

SIEMENS

SIMATIC

Industrial LCD Monitors Flat Panel

Operating Instructions

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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
⚠ WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
⚠ CAUTION
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.

Proper use of Siemens products

Note the following:

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

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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Preface

Purpose of this Manual

This manual provides information based on the requirements defined by DIN 62079. This information relates to the device, its place of use, transport, storage, installation, use and maintenance.

This manual is intended for the following target groups:

- Users
- Startup engineer
- Service technicians
- Maintenance technicians

Please read the section "Safety instructions and general notes" carefully.

Basic Knowledge Requirements

A solid background in personal computers and Microsoft operating systems is required to understand this manual. General knowledge in the field automation control engineering is recommended.

Scope of the Manual

This manual applies to devices with the following order numbers:

Monitor versions	Touch screen versions
6AV7861-1AA00-0AA0	6AV7861-1TA00-0AA0
6AV7861-1AB00-0AA0	6AV7861-1TB00-0AA0
6AV7861-2AA00-0AA0	6AV7861-2TA00-0AA0
6AV7861-2AB00-0AA0	6AV7861-2TB00-0AA0
6AV7861-3AA00-0AA0	6AV7861-3TA00-0AA0
6AV7861-3AB00-0AA0	6AV7861-3TB00-0AA0
6AV7861-1AA00-1AA0	6AV7861-1TA00-1AA0
6AV7861-1AB00-1AA0	6AV7861-1TB00-1AA0
6AV7861-2AA00-1AA0	6AV7861-2TA00-1AA0
6AV7861-2AB00-1AA0	6AV7861-2TB00-1AA0
6AV7861-4AA00-1AA0	6AV7861-4TA00-1AA0
6AV7861-4AB00-1AA0	6AV7861-4TB00-1AA0
6AV7861-3AA00-1AA0	6AV7861-3TA00-1AA0
6AV7861-3AB00-1AA0	6AV7861-3TB00-1AA0

Table 1- 1 Extended version

Monitor versions	Touch screen versions
6AV7861-1AB10-1AA0	6AV7861-1TB10-1AA0
6AV7861-2AB10-1AA0	6AV7861-2TB10-1AA0
6AV7861-4AB10-1AA0	6AV7861-4TB10-1AA0
6AV7861-3AB10-1AA0	6AV7861-3TB10-1AA0

Table 1- 2 Flat Panel PRO version

	Touch screen versions
15"	6AV7861-5TB10-1AA0
19"	6AV7861-6TB10-1AA0

Approvals

For more information, please refer to the chapter "Certificates and Guidelines" in the appendix.

CE Label

For more information, please refer to "Directives and Declarations" in the "Certificates and Guidelines" section of the appendix.

Standards

Please refer to sections "Application Planning" and "Technical Specifications".

Position in the Information Scheme

The documentation for the Flat Panel includes the following sections:

- SIMATIC Flat Panel, Operating Instructions (compact), with the following information:
 - Commissioning
 - Legal information
- SIMATIC Flat Panel, Operating Instructions, this document with the following additional information:
 - Operation
 - Fault diagnostics
 - Hardware

This is referred to simply as "operating instructions" in the following.

The documentation is supplied with the Flat Panel in electronic form as a PDF file on the "Documentation & Drivers" CD. An English and German hardcopy of the Operating Instructions (compact) is also supplied. The documentation is available in German, English, French, Italian, Spanish, and Chinese.

Conventions

The following text notation will facilitate reading this manual:

Notation	Scope
"File"	<ul style="list-style-type: none">• Terminology that appears in the user interface, for example dialog names, tabs, buttons, menu commands• Inputs required, for example limit values, tag values• Path information
"File > Edit"	Operational sequences, for example, menu commands, context menu commands
<F1>, <Shift>+<F1>	Keys and key combinations


The terms "Flat Panel" and "operator unit" are uniformly referred to as the "device" in these operating instructions. The full term is only used when a concrete reference is necessary.

Note


A note is important information about the product, handling the product or a reference to specific sections of the documentation that require special consideration.

Safety information


2.1 General safety notes

 WARNING
Emergencies In the event of a device fault, remove the mains connector immediately. Inform the customer service personnel responsible. Malfunctions can occur when the operator controls or power cable are damaged or when liquids or foreign objects penetrate the device.


2.2 Safety information

 WARNING
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 safety performance (SIL, PL or Cat.) identified by the necessary risk analysis. The intended use of the device has to be ensured. The correct use of the device has to be verified with a function test on the machine. With this programming, configuration and wiring errors can be identified. The test results have to be documented and if necessary inserted into the relevant inputs.

Electrical Connection

 WARNING
Disconnect the device from the mains before every intervention. Do not touch power lines or data transmission lines during electrical storms and do not connect any cables.

Repairs

 WARNING
Risk of bodily injury or equipment damage due to unauthorized opening or repairing
Bodily injury or considerable equipment damage may result from the unauthorized opening or repairing of the device. Do not carry out any repairs on your own. Repairs may only be carried out by authorized qualified personnel at the manufacturer's site. See chapter Repair (Page 81).

High Frequency Radiation

CAUTION
Unintentional Operating Situations
High frequency radiation, for example from a cell phone, may cause unintentional operating situations. For more details, consult the technical data in the "EMC requirements" chapter.

2.3 General Information

Overview

CAUTION
The device is approved for operation in closed rooms only under normal ambient conditions. The guarantee is void if this stipulation is ignored.

Avoid extreme ambient conditions such as sulfuric atmosphere. Protect your device against dust, moisture and heat. For additional information, refer to the specifications.

Do not place the device in direct sunlight.

Transport

Unpack the device at the its installation location. Transport the device only in the original packaging. Do not transport the device when it is mounted.

NOTICE

Adhere to these stipulations each time the device is transported, otherwise the guarantee is void.
--

CAUTION

Condensation

When transporting the device at low temperatures, ensure that no moisture gets on or into the device. This also applies if the device is subjected to extreme changes in temperature.

Commissioning

Allow the device to slowly adjust to room temperature before commissioning the device. However, do not expose the device to direct heat radiation. If moisture condensation occurs, wait at least about 12 hours before you switch on the device.

Tools & Downloads


Please check regularly if updates and hotfixes are available for download to your device.

Downloads are available on the Internet at After-sales information system for SIMATIC PC/PG (<http://www.siemens.com/asis>).

Click on "Industrial LCD Monitors" under "Tools & Downloads." Using the global search function, you can search for any downloads you require.

2.4 Operating panel guidelines

Safety-relevant applications

 WARNING
Maloperation Do not perform safety-relevant functions of the user software with the touch screen.

Chemical resistance

CAUTION
Adhere to the information regarding chemical resistance. For additional information, refer to the Internet at Industry Automation and Drive Technologies - Homepage (http://www.siemens.com/automation/service&support). Enter "Chemical resistance Flat Panel" as the search term. The available articles will be displayed.

Sources of light

NOTICE
Position the screen so that it is not subject to direct sunlight or other strong sources of light.

Defective pixels in the display

At present, the manufacturing process of modern displays does not guarantee that all pixels of the display will be perfect. A small number of defective pixels in the display is therefore unavoidable. This does not present a functional problem as long as the defective pixels are not bunched in one location.

Refer to the "Technical data" section for more information.

Burn-in effect on TFT displays

A permanent picture with bright images can lead to a burn-in effect on the TFT LCD.

If a screen saver is activated, please observe the following:

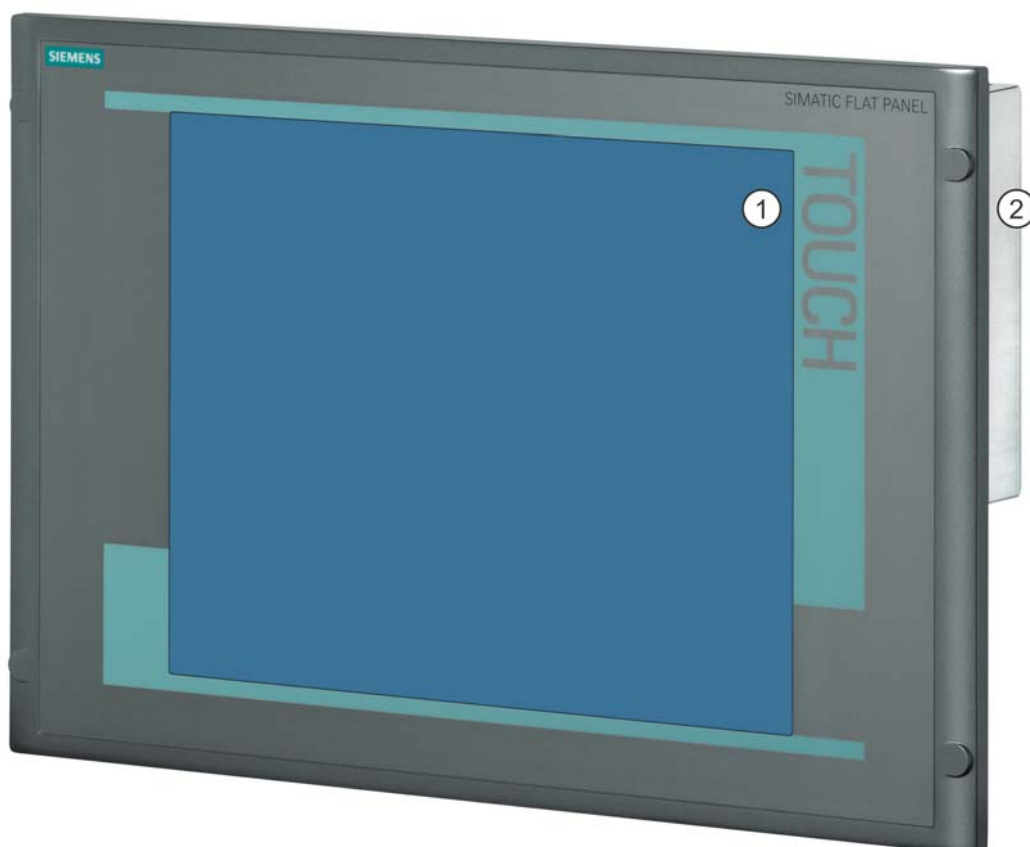
- The liquid crystals in screen savers which actuate active black when the backlighting is on, e.g. flying stars "starfield simulation," renew themselves. Pay attention to the length of time the backlighting is activated.
- The following applies to screen savers which turn off the backlighting: Each time the backlighting is turned on, its life is reduced by 50 minutes.

Consider the following carefully:

- Screensaver
- Switch off the backlighting regularly
- Permanent display of the customer application

Description

3.1 Basic variant



- 1 Display
- 2 Rear Ports Refer to the "Connecting" chapter for more information.

Figure 3-1 Flat Panel

Short description

This device is available as a simple display monitor or interactive touch screen in a variety of screen sizes.

Display size

Color display with backlighting:

- 12" TFT technology; resolution 800 x 600 pixels, SVGA
- 15" TFT technology; resolution 1024 x 768 pixels, XGA
- 17" TFT technology; 1280 x 1024 resolution, SXGA
- 19" TFT technology; 1280 x 1024 resolution, SXGA

Refer to the "Technical data" section for more information.

3.2 Extended variant

The variant Flat Panel extended is an extended version of the basic units and has the following features:

- Available as monitor or touch device, in the sizes 12", 15", 17", and 19".
- Additional USB interfaces on the rear side.
- The PC can be up to 30 m away from the Flat Panel. Both devices are connected to each other by means of a DVI/USB cable.
- The backlighting can be controlled by means of a software.
- Integrated operating hours counter, can be called up via the on-screen display.

3.3 Flat Panel PRO: IP65 version

In their technical aspects, the Flat Panel PRO devices correspond to the extended devices.

3.3.1 IP65 all-round

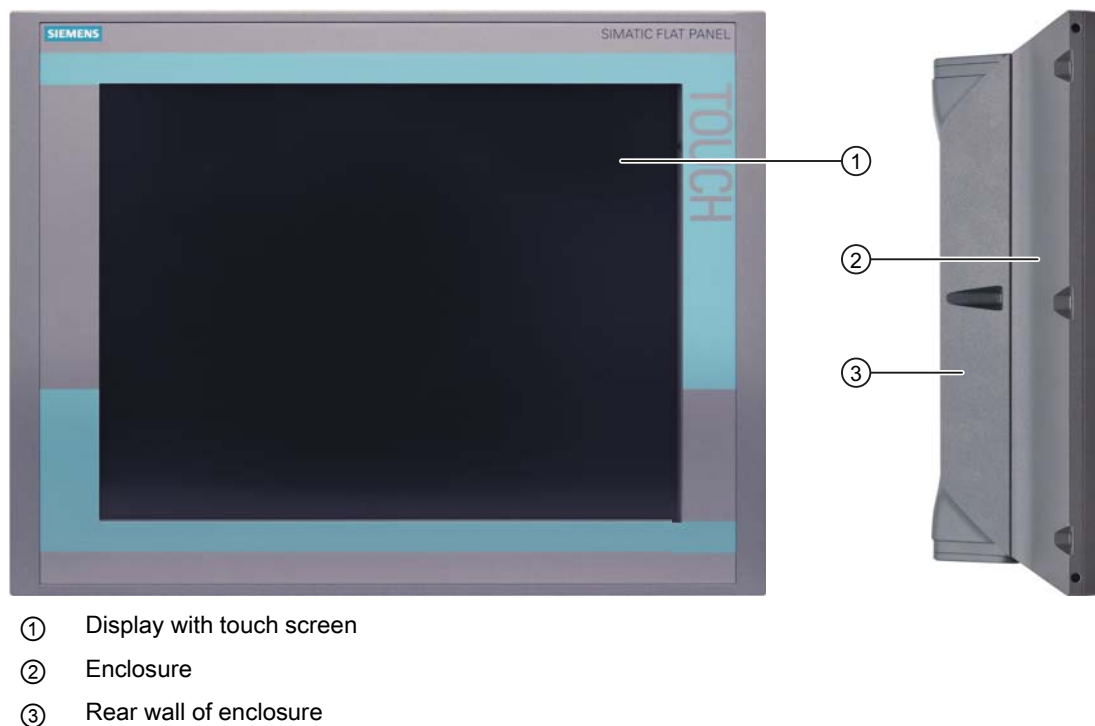
The Flat Panel PRO with its enclosure with IP65 degree of protection has all-round protection against dust and splash water. The ready-to-use HMI device can be fixed either from the top or the bottom to a supporting arm system or to a stand.

A basic adapter and adapter sets that can be ordered separately support fixing systems from various manufacturers (including VESA standard for flat screens). The rear wall can be removed quite easily. The interfaces of the HMI device can therefore be reached without any problems. You do not require any special cables or connectors.

The Flat Panel PRO is impressive not only on account of its ease of servicing, but also due to its sophisticated design and slimline device depth.

3.3.2 Layout of the Flat Panel PRO

Front view and side view



View from below



- ① Lower cover

Figure 3-2 Bottom view of Flat Panel PRO

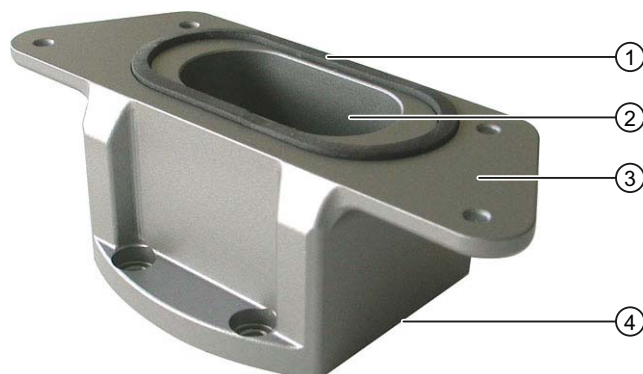
Rear view



- ① Pressure compensation element
- ② Upper cover
- ③ Rear wall of enclosure
- ④ Lower cover

Figure 3-3 Rear view of Flat Panel PRO

3.3.3 Structure of the basic adapter



- ① Seal
- ② Cable channel
- ③ Mechanical interface of the Flat Panel PRO 15"
- ④ Mechanical interface for the adapter from the adapter set

Figure 3-4 Structure of the basic adapter

The basic adapter is included in the scope of delivery of the Flat Panel PRO 15". An adapter set belongs to the basic adapter, which can be ordered as an accessory. The basic adapter and adapter set are required in order to fit the Flat Panel PRO 15" to a supporting arm or on a stand. See chapter Accessories (Page 22).

3.4 Accessories

3.4.1 Flat Panel accessories

Accessories		Machine-Readable Product Code
VGA cable	3 m long	6AV7860-0AH30-0AA0
	5 m long	6AV7860-0AH50-0AA0
DVI cable	3 m long	6AV7860-0BH30-0AA0
	5 m long	6AV7860-0BH50-0AA0
USB cable (additional cable is only required for the Touch Screen option)	3 m long	6AV7860-0CH30-0AA0
	5 m long	6AV7860-0CH50-0AA0
Backing plate for screw mounting	17" and 19"	6AV7672-8KE00-0AA0
Protective foil for the touch screen	12"	6AV7671-2BA00-0AA0
	15"	6AV7671-4BA00-0AA0
	17"	6AV7672-1CF00-0AA0
	19"	6AV7672-1CE00-0AA0
Touch pen	for all versions	6AV7672-1JB00-0AA0

The product package always includes a VGA cable and at least a 1.8 m USB cable for the interactive touch screen.

Accessories (extended version)		Machine-Readable Product Code
Cable set (DVI/USB cable)	10 m long	6AV7860-1EX21-0AA1
	15 m long	6AV7860-1EX21-5AA1
	20 m long	6AV7860-1EX22-0AA1
	30 m long	6AV7860-1EX23-0AA1

3.4.2 Flat Panel PRO accessories

Adapter sets for supporting arm systems

The following adapter sets are available for the Flat Panel PRO 15":

Adapter set	Suitable for supporting arm systems	Order number
Adapter set VESA75	Vesa 75-compatible systems	6AV7674-0KE00-0AA0
Adapter set VESA100	VESA 100-compatible systems, Rose GTN II supporting arm systems	6AV7674-0KD00-0AA0
Adapter set CP-L	Rittal CP-L supporting arm systems	6AV7674-0KC00-0AA0
Adapter set PLUS	Bernstein CS-3000 coupling 48 ¹⁾ , Rolec tara Plus ¹⁾ , Rolec Quadro, Rittal CP-S ¹⁾ , Rose GT48/2 ¹⁾ , Rose GTK electronic	6AV7674-0KB00-0AA0

¹⁾ Support arm systems with a tube diameter ≤ 48 mm are not suitable for cables with DVI connectors.

