SIEMENS

SIMATIC

Industrial PC SIMATIC IPC627E

Operating Instructions

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10/2023

A5E44297201-AE

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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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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A5E44297201-AE
Ⓟ 11/2023 Subject to change

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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 IPC627E and to maintain and repair 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.

Range of validity of these operating instructions

These operating instructions are valid for all order versions of the SIMATIC IPC627E.

History

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

Edition	Comment
12/2018	First edition
07/2019	Revision: Mounting position Revision: Current/power consumption and power supply Revision: Dimension drawings of the SIMATIC IPC627E (2 expansion slots), dimension drawing for installation with the vertical mounting kit for PC port access from the front Revision: Dimension drawings of SIMATIC IPC627E (5 expansion slots), dimension drawing for installation with the vertical mounting kit for PC port access from the front Addition: Expansion card slots on the bus board, version 5 (IPC627E; 5 slots) Corrections

Edition	Comment
06/2021	Revision: Important instructions and manuals for operating the device Revision: Accessories: Software Revision: Mounting positions Revision: Switching on the device Revision: Remote maintenance functions Cancellation: "SIMATIC IPC Remote Manager" is no longer supported Revision: Current and power requirements of the system components Revision: Electromagnetic compatibility Revision: Ambient conditions Revision: Technical specifications of the interfaces Revision: Supply for the serial ATA drives (X516 - X519) Revision: Pin assignment 12 V power supply connection for expansion cards Revision: External interfaces Revision: Problems when using expansion cards
05/2023	Revision: Current and power requirements of the system components, typical performance values Revision: Technical specifications of the interfaces Addition: BSMI (Taiwan) Addition: Marine approvals
10/2023	Revision: BSMI (Taiwan)

See also

Standards and approvals (Page 120)

Technical specifications (Page 101)

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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.

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

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

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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 AG. Otherwise, updates/patches are undertaken at your own risk. You can find more information about our Software Update Service offer on the Internet at Software Update Service (http://www.automation.siemens.com/mcms/automation-software/en/software-update-service).

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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	• Supplied data storage medium • Online at: SIMATIC IPC Documentation (http://www.siemens.com/simatic-ipc-doku-portal)
Quick Install Guide	Information on: • Operating Instructions of the device • Installation of the device • Steps for connecting the device to the power supply • Connecting I/O devices • Switching the device on	• Supplied in printed form with the device • Supplied data storage medium
Current product information	• Current notes on the device • Changes compared with these operating instructions	• Online at: SIMATIC IPC Documentation (http://www.siemens.com/simatic-ipc-doku-portal)
Firmware/BIOS description	Information on: • Important firmware settings • Firmware settings in the factory state • Boot modes	• Supplied data storage medium • Online at: Firmware/BIOS description (https://support.industry.siemens.com/cs/ww/en/view/109760621)
Windows® operating system	Information on: • Commissioning the operating system • Restoring the operating system • Configuration of the operating system	• Supplied data storage medium • Online at: Microsoft® Windows® 10 (https://support.industry.siemens.com/cs/ww/en/view/109749498)

Documentation	Contents	Source
SIMATIC IPC DiagBase	Information on: • Temperature monitoring • Fan monitoring • Monitoring drives • Watchdog • Operating hours counter • Battery monitoring	• Supplied data storage medium • Online at: SIMATIC IPC DiagBase (https://support.industry.siemens.com/cs/ww/en/view/109749690)
SIMATIC IPC DiagMonitor	Monitoring functions such as with SIMATIC IPC DiagBase with additional extended functions.	• Online at: SIMATIC IPC DiagMonitor (https://support.industry.siemens.com/cs/ww/en/view/39129913)
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/de/en/view/21766418)
SIMATIC NET	Industrial communication	• Online at: SIMATIC NET (http://w3.siemens.com/mcms/automation/en/industrial-communications/Pages/Default.aspx)

1.2 Product highlights

The SIMATIC IPC627E is a powerful industrial PC. It is perfectly suited for PC applications with high-level industry functionality.

Device view



Note

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

Maximum industrial compatibility for 24-hour continuous use in industrial environments

- Maximum processor power (in full configuration) without loss of power (throttling) at up to 55 °C ambient temperature
- Full metal enclosure with high electromagnetic compatibility (EMC) for use in industry
- Independent industrial product design for high shock and vibration resistance
- CE certification for industrial and office use

High productivity through fast data processing

- 8th generation Intel® processors: Celeron, Core i3 and i7, up to 6 cores / 12 threads
- Graphics controller (630/P630) integrated in processor up to 4K Ultra HD resolution, three independent graphic interfaces
- Maximum performance, e.g. through Intel C246 chip set, DDR4 memory (up to 64 GB) with support of dual channel technology
- High data transfer rates, e.g. with PCI Express Gen 3 technology, USB 3.1 Gen 2 SuperSpeedPlus (SuperSpeed+) (10 Gbps), M.2 NVMe
- Low noise level due to variable-speed fans

High system availability thanks to minimization of standstill times

- Hot swap (swapping of drive during operation) in removable drive bays in RAID systems
- Efficient event diagnostics through the SIMATIC IPC DiagBase or DiagMonitor monitoring software (optional) and signaling software OPC/SNMP/LAN
- Remote control and remote maintenance of the device through iAMT (Intel® Active Management Technology)
- SSD as 2.5" SATA or M.2 NVMe
- Preventative data backup with the SIMATIC IPC Image & Partition Creator

High investment protection

- Platform with embedded Intel components for long-term stability
- Availability: 3 to 6 years
- Assured spare parts availability: 5 years after end of production
- Certified for worldwide marketing (cULus)
- Support of legacy interfaces (COM)
- Compatible installation across device generations
- Worldwide service and support

User-friendly application scenarios for commissioning, use and service

- High flexibility and expandability thanks to integrated interfaces and up to 5 slots (PCI and PCI Express)
- Pre-installed and activated operating system
- Fast restoration of delivery state of the operating system (with supplied data storage medium)
- Gbit LAN with teaming capability (3 x LAN 10/100/1000 Mbps connections)
- Service-friendly equipment design (modifications, service)
- Can be used flexibly in a wide variety of positions

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:

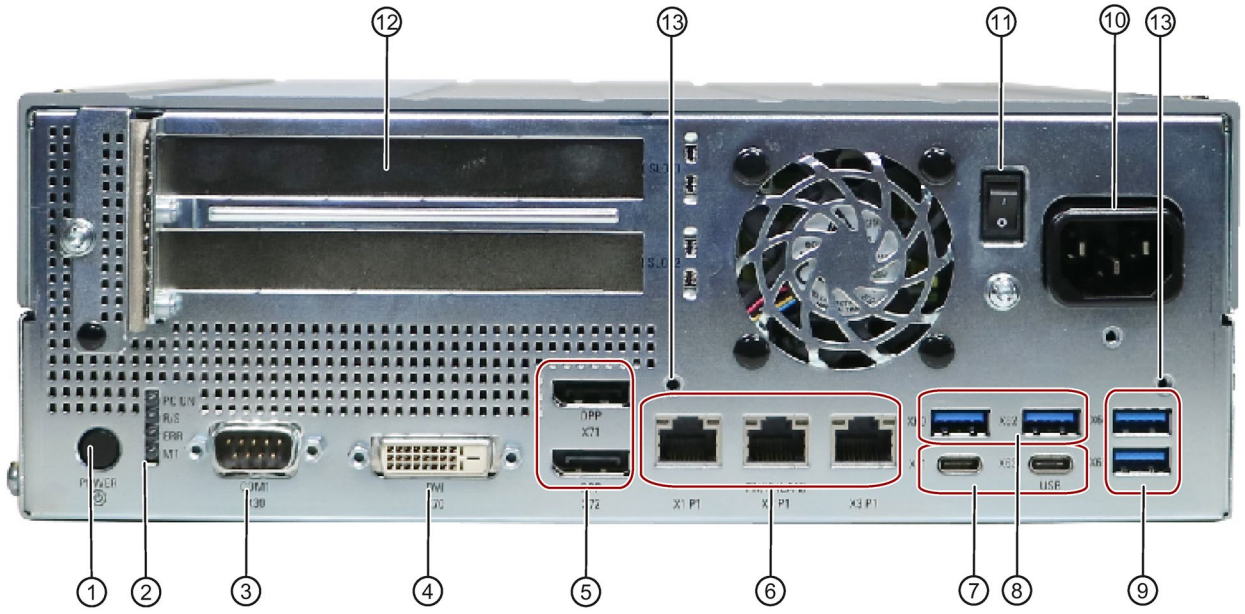
- Process and visualization applications
- Industrial image processing
- Quality assurance and monitoring tasks
- Measurement, control and rule-based tasks
- Data acquisition and management

The SIMATIC IPC has CE certification for use in the industrial sector as well as in residential and commercial areas and small businesses. In addition to the industrial applications, therefore, it can also be used in building automation or in public facilities.

1.4 External design of the device

1.4.1 Front panel

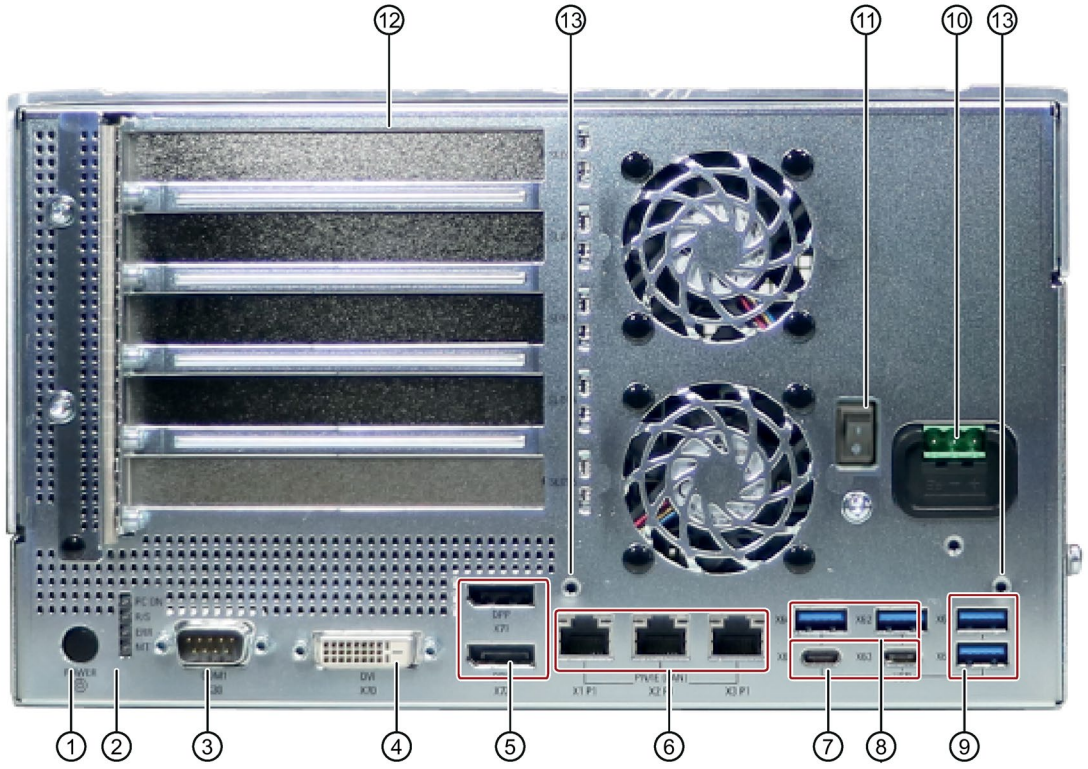
Device with two expansion slots



①	On/off button	The on/off button has three functions: • Switch on the PC: Briefly press once • Shut down operating system and switch off PC: Briefly press once • Switch off PC without shutting down the operating system (hardware reset): Press for more than 4 seconds. Note: The BIOS setup entry "State After G3" is preset to "S0 State (=Always On)". This means the device is switched on with the on/off switch. You then do not need to press the on/off button.
②	4 status LEDs	Status display of the operating state (Page 20)
③	COM1 X30	Serial interface
④	DVI/VGA X70	DVI-D connection for CRT or LCD monitor with DVI port
⑤	DisplayPort X71/X72	DisplayPort connection for digital monitor
⑥	3 × Ethernet X1P1/X2P1/X3P1	• X1P1, left: RJ45 Ethernet port 1 (exclusive PCI interrupt) with 10/100/1000 Mbps, iAMT capable • X2P1, center: RJ45 Ethernet port 2 (shared PCI interrupt) with 10/100/1000 Mbps • X3PI, right: RJ45 Ethernet port 3 (shared PCI interrupt) with 10/100/1000 Mbps

⑦	2 × USB X61/X63	USB 3.1 Gen. 2 Type C high current, backward compatible with USB 3.0/2.0/1.1
⑧	2 × USB X60/X62	USB 3.1 Gen. 2 Type A high current, backward compatible with USB 3.0/2.0/1.1
⑨	2 × USB X64/X65	USB 3.1 Gen. 2 Type A high current, backward compatible with USB 3.0/2.0/1.1
⑩	100-240 V AC	Power supply connection
⑪	On/off switch	You switch on the device with the on/off switch. This requires that the BIOS setup entry "State After G3" is set to "S0 State (=Always On)". The on/off switch does not isolate the device from the power supply. Position "ON", when the "-)" symbol is pressed inward on the device. Position "OFF" is the delivery state.
⑫	PCI/PCIe expansion cards, USB on expansion card (optional)	2 slots for expansion cards (Slot1/X101, Slot2/X102)
⑬	Fixing screws for strain relief	

Device with five expansion slots

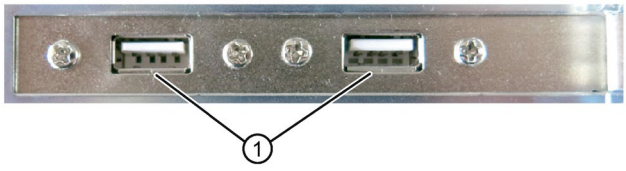


①	On/off button	The on/off button has three functions: • Switch on the PC: Briefly press once • Shut down operating system and switch off PC: Briefly press once • Switch off PC without shutting down the operating system (hardware reset): Press for more than 4 seconds. Note: The BIOS setup entry "State After G3" is preset to "S0 State (=Always On)". This means the device is switched on with the on/off switch. You then do not need to press the on/off button.
②	4 status LEDs	Status display of the operating state (Page 20)
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④	DVI/VGA X70	DVI-D connection for CRT or LCD monitor with DVI port
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⑥	3 × Ethernet X1P1/X2P1/X3P1	• X1P1, left: RJ45 Ethernet port 1 (exclusive PCI interrupt) with 10/100/1000 Mbps, iAMT capable • X2P1, center: RJ45 Ethernet port 2 (shared PCI interrupt) with 10/100/1000 Mbps • X3PI, right: RJ45 Ethernet port 3 (shared PCI interrupt) with 10/100/1000 Mbps

⑦	2 × USB X61/X63	USB 3.1 Gen. 2 Type C high current, backward compatible with USB 3.0/2.0/1.1
⑧	2 × USB X60/X62	USB 3.1 Gen. 2 Type A high current, backward compatible with USB 3.0/2.0/1.1
⑨	2 × USB X64/X65	USB 3.1 Gen. 2 Type A high current, backward compatible with USB 3.0/2.0/1.1
⑩	24 V DC	Power supply connection
⑪	On/off switch	You switch on the device with the on/off switch. This requires that the BIOS setup entry "State After G3" is set to "S0 State (=Always On)". The on/off switch does not isolate the device from the power supply. Position "ON", when the "-)" symbol is pressed inward on the device. Position "OFF" is the delivery state.
⑫	PCI/PCIe expansion cards, USB on expansion card (optional)	5 slots for expansion cards (Slot1/X101, Slot2/X102, Slot3/X103, Slot4/X104, Slot5/X105)
⑬	Fixing screws for strain relief	

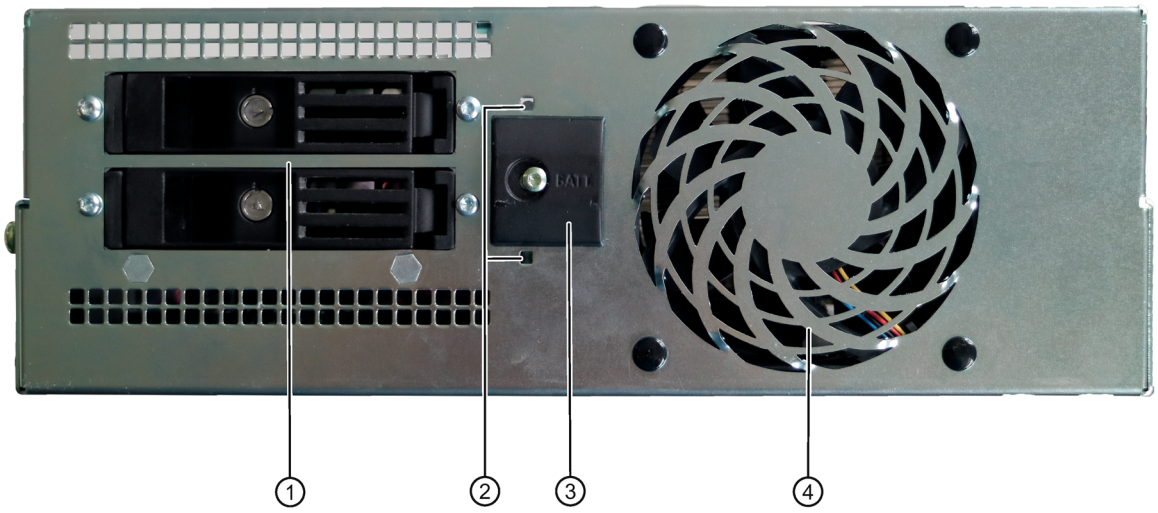
Device with USB expansion (optional)

The following expansion cards are located at the position of the cover ⑫ in the figure above:



① USB X66, X67

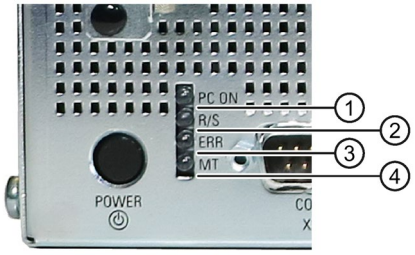
1.4.2 Rear of the device



①	Removable drives	Slots for removable drives
②	RAID status indicators	HDD alarm
③	Battery compartment	CMOS backup battery
④	Fan	

1.4.3 Status displays

The status display consists of four multi-colored LEDs.

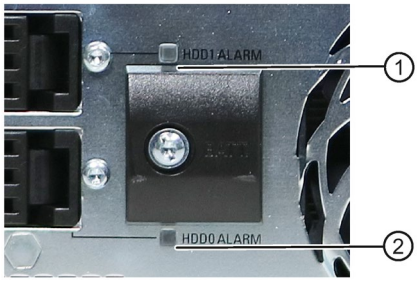


Position	Status display	Color	Description
①	PC ON/WD	Off	-
		Green	BIOS ready to boot
		Flashing green/yellow (1 Hz)	BIOS in POST, power switch on
		Yellow	Idle state
		Flashing red (1 Hz)	Watchdog status display: active

Position	Status display	Color	Description
②	RUN/STOP or L1	Off	-
		Green	Can be controlled by user program
		Yellow	Can be controlled by controller program (e.g. Soft PLC)
③	ERROR or L2	Off	-
		Red	-
		Flashing red	Can be controlled by user program or controller program (e.g. Soft PLC)
④	MAINT or L3	Off	-
		Yellow	-
		Red	Can be controlled by controller program (e.g. Soft PLC)

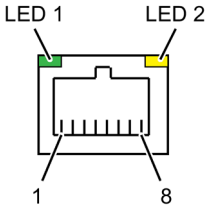
RAID status display in removable drive bay

Status display position, see also Rear of the device (Page 20).



Display	Meaning	Color	Description
LED "HDDx ALARM"	HDD alarm in connection with RAID and monitoring software	Both off	RAID is OK
		LED ① lights up red	HDD1 is not OK
		LED ② lights up red	HDD2 is not OK
		Both light up red	RAID is not OK For information on locating the hard disk, see section "Displaying a defective hard disk of a RAID system in the RAID software".
		Both flash	RAID is synchronized

Status display of Ethernet ports



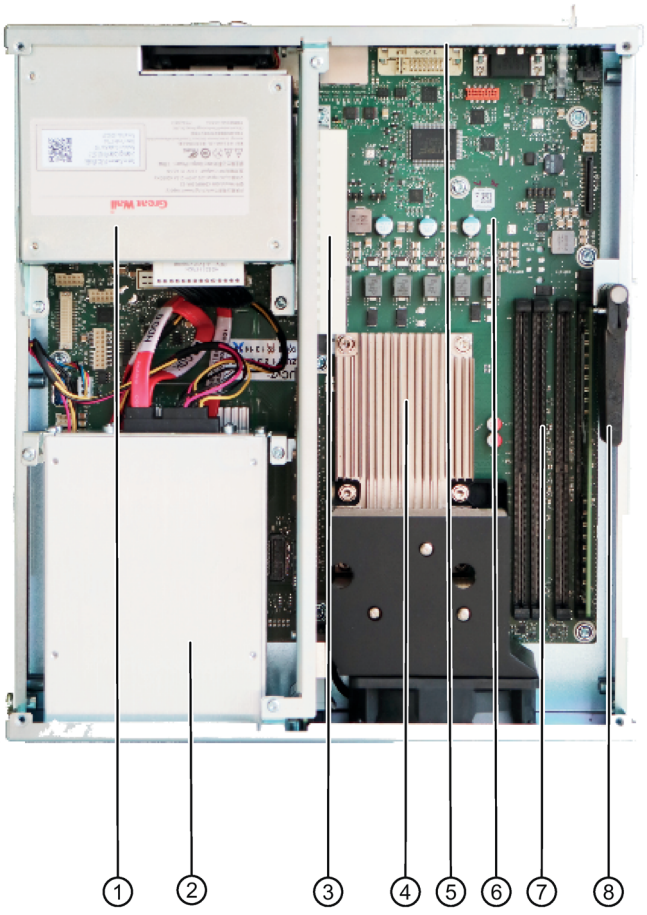
Status display	Status	Meaning of the status
LED 1	Off	10 Mbps
	Lit green	100 Mbps
	Lit orange	1000 Mbps
LED 2	Lit	Connection exists
	Flashes	Activity

See also

Buffer memory NVRAM (optional) (Page 63)

Technical support (https://support.industry.siemens.com/cs/us/en/)

1.5 Internal design of the device



① 100-240 V AC power supply
② Slots for removable drives
③ Expansion card slots
④ Heat sink of the processor
⑤ Expansion card slots
⑥ Motherboard
⑦ Slots for memory modules
⑧ Retainer for expansion cards

1.6 Accessories and spare parts

1.6.1 Accessories: Hardware

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

Obtaining accessories and original spare parts via 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 PCs > Box PC> ..."
5. In the tree structure on the left, click on: SIMATIC IPC627E.
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 Accessories: Software

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.

Avoiding functional restrictions

NOTICE
Possible functional restrictions in case of non-validated plant operation The device is tested and certified on the basis of the technical standards. In rare cases, functional restrictions can occur during plant operation. Validate the correct functioning of the plant to avoid functional restrictions.

Use in industrial environments

Note

Use in an industrial environment without additional protective measures

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

ESD directive

Electrostatic sensitive devices can be labeled with an appropriate symbol.



NOTICE
Electrostatic sensitive devices (ESD) The device contains electronic components 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

Certifications and approvals

WARNING

Voided approvals

If the following conditions for system installation are not observed, approvals in accordance with UL 61010-2-201 and EN 61010-2-201 are rendered void and there is a risk of overheating and personal injury.

- You should observe the following information on ambient and environmental conditions.

