Getting Started Edition 05/2006

Industrial PC

Box PC 627

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SIMATIC Box PC 627

Getting Started

Release 05/2006
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Safety Guidelines

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

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

Caution

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

Notice

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

Prescribed Usage

Note the following:

Warning

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

Trademarks

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

Disclaimer of Liability

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

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Order No.: A5E00362054-03
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Introduction

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Purpose of this document

This compact documentation contains all the information you need for commissioning and using the SIMATIC Box PC 627.

Scope of validity of this document

This documentation is valid for all supplied variations of the SIMATIC Box PC 627 and describes the state of delivery as of May 2006.

Operating instructions SIMATIC Box PC 627

The operating instructions are available on the supplied "Documentation and Drivers" CD. To view and print the operating instructions, run **Start** and follow the instructions on the screen.

The operating instructions provide useful information on many topics such as the hardware expansion options, modification of the system configuration and technical data.

Conventions

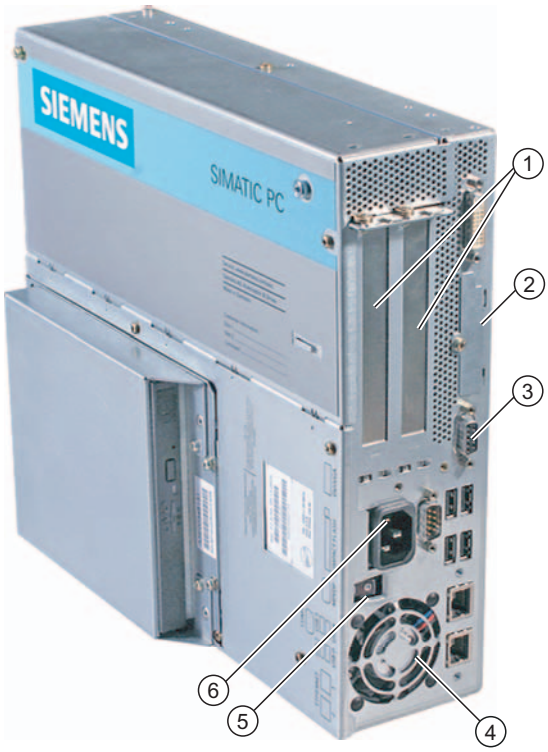
The abbreviation Box PC or device is also used within this documentation for the product name SIMATIC Box PC 627.

Description

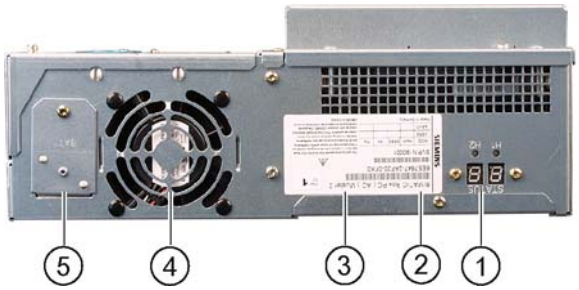
2

2.1 Structure

2.1.1 External structure

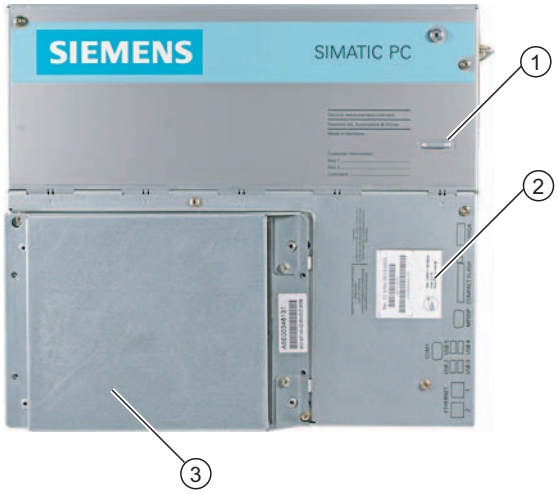
Front view		
	(1)	2 slots for expansion modules
	(2)	Cover for Compact Flash Card slot
	(3)	Front interfaces
	(4)	Power supply fan
	(5)	On / Off switch
	(6)	IEC connector for AC power supply or connection for 24 V DC

Rear view



(1)	Status display: Two part 7 segment display and two LEDs for POST code (optional)
(2)	Steel cover plate for the operator panel interfaces
(3)	Rating plate
(4)	Equipment fan
(5)	Battery compartment

Side view (drive side)



(1)	Mounting for WinAC backup battery (please use the supplied battery mount without cover for WinAC module)
(2)	Input data of the power supply
(3)	Drive mount module for hard disks and DVD ROM / CD-RW

Bottom

(1)	Equipotential Bonding

2.1.2 Operator Controls

On / Off switch

On / Off switch	Description
	The On / Off switch does not disconnect the device from mains. When the switch is in 0 position (Off), the device is still connected to the auxiliary voltage.

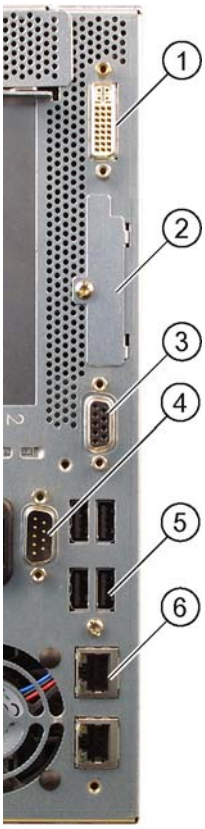
Warning

The On / Off switch does not disconnect the device from mains.

