SIEMENS

# SIMATIC HMI

# HMI devices
# Comfort Panels PRO

**Compact Operating Instructions**




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**04/2025**
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# Legal information

## Warning notice system

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

**⚠ DANGER**

indicates that death or severe personal injury **will** result if proper precautions are not taken.

**⚠ WARNING**

indicates that death or severe personal injury **may** result if proper precautions are not taken.

**⚠ CAUTION**

indicates that minor personal injury can result if proper precautions are not taken.

**NOTICE**

indicates that property damage can result if proper precautions are not taken.

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

## Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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## Disclaimer of Liability

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

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# Preface

## Scope

## Validity

These compact operating instructions apply to the following HMI devices in conjunction with the WinCC software package:

**Comfort PRO devices 12"**

| Name | Article number, device with Siemens logo | Article number, device without Siemens logo |
|---|---|---|
| TP1200 Comfort PRO for support arm (not extendable, flange top) | 6AV2124-0MC24-0AX0<br>6AV2124-0MC24-0AX1 | 6AV2124-0MC24-0AB0<br>6AV2124-0MC24-0AB1 |
| TP1200 Comfort PRO for pedestal (extendable, flange bottom) | 6AV2124-0MC24-1AX0<br>6AV2124-0MC24-1AX1 | 6AV2124-0MC24-1AB0<br>6AV2124-0MC24-1AB1 |
| TP1200 Comfort PRO for support arm (extendable, round tube) | 6AV2124-0MC24-0BX0<br>6AV2124-0MC24-0BX1 | 6AV2124-0MC24-0BB0<br>6AV2124-0MC24-0BB1 |

**Comfort PRO devices 15"**

| Name | Article number, device with Siemens logo | Article number, device without Siemens logo |
|---|---|---|
| TP1500 Comfort PRO for support arm (not extendable, flange top) | 6AV2124-0QC24-0AX0<br>6AV2124-0QC24-0AX1 | 6AV2124-0QC24-0AB0<br>6AV2124-0QC24-0AB1 |
| TP1500 Comfort PRO for pedestal (extendable, flange bottom) | 6AV2124-0QC24-1AX0<br>6AV2124-0QC24-1AX1 | 6AV2124-0QC24-1AB0<br>6AV2124-0QC24-1AB1 |
| TP1500 Comfort PRO for support arm (extendable, round tube) | 6AV2124-0QC24-0BX0<br>6AV2124-0QC24-0BX1 | 6AV2124-0QC24-0BB0<br>6AV2124-0QC24-0BB1 |

**Comfort PRO devices 19"**

| Name | Article number, device with Siemens logo | Article number, device without Siemens logo |
|---|---|---|
| TP1900 Comfort PRO for support arm (not extendable, flange top) | 6AV2124-0UC24-0AX0<br>6AV2124-0UC24-0AX1 | 6AV2124-0UC24-0AB0<br>6AV2124-0UC24-0AB1 |
| TP1900 Comfort PRO for pedestal (extendable, flange bottom) | 6AV2124-0UC24-1AX0<br>6AV2124-0UC24-1AX1 | 6AV2124-0UC24-1AB0<br>6AV2124-0UC24-1AB1 |
| TP1900 Comfort PRO for support arm (extendable, round tube) | 6AV2124-0UC24-0BX0<br>6AV2124-0UC24-0BX1 | 6AV2124-0UC24-0BB0<br>6AV2124-0UC24-0BB1 |

**Comfort PRO devices 22"**

| Name | Article number, device with Siemens logo | Article number, device without Siemens logo |
|---|---|---|
| TP2200 Comfort PRO for support arm (not extendable, flange top) | 6AV2124-0XC24-0AX0<br>6AV2124-0XC24-0AX1 | 6AV2124-0XC24-0AB0<br>6AV2124-0XC24-0AB1 |
| TP2200 Comfort PRO for pedestal (extendable, flange bottom) | 6AV2124-0XC24-1AX0<br>6AV2124-0XC24-1AX1 | 6AV2124-0XC24-1AB0<br>6AV2124-0XC24-1AB1 |
| TP2200 Comfort PRO for support arm (extendable, round tube) | 6AV2124-0XC24-0BX0<br>6AV2124-0XC24-0BX1 | 6AV2124-0XC24-0BB0<br>6AV2124-0XC24-0BB1 |

These compact operating instructions describe the technical differences of the Comfort PRO devices to the corresponding standard devices.

The information in these compact operating instructions take precedence in terms of their binding character over the statements in the underlying operating instructions, the release notes and the online help. The underlying operating instructions "Comfort Panels" are available on the Internet (http://support.automation.siemens.com/WW/view/en/49313233).

Unless otherwise described in this document, all specifications for the corresponding Comfort V2 device in the underlying operating instructions "Comfort Panels" apply to the Comfort PRO HMI devices, especially specifications regarding electronics, operating system, software, configuration, maintenance and service.

## ID Link for the digital type plate

The ID Link is a unique identifier in accordance with IEC 61406, which you will find in future as a QR code on your product and the product packaging.

You can recognize the ID Link from the frame, which has a black corner at the bottom right. The ID Link takes you to the digital type plate of your product.

Scan the QR code on the product or on the packaging label with a smartphone camera, a bar code scanner or a Read app. Call the relevant link.

In the digital type plate, you will find product data, manuals, Declarations of Conformity, certificates and other helpful information on your product.

## Keeping this documentation

| NOTICE |
| --- |
| **Manual belongs to the HMI device** |
| This manual belongs to the HMI device and is also required for recommissioning. Store all supplied and supplementary documentation for the entire service life of the HMI device. |
| Provide all stored documents to subsequent owners of the HMI device. |

For digitally attached documentation:

1. After you receive your product, download the relevant documentation, at a time no later than the first assembly/commissioning. Use the following options for the download:
   - Technical Support (https://www.siemens.com/industrialsecurity):
     The documentation is assigned to the product via the article number. The article number can be found on the product and on the packaging label. Products with new, incompatible functions are given a new article number and documentation.
   - ID Link:
     If your product carries an ID Link, you can recognize it as a QR code having a frame with a black corner at the bottom right. The ID Link takes you to the digital type plate of your product. Scan the QR code on the product or on the packaging label with a smartphone camera or a bar code scanner. Call the relevant ID Link.
2. Keep this version of the documentation.

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- HMI®
- SIMATIC®
- WinCC®

Please observe notes labeled as follows:

**Note**

A note contains important information about the product described in the manual and its use, or a specific section of the manual to which you should pay particular attention.

## Naming conventions

| Term | Applies to |
|---|---|
| System | • System<br>• Machining center<br>• One or more machines |
| PRO device,<br>HMI device, device | All HMI devices listed under "Validity" |
| WinCC | WinCC (TIA Portal) for version information, see section "Software requirements (Page 11)". |

## Figures

This manual contains figures of the described devices. The figures can deviate from the particularities of the delivered device.

Picture components are marked with black position numbers on a white background ①, ②, ③, etc.

Steps in the figures are identified with white process numbers on a black background according to the sequence in which they have to be executed: ❶, ❷, ❸, ...

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# Overview

1

## 1.1 Product description

The SIMATIC HMI Comfort PRO devices with glass front have all-round IP65 and Type 4X/12 protection and complete the portfolio of the SIMATIC HMI Comfort devices. The rugged aluminum enclosure of the SIMATIC HMI Comfort PRO devices (PRO = Protected) allows for their use directly at the machine even under tough ambient conditions.

The SIMATIC HMI Comfort PRO devices can be mounted to a pedestal and connected to a support arm system either from above or below by means of a base adapter available from a variety of manufacturers. This means the SIMATIC HMI Comfort PRO devices can be used directly at the machine for ergonomic operation at different locations in a plant or production line.

The SIMATIC HMI Comfort PRO devices have a crystal clear, scratch-resistant and continuous glass front with high chemical resistance. Special features are industry-compliant antireflective coating as well as high image sharpness and brightness for good readability even with a large viewing angle. They also include automatic recognition of accidental touching and operating errors caused, for example, by resting the palm of your hand or contamination. The projective-capacitive touch (PCT) technology makes for efficient gesture and single-finger operation even with thin work gloves. Screen contents can, for example, be intuitively and quickly moved or supplemented by hidden components.

All devices offer the same excellent functionality and are configured exclusively with the innovative HMI software, WinCC. The engineering software is integrated in the engineering framework, "Totally Integrated Automation Portal".



## Features

| | |
|---|---|
| **Front** | • Continuous antireflective, scratch-resistant front with high chemical resistance<br>• Crystal clear TFT display with 16 million colors |
| **Touch screen** | • Capacitive single-touch screen<br>• Suitable for operation with thin gloves, touch pen for capacitive touch screen and fingers |
| **Interfaces** | • 3 PROFINET interfaces<br>• 1 PROFIBUS interface<br>• 2 x USB 2.0 host port (Type A)<br>• 2 x slot for SD memory card |

Information and important notes on the interfaces and for connecting the devices are available in the following sections:

- Interfaces (Page 18)
- Connecting the PRO device (Page 44)

## Mechanical differences to the standard product

| | |
|---|---|
| **Enclosure** | All-round IP65 and type 4X/12 protected enclosure |
| **Installation** | Mounting to a support arm or pedestal with or without extensions. |
| **Interfaces** | The interfaces including the slots for SD memory cards are located in the terminal compartment with Comfort PRO devices. |

## 1.2 Software requirements

### PRO devices with article numbers -...0

To configure the Comfort PRO devices with the article numbers 6AV2124-0.C24-...**0**, you need the WinCC software as of WinCC V15 (TIA Portal) or WinCC V14 SP1 (TIA Portal) with one of the following HSPs:

- "HSP 0226 HMI TP1200 Comfort PRO" for 12" PRO devices
- "HSP 0212 HMI TP1500 - TP2200 Comfort PRO" for 15-22" PRO devices

You can find the HSPs under Technical Support on the Internet (https://support.industry.siemens.com/cs/ww/en/view/72341852).

### PRO devices with article numbers -...1

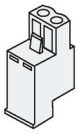
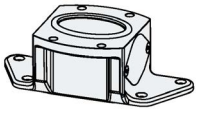
To configure the Comfort PRO devices with the article numbers 6AV2124-0.C24-...**1**, you need the WinCC software (TIA Portal) as of V16 and, depending on the main version, the following HMI device image:

- For WinCC (TIA Portal V16.x): HMI device image V16.0.0.7 or higher
- For WinCC (TIA Portal V17.x): HMI device image V17.0.0.6 or higher

The HMI device images can be downloaded from the Internet (https://support.industry.siemens.com/cs/ww/en/view/109825750).

## 1.3 Scope of delivery

The following components are included in the scope of delivery of the HMI device.

| Name | Figure | Number |
|---|---|---|
| HMI device |  | 1 |
| Installation instructions<br>(Quick Install Guide) |  | 1 |
| Accessory pack with the following contents:<br>• Power supply connector<br>• Strain relief |  | 1 |
| |  | 1 |
| Base adapter [1] |  | 1 |
| Cover for mechanical interface including screw kit [2] |  | 1 |

[1] Only with PRO devices for support arm (not extendable, flange top) and for pedestal (extendable, flange bottom)

[2] Only with PRO devices for support arm (extendable, round tube)

Some components in the scope of delivery are also available individually, see section "System components and accessories (Page 19)".

# 1.4 Design of the devices

## 1.4.1 Overview

The PRO devices are available in the following variants. The figures show examples.

- **PRO devices for support arm (not extendable, flange top)**

  These devices are designed for mounting on a support arm without extensions such as Extension Units. If required, the PRO Option handles can be used between the support arm and the device.



- **PRO devices for pedestal (extendable, flange bottom)**

  These devices are designed for mounting on a pedestal with extensions such as Extension Units. If required, the PRO Option handles can be used between the pedestal and the device.



- **PRO devices for support arm (extendable, round tube)**

  These devices are designed for mounting on a support arm with extensions such as Extension Units or PRO options (e.g. handles, keyboard tray).



Additional information on the PRO Options as well as adapters and other system components can be found in the section "System components for PRO devices (Page 19)".

## 1.4.2 PRO devices for support arm (not extendable, flange top)

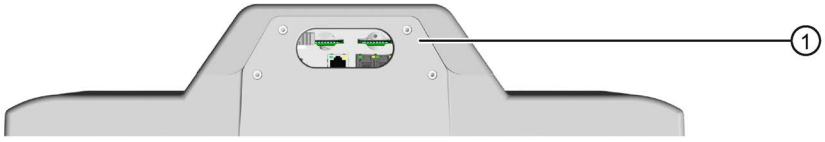
The following figures show the design of the devices using the TP2200 Comfort PRO for support arm (not extendable, flange top) as an example.

### Front view and side view



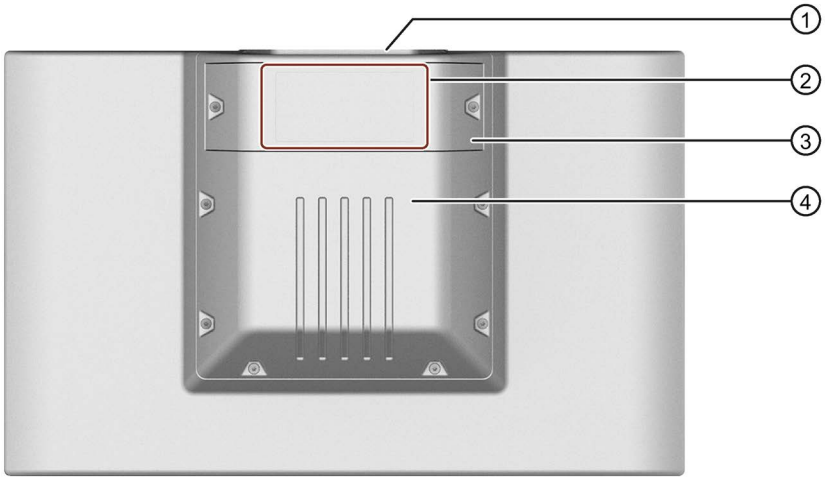

① Display with touch screen
② Enclosure
③ Backplane cover

### Top view




① Mechanical interface for fastening

### Rear view




① Mechanical interface for fastening
② Rating plate
③ Terminal compartment cover
④ Backplane cover

## 1.4.3 PRO devices for pedestal (extendable, flange bottom)

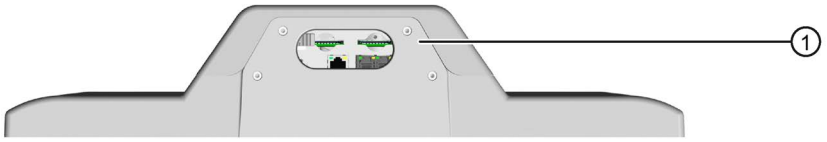
The following figures show the design of the devices using the TP2200 Comfort PRO for pedestal (extendable, flange bottom) as an example.

### Front view and side view



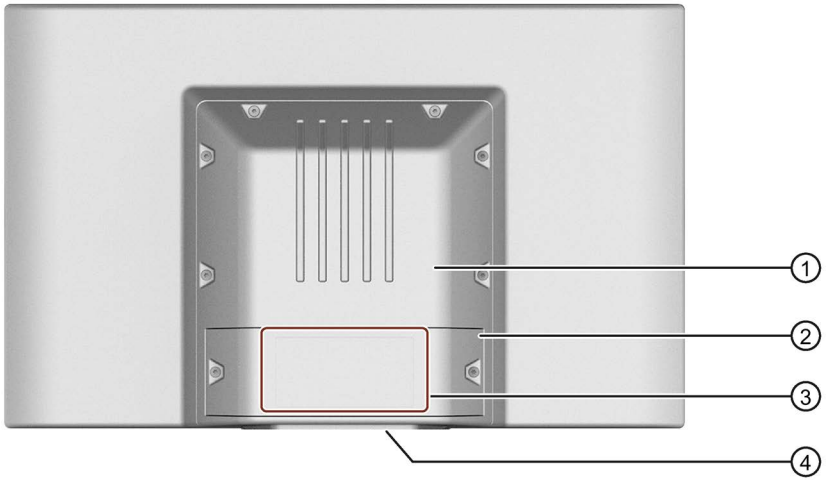

① Display with touch screen
② Enclosure
③ Backplane cover

## Bottom view




① Mechanical interface for fastening

## Rear view




① Backplane cover
② Terminal compartment cover
③ Rating plate
④ Mechanical interface for fastening

## 1.4.4 PRO devices for support arm (extendable, round tube)

The following figures show the design of the devices using the TP1500 Comfort PRO for support arm (extendable, round tube) as an example.

### Front view and side view




① Display with touch screen
② Enclosure
③ Mechanical interface for fastening (round tube)
④ Terminal compartment cover
⑤ Mechanical interface below

### Rear view

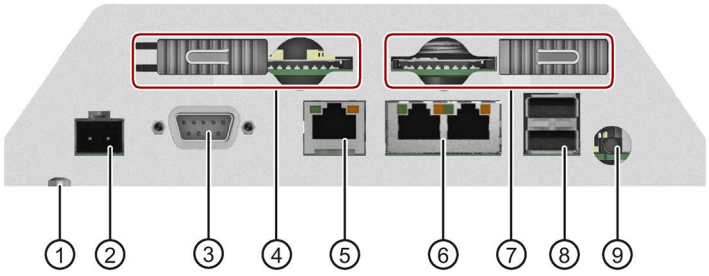



① Mechanical interface for fastening (round tube)
② Terminal compartment cover
③ Nameplate
④ Mechanical interface below
⑤ Lower cover, included in the product package

## 1.4.5 Interfaces

### All Comfort PRO devices

The figure below shows the interfaces of the Comfort PRO devices:




① Connection for equipotential bonding (ground)
② X80 power supply connector
③ X2 PROFIBUS (Sub-D RS422/485)
④ X50 slot for SD system memory card with safety catch
⑤ X3 PROFINET (LAN), 10/100/1000 Mb
⑥ X1 PROFINET (LAN), 10/100 Mb
⑦ X51 slot for SD data memory card with safety catch
⑧ X61 / X62 USB type A
⑨ X90 Audio Line OUT

#### System memory card

Use a SIMATIC HMI Memory Card ≥ 2 GB as system memory card in slot X50.

#### Data memory card

Use a memory card in "SD(IO / HC)" or "MMC" format as data memory card in slot X51.
Recommendation: Use the SIMATIC HMI Memory Card.

### Additional information

Use the X1 or X60 interface to connect a configuration PC. Use the X61 / X62 interfaces to connect peripheral devices such as a printer or keyboard. Use the X90 interface to connect a loudspeaker.

