SIEMENS

SIMATIC

Programming device SIMATIC Field PG M3

Operating Instructions

09/2010
A5E02617852-02

Legal information

Warning notice system

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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

CAUTION

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

NOTICE

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

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

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation for the specific task, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be adhered to. The information in the relevant documentation must be observed.

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Disclaimer of Liability

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

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Table of contents

Introduction

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1.1 Preface

Purpose of this documentation

This manual contains all the information you need to commission and use the SIMATIC Field PG M3.

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 is valid for all available versions of the SIMATIC Field PG M3 and describes the delivery state as of September 2010.

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 term "PG" or "device" is also used to refer to the SIMATIC Field PG M3 product in this documentation.

History

Currently released versions of this operating manual:

Issue	Comment
04/2010	First edition

1.2 Guideline to the operating instructions

Contents format	Contents
Table of Contents	Organization of the documentation, including the index of pages and chapters
Introduction	Purpose, layout and description of the important topics
Safety-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 notes

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2.1 General safety instructions

⚠ CAUTION
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 qualified personnel are permitted to repair the device.

⚠ WARNING
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.

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

Battery

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

⚠ CAUTION

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

⚠ WARNING

Risk of explosion and release of harmful substances!

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

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3.1 Overview

The SIMATIC Field PG M3 is a complete, ready-to-operate, and pre-configured programming tool for the components of SIMATIC industrial automation.

Figure 3-1 SIMATIC Field PG M3

3.2 Application areas

The compact SIMATIC Field PG M3 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

Its robust design makes the Field PG M3 especially well-suited for harsh industrial environments. This is evidenced by the housing made of impact-resistant and torsionally-rigid magnesium alloy and the generously sized bumpers on the corners of the housing, among other design features.

3.3 Highlights

Greatest possible mobility guaranteed

- Notebook structure (dimensions, weight) optimal for use in cramped spaces at the plant as well as when traveling
- High-performance lithium-ion battery with 71 Wh (rated capacity) ensures long operation without a connection to the power system.
- Housing made of magnesium alloy housing with soft plastic corners – providing good protection for the electronics inside
- High-performance graphics controller for support of dual displays (16:9 format)
- Large 15.6" display with full HD or HD-ready 16:9 format ensures ergonomic work

Industrial functionality

- Integrated PROFIBUS DP/MPI interface
- COM/TTY interface

  The TTY interface used is dependent on the selected hardware.
- Programming interfaces for SIMATIC Memory Card, Micro Memory Card, and S5 EPROM modules
- Integrated card reader for SIMATIC Memory Card (SMC), SD, SDHC, MS, and XD Card
- Link to company networks and WAN without additional hardware costs due to two integrated independent and fully-fledged Gigabit Ethernet interfaces
- Wireless LAN corresponding to IEEE 802.11 a/b/g/n
- Fast, easy to replace SATA hard disk
- 4 USB 2.0 interfaces (high current-capable); 1 USB 2.0 interface is specially prepared for use with USB Bluetooth dongle
- HDA interface (high definition audio) for sound and modem
- Integrated modem (V.92)

System availability

- Optional data backup software Image & Partition Creator V3.1

3.4 Features

General features	
Type of construction	Mobile device
Processor	• Intel® Pentium Dual Core® processor (1.86 GHz, 2 MB cache) • Intel® CORE i5-520M processor (2.40 GHz, 3 MB cache
RAM	Expandable to 8 GB DDR3 SODIMM
Graphics	• Graphics controller: Intel® HD Graphics • Graphics memory DDR3 RAM, 8 to 256 MB, partly using dynamic sharing of system memory • Resolutions/frequencies/colors: According to the setting options of the graphics driver
Power supply	100 to 240 V, wide range
Drives and storage media	
Hard disk	2.5" SATA • Hard disk capacity, see ordering information
Optical drive	DVD+-R/+-RW
Interfaces	
COM TTY/V.24 (optional)	Serial interface TTY, 20 mA, depending on configuration, cannot be retrofitted • "Premium/S5" configuration variant used as standard; • Active to 100 m, 25-pin socket, no galvanic isolation or serial interface V.24
DVI-I	Interface for external monitor (VGA monitors can be operated with a DVI/VGA adapter)
USB 2.0	5 interfaces for high-speed universal serial bus, max. 4 high current (500 mA) or 1 A – per interface block
PROFIBUS/MPI interface	• 9-pin sub-D socket • Transmission rate 9.6 kBaud to 12 MBaud, software configured • Memory address area 0CC00h to 0CC7FFh or 0DC000h to 0DC7FFh
Ethernet	2 x Gigabit Ethernet (RJ45)
Modem	RJ11 V.92 Motorola SM56
Keyboard	Standard notebook
Status displays on the device (LEDs)	Caps Lock Num Lock WLAN active Battery status Device status Access to HD/DVD S5 module/memory card MPI/DP

Software	
Operating systems (32-bit OS in each case):	Installed: • Windows 7 Ultimate, 5 languages German, English, French, Spanish, Italian • Windows XP Professional MUI • MUI: Multi Language User Interface; 5 languages English, German, French, Spanish, Italian

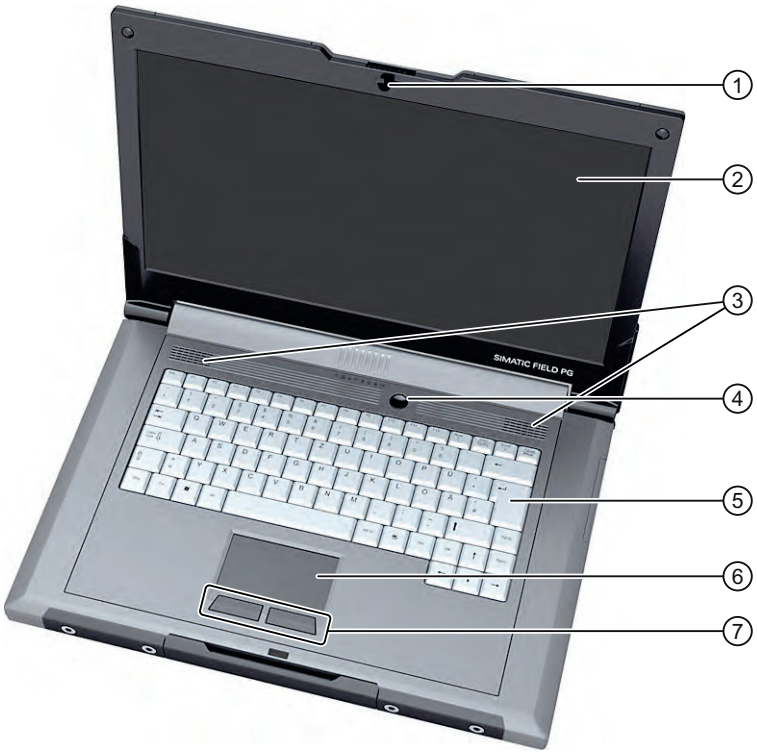
3.5 Design

3.5.1 Exterior design

View with closed display

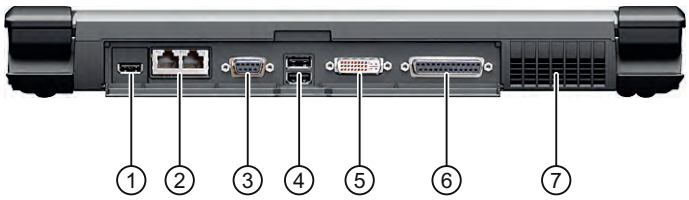
① System and keyboard LEDs
② Display latch
③ Device handle

Front view with display open



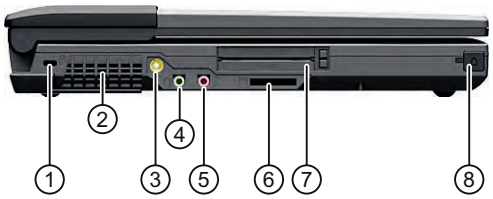
① Display latch
② Display
③ Stereo speakers
④ On/off button (power)
⑤ Keyboard
⑥ Touchpad
⑦ Mouse buttons

View from rear



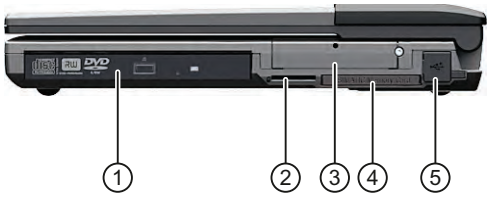
① USB 2.0 for Bluetooth dongle
② 2 Ethernet
③ MPI/DP
④ 2 USB 2.0
⑤ DVI-I
⑥ COM1/TTY (TTY functionality, dependent on variant used)
⑦ Ventilation air outlet

View of left side



① Opening for Kensington lock
② Ventilation air inlet
③ DC IN 19 V
④ Headphones
⑤ Microphone
⑥ Media Card Reader (interface for SMC, SDHC, MMC (Multi Media Card - not SIMATIC MMC), XD and MS Pro)
⑦ Express card and PC card slot
⑧ Modem port (RJ11) with cover

View of right side



① Optical drive
② SIMATIC Micro Memory Card interface
③ Exchangeable hard disk unit
④ Memory card interface
⑤ 2 USB 2.0 (with cover)

View from below

① Memory expansion
② Rating plate
③ Rechargeable battery

3.5.2 Operator controls

3.5.2.1 On/off button

On/off button

① The on/off button (power) has the following functions:

- Switch PG on/off (hold the button down for approximately 1 second; the response depends on the Windows power options settings)
- Switch PG off in the event of a fault (hold down for more than 7 seconds)

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 in Windows XP to assign a response to the on/off button and the lid. 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

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).

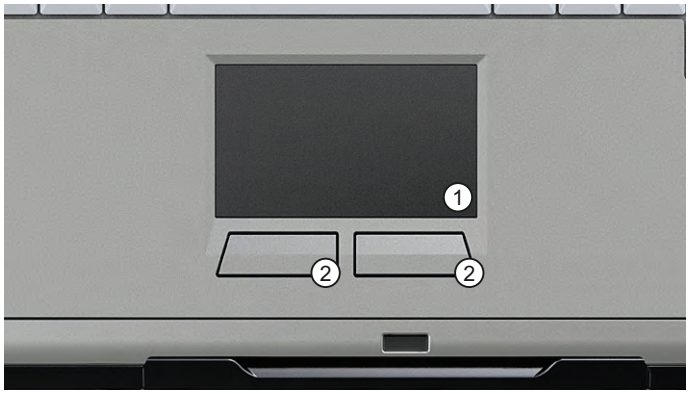
By changing these settings, and by adding extra hardware (such as USB components) or software to the device, you can modify the operating states so that the device cannot switch to Hibernation or Standby mode. Even though the screen display is dark, relevant consumers remain switched on in the device.

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.

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 and mouse buttons



① The touchpad can be used in many programs (with mouse operation) as an input device for controlling the cursor and selecting menus. You can position the touch-sensitive cursor anywhere on the screen.

② Pressing the left mouse button selects an object. The response to the right button depends on the user program.

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:

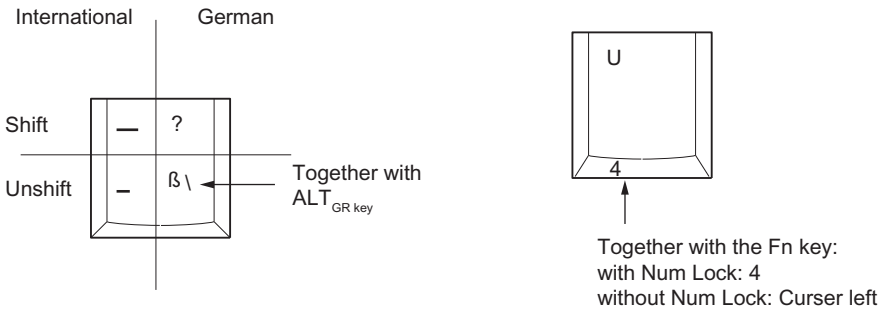
- Alphanumeric keyboard field with hotkeys
- Function keys
- Control keys

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.

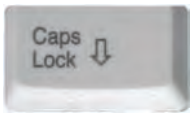
Keyboard labeling

The keyboard comes with international and German labeling.



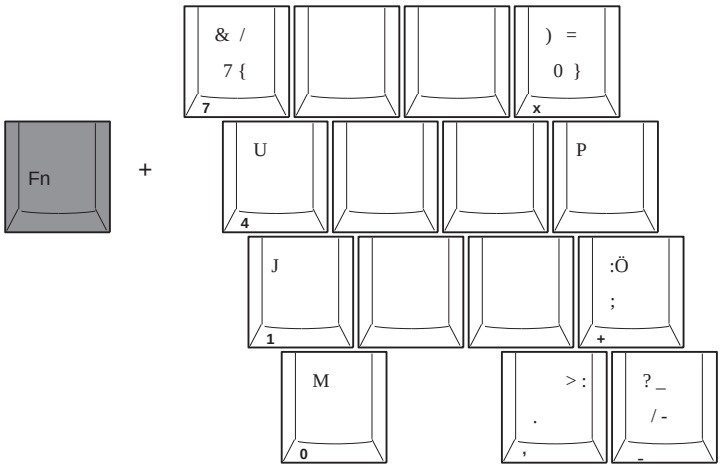
Alphanumeric keyboard field

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
	**Caps Lock** 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.
	**Num Lock key** This toggles the emulated numerical keypad between alphanumeric keys and number keys. The LED display lights up.
	**Scroll Lock** 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).
	**Start key (under Windows)** The start key calls up the Windows Start menu.
	**Menu key (under Windows)** 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.

