SIEMENS

SIMATIC

Programming device SIMATIC Field PG M4

Operating Instructions

10/2012

A5E31347320-AA

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

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

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, 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 complied with. 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 M4.

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 M4 and describes the delivery state as of December 2012.

Position in the information scheme

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

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

Conventions

The abbreviation "PG", or the term "device", are also used in this documentation instead of the designation SIMATIC Field PG M4.

History

Currently released versions of this operating manual:

Issue	Comment
10/2012	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

2

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.

NOTICE
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 Security information

Siemens offers IT security mechanisms for its portfolio of automation and drive products in order to support safe operation of the plant/machine. We recommend that you stay informed about the IT security developments for your products. For information on this topic, refer to: Industry Online Support (http://www.siemens.de/automation/csi_en_WW): You can register for a product-specific newsletter here.

For the safe operation of a plant/machine, however, it is also necessary to integrate the automation components into an overall IT security concept for the entire plant/machine, which corresponds to the state-of-the-art IT technology. You can find information on this under: Industrial Security (http://www.siemens.com/industrialsecurity).

Products used from other manufacturers should also be taken into account here.

2.3 Additional safety information when using wireless LAN

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

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

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

Description

3

3.1 Overview

The SIMATIC Field PG M4 is a complete, turn-key programming tool that is pre-configured for the components of SIMATIC industrial automation.

Figure 3-1 SIMATIC Field PG M4

3.2 Application areas

The compact SIMATIC Field PG M4 is designed for use in the field, e.g.:

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

Its robust design makes the Field PG M4 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 accumulator with rated capacity of 97 Wh for extended cordless operation.
- Housing made of magnesium alloy housing with soft plastic corners – providing good protection for the electronics inside
- High-performance graphics controller for dual display support
- Large 15.6" internal display, Full HD or HD-Ready with 16:9 format for ergonomic working

Industrial functionality

- Integrated PROFIBUS DP/MPI interface that supports operation on virtual operating systems
- 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, XD Card, and MMC
- Card reader for SIMATIC MMC on the right side of the device
- 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
- Integrated Bluetooth in accordance with standard 4.0
- Fast, easy to replace SATA hard disk
- Two USB 2.0 ports (high-current capable); two USB 3.0 ports (rear) with USB 2.0 functionality on the Windows XP OS
- One USB port with charger function
- HDA (High Definition Audio) sound port
- Integrated Trusted Platform Module to TPM 1.2 standard

System availability

- Optional data backup software Image & Partition Creator

3.4 Features

General features	
Type of construction	Mobile device
Processor	• Intel® Celeron® processor • Third generation Intel® Core™ i processor
RAM	Expandable to 16 GB DDR3 SODIMM
Graphics	• Graphic controller: Intel® HD Graphics 4000 • Graphic controller memory DDR3 RAM; with 3 GB RAM: 63 MB to 256 MB, with 16 GB RAM: 64 MB to 1696 MB; with partial dynamic occupation 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	
HDD / SSD	2.5" SATA • For info on HDD capacity, refer to the ordering documents
Optical drive	DVD+-R/+-RW
Interfaces	
RS232 TTY/V.24 (optional)	Serial interface TTY, 20 mA, depending on configuration, cannot be retrofitted • Standard for "S5" equipment variants • 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) max. DVI resolution: 1920 x 1200 pixels
DPP display port	Interface for external monitor max. PPP resolution: 2560 x 1600 pixels
USB 2.0	Two high-speed USB ports (on the right side of the device): • Top port: max. 1 A • Bottom port: max. 1.5 A
USB 3.0	Two super-speed USB ports (rear panel); max. 1 high current (900 mA). Note: Functionality depends on the operating system used. Functionality on Windows XP platform: USB 2.0, 2 x max. high current 900 mA.

General features	
PROFIBUS/MPI interface	• 9-pin sub-D socket • Transmission rate 9.6 kBaud to 12 MBaud, software configured
Ethernet	2 x Gigabit Ethernet (RJ45)
Keyboard	Standard notebook
Status displays on the device (LEDs)	Battery status Device status Access to HD/DVD Access to SD/MMC/xD/MS MPI/DP S5 Module/Memory Card Num Lock Caps Lock WLAN active

Software	
Operating systems:	Installed: • Windows 7 Ultimate 64 Bit, 5 languages German, English, French, Spanish, Italian • Windows XP Professional MUI 32-bit MUI: Multilingual User Interface; 5 languages English, German, French, Spanish, Italian

3.5 Design

3.5.1 Exterior design

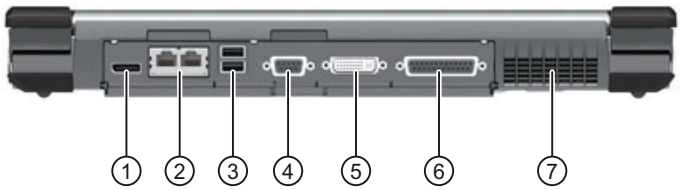
View with closed display

① System and keyboard LEDs
② Display latch
③ Device handle

Front view with display open

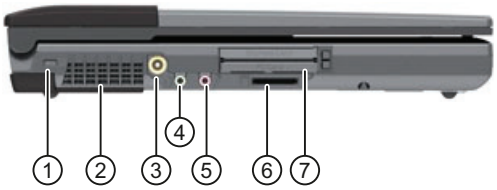
① Display latch
② Display
③ Stereo speakers
④ On/off button (power)
⑤ Keyboard
⑥ Touchpad
⑦ Mouse buttons

View from rear



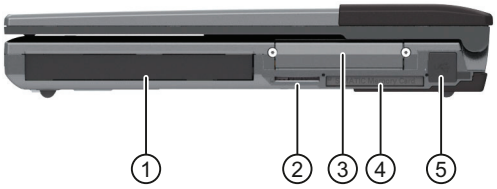
① DisplayPort
② 2 x Ethernet
③ 2 x USB 3.0
④ MPI/DP
⑤ DVI-I
⑥ RS232/TTY (TTY functionality, depending on the HW configuration variant)
⑦ Ventilation air outlet

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 (port for SMC, SDHC, MMC (Multi Media Card - not SIMATIC MMC), xD, and MS Pro)
⑦ Express card and PC card slot

View of right side



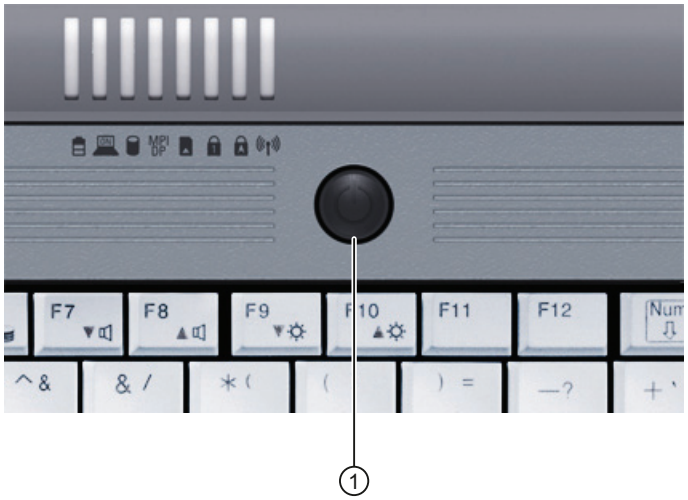
① Optical drive
② SIMATIC Micro Memory Card interface
③ Exchangeable hard disk unit
④ Memory card interface
⑤ 2 x USB port, with cover
Top port: USB 2.0
Bottom port: USB charger

View from below

① Cover for memory modules
② Rating plate
③ Rechargeable battery

3.5.2 Operator controls

3.5.2.1 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 5 seconds)

Possible operating states

You may press the ON/OFF button (power button), or close the display panel (lid switch), or use the Windows Start menu to switch the PG from normal mode to one of the following operating states:

- 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.

Note

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).

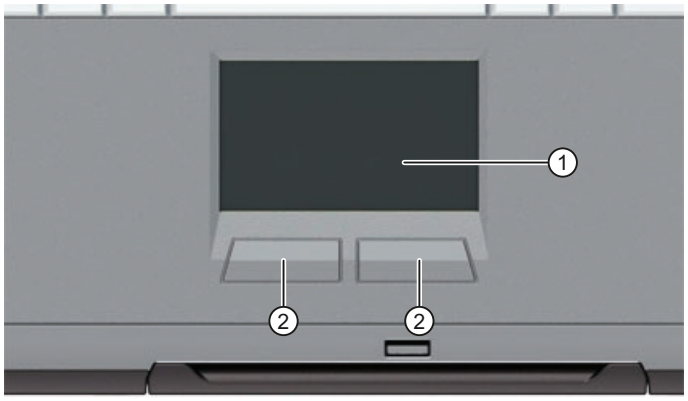
By changing these settings, and by adding extra hardware (such as USB components) or software to the device, you can modify the operating states so that the device cannot switch to Hibernation or Standby mode. Even though the screen display is dark, relevant consumers remain switched on in the device.

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.

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:

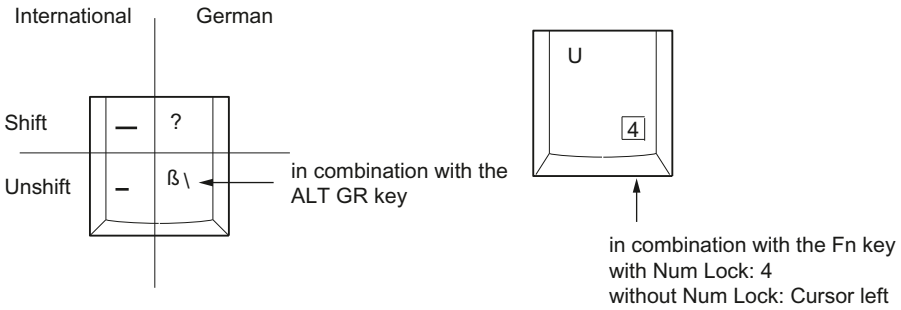
- Alphanumeric keyboard field with hotkeys
- Function keys
- Control keys

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.

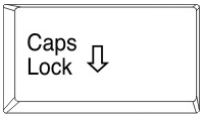
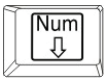
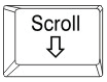
Keyboard labeling

The keyboard comes with international and German labeling.



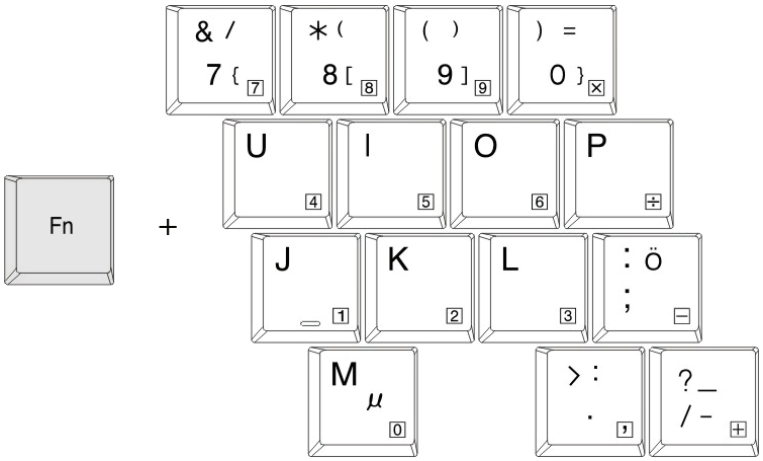
Alphanumeric keyboard field

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

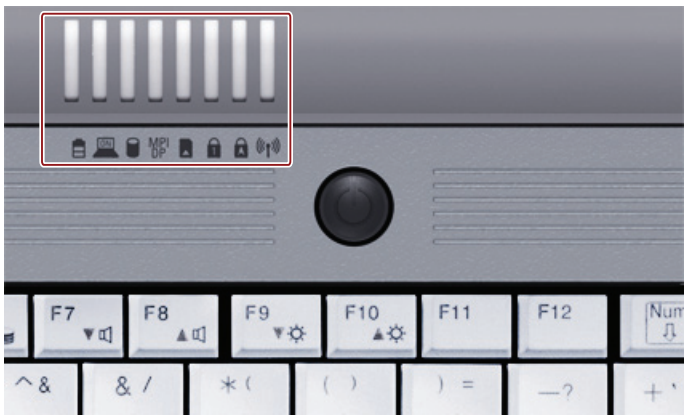
Twelve programmable function keys are arranged in the topmost row of keys. The arrangement of these keys depends on the software loaded.

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 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

Wireless LED

The term wireless relates both to WLAN and to Bluetooth. You may customize both functions in the corresponding application during installation of the software.

The wireless LED located on the right next to the keyboard LEDs indicates the active wireless function.

Symbol	LED	Description
	ORANGE OFF	Wireless is ON Wireless is 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!

Note

Using the Field PG in different countries

Verify the compatibility of local mains and power cable specifications are compatible when using the PG abroad. 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.

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 20)).
- 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.

NOTICE
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.