Protective foil for the touch screen

Version	MLFB
12"	6AV7671-2BA00-0AA0
15"	6AV7671-4BA00-0AA0
17"	6AV7672-1CF00-0AA0
19"	6AV7672-1CE00-0AA0

Cover with IP65 USB interface

A cover with USB interface can be ordered for the Flat Panel PRO 15" under the order number 6AV7 674-0LX00-0AA0. The cover with USB interface can be attached in the location of the upper or lower cover on the Flat Panel PRO 15".

The internal USB interface is shifted to the outside by attaching the cover with USB interface.

DVI/USB cable

Cable set		MLFB
DVI/USB cable	10 m long	6AV7860-1EX21-0AA1
	15 m long	6AV7860-1EX21-5AA1
	20 m long	6AV7860-1EX22-0AA1
	30 m long	6AV7860-1EX23-0AA1

Description

3.4 Accessories

Application planning

4.1 Overview

Introduction

This section describes the first steps after unpackaging, the permitted mounting positions and the fixation. This section describes the necessary considerations for EMC.

Field of Application

The Flat Panel is a display unit for demanding tasks in the field of PC-based automation. The device is designed for on-site use on the machine and is installed as follows, for example:

- In control cabinets
- on support arms/on stands
- In consoles

Note

In the following, the term "switchgear cabinet" also refers to rack, mounting rack, switchboard, operator panel and console. The term "device" refers to the Flat Panel and its versions.

4.2 Unpacking and checking the delivery

Procedure

1. Please check the packaging material for transport damage upon delivery.
2. 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.
3. Unpack the device.
4. Keep the packaging material in case you have to transport the unit again.

NOTICE

The packaging protects the device during transport and storage. Therefore, never dispose of the original packaging material!

5. Please keep the enclosed documentation in a safe place. You will need the documentation when you start up the device for the first time.
6. Check the package contents for completeness and any visible transport damage. Check for completeness using the enclosed "Contents of Delivery" list.
7. Notify the delivery service in charge immediately if the packages contents are incomplete or damaged.



WARNING

Make sure that a damaged device is not installed nor put into operation.

8. Note the identification information as described in the "Operating Instructions (compact)" document.

Scope of delivery for Flat Panel

Designation	Quantity
Flat Panel	1
Clamp	6 ... 8 (depending on the size of the display)
CD "Documentation & Drivers"	1
Power cable 230 V	1
VGA cable 1.8 m	1
USB cable 1.8 m	1 (only with Touch devices)
Installation guidelines	1
Template for mounting cut-out	1
Operating Instructions (compact)	1 (German) 1 (English)

Scope of delivery for Flat Panel PRO

Designation	Quantity
Flat Panel PRO	1
CD "Documentation & Drivers"	1
Basic adapter for fixing to a supporting arm	1
Power cable 230 V	1
Installation guidelines	1
Operating Instructions (compact)	1 (German) 1 (English)

4.3 EMC directive

Electromagnetic compatibility

The device fulfills the requirements of the EMC law of the Federal Republic of Germany as well as the EMC directive of the Single European Market.

The device is designed as a built-in model with front-sided IP65 degree of protection. Ensure compliance with the EN 61000-4-2 standard by installing the device in grounded metal cabinets, e.g. 8 MC cabinets, Siemens Catalog NV21.

Note

For additional information about EMC requirements, refer to the Technical data section.

Installing the device according to EMC directive

Basics for interference-free operation:

- Install the controller according to EMC directive
- Use interference-immune cable


Note

The instructions "Guidelines for the assembly of interference immune programmable logic controllers" with the article ID 1064706 and the manual "PROFIBUS networks" with the article ID 1971286, which also applies to the installation of the device, is located on the "Documentation & Drivers" CD.

4.4 Mounting Positions and Fastening


4.4.1 Notes on installation

Before installing the device, read the following general notes relating to installation.

 WARNING
Danger, high voltage Isolate the power supply to the switchgear cabinet before opening it. Make sure that the power to the switchgear cabinet cannot be turned on accidentally.

CAUTION
The device is approved for operation in closed rooms only.

- Ensure that the protective contact socket of the building installation is easily accessible and that there is a mains disconnect switch in switchgear cabinet installations.
- Position the screen in an ergonomic position favorable to the user. Choose a suitable installation height.
- Position the screen so that it is not subject to direct sunlight or other strong sources of light.
- The device is considered open equipment on the part of the voltage supply. Therefore, make sure that the switchgear cabinet fulfills the requirements of a fire-proof housing.

 WARNING
An additional fire-proof housing is always required for the device.

- Provide adequate volume in the switchgear cabinet for air circulation and heat transport. Keep sufficient distance between the device and switchgear cabinet.
- Do not allow the maximum air intake temperature to exceed 45° C. The maximum air intake temperature must be accounted for especially when sizing closed switchgear cabinets.
- Ensure that there is 30 mm distance from the switchgear cabinet all-round for mounting the device.
- Provide enough free space to add on to the device.
- Equip the switchgear cabinet with struts for stabilizing the installation cut-out. Install struts where necessary.
- Avoid extreme environmental operating conditions. Protect your device against dust, moisture and heat.
- Install the device in such a way that it poses no danger, e.g. by falling over.
- During assembly, please comply with the approved installation positions.

NOTICE

If the device is installed in an unapproved position, the licenses expire in accordance with UL 508 and EN 60950!

For additional information, refer to the dimension diagrams in the appendix.

4.4.2 Mounting the USB transmitter module

Mounting versions for the extended and PRO version

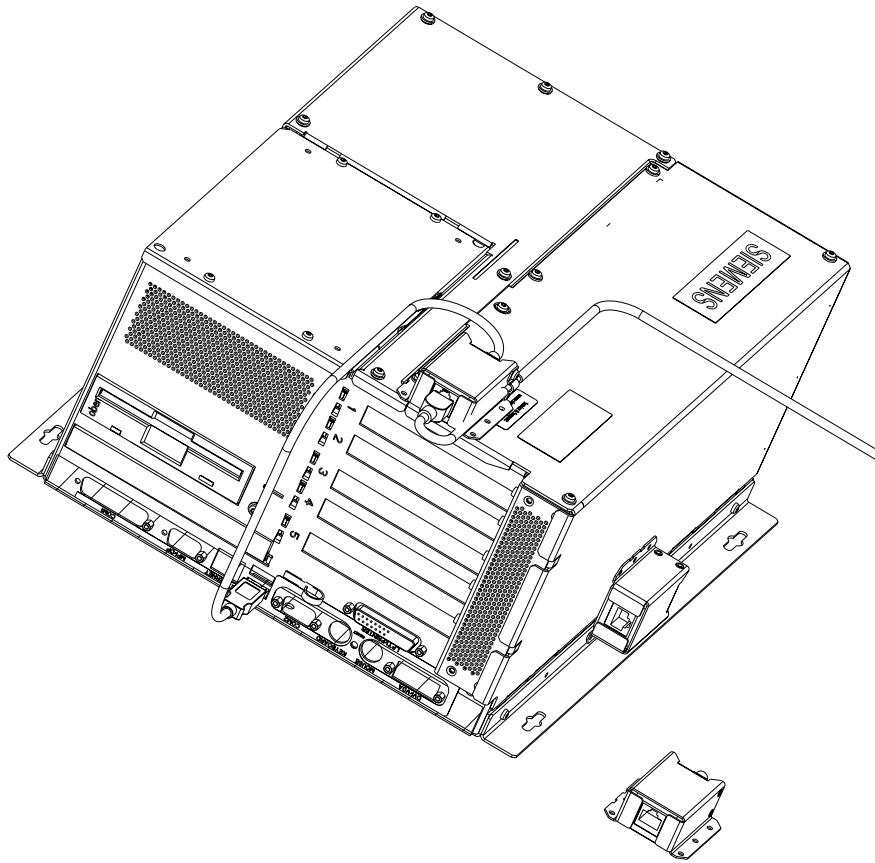


Figure 4-1 Mounting the USB transmitter module

- Mounted onto the Box PC housing
- Mounted on the side of the housing and angle section
- External mounting

4.4.3 Permitted mounting positions

Approval

Certain mounting positions are approved for the device.

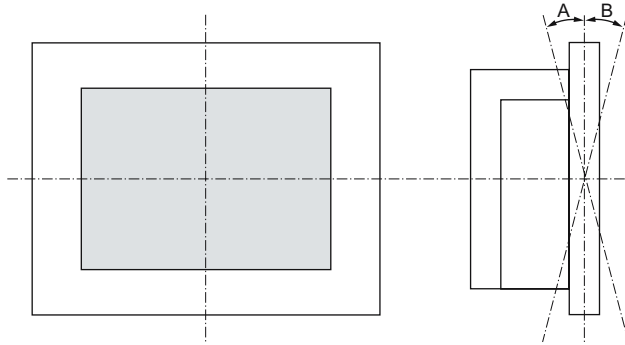


Figure 4-2 Mounting position

Flat Panel

Table 4-1 Permissible deviations from the vertical mounting position

Rack-mounting version	Ambient temperature	Angle A	Angle B
12", 15", 17", 19"	to 40°C	70°	20°
12", 15", 17", 19"	Up to 45 °C	20°	20°
12" and 15"	Up to 50°C	20°	20°

Flat Panel PRO

Table 4-2 Permissible deviations from the vertical mounting position

Ambient temperature	Angle A	Angle B
Up to 40 °C	45°	45°
Up to 45 °C	20°	20°

4.4.4 Fastening method for Flat Panel

The computer unit is secured in the installation cut-out either with clamps or screws.

Note

For screw fixing of the 17" and 19" touch panel front, a backing plate is available as an accessory. For more detailed information, refer to A&D Mall (<http://www.siemens.com/automation/mall>).

Select the type of fixation suitable to your requirements for the degree of protection.

4.4.5 Degree of protection

Principle

The degree of protection provided at the front is assured when the mounting seal lies completely against the mounting cut-out.

CAUTION
Please ensure that the material strength at the mounting cut-out is a maximum of 6 mm. Please follow the specifications for the dimensions in the "Mounting cut-out" section.
The degrees of protection are only guaranteed when the following is observed:
<ul style="list-style-type: none">• The material strength at the mounting cut-out is at least 2 mm.• The surface plane deviation of the mounting cut-out in relation to the external dimensions of the control unit amounts to ≤ 0.5 mm when the control unit is mounted.

IP65 degree of protection and NEMA4: not applicable to Flat Panel PRO

The IP65 degree of protection and NEMA4 is only provided for clamp mounting together with a ring seal.

IP54 degree of protection: not applicable to Flat Panel PRO

This degree of protection is assured when fixed using screws and the mounting components for 17" and 19" rack accessories.

4.5 Mounting cut-out

4.5.1 Selecting and creating the mounting cut-out

Requirement

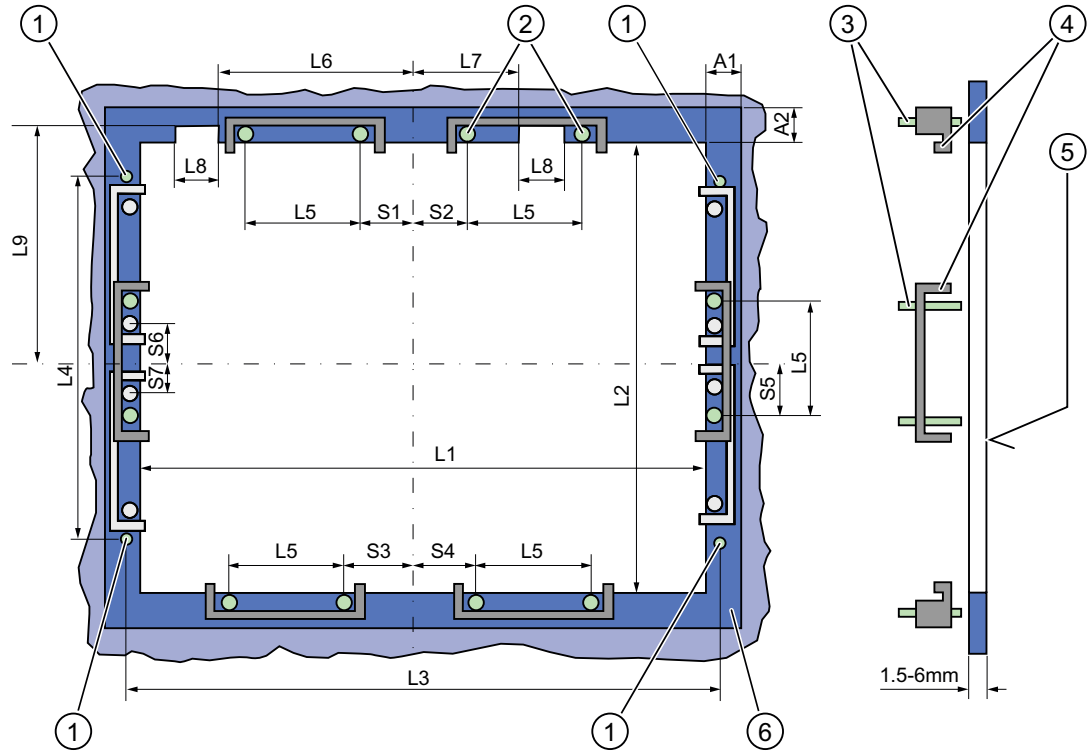
The degree of protection suitable to the field of application and thereby the mounting method have been selected.

Procedure

1. Follow the installation instructions.
2. Select a location suitable for installation, taking into account the installation instructions and the chosen mounting position.
3. On the basis of the dimension diagrams, check whether the required screw and pressure points on the rear and the seal area are easily accessible after the completion of the mounting cut-out. Otherwise the mounting cut-out is useless.
4. Complete the mounting cut-out in accordance with the dimensions. You can also obtain these dimensions from the mounting template supplied with the device.

4.5.2 Dimensions

The following illustration show the dimensions for the mounting cut-out.



- 1 Drill hole for screw attachment
- 2 Pressure points for clamp
- 3 Setscrews
- 4 Clamp
- 5 Rz 120 in the seal area
- 6 Seal area

Figure 4-3 Drill holes for the screws and pressure points for the clamp screws

	L1	L2	L3 ¹⁾	L4 ¹⁾	L5	L6 L7 L8	L9	A1	A2	S1	S2 S3 S4	S5 ²⁾	S5 ²⁾
	Dimensions in mm												
Tolerance	+1	+1	±0.2	±0.2	±0.5	±0.5	+1	±1	±1	±1	±1	±1	±1
12" TFT	368	290	-	-	112	-	-	16	10	10	35	56	-
15" TFT	450	290	465	235	112	-	-	16	10	81	81	56	-
17" TFT	450	380	465	235	112	-	-	16	10	46	46	-	33
19" TFT	450	380	465	235	112	-	-	16	10	46	46	-	33

¹⁾ M6 thread or drill holes with a diameter of 7 mm

²⁾ Only for 17" and 19" touch panel fronts, two clamps are necessary for vertically securing clamps.

More information about device dimensions, e.g. mounting depth, can be found in the "Dimension Drawing" section.

Installing the Flat Panel

5.1 Securing with clamps

Area of application

Skip this step if you have selected "screw mounting."

Note

The 12" touch screen variant can only be fixed in place using clamps.

Requirement

- The installation cut-out has been completed.
- Clamps are readily available in the accessories. Clamps and setscrews are included in the contents of delivery.



Figure 5-1 Clamp assembly

Procedure

1. Follow the installation instructions.
2. Working from the front, insert the device into the mounting cut-out.
3. Secure the control unit in the mounting cut-out from behind with the clamps, as shown in the mounting cut-out in the dimensions. Tighten the setscrews to a torque of 0.4-0.5 Nm.

5.2 Securing with screws

Area of application

Skip this step if you have selected "clamp mounting."

NOTICE
Securing with screws is not possible with the 12" variant. For more information, please refer to the chapter "Description."

Requirement

The mounting cut-out has been completed.

Procedure

1. Follow the installation instructions.
2. Drill suitable holes at the prepared mounting cut-out in accordance with the specifications for L3 and L4, as shown in the mounting cut-out in the dimension diagrams.
3. Carefully drill the respective holes in the device at the designed location [①] from the rear.

CAUTION
Ensure that no metal cuttings enter the device. Cover the device with film or when drilling, use removal by suction.

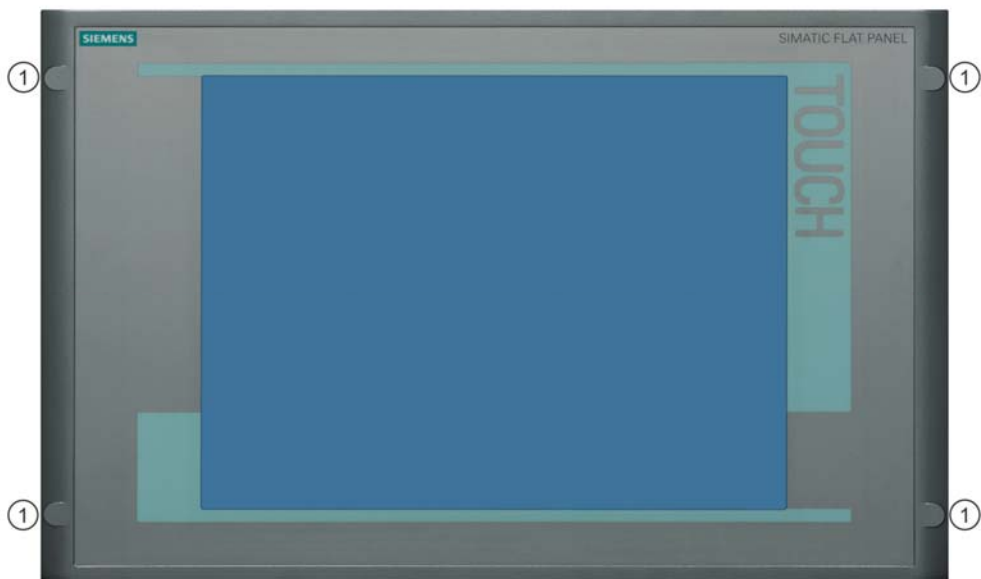


Figure 5-2 Positions for drilling holes into the device

4. Working from the front, insert the device into the mounting cut-out.
5. Secure the device by inserting suitable screws through the holes and attaching nuts.
6. Use additional backing plates for the 17" and 19" variants.

