SIEMENS

SIMATIC

Programming device SIMATIC Field PG M6

Operating Instructions

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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.

Trademarks

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

Disclaimer of Liability

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

Siemens AG
Division Digital Factory
Postfach 48 48
90026 NÜRNBERG
GERMANY

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Preface 1

1.1 Preface

Purpose of this documentation

This manual contains all the information you need to commission and use the SIMATIC Field PG M6.

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 M6 and describes the factory state as of December 2018.

Position in the information scheme

These operating instructions are included on the supplied data storage medium.

You can find additional instructions on the operating system, software and drivers in the corresponding manuals.

History

Currently released versions of this operating manual:

Issue	Comment
12/2018	First edition

1.2 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit (http://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customers' exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under (http://www.siemens.com/industrialsecurity).

1.3 Disclaimer for third-party software updates

This product includes third-party software. Siemens AG only provides a warranty for updates/patches of the third-party software, if these have been distributed as part of a Siemens software update service contract or officially released by Siemens AG. Otherwise, updates/patches are undertaken at your own risk. You can find more information about our Software Update Service offer on the Internet at Software Update Service (http://www.automation.siemens.com/mcms/automation-software/en/software-update-service).

Overview

2

2.1 Product description

2.1.1 Important instructions and manuals for operating the device

Documentation	Contents	Source
Operating instructions	• Product description • Technical specifications • Installation of the device • Operation of the device • Installing and removing hardware • Dimension drawings	• Supplied data storage medium • Online at: SIMATIC IPC Documentation (http://www.siemens.com/simatic-ipc-doku-portal)
Quick Install Guide	Information on: • Operating Instructions of the device • Installation of the device • Steps for connecting the device to the power supply • Connecting I/O devices • Switching the device on	• Supplied in printed form with the device • Supplied data storage medium
Current product information	• Current notes on the device • Changes compared with these operating instructions	• Online at: SIMATIC IPC Documentation (http://www.siemens.com/simatic-ipc-doku-portal)
SIMATIC IPC Remote Manager	Information on: • Remote maintenance of SIMATIC industrial PCs (IPCs) via a management PC • Using Intel ®Active Management Technology (Intel® AMT)	Online at: • SIMATIC IPC Remote Manager (http://support.automation.siemens.com/WW/view/en/48707158)

Documentation	Contents	Source
SIMATIC IPC Image & Partition Creator	Information on: • Backup and recovery of files, directories, drive partitions.	Online at: • SIMATIC IPC Image Partition Creator (https://w3.siemens.com/mcms/pc-based-automation/en/industrial-pc/expansion_components_accessories/image-and-partition-creator/Pages/Default.aspx)
SIMATIC NET	Industrial communication	Online at: • SIMATIC NET (http://w3.siemens.com/mcms/automation/en/industrial-communica-tions/Pages/Default.aspx)

See also

Microsoft® Windows® 10
(https://support.industry.siemens.com/cs/ww/de/view/109749498/en?dl=en)

2.1.2 Product highlights

The SIMATIC Field PG M6 is a robust and turn-key programming tool for the components of SIMATIC industrial automation.

SIMATIC Field PG M6

Greatest possible mobility ensured

- Notebook design (dimensions, weight) optimal for use in confined spaces at the plant as well as when traveling
- High-performance lithium-ion battery with rated capacity of 90 Wh for extended cordless operation.
- Housing made of magnesium alloy with soft plastic corners – providing good protection for the electronics inside
- Powerful graphics controller with triple head function
- High-resolution, anti-reflective, 15.6" display in 16:9 full HD format guarantees ergonomic working in the TIA Portal

Industrial functionality

- Integrated PROFIBUS DP/MPI interface that supports operation on virtual operating systems
- RS232/TTY interface (COM1)

  The COM interface with RS232 functionality is integrated in every device by default.

  Optional additional TTY interface functionality, which is dependent on the selected hardware.
- Integrated card readers for SIMATIC:
  - SIMATIC Memory Card for S7-300/400
  - SMC (SIMATIC Memory Card for S7-1x00)
  - SIMATIC Micro Memory Card for S7-300/C7/ET200
- Programming interfaces for SIMATIC Memory Card, SMC, SIMATIC Micro Memory Card
- Programming interfaces for S5 EPROM modules (depending on configuration)
- Integrated Multimedia Card Reader for:
  - SD card (including SD UHS-II)
  - Multi Media Card (MMC)
- Integrated card reader for smart cards
- Connection to company networks and WAN (wide area network) without additional hardware through two full and independent Gigabit Ethernet interfaces
- WLAN corresponding to IEEE 802.11 ac
- Integrated Bluetooth in accordance with standard 5.0
- Fast, easily exchangeable SATA drive
- 4 USB 3.0 ports, including 1 USB port with charging function for smartphones
- HDA (High Definition Audio) interface for sound
- Integrated Trusted Platform Module to TPM 2.0 standard

System availability

- Optional Image & Partition Creator data backup software

2.1.3 Application areas

The compact SIMATIC Field PG M6 is designed for use in the field, for example for:

- 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 M6 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.

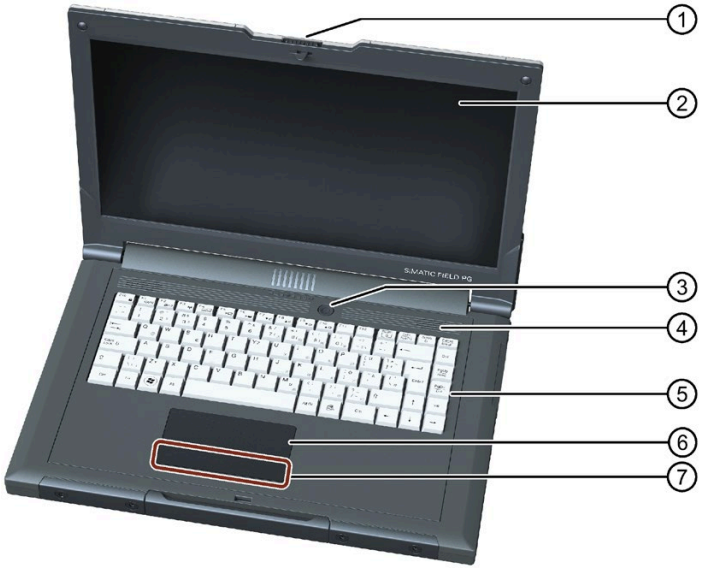
2.2 Design of the device

2.2.1 Exterior design

View with closed display

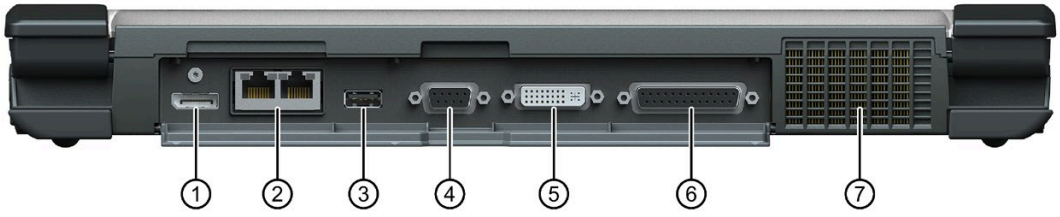
① Status indicators
② Device handle
③ Display latch

Front view with display open



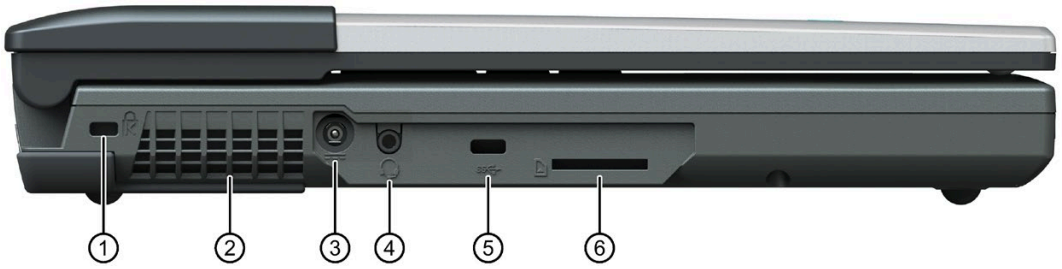
① Display latch
② Display
③ On/off button (power)
④ Stereo speakers
⑤ Keyboard
⑥ Touchpad
⑦ Mouse buttons

View from rear



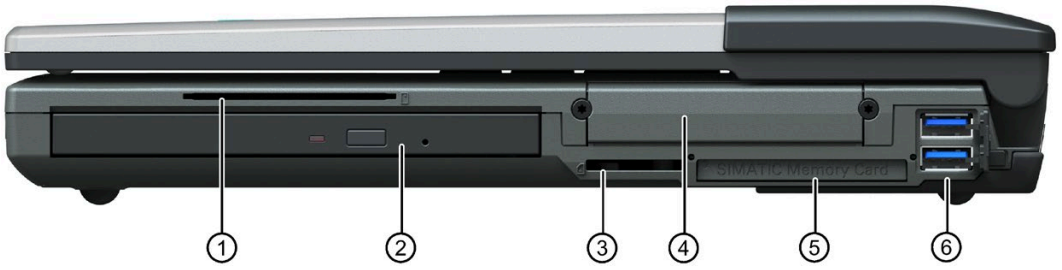
① DisplayPort (DPP)
② 2 x Ethernet
③ USB 3.1; Gen. 2; Type A
④ MPI/DP
⑤ DVI-I
⑥ RS232/TTY (TTY functionality, depending on the HW configuration variant)
⑦ Ventilation air outlet

View of left side



① Opening for Kensington lock
② Ventilation air inlet
③ Socket for connection to the power supply: DC IN 19 V
④ Audio jack: UAJ connection for audio devices
⑤ USB 3.1; Gen. 2; Type C
⑥ Multimedia Card Reader for:
- SD card (including SD UHS-II)
- SMC (SIMATIC MC)

View of right side



① Smart Card Reader for:
- Smart card according to ISO/IEC 7816 Smart Card Interface

② Optical drive
③ Card reader for:
- SIMATIC Micro Memory Card

④ Exchangeable drive unit
⑤ Card reader for:
- SIMATIC Memory Card

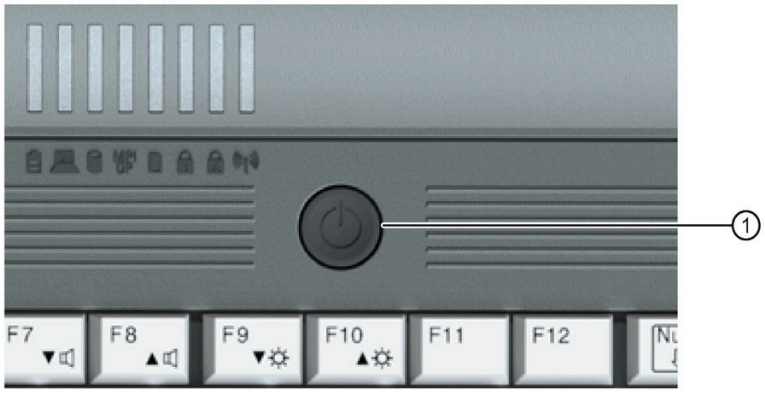
⑥ 2 x USB 3.0 ports, with cover
Top port: USB 3.0 Type A
Bottom port: USB 3.0 Type A with charging function

View from below

① Rating plate
② Cover for memory modules
③ Battery

2.2.2 Operator controls

2.2.2.1 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 option settings)
- Switch PG off in the event of a fault (hold down for more than 5 seconds)

2.2.2.2 Clickpad

The Field PG features a clickpad with integrated mouse buttons. It can be used in many programs (with mouse operation) as an input device for controlling the cursor and selecting menus.

① Clickpad for moving the cursor and for moving objects
② Left mouse button, with mechanical pressure point
③ Right mouse button, with mechanical pressure point

In contrast to a touch pad with a differentiated left and right mouse button, the mouse buttons on this clickpad are integrated into the surface. In this case, the function of the left or right mouse button has been transferred to the two integrated mouse buttons Pressing lightly on the clickpad in the selected lower part of the area initiates a left or right mouse click. The clickpad haptically provides a noticeable pressure point.

When you only use the clickpad to move the cursor, the whole area (including the mouse buttons) is available.