At interface X2 use a PROFIBUS connector with a 45° angle to the right.

Read the notes on connecting the devices in section "Connecting the PRO device (Page 44)".

Ordering information for memory cards is available in the section "Accessories (Page 26)".

# 1.5 System components and accessories

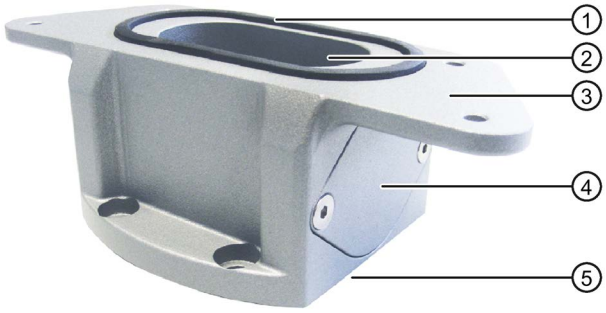
**System components** are products that have been developed for a specific system and can not be used in general, for example, like the base adapter. System components are always directly related to a core product.

**Accessories** can typically be used for multiple devices from the same or different device families, for example, batteries, touch pens or protective membranes.

## 1.5.1 System components for PRO devices

### Base adapter

Using the base adapter, mount PRO devices for support arm (not extendable, flange top) or for pedestal (extendable, flange bottom). A base adapter is included in the scope of delivery for the corresponding PRO device. The base adapter can also be ordered separately.




① Seal
② Channel cable
③ Mechanical interface to the PRO device
④ Cover
⑤ Mechanical interface to the support arm or pedestal including seal

Article number: 6AV7674-1KA00-0AA0

The corresponding documentation is available on the Internet (https://support.industry.siemens.com/cs/ww/en/view/32109730).

## Adapter sets and couplings

For mounting a PRO device for support arm (not extendable, flange top) or for pedestal (extendable, flange bottom) using the base adapter, the following adapter sets are available additionally:

- Adapter set VESA75 for VESA75-compatible systems, article number 6AV7674-0KE00-0AA0



- Adapter set VESA100 for VESA100-compatible systems, article number 6AV7674-0KD00-0AA0



The corresponding documentation is available on the Internet (https://support.industry.siemens.com/cs/ww/en/view/32109730).

In addition, other manufacturers are offering support arm or pedestal systems with mechanical interface or adapter for Siemens PRO devices, for example, RITTAL, ROLEC, BERNSTEIN, HASEKE, ROSE. Observe the technical specifications of the respective manufacturer.

## Flange mount adapter

A flange mount adapter is available for mounting a PRO device for support arm (extendable, round tube).




① Flange mount adapter
② Ring groove for fastening on PRO device with setscrews
③ Mechanical interface to support arm

Article number: 6AV7674-1KF00-0AA0

The corresponding documentation is available on the Internet (https://support.industry.siemens.com/cs/ww/en/view/32109730).

## Round tube plug

If you do not need the mechanical interface of a PRO device for support arm (extendable, round tube) you can install the round tube plug into the mechanical interface. With the round tube plug, the degree of protection IP65 is maintained all around for the PRO device.

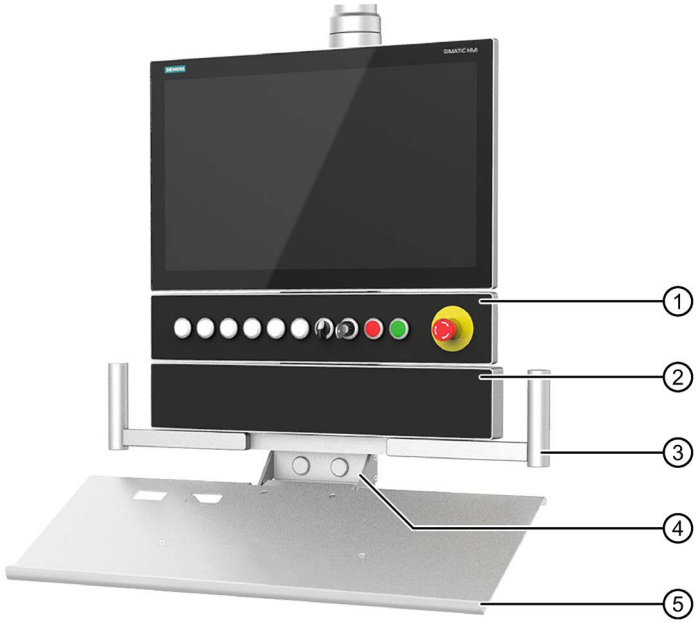


Article number: 6AV7674-1LB40-0AA0

The corresponding documentation is available on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109769784).

## Extensions for PRO devices

The following example shows a PRO device for a support arm (extendable, round tube) with Extension Unit, Extension Unit box as well as the PRO Options Handles and keyboard tray with keyboard tray plate.




① **Extension Unit**, example of an Extension Unit 22" with eight operator controls and emergency stop button
② **Extension Unit box**, deep empty enclosure, example Extension Unit box 22" without operator controls
③ **Handles**, set matching the 22" device
④ **Keyboard tray** for mounting the keyboard tray plate or installing a suitable keyboard
⑤ **Keyboard tray plate**

### Installation options

The handles can be mounted above a PRO device of the "not extendable" type or below a PRO device of the "extendable" type.

Extension Units and keyboard tray can only be mounted below a PRO device of the "extendable" type.

**Note**

**A maximum of two Extension Units is permitted**

A maximum of two Extension Units are permitted below a PRO device for pedestal (extendable, flange bottom) or for support arm (extendable, round tube) and can be configured in TIA Portal.

### Extension Unit

The Extension Unit is used to install additional operator controls below a SIMATIC PRO device for pedestal (extendable, flange bottom) or for support arm (extendable, round tube).



The Extension Unit can be customized and is supplied without operator controls. The front of the Extension Unit has pre-perforated slots for operator controls. The Extension Unit is available in four sizes:

- Extension Unit 12", article number 6AV7674-1LA3x-0AA0
- Extension Unit 15", article number 6AV7674-1LA4x-0AA0
- Extension Unit 19", article number 6AV7674-1LA5x-0AA0
- Extension Unit 22", article number 6AV7674-1LA6x-0AA0

In each size, you have the flexibility to choose between the following Extension Unit interface variants (x) for connection to the plant:

- Hardwired (x=1)
- PROFINET (x=2)
- PROFIsafe (x=3)

In addition, different operator controls, such as Emergency Stop pushbutton, selector switch, illuminated pushbutton, keyswitch or indicator light are available.

**Note**

Only operator controls with Siemens approval may be installed in the Extension Unit.

You can find detailed information in the operating instructions on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109742323).

**Extension Unit Advanced**

The Extension Unit Advanced can be ordered pre-configured or customer-specific in numerous variants and is mounted below a SIMATIC PRO device for pedestal (extendable, flange bottom) or for support arm (extendable, round tube).





The Extension Unit Advanced for PROFINET or PROFIsafe connection is available with one or more KP12 keypads. Free slots can be equipped with Standard/Advanced and Safety operator controls.

**Note**

Only operator controls with Siemens approval may be installed in the Extension Unit.

Extension Units Advanced minimum configuration with 1 x KP12 for PROFINET:

- Extension Unit 12" KP12 PN, article number 6AV2185-8CE01-0AA0
- Extension Unit 15" KP12 PN, article number 6AV2185-8DE01-0AA0
- Extension Unit 19" KP12 PN, article number 6AV2185-8EE01-0AA0
- Extension Unit 22" KP12 PN, article number 6AV2185-8FE01-0AA0

Extension Units Advanced maximum configuration with several KP12 for PROFINET:

- Extension Unit 12" KP24 PN, 2 x KP12, article number 6AV2185-8CE08-0AA0
- Extension Unit 15" KP36 PN, 3 x KP12. article number 6AV2185-8DE08-0AA0
- Extension Unit 19" KP36 PN, 3 x KP12, article number 6AV2185-8EE08-0AA0
- Extension Unit 22" KP48 PN, 4 x KP12, article number 6AV2185-8FE08-0AA0

Extension Units Advanced with 1 x KP12 for PROFINET/PROFIsafe:

- Extension Unit 12" KP12F PN, article number 6AV2185-8CF01-0AA0
- Extension Unit 15" KP12F PN, article number 6AV2185-8DF01-0AA0
- Extension Unit 19" KP12F PN, article number 6AV2185-8EF01-0AA0
- Extension Unit 22" KP12F PN, article number 6AV2185-8FF01-0AA0

In addition, customer-specific Extension Units Advanced can be ordered in various pre-configured expansion stages with operator controls.

You can find detailed information in the operating instructions on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109756068).

### Extension Unit box

The Extension Unit box offers an empty enclosure for installation of larger customer-specific components below a 16:9 SIMATIC PRO device for pedestal (extendable, flange bottom) or for support arm (extendable, round tube).



The Extension Unit is supplied without operator controls; the front has not been prepared for installation of operator controls. The Extension Unit box is available in four sizes:

- Extension Unit box 12", article number 6AV7674-1LA30-0AA0
- Extension Unit box 15", article number 6AV7674-1LA40-0AA0
- Extension Unit box 19", article number 6AV7674-1LA50-0AA0
- Extension Unit box 22", article number 6AV7674-1LA60-0AA0

The corresponding documentation is available on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109761025).

### Handles

The width of the handles can be adjusted so that the entire device can be aligned or positioned without having to touch the display of the PRO device.



Article number: 6AV7674-1LB10-0AA0

The corresponding documentation is available on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109761024).

### Keyboard tray

You can mount the keyboard tray plate or a matching keyboard to the keyboard tray. In addition, the keyboard tray has two openings for USB interfaces on the front and two openings for cable glands in the rear.



Article number: 6AV7674-1NF01-0AA0

The corresponding documentation is available on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109761024).

**Keyboard tray plate**

The keyboard tray plate has sufficient space for the keyboard and the mouse.



Article number: 6AV7674-1NG00-0AA0

The corresponding documentation is available on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109761024).

**Replacement adapter**

The Replacement adapter facilitates the removal and attachment of a Extension Unit that is mounted below a SIMATIC PRO device of the "extendable" type.



Article number: 6AV7674-1LB50-0AA0

The corresponding documentation is available on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109769845).

### Additional information

You can find additional information on system components for devices with fully-enclosed IP65 and Type 4X/12 protection is available on the Internet (https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10268745).

## 1.5.2 Accessories

An accessory kit with the necessary accessories is included with the HMI device.

**Note**

This section contains a selection of accessories that is suitable for your HMI device. You can find additional versions of this selection and the complete accessories portfolio in the Industry Mall on the Internet (https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10144445). Details such as the delivery quantity and technical specifications of accessories can be found in the Industry Mall under the respective article numbers.

You can find an overview of the status and compatibility of the accessories portfolio in the "Cross-list" on the Internet (https://support.industry.siemens.com/cs/ww/en/view/40466415).

## HMI I/O components

| Name | Article number |
|---|---|
| 45° PROFIBUS connector for RS422/RS485 interface | 6ES7972-0BA42-0XA0 |
| Plug for the power supply of the HMI device, 2-pin, screw technology | 6AV6671-8XA00-.... |
| Plug for the power supply of the HMI device, 2x2-pin, spring-loaded terminal technology | 6ES7193-4JB00-.... |

"...." stands for the variant key of the article number.

## Storage media

Use only the following storage media for the HMI device.

| Name | Article number |
|---|---|
| SIMATIC HMI Memory Card | 6AV2181-8XP00-.... |
| SIMATIC HMI USB stick | 6AV6881-0AS42-.... |

"...." stands for the variant key of the article number.

## Input help

| Name | Article number |
|---|---|
| Touch pen systems ELO and V2A | 6AV2181-8AV20-.... |

"...." stands for the variant key of the article number.

## Additional USB accessories

Additional USB accessories can be found on the Internet in the following entry:
FAQ 19188460 (https://support.industry.siemens.com/cs/ww/en/view/19188460)

## Other accessories

You can find additional accessories for SIMATIC HMI devices on the Internet at the following link:

Accessories (https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10144445)

# Safety instructions 2

## 2.1 General safety instructions

The device is designed for operation in industrial areas for operator control and monitoring of plant processes.

Observe the safety and accident prevention regulations applicable to your application in addition to the safety information given in the device documentation.

**⚠ WARNING**

**The device must be mounted on a suitable support arm or pedestal**

If the device is not mounted, not properly mounted or mounted to an unsuitable support arm system or pedestal system, then liquids, dust or gases, for example, can get into the device. Malfunctions can lead to death or serious physical injury.

The device is only enclosed equipment and only meets the specified degree of protection or the specified Enclosure Type if it is connected to a suitable support arm system or pedestal system according to the information in this document, which also meets the required degree of protection or the required Enclosure Type.

The operation of the device is only permitted if the device is mounted on a suitable support arm system or pedestal system in accordance with the information in these operating instructions. All connecting cables of the HMI device must be routed through the support arm or pedestal.

If the device is extended by optional system components, then the system components must also meet the required degree of protection and required enclosure type. Note the technical specifications of the system components.

### Safety of the plant or the system

**NOTICE**

**Safety is the responsibility of the assembler**

The safety of any plant or system incorporating the equipment is the responsibility of the assembler of the plant or system.

### ESD



An electrostatically sensitive device is equipped with electronic components. Due to their design, electronic components are sensitive to overvoltage and thus to the discharge of static electricity. Note the corresponding regulations when handling ESD.

## Cybersecurity information

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

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

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

For additional information on industrial cybersecurity measures that may be implemented, please visit (https://www.siemens.com/industrialsecurity).

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

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

## Disclaimer for third-party software updates

This product includes third-party software. Siemens Aktiengesellschaft only provides a warranty for updates/patches of the third-party software if these have been distributed as part of a Siemens Software Update Service contract or officially released by Siemens Aktiengesellschaft. Otherwise, updates/patches are undertaken at your own risk. You can find more information about our Software Update Service offer on the Internet at Software Update Service (https://support.industry.siemens.com/cs/ww/en/view/109759444).

## Notes on protecting administrator accounts

A user with administrator privileges has extensive access and manipulation options in the system.

Therefore, ensure there are adequate safeguards for protecting the administrator accounts to prevent unauthorized changes. To do this, use secure passwords and a standard user account for normal operation. Other measures, such as the use of security policies, should be applied as needed.

## 2.2 Security management for HMI devices

You can find additional information on security management of HMI devices on the Internet at the following address:

Panel Security Guidelines (https://support.industry.siemens.com/cs/de/en/view/109481300)

## 2.3 Data protection

Siemens observes the data protection guidelines, especially the requirements regarding data minimization (privacy by design). This means the following for this SIMATIC product: The product does not process / save any personal information, but only technical functional data (e.g. time stamps). If the user links this data to other data (e.g. shift plans) or if the user saves personal information on the same medium (e.g. hard disk) and therefore creates a personal reference in the process, the user has to ensure meeting the guidelines regarding data protection.

## 2.4 Notes about usage

| **NOTICE** |
| --- |
| **The HMI device is approved for indoor use only.** |
| The HMI device may be damaged if it is operated outdoors. |
| Operate the HMI device indoors only. |

**Note**

**Operate the device only in a normal atmospheric environment**

The technical characteristics of the device described in the operating instructions are guaranteed if you operate the device in normal ambient air conditions with usual air composition.

**Note**

The device is intended for operation on a SELV/PELV circuit according to IEC/EN 61131-2 or IEC/EN/UL 61010-2-201 in a dry environment, which means a dry environment inside the enclosure.

You can find additional information in the section "Operating Conditions (Page 64)".

## Industrial applications

The HMI device is designed for industrial applications. It conforms to the following standards:

- Requirements for emissions EN 61000-6-4: 2019
- Requirements for interference immunity EN 61000-6-2: 2019

### Use in mixed-use zone

Under certain circumstances, you can use the HMI device in a mixed-use zone. A mixed-use zone is used for housing and commercial operations that do not have a significant impact on residents.

When you use the HMI device in a mixed-use zone, you must ensure that the limits of the generic standard EN 61000-6-3 regarding emission of radio frequency interference are observed. A suitable measure for achieving these limits for use in a mixed area, for example, is the use of filters in power supply lines.

Individual acceptance is required.

### Use in residential areas

**Note**

**HMI device not intended for use in residential area**

The HMI device is not intended for use in residential areas. Operation of an HMI device in residential areas can have a negative influence on radio or TV reception.

## Use with additional measures

The HMI device should not be used at the following locations unless additional measures are taken:

- In locations with a high degree of ionizing radiation
- In locations with severe operating conditions, for example, due to:
  - Corrosive vapors, gases, oils or chemicals
  - Strong electrical or magnetic fields of high intensity
- In systems that require special monitoring, for example, in:
  - Elevators
  - Systems in especially hazardous rooms

## TFT displays

**NOTICE**

**Burn-in effect**

A permanently displayed two-color or multi-color picture can cause a burn-in effect, i.e. the picture remains dimly visible for a certain period of time. The longer the image is burned in, the longer the image will last. In extreme cases, the image is permanently displayed.

The image outline usually disappears on its own when the screen remains switched off for some time. Screen savers that use active black when the backlight is on reduce the burn-in effect.

**Note**

**Backlight**

The brightness of the backlight decreases incrementally during operational life. You can extend the service life of the display and backlight by taking the following measures:

- Reduce the intensity of the backlight.
- Observe the operating periods of the backlight, see section "Technical specifications (Page 78)".

## 2.5 Use in hazardous areas

The following warnings apply to operating a device with Ex approval in hazardous areas.

**⚠ WARNING**

**Do not plug or pull connectors in potentially explosive atmospheres**

If you plug in or pull out connecting plugs during operation, there is a risk of sparkover. An explosion can be triggered in the hazardous area due to sparkover, and death or serious physical injury can occur.

Plugging or pulling connectors, such as a 24 V DC power supply plug or the memory card, is **prohibited** in a potentially explosive atmosphere.

Only plug or pull a connector when one of the following two conditions is met: The area is no longer hazardous or the device and its plug-in connections are de-energized.

To switch off the device, close all open programs or the current project, and switch off the power to the device.

**⚠ WARNING**

**Explosion hazard**

The audio connectors are for temporary connection only. Do not use, connect, or disconnect unless area is known to be non-hazardous. Connection or disconnection in an explosive atmosphere could result in an explosion.

**⚠ WARNING**

**USB devices**

USB interfaces are not permitted to connect with USB devices except for equipment with USB cable connection.

Note for using the HMI device within the scope of UL approval:

**⚠ WARNING**

**Explosion Hazard**

Do not disconnect while circuit is live unless area is known to be non-hazardous. Substitution of components may impair suitability for Class I, II, III, Division 2, or Zone 2/22.