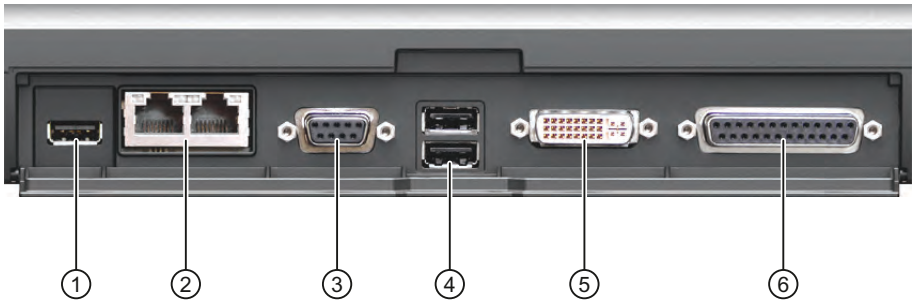
Hotkeys (combination keys)

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

Layout of the interfaces on the rear of the device



① USB 2.0 for Bluetooth dongle (optional)
② 2 RJ45 Ethernet ports for 10/100/1000 Mbps
③ MPI/DP interface (RS 485, electrically isolated), 9-pin sub-D socket
④ 2 USB 2.0 ports
⑤ DVI/VGA port for CRT or LCD monitor with DVI interface, VGA via DVI/VGA adapter
⑥ COM1(TTY) (variant-dependent) for connecting S5 automation devices, or standard V.24 via the "Serial Port Adaptors D9/D25" adapter supplied for connecting devices with a serial port, such as a modem or mouse.

3.5.4 Status displays

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)
	GREEN	MPI interface active
	GREEN	Module programming, memory card or micro memory card, card reader active

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	Caps Lock switched on Caps Lock switched off

WLAN LED

The WLAN LED is located on the right next to the keyboard LEDs and indicates whether WLAN is active.

Symbol	LED	Description
	ORANGE OFF	WLAN switched on WLAN switched off

Application planning 4

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 power cord specifications are compatible. If this is not the case, purchase a power cable that complies with the local conditions. 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 (see Section On/off button (Page 19)).
- 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.

CAUTION
Risk of damage to the device! If you are transporting the PG in extreme weather conditions with large fluctuations in temperature, care must be take to ensure that no moisture form 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.

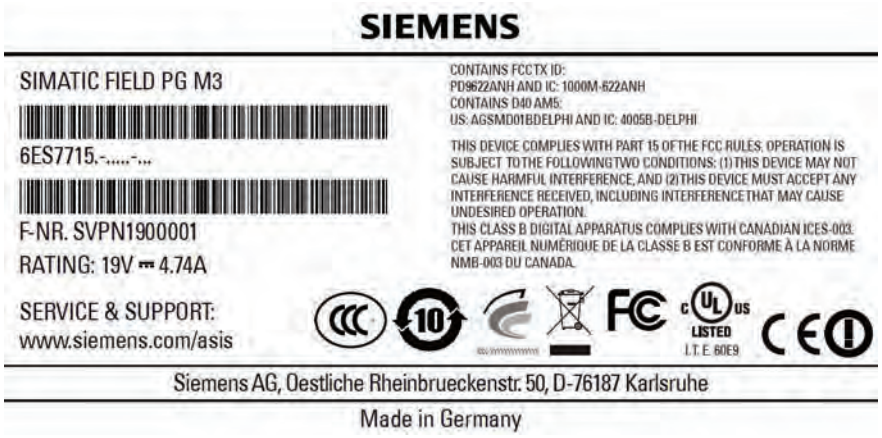
Serial number	S VP ...
Order No.	6ES ...
Microsoft Windows Product Key	
Ethernet address 1	
Ethernet address 2	

Enter the following data in the table:

- 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
- Ethernet address

  The Ethernet addresses of the device can be found in the BIOS Setup (F2 key) under Main > Hardware Options > Onboard Ethernet Address.
- 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

Positioning

5

5.1 Positioning the device

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

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

- 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 latch in the direction of the arrow.
- Flip the display open and adjust it to a convenient viewing angle. The display can be adjusted to any inclination angle between 0 and 150°.

Connecting 6

6.1 Connecting peripherals

To be noted before you connect the device

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

CAUTION
Strictly adhere to the specifications for peripheral equipment.

⚠ WARNING
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

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

Connect USB devices

Connect devices like disk drives, mouse, keyboard and printer to the USB 2.0 ports. One of the three ports at the rear is intended specifically for the USB Bluetooth dongle.

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.

See also

General specifications (Page 75)

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. 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^2) conductor cross-section, and 15 A/250 V connector. The cable set must conform to the safety regulations of the country in which the devices are installed, and bear the prescribed markings in each case.

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 1-15P.

120 V/240 V supply voltage

A flexible cable with UL approval and CSA marking must be used. In addition, the cable must exhibit the following properties:

- SPT-2 or SVT design with two conductors
- At least 18 AWG conductor cross-section
- Max. length of 4.5 m
- Connector 15 A, min. 125 V

Connecting

Steps for connecting the device to mains		
1	Turn the PG over so that it is lying on the table with its display unit closed.	
2	Release ① the battery cover ② on the bottom of the device and open it.	
3	Insert the battery.	
4	Close the cover and turn the device over again.	
5	Insert the supplied power supply cable into the external power supply.	
6	Insert the low-voltage connector into the connection ① on the device.	
7	Plug the external power supply into a socket with a grounded protective conductor.	

6.3 Connect the modem to the telephone outlet

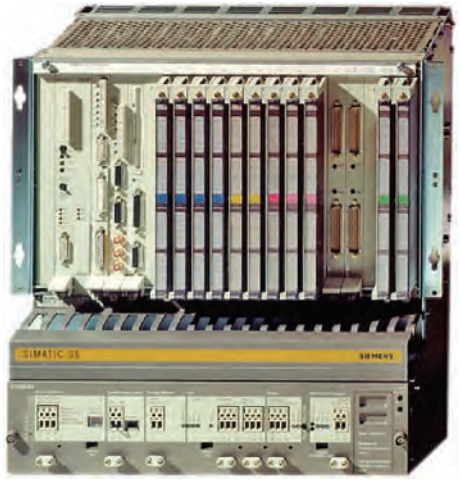
1	Connect the supplied modem cable to the telephone adapter for the local country.	
2	Open the port cap.	
3	Connect the modem cable to the modem connection of the ① PG.	
4	Connect the modem cable to your telephone outlet.	

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

NOTICE
Not all equipment variants of the Field PG M3 have a non-isolated interface (COM1/V.24 modem/AG) for connecting the S5 hardware. 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.	

CAUTION
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 electrically isolated*) MPI/DP 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	Insert the plug-in cable into the MPI/DP interface.	
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.

NOTICE
Malfunction The simultaneous use of MPI/DP Online and a SIMATIC memory card port can cause malfunctions. Simultaneous use is not supported. Terminate the use of the memory card port before using MPI/DP.

Commissioning 7

7.1 Requirements for commissioning

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

CAUTION
Risk of damage to the device! 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 Initial commissioning - initial startup

NOTICE
The programming device may not be switched off at any time during the installation process. **Do not** change the default BIOS settings, otherwise the operating system setup may become corrupted.

Procedure

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, the messages are displayed:

   - `Press F2 to go to Setup Utility`
   - `Press F12 to go to Boot Manager`
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.
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. Use the Control Panel to change to another language and keyboard layout.

- Path under Windows XP:

  Start > Control Panel > Date, Time, Language, and Regional Options > Add other languages.

- Path for Windows 7:

  Start > Control Panel > Clock, Language, and Region > Region and Language

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 the license keys for the SIMATIC software are found on the supplied USB Memory Stick.

In order to use the license keys, open the protective cap of the stick and connect this license stick to a free USB port of your computer.

After a short time a drive named "License_Key" will appear in Windows Explorer.

During a new installation, you will be notified by the Setup program if a matching license key has not been installed on your computer. You can then choose to have the Setup program install the license or to install the license later with the Automation License Manager you are going to install.

If you want to transfer the license key later, follow these steps:

1. Close the Automation License Manager. Locate the drive named "License_Key" in the left pane.
2. Click the drive named "License_Key".

   This displays an overview of the license keys found on the license stick.
3. Use a drag-and-drop operation to move the desired license key to one of your drives.
4. After the transfer, the license key is located on the corresponding drive and you can now use the activated software.

Prior to removing the license stick, make sure to give notice according to Windows specifications ("Safely remove hardware").

If required, you can use the license stick to transfer license keys from one computer to another or to store license keys temporarily.

NOTICE
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.

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.

NOTICE
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 terminated as soon as the battery is fully charged.
- A charged battery will discharge itself during storage (depending on the temperature, and whether or not it is installed) in roughly 2 - 4 months. It will then have to be recharged.
- The battery charging is terminated 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.

NOTICE
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 PG reduces with each charge/discharge; this is inherent in the technology. 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.

⚠ WARNING

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.

⚠ WARNING

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 Bluetooth dongle

The Bluetooth dongle is used for communication with Bluetooth devices, such as a headset, mouse, or printer.

A USB -2.0 port ① is available on the rear of the programming device for operating the Bluetooth dongle. The Bluetooth dongle is enclosed with the device.

7.3.3 Hard disk

Hard disk drives with differing capacities can be used.

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 corresponding system LED lights up. See Section Status displays (Page 24).

⚠ CAUTION

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

- If you are using Windows XP, the following applies:

  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.
- You can use the Windows Server 7 operating system to burn data carriers. A separate burner software is not supplied for this reason.

Information on burning CD-RWs or DVD±RWs

CAUTION

Danger of data loss!

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.

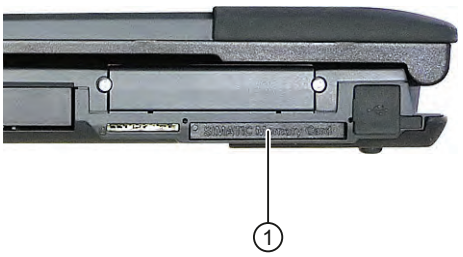
NOTICE
To avoid too much force being used on the pulled out drawer, when inserting removing a disk always hold one hand against it by touching/holding the drawer on the front facing. After closing the drawer, the data medium is initially tested and then the access display on the drive starts to flash: • Continuous flashing means that the medium is bad but still readable • Continuous flashing followed by steady illumination means the inserted data medium is no longer readable and is defective.

7.3.5 SIMATIC S5 memory module

Modifying SIMATIC S5 memory modules

The memory card interface depends on the equipment variant and is therefore not installed in all Field PG M3s.

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 (equipment variant-dependent) and then 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.	

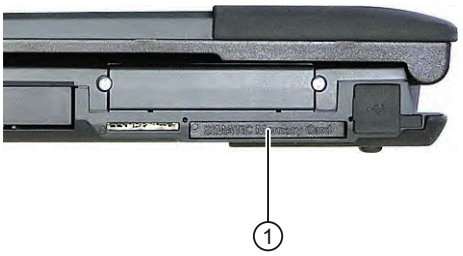
How to use S5 memory modules

CAUTION
Plugging in or removing the module while the module is being changed could damage the module. The S5 memory module must not be removed while the operating displays of the module programming are lit. Note also the ESD guidelines (Page 105).

7.3.6 SIMATIC Memory Card

Editing SIMATIC Memory Cards

You can read, program, or erase SIMATIC Memory Cards via the memory card interface. There are SIMATIC Memory Cards available for SIMATIC S5 and SIMATIC S7 software.

Steps for using SIMATIC 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 erase the SIMATIC Memory Card.	
4	End the programming function of your SIMATIC programming software.	
5	Remove the SIMATIC Memory Card from the interface ①.	

CAUTION
Inserting or removing the module while the module is being edited could damage the module. Do not remove the SIMATIC Memory Card if the module programming status display is lit. Note the ESD guidelines (Page 105).

NOTICE
Malfunction The simultaneous use of MPI/DP Online and a SIMATIC memory card port can cause malfunctions. Simultaneous use is not supported. Terminate the use of the memory card port before using MPI/DP.

7.3.7 Integrated Multi Media Card Reader

Editing the Multi Media Card

You can read, program, or erase a SIMATIC Memory Card (SMC), SD/SDHC, MMC (Multi Media Card – not SIMATIC MMC), xD, and MS Pro via the Multi Media Card interface.

The Multi Media Card interface is located on the left side of the device.

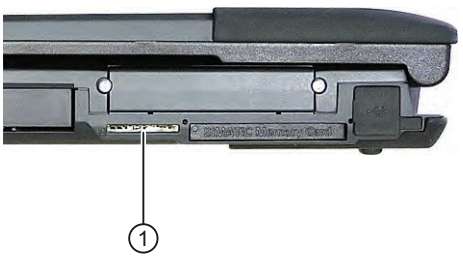
The contact areas of the card face upwards. To remove the card press it lightly towards the device. The card is ejected by a push-push function.