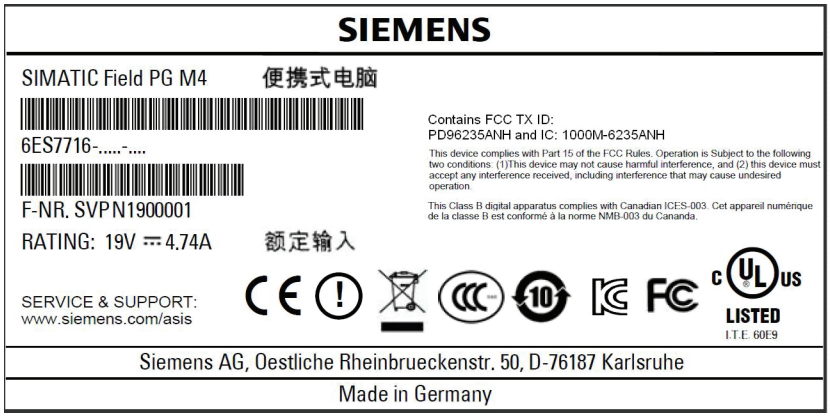
Serial number	S VP ...
Order No.	6ES ...
Microsoft Windows Product Key	
Ethernet address 1	
Ethernet address 2	

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 are listed in the BIOS Setup (ESC key > Icon "SCU") at Advanced > Peripheral Configuration.
- Microsoft Windows "Product Key" on the "Certificate of Authenticity" (COA). The Product Key is always required to reinstall the operating system.

COA label

The COA label is stuck to the bottom on the device.

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.

NOTICE
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

NOTICE
I/O devices that do not support hot-plugging
Peripheral devices that are incapable of hot-plugging may only be connected after the device has been disconnected from the power supply.

NOTICE
Observe the documentation of your I/O devices
Strictly adhere to the specifications for peripheral equipment.

⚠ WARNING
Equipotential bonding of the signal cable shields
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).

Connect USB devices

Connect devices such as drives, mouse, keyboard, and printer to the USB 2.0 and USB 3.0 ports.

Connect the microphone

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

To run a microphone recording, select:

- The Windows XP Start menu: **All Programs > Accessories > Multimedia > Audio recorder**
- In Windows 7: **All Programs > Accessories > Audio 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 83)

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.

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.

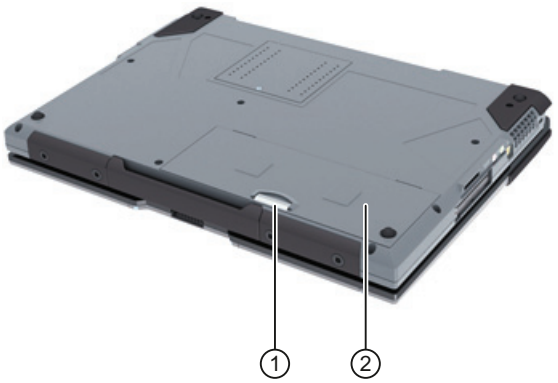
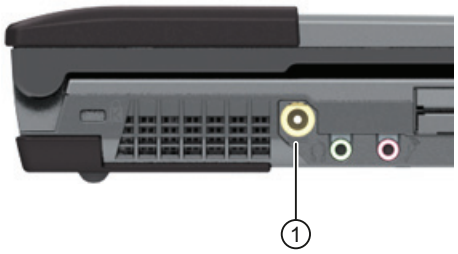
The connector must be compliant with NEMA 1-15P.

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:

- 3-wire SPT-2 or SVT,
- 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.	
8	Turn the PG over again.	

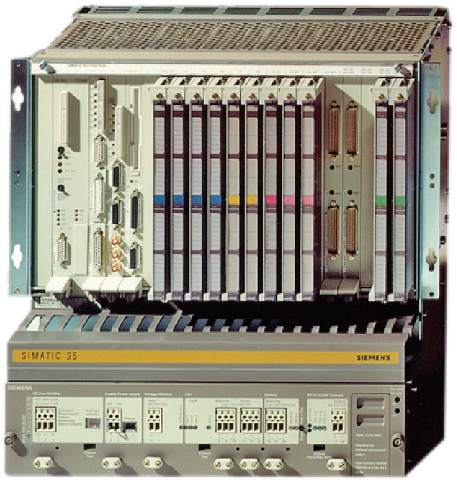
6.3 Connect the PG to the S5 automation device

To be noted before you connect the device

Note

A non-isolated interface (COM1/V.24-Modem/AG) for connecting the S5 hardware is not available on all Field PG M4 equipment variants.

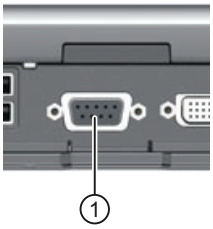
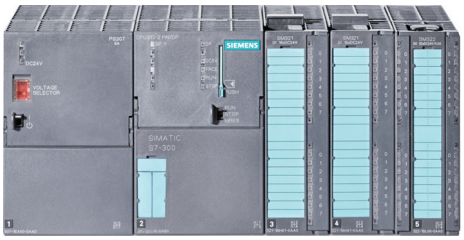
The SIMATIC STEP 5 programming software, and the connecting cable (order no. 6ES5734-2BD20) for connecting to the S5 programmable controller are not always supplied as standard.

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.	

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

6.4 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	Plug the cable into the MPI/DP interface ①.	
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)

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

Commissioning

7

7.1 Requirements for commissioning

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

NOTICE
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

Note

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 for approximately 1 second.

   The PG conducts a self-test. The following message is output during the self-test:

   ```
   Press Esc for boot options
   ```

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 set up the operating system, the PG is automatically restarted and then displays the user interface of the respective 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.

For Windows XP

1. Select:

   "Start > Control Panel > Regional and Language"

2. You can make the desired changes in the "Regional Settings", "Languages" and "Advanced" tabs.

For Windows 7

Editing the settings for language, region and formats of the registered user account

1. Select:

   "Start > Control Panel > Clock, Language, and Region > Regional and Language Options"

2. You can make your changes in the "Formats" and "Location und Keyboards and Languages" tabs.

Editing the settings for language, region and formats of the system account and default user account

1. Select:

   "Start > Control Panel > Clock, Language, and Region > Regional and Language Options"

2. You can make your changes in the "Administrative" tab. Click the respective button to copy the settings.

For more information, refer to chapter "Setting up the language selection by means of Multilingual User Interface (MUI) (Page 74)".

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 License Keys for your SIMATIC software are stored on the included USB memory stick.

Remove the cap from the USB stick and insert the stick into a free USB port of your computer to access the License Keys.

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").

You may also use the USB License Stick to transfer the License Keys to a different computer, or for intermediate storage of the License Keys.

Note

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.

Transferring the SIMATIC STEP 5 authorization

Run "install.exe" from the License Key in the **USB_Stick:>\UCL** directory to transfer the STEP 5 authorization. Follow the instructions on the screen to transfer the authorization.

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.

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) over a few weeks. 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.

Current consumption in battery operation

You can reduce the off-state battery power consumption of your device to the minimum by disabling the Intel® AMT and USB charging functions in the BIOS. However, you should remove the battery pack from the Field PG if you do not use the computer for several months. Ideal storage conditions for the battery pack: Ambient temperature of approximately 20 °C and battery charging state of approximately 50%.

Note

The battery pack may by completely or partially discharged (e.g. due to self-discharge) during commissioning. 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 you run the computer primarily on mains voltage, you should charge the battery pack to approximately 50% and then remove it from the computer for separate storage.

⚠ WARNING

Risk of personal injury or damage to property due to improper handling of the battery pack

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

Risk of personal injury or damage to property due to incorrect type of battery pack

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 HDD/SSD

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.

The respective system LED indicates access to the HDD. See section Status displays (Page 25).

⚠ 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.

7.3.3 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:

  You need to to install additional software (burner or DVD player software) to fully utilize the functionality of our DVD±R/±RW drive. 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.

- The Windows 7 operating system provides functions for the burning and playback of CDs and DVDs. Additional burner or DVD player software is therefore not supplied with Windows 7.

Information on burning CD-RWs or DVD±RWs

NOTICE

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.

Note

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.

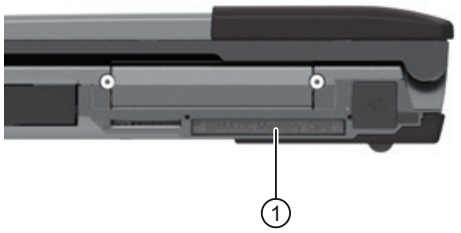
After closing the drawer, the data medium is initially tested and then the access display on the drive starts to flash:

- 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.

7.3.4 SIMATIC S5 memory module

Modifying SIMATIC S5 memory modules

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

How to use S5 memory modules		
1	Switch on the PG.	
2	In your STEP 5 software, launch the function Administration > edit EPROM.	
3	Insert the S5 adapter with its type plate facing upwards into the memory card slot (equipment variant-dependent) ① and then insert 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.	

NOTICE

Do not insert or remove the module while it is in use

Plugging in or removing the module while the module is being changed could damage the module.

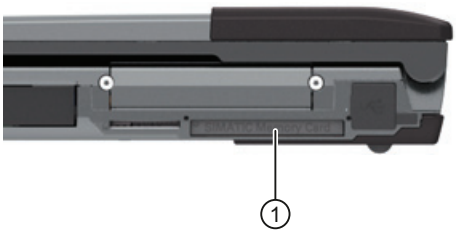
The S5 memory module must not be removed while the operating displays of the module programming are lit.

Note the ESD guidelines (Page 117).

7.3.5 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.	

NOTICE

Do not insert or remove the module while it is in use

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 117).

Note

Malfunction

The simultaneous use of MPI/DP Online and a SIMATIC memory card port can cause malfunctions. Simultaneous use is not supported.

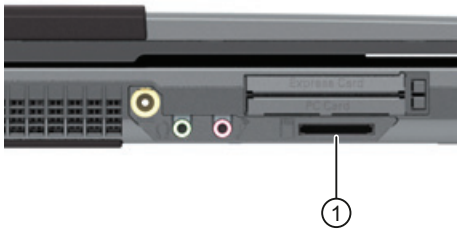
Terminate the use of the memory card port before using MPI/DP.

7.3.6 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 multimedia card slot ① is located on the left side of the device.



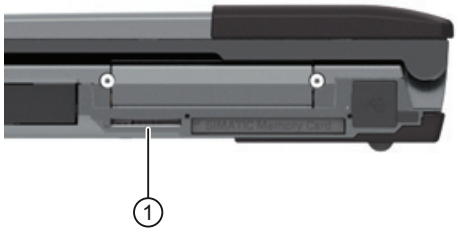
The contact areas of the card face upwards. To remove the card press it lightly towards the device. The card is ejected by a push-push function.

NOTICE
Do not insert or remove the module while it is in use 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 117).

7.3.7 SIMATIC Micro Memory Card

Modifying SIMATIC Micro Memory Cards

You can use the Micro Memory Card interface to read, program delete Micro Memory Cards (MMC). The Micro Memory Card can be operated as of STEP 7 V5.1.

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

NOTICE
Do not insert or remove the module while it is in use
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 117).

7.3.8 USB socket with charging function

You can use the bottom USB socket on the side of the device ① to charge USB devices (e.g. Smartphones) at a current of up to 1.5 A.
The circuit is compliant with USB standard BC1.2 and also supports charging of Apple devices based on the so-called Divider Mode method. Devices charged in divider mode will only reach the maximum current in shutdown state.
If you also want to use the charging function in cordless operating mode while the device is shutdown, activate the the corresponding function in the BIOS Setup dialog **Power > USB Charger**.

Note: Disable this function again to maintain the minimum possible discharge rate of the battery pack.

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.

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.

NOTICE
Proper insertion and removal of the PC Card. 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 117).

⚠ WARNING
Revocation of the safety approval for PC Cards that are not UL-listed 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 and Bluetooth

7.3.10.1 General information about WLAN and Bluetooth

The Field PG M4 supports Bluetooth to standard 4.0.

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.

Support is provided for the WLAN frequency ranges 2.4 GHz and 5 GHz.

Depending on the surrounding conditions, you can create connections through walls or at distances in the open air of up to 100 m.

The on-board network adapter operates based on the following 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 ad hoc mode (Peer to Peer) and the infrastructure mode.

Ad hoc mode

The ad hoc 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.

Note

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.

Integration into an automation system 8

8.1 System environments and networks

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 potential-free Profibus interface (12 Mbps) can be used to interconnect distributed field devices or to link 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://www.automation.siemens.com/mcms/automation/en/industrial-communications/iwlan-industrial-wireless-communication)

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).

8.2 Intel Active Management Technology

Intel® Active Management Technology is a technology for remote maintenance of computers (AMT PCs). This remote maintenance encompasses the following functions:

- Remote power management:

  AMT PCs can be switched on/off and be restarted from another PC.

- Keyboard–Video–Mouse-Redirection (KVM-Redirection)

  Keyboard–Video–Mouse redirection. This enables remote access to the AMT PC, and operation of AMT PCs without functioning operating system.

- BIOS Setup Management

  You can start and change the BIOS Setup remotely.

- Remote reboot:

  An AMT PC can be booted from a bootable ISO file made available by another PC.

- SOL (Serial over LAN):

  You can redirect data of a serial interface to the network. The function is used primarily for text-based remote control of an AMT PC in console mode.

- IDE redirection:

  An ISO file contains a memory image of the content of a CD or DVD with ISO 9660 structure. An ISO file can be implemented on the AMT PC for use as virtual DVD drive on the help desk PC.

Configuration of the AMT PC

You configure AMT in the BIOS Setup and MEBx (Management Engine BIOS Extension). MEBx is a BIOS extension for configuring AMT.

