

SIEMENS

Edition 09/2023

Operating instructions

SIMATIC

Programming device IPC MD-57A

Original operating instructions

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SIMATIC

Programming device SIMATIC IPC MD-57A

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

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

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Disclaimer of Liability

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

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Preface

1

Purpose of this documentation

These operating instructions contain all the information you need for commissioning and operation of the SIMATIC IPC MD-57A. In the following, the SIMATIC IPC MD-57A is generally referred to as "device" and as "Mobile Device (MD)" in short.

These operating instructions contain all the information required to install the device, connect it electrically, commission it including device extensions, and maintain and repair it.

The information in these operating instructions is intended for personnel with qualified expertise in the following areas:

- Mounting of industrial PCs and accessories
- Electrical installation
- Commissioning of industrial PCs
- Microsoft operating systems
- IT administration and network engineering
- Service and maintenance of industrial PCs

Scope

The documentation for the device includes the following:

- Operating instructions
- Quick Installation Guide

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

Basic knowledge required

A solid background in electrical installation, personal computers, Microsoft operating systems and network technology is required to understand this manual.

General knowledge in the field of automation technology is recommended.

Scope

This documentation is valid for all delivery variants of the SIMATIC IPC MD-57A and describes the delivery status as of September 2023.

History

Currently released versions of this operating manual:

Issue	Comment
09/2023	First edition

1.1 Security information

Siemens Aktiengesellschaft 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. The products and solutions of Siemens Aktiengesellschaft form a part 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 (https://www.siemens.com/industrialsecurity).

The products and solutions of Siemens Aktiengesellschaft 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 visit (https://www.siemens.com/industrialsecurity).

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.

1.2 Disclaimer for third-party software updates

This product includes third-party software. Siemens Aktiengesellschaft 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 Aktiengesellschaft. Otherwise, updates/patches are undertaken at your own risk. You can find more information about our Software Update Service offer on the Internet at OSD: Software Update Service (SUS) (https://support.industry.siemens.com/cs/ww/en/view/109759444).

Product description

2

2.1 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	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
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)
Windows® operating system	Information on: • Commissioning the operating system • Restoring the operating system • Configuration of the operating system	• Online at: Microsoft® Windows® 10 (https://support.industry.siemens.com/cs/ww/de/view/109749498/en?dl=en)
SIMATIC IPC Image & Partition Creator	Information on: • Backup of directories and partitions • Restoration of files, directories, partitions and drives.	Online at: • SIMATIC IPC Image & Partition Creator (https://support.industry.siemens.com/cs/de/de/view/109780775)
SIMATIC NET	Industrial communication	Online at: • SIMATIC NET (http://w3.siemens.com/mcms/automation/en/industrial-communications/Pages/Default.aspx)

2.2 Product highlights

SIMATIC IPC MD-57A, rugged and turnkey ready:

- A reliable device for configuration and simulation: Programming tool for SIMATIC industrial automation components
- A high-performance device for optimization and diagnostics: 3D applications and artificial intelligence
- A mobile device for visits to the customer or commissioning of machines or plants.



SIMATIC IPC MD-57A

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 polymer battery with 90 Wh (nominal capacity) ensures long mains-independent operation
- Enclosure with soft plastic corners - the electronics inside are therefore well protected
- Powerful graphics controller
- High-resolution, anti-reflective, 15.6" display in 16:9 full HD format guarantees ergonomic working in the TIA Portal

System availability

- Optional Image & Partition Creator data backup software

2.3 Application areas

The compact device is designed for mobile use:

- 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 rugged construction makes the Mobile Device particularly suitable for tough everyday industrial use. Among other things, the torsion-resistant and impact-resistant enclosure as well as the large-surface bumpers on the enclosure corners speak for this.

2.4 Features

Industrial functionality

Versatile memory cards

- Integrated card readers for SIMATIC:
  - SIMATIC Memory Card for S7-300/400
  - SIMATIC Memory Card (SMC) for S7-1x00
  - SIMATIC Micro Memory Card for S7-300/C7/ET200
- Programming interfaces for SIMATIC Memory Card, SMC, SIMATIC Micro Memory Card
- Integrated Multimedia Card Reader for:
  - SD card (including SD UHS-II, SDHC)
  - Multimedia Card (MMC)
- Integrated card reader for smart cards
- Micro SIM card compartment for telephony (no function)

Communication interfaces

- PROFIBUS-DP/MPI interface integrated, can also be used in virtual operating systems
- RS232 interface: COM1 interface with RS232 functionality integrated as standard.
- WLAN corresponding to IEEE802.a/b/g/n/ac R2/ax R2 (pre-standard)
- WiFi 6E, Bluetooth according to standard 5.3

High transfer rates

- 2 × Gigabit Ethernet interfaces (full, independent of each other) for connection to company networks and WAN (wide area network) without additional hardware
- HDMI interface
- 2 × USB4 Type C, protocol USB4, USB3.2 x2 and DisplayPort version 1.4a
  - Both with charging function for smartphone
- 4 × USB-3.x type A
  - 1 of them recessed for USB dongles, including practical cover cap

Processors

- Intel i7-12800HE 45W
- Intel i5-12600HE 45W

Memory expansion

- Main memory, 2 slots: 16/32 GB DDR5, max. 64 GB
- M.2 NVMe, internal: 512 GB, 1 TB, 2 TB; 4x PCIe Gen. 4
- SIMATIC IPC Slider (M.2 NVMe): without SSD, 512 GB SSD, 1 TB SSD, 2 TB SSD; 4x PCIe Gen. 3,
  for integrative data exchange: fast exchangeable SSDs, cross-device compatible for SIMATIC IPC

Multimedial and multilingual

- Colored stripes along cover (status displays)
- Illuminated keyboard (3 brightness levels and off)
- Keyboard layout:
  – QWERTZ (Europe, Germany, Switzerland)
  – AZERTY (France)
  – QWERTY (global standard, Italy, USA, UK, China, IN)
- Power cord with reverse polarity protected, special power plug (option): Europe, Italy, Switzerland, USA, UK, China, IN

Operating system

- Windows 11 IoT Enterprise (Version 22H2) 64-bit
- Windows 11 IoT Enterprise (Version 22H2) 64-bit with Recovery USB flash drive

Safety

- Media for installation and recovery
- Integrated Trusted Platform Module to TPM 2.0 standard
- Secure login with Smart Card, face field recognition and fingerprint sensor

Connection

- Extensive licenses for TIA Portal project engineering:

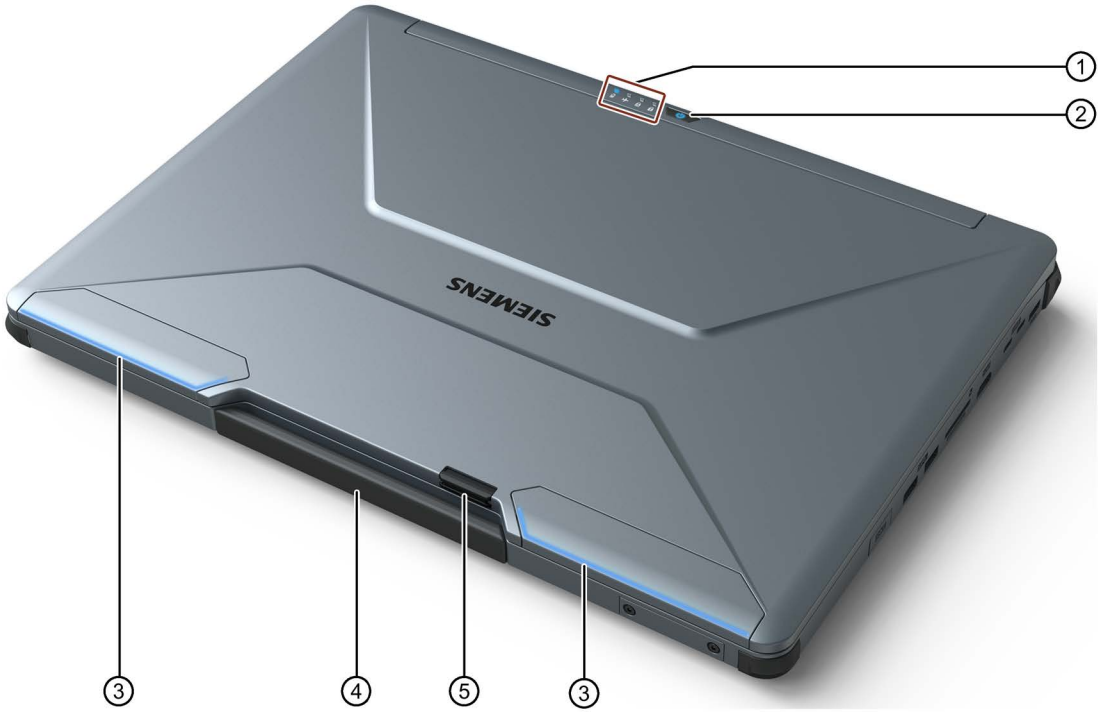
License	STEP 7	WinCC	Safety
Trial	STEP 7 Prof. Combo (V18 & 2017 SR1)	WinCC Adv. Combo (V18 & flex. 2008 SP8)	Safety Adv. (V18 & Distr. Safety 5.4 SP5)
STEP 7 & WinCC & Safety in the TIA Portal	STEP 7 Prof. V18	WinCC Adv. V18	Safety Adv. V18
STEP 7 & WinCC & Safety Combo	STEP 7 Prof. Combo (V18 & 2017 SR1)	WinCC Adv. Combo (V18 & flex. 2008 SP8)	Safety Adv. Combo (V18 & Distrib. V5.4 SP5)
Trial	STEP 7 Prof. Combo (V19 & 2017 SR1)	WinCC Adv. Combo (V19 & flex. 2008 SP8)	Safety Adv. (V19 & Distr. Safety 5.4 SP5)
STEP 7 & WinCC & Safety in the TIA Portal	STEP 7 Prof. V19	WinCC Adv. V19	Safety Adv. V19
STEP 7 & WinCC & Safety Combo	STEP 7 Prof. Combo (V19 & 2017 SR1)	WinCC Adv. Combo (V19 & flex. 2008 SP8)	Safety Adv. Combo (V19 & Distrib. V5.4 SP5)
Trial	STEP 7 Prof. Combo (V20 & 2017 SR1)	WinCC Adv. Combo (V20 & flex. 2008 SP8)	Safety Adv. (V20 & Distr. Safety 5.4 SP5)
STEP 7 & WinCC & Safety in the TIA Portal	STEP 7 Prof. V20	WinCC Adv. V20	Safety Adv. V20
STEP 7 & WinCC & Safety Combo	STEP 7 Prof. Combo (V20 & 2017 SR1)	WinCC Adv. Combo (V20 & flex. 2008 SP8)	Safety Adv. Combo (V20 & Distrib. V5.4 SP5)

2.5 External design of the device

2.5.1 Device view and interfaces

The following sections describe the external structure. Internal design of the device (overview) (Page 65) is described in the section "Expanding and assigning parameters to the device".

View with closed display



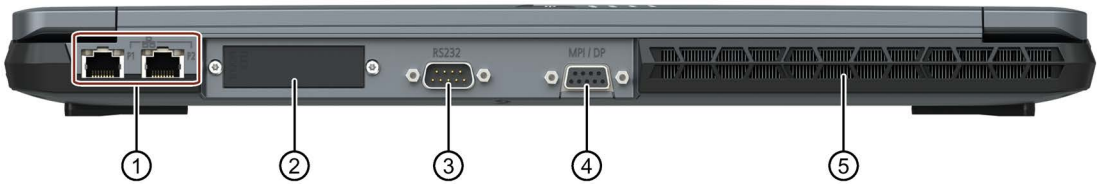
① Status displays (Page 23)
② On/off button (Page 17): Switching on and off with closed display
③ "Front" lighting on the display cover shows the battery charge status, see ①.
④ Carrying handle, retractable (see section "Notes on transport (Page 28)")
⑤ Display lock, see "Positioning the device (Page 41)"

Front view with display open



Left		Right	
①	Function keys, see "Keyboard (Page 20)"	①	Camera with Privacy cover for photo and video recording e.g. Online Meetings, Video chats, (see section "Camera and fingerprint sensor (Page 22)")
②	Alphanumeric keypad, see "Keyboard (Page 20)"	②	Display lock, see "Positioning the device (Page 41)"
③	Fingerprint (see section "Camera and fingerprint sensor (Page 22)")	③	Camera LED (white): lights up when the camera is recording/running.
④	Touchpad, see Touchpad and keys (Page 18)	④	2 × infrared (IR) LEDs left and right of camera, see ①, for close IR recording for field of view detection.
⑤	Stereo speaker, see "Hotkeys (Page 21)"	⑤	2 × microphone left and right of camera, see ①, for stereo recording e.g. Voice calls
⑥	Mouse buttons, see Touchpad	⑥	Device display, see "Positioning the device (Page 41)"
⑦	Carrying handle, retractable (see section "Notes on transport (Page 28)")	⑦	Status displays (Page 23), even with closed display
⑧	Recess for display lock (see ①, right)	⑧	On/off button (Page 17), functions even when display is closed
⑨	Slot for SIMATIC IPC Slider: fast, cross-device data exchange (see section "Replacing the SIMATIC IPC slider (M.2 NVMe) (Page 70)")	⑨	Numeric block of ten, see "Keyboard (Page 20)"
		⑩	Stereo speaker, see "Hotkeys (Page 21)"

View from rear



① 2 × RJ45 1 Gbps Ethernet for Profinet (see section "Connecting the device to systems and networks (Page 45)")

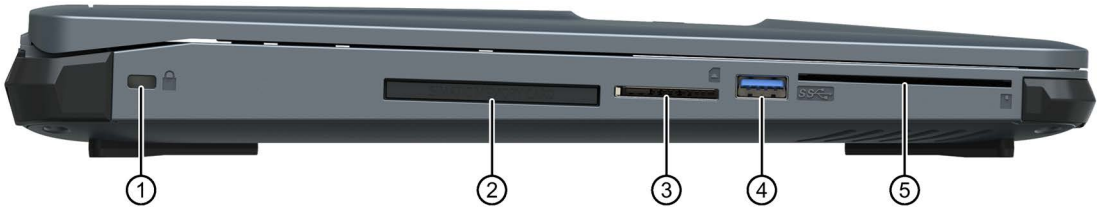
② Mounting slot for the interfaces of an expansion module (see section "Installing and removing SIMATIC IPC FLEX MODULE (M.2) (Page 67)")

③ COM1 interface, RS232 9-pin (see section "Connecting the device to systems and networks (Page 45)")

④ PROFIBUS interface MPI/DP for online S7 access, RS485 via 9-pin sub D socket (see section "Connect SIMATIC S7 or PROFIBUS (Page 45)")

⑤ Ventilation openings for air outlet, see section "Positioning the device (Page 41)"

View of left side



① Anti-theft device: Opening for lock (not included in scope of delivery)

② Card reader (Page 54) for:

- SIMATIC Memory Card for S7-300/400

③ Card reader (Page 54) for:

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

④ USB-A 3.2 Gen. 1

⑤ Smart Card Reader (Page 57) e.g. badge reader for:

- Smart Card according to ISO/IEC 7816 Smart Card Interface

View of right side



① USB-A 3.2 Gen. 1, recessed, for USB dongle e.g. BT mouse or USB headset for Voice calls (see section "Inserting and removing the USB dongle (Page 40)")

② 2 × USB-A 3.2 Gen. 2x1 (see section "Connecting peripheral devices (Page 46)"):

- Switchable, separate from USB C

③ Multimedia Card Reader (SMC, SD, MMC) (Page 55) for:

- SD card including SD UHS-II, SDHC
- Multimedia Card (MMC)
- SMC (SIMATIC MC): SIMATIC Memory Card for S7-1x00

④ SIM card compartment for card of phone provider (see section "Inserting a SIM card (Page 38)"):