Ambient and environmental conditions

NOTICE

Ambient conditions and chemical resistance

Unsuitable environmental conditions can cause faults or damage the device.
Failure to comply nullifies the warranty in accordance with IEC/EN/UL 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.
- When the device is used in the programmable controller area in accordance with IEC/EN/UL61010-2-201, note that the device is classified as "Open Equipment". The installation of the device in a housing in accordance with UL 61010-2-201 is therefore a requirement for approval or operation.
- Always maintain a minimum clearance of 100 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

Mounting positions (Page 36)

Ambient conditions (Page 106)

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 device and system extensions

Device and system extensions

⚠ CAUTION

Fire hazard due to overheating of the device

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

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

NOTICE

Damage caused by device and system extensions

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

NOTICE

"Open Equipment" IEC/EN/UL61010

The device is designed for use as a programmable controller, Open Equipment according to IEC/EN/UL 61010-2-201. The installation of the device in a housing in accordance with IEC/EN/UL 61010-2-201 is therefore a mandatory requirement for approval or operation.

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

- Box PC SIMATIC IPC627E
- 2 mounting brackets
- 1 strain relief for USB and LAN interfaces
- 1 power plug latch
- 1 DC 24 V plug connector (with DC power supply)
- 1 USB stick

Supplied data medium

On the supplied data medium (read-only), you can find:

- Software and tools to restore your ordered Microsoft® Windows® operating system.
- Device drivers for installation in operating systems
- SIMATIC IPC627E Quick Install Guide
- SIMATIC IPC627E operating instructions
- Product information
- Firmware/BIOS description
- Operating instructions for your ordered Microsoft® Windows® operating system on this device

Operating system

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

You can find information on ordered Microsoft® Windows® operating systems under: Important instructions and manuals for operating the device (Page 11) or Technical specifications of the operating systems (Page 110).

Installed software

- Monitoring software SIMATIC IPC DiagBase (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 24)

Printed documents

- SIMATIC IPC627E Quick Install Guide
- Product Information "Important notes on your device"
- SIMATIC IPC/PG Quality Control Report

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 27)".

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 32) and any accessories you may have ordered for completeness and damage.

   Please inform the delivery service immediately if the package contents are incomplete or damaged or do not correspond with your order. Fax the enclosed form "SIMATIC IPC/PG Quality Control Report".
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 34).

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 IPC627E 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:



3.2 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 28)
- Notes on ambient and environmental conditions (Page 28)

Securing the device

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 screws other than those specified below for mounting. The device can fall and may be damaged.

- Use only the specified screws.

Instructions for wall mounting

Mounting examples

Material	Hole diameter	Fixation
Concrete	8 mm diameter, 60 mm depth	Dowel: 8 mm diameter; 50 mm long Screws: 4.5-6 x 50 mm
Plasterboard (at least 13 mm thick)	14 mm diameter	Tilting dowel: 4 mm diameter; at least 50 mm long
Metal (at least 2 mm thick)	5 mm diameter	Metal screws: 4 mm diameter; at least 15 mm long

See also

Ambient conditions (Page 106)
Mounting positions (Page 36)

3.2.2 Mounting positions

Mounting positions

- In the mounting positions "Position 1", "Position 2" and "Position 3", the device is designed for use as a programmable controller, enclosed equipment according to IEC/EN/UL 61010-2-201. In these cases, installation of the device into a fire protection housing (in accordance with the requirements of the sections 6.2.3, 8 and 9.3.2 of IEC/EN/UL 61010-1 and 61010-2-201) is not necessary.

1. In the mounting positions "Position 4" and "Position 5", the device is designed for use as programmable controller, open equipment according to IEC/EN/UL 61010-2-201. Mandatory requirement for mounting positions "Position 4" and "Position 5": For approval or operation, the installation of the device in an enclosure conforming to paragraphs 6.2.3, 8 and 9.3.2 of the IEC/EN/UL 61010-1 und 61010-2-201 is met.

   Mounting positions "Position 4" and "Position 5" are also permitted for the Information Technology Equipment area (BSMI Taiwan) when the device is mounted in an enclosure that fulfills the requirements of CNS 15598-1.

- An inclination of ± 20° is permitted for all approved mounting positions.

		
Position 1 (preferred) for wall mounting: The interfaces are at the right.	Position 2 for wall mounting: The interfaces are at the left.	Position 3 (desktop)

- An inclination of ±15° is allowed in this mounting position.

	
Position 4 (interfaces facing down)	Position 5 (interfaces facing up)

See also

Notes on ambient and environmental conditions (Page 28)

3.2.3 Installation of the device with wall mounting rails

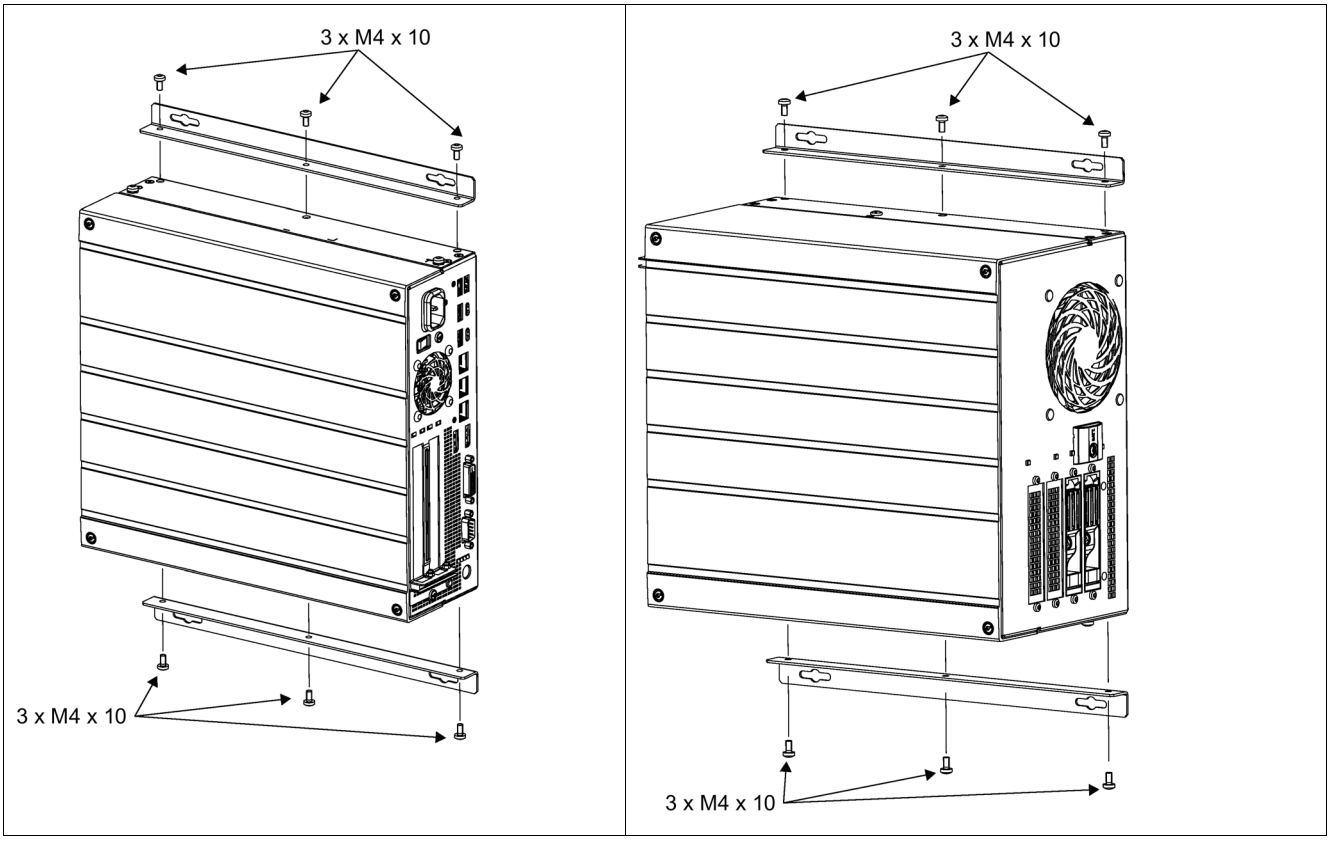
The included wall mounting rails allow for space-saving installation of the device.

Note

See the notes under "Mounting positions (Page 36)".

Mounting of the mounting rails on the device

1. Remove the equipotential bonding screw ① from the device and attach it to the wall mounting rails.
2. Secure the wall mounting rails to the device using the following number of screws:
   – SIMATIC IPC627E: Six M4 screws; torque 3 Nm



3.2.4 Installing the device with the vertical mounting kit

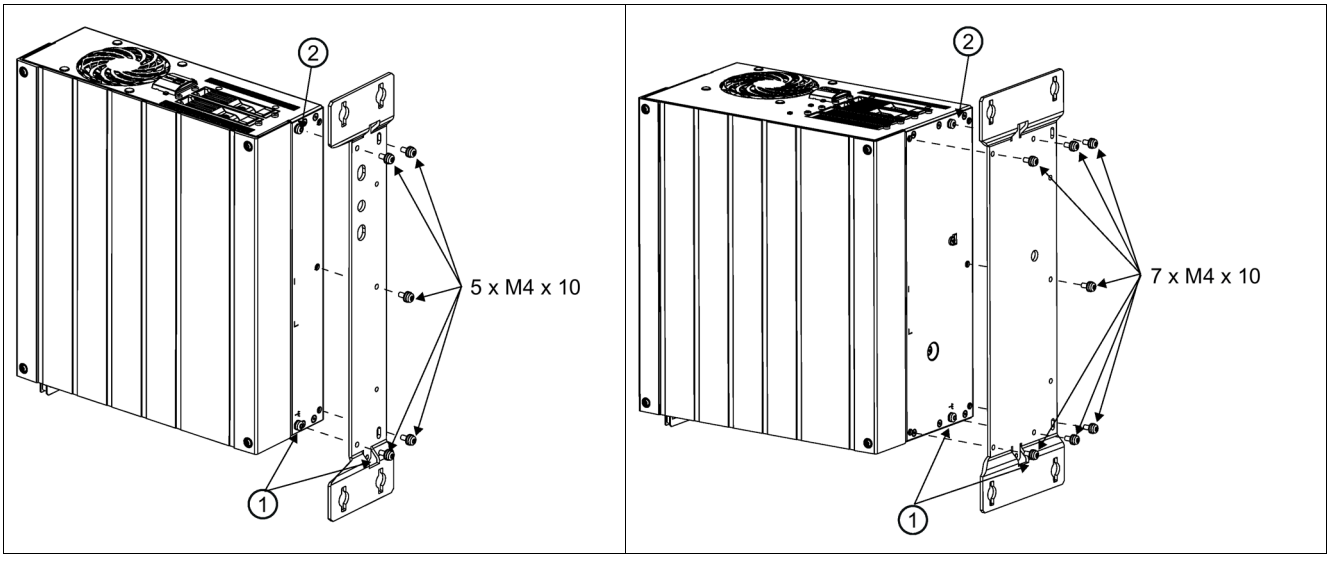
The optional vertical mounting kit allows space-saving installation of the device.

Note

See the notes under "Mounting positions (Page 36)".

Securing the vertical mounting plate to the device

1. Remove the equipotential bonding screw ① from the device and attach it to the vertical mounting plate ②.
2. Secure the vertical mounting plate to the device using the following number of screws:
   – SIMATIC IPC627E: Four or 7 M4 screws; torque 3 Nm



① Remove the screw and the toothed lock washer and fasten them again after installing the vertical mounting plate.

② Remove the screw prior to mounting.

3.2.5 Installing the device with the vertical mounting kit for PC port access from the front

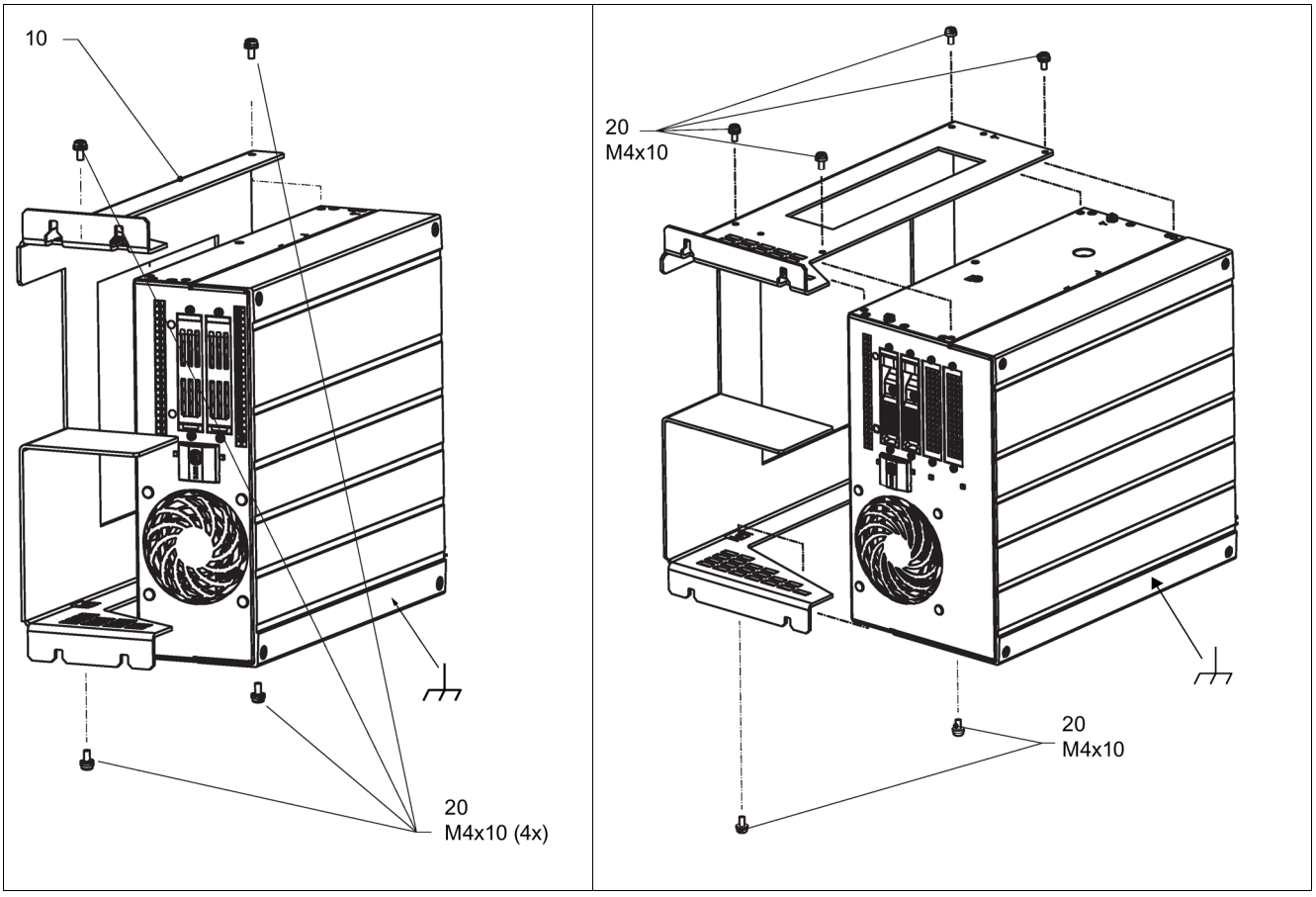
The optional vertical mounting kit allows space-saving installation of the device.

Note

See the notes under "Mounting positions (Page 36)".

Securing the vertical mounting plate to the device

Secure the vertical mounting plate on the device using five M4 screws. Two screws at the top and two at the bottom of the device.



3.3 Connecting the device

3.3.1 Country-specific information on supply voltage

USA and Canada

Supply voltage 120 V / 230 V / 240 V AC

Ensure that the power cords used are rated for the maximum current input and ambient temperature of the device and meet the requirements of the following standards:

- ANSI/UL 817
- CSA C22.2 No. 21

Ensure that the device connectors, connector sockets and connection materials are rated for the maximum current input and ambient temperature of the device and meet the requirements of the following standards:

- ANSI/UL 498 and CSA C22.2 No. 42
- CSA C22.2 No. 182.1
- CSA C22.2 No. 182.2
- CSA C22.2 No. 182.3

For countries other than the USA and Canada

Supply voltage 230 V AC

This device is supplied with a safety-tested power cord and may only be connected to a grounded SCHUKO socket outlet.

If you do not use the power cord, use a flexible cable that is rated for the maximum current input and ambient temperature of the device and complies with the safety regulations of the country in which the device is installed.

Power cords and device connectors must be certified or approved by a recognized testing authority in the respective country and must bear the corresponding prescribed markings.

3.3.2 Connection of equipotential-bonding cable

A low-resistance ground connection ensures that interference signals generated by external power supply cables, signal cables or cables to the I/O modules are safely discharged to ground.

The connection for functional earthing on a device has a large surface, makes contact over a large area and is marked with the following symbol:



Requirements

For the equipotential bonding connection, you need:

- One TORX T20 screwdriver
- One equipotential bonding cable with minimum cross-section of 2.5 mm^2

Procedure

1. Connect the identified equipotential bonding connection (thread M4) of the device with the equipotential bonding cable.
   Make sure that the equipotential bonding cable is in contact with the enclosure over a wide area.
2. Connect the equipotential bonding cable with the central grounding point of the control cabinet.
   Make sure that the equipotential bonding cable is in contact with the central grounding point over a wide area.



3.3.3 Connecting the power supply

3.3.3.1 Connecting 100-240 VAC power supply

⚠ WARNING

Injury to persons or damage to property when operated on an incorrect power supply system

If you connect the device to an unsuitable power supply, the device receives voltages and currents that are too high or too low.

Injuries to persons, malfunctions or a damage to the device can result.

- The permissible rated voltage of the device must match the local supply voltage.
- Operate the device only in grounded power supply networks (TN networks in accordance with VDE 0100, Part 100 or IEC 60364-1).
- Operation in non-grounded or impedance-grounded networks is not permitted.

⚠ WARNING

Safety regulations - connecting cable

Use only AC or 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 AC or 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 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.

Note

The varying voltage power supply module is designed for operation on 120/230/240 V AC networks. The setting of the voltage range takes place automatically.

Requirements

- You have observed the information under "Country-specific information on supply voltage (Page 41)".
- Screwdriver T10

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. Connect the appliance connector to the device.
3. If necessary, install the enclosed cable grip.



4. Connect the power cable with the safety power outlet.

3.3.3.2 Connecting the 24 VDC power supply

⚠ WARNING

Safety regulations - connecting cable

Use only AC or 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 AC or 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 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.

Note

Safety extra-low voltage (SELV)

- The device must only be connected to a 24 V DC power supply which meets the requirements of safe extra-low voltage (SELV) according to IEC/EN/DIN EN/UL 61010-2-201. A protective conductor must also be used.
- The conductors must withstand the short-circuit current of the 24 V DC power source, so that a short-circuit will not damage the cable.
- Only connect cables with a minimum cross-section of 1.3 mm^2 (AWG16) and a maximum cross-section of 3.3 mm^2 (AWG12).

Requirements

- You have observed the information under "Country-specific information on supply voltage (Page 41)".
- The 24 V DC power source must be adapted to the input data of the device (see Technical specifications (Page 101)).

Procedure

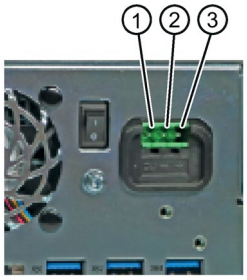
1. Make sure that the on/off switch is in the position "0" (OFF) to prevent unintentional startup of the device when it is connected to the 24 V DC power supply.
2. Switch off the external 24 V DC power supply.
3. Connect the 24 V DC plug connector to the device.

   Observe the correct polarity of the contacts:

   ① Protective conductor

   ② ground

   ③ 24 V DC



4. If necessary, install the enclosed cable grip.
5. Secure the 24 V DC cable to the cable grip using a cable tie.



Note

Reverse-polarity protection

The 24 V DC power supply is protected against polarity reversal. When you confuse the 24 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.

3.3.4 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 30)".

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 "Front panel (Page 16)".
2. Secure the cables with the strain relief.
   See: Connecting Ethernet/USB strain relief (Page 49)

Connecting several monitors (multi-monitoring)

You will find up to three ports on the rear 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 settings, see "Multi-monitoring (Page 53) ".

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

		Motherboard		
		DPP1	**DPP2**	**DVI-D**
Monitor 1	DP	X	-	-
	DVI	X 1)	-	-
	VGA	X 2)	-	-
Monitor 2	DP	-	X	-
	DVI	-	X 1)	-
	VGA	-	X 2)	-
Monitor 3	DP	-	-	-
	DVI	-	-	X
	VGA	-	-	-

1) - via DP to DVI-D adapter

2) - via DP-VGA adapter

3.3.5 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)

Additional information

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

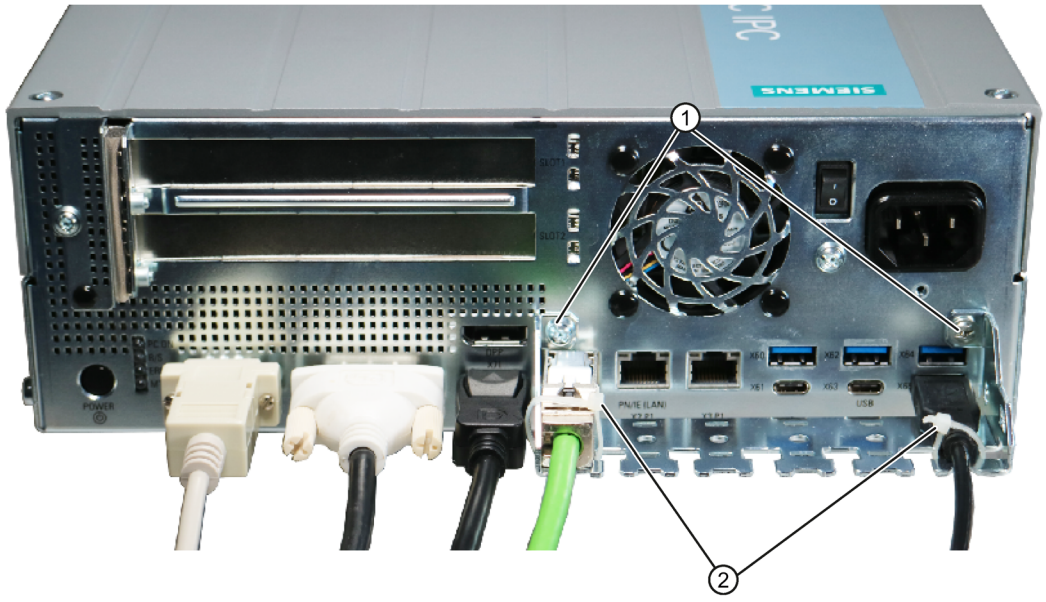
3.3.6 Connecting Ethernet/USB strain relief

The Ethernet/USB strain relief supplied in the product package is used to prevent accidental removal of the Ethernet cable and Industrial Ethernet FastConnect connector from the device. You need two cable ties to use the strain relief. In addition to the Ethernet cables, you can also use this strain relief to protect the four USB cables from inadvertent removal.

To secure the Ethernet strain relief, you will need a TORX T10 screwdriver.

Procedure

1. Secure the Ethernet/USB strain relief with two oval-head screws M3 ① to the device housing.
2. Connect the network and USB cables with the device and secure the connectors to the strain relief with cable ties ②.



3. Secure the connectors of the COM and DVI connection by screwing the connectors.

Commissioning the device

4

4.1 Switching on the device

Requirement

- The power supply is connected. (Page 43)

Procedure

1. Switch on the on/off switch on the rear of the device (position |).
2. Press the on-off button on the rear of the device.

Information on the position of the switch and button can be found at "Front panel (Page 16)".

Note

The power-up time is dependent on the system-related device configuration and the BIOS settings.