Press <ESC> when the BIOS appears briefly during startup and select the BIOS start page MEBx.

Note

Password protection for the AMT PC

AMT enables virtually unrestricted access to the AMT PC. Protect access to the AMT PC by means of password.

See also

Advanced Menu (Page 96)

8.3 Trusted Platform Module (TPM)

The Field PG features a so-called Trusted Platform Module (TPM) to standard 1.2. You can enable this module in the **Security** dialog of BIOS-Setup. Follow the instructions in BIOS Setup.

The Trusted Platform Module can be used in combination with the BitLocker drive encryption in Windows 7. Follow the instructions of the OS.

Note

Improper usage poses the risk of data loss. Always keep the keys and passwords in a secure place. Encrypted data cannot be retrieved. The Siemens warranty does not cover a hardware reset after loss of the password.

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**.

Note

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 M4 features an additional boot menu entry that is used to set a single core mode. 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://www.siemens.de/automation/csi_en_WW).

STEP 5 authorization

To transfer the STEP 5 authorization, run 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

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. You can use these to expand PG RAM to a maximum of 16 GB. The memory modules may not exceed the maximum size of 8 GB.

Preparation

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

NOTICE
Observe the ESD guidelines 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 117) for a description of these measures.

Note

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.

5. Open the battery pack cover; see chapter "Replace the battery (Page 65)".

Removing a memory module

How to remove a memory module		
1	Remove the battery.	
2	Remove the screw (Torx T6) that holds 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.	

Note

The memory modules must be seated firmly in their slots. Faulty contact of the memory modules may lead to malfunction, e.g. boot failure of the device.

Display of the current memory configuration

The memory expansion is automatically detected. The RAM configuration is indicated in the BIOS Setup (Page 94), **Main** menu.

Service and maintenance

11

11.1 Removing and installing hardware components

11.1.1 Replacing HDDs/SSDs

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 65).
3. Remove all connecting cables from the device.

⚠ CAUTION
Note the ESD guidelines (Page 117).

⚠ WARNING
Always replace the HDD/SSD with a drive 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

The HDD kit is available on order under order number 6ES7791-2BA01-0AA0, or as performance version 6ES7791-2BA20-0AA0 for the SSD variant. It consists of the HDD module (see the order documents for details of the HDD capacity), a Torx T8 driver, as well as a transport/storage bag.

With the SATA to USB adapters (order no. 6ES7790-1AA01-0AA0), 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.

Note

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.

Note

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.

NOTICE

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.

NOTICE

Batteries must be disposed of in accordance with local regulations.

11.2 Reinstalling the software

11.2.1 General installation procedure

If ever your software fails you can use the Recovery DVD, the "Software for Field PG M4" DVD, or the Restore DVD sets to reinstall the software.

Recovery DVD:

The recovery DVD contains the installation program with tools for configuring the hard drives and installing the operating system and the languages supported by the operating system (MUI package).

The basic language of the installed operating system is English. To add other languages, install these languages from the Recovery DVD at a later time.

DVD "Software for Field PG M4":

The "Software for Field PG M4" DVD contains the documentation, the SIMATIC software, and the hardware drivers.

Restore DVD set:

The Restore DVD set is included if you have ordered a device with operating system. The DVD contains a HD image with the original software package: Operating system with installed HW drivers and and SIMATIC software.

Note

Place the data medium from which the operating system is to be booted later at the first position in the boot folder. Make this setting in the "Boot" menu of BIOS Setup.

11.2.2 Restoring the delivery state

You can restore the original factory software using the Restore DVD set. The DVDs contain the necessary images and tools for transferring the software package to the drive of your device. Restoration of the all drives C: (system) and D: (data), or only of drive C: (system) is possible. This allows you to retain any user data on drive D: (data).

Retrieving authorization or license

- Check whether you can retrieve your authorization or License Key from the HDD to a License Key memory stick or other data volume with the help of Automation License Manager .
- If backup is not possible, please contact Customer Support. There you can obtain information necessary for software authorization.

NOTICE
Option "Restore only system partition" formats C: (System) If "Restore system partition only" is set all data on drive C: (system partition) will be deleted. All data, user settings and all authorizations or license keys on drive C: (System) will be lost! All data on drive C: (System) will be completely deleted, reformatted and overwritten with the original factory software. If "Restore entire hard disk" is set ALL data, user settings, authorizations or license keys will be lost on the entire drive.

Procedure

1. Place the first DVD of the Restore-DVD sets (Restore-DVD 1-2) into the optical CD/DVD drive.
2. Restart the device.
3. Press <ESC> when the following BIOS message is output.

   ```
   Press Esc for Boot Options
   ```

   The "Boot Menu" is displayed when initialization is completed.
4. Select the Boot Manager to boot from the Restore DVD.
5. Select the optical CD/DVD drive from the boot manager.

   Example:

   ```
   Optiarc DVD RW AD-7710H
   ```
6. Follow the on-screen instructions.

NOTICE
All data will be deleted All data, programs, user settings and authorizations/License Keys will be deleted from the drives and are lost irrevocably.

11.2.3 Installing Windows

11.2.3.1 Installing Windows XP

Note

For specific information related to the use of Windows XP, refer to the following manual (not included in the scope of delivery):

Microsoft Windows XP Professional, Technical Reference (MSPress No. 934)

Requirement

You need the recovery DVD for the Windows XP operating system. It is included in the product package.

Windows XP does not provide suitable native AHCI drivers for the SATA controller, which means that you need to set the "IDE" mode in the BIOS Setup
prior to installation of Windows XP. This setting can be made in "**Advanced > IDE configuration > HDC configure AS**".

You may optionally install an AHCI controller for Windows XP by loading the driver from a 3.5" floppy disk during Windows Setup. For this purpose, connect a 3.5" floppy drive to one of the USB 2.0 ports on this side of the Field PG M4 before you run Windows XP Setup and have the AHCI controller driver disk at hand.

For more information about implementation of the AHCI controllers, refer to section "Procedure for installing an AHCI Controller".

You can create an AHCI controller driver disk with the help of the "Softwar for Field PG M4" DVD.
For more information about the creation of an AHCI controller driver disk, refer to section "Creating an AHCI controller driver disk".

For more information, refer to section Installing the drivers (Page 75).

Procedure

1. Place the Recovery DVD into the optical CD/DVD drive.
2. Restart the device.
3. Press <ESC> when the following BIOS message is output.

   ```
   Press Esc for Boot Options
   ```

   A "Boot Menu" is displayed on completion of the initialization routine.
4. Select the Boot Manager to boot from the Restore DVD.
5. Select the optical CD/DVD drive from the boot manager.

   Example:

   ```
   Optiarc DVD RW AD-7710H
   ```
6. Confirm the selection by pressing ENTER.
7. **Immediately** press any key when you see the following prompt to install the operating system from the Recovery DVD.

   ```
   Press any key to boot from CD ..
   ```

   The Windows XP installation program (blue screen) appears after a few seconds.
8. Follow the instructions of the Windows XP installation program. You can find additional information on this in the section: Windows XP installation program

Windows XP installation program

The language of the installation program and the Windows XP Professional operating system is preset to English. You can change the language of Windows XP Professional once you have installed it. You can find information on this in section: Setting up the language selection by means of the Multilanguage User Interface (MUI) (Page 74).

Setting up partitions

You can set up partitions while installing the OS.

The recommended minimum size of the partition on which you want to install Windows XP varies depending on how much work memory and which additional software you want to use. Information on partitioning of the data carrier in the delivery state is provided in the following table.

Partitions in the delivery state for Windows XP

Partition	Name	Size	File system
First	System	100 GB	NTFS not compressed
Second	Data	Remainder	NTFS not compressed

Procedure for installing an AHCI controller

Data carrier controllers that are unknown to the operating system must be made known to the operating system during installation. Proceed as follows:

1. Connect a USB floppy drive and insert the AHCI driver disk.
2. Start the Windows installation process as described above.
3. Initiate installation of the AHCI controller by pressing <F6> when prompted at the start of the Windows Setup (blue screen).

   After a few seconds, a dialog for installation of the data carrier controllers appears.
4. Select the corresponding driver on the driver disk.

Note

Select the driver "Intel(R) 7 Series Chipset Family SATA AHCI Controller" for the on-board AHCI controller.

For RAID controller: "Intel(R) ICH8M-E/ICH9M-E/5 Series SATA RAID Controller"

11.2.3.2 Installing Windows 7

Note

For specific information about using Windows 7refer to the "Windows 7, Technical Reference (MS Press No. 5913)", manual (not included in the scope of delivery).

Requirement

You need the Recovery DVD for the operating system you want to install. It is included in the product package.

Procedure

1. Place the Recovery DVD into the optical CD/DVD drive.
2. Restart the device.
3. Press <ESC> when the following BIOS message is output.

   ```
   Press Esc for Boot Options
   ```

   The "Boot Menu" is displayed when initialization is completed.
4. Select the Boot Manager to boot from the Restore DVD.
5. Select the optical CD/DVD drive from the boot manager.

   Example:

   ```
   Optiarc DVD RW AD-7710H
   ```
6. Confirm the selection by pressing ENTER.
7. **Immediately** press any key when you see the following prompt to install the operating system from the Recovery DVD.

   ```
   Press any key to boot from CD or DVD ..
   ```

   After a few seconds, you will see the "Install Windows" installation program.
8. Now follow the instructions in the installation program. You can find additional information on this in the section: "Install Windows" installation program.

"Install Windows" installation program

The language of the installation program and the operating system you want to install has been preset to English. You can change the language of the operating system after the installation. You can find information on this in section: Setting up the language selection by means of the Multilanguage User Interface (MUI) (Page 74).

Setting up partitions

You can set up partitions while installing the OS.

The recommended minimum size for Windows 7 system partition varies, depending on the amount of RAM and additional software that you are going to use. The following table provides information about the factory partitioning of the data volume.

Windows 7 partitions, factory setup

Partition	Name	Size	File system
Primary	Boot	100 MB	Automatically set up by installation program
Second	System	100 GB	NTFS not compressed
Third	Data	Unallocated	NTFS not compressed

11.2.4 Setting up the language selection by means of the Multilanguage User Interface (MUI)

You can set the display of menus, dialogs or other information, such as date and time, to a different language. For this purpose, you can either select one of the preinstalled languages or install a new language package.

The following command sequences are described in English. Depending on the default setting, they can be displayed in another language.

Setting up the language selection in Windows XP

Note

Specific information for setting up the language for Windows XP Professional is available in the following manual (not included in the product package):

- "Microsoft Windows XP Professional, Technical Reference" (MSPress No 934)

Changing the settings for language, region and formats of a registered user account

1. Choose:

   "Start > Control Panel > Regional and Language"

2. You can make the desired changes in the "Regional Settings", "Languages" and "Advanced" tabs.

Installing new language packages

1. Start the "MUISETUP.EXE" program in the "MUI" folder from the Recovery DVD.

   All languages that can be installed are displayed.

Setting up the language selection in Windows 7

Note

Specific information for setting up the language selection for Windows operating systems is available in the following manuals (not included in the product package):

- Windows 7 Technical Reference (MS Press No. 5913)
- Windows Server 2008 Technical Reference (MS Press No. 5919)

Changing the settings for language, region and formats of a registered user account

1. Choose:

   "Start > Control Panel > Clock, Language, and Region > Regional and Language Options"

2. You can make your changes in the "Formats" and "Location und Keyboards and Languages" tabs.

Changing the settings for language, region and formats of the system account and the standard user account

You can change the settings for language, region and formats of the system account (for example, the language in the user login dialog) and the settings of the standard user account (standard setting for new users). The settings of the registered user are copied to the system account and the standard user account for this purpose.

1. Choose:

   "Start > Control Panel > Clock, Language, and Region > Regional and Language Options"

2. You can make your changes in the "Administrative" tab. You copy the settings by clicking the respective button.

Installing new language packages

Some language packages are available on the Recovery DVD in the "Languagepacks" folder.

1. Choose:

   "Start > Control Panel > Clock, Language, and Region > Regional and Language Options"

2. Select the "Keyboards and Languages" tab.
3. Click the "Install/uninstall languages" button and make the required changes.

11.2.5 Installing drivers and software

11.2.5.1 Installing the drivers

Note

In the case of multilingual operating systems (MUI versions), you have to set the regional settings for menus and dialogs and the default language to English (US) before you install new drivers or operating system updates.

Install the drivers and software from the "Software for Field PG M4" DVD included with your product. Proceed as follows:

1. Insert the "Software for Field PG M4" DVD into the optical CD/DVD drive.
2. If the suite does not start automatically, run "START.CMD" from the DVD.
3. Select "Drivers" from the index.
4. Select the operating system.
5. Select the required driver.

6. Click the link next to "Driver path" to open the folder containing the driver data.
7. Run Setup from the folder.

Note

The chipset driver must be installed before you install any other drivers for new installations of Windows operating systems.

11.2.5.2 Creating an AHCI controller drive disk

Create an AHCI controller drive disk with the help of the "Softwar for Field PG M4" DVD and a 3.5 inch floppy drive.

