

# SIEMENS

## SIMATIC




### Programming device SIMATIC Field PG M2

#### Operating Instructions

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## 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.

 <b>DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
 <b>WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
 <b>CAUTION</b>
with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.
<b>CAUTION</b>
without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.
<b>NOTICE</b>
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:

 <b>WARNING</b>
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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# Introduction

## 1.1 Preface

### Purpose of this documentation

This manual contains all the information you need to commission, and use the SIMATIC Field PG M2.

It is intended both for programming and testing/debugging personnel who commission the device 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.

### Validity of this documentation

This documentation applies to all suppliable versions of the SIMATIC Field PG M2, and describes the versions delivered as of March 2008.

### Position in the information scheme

These operating instructions are part of the supplied "Software for Field PG" DVD.

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

### Conventions

The abbreviation PG or device is also used in this documentation instead of the product name SIMATIC Field PG M2.

### History

Currently released versions of this operating manual:

Issue	Comment
10/2007	First edition
03/2008	<ul style="list-style-type: none"><li>• Windows Vista operating system</li><li>• Remedy</li></ul>


## 1.2 Guideline to the operating instructions

<b>Contents format</b>	<b>Contents</b>
Table of Contents	Organization of the documentation, including the index of pages and chapters
Introduction	Purpose, layout and description of the important topics
Safety-related notices	Refers to all the valid safety-technological aspects which are derived from statutory regulations and should be adhered to when installing, commissioning and operating the product/system
Description	Fields of application, the features and the structure of the product/system
Application Planning	Preparatory considerations relating to storage, transport, environmental and EMC conditions.
Connecting	Options of connecting the product and connection instructions
Commissioning	Commissioning the product/system.
Integration	Options of integrating the product into existing or planned system environments/networks
Operation	Operating the SIMATIC software
Expansions / Configuration	Procedure for installing expansion devices (memory).
Maintenance and service	Replacement of hardware components, restoring and setup of the operating system, installation of drivers and software
Troubleshooting/FAQs	Problems, cause, remedy
Specifications	General specifications in compliance with relevant standards and current/voltage values
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
ESD guidelines	General ESD guidelines.



## Safety-related notices


### 2.1 General safety instructions

 <b>CAUTION</b>
Please observe the safety instructions on the back of the cover sheet 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, VDE, UL, and CSA. 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.

 <b>WARNING</b>
Unauthorized opening and improper repairs can cause considerable damage to property or danger for the user.

#### System expansions

Only install system expansion devices designed for this device. The installation of other expansions can damage the system and violate the radio-interference suppression regulations. Contact your technical support team or where you purchased your PC to find out which system expansion devices may safely be installed.

<b>CAUTION</b>
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!

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, follow the disposal instructions, and protect against direct exposure to sunlight, humidity, and condensation.

## ESD guidelines

Modules containing electrostatic 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 any static electricity from your body before handling modules that are sensitive to electrostatic discharge (for example, by touching a grounded object).
- All devices and tools must be free of static charge.
- Always pull the mains connector 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.

## 2.2 Additional safety information when using wireless LAN

As your device has an integrated WLAN card, you must observe the following safety information:

- The transmitted radio waves can cause an unpleasant droning in hearing aids.
- Switch off the device if traveling by aircraft or car.
- Switch off the radio components on the device if you are in a hospital or in the proximity of a medical electronic system. The transmitted radio waves can have a negative effect on the function of medical equipment.
- Keep the device at least 20 cm away from pacemakers, otherwise the radio waves may interfere with the pacemaker.
- When the radio components are switched on, do not bring the device in the vicinity of flammable gases, or into a potentially-explosive atmosphere (paint shop, for example), as the transmitted radio waves could trigger an explosion or a fire.
- The range of the radio connection depends on the environmental and surrounding conditions.
- With data traffic via a wireless connection, it is also possible for unauthorized third parties to receive data.

Siemens is not responsible for radio or television interference that has been caused by unauthorized changes to this device. Furthermore, Siemens shall not be held responsible for the use or replacement of connection lines and devices that have not been recommended by Siemens. The user alone is responsible for remedying faults that have been caused by such an unauthorized change, or for the use or the replacement of the device.



## Description

### 3.1 Overview

The SIMATIC Field PG M2 is a complete, ready-to-operate, and pre-configured programming tool for the components of SIMATIC industrial automation.



Figure 3-1 SIMATIC Field PG M2

## 3.2 Application areas

The compact SIMATIC Field PG M2 is designed for mobile use, such as:

- configuring, programming as well as simulating automation solutions in the office
- commissioning, maintenance and servicing automation solutions on site at the plant
- teleservicing via integrated modem
- use of modern office applications in the office or when traveling

The rugged construction - for example the impact-proof and distortion-resistant magnesium die-cast housing and large bumpers on the corners - make the Field PG M2 particularly suitable for tough industrial daily routine.

## 3.3 Highlights

### Highlights of the Field PG M2

#### **Greatest possible mobility guaranteed by:**

- Notebook structure (dimensions, weight) optimal for use in cramped spaces at the plant as well as when traveling
- High-performance Li-ion battery with 74 Wh ensures long network-independent operation
- Die-cast-magnesium casing with soft plastic corners - providing good protection for the electronics inside
- Powerful graphics controller for dual display support
- Large 15" display with XGA and SXGA+ resolution guarantees ergonomic working

#### **Industrial functionality:**

- Integrated PROFIBUS DP/MPI interface
- COM/TTY interface
- Programming interface to memory card, Micro Memory Card, and S5 EPROM modules
- Link to company networks without additional hardware costs due to integrated gigabit Ethernet interface
- Triband Wireless LAN (corresponding to IEEE 802.11 a/b/g)
- Fast, easy to replace SATA hard disk
- 4 USB 2.0 ports (high-current capable)
- HDA (high definition audio) interface for sound and modem
- Integrated modem (V.92)

#### **System availability:**

- Symantec Ghost data backup software


## 3.4 Features


General features	
Type of construction	Mobile device
Processor	Pentium M2 Intel Core 2 Duo <ul style="list-style-type: none"> <li>• Standard variant: T7250 (2.0 GHz, 800 MHz FSB, 2 MB cache)</li> <li>• Premium variant: T7500 (2.2 GHz, 800 MHz FSB, 4 MB cache)</li> </ul>
RAM	<ul style="list-style-type: none"> <li>• DDR2 SDRAM, upgrades depend on configuration</li> <li>• Expandable up to 4 GB SDRAM (DDR2)</li> </ul>
Graphics	<ul style="list-style-type: none"> <li>• Graphics memory 8 to 256 MB SDRAM, partially using dynamic sharing of system memory</li> <li>• VGA: 1600 x1200 / 32 Bit color depth / 85 Hz</li> </ul>
Power supply	100 - 240 V wide range
Drives and storage media	
Hard disk	≥ 80 GB serial ATA 2.5" hard disk
Diskette drive	Standard (1.44 MB or 720 KB)
Optical drive	DVD+-R/+-RW
Interfaces	
PROFIBUS/MPI (12 Mbps)	12 Mbps (isolated potential, compatible to CP 5611)
Ethernet	10/100/1000 Mbps (RJ-45)
USB	2 x left, 2 x back; (high-current)
Modem	V.92 (connection via RJ11)
Serial	COM1 (V.24) or AG (TTY)
Parallel	LPT
VGA	Interface for external monitor
Keyboard	Standard notebook
LEDs	Num-Lock Shift-Lock WLAN active Device state Battery state Access to HD / FD / CD/DVD S5 module / memory card MPI/DP active

Software	
Operating systems	Pre-installed: <ul style="list-style-type: none"> <li>• Windows Vista Ultimate (5-language: German, English, French, Spanish, Italian)</li> <li>• Windows XP Professional MUI</li> <li>• MUI: Multi Language User Interface; 5 languages (English, German, French, Spanish, Italian)</li> </ul>

### 3.5 Design

#### 3.5.1 Exterior design

View with closed display	Pos	Description
	(1)	Device handle
	(2)	Keyboard LEDs
	(3)	System LEDs

Front view with display open	Pos	Description
	(1)	Display latch
	(2)	Display
	(3)	Stereo speakers
	(4)	On/off button (power)
	(5)	Mouse buttons
	(6)	Touchpad
	(7)	Keyboard



View from rear	Pos	Description
	(1)	Ventilation air outlet
	(2)	DC IN 18.5 V
	(3)	USB
	(4)	VGA
	(5)	LPT
	(6)	MPI/DP Multipoint Interface
	(7)	COM1/TTY
	(8)	Ethernet


View of left side	Pos	Description
	(1)	USB with cover open
	(2)	Micro Memory Card interface
	(3)	Memory card interface
	(4)	Ventilation air inlet
	(5)	Opening for Kensington lock

View of right side	Pos	Description
	(1)	Express card and PC card slot
	(2)	Microphone
	(3)	Headphones
	(4)	Optical drive
	(5)	Diskette drive
	(6)	Modem port (RJ-11)

View from below	Pos	Description
	(1)	Memory expansion
	(2)	Rechargeable battery
	(3)	Exchangeable hard disk unit
	(4)	Ventilation openings
	(5)	Rating plate and Certificate of Authenticity

### 3.5.2 Operator controls

#### 3.5.2.1 On/off button

On/off button	Pos	Description
	(1)	The on/off button (power) has the following functions: <ul style="list-style-type: none"><li>• Switch PG on/off (hold the button down for approximately 1 second; the response depends on the Windows power options settings)</li><li>• Switch PG off in the event of a fault (hold down for more than 7 seconds)</li></ul>

#### Configuring the on/off button

You can switch the PG from normal mode to the following states using the on/off button (Power button), by closing the display cover, or from the Windows Start menu:

- Standby mode (Save to RAM),
- Hibernate (save to disk), default setting
- Off (Windows is brought down).

When the device is brought down from Windows, the device automatically switches off. If the device is not in Windows, it can be switched off using the on/off button.

---

#### Note

You can use Settings > Control Panel > Power Options under Windows XP to configure the response of the on/off button, and of the display cover. You can also assign these settings to the hot keys FN + F5 and Fn + F6.

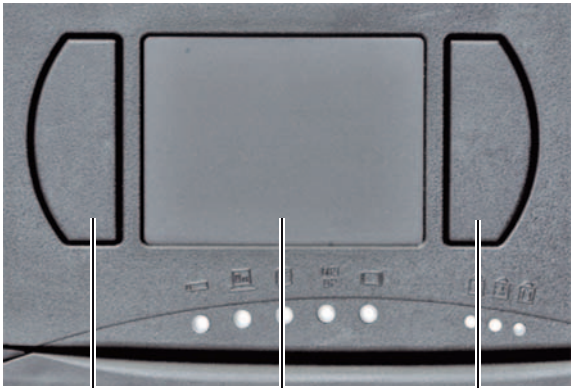
To completely disconnect from the power supply network you must pull out the power cord and dismantle the battery.

---

CAUTION
<p>In accordance with the settings in the Windows Power Options, the Field PG supports different operating states. The Power Options have been preset by the factory in such a way that in the factory state the device always adopts defined operating states (On, Standby, Hibernation, Off).</p> <p>By changing these settings, and by adding extra hardware (such as USB components) or software to the device, you can modify the operating states so that the device cannot switch to Hibernation or Standby mode. Even though the screen display is dark, relevant consumers remain switched on in the device.</p> <p>Please remember to always bring down the Field PG or set it to Hibernation prior to transporting in the backpack. When the device is in these states, all the status LEDs on the device go off when you disconnect the power supply. This way you can ensure the device is not switched on and the battery is not unintentionally discharged during transportation.</p>

Press the on/off button briefly to reactivate the PG from Standby mode or Hibernation. In Standby mode the device LED flashes, and in Hibernation all the displays are switched off.

### 3.5.2.2 Touchpad

Touchpad	Pos	Description
	(1)	<p>Mouse buttons</p> <p>Press the left button to select an object. The response to the right button depends on the user program.</p>
	(2)	<p>Touchpad</p> <p>The touchpad can be used in many programs (operated by mouse) as an input device for controlling the cursor and selecting menus. You can position the touch-sensitive cursor anywhere on the screen.</p>

**Note**

The touchpad function (mouse pointer and mouse buttons) can be enabled and disabled with the hotkey Fn + F4.

You can configure the advanced touchpad functions under "Mouse" in the Windows Control Panel. The technical principle used means that it is possible to make unintentional mouse clicks with the touchpad when it is used in a "noisy" environment. In such environments, it is a good idea to disable the tap function in the touchpad driver, and to use the mouse buttons.

**3.5.2.3 Keyboard**

**Keyboard arrangement**

The keyboard is divided into the following function groups:

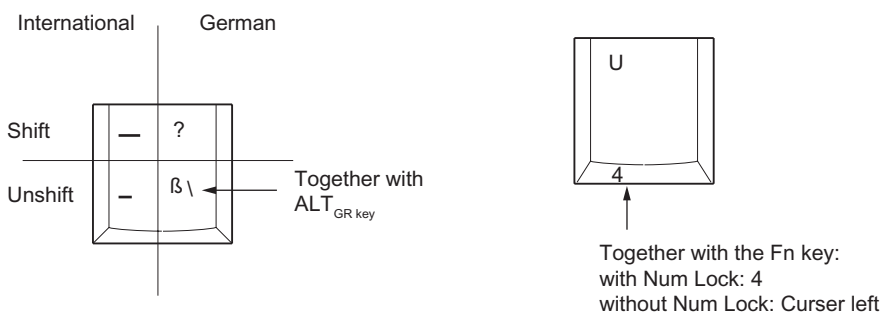
- Alphanumeric keyboard field with hotkeys
- Function keys
- Control keys

**Repeat function**

All the keys of the keyboard are equipped with a repeat function, i.e. the character is repeated for as long as the key is pressed.

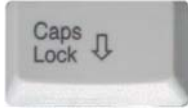




**Keyboard labeling**

The keyboard comes with international and German labeling.



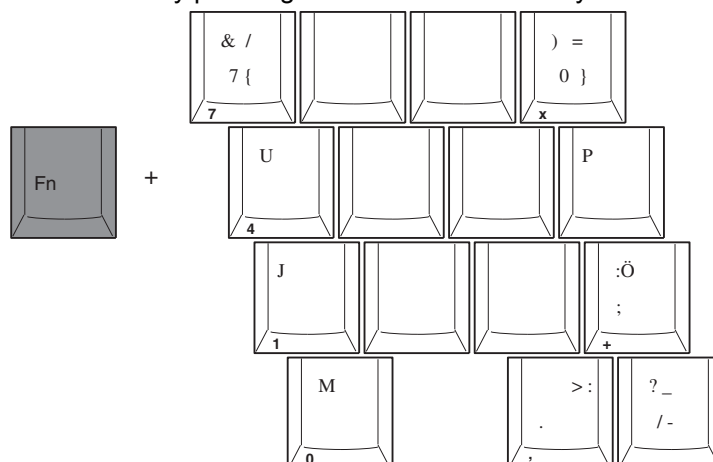
### Alphanumeric keyboard field

The largest block of keys is the alphanumeric keyboard with all the keys for letters, numerals and special characters. The arrangement of the characters essentially corresponds to that of a normal typewriter. However, there are a few keys that undertake specific special functions for the PG.

Key	Function
	<b>Caps Lock</b> The caps lock key activates uppercase mode. All the characters are then output as capital letters. With a multiple labeled key, the upper left character is displayed. You can switch off the caps lock by pressing the shift key.
	<b>Num Lock key</b> This toggles the emulated numerical keypad between alphanumeric keys and number keys. The LED display lights up.
	<b>Scroll Lock</b> Use this key to decide whether the cursor keys should move the cursor or the screen section (this functionality is not supported by every program).
	<b>Start key (under Windows)</b> The start key calls up the Windows Start menu.
	<b>Menu key (under Windows)</b> The menu key calls up the menu for the selected object.

### Number pad with Fn key

The characters and numbers labeled on the front of the number pad keys can be used by simultaneously pressing Fn and one of these keys. Num lock must be active for this.



### Function keys

Twelve programmable function keys are arranged in the topmost row of keys. The arrangement of these keys depends on the software loaded.

### Hotkeys (combination keys)

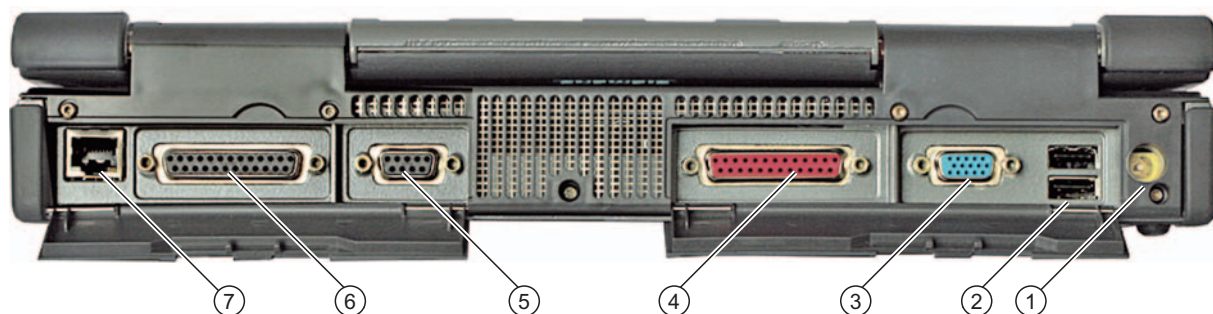
Using the Fn key and a 2nd key (e.g. a function key) you activate further key codes for specific applications.