Changes made to the BIOS settings and/or the device configuration can likewise influence the power-up time.

Note

If the device was switched off shortly before, it can only be switched on again after a few seconds (as indicated by the "PC ON/WD" LED turning off). Depending on the configuration, the time until the device can be switched on again may be up to 15 seconds.

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 on the supplied data storage medium.

See also "Important instructions and manuals for operating the device (Page 11)" for more on this.

4.2 Configuring automatic switch-on of device

In the firmware settings you can specify that the device automatically starts up again after a separation from the mains voltage of at least 20 ms as soon as the mains voltage is available again.

Configure this function with the firmware setting (Setup Utility > Advanced > PCH-IO Configuration):

- State After G3

You can find information on this in the detailed firmware/BIOS description, see Important instructions and manuals for operating the device (Page 11).

The exact minimum required downtime of the mains voltage is dependent on the device equipment and the application.

4.3 Switching off the device

Shutting down the operating system

For active operating system

- Shut down the operating system properly.

For inactive operating system

- Briefly press the on/off button (unless otherwise configured in the power options). Information on the position of the button is available under: "Front panel (Page 16)".

Result

The "POWER" operating display is lit yellow.

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 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.

- Shut down the operating system and unplug the power plug from the rear of the device, see "Front panel (Page 16)".

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.

See also

General safety instructions (Page 25)

Operating the device

5

5.1 Multi-monitoring

You can operate several monitors on one device at the same time. Read the information in the corresponding section under "Connecting I/O devices (Page 47)".

Note

Information on graphics cards which support multi-monitoring can be obtained from your local contact person, see "Service and support (Page 137)".

Procedure

1. Install a suitable graphics card.
2. Configure the function "Multi-monitoring" in the firmware settings of the device. You can find information on this in the detailed firmware/BIOS description, see "Important instructions and manuals for operating the device (Page 11)".

5.2 Drive configurations

5.2.1 RAID1 system

The RAID1 system works on the principle of "data mirroring on two drives".

In the event of a defective drive the RAID1 system can continue to work on the remaining drive and thus achieves a high level of availability.

RAID1 system with associated software

If you have ordered a RAID1 system with pre-installed operating system, the RAID1 system is monitored with the installed diagnostics software SIMATIC IPC DiagBase or DiagMonitor.

The following software is available to monitor the RAID1 system:

- Onboard RAID system:

  Intel® Rapid Storage Technology

5.3 Operating RAID systems

5.3.1 Display of a defective drive of a RAID system

A defective drive is displayed in conjunction with RAID at the following locations:

- SIMATIC IPC DiagBase or SIMATIC IPC DiagMonitor monitoring software
- For onboard RAID system:

  "Intel® Rapid Storage Technology", see "Monitoring the onboard RAID system with "Intel® Rapid Storage Technology" (Page 57)".

5.3.2 RAID1 system: Installation options for drives

The two hard drives required for a RAID1 system can be installed in SIMATIC IPC627E in the following locations:

- For onboard RAID system:
  - "Drives (Page 72)"

5.3.3 Configure the onboard RAID system

If you have ordered a device with an onboard RAID system, the RAID system is already configured on delivery.

If you subsequently set up an onboard RAID system, you will still have to configure it.

Requirements

- The drives required for the onboard RAID system are built into the device, see:
  - RAID1 system: Installation options for drives (Page 54)

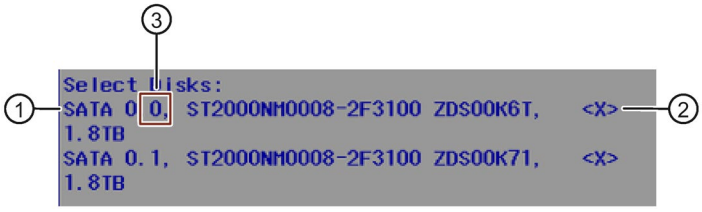
Navigation in the firmware of the onboard RAID system

Action	Button
• Select entry (then confirm selection)	• Arrow buttons on the keyboard
• Confirm selection	• <Return> button
• Back to the previous screen	• <Esc> button

Set up the onboard RAID system (Create Volume)

1. Switch on the device or restart it.
2. Immediately after turning on the device, as soon as the message "`Press ESC for boot options`" appears, press and hold the <Esc> button.
3. From the firmware selection menu, using the arrow keys, select the entry "Device Management" and confirm your selection.
4. From the "Devices List", select the entry "Intel <R> Rapid Storage Technology".
5. Select "Create RAID Volume".
6. On the next screen, assign a name for the RAID system.
7. Select "RAID Level" and select the entry "RAID1" in the following selection window.

   A list of the available drives is displayed.
8. Under "Select Disks" select the drives ① that you want to integrate into your RAID system and confirm your selection.



   – The mounted drive is provided with a check mark in the list ②.
   – You will find the assignment of the drive to the installation location in the drive cage after the drive name, see ③.

9. Select "Create Volume".

   The following screen shows the details on the RAID system just set up (RAID Volume).

   The onboard RAID system is set up.

10. Press the <Esc> multiple times in succession until you reach the "Main Page" of the firmware/BIOS menu.

Note

Confirm "Exit Discarding Changes" message with "YES"

If when exiting the firmware/BIOS menu with the <Esc> button, the warning message "Exit Discarding Changes" is displayed, confirm this message with "Yes".

The prenumbered settings are saved nonetheless and you can leave the firmware/BIOS menu.

5.3.4 Monitoring the onboard RAID system with "Intel® Rapid Storage Technology"

Open software for monitoring the "Intel® Rapid Storage Technology" onboard RAID system

1. Select "Start > Programs > Start > Intel".

Display status of the onboard RAID system (faulty drive)

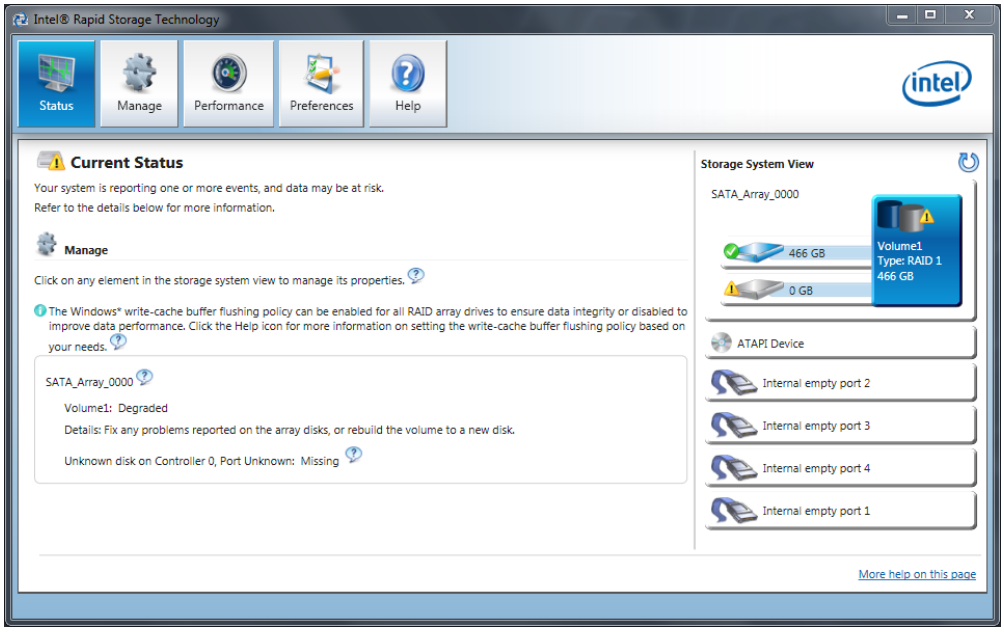
1. Select the "Status" tab.

   In the "Storage System View" area on the right side of the window, you will find information on:

   – a defective drive

   – a functioning drive

Example display status of a RAID1 system:



Creating a report on the onboard RAID system

1. Select the "Help" tab.
2. Select "System Report" > "Save".

5.3.5 Integrating a new drive into the onboard RAID system

The RAID system is configured in the delivery state so that a new drive must be integrated manually when a defective drive was replaced.

You can also configure the RAID system in such a way that the new drive is automatically mounted when the defective drive is replaced.

Configuring "Automatic mounting of a new drive " (before replacing a defective drive)

NOTICE
Risk of data loss If a new drive is automatically integrated, the new drive is not checked for partition information or existing data. All partitions and data of the new drive are deleted without warning. • Only use a brand new drive or a drive that has been set up as a replacement drive. • You can find notes on setting replacement drives in the controller documentation.

1. Select "Start" > "Intel" > "Intel Rapid Storage Technology".
2. Select the "Preferences" menu.
3. In the area "Automatic Rebuild", enable the option "Auto-rebuild on hot plug".

Configuring "Manual mounting of a new drive " (before replacing a defective drive)

The RAID system is configured in the delivery state so that a new drive must be integrated manually when a defective drive was replaced.

You can configure the manual integration of the drive or check the settings yourself.

1. Select "Start" > "Intel" > "Intel Rapid Storage Technology".
2. Select the "Preferences" menu.
3. In the area "Automatic Rebuild", enable the option "Auto-rebuild on hot plug".

Manually integrating a replaced drive (after a fault)

You can manually install a replaced drive in the onboard RAID system as follows:

- In the running system (without restarting the device).
- After switching off the unit

Integrating a replaced drive in the running system (without restarting the device)

1. Select "Start" > "Intel" > "Intel Rapid Storage Technology".
2. Select the "Status" menu.

   The new drive is displayed on the right-hand side of the program window in the "Storage System View" area.

   If the new drive is not shown, click the "Run Hardware Scan now" icon .
3. Click on the RAID volume in the "Storage System View" area on the right-hand side of the program window.
4. Click on the link "Rebuild to another Disk" in the "Manage" menu.
5. In the following dialog, select the newly installed drive and click on "Rebuild".

   The RAID system data synchronization (Page 59) is started.

5.3.6 Data synchronization in the RAID system

NOTICE
Danger of incorrect operations on machine and plant: delayed system reaction during data synchronization Data is synchronized if a drive fails. The system can respond with a delay depending on the size of the drive and system load. In extreme cases, the execution of keyboard, mouse or touch screen commands may be briefly delayed. The result may be faulty operations of the machine or plant. • Do not operate safety-critical functions during synchronization of a drive. Stable system statuses are only achieved after successful completion of synchronization.

Duration of data synchronization

The synchronization process may take quite some time, e.g. several hours, with extremely high drive load even days.

Guide value for the duration of data synchronization:

- < 3h at 90% HDD system load

In addition, system performance may be limited in the case of a manually started maintenance operation until completion of the maintenance phase.

5.4 Monitoring of the device

5.4.1 Monitoring functions

You can monitor the following device functions with the SIMATIC DiagBase or SIMATIC DiagMonitor software:

Monitoring	Description	Status displays and actions
Temperature monitoring	• Monitoring for temperature high and low limits as well as cable breaks of the temperature sensors • Temperature sensors record the temperature at critical device points, e.g. at the processor. • The temperature thresholds are defined for the individual temperature sensors. • With SIMATIC IPC DiagBase or SIMATIC IPC DiagMonitor, actions are triggered when the temperature thresholds are exceeded.	• Speed control of the device fans, the power supply fan and the fan of the optional graphics card • Temperature alarm is generated.
Fan monitoring	• Monitoring for underspeed and fan failure as well as cable breaks of the speedometer cable	• Fan alarm is output.
Watchdog	• Monitoring of the system status and message to determine if a station is still operational • If the watchdog is not addressed within a configured monitoring time, a watchdog alarm is output. • A change to the monitoring time is effective immediately.	Depending on the setting, the following actions are triggered: • Reset on: Hardware reset is performed • Reset off: No action is performed • The device is restarted • The device is shut down
Voltage monitoring	• Monitoring the charge status of the backup battery (CMOS) • When the first warning threshold is reached, the backup battery will run for at least one more month.	• An alarm is generated in the event of a critical or faulty state.
Drive monitoring	• Determination of the status of the drives (HDD and SSD) with SMART functionality, also in RAID systems (RAID status)	• SMART status of the hard disks • For example, the following states are displayed in a RAID group: "Normal", "OK", "Degraded", error "Rebuild", rebuilding

Software for device monitoring

You can find information on the monitoring software and its documentation under:

- SIMATIC IPC DiagBase (Page 61) for monitoring and alarming locally on the device
- SIMATIC IPC DiagMonitor (Page 61) for monitoring and alarming via network

5.4.2 SIMATIC IPC DiagBase

If you have ordered your device with a Microsoft® Windows® operating system, the SIMATIC IPC DiagBase monitoring software is installed.

Information on the software and documentation of SIMATIC IPC DiagBase can be found under:

- SIMATIC IPC DiagBase (https://support.industry.siemens.com/cs/ww/en/view/109749690)
- Important instructions and manuals for operating the device (Page 11)

5.4.3 SIMATIC IPC DiagMonitor

The SIMATIC IPC DiagMonitor monitoring software can be ordered optionally.

If a device is ordered with SIMATIC IPC DiagMonitor, the software is included with the device in the delivery state.

Information on the software and documentation of SIMATIC IPC DiagMonitor can be found under:

- SIMATIC IPC DiagMonitor (https://support.industry.siemens.com/cs/ww/en/view/39129913)
- Important instructions and manuals for operating the device (Page 11)

Note

SIMATIC IPC DiagMonitor version 5.1.0 and higher

SIMATIC IPC DiagMonitor only supports the device hardware as of version 5.1.0.

Older versions do not support the device hardware.

See also

Accessories: Software (Page 24)

5.5 Remote maintenance of the device

5.5.1 Remote maintenance functions

Remote maintenance of the devices is performed using Intel® Active Management Technology (iAMT), which is integrated into the hardware and firmware of the computer.

By using remote access to SIMATIC IPCs, system or program errors can be corrected from a control room (without on-site presence), for example, and program updates and firmware/BIOS settings can be performed. Access is possible even if the operating system no longer starts.

Some examples of iAMT's remote maintenance functions are listed below:

Function	Description
Remote control (keyboard / video / mouse redirection)	With KVM redirection, you can operate SIMATIC IPCs remotely, even if they have no operating system or the operating system is corrupt. A KVM remote session is always possible with the KVM server integrated in the firmware. This allows you to restart the IPC and change firmware/BIOS settings remotely.
Remote Power Management	SIMATIC IPCs can be turned on and off and restarted from another PC.
IDE redirection	An ISO file on the Help Desk PC can be integrated and used on the SIMATIC IPC as a DVD drive. An ISO file contains a memory image of the content of a CD or DVD structured in the ISO 9660 format.
Remotes Booting	A SIMATIC IPC can be booted remotely from a bootable ISO file made available by another PC.

Requirement

The following requirements must be fulfilled in order to use the remote maintenance functions:

- A device with a processor using iAMT technology
- A configured management engine (ME)
- The computer must be connected to the power grid and the network.

Configuring iAMT

You configure iAMT with Intel® Management Engine BIOS Extension (MEBx) in the firmware.

You can find information on this in the detailed firmware/BIOS description, see "Important instructions and manuals for operating the device (Page 11)".

5.6 Trusted Platform Module (TPM)

Depending on the ordered configuration of your device, a Trusted Platform Module according to Standard TPM V2.0 may be available. The Trusted Platform Module is a chip that enhances your device with security functions. It provides an improved protection from manipulation of the PC.

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 11)".

5.7 Buffer memory NVRAM (optional)

For applications to store data following a power failure, motherboards feature battery-buffered NVRAM. If the supply voltage fails for more than 20 ms for the AC power supply or more than 5 ms for the DC power supply, then you will be informed about this situation by the NAU signal.

At least 10 ms is available to copy the data to the buffered RAM. During this time, 128 KB can be saved with a full load and even more with a smaller configuration, in other words, a lesser load. A memory window with a maximum size of of 512 KB can be displayed by means of a PCI address register. The base address is initialized by the BIOS.

A corresponding function is implemented there for using the NVRAM under Soft PLC.

See also

Status displays (Page 20)

5.8 Operation without monitor and keyboard

The device can be operated without a monitor and keyboard. The device startup is guaranteed without these peripherals. A USB keyboard and mouse and a monitor can be connected later for diagnostics.

A digital DVI monitor or DisplayPort monitor is only activated retrospectively when the Windows operating system has booted completed.

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 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 31)".

⚠ 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:

- Always disconnect the power plug before you open the device.
- Close the device after every intervention.

NOTICE

Electrostatic-sensitive components

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

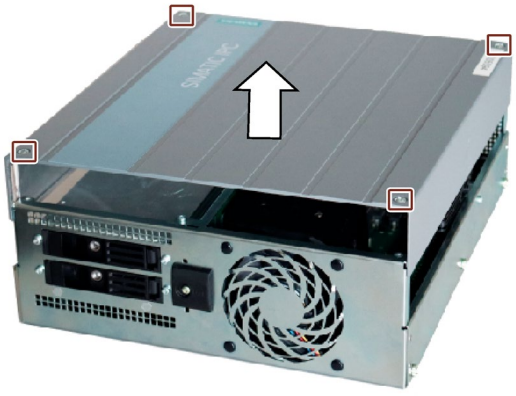
Take corresponding precautionary measures before you open the device.

Requirement

- All connecting cables are unplugged
- Screwdriver of type Torx T10

Procedure

1. Remove the four marked screws in the cover.
2. Remove the cover by lifting it up.



6.2 Expansion cards

6.2.1 Usable expansion cards

Expansion cards compliant with the following standards are supported:

- PCI; Rev 2.3 Expansion cards with 3.3 V and 5 V supply voltage can be used.
- PCIe; Gen. 1, Gen. 2, Gen. 3

Conditions of use of expansion cards

- The expansion cards must not exceed the specified dimensions. If the height is exceeded, you may experience contact problems, malfunctions and difficulties with the assembly.

  You can find the permitted dimensions for expansion cards under "Dimension drawing of the expansion cards (Page 119)".

See also

Expansion card slots on the bus board (Page 129)

6.2.2 Installing/removing expansion cards

Note

Requirement for expansion cards

You can find the permitted dimensions for expansion cards under "Dimension drawing of the expansion cards (Page 119)". If the permissible height is exceeded, contact problems, malfunctions and installation difficulties cannot be ruled out.

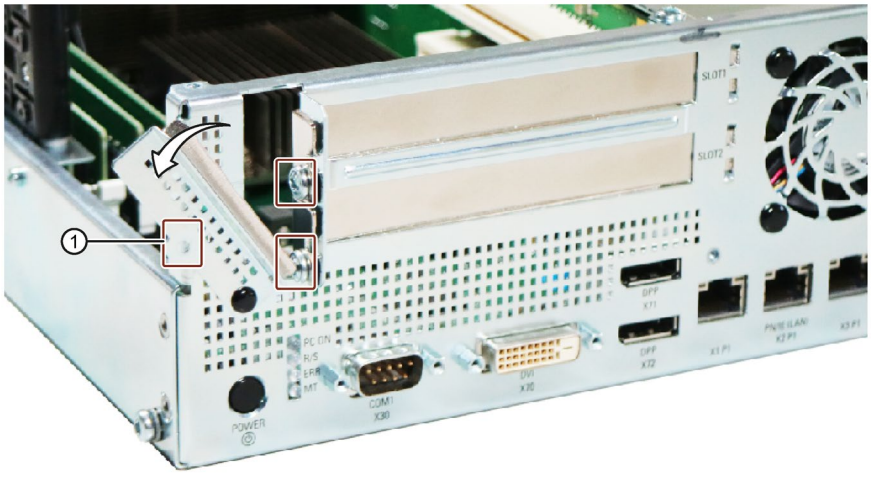
Requirements

- The device is open (see: Opening the Device (Page 64)).

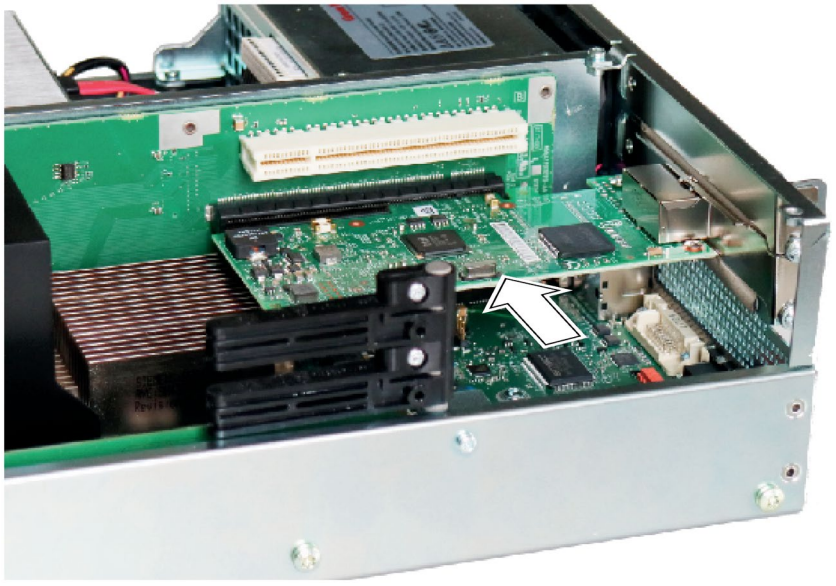
Procedure - Installation

NOTICE
Damage to the expansion card. The expansion card can break if excessive force is used. • Do not apply any pressure. • Do not apply excessive force on the slider when you push it onto the expansion card.

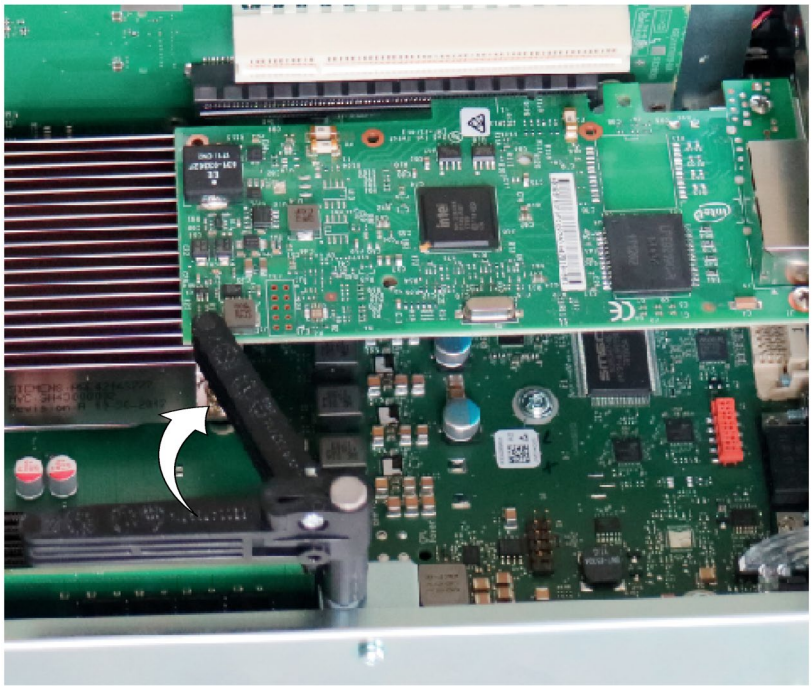
1. Remove the marked screw ① and swivel the cover to the side as shown. Then remove the marked screws and the panels.



2. Insert the expansion card into the relevant slot.



3. Secure the expansion card with the card retainer.



4. Fasten the slot cover of the expansion card (see 1.)

Notes on the allocation of resources

The slots for the expansion cards come with exclusive interrupts. The assignment of the PCI IRQ line to the PCI slot is explained in the chapter "Bus board (Page 129)".

Procedure - Removal

Proceed in reverse order of installation.

6.3 Memory modules

6.3.1 Usable memory modules

Combination options for memory modules

You can equip each device with 1, 2 or 4 memory modules of the same capacity. Combining three memory modules or mixing memory capacities is not permitted.