Proceed as follows:

1. Connect a 3.5 inch USB floppy drive to your device.
2. Insert a 3.5 inch floppy disk into the drive
3. Insert the "Software for Field PG M4" DVD into the optical CD/DVD drive.
4. If the suite does not start automatically, run "START.CMD" from the DVD.
5. Select "Drivers" from the index.
6. Select the operating system.
7. Select the "Intel Rapid Storage Technology" driver.
8. Click the floppy disk icon next to "Driver disk".
9. Verify or set the correct floppy drive in the "Writing on Floppy" area.
10. Click "OK" to create the AHCI controller driver disk.

11.2.5.3 Installing the SIMATIC software from the "Software for Field PG M4" DVD

Install the SIMATIC software from the "Software for Field PG M4" included with your product. Proceed as follows:

1. Insert the "Software for Field PG M4" DVD into the optical CD/DVD drive.I
2. If the suite does not start automatically, run "START.CMD" from the DVD.
3. Select "Software" from the index.
4. Click "SIMATIC Software" to run the SIMATIC software setup.
5. Follow the Setup instructions.
6. Run Setup from the folder.

Note

The license key USB sticks containing authorizations or license keys that are necessary for running the SIMATIC software are only available for delivery variants that include the respective SIMATIC software.

For more information about installation of the authorizations or License Key activation, refer to chapter Initial commissioning – initial power on (Page 39).

Installing additional SIMATIC software

Proceed as follows to install additional SIMATIC software:

1. Insert the respective software DVD into the optical CD/DVD drive.
2. If Setup does not start automatically, run Setup manually from the DVD.
3. Follow the Setup instructions.

For more information about installation, refer to the respective SIMATIC software documentation.

11.2.6 Installing the optional burner or DVD software

Information about installation of the burner / DVD software for Windows XP is available on the included CD.

The Windows 7 OS provides native functions for burning data volumes, i.e. it is not necessary to install additional burner/DVD software.

11.2.7 Updating the operating system

Windows

The latest updates for the Windows operating system are available in the Internet at Microsoft (http://www.microsoft.com).

Note

Before you install new drivers or operating system updates for Windows MUI versions, set the default language to US English in the regional settings for menus and dialogs.

Other operating systems

Contact the corresponding manufacturer.

11.2.8 Data backup / subsequent modification of partitions

11.2.8.1 Hardware supported

Note

Older versions of the SIMATIC IPC Image Creators do not support the hardware of the device.

Support is available as of SIMATIC IPC Image & Partition Creator Version 3.3.

For information on SIMATIC IPC Image & Partition Creator, refer to the corresponding product documentation.

11.2.8.2 Creating an image

To backup your data under Windows, we recommend that you use the "SIMATIC IPC Image & Partition Creator" software tool. This tool is a simple and efficient backup and restore solution for HDD contents and individual partitions (images).

"SIMATIC IPC Image & Partition Creator" supports burning to DVD media.

The software can be ordered from the SIEMENS online ordering system. For detailed information about "SIMATIC IPC Image & Partition Creator", please refer to the corresponding product documentation.

11.2.8.3 Modifying the partitions

Siemens recommends that you use "SIMATIC IPC Image & Partition Creator" to modify partitions. The software is available on order from the SIEMENS Online Ordering System.

For more information on using "SIMATIC IPC Image & Partition Creator", refer to the corresponding documentation.

Note

To run the "Restore system partition only" option from the Restore DVD, the size of the partitions must correspond to the factory default. The factory settings for the partition sizes are listed in chapter "Installing Windows (Page 70)".

Troubleshooting/FAQs

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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 <ESC> 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 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
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

- Verify that WLAN is activated.
  You can use the Fn + F3 hotkey to activate/deactivate the WLAN.
- Check that the other WLAN partner is active.
- Check the WLAN connection settings
  Observe the corresponding notes on WLAN configuration and operation in the Online Help of the WLAN 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 depends on many factors.
  Start by verifying that the transmission mode of all network components is set up in accordance with the IEEE 802.11 a/b/g/n standard.
- 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

Due to the structural principle of the Field PG M4, a high degree of ambient interference may, in rare cases, cause malfunction 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.

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

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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 Type 1.5 W approximately 8800 mAh; 11.1 V with thermal switch and multi-fuse; recyclable; chargeable up to 40°C; high number of cycles for use in harsh environments; 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	• IEC 60950-1/EN 60950-1 • 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/m with 80% amplitude modulation at 1 kHz, 10 kHz to 80 MHz (to IEC 61000-4-6) 10 V/m at 80 % amplitude modulation with 1kHz, 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	Processor specifications are listed in your order documents.
RAM	Expandable to 16 GB DDR3 SODIMM

General technical data	
Disk drives	
Hard disk	2.5"-SATA HDDs or SSD, capacity specified in BIOS.
Optical drive	DVD+-R/+-RW
Graphics	
Graphic controller	Intel® HD Graphics 4000
Graphic controller memory	Graphics memory DDR3-RAM, 63 MB to 256 MB allocated in system memory with 3 GB RAM, 64 MB to 1696 MB allocated in system memory with 16 GB RAM
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	2.5 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 screens can be operated using a DVI/VGA adapter), max. resolution DVI/VGA: 1920 x 1200

General technical data	
DPP (Display Port)	Interface for external monitor, max. resolution: 2560 x 1600
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
Media Card Reader	Interface for SMC (SIMATIC Memory Card) SD/SDHC MMC xD-Picture Card MS Pro
USB 2.0	Two interfaces for High-Speed USB, max. 2 high current (500 mA) or 1 A. USB charging function is possible at max. 1.5 A.
USB 3.0	Two interfaces (rear panel) for SuperSpeed USB; max. One high current (900mA). Note: Functionality depends on the operating system used. For Windows XP with USB 2.0 function.
PROFIBUS/MPI interface • Transmission speed • Mode of operation	9-pin sub-D socket • 9.6 kBaud to 12 MBaud, software configured • 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
Interrupts	IRQ 5, 10, 11 or 15 software configured
Ethernet	2 x Gigabit Ethernet (RJ45)
DC-In	DC power supply input, jack plug
Headphones and microphone	Connection for each 3.5 mm jack plug
Status displays on the device	
	Battery state Device state Access to HD/DVD MPI/DP S5 module/Memory Card Num Lock Caps Lock WLAN active

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

Detailed descriptions

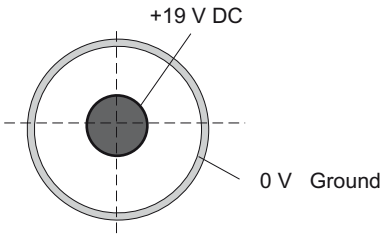
14

14.1 Interfaces

14.1.1 External interfaces

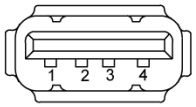
DC-In

Power adapter socket. This has the following charge:



USB 2.0

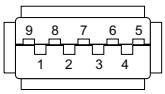
The Universal Serial Bus port (2.0) has the following pinout:

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

The connectors are of type A.

USB 3.0

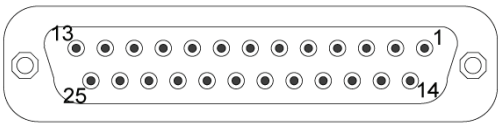
USB 3.0 interface



Pin no.	Short designation	Meaning	Input/output
1	VBUS	+ 5 V (fused)	Output
2	D-	Data line	Input/output
3	D+	Data line	Input/output
4	GND	Ground	–
5	RX-	Data line	Input
6	RX+	Data line	Input
7	GND	Ground	–
8	TX-	Data line	Output
9	TX+	Data line	Output

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

Serial port COM 1 (socket)



Pin no.	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	-

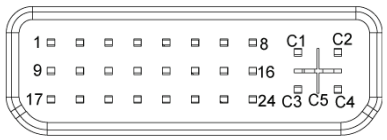
Gender changer for COM1

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

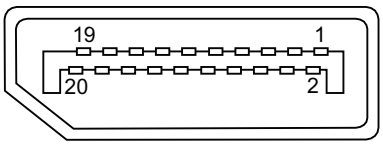
DVI-I port



Pin no.	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	–

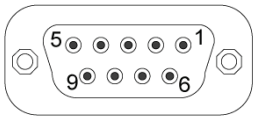
DVI-I port			
22	GND	Ground	–
23	TXCP	TDMS clock +	Output
24	TXCN	TDMS clock -	Output

Display port

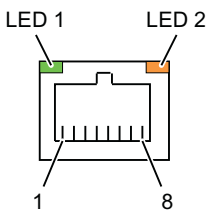
Display port interface			
			
Pin no.	**Short designation**	**Meaning**	**Input/output**
1	ML_Lane0+	DP data 0+	Output
2	GND	Ground	-
3	ML_Lane0-	DP data 0-	Output
4	ML_Lane1+	DP data 1+	Output
5	GND	Ground	-
6	ML_Lane1-	DP data 1-	Output
7	ML_Lane2+	DP data 2+	Output
8	GND	Ground	-
9	ML_Lane2-	DP data 2-	Output
10	ML_Lane3+	DP data 3+	Output
11	GND	Ground	-
12	ML_Lane3-	DP data 3-	Output
13	CONFIG1 CAD	Cable Adapter Detect	Input
14	CONFIG2	Ground (pull-down)	-
15	AUX_CH+	Auxiliary channel+	Bi-directional
16	GND	Ground	-
17	AUX_CH-	Auxiliary channel-	Bi-directional
18	HPD	Hot Plug Detect	Input
19	GND	Ground	-
20	DP_PWR	+3.3V (fused)	Output

PROFIBUS/MPI interface

The PROFIBUS/MPI socket has the following pinout:

PROFIBUS/MPI interface			
			
Pin no.	**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	

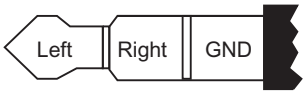
Ethernet RJ45 connection

Ethernet RJ45 port			
			
Pin no.	**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

Ethernet RJ45 port				
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 is up indicates activity	–

Micro-In

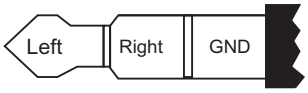
The socket has the following pinout:



3.5 mm microphone jack plug

Headphones

The socket has the following pin assignment:



3,5-mm Stereo phono plug

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

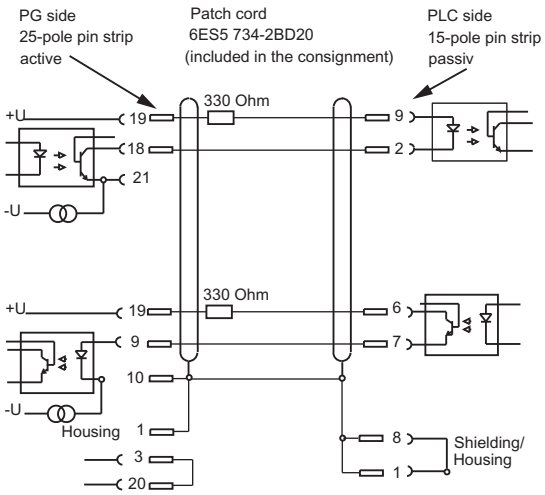
Setting the volume and the equalizer to a setting other than the medium, will increase the output voltage of the earphones / headphones and therefore the sound pressure value.

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 37).

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

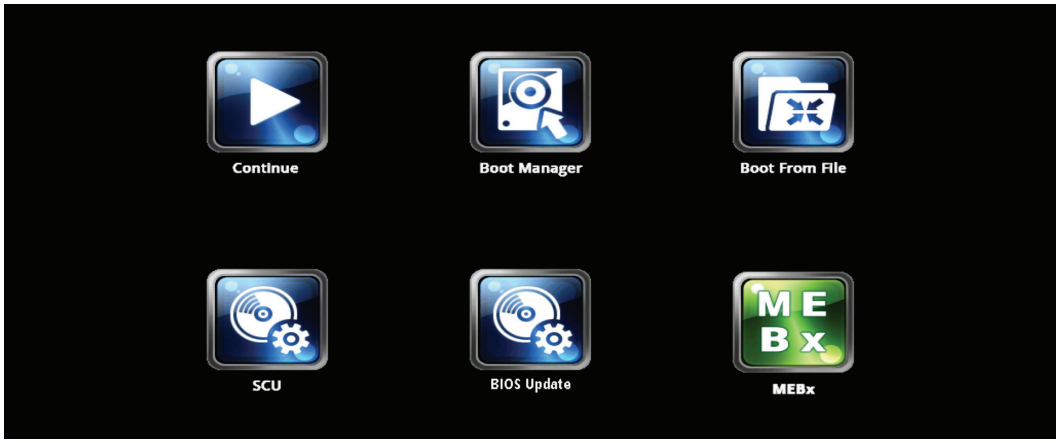
Run SETUP as follows:

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:

   ```
   Press Esc for Boot Options
   ```

2. Press **Esc**

   The BIOS menu is displayed.