Key	Function
Fn + Home	Cursor at start
Fn + End	Cursor at end
Fn + ESC	Disable PG
Fn + F1	Switch speaker on/off
Fn + F2	Control menu for the display/monitor display
Fn + F3	Switch WLAN on/off
Fn + F4	Switch touchpad function (mouse pointer and mouse button) on/off
Fn + F5	Standby mode (depending on the configuration of the Power Button in the Windows Power Options)
Fn + F6	Hibernation mode (depending on the configuration of the Power Button in the Windows Power Options)
Fn + F7	Reduce volume
Fn + F8	Increase volume
Fn + F9	Reduce brightness of screen
Fn + F10	Increase brightness of screen

### 3.5.3 Connecting elements

#### Interfaces

Layout of the interfaces on the rear of the device







Pos	Designation	Description
(1)	DC IN 18.5 V	Connector for supplied power unit
(2)	USB 2.0	2 ports for USB devices
(3)	VGA	Connector for compatible external monitor
(4)	LPT	Connector for devices with parallel ports such as printers or scanners
(5)	PROFIBUS / MPI	MPI interface (RS-485, electrically isolated), 9-pin D-sub socket
(6)	COM1 V.24	COM1(TTY) for connecting S5 programmable controllers, or standard V.24 via the "Serial Port Adaptors D9/D25" supplied for connecting a serial device such as a modem or mouse.
(7)	ETHERNET	RJ-45 Ethernet port 10/100/1000 Mbps

### 3.5.4 Status displays



#### System LEDs

The system LEDs indicate the operating state of the battery, the device, the drives, and the MPI/DP and memory card interface. The LEDs can also be seen when the display is closed.



Symbol	LED	Description
	GREEN ORANGE RED OFF	Battery is charged Battery is being charged Battery capacity too low (only with battery operation) No battery
	GREEN ORANGE GREEN flashing ORANGE flashing OFF	Line operation Battery operation Line operation, device is in Standby Battery operation, device is in Standby Device is switched off
	GREEN	Access to the external memory (hard disk, optical drive, diskette drive)
MPI/DP	GREEN	MPI interface active
	GREEN	Module programming, memory card or micro memory card active

The access displays of the disk drives are located on the right of the device for the respective drives.




## Keyboard LEDs

The keyboard LEDs indicate the current state of the Num Lock and Shift Lock keys. After switching on the device, the operating displays of the keys light up briefly. The keyboard is ready.

Symbol	LED	Description
	GREEN OFF	Num Lock switched on Num Lock switched off
	GREEN OFF	Shift Lock switched on Shift Lock switched off

## WLAN LED

The LED to the far right next to the keyboard LEDs indicates if WLAN is active.

Symbol	LED	Description
	ORANGE OFF	WLAN switched on WLAN switched off



## Planning before using the device

### 4.1 Transport

#### Before you set off

Observe the following information when you are traveling with the PG:

- Save important data from the hard drive.
- For safety reasons, switch off the radio components (Wireless LAN) if you can't be sure that the transmitted radio waves will not interfere with any electric or electronic equipment in your vicinity.
- If you want to use your PG during a flight, first of all ask the airline company if you are permitted to do so.
- When traveling abroad, ensure the power adapter can be used with the local mains voltage. If this is not the case, you must acquire the appropriate adapter for your PG. Do not use any other voltage transformers!

#### NOTICE

If you are traveling to a different country, check to see if the local voltage and the specifications of the mains are compatible. If this is not the case, purchase a mains cable that corresponds to the local circumstances. Do not use connection adapters for electrical appliances in order to connect the PG to them.

If you are using the modem, there could be incompatibilities with the local telecommunications system.

#### CAUTION

The integrated WLAN is approved for use in certain countries, depending on which configuration you ordered. This information is shown in your order documentation.

## Transport

Despite the fact that the device is of a rugged design, its internal components are sensitive to severe vibrations or shock. With just a few simple transport precautions you can help to create a trouble-free operation.

- Make sure that the PG is no longer accessing the drives, and remove all data media (such as CDs) from the drives.
- Switch off the PG (refer to on/off button).
- Disconnect the peripheral devices from the PG.
- Close the display and the interface covers on the back of the device.
- Use the integrated handle for brief transportation.
- For longer transport, put the PG with all its accessories into the provided backpack.

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

<b>CAUTION</b>
<b>Risk of damage to the device!</b>
If you are transporting the PG in extreme weather conditions with large fluctuations in temperature, care must be taken to ensure that no moisture forms on or in the device (condensation).
If you notice any condensation, wait around 12 hours before you switch on the device.

## 4.2 Unpacking and checking the delivery unit

### Unpacking the device

Note the following points when you unpack 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.
- Check the delivery and your specially ordered accessories against the packaging list to ensure nothing is missing. Please inform your local dealer of any disagreements or transport damages.

## 4.3 Device identification data

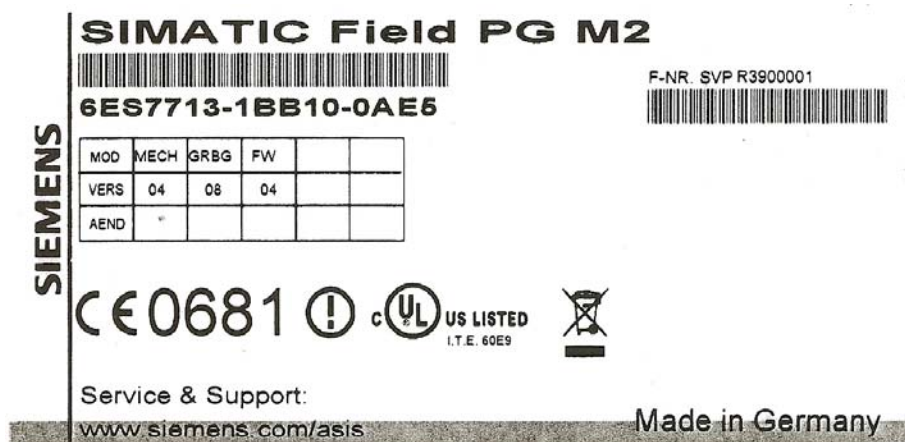
### Noting the device identification data

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

Enter the following data in the table below:

- Serial number: The serial number (S VP) is located on the rating plate on the bottom of the device.

### Rating plate



- Order number of the device
- Microsoft Windows "Product Key" from the "Certificate of Authenticity" (COA). The COA label is stuck to the bottom on the device. The Product Key is always required to reinstall the operating system.

### COA label



Serial number	S VP ...
Order No.	6ES ...
Microsoft Windows Product Key	
Ethernet address	



## Setting up

### 5.1 Positioning the device

- Position the programming device to ensure comfortable operation and safety.
- Position the programming device with its bottom on a flat surface and at a comfortable height and distance.
- Ensure that a power outlet is easily accessible near your workplace.
- Ensure that there is enough space for connecting peripherals.
- Do not obstruct any ventilation slots when you position the device.
- Open the display by sliding the lock in direction of the arrow.
- Flip the display open and adjust it to a convenient viewing angle. The display can be adjusted within any inclination angle from 0 to 180°.

**CAUTION**

Always set the PG down on its underside, otherwise there is a risk that it will fall over and damage sensitive components.

**⚠ WARNING**

The outer housing is made of Magnesium. If it comes into contact with open flame, there is a risk of fire / spreading fire.





## Connecting

### 6.1 Connecting peripherals

To be noted before you connect the device

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

<b>CAUTION</b>
Strictly adhere to the specifications for peripheral equipment.

 <b>WARNING</b>
When you connect long signal cables (particularly with connections between buildings), make sure the signal cables are always integrated into the local equipotential bonding system (connecting the cable shielding to the protective conductor).

### Connecting the external screen

<b>NOTICE</b>
Ensure the screen used is suitable for the set resolution and vertical refresh rate. Otherwise, this could lead to damage.

---

**Note**

The default settings for the display are the simultaneous operation of flat display and external screen. In this case, the display is optimized for display format 1024 x 768 pixels (XGA), or 1400 x 1050 pixels (SXGA+). Modes with less resolution and text modes will be expanded in this format.

If an external screen is connected that supports just one lower resolution than the display, in simultaneous mode the resolution of the display is reduced to the resolution of the external screen.

With the Hotkey Fn + F2 you can call up the control menu for the display/monitor settings and set for far-reaching graphics functions.

---

### Connect USB devices

Connect to the USB 2.0 ports devices like disk drives, mouse, keyboard and printer.

<b>NOTICE</b>
All four ports are designed as high-current USB 2.0 (500 mA). You cannot use all of these as high current at the same time, however (see Specifications).

### Connect the microphone

You can connect an external microphone to the 3.5 mm jack for the microphone (pink).

To record using the microphone, in the Windows Start menu, select **Programs > Accessories > Entertainment > Sound Recorder**.

### Connect headphones

You can connect headphones, or external speakers that are equipped with a 3.5 mm stereo jack plug to the headphones jack (green).

You can control the volume using the speaker button on the taskbar, or using hotkey Fn + F7 / F8.

## 6.2 Connecting the device to power

### To be noted before you connect the device

**Note**

The external power unit supplies power to the Field PG in line operation with 120 V and 230 V power supply networks. The setting of the voltage range takes place automatically.

The battery is charged in line operation, that's why you need to install the supplied battery before you connect the device to the power supply.

 **WARNING**

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

 **WARNING**

The device is designed only to be used in grounded power supply systems (TN systems to VDE 0100, part 300, or IEC 60364-3).

It must not be used in ungrounded, or impedance-grounded power systems (IT systems).

 **WARNING**

The Field PG may only be operated using the supplied power supply and / or using the supplied battery.

The external power supply may not be covered (risk of overheating).

 **CAUTION**

The mains connector must be disconnected to fully isolate the device from mains.

**Localized information**

**Outside of the USA and Canada, operation on a 230 V power supply:**

This device is equipped with a safety-tested power cord which may only be connected to a grounded shockproof power outlet. If you choose not to use this cable, you must use a flexible cable of the following type: At least 18 AWG (0.82 mm<sup>2</sup>) conductor cross-section, and 15 A / 250 V shockproof connector. The cable set must conform to the safety regulations, and bear the identification marks prescribed by the country in which the system is to be installed.

**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.



**120 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 SVT or SJT with three leads, at least 18 AWG conductor cross-section, max. 4.5 m long, and parallel Type F connector 15 A, min. 125 V.


**240 V AC power supply**

A flexible power cord with UL approval and with CSA label should be used. It must also have the following features: Type SJT with three leads, at least 18 AWG conductor cross-section, max. 4.5 m long and tandem Type F connector 15 A, min. 250 V.

**Connecting**

Steps for connecting the device to mains		
1	Turn the PG so that the closed display unit is lying on the table.	
2	Unlock and fold up the battery cover on the underside of the device.	
3	Insert battery.	
4	Close the cover and turn the device round again.	
5	Plug the supplied power supply cable into the external power supply.	
6	Plug the low plug into the connection on the device.	
7	Connect the external power supply to a power point with grounded grounding wire.	

## 6.3 Connect the modem to the telephone outlet

1	Connect the supplied modem cable to the telephone adapter for the local country.	
2	Open the port cap.	
3	Connect the modem cable to the modem connection of the PG.	
4	Connect the modem cable to your telephone outlet.	

### NOTICE

If you are connecting your modem to a TAE N connection, this telephone or data channel is occupied. It can not be used simultaneously for other communication devices. After the data transfer, remove the modem plug from the TAE N socket; no other communication devices can be used if the cable is still connected.

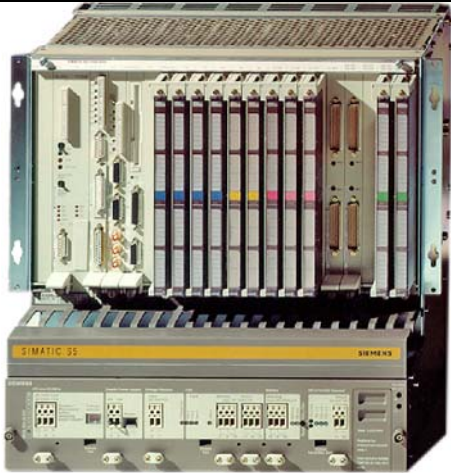

Strong electrical noise fields can cause transmission errors or a connection abort. In these cases, you should reduce the interference by moving further away from the source.

## 6.4 Connect the PG to the S5 automation device

To be noted before you connect the device

<b>NOTICE</b>
The port is non-isolated. The SIMATIC STEP 5 programming software, and the connecting cable (order no. 6ES5734-2BD20) for connecting to the S5 programmable controller are not always supplied as standard.


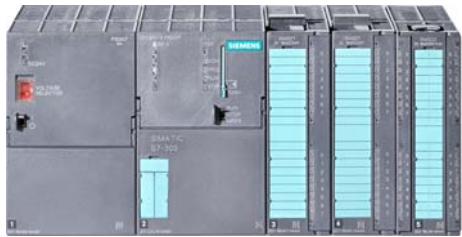
How to connect to an S5 automation device	
1	Switch off your device.
2	Plug the cable into the COM1/V.24 modem/AG port.
3	Screw the connector into place.
4	Insert the cable into the respective port on the CPU in the automation device.



<b>CAUTION</b>
You could damage the port if you use the wrong cable.

## 6.5 Connect the PG to the S7 automation system or the PROFIBUS network

You can connect the PG to a SIMATIC S7 automation system or a PROFIBUS network via the isolated potential\*) PROFIBUS/MPI interface. The MPI cable (5 m) for connecting to SIMATIC S7 CPUs (order number: 6ES7901-0BF00-0AA0) is supplied as standard. Transmission rates of no more than 187.5 Kbps are possible with this cable. To achieve baud rates higher than 1.5 Mbps, you will need a 12 Mbps PROFIBUS connecting cable (order number 6ES7901-4BD00-0XA0).

How to connect to an S7 automation system		
1	Switch off your device.	
2	Plug the cable into the COM1/V.24 modem/PLC port.	
3	Screw the connector into place.	
4	Insert the cable into the respective port on the CPU. In the disturbed environment: Bus connector 6ES7972-0BB10-0XA0 or 6ES7972-0BB20-0XA0 6ES7901-0BF00-0AA0 (5m long)	

\*) Electrically isolated within the safety extra-low voltage circuit (SELV)

### CAUTION

You could damage the port if you use the wrong cable.





## Commissioning

### 7.1 Requirements for commissioning

The operating system and system software of your device are preinstalled on the hard disk.

<b>CAUTION</b>
----------------

<b>Risk of damage to the device!</b>
--------------------------------------

Allow the device to warm up slowly to room temperature before you start it up. If you notice any condensation, wait around 12 hours before you switch on the device.
--

### 7.2 Basic commissioning - initial startup

The operating system is set up automatically on the programming device when it is **first** started. The following tasks need to be performed:

1. Press the on/off button and hold it down for at least 1 second. The PG conducts a self-test. During the self-test, this message appears:  
`Press F2 to go to SETUP Utility /Press ESC to go to Bootmanager`
2. Wait until this message is cleared, then follow the instructions on the screen.
3. Type in the Product Key as required. You find this key on the "Certificate of Authentication", in the "Product Key" line.

<b>NOTICE</b>
---------------

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

<b>Do not</b> change the default BIOS settings, otherwise the operating system setup may become corrupted.
--

4. Automatic restart

After you have entered all necessary information, and after the operating system setup is completed, the PG is automatically restarted and displays the user interface of the relevant operating system.

From now on, after you switch on the PC, the user interface of the operating system is automatically opened when the startup routine is completed.

### Startup with Microsoft Windows

The menus, dialogs, and keyboard layout are set up in English under Windows XP MUI. You can set another language and another keyboard layout by selecting **Start > Control Panel > Date, Time, Language, and Regional Options > Add other languages**.

### Authorization / License key

A product specific authorization or a License Key (user authorization) is required to use the STEP 5-, STEP 7- and WinCC flexible programming software. This protected software may only be used with the relevant authorization. The authorization and license keys for the SIMATIC software are included on the supplied license key diskette.

To unlock the software:

- Insert the license key diskette into your diskette drive.
- Click on the Start button in Windows and
- Open the Automation License Manager with the menu command **Simatic > License Management > Automation License Manager**. Use this program to install the authorization or license key to your hard disk.

#### NOTICE

The license key diskette supplied with the Field PG only contains the authorization or license keys for the SIMATIC software you have ordered. The SIMATIC software you receive will correspond to your order form.

The license key diskette of the supplied "Upgrade Installation" version only contains the software for upgrading an existing authorization or existing license keys.

Software installed on the PG for which there is no authorization or a license key in the delivery package, cannot be used or will only run in Trial mode.

Keep the License Key diskette with its authorization or license key in a safe place.