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

Clickpad functions

Function	Triggered by
Moving the cursor	Swiping across the clickpad with one finger.
Mouse click, left	Simple tapping on the entire area of the clickpad.
	Brief mechanical pressing of the left mouse button.
Mouse click, right	Brief mechanical pressing of the right mouse button.
Double-click, left	Quick double-tapping on the entire area of the clickpad.
	Quick double-pressing of the left mouse button.
Drag and drop (Drag&Drop)	Pressing the left mouse button while swiping across the clickpad with the other finger at the same time.

Note

Using the clickpad may require some practice.

The clickpad function can be enabled and disabled with the hotkey Fn + F4.

You can configure the advanced clickpad functions under "Mouse" in the Windows Control Panel. The technical principle used means that it is possible to make unintentional mouse clicks with the clickpad when it is used in an environment with EMC interference. In such environments, it is a good idea to use an external mouse. Observe the information on electromagnetic compatibility in section "Technical specifications (Page 76)".

Problems during operation in an environment with EMC interference

A high degree of ambient interference in the vicinity of the Field PG M6 may, in rare cases, cause malfunction of the integrated clickpad.

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) using the clickpad driver. Afterwards use the clickpad keys below the clickpad for operation.

2.2.2.3 Keyboard

Keyboard arrangement

The keyboard is divided into the following function groups:

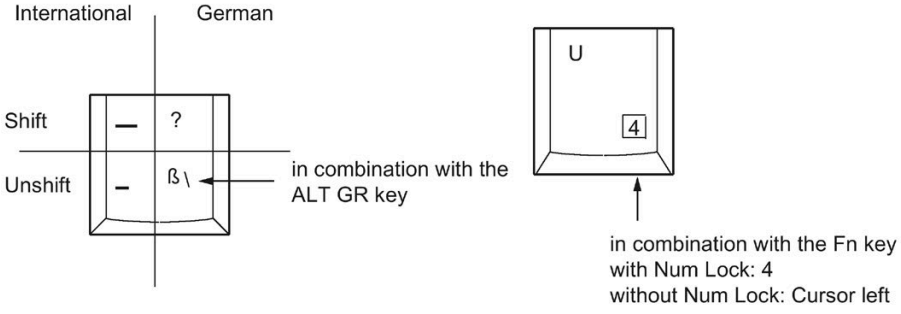
- Alphanumeric keyboard field with hotkeys
- Function keys
- Control keys

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.

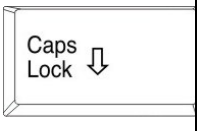
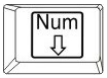
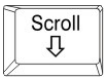
Keyboard labeling

The keyboard comes with international and German labeling.



Alphanumeric keyboard field

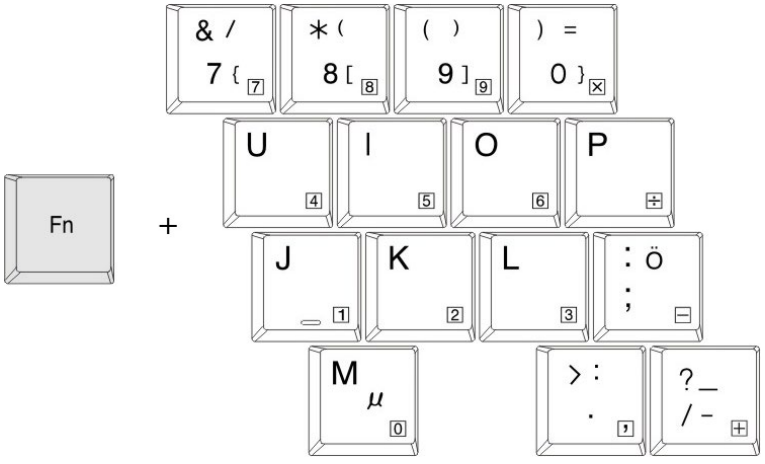
The largest block of keys is the alphanumeric keyboard with all the keys for letters, numerals and special characters. The arrangement of the characters essentially corresponds to that of a normal keyboard.

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).

Key	Function
	**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

This function is activated using the Num Lock 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.



Function keys

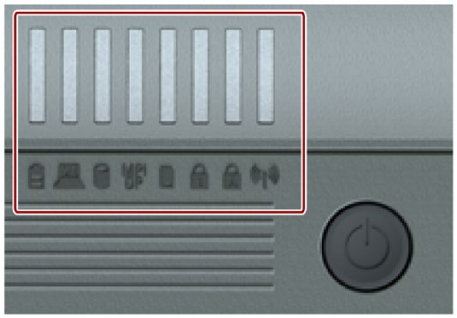
Twelve programmable function keys are arranged in the topmost row of keys. The arrangement of these keys depends on the software loaded.

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 and off
Fn + F2	Control menu for the display/monitor display
Fn + F3	Switch WLAN on and off
Fn + F4	Switch clickpad function (mouse pointer and mouse buttons) on and 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

2.2.3 Status displays



System status indicators

The status indicators for the system show the status of the battery, the device, the drives, the S5 and S7 modules, the MPI/DP and the Card Reader interface (except the Smart Card Reader). The status indicators are also visible when the display is closed.

Symbol	Meaning	Status indicator	Description
	Battery	GREEN ORANGE RED OFF	Battery is charged Battery is being charged Battery capacity too low (only with battery operation) No battery
	Operation	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
	Mass storage	GREEN	Access to external memory: Drive (SSD), optical drive (DVD)
	MPI interface	GREEN	MPI interface active
	Card reader	GREEN	Module programming (S5 and S7 modules) active

Keyboard

The status indicators for the keypad show the current status of the Num Lock and Caps Lock shift keys. After switching on the device, the status indicators of the keys light up briefly. The keyboard is ready.

Symbol	Meaning	Status indicator	Description
	Num Lock	GREEN OFF	Num Lock switched on Num Lock switched off
	Caps Lock	GREEN OFF	Caps Lock switched on Caps Lock switched off

WLAN

The WLAN status indicator is located to the right of the keypad LEDs and indicates whether WLAN is active.

Symbol	Meaning	Status indicator	Description
	WLAN	ORANGE OFF	WLAN switched on WLAN switched off

2.3 Accessories

Accessories which are not included in the scope of delivery are available for your device. Information on the accessories that can be ordered is available on the Internet at the following addresses:

- Industry Mall (https://mall.industry.siemens.com)
- IPC expansion components (http://www.automation.siemens.com/mcms/pc-based-automation/en/industrial-pc/expansion_components_accessories)

Order accessories from the SIEMENS Industry Mall

1. Navigate to the Internet URL of the Industry Mall (https://mall.industry.siemens.com).
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 M6.
6. Select the "Accessories" tab in the display area.

Safety instructions

3

3.1 General safety instructions

⚠ CAUTION
Observe safety instructions 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
Damage to property and personal injury 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
Warranty If you install or exchange system expansions and damage your device, the warranty becomes void.

Battery

This device is equipped with a lithium battery for supplying power to the internal real-time clock. Batteries may only be replaced by qualified personnel.

CAUTION

Risk of explosion when replacing and disposing of the battery

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. When disposing of batteries, observe the locally applicable legal 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.

3.2 Safety guidelines for transport

Before you set off

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

- Back up important data from the SSD.
- For safety reasons, switch off the radio component (WLAN) if you cannot be sure that the transmitted radio waves will not interfere with any electrical or electronic equipment in your vicinity.
- If you want to use your device 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 device. Do not use any other voltage transformers!

Note

Using the field device in another country

Verify the compatibility of local mains and power cable specifications 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 device 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.

- Switch off the device (see section On/off button (Page 16)).
- Disconnect the I/O devices from the device.
- Close the display and the interface covers on the back of the device.
- Use the integrated handle for brief transportation.
- Store the device with all accessories in the backpack supplied for further transport.

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 device in extreme weather conditions with large fluctuations in temperature, care must be taken to ensure that no moisture forms on or in the device (condensation). If you notice any condensation, wait around 12 hours before you switch on the device.

3.3 Notes on protecting administrator accounts

A user with administrator privileges has extensive access and manipulation options in the system.

Therefore, ensure there are adequate safeguards for protecting the administrator accounts to prevent unauthorized changes. To do this, use secure passwords and a standard user account for normal operation. Other measures, such as the use of security policies, should be applied as needed.

Installing and connecting the device

4

4.1 Preparations

4.1.1 Checking delivery

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.

4.1.2 Device identification data

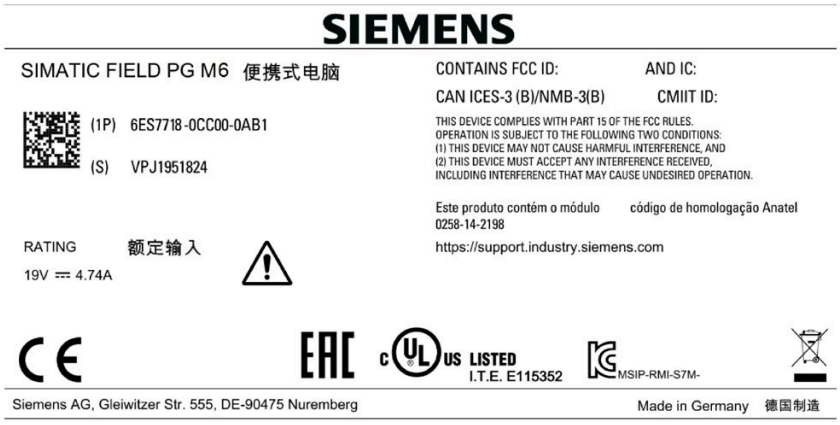
The device can be clearly identified with the help of the identification data in case of repairs or loss.

The figures below are examples. The data of your device may differ from the data in these examples.

Rating plate

The rating plate is located on the underside of the device.

Example:



COA label

The COA label is located on the underside of the device.

Example COA label for the Microsoft® Windows® 10 operating system:

Write down identification data

Identification date	Source	Value
Order number	Rating plate	6ES ...
Serial number	Rating plate	S VP...
Microsoft Windows Product Key	COA-label	
Ethernet address 1	BIOS Setup:	
Ethernet address 2	Menu "Advanced" > "Peripheral Configuration"	

1. Enter the order number, serial number and production status in the table above.
2. Transfer the Microsoft Windows Product Key to the table. This is always required to reinstall the operating system.
3. Enter the Ethernet addresses in the table.

4.2 Positioning the device

⚠ WARNING

Risk of fire

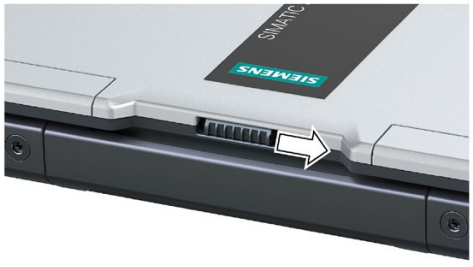
The outer housing is made of Magnesium. If it comes into contact with open flame, there is a risk of fire / spreading fire.

NOTICE

Risk of damage to the device

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 lock of the display 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°.



4.3 Connecting the device

4.3.1 Connecting the power supply

To be noted before you connect the device

WARNING

Power supply only with the original power supply unit

Only use the original power supply that is supplied with the device.

Note

The external power unit supplies power to the Field PG in mains operation with 120 V and 230 V power supply networks. The voltage range is set automatically.

WARNING

Risk of lightning strikes

Lightning may enter the mains cables and data transmission cables and jump to a person.

Death, serious injury and burns can be caused by lightning strikes.

Take the following precautions:

- Pull out the power plug in good time when a thunderstorm is approaching.
- Do not touch mains cables and data transmission cables during a thunderstorm.
- Keep a sufficient distance from electric cables, distributors, systems, etc.

WARNING

Operation only in grounded power supply systems

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

Danger of damage to the device or destruction of the battery

Only use the supplied battery or an original spare part. Information on original spare parts for Field PGs is available in section Accessories (Page 23).

⚠ WARNING

Risk of fire and electric shock

The On/Off button does not completely isolate the device from the power supply. If the device is switched off with the On/Off button, there is still a risk of electric shock and fire, for example, if the device or the connecting cables are damaged or in the event of improper use.

When working on the device or if the device is not used for a long period of time, always disconnect it fully from the power supply. Shut down the operating system and if you are using the device in mains operation, pull out the power plug.