- Micro SIM card
- Nano SIM card only with adapter to Micro SIM

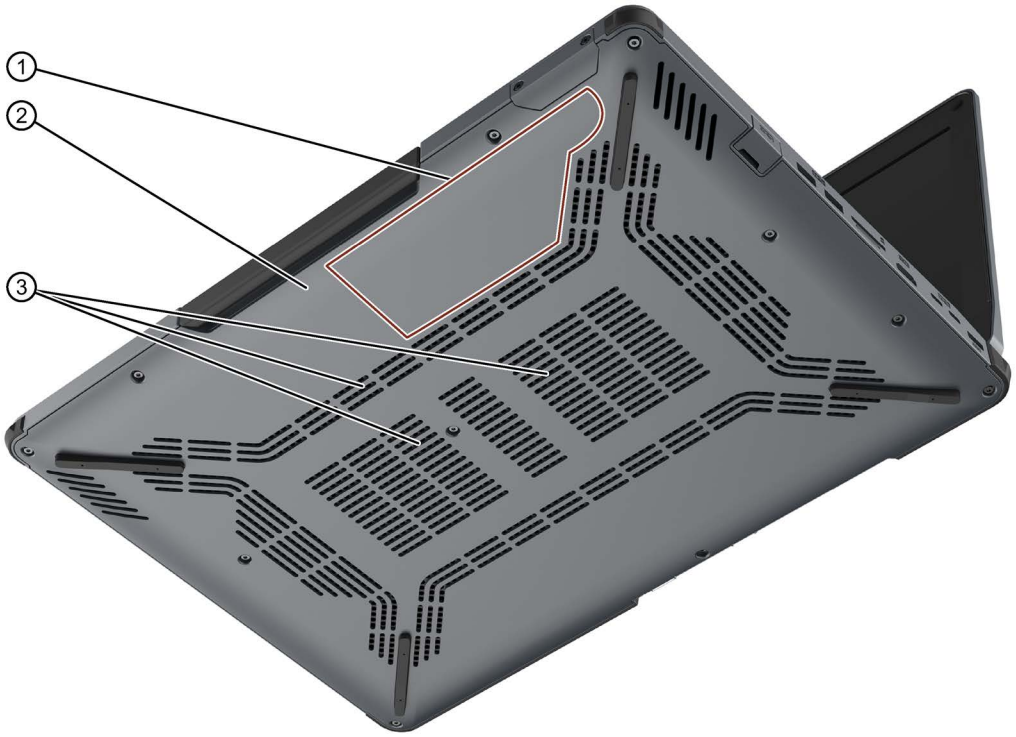
⑤ Video interface (HDMI) (see section "Connecting peripheral devices (Page 46)")

⑥ 2 × USB4-C:

- DisplayPort version 1.4a
- Switchable, separate from USB A
- At least 20 Gbps for connecting external graphic cards

⑦ Socket for connecting AC/DC power supply (see section "Connecting the power supply (Page 43)")

Bottom view



① Nameplate (see section "Device identification data (Page 37)")
② Enclosure cover (see section "Opening the device and switching off the power (Page 63)")
③ Ventilation openings for air intake, see section "Positioning the device (Page 41)"

2.5.2 Operator controls

2.5.2.1 On/off button



The on-off button (Power Button) ① has the following functions:

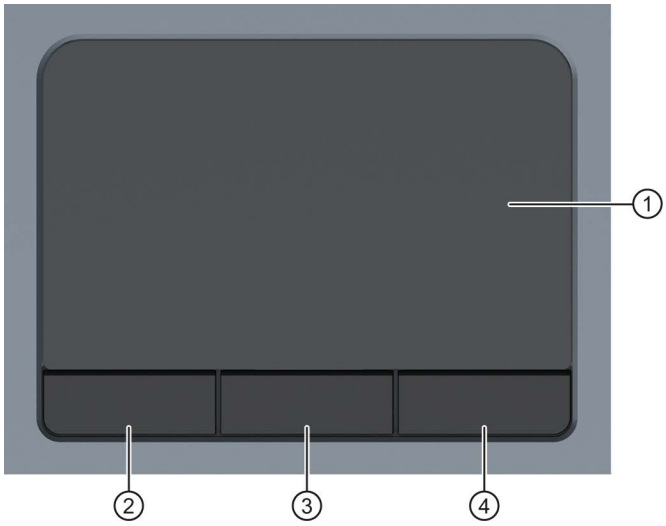
- Press button for about 1 second: switches the device on or switches the switched-on device off. The behavior depends on the settings in the Windows power options. Read the information in section "Switching the device on and off (Page 59)".
- Press button longer than 5 seconds in case of error: Windows/BIOS performs a reset (power button override) and shuts down the device. Depending on the BIOS settings, the device then goes into deep sleep (DeepSleep Mode).

- Press the button for longer than 10 seconds if the malfunction persists: a complete power cycle is executed (Full Board Power Cycle): the device is de-energized, compare section "Opening the device and switching off the power (Page 63)". This means that the battery does not have to be physically removed if the malfunction persists.

  The device then goes into deep sleep (DeepSleep Mode). If you press the button again briefly, the device is restarted.

2.5.2.2 Touchpad and keys

The device has a touchpad with separate mouse buttons. This input device is used for cursor control and menu operation in many programs and assumes the function of a mouse.



① Touchpad controls the position of the mouse pointer
② Left button emulates the left mouse button
③ Middle button emulates the middle mouse button
④ Right button emulates the right mouse button

You move the mouse pointer with your finger on the touchpad. This allows you, for example, to move selected objects (together with the left button). Gesture control for multiple open windows is supported.

The keys are not integrated into the surface, but are real, mechanically delimited keys:

- You trigger a left mouse click by pressing the left button. This allows you, for example, to select an object or place the cursor in a field.
- You trigger a right mouse click by pressing the right key. The response to the right mouse button depends on the user program.
- The middle button emulates the middle mouse button, whose function you select via the touchpad driver.

Functions

Function	Triggered by
Moving the cursor	Swipe a finger over the touchpad.
Gesture control: • Show open windows/desktop • Switch open windows/desktops	More than one finger: • Swipe up/down on touchpad with three fingers • Swipe left or right on the touchpad with three/four fingers
Mouse click, left	Briefly press the left button.
	Alternatively, briefly tap anywhere on the touchpad with your finger.
Mouse click, right	Briefly press the right button.
Double-click, left	Press the left key twice quickly.
	Alternatively, tap twice quickly with the finger on the touchpad.
Drag-and-drop: drag object, hold and move to new position	When the mouse pointer (see first line) is over the object, press the left button, hold it down and simultaneously swipe the touchpad with another finger. Release the left button at the new position of the object.

Note

Using the touchpad may require some practice.

The touchpad can be switched off and on by a hotkey, see section "Hotkeys (Page 21)".

The extended functions of the touchpad can be configured in the Windows Control Panel under "Mouse". Due to the technical principle, unintentional mouse clicks may occur during operation in environments with EMI. In such environments, it is a good idea to use an external mouse. Observe the information on electromagnetic compatibility in section "General specifications (Page 83)".

Problems during operation in an environment with EMC interference

In rare cases, the touchpad may malfunction due to high interference potential in the vicinity of the device.

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 it is essential to work in the disturbed environment, disable the tap function (the respective alternative for mouse click, left and double click, left) via the touchpad driver. Then use the keys below the touchpad for operation.

2.5.2.3 Keyboard

Keyboard arrangement

The keyboard is divided into the following function groups:

- Alphanumeric keypad
- Numeric keypad, separate
- Function keys
- Control keys and hotkeys

Autorepeat

All keys of the keyboard except the function keys FN + F[1-10] are equipped with a continuous function, i.e. the character is repeated as long as the key is pressed.

Keyboard labeling

There is a separate keyboard layout (arrangement of characters) for each of the languages that can be ordered, see chapter "Features (Page 11)", section "Multimedial and multilingual".

Keyboard illumination

The keys can be illuminated in three brightness levels 1, 2, 3 and 0 (OFF). Use the key combination <Fn + F3> to switch from one brightness level to the next.

Alphanumeric keyboard field

The largest key area is the alphanumeric keypad with keys for letters, digits and special characters.

Key	Function
	**CapsLock (upper case key)** The CapsLock key enables upper case mode, see also "Status displays (Page 23)": all letters are output as capital letters. With a multiple labeled key, the upper left character is displayed. You can exit upper case mode by pressing the key again.
	**Start (Windows Start key)** The Start key opens the Windows Start menu.

Numeric keypad

The numeric keypad is located to the right of the alphanumeric keypad. It provides a compact numeric keypad with arithmetic operators + - x / and <Enter>. Use it to quickly type columns of numbers and add up totals in the table cell in Excel, for example.

Key <NUM> (NumLock)

Instead of entering numbers, you can alternatively control the cursor and screen with the keys of the numeric keypad (double assignment): By pressing the <Num> key you activate and deactivate this cursor/screen control, see also "Status displays (Page 23)".

Function keys

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

Control keys e.g. Fn key

You can use the standard functions labeled on the right side of each function key by pressing and holding down the <Fn> control key beforehand, see section "Hotkeys (Page 21)".

2.5.2.4 Hotkeys

Hotkeys (key combinations)

With the <Fn> key and a 2nd key, e.g. a function key, you activate further key codes for certain applications.

Key	Function
Fn + ESC	Switching the touchpad on and off
Fn + F1	Standby mode/hibernation mode: based on the configuration of the energy-saving key in the Windows energy options.
Fn + F2	Switch flight mode on and off (WiFi/WLAN, Bluetooth).
Fn + F3	Set keyboard illumination: 3 brightness levels and off
Fn + F4	Toggle screen: Device display or external monitor
Fn + F5	Switch loudspeaker on and off (mute)
Fn + F6	Loudspeaker: Decrease volume
Fn + F7	Loudspeaker: Increase volume
Fn + F8	Switch microphone on and off (mute)
Fn + F9	Reduce brightness of screen
Fn + F10	Increase brightness of screen
Fn + F11	Idle
Fn + F12	Scrolling
Fn + Del	Paste
Fn + Shift right	Print

2.5.2.5 Camera and fingerprint sensor

The device has a built-in camera surrounded by 2 infrared (IR) LEDs. The device offers a comprehensive enterprise-level protection concept:

- Access protection with Privacy-coverage
- Identity verification via field of view and fingerprint

Privacy-cover

The camera has a sliding cover to protect your privacy e.g. from spying: This covers more than just the camera:

- Camera off.
- Infrared (IR) LEDs for close IR recording switched off.
- Microphones switched off.
- These devices no longer appear in the Windows Device Manager, providing additional access protection from the inside.
- The complete detection module is de-energized.

To activate the Privacy-cover, slide it all the way to the right until it stops.

NOTICE
No camera and no microphone If you activate the Privacy-cover, the camera and microphone will no longer be found in the operating system. To set up or install the camera and microphone, temporarily disable the Privacy-cover.

Face detection

When you log in, your face is illuminated in front of the two infrared (IR) LEDs and captured by the camera (near-IR capture). You set up face field recognition via the Microsoft operating system component, "Windows Hello". Search for "Windows Hello face authentication" in Windows Help.

NOTICE
No access protection through face field recognition If the Privacy-cover is enabled **after** the device is started, the camera remains switched off even if you open the cover to log in: Login via face field recognition is not possible. To use face field recognition when logging in, disable the Privacy-cover **before** switching on the device.

Fingerprint recognition

When logging in, your fingertip is recognized on the fingerprint sensor. You set up fingerprint recognition via the Microsoft operating system component, "Windows Hello". Search for "Windows Hello fingerprint authentication" in Windows Help.

2.5.3 Status displays



The status displays show the state of the device, battery and keyboard, depending on the respective operating state in the first column, see section "Operating modes (Page 60)".

- The status indicators are also visible when the display is closed.
- The "Front" light on the display cover shows the battery charge status from a distance.

Item	Operating state	Status indicator	Description
①	**LED "Operation"** [1] **(on-off button) shows the operating state**		
	See right	BLUE BLUE flashing WHITE OFF	Device switched on Device in standby Device is shut down Device is in deep sleep (DeepSleep, power consumption very low, see section "Notes on battery mode (Page 30)")
②	**"Battery" LED indicates battery charge status**		
	Device switched on	WHITE GREEN BLUE RED	Battery fully charged, power supply unit connected Battery charging, power supply unit connected Battery full or not critical, power supply unit **not** connected Battery capacity critical (<10% physical), power supply unit **not** connected
	Device in standby	WHITE [2] GREEN BLUE [2] RED	Battery fully charged, power supply unit connected Battery charging, power supply unit connected Battery full or not critical, power supply unit **not** connected Battery capacity critical (<10% physical), power supply unit **not** connected
	Device switched off	GREEN RED OFF [#] [#] also in sleep state (Hibernation)	Battery is charging, power supply connected Battery capacity critical (<10% physical) Power supply **not** connected Battery fully [#] charged or uncritical [#] in sleep state (Hibernation), only if power supply connected
	Device in DeepSleep	OFF	Depending on the DeepSleep/Sx settings in the BIOS, the power consumption is very low. Charging via USB, e.g. of cell phones, is then switched off.
F	**"Front" illumination, see "View with closed display"**, section "Device view and interfaces (Page 13)"		
	Device switched on	WHITE GREEN BLUE RED	Battery fully charged, power supply unit connected Battery charging, power supply unit connected Battery full or not critical, power supply unit **not** connected Battery capacity critical (<10% physical), power supply unit **not** connected
	Device in standby	WHITE flashing [2] GREEN flashing: BLUE flashing: [2] RED flashing:	Battery fully charged, power supply unit connected Battery charging, power supply unit connected Battery full or not critical, power supply unit **not** connected Battery capacity critical (<10% physical), power supply unit **not** connected
	Device switched off	GREEN RED OFF	Battery fully charged, power supply unit connected Battery capacity critical (<10% physical), power supply unit **not** connected Battery full or not critical
	Device in DeepSleep	OFF	Depending on the DeepSleep/Sx settings in the BIOS, the power consumption is very low. Charging via USB, e.g. of cell phones, is then switched off.
③	**LED "Flight mode"** [3] **indicates no radio reception and transmission mode**		
	The device is switched off	ORANGE OFF	Flight mode switched on: **no** radio reception and transmission operation; protection against radio frequency interference, e.g. in aircraft Flight mode switched off: radio connections possible; danger of radio frequency interference.

1 No special LEDs for operation of PROFIBUS interface MPI/DP, mass storage, NVMe or card reader.

2 The LED is switched off after 60 seconds (no status display) to save power.

3 No special LEDs for WLAN or mobile wireless.

Keyboard

The two status displays for the Keyboard (Page 20) show the current status of the "NumLock" and "CapsLock" toggle keys. After switching on the device, these status displays light up briefly: The keyboard is ready.

Item	Meaning	Status indicator	Description
④	**LED "NumLock"**	BLUE OFF	Cursor/screen control on the numeric keypad (and device) switched on Cursor/screen control switched off (or device in standby)
⑤	**LED "CapsLock"**	BLUE OFF	Upper case on the keyboard (and device) switched on Upper case switched off (or device in standby)

2.6 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) (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 on your device:
6. Select the "Accessories" tab in the display area.

The following software products, among others, can be additionally ordered for your device:

Software	Description
SIMATIC IPC Image & Partition Creator	SIMATIC IPC Image & Partition Creator enables easy backup and quick recovery of individual data and files, complete hard disks and other data storage media. The intuitive user interface provides disk and partition management functions.
SIMATIC IPC DiagMonitor	SIMATIC IPC DiagMonitor also offers, in addition to local monitoring functions, options to remotely monitor IPCs, to communicate with other systems, to alarm worldwide and to create proprietary monitoring applications.

Further information on the software products and references to the online catalog and ordering system (Industry Mall (https://mall.industry.siemens.com)) can be found on the SIMATIC IPC software (http://www.automation.siemens.com/mcms/pc-based-automation/en/industrial-pc/expansion_components_accessories) homepage.

Safety instructions 3

3.1 General safety instructions

⚠ WARNING

The installer of the system is responsible for the safety of a system in which the device is integrated.

There is a risk of malfunction which could result in death or serious injury.

- Ensure that only suitably qualified personnel perform the work.

Risk of physical injury

⚠ CAUTION

Risk of physical injury

The device is heavy, may fall down, injure persons and be damaged.