## 7.3 Notes on operation

### 7.3.1 Rechargeable battery

#### Battery operation

The battery (lithium ion) enables mobile use of the device, independently of an external power supply. It also protects against data loss in the even of a power failure.

<b>NOTICE</b>
---------------

You should install the battery before you connect the device to the power supply. Use only the battery supplied with the device.
--

As soon as the external power supply is connected, the battery will start charging. In doing so, the following conditions are important:

- When the device is switched off the charging process takes around 3 hours.
- When the device is switched on, the charging process takes between 3 and 6 hours (depending on the system load).
- The charging process is cancelled as soon as the battery is full.
- A charged battery will discharge itself during storage (depending on the temperature, and whether or not it is built in) in roughly 2 - 4 months. It will then have to be recharged.
- The battery charging ends when the battery is fully charged or if, for example, the upper temperature limit for charging is exceeded. You can check the battery charge level in Windows.

If, with a connected power supply, the battery LED lights up green, the battery is full and will not be charged any further.

<b>NOTICE</b>
---------------

If the device is going to be out of use for a long period (> 1 week), switch the Field PG off after use, and remove the battery.
--

During commissioning, the battery can become partially or fully discharged (e.g. from self-discharge). Prior to completion of the discharge, when merely a residual charge is existent, the LED battery in the battery operation lights up red as a warning. End your work and save your data. There are now only a few minutes battery running time left.
--

Please note that for a complete disconnection from the mains the mains connector must be removed.
---


### Information


The capacity of the Lithium ion battery used in the Field PG reduces with each charge / discharge. A gradual reduction in capacity also takes place if stored at too high or too low temperatures. The operating times of one battery charge in a network-independent operation can therefore gradually reduce over time.

The battery has a typical life span of c. 300 charges and is therefore designed in such a way that with standard handling within six months after purchase of your PG it can still be charged and discharged. A loss of capacity over time is technology-dependent and, as with all manufacturers of comparable devices, it is excluded from the warranty. In the case of a significant drop of efficiency we recommend that you replace the battery. Buy only original Siemens batteries.

You should note the following with regard to the life span of the battery:

- If possible, the battery should always be completely discharged/charged.
- Frequency of use: The more often the battery is used, the faster it reaches the end of its effective life span. A lithium ion battery has a typical life of around 300 charge cycles.
- If the computer is almost always connected to the mains power supply, the battery should be removed from the computer (but fully charged) and stored elsewhere.

 <b>WARNING</b>
Do not dismantle or damage. Batteries can cause combustion.
Do not light or heat up. Batteries can cause combustion, can explode or release toxic substances.
Do not short circuit. This can cause combustion. Keep away from children.

 <b>WARNING</b>
Always replace the battery with another battery of the same type. The battery is available as a spare part. You will find the ordering data in the catalog.

### 7.3.2 Floppy disk drive

You can use 3.5" disks (1.44 MB or 720 KB).

When the disk drive is being used, the access display on the drive and the access display to the external memory at the front of on the keyboard lights up.

<b>CAUTION</b>
<b>Danger of data loss!</b>
Remove the disk only when the access display on the disk drive has gone out.

### 7.3.3 Hard disk

Hard disk drives with differing capacities can be used.

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**Note**

Please use only hard disk drives recommended by Siemens. The order data for removable hard disks can be found in the catalog.

---

When the hard disk drive is in use, the system LED lights up in front of the touchpad. Refer to the chapter on Status displays.

 <b>CAUTION</b>
Drives are sensitive to inadmissible vibrations. Shocks during operation can lead to the loss of data or damage to the drive or data carrier.

### 7.3.4 Optical drive

This drive allows you, for example, to read the operating instructions on the supplied "Software for Field PG" DVD.

#### Burner/DVD player software

To fully utilize the functionality of our DVD±R/±RW drive, you will have to install additional software (DVD burner or player software). This software is included on the CD supplied with the device. Insert the CD in the drive, run setup and follow the instructions on the screen.

#### Information on burning CD-RWs or DVD±RWs

<b>CAUTION</b>
<b>Danger of data loss!</b> Burning is permissible only in an undisturbed environment, i.e. shock and vibration stress must be avoided. Because of heavy fluctuation in the quality of CD-Rs, data may be corrupted in a burning session, even if no error message is initially displayed. The written data can only be verified by comparing these with the source. To be on the safe side, data should be verified after every burning session.

#### Emergency removal

When the device is switched off, you can use a pin (e.g. bent paperclip) to forcibly remove the disk.

<b>NOTICE</b>
To avoid too much force being used on the pulled out drawer, when inserting removing a disk always hold one hand against it by touching/holding the drawer on the front facing. After closing the drawer, the data medium is initially tested and then the access display on the drive starts to flash: - continuous flashing means this is a bad but still readable data medium, - continuous repeated flashing means the inserted data medium is no longer readable and is faulty.

### 7.3.5 SIMATIC S5 memory module

#### Modifying SIMATIC S5 memory modules

Via the memory card interface you can read and program SIMATIC S5 memory module (EPROMs or EEPROMs). To do this, use the S5 adapter for S5 memory modules; this is supplied as standard with devices with full STEP 5 licenses. The S5 adapter consists of a memory card connector with an interface for connecting the S5 memory modules. Refer to the STEP 5 manual for information regarding the operation of the programming software.

How to use S5 memory modules	
1	Switch on the PG.
2	In your STEP 5 software, launch the function Administration > edit EPROM.
3	Plug the S5 adapter with its type plate facing upwards into the memory card interface, and then into the S5 memory module.
4	Read, program, or delete (EEPROMs only) the S5 memory module using the EPROM functions of the STEP 5 software.
5	Remove the S5 memory module.
6	Exit the EPROM functions of your STEP 5 software.




CAUTION
<p>Plugging in or removing the module while the module is being changed could damage the module.</p> <p>The S5 memory module must not be removed while the operating displays of the module programming are lit.</p> <p>Please adhere to the ESD guidelines.</p>

### 7.3.6 SIMATIC Memory Card

#### Modifying SIMATIC memory cards

You can use the Memory Card port read, program delete SIMATIC Memory Cards. There are memory Cards available for SIMATIC S5, and SIMATIC S7 software.

How to use memory cards	
1	Switch on the PG.
2	Start your SIMATIC programming function.
3	Use the programming function of your SIMATIC programming software to read, program or delete the memory card.
4	End the programming function of your SIMATIC programming software.
5	Remove the memory card from the interface.



CAUTION
Plugging in or removing the module while the module is being changed could damage the module.
Do not remove the memory card if the module programming indicator is lit.
Please keep to the ESD guidelines.




## 7.3.7 SIMATIC Micro Memory Card

### Modifying SIMATIC Micro Memory Cards

You can use the Micro Memory Card interface to read, program delete Micro Memory Cards (MMC). You can use the Micro Memory Card with STEP 7, version V5.1 or later.

How to use micro memory cards	
1	Switch on the PG.
2	Start your SIMATIC programming function.
3	Use the programming function of your SIMATIC programming software to read, program or delete the micro memory card.
4	End the programming function of your SIMATIC programming software.
5	Remove the Micro Memory Card from the interface.



CAUTION
Plugging in or removing the module while the module is being changed could damage the module.
Do not remove the Micro Memory Card if the status light is lit.
Please keep to the ESD guidelines.

### 7.3.8 PC Cards

#### Working with PC Cards

You can use Cardbus Cards (32 bit) and PCMCIA Cards (16 bit) in the PC card interface. The PG is equipped with a PC card interface and an Express card interface. Credit card-style communication cards for MODEM, FAX MODEM, ISDN, Token Ring, ETHERNET, memory upgrades, and SCSI interfaces, USB, or eSATA can be inserted.



The PC Card ejectors have a spring-coil mechanism. Before you insert the card, ensure that the ejector is engaged. To remove the PC card, press the ejector once to unlock it, and a second time to eject the PC card.

#### CAUTION

The label of the PC Card must face upward during insertion.

Only take out the card when data is no longer being transferred (risk of loss of data and system crash).

The Express card is inserted in the top slot, and the PC card in the bottom slot. Type III PC cards are not supported. If you try to insert the PC card the wrong way round, the PG and PC card can be damaged.

Please keep to the ESD guidelines.

#### WARNING

The Express Card interface does not meet the requirements of the limited power source. To retain the safety approval of the device, please use only UL listed Express Cards or cards that meet the relevant requirements of IEC / EN 60950-1. You can obtain further information from the card vendor.

## 7.3.9 Wireless LAN

### 7.3.9.1 General information regarding WLAN

The Field PG is equipped with a network card for Wireless LAN (WLAN), i.e. you are **not** assigned to a cable network. With WLAN, the same as with cable network, you have access to files, the printer and to the Internet.

Depending on the surrounding conditions, you can create connections through walls or at distances in the open air of up to 100 m. The built-in network card works in accordance with the latest standards:

- IEEE 802.11 a: The maximum data rate that is theoretically possible with optimum ambient conditions, and low power utilization is 11 Mbps.
- IEEE 802.11 b: The maximum data rate that is theoretically possible with optimum ambient conditions, and low power utilization is 11 Mbps.
- IEEE 802.11 g: The maximum data rate that is theoretically possible with optimum ambient conditions, and low power utilization is 54 Mbps.

The IEEE standard offers two modes of operation, the adhoc mode (Peer to Peer) and the infrastructure mode.

#### **Adhoc mode**

The adhoc network refers to a wireless network that is established directly between several computers, whereby all computers must have a WLAN facility. No additional devices are necessary.

#### **Infrastructure mode**

The infrastructure network combines computers (via so-called access points) with the aid of Wireless LAN with cable networks. In doing so, this can concern local (e.g. company networks) or also global (e.g. Internet) networks.

More detailed information on configuring and operating the Wireless LAN can be found in the online help of the WLAN network adapter.

### 7.3.9.2 Safety information for WLAN operation

The radio waves necessary for Wireless LAN can cause interference in hearing aids and in the onboard electronics of vehicles. To prevent interference, switch off the Field PG in aircraft, or when driving a vehicle.

The radio waves caused by wireless LAN can interfere with life-support systems, so you should switch off the WLAN device when in the vicinity of such systems (use hotkey Fn + F3 to disable the Field PG's WLAN).



#### CAUTION

To prevent adverse effects on pacemakers, a minimum distance of 20 cm from pacemakers should be maintained while the WLAN is in use.

#### NOTICE

Please note that the device is not suitable for operation in potentially explosive atmospheres.

The range and the attainable data transmission rate depends on the environment. A Wireless LAN connection is not bug-proof.

To protect the transmitted data, Wireless LAN has different encoding methods. We recommend that you activate an encoding in accordance with your Wireless LAN environment.

If possible, do not bring the WLAN connection in the vicinity of the following devices:

- Microwaves
- Wireless video-audio transmission systems
- Wireless telephones (DECT)

These can lead to interference or the complete breakdown of the WLAN connection.

#### CAUTION

The integrated WLAN is approved for use in certain countries, depending on which configuration you ordered. This information is shown in your order documentation.

# Integration

## 8.1 Integration

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

### Ethernet

The integrated Ethernet interface (10/100/1000 Mbps) can be used to communicate, and to exchange data with automation systems such as SIMATIC S7.

### PROFIBUS / MPI

The optional potential-free Profibus interface (12 Mbps) can be used to interconnect distributed field devices or for linking to SIMATIC S7.

The "PROFIBUS" software package is needed to link to S7 automation systems.

### COM1/TTY

You can connect the Field PG to a SIMATIC S5 programmable controller using the TTY interface.

You will need the "SIMATIC STEP 5 V7.23" software to link to S5 programmable controllers.

### WLAN

You can link the Field PG to an Industrial Wireless LAN network using the integrated WLAN interface.

You can find more information on industrial Wireless LAN at SIMATIC® NET :  
<http://www2.automation.siemens.com/net>

### Further information

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

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



# Operation

## 9.1 SIMATIC Software

### Starting STEP 5 (not included in all delivery variants)

Please note, you must have authorization to work with STEP 5 (refer to Initial Commission - First Switch-on section).

- In Windows, click on the **Start** button and select the desired program with **Simatic > STEP 5**.

<b>NOTICE</b>
When using the P tools supplied with STEP 5 (for editing PCP/M files), remember that these are no longer supported fully by Windows XP Professional.

### Starting STEP 7

Please note that you will need a license key to work with STEP 7 (see the Basic commissioning - initial startup section).

- In the Windows desktop, click the SIMATIC Manager icon or
- Click on the Start button, and select the desired program with Simatic > STEP 7.

---

**Note**

The Archive/Retrieve function in STEP 7 is used to transfer a STEP 7 project from one PG to another. To transmit, in the SIMATIC Manager select **File > Archive** or **File > Retrieve**. A detailed description of the procedure is given in section "Steps for File Archiving/Retrieval" of the online help for STEP 7.

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### Starting WinCC flexible

Please note that a license key is required to use WinCC flexible.

- In the Windows desktop, click on the SIMATIC Manager icon, or
- Click the Start button and select the desired program with Simatic > WinCC flexible.





## Expansions and configuration

### 10.1 Installing / removing memory modules

#### Memory expansion options

The motherboard is equipped with 2 slots for SO-DIMM memory modules. For 200-pin DDR2 RAM chips, unbuffered, no ECC. This allows you to upgrade the memory capacity of your PG to a maximum of 4 GB. Maximum memory module size: 2 GB.

#### Preparation

1. Make sure the device is not in Standby mode (unsaved data could be lost) and that the device cannot get damaged.
2. Isolate the device from the mains and remove the battery.
3. Remove all connecting cables from the device.
4. Close the display unit.
5. Place the PG with the display unit face down on an level surface.


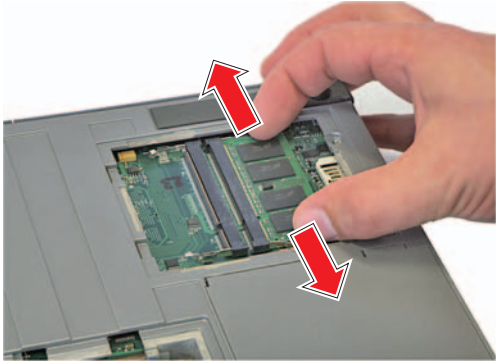

**CAUTION**

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.

**NOTICE**

Please use only Siemens memory modules as these have been qualified and cleared for use in this device. You will find the order data in the catalog.

### Removing a memory module

How to remove a memory module		
1	Remove the battery.	
2	Remove the two screws that secure the cover.	
3	Remove the cover.	
4	Carefully push the two clamps to the side. The memory module folds up.	
5	Pull the memory module out of the slot.	

## Installing the memory module

How to install a memory module	
1	Insert the memory module into the slot with the connection contacts in front. Pay attention to the notch (locking element) on the side of the connector.
2	Carefully push the module downwards until the lock engages.
3	Put the cover back over the slot and fasten this with the two screws.
4	Insert the battery again and connect the device to the mains



### CAUTION

After insertion the module must be securely fixed in the slot; otherwise the module could fall out or be damaged.

## Display of the current memory configuration

The memory expansion is automatically detected. The work memory configuration is shown in the Main menu of the BIOS Setup.



## Maintenance and service

### 11.1 Removing and installing hardware components

#### 11.1.1 Replacing a hard disk bay

##### To be noted prior to replacing

1. Make sure the device is not in Standby or Hibernate mode. Unsaved data might be lost and the device can get damaged.
2. Disconnect the device from the mains and remove the battery.
3. Remove all connecting cables from the device.

**⚠ CAUTION**


Please adhere to the ESD guidelines.

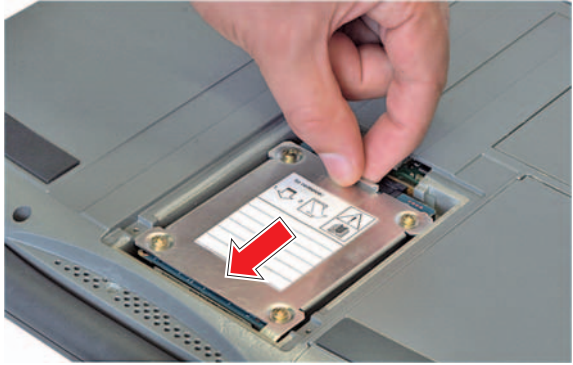
**⚠ WARNING**

Replace the hard disk only with one of the same type. The hard disk is available as a spare part. You will find the order data in the catalog.

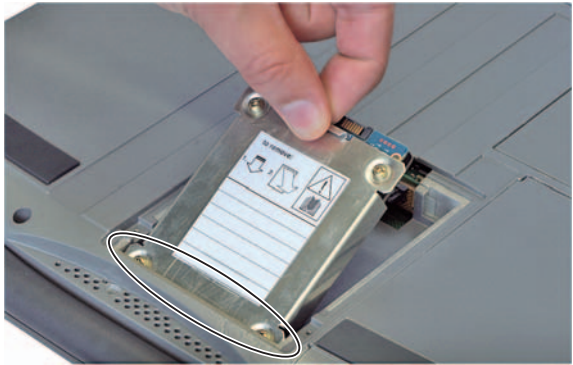
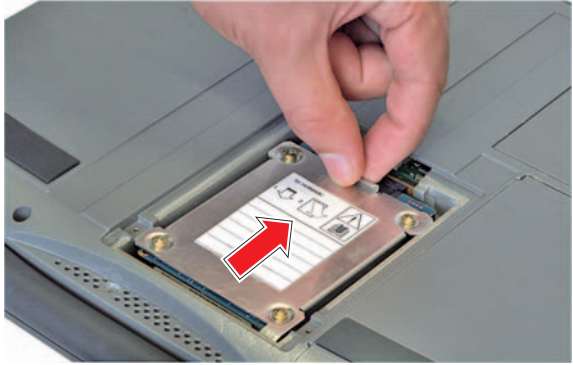
##### Remove the hard disk bay

How to remove the hard disk bay	
1	Turn the PG over so that the closed display unit is lying on the table.
2	Remove both screws (Torx T8) on the cover of the hard disk bay.



