SIEMENS

SIMATIC

Industrial PC
SIMATIC IPC PX-32A

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.

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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.

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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

Purpose of the operating instructions

These operating instructions contain all the information you need for the installation, electrical connection, commissioning and expansion of the SIMATIC IPC PX-32A and for servicing and maintaining the device. They are intended for the following qualified specialist personnel:

- Installation personnel
- Commissioning engineers
- IT administrators
- Service and maintenance personnel

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 automation control engineering is recommended.

Scope of the operating instructions

These operating instructions are valid for all order variants of the SIMATIC IPC PX-32A.

History

The following editions of these operating instructions have already been published:

Edition	Comment
09/2023	First edition
06/2024	Corrections
02/2025	Update

Cybersecurity information

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

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

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

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 Software Update Service (https://support.industry.siemens.com/cs/ww/en/view/109759444).

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Product description

1

1.1 Important instructions and manuals for operating the device

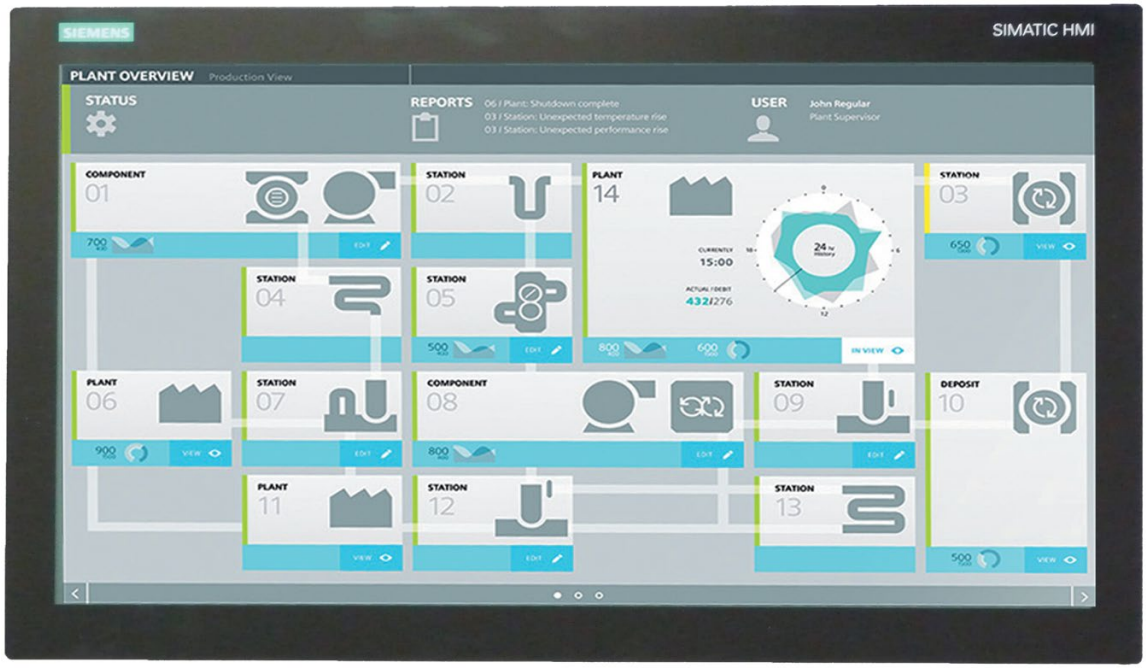
Documentation	Contents	Source
Operating instructions	• Product description • Technical specifications • Installation of the device • Operation of the device • Installing and removing hardware • Dimension drawings	• Online at: SIMATIC IPC Documentation (http://www.siemens.com/simatic-ipc-doku-portal)
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)
Firmware/BIOS description	Information on: • Important firmware settings • Firmware settings in the factory state • Boot modes	• Online at:Firmware/BIOS description SIMATIC IPC BX-39A, IPC PX-39A, IPC PX-39A PRO (https://support.industry.siemens.com/cs/ww/en/view/109811365)
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/en/view/109749498)
SIMATIC IPC Image & Partition Creator	Information on: • Backup and recovery of files, directories, drive partitions.	• Online at: SIMATIC IPC Image & Partition Creator (https://support.industry.siemens.com/cs/ww/en/view/109803590)

Documentation	Contents	Source
SIMATIC NET	Industrial communication	• Online at: SIMATIC NET (http://w3.siemens.com/mcms/automation/en/industrial-communications/Pages/Default.aspx)
SIMATIC IPC Creating a bootable USB flash drive	Information on: • Creating a bootable USB flash drive for recovery of operating system, software and drivers	• Online at: SIMATIC IPC Creating a bootable USB flash drive (https://support.industry.siemens.com/cs/ww/en/view/109811224)

1.2 Product highlights

The SIMATIC IPC PX-32A with innovative Intel processor architecture is a cost-optimized industrial panel PC that supplements the Embedded series. It is a cost- and function-reduced alternative to SIMATIC IPC PX-39A.

Device view



Note

Depending on the configuration ordered the features and illustrations described in this manual may differ from the features of your device.

High productivity through fast data processing

- High performance in the embedded segment with 11th generation Intel Xeon processors
- Scalable with 4 different processors - from Intel Celeron to Intel Xeon
- Latest memory technology with DDR4 up to 32 GB

Flexibility during installation for use in machines

- Minimal mounting depth for space-optimized installation
- Flexible mounting options (portrait, landscape)
- Rugged enclosure concept for use at ambient temperatures up to 50 °C

Industrial functionality and flexibility for implementation of the embedded solution

- 2 x LAN 10/100/1000 Mbps connections; teaming capability
- 4 x High-Speed USB 3.2 ports; up to 4 serial interfaces
- Easy expandability (1 x M.2 module)
- On/off switch

High system availability thanks to minimization of standstill times

- Maintenance-free because there are no rotating parts (fans, hard drives) and operation without batteries is possible
- Up to one M.2 NVMe SSD, internally mounted with advanced cooling solution
- SIMATIC software

High investment safety to reduce engineering costs

- Long-term availability: Service and support offered for 8 to 10 years as of market launch

Device variants

Devices with resistive single-touch screen display:

- 12" display, resolution: 1280 x 800 pixels
- 15" display, resolution 1366 x 768 pixels
- 19" display, resolution: 1366 x 768 pixels
- 22" display, resolution: 1920 x 1080 pixels

1.3 Applications

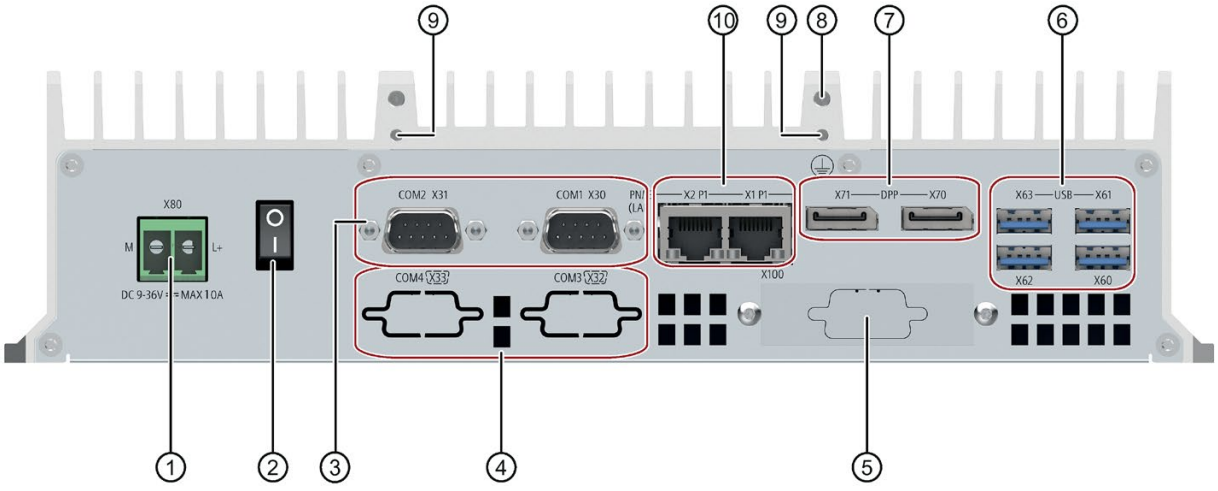
The device offers industrial PC systems for high-performance and space-saving applications in particular for manufacturers in the field of machine, plant and control cabinet engineering:

- Process and visualization applications
- Industrial image processing
- Quality assurance and monitoring tasks
- Measurement, control and rule-based tasks
- Data acquisition and management

1.4 External design of the device

1.4.1 Interfaces and operating elements

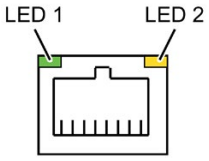
View of the interfaces and operator controls



①	9-36 V DC X80	Power supply connection
②	On/off switch	You switch on the device with the on/off switch. The on/off switch does not isolate the device from the power supply. • Position "ON", when the "_" symbol is pressed. • Position "OFF" is the delivery state.
③	COM1 X30 and COM2 X31	Serial interface 1 and 2 (V.24), 9-pin D-sub socket, RS485/RS232
④	COM3 X32 and COM4 X33 (optional)	Serial interface 3 and 4 (V.24), 9-pin D-sub socket, RS232 (optional)
⑤	Opening for expansion interface X100	Interfaces of external expansion modules (M.2 format)
⑥	4 × USB X60/X61/X62/X63	USB 3.2 Gen 2 type A, high current, backward compatible
⑦	2 x DPP X70/X71	Connection for monitors with DisplayPort interface
⑧	Protective conductor	Connection for protective grounding
⑨	Position for the fixing screws of the strain relief	
⑩	2 × Ethernet X1 P1/X2 P1	Connections for Ethernet RJ45 for 10/100/1000 Mbps • Ethernet X1 P1 is iAMT-capable • Ethernet X2 P1

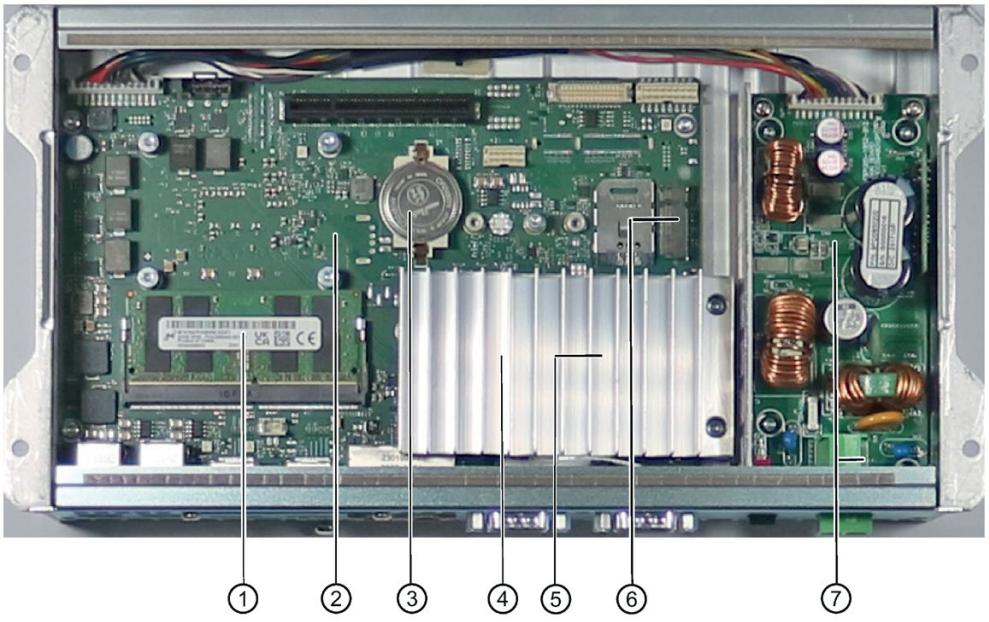
1.4.2 Status displays

Status indicator Ethernet interfaces X1 P1 and X2 P1



Status display	Status	Meaning of the status
LED 1	Off	10 Mbps
	Lit green	100 Mbps
	Lit orange	1000 Mbps
LED 2	Off	No connection
	Lit orange	Connection exists
	Flashes orange	Activity

1.5 Internal design of the device



① Slot for memory module
② Motherboard
③ Backup battery
④ Heat sink for drive (SSD)
⑤ Slot for drive (SSD) under the heat sink
⑥ Slot for M.2 expansion module
⑦ Power supply 9-36 V DC

1.6 Accessories and spare parts

1.6.1 Hardware accessories

Accessories from Siemens are available for your device that are not included in the scope of delivery.

Obtaining accessories from the SIEMENS Industry Mall

1. On the Internet, go to Industry Mall (https://mall.industry.siemens.com).
2. Log in with your customer data.
3. Select your user language.
4. Go to your device in the product catalog (tree structure on left):

   "Automation technology > PC-based Automation > Industrial PC > Panel PC > ..."
5. In the tree structure on the left, click on: SIMATIC IPC PX-32A.
6. Select the "Accessories" tab in the display area.

SIEMENS spare parts services

Information on ordering, the provision and delivery of spare parts can be found under "Industry Online Support: Spare parts services (http://support.automation.siemens.com/WW/view/en/16611927)".

1.6.2 Software accessories

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 2

2.1 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 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 supply voltage.

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

- Always fully disconnect the device from the supply 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 a central, easily accessible AC circuit breaker close to the device, if possible.
- When you install the device, make sure that the power supply connector is easily accessible.

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.

Danger of burns

⚠ CAUTION

Danger of burns

The surface of the device can reach temperatures of over 65 °C.

- Any unprotected contact may cause burns.
- Avoid direct contact during operation of the device.
- Touch the device only with appropriate protective gloves.

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.

TFT displays

Note

Burn-in effect and backlighting

The brightness of the backlighting deteriorates over the course of the screen's service life. A permanent picture with bright screen objects leads to a burn-in effect.

- Use a screen saver to extend the life of the screen and the backlighting and to prevent the burn-in effect.

Note

Defective pixels in the display

The manufacturing process of modern displays does not currently guarantee that all pixels of the display are perfect. It is therefore inevitable that the display will contain a small number of defective pixels. This does not limit the function in any way provided the defective pixels are not all in one location.

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 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.

2.2 Note on transport and storage

Damage caused by transportation and storage

NOTICE

Damage to the device 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 transportation and storage.