2.1.3 Connection components

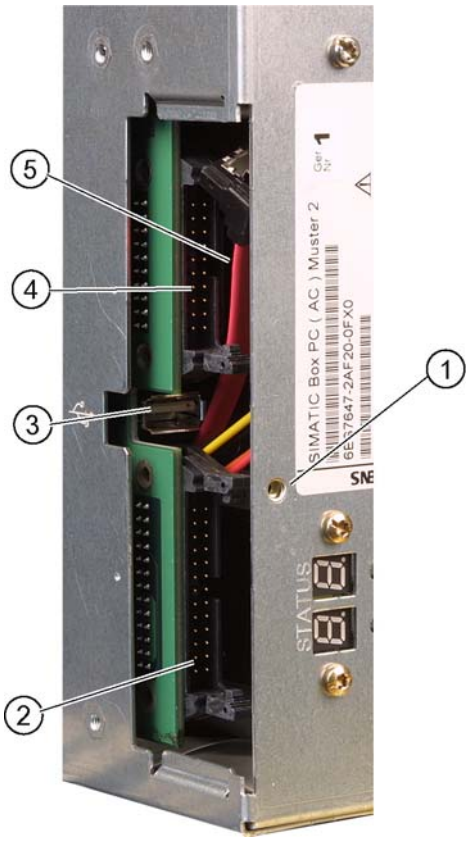
Interfaces

Arrangement of the ports on the front of the device



Pos	Description	Description
(1)	DVI/VGA	DVI/VGA connection for CRT or LCD monitor with DVI interface, VGA via DVI/VGA adapter
(2)	Compact Flash Card	Slot for Compact Flash Card
(3)	PROFIBUS/MPI/DP	MPI interface (RS485, electrically isolated), 9-pin Cannon socket
(4)	COM	Serial V.24 interface
(5)	USB 2.0	4 ports for USB devices (only 2 ports can be simultaneously used as high current)
(6)	ETHERNET	2x RJ 45 Ethernet connection for 10/100 Mbps

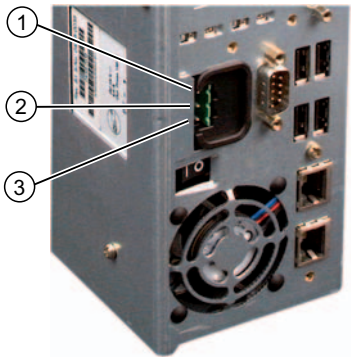
Interfaces for connecting operator panels / displays

Arrangement of the ports		
	(1)	Retaining screw for the steel cover plate that covers the interfaces described below.
	(2)	I/O interface for connecting front panel components
	(3)	USB 2.0 for front
	(4)	LVDS display interface for TFT displays up to 1024 x 768 pixels
	(5)	Access to 2nd LVDS display interface for TFT displays up to 1280 x 1024

AC power supply

Position of the IEC power connector	Description
	IEC power connector for the AC power supply to the device. The maximum permitted power range is 120 V AC to 240 V AC.

DC power supply

Location of the DC power connector	Description
	DC power connector for DC power supply of the device

Application planning

3

3.1 Transport

Despite the device's rugged design, its internal components are sensitive to severe vibrations or shock. You must therefore protect the PC from severe mechanical stress when transporting it.

You should always use the **original packaging** for shipping and transporting the device.

Caution

Risk of damage to the device!

When transporting the PC in cold weather, it may be submitted to extreme variations in temperature. In this situation, ensure that no moisture (condensation) develops on or inside the device.

If condensation develops, wait at least 12 hours before switching on the device.

3.2 Unpacking and checking the delivery unit

Unpacking the device

Note the following points when you unpack the unit

- It is advisable not to dispose of the original packing material. Keep it in case you have to transport the unit again.
- Please keep the documentation in a safe place. It is required for initial commissioning and is part of the device.
- Check the delivery unit for any visible transport damage.
- Verify that the shipment contains the complete unit and your separately ordered accessories. Please inform your local dealer of any disagreements or transport damages.

3.3 Device identification data

The device can be identified uniquely with the help of these numbers in case of repairs or theft.

Enter the following data in the table below:

- Serial number: The serial number is found on the rating plate.

Rating plate

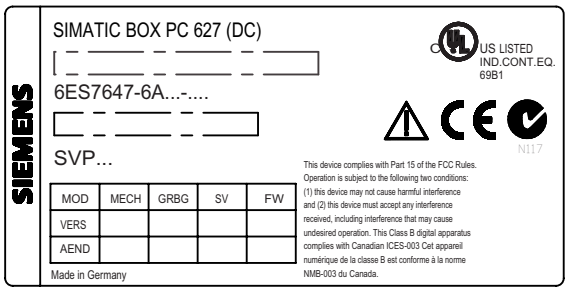


Figure 3-1 Rating plate

- Order number of the device
- Ethernet address: The Ethernet address of the device can be viewed in the BIOS Setup (F2) under Main > Hardware Options > Ethernet Address.
- Microsoft Windows "Product Key" from the "Certificate of Authenticity" (COA). The COA label is bonded to the device. The Product Key is always required to reinstall the operating system.