This allows you to expand IPC memory capacity to up to 64 GB, of which you can use approx. 3.2 GB for operating systems and applications with 32-bit operating systems.

Depending on the number of memory modules used, these are inserted in defined slots on the motherboard.

The slots are inscribed on the motherboard.

Combination option	Channel A		Channel B (external)		Maximum expansion
	Slot X19 DIMM1-1	Slot X190 DIMM1-2	Slot X20 DIMM2-1	Slot X200 DIMM2-2	
Combination 1	-	-	4 GB / 8 GB / 16 GB	-	16 GB
Combination 2	4 GB / 8 GB / 16 GB	-	4 GB / 8 GB / 16 GB	-	32 GB
Combination 3	Combinations of three memory modules are not permitted				
Combination 4	4 GB / 8 GB / 16 GB	4 GB / 8 GB / 16 GB	4 GB / 8 GB / 16 GB	4 GB / 8 GB / 16 GB	64 GB

Usable memory modules

- DIMM DDR4 memory modules
- Memory transaction rate 2666 MT/sec "unbuffered"
- "without ECC"

Conditions of use of memory modules

- Memory is operated in dual-channel mode if two modules are installed.
- Only modules of the same module organization 2Rx8 or 1Rx8 may be used per channel.
- If expansion cards with their own memory, such as graphics cards, with 256 MB or more are used, the memory that can be used for the operating system or applications may be less than 64 GB.
- In faults occur, it may be enough to remove one or two memory modules or use a memory module with less capacity so that the physical memory set up on the motherboard and the reserved memory on the expansion card do not overlap.

See also

Opening the Device (Page 64)

6.3.2 Installing and removing memory module

Requirements

- The device is disconnected from the mains and all connecting cables have been removed.
- You have noted the information on combination options and the conditions of use of memory modules under "Usable memory modules (Page 69)".
- The device is open (see: Opening the Device (Page 64)).

Installing a memory module

Note

Equipment of the memory modules

Make sure that the memory modules are equipped in the following order:

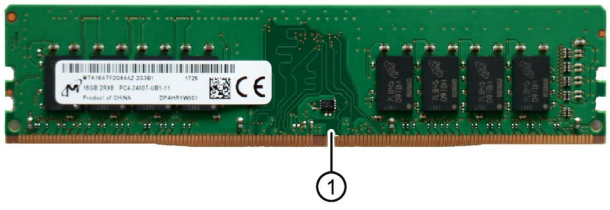
1 memory module: Slot at the very end (2-1)

2 memory modules: Slot at the very end (2-1) and the third from the end (1-1)

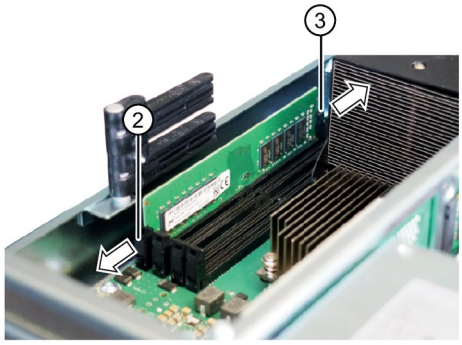
3 memory modules: not allowed

4 memory modules: all slots (2-1, 2-2, 1-1, 1-2)

1. Note where the cutout ① (reverse polarity protection) is located on the pin side of the RAM module before inserting it.



2. Open the two locking mechanisms on the left ② and right ③ of the slot.
3. Insert the module downwards, applying slight pressure and press it until the locking snaps into place.



4. Close the device.

Removing a memory module

Note

Also observe the order for equipping the memory modules described above when removing the memory modules.

1. Loosen the locking mechanisms on the left ② and right ③ of the slot.
2. Remove the memory module from the slot.
3. Close the device.

Display of a changed memory configuration

A new memory module is automatically detected. When switching on the device and starting the BIOS Setup using <F2>, the current memory size is displayed under "Total Memory".

See also

General safety instructions (Page 25)

6.4 Drives

6.4.1 Changing the drive in the removable tray

NOTICE
Risk of damaging the drive and data loss Drives in the removable drive bays can only be replaced during operation in connection with RAID1 (hot swap). When you remove the drive while data is being written to it, you may damage the drive and destroy data. • Only remove the removable tray from the device when the drive is inactive. • Observe the ESD guidelines.

Requirement

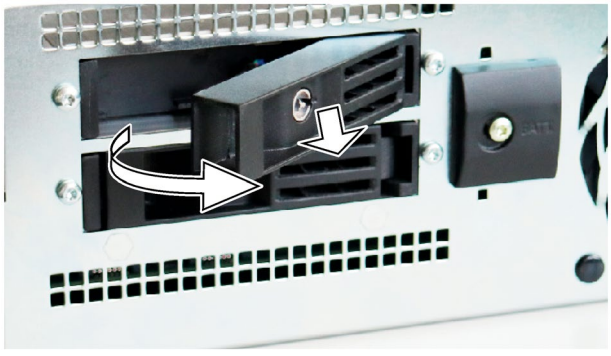
- An original spare part, that is a drive approved for this device, see notes in "Accessories: Hardware (Page 24)".
- If there is no RAID system: The device is fully disconnected from the line voltage, see "Switching off the device (Page 51)".
- The device you wish to replace is inactive.

Procedure

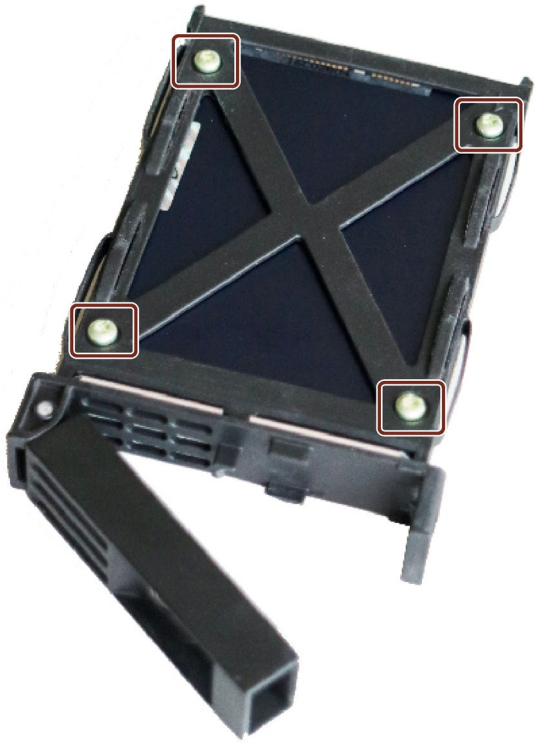
1. Open the lock of the removable tray with the appropriate key.



2. Fold out the removable tray bracket somewhat to the front and pull out the removable tray by the tray bracket in the direction of the arrow.



3. Loosen the highlighted screws on the bottom of the removable tray and remove the drive.



4. Carefully insert the new drive into the removable tray.

   Take care not to touch the contacts of the drive when you do this.

5. Fasten the new drive with the screws to the base of the removable tray.

   Only use the original screws.

6. Fold the tray bracket out of the removable tray as far as it will go and slide the removable tray fully into the drive cage.

   Ensure that the removable tray fits tightly in the drive cage.

7. Close the tray bracket.
8. Lock the removable tray with the key.

Note

The removable tray must always be locked to ensure reliable operation of the devices with removable trays.

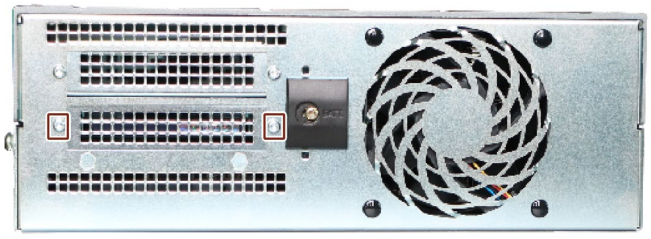
6.4.2 Changing internal SSD

Requirements

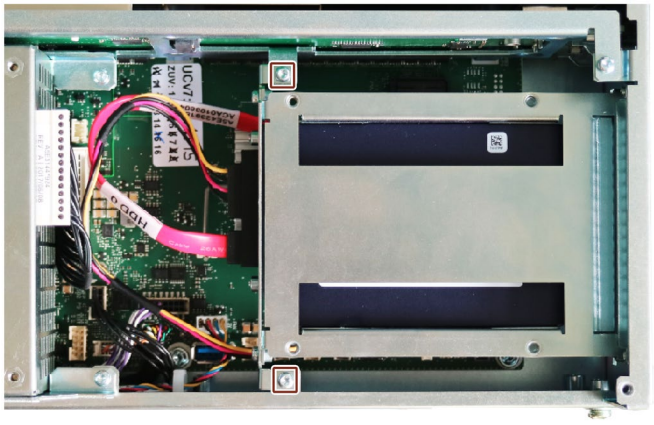
- The device is disconnected from the mains and all connecting cables have been removed.
- The device is open, see important information regarding this under Opening the Device (Page 64).
- An original spare part, that is an SSD of the same type, see information under Accessories: Hardware (Page 24).

Procedure - Removal

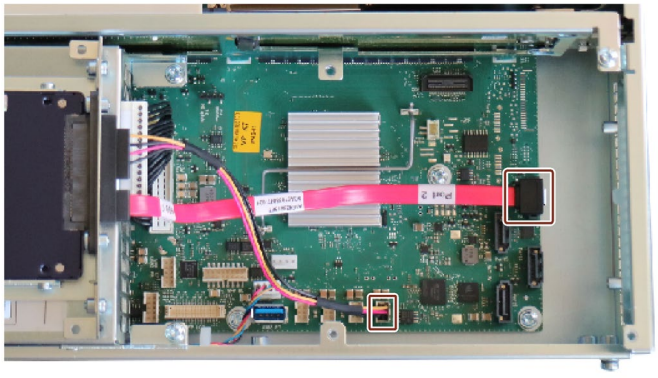
1. Remove the marked screws.



2. Remove the marked screws and place the SSD on its side.



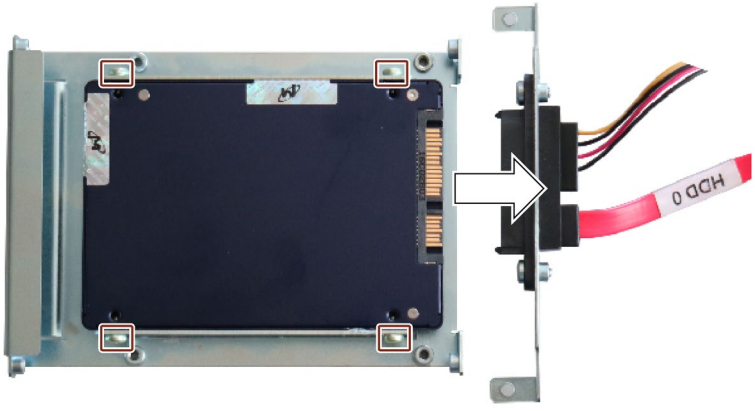
3. Remove the marked connectors.



4. Remove the marked screws.



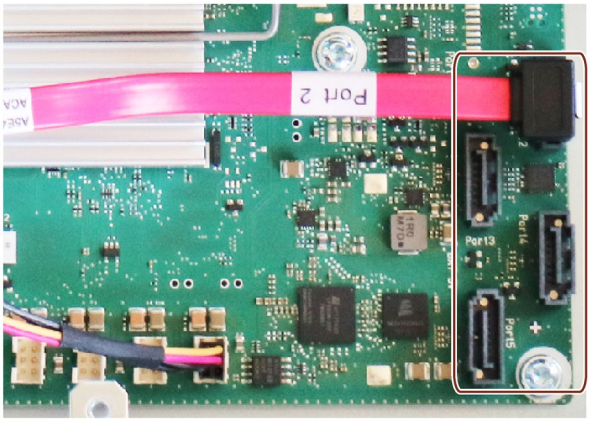
5. Remove the carrier with the connectors, remove the marked screws and take out the SSD.



Procedure - Installation

Proceed in reverse order.

When connecting multiple drives, observe the assignments of the port connections (see PCB labeling).



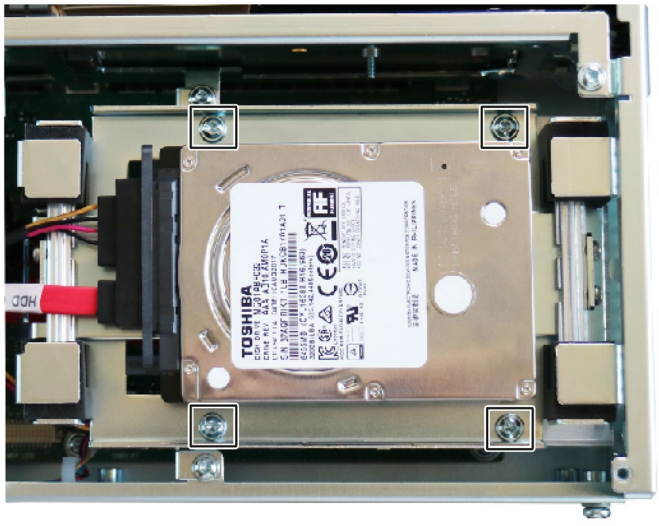
6.4.3 Changing internal hard disk drive

Requirements

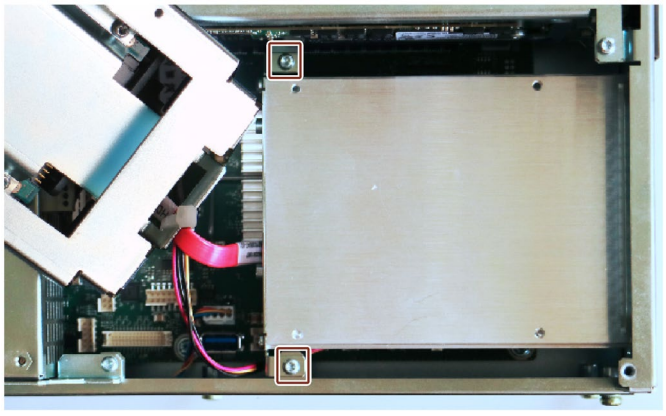
- The device is disconnected from the mains and all connecting cables have been removed.
- The device is open, see important information regarding this under Opening the Device (Page 64).
- An original spare part, that is a hard disk drive of the same type, see information under Accessories: Hardware (Page 24).

Procedure - Removal

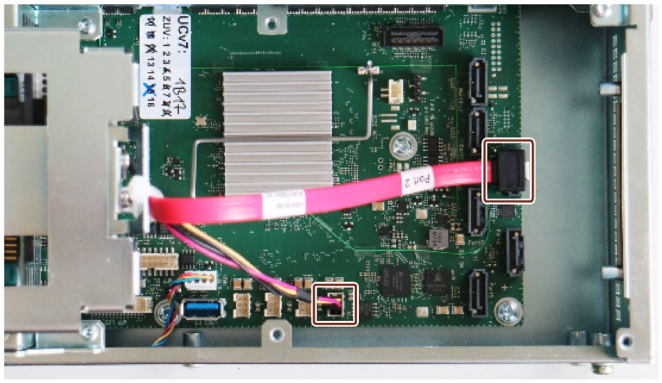
1. Remove the marked screws and place the hard disk drive on its side.



2. Remove the marked screws and the drive carrier.



3. Remove the marked connectors and remove the hard disk.



Procedure - Installation

Proceed in reverse order.

6.4.4 Replacing a drive in the RAID system

A hard disk can only be replaced during operation in the removable drive bay in connection with a configured RAID1 system. This functionality is referred to as "Hot Swap".

Note

If you have configured a non-RAID system with several hard disks, or in the case of an internally installed hard disk, you need to turn off the device before you replace a hard disk.

- Observe the EGB guidelines.
- Always replace the drive with a new drive of the same type and capacity.

Mounting locations for hard disks in the RAID1 system

Hard disks for a RAID1 system are installed in the removable tray or inside the device.

Note

The replacement of a RAID hard disk **with removable drive bay** can be performed without shutting down the device.

The new hard disk can be integrated into the RAID system at operating system level with the RAID software. Synchronization may take several hours, depending on system load.

Replacing a defective drive in the RAID system

- Determine which drive was reported by the RAID software as defective.
  - Assignment of the port numbers for labeling on the device:
    - SATA port 2 => HDD 0
    - SATA port 3 => HDD 1

1. Replace the appropriate drive (see: Drives (Page 72)).
2. Replace the defective drive with a new one of the same type and capacity.

Information about the recovery of the RAID system is available in the section "Integrating a new drive into the onboard RAID system (Page 58)".

Note

Replacing the drive in the RAID system when switched off

The RAID system does not automatically boot up when restarted if a defective drive was replaced while the RAID system is switched off.

Therefore, place the RAID system in the first place of the bootable sources in the BIOS setup menu "Boot > EFI".

Otherwise, the system is booted from the drive you have just installed and the message "Operating system not found" is displayed.

6.4.5 Replacing M.2 NVMe SSD

Note

An M.2 NVMe SSD cannot be operating in a RAID-System.

Requirements

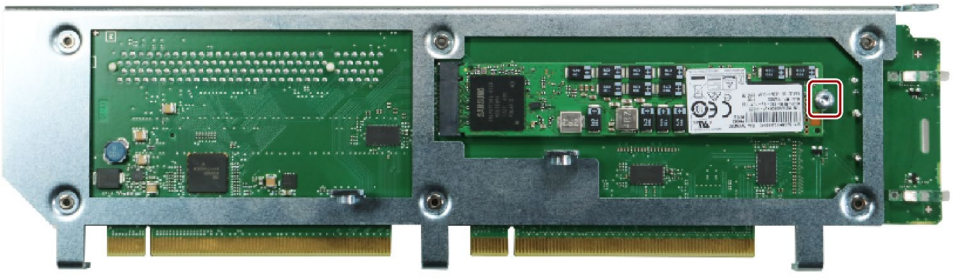
Note
Observe the ESD directives

Observe the ESD directives.

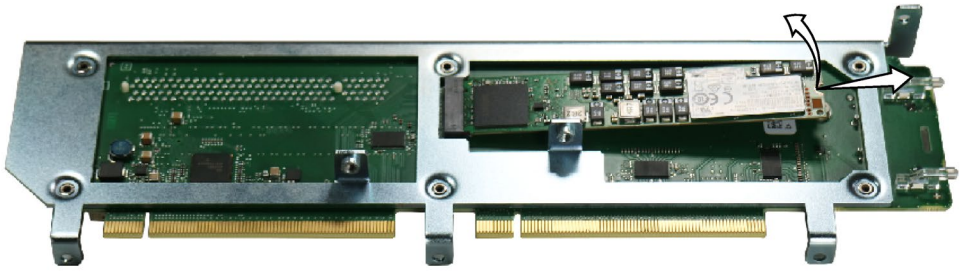
- M.2 NVMe SSDs with an length of up to 110 mm
- Phillips screwdriver P1
- The drive bay module, the power supply and the bus board are removed; see Replacing the bus board (Page 93)

Procedure

1. Remove the bus board; see Replacing the bus board (Page 93)
2. Place the bus board on a suitable surface so that it lies flat and plane.
3. Remove the marked screw.

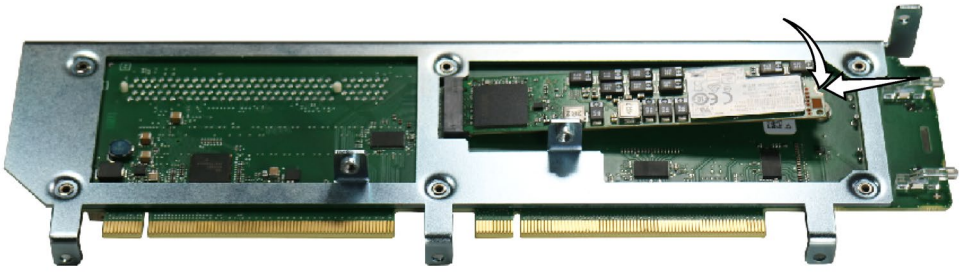


4. Lift the M.2 NVMe SSD slightly as shown and pull it out of the direct connector socket.



5. Lay the thermal pad on the bus board in such a manner that it is covered completely by the M.2 NVMe SSD after the SSD's installation.

6. Insert the M.2 NVMe SSD slightly inclined from above into the provided direct connector socket.



7. Carefully push the M.2 NVMe SSD down and secure it with the screw.
8. Install the bus board and then the drive bay module and the power supply again.

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 31)".

See also

Spare parts service (https://support.industry.siemens.com/cs/ww/en/sc/2110)

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
Hard disk drive	3 years
Fan	3 years
CMOS backup battery	5 years
SSD	Depends 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.

Note

All drives are monitored by SIMATIC DiagBase or SIMATIC DiagMonitor software via Smart status.

As soon as the Smart status of the data medium goes to "Not OK", a message is generated in SIMATIC DiagBase or SIMATIC DiagMonitor or also during a system start of the device. You should then back up your data and replace the drive.

7.3 Removing and installing hardware

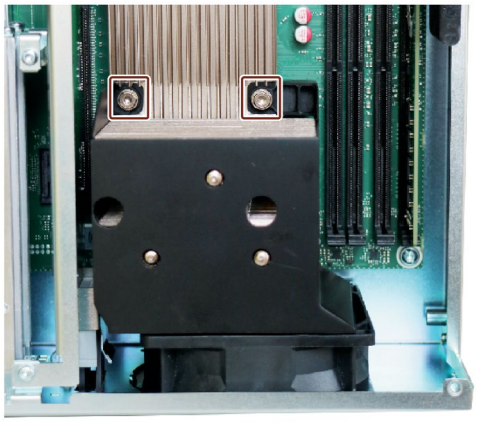
7.3.1 Replacing device fans

Requirement

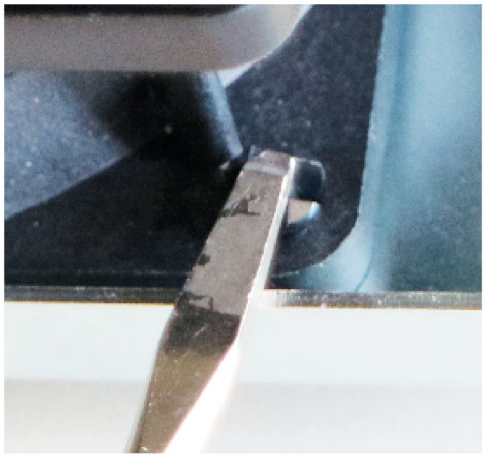
- The device is disconnected from the mains and all connecting cables have been removed.
- The device is open, see important information regarding this under Opening the Device (Page 64).
- An original spare part, that is a fan of the same type, see information under Accessories: Hardware (Page 24).

Procedure - Removal

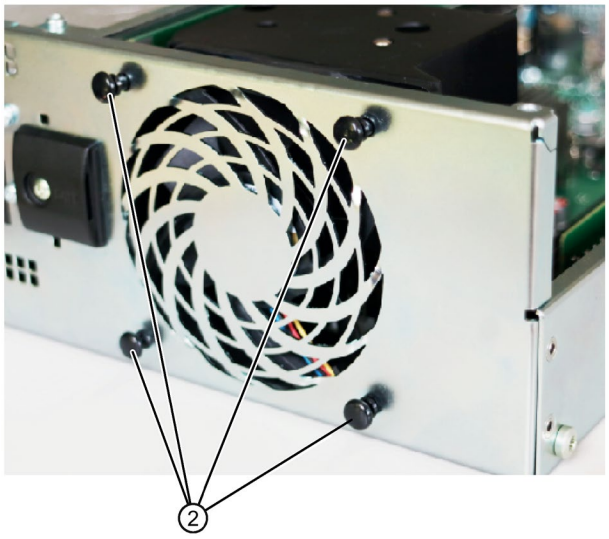
1. Remove the two screws ① and remove the air guide pulling it up vertically.