- Use handles and carrying handle on the front panel to carry and lift the device.

Risk due to electric shock

⚠ WARNING

Risk of electric shock

The on/off button and on/off switch do not fully disconnect the device from the mains.

There is also a risk of fire if the device or connecting lines are damaged.

- Always fully disconnect the device from the mains voltage before performing work on the device or when the device will not be used over an extended period of time.
- For control cabinet mounting: Use an easily accessible central mains circuit breaker located as close to the device as possible.

Risk of lightning strikes

DANGER

Risk of lightning strikes

A lightning flash may enter the mains cables and data transmission cables and jump to a person.

Death, serious injury and burns may result.

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

Avoiding functional restrictions

NOTICE

Possible functional restrictions in case of non-validated plant operation

The device is tested and certified on the basis of the technical standards. In rare cases, functional restrictions can occur during plant operation.

Validate the correct functioning of the plant to avoid functional restrictions.

Use in industrial environments

Note

Use in an industrial environment without additional protective measures

This device was designed for use in a normal industrial environment according to IEC 60721-3-3.

ESD directive

Electrostatic sensitive devices can be labeled with an appropriate symbol.



NOTICE

Electrostatic sensitive devices (ESD)

The device contains electronic components that may be destroyed by electrostatic charges. This can result in malfunctions and damage to the machine or plant.

Take corresponding precautionary measures before you open the device.

3.2 Notes on ambient and environmental conditions

Application planning

Observe the following for device application:

- Do not place the device near heat sources such as heaters, hot air inlets, stoves, or other heat-generating equipment (including amplifiers or other heat-generating devices).
- Do not cover the air inlets at the bottom: Do not use the device on a cushion, upholstered chair or in bed.
- Do not place heavy objects on the device, as that could damage the display.
- Do not place any objects and avoid exerting excessive force on the display, as this could break the glass.
- Never touch the screen surface with a ballpoint pen, pencil, or any other sharp or metallic object, as this could scratch the display.

  Use your finger or a stylus to make inputs on the touch(pad).
- To maximize the service life of the backlight, set automatic turn off in the energy management options. Do not use screen savers or any other software that impede energy management.

Radiofrequency radiation

⚠ CAUTION

Immunity to radiofrequency radiation

The device has an increased immunity to radio frequency radiation according to the specifications on electromagnetic compatibility in the technical specifications.

RF radiation, e g. from a cell phone, may result in malfunctioning of the device. Persons may be injured and the plant damaged.

- Avoid RF radiation.
- Remove radiation sources from the environment of the device.
- Switch off radiating devices.
- Reduce the radio output of radiating devices.
- Observe the information regarding electromagnetic compatibility.
- Observe the information in the technical specifications.

3.3 Notes on 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 that the original power supply can be operated with the local mains voltage. If it cannot, obtain the appropriate power adapter for the original power supply. Only use the supplied original power supply and no other voltage converters!

Note

Using the 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 17)).
- 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

Device damage during transport and storage

If a device is transported or stored without packaging, shocks, vibrations, pressure and moisture may impact the unprotected unit. Damaged packaging indicates that ambient conditions have already had a massive impact on the device and it may be damaged.

This may cause the device, machine or plant to malfunction.

- Keep the original packaging.
- Pack the device in the original packaging for transport and storage.

Damage

⚠ WARNING

Electric shock and fire hazard due to device damage

A damaged device may be under hazardous voltage and start a fire in the machine or plant. A damaged device has unpredictable properties and states.

Death or serious injury could occur.

- Avoid installing and commissioning a damaged device.
- Label the damaged device and keep it locked away. Have the device repaired without delay.

NOTICE

Damage from condensation

If the device has been exposed to low temperatures or extreme temperature fluctuations during transport, it is possible that moisture has condensed on or inside the device (condensation).

Moisture can cause a short-circuit in electrical circuits and damage the device.

- Store the device in a dry place.
- Bring the device to room temperature before commissioning.
- Do not expose the device to direct thermal radiation from a heater.
- If condensation develops, wait approximately 12 hours or until the device is completely dry before switching it on.

3.4 Notes on battery mode

Danger notices

⚠ WARNING

Danger of explosion and fire and release of harmful substances!

The battery may explode, cause burns or release toxic substances. This can result in personal injury or property damage.

- Do not open or damage the battery. Do not expose battery to heat or fire. Keep the battery away from children.
- For this reason, do not throw batteries into fire, do not solder on the cell body, do not short-circuit, do not reverse polarity, do not heat above 100°C, dispose of correctly, and protect against direct sunlight, dampness and condensation.

⚠ WARNING

Danger of damage to the device or destruction of the battery

Only use the supplied battery or an original spare part. For information on the original space parts, refer to section "Accessories (Page 24)".

⚠ 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 submerge the battery in water and protect it from 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 batteries are recyclable. 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.

⚠ 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. Only replace the battery with the same or equivalent type recommended by the battery manufacturer. When disposing of batteries, the local legal regulations must be observed.

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 enables mobile use of the device, independent 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:

- The charging process takes a maximum of approx. 3 hours, with the device switched off or on and also independent of the system load.
- The device monitors the battery and its temperature: Depending on its use, the internal battery temperature may exceed the permissible ambient temperature by an amount which limits charging. You can find more detailed information in chapter "General specifications (Page 83)", section "Climatic conditions".
- Battery charging stops when the battery is full or when the high temperature limit for charging the battery is exceeded. The charge level achieved can be queried in Windows.
- 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 charging level of the battery is indicated by different colors, see section "Status displays (Page 23)".

Current consumption in battery operation

If the following functions are enabled, the power consumption is relatively high, even in sleep mode (Hibernation):

- iAMT: If you use Intel® AMT, the battery will be discharged in 1-2 weeks.
- WOL: If you use "Wake On LAN", the battery will be discharged in 1-2 weeks.
- USB Charge: If you use the USB charging function and power a cell phone via USB, for example, the battery will be discharged in a few hours.

If the DeepSleep/Sx settings in the BIOS are enabled, the device only draws a very small amount of current from the battery when it is switched off:

- Charging via USB, e.g. of cell phones, is switched off.
- All status displays are off.
- The battery can be stored installed in the device for several months.

However, if you plan not to use the device for a longer period of time, you should remove the battery from the device as a precaution. Ideal storage conditions for the battery pack:

- Ambient temperature of approx. 20 °C and
- battery charge level of approx. 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.

3.5 Information on I/O devices

⚠ CAUTION

Fault caused by I/O devices

The connection of I/O devices can cause faults in the device.

The result may be personal injury and damage to the machine or plant.

- Only connect I/O devices which are approved for industrial applications in accordance with EN 61000-6-2 and IEC 61000-6-2.
- I/O devices that are not hotplug-capable may only be connected after the device has been disconnected from the power supply.

NOTICE

Damage through regenerative feedback

Regenerative feedback of voltage to ground by a connected or installed component can damage the device.

Connected or built-in I/Os, for example, a USB drive, are not permitted to supply any voltage to the device.

Regenerative feedback is generally not permitted.

Note

When measuring the counter emf, remember the following:

- The computer in question must be turned off and the power supply connector must be plugged in.
- During the measurement, all cables from the plant to the computer should be connected.
- All other components in the plant must be active.

3.6 Safety notices for WLAN and Bluetooth operation

- 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 device 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 device 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 device if you go in the vicinity of flammable gases or in an explosive environment (e.g. paint shop).

Siemens Aktiengesellschaft is not responsible for radio or television interference caused by unauthorized modifications to this equipment. Furthermore, Siemens Aktiengesellschaft assumes no responsibility for the replacement or exchange of connecting cables and devices not recommended by Siemens Aktiengesellschaft. 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.

See also

Hotkeys (Page 21)

3.7 Notes on device and system extensions

Device and system extensions

⚠ CAUTION

Fire hazard due to overheating of the device

Expansion cards generate additional heat. The device can overheat or cause a fire.

- Observe the safety and installation instructions for the expansion cards.
- Observe the max. permissible power consumption values.

NOTICE

Damage caused by device and system extensions

Device and system expansions may contain faults and affect the entire device, machine or plant. They may also violate safety rules and regulations regarding EMC.

If you install or replace device or system expansions and damage your device, the warranty is voided.

- Always disconnect the power plug before you open the device.
- Only install device or system expansions designed for this device.
- Observe the information on "Electromagnetic compatibility" provided in the technical specifications.

Contact your technical support team or the point of sale to find out which device and system expansions are suitable for installation.

Limitation of liability

- All technical specifications and approvals for the device are only valid if you use expansion components that have a valid CE approval (CE mark).
- Observe the installation instructions for expansion components in the associated documentation.
- UL approval of the device only applies when the UL-approved components are used according to their "Conditions of Acceptability".
- We are not liable for functional limitations caused by the use of third-party devices or components.

4 Installing and connecting the device

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

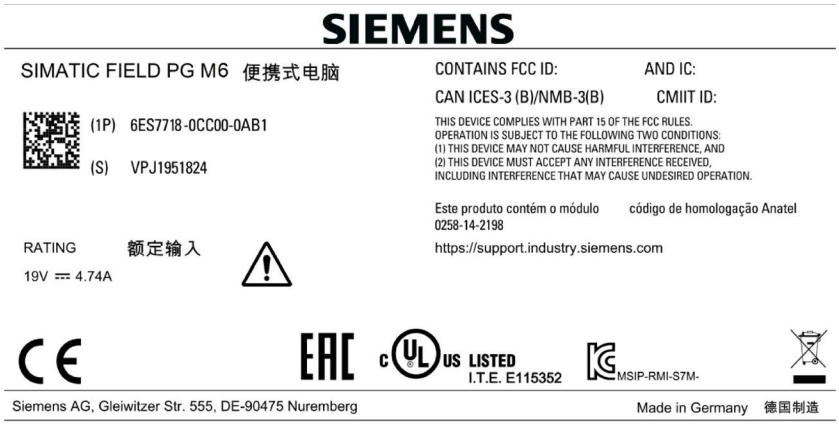
The device can be clearly identified with the help of the identification data in case of repairs or loss.

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		

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.

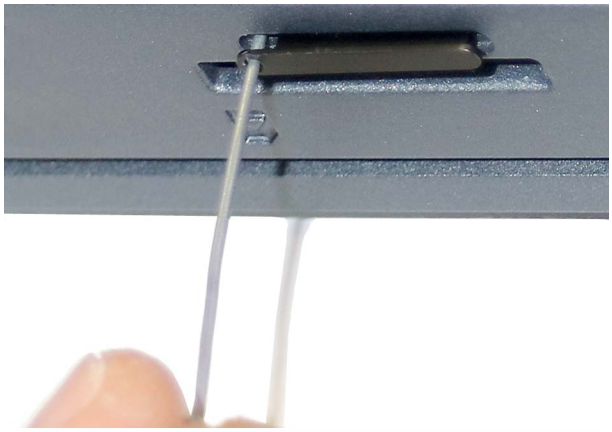
4.1.3 Inserting a SIM card (no function)

Requirement

- The device is switched off.

Procedure

1. Close the display and place the device with the display facing down (upside down) on a soft surface.
2. Insert a thin pin or wire into the opening as shown until the SIM card tray pops out.

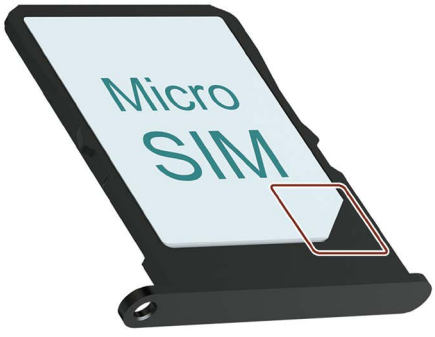


3. Pull the SIM card tray out evenly on the left and right without tilting.



4. Place the SIM card tray as it comes out (upside down) on a solid surface.
5. Insert the SIM card from above into the SIM card compartment as shown:
   - Do not touch the chip contacts of the SIM card.
   - The label faces up, the chip contacts are at the bottom.
   - The notch on the SIM card must be aligned with the notch in the card compartment, as marked in the illustration.





6. Push the SIM card compartment all the way back into the SIM card slot, without using force and without tilting.

   Please note the following:

   - The SIM card tray snaps into place at the back.
   - The SIM card compartment lies flat all the way in the enclosure.



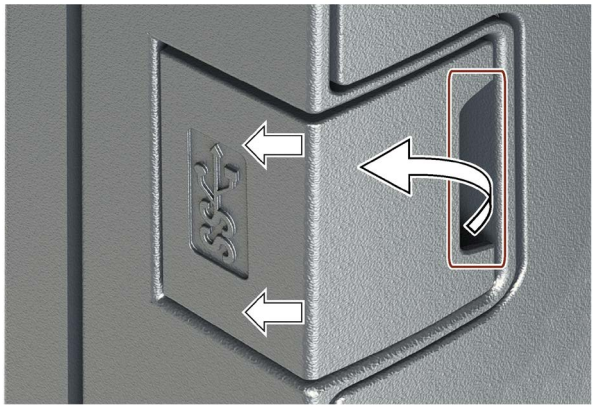
4.1.4 Inserting and removing the USB dongle

The device has a recessed USB port so that a USB dongle (see section "Features (Page 11)") does not protrude from the device.

Procedure

Inserting the USB dongle

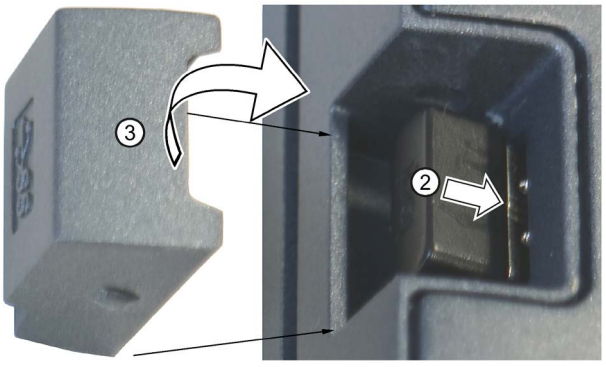
1. Remove the cover cap on the recessed grip as shown.



2. Insert the USB dongle into the recessed USB port.
3. Insert the cover cap at the bottom of the recess and turn it towards the device with the recessed grip.

   Please note the following:

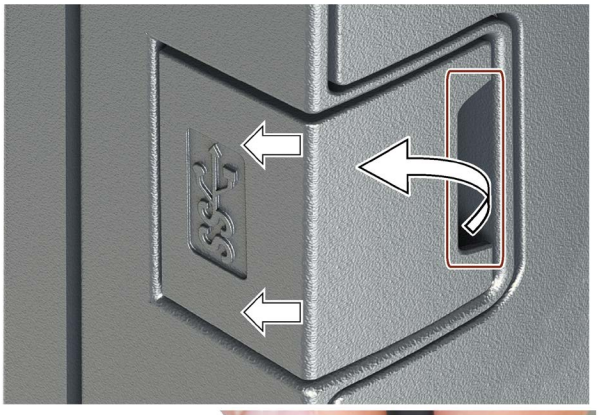
   - The cover cap snaps into place on the enclosure.
   - The cover cap lies flat completely in the enclosure, see step 1.



Removing the USB dongle

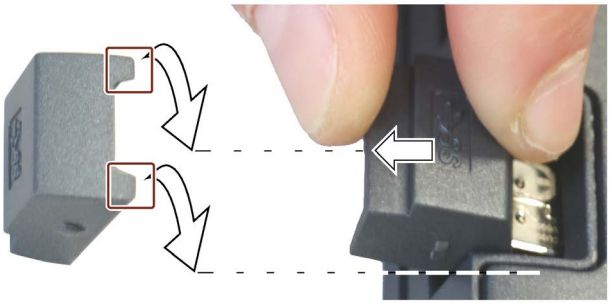
1. Remove the cover cap on the recessed grip as shown.

   Place the cover cap vertically as on the device.



2. Turn the cover cap horizontally so that the fork lugs point downwards as marked in the figure.

   Grasp the dongle with the fork lugs of the cover cap and pull it out of the device.