**Risque d'Explosion**

Ne pas déconnecter pendant que le circuit est sous tension, sauf si la zone est non-dangereuse. Le remplacement de composants peut compromettre leur capacité à satisfaire à la Classe I, II, III, Division 2, ou Zone 2/22.

Also note the information in section "Labeling, certificates, and approvals (Page 55)".

# Mounting and connecting the device 3

## 3.1 Preparing for installation

### 3.1.1 Checking delivery

Check the package content for visible signs of transport damage and for completeness.

**Note**

**Damaged parts**

A damaged part will cause the HMI device to malfunction.

Do not install parts damaged during shipment. In the case of damaged parts, contact your Siemens representative.

Check the scope of supply of the HMI device (see Scope of delivery (Page 12)).

Additional documents may be included in the delivery.

The documentation is part of the HMI device and is required for subsequent commissioning. Keep all enclosed documentation for the entire service life of the HMI device. You must pass along the enclosed documentation to any subsequent owner or user of the HMI device. Make sure that every supplement to the documentation that you receive is stored together with the operating instructions.

### 3.1.2 Checking the operating conditions

Note the following aspects before installing the HMI device:

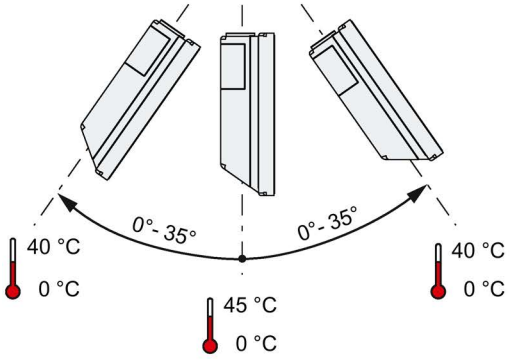
1. Familiarize yourself with the technical specifications for operating the HMI device. You can find this information in the section "Technical information (Page 55)".
2. Read the information about local use of the HMI device, see section "Notes about usage (Page 30)".

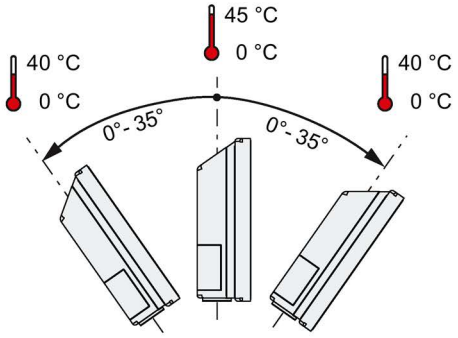
## 3.1.3 Permitted mounting positions

The device is intended for mounting on a support arm or stand.

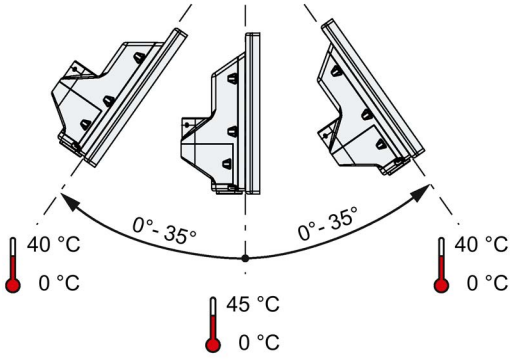
The following figures show the permissible mounting positions of the different PRO devices.

**PRO devices for support arm (not extendable, flange top) and for pedestal (extendable, flange bottom)**




**PRO devices for support arm (extendable, round tube)**




**Ambient conditions**

**Note**

**No extended inclination and ambient temperature range for Comfort PRO devices**

The information on the extended inclination and ambient temperature range in the "Comfort Panels" operating instructions does not apply to the Comfort PRO devices.

For detailed information on the permitted ambient temperatures, refer to section "Climatic ambient conditions (Page 64)".

### 3.1.4 Installing a strain relief

Install the strain relief in the terminal compartment as follows:

1. Loosen the two screws of the terminal compartment cover and remove the terminal compartment cover.
2. Fasten the strain-relief with the screws intended for this purpose, torque 0.8 Nm.
   In the delivery state, the screws are already pre-installed in the terminal compartment.
   The following figure shows an example.




   With PRO devices for support arm (not extendable, flange top), the strain relief is to be installed rotated by 180°.
3. If you do not install the device to a support arm or a pedestal immediately afterwards, close the terminal compartment. Fasten the terminal compartment cover with the two associated screws, torque 1.5 Nm. Check that the seal is sitting correctly.

## 3.2 Mounting the PRO device

### 3.2.1 Notes on mounting

**⚠ WARNING**

**The device must be mounted securely.**

Inadequately dimensioned fasteners may cause the device to fall down. Serious physical injury may result.

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

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

Pay attention to the torque specifications in the following sections.

**NOTICE**

**Degree of protection for overall device**

If you are using a support arm system or a pedestal system that does not have IP65 degree of protection or Enclosure Type 4X/12 (indoor use only), IP65 degree of protection or Enclosure Type 4X/12 (indoor use only) are lost for the entire device. Spray and water jets as well as penetrating substances can then damage the device.

Use a suitable support arm system or pedestal system with IP65 degree of protection or Enclosure Type 4X/12 (indoor use only) for your application.

**Note**

**Liability disclaimer**

The device is mounted to a pedestal or a support arm via the mechanical interface with screws. Siemens Aktiengesellschaft assumes no liability for the consequences of incorrect installation.

**Note**

**Warranty at risk**

If you do not install the HMI device in accordance with the specifications in these operating instructions, the warranty for the device is voided.

- Always install the device according to these operating instructions.
- If the seal on the backplane cover is damaged, it can be repaired. For a repair scenario, following the instructions in the section "Repair, spare parts, recycling and disposal (Page 54)".

**Note**

**IP65 degree of protection and Enclosure Type 4X/12 (indoor use only) at risk**

If there are no seals on the mechanical interfaces or if they are damaged, IP65 degree of protection and Enclosure Type 4X/12 (indoor use only) is at risk. Check the condition and proper seating of the seals.

**NOTICE**

**Damaging the seal when opening**

If the device has not been opened for a long time, the backplane cover or connection compartment cover may stick to the seal of the enclosure. Opening the device with excessive force or with tools will destroy the seal. Spray and water jets as well as penetrating substances can then damage the device.

Open the connection compartment cover gently, without too much pressure.

### 3.2.2 PRO devices for support arm (not extendable, flange top) and for pedestal (extendable, flange bottom)

**Note**

**Mounting with and without a base adapter**

The SIMATIC PRO devices are designed for mounting with the base adapter. If you install the device without a base adapter, you must adjust the mechanical interface between the support arm or pedestal and the unit accordingly, including placement of an appropriate seal on the mechanical interface.

**Requirement**

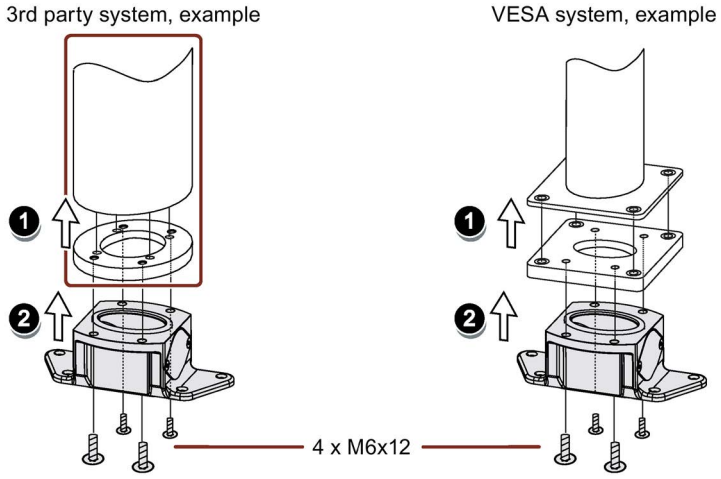
- All packaging components and protective films have been removed.
- Siemens basic adapter with screws, included in product package of a PRO device for support arm (not extendable, flange top) or for pedestal (extendable, flange bottom).
- One of the following support arms or pedestal systems:
  - Support arm or pedestal with mechanical VESA interface and the corresponding Siemens adapter set
  - Support arm or pedestal with mechanical interface for the Siemens base adapter
    The type of mechanical interface differs depending on the type of support arm or pedestal.

  See also section "System components for PRO devices (Page 19)".
- The following cables are fed through the pedestal or the support arm to which the device is mounted:
  - Cables for the power supply
  - Equipotential bonding cable
  - Data cables, such as PROFIBUS, PROFINET or USB cable
    Recommendation: Route large connectors, such as PROFIBUS connectors and their cables, through the pedestal or support arm first.
- The following tool is available: A torque screwdriver with T20 insert

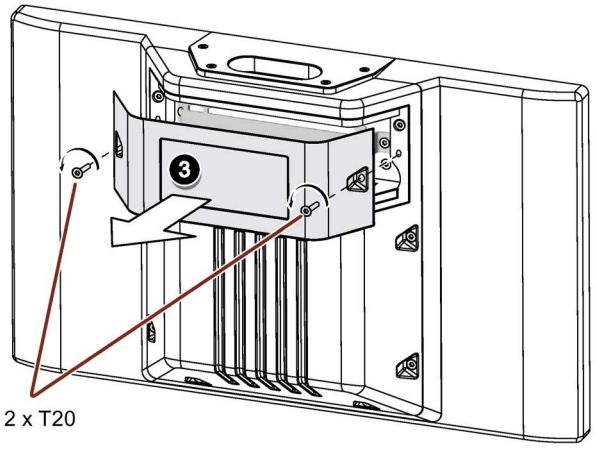
## Procedure

This section describes the mounting of the device to a support arm system using example figures. Installation on a pedestal is carried out in the same way. With PRO devices for support arm (not extendable, flange top), the basic adapter is screwed to the device on the top. With PRO devices for pedestal (extendable, flange bottom), the basic adapter is screwed to the device from the bottom. A PRO device for a support arm system cannot be used on a pedestal, and vice versa.

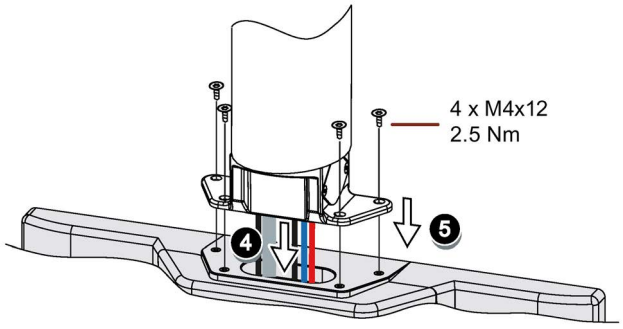
1. If an adapter plate for the Siemens base adapter is included in your support arm system, attach the adapter plate to the support arm with 4 M6x12 screws. Pay attention to the torque that is specified for the support arm.




2. Attach the base adapter with 4 M6x12 screws to the mechanical interface of the support arm from below. Pay attention to the torque that is specified for the support arm.
3. Loosen the 2 screws of the terminal compartment cover and remove the terminal compartment cover.



4. Insert all connection cables through the opening of the PRO device. Make sure that the connection cables are not damaged.




5. Attach the device with 4 M4x12 screws to the base adapter from the top, torque 2.5 Nm. Make sure that the connection cables are not crushed.
6. Connect all cables according to the description in the section below.
7. Fasten the terminal compartment cover to the device with the 2 screws, torque 1.5 Nm. Check that the seal is sitting correctly.

## 3.2.3 PRO devices for support arm (extendable, round tube)

### Requirement

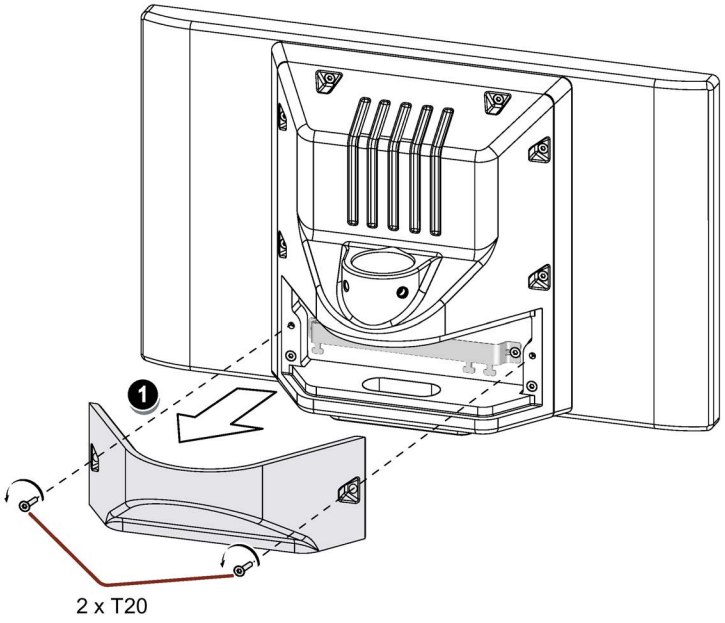
- One of the following support arm systems:
  - Support arm with round tube end with outside diameter 48.3 mm, appropriate for the opening of the PRO device
    When selecting the round tube, ensure that its inside diameter is large enough so that all needed cables and their connectors can fit through.
  - Support arm with mechanical interface, appropriate for the flange of the flange mount, and Siemens flange mount (not included in product package)
  - Support arm with mechanical VESA interface, the corresponding Siemens adapter set and the Siemens flange mount (not included in product package)

  See also section "System components for PRO devices (Page 19)".
- The PRO device, all packaging components and protective films have been removed
- The lower cover of the PRO device from the accessory kit
- The following cables are fed through the support arm to which the device is mounted:
  - Cables for the power supply
  - Equipotential bonding cable
  - Data cables, such as PROFIBUS, PROFINET or USB cable
    Recommendation: Route large connectors, such as PROFIBUS connectors and their cables, through the pedestal or support arm first.
- The following tool is available: A torque screwdriver with T20 insert and hexagon socket-head screw insert, width across flats 4

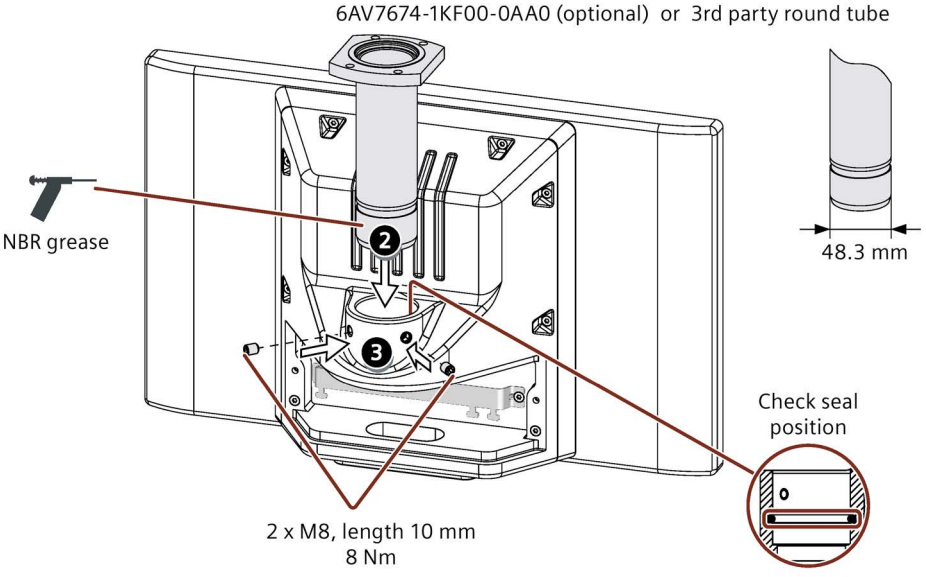
### Procedure

The following figures show an example of how to attach the PRO device to a support arm system using the optionally available Siemens flange mount. The same approach is used to mount the PRO device to a 48.3 mm round tube.

1. Loosen the 2 screws of the terminal compartment cover and remove the terminal compartment cover.




2. Check that the NBR seal is properly seated on the inside of the mechanical interface to the flange mount, see figure below. Grease the flange mount or 48.3 mm round tube with grease suitable for NBR seals, and insert the flange mount or 48.3 mm round tube into the corresponding opening of the PRO device.

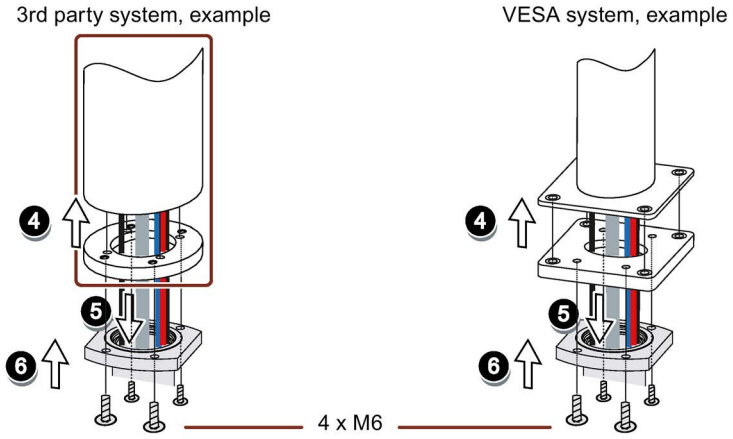



3. Attach the flange mount or the 48.3 mm round tube with the two M8 threaded pins. Observe the appropriate torque:
   - Siemens flange mount: 8 Nm
   - 48.3 mm steel round tube 8 Nm
   - 48.3 mm aluminum round tube: 5 Nm

4. When you are using an adapter plate from a Siemens VESA adapter set, attach the adapter plate to the support arm with 4 M6x12 screws.

   When you are using another adapter plate matching the Siemens flange mount, attach the adapter plate to the support arm with the supplied mounting hardware.

   When tightening the screws, pay attention to the torque that is specified for the support arm.




5. Insert all connecting cables through the opening of the flange mount or 48.3 mm round tube into the connection compartment of the PRO device. Make sure that the connection cables are not damaged.
6. When you are using an adapter plate from a Siemens VESA adapter set, attach the flange mount with 4 M6 screws, 16 mm to 20 mm long to the load-bearing system from below.

   When you are not using an adapter plate or a different adapter plate, attach the flange mount with 4 M6 screws to the load-bearing system from below. The screw length depends on the specifications for the load-bearing system and must be at least 16 mm to securely fasten the flange mount.