Installing the Flat Panel PRO 15"

Requirement

All packaging components and protective foils should be removed from the HMI device.

To install the HMI device, you need the basic adapter and an adapter set from the accessories.

The following cables are fed through the stand or the supporting arm to which the HMI device will be fixed:

- Equipotential bonding cable
- Power cable 24 V/230 V
- VGA/DVI cable
- Ethernet cable
- USB cable (optional) or as needed

NOTICE

Warranty endangered

If you install the HMI device not in accordance with the specifications given in these operating instructions, the warranty for the HMI device will become void.

Always install the HMI device according to these operating instructions.

IP65 degree of protection at risk

If there are no seals on the adapters or these are damaged, then IP65 degree of protection is at risk. Check the condition and seating of the seals.

If the seal on the rear wall of the housing is damaged, then this can be repaired. For a repair scenario, proceed as directed in chapter "Repair (Page 81)".

Note

The warranty for the IP65 degree of protection assumes that the supporting arm or the stand also complies with IP65.

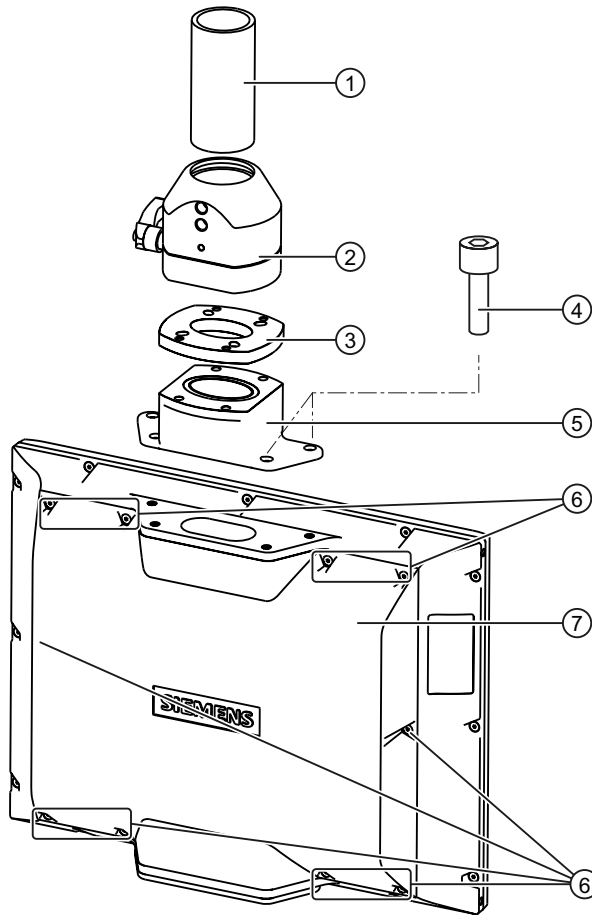
Procedure

This section describes how to install the device on a supporting arm system. Installation on a stand is carried out from below in the same way.

Proceed as follows:

1. Use an Allen key, size 2, to remove the 4 screws of the upper lid, size 2.
2. Remove the lid.

The following exploded view shows the fixing for a Flat Panel PRO 15" on a supporting arm.



3. Use an Allen key, size 2, to remove the 10 screws ⑥ of the housing rear wall.
4. Remove the housing rear wall ⑦ and store this somewhere safe.
5. Use four screws M6 x 12 from the accessory kit of the adapter set to fix the supporting arm head ② to the interim plate ③. Check that the seal is properly seated.
6. Use four screws M6 x 12 from the accessory kit of the adapter set to fix the basic adapter ⑤ to the interim plate ③. Check that the seal is properly seated.

NOTICE

Do not exceed the permissible torque

If you tighten up the screws ④ with a torque of > 1.2 Nm, you could damage the thread in the housing.

Alternatively, tighten the screws using a maximum torque of 1.2 Nm.

7. Use the four screws ④ of the lid to fix the basic adapter ⑤ to the mechanical interface. Check that the seal is properly seated.
8. Fix the HMI device to the supporting arm ①.
In doing so, ensure that all connections are fed (without damage) through the adapter into the inside of the HMI device.
9. If the cables are to be connected at a later time, then fix the rear wall of the housing ⑦ to the HMI device.

Result

The HMI device is fitted and can be connected electrically.

Connection

7.1 Overview

Introduction

Once you have mounted the device, connect it.

 WARNING
--

Do not touch power lines or data transmission lines during electrical storms and do not connect any cables.

Unplug the power cable from the socket to be sure the electricity is disconnected.
--

CAUTION

Connection sequence

Follow the described sequence when connecting the device to avoid damaging it.
--

Commissioning

Allow the device to adjust to the room temperature before connecting the device. However, do not expose the device to direct heat radiation. If moisture condensation occurs, wait at least about 12 hours before you switch on the device.

Requirement

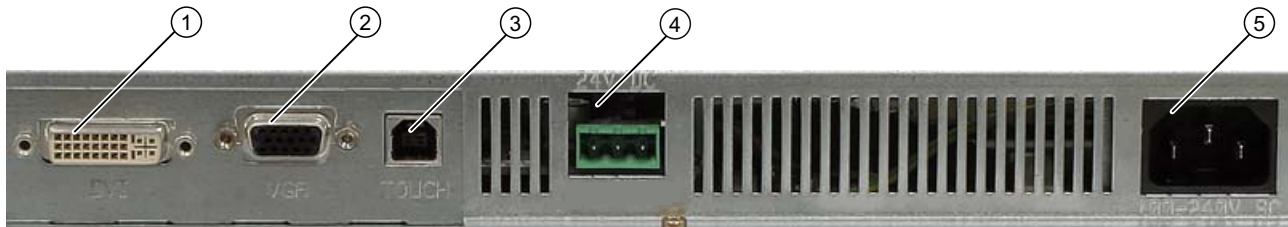
The device is EMC-compatible and has been installed according to the information provided in these operating instructions.

Procedure

1. Connect the equipotential bonding.
2. Connect all relevant cables.
3. Connect the power supply.

7.2 Rear interfaces

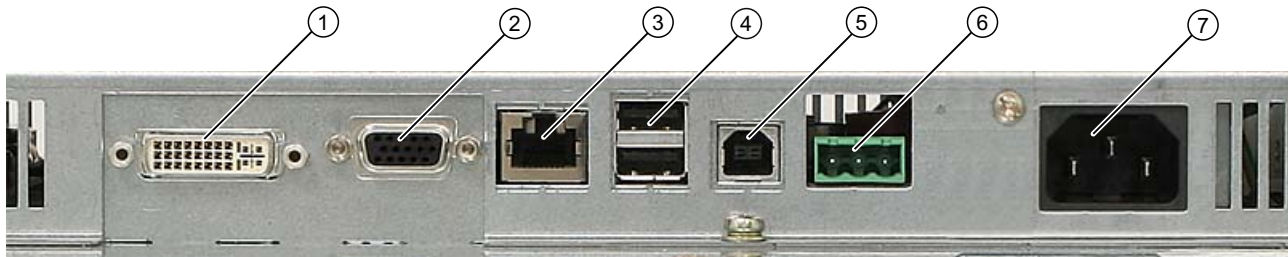
Interfaces



Position	Name	Description
(1)	DVI	Digital DVI connection
(2)	VGA	Analog VGA connection
(3)	USB (with Touch screen option)	USB connection for Flat Panels with Touch screens
(4)	24 V DC (the 230 V AC version is closed by a cover plate)	24 V DC power supply
(5)	230 V AC (the 24 V DC option is closed by a cover plate)	230 V AC power supply IEC power connector for the AC power supply to the device

Figure 7-1 Arrangement of the ports

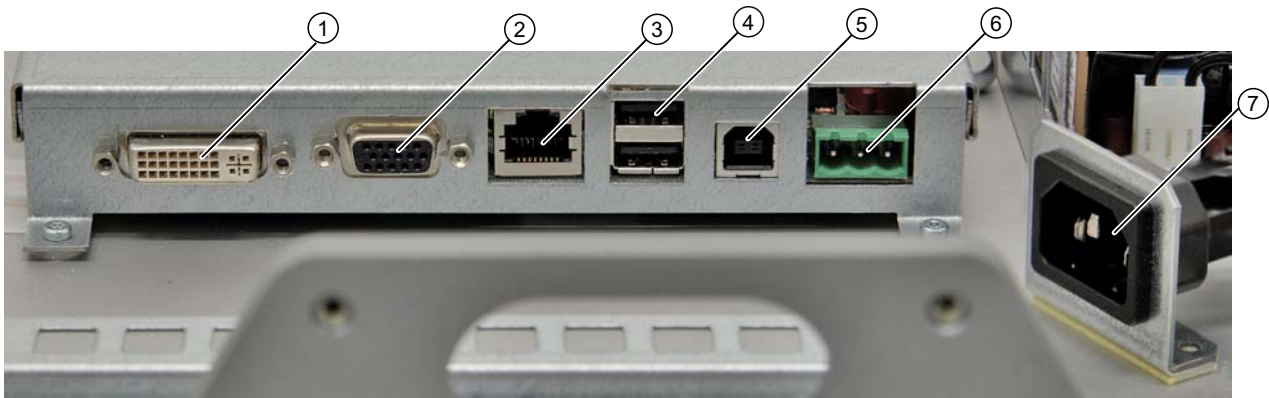
Interfaces (extended version)



Position	Name	Description
(1)	DVI-D	Digital DVI connection
(2)	VGA	Analog VGA connection
(3)	USB link (> 5 m)	USB computer interface (RJ45 type) Is connected to the USB transmitter module when the distance exceeds 5 m.
(4)	USB out	Interfaces from the USB hub for external devices (type A)
(5)	USB in (≤ 5 m)	USB computer interface (type B) Is connected to the computer unit when the distance is ≤ 5 m.
(6)	24 V DC	24 V DC power supply
(7)	100 ... 240 V AC	230 V AC power supply

Figure 7-2 Arrangement of the interfaces (extended version)

Interfaces (Flat Panel PRO version)



Position	Name	Description
(1)	DVI-D	Digital DVI connection
(2)	VGA	Analog VGA connection
(3)	USB link (> 5 m)	USB computer interface (RJ45 type) Is connected to the USB transmitter module when the distance exceeds 5 m.
(4)	USB out	Interfaces from the USB hub for external devices (type A)
(5)	USB in (\leq 5 m)	USB computer interface (type B) Is connected to the computer unit when the distance is \leq 5 m.
(6)	24 V DC	24 V DC power supply
(7)	100 ... 240 V AC	230 V AC power supply

Figure 7-3 Arrangement of the interfaces (Flat Panel PRO version)

7.3 Equipotential Bonding

Potential differences

Differences in potential arise between separated system parts, which in some cases leads to high equalization currents. For example: there may be cable shields on both sides which are grounded at different parts of the system.

Potential differences can be caused, for example, by different power inputs.

Equipotential Bonding Requirements

Reduce the differences in potential by laying the equipotential bonding cables in such a way that the affected electronic components function properly. Observe with the following guidelines when setting up equipotential bonding:

- The lower the impedance of the equipotential bonding cable, the greater the effectiveness of the equipotential bonding.
- When two system parts are connected by means of a shielded signal cable, and their shields are both connected to the ground or protective conductor, the following must be observed: The impedance of the additional equipotential bonding cable amounts to 10% of the shield impedance, at the most.
- Make sure that the equipotential bonding cable cross section is selected to accommodate the maximum equalization current. Equipotential bonding cables with a cross section of 16 mm² are field-proven.
- Use equipotential bonding conductors made of copper or galvanized steel. Connect the cables to the ground or protective conductor over a wide area. Protect the ground or protective conductor from corrosion.
- Lay the equipotential bonding cable in such a way that the area between the equipotential bonding cable and signal cables is as small as possible.

7.4 Connecting the Equipotential Bonding Circuit

Introduction

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.

Procedure

1. Connect the equipotential bonding to the equipotential bonding threads on the back of the device. The equipotential bonding connection is labeled with the following symbol:



2. Connect the equipotential bonding connection of the device to a central grounding point of the control cabinet, stand or supporting arm. Ensure that the conductor cross-section is not less than 5 mm².

7.5 Connecting the Cables

Introduction

The Flat panel and computer unit need to be connected by cable for data transmission. Further information is available in the "Description" chapter of the operating instructions under the section, "Accessories."

Procedure when the distance is ≤ 5 m

Connect the DVI or VGA cable to the Flat Panel and the computer unit.

Note

Use a USB cable for the Touch Screen versions.

Procedure when the distance is > 5 m (extended and PRO version)

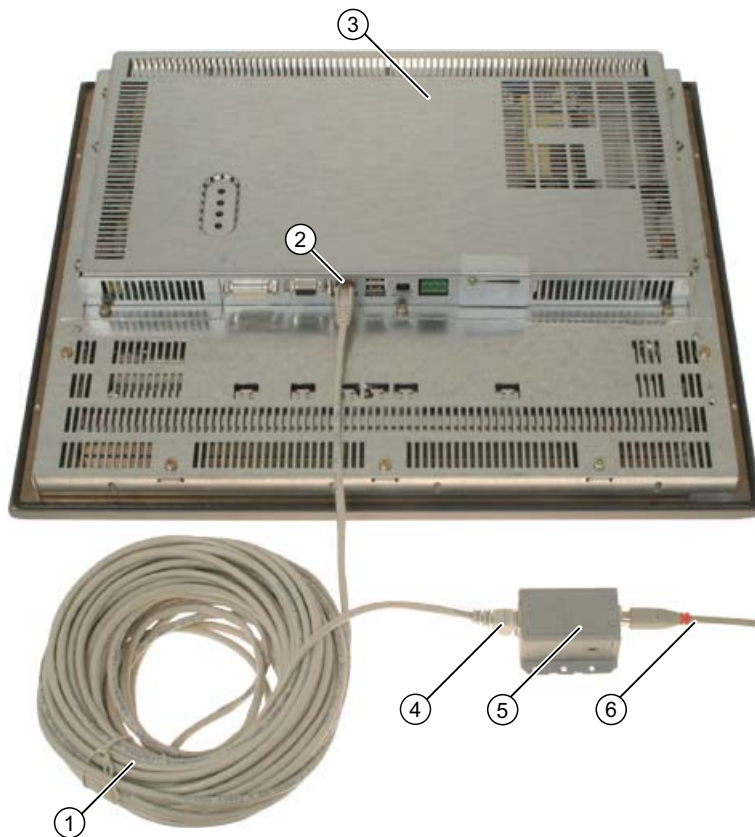


Figure 7-4 Cable connection

- (1) Long connecting cable
- (2) USB link on the control unit
- (3) Operating unit
- (4) USB-connection on the USB transmitter module
- (5) USB-transmitter module
- (6) Short connecting cable

1. Plug the female connector of the long USB connecting cable (1) into the port (2) (USB link) on the control unit (3).
2. Plug the USB connecting cable (1) into the port (4) () on the USB transmitter module (5).
The control unit is connected to the USB transmitter module.
3. Use the second, short USB connecting cable (6) to connect the USB transmitter module to the computer unit.
4. Connect the DVI cable to the Flat Panel and the computer unit.

7.6 Selecting the power port (extended variant)

Procedure

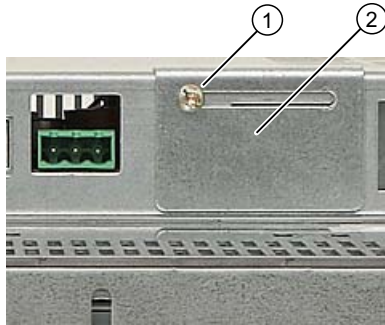


Figure 7-5 Selecting the power port

1. Loosen the screw (1).
2. Slide the interlock (2) open to permit access to the required 24 V DC or 230 V AC power port.
3. Tighten the screw (1) again.

7.7 Connecting the power supply

Principle

You can operate the device either with a 120/230 V AC power supply with automatic voltage selector switch or 24 V DC power supply.

The basic and extended version are supplied with one power supply. The Flat Panel PRO has two power supply connections. The device has no power switch.

CAUTION

Do not operate the device simultaneously on AC and DC power supplies.

Do not touch power lines or data transmission lines during electrical storms and do not connect any cables.

Unplug the mains connector from the socket to be sure the electricity is disconnected.

The device features a safety-certified power cable. Connect the device only to a grounding socket. Operate the device only on grounded-neutral systems and not on impedance-grounded systems such as IT networks.

Make sure that the local supply voltage complies with the permissible rated voltage for the device.

⚠ CAUTION**Only plug the AC power supply cable for Flat Panel PRO in the terminal**

The 230 V power supply cable for the Flat Panel PRO may only be plugged in/connected at the terminal. Otherwise, the requirements for electrical safety are not met. Therefore, only plug the 230 V power supply cable for Flat Panel PRO into the terminal.

⚠ WARNING

Select an adequately large cable diameter so that the device is not damaged by a current short circuit.

24 V DC power supply module

Only connect cables with a minimum cross-section of 1.3 mm² (16 AWG) and a maximum cross-section of 3.3 mm² (12 AWG).

CAUTION

The device can be approved for operation with the 24 V DC only with a safety low-voltage supply (SELV).

Regional Information**Outside the United States and Canada, in regions with 230 V supply voltage:**

If you do not use the safety-certified power cable, use a flexible, double-insulated power supply cable (no single cables) with the following characteristics:

- At least 18 AWG (0.75 mm²) conductor cross-section
- Grounded safety plug 15 A, 250 V

NOTICE

Ensure that the cable set conforms to the respective national safety regulations and is appropriately labeled.

For USA and Canada:

A CSA or UL-listed power supply cable must be used in the United States and Canada.

