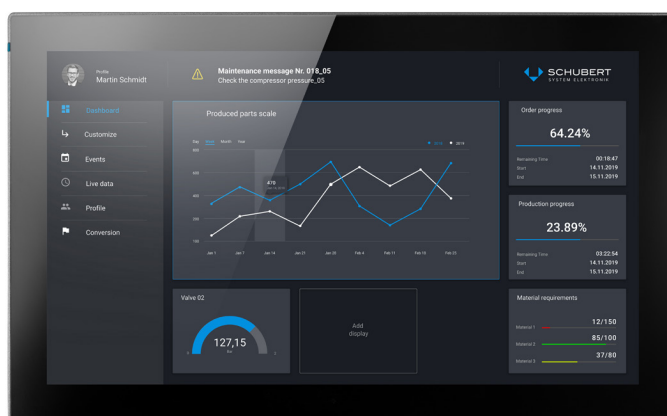


## Prime Panel Pico Installation

10.1" | PPI1100ED\_101\_00

13.3" | PPI1100ED\_133\_00

15.6" | PPI1100ED\_156\_00



## Operating manual

6902180 | V 1.01

US English translation of the German original operating manual



This operating manual is part of the technical documentation.  
It provides technicians and system managers with the necessary information on:

- Installation
- Commissioning
- Operation
- Maintenance

## General information

### Safety instructions

This document contains instructions that you must follow for your personal safety and to prevent damage to property. The instructions are marked by warning triangles and are graded according to the degree of risk.



Symbol with signal word: **DANGER**

**Imminent danger to the life and health of persons.**

Non-compliance will result in death or serious injury (disability).



Symbol with signal word: **WARNING**

**Dangerous situation for the life and health of persons.**

Non-compliance may result in death or serious injury.



Symbol with signal word: **CAUTION**

**Potentially dangerous situation**

Non-compliance can cause minor injuries or damage to property.



### Instructions for proper handling

Non-compliance can cause damage to the product or other objects in the vicinity.

Important information about the product, the handling of the product or the part of the documentation to which special attention should be paid.



### Environmental protection

Non-compliance may pollute the environment.



### Electrostatic discharge

The adjacent symbol indicates the use of electrostatic-sensitive devices (ESD).

The following typographical symbols are used in this operating manual:

- First level enumeration
- Second level enumeration
- Instruction for action

### Intended use of the system

Products from Schubert System Elektronik GmbH may only be used for the purposes specified in the technical documentation and only in conjunction with third-party devices and components recommended or approved by us.



Commissioning is prohibited until it has been established that the machine in which this component is to be installed complies with the provisions of Directive 2006/42/EC.

The proper and safe operation of the product depends on proper transport, storage, installation and assembly as well as careful operation and maintenance.

Using the device in a manner other than that specified by the manufacturer can impair the protection afforded by the device.

### Qualification of the personnel

Only qualified personnel may perform the following work on the products:

- Installation, commissioning, operation, maintenance.

Qualified personnel in the sense of the safety instructions are persons who are authorized to commission, ground and label devices, systems and circuits in accordance with the standards of safety engineering.

### Exclusion of liability

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

### Standards compliance

Products from Schubert System Elektronik GmbH comply with the relevant harmonized European standards (EN) for the respective area of application.

### Warranty

The agreements stipulated in the General Terms and Conditions of Business (GTC) apply to Schubert System Elektronik GmbH equipment.

### Safety instructions

The safety instructions specified in this document must be observed during the commissioning and ongoing operation of the products.

### Trade names and/or trademarks

All hardware and software names used are trade names and/or trademarks of the respective manufacturers.

### Copyright

Any user documentation is intended only for the operator and his personnel.

Passing on and reproduction of this document and use and disclosure of its contents are prohibited unless expressly permitted.

Any violations will result in compensation claims.

## EU Declaration of Conformity



The product from Schubert System Elektronik GmbH complies with the directives listed in the chapter "4 Technical data".

The requirements are assessed on the basis of the standards referenced therein.

The EU Declaration of Conformity and the associated documentation are provided in accordance with the directives at:

Schubert System Elektronik GmbH  
take-off Gewerbepark 36  
78579 Neuhausen ob Eck  
Germany

## Note

This operating manual with doc. no.: 6902180 describes the following devices:

- **10.1" Prime Panel Pico Installation | PPI1100ED\_101\_00**
- **13.3" Prime Panel Pico Installation | PPI1100ED\_133\_00**
- **15.6" Prime Panel Pico Installation | PPI1100ED\_156\_00**

### Multiple devices in operating manual

- This operating manual describes the **Prime Panel Pico Installation 15.6"** as example. Relevant differences between the devices described herein are pointed out and described where appropriate.
- Please read the operating manual before using the device for the first time and keep it in a safe place for later use. It is intended for users with previous knowledge of PC and automation technology.

## Illustrations

- All illustrations show the **Prime Panel Pico Installation 15.6"** as example. If a different device is shown, this is indicated in the description.
- The illustrations may include optional equipment!

## Intended use of the document



This operating manual is part of the technical documentation. It provides technicians and system managers with the necessary information on installation, commissioning, operation and maintenance of the device.

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We reserve the right to make technical changes.

## Table of contents

|            |                                                                                                |            |
|------------|------------------------------------------------------------------------------------------------|------------|
| <b>1</b>   | <b>Characteristic .....</b>                                                                    | <b>1</b>   |
| 1.1        | Overview.....                                                                                  | 1          |
| 1.2        | Areas of application.....                                                                      | 1          |
| 1.3        | Block diagram .....                                                                            | 2          |
| <b>2</b>   | <b>Installation.....</b>                                                                       | <b>3</b>   |
| 2.1        | Unpacking and checking delivery contents .....                                                 | 3          |
| 2.2        | Storage and transport .....                                                                    | 3          |
| 2.3        | Installation .....                                                                             | 3          |
| 2.4        | Temperature .....                                                                              | 3          |
| 2.5        | Ventilation .....                                                                              | 4          |
| 2.5.1      | Installation position and mounting .....                                                       | 5          |
| 2.5.2      | Installation cut-out.....                                                                      | 5          |
| 2.5.3      | Fastening and sealing .....                                                                    | 6          |
| 2.5.4      | Installation with mounting clamps in the front panel.....                                      | 6          |
| 2.5.5      | Installing the mounting clamps .....                                                           | 7          |
| <b>3</b>   | <b>Connection, commissioning and operation .....</b>                                           | <b>8</b>   |
| 3.1        | Establishing operational readiness.....                                                        | 8          |
| 3.2        | Expanding the Prime Panel Pico Installation.....                                               | 9          |
| 3.3        | Opening and closing the device.....                                                            | 10         |
| 3.3.1      | Parts of the housing .....                                                                     | 10         |
| 3.3.2      | Opening the device .....                                                                       | 11         |
| 3.3.3      | Closing the device.....                                                                        | 12         |
| 3.4        | Connecting the power supply .....                                                              | 13         |
| 3.4.1      | Connection cable .....                                                                         | 13         |
| 3.4.2      | Plug connection for 24 V DC.....                                                               | 13         |
| 3.4.3      | Ground connection.....                                                                         | 14         |
| 3.5        | Connecting peripheral devices.....                                                             | 14         |
| 3.5.1      | Interfaces.....                                                                                | 14         |
| 3.6        | Setting up and operating the device .....                                                      | 15         |
| 3.6.1      | Memory modules.....                                                                            | 15         |
| 3.6.2      | SD storage media (optional).....                                                               | 15         |
| 3.6.3      | Operating system .....                                                                         | 15         |
| 3.6.4      | Commissioning.....                                                                             | 15         |
| 3.6.5      | Replacing the buffer battery.....                                                              | 16         |
| 3.7        | Disposal.....                                                                                  | 16         |
| <b>4</b>   | <b>Technical data.....</b>                                                                     | <b>17</b>  |
| 4.1        | General data for all Prime Panel Pico Installation 10.1 " / 13.3 " / 15.6" .....               | 17         |
| 4.1.1      | Specific data for 10.1" Prime Panel Pico Installation.....                                     | 18         |
| 4.1.2      | Specific data for 13.3" Prime Panel Pico Installation.....                                     | 18         |
| 4.1.3      | Specific data for 15.6" Prime Panel Pico Installation.....                                     | 18         |
| 4.2        | Mechanical dimensions .....                                                                    | 19         |
| 4.2.1      | 10.1" Prime Panel Pico Installation - device dimensions .....                                  | 19         |
| 4.2.2      | 10.1" Prime Panel Pico Installation - installation cut-out .....                               | 20         |
| 4.2.3      | 13.3" Prime Panel Pico Installation - device dimensions .....                                  | 21         |
| 4.2.4      | 13.3" Prime Panel Pico Installation - installation cut-out .....                               | 22         |
| 4.2.5      | 15.6" Prime Panel Pico Installation - device dimensions .....                                  | 23         |
| 4.2.6      | 15.6" Prime Panel Pico Installation - installation cut-out .....                               | 24         |
| 4.2.7      | Prime Panel Pico Installation 10.1" / 13.3" / 15.6" - installation spacing for convection..... | 25         |
| <b>A 1</b> | <b>Annex   Grounding concept .....</b>                                                         | <b>A-1</b> |

## Table of figures

|                                                                                  |     |
|----------------------------------------------------------------------------------|-----|
| Fig. 1-1: 10.1" Prime Panel Pico Installation - view of device .....             | 1   |
| Fig. 1-2: 13.3" Prime Panel Pico Installation - view of device.....              | 1   |
| Fig. 1-3: 15.6" Prime Panel Pico Installation - view of device .....             | 2   |
| Fig. 1-4: Block diagram .....                                                    | 2   |
| Fig. 2-1: Ventilation.....                                                       | 4   |
| Fig. 2-2: Permissible installation position.....                                 | 5   |
| Fig. 2-3: Installation with mounting clamps (15.6" device shown as example)..... | 6   |
| Fig. 2-4: Installing the mounting clamps .....                                   | 7   |
| Fig. 3-1: Parts of the housing .....                                             | 10  |
| Fig. 3-2: Opening the device .....                                               | 11  |
| Fig. 3-3: Closing the device.....                                                | 12  |
| Fig. 3-4: Connecting the 24 V DC supply voltage .....                            | 13  |
| Fig. 3-5: Ground connection.....                                                 | 14  |
| Fig. 3-6: Overview of connections for peripherals.....                           | 14  |
| Fig. 3-7: Replacing SD storage media.....                                        | 15  |
| Fig. 3-8: Disengaging the battery carrier and changing the buffer battery .....  | 16  |
| Fig. 4-1: 10.1" Prime Panel Pico Installation - device dimensions.....           | 19  |
| Fig. 4-2: 10.1" Prime Panel Pico Installation - installation cut-out .....       | 20  |
| Fig. 4-3: 13.3" Prime Panel Pico Installation - device dimensions.....           | 21  |
| Fig. 4-4: 13.3" Prime Panel Pico Installation - installation cut-out .....       | 22  |
| Fig. 4-5: 15.6" Prime Panel Pico Installation - device dimensions.....           | 23  |
| Fig. 4-6: 15.6" Prime Panel Pico Installation - installation cut-out .....       | 24  |
| Fig. 4-7: Installation spacing for convection.....                               | 25  |
| Fig. A-1: Grounding concept - panel PC.....                                      | A-1 |
| Fig. A-2: Ground straps .....                                                    | A-1 |
| Fig. A-3: Grounding concept - monitor PC .....                                   | A-2 |
| Fig. A-4: Grounding to be avoided .....                                          | A-2 |

## 1 Characteristic

### 1.1 Overview

The Prime Panel Pico Installation with Intel® Atom E3950 Core are designed as industrial touchscreens for demanding applications with high connectivity. They are designed to be fitted into systems that are enclosed at the back (e. g. control cabinets, switchboards, etc.) and intended for the use in plant engineering.