Localized information

For the United States and Canada

For the United States and Canada, a CSA or UL-listed power cord must be used.

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

- **120 V/240 V supply voltage**

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

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

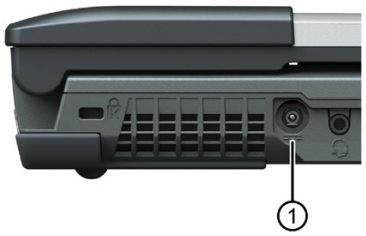
For countries other than the USA and Canada

- **230 V supply voltage**

  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.

Procedure

1. Insert the supplied power supply cable into the external power supply.
2. Insert the low-voltage connector into the appropriate socket for connection to the power supply ① on the left hand side of the device.
3. Plug the external power supply into a socket with a grounded protective conductor.

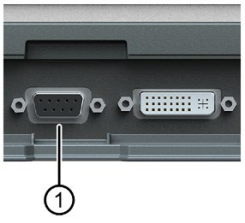


4.3.2 Connect SIMATIC S7 or PROFIBUS

You can connect the PG to a SIMATIC S7 automation system or a PROFIBUS network via the electrically isolated*) MPI/DP interface. The MPI connecting 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).

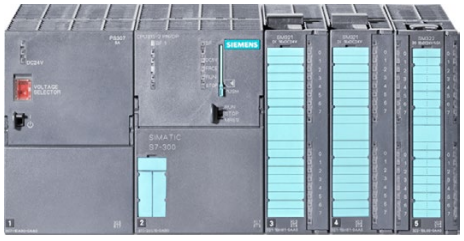
Connecting the Field PG to an S7 automation system

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
Risk of damage to the device
You could damage the port on the Field PG if you use the wrong connecting cable.

4.3.3 Connecting the device to systems 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.

RS232/TTY interface (COM1)

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.

You can find additional information here: Industrial Wireless Communication (IWLAN) (http://w3.siemens.com/mcms/automation/en/industrial-communications/industrial-wireless-communication/Pages/industrial-wireless-communication.aspx)

SIEMENS Industry Online Support

For more information, the SIEMENS Industry Online Support (https://support.industry.siemens.com) is also available.

4.3.4 Connecting peripheral devices

To be noted before you connect the device

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

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).

Connecting a monitor

You can also connect monitors with other appropriate interfaces to the connections for DisplayPort and DVI-I with appropriate adapters.

Connecting devices to the USB socket

Connect devices such as drives, mouse, keyboard, printer and USB headsets to the USB sockets.

Connecting audio devices to the UAJ socket

The audio socket on the left-hand side of the device is a so-called UAJ connection (Universal Audio Jack) for a 3.5mm jack.

Depending on the function, a UAJ connector has 2 to 4 contact areas. Depending on their position, they are generally referred to as Tip, Ring 1, Ring 2 and Sleeve.

Depending on the function or standard, the contacts are assigned differently.

The audio controller of the Field PG recognizes the assignment of the contacts of the UAJ connector depending on the connected audio device and is automatically configured.

You can connect the following audio devices to the UAJ connection:

- Audio device with line-out
- Audio device with line-in
- Headphones
- Microphone
- Headset (with headphones and microphone) with the following standards:
  - OMTP: Standard for Samsung audio devices, etc.
  - CTIA: Standard for Apple® audio devices

Note

Connection of microphone and headphones with two 3.5mm jacks

An adapter is needed to simultaneously connect a microphone and headphones to a 3.5-mm-jack.

See also

Technical specifications (Page 76)

Commissioning the device 5

5.1 General information on commissioning

NOTICE
Risk of damage to the device! Make sufficient allowances for the device to warm up to room temperature before you put it into use. If condensation develops, wait at least 12 hours before switching on the device.

Requirements for commissioning

- The power supply is connected or the battery is fully charged.

5.2 Initial startup: Commissioning the operating system

Your device is delivered with preinstalled device drivers and SIEMENS software products.

After switching on the device for the first time, you can make the following menu-driven personnel settings:

- Specify display language and region
- Create user account

Requirements

- There is **no** data storage medium in the optical drive.
- The default settings in the firmware/BIOS are unchanged before commissioning the operating system.

Commissioning of the installed Windows® operating system

NOTICE

Operational reliability of the device and the plant is at risk

Incorrect or aborted commissioning of the operating system can put the operational reliability of your device and the plant at risk.

Observe the following:

- Do not switch off the device at any time during commissioning of the device.
- If commissioning is aborted or is done incorrectly, you must restore the operating system with the supplied Restore DVD set to achieve full operational reliability. You can find additional information on this in Restoring operating system and partitions (Page 69).

1. Switch the device on.
2. The operating system is set up automatically. The device may restart multiple times during this process.
3. Wait until you are prompted to select the language.
4. Type in the product key if required. The product key is located on the "Certificate of Authenticity" label on the device or on an enclosed "Certificate of Authenticity Card".
5. Follow the rest of the instructions on the screen.

   Once the user has logged on for the first time and the Windows® user interface has loaded, commissioning of the operating system is complete.

5.3 Changing the display language, region and formats of the operating system

Changing the settings of the logged-in user account

1. Select: "Start > Settings > Time & language".
2. Make the desired changes in the following areas:
   - "Date & time"
   - "Region & language"

Changing the system account and the standard user account settings

You can change the settings for the display language, region and formats of the system account (for example, the display language in the user login dialog) and the settings of the standard user account (default 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. Select: "Start > Settings > Time & language".
2. In the "Region & language" area, for the "Add a language" option define a desired "default" language.

5.4 Use of SIMATIC software with license key

A product-specific license key (user authorization) is required for use of SIMATIC 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 memory 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 disconnect it according to the Windows specifications ("Safely removing hardware").

You may also use the USB license stick to transfer the license keys to a different computer, or to store them intermediately.

Note

Software installed on the SIMATIC Field PG M6 for which a license key is not included in the scope of delivery cannot be used or will only run in Trial mode.

5.5 Rechargeable battery

Danger notices

WARNING

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

A battery can cause burns, it can explode or release toxic substances.

Do not open or damage the battery. Do not expose battery to heat or fire. Keep the battery away from children.

WARNING

Danger of damage to the device or destruction of the battery

Only use the supplied battery or an original spare part. Information on original spare parts for Field PGs is available in section "Accessories (Page 23)".

WARNING

Risk of damage to the device by foreign objects

Always transport the device with the battery plugged in. This prevents foreign objects (e.g. paper clips) from entering the device through the openings.

WARNING

Risk of damage to the device by unprotected transport

Do not carry the rechargeable battery unprotected in your pocket, briefcase or other container, as metal objects (e.g. car keys) could short-circuit the battery terminals. This can result in damage to the rechargeable battery or there can be a risk of fire.

⚠WARNING

Risk of damage to the device by water or splashing water

The rechargeable battery is not waterproof. Never immerse the rechargeable battery in water and protect it against splashing water (rain, seawater).

⚠WARNING

Danger if the device leaks

If a rechargeable battery leaks, avoid contact of the liquid with skin, mucous membranes (eyes, mouth) or food and do not inhale the escaping vapors. Clean exposed and affected body parts with plenty of water and soap.

⚠WARNING

Danger of damage to the device by pressure

Do not exert pressure on the rechargeable battery, do not drop it, damage it and do not insert any foreign objects.

⚠WARNING

Risk of damage to the device by metal objects

Keep the unused battery away from paper clips, coins, keys, nails, screws or other small metal objects that could cause the contacts to be bridged. A short-circuit between the battery contacts can result in burns or fire.

⚠WARNING

Danger due to damaged or modified devices

Do not use damaged or modified rechargeable batteries. Damaged or modified rechargeable batteries can behave unpredictably and lead to fire, explosion or risk of injury.

⚠WARNING

Risk of damage to the device due to charging outside the permissible temperature range

Observe all instructions for charging and never charge the battery outside the temperature range specified in the operating instructions. Incorrect charging or charging outside the permissible temperature range can destroy the rechargeable battery and increase the risk of fire.

⚠WARNING

Risk of damage to the device from unauthorized customer service centers

Never service damaged rechargeable batteries. All rechargeable battery maintenance should only be performed by the manufacturer or authorized customer service centers.

WARNING

Risk of damage to the device from pointed objects or external force

The rechargeable battery can be damaged by pointed objects such as nails or screwdrivers or by external force. An internal short-circuit can occur and cause the rechargeable battery to burn, smoke, explode or overheat.

WARNING

Risk of damage to the device by frost

Avoid exposing the battery to frost. The longer the cells are exposed to lower temperatures, the greater the risk of capacity loss and hazardous cell damage. Therefore, do not store rechargeable batteries in an unheated garage during winter.

Disposal

Lithium ion batteries can be recycled. Their components can be used as raw materials for new batteries or other products. A requirement for effective recycling is the collection of used batteries.

NOTICE

Risk of fire - Hazardous to people and the environment

The improper disposal of batteries may cause fire.

Observe the local regulations for the disposal of recyclable materials.

Dispose of batteries properly.

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 months. It will then have to be recharged.
- The battery charging is terminated when the battery is fully charged or if, for example, the upper temperature limit for charging is exceeded. You can check the battery charge level in Windows.

When the power supply is connected and the status indicator of the battery 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. You should remove the battery from the Field PG if you are planning on not operating the device 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. Before full discharge, when only a residual charge remains, the battery status indicator lights up red in battery mode 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.

Service life of the battery

Due to the technology used, the capacity of the rechargeable battery decreases over its lifetime. For this reason, the rechargeable battery is excluded from the warranty in the event of a capacity reduction, as is the case with all manufacturers of comparable devices. In the case of a significant drop of efficiency we recommend that you replace the battery. Use only Siemens original spare parts.

5.6 Using batteries

WARNING
Observe the danger notices Read the notes and information on the proper use and correct disposal of batteries in section "Rechargeable battery (Page 42)".

Requirement

The device is completely isolated from the line voltage.

Procedure

1. Turn the device over so that it is lying on a stable surface with its display unit closed.
2. Release ① the battery cover ② on the bottom of the device.

3. Open the battery cover in the direction of the arrow and, if necessary, remove the old battery.
   Insert the new battery.

4. Close the cover and turn the device over again.

5.7 Operating modes

In accordance with the settings in the Windows Power Options, the Field PG supports different operating states. You can manually or automatically, after a particular time interval, put the device in the following operating states:

- Standby mode (Save to RAM)
- Hibernation (Hibernate, save to disk)
- On
- Off

Parameterize the possible operating modes of the device to the following actions in the power options:

- Operating the on/off button
- Shutting down the operating system (Windows)
- Opening and closing the display lid
- Inactivity of keyboard and mouse

Reactivating the device after standby mode or hibernation

In standby mode the corresponding status indicator for the system flashes; in hibernation mode all status indicators are switched off. To reactivate the Field PG after these two operating modes, press the on/off button briefly.

Parameterize the change to the different operating states

In Windows you can set parameters for the time interval and the actions for change to a different operating mode in the power options. Select:

- "Control Panel\All Control Panel Items\Power Options".

Before changing the power options, make a note of the factory settings, if necessary.

Note

Deactivating Hibernation or Standby mode

By changing the power settings, and by adding extra hardware (such as USB-components) or software to the device, you can modify the operating modes 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.

Operating modes during transportation of the device

Please remember to always shut down the Field PG or set it to Hibernation prior to transporting it in the backpack. You can recognize these states by the fact that all device status indicators are switched off after removing the power supply. This way you can ensure the device is not switched on and the battery is not unintentionally discharged during transportation.

Operating the device

6

6.1 Notes on operation

6.1.1 SSD

SSDs with different capacities can be used.

Note

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

The corresponding status indicator for the system lights up when the drive is accessed. See sectionStatus displays (Page 21).

6.1.2 Optical drive

This drive allows you, for example, to read the operating instructions on the supplied "Manuales and Drivers" DVD.

Information on burning data storage media (CD-RW or DVD±RW)

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 unlocking mechanism of the drive drawer

If the drive drawer does not open, you can open it using the emergency unlocking mechanism:

1. Completely disconnect the device from the power supply.
2. Carefully guide a long, thin object through the small hole (diameter approx. 1mm) in the drive drawer.

   You can use a thin needle or a straightened paper clip for this. Push it approx. 2-3 mm into the hole.

   The drive drawer will open.