How to remove the hard disk bay		
3	Push the disk bay in the direction of the arrow and then remove it.	

Insert the hard disk bay

How to insert the hard disk bay		
1	Insert the hard disk bay again. Ensure the metal nose is located under the base of the housing.	
2	Push the hard disk bay in the direction of the arrow until the connector is sitting in the jack.	

How to insert the hard disk bay	
3	Attach the cover with the two screws and turn the device round again.



### 11.1.2 Hard disk kit

You can order the hard disk kit under order number 6ES7791-2BA00-0AA0. This consists of a hard disk module (see the order documents for details of the hard disk capacity), a Torx screwdriver, and a transport and storage bag.


With the SATA to USB adapters (order no. 6ES7790-1AA00-0AA0), you can easily create an image of your system for backup purposes, or as the basis for system-specific installations.





### 11.1.3 Replace the battery

#### To be noted before you replace the battery

 <b>WARNING</b>
Replace the battery only with a battery of the same type. The battery is available as a spare part. You will find the order information in the catalog.


#### Disposal

Lithium ion batteries can be recycled. Their components can be used as raw materials for new batteries or other products. The prerequisite for an effective recycling is to sort the used batteries according to type.

<b>NOTICE</b>
Observe the local conditions for the disposal of recyclable materials.

#### Replace the battery

How to replace the battery	
1	Turn the PG over so that the closed display unit is lying on the table.
2	Unlock and fold up the battery cover on the underside of the device.
3	Replace the battery (1)
4	Close the cover and turn the device round again.





#### 11.1.4 Replacing the backup battery

The Field PG has a backup battery. This supplies the hardware clock with power even when the device has been switched off.

Batteries are subject to wear and tear and should be replaced after five years to make sure that your PG works correctly.

**NOTICE**

The backup battery should only be replaced by the repair center. If you have any queries, please contact your service office or your sales partner.

**CAUTION****Risk of damage!**

The lithium battery must only be replaced with an identical battery, or with a type recommended by the manufacturer (order no: A5E00047601).

**WARNING****Risk of explosion and release of harmful substances!**

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, follow the disposal instructions, and protect against direct exposure to sunlight, humidity, and condensation.

**CAUTION**

Batteries must be disposed of in accordance with local regulations.

## 11.2 Reinstalling the software

### 11.2.1 General installation procedure

If errors occur in your software installation, use the recovery CD, and the "Software for Field PG" DVD to reinstall the software.

#### Recovery CD:

Contains the tools for setting up hard disk drives and the operating system.

#### "Software for Field PG" DVD:

Contains the documentation, the SIMATIC software and the hardware drivers.

### 11.2.2 Restore the system

#### Retrieving an authorization or license key from the hard disk

- Check to see if, using the Automation License Manager, you can retrieve your authorization or the license key from the hard disk and back it up onto a license key disk or another data medium.
- If it is not possible to backup your authorization, please contact the Customer Support Hotline. There you can obtain information necessary for your software authorization.

#### Restoring the factory condition

Norton Ghost from Symantec allows you to back up, and restore the data of your PG. The program enables you to create a backup image of a disk drive and retrieve a disk drive from a backup image.

In order to be able to use Norton Ghost under Windows, you must install it on your PG. To start the installation either double-click the Ghost icon on the Desktop or run the Setup routine from the Symantec Ghost CD.

The backup takes place:

- on a disk drive of the internal hard disk or on an external hard disk
- on CD-R, CD-RW, DVD+-R or DVD+-RW

Using Norton Ghost you can save a hard disk drive to a file (known as a backup image), and then retrieve the drive from this backup image.

The backup image of your device as it was delivered is contained in the D:\Restore directory.

**NOTICE**

Any data on the partition on which you are recording the image will be lost with this procedure. Make sure that you saved your SIMATIC license keys to a diskette or USB stick first using the Automation License Manager (ALM). You cannot save the STEP 5 authorization to a USB stick.

Follow the instructions on the screen.

**Note**

We recommend, after the installation of your user software, that you make backups cyclically.

**CAUTION**

Please observe the safety instructions in the documentation. Incorrect handling of the program could result in the loss of the operating system, the programs and the saved data.

### 11.2.3 Installing Windows

Use the recovery CD to create a Windows installation that meets your specific requirements. The operating system used is Windows Preinstall Environment (WinPE). You will also need the supplied "Software for Field PG" DVD.

#### Booting with the CD Recovery

1. Insert the Recovery CD in your drive and restart the device.
2. When BIOS outputs the message  
Press <F2> to go to Setup Utility / Press <ESC> to go to  
Bootmanager#+  
to boot from the Recovery CD. Once initialization is complete, a Boot options menu appears with the boot options.
3. Boot from the Recovery CD and then follow the instructions on the screen.

### 11.2.3.1 Setting up the partitions for Windows XP

After you have installed a new hard disk, or if partitions are faulty, or when you want to change the partitioning on your hard disk, you will need to set up partitions on the hard disk.

<b>CAUTION</b>
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.

When the device is supplied, there are two partitions with an NTFS file system on the hard disk. To restore the partitions to factory state, proceed as follows:

#### Adjusting the partitions

1. Boot from the Recovery CD and then follow the screen instructions until the Recovery functions window is displayed.
2. Start the DiskPart tool in the Siemens SIMATIC Recovery window. Enter the following commands in the command interface that appears:

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 drive.
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. Values as shipped: n = 30000
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 changed the configuration of your hard disk with DiskPart, you will need to reboot the device for the changes to take 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. Enter the following command in the command interface:

```
format DR:/FS:file system
```

DR = 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 set as when the device is delivered.

Example for a master hard disk on the IDE bus

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

format /? Shows all parameters of the command.

### 11.2.3.2 Installing Microsoft Windows XP

This 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 must still be free space on the drive after the selected recovery data has been transferred:  
1500 MB for Windows XP

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4. Select "Open 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 manuals available (not supplied as standard):

Microsoft Windows XP Professional, The Technical Reference" (MSPress no. 934).

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

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## 11.2.4 Recovery of Windows Vista

To recover Windows Vista, there is a full graphical user interface available. It may take several minutes before the first input window appears. In this window, you can set the time and currency formats and select the keyboard language.

English is the basic language and other languages can be installed later with the MUI. The MUI is on the recovery DVD.

Now follow the on-screen instructions. It may take several minutes before the next prompt for the product key is displayed.

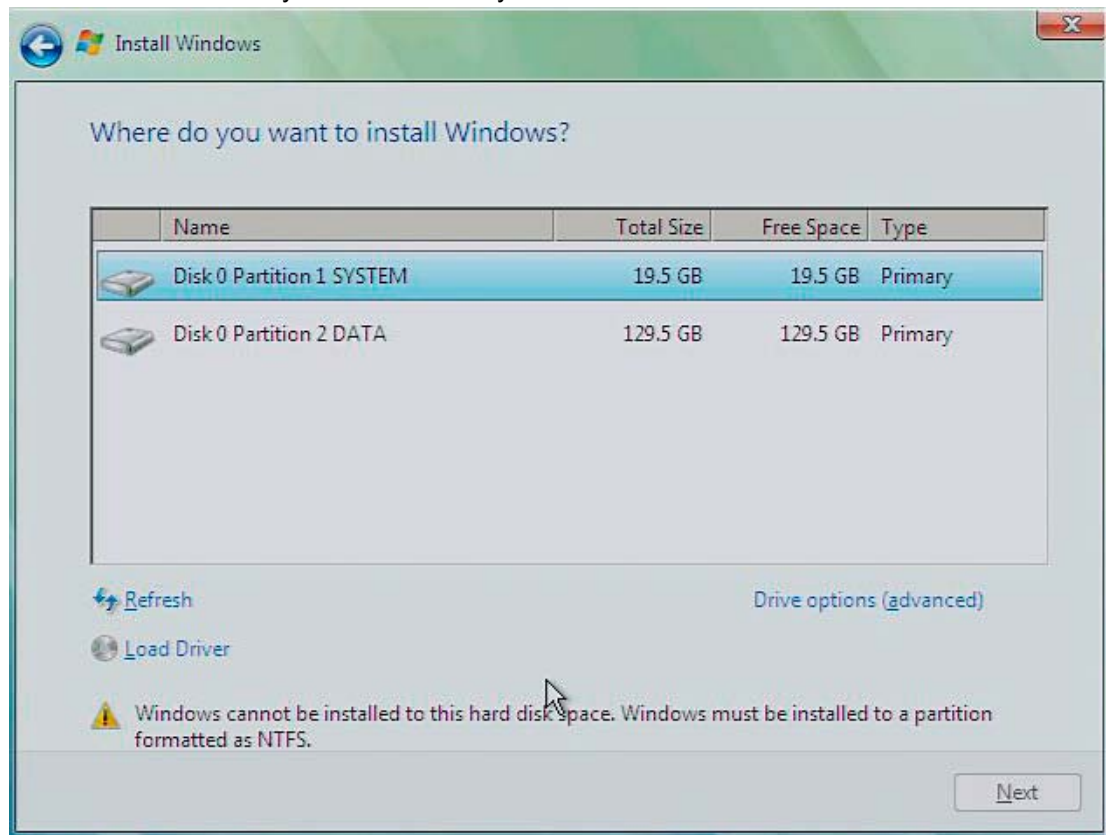
### Note

Due to the previous activation, you do not need to enter the product key (COA number). This is entered automatically during the installation.

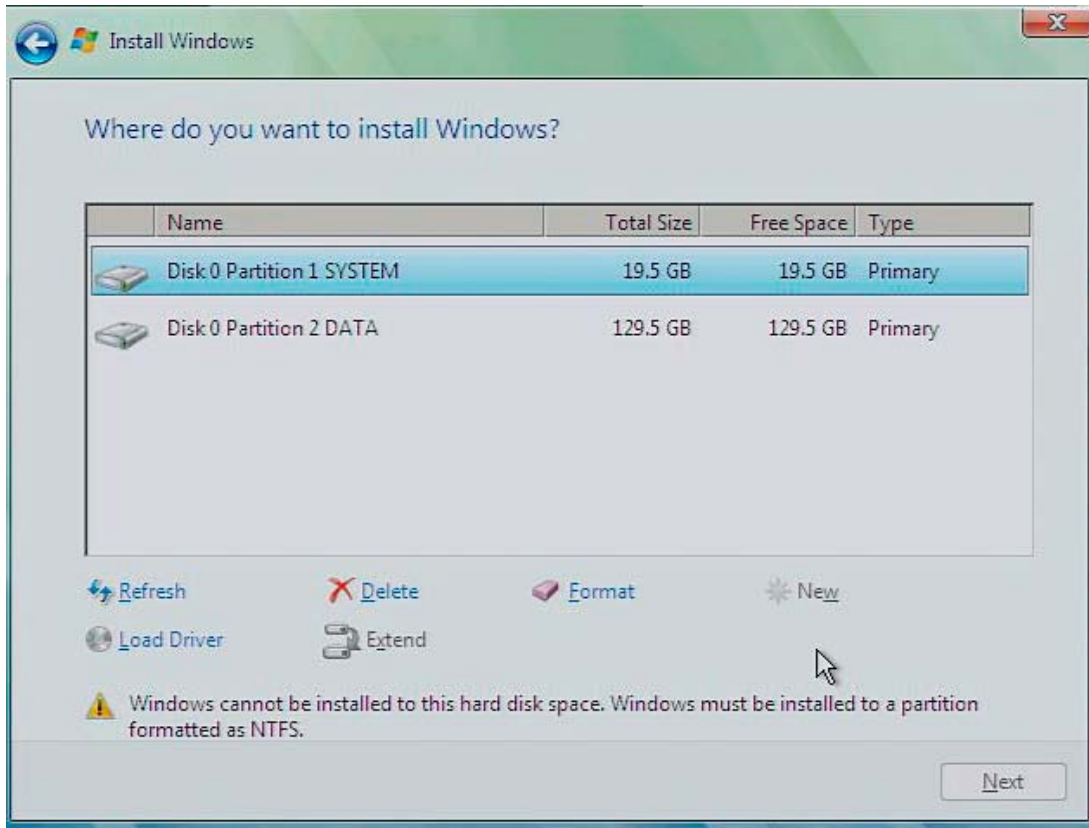
## Setting up and formatting partitions

After you have installed a new hard disk, or if partitions are faulty, or when you want to change the partitioning on your hard disk, you will need to set up partitions on the hard disk.

In the next dialog box, you can set up the hard disk according to your requirements and add controllers that are not yet known to the system.



Options	Meaning
Drive options (advanced)	Further functions are displayed with which you can set up the hard disk.
Load Driver	To add new drivers, for example the driver for RAID.



Options	Meaning
Refresh	Updating
Delete	Deleting a partition
Format	Formatting a partition
New	Creating new partitions
Load Driver	To add new drivers, for example the driver for RAID
Extend	Changing the partition size
	Any error messages that occur are displayed behind this icon, for example if the hard disk was not formatted in the required "NTFS" format.

The first partition should be at least 30 GB. The operating system must be installed on this partition. You can use the rest of the hard disk as a data partition. Both partitions must be installed as the NTFS file system.



When shipped, the partitions are set up as follows:

Partition	Operating system	Name	Size	File system
First	Windows Vista	System	30 GB	NTFS not compressed
Second	Windows Vista	DATA	Remainder	NTFS not compressed

Following a reboot, Windows Vista is installed on the hard disk. This process takes at least 20 minutes.

Now follow the instructions on the screen.

---

**Note**

If you want to reinstall drivers from the integrated floppy disk drive, select Floppy Drive (A:).  
If you want to reinstall drivers from a USB floppy disk drive, select Floppy Drive (B:).

---

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**Note**

If you want to use Microsoft Windows as a professional user, you should have the following manual available (not supplied):  
Windows Vista Inside Out

This manual contains information specifically for administrators involved in installing, managing and integrating Windows in networks or multi-user environments.

---

## Setting up language options in Windows Vista

With the Multilanguage User Interface (MUI), you can set up the Windows menus and dialogs for additional languages. When shipped, Windows Vista is installed with English menus and dialogs. You can change this in the Control Panel with the "Regional and Language options" or "Time and Date" dialogs.

Here, you can change all system formats:

Start > Control Panel > Clock, Language, and Region > Change display language > Regional and Language options

Here, you can only change the date and time formats:

Start > Control Panel > Clock, Language, and Region > Change display language > Time and Date

If you want to install additional languages, you can install these later in the Control Panel, as follows. You will find the necessary files on the recovery DVD in the "Languagepacks" folder.

Start > Control Panel > Clock, Language, and Region > Change display language > Regional and Language options > Keyboards and Languages

## 11.2.5 Setting up the language selection for Windows XP Professional

### 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.

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**  
**Languagestab, 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.

## 11.2.6 Installing drivers and software

### NOTICE

In the case of multilingual operating systems (MUI versions) you have to set menu, dialog boxes and default language to English (US) in the regional settings **before** installing the new drivers and operating system updates.

### Installing the drivers

1. Insert the "Software for Field PG" DVD.
2. You must have Acrobat Reader installed.
3. Navigate to the driver list (language-, OS- and device-specific).
4. Install the relevant driver according to the specifications in the driver list.

### Installing the SIMATIC software

1. Insert the "Software for Field PG" DVD.
2. Launch the "Simatic Setup".

### NOTICE

The license key disk with the authorizations or license keys necessary for operating the SIMATIC software is only available with the delivery variants that include the respective SIMATIC software.

The installation of the authorizations or enabling the license key is described in section "Initial Commissioning - First Switch-on".

### **Installation of SIMATIC WinCC flexible software**

1. Insert the WinCC flexible DVD.
2. If setup does not start automatically, start the "Setup" installation program in the "\CD\_1" folder.

### **11.2.7 Installing burner/DVD software**

You will find notes on installing the burner / DVD software on the supplied CD.