COA label

Figure 3-2 COA label

Serial number	S VP ...
Order no.	6ES ...
Microsoft Windows Product Key	
Ethernet address	

3.4 Ambient and environmental conditions

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

- Note the climatic and mechanical environmental conditions specified in the specifications provided by your operating manual.
- The clearance in the area of the ventilation slots must be at least 100 mm, so that the PC is sufficiently ventilated.
- Do not cover the vent slots of the device.
- The device with AC power supply satisfies fire protection requirements to EN 60950-1. It may therefore be installed without additional fire-proofing measures.
- The device with DC power supply does not satisfy fire protection requirements to EN 60950-1. It may therefore be installed with additional fire-proofing measures
- Always observe the mounting positions permitted for this device.

Warning

Failure to adhere to these conditions when mounting the system voids the approvals based on UL 60950-1, UL 508 and EN 60950-1!

3.5 Permitted mounting positions

PC mounting position according to UL60950-1/UL508/EN60950-1/CSA22.2 No. 60950-1

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

 Position 1 (preferred)	 Position 2
 Position 3 (desktop)	 Position 4 (ceiling) CD/DVD drive cannot be operated.

Additional permissible PC mounting positions according to UL508/CSA 22.2 No. 142

An inclination of ±15° is allowed in this mounting position. An external fire protection casing is required.

 Position 5 (ports facing down) CD/DVD drive cannot be operated.	 Position 6 (ports facing above) CD/DVD drive cannot be operated.

Note

CD/DVD and floppy drives cannot be operated in this position. The CD drawer opens upward or downward which can lead to mechanical damages in the drawer mechanism.

Installation

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4.1 Installing the device

The device is particularly suitable for installation in consoles, switch cabinets and switchboards.

Warning

Function test while installing the device in machines or execute systems

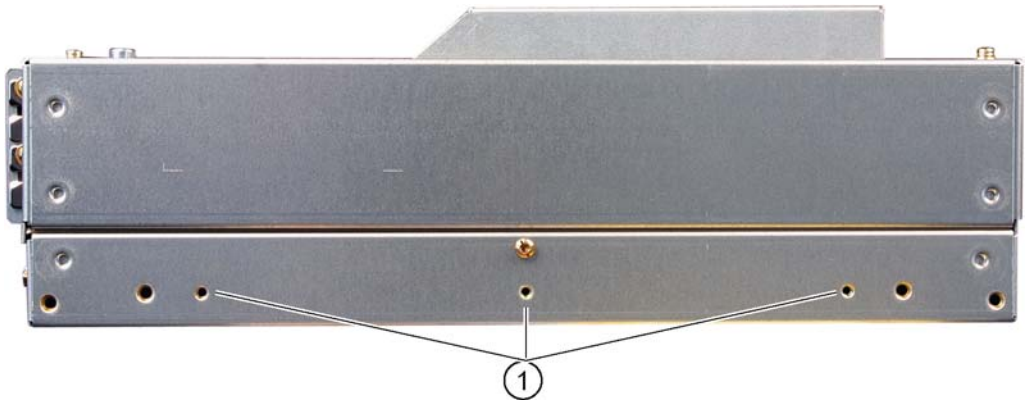
Following the results of a risk analysis, additional protection equipment on the machine or the system is necessary to avoid endangering persons. With this, especially the programming, configuration and wiring of the inserted I/O modules have to be executed, in accordance with the necessary risk analysis identified safety performance (SIL, PL or Cat.). The intended use of the device has to be secured.

The proper use of the device has to be varified with a function test on the system. This test can detect programming, configuration and wiring errors. The test results have to be documented and if necessary inserted into the relevant inputs.

4.2 Installation of the device with mounting brackets

Screw-mounting the brackets

Two brackets are included, depending on the device version. You can attach these to the PC housing using six M3 x 6 mm screws.



(1)	Mount the brackets onto the device using the included M3 x 5 mm screws with a max. insertion depth of 5 mm (included in package).

Instructions for ceiling or wall mounting

Mounting examples		
Material	**Hole diameter**	**Mounting**
Concrete	8 mm diameter, 60 mm depth	Dowel: 8 mm, 50 mm screws 4 mm, 50 mm
Plasterboard (min. 13 mm thick)	14 mm diameter	Tilting dowel diameter 4 mm min. length 50 mm
Metal (min. 2 mm thick)	5 mm diameter	Metal screws diameter 4 mm min. length 15 mm

