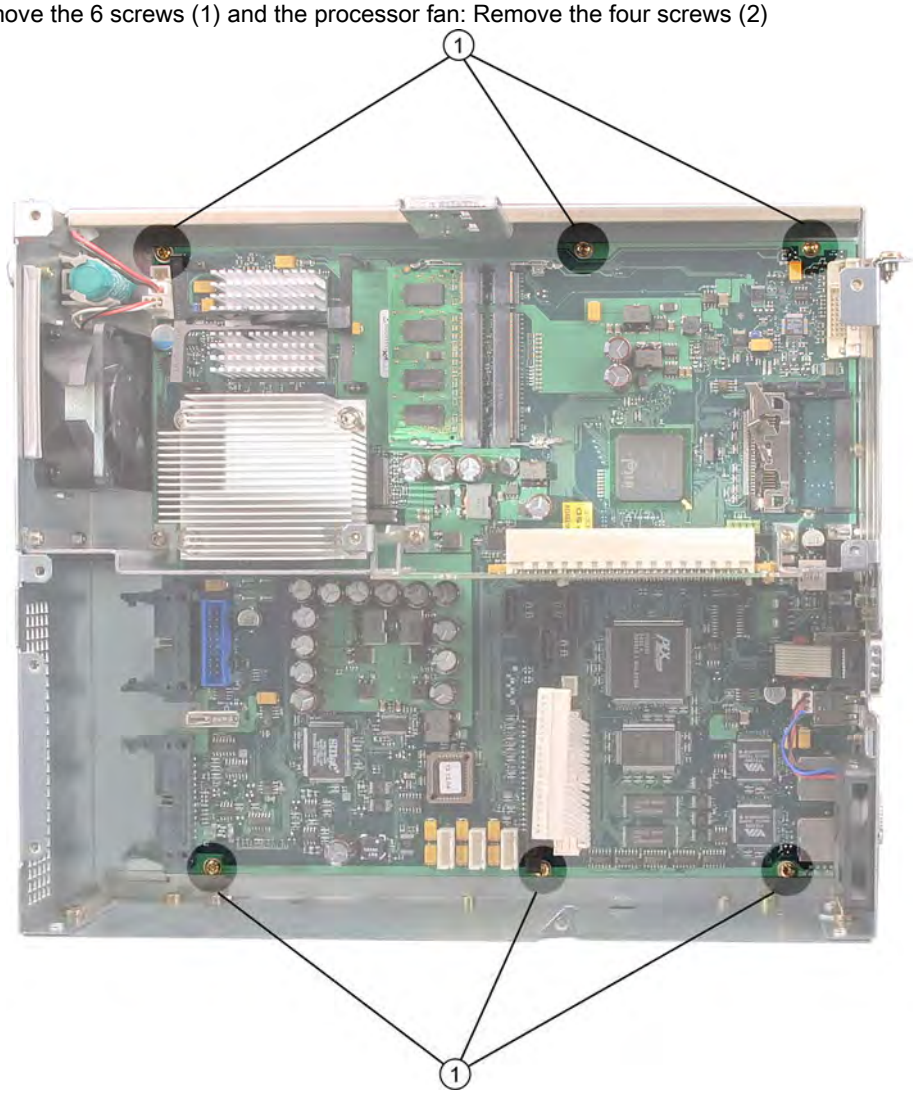
12.7.10 Installing / removing the motherboard

Preparation

1. Disconnect the device from mains and unplug all cables.
2. Open the device.

Removing the motherboard

How to remove the motherboard		
1	Remove the hard disk, DVD-ROM/CD-RW drive bay module	
2	Remove the module bracket (2). To do so, remove 1 screw (1)	
3	Remove the power supply cover	
4	Removing the bus board	
5	Remove the power supply module.	
6	Disconnect all cables from the motherboard, noting down their assignment while doing so	

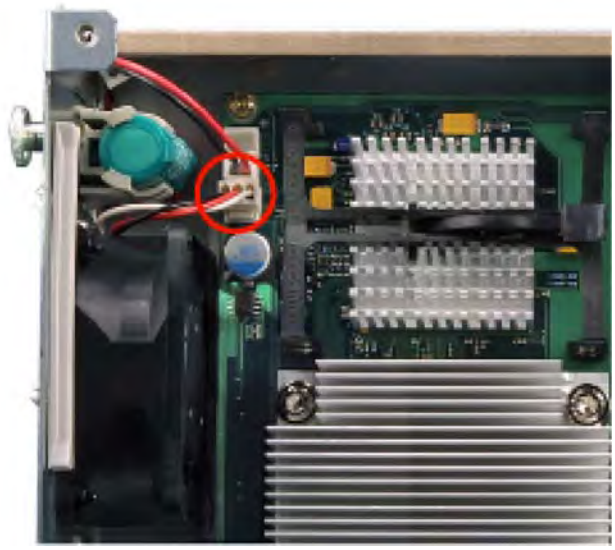
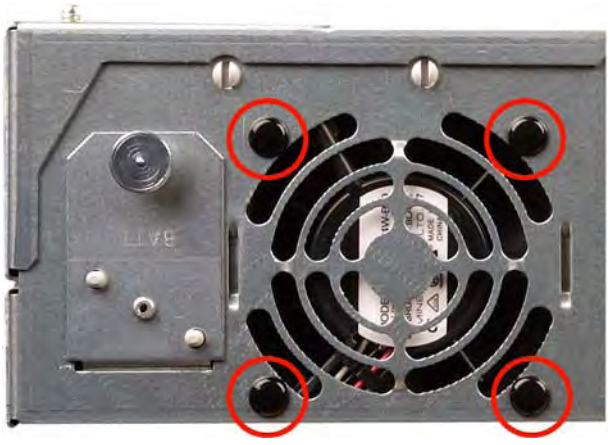
How to remove the motherboard	
7	Remove the 6 screws (1) and the processor fan: Remove the four screws (2) 
8	Remove the 4 hexagonal bolts at the interfaces. 
9	Lift out the motherboard.

12.7.11 Installing / removing the equipment fan

Preparations

1. Disconnect the device from mains.
2. Open the device

Removing the fan

How to remove the fan		
1	Unplug the fan connector from the motherboard	
2	Loosen the four screws on the housing	
3	Lift out the fan from the housing.	

Installing the fan

Notice

Always install a fan of the same type!

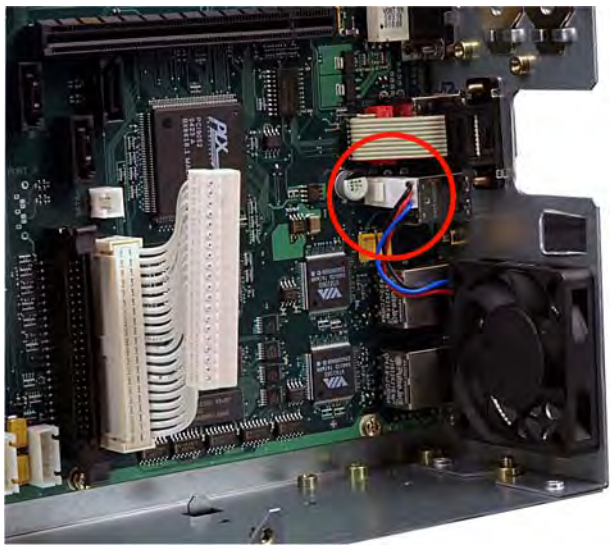
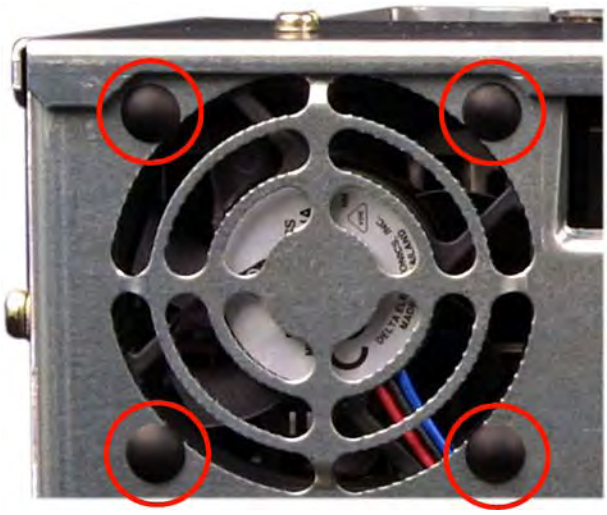
Fan mounting position	
The figure shows the correct fan mounting position. Pay attention to the direction of the arrow on the fan enclosure!	

12.7.12 Installing / removing the power supply fan

Preparations

1. Disconnect the device from mains.
2. Open the device
3. Removing the power supply module

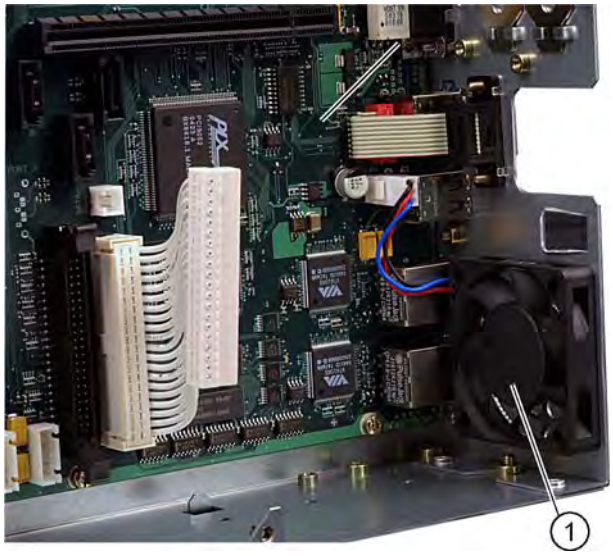
Removing the fan

How to remove the fan		
1	Unplug the power supply connector.	
2	Loosen the four screws on the housing.	
3	Lift out the fan from the housing.	

Installing the fan

Notice

Always install a fan of the same type!

Fan mounting position	
The diagram shows the correct mounting position of the fan (1). Pay attention to the direction of the arrow on the fan enclosure! When correctly installed, the labeling can be seen from the outside.	

12.7.13 Installing / removing the processor

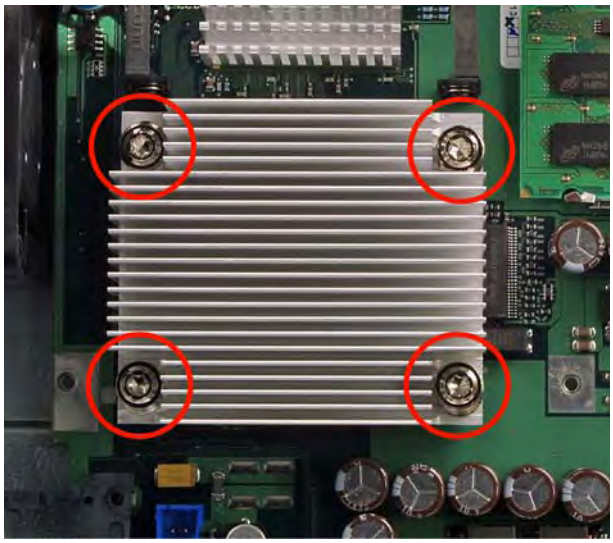
Caution

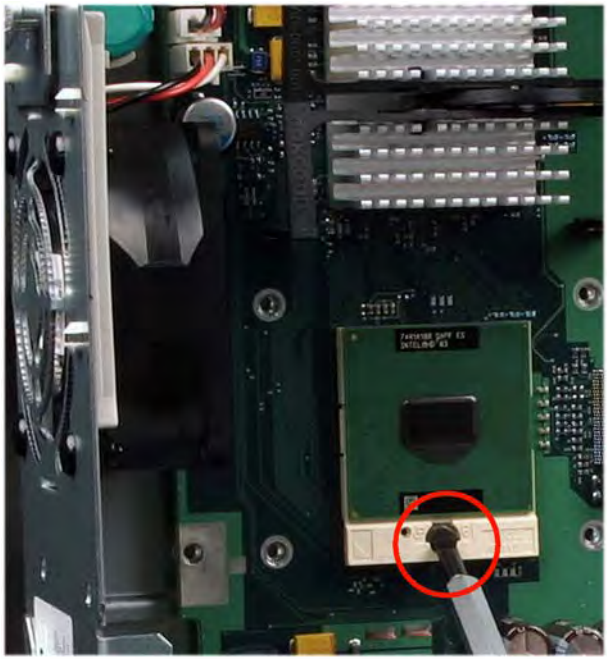
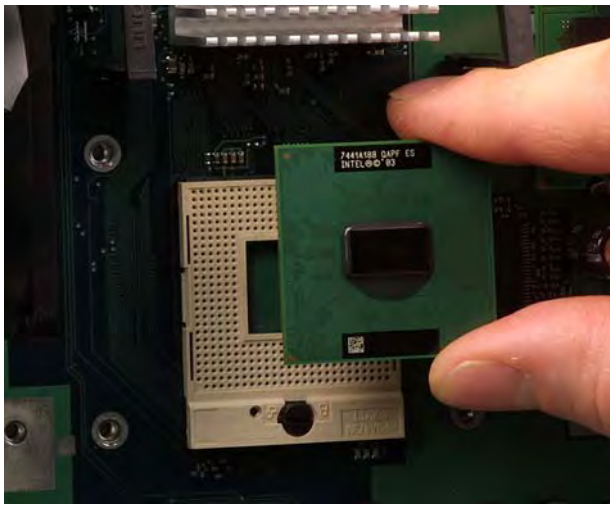
The processor replacement may only be carried out by authorized qualified personnel.

Preparation

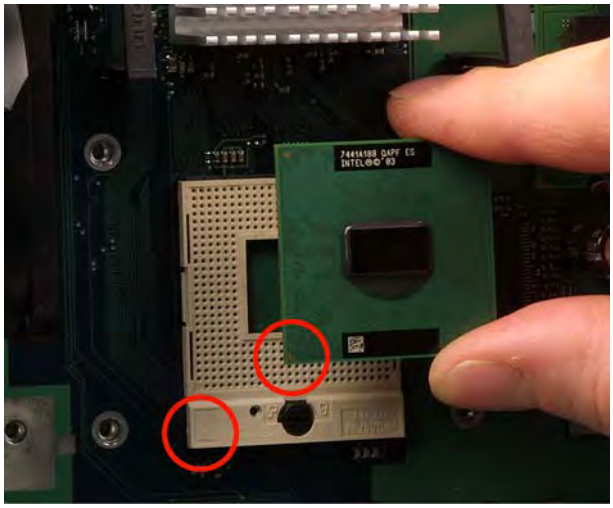
1. Unplug the device from mains.
2. Open the device.

Removing the processor

How to remove the processor		
1	Remove the 4 screws holding the processor heat sink and remove the heat sink	

How to remove the processor		
2	Opening the processor latch	
3	Removing the processor	

Installing the processor

How to install the processor		
1	Inserting the processor	

Notice

When you insert the processor, make sure the notches of the processor and of the socket match up.

2	Close the processor latch
3	Apply some heat-conductive paste to the processor

Caution

The processor may overheat when the system is in operation!

The heat-conductive paste must be applied evenly as a thin film!

4	Fasten the processor heat sink with the 4 screws. To do so, insert the screws diagonally and tighten them evenly, working diagonally in order to avoid tilting of the fan unit. Tighten the screws down to the mechanical stop.

Required tools

You need a Torx 20 screw driver for removing the processor.

12.8 Installing the software

12.8.1 General installation procedure

If the system is unstable or if the operating system reports errors, the delivery status of the device can be easily restored using the Restore DVD. You can re-install the operating system and relevant drivers using the Recovery CD and the "Documentation and Drivers" CD.

Recovery CD:

The new recovery procedure is based on Windows PE (Preinstalled Environment). The CD contains a Windows PE user interface with tools for configuring the hard drives and the operating system.

Documentation and Drivers CD:

Contains the documentation and the hardware drivers.

Restore DVD:

Contains a hard disk image file with the original software (operating system with installed hardware drivers).

12.8.2 Setting up the partitions for Windows operating systems

After you have installed a new hard disk, or if partitions are faulty, or when you wish to change the partitioning on your hard disk, you need to create or reconfigure partitions on the hard disk

Caution

When you delete or create partitions or logical DOS partitions, you lose all data on the hard disk. All partitions on the hard disk will be deleted.

With the Windows 2000 Professional and Windows XP Professional operating systems, the factory state features two partitions with an NTFS file system on the hard disk. To restore the partitions to factory state, proceed as follows:

Setting up partitions

1. Boot from the Recovery CD and then follow the screen instructions until the Recovery functions window is displayed.
2. Start the DiskPart program in the "Siemens SIMATIC Recovery“ window and enter the following commands in the displayed command interface:

list disk	Displays all available hard disks.
select disk 0	Selects the disk where you wish to change the configuration. 0 selects the first hard disk.
list partition	Displays all partitions on the selected hard disk 1)
clean	Completely wipes the selected hard disk. All information stored there is lost.
create partition primary size=n	Creates a primary partition with the n MB on the selected hard disk. Factory state values: n = 10000 for Windows 2000 Professional or XP Professional
select partition 1	Select the primary partition
active	Activates the selected partition 1)
exit	Closes DiskPart.
1) The active partition is identified with a *.	

Additional DiskPart functions:

Help	Shows all available DiskPart commands. When a command is supplemented with other parameters, the command is described with additional information. Example: create partition help

Note

Once you have changed the configuration of your hard disk with DiskPart, you will need to reboot the PC for the changes to go into effect.

Boot again from the Recovery CD to format the partitions.

Format primary partition

1. Boot from the Recovery CD to format the partitions. Follow the screen instructions until the Recovery functions window is displayed.
2. Select "Start command prompt" in the Recovery functions window. In the command interface that opens, enter the following command:
   `format DL:/FS:File System`
   DL = Drive letter of the partition to be formatted. Valid values: C, D, E, F etc.
   File system = Specifies the type of file system. Valid values: FAT, FAT32, NTFS.

NTFS is the factory setting for all Windows operating systems.

Example for a master hard disk on the IDE bus:

```
format C:/FS:NTFS
```

Note

Parameter overview

`format /?` shows all parameters of the command.

12.8.3 Compatibility of the Restore DVD

Caution

Use only the supplied Restore DVDs for the device. Verify that the order number of the Restore DVD matches that of the device. You can find the order number of the device on the rating plate.

Do not use the supplied images for any other device. The chipsets and drivers differ.

12.8.4 Restoring the factory state of the software using the Restore DVD

You can restore the software to the original factory state using the Restore CD (not included in all package variants). The DVD contains the necessary images and tools for transferring the factory software to the hard disk of your PC. You can restore the entire hard disk with drive C: (system) and drive D: or only drive C:. at the command line input. This allows you to retain any user data on drive D.

Recovering authorizations or license keys for SIMATIC software from the hard disk

- If you have installed SIMATIC software with a license key or authorization on the PC, please check if you can recover the license key or authorization on the hard disk. The transfer of license keys or authorizations is described in the Help of the Automation License Manager program.
- If it is not possible to backup your authorization, please contact the Customer Support Hotline. There you can obtain information necessary for your software authorization.

Caution

With the option "Restore system partition only", all data on drive C: (System) will be deleted. All data, user settings and all authorizations or license keys on drive C: will be lost in the process! All data on drive C: of your hard disk will be deleted. Setup formats the hard disk partition and reinstalls the original factory software.

When you select the "Restore entire hard disk" option, ALL the data, user settings and authorizations or license keys will be lost on the hard disk.

Restoring the factory state with the installed drive

To restore the factory state, proceed as follows:

1. Make the following setting in the BIOS Setup:
   Menu Exit > Get Default Values
2. Insert the Restore DVD in the drive and reboot the device. When the BIOS message
   ”Press <F2> to enter Setup or <ESC> to show Boot Menu"
   appears, press the ESC key. After initialization, a "Boot Menu" is displayed.
3. Select the optical drive with the cursor keys.
4. Now follow the instructions on the screen.

Caution

All existing **data, programs, user settings** and **authorizations or License Keyswill bedeleted** from the hard disk and are therefore lost.

Restoring the factory state with an external USB CD/DVD ROM

Procedure:

1. Connect the external USB CD/DVD ROM to the Panel PC and reboot the device.
2. Enter the external CD/DVD ROm in the "Boot priority order"
   - Press <F2> when the BIOS message "Press <F2> to enter Setup" appears.
   - Select Advanced".
   - Add the external CD/DVD ROM by marking the external CD/DVD ROM with the cursor keys.
   - Press the "include" key <x> to include the external CD/DVD ROM in the "Boot priority order" list.
   - Save the settings and exit the BIOS with Save Changes & Exit
   - Switch off the Panel PC
3. Restoring the factory state
   - Place the Restore DVD into the external drive and restart the device using the on/off switch (min. 15s).
   - During the self-test phase, press < ESC >. After initialization, a boot menu is displayed.
   - Select the external optical drive with the cursor keys.
   - Now follow the instructions on the screen

Caution

All existing **data, programs, user settings** and **authorizations or License Keyswill bedeleted** from the hard disk and are therefore lost.

For information on the functions, refer to the README.TXT file on the Restore DVD.

12.8.5 Installing Microsoft Windows operating systems

12.8.5.1 Operating system not installed

The device can be optionally purchased without an operating system. If you want to install the operating system yourself, read the information available in the Internet at **http://www.siemens.com/asis**

Notice

You must integrate the required software components yourself if you install an operating system not offered by Siemens AG. Note the following in this regard:

— The device has features that a standard PC does not, for example, a touch screen and front panel function keys.

— Siemens AG can only guarantee the availability of these features for operating systems that have been released.

— Siemens AG only provides support within a strictly defined framework.

12.8.5.2 Booting from the Recovery CD

Please use the Recovery CD to install Windows to meet your special requirements. The operating system used is Windows Preinstall Environment (WinPE). You will also need the supplied Documentation and Drivers CD.

Booting with the Recovery CD:

1. Insert the Recovery CD in the drive and reboot the device. When the BIOS message ″Press <F2> to enter Setup or <ESC> to show Boot Menu" appears, press the ESC key. After initialization, a "Boot Menu" is displayed.
2. Select the optical drive with the cursor keys.
3. Please follow the on-screen instructions until the "Siemens SIMATIC Recovery" window appears.

12.8.5.3 Installing the Microsoft Windows operating system (not for RAID)

The recovery CD contains encrypted data that can only be transferred to this system.

Please use the Recovery CD to install Windows to meet your special requirements. The operating system used is Windows Preinstall Environment (WinPE). You will also need the supplied Documentation and Drivers CD.

Booting with the Recovery CD

1. Boot from the Recovery CD and when the BIOS message
   ″Press <F2> to enter Setup or <ESC> to show Boot Menu"
   appears, press the ESC key. After initialization, a "Boot Menu" is displayed.
2. Select the optical drive with the cursor keys.
3. Please follow the on-screen instructions until the "Siemens SIMATIC Recovery" window appears.
4. After copying the Windows installation files, return to the Siemens SIMATIC Recovery main menu (click "Back").
5. Select "Start command prompt" in the Recovery functions window.
6. Enter the following command in the displayed command prompt interface:
   DL:
   cd \I386
   Winnt32.bat
   DL: Drive letter of the folder containing the I386 directory.
7. The preparation of the Windows installation is displayed.
8. When this is completed, close the command prompt with the exit command.
9. Close the Siemens SIMATIC Recovery window with the "Finish" button.
10. The Windows installation is completed following an automatic restart of the system.
11. Follow the instructions on the screen.

Note

If you are using Microsoft Windows 2000 Professional or Windows XP Professional, you should have the following manuals at your disposal (not included in the product package):
Microsoft Windows 2000 Professional Resource Kit (MS Press No. 24) or
Microsoft Windows XP Professional, The Technical Reference" (MS Press No. 934).

These manuals contain special information for administrators involved in installing, managing and integrating Windows in networks or multi-user environments.

12.8.5.4 Installing the Microsoft Windows operating system (for RAID)

Notes on RAID systems (Optional)

Since the device does not feature an internal floppy disk drive, you cannot use a diskette to install the drivers required for the RAID system during the installation with the Recovery CD.

The RAID system therefore has to be temporarily removed.

1. When the device starts up press <Ctrl> + <I> to enter into the BIOS setup of the RAID controller.
2. Select "Delete Volume" and follow the instructions that appear on screen.

Note

Please ensure that the function "Reset Disk to NON RAID" is **not** selected, since this function would delete the master boot record and all partitions.
Then proceed as described in "Setting up the partition for Windows operating systems".

---

3. Restart the system
4. Make the following setting in the BIOS Setup:
   Menu Exit -> Get Default Values
5. BIOS-> Advanced SATA/Pata configuration; change SATA Controller mode to "Compatible"; save BIOS and exit; reset; change boot sequence in BIOS (include hard disk in boot sequence).

RAID Recovery

1. Boot from the Recovery CD and follow the screen instructions until the Recovery functions window is displayed
2. Select "Recovery Windows ..." in the "Siemens SIMATIC Recovery" window.
3. Follow the instructions on the screen

Note

After copying the Windows installation files, return to the "SIEMENS Simatic Recovery" main menu

4. Select "Start command prompt" in the Recovery functions window.
5. Set the appropriate drive letter in folder I386 and start "Winnt32.bat" from this folder.
6. Following completion of the Windows installation, BIOS must run through the following points:
   Create:
   - Change the following setting in the BIOS Setup:
     SATA Controller Mode-> activate enhanced
     Menu Advanced > SATA Configuration > RAID support = Enabled

     Notice

     Do **not** change the setting in the RAID option ROM. The configuration of the RAID system is made entirely in the supplied program, "Intel Matrix Storage Manager".

   - Restart the system
   - Start the installation program in the start menu "Intel Application Accelerator"
7. The preparation of the Windows installation is displayed.
8. When this is completed, close the command prompt with the "Exit" command.
9. Close the Siemens SIMATIC Recovery window with the "Finish" button.
10. The Windows installation is completed following an automatic restart of the system.
11. Follow the instructions on the screen.

12.8.6 Installing individual drivers

Introduction

The "Documentation and Drivers" CD contains the required drivers for the device.

Procedure

1. Start "Start.exe" in the root directory of the CD.
2. Follow the instructions displayed on the screen.

Note

For further information on reinstalling the drivers, go to http://www.siemens.com/asis, under "Support".

12.8.7 Operation of two hard disks

The two hard disks are configured as follows in the factory state of the computer:

Hard disk 0	Hard disk 1
Partition C: System, NTFS, 10 GB	Not configured
Partition D: Data, NTFS, remaining capacity	

You can use the two hard disks as a 2 HHD system or as a RAID system.

12.8.7.1 2 HDD system

Two 2.5" hard disks are installed in the device depending on the device features. The two hard disks are connected to the SATA ports 0 and 2. The hard disk on SATA port 2 is not configured. This gives you the option of backing up your data to this hard disk. For information on hard disk capacities, refer to your order documentation.

Booting from the slave hard disk

The system boots by default from the hard disk on SATA port 0. You can also configure the system to boot from the disk on SATA port 2.

In order to allow booting from the second hard disk, you need to configure it as the primary boot device. Make the following settings in your BIOS Setup:

Select Boot > Hard Drive > <Drive name> e.g. FUJITSU MHT2060BH - SATA2, then press the "+" key to move it up in the boot order.

Notice

The drive letters for the partitions on both drives are assigned by the operating system used. You can change these in the Control Panel as required.

