

SIEMENS

SIMATIC HMI

Customized Automation Mobile Client900WXN

Operating Instructions

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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.

Proper use of Siemens products

Note the following:

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

Trademarks

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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.

Preface

Purpose of the operating instructions

These operating instructions provide information based on the requirements defined by DIN EN 62079 for mechanical engineering documentation. This information relates to the place of use, transport, storage, mounting, use and maintenance.

These operating instructions are intended for the following user groups:

- Operators
Operators operate and monitor the system during the process control phase.
- Commissioning engineers
The commissioning engineer integrates the HMI device into the system and ensures the operating capability of the HMI device for the process control phase.
- Service technicians
Service technicians rectify faults that occur during the process control phase.
- Maintenance technicians
Maintenance technicians carry out regular maintenance work during the process control phase.

Knowledge required

General knowledge of automation technology and process communication is needed to understand the operating instructions.

Scope of application of the document

This source document was written in German, the basis for the translations, and applies to the following HMI devices:

- SIMATIC Mobile Client900WXN, article number 6AV6645-7CF30-2AA0

Note

Observe the following points:

- This document belongs to the device and will also be required for repeat commissioning. Keep all supplied and supplementary documentation for the entire service life of the device.
 - Make sure that the persons who require these documents have access to them.
 - Pass on all of these documents to the subsequent owner of the device.
-

Figures

This document contains figures of the described devices and the described software. The figures can deviate from the particularities of the delivered device and the supplied software.

Style conventions

The following text notation will facilitate reading this manual:

Representation type	Scope
"Add figure"	<ul style="list-style-type: none">• Terminology that appears in the user interface, for example dialog names and buttons.• Required inputs, for example, an IP address.• Path information
"File > Edit"	Operating sequences, for example, menu commands, shortcut menu commands.
<F1>, <Alt + P>	Keyboard actions

Please observe notes labeled as follows:

Note

Notes containing important information about the product and its use or a specific section of the documentation to which you should pay particular attention.

Naming conventions

The following terms are used in this document:

Article name	Term used in the document
Mobile Client900WXN	Device, HMI device Mobile Client Mobile Panel
Connection Box compact CA	"Connection Box", connection box

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Overview

1.1 Product description

The SIMATIC Mobile Client900WXN is a mobile HMI device with a rugged and ergonomic design. A high-performance processor and Ethernet capability mean the device is excellently suited to a wide range of uses. The device is lightweight and robust, has an easy-to-read display and can be operated by both left-handed and right-handed users.

SIMATIC Mobile Clients enable operator control and monitoring functions to be available on a mobile basis at any point of a machine or system.



The device also has the following additional features:

- Ethernet, integrated with connecting cable
- 9" TFT screen with color depth of 24 bits and a resolution of 1280 × 768
- USB port for service purposes

The connection box provides the connection to the power supply and to the Web server in the control cabinet. The device is connected to the connection box with a connecting cable.

The device is used as a mobile handheld terminal. The connecting cable can be easily connected and disconnected at both the connection box and the handheld terminal. The device enables you to use text- or graphic-based projects even more efficiently for simple and medium-complexity operator control and monitoring tasks on machines and systems.

Area of application

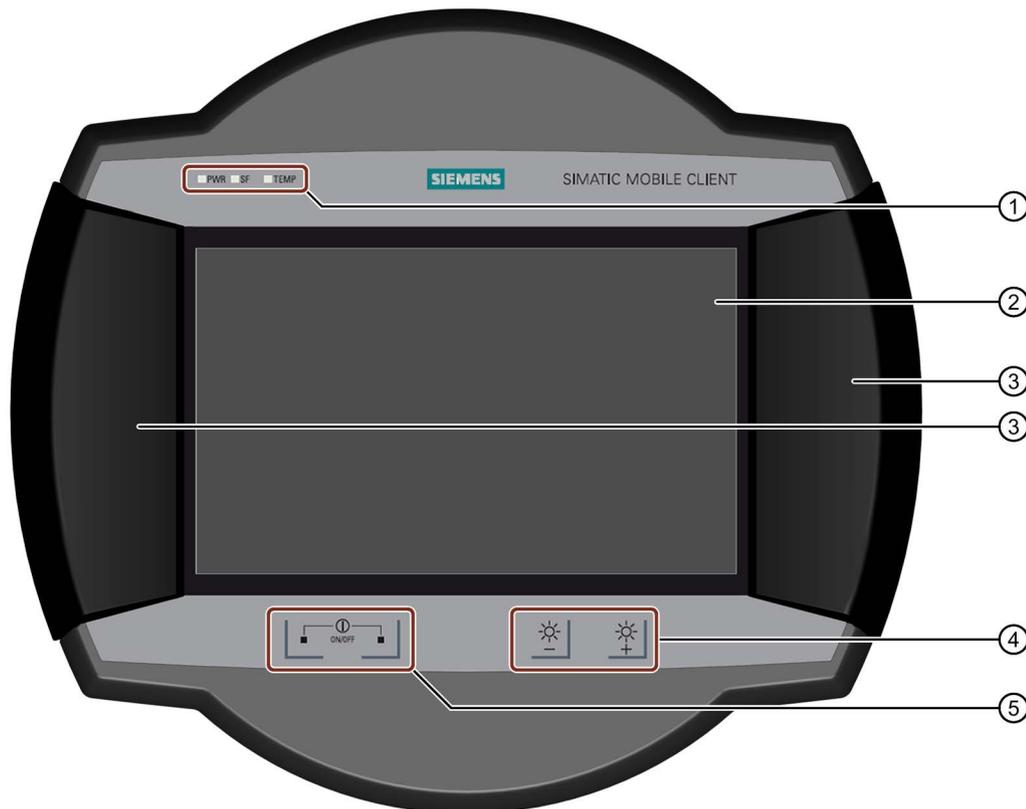
The device is intended for uses ranging from operation and monitoring, parameter assignment, and commissioning to troubleshooting for industrial systems, in particular wind turbines.

Note

Please observe the relevant requirements and safety measures for the application and place of use.

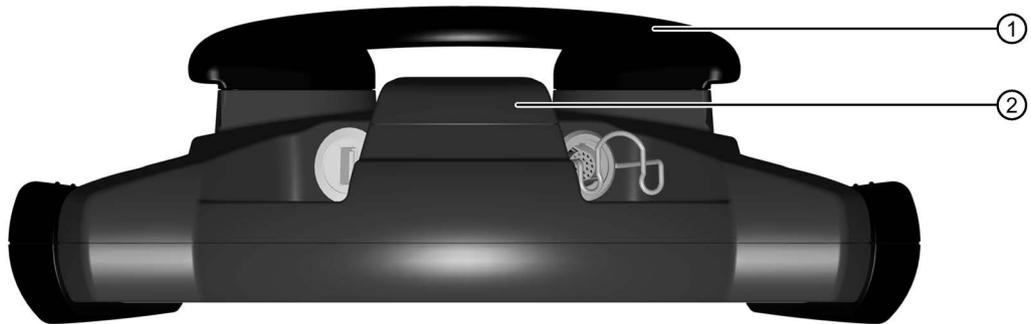
1.2 Design of the device

Front view



- ① LED display
- ② Display with touch screen
- ③ Handle
- ④ Button for brightness control
- ⑤ On/off button, two present

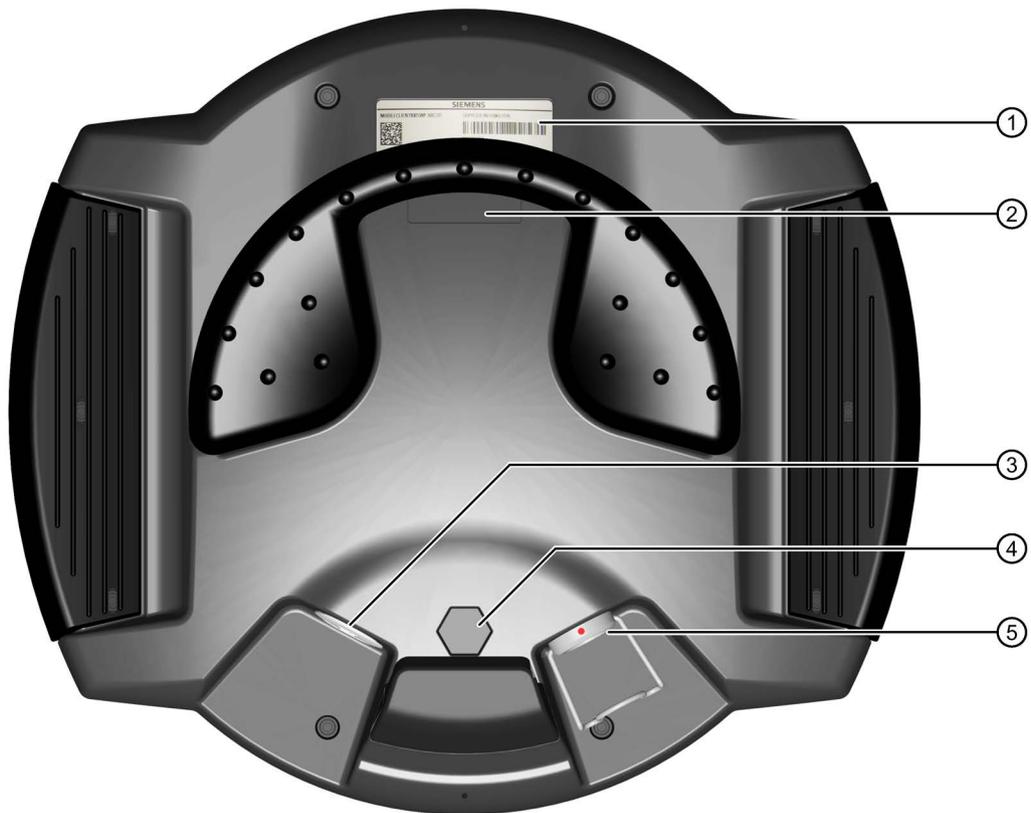
Bottom view



- ① Handle
- ② Stand

The supporting surfaces of the handle and stand are made of anti-slip material.

Rear view



- ① Rating plate
- ② Space for customized rating plate
- ③ USB port for service purposes
- ④ Pressure compensation valve
- ⑤ Port for connecting cable, with locking clip

Note

The device ensures a degree of protection of IP65 even without the connecting cable plugged in.

1.3 Scope of delivery

- 1 × HMI device
- 1 × DVD with software and documentation with license information and Open Source software
- 1 × packaging

Packaging is used for shipping and protection of the device. You can reuse the packaging if you are returning the device.

1.4 Accessories

Accessories are not included with the device. You can order accessories by entering the corresponding article number at the following link:

Industry Mall (<https://mall.industry.siemens.com>)

1.4.1 Connecting cable

The connecting cable connects the device with the connection box:



- ① Circular connector, female connector for connection to the device
- ② Circular connector, male connector for connection to the connection box

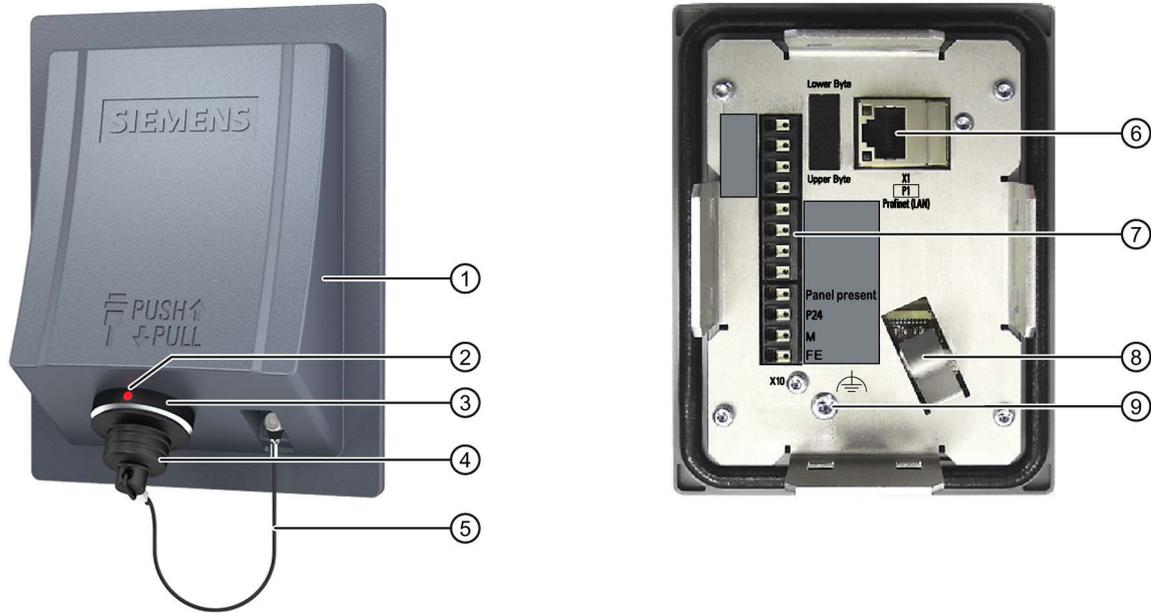
The connecting cable is available in the following lengths:

Length	Article number	Functional status
5 m	6AV6645-7CY03-1WP0	FS 02
10 m	6AV6645-7CY04-1WP0	FS 02
15 m	6AV6645-7CY05-1WP0	FS 02

The connecting cable is an industrial cable and is therefore resistant to many solvents and lubricants. The flexural strength of the connecting cable is geared to the actual usage conditions.

1.4.2 Connection box

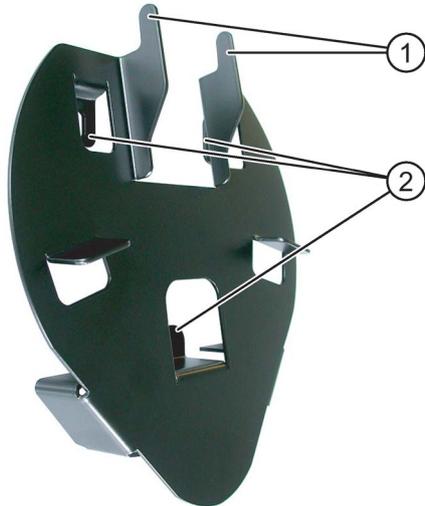
The figure below shows the Connection Box compact CA (article number 6AV2125-2AE03-0CA0):



- ① Area for rating plate, lasered
- ② Positioning mark; the connecting cable also has a red mark. Align this mark with the mark on the connection box when connecting.
- ③ Connection socket for the connecting cable. Only use connecting cables that are approved for the connection box.
- ④ Cover cap
- ⑤ Safety strap
- ⑥ Interface X1
- ⑦ Interface X10
- ⑧ Strain relief bracket
- ⑨ Connection for equipotential bonding

1.4.3 Wall-mounting bracket

The wall bracket ensures secure fastening of the Mobile Panel during stationary operation.



- ① Hook for the grip on the HMI device
- ② Screw flange

The wall bracket is not included with the HMI device. The wall bracket is available with order number 6AV6574-1AF04-4AA0.

1.4.4 Wall-mounting bracket with cable holder

The wall bracket is used as a secure holder for the device during stationary operation and to store the device when it is not in use.



- ① Hooks
You attach the handle of the Mobile Client to the hooks.
- ② Mounting holes
- ③ Holder for the connecting cable

Article number: 6AV6645-7CX04-1WP0

⚠ CAUTION
Risk of injury when device drops
The device can fall out of the wall bracket even when handled carefully.
<ul style="list-style-type: none">• Never stand below the fitted wall bracket.• The wall bracket is permitted for indoor use only.• Do not mount the wall bracket on doors or covers.• Do not fit the wall bracket anywhere where the device may fall out of the bracket.

Note

The wall bracket is designed for fixed used and is always to be screwed to the wall.