2. Loosen the plastic rivets.



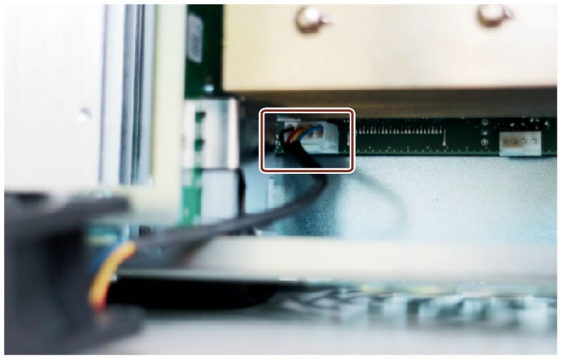
3. Remove the four plastic rivets ② on the enclosure.



4. Take the fan out of the enclosure.



5. Pull out the fan plug.



Procedure - Installation

Proceed in reverse order of removal.

Note

- Install only a fan of the same type.
- Note the correct mounting position of the fan.
- Direction of flow: Make sure that the blades/bars of the fan housing are on the outside of the enclosure.
- Run the power supply cable along the enclosure edge and fasten the cable.

The marked symbols show the rotation and flow direction of the fan.



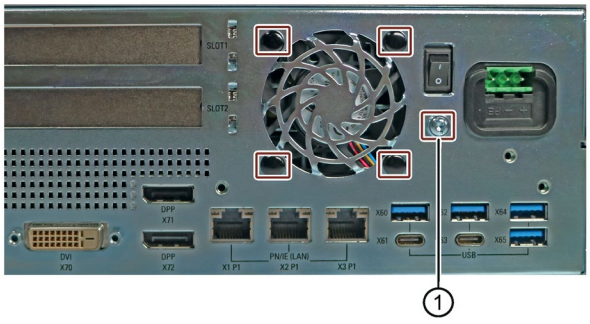
7.3.2 Replace power supply fan

Requirements

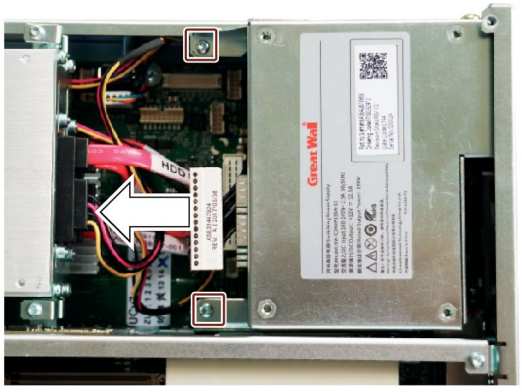
- The device is disconnected from the voltage supply and all connecting cables have been unplugged.
- The device is open, see important information regarding this under Opening the Device (Page 64).
- An original spare part, that is a fan of the same type, see information under Accessories: Hardware (Page 24).

Procedure - Removal

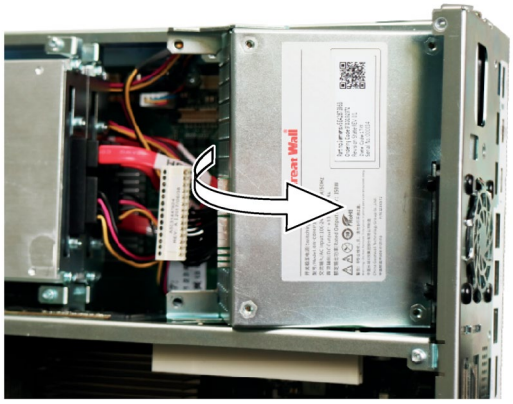
1. Remove the four plastic rivets on the enclosure and remove the marked screw ①.



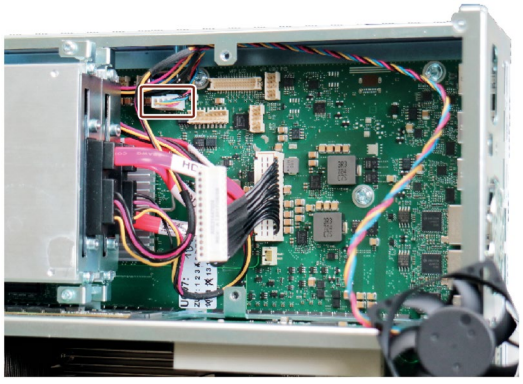
2. Pull the power supply connector and remove the marked screws.



3. Take the power supply out of the enclosure.



4. Remove the power supply fan and pull the fan plug.



Procedure - Installation

Proceed in reverse order of removal.

Note

- Install only a fan of the same type.
- Note the correct mounting position of the fan.
- Direction of flow: Make sure that the blades/bars of the fan housing are on the outside of the enclosure.
- Run the power supply cable along the enclosure edge and fasten the cable.

The marked symbols show the rotation and flow direction of the fan.



7.3.3 Changing the backup battery

⚠ WARNING

Risk of explosion and release of harmful substances

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

Explosion of the lithium batteries and the resulting release of harmful substances can cause severe physical injury. Damaged batteries jeopardize the function of the device.

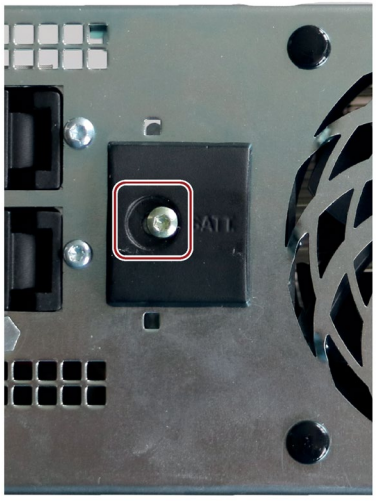
- Replace spent batteries promptly. See information in "Maintenance intervals (Page 82)".
- Replace the lithium battery only with an identical battery or types recommended/approved by SIEMENS.
- Do not throw lithium batteries into fire, do not solder on the cell body, do not recharge, do not open, do not short-circuit, do not reverse polarity, do not heat above 100 °C and protect from direct sunlight, moisture and condensation.

Requirements

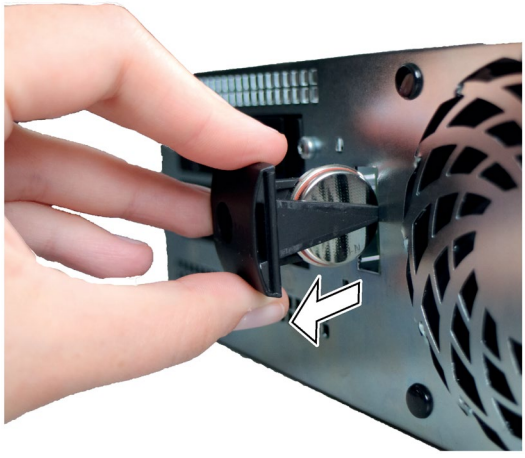
- An original spare part, that is a backup battery of the same type (article number of lithium battery: A5E00047601 CR2450-N).
- You have noted the current firmware settings as the configuration data of the device is deleted when the battery is replaced.
- You can find information on this in the detailed firmware/BIOS description, see Important instructions and manuals for operating the device (Page 11).
- The device is open, see important information regarding this under Opening the Device (Page 64).
- You have observed the local regulations relating to the disposal of used batteries.

Procedure

1. Remove the marked screw.



2. Remove the battery holder.



3. Replace the battery, reinsert the battery holder and fasten it with the screw.

See also

Accessories: Hardware (Page 24)

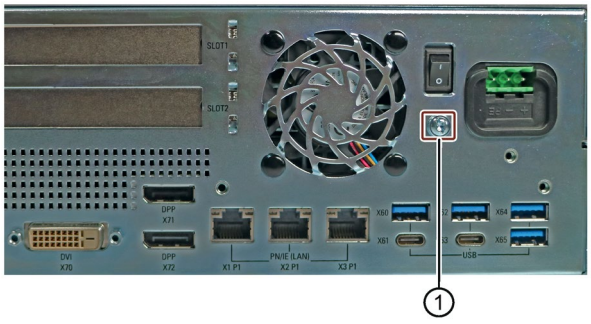
7.3.4 Replace power supply

Requirements

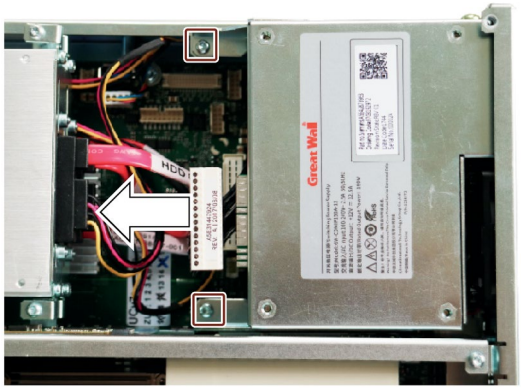
- The device is disconnected from the mains and all connecting cables have been removed.
- The device is open, see important information regarding this under Opening the Device (Page 64).
- An original spare part, i.e. a power supply of the same type, see notes under Accessories: Hardware (Page 24).

Procedure - Removal

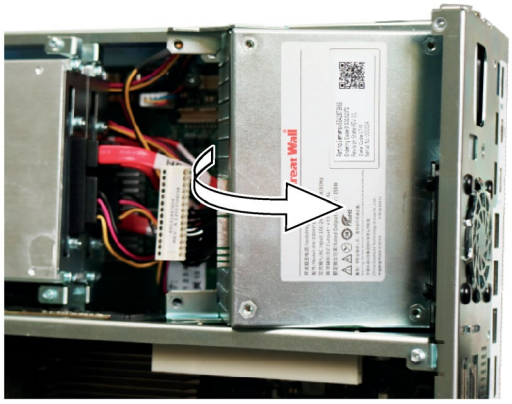
1. Remove the marked screw ①.



2. Pull the power supply connector and remove the marked screws.



3. Take the power supply out of the enclosure.



Procedure - Installation

Note

Install only a power supply of the same type.

Proceed in reverse order.

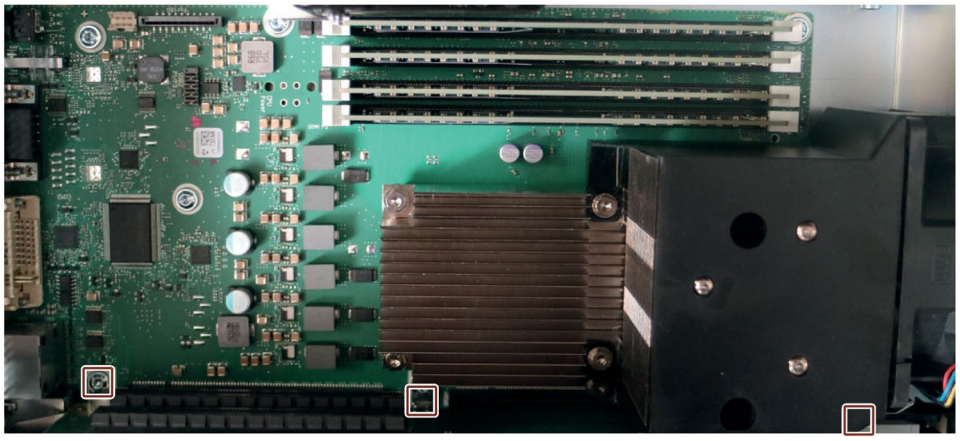
7.3.5 Replacing the bus board

Requirement

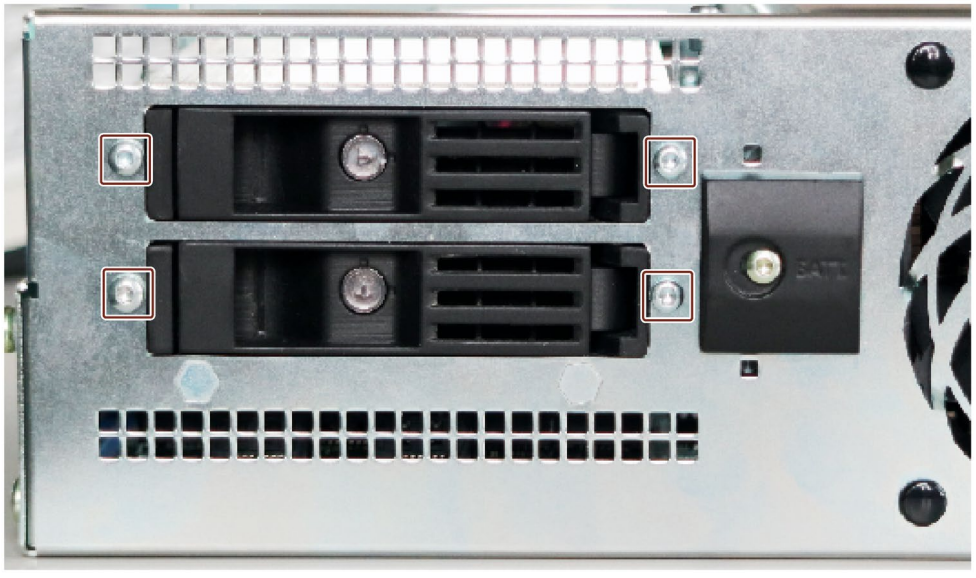
- The device is disconnected from the mains and all connecting cables have been removed.
- The device is open, see important information regarding this under Opening the Device (Page 64).

Procedure - Removal

1. Remove all modules from the slots.
2. Remove the marked screws on the bus board.

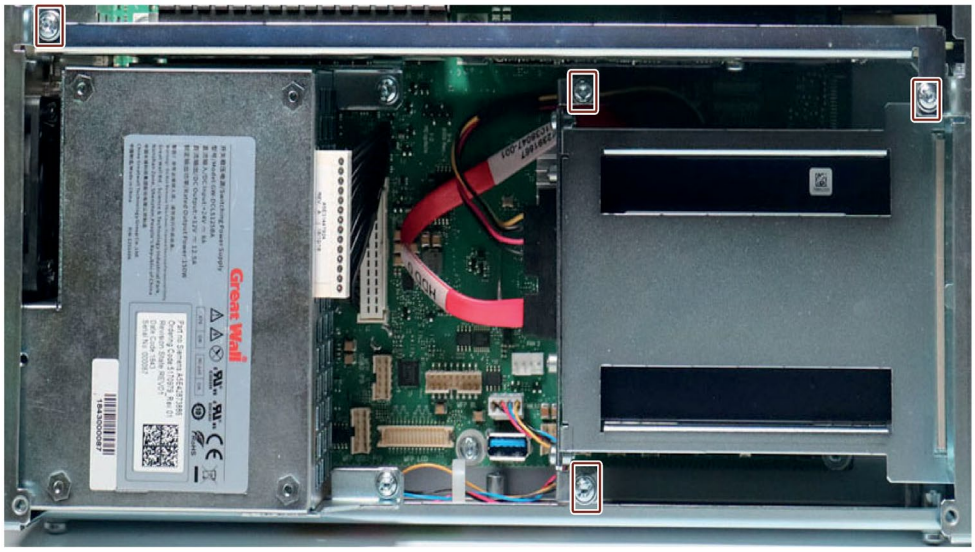


3. Remove the marked screws.

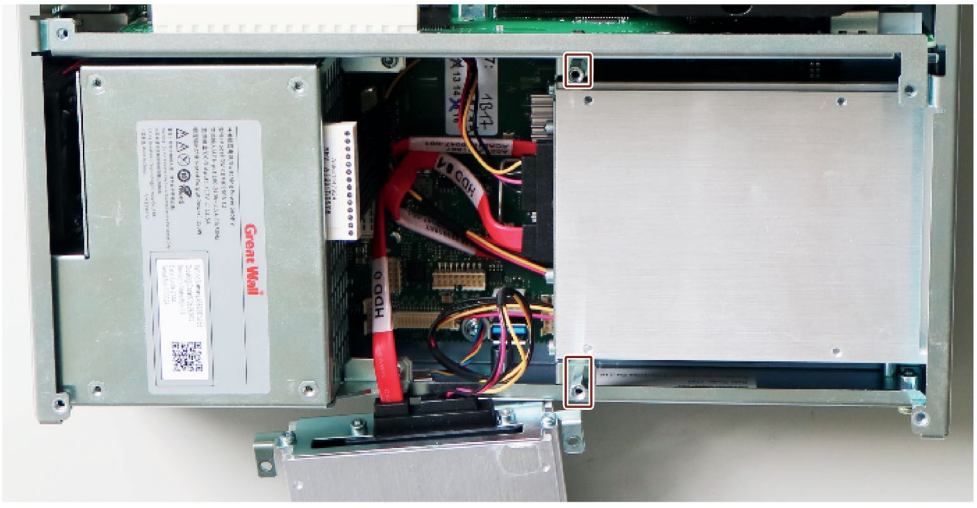


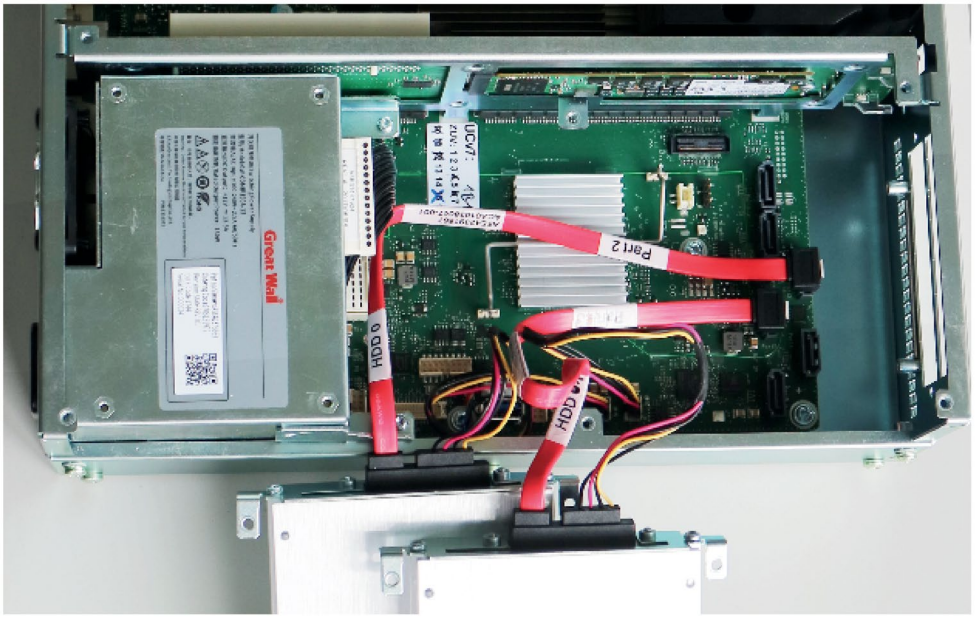
4. Remove the back-up battery holder, see Changing the backup battery (Page 89).

5. Remove the marked screws and remove the top drive bay module (including hard disk).

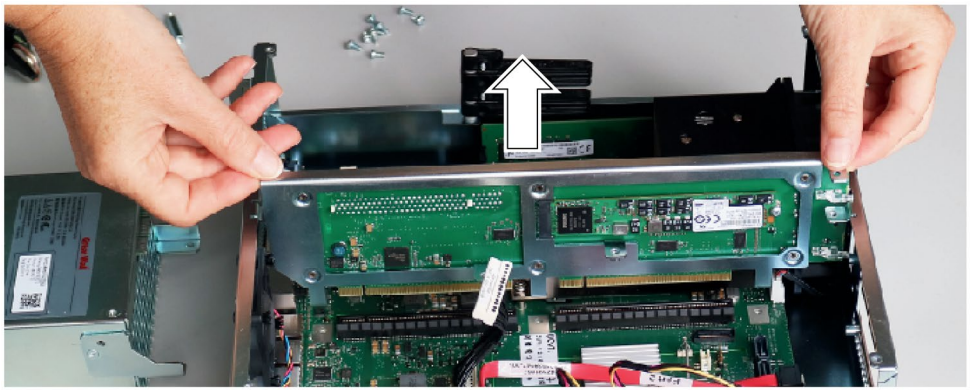


6. Remove the marked hexagonal distance bolts and remove the bottom drive bay module (including hard disk).





7. Remove the power supply, see also Replace power supply (Page 91).
8. Pull the bus board from the motherboard as shown in the figure.



Procedure - Installation

Note

Install only a bus board of the same type.

Proceed in reverse order.

7.3.6 Replacing the processor

Requirements

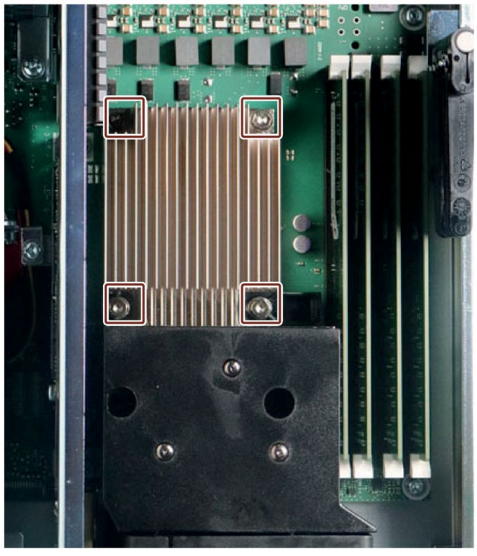
- The device is disconnected from the mains and all connecting cables have been removed.
- The device is open, see important information regarding this under Opening the Device (Page 64).
- The memory modules have been removed.
- The air guide has been removed (see chapter "Replacing device fans (Page 83)")
- An original spare part, i.e. a processor of the same type.

  Only an approved processor is permitted to be installed on the motherboard.

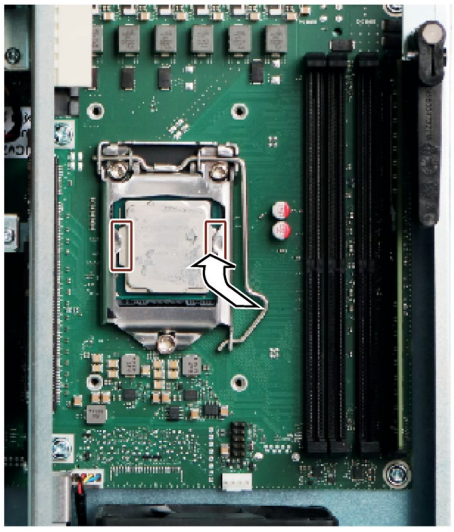
NOTICE
Damage to the processor If the installed processor is operated with a higher clock frequency than permitted, it can be destroyed or cause loss of data. • Operate the processor only at a clock frequency that is equal to or less than the permitted clock frequency.

Procedure

1. Loosen the marked screws and remove the heat sink.



2. Release the lever of the processor bay and tilt it all the way back. The bay releases the processor.



3. Remove the processor by grabbing the marked rails on the side. Do not touch the processor and its connections in the process (see "ESD guidelines" under General safety instructions (Page 25)).

   Note: The contact springs of the socket are highly sensitive to mechanical damage, e.g. caused by an incorrectly inserted CPU or foreign objects, and their entire surface may only touch the contact side of the processor flat.

4. Install the new processor on the socket, as shown in the figure.

   During positioning, make sure to take the highlighted arrow on the processor into consideration.

5. Tilt the lever to the front again. Make sure that the bay covers the screw.

6. Press the lever all the way down and lock it again.

NOTICE
Damage to the processor due to excessive force The locking mechanism may be stuck. The locking mechanism is damaged while being pressed down. The processor is not correctly locked in place by the bay. The result may be malfunctions. • Do not use excessive force. • Tilt the lever back again and try again.

See also

Contacts (http://www.siemens.com/automation/partner)

SIMATIC IPC after-sales information system (http://www.siemens.com/asis)

7.4 Installing operating system, software and drivers

7.4.1 Installing the operating system

Information on restoring or reinstalling the operating system you ordered with the device can be found in the detailed operating system description, see "Important instructions and manuals for operating the device (Page 11)".