12.8.7.2 RAID system

RAID 0 system

A RAID 0 system (Stripe) enables you to increase the read/write speed of your hard disk system. This configuration reduces the reliability of the drive system, however. RAID 0 is therefore not recommended and is omitted from the installation instructions.

RAID 1 system

A RAID 1 system (mirroring) enables you to increase the data security of your hard disk system. It involves copying (mirroring) the data to a second hard disk.

Each hard disk is operated on a separate SATA channel. The system can continue to operate even when a problem is detected on one of the hard disks. The data backed up on the RAID 1 network is retained. This data would be lost on a single drive or without RAID 1. RAID 1 therefore increases the availability of the system.

Configuring a RAID 1 system

Prerequisites

- Two identical SATA hard disks; the primary hard disk contains the operating system and data (boot drive), the second hard disk is empty.
- If DiagMonitor was installed, the DiagMonitor agent must be stopped. To exit the DiagMonitor agent, enter the command "NET STOP SNMP" in the DOS box.
- The Windows XP Professional or Windows 2000 Professional operating system installed in the factory state already includes the required drivers and the unconfigured RAID software (Intel Matrix Storage Console).

Note

Re-starting the DiagMonitor agent

After the RAID 1 volume has been sucessfully created, you must start the DiagMonitor agent again. Enter the "NET START SNMP" commands in the DOS box.

Note

The screen shots shown below may not correspond to the actual layout of the application.

If the primary hard disk does not have an operating system installed, follow the instructions provided by the section "Restoring the factory state of the software using the Restore DVD".

Setup:

1. Change the following setting in the BIOS Setup:
   SATA Controller Mode-> activate enhanced
   Menu Advanced > SATA Configuration > RAID support = Enabled

Notice

Do not change the setting in the RAID option ROM. The configuration of the RAID system is made entirely in the supplied program, "Intel Matrix Storage Console". It is located in the "Intel Matrix Storage Manager" path.

2. Restart the system.
3. Start the "Intel Matrix Storage Console" program in the start menu.
4. Activate the button "Protect data from a hard drive failure with RAID 1" to the right of the "Intel Matrix Storage Console" program.

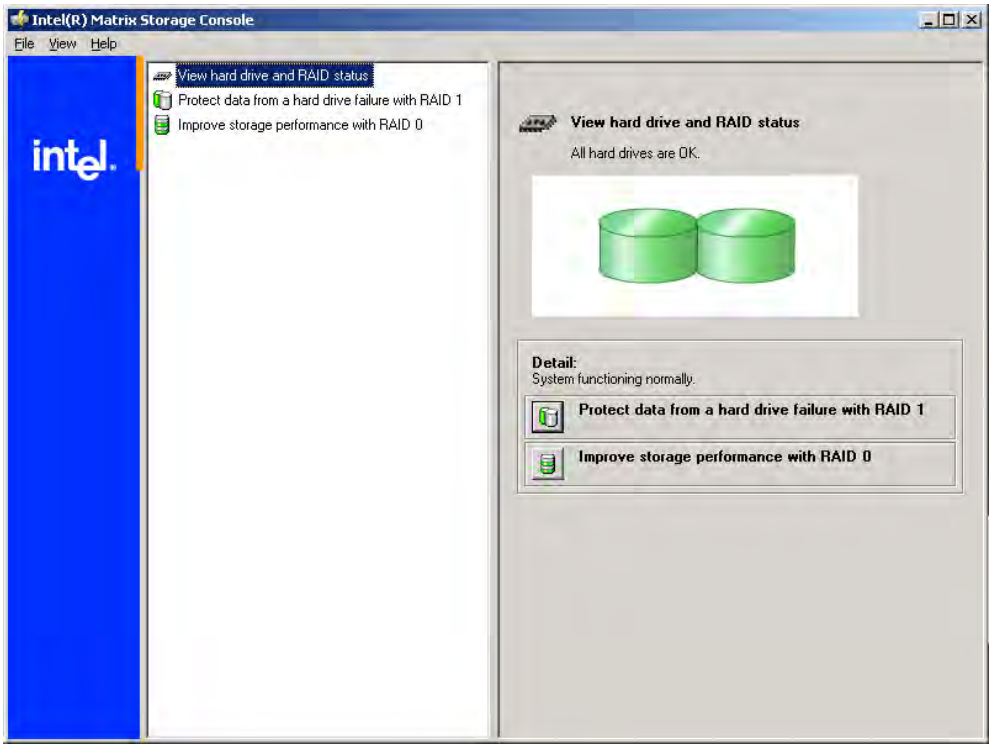


Figure 12-4 Protect data from a hard drive failure with RAID 1

5. Activate the button "Create a RAID 1 volume" to the right of the "Intel Matrix Storage Console" program.

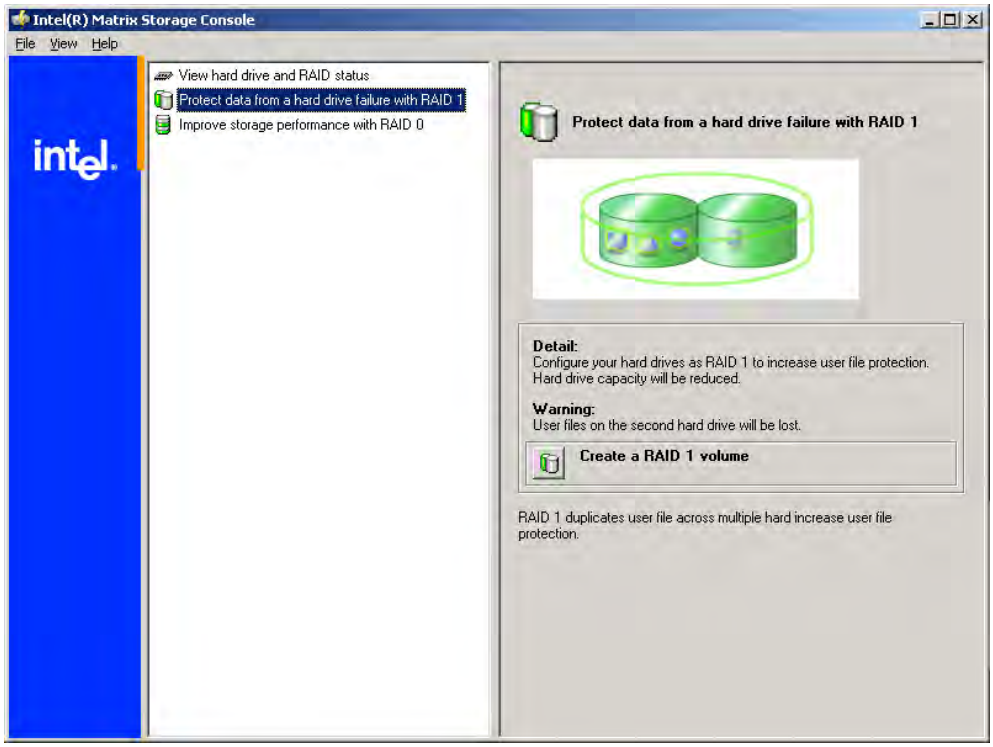


Figure 12-5 Create a RAID 1 volume

6. Confirm the prompt "Are you sure you want to create a RAID 1 volume" with "Yes". The RAID 1 volume will be created.

Figure 12-6 Migration is in Progress

The data on the hard disk specified as the source drive will now be copied to the partner drive. The time required to copy the data (migration) depends on the capacity of the hard disk and may take approximately 45-90 minutes. The device can continue to operate during the copy process although at a reduced speed. The data mirroring first goes into effect when the copying process is successfully completed. The device will then be operating in the specified RAID 1 mode and the data will be saved on both hard disks.

Note

Information about the operation of the RAID system can be found in the RAID user manual on the supplied Documentation and Drivers CD.

Notice

The security functions of the RAID system take effect without starting the RAID software. The RAID status is always indicated in the Windows status bar.

In the event of an error, a hard disk can be duplicated by means of the RAID Controller BIOS or on the operating system level. It may take up to several hours to synchronize a new disk in the background, depending on the size of the hard disk and on the system load.

The redundant system state RAID Level 1 is reached again only after synchronization is completed.

Comments about faults

A message from the "Intel Matrix Storage Manager" is generated when a hard disk fails.

This message is also entered in the status bar of the Windows operating system.

Notice

Input delay

Depending on the load on the processor and the hard disk activity at the time, the system may become briefly overloaded when a disk fails due to the synchronization process.

In extreme cases, input from the keyboard and touchscreen may be delayed for a brief period.

Note

BIOS messages during startup

At the first restart / cold start following a hard disk failure or installation of a new hard disk (servicing), the RAID BIOS reports that the RAID functionality is no longer available and offers the appropriate operator options.

12.8.8 Installing burner and DVD software

The supplied CD provides information about installation of the burner and DVD software.

12.8.9 Backing up the hard disk

The device's hard disk is divided into two partitions, volumes C and D. The operating system is installed on volume C. Volume D can be used for user data.

Back up the complete hard disk regularly, for example, using "SIMATIC PC/PG Image Partition Creator". This software can be purchased as an accessory, Order No. 6ES7648-6AA03-0YX0.

Caution

Date errors writing to CD-RW

The quality of raw disc differs considerably. Data errors cannot, therefore, be entirely excluded. To be on the safe side, verify the data after writing it.

Alarm, error and system messages 13

13.1 Boot error messages

During startup (the boot process), the BIOS first performs a **P**ower **O**n **S**elf **T**est (POST) and checks whether certain functional units of the PC are operating error-free. When an error occurs within this phase, the BIOS outputs a tone sequence (beep code) based on the current test result. The boot sequence is interrupted immediately if fatal errors occur.

If the POST does not return an error, the BIOS initializes and tests further functional units. In this startup phase, the graphics controller is initialized and any error messages are output to the screen.

The following lists the error messages from the system BIOS. For information on error messages output by the operating system or programs, refer to the corresponding manuals.

On-screen error messages

On-screen error message	Meaning / suggestions
Address conflict	Plug and Play problem. Contact your technical support team.
Combination not supported	Plug and Play problem. Contact your technical support team.
IO device IRQ conflict	Plug and Play problem. Contact your technical support team.
Invalid System Configuration Data	Plug and Play Problem • Set the RESET CONFIGURATION DATA option in the "Advanced" menu of Setup. • Contact your technical support team.
Allocation Error for ...	Plug and Play problem • Please undo the last hardware change. • Contact your technical support team.
System battery is dead. Replace and run SETUP	The battery on the CPU module is defective or dead. Contact your technical support team.
System CMOS checksum bad Run SETUP	Call up SETUP, adjust settings and save. If this message appears during each startup, contact your technical support team.
Failure Fixed Disk	Error accessing the hard drive. Check the SETUP settings. Contact your technical support team.

On-screen error message	Meaning / suggestions
Keyboard error	Check whether the keyboard is properly connected.
Key seizure	Check whether a key on the keyboard has seized.
System RAM Failed at offset:	Memory error. Contact your technical support team.
Shadow RAM Failed at offset:	Memory error. Contact your technical support team.
Extended RAM Failed at offset:	Memory error. Contact your technical support team.
Failing Bits:	Memory error. Contact your technical support team.
Operating system not found	Possible causes: • No operating system present • Wrong drive addressed (disk in drive A/B) • Incorrect active boot partition • Wrong boot drive settings in SETUP • Hard disk is not connected / defective
Previous boot incomplete Default configuration used	Abort of the previous BOOT procedure, for example, due to a power failure. Adjust the settings in SETUP.
System cache error Cache disabled	Error in the CPU's cache module. Contact your technical support team.
Monitor type does not match CMOS Run SETUP	The monitor does not match the SETUP entries. Adapt the SETUP entries to the monitor.
System time-out	Hardware error. Contact your technical support team.
Real-time clock error	Clock chip error. Contact your technical support team.
Keyboard controller error	Keyboard error. Contact your technical support team.

13.2 Introduction to the BIOS beep codes

The device performs a self-test when it is switched on. If an error is detected during the POST (Power On Self Test), a series of beep signals are issued. The beep tones are a code for errors and are composed of 2 x 2 sequences.

Table 13-1 Converting the beep codes in a Hex display

Beep tones		Hex code
B	B	0
B	BB	1
B	BBB	2
B	BBBB	3
BB	B	4
BB	BB	5
BB	BBB	6
BB	BBBB	7
BBB	B	8
BBB	BB	9
BBB	BBB	A
BBB	BBBB	B
BBBB	B	C
BBBB	BB	D
BBBB	BBB	E
BBBB	BBBB	F

Example

Tone sequence	B	BBB	BBB	B
Hex code	2		8	
Meaning	Determine RAM size			

Special codes

The following special code are provided in addition to the beep codes:

Special code	Meaning
3x short	The <Ins> key is pressed during the system start: The on-board device installation is skipped. The on-board graphic controller is used as the default display.
1x long 8x short	Error reading the MPI system information. Contact customer service.
4x short	MPI-EPROM programmed for the first time.
1x long 5x short	Ethernet error Contact customer service.
2x short	Error in checksum test of the BIOS: This can occur following a battery replacement or when the battery is empty.

13.3 BIOS beep codes

The following section lists the POST codes relevant to users in the sequence in which they occur: Contact Customer Support for all other POST codes.

Hex code of the Beep codes	Meaning	Description	Remedy
16H	TP_CHECKSUM	BIOS checksum test	Service event
28H	TP_SIZE_RAM	Determine DRAM size	Replace memory modules
2AH	TP_ZERO_BASE	Set base RAM 64KB to 0	Replace memory modules
2CH	TP_ADDR_TEST	Check address busses	Replace memory modules
2EH	TP_BASERAML	BaseRam Low	Replace memory modules
30H	TP_BASERAMH	BaseRam High	Replace memory modules
38H	TP_SYS_SHADOW	BIOS is copied to DRAM	Replace memory modules
3AH	TP_CACHE_AUTO	Determine CPU cache	Exchange CPU
22H	TP_8742-TEST	Test keyboard controller	Check if keyboard is connected or defective
3CH	TP_ADV_CS_CONFIG	Configure the advanced chip set	Test by switching off the hardware components in Setup
49H	TP_PCI_INIT	Initialize the PCI interface	Test by switching off the hardware components in Setup or removing installed expansion modules from the bus module
55H	TP_USB_INIT	Activation of the USB hardware	Removal of USB devices
4AH	TP_VIDEO	Initialize the video interface	
5CH	TP_MEMORY_TEST	Test of the system memory	Replace memory modules
60H	TP_EXT_MEMORY	Test of the complete memory	Replace memory modules
62H	TP_EXT_ADDR	Test of the address busses	Replace memory modules
90H	TP_FDISK	Initialization and test of the hard disk hardware	Disconnect hard disk, replace if necessary
95H	TP_CD	Initialization and test of the CD hardware	Disconnect CD ROM, replace if necessary
98H	TP_ROM_SCAN	Search for BIOS expansions	Test by switching off the hardware components in Setup or removing installed expansion modules from the bus module
BCH	TP_PARITY	Test of the memory modules	Replace memory modules

Troubleshooting/FAQs

14

14.1 General problems

This chapter provides you with tips on how to localize and troubleshoot frequently occurring problems.

Problem	Possible causes	Possible remedy
The device is not operational	There is no power supply to the device.	• Check the power supply, the network cable and the power plug. • Check whether the On/Off switch is in the correct position.
	Device is being operated outside the specified ambient. conditions	• Check the ambient conditions. • After transport in cold weather, wait approximately 12 hours before switching on the device.
The mouse pointer does not appear on the screen.	The mouse driver is not loaded.	1. Check whether the mouse driver is properly installed and present when you start the application program.
Wrong time and/or date on the PC.		1. Press <F2> within the boot sequence to open the BIOS Setup. 2. Set the time and date in the setup menu.
Although the BIOS setting is OK, the time and data are still wrong.	The backup battery is dead.	In this case, please contact your technical support team.
USB device not responding.	The USB ports are disabled in your BIOS.	Use a different USB port or enable the port.
	USB 2.0 device connected but USB 2.0 is disabled.	Enable USB 2.0.
	Operating system does not support the USB port.	Enable USB Legacy Support for the mouse and keyboard. For all other devices you need USB drivers for the specific operating system.
DVD: The front loader does not open.	The device is switched off or the open/close button is disabled by a software application.	Emergency removal of the data medium: 1. Switching off the device 2. Insert a pointed object, a pin for example, or an opened paper clip into the emergency extraction opening of the drive. Apply slight pressure to the contact until the front loader opens. 3. Pull the loader further out.

14.2 Problems when using modules of third-party manufacturers

Problem	Possible causes	To correct or avoid error
The PC crashes during startup	• I/O addresses are assigned twice. • Hardware interrupts and/or DMA channels are assigned twice. • Signal frequencies or signal levels are incorrect. • Connector assignments deviate. • “Reset Configuration” in BIOS SETUP has not been carried out.	Check your computer configuration: • If the computer configuration corresponds with factory state, please contact your technical support team. • If the computer configuration has changed, restore the original factory settings. Remove all third-party modules, then restart the PC. If the error no longer occurs, the third-party module was the cause of the fault. Replace this module with a Siemens module or contact the module supplier. • Force a “Reset Configuration” using the BIOS setup.
		If the PC still crashes, contact your technical support team.
	• If the performance of the external 24 V power supply is insufficient	• use a larger power supply.

14.3 Temperature limits

Cause

If the device is used for its intended purpose, the temperature threshold values are not exceeded or fallen below. When the LED "Temp" on the upper left side of the operator control unit lights up, check the following:

- Are the fan apertures covered?
- Has the fan failed (check speed display in the SOM or on the DiagMonitor)?
- Is the ambient temperature higher than the allowed value (see "Technical data")?
- Is the total output of the power supply within the specified limit?
- Are the heatsinks inside the PC covered with dust?

Remedy

The temperature error is retained until the temperatures have fallen below the thresholds and you have acknowledged the error alarm in the SOM program. Click on the button with the "small broom" icon. When the error alarm has been acknowledged, the "TEMP" LED on the devices goes off and the title bar and "SOM" icon in the status bar of the SOM program changes from red to green. If you have not installed the SOM program or DiagMonitor, you must restart the PC.

Technical data

15

15.1 General technical data

General technical data	
AC device: Power supply	100 V - 240 V AC (85 V - 265 V) autorange
DC device: Power supply	24 V DC (20.4 to 28.8 V DC) SELV
AC device: Frequency	50 to 60 Hz, 47 to 63 Hz
Transient voltage interruption according to Namur	AC device: Max. 20 ms at 93 to 264 V Max. 10 events per hour; recovery time at least 1 s DC device: Max. 20 ms Max. 10 events per hour; recovery time at least 1 s
Maximum power consumption	Max. 140 W for 12" and 15" operator control unit 1) Max. 163 W for devices with 19" operator control unit 1)
Maximum current output	+5 V / 16.5 A *), 18.5 A peak +3.3 V / 8.5 A *) *) Total of 90 W permitted +12 V / 6.5 A, 8 A peak –12 V / 0.3 A The total sum of all voltages is max. 150 W
Noise emission	< 55 dB(A) according to DIN 45635-1
Degree of protection for complete unit, rear	IP20
Degree of protection on front, clamp mounted	IP 65
Degree of protection on front, screw mounted, except 12" Touch	IP 54
Electromagnetic compatibility (EMC)	
AC device: Emitted interference	EN 55011 Class A, EN 61000-3-2 Class D EN 61000-3-3
DC device: Emitted interference	EN 55022 Class A
Noise immunity: Mains borne disturbance variables on supply lines	± 2 kV, according to IEC 61000–4–4, burst ± 1 kV, according to IEC 61000–4–5, surge sym. ± 2 kV, according to IEC 61000–4–5, surge asym.
Noise immunity on signal lines	± 1 kV, according to IEC 61000–4–4, burst, length < 5 m ± 2 kV, according to IEC 61000–4–4, burst, length > 5 m ± 2 kV, according to IEC 61000–4–5, surge, length > 30 m
Immunity to discharges of static electricity	± 6 kV contact discharge according to IEC 61000–4–2 ± 8 kV air discharge according to IEC 61000–4–2
Immunity to RF interference	10 V/m 80–1000 MHz, 80% AM according to IEC 61000–4–3 10 V/m 900 MHz and 1.89 GHz, 50% ED according to IEC 61000–4–3 10 V/m 9 KHz-80 MHz according to IEC 61000–4–6
Magnetic field	30 A/m, 50 Hz according to IEC 61000–4–8

General technical data	
Climatic conditions	
Temperature • Operation • Installed in cabinet: – For external temperature of 40 °C – For external temperature of 45 °C • Storage, transportation • Gradient	Tested to IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-14 • +5 °C to +45 °C (maximum configuration) • Internal temperature max. 50°C (for a total load of the slots of max. 15 W) • Internal temperature max. 45°C • –20 °C to +60 °C • Maximum 10° C / h in operation, 20° C / h storage, no condensation
Relative humidity • Operation • Storage, transportation • Gradient	Tested to IEC 60068–2–78, IEC 60068–2–30 • 5% to 80 % at 25° C, no condensation • 5% to 95% at 25° C, no condensation • Maximum 10° C / h, no condensation
Mechanical environmental conditions	
Vibration • Operation 2) • Storage, transportation	Tested to DIN IEC 60068-2-6 • 10 to 58 Hz: 0.075 mm, 58 to 500 Hz: 9.8 m/s^2 = 1 g (10 cycles) • 5 to 9 Hz: 3,5 mm, 9 to 500 Hz: 9.8 m/s^2 = 1 g (10 cycles)
Shock resistance 2) • Operation • Storage, transportation	Tested to IEC 60068-2-27, IEC 60068-2-29 • 50 m/s^2 approx. 5 g, 30 ms (3 cycles per axis) • 250 m/s^2 approx. 25 g, 6 ms (3 cycles per axis)
Motherboard	
Processor	Intel ® Celeron M 370 1.5 GHz Intel ® Pentium M 730 1.6 GHz Intel ® Pentium M 760 2.0 GHz
Internal processor cache	Intel ® Celeron 1024 KB Second level cache Intel ® Pentium 2048 KB Second level cache
Front Side Bus FSB	Intel ® Celeron 400 MHz Front Side Bus Intel ® Pentium 533 MHz Front Side Bus
Main memory	2 sockets maximum 2GB SDRAM DDR2 See order documentation for expansion memory
Free expansion slots	1x PCI 265 mm long 1x PCI 175 mm long
Max. admissible power consumption per PCI slot Max. total for all slots	5 V/ 2 A or 3.3 V/ 2 A, 12 V/ 0.3 A, -12 V/ 0.05 A 30 W total consumption

General technical data	
Disk drives	
Hard disks	2.5" or 3.5" Serial ATA, hard disk capacity see order documentation
CD-RW/DVD-ROM [2)]	ATA 33, See order documentation for features
Interfaces	
DVI-I	Port for external CRT / LCD monitor
USB	External: 4 x USB 2.0 on the interface side: max. 2 can be simultaneously operated as high current. Interface on the front: 1 x USB 2.0, high current
PROFIBUS / MPI interface electrically isolated[3)] Communication interface SIMATIC S7 • Transmission rate • Operating mode • Physical interface – Memory address area – Interrupts	9-pin Cannon socket • 9.6 Kbps to 12 Mbps, configured per software • Electrically isolated DP12, CP 5611 compatible: Data channels A, B Control channels RTS AS, RTS_PG 5 V power supply, maximum 90 mA Ground connection: DP12 connector cable shield • RS485, electrically isolated – Configured automatically – Configured automatically
Ethernet	2 x Ethernet interface RJ45, VIA MAC VT6106S, 10/100 Mbit/s
COM1	Serial interface, 9-pin Cannon plug
Compact Flash	Slot for Compact Flash Card
Status displays	
Control unit	• Power LED • Temperature LED
Computer unit	• Ethernet LEDs • Optical drive LED

General technical data					
Display					
Graphics controller	Intel				
Graphics memory	Graphics memory; 8 to 132 MB, is taken from main memory.				
Resolutions, frequencies, color depth	VGA: 1600 x 1200, 32-bit color depth, 85 Hz DVI-I: 1600 x 1200 / 32-bit color depth, 60 Hz LCD: 1280 x 1024, 18-bit color depth				
Color display 4)	12" TFT Key front	15" TFT Key front	12" TFT Touch screen	15" TFT Touch screen	19" TFT Touch screen
Resolution	800 x 600	1024 x 768	800 x 600	1024 x 768	1280 x 1024
Contrast ratio, typ.	600:1	450:1	450:1	450:1	700:1
Max. light density cd/m², typ.	350	250	350	250	300
Horizontal viewing angle right/left/typ./min.	70° / 60°	60° / 50°	70° / 60°	60° / 50°	typically 80°
Vertical viewing angle l above / typ. / min.	45° / 35°	40° / 30°	45° / 35°	40° / 30°	typically 80°
Vertical viewing angle l below / typ. / min.	55° / 45°	60° / 35°	55° / 45°	60° / 35°	typically 80°
Panel PC 677	12" TFT Key front	15" TFT Key front	12" TFT Touch screen	15" TFT Touch screen	19" TFT Touch screen
Service life of backlighting	50,000 h for 24 h continuous operation, temperature dependent, remaining brightness 50%				
Membrane keyboard with alphanumeric and numeric keys	X		—		
Function keys	36 with LED		—		
Direct control key module	optional		—		
Actuating force (test pen with 3 mm radius)	max. 3 N		—		
Cycles (operation)	> 1 million		—		
Resistive analog touch screen	—		X		
Touch force (with test pen 2 mm diameter)	—		5 N		
Slide-in labels for function keys	X		—		
Front-mounted integrated mouse	X		—		

General technical data					
Power loss *) Efficiency of the power supply 86%	12" TFT Key front	15" TFT Key front	12" TFT Touch screen	15" TFT Touch screen	19" TFT Touch screen
Control unit	30 W	30 W	30 W	30 W	53 W
Computer unit	75 W	75 W	75 W	75 W	75 W
PCI cards (17.5 W each)	35 W	35 W	35 W	35 W	35 W
Panel PC 677	105 W	105 W	105 W	105 W	128 W
Panel PC with 2 PCI plug-in cards	140 W	140 W	140 W	140 W	163 W
*) The values specified apply for the maximum configuration of the device					
Weight					
Panel PC 677	12" TFT Key front	15" TFT Key front	12" TFT Touch screen	15" TFT Touch screen	19" TFT Touch screen
Weight of complete unit	10.2 kg	14.32 kg	10.82 kg	12.75 kg	15.11 kg
Control unit	4.89 kg	9.01 kg	5.51 kg	7.44 kg	9.8 kg
Safety					
Protection class	Protection class I to IEC 60536, i.e.: Device with PE ground terminal				
Standards	IEC 60950-1, EN 60950-1, DIN EN 60950-1, EN 61131-2				
Approvals	AC device: cULus in accordance with UL 60950-1 DC device: cULus in accordance with UL 508				
Conformity	CE				
Degree of protection	a.	With clamp attachment, encircling seal and pressed-on plastic cap for USB interface [5)]		IP 65, NEMA 4	
	b.	With screw attachment		IP 54	
Liability of product nonconformance	24 months				
Quality assurance	According to ISO 9001				

1) Max. PCI load 15 W (7.5 W per PCI slots) taken into account

2) Limitations for optical drive

Burner can only be operated in an undisturbed environment:

- Ambient temperature from +5 °C to +40 °C.
- 10 to 58 Hz: 0.019 mm / 58 to 500 Hz: 2.5 m/s^2 approx. 1/4 g.

3) Electrically isolated within the safety extra-low voltage circuit, SELV.