3. Replace the cover cap. Please note the following:
   - The cover cap snaps into place on the enclosure.
   - The cover cap lies flat completely in the enclosure, see step 1.

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.

⚠ CAUTION

Danger due to overheating of the device

The air inlets are located on the underside of the device, see section "Bottom view" in section "Device view and interfaces (Page 13)".

If these air inlets are covered to a great extent, cooling is impaired, as well as if there is not enough clearance for the air outlet, see section "Rear view". The device can overheat and be damaged with consequences for people, machines and the plant.

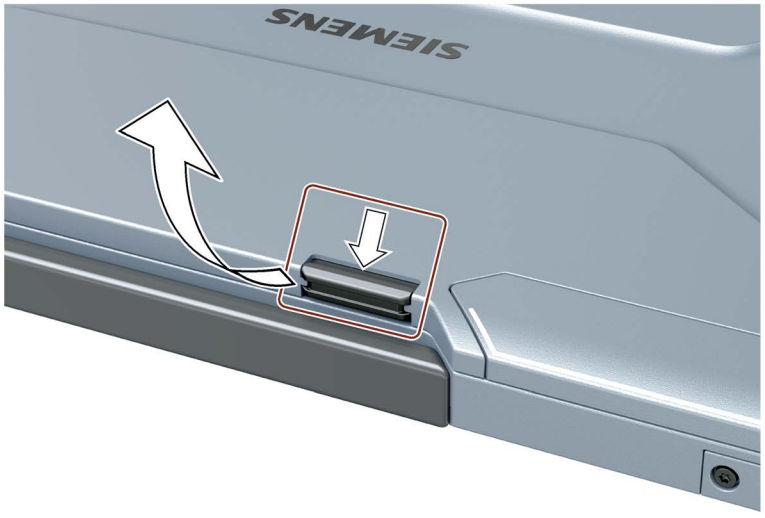
Ensure that these ventilation openings are not covered.

Do not place the device on very soft surfaces, e.g. cushions or pillows.

Maintain a minimum distance of 15 cm to obstacles e.g. walls behind the device.

NOTICE
Risk of damage when setting up Always place the device on its underside, otherwise there is a risk of it falling over and damaging sensitive device parts.

- Set up the device in a way that ensures comfortable posture and safety.
- Place the device with the underside on a level surface and at a comfortable height and distance.
- Ensure that a power outlet is easily accessible near your workplace.
- Ensure there is enough space to connect peripheral devices.
- Open the display by pressing the display latch, see marking:



- Flip the display open and adjust it to a convenient viewing angle. The display can be adjusted to any angle of inclination between 0 ... 170°.
- You can adjust the brightness of the display, see section "Hotkeys (Page 21)".

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 supply unit supplies the device with power in mains operation in 120 V and 230 V power 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. For information on the original space parts, refer to section Accessories (Page 24).

⚠ 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

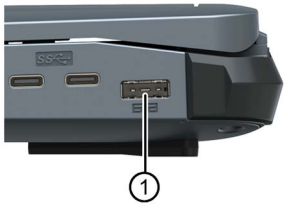
For countries other than the USA and Canada

- **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 plug into the corresponding socket for connection to the power supply ① on the right 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

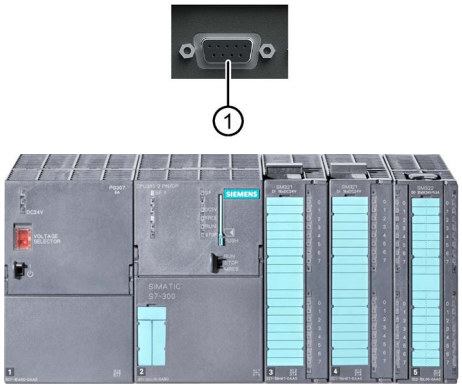
You can connect the PG to a SIMATIC S7 automation system or a PROFIBUS network via the electrically isolated*) MPI/DP interface. The MPI connecting cable (5 m) for connecting to SIMATIC S7-CPUs (order number: 6ES7901-0BF00-0AA0) is supplied as standard. Transmission rates of no more than 187.5 Kbps are 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).

*) Electrical isolation within the safety extra-low voltage circuit (SELV)

Connecting the device 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 connectors
   6ES7972-0BB10-0XA0 or
   6ES7972-0BB20-0XA0
   6ES7901-0BF00-0AA0
   (5 m length)



NOTICE
Risk of damage to the device
Using an incorrect plug-in cable may damage the interface.

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 ports can be used for communication and for data exchange with automation devices such as SIMATIC S7.

PROFIBUS / MPI

The electrically isolated PROFIBUS interface can be used to interconnect distributed field devices or for coupling to SIMATIC S7.

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

RS232 interface (COM1)

For connection of serial periphery, for example, pointing instruments.

WLAN

Via the integrated WLAN interface, you can connect the device to an Industrial Wireless LAN network.

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 connect monitors via the two USB4-C ports with DisplayPort and the HDMI interface.

Alternatively, you can also connect monitors with other interfaces via adapters.

Connecting devices to the USB socket

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

See also

General specifications (Page 83)

Hotkeys (Page 21)

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

- 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 the startup aborts or encounters errors, you must reinstall (Restore) the operating system to obtain full operational reliability. You can find additional information on this in Installing the operating system, software and drivers (Page 81).

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 Using the SIMATIC software with a 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

Installed software for which no license key is included in the scope of delivery cannot be used or only runs in trial mode.

Operating the device

6

6.1 Notes on operation

You can operate the device in the following positions.

⚠ CAUTION

Risk of physical injury and device damage

The device is heavy and may injure persons and suffer damage if dropped.

- Hold the device on the sides using both hands.
- Protect the device from accidental drops.
- Transport the device by the carrying handle.
- Use the carrying elements from the accessories and transport the device in a device bag.

⚠ CAUTION

Danger due to overheating of the device

The air inlets are located on the underside of the device, see section "Bottom view" in section "Device view and interfaces (Page 13)".

If these air inlets are covered to a great extent, cooling is impaired, as well as if there is not enough clearance for the air outlet, see section "Rear view". The device can overheat and be damaged with consequences for people, machines and the plant.

- Ensure that these ventilation openings are not covered.
- Do not place the device on very soft surfaces, e.g. cushions or pillows.
- Maintain a minimum distance of 15 cm to obstacles e.g. walls behind the device.

Operating device on table

- Place the device on a flat, smooth, clean and stable surface, e.g. desk.
- Protect the device adequately against inadvertent falling, i.e. do not place the device over the edge of the surface.

Mobile use of device

- Hold the device on both the left and right sides.

Permanently supplying the device with power

- The device is not intended for uninterrupted continuous operation:
  - The device can be permanently connected to the mains 24h/7d.
  - The device is intended for 40h/5d office operation and shut down the rest of the time.
- Place the device on a stable, flat surface e.g. desk.
- Connect the power supply unit, see section "Accessories (Page 24)".

  Only use the external power supply supplied with the device or an original spare part.

6.1.1 Optional expansion card in battery mode

You can run a high-performance expansion card (option available for order), for example, discrete graphics such as that from NVIDIA.

Note

Expansion card with reduced performance

When the power supply is disconnected and the device is powered by the battery, the performance of the expansion card is reduced.

To achieve full performance, operate the device with the power supply connected.

6.1.2 USB socket with charging function

The USB ports (see section "Device view and interfaces (Page 13)") have a charging function.

⚠ CAUTION

Fire hazard due to overheating of the device

If the permissible total power is exceeded, the device may overheat and be damaged. An overheated device can cause a fire with consequential damage to people, machines and equipment.

The total power of all USB ports and built-in expansion modules (M.2) must not exceed 15 W in total.

Observe the following:

- Each USB Type C socket can output 5 V/3 A in individual operation, with a maximum of 5 V × 3 A = 15 W per port.

  This allows you to charge USB devices such as smartphones with up to 3 A even when the device is switched off.
- Both USB Type C sockets together can output 5 V × (3 A + 0.9 A) = 19.5 W.
- Each USB Type A jack can output 5 V/0.9 A.
- The USB Type A sockets together can output 5 V × (0.9 A + 0.9 A+ 0.9 A) = 13.5 W.

- The USB ports of both types (Type C and Type A) can output a total of 19.5 W + 13.5 W = 33 W together.
- An M.2 module can output a maximum of 3.3 V/2.5 W.

The USB circuit is compliant with the standard "Power Delivery 3.0". Apple's Divider Mode is not supported.

To use the charging function in battery mode even when the device is switched off, activate the "USB-C Charging" function in the BIOS "Setup" menu.

Note

To only discharge the battery minimally, deactivate the "USB-C Charging" function again.

6.1.3 M.2 NVMe SSDs

M.2 NVME SSDs with different capacities can be used.

Note

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

6.1.4 Card reader

6.1.4.1 SIMATIC cards for card reader

The card readers are located on the side of the device, see section "Device view and interfaces (Page 13)". You can operate the following SIMATIC cards:

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 Multimedia Card Reader (SMC, SD, MMC)

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

- SMC (SIMATIC MC)
- SD card (including SD UHS-II)
- MMC (Multimedia 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.

For information on the location of the microSD card reader, see section "Device view and interfaces (Page 13)".

- The contact areas of the card face downward. When inserting the card, pay attention to the correct positioning of the card.
- The card is operated by a push-push function. To remove the card press it lightly towards the device.

NOTICE
Do not insert or remove cards while in use. Inserting or removing a card while it is in use could damage it. • Do not remove the card as long as the corresponding status display is lit, see section "Status displays (Page 23)". • Observe the ESD guidelines (Page 92).

6.1.4.3 Using microSD cards

You can use the following cards:

- microSD cards

For information on the location of the microSD card reader, see section "Device view and interfaces (Page 13)".

- The contact areas of the card face downward and point toward the display. When inserting the card, pay attention to the correct positioning of the card.
- The card is operated by a push-push function. To remove the card press it lightly towards the device.

NOTICE
Do not insert or remove cards while in use. Inserting or removing a card while it is in use could damage it. • Remove the card as long as the corresponding status display is lit, see section "Status displays (Page 23)". • Observe the ESD guidelines (Page 92).

6.1.4.4 Modifying SIMATIC Micro Memory Cards

You can read, program, or erase SIMATIC Micro Memory Cards. For information on the location of the SIMATIC Memory Card reader, see section "Device view and interfaces (Page 13)".

Procedure

1. Switch on the device.
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. Pull the SIMATIC Micro Memory Card out of the card reader.

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 as long as the status display of the programming/reading EPROM is lit. • Observe the ESD Guidelines (Page 92).

6.1.4.5 Editing SIMATIC Memory Cards

You can read, program or delete SIMATIC Memory Cards. SIMATIC Memory Cards are available for SIMATIC S7 hardware. For information on the location of the SIMATIC Memory Card reader, see section "Device view and interfaces (Page 13)".

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. Pull the SIMATIC Memory Card out of the Card Reader.

NOTICE
Do not insert or remove cards while in use. Inserting or removing a card while it is in use could damage it. • Do not remove the card as long as the corresponding status display is lit, see section "Status displays (Page 23)". • Observe the ESD guidelines (Page 92).

Note

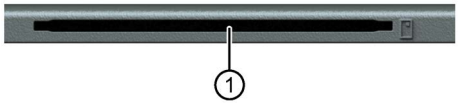
Malfunction

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.

6.1.4.6 Smart Card Reader

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



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

6.1.5 General information about WLAN and Bluetooth

For information on the standard of WLAN and the Bluetooth version, refer to section "General specifications (Page 83)".

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

You can find more detailed information about configuration and operation of the WLAN 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).

6.1.6 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 "Using the SIMATIC software with a License Key (Page 49)".

- 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

6.2 Switching the device on and off

The operating system and system software of your device are pre-installed.

Following the initial switch on, the operating system is set up automatically on the device.

CAUTION

Device damage when switching on the device

If the Windows setup or startup is interrupted, or a default value in the BIOS setup is changed, Windows will not be installed correctly or will not start completely. This damages the device and jeopardizes the operational safety of the machine and plant.

- 1. Do not press the on/off button several times in succession.
- 2. Do not switch off the device while Windows is being set up or started. Secure the device to prevent accidental switch off.
- 3. Do not pull out the power plug. Secure the power plug during operation.
- 4. Do not change the default values in the BIOS setup.
- 5. Do not touch the screen, buttons, or external keyboard or mouse while Windows is starting.

  Should case 2 or 3 nevertheless occur, restart the device. Press the <Fn1> key while the device is booting and before Windows starts. Start the recovery operation in the Recovery menu.

Switching on the device

1. To use the face detection when logging in, disable the Privacy-cover **before** switching on the device, see section "Camera and fingerprint sensor (Page 22)".
2. Press and hold the on-off button for **one second** (see "On/off button (Page 17)") until the "Operation" status display lights up.
3. Follow the instructions on the screen.
4. The following steps should only be performed the first time the device is switched on in its factory state: See section "Initial startup: Commissioning the operating system (Page 47)".

Note

Once the operating system has been set up, the device may restart.

Result

From now on, the interface of the operating system will appear every time you switch it on.

Switching off the device

NOTICE
Forced shutdown If you press and hold the on-off button for **five seconds or longer**, the device will be forcibly switched off, see section "On/off button (Page 17)". In so doing, any programs still open may be damaged and data may be lost. During operation, only press the on/off button in the event of an error or persistent malfunction.

1. Ensure that you all programs open on the desktop are closed.

   Apps on the start screen do not have to be closed.
2. In the Windows Start menu, select "On/Off > Shutdown".
3. Wait until the device has shut down and all status displays are extinguished.
4. Pull out the mains plug of the power supply unit.

6.3 Operating modes

The device supports different operating states in accordance with the settings in the Windows Power Options. 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 or deep sleep: depending on the DeepSleep/Sx settings in the BIOS, the power consumption is very low. Charging via USB, e.g. of cell phones, is then switched 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 display to the device is flashing, in sleep mode all status displays are off. Briefly press the On-Off button to reactivate the device from these two operating states.

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 elements\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

Always shut down the device or put it into hibernation before transporting it. You can recognize these states by the fact that all device status indicators are switched off after unplugging the power supply unit. This ensures that the device is not switched on during transport and that the battery is not unduly discharged.

See also

Hotkeys (Page 21)

6.4 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 106).

6.5 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 and assigning parameters to the device 7

7.1 Opening the device and switching off the power

⚠ WARNING

Risk due to unauthorized opening and improper repairs or expansions

Improper intervention in the device endangers operational reliability and may damage the device. The results can be personal injuries and damage to the plant.

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

- For this reason, please observe the information in "Notes on device and system extensions (Page 36)".

⚠ WARNING

Risk due to electric shock

After switching off, the device is not de-energized:

- The mains voltage from the power supply is present outside the device.
- The voltage from the battery is present inside the device. When installing and removing electronic components, incorrect voltages and short-circuits can occur which damage the device.

Take the following precautions:

- Switch off the device completely and de-energize the interior of the device.
- Pull out the power plug of the power supply before you open the device.
- After opening, disconnect the battery connector from the motherboard.
- Close the device after every intervention.

NOTICE

Electrostatic sensitive devices (ESD)

The device contains electronic components which may be destroyed by electrostatic charge. This can result in malfunctions and damage to the machine or plant.