- The wall bracket should not be used to store tools or for other purposes.
- Ensure that the wall bracket is used correctly. If the wall bracket is not in use, it should be stored in a suitable location.
- Make sure that no one can trip over the cable and cause the device to fall.

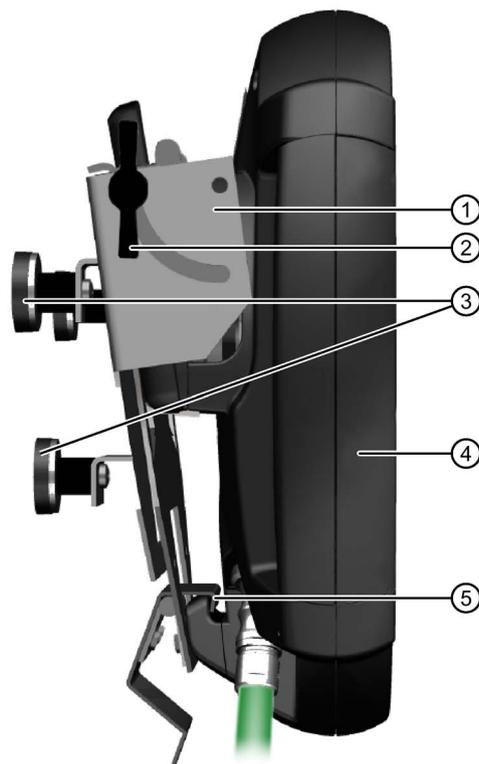
1.4.5 Magnetic wall bracket

The magnetic wall bracket provides a safe hold for the SIMATIC Mobile Client when used in stationary mode.

The magnetic wall bracket is equipped with magnets for permanent or temporary mounting on ferromagnetic surfaces. The following applies to the magnetic holding power:

- Under normal circumstances, the wall bracket can be removed from the surface without tools.
- When the wall bracket is used as intended, there is no danger of it falling unintentionally with the HMI device.

The magnetic wall bracket features a retaining mechanism for the HMI device.



- ① Joint to set the inclination of the device
- ② Wing screw to secure the inclination of the device
- ③ Magnets
- ④ Mobile Client
- ⑤ Locking hook

Article number: 6AV6645-7CX05-1WP0

Safety information on the magnetic wall bracket

 **CAUTION**

Risk of injury when device drops

The magnetic wall bracket should be regarded as a suspended load and can fall. However, under normal circumstances and if handled properly, the magnetic wall bracket is designed in such a way that there is no risk of the wall bracket and device unintentionally falling and the wall bracket can be taken down without tools.

In the case of improper locking, the device could fall out of the wall bracket.

- Never stand below the fitted wall bracket.
- Do not mount the wall bracket overhead or in places where the wall bracket or the device held in it could fall.
- The wall bracket is permitted for indoor use only.
- Do not mount the wall bracket on doors or covers.
- The magnetic holding power is affected by the material, thickness and structure of the mounting surface. Ensure that the holding power at the mounting location is sufficient. If necessary, choose a different mounting location.

Risk of injury or damage from magnetic fields

Strong magnetic fields attract magnetic parts and damage or destroy electromagnetic elements and devices. This also applies to pacemakers.

- Do not bring any iron parts (tools, nails, knives) into the vicinity of the magnets.
- Keep electronic devices and magnetic data carriers away from the magnets.
- Do not process the magnets mechanically, for example, by sawing or drilling.
- Keep the magnets away from open heat and flames.

Note

- The wall bracket should not be used to store tools etc.
- Ensure that the wall bracket is used correctly. If the wall bracket is not in use, it should be stored in a suitable location.
- Make sure that no one can trip over the cable and cause the device to fall.

Adjustable inclination

The inclination can be adjusted in the range from almost parallel to almost perpendicular to the mounting surface. To adjust the inclination, loosen the wing screws located on both sides of the wall bracket. With very large inclinations, the device cannot be removed from the wall bracket. In this case, reduce the inclination in order to remove the device safely from the wall bracket.

 CAUTION

Tighten the wing screws sufficiently

Loosen the wing screws only when you wish to adjust the inclination. Afterwards, tighten the two wing screws. Check that the wing screws and the device are tightly in place.

1.4.6 Protective cover

The protective cover provides mechanical protection of the display and is attached to both handles. It protects the device from being damaged when transported, for example, in a tool bag together with other tools.

NOTICE

Overheating

If you use the protective cover when the HMI device is on, the device may overheat.

Make sure the HMI device is off before you fit the protective cover.

Damage to the touch screen

Particles of dirt can scratch the touch screen when you attach the protective cover.

Clean the touch screen before attaching the protective cover or use a protective sheet according to chapter "Protective foil (Page 20)".



- ① Device
- ② Protective cover

Article number: 6AV6645-7CX02-1WP0

1.4.7 Protective foil

The protective sheet prevents the touch screen getting scratched or dirty.

Article number: 6AV6645-7CX07-1WP0

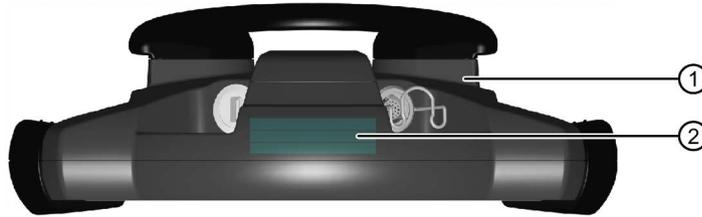
Note

Particles of dirt can scratch the touch screen when you attach the protective sheet. Clean the touch screen before attaching the protective sheet.

The set contains 10 protective sheets.

1.4.8 Rubber strips

The rubber strips prevent the device from slipping. You can also use rubber strips to angle the device, for example.

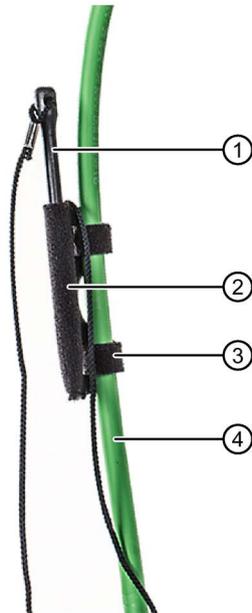


- ① Device
- ② 3 rubber strips

Article number: 6AV6645-7CX01-1WP0

1.4.9 Touch pen

The touch pen makes it easier to operate the touch screen. The touch pen is to be attached to the connecting cable.



- ① Touch pen
- ② Holder
- ③ Velcro strap
- ④ Connecting cable

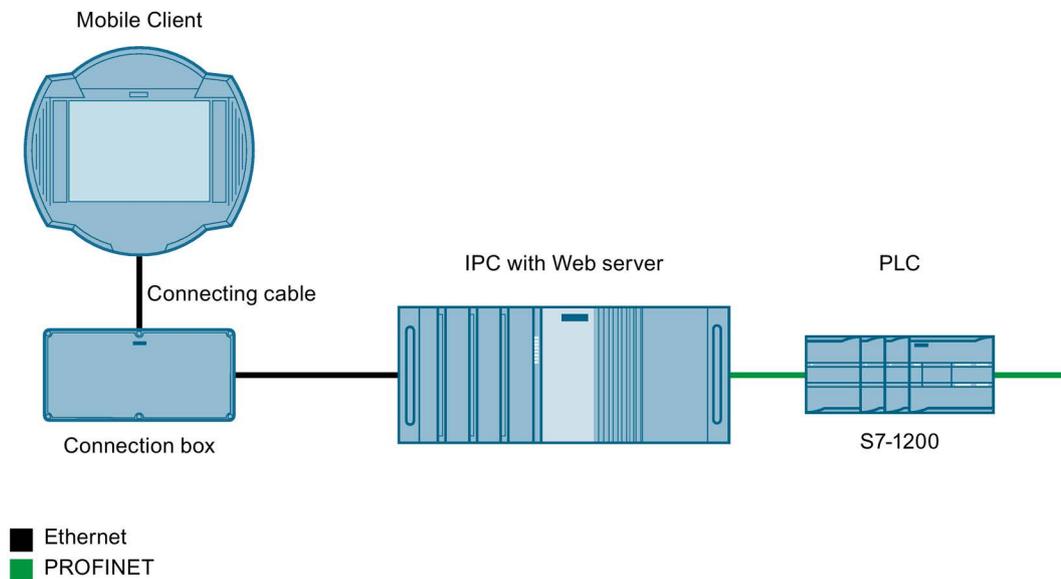
Article number: 6FC5348-0AA08-4AA0

1.4.10 Storage media

Name	Article number
USB flash drive 8 GB	6ES7648-0DC50-0AA0

1.5 The HMI device in the operating process

The HMI device is part of the operating process. The operating process is characterized by the two-way communication between controller, such as S7-1200, and the operator control and monitoring systems connected to it. The following figure shows an exemplary system design.



The HMI device is solely used for monitoring the operating process. To do this, the HMI device accesses a Web server which provides data that are then displayed on the HMI device.

Safety guidelines

2.1 Safety Instructions

Safety regulations

 WARNING
Instructions in the operating instructions
Strictly observe all instructions in these operating instructions at all times. Otherwise, hazardous situations can arise or the safety mechanisms in the HMI device can be rendered ineffective.

Observe the safety and accident prevention instructions applicable to your application in addition to the safety information given in this manual.

 WARNING
Hazardous operating states and faults in the system
The configuration engineer for a machine or system PLC must take precautions so that an interrupted program can be restarted normally after voltage dips or power failures. Dangerous operating conditions must not occur, even temporarily.
If faults in the system can cause bodily injury or significant property damage, additional measures must be taken outside of the system. These measures must also ensure safe operating conditions in the system in the event of a fault.
The system's configuration engineer must take precautions to ensure that memory changes that could lead to a dangerous situation can only be undertaken by authorized persons.

 WARNING
Risk of shock
After a hard impact, check the HMI device to ensure it is fully functional, for example, in the event that the HMI device is dropped.
Exclusive operation
If the system is operated with the HMI device:
Ensure that current operation is only possible by means of the HMI device and not from any other point on the system.

Proper use

 WARNING
Commissioning It is not allowed to commission the HMI device unless it has been verified that the machine in which the HMI device is to be installed complies with Directive 2006/42/EC.

High frequency radiation

NOTICE
Observe immunity to high frequency radiation The device has an increased resistance to high frequency radiation according to the information on electromagnetic compatibility in the technical specifications. Radiation exposure to immunity levels above the specified limits can impair device functions, result in malfunctions and cause harm to persons and machines. Observe the information on immunity to high frequency radiation in the technical specifications.

Industrial Security

Siemens offers products and solutions with Industrial Security functions that support the safe operation of equipment, solutions, machines, devices and/or networks. They are important components in a comprehensive Industrial Security concept. As a result the products and solutions from Siemens are constantly evolving. Siemens recommends obtaining regular information regarding product updates.

For safe operation of Siemens products and solutions appropriate protective measures (e.g., cell protection concept) must be taken and each component must be integrated in a comprehensive Industrial Security concept, which corresponds with the current state of technology. The products of other manufacturers need to be taken into consideration if they are also used. You can find addition information on Industrial Security under (<http://www.siemens.de/industrialsecurity>).

Sign up for our product-specific newsletter to receive the latest information on product updates. For more information, see under (http://www.siemens.de/automation/csi_en_WW).

Disclaimer for third-party software updates

This product includes third-party software. Siemens AG only provides a warranty for updates/patches of the third-party software, if these have been distributed as part of a Siemens software update service contract or officially released by Siemens AG. Otherwise, updates/patches are undertaken at your own risk. You can find more information about our Software Update Service offer on the Internet at Software Update Service (<http://www.automation.siemens.com/mcms/automation-software/de/software-update-service/Seiten/Default.aspx>).

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 Notes about usage

Intended use of the Mobile Client

The SIMATIC Mobile Client is intended for uses ranging from operator control and monitoring, parameter assignment, and commissioning to troubleshooting for industrial systems.

The system consists of the following components:

- Device
- Connecting cable
- Connection box

Ambient conditions for intended use:

- Industrial environment according to EN 61131-2:2007
- Indoor use protected from weather
- Ambient temperature range -10 to 45 °C

The connection box is designed as bushing for installation in a control cabinet wall. The device connecting cable can be easily unplugged and plugged back for moving the device from one operating location to another.

NOTICE
Wall-mounting bracket Objects placed on the wall-mounting bracket may fall off and cause injury. Do not use the wall-mounting bracket to hold other objects, for example tools.

Note

The device is not compatible with other system components, in particular not with those of the SIMATIC Mobile Panel product family. You may only use the original system components defined here.

Industrial applications

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

- Emission requirements, EN 61000-6-4:2007
- Immunity requirements, DIN EN 61000-6-2:2005

Use in residential areas

Note

The HMI device is not suitable for operation in residential areas. Operation of an HMI device in residential areas can have a negative impact on radio and TV reception.

If you are to use the HMI device in a residential area, you must ensure Limit Class B conforming to EN 55011 for radio frequency interference.

One suitable measure for achieving the required RF interference level for limit class B is:

- To use filters in electrical supply lines

Individual acceptance is also required.

Mechanical and climatic conditions of use

Check the mechanical and climatic environmental conditions according to the following sections:

- Ambient conditions during operation (Page 82)
- Ambient conditions and degree of protection connection box (Page 83)

NOTICE

Climatic factors at the place of use

Fluctuations in temperature cause condensation inside the device. The device is exposed to heat and to the cold even when not in operation.

- | |
|-----------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• Do not expose the device to extreme temperature fluctuations. |
|-----------------------------------------------------------------------------------------------------------------|

The device has a pressure compensation valve to provide additional protection in the event of temperature fluctuations. The pressure compensation valve contains a membrane which helps to reduce the level of moisture in the device.

Please note the following:

- | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• The valve must always be freely ventilated and must be protected from dirt.• The device is always supplied with power so that the waste heat from the electronics system keeps the interior temperature slightly higher than the exterior temperature. This reduces the likelihood of malfunctions caused by condensation and creates a sufficient vapor pressure for ventilation. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

 **WARNING**

The product must not be used for the following applications

- Applications in potentially explosive atmospheres / fire risk areas
- Use in mining

Explosion-proof products must be used for such applications.

Instructions

- Make sure that no-one can trip on the cable and injure themselves or cause the device to fall out.
- Make sure that there are no objects crushing and potentially damaging the cable.
- Avoid laying the cable over sharp edges as this can chafe the cable sheath.
- Never place the device on unsteady surfaces. It could fall down and be damaged.
- Never expose the device to direct sunlight or heat sources.
- Make sure that the device is sufficiently ventilated. Do not cover it. Never operate the device with the protective cover on.
- Avoid subjecting the device to mechanical shocks, excessive amounts of dust, moisture, and strong magnetic fields.

Use with additional measures

Examples of applications where the use of the HMI device requires additional measures:

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

Installing and connecting the device

3.1 Preparing for installation

3.1.1 Checking delivery

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

Note

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

The documentation belongs to the HMI device and is required for subsequent commissioning. Retain all enclosed documentation for the entire service life of the HMI device. You must pass on 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 original documentation.

3.1.2 Device identification data

Unpacking the device

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

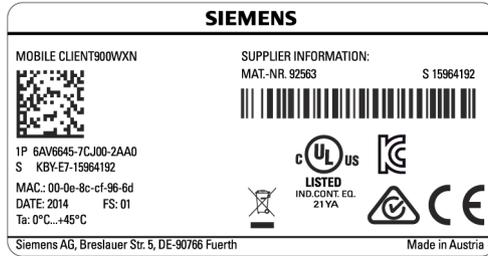
Enter the identification data in the table below:

Identification data	Source	Value
Serial number	Rating plate	S ...
Order number of the device	Rating plate	6AV....
Ethernet address 1	Rating plate	MAC.:

3.1 Preparing for installation

Rating plate

The following figure shows an example of a rating plate.