4) A small number of faults in the display is unavoidable. However, the displays do comply with the described quality standards of the ISO standard 13406-2, class 2.

Bad pixels	Permissible number
Permanently bright and permanently dark pixels	≤ 12
Permanently bright, green pixels	≤ 5

5) The front USB interface cannot be used in some device variants.

Permissible temperature ranges depend on the type of installation

Panel PC 677			
Complete unit	Internal cabinet temperature	Ambient temperature cabinet	Comment
Installed in cabinet, different temperatures	50 °C	40 °C	1)4)
Installed in cabinet, same temperature inside and outside	45 °C	45 °C	2)4)
Computer unit and control unit separated, using Remote Kit			
12" operator control unit	50 °C	45 °C	
15" operator control unit	50 °C	45 °C	
19" operator control unit	50 °C	45 °C	5)
Computer unit 677, Intel ® Pentium M 2 GHz	55 °C	-	3)4)

These values are applicable for vertical installation and when air is flowing through the cabinet.

1) Max. PCI load 15 W

2) Full expansion, max. PCI load 30 W (2 slots)

3) No PCI modules are connected

4) Above 40 °C, optical drives must not be operated

5) When the 19" front is operated in a housing with an internal temperature between 45 °C and 50 °C, the USB interface of the Remote Kit (rear USB interface) must not be used.

Additional information for devices with stainless steel front

Outer dimensions W x H x D	483 x 310 x 155 mm
Mounting cut-out (W x H)	450 x 290 mm
Exterior dimensions of the clamping frame W x H	495 x 322 mm
Mounting depth	150 mm
Type of protection • Front panel • Back page	 • IP66 • IP20
Control panel panel thickness	Min. 1.5 mm Max. 5,0 mm
Weight	Approx. 15 kg

15.2 Power requirements of the components

Computer unit

Components	Voltage			
	+5 V	+3.3 V	+12 V	-12 V
Motherboard	1.8 A	2.1 A	0.01 A	0.02 A
Pentium M or Celeron M processor	6.4 A			
Hard diskdrive; 1x 3.5" or Hard disk-drive; 2x 2.5" [1]	0.3 A	0.5 A		
DVD-ROM- or DVD-ROM/CD-RW drive [1]	0.8 A			
Equipment fan	0.4 A			
Power supply fan	0.15 A			
Total (base device)	**8.2 A**	**2.1 A**	**1.36 A**	**0.02 A**
PCI slots (total)	4 A	[2]	0.6 A	0.20 A
Interface between computer unit and operator control unit	1.1 A	0.1 A	4.2 A	
Single lines of current (max. permissible)	**16.5 A** [3]	**8.5 A** [3]	**6.5 A**	**0.3 A**

[1] Depends on the selected device configuration

[2] The PCI slots can be operated both 5 V and on 3.3 V at the same power loss.

[3] The max. permitted accumulated power of the +5 V and + 3.3 V is 90 W.

15.3 Device with AC voltage supply

Technical data

Input voltage	100 V - 240 V AC (85 V - 265 V) autorange
Input current	Continuous current up to 2.3 A, starting current 23 A < 5 ms
Frequency	50 to 60 Hz, 47 to 63 Hz
Power consumption	Max. 140 W for 12" and 15" operator control unit [1] Max. 163 W for devices with 19" operator control unit [1]
Power failure buffering	20 ms
Maximum continuous output power	150 W
Degree of protection	IP20 (in installed state)
Protection Class	VDE 0106

[1] 15 W per PCI slot included

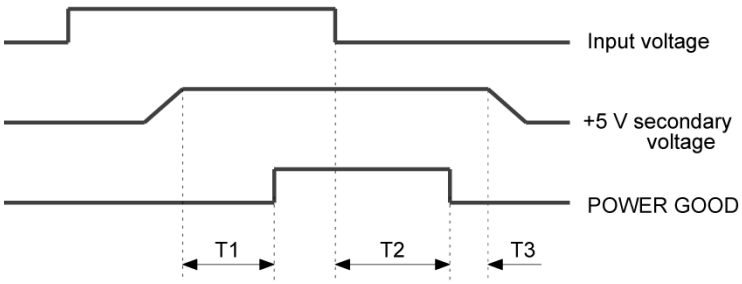
Output voltages

Voltage	Max. current
+12 V	6.5 A peak 8 A
-12 V	0.3 A
+5 V	16.5 A [2] Peak 18.5 A
+3.3 V	8.5 A [2]

[2] The max. permitted accumulated power of the +5 V and + 3.3 V is 90 W.

Power Good Signal of the AC power supply

Power-Good-Signal:



T1:	preset time	100 ... 500 ms
T2:	hold-up time	20 ms minimum
T3:	save time	1 ms mimimum

15.4 Device with DC voltage supply

Technical data

Input voltage	24 V DC (20.4 to 28.8 V DC)
Input current	Continuous current to 9 A (to 14 A for 30 ms at startup)
Power consumption	Max. 140 W for 12" and 15" operator control unit [1)] Max. 163 W for devices with 19" operator control unit [1)]
Power failure buffering	20 ms at nominal voltage
Maximum continuous output power	150 W
Degree of protection	IP20 (in installed state)
Protection Class	VDE 0106

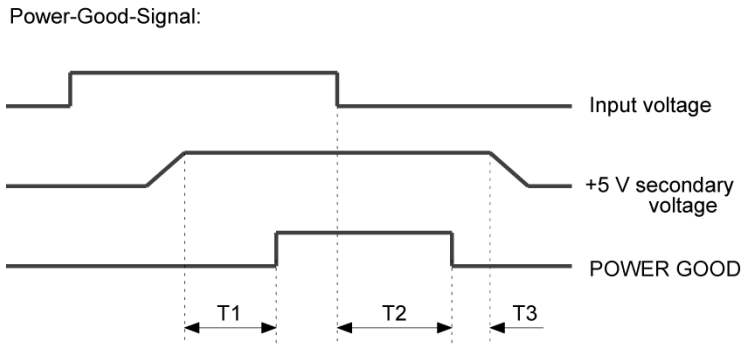
[1)] 15 W per PCI slot included

Output voltages

Voltage	Max. current
+12 V	6.5 A peak 8 A
-12 V	0.3 A
+5 V	16.5 A [1)] Peak 18.5 A
+3.3 V	8.5 A [1)]

[1)] The max. permitted accumulated power of the +5 V and + 3.3 V is 90 W.

Power Good Signal of the DC power supply



T1:	preset time	100 ... 500 ms
T2:	hold-up time	**not specified**
T3:	save time	1 ms mimimum

15.5 Keyboard table

Key codes

The following table applies only to control units with key panels. It contains all characters that can be entered in SIMATIC KeyTools in the "Key code table" area and under "User specific". The character that is triggered by pressing a specific key is listed in the "Display/function" column. Further information is available in the documentation for SIMATIC KeyTools on the "Documentation and Drivers" CD.

Name	Code (Hex) 0x	Check-box	Display/function
a A	4	—	a
		L Shift/R Shift	A
		R Alt	á
		R Alt+L Shift/R Shift	Á
b B	5	—	b
		L Shift/R Shift	B
c C	6	—	c
		L Shift/R Shift	C
		R Alt	©
		R Alt+L Shift/R Shift	¢
		L Ctrl/R Ctrl	Copy
d D	7	—	d
		L Shift/R Shift	D
		R Alt	ð
		R Alt+L Shift/R Shift	Ð
e E	8	—	e
		L Shift/R Shift	E
		R Alt	é
		L Shift/R Shift	É
		L Gui/R Gui	Start Windows Explorer
f F	9	—	f
		L Shift/R Shift	F
		L Gui/R Gui	Find folder and file
g G	0A	—	g
		L Shift/R Shift	G
h H	0B	—	h
		L Shift/R Shift	H

Name	Code (Hex) 0x	Check-box	Display/function
i I	0C	—	i
		L Shift/R Shift	I
		R Alt	í
		R Alt+L Shift/R Shift	Í
j J	0D	—	j
		L Shift/R Shift	J
k K	0E	—	k
		L Shift/R Shift	K
l L	0F	—	l
		L Shift/R Shift	L
		R Alt	ø
		R Alt+L Shift/R Shift	Ø
m M	10	—	m
		L Shift/R Shift	M
		R Alt	µ
		L Gui/R Gui	Minimize all windows
n N	11	—	n
		L Shift/R Shift	N
		R Alt	ñ
		R Alt+L Shift/R Shift	Ñ
o O	12	—	o
		L Shift/R Shift	O
		R Alt	ó
		R Alt+L Shift/R Shift	Ó
		L Ctrl/R Ctrl	Open
p P	13	—	p
		L Shift/R Shift	P
		R Alt	ö
		R Alt+L Shift/R Shift	Ö
		L Ctrl/R Ctrl	Printing
q Q	14	—	q
		L Shift/R Shift	Q
		R Alt	ä
		R Alt+L Shift/R Shift	Ä
r R	15	—	r
		L Shift/R Shift	R
		R Alt	®
		L Gui/R Gui	Display "Run" dialog

Name	Code (Hex) 0x	Check-box	Display/function
s S	16	—	s
		L Shift/R Shift	S
		R Alt	ß
		R Alt+L Shift/R Shift	§
		L Ctrl/R Ctrl	Save
t T	17	—	t
		L Shift/R Shift	T
		R Alt	þ
		R Alt+L Shift/R Shift	Þ
u U	18	—	u
		L Shift/R Shift	U
		R Alt	ú
		R Alt+L Shift/R Shift	Ú
v V	19	—	v
		L Shift/R Shift	V
		L Ctrl/R Ctrl	Paste
w W	1A	—	w
		L Shift/R Shift	W
		R Alt	å
		R Alt+L Shift/R Shift	Å
x X	1B	—	x
		L Shift/R Shift	X
		L Ctrl/R Ctrl	Cut
y Y	1C	—	y
		L Shift/R Shift	Y
		R Alt	ü
		R Alt+L Shift/R Shift	Ü
z Z	1D	—	z
		L Shift/R Shift	Z
		R Alt	æ
		R Alt+L Shift/R Shift	Æ
		L Ctrl/R Ctrl	

Name	Code (Hex) 0x	Check-box	Display/function
1 !	1E	—	1
		L Shift/R Shift	!
		R Alt	¡
		R Alt+L Shift/R Shift	¹
2 @	1F	—	2
		L Shift/R Shift	@
		R Alt	²
3 #	20	—	3
		L Shift/R Shift	#
		R Alt	³
4 $	21	—	4
		L Shift/R Shift	$
		R Alt	¤
		R Alt+L Shift/R Shift	£
5 %	22	—	5
		L Shift/R Shift	%
		R Alt	€
6 ^	23	—	6
		L Shift/R Shift	^
		R Alt	¼
7 &	24	—	7
		L Shift/R Shift	&
		R Alt	½
8 *	25	—	8
		L Shift/R Shift	*
		R Alt	¾
9 (	26	—	9
		L Shift/R Shift	(
		R Alt	'
0)	27	—	0
		L Shift/R Shift	)
		R Alt	'

Name	Code (Hex) 0x	Check-box	Display/function
Return	28	—	Return
Escape	29	—	Escape
Backspace	2A	—	Backspace
Tab	2B	—	Tab
Space	2C	—	Space
- _	2D	—	-
		L Shift/R Shift	_
		R Alt	¥
= +	2E	—	=
		L Shift/R Shift	+
		R Alt	×
		R Alt+L Shift/R Shift	÷
[{	2F	—	[
		L Shift/R Shift	{
		R Alt	«
] }	30	—	]
		L Shift/R Shift	}
		R Alt	»
\ |	31	—	\
		L Shift/R Shift	|
		R Alt	¬
		R Alt+L Shift/R Shift	¦
Europe 1	32	—	Europe 1
; :	33	—	;
		L Shift/R Shift	:
		R Alt	¶
		R Alt+L Shift/R Shift	°
’ "	34	—	
		L Shift/R Shift	"
		R Alt	´
		R Alt+L Shift/R Shift	¨
‘ ~	35	—	‘
		L Shift/R Shift	~
, <	36	—	,
		L Shift/R Shift	<
		R Alt	ç
		R Alt+L Shift/R Shift	Ç

Name	Code (Hex) 0x	Check-box	Display/function
. >	37	—	.
		L Shift/R Shift	>
/ ?	38	—	/
		L Shift/R Shift	?
		R Alt	¿
Caps Lock	39	—	Caps Lock
F1	3A	—	F1
		L Shift/R Shift	F13
		L Ctrl/R Ctrl	S5
F2	3B	—	F2
		L Shift/R Shift	F14
		L Ctrl/R Ctrl	S6
F3	3C	—	F3
		L Shift/R Shift	F15
		L Ctrl/R Ctrl	S7
F4	3D	—	F4
		L Shift/R Shift	F16
		L Ctrl/R Ctrl	S8
F5	3E	—	F5
		L Shift/R Shift	F17
		L Ctrl/R Ctrl	S9
F6	3F	—	F6
		L Shift/R Shift	F18
		L Ctrl/R Ctrl	S10
F7	40	—	F7
		L Shift/R Shift	F19
		L Ctrl/R Ctrl	S11
F8	41	—	F8
		L Shift/R Shift	F20
		L Ctrl/R Ctrl	S12
F9	42	—	F9
		L Shift/R Shift	S1
		L Ctrl/R Ctrl	S13
F10	43	—	F10
		L Shift/R Shift	S2
		L Ctrl/R Ctrl	S14
F11	44	—	F11
		L Shift/R Shift	S3
		L Ctrl/R Ctrl	S15
F12	45	—	F12
		L Shift/R Shift	S4
		L Ctrl/R Ctrl	S16

Name	Code (Hex) 0x	Check-box	Display/function
Print Screen, F_N+INS	46	—	Print Screen, F_N+INS
Scroll Lock	47	—	Scroll Lock
Break, Ctrl+Pause	48	—	Break, Ctrl+Pause
Pause	48	—	Pause
Insert	49	—	Insert
Home	4A	—	Home
Page Up	4B	—	Page Up
Delete	4C	—	Delete
End	4D	—	End
Page Down	4E	—	Page Down
Right Arrow	4F	—	Right Arrow
Left Arrow	50	—	Left Arrow
Down Arrow	51	—	Down Arrow
Up Arrow	52	—	Up Arrow
Num Lock	53	—	Num Lock
Keypad /	54	—	Keypad /
Keypad *	55	—	Keypad *
Keypad -	56	—	Keypad -
Keypad +	57	—	Keypad +
Keypad Enter	58	—	Keypad Enter
Keypad 1 End	59	—	Keypad 1 End
Keypad 2 Down	5A	—	Keypad 2 Down
Keypad 3 PageDn	5B	—	Keypad 3 PageDn
Keypad 4 Left	5C	—	Keypad 4 Left
Keypad 5	5D	—	Keypad 5
Keypad 6 Right	5E	—	Keypad 6 Right
Keypad 7 Home	5F	—	Keypad 7 Home
Keypad 8 Up	60	—	Keypad 8 Up
Keypad 9 PageDn	61	—	Keypad 9 PageDn
Keypad 0 Insert	62	—	Keypad 0 Insert
Keypad . Delete	63	—	Keypad . Delete
Europe 2	64	—	Europe 2
App	65	—	App
Keyboard Power	66	—	Keyboard Power
Keypad =	67	—	Keypad =

Name	Code (Hex) 0x	Check-box	Display/function
F13	68	—	F13
F14	69	—	F14
F15	6A	—	F15
F16	6B	—	F16
F17	6C	—	F17
F18	6D	—	F18
F19	6E	—	F19
F20	6F	—	F20
F21	70	—	F21
F22	71	—	F22
F23	72	—	F23
F24	73	—	F24
Left Control	E0	—	Left Control
Left Shift	E1	—	Left Shift
Left Alt	E2	—	Left Alt
Left GUI	E3	—	Left GUI
Right Control	E4	—	Right Control
Right Shift	E5	—	Right Shift
Right Alt	E6	—	Right Alt
Right GUI	E7	—	Right GUI

Dimensional drawings

16

16.1 Panel PC 677 dimensional drawing

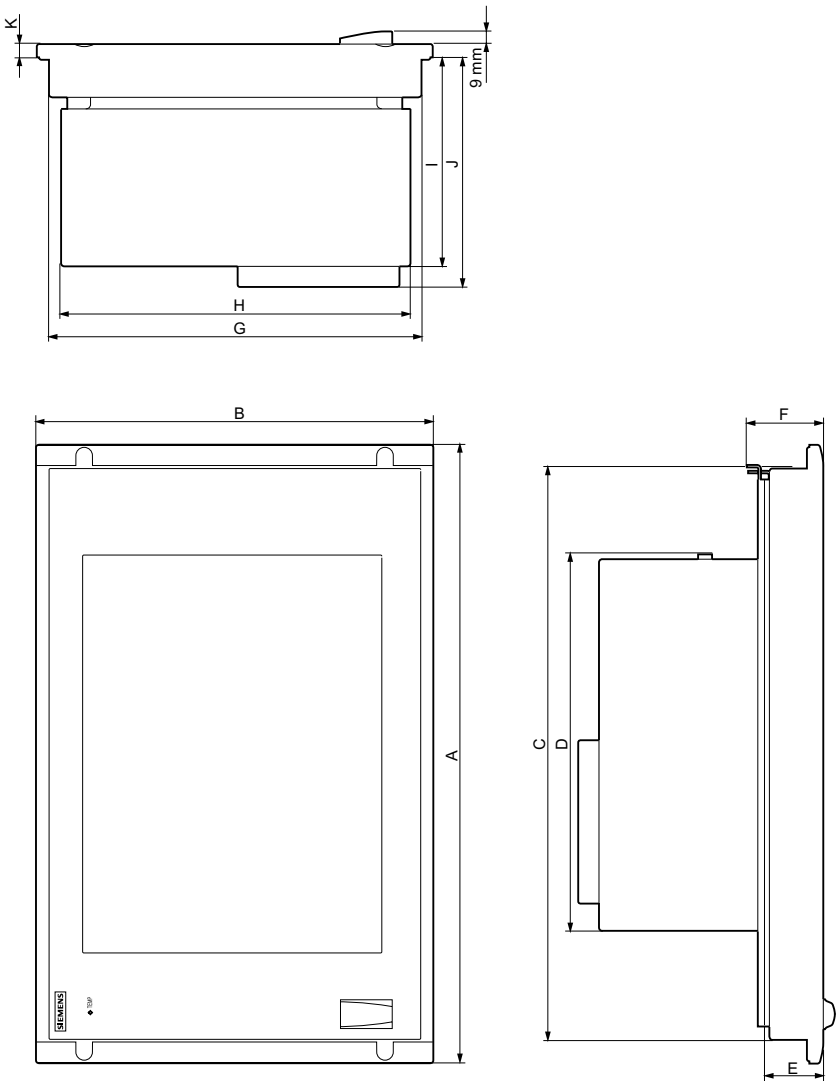


Figure 16-1 Panel PC 677 dimensional drawing

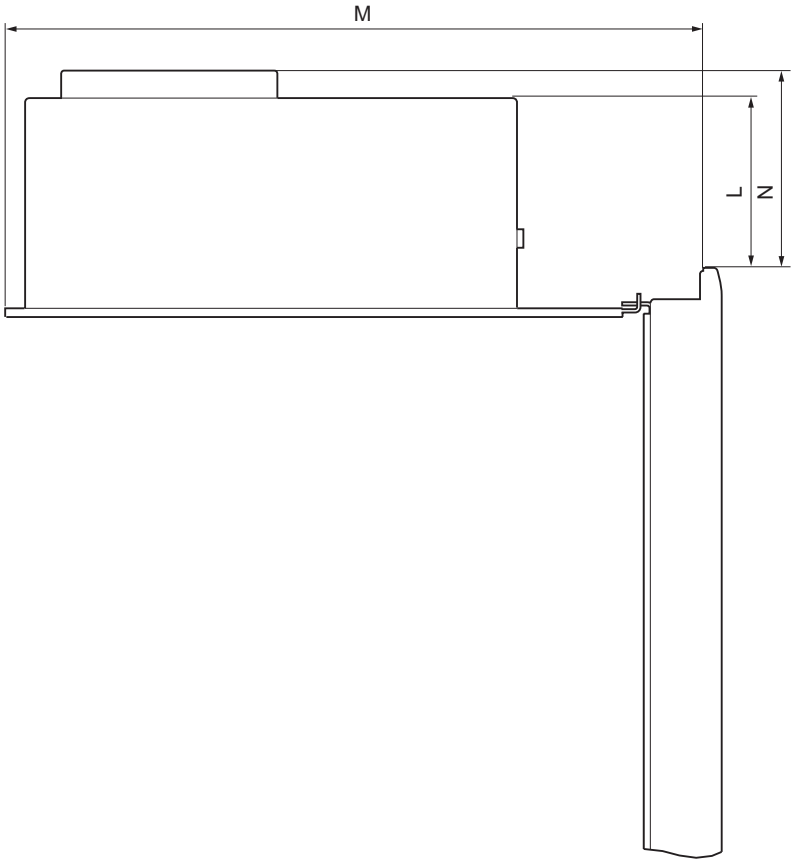


Figure 16-2 Panel PC 677 dimensional drawing, computer unit swung away from control unit

Table 16-1 Panel PC 677 dimensions in mm

Control unit	Key panels		Touch screen front		
	12" TFT	15" TFT	12" TFT	15" TFT	19" TFT
A	482.6	482.6	400.0	482.6	482.6
B	310.3	354.8	310.3	310.3	400.0
C	447.2	447.2	366.0	450.0	450.0
D	314.9	314.9	314.9	314.9	314.9
E	30.8	49.8	37.8	46.6	56.1
F	39.8	59.8	48.3	58.6	68.1
G	288.3	324.4	288.3	288.3	378.0
H	270.4	270.4	270.4	270.4	270.4
I	104.5	123.5	123.0	120.3	129.5
J	121.9	140.9	140.4	137.7	246.9
K	10.5	10.5	10.5	10.5	10.8
L	41.9	30.0	53.4	24.4	18.4
M	350.6	369.0	369.1	366.5	375.6
N	59.3	48.1	70.8	41.8	35.8

16.2 Panel PC 677 dimensional drawing with stainless steel front

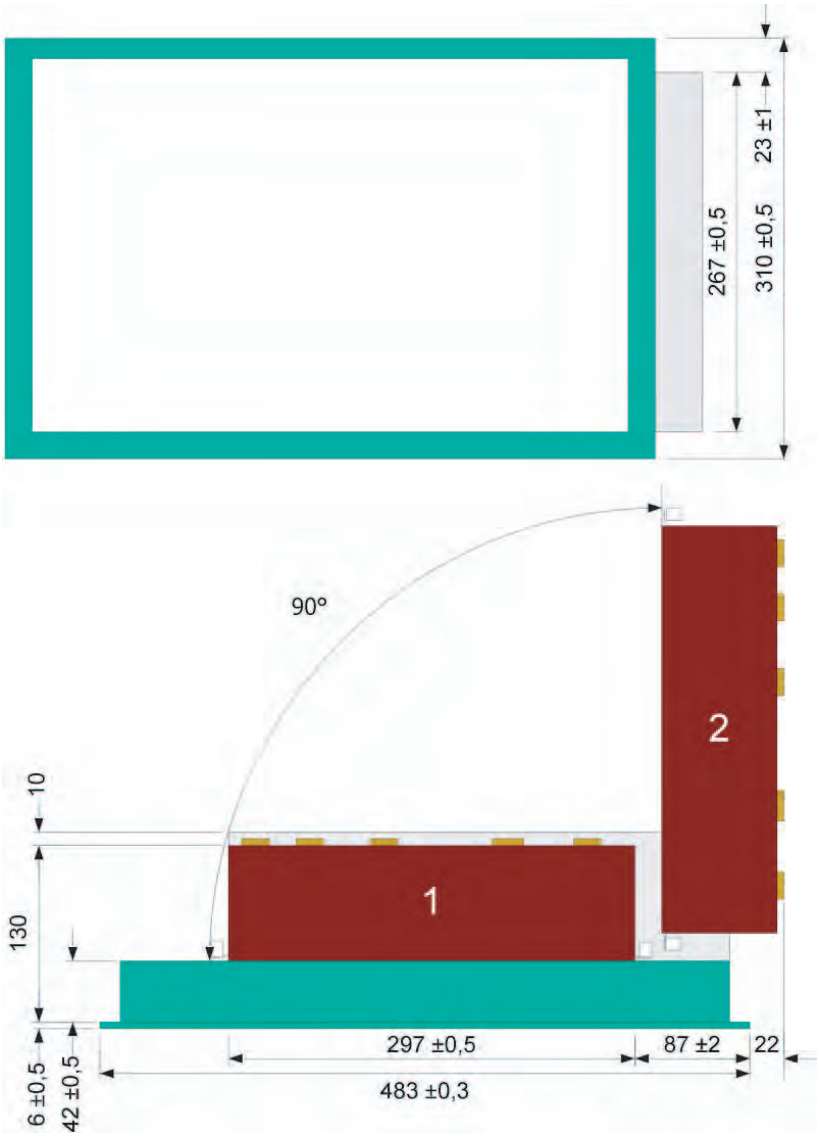


Figure 16-3 Mounting cut-out

1	Computer unit in final position
2	Computer unit swiveled by 90°

16.3 Dimensional drawings for the installation of expansion modules

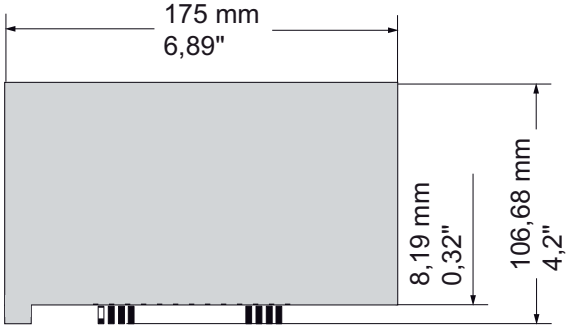


Figure 16-4 Short PCI module (5V)

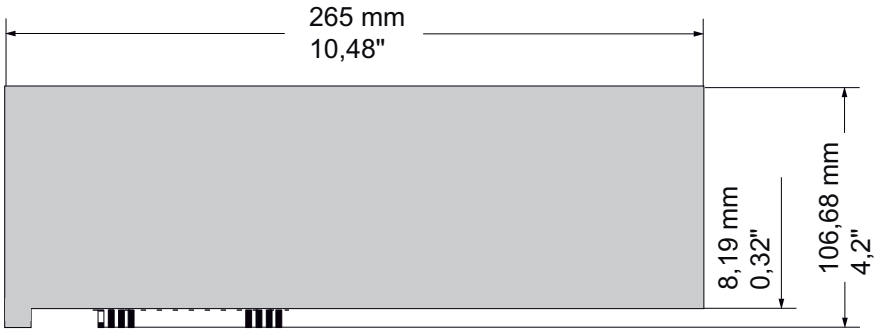


Figure 16-5 Maximum size of PCI module

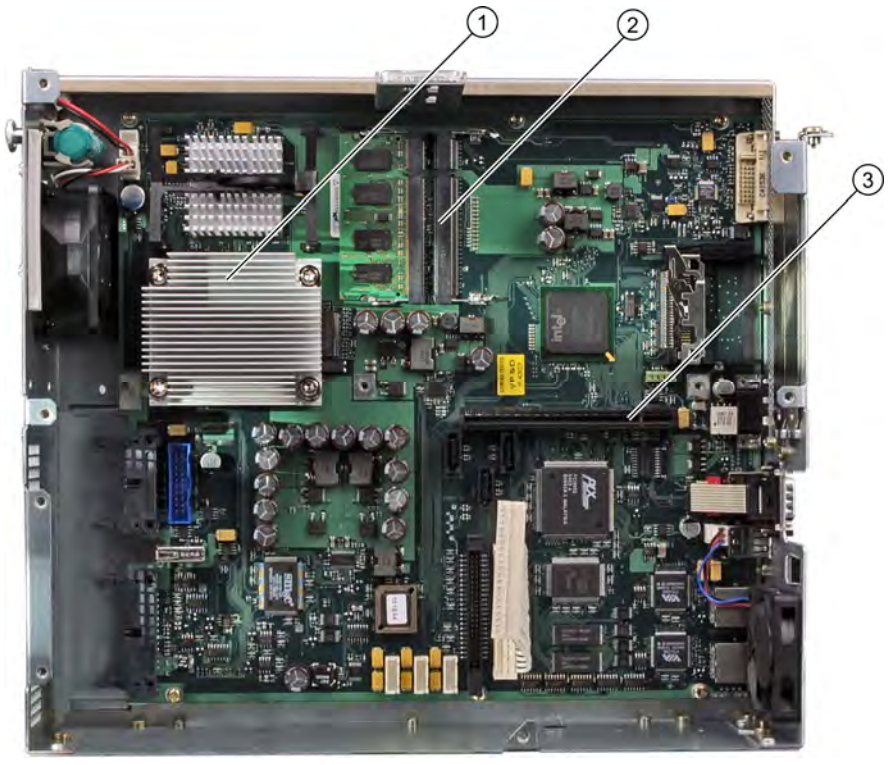
Detailed descriptions

17

17.1 Motherboard

17.1.1 Structure and functions of the motherboard

The essential components of the motherboard are the processor and the chip set, two slots for memory modules, internal and external interfaces and the Flash BIOS.



