

Operating Instructions Edition 12/2005



Industrial PC
Panel PC 477

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Industrial PC Panel PC 477

Operating Instructions

Introduction	1
Safety Information	2
Description	3
Application planning and preparation	4
Installation / panel-mounting	5
Connecting	6
Operation	7
Commissioning	8
Integration	9
Functions	10
Expansions and configuration	11
Maintenance and service	12
Alarm, error and system messages	13
Troubleshooting	14
Technical Specifications	15
Dimension drawings	16
Detailed descriptions	17
Appendix	A
ESD Guidelines	B
Abbreviations	C

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

All names identified by ® are registered trademarks of the Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

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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Table of contents

1	Introduction	1-1
1.1	Guideline to the operating instructions	1-2
2	Safety Information	2-1
2.1	General safety instructions	2-1
3	Description	3-1
3.1	Overview	3-1
3.2	Applications.....	3-2
3.3	Features	3-3
3.4	Configuration.....	3-5
3.5	Windows XP Embedded	3-6
3.6	Structure.....	3-7
3.6.1	External feature.....	3-7
3.6.2	Connection components	3-10
3.6.3	Status displays	3-12
4	Application planning and preparation	4-1
4.1	Transport.....	4-1
4.2	Unpacking and checking the delivery unit	4-1
4.3	Affixing Labeling Strips for Function Keys and Softkeys	4-3
4.4	Ambient and Environmental Conditions.....	4-6
5	Installation / panel-mounting	5-1
5.1	Permitted mounting positions.....	5-1
5.2	Fastening and installation types.....	5-2
5.3	Mounting information	5-3
5.4	Preparing the mounting cut-out.....	5-5
5.5	Securing the Device with Clamps	5-7
5.6	Securing the Device with Screws.....	5-9
6	Connecting	6-1
6.1	Connecting the 24 V DC power supply.....	6-1
6.2	Connecting the 100 - 240 V AC Power Supply.....	6-3
6.3	Connecting the equipotential bonding	6-5
6.4	Connecting peripheral equipment.....	6-7

7	Operation	7-1
7.1	Device with key panel	7-1
7.1.1	Using the keyboard	7-2
7.1.2	Using the integrated mouse	7-7
7.2	Device with touch screen	7-8
7.2.1	Using the touch screen	7-8
8	Commissioning	8-1
8.1	Note before commissioning.....	8-1
8.2	Commissioning Windows XP Embedded.....	8-2
8.2.1	Basic commissioning - initial startup	8-2
8.2.2	Setting Up the Language Selection	8-3
8.3	Commissioning Windows XP Professional	8-4
8.3.1	Basic commissioning - initial startup	8-4
8.3.2	Setting Up the Language Selection	8-5
8.3.3	Checking the Language Selection	8-6
8.4	Setting the Panel Type.....	8-7
8.5	Device with key panel	8-9
8.5.1	Activating KeyTools.....	8-9
8.6	Device with touch screen	8-10
8.6.1	Recalibrating the Touch Screen.....	8-10
8.6.2	Activating the Screen Keyboard.....	8-12
9	Integration	9-1
10	Functions	10-1
10.1	Monitoring functions	10-1
10.1.1	Overview	10-1
10.1.2	Temperature monitoring/display	10-1
10.1.3	Watchdog (WD).....	10-2
10.1.4	Safecard on Motherboard (SOM).....	10-3
10.2	Enhanced Write Filter (EWF)	10-4
11	Expansions and configuration	11-1
11.1	Open the device.....	11-1
11.2	Memory expansion.....	11-3
11.2.1	Installing the memory module	11-3
11.3	Installing PC/104 modules	11-5
11.3.1	Notes on the modules	11-5
11.3.2	Mounting a PC/104 module.....	11-5
11.4	Installing/removing a Compact Flash card.....	11-9
12	Maintenance and service	12-1
12.1	Cleaning the Device Front.....	12-1
12.2	Removing and installing hardware components	12-2
12.2.1	Replacing a hard disk.....	12-3
12.2.2	Replace the backup battery	12-4
12.3	Reinstalling the Operating System.....	12-6
12.3.1	Windows XP Embedded	12-6
12.3.1.1	General installation procedure	12-6

12.3.1.2	Restoring the software to factory state using the Restore CD.....	12-6
12.3.2	Windows XP Professional.....	12-8
12.3.2.1	General installation procedure.....	12-8
12.3.2.2	Restoring the Software to Factory State Using the Restore DVD.....	12-8
12.3.2.3	Setting up the operating system via the Recovery CD.....	12-10
12.4	Partitioning the hard disk.....	12-13
12.4.1	Setting up the partitions under Windows XP Embedded.....	12-13
12.4.2	Setting up the partitions under Windows XP Professional.....	12-13
12.5	Installing updates.....	12-14
12.5.1	Updating the operating system.....	12-14
12.5.2	Installing or updating application programs and drivers.....	12-14
12.6	Data backup.....	12-15
12.6.1	Creating an image.....	12-15
13	Alarm, error and system messages.....	13-1
13.1	Boot error messages.....	13-1
14	Troubleshooting.....	14-1
14.1	General problems.....	14-1
14.2	Problems when using modules of third-party manufacturers.....	14-2
15	Technical Specifications.....	15-1
15.1	General Technical Specifications.....	15-1
15.2	Power requirements of the components.....	15-4
15.3	DC power supply.....	15-4
15.4	AC voltage supply.....	15-4
15.5	Keyboard table.....	15-5
16	Dimension drawings.....	16-1
16.1	Overview of the dimension drawings.....	16-1
16.2	Dimension drawing of the touch screen device, 12" display.....	16-2
16.3	Dimension drawing of the touch screen device, 15" display.....	16-3
16.4	Dimension drawing of the key panel device, 12" display.....	16-4
16.5	Dimension drawing of the key panel device, 15" display.....	16-5
16.6	Dimension drawing of the touch screen device, 12" display with expansion frame.....	16-6
16.7	Dimension drawing of the touch screen device, 15" display with expansion frame.....	16-7
16.8	Dimension drawing of the key panel device, 12" display with expansion frame.....	16-8
16.9	Dimension drawing of the key panel device, 15" display with expansion frame.....	16-9
16.10	Dimension drawing of the blanking plate.....	16-10
17	Detailed descriptions.....	17-1
17.1	Internal components.....	17-1
17.1.1	Overview of internal components.....	17-1
17.1.2	Technical features of the motherboard.....	17-2
17.1.3	External interfaces.....	17-2
17.1.3.1	COM.....	17-2
17.1.3.2	DVI-I.....	17-3
17.1.3.3	Ethernet.....	17-4

17.1.3.4	PROFIBUS	17-4
17.1.3.5	USB	17-5
17.1.4	Internal ports	17-6
17.1.4.1	PC/104 port	17-6
17.1.4.2	PC/104-Plus port	17-7
17.2	BIOS Setup	17-8
17.2.1	Overview	17-8
17.2.2	Starting BIOS Setup	17-8
17.2.3	BIOS Setup menus	17-9
17.2.4	Main menu	17-11
17.2.5	Advanced Menu	17-18
17.2.6	Security menu	17-25
17.2.7	Power menu	17-27
17.2.8	Boot Menu	17-28
17.2.9	Versions Menu	17-30
17.2.10	Exit menu	17-31
17.2.11	BIOS Setup default settings	17-33
17.3	System resources	17-36
17.3.1	Currently allocated system resources	17-36
17.3.2	System resources used by the BIOS/DOS	17-36
17.3.2.1	PCI Interrupt Lines	17-36
17.4	I/O address areas	17-37
17.4.1	Overview of the internal module registers	17-37
17.4.2	Watchdog enable register (read/write address 062h)	17-38
17.4.3	Watchdog trigger register (read only, address 066h)	17-38
17.4.4	SRAM base address register (write only, address 066h)	17-39
17.4.5	SRAM control register (write only, address 066h)	17-41
17.4.6	Output register LED 1 / 2 (read/write address 404Eh)	17-41
17.4.7	General Purpose Ports (GPP) output register (read/write, address 404Dh)	17-42
A	Appendix	A-1
A.1	Guidelines and Declarations	A-1
A.2	Certificates and Approvals	A-2
A.3	Service and support	A-4
A.4	Catalog and A&D online ordering system (mall)	A-6
B	ESD Guidelines	B-1
B.1	ESD Guidelines	B-1
C	Abbreviations	C-1
C.1	Abbreviations	C-1
	Glossary	Glossary-1
	Index	Index-1

Introduction

Purpose of the Manual

These operating instructions contain all the information you need for commissioning and using the SIMATIC Panel PC 477.

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

Scope of this manual

This documentation is valid for all supplied variations of the SIMATIC Panel PC 477 and describes the state of the product package as of December 2005.

Position in the Information Landscape

For supplementary instructions on how to handle the software, please refer to the corresponding manuals.

Conventions

The short forms "Panel PC" and "device" are also used within this manual for the product name, SIMATIC Panel PC 477.

History

Currently released versions of this operating manual:

Version	Comment
10/2005	First edition
12/2005	Troubleshooting

1.1 Guideline to the operating instructions

Contents format	Table of Contents
Table of Contents	Organization of the documentation, including the index of pages and chapters
Introduction	Purpose, layout and description of the important topics.
Safety Information	Refers to all the valid technical safety aspects which have to be adhered to while installing, commissioning and operating from the product/system view and with reference to statutory regulations.
Description	Fields of application, the features and the structure of the product/system
Application Planning	Aspects of storage, transport, environmental and EMC conditions to be considered in the preparatory stage
Installation / panel-mounting	Product installation options and installation instructions
Connecting	Options of connecting the product and connection instructions
Operation	Operator control elements and operation at the product.
Commissioning	Commissioning the product/system.
Integration	Options of integrating the product into existing or planned system environments/networks
Functions	Monitoring and display functions
Expansions and configuration	Procedure for installing expansion devices (memory, modules).
Maintenance and service	Replacement of hardware components, restoring and setup of the operating system, installation of drivers and software
Alarm, error and system messages	Error messages from booting
Troubleshooting	Problems, cause, remedy
Technical Specifications	General specifications in compliance with relevant standards and current/voltage values
Dimension drawings	Dimensions of the device and of modules
Detailed descriptions	Structure, function and features of the vital components, allocation of system resources and use of the BIOS Setup
Appendix	Guidelines and certifications, service and support, notes on retrofitting.
ESD Guidelines	General ESD guidelines.

Safety Information

2.1 General safety instructions



Caution

Please observe the safety instructions on the back cover of this documentation. You should not expand your device unless you have read the relevant safety instructions.

This device is compliant with the relevant safety measures to IEC, EN, and UL. If you have questions about the validity of the installation in the planned environment, please contact your service representative.

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.

System expansions

Only install system expansion devices designed for this device. If you install other expansion devices, you may damage the system or violate the safety requirements and regulations on RF 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.

Battery

This device is equipped with a Lithium battery. Batteries may only be replaced by qualified personnel.



Caution

There is the risk of an explosion if the battery is not replaced as directed. Replace only with the same type or with an equivalent type recommended by the manufacturer. Dispose of used batteries in accordance with local regulations.



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.

ESD Guidelines

Modules containing electrostatically sensitive devices (ESDs) can be identified by the following label:



Strictly follow the guidelines mentioned below when handling modules which are sensitive to ESD:

- Always discharge your body's static electricity before handling modules which are sensitive to ESD (for example, by touching a grounded object).
- All devices and tools must be free of static charge.
- Always pull the power plug and disconnect the battery before you install or remove modules which are sensitive to ESD.
- Handle modules fitted with ESDs by their edges only.
- Do not touch any wiring posts or conductors on modules containing ESDs.

Description

3.1 Overview

Features

The SIMATIC Panel PC 477 provides high-level industrial performance.

- Compact design
- Maintenance-free operation
- Rugged

Device variants

The SIMATIC Panel PC 477 is available in the following variants:

Device with touch screen	Device with key panel
 <p>The image shows the front view of a SIMATIC Panel PC 477 with a touch screen. The screen is black and framed by a light blue border. The word 'TOUCH' is printed vertically on the right side of the frame. The Siemens logo is visible in the top left corner, and 'SIMATIC PANEL PC' is printed in the top right corner.</p>	 <p>The image shows the front view of a SIMATIC Panel PC 477 with a key panel. It features a black screen on the left and a control panel on the right. The control panel includes a numeric keypad, function keys, and a small display area. The Siemens logo is in the top left, and 'SIMATIC PANEL PC' is in the top right.</p>
12" LCD or 15" LCD	12" LCD or 15" LCD

3.2 Applications

The SIMATIC Panel PC 477 is an industry-standard PC platform for demanding tasks in the field of automation. The device is conceived for use direct on site at the machine. The SIMATIC Panel PC 477 provides a flexible system for high-performance and space-saving applications in particular in the field of machine, systems and switchgear cabinet engineering:

- Measuring and controlling of process and machine data (e.g. automated washing systems, robot controls)
- Operator control and monitoring of machines (HMI function)
- Data logging and processing (e.g. system data logging, distributed process control)

3.3 Features

Basic data	
Installation / mounting	<ul style="list-style-type: none"> • Switchgear cabinet installation • Rack installation • Swivel arm installation
Processor	<ul style="list-style-type: none"> • Intel Celeron 400 MHz, 100 FSB, SLC 256 KB or • Intel Celeron 650 MHz, 100 FSB, SLC 256 KB or • Intel Pentium III 933 MHz, 133 FSB, SLC 512 KB
Main memory	<ul style="list-style-type: none"> • 128 Mbytes SDRAM PC133 or • 256 Mbytes SDRAM PC133 or • 512 Mbytes SDRAM PC133
Free slots for expansion	up to 3 x PC/104 <i>Plus</i> (with expansion frames)
Display	<ul style="list-style-type: none"> • 12" screen diagonal with background illumination, resolution 800*600 • 15" screen diagonal with background illumination, resolution 1024*768
Graphic controller	<ul style="list-style-type: none"> • Integrated S3 - ProSavage 4 AGP controller • CRT resolution of 640x480 pixel up to 1600x1200 pixel (1600x1200 to 60Hz) • DVI resolution of 640x480 pixel up to 1024x768 pixel (not external) ¹ • 8/16/32 MB graphics memory taken from RAM (UMA)
Power supply	<ul style="list-style-type: none"> • 24 V DC (20.4 to 28.8 V) or • 100 - 240 V AC Europe or • 100 - 240 V AC USA
Conditions of use	<ul style="list-style-type: none"> • Operation without fan
Drives and storage media	
Compact Flash card via CF slot	<ul style="list-style-type: none"> • 256 Mbytes optional or • 512 Mbytes optional or • 1 GByte optional
Compact Flash card via CF adapter (optional instead of the hard disk)	<ul style="list-style-type: none"> • 256 Mbytes optional or • 512 Mbytes optional or • 1 GByte optional
Hard disk	40 GB UDMA100 EIDE (optional)
Floppy/CDROM drive	Connected via external USB port
USB stick	Connected via external USB port
Interfaces	
Serial	COM1 (RS232)
Graphics	DVI-I: Externally only VGA signal ¹
USB	3 x USB 2.0, high current
Ethernet	2 x 10/100 Mbps (RJ 45)
PROFIBUS DP	12 Mbps (isolated potential, compatible to CP 5611), optional
External keyboard, mouse	Connected via external USB port

Monitoring and safety functions	
Temperature	<ul style="list-style-type: none"> When permitted temperature range is exceeded Warnings can be analyzed by application program (local, via LAN) Functions are optionally available.
Watchdog	Monitoring function for program execution (optionally available)
LED display computer unit	5 LEDs for displaying system status, 2 of these can be programmed by the user
Transient voltage interruption	up to 15 ms
Buffer memory	128 KB battery buffered SRAM ²

Software	
Operating systems	
Available	<ul style="list-style-type: none"> Windows XP Embedded preinstalled on 40 GByte hard disk or CF card Windows XP Professional MUI auf preinstalled on 40 GByte hard disk ³
System tested SIMATIC Industrial Software	
Control software	WinAC

¹ Due to the chipset architecture only the analog VGA signals are available at the DVI interface.

² Supported by PLC software WinAC RTX 2005

³ MUI: Multi Language User Interface; 5 languages (English, German, French, Spanish, Italian)

3.4 Configuration

Accessories	Order No.
Expansion kit PC/104	6 A G 4 0 7 0 - 0 B A 0 0 - 0 X A 0
256 Mbytes Compact Flash card	6 E S 7 6 4 8 - 2 B F 0 0 - 0 X C 0
512 Mbytes Compact Flash card	6 E S 7 6 4 8 - 2 B F 0 0 - 0 X D 0
1 GByte Compact Flash card	6 E S 7 6 4 8 - 2 B F 0 0 - 0 X E 0
SIMATIC USB-FlashDrive, USB 2.0, 512 Mbytes	6 E S 7 6 4 8 - 0 D C 2 0 - 0 A A 0
Power cable 100 - 240 V AC, 90° offset, GB	6 E S 7 9 0 0 - 1 B A 0 0 - 0 X A 0
Power cable 100 - 240 V AC, 90° offset, CH	6 E S 7 9 0 0 - 1 C A 0 0 - 0 X A 0
Power cable 100 - 240 V AC, 90° offset, USA	6 E S 7 9 0 0 - 1 D A 0 0 - 0 X A 0
Power cable 100 - 240 V AC, 90° offset, ITA	6 E S 7 9 0 0 - 1 E A 0 0 - 0 X A 0

3.5 Windows XP Embedded

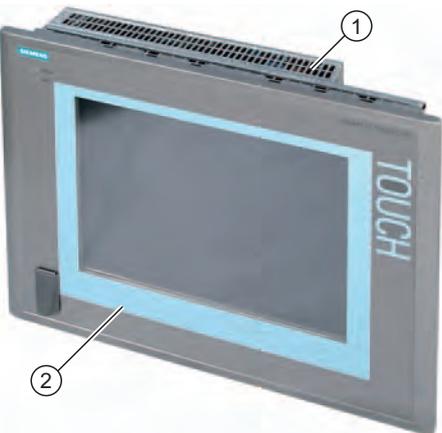
The overview shows the most important device functions under Windows XP Embedded:

Function	Hard disk version	Compact Flash card version
Enhanced Write Filter (EWF)	In the RAM	In the RAM
Safecard on Motherboard (SOM)	Available	Available
Pagefile	150% RAM expansion	Not available
System Restore Core	Available	Available
MUI	GER/FRA/ITA/SPA	Not available
Administrator Account	Available	Available
User Account	Available	Available
Explorer Shell	Available	Available
Internet Explorer (IE) 6.0	Available	Available
Internet Information Server (IIS)	Available as of SP2	Available as of SP2
Terminal Services	Available	Available
Bluetooth	Available as of SP2	Available as of SP2
Wireless Network Support	Available as of SP2	Available as of SP2
Windows Firewall	Available as of SP2	Available as of SP2
Windows Security Center	Available as of SP2	Available as of SP2
MSN Explorer	Available	Not available
Outlook Express	Available	Available
Administrative Tools	Available	Available
SMS Advanced Client	Available	Not available
Netmeeting	Available	Not available
Remote Desktop	Available	Available
Remote Assistance	Available	Not available
.NET Framework 1.1	Available	Not available
ASP.NET 1.1	Available	Not available
Windows .NET Messenger	Available	Not available
Codepages/User Locale/Keyboard	Available	Selection available
Disk Management Services	Available	Available
Windows Installer Service	Available	Available
Class Installer	Available	Available
CoDevice Installer	Available	Available
Windows Movie Maker	Available	Not available
Media Player 9.0	Available	Available
Windows Media Player Tour	Available	Not available
DirectX	SP1: V8.1 / SP2: V9.0	SP1: V8.1 / SP2: V9.0
Accessories	Available	Available
Help files for all components	Available	Not available
Games	Available	Not available
Fonts	309	120
Windows XP Tour	Available	Not available

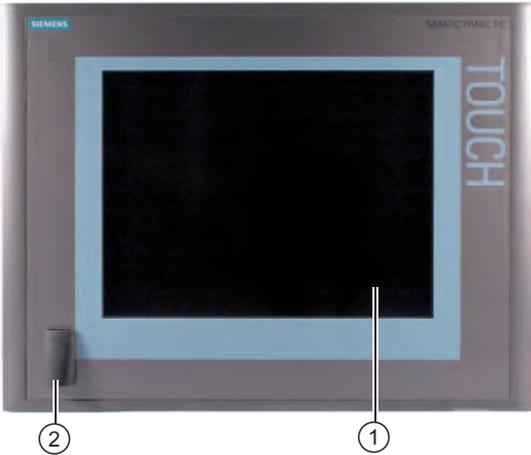
3.6 Structure

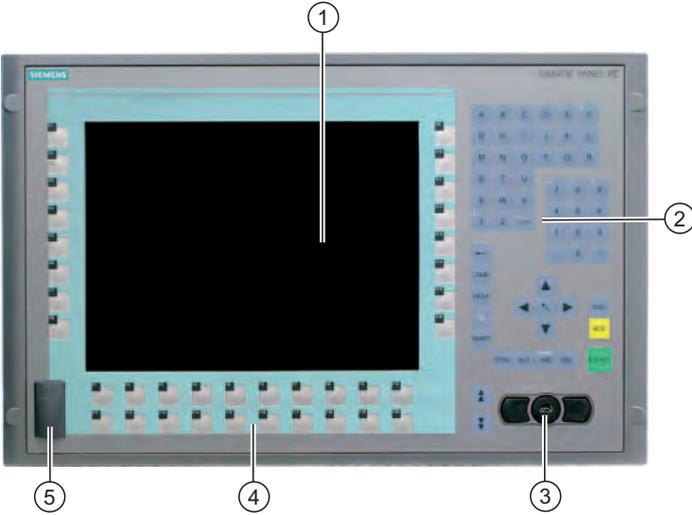
3.6.1 External feature

Basic elements

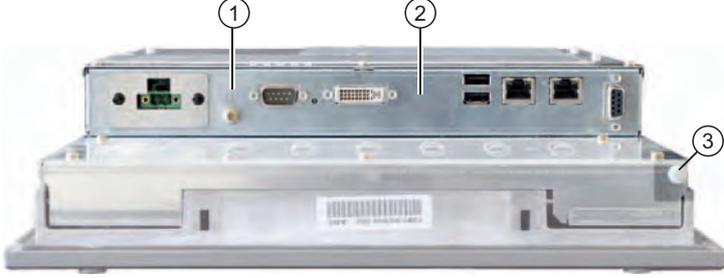
Basic elements of all device variants	Pos	Description
	(1)	Computer unit
	(2)	Control unit

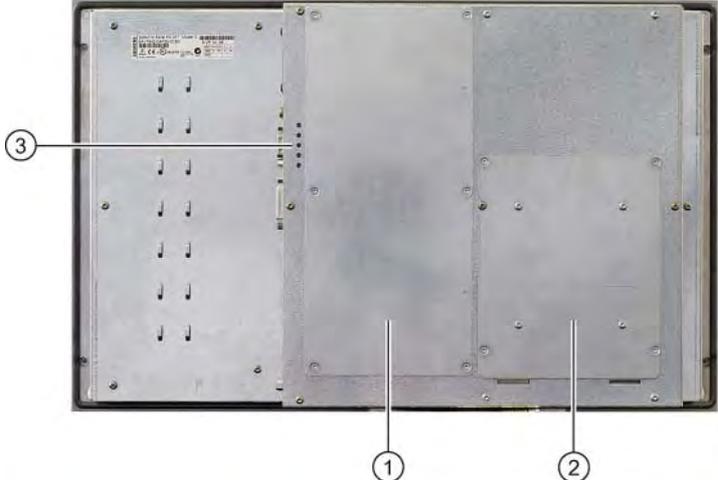
Device elements of control unit

Device with touch screen	Pos s	Description
	(1)	Touch-sensitive LCD display
	(2)	USB port

Device with key panel	Pos	Description
	(1)	LCD display
	(2)	Alphanumeric keys, numeric keys, cursor keys and control keys
	(3)	Integrated mouse
	(4)	Function keys, softkeys
	(5)	USB port

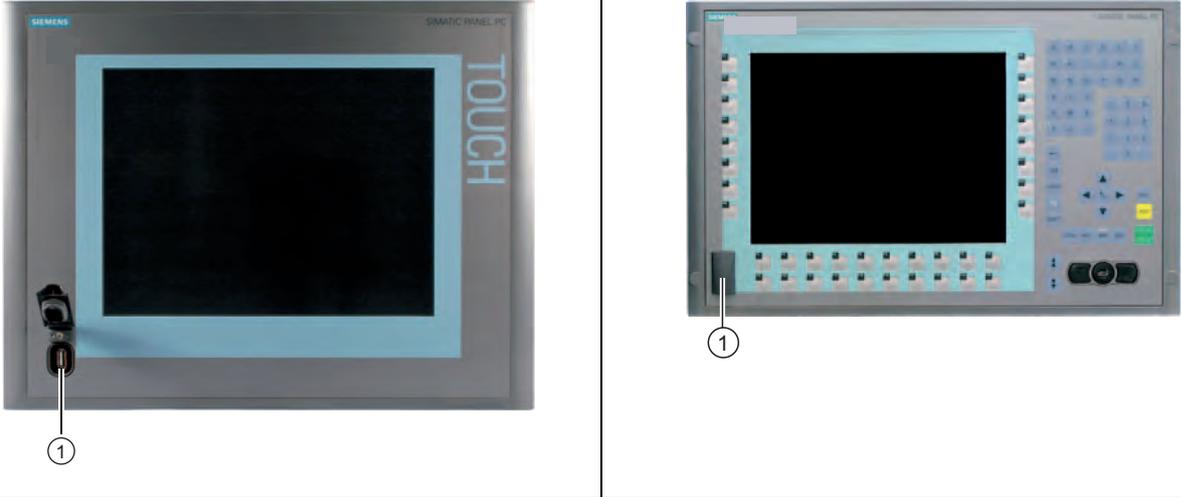
Device elements of computer unit

All device variants / Side view	Pos	Description
	(1)	Reset button
	(2)	Interfaces / Connection elements
	(3)	Computer / control unit rotating joint

All device variants / Rear view	Pos	Description
	(1)	Extension cover
	(2)	Hard disk cover
	(3)	Status displays

3.6.2 Connection components

Connection components of control unit

Connector locations		
		
Pos	Designation	Description
(1)	USB	1 connection USB 2.0 high speed / 500 mA under sealed cover

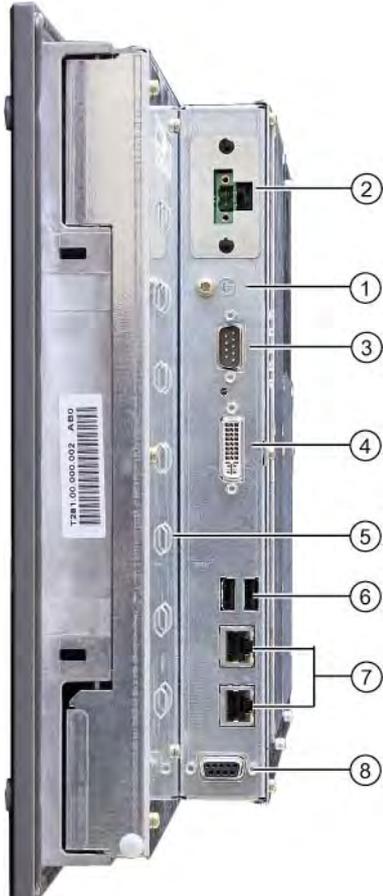
Notice

Ensuring of protective class

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

Connection components of computer unit

Connector locations		
Pos	Designation	Description
(1)	Equipotential bonding (device with AC power supply)	Connection for low-resistance grounding connection
	Protective conductor (device with DC power supply)	
(2)	24 V DC / 100 - 240 V AC	Connection for power supply 24 V DC or 100 - 240 V AC
(3)	COM 1	Serial port 1 (RS232) 9-pin Cannon socket
(4)	DVI	DVI-I socket ¹
(5)	Metal eyes	Eyes for connection strain relief via cable ties
(6)	USB	2 USB 2.0 connections high speed / 500 mA
(7)	Ethernet	2 RJ45 Ethernet connections for 10/100 Mbps
(8)	PROFIBUS DP/MPI	PROFIBUS-DP/MPI interface (RS 485, electrically isolated), 9-pin Cannon socket



¹ Due to the chipset architecture only the analog VGA signals are available at the DVI interface.

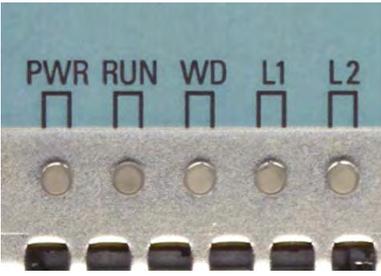
Note

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.

3.6.3 Status displays

Status display of computer unit

Status displays	Indication	Meaning	LED	Description
	PWR	Power supply	OFF YELLOW W	Isolated from supply voltage Supply voltage available
	RUN	Operation	OFF GREEN N	No access to PCI bus Access to PCI, onboard and ISA peripherals
	WD	Watchdog status display	OFF GREEN N RED	Watchdog disabled Watchdog enabled, monitoring time not expired Watchdog enabled, monitoring time not expired
	L 1	LED 1	YELLOW W	Can be controlled by user programs ¹
	L 2	LED 2	YELLOW W	Can be controlled by user programs ¹

¹Please contact the Customer Support for information about addressing the LEDs L1 and L2.

Application planning and preparation

4.1 Transport

Despite the fact that the device is of a rugged design, its internal components are sensitive to severe vibrations or shock. You must therefore protect the PC from severe mechanical stress when transporting it.

You should always use the **original packaging** for shipping and transporting the device.

Caution

Risk of damage to the device!

When transporting the PC in cold weather it may be submitted to extreme variations in temperature. In this situation, should make sure that no moisture (condensation) develops on or inside the device.

If condensation has developed, wait at least 12 hours before you switch on the device.

4.2 Unpacking and checking the delivery unit

Unpacking the device

Note the following when unpacking the unit:

- It is advisable not to dispose of the original packing material. Keep it in case you have to transport the unit again.
- Please keep the documentation in a safe place. It is required for initial commissioning and is part of the device.
- Check the delivery unit for any visible transport damage.
- Verify that the shipment contains the complete unit and your separately ordered accessories. Please inform your local dealer of any disagreements or transport damages.

Noting the device identification data

The device can be identified uniquely with the help of these numbers in case of repairs or theft.

Enter the data in the following table:

Serial number	S VP ...
Order No.	6AV784 ...
Ethernet address 1	
Ethernet address 2	
Microsoft Windows Product Key	

You can find the corresponding data here:

- Serial number: You can find the serial number on the rating plate on the back of the device.



Figure 4-1 Type plate

- Order number of the device
- Ethernet address: You can find the Ethernet address of the device in your BIOS Setup (**F2 function key**) under **Hardware Options > ETH 1 Address** or **ETH 2 Address**.
- Microsoft Windows "Product Key" from the "Certificate of Authenticity" (COA). The COA label is only present in preinstalled Windows XP Embedded or XP Professional and is affixed to the back of the device.



Figure 4-2 COA label

4.3 Affixing Labeling Strips for Function Keys and Softkeys

Note

The following table applies only to devices with a key panel.

The control unit has two horizontal and two vertical keypads for the function keys and the softkeys. Assign user specific functions to the keys as needed. You can mark these keys with labeling strips. A4 films for creating the labeling strips are available as accessories.

Proceed as follows to affix the labeling strips:

Preparing the Labeling Strips

1. Label the DIN A4 film with a laser printer with the printing templates from the options, for example.
2. Cut the labeling strips along the pre-printed lines.

Note

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

Separating the control unit from the computer unit

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 that can be destroyed by electrostatic charges. You must therefore take preventive measures before opening the device. Refer to the (ESD) directives for handling components which are sensitive to electrostatic charge.

Tool required to separate the computer unit from the control unit: Torx T10 screwdriver

1. Disconnect the device from the power supply.



Warning

Unauthorized opening of the device may result in substantial damage to equipment or endanger the user. Always disconnect the device from the power supply before opening it.

2. Unplug all peripherals (mouse, keyboard, external monitor, etc.) from the SIMATIC Panel PC 477.
3. Loosen the 7 screws that secure the computer unit to the control unit.

Note

Device variants

The number of screws to be screwed out varies depending on the device variants.