120 V supply voltage

Use a flexible cable with the following characteristics:

- UL approval
- CE marking
- Type SJT with three conductors
- At least 18 AWG (0.75 mm²) conductor cross-section
- Maximum 4.5 m length
- Parallel grounded safety plug 15 A, min. 125 V

230 V Supply Voltage

Use a flexible cable with the following characteristics:

- UL approval
- CE marking
- Type SJT with three conductors
- At least 18 AWG (0.75 mm²) conductor cross-section
- Maximum 4.5 m length
- Tandem grounded safety plug 15 A, min. 250 V

Procedure

1. Insert the plug of the supplied power supply cable into the AC or DC power supply socket of the device.
2. Depending on the design, secure the cable by means of a cable clamp or a cable tie. This will prevent unintentional detachment of the IEC power connector on the device.

Operation

8.1 Operation on the Touch Screen

Thanks to the touch sensor, the display is sensitive to touch and application-specific screen elements, e.g. a button, appear on the screen. By tapping the button with your finger, the function assigned to the button is activated.

CAUTION
Only touch one point on the touch screen and not several points at one time. You may otherwise trigger unintended reactions. Do not touch the screen in the following situations: — When the device is booting until the boot process is completed. — When plugging or unplugging any optional USB components.

The following types of pressure are permissible:

- Using a plastic pen with a 1 mm radius at the point: 25 grams
- Using a silicone finger with a diameter of 1.6 cm: 50 grams

Note**User-friendly operation using a touch pen.**

If you would like to conveniently operate the touch screen, use the touch pen, which is available as an accessory. See chapter Flat Panel accessories (Page 22).

Operation and configuration

9.1 Commissioning

9.1.1 Overview

Check list

Before starting up the device for the first time, go through the following checklist:

- Have you taken into account the proper ambient and environmental conditions for the device, as described in the Technical data?
- Have you learned how to connect the equipotential bonding?
- Have you learned how to connect the power supply?
- Read over this information in the respective "Connecting" chapter of the operating instructions. Please follow all guidelines.

CAUTION
Condensation When transporting the device at low temperatures, ensure that no moisture gets on or into the device. This also applies if the device is subjected to extreme changes in temperature. Wait 12 hours before switching the device on. Allow the device to slowly adjust to room temperature before commissioning the device. Do not subject the device to direct heat radiation from devices such as heaters.

Requirement

- The equipotential bonding is connected.
- The cables are correctly plugged in.

Procedure

1. Switch on the device.
2. Configure the screen.
3. Calibrate the touch screen.

9.1.2 Switching on the device

Procedure

If you have connected the power supply (see chapter Connecting the power supply (Page 50)), the device is switched on.

Then switch on the computer unit.

9.1.3 Approvals for Microsoft Windows Operating Systems

The device is approved for use with the following operating systems:

Approvals

- Windows 2000 is only approved as of Service Pack 4.
- Windows XP is only approved as of Service Pack 2.
- Windows XPe is only approved as of Service Pack 2.

9.1.4 Screen Configuration

Configuring the Monitor

You can set the screen resolution and other parameters of the monitor using the Control Panel of the computer unit.

Call

- Start menu "Start", command "Settings > Control panel > Display"

NOTICE
A limited set of screen resolutions are available for the monitor. Set the screen resolution that is suitable for your device. For more information, please refer to the "Flat Panel" section of the "Description" chapter.

9.1.5 Installing UPDD

9.1.5.1 Prerequisites

- The commissioning engineer has administrator privileges.
- The operating system is **Windows 2000 SP 4, WinXp Pro Professional or WinXP embedded Professional**.
- The program is exclusively provided for touch operation.
- A USB keyboard and USB mouse are connected to the PC.
- A previous version of the "UPDD" software must not have been installed.

9.1.5.2 Procedure

1. If a previous version of the "UPDD" software is installed, please uninstall it. Subsequently restart the computer.

Note

Use the application from the "Documentation & Drivers" CD supplied, or from the Internet. You can find the application under Industry Automation and Drive Technologies - Homepage (<http://www.siemens.com/automation/service&support>).

2. Start the software by double-clicking on "Setup".

The "UPDD Install" dialog box is displayed. This informs you of the software version and of supported controllers.



Figure 9-1 Installing UPDD

3. Click "Install" in order to install the program.

The progress of the installation is displayed.

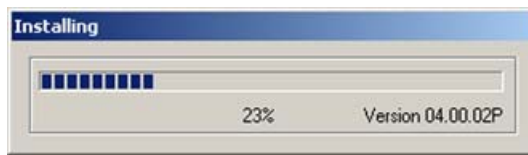


Figure 9-2 Installation

The "Event Selector" application is displayed on the desktop. The application emulates the right mouse button.

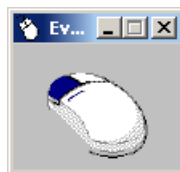


Figure 9-3 Mouse

The end of the installation is displayed.

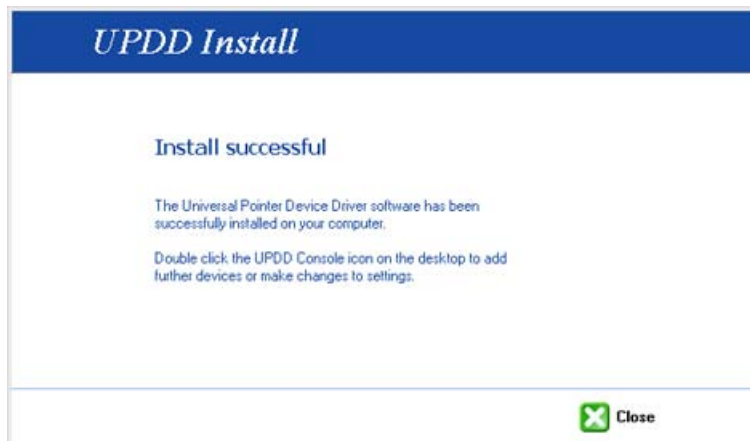


Figure 9-4 Installation completed

4. Confirm with "Close".

If you call "Start > Programs > UPDD" following the installation, the following functions are available: "Event Selector", "Test", "Settings" and "Calibrate".

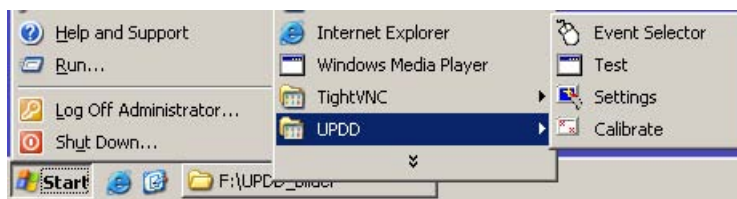


Figure 9-5 Start menu

9.1.5.3 Touch screen calibration

Procedure

1. Select "Start > Programs > UPDD > Settings".
The "UPDD Console" dialog box opens.

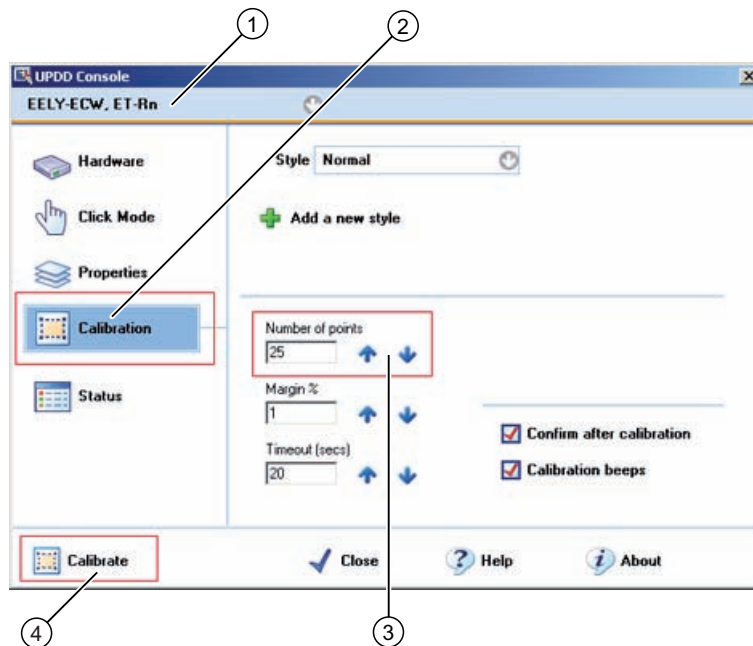


Figure 9-6 Point calibration

2. Select the screen (1) you wish to calibrate.
3. Click on "Calibration" (2).
4. Activate "25-point calibration" (3).
5. Click on "Calibrate" (4).
The calibration mask is output on the selected display.
6. Touch the blue arrow.
The input is confirmed by a tick, and the next arrow is displayed.
7. Confirm all input prompts (arrows, or crosses in the center) until the complete screen has been calibrated.

Note

If the touch screen does not react as expected when touched, repeat the calibration.
Only an active screen can be calibrated. An active screen is displayed in black, and a deactivated screen in red.

9.1.5.4 Touch functionality on several screens

Description

The touch functionality can be used simultaneously on two screens.

Note

The simultaneous touch functionality on two screens is possible with the Simatic Flat Panel and SIMATIC Panel PC.

Procedure

1. Connect the second screen using a USB cable and a DVI or VGA cable.
2. Right-click on the desktop. Select "Settings" in the "Properties" dialog box.

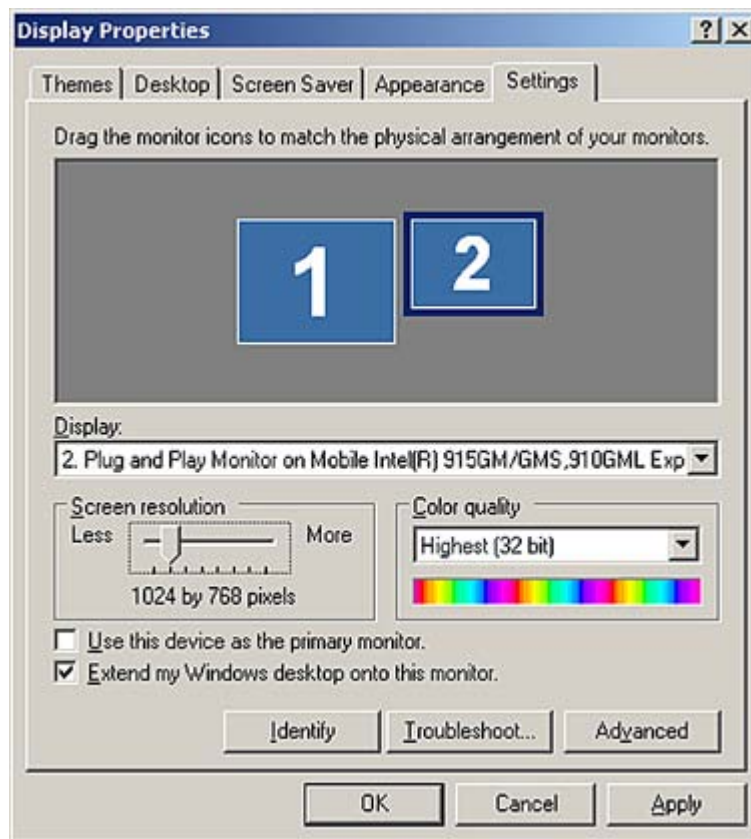


Figure 9-7 Characteristics

3. Click the second screen.
4. Set a tick for "Extend my windows desktop auto this monitor".
5. Confirm with "OK."

6. Select "Identify" in the same dialog box.
The number of the corresponding screen is displayed on the screens.
7. Confirm with "OK."
8. Select "Start > Programs > UPDD > Settings".
The "UPDD Console" dialog box opens.
9. Select the screen you wish to assign, e.g. EELY-ECW,ET-Rn.

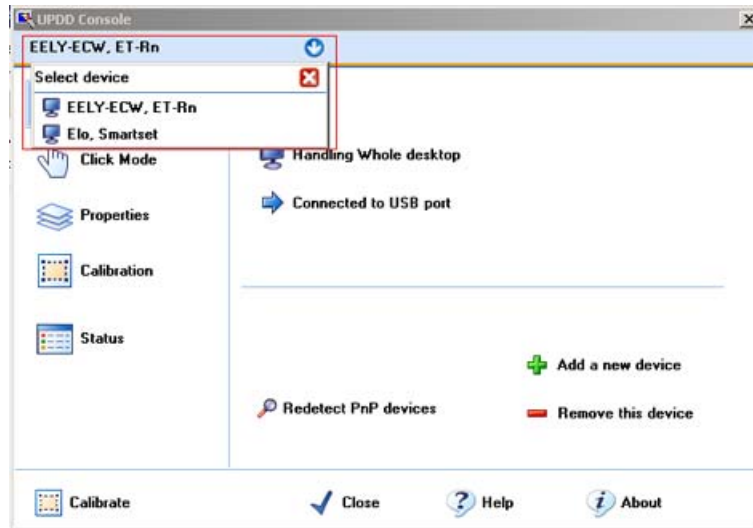


Figure 9-8 Select screen

10. Click "Hardware".

The "Desktop Area" dialog box is displayed.

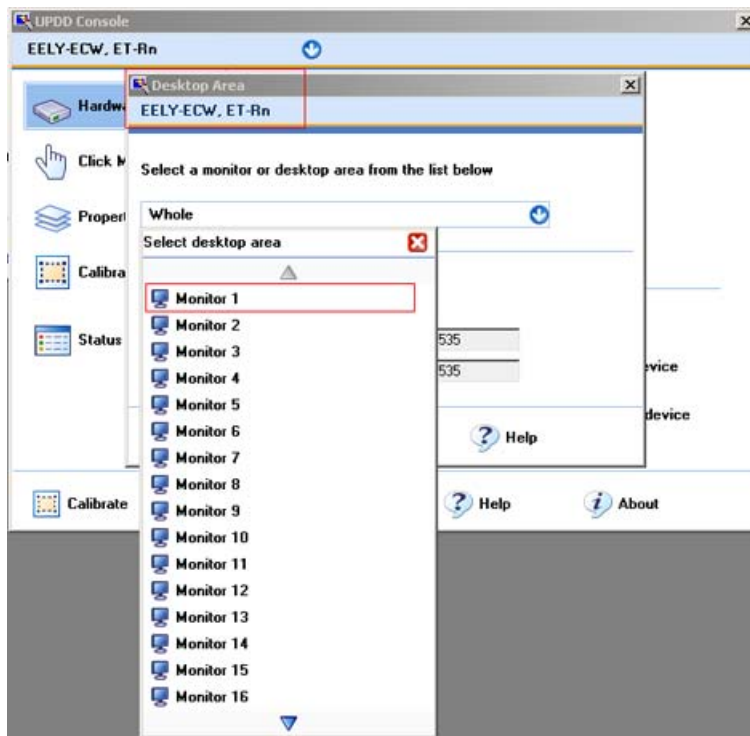


Figure 9-9 Select monitor

11. Change the default value "Whole" to "Monitor n".
The corresponding screen is assigned to the controller.
12. Confirm your entry with "OK".
13. Calibrate the screen. Observe the information in the Section "Calibrating the touch screen".

9.2 Additional applications

9.2.1 Controlling backlit display

9.2.1.1 Installation

Note**Software**

Use the application from the "Documentation & Drivers" CD supplied, or from the Internet. You can find the application under Industry Automation and Drive Technologies - Homepage (<http://www.siemens.com/automation/service&support>)

1. Start the file <FlatPanelSetup>.exe.
2. Follow the on-screen instructions.

9.2.1.2 Description

You can set the backlit display of your Flat Panels. You can increase or reduce the brightness value.

If you want to change the backlit display, choose between two applications:

- Command Shell
- Windows application

Note

The setting range is between 0 and 100 %.

0% corresponds to the smallest adjustable and visible brightness value of the Flat Panels.

100% corresponds to the largest adjustable and visible brightness value of the Flat Panels.

9.2.1.3 Command Shell

Procedure

1. Call the Command Shell with "Start > Run > cmd".
2. Confirm with "OK."

The Command Shell dialog box is displayed.

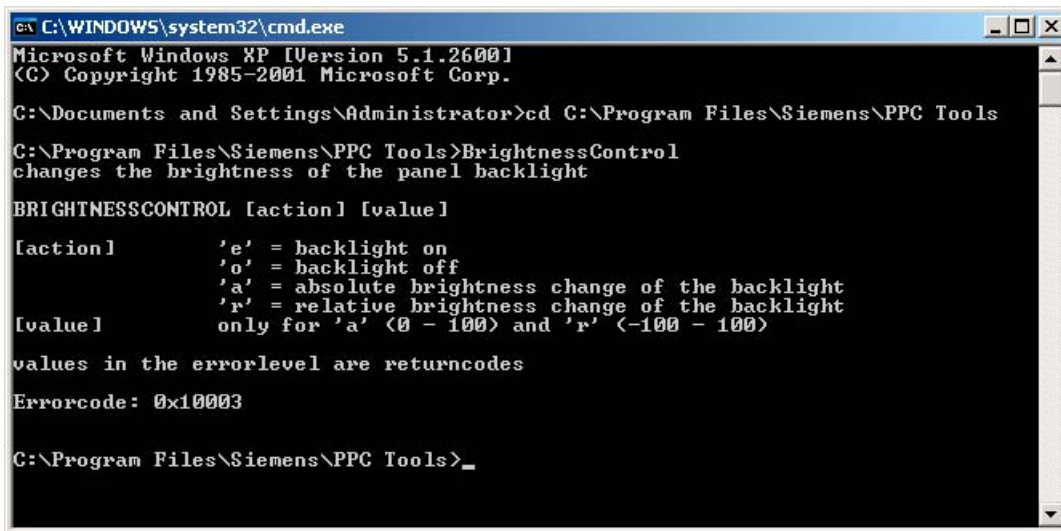


Figure 9-10 Command Shell

Call

#>SetBacklightFP[Parameter] [Value]

Inputs for the Command Shell

SetBacklight	Parameter	Action	Value (in %)
	e	Maximum	0
	o	Minimum	100
	a	Set to absolute value	0 - 100
	r	Change by relative value	Value between 0 and 100

Error codes

Description	Output on the screen
Successful	0
Driver error	0x10001
Invalid parameter	0x10003

9.2.1.4 Windows application

Procedure

1. Call the "SetBrightnessFP" function with "Start > Programs > FlatPanelTools".
The dialog box is displayed.

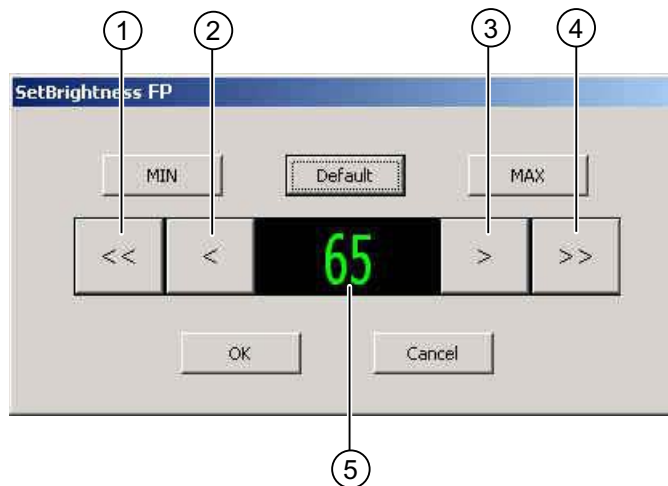


Figure 9-11 Changing the brightness value

2. Change the brightness value directly with buttons ① to ④.
 - ① Reduce brightness value: Increment 10%
 - ② Reduce brightness value: Increment 1%
 - ③ Increase brightness value: Increment 1%
 - ④ Increase brightness value: Increment 10%

The current brightness value ⑤ is displayed.