Warning

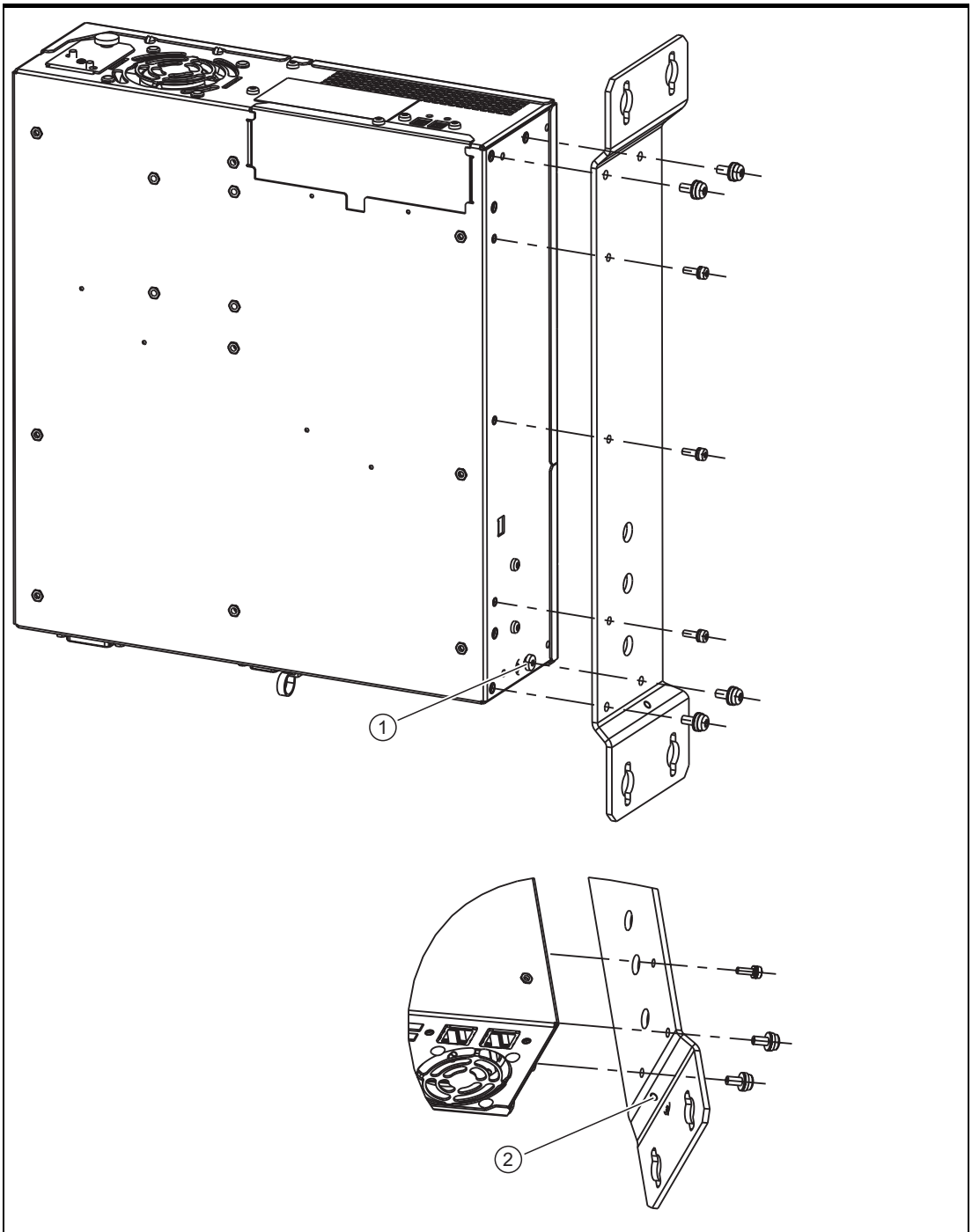
Ensure that the wall or ceiling is capable of carrying at least four times the total weight of the device (including the brackets and expansion modules). The total weight is approx. 7 kg.

4.3 Installation of the device with the vertical mounting kit

With the available optional vertical mounting kit you have the possibility to implement a place saving installation.

Mounting the vertical mounting plate onto the device

Two brackets are included, depending on the device version. You can attach these to the PC housing using six M3 x 6 mm screws.



1.	Remove the equipotential bonding screw (1) from the device and attach it with the vertical mounitng plate (2).
2.	Attach the vertical mounting plate with four M4 screws and three M3 screws to the device

Note

Please note the information on the permissible mounting position in the section "Permissible Mounting Positions"

Connecting

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5.1 Connecting peripherals

Note before connecting

Notice

Connect only I/O modules approved for industrial applications to EN 61000-6-2:2001.

Note

Hot-plug I/O modules (USB) may be connected while the PC is in operation.

Caution

I/O devices not capable of hot-plugging may only be connected after the device has been disconnected from the power supply.

Caution

Strictly adhere to the specifications for I/O modules.

5.2 Connecting the 120 V / 230 V Ac power supply

Note before connecting

Note

The varying voltage power supply module is designed for operation on 120/230/240 V AC networks. It is not necessary to adjust the voltage range.

Caution

Do not connect or disconnect power and data cables during thunderstorms.

Caution

The device is designed for operation on grounded power supply networks (TN systems to VDE 0100, part 300 or IEC 60364-3).

It is not designed for operation on ungrounded or impedance-grounded power networks (IT networks).

Caution

The permitted nominal voltage of the device must conform with local mains voltage.

Caution

Pull out the power plug to completely disconnect the device from mains. Ensure easy access to this area.

A master mains disconnect switch must be installed if the device is mounted in a switch cabinet.

Always ensure free and easy access to the power inlet on the device or that the safety power outlet of the building installation is freely accessible and located close to the device.

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.

USP 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-....”.

Local information

Outside of the USA and Canada, operation on a 230 V power supply:

This device is equipped with a safety-tested power cord which may only be connected to ground contact power outlet. If you choose not to use this cable, you must use a flexible cable of the following type: min. conductor cross-section 18 AWG and 15 A / 250 V ground contact connector. The cable set must be compliant with the safety regulations and stipulated IDs of the country where the system is to be installed.

For the USA and Canada:

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

The connector must be compliant with NEMA 5-15.