WARNING

Electric shock and fire hazard due to damaged device

A damaged device can be under hazardous voltage and trigger 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. Send off the device for immediate repair.

Damage from condensation

NOTICE

Damage from condensation

If the device is subjected to low temperatures or extreme fluctuations in temperature during transportation, moisture could occur on or inside the HMI 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 starting it up.
- Do not expose the device to direct heat radiation from a heating device.
- If condensation develops, wait approximately 12 hours or until the device is completely dry before switching it on.

2.3 Notes on mounting

Device in the control cabinet

⚠ DANGER

Electrocution risk when control cabinet is open

When you open the control cabinet, some areas or components may, possibly due to other devices, be under life-threatening voltage.

Touching these areas or components can cause death or serious bodily injury.

- Always disconnect the cabinet from the mains before opening it.
- Ensure that the power to the control cabinet cannot be turned on accidentally.

2.4 Notes on ambient and environmental conditions

Ambient and environmental conditions

NOTICE

Ambient conditions and chemical resistance

Unsuitable ambient conditions can cause faults or damage the device.
Failure to comply nullifies the warranty in accordance with IEC/UL/EN/DIN-EN 61010-2-201.

- Operate the device only in closed rooms.
- Only operate the device in the ambient conditions specified in the technical specifications.
- Observe the permitted mounting positions of the device.
- Do not obstruct the venting slots of the device.
- Please note that when the device is operated in severe environments which are subject to caustic vapors or gases, the provision of clean air is ensured.
- Clean the enclosure surface with a damp cloth and make sure that no water enters the device.

When you plan your project, you should make allowances for:

- The climatic and mechanical environmental conditions specified in the operating instructions.
- Do not operate the device in severe operating conditions which are subject to caustic vapors or gases.

- For installation in a cabinet, observe the SIMATIC setup guidelines as well as the relevant DIN/VDE requirements or the applicable country-specific regulations.
- Always maintain a minimum clearance of 50 mm to the area of the ventilation slots and do not cover the ventilation slots of the enclosure.

High frequency radiation

CAUTION

Immunity to RF interference

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

High-frequency radiation outside the specified interference immunity ranges can result in device malfunctions.

Persons are injured and the plant is damaged.

- Avoid high-frequency radiation.
- Remove radiation sources from the environment of the device.
- Switch off radiating devices.
- Reduce the radio output of radiating devices.
- Read the information on electromagnetic compatibility.
- Read the information in the technical specifications.

See also

Ambient conditions (Page 68)

2.5 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 IPC 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 IPC should be connected.
- All other components in the plant must be active.

2.6 Notes on the touch screen

⚠ WARNING

Personal injury or property damage due to incorrect operation

Incorrect operation of devices with a touch screen can occur. This can result in personal injury or property damage.

Take the following precautions:

- Configure the plant so that safety-related functions are not operated with the touch screen.
- Switch off the device for cleaning and maintenance.
- Make sure that the touch screen is kept free of dirt.

NOTICE

Damage to the touch screen

Impact with hard objects as well as touching the touch screen with pointed or sharp objects can damage it and lead to a significant reduction in service life or even total failure of the touch screen.

Never touch the touch screen with pointed or sharp objects. Only touch the touch screen with your fingers, a touch stylus or an approved touch glove.

Avoiding malfunctions

⚠ WARNING

Personal injury or property damage due to no protective conductor

An inadequate protective conductor or the lack of one might cause malfunction of the resistive touch screen. Functions may not work properly. This can result in personal injury or property damage.

- Always connect the device to a protective conductor.
- Additional information on connecting the protective conductor can be found in the section "Connecting the protective conductor (Page 39)."

⚠ CAUTION

Unintentional actions with touch screen operation

If you touch the touch screen while system-internal processes are running, unintended reactions of the device might be triggered.

Do not touch the screen in the following situations:

- During the boot process
- When plugging or unplugging USB components
- While Scandisk is running
- During a BIOS update

2.7 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 for the device.
- When in doubt, install the device in an enclosure that meets the requirements of paragraph 9.3.2 of the IEC/UL/EN/DIN-EN 61010-2-201 standard.

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 radio interference suppression.

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

- 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.

Installing and connecting the device

3

3.1 Preparing for installation

3.1.1 Scope of delivery

Device and hardware for the device

- Panel PC SIMATIC IPC PX-32A
- 12 mounting clips
- 1 USB flash drive with Restore or Documentation and Drivers set (optional, if ordered)

Operating system

Depending on the ordered device configuration, the device is equipped with or without an installed operating system.

You can find information on ordered Microsoft® Windows® operating systems under: Important instructions and manuals for operating the device (Page 9) or Technical specifications of the operating systems (Page 71).

Installed software

- Monitoring software (only with installed Microsoft® Windows® operating system)

You will find the latest information on additional software for your device under: Accessories and spare parts (Page 16)

Printed documents

- Quick Install Guide SIMATIC IPC PX-32A
- Product Information "Important notes on your device"

3.1.2 Checking the delivery package

⚠ WARNING

Electric shock and fire hazard due to damaged device

Damaged devices due to improper storage or transport may lead to personal injury and/or substantial damage to equipment.

- You must observe the warnings in "Note on transport and storage (Page 20)".

Procedure

1. Check the delivery unit for any signs of visible transport damage.

   If any transport damage is present at the time of delivery, lodge a complaint at the shipping company in charge. Have the shipper confirm the transport damage immediately.

2. Unpack the device at its installation location.
3. Keep the original packaging in case you have to transport the unit again.
4. Check the Scope of delivery (Page 26) and any accessories you may have ordered for completeness and damage.

   If the contents of the package are incomplete, damaged or do not correspond to your order, you can use the After Sales Information System (ASIS) (http://siemens.com/asis) to provide feedback on product deliveries and repairs.

   Complete the online form for product delivery (quality control notification) under the heading "Product delivery: Feedback on quality control and repairs".

5. Please keep the documentation in a safe place. It is required for initial commissioning and is part of the device.
6. Note down the Identification data of the device (Page 28).

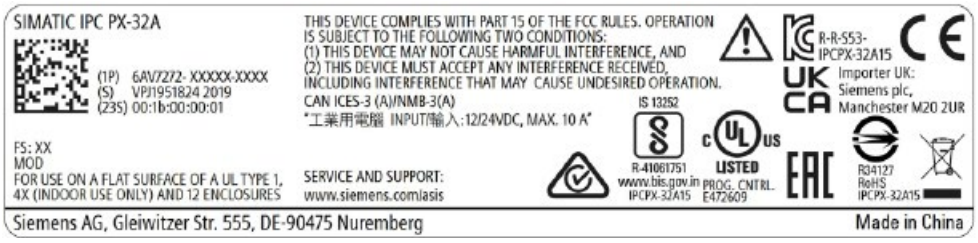
3.1.3 Identification data of the device

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

The following illustrations are examples. The data of your device may differ from the data in these examples.

Nameplate

The following image shows the nameplate on the SIMATIC IPC PX-32A as an example.



COA label

The COA label (Certificate of Authenticity) is located on the side of the device.

Note

The COA label is only available on devices shipped with an installed Microsoft® Windows® operating system.

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



3.1.4 Mounting positions

NOTICE

Approval in accordance with IEC/EN/UL61010

The device meets the requirements for a fire protection enclosure according to section 9.3.2. c) of IEC/UL/EN/DIN-EN 61010-1 and IEC/UL/EN/DIN-EN 61010-2-201 only in the standard mounting position, mounting in landscape format with maximum inclination of ±45° (see figure).

If the device is installed in an enclosure that complies with section 9.3.2. c) of IEC/UL/EN/DIN-EN 61010-1 und IEC/UL/EN/DIN-EN 61010-2-201, the device can also be operated in vertical mode. The device is then classified as "OPEN EQUIPMENT".

NOTICE

Approval in accordance with IEC/EN 61010 for devices with 6-core and 8-core processors (6AV7272-5....-.... with Intel Xeon W-11555MLE and 6AV7272-7....-.... with Intel Xeon W-11865MLE)

The device meets the requirements for a fire protection enclosure according to section 9.3.2. c) of IEC/EN/DIN-EN 61010-1 and IEC/EN/DIN-EN 61010-2-201 only in the standard mounting position, mounting in landscape format with maximum inclination of ±45° (see figure).

Note

Operation in closed rooms

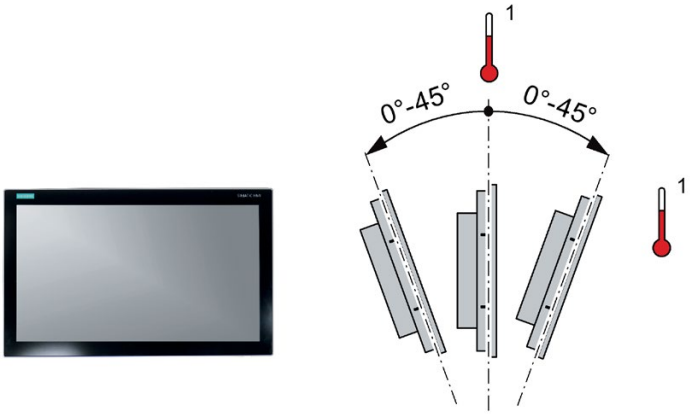
The device is approved for operation in closed rooms only.

The following mounting positions are permitted for the device.

For information on the maximum permissible ambient temperatures during operation, refer to section "Ambient conditions (Page 68)".

Mounting in landscape format

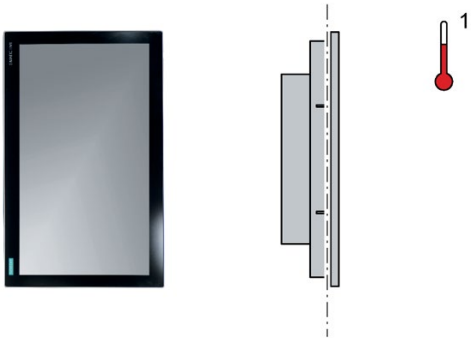
Vertical mounting in landscape format or inclined mounting in landscape format with vertical inclination of max. ±45°:



[1] For temperature specifications, see section "Ambient conditions (Page 68)".

Mounting in vertical format

Upright mounting in vertical format:



[1] For temperature specifications, see section "Ambient conditions (Page 68)".

The power supply is located at the top.

3.1.5 Preparing the mounting cutout

Note

Stability of the mounting cutout

The material in the area of the mounting cutout must provide sufficient strength to guarantee the enduring and safe mounting of the HMI device.

The force of the clamps or operation of the device may not lead to deformation of the material in order to achieve the degrees of protection described below.

Note

Read the information in the section "Installation guidelines (Page 33)".

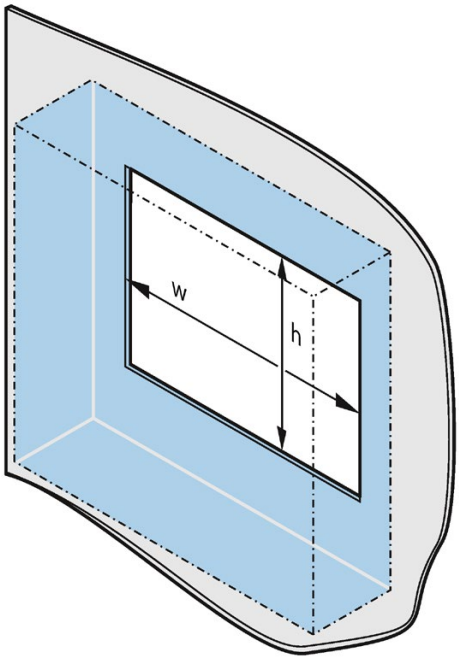
Requirements for complying with degree of protection

The degree of protection of the HMI device can only be guaranteed if the following requirements are met:

- Material thickness at the mounting cutout for a degree of protection IP65 or Enclosure Typ 4X/Typ 12 (indoor use only): 2 mm to 6 mm
- Permissible deviation from plane at the mounting cutout: ≤ 0.5 mm

  This condition must be fulfilled for the mounted HMI device.
- Permissible surface roughness in the area of the mounting seal: ≤ 120 µm (R_z 120)

Dimensions of the mounting cutout



Mounting cutout	Multi-touch device			
	12"	**15"**	**19"**	**22"**
Width w [1]	302^{+1} mm	388^{+1} mm	455^{+1} mm	522^{+1} mm
Height h [1]	208^{+1} mm	241^{+1} mm	279^{+1} mm	317^{+1} mm

[1] Width and height must be interchanged for mounting in vertical format.

Installation depth

Information on the overall depth is available in the section "Dimension drawings (Page 72)".

3.2 Installing the device

3.2.1 Installation guidelines

Procedure during installation and mounting

⚠ WARNING

Dangerous voltage and fire hazard

Improper actions during installation and assembly may lead to personal injury and/or substantial damage to equipment.

You should observe the installation and assembly notes under:

- Notes on mounting (Page 21)
- Notes on ambient and environmental conditions (Page 21)

NOTICE

Insufficient load carrying capacity

If the wall it is mounted on does not have a sufficient load-bearing capacity, the device may fall and be damaged.

- Ensure that the mounting surface on the wall can bear four times the total weight of the device, including fixing elements.

NOTICE

Incorrect fixing elements

The device may not be securely fitted if you use fixing elements other than those specified below for mounting. The device can fall and may be damaged.

- Use only the specified fixing elements.

Note

- See the notes under Preparing the mounting cutout (Page 31).
- For installation in control cabinets, note the SIMATIC setup guidelines as well as the relevant DIN/VDE requirements or the country-specific regulations.
- Provide adequate volume in the control cabinet for air circulation and heat transport. Keep at least 50 mm distance between the device and control cabinet.
- The ventilation slots of the device may not be covered or obstructed.
- Ensure there is enough clearance in the control cabinet to allow the backplane cover to be removed.
- Equip the control cabinet with struts for stabilizing the mounting cut-out. Install struts where necessary.

See also

Mounting positions (Page 29)

3.2.2 Mounting the device with mounting clips

Positions of the mounting clips

To achieve the degree of protection for the device, the positions for the mounting clips shown below must be adhered to.

Requirement

- All packaging components and protective films have been removed from the device.
- To install the device, you need the mounting clips from the accessory kit.
- The mounting seal on the front of the device is not managed.