Note

The set value remains after a restart. It can only be changed in the "SetBrightnessFP" dialog box.

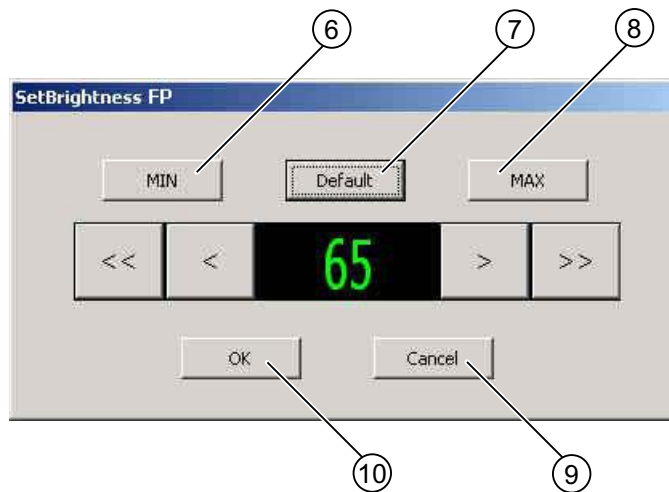


Figure 9-12 Confirming the brightness value

3. Set the minimum or maximum brightness value with the buttons ⑥ and ⑧.
4. Set the brightness value to 65 % with the button ⑦. This value corresponds to the delivery state.
5. Confirm the set values with "OK" ⑩ or complete the input with "Cancel" ⑨. If you click on "Cancel" the values are not saved.

Note

The backlit display cannot be switched off during operation.

9.2.2 Installing OSKGinaSetup

9.2.2.1 Description

The program installs a **Windows** service that enables you to log in using an onscreen keyboard.

The onscreen keyboard is adapted to the screen resolution at **Windows**-login.

9.2.2.2 Requirements

- The screen resolution is at least 800 x 600 pixels.
- The system startup engineer has administration rights.
- The operating system is **Windows 2000 SP 4**, **WinXp Pro SP 2** or **WinXPe**.
- There must be no previous version of **OSKGinaSetup** installed.

9.2.2.3 Possible error messages prior to installation

Previous version 2.xx

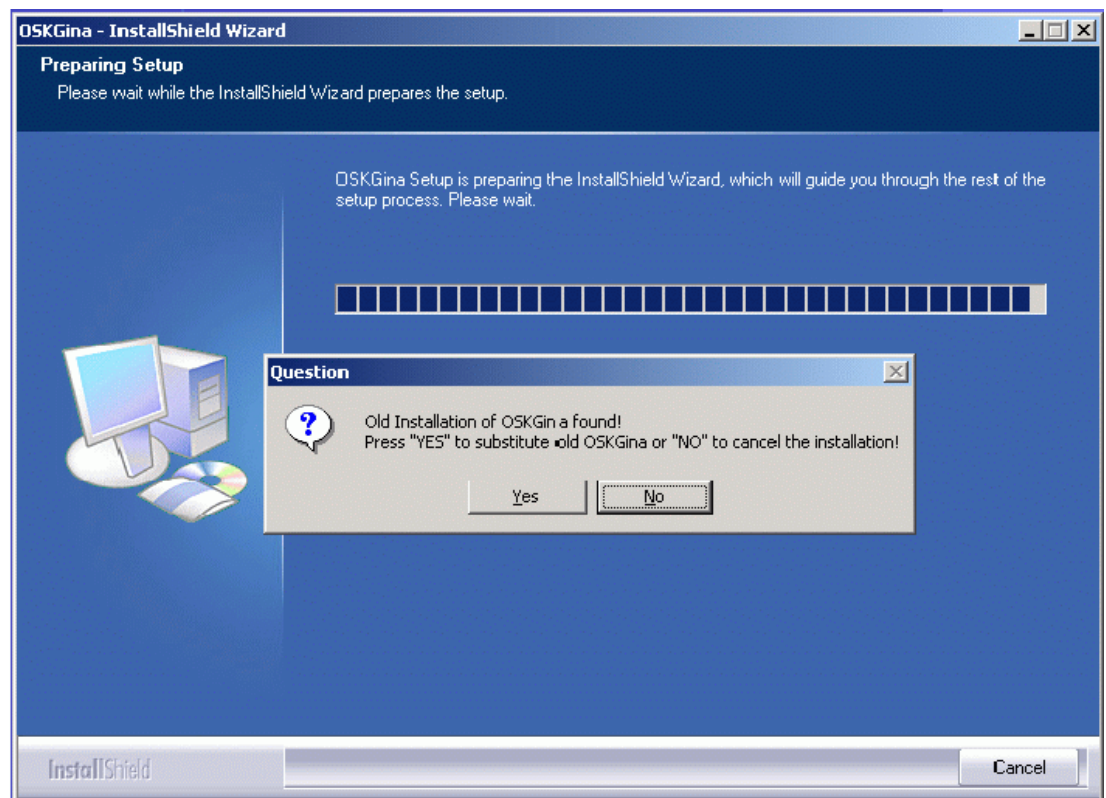
If a previous version 2.xx of **OSKGinaSetup** is installed on your PC, the following error message appears:



1. Uninstalling the **OSKGinaSetup** program.
2. Restart the computer.

Previous version 1.xx

If a previous version 1.xx of **OSKGinaSetup** is installed on your PC, the following error message appears:



1. Confirm with "Yes" to replace the previous version.
2. Now follow the instructions in the program.

Screen resolution

If the screen resolution is set to less than 800 x 600 pixels on your Flat Panel, the following error message appears:



9.2.2.4 Procedure

Note

Software

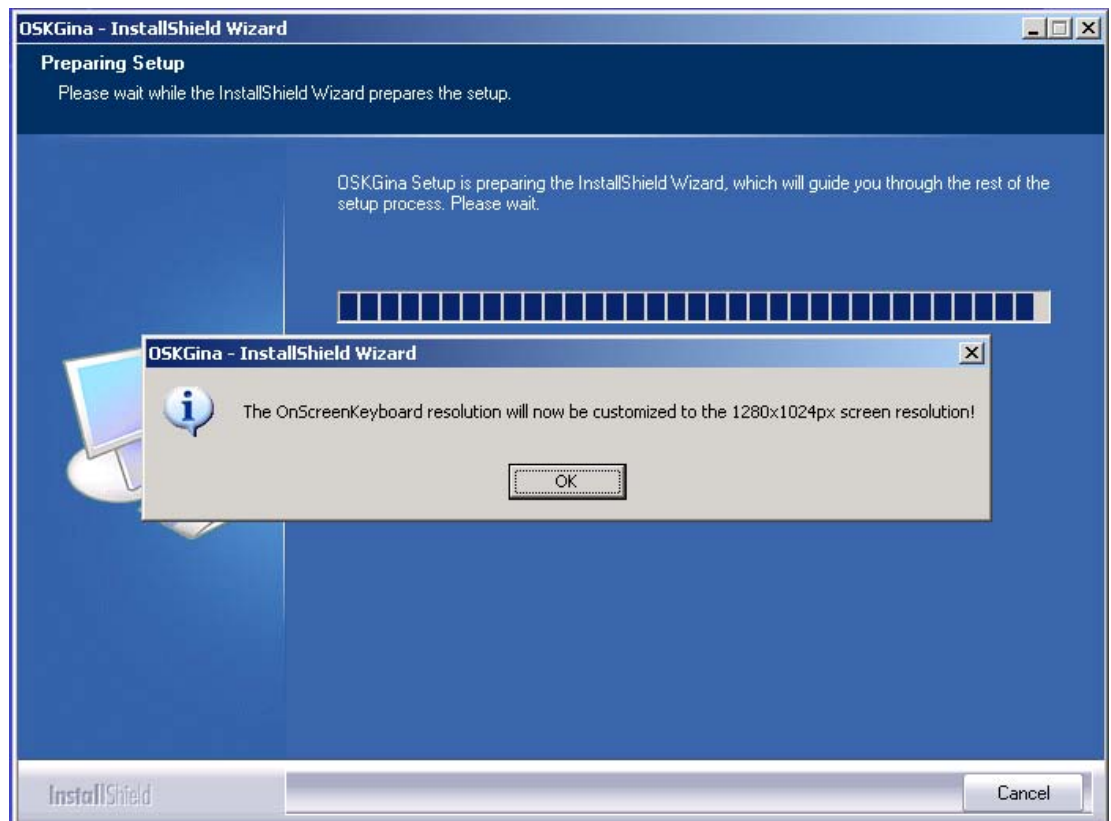
Use the application from the "Documentation & Drivers" CD supplied, or from the Internet. You can find the application under Industry Automation and Drive Technologies - Homepage (<http://www.siemens.com/automation/service&support>).

Hardware

If required, you can connect a USB keyboard and a USB mouse to the PC.

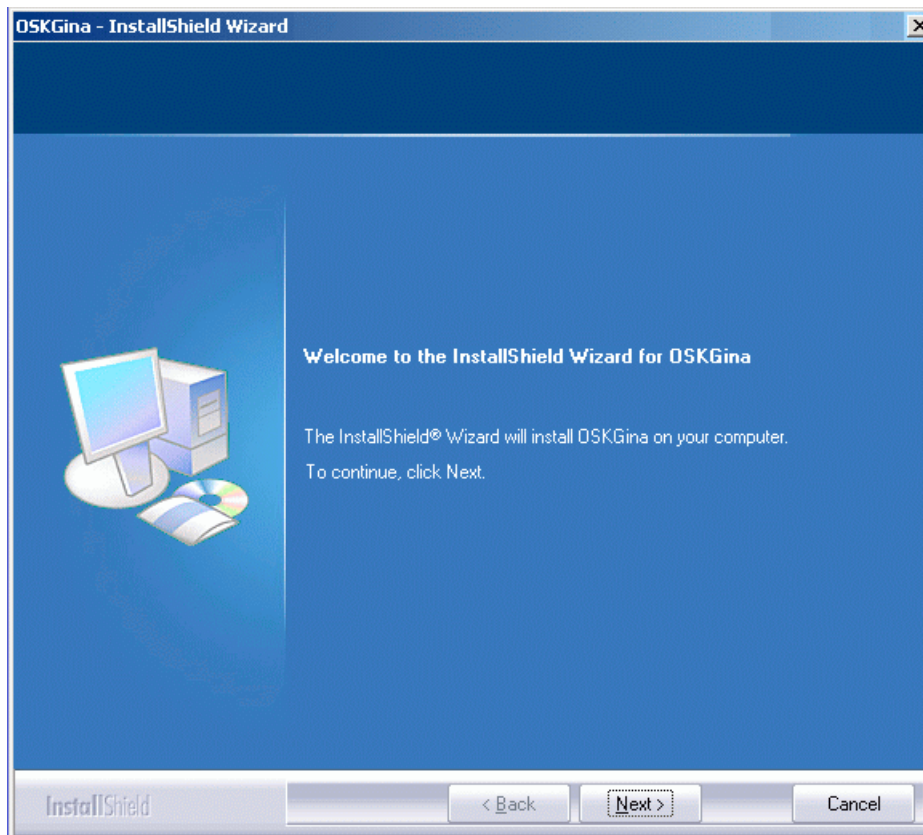
1. Start the file <OSKGina Setup>.exe.

The window "OSKGina-InstallShield Wizard" indicates the current screen resolution. The size of the onscreen keyboard is adapted to this screen resolution.



2. Confirm with "OK."

The following screen is shown:



3. Confirm with "Next."

The **OSKGinaSetup** program is installed. Follow the instructions displayed on the screen.

4. When the program has been successfully installed, restart the PC.

The onscreen keyboard is ready for use.

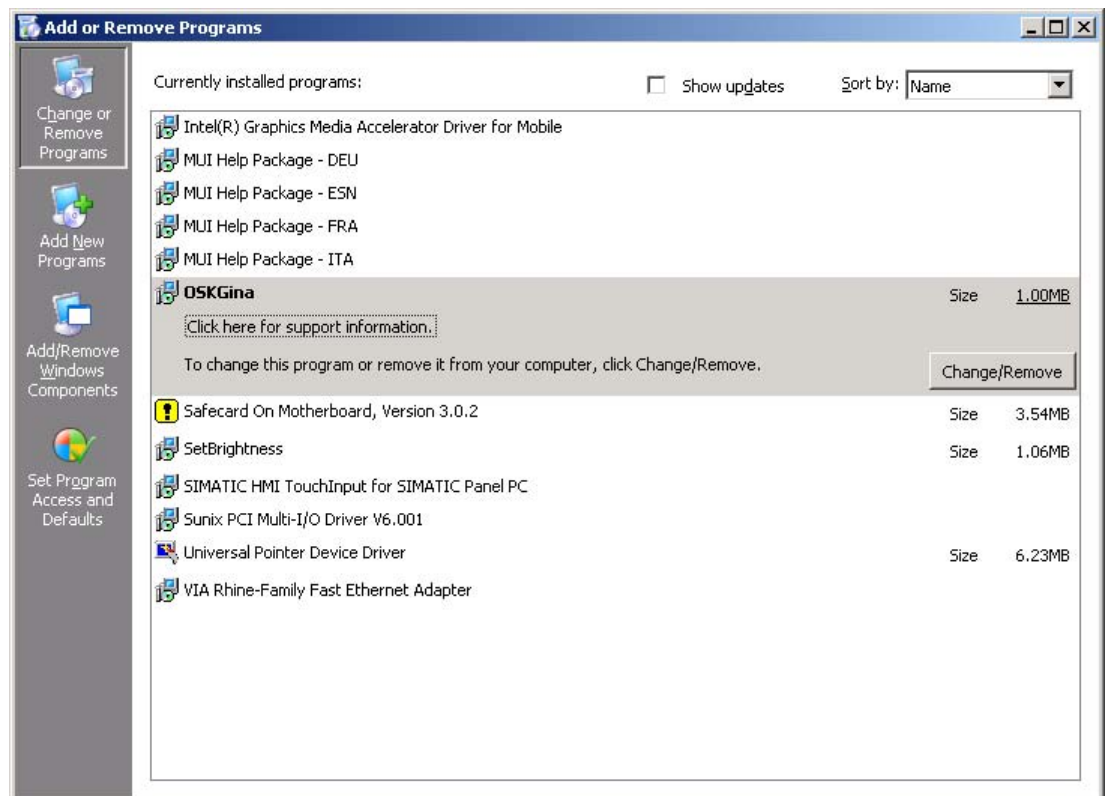
9.2.2.5 Display of the onscreen keyboard

If the size of the onscreen keyboard is not in accordance with the screen resolution, proceed as follows:

Procedure

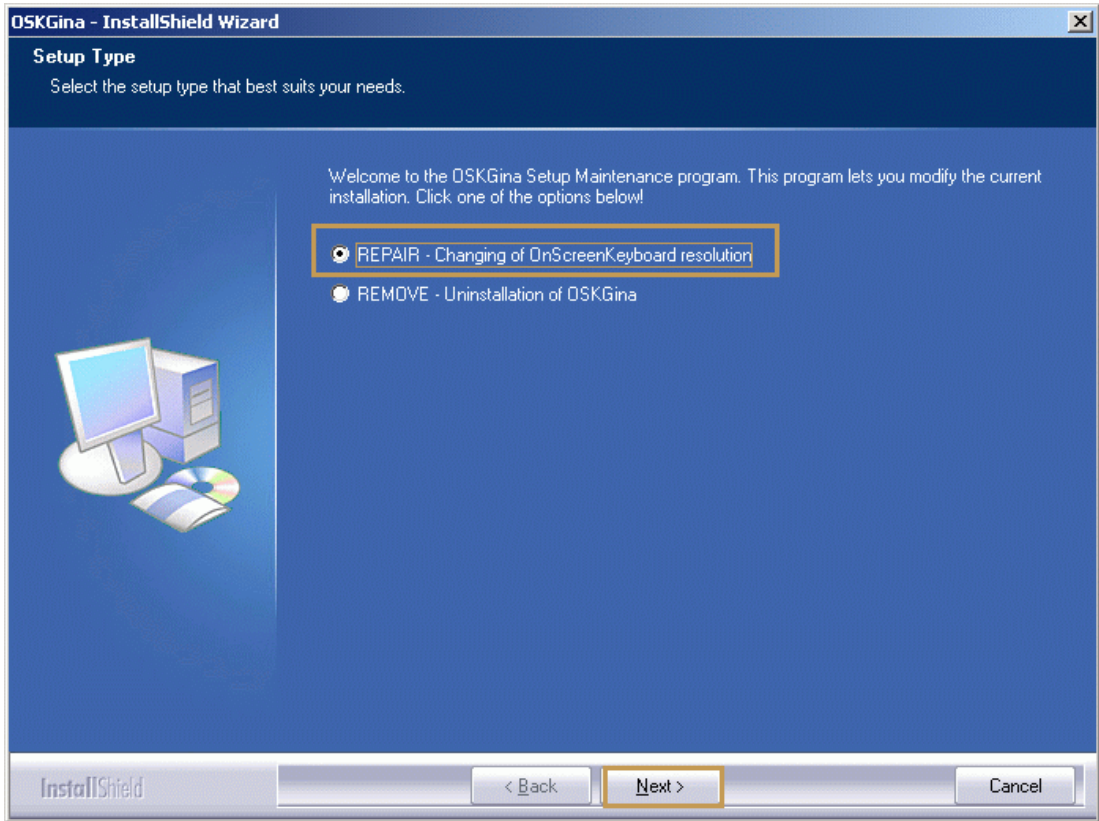
1. Select the menu command "Start > Settings > Control Panel > Add or Remove Programs".

