Select Panel Client Installation

10.1" | SPA1000ED_101

Operating manual

80000305860 | V00

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
- Disposal

General information

Safety instructions

This document contains instructions that must be followed for safety and health as well as the prevention of 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.

⚠ WARNUNG

Commissioning is prohibited until it has been established that the machine in which this component will be incorporated 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.

Images

The illustrations used in this document may contain accessories, optional parts and extensions.

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 must be observed during the commissioning and ongoing operation of the products.

Also observe the individual safety instructions for the accessories.

Trade names and/or trademarks

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

Copyright

EU Declaration of Conformity

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

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.: 80000305860 describes the following device:

- **Select Panel Client Installation 10.1" | SPA1000ED_101**

– Read this operating manual prior to the first use and keep it in a safe place for later use.
It is intended for users with previous knowledge of PC and automation technology.

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.

Read this operating manual prior to the first use and keep it in a safe place for later use.

It is intended for users with previous knowledge of PC and automation technology.

We reserve the right to make technical changes.

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1 Characteristic

1.1 Overview

The Select Panel Client Installation have been designed as industrial-grade touchscreen displays for the use as Human Machine Interface (HMI) client in a client-server system. 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 (not evaluated by UL) according to EN 60529 when properly installed,
  IP20 (not evaluated by UL) according to EN 60529, back
- 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 Select Panel Client Installation can be used for industrial applications such as:

- Operation and display tasks

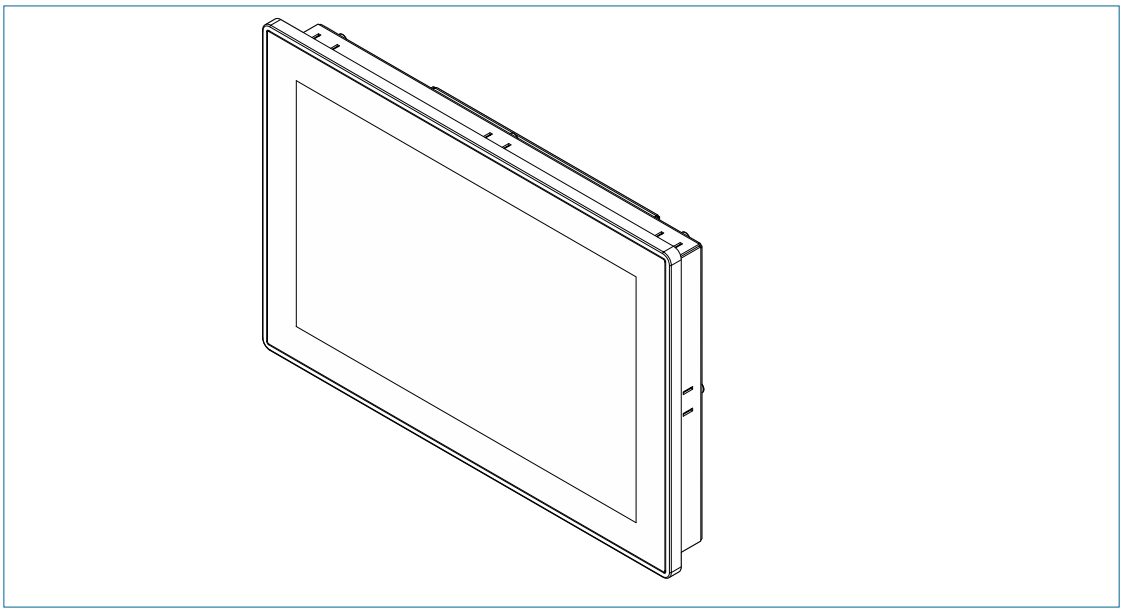


Fig. 1-1: 10.1“ Select Panel Client Installation - view of device

1.3 Block diagram

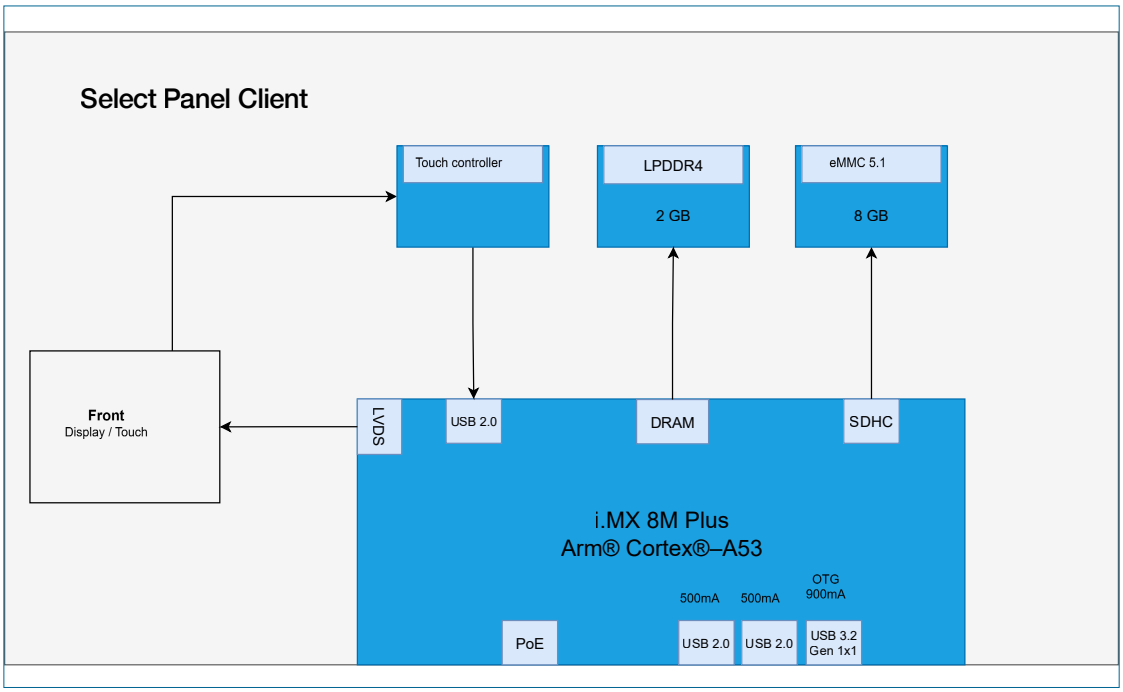


Fig. 1-2: Block diagram

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 Operating environment

FOR INDOOR USE ONLY!

This device is intended for indoor use only and is not suitable for outdoor environments.

– When installing the Select Panel Client Installation, observe chapter “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 “5 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 power semiconductors are connected directly to the cover of the computer housing.
  - The cover of the computer housing collects the heat generated by components with high power loss and dissipates it to the outside.
  - The device is a closed system. There are no vents that allow air exchange with the surrounding air.
  - A space of 30 mm must be kept free above, below, on the sides and behind the device for free air convection, see chapter “5.2.2 Installation conditions” on page 19.
  - Suitable air circulation must be provided.