   The screws are not included in the product package of the PRO device. Pay attention to the torque that is specified for the support arm. Make sure that the connection cables are not crushed.
7. Connect all cables according to the description in the section below.
8. Fasten the terminal compartment cover to the device with the 2 supplied screws, torque 1.5 Nm. Check that the seal is sitting correctly.
9. Attach the lower cover supplied with the PRO device with 4 M4x12 screws, torque 1.5 Nm. Alternatively, you can extend the PRO device by adding an Extension Unit at the bottom. Observe the associated documentation.

## See also

System components for PRO devices (Page 19)

## 3.3 Connecting the PRO device

The specifications for Comfort V2 devices in the "Comfort Panels" operating instructions apply.

You should also observe the following notes.

**Note**

**Cable routing**

As the PRO device is not installed in a control cabinet but on a pedestal or support arm, the connecting cables must be routed through the support arm or the pedestal.

Make sure to consult the corresponding connection diagrams in the Quick Install Guide supplied with your PRO device.

### Connection cables

Use only shielded standard cables as data connecting cables; order information is available on the Internet (https://mall.industry.siemens.com).

**Note**

**Separate SELV/PELV circuits from other electric circuits or insulate the cables**

The wiring of SELV/PELV circuits must either be separated from the wiring of other non-SELV/PELV electric circuits, or the insulation of all conductors must be rated for the higher voltage. Alternatively, a grounded shielding or additional insulation must be installed around the wiring for SELV/PELV circuits or the other electric circuits, based on IEC 60364-4-41.

Note on using the HMI device within the scope of UL approval:

**⚠ CAUTION**

**Use copper cables at connectors with terminal connections**

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

**Utiliser des câbles en cuivre sur les connexions à bornes**

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

### Connecting the cables

**NOTICE**

**Observe local installation regulations**

Observe the local regulations and the local installation conditions, such as protective wiring for power supply lines, when connecting the cables.

| NOTICE |
|---|
| **Thermal stability and insulation of the cables**<br>Use cables with a maximum permitted operating temperature that is at least 20 °C higher than the maximum ambient temperature.<br>The insulation of the cables must be suitable for the operating voltage. |

| NOTICE |
|---|
| **Short-circuit and overload protection**<br>Different measures for short-circuit and overload protection are required when setting up an entire plant. The type of components and the level of obligation for the protective measures depend on the regulation that applies to your plant installation. |

- When connecting the cables, make sure that you do not bend the contact pins.
- Secure the cable connectors by fastening the connector to the socket with screws.
- Provide adequate strain relief for all connecting cables.
- The pin assignment of the ports is described in the technical specifications.

## Connection cables for the power supply connector

The power supply connector is included in the accessory pack.

Use flexible cables with wire end ferrule for the power supply connector that meet the specifications in the following table.

| Cables for the 24 V DC power supply connector | | Specification |
|---|---|---|
| Cable type | | Flexible cable (Cu), with wire end ferrule |
| Connectable cable cross-sections | | 0.5 ... 1.5 $mm^2$ |
| | | AWG*: 20 ... 16 |
| Number of cables per connection | | 1 |
| Stripped length of the cables | | 7 ... 8 mm |
| Wire end ferrules according to DIN 46228 | Without plastic sleeve | Form A, 7 mm long |
| | With plastic sleeve 0.5 ... 1.5 $mm^2$ | Form A, 7 mm long |
| Tool | | Screwdriver, conical, 3 mm to 3.5 mm |
| Connection technology | | Screw-type terminal |
| Tightening torque | | 0.5 ... 0.6 Nm |

* American Wire Gauge

More information on the supplied power supply connectors and additional permitted power supply connectors can be found in the section "Accessories (Page 26)".

## Connecting the controller

**Note**

**PROFIBUS connector with 45° cable outlet necessary**

When you connect the HMI device over PROFIBUS, you are using a PROFIBUS connector with 45° cable outlet. We recommend the PROFIBUS connector with article number 6ES7972-0BA42-0XA0.

**Note**

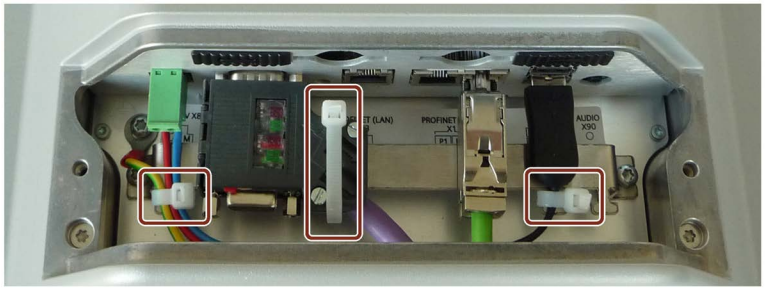
**Connecting PROFIBUS and PROFINET**

When you connect the HMI device over PROFIBUS and PROFINET, the interface X3 PROFINET (LAN) is covered up by the cable of the PROFIBUS connector with 45° cable outlet. Use one of the two X1 PROFINET (LAN) interfaces for PROFINET in this case.

## Securing the cables

Secure the connected connectors and cables with cable ties to the corresponding fastening elements of the strain relief plate. You must secure at least those connectors that do not snap into place in the socket or cannot be fastened with screws.

The figure below shows an example of how you can secure connectors and cables to a PRO device for pedestal (extendable, flange bottom).



## 3.4 Removing the PRO device

The HMI device is generally removed in the reverse order for mounting and connecting.

### Procedure

Proceed as follows:

1. When a project is running on the HMI device, close the project using the HMI device configured for this purpose. Wait for the Start Center to be displayed.
2. Switch off power to the HMI device.
3. Open the connection compartment by removing the terminal compartment cover.
4. Remove all cable ties that were installed for tension relief of the connecting cables in the terminal compartment of the HMI device.
5. Remove all plug-in connectors and the equipotential-bonding cable from the HMI device.
6. Remove the HMI device from the support arm or pedestal. Make sure that you do not damage the connecting cables.
7. Fasten the terminal compartment cover to the device with the 2 screws, torque 1.5 Nm.

### See also

Connecting the PRO device (Page 44)

Mounting the PRO device (Page 37)

# Commissioning the device

# 4

## 4.1 Notes on commissioning and operation

**⚠ WARNING**

**Personal injury or property damage due to no earth connection**

An inadequate earth connection or the lack of one may cause malfunction of the capacitive touch screen. Functions may not work properly. This can result in personal injury or property damage.

- Always connect the device to an earth conductor.
- The earth conductor from the device must be connected directly to earth with low impedance (short connection, minimum cross-section 4 $mm^2$).

You can find additional information on connecting the earth conductor in the section "Connecting the equipotential bonding" of the "Comfort Panels" operating instructions.

**⚠ WARNING**

**Personal injury or property damage due to maloperation**

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

Take the following precautions:

- Configure the plant so that safety-related functions are not operated with the touch screen.
- Switch off the device for cleaning and maintenance.

**⚠ WARNING**

**Danger of malfunction due to improper execution of gestures on the touch screen**

If gestures are executed incorrectly on the capacitive single-touch screen, these gestures may not be recognized or could be recognized incorrectly. The entries made are then not implemented by the device or are implemented incorrectly or in an unintended manner.

Incorrect execution of the functions can lead to errors in the operation of the plant and thus to physical injury.

Note when operating the capacitive single-touch screen:

- The touch screen reacts to contact on its surface, not to pressure.
- When using a touch pen: Operate the touch screen only with a touch pen for capacitive touch.
- Avoid unintended multiple touches, for example, with your knuckles.

## Notes on operation

**Note**

**Do not touch the touch screen during startup**

The device automatically calibrates the capacitive single-touch screen during startup. The touch screen is locked during calibration.

Do **not** touch the touch screen during startup. Make sure that you do **not** rest on the touch screen with the palm of your hand during startup.

Make sure that there are **no** conductive liquids on the touch screen during startup.

Note when operating the capacitive single-touch screen:

- Surface contact with a diameter of about 5 to 20 mm is required for an operator action to be detected.
- An operation with gloves with a material thickness of <2 mm is detected in most cases. However, check the usefulness of the gloves you are using.
- To avoid incorrect operation, certain inputs are ignored and blocked from further entry:
  - Simultaneous operation with multiple fingers.
  - Surface contact with a diameter of > 3 cm, for example, resting the palm of the hand on the touch screen
  - As soon as the touch screen is no longer touched, input is possible again.

## Functions of the capacitive single-touch screen

**General functions**

- Automatic calibration of the touch screen during startup; manual calibration is not necessary. For this reason the "Touch" tab does not exist in the "OP Properties" dialog for PRO devices.
- Touch and gesture operation analog to the operating options described in the "Comfort Panels" operating instructions.

**Security functions in an industrial environment**

The touch screen is locked for security reasons when following happens:

- There is a conductive liquid on the touch screen with ground contact via the enclosure or the operator, for example.
- Electromagnetic interference is present that exceeds the specification according to EN 61000-4-2.

Once the interference is over, the touch screen is no longer locked.

## 4.2 Memory concept

The HMI devices use the following memory types:

- **Internal memory**
- **Memory card** for data and logs
- **System memory card** for "automatic backup"
- USB port for a **USB storage medium** with data

**Note**

**Use the memory card for logs**

Due to the high number of read/write cycles use the memory card instead of the USB interface for logs.

### Internal memory

The following data is saved in the internal memory:

- Operating system
- Project file
- License keys
- User management
- Recipes*
- Other data, such as documents or media files

* To store recipes in the internal memory, select "\Flash\" as the path in WinCC.

**Note**

**Cyclic write access to the internal memory is not permitted**

Cyclic write access to internal memory is not permitted, because it reduces the service life of the internal memory and of the HMI device, for example, during configuration in which permanent system messages or user-defined messages are generated in the alarm buffer.

Configure an alarm window and check the number and frequency of the alarms that occur. Adjust the configuration accordingly if you expect a permanent load on the internal memory from alarms.

If permanent storage of alarms is not necessary, you can switch off the retentivity of the alarm buffer, see section "Activate/deactivate retentivity of the alarm buffer on the HMI device" in the "Comfort Panels" Operating Instructions.

To prolong the service life of your device, you should preferably use external memory cards to store and log data, such as the SIMATIC HMI Memory Card.

**Note**

**Number of permitted files in the root directory of the internal memory**

The number of files in the root directory is limited to 256. The number of files is not limited in the subdirectories of the internal memory.

## Memory card

The following data is saved on the memory card:

- Logs
- Data backups
- User data
- Recipes*)

*) To store recipes on the memory card, select "\Storage Card SD\" as the path in WinCC.

You can use commercially available memory cards with the "SD(IO / HC)" or "MMC" format. For reasons of data consistency, Siemens recommends the use of the SIMATIC HMI Memory Card as memory card, see Accessories (Page 26).

**Note**

**Data consistency**

When the HMI device is switched off, consistency of the stored data is ensured only for the SIMATIC HMI Memory Card ≥ 2 GB.

With commercially available memory cards, switching off the device may result in the loss of saved data, for example, due to a power failure.

The consistency of data stored in logs is only guaranteed if you use RDB format.

**Note**

**Frequency**

Logs are stored at a frequency of approx. 0.2 Hz. This may result in small amounts of data from not being stored shortly before a power failure.

Use a UPS to avoid data loss even shortly before a power failure.

## System memory card

The system memory card is part of the service concept of the HMI devices. If you enable the "automatic backup" function, all data from the internal memory of the HMI device is transferred to the system memory card. If the HMI device fails, you insert the system memory card into a replacement device. Once the replacement device starts, you can continue working in your project. This way you reduce your system downtimes to a minimum.

The system memory card is not visible in the user interface of the HMI device and it cannot be used for data storage. In order for the HMI device to recognize the system memory card, you have to insert the system memory card into the slot designed for it.

**Note**

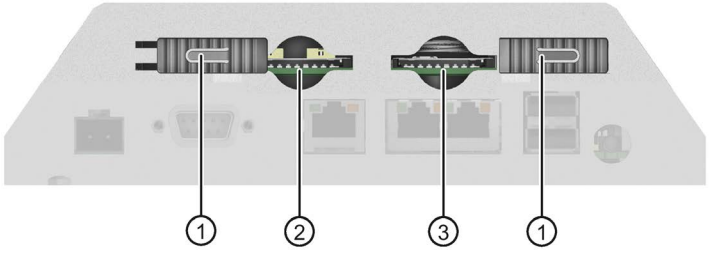
**Format of the system memory card**

Only a SIMATIC HMI Memory Card ≥ 2 GB may be used as a system memory card. All other memory cards are not recognized as system memory card by the HMI device.

### Slots for memory card and system memory card

The memory cards and system memory cards are protected by a safety catch.

The figure below shows the slots with safety catch.




① Safety catch
② Slot for the system memory card.
Permitted: SIMATIC HMI Memory Card ≥ 2 GB
③ Slot for memory card in the "SD(IO / HC)" or "MMC" format.
Recommendation: SIMATIC HMI memory card

## 4.3 Changing the memory cards

The memory cards and system memory cards are protected by a safety catch.

**Note**

**Potential loss of data**

The data on the memory card is lost if you attempt to remove it while the HMI device is accessing its data.

Do not remove the memory card while data is being accessed. Observe the corresponding alarms on the screen.

**Note**

**Do not remove the system memory card for "automatic backup" during operation**

If the "Automatic backup" function is activated, the system memory card must only be removed when the HMI device is switched off. You can find more information on this topic in the section "Using automatic backup" in the Comfort Panels Operating Instructions.

**Note**

**Removing the system memory card while the project is running**

If you remove the system storage card while a project is running, the project is ended.

## Requirement

No write access to the memory and/or system memory card is currently taking place.

## Procedure

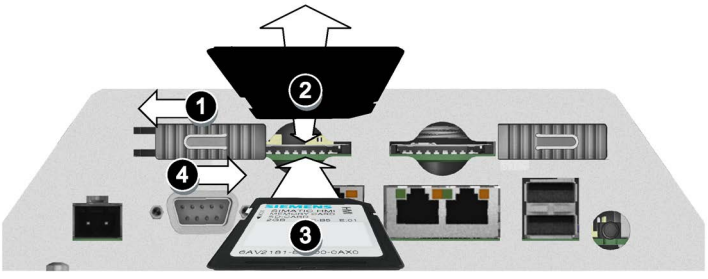
**Note**

**Use only a SIMATIC HMI Memory Card as a system memory card**

Only the SIMATIC HMI Memory Card ≥ 2 GB may be used as a system memory card. All other memory cards are not recognized as system memory card by the HMI device.

Proceed as follows:

1. Push the safety catch to the outside.
2. To remove the memory card and/or system memory card, briefly press the card in question.
   The card will be released and can be removed. This step is not required during commissioning.




3. Insert the new memory card and/or system memory card.
4. Slide the safety catch back into its original position.
   When you have inserted the system memory card, you will be prompted by the HMI device to enable the "Automatic Backup" function.

The memory card and/or system memory card is replaced.

# Maintenance and care

# 5

## 5.1 General information on maintenance and servicing

Observe the following when servicing and repairing protective equipment e.g. such as ground circuits or overvoltage protection components:

- Observe the maintenance and replacement intervals.
- Replace system components, including external cables, fuses and batteries only with equivalent components approved by the respective manufacturer.

## 5.2 Cleaning the device

The information in the section "Cleaning the device front" of the "Comfort Panels" Operating Instructions apply to the all-round IP65 and Type 4X/12 protected PRO devices. You should also observe the following notes.

| NOTICE |
| --- |
| **Disable or switch off the device while cleaning**<br>Switch off the HMI device or activate the clean screen when you clean the appliance during operation. |

**Note**

**Cleaning of the coated glass touch screen**

Take care not to damage the glass touch screen and the coating of the touch screen on Comfort PRO devices.

Use a cleaning cloth and dishwashing liquid or foaming screen cleaners. Apply as little pressure as possible on the touch screen when cleaning.

## 5.3 Repair, spare parts, recycling and disposal

The specifications in "Comfort Panels" operating instructions apply.

# Technical information

# 6

## 6.1 Labeling, certificates, and approvals

**Note**

**Approvals on the rating plate**

The following overview shows possible approvals.

Only the approvals specified on the rating plate apply to the device.

### CE marking

The devices meet the general and safety-related requirements of the following EU directives and conform with the harmonized European standards (EN) published in the official gazettes of the European Union and confirmed in the EU Declarations of Conformity:

- 2014/30/EU "Electromagnetic Compatibility Directive" (EMC Directive)
- 2011/65/EU "Directive of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment" (RoHS Directive)

When the device has Ex approval, the following also applies:

- 2014/34/EU "Equipment and protective systems intended for use in potentially explosive atmospheres" (Directive for Explosion Protection)

**EU Declarations of Conformity**

The EU Declarations of Conformity are available to the relevant authorities at the following address:

Siemens Aktiengesellschaft
DI FA
Gleiwitzer Straße 555
DE-90475 Nürnberg

You can also download these on the Internet using the keyword "Declaration of Conformity" at the following address: Comfort Panels PRO certificates (https://support.industry.siemens.com/cs/ww/en/ps/24408/cert)

### UKCA marking

The devices fulfil the general and safety-related requirements of the following regulations and related amendments, and complies with the designated British standards (BS) published in the official consolidated list of the British Government.

- Electromagnetic Compatibility Regulations 2016 (EMC)
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (RoHS)

When the device has Ex approval, the following also applies:

- Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016 (Explosion Protection)

**UK Declarations of Conformity**

The UK Declarations of Conformity are available to the relevant authorities at the following address:

Siemens plc
Princess Road
Manchester
M20 2UR
United Kingdom

You can also download these on the Internet using the keyword "Declaration of Conformity" at the following address: Comfort Panels PRO certificates (https://support.industry.siemens.com/cs/ww/en/ps/24408/cert)

## UL approval

Observe the following notes:

- The device shall be supplied from an isolating source.
- Only for use in LAN, not for connection to telecommunication circuits.