Inserting or removing data storage media

To prevent excessive force acting on the extended drive drawer, hold it at the front panel when inserting or removing the data storage media.

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

- Display flashes:

  A data storage medium which is hard to read but still readable is in the drive.

- Display flashes initially and then is continuously lit:

  The data storage medium inserted is not readable and is defective.

6.1.3 USB socket with charging function

You can use the bottom USB socket under the cover on the side of the device ① to charge USB devices (e.g. smartphones) at a current of up to 1.5 A, even when the Field PG is switched off.

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 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.

6.1.4 Card reader

6.1.4.1 SIMATIC cards for card reader

The card readers of the Field PG can be found on the left and right of the device, see section "Exterior design (Page 12)". You can operate the following SIMATIC cards in the following card readers:

SIMATIC Memory Card

- SIMATIC Memory Card for S7-300/400
  - SIMATIC Memory Card for S7-400 (long design)

  - SIMATIC Memory Card for S7-300 (short design)

SIMATIC Micro Memory Card

- SIMATIC Micro Memory Card for S7-300/C7/ET200

SMC (SIMATIC MC)

- SIMATIC Memory Card for S7-1x00

6.1.4.2 Editing SMCs, SD cards and multimedia cards

You can read, program or erase the following cards with the Multimedia Card Reader:

- SMC (SIMATIC MC)
- SD card (including SD UHS-II)
- MMC (Multi Media Card)

NOTICE
Risk of data loss for SIMATIC Micro Memory Card Do not use a SIMATIC Micro Memory Card in this case because the card can be damaged by Windows functions. The slot for the SIMATIC Micro Memory Card is located on the right-hand side of the device, see section "Modifying SIMATIC Micro Memory Cards (Page 53)".

The Multimedia Card Reader ① is located on the left-hand side of the device.

The contact areas of the card face downward. When inserting the card, pay attention to the correct positioning of the card.

To remove the card press it lightly towards the device.

The card is operated by a push-push function.

NOTICE
Do not insert or remove cards while in use. Inserting or removing a card while it is in use could damage it. The card may not be removed as long the status indicator is lit, see section "Status displays (Page 21)". Observe the ESD guidelines (Page 74).

6.1.4.3 Modifying SIMATIC Micro Memory Cards

You can read, program, or erase SIMATIC Micro Memory Cards.

Procedure

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 Micro Memory Card.
4. End the programming function of your SIMATIC programming software.
5. Remove the SIMATIC Micro Memory Card from the card reader ①.

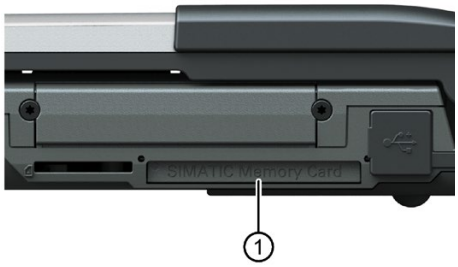
NOTICE
Do not insert or remove the module while it is in use Plugging in or removing the module while the module is being changed could damage the module. Do not remove the SIMATIC Micro Memory Card if the module programming status display is lit. Note the ESD Guidelines (Page 74).

6.1.4.4 Editing SIMATIC Memory Cards

You can read, program, or erase SIMATIC Memory Cards in the card reader located on the right-hand side of the device. SIMATIC Memory Cards are available for SIMATIC S5 and SIMATIC S7-hardware.

Procedure

1. Switch the device on.
2. Use the programming function of your SIMATIC programming software to read, program, or erase the SIMATIC Memory Card.
3. End the programming function of your SIMATIC programming software.
4. Remove the SIMATIC Memory Card from the card reader①.



NOTICE
Do not insert or remove cards while in use. Inserting or removing a card while it is in use could damage it. The card may not be removed as long the status indicator is lit. See section "Status displays (Page 21)". Observe the ESD guidelines (Page 74).

Note

Malfunction

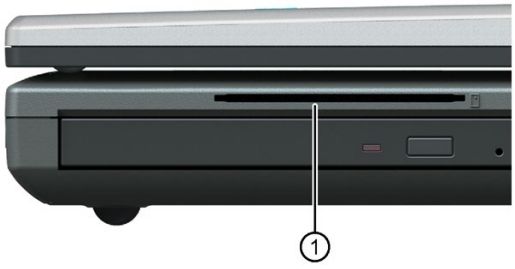
The simultaneous use of MPI/DP Online and a SIMATIC Memory Card can cause malfunctions. Simultaneous use is not supported.

Terminate the use of the SIMATIC Memory Card before using MPI/DP.

6.1.4.5 Editing smart cards

You can read smart cards with an integrated chip, such as plant ID cards, with the Smart Card Reader.

The Smart Card Reader is located on the right-hand side of the device.



When inserting the card, pay attention to the correct positioning of the card. The chip must face upward.

6.1.5 WLAN and Bluetooth

6.1.5.1 General information about WLAN and Bluetooth

You can find information on the WLAN standard and the Bluetooth version in the section "Technical specifications (Page 76)".

The device is equipped with a network card for Wireless LAN (WLAN), i.e. you are **not** assigned to a cable network.

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

Depending on the infrastructure and the access rights set by the network administrator, you have exactly the same access to files, the printer and to the Internet with WLAN as with cable network.

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:

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 connect computers to wired networks with the aid of WLAN. These can be a local network (e.g. company networks) or a global network (e.g. Internet).

6.1.5.2 Safety notices for WLAN and Bluetooth operation

You can switch the WLAN of the Field PG off and on with the hotkeys Fn + F3.

- The radio waves necessary for WLAN and Bluetooth can cause interference in hearing aids (unpleasant buzzing) and in the onboard electronics of vehicles. To prevent interference, switch off the Field PG in aircraft, or when driving a vehicle.
- Radio waves caused by WLAN and Bluetooth may lead to malfunctioning of life-support systems. Switch off the WLAN and Bluetooth function if you are in the proximity of such systems, e.g. hospitals, medical electronic systems.
- The range of the wireless connection and the achievable data transmission rate depend on the ambient and environmental conditions.
- A WLAN and Bluetooth connection is not tap-proof. Unauthorized third parties can then receive data.

  To protect the transmitted data, WLAN and Bluetooth have different encryption methods. We recommend that you activate an encryption in accordance with your WLAN and Bluetooth environment.
- If possible, do not bring the WLAN and Bluetooth connection in the vicinity of the following devices as the operation of these devices may result in faults or the complete failure of the WLAN and Bluetooth connection:
  - Microwaves
  - Wireless video-audio transmission systems
  - Wireless telephones (DECT)

⚠ CAUTION

Risk of interference with pacemakers

The radio waves of WLAN and Bluetooth may interfere with pacemakers.

If you wear a pacemaker, keep a minimum distance of 20 cm from the Field PG when WLAN or Bluetooth is activated.

⚠ CAUTION

Danger of explosion

The radio waves transmitted by WLAN and Bluetooth may trigger an explosion or fire.

Switch off WLAN and Bluetooth of the Field PG if you go in the vicinity of flammable gases or in an explosive environment (e.g. paint shop).

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 connecting cables 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.

6.2 Notes on SIMATIC software

Starting STEP 7

Please note that a license key is required to work with STEP 7. For more information, refer to section "Use of SIMATIC software with license key (Page 41)".

- 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 TIA Portal

You have the following options for starting 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 > TIA Portal V1x

6.3 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.

You can find additional information on this under Enabling Intel® AMT / basic configuration (Page 105).

6.4 Trusted Platform Module (TPM)

Depending on the configuration you ordered, your device may have a TPM 2.0 compatible Trusted Platform Module. The Trusted Platform Module (TPM) is a chip that adds security functions to your device. This enables improved protection of the device against manipulation, for example.

NOTICE
Import restrictions for the Trusted Platform Module Some countries restrict the use of Trusted Platform Modules. Use of Trusted Platform Modules in these countries is not permitted. • Observe all regulations of the country in which the device will be operated.

Expanding the device 7

7.1 Removing and installing memory modules

Memory expansion options

The motherboard is equipped with 2 slots for DDDR4-memory modules. You can use these to expand the PG memory capacity to a maximum of 32 GB. The memory modules may not exceed the maximum size of 16 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 74) 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 "Using batteries (Page 46)".

Removing a memory module

1. Remove the battery (Page 46).
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

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 (Page 46) 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, "Main" menu.

Maintaining and repairing the device

8

8.1 Installing and removing hardware

8.1.1 Replacement interval

To maintain high system availability, we recommend the preventative replacement of those PC components that are subject to wear in accordance with the intervals for replacement indicated in the table below:

Component	Replacement interval
Drives	3 years
Backup battery	5 years

8.1.2 SSD kit

SSD kits consist of the SSD unit (please refer to the order documents for the capacity of the SSD), a T8 Torx screwdriver and a transport and storage bag.

SSD kits are available with the following order numbers:

- 6ES7791-2BA24-0AA0 (256 GB SSD)
- 6ES7791-2BA22-0AA0 (512 GB SSD)
- 6ES7791-2BA25-0AA0 (2 TB SSD)

SATA to USB 3.0 adapter

With the SATA to USB 3.0 adapter (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.

See also

Accessories (Page 23)

8.1.3 Replacing the SSD

Requirements

Note

Only replace the SSD with an SSD of the same type.

SSDs are available as SSD units in a kit. Information about this can be found in section "SSD kit (Page 64)".

- The device is not in Standby or Hibernate mode (unsaved data might be lost) or the device can get damaged.
- The device is completely isolated from the line voltage.
- The battery has been removed, see section "Using batteries (Page 46)".
- All connecting cables have been removed from the device.

Removing the SSD unit

1. Open the display.
2. Remove both screws (Torx T8) on the cover of the SSD unit.

3. Open the cover and pull out the SSD unit.

Inserting the SSD unit

1. Carefully slide the new SSD unit into the slot as far as it will go.

2. Close the cover, and secure it with the two screws.

See also

ESD Guidelines (Page 74)

8.1.4 Replacing the backup battery

The device 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 device works correctly.

Note

The backup battery should only be replaced by the SIEMENS Repair Service. You can find information on this on the Internet at: SIEMENS Repair Service (https://support.industry.siemens.com/cs/ww/en/sc/2154).

NOTICE
Risk of damage! The lithium battery may 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
Danger of explosion Batteries must be disposed of in accordance with local regulations.

8.2 Installing the operating system, software and drivers

8.2.1 Updating the operating system

We recommend updating the operating system as soon as relevant updates for it become available.

Requirements

- You have administrator rights for the system.
- The device is connected to the Internet.

Procedure

1. Select "Start > Settings > Update & security > Windows Update > Check for update".

   Windows® determines the updates that are not installed.
2. Then start the download and installation process.

8.2.2 Restoring operating system and partitions

You can restore the factory settings of the target system (i.e. the volume partitions, the operating system with installed device drivers, and the SIEMENS software products).

This allows you to restore your device quickly if it has suffered damage.

Procedure

Note

In order for the device to boot from the supplied data storage medium, it may need to be specified in the firmware settings.

NOTICE
Risk of data loss Files, user settings as well as existing authorizations and license keys are lost when a restore is performed! • Back up your data before restoring.

1. Insert the first DVD (1-x) of the supplied Restore DVD set into the optical drive.
2. Restart the device.

3. Boot from the inserted DVD.

   The Restore program from Siemens starts after a few seconds.

4. Follow the instructions on the screen.

   Note the following information.

Selecting the scope of restoration (operating system version)

Option: "Factory settings"

Use this option if you want to restore the factory settings of the operating system with the installed device drivers and the SIEMENS software products.

Option: "Administrator Basic"

Use this option if you only want to restore the operating system without additional device drivers and without SIEMENS software products.

8.2.3 Installing software and drivers

Requirements

- A Windows operating system is booted.
- Internet Explorer 8.0 (or higher) is installed.
- "Scripts and ActiveX controls" are enabled in the browser.

Procedure

1. Insert the supplied "Manual and Drivers" DVD into the optical drive.
2. Start the "START.CMD" script from this DVD.
3. Select "Software" or "Drivers" in the index.
4. Select the device and operating system.
5. Select the desired software component or driver.
6. Click on the "Install" icon.

8.3 Configuring firmware/BIOS

You can find information on the firmware/BIOS under: "Firmware/BIOS description (Page 90)".