(1)	Processor heat sink
(2)	Two memory module slots
(3)	Slot for the bus board

17.1.2 Technical features of the motherboard

Component / interface	Description	Characteristics
Chipset	Single chip set	Mobile Intel 915 GM
BIOS	Update by means of software	Phoenix BIOS • V05.01.xx (with Profibus)
CPU	Intel ® Pentium M / Intel ® Celeron M	Upgradable • Multimedia support • On-board L2 cache with 2048/1024 KB
Memory	2 DIMM module slots, max. 1 GB/DIMM	• 64-bit data bus width • 3.3 V • SDRAM DDR2 • Up to 1024 Mbit chip size on the module • 400/533 MHz bus clock [3] • 256 MB to 2 GB/DIMM variable
Graphic	integrated in chipset	• Mobile Intel 915GM/GMS, 910GML Express Chipset Family • VGA: 1600x1200/32-bit color depth/85 Hz • DVI-I: 1600x1200/32-bit color depth/85 Hz • LCD: 1280x1024/18 bit colors • Graphics memory: 8-128 MB, shares system RAM, 8 MB are reserved. With 128 MB system RAM: additional dynamic assignment of up to 32 MB; with system memory 256 MB - 2 GB: additional dynamic assignment of up to 128 MB
Hard disk	2 channels, Serial ATA	Serial ATA 1.5 Mbps
RAID	On-board Serial ATA	• Intel 82801 FR SATA RAID controller • RAID 0, 1, 0+1
DVD-ROM [4] DVD-ROM/CD-RW[4]	Master on parallel ATA interface or connection, Serial ATA	- UDMA-capable, ATA33
PROFIBUS/MPI	Communication interface SIMATIC S7	• Floating[1] CP 5611-compatible • 12 Mbaud

Component / interface	Description	Characteristics
USB	Universal Serial Bus	• External: 4x USB 2.0 on the interface side (max. 2 can be simultaneously operated as high current) • Internal: 2x USB 2.0 (1x high current, 1x low current) • Front panel ports: 1x USB 2.0 high current
Ethernet	2x 10BaseT/100Base-TX	-10/100 Mbps, isolated[1]

[1] Electrically isolated within the safety extra-low voltage circuit (SELV)

[2] Optional product feature

[3] Depends on the CPU type

[4] Depends on the selected device configuration

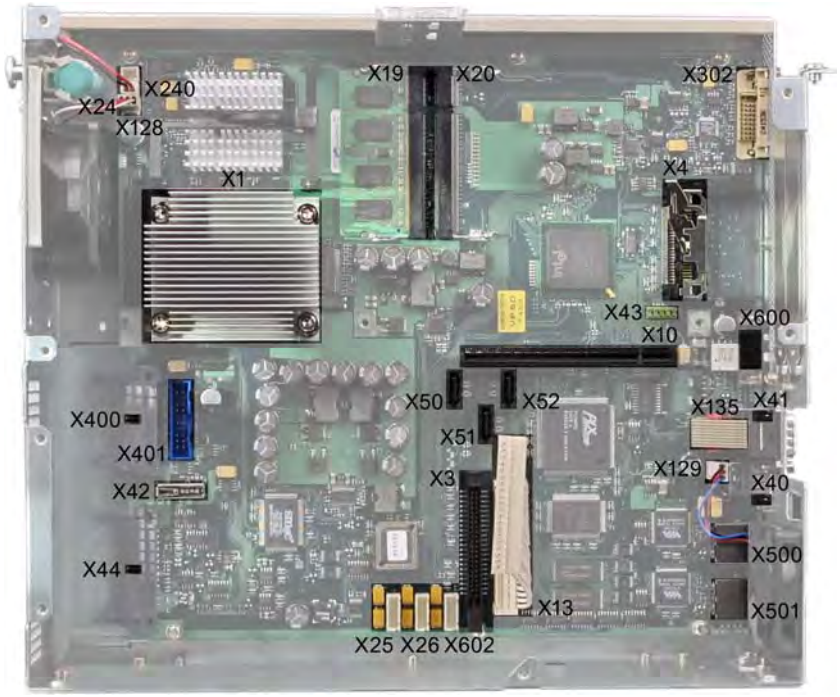
17.1.3 Position of the ports on the motherboard

Interfaces

The motherboard of the device features the following interfaces:

- Interfaces for the connection of external devices
- Interfaces for internal connections (drives, bus boards etc.)

The figure below shows the location of the internal and external interfaces on the motherboard.



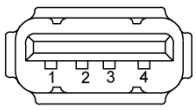
17.1.4 External interfaces

Interface	Position	Connector	Description
USB 2.0	external	X40 X41	X40 lower USB channel 0, X40 upper USB channel 2 X41 lower USB channel 4, X41 upper USB channel 5
PROFIBUS/MPI	external	X600	9-pin, standard socket, galvanically isolated interface
Ethernet	external	X500 X501	X500 first RJ45 port X501 second RJ45 port
DVI-I	external	X302	26-pin socket
Compact Flash	external	X4	50-pin CF socket, types I / II
COM1	external	X135	Serial interface

USB ports, X40, X41

The Universal Serial Bus interfaces have the following pinout:

USB interface



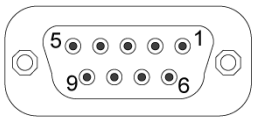
Pin No.	Short designation	Meaning	Input/Output
1	VCC	+ 5 V (fused)	Output
2	– Data	Data channel	Input/Output
3	+ Data	Data channel	Input/Output
4	GND	Ground	–

The connectors are of type A.

All ports are designed as high current USB (500 mA), you can only use a maximum of 2 simultaneously as high current, however.

PROFIBUS / MPI interface, X600

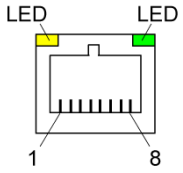
PROFIBUS/MPI interface [1)]



PinNo.	Short designation	Meaning	Input/Output
1	–	Unassigned	–
2	–	Unassigned	–
3	LTG_B	Signal line B of MPI module	Input/output
4	RTS_AS	RTSAS, control signal for received data stream. The signal is "1" active when the directly connected PLC is sending.	Input
5	M5EXT	M5EXT return line (GND) of the 5 V power supply. The current load caused by an external consumer connected between P5EXT and M5EXT must not exceed the maximum of 90 mA.	Output
6	P5 EXT	P5EXT power supply (+5 V) of the 5 V power supply. The current load caused by an external consumer connected between P5EXT and M5EXT must not exceed the maximum of 90 mA.	Output
7	–	Unassigned	–
8	LTG_A	Signal line A of MPI module	Input/output
9	RTS_PG	RTS output signal of the MPI module. The control signal is "1" when the PG is sending.	Output
Shield		on connector casing	

[1] Optional product feature

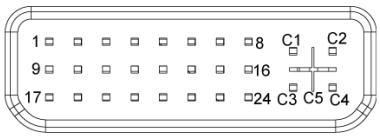
Ethernet RJ45 connection, X500, X501

Ethernet RJ45 connection			
			
PinNo.	**Short designation**	**Meaning**	**Input/Output**
1	TD+	Transmitted data	Output
2	TD-	Transmitted data	Output
3	RD+	Received data	Input
4, 5 [1]	SYMR	Internal 75 Ohm terminating resistor	–
6	RD-	Received data	Input
7, 8 [1]	SYMT	Internal 75 Ohm terminating resistor	–
I		Shield	–
	LED green	Off: 10 Mbps Lit: 100 Mbps	–
	Yellow LED	Lit: Active connection (e.g. to a hub) Flashing: Activity	–

[1] is not necessary for data transfer

DVI-I port, X302

DVI-I port



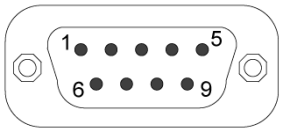
PinNo.	Short designation	Meaning	Input/Output
I	GND	Ground	–
S1	GND	Ground	–
C1	R	Red	Output
C2	G	Green	Output
C3	B	Blue	Output
C4	HSYNC	Horizontal synchronizing pulse	Output
C5	GND	Ground	–
CSA	GND	Ground	–
1	TX2N	TDMS data 2-	Output
2	TX2P	TDMS data 2+	Output
3	GND	Ground	–
4	NC	Unassigned	–
5	NC	Unassigned	–
6	DDC CLK	DDC clock	Input/Output
7	DDC CLK	DDC data	Input/Output
8	VSYNC	Vertical synchronizing pulse	Output
9	TX1N	TDMS data 1-	Output
10	TX1P	TDMS data 1+	Output
11	GND	Ground	–
12	NC	Unassigned	–
13	NC	Unassigned	–
14	+5 V	+5 V	Output
15	GND	Ground	–
16	MONDET	Hotplug detect	Input
17	TX0N	TDMS data 0-	Output
18	TX0P	TDMS data 0+	Output
19	GND	Ground	–
20	NC	Unassigned	–
21	NC	Unassigned	–
22	GND	Ground	–
23	TXCP	TDMS clock +	Output
24	TXCN	TDMS clock -	Output

Compact Flash Card, X4

Compact Flash card port		
Pin No.	**Short designation**	**Meaning**
41	RESET#	Reset (output)
7	CS0#	Chip select 0(output)
32	CS1#	Chip select 1(output)
34	IORD#	I/O read (output)
35	IOWR#	I/O write (output)
20, 19, 18,	A0-A2	Address bit 0-2 (output)
17, 16, 15, 14, 12, 11, 10, 8	A3-A10	Address bit 3-10 (output) to ground
21, 22, 23, 2, 3, 4, 5, 6, 47, 48, 49, 27, 28, 29, 30, 31	D0-D15	Data bits 0-15 (in/out)
37	INTRQ	Interrupt request (input)
9	OE# /ATA SEL#	Enables True IDE mode
24	IOCS16#	I/O-chip select 16 (input)
39	CSEL#	Cable select (output)
42	IORDY	I/O ready (input)
46	PDIAG#	Passed diagnostic
45	DASP#	Drive active/slave present (not connected)
26, 25	CD1#, CD2#	Card detect (not connected)
33, 40	VS1#, VS2#	Voltage sense (not connected)
43	DMARQ	DMA request (input)
44	DMACK#	DMA acknowledge (output)
36	WE#	Write enable
1, 50	GND	Ground
13, 38	VCC	+ 3.3V power

Serial port COM1, X135

The COM1 serial port has the following pin assignment:

Serial interface COM1			
			
PinNo.	**Short designation**	**Meaning**	**Input/Output**
1	DCD (M5)	Receiving signal level carrier	Input
2	RxD (D2)	Received data	Input
3	TxD (D1)	Transmitted data	Output
4	DTR (S1)	Data terminal ready	Output
5	GND (E2)	System ground (reference potential)	–
6	DSR (M1)	Ready for operation	Input
7	RTS (S2)	Request to send	Output
8	CTS (M2)	Clear to send	Input
9	RI (M3)	Incoming call	Input

17.1.5 Front interfaces

Overview

Interface	Position	Connectors	Description
Display (LVDS)	Internal	X400	Connection of LCD displays with LVDS interface (channel 1)
Display (LVDS)	Internal	X401	Connection of LCD displays with LVDS interface (channel 2)
I/O front	Internal	X44	Ports for front I/O, including USB channel 1
USB	Internal	X42	Internal USB 2.0 interface (USB channel 3)

Display interfaces

TFT displays with an LVDS interface can be connected to this interface. You can connect 18-bit displays with a resolution up to 1024x768 pixels on X400 only (single-channel LVDS), and of 1280 x 1024 pixels on X400 and X401 (dual-channel LVDS). On the X401 there is also +12VF as supply voltage for the backlight inverter (max. 4.2A) for 19" / Dual Channel LVDS displays. The permitted display clock rate is 20MHz to 66MHz. The display is selected automatically based on the code of the display select inputs.

The display supply voltages (3.3V and 5V) are switched via the graphics controller according to the requirements of the connected displays. The maximum cable length is 50 cm at a transmission rate of 455 MHz. Special cable properties are required for the differential cable pairs specified by the LVDS specification.

Display interface (1st LVDS channel), X400

Pin No.	Short designation	Meaning	Input/Output
1	P5V_D_fused	+5V (fused) display VCC	Output
2	P5V_D_fused	+5V (fused) display VCC	Output
3	RXIN0-	LVDS output signal bit 0 (-)	Output
4	RXIN0+	LVDS output signal bit 0 (+)	Output
5	P3V3_D_fused	+3.3V (fused) display VCC	Output
6	P3V3_D_fused	+3.3V (fused) display VCC	Output
7	RXIN1-	LVDS output signal bit 1 (-)	Output
8	RXIN1+	LVDS output signal bit 1 (+)	Output
9	GND	Ground	-
10	GND	Ground	-
11	RXIN2-	LVDS output signal bit 2 (-)	Output
12	RXIN2+	LVDS output signal bit 2 (+)	Output
13	GND	Ground	-
14	GND	Ground	-
15	RXCLKIN-	LVDS clock signal (-)	Output
16	RXCLKIN+	LVDS clock signal (+)	Output
17	GND	Ground	-
18	GND	Ground	-
19	NC	Unassigned	-
20	NC	Unassigned	-

Display interface (2nd LVDS channel), X401

Pin No.	Short designation	Meaning	Input/Output
1	GND	Ground	-
2	GND	Ground	-
3	RXIN10-	LVDS input signal bit 0 (-)	Output
4	RXIN10+	LVDS input signal bit 0 (+)	Output
5	GND	Ground	Output
6	GND	Ground	Output
7	RXIN11-	LVDS input signal bit 1 (-)	Output
8	RXIN11+	LVDS input signal bit 1 (+)	Output
9	GND	Ground	-
10	GND	Ground	-
11	RXIN12-	LVDS input signal bit 2 (-)	Output
12	RXIN12+	LVDS input signal bit 2 (+)	Output
13	GND	Ground	-
14	GND	Ground	-
15	RXCLKIN1-	LVDS clock signal (-)	Output
16	RXCLKIN1+	LVDS clock signal (+)	Output
17	GND	Ground	-
18	P12VF	+12V fused	Output
19	P12VF	+12V fused	Output
20	P12VF	+12V fused	Output

Assignment of the display to the display select pins

One of the 15 available displays is configured automatically via the display select inputs. The display select inputs are connected to pull–up resistors, i.e. if these inputs are not interconnected, they are high level. The input must be connected to GND if a low signal is to be generated.

Pin No.	LCD_SEL3	LCD_SEL2	LCD_SEL1	LCD_SEL0	Display type
0	low	low	low	low	reserved
1	low	low	low	high	1280x1024 (SXGA), TFT, 2 x 18-bit, LVDS channel 1 and 2
2	low	low	high	low	DVI LCD 640 x 480
3	low	low	high	high	DVI LCD 800 x 600
4	low	high	low	low	640 x 480 (VGA), TFT, 18 bits, LVDS channel 1
5	low	high	low	high	reserved
6	low	high	high	low	1024 x 768 (XGA), TFT, 18 bits, LVDS channel 1
7	low	high	high	high	800 x 600 (SVGA), TFT, 18 bits, LVDS channel 1
8	high	low	low	low	reserved
9	high	low	low	high	reserved
10	high	low	high	low	reserved
11	high	low	high	high	reserved
12	high	high	low	low	1024 x 768 (XGA), TFT, 2 x 18-bit, LVDS channel 1 and 2
13	high	high	low	high	DVI LCD 1024 x 768
14	high	high	high	low	DVI LCD 1280 x 1024
15	high	high	high	high	No LVDS display or DVI LCD with automatic DDC ID

I/O Front Interface for Operator Panels, X44

This interface carries all signals required for connecting operator panels in addition to the display interface. The maximum cable length is 50 cm at a USB data rate of 12 Mbit/s.

Pin No.	Short designation	Meaning	Input/Output
1	GND	Ground	-
2	P12V	Inverter voltage supply	Output
3	BL_ON	Backlight ON (5 V = ON)	Output
4	P5V_fused	+5 V (fused)	Output
5	GND	Ground	-
6	P3V3_fused	+3.3 V VCC (fused)	Output
7	Reserved	Reserved	-
8	Reserved	Reserved	-
9	Reserved	Reserved	-
10	Reserved	Reserved	-
11	P5V_fused	+5 V (fused)	Output
12	USB_D1M	USB data channel 1	Input/Output
13	USB_D1P	USB data+, channel 1	Input/Output
14	GND	Ground	-
15	LCD_SEL0	Display type - Select signal 0	Input
16	LCD_SEL1	Display type - Select signal 1	Input
17	LCD_SEL2	Display type - Select signal 2	Input
18	LCD_SEL3	Display type - Select signal 3	Input
19	RESET_N	Reset signal (active low)	Input
20	reserved	Reserved	-
21	HD_LED	HD LED, anode with 1 kW in series on the motherboard	Output
22	DP_LED	MPI/DP LED, anode via 1 KOhm in series on the motherboard	Output
23	Ethernet_LED	Ethernet LED, anode with 1 kW in series on the motherboard	Output
24	TEMP_ERR	Temperature error LED, anode with 1 kW in series on the motherboard	Output
25	RUN_R	Watchdog error LED, anode with 1 kW in series on the motherboard	Output
26	RUN_G	Watchdog OK LED, anode with 1 kW in series on the motherboard	Output

Pin Assignment of the USB 2.0 interface, X42

Pin No.	Short designation	Meaning	Input/Output
1	VCC	+ 5 V, fused	Output
2	USB5	USB5_M	Input/Output
3	USB5	USB5_P	Input/Output
4	GND	Ground	-
S1	I	Shield	-
S2	S1	Shield	-

Note

For detailed information on the pin assignments of the interfaces, please contact Costumer Support or the Repair Center.

17.1.6 Internal interfaces

Pin assignment of the internal interfaces

Interface	Position	Connector	Description
Memory	Internal	X19, X20	2 DIMM sockets, 64-Bit
Processor	Internal	X1	Socket for FCPGA processor
Bus expansion	Internal	X10	Socket for bus expansion, uses PCI bus signals
Power supply	Internal	X13	20-pin connector plug for power supply
Hard disk drive Serial ATA	Internal	X50, X51	Serial ATA, max. 2 drives operable
Optical drive Serial ATA	Internal	X52	Serial ATA, max. 1 drive operable
Connection for PS serial ATA	Internal	X25, X26, X602	Power supply for serial ATA
Optical drive Parallel ATA	Internal	X3	44-pin, 2mm male connector
Connection for PS fan	Internal	X129	Power supply for CPU fan, 3-pin male connector
Connection for equipment fan	Internal	X128	Power supply for equipment fan, 3-pin male connector
Back-up battery	Internal	X24	Power supply for back-up battery, 2-pin male connector
Tap for back-up battery	Internal	X240	Voltage tap (= 3V) of the back-up battery, 2-pin, male connector
USB interface	Internal	X43	USB channel 6 and 7

Connection for optical drive, X3

Pin No.	Short designation	Meaning	Input/Output
1	Reserved	Reserved	-
2	Reserved	Reserved	-
3	Reserved	Reserved	-
4	GND	Ground	-
5	Reset	Reset signal	Input/Output
6	D8	Data signal D8	Input/Output
7	D7	Data signal D7	Input/Output
8	D9	Data signal D9	Input/Output
9	D6	Data signal D6	Input/Output
10	D10	Data signal D10	Input/Output
11	D5	Data signal D5	Input/Output
12	D11	Data signal D11	Input/Output
13	D4	Data signal D4	Input/Output
14	D12	Data signal D12	Input/Output
15	D3	Data signal D3	Input/Output
16	D13	Data signal D13	Input/Output
17	D2	Data signal D2	Input/Output
18	D14	Data signal D14	Input/Output
19	D1	Data signal D1	Input/Output
20	D15	Data signal D15	Input/Output
21	D0	Data signal D0	Input/Output
22	DREQ	DMA request	Input
23	GND	Ground	-
24	IOR_N	Read signal	Output
25	IOW_N	Write signal	Output
26	GND	Ground	-
27	IORDY	Ready signal	Input
28	DACK_N	DMA acknowledgment	Output
29	IRQ15	Interrupt signal	Input
30	AD_1	Address1	Output
31	AD_0	Address 0	Output
32	AD_2	Address 2	Output
33	CS_N	Chip select signal	Output
34	HDACT_N	Activity	Input

Pin No.	Short designation	Meaning	Input/Output
35	CS1_N	Chip select 1	-
36	CSEL	Chip select signal	-
37	GND	Ground	-
38	P5V	+5 V voltage supply	Output
39	P5V	+5 V voltage supply	Output
40	P5V	+5 V voltage supply	Output
41	P5V	+5 V voltage supply	Output

Pin assignment of the equipment fan, X128

Pin No.	Short designation	Meaning	Input/Output
1	GND	Ground	-
2	+12 V	Switched power supply	Output
3	CPU FAN_CLK	Clock signal	Input

Pin assignment of the supply for the power supply fan, X129

Pin No.	Short designation	Meaning	Input/Output
1	GND	Ground	-
2	+12 V	Switched power supply	Output
3	PG1 FAN_CLK	Clock signal	Input

Connection for backup battery, X24 (BATT)

A battery for buffering the CMOS RAM is connected to this connector. This is a 3 V Lithium battery with a capacity of 750 mAh.

Pin No.	Short designation	Meaning	Input/Output
1	+	Plus pole	Input
2	-	Minus pole	-

Tap of the backup battery, X240 (OUT)

This connection is intended for expansion modules with on-board CMOS-RAM. The voltage of the backup battery can be tapped here to backup the CMOS RAM data of the expansion module.

Pin No.	Short designation	Meaning	Input/Output
1	+	Plus pole	Output
2	-	Minus pole	-

Notice

No battery should be connected to this connection.

Pin assignment of the supply for the serial ATA drives X25, X26, X602

Pin No.	Short designation	Meaning	Input/Output
1	+12 V	Voltage supply	Output
2	GND	Ground	–
3	GND	Ground	–
4	+5 V	Voltage supply	Output
5	+3.3 V	Voltage supply	Output

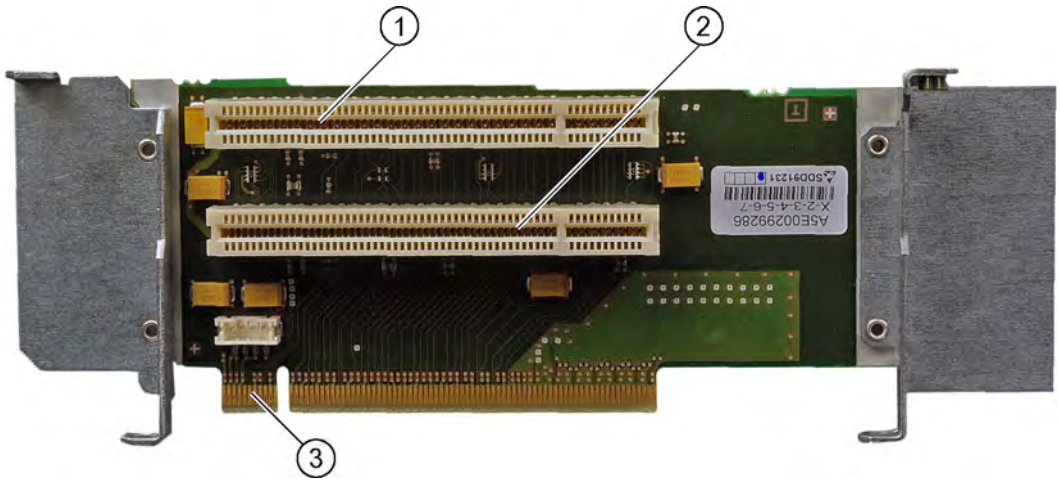
Pin assignment of the internal USB interface connector, X43

Pin No.	Short designation	Meaning	Input/Output
1	VCC 3.3V	+3.3V, fused	Output
2	VCC 5V	+ 5 V, fused	Output
3	USB3	USB3_M	Input/Output
4	USB5	USB5_M	Input/Output
5	USB3	USB3_P	Input/Output
6	USB5	USB5_P	Input/Output
7	GND	Ground	–
8	GND	Ground	–
9	GND	Ground	–
10	GND	Ground	–

17.2 Bus board

17.2.1 Layout and principle of operation

The bus board is designed as a link between the motherboard and the expansion modules. It is fastened with two screws.
The bus board has two PCI slots (1x short, 1x long). It can host expansion modules conforming to PCI specification (Rev. 2.2) for 5 V and 3.3 V modules. All PCI slots are master–capable. The expansion modules are supplied with power via the bus board to motherboard connection.



(1)	Slot 1
(2)	Slot 2
(3)	12V power supply connection for WinAC module

17.2.2 Interrupt assignment (PCI-IRQ)

Box PC 627	PCI devices interrupt assignment (PCI IRQ)
INT – A	Graphics, USB A (channel 0+1), USB B (channel 2+ 3)
INT – B	Slot 1
INT – C	Slot 2
INT – D	Serial ATA
INT – E	Ethernet 1
INT – F	MPI/DP
INT – G	Ethernet 2, USB C (channel 4+5), USB D (channel 6 + 7)
INT - H	USB 2.0

17.2.3 Exclusive PCI hardware interrupt

Applications demanding a high-performance interrupt require a high-speed hardware interrupt reaction. The PCI hardware interrupt should be used only by one resource in order to ensure high-speed reaction of the hardware.

To enable this, the Ethernet 1, PROFIBUS/MPI interfaces and the two slots each have an exclusive interrupt.