4. Fold up the computer unit in the arrow direction along the joint (1).

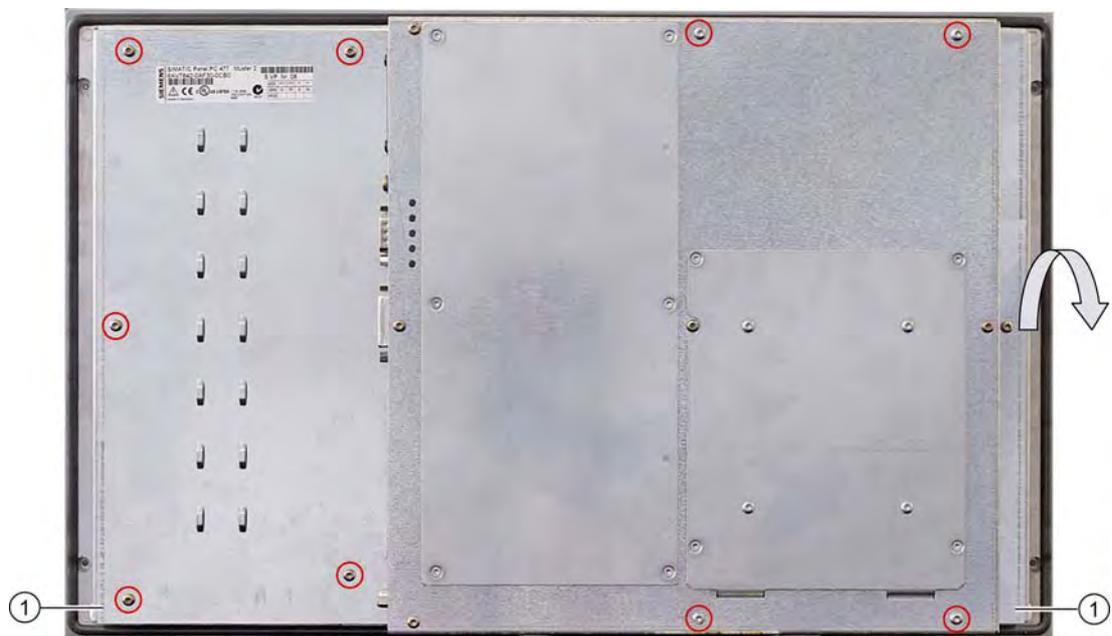


Figure 4-3 Example 12" touch screen device: Separating the computer unit from the control unit:

Affixing the Labeling Strips

Notice

Risk of damage

Do not under any circumstances touch exposed components of the control unit.

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

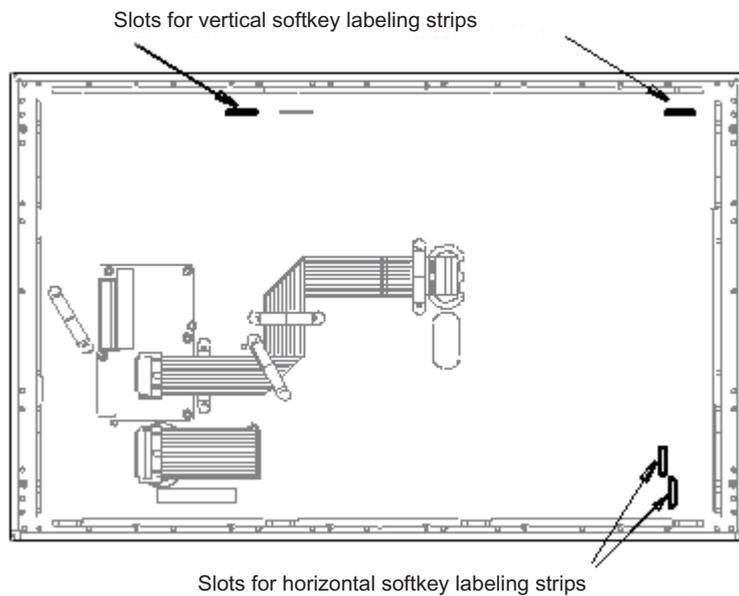


Figure 4-4 Device rear with connections and slots for the labeling strips

Screwing the Computer Unit onto the Control Unit

Mount the computer unit back onto the control unit using the 7 screws that were removed beforehand.

4.4 Ambient and Environmental Conditions

When you plan your project, you should make allowances for:

- Note the climatic and mechanical environmental conditions specified in the technical data in your operating manual.
- The device is approved for operation in closed rooms only.
- Avoid extreme environmental operating conditions. Protect the device against dust, moisture and heat.
- Do not place the device in direct sunlight.
- Ensure at least 100 mm of space above and below the device and between other components or the sides of cabinets.
- Do not cover the vent slots of the device.
- Always observe the mounting positions permitted for this device.

Installation / panel-mounting

5.1 Permitted mounting positions

Mounting Positions

Only vertical installation with a deviation of up to $+35^\circ$ and -35° in the specified directions is permitted for the device.

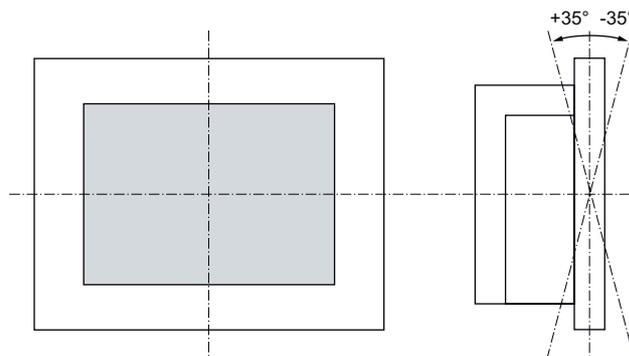


Figure 5-1 Permitted mounting positions

5.2 Fastening and installation types

Installation types

You can install the device by three methods:

- In a 19" rack
- On a swivel arm
- In a switchgear cabinet

Type of fixation

You can fasten the device by two methods:

- With clamps Clamp and grub screws are included in the contents of delivery.
- With screws

Note

You cannot use screws to secure the device variant with the 12" touch screen variant.

See also

Securing the Device with Clamps (Page 5-7)

Securing the Device with Screws (Page 5-9)

5.3 Mounting information

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

- 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 device so that the screen is in an ergonomic position favorable to the user. Choose a suitable installation height.
- Position the device so that the screen is not subject to direct sunlight or other strong sources of light.
- Applies to devices with hard disk 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.
- 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.
- Do not allow the maximum air intake temperature to exceed 45° C. Decisive is the temperature measured at a distance of 10 cm from an air intake. The maximum air intake temperature must be accounted for especially when sizing closed switchgear cabinets.
- Position the device so that the air vents of the housing are not covered up following installation.
- Provide enough free space to add on to the device.
- Equip the switchgear cabinet with struts for stabilizing the installation 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 that it poses no danger, e.g. by falling over.
- During assembly, please comply with the approved installation positions.

Notice

Install the device in such a way that the area behind the front part of an operating area has restricted access (e.g. lockable switchgear cabinet or console).

Notice

The device must be mounted in a fireproof cabinet to fulfill the requirements for UL508 certification.



Warning

Danger, high voltage

Isolate the power supply to a 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.



Warning

Function test while installing the device in machines or execute systems

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 secured.

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.

5.4 Preparing the mounting cut-out

If you want to install the device in a control cabinet, you first have to prepare a mounting cut-out.

Dimensions for the Mounting Cut-out

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

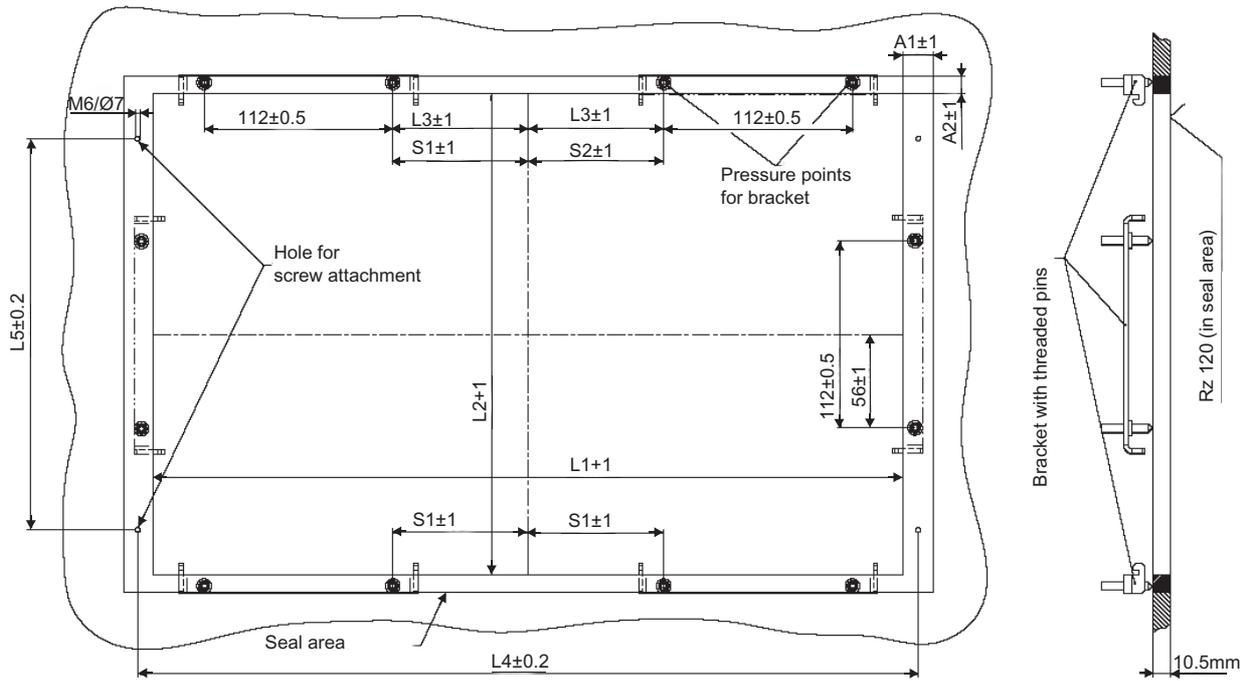


Figure 5-2 Dimensioned drawing mounting cut-out

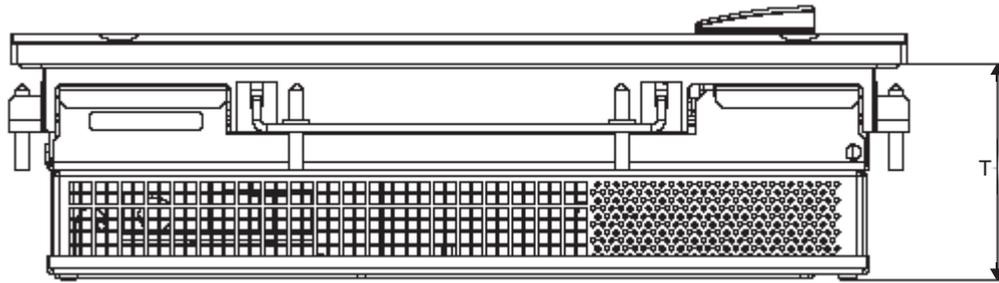


Figure 5-3 Screw holes and screw pressure points of the clamps

Dimensions for the mounting cut-out in mm										
Control unit	L1	L2	T	L3	L4 ¹⁾	L5	A1	A2	S1	S2
With key panel, 12" display	450	290	78	78	465	235	16	10	-	
With key panel, 15" display	450	321	78	51	465	279	16	17	-	-
With touch screen, 12" display	368	290	78	-	-	-	16	10	35	19
With touch screen, 15" display	450	290	78	81	465	235	16	10	-	-

¹⁾ Drill holes with 6 mm diameter each

Preparing the Mounting Cut-out

Steps for preparing the mounting cut-out	
1	Select a location suitable for mounting, taking into account the installation guidelines and the chosen mounting position.
2	On the basis of the dimension diagrams, check whether the required screw and pressure points on the rear and the hatched 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 to the dimensions.

See also

Mounting information (Page 5-3)

5.5 Securing the Device with Clamps

You require 6 clamps in order to mount the device. These are supplied with the device.

Required tool for fastening the clamps: Hexagon insert wrench 2.5 mm



Figure 5-4 Clamp assembly

Rack Mounting

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

Swivel Arm Mounting

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

Control Cabinet Installation

Steps for fastening the device with clamps	
1	Follow the installation guidelines.
2	Disconnect the device from the power supply.
3	Working from the front, insert the device into the mounting cut-out.
4	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 grub screws to a torque of 0.4-0.5 Nm.

Degree of Protection IP65

The IP65 degree of protection is only provided for a clamp mounting together with a ring seal.

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 is only ensured if the following requirements are fulfilled:

1. The material strength at the mounting cut-out amounts to at least 2 mm.
 2. 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.
-

See also

Permitted mounting positions (Page 5-1)

Mounting information (Page 5-3)

5.6 Securing the Device with Screws

Note

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

Required tool for fastening with screws: 7 mm drill

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.

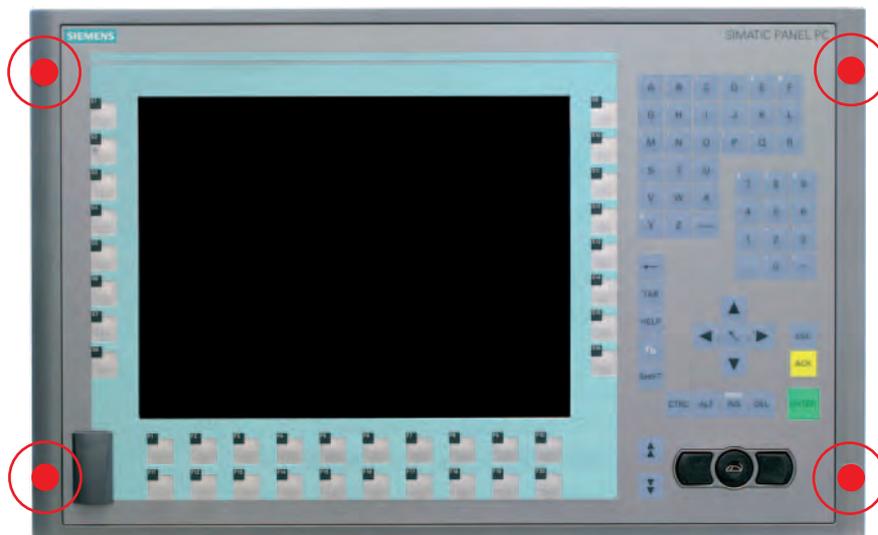


Figure 5-5 Designated location for holes on the control unit

Rack Mounting

Steps for fastening the device with screws	
1	Follow the installation guidelines.
2	Carefully drill the respective holes in the control unit at the designed location from the rear.
3	Working from the front, insert the device into the 19" rack.
4	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	Follow the installation guidelines.
2	Carefully drill the respective holes in the control unit at the designed location from the rear.
3	Working from the front, place the device onto the swivel arm.
4	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	Follow the installation guidelines.
2	Drill suitable holes at the prepared installation cut-out in accordance with the specifications for L4 and L5, as shown at the dimensions in the mounting cut-out
3	Carefully drill the respective holes in the control unit at the designed location from the rear.
4	Working from the front, insert the device into the mounting cut-out.
5	Secure the control unit by inserting suitable screws through the holes and attaching nuts.

IP54 Degree of Protection

This degree of protection is ensured for screw mounting.

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.
-

See also

Permitted mounting positions (Page 5-1)

Mounting information (Page 5-3)

Connecting

6.1 Connecting the 24 V DC power supply

Note before connecting

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



Warning

The device is only allowed to be connected to a power supply VDC 24 according to NEC class 2 or LPS (Limited Power Source).

Use the special plug supplied to connect the supply voltage.

Notice

The 24V DC power source must be adapted to the input data of the device (see technical specifications).

Notice

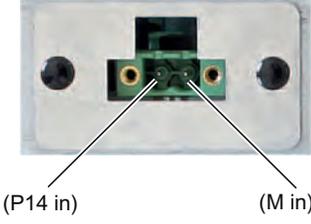
The permitted cable cross-section for the 24 V DC connection is 0.75 mm² to 2.5 mm².

Notice

If a Compact Flash card is used in the device, be sure that the card is properly installed before you connect it.

Connecting

Steps for connecting the device to the 24 V DC power supply	
1.	Switch off the 24 V DC power source.
2.	Connect the power supply using the plug (included in the package).



Power consumption

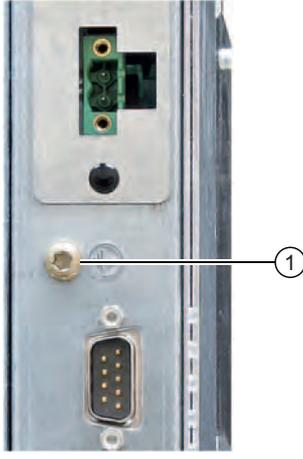
The power consumption at 24 V amounts to 81 W.

Implementing the Protective Earth Terminal

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.

Required tool for protective earth terminal: TORX T20 screwdriver

Steps for connecting the PE conductor	
1	Connect the protective earth terminal (M4 threads) (1) on the device (large surface, large-area contact) with the protective earth conductor of the cabinet or plant in which the PC is to be installed. The minimum conductor cross-section may not amount to less than 5 mm ² .



6.2 Connecting the 100 - 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 varying voltage power supply module is designed for operation on 100 to 240 V AC networks. It is not necessary to adjust the voltage range.

Notice**Risk of damage**

Do not connect or disconnect power and data cables during thunderstorms.

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 designed for operation on ungrounded or impedance-grounded power networks (IT networks).

Notice**Permitted mains voltage**

The permitted nominal voltage of the device must conform with local mains voltage.

Notice**Power disconnection**

The mains connector must be disconnected to fully isolate the device from mains. Ensure easy access to this area.

A master mains disconnect switch must be installed if the device is mounted in a switch cabinet.

Always ensure free and easy access to the power inlet on the device or that the safety power outlet of the building installation is freely accessible and located close to the device.

Notice

If a Compact Flash card is used in the device, be sure that the card is properly installed before you connect it.

Note

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.

USP 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-....".

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 mains leads are available as accessories.

- **100 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 long and parallel 15 A ground contact connector, minimum rating 125 V.
- **240 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 15 A ground contact connector, minimum rating 250 V.

For countries other than the USA and Canada

- **240 V power supply**
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

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 plug.

Power consumption

The power consumption at 240 V amounts to 85 W.

See also

AC voltage supply (Page 15-4)

6.3 Connecting the equipotential bonding**Note**

The following content applies only to devices with an AC power supply.

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 at the connecting elements of the computer unit and is identified by the following symbol:



Figure 6-1 Equipotential bonding

Connecting the equipotential bonding

Required tool for equipotential bonding terminal: TORX T20 screwdriver

Steps for connecting the equipotential bonding	
1	<p>Connect the equipotential bonding connection (M4 thread) on the device (large surface, large-area contact) with the central grounding point of the control cabinet.</p> <p>The minimum conductor cross-section may not amount to less than 5 mm².</p>

Avoiding Differences in Potential

Differences in potential arise between separated system parts, which in some cases leads to high equalization currents. This situation may arise if the cable shielding is terminated at both ends and grounded at different system parts. Potential differences can be caused, for example, by different power inputs.

Reduce the differences in potential by laying the equipotential bonding cables in such a way that the affected electronic components function properly. Observe the following guidelines when setting up equipotential bonding:

- The lower the impedance of an equipotential bonding conductor, the more effective is equipotential bonding.
- When two system parts are connected by means of a shielded signal cable, and their shields are both connected to the ground or protective conductor, the following must be observed: The impedance of the additional equipotential bonding cable amounts to 10% of the shield impedance, at the most.
- Ensure that the equipotential bonding cable cross section is selected to accommodate the maximum equalization current. The equipotential bonding conductor cross-section that has proven best in practice is 16 mm².
- Always use equipotential bonding conductors made of copper or galvanized steel. Connect the cables to the ground or protective conductor over a wide area. Protect the ground or protective conductor from corrosion.
- Lay the equipotential bonding cable in such a way that the area between the equipotential bonding cable and signal cables is as small as possible.

6.4 Connecting peripheral equipment

Notice**Ensure suitability for industrial applications**

Connect only I/O modules approved for industrial applications to EN 61000-6-2:2001.

Note**Peripheral devices capable of hot-plugging (USB)**

Hot-plug I/O modules (USB) may be connected while the PC is in operation.

Caution**Peripheral devices incapable of hot-plugging**

Peripheral devices that are incapable of hot-plugging may only be connected after the device has been disconnected from the power supply.

Caution

Strictly adhere to the specifications for peripheral equipment.

Note**External display**

Due to the chipset architecture only the analog VGA signals are available at the DVI interface.

Note**Strain relief**

Use the eyes for connection strain relief on the device rear via cable ties.

Operation

7.1 Device with key panel

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.

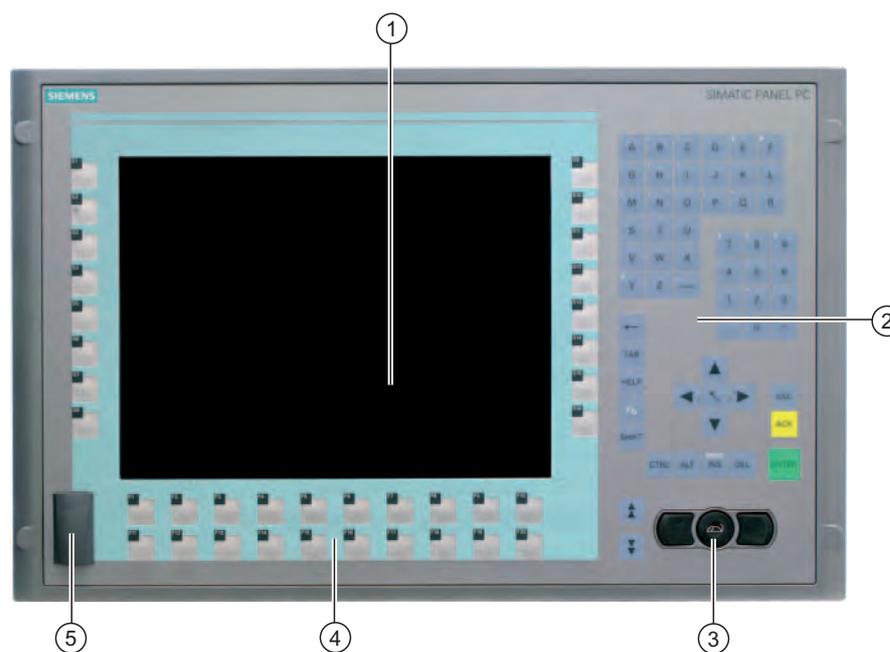


Figure 7-1 Key panel device with 12" display

- (1) Display
- (2) Alphanumeric keys, numeric keys, cursor keys and control keys
- (3) Integrated mouse
- (4) Function keys, softkeys
- (5) USB port

7.1.1 Using the keyboard

The membrane keyboard is divided into different functional groups:

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

Function keys and softkeys

The softkeys are arranged on the left and on the right, and the function keys in a double row below the display.



Figure 7-2 Function keys and softkeys

Control keys

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

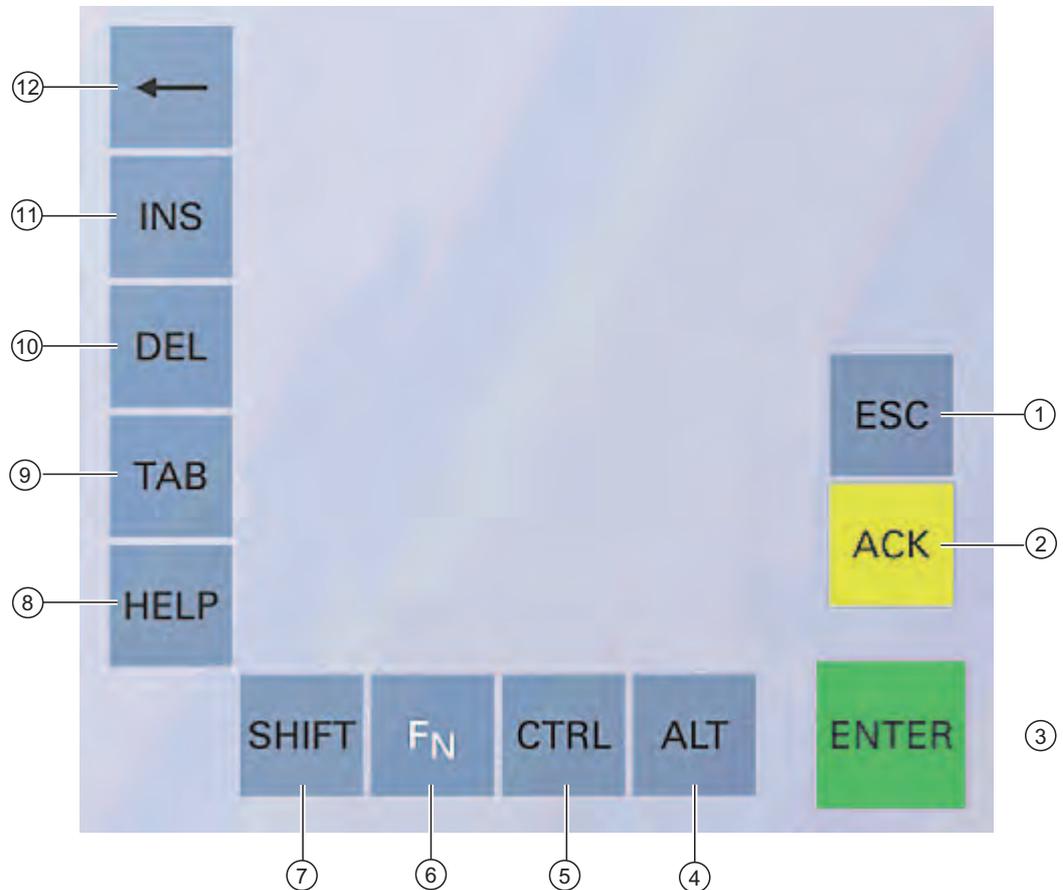


Figure 7-3 Control keys

- (1) Cancel
- (2) Acknowledge
- (3) Enter
- (4) <ALT> key: Application specific functions and special key codes, compare keyboard table in the appendix
- (5) <CTRL> key: Application specific functions and special key codes, compare keyboard table in the appendix
- (6) Toggling between the pre-defined key assignment and special characters, arithmetic symbols and signs
- (7) Toggling between lower-case letters and upper-case letters
- (8) Help
- (9) Tabulator
- (10) Delete
- (11) Insert
- (12) Backspace

Alphanumeric keys

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

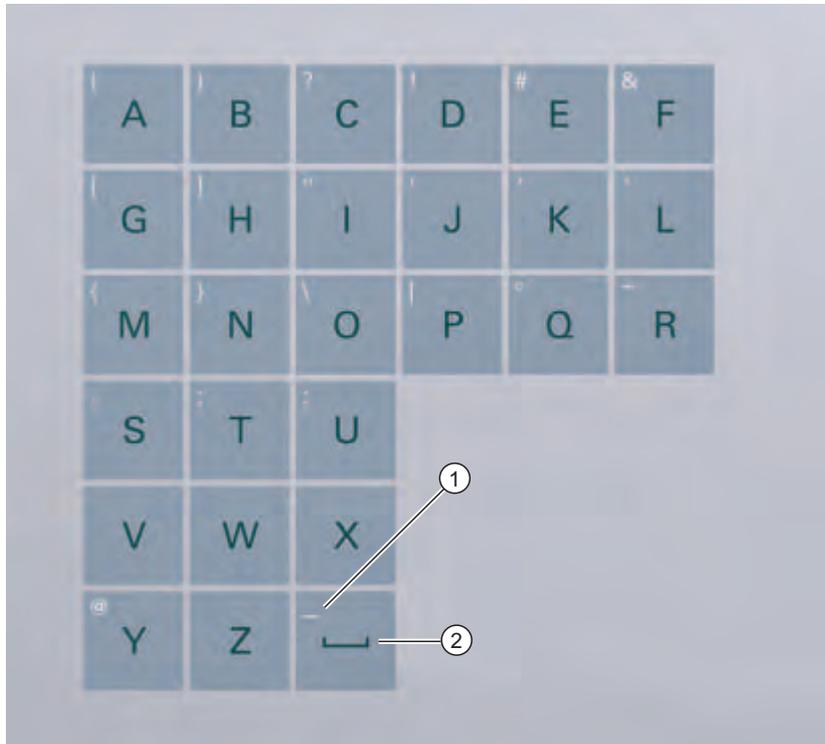


Figure 7-4 Alphanumeric keys

- (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.

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.

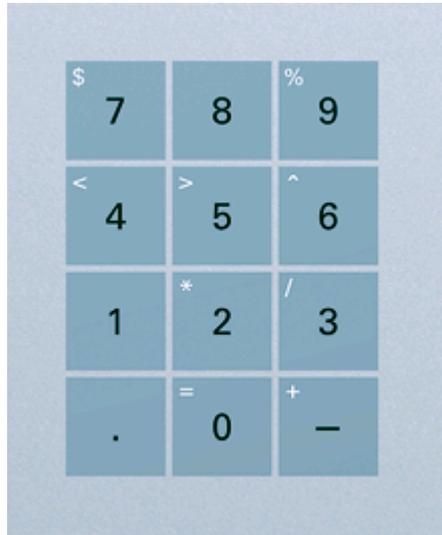


Figure 7-5 Numeric keys

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.

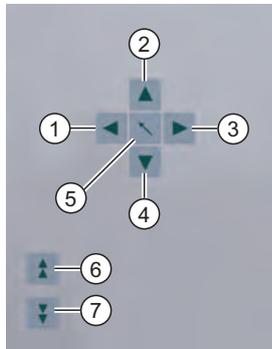


Figure 7-6 Cursor keys

- (1) <Left> key
- (2) <Up> key
- (3) <Right> key
- (4) <Down> key
- (5) <Pos 1> key
- (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

Faulty operation

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 object, e.g. a screwdriver, reduces the life of the key.

See also

Activating KeyTools (Page 8-9)

7.1.2 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 7-7 Integrated mouse

7.2 Device with touch screen

The 12" variant and the 15" variant differ in their dimensions and the size of the display. The 12" variant has no drill hole covers on the sides.

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

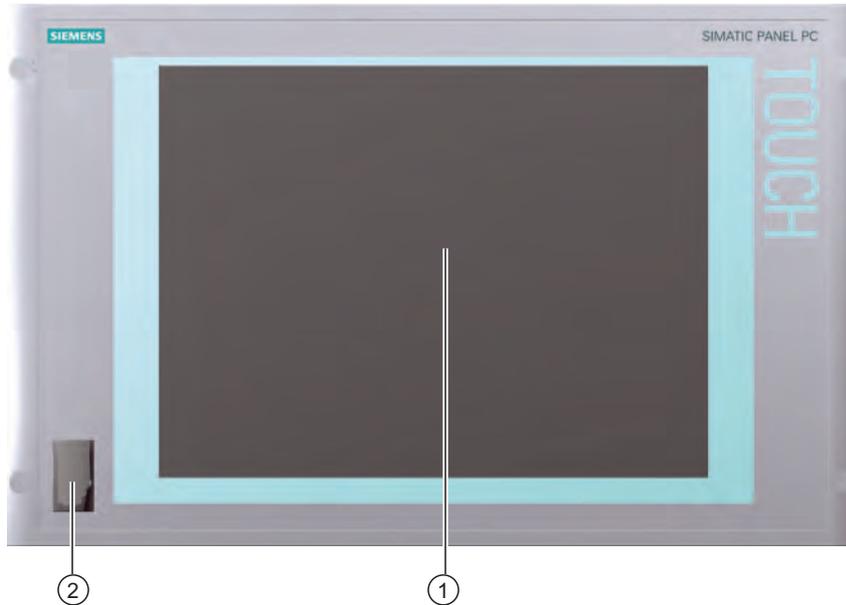


Figure 7-8 Example of a 15" touch screen front

- (1) Display
- (2) USB port

7.2.1 Using the touch screen

At a touch-sensitive display, application-specific user interface elements, for example command 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
-

Commissioning

8.1 Note before commissioning

Factory state

The SIMATIC Panel PC 477 is available in two versions:

- with the Windows XP Embedded operating system (preinstalled on Compact Flash card or the hard disk)
- with the Windows XP Embedded operating system as a customer specified variant (preinstalled on the hard disk)

Information about Commissioning



Caution

Risk of damage to the device

If condensation has developed, wait at least 12 hours before commissioning the device.