7.4.2 Installing software and drivers

On the supplied USB stick (read only), you will find the "Documentation and Drivers" suite, which you use to install all supplied software and drivers.

Procedure

1. Connect the supplied USB flash drive.
2. Start the "Documentation and Drivers" suite from the USB flash drive by executing the "START_DocuAndDrivers.CMD" file.
3. Install the desired software and drivers.

7.5 Configuring firmware/BIOS

You can find information on configuring firmware/BIOS and on the firmware settings in the delivery state in the "Firmware/BIOS description (https://support.industry.siemens.com/cs/ww/en/view/109760621)".

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 127)".

7.6 Backing up data and changing partitions

We recommend the "SIMATIC IPC Image & Partition Creator" software to back up data under Windows®, which supports the hardware of the device as of version 3.5.3.

You will find detailed information on this software in: "SIMATIC IPC Image & Partition Creator (https://support.industry.siemens.com/cs/ww/de/view/109780684/en)".

Please also observe the information in "Technical specifications of the operating systems (Page 110)".

7.7 Recycling and disposal

The devices described in these operating instructions can be recycled thanks to their low level of pollutants. Contact a certified disposal service company for electronic scrap for environmentally sound recycling and disposal of your old device, and dispose of it according to the relevant regulations in your country.

Technical specifications

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 101)".

Article number	6AG4131-3....-.... (for details, refer to the ordering documentation)
Dimensions	Device with two expansion slots: 295 × 265 × 93 (W × H × D in mm) Device with five expansion slots: 295 x 265 x 155 (W × H × D in mm)
Weight	Device with two expansion slots: approx. 5 kg Device with five expansion slots: approx. 7 kg
Supply voltage AC	Nominal 100-240 V AC (-15% / +10%) (wide range)
Supply voltage DC [1]	Nominal 24 V DC (-20% / + 20%), SELV [1]
Input current AC	Continuous current up to 2.5 A (max. 132 A for a half-value time of 0.8 ms)
Input current DC	Continuous current up to 8 A (max. 13 A for a period of 50 ms)
Supply voltage frequency	50-60 Hz (47 to 63 Hz)
Short-term voltage interruption in accordance with Namur	max. 20 ms (at 93 to 264 V) (max. 10 events per hour; recovery time at least 1 s)
Max. power consumption AC and DC	Active power 176 W
Noise emission	< 55 dB(A) according to EN ISO 7779
Degree of protection	IP 20 to IEC 60529
Quality assurance	In accordance with ISO 9001

Safety	
Protection class	Protection class I 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 • UL 61010-2-201 • CSA C22.2 No 61010-2-201

[1] The device must only be connected to a 24 V DC power supply which meets the requirements of safe extra-low voltage (SELV) according to IEC/EN/DIN EN/UL 61010-2-201. A protective conductor must also be used (see chapter "Connecting the 24 VDC power supply (Page 45)").

8.3 Current/power requirements and power supply

8.3.1 Current and power requirements of the system components

Maximum current values

Table 8- 1 IPC627E - two expansion slots

Component	**Voltage**							
	+3.3 V		**+5 V**		**+12 V**		**-12 V**	
Basic device [1, 2]	1.53 A		4.1 A		5.45 A			
1 × 2.5" SATA SSD [2]			0.8 A					
1 x 2.5" SATA HDD [2]			0.6 V					
M.2 NVMe SSD	2.24 A							
USB ports [3 4]			2 A					
PCI/PCIe slots [4] in total	6 A		4 A		2 A		0.1 A	
Maximum per PCI slot		6 A		4 A		0.5 A		0.1 A
Maximum per PCIe slot		3 A		-		2 A		-
Individual currents (max. permissible)	**14 A**		**14 A**		**12.5 A**		**0.3 A**	

[1] Basic device includes motherboard, processor, memory and both fans

[2] Depends on the selected device configuration

[3] 2 × USB3.1 type C high current and 4 × USB3.1 low current.

[4] The total power for individual PCI/PCIe slots cannot exceed 25 W.
The total power for USB and PCI/PCIe slots cannot exceed 30 W.

Table 8- 2 IPC627E - five expansion slots

Component	Voltage							
	+3.3 V		**+5 V**		**+12 V**		**-12 V**	
Basic device [1, 2]	1.53 A		4.1 A		5.45 A			
1 x 2.5" SATA SSD [2]			0.8 A					
1 x 2.5" SATA HDD [2]			0.6 A					
M.2 NVMe SSD	2.24 A							
USB ports [3 4]			2 A					
PCI/PCIe slots [4] in total	10 A		6 A		2 A		0.1 A	
Maximum per PCI slot		6 A		4 A		0.5 A		0.1 A
Maximum per PCIe slot		3 A		-		2 A		-
Individual currents (max. permissible)	**14 A**		**14 A**		**12.5 A**		**0.3 A**	

1 Basic device includes motherboard, processor, memory, both fans, CF

2 Depends on the selected device configuration

3 2 × USB3.1 type C high current and 4 × USB3.1 low current.

4 The total power for individual PCI/PCIe slots cannot exceed 25 W.
The total power for USB and PCI/PCIe slots cannot exceed 50 W.

Typical power values

Table 8- 3 IPC627E - two expansion slots

Component	Current consumption 230 V AC	Current consumption 24 V DC	Power consumption efficiency 0.85
Base device	0.39 A	3.75 A	90 W
1 × 2.5" SATA SSD	0.03 A	0.29 A	7 W
1 × M.2 NVMe SSD	0.03 A	0.25 A	6 W
1 × 2.5" SATA HDD	0.01 A	0.13 A	3 W
USB ports	Max. 0.06 A	Max. 0.54 A	Max. 13 W
PCI/PCIe slots	0.16 A max.	1.54 A max.	Max. 37 W

Table 8- 4 IPC627 - five expansion slots

Component	Current consumption 230 V AC	Current consumption 24 V DC	Power consumption efficiency 0.85
Base device	0.30 A	2.92 A	70 W
1 × 2.5" SATA SSD	0.03 A	0.29 A	7 W
1 × M.2 NVMe SSD	0.03 A	0.25 A	6 W
1 × 2.5" SATA HDD	0.01 A	0.13 A	3 W
USB ports	Max. 0.06 A	Max. 0.54 A	Max. 13 W
PCI/PCIe slots	Max. 0.26 A	Max. 2.46 A	Max. 59 W

8.3.2 Technical specifications AC power supply (AC)

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

Note

The power supply contains an active PFC (Power Factor Correction) circuit to conform to the EMC guidelines.

Uninterruptible AC power systems (UPS) must supply a sinusoidal output voltage in the normal and buffered mode when used with SIMATIC PCs with an active PFC.

UPS characteristics are described and classified in the standards EN 50091-3 and IEC 62040-3. Devices with sinusoidal output voltage in the normal and buffered mode are identified with the classification "VFI-SS-...." or "VI-SS-....".

Power supply characteristics	AC power supply
Input data	
Voltage	Nominal 100 - 240 V AC (-15% / +10%), wide range
Frequency	Nominal 50-60 Hz (min. 47 - max. 63 Hz), sinusoidal
Continuous current	Max. 2.5 A
Starting current (load-independent)	Max. 132 A for a half-value time of 0.8 ms
• I^2t value:	Max. 9.5 A^2s
Active power	176 W
Apparent power	190 VA
Output data	
Voltages	+12 V / 12.5 A
Secondary power output	Max. 150 W

8.3.3 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 24 V DC (-20% / +20%), SELV, isolated
Continuous current	Max. 8 A
Starting current (load-independent)	Max. 13 A for a period of 50 ms
• I^2t value:	Max. 3.5 A^2s
Active power	176 W
Output data	
Voltages	+12 V / 12.5 A
Secondary power output	Max. 150 W

8.4 Electromagnetic compatibility

See the note in "Applicability of technical specifications (Page 101)".

Interference emission	EN 61000-6-3, EN 61000-6-4, CAN/CSA-CISPR 32 class B; KN32, FCC class A
Immunity to interference	EN 61000-6-1; EN 61000-6-2; KN 35
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 according to IEC 61000-4-4; burst; length < 30 m ± 2 kV according to IEC 61000-4-4; burst; length > 30 m ± 2 kV according 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 to IEC 61000-4-6
Immunity to magnetic fields	100 A/m; 50 Hz; 60 Hz (according to IEC 61000-4-8)

8.5 Ambient conditions

See the note under "Validity of the technical specifications (Page 101)".

Climatic ambient conditions	
Temperature - Operation *2	Tested according to IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-14 + 0 °C to + 55 °C (Observe the permissible total power for USB and PCI/PCIe expansions, see table "Permissible total power for USB and PCI/PCIe expansions")
- Storage/transport	– 20° C 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 30 °C, relative humidity 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 795 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 *1 - Storage/transport	tested to DIN IEC 60068-2-6 10 to 58 Hz: 0.075 mm, 58 to 500 Hz: 9.8 m/s² 5 to 9 Hz: 3.5 mm, 9 to 500 Hz: 9.8 m/s²
Shock resistance - Operation - Storage/transport	Tested to IEC 60068-2-27, IEC 60068-2-29 half-sine 50 m/s², 30 ms half-sine 250 m/s², 6 ms

*1 Restriction for installation with vertical mounting kit:
Vibration: 10-58 Hz: 0.0375 mm / 58-500 Hz: 4.9 m/s²
Shock resistance: 25 m/s², 30 ms

*2 Restrictions to operation with HDD:
The low limit temperature here is + 5 °C.

Permissible total power for USB and PCI/PCIe expansions

Permissible total power for USB and PCI/PCIe expansions				
	BIOS setup setting	**Maximum ambient temperature**		
	Menu: Advanced > Power&Performance	up to 45 °C	up to 50 °C	up to 55 °C
IPC627E with 2 slots	Default setting (Max.Performance)	30 W	20 W	10 W
IPC627E with 5 slots	Default setting (Balanced)	50 W	40 W	30 W
IPC627E with 5 slots	Setting (Max.Performance)	30 W	20 W	10 W

8.6 Technical specifications of the drives

See the note in "Applicability of technical specifications (Page 101)".

HDD	2.5" SATA HDD, ≥ 320 GB
SSD	2.5" SATA SSD, ≥ 480 GB standard M.2 NVMe SSD 480 GB, form factor 22 mm x 80 mm, Type M

8.7 Technical specifications of the motherboard

See the note in "Applicability of technical specifications (Page 101)".

Chipset	Intel C246
Processor	• Intel® Celeron® G4900 2 cores/2 threads, 3.1 GHz, 2 MB cache, VT • Intel® Core™ i3-8100 4 cores/4 threads, 3.6 GHz, 6 MB cache, VT • Intel® Core™ i7-8700 6 cores/12 threads, 3.2 (4.6) GHz, 12 MB cache, VT, iAMT
Main memory	4 up to 64 GB, DDR4 SDRAM, see ordering documents for features
Buffer memory	512 KB NVRAM
Expansion slots IPC627E	Version with • 2 expansion slots or • 5 expansion slots
Maximum bandwidth of PCI slots	Rev. 2.3: 133 Mbps
Maximum bandwidth of PCI slots	Rev. 3.0: 8 GT/s (985 Mbps) bandwidth per lane
Max. permissible power loss per slot	Total power consumption (all voltages) may not exceed 25 W.

Expansion card slots

Expansion card slots IPC627E with **two** expansion slots (bus module 2 x PCI)	
Slot 1	PCI: Specification Rev. 2.3, length: Max. 185 mm
Slot 2	PCI: Specification Rev. 2.3, length: Max. 185 mm
Expansion card slots IPC627E with **two** expansion slots (bus module 1 x PCI and 1 x PCIexpress (x16))	
Slot 1	PCI: Specification Rev. 2.3, length: Max. 185 mm
Slot 2	PCIexpress x16: Specification Rev. 3.0, length: Max. 185 mm

Expansion card slots IPC627E with **two** expansion slots (bus module 2 x PCIexpress (x16, x4))	
Slot 1	PCIexpress x4: Specification Rev. 3.0, length: max. 185 mm
Slot 2	PCIexpress x16: Specification Rev. 3.0, length: max. 185 mm
Expansion card slots IPC627E with **five** expansion slots (Bus module 3 x PCIexpress (x1), 1 x PCIexpress (x4) and 1x PCIexpress (x16))	
Slot 1	PCIexpress x1: Specification Rev. 3.0, length: Max. 240 mm
Slot 2	PCIexpress x1: Specification Rev. 3.0, length: Max. 240 mm
Slot 3	PCIexpress x1: Specification Rev. 3.0, length: Max. 185 mm
Slot 4	PCIexpress x4: Specification Rev. 3.0, length: Max. 185 mm
Slot 5	PCIexpress x16: Specification Rev. 3.0, length: Max. 185 mm
Expansion card slots IPC627E with **five** expansion slots (Bus module 3 x PCI, 1 x PCIexpress (x4) and 1x PCIexpress (x16))	
Slot 1	PCI Specification Rev. 2.3, length: max. 240 mm
Slot 2	PCI Specification Rev. 2.3, length: max. 240 mm
Slot 3	PCI Specification Rev. 2.3, length: max. 185 mm
Slot 4	PCIexpress x4: Specification Rev. 3.0, length: max. 185 mm
Slot 5	PCIexpress x16: Specification Rev. 3.0, length: max. 185 mm

8.8 Technical specifications of graphic

See the note in "Applicability of technical specifications (Page 101)".

Graphics controller	• Core i7: Intel® UHD Graphics 630 • Core i3: Intel® UHD Graphics 630 • Celeron: Intel® UHD Graphics 610
Graphics memory	32 - 4 GB Shared Memory
Resolutions/frequencies/colors	DVI: 640 × 480 to 1920 × 1200 / 80 Hz / 24 bit DisplayPort: max. 3840 ×2160 / 130 Hz / 30 bits

8.9 Technical specifications of the interfaces

Observe the information in "Applicability of technical specifications (Page 101)" and use only original connections of the I/O to be connected.

DisplayPort	2 x connection of DisplayPort monitor
DVI-D	Connection of DVI monitor, with adapter cable (optional) also VGA monitor
Keyboard	USB support
Mouse	USB support
USB	4 × USB 3.1, type A, high current, backward compatible
	2 × USB 3.1, type C, high current, backward compatible: • for USB devices with a cable length up to 3 m depending on the attenuation of the cable and the maximum data rate of the connection.[4]
	2 x USB on slot bracket (optional): • 2 x USB 2.0 type A, for USB1.1 and USB 2.0 devices with a cable length up to 3 m.[5] • with 2 slots installed on slot 2 • with 5 slots installed on slot 5
Ethernet [1]	3 × Ethernet interface (RJ45), 10/100/1000 Mbps • 1 x Ethernet 1: Intel® Jacksonville i219-LM; AMT-capable [2, 3] • 2 x Ethernet 2, 3: Intel® Springville i210-AT
	Wake on LAN, Remote Boot and the following Teaming modes are supported: • Adapter Fault Tolerance (AFT) • Adaptive Load Balancing (ALB) • IEEE 802.3ad Dynamic Link Aggregation (DLA) • Static Link Aggregation (SLA) • Switch Fault Tolerance (SFT)
COM1	RS232, 115 kbps max., 9-pin SUB-D, male
Free slots for expansion cards (see Motherboard (Page 125))	Versions with 2 and 5 PCI(e) cards

1 For unique labeling, the Ethernet ports are numbered on the enclosure. The numbering by the operating system can differ.

2 No teaming with AMT.

3 When using AMT, the interface X1P1 must be used for connection to remote maintenance.

4 Use the original connection technology of the I/O devices to be connected without adapters and without extensions.

5 For longer cable lengths, appropriate measures must be taken to comply with the EMC requirements.

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 2016 LTSB, 64-bit, Multi-Language*
- Microsoft® Windows® 10 Enterprise 2019 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 11)

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:

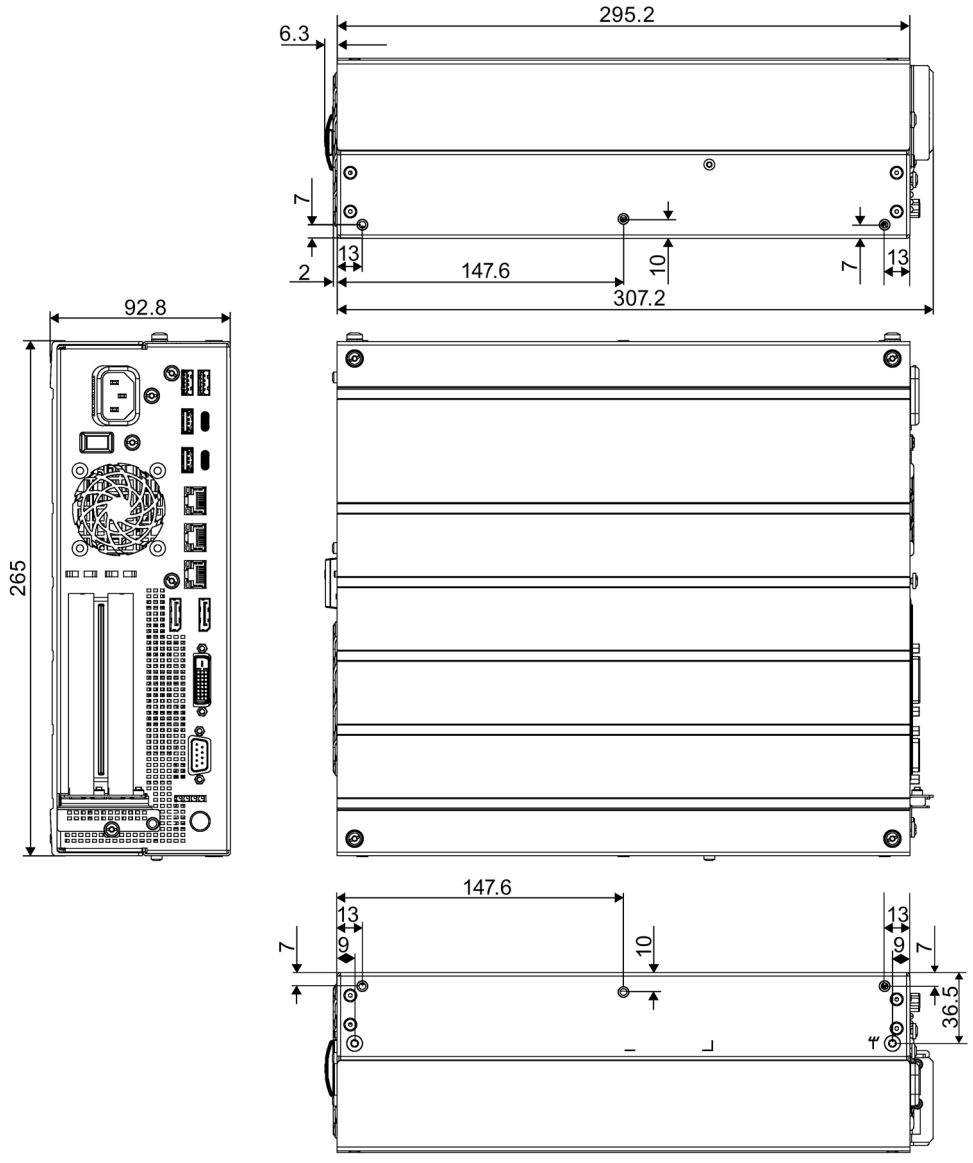
Partition	Name	Size	File system
First	Boot	260 MB	FAT32
Second	MSR	128 MB	None
Third	System	160 GB	NTFS (compressed)
Fourth	WinRE	500 MB	NTFS (compressed)
Fifth	Data	Remainder	NTFS (compressed)

Dimension drawings

9

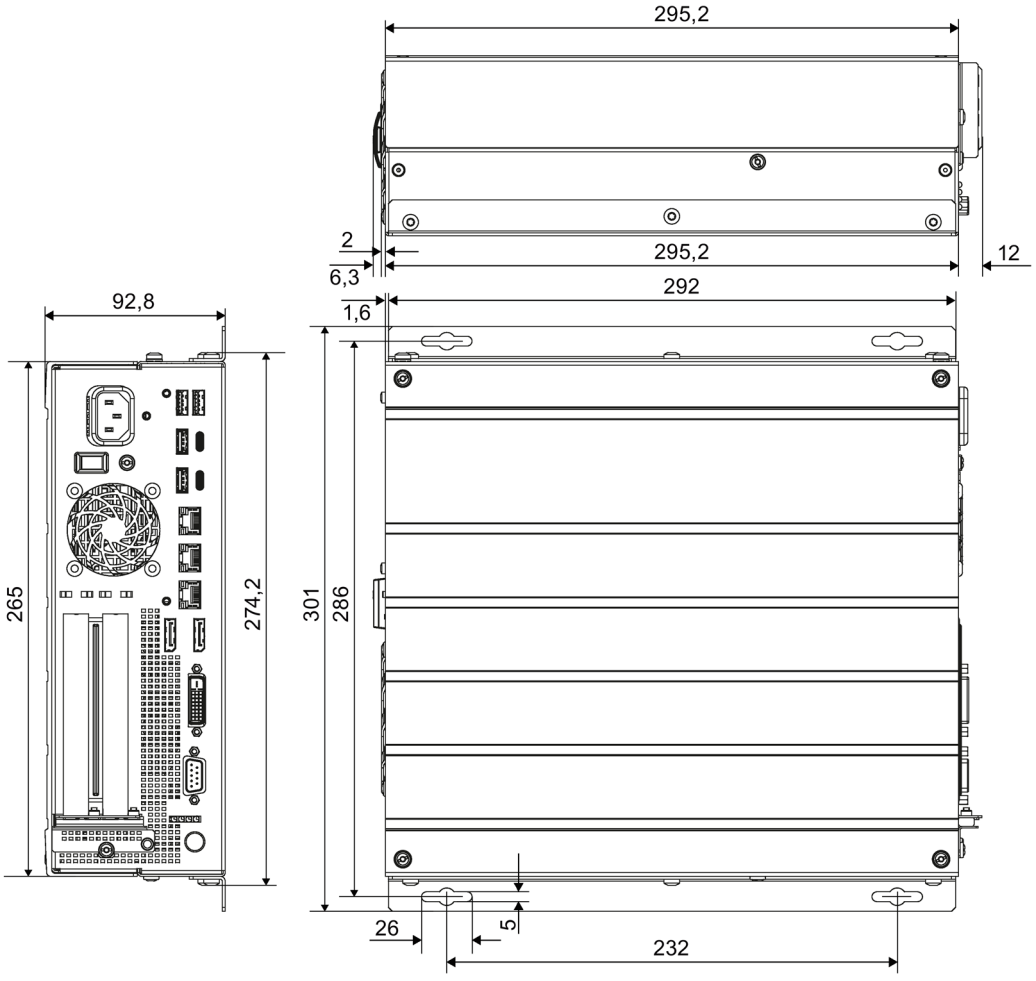
9.1 Dimension drawings of SIMATIC IPC627E (2 expansion slots)