	IRQ assignments for Windows XP Professional /2000 Professional operating systems (APIC mode)	IRQ assignments for DOS-based operating systems (PIC mode)
Ethernet 1	20	10
Profibus/MPI	21	7
Slot 1	17	5
Slot 2	18	3

17.2.4 PCI slot pin assignment

Pin No.	5V System Environment	
	Side B	Side A
1	-12V	TRST#
2	TCK	+12V
3	Ground	TMS
4	TDO	TDI
5	+5V	+5V
6	+5V	INTA#
7	INTB#	INTC#
8	INTD#	+5V
9	PRSNT1#	Reserved
10	Reserved	+5V (I/O)
11	PRSNT2#	Reserved
12	Ground	Ground
13	Ground	Ground
14	Reserved	Reserved
15	Ground	RST#
16	CLK	+5V (I/O)
17	Ground	GNT#
18	REQ#	Ground
19	+5V (I/O)	Reserved
20	AD[31]	AD[30]
21	AD[29]	+3.3V
22	Ground	AD[28]
23	AD[27]	AD[26]
24	AD[25]	Ground
25	+3.3V	AD[24]
26	C/BE[3]#	IDSEL
27	AD[23]	+3.3V
28	Ground	AD[22]
29	AD[21]	AD[20]
30	AD[19]	Ground

	5V System Environment	
31	+3.3V	AD[18]
32	AD[17]	AD[16]
33	C/BE[2]#	+3.3V
34	Ground	FRAME#
35	IRDY#	Ground
36	+3.3V	TRDY#
37	DEVSEL#	Ground
38	Ground	STOP#
39	LOCK#	+3.3V
40	PERR#	SDONE
41	+3.3V	SBO#
42	SERR#	Ground
43	+3.3V	PAR
44	C/BE[1]#	AD[15]
45	AD[14]	+3.3V
46	Ground	AD[13]
47	AD[12]	AD[11]
48	AD[10]	Ground
49	Ground	AD[09]
50	CONNECTOR KEY	
51	CONNECTOR KEY	
52	AD[08]	C/BE[0]#
53	AD[07]	+3.3V
54	+3.3V	AD[06]
55	AD[05]	AD[04]
56	AD[03]	Ground
57	Ground	AD[02]
58	AD[01]	AD[00]
59	+5V (I/O)	+5V (I/O)
60	ACK64#	REQ64#
61	+5V	+5V
62	+5V	+5V

17.2.5 Pin assignment 12V power supply connection for WinAC module

Pin	Short description	Meaning	Input /Output
1	+12V[1]	12V voltage	Output
2	GND	Ground	-
3	GND	Ground	-
4	+5V[1]	5V voltage	Output

1) max. permissible current: 1 A; with this power demand the total power demand for the PCI slots are not allowed to be exceeded.

17.3 System resources

17.3.1 Currently allocated system resources

All system resources (hardware addresses, memory configuration, interrupt assignment, DMA channels) are assigned dynamically by the Windows OS, depending on the hardware configuration, drivers, and connected peripheral devices. You can view the current configuration of system resources or possible conflicts with the following operating systems:

Windows 2000 Professional / XP Professional	"Start > Run" : Enter *msinfo32* in "Open" field and confirm with "OK"

17.3.2 System resources used by the BIOS/DOS

The following table describes the system resources for the factory state of the device.

17.3.2.1 I/O address allocation

I/O address (hex)		Description of the basic function	Possible alternative function
from	to		
0000	0CF7	DMA controller	
0020	0021	Programmable interrupt controller	
0024	0025	Programmable interrupt controller	
0028	0029	Programmable interrupt controller	
002C	002D	Programmable interrupt controller	
002E	002F	Motherboard resources	
0030	0031	Programmable interrupt controller	
0034	0035	Programmable interrupt controller	
0038	0039	Programmable interrupt controller	
003C	003D	Programmable interrupt controller	
0040	0043	System timer	
004E	004F	Motherboard resources	
0050	0053	System timer	
0060	0060	Keyboard controller	
0061	0061	Motherboard resources	
0063	0063	Motherboard resources	
0064	0064	Keyboard controller	
0065	0065	Motherboard resources	
0067	0067	Motherboard resources	
0070	0070	Motherboard resources	
0070	0070	System CMOS/real-time clock	
0080	0080	Motherboard resources	
0081	0091	DMA controller	
0092	0092	Motherboard resources	
0093	009F	DMA controller	

I/O address (hex)		Description of the basic function	Possible alternative function
00A0	00A1	Programmable interrupt controller	
00A4	00A5	Programmable interrupt controller	
00A8	00A9	Programmable interrupt controller	
00AC	00AD	Programmable interrupt controller	
00B0	00B1	Programmable interrupt controller	
00B2	00B3	Motherboard resources	
00B4	00B5	Programmable interrupt controller	
00B8	00B9	Programmable interrupt controller	
00BC	00BD	Programmable interrupt controller	
00C0	00DF	DMA controller	
00F0	00F0	Numeric data processor	
01F0	01F7	Primary IDE channel	
0274	0277	ISA PNP Read Data Port	
0279	0279	ISA PNP Read Data Port	
03B0	03BB	Mobile Intel 915GM/GMS, 910GML Express Chipset Family	
03C0	03DF	Mobile Intel 915GM/GMS, 910GML Express Chipset Family	
03E0	03E7	Unused	
03F6	03F6	Primary IDE channel	
03F7	03F7	Standard floppy disk controller	
03F8	03FF	COM1	
04D0	04D1	Programmable interrupt controller	
0680	06FF	Motherboard resources	
0800	080F	Motherboard resources	
0A79	0A79	ISA PNP Read Data Port	
0D00	FFFF	PCI bus	
1000	107F	Motherboard resources	
1180	11BF	Motherboard resources	
1640	164F	Motherboard resources	
1800	1807	Mobile Intel 915GM/GMS, 910GML Express Chipset Family	
1810	181F	Intel® 82801FB/FBM Ultra ATA Storage Controllers - 266F	
1820	183F	Intel® 82801FB/FBM USB Universal Host Controller - 2658	
1840	185F	Intel® 82801FB/FBM USB Universal Host Controller - 2659	
1860	187F	Intel® 82801FB/FBM USB Universal Host Controller - 265A	

I/O address (hex)		Description of the basic function	Possible alternative function
1880	189F	Intel® 82801FB/FBM USB Universal Host Controller - 265B	
18B0	18BF	Intel® 82801FB Ultra ATA Storage Controllers - 2652	
18C4	18C7	Intel® 82801FB Ultra ATA Storage Controllers - 2652	
18C8	18CF	Intel® 82801FB Ultra ATA Storage Controllers - 2652	
18D0	18D7	Intel® 82801FB Ultra ATA Storage Controllers - 2652	
0018	18FF	Intel® 82801FB/FBM SMBus Controller - 266A	
2000	20FF	VIA Rhine III Fast Ethernet Adapter	
2400	24FF	VIA Rhine III Fast Ethernet Adapter #2	

17.3.2.2 Interrupt assignment

Interrupt	Description	Notes
IRQ0	System timer	Fixed
IRQ1	Keyboard	Fixed
IRQ4	Serial port COM1	2)
IRQ8	Real-time clock (RTC)	Fixed
IRQ9	Microsoft ACPI-Compliant System	1)
IRQ13	Numeric processor	Fixed
IRQ14	1. IDE channel (primary)	2)
IRQ16	Mobile Intel 915GM/GMS, 910GML Express Chipset Family	1)
IRQ16	Intel® 82801FB/FBM USB Universal Host Controller - 2658	1)
IRQ 16	Intel® 82801FB/FBM USB Universal Host Controller - 2659	1)
IRQ 17	Slot 1	Fixed
IRQ 18	Slot 2	Fixed
IRQ 19	Intel® 82801FB Ultra ATA Storage Controllers - 2652	1)
IRQ 20	VIA Rhine III Fast Ethernet Adapter	2)
IRQ 21	Profibus/MPI	Fixed
IRQ 22	Intel® 82801FB/FBM Universal Host Controller - 265A	1)
IRQ 22	Intel® 82801FB/FBM Universal Host Controller - 265B	1)
IRQ 22	VIA Rhine III Fast Ethernet Adapter #2	2)
IRQ 23	Intel® 82801FB/FBM USB2 Enhanced Host Controller - 265C	1)

PCI interrupt lines	PCI devices interrupt assignment (PCI IRQ)
INT – A	Graphics, USB A (channel 0+1), USB B (channel 2+ 3)
INT – B	Slot 1
INT – C	Slot 2
INT – D	Serial ATA
INT – E	Ethernet 1
INT – F	MPI/DP
INT – G	Ethernet 2, USB C (channel 4+5), USB D (channel 6 + 7)
INT - H	USB 2.0

[1)] The on-board PCI devices require PCI interrupt channels. These interrupt channels are sharable and plug and play compatible. This means several devices can share the same interrupt. Interrupts are assigned automatically (exception: see section, Exclusive PCI Hardware Interrupt).

[2)] These functions can be disabled in the Setup This releases allocated resources.

17.3.2.3 Memory address assignments

PCI VGA modules can be operated with an expansion ROM of a size up to 48 K.

Address		Description of the basic function	Possible alternative function
from	to		
000A 0000	000B FFFF	PCI bus	
000A 0000	000B FFFF	Mobile Intel® 915GM/GMS,910GML Express Chipset Family	
000D 0000	000D 3FFF	PCI bus	
000D 4000	000D 7FFF	PCI bus	
000D 8000	000D BFFF	PCI bus	
B000 0000	B003 FFFF	Mobile Intel® 915GM/GMS,910GML Express Chipset Family	
B004 0000	B004 03FF	Intel® 82801FB/FBM USB2 Enhanced Host Controller 265C	
B004 0400	B004 07FF	Intel® 82801FB Ultra ATA Storage Controllers	
B008 0000	B00F FFFF	Mobile Intel® 915GM/GMS,910GML Express Chipset Family	
B010 0000	B010 00FF	VIA Rhine III Fast Ethernet Adapter	
B010 0400	B010 04FF	VIA Rhine III Fast Ethernet Adapter #2	
C000 0000	CFFF FFFF	Mobile Intel® 915GM/GMS,910GML Express Chipset Family	
DFF8 0000	DFFF FFFF	Mobile Intel® 915GM/GMS,910GML Express Chipset Family	
E000 0000	EFFF FFFF	Motherboard resources	
F000 0000	F000 3FFF	Motherboard resources	
F000 8000	F000 BFFF	Motherboard resources	
F000 4000	F000 4FFF	Motherboard resources	
F000 5000	F000 5FFF	Motherboard resources	
F000 8000	F000 BFFF	Motherboard resources	
FF80 0000	FFFF FFFF	Intel® 82802 Firmware Hub Device	

17.4 Operating system licenses

Description:

The supplied and installed Windows operating systems of the SIMATIC PCs are full Windows versions without any function restrictions. The additional wording "For Embedded Systems" on the accompanying operating system Recovery CD describes the contractual conditions under which Siemens AG acquires the licenses from Microsoft. The Microsoft Windows 2000 Professional MUI and Microsoft Windows XP Professional MUI operating systems supplied to Siemens AG under the license "Microsoft Operating Systems for Embedded Systems" for use with SIMATIC PG/PC products are equivalent to the relevant version from the desktop/office sales channel.

This provides numerous advantages for customers in the industrial environment over the OEM licenses marketed in the office environment:

- Long-term availability of operating systems up to 15 years, considerably longer than the Microsoft marketing period for the office environment
- No license for Windows XP Professional is required from Microsoft by the customer (important when components are replaced during servicing)
- In addition to the operating system CD (Recovery CD), the contract permits a Restore DVD to be supplied (image of the operating system as delivered - including all relevant drivers and software)
- The license permits images created by a customer to be transferred to any number of SIMATIC PCs that are fitted with the relevant COA (Certificate of Authentificity) labels "for Embedded Systems"
- The COA label on the device is the only license verification required. An additional license agreement is not necessary

The license conditions in the operating system pack contain a reference to "restricted functionality". This note only refers to the application scope of this license and is defined for industrial applications, such as industrial controls, programming devices, information terminals, instruments, displays, Web panels, etc. These devices must not be primarily intended for use in domestic or office environments.

The licenses "for Embedded Systems" must not be confused with the Windows embedded operating systems, such as Windows XPe (Windows XP embedded). These may also contain functional limitations that have been implemented in favor of reduced memory allocation for image generation.

17.5 Dual Display mode

The Panel PC 677 can be operated with a digital LCD display or with a VGA monitor. An adapter (A5E00254532) is required for operating the VGA monitor that forwards the analog signals of the DVI connector to the VGA connector.

Note

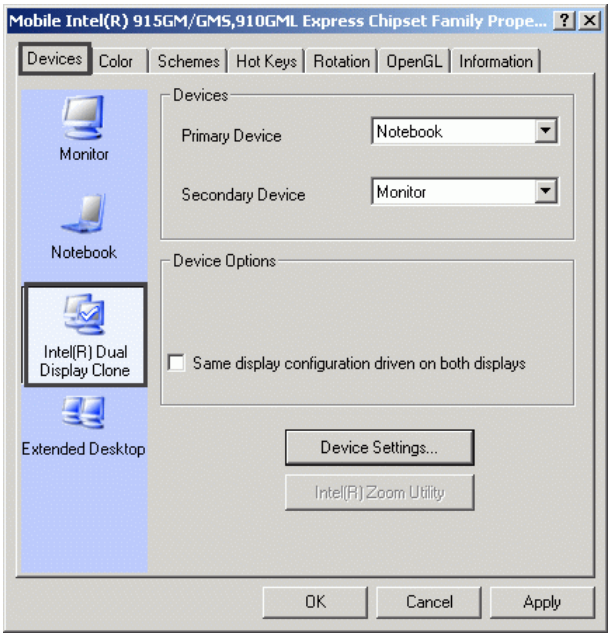
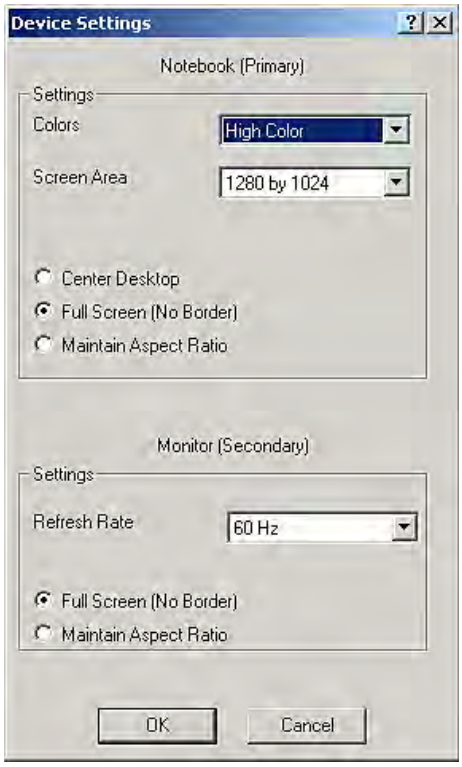
BIOS restrictions

DVI LCD and LVDS displays do not function simultaneously in the BIOS.

Activation of Dual Display mode

The procedure for activating Dual Display mode is described in the table below:

	Procedure	
1	You can connect the external monitor or LCD display in one of the following ways: 1. Connection with device switched off: • Connect the monitor or the LCD display using the VGA adapter via the DVI interface. • During the boot procedure, a picture must be constantly visible on both displays 1. Connection with device switched on: Connect the monitor or the LCD display using the VGA adapter via the DVI interface.	
2	Activate the graphics driver of the external display. In the Control Panel menu, activate "Intel® Extreme Graphics Family Properties" via "Start > Settings > Control Panel > Intel® GMA Driver for Mobile"	
3	In the window "Intel® Extreme Graphics Family Properties", select the "Devices" tab. You can select from four different settings: • Monitor (external display) • Notebook (internal display) • Intel® Dual Display Clone (Dual Display mode) • Extended Desktop (Extended Display mode)	

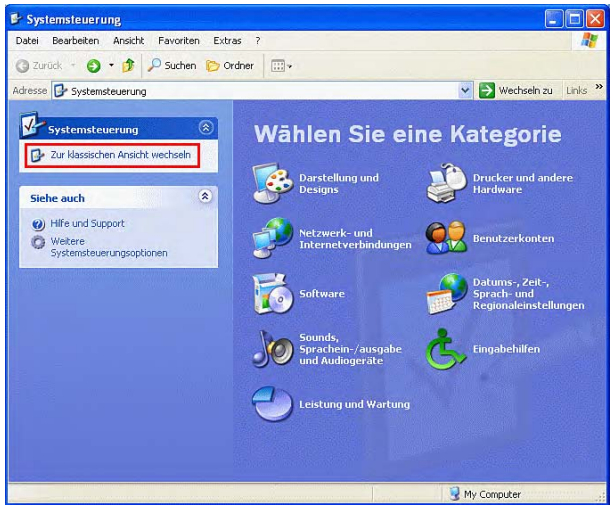
	Procedure	
4	To activate both displays, click the button "Intel® Dual Display Clone" (Figure 02). After confirming with OK, both displays will be activated.	
5	Dual Display mode is subject to the following restrictions: • The external display must be activated under Windows when: – It is connected for the first time – An external display was not connected during booting – It is not plugged in until after start-up • The maximum resolution is limited by the display with the lowest capability • During booting, on the LCD monitor, only the "Primary" display will be visible. When Windows is active, the LCD monitor switches on **Special features in Dual Display mode:** In Dual Display mode, the maximum refresh rate can be specified for the monitor.	

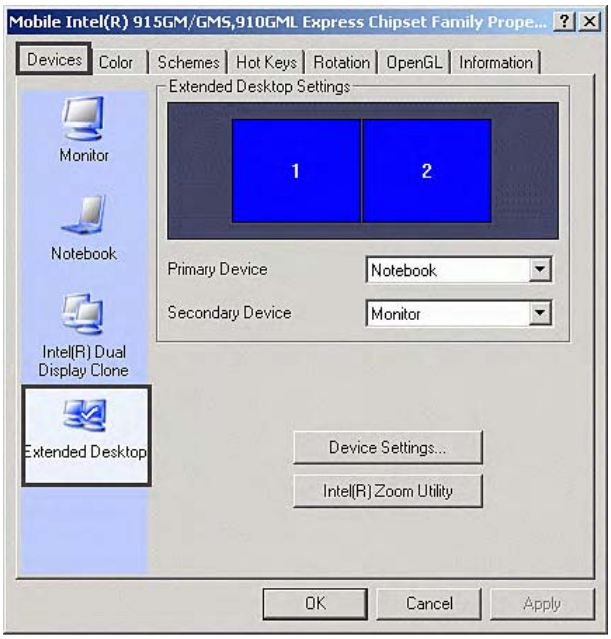
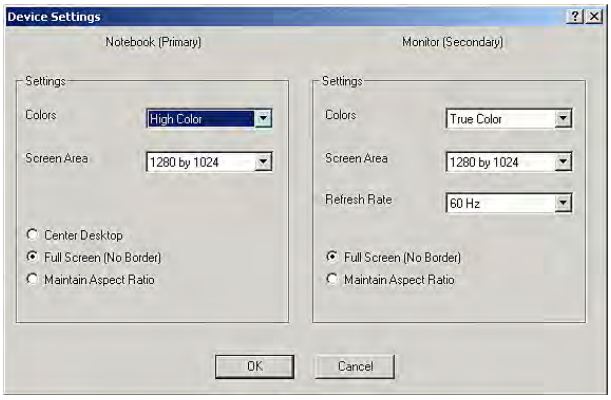
17.6 Extended Display mode

The Panel PC 677 can be operated with a digital LCD display or with a VGA monitor. An adapter (A5E00254532) is required for operating the VGA monitor that converts the analog DVI signals to VGA signals.

Activation of Extended Display mode

The procedure for activating Dual Display mode is described in the table below:

	Procedure	
1	You can connect the external monitor or LCD display in one of the following ways: • Connection with device switched off: – Connect the monitor or the LCD display using the VGA adapter via the DVI interface – During the boot procedure, a picture must be constantly visible on both displays • Connection with device switched on: Connect the monitor or the LCD display using the VGA adapter via the DVI interface.	
2	Activate the graphics driver of the external display. In the Control Panel menu, activate "Intel® Extreme Graphics Family Properties" via "Start > Settings > Control Panel > Intel® GMA Driver for Mobile"	
3	Note for Windows XP Professional and Windows 2000 Professional operating systems: You can also access the "Control Panel" menu • Via "Start > Control Panel" (in the start menu for easier access to programs under Windows XP Professional) • Via "Start > Settings > Control Panel" (in the classical start menu as in earlier Windows versions, such as Windows 2000 Professional) There are two diffierent views in the Control Panel menu of Windows XP Professional, the classical view and the category view. In the category view, you must click the menu item "Change to classical view" first (Figure 01), to change to the classical view of the Control Panel. You can open the properties of the "Intel® GMA Driver for Mobile" here.	

	Procedure	
4	In the window "Intel® Extreme Graphics Family Properties", select the "Devices" tab. You can select from four different settings: • Monitor (external display) • Notebook (internal display) • Intel® Dual Display Clone (Dual Display mode) • Extended Desktop (Extended Display mode)	
5	To activate both displays, click the button "Extended Desktop" (Figure 02). After confirming with OK, both displays will be activated	
6	Extended Display mode is subject to the following restrictions: • The external display must be activated under Windows when: – It is connected for the first time – An external display was not connected during booting – It is not plugged in until after start-up • During booting, on the LCD monitor, only the "Primary" display will be visible. When Windows is active, the LCD monitor switches on. Special features in Extended Display mode: • In Extended Display mode, the maximum refresh rate can be specified for the monitor • Different resolutions can be selected.	

17.7 BIOS Setup

17.7.1 Overview

BIOS SETUP program

The BIOS SETUP program is stored in the ROM BIOS. Information about the system configuration is stored in the battery-backed RAM of the device.

You can use SETUP to set the hardware configuration (for example, the hard disk type) and define the system properties. You can also use SETUP to set the time-of-day and date.

Changing the device configuration

Your device configuration is preset for working with the software supplied with the unit. You should only change the preset values if you have modified your device in any way, or if a fault occurs when the unit is powered up.

17.7.2 Starting BIOS Setup

Starting BIOS Setup

Start the setup program as follows:

Reset the device (warm or cold restart).

In the figures shown, the default settings differ based on the device versions. With the default setting of your device, the display shown below appears following power-on, **for example**:

```
Phoenix BIOS 4.0 Release 6.0
Copyright 1985 - 2002 Phoenix Technologies Ltd.
All Rights Reserved
SIMATIC Panel PC 677 Profibus/MPI
CPU = Intel ® Pentium M processor x.x GHz
xxx M System RAM Passed
512 K Cache SRAM Passed
System BIOS shadowed
Video BIOS shadowed
ATAPI CD/DVD-ROM : xx DVD_RW
Fixed Disk 0 : xxx
Fixed Disk 1 : xxx
```

On completion of the POST, the BIOS gives you the opportunity of starting the SETUP program. The following message appears on the screen:

```
Press < F2 > to enter SETUP or <ESC> to show boot menu
```

Press the F2 key as long as the BIOS prompt appears on the screen.

17.7.3 BIOS setup menus

The various menus and submenus are listed on the next pages. You can obtain information on the selected SETUP item from the "item-specific help" part of the respective menu.

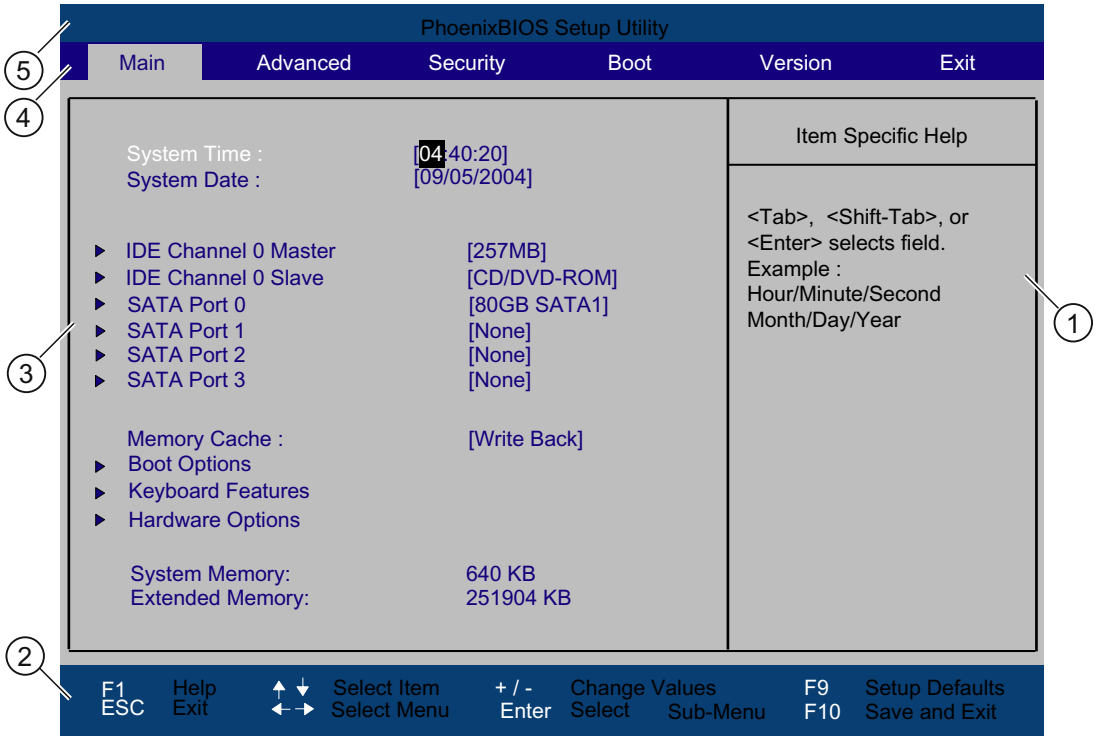


Figure 17-1 SETUP Main Menu (Example)

(1) Help view	(4) Menu line
(2) Input line	(5) Header
(3) Selectable submenu	

Menu layout

The screen is divided into four sections. In the top part (4), you can select the menu forms [Main], [Advanced], [Security], [Boot], [Version], [Exit]. In the left of the center section (3) you can select various settings or submenus. Brief help texts appear on the right (1) for the currently selected menu entry. The bottom section contains information for operator input.

The figures below represent examples of specific device configurations. The screen content changes based on the supplied equipment configuration.

Yellow stars to the left of the interface designation (for example, Internal COM 1) indicate a resource conflict between the interfaces managed by the BIOS. In this case you should select the default settings (F9) or eliminate the conflict.

You can move between the menu forms using the cursor keys [←] left and [→] right.

Menu	Meaning
Main	System functions are set here
Advanced	An extended system configuration can be set here
Security	Security functions are set here, for example, a password.
Boot	This is where the boot priority is specified.
Version	Information about the programming device (for example, release status) can be found here.
Exit	Used for terminating and saving.