120 V AC power supply
To be used is a flexible power cord approved to UL and with CSA label, and which has the following features: Type SJT with three leads, min. 18 AWG conductor cross-section, max. 4.5 m in length and parallel ground contact connector 15 A, min. 125 V.

240 V power supply
Use a flexible power cord with UL approval and with CSA label, and with the following features: Type SJT with three leads, min. 18 AWG conductor cross-section, max. 4.5 m in length and tandem ground contact connector 15 A, min. 250 V.

Connecting

How to connect the device to the 120 V AC / 230 V AC power supply		
1.	Make sure that the ON / OFF switch is in "0" position (Off) when you plug in the power cord in order to avoid unintentional startup of the device.	
2.	Connect the IEC connector	
3.	Connecting the power cord to the power socket	

5.3 Connecting the (24 V) DC power supply

Note before connecting

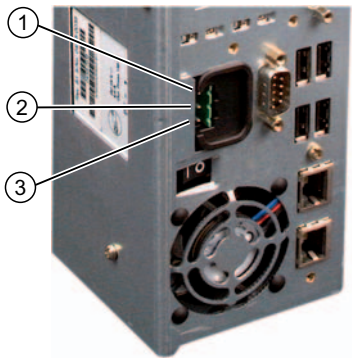
Warning

Only connect the device to 24 V DC power supply systems which meet the requirements of a safe extra-low voltage (SELV); in addition, a protective conductor must be connected. 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).

Notice

The 24V DC power source must be adapted to the input data of the device (see specifications).

Connecting

Steps for connecting the device to the 24 V DC power supply		
1.	Ensure that the ON/OFF switch is in the '0' (OFF) position to prevent unintentional startup of the device when connecting it to the 24 V power supply.	
2.	Switch off the 24 V DC power source.	
3.	Insert the DC power plug. (1) 24 V DC (2) ground (3) protective conductor	

5.4 Equipotential Bonding

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

Equipotential bonding terminal	
The equipotential bonding terminal on the device (large surface, large-area contact) must be connected with the central grounding busbar of the cabinet or plant in which the PC is to be installed. The minimum conductor cross-section may not be less than 5 mm^2.	

Startup

6

6.1 Requirements for commissioning

- Connect the peripherals, such as the keyboard, mouse, monitor and the power supply, before putting the device into operation.
- The operating system of your device is preinstalled on the hard disk.

Caution

Risk of damage to the device!

Make sufficient allowances for the device to acquire room temperature before you put it into use. If condensation develops, wait at least 12 hours before switching on the device.

6.2 Basic commissioning - initial startup

The PC operating system is automatically set up the **first** time you switch on the device. Procedure:

1. Set the ON / Off switch to I position (On). The PC performs a POST. During the self-test, this message appears:

```
Press <F2> to enter SETUP or <ESC> to display the boot menu
```

2. Wait until this message is cleared, then follow the instructions on the screen.

3. Type in the Product Key as required. You find this key on the "Certificate of Authentication", in the "Product Key" line.

Notice

The PC may not be switched off when you run setup.

Do not change the default BIOS settings, otherwise the operating system setup may become corrupted.

4. Automatic restart

After you have entered all necessary information, and after the operating system setup is completed, the PC is automatically restarted and displays the user interface of the relevant operating system.

From now on, after you switch on the PC, the user interface of the operating system is automatically opened when the startup routine is completed.

6.3 Reinstalling the software

6.3.1 General installation procedure

In case of software errors, you can reinstall your software using the Recovery CD, the Documentation and Drivers CD or the Restore DVD.

Recovery CD:

Contains the tools for setting up hard disk drives and the operating system.

Documentation and Drivers CD:

Contains the documentation and the hardware drivers.

Restore DVD:

Contains a hard disk image file with the original software (operating system with installed hardware drivers).

Troubleshooting

7

7.1 General problems

This chapter provides you with tips on how to localize and troubleshoot frequently occurring problems.

Problem	Possible causes	To correct or avoid error
The device is not operational	There is no power supply to the device.	• Check the power supply, the network cable and the power plug. • Check 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.
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.	1. Check whether the mouse driver is properly installed and present when you start the application program.
Wrong time and/or date on the PC.		1. Press <F2> within the boot sequence to open the BIOS Setup. 2. Set the time and date in the setup menu.
Although the BIOS setting is OK, the time and data are still wrong.	The backup battery is dead.	In this case, please contact your technical support team.

Problem	Possible causes	To correct or avoid error
USB device not responding.	The USB ports are disabled in your BIOS.	Use a different USB port or enable the port.
	USB 2.0 device connected but USB 2.0 is disabled.	Enable USB 2.0.
	Operating system does not support the USB port.	Enable USB Legacy Support for the mouse and keyboard. For all other devices you need USB drivers for the specific operating system.
DVD: The front loader does not open.	The device is switched off or the open/close button is disabled by a software application.	Emergency removal of the data medium: 1. Switching off the device 2. Insert a pointed object, a pin for example, or an opened paper clip into the emergency extraction opening of the drive. Apply slight pressure to the contact until the front loader opens. 3. Pull the loader further out.