Dimension drawing for mounting without wall mounting rails



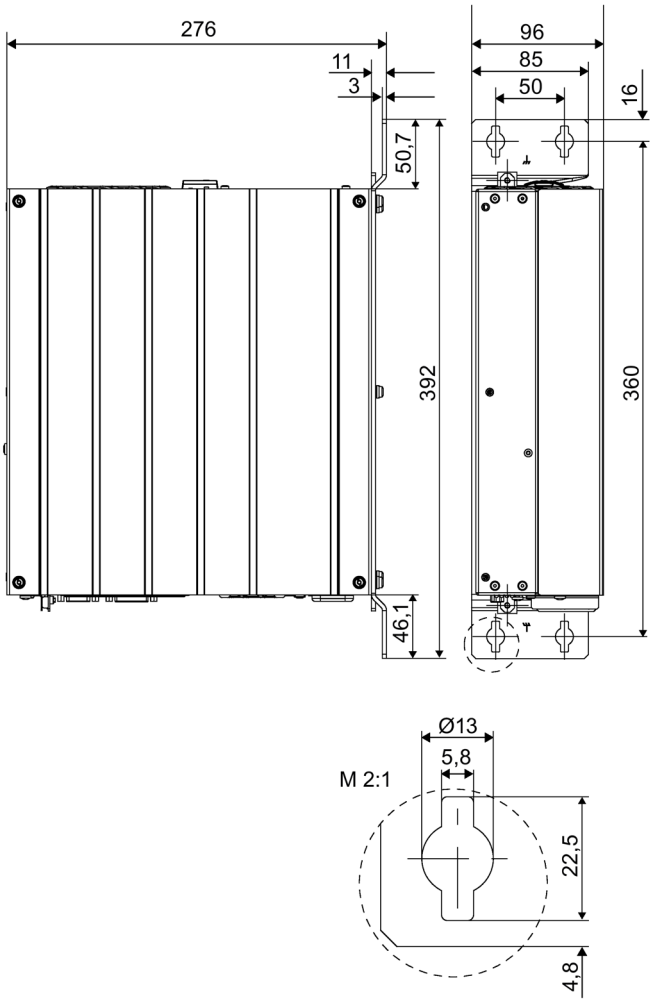
All dimensions in mm

Dimension drawing for mounting with wall mounting rails



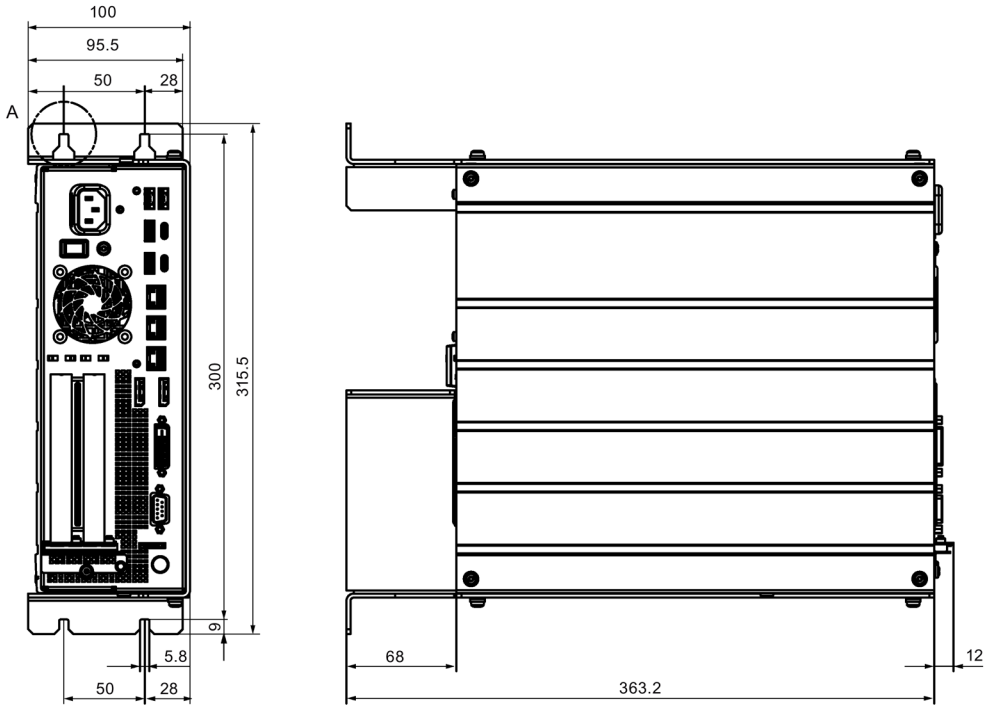
All dimensions in mm

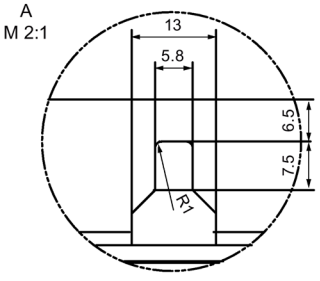
Dimension drawing for mounting with vertical mounting kit



All dimensions in mm

Dimension drawing for installation with the vertical mounting kit for PC port access from the front

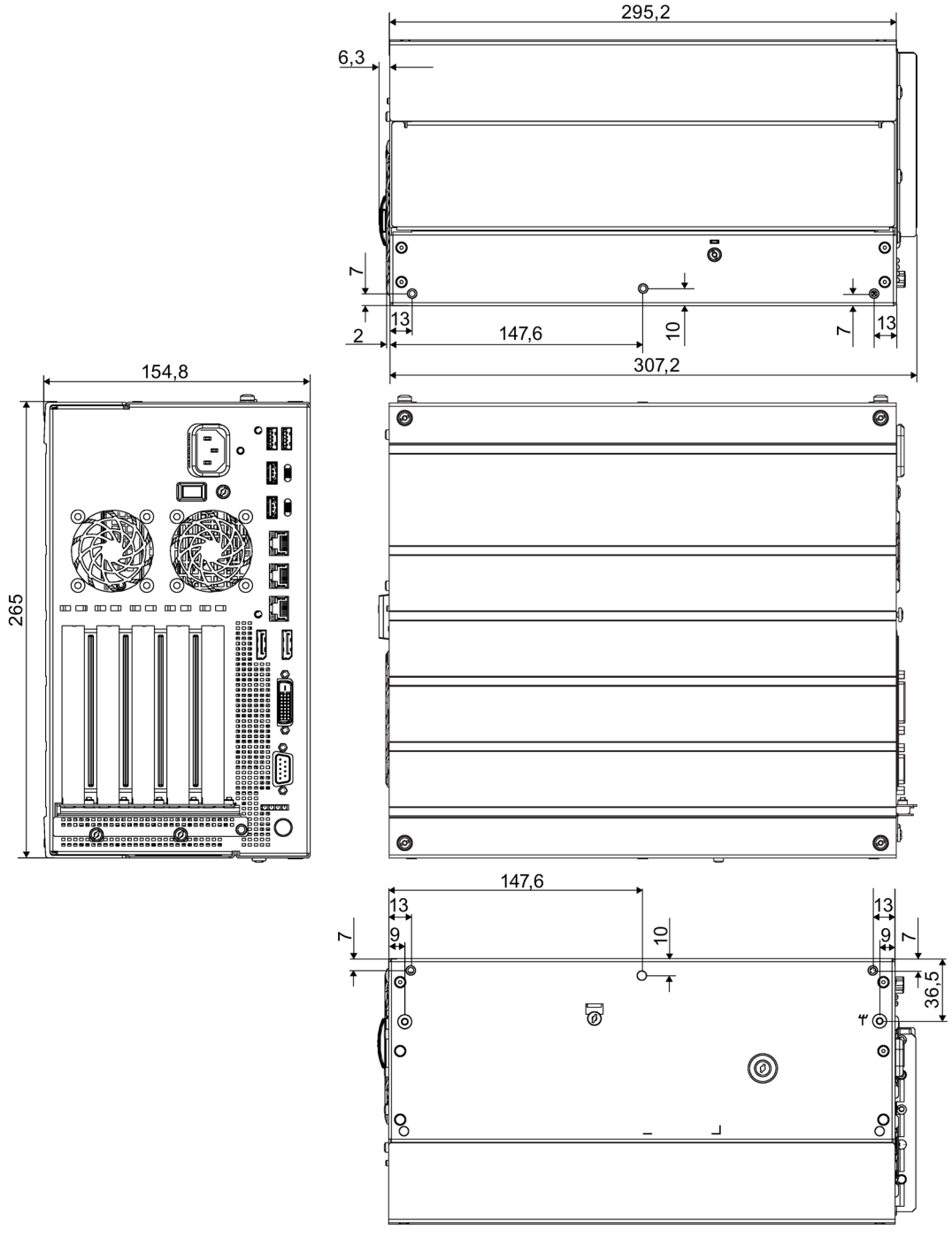




All dimensions in mm

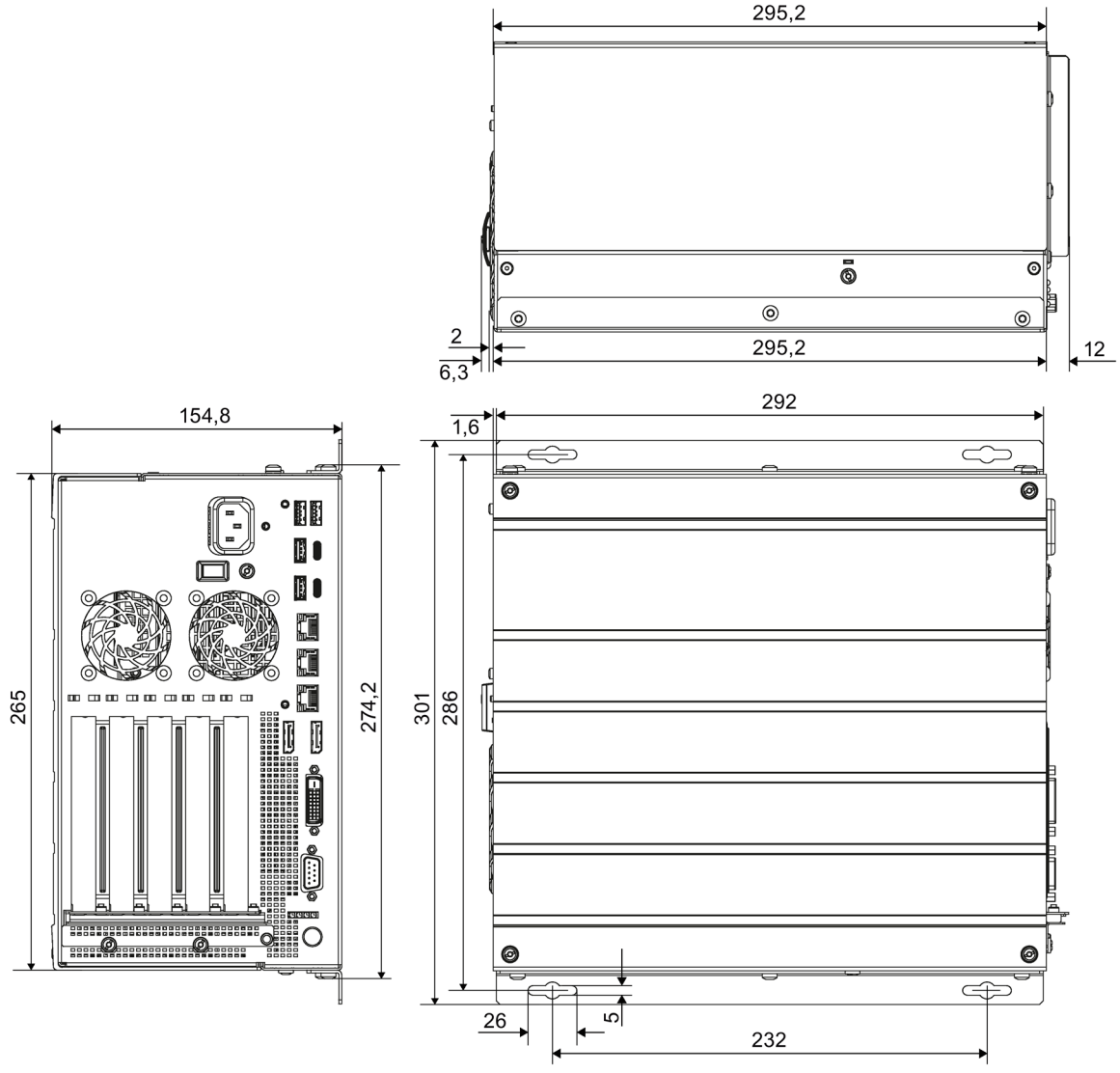
9.2 Dimension drawings of SIMATIC IPC627E (5 expansion slots)

Dimension drawing for mounting without wall mounting rails



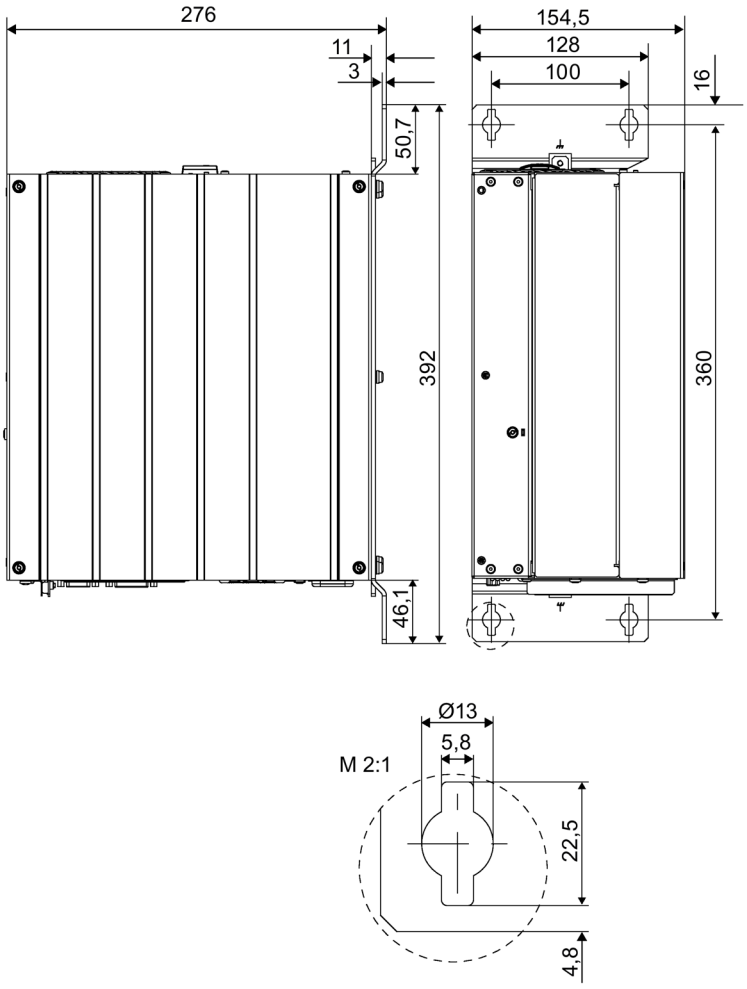
All dimensions in mm

Dimension drawing for mounting with wall mounting rails



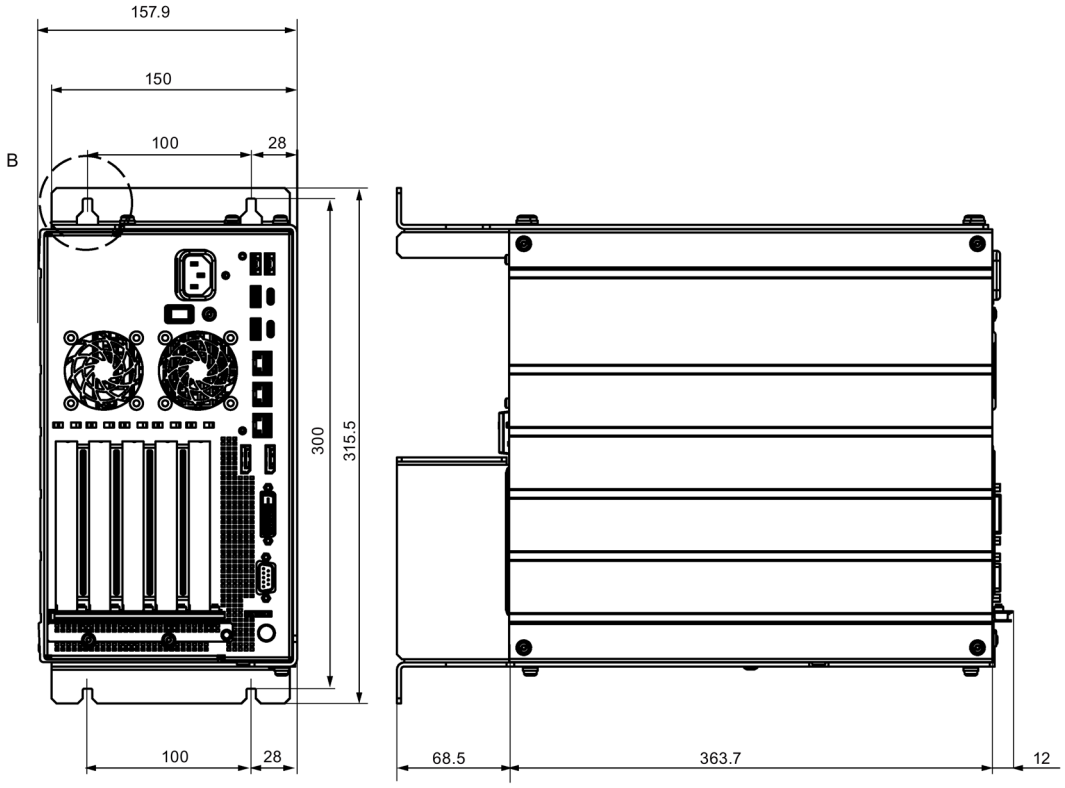
All dimensions in mm

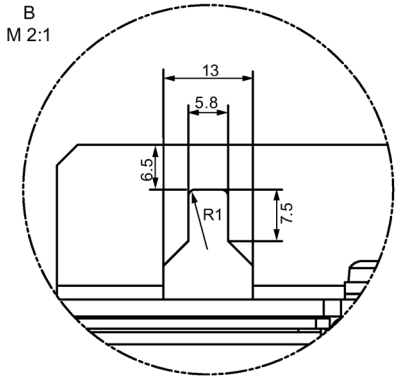
Dimension drawing for mounting with vertical mounting kit



All dimensions in mm

Dimension drawing for installation with the vertical mounting kit for PC port access from the front

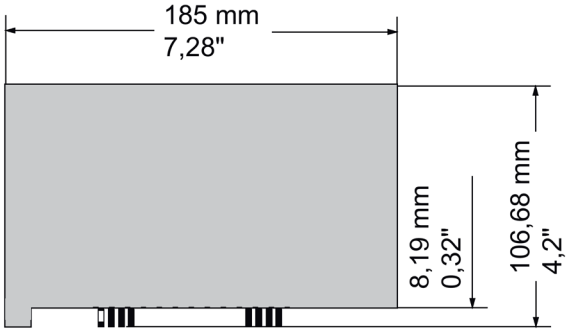




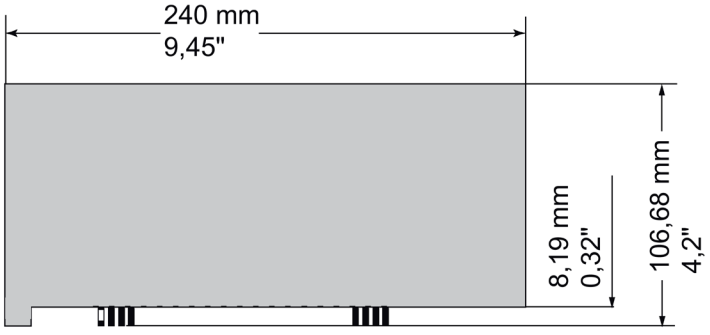
All dimensions in mm

9.3 Dimension drawing of the expansion cards

Short PCI or PCIe expansion card



Long PCI or PCIe expansion card



Standards and approvals

10

10.1 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
The devices are compliant with EN 61000-3-2 (Transient currents) and EN 61000-3-3 (Voltage fluctuation and Flicker).[1)]		

- 2014/35/EU "Electrical equipment for use within specific voltage limits" (Low-Voltage Directive)[1)]

  Conformance with this standard has been verified according to IEC/EN 61010-2-201.

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

  [1)] Applies to devices with AC voltage supply

EU Declaration of Conformity

The associated declaration of conformity is available on the Internet at the following address: Certificate Box PC (http://support.automation.siemens.com/WW/view/en/10805671/134200).

10.2 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.

10.3 UL approval



The following approvals are available for the device:

- Underwriters Laboratories (UL) according to Standard UL 61010-2-201 Second Edition, File E85972 (PROG.CNTLR.)
- Canadian National Standard CAN/CSA-C22.2 No. 61010-2-201 Second Edition

10.4 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)

10.5 Canada

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

10.6 Australia / New Zealand

AUSTRALIA / NEW ZEALAND



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

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

10.7 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)

10.8 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.

10.9 BSMI (Taiwan)



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

This product meets the requirements of CNS15936, CNS15598-1 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					
	铅Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻Hexavalent chromium(Cr^{+6})	多溴聯苯Polybrominated biphenyls(PBB)	多溴二苯醚Polybrominated diphenyl ethers (PBDE)
外殼	○	○	○	○	○	○
電路板	—	○	○	○	○	○
硬碟	—	○	○	○	○	○
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 (Adscs.taiwan@siemens.com)

10.10 Marine approvals

The device has the following marine approvals:

- ABS American Bureau of Shipping (USA)
- BV Bureau Vertias (France)
- CCS China Classification Society (China)
- Class NK Nippon Kaiji Kyokai (Japan)
- DNV Det Norske Veritas (Norway/Germany)
- KR Korean Register of Shipping (Korea)
- LRS Lloyds Register (Great Britain)

The certificates will be made available after acceptance at:

SIMATIC IPC627E Certificates
(https://support.industry.siemens.com/cs/products?dtp=Certificate&ct=446&mfn=ps&pnid=25385&lc=en-WW)

Note

Only devices that are named in the corresponding marine certificate have marine approval.

Note

EMC requirements for installation on deck and on the bridge.

Using the filter specified in the marine certificate, the device meets the EMC requirements for installation on deck and on the bridge.

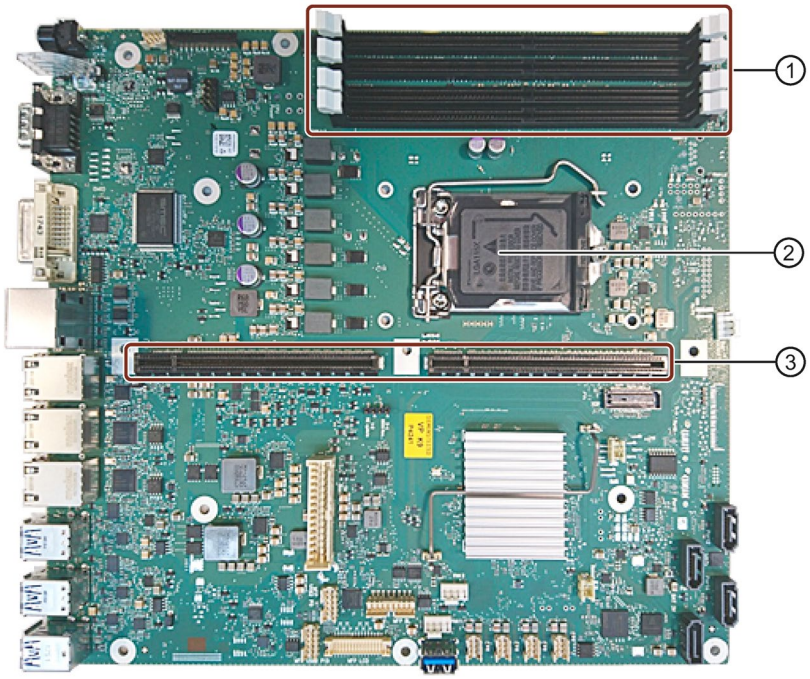
Hardware description

A

A.1 Motherboard

A.1.1 Layout of the motherboard

The motherboard consists of these main components: Processor and chip set, four slots for memory modules, internal and external interfaces, and the Flash BIOS.