8.4 Backing up data

We recommend the software tool **SIMATIC IPC Image & Partition Creator** (as of V3.5.1) to back up data under Windows.

This tool enables easy backup and fast restoration of entire memory cards and drive contents as well as individual partitions (images).

It supports burning DVD media.

SIMATIC IPC Image & Partition Creator can be ordered using the Siemens online ordering system (https://mall.industry.siemens.com). For more information about SIMATIC IPC Image & Partition Creator, refer to the corresponding product documentation.

8.5 Modifying the partitions

We recommend the software tool **SIMATIC IPC Image & Partition Creator** (as of V3.5.1) for modifying partitions under Windows.

SIMATIC IPC Image & Partition Creator can be ordered using the Siemens online ordering system (https://mall.industry.siemens.com). For more information about SIMATIC IPC Image & Partition Creator, refer to the corresponding product documentation.

You can find information on partitioning the operating system in the factory state under "Boot mode and partitions in the delivery state (Page 103)".

8.6 Recycling and disposal

The devices described in these operating instructions can be recycled thanks to their low level of pollutants. Contact a certified disposal service company for environmentally sound recycling and disposal of your old devices.

Technical specifications

9

9.1 Certificates and approvals

ISO 9001 certificate

The Siemens quality assurance system for all product creation processes (development, production and sales) meets ISO 9001 requirements.

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

Software License Agreement

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

Certificates for USA and Canada

Product safety.

The following approval is available for the device:

Underwriters Laboratories (UL) according to UL 62368-1 Second Edition and Canadian Standard CAN/CSA C22.2 No. 62368-1-14 Second Edition.

WLAN

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

RCM AUSTRALIA/NEW ZEALAND

This product meets the requirements of EN 61000-6-3 Generic standards - Emission standard for residential, commercial and light-industrial environments.

This product meets the requirements of the standard EN 61000-6-3 Generic standards - Emission standard for residential, commercial and light-industrial environments.

9.2 Directives and declarations

9.2.1 Notes on the CE mark

Notes on the CE mark

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

RED 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

This product meets the requirements of the Radio Equipment Directive: 2014/53/EU

The protection goals of the directive were tested according to the following standards:

- Health: EN 50566
- Safety: EN 62368-1:
- EMC: EN 301 489-1, EN 301 489-17,
- Radio: EN 300 328, EN 301 893,

RoHS Directive

This product meets the requirements of the RoHS Directive (Restriction of Hazardous Materials): 2011/65/EU.

Compliance with the directive was tested according to the following standard: EN 50581.

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

Noise immunity requirements to EN 61000-6-2 are met if connected peripherals are suitable for industrial applications. Peripheral devices must only be connected using shielded cables.

9.2.2 ESD Guidelines

Definition of ESD

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

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

Electrostatic sensitive modules are identified by the following symbol:

NOTICE
Risk of overvoltage Modules that are sensitive to electrostatic discharge can be destroyed by voltages well below those that can be perceived by human beings. Such voltages occur if you touch a component or electrical connectors of a module without first discharging the static from 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.

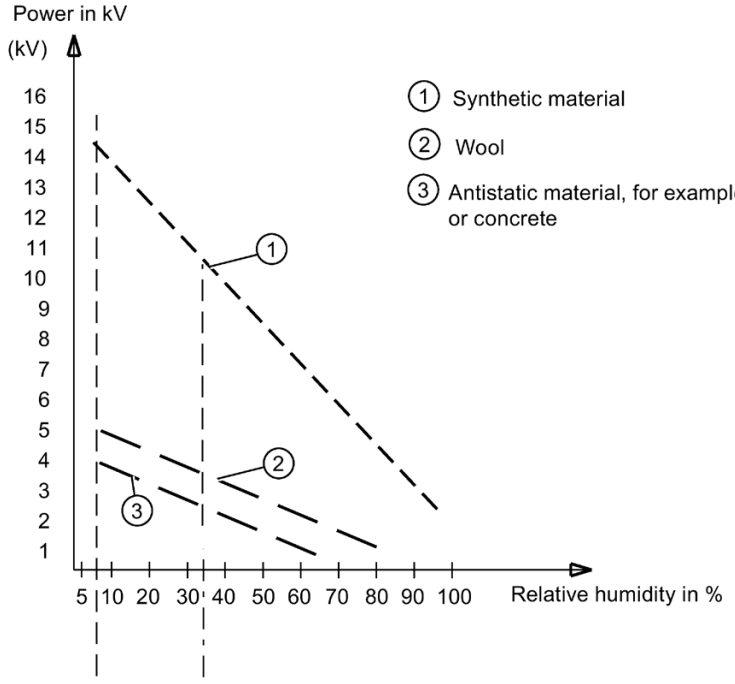


Figure 9-1 Electrostatic voltages which an operator can be subjected to

Basic protective measures against electrostatic discharge

- Ensure correct grounding:
  When handling electrostatically sensitive devices, ensure that your body, working environment and any packaging are sufficiently grounded. This prevents electrostatic charge.
- Avoid direct contact:
  As a general rule, only touch electrostatically sensitive devices when otherwise unavoidable (e.g. during maintenance work). Handle the modules without touching any chip pins or conductors. 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.

9.3 Technical specifications

General technical specifications

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)
Power consumption AC	Max. 100 W
Output voltage of the power supply unit (DC)	19 V
Output current of the power supply unit (DC)	Max. 4.7 A
Output power of power supply unit (DC)	Max. 90 W
Standby power (in battery operation)	Typically 1.5 W
Lithium ion battery (9 cells) with detection of charging condition)	Approx. 8250 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) according to ISO 7779
Degree of protection (entire device)	IP 30 (with closed covers) according to IEC 60529

Safety

Protection class	Safety class II according to IEC 61140
Safety specifications	• IEC 62368-1/EN 62368-1 • UL 62368-1 Second Edition • CAN/CSA C22.2 No. 62368-1-14 Second Edition

Electromagnetic compatibility (EMC)

Emitted interference	EN 61000-6-3, EN 61000-3-2 Class D and EN 61000-3-3
Noise immunity: Mains borne disturbance variables on supply lines	± 2 kV; (according to IEC 61000-4-4; Burst) ± 1 kV; (according to IEC 61000-4-5; Surge sym./ line to line) ± 2 kV; (according to IEC 61000-4-5; Surge sym./ line to earth)
Noise immunity on signal lines	• ± 1 kV; (to IEC 61000-4-4; burst; length < 30 m) • ± 2 kV; (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 with 80% amplitude modulation with 1 kHz, from 150 kHz to 80 MHz (according to IEC 61000-4-6) 10 V/m with 80 % amplitude modulation with 1kHz, 80 MHz to 1000 MHz (according to IEC 61000-4-3) 3 V/m with 80% amplitude modulation with 1 kHz, 1.4 GHz to 6 GHz (according to IEC 61000-4-3)
Magnetic field	30 A/m, 50 Hz and 60 Hz (according 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 85% at 30° C (no condensation)
Storage/transport	5% to 95% at 25° C (no condensation)

Mechanical 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 32 GB DDR4 SODIMM

Drives

SSD	2.5" SATA, capacity specified in BIOS.
Optical drive	DVD + R+ / RW Burner operation of the optical drive is only allowed in an undisturbed environment and at a maximum ambient temperature of +35° C.

Graphic

Graphic controller	Intel® HD Graphics 630
Graphic controller memory	is assigned in the system memory
Resolutions/frequencies/colors	According to the setting options of the graphics driver

LCD display

Type	TFT (Thin Film Transistor), 16: 9, anti-reflection
Size	344 x 194, corresponding to 15.6"
Screen resolution	1920 x 1080 (full HD)
Possible colors	maximum 256 k
Vertical frequency	60 Hz
Contrast	> 200 : 1
Brightness	typ. 300 cd/m^2
Permissible defective areas	light and dark pixel: Max. 10

Audio

Audio controller	Realtek ALC255, UAA-compatible
Internal loudspeaker	Maximum output power 2 x 1 W

WLAN and Bluetooth

WLAN is supported in the frequency ranges.

Bluetooth version	
WLAN standard according to IEEE standard	IEEE 802.11a/b/g/n/ac
Frequency ranges	• 2.4 GHz • 5.0 GHz
Connection range	Up to 100 m
Transmission rate	Up to 1.73 Gbps

Keyboard

Variant	Standard notebook
Key distance	19 mm
Key drop	2.5 mm
Labeling	• International / German • AZERTY layout (optional)
Pointing device integrated	Clickpad with integrated key function

Interfaces

RS232/TTY interface (COM1)	• The RS232 interface is integrated in every device by default. • TTY interface (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 screens can be operated using a DVI/VGA adapter), max. resolution DVI/VGA: 1920 x 1200
DPP 1.2 (DisplayPort)	Interface for external monitor, max. resolution: 4096 x 2560
USB	• 1x USB 3.1; Gen. 2; Type C (left-hand side of device): Max. 1.5 A • 1x USB 3.1; Gen. 2; Type A (back of device): Max. 0.9 A • 1 x USB 3.0; Type A (right-hand side of device, top): Max. 0.9 A • 1 x USB 3.0; Type A (right-hand side of device, bottom) with charging function for smartphone: Max. 1.5 A
PROFIBUS/MPI interface	9-pin sub-D socket
• Transmission speed	• 9.6 kBaud to 12 Mbaud, software configured
• Mode of operation	• Electrically isolated: - Data channels A, B - Control lines RTS AS, RTS_PG - 5 V supply voltage (max. 90 mA) Grounded: - Shielding of the DP12 connection line
Physical port	RS485, electrically isolated
Ethernet	2 x Gigabit Ethernet (RJ45)
DC-In	DC power supply input, jack plug
Headphones, microphone, headset	UAJ connection for 3.5mm jack

Card reader

Smart Card Reader	ISO/IEC 7816 Smart Card Interface
SIMATIC Memory Card Reader	Programming interface for SIMATIC Memory Cards (S5 and S7-400)
SIMATIC Micro Memory Card Reader	Programming interface for SIMATIC Micro Memory Card
Multimedia Card Reader	Interface for: • SMC (mechanical as SD card); programming function • SD card (including SD UHS-II) • MMC

Status indicators on the device

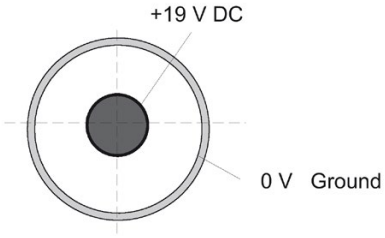
- Charge level
- Device status
- Access to SSD
- MPI/DP
- S5 and S7 modules
- Num Lock
- Caps Lock
- WLAN active

9.4 Interface description

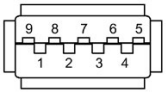
9.4.1 External interfaces

DC-In

Power adapter socket. This has the following charge:

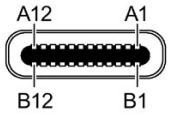


USB 3.0/3.1; Type A



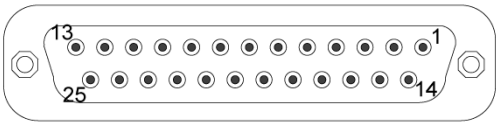
Pin no.	Short designation	Meaning	Input/output
1	VBUS	+ 5 V (fused)	Output
2	D-	Data line	Input/output
3	D+	Data line	Input/output
4	GND	Ground	–
5	RX-	Data line	Input
6	RX+	Data line	Input
7	GND	Ground	–
8	TX-	Data line	Output
9	TX+	Data line	Output

USB 3.0/3.1; Type C



Pin no.	Short designation	Meaning	Input/output
A1	GND	Ground	–
A2	TX1+	Data cable (USB 3.0)	Output
A3	TX1-	Data cable (USB 3.0)	Output
A4	VBUS	+ 5 V (fused)	Output
A5	CC1	Configuration channel	Input/output
A6	D+	Data cable (USB 2.0)	Input/output
A7	D-	Data cable (USB 2.0)	Input/output
A8	-	Not assigned	-
A9	VBUS	+ 5 V (fused)	Output
A10	RX2-	Data cable (USB 3.0)	Input
A11	RX2+	Data cable (USB 3.0)	Input
A12	GND	Ground	-
B1	GND	Ground	-
B2	TX2+	Data cable (USB 3.0)	Output
B3	TX2-	Data cable (USB 3.0)	Output
B4	VBUS	+ 5 V (fused)	Output
B5	VCONN	Configuration channel	Input/output
B6	D+	Data cable (USB 2.0)	Input/output
B7	D-	Data cable (USB 2.0)	Input/output
B8	-	Not assigned	-
B9	VBUS	+ 5 V (fused)	Output
B10	RX1-	Data cable (USB 3.0)	Input
B11	RX1+	Data cable (USB 3.0)	Input
B12	GND	Ground	-

RS232/TTY (COM1)



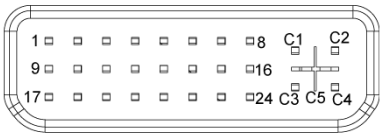
Pin no.	Short designation	Meaning	Input/output
1	-	Shielding	-
2	TxD (D1)	Serial transmit data	Output
3	RxD (D2)	Serial receive data	Input
4	RTS (S2)	Request to send	Output
5	CTS (M2)	Clear to send	Input
6	DSR (M1)	Ready for operation	Input
7	GND (E2)	Functional ground (reference potential)	-
8	DCD (M5)	Data carrier detect	Input
9	+TTY RxD	Current loop receive	Input
10-17	-	Not assigned	-
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 assigned	-

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.