## Troubleshooting/FAQs

### 12.1 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 the power supply, the power cord or the power plug.
	PG is switched off	Press the power button
	The battery is empty or not installed	Charge the battery
You can move the mouse pointer with the touchpad under Windows	Touchpad is switched off	Switch on the touchpad via the Hot Key Fn + F4
Wrong time and/or date on the PG.		<ol style="list-style-type: none"> <li>1. Press &lt;F2&gt; during the boot sequence to open BIOS Setup.</li> <li>2. Set the time and date in the setup menu.</li> </ol>
Although the BIOS setting is OK, the time and data are still wrong.	The backup battery is dead.	In this case, please contact your technical support team.
USB device not responding.	The USB ports are disabled in your BIOS.	Use a different USB port or enable the port.
	The operating system does not support the USB ports.	Enable USB Legacy Support for the mouse and keyboard. For all other devices you will need USB drivers for the specific operating system.
DVD/CD: The front loader does not open.	The device is switched off, or the open/close button is disabled by a software application.	Emergency removal of the data medium: <ol style="list-style-type: none"> <li>1. Switch off the device.</li> <li>2. Insert a pin, for example, or an opened paper clip into the emergency extraction opening of the drive. Apply slight pressure to the contact until the front loader opens.</li> <li>3. Pull the loader further out.</li> </ol>
The message "Invalid configuration information... Press the F1 key for continue, F2 to run Setup utility" appears on the display.	Defective configuration data	Press the "F2" key, and in the SETUP program check the configuration data, enter any default values, and check error messages in the first SETUP screen

Problem	Possible cause	To correct or avoid error
The following message appears on the display: "No boot device available" NTLDR not found, check the boot data medium...	No bootable disk in the disk drive	Insert a bootable disk
	Incorrect hard disk type entered in SETUP	Use the "Autodetect Fixed Disk" function
The following message appears on the display: "Keyboard stuck key failure"	A key has been blocked during system self-test of the keyboard	Check the keyboard and, if necessary, restart the system
A beep sounds when a key is pressed but no character is displayed	Keyboard buffer is full	<CTRL> <PAUSE>
< \ > key not available	incorrect keyboard driver is being used	with German keyboard drivers: <ALTGr> < ß> with international keyboard drivers: < \>

## 12.2 Problems with Wireless LAN

The following lists the possible causes for problems with Wireless LAN:

<b>Cannot connect with WLAN</b>
<ul style="list-style-type: none"> <li>• Check that you have enabled the WLAN. You can toggle the WLAN on and off with the hotkey Fn + F3.</li> <li>• Check that the other WLAN partner is active.</li> <li>• Check the settings for the WLAN connection (follow the instructions on configuring, and operating the WLAN in the online help for the WLAN network adapter).</li> </ul>
<b>Data transmission speed is too low</b>
<ul style="list-style-type: none"> <li>• Please note that the data rate stipulated and that is given under Windows is only a theoretical value / corresponds to the gross value. Determined by the transmission procedure, the actual applicable data rate for the data transmission is usually around 50% of the gross value.</li> <li>• The maximum data transmission speed is dependent on many factors. First check that all the network components conform to the IEEE 802.11 a/b/g standard, and that this method of transmission (54 Mbps) is set.</li> <li>• The spatial arrangement of the network components can also negatively influence the transmission. <ul style="list-style-type: none"> <li>– The distances between the components should be as short as possible</li> <li>– Masonry or reinforced concrete walls have a negative effect on the transmission performance and can, under some circumstances, prevent a connection from being established. For the best performance, a line-of-sight connection of the network components is preferred.</li> <li>– A high load on the network, perhaps from too many simultaneous access attempts from different nodes, can lead to lower data rates or communication problems.</li> </ul> </li> </ul>

## Specifications

### 13.1 General specifications

<b>General specifications</b>	
Order nos.	see the order documents
Dimensions	328 x 294 x 52 (WxHxD in mm)
Weight	Approx. 4 kg
Supply voltage (U <sub>N</sub> )	100 V to 240 V AC (+10%-15%), sinoidal
Line voltage frequency	50 - 60 Hz (47 to 63 Hz)
Max. power consumption (AC) Output voltage of the power supply unit (DC) Output current of the power supply unit (DC) Output power of the power supply unit (DC) Standby power (in battery mode) Lithium ion battery (9 cells) with charge level indicator)	c. 90 W 18.5 V max. 4.3 A max. 80 W type 1.5 W c. 6 Ah, 11.1 V with thermo switch and multifuse, recyclable, chargeable up to 40°C, high number of cycles with tough use, low self-discharge
Noise emissions	< 45 dB(A) to DIN 45635
Degree of protection (entire device)	IP 30 (with closed covers) according to IEC 60529
<b>Security</b>	
Protection class	Safety class I according to IEC 61140
Safety specifications	According to VDE 0805, IEC 60950-1:2001 amendment 1:2002, and EN 60950-1:2001, First Edition, corresponds to EN 60950-1/A11:2004 + amendment 2004 and DIN EN 60950-1:2003, amendment 1:2004  UL 60950-1, 1st edition, 2006-07-07 (Information Technology Equipment - Safety - Part 1: General Requirements)  CSA C22.2 No. 60950-1-03, 1st edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)

13.1 General specifications

<b>General specifications</b>	
<b>Electromagnetic compatibility (EMC)</b>	
Emitted interference	Limit class B in accordance with EN 55022, EN 61000-3-2 class D, and EN 61000-3-3
Noise immunity: Mains borne disturbance variables on supply lines	± 2 kV; (according to IEC 61000-4-4; Burst) ± 1 kV; (according to IEC 61000-4-5; Surge sym./ line to line) ± 2 kV; (according to IEC 61000-4-5; Surge sym./ line to earth)
Noise immunity on signal lines	± 2 kV; (according to IEC 61000-4-4; Burst; length > 3 m) ± 2 kV; (according to IEC 61000-4-5; Surge sym./ line to earth, length > 20 m)
Immunity to discharges of static electricity	± 4 kV contact discharge (according to IEC 61000-4-2; ESD) ± 8 kV air discharge (according to IEC 61000-4-2; ESD)
Immunity to RF interference	10 V (max. 3 V in modem mode), with 80% amplitude modulation at 1 kHz, 10 kHz - 80 MHz (to IEC 61000-4-6) 10 V/m (in modem mode max. 3 V/m), with 80% amplitude modulation at 1 kHz, 80 MHz - 1000 MHz and 1.4 GHz – 2 GHz (to IEC 61000-4-3) 1 V/m, with 80% amplitude modulation at 1 kHz, 2.0 GHz – 2.7 GHz 1 V/m (to IEC 61000-4-3)
Magnetic field	100 A/m, 50 Hz and 60 Hz (acc. to IEC 61000-4-8)
<b>Climatic conditions</b>	
Temperature In operation * Storage/transport	tested to IEC 60068-2-1, IEC 60068-2-2 + 5 °C to + 40 °C max. 10°C /h (no condensation) - 20 °C up to + 60 °C max. 20°C /h (no condensation)
Relative humidity  in operation storage/transport	tested to IEC 60068-2-78, IEC 60068-2-30, IEC 60068-2-14  5 % to 80% max. 25°C /h (no condensation) 5 % up to 95% max. 25°C /h (no condensation)
<b>Mech. Ambient conditions</b>	
Vibration Operation *  transport	tested to DIN IEC 60068-2-6 10 to 58 Hz; amplitude 0.0375 mm 58 to 500 Hz; acceleration 4.9 m/s <sup>2</sup> 5 to 9 Hz; amplitude 3.5 mm, 9 to 500 Hz: Acceleration 9.8 m/s <sup>2</sup>
Shock resistance operation * storage / transport	tested to IEC 60068-2-27, IEC 60068-2-29 Half sine: 50 m/s <sup>2</sup> , 30 ms, 100 shocks half sine: 250 m/s <sup>2</sup> , 6 ms, 1000 shocks
<b>Special Features</b>	
Quality assurance	to ISO 9001



<b>General specifications</b>	
<b>Motherboard</b>	
Processor	Intel Core 2 Duo, Depends on version: T7250 (2.0 GHz, 800 MHz, 2 MB), T7500 (2.2 GHz, 800 MHz, 4 MB)
RAM	Can be upgraded to 4 GB SODIMM DDR2
<b>Disk drives</b>	
Floppy disk	3.5" (1.44 MB)
Hard disk	2.5" SATA hard disk capacity, see BIOS
Optical drive	DVD+-R/+-RW (24x CD-ROM, 8x DVD, 10x CD-RW, 2x DVD-R, 1x DVD-RW)
<b>Graphics</b>	
Graphic controller	Intel GME965
Graphic controller memory	Graphics memory 8 to 256 MB DDR2 RAM, partly using dynamic sharing of system memory
Resolutions/frequencies/colors	CRT: 1600x1200 with 85 Hz / 32 Bit colors CRT: 1280 x 1024 at 100 Hz / 32-bit colors
<b>LCD display</b>	
Display type	TFT (Thin Film Transistor)
Display size	304.1 x 228.1 mm corresponding to 31 cm (15")
Screen resolution	1024 x 768 pixels (XGA)      1400 x 1050 pixels (SXGA+)
Possible colors	maximum 256 k
Vertical frequency	60 Hz
Contrast	> 200 : 1
Brightness	> 150 cd/m <sup>2</sup>
Permissible defective areas	light and dark pixel: Max. 10
<b>Audio</b>	
Audio controller	Analog Devices AD1986A, UAA-compatible
Compatibility	Sound Blaster Pro and Microsoft Sound System (corresponding to PC98 / PC99 and WHQL specification)
Record and Playback Features	Up to 16 Bit stereo 48 kHz sampling rate, full duplex 3D Audio Effects and ESFM(T) music synthesizer
Internal loudspeaker	Maximum output 2 x 0.5 W
<b>WLAN</b>	IEEE 802.11. a/b/g
<b>Keyboard</b>	
Variant	Standard notebook
Key distance	19 mm
Key drop	3 mm
Labeling	International / German
Pointing device integrated	Touchpad with 2 mouse buttons

13.1 General specifications

General specifications	
<b>Interfaces</b>	
COM TTY/V.24	Serial interface TTY (20 mA), active up to 100 m (25-pin jack) no electrical isolation or serial interface V.24
LPT	Parallel port
VGA	Interface for external monitor 15-pin VGA jack)
Cardbus	1x PC card (type I, type II) 1x Express card (34 and 54 mm) TI controller: PCI 1520
Memory Card	Programming interface for SIMATIC memory card and S5 memory module
Micro Memory Card	Interface for micro memory card
USB 2.0	4 interfaces for high-speed universal serial bus Max. 2 high current (500 mA) - for each interface block, only 1 interface can be used for high current.
PROFIBUS/MPI interface Transmission speed Operating mode  Physical port Memory address area Interrupts	9-pin sub-D socket 9.6 Kbaud to 12 Mbaud, software configured Electrically isolated: - data channels A, B - control lines RTS AS, RTS_PG - 5 V supply voltage (max. 90 mA) grounded: - shielding of the DP12 connection line RS485, electrically isolated 0CC00h ... 0CC7FFh or 0DC000h ... 0DC7FFh IRQ 5, 10, 11 or 15 software configured
Ethernet	Ethernet port (RJ-45)
Modem	RJ-11 V.92 Motorola SM56
DC In	DC voltage supply input, jack plug
Headphones and microphone	Connection for each 3.5 mm jack plug
<b>Status displays on the device</b>	
	Caps Lock Num Lock WLAN active battery state device state access to FD / HD / DVD S5 module / memory card MPI/DP

\* You are only permitted to burn with optical drives only in an undisturbed environment and up to a maximum ambient temperature of 35°C.

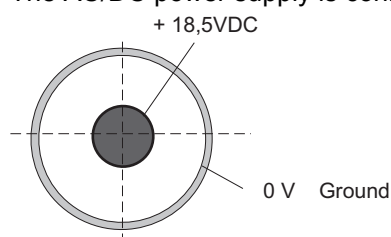
## Detailed descriptions

### 14.1 Interfaces

#### 14.1.1 External interfaces

##### DC-In

The AC/DC power supply is connected to this jack. This has the following charge:



##### USB

The Universal Serial Bus port (2.0) has the following pinout:

USB 2.0 interface			
Pin No.	Short designation	Meaning	Input / output
1	VCC	+ 5 V (fused)	Output
2	- Data	Data line	Input / output
3	+ Data	Data line	Input / output
4	GND	Ground	-

The connectors are of type A.

The ports are rated as high-current USB 2.0 (500 mA). However they cannot be operated simultaneously with high current.

**Serial port COM1 (V.24/TTY)**

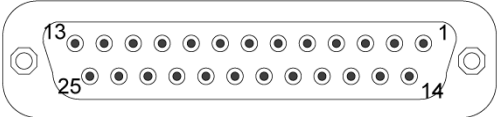
Serial port COM 1 (socket)			
PinNo.	Short designation	Meaning	Input / output
1	-	Shielding	-
2	TxD (D1)	Serial transmit data	Output
3	RxD (D2)	Serial receive data	Input
4	RTS (S2)	Request to send	Output
5	CTS (M2)	Clear to send	Input
6	DSR (M1)	Ready for operation	Input
7	GND (E2)	Functional ground (reference potential)	-
8	DCD (M5)	Data carrier detect	Input
9	+TTY RxD	Current loop receive	Input
10-17	-	Not used	-
18	+TTY TxD	Current loop send	Output
19	+20 mA	Potentially isolated power source	-
20	DTR (S1)	Data terminal ready	Output
21	-TTY TxD	Current loop send	Output
22	RI (M3)	Incoming call	Input
23-25	-	Not used	-

**Gender changer for COM1**

With the gender changer (25-pin / 9-pin) the COM1/V.24/AG port can be converted to the usual 9-pin male connector. For this, you only have to plug the adapter onto the COM1 socket and secure it with the two hexagonal head screws.

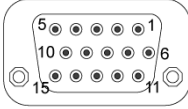
The V.24 and TTY ports of the COM1 can be used alternatively.

## Parallel port LPT1

Parallel port LPT1			
			
PinNo.	Short designation	Meaning	Input / output
1	/ Strobe (CLK)	Data message	Output (open collector)
2	Data - Bit 0	Data line 0	Output (TTL level)
3	Data - Bit 1	Data line 1	Output (TTL level)
4	Data - Bit 2	Data line 2	Output (TTL level)
5	Data - Bit 3	Data line 3	Output (TTL level)
6	Data - Bit 4	Data line 4	Output (TTL level)
7	Data - Bit 5	Data line 5	Output (TTL level)
8	Data - Bit 6	Data line 6	Output (TTL level)
9	Data - Bit 7	Data line 7	Output (TTL level)
10	/ACK	Data acknowledge	Input (4.7 kΩ pull up)
11	BUSY	Not ready	Input (4.7 kΩ pull up)
12	PE (PAPER END)	Paper end	Input (4.7 kΩ pull up)
13	SELECT	Device selection	Input (4.7 kΩ pull up)
14	/ AUTO FEED	Automatically new line	Output (open collector)
15	/ ERROR	Device error	Input (4.7 kΩ pull up)
16	/ INIT	Reset / Initialization	Output (open collector)
17	/ SELECT IN	Printer selection	Output (open collector)
18 – 25	GND	Ground	–

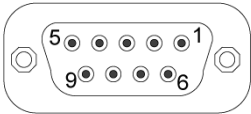
### VGA port

The VGA socket has the following pinout:

VGA port			
			
Pinno.	Short designation	Meaning	Input / output
1	R	Red	Output
2	G	Green	Output
3	B	Blue	Output
4	–	Not used	–
5	GND	Ground	–
6	GND	Ground	–
7	GND	Ground	–
8	GND	Ground	–
9	+ 5 V	+ 5 V (fused)	Output
10	GND	Ground	–
11	–	Not used	–
12	DDC_DAT	Display Data Channel Data	Input/output
13	EXT_H	Horizontal synchronizing pulse	Output
14	EXT_V	Vertical synchronizing pulse	Output
15	DDC_CLK	Display Data Channel Clock	Input/output

## PROFIBUS/MPI interface

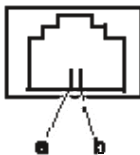
The PROFIBUS/MPI socket has the following pinout:

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

Ethernet RJ45 connection

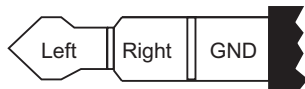
Ethernet RJ45 interface			
Pinno.	Short designation	Meaning	Input / output
1	BI_DA+	Bi-directional data A+	Input/output
2	BI_DA-	Bi-directional data A-	Input/output
3	BI_DB+	Bi-directional data B+	Input/output
4	BI_DC+	Bi-directional data C+	Input/output
5	BI_DC-	Bi-directional data C-	Input/output
6	BI_DB-	Bi-directional data B-	Input/output
7	BI_DD+	Bi-directional data D+	Input/output
8	BI_DD-	Bi-directional data D-	Input/output
S		Shielding	-
	LED 1	Off: 10 Mbps Lights up green: 100 Mbps / 1 Gbps	-
	LED 2	Lights up yellow: Connection established Flashes: when there is activity	-

RJ11 (connection for modem)



Micro-In

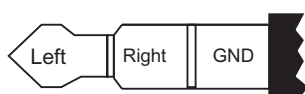
The socket has the following pinout:



3.5 mm microphone jack plug

Headphones

The socket has the following pinout:



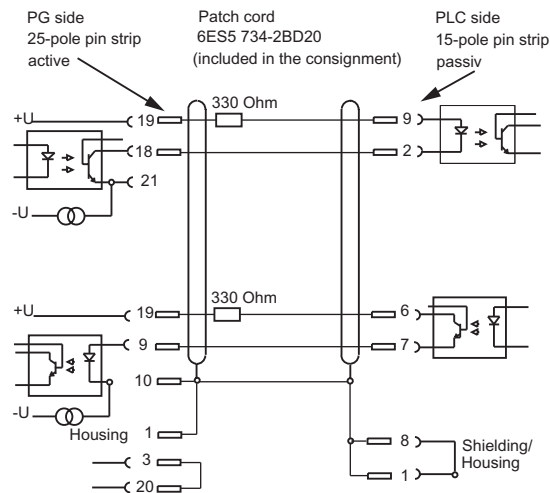
3,5-mm Stereo phono plug



## 14.2 Connecting cables

### SIMATIC S5 cabling

The SIMATIC S5 cable (not always supplied as standard) allows you to connect your PG to a SIMATIC S5 automation device. Please follow the notes in the "Connecting the PG to an S5 programmable controller" section.