17.7.4 Main menu

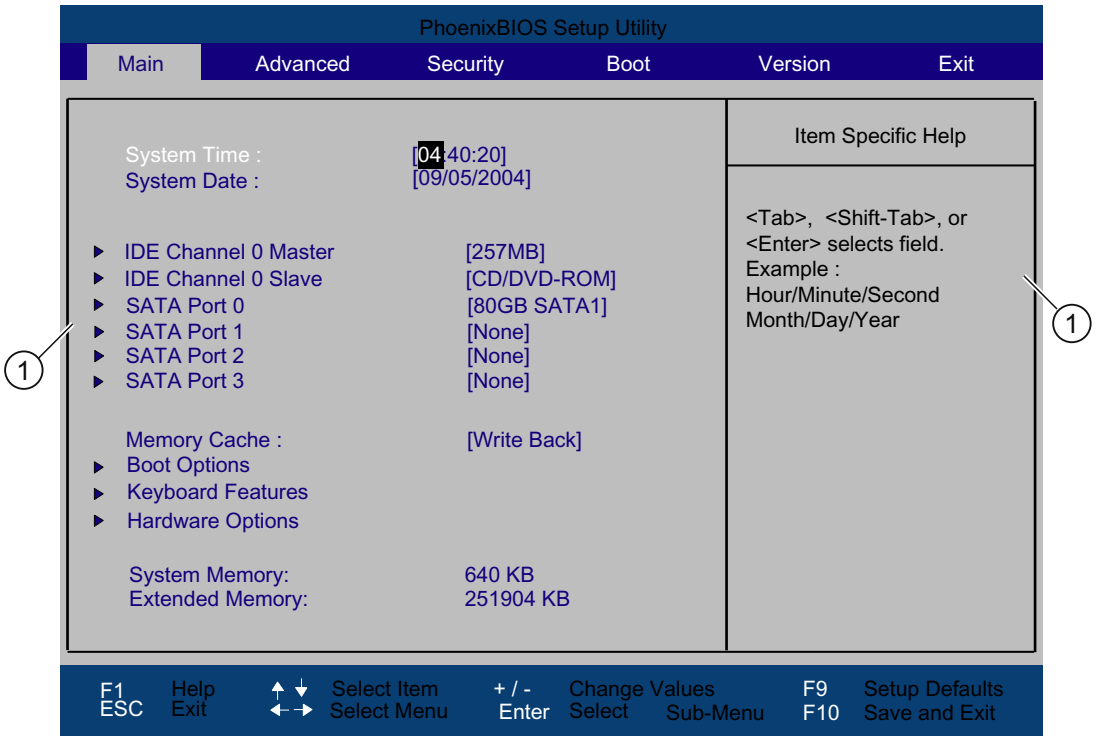


Figure 17-2 SETUP Main menu (example)

(1) Selectable submenu

Settings in the main menu

In the main menu, you can move up and down to select the following system configuration boxes by means of the [↑] up and [↓] down cursor keys:

Field	Meaning
System Time	For viewing and setting the current time
System Date	For viewing and setting the current date
Memory Cache	Used for setting the cache options
by submenus	
IDE Channel 0 Master	Type of installed disk drives
IDE Channel 0 Slave	Type of installed disk drives
SATA Port 0	Type of installed disk drives
SATA Port 1	Type of installed disk drives
SATA Port 2	Type of installed disk drives
SATA Port 3	Type of installed disk drives
Boot options	Used for setting the boot options
Keyboard Features	Used for setting of keyboard interface (for instance, NUM-LOCK, typematic rate)
Hardware options	Used for setting the hardware options

System time and date

System Time and System Date indicate the current values. Once you have selected the appropriate option, you can use the [+] and [-] keys to modify the time setting

Hour: Minute: Second

and for the date

Month/Day/Year

.

You can move between the entries in the date and time fields (for example, from hour to minute) using the tab key.

IDE Channel 0 Master, IDE Channel 0 Slave

The system jumps to the following submenu when you select this type of menu field:

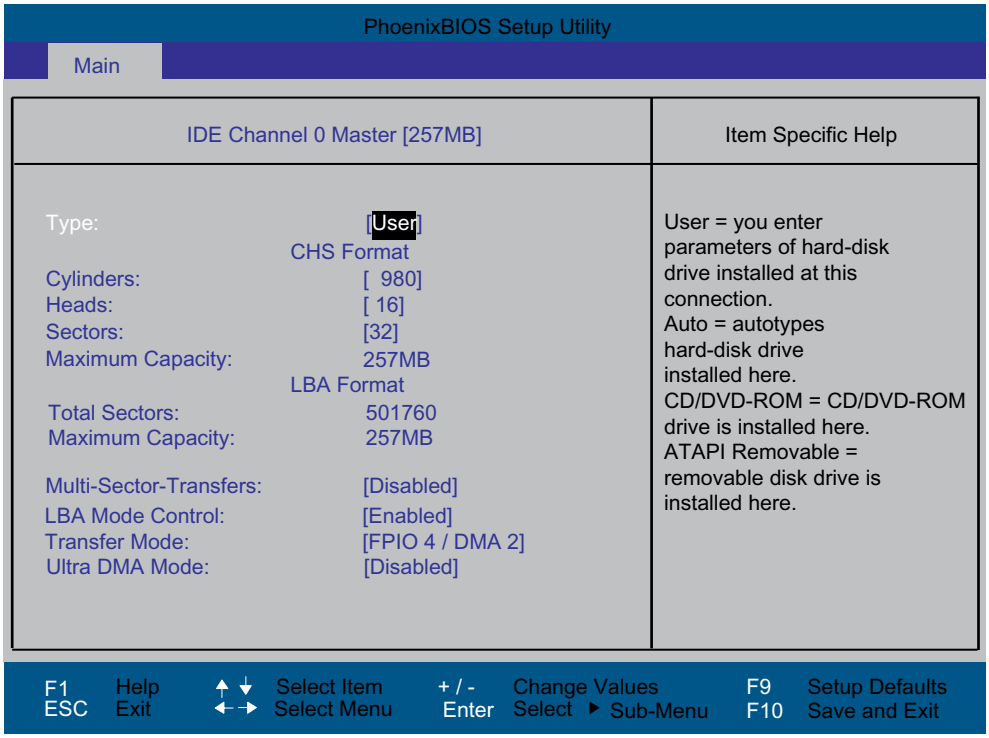
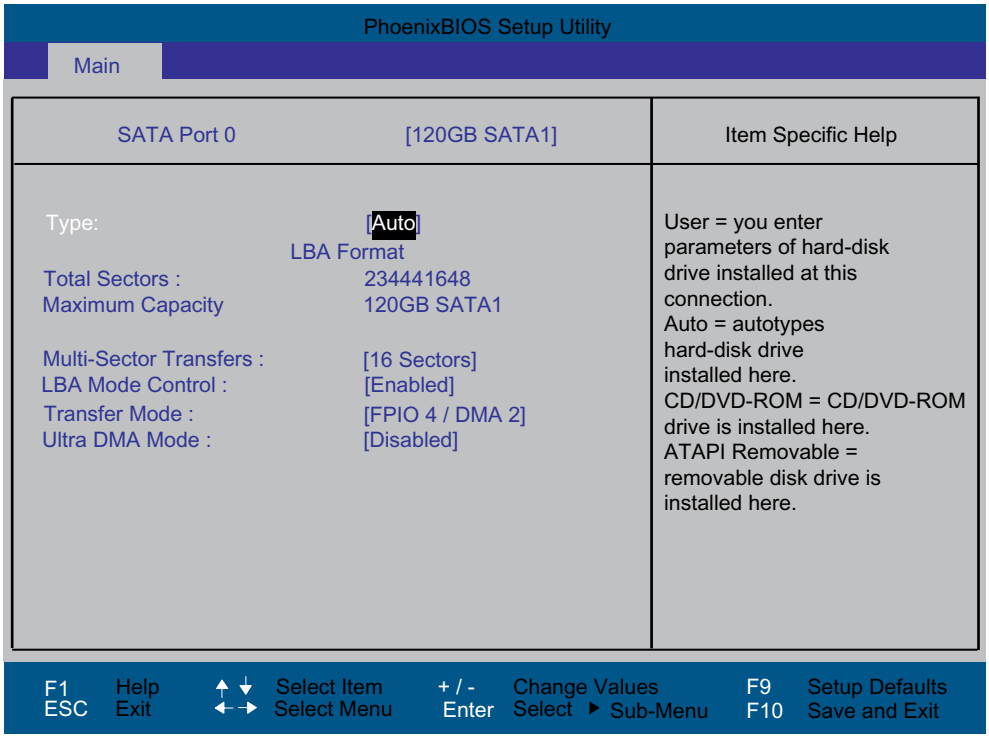


Figure 17-3 IDE Channel 0 Master (example)

Type	[User]	Select “User” if you want to define the hard disk drive. You also need to configure the other options, for example, Cylinder, Heads, Sectors/Track, or other properties in accordance with the hard disk drive.
	[Auto]	The parameters that you can select here are usually stored on the respective IDE drive. The 'Auto' setting in the 'Type' field means that these values are automatically read from the drive and written to memory. If Type is selected for a drive that cannot be detected, a time-out is triggered within approximately 1 minute and the entries remain unchanged. You should always check that the interfaces for which you select 'Auto' are in fact connected to drives.
	[CD/DVD-ROM]	CD/DVD-ROM is connected
	ATAPI Removable	This is where removable data media is connected
	None	Select "None" if you have not connected a disk drive. This setting reduces the system waiting time.
Multi Sector-Transfer	The number of sectors transmitted per interrupt are transferred in the option “Multi-Sector Transfers.” The value depends on the drive and should be set only to "Auto" in the "Type" field.	
	Disabled	2, 4, 8, 16 sectors
LBA mode control	“Enabled” in the option “LBA Mode Control” (enabled, disabled) means that hard disk capacities greater than 528 MB are supported. The value depends on the drive and should be set only to "Auto" in the "Type" field.	
32-bit I/O	The type of access to the drive is defined in the 32-bit I/O field	
	Disabled	16–bit access
	Enabled	32–bit access (default)
Transfer Mode or Ultra DMA Mode	The settings in these fields define the interface data transfer rate. The value depends on the drive and should be set only to "Auto" in the "Type" field. You exit the submenu using the ESC key.	

SATA Port 0, SATA Port 1, SATA Port 3

The system jumps to the following submenu when you select this type of menu field:



Type	[User]	Select “User” if you want to define the hard disk drive. You also need to configure the other options, for example, Cylinder, Heads, Sectors/Track, or other properties in accordance with the hard disk drive.
	[Auto]	The parameters that you can select here are usually stored on the respective IDE drive. The 'Auto' setting in the 'Type' field means that these values are automatically read from the drive and written to memory. If Type is selected for a drive that cannot be detected, a time-out is triggered within approximately 1 minute and the entries remain unchanged. You should always check that the interfaces for which you select 'Auto' are in fact connected to drives.
	[CD/DVD-ROM]	CD/DVD-ROM is connected
	[ATAPI Removable]	This is where removable data media is connected
	[None]	Select "None" if you have not connected a disk drive. This setting reduces the system waiting time.
Multi Sector-Transfer	The number of sectors transmitted per interrupt are transferred in the option “Multi-Sector Transfers.” The value depends on the drive and should be set only to "Auto" in the "Type" field.	
	Disabled	2,4,8,16 sectors
LBA mode control	“Enabled” in the option “LBA Mode Control” (enabled, disabled) means that hard disk capacities greater than 528 MB are supported. The value depends on the drive and should be set only to "Auto" in the "Type" field.	
32-bit I/O	The type of access to the drive is defined in the 32-bit I/O field	
	Disabled	16–bit access
	Enabled	32–bit access (default)
Transfer Mode or Ultra DMA Mode	The settings in these fields define the interface data transfer rate. The value depends on the drive and should be set only to "Auto" in the "Type" field. You exit the submenu using the ESC key.	

The "Memory Cache" field

The following context menu appears when you select the option “Memory cache” in the main menu:

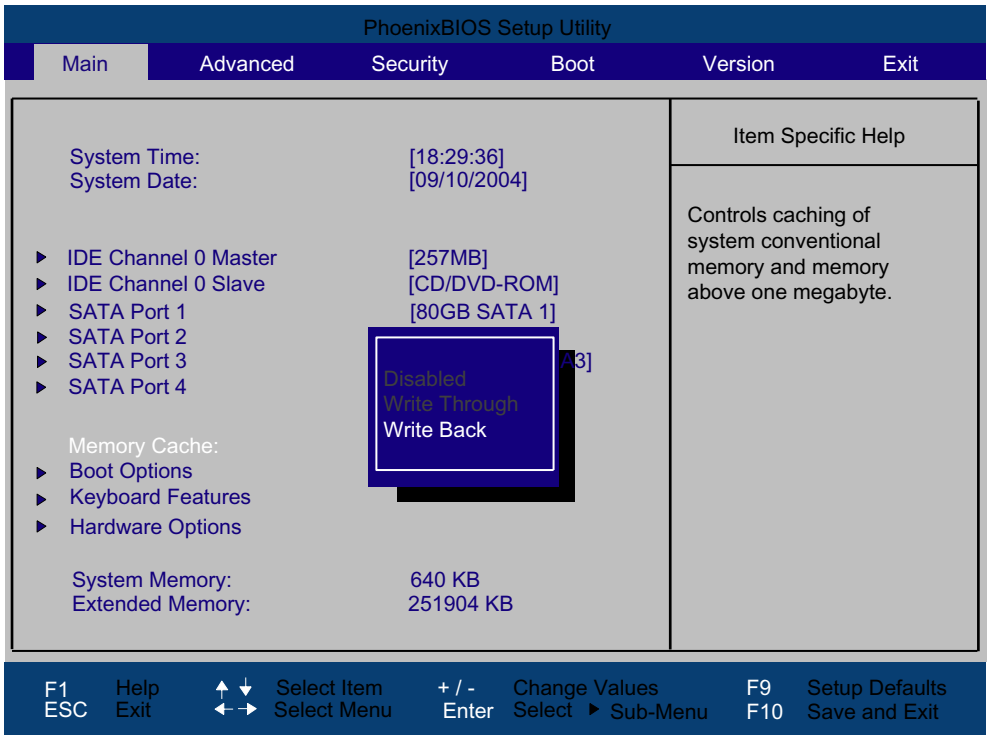


Figure 17-4 "Memory Cache" field

The cache is a high-speed memory buffer between the CPU and memory (DRAM). Repeated memory access operations are executed in the faster cache, and not in the main memory, provided the feature is enabled. In some cases it may be necessary to disable the cache for certain types of hardware and software because intentional program runtimes or delay times may be prevented by the fast cache.

[Disabled]	Cache is disabled
[Write Through]	Write access is not concluded until the entry has been made in main memory
[Write Back]	Write access is concluded immediately, the entry in main memory takes place in the background (default)

"Boot options" field

The following context menu appears when you select “Boot options” in the main menu:

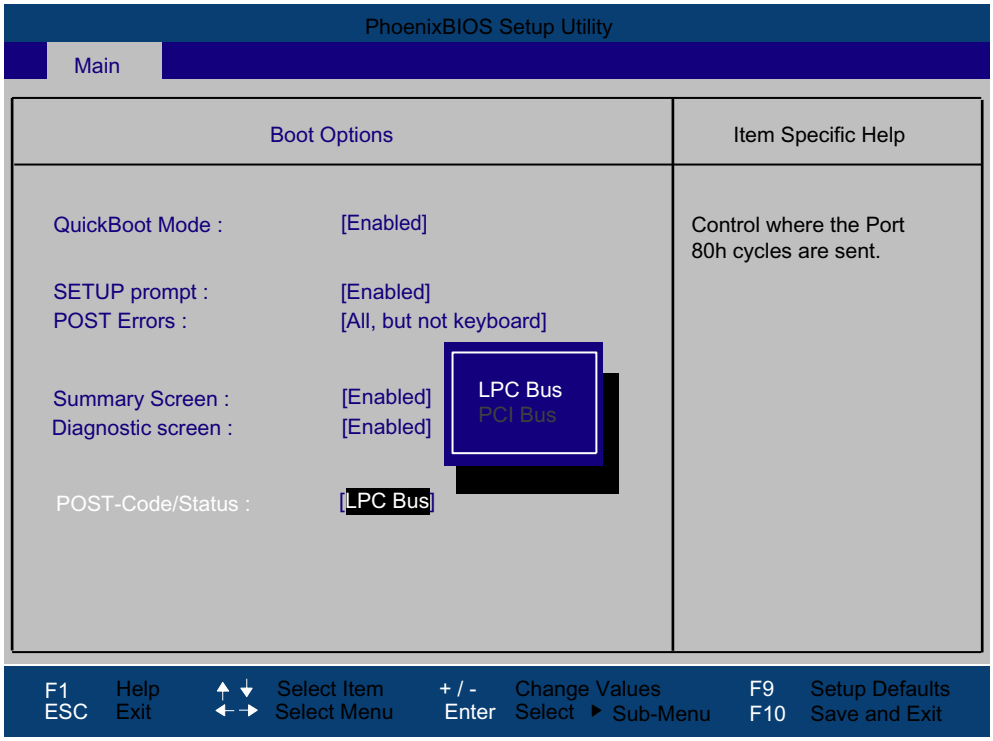


Figure 17-5 "Boot Options" field

Quick Boot Mode	Some hardware tests are skipped to speed up the boot sequence.	
SETUP prompt	During the system load phase, the message "Press <F2> to enter Setup or <Esc> to show boot menu" is output on the bottom of the screen.	
POST errors	The boot sequence is stopped if an error is detected; you must press F1 to acknowledge.	
	[Disabled]	No error confirmation is required, for example, when no keyboard is connected.
	[All, but not keyboard]	Show all errors except for keyboard errors.
Summary screen	The most important system parameters are displayed when the system run-up phase completes.	
Diagnostic screen	Shows the diagnostics messages on the monitor during booting.	
Post Code/Status	Specifies where the POST codes are saved.	

'Enabled' means that the feature is active. 'Disabled' means that the feature is inactive.

Example of a summary screen:

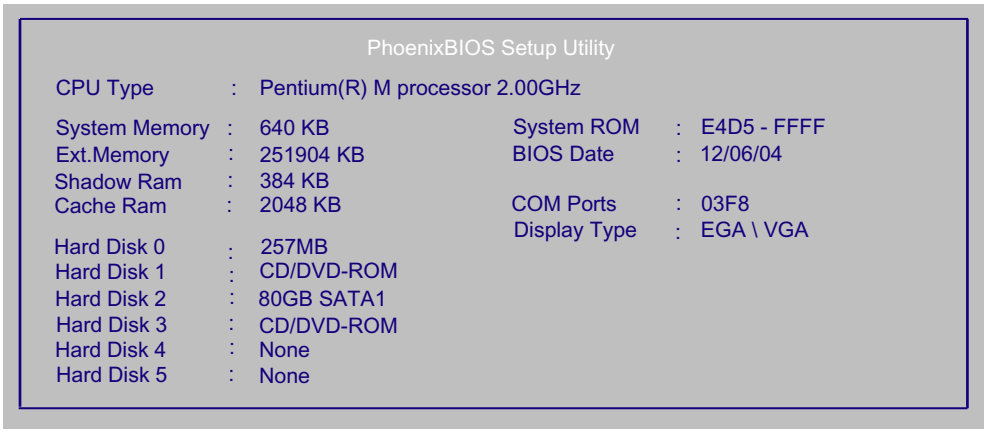


Figure 17-6 Summary screen (example)

The summary screen appears when the system run-up phase completes.

"Keyboard features" field

The following submenu appears when you select the option “Keyboard features” in the main menu:

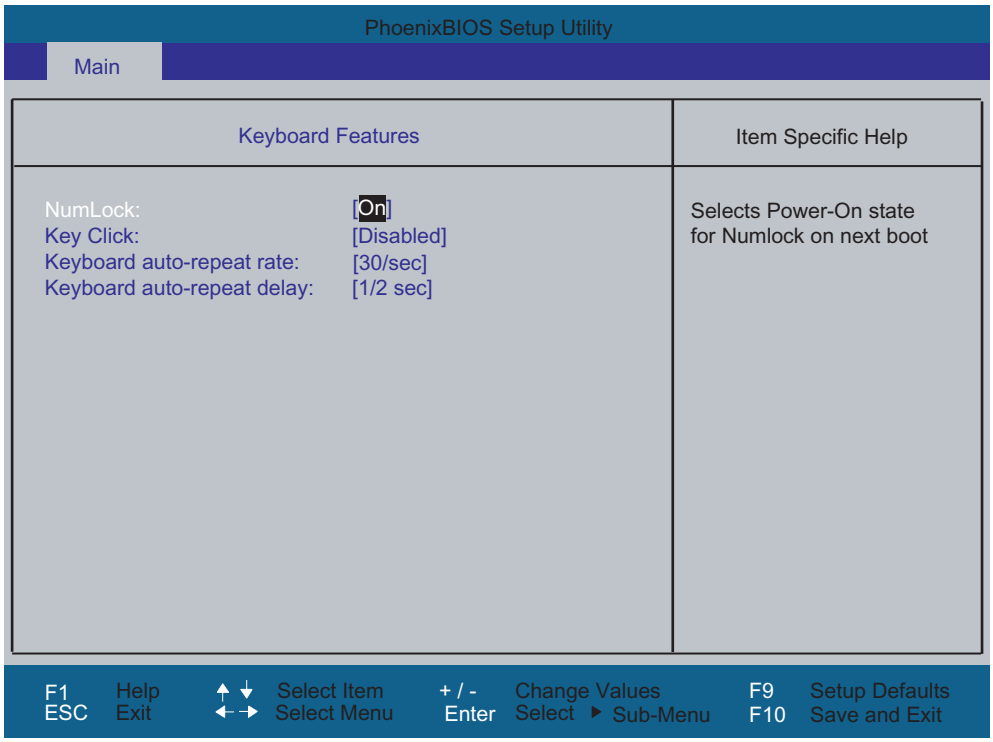


Figure 17-7 "Keyboard features" submenu (example)

Numlock	Switches Numlock on or off following power on. If "Auto" is set, this will be remembered the next time the device is switched on.
Key Click	A keystroke can be heard
Keyboard auto-repeat rate	Increase in automatic key repeat rate
Keyboard auto-repeat delay	On-delay of automatic keyboard repeat

"Hardware options" field

The following submenu, for example, appears when you select “Hardware options” in the main menu:

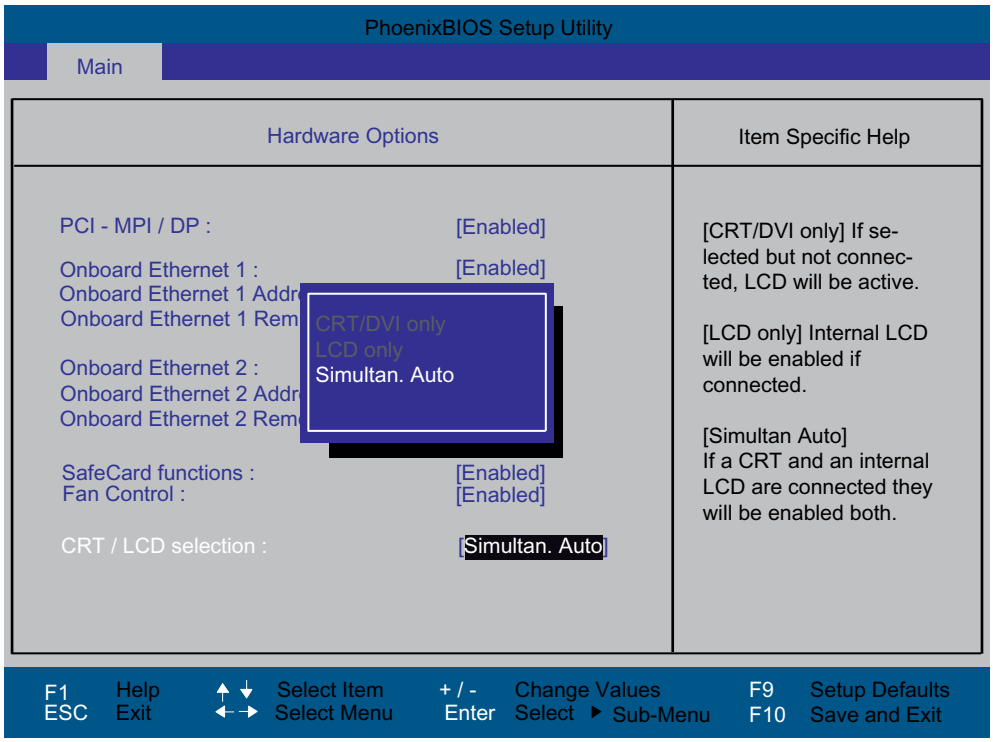


Figure 17-8 "Hardware options" submenu (example)

The parameters of the interfaces present on the motherboard are set here.

Entry	Meaning	
PCI-MPI/DP [1)]	[Enabled]	Enables the CP5611-compatible MPI/DP interface. The resources are managed by the BIOS PCI Plug and Play mechanism.
	[Disabled]	The CP5611 compatible MPI/DP interface is disabled.
On-board Ethernet	[Enabled]	The Ethernet interface on the motherboard is enabled.
	[Disabled]	The Ethernet interface on the motherboard is disabled.
On-board Ethernet Address	Shows the individual Ethernet address.	
On-board Ethernet Remote Boot [1)]	[Enabled]	Booting via a connected LAN is possible. The respective boot source is displayed as Intel® Boot-Agent in the boot sequence menu.
	[Disabled]	Booting via LAN is not possible.
SafeCard functions	[Enabled]	On-board monitoring functions are enabled.
	[Disabled]	No monitoring functions.
	The relevant driver and the application must be started for operation of the monitoring functions.	
Fan control	[Enabled]	The fan speed is controlled based on the temperature.
	[Disabled]	The fan always runs at full speed.
CRT / LCD selection	[CRT only]	A CRT monitor is addressed, or a DVI LCD monitor, if it is connected to the DVI ports when the system boots up.
	[LCD only]	The internal LVDS interface or the digital DVI interface is enabled, if a valid display ID was read during the boot sequence; if not, the procedure as for 'CRT only' applies.
	[Simultan. Auto]	The two interfaces, CRT and LVDS, are activated when a CRT monitor is connected with valid display detection. The external monitor is only enabled for operation if it is connected and detected at the start of the boot sequence. Data are not output to an external monitor which is not connected until after the boot sequence.
	DVI LCD and LVDS displays do not function simultaneously in BIOS; LVDS takes priority over DVI!	

[1)] Optional product feature

Note

The second Ethernet interface support is OS dependent. For DOS based applications (e.g. Image Creator) please use the first Ethernet interface.