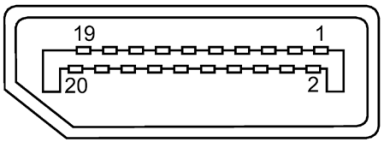
The V.24 and TTY ports of the COM1 can be used alternatively.

DVI-I



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

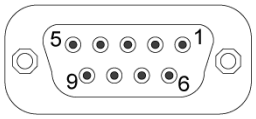
DisplayPort



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

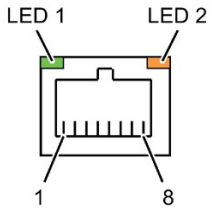
PROFIBUS/MPI

The PROFIBUS/MPI socket has the following pinout:



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

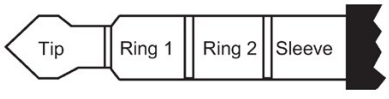


Pin no.	Short designation	Meaning		Input/output
1	BI_DA+	Bi-directional data A+		Input/output
2	BI_DA-	Bi-directional data A-		Input/output
3	BI_DB+	Bi-directional data B+		Input/output
4	BI_DC+	Bi-directional data C+		Input/output
5	BI_DC-	Bi-directional data C-		Input/output
6	BI_DB-	Bi-directional 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	–

UAJ

You can connect various audio devices to the UAJ connection. The audio controller socket recognizes the pin assignment of the connector, depending on the connected audio device. Information on connecting the audio devices can be found in section "Connecting peripheral devices (Page 37)".

The pins of a 3.5 mm jack are assigned as follows depending on the audio device:

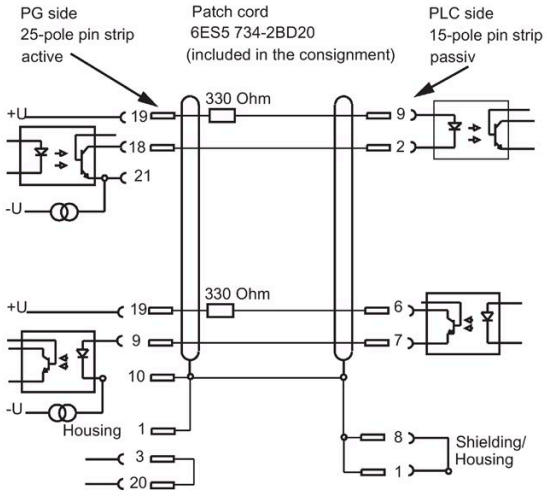


	Tip	Ring 1	Ring 2	Sleeve
Headphone out (stereo)	L	R	-	GND
Line out (stereo)	L	R	-	GND
Line in (stereo)	L	R	-	GND
Microphone in (mono)	MIC	-	-	GND
Headset (OMTP)	L	R	MIC	GND
Headset (CTIA)	L	R	GND	MIC

9.4.2 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 the STEP 5 documentation.



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 section "Connect SIMATIC S7 or PROFIBUS (Page 35)."

9.5 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 operating systems.

9.6 Firmware/BIOS description

9.6.1 Overview

Parameterize your device in the BIOS Setup.

BIOS Setup program

The BIOS Setup program, or BIOS Setup for short, is located, together with the setup parameters, in a FLASH block on the motherboard.

Change the setup parameters of the device in the BIOS Setup, e.g. system time or boot sequence.

Changing the device configuration

Your device configuration is preset for operating with the included software. You should only change the default setup parameters if technical modifications to your device require different parameters.

NOTICE
Malfunctions can occur with running software CPU If a BIOS update of the PC is performed while SIMATIC software controller, a SIMATIC WinAC for example, is running, the software CPU can malfunction, resulting in communication interruptions or failures, for example. Other actions that put a heavy load on the PC hardware, for example, running hardware tests such as benchmarks, can result in malfunctions of the software CPU. Do not run a BIOS update or other actions that would put a heavy load on the hardware during operation of a software CPU. Switch the software CPU to "STOP" before you run a BIOS update or perform other critical actions.

Note

Documentation

BIOS Setup is described for all devices and device configurations. Some BIOS submenus or Setup parameters may not be included, depending on your order. The interface of your BIOS Setup can deviate from the figures in this document.

You can find a detailed description of the BIOS on the Support website under Entry ID 92189178.

9.6.2 Opening the BIOS selection menu

Procedure

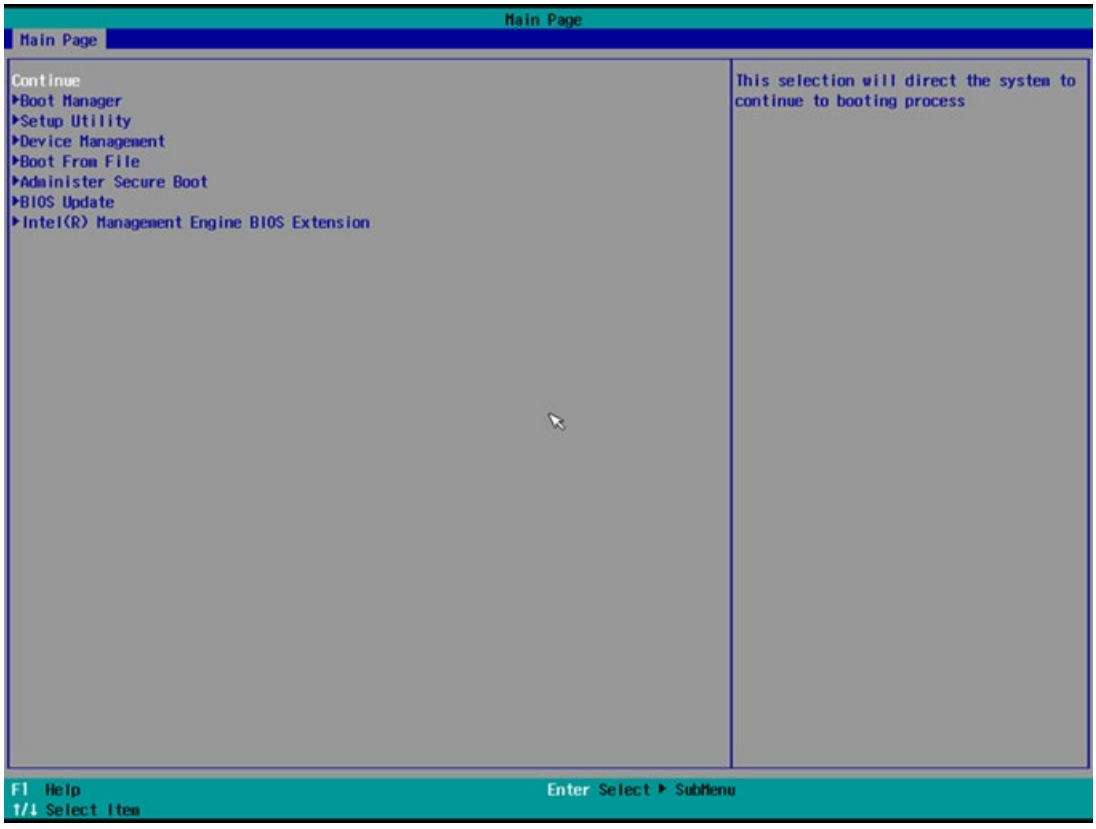
1. Reset the device (warm or cold restart).

   Depending on the device version, the default settings can differ from the figures shown.

   The following message appears briefly on the display at the end of the self-test:

   ```
   Press ESC for boot options
   ```

2. Press <ESC> to open the BIOS selection menu:



The following keys are available in the BIOS selection menu:

Buttons	Function
Continue	Exit selection menu, continue start sequence
Boot Manager	Specify the boot media from which to boot: • Hard disk drive • CD-ROM drive • USB drive (USB boot = enabled)
Setup Utility	Start the firmware configuration menu.
Device Management	Start device manager for UEFI boot media

Buttons	Function
Boot From File	Boot Maintenance Manager: • Boot Options: Set boot order • Driver Options: Configure drivers • Console Options: Configure connected input device • Boot from File: Start from an ".EFI" file • Reset System: Restore factory settings
Administer Secure Boot Option [1]	Configuration settings for starting the device in Administer Secure Boot mode. The only software modules loaded are those that are known to be safe for the BIOS or the operating system.
BIOS Update	Update BIOS from USB memory stick
Intel (R) Management Engine BIOS Extension	Start Intel® Management Engine BIOS Extension (MEBx) so that the hardware can be configured for use of the Intel® Active Management Technology (iAMT).

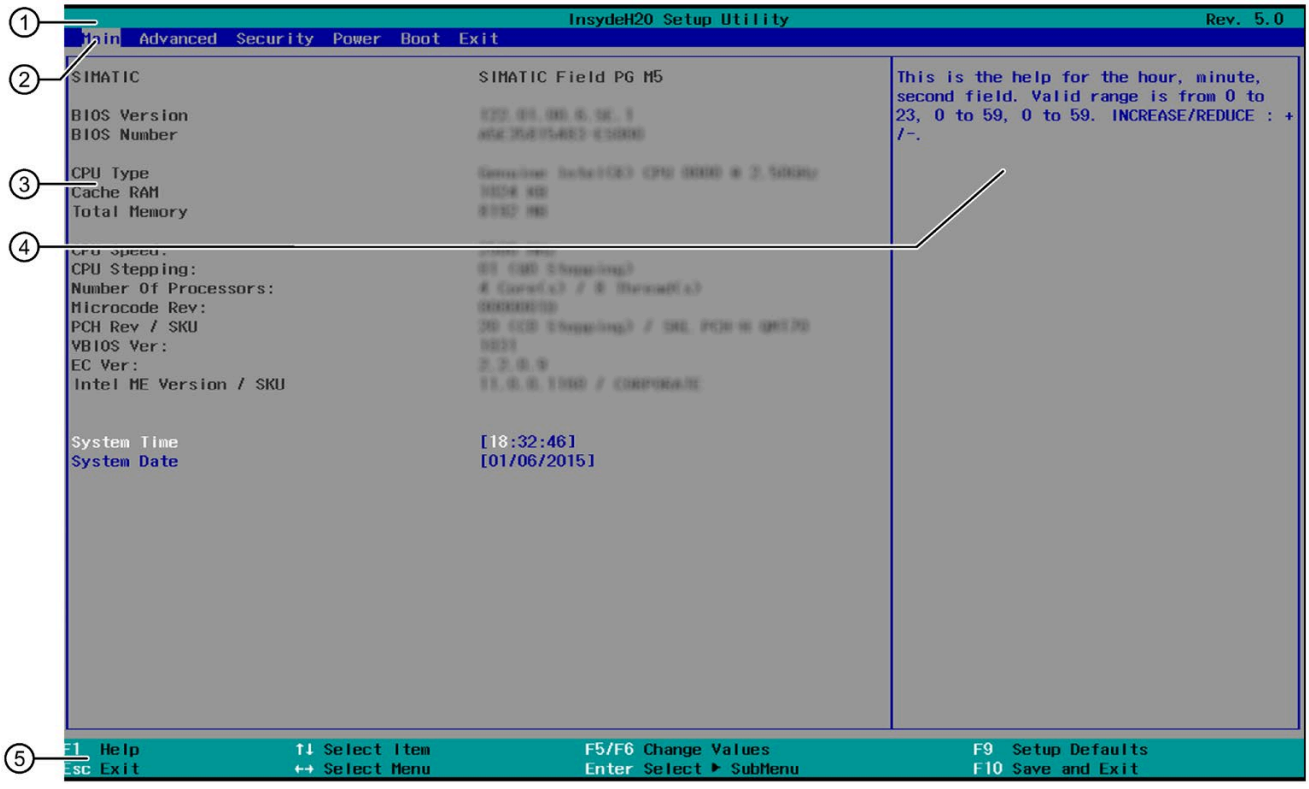
[1] Available as of Windows 8 or later

9.6.3 Structure of the BIOS Setup menu

The individual setup parameters are distributed between different menus and submenus. Not all menus are included in each supplied device configuration. The following table shows the menus.