The "Add or Remove Programs" dialog is opened.



2. Select the "OSKGina" program.
3. Confirm with "Change/Remove".

The "OSKGina - InstallShield Wizard" dialog is opened.
"REPAIR - Changing of OnScreenKeyboard Resolution" is selected.



4. Confirm with "Next."

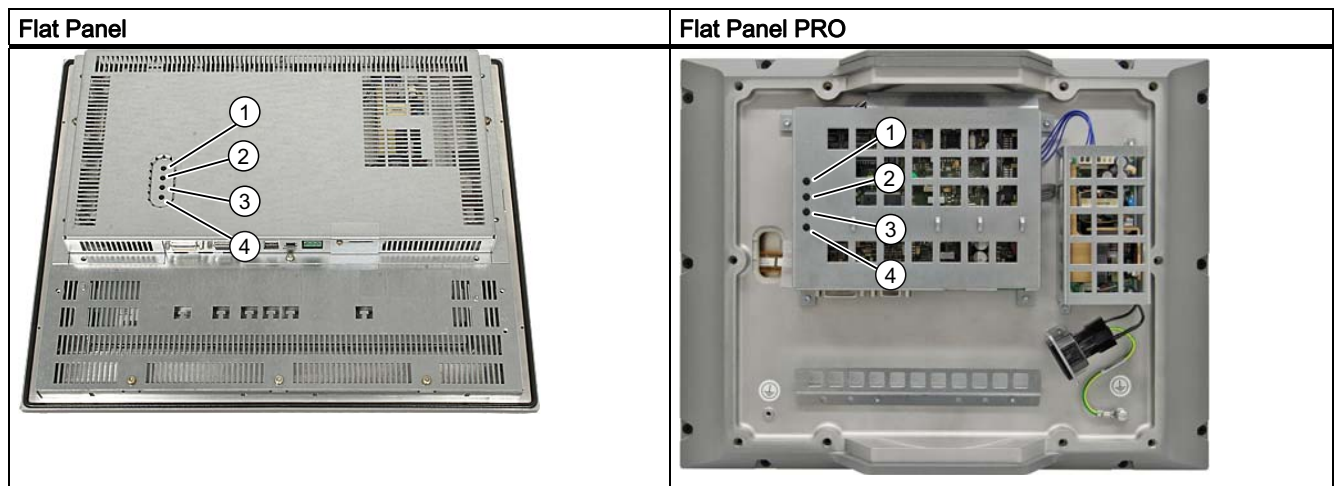
The size of the onscreen keyboard is adapted to the current screen resolution and the settings are adopted.
You don't have to restart the PC.

9.3 The OSD Menu

9.3.1 Overview

Introduction

You can configure the touch screen and monitor direct on the screen using the "On Screen Display" (OSD) menu. The OSD menu contains all the functions, such as brightness and contrast, whose values can be changed. You can navigate through the OSD menu and set the values using four push buttons on the back of the device.



Push buttons for OSD menu

The push buttons have the following functions:

Item	Button	Function in OSD Menu	Function in Quick OSD Menu
①	<+>	Increase value Cursor right	Start Quick OSD menu and start automatic picture adjustment
②	<->	Reduce value Cursor left	—
③	Menu	Open OSD menu	—
④	SET	Go to next menu item	Start the Quick OSD menu and set the contrast or brightness

Opening and Navigating through the Menu

You can open the menu with the <Menu> button. When the menu opens, the main menu is shown on the left and the submenus with their respective functions for each menu item are shown on the right. You can navigate through the menu items with the <SET> button.

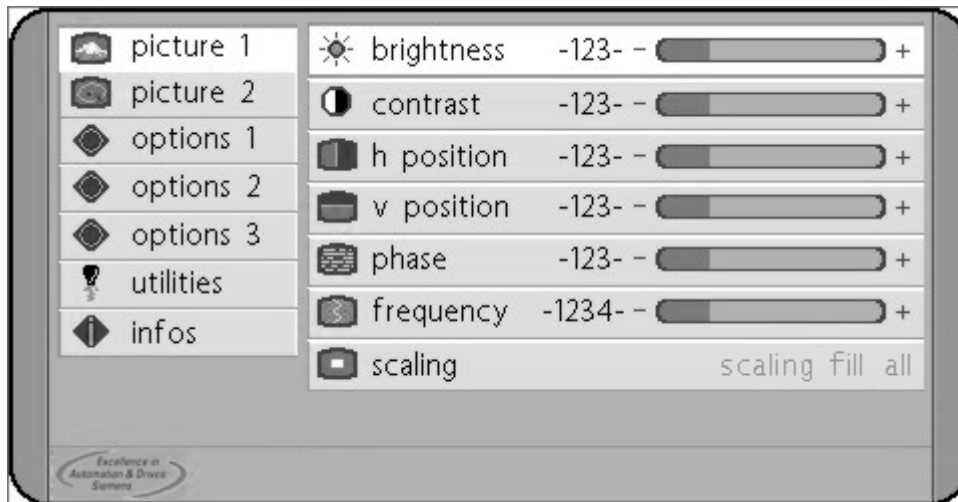


Figure 9-13 OSD menu "Screen 1"

9.3.2 OSD Menu: Setting Functions

Introduction

You can set all functions of the device using the OSD menu.

NOTICE

Wait 5 seconds after each change to the OSD menu until the changes have been saved. If you do not wait the time allotted, the changes will not be saved.

Procedure

1. Press the "Menu" button. The OSD menu appears.
2. Move down to the next desired menu item using the <Set> button. The corresponding submenu is display on the right.
3. Move right to the submenu using <+> button.
4. Move to the desired function using the <Set> button.
5. Increase or reduce the value with the <+> or <-> buttons.
6. Press the <Menu> button again to exit the OSD menu.

9.3.3 Quick OSD Menu: Setting Brightness, Contrast and Picture Adjustment

Introduction

The most important functions, such as brightness, contrast and picture adjustment can be made quickly available.

Set contrast

Use the Quick OSD menu to set the display of the light picture elements.

1. Press the "SET" button. The Quick OSD menu appears.



Figure 9-14 Quick OSD menu, Contrast

2. Increase or reduce the contrast from 0 to 100 with the <+> or <-> buttons.

Set brightness

Use the Quick OSD menu to set the display of the dark picture elements.

1. Press the "SET" button twice. The Quick OSD menu appears.

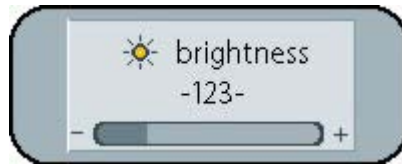


Figure 9-15 Quick OSD menu, Brightness

2. Increase or reduce the brightness from 0 to 100 with the <+> or <-> buttons.

Performing a Picture Adjustment

Use the Quick OSD menu to perform an automatic picture adjustment to set the frequency, phase and picture alignment:

1. Press the "+" button. The Quick OSD menu appears.



Figure 9-16 Quick OSD menu, performing a picture adjustment

2. Press the <+> button to start the picture adjustment.

The picture adjustment is performed.

NOTICE
The Quick OSD menu disappears if no button is pressed within 5 seconds. Then start the Quick OSD again if needed.

9.3.4 Calling the operating hours counter

Call the runtime meter with the following key combination:

<-> <Set> <Set> <+> <->

9.3.5 OSD Menu Functions

The following table lists all of the functions and their settings.

Main menu	Function	Settings	Description
Fig. 1:	Brightness	0 to 100 with the <+> and <-> buttons	Set brightness: Display of light picture elements
	Contrast	0 to 100 with the <+> and <-> buttons	Set contrast: Display of dark picture elements
	H position	0 to 100 with the <+> and <-> buttons	Shift picture in horizontal direction.
	V position	0 to 100 with the <+> and <-> buttons	Shift picture in vertical direction.
	Phase	0 to 31 with the <+> and <-> buttons	Set phase of the input signal.
	Frequency	950 to 1050 depending on picture with the <+> and <-> buttons	Set frequency of the input signal.
	Scaling	Off, default setting On with the <+> button	The default setting is fill all: If the resolution set is too low or too high, the image is correspondingly interpolated to fit the entire display size. Scaling the image to fill aspect ratio: When a lower resolution than recommended is set for the device, the image is not interpolated, rather it is displayed in original size in the center.
Fig. 2:	Sharpness	Five sharpness levels, filter: 1 = sharp, 2, 3, 4, 5 = smooth	Set picture sharpness.
	Gamma	Linear CRT: Correct display	Correct gamma curve: Multiply every color value used with a factor. First pass the corrected value to the display.
	Color temperature	5000, 6500, 9300, VAR If you activate "VAR", a scroll bar appears for each RGB color, red, yellow and blue. Use the scroll bar to change the color tone of the RGB colors by a specific factor. For example, red from 0 to 100%, 50% corresponds to a factor of 1.	Set color temperature or color tone: Three color temperatures and one adjustable color tone are available for each RGB color.
Options 1	OSD	Selection of nine pre-defined OSD positions	Set the position of the menu on the screen.
	OSD H position	0 to 100 with the <+> and <-> buttons	Shift OSD menu in horizontal direction
	OSD V position	0 to 100 with the <+> and <-> buttons	Shift OSD menu in vertical direction
	OSD duration	5 to 60 seconds in increments of 5 seconds.	Set hide time: Time after which the OSD menu is automatically hidden if no buttons are pressed.
	OSD background	Opaque Transparent	Select background color of the OSD menu: Opaque or transparent background.

9.3 The OSD Menu

Main menu	Function	Settings	Description
	Backlight	0 to 100 with the <+> and <-> buttons	Set brightness of the backlighting: This allows the brightness of the entire picture to be adjusted to the ambient lighting.
Options 2	DPMS	Off On	Activation of Display Power Management System (DPMS) If DPMS is activated, the monitor switches off as soon as synchronization signals are no longer detected. The screen then goes black.
	Signal search	On, default setting Off	Set video source automatically: When the graphics card receives no signal, the two DVI/VGA video inputs can be alternately scanned for a signal. No signal scanning is performed with the OFF setting.
	Deletion color	Red, Green, Blue, Black	Select the background color of the screen: The screen shows the background colors when no input signal is detected.
	Info signal source	Off On	Signal source display on or off If there is a change in one of the following settings, the signal source display appears briefly on the screen with the current signal source information: <ul style="list-style-type: none"> • Signal source (e.g. RGB analog) • Mode: Number of the table entry for the internal timing table, resolution of the video source • H frequency, V frequency • Resolution of the video source of the computer unit, for example, to which the device is to be connected. Example of a signal source display on a 15" variant: Analog RGB1 Mode: 115, 1024 x 768 48.355 kHz / 60 Hz
Options 3	Noise suppression	Off, default setting On	ON: Suppress interference in the synchronization signals. This prevents repeated picture adjustment and therefore prevents the screen from showing the background color when transient interference occurs. The interference suppression can be deleted in the "Options 1" main menu
	Lock RGB signal 1	Off, default setting On with the <+> button	ON: The currently displayed video timing is saved and now operates with a higher tolerance in the H frequency and V frequency. The settings for this timing are always used. Even when the interference variations occur in the H frequency and V frequency. This prevent incorrect timing detection when a disturbed video is detected. Incorrect timing detection can be recognized, for example, by a misaligned picture or the wrong resolution.
	Unlock RGB signal 1	Off, default setting with the <+> button	Video timing 1 is released again.

Main menu	Function	Settings	Description
	Lock RGB signal 2	Off, default setting On with the <+> button	ON: The currently displayed video timing is saved and now operates with a higher tolerance in the H frequency and V frequency. The settings for this timing are always used. Even when the interference variations occur in the H frequency and V frequency. This prevent incorrect timing detection when a disturbed video is detected. Incorrect timing detection can be recognized, for example, by a misaligned picture or the wrong resolution.
	Unlock RGB signal 2	Off, default setting with the <+> button	Video timing 2 is released again.
Utilities	Language	English, German	Select language for operation of the OSD menu.
	Factory setting	Press the <+> button.	Reset all functions to factory settings.
	Installation RGB mode	Press the <+> button: A submenu with 9 functions is displayed.	Adjust video signals that have not been saved as timing parameters in the device: If, for example, the resolution shown on the display does not correspond to the resolution of the video source such as the computer unit.
Installation RGB Mode, Submenu			
	H and V frequencies	—	Display H/V frequency of the connected video source.
	H/V total, H/V start	—	Timing data of the connected video source used.
	Options	Variable RGB mode inactive Mode1 Mode2 Mode3	Variable RGB mode inactive: Use internal timing table only. Mode1: Use configured parameters with completely automatic adjustment, default. Mode2: Use the configured parameters with completely automatic adjustment without automatic "position" adjustment. Mode3: Use the configured parameters with completely automatic adjustment without automatic frequency adjustment.
	H visible	100 to 2000 with the <+> and <-> buttons	Set horizontal screen resolution.
	V visible	100 to 2000 with the <+> and <-> buttons	Set vertical screen resolution.
	H total	100 to 2500 with the <+> and <-> buttons	Adjustment of total number of pixels in a line.
	H start	0 to 750 with the <+> and <-> buttons	Set number of pixels from H-Sync start up to beginning of picture.
	V start	0 to 500 with the <+> and <-> buttons	Set number of lines from V-Sync start up to beginning of picture.
	Installing	Press the <+> button.	Apply configured timing parameters.
	Test pattern	Press the <+> button.	Display test picture.
Info	Firmware, resolution, timing	—	Display firmware version and information about the connected video source.

Maintenance

10.1 Repair

 WARNING**Risk of bodily injury or equipment damage due to unauthorized opening or repairing**

Bodily injury or considerable equipment damage may result from the unauthorized opening or repairing of the device. Do not carry out any repairs on your own. Repairs may only be carried out by authorized qualified personnel at the manufacturer's site.

For repairs, send the device to the Return Center in Fürth. Repairs may only be carried out at the Return Center in Fürth.

Depending on the work necessary to repair the device, the Center may decide to give you a credit note. In this case, it is your responsibility to order a new device.

The address is:

Siemens AG
Industry Sector
Returns Center
Siemensstr. 2
90766 Fürth Germany

10.2 Servicing

Scope of maintenance

When working in areas where there is dust that may be hazardous to functionality, the device must be operated in a control cabinet with a heat exchanger or with suitable supply air.

Note

The dust deposits must be removed at appropriate time intervals.

Maximum dust content in the air circulating in the cabinet	
Suspended component	0.2 mg/m ³
Deposits	1.5 mg/m ³ /h

Cleaning agents

Use dish soap or foaming screen cleaner only as cleaning agents.

CAUTION
Do not clean the device with aggressive solvents or scrubbing agents or with pressurized air or steam cleaner.

Procedure

1. Switch off the device. This prevents the accidental triggering of functions when the screen is touched.
2. Dampen the cleaning cloth.
3. Spray the cleaning agent on the cloth and not directly on the device.
4. Clean the device with the cleaning cloth.