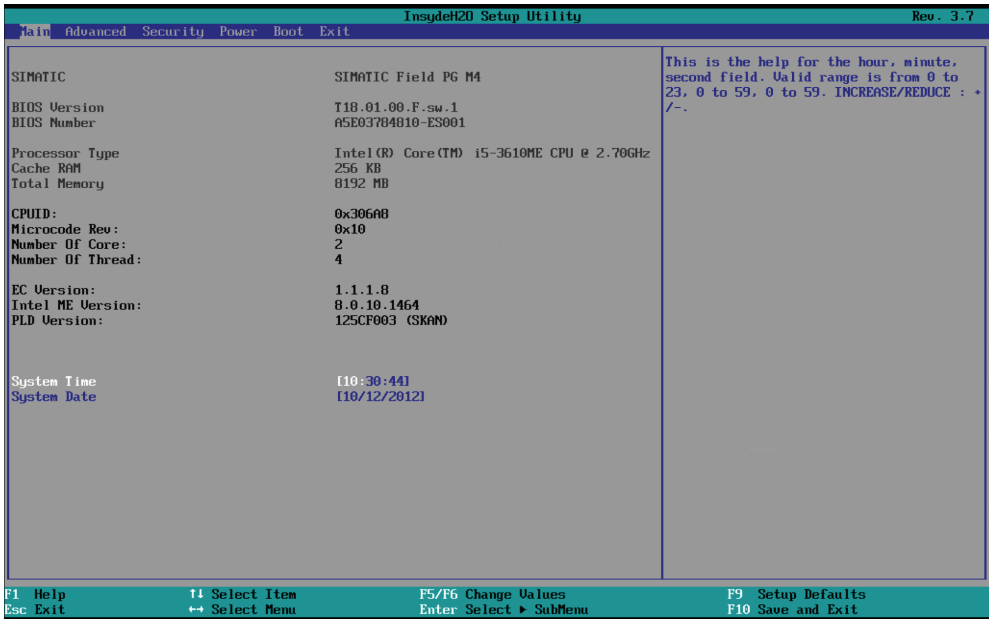


The following button functions are available in the BIOS menu:

Button	Function
Continue	Exit BIOS menu, resume start process
Boot Manager	Boot drive selection
Boot From File	Start from .EFI file
SCU	Device configuration
BIOS Update	BIOS Update from USB Stick
MEBx	Start Intel Management BIOS Extension

The following chapters describe the device configuration settings under "SCU" and the corresponding AMT setting in "MEBx".

14.4.2 SCU (Setup Configuration Utility) - Main Menu



Settings in the main menu

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

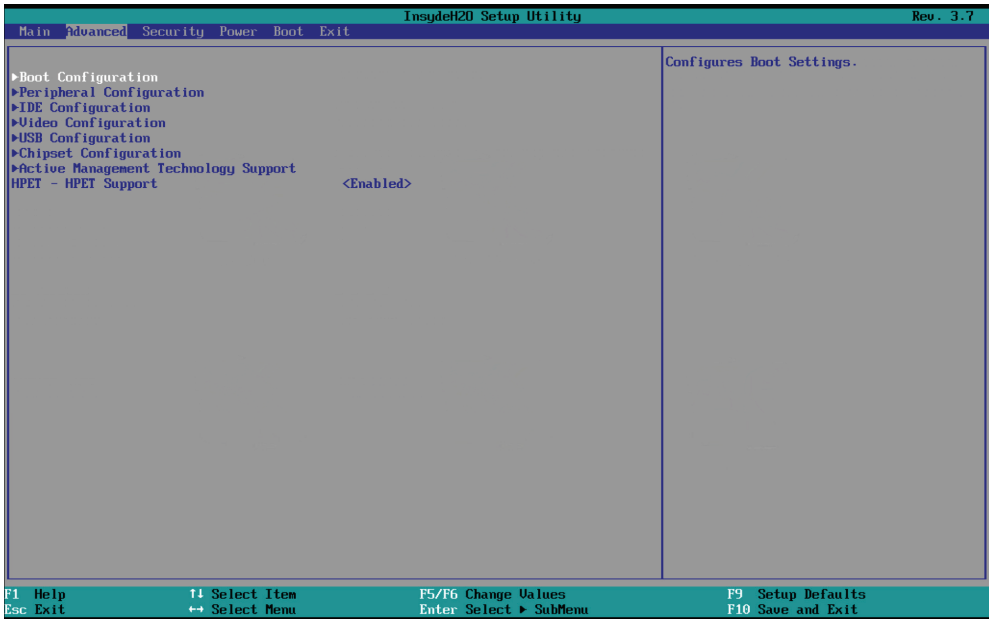
Field	Meaning
System Time	For viewing and setting the current time
System Date	For viewing and setting the current date

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.

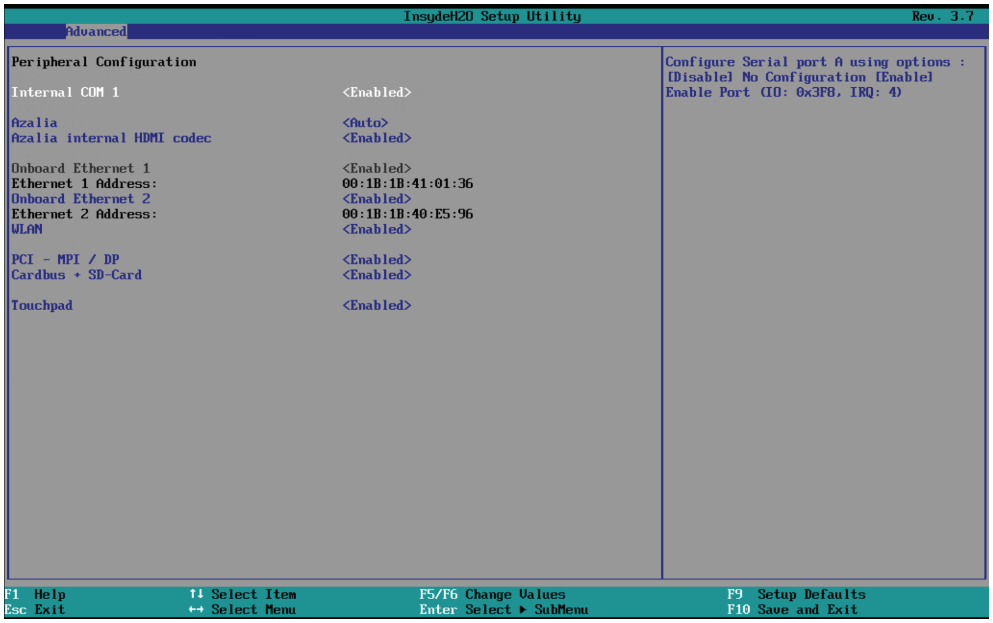
14.4.3 Advanced Menu



Settings in the "Advanced" menu

Entry	Meaning
Boot Configuration	Boot sequence configuration
Peripheral Configuration	Configuration of components on the motherboard
IDE Configuration	Configuration of the IDE interfaces
Video Configuration	Configuration of the graphics interface
USB Configuration	Configuration of the USB ports
Chipset Configuration	Extended chipset configuration.
Active Management Technology Support	Configuration of remote management
HPET - HPET Support	Enable High Precision Event Timer

Advanced menu > "Peripheral Configuration" submenu

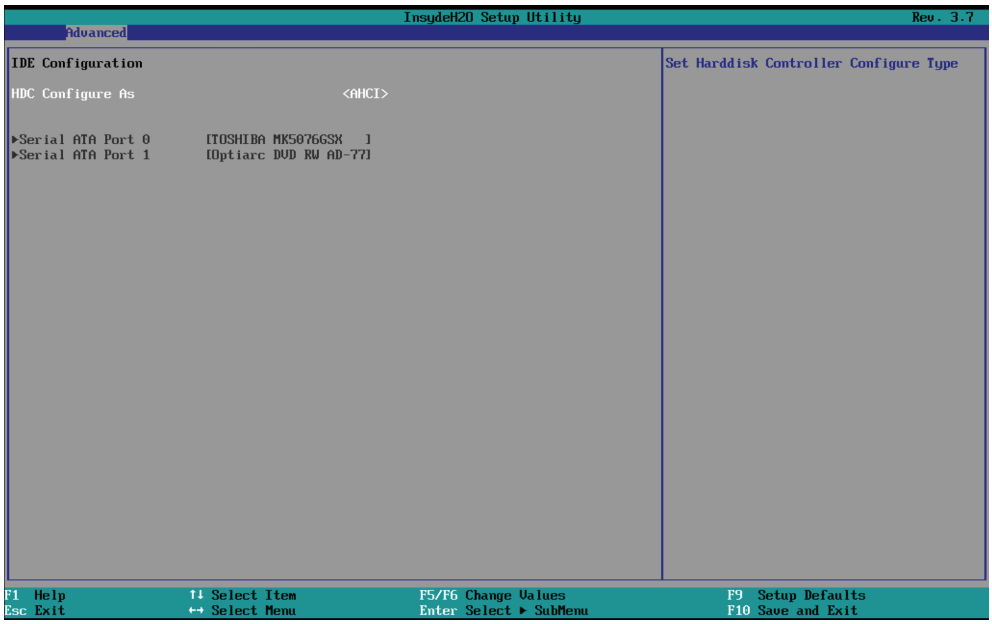


Entry	Meaning	
Internal COM1	Enabling (Enabled), disabling (Disabled), or automatic configuration (Auto) of the serial port In Enabled state you can set the I/O base address and the interrupt.	
Azalia	Enable or disable the integrated audio controller	
Azalia internal HDMI codec	Enabling (Enabled) or disabling (Disabled) audio playback via HDMI/display port	
Onboard Ethernet 1:	The 1st on-board Ethernet interface is Enabled or Disabled.	
Ethernet 1 Address:	Display the MAC address of Ethernet 1	
Onboard Ethernet 2:	The 2nd on-board Ethernet interface is Enabled or Disabled.	
Ethernet 2 Address:	Display the MAC address of Ethernet 2	
WLAN	Specifies the WLAN operating state after restart.	
	Disabled	The WLAN is always OFF when you switch on, or restart the device. The state set in Windows is retained after Hibernation or Standby mode.
	Enabled (default)	The WLAN is always ON when you power on or restart the device. The state set in Windows is retained after Hibernation or Standby mode.
	Last State	The state set in Windows is retained after power on, restart, hibernation, or standby.
	You can always use hotkey Fn + F3 in Windows to switch the WLAN on/off, regardless of the BIOS settings.	
PCI - MPI / DP	Enabling (Enabled) or disabling (Disabled) the CP5711-compatible MPI/DP interface and the memory card interface.	
Cardbus + SD-Card	Enabling (Enabled) or disabling (Disabled) the Cardbus, SD Card.	
Touchpad	Enabling (Enabled) or disabling (Disabled) the touchpad.	

Note

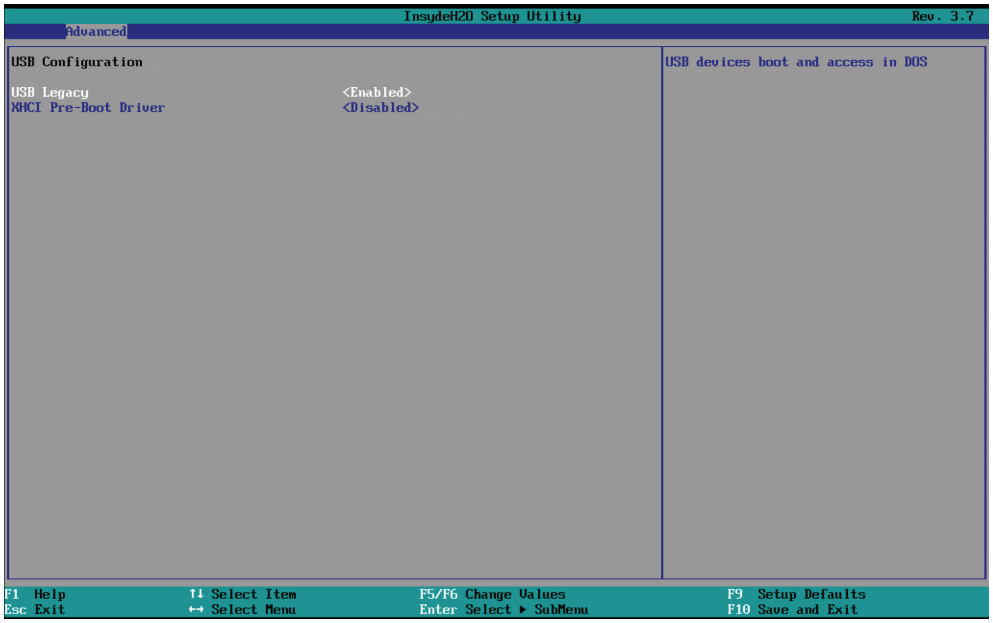
The second Ethernet interface support is OS dependent. For DOS-based applications (e.g. SIMATIC IPC Image & Partition Creator), use Ethernet interface 1 and disable Ethernet interface 2 in BIOS Setup.