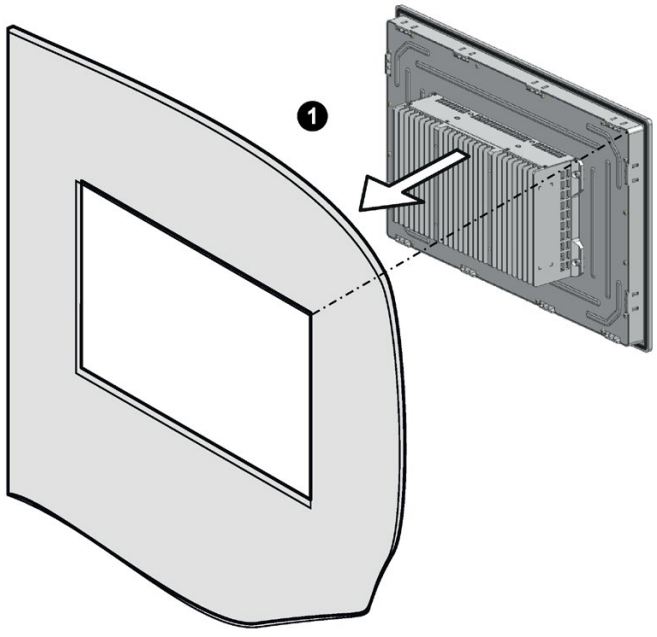
Procedure

Note

If the mounting seal is damaged or protrudes from the device, the guaranteed degree of protection is not ensured.

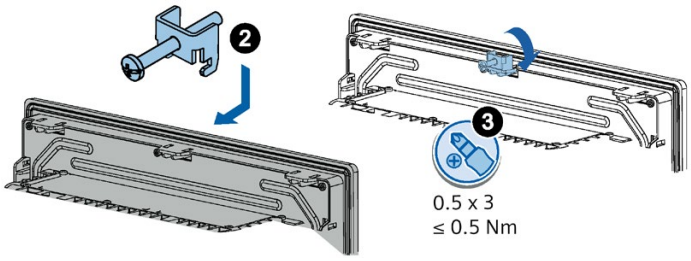
It is prohibited from mounting the device if the mounting seal is damaged.

1. Working from the front, insert the device into the mounting cut-out.



2. Insert a mounting clip into the cutout provided on the device.

   Note the correct position of the mounting clips.

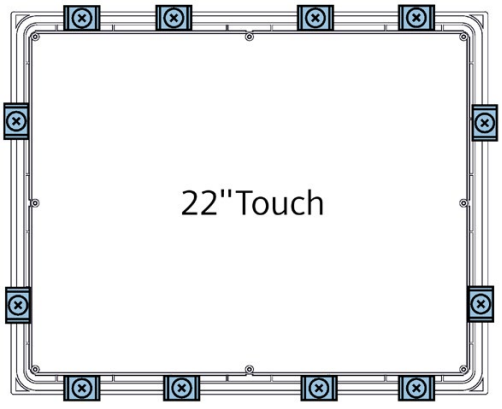
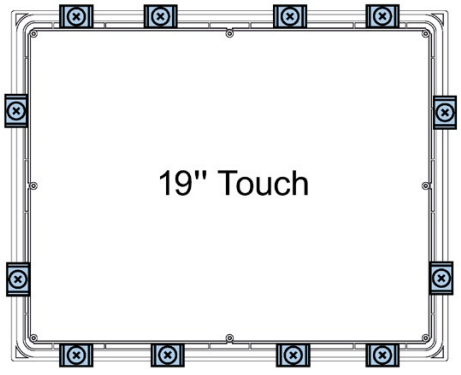


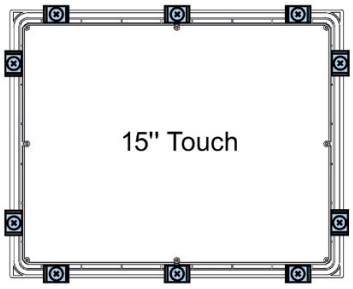
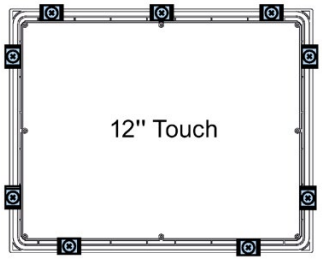
3. To secure the mounting clip, tighten the grub screw with the slotted screwdriver, torque 0.5 Nm.
4. Repeat steps 2 and 3 for all mounting clips.
5. Check the fit of the mounting seal.

Position of the mounting clips for multi-touch devices

Fasten the mounting clips to the positions as illustrated. The number of mounting clips depends on the device:

22" (12 x), 19" (12 x), 15" (10 x), 12" (9 x)

Device	Position
22" display	
19" display	

Device	Position
15" display	
12" display	

3.2.3 Fastening a device using a VESA adapter

You can also fasten the SIMATIC IPC PX-32A up to a display size of 24" using a 100 x 100 mm VESA adapter.

Different models of VESA adapters are offered by third-party manufacturers.

NOTICE

Approval in accordance with IEC/EN/UL61010

The device meets the requirements for a fire protection enclosure according to section 9.3.2. c) of IEC/UL/EN/DIN-EN 61010-1 and IEC/UL/EN/DIN-EN 61010-2-201 only in the standard mounting position, mounting in landscape format with maximum inclination of ±45° (see figure).

Using the device in the vertical mounting position with a VESA adapter is not permitted within the scope of UL61010-2-201.

NOTICE

Approval according to standard IEC/EN61010 for devices with 6-core and 8-core processor (6AV7272-5....-.... with Intel Xeon W-11555MLE and 6AV7272-7....-.... with Intel Xeon W-11865MLE)

The device meets the requirements for a fire protection enclosure according to section 9.3.2. c) of IEC/EN/DIN-EN 61010-1 and IEC/EN/DIN-EN 61010-2-201 only in the standard mounting position, mounting in landscape format with maximum inclination of ±45° (see figure).

NOTICE

Degree of protection for overall device

If you are fastening the device via a VESA adapter, degree of protection IP65 of the device is lost.

Spray and water jets as well as penetrating substances can then damage the device.

NOTICE

Dimensioning of the VESA adapter

When selecting the VESA adapter, make sure that it is designed for at least four times the weight of the device.

WARNING

The device must be mounted securely

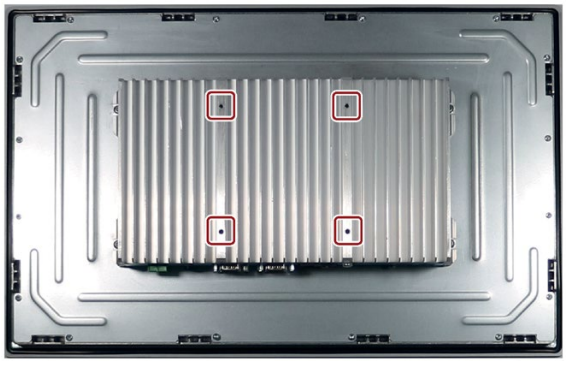
Inadequately dimensioned fastening material may cause the device to fall down. Serious bodily injury may result.

Make sure that fasteners are adequately dimensioned during installation of the device. Make sure to consider the weight of the device and the forces acting on the device when dimensioning the fasteners. This applies in particular to dynamic load of the device. All fasteners including mounting surfaces, support arm systems, and fastening elements such as screws must be able to carry at least four times the weight of the device.

Observe any further statutory specifications applying at the location of use of the device and further applicable regulations with regard to the fastening of the device.

Procedure

1. Attach the VESA adapter 100 x 100 mm to the marked locations.
2. To do this, use M4x10 screws with property class 8.8 and tighten these with a torque of 3 Nm.



3.3 Connecting the device

3.3.1 Connecting the protective conductor

The protective conductor connection is needed to protect the device. The protective conductor discharges dangerous currents, triggering a surge protection switch. The protective conductor also improves the discharge of interference generated by external power cables, signal cables or cables for I/O devices to ground.

The connection for the protective conductor is labeled with the following symbol:

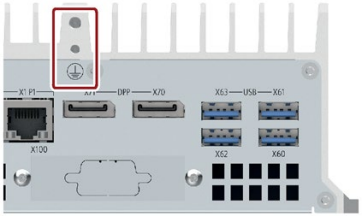


Requirement

- The device has been installed.
- 1 protective conductor, minimum cross section 2.5 mm^2 = AWG14
- 1 T20 screwdriver
- 1 x M4 cable lug

Procedure

1. Crimp the cable lug onto the protective conductor.
2. Screw the cable lug onto the protective conductor connection as shown.



3. Wire the protective conductor to the protective conductor connection of the control cabinet in which the device is installed.

3.3.2 Connecting the power supply

3.3.2.1 Connecting the terminal

The connection terminal for connecting the power supply is fitted to the device.

- The connection terminal is designed for cores with a cross-section of between 0.25 mm² and a maximum of 4 mm².
- Only connect copper cables (Cu) with a cross-section ≥ 1.5 mm² and a temperature rate ≥ 85 °C.
- You can use either semi-rigid or flexible cables.
- You do not need to use end sleeves.

Requirements

- The external 9-36 V DC power supply is switched off.
- 1 connection terminal
- 1 0.6 × 3.5 mm Philips screwdriver

Procedure

NOTICE

Damage to the device

Do not adjust the screws in the connection terminal when it is plugged into the device.

The pressure of the screwdriver on the connection terminal and the socket can damage the device.

- Connect the wires to the connection terminal when it is not plugged in.

Note

Make sure that the cores are connected to the correct terminals. Observe the labeling for the contacts on the device.

CAUTION

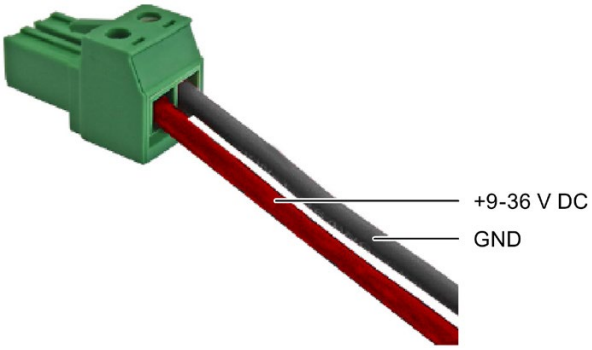
Use copper cables at terminal connections

Use copper cables (Cu) for all supply lines connected to the device via terminals, e.g. 24 V DC power supply cables to the 24 V DC power supply terminals.

Utiliser des câbles en cuivre sur les connexions à bornes

Utilisez des câbles en cuivre (Cu) pour tous les câbles d'alimentation qui sont raccordés à l'appareil par des bornes, par exemple les câbles d'alimentation 24 V CC sur le connecteur d'alimentation 24 V CC.

1. Connect the cables as shown with a tightening torque of 0.6 Nm. Make sure the connection terminal is in the correct position as shown.



3.3.2.2 Connecting the 9-36 V DC power supply

Please note the following to ensure you operate the device safely and in accordance with regulations:

⚠ WARNING

Safety regulations - connecting cable

Use only DC connecting cables which comply with the local safety regulations.

Otherwise, there is a risk of fire and electric shock. This can result in personal injury or property damage.

- Ensure that the DC connecting cables comply with the safety regulations of the country in which the device is installed and bear the marks required in each case.
- Connect the protective conductor in accordance with the operating instructions.

⚠ WARNING

Risk of electric shock

The On/Off switch does not fully disconnect the device from the line voltage.

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

- Always fully disconnect the device from the line 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 a central, easily accessible AC circuit breaker close to the device, if possible.
- When you install the device, make sure that the power supply connector is easily accessible.

NOTICE

Approval in accordance with IEC/EN/UL61010

- The device may only be connected to a 24 V DC power supply which meets the requirements of a safe extra-low voltage (SELV/PELV) in accordance with the standard IEC/UL/EN/DIN EN 61010-2-201. The power supply must fulfill the requirements of NEC Class 2 or respectively Limited Energy according to IEC/UL/EN/DIN EN 61010-2-201.
- If the device is installed in an enclosure that complies with section 9.3.2. c) of IEC/UL/EN/DIN-EN 61010-1 und IEC/UL/EN/DIN-EN 61010-2-201, it can be supplied from a "Higher NEC Class 2 / Limited Energy" source. The device is then classified as "OPEN EQUIPMENT".

Note

Reverse polarity protection

The 9-36 V DC power supply features reverse polarity protection. If you mix up the 9-36 V DC connecting cables and ground, the device is not damaged but does not switch on. After the power supply has been connected correctly, the device will again be ready to operate.

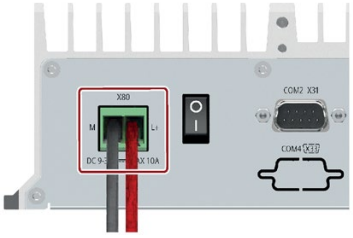
Requirements

- The device has been installed.
- The Connecting the protective conductor (Page 39) is connected.
- 1 wired Connecting the terminal (Page 40).

  The associated 9-36 V DC power supply is switched off.
- 1 0.6 × 3.5 mm Philips screwdriver

Procedure

1. Make sure that the ON/OFF switch is in position "O" (Off) to avoid unintentional startup of the device when you plug in the power cord.
2. Insert the terminal at the marked position.



3.3.3 Connecting I/O devices

CAUTION

Fault caused by I/O devices

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

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

- You should observe the warnings relating to the connection of I/O devices in "Information on I/O devices (Page 23)".

Procedure

Note

Use the original connections of the I/O to be connected without adapters or extensions.

1. Connect the I/O devices to the respective interfaces.

   Information on the position of the interfaces is available in "Interfaces and operating elements (Page 13)".

2. Secure the cables with the strain relief.

   See: Securing the lines (Page 46)

Connecting several monitors (multi-monitoring)

You will find two ports on the front of the device for connecting monitors. These ports are connected to the motherboard.

Parameter assignment is performed by means of the Control Panel in Windows®.

The IPC is factory set for multi-monitoring. If needed, you can configure the multi-monitoring function and the output of the boot screen in the firmware/BIOS settings.

The following table shows the various connection options for the monitors on the device interfaces.