Underwriters Laboratories Inc. (E116536 or E472609) in accordance with

- UL 61010-1 and UL 61010-2-201
- CAN/CSA C22.2 No. 61010-1 and 61010-2-201

or

Underwriters Laboratories Inc. (E222109 or E472610) in accordance with

- UL 61010-1 and UL 61010-2-201
- CAN/CSA C22.2 No. 61010-1 and 61010-2-201
- UL 121201 (Hazardous Location)
- CAN/CSA C22.2 No. 213 (Hazardous Location)

Approved for use in

**Devices with article numbers -...1**

Approved for use in

- Class I, II, III, Division 2, Group A, B, C, D, F, G; T4
- Class I, Zone 2, Group IIC T4
- Zone 22, Group IIIA, IIIB T135°C
- non-hazardous locations

**Devices with article numbers -...0**

Approved for use in

- Class I, Division 2, Group A, B, C, D; T4
- Class I, Zone 2, Group IIC; T4
- non-hazardous locations

## FM Approval




Factory Mutual Research (FM) conforming to

- Approval Standard Class number 3611, 3600, 3810
- ANSI/UL 61010-1
- ANSI/UL 121201
- ANSI/NEMA 250
- CSA-C22.2 No. 94
- CSA C22.2 No. 213
- CSA C22.2 No. 61010-1

**Devices with article numbers -...1**

Approved for use in

- Class I, II, III, Division 2, Group A, B, C, D, F, G; T4
- Class I, Zone 2, Group IIC T4
- Zone 22, Group IIIA, IIIB T135°C
- non-hazardous locations

**Devices with article numbers -...0**

Approved for use in

- Class I, Division 2, Group A, B, C, D; T4
- Class I, Zone 2, Group IIC T4
- non-hazardous locations

**Installation Instructions for cFMus:**

WARNING – Do not remove or replace while circuit is live when a flammable or combustible atmosphere is present.

WARNING – Substitution of components may impair suitability of the equipment.

CAUTION – To prevent injury, read the manual before use.

## ATEX/UKEX/IECEx approval

**Notes on use in hazardous areas**

Observe the following FAQ regarding the use of an HMI device in hazardous areas:
FAQ 291285 (https://support.industry.siemens.com/cs/ww/en/view/291285)

When using the device in hazardous areas, ensure that all plugs connected to the device are secured in a captive manner, see section "Connecting the PRO device (Page 44)".

You can find more information about explosion protection, EU/UK Declarations of Conformity and other certificates on the Internet at the following address:

Certificates for Comfort Panels PRO
(https://support.industry.siemens.com/cs/ww/en/ps/24408/cert)

**ATEX/UKEX approval**

For an HMI device with "Ex" marking, the following approvals apply according to the following standards.

- Standards:
  - EN IEC 60079-0
  - EN IEC 60079-7
  - EN 60079-31
- Approvals:

| | | |
|---|---|---|
|  | II 3 G | Ex ec IIC T4 Gc |
| | II 3 D | Ex tc IIIC T 70 °C Dc |

ATEX certificate number: UL 23 ATEX 3022X

UKEX certificate number: UL24UKEX2975X

**IECEx approval**

For an HMI device with "IECEx" marking, the following approvals apply according to the following standards.

- Standards:
  - IEC 60079-0
  - IEC 60079-7
  - IEC 60079-31
- Approvals:

| | |
|---|---|
|  | Ex ec IIC T4 Gc |
| | Ex tc IIIC T70°C Dc |

IECEx certificate number: IECEx UL 23.0042X

**Specific Conditions of use**

- When used in an area requiring the use of equipment with EPL Gc, the following additional conditions apply:
  - The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1.
  - Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.
- Pedestal (flange bottom) type and Support arm (flange top) type of SIMATIC Comfort PRO series assembled with the packaged base adapter provide the degree of protection IP65. The underside of the base adapter shall be installed with a certified enclosure that ensures a minimum degree of protection of IP54 for Zone 2 in accordance with IEC/EN IEC 60079-7, and at least IP54 for Zone 22 with Group IIIA and IIIB and at least IP6X with group IIIC in accordance with IEC/EN 60079-31.

- SIMATIC Comfort PRO support arm (round tube) type series assembled with packaged low cover provide the degree of protection IP65. The round tube opening of the device shall be installed with a certified enclosure which has a round tube end of 48.3 mm outside diameter that ensures a minimum degree of protection of IP54 for Zone 2 in accordance with IEC/EN IEC 60079-7, and at least IP54 for Zone 22 with Group IIIA and IIIB and at least IP6X with group IIIC in accordance with IEC/EN 60079-31.
- SIMATIC Comfort PRO series is acceptable for use in different external ambient temperature ranges (Ta: 0 °C to 40 °C/45 °C), depending on the mounting position. Users shall access Ambient Conditions section (Page 64) for details.
- For SIMATIC Comfort PRO series, the fastener shall only be replaced with M4 screws specified by the manufacturer.
- USB interfaces are not permitted to connect with USB devices except for equipment with USB cable connection.
- The side cover on the either side of Base adapter (Article number: 6AV7674-1KA00-0AA0) must not be opened during installation or normal operation.
- To avoid an electrostatic charge, wipe the enclosure surface with a damp cloth only.

## CCCEx approval

The following approvals according to the following standards are valid for a device with the "CCC" marking.

- Standards:
  - GB/T 3836.1 (Explosive atmospheres - Part 1: Equipment - General requirements)
  - GB/T 3836.3 (Explosive atmospheres - Part 3: Device protection through type of protection "e")
  - GB/T 3836.31 (Explosive atmospheres - Part 31: Equipment dust explosion protection by enclosure "t")
- Approvals:
  - Ex ec IIC T4 Gc
  - Ex tc IIIC T70°C Dc

**Special conditions of use**

- When used in an area requiring the use of equipment with EPL Gc, the following additional conditions apply:
  - The equipment shall only be used in an area of at least pollution degree 2, as defined in GB/T 16935.1.
  - Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.

- Pedestal (flange bottom) type and Support arm (flange top) type of SIMATIC Comfort PRO series assembled with the packaged base adapter provide the degree of protection IP65. The underside of the base adapter shall be installed with a certified enclosure that ensures a minimum degree of protection of IP54 for Zone 2 in accordance with GB/T 3836.3, and at least IP54 for Zone 22 with Group IIIA and IIIB and at least IP6X with group IIIC in accordance with GB/T 3836.31.
- SIMATIC Comfort PRO support arm (round tube) type series assembled with packaged low cover provide the degree of protection IP65. The round tube opening of the device shall be installed with a certified enclosure which has a round tube end of 48.3 mm outside diameter that ensures a minimum degree of protection of IP54 for Zone 2 in accordance with GB/T 3836.3, and at least IP54 for Zone 22 with Group IIIA and IIIB and at least IP6X with group IIIC in accordance with GB/T 3836.31.
- SIMATIC Comfort PRO series is acceptable for use in different external ambient temperature ranges (Ta: 0 °C to 40 °C/45 °C), depending on the mounting position. Users shall access Ambient Conditions section (Page 63) for details.
- For SIMATIC Comfort PRO series, the fastener shall only be replaced with M4 screws specified by the manufacturer.
- USB interfaces are not permitted to connect with USB devices except for equipment with USB cable connection.
- The side cover on the either side of Base adapter (Article number: 6AV7674-1KA00-0AA0) must not be opened during installation or normal operation.
- To avoid an electrostatic charge, wipe the enclosure surface with a damp cloth only.

### IEC 61010-2-201

The devices meet the requirements and criteria of the IEC 61010 standard, Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-201: Special requirements for control equipment.

### IEC 61131

The devices meet the requirements and criteria of IEC 61131-2, Programmable Logic Controllers, Part 2: Operating resource requirements and tests.

### RCM AUSTRALIA/NEW ZEALAND



This product meets the requirements of EN 61000-6-4 Generic standards – Emission standard for industrial environments.

### KOREA



This product conforms to Limit Class A for emission of radio interference. This device is not intended to be used in residential areas.

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

### EAC (Eurasian Conformity)



The EAC (Eurasian Conformity) marking confirms the conformity with the technical regulations (TR) of the Eurasian Economic Union.

### WEEE label (European Union)



Disposal instructions, observe the local regulations and the section "Repair, spare parts, recycling and disposal (Page 54)".

## 6.2 Electromagnetic compatibility

The HMI device satisfies, among other things, the requirements of the EMC guidelines of the European domestic market.

### EMC-compatible installation of the HMI device

The EMC-compliant installation of the HMI device and the application of interference-proof cable is the basis for interference-free operation.

Observe the following manuals in addition to these operating instructions:

- Designing interference-free controllers (https://support.industry.siemens.com/cs/ww/en/view/59193566)
- Industrial Ethernet / PROFINET - Passive network components (https://support.industry.siemens.com/cs/ww/en/view/84922825)
- PROFIBUS networks (https://support.industry.siemens.com/cs/ww/en/view/1971286)

### Pulse-shaped disturbance

The following table shows the electromagnetic compatibility of modules with regard to pulse-shaped interference. The precondition for electromagnetic compatibility is that the HMI device meets the specifications and guidelines for electrical installation.

| Pulse-shaped interference | Tested with | Test level equivalence |
|---|---|---|
| Electrostatic discharge in accordance with IEC 61000-4-2 | Air discharge: 8 kV | 3 |
| | Contact discharge: 6 kV | |
| Burst pulses (high-speed transient interferences) in accordance with IEC 61000-4-4 | 2 kV supply cable<br>1 kV signal line, < 30 m | 3 |
| | 2 kV signal line, > 30 m | 4 |

| Pulse-shaped interference | Tested with | Test level equivalence |
|---|---|---|
| **PRO devices with article numbers -...1**<br>High-energy single pulse (surge) according to IEC 61000-4-5<br><br>Coupling process:<br>42 Ω, 0.5 µF [1] | Asymmetrical coupling (line to ground): | |
| | • 1 kV supply cable, DC voltage | 2 |
| | • 2 kV signal line/data cable, > 30 m | 3 |
| | Symmetrical coupling (line to line): | |
| | • 0.5 kV power cable, DC voltage | 2 |
| | • 1 kV signal line, > 30 m | 3 |
| **PRO devices with article numbers -...0**<br>High-energy single pulse (surge) according to IEC 61000-4-5<br><br>External protective wiring required, see Function Manual "Designing interference-free controllers", section 7 "Lightning protection and overvoltage protection" | Asymmetrical coupling (line to ground): | |
| | • 2 kV power cable, DC voltage with protective elements | 3 |
| | • 2 kV signal line/data cable, > 30 m, with protective elements as required | 3 |
| | Symmetrical coupling (line to line): | |
| | • 1 kV power cable, DC voltage with protective elements | 3 |
| | • 1 kV signal line, > 30 m, with protective elements as required | 3 |

[1] Basically, you must connect the HMI device to your own distribution system (or batteries) via an upstream local power supply unit. If you connect the HMI device directly to your own distribution system, you must provide additional protective measures against overvoltage.

## Sinusoidal interference

The following table shows the EMC behavior of the modules with respect to sinusoidal interference. This requires the HMI device to meet the specifications and directives for electrical installation.

| Sinusoidal interference | Test values |
|---|---|
| HF radiation (electromagnetic fields) according to IEC 61000-4-3 | 80% amplitude modulation at 1 kHz<br>• Up to 10 V/m in the 80 MHz to 1 GHz range<br>• Up to 3 V/m in the 1.4 GHz to 6 GHz range |
| HF current feed on cables and cable shields according to IEC 61000-4-6 | Test voltage 10 V, with 80% amplitude modulation of 1 kHz in the 150 kHz to 80 MHz range |
| Magnetic field strength according to IEC 61000-4-8 | 50/60 Hz; 100 A/m RMS |

### Emission of radio interference

The following table shows the interference emission from electromagnetic fields according to EN/IEC 61000-6-4, measured at the following distance.

**Radiated emission (emitted interference)**

| Frequency range | Measuring distance | Interference emission |
|---|---|---|
| 30 ... 230 MHz | 10 m | < 40 dB (µV/m) quasi-peak |
| 230 ... 1000 MHz | 10 m | < 47 dB (µV/m) quasi-peak |
| 1 ... 3 GHz | 3 m | < 76 dB peak and < 56 dB average |
| 3 ... 6 GHz | 3 m | < 80 dB peak and < 60 dB average |

**Emission of radio interference voltages**

| Frequency range | Interference emission |
|---|---|
| 0.150 ... 0.5 MHz | < 89 dB quasi-peak and < 76 dB average |
| 0.5 ... 30 MHz | < 83 dB quasi-peak and < 70 dB average |

### See also

EMC information in section "Notes about usage (Page 30)".

## 6.3 Mechanical ambient conditions

### 6.3.1 Transport and storage conditions

The following information is for a device that is transported and stored in its original packaging.

| Type of condition | Permitted range |
|---|---|
| Free fall | ≤ 0.3 m |
| Vibration according to IEC 60068-2-6 | 5 .. 8.4 Hz, deflection 3.5 mm<br>8.4 ... 500 Hz, acceleration 1 g |
| Shock according to IEC 60068-2-27 | 250 $m/s^2$, 6 ms, 1000 shocks |

### 6.3.2 Operating Conditions

The following information applies to a device installed according to the specifications in these operating instructions.

| Type of condition | Permitted range |
|---|---|
| Vibration according to IEC 60068-2-6 | 10 ... 58 Hz, deflection 0.0375 mm<br>58 ... 200 Hz, acceleration 0.5 g |
| Shock according to IEC 60068-2-27 | 150 $m/s^2$, 11 ms, 3 shocks |

Shock pulses within the specified range can be transferred to the display but do not impact the functionality of the device.

# 6.4 Climatic ambient conditions

## 6.4.1 Transport and storage conditions

The following information applies to a device that is transported in the original packaging and weather-proof packaging, and stored from some time.

| Type of condition | Permitted range |
|---|---|
| Temperature | –20 ... 60 °C |
| Atmospheric pressure | 1140 ... 660 hPa, corresponds to an elevation of -1000 to 3500 m |
| Relative humidity | 10 ... 90 % |
| Pollutant concentration | In accordance with ANSI/ISA-71.04-2013 severity level G3 |

**Note**

If dewing has developed, wait until the HMI device has dried completely before switching it on.

Do not expose the HMI device to direct radiation from a heater.

## 6.4.2 Operating Conditions

The following information applies to a device installed according to the specifications in these compact operating instructions.

The HMI device is intended for stationary use.

| Type of condition | Mounting position | Permitted range |
|---|---|---|
| Temperature, Mounting in landscape format | Vertical | 0 ... 45 °C |
| | Inclined, maximum inclination 35° | 0 ... 40 °C |
| Atmospheric pressure, operation elevation | 1140 ... 795 hPa, corresponds to an elevation of -1000 to 2000 m | |
| Relative humidity | From 10 to 90%, no condensation [1] | |
| Pollutant concentration | According to ANSI/ISA-71.04-2013 severity level G3 | |

[1] PRO devices: No condensation inside the housing

Observe the Notes on use (Page 30) and section "Permitted mounting positions (Page 36)".

**Note**

The system components connected to the HMI device, the power supply for example, must also be suited to the respective operating conditions.

# 6.5 Information on insulation tests, protection class and degree of protection

## Insulation test

The insulation strength is demonstrated in the type test with the following test voltages in accordance with IEC 61010-2-201/IEC 61131-2:

| Circuit | Insulation tested with (type test) |
|---|---|
| Rated voltage $U_e$ 24 V | 707 V DC to other circuits / to ground |
| Ethernet connector | 2250 V DC |

## Degree of pollution and overvoltage category

The device meets the following requirements according to IEC 61010-2-201/IEC 61131-2:

| | |
|---|---|
| Degree of pollution | 3 (fully-enclosed) |
| Overvoltage category | II |

## Protection class

Protection class III according to IEC 61010-2-201/IEC 61131-2.

## Protection against foreign objects and water

The device meets the requirements according to IEC 60529 and UL50E.

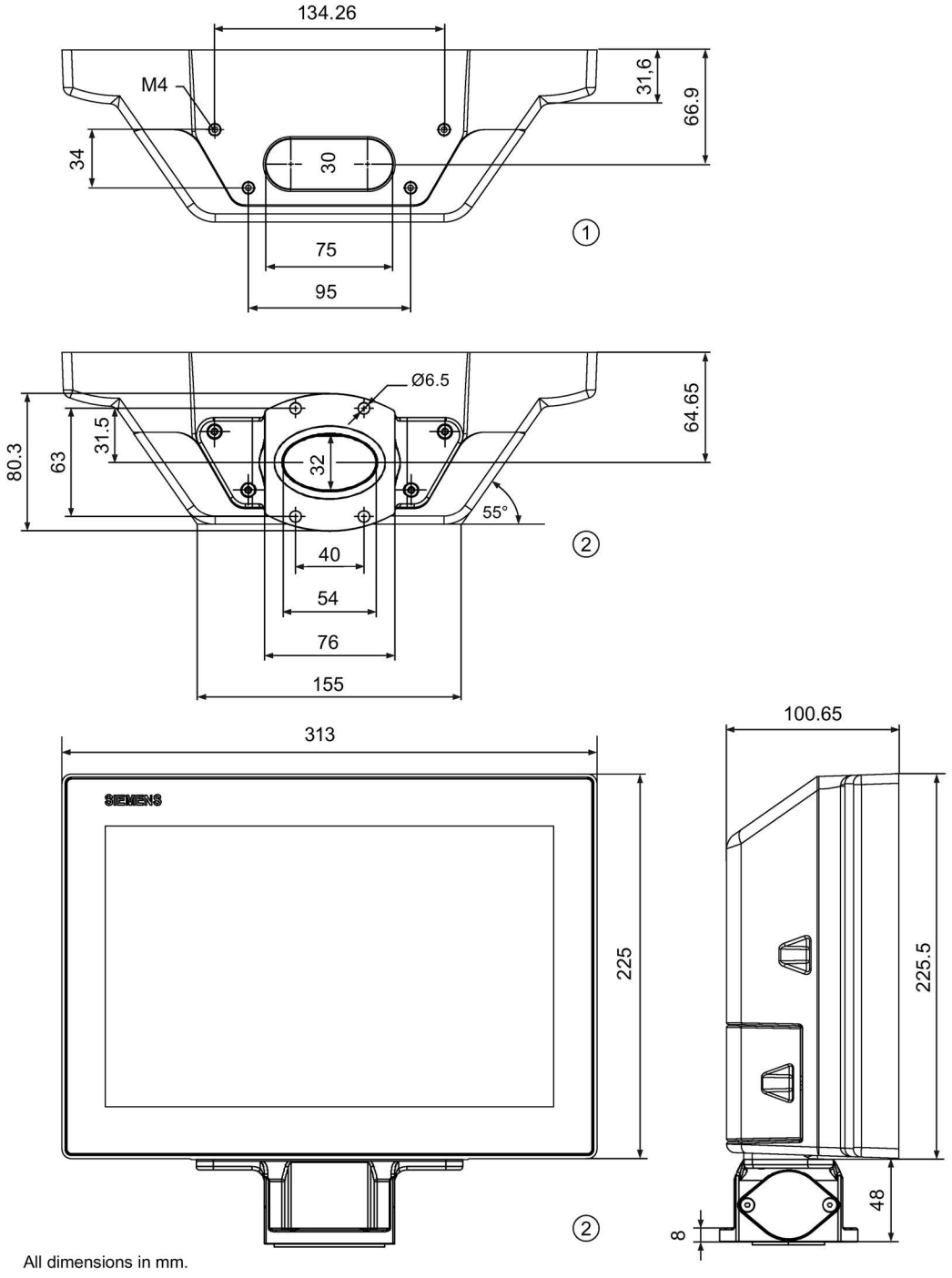
| Device side | Degree of protection |
|---|---|
| All-round | • IP65 according to IEC 60529<br>• Enclosure Type 4X/12 (indoor use only) according to UL50E |

The degree of protection can only be guaranteed if the seals are completely flush at the mechanical interfaces and at the terminal compartment, and the associated covers are closed.