- Protection class: IP65 compliant with EN 60529 when properly fitted, IP20 at rear
- Combined glass-aluminum device design without beads or edges
- Full-surface glass front built flush into front frame
- High-end steel plate housing with sturdy aluminum front frame
- Quick and easy installation using mounting clamps
- Fanless CPU and system cooling
- Industrial, EMC-compliant housing design

### 1.2 Areas of application

The Prime Panel Pico Installation can be used for a broad range of applications, such as:

- Measurements, open-loop control and closed-loop control of machines, systems and industrial processes
- Operation and display tasks
- Data collection and data processing

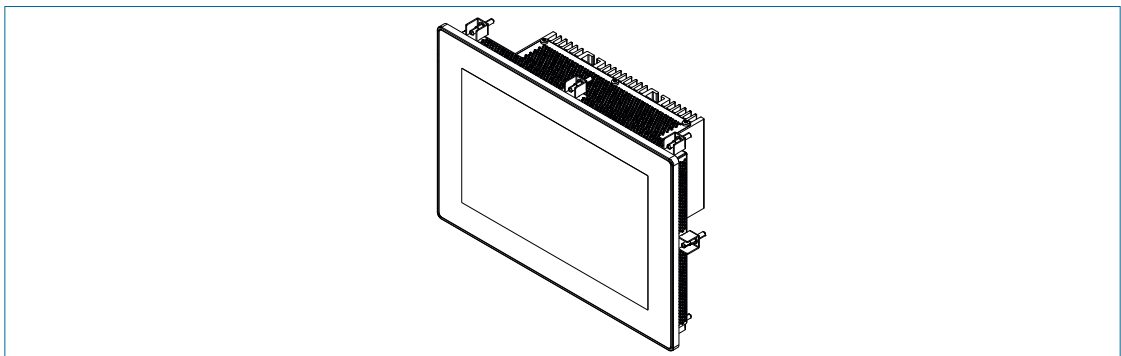


Fig. 1-1: 10.1" Prime Panel Pico Installation - view of device

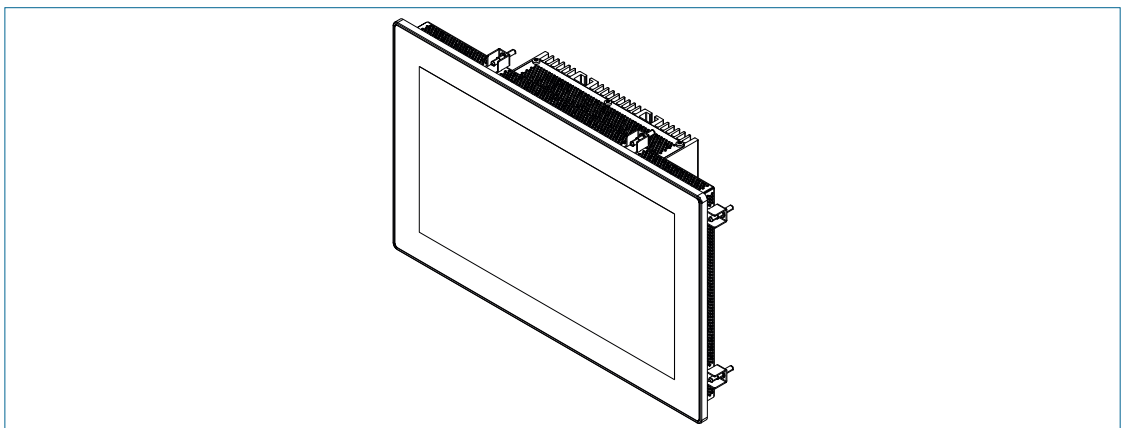


Fig. 1-2: 13.3" Prime Panel Pico Installation - view of device

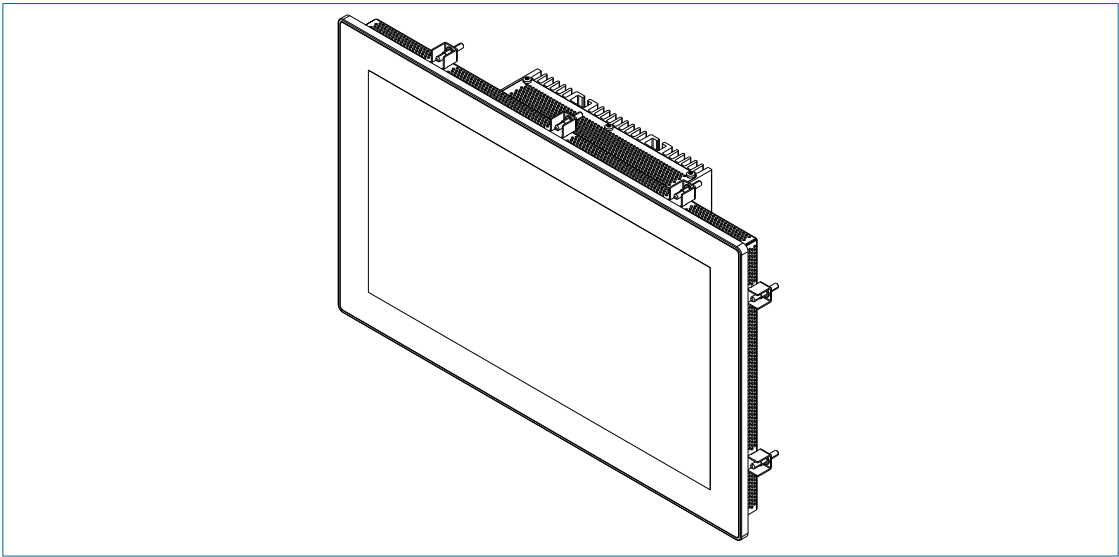


Fig. 1-3: 15.6" Prime Panel Pico Installation - view of device

1.3 Block diagram

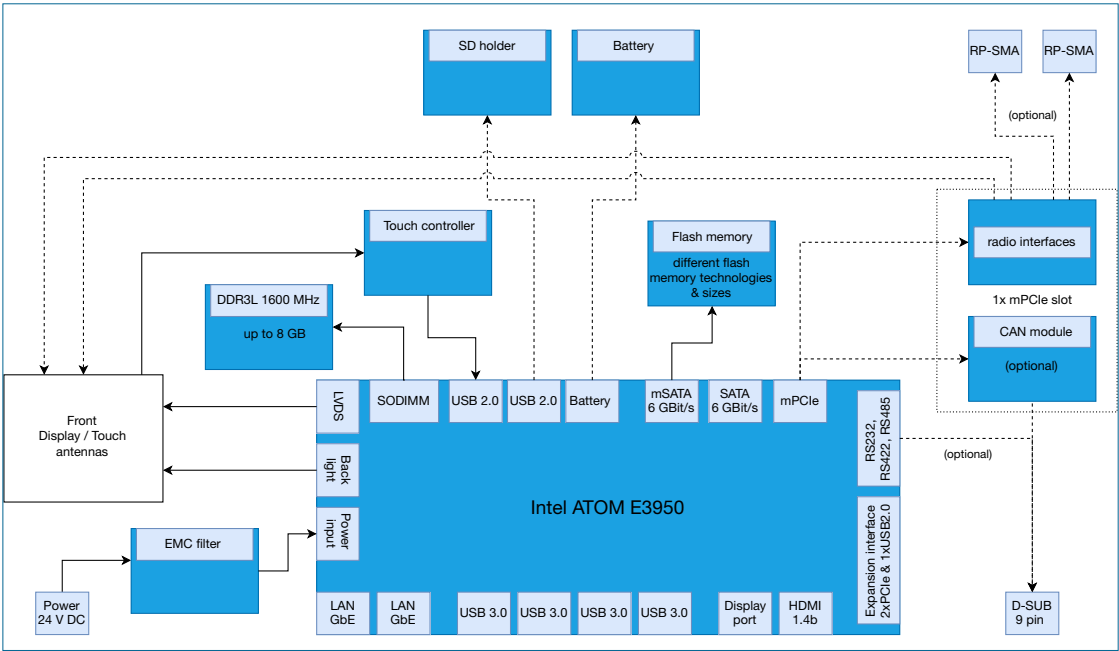


Fig. 1-4: Block diagram

## 2 Installation

### 2.1 Unpacking and checking delivery contents

- Check packaging for transport damage.
- Carefully remove the packaging to avoid causing damage.



Keep the original packaging for future transport.

Keep the documents that are included.

- Check the contents of the packaging for visible transport damage.
- Check the contents for completeness on the basis of the delivery note.

### 2.2 Storage and transport



During storage and transport, observe the permissible limit values specified in the “Technical data” chapter.

Especially in cold weather and in case of extreme temperature differences, ensure that moisture does not condense on or in the device.

- Protect the device from excessive mechanical stress. Suitable packaging improves its resistance to vibrations during transport.
- When transporting the individual device, use the original packaging including all shock-absorbing elements, or comparable packaging!

### 2.3 Installation



#### Fire hazard due to open equipment

The device is not enclosed at the back and is intended for installation inside a housing that provides the fire protection function.



The Prime Panel Pico Installation is **not** suitable for outdoor operation.

The following points must be observed to ensure trouble-free operation of the Prime Panel Pico Installation and to avoid damage.

- When installing the Prime Panel Pico Installation, observe chapter “4 Technical data”

### 2.4 Temperature

- Before commissioning:
  - Slowly adjust the device to the room temperature.
  - In case of condensation, do not start up the device until it is completely dry.
- Prevent overheating during operation:
  - Do not expose the device to direct irradiation from a heat source, such as sunlight.
- Only operate the device within the temperature range specified in chapter “4 Technical data”.

## 2.5 Ventilation

- Cooling concept
  - The processor uses only passive cooling via free convection, i.e. there are neither CPU fans nor system fans.
  - The CPU as well as all power semiconductors of the power supply unit are connected to the cover of the computer housing via heat spreaders and heat pipes.
  - An aluminum heat sink collects the heat generated by components with high power loss and dissipates it to the outside.
  - Vents are provided on the display and computer housings to allow air exchange with the surrounding air.
- Do not cover these vents when installing the device.
- A space of 50 mm must be kept free above, below, on the sides and behind the device for free air convection, see chapter “4.2.7 Prime Panel Pico Installation 10.1“ / 13.3“ / 15.6“ - installation spacing for convection” on page 25.
- Suitable air circulation must be provided.

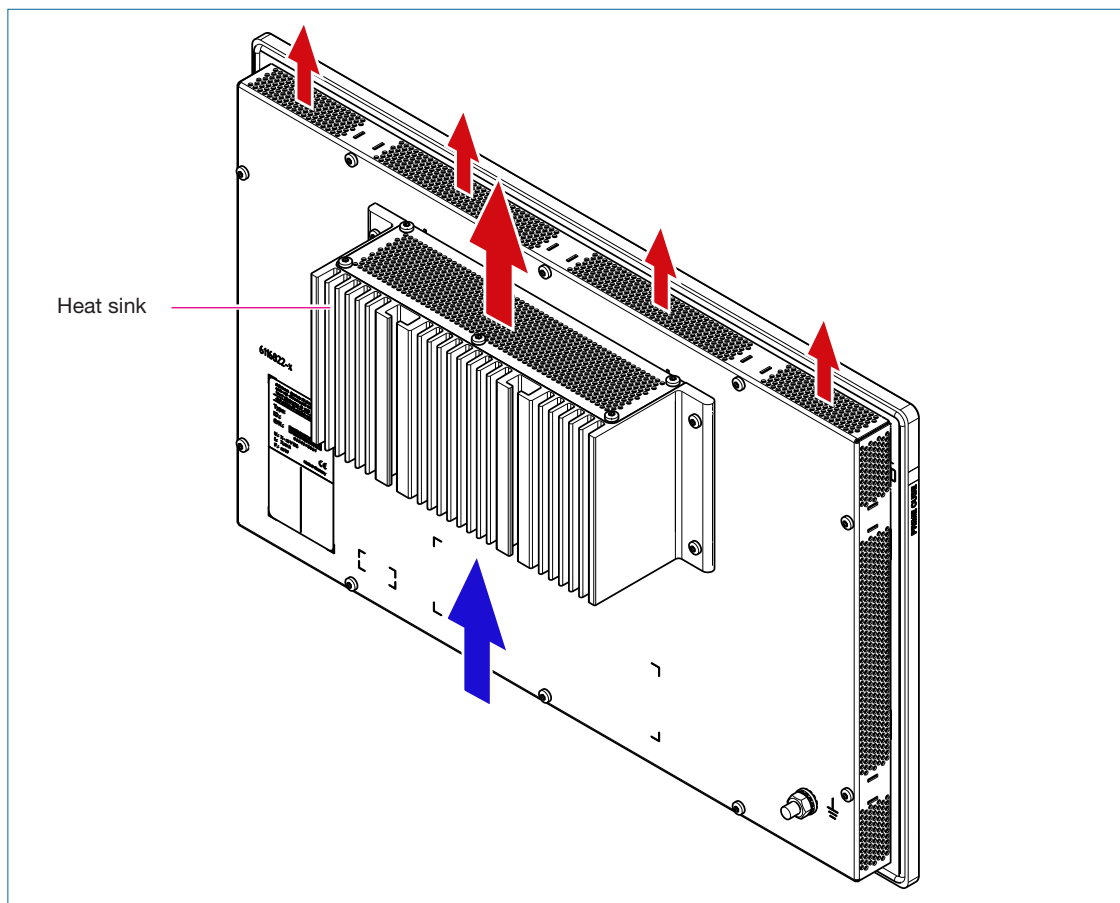


Fig. 2-1: Ventilation

### 2.5.1 Installation position and mounting

- The device is designed for horizontal installation (connections at bottom) and must **not** be installed in vertical orientation (connections at the side).
- The device must only be operated with the glass front in vertical position. Deviations of up to  $\pm 5^\circ$  from the vertical axis are permitted. If deviating from the vertical installation, make sure not to cause a heat build-up inside the housing.
- For dimensions, see chapter "4 Technical data" on page 17.