### SIMATIC S7 cable for MPI/DP

The 6ES7901-0BF00-0AA0 cable is used to connect your PG to a SIMATIC S7 automation system. Please follow the notes in the "Connecting the PG to an S7 automation system" section.

## 14.3 System resources

### Currently allocated system resources

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

Windows XP	<b>Start &gt; Run</b> : in the <b>Open</b> dialog, enter "msinfo32" and confirm with <b>OK</b>
Windows Vista	<b>Start &gt;</b> Enter "cmd" in the search function, then enter "msinfo32" in the input box

## 14.4 BIOS Setup

### 14.4.1 Overview

#### BIOS SETUP program

BIOS SETUP allows you to set the hardware configuration, and system properties. SETUP is also used to set the time and date of the real time clock.

#### Changing the device configuration

Your device configuration is preset for use with the software supplied. You should only change the default values if you have modified the technical configuration of your device, or if a fault occurs when it is powered up.

#### Starting BIOS SETUP

Run SETUP as follows:

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

If your PG still has the default settings, the following screen appears when you switch on,

**for example:**

SIMATIC Field PG M2

Press <F2> go to SETUP utility or <ESC> go to Bootmanager

2. Hold down the F2 key while the BIOS prompt is on screen.

#### BIOS Setup menus

The various menus and submenus are listed on the next pages.

## 14.4.2 Main menu

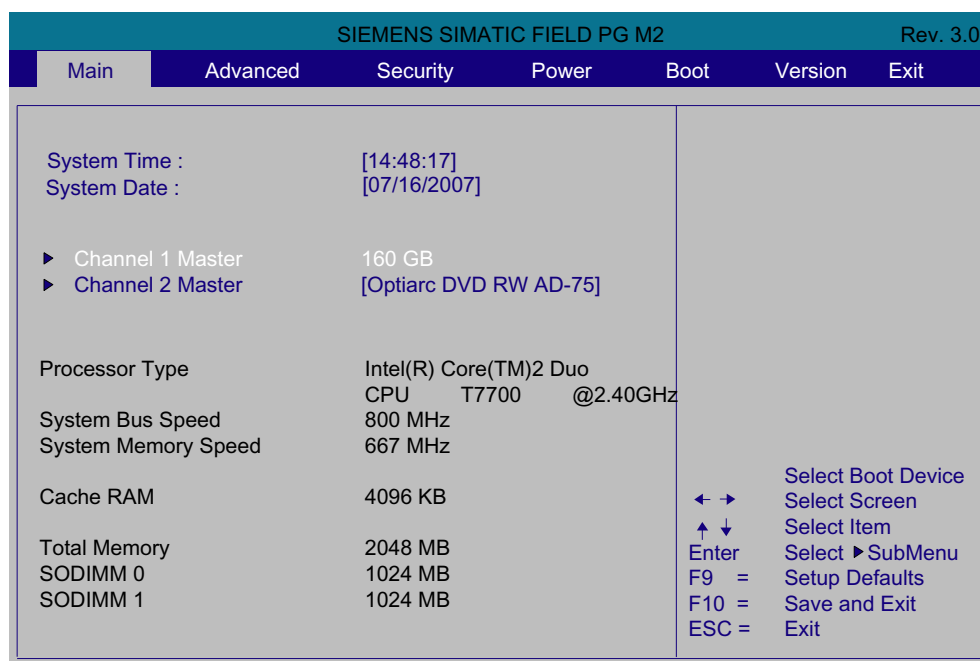


Figure 14-1 Main menu (example)

### Settings in the main menu

In the main menu, use the [↑] up and [↓] down cursor keys to move between the following system configuration boxes:

Field	Meaning
System Time	For viewing and setting the current time
System Date	For viewing and setting the current date
Channel 1 Master	Contains information about the installed hard disk
Channel 2 Master	Contains information about the installed DVD drive

### System time and date

System Time and System Date indicate the current values. Once you have selected an option, you can use the [+] and [-] keys to change the "Hour: Minute: Second" settings, or 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 Enter key.

### 14.4.3 Advanced Menu

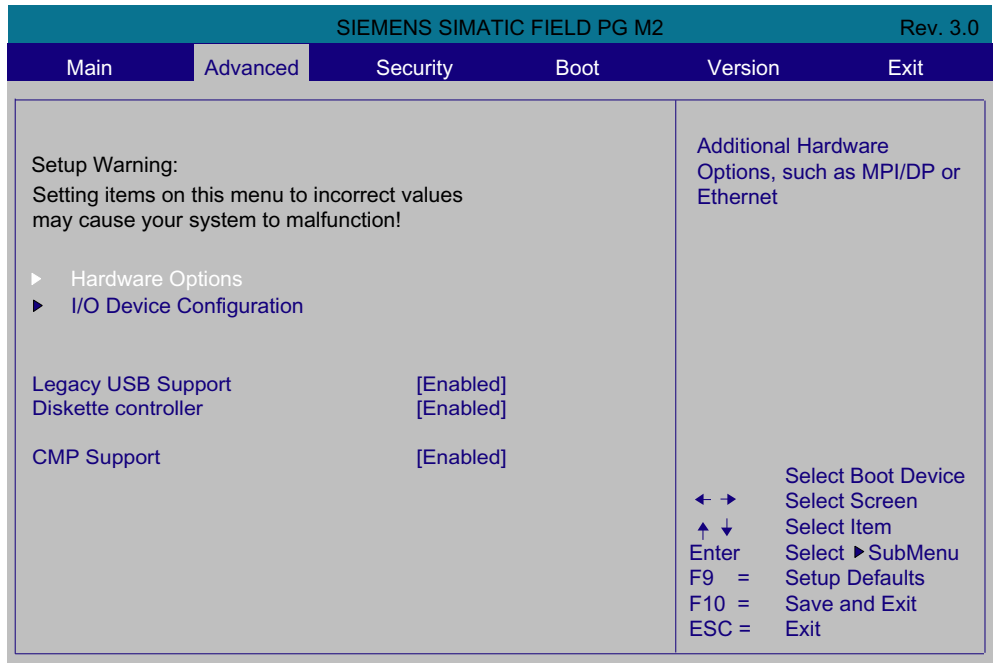


Figure 14-2 "Advanced" menu (example)

#### Settings in the Advanced Menu

Entry	Meaning
Legacy USB support	Enable or disable Legacy Universal Serial Bus.
Diskette controller	Enable or disable the diskette controller.
CMP support	Enable or disable the dual core processor mode.

## "Hardware Options" submenu

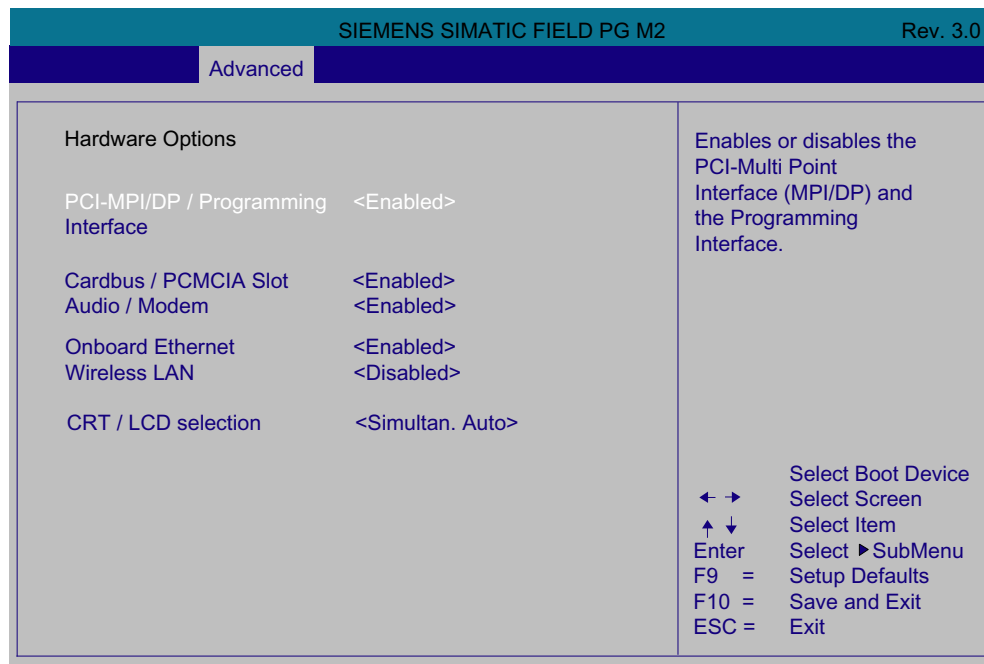


Figure 14-3 "Hardware Options" submenu (Example)

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

Entry	Meaning	
PCI-MPI/DP / Programming Interface	Enable or disable the CP 5611-compatible MPI/DP interface, and the SIMATIC memory card interface.	
Cardbus/PCMCIA slot	Enable or disable the Cardbus / PCMCIA slots.	
Audio / Modem	Enable or disable the integrated audio controller, and mode.	
On-board Ethernet	Enable or disable the onboard Ethernet interface.	
Wireless LAN	Disabled (default)	The WLAN is always OFF when you switch on, or restart the device. The state set under Windows is retained after Hibernation or Standby mode.
	Enabled	The WLAN is always ON when you switch on, or restart the device. The state set under Windows is retained after Hibernation or Standby mode.
	Last State	The state set under Windows is retained after switching on or restarting, and after Hibernation or Standby mode.
	Note: You can always use hotkey Fn + F3 to switch the WLAN on/off under Windows, regardless of the BIOS settings.	

Entry	Meaning
CRT / LCD selection	In Windows mode these settings can be overwritten by graphics driver.
	[CRT only] for highest resolution, the display signals are only output on the 15-pin VGA port, the LCD interface of the VGA controller is switched off.
	[LCD only] all data is only output on the internal LCD, the 15-pin VGA port is switched off.
	[Simultan. Auto] With a connected monitor, both display interfaces are operated

"I/O Device Configuration" submenu

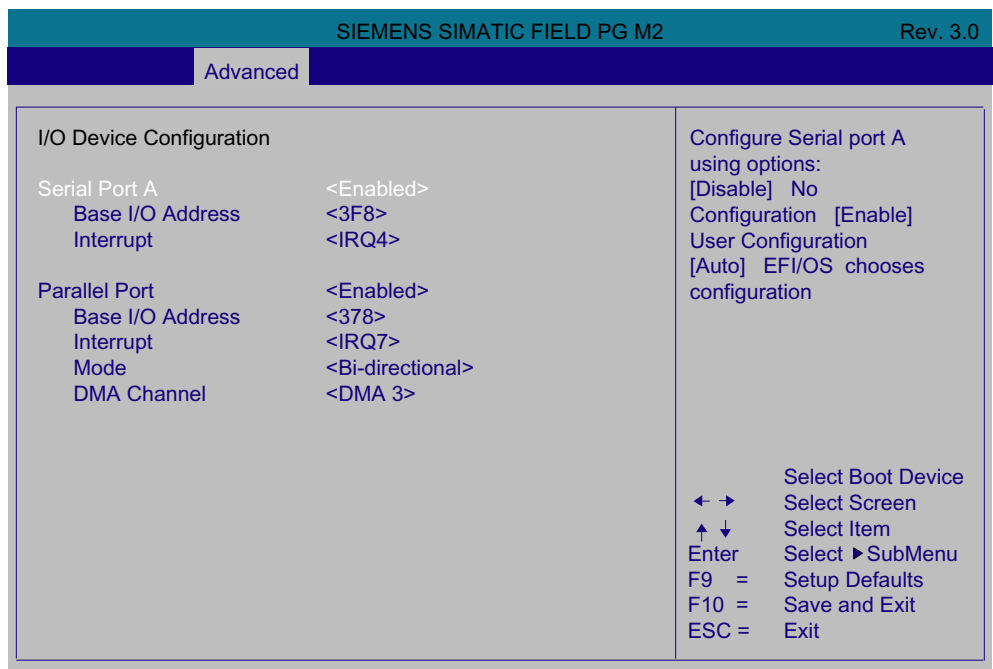


Figure 14-4 "I/O device configuration" submenu

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.

## 14.4.4 Security Menu

In this menu you can limit access to the PG by setting up passwords. First you must enter a password for the supervisor. You can delete the supervisor password by entering the current password, and repeatedly confirming the blank password box.

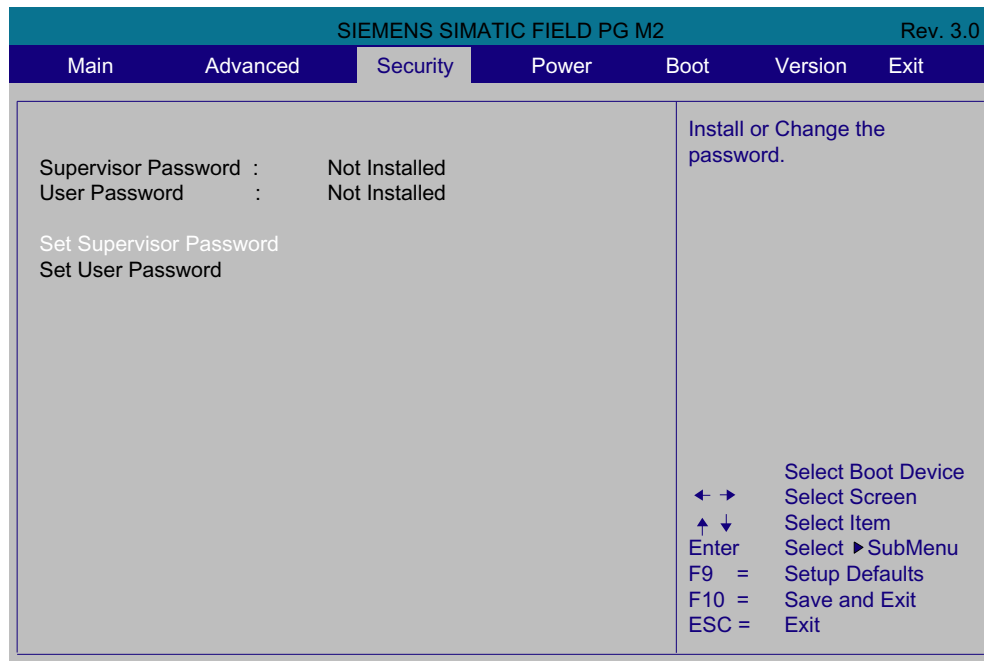


Figure 14-5 Security menu

14.4.5 Power menu

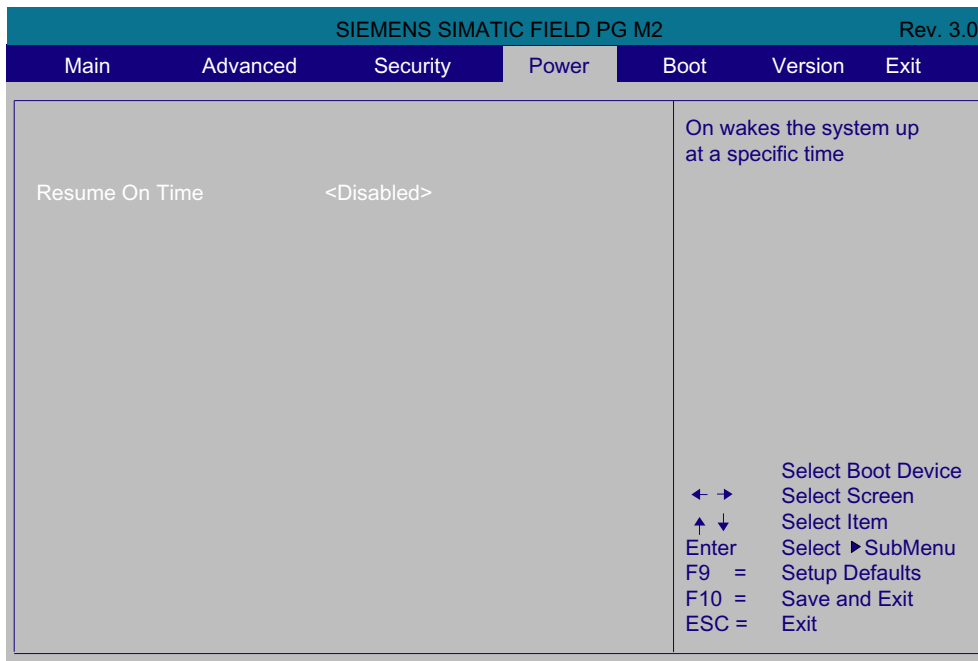


Figure 14-6 Power menu

Resume On Time	[Disabled]	This function is disabled.
	[Enabled]	This function is used to switch the device on automatically at the time specified at the bottom.
Resume Time	Time for automatic restart	