Notice

Windows XP Embedded: Observe the EWF rules!

Under Windows XP Embedded a configurable write filter (Enhanced Write Filter) is always. Please observe the EWF rules during commissioning, since a data loss may otherwise occur.

See also

Enhanced Write Filter (EWF) (Page 10-4)

8.2 Commissioning Windows XP Embedded

8.2.1 Basic commissioning - initial startup

Setting up the operating system

When the computer starts up for the **first** time, the Windows XP operating system on the Compact Flash card or hard disk is configured automatically. Proceed as follows:

1. Connect the device to the 24 V DC / 100 - 240 V AC power supply. The PC performs a self-test (POST). During the self-test, this message appears:

Press <F2> to enter SETUP or <ESC> to display the boot menu

2. Wait until the message is cleared, then follow the instructions on the screen.

Notice

The device may not be switched off at any time during the installation process.

Do not change the default BIOS settings, otherwise the operating system setup may become corrupted.

3. Restart

After you have entered all the necessary information and the operating system is configured, you are prompted to restart the system. Acknowledge this prompt with **Yes**.

Note

System startup can take longer than usual for the basic commissioning. A blue screen is displayed for several minutes.

Note

Errors and warnings can be displayed in the status bar, with the first and second switch on of the first basic commissioning or after a restore procedure Mode changes have no effect on FRAMES.

When you switch on the PC now, the user interface of the Windows XP Embedded operating system is automatically opened when the startup routine is completed.

Note

To prevent data loss, it is advisable to create an image of your system partition after basic commissioning.

Switching Off the Device

When you work with Windows XP Embedded, always shut down the PC with the command **Start > Turn Off Computer**.

Note

If the Enhanced Write Filter is active and no data has been written to the Compact Flash card, then the device can be switched off by disconnecting it from the power supply.

8.2.2 Setting Up the Language Selection

The hard disk version of Windows XP Embedded offers the option of setting the menus and dialog boxes to a different language.

Note

Changing the Language Selection

Changing of the language selection under Windows XP Embedded is not possible in the Compact Flash version.

Setting Up the Language Selection

The default setting on your device is Windows XP Embedded with English menus and dialog boxes and a US keyboard layout. You can change the language in the Control Panel. Select:

Start > Control Panel > Regional and Language Options
Languages, tab **Language used in menus and dialogs** field.
For the **Regional and Language Options** set the default to **non-Unicode programs** under **Advanced** in addition to the language for menus and dialog boxes

8.3 Commissioning Windows XP Professional

8.3.1 Basic commissioning - initial startup

Configuring the Operating System

When the computer starts up for the **first** time, the Windows XP Professional operating system on the hard disk is configured automatically. Proceed as follows:

1. Connect the device to the 24 V DC / 100 - 240 V AC power supply. The PC performs a self-test (POST). During the self-test, this message appears:

Press <F2> to enter SETUP or <ESC> to display the boot menu

2. Wait until the message is cleared, then follow the instructions on the screen.

Notice

The device may not be switched off at any time during the installation process.

Do not change the default BIOS settings, otherwise the operating system setup may become corrupted.

3. Automatic Restart

After you have entered all necessary information and the operating system is configured, the PC automatically restarts and displays the user interface of the operating system.

Note

System startup can take longer than usual for the basic commissioning.

When you switch on the PC now, the user interface of the Windows XP Professional operating system is automatically opened when the startup routine is completed.

Note

To prevent data loss, it is advisable to create an image of your system partition after basic commissioning.

Switching Off the Device

When you work with Windows XP Professional, always shut down the PC with the command **Start > Turn Off Computer**.

8.3.2 Setting Up the Language Selection

The **Multilanguage User Interface (MUI)** allows you to set up the Windows XP Professional menus and dialogs for additional languages.

Setting Up the Language Selection

The default setting on your device is Windows XP MUI with English menus and dialog boxes and a US keyboard layout. You can change the language in the Control Panel. Select:

Start > Control Panel > Regional and Language Options
Languages, tab **Language used in menus and dialogs** field.
For the **Regional and Language Options** set the default to **non-Unicode programs** under **Advanced** in addition to the language for menus and dialog boxes

See also

Checking the Language Selection (Page 8-6)

8.3.3 Checking the Language Selection

You can have the languages currently set and their ID numbers displayed by using the "CheckLangID" tool. These include:

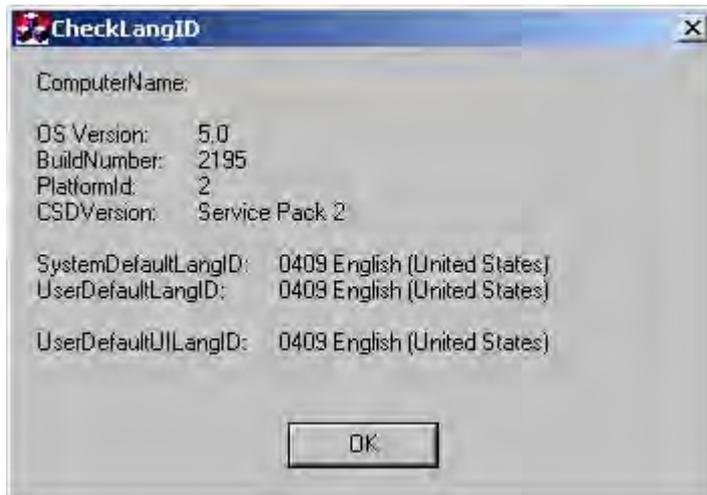
- SystemDefaultLangID: System language
- UserDefaultLangID: Standard language
- UserDefaultUILangID: User interface language

Note

This tool is only installed in the hard disk drive variant of the device.

Checking the Language Selection

Call up the "CheckLangID" tool by using `c:\drivers\checklang\checklangid.exe`.



Notice

All three languages displayed should have the same ID assigned. If this is not the case, change the language selection as described in the section "Setting Up the Language Selection".

See also

Setting Up the Language Selection (Page 8-5)

8.4 Setting the Panel Type

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

Setting the Panel Type

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

Note

The devices with Touch Panel require a USB mouse or USB keyboard for commissioning.



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

2. In the "Panel Wizard Touch" dialog, click on the screen size that corresponds to your device. The screen resolution is set correspondingly for the device.

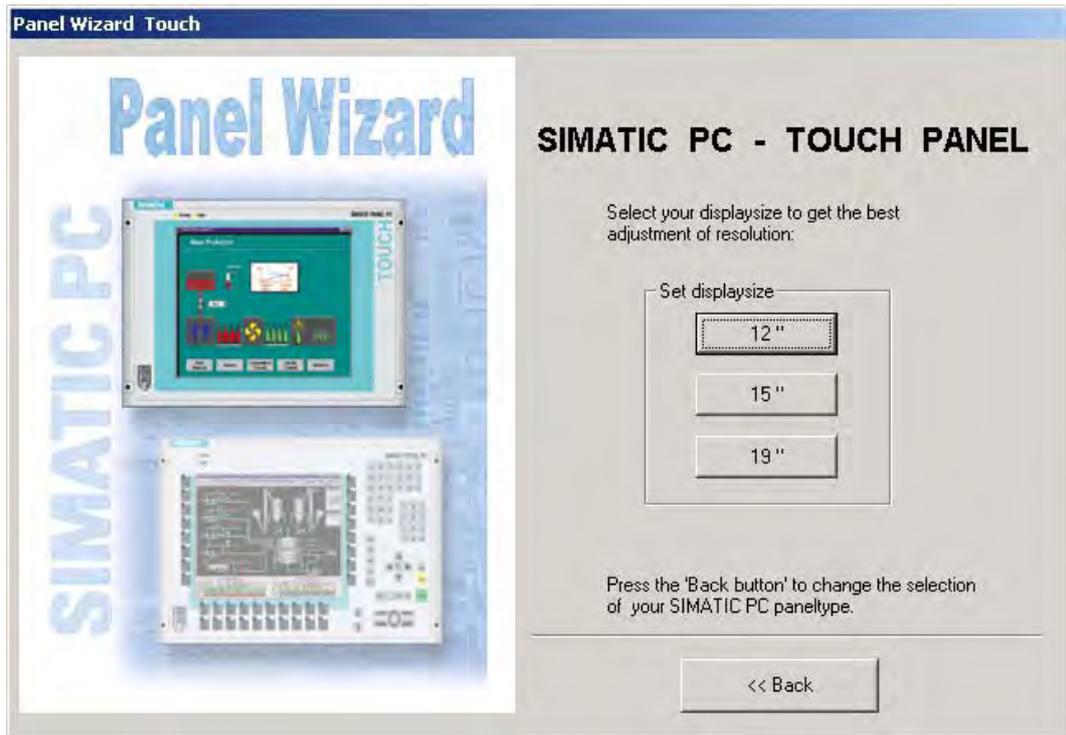


Figure 8-2 Panel Wizard Touch, selection of the screen size

The next step only applies to control units with touch screen panels.

Once the screen size is selected, the wizard will search for new hardware, the touch controller. The Panel Wizard closes and the Touch-Base calibration appears. Carry out the following steps carefully.

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

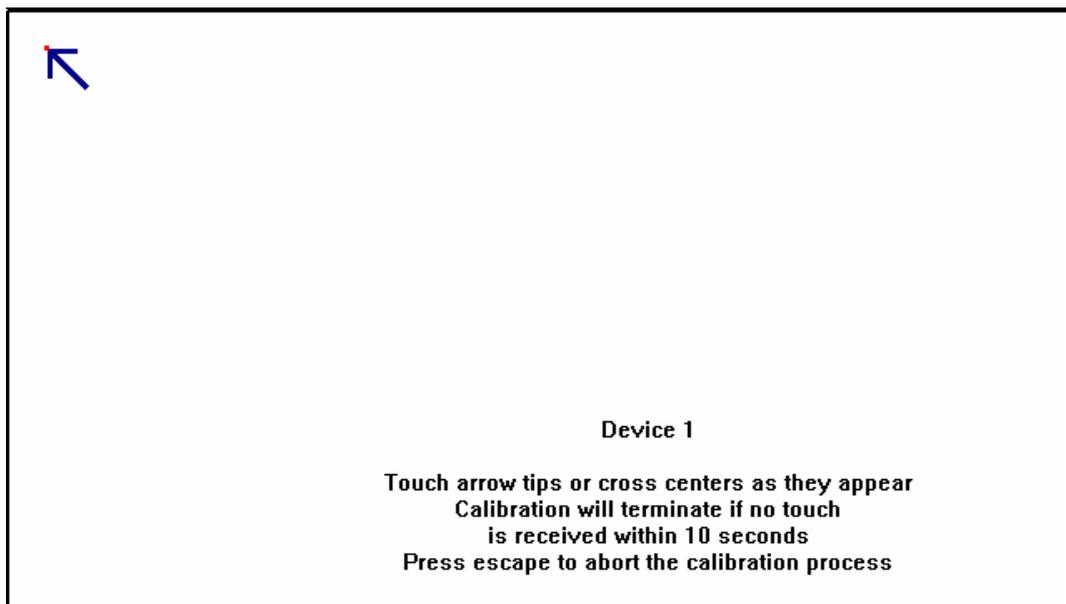


Figure 8-3 Touch screen calibration

The setup of the panel type is complete.

8.5 Device with key panel

8.5.1 Activating KeyTools

SIMATIC Key Tools is a selection of applications for the SIMATIC Panel PC 477. 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 tools:

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

Note

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

Calling Up Keytools

1. Call up the Keytools by using **Start > 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 F13 to S16 are used or if own key code tables are used.

See also

Keyboard table (Page 15-5)

8.6 Device with touch screen

8.6.1 Recalibrating the Touch Screen

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

Carrying out Calibration

1. Activate the calibration tool by using **Start > Programs > UPDD > Settings**. Your touch screen type is displayed on the **Devices** tab.

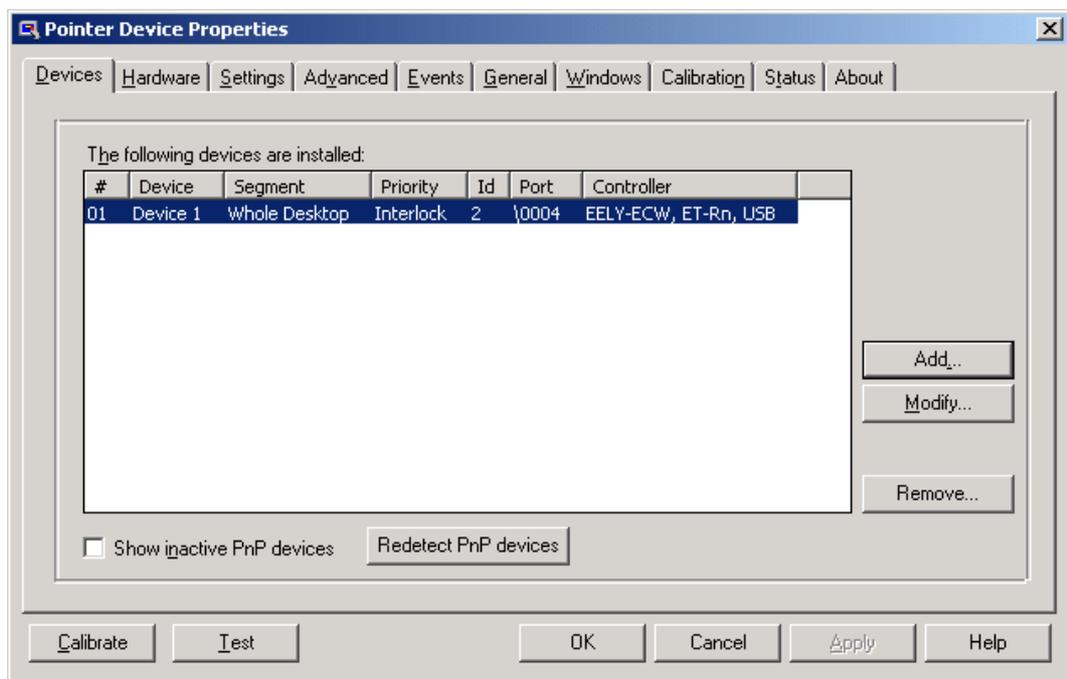


Figure 8-4 Touch defaults, "Devices" tab

2. You can recalibrate the touch screen under the **Calibration** tab. First set the desired number of calibration points under **Calibration Points**. Then consecutively touch the crosses of the calibration pattern field.

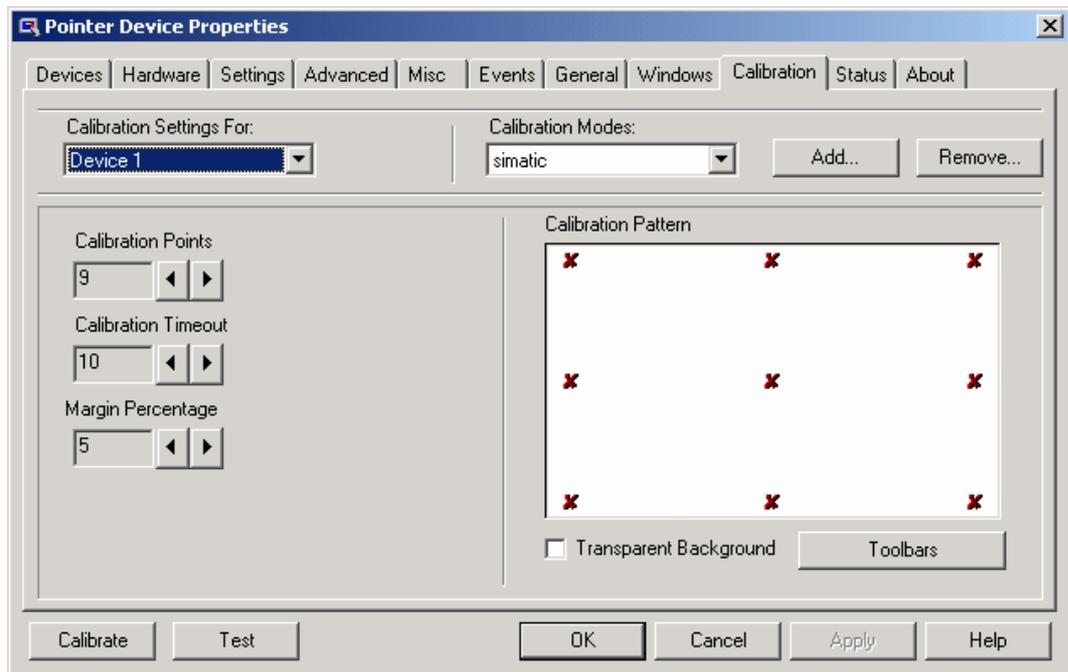


Figure 8-5 Touch defaults, "Calibration" tab

3. Click the "OK" button to confirm the recalibration.

Note

For further information press the "Help" command button.



Warning

Faulty operation

If you touch the touch screen while configuring it or if the screen saver is active, the SIMATIC process visualization software, e.g. ProTool/Pro, 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:

- During the booting process
 - When plugging or unplugging USB components
 - While Scandisk is running
-

8.6.2 Activating the Screen Keyboard

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 the mouse.

Calling Up TouchInput

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



Figure 8-6 TouchInput

Integration

The following options are available for the integration of the device in existing or planned system environments/networks:

Ethernet

The integrated Ethernet interface (10/100 Mbps) can, for example, be used for communication with automation devices such as SIMATIC S7.

PROFIBUS / MPI

The optional potentially isolated PROFIBUS interface (12 Mbps) can be used to interconnect distributed field devices or to carry out coupling to the SIMATIC S7.

RS232

The serial port can be used for data communication (via terminal applications, for example).

Further Information

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

Internet address: <http://mall.ad.siemens.com>

Functions

10.1 Monitoring functions

10.1.1 Overview

The following individual functions are implemented:

- Temperature monitoring
- Watchdog

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

The SOM software (Safecard On Motherboard) and DiagMonitor software on CD (optional) are available for Windows XP Embedded and Windows XP Professional..

The DiagMonitor software contains the monitoring software, the software for the stations to be monitored and a library for creating user-specific applications.

10.1.2 Temperature monitoring/display

Temperature monitoring

The temperature is recorded by two temperature sensors. One sensor monitors the processor temperature and the other monitors the temperature near the RAM module.

When the temperature is out of the range on one of the two defined temperature thresholds, the following error reactions are triggered:

Response	option
The SOM or DiagMonitor software is enabled	None

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

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

10.1.3 Watchdog (WD)

Function

If the user program does not respond to the watchdog within the predetermined monitoring time, the watchdog monitors the program process and informs the user about various reactions.

After POWER ON of the device or after a HW RESET (cold restart), the watchdog is in idle state, i.e. a reaction of the WD will not be triggered and the Watchdog LED is switched off.

Watchdog reactions

If the WD is not triggered again within the set time (by application with the help of the SOM drive), the following reactions are initiated:

Reaction	Option
Switch watchdog LED to red	None
Trigger a PC reset	Configurable
Enable the SOM or DiagMonitor software	None

Note

If the desired device reset does not take place under RMOS, set Bit 7 to the value 1 in the General Purpose Ports (GPP) output register (address 404D) .

WD monitoring times TWD

The monitoring times are defined as follows:

Normal mode: 94 ms, 210 ms, 340 ms, 460 ms, 590 ms, 710 ms, 840 ms and 960 ms.

Macro mode: 2s, 4s, 6s, 8s, 16s, 32s, 48s and 64s.

Note

Default mode

The macro mode is selected as the default during SOM operation.

Note

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

10.1.4 Safecard on Motherboard (SOM)

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

Your SIMATIC PC is equipped with two temperature sensors which are automatically detected by the application.

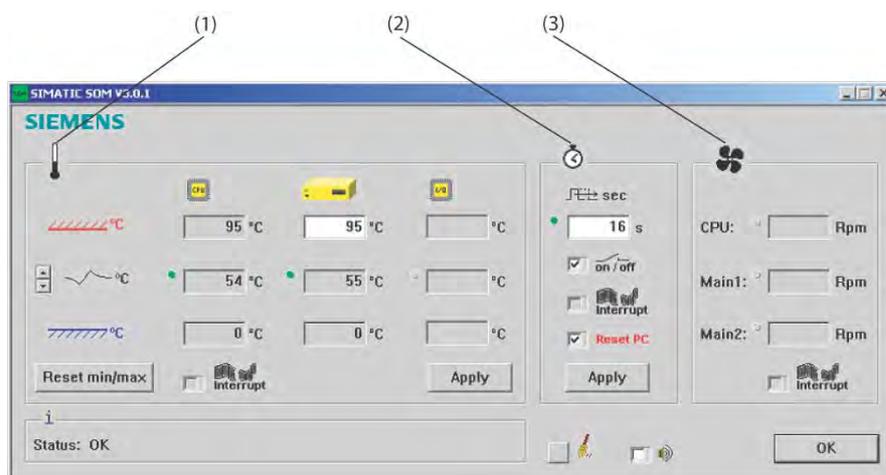


Figure 10-1 Safecard On Motherboard

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.
2	Watchdog area:	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:	This option is not enabled because the device does not have a fan.

10.2 Enhanced Write Filter (EWF)

Purpose and function

The EWF (Enhanced Write Filter) is a function that is only available with Windows XP Embedded operating systems. It provides write protection that can be configured by the user.

The Enhanced Write Filter allows you to boot Windows XP Embedded from write-protected media (such as CD-ROM), to write protect individual partitions and adapt the performance of the file system to your needs (when using Compact Flash cards, for example).

EWF can be used to minimize write access to Compact Flash cards. This is important because the write cycles on Compact Flash cards are limited due to technical reasons. We therefore recommend using EWF if you work with Compact Flash cards.

Note

As from Windows XP Embedded SP2 the EWF is deactivated by default. After the operating system has been set up, you should back up your data and then activate the EWF.

Set EWF

The EWFMgr.EXE program can be used to install, enable or disable the EWF. Use the command prompt to call up the program. The following functions are available:

Function	Command
Write-protect drive C: Switching on	<code>ewfmgr c: -enable</code>
Write-protect drive C: disable (modified files are accepted)	<code>ewfmgr c: -commitanddisable</code>
Write-protect drive C: disable (modified files are lost)	<code>ewfmgr c: -disable</code>
Modified files on drive C: Accept	<code>ewfmgr c: -commit</code>
Display information about the EWF drive	<code>ewfmgr c:</code>
Display help	<code>ewfmgr c: /h</code>

Note

The EWF commands affecting the write protection do not become active until after the next booting process.

Special features for the use of Enhanced Write Filters (EWF)

- In the event of a power failure, if the EWF is active, changes made after the boot sequence are saved in drive C: lost.
To prevent data loss in the event of a power failure, the use of a USV is recommended.
- You can save the files in the EWF RAM overlay to the Compact Flash card or the hard disk before you shut down the device. To do so, enter the following command in the command prompt:

```
ewfmgr c: -commitanddisable
```

Then restart the system.

```
ewfmgr c: -enable
```

Then restart the system.

Notice**Data loss**

If do not restart the system after the `commitanddisable` command, you data are lost.

Expansions and configuration

11.1 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.



Warning**Danger to life**

- Separate the device from the mains before opening it.
 - Use the supplied screws to close the device before commissioning.
-



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.

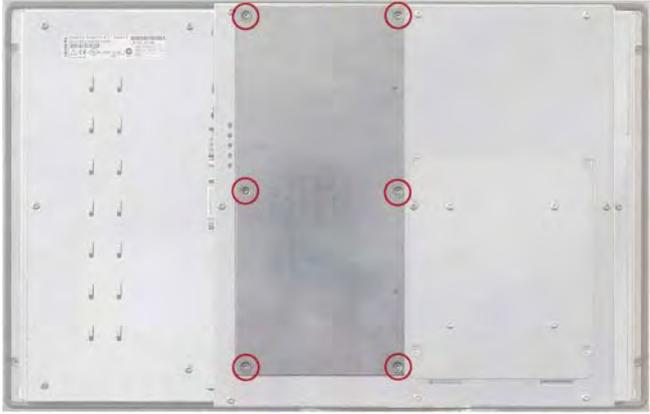
Tools

- Expansion cover: Torx T8
- Hard disk cover: Torx T10
- Hard disk mounting: Torx T10
- Equipotential bonding terminal: Torx T20
- Spacing bolts PC/104: Hexagon head 5mm

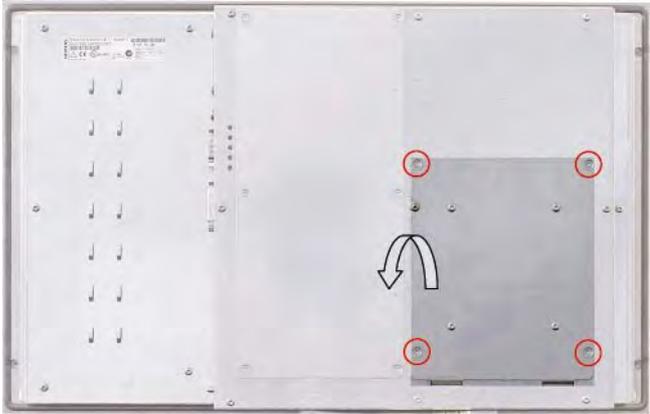
Preparation

Isolate the device from power supply.

Removing the Expansion Cover

Steps for removing the expansion cover	
1	Remove the 6 screws.
	
2	Remove the expansion cover.

Removing the Hard Disk Cover

Steps for removing the hard disk cover	
1	Remove the 4 screws.
	
2	Swing up the hard disk cover and remove it.

11.2 Memory expansion

11.2.1 Installing the memory module

Memory expansion options

The motherboard is equipped with one slot for a memory module. A 144-pin SO-DIMM SDRAM PC133 memory module can be used. This allows you to expand the memory capacity of the SIMATIC Panel PC 477 to a maximum of 512 Mbytes.

Note

We recommend using the original spare parts for memory configuration.

Preparation

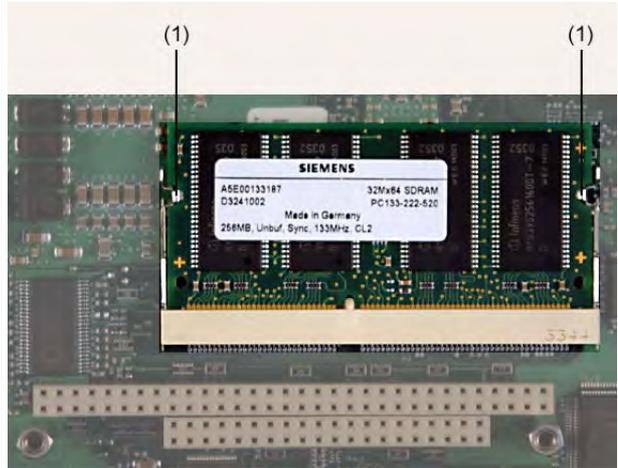
Isolate the device from power supply.

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 components which are sensitive to electrostatic charge.

Removing a memory module

How to remove a memory module	
1	Remove the expansion cover
2	Open the clamps (1). Tilt the memory module forward.
3	Carefully remove the memory module.



Installing the memory module

How to install a memory module	
1	Set the memory module in the slot tilting forward.
2	Push the memory module back until it locks into place.
3	Mount the expansion cover.



Display of the current memory configuration

A new memory module is automatically detected. System RAM, Extended RAM and Cache SRAM are displayed during device startup.

See also

Open the device. (Page 11-1)

11.3 Installing PC/104 modules

11.3.1 Notes on the modules

Notes on module specifications

The device is designed to operate with PC/104 modules and PC/104 *Plus* modules in conformity to the specifications of the PC/104 consortium.

- PC/104 modules: ISA compatible (104-pin plug)
- PC/104 *Plus* modules: PCI compatible (120-pin plug)

Note

The necessary expansion frames for the installation of PC/104 and PC/104 *Plus* modules can be ordered via the A&D online ordering system, as a 6-pack with the order number 6AG4070-0BA00-0XA0.

11.3.2 Mounting a PC/104 module

Tools

Use hexagon head screws (5 mm) to mount the spacing bolts of the PC/104 module. If this is the only PC/104 module you wish to mount, you can also use screws (M3) instead of the spacing bolts.

Preparation

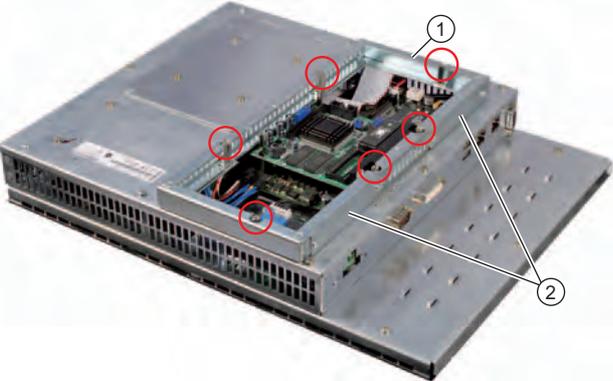
- Isolate the device from power supply.
- Two blanking plates are mounted on the expansion frame. If the PC/104 module features external ports, you can use these blinding plates to mount the connectors. You can also use a slot plate with existing connector perforations. The dimensional drawings provide the required measurements.

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 components which are sensitive to electrostatic charge.

Mounting a PC/104 module

Steps for mounting an expansion module (PC/104 module):	
<p>1 Remove the expansion cover</p>	
<p>2 Insert the PC/104 module in the slots. (1) PCI connector (2) ISA connector</p>	
<p>3 Secure the PC/104 module with 4 screws or spacing bolts.</p>	

Steps for mounting an expansion module (PC/104 module):		
4	Place on the expansion frame (1) and fasten with 6 spacing bolts. Remove the slot plates (2) if the connector goes outwards.	
5	Mount the expansion cover on the expansion frame.	

Mounting additional PC/104 modules

The device can be equipped with a maximum of 3 PC/104 modules. An additional expansion frame is required for each PC/104 module.

Follow the installation procedure described in the section *Mounting a PC/104 module* (steps 2 to 4).

Note

PC/104-*Plus* modules must be mounted before PC/104 modules.

Configuring/installing a PC/104 module

You may need to make settings in the BIOS Setup and select an interrupt and address for a PC/104 module. For detailed information about installation, refer to the manufacturer documentation for the respective module.

Note about resource allocation for PC/104-Plus

device		Req # /Gnt #	INTA#	INTB#	INTC#	INTD#
max. 3 PC104-Plus modules Resources depending on selection	1	4	INT B	INT C	INT D	INT A
	2	5	INT A	INT B	INT C	INT D
	3	5	INT D	INT A	INT B	INT C
	4	5	INT C	INT D	INT A	INT B

Note

Since selections 2, 3 and 4 share the Req/Gnt resource, only one PC/104-Plus module that is master-capable on the PCI bus can be inserted here. With selection 1, a total of two PC/104-Plus modules that are master-capable on the PCI bus can be installed.

See also

Open the device. (Page 11-1)

11.4 Installing/removing a Compact Flash card

Memory expansion options

The device can be expanded with Compact Flash cards (Types I / II). The following options are available:

- Installation of a Compact Flash card in the Compact Flash slot.
- Installation of a Compact Flash card in the optional Compact Flash adapter.

Notice

Risk of damage

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

Note

The Compact Flash slots are coded against reversed insertion of the Compact Flash cards. Insert the Compact Flash card so that its upper side (label side) is facing the hard disk cover of the SIMATIC Panel PC 477.



Caution

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

Preparation

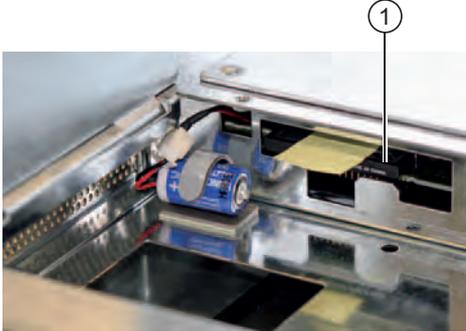
Disconnect the SIMATIC Panel PC 477 from the mains.