# 6.6 Dimension drawings

## 6.6.1 TP1200 Comfort PRO

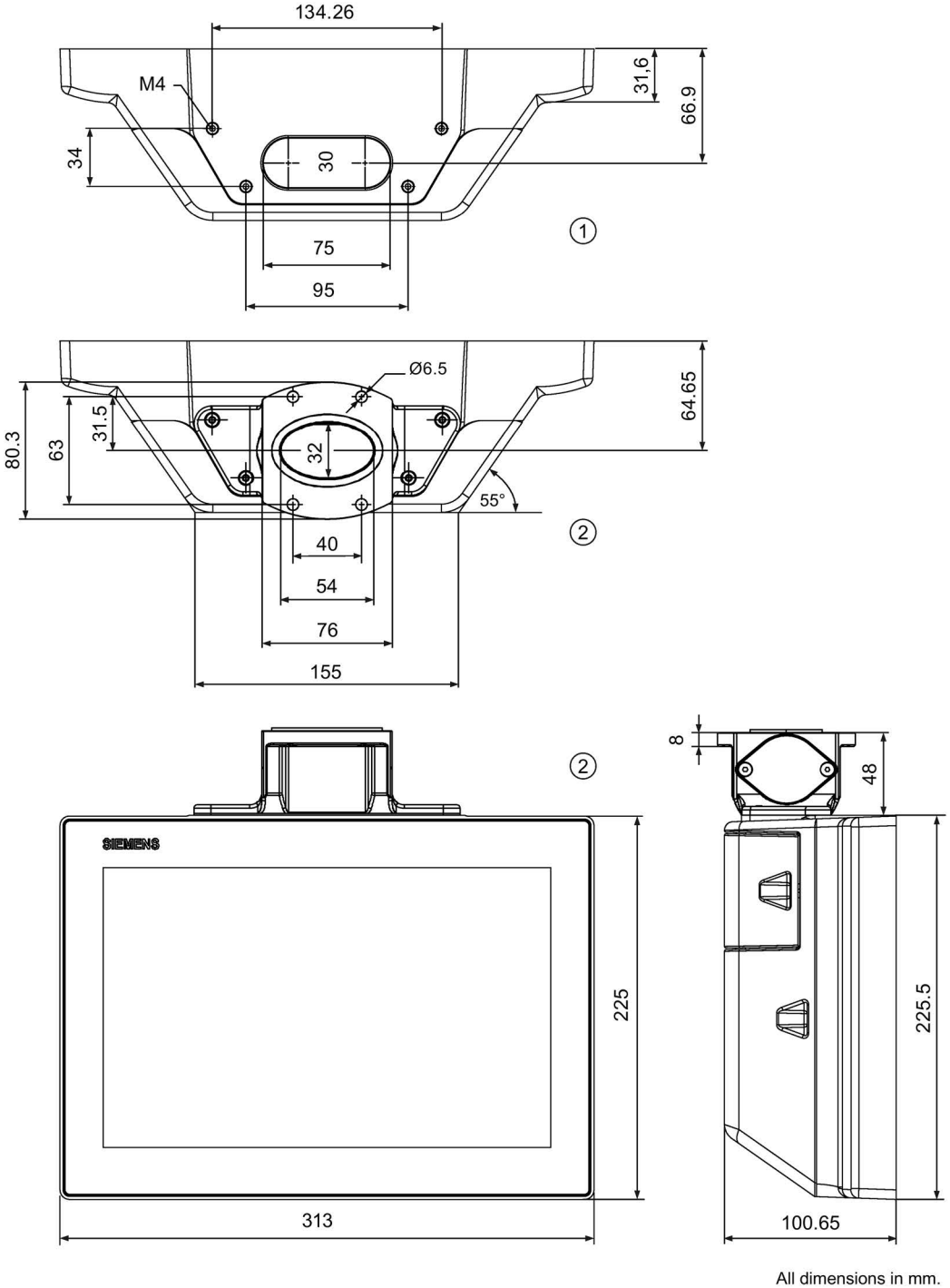
**TP1200 Comfort PRO for pedestal (extendable, flange bottom)**




① Without base adapter

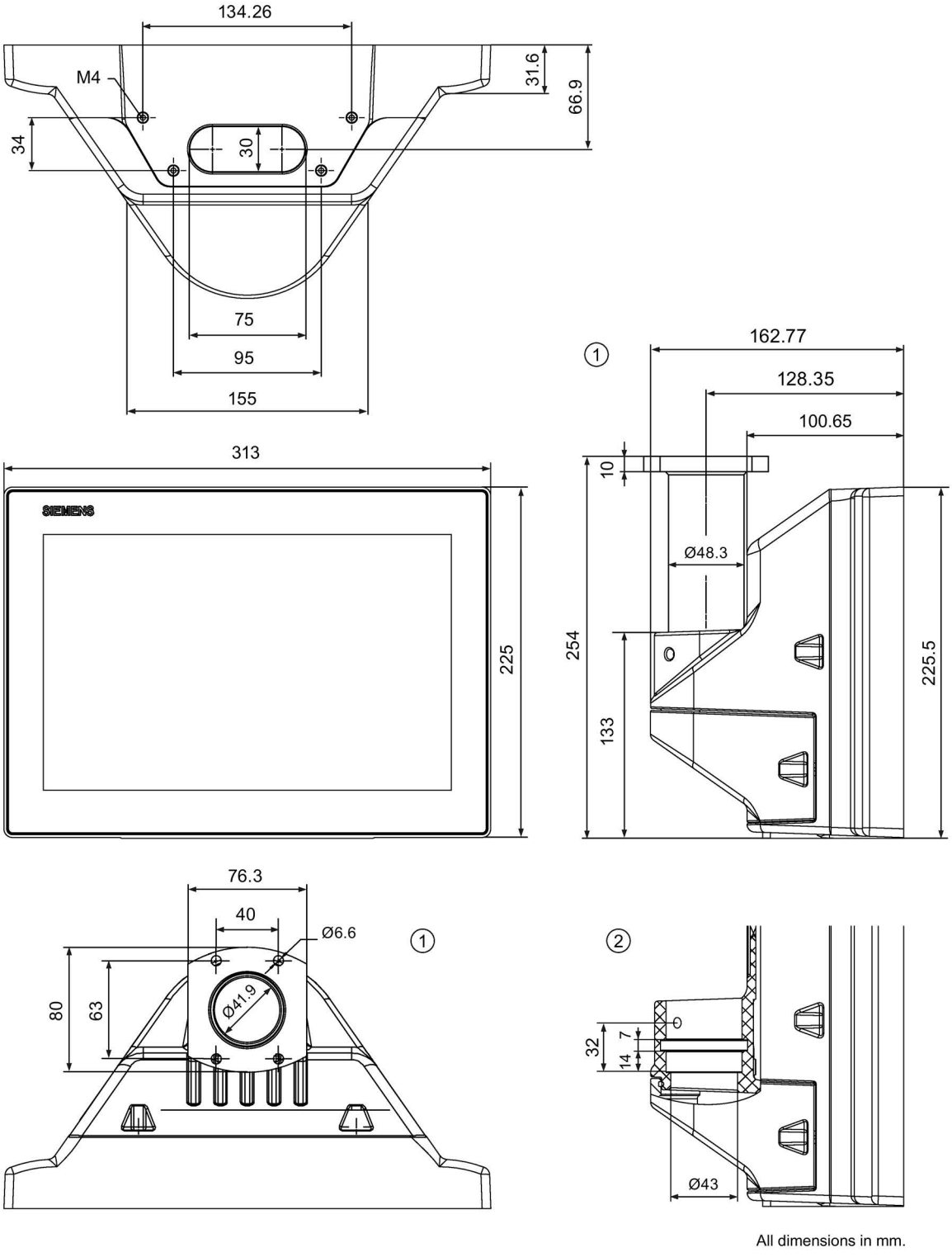
② With base adapter

**TP1200 Comfort PRO for support arm (not extendable, flange top)**




① Without base adapter
② With base adapter

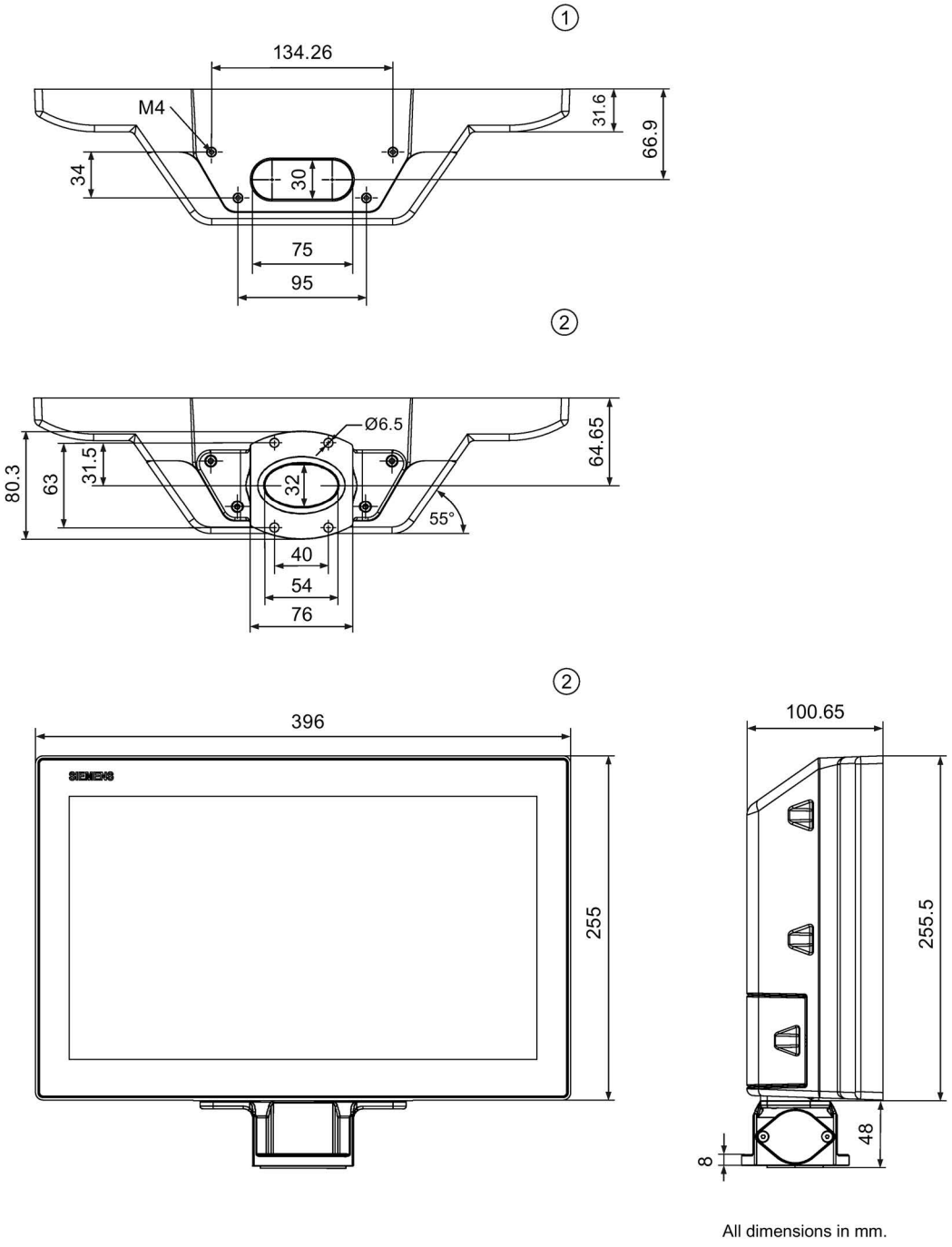
**TP1200 Comfort PRO for support arm (extendable, round tube)**




① with flange mount
② without flange mount

## 6.6.2 TP1500 Comfort PRO

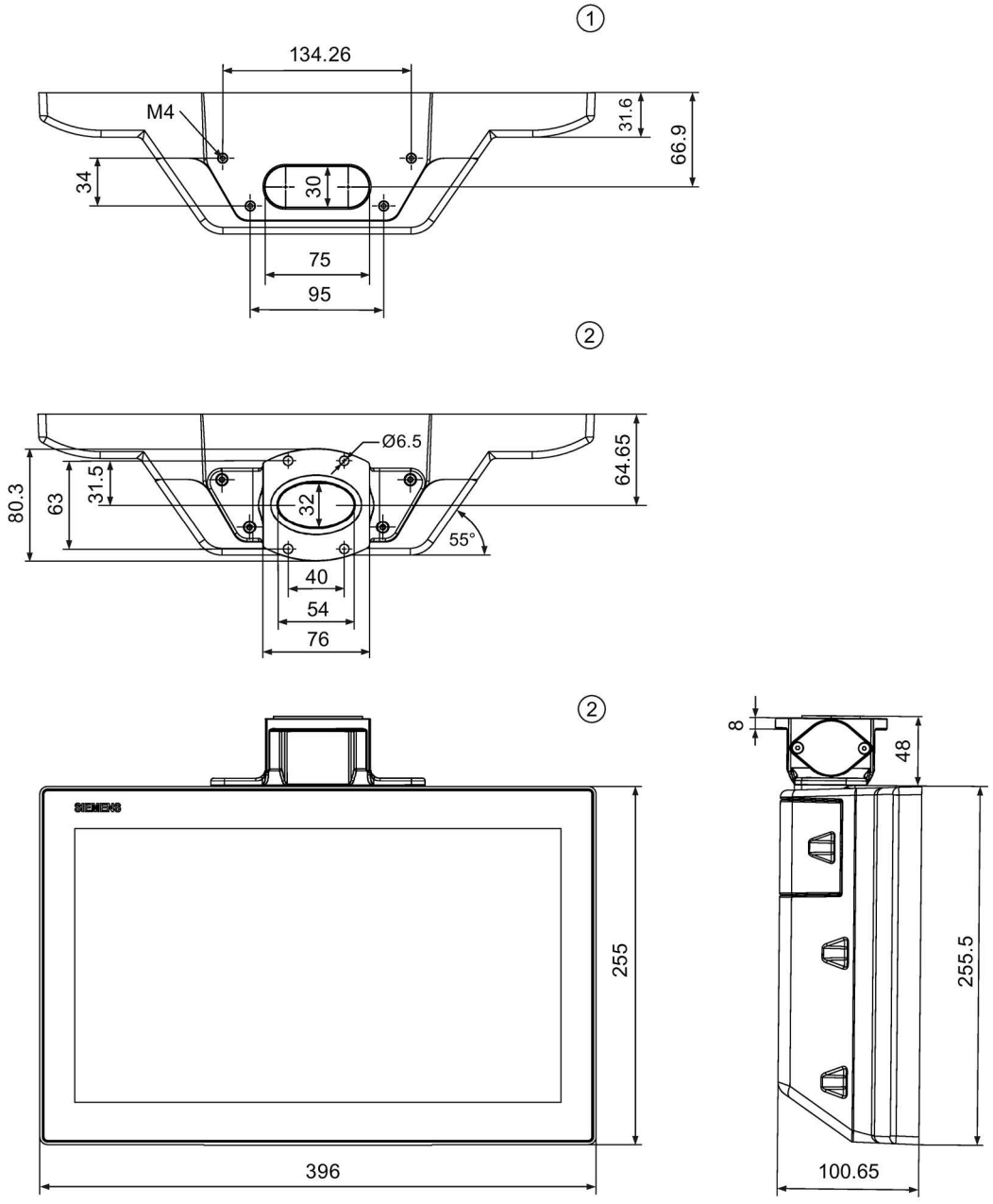
**TP1500 Comfort PRO for pedestal (extendable, flange bottom)**




All dimensions in mm.

① Without base adapter
② With base adapter

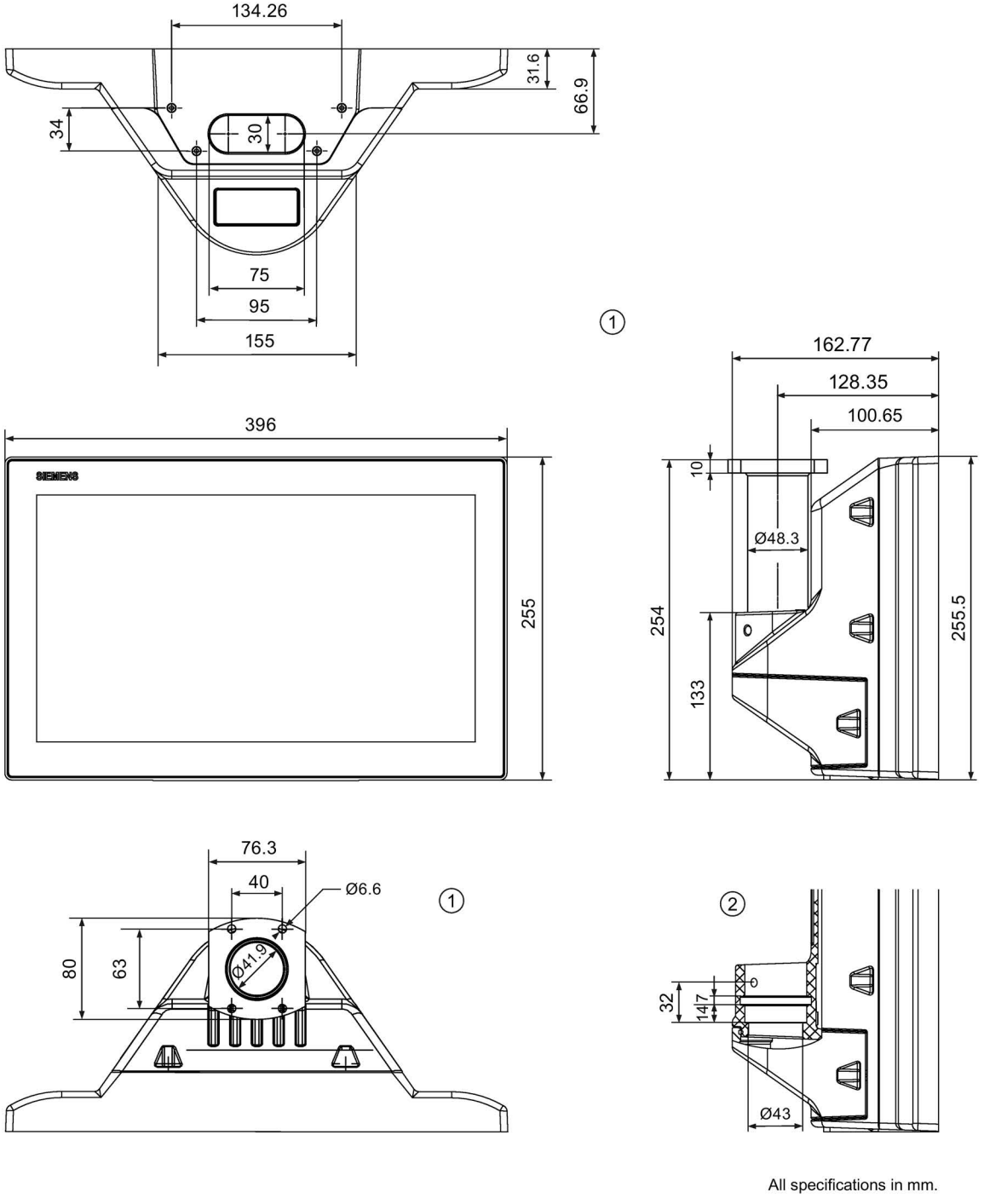
**TP1500 Comfort PRO for support arm (not extendable, flange top)**




All dimensions in mm.