		Motherboard	
		DPP1	DPP2
Monitor 1	DP	X	-
	DVI	X 1)	-
	VGA	X 2)	-
Monitor 2	DP	-	X
	DVI	-	X 1)
	VGA	-	X 2)

1) - via DP to DVI-D adapter

2) - via DP-VGA adapter

3.3.4 Connecting the device to networks

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

Ethernet

You can use the integrated Ethernet interfaces (10/100/1000 Mbps) for communication and data exchange with automation devices, e.g. SIMATIC S7.

You need the "SOFTNET S7" software package for this.

PROFINET

PROFINET can be operated via:

- Standard Ethernet interfaces (RT)

SIMATIC NET

Use this software package to create, operate and configure an innovative network for Field & Control level. You can find information on this under SIMATIC NET (http://w3.siemens.com/mcms/automation/en/industrial-communications/Pages/Default.aspx).

The software package and the documentation are not included in the scope of delivery.

Additional information

You can find additional information on the Internet at: Technical Support (https://support.industry.siemens.com).

3.3.5 Securing the lines

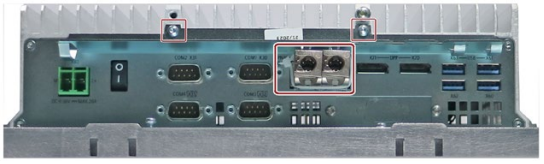
The strain relief (see "scope of delivery (Page 26)") provided is used to prevent accidental loosening of the interface cables from the device.

Requirements

- I/O devices are connected to the respective interfaces.
- 1 screwdriver of type Torx T10
- 1 cable grip (not included in the scope of delivery)
- Cable ties (not included in the scope of delivery)
- 2 screws (not included in the scope of delivery)

Procedure

1. Fasten the strain relief at the marked points using the supplied pan-head screws.
2. Pass the cable tie around the strain relief bar and secure the cables as shown.
3. Cut off the protruding ends of the cable ties.



Commissioning the device

4

4.1 Switching on the device

Requirements

- The power supply is connected.

Procedure

1. Switch the ON/OFF switch at the front of the device on ("ON" position when the symbol "_" is pressed in).

Information on the position of the switch is available under "Interfaces and operating elements (Page 13)".

Commissioning the installed Windows® operating system

You can find information on first startup of the device and commissioning the installed Windows® operating system in the documentation.

See also "Important instructions and manuals for operating the device (Page 9)" for more on this.

4.2 Switching off the device

Shutting down the operating system

For active operating system

- Shut down the operating system properly.

Result

The device is switched off but not fully disconnected from the line voltage.

Fully disconnecting the device from the line voltage

⚠ WARNING

Risk of electric shock

The On/Off switch does not fully disconnect the device from the line voltage.

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

- Always fully disconnect the device from the line 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 a central, easily accessible AC circuit breaker close to the device, if possible.
- When you install the device, make sure that the power supply connector is easily accessible.

- Shut down the operating system and unplug the power plug from the front of the device, see "Interfaces and operating elements (Page 13)".

The device is switched off and fully disconnected from the line voltage. No trickle current is flowing.

Hardware reset

With the hardware reset, you can restart the device if it does no longer respond to keyboard or mouse input. Any running operating system will not shut down safely.

NOTICE

Data loss

If a hardware reset is performed, the device undergoes a hard reboot.

- Data in the main memory is deleted.
- Data on the hard disk drive may be lost.
- The device may be damaged.

Perform a hardware reset only in the case of an emergency.

- Operate the on/off switch to initiate a hardware reset, see "Interfaces and operating elements (Page 13)".

See also

General safety instructions (Page 17)

Operating the device 5

5.1 Possible operations

Depending on your device and the connected I/O devices, the following possible operations are available:

- Touch screen for touch device

  ⚠ CAUTION

  Unintentional actions with touch screen operation

  If you touch the touch screen while system-internal processes are running, unintended reactions of the device might be triggered.

  Do not touch the screen in the following situations:

  - During the boot process
  - When plugging or unplugging USB components
  - While Scandisk is running
  - During a BIOS update

- Screen keyboard for touch device
- External keyboard, connected via USB
- External mouse, connected via USB

See also

Notes on the touch screen (Page 24)

5.2 Trusted Platform Module (TPM)

Your device has a Trusted Platform Module conforming to the TPM 2.0 standard. The Trusted Platform Module is a chip that enhances your device with security functions. It provides improved protection from manipulation of the PC, for example.

NOTICE

Import restrictions for the Trusted Platform Module

Use of the Trusted Platform Module is subject to legal restrictions in some countries and is not permitted there.

- Be sure to observe the respective import restrictions of the country in which the device will be used.

Activate the Trusted Platform Module

You can find information on activating the Trusted Platform Module in the detailed firmware/BIOS description, see "Important instructions and manuals for operating the device (Page 9)".

Expanding and assigning parameters to the device 6

6.1 Opening the Device

⚠ WARNING

Risk due to unauthorized opening and improper repairs or expansions

Improper procedure when carrying out expansions may result in damage to equipment or endanger the user.

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 25)".

⚠ WARNING

Malfunctions and electric shock

Improper intervention in the device endangers operational reliability and may damage the device.

The results can be personal injuries and damage to the plant.

Take the following precautions:

- Disconnect the power plug before you open the device.
- 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.

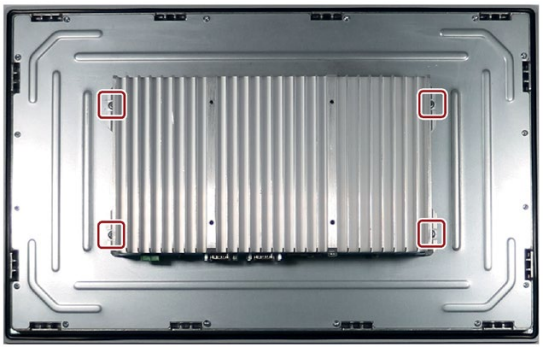
Take corresponding precautionary measures before you open the device.

Requirements

- The device is fully disconnected from the line voltage, see "Switching off the device (Page 47)".
- All connecting cables are unplugged.
- Screwdriver of type Torx T10

Procedure

1. Remove the marked screws.



2. Tilt the PC enclosure away from the touch panel.

3. Disconnect the three marked cables from the motherboard.

   Note: The gold-colored, right foil cable must be unlocked beforehand.



4. Put down the front panel.

Close the device in reverse order.

6.2 Expansion modules (M.2)

6.2.1 Usable expansion modules (M.2)

The expansion modules (M.2) are referred to as **M.2 modules** below.

An M.2 module that complies with the following specifications is supported:

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

[1] Key E/Key A+E is also possible via M.2 Key E-Key B adapter

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 connecting cable between M.2 modules and conditioner card should be at least 150 mm long.

See also

Position of the interfaces on the motherboard (Page 83)

Dimension drawing of expansion modules (M.2) (Page 76)

6.2.2 Installing/removing expansion modules (M.2)

Note

Requirement for M.2 modules

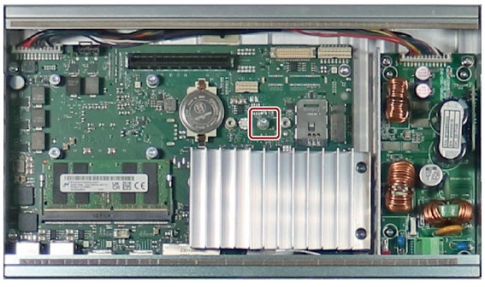
- You can find the permitted dimensions for M.2 modules under "Usable expansion modules (M.2) (Page 52)". If the permissible height is exceeded, contact problems, malfunctions and installation difficulties cannot be ruled out.
- You can find information on which M.2 modules you can install in which slot under "Usable expansion modules (M.2) (Page 52)".

Requirements

- You are familiar with the information on M.2 modules and the conditions of use of M.2 modules, see "Usable expansion modules (M.2) (Page 52)".
- The device is open, see important information regarding this under Opening the Device (Page 50).
- Adapter plates: If the M.2 module to be used has external interfaces, you can use the adapter plates supplied with the M.2 module to install the connectors.
- Screwdrivers of type Torx T10 and T8

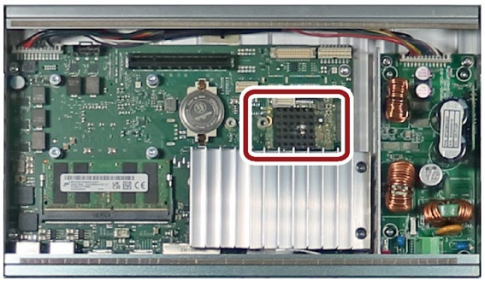
Procedure - Installation

1. Remove the designated screw on the motherboard with the screwdriver of the type Torx T8.

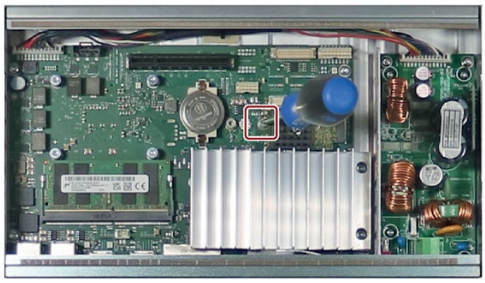


2. Insert the M.2 module into the relevant slot (X100).

   Take care not to touch the contacts of the M.2 module when you do this.



3. Secure the M.2 module with the screw that you removed in the first step.
   Only use the original screws with the spacers.
   Note: Make sure that the M.2 module is between the head and the spacer of the screw.

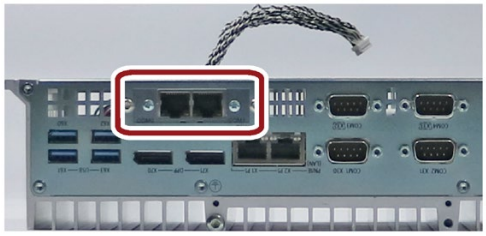


If the M.2 module includes a cable with an additional interface card that must be connected to the enclosure opening, you must also execute the following steps:

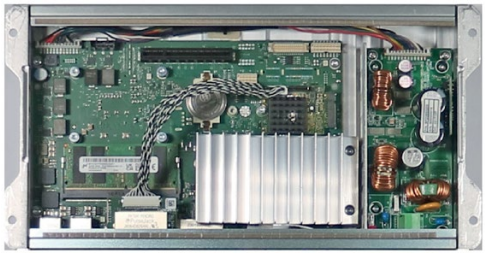
4. Loosen the marked screws for fixing the blanking cover using the Torx T10 screwdriver.



5. Place the additional interface card from the inside against the empty enclosure opening and secure it using the screw.



6. Connect the cable of the interface card to the M.2 module.



7. Close the device as specified in section "Opening the Device (Page 50)".

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.

See also

Replacing M.2 NVMe SSD (Page 56)

6.3 Memory modules

6.3.1 Installing and removing a memory module

The motherboard is equipped with one slot for an SO-DIMM DDR4 memory module. You can use it to expand the memory capacity of the device to a maximum of 32 GB.

Usable memory modules

- DIMM DDR4 memory modules
- Memory transaction rate 3200 MT/sec "unbuffered"
- "without ECC"

Note

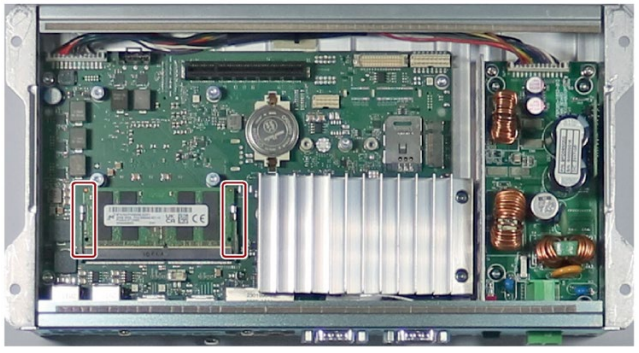
Use only the memory modules recommended by Siemens AG.

Requirement

- The device is open, see important information under "Opening the device (Page 50)".

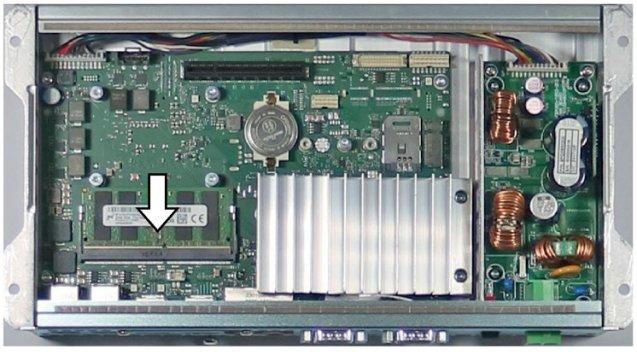
Procedure - Removal

1. Push down the module clips towards the outside.
   The memory module tilts forward.
2. Remove the memory module from the slot.



Procedure - Installation

1. Insert the memory module into the marked slot at an incline with the contact side facing the motherboard.
2. Carefully press the memory module into the contact strip until the latches engage.



After insertion and removal

Close the device.

The new memory capacity will be automatically detected and displayed in the BIOS setup when the device is switched on.

6.4 Drives

6.4.1 Replacing M.2 NVMe SSD

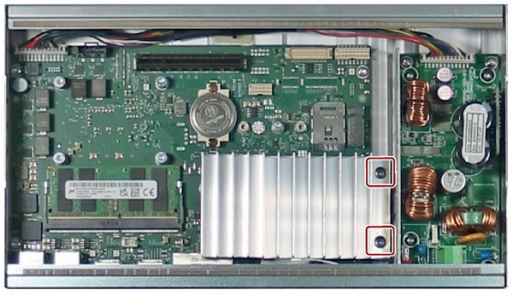
NOTICE
Risk of damaging the drive and data loss When you remove the drive while data is being written to it, you may damage the drive and destroy data. • Observe the ESD guidelines.