CAUTION
Inserting or removing the module while the module is being edited could damage the module. Do not remove the media card if the module programming status display is lit. Note the ESD guidelines (Page 105).

7.3.8 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 ① 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. Note the ESD guidelines (Page 105).

NOTICE
Malfunction The simultaneous use of MPI/DP Online and a SIMATIC memory card port can cause malfunctions. Simultaneous use is not supported. Terminate the use of the memory card port before using MPI/DP.

7.3.9 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. Note the ESD guidelines (Page 105).

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.

7.3.10 Wireless LAN

7.3.10.1 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.
- IEEE 802.11 n: The maximum data rate that is theoretically possible with optimum ambient conditions and low power utilization is 300 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 uses access points to connects computers to wired networks with the aid of Wireless LAN. These can be a local network (e.g., company networks) or a global network (e.g., Internet).

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

7.3.10.2 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 into an automation system

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

Ethernet

The integrated Ethernet interfaces (10/100/1000 Mbps) can be used for communication and data exchange with programmable controllers, 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 via the optional 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.

Information on Industrial Wireless LAN can be found in SIMATIC NET (http://www2.automation.siemens.com/net)

Further information

Additional information is available in the catalog and the online ordering system Industry Automation and Drive Technologies - Homepage (http://www.siemens.com/automation/service&support).

Operating 9

9.1 SIMATIC Software

Starting STEP 5 (not included in all delivery variants)

Please note that an authorization is required to work with STEP 5. For more information, refer to Initial commissioning - initial startup (Page 39).

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

NOTICE
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.

Note

Running SIMATIC STEP 5 on devices that have Dual-Core processors

A "blue screen" can occur on rare occasions when SIMATIC STEP 5 is run on devices that have Dual-Core processors. The Field PG M3 has an additional boot menu entry that sets Single-Core operation. If you run SIMATIC STEP 5, please select the boot menu entry "Microsoft Windows XP Professional for STEP 5 Operation".

SIMATIC STEP 5

Please note that the enclosed software SIMATIC STEP 5 is released solely for Windows XP. If an unsuitable operating system is used, we recommend that you can create a further boot option with Windows XP. If you have any questions about creating further boot options or require product support, please contact the Customer Support SIMATIC Hotline:

Technical Support (http://support.automation.siemens.com).

STEP 5 authorization

To transfer the STEP 5 authorization, start the program install.exe from the License Key in the folder USB_Stick:>\UCL. Follow the instructions on the screen to transfer the authorization.

Starting STEP 7

Please note that a license key is required to work with STEP 7. For more information, refer to Initial commissioning - initial startup (Page 39).

- In the Windows desktop, click the SIMATIC Manager icon, or
- Click 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.

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**.

Starting the TIA Portal

How to start the TIA Portal:

- Click the TIA Portal icon on the Windows Desktop:

- Click the **Start** button and select the following path:
  All Programs > Siemens Automation > Totally Integrated Automation Portal V10

Expansions and parameter assignment 10

10.1 Installing/removing memory modules

Memory expansion options

The motherboard is equipped with 2 slots for DDR3 memory modules. This allows you to upgrade the memory capacity of your PG to a maximum of 8 GB. The maximum memory module size is 4 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. Disconnect the device from the power supply system and remove the battery. See: Replace the battery (Page 61).
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 ESD guidelines (Page 105) for a description of these measures.

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 screw that secures 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 screw.	
4	Insert the battery again and connect the device to the power supply system.	

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 working memory configuration is shown in the Main menu (Page 87) of the BIOS Setup.

Service and maintenance

11

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 power supply system and remove the battery. See: Replace the battery (Page 61).
3. Remove all connecting cables from the device.

⚠ CAUTION
Note the ESD guidelines (Page 105).

⚠ 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.

Removing the hard disk assembly

How to remove the hard disk assembly		
1	Open the display.	
2	Remove both screws (Torx T8) on the cover of the hard disk assembly.	
3	Open the cover and remove the hard disk assembly.	

Inserting the hard disk assembly

How to insert the hard disk assembly		
1	Push the new hard disk assembly into the slot until it reaches the endstop.	
3	Close the cover, and secure it with the two screws.	

11.1.2 Hard disk kit

You can order the hard disk kit with order number 6ES7791-2BA01-0AA0. 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 prior to replacing

⚠ WARNING
Replace the battery only with a battery of the same type. The battery is available as a spare part. You will find the order data 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.

NOTICE
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 it is lying on the table with its display unit closed.	
2	Release the battery cover on the bottom of the device and open it.	
3	Replace the battery ①.	
4	Close the cover and turn the device over 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

Danger of explosion and the 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 memory stick 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

The optional accessory "Image & Partition Creator V3.0" enables you to back up and restore the factory condition. The program enables you to create a backup image of a disk drive and retrieve a disk drive from a backup image.

The backup image of your device in its as-delivered condition is contained in the D:\Restore directory.

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.

NOTICE
Any data on the partition on which you are recording the image will be lost with this procedure. Make sure to back up your SIMATIC license keys to a license key memory stick beforehand using the Automation License Manager (ALM).

Note

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

11.2.3 Setting up the operating system via the Recovery CD/DVD

Use the supplied Recovery CD/DVD to install Windows to suit your particular requirements. You will also need the supplied "Software for Field PG" DVD.

Booting with the Recovery CD/DVD

1. Insert the Recovery CD/DVD in your drive and reboot the device. When the following BIOS message appears:

   `Press <F2> to enter SETUP or <F12> to display the boot menu.`

   press ESC. The "Boot Menu" is displayed when initialization is completed.

2. To boot from the Recovery CD or DVD, when BIOS outputs the message:

   `Press <F2> to enter SETUP or <F12> to display the boot menu.`

   press F12.

   The boot menu displayed after initialization indicates all boot devices.

3. Select "CD/DVD-ROM Drive".

   Please follow the on-screen instructions until the "Siemens SIMATIC Recovery" window appears.

   When using the recovery function with Windows 7, confirm that you want to boot from CD or DVD at startup. Otherwise the system boots from hard disk if you have a bootable hard disk installed.

The following sections describe older Windows operating systems. The recovery of Windows 7 is described in the section Recovery of Windows 7.

Partition setup

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.

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

With Windows XP operating systems, the factory state features two partitions with an NTFS file system on the hard disk. To restore the partitions to factory state, follow the on-screen instructions:

- To install the selected partition, select "ENTER"
- To create a new partition in an unpartitioned area, press C.
- To delete the selected partition, press D.

Note

The on-screen instructions are in English.

Installation of the operating system.

Follow the on-screen instructions when the "Windows XP Professional Setup" window appears.

Note

Note that there must still be free space on the drive after the selected recovery data has been transferred:
50000 MB for Windows XP

Note

If you want to use Windows XP as a professional you should have the following manual (not included in the product package) available:
Microsoft Windows XP Professional, the technical reference" (MSPress Nr 934).

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

Setting up the language selection for Windows XP Professional

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

To install the MUI, start the program MUISETUP.EXE in the folder

```
CD_DRIVE:\MUI
```

of the "MUI-english" Recovery CD/DVD or in root folder of the "MUI Windows XP" Recovery CD/DVD. Follow the instructions on the screen to install the required languages.

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

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

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

11.2.4 Recovery of Windows 7

There is a full graphical user interface available for recovery of Windows 7. 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.

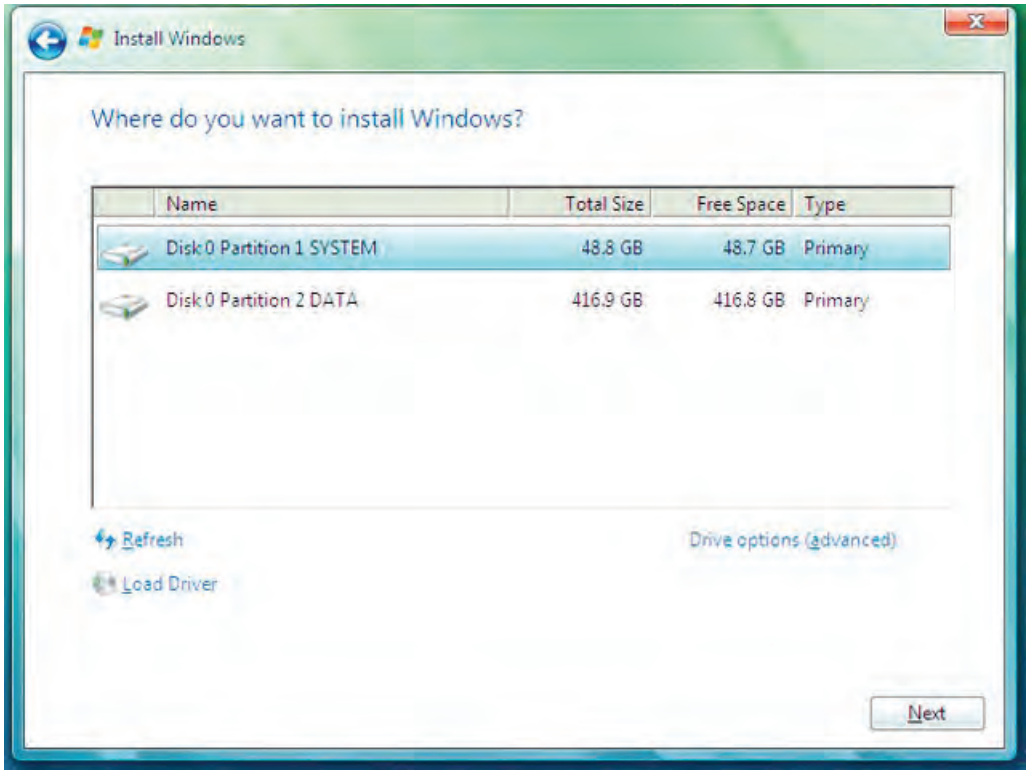
Note

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

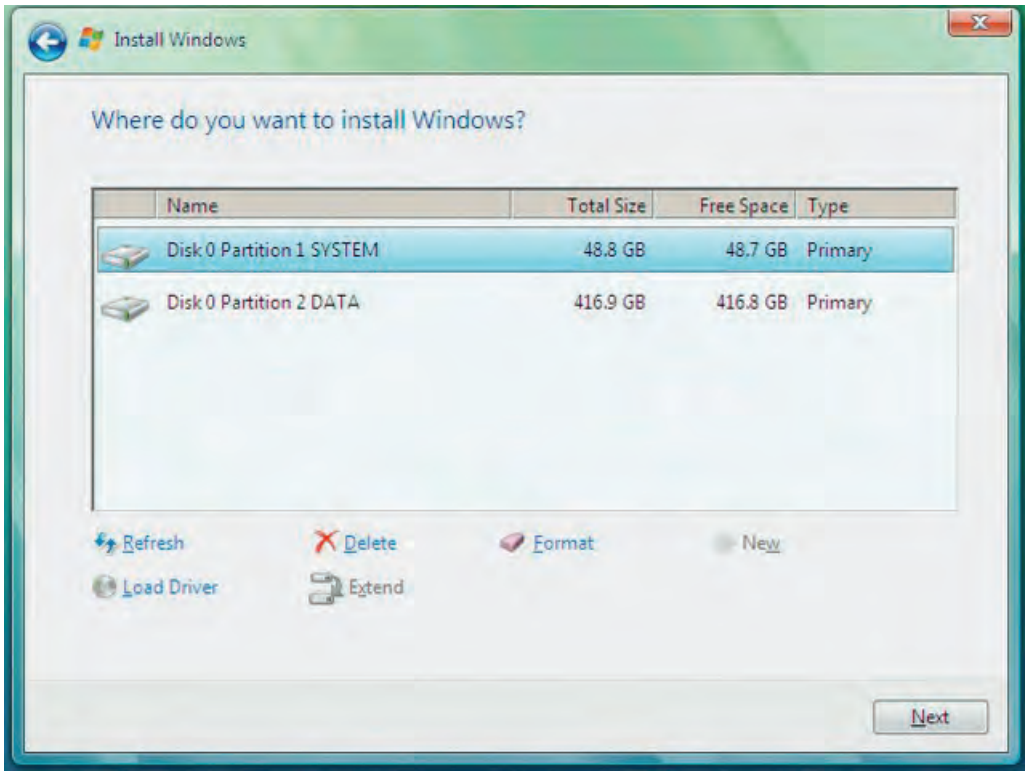
Setting up and formatting partitions

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 50 Gbytes. 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 7	System	50 GB	NTFS not compressed
Second	Windows 7	DATA	Remainder	NTFS not compressed

Following a required reboot, Windows 7 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 use Microsoft Windows as a professional user, you should have the following manual available (not supplied):
Windows 7 Technical Reference (MS Press No. 5927)

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

Setting up the language selection in Windows 7

With the Multilanguage User Interface (MUI), you can set up the Windows menus and dialogs for additional languages. When shipped, Windows 7 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 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. You must have Acrobat Reader installed.
2. Navigate to the driver list (language-, OS- and device-specific).
3. 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 activation of the license key is described in Section Initial commissioning - initial startup (Page 39).

Installation of SIMATIC WinCC flexible software

1. Insert the WinCC flexible DVD.
2. If the Setup installation program does not start automatically, you must start the "Setup" program in the "\CD_1" folder.