① Without base adapter
② With base adapter

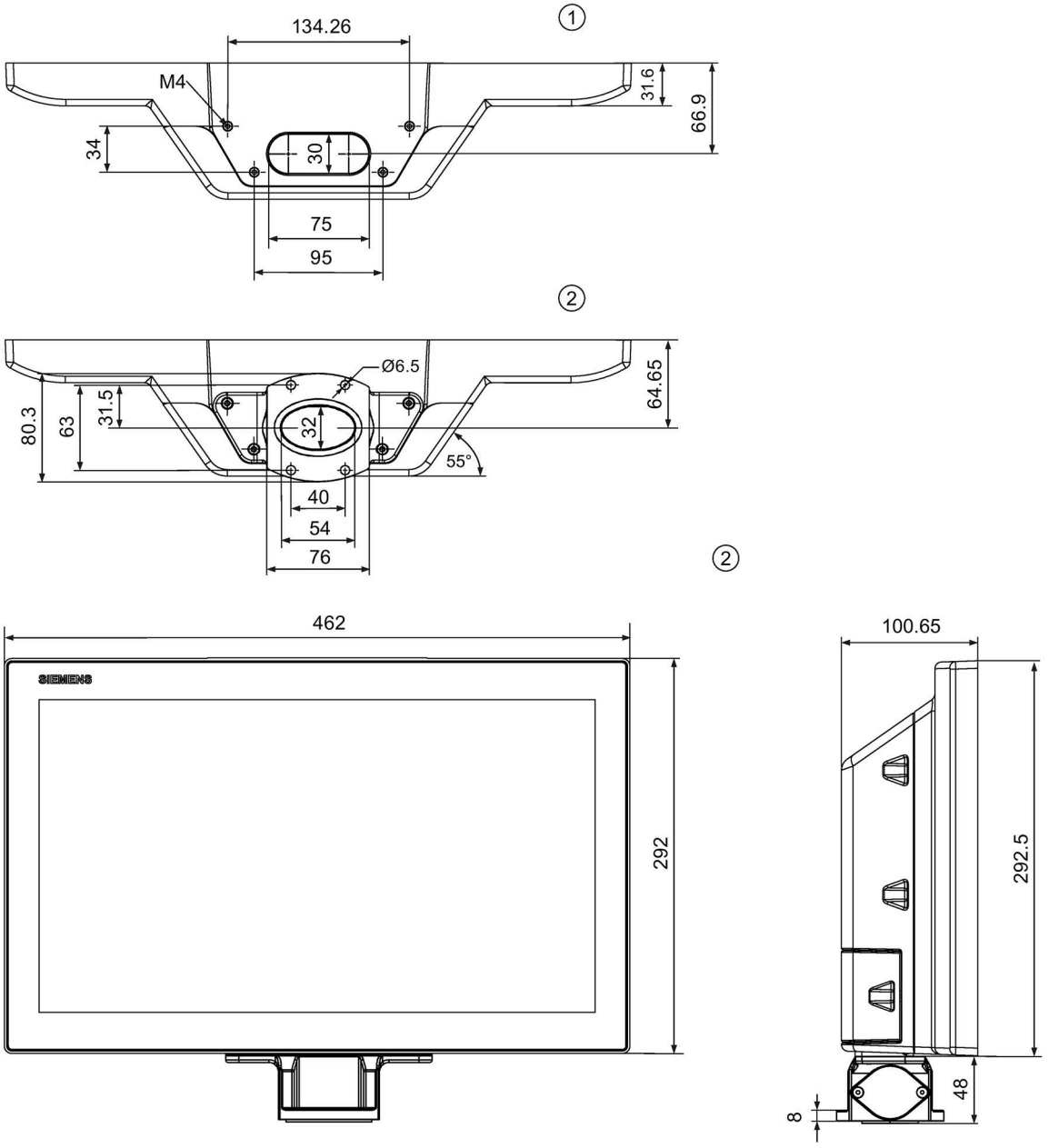
**TP1500 Comfort PRO for support arm (extendable, round tube)**




① with flange mount
② without flange mount

## 6.6.3 TP1900 Comfort PRO

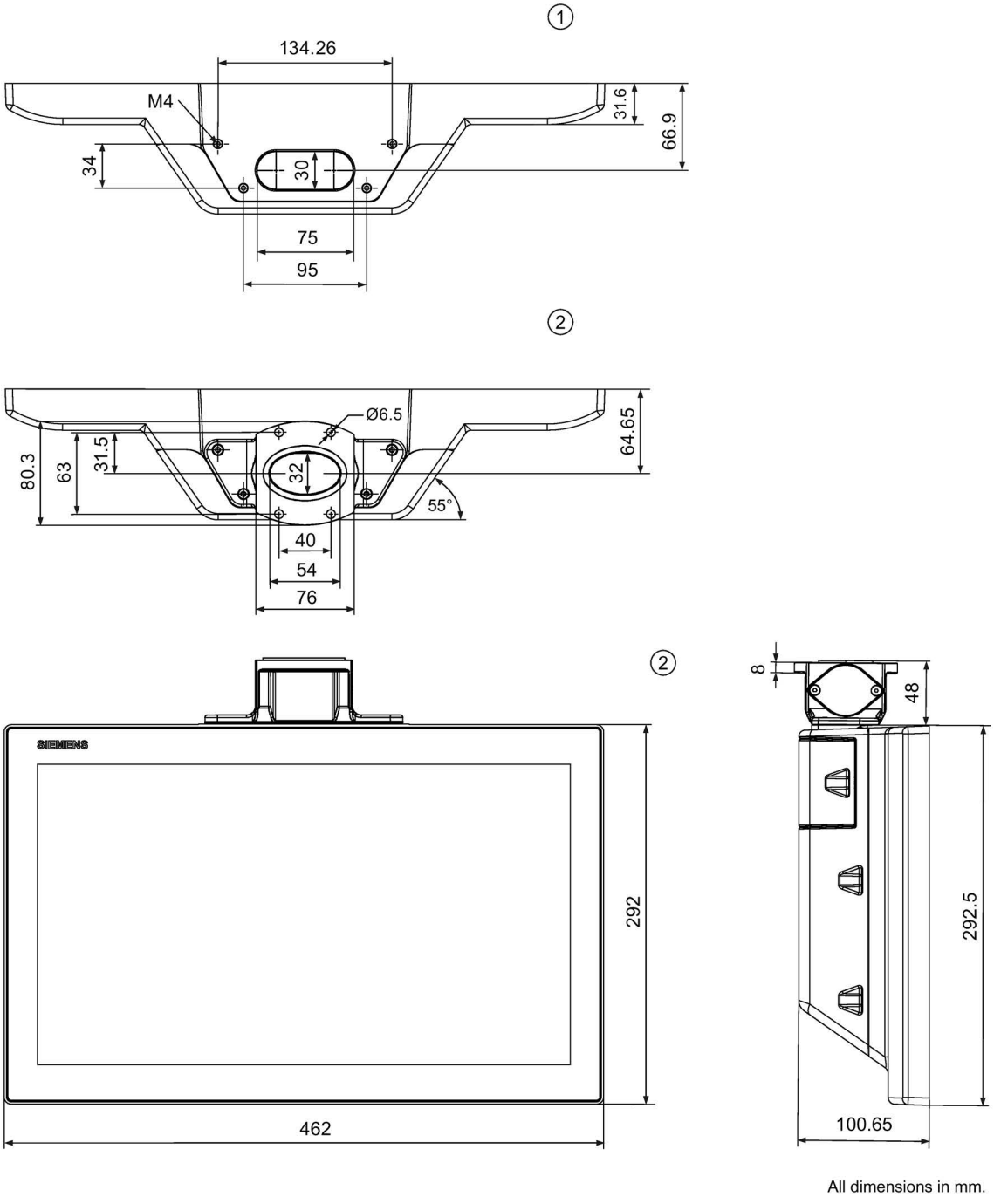
**TP1900 Comfort PRO for pedestal (extendable, flange bottom)**




All dimensions in mm.

① Without base adapter
② With base adapter

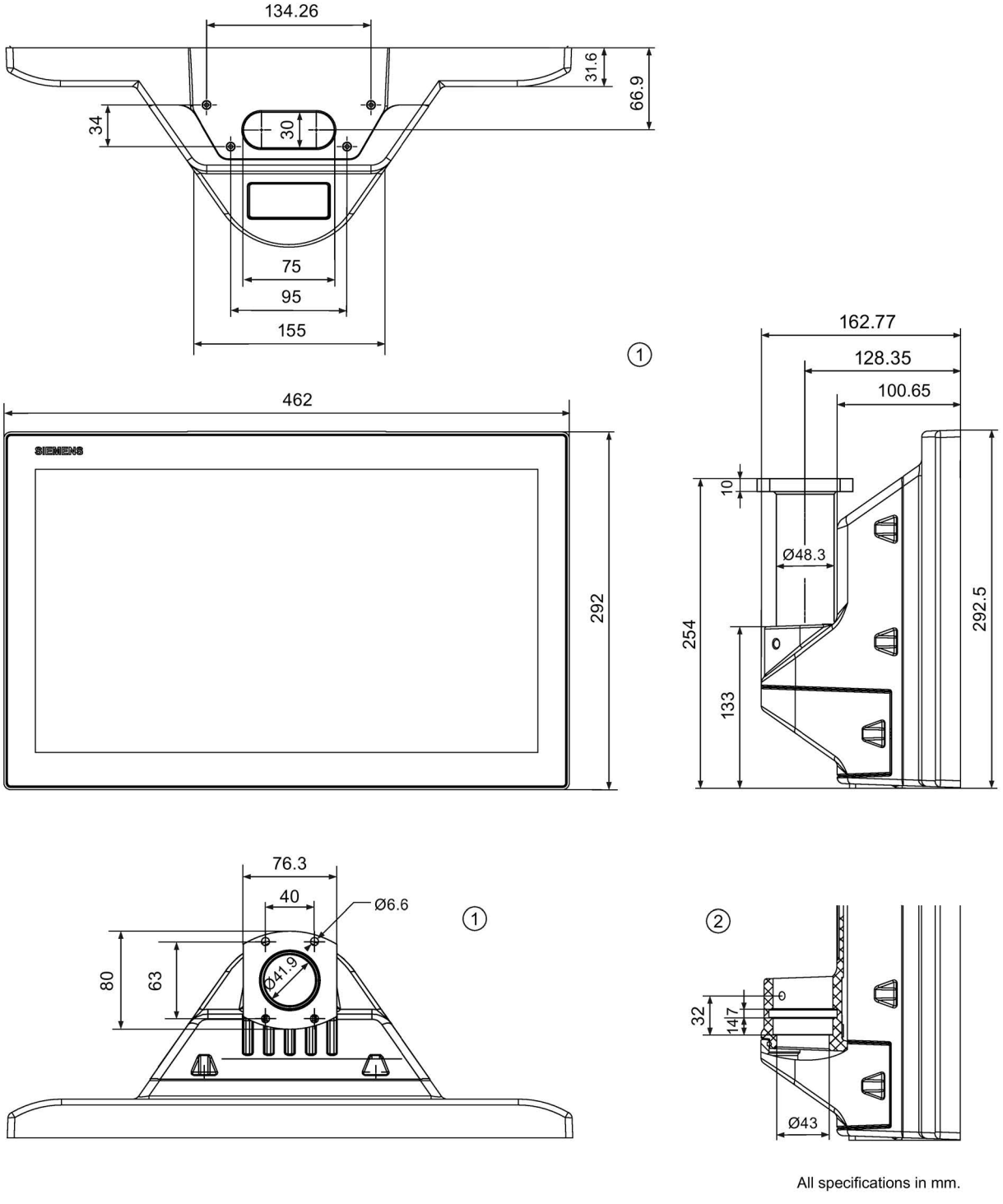
**TP1900 Comfort PRO for support arm (not extendable, flange top)**




All dimensions in mm.

① Without base adapter
② With base adapter

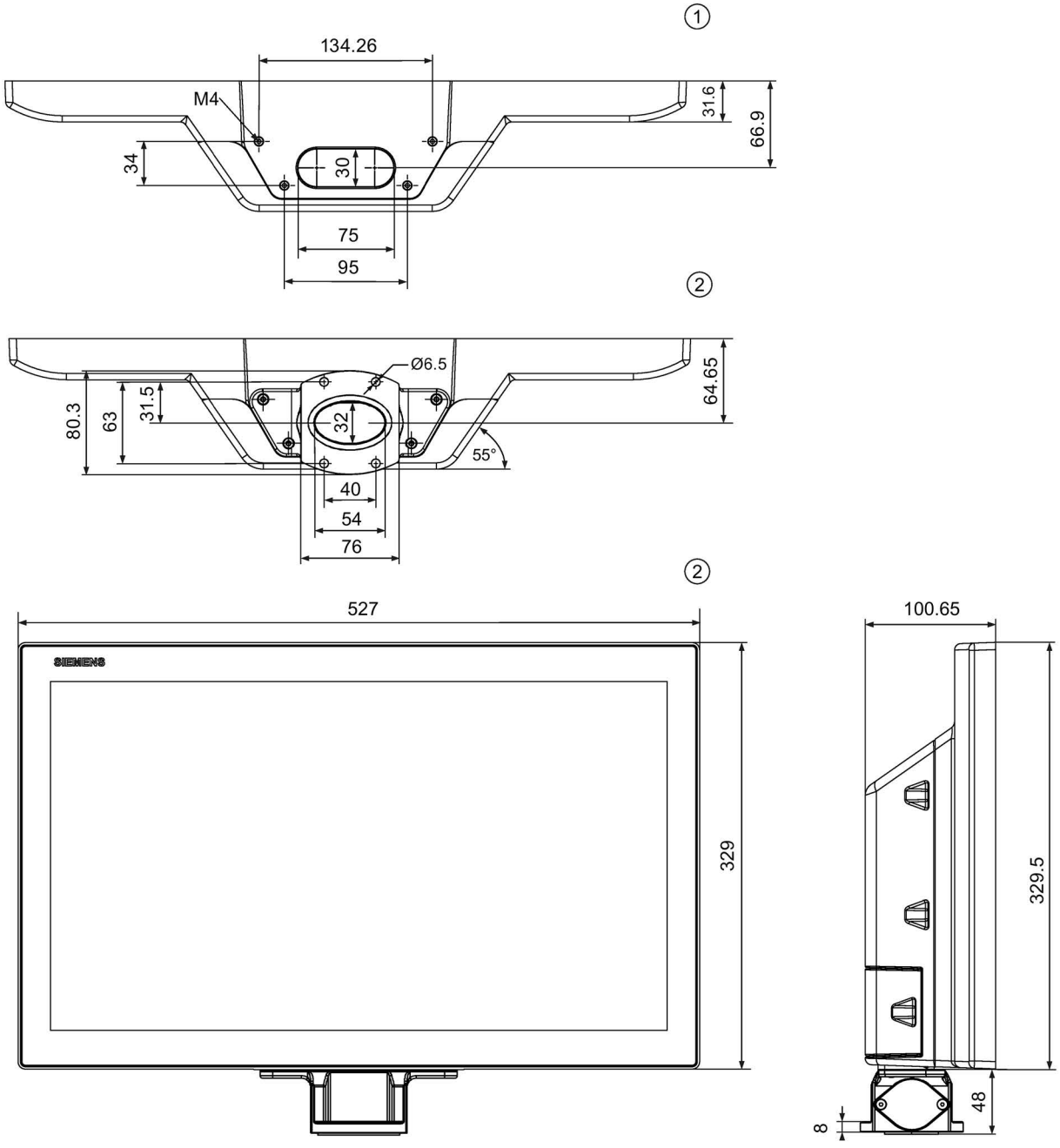
**TP1900 Comfort PRO for support arm (extendable, round tube)**