Requirements

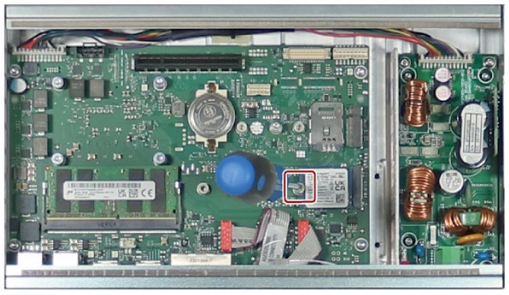
- The device is open, see important information regarding this under Opening the Device (Page 50).
- M.2 NVMe SSDs with a length of 30 or 80 mm
- The device is fully disconnected from the line voltage, see "Switching off the device (Page 47)".
- Screwdrivers of type Torx T10 and T8

Procedure - Removal

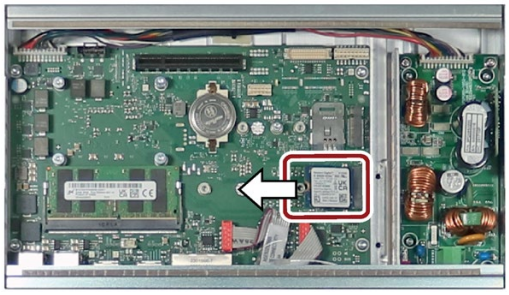
3. Remove the designated screws of the heat sink with the type Torx T10 screwdriver.
2. Remove the heat sink upwards and set it aside.



3. Remove the designated screw on the motherboard with the screwdriver of the type Torx T8.



4. Pull the M.2 NVMe SSD out of the slot.



Procedure - Installation

Follow the steps for removal in reverse order.

See also

Hardware accessories (Page 16)

Device maintenance and repair 7

7.1 Repair information

⚠ WARNING

Risk due to unauthorized opening and improper repairs or expansions

Improper procedure when carrying out expansions may result in substantial damage to equipment or endanger the user.

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 25)".

7.2 Maintenance intervals

To maintain high system availability, we recommend the preventative replacement of those PC components that are subject to wear. The table below indicates the intervals for this replacement.

Component	Replacement interval
Backup battery	5 years
SSD	Depending on the type of use[1]

[1] The interval for replacement of the flash drives (SSD) depends greatly on the type of use. A specific interval cannot be given.

7.3 Cleaning the Device Front

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

⚠ CAUTION

Unwanted reactions when cleaning the device

You risk unintentional actuation of control elements if you clean the device while it is switched on.

You may possibly trigger unwanted actions of the device or controller that are liable to cause personal injury or damage to the machinery.

- Always switch off the device before you clean it.

Cleaning Agents

NOTICE

Damage to the HMI device caused by impermissible cleaning agents

Impermissible and unsuitable cleaning agents may cause damage to the HMI device.

Use only a damp cloth to clean the device.

- See the notes under "Notes on ambient and environmental conditions (Page 21)".

Cleaning the Device Front

1. Switch off the device.
2. Dampen the cleaning cloth.
3. Clean the device with the cleaning cloth.

7.4 Removing and installing hardware

7.4.1 Changing the backup battery

⚠ WARNING

Explosion hazard and risk of release of hazardous substances

Installing the wrong type of battery can cause a DANGER of explosion or fire.

Improper handling of lithium batteries can also result in an explosion of the batteries.

An explosion of the batteries and the released pollutants can cause severe personal injury. Obsolete batteries endanger the function of the device.

Note the following when handling lithium batteries:

- Replace the battery every 5 years.
- Replace the lithium battery only with the type recommended by the manufacturer. The new lithium battery must be certified by UL and meet the following requirements:
  - Type: CR2450W or BR2450A
  - Rated voltage: 3 V DC
  - Maximum special charging current: 5 mA
- To find out which requirements apply to product maintenance, contact Technical Support.
- Do not throw lithium batteries into open fire, do not solder on the cell case, do not open the battery, do not short-circuit the battery, do not reverse the polarity of the battery, do not heat the battery above 100 °C and make sure to protect the battery from direct sunlight, moisture and condensation.

⚠ WARNING

Risque d'explosion et d'émission de substances nocives

l'installation d'une pile ou d'un accumulateur de type inadéquat peut provoquer un DANGER d'explosion ou d'incendie.

Une manipulation non conforme des piles au lithium peut conduire à leur explosion.

L'explosion des piles et l'émission de polluants qui en résulte peuvent entraîner de graves lésions corporelles. Des piles usagées constituent un danger pour le fonctionnement de l'appareil.

Observez les remarques suivantes lorsque vous manipulez des piles au lithium :

- Remplacez la pile tous les 5 ans.
- Remplacez la pile au lithium uniquement par une pile du type recommandé par le constructeur. La nouvelle pile au lithium doit avoir une certification UL et satisfaire aux exigences suivantes :
  - Type : CR2450W ou BR2450A
  - Tension nominale : 3 V CC
  - Courant de charge anormal max. : 5 mA
- Pour toute demande concernant la maintenance du produit, contactez le support technique Siemens.
- Ne jetez pas au feu des piles au lithium, n'effectuez pas de soudage sur la pile, ne la rechargez pas, ne l'ouvrez pas, ne la court-circuitez pas, n'intervertissez pas les pôles, ne la chauffez pas à plus de 100 °C et protégez-la de l'ensoleillement direct, de l'humidité et de la condensation.

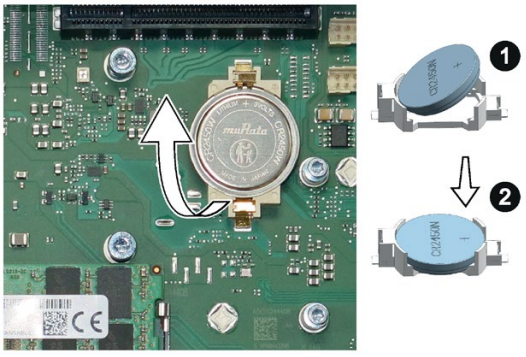
Requirements

- An original spare part, that is a backup battery of the same type.
- You have noted the current firmware/BIOS settings, because the configuration data of the device may be deleted when the battery is replaced.

  You can find information on this in the detailed firmware/BIOS description, see Important instructions and manuals for operating the device (Page 9).
- The device is open, see important information regarding this under Opening the Device (Page 50).
- You have observed the local regulations relating to the disposal of used batteries.

Procedure

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. Close the device.
4. Check the firmware/BIOS settings.



See also

Maintenance intervals (Page 58)

7.5 Installing operating system, software and drivers

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.

7.6 Configuring firmware/BIOS

For information on configuring firmware/BIOS and on the firmware/BIOS settings in the delivery state, refer to the detailed firmware/BIOS description, see "Important instructions and manuals for operating the device (Page 9)".

Note

If your IPC fails to boot, for example, by crashing during a BIOS update, contact your local SIEMENS representative.

You can find information on "BIOS Recovery" and "ME update" under "Pin assignment of the internal interfaces (Page 84)".

7.7 Backing up data and changing partitions

We recommend the "SIMATIC IPC Image & Partition Creator" software to back up data under Windows®, see "Important instructions and manuals for operating the device (Page 9)".

7.8 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

8

8.1 Applicability of technical specifications

Note

The following technical specifications only apply under the following conditions:

- The device is in good working order.
- The device is closed.
- The I/O devices fulfill the requirements for the respective area of application (interference emission according to EN 61000-6-3 / IEC 61000-6-3, interference immunity according to EN 61000-6-2 / IEC 61000-6-2).

8.2 General technical specifications

See the note under "Validity of the technical specifications (Page 64)".

Article number	6AV7272-.....-.... (for details, refer to the ordering documentation)			
Dimensions (W x H x D in mm)	12"	15"	19"	22"
	320 x 226 x 89	406 x 258 x 96	473 x 297 x 96	540 x 334 x 96
Weight	12"	15"	19"	22"
	Approx. 4.5 kg	Approx. 6 kg	Approx. 7 kg	Approx. 8 kg
Supply voltage DC	Nominal 12/24 V DC, 9-36 V DC			
Input current DC	Continuous current up to 10 A			
Short-term voltage interruption in accordance with Namur	Max. 20 ms (at 12 V) Max. 20 ms (at 20.4 V) (max. 10 events per hour; recovery time of at least 1 s)			
Max. power consumption	83 W (at 9 V) 82 W (at 12 V) 80 W (at 24 V) 77 W (at 36 V)			
Noise emission	< 40 dB(A) according to DIN 45635-1			
Degree of protection	IP 20 according to IEC 60529 [1] IP 65 (front)			
Quality assurance	In accordance with ISO 9001			

Safety	
Protection class	Protection class III according to IEC 61140
Degree of pollution	Device is designed for environments with pollution degree 2
Transient overvoltages	Device is designed for connection to supply with overvoltage category II (transient overvoltages up to 2500 V)
Safety specifications	• IEC 61010-2-201 • EN 61010-2-201 • DIN EN 61010-2-201 • UL 61010-2-201 • CSA C22.2 No 61010-2-201

[1] not evaluated by UL

See also

Connecting the 9-36 V DC power supply (Page 42)

8.3 Current/power requirements and power supply

8.3.1 Current and power requirements of the system components

Maximum current values

Component	Voltage		
	+3.3 V	**+5 V**	**+12 V**
USB port [1, 4]	-	0.9 A	-
DisplayPort	1 A	-	-
M.2 NVMe SSD	3.3 A	-	-
M.2 slot [2, 4]	2 A	-	-
PCIe slot [3, 4]	1.5 A	-	0.5 A

1 Maximum total power 18 W for all USB devices

2 The total power for each M.2 slot must not exceed 2.5 W.

3 The total power for each PCIe slot must not exceed 8 W.

4 The total power for all USB ports, M.2 and PCIe slots must not exceed 15 W.

Typical power values

Component	Current consumption 12 V DC	Power consumption Efficiency 0.85	Current consumption 24 V DC	Power consumption Efficiency 0.85
Device with BIOS setting "Power & Performance Scenario" = "High Temperature" or "Stable Performance"	3.30 A	39.60 W	1.65 A	39.60 W
Device with BIOS setting "Power & Performance Scenario" = "Balanced"	3.88 A	46.56 W	1.93 A	46.32 W
Device with BIOS setting "Power & Performance Scenario" = "Max Performance"	4.20 A	50.40 W	2.14 A	51.36 W

8.3.2 Technical specifications DC power supply (DC)

Degree of protection	IP20 (in installed state)
Protection class	VDE 0106

Power supply characteristics	**DC power supply**
Input data	
Voltage	Nominal 12/24 V DC, 9-36 V DC, not electrically isolated
Continuous current	Max. 10.6 A
Starting current (load-independent)	Max. 40 A for 1.6 ms Max. 25 A for further 4 ms
• I^2t value:	Max. 4.5 A^2s
Active power	96 W
Output data	
Voltages	+12 V / 7.1 A
Power output • Continuous power • Temporary power (30 s) • Peak power (10 ms)	 Max. 85 W Max. 140 W Max. 210 W

8.4 Electromagnetic compatibility

See the note in "Applicability of technical specifications (Page 64)".

Interference emission	EN 61000-6-3, EN 61000-6-4, CAN/CSA CISPR32 Class B; KS C 9610-6-3; FCC Class A
Immunity to interference	EN 61000-6-1; EN 61000-6-2; KS C 9610-6-2
Interference immunity on the supply cables	± 2 kV according to IEC 61000-4-4; burst ± 1 kV according to IEC 61000-4-5; symmetrical surge ± 2 kV according to IEC 61000-4-5; asymmetrical surge
Noise immunity on signal lines	± 1 kV acc. to IEC 61000-4-4; Burst; Length < 30 m ± 2 kV acc. to IEC 61000-4-4; Burst; Length > 30 m ± 2 kV acc. to IEC 61000-4-5; Surge; Length > 30 m
Immunity to electrostatic discharge	± 6 kV contact discharge in accordance with IEC 61000-4-2 ± 8 kV air discharge in accordance with IEC 61000-4-2
Immunity to RF interference	• 10 V/m 80 MHz – 2.7 GHz, 80% AM to IEC 61000-4-3 • 3 V/m 2.7 – 6 GHz, 80% AM to IEC 61000-4-3 • 10 V 10 kHz – 80 MHz, 80% AM according to IEC 61000-4-6

8.5 Ambient conditions

See the note in "Applicability of technical specifications (Page 64)".

Climatic ambient conditions	
Temperature - Operation	**Landscape format - horizontal:** • 0 to +50 °C [1] **Horizontal format - inclined max. ± 45°:** • 0 to +50 °C [1] **Portrait format - vertical:** • 0 to +45 °C [1]
- Storage/transport	-20 to +60 °C
- Gradient	Max. 10 °C/h in operation, 20 °C/h storage, no condensation
Relative humidity - Operation	tested to IEC 60068-2-78, IEC 60068-2-30 Temperature 0 °C to 30 °C, relative humidity 5 - 85%; Permitted range: 0 to 31 °C: 5 ... 80%; decreasing linearly to 5 ... 25% at 55 °C
- Storage/transport	Temperature 25 °C - 55 °C, relative humidity 95%
Air pressure - Operation	 1080 to 689 hPa (corresponds to an altitude of -1000 to 2000 m)
- Storage/transport	1080 to 660 hPa (corresponds to an altitude of -1000 to 3500 m)
Mechanical ambient conditions	
Vibration - Operation - Storage/transport	tested according to DIN IEC 60068-2-6 5 to 9 Hz: 3.5 mm, 9 to 500 Hz: 9.8 m/s^2 5 to 9 Hz: 3.5 mm, 9 to 500 Hz: 9.8 m/s^2
Shock resistance - Operation - Storage/transport	Tested to IEC 60068-2-27, IEC 60068-2-29 half-sine 150 m/s^2, 11 ms half-sine 250 m/s^2, 6 ms

1 This information applies to the setting "Balanced" in the BIOS Setup, menu "Advanced" > "Power&Performance" > "CPU Power Management Control" > "Power & Performance Scenario"; the maximum ambient temperature must be reduced by 5 °C for the setting "Max Performance".

8.6 Technical specifications of the drives

See the note in "Applicability of technical specifications (Page 64)".

SSD	M.2 NVMe SSD >= 256 GB, form factor 22 mm x 30 mm or 22 mm x 80 mm, type M

8.7 Technical specifications of the motherboard

See the note in "Applicability of technical specifications (Page 64)".

Chipset	Intel® RM590E
Processor	• Intel® Celeron® 6600HLE 2 cores/2 threads, 2.1 GHz, 8 MB cache • Intel® Xeon® W-11155MLE 4 cores/8 threads, 1.8 (3.1) GHz, 8 MB cache • Intel® Xeon® W-11555MLE 6 cores/12 threads, 1.9 (4.4) GHz, 12 MB cache, vPro (iAMT) • Intel® Xeon® W-11865MLE 8 cores/16 threads, 1.5 (4.5) GHz, 24 MB cache, vPro (iAMT)
Main memory	4 up to 32 GB, DDR4 SDRAM, SODIMM see ordering documents for features

8.8 Technical specifications of graphics/display

See the note in "Applicability of technical specifications (Page 64)".