3.1.3 Mounting positions and type of fixation

Mounting position

The wall-mounting bracket is designed for vertical mounting.

The connection box must be installed in a control cabinet.

The connection box is self-ventilated and is approved for all mounting positions. Note that the guaranteed protection rating is only ensured if the connecting cable or the dummy cap is plugged into the connection box.

3.1.4 Preparing for mounting

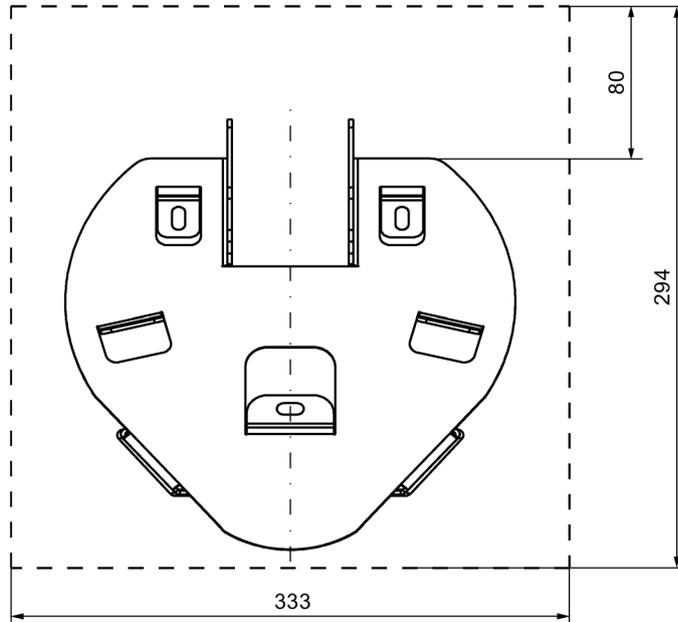
Selecting the mounting location for the wall-mounting bracket

Observe the following points when selecting the mounting location:

- Position the wall-mounting bracket so that the display of the hooked-in HMI device is not exposed to direct sunlight.
- Position the wall-mounting bracket so that the HMI device can be ergonomically inserted by the user. Choose a suitable mounting height.

Maintaining clearances

The following clearances are required around the wall-mounting bracket:



Mounting position

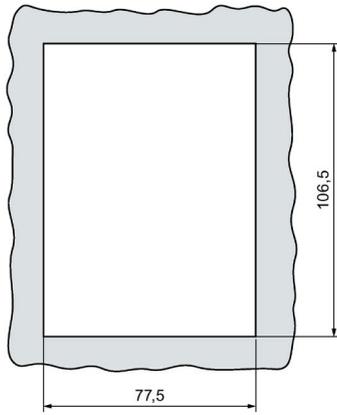
The connection box can be installed in any mounting position.

IP65 degree of protection is ensured on the front if the following conditions are met:

Material thickness at the mounting cutout	2 to 6 mm
Deviation from plane at the mounting cutout	≤ 0.5 mm
Surface roughness in the area of the mounting seal	≤ 120 μm (R _z 120)

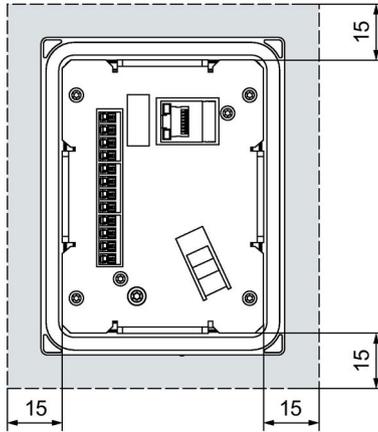
Mounting cutout and clearances

Mounting cutout



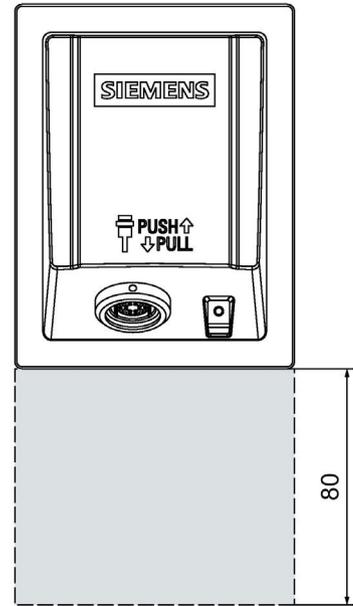
All dimensions in mm

Clearance at rear



Mounting depth of the connection box: 30 mm
Keep in mind that a clearance is required at the rear for the cables and connectors in addition to the mounting depth.

Clearance in front



3.2 Connection box and wall bracket

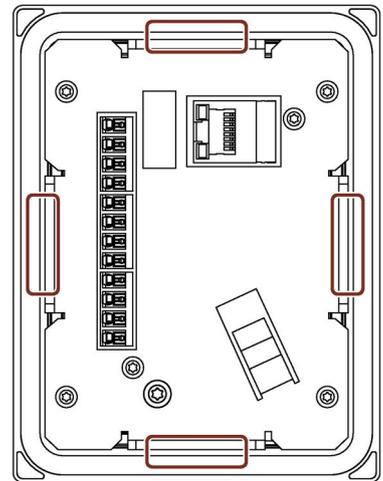
3.2.1 Installing the Connection Box compact CA

Observe the safety and accident prevention instructions (Page 23) and the applicable ESD guidelines.

You need 4 mounting clips from the product package for installation of the connection box and a Phillips screwdriver, size 2.

Procedure

1. Check for damage to the mounting seal on the connection box. Do not install a connection box with a damaged mounting seal.
2. Insert the connection box in the mounting cutout. Secure the connection box to prevent it from falling out.
3. Place one mounting clip into each of the four cutouts marked.
4. Fasten the mounting clips. The permitted torque is 0.2 Nm.



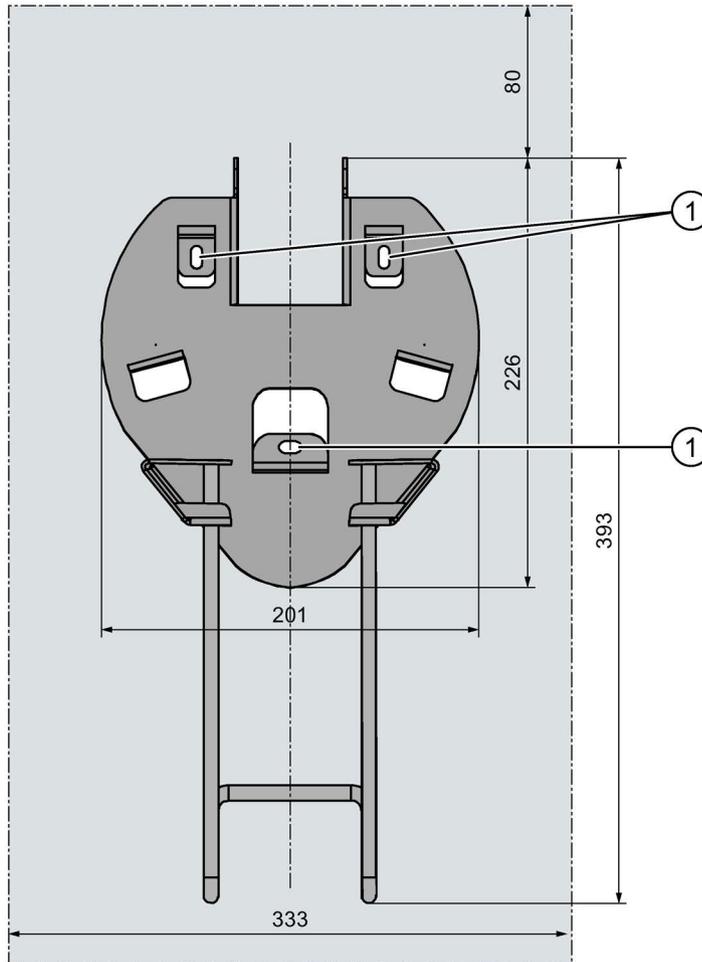
3.2.2 Mounting the wall-mounting bracket

Requirement

- In order to ensure that the HMI device can be hooked in securely, select a vertical surface or one inclined slightly to the rear as the mounting surface.
- A position at eye level is recommended.
This enables convenient operation of the device in the wall bracket.
- Position the wall bracket so that the HMI device is not exposed to direct sunlight when attached.

3.2 Connection box and wall bracket

- You need 3 M5 × 16 screws.
- Required clearance:



① Mounting holes

NOTICE

Risk of injury from the wall bracket

People may bang in to the wall bracket. This can result in injury and in damage to the device.

Select a position for the wall bracket where no individuals are placed at risk.

Procedure

1. Place the wall bracket on the mounting surface.
2. Mark the mounting holes with a marking tool.
3. Drill 3 through holes or 3 threaded holes M5.
4. Attach the wall bracket.

3.2.3 Mounting and using the magnetic wall-mounting bracket

3.2.3.1 Mounting the magnetic wall bracket

 CAUTION
Danger of tripping over connecting cable
If somebody trips over the connecting cable, there is a risk of injury and the device and wall bracket could fall.
<ul style="list-style-type: none">• Pay attention to the position of the connection box and the maximum length of the connecting cable.• Lay the connecting cable carefully.• Avoid excess cable length.
Risk of injury from the magnetic wall bracket
The magnetic holding power is affected by the material, thickness and structure of the mounting surface. The magnetic wall bracket can fall. This can result in personal injuries or material damage.
<ul style="list-style-type: none">• Select a position for the wall bracket where no persons are placed at risk.• Overhead mounting is not permitted.• Mounting at locations at which the wall bracket or devices held in it could fall is not permitted.• Check for any dirt before mounting the magnets.• Ensure that the mounting surface is clean and suitable.• Curved surfaces are permitted up to a curve radius of ≥ 1.5 m.• Ensure that the whole surface of all magnets is in contact with the mounting surface.• Make sure that the wall bracket is securely mounted by lightly pulling on it and moving it.• Do not pull strongly on the wall bracket.

Requirement

- Select a position for the magnetic wall bracket that can be accessed easily and safely.
- A position at eye level is recommended. This enables convenient operation of the device in the wall bracket.

Procedure

Mounting

1. Mount the magnetic wall bracket according to the safety note.

The magnetic wall bracket is held in place by the three magnets.

Remove

1. Start by removing one magnet from the mounting surface and then the remaining magnets.

Do not try to remove all three magnets at once.

3.2.3.2 Using the magnetic wall bracket

Procedure

Inserting a device in the magnetic wall bracket

1. Insert the top edge of the device handle into the top of the magnetic wall bracket.
2. Move the lock hook as shown and hook the device into the magnetic wall bracket.



The device will slide into the lock position.

3. Release the lock hook.
4. Check to make sure that the device is completely engaged in the magnetic wall bracket.

NOTICE
Device can drop
In the case of improper locking, the device could fall out of the wall bracket and get damaged.
Make sure that the lock hook is latched on the device.

Taking the device out of the magnetic wall bracket

1. Pull the lock hook toward the device and lift the device slightly at the bottom.

The device is unlocked.

2. Release the lock hook.
3. Remove the device from the magnetic wall bracket.

3.3 Connecting the device

3.3.1 Connecting the connection box

3.3.1.1 Overview

NOTICE**Approved connecting cables**

Only the following connecting cables may be connected to the Connection Box compact CA:

- 6AV6645-7CY03-1WP0 (FS02), 5 m long
- 6AV6645-7CY04-1WP0 (FS02), 10 m long
- 6AV6645-7CY05-1WP0 (FS02), 15 m long

Note**Installation notes and instructions on use**

- The Connection Box compact CA is only suitable for installation in a control cabinet. Please observe the relevant guidelines for control cabinet construction at the place of use.
- Make sure that all the connectors and cables have sufficient contact and strain relief.
- The two LEDs at the RJ45 socket are not supported by the hardware and are not illuminated during operation.

Requirement

- The connection box is mounted in accordance with the specifications of these operating instructions.
- Only shielded standard cables may be used.

Note**Permitted length of the connecting cable**

Do not exceed the permitted cable length. Otherwise, functional errors may occur.

Observe the maximum length for the connecting cable. This information concerns the length of the cable between the connection box and the HMI device.

Connection sequence

Connect the connection box in the following sequence:

1. Equipotential bonding
2. Supply voltage
3. Web server

Note

Maintaining the connection sequence

You risk damage to the connection box if you ignore the proper connection sequence.

Always adhere to the proper sequence when connecting the connection box.

3.3.1.2 Equipotential bonding of the connection box

Potential differences

Differences in potential between separated plant components can lead to high equalizing currents over the data cables, destroying the circuits. This situation may arise if the cable shielding is terminated at both ends and grounded at different system parts.

Differences in potential can also be caused by different mains supplies.

General requirements for equipotential bonding

Differences in potential must be reduced far enough with equipotential bonding conductors to ensure error-free operation of the relevant electronic components. The following information must therefore be observed when installing the equipotential bonding:

- The effectiveness of equipotential bonding increases as the impedance of the equipotential bonding conductor decreases or as its cross-section increases.
- If two plant sections are interconnected by means of shielded data cables and their shielding is connected at both ends to the grounding/protective conductor, the impedance of the additionally installed equipotential bonding conductor must not exceed 10% of the shielding impedance.
- The cross-section of a selected equipotential bonding conductor must be capable of handling the maximum equalizing current.

Experience has shown that the best equipotential bonding between two control cabinets is achieved by following the instructions in "Description "Directives for interference-free installation of PLCs" (<http://support.automation.siemens.com/WW/view/de/1064706>)".

- Use equipotential bonding conductors made of copper or galvanized steel. Connect the equipotential bonding conductors to the ground / protective conductor over a wide area. Protect the equipotential bonding conductors against corrosion.
- Clamp the shielding of the data cable on the HMI device flush and near the equipotential busbar using suitable cable clamps.

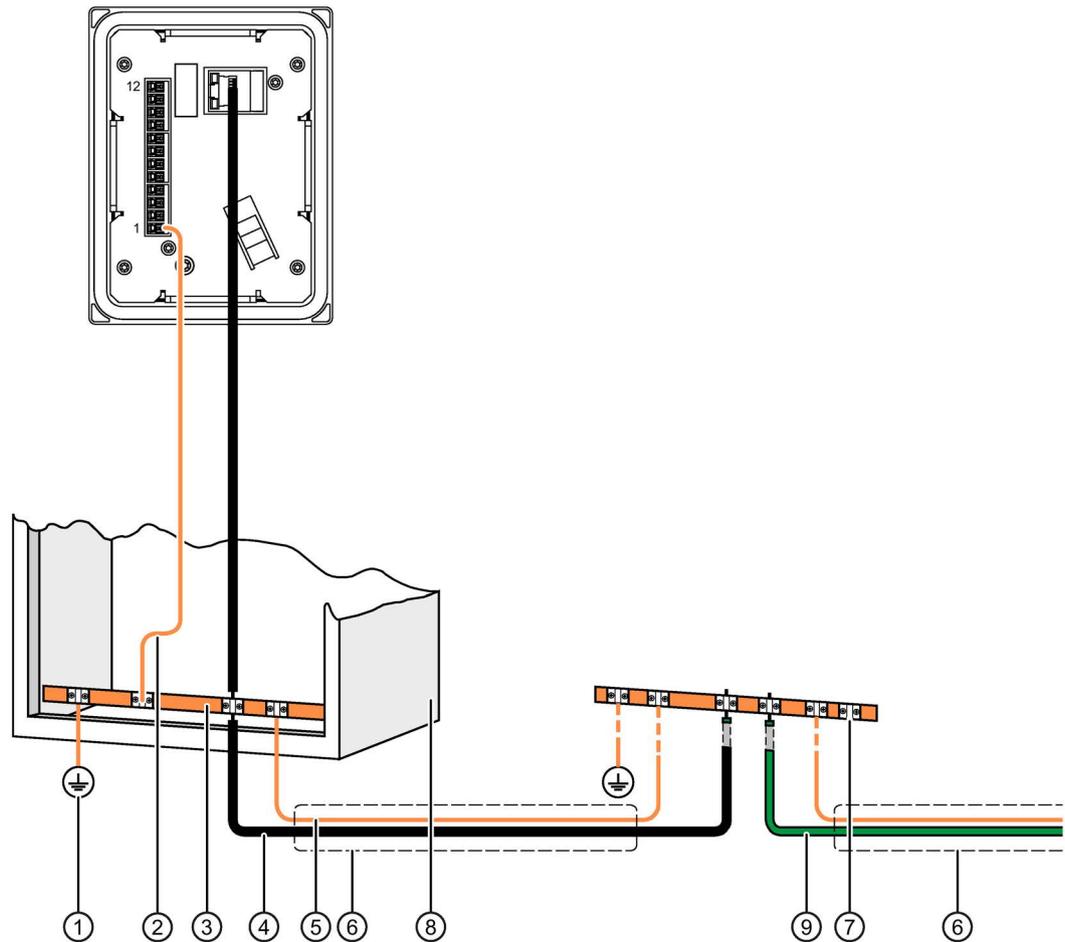
- Route the equipotential bonding conductor and data cables in parallel with minimum clearance between them.