Advanced menu > "IDE Configuration" submenu



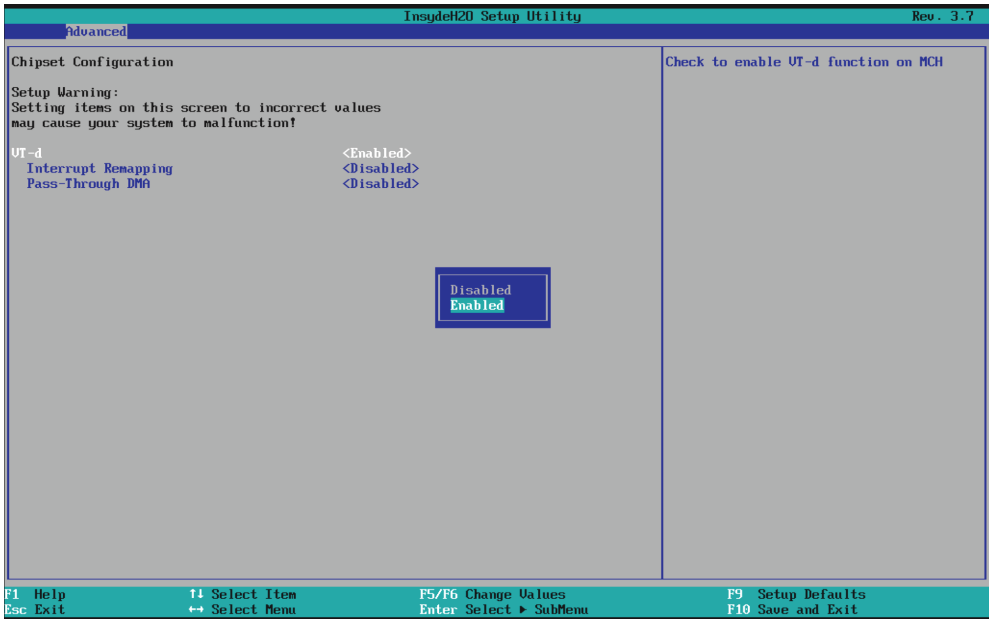
Entry	Meaning	
HDC Configure As	Configures the type of HDD controller	
	IDE	SATA HDD in non-AHCI mode
	AHCI	SATA HDD in AHCI mode
Serial ATA Port #	Specification of the type of built-in IDE drive	

Advanced menu > "USB Configuration" submenu



Entry	Meaning
USB Legacy	Enables (Enabled) or disables (Disabled) booting and DOS access for the USB interface
XHCI Pre-Boot Driver	Within the boot sequence, this enables (Enabled) or disables (Disabled) the compatibility mode of the USB3 host controller for OS that do not support USB3.

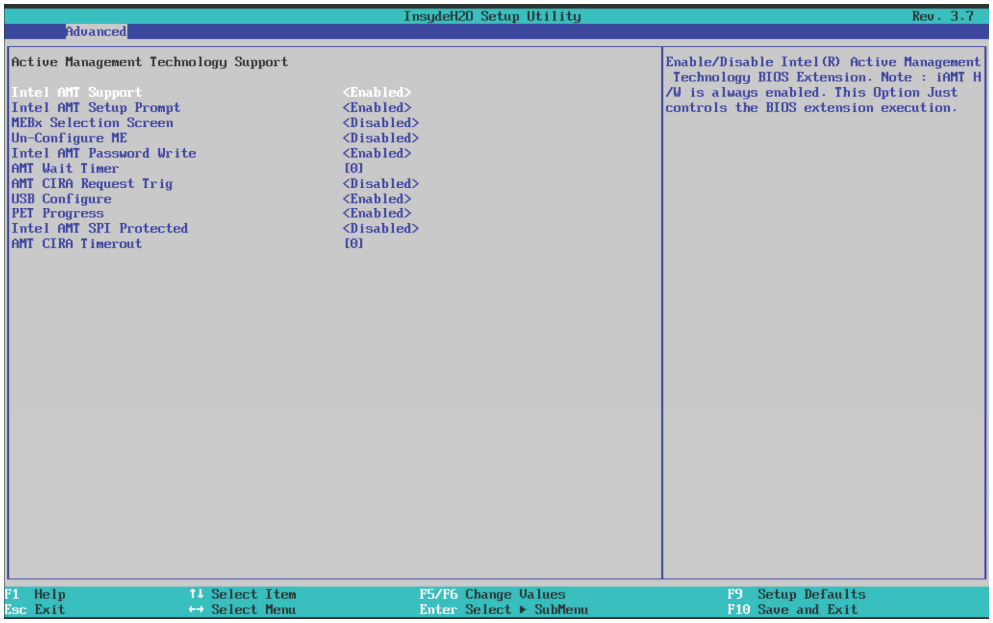
Advanced menu > "Chipset Configuration" submenu



Entry	Meaning
VT-d	VT-d (Intel Virtualization Technology for Directed I/O) is a hardware support for shared use of I/O devices by several virtual machines. In Enabled state, the VMM systems (Virtual-Machine-Monitor) can use VT-d to manage different virtual machines that access the same I/O hardware. In Disabled state, VT-d is not available for the VMMs.

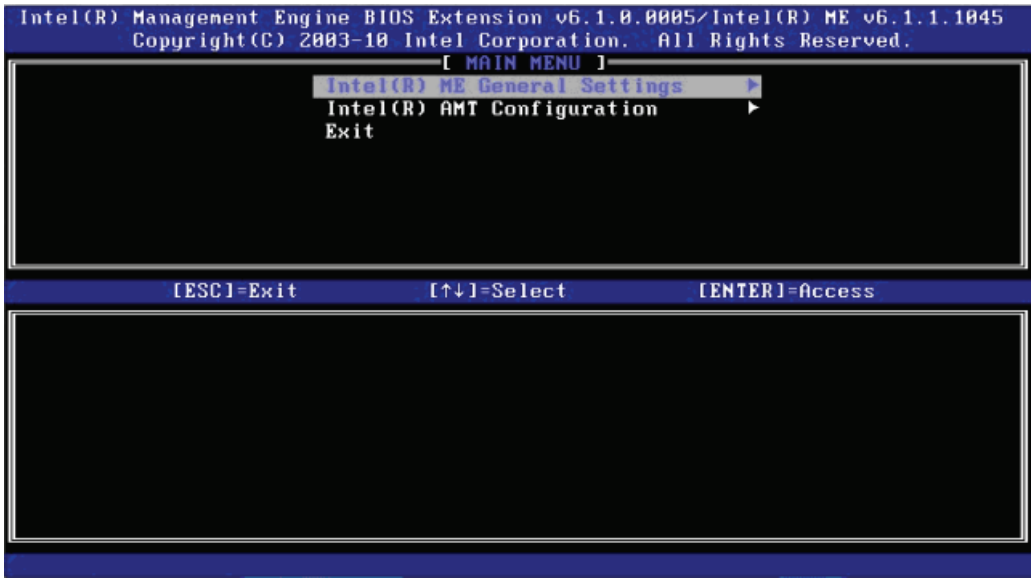
Advanced menu > "Active Management Technology Support" submenu

The following figure shows the BIOS submenu "Advanced Menu > Active Management Technology Support", in which you configure part of AMT in the BIOS. You will find further configuration options for AMT in the MEBx (see "Settings in the MEBx").



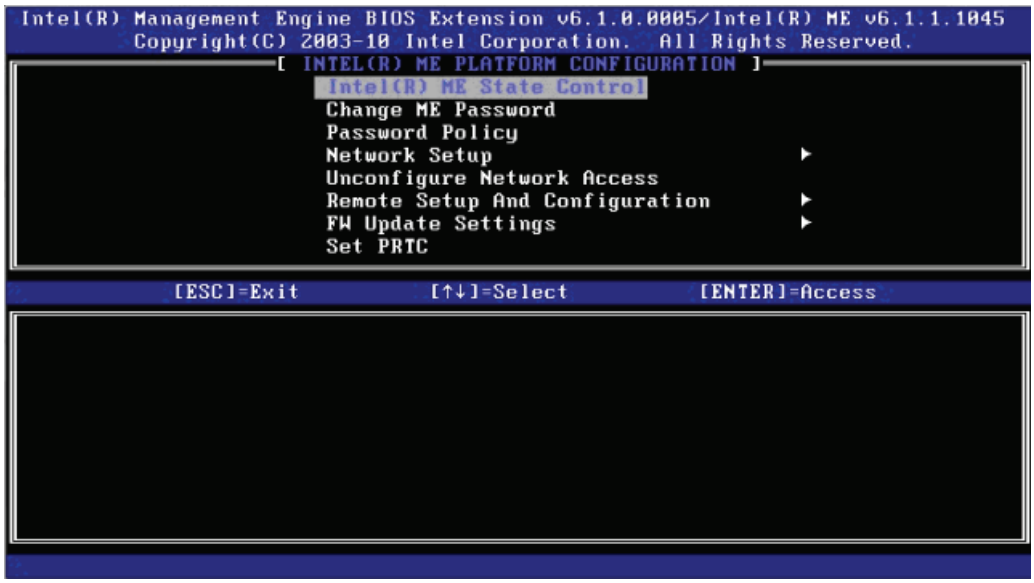
Entry	Meaning
Intel AMT Support	Enable and disable BIOS support for Intel Active Management Technology (AMT)
Intel AMT Setup Prompt	Enable and disable the boot interruption <Ctrl+P> to call up the MEBx configuration page.
MEBx Selection Screen	Enables and disables the MEBx selection dialog.
Un-Configure ME	Resets all MEBx values to default (see section "Reset with Un-Configure").
Intel AMT Password Write	Password write access is enabled (Enabled) or not (Disabled).
AMT Wait Timer	BIOS waiting time until querying the ME boot option.
AMT CIRA Request Trig	Enable CIRA (Client Initiated Remote Access, "Fast Call For Help"). CIRA allows AMT maintenance event if the AMT PC is not in the intranet.
USB Configure	Enable and disable the USB configuration (provisioning).
PET Progress	Platform Event Trap Format Specification (PET). Progressive events are logged (Enabled) or not (Disabled).
Intel AMT SPI Protected	Allow (Enabled) or prevent (Disabled) write access of AMT applications to the FLASH chip.
AMT CIRA Timeout	CIRA timeout for connection establishment with MPS (Manageability Presence Server / "vPro Enabled Gateway").

Settings in the MEBx



Entry	Meaning
Intel(R) ME General Settings	Opens the submenu with the general ME settings (see "ME General Settings").
Intel(R) AMT Configuration	Opens the submenu for the AMT settings (see "ME General Settings").
Exit	Exits the MEBx.

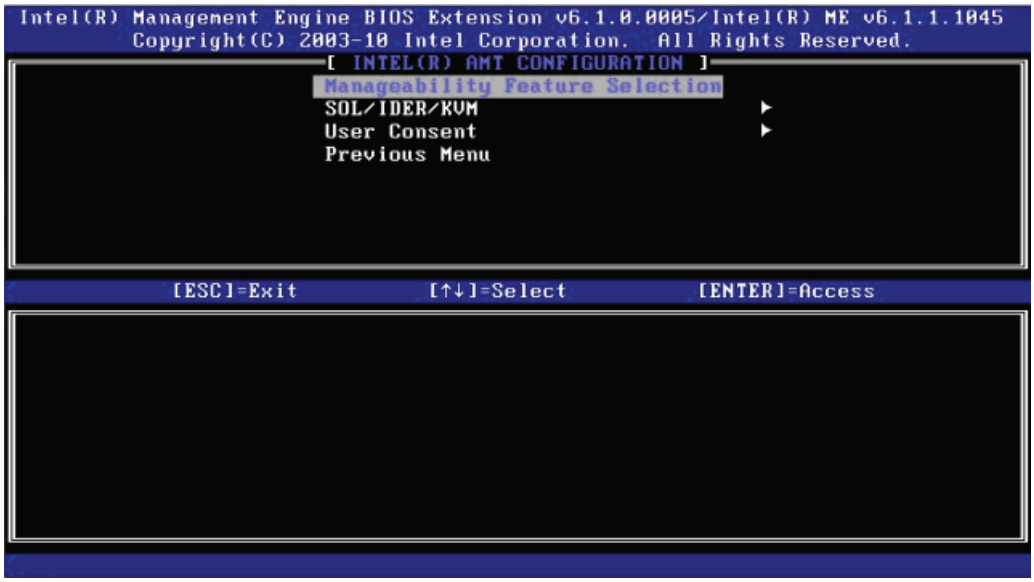
ME general settings



You cannot see all the switches in the menu at the same time. Use the arrow buttons to display the hidden switches.

Entry	Meaning
Intel(R) ME State Control	Enable ME: Normal operation Disable ME: Stops ME at a very early boot stage to search for errors. • When searching for errors, ME can then be excluded as a possible source of error. • No ME activities on a BUS.
Change ME Password	Used to change the password
Password Policy	Password policy that specifies the conditions under which the password can be modified remotely.
Network Setup	Network settings, for example DHCP, IP address, host name, domain name.
Activate Network Access	Activates the network interface. This menu entry only exists if the network is not activated.
Unconfigure Network Access	Deactivates the network interface and resets the network settings to their default values.
Remote Setup And Configuration	Displays the current provisioning settings.
FW Update Settings	Sets the user rights and the conditions under which ME firmware updates can be transferred.
Set PRTC	PRTC (protected real time clock) is an internal ME clock, that is required in the ME, for example for comparing times with TLS & Kerberos, time stamps of events. Period of validity: 1.1.2004 – 4.1.2021.
Power Control	Specifies the power states S0, S3, S4 of the computer in which the ME is activated.
Previous Menu	Return to the main menu.