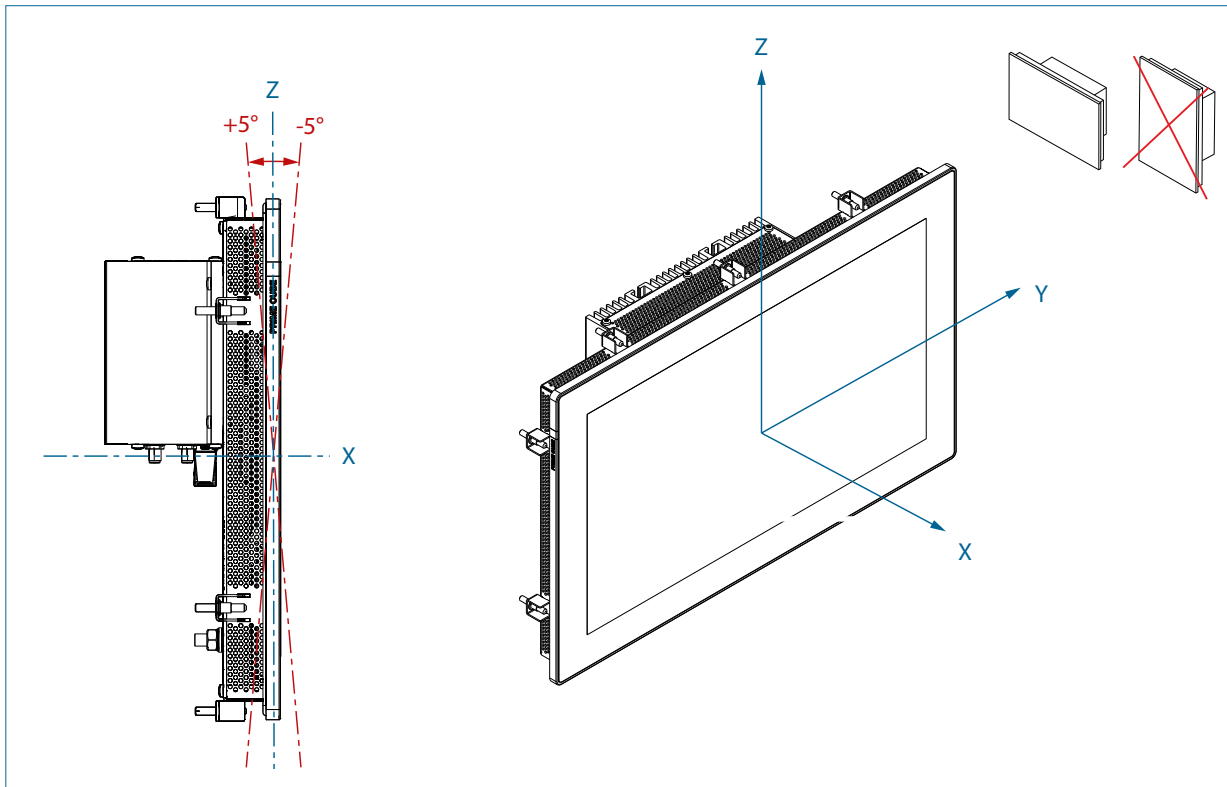


Fig. 2-2: Permissible installation position

### 2.5.2 Installation cut-out

For information on the dimensions of the installation cut-out and the specified maximum thickness of the mounting wall, see chapter "4 Technical data" on page 17.



Make sure there is enough space to remove the device from the installation cut-out.



The mounting wall of the housing in which the device is installed - including the mounting elements - must be able to support four times the weight of the device.

2.5.3 Fastening and sealing



The device is suitable for installation in the front panels of suitable housings, such as control cabinets, consoles, racks and hinged frames.

Use an installation cut-out that provides bracings in the housing for stabilization. Install such bracings where necessary.

The IP 65 protection rating (front) is only guaranteed if the housing has sufficient rigidity, if the installation is performed using the number of mounting clamps or mounting plates specified below, and if the seal is inserted properly.

2.5.4 Installation with mounting clamps in the front panel

The installation in the front panel uses:

- Mounting clamps, stainless steel 1 mm (mat. no. 61 16 546) with grub screws with hexagon socket GRS HS A2 M4x25 DIN916 (mat. no.60 10 244) [included with accessories at delivery]

|               |                    |
|---------------|--------------------|
| 10.1" / 13.3" | 8 mounting clamps  |
| 15.6          | 10 mounting clamps |

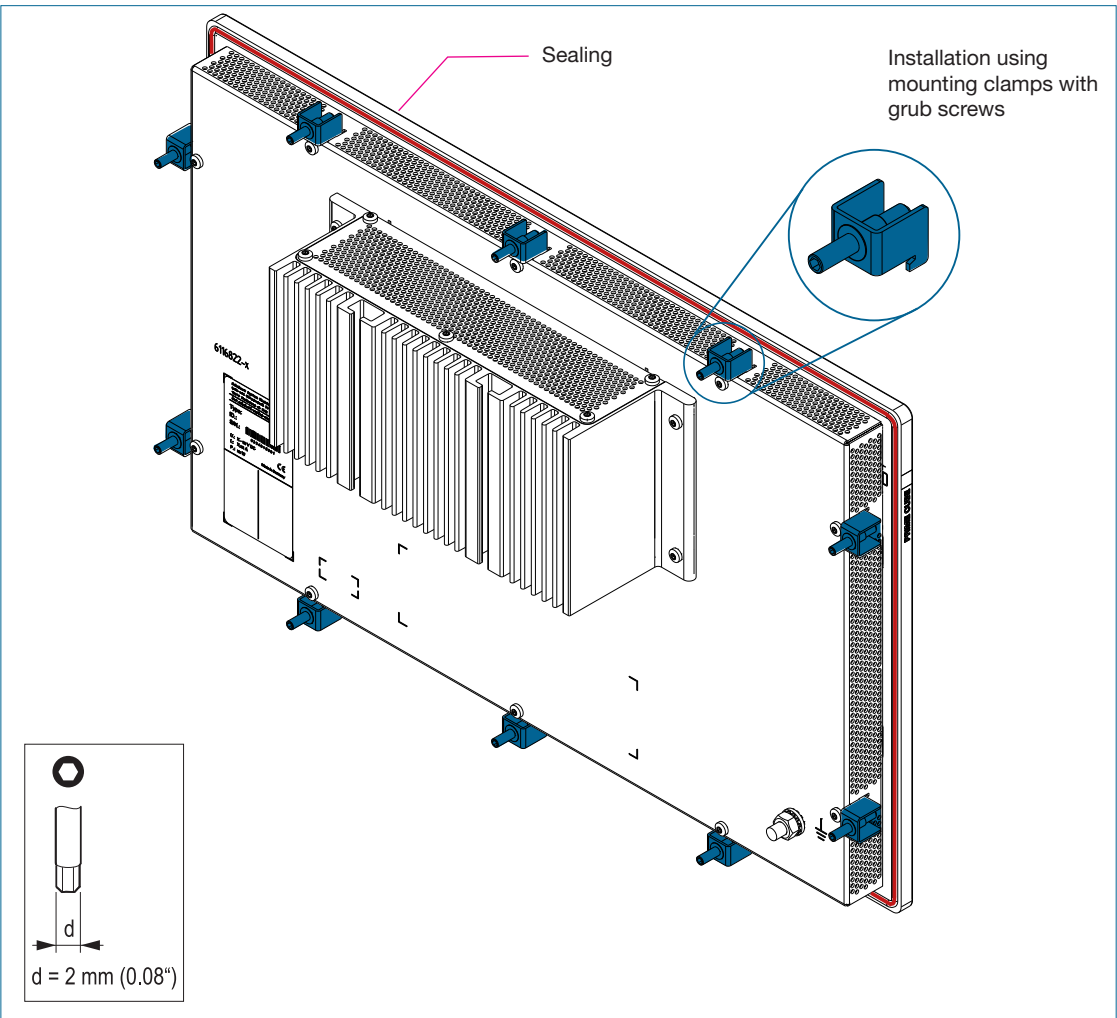


Fig. 2-3: Installation with mounting clamps (15.6" device shown as example)

### 2.5.5 Installing the mounting clamps

After inserting the device into the front plate of the housing, use the provided mounting clamps to fasten it to the housing. To do so:

- Place the provided mounting clamps on the front plate and snap them into the designated slots on the device.
- Turn the grub screws slightly to immobilize the mounting clamps.
- Double-check that the device is centered in the installation opening and realign it precisely if necessary.
- Tighten the mounting clamps with 0.6–0.7 Nm.



**When tightening the grub screws, use a torque of 0.6–0.7 Nm!**

**Avoid mechanical tension when installing the display!**

This could lead to malfunctions of the touch or problems with the image display (uneven illumination of the display).

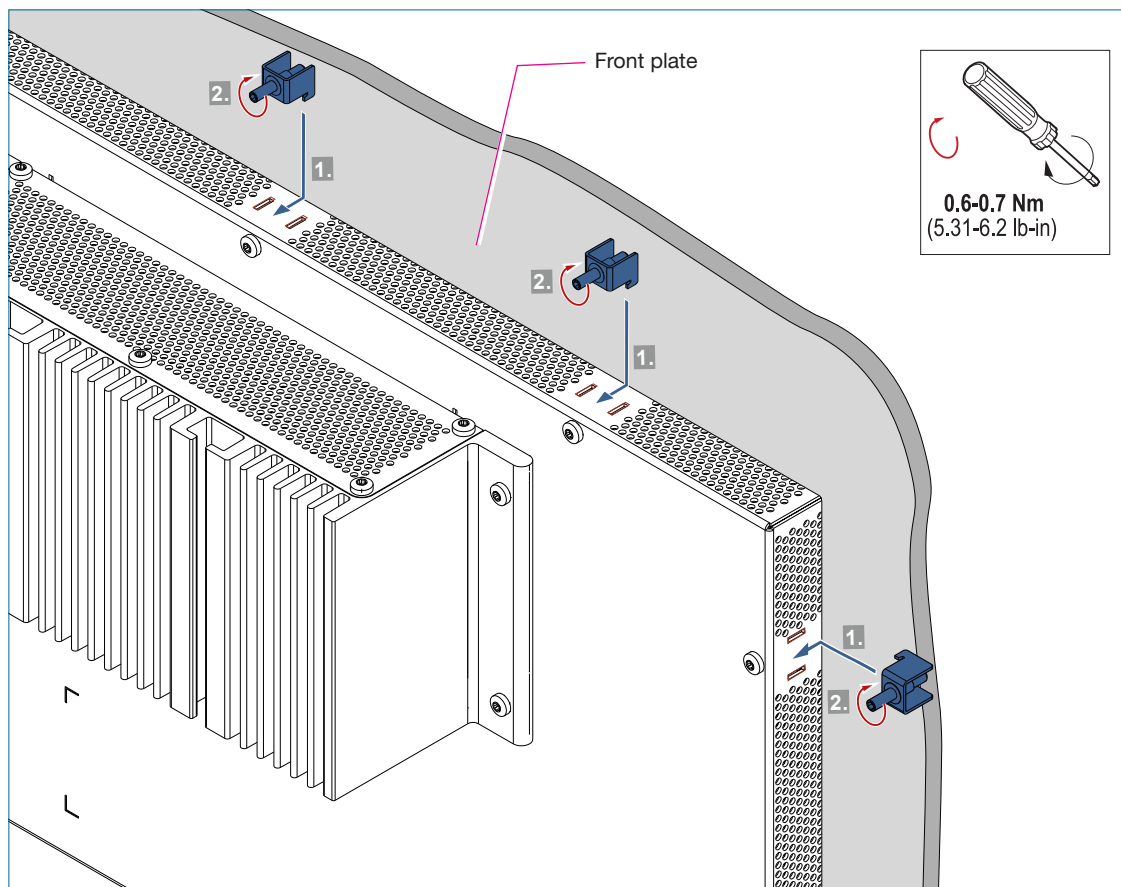


Fig. 2-4: Installing the mounting clamps

### 3 Connection, commissioning and operation

#### 3.1 Establishing operational readiness



Only qualified personnel may open the Prime Panel Pico Installation.  
Open the device only when it is de-energized.



##### Noise-immune connections for trouble-free operation

When connecting peripheral devices, use shielded bus and LAN cables with shielded connectors to meet EMC requirements.

If possible, screw or lock the plug connections as this will improve electrical shielding

Signal lines must not run in the same cable duct as power lines.

Check all cable connections before commissioning the system.

Make sure that all voltages and signals comply with the required values.



##### Safe discharge of electrical interference

Connect the device and control cabinet to a central grounding point using the shortest possible path.

To ensure safe operation of the Prime Panel Pico Installation during use, make sure that the connection (functional earth) between the device and the control cabinet is as low-impedance as possible.

In this context, be sure to also observe “Annex | Grounding concept” on page A-1.



##### Emitted interference

Industrial environment according to EN 61000-6-4

This device may cause radio interference in residential areas; in this case, the operator may be required to implement appropriate measures.



##### Electrostatic discharge

All assemblies and components are ESD sensitive.

The ESD instructions must be observed.

Avoid touching electrostatically sensitive components (e.g. connector pins).

Discharge your body electrostatically before touching the device (e.g. by touching a grounded metallic object).

## 3.2 Expanding the Prime Panel Pico Installation

### Limitation of liability

The devices are supplied with a specific hardware and software configuration according to the respective application.

No liability can be assumed in the event of changes to the hardware or software that go beyond the documented possibilities, or in the event of improper use of the components.

### Precautionary measures



Electronic components are very sensitive to electrostatic discharges. Precautions must therefore be taken when handling the assemblies. These can be found in the guidelines for electrostatic-sensitive devices (ESD guidelines).

- Disconnect the Prime Panel Pico Installation from the power supply before connecting or disconnecting components or expansion modules.
- Put on a grounding strap before handling electronic components.
- Before plugging in the cables, the static charge of the technician and that of the Prime Panel Pico Installation must be brought to the same potential. To do this, briefly touch the metal housing.
- Discharge electrostatic charge from your tools before using them.
- Leave components and expansion modules in their packaging until they are installed.
- Do **not** touch the pins and conductors of components and expansion modules.
- Never operate the Prime Panel Pico Installation with the housing open.

### Preconditions

The devices from Schubert System Elektronik GmbH feature peripheral interfaces that can be used to connect various components.



When using commercially available peripheral devices (e.g. at the USB port), please note that their EMC interference immunity is often designed for office use. However, they are not suitable for operation in an industrial environment!

For process operation, devices that are connected must have the CE mark.

When connecting peripheral devices, ensure that they are suitable for industrial use!

Do not connect or disconnect any plugs during operation!