Note

Cable shielding is not suitable for equipotential bonding. Always use the prescribed equipotential bonding conductors. Ensure there is sufficient cable cross-section. Otherwise, there is a risk that interface components will be damaged or destroyed.

Connection graphic

The figure below shows how to connect the equipotential bonding of the connection boxes to the equipotential busbars.



- ① Ground connection
- ② Equipotential bonding conductor, cross-section 1.5 mm²
- ③ Equipotential busbar
- ④ Ethernet cable
- ⑤ Equipotential bonding conductor, cross-section ≥ 16 mm²
- ⑥ Parallel routing of the equipotential bonding conductor and data cable
- ⑦ Cable clamp
- ⑧ Control cabinet
- ⑨ PROFINET cable

3.3.1.3 Connect cables to interface X10

The power supply for the HMI device is connected to a terminal strip in the connection box. The connection box has reverse polarity protection.

 **WARNING**

24 V DC power supply

If the supply voltage is outside the specified range, it may cause the HMI device to malfunction. This can result in personal injury or material damage.

Use a 24 V DC power supply with the following properties for the connection box:

- Safe electrical isolation according to IEC 60364-4-41 or HD 384.04.41 (VDE 0100, Part 410).
- The power supply provides safety extra-low voltage according to SELV/PELV up to a maximum of 36 V DC and also does not exceed $u_m = 36$ V DC in case of fault. Refer to the information in the data sheet for overvoltage protection in the event of an internal error or take appropriate voltage-limiting measures, such as the use of a surge protection device.

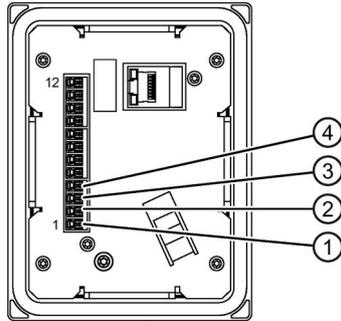
Requirement

- The power supply meets the requirements set out in the section "Specifications (Page 79)".
- The connection box is open.
- The power cable wires have been stripped by 6 mm.
- Power supply cables and equipotential bonding conductor, cross-section 1.5 mm²
- Wire end ferrules \varnothing 0.5 mm
- Phillips screwdriver, size 2

Procedure

1. Insert the wire ends into the corresponding spring-loaded terminal as shown in the figures below.

The figure below shows the contacts to be connected to the X10 terminal of the connection box.



- ① Connection for the functional grounding
- ② M24
- ③ P24
- ④ Panel present

2. Connect the equipotential bonding conductor to the equipotential busbar.
3. Connect the equipotential bonding conductor to the terminal for the functional ground of the connection box.

Connect the equipotential bonding conductor of the connection box as described in the section "Equipotential bonding of the connection box (Page 38)".

Note

Applies to non-isolated system design:

Connect the terminal for GND 24 V from the 24 V power supply output to equipotential bonding for uniform reference potential.

4. Connect cables M24 and P24 to the power supply.
5. If you evaluate the "Device inserted" detection in the controller, connect the "Panel present" connection with the corresponding input of the controller.

3.3.1.4 Secure cables and seal screw glands

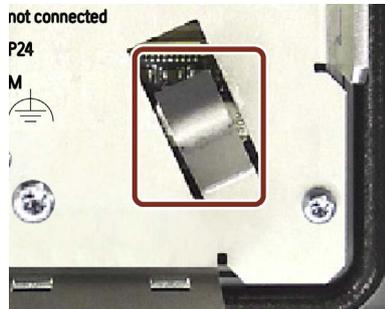
When all cables are connected to the connection box, secure the cables at the rear of the connection box.

Requirement

- 1 cable tie
- 1 diagonal cutter

Procedure

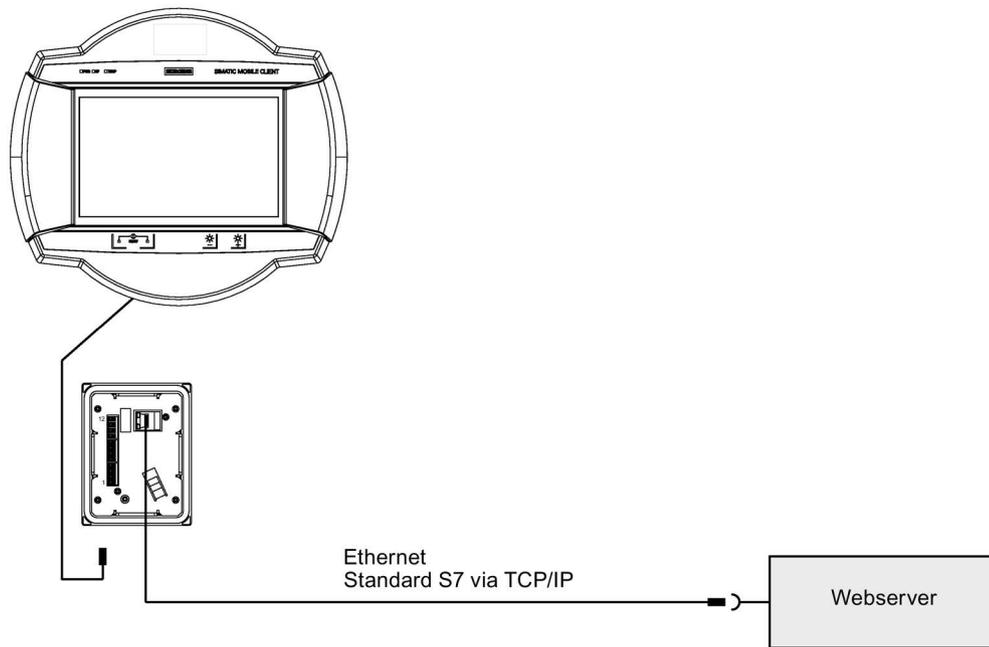
1. Secure all connected cables with a cable tie to the fastening element, which is labeled in the figure below (similar).



3.3.1.5 Connecting the Web server

Configuration diagram – Connecting a Web server to a connection box

The figure below shows the connection of a Web server to the connection box and a Mobile Client.



Note

Damage to the HMI device

Only connect the HMI device to public Ethernet networks using a switch or comparable device.

3.3.2 Connecting the mobile client

The connecting cable can be connected to the connection box using a female connector at the device and a male connector at the connection box. A red dot helps you align the connector for connection.

Requirement

- The connection box is connected and supplied with power.

Procedure

Plug in connector

1. Align the red dot on the connecting cable connector with the red dot on the connection box socket.
2. Insert the connector into the socket and push until it clicks into place.
3. Swing down the locking clip until it slots into place on the connector.
4. Align the red dot on the connecting cable connector with the red dot on the mobile client socket.



5. Insert the connector into the socket and push until it clicks into place.
6. Swing down the locking clip until it slots into place on the connector.

CAUTION

Incorrectly plugged in connectors cause malfunctions

If the connecting cable connector is not positioned correctly at the connection box as well as the device, this will disrupt power supply, data transfer and shielding. This can result in machine and system malfunctions.

- Make sure that the mark on the connector (red dot) matches that on the socket.
- Make sure that the connector is fully inserted.
- Make sure that the connector is secured with the locking clip and that the locking clip is securely positioned against the connector.

3.3 Connecting the device

Perform self-test

As soon as power is connected with the connecting cable, the HMI device runs a self-test program once and automatically. All LEDs on the HMI device are switched on briefly during program execution. This allows the user to check whether the LEDs are functioning correctly. At the end of the self-test, the LEDs indicate the operating state of the device.

If the self-test reports an error, the "SF" LED lights up in red.

1. Repeat the switch-on operation.
2. If the LED does not go out, check the voltage in the power supply line to the connection box.
3. If the LED still does not go out, send the device for repair.

Remove connector

You can remove the connecting cable at the connection box and/or at the device:

1. Lift up the connecting cable locking clip at the device.
2. To disconnect the connecting cable from the device, pull firmly on the connecting cable connector.
3. Lift up the connecting cable locking clip at the connection box.
4. To remove the connecting cable from the connection box, pull hard on the connecting cable connector.

If you do not intend to use the device with another connection box, place the device securely in its wall-mounting bracket.

3.3.3 USB mouse or USB keyboard for service purposes

Using additional USB peripherals

Note

The following applies for additional USB peripherals:

- The use of a USB hub at the USB port is not permitted.
 - The use of a USB mouse during operation is not approved.
 - The use of a USB keyboard during operation is not approved.
-

Parameter assignment of a Mobile Client

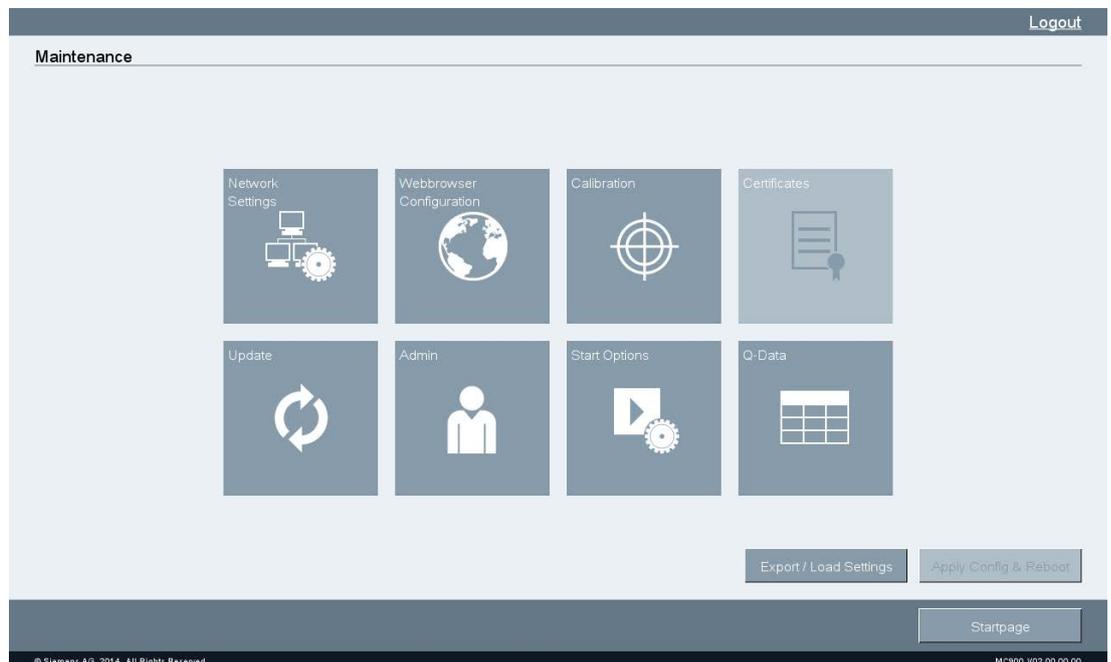
4.1 "Maintenance" website

A "Maintenance" website is available on the device for maintenance purposes. It includes an internal operating data recording system that runs during normal operation and permanently records data in case service is required.

The "Maintenance" website is displayed under the following conditions:

- When the device is initially started with the factory settings.
- When no start option is selected.
- When a start option is not possible or cannot be achieved.
- When the operator presses both buttons for brightness control simultaneously.
- When the following fixed address of the "Maintenance" website is called by a customer-specific website: "http://127.0.0.1:8080".

The figure below shows the overview page:



Changing the settings

1. Click a button. The corresponding maintenance page opens.
2. Change one or more settings and exit with "OK".
3. The overview page opens. The frame flashes when you press "Apply Config & Reboot".
4. Click "Apply Config & Reboot". The device restarts and activates the new settings.

4.2 Opening a customer-specific website

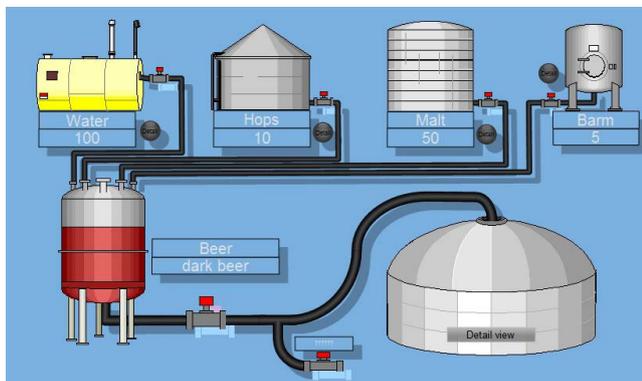
If there is a connection to the web server, the customer-specific website is displayed. If you want to open the "Maintenance" website from the customer-specific website, a corresponding button or hyperlink must be configured (see section "Maintenance website").

Requirement

- The device is switched on.
- A connection to the web server exists.

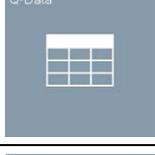
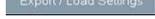
Procedure

The figure below is an example of a customer-specific website and how the collected data can be displayed.



4.3 Maintenance pages

The table below includes the icons of the "Maintenance" website with links to the relevant sections.

Icon	Functional description
	"Network Settings" page (Page 48)
	"Webbrowser Configuration" page (Page 49)
	"Calibration" page (Page 51)
	Certificates are currently not supported.
	"Update" page (Page 52)
	"Admin" page (Page 53)
	"Start Options" page (Page 55)
	"Q-Data" page (Page 57)
	"Export / Load Settings" page (Page 59)

4.4 "Network Settings" page

On the "Network Settings" page, you can specify the network settings for the device that you will use to assign the parameters of the device for data communication via the Ethernet port:

Network Settings

Automatic IP-Address

Static Address

IP: 149.202.190.53

Netmask: 255.255.0.0

Gateway:

NTP-Server:

MAC-Address: 08:00:06:C2:B1:A0

Cancel OK

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Note

The HMI device can only be used in Ethernet networks.

The HMI device has client functionality in the local network. This means that users can access files of a node with TCP/IP server functionality from the HMI device via the local network. However, you cannot, for example, access files of the HMI device from a PC via the local network.

Type of address assignment

- To obtain the addresses automatically via DHCP, select "Automatic IP-Address".
- To determine the addresses manually, select "Static Address".

If you have selected manual address assignment, enter the corresponding addresses under "IP", "Netmask" and under "Gateway", as required.

NOTICE

IP address must be unique

An address conflict and malfunctions may occur if more than one device is assigned the same IP address in the local network.