11.2.6 Installing the burner or DVD software (optional)

You will find notes on installing the burner/DVD software on the supplied CD-ROM and in Section Optical drive (Page 43).

You can use the Windows Server 7 operating system to burn data carriers. A separate burner software is not supplied for this reason.

Troubleshooting/FAQs

12

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 or install 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.		1. Press <F2> during the boot sequence to open BIOS Setup. 2. Set the time and date in the setup menu.
Although the BIOS setting is OK, the time and data are still wrong.	The backup battery is dead.	In this case, please contact your technical support team.
USB device not responding.	The operating system does not 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: 1. Switch off the device. 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. 3. Pull the loader further out.
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
The following message appears on the display: "No boot device available" NTLDR not found, check the boot data medium...	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

Problem	Possible cause	To correct or avoid error
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:

Cannot connect with WLAN
• Check that you have enabled the WLAN. You can toggle the WLAN on and off with the hotkey Fn + F3.
• Check that the other WLAN partner is active.
• Check the settings of the WLAN connection. Follow the instructions on configuring and operating the WLAN in the online help for the WLAN network adapter.
Data transmission speed is too low
• Please note that the data rate stipulated and visible 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.
• 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/n standard and that this method of transmission is set.
• The spatial arrangement of the network components can also negatively influence the transmission. – The distances between the components should be as short as possible. – 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. – 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.

Operation in the environment with EMC interference

On rare occasions higher interference potential in the vicinity of the Field PG M3 may result in malfunctions of the integrated touchpad.

The malfunction manifests itself in the triggering of unintentional key clicks or delays in the movement of the cursor. In such cases we recommend eliminating the cause of the interference or establishing a greater distance to the source of the interference.

If working in an interference-prone environment cannot be avoided, deactivate the tap function (mouse button emulation) by using the touchpad driver. Afterwards use the touchpad keys below the touchpad for operation.

NOTICE
Modem disconnection Faults in the phone line caused by a lightning strike (surge) can cause the modem to be disconnected. Re-establish the connection after the cause has been eliminated.

Procedure – deactivating the tap function of the touchpad

1. Click "Start" and open the "Control Panel".
2. In the "Category view" first select "Printers and other hardware" and then the "Mouse" menu. In the "classical view" you can select the "Mouse" menu directly.
3. Select the "Device settings" tab and click the "Settings" tab.
4. Select the "Tap" button and deactivate the "Activate tapping" check box.
5. Click "Apply".

Technical data

13

13.1 General specifications

General technical data	
Order nos.	See order documents or rating plate
Dimensions	385 x 53 x 275 (W x H x D in mm)
Weight	• Without battery Approx. 3 kg • With battery: Approx. 3.4 kg
Supply voltage (U_N)	100 V to 240 V AC (±10%), sinusoidal
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)	100 W 19 V Max. 4.7 A Max. 90 W Typ. 1.5 W Approx. 6600 mAh, 10.8 V with thermal switch and multifuse, recyclable, chargeable up to 40°C, high number of cycles with rough 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
Security	
Protection class	Safety class II according to IEC 61140
Safety specifications	• According to VDE 0805 in conformance with IEC 60950-1:2006 • IEC 60950-1:2005 • EN 60950-1:2006 with change EN 60950-1:2006/A11:2009 • DIN EN 60950-1 (VDE0805-1):2006-11 with change DIN EN 60950-1/A11 (VDE0805-1/A11):2009-11 • UL 60950-1 Second Edition • CAN/CSA-C22.2 No. 60950-1-07 Second Edition
Electromagnetic compatibility (EMC)	
Emitted interference	EN 61000-6-3:2007, 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)

General technical data	
Noise immunity on signal lines	• ± 1 kV; (acc. to IEC 61000-4-4; burst; length <30 m) • ± 2 kV; (acc. to IEC 61000-4-4; burst; length >30 m) • ± 2 kV; (acc. to IEC 61000-4-5; surge pulse/cable to ground; length > 30 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 to 1000 MHz and 1.4 GHz to 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)
Climatic conditions	
Temperature	tested to IEC 60068-2-1, IEC 60068-2-2
During operation *	+ 5 °C to + 40 °C max. 10 °C/h (no condensation)
Storage/transport	–20 °C to + 60 °C at max. 20 °C/h (no condensation)
Relative humidity	tested to IEC 60068-2-78, IEC 60068-2-30, IEC 60068-2-14
During operation	5% to 80% at 25 °C/h (no condensation)
Storage/transport	5% to 95% at 25 °C/h (no condensation)
Mech. Ambient conditions	
Vibration	Tested in accordance with DIN IEC 60068-2-6
Operation *	10 to 58 Hz; amplitude 0.0375 mm 58 to 500 Hz; acceleration 4.9 m/s^2
Transport	5 to 9 Hz; amplitude 3.5 mm, 9 to 500 Hz: Acceleration 9.8 m/s^2
Shock	Tested in accordance with IEC 60068-2-27
Operation *	Half-sine, 50 m/s^2, 30 ms, 100 shocks
Storage/transport	Half-sine, 250 m/s^2, 6 ms, 1000 shocks
Special Features	
Quality assurance	According to ISO 9001
Motherboard	
Processor	• Intel® Pentium Dual Core® processor (1.86 GHz, 2MB cache) • Intel® CORE i5-520M processor (2.40 GHz, 3MB cache)
RAM	Expandable to 8 GB DDR3 SODIMM

General technical data	
Disk drives	
Hard disk	2.5" SATA hard disk, capacity see BIOS
Optical drive	DVD+-R/+-RW
Graphics	
Graphic controller	Intel® HD Graphics
Graphic controller memory	Graphics memory 8 to 256 MB DDR3 RAM, partly using dynamic sharing of system memory
Resolutions/frequencies/colors	According to the setting options of the graphics driver
LCD display	
Display type	TFT (Thin Film Transistor), 16: 9, anti-reflection
Display size	344 x 194, corresponding to 15.6"
Screen resolution	• 1366 x 768 (HD ready) • 1920 x 1080 (full HD)
Possible colors	maximum 256 k
Vertical frequency	60 Hz
Contrast	> 200 : 1
Brightness	> 150 cd/m^2
Permissible defective areas	light and dark pixel: Max. 10
Audio	
Audio controller	IDT 92HD81, UAA compatible
Internal loudspeaker	Maximum output power 2 x 1 W
WLAN	IEEE 802.11. a/b/g/n
Keyboard	
Variant	Standard notebook
Key distance	19 mm
Key drop	3 mm
Labeling	• International / German • AZERTY layout (optional)
Pointing device integrated	Touchpad with 2 mouse buttons
Interfaces	
COM TTY/V.24 (optional)	Serial interface TTY (20 mA), depending on configuration, cannot be retrofitted • "Premium/S5" configuration variant used as standard; • Active to 100 m, (25-pin socket), no galvanic isolation or serial interface V.24
DVI-I	Interface for external monitor (VGA monitors can be operated with a DVI/VGA adapter)
Expansion slots	• 1 x PC Card (Type I, Type II) • 1 x Express Card (34 and 54 mm)
SIMATIC Memory Card	Programming interface for SIMATIC memory card and S5 memory module
SIMATIC Micro Memory Card	Interface for SIMATIC Micro Memory Card

General technical data	
Media Card Reader	Interface for SMC (SIMATIC Memory Card) SD/SDHC MMC xD-Picture Card MS Pro
USB 2.0	5 interfaces for high-speed universal serial bus, max. 4 high current (500 mA) or 1 A per interface block
PROFIBUS/MPI interface	9-pin sub-D socket
Transmission speed	9.6 kBaud to 12 MBaud, software configured
Mode of operation	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
Physical port	RS485, electrically isolated
Memory address area	0CC00h to 0CC7FFh or 0DC000h to 0DC7FFh
Interrupts	IRQ 5, 10, 11 or 15 software configured
Ethernet	2 x Gigabit Ethernet (RJ45)
Modem	RJ-11 V.92 Motorola SM56
DC-In	DC power supply input, jack plug
Headphones and microphone	Connection for each 3.5 mm jack plug
Status displays on the device	
	Caps Lock Num Lock WLAN active Battery status Device status Access to HD/DVD S5 module/memory card MPI/DP

* Burning with the optical drive is only permitted in an undisturbed environment and up to a maximum ambient temperature of 35 °C.

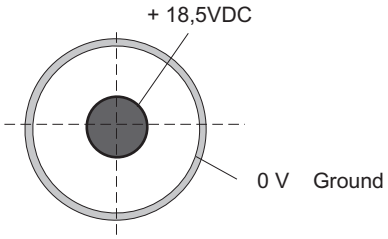
Detailed descriptions 14

14.1 Interfaces

14.1.1 External interfaces

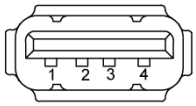
DC-In

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:

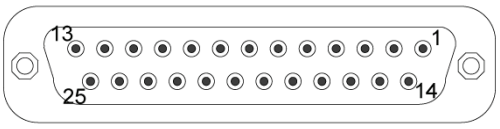
USB 2.0 interface			
			
Pin no.	**Short designation**	**Meaning**	**Input/output**
1	VCC	+ 5 V (fused)	Output
2	– Data	Data line	Input/output
3	+ Data	Data line	Input/output
4	GND	Ground	–

The connectors are of type A.

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

Serial port COM1 (V.24/TTY, optional)

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	-

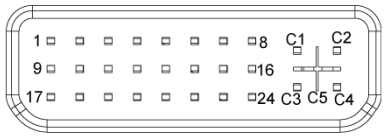
Gender changer for COM1

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.

DVI-I port

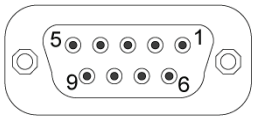
DVI-I port



Pinno.	Short designation	Meaning	Input/output
S	GND	Ground	–
S1	GND	Ground	–
C1	R	Red	Output
C2	G	Green	Output
C3	B	Blue	Output
C4	HSYNC	Horizontal synchronizing pulse	Output
C5	GND	Ground	-
CSA	GND	Ground	-
1	TX2N	TDMS data 2-	Output
2	TX2P	TDMS data 2+	Output
3	GND	Ground	–
4	NC	Not used	–
5	NC	Not used	–
6	DDC CLK	DDC clock	Input/output
7	DDC CLK	DDC data	Input/output
8	VSYNC	Vertical synchronizing pulse	Output
9	TX1N	TDMS data 1-	Output
10	TX1P	TDMS data 1+	Output
11	GND	Ground	–
12	NC	Not used	–
13	NC	Not used	–
14	+5 V	+5 V	Output
15	GND	Ground	–
16	MONDET	Hotplug detect	Input
17	TX0N	TDMS data 0-	Output
18	TX0P	TDMS data 0+	Output
19	GND	Ground	–
20	NC	Not used	–
21	NC	Not used	–
22	GND	Ground	–
23	TXCP	TDMS clock +	Output
24	TXCN	TDMS clock -	Output

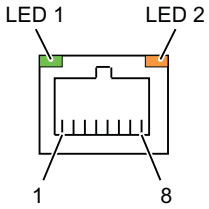
PROFIBUS/MPI interface

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	

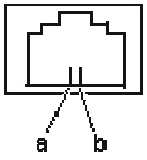
Ethernet RJ45 connection

Ethernet RJ45 port



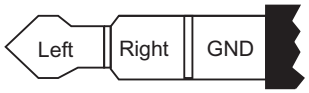
Pinno.	Short designation	Meaning		Input/output
1	BI_DA+	Bi-directional data A+		Input/output
2	BI_DA-	Bi-directional data A-		Input/output
3	BI_DB+	Bi-directional data B+		Input/output
4	BI_DC+	Bi-directional data C+		Input/output
5	BI_DC-	Bi-directional data C-		Input/output
6	BI_DB-	Bi-directional 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 Lights up green Lights up orange	10 Mbps 100 Mbps 1 Gbps	–
	LED 2	Lights up green Flashes green	Connection exists No activity	–

RJ11 (connection for modem)



Micro-In

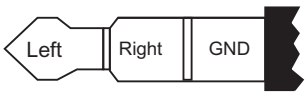
The socket has the following pinout:



3.5 mm microphone jack plug

Headphones

The socket has the following pinout:



3,5-mm Stereo phono plug

Excessive sound pressure of earphones / headphones can result in hearing impairment or hearing loss.

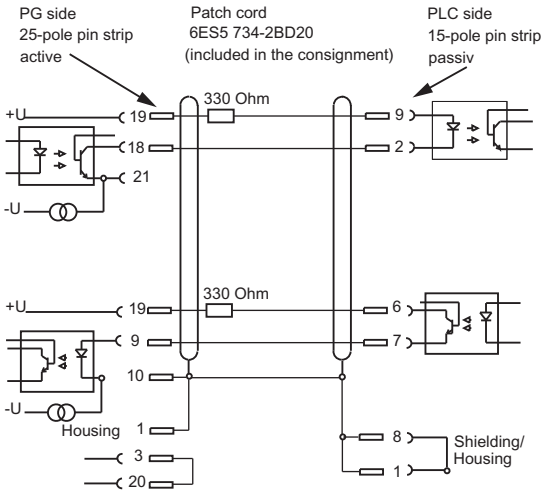
Setting the volume and the equalizer to a setting other than the medium, will increase the output voltage of the earphones / headphones and therefore the sound pressure value.