### 3.3 Opening and closing the device

#### 3.3.1 Parts of the housing

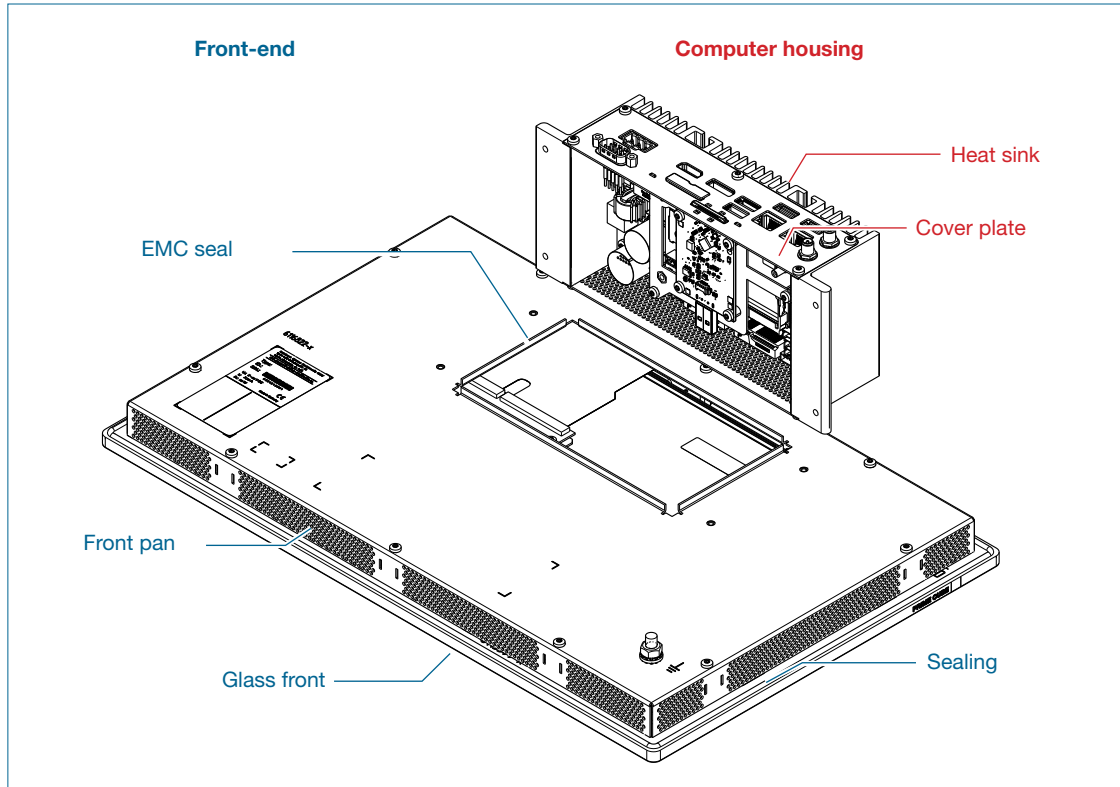


Fig. 3-1: Parts of the housing

The device consists of the front-end and the computer housing. The two components are screwed together.

- **Front-end**
  - Bolted to the front frame is the front pan which includes the display, the PCT sensor laminated on the back of the glass plate, and the touch controller.
  - The mounting plates fastened to the front pan are used in combination with the mounting clamps to fasten the device in the housing
- **Computer housing**
  - The computer housing and the aluminum heat sink with a cover plate at the top and the interface plate at the bottom also include the computer PCB, the mass storage device and the power supply unit.
  - The interfaces are accessible from below when the housing is closed.

### 3.3.2 Opening the device

#### Damage to the device



To avoid damage to the device, do the following before opening it:

- Shut down the operating system.
- Disconnect the power supply.

#### Damage to the display



Always use a suitable soft, clean pad to set the device down on; otherwise, the display may get scratched.

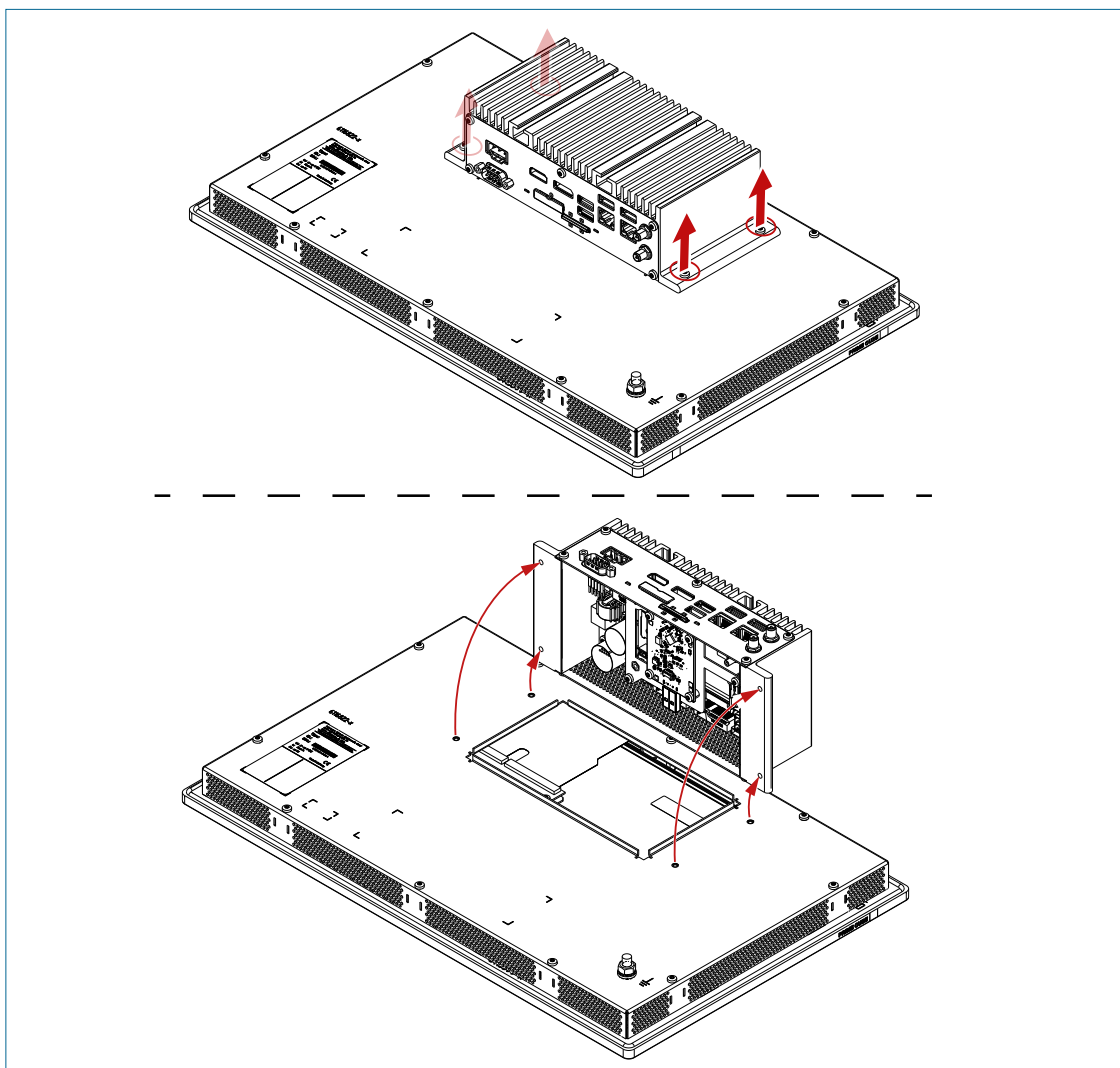


Fig. 3-2: Opening the device

- Carefully set the device down on a suitable soft, clean pad.
- Remove all four Torx screws (M3x10, mat. no. 60 01 210) that connect the front-end to the computer housing.
- Lift the housing up and off, then fold it open carefully - in doing so, unplug all cable connections between the front-end and the computer housing from the computer PCB.

The main board and the mass storage device are freely accessible in the computer housing.

### 3.3.3 Closing the device



#### Damage to the display

Always use a suitable soft, clean pad to set the device down on; otherwise, the display may get scratched.

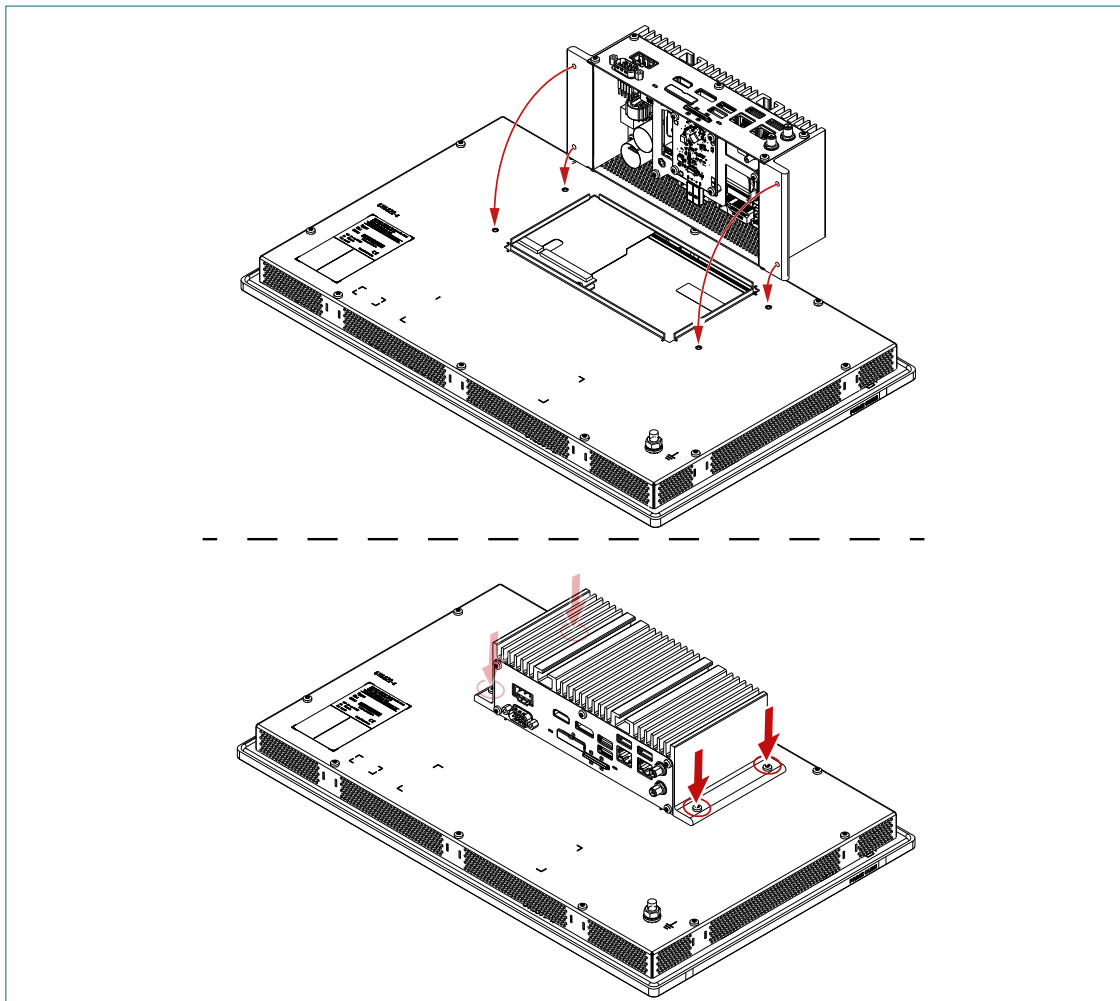


Fig. 3-3: Closing the device

- Carefully set the display down on a suitable soft, clean pad.
- Plug in all cable connections between the front-end and the computer housing on the computer PCB.
- Carefully place the housing onto the front-end from above, inserting the computer housing guide bushes into the holes in the front-end (see arrows).
- Install all four Torx screws (M3x10, mat. no. 60 01 210) that connect the front-end to the computer housing and tighten with a torque wrench.



Observe the torque of approx. **0.7 Nm** when tightening the Torx screws!

3.4 Connecting the power supply

Supply voltage 24 V DC

Electric shock if unsuitable power supply is used.

Connect the device only to a power supply that meets the requirements for safe extra-low voltage (SELV/PELV) according to EN/UL 61010-2-201.

Connect the device only to a 24 V DC power supply (12...32 V DC) that meets the requirements for an energy-limited circuit according to EN/UL 61010-2-201, chapter 9.4 or to a circuit that meets the requirements of NEC Class 2 according to UL 1310.



Voltage range, see chapter “Technical data”

Observe “+” and “-” polarity!

Functional earth is via a screw connection on the panel.

Interface plate with plug for 24 V DC power supply (without cable connection).

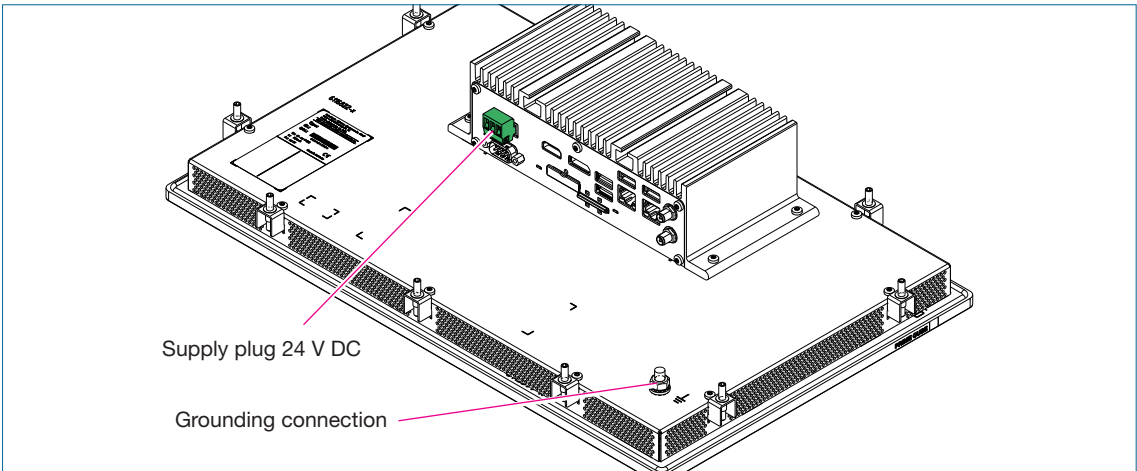


Fig. 3-4: Connecting the 24 V DC supply voltage

3.4.1 Connection cable

For connecting the power supply, the following are permitted:

Cu cable, min. 75 °C, 0.75- 2.5 mm², AWG19-AWG14

3.4.2 Plug connection for 24 V DC

|  |                                        |                                                                                          |                      |
|--|----------------------------------------|------------------------------------------------------------------------------------------|----------------------|
|  | Basic housing                          | <b>MSTBA 2.5/ 3-G-5.08</b><br>3-pole, pitch: 5.08 mm<br>Phoenix Contact part no. 1757255 |                      |
|  | Plug component                         | <b>FKC 2.5/ 3-ST-5.08</b><br>3-pole, pitch: 5.08 mm<br>Phoenix Contact part no. 1757022  |                      |
|  | Included with accessories at delivery! | Designation                                                                              | Meaning              |
|  |                                        | +                                                                                        | +24 V supply voltage |
|  |                                        | -                                                                                        | GND supply voltage   |

- Connect the supplied plug to the wires of a 2-pole cable according to the labeling and plug it into the socket on the interface plate.
- Connect the “+” and “-” wires of the supply cable to a suitable 24 V supply.