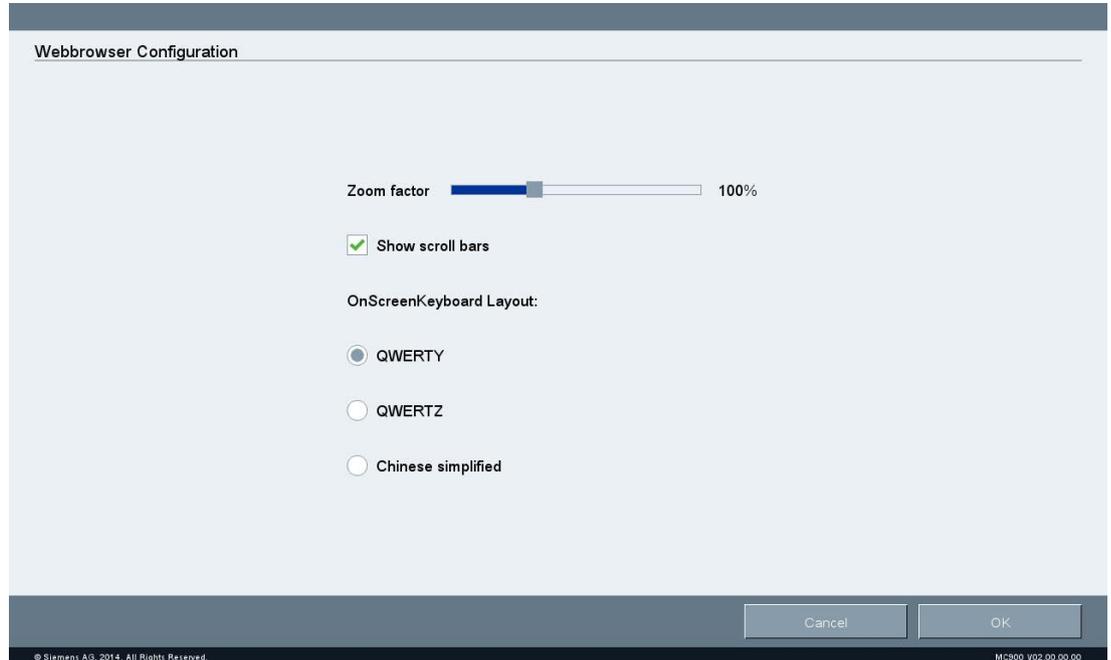
Assign a unique IP address to each HMI device in the local network.

NTP-Server: The time server synchronizes the time of day using the "Network Time Protocol" NTP. Enter the address of the time server.

MAC-Address: For information only.

4.5 "Webbrowser Configuration" page

On the "Webbrowser Configuration" page, you can specify the screen and keyboard display in the Web browser:

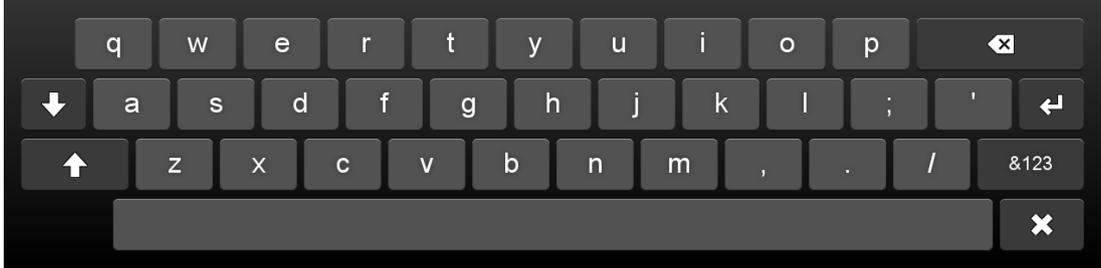


Use "**Zoom factor**" to enlarge or reduce the entire screen content (zoom factor 70-160% in 10% increments).

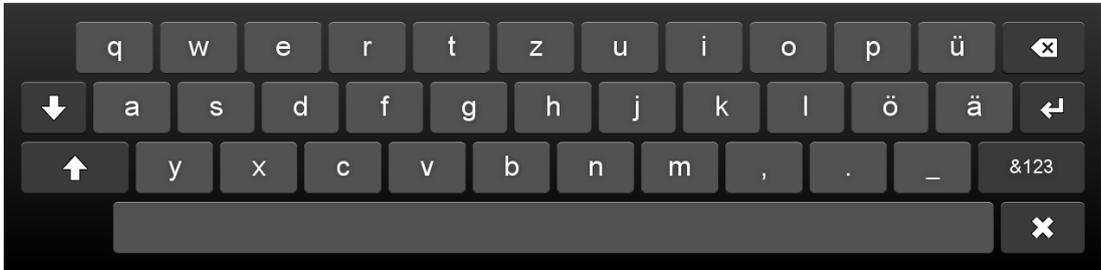
Use "**Show scroll bars**" to activate and deactivate the scroll bars.

Use the "OnScreenKeyboard Layout" options to specify the layout of the on-screen keyboard:

- "QWERTY" for English keyboard



- "QWERTZ" for German keyboard



- "Chinese simplified" for Chinese keyboard You can enter Latin characters when you press the "X" key twice on the Chinese keyboard:

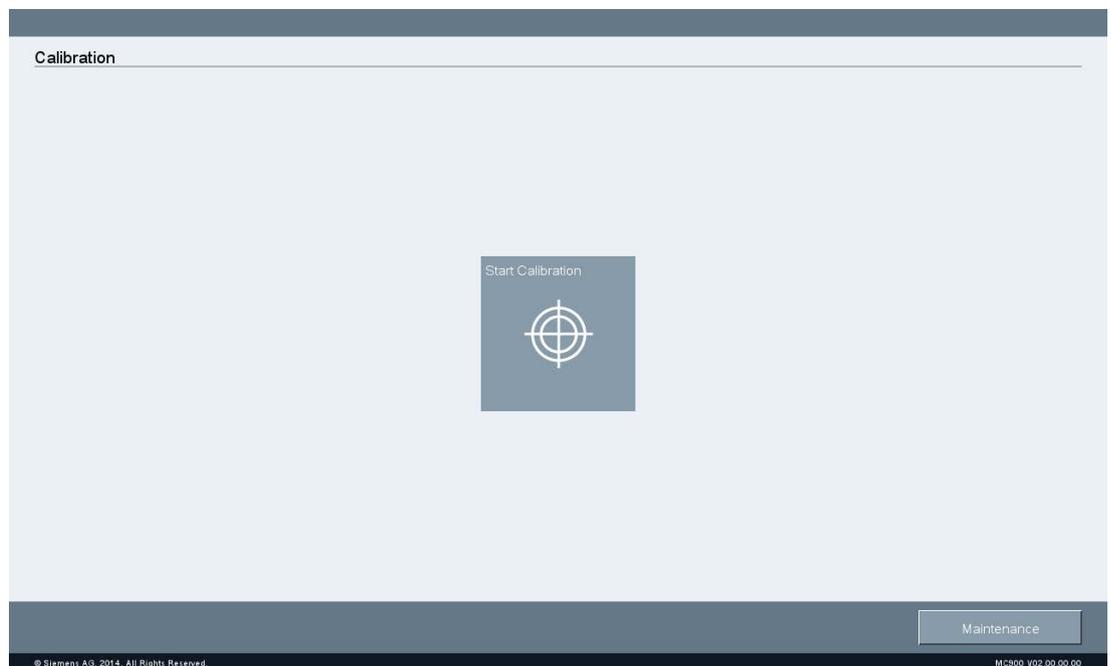


4.6 "Calibration" page

Parallax may occur on the touch screen depending on the mounting position and perspective. To prevent any resulting operating errors, you may need to calibrate the touch screen.

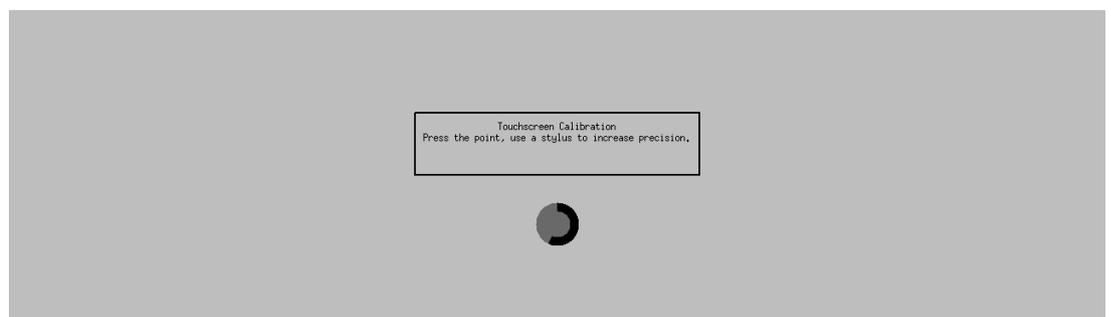
Requirement

- 1 Touch pen
- The "Calibration" dialog is open.



Procedure

1. Select "Start Calibration". The following dialog appears:



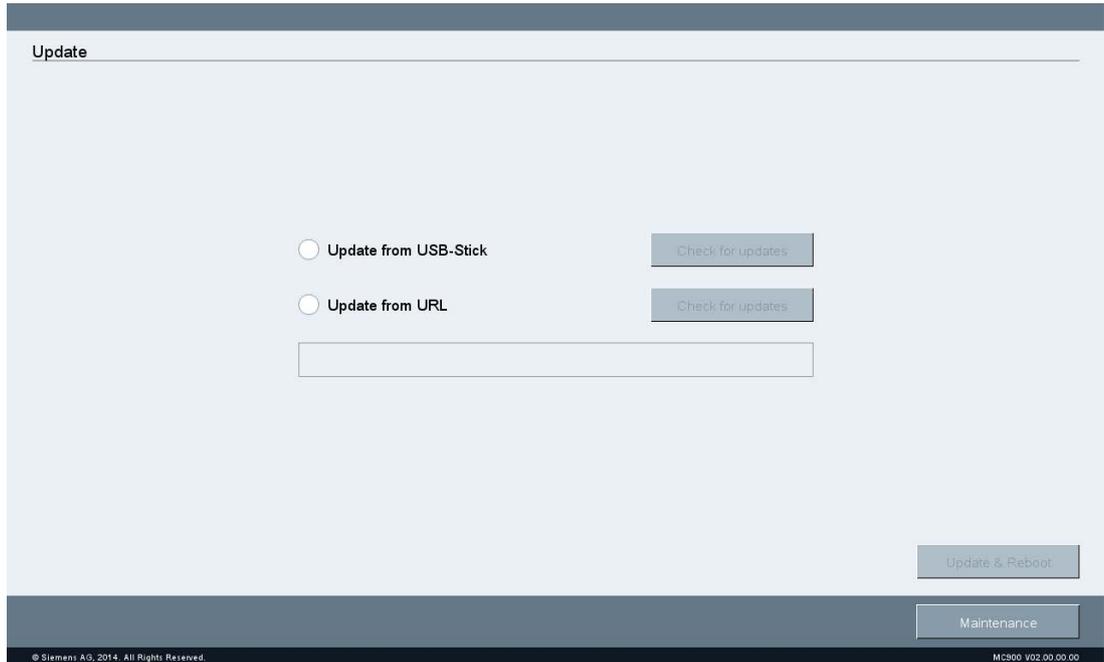
2. Briefly touch the center of the calibration crosshairs.

The calibration crosshairs are then displayed at three more positions. Briefly touch the middle of the calibration crosshairs for each position.

Once you have touched the calibration crosshairs for all positions, the "Calibration successful" message appears. The touch screen is calibrated.

4.7 "Update" page

On the "Update" page, you can update the operating system of the device when a security or service update is performed:



Update from USB-Stick: Search is performed for a "fw.tar" file in the root directory of the USB flash drive. The USB flash drive must have a FAT or FAT32 partition. The ongoing update procedure cannot be explicitly aborted.

The update process is canceled when you interrupt the power supply or pull the USB cable. The existing image will still start up without any problems.

Update from URL: The update via URL is performed via HTTP with the syntax "http(s)://149.202.10.10/". The URL is checked for validity. A search is performed for a "fw.tar" file at this point of the URL. The ongoing update procedure cannot be explicitly aborted.

The update process is canceled when you interrupt the power supply. The existing image will still start up without any problems.

4.8 "Admin" page

On the "Admin" page, you can log on as administrator and change the password.

When the device starts in the delivery state or after restoring the factory settings, the user is automatically logged on as administrator and has access to all functions (see section "Maintenance website").

NOTICE

Unrestricted access

An unrestricted user can manipulate data. This can result in damage to the machine or system.

- Protect your device from unauthorized access.
- Always assign a password.

Change your password

You use a password to protect your device from unauthorized access (see also section "Security instructions").

1. To change the password, log on as administrator if you have not already done so.
2. Click "Admin". The following page opens:

Login

Limit access with Password

Enter new Password:

Retype new Password:

Set password

Maintenance

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3. Enter a password under "Enter new Password".
4. Repeat the password in the password field.

5. Click "Set password".

The overview page opens. The "Apply Config & Reboot" button flashes.

6. Click "Apply Config & Reboot". The device restarts and activates the new password.

You must log on as administrator with the new password for all functions to be available.

Deleting a password

The password is reset if you leave both password fields blank when you change the password. All functions are available without logon after restart with "Apply Config & Reboot".

Log on and log off as administrator

When the user is not logged on as administrator (logged off), only the following functions are available:

- Admin
- Calibration
- Q-Data
- Upgrade

1. To log on as administrator, press "Admin". The following page opens:

Limit access with Password

Password:

Login

Maintenance

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2. Enter the password. If the password is correct, the overview page of the "Maintenance" website opens and all functions are available (see section "Maintenance website").

3. To log off, press "Logout" at the top right.

The user is no longer logged on as administrator (logged off).

4.9 "Start Options" page

In the "Start Options" dialog, you can specify what is displayed after starting the device:

Entered values, for example, the "Static URL" are retained even after changing the start option.

Static URL: Address of the website that is called during start. The URL is not checked for validity. If the website or the web server is unavailable during the start or if no value is entered, the "Maintenance" website is displayed.

Startupscreen with address field for URL: A page with a URL input field is displayed. The URL is not checked for validity. If the website or the web server is unavailable during the start, the "Maintenance" website is displayed.

Customer specific welcome page: The "custom.html" file is looked up in the root directory of the USB stick, loaded and processed by the browser. The file must not be larger than 1 MB. An error is displayed if the file is too large. The "Maintenance" website is displayed if an error occurs.

Server station list: The "stations.conf" file is looked up in the root directory of the USB stick.

- The file must not be larger than 1 MB.
- A maximum of 120 stations is possible.

Syntax and content are checked: An error is displayed if there are too many stations. One or more html pages are generated from the "stations.conf" during the next restart. The "Maintenance" website is displayed if an error occurs.

Creating a station list "stations.conf" manually

You can create the "stations.conf" file with the Windows tool "Notepad". The file must be saved in "UTF-8" format. To do this, select "UTF-8" as coding.

The file must have the following structure in JSON format (see JSON standard ECMA-404 (<http://www.ecma-international.org/publications/files/ECMA-ST/ECMA-404.pdf>) in the Internet):

```
{  
  
  "stationlist":  
  
    [  
  
      {"ipaddress": "1.2.3.4", "id": 1406896505961, "stationname": "aaa"},  
      {"ipaddress": "1.22.33.44", "id": 1406896515846, "stationname": "bbb"},  
      {"ipaddress": "111.32.3.4", "id": 1407155369801, "stationname": "ccc"}  
  
    ]  
  
}
```

ipaddress: IP/URL to which this entry is to refer.

id: optional; not required for manual creation of the file and not evaluated.

stationname: The name of the station entry.

The last entry cannot have a comma at the end, as in the example above.

When using **special characters**, observe the JSON standard, especially page 10.