The use of factors that influence the output power of the earphones / headphones (such as operating system, equalizer software, firmware, driver) and that are not approved by the manufacturer, may increase the output voltage of the earphones/headphones and therefore the sound pressure value.

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. Note the information in Connect the PG to the S5 automation device (Page 36).



SIMATIC S7 cable for MPI/DP

The 6ES7901-0BF00-0AA0 cable is used to connect your PG to a SIMATIC S7 automation system. Note the information in Connect the PG to the S7 automation system or the PROFIBUS network (Page 38).

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	**Start > Run :** in the **Open** dialog, enter "msinfo32" and confirm with **OK**
Windows 7	**Start >** 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

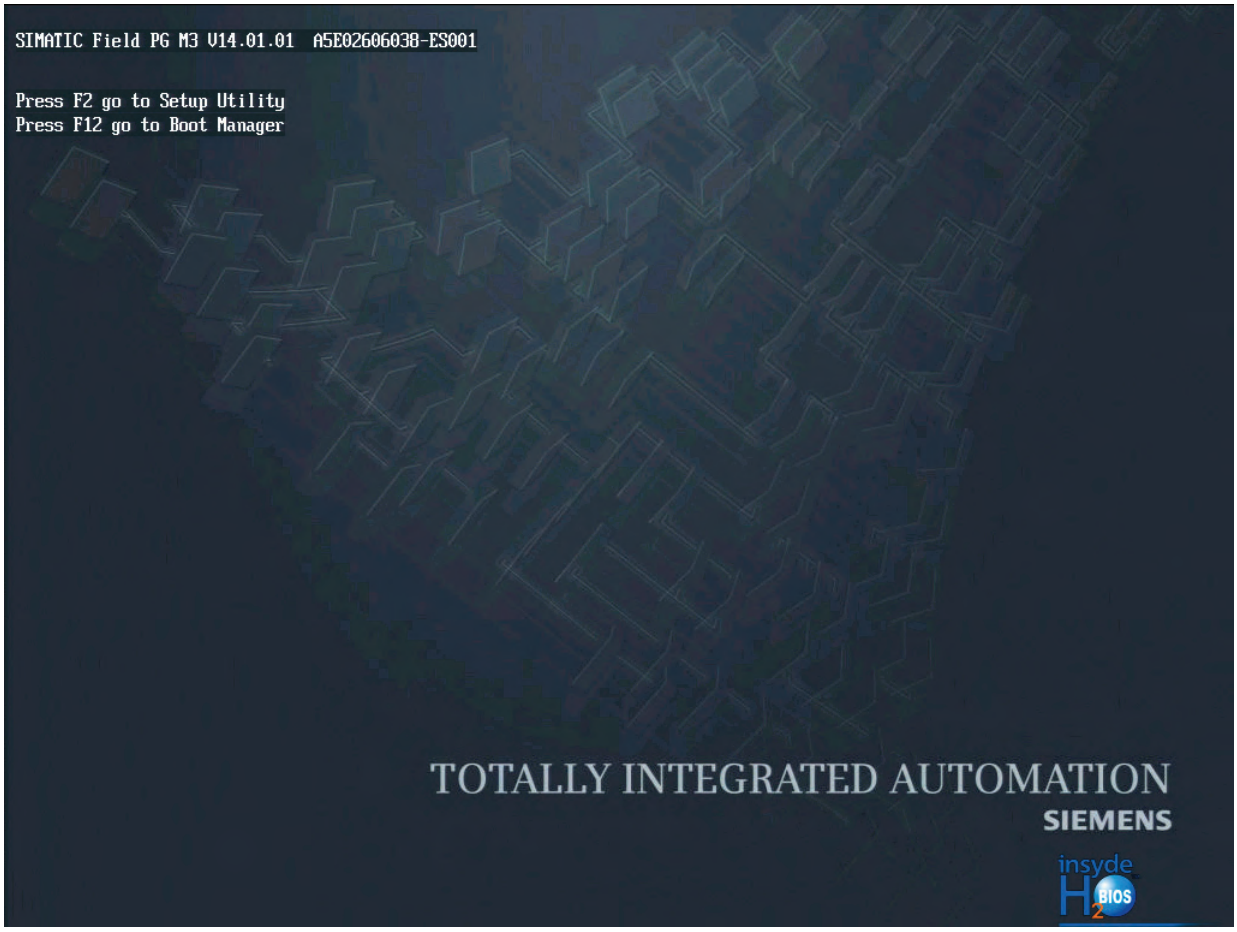
Your device configuration is preset for use with the software supplied. You should only change the default values if you have modified the technical configuration of your device, or if a fault occurs when it is powered up.

Starting BIOS SETUP

Run SETUP as follows:

1. Reset the device (warm or cold restart). With the default setting of the PG, the display shown below appears following power-on, for example:

```
SIMATIC Field PG M3
Press <F2> to go to SETUP Utility
Press <F12> to go to Boot Manager
```



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

BIOS Setup menus

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

14.4.2 Main menu

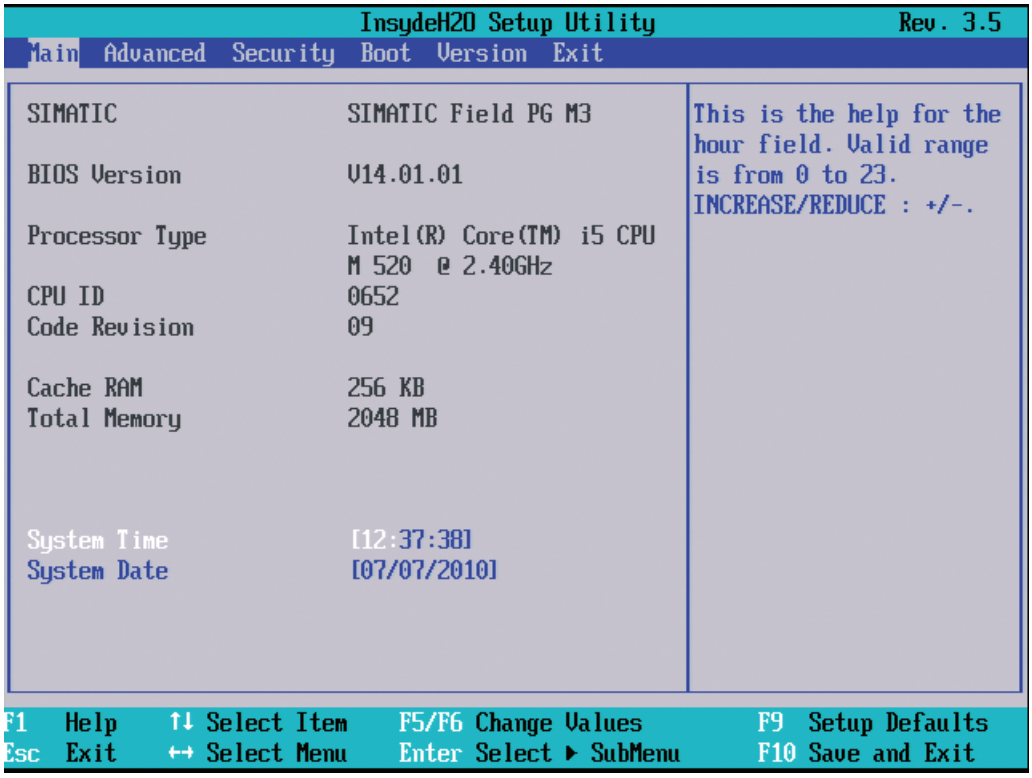


Figure 14-1 Main menu (example)

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

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

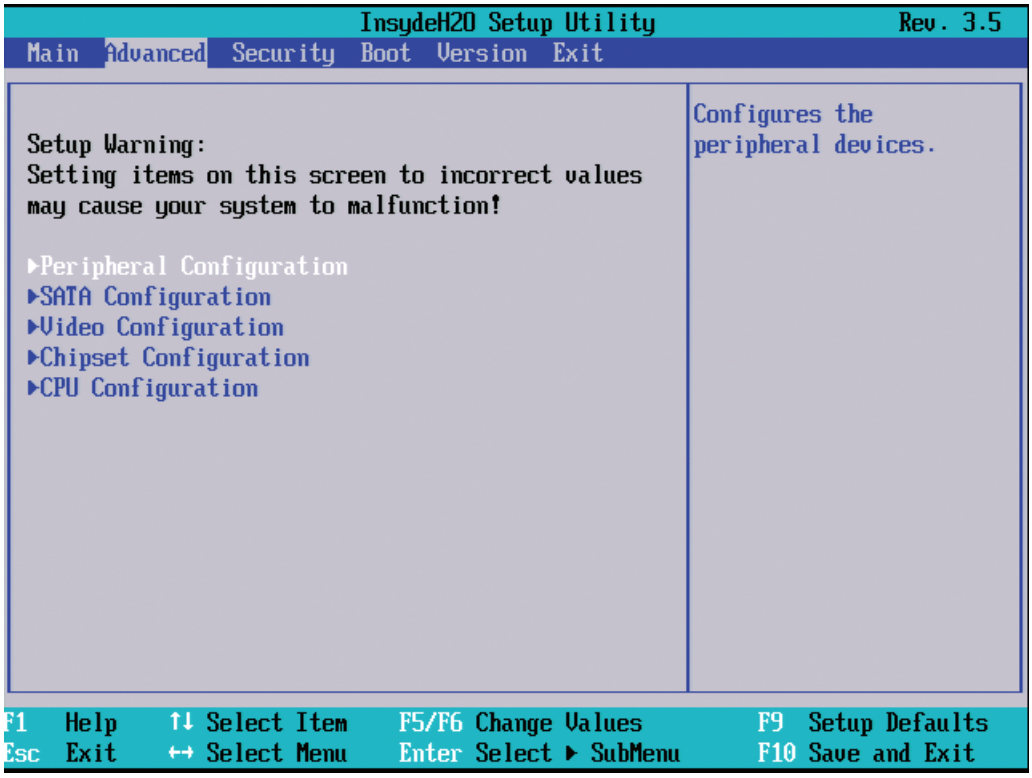


Figure 14-2 "Advanced" menu (example)

Settings in the Advanced Menu

Entry	Meaning
Peripheral Configuration	Settings for components on the motherboard
SATA Configuration	Configuration of the SATA interface
Video Configuration	Settings for the screen output during the startup sequence
Chipset Configuration	Advanced chipset settings
CPU Configuration	Setting of various CPU parameters e.g.: Single Core/Multicore

"Peripheral Configuration" submenu

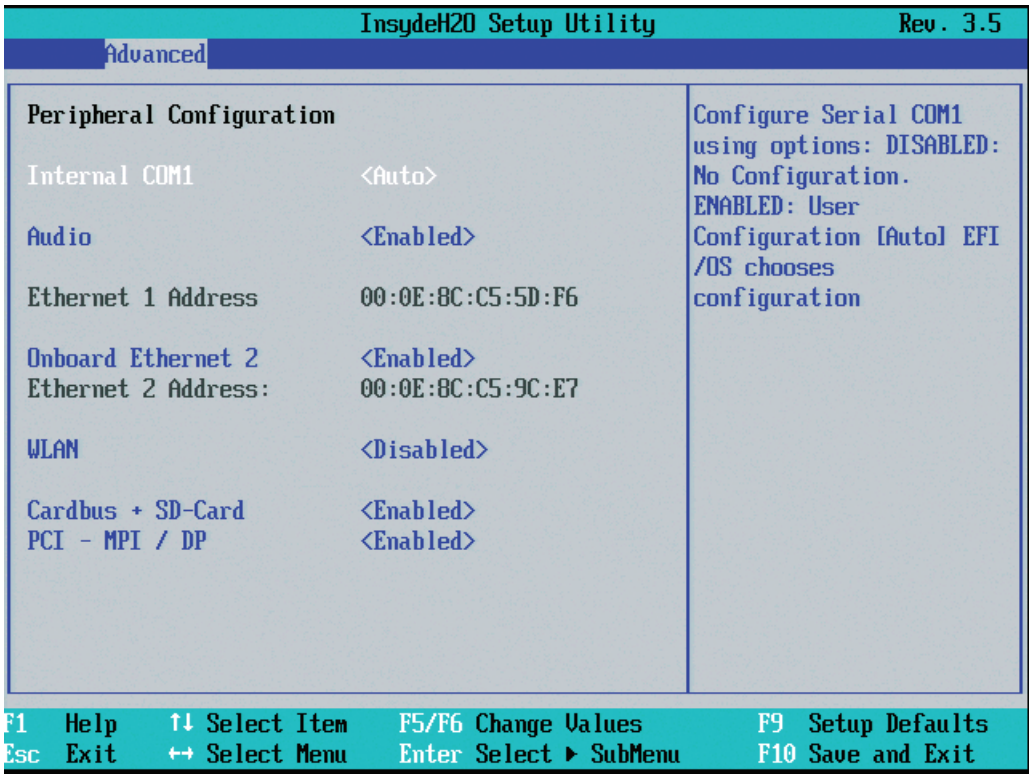


Figure 14-3 "Peripheral Configuration" submenu (Example)

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

Entry	Meaning	
Internal COM1	Enable or disable the serial port or configure it automatically (Auto) With Enabled, it is possible to specify the I/O base address and the interrupt.	
Audio	Enable or disable the integrated audio controller	
Onboard Ethernet 1	The first Ethernet interface is always active.	
Onboard Ethernet 2	Enable or disable the onboard Ethernet-2 interface.	
WLAN Transceiver	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.
	You can always use hotkey Fn + F3 to switch the WLAN on/off under Windows, regardless of the BIOS settings.	