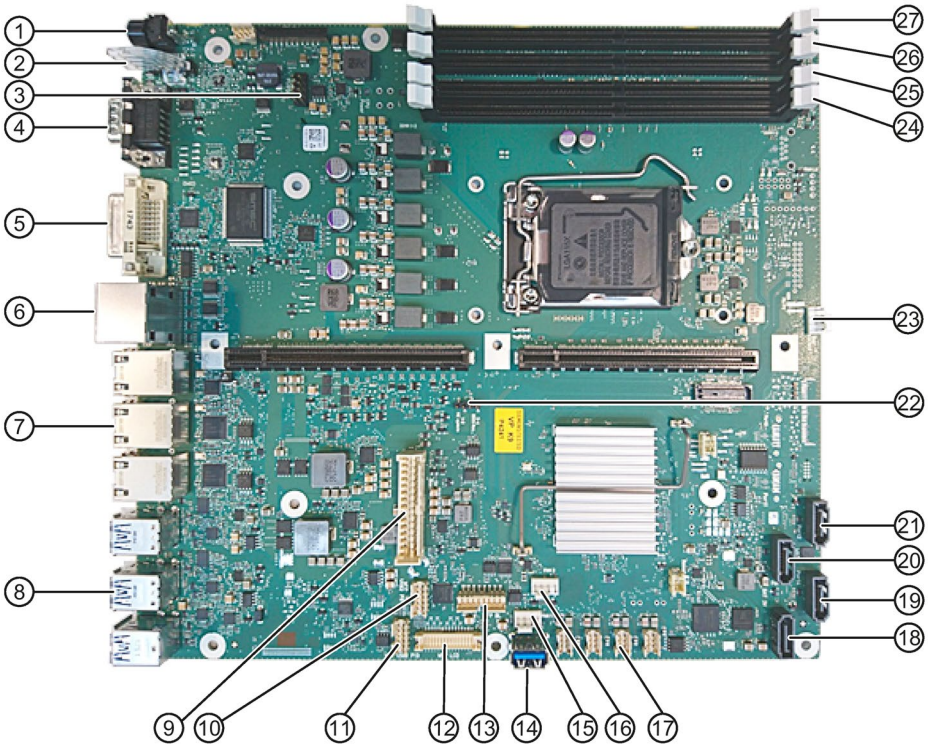


① Slots for memory modules
② Processor
③ Slots for bus boards

Technical features of the motherboard

Technical features of the motherboard can be found under "Technical specifications of the motherboard (Page 107)".

A.1.2 Position of the interfaces on the motherboard



(1)	Power button	(9)	Power supply (X800)	(19)	SATA 2 (Port4) (X525), IPC627E-5 only
(2)	Status LEDs	(10)	USB 2.0 (X15), IPC677E only	(20)	SATA 1 (Port3) (X523)
(3)	2xUSB 2.0 (X13)	(11)	USB 2.0 (X17), IPC677E only	(21)	SATA 0 (Port2) (X526)
(4)	COM1 (X30)	(12)	LVDS (X9), IPC677E only	(22)	BIOS Recovery (X594)
(5)	DVI (X70)	(13)	Backlight (X4007), IPC677E only	(23)	CPU fan (X513)
(6)	2x DPP (X71/X72)	(14)	1x USB 2.0 (X562)	(24)	RAM DIMM1-2 (X190)
(7)	LAN 1 (X1 P1)	(15)	HDD fan (X511), IPC627E-5 only	(25)	RAM DIMM1-1 (X19)
	LAN 2 (X2 P1)	(16)	PS fan (X52)	(26)	RAM DIMM2-2 (X200)
	LAN 3 (X3 P1)	(17)	4x SATA-SV (X516-X519)	(27)	RAM DIMM2-1 (X20)
(8)	USB 3.1 (X60-X65) 4x type A, 2x type C	(18)	SATA 3 (Port5) (X522), IPC627E-5 only		

A.2 Internal interfaces

A.2.1 Pin assignment of the internal interfaces

Interface	Position	Description
Memory	Internal	4 DIMM sockets, 64-bit
Bus expansion	Internal	Socket for bus expansion, assigned PCI bus signals
Power supply	Internal	20-pin connector plug for power supply
BIOS Recovery	Internal	Jumper: • Jumper on pins 2-3: default • Replug to pins 3-4 for BIOS Recovery * • Replug to pins 1-2 for ME Update * * A special USB stick is required for this (not included in scope of delivery; contact your local SIEMENS representative)
Serial ATA	Internal	Serial ATA, max. 1 to 4 drives can be operated
Connection for PS serial ATA	Internal	Voltage supply for serial ATA
Connection for PS fan	Internal	Power supply for CPU fan, 4-pin, male connector (USB1 P1/2)
Connection for equipment fan	Internal	Voltage supply for equipment fan, 4-pin male connector
USB port	Internal	USB port 6 and 7, 10-pin male connector routed on USB 2.0 slot adapter (optional)
USB port	Internal	USB port 9, upright USB socket (USB3 P7)
Spare HDD	Internal	LED display

A.2.2 Device fan supply (X512)

Pin	Name	Meaning
1	GND	Ground
2	+12 V	Switched voltage supply
3	CPU FAN_CLK	Clock signal
4	PWM	PWM signal

A.2.3 Supply for the power supply fan (X515)

Pin	Name	Meaning
1	GND	Ground
2	+12 V	Switched voltage supply
3	PG1 FAN_CLK	Clock signal
4	PWM	PWM signal

A.2.4 Supply for the serial ATA drives (X516 - X519)

Pin	Name	Meaning
1	GND	Ground
2	+12 V	Output power supply
3	GND	Ground
4	+5 V	Output power supply
5	GND	Ground (not allocated in the SATA cable of the IPC627E)
6	+3.3 V	Output power supply (not allocated in the SATA cable of the IPC627E)

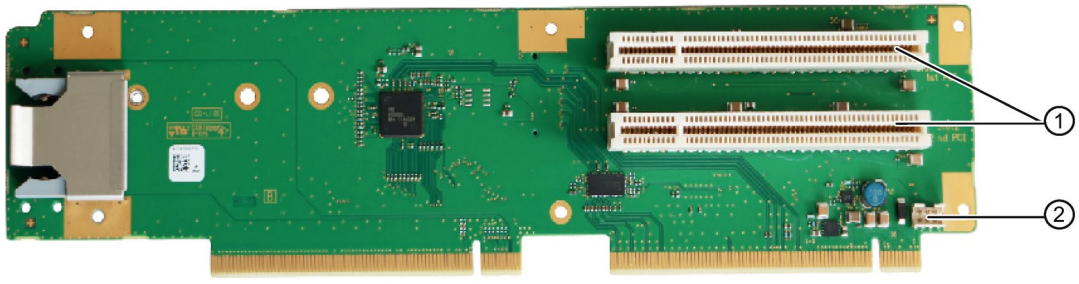
A.3 Bus board

A.3.1 Expansion card slots on the bus board

The bus board is designed as a link between the motherboard and the expansion cards. The bus board is available in the following designs:

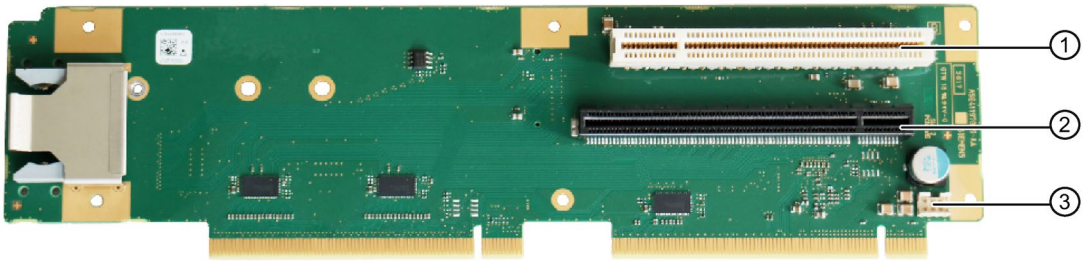
Information on pin assignment is available in the sections below.

Version 1 (IPC627E; 2 slots)



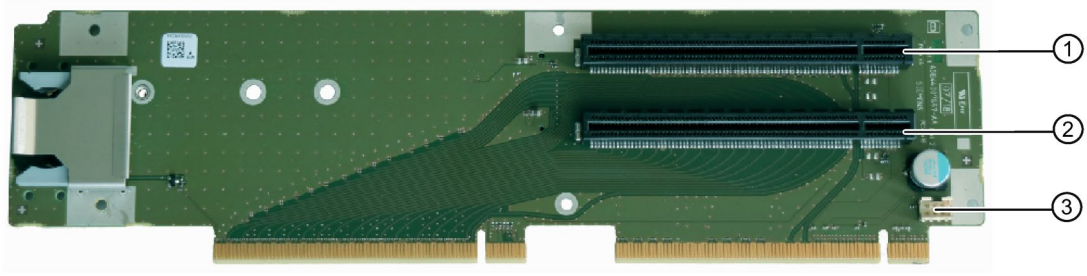
①	Slot 1/2 PCI
②	12 V power supply connection; see Pin assignment 12 V power supply connection for expansion cards (Page 131)

Version 2 (IPC627E; 2 slots)



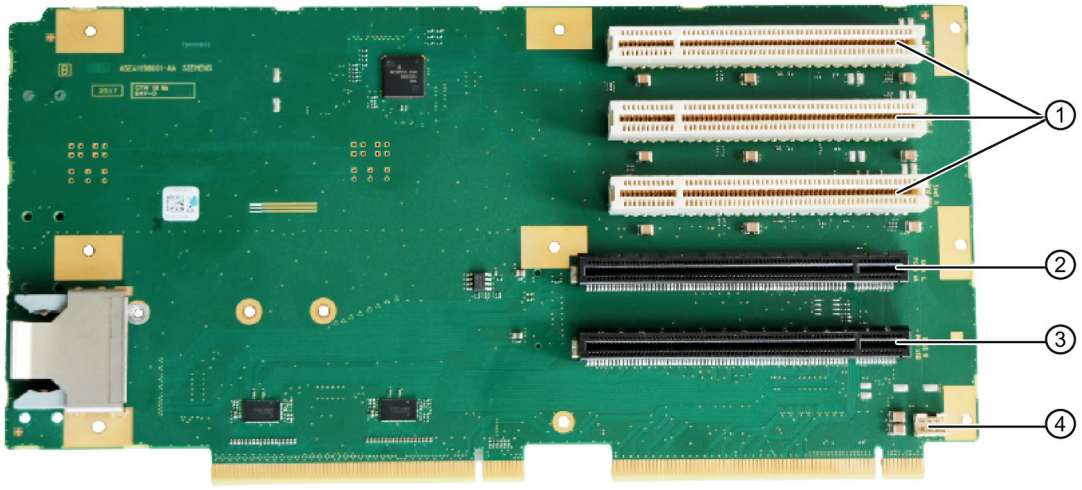
①	Slot 1 PCI
②	Slot 2 PCI Express x16
③	12 V power supply connection; see Pin assignment 12 V power supply connection for expansion cards (Page 131)

Version 3 (IPC627E; 2 slots)



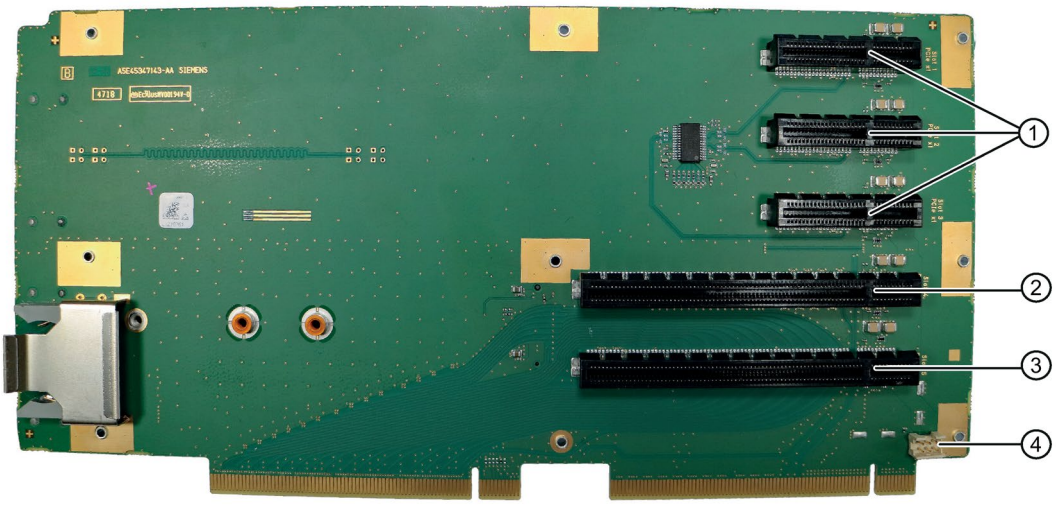
①	Slot 1 PCI Express x4 (mechanical x16)
②	Slot 1 PCI Express x16
③	12 V power supply connection; see Pin assignment 12 V power supply connection for expansion cards (Page 131)

Version 4 (IPC627E; 5 slots)



①	Slot 1/2/3 PCI
②	Slot 4 PCI Express x4 (mechanical x16)
③	Slot 5 PCI Express x16
④	12 V power supply connection; see Pin assignment 12 V power supply connection for expansion cards (Page 131)

Version 5 (IPC627E; 5 slots)



①	Slot 1/2/3 PCI Express x1 (mechanical x4)
②	Slot 4 PCI Express x4 (mechanical x16)
③	Slot 5 PCI Express x16
④	12 V power supply connection; see Pin assignment 12 V power supply connection for expansion cards (Page 131)

A.3.2 Pin assignment 12 V power supply connection for expansion cards

Pin	Name	Meaning
1	GND	Ground
2	+12 V [1]	Output power supply
3	GND	Ground
4	+5 V [1]	Output power supply
5	GND	Ground (not allocated in the SATA cable of the IPC627E)
6	+3.3 V	Output power supply (not allocated in the SATA cable of the IPC627E)

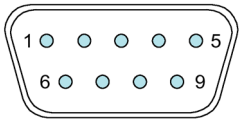
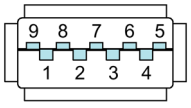
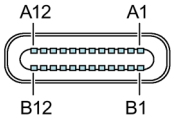
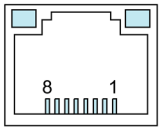
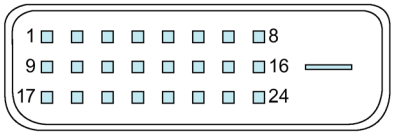
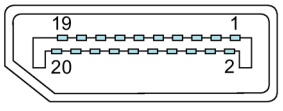
[1] max. permitted current: 1 A; with this power demand the total power demand for the PCI slots are not allowed to be exceeded.

A.4 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	
USB 3.1	X60, X62 X64, X65	USB 3.1 female connector Type A (5 V; 900 mA; up to 10 Gbps)	
USB 3.1 type C	X61, X63	USB 3.1 female connector Type C (5 V; 1.5 A; up to 10 Gbps)	
Ethernet 1, 2 and 3	X1P1, X2P1, X3P1	RJ45 (up to 1 Gbps)	
DVI-D	X70	24-pin DVI-D female connector (5 V; 500 mA)	
DPP	X71, X72	20-pin DisplayPort connector (3.3 V; 500 mA)	

A.5 System resources

A.5.1 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.5.2 I/O address allocation

The table describes the assigned I/O addresses in the delivery state of the device.

I/O address (hex)		Size (bytes)	Description of the basic function	Possible alternative function
from	to			
0000 0000	0000 0CF7	415	PCI Express Root Complex	
0000 0020	0000 0021	2	Programmable Interrupt Controller	
0000 0024	0000 0025	2	Programmable Interrupt Controller	
0000 0028	0000 0029	2	Programmable Interrupt Controller	
0000 002C	0000 002D	2	Programmable Interrupt Controller	
0000 002E	0000 002F	2	Motherboard resources	
0000 0030	0000 0031	2	Programmable Interrupt Controller	
0000 0034	0000 0035	2	Programmable Interrupt Controller	
0000 0038	0000 0039	2	Programmable Interrupt Controller	
0000 003C	0000 003D	2	Programmable Interrupt Controller	
0000 0040	0000 0043	4	System timer	
0000 004E	0000 004F	1	Motherboard resources	
0000 0050	0000 0053	4	System timer	
0000 0061	0000 0061	1	Motherboard resources	
0000 0063	0000 0063	1	Motherboard resources	
0000 0065	0000 0065	1	Motherboard resources	
0000 0067	0000 0067	1	Motherboard resources	
0000 0070	0000 0070	1	Motherboard resources	
0000 0070	0000 0070	1	System CMOS/real-time clock	
0000 0080	0000 0080	1	Motherboard resources	
0000 0092	0000 0092	1	Motherboard resources	

I/O address (hex)		Size (bytes)	Description of the basic function	Possible alternative function
from	to			
0000 00A0	0000 00A1	2	Programmable Interrupt Controller	
0000 00A4	0000 00A5	2	Programmable Interrupt Controller	
0000 00A8	0000 00A9	2	Programmable Interrupt Controller	
0000 00AC	0000 00AD	2	Programmable Interrupt Controller	
0000 00B0	0000 00B1	2	Programmable Interrupt Controller	
0000 00B2	0000 00B3	2	Motherboard resources	
0000 00B4	0000 00B5	2	Programmable Interrupt Controller	
0000 00B8	0000 00B9	2	Programmable Interrupt Controller	
0000 00BC	0000 00BD	2	Programmable Interrupt Controller	
0000 00F0	0000 00F0	2	Numeric data processor	
0000 02F8	0000 02FF	8	COM 2	
0000 03F8	0000 03FF	8	COM 1	
0000 04D0	0000 04D1	2	Programmable Interrupt Controller	
0000 0680	0000 069F	32	Motherboard resources	
0000 0D00	0000 FFFF	768	PCI Express Root Complex	
0000 164E	0000 164F	255	Motherboard resources	
0000 1800	0000 18FE	255	Motherboard resources	
0000 1854	0000 1857	2	Motherboard resources	
0000 2000	0000 20FE	255	Motherboard resources	

A.5.3 Interrupt assignments

The functions are assigned different interrupts, depending on the operating system. The APIC mode is used.

The table describes the assignment of the interrupts in the delivery state of the device.

	IRQ number																							Comment
IRQ (ACPI mode)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Host PCI IRQ Line																	A	B	C	D	E	F	G	H	[1]
Function																									
Timer Output 0	X																								Fixed
Serial port 2				X																					Can be deactivated
Serial port 1					X																				Can be deactivated
Numeric processor														X											Fixed
SATA																	X								Can be deactivated
USB 3.0 Controller																	X								Can be deactivated
Ethernet 1																	X								Can be deactivated
Ethernet 2																		X							Can be deactivated
Ethernet 3																			X						Can be deactivated
Graphics																	X								Option, can be deactivated
Audio																	X								Can be deactivated

X Interrupt in APIC mode

1 Host PCI-IRQ A to H is assigned to IRQ 16 to 23 permanently in APIC mode.
A specific assignment cannot be forced.

PCI / PCIe cards and the on-board PCI / PCIe devices require PCI interrupt channels. These interrupt channels can be shared and are plug-and-play compatible. that is, several devices can share the same interrupt. The IRQ is assigned automatically.

A.5.4 Exclusive PCI hardware interrupt

Applications demanding a high-performance interrupt require a high-speed hardware interrupt reaction. The PCI hardware interrupt should be used only by one resource in order to ensure high-speed reaction of the hardware.

Setting an exclusive interrupt on the device

All system resources (hardware addresses, memory allocation, interrupt allocation, DMA channels) are dynamically assigned by the firmware or the operating system based on the hardware equipment, drivers, installed expansion cards and connected external devices.

The assignment is made automatically and depends on the requested resources of the connected devices and installed components.

Due to this configuration dependency, clear statements can only be made by determining them in relation to the system in the final configuration.

Resources may be viewed as follows under Windows:

1. Press the "Windows® key" and "R" simultaneously.
2. Enter "msinfo32" in the "Open" field.
3. Click "OK" to confirm.

A.6 Assignment of expansion interfaces to the software in the TIA Portal (CP assignment)

The tables below show the correlation between enclosure labeling of the IPC expansion slots and the designation that is used during assignment of interfaces to the software in the TIA Portal.

Enclosure labeling (two expansion slots)	TIA Portal
1	X100
2	X101

Enclosure labeling (five expansion slots)	TIA Portal
1	X100
2	X101
3	X102
4	X103
5	X104

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/cs/us/en/)
- 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 wrong	• Check the settings in the BIOS Setup "SATA Configuration" submenu • 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.

Problem	Cause	Remedy
Wrong time and/or date on the PC.		1. Open the firmware configuration menu. To do this, press the <F2> key during the boot operation. 2. Set the date and time in the "Main" tab.
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 deactivated in the firmware (BIOS)	Use a different USB port or activate the port.
	Operating system does not support the USB port.	• Activate the "Legacy USB Support" setup parameter in the "Advanced > USB Configuration" menu of the BIOS Setup. • 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
After changing the hard disk, the system does not boot from the RAID array	RAID array does not have highest boot priority	Change the boot priority in the firmware (BIOS) under "Boot > Boot device": • Permit RAID system in the boot priority • Give RAID system top boot priority
After changing the drive, "unused" is indicated for the relevant SATA port	System was booted without functioning hard disk. The removable tray might not be fully pushed in.	Reboot the system with a functioning hard disk.
Computer does not boot or "Boot device not found" is displayed.	The boot medium is not approved	Set the boot priority in the firmware (BIOS) under "Boot > Boot device" to "Enabled".
	The boot device is not in first place of the boot priority in the firmware (BIOS)	Change the boot priority in the firmware (BIOS) under "Boot > Boot device".
	The boot data storage medium is set up with GPT, and UEFI boot is deactivated in the firmware (BIOS)	Activate UEFI mode in the firmware (BIOS).

B.2.3 Problems with RAID systems

Problem	Cause	Remedy
The RAID software reports the following errors: • The RAID plug-in failed to load, because the drive is not installed. • The Serial ATA plug-in failed to load, because the driver is not installed correctly. • The Intel® Storage Console was unable to load a page for the following reason: – A plug-in did not provide a page for the selected device – A plug-in failed to load	RAID is not activated	The messages have no negative effect on the operation of the device and can be ignored. Acknowledge the messages.
	RAID is activated	Install the software again with the help of the supplied data storage medium.

B.2.4 Problems when using expansion cards

Problem	Cause	Remedy
The device crashes during startup.	• I/O addresses are assigned twice. • Hardware interrupts and/or DMA channels are assigned twice • Signal frequencies or signal levels are not adhered to • Different pin assignment	Check your computer configuration: • If the computer configuration corresponds to the delivery condition, contact your technical support team. • In the case of a change in the configuration, restore the delivery condition. To do this, remove the expansion card and restart the device. If the error no longer occurs, the expansion card was the cause of the fault. Replace this with a Siemens expansion card or contact the supplier of the expansion card.
		If the device still crashes, contact your technical support team.
The IPC does not work normally when PCI (e) is installed. Example: • The operating system does not boot. • The installed card is not detected.	Contact problem on the PCI(e) bus	Check your computer connection. • Remove the installed PCI(e) card and reinsert it again. • Remove the bus module from the motherboard and reinsert it. • Clean the contact surface with pure ethanol.

Markings and symbols

C

C.1 Overview

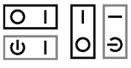
The following tables show symbols which may be found on your SIMATIC industrial PC.

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

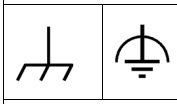
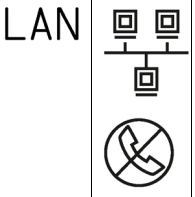
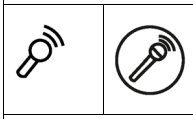
Symbol	Meaning		Symbol	Meaning
	On/off switch, without electrical isolation			On/off switch, without electrical isolation

C.4 Certificates, approvals and markings

The following table shows symbols relating to certificates, approvals and markings which may be on the device. Detailed information is available at Standards and approvals (Page 120).

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

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
	DisplayPort interface			Smart Card Reader
	DVI-D interface			Line In
	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. This is supported in Microsoft Windows XP as of SP1 and IAA driver.
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	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
LPT	Line Printer	Printer port
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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