4.10 "Q-Data" page

The "Q-Data" page displays device data and the operating times in the various different temperature ranges:

Q-Data

<p>MC900 Device Info (1)</p> <p>Device: MC900WXN / 6AV6 645-7CF30-2AA0 Device Serial Number: 5 KBY-EN-16137003 OS-Type: Linux 3.4.45 i586 Image Version: MC900 V02.00.00.02 Bootloader Version: 0020-52bb1704 BIOS Version: 5.16 12:13:15 08/04/2014</p>	<p>MC900 Device Info (2)</p> <p>SMM Bootloader: SmmBootloader_1.00 V1.0 SMM Firmware: Smm_1.07 V1.7 MAC Address: 28:63:36:1C:DF:3F IP Address: 10.166.1.10</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Device_temperature	SMM-Time (s)	SMM-Entries (1)	SMM-PwrCycles (1)	CPU-Time (s)	CPU-Entries (1)	CPU-PwrCycles (1)	Heater-Time (s)
TOO LOW	0	0	0	0	0	0	0
VERY LOW	0	0	0	0	0	0	0
LOW	0	0	0	0	0	0	0
REGULAR	777183	0	56	766477	0	185	0
HIGH	0	0	0	0	0	0	0
VERY HIGH	0	0	0	0	0	0	0
TOO HIGH	0	0	0	0	0	0	0

[Export data to USB-Device](#)

[Maintenance](#)

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- Device name and order no. (MLFB)
- Serial no. of the device
- Operating system version
- Device image and BIOS version
- Boot loader version
- Firmware version of the power supply board (SMM)
- MAC address and IP address

The device is also equipped with an internal operating data recording system which is active in all standard operating states (see below). The following data is permanently stored for evaluating use for servicing purposes:

- Device operating time
- Number of power supply operations
- Number of switch-on operations

Operating data recording

The first column in the table contains a set temperature range. The columns contain the individual counters for operating states and transitions. In principle, **SMM** stands for "device has voltage supply" and **CPU** for "device is on and running".

Time indicates the total duration of the operating state in the temperature range in seconds. The time for which the device had a voltage supply (SMM-Time) or was switched on (CPU-Time). Example: CPU-Time = 716643.

The device ran for a total of 716643 seconds = 8.3 days.

Note

As each device that is switched on also has a voltage supply, the "device switched on and running" (CPU) operating state times are always recorded simultaneously on the CPU- and SMM- counters.

PwrCycles shows how often the device switched to this operating state. How often was voltage applied to the device in the temperature range (device connected, SMM-PwrCycles) and device switched on (CPU-PwrCycles).

Entries shows how often the device switched to this temperature range for each operating state. Example: How often did the device switch to the temperature range while there was voltage at the device (SMM-Entries) or the device (CPU-Entries) was running.

Note

PwrCycles and Entries adjust the data under Time in a temperature range. Example: Where the total operating time Time = 1000 seconds and PwrCycles = 10, the device was only in the operating state for an average of 100 seconds. Where the total operating time Time = 1000 seconds and Entries = 10 in the "LOW temperature range, the device was only in the "LOW" temperature range for an average of 100 seconds.

Heater-Time shows how long the heater was running in the respective temperature range.

USB backup of data displayed

Requirement

- A SIMATIC IPC USB flash drive is connected.
- The SIMATIC IPC USB flash drive has sufficient free memory space.

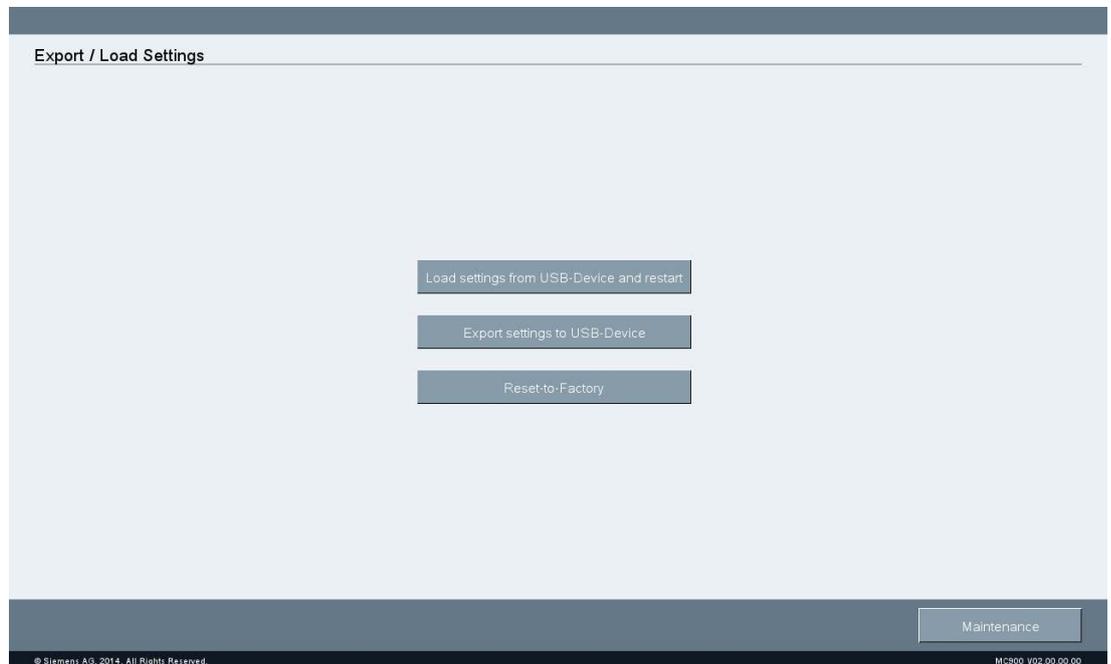
The following procedure should only be followed for servicing:

1. Insert the SIMATIC IPC USB flash drive into the USB port in the device.
2. Click on the "Export data to USB-Device" button.
3. After the export, the message "Export completed" appears.

All device data and operating times are saved.

4.11 "Export / Load Settings" page

On the "Export / Load Settings" page, you save the settings and restore them:



NOTICE

Data loss

All data on the HMI device is deleted during a restore operation.

Load settings from USB-Device and restart: Looking for the "syssettings.conf" file in the root directory of the USB flash drive. A syntax check is performed prior to loading. If the Config protocol version is older or the same, the file is migrated. A message is output if an error occurs and the file is discarded. If there is no error, the device is restarted and the new settings are activated. You must be logged on as administrator for this function.

Export settings to USB-Device and restart: The latest maintenance settings are stored in the root directory in the "syssettings.conf" file.

Reset-to-Factory: Restore the factory settings. A confirmation page with "NO" and "YES" buttons is displayed. If you confirm with "YES", the default settings are activated and the device restarts. All user files, for example, "stations.conf" and "custom.html" are deleted.

You must be logged on as administrator for this function. If you cannot log on as administrator because you forgot your password, only the Repair Center can reset the device to factory settings.

Operating the mobile client

5.1 Operating the website

The following is displayed once the Mobile Client is switched on:

- The customer-specific application

An example of a customer-specific website is displayed in the section "Opening a customer-specific website (Page 46)".

- If the Web server cannot be accessed, the "Maintenance" website is displayed.

The "Maintenance" website is described in the section "Parameter assignment Mobile Client".

You can open an on-screen keyboard for inputs on the customer-specific website as well as the "Maintenance" website (see section ""Webbrowser Configuration" page (Page 49)").

You can enter Latin characters when you press the "X" key twice on the Chinese keyboard.

See also

"Maintenance" website (Page 45)

5.2 Holding and setting down the mobile client

Holding the device

The figures below show examples of how you can hold the device resting on your forearm.



You can rest the device on your forearm, for example, to undertake movements while servicing the monitored system. The free hand can be used to operate the operator controls of the device.

Setting down the device

Always set down the device as follows:

- In the wall-mounting bracket according to section "Wall-mounting bracket (Page 15)"
- In the magnetic wall-mounting bracket according to section "Magnetic wall bracket (Page 17)"

If none of the two wall-mounting brackets is within reach, you can also set down the device as shown below after attaching the three rubber strips according to section "Rubber strips (Page 21)". The rubber strips keep the device from slipping.



5.3 Using the override function

You can use the "Override" function when the device is operated at an ambient temperature outside the permitted range. The operator has to make this decision. The use of the override function is logged by the device.

Requirement

- The connecting cable is connected.
- The two on/off buttons have been pressed and held down for at least 0.5 seconds.



- The "TEMP" LED is on.
- The "PWR" LED is flashing.

Procedure

NOTICE

Malfunction during override function

The correct function of the device cannot be guaranteed when the override function is activated. The device can be damaged. This can result in machine and system malfunctions or injuries. The device warranty becomes void.

Use the override function in exceptional cases only and very briefly.

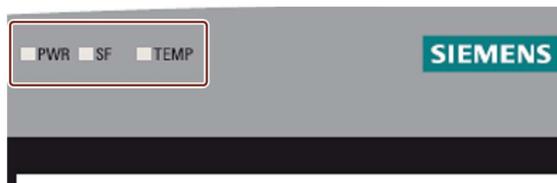
1. Press the two on/off buttons simultaneously again and hold for at least 7 seconds.

This activates the override function and blocks the associated safety mechanism of the device. The device starts at an ambient temperature that is either higher or lower than the permitted temperature range.

- The "TEMP" LED lights up red or yellow.
- The "PWR" LED comes on.
- The maintenance application is displayed, as described in section ""Q-Data" page (Page 57)".

5.4 LED display

There are three LEDs on the front of the device which indicate the device status.



Meaning of the LED displays

- The "PWR" LED indicates the operating state of the device:
 - LED flashes slowly at 1 Hz: Device has power supply and is off or in the process of being switched off.
 - LED flashes rapidly at 3 Hz: Power-on delay is active.
 - LED on: Device is switched on.
- The "SF" LED lights up red if an error occurs.
- "TEMP" LED, see table below:

Temperature in the device is	"TEMP" LED	Comments
Too low	Lit red ¹	Power off the device immediately. The device cannot be powered back on again immediately.
Very low	Flashing red, 3 Hz	You are urgently advised to move the device to warmer surroundings. If the device is switched on in this condition, the device temperature will usually rise significantly over time as a result of the waste heat generated and become non-critical. Increasing the display brightness can improve the situation as this generates more heat.
Low	Flashing red, 0.5 Hz	The device temperature is low. You are advised to move the device to warmer surroundings. If the device is switched on in this condition, the device temperature will usually rise significantly over time as a result of the waste heat generated and become non-critical. Increasing the display brightness can improve the situation as this generates more heat.
Optimum	Off	For handheld operation, you can generally assume that no part of the device surface is at a dangerous temperature and that the device can therefore be held for at least 10 minutes without the risk of injury/damage from heat.
High	Flashing red, 0.5 Hz	You are advised to move the device to cooler surroundings. If the device is switched on in this condition, there is a risk that device temperature will rise significantly over time as a result of the waste heat generated and become critical. For handheld operation, you can generally assume that all parts of the device surface are below 43 °C and that the device can therefore be held for at least 5 minutes without the risk of injury/damage from heat. Reducing the display brightness can improve the situation as this generates less heat.
Very high	Flashing red, 3 Hz	You are urgently advised to move the device to cooler surroundings. If the device is switched on in this condition, there is an imminent risk of the device temperature rising rapidly and significantly as a result of the waste heat generated, and becoming critical. For handheld operation, you can generally assume that all parts of the device surface are below 60 °C and that the device can therefore be held for at least 1 minute without the risk of injury/damage from heat. Reducing the display brightness can improve the situation as this generates less heat.
Too high	Lit red ¹	Power off the device immediately. The device cannot immediately be switched on. If the device is off, check whether the ambient conditions are suitable for storage of the device. There is an immediate and serious risk of injury from hot surfaces.

¹ The "TEMP" LED on the Mobile Client lights up when the temperature is too low or too high.

5.5 Switching the device on and off

Operator controls are described in the section "Design of the device (Page 10)" and displays in the section "LED display (Page 63)".

Requirement

- The connecting cable is connected.
- The "PWR" LED is flashing green at a frequency of 1 Hz.

If the LED is not flashing, the voltage of the connected power supply is too low. The device cannot be switched on.

Procedure

Switching on the unit

1. Press the two on/off buttons simultaneously and hold them down for at least 0.5 seconds.



The LED display responds as follows:

- The "PWR" LED lights up green.
- The "TEMP" LED indicates the correct temperature for operation.

NOTICE

Device switches off automatically after 48 hours

The device switches off automatically once it has been idle for 48 hours. This can result in machine and system malfunctions.

Please consider this response when operating the device.

The device starts in full screen mode.

Shutdown the device

1. Close the project on the HMI device before shutting it down.
2. Press the two on/off buttons simultaneously and hold them down for at least 0.5 seconds.
The "PWR" LED is flashing. The device switches off.
3. Switch off the power supply.
4. Pull out the connecting cable from the connection box.

Note

Recovery time

Wait for approximately one second after you have removed the connecting cable from the connection box before you plug the connecting cable back into the connection box.

Wait approximately one second after switching off the power supply before you switch it back on again.

After power failures lasting less than one second the connecting cable has to be disconnected.

5.6 Possible errors when powering on

The following 2 errors are typical:

- There is an internal error

If an internal error occurs during device start-up, the "SF" LED lights up red.

Switch the device off and on again.

- The device does not start

If the device does not start, the operating temperature is outside the permitted range according to the section "Problem solving (Page 86)". This is displayed as follows:

- The "TEMP" LED lights up red.
- The "PWR" LED flashes at 3 Hz.

The device is in the "Power-on delay" state. The device switches on automatically as soon as the operating temperature is in the permitted range. Wait until the permitted operating temperature has been reached. This is displayed as follows:

- The "PWR" LED lights up green.
- The "TEMP" LED flashes at 3 Hz.

Additional causes of errors are available in the section "Problem solving (Page 86)".

See also

Ambient conditions during operation (Page 82)

Device maintenance and repair

6.1 Cleaning the device

Scope of maintenance

The device is designed for low-maintenance operation. You should, however, clean the touch screen at regular intervals.

 CAUTION

Inadvertent operation

Always switch off the device before cleaning it. This will ensure that you do not trigger functions unintentionally when you touch the keys.

Note

Observe the following points:

- The device housing is resistant to water, cleaner and alcohol.
 - Use a cleaning cloth dampened with a cleaning agent to clean the equipment. Always use dish washing liquid or a screen cleaning agent.
 - Do not clean the device with compressed air or steam jets. Never use solvents or scouring powder.
-

Requirement

- The device is voltage-free.

Procedure

1. Spray the cleaning solution onto a cleaning cloth.
Do not spray directly onto the device.
2. Clean the device.
When cleaning the display wipe from the screen edge inwards.

6.2 Spare parts and repairs

Repairs

In case of repair, the HMI device must be shipped to the Return Center in Fürth. Repairs may only be carried out at the Return Center in Fürth.

Depending on the work necessary to repair the device, the Center may decide to give you a credit. A credit is only granted when the sender ordered a new HMI device.

The address is:

Siemens AG
Digital Factory
Returns Center
Siemensstr. 2
D-90766, Fürth, Germany

Spare parts

Spare parts and accessories for the HMI device can be found in section Accessories (Page 12).

6.3 Recycling and disposal

The HMI devices described in these operating instructions can be recycled due to their low levels of pollutants. Contact a certified disposal service company for environmentally sound recycling and disposal of your old devices.

Technical specifications

7.1 Certificates and approvals

7.1.1 Standards, certificates and approvals

Note

The only valid approvals for the HMI device and the connection box itself are those shown on the label on the rear panel.