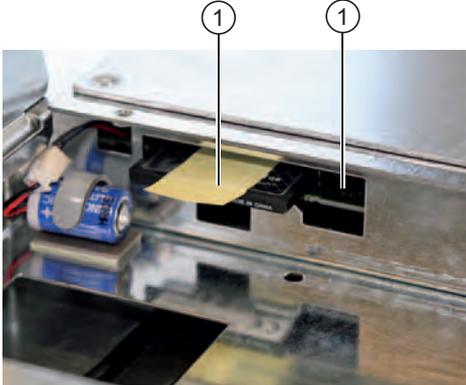
Caution

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 components which are sensitive to electrostatic charge.

Installation of a Compact Flash Card in the Compact Flash Slot

Steps for installing a Compact Flash card	
1	Remove the hard disk cover.
2	Insert the Compact Flash card (1) in the Compact Flash slot with the connector facing in until it locks into place.
	
3	Mount the hard disk cover.

Removal of a Compact Flash Card from the Compact Flash Slot

Steps for removing a Compact Flash card	
1	Remove the hard disk cover.
2	Press the eject button (2) and pull out the Compact Flash card by link (1).
	
3	Mount the hard disk cover.

Installation of a Compact Flash Card in the Compact Flash Adapter

Note

The use of the Compact Flash adapter excludes the simultaneous use of a hard disk.

Note

The Compact Flash adapter is not included with the product and must be ordered separately.

Steps for installing a Compact Flash card	
1	Remove the hard disk cover.
2	If necessary, remove the hard disk and hard disk retainer.
3	Mount the Compact Flash adapter by means of 4 screws to the hard disk cover.
4	Insert the connector on the pin connector of the adapter.
5	Insert the Compact Flash card in the adapter slot with the connector facing in until it locks into place.
6	Mount the hard disk cover.

Removal of a Compact Flash Card from the Compact Flash Adapter

Steps for removing a Compact Flash card	
1	Remove the hard disk cover.
2	Pull the Compact Flash card out of the Compact Flash adapter.
3	Mount the hard disk cover.

See also

Open the device. (Page 11-1)

Maintenance and service

12.1 Cleaning the Device Front

The device is designed for low-maintenance operation. You should still clean the device front regularly, however.

Cleaning Agents

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

Notice**Risk of damage**

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

Cleaning the Device Front

1. Switch off the device. This prevents the accidental triggering of functions when the screen and/or the membrane keyboard 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 Removing and installing hardware components

Carrying out repairs

Only authorized personnel are permitted to repair the device.



Warning
Danger to life

- Separate the device from the mains before opening it.
 - Use the supplied screws to close the device before commissioning.
-



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

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

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

Notice

Note the ESB instructions.

Limitation of Liability

All specifications and approvals are only valid when the expansion component feature the CE symbol.

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

Tools

- Torx T8 (expansion cover)
- Torx T10 (hard disk mounting and hard disk cover)
- Torx T20 (equipotential bonding terminal)
- Hexagon head 5mm (spacing bolts PC/104)

See also

Open the device. (Page 11-1)

12.2.1 Replacing a hard disk



Caution

Replacement of the hard disk may only be carried out by authorized qualified personnel.

Tools

You need a TORX T10 screwdriver to carry out the mounting work.

You will need a TORX T20 screwdriver to loosen the equipotential bonding terminal.

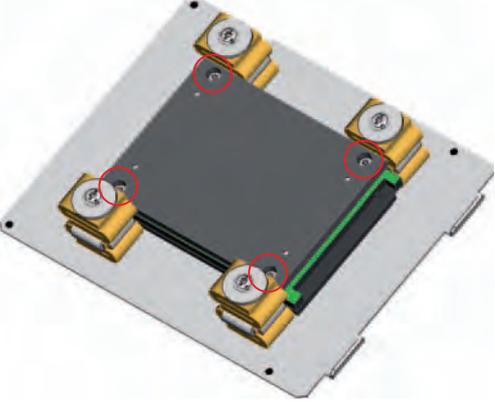
Preparation

1. Disconnect the SIMATIC Panel PC 477 from the mains.
2. Unplug all peripherals (mouse, keyboard, external monitor, etc.) from the SIMATIC Panel PC 477.

Removing the hard disk

Notice

Note the ESB instructions.

Steps for replacing the hard disk	
1	Removing the Hard Disk Cover
2	Remove the plug (1) from the socket (2). Remove the 4 screws holding the hard disk installed in the back of the hard disk retainer.
	
3	Carefully pull out the hard disk from the hard disk retainer.

Installing hard disk

To install a hard disk, perform the actions described in "Removing the hard disk" in the reverse order.

See also

Open the device. (Page 11-1)

12.2.2 Replace the backup battery

To be noted before you replace the battery

Note

The life span of a backup battery is approximately 3 - 5 years, depending on the operating conditions.

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

Depleted batteries must be disposed of in accordance with local regulations.

Preparation

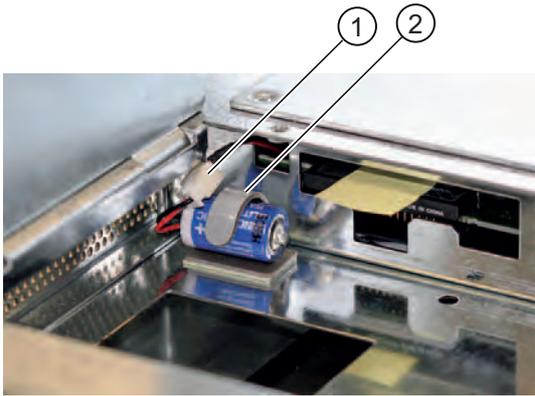
Note

The configuration data and contents of the SRAM in the device are lost when the battery is replaced.

1. Note down the current settings of the BIOS Setup.
A list in which you can note down this information is found in the BIOS manual.
2. Isolate the device from mains and disconnect all cables.

Replacing the battery

Steps for replacing the battery	
1	Remove the hard disk cover.
2	Pull out the battery plug (1).
3	Carefully bend up the battery mount (2) and remove the battery.
4	Insert the new battery, plug the battery connector back in and bend the battery mount down.
5	Mount the hard disk cover.



Reconfiguring the BIOS Setup

After you have replaced the battery, the configuration data of the device are deleted and you need to reconfigure these in the BIOS Setup.

See also

Open the device. (Page 11-1)

12.3 Reinstalling the Operating System

12.3.1 Windows XP Embedded

12.3.1.1 General installation procedure

If your software becomes corrupt for any reason, you can reinstall it from the Restore CD. The Restore CD contains a image file for the hard disk or CF card with the original software (operating system with installed hardware drivers) and forms part of the scope of delivery of the device.

Note

You require a USB keyboard in order to reinstall the operating system.

12.3.1.2 Restoring the software to factory state using the Restore CD

You can reinstall the original factory software using the Restore CD (forms part of the scope of delivery). The CD contains the necessary images and tools for transferring the factory software to the hard disk or CF card of your PC. The following options are available for restoring software:

- You can restore the entire hard disk with drive C: (system) and drive D:
- or only drive C:. This allows you to retain any user data on drive D.
- Restore the entire CF card.

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 drive 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

To restore the factory state, proceed as follows:

1. Connect a USB CD-ROM drive to the device.
2. Insert the Restore CD in the drive and reboot the device. When the BIOS message appears, press

<F2> to enter SETUP or <ESC> to display the boot menu

the F2 key.

3. Select the Boot menu and move the entry "CD-ROM Drive" to the first position.
4. End the BIOS setup with the "Exit Saving Changes" entry.
5. Now follow the instructions on the screen.

Caution

All existing **data, programs, user settings** and **authorizations or license keys will be deleted** from the hard disk and therefore lost.

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

Note

The "Legacy USB Support" option has to be set to "Enabled" in the Advanced menu of the BIOS so that the device can address a USB CD-ROM drive.

12.3.2 Windows XP Professional

12.3.2.1 General installation procedure

If your software becomes corrupt for any reason, you have two possibilities:

- **Restoring the software to factory state using the Restore DVD**
The Restore CD contains a hard disk image file with the original software (operating system with installed hardware drivers) and is contained in the Windows XP Professional delivery variant.
- **Setting up the operating system via the Recovery CD**
The Recovery CD contains the tools for setting up the hard disk and the Windows XP Professional operating system. After the required data have been copied to the hard disk, you can run Windows XP professional Setup to install the operating system. The Recovery CD can be obtained from the Customer Support.

Note

You require a USB keyboard in order to reinstall the operating system.

12.3.2.2 Restoring the Software to Factory State Using the Restore DVD

You can reinstall the original factory software (included in the Windows XP Professional supply variant) using the Restore DVD. The DVD contains the necessary images and tools for transferring the factory software to the hard disk of your PC. The following options are available for restoring software:

- You can restore the entire hard disk with drive C: (system) and drive D:
- or only drive C:.. This allows you to retain any user data on drive D.

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 drive 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

To restore the factory state, proceed as follows:

1. Connect a USB DVD-ROM drive to the device.
2. Insert the Restore DVD in the drive and reboot the device. When the BIOS message appears, press

<F2> to enter SETUP or <ESC> to display the boot menu

the F2 key.

3. Select the Boot menu and move the entry "CD-ROM Drive" to the first position.
4. End the BIOS setup with the "Exit Saving Changes" entry.
5. Now follow the instructions on the screen.

Caution

All existing **data, programs, user settings** and **authorizations or license keys** will be deleted from the hard disk and therefore lost.

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

Note

The "Legacy USB Support" option has to be set to "Enabled" in the Advanced menu of the BIOS so that the device can address a USB DVD-ROM drive.

Setting up the language selection for Windows XP Professional

The **Multilanguage User Interface (MUI)** allows you to set up the Windows XP Professional menus and dialogs for additional languages.

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

Start > Control Panel > Regional and Language Options **Languages,**
tab **Language used in menus and dialogs** field.

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

12.3.2.3 Setting up the operating system via the Recovery CD

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.

Note

Prerequisite is that you connect a USB CD-ROM drive to the device and have set the "Legacy USB Support" option to "Enabled" in the BIOS setup.

Booting with the CD Recovery

1. Insert the Recovery CD in your 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. Follow the on-screen instructions until the "Siemens SIMATIC Recovery" window appears.

Partition setup

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 Windows XP 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:

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.
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 or XP
select partition 1	Select the primary partition
active	Activates the selected partition
exit	Closes DiskPart.