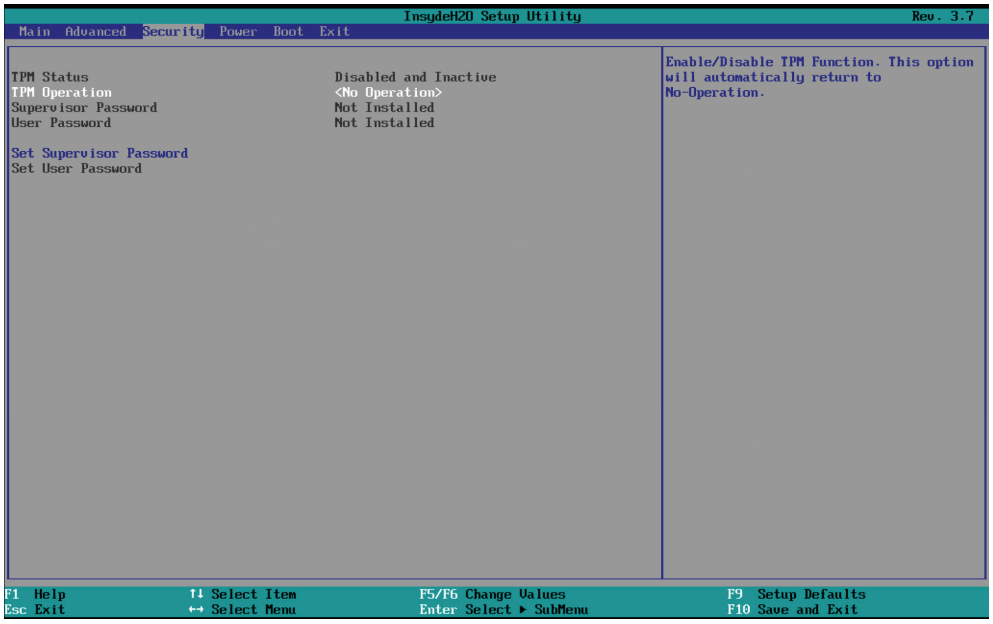
AMT configuration



Entry	Meaning
Manageability Feature Selection	Enable and disable all AMT features.
SOL/IDER/KVM	Enable and disable the features SOL, IDE redirection, KVM.
User Consent	User consent settings. Forces the following additional security behavior: When a user attempts to establish a KVM connection remotely, a six-figure number is displayed on the AMT PC. The remote user must enter this number on the help desk PC before the KVM connection can be opened.
Previous Menu	Return to the main menu.

14.4.4 Security Menu

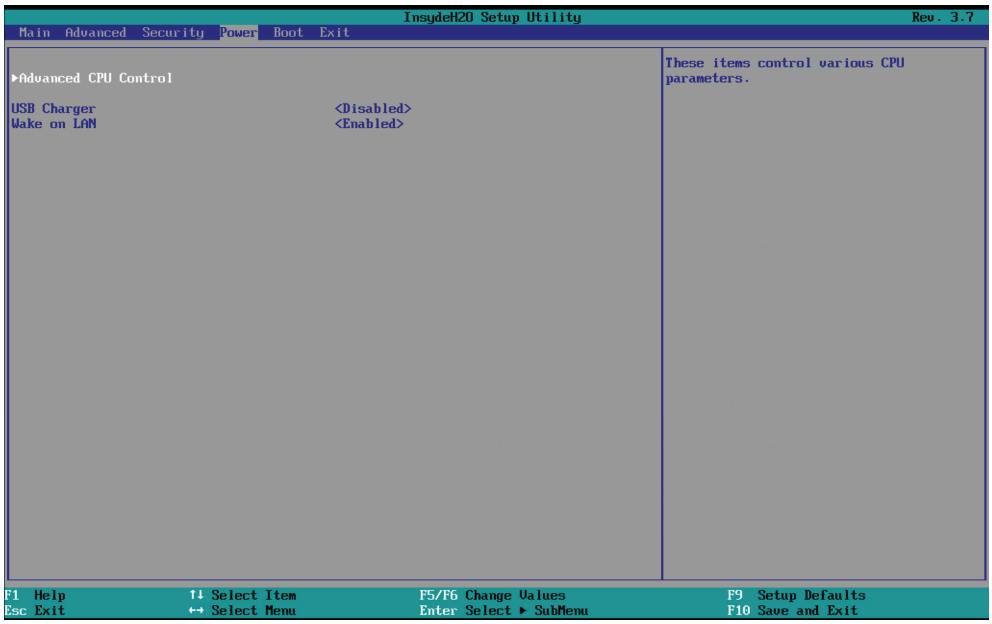
In this menu you can limit access to the PG by setting up passwords. First you must enter a password for the supervisor. You can delete the supervisor password by entering the current password, and repeatedly confirming the blank password box.



TPM Status	Displays the current state of the Trusted Platform Module	
TPM Operation	Enables or disables the Trusted Platform Module.	
Supervisor Password	Installed	Certain Setup fields, including the User Password, can be edited by users.
	Not installed	The password is disabled.
User password	Installed	Certain Setup fields, including the User Password, can be edited by users.
	Not installed	The password is disabled.
Set Supervisor Password	This field opens the password input dialog. After having entered the Supervisor Password, you may change, or delete and therefore disable it using the "Return" key.	
Power on password	Enabled	Password must be entered to boot.
	Disabled	Password must be entered to access BIOS Setup.
User Access Level	View only	Setup is accessible, but fields cannot be changed.
	Limited	Some setup entries can be changed.
	Full	All Setup entries can be edited except the Supervisor password.
Set User Password	This field opens the password input dialog. Logged on users can change the password, or clear and therefore disable it by pressing "Return".	

14.4.5 Power menu

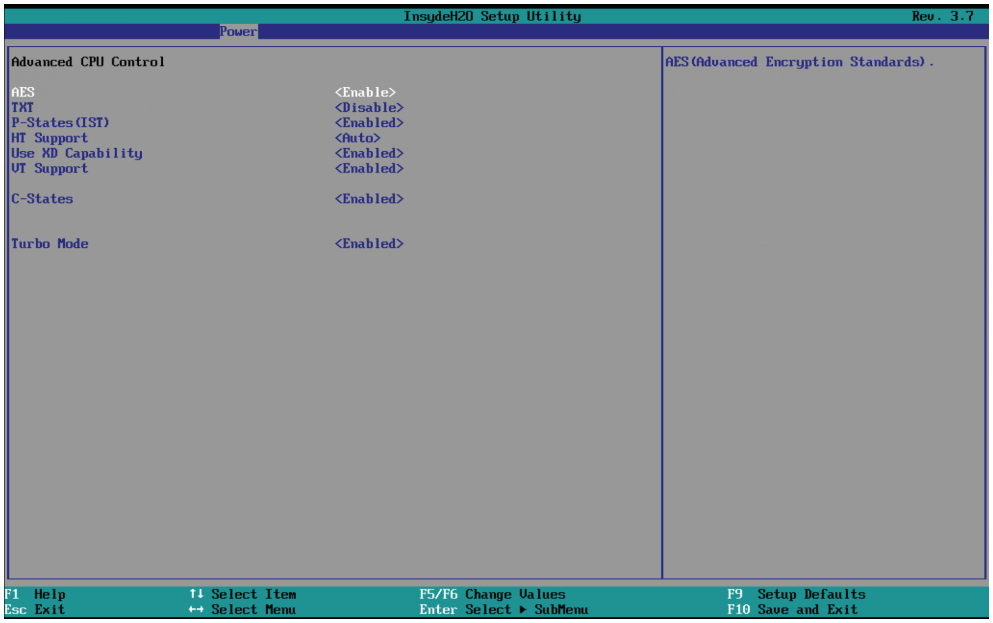
The reaction of the device to a power failure and after wake events is specified in this menu. You can also enable or disable the USB charging function.



"Power" menu settings

Entry	Meaning
USB charger	Enables (Enabled) or disables (Disabled) the USB charging in battery mode as well. Be aware that the enabled USB charging function accelerates battery discharging.
Wake on LAN	If enabled (Enabled) the device is powered on by LAN network events. Otherwise, the device remains switched off.

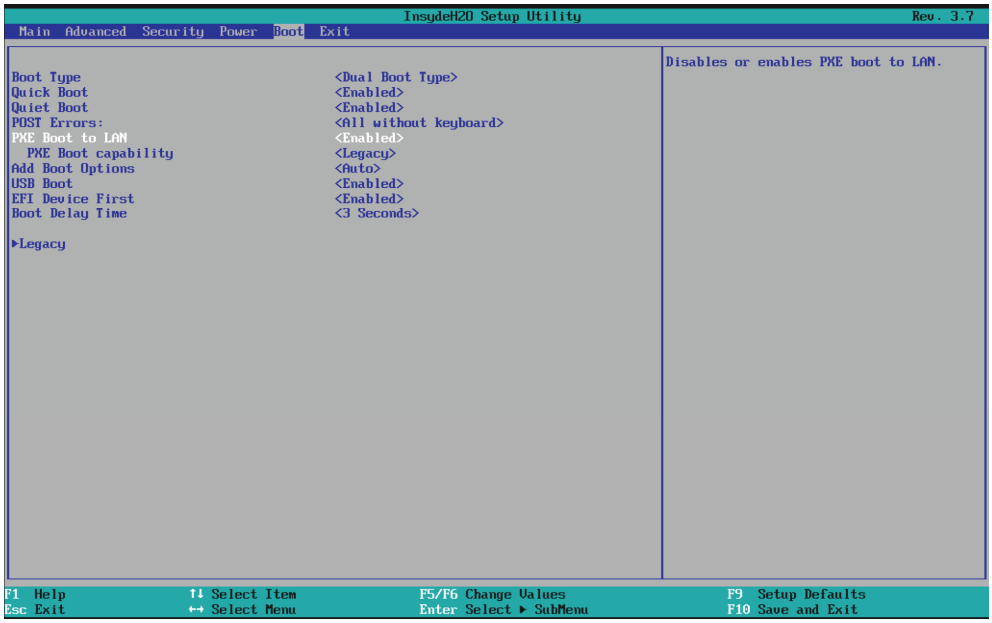
"Advanced CPU Control" submenu



Entry	Meaning
AES	In Enabled state, the secure encryption method AES (Advanced Encryption Standard) is supported by hardware and accelerates encryption and decoding.
TXT	Enables (Enabled) or disables (Disabled) Trusted Execution Technology. In Enabled state, all programs are denied access to the data or code of a different application.
P-States (IST)	Enables the processor performance modes (Enabled).
HT Support	Use Hyperthreading if possible (Auto), or disable Hyperthreading (Disabled).
Use XD Capability	Allows you to prevent program execution in specific memory areas (virus protection). The eXecute Disable-Bit (XD bit) is only effective if supported by the OS. In Enabled state, the OS can set the XD bit function. In Disabled state, the operating system is prevented from enabling the XD bit function.
VT Support	Enabling (Enabled) or disabling (Disabled) "Vanderpool Technology" virtualization functionality.
C-States	Enables (Enabled) the energy saving modes of the processor for the idle process (idle state).
Turbo Mode	Enables the Turbo Mode of the processor (Enabled). EMTTM is a prerequisite.

14.4.6 Boot menu

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



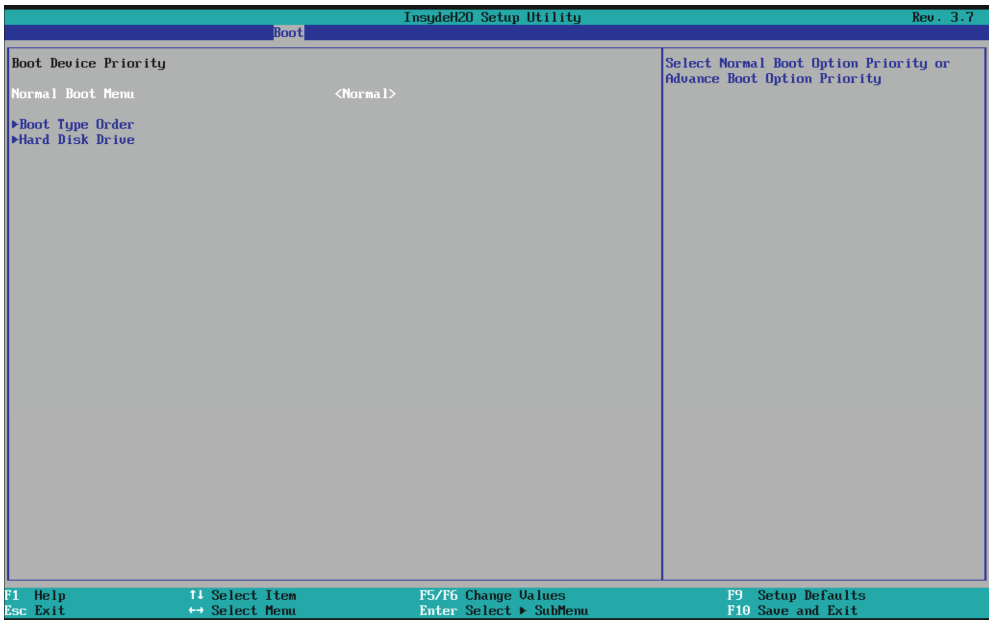
Boot Type	Selection of the Boot devices	
	Dual Boot Type	Both Legacy and EFI boot devices are evaluated and approved.
	Legacy Boot Type	Only Legacy boot devices are evaluated and approved.
	UEFI Boot Type	Only EFI boot devices are evaluated and approved.
Quick Boot	Enabled or Disabled In enabled state, device startup is accelerated because various tests will be skipped.	
Quiet Boot	In Disabled state, the BIOS Welcome Screen is displayed without background image.	
Post Errors	Specifies whether or not to stop the boot sequence if BIOS detects specific errors	
	Never halt on errors	Boot sequence is continued.
	Halt on all errors	Boot sequence is stopped.
	All without keyboard	Boot sequence is stopped on errors not triggered by keyboards.
	All without kb/smart	Boot sequence is stopped on errors that are not keyboard or SMART errors.
PXE Boot to LAN	Enables (Enabled) or disables (Disabled) booting from a boot image that can be loaded from the network.	
	PXE boot capability	PXE Preboot Executable Environment
Add Boot Options	Recognized new boot devices are added to the boot sequence start (First), end (Last), or automatically (auto, at the end).	
USB Boot	Enable or disable booting of the USB ports.	