Dimensional Drawings

8

8.1 Dimensional Drawing of the Device

All dimensions are in millimeters

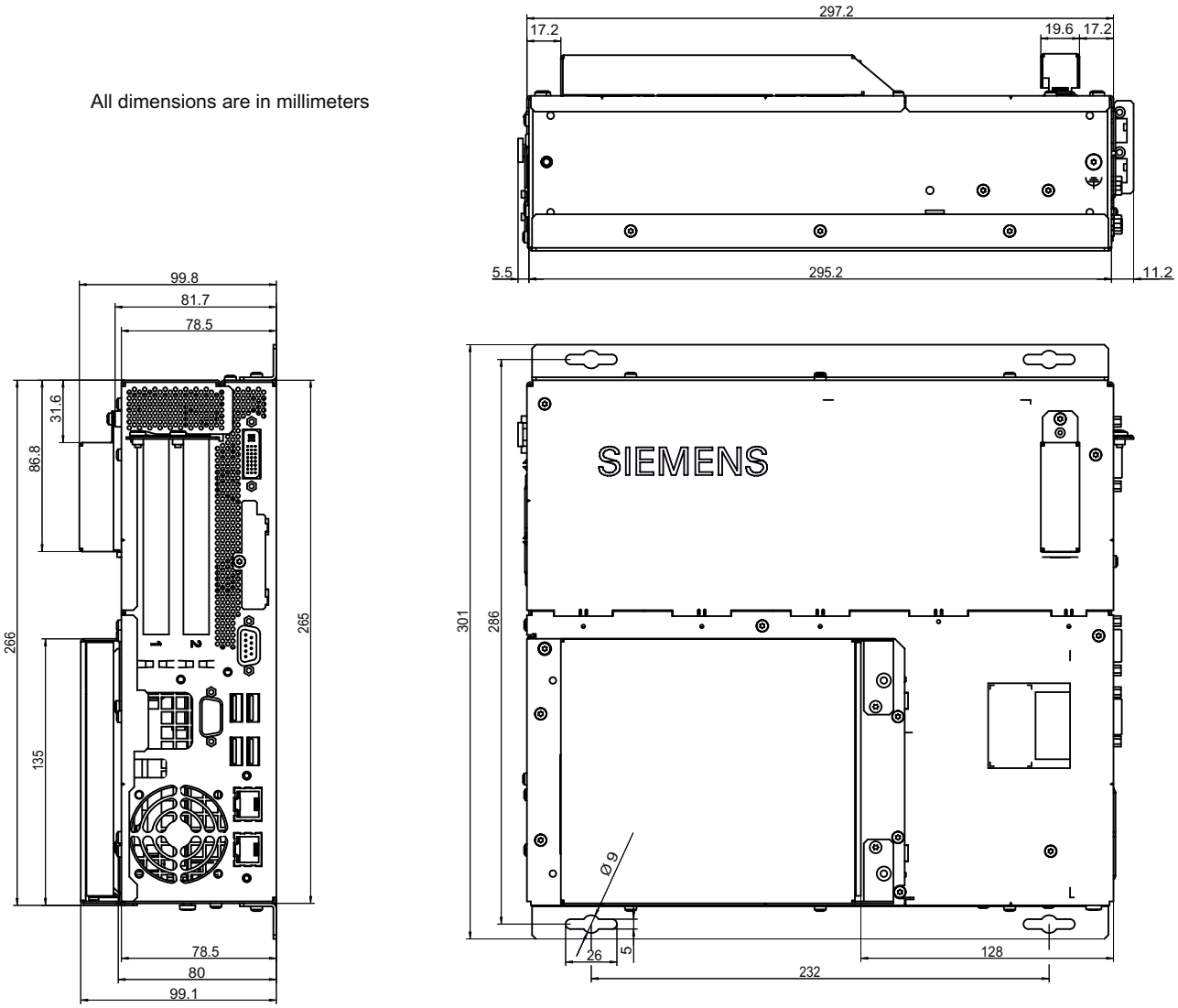


Figure 8-1 Dimensional drawing for mounting with angle bracket

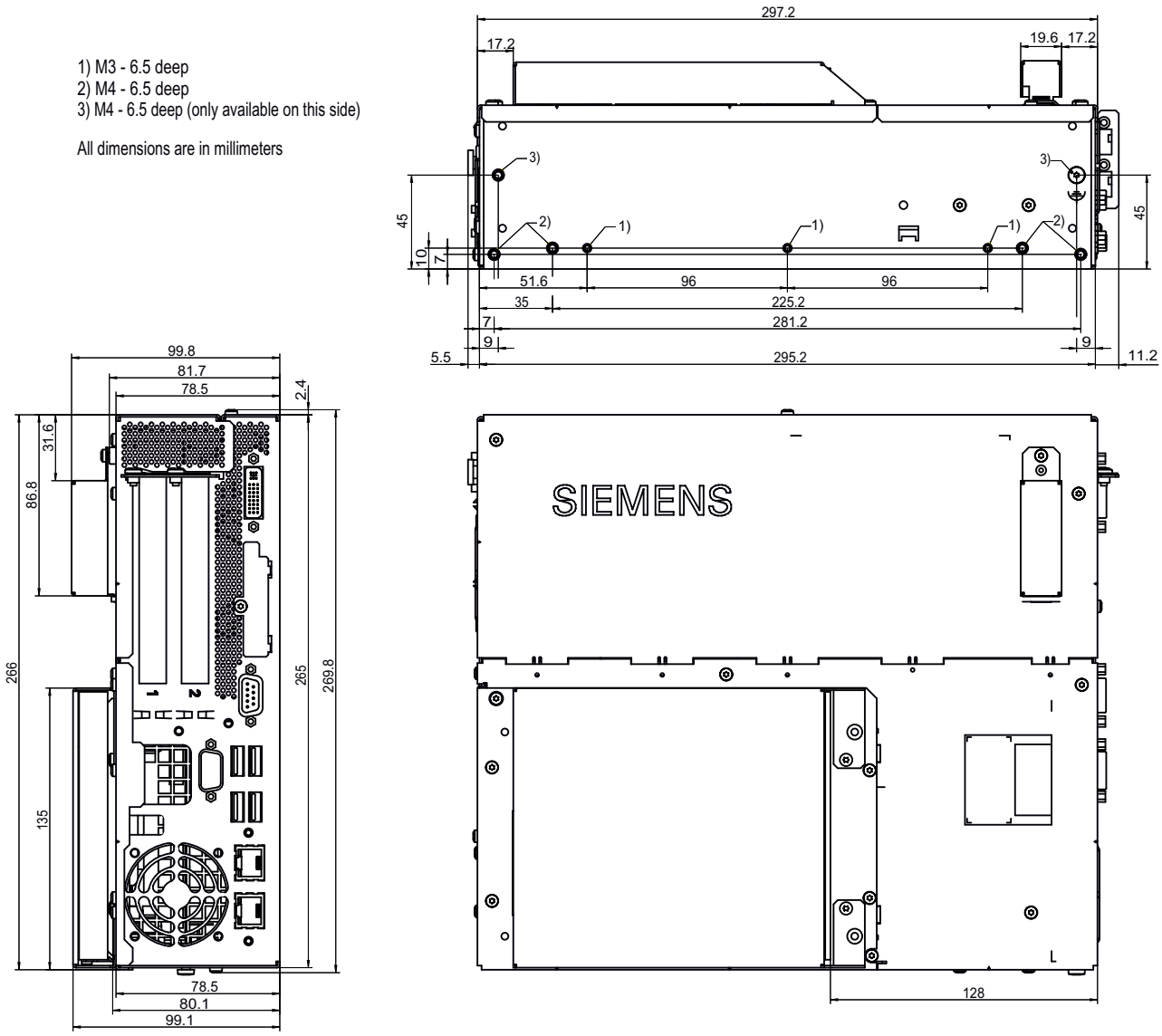


Figure 8-2 Dimensional drawing for mounting without angle bracket

Notice

When mounting devices with optical drives or WinAC backup batteries change the fitting depth.