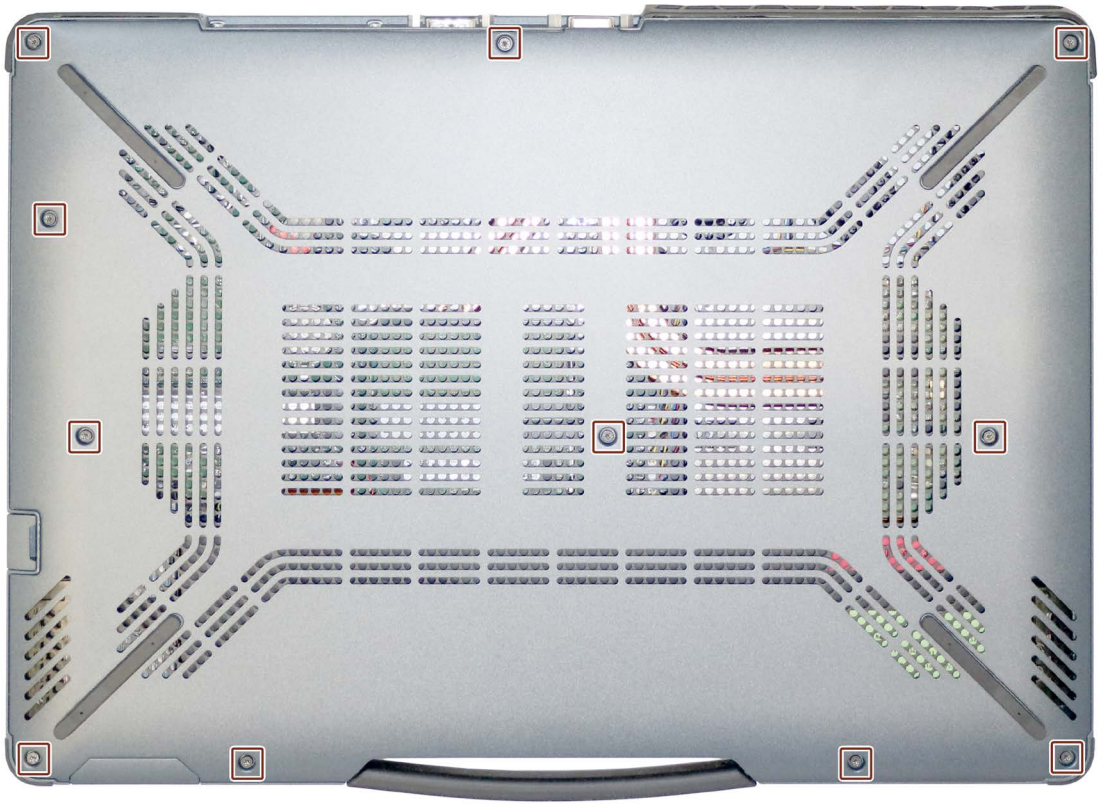
Take corresponding precautionary measures before you open the device.

Requirements

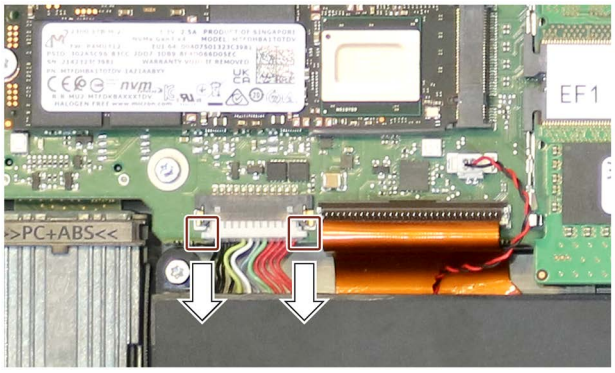
- The device is completely switched off, see "Switching the device on and off (Page 59)".
- All connecting cables are unplugged.
- Screwdriver of type Torx T8

Procedure

1. Place the device with the display facing down on a stable, soft surface. The carrying handle points downwards, for orientation, as in all following illustrations.

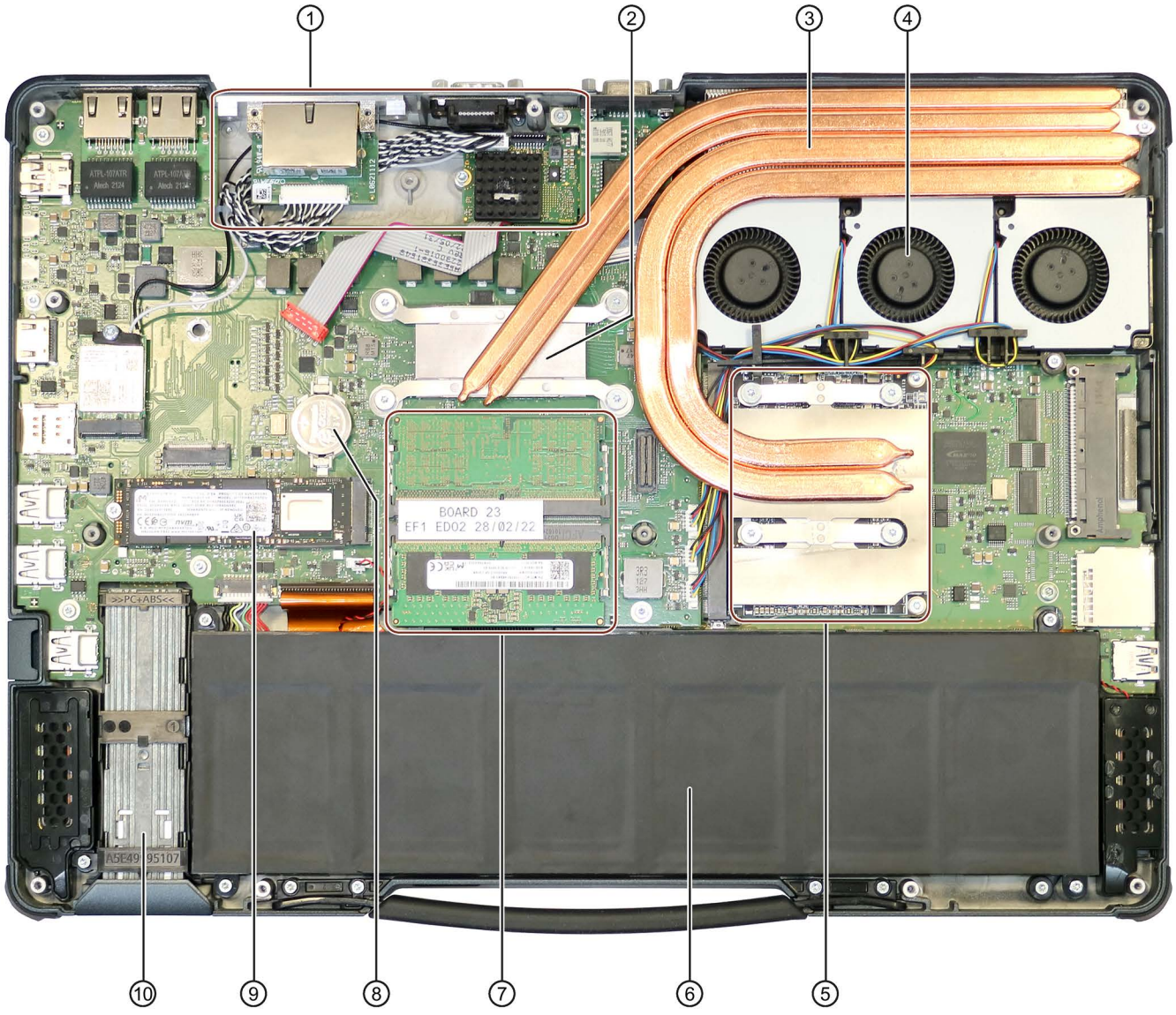


2. Remove all marked screws.
3. Remove the case cover evenly upwards and place it on the soft surface.
4. Pull the connector above the battery downward at the edge protrusions evenly to the left and right without tilting.



Close the device in reverse order.

7.2 Internal design of the device (overview)



① Expansion module (see section "Installing and removing an M.2 module (Page 67)")
② Heat sink above the processor
③ Heat exchanger of the cooling system
④ Cooling system fan
⑤ MXM graphics card (option, configurable)
⑥ Battery (see section "Replace battery (Page 78)")
⑦ Main memory (see section "Removing and installing memory modules (Page 74)")
⑧ Backup battery (see section "Replacing the backup battery (Page 79)")
⑨ Drive module (see section "Replacing the internal M.2 module (NVMe) (Page 72)")
⑩ SIMATIC IPC Slider (see section "Replacing the SIMATIC IPC slider (M.2 NVMe) (Page 70)")

See also

External design of the device (Page 13)

7.3 Expansion modules (FLEX MODULE)

7.3.1 Usable FLEX MODULE

The expansion modules (M.2) are referred to in short form as **M.2 modules** in the following.

M.2 modules with the following specifications (excerpt) and compatible M.2 modules from third-party suppliers are supported (detailed specification on request):

	M.2 module (X100)
Dimensions	2230, 2242, 2260, 3030, 3042, 3060
Interface	Key B
Protocols	1 × PCIe 3.0 x2 lane 1 × USB 2.0
Buffer memory NVRAM	-
WLAN module[1], e.g. WiFi	x
WWAN module, e.g. LTE/ 5G [2]	x
Field Bus	x
M.2 NVMe SSD	x
Artificial Intelligence	x
Special (Digital IO)	x

1 Key E/Key A+E is also possible via an M.2 Key E/Key B adapter
2 SIM/eSIM on the module

Conditions of use of M.2 modules

- The dimensions of the M.2 modules must not exceed the specified dimensions. If the dimensions are exceeded, you may experience contact problems, malfunctions and difficulties with the assembly.
- **The power of the installed expansion modules (M.2) must not exceed 2.5 W.**

See also

Dimension drawing of expansion modules (M.2) (Page 88)

7.3.2 Installing and removing SIMATIC IPC FLEX MODULE (M.2)

NOTICE

Standards and approvals no longer valid

If you expand the device with new hardware and interfaces, Siemens Aktiengesellschaft described standards can no longer be assured and the product no longer meets the guidelines. The approvals may no longer be valid. You can find additional information in section "Standards and approvals (Page 89)".

- You are responsible for device safety and compliance with existing standards.
- You may have to repeat the approval of the device with the extensions yourself.
- Ensure compliance with the directives, protection targets and certificates yourself.

Requirement

Note

Requirement for M.2 modules

You can find the following information in the section "Usable FLEX MODULE (Page 66)":

- Permitted dimensions for M.2 modules: If the permissible height is exceeded, contact problems, malfunctions and installation difficulties cannot be ruled out.
- The slot for which M.2 modules are supported.

- The device is opened and de-energized, see section "Opening the device and switching off the power (Page 63)".
- If the M.2 module to be used has external interfaces, they are controlled via an interface board and attached to the enclosure via an adapter plate.
- Screwdriver of type Torx T10

Procedure - Installation

⚠ CAUTION

Malfunction of and damage to the device

Poor contact of the M.2 module can lead to malfunctions with consequential damage to people and machines.

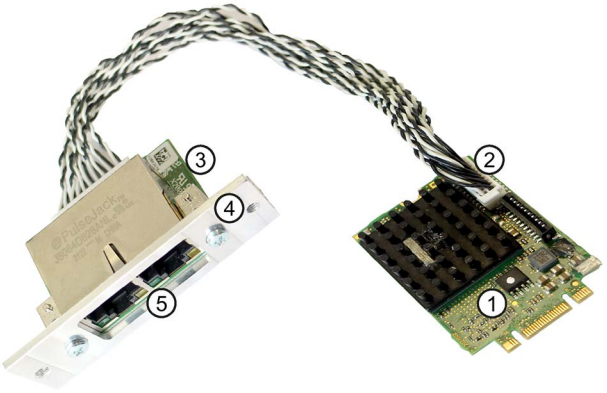
- Ensure that the contacts on the plug-in board are correctly coded (cut-out).
- Ensure that the PCB is firmly inserted in the slot after installation.

Screws that are tightened too much will break the PCB. Irreparable damage to the device is the result, with consequential damage to people and machines.

- Observe the specified torques when screwing.

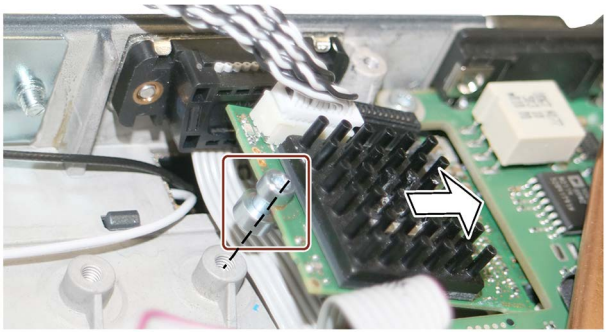
1. Remove the expansion module (M.2) from the packaging:
   - ① Slot
   - ② Plug-in connector
   - ③ Interface board
   - ④ Adapter plate
   - ⑤ External interfaces

   Notice: Do not touch the contacts of the M.2 module.



2. Loosen the illustrated locking screw and place it on the M.2 module's plug-in board.

   Notes:
   - Ensure that the plug-in board is always between the head and the spacer of the screw.
   - Only use the original screw with the spacer.

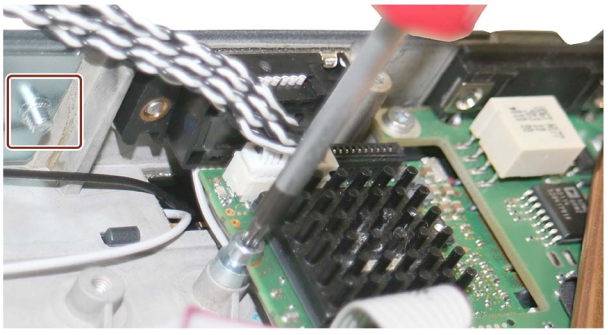


3. Use the locking screw to push the M.2 module into the slot (arrow) until the screw is above the thread (dashed line).

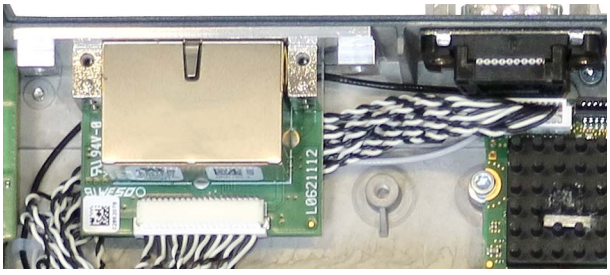
   Note: The cut-out (coding) on the plug-in board lies against the cut-out on the slot.

4. Tighten the locking screw in the thread.
5. From the outside, loosen the two screws of the blanking cover, marked in the figure.

   Remove the blanking cover.



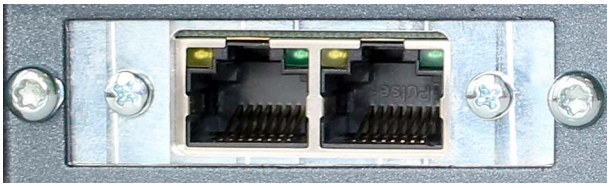
6. Place the interface board from the inside to the enclosure opening - interfaces pointing outwards and hold it with one hand.



7. Screw the interface board tight from the outside (outer screws).

   Note:

   - The two outer screws fasten the adapter plate to the enclosure.
   - The inner screws fasten the interface board to the adapter plate.



8. Reconnect the battery and close the device.

Procedure - Removal

Proceed in reverse order of installation.

Configuring BIOS setup

You may need to make settings in the BIOS Setup. For detailed information about installation, please refer to the documentation provided with the specific expansion module.

7.4 Drives

7.4.1 Replacing the SIMATIC IPC slider (M.2 NVMe)

The device has a slot for the SIMATIC IPC Slider, a replaceable SSD of different sizes, see section "Features (Page 11)". The SIMATIC IPC Slider can be exchanged while the device is running.

NOTICE
Risk of damaging the drive and data loss When you remove the drive while data is being written to it, you may damage the drive and destroy data. • Only remove the drive from the device when it is inactive. • To avoid data loss, close running programs and log off in Windows. • Observe the ESD guidelines.

Requirements

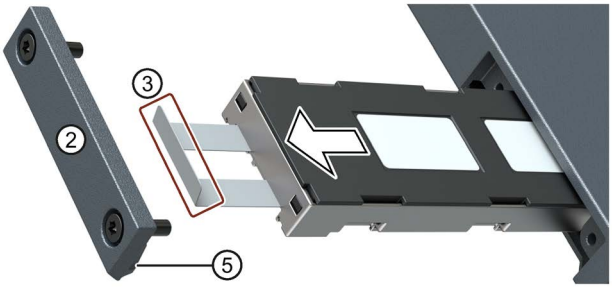
- SIMATIC IPC Slider with the following options:
  - Option 1: A drive of the same type approved for this device as an original spare part, see notes under "Accessories (Page 24)".
  - Option 2: M.2 NVMe SSDs with a length of 30, 42 or 80 mm
- The current user is logged off in Windows.
- Screwdriver of type Torx T8

Procedure

1. Loosen the screws on the cover to the slider slot with the screwdriver.
   Similar to figure



2. Remove the cover ②.
3. Pull out the Slider in the direction of the arrow using the lug ③.



4. Push the new slider with the plug contacts (see marking) into the slide-in module until the slider audibly clicks into place.