17.7.5 Advanced menu

Menu layout

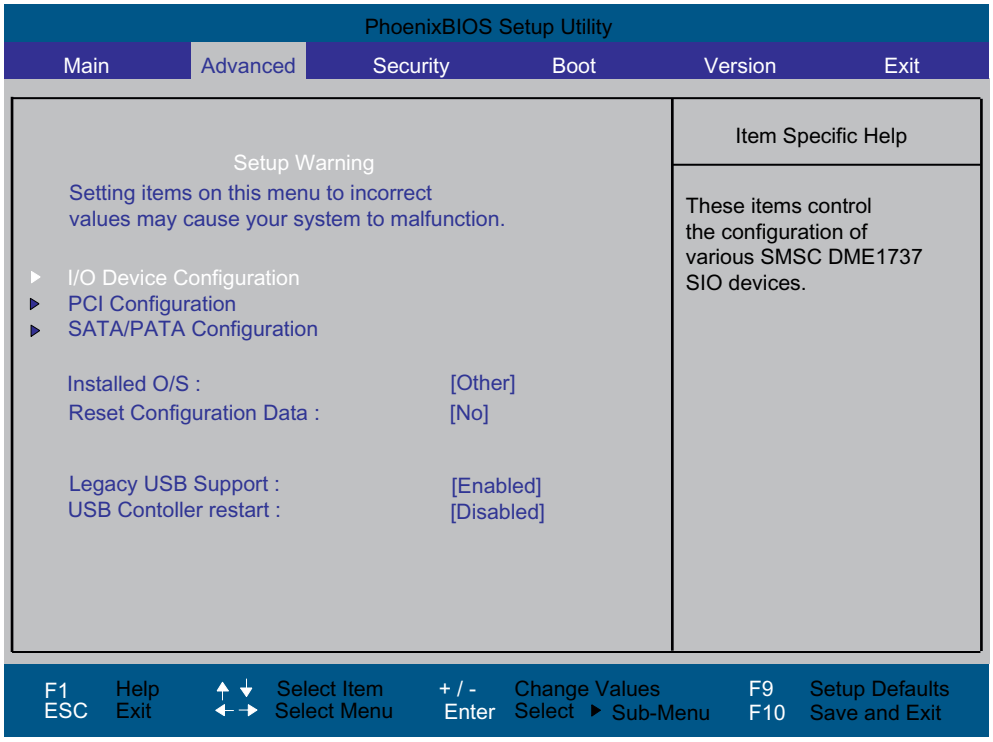


Figure 17-9 Advanced menu

Settings in the Advanced Menu

Installed O/S	Plug&Play means that all modules are automatically detected and installed, providing they support the Plug&Play functionality.	
	[Other]	BIOS handles the entire Plug&Play capability, default setting.
	[WinXP/2000]	The operating system handles the Plug&Play functions.
Reset configuration data	[Yes]	All installations under Plug&Play are deleted and the configuration is retriggered the next time the system boots. The entry is then reset to [No]. System components that do not support Plug&Play have to be entered manually.
	[No]	The Plug&Play system components are initialized after the next system start.
Legacy USB support	[Disabled]	Disables Legacy Universal Serial Bus support
	[Enabled]	Enables Legacy Universal Serial Bus support The USB Boot function must be enabled to allow booting from a USB device, or if the system is to be operated without USB support with a USB keyboard or mouse.

"I/0 Device Configuration" submenu

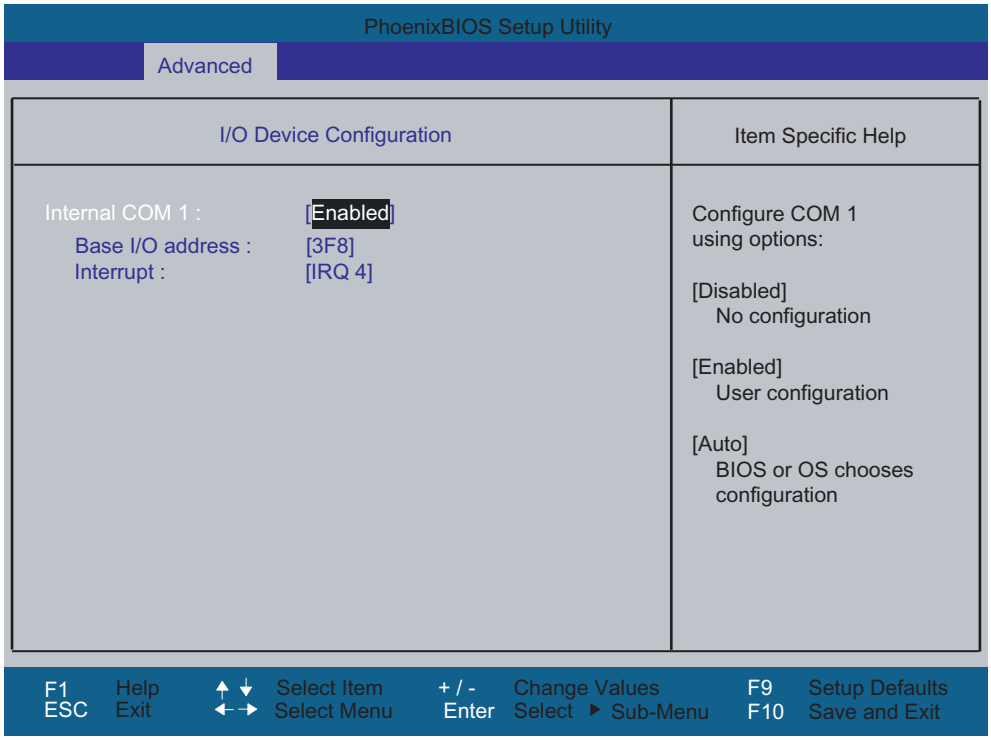


Figure 17-10 COM/LPT configuration submenu

The resources used by an interface are released when you disable the interface in question.

The I/O addresses and interrupts are pre-assigned; it is advisable not to change these default assignments.

"PCI Configuration" submenu

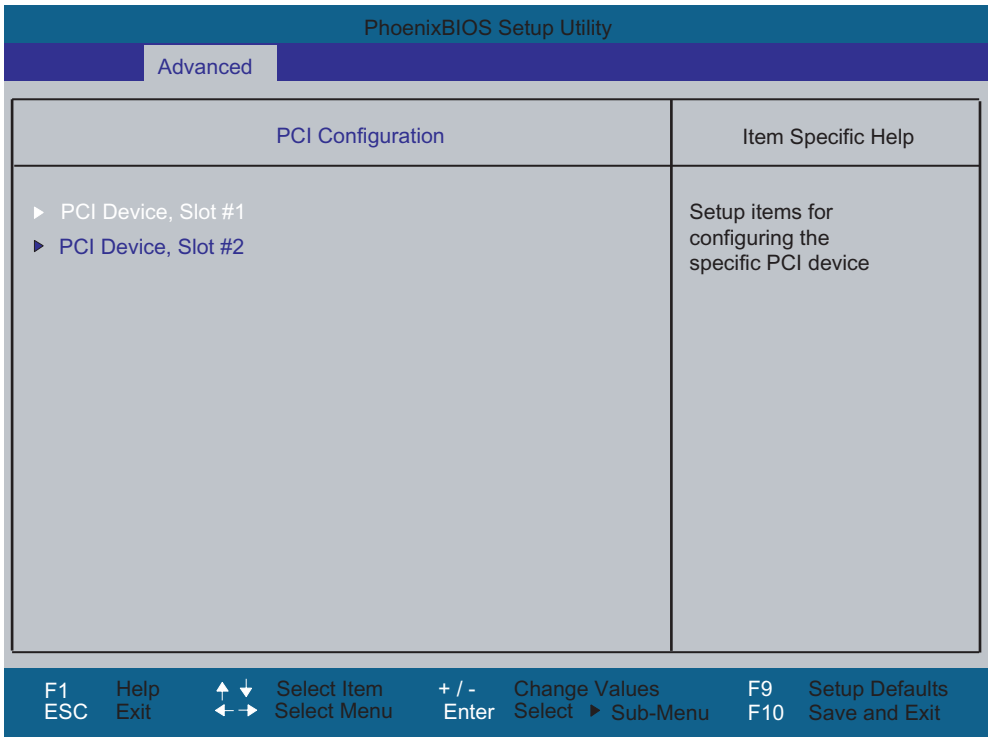


Figure 17-11 PCI Configuration submenu (example)

"PCI Devices" field

If the PCI devices field is selected, the following submenu appears:

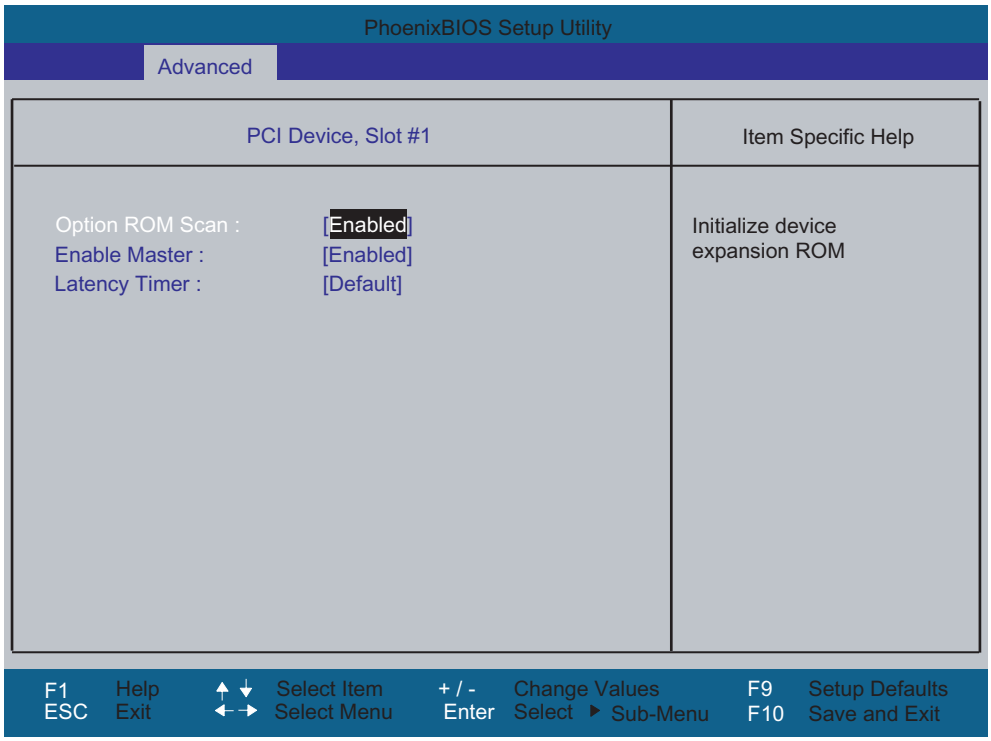
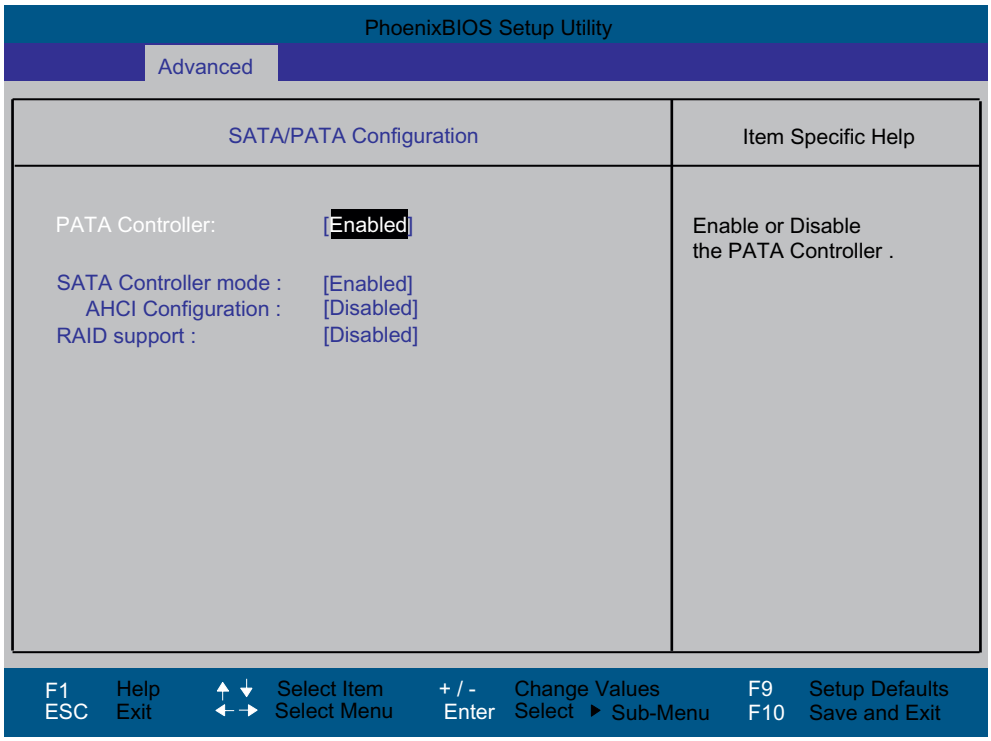


Figure 17-12 PCI Devices submenu, slot #1

ROM scan option:	[Enabled]	The ROM option of the PCI module (if present) is enabled
	[Disabled]	The ROM option of a PCI module is disabled.
Enable master	[Enabled]	This slot can be assigned PCI master functions
	[Disabled]	This slot can only operate as a PCI slave.
Latency Timer	[Default]	The number of active PCI clock cycles of the master modules is determined by this module
	[0020H to 00E0H]	These settings are used to set the maximum number of active PCI clock cycles to the selected value.
	You should only use a value different from the default if the module or its application requires it.	

"SATA/PATA Configuration" submenu



PATA Controller:	[Enabled] [Disabled]	Disables or enables the PATA controller
SATA Controller mode	[Enhanced]	SATA drive = Primary on the SATA controller in native mode. PATA drive = Primary on the PATA controller in legacy mode.
	[Compatible]	SATA drive = Primary on the SATA controller, in legacy mode PATA drive = drive on the SATA controller in legacy mode
AHCI Configuration	[Disabled] [Enabled]	Enhanced AHCI: WinXP-SP1 + IAA driver supports AHCI mode
RAID support	[Disabled] [Enabled]	Disables or enables RAID support

17.7.6 Security menu

You can only edit the fields enclosed in square brackets. Two passwords can be assigned to protect your PC from unauthorized use. The Supervisor password can be used to restrict usage of the hard disk.

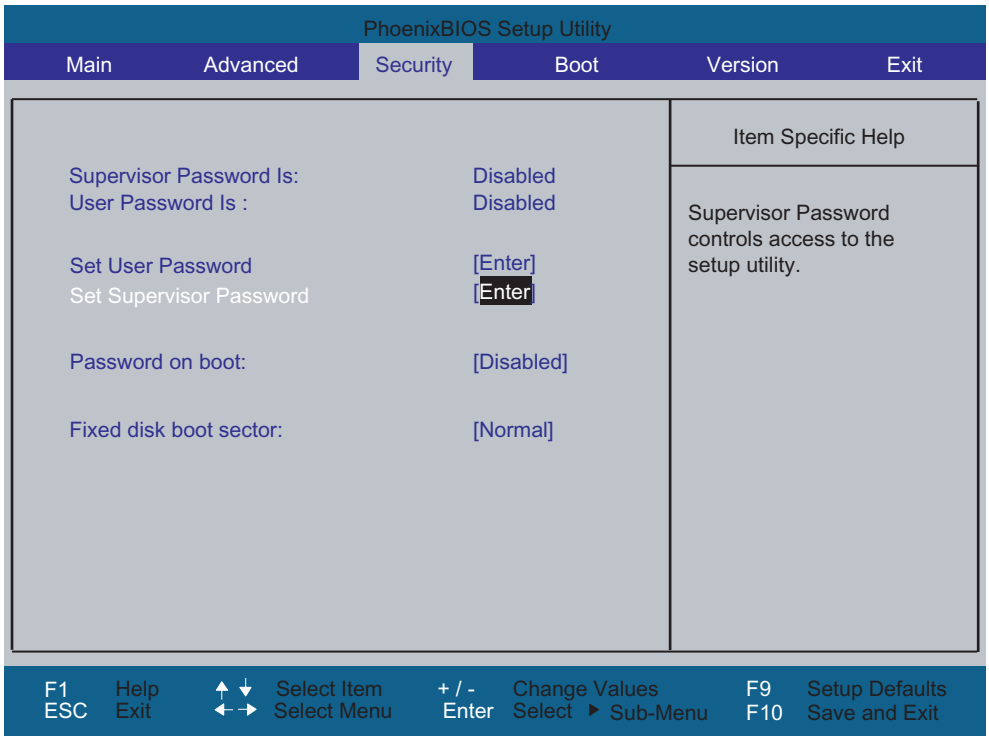


Figure 17-13 Security menu

User password is	Disabled	The password is disabled.
	Enabled	Certain Setup fields are thus configurable by the user, including the user password.
	The field resets automatically from [Disabled] to [Enabled] when the password is entered.	
Set supervisor password	This field opens the dialog box for entering a password. Once it has been entered, the supervisor password can be changed or deleted by pressing ”Return” and thus deactivated.	
Set user password	This field opens the dialog box for entering a password. Once it has been entered correctly, the user password can be changed or deleted by pressing ”Return” and thus deactivated.	
Password on boot	[Disabled]	No password required for system boot.
	[Enabled]	Supervisor or user password must be entered for system boot.
Fixed disk boot sector	[Normal]	All types of hard-disk access are permitted.
	[Write protect]	the user cannot install an operating system. This is a way of protecting against boot viruses.

17.7.7 Boot menu

This menu allows you to assign a priority for the boot devices.

Figure 17-14 Boot Menu

This screen shows all possible boot devices. The boot source with the highest boot priority is at the top. To change the sequence:

Select the boot source with the ↑ ↓ keys, move to the desired position with + or -.

Note

During startup the boot drive can be selected using the ESC key.

If a boot device is not available, the next device in the sequence is automatically checked to ascertain whether or not it is bootable.

17.7.8 Version menu

This menu contains the information you will have to quote when you send us technical questions about your system.

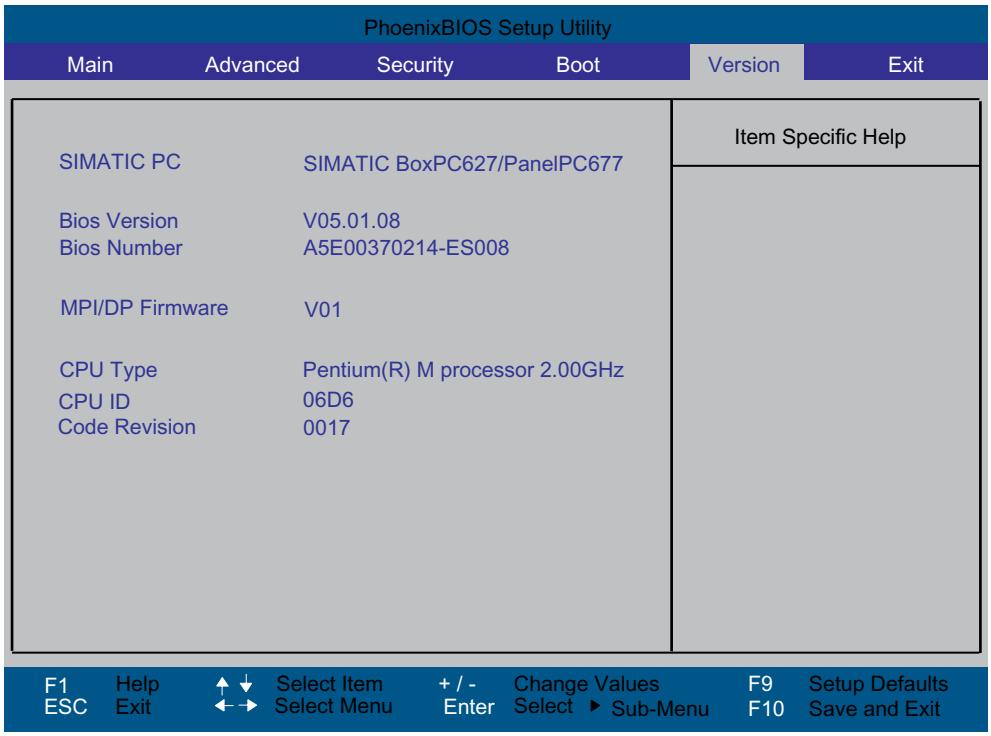


Figure 17-15 "Version" menu (Example)

17.7.9 Exit menu

The setup program is always closed from this menu.

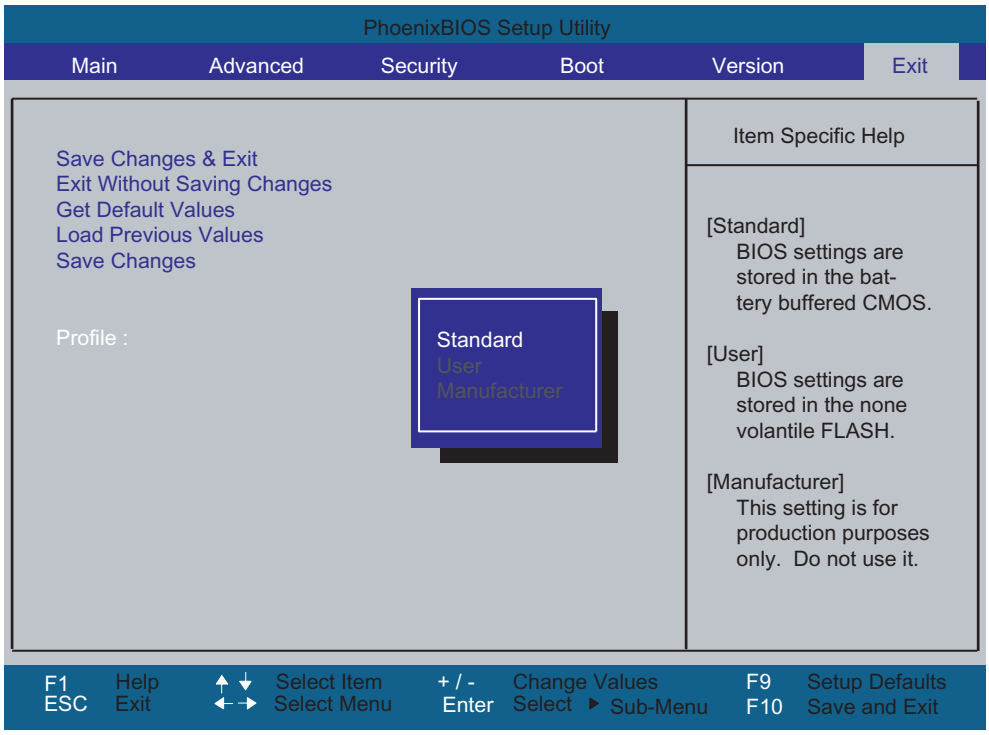


Figure 17-16 Exit menu

Save Changes & Exit	All changes are saved; a system restart is carried out with the new parameters.	
Exit Without Saving Changes	All changes are discarded and the system performs a restart based on the old parameters.	
Get Default Values	All parameters are set to safe values.	
Load Previous Values	The last saved values are reloaded.	
Save Changes	Save all Setup settings.	
Profile	Standard	The BIOS settings are saved in the battery-backed CMOS
	User	The BIOS settings are saved
	Manufacturer	This setting is only used for production purposes. Do not use.

17.7.10 BIOS setup default settings

Documenting your device configuration

If you have changed any default settings in Setup, you can enter them in the following table. You can then refer to these entries for any future hardware modifications.

Note

Print out the table below and keep the pages in a safe place once you made your entries.

BIOS Setup default settings

System parameters	Defaults	Custom entries
Main		
System Time	hh:mm:ss	
System Date	MM/DD/YYYY	
IDE Channel 0 Master	257MB	
IDE Channel 0 Slave	None	
SATA Port 0	40GB SATA1	
SATA Port 1	None	
SATA Port 2	None	
SATA Port 3	None	
Memory Cache	Write Back	
Boot options		
Quick Boot Mode	Enabled	
SETUP prompt	Enabled	
POST errors	All, but not keyboard	
Summary screen	Enabled	
Diagnostic screen	Enabled	
Post Code/Status	LPC Bus	

Keyboard Features		
Numlock	On	
Key Click	Disabled	
Keyboard auto-repeat rate	30/sec	
Keyboard auto-repeat delay	½ sec	

Hardware options		
PCI-MPI/DP	Enabled	
On-board Ethernet 1	Enabled	
On-board Ethernet 1 Address	08000624xxxx	
On-board Ethernet 1 Remote Boot	Disabled	
On-board Ethernet 2	Enabled	
On-board Ethernet 2 Address	08000624xxxx	
On-board Ethernet 2 Remote Boot	Disabled	
SafeCard functions	Enabled	
Fan control	Enabled	
CRT / LCD selection	Simultan. Auto	

Advanced		
Installed O/S	Other	
Reset configuration data	No	
Legacy USB support	Enabled	

I/O Device Configuration		
Internal COM 1	Enabled	
Base I/O address	3F8	
Interrupt	IRQ 4	

PCI Configuration		
PCI Device Slot 1		
ROM scan option:	Enabled	
Enable master	Enabled	
Latency timer	Default	
PCI Device Slot 2		
ROM scan option:	Enabled	
Enable master	Enabled	
Latency timer	Default	

SATA/PATA Configuration		
PATA Controller:	Enabled	
SATA Controller mode	Enhanced	
AHCI Configuration	Disabled	
RAID support	Disabled	

Security		
Supervisor Password Is	Disabled	
User Password is	Disabled	
Set user password	Enter	
Set supervisor password	Enter	
Password on boot	Disabled	
Fixed disk boot sector	Standard	

Boot		
Boot priority order:		
Excluded from boot order:		

Version		
SIMATIC PC	SIMATIC BoxPC627/ PanelPC677	
BIOS Version	L05.01.00.7	
BIOS Number	A5E00378214-ES000	
MPI/DP Firmware	V01	
CPU Type	Intel ® Pentium M processor 2.00 GHz	
CPU ID	06D6	
Code Revision	0017	

Appendix

A

A.1 Certificates and guidelines

A.1.1 Guidelines and declarations

Notes on the CE marking

The following applies to the SIMATIC product described in this documentation:

EMC directive

AC voltage supply

The devices with AC power supply fulfill the requirements of the EC directive "89/336/EEC Electromagnetic Compatibility" and are intended for the following fields of application in accordance with the CE marking:

Area of application	Requirement for	
	Emitted interference	Noise immunity
Industry	EN 61000-6-4: 2001	EN 61000-6-2: 2001

The device is also compliant with EN 61000-3-2:2000, harmonic currents and EN 61000-3-3:1995, voltage fluctuations and flicker.

DC power supply

Thesse devices with DC power supply fulfill the requirements of the EC directive "89/336/EEC Electromagnetic Compatibility" and are intended for the following fields of application in accordance with the CE marking:

Area of application	Requirement for	
	Emitted interference	Noise immunity
Industry	EN 61000-6-4: 2001	EN 61000-6-2: 2001

The device is also compliant with the standards EN 61000-3-2:2000, harmonic currents and EN 61000-3-3:1995, voltage fluctuations and flicker.

Caution

This is a system of Class A. The equipment may cause RF interference in residential areas. In this case, the operating company may be held liable for taking appropriate measures.

Low-voltage directive

The device with AC power pack complies with the requirements of EC directive 73/23/EEC (Low-Voltage Guidelines). Compliance has been verified by a test in accordance with the EN 60950-1 standard. The device with DC power pack also complies with this standard but does not fall within the area of validity of the EU low-voltage directive.

Declaration of conformity

The EC declaration of conformity and the corresponding documentation are made available to authorities in accordance with the EC directives stated above. The declaration of conformity can be downloaded at http://www.siemens.com/asis under "Support".

Click on "Software Tools & Downloads" on "Overview Panel PCs" You can find the declaration under Approvals / Certificates.

Design guidelines

Adhere to the installation guidelines and safety instructions given in this documentation during commissioning and operation.

Connecting peripherals

The requirements regarding noise immunity to EN 61000-6-2:2001 are met when you connect a peripheral suitable for an industrial environment. Always use shielded cables to connect peripherals.

A.1.2 Certificates and approvals

DIN ISO 9001 certificate

The quality assurance system for the entire product process (development, production, and marketing) at Siemens fulfills the requirements of ISO 9001 (corresponds to EN 29001: 1987).

This has been certified by DQS (the German society for the certification of quality management systems).

EQ-Net certificate no.: 1323-01

Software License Agreement

The device can be supplied with or without preinstalled software. For devices with preinstalled software, please note the relevant license agreements.