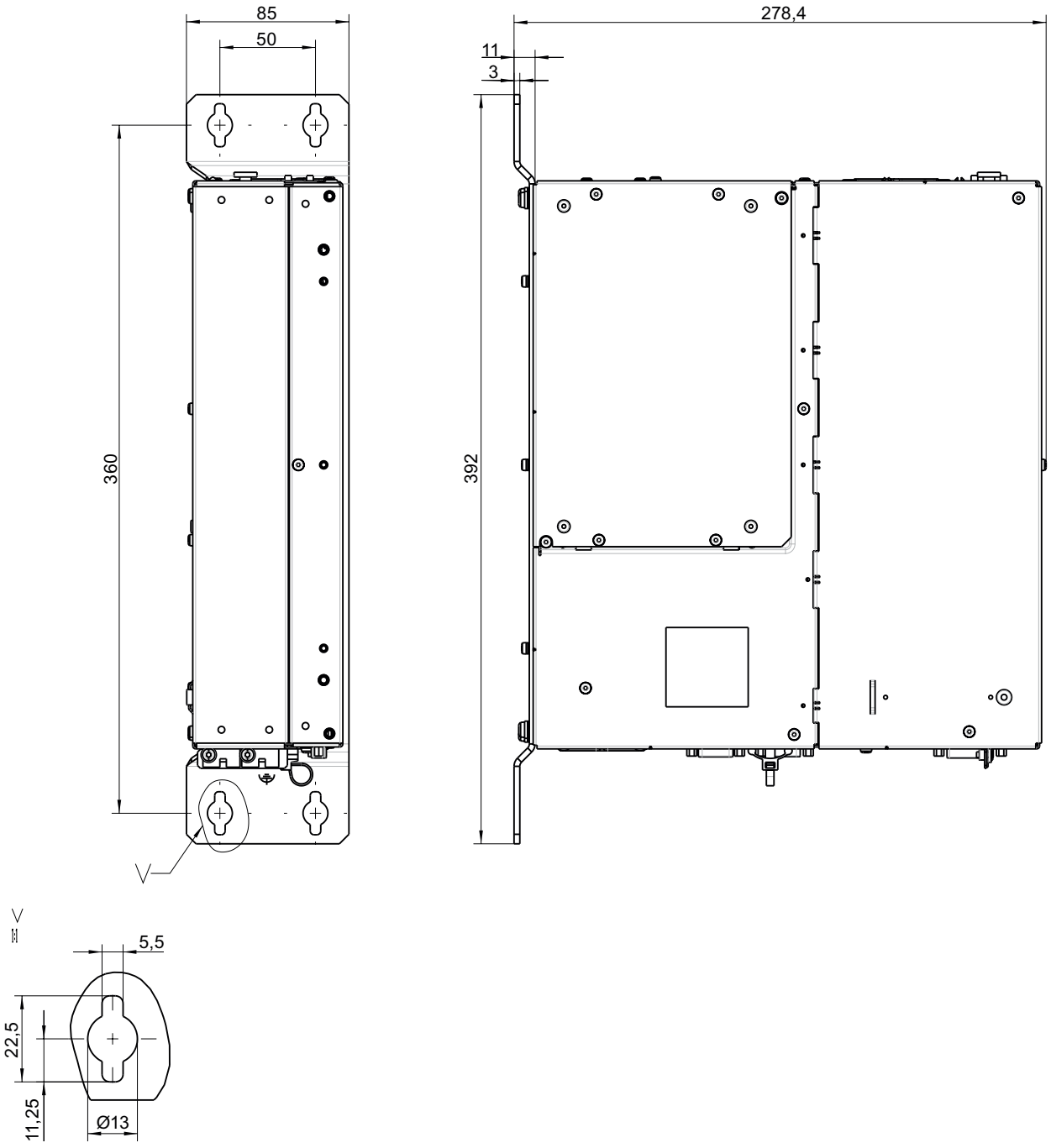


Figure 8-3 Dimensional drawing for mounting with the vertical mounting kit

Appendix

A

A.1 Guidelines and declarations

Notes on the CE Label

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

EMC Directive

The devices fulfill the requirements for the EC directive "89/336/EEC Electromagnetic Compatibility", and the following fields of application applies according to this CE label:

Area of Application	Requirement for	
	Emitted interference	Immunity to interferences
Domestic housing area, business and trade areas and small businesses.	EN 61000-6-3: 2001	EN 61000-6-1: 2001
Industry	EN 61000-6-4: 2001	EN 61000-6-2: 2001

The device is also compliant with the EN 61000-3-2:2000 (harmonic currents) and EN 61000-3-3:1995 (voltage fluctuation and flicker) standards.

Low-voltage directive

The devices with AC and DC power supply are compliant with the requirements of the EC Directive 73/23/EEC "Low-Voltage Directive." Conformance with this directive has been verified according to EN 60950-1.

Declaration of conformity

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

Note the installation guidelines

The installation guidelines and safety instructions given in this documentation have to be noted during commissioning and operation.

Connecting peripherals

The requirements relating to noise immunity according to EN 61000-6-2:2001 are met when you connect a peripheral suitable for an industrial environment. Peripheral devices are only be connected via shielded cables.

A.2 Certificates and approvals

DIN ISO 9001 certificate

The quality assurance system for the entire product process (development, production, and marketing) at Siemens fulfills the requirements of ISO 9001 (corresponds to EN29001: 1987).

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

EQ-Net certificate no.: 1323-01

Software License Agreement

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

Approvals for the USA, Canada and Australia

Product safety

One of the following markings on a device is indicative of the corresponding approval:	
	Underwriters Laboratories (UL) per UL 60950-1 (I.T.E) or per UL 508 (IND.CONT.EQ)
C	Underwriters Laboratories (UL) according to Canadian standard C22.2 No. 60950-1 (I.T.E) or C22.2 No. 142 (IND.CONT.EQ)
C US	Underwriters Laboratories (UL) to Standard UL 60950-1, Report E11 5352 and Canadian Standard C22.2 no. 60950-1 (I.T.E), or to UL508 and C22.2 no. 142 (IND.CONT.EQ)
	UL recognition mark
	Canadian Standard Association (CSA) per Standard C22.2. No. 60950-1 (LR 81690) or per C22.2 No. 142 (LR 63533)