5. Carefully place the cover ② with the pressure pad ⑤ onto the slider and screw it tight with the screwdriver ①.

Note

To ensure reliable operation of the devices with SIMATIC IPC Slider, the slider must be closed with the cover.

See also

Switching the device on and off (Page 59)

7.4.2 Replacing the internal M.2 module (NVMe)

The device has an internal, permanently installed drive module:

- Referred to as M.2 module in the following.
- With an SSD of different size, see section "Features (Page 11)".

Requirements

- The device is opened and de-energized, see section "Opening the device and switching off the power (Page 63)".
- Screwdriver of type Torx T8

Procedure

CAUTION

Malfunction of and damage to the device

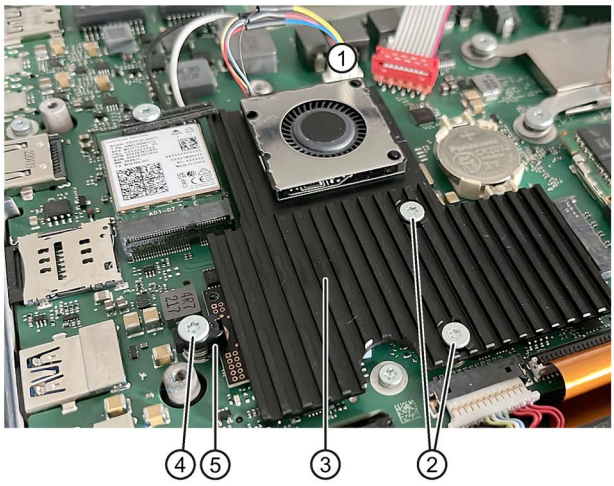
Poor contact of the M.2 module can lead to malfunctions e.g. data loss with consequential damage to people and machines.

- Ensure that the contacts on the M.2 module are correctly coded (recess).
- Ensure that the M.2 module is firmly inserted in the slot after installation.

Screws that are tightened too much will break the PCB. Irreparable damage to the device is the result, with consequential damage to people and machines.

- Observe the specified torques when screwing.

1. Pull out the fan plug ①.
2. Loosen the two screws ② on the heat sink.
3. Remove the heat sink ③ together with its fan and put it aside.
4. Remove the fixing screw ④.
5. Take the black M.2 holder ⑤ from the round recess and flip the M.2 module upwards by approx. 30°.

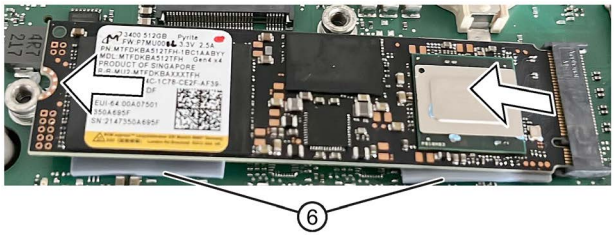


6. Pull the M.2 module in the 30° inclined position to the left out of the slot, evenly without tilting.

   Leave the thermal pads ⑥ on the motherboard.
7. Place the new M.2 module in the 30° inclined position with the connection contacts facing downwards to the right.

   Note:

   - The recess (coding) of the contacts is against the recess on the slot.
   - The thermal pads ⑥ are between the module and the motherboard.



8. Push the module to the right as far as it will go into the slot.

   Note: Push evenly, without using too much force and without tilting.
9. Place the M.2 holder ⑤ at the round recess and insert the fixing screw ④ through it.

   See illustration above.
10. Screw the fixing screw ④ back into the thread until the M.2 module lies firmly and parallel over the motherboard.
11. Replace the heat sink ③ together with its fan and fasten it with the two screws ②.
12. Plug in the fan connector ① as shown above.
13. Reconnect the battery and close the device.

7.5 Main memory

7.5.1 Removing and installing memory modules

For the possible memory modules, see section "Features (Page 11)", Memory expansion.

Requirement

- The device is opened and de-energized, see section "Opening the device and switching off the power (Page 63)".

NOTICE

Observe the ESD guidelines

The electronic components on the PCBS are highly sensitive to electrostatic discharge. Always take appropriate precautionary measures when handling these components, see section "ESD Guidelines (Page 92)".

Note

Only use memory modules from Siemens Aktiengesellschaft, as these are qualified and approved for use in this device. You will find the order data in the catalog.

Procedure

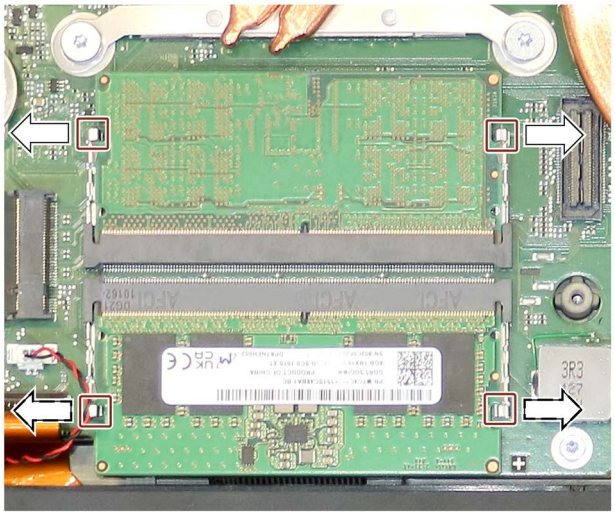
CAUTION

Malfunctions on the device

Poor contact of the memory module can lead to malfunctions, e.g. the device no longer boots, with consequential damage to people and machines.

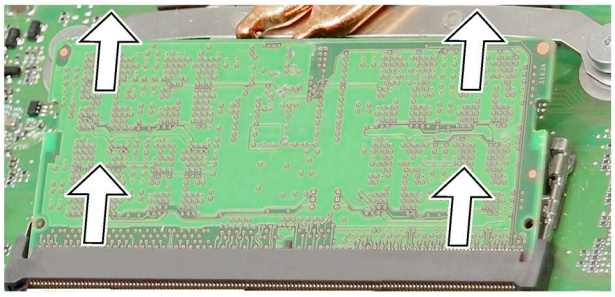
- Ensure that the contacts on the memory module are protected against rotation (recess).
- Ensure that the memory module is firmly inserted in the slot after installation.

1. In the following, you replace the upper memory module. The procedure is mirrored accordingly for the lower memory module.
2. Press the marked handles of the fixing brackets evenly to the left and right to the side until the memory module flips upwards by approx. 30°.



3. Pull the memory module evenly out of the slot in the 30° inclined position without tilting it.
4. Place the new memory module in the 30° inclined position with the connection contacts facing downwards.

   Note: The recess (anti-rotation device) of the contacts lies against the recess on the slot.



5. Push the memory module into the slot as far as it will go.

   Note: Push evenly on the left and right without exerting too much force and without tilting.
6. Carefully push the memory module down until the two fixing brackets snap into place.
7. Reconnect the battery and close the device.

Again, see first illustration above.

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 Maintenance intervals

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
NVMe (SSD)	3 years
Rechargeable battery	3 years
Backup battery	5 years

8.2 Maintaining and servicing the device

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

Requirement

- Soft cleaning cloth
- Rinsing liquid or foaming detergent for the outside of the device

Procedure

⚠ CAUTION

Unintentional response when cleaning the device

You risk unintentional actuation of operator controls if you clean the device while it is switched on. The device or controller may respond in unintentional ways. Personal injury or machine damage may result.

- Always switch off the device before you clean it.
- Alternatively, clean the display during operation only when it is locked.

Damage caused by unauthorized detergents

Using compressed air or steam cleaners, or aggressive solutions or scouring agents will damage the device.

Do not clean the device with compressed air or steam jets. Do not use aggressive solvents or scouring powder.

NOTICE
Damage to the protective coating The user interface of the display has a special protective coating that prevents dirt from adhering to it. Wiping the surface may damage the special protective coating. • Only remove dirt on the display with a soft cloth. Do not use a paper towel. • To remove stubborn dirt, you can gently blow on the affected area and then carefully wipe it with a soft cloth.

Proceed as follows:

1. Switch off the device. If available, press the lock key for the display, see section "Operator controls (Page 17)".
2. Wipe the outside of the device with a soft cloth moistened with water or non-alkaline detergent.

   Spray the detergent onto the cleaning cloth.

   Do not spray directly onto the device.
3. Carefully wipe the display with a soft, lint-free cloth.

   Do not use alcohol or detergents.

   When cleaning the display, wipe from the edge of the screen inwards.
4. Switch the device on again. Alternatively, unlock the screen by pressing the lock key again.

8.3 Removing and installing hardware

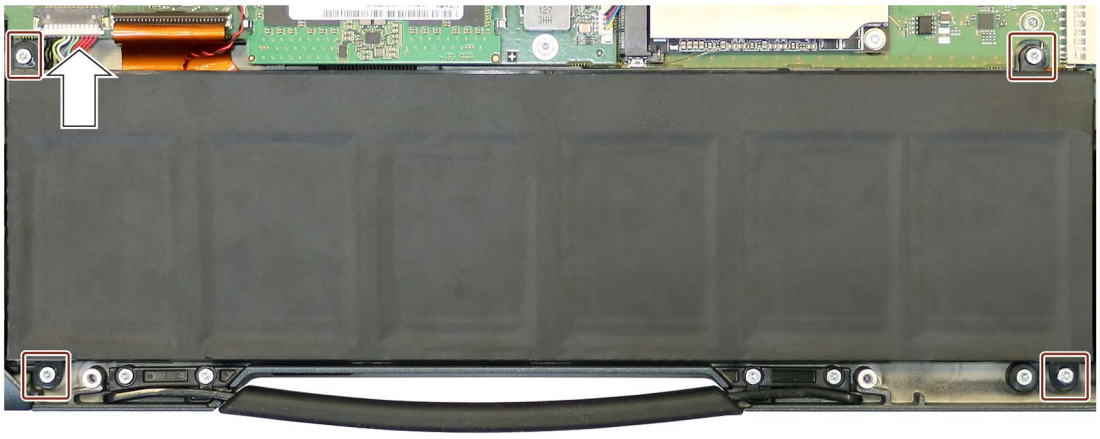
8.3.1 Replace battery

Requirement

- The device is opened and de-energized, see section "Opening the device and switching off the power (Page 63)".

  Location of the battery, see section "Internal design of the device (overview) (Page 65)".
- Screwdriver of type Torx T8

Procedure



1. The connector above the battery marked with the arrow is already disconnected.
2. Remove the marked screws in the eyelets of the battery.
3. Remove the battery by lifting it upwards.
4. First hold the new battery above the motherboard and connect the battery connector first (arrow) without tilting it.
5. Insert the new battery so that the eyelets of the battery (see marking) are exactly above the threads.

   Ensure that the cable of the battery connector is not crimped.
6. Screw on the new battery.
7. Close the device.

8.3.2 Replacing the backup battery

Introduction

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).

Requirement

- You have noted the current firmware/BIOS settings as the configuration data of the device is deleted when the battery is replaced.
- The device is opened and de-energized, see section "Opening the device and switching off the power (Page 63)".
- Location of the backup battery, see section "Internal design of the device (overview) (Page 65)".
- You have observed the local regulations relating to the disposal of used batteries.

Procedure

NOTICE

Risk of damage!

The lithium battery may only be replaced with an identical battery or with a type recommended by the manufacturer (type CR-2032).

⚠ 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.

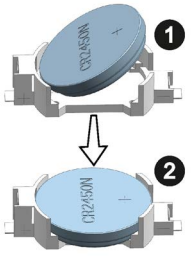
NOTICE

Danger of explosion

Batteries must be disposed of in accordance with local regulations.

1. Remove the battery from socket as shown.
2. Place the new battery below the two contacts (1) and press it into the base (2) while applying slight pressure.
3. Reconnect the battery and close the device.
4. Check the firmware/BIOS settings.

Similar to figure



8.4 Installing the operating system, software and drivers

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.

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.

Provision of operating system, software and drivers

Possible sources of the Restore or Documentation and Drivers set:

- USB flash drive supplied (optional, if ordered)
- Online Software Delivery Portal: You can download the Restore or Documentation and Drivers Set for the device from the Online Software Delivery Portal. To do this, log in to Online Software Delivery Portal (https://www.automation.siemens.com/swdl/register/ipc), download the required data set and use it to create a bootable USB flash drive.
  For more information, see the Product Information for creating a bootable USB flash drive, see"Important instructions and manuals for operating the device (Page 9)".

Installing the operating system

Additional information on restoring or reinstalling the operating system you ordered with the device can be found in the detailed description of the operating system, see "Important instructions and manuals for operating the device (Page 9)".

Installing software and drivers

1. Insert the bootable USB flash drive into the device.
2. Start the "Documentation and Drivers" suite from the USB flash drive by executing the "START_DoucAndDrivers.CMD" file.
3. Install the desired software and drivers.

8.4.1 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 86)".

8.5 Configuring firmware/BIOS

You can find information on the firmware/BIOS under: "Firmware/BIOS description (Page 98)".

8.6 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).

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.

8.7 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 electronic scrap for environmentally sound recycling and disposal of your old device, and dispose of it according to the relevant regulations in your country.

Technical specifications

9

9.1 General specifications

Order nos.	See order documents or rating plate
Dimensions (W x H x D in mm)	• Display opened (90°): 386 × 300 × 281 • Display closed (0°): 386 × 41 × 281
Weight	Approx. 2.8 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) • Operation • In DeepSleep (power supply connected) • In DeepSleep (battery operation)	 • Approx. 263 W • 0.25 W typical • < 0.001 W typical
Max. current (100... 230 V AC)	Continuous current up to 3 A (during startup up to 174 A for 0.7 ms)
Output voltage of the power supply unit (DC)	19 V
Output current of the power supply unit (DC)	Max. 12.63 A
Output power of power supply unit (DC)	Max. 240 W
Standby power (in battery operation)	Typically 1.5 W
Lithium polymer battery, 3S2P, 6x cells with charge status detection	Min. 8010 mAh; 11.1 V; recyclable; up to 40 °C high number of cycles in harsh environments; low self-discharge
Noise emission	< 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 Third Edition • CAN/CSA C22.2 No. 62368-1-14 Third Edition

Electromagnetic compatibility (EMC)

Emitted interference	EN 61000-6-3 CAN/CSA CISPR32 Class B, EN 55032 Class B, EN 61000-3-2 class D, 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
Environment in operation	+ 5 °C to + 40 °C max. 10 °C/h (no condensation)
Battery temperature	+ 5 °C to + 45 °C: • Battery is charging. + 45 °C to + 60 °C (high limit): • Battery is charged with reduced current. > 60 °C (high limit): • Battery is **not** charging. Battery must cool below 45 °C to be recharged. **NOTICE**: Cooling down may take some time when operating in a 40 °C environment.
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

Display

Type	TFT (Thin Film Transistor), 16: 9, anti-reflection
Size	344 x 194, corresponds 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

Graphics

Graphics controller	• Internal: Intel® Iris XE • Dedicated: MXM module (option)
Graphics memory	
Resolutions/frequencies/colors	According to the settings of the graphics driver

Camera

Resolution	• RGB camera: 1280×720; 30 FPS • Infrared sensor: 640×360; 30 FPS

WLAN and Bluetooth

WLAN is supported in the frequency ranges.