CE approval



The device and the connection box satisfy the requirements and protection objectives of the following EC directives. The HMI device and the connection box comply with the harmonized European standards, promulgated in the Official Journals of the European Community for programmable logic controllers:

- 2004/108/EC Electromagnetic Compatibility Directive (EMC Directive)

EC Declaration of Conformity

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

Siemens AG
 Digital Factory, Factory Automation
 DF FA SE R&D
 Breslauer Str. 5
 DE-90766 Fürth, Germany

UL approval



The device satisfies the requirements according to Underwriters Laboratories Inc.

- UL 508 (Industrial Control Equipment)
- CSA C22.2 No. 142 (Process Control Equipment)

Marking for Australia



The device and the connection box satisfy the requirements of standard AS/NZS 2064 (Class A).

IEC 61131

The Mobile Client meets the requirements and criteria according to IEC 61131-2:2007, Programmable Logic Controllers, Part 2: Equipment requirements and tests.

KOREA



The device and the connection box satisfy the requirements according to the Korean certification.

This product satisfies the requirement of the Korean Certification (KC Mark).

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7.1.2 Operating safety

The HMI device complies with the following standards:

- EN 60204-1
Safety of Machinery – Electrical Equipment of Machines
- EN 61131-1 and EN 61131-2
Programmable Controllers
- The HMI device was tested for EMC in accordance with the following standards:
 - EN 50081-2, EMC – Unwanted emissions
 - EN 61000-6-2, Generic standard, Immunity, industrial environments
 - EN 61131-2, Programmable Controllers

The HMI device also meets the following standards which are important for use within a system:

- EN 1921, Industrial automation systems – safety of integrated manufacturing systems
- EN 12417:2001, Machine tools – safety – machining centers
- UL 508, Industrial Control Equipment
- CSA C22.2 No.14, Industrial Control Equipment

7.2 Directives and declarations

7.2.1 Electromagnetic compatibility

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

EMC-compliant installation

The EMC-compliant installation of the connection box and the application of interference-proof cables is the basis for interference-free operation. The following descriptions also apply to installation of the connection box:

- Description "Directives for interference-free installation of PLCs"
(<http://support.automation.siemens.com/WW/view/de/1064706>)
- SIMATIC PROFINET system description
(<http://support.automation.siemens.com/WW/view/en/19292127>)

Pulse-shaped interference

The following table shows the electromagnetic compatibility of modules with regard to pulse-shaped interference. This requires the HMI device to meet the specifications and directives for electrical installation.

Pulse-shaped interference	Test voltage	Degree of severity
Electrostatic discharge in accordance with IEC 61000-4-2	Air discharge: 8 kV Contact discharge: 6 kV	3
Bursts (high-speed transient interference) in accordance with IEC 61000-4-4	2 kV power supply cable 2 kV signal cable, > 30 m 1 kV signal cable, < 30 m	3
High-power surge pulses in accordance with IEC 61000-4-5, external protective circuit required ((refer to controller S7-300, Installation, section "Lightning and surge voltage protection"))		
Asymmetrical coupling	2 kV power cable DC voltage with protective elements 2 kV signal/data cable, > 30 m, with protective elements as required	3
Symmetrical coupling	1 kV power cable DC voltage with protective elements 1 kV signal cable, > 30 m, with protective elements as required	3

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	Degree of severity
HF radiation (in electromagnetic fields) IEC 61000-4-3	<ul style="list-style-type: none"> • 80% amplitude modulation at 1 kHz <ul style="list-style-type: none"> – On 10 V/m in the range of 80 MHz to 1 GHz – On 3 V/m in the range of 1.4 GHz to 2 GHz – On 1 V/m in the range of 2 GHz to 2.7 GHz • 10 V/m with 50% pulse modulation <ul style="list-style-type: none"> – At 900 MHz – At 1.89 GHz 	3
RF interference current on cables and cable shielding IEC 61000-4-6	Test voltage 10 V at 80% amplitude modulation of 1 kHz in the range from 10 kHz to 80 MHz	3

Emission of radio interference

The following table shows the emitted interference from electromagnetic fields in accordance with EN 55011, Limit Class A, Group 1, measured at a distance of 10 m.

30 to 230 MHz	< 40 dB (V/m) quasi-peak
230 to 1000 MHz	< 47 dB (V/m) quasi-peak

Additional measures

Before you connect an HMI device to the public network, ensure that it is compliant with Limit Value Class B in accordance with EN 55022.

7.2.2 ESD guideline

Definition of ESD



All electronic modules are equipped with large-scale integrated ICs or components. Due to their design, these electronic elements are highly sensitive to overvoltage, and thus to any electrostatic discharge. These electronic components are therefore specially identified as ESDs.

Abbreviations

The following abbreviation is commonly used for electrostatic sensitive devices:

- EGB – Elektrostatisch Gefährdete Bauteile/Baugruppen (Germany)
- ESD – Electrostatic Sensitive Device (internationally recognized term)

Electrostatic charging

NOTICE

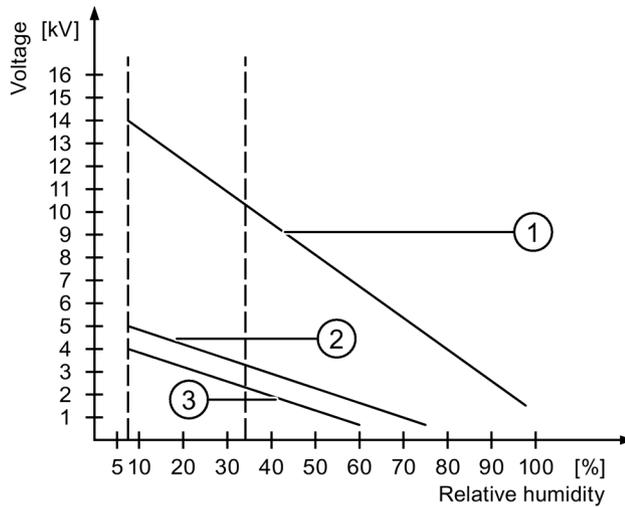
Electrostatic charging

ESDs may be destroyed by voltages far below the level perceived by human beings. Voltages of this kind develop when a component or an assembly is touched by a person who is not grounded against static electricity. Usually, it is unlikely that damage to an ESD as a result of overvoltage is detected immediately but may become apparent only after a longer period of operation.

Prevent electrostatic charging of your body before you touch the ESD!

Anyone who is not connected to the electrical potential of their surroundings is subjected to electrostatic charging.

The following figure indicates the maximum electrostatic charge anyone is subjected to when coming into contact with the materials shown. These values correspond with specifications to IEC 801-2.



- ① Synthetic materials
- ② Wool
- ③ Antistatic materials such as wood or concrete

Protective measures against electrostatic discharge

NOTICE

Observe grounding measures

When working with electrostatic sensitive devices, make sure that the person, the workplace and the packaging are properly grounded. This helps to avoid electrostatic charging.

As a rule, only touch the ESD if this is unavoidable, for example for maintenance. When you touch modules, make sure that you do not touch the pins on the modules or the PCB tracks. In this way, the discharged energy cannot reach and damage the sensitive devices.

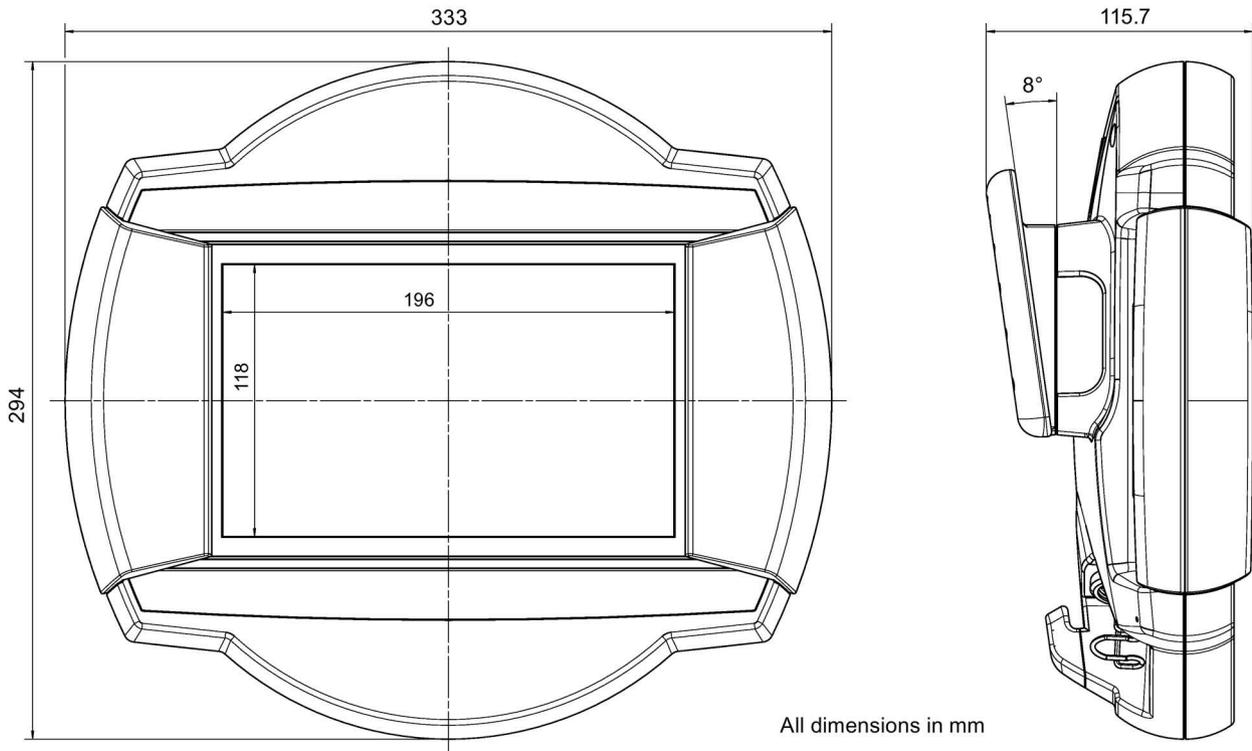
Discharge electrostatic electricity from your body if you are performing measurements on an ESD. Do so by touching grounded metallic parts.

Always use grounded measuring instruments.