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 change 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
```

format /? Shows all parameters of the command.

Installation of the operating system.

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

1. Boot from the Recovery CD and then 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

Note that there has to be the following available space on the drive after transfer of the selected recovery data:

500 MB for Windows 2000

1500 MB for Windows XP

4. Select "Start command prompt" in the Recovery functions window.

5. Enter the following command in the displayed command prompt interface:
Drive:
cd \I386
Winnt32.bat
Drive: Drive letter of the folder containing the I386 directory.
6. The preparation of the Windows installation is displayed.
7. When this is completed, close the command prompt with the `exit` command.
8. Close the Siemens SIMATIC Recovery window with the "Finish" button.
9. The Windows installation is completed following an automatic restart of the system.
10. Follow the instructions on the screen.

Note

If you want to use Windows XP as a professional you should have the following manual (not included in the scope of delivery) available:
Microsoft Windows XP Professional, the technical reference" (MSPress Nr 934).
this manual contains special information for administrators involved in installing, managing and integrating Windows in networks or multi-user environments.

Setting up the language selection for Windows XP Professional

The **Multilanguage User Interface (MUI)** allows you to set up the Windows XP Professional menus and dialogs for additional languages.

To install the MUI, start

"MUI-german"

or "MUI Windows XP" in root folder of your Recovery CD to run MUISETUP.EXE. Follow the instructions on the screen to install the required languages.

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

Start > Control Panel > Regional and Language Options
Languages, tab **Language used in menus and dialogs** field.
For the **Regional and Language Options** set the default as **non-Unicode programs** under **Advanced** in addition to the language for menus and dialogs.

12.4 Partitioning the hard disk

12.4.1 Setting up the partitions under Windows XP Embedded

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

Partitioning the Compact Flash card

The factory state of the Compact Flash card includes the following partitions:

Partition	Name	Size of the card		File system
		512 Mbytes	1 Gbytes	
1. Partition	system	455 Mbytes	867 Mbytes	NTFS (compressed)
2. Partition	DATA	25 Mbytes	100 Mbytes	NTFS (compressed)
not partitioned	EWF buffer area	at least 7 Mbytes		---

Partitioning the hard disk

The factory state of the hard disk with Windows XP Embedded includes the following partitions:

Partition	Name	Size	File system
1. Partition	system	15 Gbytes	NTFS (not compressed)
2. Partition	DATA	Rest	NTFS (not compressed)

To restore the original partition to its factory state, we recommend the software tool **SIMATIC PC/PG Image Creator**. Detailed information about using this tool is available in the manufacturer documentation.

12.4.2 Setting up the partitions under Windows XP Professional

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

Partitioning the hard disk

The factory state of the hard disk with Windows XP Professional includes the following partitions:

Partition	Name	Size	File system
1. Partition	system	15 GB	NTFS (not compressed)
2. Partition	DATA	Rest	NTFS (not compressed)

To restore the original partition to its factory state, we recommend the software tool **SIMATIC PC/PG Image Creator**. Detailed information about using this tool is available in the manufacturer documentation.

12.5 Installing updates

12.5.1 Updating the operating system

Windows XP Embedded

An update of the operating systems is only possible with a new version of the Restore CD. Please contact customer support for more information about its availability.

Windows XP Professional

Monthly updates for the Windows XP Professional operating system are available on the Internet under <http://www.microsoft.de>

Notice

Before you install new drivers or operating system updates at Windows XP Professional MUI versions, the regional settings for menus and dialogs and the default language have to be reset to US English.

other operating systems

Please contact the corresponding manufacturer.

12.5.2 Installing or updating application programs and drivers

A USB drive has to be connected in order to install the software from a CD or floppy disk under Windows XP Embedded/Windows XP Professional.

Drivers for USB floppy disk and CD-ROM drives are included in Windows XP Embedded/Windows XP Professional and do not have to be installed from other sources.

For information about installation of SIMATIC software packages, refer to the respective manufacturer documentation.

For updates of drivers and application programs from third-party manufacturers, contact the respective manufacturer.

Notice

Before you install new drivers or operating system updates at Windows XP Professional MUI versions, the regional settings for menus and dialogs and the default language have to be reset to US English.

12.6 Data backup

12.6.1 Creating an image

Data backup under Windows XP Embedded/Windows XP Professional

To back up data under Windows XP Embedded / Windows XP Professional, we recommend the software tool **SIMATIC PC/PG Image Creator**. This tool enables you to easily back up and restore the full content of Compact Flash cards or hard disks as well as individual partitions (images).

The software can be ordered from the Siemens A&D online ordering system. For detailed information about SIMATIC PC/PG Image Creator, please refer to the corresponding product documentation.

Alarm, error and system messages

13.1 Boot error messages

During startup (the boot process), the BIOS first performs a **Power On Self Test (POST)** and checks whether certain functional units of the PC are operating error-free. The boot sequence is immediately interrupted if critical 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 <ul style="list-style-type: none"> Set the RESET CONFIGURATION DATA option in the "Advanced" menu of Setup. Contact your technical support team.
Allocation Error for ...	Plug and Play Problem <ul style="list-style-type: none"> 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.
System RAM Failed at offset:	Memory error. Contact your technical support team.
Shadow RAM Failed at offset:	Memory error. Contact your technical support team.

13.1 Boot error messages

On-screen error message	Meaning / suggestions
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: <ul style="list-style-type: none">• No operating system present• Incorrect active boot partition• Wrong boot drive settings in SETUP
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 time-out	Hardware error. Contact your technical support team.
Real-time clock error	Clock chip error. Contact your technical support team.
Keyboard controller error	Controller error. Contact your technical support team.

Troubleshooting

14.1 General problems

This chapter provides you with tips on how to locate and troubleshoot common problems.

Problem	Possible cause	To correct or avoid error
The device is not operational.	There is no power supply to the device.	Check your computer configuration:
The monitor remains dark.	The monitor is in "powersave" mode.	Press any key on the keyboard.
	The brightness button has been set to dark.	Set the monitor brightness button to obtain more light. For detailed information, refer to the monitor operating instructions.
	The power cord is not connected.	Check whether the power cord has been properly connected to the monitor and to the system unit or to the grounded shockproof outlet. If the monitor screen still remains dark after you have performed these checks, please contact your technical support team.
The mouse pointer does not appear on the screen.	The mouse driver is not loaded.	Check whether the mouse driver is properly installed and present when you start the application program. For more detailed information, refer to the manuals for the mouse or application programs.
	The mouse is not connected.	Check whether the mouse cord is properly connected to the system unit. If you use an adapter or extension on the mouse cable, also check the connectors. If the mouse pointer still does not appear on the screen after you have performed these checks and measures, please contact your technical support team.
Wrong time and/or date on the PC.		<ol style="list-style-type: none"> 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 operating system does not have a suitable driver for the USB device.	Install a suitable driver; the correct driver can often be downloaded from the homepage of the device's manufacturer.

14.2 Problems when using modules of third-party manufacturers

Problem	Possible cause	To correct or avoid error
The PC crashes during startup.	<ul style="list-style-type: none"> • I/O addresses are assigned twice. • Hardware interrupts and/or DMA channels are assigned twice • Signal frequencies or signal levels are not adhered to • Different connector pin assignments • No "Reset Configuration" in BIOS SETUP. 	Check your computer configuration: <ul style="list-style-type: none"> • 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.

Technical Specifications

15.1 General Technical Specifications

General technical data	
Order nos.	see the order documents
Dimensions	Device with touch screen, 12" display 400x310x75 (WxHxD in mm) Device with touch screen, 15" display 483x310x75 (WxHxD in mm) Device with key panel, 12" display 483x310x75 (WxHxD in mm) Device with key panel, 15" display 483x355x75 (WxHxD in mm)
Weight	Device with touch screen, 12" display 7.3 kg Device with touch screen, 15" display 8,3 kg Device with key panel, 12" display 7,7 kg Device with key panel, 15" display 8,7 kg
Supply voltage (AC)	100 - 240 V AC
Supply voltage (DC)	24 V DC ¹ (20.4 to 28.8 V DC)
Brief power failure according to Namur	min. 15 ms (at 20.4 V) Max. 10 events per hour; min. 1 s recovery time
Maximum power consumption (AC)	1A
Max. power consumption (DC)	5 A continuous current (up to 6.5 A for 30 ms at startup)
Noise emission	<45 dB (A) to DIN 45635-1 at operation with hard disk < 30 dB (A) to DIN 45635-1 at operation with Compact Flash card / in no.load mode
Degree of protection	IP 20 to IEC 60529
Security	
Protection class	Protection class I to IEC 61140
Safety specifications	UL60950-1, EN60950-1, UL 508; CSA C22.2 No. 142
Electromagnetic compatibility (EMC)	
Emitted interference	EN 55022 Class A, FCC Class A
Noise immunity on signal lines	± 1 kV (to IEC 61000-4-4, burst, length < 3 m) ± 2 kV (to IEC 61000-4-4, surge symmetrical, length > 3 m) ± 2 kV (to IEC 61000-4-5, surge symmetrical, length > 30 m)

Technical Specifications

15.1 General Technical Specifications

General technical data

Immunity to conducted interference on the supply lines	± 2 kV (to IEC 61000-4-4, burst) ± 1 kV (to IEC 61000-4-5, surge symmetrical) ± 2 kV (to IEC 61000-4-5, surge asymmetrical)
Immunity to discharges of static electricity	± 6 kV, contact discharge (to IEC 61000-4-2) ± 8 kV, air discharge (to IEC 61000-4-2)
Immunity to RF interference	10 V/m, 80 - 1000 MHz, 80% AM; (to IEC 61000-4-3) 10 V/m, 900 MHz and 1.89 GHz, 50% c.d.f.; (to IEC 61000-4-3) 10 V, 9 kHz - 80 MHz; (to IEC 61000-4-6)
Immunity to magnetic fields	30A/m, 50/60 Hz; (to IEC 61000-4-8)

Climatic Conditions

Temperature	Tested to IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-14
- Without de-rating	5 - 45°C in completed form (max. of 3 expansions, each with up to 3 W, T _{max} for expansion 70°C)
- With de-rating	5 - 40°C at inclined installation, up to a maximum of 35° from the vertical 5 - 50°C in partial form without hard disk and for Intel Celeron 400/650 processors an (expansion with a max. of up to 3W, T _{max} for expansion 70°C)
Relative humidity	tested to IEC 60068-2-78, IEC 60068-2-30
-Operation	5% to 80% at 25° C (no condensation)
-Storage/transport	5% to 95% at 25° C (no condensation)

Mech. Ambient conditions

Vibration	Tested to DIN IEC 60068-2-6
- Operating (with Compact Flash card)	10 to 58 Hz: 0.075 mm, 58 to 200 Hz: 9,8 m/s ²
- Operating (with hard disk and wall handling)	10 to 58 Hz: 0.0375 mm; 58 to 200 Hz: 4,9 m/s ²
-Storage/transport	5 to 9 Hz: 3,5 mm, 9 to 500 Hz: 9,8 m/s ²
Resistance to shock	tested to IEC 60068-2-27, IEC 60068-2-29
-in operation	50 m/s ² , 30 ms
-storage/transport	250 m/s ² , 6 ms

Special Features

Quality assurance	acc. to ISO 9001
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Motherboard

Processor	Intel Celeron ULV 400 MHz Intel Celeron ULV 650 MHz Intel Pentium III LV 933 MHz
Internal processor cache	Intel Celeron: 16+16 Kbytes L1 cache, 256 Kbytes L2 cache; Intel Pentium III: 16+16 KB L1 cache, 512 KB L2 cache
Front Side Bus	Intel Celeron: 100 MHz Intel Pentium III: 133 MHz
Main memory	SO-DIMM SDRAM modules with 133 MHz; 128/256/512 Mbytes
Buffer memory	128 KB SRAM
Free expansion slots	Max. 3 PC/104 <i>Plus</i> modules

General technical data		
Disk drives		
Hard disk		1x 2.5" optional
Graphic controller		
Display		12" screen diagonal with background illumination, resolution 800x600 15" screen diagonal with background illumination, resolution 1024x768
Touch controller (only touch screen devices)		Resistive Semtech controller UR7HCTS2-US
Graphic connector		DVI connection with external VGA output ²
Graphics controller		S3 ProSavage 4 compatible UMA controller ²
Graphics memory		8/16/32 MB Shared Memory (adjustable in the system BIOS)
Resolutions / controller		From 640x480 to 1600x1200
Interfaces		
COM1		RS232, max. 115 Kbps., 9-pin Cannon, male
DVI		DVI connection with external VGA output ²
Keyboard		USB support
Mouse		USB support
USB		1x USB 2.0 high speed / 500 mA (device front) 2x USB 2.0 high speed / 500 mA (device rear)
PROFIBUS / MPI interface, isolated		9-pin Cannon socket, 2-row
- Transmission speed		9.6 Kbps to 12 Mbps
- Operating modes		DP master: DP-V0, DP-V1 with SOFTNET-DP DP slave: DP-V0, DP-V1 with SOFTNET DP slave
Ethernet		2x VIA VT6105LOM / VT6106S, 10/100 Mbps with RJ45
Status display of computer unit		
PWR (yellow)		Indicates correct supply voltage of 3.3 V, 5 V and 12 V from the integrated power unit
RUN (green)		Indicates the module is accessing the PCI bus and that the PCI is providing the FRAME signal (access to PCI, onboard and ISA peripherals)
WD	Off	Watchdog disabled
	green	Watchdog enabled, monitoring time not expire
	red	Watchdog enabled, monitoring time expired
L1 (yellow)		Can be controlled by user programs
L2 (yellow)		Can be controlled by user programs

¹ The feed of the 24 V supply voltage from the line-side power unit must be generated as functional extra-low voltage with safe electrical isolation (isolated) in accordance with IEC 60364-4-41.

² Due to the chipset architecture only the analog VGA signals are available at the DVI interface.

15.2 Power requirements of the components

Maximum power consumption of the auxiliary components

Auxiliary components		Maximum permitted power consumption				Max. total power
		+5 V	+3.3 V	+12 V	-12 V	
USB device	High current	500 mA	--	--	--	6 W (for all USB devices)
	Low current	100 mA	--	--	--	
PC/104 modules	Per slot	1.5 A	1.5 A	0.3 A	0.2 A	9 W (for the whole device)
	Total	2 A	2 A	0.5 A	0.5 A	

Notice

Device can overheat!

For thermal reasons a 3 watt power loss per PC/104 slot cannot be exceeded.

15.3 DC power supply

Technical specifications

Input voltage	24 V DC (20.4 to 28.8 V DC)
Input current	Up to 5 A continuous current (up to 6.5 A for 30 ms at startup)
Power consumption	80 W
Power failure buffering	Hold-up time > 15 ms (after > 5 ms DC_FAIL is active)
Maximum continuous output power	65 W
Protection class	VDE 0106

15.4 AC voltage supply

Technical specifications

Input voltage	100 - 240 V AC
Input current	Up to 1,2 A continuous current
Power consumption	85 W
Power failure buffering	Hold-up time > 20 ms
Maximum continuous output power	70 W
Protection class	VDE 0106

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	ç
		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
i I	0C	—	i
		L Shift/R Shift	I

15.5 Keyboard table

Name	Code (Hex) 0x	Check box	Display/function
		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
s S	16	—	s
		L Shift/R Shift	S

Name	Code (Hex) 0x	Check box	Display/function
		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	Insert
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	
1 !	1E	—	1
		L Shift/R Shift	!
		R Alt	i
		R Alt+L Shift/R Shift	´
2 @	1F	—	2
		L Shift/R Shift	@
		R Alt	²

15.5 Keyboard table

Name	Code (Hex) 0x	Check box	Display/function
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	'
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	—]

Name	Code (Hex) 0x	Check box	Display/function
		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
. >	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

15.5 Keyboard table

Name	Code (Hex) 0x	Check box	Display/function
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
Print Screen, FN+INS	46	—	Print Screen, FN+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 -

Name	Code (Hex) 0x	Check box	Display/function
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 =
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	I4	—	Right Control
Right Shift	I5	—	Right Shift
Right Alt	I6	—	Right Alt
Right GUI	I7	—	Right GUI

See also

Activating KeyTools (Page 8-9)

Dimension drawings

16.1 Overview of the dimension drawings

This section contains the following dimensional drawings of the SIMATIC Panel PC 477:

- Dimension drawing of the touch screen device, 12" display
- Dimension drawing of the touch screen device, 15" display
- Dimension drawing of the key panel device, 12" display
- Dimension drawing of the key panel device, 15" display
- Dimension drawing of the touch screen device, 12" display with expansion frame
- Dimension drawing of the touch screen device, 15" display with expansion frame
- Dimension drawing of the key panel device, 12" display with expansion frame
- Dimension drawing of the key panel device, 15" display with expansion frame
- Dimension drawing of the blanking plate

16.2 Dimension drawing of the touch screen device, 12" display

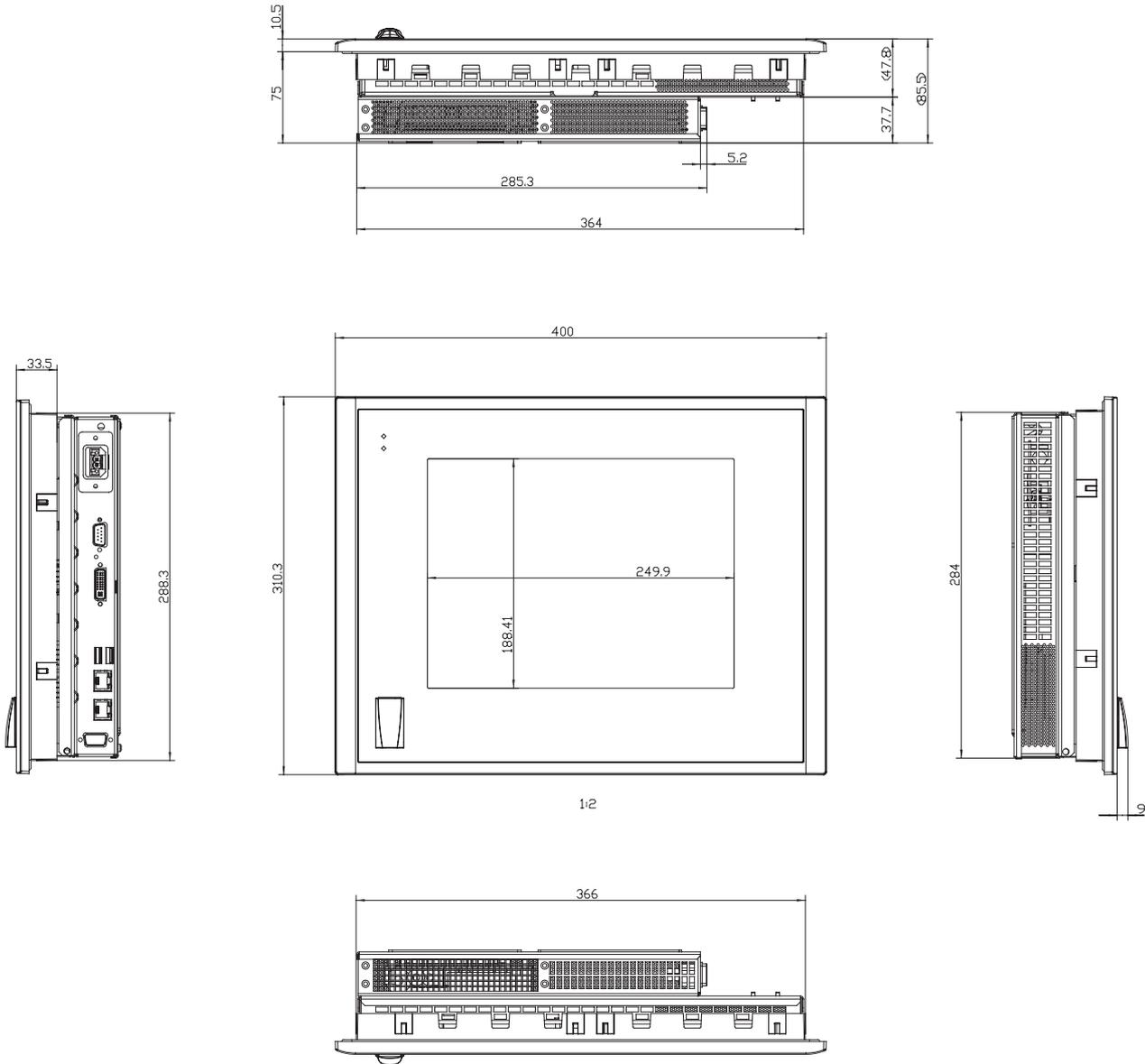


Figure 16-1 Dimension drawing of the touch screen device with 12" display

All dimensions in mm

16.3 Dimension drawing of the touch screen device, 15" display

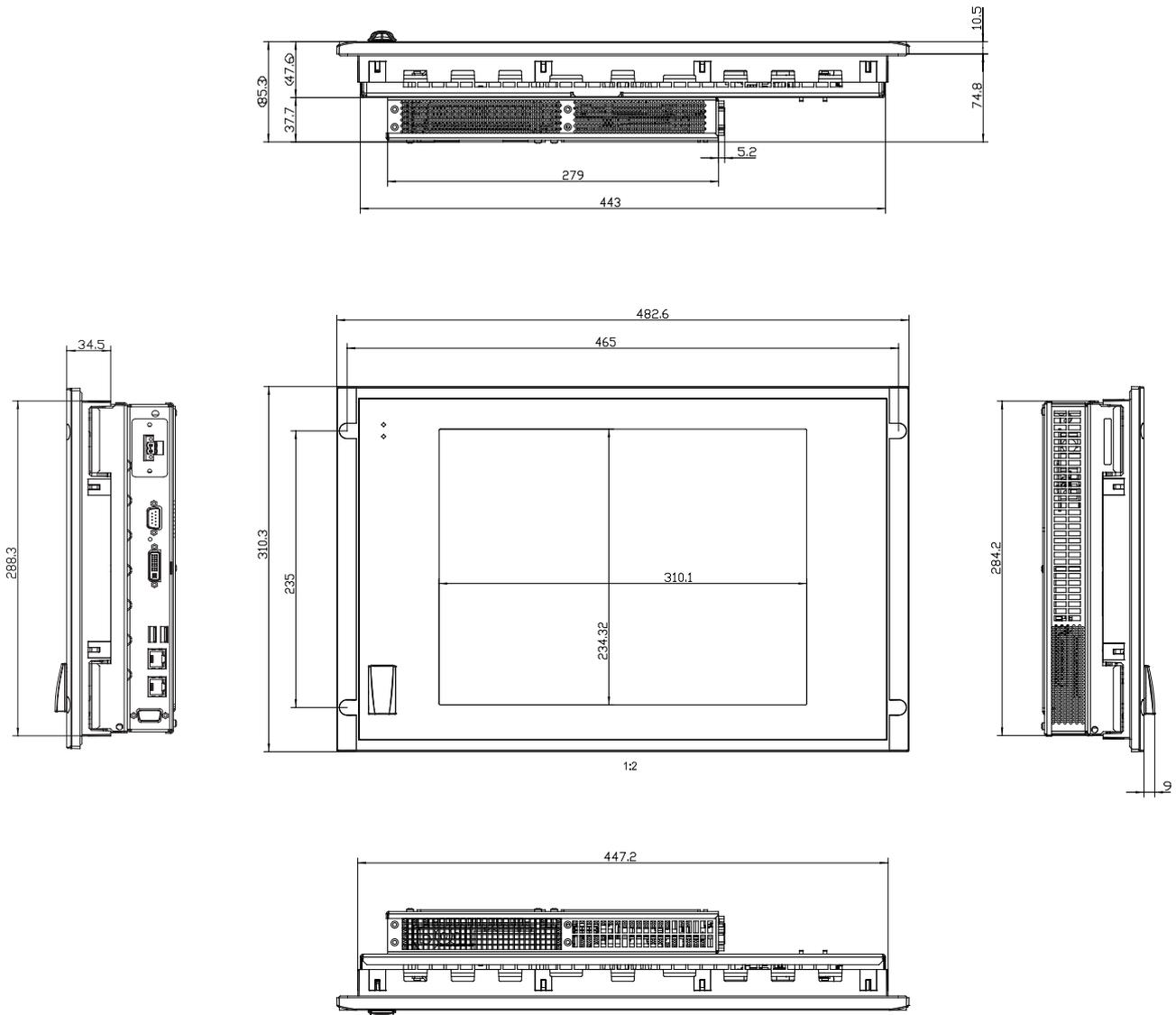


Figure 16-2 Dimension drawing of the touch screen device with 15" display

All dimensions in mm

16.4 Dimension drawing of the key panel device, 12" display

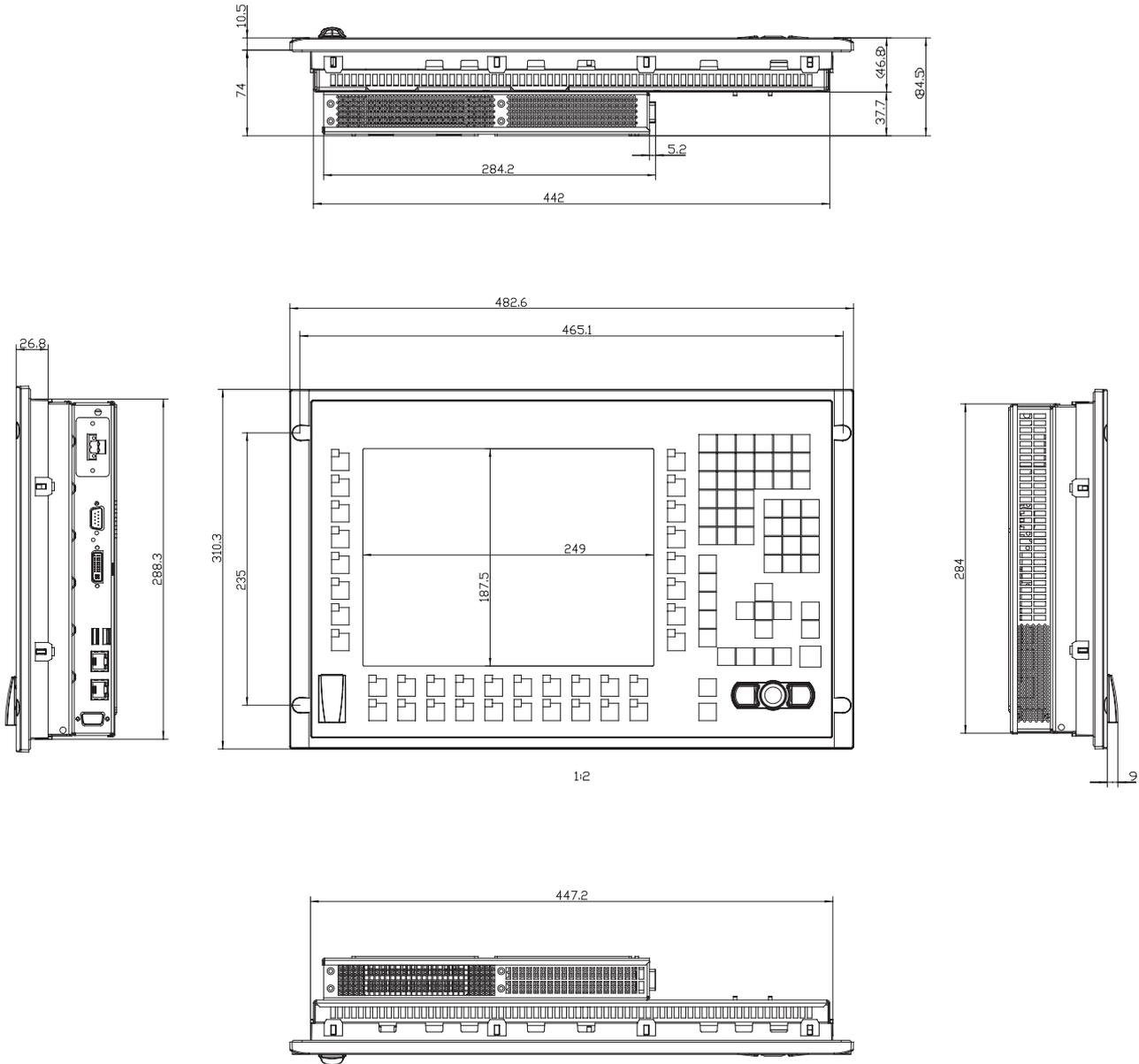


Figure 16-3 Dimension drawing of the key panel device with 12" display

All dimensions in mm

16.5 Dimension drawing of the key panel device, 15" display

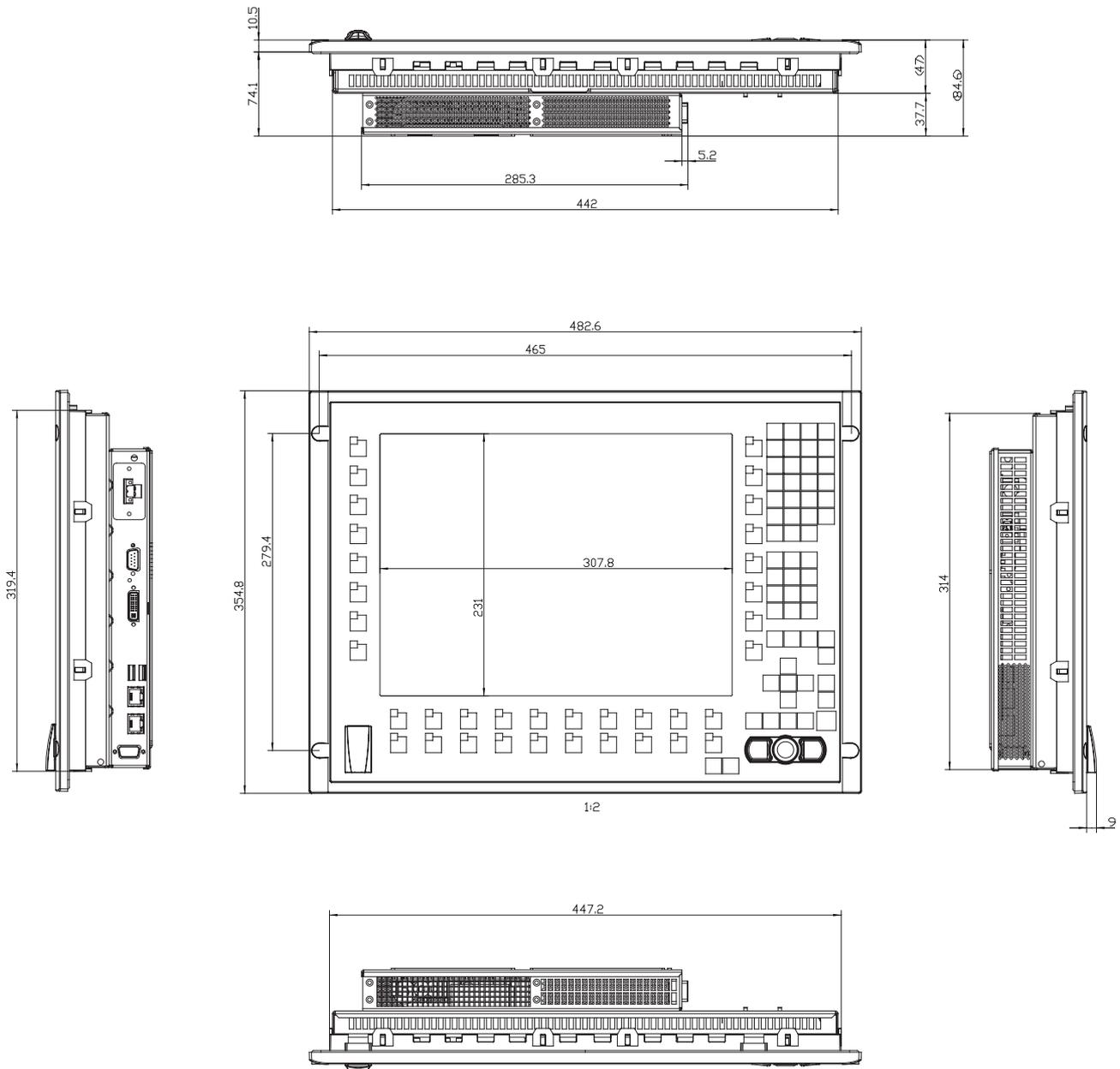


Figure 16-4 Dimension drawing of the key panel device with 15" display

All dimensions in mm

16.6 Dimension drawing of the touch screen device, 12" display with expansion frame

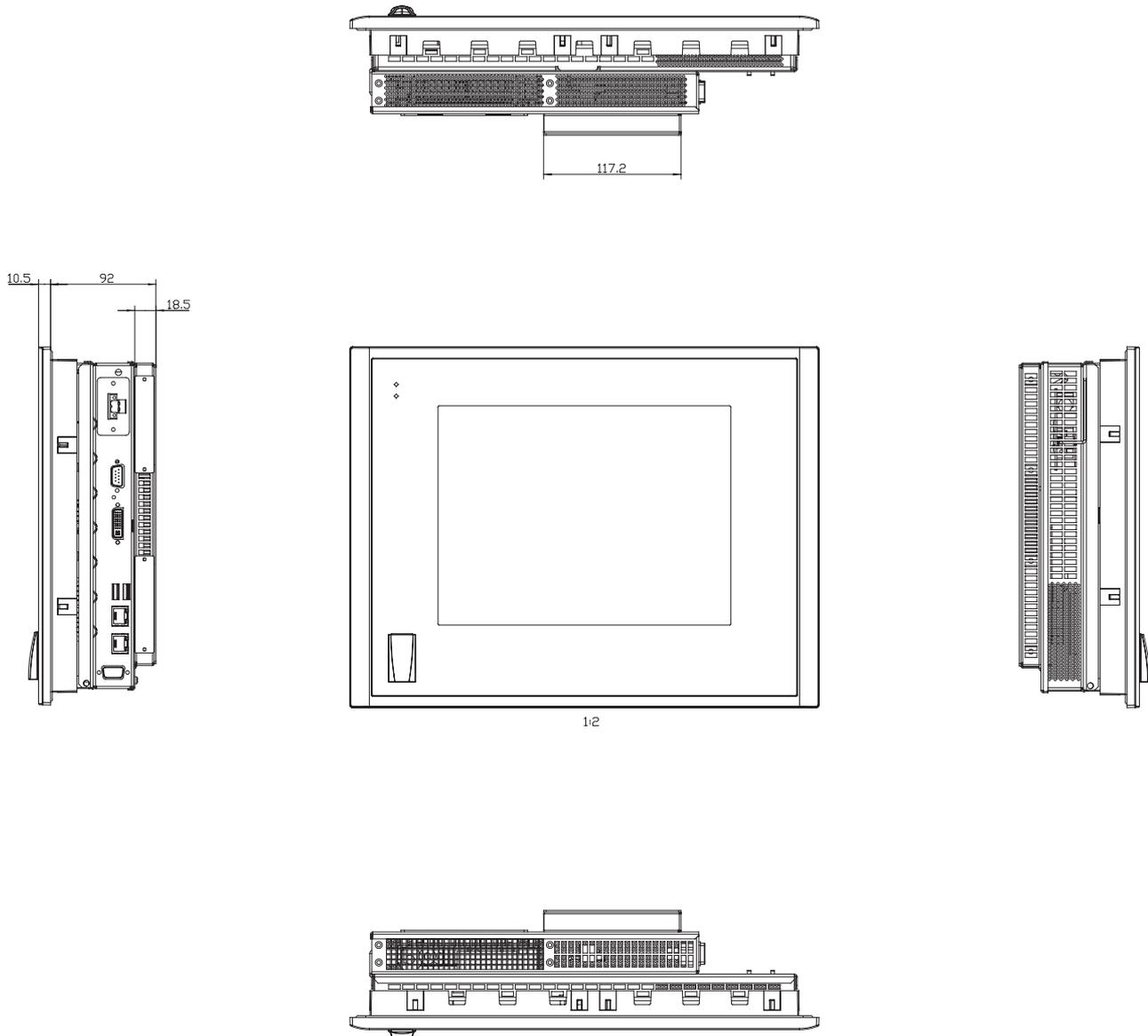


Figure 16-5 Dimension drawing of the touch screen device with 12" display and expansion frame

All dimensions in mm

16.7 Dimension drawing of the touch screen device, 15" display with expansion frame

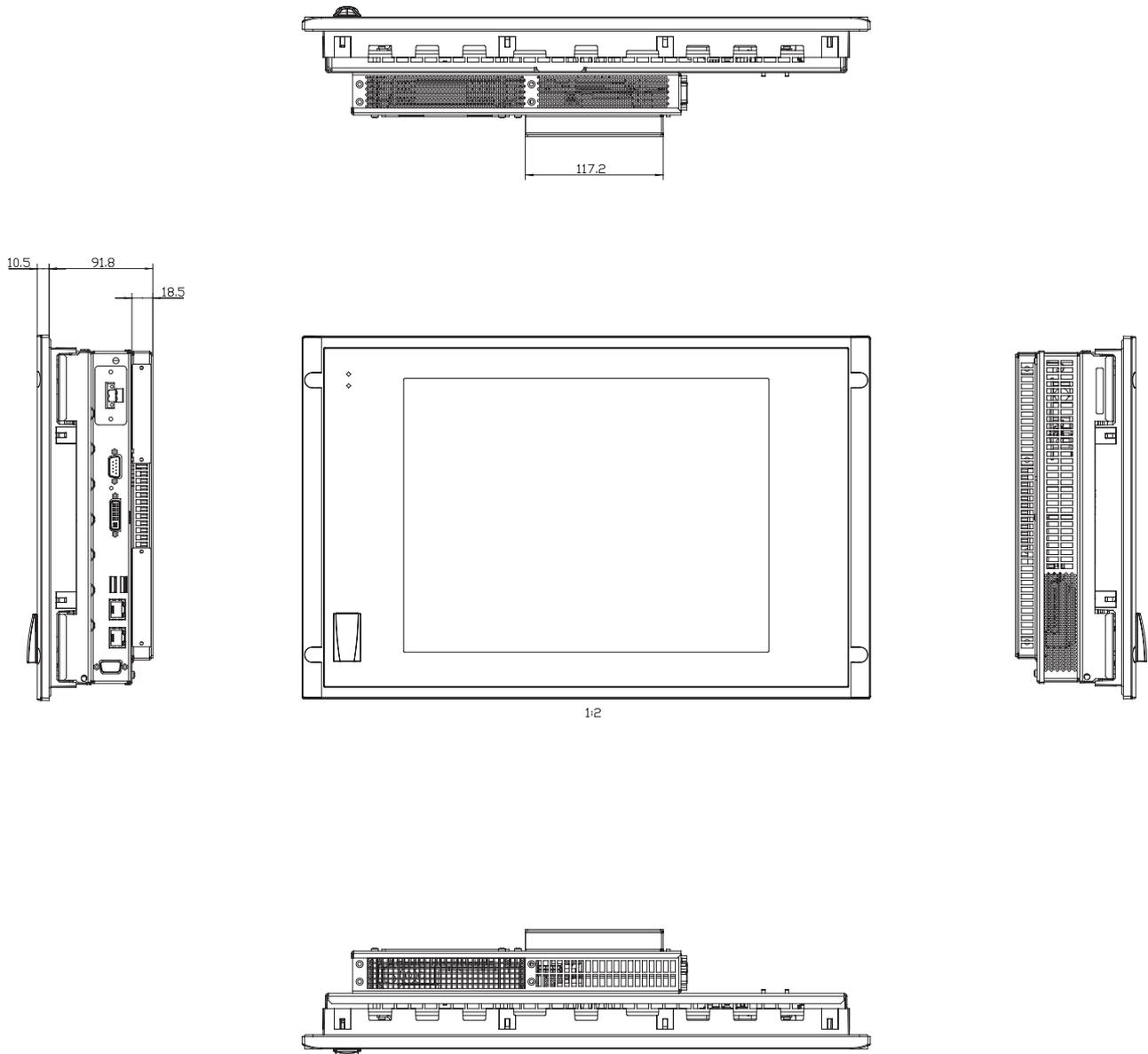


Figure 16-6 Dimension drawing of the touch screen device with 15" display and expansion frame

All dimensions in mm

16.8 Dimension drawing of the key panel device, 12" display with expansion frame

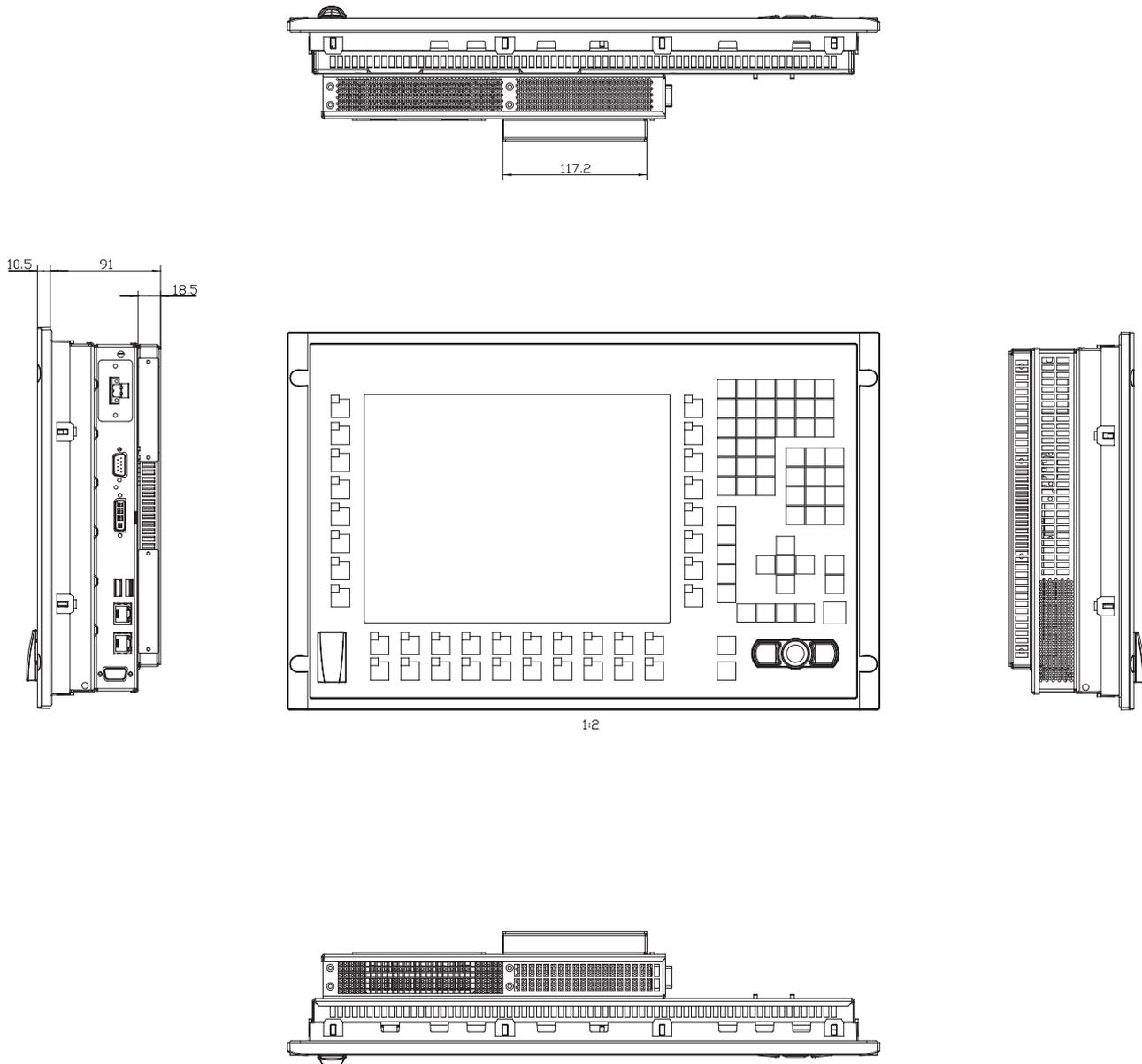


Figure 16-7 Dimension drawing of the key panel device with 12" display and expansion frame

All dimensions in mm

16.9 Dimension drawing of the key panel device, 15" display with expansion frame

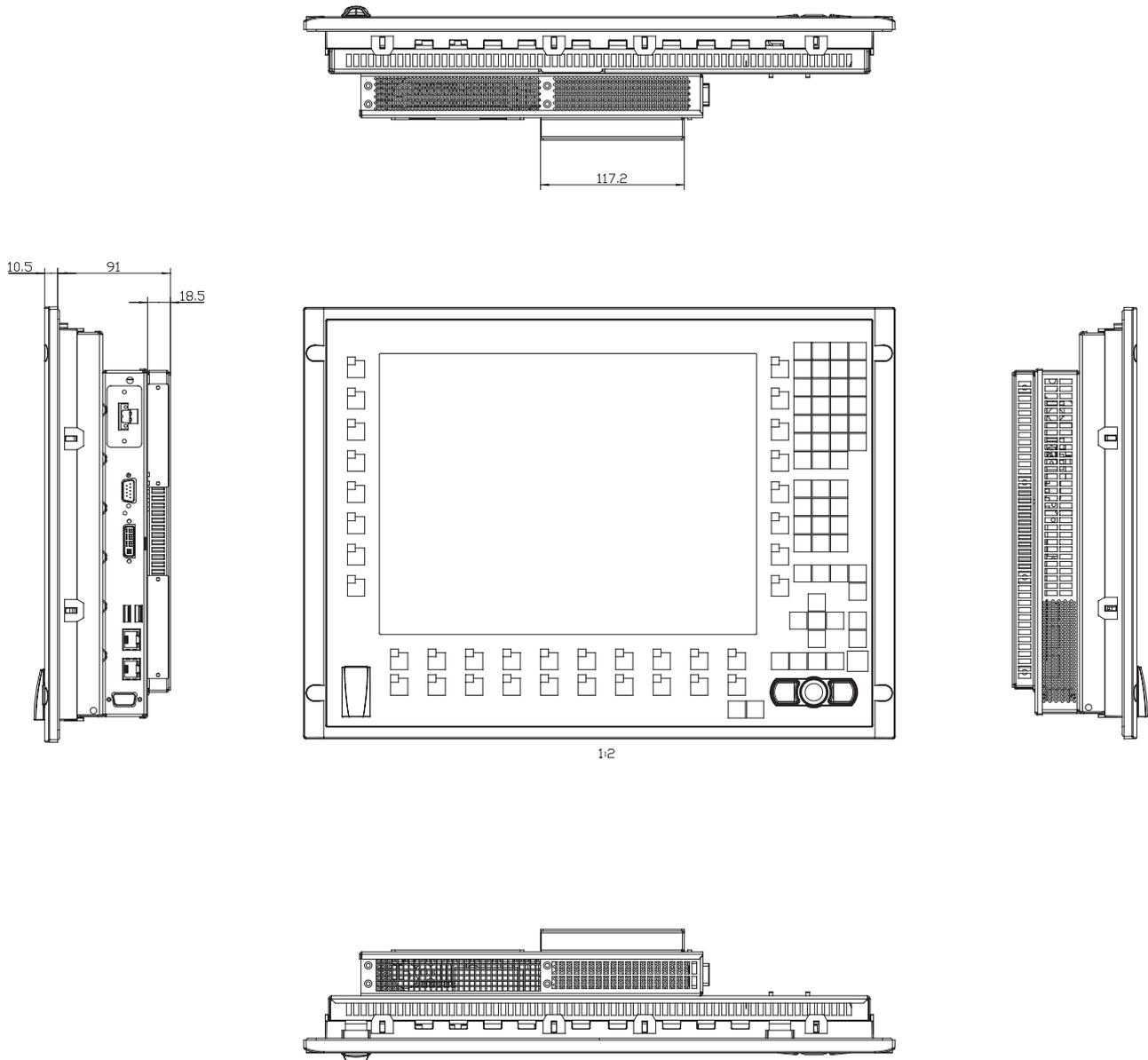


Figure 16-8 Dimension drawing of the key panel device with 15" display and expansion frame

All dimensions in mm

16.10 Dimension drawing of the blanking plate

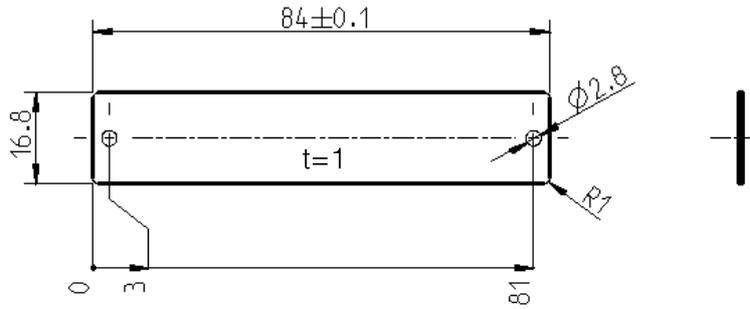


Figure 16-9 Dimensional drawing of the blinding plate

Detailed descriptions

17.1 Internal components

17.1.1 Overview of internal components

The basic components of the device are

- the motherboard with processor, the chipset, one slot for a RAM module, internal and external ports, the Flash BIOS and
- a DC/DC converter for the power supply of the device.

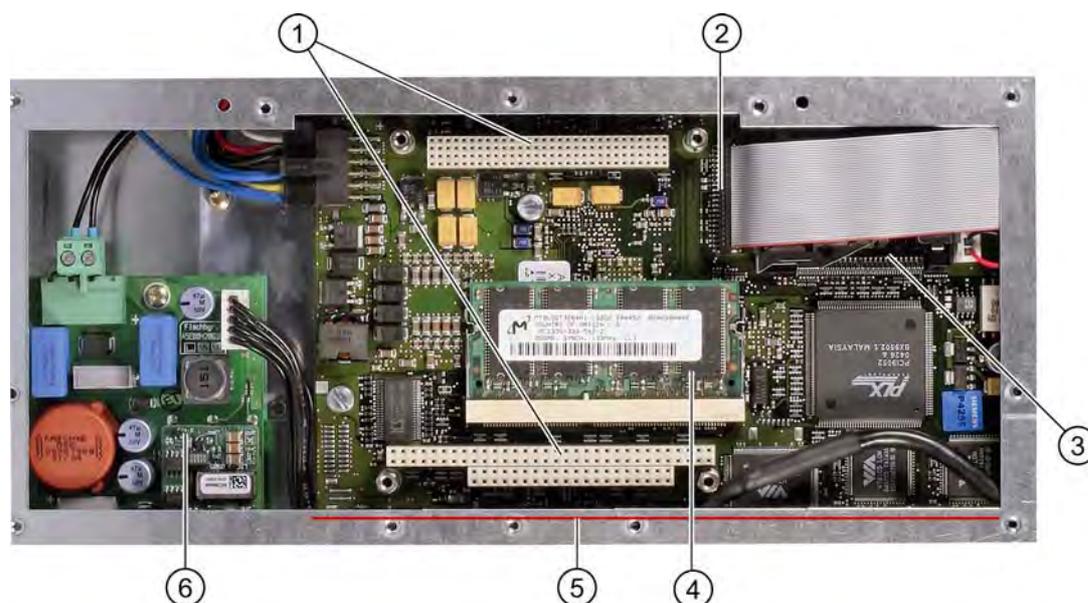


Figure 17-1 Internal layout of the device

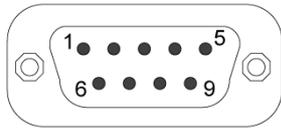
Internal design of the SIMATIC Panel PC 477	
(1)	Slot for max. 3 PC/104 modules
(2)	Panel controller connecting cable
(3)	Slot for Compact Flash card
(4)	Slot for a memory module
(5)	Motherboard
(6)	DC converter panel

17.1.2 Technical features of the motherboard

Component / port	Description	Parameters
Chipset	VIA PN133T (Twister-T)	
BIOS	Phoenix BIOS 4.0 Release 6.0	
CPU	Intel Celeron ULV / Intel Pentium III LV	400 MHz/650 MHz/933 MHz
Memory	SO-DIMM module SDRAM PC133	128 Mbytes, 256 Mbytes or 512 Mbytes
Graphic controller	S3 ProSavage 4 compatible UMA controller	8/16/32 Mbytes graphics memory taken from RAM (UMA); default settings is 8 Mbytes

17.1.3 External interfaces

17.1.3.1 COM

Serial port COM1, 9-pin (plug)		
		
Pin No.	Designation	Meaning
1	DCD	Data carrier detect (I)
2	RxD	Received data (I)
3	TxD	Transmitted data (O)
4	DTR	Data terminal ready (O)
5	GND	
6	DSR	Data set ready (I)
7	RTS	Request to send (O)
8	CTS	Clear to send (I)
9	RI	Incoming call (I)

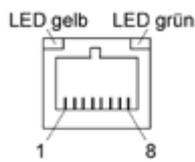
17.1.3.2 DVI-I

DVI port, standard socket		
Pin No.	Abbreviation	Meaning
1	TMDS Data2-	DVI data channel (O)
2	TMDS Data2+	DVI data channel (O)
3	TMDS Data2/4 shield	Shield channel
4	NC*	
5	NC	
6	DDC clock (SCL)	Display data channel – clock (I/O)
7	DDC data (SDA)	Display data channel – data (I/O)
8	Analog vertical sync (VSYNC)	Analog vertical sync signal (O)
9	TMDS Data1-	DVI data channel (O)
10	TMDS Data1+	DVI data channel (O)
11	TMDS Data1/3 shield	Shield channel
12	NC	
13	NC	
14	+5V power (VCC)	+5V power for DCC (O)
15	Ground (return for +5V, Hsync and Vsync) (GND)	Analog ground
16	Hot Plug Detect	
17	TMDS data 0-	DVI data channel (O)
18	TMDS data 0+	DVI data channel (O)
19	TMDS Data0/5 shield	Shield channel
20	NC	
21	NC	
22	TMDS clock shield	Shield channel
23	TMDS clock+	DVI clock channel (O)
24	TMDS clock-	DVI clock channel (O)
C1	Analog red (R)	Analog red signal (O)
C2	Analog green (G)	Analog green signal (O)
C3	Analog blue (B)	Analog blue signal (O)
C4	Analog horizontal sync (HSYNC)	Analog horizontal sync signal (O)
C5	Analog ground (analog R, G, & return) (GND)	Analog ground

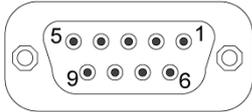
Note

Only Signals C1 to C5 can be used at the DVI interface

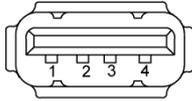
17.1.3.3 Ethernet

Ethernet port, 2* RJ45		
		
Pin No.	Designation	Meaning
1	TxD+	Transmitted data+ (O)
2	TxD-	Transmitted data- (O)
3	RxD+	Received data+ (I)
4	SYMR	Internal 75 Ohm terminating resistor
5	SYMR	Internal 75 Ohm terminating resistor
6	RxD-	Received data- (I)
7	SYMR	Internal 75 Ohm terminating resistor
8	SYMR	Internal 75 Ohm terminating resistor

17.1.3.4 PROFIBUS

PROFIBUS port, 9-pin (socket)		
		
Pin No.	Designation	Meaning
1-2	NC	Not connected
3	LTG_B	Data channel (I/O)
4	RTS_AS	AS Request to send (O)
5	GND	Ground isolated
6	P5V_dp_fused	+5 V (fused) isolated
7	NC	Not connected
8	LTG_A	Data channel (I/O)
9	RTS_PG	PG Request to send (O)

17.1.3.5 USB

USB port, 4 channels (2* low current, 2* high current)		
		
Pin No.	Abbreviation	Meaning
1	USB_P5V_fused (O)	+ 5 V (fused) for external USB interface
2	USB_D0M (I/O)	Data+, USB channel 0
3	USB_D0P (I/O)	Data-, USB channel 0
4	USB_GND	Ground for external USB interface

17.1.4 Internal ports

17.1.4.1 PC/104 port

PC/104 port	X81		X80	
Pin No.	A	B	C	D
0	--	--	GND	GND
1	IOCHCHK#	GND	SBHE#	MEMCS16#
2	SD7	RESETDRV	LA23	IOCS16#
3	SD6	+5V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	--	LA20	--
6	SD3	--	LA19	--
7	SD2	-12V	LA18	--
8	SD1	--	LA17	DACK0#
9	SD0	+12V	MEMR#	DRQ0
10	IOCHRDY	--	MEMW#	DACK5#
11	AEN	SMEMW#	SD8	DRQ5
12	SA19	SMEMR#	SD9	DACK6#
13	SA18	IOW#	SD10	DRQ6
14	SA17	IOR#	SD11	DACK7#
15	SA16	DACK3#	SD12	DRQ7
16	SA15	DRQ3	SD13	+5V
17	SA14	DACK1#	SD14	--
18	SA13	DRQ1	SD15	GND
19	SA12	REFRESH#	--	GND
20	SA11	SYSCLK	--	--
21	SA10	IRQ7	--	--
22	SA9	--	--	--
23	SA8	IRQ5	--	--
24	SA7	IRQ4	--	--
25	SA6	IRQ3	--	--
26	SA5	--	--	--
27	SA4	TC	--	--
28	SA3	BALE	--	--
29	SA2	+5V	--	--
30	SA1	OSC	--	--
31	SA0	GND	--	--
32	GND	GND	--	--

17.1.4.2 PC/104-Plus port

PC/104-Plus port, X7				
Pin No.	A	B	C	D
1	GND	Reserved	+5	AD00
2	VI/O 5V	AD02	AD01	+5V
3	AD05	GND	AD04	AD03
4	C/BE0#	AD07	GND	AD06
5	GND	AD09	AD08	GND
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1#	AD15	+3.3V
9	SERR#	GND	--	PAR
10	GND	PERR#	+3.3V	--
11	STOP#	+3.3V	LOCK#	GND
12	+3.3V	TRDY#	GND	DEVSEL#
13	FRAME#	GND	IRDY#	+3.3V
14	GND	AD16	+3.3V	C/BE2#
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0 = AD28	GND	IDSEL1 = AD29	IDSEL2 = AD30
19	AD24	C/BE3#	VI/O	IDSEL3 = AD31
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0#	GND	REQ1#	VI/O
24	GND	REQ2#	+5V	GNT0#
25	GNT1#	VI/O	GNT2#	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD#	+5V	RST#
29	+12V	INTA#	INTB#	INTC#
30	-12V	Reserved	Reserved	GND

17.2 BIOS Setup

17.2.1 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 Rack PC 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 Rack PC in any way, or if a fault occurs when the unit is powered up.

17.2.2 Starting BIOS Setup

Starting BIOS Setup

Start the setup program as follows:

1. Reset the device (warm or cold restart).

With the default setting of your PC, the display shown below appears following power-on, for example:

```
Phoenix BIOS 4.0 Release 6.0 A5E000xxxx-ES0x
Copyright 1985–2004 Phoenix Technologies Ltd. All Rights Reserved.
SIMATIC Panel PC 477 xx.xx.xx
CPU = Intel® Pentium®3 CPU 933 MHz
639K System RAM Passed
127MB Extended RAM Passed
Press <F2> to enter SETUP or <ESC> to display the boot menu
```

2. 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
```

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

17.2.3 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 context-sensitive help in the respective menu.

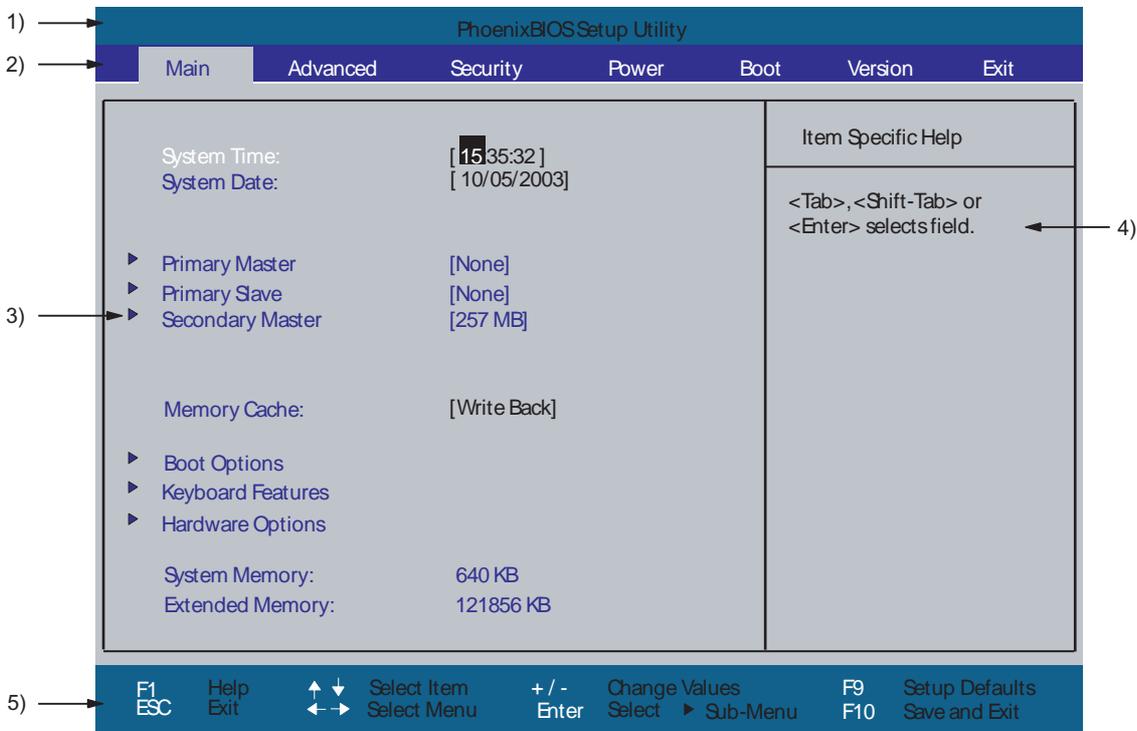


Figure 17-2 Setup Main menu

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

Menu layout

The screen is divided into four sections. In the top part (2), you can select the menu forms [Main], [Advanced], [Security], [Power], [Boot Sequence], [Version], [Exit]. In the left of the center section (3) you can select various settings or submenus. Brief help texts appear on the right (4) 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.
Power	Power-saving functions can be selected here.
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.

17.2.4 Main menu

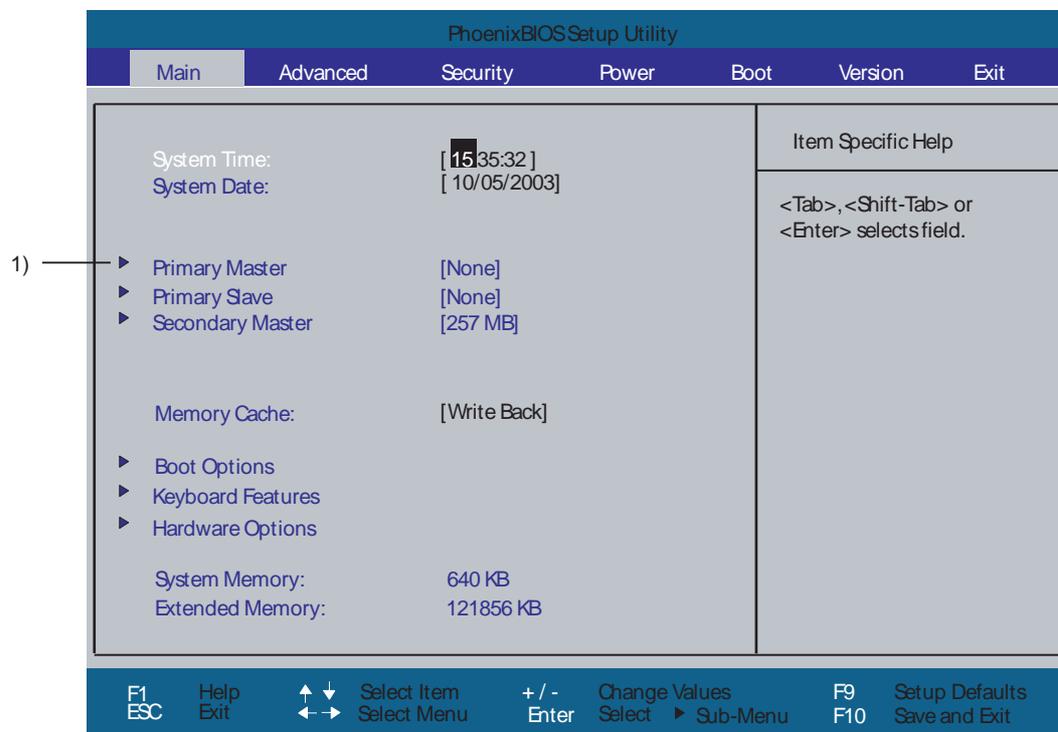


Figure 17-3 Example of Main menu

(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	
Primary Master	Type of installed disk drives
Primary Slave	Type of installed disk drives
Secondary Master	Type of installed disk drives
Boot options	Used for setting the boot options.
Keyboard Features	Used for setting the keyboard interface (for instance, NUM lock, keyboard auto repeat 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.

Primary Master, Primary Slave, Secondary Master

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

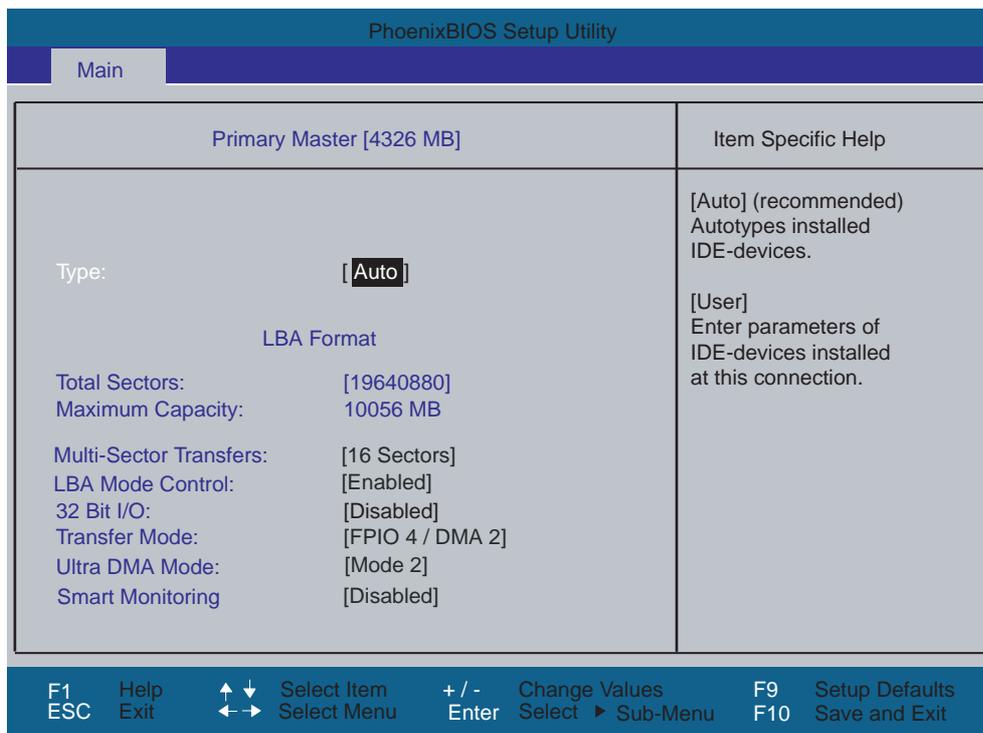


Figure 17-4 Primary Master submenu

"Type" Field	<p>The parameters which you can select here are usually saved 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 (Auto detect).</p> <p>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.</p> <p>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 of the hard disk drive.</p> <p>Select "None" if you have not connected a disk drive. This setting reduces the system waiting time.</p>	
Option "Multi-Sector Transfers"	The number of blocks (sectors) transmitted per interrupt are set with 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	
Option "LBA Mode Control"	If the LBA Mode Control field (enabled, disabled) is set to 'Enabled', the system supports hard disks with capacities greater than 528 MB. The value depends on the drive and should be set only to "Auto" in the "Type" field.	
In the 32-bit IO field	In the field 32-bit I/O you define the drive access mode	
	Disabled	16-bit accesses
	Enabled	32-bit accesses (default)
Option "Transfer Mode" and "Ultra DMA Mode"	<p>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.</p> <p>You leave the submenu using the ESC key.</p>	
Smart Monitoring	Disabled	Monitoring function of hard disk disabled
	Enabled	Monitoring function of hard disk enabled

The "Memory Cache" field

The following shortcut menu appears when you select the "Memory cache" option in the main menu:

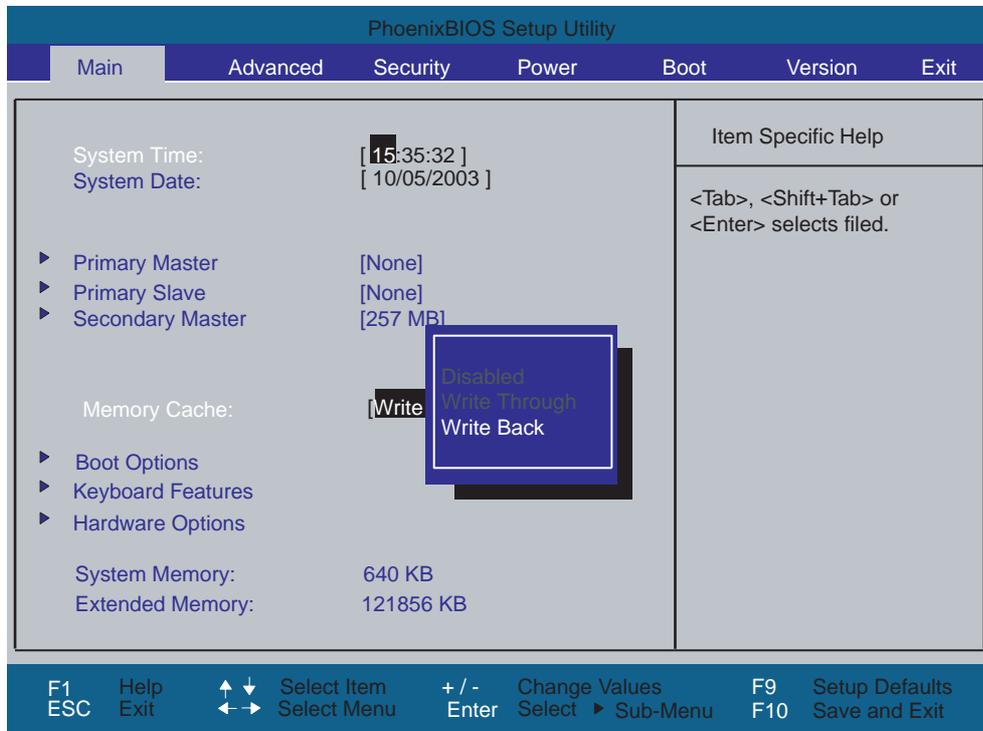


Figure 17-5 Memory cache field

The cache is a high-speed memory buffer between the CPU and memory (DRAM). Repeated memory access operations are executed in the fast 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 hardware and software because desired program runtimes or wait times may be shortened 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 submenu appears when you select the "Boot Options" field in the main menu:

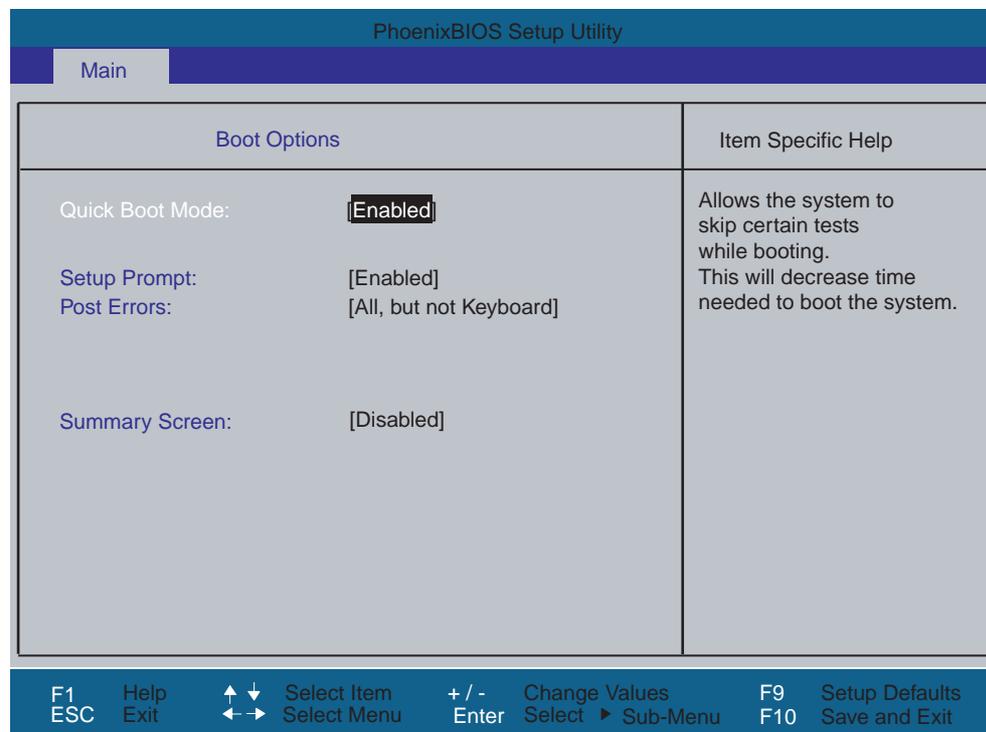


Figure 17-6 Boot Options submenu

Quick Boot Mode	Some hardware tests (memory test) are skipped to speed up the boot sequence.
Setup prompt	The message PRESS <F2> to enter Setup is output at the bottom of the screen during the system run-up phase.
Post Errors	The boot sequence is stopped if an error is detected; you must press F1 to acknowledge. Enter "Disabled" to avoid the necessity of acknowledging errors, for example, if no keyboard is connected. The default setting [All, but not keyboard] allows the startup with error messages, although possible keyboard errors are eliminated.
Summary screen	The most important system parameters are displayed when the system boot phase completes.

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

Example of a summary screen:

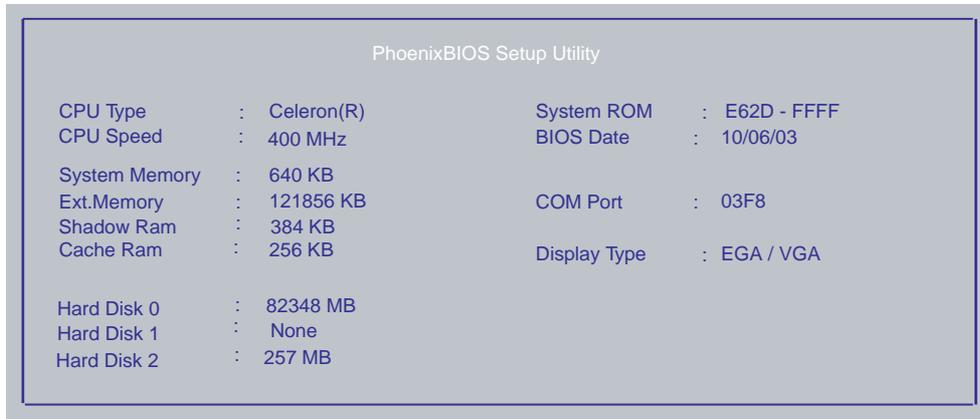


Figure 17-7 Summary screen

The Summary screen appears when the system boot phase completes.

"Keyboard Features" field

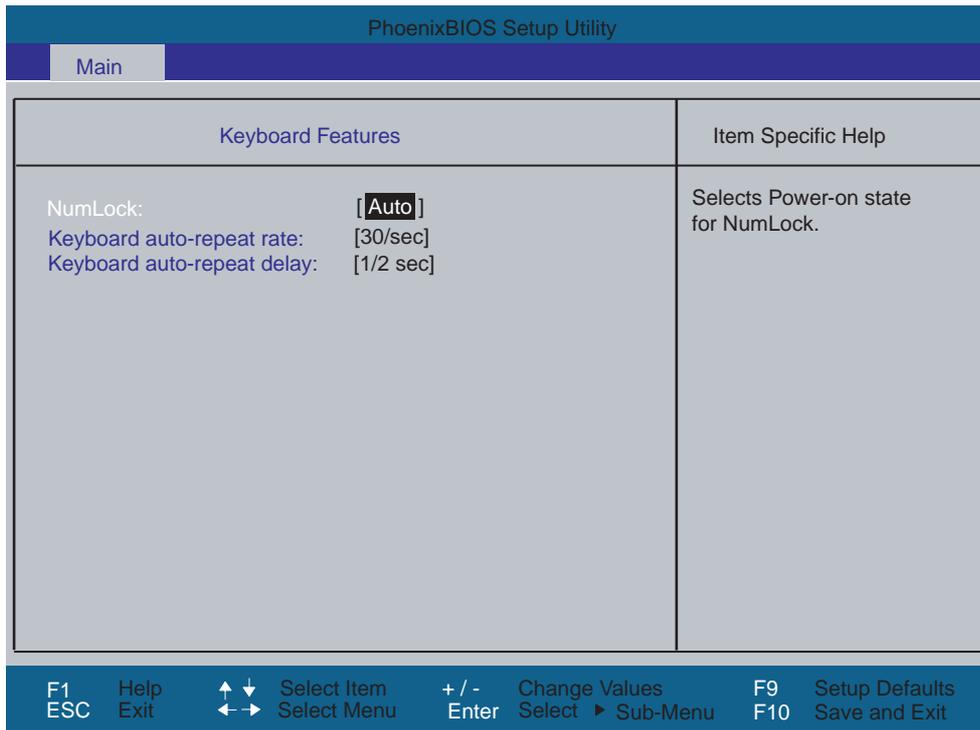


Figure 17-8 Keyboard Features submenu

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.
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 appears when you select the "Hardware Options" field in the main menu:

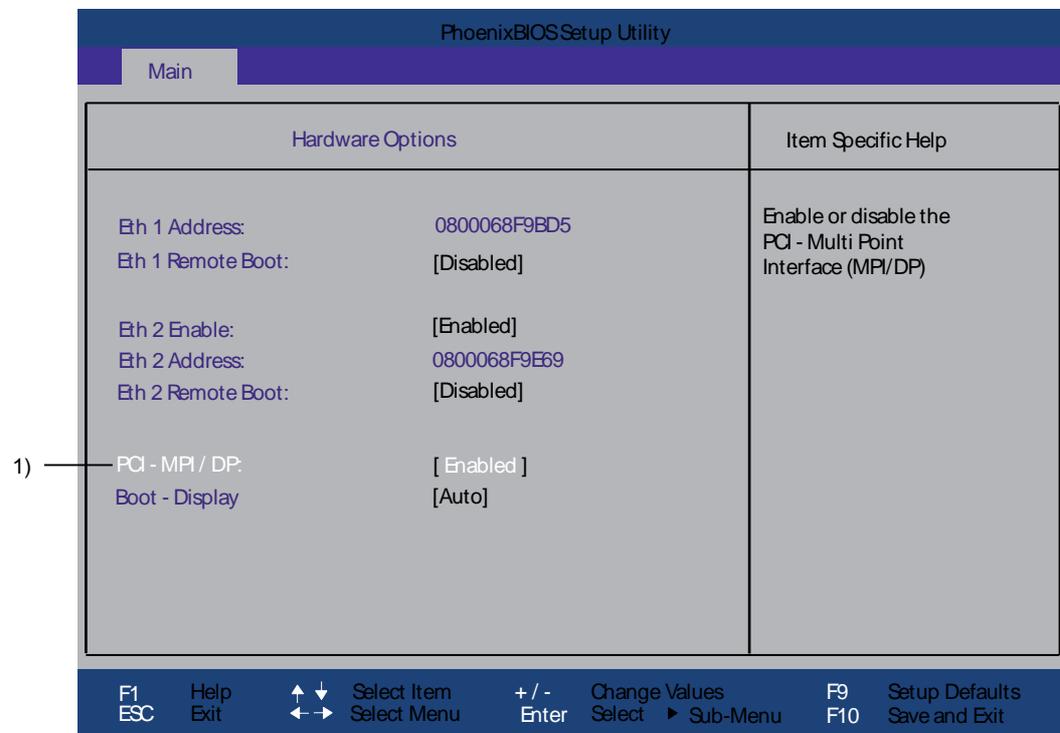


Figure 17-9 Hardware Options submenu

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

Entry	Meaning	
Eth 1 Address	Shows the individual address on the first Ethernet port.	
Eth 1 Remote Boot	[Enabled]	You can boot from a LAN connected to the first Ethernet port. The respective boot source is displayed as PXE/RPL 2.32 in the boot sequence menu.
	[Disabled]	You cannot boot from a LAN connected to the first Ethernet port.
Eth 2 Enable	[Enabled]	The second Ethernet port is enabled.
	[Disabled]	The second Ethernet port is disabled.
Eth 2 Address	Shows the individual address on the second Ethernet port.	
Eth 2 Remote Boot	[Enabled]	You can boot from a LAN connected to the second Ethernet port. The respective boot source is displayed as PXE/RPL 2.32 in the boot sequence menu.
	[Disabled]	You cannot boot from a LAN connected to the second Ethernet port.
PCI-MPI/DP ¹⁾	[Enabled]	Enables the CP5611-compatible MPI/DP interface. The resources are managed by the BIOS PCI Plug&Play mechanism.
	[Disabled]	The CP5611 compatible MPI/DP interface is disabled.

Entry	Meaning	
Boot display	[Auto]	The optimal setting is searched for and selected.
	[DVI-CRT XGA]	1024x768
	[DVI-CRT SVGA]	800x600
	[DVI-CRT VGA]	640x480

1) Optional product feature

17.2.5 Advanced Menu

Menu layout

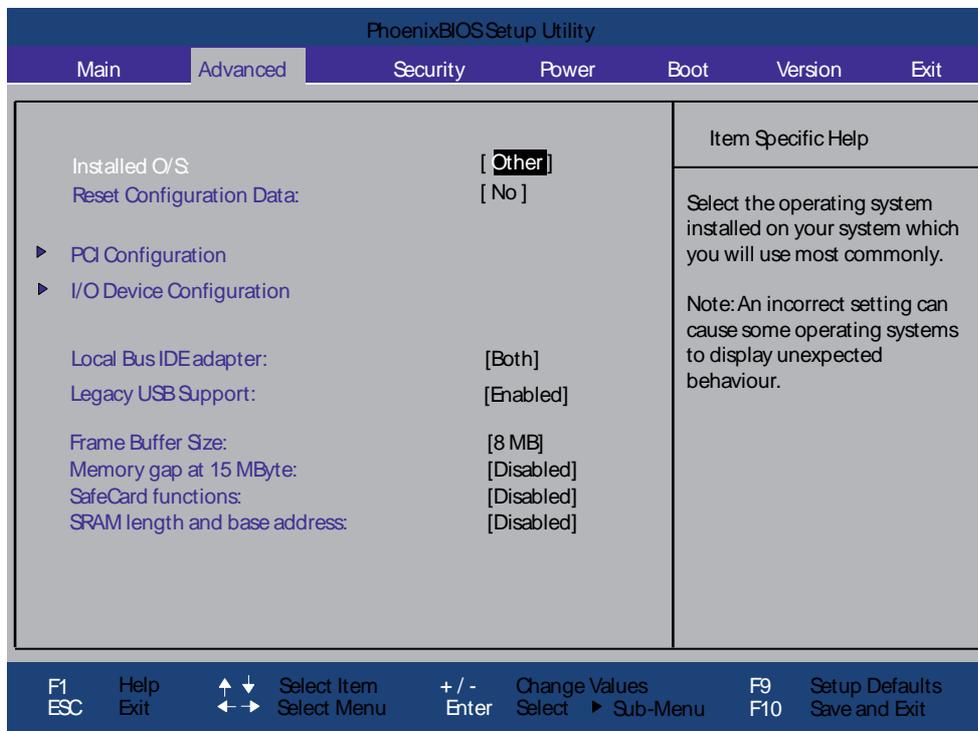


Figure 17-10 Example of Advanced menu

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.
	[Win XPE]	The operating system handles the Plug&Play functions.
Reset Configuration Data	[Yes]	All installations under Plug and 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.
Local Bus IDE adapter	[Primary]	One IDE interface for max. two drives.
	[Secondary]	One IDE interface for max. two drives.
	[Both]	Two IDE interfaces for max. four drives.
	[Disabled]	No local IDE interface.
Legacy USB support	[Enabled]	USB ports are accessible.
	[Disabled]	USB ports are not accessible.
Frame Buffer Size	[None]	No graphics memory can be taken from RAM.
	[8 MB]	8 Mbytes of the RAM is used for the graphics memory.
	[16 MB]	16 Mbytes of the RAM is used for the graphics memory.
	[32 MB]	32 Mbytes of the RAM is used for the graphics memory.
Memory gap at 15MB	[Disabled]	The onboard RAM is fully available.
	[Enabled]	A 1 Mbytes area of the RAM beginning at 15 Mbytes (address F0 0000 - FF FFFF) can be used by auxiliary ISA cards.
SafeCard functions	[Disabled]	The SafeCard functions are disabled.
	[Enabled]	The SafeCard functions are disabled.
SRAM length and base address	[Enabled]	Length and base address of the SRAMs can be specified.
	[Disabled]	Length and base address of the SRAMs cannot be specified.