3.4.3 Ground connection

- Connect the ground connection to chassis ground as shown below (see also “Annex | Grounding concept” on page A-1..

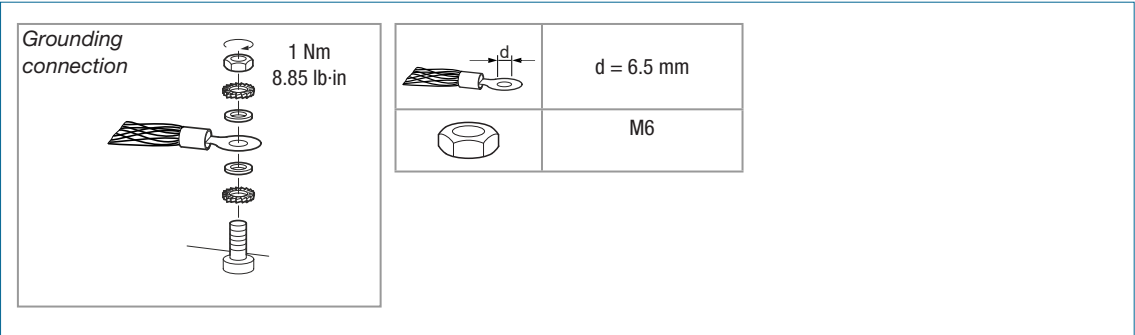


Fig. 3-5: Ground connection

3.5 Connecting peripheral devices

3.5.1 Interfaces

Access to connections and drives

- Connections to the peripherals are located at the bottom of the computer housing. For more details on the connections, see chapter “4 Technical data” on page 17.

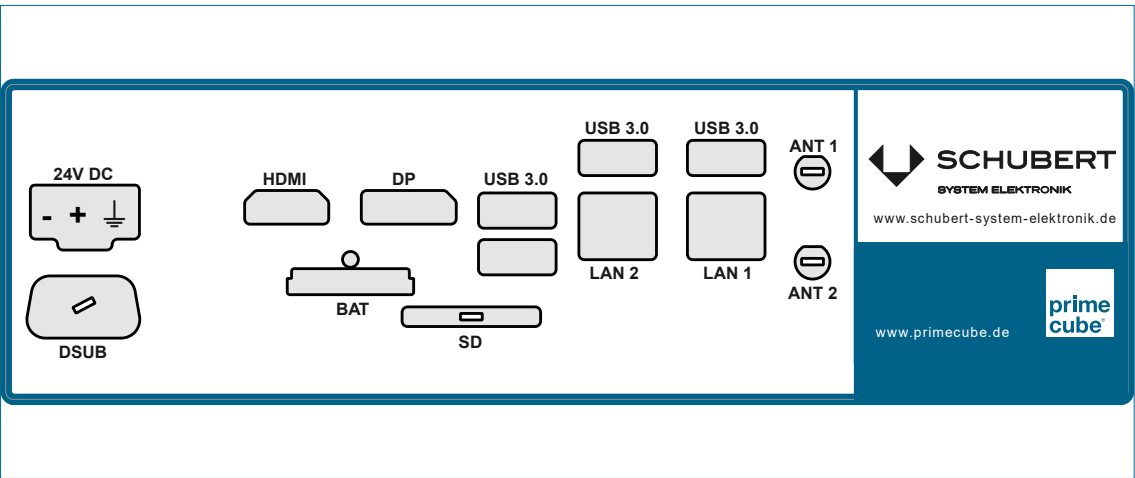


Fig. 3-6: Overview of connections for peripherals



The connections are marked on the interface film.  
The connections are standardized contacts with standard pin assignments.  
The total power output of all USB interfaces is limited to 18 W.



The device may only be connected to in-house Ethernet networks without leaving the closed network or being subjected to TNVs.

### 3.6 Setting up and operating the device

#### 3.6.1 Memory modules

The device comes with RAM and mass storage (depending on configuration) mounted on the computer PCB.

#### 3.6.2 SD storage media (optional)

##### Handling SP storage media

- There is a slot for SD memory cards on the bottom of the computer housing. It connects to the SATA interfaces on the computer board.

##### Replacing SD storage media

##### Damage to the device.



To avoid damage to the device, perform the following steps before removing or inserting the memory card:

- Shut down the operating system.
- Disconnect the power supply.
- To remove the SD memory card, pull it out of the slot (blue arrow).
- To install the SD memory card, insert it into the computer housing as shown in the illustration below until you can lightly feel it click into place.

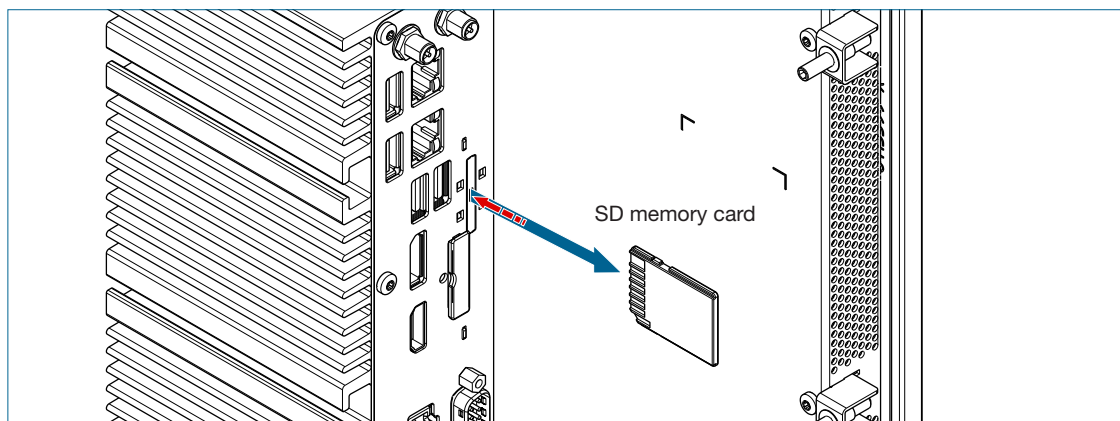


Fig. 3-7: Replacing SD storage media

#### 3.6.3 Operating system

As ordered, Schubert System Elektronik GmbH installs the operating system specified in chapter “4 Technical data” on page 17.

##### Licensing information for Microsoft Windows systems

The pre-installed operating system is software in the Microsoft Embedded license model.



- Device, operating system and license are one unit in the Microsoft Embedded license model and must not be used separately!
- A subsequent software installation by the customer on the delivered operating system is permitted, provided that the software is needed exclusively for the technical functionality of the overall system.
- If you have purchased a custom software image, configuration and scope may differ from the standard.

#### 3.6.4 Commissioning

After connecting the supply voltage, the system starts automatically.

3.6.5 Replacing the buffer battery



Fire and explosion hazard of the battery.

- The battery may explode if not handled according to instructions!
- Do not recharge, disassemble or incinerate!
- The lithium battery may only be replaced with a battery type approved by the manufacturer.

|                                                    |                    |
|----------------------------------------------------|--------------------|
| Approved battery type:                             | BR 2032            |
| Please order from Schubert System Elektronik GmbH. |                    |
| BAT battery BR 2032                                | Mat. no. 64 10 023 |

The buffer battery is located on a battery carrier in the computer housing.



Replacing the battery deletes the configuration data of the device.

Write down the current BIOS setup settings.

Dispose of used batteries according to local regulations.

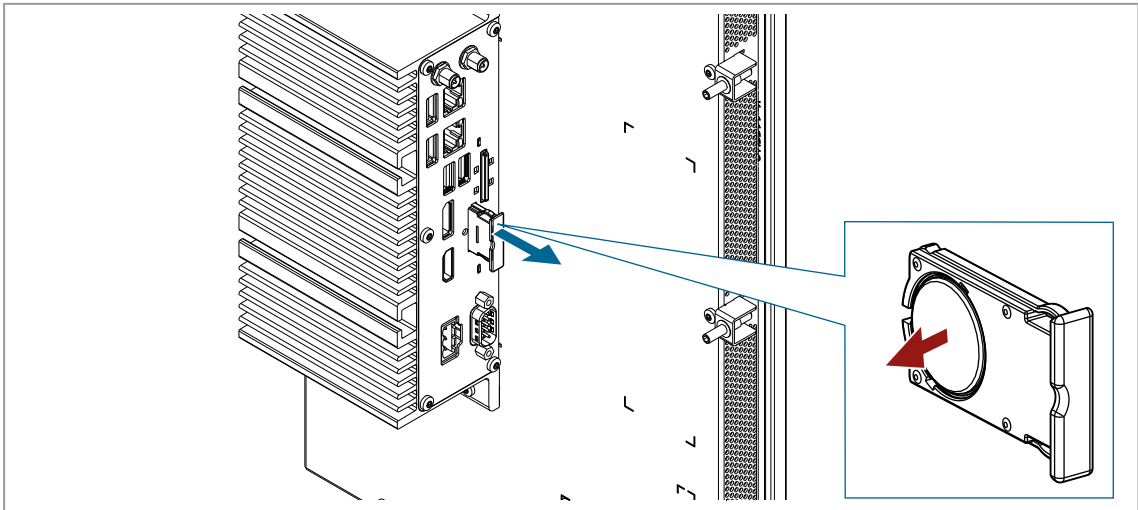


Fig. 3-8: Disengaging the battery carrier and changing the buffer battery

- To access the battery, pull the battery carrier out of the front panel (blue arrow).
- Remove the buffer battery from the battery carrier (red arrow) and insert the new buffer battery into the battery carrier with the + pole first.
- Push the battery carrier back into the slot in the front panel.

3.7 Disposal



Dispose of the product in accordance with the applicable national regulations.

The device is dismantled and completely disassembled:

- Metal and plastic parts can be recycled through the appropriate channels.
- Electronic components must be disposed of in accordance with the national regulation.