Bluetooth version		Standard 5.3	
WiFi version		6E	
WLAN standard according to IEEE standard		IEEE802.a/b/g/n/ac R2/ax R2 (pre-standard)	
Frequency ranges		• 2.4 GHz • 5.0 GHz • 6.0 GHz	
TX Frequency bands	Modes of Operation	Transmitter Frequency Range (MHz)	Output Power
	2.4 GHz WLAN	2412 - 2462	20 dBm
	5 GHz WLAN	5180 - 5825	20 dBm
	6 GHz WLAN	5995 - 7115	13 dBm
	Bluetooth	2402 - 2480	11.2 dBm
Connection range		Up to 100 m	
Transmission rate		Up to 1.73 Gbps	

Keyboard

Variant	Standard notebook
Key distance	19 mm
Key drop	2.0 mm
Pointing device integrated	Touchpad

Interfaces

RS232 interface (COM1)	• RS232 interface is integrated in every device as standard 9-pin socket, no electrical isolation r serial interface V.24
USB	• 1× USB 3.2; Gen. 1; type A (left side of device): Max. 0.9 A • 1× USB 3.2; Gen. 1; type A (rights side of device): Max. 0.9 A • 2× USB 3.2, Gen. 2x1; type A (right side of device): Max. 0.9 A • 2× USB4, Gen. 3; type C (right side of device): Max. 3.0 A 15 W per 1×USB, 2×USB provide 22 W, battery or mains operation makes no difference. **The total power of all USB ports and built-in expansion modules (M.2) must not exceed 15 W in total.** Read the more detailed information in the section "USB socket with charging function (Page 52)".

PROFIBUS/MPI interface • Transmission speed • Operating mode	9-pin sub D socket, RS485 • 9.6 kBaud to 12 Mbaud, software configured • Electrically isolated: - Data channels A, B - Control lines RTS AS, RTS_PG - 5 V supply voltage (max. 90 mA) Grounded: - Shielding of the DP12 connection line
Video (HDMI)	HDMI 1.4b: • 4096 × 2160 @30Hz • 2560 × 1440 @60Hz • 1920 × 1080 @120Hz
Ethernet	2 x Gigabit Ethernet (RJ45)
DC-In	DC power supply input

Card reader

Smart Card Reader	ISO/IEC 7816 Smart Card Interface
SIMATIC Memory Card Reader	Programming interface for SIMATIC Memory Cards (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

See also

Features (Page 11)

9.2 Boot mode and partitions in the delivery state

Factory state for Windows® 10

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

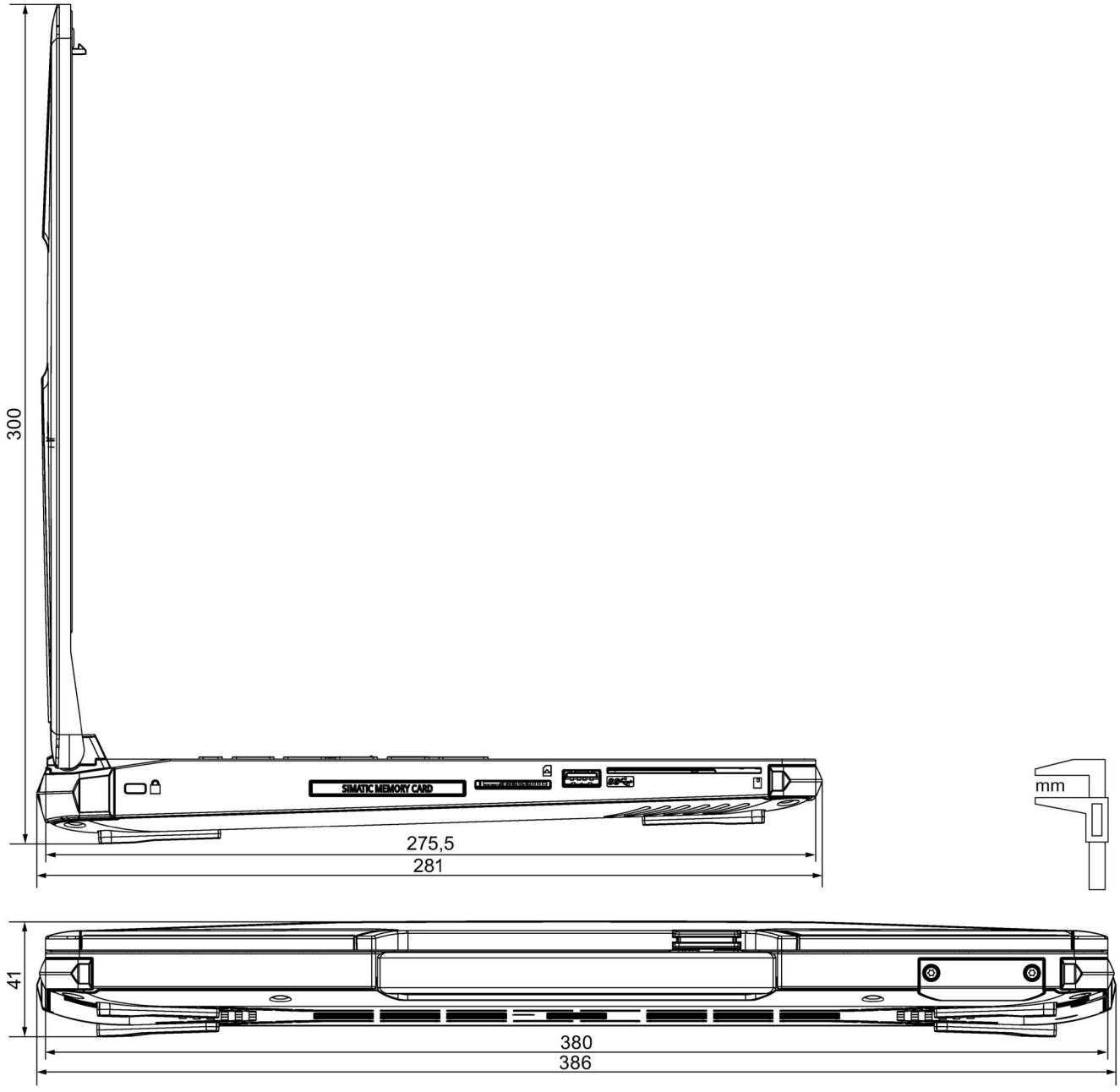
The following table lists the partitioning for data storage media ≥ 200 GB on delivery:

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

Dimension drawings

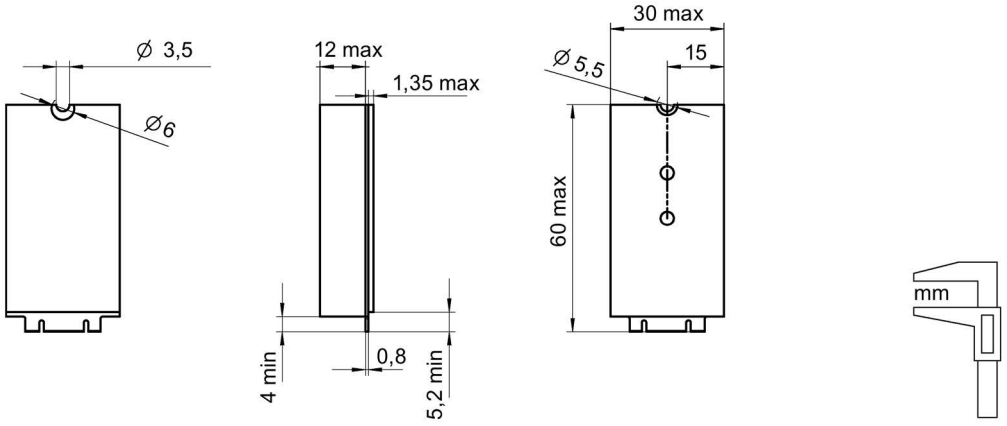
10

10.1 Dimension drawing of the device

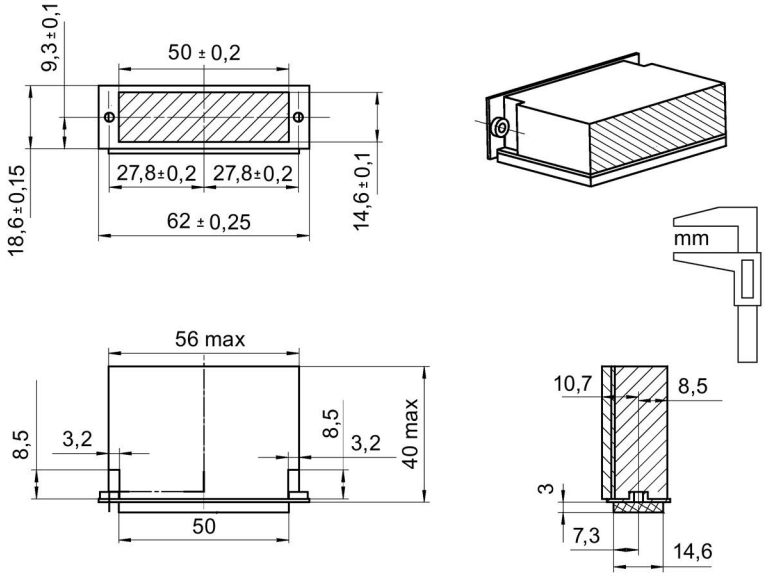


10.2 Dimension drawing of expansion modules (M.2)

Maximum dimensions of expansion modules



Dimension drawing of the conditioner card



Standards and approvals

11

Note

Approvals on the rating plate

The following overview provides information on possible approvals.
Only the approvals printed on the rating plate apply to the device.

11.1 Certificates and approvals

The Siemens quality management system for our entire product creation process (development, production and sales) meets the requirements of ISO 9001.

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

If the device is supplied with preinstalled software, you must observe the corresponding license agreements.

The following approvals are available for the device:

- Underwriters Laboratories (UL) according to the standard UL 62368-1 Third Edition (PROG.CNTLR.)
- Canadian National Standard CAN/CSA C22.2 No. 62368-1-14 Third Edition

FCC USA	
Federal Communications Commission Radio Frequency Interference Statement	This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna. • Increase the separation between the equipment and receiver. • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help.
Shielded Cables	Shielded cables must be used with this equipment to maintain compliance with FCC regulations.
Modifications	Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.
Conditions of Operations	This device complies with Part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CANADA	
Canadian Notice	This Class B digital apparatus complies with Canadian ICES-003 (B).
Avis Canadien	Cet appareil numérique de la classe B est conforme à la norme NMB-003 (B) du Canada.

Autorisée exploitation	Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Identification for Eurasion Customs Union

- EAC (Eurasian Conformity)
- Declaration of conformity according to Technical Regulations of the Customs Union (TR CU)

This product meets the requirements of Korean certification.

This product satisfies the requirement of the Korean Certification (KC Mark).

이 기기는 업무용(A급) 전자파 적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

BIS (India)

This product meets the requirements of the Bureau of Indian Standard (BIS).

Tested according to IS 13252(Part 1):2010/ IEC 60950-1 : 2005.

Brazil

Incorporates product approved by Anatel under number 12070-21-04423.

11.2 Directives and declarations

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 RED Directive (Radio Equipment Directive): 2014/53/EU

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

- Health: EN 62311
- Safety: EN 62368-1:
- EMC: EN 301 489-1, EN 301 489-3, EN 301 489-17
- Radio: EN 300 328, EN 301 893, EN 300 440, EN 303 687

RoHS Directive

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

Compliance with the directive was tested according to the following standard: EN IEC 63000.

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. Internet: https://support.industry.siemens.com/cs/ww/en/view/109824692

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.

Electromagnetic compatibility: Specific absorption rate (SAR)

RF EXPOSURE INFORMATION (SAR)

This model device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless devices employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value. This is because the device is designed to operate at multiple power levels so as to use only the poser required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

While there may be differences between the SAR levels of various devices and at various positions, they all meet the government requirement.

The FCC has granted an Equipment Authorization for this model device with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this model device is on file with the FCC and can be found under the Display Grant section of http://www.fcc.gov/oet/fccid.

This device is compliant with SAR for general population /uncontrolled exposure limits in ANSI/IEEE C95.1-1999 and had been tested in accordance with the measurement methods and procedures specified in OET Bulletin 65 Supplement C.

SAR COMPLIANCE

This product has been tested and found to comply with the following standards:

- For the used worst case positions, the device is in compliance with the IC RSS 102 Issue 4 [RSS 102] and Federal Communications Commission (FCC) Guidelines [OET 65] for uncontrolled exposure. SAR assessment in body worn was conducted with a distance of 100 mm between the housing of the handheld and the flat phantom.
- EN 62311:2008: assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz).

11.2.1 ESD Guidelines

Definition of ESD

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

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

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.

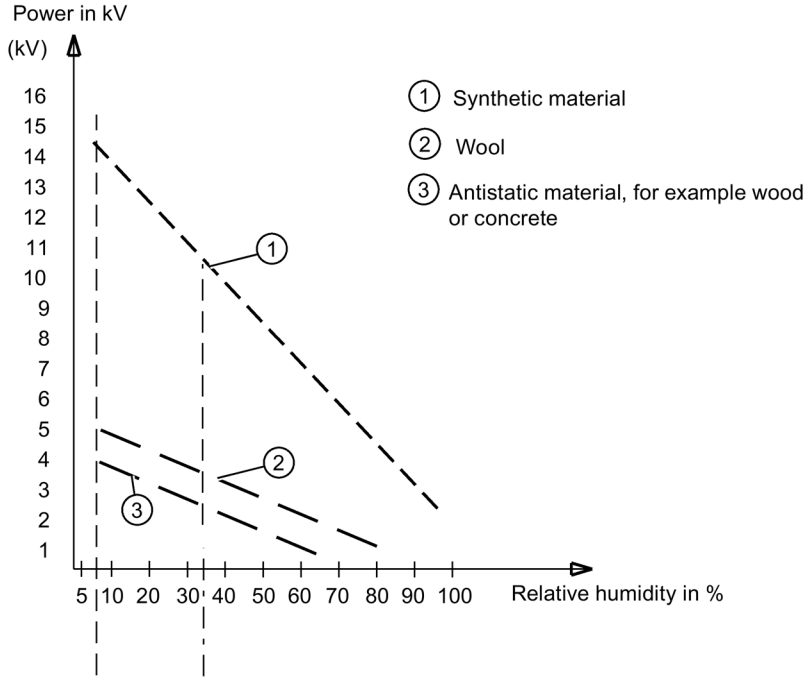


Figure 11-1 Electrostatic voltages which an operator can be subjected to

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.

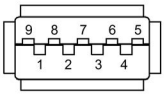
Hardware description

A

A.1 Interface description

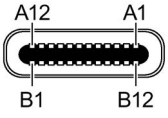
A.1.1 External interfaces

USB 3.0/3.1, USB 3.2 Gen1/Gen2; 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

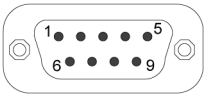
USB4; type C



Pin no.	Short designation	Meaning	Input/output
A1	GND	Ground	–
A2	TX1+	Data channel (USB4)	Output
A3	TX1-	Data channel (USB4)	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	SBU1	Sideband usage1	-
A9	VBUS	+ 5 V (fused)	Output
A10	RX2-	Data channel (USB4)	Input

A11	RX2+	Data channel (USB4)	Input
A12	GND	Ground	-
B1	GND	Ground	-
B2	TX2+	Data channel (USB4)	Output
B3	TX2-	Data channel (USB4)	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	SBU2	Sideband usage2	-
B9	VBUS	+ 5 V (fused)	Output
B10	RX1-	Data channel (USB4)	Input
B11	RX1+	Data channel (USB4)	Input
B12	GND	Ground	-

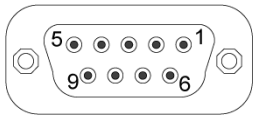
RS232 (COM1)



Pin no.	Short designation	Meaning	Input/output
1	DCD	Data carrier detect	Input
2	RxD	Receive data	Input
3	TxD	Send data	Output
4	DTR	Data terminal ready	Output
5	GND	Ground	-
6	DSR	Ready for operation	Input
7	RTS	Request to send	Output
8	CTS	Clear to send	Input
9	RI	Incoming call	Input

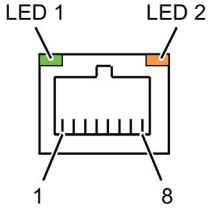
PROFIBUS/MPI

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	–

A.1.2 Connecting cables

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 45)."