Graphics controller

Graphics controller	Intel® UHD Graphics 16 EUs: • Intel® Celeron® 6600HLE • Intel® Xeon® W-11155MLE Intel® UHD Graphics 32 EUs: • Intel® Xeon® W-11555MLE • Intel® Xeon® W-11865MLE
Resolutions/frequencies/colors	DisplayPort: Max. 4096 × 2304 / 60 Hz / 36 bits

Display

	12"	15"	19"	22"
Display type	LCD TFT	LCD TFT	LCD TFT	LCD TFT
Active display area	261 x 163 mm	344 x 194 mm	410 x 230 mm	476 x 268 mm
Resolution	1280 x 800 pixels	1366 x 768 pixels	1366 x 768 pixels	1920 x 1080 pixels
Displayable colors	Up to 16.7 million			
Backlight Half Brightness Life Time (MTBF[1])	LCD 50000 h	LCD 50000 h	LCD 30000 h	LCD 30000 h
Pixel error class in accordance with ISO 9241-307	III			
Power consumption	6 W	11 W	13 W	11 W

[1] MTBF: Operating hours after which the maximum brightness is reduced by half compared to the original value. MTBF is increased by using the integrated dimming function, for example, time-controlled via screen saver or centrally via PROFIenergy.

8.9 Technical specifications of the interfaces

Observe the information in "Applicability of technical specifications (Page 64)" and use only original connections of the I/O to be connected.

DisplayPort [1]	2 x connection of DisplayPort monitor
Keyboard	USB support
Mouse	USB support
USB	4 × USB 3.2 Gen 2 type A, high current, backward compatible
Ethernet [2]	2 × Ethernet interface (RJ45), 10/100/1000 Mbps • 1 x Ethernet 1: Intel® Jacksonville i219-LM; iAMT-capable [3, 4] • 1 x Ethernet 2: Intel® Springville i210-IT
	Wake on LAN, Remote Boot and the following Teaming modes are supported [5]: • Adapter Fault Tolerance (AFT) • Adaptive Load Balancing (ALB) • IEEE 802.3ad Dynamic Link Aggregation (DLA) • Static Link Aggregation (SLA) • Switch Fault Tolerance (SFT)
COM1, COM2	RS232/RS422/RS485, 115 kbps max., 9-pin D-sub, male
COM3, COM4 (optional)	RS232, 115 kbps max., 9-pin D-sub, male

1 An analog monitor can be used with an adapter cable (optional).

2 For unambiguous labeling, the Ethernet interfaces are numbered on the enclosure. The numbering by the operating system can differ.

3 No teaming with iAMT

4 When using iAMT, the X1 P1 interface must be used to connect to remote maintenance.

5 Only possible with ports X1 P1 and X2 P1

8.10 Technical specifications of the operating systems

Depending on the ordered device configuration, the device is equipped with or without one of the following installed operating systems.

- Microsoft® Windows® 10 Enterprise 2021 LTSC, 64 bit, Multi-Language*

* Multi-language user interface (MUI): 5 languages (English, German, French, Spanish, Italian)

You can find information on ordered Microsoft® Windows® operating systems under:

Important instructions and manuals for operating the device (Page 9)

Boot mode and partitions in the delivery state

Delivery state for Windows® 10

Windows® 10 boots in UEFI mode in the delivery state.

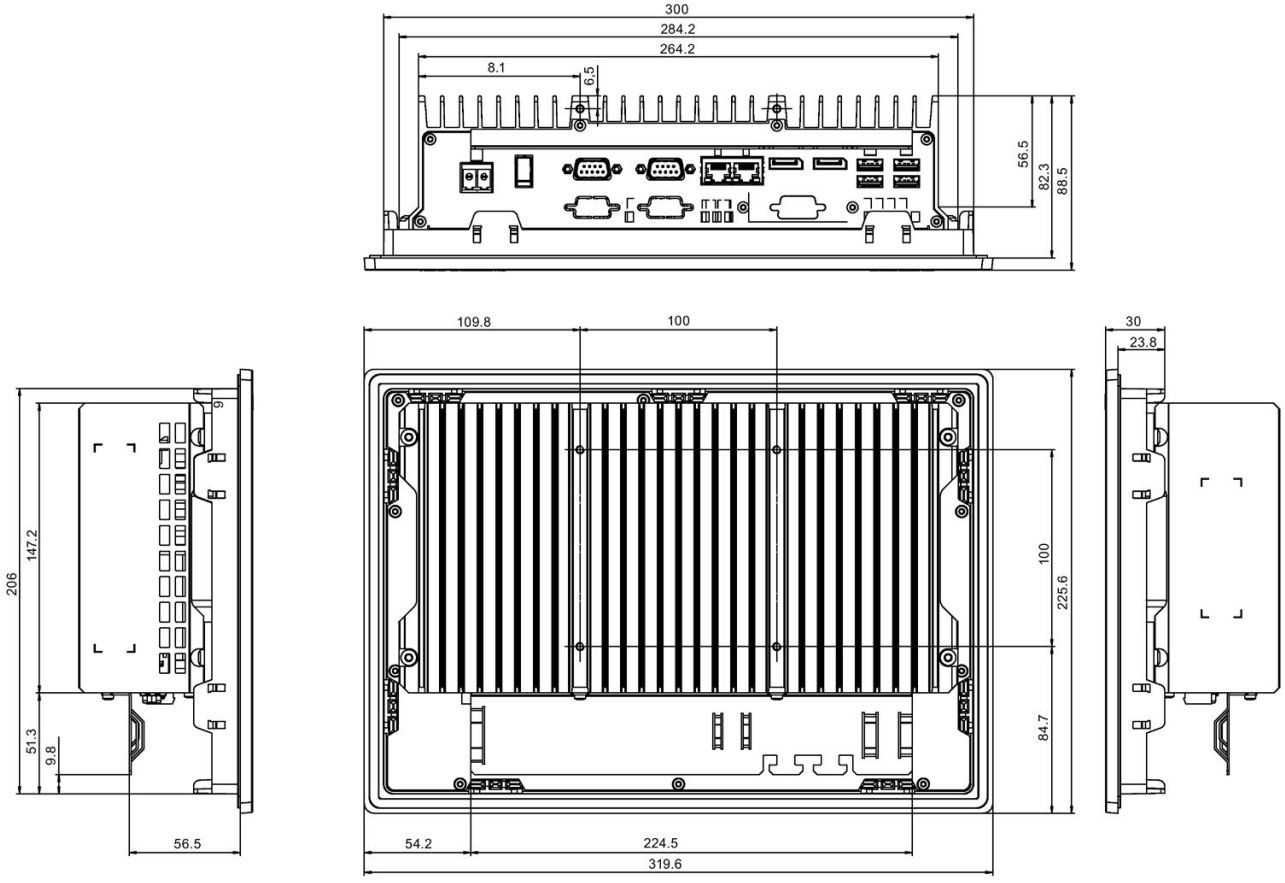
The following table lists the partitioning for disks ≥ 200 GB in GPT mode:

Partition	Name	Size	File system
First	Boot	260 MB	FAT32
Second	MSR	128 MB	None
Third	System	160 GB	NTFS
Fourth	WinRE	500 MB	NTFS
Fifth	Data	Remainder	NTFS