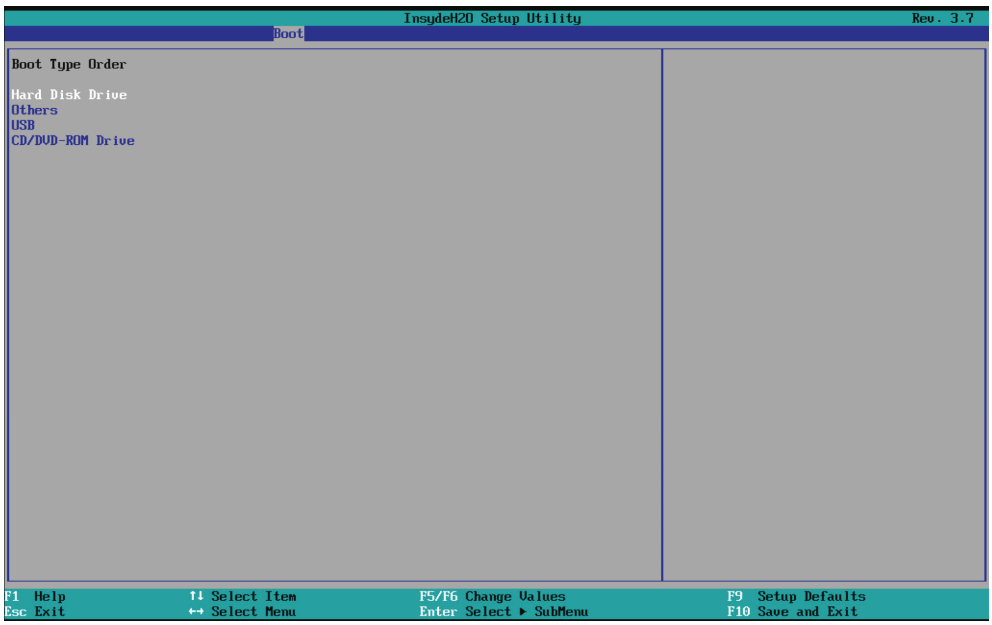
EFI Device First	EFI boot devices are added to the boot sequence before (ENABLE) or after (DISABLE) the Legacy boot devices.
Boot Delay Time	Boot delay time in seconds that is sufficient for users to press the hotkey for accessing the BIOS.

Legacy

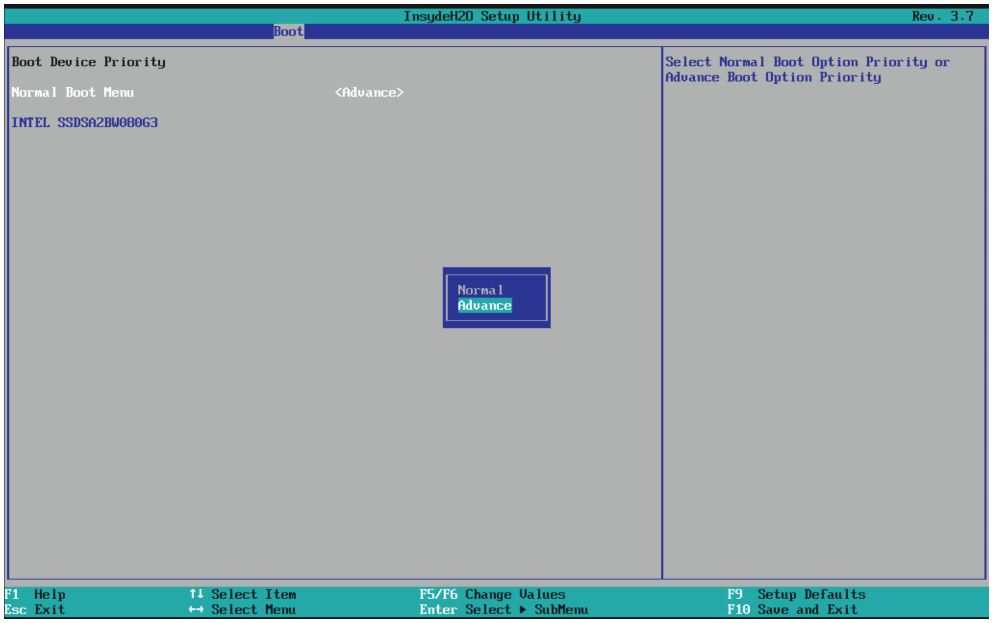
Specifies the boot sequence for boot devices with Legacy operating systems.

"Normal Boot Menu" field, "Normal" selection:





"Normal Boot Menu", "Advanced" selection:



Note

You can open the Boot menu and select the boot volume by pressing the ESC key during system startup.

14.4.7 Exit menu

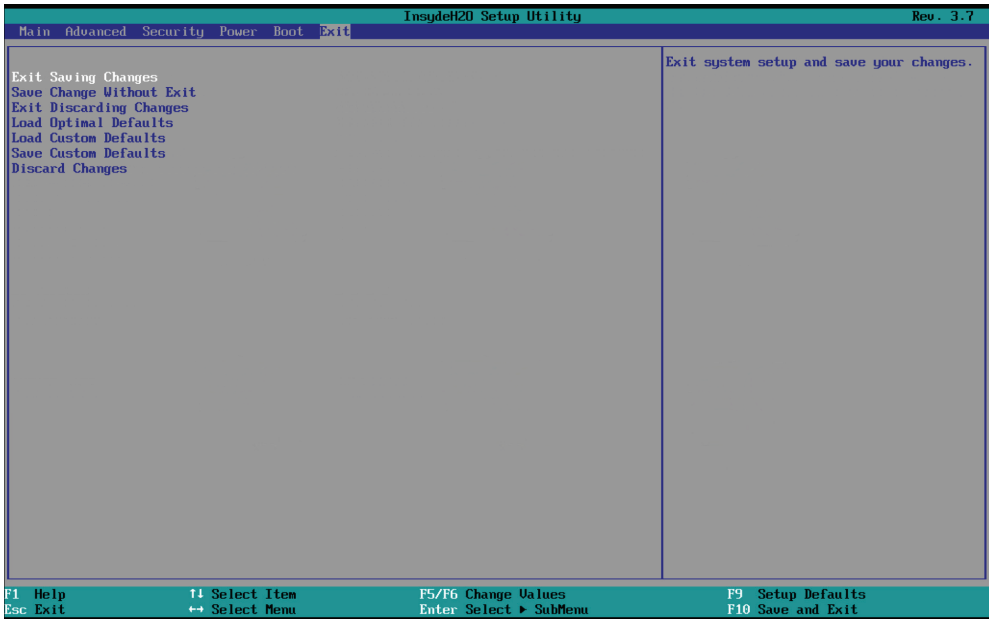


Figure 14-1 "Exit" menu

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

CE

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	EN 61000-6-1
Industrial applications	EN 61000-6-4	EN 61000-6-2

The devices are compliant with EN 61000-3-2 (Transient currents) and EN 61000-3-3 (Voltage fluctuation 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 / EN 301 893 / EN 301 489-17 / EN 302 489-1

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

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 was validated in accordance with EN 60950-1.

Declaration of conformity

The EC declaration of conformity and the corresponding documentation are made available to authorities in accordance with the EC directives stated above. Your sales representative can provide these on request.

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.

Certifications for the United States, Canada, and Australia

Product safety.

The following approval is available for the device:

Underwriters Laboratories (UL) 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:

A.3 Service and support

You can find additional information and support for the products described on the Internet at the following addresses:

- Technical support (http://www.siemens.com/automation/service&support)
- Support request form (http://www.siemens.com/automation/support-request)
- After-sales information system for SIMATIC PC / PG (http://www.siemens.com/asis)
- SIMATIC Documentation Collection (http://www.siemens.com/simatic-tech-doku-portal)
- Your local representative (http://www.siemens.com/automation/partner)
- Training center (http://www.sitrain.com)
- Industry Mall (http://mall.automation.siemens.com)

When contacting your local representative or Technical Support, please have the following information at hand:

- Order number of the device (MLFB)
- BIOS version (industry PC) or image version (HMI device)
- Installed additional hardware
- Installed additional software

Tools & downloads

Please check regularly if updates and hotfixes are available for download to your device. The downloads are available on the Internet under "After Sales Information System SIMATIC PC/PG" (see above).

A.4 Accessories

Accessories for the Field PG M4 are available on order from the SIEMENS Industry Mall.

Procedure

1. Navigate to the Internet URL of the SIEMENS Industry Mall (http://www.siemens.com/automation/mall).
2. Log in with your customer data (Login on the top right).
3. Select the user language.
4. Navigate to the programming devices in the product catalog (tree structure on the left): "Automation technology > Automation systems > SIMATIC Industrial automation systems > Programming devices"
5. In the tree structure on the left, click: Field PG M4.
6. Select "Accessories" in the display area.

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:

NOTICE
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.

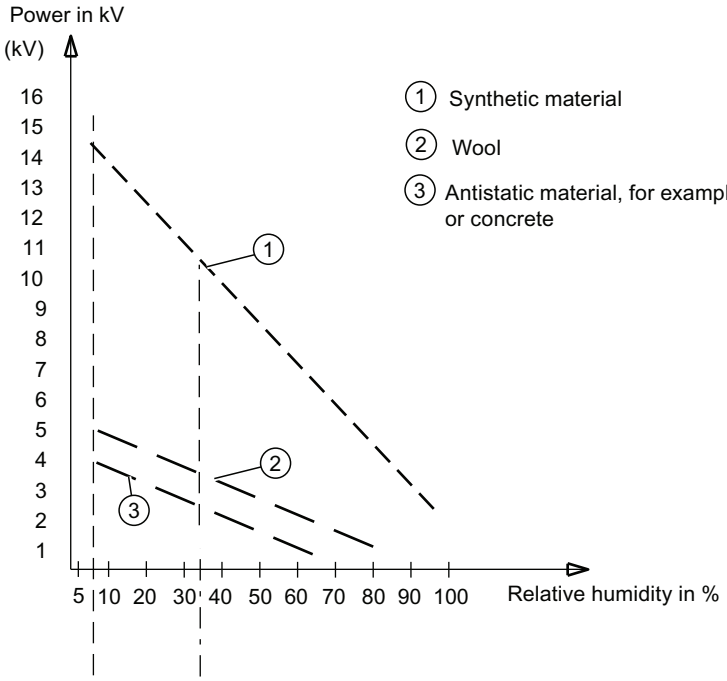


Figure B-1 Electrostatic voltages on an operator

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	Current with continuously alternating polarity.
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	PC controller for allocation of interrupts
APM	Advanced Power Management	Tool for monitoring and reducing current 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	PC Firmware
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

Abbreviation	Term	Meaning
CRT	Cathode Ray Tube	
CSA	Canadian Standards Association	Canadian organization for tests and certifications according to own or binational standards (with UL / USA) standards
CTS	Clear To Send	Clear to send
DRAM	Dynamic Random Access Memory	
DC	Direct Current	DC current
DCD	Data Carrier Detect	Data carrier signal detection
DMA	Direct Memory Access	Direct memory access
DOS	Disk Operating System	Operating system without GUI
DPP	Display Port	High-performance digital monitor interface
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

Abbreviation	Term	Meaning
HD	Hard disk	Hard disk
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	

Abbreviation	Term	Meaning
NAMUR	Normenarbeitsgemeinschaft for Mess- und Regelungstechnik in der chemischen Industrie (standardization body for instrumentation and control technology in the chemicals industry)	
NC	Not Connected	Not connected
NCQ	Native Command Queuing	Automatic re-sorting of the file and disk access, for increased performance
NEMA	National Electrical Manufacturers Association	Syndicate of manufacturers of electrical components in the USA
NMI	Non Maskable Interrupt	Interrupt the processor can not reject
NTFS	New Techniques File System	Secure file system for 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

Abbreviation	Term	Meaning
SMS	Short Message Service	Short message via telecommunication network
SNMP	Simple Network Management Protocol	Network protocol
SO-DIMM	Small Outline Dual Inline Memory Module	
SOM	SafeCard on Motherboard (SOM)	
SPP	Standard Parallel Port	Synonym for parallel port
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	Wireless 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 I/O 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.

DPP

Disp**l**ay **P**ort: 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 (iAMT)

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

- 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 V AC to 1000 V AC, 70 V DC to 1500 V DC) and not specified in other directives. Compliance is confirmed by the CE symbol and the EC certificate of conformity.

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).

Motherboard

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

Operating system

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.

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.

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 **Fi**eld **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.

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, low energy consumption and rapid data transfer.

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.

Trusted Platform Module TPM

The Trusted Platform Module (TPM) is a chip in accordance with the TCG specification that provides fundamental security functions as extension for computers or similar devices. These functions can support, for example, license protection objectives and/or data security.

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.

ZMM

Zero **M**aintenance Cache Protection **M**odule is a functional unit of the SAS Raid controller that stores the data in the cache of the controller in the case of a voltage failure. This functional unit is maintenance-free.

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