## 14.4.6 Boot menu

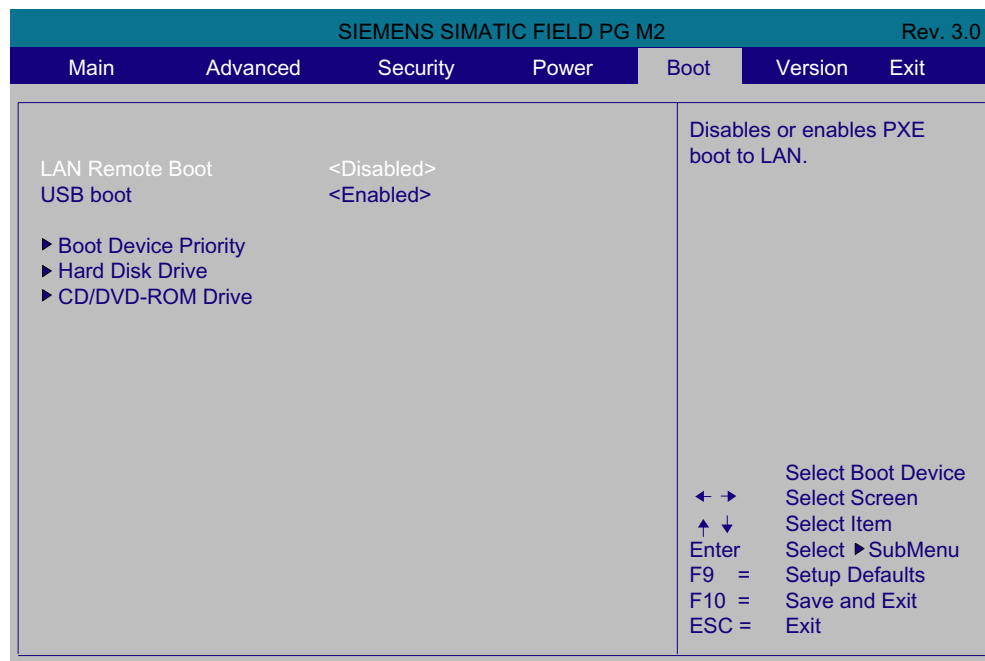


Figure 14-7 Boot Menu

LAN Remote Boot	Enable or disable booting of the LAN.
USB Boot	Enable or disable booting of the USB ports.

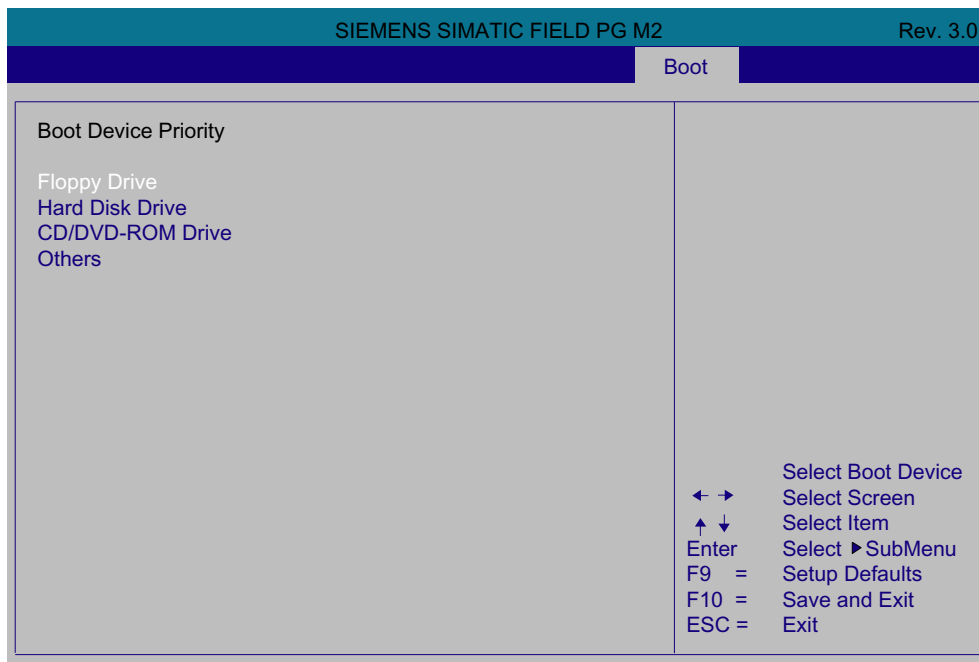


Figure 14-8 Boot Device Priority submenu

Here you can set the order of the boot drives. Press the "+" key to move the selected entry up in the order.

### 14.4.7 Version menu

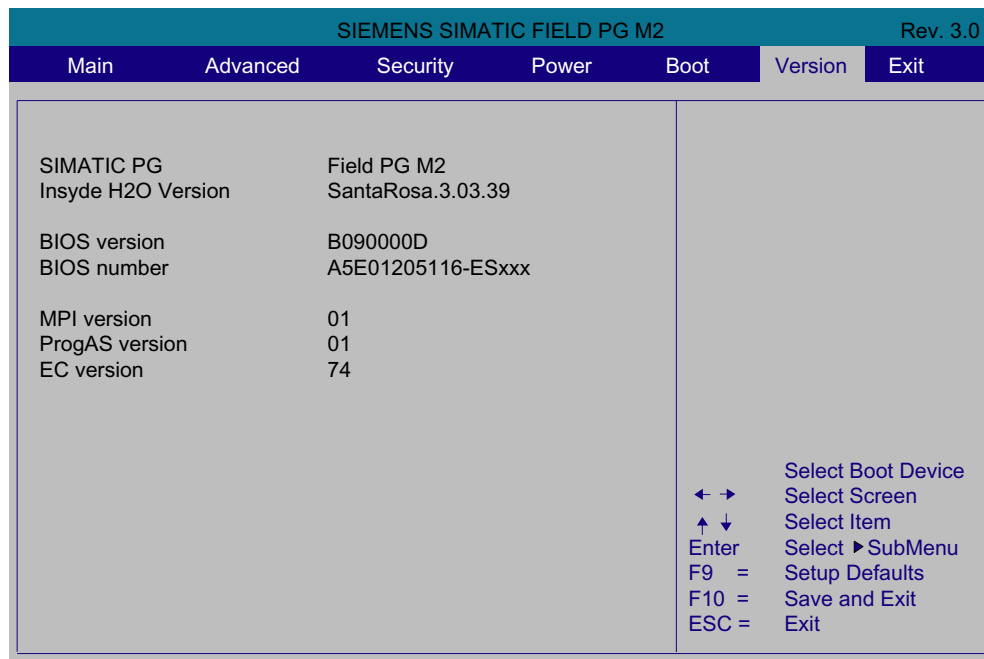


Figure 14-9 Version menu

### 14.4.8 Exit menu

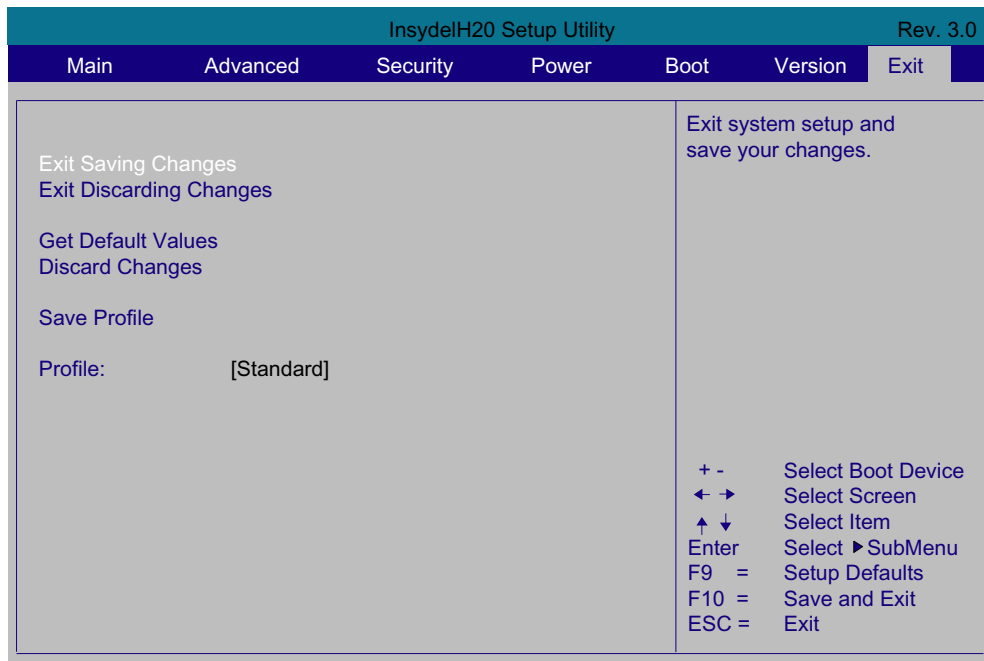


Figure 14-10 Exit menu

Exit Saving Changes	All changes are saved; a system restart is carried out with the new parameters.	
Exit Discarding Changes	All changes are discarded.	
Get Default Values	All parameters are set to the recommended default values.	
Discard Changes	Undoes all the changes you have made.	
Profile	Standard	Corresponds to the default configuration.
	Manufacturer	Factory setting, intended for production

## Appendix

### A.1 Guidelines and declarations

#### Notes on the CE mark

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

#### EMC directive

This product meets requirements of EC directive 89/336/EEC Electromagnetic Compatibility, and is designed for the following applications as defined by the CE mark:

Application	Requirement for	
	Emissions	Immunity
Residential, business and commercial operations, and small businesses	EN 61000-6-3: 2001	EN 61000-6-1: 2001
Industrial applications	EN 61000-6-4: 2001	EN 61000-6-2: 2001

The device complies with the standards EN 61000-3-2:2000 (harmonic currents) and EN 61000-3-3:1995+A1:2001 (voltage fluctuation and flicker).

#### Low voltage directive

This product fulfills the Directive 2006/95/EEC of the European Parliament and of the Council on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

Requirements of EC Directive 73/23/EEC "Low-voltage directive". Compliance with this standard has been verified according to EN 60950-1 +A11.

#### RTTE directive

This product meets the requirements of EC directive 1999/5/EEC "Radio Equipment and Telecommunications Terminal Equipment - Use of the Radio Spectrum": EN 300 328-2 V1.2.1 EN 300 893 V1.2.3

Safety: see the low voltage directive

EMC: see the EMC directive

Network-compatibility of modem interface: TBR21

### 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.

### Installation guidelines

The installation guidelines and safety notices specified in the supplied documentation must be adhered to during commissioning and operation.

### Connecting peripherals

The requirements relating to noise immunity according to EN 61000-6-2:2001 are met when you connect a peripheral suitable for an industrial environment. Peripheral devices must only be connected using shielded cables.

## A.2 Certificates and approvals

### DIN ISO 9001 certificate

The Siemens quality management system for all production processes (development, production, and sales) meets DIN ISO 9001:2000 requirements.

This has been certified by DQS (the German society for the certification of quality management systems).


Q-Net certificate no.: DE-001108 QM

### Software License Agreement

The device is shipped with preinstalled software. Please observe the corresponding license agreements.

### Certifications for the United States, Canada, and Australia

#### Product safety

<b>The following approval is available for the device:</b>	
	Underwriters Laboratories (UL) according to Standard UL 60950-1 and Canadian Standard C22.2 No. 60950-1-3

### WLAN

The integrated wireless LAN conforming to IEEE 802.11 a/b/g is certified for the following countries: Germany, France, Italy, Spain, Great Britain, Austria Please follow the relevant local regulations when operating the device outside these countries.

## A.3 Service and support

### Local information

If you have questions about the products described in this document, you can find help at:  
<http://www.siemens.com/automation/partner>

### Technical documentation for SIMATIC products

Further documentation for SIMATIC products and systems can be found at:  
<http://www.siemens.de/simatic-tech-doku-portal>

### Easy shopping with the A&D Mall

Catalog & online ordering system <http://www.siemens.com/automation/mall>

### Training

All the training options are listed at: <http://www.siemens.com/sitrain>  
Find a contact at: Phone: +49(911) 895-3200

### Technical support

Tel +49 180 5050 222  
Fax +49 180 5050 223  
<http://www.siemens.com/automation/service>

You will find support request web form at:  
<http://www.siemens.de/automation/support-request>

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

### Online support

Information about the product, Support and Service, right through to the Technical Forum, can be found at: <http://www.siemens.com/automation/service&partner>

### After-sales information system for SIMATIC PC / PG

Information about contacts, drivers, and BIOS updates, FAQs and Customer Support can be found at: <http://www.siemens.com/asis>

## A.4 Accessories

You can order accessories for the Field PG M2 using the following order numbers:

Order no.	Accessory
6ES7798-0CA00-0XA0	S5 EPROM Adapter
6ES7648-2AG40-0HA0	Memory module 1 GB DDR2 RAM
6ES7648-2AG50-0HA0	Memory module 2 GB DDR2 RAM
6ES5734-2BF00	S5 AG cable 5m
6ES7901-0BF00-0AA0	MPI cable
6ES7791-2BA00-0AA0	Hard disk kit (hard disk module, screwdriver, protective case)
6ES7790-1AA00-0AA0	USB to SATA adapter (for connecting the hard disk kit via the USB interface)



## ESD guidelines

### B.1 ESD guidelines

#### Definition of ESD

All electronic modules are equipped with large-scale integrated ICs or components. Due to their design, these electronic elements are highly sensitive to overvoltage, and thus to any electrostatic discharge.

The electrostatic sensitive components/modules are commonly referred to as ESD devices. This is also the international abbreviation for such devices.

ESD modules are identified by the following symbol:



#### CAUTION

ESD devices can be destroyed by voltages well below the threshold of human perception. These static voltages develop when you touch a component or electrical connection of a device without having drained the static charges present on your body. The electrostatic discharge current may lead to latent failure of a module, that is, this damage may not be significant immediately, but in operation may cause malfunction.

### Electrostatic charging

Anyone who is not connected to the electrical potential of their surroundings can be electrostatically charged.

The figure below shows the maximum electrostatic voltage which may build up on a person coming into contact with the materials indicated. These values correspond to IEC 801-2 specifications.

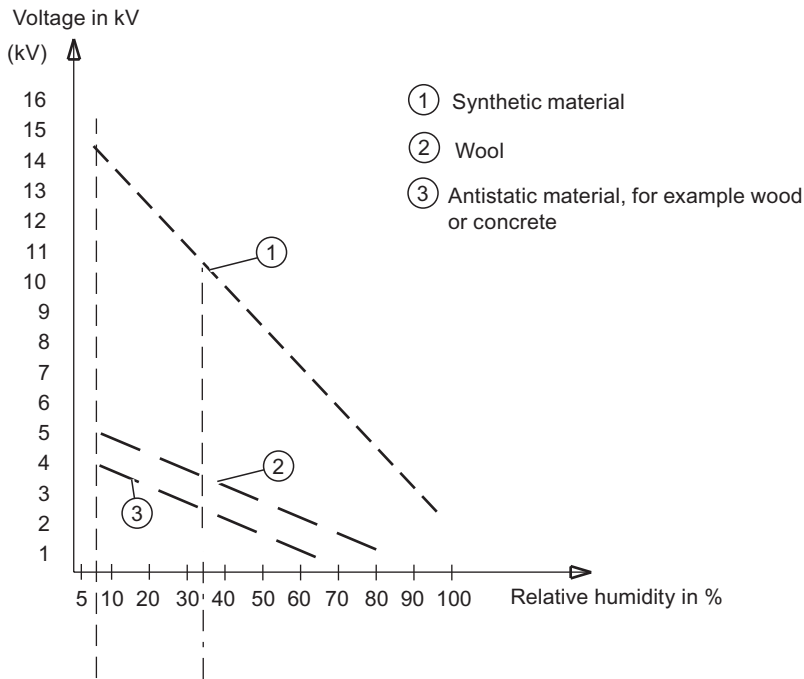


Figure B-1 Electrostatic voltages on an operator

### Basic protective measures against electrostatic discharge

- Ensure good equipotential bonding:  
When handling electrostatic sensitive devices, ensure that your body, the workplace and packaging are grounded. This prevents electrostatic charge.
- Avoid direct contact:  
As a general rule, only touch electrostatic sensitive devices when this is unavoidable (e.g. during maintenance work). Handle the modules without touching any chip pins or PCB traces. In this way, the discharged energy can not affect the sensitive devices.

Discharge your body before you start taking any measurements on a module. Do so by touching grounded metallic parts. Always use grounded measuring instruments.