NRTL	Canadian Standard Association (CSA) to the American Standard UL 60950-1 (LR 81690), or to the UL 508 (LR 63533)

EMC

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.

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

AUSTRALIA	
	This product meets the requirements of the AS/NZS 3548 Norm.

A.3 Service and support

Additional support

If you have any further questions relating to the products described in this documentation, contact your local representative at the SIEMENS office nearest you.

Find your contact partner at:

http://www.siemens.com/automation/partner

A guide to the technical documentation for the various SIMATIC products and systems is available at:

http://www.siemens.de/simatic-tech-doku-portal

The online catalog and the online ordering system is available at:

http://mall.automation.siemens.com/

Training center

Siemens offers a number of training courses to familiarize you with the SIMATIC automation system. Please contact your regional Training Center, or the central Training Center in D90327 Nuremberg.

Phone: +49 (911) 895-3200.

Internet: http://www.sitrain.com

Technical support

You can reach technical support for all A&D products at:

- Support request form on the web:
  http://www.siemens.de/automation/support-request
- Phone: +49 180 5050 222
- Fax: +49 180 5050 223

Further information about our technical support is available in the Internet at www.siemens.com/automation/service

When you contact the customer support, please have the following information for the technician on hand:

- BIOS version
- Order No. (MLFB) of the device
- Installed additional software
- Installed additional hardware

Service & support on the Internet

In addition to our documentation, we offer our complete knowledge base on the Internet at.

http://www.siemens.com/asis

There you will find:

- The newsletter which provides the latest information on your products
- Relevant documentation for your application which you can access via the search function in our service & support database.
- The current BIOS version
- A forum is available for users and specialists from all over the world to exchange experiences
- Your local Siemens partner for Automation & Drives in our partner database
- Information about on-site service, repairs, spare parts. Lots more is available under ”Services”

You can find the latest information about your device at the following address:

http://support.automation.siemens.com

Siemens AG

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