Entry	Meaning
Cardbus + SD Card	Enable or disable the Cardbus, SD Card.
PCI–MPI/DP	Enable or disable the CP 5611-compatible MPI/DP interface, and the SIMATIC memory card port.

"SATA Configuration" submenu

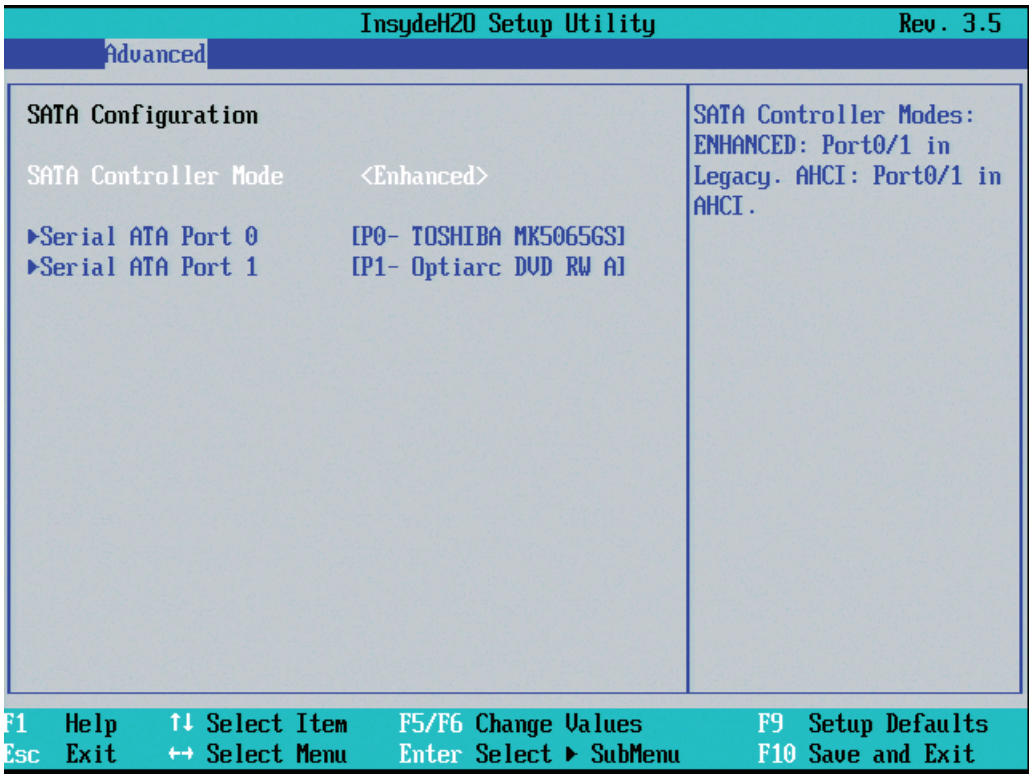
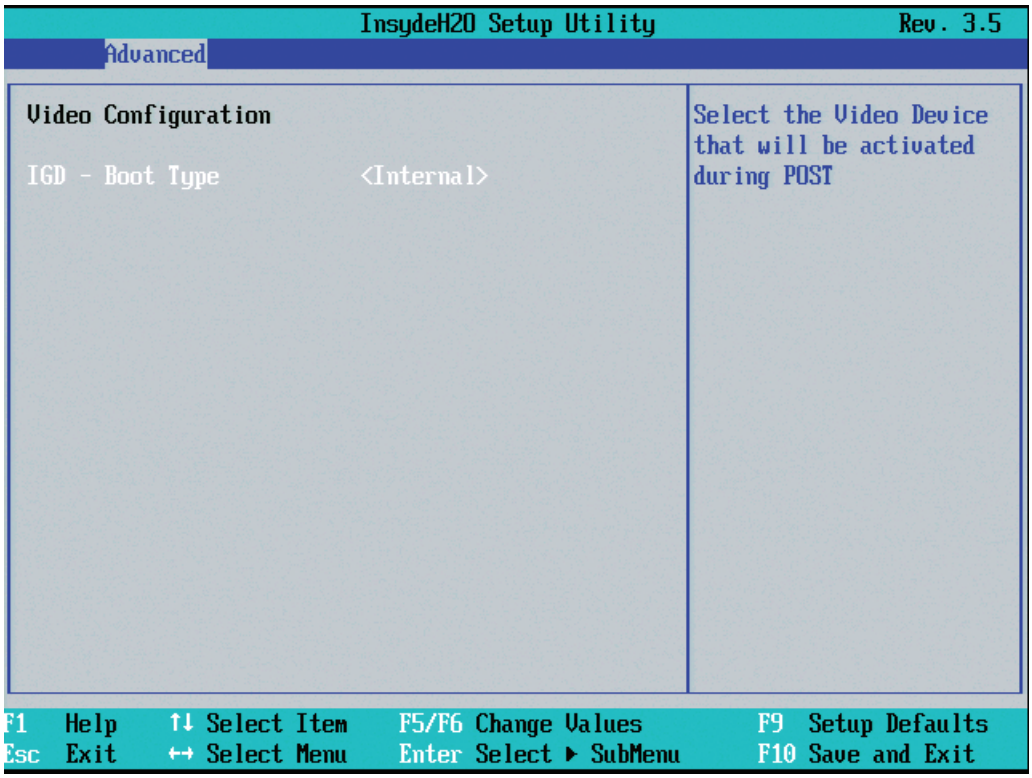


Figure 14-4 "SATA Configuration" submenu (Example)

Entry	Meaning	
SATA Controller mode	Enhanced	SATA Legacy mode
	AHCI	SATA in AHCI mode

Submenu "Advanced Video Configuration"



"Advanced Video Configuration" menu (example)

Entry	Description
IGD boot type	Internal (default) screen output is carried during the startup on the internal Display Auto Screen output during the startup is carried out on the external screen, if connected. If there is no external screen, the screen output is carried out internally.

"Chipset Configuration" submenu

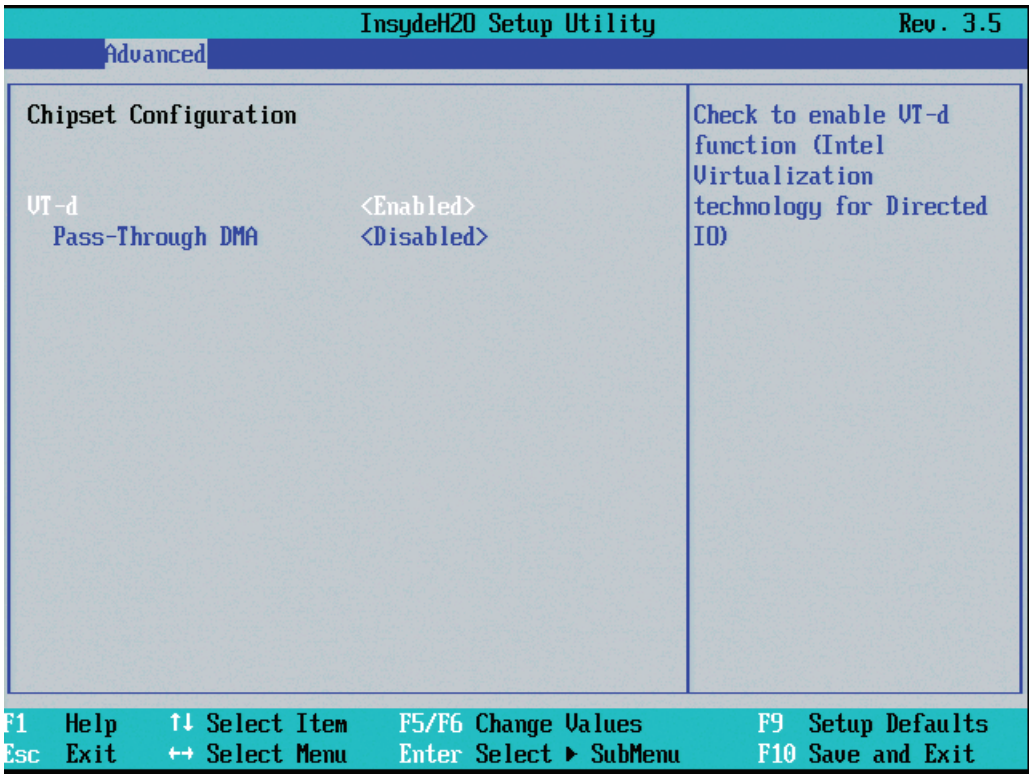


Figure 14-5 Advanced Chipset menu (Example)

Entry	Meaning
VT-d	Enable or disable advanced support for virtualization technology
Pass-Through DMA	Enable or disable

"Advanced CPU Control" submenu

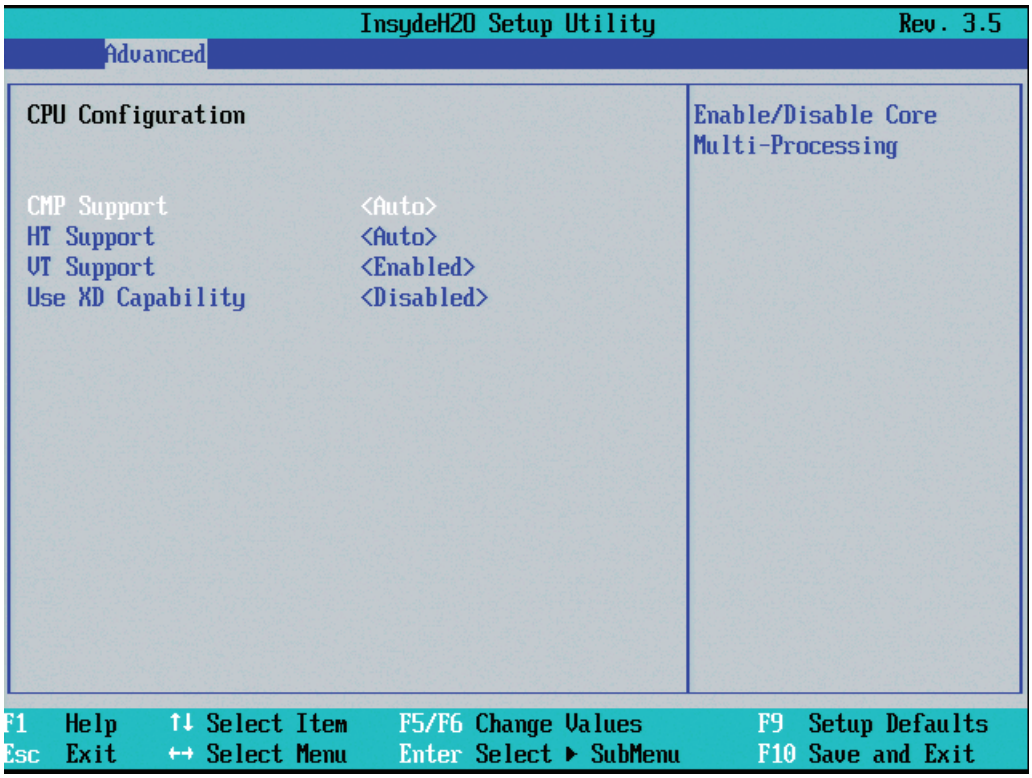


Figure 14-6 Advanced CPU menu (example)

Entry	Meaning	
CMP support	Auto	Multi Core operation, if available
	Disabled	Single Core operation
HT Support	Auto	Use hyperthreading, if available
	Disabled	Hyperthreading disabled
VT Support	Enable or disable Vanderpool Technology	
Use XD Capability	Enable or disable XD Capability	

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.