Menu	Meaning
Main	Display system information, for example, BIOS version, processor and memory
Advanced	Configure hardware using different submenus
Security	Security functions, e.g., setting a password
Power	Specify power management of CPU and the device
Boot	Determine boot options, e.g., boot order
Exit	Save and exit (see Exit menu)

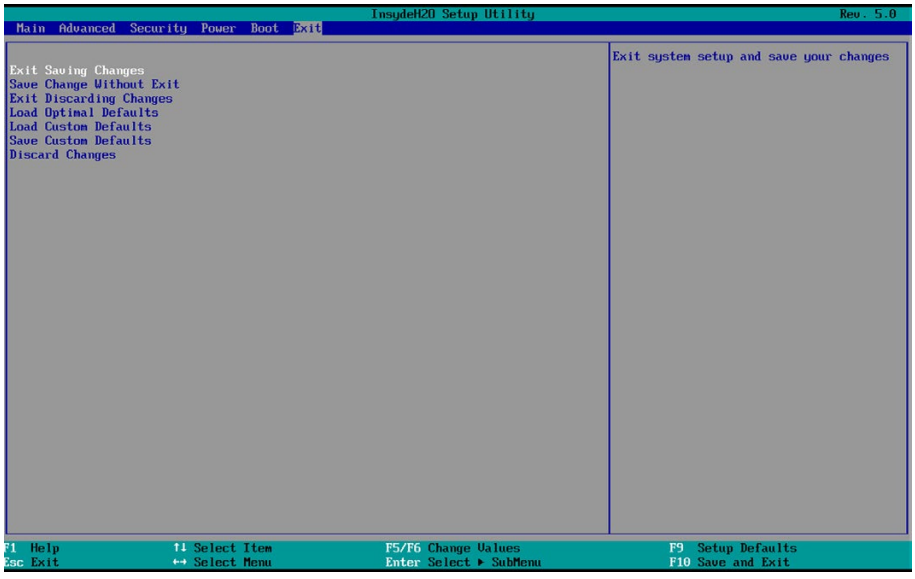
The menus always have the same structure. The figure below shows an example for the "Main" menu. Device-specific information is shown blurred.



①	Header	The current version of the selected BIOS Setup is displayed in the header.
②	Menu bar	Switch between the various menus "Main", "Advanced", etc. in the menu bar at the top.
③	Settings, submenus and device-specific information	Information about your device is displayed in the center left-hand area; here you can edit settings which are partly in submenus.
④	Help area	Short help texts on the currently selected setup parameters are displayed in the center right-hand area.
⑤	Key assignment	The key assignment for navigation in the BIOS Setup is found in the footer.

9.6.4 Exit menu

You always exit BIOS Setup in this menu.



Exit Saving Changes	All changes are saved and the system is restarted with the new Setup parameters.
Save Change Without Exit	All changes are saved
Exit Discarding Changes	All changes are discarded and the system is restarted with the old Setup parameters.
Load Optimal Defaults	All setup parameters are reset to the safe default values. **Notice**: The existing Setup parameters are overwritten by this.
Load Custom Defaults	The profile must be loaded with the custom Setup parameters. Requirement: The parameters are saved prior to this with "Save Custom Defaults". **Notice**: All existing Setup parameters are overwritten during loading. • Write down the BIOS Setup settings beforehand • Save the BIOS Setup settings as user-specific profile.
Save Custom Defaults	The currently configured Setup parameters are saved as a custom profile (see also "Load Custom Defaults").
Discard Changes	All changes are discarded.

9.6.5 BIOS Setup settings

Documenting your device configuration

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

Note

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

BIOS Setup default settings

System parameters	Defaults	Custom entries
Main		
System Time	hh:mm:sss	
System Date	MM/DD/YYYY	

Boot configuration		
Numlock	On	
POST errors	Never halt on errors	

Peripheral Configuration		
Internal COM 1	Enabled	
On-board Ethernet 1	Enabled	
Ethernet 1 Address	00:1B:1B:41:42:7B (example)	
On-board Ethernet 2	Enabled	
Ethernet 2 Address	00:1B:1B:0A:85:10 (example)	
WLAN	Last State	
MPI	Enabled	
SD card	Enabled	
ExpressCard	Enabled	
Touchpad	Enabled	

Chipset Configuration		
HPET – HPET support	Enabled	
VT-d	Enabled	

Active Management Technology Support		
Intel AMT Support	Disabled	
Intel AMT Setup Prompt	Enabled	
MEBx Selection Screen	Disabled	
Un-Configure ME	Disabled	
Intel AMT Configuration Screens	Enabled	
USB Configure	Disabled	
Intel AMT Password Write	Enabled	
USB Configure	Disabled	
PET Progress	Enabled	
Intel AMT SPI Protected	Disabled	

Security		
TPM Operation	No operation	
Supervisor Password	Not installed	
User password	Not installed	
Power on password	Disabled	
User Access Level	View Only	

Power		
USB charger	Disabled	
Wake on LAN 1	Enabled	
Wake on LAN 2	Enabled	

Advanced CPU Control		
SW Guard Extensions (SGX)	Software Controlled	
Select Owner EPOCH input type	No change in Owner EPOCHs	
Intel (VMX) Virtualization Technology	Enabled	
Active Processor Cores	All	
Hyper-Threading	Enabled	
AES	Enabled	
Intel® SpeedStep™	Enabled	
Intel® Speed Shift Technology	Enabled	
Turbo Mode	Enabled	
C state	Enabled	

Boot		
Quick Boot	Enabled	
Quiet Boot	Enabled	
Network Stack	Disabled	
PXE Boot capability	Disabled	
Add Boot Options	Auto	
USB Boot	Disabled	
EFI Device First	Enabled	
Timeout	0	

Legacy / Boot Device Priority		
Normal Boot Menu	Standard	

9.6.6 BIOS update

Check regularly if updates are available for download to your device.

You can find additional information on the Internet at the following address: After Sales Information System (http://www.siemens.com/asis).

Noting down and restoring BIOS Setup settings

NOTICE
Irretrievable loss of data All BIOS Setup settings are deleted after the BIOS update. This can put the system in an undefined state. This may damage the device and the plant. 1. Print out the table in the next section "General BIOS Setup settings". 2. Enter your specific BIOS Setup setting in this table before you run a BIOS update. 3. Start BIOS Setup after the BIOS update. 4. Load the BIOS Setup default settings with <F9> "Setup Defaults". Or use the BIOS Setup command "Load Optimal Defaults" in the "Exit" menu. 5. Make your own Setup settings based on the table you have printed out. 6. Save the BIOS Setup settings with <F10> "Save and Exit".

Preparing a BIOS update

NOTICE
Irretrievable loss of data If you are using BitLocker drive encryption, pause it before you perform the BIOS update.

Performing a BIOS update

NOTICE
Damage to the device If you switch off the device during the update, the BIOS will be incomplete and corrupt. This may result in malfunctions. Leave the device switched on during the update.

If you have purchased a new BIOS update for your device, follow these steps to install the update:

1. Connect the device to the power supply.
2. Copy the update to a USB memory stick.

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

   The following message appears briefly on the display at the end of the self-test:

   ```
   Press ESC for boot options
   ```

4. Press <ESC> to open the BIOS selection menu.
5. Click the "BIOS Update" button.
6. Follow the instructions on the screen.

Reboots

There may be several reboots after a BIOS update. These reboots are initiated by the Management Engine (ME). The reboots are required by the ME in order to prepare for the changes of the BIOS update.

9.6.7 Alarm, error and system messages

During startup (the boot process), the BIOS first performs a **P**ower **O**n **S**elf **T**est (POST) and checks whether certain functional units of the PC are operating error-free. The boot sequence is immediately interrupted if critical errors occur.

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

The error messages output by system BIOS are listed below. For information on error messages output by the operating system or application programs, refer to the corresponding manuals.

On-screen error messages

On-screen error message	Meaning / tip
Operating system not found	Possible causes: • No operating system installed • Incorrect active boot partition • Wrong boot drive settings in SETUP
Keyboard controller error	Controller error. Contact your technical support team.
SMART failure detected on HDD	Hard disk reports pending failure through S.M.A.R.T.
CMOS battery failed	CMOS battery is not connected.
CMOS battery weak	CMOS battery is weak
Real-time clock has lost power	The CMOS clock was operated without battery or with a battery that was too weak, during battery change, for example. Check the CMOS clock.
Keyboard error	• Field PG: Internal keyboard defective and no external keyboard connected • Other devices: Keyboard defective or not connected
PLD configuration failed	Programming of the PLC on the motherboard has failed.

9.7 Boot mode and partitions in the delivery state

Factory state for Windows® 10

In the factory state, Windows® 10 boots in UEFI mode.

The following table lists the partitioning for data storage media ≥ 200 GB on delivery:

Partition	Name	Size	File system
First	Boot	260 MB	FAT32
Second	MSR	128 MB	None
Third	System	Remainder	NTFS, not compressed

9.8 Active Management Technology (iAMT)

9.8.1 Introduction

Intel® Active Management Technology (Intel® AMT) is an Intel technology for the remote maintenance of SIMATIC Industrial PCs (IPCs) with AMT technology using a management PC. It is not necessary to install an operating system on the SIMATIC IPC with Intel® AM. Intel® AMT provides numerous functions, e.g.:

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

  KVM connections are always possible using the KVM server that is integrated in the firmware. KVM enables access to IPCs with a corrupted or no operating system as the KVM server is integrated in the AMT hardware. KVM enables you to reboot a remote computer and make changes to its BIOS settings.

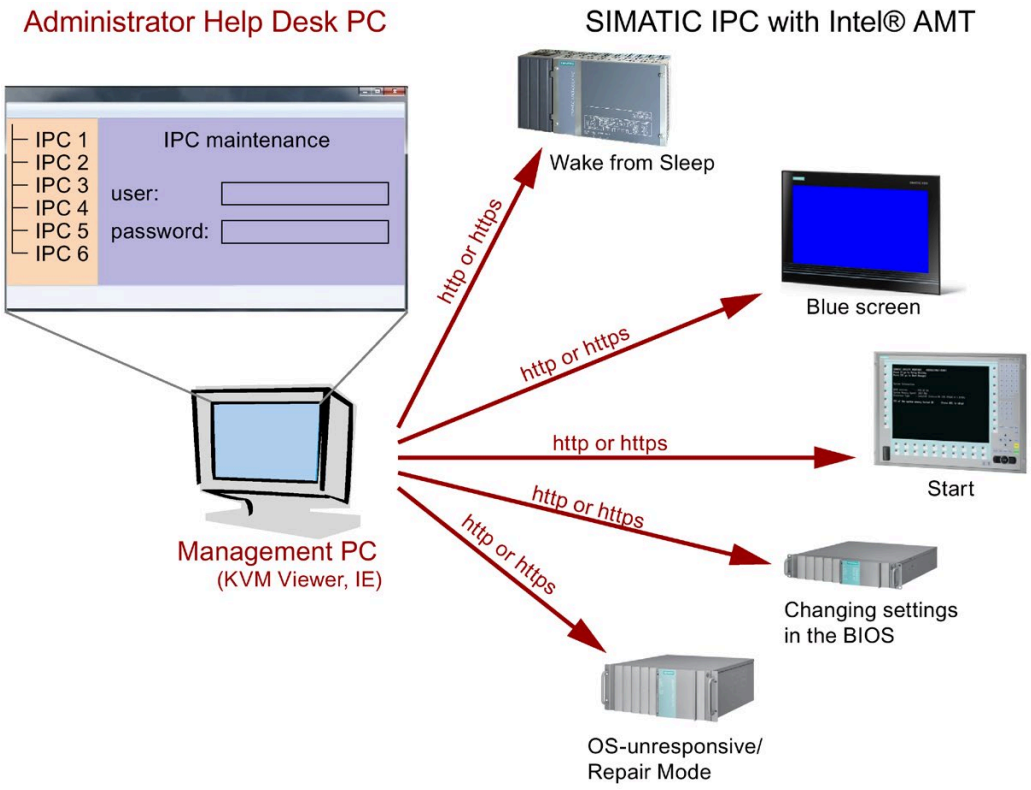
- **Remote power management**

  SIMATIC IPC with Intel ® AMT can be switched on and off or restarted using another PC.