## List of abbreviations

### C.1 Abbreviations

Abbreviation	Term	Meaning
AC	Alternating current	Alternating current
ACPI	Advanced Configuration and Power Interface	
PLC	Programmable controller	
AGP	Accelerated Graphics Port	High speed bus system
AHCI	Advanced Host Controller Interface	Controller interface for SATA devices. Supported in Microsoft Windows XP as of SP1 and IAA driver.
APIC	Advanced Programmable Interrupt Controller	Extended programmable interrupt controller
APM	Advanced Power Management	Tool for monitoring and reducing power consumption of the PC
AS	Automation system	
ASIS	After Sales Information System	
AT	Advanced Technology	
ATA	Advanced Technology Attachment	
ATX	AT-Bus-Extended	
AWG	American Wire Gauge	US standard for the cable diameter
BIOS	Basic Input Output System	Basic Input Output System
CAN	Controller Area Network	
CD-ROM	Compact Disc – Read Only Memory	Removable storage medium for large data volumes
CD-RW	Compact Disc – Rewritable	Rewritable CD
CE	Communauté Européenne (CE symbol)	The product is in conformance with all applicable EC directives
CF	Compact Flash	
CGA	Color Graphics Adapter	Standard monitor interface
CLK	Clock pulse	Clock signal for controllers
CMOS	Complementary Metal Oxide Semiconductors	Complementary metal oxide semiconductors
COA	Certificate of authentication	Microsoft Windows Product Key

List of abbreviations

C.1 Abbreviations

Abbreviation	Term	Meaning
CoL	Certificate of License	License authorization
COM	Communications Port	Term for the serial interface
CP	Communication Processor	Communication computer
CPU	Central Processing Unit	CPU
CRT	Cathode Ray Tube	
CSA	Canadian Standards Association	Canadian organization for tests and certifications according to own or binational standards (with UL / USA) standards
CTS	Clear To Send	Clear to send
DRAM	Dynamic Random Access Memory	
DC	Direct Current	DC current
DCD	Data Carrier Detect	Data carrier signal detection
DMA	Direct Memory Access	Direct memory access
DOS	Disk Operating System	Operating system without GUI
DP	Distributed I/Os	
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 Disk	Digital versatile disk
DVI	Digital Visual Interface	Digital display interface
DVI-I	Digital Visual Interface	Digital display interface with digital and VGA signals
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"

Abbreviation	Term	Meaning
FSB	Front Side Bus	
GND	Ground	Chassis ground
HD	Hard disk	Hard disk
HDA	High Definition Audio	
HDD	Hard Disk Drive	HDD
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	
I/O	Input/Output	Data input/output on computers
IAA	Intel Application Accelerator	
IDE	Integrated Device Electronics	
IEC	International Electrotechnical 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
ITE	Information Technology Equipment	
L2C	Level 2 cache	
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	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 of the format 32 mm x 24.5 mm
MPI	Multipoint-capable interface for programming devices	
MS-DOS	Microsoft Disc Operating System	
MTBF	Mean Time Between Failures	
MUI	Multilanguage User Interface	Language localization in Windows
NA	Not Applicable	
NAMUR	Normenarbeitsgemeinschaft für Mess- und Regelungstechnik in der chemischen Industrie (standardization body for instrumentation and control technology in the chemicals industry)	

List of abbreviations

C.1 Abbreviations

Abbreviation	Term	Meaning
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 Windows versions (2000, XP, Vista)
ODD	Optical Disk Drive	
OPC	OLE for Process Control	Standardized interface for industrial processes
PATA	Parallel ATA	
PC	Personal computer	
PCI	Peripheral Component Interconnect	High-speed expansion bus
PCIe	Peripheral Component Interconnect express	High-speed serial, differential full-duplex PtP interface with high data rate.
PCMCIA	Personal Computer Memory Card International Association	
PE	Protective Earth	Protective conductor
PEG	PCI Express Graphics	
PG	Programming device	
PIC	Programmable Interrupt Controller	Programmable interrupt controller
POST	Power On Self Test	
PXE	Preboot Execution Environment	Software for running new PCs without hard disk data via the network
RAID	Redundant Array of Independent Disks	Redundant hard disk array
RAM	Random Access Memory	
RI	Ring Input	Incoming call
ROM	Read-Only Memory	
RS 485	Reconciliation Sublayer 485	Bi-directional bus system designed for up to 32 nodes
RTC	Real Time Clock	Real-time clock
RTS	Reliable Transfer Service	Request to send
RxD	Receive Data	Data transfer signal
SATA	Serial Advanced Technology Attachment	
SCSI	Small Computer System Interface	
SDRAM	Synchronous DRAM	
SELV	Safety Extra Low Voltage	Safety extra low voltage
SLC	Second Level Cache	
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)	

Abbreviation	Term	Meaning
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.	US organization for tests and certifications according to own or binational standards (with CSA / Canada) standards
UMA	Unified Memory Architecture	Video memory
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 1600x1200 pixels.
V.24		ITU-T standardized recommendation for data transfer via serial ports
VDE	Verein deutscher Elektrotechniker (Union of German Electrical Engineers)	
VGA	Video Graphics Array	Video adapter which meets industrial standard
VRM	Voltage Regulator Module	
W2k	Windows 2000	
WAV	Wave Length Encoding	Loss-free file format for audio data
WD	Watchdog	Program monitoring with error detection and alarming.
WLAN	Wireless LAN	LWireless local area network
WWW	World Wide Web	
XGA	Extended Graphics Array	Graphic standard, maximum resolution 1024x768 pixels.





# Glossary

## **ATAPI CD-ROM Drive**

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

## **Automation system (AS)**

A programmable controller (PLC) of the SIMATIC S7 system consist of a central controller, one or several CPUs, and various I/O modules.

## **Backup**

Duplicate of a program, data medium 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. Certain applications automatically generate backup copies of data files, and manage both the current and the previous versions on the hard disk.

## **Baud**

Physical unit for the step speed in signal transmission. Defines the number of transferred signal states per second. With only two states, one baud is equivalent to a transmission rate of 1 bps.

## **BEEP code**

If the BIOS detects a boot error, it outputs an audible warning based on the current test result

## **Boot disk**

A boot disk is a bootstrap disk with "Boot" sector. This can be used to load the operating system from the disk.

## **Booting**

Start or restart of the computer. During booting the operating system is transferred from the system data medium to the work memory.

## **Cache**

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

### **CE label**

**Communauté Européene** The CE mark confirms compliance of the product with corresponding EC Directives, for example, with the EMC Directive.

### **Chipset**

Located on the motherboard, connects the processor with the RAM, the graphics controller, the PCI bus, and the external interfaces.

### **Cold restart**

A start sequence, starting when the computer is switched on. The system usually performs some basic hardware checks within the cold start sequence, and then loads the operating system from the hard disk to work memory -> boot

### **COM interface**

The COM interface is a serial V.24 interface. The interface is suitable for asynchronous data transfer.

### **Compact Flash cards (CF)**

Compact Flash is a digital storage medium in card format and without moving parts. The CF card contains the non-volatile memory and the controller. The interface of the CF card corresponds with the IDE interface. CF cards can be operated without additional electronics on PCMCIA or IDE hard disk controllers using a plug and socket adapter. There are two design forms: CF-I (42.6 x 36.4 x 3.3 mm) and CF-II (42.8 x 36.4 x 5 mm).

### **Configuration files**

These are files containing data which define the configuration after restart. Examples of such files are CONFIG.SYS, AUTOEXEC.BAT and the registry files .

### **Configuration software**

The configuration software updates the device configuration when new modules are installed . This is done either by copying the configuration files supplied with the module or by manual configuration using the configuration utility.

### **Controller**

Integrated hardware and software controllers that control the functions of certain internal or peripheral devices (for example, the keyboard controller).

**Device configuration**

The configuration of a PC or programming device contains information on hardware and device options, such as memory configuration, drive types, monitor, network address, etc. The data are stored in a configuration file and enable the operating system to load the correct device drivers and configure the correct device parameters. . If changes are made to the hardware configuration, the user can change entries in the configuration file using the SETUP program. .

**Disc-at-once**

With this burning technique, data are written to a CD in a single session, and the CD is then closed. Further write access is then no longer possible.

**Drivers**

Program parts of the operating system. They adapt user program data to the specific formats required by I/O devices such as hard disk, printers, and monitors.

**Dual Core CPU**

Dual-core processors significantly increase the speed of computing and program execution compared to the previous generation of single-core processors with hyperthreading technology.

**EMC directive**

Directive concerning **E**lectromagnetic **C**ompatib**l**ity. Compliance is confirmed by the CE symbol and the EC certificate of conformity.

**Energy management**

The energy management functions of a modern PC allow individual control over the current consumption of vital computer components (e.g. of the monitor, hard disk and CPU), by restricting their activity based on the current system or component load. Energy management is of particular importance for mobile PCs.

**Energy options**

The energy options can be used to reduce energy consumption of the computer, while keeping it ready for immediate use. This can be configured in Windows by selecting Settings > Control Panel > Energy options.

**Enhanced Write Filter (EWF)**

Configurable write filter that allows you, for example, 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).

### **ESD directive**

Directive for using electrostatic sensitive components.

### **Ethernet**

Local network (bus structure) for text and data communication with a transfer rate of 10/100 Mbps.

### **Formatting**

Basic partitioning of memory space on a magnetic data medium into tracks and segments. Formatting deletes all data on a data medium. All data media must be formatted prior to their first use.

### **Gender changer**

Using the gender changer (25-pin / 25-pin), the COM1/V24/AG interface of the SIMATIC PC family can be converted to the usual 25-pin male connector.

### **Hard disk drives**

Hard disks represent a form of magnetic disk storage medium (Winchester drives, hard disks) with integrated magnetic disks.

### **Hot swapping**

The SATA interface gives the device's hard drive system hot-swap capability. Prerequisite for this configuration is a RAID1 system with SATA RAID controller (on-board, or slot module), and at least two SATA removable cartridges. The advantage of hot swapping is that defective hard disks can be replaced without having to reboot the computer.

### **Hub**

A term in network technology. In a network, a device joining communication lines at a central location, providing a common connection to all devices on the network.

### **Hyper Threading**

HT technology (multi-threading) enables the parallel computing of processes. HT is only effective when all relevant system components, such as processors, operating systems and applications are supported.

### **Image**

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

**Interface**

see Interface

- Physical interconnection (cable) of hardware elements such as PLCs, PCs, programming devices, printers or monitors.
- Interface for interactive software applications.

**Interface**

see Interface

- Physical interconnection (cable) of hardware elements such as PLCs, PCs, programming devices, printers or monitors.
- Interface for interactive software applications.

**Interface, multi-point**

MPI is the programming interface of SIMATIC S7/M7. Allows remote access to programmable modules, text-based displays and OPs from central locations. The MPI nodes can intercommunicate.

**LAN**

**Local Area Network:** LAN is a local network that consists of a group of computers and other devices that are distributed across a relatively restricted range and are linked with communication cables. The devices connected to a LAN are called nodes. The purpose of networks is the mutual use of files, printers or other resources.

**Legacy USB support**

Support of USB devices (e.g. mouse, keyboard) on the USB ports without driver.

**License key**

The license key represents the electronic license stamp of a license. Siemens provides the license keys for protected software.

**License key disk**

The license key disk contains the authorizations or license keys required to enable protected SIMATIC software.

**Low-voltage directive**

EC Product Safety Directive relating to the safety of products which are operated on low voltage (50 VAC to 1000 VAC, 70 VDC to 1500 VDC) and not specified in other directives. Compliance is confirmed by the CE symbol and the EC certificate of conformity.

### **LPT interface**

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

### **Memory card**

Memory cards in credit card format. Memory for user programs and parameters, for example, for programmable modules and CPs.

### **Module**

Modules are plug-in units for PLCs, programming devices or PCs. They are available as local modules, expansion modules, interfaces or mass storage (Mass storage module).

### **Module retainer**

The module retainer 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 retainer for this type of module. There are also short, compact and light modules on the market. The module retainer was not designed for these modules because the standard fastening is sufficient for them.

### **Motherboard**

The motherboard is the core of the computer. Here, data are processed and stored, and interfaces and device I/Os are controlled and managed.

### **NEC Class 2**

The "NEC", National Electrical Code, is the USA collection of regulations that generally correspond to German VDE 0100 standards. All USA standards governing the safety of electrical equipment and corresponding "deviations" in IEC standards are based on NEC in terms of their country-specific requirements.

NEC Class 2 specifies higher safety requirements for protection against electric shock and National Fire Protection Association (NFPA) requirements for fire protection. Power supplies operating within the range from 20 VDC to 30 VDC must be equipped with an internal current limiting circuit which safely prevents output power higher than 100 VA.

### **Operating system**

Generic term which describes all functions for controlling and monitoring user program execution, distribution of system resources to the user programs and the operating mode in cooperation with the hardware (for example Windows XP Professional).

**Packet writing**

The CD-RW is used as a disk medium. The CD can then be read only by packet-writing compatible software or has to be finalized. Finalization of a CD closes the CD within an ISO9660 shell. You can still write to the CD-RW several times in spite of finalization. Not all CD drives can read packet-written CDs. There are restrictions to using this method in general data transfer.

**PATA**

Interface for hard disk drives and optical drives, with parallel data transmission rate up to 100 Mbps.

**PC card**

Trademark of the Personal Computer Memory Card International Association (PCMCIA). Designation for auxiliary cards that conform with PCMCIA specifications. A PC card that has roughly the size of a credit card can be plugged into a PCMCIA slot. Version 1 specifies cards of Type I with a thickness of 3.3 millimeters, which are designed mainly for use as external memory. Version 2 of the PCMCIA specification also defines cards of Type II with a thickness of 5 mm and cards of Type III with a thickness of 10.5 mm. Type II cards can realize devices such as modems, fax cards and network interface cards. Type III cards are equipped with devices that require more space, for example wireless communication modules, or rotary storage media such as hard disk drives, for example.

**PC/104 / PC/104-Plus**

Two bus architectures are especially fashionable today in the industrial world. PC/104 and PC/104-*Plus*. Both are standard in single-board computers of the PC class. The electrical and logical layout of the two bus systems is identical with ISA (PC/104) and PCI (PC/104-*Plus*). Software cannot usually detect a difference between them and normal desktop bus systems. Their advantage is the compact design and the resulting space they save.

**PCMCIA**

Association consisting of approx. 450 member companies of the computer industry whose focus is set on providing worldwide standards for miniaturization and flexible use of PC expansion cards in order to provide basic technologies to the market.

**Pixel**

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

**Plug&Play**

Generally, a reference to the ability of a computer to automatically configure the system for communication with peripheral devices (for example monitors, modems or printers). The user can plug in a peripheral and "play" it at once without manually configuring the system. A Plug&Play PC requires both a BIOS that supports Plug&Play and a Plug&Play expansion card.

## POST

Self-test performed by the BIOS after the computer is switched on. Performs a RAM test and a graphics controller test, for example. The system outputs audible signals (beep codes) if the BIOS detects any errors; the relevant message indicating cause of error is output on the screen.

## PROFIBUS/MPI

**Process Field Bus** (standard bus system for process applications)

## Programmable controller (PLC)

The programmable controllers (PLC) of the SIMATIC S5 system consist of a central controller, one or more CPUs, and various other modules (e.g. I/O modules).

## PXE server

A **Preboot Execution Environment** server is part of a network environment and can provide software to connected computers even before they boot. This can involve operating system installations or servicing tools, for example.

## RAID

**Redundant Array of Independent Disks**: Data storage system which is used to save data and the corresponding error correction codes (parity bits, for example) to at least two hard disk volumes in order to enhance reliability and performance. The hard disk array is controlled by management programs and a hard disk controller for error correction. The RAID system is usually implemented in network servers.

## Recovery CD

Contains the tools for configuring hard disks and the Windows operating system.

## Reset

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

## Restart

Warm restart of a computer without switching the power off (Ctrl + Alt + Del)

## Restore DVD

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



## **ROM**

Read-Only Memory ROM is a read-only memory in which every memory location can be addressed individually. The programs or data are permanently stored and are not lost in the event of a power failure.

## **SCSI interface**

Small Computer System Interface Interface for connecting SCSI devices such as hard disk drives or optical drives.

## **Session at once**

In session at once, the CD can be written to both with an audio session and a data session. The two sessions are written to at once (as in disc at once).

## **SETUP (BIOS Setup)**

A program in which information about the device configuration (that is the configuration of the hardware on the PC/PG) is defined. The device configuration of the PC/PG is preset with defaults. Changes must therefore be entered in the SETUP if a memory expansion, 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

## **V.24 interface**

V.24 is a standardized interface for data transfer. Printers, modems, and other hardware modules can be connected to a V.24 interface.

## **Warm restart**

The restart of a computer after a program was aborted. The operating system is loaded and restarted again. The CTRL+ ALT+ DEL hotkey can be used to initiate a warm restart.

## **Windows**

Microsoft Windows is a multitasking graphical user interface. Windows provides a standard graphical interface based on drop-down menus, windowed regions on the screen, and allows operation with a pointer device such as a mouse.

## **WLAN**

**Wireless LAN** is a local network that transmits data via radio waves, infrared light or another wireless technology. Wireless LAN is mainly used for mobile computer applications in office or factory environments.

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