## 4 Technical data

### 4.1 General data for all Prime Panel Pico Installation 10.1 " / 13.3 " / 15.6"

| Component                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Housing</b>                      | <ul style="list-style-type: none"> <li>Aluminum front frame, powder-coated</li> <li>Steel plate back wall, galvanized</li> <li>Aluminum computer kernel with heat sink, anodized</li> <li>Tempered anti-glare front glass.</li> <li>Designed for front installation using mounting clamps</li> </ul>                                                                                                                                              |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Front glass</b>                  | <ul style="list-style-type: none"> <li>Neutral, black edge all around</li> <li>Glass encased in delicate aluminum frame</li> <li>Glass surface with chemical anti-glare treatment and tempering</li> </ul>                                                                                                                                                                                                                                        |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Touch</b>                        | <ul style="list-style-type: none"> <li>Projected Capacitive Touch (PCT), control using up to 10 fingers</li> <li>Pre-configured EMC-stable 4-finger control</li> </ul>                                                                                                                                                                                                                                                                            |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Protection class</b>             | <ul style="list-style-type: none"> <li>IP65** according to EN 60529, front</li> <li>IP20** according to EN 60529, back</li> </ul> <p>** not UL rated</p>                                                                                                                                                                                                                                                                                          |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Computer</b>                     | <ul style="list-style-type: none"> <li>Processor Intel® Atom x7-E3950, Quad Core, 1.6 GHz</li> </ul>                                                                                                                                                                                                                                                                                                                                              |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>RAM</b>                          | <ul style="list-style-type: none"> <li>Up to 8 GB DDR3L, 1600 MHz</li> <li>1x SODIMM</li> </ul>                                                                                                                                                                                                                                                                                                                                                   |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Mass storage</b>                 | <ul style="list-style-type: none"> <li>1x mSATA 64 GB - 512 GB, flash memory</li> </ul> <p>Additional memory storage sizes and various flash technologies available</p>                                                                                                                                                                                                                                                                           |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Extension</b>                    | <ul style="list-style-type: none"> <li>1x mPCIe full size</li> <li>1x DSUB 9 pin</li> </ul>                                                                                                                                                                                                                                                                                                                                                       |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Removable storage (optional)</b> | <ul style="list-style-type: none"> <li>1x SD card holder, optionally with SD card</li> </ul>                                                                                                                                                                                                                                                                                                                                                      |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Interfaces (standard)</b>        | <ul style="list-style-type: none"> <li>2x GbE LAN, separate controllers, Intel® I210-AT</li> <li>4x USB 3.0</li> <li>1x DisplayPort</li> <li>1x HDMI</li> </ul>                                                                                                                                                                                                                                                                                   |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Interfaces (optional)</b>        | <table> <tr> <td>DSUB 9 pin:</td><td> <ul style="list-style-type: none"> <li>1x RS232, RS422, RS485</li> </ul> </td></tr> <tr> <td>mPCIe:</td><td> <ul style="list-style-type: none"> <li>1x CAN, single DSUB 9 pin (Profibus, Profinet and more field buses available as options)</li> <li>1x WiFi and BLUETOOTH (through built-in antennas on the front or external antennas)</li> <li>1x cellular communication</li> </ul> </td></tr> </table> | DSUB 9 pin: | <ul style="list-style-type: none"> <li>1x RS232, RS422, RS485</li> </ul> | mPCIe: | <ul style="list-style-type: none"> <li>1x CAN, single DSUB 9 pin (Profibus, Profinet and more field buses available as options)</li> <li>1x WiFi and BLUETOOTH (through built-in antennas on the front or external antennas)</li> <li>1x cellular communication</li> </ul> |
| DSUB 9 pin:                         | <ul style="list-style-type: none"> <li>1x RS232, RS422, RS485</li> </ul>                                                                                                                                                                                                                                                                                                                                                                          |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| mPCIe:                              | <ul style="list-style-type: none"> <li>1x CAN, single DSUB 9 pin (Profibus, Profinet and more field buses available as options)</li> <li>1x WiFi and BLUETOOTH (through built-in antennas on the front or external antennas)</li> <li>1x cellular communication</li> </ul>                                                                                                                                                                        |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Battery</b>                      | Buffer battery, external, exchangeable                                                                                                                                                                                                                                                                                                                                                                                                            |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Power supply</b>                 | 24 V DC (12 ... 32 V DC)                                                                                                                                                                                                                                                                                                                                                                                                                          |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Overvoltage category</b>         | II                                                                                                                                                                                                                                                                                                                                                                                                                                                |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Operating system</b>             | <ul style="list-style-type: none"> <li>Windows 10 IoT Enterprise LTSC 2021</li> <li>LINUX 64bit: Debian 10 distribution</li> </ul>                                                                                                                                                                                                                                                                                                                |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Ambient temperature*</b>         | <ul style="list-style-type: none"> <li>-10 °C to +45 °C with natural convection</li> <li>-10 °C to +50 °C** with air flow rate 0.4 m/s or greater</li> </ul> <p>* Functional system test at maximum ambient temperature and highest-possible internal thermal load</p> <p>** not UL rated</p>                                                                                                                                                     |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Storage temperature</b>          | -20 °C to +60 °C                                                                                                                                                                                                                                                                                                                                                                                                                                  |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Air humidity</b>                 | 10 % to 90 %, non-condensing                                                                                                                                                                                                                                                                                                                                                                                                                      |             |                                                                          |        |                                                                                                                                                                                                                                                                            |
| <b>Elevation</b>                    | Max. 2000 m                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |                                                                          |        |                                                                                                                                                                                                                                                                            |

|                                 |                                                                           |
|---------------------------------|---------------------------------------------------------------------------|
| <b>Degree of pollution</b>      | 2                                                                         |
| <b>EMC immunity</b>             | Industrial environment according to DIN EN 61000-6-2                      |
| <b>EMC emitted interference</b> | Industrial environment according to DIN EN 61000-6-4                      |
| <b>Shock</b>                    | 15 g: 11 ms and 25 g: 6 ms according to EN 60068-2-27                     |
| <b>Vibration</b>                | 2 ... 9 Hz: 3.5 mm amplitude, 9 ... 200 Hz: 1 g according to EN 60068-2-6 |
| <b>Warranty</b>                 | 36 months                                                                 |
| <b>Approvals</b>                | The type plate indicates the approvals granted for the device.            |

#### 4.1.1 Specific data for 10.1" Prime Panel Pico Installation

| Component                  | Description                                                                                                                                                                                                                                                       |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Model code</b>          | PPI1100ED_101                                                                                                                                                                                                                                                     |
| <b>Display</b>             | <ul style="list-style-type: none"> <li>• 10.1" WXGA display, 1280 x 800 pixels, 16:10</li> <li>• 500 cd/m<sup>2</sup> brightness</li> <li>• Contrast ratio: 900</li> <li>• View angle: 85/85/85/85°</li> <li>• Service life of lighting: min. 50,000 h</li> </ul> |
| <b>Current consumption</b> | max. 3.1 A                                                                                                                                                                                                                                                        |
| <b>Dimensions</b>          | see "10.1" Prime Panel Pico Installation - device dimensions" on page 19                                                                                                                                                                                          |
| <b>Weight</b>              | approx. 2.60 kg                                                                                                                                                                                                                                                   |

#### 4.1.2 Specific data for 13.3" Prime Panel Pico Installation

| Component                  | Description                                                                                                                                                                                                                                                                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Model code</b>          | PPI1100ED_133                                                                                                                                                                                                                                                                                |
| <b>Display</b>             | <ul style="list-style-type: none"> <li>• 13.3" Full-HD display, 1920 x 1080 pixels, 16:9, optional HD resolution</li> <li>• 400 cd/m<sup>2</sup> brightness</li> <li>• Contrast ratio: 800</li> <li>• View angle: 89/89/89/89°</li> <li>• Service life of lighting: min. 50,000 h</li> </ul> |
| <b>Current consumption</b> | max. 3.4 A                                                                                                                                                                                                                                                                                   |
| <b>Dimensions</b>          | see "13.3" Prime Panel Pico Installation - device dimensions" on page 21                                                                                                                                                                                                                     |
| <b>Weight</b>              | approx. 3.02 kg                                                                                                                                                                                                                                                                              |

#### 4.1.3 Specific data for 15.6" Prime Panel Pico Installation

| Component                  | Description                                                                                                                                                                                                                                                                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Model code</b>          | PPI1100ED_156                                                                                                                                                                                                                                                                                |
| <b>Display</b>             | <ul style="list-style-type: none"> <li>• 15.6" Full-HD display, 1920 x 1080 pixels, 16:9, optional HD resolution</li> <li>• 450 cd/m<sup>2</sup> brightness</li> <li>• Contrast ratio: 800</li> <li>• View angle: 85/85/85/85°</li> <li>• Service life of lighting: min. 50,000 h</li> </ul> |
| <b>Current consumption</b> | max. 3.2 A                                                                                                                                                                                                                                                                                   |
| <b>Dimensions</b>          | see "15.6" Prime Panel Pico Installation - device dimensions" on page 23                                                                                                                                                                                                                     |
| <b>Weight</b>              | approx. 4.05 kg                                                                                                                                                                                                                                                                              |

## 4.2 Mechanical dimensions

### 4.2.1 10.1" Prime Panel Pico Installation - device dimensions

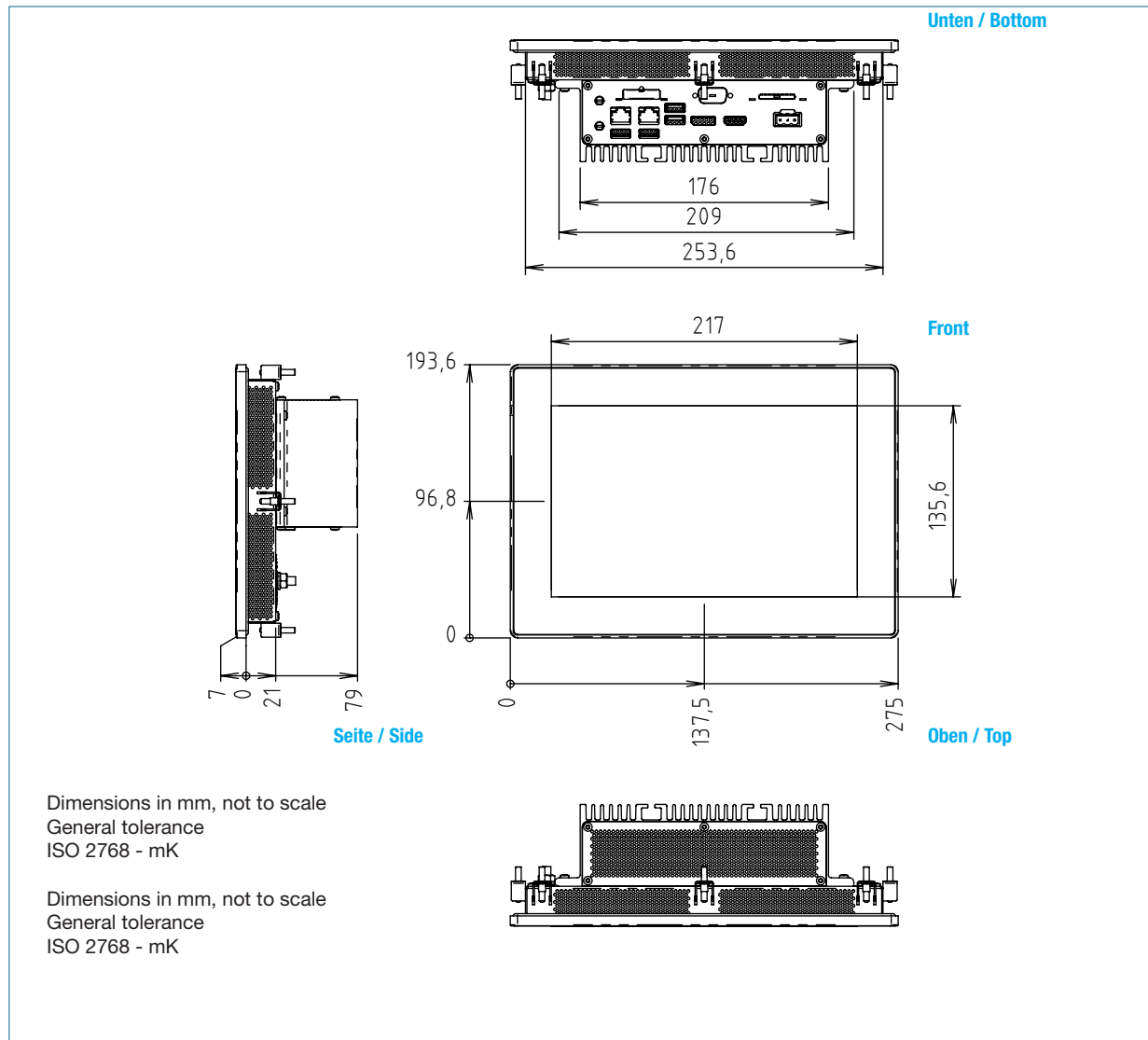


Fig. 4-1: 10.1" Prime Panel Pico Installation - device dimensions

4.2.2 10.1“ Prime Panel Pico Installation - installation cut-out

|                                                                    |                                                                                                                                        |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required installation cut-out (WxH)</b><br><b>Thickness (d)</b> | <ul style="list-style-type: none"><li>• <math>255 \pm 0.5 \text{ mm} \times 174 \pm 0.5 \text{ mm}</math></li><li>• 1 - 6 mm</li></ul> |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|