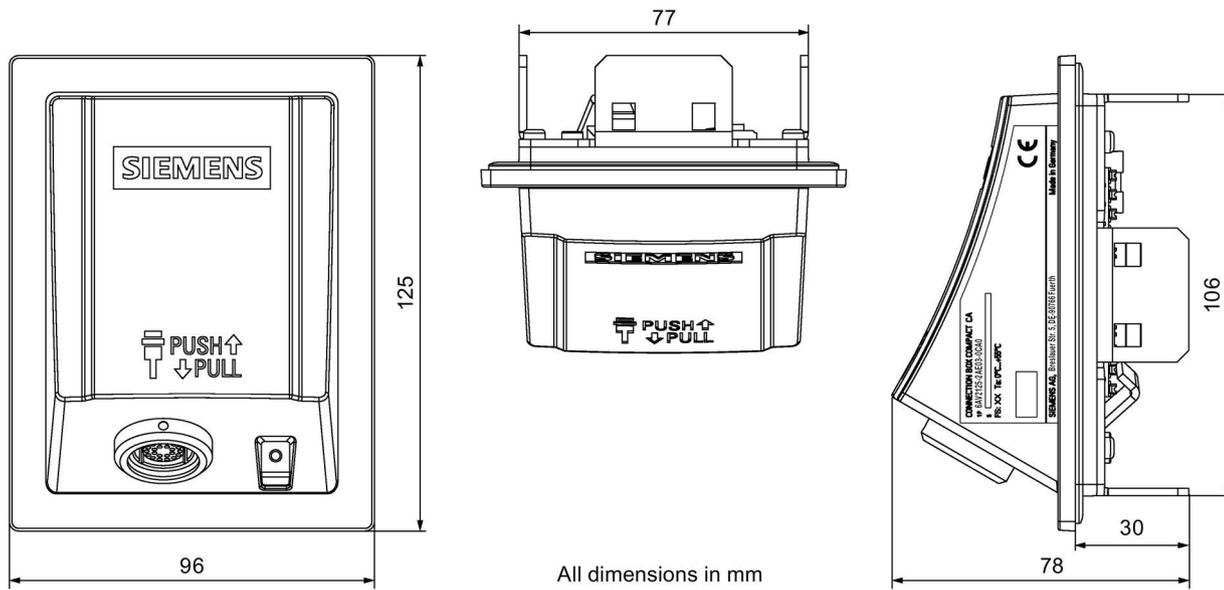
7.3 Dimension drawings

7.3.1 Mobile client

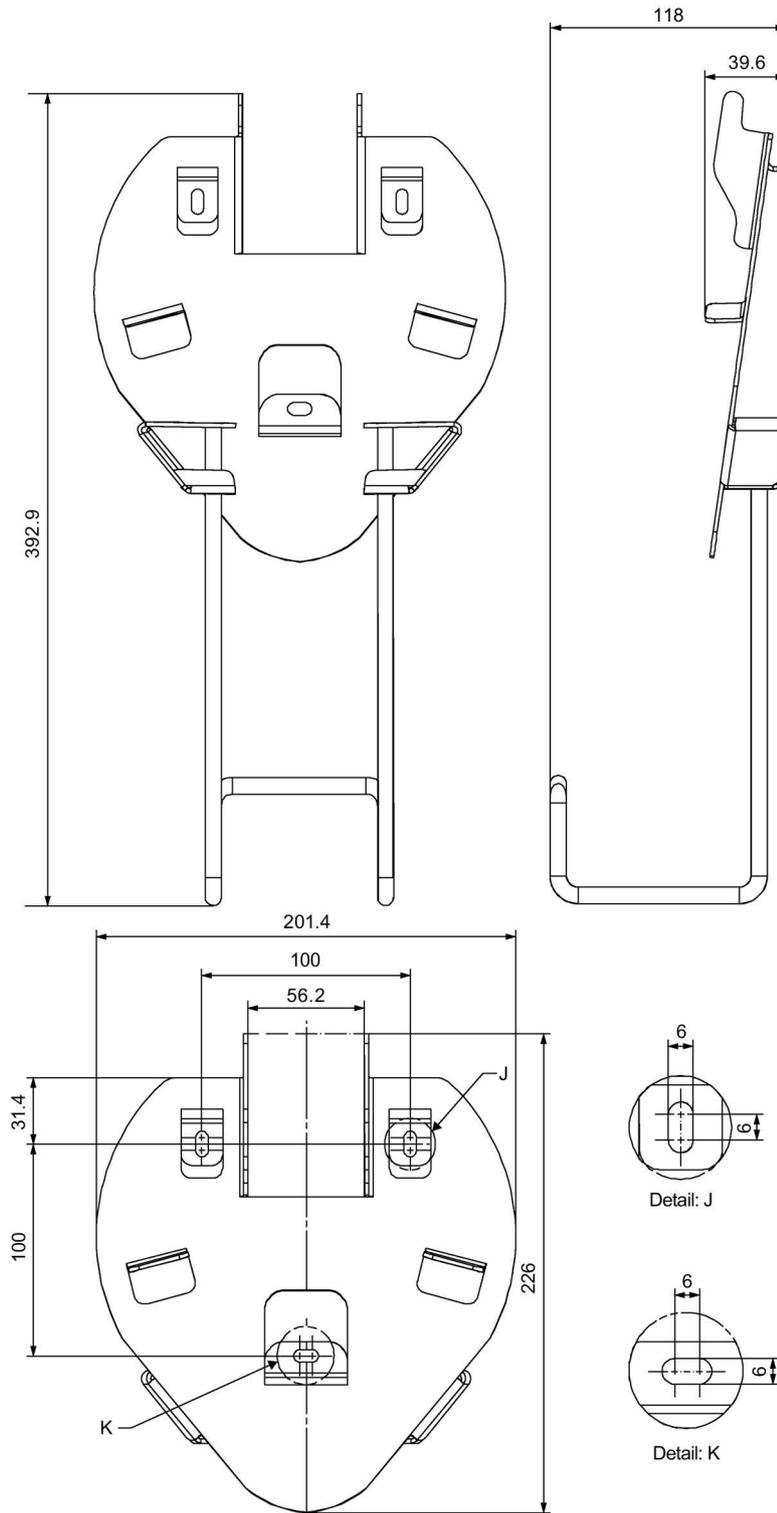
Front, side and rear view



7.3.2 Connection Box compact CA

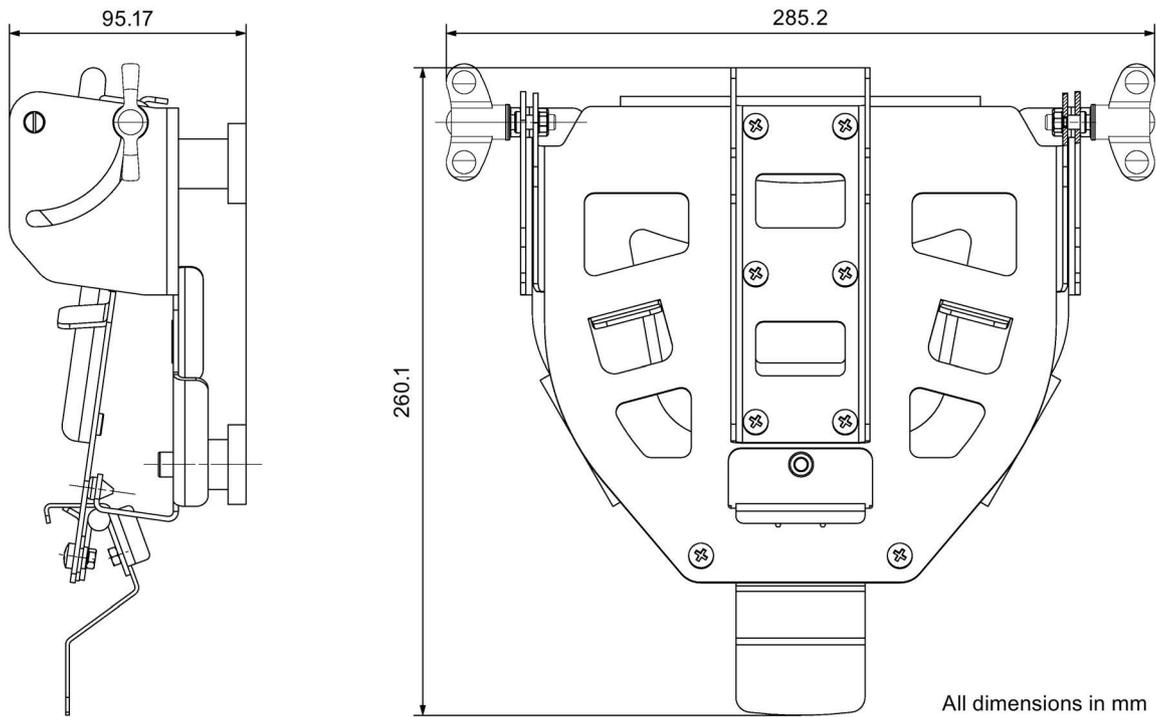


7.3.3 Wall-mounting bracket

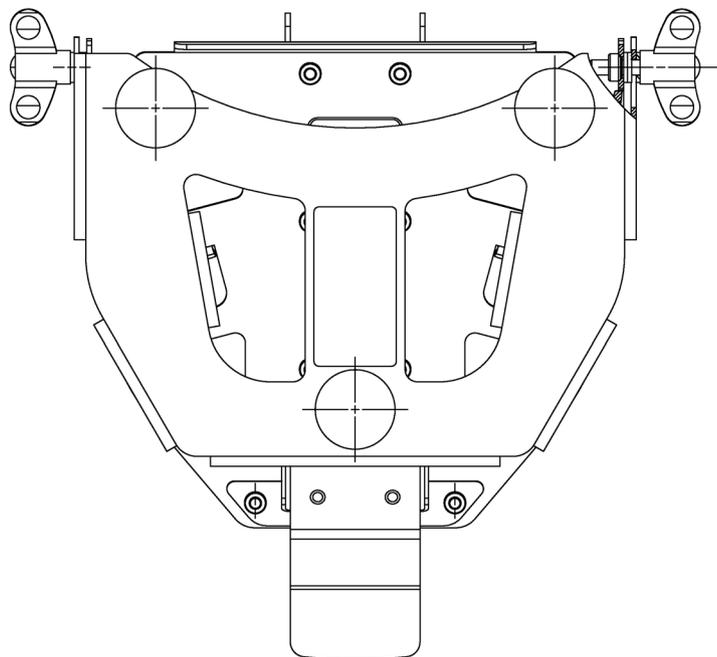


All dimensions in mm

7.3.4 Magnetic wall bracket



The figure below shows the rear view with the position of the magnet:



7.4 Specifications

7.4.1 Technical specifications Mobile Client

Weight without packaging	Approx. 2260 g
Length × height × width	294 × 333 × 116 mm
Degree of protection	IP65
Protection class	Protection class I in accordance with IEC 60536, protective conductor required
Fall height	≤ 1 m

Ports

Circular connectors	Power supply and Ethernet
USB	Only for approved USB storage medium and for service purposes only

Isolation resistance

Isolation resistance is demonstrated in the type test with the following test voltages in accordance with IEC 61131-2:

Circuits with a rated voltage of U_n relative to other circuits or ground	Test voltage
< 50 V	500 V DC

Display

Type	Color TFT-LC Display
Size	9 inch
Resolution	WXGA resolution (1280 × 768)
Color depth	24 bits
Brightness control	Yes
Backlighting	LED
Half brightness life time, typical	50000 h
Input unit: Type	Touch screen, resistive analog

Memory

Processor	X86 processor system
Application memory	1 GB
System memory	512 MB

Software

Operating system	Linux
SMM firmware, no license required	<ul style="list-style-type: none"> FreeRTOS V5.0.3, http://www.freertos.org/ TI Driver Library, Stellaris Peripheral Driver Library, version 6852, http://www.ti.com/tool/sw-lm3s

7.4.2 Technical specifications Connection Box

Weight without packaging	Approx. 250 g
--------------------------	---------------

Power supply

Rated voltage	+24 V DC
Range, permitted	20.4 to 28.8 V (-15%, +20%)
Transients, maximum permitted	35 V (500 ms)
Time between two transients	≥ 50 s
Cable length between connection box and PLC	≤ 30 m
Fuse, internal	Electronic; 1.5 A
Current load PLC-accompanying signals	< 100 mA
Recovery time	≥ 1 s
Current consumption without connected HMI device	< 0.1 mA
Current consumption with connected HMI device Mobile Client900WXN	
<ul style="list-style-type: none"> • Typical • Continuous current, maximum • Inrush current I²t 	<ul style="list-style-type: none"> • Approx. 700 mA • Approx. 850 mA • Approx. 0.6 A²s
24 V DC output X10 pin 4 (driver ability)	Signal High: Device connected (self-limited, max. 100 mA) Signal Low: Device not connected

Protection class and degree of protection

The device meets the requirements of EN 61131-2.

Circuits with rated voltage of V_i	Test voltage
< 50 V	500 V AC to other circuits / to ground

The device meets the requirements of EN 60529.

Device side	Degree of protection	Requirements
Front	IP65	<ul style="list-style-type: none"> • The connection box has been installed as described in this document. • Connecting cable or cover cap is plugged into the socket.
	Type 4X/Type 12 (indoor use only)	If specified on the rating plate

7.4.3 Technical specifications of the wall-mounting brackets

Wall-mounting bracket, weight without packaging	Approx. 900 g
Magnet wall bracket, weight without packaging	Approx. 850 g

7.4.4 Ambient conditions for transport and storage

Mechanical and climatic transport and storage conditions

The transportation and storage conditions of this HMI device exceed requirements in accordance with IEC 61131-2. The following specifications apply to the transportation and storage of an HMI device in its original packaging.

The climatic conditions comply with the following standards:

- IEC 60721-3-3, Class 3K7 for storage
- IEC 60721-3-2, Class 2K4 for transport

The mechanical conditions are compliant with IEC 60721-3-2, Class 2M2.

The following table shows the transport and storage conditions for the Mobile Client.

Type of condition	Permissible range
Free fall	≤ 1 m
Temperature	-25 to +70 °C
Atmospheric pressure	1080 to 660 hPa, corresponds to an elevation of -1000 to 3500 m
Relative humidity	5 to 95%, without condensation
Sinusoidal vibration in accordance with IEC 60068-2-6	5 to 8.4 Hz: 3.5 mm 8.4 to 150 Hz: 9.8 m/s ²
Shock in accordance with IEC 60068-2-27	25 g, 6 ms, 1000 shocks per axis

Note

In the following cases, ensure that no humidity can settle on or in the HMI device:

- Transportation of the HMI device in low temperatures
- Under extreme temperature variations

The HMI device must have acquired room temperature before it is put into operation. Do not expose the HMI device to direct radiation from a heater in order to warm it up. If dewing has developed, wait approximately 4 hours until the HMI device has dried completely before switching it on.

The following points must be adhered to in order to ensure a fault-free and safe operation of the HMI device:

- Proper transportation and storage
- Proper installation and mounting
- Careful operation and maintenance

The warranty for the HMI device will be deemed void if these stipulations are not heeded.

7.4.5 Ambient conditions during operation

Mechanical ambient conditions

The tables below contain the tested and maximum permissible mechanical ambient conditions in the form of sinusoidal vibrations.

Mobile Client

Duration	Effect	Tested for
$5 \leq f \leq 8.4 \text{ Hz}$	Amplitude 3.5 mm	Vibration resistance, IEC 60068-2-6
$8.4 \leq f \leq 150 \text{ Hz}$	Constant acceleration 1 g	
Duration 11 ms	Acceleration 15 g	Shock resistance, IEC 60068-2-27

Reducing vibrations and shocks

If the device is subject to stronger shocks or vibrations than specified in the ambient conditions, you must take appropriate measures to reduce amplitudes or acceleration. In such situations, use vibration damping or vibration absorber systems.

Climatic ambient conditions

The following tables show the permissible climatic ambient conditions for use of the Mobile Client and connection box.

Mobile Client

Note

Observe the following points:

- The SIMATIC Mobile Client can be exposed to an ambient temperature of about $-10 \text{ }^\circ\text{C}$ due to its internal heating.
- Please observe the ambient conditions in section "Using the override function (Page 62)".

Ambient conditions	Permissible range	Comments
Temperature (operation)	0 to $45 \text{ }^\circ\text{C}$	
Extended operational temperature range	-10 to $45 \text{ }^\circ\text{C}$	The range of $<0 \text{ }^\circ\text{C}$ must not be entered if the HMI device was in operation for more than 30 minutes beforehand.
Relative humidity, operation and storage	10 to 85 %	Without condensation, corresponds to a relative humidity, exposure level 2 conforming to IEC 61131, part 2

Ambient conditions	Permissible range	Comments
Atmospheric pressure	1.080 to 795 hPa	Corresponds to an altitude of -1000 m to 2000 m
Pollutant concentration	SO ₂ : < 0.5 ppm; Relative humidity < 60%, no condensation	Test: 10 cm ³ /m ³ ; 10 days
	H ₂ S: < 0.1 ppm; Relative humidity < 60%, no condensation	Test: 1 cm ³ /m ³ ; 10 days

The device has a vapor-permeable valve which gives a certain amount of protection from condensation inside the device.

7.4.6 Ambient conditions and degree of protection connection box

Ambient conditions

The Connection Box compact CA is specified according to IEC 61131-2 or UL508 as "Open Type".

Permissible ambient temperature range for transport and storage: -20 to. 60 °C

Permissible ambient temperature range during operation: 0 to. 55 °C

Degree of protection

The degree of protection IP65 is only ensured on the front of the Connection Box compact CA when the connecting cable or the cover cap is plugged into the connection socket.

7.5 Interface description

7.5.1 Interface assignment on the Connection Box compact CA

X1

Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment
1	TD+	3	RD+	5	Not connected	7	Not connected
2	TD-	4	Not connected	6	RD-	8	Not connected

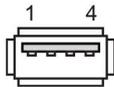
X10

The pins are numbered from bottom to top.

Pin	Assignment
1	Functional earth
2	M24
3	P24
4	24 VDC when device is connected
5-12	Not connected

7.5.2 Contact assignment of the USB port

USB socket



Contact	Assignment
1	+5 VDC, out (max. 500 mA)
2	USB-DN
3	USB-DP
4	GND

Technical support

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 (<http://www.siemens.com/automation/service&support>)
- Support request form (<http://www.siemens.com/automation/support-request>)
- After-sales information system for SIMATIC PC / PG (<http://www.siemens.com/asis>)
- SIMATIC Documentation Collection (<http://www.siemens.com/simatic-tech-doku-portal>)
- Your local representative (<http://www.siemens.com/automation/partner>)
- Training center (<http://www.sitrain.com>)
- Industry Mall (<https://mall.industry.siemens.com>)

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

- Article number of the device
- BIOS version, SMM firmware version, image version

These specifications are described in the chapter ""Q-Data" page (Page 57)".

- Installed additional hardware

A.2 Problem solving

This section provides you with tips on how to locate and/or troubleshoot problems which occur.

Problem	Possible cause	Possible remedy
No LEDs are on or flashing	Supply voltage too low	Check the voltage at the power supply input of the connection box.
	Connecting cable not plugged in	Check whether the connecting cable has been fully plugged in to the HMI device and the connection box.
	Humidity too high (condensation)	Let the device dry for about 4 hours.
Only the "SF" LED is on	"Internal error" or voltage outside permissible range	Check the power supply or remove the device from the power supply. Switch on the power supply again. If the error still exists, send the device to the Return Center in Fürth.
The "PWR" LED flashes at 3 Hz and the "TEMP" LED is on	The device is outside the permissible operating temperature range	Move the device to warmer / cooler surroundings until the temperature is back in the permissible range.

Abbreviations

B.1 Abbreviations

DC	Direct Current
ESD	Components and modules endangered by electrostatic discharge
EMC	Electromagnetic compatibility
EN	European standards
ESD	Components and modules endangered by electrostatic discharge
GND	Ground
HF	High Frequency
HMI	Human Machine Interface
IEC	International Electronic Commission
IP	Internet Protocol
IPC	Industrial PC
LED	Light Emitting Diode
PC	Personal Computer
PELV	Protective Extra Low Voltage
RFN	Runtime TIA Portal V13, Full Features, Non arctic (hardware with buttons, no heating)
SELV	Safety Extra Low Voltage
SMM	System Management Module
TFT	Thin Film Transistor
UL	Underwriter's Laboratory
USB	Universal Serial Bus
WXN	Web Client Linux, no safety operator controls (X), normal temperature range

Glossary

Automation system

Controller of the SIMATIC S7 series such as a SIMATIC S7-300

Bootloader

Used to start the operating system. Automatically started when the HMI device is switched on. After the operating system has been loaded, the Loader opens.

EMC

Electromagnetic compatibility is the ability of electrical equipment to function properly in its electromagnetic environment without affecting this environment.

HMI device

An HMI device is a device used for the operation and monitoring of machines and plants. The statuses of the machine or plant are indicated by means of graphic elements or by indicator lamps on the HMI device. The operator controls of the HMI device allow the operator to interact with the processes of the machine or plant.

Plant

General term referring to machines, processing centers, systems, plants and processes which are operated and monitored on an HMI device.

PLC

A PLC is a general term for devices and systems with which the HMI device communicates, e.g. SIMATIC S7.

Project

Result of a configuration using configuration software. The project normally contains several screens with embedded system-specific objects, basic settings and alarms.

Web server

A variety of IPCs have a Web server that provides the machine or plant picture as an HTML page. When a Mobile Client connects to the Web server, the HTML page is displayed on the Mobile Client.

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