Technical specifications

Supply voltage					
	12"	15"	17"	19"	15" PRO
AC	Yes				
• Rated voltage	90...264 V				
DC	Yes				
• Rated voltage	19.2 ... 28.8 V				
Maximum power consumption	35 W	40 W	55 W	55 W	40 W

General features					
	12"	15"	17"	19"	15" PRO
External dimensions in mm					
• Width	400	483	483	483	400
• Height	310	310	400	400	310
• Depth	61.5	65.5	67.5	67.5	91
Installation cutout/device depth in mm					
• Width	368 ⁺¹	450 ⁺¹	450 ⁺¹	450 ⁺¹	-
• Height	290 ⁺¹	290 ⁺¹	380 ⁺¹	380 ⁺¹	-
• Depth	51	55	57	57	-
Weight in kg	5.0	6.4	9.6	10.2	7 kg
Installation	Front installation	Rack installation or front installation			On the support arm/ Stand
Special features	<ul style="list-style-type: none"> • Anti-reflex and hardened mineral glass screen • Dimmable backlighting • The PC can be up to 30 m away from the Flat Panel (option) 				
Operated as touch screen	analog-resistive, optional				resistive

Degree of protection					
	12"	15"	17"	19"	15" PRO
Front					
• Enclosure type 4x/type 12	Yes				
• IP 65	Yes				
Rear-mounted					
• IP 20	Yes				Yes
• IP 65	No				Yes

Display					
	12"	15"	17"	19"	15" PRO
Type	TFT				
Representation	Complete Screen				
Landscape mode	No	Yes	No	No	No
Onscreen Display (OSD) Setup	Yes				
Screen diagonals	12,1"	15"	17"	19"	15"
Visible area (horizontal x vertical) in mm	246 x 184.5	304,1 x 228,1	337,92 x 270,34	376,32 x 301,06	304.1 x 228.1
Viewing angle (horizontal x vertical)	140° x 120°	160° x 160°	160° x 160°	170° x 170°	160° x 160°
Pixel size in mm	0,3075 x 0,3075	0,297 x 0,297	0,264 x 0,264	0,294 x 0,294	0.297 x 0.297
Optimum resolution in pixel	800 x 600	1024 x 768	1280 x 1024	1280 x 1024	1024 x 768
Supported resolutions (scaled)	VGA - XGA	VGA - SXGA	VGA - UXGA	VGA - UXGA	VGA - SXGA
Refresh Rate	60 to 75 Hz				
Line frequency (typical)	37.9 kHz	48,3 kHz	64 kHz	64 kHz	48.3 kHz
Brightness in cd/m ² (nits)	> 300	> 250	> 300	> 300	> 250
Contrast (typical)	> 450 : 1	> 350 : 1	> 650 : 1	> 650 : 1	> 350 : 1
Number of colors	> 256k	> 16 million	> 16 million	> 16 million	> 16 million
MTBF background lighting (at 20° ambient temperature)	50000 h				

Certifications and standards					
	12"	15"	17"	19"	15" PRO
EMC					
• CE EN 55011 class A			Yes		
• EN 61000-3-2			Yes		
• EN 61000-3-3			Yes		
• EN 61000-6-2			Yes		
• FCC Part 15			Yes		
UL					
• cULus 508			Yes		
Marine			Yes		No
Product safety					
• CE EN 60950-1			Yes		


Ambient conditions					
	12"	15"	17"	19"	15" PRO
During operation					
• Vibration load	10 to 58 Hz: 0.0165 mm 58 to 200 Hz: 1 g 20 Sweeps			10 ...58 Hz 0.0375 mm 58 ... 200 Hz: 1 g on the support arm, 0.5 g with basic adapter; 10 Sweeps per axis	
• Shock load	5 g, 30 ms, 3 shocks per direction				
• Ambient temperature	Max. 50° for 12" and 15"				
• Relative humidity limit values	5 to 90% at max. 40 °C				
Transport and storage (packed)					
• Vibration load	5 to 9 Hz: 3,5 mm 9 to 500 Hz: 1 g 20 Sweeps				
• Shock load	250 m/s ² , 6 mm, 1000 shocks				
• Ambient temperature	-20 °C to 60 °C				
• Relative humidity limit values	5 to 90% at max. 40 °C				
Temperature change	Maximum 10 K/h				
Condensation	Not allowed				
Air inlet	No corrosive gases				

Interfaces					
	12"	15"	17"	19"	15" PRO
Video port					
• VGA	Yes				
• DVI-D	Yes				
Interface for touch screen	USB type B				
Other interfaces	USB type A (2x), option				
Transmission rate USB ≤ 5 m	High-speed				
Transmission rate USB ≥ 5 m	Full-speed				

EMC		
	Standard	
EMC requirements	EN 61000-6-4 EN 61000-6-2	Area of application: The device is designed for industrial use.
Radio frequency interference	EN 55011	Class A, Group 1
<ul style="list-style-type: none"> • Immunity level against very steep impulses: Bursts • Interference immunity on power lines • Interference immunity on data and signal lines <30 m • Immunity in data/signal lines >30 m process data lines 	EN 61000-4-4	24 DC V; 2.0 kV, interference criterion B 2.0 kV, interference criterion B 2.0 kV, interference criterion B
Immunity to surges: Surge	EN 61000-4-5	On 24 V DC: 0.5 kV symmetric, asymmetric 1 kV symmetric 2 kV asymmetric
Immunity to discharge of static electricity ESD	EN 61000-4-2	±8 kV with air discharge 4 kV on contact, direct/indirect Interference criterion B
Interference immunity against radiated, radio-frequency, electromagnetic fields	EN 61000-4-3	80-1000 MHz: 10 V/m Modulation: 80 % AM with 1 kHz, interference criterion A
HF radiation in cables and cable shields	EN 61000-4-6	On 24 V DC: 10 V On signal lines and data lines 150 kHz to 80 MHz: 10 V Modulation: 80 % AM with 1 kHz, interference criterion A
Interference immunity against magnetic fields	EN 61000-4-8	50/60 Hz, 30 A/m effective value

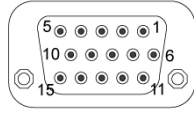
11.1 Ports

11.1.1 DVI interface

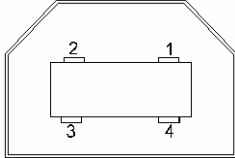
DVI Port		
		
PinNo.	Abbreviation	Signal
1	TX2N	TDMS data 2-
2	TX2P	TDMS data 2+
3	GND	TMDS data shield 2, ground
4	NC	Not assigned
5	NC	Not assigned
6	DDC CLK	DDC clock
7	DDC CLK	DDC data
8	VSYNC	Analog V-synch signal
9	TX1N	TDMS data 1-
10	TX1P	TDMS data 1+
11	GND	TMDS data shield 1, ground
12	NC	Not assigned
13	NC	Not assigned
14	+5 V	+5 V power
15	GND	Chassis ground
16	MONDET	Hotplug detect
17	TX0N	TDMS data 0-
18	TX0P	TDMS data 0+
19	GND	TMDS data shield 0, ground
20	NC	Not assigned
21	NC	Not assigned
22	GND	TMDS clock shield, ground
23	TXCP	TDMS clock +
24	TXCN	TDMS clock -

11.1.2 VGA interface

The VGA port is a standard 15-pin HD D-SUB socket.

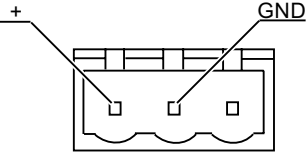
VGA Port	
	
PinNo.	Signal
1	Video input red
2	Video input green
3	Video input blue
4	Chassis ground
5	Chassis ground
6	Ground red
7	Ground green
8	Ground blue
9	Not assigned
10	Chassis ground
11	Not assigned
12	DDC data / SDA
13	H-sync
14	V-sync
15	DDC clock / SCL

11.1.3 USB Port


USB port		
		
Pin No.	Short name	Signal
1	VCC	+ 5 V (fused)
2	- Data	Data channel
3	+ Data	Data channel
4	GND	Ground

This is a type B socket.

11.1.4 24 V DC Power Supply

24 V DC power supply	
	
Pinno.	Meaning
On left	+ 24 V
Center	GND
Clockwise	n.c.

11.1.5 USB hub

USB port		
		
Pin No.	Short name	Signal
1	VCC	+ 5 V (fused)
2	- Data	Data channel
3	+ Data	Data channel
4	GND	Ground

Dimension drawing

12.1 Flat Panel dimensions

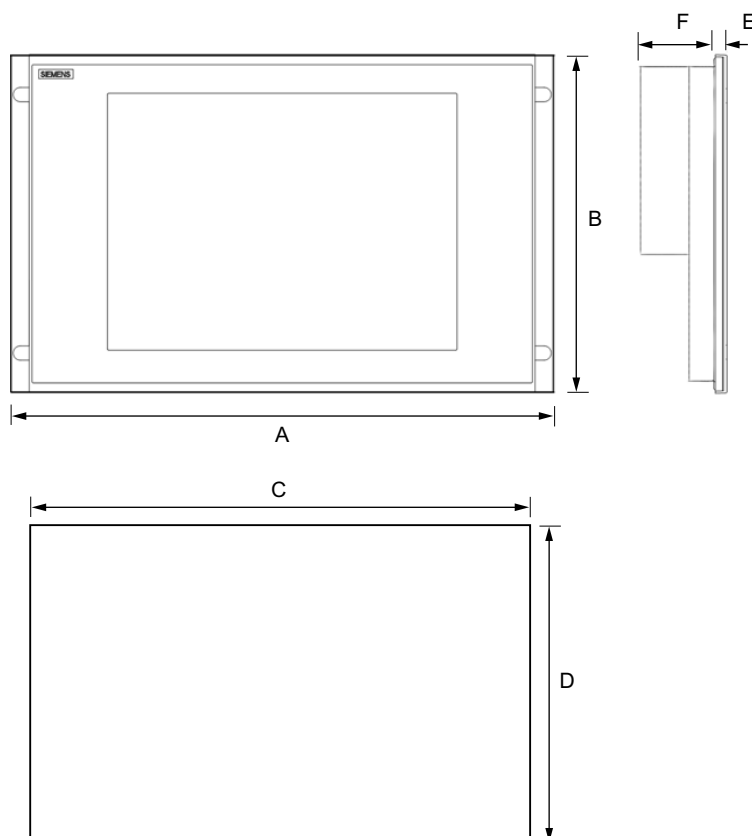


Figure 12-1 Dimensions

Dimensions in mm	Front dimensions			Mounting cut-out		
	A	B	E	D ⁺¹	C ⁺¹	F
Models						
12" TFT	400	310	10,5	290	368	51
15" TFT	483	310	10,5	290	450	55
17" TFT	483	400	10,5	380	450	57
19" TFT	483	400	10,5	380	450	57

12.2 Dimensions of the Flat Panel PRO

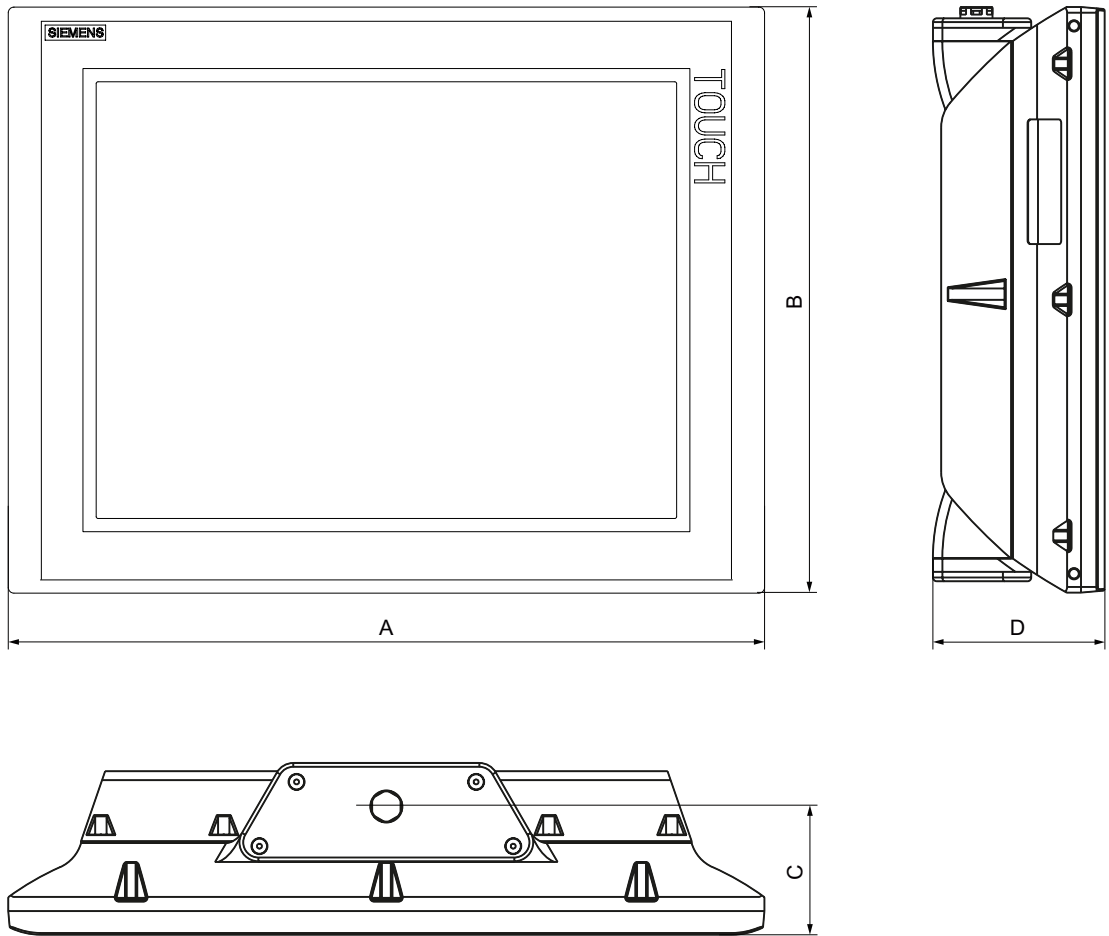
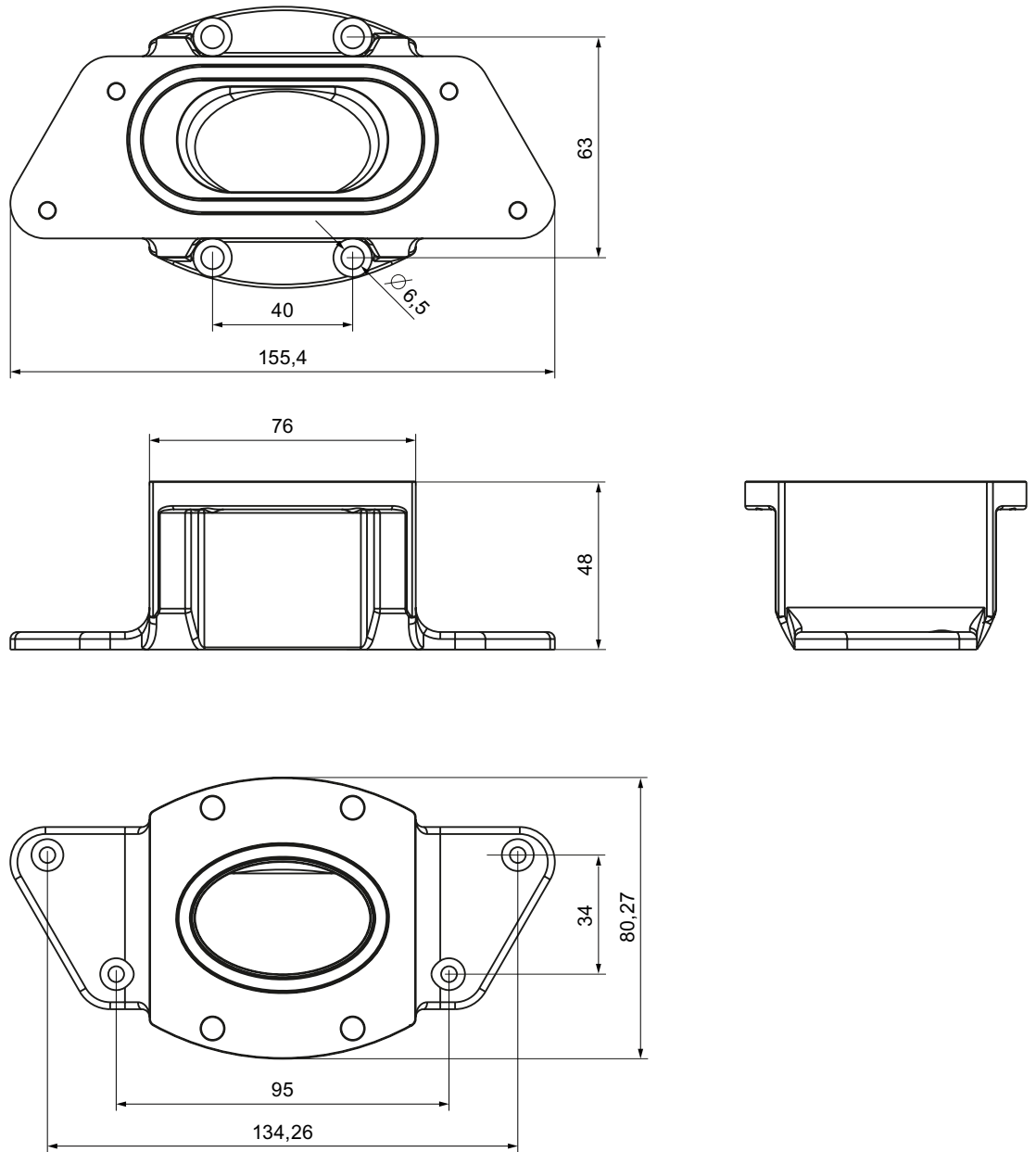


Figure 12-2 Dimensions of Flat Panel PRO

Dimensions				
Dimensions in mm	A	B	C	D
15" TFT	400	310	67.85	90.85

12.3 Dimensions of the basic adapter

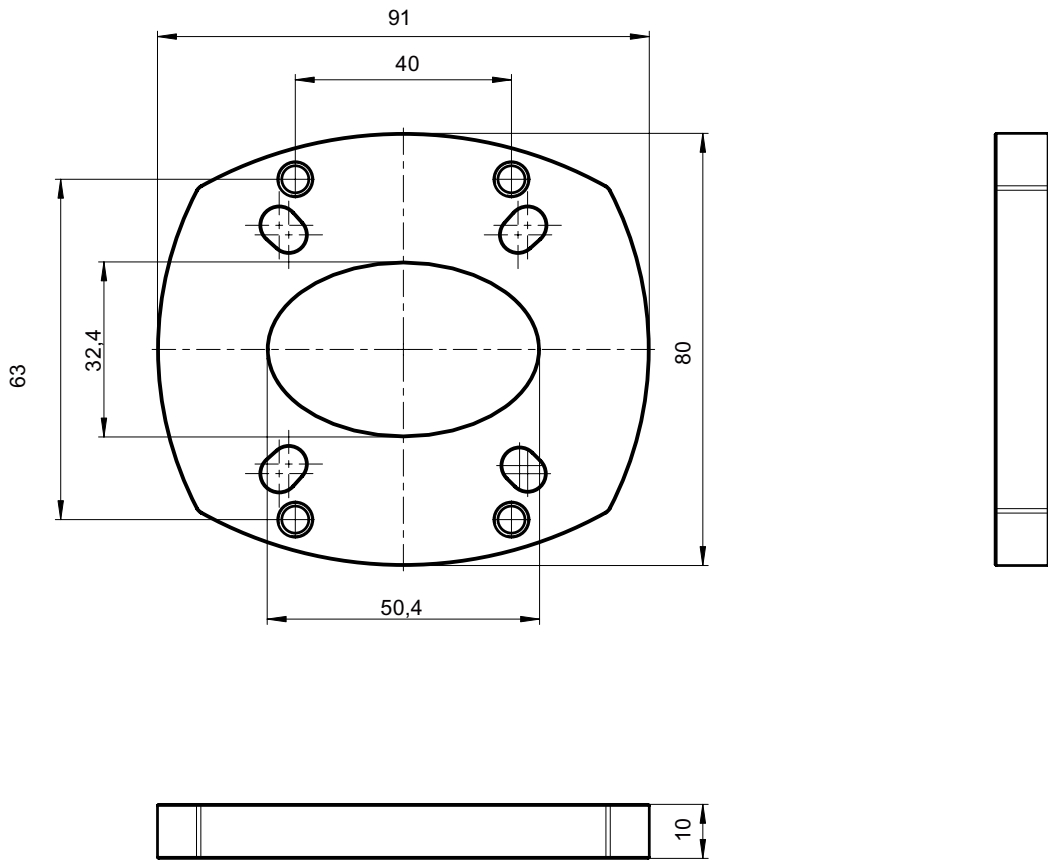
Dimensions of the basic adapter for Flat Panel PRO