Dimension drawings

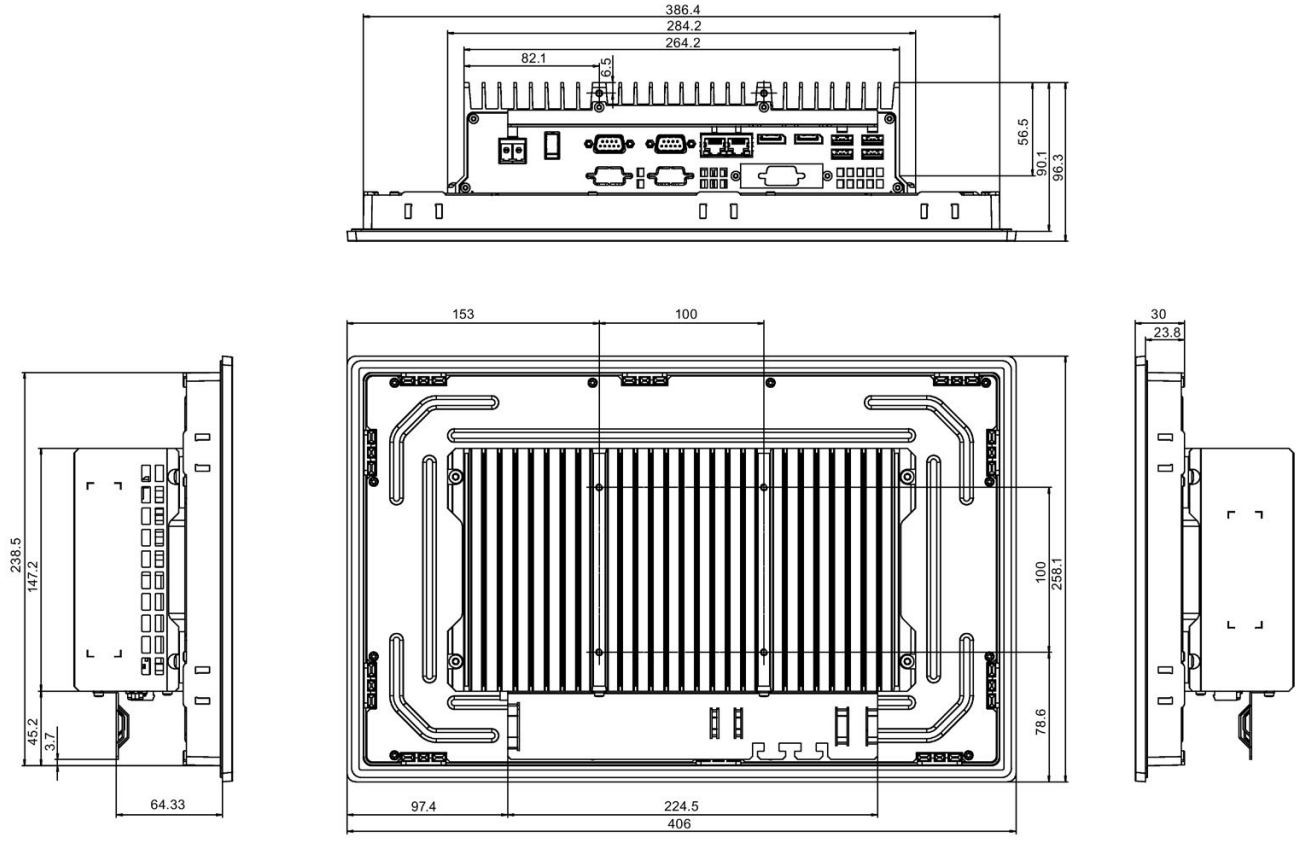
9

9.1 Dimension drawing of 12" device with resistive single-touch screen



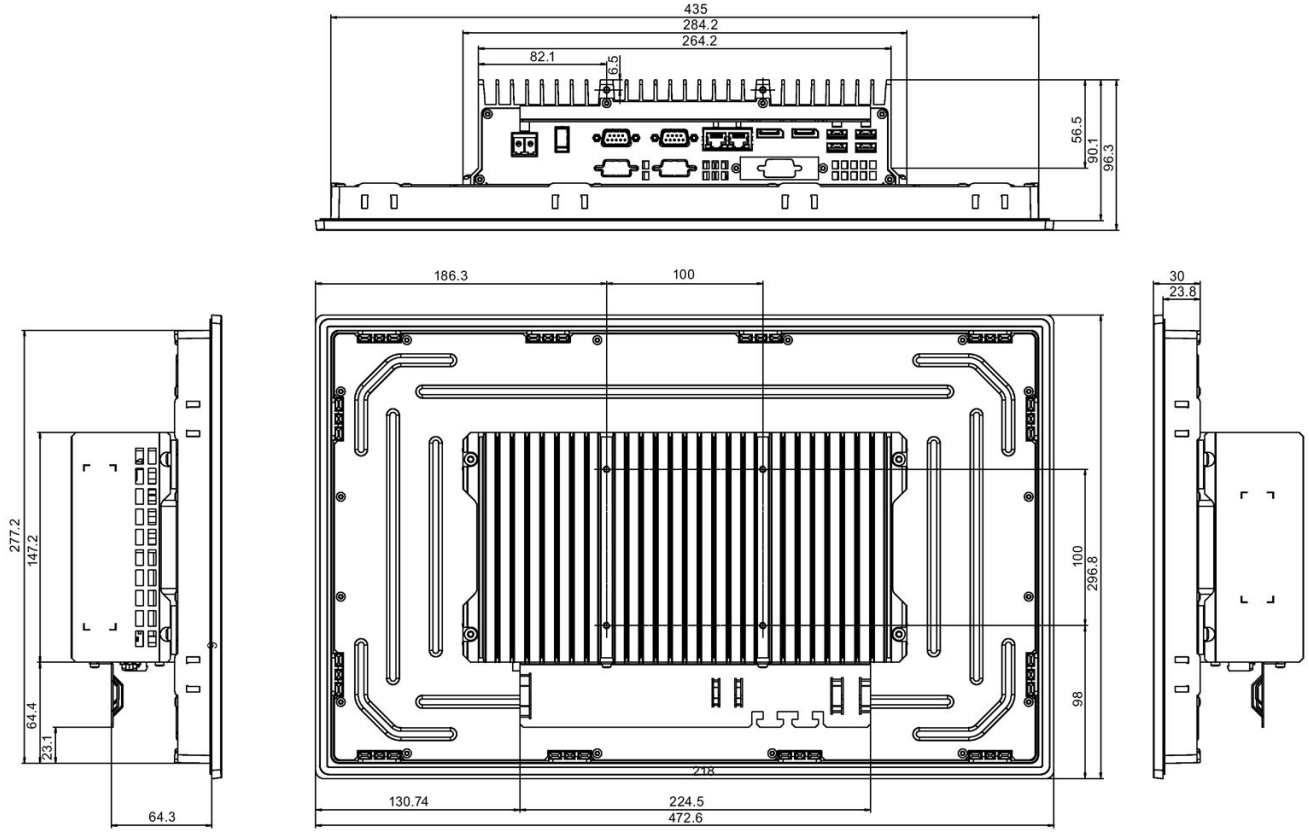
All dimensions in mm

9.2 Dimension drawing of 15" device with resistive single-touch screen



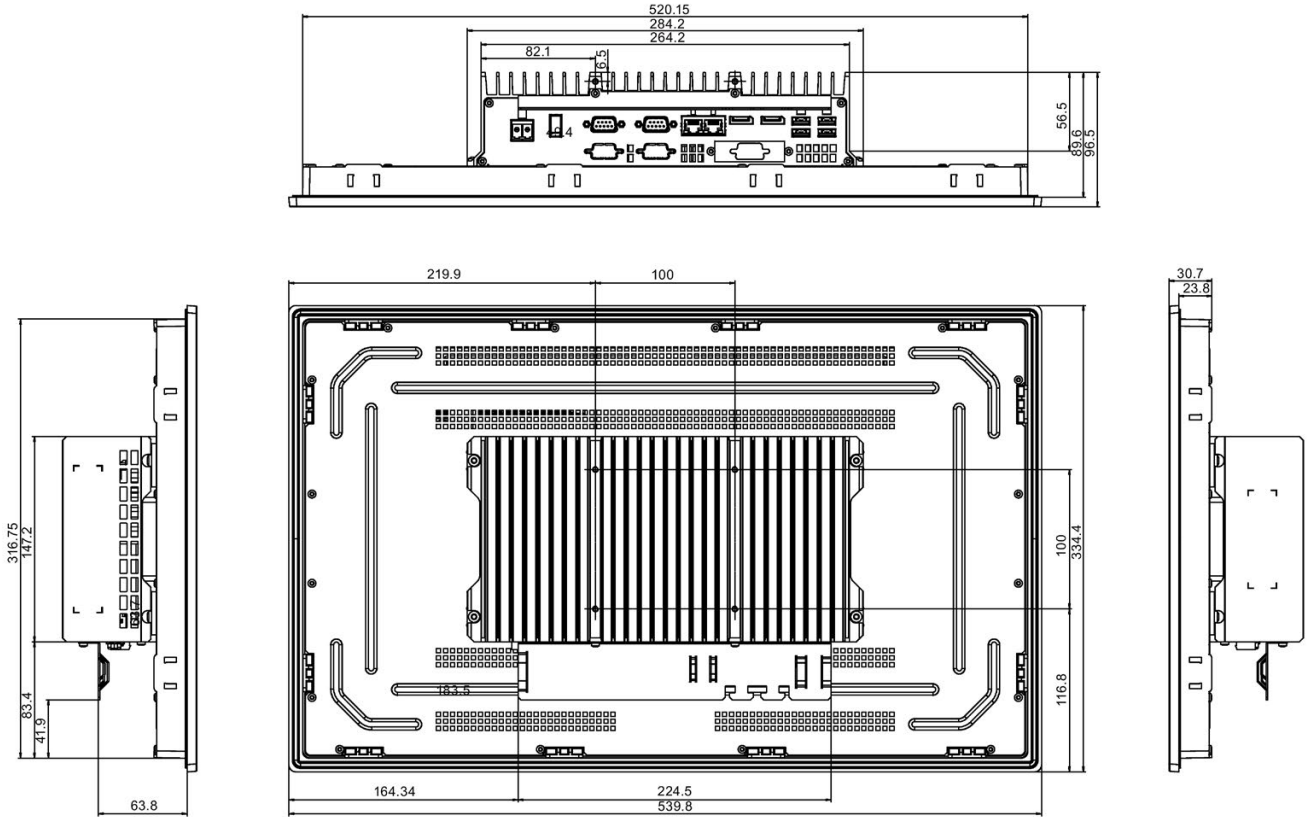
All dimensions in mm

9.3 Dimension drawing of 19" device with resistive single-touch screen



All dimensions in mm

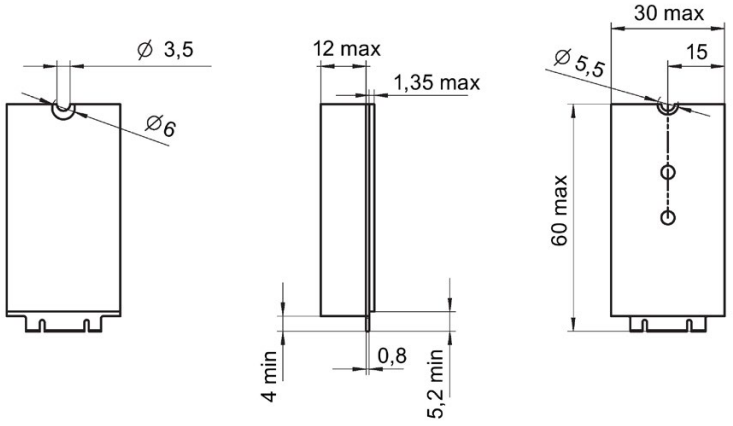
9.4 Dimension drawing of 22" device with resistive single-touch screen



All dimensions in mm

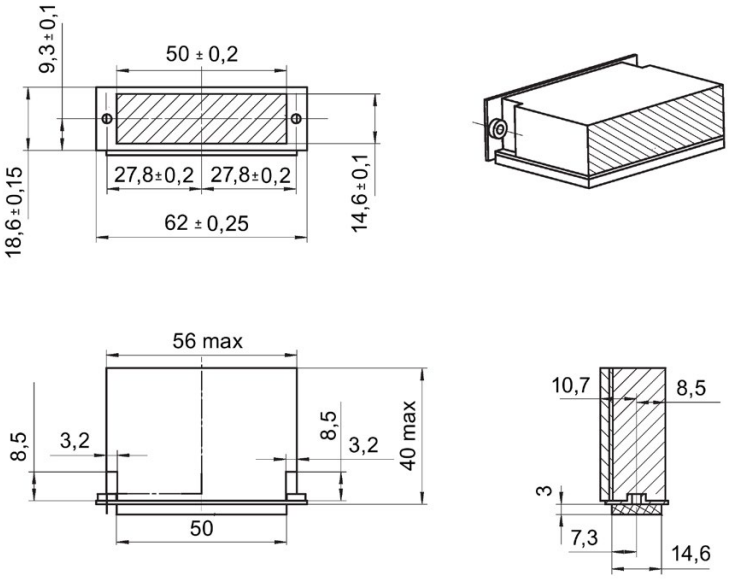
9.5 Dimension drawing of expansion modules (M.2)

Maximum dimensions of expansion modules



Alle Angaben in mm

Dimension drawing of the conditioner card



Alle Angaben in mm

Standards and approvals

10

10.1 Scope

Note

Scope

The possible approvals are described below. The approvals applicable to your device are indicated on the nameplate.

10.2 CE marking

The device meets the general and safety-related requirements of the following directives and conforms to the harmonized European standards (EN) published in the official gazettes of the European Union:

- 2014/30/EU "Electromagnetic Compatibility Directive" (EMC Directive)

  The device is designed for the following areas of application corresponding to the CE marking:

Scope of application	Requirement for	
	Interference emission	Immunity to interference
Industry	EN 61000-6-4	EN 61000-6-2
Residential and commercial areas and small businesses	EN 61000-6-3	EN 61000-6-1

- 2011/65/EU "Restriction of the use of certain hazardous substances in electrical and electronic equipment" (RoHS Directive)

EU Declaration of Conformity

The associated declaration of conformity is available on the Internet at the following address: Panel PC certificates (http://support.automation.siemens.com/WW/view/en/10805572/134200).

10.3 UKCA marking



The device complies with the designated British standards (BS) for electrical equipment published in the official consolidated list of the British Government. The device meets the requirements and protection targets of the following regulations and related amendments:

- Electromagnetic Compatibility Regulations 2016 (EMC)
- Regulations on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2012 (RoHS)

UKCA Declaration of Conformity

The associated Declaration of Conformity is available on the Internet at the following address:

- Panel PC certificates (http://support.automation.siemens.com/WW/view/en/10805572/134200)

10.4 DIN ISO 9001 certificate and software license agreements

ISO 9001 certificate

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).

Software license agreements

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

10.5 UL approval



The following approvals are available for the device:

- Underwriters Laboratories (UL) complying with Standard UL 61010-1 and UL 61010-2-201, File E472609
- Canadian National Standard CAN/CSA No. 61010-1-12 and CAN/CSA-C22.2 No. 61010-2-201

10.6 FCC (USA)

USA	
Federal Communications Commission Radio Frequency Interference Statement	This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
Shielded Cables	Shielded cables must be used with this equipment to maintain compliance with FCC regulations.
Modifications	Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.
Conditions of Operations	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible party for Supplier's Declaration of Conformity

Siemens Industry, Inc.

Digital Factory - Factory Automation

5300 Triangle Parkway, Suite 100

Norcross, GA 30092

USA

mailto: amps.automation@siemens.com (mailto: amps.automation@siemens.com)

10.7 Canada

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

10.8 Australia / New Zealand

AUSTRALIA / NEW ZEALAND

This product meets the requirements of EN 61000-6-3 Generic standards – Emission standard for industrial environments.

This product meets the requirements of the standard EN 61000-6-3 Generic standards - Emission standard for industrial environments.

10.9 Eurasion Customs Union EAC

Identification for Eurasion Customs Union

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

10.10 Korea

KOREA

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.

10.11 Taiwan



This product meets the requirements of CNS15936, CNS15598-1 generic standard.

This product meets the requirements of CNS 15936, CNS 15598-1 generic standard.

WARNING

警告

為避免電磁干擾，本產品不應安裝或使用於住宅環境。

限用物質含有情況標示聲明

單元Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmi-um (Cd)	六價鉻Hex-avalent chromi-um(Cr^{+6})	多溴聯苯 Polybrominat-ed biphen-yls(PBB)	多溴二苯醚 Polybrominat-ed diphenyl ethers (PBDE)
外殼	○	○	○	○	○	○
電路板	超出0.1 wt %	○	○	○	○	○
硬碟	超出0.1 wt %	○	○	○	○	○
線材	○	○	○	○	○	○

備考1. “超出0.1 wt %”及“超出0.01 wt %”係指限用物質之百分比含量超出百分比含量基準值。

Note 1： "Exceeding 0.1 wt %" and "exceeding 0.01 wt %" indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2. “○”係指該項限用物質之百分比含量未超出百分比含量基準值。

Note 2： "○" indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3. “—”係指該項限用物質為排除項目。

Note 3：The "–" indicates that the restricted substance corresponds to the exemption.

電池和蓄電池

WARNING

警告

— 置換可能影響安全防護的錯誤型式的電池（例：在某些鋰電池類型的情形下）；
— 電池丟入火焰或烤箱中，或將電池作可能導致爆炸的機械擠壓或切割；
— 電池置於可能導致爆炸或可燃性液體或氣體洩漏的高溫環境中；且
— 電池承受可能導致爆炸或可燃性液體或氣體洩漏的極度低氣壓。

Responsible party for Supplier's Decalation of Conformity / 供應商符合性聲明的責任方

西門子股份有限公司

臺北市11503南港區園區街3號8樓

電子郵件信箱：Adscs.taiwan@siemens.com

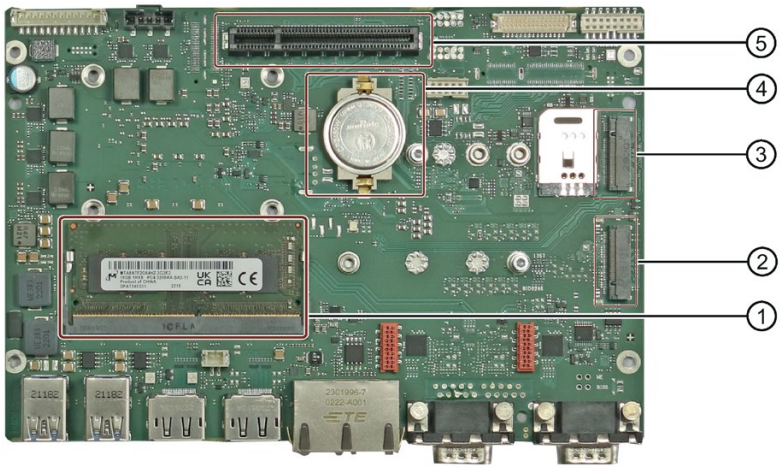
Hardware description

A

A.1 Motherboard

A.1.1 Layout of the motherboard

The motherboard consists of these main components: Processor and chip set, one slot for the memory module, internal and external interfaces and the flash block for the BIOS.

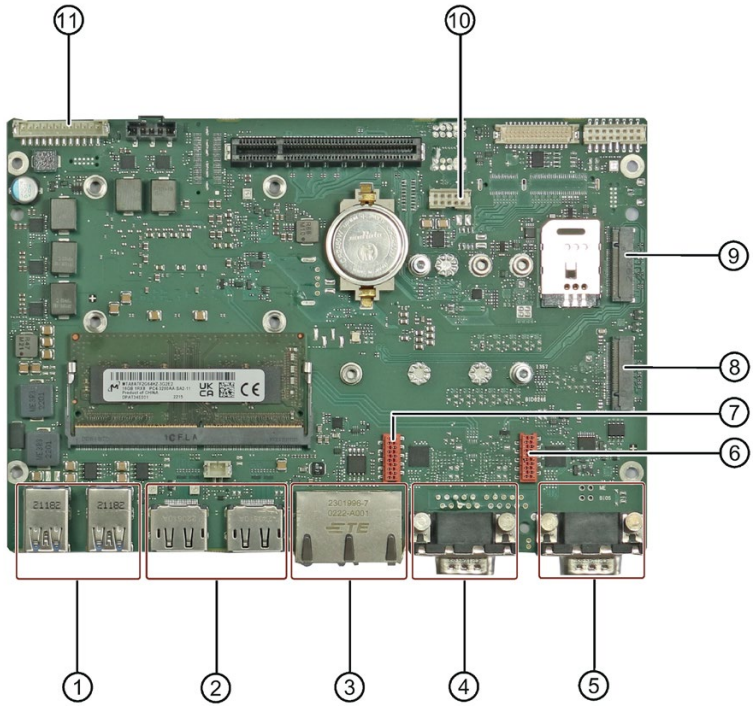


① Slot for memory module
② Slot for M.2 NVMe SSD
③ Slot for expansion modules (M.2)
④ Backup battery
⑤ Slot for the bus board

Technical features of the motherboard

Technical features of the motherboard can be found under "Technical specifications of the motherboard (Page 69)".