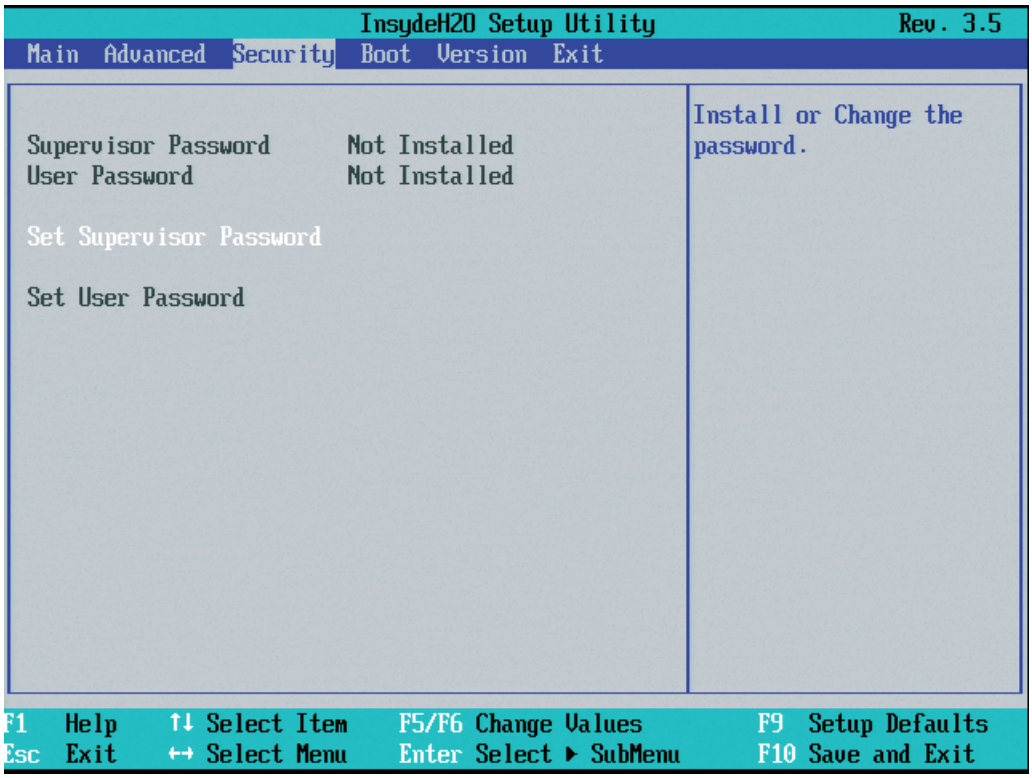


Figure 14-7 Security menu

14.4.5 Boot menu

"Boot" menu

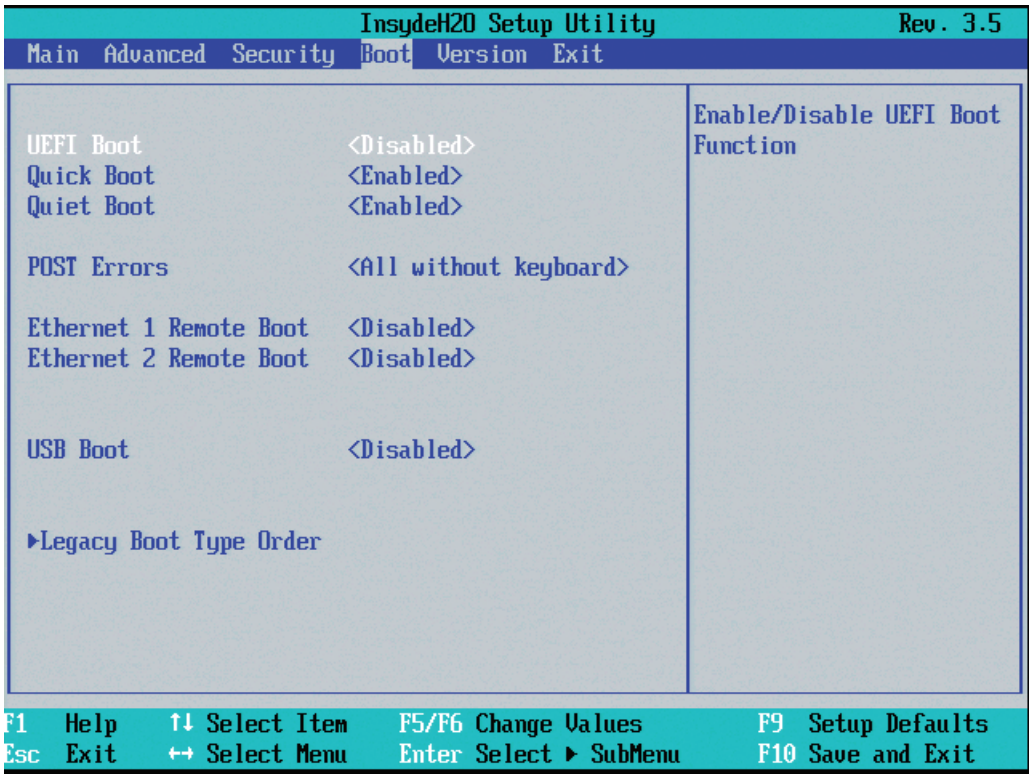


Figure 14-8 "Boot" menu (example)

Entry	Example	
UEFI Boot	Enable or disable	
Quick Boot Mode	Enable or disable If enabled, the PG starts faster because various tests are skipped.	
Quiet Boot	If disabled the BIOS initial screen is displayed without a background image	
Post Errors	Never halt on errors	Reboot even if an error occurs
	Halt on all errors	Interrupt the boot operation when an error occurs.
	All without keyboard	Interrupt the boot operation when an error occurs. Exception: Keyboard errors are ignored.
	All without kb/smart	Interrupt the boot operation when an error occurs. Exceptions: Keyboard errors are ignored. Hard disk S.M.A.R.T errors are ignored
Ethernet 1 Remote Boot	Enable or disable booting of LAN (PXE) via P1.	

Entry	Example
Ethernet 2 Remote Boot	Enable or disable booting of LAN (PXE) via P2.
USB Boot	Enable or disable booting of the USB ports.
Legacy	Set traditional boot order (normal and advanced)

"Legacy Boot Device Priority" submenu

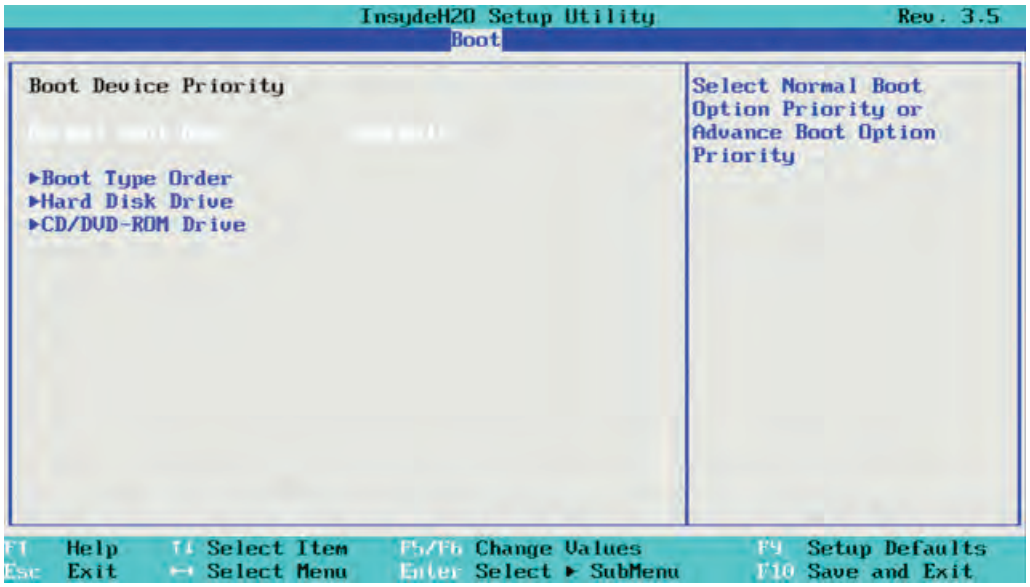


Figure 14-9 "Legacy Boot Device Priority" submenu

Entry	Example
Normal Boot Menu	Normal = Boot order depending on component type Advanced = Individual boot order of all components
Boot Type Order	Submenu for setting the boot order of component groups relative to one another
Hard Disk Drive	Submenu for setting the boot order within the hard disk group
CD/DVD–ROM Drive	Submenu for setting the boot order within the group of optical drives.

Note

Changing the order of boot entries

Press the "F6" key to move the selected boot entry up in the order.

Press the "F5" key to move the selected boot entry down in the order.

14.4.6 Version menu

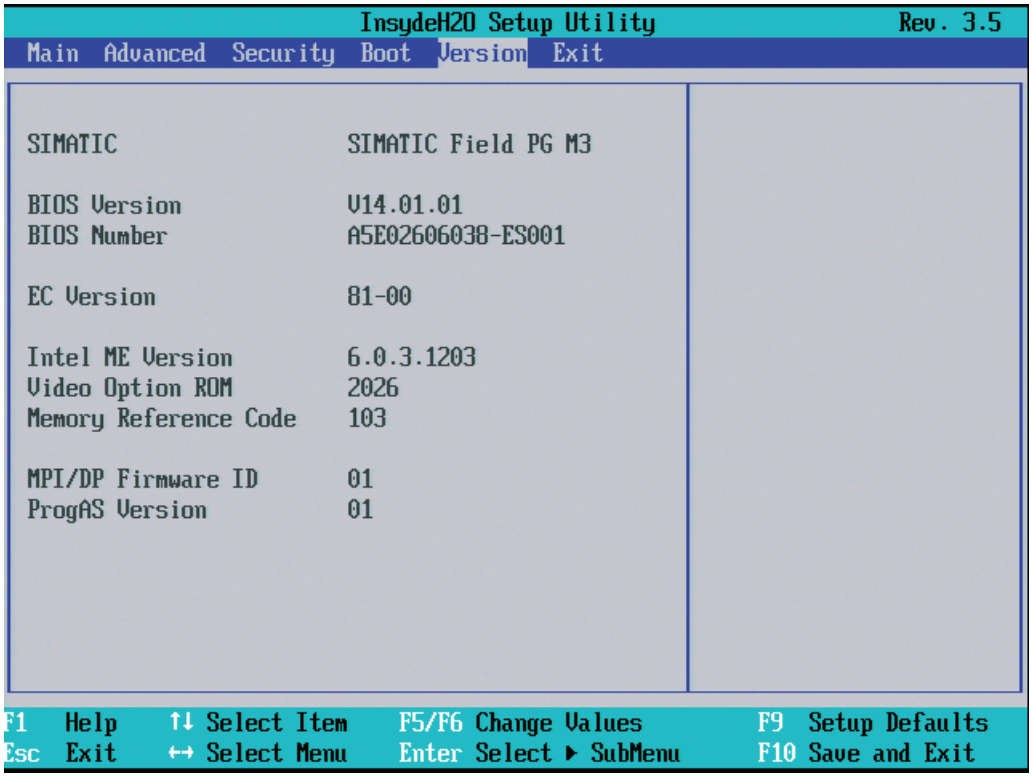


Figure 14-10 "Version" menu (Example)

14.4.7 Exit menu

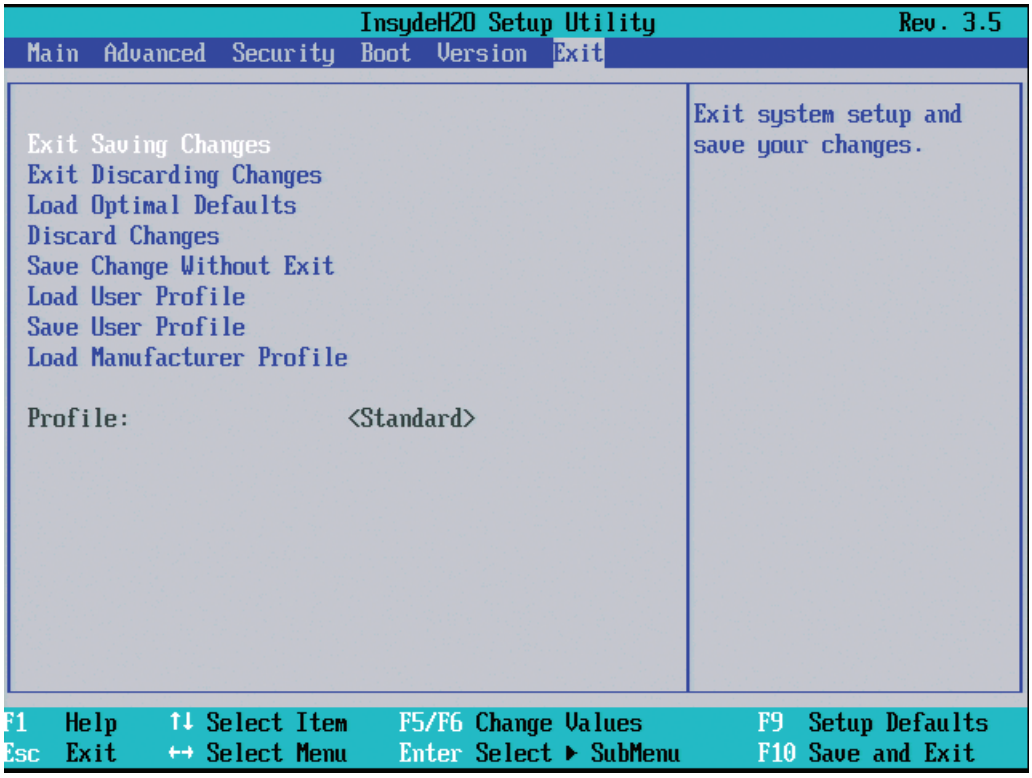


Figure 14-11 "Exit" menu

Entry	Description
Exit Saving Changes	All changes are saved; a system restart is carried out with the new parameters.
Exit Discarding Changes	All changes are discarded and the BIOS Setup is exited.
Load optimal defaults	All parameters are set to the recommended default values.
Discard Changes	Undoes all the changes you have made.
Save Change Without Exit	All changes are saved without exiting the BIOS.
Load User Profile	All the user-defined settings are loaded. The user settings must have been saved beforehand with the Save User Profile function.
Save User Profile	The set parameters are saved as a USER profile.
Load Manufacturer Profile	The manufacturer parameters are downloaded to the SETUP device.