All dimensions in mm

Figure 12-3 Dimensions of the basic adapter for Flat Panel PRO

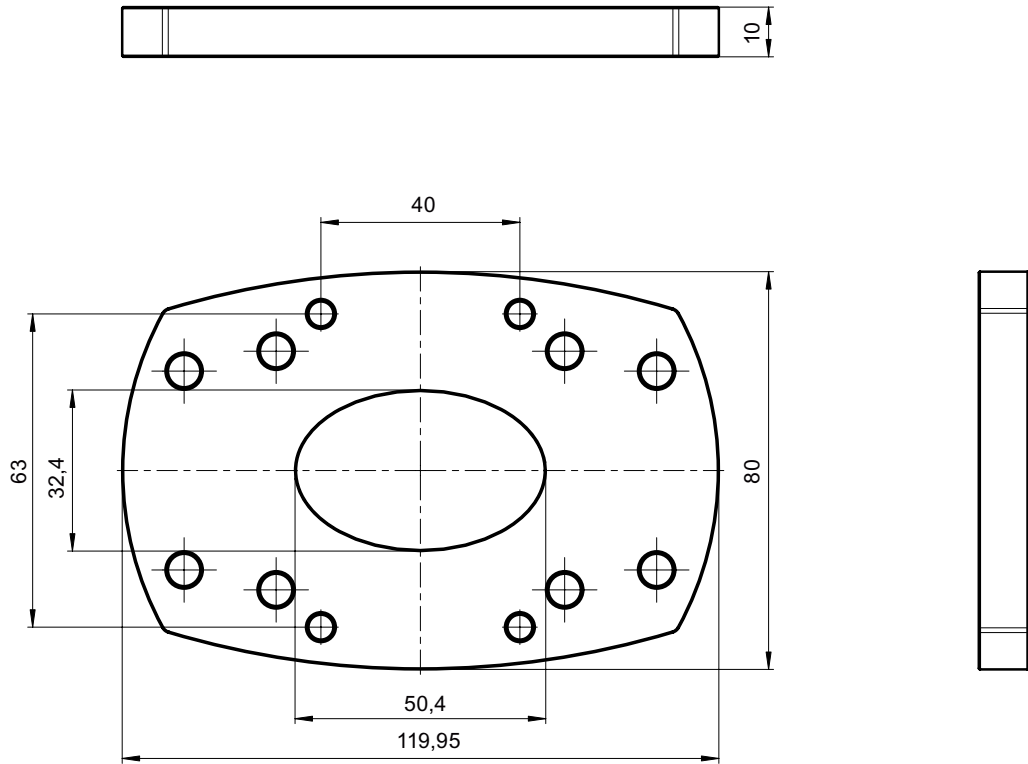
Dimensions of adapter set PLUS



All dimensions in mm

Figure 12-4 Dimensions of adapter set PLUS: 6AV7674-0KB00-0AA0

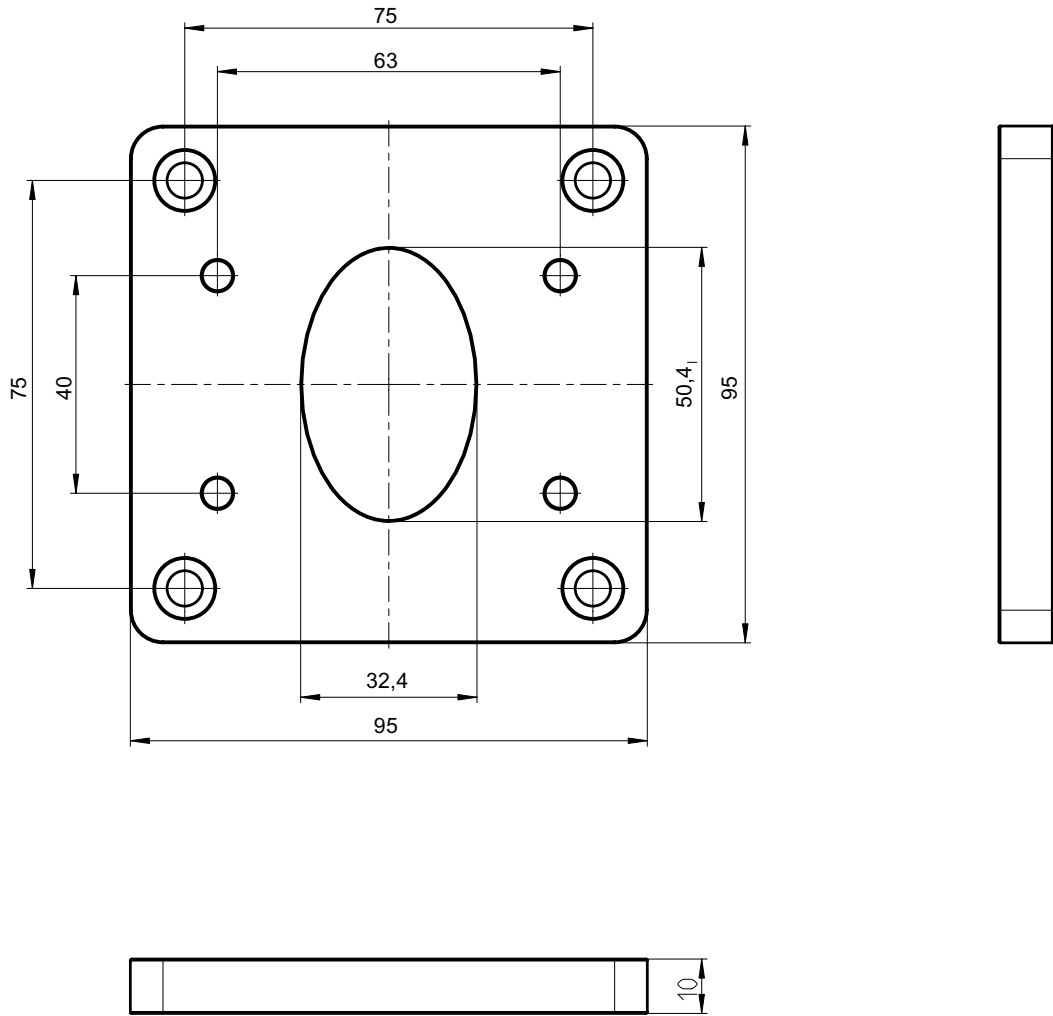
Dimensions of adapter set CP-L



All dimensions in mm

Figure 12-5 Dimensions of adapter set CP-L: 6AV7674-0KC00-0AA0

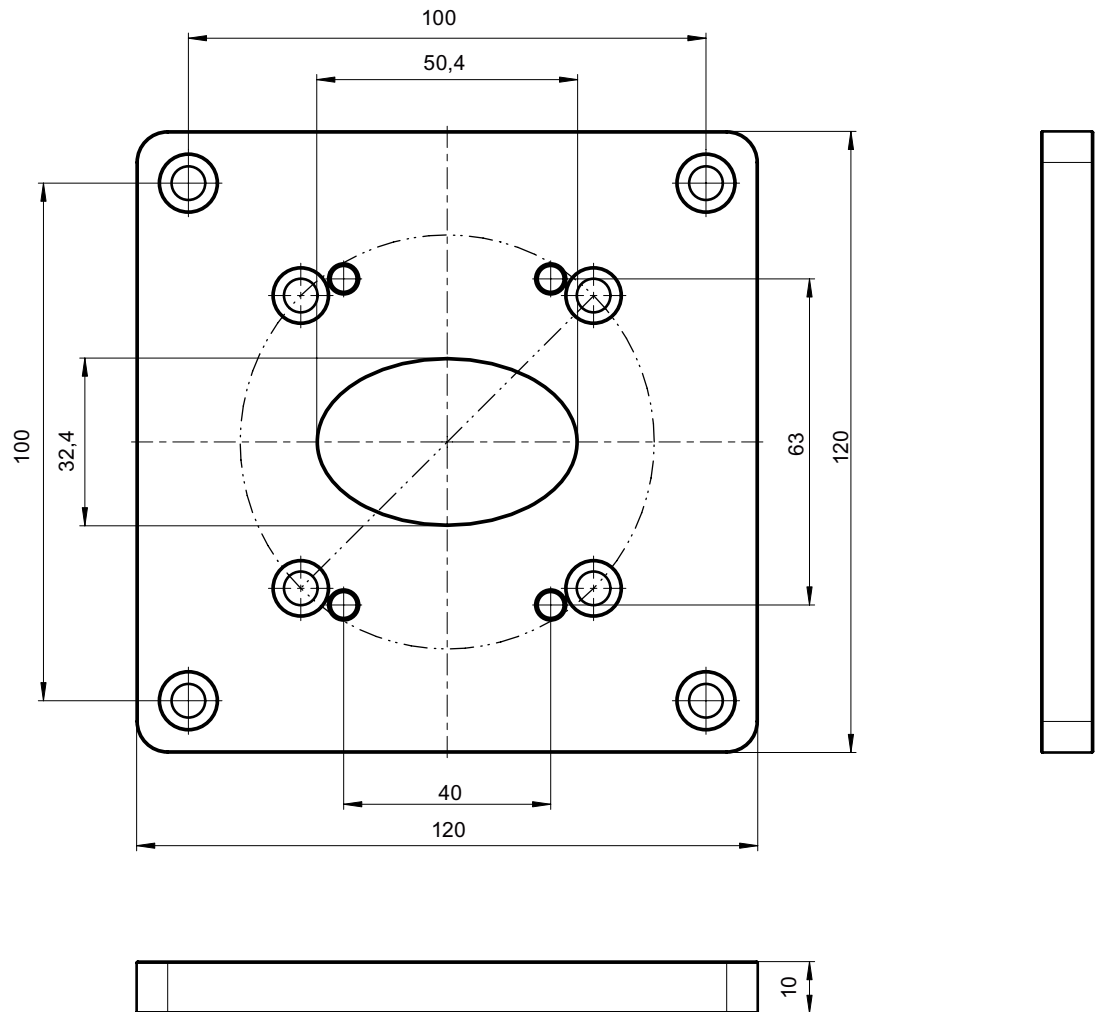
Dimensions of adapter set VESA75



All dimensions in mm

Figure 12-6 Dimensions of adapter set VESA75: 6AV7674-0KE00-0AA0

Dimensions of intermediate plate VESA100



All dimensions in mm

Figure 12-7 Dimensions of adapter set VESA100: 6AV7674-0KD00-0AA0

Appendix

A.1 Additional support

If you have any further questions about the use of products described in this manual and do not find the right answers here, contact your local Siemens representative (<http://www.siemens.com/automation/partner>):

A guide to the technical documentation for the various products and systems is available on the Internet:

- SIMATIC Guide manuals (<http://www.siemens.com/simatic-tech-doku-portal>)

The online catalog and online ordering systems are also available on the Internet:

- A&D Mall (<http://www.siemens.com/automation/mall>)

Training center

To help you get started with automation technology and systems, we offer a variety of courses. Contact your regional Training Center or the central Training Center in D-90327 Nuremberg, Germany.

- Phone: +49 911 895-3200
- Internet: SITRAIN homepage (<http://www.sitrain.com>)

Technical Support

You can access technical support for all A&D projects via the following:

- Phone: + 49 180 5050 222
- Fax: + 49 180 5050 223
- Internet: Online support request form:
(<http://www.siemens.com/automation/support-request>)

Service & Support on the Internet

In addition to our documentation, we offer a comprehensive online knowledge base on the Internet at:

Industry Automation and Drive Technologies - Homepage
(<http://www.siemens.com/automation/service&support>)

There you will find the following information, for example:

- Our newsletter containing up-to-date information on your products.
- The documents you need via our Search function in Service & Support.
- A forum for global information exchange by users and specialists.
- You local Automation & Drives representative.
- Information about on-site service, repairs, and spare parts. Much more can be found under "Services".

A.2 Certificates and guidelines

A.2.1 Guidelines and declarations

Notes on the CE Label

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

Notes for Norway, Sweden and Finland

CAUTION
Forsiktig Apparatet må tilkoples jordet stikkontakt.
Varo Laitte on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.

EMC directive

AC Voltage Supply

The devices with AC power supply fulfill the requirements of the EC directive 89/336/EEC Electromagnetic Compatibility and are intended for the following fields of application in accordance to the CE label:

Area of Application	Requirement for	
	Emitted Interference	Noise immunity
Industry	EN 50022:1998	EN 50024:1998/A1:2001
	EN 61000-6-4: 2001	EN 61000-6-2: 2001

The device is also compliant with EN 61000-3-2:2000, harmonic currents and EN 61000-3-3:1995/A1:2001 voltage fluctuation and flicker.

Low-Voltage Directive

The devices complies with the requirements of the EC directive 73/23/EEC "Low-Voltage Guidelines." Conformance with this standard has been verified according to EN 60950.

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.


Design Guidelines

Adhere to the installation guidelines and safety instructions given in this documentation during commissioning and operation.

China RoHS

Part Name	Toxic and Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent (Cr ⁶⁺)	Polybrominated biphenyl (PBB)	Polybrominated diphenylether (PBDE)
SIMATIC Flat Panel (in conformity with RoHS): 6 AV7 861 - xxxxx - 1xxx						
Plastic	O	O	O	O	O	O
Metal	O	O	O	O	O	O
LCDs	X	O	O	O	O	O
Electronic components	O	O	O	O	O	O

O	indicates that the content of the toxic and hazardous substance in all the homogeneous materials of the part is below the concentration limit requirement as described in SJ/T11363-2006.
X	indicates that the content of the toxic and hazardous substance in at least one homogeneous material of the part exceeds the concentration limit requirement as described in SJ/T11363-2006.
The enterprise may further explain the technical reasons for the 'X' indicated portion in the table in accordance with the actual situations.	

The Environmental Protection Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked.	
The Environmental Protection Use Period is valid only when the product is operated under the conditions defined in the product manual.	

A.2.2 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 software. Please observe the corresponding license agreements.

Certification for the USA, Canada and Australia

Safety

One of the following markings on a device is indicative of the corresponding approval:	
	Underwriters Laboratories (UL) to Standard UL 60950, Report E11 5352 and Canadian Standard C22.2 no. 60950 (I.T.E), or to UL508 and C22.2 no. 142 (IND.CONT.EQ)

The device also fulfills the requirements for FCC.

Note

The approval or certification is located on the rating plate. The rating plate is described in the "Operating Instructions (compact)" document.

EMC

USA	
General	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 interferences. 2. This device must accept any interference received, including interference that may cause undesired operation.
Shielded cables	The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC rules.
Modifications	Siemens AG is not responsible for any radio television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Siemens AG. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.
Canadian notice	This class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

A.2.3 Certifications and approvals

Note

The approval or certification is located on the rating plate. The rating plate is described in the "Operating Instructions (compact)" document.

B

List of abbreviations/acronyms

B.1 Abbreviations

ANSI	American National Standards Institute
ASCII	American Standard Code for Information Interchange
B	Width
BLI	Backlight Inverter
BIOS	Basic Input Output System
CD-ROM	Compact Disc – Read Only Memory
CPU	Central Processing Unit
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Service
DP	Distributed I/O
DSN	Data Source Name
DVD-ROM	Digital Versatile Disc – Read Only Memory
ESD	Electrostatic Sensitive Devices
EMC	ElectroMagnetic Compatibility
H	Height
HF	High Frequency
HMI	Human Machine Interface
IF	Interface: Interface
LCD	Liquid Crystal Display: Liquid crystal display
LED	Light Emitting Diode: Light emitting diode
Mbps	Megabits per second
OSD	OnScreenDisplay
PC	Personal Computer
PG	Programming device
PPI	Point to Point Interface SIMATIC S7
PS/2	Personal System 2
PLC	Programmable logic controller
T	Device depth
TCP/IP	Transmission Control Protocol/Internet Protocol
USB	Universal Serial Bus
VGA	Video Graphics Array

Glossary

Application

An application is a program which is put directly on the operating system MS-DOS or windows. An application on the PC/PG, for example, is STEP 7.

Booting

Start or restart of the computer. During the boot sequence, the operating system is loaded from the system data carrier into RAM.

Controller

Installed hardware and software which control the functions of specific internal or external devices, e.g. the keyboard controller.

Documentation and Drivers CD/DVD

The "Documentation and Drivers" CD/DVD is included. The CD/DVD contains specific drivers and applications for the supported operating system.

Drivers

Program parts of the operating system. They adapt user program data to the specific formats required by peripheral devices, such as hard disk, monitors, and printers.

Drop-down menu

Menu bar on the upper edge of the screen. The menu items are pre-set or can be set as drop down menus or pull down menus. Drop down menus roll down as soon as the cursor is moved over the menu title. Pull down menus roll down after clicking on the title.

Hub

A term from network technology. A device which joins communication lines at a central location and provides a common connection to all devices on the network.

InterfaceInterface

See Interface.

The connection of individual hardware elements, e.g. programmable controller, PCs, programming device, printer, or screen, by means of physical plug connectors.

Connection between different programs in order to exchange data.

InterfaceInterface

See Interface.

The connection of individual hardware elements, e.g. programmable controller, PCs, programming device, printer, or screen, by means of physical plug connectors.

Connection between different programs in order to exchange data.

Module

Modules are plug-in units for PLCs, programming devices or PCs. Modules exist, for example, as central modules, power-ons, or as mass storage.

Plug and play

Through plug and play, the computer configures itself automatically to be able to communicate with peripheral devices, e.g. screens, modems and printers. User connects a peripheral device: plug. Afterwards, the peripheral device can be used immediately. play, without having to configure the operating system manually. The plug and play PC requires both a BIOS that supports plug and play and a corresponding expansion card.

RoHS

Restriction of the use of certain hazardous substances in electrical and electronic equipment

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