"COM Configuration" submenu

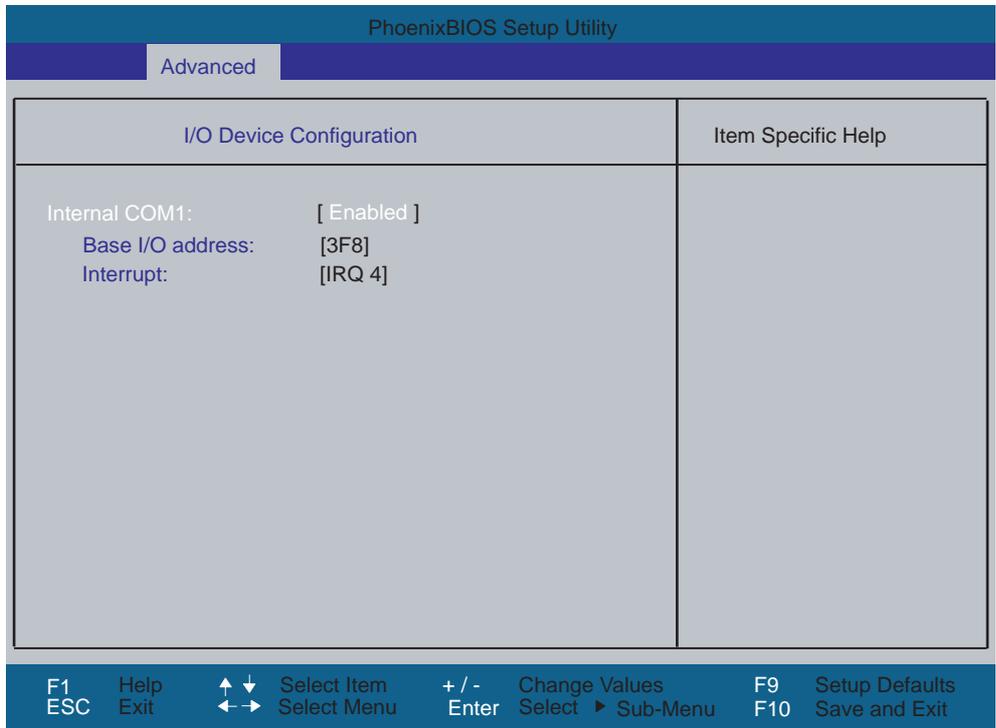


Figure 17-11 COM Configuration submenu

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

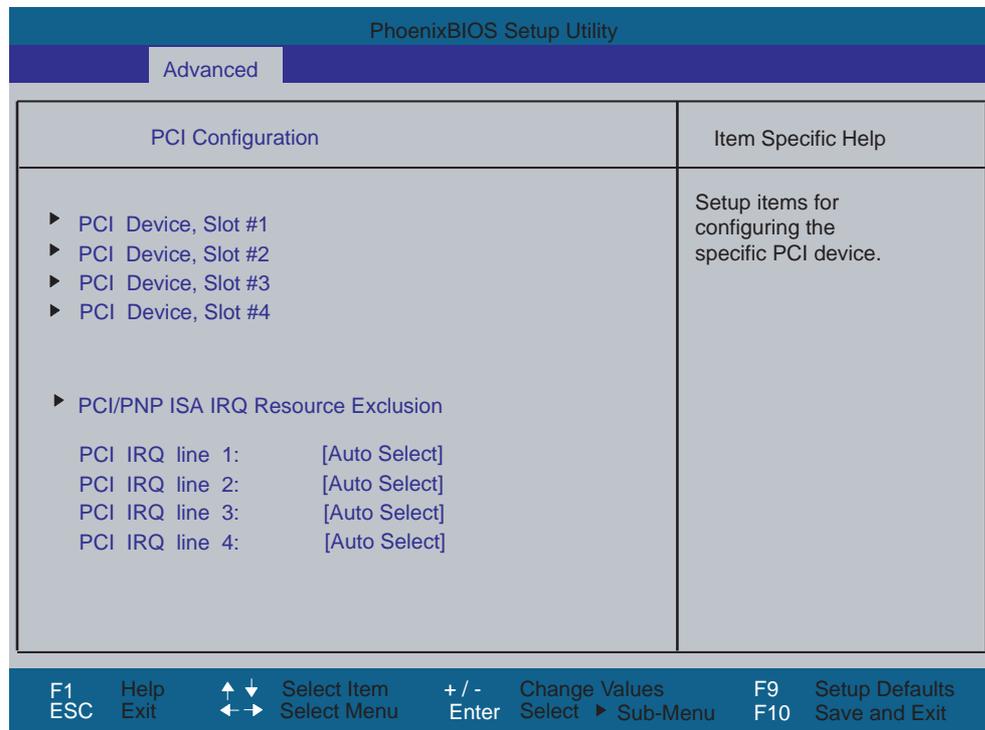


Figure 17-12 PCI Configuration submenu

"PCI Devices" field

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

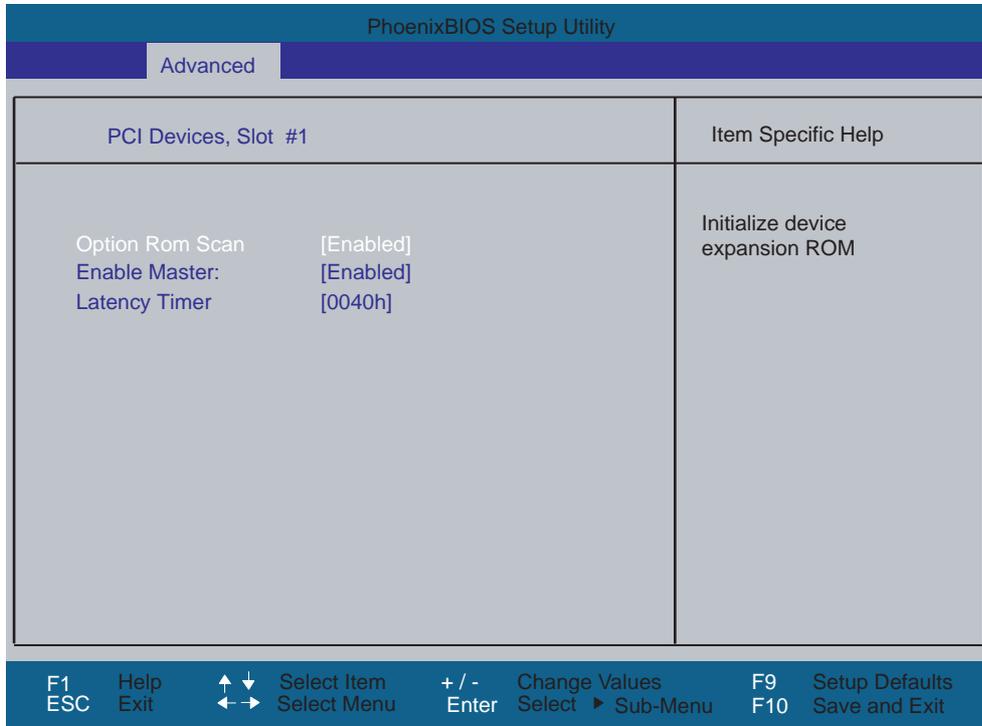


Figure 17-13 PCI Devices submenu

ROM scan option:	[Enabled]	The Option ROM 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 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 the module
	[0020H to 00E0H]	With these settings, you set the maximum number of active PCI clock cycles to the selected value.

Note

You should only use a value different from the default if the module or its application requires it.

"IRQ Resource Exclusion" submenu

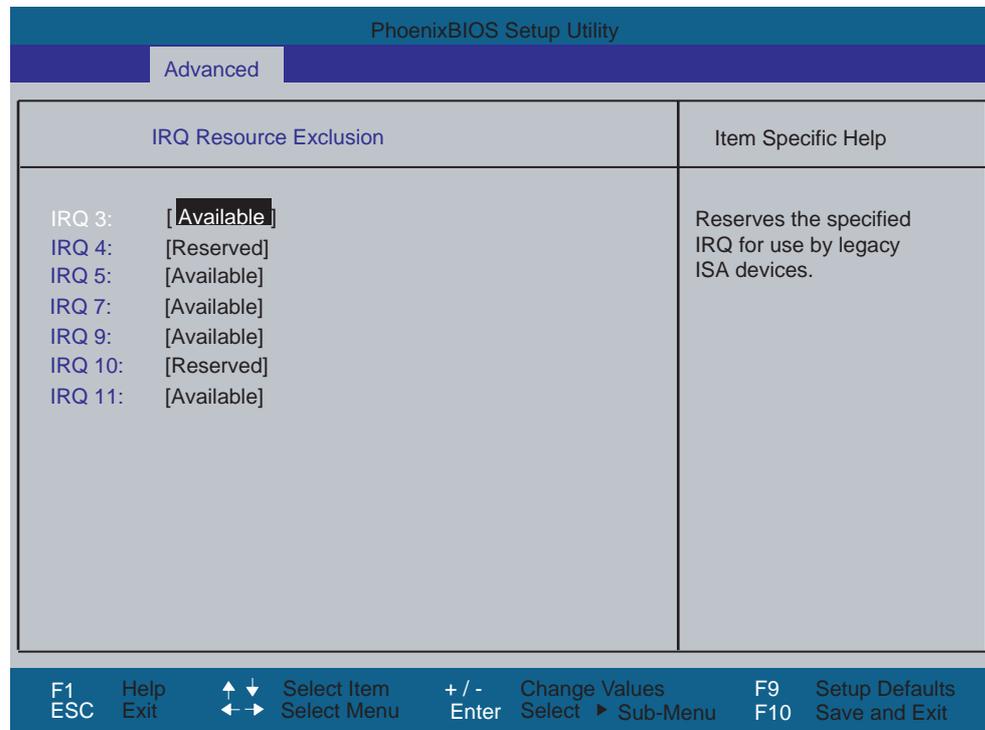


Figure 17-14 IRQ Resource Exclusion submenu

Available means that the Plug and Play mechanism in BIOS can allocate the IRQ to Plug and Play submodules or motherboard functions.

Note

Use the 'Reserved' setting only if the interrupt has to be assigned specifically to submodules with no Plug and Play capability.

"PCI IRQ channel" field

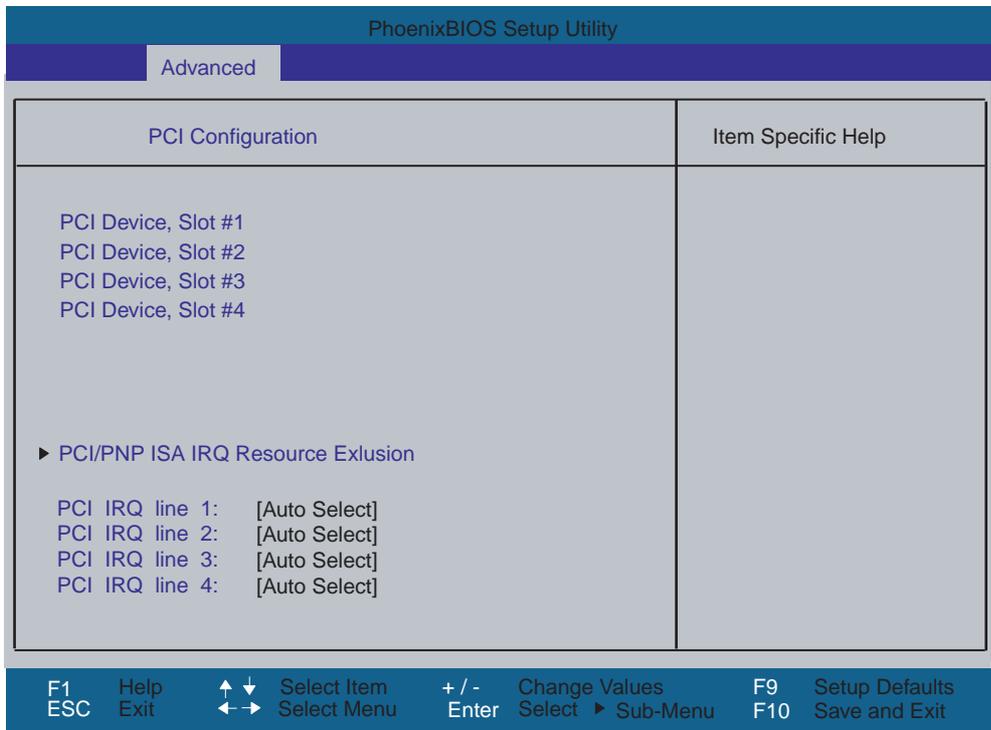


Figure 17-15 The PCI IRQ line field

Disabled	No interrupt possible for the selected PCI IRQ channel.
AutoSelect	Plug and Play mechanism in BIOS selects unassigned interrupts and allocates them to the on-board PCI devices.
3 to 15	The selected PCI IRQ channel is assigned permanently to the selected interrupt. You should only select this setting if this is specified in the documentation for your application.

Assignment of the PCI IRQ channels to the PCI slots.

17.2.6 Security menu

You can only edit the fields enclosed in square brackets. Two passwords can be assigned to protect the device against unauthorized use. The Supervisor password can be used to prevent access to the floppy disk drive for normal users and to restrict access to the hard disk drive.

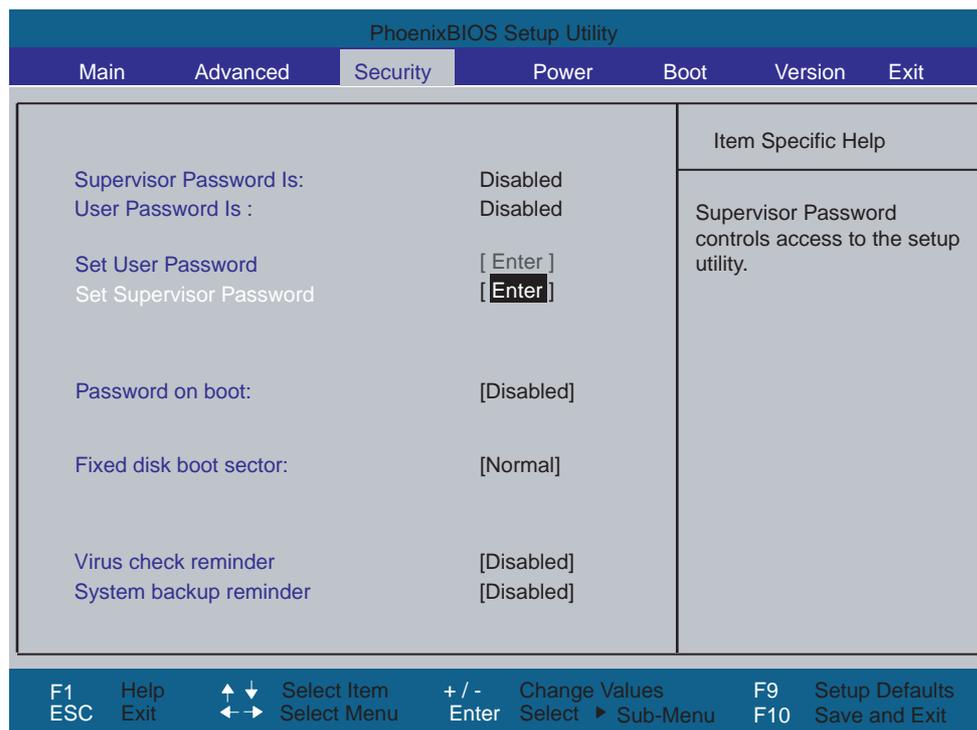


Figure 17-16 Security menu

Supervisor Password is	Disabled	The password is disabled.
	Enabled	Certain Setup fields are thus configurable by the user, including the supervisor password.
	The field resets automatically from [Disabled] to [Enabled] when the password is entered.	
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.
Virus check reminder	Outputs a virus check prompt when booting.	
	[Disabled]	No message during system startup
	[Daily]	Daily
	[Weekly]	Each Monday
System backup reminder	[Monthly]	Every first of the month
	Outputs a message when booting requesting a system backup.	
	[Disabled]	No message during system startup
	[Daily]	Daily
	[Weekly]	Each Monday
	[Monthly]	Every first of the month

17.2.7 Power menu

This menu has the following layout:

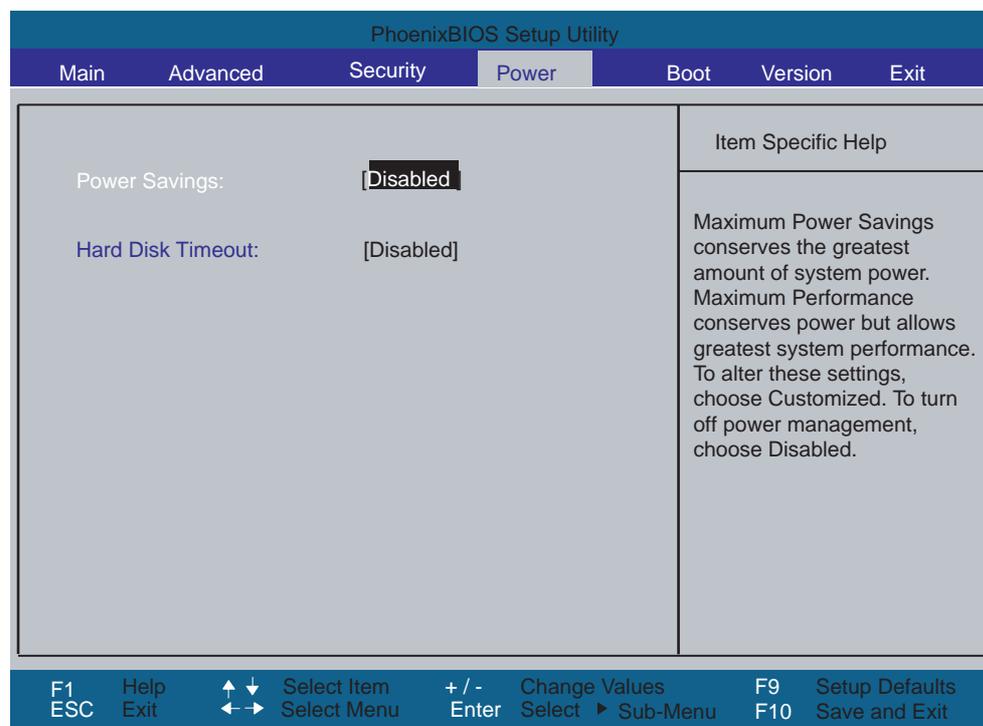


Figure 17-17 Power menu

Power Savings	[Disabled]	No energy saving functions.
	[Customized, Maximum Power Savings, Maximum Performance]	Freely selectable or default values for min./max. energy saving functions. You can set the parameters for Standby Time-out and Fixed Disk Timeout, or they are set automatically to their defaults.
Hard Disk Timeout	[Disabled]	The hard disk is not switched off.
	[1,6,8,10,15]	Minutes after the last access the hard disk drive is switched off. The next time it is accessed, the hard disk starts spinning again after a brief delay.

17.2.8 Boot Menu

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



Figure 17-18 Boot Menu

This menu lists the boot devices in groups. The group with the highest priority is at the top. To change the sequence:

Note

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

Groups marked + can contain more than one device. When you select a group marked in this way, press Enter to view the list of devices in the group.

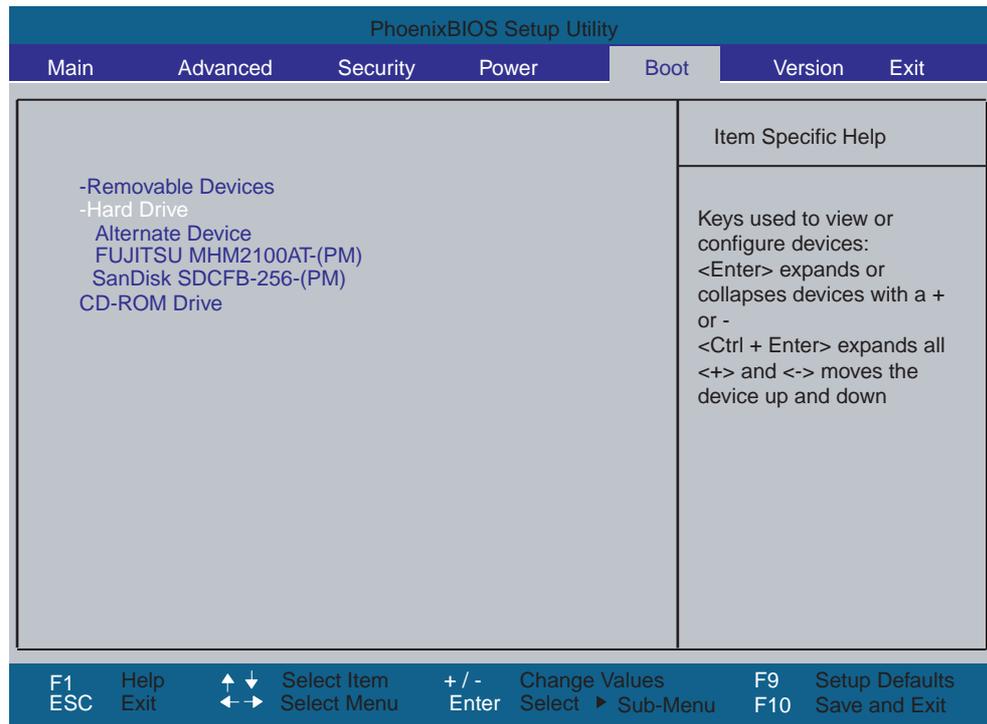


Figure 17-19 Example of the Boot menu

This screen shows all possible boot devices. The device taking highest priority is listed in the first line of the relevant group. Here again, you can change the order of appearance as described above.

Note

Due to a BIOS limitation it is always only possible to boot from the first device of a group.

17.2.9 Versions Menu

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

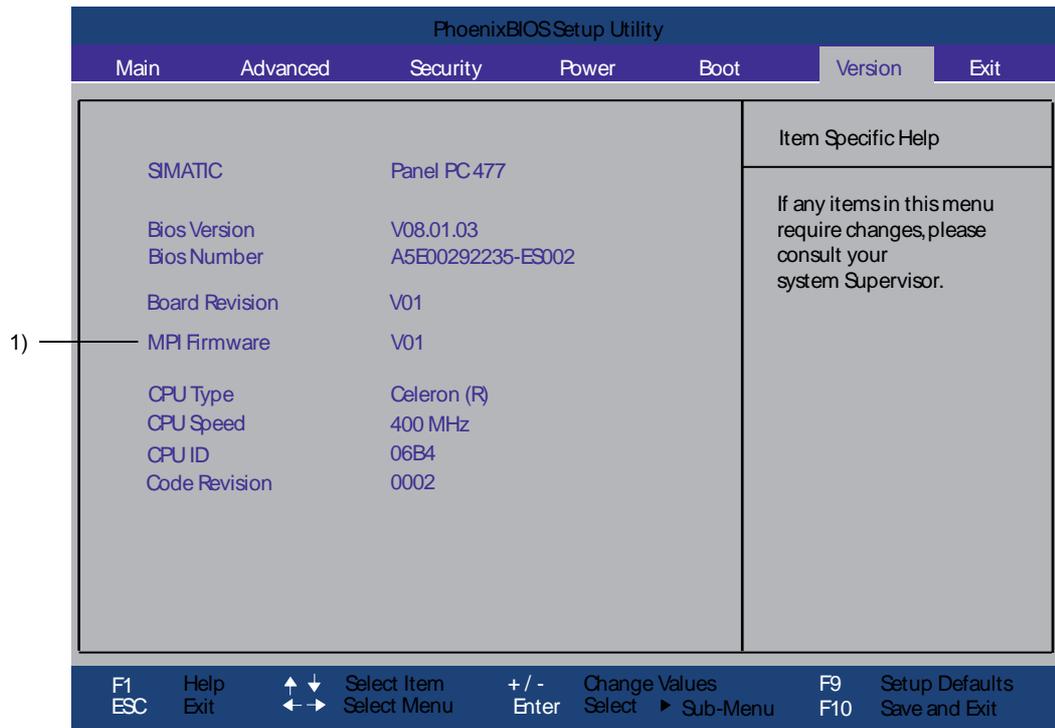


Figure 17-20 Version menu

1) Optional product feature

17.2.10 Exit menu

The setup program is always closed from this menu:

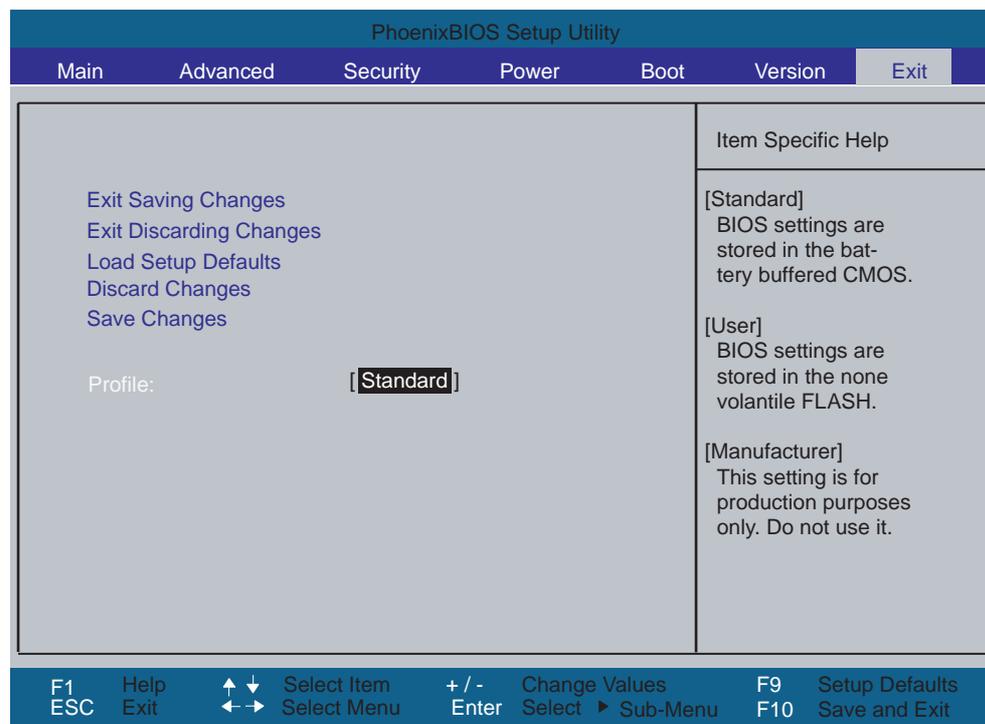


Figure 17-21 Exit menu

Profile	[Default]	The BIOS settings are saved in the CMOS-RAM which is backed up by battery.
Exit Saving Changes	All changes are saved; a system restart is carried out with the new parameters. (Also called with the F10 key)	
Exit Discarding Changes	All changes are discarded and the system performs a restart based on the old parameters.	
Load Setup Defaults	All parameters are set to the default values. (Also called with the F9 key)	
Discard Changes	All your changes are discarded.	
Save Changes	Save all Setup settings.	

Profile	[User]	The BIOS settings are saved in the non-volatile FLASH memory and CMOS-RAM.
Exit Saving Changes	The current user settings are saved in the FLASH and CMOS. A FLASH cell records that the user profile is selected. The system then reboots. (Also called by the F10 key)	
Exit Discarding Changes	All your changes are discarded. A FLASH cell records that the user profile is still active. The system then reboots.	
Load Setup Defaults	Loads the BIOS default settings. The profile is not changed. (Also called with the F9 key)	
Discard Changes	All your changes are discarded.	
Save Changes	The current user settings are saved in the FLASH and CMOS.	

Profile	[Manufacturer]	Profile for development purposes. Not used!
Exit Saving Changes	A FLASH cell records that the manufacturer profile is selected. The system then reboots. (Also called with the F10 key)	
Exit Discarding Changes	All your changes are discarded. The system then reboots.	
Load Setup Defaults	The manufacturer settings saved in the Flash are saved in the CMOS. (Also called with the F9 key)	
Discard Changes	All your changes are discarded.	
Save Changes	The manufacturer settings saved in the Flash are saved in the CMOS.	

17.2.11 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 have made your entries.

Default BIOS Setup entries

System parameters	Defaults	Custom entries
Main		
System Time	hh:mm:ss	
System Date	MM/DD/YYYY	
Primary Master	40008 MB	
Primary Slave	None	
Secondary Master	512 MB	
Memory Cache	Write Back	
Boot options		
Quick Boot Mode	Enabled	
SETUP prompt	Enabled	
POST errors	All, but not keyboard	
Summary screen	Disabled	
Keyboard Features		
Num Lock	Auto	
Keyboard auto-repeat rate	30/sec	
Keyboard auto-repeat delay	½ sec	
Hardware Options		
Eth 1 Address	0800068F9DB5	
Eth 1 Remote Boot	Disabled	
Eth 2 Enable	Enabled	
Eth 2 Address	0800068F9E69	
Eth 2 Remote Boot	Disabled	
PCI – MPI/DP	Enabled	
Boot display	Auto	

Advanced		
Installed O/S	Other	
Reset Configuration Data	No	
Local Bus IDE adapter	Both	
Legacy USB support	Enabled	
Frame Buffer Size	8 MB	
Memory gap at 15 Mbytes	Disabled	
SafeCard functions	Enabled	
SRAM length and base address	Disabled	

I/O Device Configuration		
Internal COM1	Enabled	
Base I/O address	3F8	
Interrupt	IRQ 4	

PCI configuration		
PCI Device, Slot#1		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	0040h	
PCI Device, Slot#2		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	0040h	
PCI Device, Slot#3		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	0040h	
PCI Device, Slot#4		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency Timer	0040h	
PCI/PNP ISA IRQ Resource Exclusion		
IRQ3	Available	
IRQ4	Available	
IRQ5	Available	
IRQ7	Available	
IRQ9	Available	
IRQ10	Reserved	
IRQ11	Available	
PCI IRQ Line 1	Auto Select	
PCI IRQ Line 2	Auto Select	

PCI configuration		
PCI IRQ Line 3	Auto Select	
PCI IRQ Line 4	Auto Select	

Security		
Supervisor Password Is	Disabled	
User Password is	Disabled	
Set Supervisor Password	Enter	
Set User Password	Enter	
Password on boot	Disabled	
Fixed disk boot sector	Normal	
Virus check reminder	Disabled	
System backup reminder	Disabled	

Power		
Power Savings	Disabled	
Hard Disk Timeout	Disabled	

Boot		
Removable Devices		
Hard disk drive		
CD-ROM drive		

Version		
SIMATIC	Panel PC 477	
BIOS Version	V08.01.02	
BIOS Number	A5E00292424-ES02	
Board Revision	V01	
MPI Firmware	V01	
CPU Type		
CPU speed		
CPU ID		
Code Revision		

Exit		
Profile	Standard	

17.3 System resources

17.3.1 Currently allocated system resources

All system resources (hardware address, memory configuration, IRQ, DMA channel) 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 XP Embedded	Start > Run : in the Run dialog, enter <i>msinfo32</i> 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 PCI Interrupt Lines

PCI Device #	Device	Req # /Gnt #	INTA#	INTB#	INTC#	INTD#	
Internal	Northbridge (GFX) PN133T		x				
Internal	Southbridge Vt82C686B-CE						
1	VT6105LOM – Ethernet #1	1			x		
2	VT6105LOM – Ethernet #2	2	x				
3	VT6212 - USB1.1 #1	3	x				
	VT6212 - USB1.1 #2		x				
	VT6212 - USB2.0		x				
4	DP12 (PROFIBUS controller)	None		x			
5-7	Max. 3 modules PC/104 PCI resources depending on selection (1-4)	1	4	INT B	INT C	INT D	INT A
		2	5	INT A	INT B	INT C	INT D
		3	5	INT D	INT A	INT B	INT C
		4	5	INT C	INT D	INT A	INT B

17.4 I/O address areas

17.4.1 Overview of the internal module registers

Overview of the internal module registers

The following addresses are used for the internal registers:

Addresses	Input/output unit
062h	Watchdog enable register
066h	Watchdog trigger register
	SRAM base address register
	SRAM control register
404Dh	General Purpose Ports (GPP) output register
404Eh	Output register LED 1 / 2

17.4.2 Watchdog enable register (read/write address 062h)

Meaning of the bits

Watchdog enable register (r/w address 062h)								
Bit								Meaning of the bits
7	6	5	4	3	2	1	0	
								Watchdog enable bit (WDE)
							0	Watchdog circuit disabled
							1	Watchdog circuit enabled
								Watchdog Mode
							0	Normal
							1	Macro
								Address register selection
							0	SRAM base address register
							1	SRAM control register
								Scaler watchdog time (Normal/Macro)
		0	0	0				94 ms/2s (default)
		0	0	1				210 ms/4s
		0	1	0				340 ms/6s
		0	1	1				460 ms/8s
		1	0	0				590 ms/16s
		1	0	1				710 ms/32s
		1	1	0				840 ms/48s
		1	1	1				960 ms/64s
								Trigger red LED
	0							Red LED (WD) off
	1							Red LED (WD) on
								Watchdog error / Display and reset
0								WD inactive
1								WD triggered Reset LED after watchdog alarm (Bit 7 = write 1)

17.4.3 Watchdog trigger register (read only, address 066h)

Watchdog trigger register

The watchdog is triggered by a read action (address 066h) by this register. The read result has no meaning (= dummy read).