Appendix A

A.1 Guidelines and declarations

Notes on the CE mark

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

RTTE directive

This product is designed for the following applications:

Application	Requirement for	
	Emissions	Immunity
Residential, business and commercial operations, and small businesses	EN 61000-6-3: 2007	EN 61000-6-1: 2007
Industrial applications	EN 61000-6-4: 2007	EN 61000-6-2: 2005

The device complies with EN 61000-3-2:2006 (harmonic currents) and EN 61000-3-3:2008 (voltage fluctuations and flicker.)

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 V1.7.1 / EN 301 893 V1.5.1 / EN 301 489-17 V1.3.2 / EN 302 489-1 V1.8.1

Directive 1999/5/EC contains the requirements of Directive 2004/108/EC "Directive of the Council on the Approximation of the Laws of Member States relating to Electromagnetic Compatibility (EMC Directive).

- Safety: see Low voltage directive
- Power system compatibility with modem interface:TBR21

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 2006/95/EEC "Low voltage directive". Compliance with this standard has been verified according to EN 60950-1:2006.

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 for noise immunity are met when you connect a peripheral suitable for an industrial environment according to EN 61000-6-2:2005. 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. The license agreements for South Korea and China are being prepared.

Certifications for the United States, Canada, and Australia

Product safety

The following approval is available for the device:	
	Underwriters Laboratories (UL) according to Standard UL 60950-1 Second Edition and Canadian Standard CAN/CSA-C22.2 No. 60950-1-07 Second Edition

WLAN

The integrated wireless LAN conforming to IEEE 802.11 a/b/g/n is certified for Europe, the USA and Canada:

Iterference-Causing Equipment Standard

Country	Approvals/ Determinations
USA	
	FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATMENT
	This equipment has been tested and found comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used accordance with the instruction manual, may cause harmful interference to radio communications. Operations of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
	SHIELDED CABLES
	Shielded cables must be used with this equipment to maintain compliance with FCC regulations.
	MODIFICATIONS
	Changes or modifications not expressly approved by the manufacturer could void the user’s authority to operate the equipment.
	CONDITIONS OF OPERATION
	This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Canada	
	CANADIAN NOTICE
	This Class B digital apparatus complies with Canadian ICES-003.
	AVIS CANADIEN
	Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada

A.3 Service and support

Local information

Contain your Siemens representative (http://www.siemens.com/automation/partner) if you have questions about the products described here.

Technical documentation for SIMATIC products

You can find additional documentation for SIMATIC products and systems in the Internet: SIMATIC Guide manuals (http://www.siemens.com/simatic-tech-doku-portal)

Easy shopping at the mall

You can find the online catalog and order system under:
Industrial Automation and Drive Technologies (http://mall.automation.siemens.com)

Training center

All the training options are listed at:
SITRAIN homepage (http://www.sitrain.com)

Technical support

You can contact technical support for all Industry Automation and Drive Technologies products by:

- E-mail: support.automation@siemens.com
- Internet: Online support request form: (http://www.siemens.com/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 Service & Support

Information about the product, Support and Service, right through to the Technical Forum, can be found at: Industry Automation and Drive Technologies - Homepage (http://www.siemens.com/automation/service&support)

After-sales information system for SIMATIC PC / PG

Information about contacts, drivers, and BIOS updates, FAQs and Customer Support can be found at: After-sales information system for SIMATIC PC/PG (http://www.siemens.com/asis)

A.4 Accessories

You can order accessories for the Field PG M3 using the following order numbers:

Order no.	Accessory
6ES7798-0GA02-0XA0	External Field PG M3 power supply
6ES7798-0DA01-0XA0	Field PG M3 carrying case
6ES7900-5AA01-0XA0	Power cable D, F, NL, E, B, A, S, SF, CH, I (Field PG M3 only)
6ES7900-5BA01-0XA0	Power cable UK (Field PG M3 only)
6ES7900-5DA01-0XA0	Power cable USA (Field PG M3 only)
6ES7900-5FA01-0XA0	Power cable CN (Field PG M3 only)
6ES7798-0AA06-0XA0	Li-ion battery 6.6 Ah (Field PG M3 only)
6ES7791-2BA01-0AA0	Replacement hard disk kit (Field PG M3 only)
6ES7790-1AA00-0AA0	S-ATA-USB adapter
6ES7648-2AH40-0KA0	Memory module 1 GB DDR3 1066,SODIMM
6ES7648-2AH50-0KA0	Memory module 2 GB DDR3 1066,SODIMM

ESD guidelines

B

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.

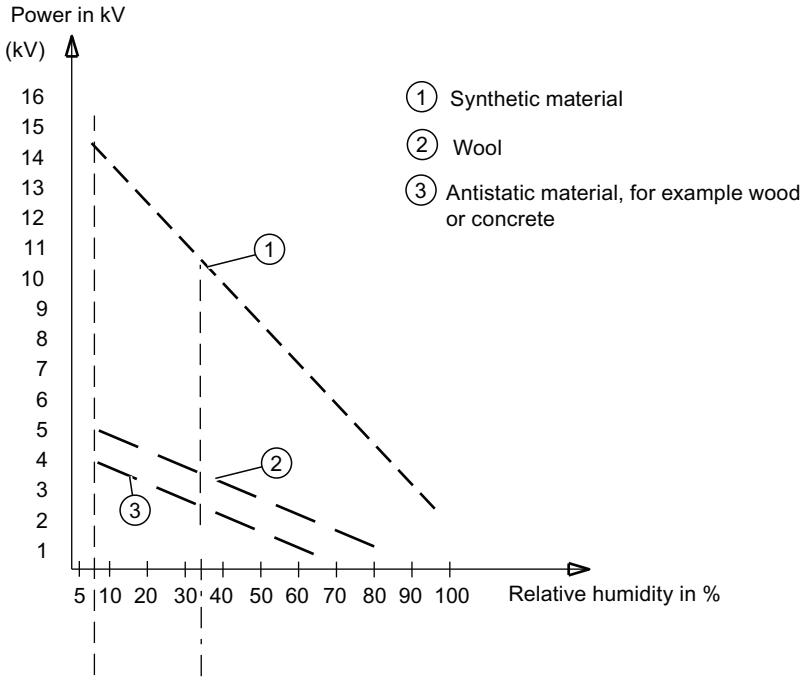


Figure B-1 Electrostatic voltages on an operator

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

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	Standardized controller interface for SATA devices. This is 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
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	

Abbreviation	Term	Meaning
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	Display Port	New powerful digital monitor port
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 checking and correction	Error correction code
ECP	Extended capability port	Extended parallel port
EFI	Extensible Firmware Interface	
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
FBWF	File-Based Write Filter	
FD	Floppy disk	Disk drive, 3.5"
FSB	Front Side Bus	
GND	Ground	Chassis ground
HD	Hard disk	Hard disk

Abbreviation	Term	Meaning
HDA	High Definition Audio	
HDD	Hard Disk Drive	HDD
HU	Height unit	
HMI	Human Machine Interface	User interface
HORM	Hibernate Once - Resume Many	
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	
IAMT	Intel Active Management Technology	Technology that permits the diagnostics, management and remote control of PCs
I/O	Input/Output	Data input/output on computers
IAA	Intel Application Accelerator	
IDE	Integrated Device Electronics	
IEC	International Electronical Commission	
IGD	Integrated Graphics Device	
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 for Mess- und Regelungstechnik in der chemischen Industrie (standardization body for instrumentation and control technology in the chemicals industry)	

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, 7)
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	
PI	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
RAL	Restricted Access Location	Installation of device in operating facilities with restricted access - for example, a locked switchgear cabinet
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

Abbreviation	Term	Meaning
SO-DIMM	Small Outline Dual Inline Memory Module	
SOM	SafeCard on Motherboard (SOM)	
SPP	Standard Parallel Port	Synonym for parallel port
SRAM	Static Random Access Memory	Static RAM
SSD	Solid State Drive	
SVGA	Super Video Graphics Array	Enhanced VGA standard with at least 256 colors
SVP	Serial number of the device	
SW	Software	
TCO	**T**otal **C**ost of **O**wnership	
TFT	Thin-Film-Transistor	Type of LCD flat-screen
TTY	Tele Type	Asynchronous data transfer
TxD	Transmit Data	Data transfer signal
TXT	Trusted Execution Technology	Hardware implementation
TWD	Watchdog Time	Watchdog monitoring time
UEFI	Unified Extensible Firmware Interface	
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
VCC		Positive supply voltage of integrated circuits
VDE	Verein deutscher Elektrotechniker (Union of German Electrical Engineers)	
VGA	Video Graphics Array	Video adapter which meets industrial standard
VRM	Voltage Regulator Module	
VT	Virtualization Technology	Intel technology with which a virtually closed environment can be made available.
VT-D	Virtualization Technology for Directed I/O	Enables the direct assignment of a device (e.g. network adapter) to a virtual device.
W2k	Windows 2000	
WAN	Wide Area Network	
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
WoL	Wake on Local Area Network	
WWW	World Wide Web	

Abbreviation	Term	Meaning
XD	Execute Disable Capability	Hardware implementation
XGA	Extended Graphics Array	Graphic standard, maximum resolution 1024x768 pixels.

Glossary

AHCI mode

AHCI is a standardized method to address the SATA controller. AHCI describes a structure in the RAM, which contains a general area for control and status, as well as a command list.

APIC mode

Advanced peripheral interrupt controller. 24 interrupt lines are available.

ATAPI CD-ROM Drive

AT Bus **A**ttachment **P**acket **I**nterface (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.

Boot disk

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

Cache

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

CE marking

Communauté **E**uropéene 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.

DP

Display **P**ort: New digital monitor interface.

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.

ECC

Error checking and correction is a method for detecting and correcting errors when saving and transferring data, frequently used in conjunction with RAM modules with and without ECC.

EMC directive

Directive concerning **E**lectro**m**agnetic **C**ompatibility. Compliance is confirmed by the CE symbol and the EC certificate of conformity.

Energy management

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

Energy options

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

Enhanced Write Filter (EWF)

Configurable write filter that allows you, for example, to boot Windows Embedded Standard 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 10/100/1000 Mbps.

Execute Disable Capability

Hardware implementation that prevents mutual memory accesses by programs and applications. It is only effective when all relevant system components, such as processors, operating systems and applications are supported.

Extensible Firmware Interface (EFI)

Refers to the central interface between the firmware, the individual components of a computer and the operating system. EFI is located logically beneath the operating system and represents the successor to PC BIOS, focusing on 64-bit systems.

File Based Write Filter (FBWF)

Configurable write filter to protect individual files from write access.

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.

HORM

Hibernate once, resume many is a method for fast booting from a single Hibernate file that only needs to be created once. HORM ensures restoration of a uniform, saved system state when booting. This reduces the writing to a CompactFlash medium to a minimum, for example, when starting up and shutting down Windows Embedded Standard 2009.

Hot plug

The SATA interface gives the device's hard drive system hot plugging capability. Prerequisite for this configuration is a RAID1 system with SATA RAID controller (onboard, or slot module), and at least two SATA removable cartridges. The advantage of hot plugging 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.

IGD

Integrated Graphics Device. Graphics interface integrated in the chipset.

Image

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

Intel Active Management Technology

This technology permits the diagnostics, management and remote control of PCs. It is only effective when all relevant system components, such as processors, operating systems and applications are supported.

Intel VT

The Intel Virtualization Technology (IVT) is the implementation of a secure closed environment for applications. Special (visualization) software an a VT-capable processor is required for its use.

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 Boot Device

Conventional drives can be used as USB devices.

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 communications 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.

PEG interface

PCI Express for Graphics. Graphics interface with 16 PCIe lanes for expansions with graphics modules.

PIC mode

Peripheral interrupt controller. 15 interrupt lines are available.

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 **F**ield **Bus** (standard bus system for process applications)

PROFINET

PROFINET is the name of the standard for Industrial Ethernet developed and maintained by the PROFIBUS user organization. PROFINET unites protocols and specifications with which Industrial Ethernet meets the requirements of industrial automation technology.

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 **P**reboot E**x**ecution **E**nvironment server is part of a network environment and can provide software to connected computers even before they boot. This can involve operating system installations or servicing tools, for example.

RAID

Redundant **A**rray of **I**ndependent **D**isks: Data storage system which is used to 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.

RAL

Restricted **A**ccess **L**ocation: Installation of the device in a production facility with restricted access, for example, a locked control cabinet.

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.

S.M.A.R.T

The Self-Monitoring, Analysis and Reporting Technology (SMART or S.M.A.R.T.) is an industry standard integrated in storage media. It makes for permanent monitoring of important parameters and early detection of imminent problems.

SATA

Serial ATA Interface for hard disk drives and optical drives with serial data transmission rates of up to 300 Mbps.

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.

SSD (Solid State Drive)

A Solid State Drive is a drive that can be installed like any other drive; it does not contain a rotating disk or other moving parts because only semiconductor memory chips of similar capacity will be used. This design makes SSDs more rugged, provides shorter access times and low energy consumption.

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

Trusted Execution Technology

Hardware implementation that allows secured execution of programs and applications. It is only effective when all relevant system components, such as processors, operating systems and applications are supported.

Turbo Mode

In this mode individual processor cores can be clocked higher in accordance with the load from the user programs and as required. It is only supported by Core i5 and Core i7 processors.

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.

Wake on LAN (WoL)

Wake on Local area network. This function allows the PC to be started via the LAN 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.

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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