① with flange mount
② without flange mount

## 6.6.4 TP2200 Comfort PRO

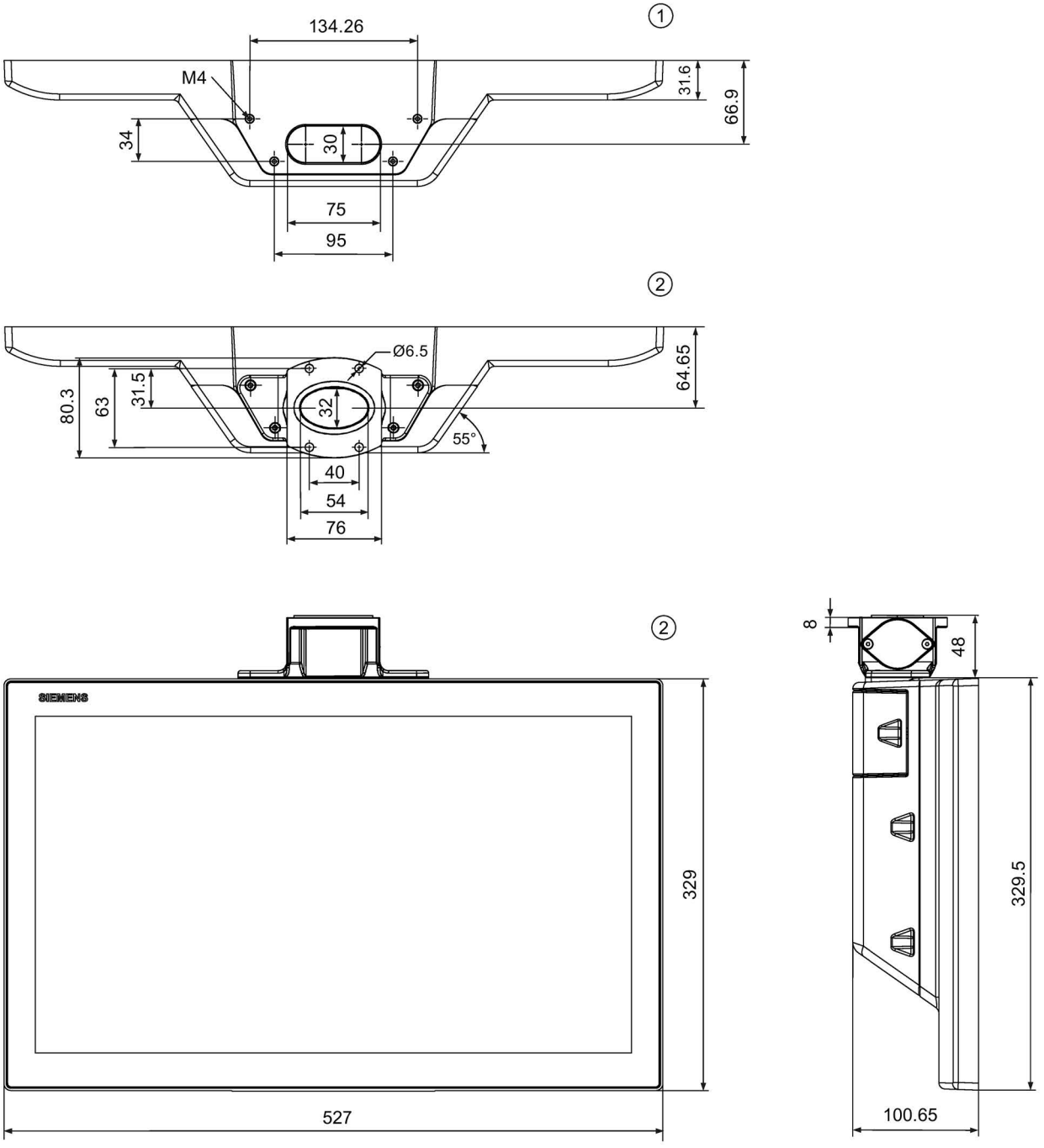
**TP2200 Comfort PRO for pedestal (extendable, flange bottom)**




All dimensions in mm.

① Without base adapter
② With base adapter

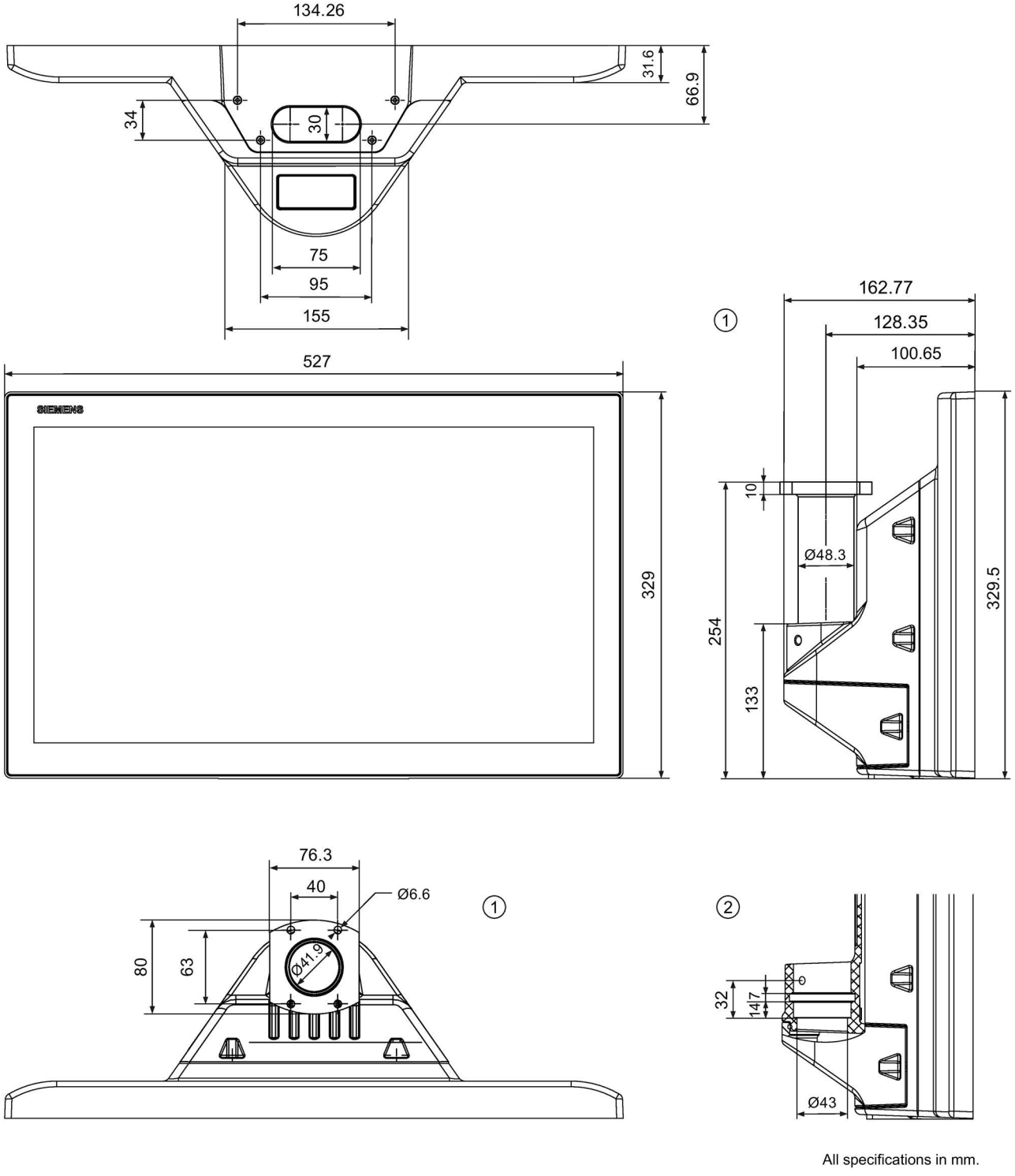
**TP2200 Comfort PRO for support arm (not extendable, flange top)**




All dimensions in mm.

① Without base adapter
② With base adapter

**TP2200 Comfort PRO for support arm (extendable, round tube)**




① with flange mount
② without flange mount

# 6.7 Technical specifications

### Weight of the PRO devices for support arm (not extendable, flange top) and for pedestal (extendable, flange bottom)

| | TP1200 Comfort PRO | TP1500 Comfort PRO | TP1900 Comfort PRO | TP2200 Comfort PRO |
|---|---|---|---|---|
| Weight without packaging | 5.0 kg | 6.3 kg | 7.4 kg | 8.5 kg |

### Weight of the PRO devices for support arm (extendable, round tube)

| | TP1200 Comfort PRO | TP1500 Comfort PRO | TP1900 Comfort PRO | TP2200 Comfort PRO |
|---|---|---|---|---|
| Weight without packaging | 4.9 kg | 6.2 kg | 7.2 kg | 8.1 kg |

### Display

| | TP1200 Comfort PRO | TP1500 Comfort PRO | TP1900 Comfort PRO | TP2200 Comfort PRO |
|---|---|---|---|---|
| Type | LCD TFT | | | |
| Active display area | 12.1'"<br>261.1 x 163.2 mm | 15.6"<br>344.2 x 193.5 mm | 18.5"<br>409.8 x 230.4 mm | 21.5"<br>475.2 x 267.3 mm |
| Resolution | 1280 x 800 pixels | 1366 x 768 pixels | 1366 x 768 pixels | 1920 x 1080 pixels |
| Possible colors | Up to 16 million | | | |
| Brightness control | Manual/automatic, value range 0 to 100 [1], 0 = backlight off | | | |
| Backlight | LED, dimmable | | | |
| Half Brightness Life Time (MTBF [2]) | 80000 h | 50000 h | 50000 h | 30000 h |
| Pixel error class in accordance with ISO 9241-307 | I | | | |

[1] Via WinCC: Complete range, via Control Panel: Manual ("Low limit" to 100) or automatic (0 to 100). The factory setting for "Low limit" is a fixed minimum value.

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

### Input device

| | TP1200 Comfort PRO | TP1500 Comfort PRO | TP1900 Comfort PRO | TP2200 Comfort PRO |
|---|---|---|---|---|
| Touch screen | Yes, projective capacitive | | | |

## Memory

| | TP1200 Comfort PRO | TP1500 Comfort PRO | TP1900 Comfort PRO | TP2200 Comfort PRO |
|---|---|---|---|---|
| Usable memory for application data | 12 MB | 24 MB | | |
| Usable memory for recipe data [1] | 2 MB | 4 MB | | |
| Additional memory for options | 12 MB | 24 MB | | |
| Data memory card [2] | 1 x MMC/SD combination slot | | | |
| System memory card [2] | 1 x SD slot | | | |

1 Can be extended via memory card
2 Memory cards are available as SIMATIC HMI accessories

## Interfaces

| | TP1200 Comfort PRO | TP1500 Comfort PRO | TP1900 Comfort PRO | TP2200 Comfort PRO |
|---|---|---|---|---|
| 1 x RS 422/485 (PROFIBUS) | Max. 12 Mbps, applies to DP operations | | | |
| Ethernet (PROFINET) | 2 x RJ45 10/100 Mbps [1] | | | |
| Ethernet (PROFINET) | 1 x RJ45 10/100/1000 Mbps | | | |
| Audio | Line Out | | | |
| USB 2.0 | 2 x Host [2] | | | |

1 With integrated switch (one IP address only)
2 USB type A; maximum load 500 mA

## Power supply

### PRO devices with article numbers -...1

| | TP1200 Comfort PRO | TP1500 Comfort PRO | TP1900 Comfort PRO | TP2200 Comfort PRO |
|---|---|---|---|---|
| Rated voltage | 24 V DC | | | |
| Permitted voltage range | +19.2 V to +28.8 V | | | |
| Rated current | 1.3 A | 1.3 A | 1.5 A | 1.6 A |
| Rated current, load-dependent | 1.1 ... 1.6 A | 1.1 ... 1.6 A | 1.2 ... 1.8 A | 1.3 ... 1.9 A |
| Inrush current $I^2t$ | 0.5 $A^2s$ | | | |
| Power consumption [1] | 31 W | 31 W | 36 W | 36 W |
| Maximum permitted transients | 35 V (500 ms) | | | |
| Minimum time between two transients | 50 s | | | |
| Internal protection | Yes | | | |

1 The power loss generally corresponds to the specified value for power consumption.

**PRO devices with article numbers -...0**

| | TP1200 Comfort PRO | TP1500 Comfort PRO | TP1900 Comfort PRO | TP2200 Comfort PRO |
|---|---|---|---|---|
| Rated voltage | 24 V DC | | | |
| Permitted voltage range | +19.2 V to +28.8 V | | | |
| Rated current | 1.5 A | 1.5 A | 1.5 A | 1.8 A |
| Rated current, load-dependent | 1.2 ... 1.7 A | 1.2 ... 1.8 A | 1.2 ... 1.8 A | 1.5 ... 2.2 A |
| Inrush current $I^2t$ | 0.5 $A^2s$ | | | |
| Power consumption [1] | 36 W | 36 W | 36 W | 44 W |
| Maximum permitted transients | 35 V (500 ms) | | | |
| Minimum time between two transients | 50 s | | | |
| Internal protection | Yes | | | |

[1] The power loss generally corresponds to the specified value for power consumption.

### Miscellaneous

| | TP1200 Comfort PRO | TP1500 Comfort PRO | TP1900 Comfort PRO | TP2200 Comfort PRO |
|---|---|---|---|---|
| Buffered real-time clock [1] | Yes | | | |
| Audio reproduction | Integrated or external via Line OUT | | | |

[1] Buffering time typically 6 weeks

## 6.8 Description of the interfaces

The specifications in the section "Interface description" of the "Comfort Panels" operating instructions apply.

## 6.9 Scope of functions with WinCC

The tables below show the objects which can be integrated in a project for an HMI device.

**Note**

The specified values are maximum values of the individual objects. Simultaneous use of multiple objects with their maximum value can lead to problems in the active project.

## Alarms

| Object | Specification | TP1200 Comfort PRO | TP1500/1900/2200 Comfort PRO |
|---|---|---|---|
| Alarms | Number of discrete alarms | 4000 | 6000 |
| | Number of analog alarms | 200 | |
| | Alarm length | 80 characters | |
| | Number of tags / process values in an alarm | Max. 8 | |
| | Number of alarm classes | 32 | |
| | Display | Alarm window, alarm view | |
| | Acknowledge error alarm individually | Yes | |
| | Edit alarm | Yes | |
| | Alarm indicator | Yes | |
| ALARM_S | Display S7 alarms | Yes | |
| Alarm buffer, retentive | Alarm buffer capacity | 1024 | |
| | Simultaneously queued alarm events | 500 | |
| | View alarm | Yes | |
| | Delete alarm buffer | Yes | |
| | Print alarms line by line | Yes | |

**Note**

**Read the notes on using the internal memory**

If too many alarms are written to the alarm buffer in short time intervals, the life of the internal memory and thus the service life of the HMI device will be reduced.

When configuring alarms, read the notes on the internal memory in the section "Memory concept (Page 50)".

## Tags, values and lists

| Object | Specification | TP1200 Comfort PRO | TP1500/1900/2200 Comfort PRO |
|---|---|---|---|
| Tags | Number | 2048 | 4096 |
| Limit value monitoring | Input/output | Yes | |
| Linear scaling | Input/output | Yes | |
| Text lists | Number | 500 [1] | |
| Graphics lists | Number | 500 [1] | |

[1] The maximum total of text and graphics lists is 500.

## Screens

| Object | Specification | TP1200 Comfort PRO | TP1500/1900/2200 Comfort PRO |
|---|---|---|---|
| Screens | Number | 500 | 750 |
| | Objects per screen | 400 | 600 |
| | Tags per screen | 400 | 600 |
| | Complex objects per screen (for example, bars) | 20 | 40 |
| | Template | Yes | |

## Recipes

| Object | Specification | TP1200 Comfort PRO | TP1500/1900/2200 Comfort PRO |
|---|---|---|---|
| Recipes | Number | 300 | 500 |
| | Data records per recipe | 500 | 1000 |
| | Entries per data record | 1000 | 2000 |
| | Recipe memory | 2 MB | 4 MB |
| | Storage location [1] | • Memory card (MMC/SD)<br>• USB storage medium<br>• Network drive | |

[1] The number of recipe data records may be restricted by the capacity of the storage medium.

## Logs

**Note**

The HMI devices are suitable for the logging of relatively small volumes of data.

Manage the data in several adjacent logs in a segmented circular log. The use of a large circular log has a negative effect on performance.

| Object | Specification | TP1200 Comfort PRO | TP1500/1900/2200 Comfort PRO |
|---|---|---|---|
| Logs | Number of logs | 50 | |
| | Number of partial logs in a segmented circular log | 400 | |
| | Entries per log [1] | 20000 | 50000 |
| | Filing format | CSV with ANSI character set, RDB, TXT | |
| | Storage location | • Memory card<br>• USB storage medium<br>• Network drive | |

[1] The number of entries in the log may be restricted by the capacity of the storage medium.

Read the notes on using logs in the section "Memory concept (Page 50)".

## Safety

| Object | Specification | TP1200 Comfort PRO | TP1500/1900/2200 Comfort PRO |
|---|---|---|---|
| User view | Number of user groups | 50 | |
| | Number of users | 50 | |
| | Number of authorizations / user permissions | 32 | |

## Info texts

| Object | Specification | TP1200 Comfort PRO | TP1500/1900/2200 Comfort PRO |
|---|---|---|---|
| Info texts | Length (no. of characters) | 500 (depending on font) | |
| | For alarms | Yes | |
| | For screens | Yes | |
| | For screen objects (e.g. I/O field, switch, button, invisible button) | Yes | |

## Additional functions

| Object | Specification | TP1200 Comfort PRO | TP1500/1900/2200 Comfort PRO |
|---|---|---|---|
| Screen settings | Brightness setting | Yes | |
| Language change | Number of languages per project | 32 | |
| VB Script | User-specific extension of the functionality | Yes | |
| | Number of scripts | 100 | 200 |
| Graphic objects | Vector and pixel graphics | Yes | |
| Trends | Number | 300 | 400 |
| Scheduler | Number of tasks | 48 | |
| Text objects | Number | 40000 | |
| Direct keys | PROFIBUS DP direct keys | Yes | |
| | PROFINET IO direct keys | Yes | |

# Technical Support

# A

## A.1 Service and support

You can find additional information and support for the products described on the Internet at the following addresses:

- Technical support (https://www.siemens.com/industrialsecurity)
- Support request form (https://www.siemens.com/supportrequest)
- After Sales Information System SIMATIC IPC/PG (https://www.siemens.com/asis)
- SIMATIC Documentation Collection (https://www.siemens.com/simatic-tech-doku-portal)
- Your local representative (https://www.automation.siemens.com/aspa_app)
- Training center (https://siemens.com/sitrain)
- Industry Mall (https://mall.industry.siemens.com)

When contacting your local representative or Technical Support, please have the following information at hand:

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

### Current documentation

Always use the current documentation available for your product. You can find the latest edition of this manual and other important documents by entering the article number of your device on the Internet (https://www.siemens.com/industrialsecurity). If necessary, filter the comments for the entry type "Manual".

### Tools & downloads

Please check regularly if updates and hotfixes are available for download to your device. The download area is available on the Internet at the following link:

After Sales Information System SIMATIC IPC/PG (https://www.siemens.com/asis)

## A.2 Troubleshooting and system alarms

The specifications in "Comfort Panels" operating instructions apply.