A.2 Firmware/BIOS description

A.2.1 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 (http://support.automation.siemens.com/WW/view/en/92189178).

A.2.2 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 BIOS selection menu identifies your device in the upper area. The following submenus are available:



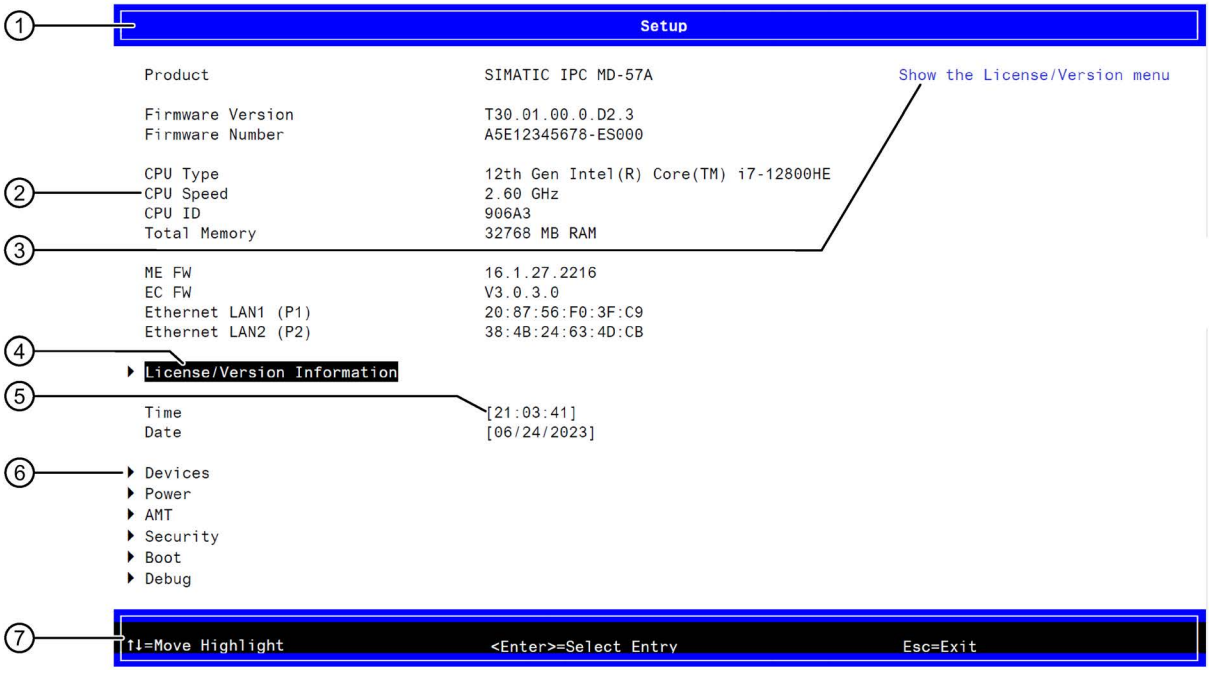
Buttons	Function
Boot Manager	Determine the boot media from which to boot: • Windows Boot Manager (EFI) • NVMe drive, see section "Drives (Page 70)". • USB drive
Boot Maintenance Manager	• Boot Options: Set up boot options and change boot order • Driver Options: Configure drivers • Console Options: Set up connected input and output device and standard error device • Boot from File: from an ".EFI" file
Device Manager	Device manager for UEFI boot media: • Platform Driver Override • Configure TLS (Transport Layer Security): Authentication and certificates for secure data transfer, e.g. HTTPS/SMTPS. • Secure Boot Configuration: Configuration settings to start the device in Secure Boot mode. The only software modules loaded are those that are known to be safe for the BIOS or the operating system. • Configure EFI standard interface TCG2 to TPM, see section "Trusted Platform Module (TPM) (Page 62)". • Set user password
Firmware Update	Updating the firmware

Buttons	Function
Setup	Firmware configuration menu, see section "Structure of the BIOS Setup menu (Page 100)". • License/version information e.g. OSS/OpenSSL • Setting the date and time • Activate Profibus and camera devices • Power management (USB charging function, Wake on LAN) • AMT, see section "Enabling Intel® AMT / basic configuration (Page 106)" • Security: Combines various security settings in a single menu. • Boot settings ("USB/NVMe Boot" = "Enable", "Network stack") • Debug, e.g. graphics card
MEBx	Start Intel® Management Engine BIOS Extension (MEBx) to configure the hardware to use the Intel® Active Management Technology (AMT), see section "Active Management Technology (iAMT) (Page 105)".
Continue	BIOS selection menu, continue start sequence
Reset	Restore factory settings

A.2.3 Structure of the BIOS Setup menu

The individual setup parameters are distributed between different menus and submenus, which always have the same structure.

- The following figure shows the "Setup" menu as an example.
- Device-specific information may differ from the illustration.
- Not all menus are included in each supplied device configuration.



①	Header	The header shows where you are currently located in the BIOS, e.g. in the "Setup" menu.
②	Device-specific information	**Setup parameters** in the middle area that you **cannot** set, e.g. the CPU ID.
③	Help area	Short help texts for the currently selected line.
④	Selection bar	Currently selected line: • **Setup parameters** or • **Submenu**
⑤	BIOS Setup settings	**Setup parameters** in the lower area that you can set e.g. time.
⑥	Submenu	Another menu within the setup.
⑦	Page footer	Key assignment for navigating in the BIOS setup: • ↑ Selection bar one line up. • ↓ Selection bar one line down • <Enter> Switch from the menu into →**submenu** or set **Setup parameters**. • <Esc> Back from **submenu** into menu or exit **Setup parameters** setting.

A.2.4 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 e.g. in the "Setup" menu	Defaults	Custom entries
Time	hh:mm:sss	
Date	MM/DD/YYYY	

Boot Maintenance Manager		
Boot Next Value	None	
Auto Boot Timeout	1	

Device Manager		
Platform Driver Override selection		
PCI device filter	·	
Secure Boot Configuration		
Current Secure Boot State	Enabled	
Attempt Secure Boot	X	
Secure Boot Mode	Standard mode	
TCG2 configuration		
TPM2 operation	No Action	
TPM2 Operation Parameter	0	
PCR bank: SHA1	·	
PCR bank: SHA256	X	
PCR bank: SHA384	·	
User Password Management		
Admin Password Status	Not installed	
Require strong password	X	
History count	5	

Setup		
Time	hh:mm:sss	
Date	MM/DD/YYYY	
Devices		
Profibus	Enable	
SKAN	Enable	
Camera	Enable	
Power		
USB-C charging	Disable	
Wake on USB	Disable	
Wake on LAN	Disable	
Wake on Lid	Disable	
Wake on Internal Keyboard	Disable	
Wake on Touchpad	Disable	
Lid LEDs	Enable	
AMT		
AMT support	Disable	
USB provisioning	Disable	
Boot		
Network support	On demand	
Network stack	IPv4,PXE,HTTP	
Orcla support	Enable	
Orcla Boot Option	Enable	
USB Boot	Enable	
NVMe Boot	Enable all	
Debug		
EcImageType	Release	
MXMGPU	Disabled	

MEBx		
Intel (R) AMT	Enabled	
	Intel(R) AMT Configuration:	
Password Policy	Anytime	
Network Access State	Network Inactive	
Redirection features		
SOL	Enabled	
Storage Redirection	Enabled	
KVM Feature Selection	Enabled	
User Consent		
User Opt-In	KVM	
Opt-in Configurable from Remote IT	Enabled	
Network Setup > Intel(R) ME Network Name Settings		
FQDN	_	
Shared/Dedicated FQDN	Shared	
Dynamic DNS Update	Disabled	
Network Setup > TCP/IP Settings		
DHCP mode	Enabled	
IPV4	0.0.0.0	
Subnet Mask Address	255.255.255.254	
Default Gateway Address	0.0.0.0	
Preferred DNS Address	0.0.0.0	
Alternate DNS Address	0.0.0.0	
Remote Setup And Configuration		
Provisioning Server address	_	
Provisioning server port number	9971	
Remote Configuration	Enabled	
PKI DNS suffix	_	
Power Control		
ME ON in Host Sleep States	Mobile: ON in S0, ME Wake in S3, S4-5 (AC only)	
Idle Timeout	15	

A.2.5 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
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.
PLD configuration failed	Programming of the PLC on the motherboard has failed.

A.3 Active Management Technology (iAMT)

A.3.1 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.

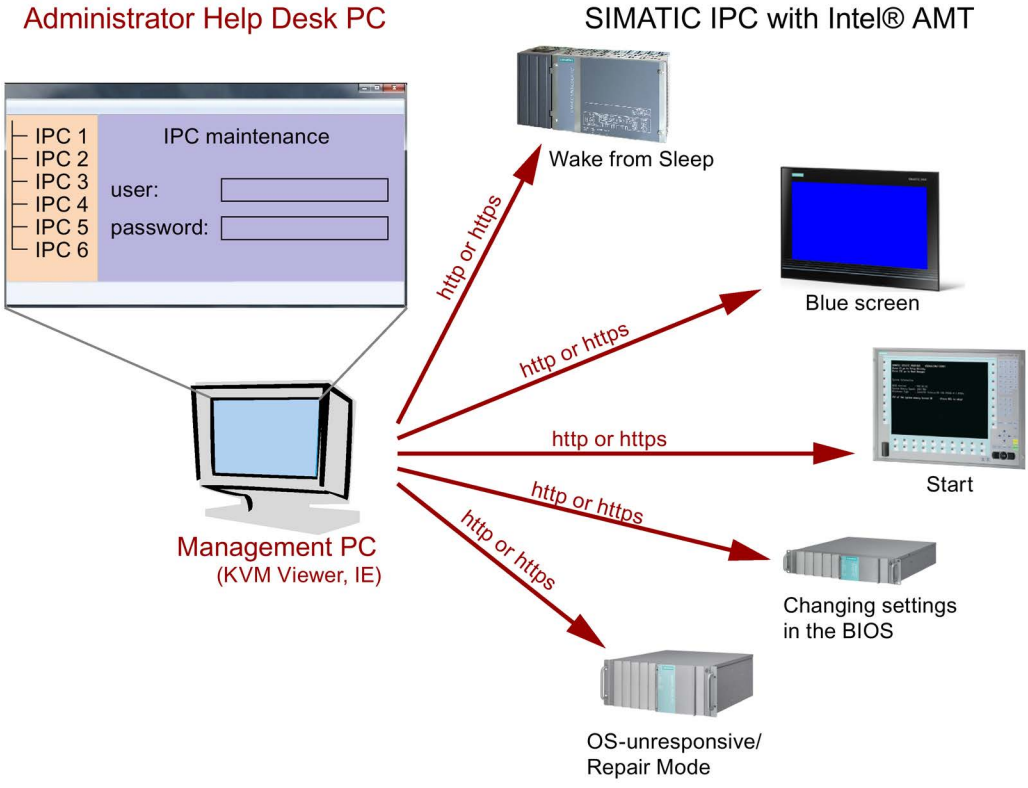
- **Remote power management**

  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 mounted and used as a drive on the SIMATIC IPC with Intel® AMT. 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:



A.3.2 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

A.3.3 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. To open the BIOS selection menu, press the <ESC> key while the device is booting.
2. If necessary, first reset to the default settings.
3. Select the "AMT" menu command in the Setup menu.
4. Select "AMT support".
5. Exit the BIOS Setup with the <ESC> key.

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. Enter the default password "admin" for MEBx Login. The "MEBx" menu opens.
   Immediately change the password with "Change ME 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
   Backup the password to protect it against loss.
   If the password is no longer available, you must restore the default settings.
4. Switch to the "Intel (R) AMT Configuration" > "Redirection features" submenu and enable "KVM Feature Selection".
5. Activate the access via the "Network Access" network in the "Intel (R) AMT Configuration" submenu.
6. Confirm the dialogs that appear with "Y".

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

A.3.4 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 in the MEBx menu of the AMT PC in the "Intel(R) AMT Configuration" submenu under "Network Setup > TCP/IP Settings" for automatic "DHCP" assignment is enabled, the network address is not permanently set.

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.

A.3.5 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 the submenu "Intel(R) AMT Configuration > User Consent" in the MEBx.
2. Select the value "KVM" for "User Opt-in".
3. To allow a user with administrator rights to bypass this code request, activate "Opt-in Configurable from Remote IT".

A.4 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.

Technical support

B

B.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)
- Support request form (https://www.siemens.com/supportrequest)
- After Sales Information System SIMATIC IPC/PG (https://www.siemens.com/asis)
- SIMATIC Documentation Collection (https://www.siemens.com/simatic-tech-doku-portal)
- Your local representative (https://www.automation.siemens.com/aspa_app)
- Training center (https://siemens.com/sitrain)
- 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 (https://support.industry.siemens.com/cs/ww/en/ps/14432). 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 (https://www.siemens.com/asis)

B.2 Troubleshooting

B.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.
	The device is switched off.	Press the power button
	The battery is empty or not installed	Charge or install battery.
Device cannot be switch on	Battery is installed and charged, power supply is connected	Press the on/off button for longer than 10 seconds to switch the device off.
The mouse pointer cannot be moved with the touchpad under Windows	Touchpad is disabled	Switch on touchpad with a key combination, see section "Hotkeys (Page 21)".
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.	Replacing the backup battery (Page 79)
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 used	with German keyboard driver: <ALTGr> < ß> with international keyboard driver: < \>

B.2.2 Problems with WLAN

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

Cannot connect with WLAN

- Check whether you have enabled the WLAN.

  You can switch the WLAN on and off with a key combination, see section "Hotkeys (Page 21)".
- Check that the other WLAN partner is active.
- Check the settings of the WLAN connection.

  Read the notes on configuring and operating the WLAN in the online help of the WLAN network adapter.

Data transmission speed is too low

- Please note that the data rate stipulated and visible under Windows is only a theoretical value / corresponds to the gross value. Determined by the transmission procedure, the actual applicable data rate for the data transmission is usually around 50% of the gross value.
- The maximum data transfer speed depends on many factors.

  First, check that all network components comply with the IEEE 802 standard and that this transmission mode is set.
- The spatial arrangement of the network components can also negatively influence the transmission.
  - The distances between the components should be as short as possible.
  - Masonry or reinforced concrete walls have a negative effect on the transmission performance and can, under some circumstances, prevent a connection from being established. For the best performance, a line-of-sight connection of the network components is preferred.
  - A high load on the network, perhaps from too many simultaneous access attempts from different nodes, can lead to lower data rates or communication problems.

Procedure - Disabling the jog function of the touchpad

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

Labels and symbols

C

C.1 Overview

The following tables show all the symbols which may be found on your SIMATIC IPC 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.

C.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			Warning of hot surface
	Attention ESD (Electrostatic sensitive device)			

C.3 Operator controls

Symbol	Meaning
	On/off switch, without electrical isolation

C.4 Interfaces

Symbol	Meaning		Symbol	Meaning
⎓	Connection to the power supply			SIMATIC Micro Memory Card Reader
⏚	Protective conductor terminal			Multimedia Card Reader
⏚ ⏚	Connection for functional earthing (equipotential bonding line)			Smart Card Reader
	USB port			Serial interface
HDMI	Video interface (HDMI)		LAN	LAN interface, not approved for connecting WAN or telephone

C.5 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		EAC	Marking for the Eurasian Customs Union
	Approved for China		FM APPROVED	Test mark of Factory Mutual Research
CE	CE markings for European countries		FC	Marking of Federal Communications Commission for the USA
10	EFUP (Environment Friendly Use Period) marking for China			Approved for Korea
c UL us	Test mark of the Underwriters Laboratories			Disposal information, observe the local regulations.

List of abbreviations

D

D.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
MUI	Multilanguage User Interface	Language localization in Windows
NEMA	National Electrical Manufacturers Association	Syndicate of manufacturers of electrical components in the USA

Abbreviation	Term	Meaning
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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COA label, (Certificate of Authenticity)
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