Certification for the United States and Canada

Safety

One of the following markings on a device is indicative of the corresponding approval:	
c UL us	UL-listed, approval from Underwriters Laboratories (UL) for United States and Canada: with abbreviation 'I.T.E.' in accordance with binational standard UL 60950-1 / CAN/CSA-22.2 No. 60950-1, with abbreviation 'IND.CONT-EQ' in accordance with standards UL 508 and CSA C22.2. No. 14-5
	UL recognition mark: Components that cannot be operated autonomously, approved by UL

EMC

USA	
Federal Communications Commission Radio Frequency Interference Statement	This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
Shielded cables	Shielded cables must be used with this equipment to maintain compliance with FCC regulations.
Modifications	Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.
Conditions of operations	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CANADA	
Canadian Notice	This Class A digital apparatus complies with Canadian ICES-003.
Avis Canadian	Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

A.1.3 Further support

Do you have additional questions regarding use of the described products, which are not answered in the documentation? Then, contact the Siemens representative or office nearest you.

- Your contact:
  http://www.siemens.com/automation/partner
- Access to available technical documentation for individual SIMATIC products and systems:
  http://www.siemens.com/simatic-tech-doku-portal
- Online catalog and online ordering system:
  http://mall.ad.siemens.com/

Training center

To help you get started with automation technology and systems, we offer a variety of courses. Contact your regional training center or the central training center in D-90327 Nuremberg.
Phone: +49 (911) 895-3200.
Internet: http://www.sitrain.com

Technical Support

You can access technical support for all A&D projects via the following:

- Support Request form on the web:
  http://www.siemens.com/automation/support-request
- Phone: + 49 180 5050 222
- Fax: + 49 180 5050 223

Additional Technical Support information:
http://www.siemens.com/automation/service.

Service & Support on the Internet

In addition to our documentation, our complete know-how is available online on the Internet at:
http://www.siemens.com/automation/service&support
Here you will find:

- Our newsletter containing up-to-date information on your products.
- The documents you need via our Search function in Service & Support.
- A forum for global information exchange by users and specialists.
- You local Automation & Drives representative.
- Information about on-site service, repairs, and spare parts. Much more can be found under "Services".

ESD directives

B

B.1 ESD directives

What does ESD mean?

Almost all electronic modules are equipped with highly integrated components and elements in MOS technology. For technological reasons, these electronic components are very sensitive to overvoltages and, consequently, to electrostatic discharge. These components are therefore marked as follows:

- **ESD: E**lectrostatically **S**ensitive **D**evices
- **ESD:** Internationally recognized marking for components and modules susceptible to electrostatic discharge

The following symbols on switch cabinets, module carriers or packaging indicate their susceptibility to electrostatic discharge:

ESD components are destroyed by voltage and energy far below the limits of human perception. Voltages of this kind occur as soon as a device or an assembly is touched by a person who is not electrostatically discharged ESD components which were subject to such voltage are usually not recognized immediately as being defective, because the malfunction does not occur until after a longer period of operation.

Note

More information is located on the rating label. The rating label is described in the chapter "Planning use."

Precautions against electrostatic discharge

Most plastics can be charged easily. Therefore, keep plastics away from ESD components!

When working with electrostatically sensitive components, make sure that the person, the workstation and the packaging are properly grounded. Conduct the electrostatic charge away from your body by touching the mounting plate for the interfaces, for example.

Handling ESD modules

As a rule: Only touch ESD components if unavoidable due to necessary tasks.

Only touch the components when the following holds true:

- You are permanently grounded by means of an ESD armband.
- You are wearing ESD shoes or ESD shoes grounding protective strips in connection with ESD floors.

Before you touch an electronic assembly, your body must be discharged. Touch a conductive object immediately beforehand, e.g. a bare metal part of a switch cabinet or the water pipe.

Do not allow chargeable, highly insulated materials, e.g. plastic films, insulating tabletops, synthetic clothing fibers, to come into contact with ESD components.

Place ESD components only on conductive surfaces (work surfaces with ESD surface, conductive ESD foam, ESD packing bag, ESD transport container).

Do not expose ESD components to visual display units, monitors or televisions. Maintain a distance of at least 10 cm to screens.

Handle flat components only by their edges. Do not touch component connectors or conductors. This prevents charges from reaching and damaging sensitive components.

Measuring and modifying ESD components

Measure the ESD component under the following conditions only:

- The measuring device is grounded with a protective conductor, for example.
- The probe on the potential-free measuring device has been discharged, e.g. by touching the bare metal of a part of the switch cabinet.
- Your body is discharged. To do so, touch a grounded metallic object.

Solder only with grounded soldering irons.

Shipping ESD modules

Always store or ship ESD components in conductive packaging, e.g. metallized plastic boxes or metal cans. Leave the components and parts in their packaging until installation.

If the packaging is not conductive, wrap the ESD component in a conductive material, e.g. rubber foam, ESD bag, household aluminum foil, or paper, before packing. Do not wrap the ESD component in plastic bags or plastic film.

In ESD components containing installed batteries, make sure that the conductive packaging does not touch the battery connectors or short circuit. Insulate the connectors with suitable material.

B.2 Electrostatic charging of individuals

Anyone who is not connected to the electrical potential of their surroundings can be electrostatically charged.

The figure below shows the maximum electrostatic voltages that can accumulate in a person who is operating equipment when he/she comes into contact with the materials indicated. These values comply with the specifications of IEC 801–2.

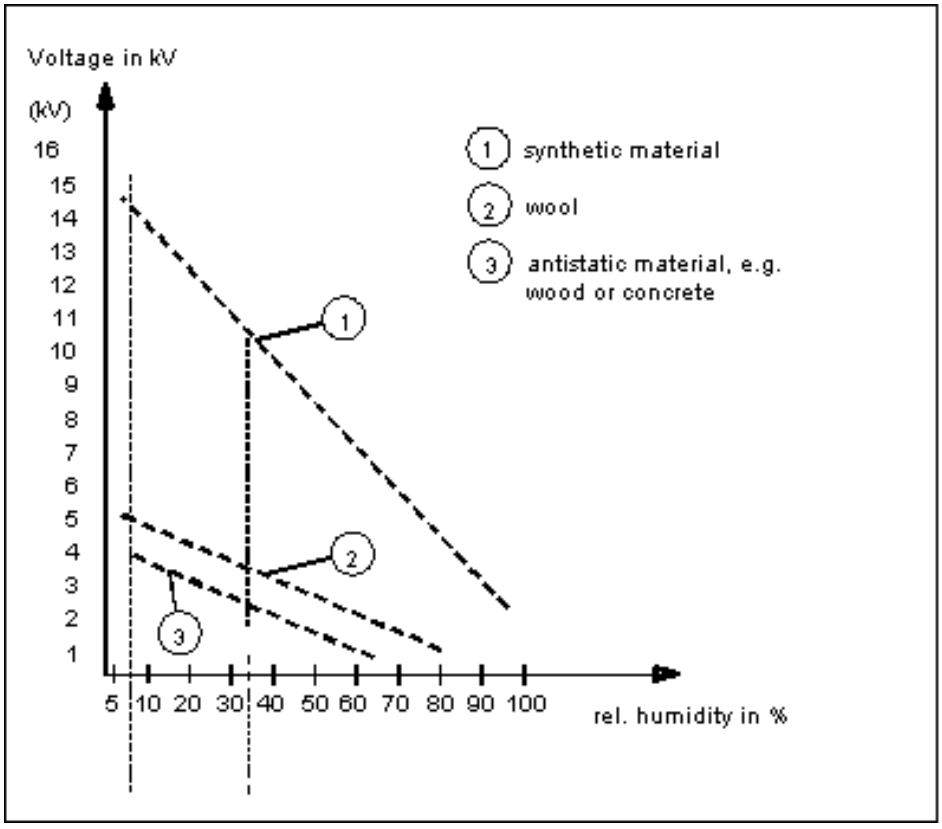


Figure B-1 Electrostatic voltages with which an operator can be charged.

List of abbreviations

C

C.1 Abbreviations

Abbreviation	Term	Meaning
AC	Alternating current	Alternating current
ACPI	Advanced Configuration and Power Interface	
PLC	Automation device	
AGP	Accelerated Graphics Port	High speed bus system
APIC	Advanced Programmable Interrupt Controller	Extended programmable interrupt controler
APM	Advanced Power Management	Tool for monitoring and reducing power consumption of the PC
PLC	Automation system	
AT	Advanced Technology	
ATA	Advanced Technology Attachment	
ATX	AT-Bus-Extended	
AWG	American Wire Gauge	US standard for the cable diameter
BIOS	Basic Input Output System	Basic Input Output System
CAN	Controller Area Network	
CD-ROM	Compact Disc – Read Only Memory	Removable storage medium for large data volumes
CD-RW	Compact Disc – Rewritable	Rewritable CD
CE	Communauté Européenne (CE symbol)	The product is in conformance with all applicable EC directives
CF	Compact Flash	
CGA	Color Graphics Adapter	Standard monitor interface
CLK	Clock pulse	Clock signal for controllers
CMOS	Complementary Metal Oxide Semiconductors	Complementary metal oxide semiconductors
COA	Certificate of authentication	Microsoft Windows Product Key
CoL	Certificate of License	License authorization
COM	Communications Port	Term for the serial interface
CP	Communication Processor	Communication computer

Abbreviation	Term	Meaning
CPU	Central Processing Unit	CPU
CSA	Canadian Standards Association	Canadian organisation for tests and certifications according to own or binational standards (with UL / USA) standards
CTS	Clear To Send	Clear to send
DRAM	Dynamic Random Access Memory	
DC	Direct Current	DC current
DCD	Data Carrier Detect	Data carrier signal detection
DMA	Direct Memory Access	Direct memory access
DOS	Disc Operating System	Operating system without GUI
DP	Decentralized peripherals	
DQS	Deutsche Gesellschaft zur Zertifizierung von Qualitätsmanagement mBH	
DDRAM	Double Data Random Access Memory	Memory chip with high-speed interface
DSR	Data Set Ready	Ready for operation
DTR	Data Terminal Ready	Data terminal is ready
DVD	Digital Versatile Disc	Digital versatile disk
DVI	Digital Visual Interface	Digital display interface
ECC	Error Correction Code	Error correction code
ECP	Extended capability port	Extended parallel port
EGA	Enhanced Graphics Adapter	PC to monitor interface
ESD	Components sensitive to electrostatic charge	
DM	Electronic Manual	
EIDE	Enhanced Integrated Drive Electronics	An enhancement of the IDE standard
EISA	Extended Industry Standard Architecture	Extended ISA standard
EMM	Expanded Memory Manager	Manages memory expansions
EM64T	Extended Memory 64 technology	
EN	European standard	
EPROM / EEPROM	Erasable Programmable Read-Only Memory / Electrically Erasable Programmable Read-Only Memory	Plug-in submodules with EPROM/EEPROM chips
EPP	Enhanced Parallel Port	Bi-directional Centronics interface
ESC	Escape character	Control character
EWF	Enhanced Write Filter	
FAQ	Frequently Asked Questions	FAQs
FAT 32	File Allocation Table 32-bit	32-bit file allocation table
FD	Floppy disk	Disk drive, 3.5"
FSB	Front Side Bus	
GND	Ground	Chassis ground
HD	Hard disk	Hard disk
HDA	High Definition Audio	
HU	Height unit	
HMI	Human Machine Interface	User interface

Abbreviation	Term	Meaning
HT	Hyper-Threading	
HTML	Hyper Text Markup Language	Script language for creating Internet pages.
HTTP	Hypertext Transfer Protocol	Protocol for data transfer on the Internet
Hardware	Hardware	
I/O	Input/Output	Data input/output on computers
IDE	Integrated Device Electronics	
IEC	International Electronical Commission	
IP	Ingress Protection	Degree of protection
IR	Infrared	Infrared
IRDA	Infrared Data Association	Standard for data transfer via IR module
IRQ	Interrupt Request	Interrupt request
ISA	Industry Standard Architecture	Bus for expansion modules
IT	Information Technology	Information technology
LAN	Local Area Network	Computer network that is limited to a local area.
LCD	Liquid Crystal Display	Liquid crystal display
LEDs	Light Emitting Diode	Light emitting diode
LPT	Line Printer	Printer port
LVDS	Low Voltage Differential Signaling	
LW	Disk drive	
MAC	Media access control	Media access control
MC	Memory Card	Memory card in credit card format
MLFB	Machine-readable product designation	
MMC	Micro Memory Card	Memory card with the format 32 x 24.5 mm
MPI	Multipoint-capable interface for programming devices	
MS-DOS	Microsoft Disc Operating System	
MTBF	Mean Time Between Failures	
MUI	Multilanguage User Interface	Language localization in Windows
NA	Not Applicable	
NAMUR	Normenarbeitsgemeinschaft für Mess- und Regelungstechnik in der chemischen Industrie (standardization body for instrumentation and control technology in the chemicals industry)	
NC	Not Connected	Not connected
NCQ	Native Command Queuing	Automatic re-sorting of the file and disk access, for increased performance
NEMA	National Electrical Manufacturers Association	Syndicate of manufacturers of electrical components in the USA
NMI	Non Maskable Interrupt	Interrupt the processor can not reject
NTFS	New Techniques File System	Secure file system for certain versions of Windows (NT, 2000, XP)
OPC	OLE for Process Control	Standardized interface for industrial processes
PATA	Parallel ATA	

Abbreviation	Term	Meaning
PC	Personal computer	
PCI	Peripheral Component Interconnect	High-speed expansion bus
PCMCIA	Personal Computer Memory Card International Association	
PI	Protective Earth	Protective conductor
PG	Programming device	
PIC	Programmable Interrupt Controller	Programmable interrupt controller
POST	Power On Self Test	
PXE	Preboot Execution Environment	Software for running new PCs without hard disk data via the network
RAID	Redundant Array of Independent Disks	Redundant hard disk array
RAM	Random Access Memory	
RI	Ring Input	Incoming call
ROM	Read-Only Memory	
RS 485	Reconciliation Sublayer 485	Bi-directional bus system designed for up to 32 nodes
RTC	Real Time Clock	Real-time clock
RTS	Reliable Transfer Service	Request to send
RxD	Receive Data	Data transfer signal
SATA	Serial ATA	
SCSI	Small Computer System Interface	
SDRAM	Synchronous DRAM	
SELV	Safety Extra Low Voltage	Safety extra low voltage
SMART	Self Monitoring Analysis and Reporting Technology	Hard disk error diagnostics program
SMS	Short Message Service	Short message via telecommunication network
SNMP	Simple Network Management Protocol	Network protocol
SO-DIMM	Small Outline Dual Inline Memory Module	
SOM	SafeCard on Motherboard (SOM)	
SPP	Standard Parallel Port	Synonym for parallel port
SVGA	Super Video Graphics Array	Enhanced VGA standard with at least 256 colors
SVP	Serial number of the device	
SW	Software	
TCO	**T**otal **C**ost of **O**wnership	
TFT	Thin-Film-Transistor	Type of LCD flat-screen
TTY	Tele Type	Asynchronous data transfer
TxD	Transmit Data	Data transfer signal
TWD	Watchdog Time	Watchdog monitoring time
UL	Underwriters Laboratories Inc.	US organisation for tests and certifications according to own or binational standards (with CSA / Canada) standards
UMA	Unified Memory Architecture	
URL	Uniform Resource Locator	Designation of the full address of an Internet page

Abbreviation	Term	Meaning
USB	Universal Serial Bus	
UXGA	Ultra Extended Graphics Array	Graphic standard, maximum resolution 1.600 x 1.200 pixels
V.24		ITU-T standardized recommendation for data transfer via serial ports
VDE	Verein deutscher Elektrotechniker (Union of German Electrical Engineers)	
VGA	Video Graphics Array	Video adapter which meets industrial standard
VRM	Voltage Regulator Module	
W2k	Windows 2000	
WAV	Wave Length Encoding	Loss-free file format for audio data
WD	Watchdog	Program monitoring with error detection and alarming.
WLAN	Wireless LAN	LWireless local area network
WWW	World Wide Web	
XGA	Extended Graphics Array	Graphic standard, maximum resolution 1.024 x 768 pixels

Glossary

ATAPI CD–ROM Drive

AT-Bus **A**ttachment **P**acket **I**nterface (connected to AT bus) CD-ROM drive

Automation device (AG)

The programmable logical controllers (PLC) of the SIMATIC S5 system consist of a central controller, one or more CPUs, and various other modules (e.g. I/O modules).

Automation system (AS)

The programmable logical controllers (PLC) of the SIMATIC S7 system consist of a central controller, one or more CPUs, and various I/O modules.

Backup

Duplicate of a program, data carrier or database, used either for archiving purposes or for the protection of vital and non-replaceable data against loss when the working copy is corrupted. Some applications automatically generate backup copies of data files, and manage both the current and the previous versions on the hard disk.

Baud

Physical unit for the step speed in signal transmission. Defines the number of transferred signal states per second. With only two states, one baud is equivalent to a transmission rate of 1 bps.

BEEP code

If the BIOS detects a boot error, it outputs an audible warning based on the current test result

Boot diskette

A diskette that contains a boot sector and an initial loader for the operating system. This can be used to load the operating system from the disk.

Booting

Start or restart of the computer. During booting the operating system is transferred from the system data carrier to the work memory.

Cache

High-speed access buffer for interim storage (buffering) of requested data.

CE marking

Communauté **E**uropéene The CE symbol confirms the conformance of the product with all applicable EC directives, e.g. the EMC directive.

Chipset

Located on the motherboard, connects the processor with the RAM, the graphic controller, the PCI bus, and the external interfaces.

Cold start

A start sequence, starting when the computer is switched on. The system usually performs some basic hardware checks within the cold start sequence, and then loads the operating system from the hard disk to work memory -> boot

COM interface

The COM interface is a serial V.24 interface. The interface is suitable for asynchronous data transfer.

Configuration files

These are files containing data which define the configuration after restart. Examples of such files are CONFIG.SYS, AUTOEXEC.BAT and the registry files .

Configuration software

The configuration software updates the device configuration when new modules are installed . This is done either by copying the configuration files supplied with the module or by manual configuration using the configuration utility.

Controller

Integrated hardware and software controllers that control the functions of certain internal or peripheral devices (for example, the keyboard controller).

Device configuration

The configuration of a PC or programming device contains information on hardware and device options, such as memory configuration, drive types, monitor, network address, etc. The data are stored in a configuration file and enable the operating system to load the correct device drivers and configure the correct device parameters. . If changes are made to the hardware configuration, the user can change entries in the configuration file using the SETUP program. .

Disc-at-once

With this burning technique, data are written to a CD in a single session, and the CD is then closed. Further write access is then no longer possible.

Drivers

Program parts of the operating system. They adapt user program data to the specific formats required by I/O devices such as hard disk, printers, and monitors.

EMC directive

Directive concerning **E**lectro**m**agnetic **C**ompatibility. Compliance is confirmed by the CE symbol and the EC certificate of conformity.

Energy management

The energy management functions of a modern PC allow individual control over the current consumption of vital computer components (e.g. of the monitor, hard disk and CPU), by restricting their activity based on the current system or component load. Energy management is of particular importance for mobile PCs.

Energy options

The energy options can be used to reduce energy consumption of the computer, while keeping it ready for immediate use. This can be configured in Windows by selecting Settings > Control Panel > Energy options.

ESD guidelines

Directive for using electrostatic sensitive components.

Ethernet

Local network (bus structure) for text and data communication with a transfer rate of 10/100 Mbps.

Formatting

Basic partitioning of memory space on a magnetic data carrier into tracks and segments. Formatting deletes all data on a data carrier. All data carriers must be formatted prior to their first use.

Gender changer

Using the gender changer (25-pin / 25-pin), the COM1/V24/AG interface of the SIMATIC PC family can be converted to the usual 25-pin male connector.

Hard disks

Hard disks represent a form of magnetic disk storage medium (Winchester drives, hard disks) with integrated magnetic disks.

Hot swapping

The SATA interface gives the device's hard drive system hot-swap capability. The prerequisite for this is a RAID1 system, comprising a SATA RAID controller (onboard or as a slot board, and at least two SATA swap frames. The advantage of hot swapping is that defective hard disks can be replaced without the need for rebooting.

Hub

A term in network technology. In a network, a device joining communication lines at a central location, providing a common connection to all devices on the network.

Hyper Threading

HT technology enables the parallel processing of tasks. HT is only effective when all relevant system components, such as processors, operating systems and applications are supported.

Image

This refers to the image, for example, of hard disk partitions saved to a file in order to restore them when necessary.

Intel chip set 915 GM

The chip set organizes the data traffic between the main processor, working memory, cache, slots and other interfaces.

Functions of the 915 GM: Front side bus with 533 MHz, Intel® graphical media accelerator 900, support for up to 2 GB dual-channel DDR2 memories, Intel® High definition audio, Intel® display power-saving technology 2 (Intel® DPST 2)

Interface

see Interface

Interface, multi-point

MPI is the programming interface of SIMATIC S7/M7. Allows central access to programmable modules, text-based displays and OPs. The MPI nodes can intercommunicate.

LAN

Local **A**rea **N**etwork: LAN is a local network that consists of a group of computers and other devices that are distributed across a relatively restricted range and are linked with communication cables. The devices connected to a LAN are called nodes. The purpose of networks is the mutual use of files, printers or other resources.

Legacy USB support

Support of USB devices (e.g. mouse, keyboard) on the USB ports without driver.

License key

The license key represents the electronic license stamp of a license. Siemens provides the license keys for protected software.

License key diskette

The license key diskette contains the authorizations or license keys required to enable protected SIMATIC software.

Low-voltage directive

EC directive for product safety of products operated with low voltage (AC 50V to 1000V, DV 70V to 1500V) that are not governed by other directives. Compliance is confirmed by the CE symbol and the EC certificate of conformity.

LPT interface

The LPT interface (Centronics interface) is a parallel interface that can be used to connect a printer.

Memory card

Memory cards in credit card format. Memory for user programs and parameters, for example, for programmable modules and CPs.

Module

Modules are plug-in units for PLCs, programming devices or PCs. They are available as local modules, expansion modules, interfaces or mass storage (Mass storage module).

Module bracket

The module bracket is used to fasten modules and ensure safe contact and transport. Shocks and vibrations especially affect large, heavy modules. It is therefore recommended to use the module bracket for this type of module. There are also short, compact and light modules on the market. The module bracket was not designed for these modules because the standard fastening is sufficient for them.

Motherboard

The motherboard is the core of the computer. Here, data are processed and stored, and interfaces and device I/Os are controlled and managed.

Operating system

Summarizing term describing all functions for program execution, allocation of system resources to the various user programs, and for controlling and monitoring consistency of the operating mode in cooperation with the hardware (e.g. Windows XP Professional).

Packet writing

The CD-RW is used as a diskette medium. The CD can then be read only by packet–writing compatible software or has to be finalized. Finalization of a CD closes the CD within an ISO9660 shell. You can still write to the CD-RW several times in spite of finalization. Not all CD drives can read packet-written CDs . There are restrictions to using this method in general data transfer.

PATA

An interface for hard disk drives and optical drives with parallel data transfer of up to 100 Mbps.

PC card

Trademark of the Personal Computer Memory Card International Association (PCMCIA). Designation for auxiliary cards that conform with PCMCIA specifications. A PC card that has roughly the size of a credit card can be plugged into a PCMCIA slot. Version 1 specifies cards of Type I with a thickness of 3.3 millimeters, which is conceived mainly for use as external memory. Version 2 of the PCMCIA specification also defines a card Type II with a thickness of 5 mm and a card of the Type III with a thickness of 10.5 mm. Type II cards can realize devices such as modems, fax and network interface cards. Type III cards are equipped with devices that require more space, for example wireless communication modules or rotary storage media (hard disks, for example).

PC/104 / PC/104-Plus

Two bus architectures are especially fashionable today in the industrial world. PC/104 and PC/104-*Plus*. Both are standard in single-board computers of the PC class. The electrical and logical layout of the two bus systems is identical with ISA (PC/104) and PCI (PC/104-*Plus*). Software cannot usually detect a difference between them and normal desktop bus systems. Their advantage is the compact design and the resulting space they save.

PCMCIA

Association consisting of approx. 450 member companies of the computer industry. Their focus is set on providing worldwide standards for miniaturization and flexible use of PC expansion cards, and thus to provide a basic technology to the market.

Pentium M

Intel processor type: The architecture of the processor is designed for mobile computing; the processor features superior performance characteristics for computer applications and enhanced power-saving functions

Pixel

PixElement (picture point). The pixel represents the smallest element that can be reproduced on-screen or on a printer.

Plug&Play

Generally, a reference to the ability of a computer to automatically configure the system for communication with peripheral devices (for example monitors, modems or printers). The user can plug in a peripheral and ”play” it at once without manually configuring the system. A Plug&Play PC requires both a BIOS that supports Plug&Play and a Plug&Play expansion card.

POST

Self-test performed by the BIOS after the computer is switched on. Performs a RAM test and a graphic controller test, for example. The system outputs audible signals (beep codes) if the BIOS detects any errors; the relevant message indicating cause of error is output on the screen.

PROFIBUS/MPI

Process **F**ield **Bus** (standard bus system for process applications)

PXE server

A **P**reboot E**x**ecution **E**nvironment server is part of a network environment and can provide software to connected computers even before they boot. This can involve operating system installations or servicing tools, for example.

RAID

Redundant **A**rray of **I**ndependent **D**isks: Data storage system which is used to store data along with the error correction codes (e.g. parity bits) on at least two hard disks, in order to increase system reliability and performance. The hard disk array is controlled by management programs and a hard disk controller for error correction. The RAID system is usually implemented in network servers.

Recovery CD

Contains the tools for setting up the hard disks and the Windows operating system.

Reset

Hardware reset: Reset/restart of the PC using a button/switch.

Restart

Warm start of a computer in operating state without switching off the power supply (Ctrl + Alt + Del)

Restore DVD

The Restore DVD is used to restore the system partition or the entire hard disk to factory state if the system has crashed. The bootable DVD contains all the necessary image files. You can also create a boot disk allowing restoration via the network.

ROM

Read-Only Memory ROM is a read-only memory in which every memory location can be addressed individually. The programs or data are permanently stored and are not lost in the event of a power failure.

SCSI interface

Small Computer System Interface Interface for connecting SCSI devices (e.g. hard disk or optical drives)

Session at once

In session at once, the CD can be written to both with an audio session and a data session. The two sessions are written to at once (as in disc at once).

SETUP (BIOS Setup)

A program in which information about the device configuration (that is, the configuration of the hardware on the PC/PG) is defined. The device configuration of the PC/PG is preset with defaults. Changes must therefore be entered in the SETUP if a memory extension, new modules or a new drive are added to the hardware configuration.

Track-at-once

In track-at-once recording, a CD can be written to in bits in several sessions if the CD was not closed.

Troubleshooting

Error cause, cause analysis, remedy

V.24 interface

The V.24 interface is a standardized interface for data transmission. Printers, modems, and other hardware modules can be connected to a V.24 interface

Warm restart

The restart of a computer after a program was aborted. The operating system is loaded and restarted again. The hot key CTRL+ ALT+ DEL can be used to perform a warm start.

Windows

Microsoft Windows is a multitasking graphical user interface. Windows provides a standard graphical interface based on drop-down menus, windowed regions on the screen, and allows operation with a pointer device such as a mouse.

WLAN

Wireless **LAN** is a local network that transmits data via radio waves, infrared light or another wireless technology. Wireless LAN is mainly used in connection with mobile computers in the office or in factory environments.

Index

D

E

F

G

H

I

K

L

M

N

O

P

R

S

T

U

V

W

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