A.1.2 Position of the interfaces on the motherboard



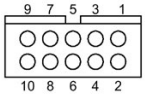
(1) 4 x USB (X60/X61/X62/X63)
(2) 2 x DPP (X70/X71)
(3) 2 × Ethernet (X1 P1 iAMT-capable/X2 P1)
(4) COM1 (X30)
(5) COM2 (X31)
(6) COM4 (X33)
(7) COM3 (X32)
(8) Interface for M.2 NVMe SSD (X101)
(9) M.2 PCIe interface (X100)
(10) USB 2.0 (X64 Internal 1)
(11) Power supply (X10)

A.2 Internal interfaces

A.2.1 Pin assignment of the internal interfaces

Interface	Position	Description
Memory	Internal	1 SODIMM socket, 64-bit
Bus board	Internal	Socket for bus board, assigned with PCIe bus signals
Power supply	Internal	12-pin connection plug for power supply
Backup battery	Internal	Power supply for backup battery, 2-pin socket
USB port	Internal	USB channel, 10-pin male connector
M.2 interface	Internal	M.2 Key B, assigned PCIe bus signals
Port for SSD drive bay	Internal	Socket for SSD drive bay, assigned PCIe bus signals

A.2.2 USB ports



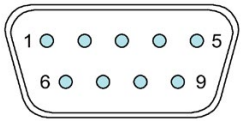
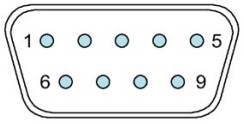
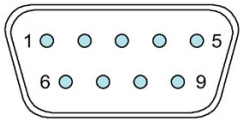
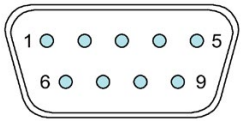
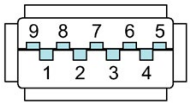
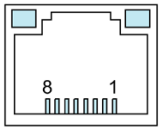
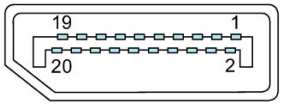
Pin	Designation
1	VBUS_USB1
2	VBUS_USB2
3	USB1_D-
4	USB2_D-
5	USB1_D+
6	USB2_D+
7	GND
8	GND
9	GND
10	GND

A.3 External interfaces

Note

Interface specification

The data of all external interfaces listed below correspond to the respective interface specifications and the intended use.

Interface	Connector	Description	Assignment
COM1	X30	9-pin D-sub connector	
COM2	X31	9-pin D-sub connector	
COM3	X32	9-pin D-sub connector	
COM4	X33	9-pin D-sub connector	
USB 3.2	X60, X61 X62, X63	USB 3.2 Gen 2 socket type A	
Ethernet 1, 2, 3 and 4	X1 P1, X2 P1, X3 P1, X4 P1	RJ45	
DPP	X70, X71	20-pin DisplayPort connector	

A.4 System resources

A.4.1 Currently allocated system resources

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

1. Press the "Windows key" and "R" simultaneously.

   The "Run" dialog box opens.

2. Enter "msinfo32" in the "Open" field.
3. Confirm your entry with "OK".

A.4.2 I/O address allocation

A.4.2.1 Overview of the internal module registers

The following addresses are used for the internal registers:

I/O address (hex)	Input/output unit
280 h	Basic address
Base address + offset 0	GPIO port select register
Base address + offset 2	GPIO data register
Base address + offset 5	WDT control register
Base address + offset 6	WDT counter register
Base address + offset 7	WDT status register

The following tables describe the system resources for the factory state of the device.

See also

Watchdog timer (WDT) register (read/write) (Page 88)

A.4.2.2 Battery status register (read only)

The status of the CMOS battery (two levels) can be read out via the battery status register as follows.

Note: Always use read-modify-write operations so that reserved bits are not overwritten. This can lead to impairment of the functionality of the device.

Procedure

1. Write 06h into the GPIO port select register (280h) to select the relevant register (GPIO6).
2. To get information about the battery status, read the desired value from the GPIO6 data register (282h).

Meaning of the bits

Battery status register (read, address 282h)								
Bits								**Meaning of the bits**
7	6	5	4	3	2	1	0	
							x	Reserved
						x		Reserved
					x			Reserved
			0	0				CMOS battery capacity is still sufficient
			0	1				CMOS battery capacity is exhausted (remaining capacity is still sufficient for approx. 1 month)
			1	1				CMOS battery is empty or missing
		x						Reserved
	x							Reserved
x								Reserved

A.4.2.3 Watchdog timer (WDT) register (read/write)

The procedures for operating the watchdog timer (WDT) are described below.

Note: Always use read-modify-write operations so that reserved bits are not overwritten. This can lead to impairment of the functionality of the device.

Enter countdown time and start timer

1. Write the desired value for the WDT Count Mode (minutes or seconds) into the WDT control register (285h).
2. Write the desired countdown time into the WDT counter register (286h).

The countdown starts. When the countdown reaches 0, the WDT expires. If the WDT has expired, the countdown will not restart until the WDT status "Expired" is reset.

Reset WDT countdown

1. Write the initial or new countdown time into the WDT counter register (286h).

The WDT starts counting down. When the countdown reaches 0, the WDT expires.

Stop WDT

1. Write 0 into the WDT counter register to stop the WDT completely.

Set behavior when WDT expires

1. Write the desired value for the WDT system reset (On or Off) into the GPIO2 data register (282h).
   - If On, the system restarts when the WDT expires. The WDT status is set to "Expired" and the "PC ON/WD" LED starts pulsing red.
   - If Off, the system will NOT reboot when the WDT expires. The WDT status is set to "Expired" and the "PC ON/WD" LED starts pulsing red.

Read WDT status

1. Read the current WDT status (active or expired) from the WDT status register (287h).

Reset WDT Status "Expired"

1. Write 0 into the WDT status register (287h) to switch the WDT to "Active" again.

This step resets the "PC ON/WD" LED from pulsing red to its normal state (lit green).

The WDT starts counting down. To prevent this behavior, stop the WDT before resetting the status to "Active".

Meaning of the bits

WDT control register (read/write, address 285h)								
Bits								**Meaning of the bits**
7	6	5	4	3	2	1	0	
							x	Reserved
						x		Reserved
					x			Reserved
				0				WDT count mode: in seconds
				1				WDT count mode: in minutes
			x					Reserved
		x						Reserved
	x							Reserved
x								Reserved

WDT counter register (read/write, address 286h)								
Bits								**Meaning of the bits**
7	6	5	4	3	2	1	0	
00h-FFh								Countdown time

WDT status register (read/write, address 287h)								
Bits								**Meaning of the bits**
7	6	5	4	3	2	1	0	
							x	Reserved
						x		Reserved
					x			Reserved
				x				Reserved
			0					WDT status: Active
			1					WDT status: Expired
		x						Reserved
	x							Reserved
x								Reserved

A.4.2.4 NVRAM address register

NVRAM occupies a 512 KB memory address range that can be read via PCI registers.

Meaning of the bits

NVRAM address register		
PCI register address: NVRAM base address register	PCI register content: NVRAM memory address (default)	Length of the memory area
E300 0000	Address is assigned dynamically (depending on device configuration)	80000 h

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 for SIMATIC PC / 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:

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

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 Problems with device functions

Problem	Cause	Remedy
The device is not operational	There is no power supply to the device.	• Check the power supply, the power cord and the power plug. • Check to see if the on-off switch is in the correct position.
	Device is being operated outside the specified ambient. conditions	• Check the ambient conditions. • After transport in cold weather, wait approximately 12 hours before switching on the device.
Windows no longer boots	Settings in firmware/BIOS are not correct	• Check the settings in the firmware/BIOS boot menu.
The external monitor remains dark.	The monitor is switched off.	Switch on the monitor.
	The monitor is in "power save" mode.	Press any key on the keyboard.
	The brightness button has been set to dark.	Increase the screen brightness. For detailed information, refer to the monitor operating instructions.
	The power cord or the monitor cable is not connected.	• Check whether the power cord has been properly connected to the monitor and to the system unit or to the grounded shockproof outlet. • Check whether the monitor cable has been properly connected to the system unit and to the monitor.
		If the monitor screen still remains dark after you have performed these checks, please contact your technical support team.
The mouse pointer does not appear on the screen.	The mouse driver is not loaded.	Check whether the mouse driver is properly installed and available when you start the user program. Detailed information about the mouse driver is available in the corresponding documentation.
	The mouse is not connected.	• Check whether the mouse cord is properly connected to the system unit. • If you use an adapter or expansion for the mouse cable, also check these connectors.
		If the cursor still does not appear on the screen after you have performed these checks and actions, contact your technical support team.
Wrong time and/or date on the PC.		1. Call the firmware/BIOS configuration menu. To do this, press the "<Esc>" button during the boot process and then select "Setup Utility". 2. Set the date and time in the "Main" tab and save the changes.

Problem	Cause	Remedy
Time and date are still incorrect, even after correct setting in the firmware/BIOS	The backup battery is dead.	Replace the backup battery.
USB device not responding.	USB ports are disabled in the firmware/BIOS	Use a different USB port or activate the port.
	Operating system does not support the USB port.	For other devices, you need the USB device drivers for the required operating system.

B.2.2 Problems when booting the device

Problem	Cause	Remedy
Computer does not boot or "Boot device not found" is displayed.	The boot medium is not approved	In the firmware/BIOS, set the boot priority under "Boot > Boot device" to "Enabled".
	The boot medium is not in first place of the boot priority in the firmware/BIOS	Change the boot priority in the firmware/BIOS under "Boot > EFI".
	The boot data carrier is set up with GPT and UEFI boot is deactivated in the firmware/BIOS	Enable UEFI mode in the firmware/BIOS.

Markings and symbols

C

C.1 Overview

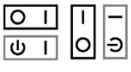
The following tables show all the symbols which may be found on your SIMATIC industrial PC, SIMATIC industrial monitor or SIMATIC Field PG in addition to the symbols which are explained in the operating instructions.

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

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			Opening for Kensington lock
	Attention ESD (Electrostatic sensitive device)			Warning of hot surface

C.3 Operator controls

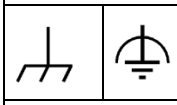
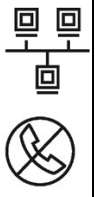
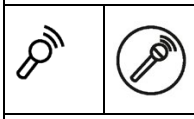
Symbol	Meaning		Symbol	Meaning
	On/off switch, without electrical isolation			On/off switch, without electrical isolation

C.4 Certificates, approvals and markings

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

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

C.5 Interfaces

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

List of abbreviations

D

D.1 Abbreviations

Abbreviation	Term	Meaning
AC	Alternating current	Alternating current
AHCI	Advanced Host Controller Interface	Standardized controller interface for SATA devices.
APIC	Advanced Programmable Interrupt Controller	Extended programmable interrupt controller
AWG	American Wire Gauge	US standard for the cable diameter
CAN	Controller Area Network	
CE	Communauté Européenne (CE symbol)	The product is in conformance with all applicable EC directives
CLK	Clock pulse	Clock signal for controllers
CMOS	Complementary Metal Oxide Semiconductors	Complementary metal oxide semiconductors
COA	Certificate of Authenticity	Microsoft Windows Product Key
COM	Communications Port	Term for the serial interface
CPU	Central Processing Unit	CPU
CRT	Cathode Ray Tube	
CSA	Canadian Standards Association	Canadian organization for tests and certifications according to own or binational standards (with UL / USA) standards
DC	Direct Current	DC current
DMA	Direct Memory Access	Direct memory access
DPP / DP	DisplayPort	New powerful digital monitor port
DQS	Deutsche Gesellschaft zur Zertifizierung von Qualitätsmanagement mBH	
DVI / DVI-D	Digital Visual Interface	Digital display interface without VGA signals
DVI-I	Digital Visual Interface	Digital display interface with digital and VGA signals
ECC	Error checking and correction	Error correction code
EFI	Extensible Firmware Interface	
ESD	Electrostatic-sensitive components	
EN	European standard	
GND	Ground	Chassis ground
HDD	Hard Disk Drive	Hard disk drive
HU	Height unit	

Abbreviation	Term	Meaning
I/O	Input/Output	Data input/output on computers
iAMT	Intel® Active Management Technology	
IEC	International Electronical Commission	
IP	Ingress Protection	Degree of protection
IRQ	Interrupt Request	Interrupt request
KVM	Keyboard Video Mouse	Keyboard video mouse bypass
LAN	Local Area Network	Computer network that is limited to a local area.
LCD	Liquid Crystal Display	Liquid crystal display
LED	Light Emitting Diode	Light emitting diode
MUI	Multilanguage User Interface	Multilanguage operating system with Windows with language toggling; 5 languages: German, English, French, Spanish and Italian
NEMA	National Electrical Manufacturers Association	Syndicate of manufacturers of electrical components in the USA
NVRAM	Non Volatile Random Access Memory	Non-volatile data memory. Data memory is retained without external power supply.
OPC	OLE for Process Control	Standardized interface for industrial processes
PCI	Peripheral Component Interconnect	High-speed expansion bus
PCIe	Peripheral Component Interconnect Express	High-speed serial, differential full-duplex PtP interface with high data rate.
PIC	Programmable Interrupt Controller	Programmable interrupt controller
PXE	Preboot Execution Environment	Software for running new PCs without hard disk data via the network
RAID	Redundant Array of Independent Disks	Redundant hard disk array
RAM	Random Access Memory	
SATA	Serial Advanced Technology Attachment	
SELV	Safety Extra Low Voltage	Safety extra low voltage
SMART	Self Monitoring Analysis and Reporting Technology	Hard disk error diagnostics program
SNMP	Simple Network Management Protocol	Network protocol
SSD	Solid State Drive	
TPM	Trusted Platform Module	
UEFI	Unified Extensible Firmware Interface	
UL	Underwriters Laboratories Inc.	US organization for tests and certifications according to own or binational standards (with CSA / Canada) standards.
USB	Universal Serial Bus	
VGA	Video Graphics Array	Video adapter which meets industrial standard
WD	Watchdog	Program monitoring with error detection and alarming.

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