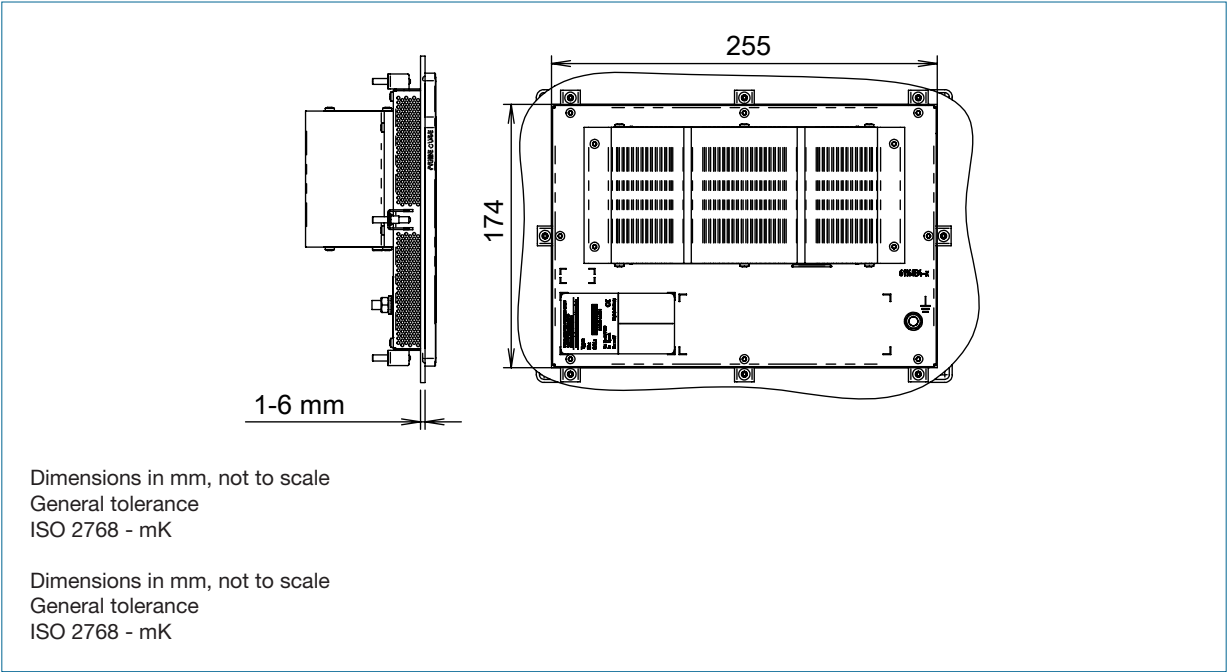


Fig. 4-2: 10.1“ Prime Panel Pico Installation - installation cut-out

#### 4.2.3 13.3" Prime Panel Pico Installation - device dimensions

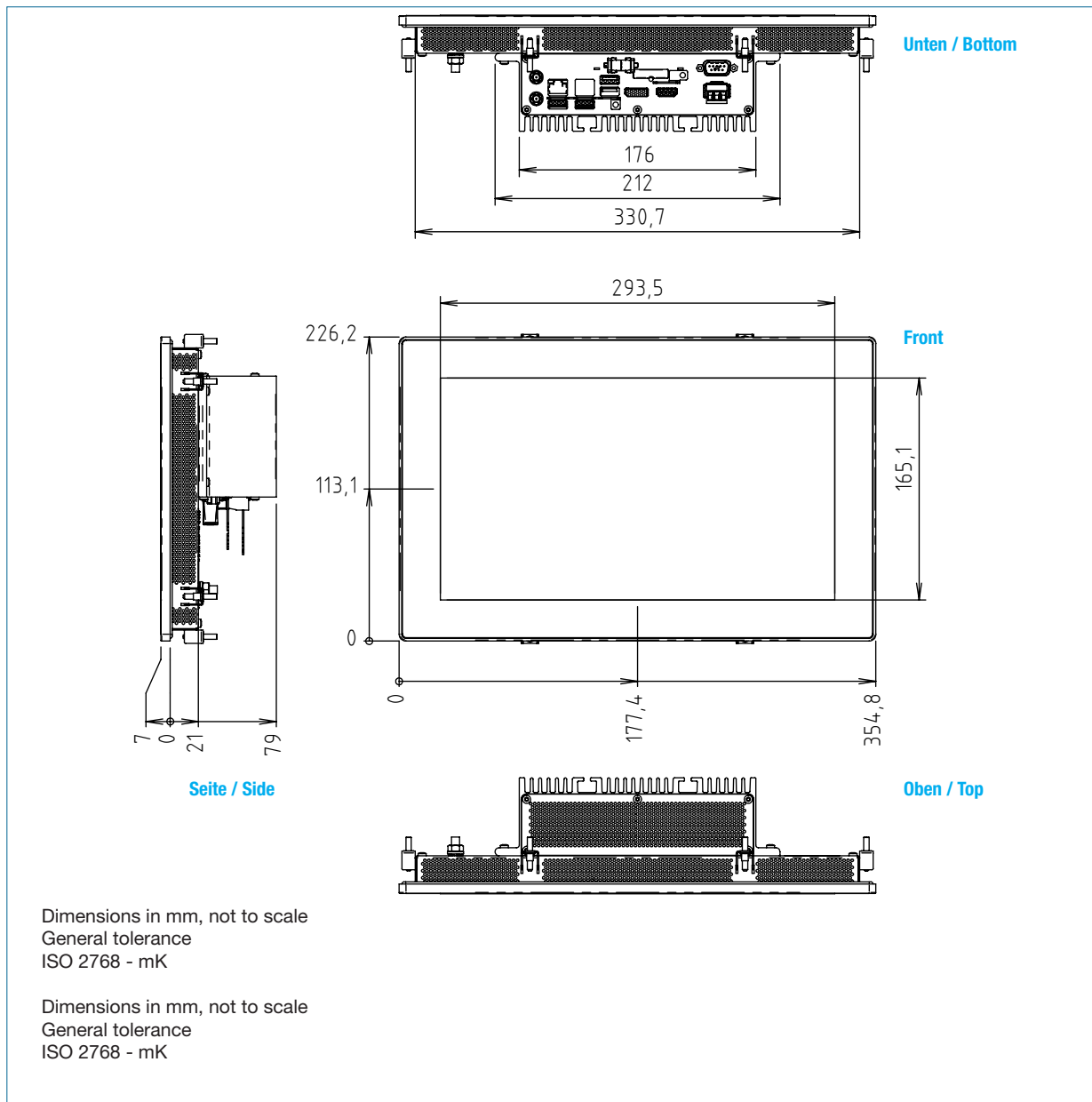


Fig. 4-3: 13.3" Prime Panel Pico Installation - device dimensions

4.2.4 13.3" Prime Panel Pico Installation - installation cut-out

|                                                                    |                                                                                                                                        |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required installation cut-out (WxH)</b><br><b>Thickness (d)</b> | <ul style="list-style-type: none"><li>• <math>332 \pm 0.5 \text{ mm} \times 211 \pm 0.5 \text{ mm}</math></li><li>• 1 - 6 mm</li></ul> |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|

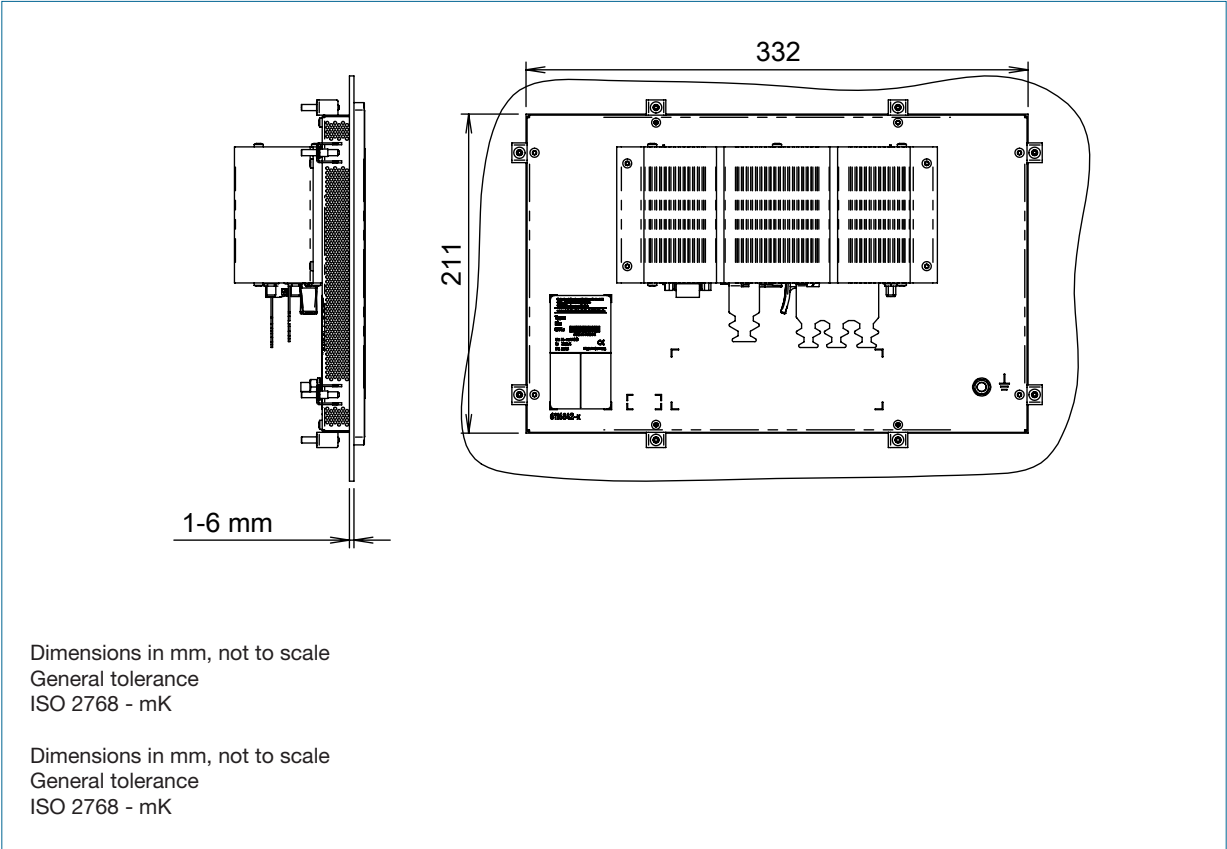


Fig. 4-4: 13.3" Prime Panel Pico Installation - installation cut-out

#### 4.2.5 15.6" Prime Panel Pico Installation - device dimensions

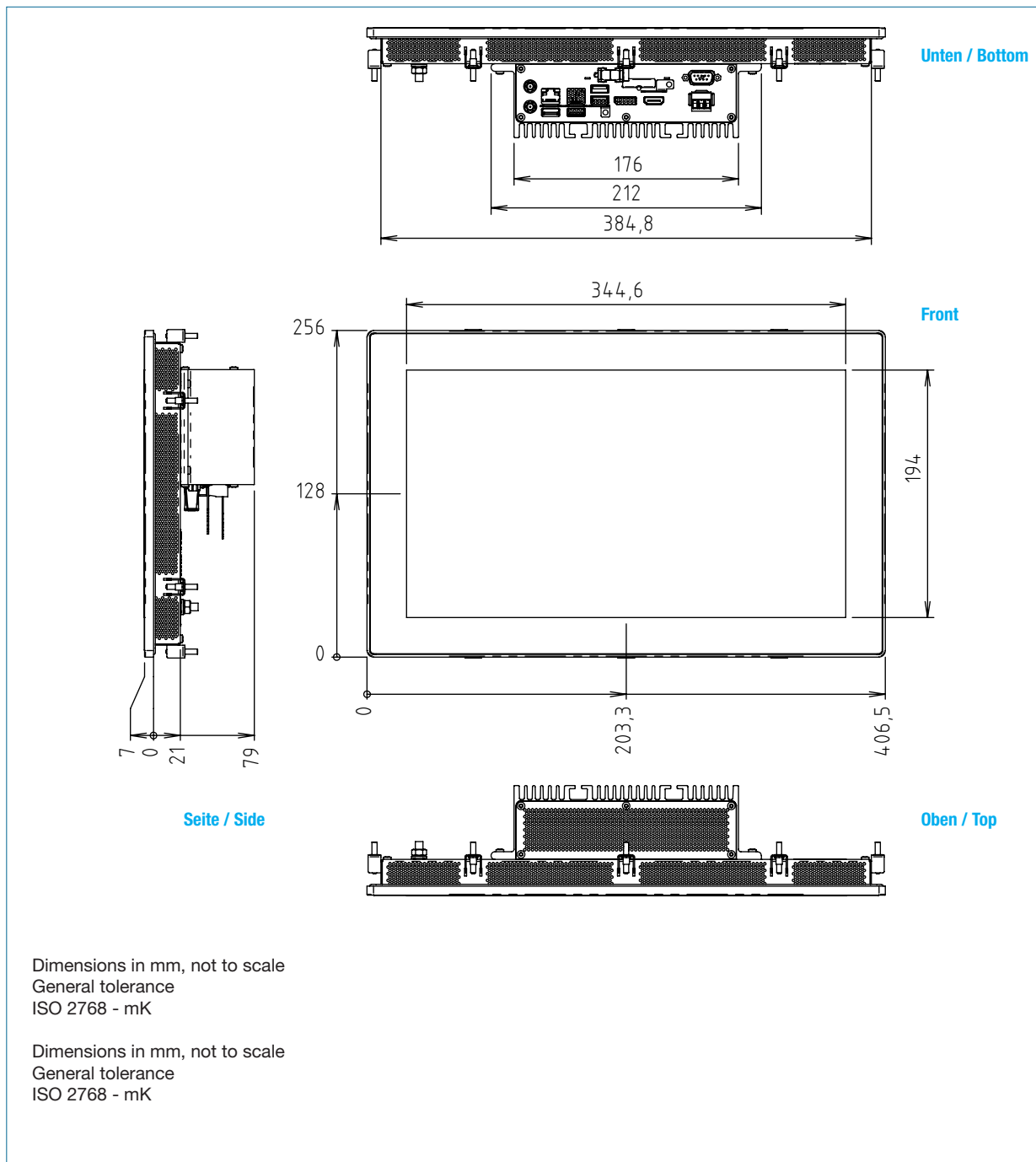


Fig. 4-5: 15.6" Prime Panel Pico Installation - device dimensions

4.2.6 15,6" Prime Panel Pico Installation - installation cut-out

|                                            |                                                          |
|--------------------------------------------|----------------------------------------------------------|
| <b>Required installation cut-out (WxH)</b> | • $388 \pm 0.8 \text{ mm} \times 239 \pm 0.5 \text{ mm}$ |
| <b>Thickness (d)</b>                       | • 1 - 6 mm                                               |