- **IDE redirection**

  An image on the management PC can be integrated and used on the SIMATIC IPC with Intel® AMT both as a CD/DVD drive and as a floppy drive. If the image is bootable, you can also boot the SIMATIC IPC with Intel® AMT from it.

The following figure shows remote maintenance of SIMATIC IPCs with Intel® AMT, e.g. for troubleshooting a corrupt operating system or incorrect BIOS settings:



9.8.2 Overview of AMT

This section describes the required measures and settings on the local IPC so that the IPC can be controlled and maintained remotely from a management station known below as the help desk PC.

The local IPC is known below as the "AMT PC".

The sections contain the following information:

- AMT settings in the MEBx and in the BIOS setup
- Basic configuration of AMT
- Further useful notes

9.8.3 Enabling Intel® AMT / basic configuration

For security reasons, Intel® AMT is not enabled on new devices. The Management Engine (ME) is always active.

Procedure

1. If necessary, first reset Intel® AMT to the default status.
2. To open the BIOS selection menu, press the <ESC> key while the device is booting.
3. Open the BIOS Setup using the "Setup Configuration Utility (SCU)".
4. Select the "Active Management Technology Support" command in the Advanced menu.
5. Activate the option "Intel AMT Support".
6. Exit the BIOS Setup with <F10> key (Save and Exit).

Settings in the MEBx

1. To open the BIOS selection menu, press the <ESC> key while the device is booting.
2. Use the arrow keys to select "MEBx" and confirm with the <Enter> key.
3. Select "MEBx Login".
4. Enter the default password "admin".

   Change the password. The new password must comprise:

   – At least eight characters
   – An upper case letter
   – A lower case letter
   – A number
   – A special character (! @ # $ % ^ & *)
   – The underscore "_" and space characters are valid in the string but do not increase the complexity of the password.

   Note

   If the password is no longer available, you must reset the Intel® AMT to the default settings.

   Backup the password to protect it against loss.

5. Switch to the "Intel (R) AMT Configuration" submenu and enable "Manageability Feature Selection".
6. Switch to the "Intel(R) ME General Settings" submenu and enable access via the network with "Activate Network Access".
7. Confirm the dialogs that appear with "Y".

Drivers are automatically installed once with the Windows system start in the subsequent restart.

9.8.4 Reset Intel® AMT to default settings with Un-configure

If Intel® AMT was already configured, it is advisable to reset Intel® AMT to default settings. On reset to default settings Intel® AMT is deactivated, among others.

You can skip this item if the device is still in factory state.

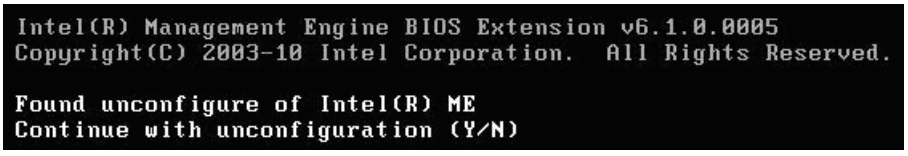
Note

All previous settings in the management engine MEBx are deleted.

Correct operation in the plant may be at risk.

Note down all the settings in the MEBx. Make the settings again as necessary following Unconfigure.

1. Enable the "Unconfigure ME" entry in "Advanced > Active Management Technology Support" in the BIOS.
2. Exit the BIOS with the <F10> key "Save and Exit". The AMT PC restarts.
3. After the restart, a user prompt appears asking whether you really want to discard all the settings in the management engine:



4. Confirm with "Y". On a German keyboard, this means pressing the <Z> key.

The device continues to boot with the factory settings of the management engine.

9.8.5 Determining the network address

To connect the AMT PC with the AMT server, the network address that uniquely localizes the AMT server on the AMT PC must be entered.

If DHCP is set for the automatic assignment of the network address in "Network Setup" in the MEBx of the AMT PC, the network address is not fixed.

Procedure

If the AMT server uses the same network address as the operating system of the AMT PC (most common situation):

1. You can obtain the address of the AMT server in the command line in Windows using "ipconfig" and in UNIX using "ifconfig".

If the AMT server and operating system do not use the same network address, ask your network administrator for the address you have been assigned.

9.8.6 Forcing user consent

When a connection to the AMT PC is established, the KVM viewer may prompt the user to enter a six-figure code. This code is displayed on the screen of the AMT PC. The user of the AMT PC must inform the user of the KVM viewer of this code.

This code query needs to be set up on the KVM viewer.

Procedure

1. Select "Intel(R) AMT Configuration > User Consent" in the MEBx.
2. Select the value "KVM" for "User Consent".

To allow a user with administrator privileges to avoid this code query, follow these steps:

1. Select "Intel(R) AMT Configuration > User Consent" in the MEBx.
2. Select "Opt-in Configurable from Remote IT".

Technical support

A

A.1 Service and support

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

- Technical support (https://support.industry.siemens.com/cs/ww/en/)
- Support request form (http://www.siemens.com/automation/support-request)
- After Sales Information System SIMATIC IPC/PG (http://www.siemens.com/asis)
- SIMATIC Documentation Collection (http://www.siemens.com/simatic-tech-doku-portal)
- Your local representative (http://www.automation.siemens.com/mcms/aspa-db/en/Pages/default.aspx)
- Training center (http://sitrain.automation.siemens.com/sitrainworld/?AppLang=en)
- Industry Mall (https://mall.industry.siemens.com)

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

- MLFB of the device
- BIOS version for industrial PC or image version of the device
- Other installed hardware
- Other installed software

Current documentation

Always use the current documentation available for your product. You can find the latest edition of this manual and other important documents by entering the article number of your device on the Internet. If necessary, filter the comments for the entry type "Manual".

Tools & downloads

Please check regularly if updates and hotfixes are available for download to your device. The download area is available on the Internet at the following link:

After Sales Information System SIMATIC IPC/PG (http://www.siemens.com/asis)

A.2 Troubleshooting

A.2.1 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 cannot move the mouse pointer with the clickpad under Windows	The clickpad is switched off	Switch on the clickpad via the hotkeys 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.
The following message appears on the display: "No boot device available" NTLDR not found, check the boot data storage medium...	Wrong drive 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 driver: <ALTGr> < ß> with international keyboard driver: < \>

A.2.2 Problems with WLAN

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 or ac 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.

Procedure – deactivating the tap function of the clickpad

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".

Labels and symbols

B

B.1 Overview

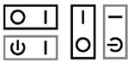
The following tables show all the symbols which may be found on your SIMATIC industrial PC, SIMATIC industrial monitor or SIMATIC Field PG in addition to the symbols which are explained in the operating instructions.

The symbols on your device may vary in some details from the symbols shown in the following tables.

B.2 Safety

Symbol	Meaning		Symbol	Meaning
	Warning, observe the supplied documentation.			Lock is closed
	Attention, radio equipment			Lock is open
	Disconnect the power plug before opening			Opening for Kensington lock
	Attention ESD (Electrostatic sensitive device)			Warning of hot surface

B.3 Operator controls

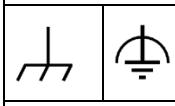
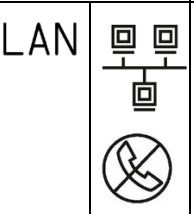
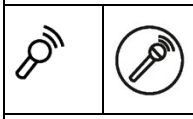
Symbol	Meaning		Symbol	Meaning
	On/off switch, without electrical isolation			Eject CD/DVD
	On/off switch, without electrical isolation			

B.4 Certificates, approvals and markings

The following table shows symbols relating to certificates, approvals and markings which may be on the device. You can find more information in the operating instructions for your device:

Symbol	Meaning		Symbol	Meaning
	Approved for Australia and New Zealand			Marking for the Eurasian Customs Union
	Approved for China			Test mark of Factory Mutual Research
	CE markings for European countries			Marking of Federal Communications Commission for the USA
	EFUP (Environment Friendly Use Period) marking for China			Approved for Korea
	Test mark of the Underwriters Laboratories			Disposal information, observe the local regulations.

B.5 Interfaces

Symbol	Meaning		Symbol	Meaning
	Connection to the power supply			PS/2 mouse interface
	Protective conductor terminal			PS/2 keyboard-interface
	Connection for functional earthing (equipotential bonding line)			Multimedia Card Reader
	DisplayPort interface			Smart Card Reader
	DVI-D interface			Line In
	LAN interface, not approved for connecting WAN or telephone			Line Out
	Serial interface			Microphone input
	USB port			Universal Audio Jack
	USB 2.0 HiSpeed interface			Headphone output
	USB 3.0 super-speed port			
	USB 3.1 SuperSpeedPlus interface			

Abbreviations

C

C.1 Abbreviations

Abbreviation	Term	Meaning
AC	Alternating current	Alternating current
AMT	Active Management Technology	Technology from Intel® that permits the diagnostics, management and remote control of PCs
AWG	American Wire Gauge	US standard for the cable diameter
BIOS	Basic Input Output System	Basic Input Output System
CAN	Controller Area Network	
CE	Communauté Européenne (CE symbol)	The product is in conformance with all applicable EC directives
CMOS	Complementary Metal Oxide Semiconductors	Complementary metal oxide semiconductors
COA	Certificate of authentication	Microsoft Windows Product Key
COM	Communications Port	Term for the serial interface
CPU	Central Processing Unit	CPU
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
DC	Direct Current	DC current
DCD	Data Carrier Detect	Data storage medium signal detection
DPP	DisplayPort	High-performance digital monitor interface
DQS	Deutsche Gesellschaft zur Zertifizierung von Qualitätsmanagement mBH	
DSR	Data Set Ready	Ready for operation
DTR	Data Terminal Ready	Data terminal is ready
ESD	Components sensitive to electrostatic charge	
EN	European standard	
GND	Ground	Chassis ground
IDE	Integrated Device Electronics	
IEC	International Electronical Commission	
IP	Ingress Protection	Degree of protection
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
MLFB	Machine-readable product designation	Order number
MMC	Multi Media Card	Memory card of the format 32 mm x 24.5 mm

Abbreviation	Term	Meaning
MUI	Multilanguage User Interface	Language localization in Windows
NEMA	National Electrical Manufacturers Association	Syndicate of manufacturers of electrical components in the USA
PCAP	Projected capacitive touch screen technology	Technology for touch screen fronts. The touch screen with PCAP features a rugged, smooth glass front that is especially suited for in industrial environments. Advantages of this glass front are, for example, glare suppression, EM- or UV-shielding glasses, vision protection when viewed from the side
PXE	Preboot Execution Environment	Software for running new PCs without hard disk data via the network
RFID	Radio Frequency Identification	
RI	Ring Input	Incoming call
RTS	Reliable Transfer Service	Request to send
RxD	Receive Data	Data transfer signal
SATA	Serial Advanced Technology Attachment	
SMART	Self Monitoring Analysis and Reporting Technology	Fault diagnostic program for the drive
SSD	Solid State Drive	Storage medium (not volatile)
S VP	Serial number of the device	
TFT	Thin-Film-Transistor	Type of LCD flat-screen
TTY	Tele Type	Asynchronous data transfer
TxD	Transmit Data	Data transfer signal
UL	Underwriters Laboratories Inc.	US organization for tests and certifications according to own or binational standards (with CSA / Canada) standards
V.24		ITU-T standardized recommendation for data transfer via serial ports
VDE	Verein deutscher Elektrotechniker (Union of German Electrical Engineers)	
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.
WLAN	Wireless LAN	Wireless local area network

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