17.4.4 SRAM base address register (write only, address 066h)

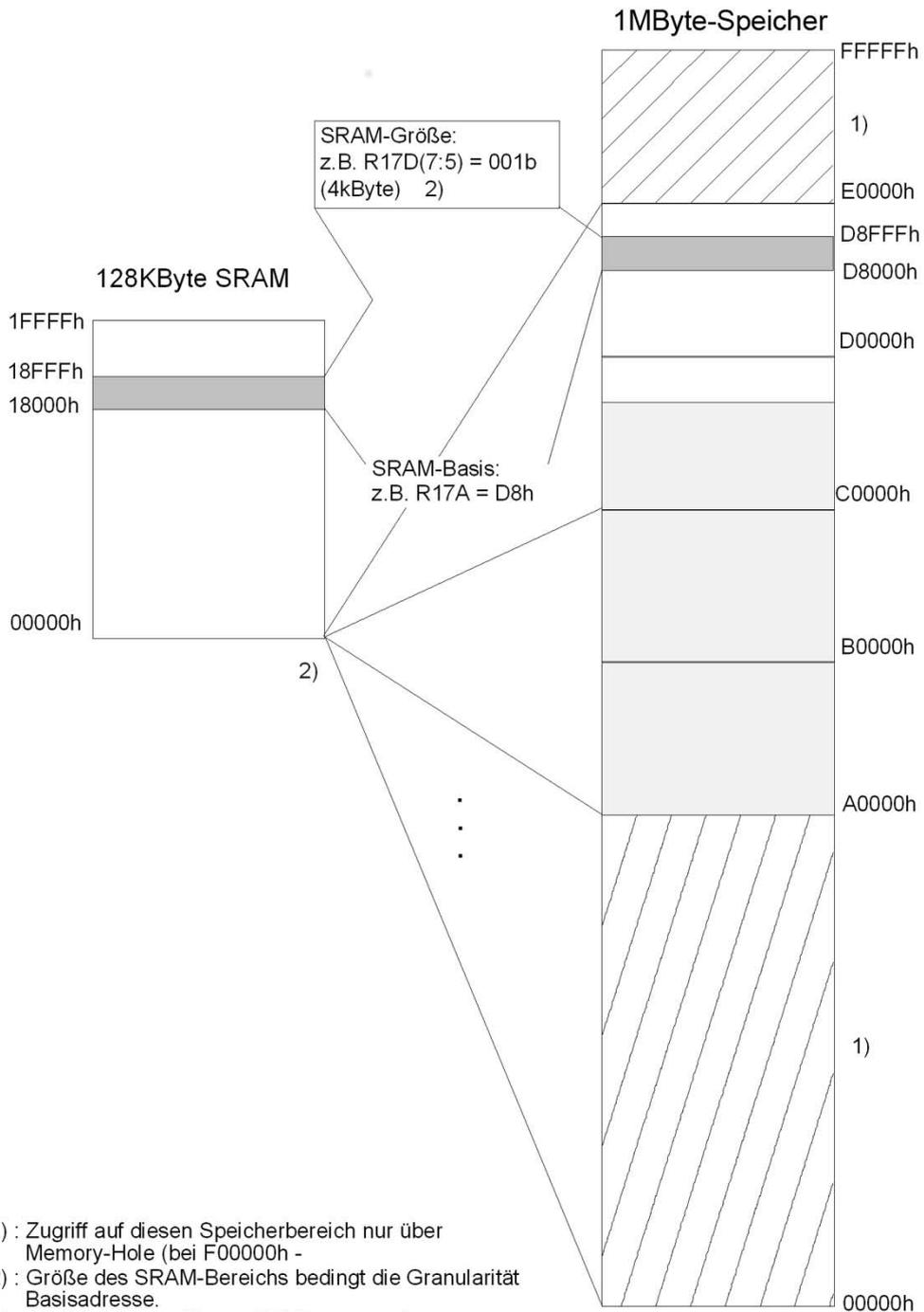
A maximum of 128 KB SRAM is available on the module. This can be overlaid on the SRAM base register in various address ranges. The length and enable of the address range is made through the SRAM control register. A limited selection can be preset in the BIOS Setup.

Note

The SRAM base address register shares its I/O address with other registers. The watchdog enable register therefore must be selected before access.

Meaning of the bits

SRAM base address register (write only, address 066h, Address register selection 0)								
Bit								Meaning of the bits
7	6	5	4	3	2	1	0	
								Setting the SRAM base address



- 1) : Zugriff auf diesen Speicherbereich nur über Memory-Hole (bei F00000h -
- 2) : Größe des SRAM-Bereichs bedingt die Granularität Basisadresse.
- 3) : SRAM-Adresse 0h nur 128KByte-granular

Figure 17-22 SRAM base register Memory areas

17.4.5 SRAM control register (write only, address 066h)

The length and enable of the SRAM address range is made through the SRAM control register (write only, address 066h).

Note

The SRAM control register shares its I/O address with other registers. The watchdog enable register therefore must be selected before access.

Meaning of the bits¹

SRAM control register (write only, address 066h, Address register selection 1)								
Bit								Length in KB
7	6	5	4	3	2	1	0	
0	0	0						Disabled
0	0	1						4
0	1	0						8
0	1	1						16
1	0	0						32
1	0	1						64
1	1	0						128 ²
1	1	1						Disabled
			0	0	0	0	0	Reserved (Write 0 0 0 0 0 0)

¹Limited selection can be preset in the BIOS Setup.

²This setting only makes sense when the memory hole is activated.

17.4.6 Output register LED 1 / 2 (read/write address 404Eh)

Meaning of the bits

Output register LED 1 / 2 (read/write address 404Eh)								
Bits								Meaning
7	6	5	4	3	2	1	0	
	1							1= LED 1 is dark (default)
	0							0= LED 1 lit
1								1= LED 2 is dark (default)
0								0= LED 2 lit
		1	1	1	1	1	1	Reserved (read/write)

17.4.7 General Purpose Ports (GPP) output register (read/write, address 404Dh)

Meaning of the bits

General Purpose Ports output register (read/write, address 404Dh)								
Bits							Meaning	
7	6	5	4	3	2	1	0	
					1			Write protection for BIOS Flash Memory is active (default)
					0			Write protection for BIOS Flash Memory is inactive
	1							SW reset for PROFIBUS ASIC ASPC2 is inactive (default)
	0							SW reset for PROFIBUS ASIC ASPC2 is active
1								Watchdog locking is active
0								Watchdog locking is inactive (default)
		1	1	1				Reserved (read/write)

Notice

Data loss

If SIMATIC products are installed on your device, the ASPC2 may not be reset by a user program under any circumstances.

Appendix

A.1 Guidelines and Declarations

Notes on the CE Label

 The following applies to the SIMATIC product described in this documentation:

EMC Guideline

The devices fulfill the requirements for the EC directive "89/336/EEC Electromagnetic Compatibility", and the following field of application applies according to this CE label:

Area of Application	Requirements	
	Emitted interference	Interference immunity
Industry	EN 61000-6-4: 2001	EN 61000-6-2: 2001

Low-Voltage Directive

The devices complies with the requirements of the EC directive 73/23/EEC "Low-Voltage Guidelines." Conformance with this standard has been verified according to EN 60950-1.

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. Your sales representative can provide these on request.

Note the installation guidelines

The installation guidelines and safety instructions given in this documentation have to be noted 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. Peripheral devices are only be connected via shielded cables.

A.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 EN29001: 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 is shipped with preinstalled software. Please observe the corresponding license agreements.

Certifications for the United States, Canada, and Australia

Safety

One of the following markings on a device is indicative of the corresponding approval:	
	Underwriters Laboratories (UL) per UL 60950 (I.T.E) or per UL 508 (IND.CONT.EQ)
	Underwriters Laboratories (UL) per Canadian Standard C22.2 No. 60950 (I.T.E) or per C22.2 No. 142 (IND.CONT.EQ)
	Underwriters Laboratories (UL) per UL 60950, Report E11 5352 and Canadian Standard C22.2 No. 60950 (I.T.E) or per UL 508 and C22.2 No. 142 (IND.CONT.EQ)
	UL recognition mark
	Canadian Standard Association (CSA) per Standard C22.2. No. 60950 (LR 81690) or per C22.2 No. 142 (LR 63533)
	Canadian Standard Association (CSA) per American Standard UL 60950 (LR 81690) or per UL 508 (LR 63533)

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 Canadien	Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

A.3 Service and support

Further Support

If you have any further questions relating to the products described in this documentation, contact your local representative at the SIEMENS office nearest you.

Find your contact partner at:

<http://www.siemens.com/automation/partner>

A signpost to the documentation of the various SIMATIC products and systems is available at:

<http://www.siemens.de/simatic-tech-doku-portal>

The online catalog and the online ordering system is available at:

<http://mall.automation.siemens.com/>

Training center

Siemens offers a number of training courses to familiarize you with the SIMATIC automation system. Please contact your regional training center or the central training center in Nuremberg, D 90327 Germany.

Telephone: +49 (911) 895-3200.

Internet: <http://www.sitrain.com>

Technical Support

You can reach technical support for all A&D products at:

- Support Request form on the web:
<http://www.siemens.de/automation/support-request>
- Telephone: +49 180 5050 222
- Fax: +49 180 5050 223

Further information about our technical support is available in the Internet at www.siemens.com/automation/service

When you contact the Customer Support, please have the following information for the technician on hand:

- BIOS version
- Order No. (MLFB) of the device
- Installed additional software
- Installed additional hardware

Service & Support on the Internet

In addition to our documentation, we offer a comprehensive knowledge base online on the Internet at:

<http://www.siemens.com/asis>

There you will find:

- The Newsletter contains the latest information on your products.
- Numerous documents are available by searching through Service & Support.
- The current BIOS version.
- A forum is available for users and specialists to exchange experiences.
- Your local service partner for Automation & Drives in our contact database
- Information about local service, repairs, and spare parts. Lots more is available on the "Services" page.

You can find the latest information about your device at the following address:

<http://support.automation.siemens.com>

A.4 Catalog and A&D online ordering system (mall)

In our continually updated online catalog, you can find detailed information about products, systems and solution in the field of Automation and Drives and – using a personal password – place orders.

Address: <http://mall.automation.siemens.com>

ESD Guidelines

B.1 ESD Guidelines

What does ESD mean?

All electronic modules are equipped with highly integrated modules or components. Based on their design, these electronic components are highly sensitive to overvoltage and thus to discharge of static electricity.

The electrostatic sensitive components/modules are commonly referred to as ESD devices. You can also find the commonly used international designation ESD for electrostatic sensitive device.

Electrostatic sensitive modules are identified by the following symbol:



Caution

Electrostatic sensitive devices may be destroyed by voltages and energies that are undetectable to a human. Voltages of this kind occur as soon as a component or an assembly is touched by a person who is not grounded against static electricity. The damage to a module as a result of overvoltage cannot usually be detected immediately. It may only become apparent after a long period of operation.

Electrical charge

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 correspond with specifications to IEC 801-2.

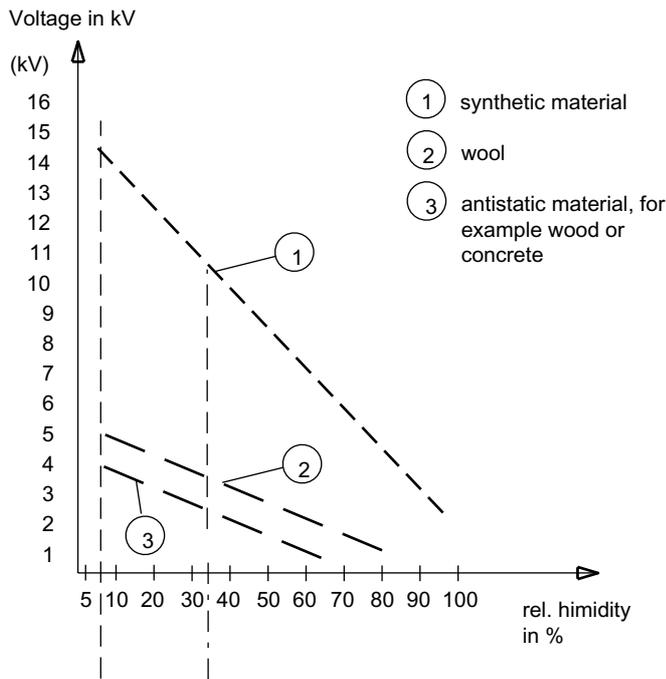


Figure B-1 Electrostatic voltages on an operator

Basic protective measures against discharge of static electricity

- Ensure good equipotential bonding:
When handling electrostatic sensitive devices, ensure that your body, the workplace and packaging are grounded. This helps you avoid static charge.
- As a general rule, only touch electrostatic sensitive devices when this is unavoidable (e.g. during maintenance work). When you touch modules, make sure that you do not touch either the pins on the modules or the printed conductors. This prevents any discharge of static electricity to sensitive component and thus avoids damage.

Discharge electrostatic energy from your body before you perform measurements on a module. To do so, touch a grounded metallic object. Always use grounded measuring instruments.

Abbreviations

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 controller
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 label
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
CPU	Central Processing Unit	CPU
CSA	Canadian Standards Association	Canadian standardization organization
CTS	Clear To Send	Clear to send

Abbreviations

C.1 Abbreviations

Abbreviation	Term	Meaning
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 drive
HDA	High Definition Audio	
HU	Height unit	
HMI	Human Machine Interface	User interface
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	

Abbreviation	Term	Meaning
I/O	Input/Output	Data input/output on computers
IDE	Integrated Device Electronics	
IEC	International Electrical 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	
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	
PC	Personal computer	
PCI	Peripheral Component Interconnect	High-speed expansion bus
PCMCIA	Personal Computer Memory Card International Association	
PE	Protective Earth	PE conductor
PG	Programming device	

Abbreviations

C.1 Abbreviations

Abbreviation	Term	Meaning
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	Total Cost of Ownership	
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.	
UMA	Unified Memory Architecture	
URL	Uniform Resource Locator	Designation of the full address of an Internet page
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	
VGA	Video Graphics Array	Video adapter which meets industrial standard
VRM	Voltage Regulator Module	

Abbreviation	Term	Meaning
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	Wireless local area network
WWW	World Wide Web	
XGA	Extended Graphics Array	Graphic standard, maximum resolution 1.024 x 768 pixels

Glossary

Application

An application is a program which builds directly on the MS-DOS / Windows operating system. Applications on your PG or PC, for example, are STEP 7, STEP 7-Micro/WIN.

ATAPI CD-ROM Drive

AT-Bus Attachment Packet Interface (connected to AT bus) CD-ROM drive

Automation device (AG)

The programmable logical controllers (PLC) of the SIMATIC S5 systems 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 systems (S5 or S7) 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.

Base memory

The base memory is a part of the main memory. Its size is 640 K for all programming devices. The size is entered in the SETUP menu under the entry "Base Memory" and is not changed even if the memory is extended.

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. Within the boot sequence, the operating system is transferred from the system data carrier to RAM.

Cache

High-speed access buffer for interim storage (buffering) of requested data.

CE marking

Communauté Européene (EC label of goods)

Chipset

Located on the motherboard, connects the processor with the RAM, graphic card, PCI bus and 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 port

A serial V.24 interface. The port 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 .

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.

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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 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.

Drop-down menu

In programs supported by GUI, a menu bar is found on the top margin of the screen. The menu titles contained in this line can be set either as drop-down or pull-down menus. Drop-down menus "roll" down as soon as the mouse pointer passes over a menu title. Pull-down menus only "roll" down when the menu title is clicked on. Functions can then be selected from the menus by moving the mouse cursor or by clicking a menu item.

EMC Guidelines

Directive concerning **Electromagnetic Compatibility**.

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 handling electrostatic sensitive devices.

Ethernet

Local network (bus structure) for text and data communication with a transfer rate of 10 Mbps.

Formatting

Basic partitioning of memory space on a magnetic data carrier into track 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 port 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.

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.

Image

This refers to the image, for example, of hard disk partitions saved to a file in order to restore them when necessary.

Interface

see Interface

Interface, MPI

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.

Interface, parallel

Information is transmitted byte for byte via a parallel interface (port). This means that the transmission rate is very fast. The PGs/PCs have one parallel interface (LPT1).

Interfaces

The connection between individual hardware elements such as PLCs, programming devices, printers or monitors via physical connections (cables).

IT networks

Networks for Information technology

LAN

Local Area Network 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.

LPT port

The LPT1 port (Centronics port) is a parallel interface that can be used to connect a printer.

Main memory

This is a RAM area in the CPU which is accessed by the processor during user program execution.

Main menu

Usually the main menu/initial menu of a program.

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 device or PCs. They are available as local modules, expansion modules, interfaces or mass storage (Mass storage module).

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 Embedded).

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.

Password

Unique sequence of characters that is entered for user identification.

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 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

Personal Computer Memory Card International Association Association consisting of approx. 450 member companies of 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.

Pixel

PixElement (picture point). The pixel represents the smallest element that can be reproduced on-screen or on a printer.

PROFIBUS / MPI

Process Field Bus (standard bus system for process applications)

RAM

The RAM is the total a read/write memory in a PG/PC.

Recovery CD

Contains the tools for setting up the hard disks and the Windows operating system.

Remove 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.

Reset

Hardware Reset: Reset/restart of the PC using a button/switch.

Restart

Warm start of a computer in operate state without switching off the power supply (Ctrl + Alt + Del).

Restore CD

The Restore CD is used to restore the system partition or the entire hard disk to factory state if the system has crashed. The bootable CD contains all the necessary image files. You can also create a boot disk allowing restoration via the network.

ROM

Read-Only Memory ROM is read-only memory in which every memory location can be addressed individually. They contain factory set programs and data that are not lost in the event of a power failure.

SCSI port

Small Computer System Interface Interface for connecting SCSI devices (e.g. hard disk or CD-ROM drives)

Serial interface

Data is transmitted one bit at a time via a serial port. They are used in all applications requiring minimum wiring and data transfer across greater distances.

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.

STEP 7

Programming software for the creation of user programs for SIMATIC S7 controllers.

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

User program

The user program contains all instructions and declarations, as well as signal processing data which can be controlled by the plant or the process. It is assigned to a programmable module (Module, programmable) (e.g. CPU, FM) and can be granulated into smaller units (blocks).

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 start

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 or 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

<

<Shift> key, 7-4

2

24 V DC power supply
Connecting, 6-1

A

Abbreviations, C-1
Ambient and environmental conditions, 4-6
Applications, 3-2
Arithmetic symbols, 7-5
Entering, 7-5
Assignment
Resources, 11-5

B

Battery, 2-2, 12-5
Battery change, 12-5
BIOS, 17-8
Boot Menu, 17-28
Defaults, 17-33
Main menu, 17-11
Menu layout, 17-10
Security menu, 17-25
Setup, 12-5, 17-8, 17-33
Setup menus, 17-9
Blanking plate, 16-10
Boot options, 17-15
BIOS Setup, 17-8
Boot sequence, 13-1

C

Calibrating, 8-10
Touch Screen, 8-10
CE marking, A-1
Cleaning Agents, 12-1

COA, 4-2

COM port

BIOS Setup, 17-20
Detailed descriptions, 17-2
Interfaces, 3-11

Commissioning

Windows XP Embedded, 8-2
Windows XP Professional, 8-4

Compact Flash

Partitioning, 11-9

Configuration, 3-5, 5-4, 8-1

Connecting, 7-6

24 V DC power supply, 6-1

Connecting external keyboard, 7-6

Peripheral equipment, 6-7, A-1

Power supply, 6-7

Cursor key, 7-6

D

Dash, 7-5

Data backup, 12-15

Data exchange, 9-1

Date, 17-12

BIOS Setup, 17-12

DC power supply, 15-4

Decimal point, 7-5

Declaration of conformity, A-1

Defaults

BIOS Setup, 17-33

Degree of protection, 15-1

Device

unpacking, 4-1

Device configuration, 17-33

DiagMonitor

Temperature monitoring, 10-1

Diagnosis

DiagMonitor, 10-1

Error Messages, 13-1

SOM (Safecard On Motherboard), 10-1

Troubleshooting, 14-1

Dimension Drawings

Blanking plate, 16-10

Dimensions, 15-1

Disk drives, 15-3

E

- Electrostatically sensitive devices, 2-2, B-1
- EMC Guideline, A-1
- EMC Guidelines, A-3
- Entering, 7-5
 - Arithmetic symbols, 7-5
 - Sign, 7-5
 - Special characters, 7-5
- Equipotential bonding, 6-5
- Error Messages, 13-1
 - on the screen, 13-1
 - Troubleshooting, 14-1
- ESD Guidelines, 2-2, B-1
- Ethernet, 9-1
 - BIOS Setup, 17-17
 - Detailed descriptions, 17-4
 - Interfaces, 3-11
- Exit menu
 - BIOS Setup, 17-31
- Expansion
 - Module, 11-6
 - PCI/AT cards, 11-6
 - Slots, 15-2
- Explanations, A-1

F

- Factory state, 12-7, 12-9
- FAQs, 14-1
- Feature, external, 3-8
- Field devices, 9-1
- Function key, 7-2

G

- General technical specifications, 15-1
- Graphic controller
 - Technical specifications, 15-3
- Guidelines, A-1
 - ESD Guidelines, B-1

H

- Hard disk, 15-3
- Hardware Options, 17-17
 - BIOS Setup, 17-17

I

- Identification data, 4-2
- Image

- creating, 12-15
- Industrial Grade
 - Compact Flash card, 3-5
- Initial commissioning
 - Windows XP Embedded, 8-2
 - Windows XP Professional, 8-4
- Installation guidelines, 5-3
- Integration, 9-1
 - Ethernet, 9-1
 - PROFIBUS, 9-1
 - SIMATIC S7, 9-1
 - SOFTNET S7, 9-1
- Interconnection to SIMATIC S7, 9-1
- Interfaces
 - Ethernet, 3-11, 9-1, 17-17
 - Keyboard, 17-16
 - PC/104, 17-6
 - PC/104-Plus, 17-7
 - PROFIBUS, 3-11, 9-1, 15-3
 - Serial, 15-3
 - USB, 15-3
- IT communication, 9-1

K

- Key, 7-5
 - Numeric key, 7-5
- Key code, 15-5
- Key panel, 7-1
- Keyboard, 7-6
 - BIOS Setup, 17-16
 - BIOS Setup, 17-16
 - External keyboard, 7-6
- Keyboard Features, 17-16
- Keyboard table, 15-5

L

- Labeling strips, 4-3
 - Handwritten strips, 4-3
- Language selection
 - Windows XP, 12-12
- LED 1/2
 - Output register, 17-41, 17-42
- License key, 12-6, 12-8
- Limitation of Liability, 12-2
- Lithium battery, 12-4
- Lower-case letter, 7-4
 - Toggling to upper-case letters, 7-4

M

- Main memory, 15-2
- Main menu
 - BIOS Setup, 17-11
- Memory Hole, 17-41
- Messages
 - On-screen error messages, 13-1
- Microsoft Windows Product Key
 - Identification data, 4-2
- Minus sign, 7-5
- Modules, 11-5
- Monitoring
 - DiagMonitor, 10-1
 - SOM (Safecard On Motherboard), 10-3
 - Temperature, 10-1
 - Watchdog, 10-2
- Motherboard
 - Layout and function, 17-1
 - Technical features, 17-2
- Mounting
 - Modules, 11-6
- Mounting position, 5-1
 - Permitted mounting position, 5-1
- Mouse, 7-7
 - Integrated mouse, 7-7
- Mouse pointer, 7-7
 - Direction, 7-7
 - Speed, 7-7

N

- Navigation, 7-6
- Note, 5-3
 - Mounting information, 5-3

O

- Online ordering system, 9-1
- Open
 - Device, 12-2
- Operating, 7-8
 - Touch Screen, 7-8
- Operating system
 - Windows 2000, 12-10, 12-11
 - Windows XP, 12-9, 12-10, 12-11
 - Windows XP Embedded, 12-13
- Operator Controls, 7-1
 - On the key panel, 7-1
- Order number
 - Identification data, 4-2
- Output register LED 1 / 2, 17-41, 17-42

P

- Partitioning
 - Windows 2000, 12-10
 - Windows XP, 12-10
 - Windows XP Embedded, 12-13
 - Windows XP Professional, 12-13
- Password
 - Boot, 17-26
 - Supervisor, 17-25
 - User, 17-25
- PC/104 port
 - Detailed descriptions, 17-6
- PC/104-Plus port
 - Detailed descriptions, 17-7
- PCI configuration, 17-21
- PCI/AT cards, 11-5
 - BIOS Setup, 17-21
 - Expansion, 11-5
- PCI/PNP ISA IRQ Resource Exclusion, 17-22
- Peripheral equipment, 6-7
 - Connecting, A-1
- Plus sign, 7-5
- Power menu, 17-27
 - BIOS Setup, 17-27
- Power supply
 - DC power supply, 15-4
 - Power requirements of the components, 15-4
- Primary Master, 17-12
- Processor, 15-2
- PROFIBUS, 9-1
 - Detailed descriptions, 17-4
 - Integration, 9-1
 - Technical specifications, 15-3

R

- Ramp-up, 13-1
- Recovery CD, 12-11
- Recovery functions, 12-11
- Repairs, 2-1, 12-2, 12-3
- Restart, 8-4
- Restore CD, 12-6, 12-8

S

- Safety Information, 2-1
- Scrolling, 7-6
- Security menu
 - BIOS Setup, 17-25
- Serial ports, 3-11
 - BIOS Setup, 17-20
- Service, A-4

- setting, 8-10
 - Touch software, 8-10
- Setting up partitions, 12-10
- Sign, 7-5
 - Entering, 7-5
- SIMATIC S7, 9-1
 - Integration, 9-1
- Softkey, 7-2
- SOFTNET S7
 - Integration, 9-1
- Software, 12-6
- SOM (Safecard On Motherboard), 10-3
 - Temperature monitoring, 10-3
- Special characters, 7-5
 - Entering, 7-5
- SRAM
 - Base address register, 17-40
 - Control register, 17-41
- Supply voltage, 15-1
- Support, A-4
- System Date, 17-12
 - BIOS Setup, 17-11
- System parameters, 17-33
- System partition, 12-6, 12-8
- System resources, 17-36
 - Currently allocated system resources, 17-36
- System Time, 17-12
 - BIOS Setup, 17-11

T

- Technical specifications, 15-1
- Temperature, 15-2
 - Monitoring, 10-1
- Terminal Application, **9-1**
- Third-party modules, 14-2
- Time, 17-12
 - BIOS Setup, 17-11, 17-12
- toggle, 7-4
 - between lower-case and upper-case letters, 7-4
- Tools, 12-2
- Touch Screen
 - Special Features, 8-11
- Touch Screen, 7-8, 8-10, 8-11
 - Calibrating, 8-10
 - Faulty operation, 8-11
 - Operating, 7-8
- Touch software, 8-10, 8-11
 - Faulty operation, 8-11
 - setting, 8-10
 - Special Features, 8-11
- Training center, A-4
- Transport, 4-1

- Trigger register
 - Watchdog, 17-38
- Troubleshooting/FAQs, 14-1
- Type plate, 4-2
 - Identification data, 4-2

U

- Unpacking
 - Device, 4-1
- Updates
 - Operating system, 12-14
 - User programs and drives, 12-14
- Upper-case letter, 7-4
 - Toggle to lower-case letter, 7-4
- USB, 15-3
 - Detailed descriptions, 17-5
 - Technical specifications, 15-3
- USB mouse, 7-7
- USB port, 7-1, 7-7
- User
 - Password, 17-26
 - Profile, 17-32

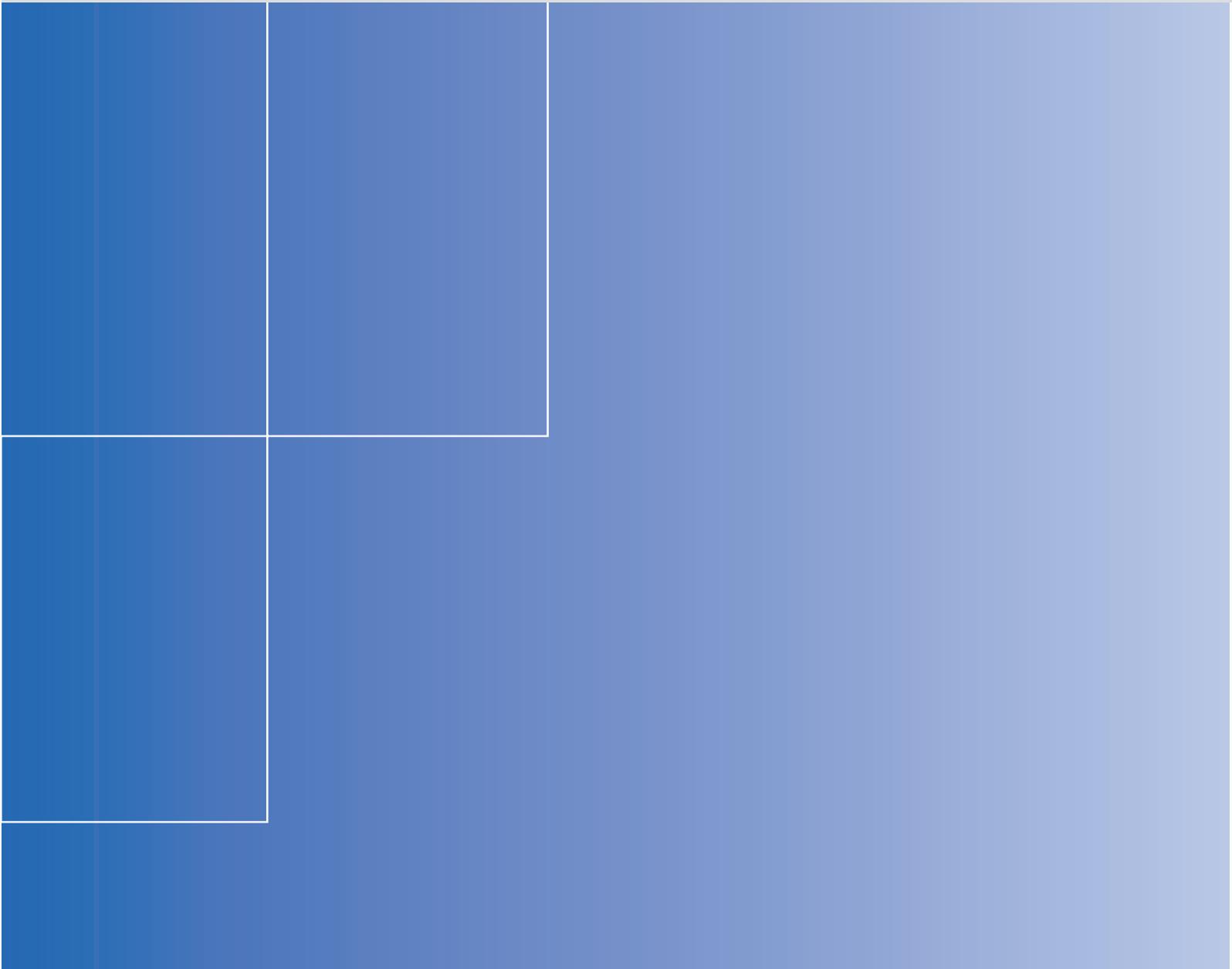
V

- ventiducts, 4-6
- Versions Menu
 - BIOS Setup, 17-30

W

- Warranty, 2-1
- Watchdog, 10-2
 - Monitoring function, 10-2
 - Monitoring times, 10-2
 - Trigger register, 17-38
- Weight, 15-1
- Windows 2000
 - Partitioning the hard disk, 12-10, 12-11
- Windows XP
 - Language selection, 12-12
 - Partitioning the hard disk, 12-10, 12-11
- Windows XP Embedded
 - COA, 4-2
 - Data backup, 12-15
 - Initial commissioning, 8-2
 - Partitioning the hard disk, 12-13
 - Reinstalling the Operating System, 12-6
 - Setting up partitions, 12-13
 - Updates, 12-14
- Windows XP Professional

COA, 4-2
Data backup, 12-15
Initial commissioning, 8-4
Partitioning the hard disk, 12-13
Reinstalling the operating system, 12-8
Setting up partitions, 12-13
Updates, 12-14



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