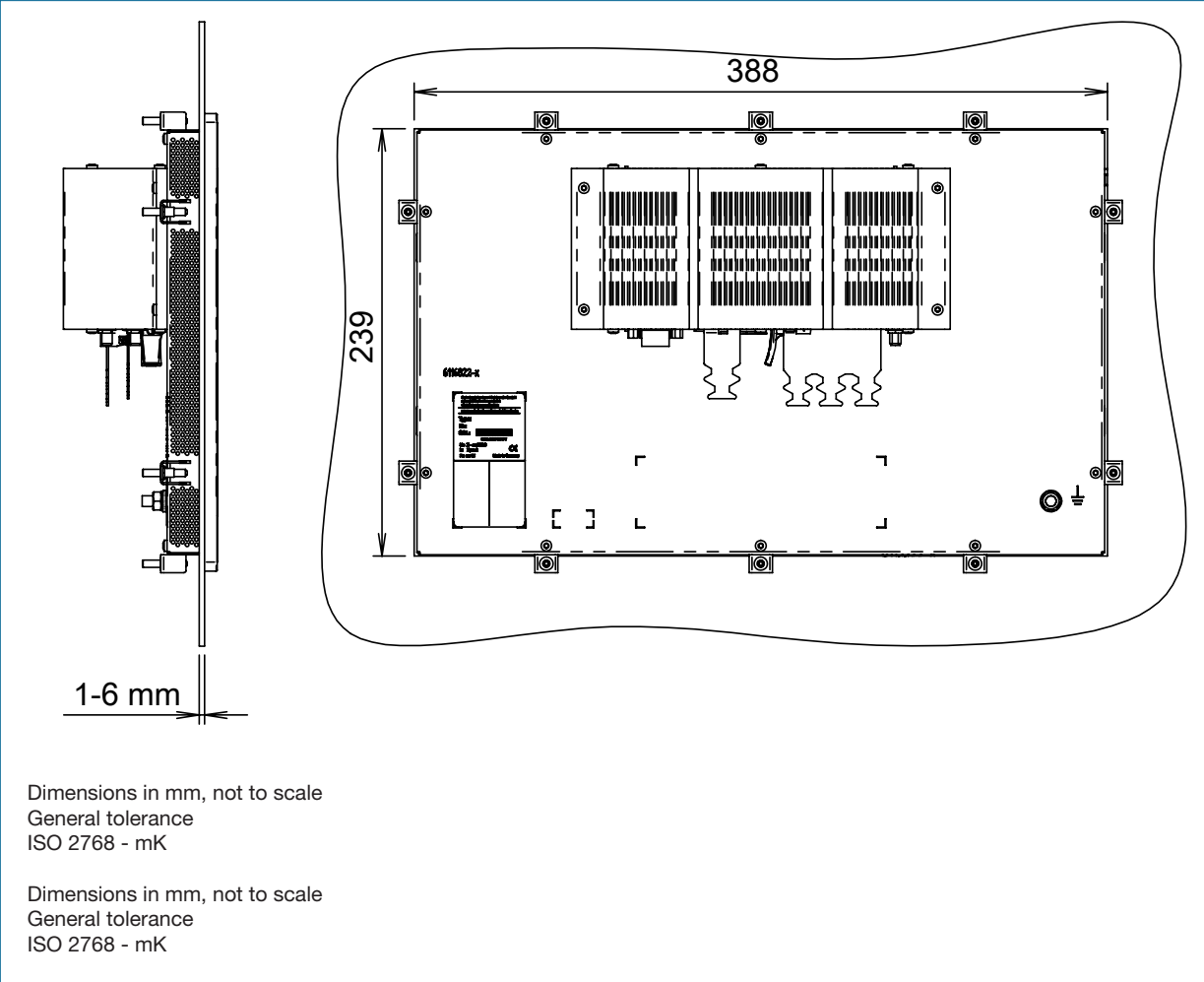


Fig. 4-6: 15.6" Prime Panel Pico Installation - installation cut-out

4.2.7 Prime Panel Pico Installation 10.1" / 13.3" / 15.6" - installation spacing for convection

| [mm]      | Min. interior spacing for convection |     |     |
|-----------|--------------------------------------|-----|-----|
|           | a                                    | b   | c   |
| ...ED_101 | >50                                  | >50 | >50 |
| ...ED_133 | >50                                  | >50 | >50 |
| ...ED_156 | >50                                  | >50 | >50 |

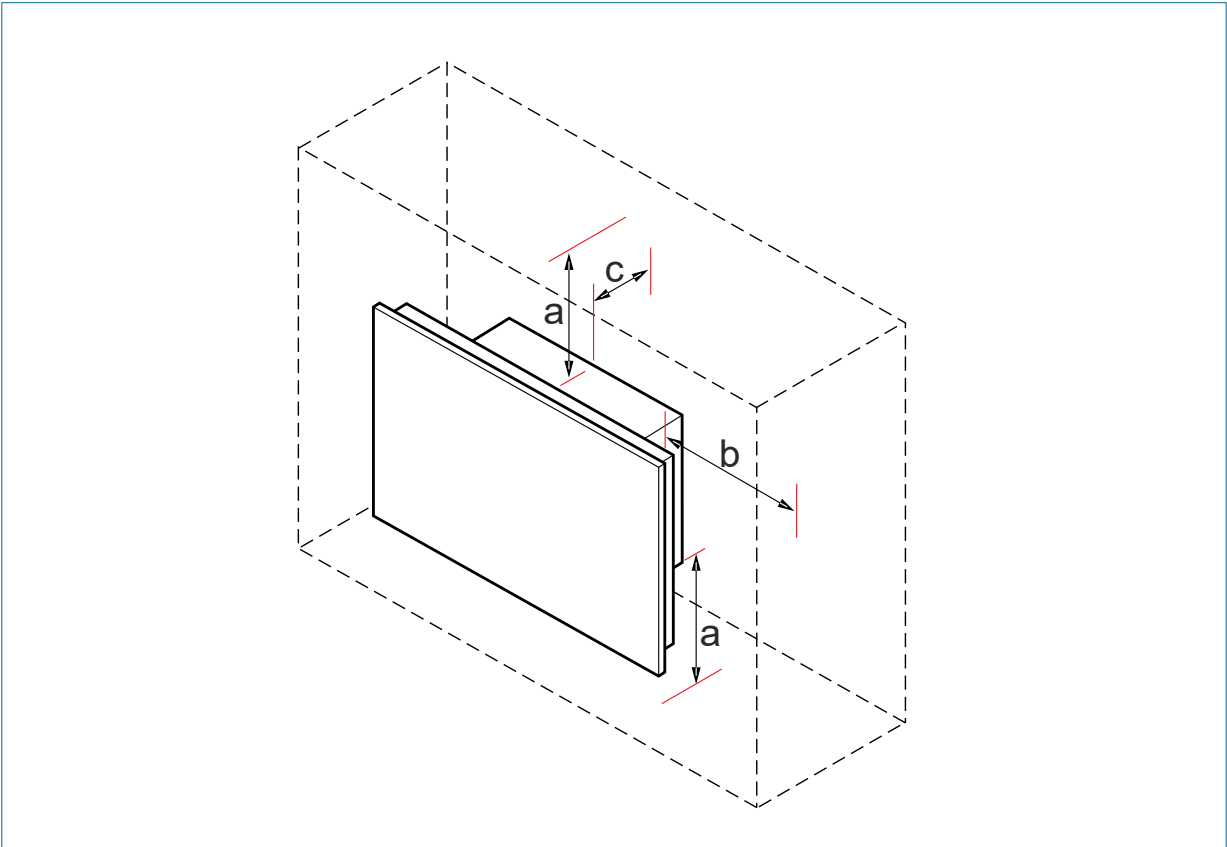


Fig. 4-7: Installation spacing for convection

[www.schubert-system-elektronik.de](http://www.schubert-system-elektronik.de)

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## Annex | Grounding concept

### Instructions for low-impedance grounding of components



This instruction sheet is part of the technical documentation. It provides technicians and system managers with the necessary information on:

- Correct, low-impedance grounding of the device

#### A 1 Annex | Grounding concept

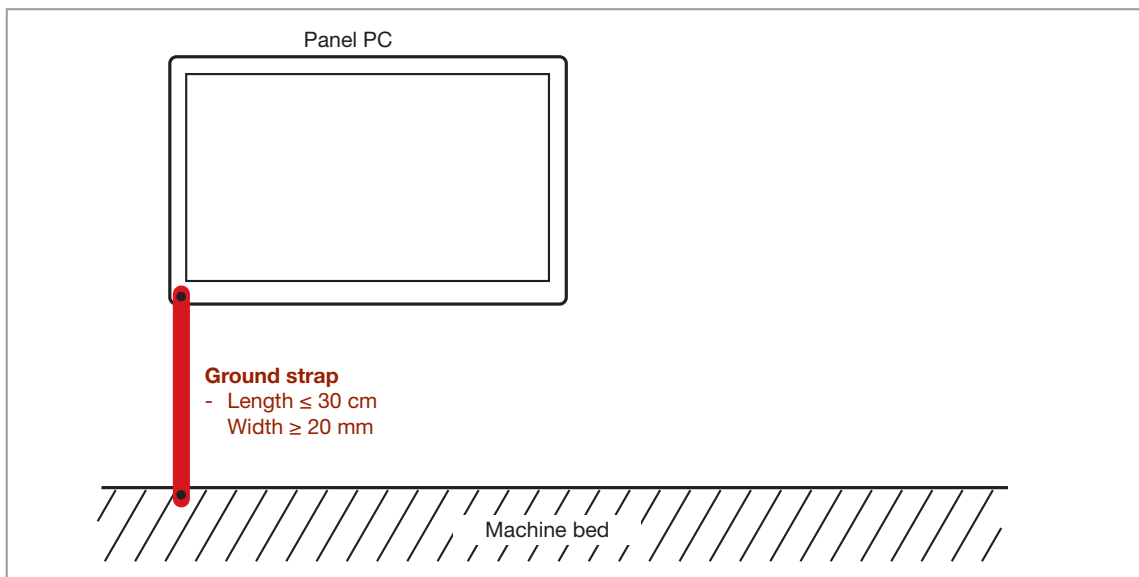


Fig. A-1: Grounding concept - panel PC

- Contact surfaces must be designed to be conductive (free of paint, etc.) and corrosion-resistant.
  - Lock washers against corrosion of the contact surface.
  - The conductive contact surface must be as large as possible.
  - Ground straps with ring cable lugs are not suitable.
- The grounding point must also have a low-impedance ground connection.
- Length, width and shape of the ground straps are recommendations of Schubert System Elektronik GmbH.



Fig. A-2: Ground straps

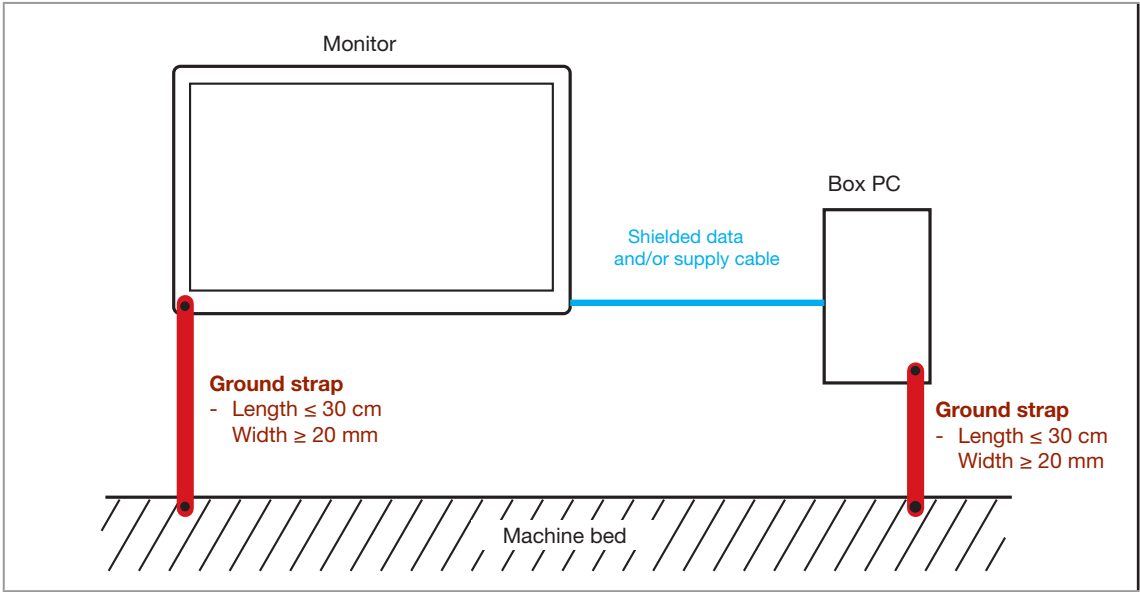


Fig. A-3: Grounding concept - monitor PC

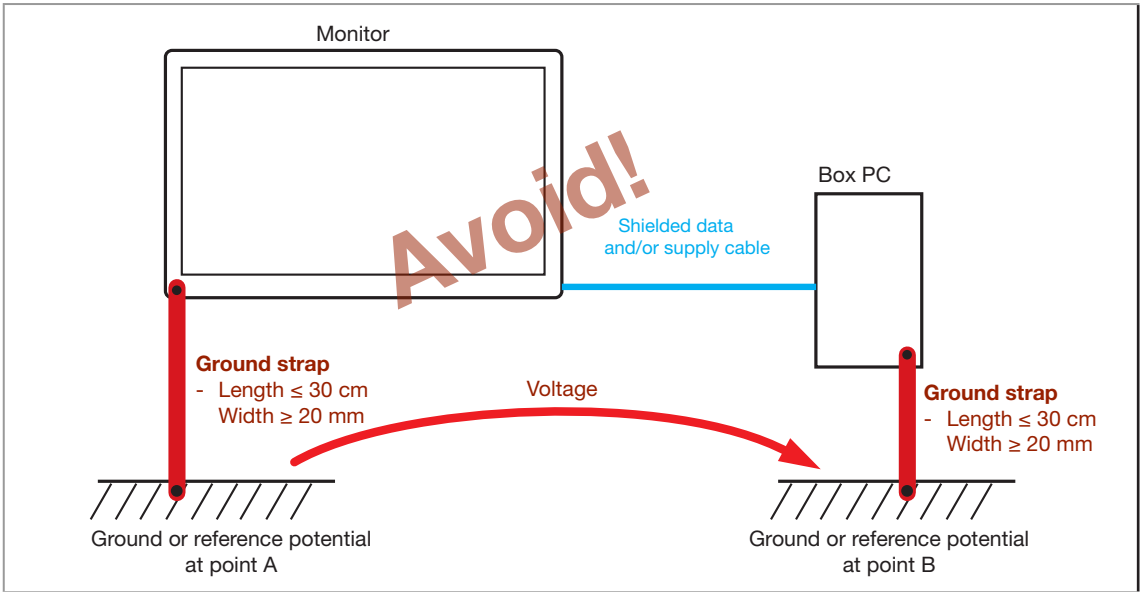


Fig. A-4: Grounding to be avoided