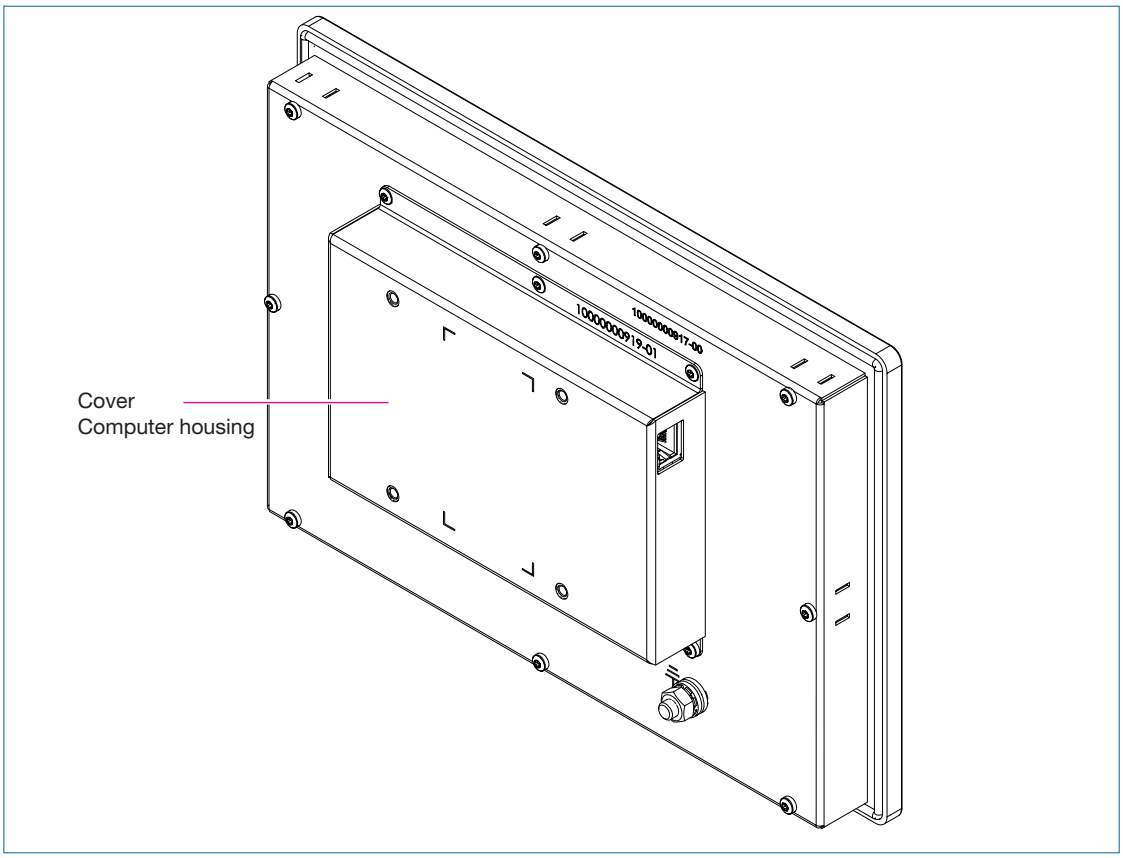


Fig. 2-1: Ventilation

2.6 Orientation options of the device

- The device is designed for use in portrait and landscape orientation.
- The device can be operated in an upright or flat (horizontal) position.
- For dimensions, see chapter “5 Technical data” on page 17.

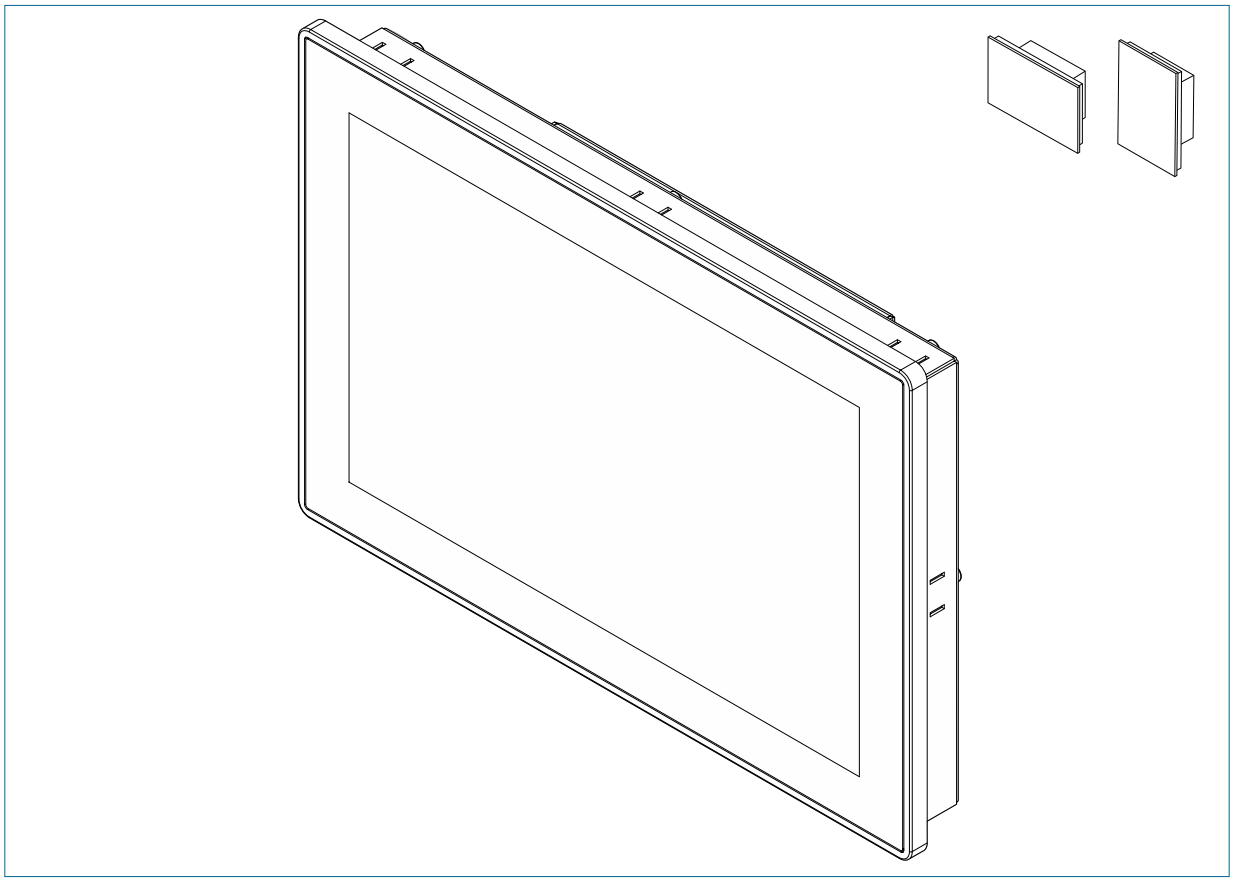


Fig. 2-2: Permissible installation position

3 Installation

The device is suitable for the following:

- Integration in the front panels of suitable housings, such as control cabinets, consoles, racks and hinged frames.
- Mounting on VESA 75 mounts. The fastening points at the back of the device allow installation on a VESA swivel arm or a VESA wall bracket.

3.1 Integration

The installation cut-out for integration must be such that there are bracings in the housing that stabilize the cut-out. Install such bracings where necessary.

The IP65 protection rating at the 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.

3.1.1 Installation cut-out

For information on the dimensions of the installation cut-out and the specified maximum thickness of the mounting wall, see chapter “5 Technical data” on page 17.

3.1.2 Installation with mounting clamps in the front panel

The installation in the front panel uses:

- 8 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]

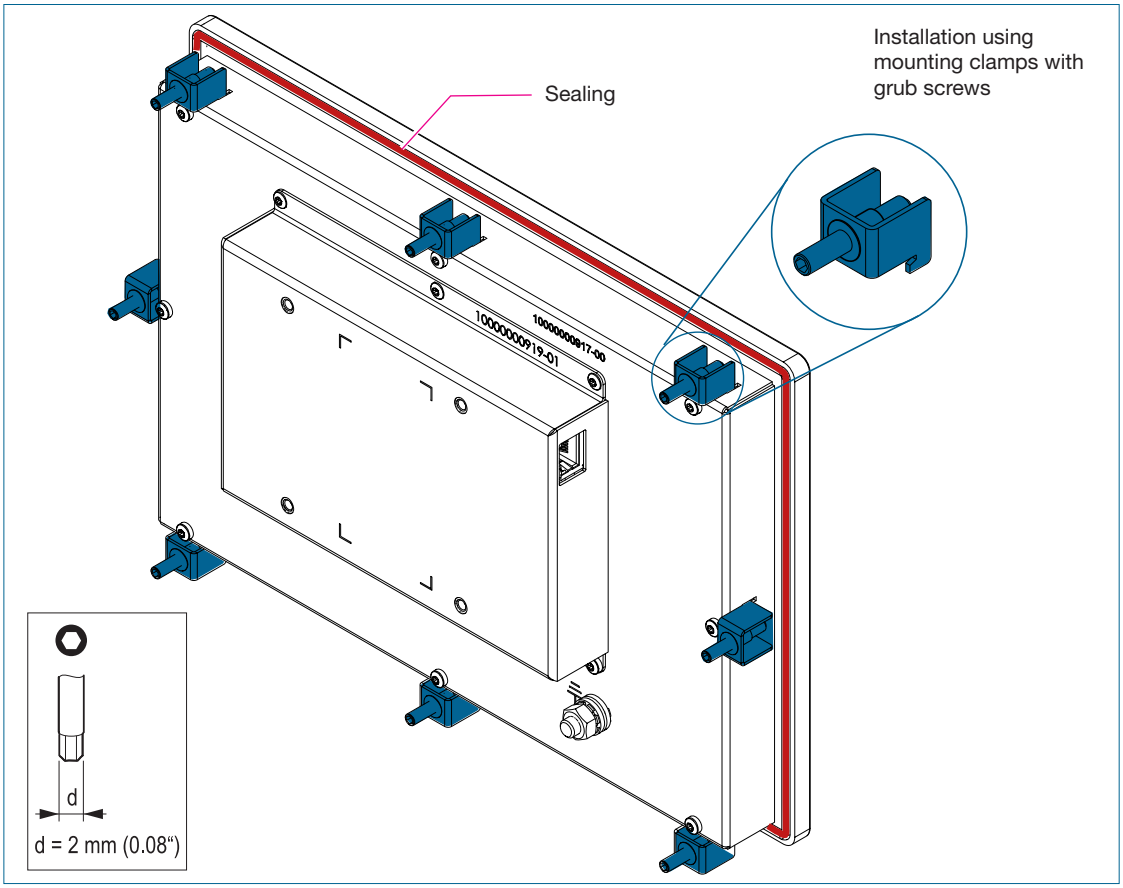


Fig. 3-1: Fastening with mounting clamps

3.1.3 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 of the mounting clamps slightly to immobilize the device.
- 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).

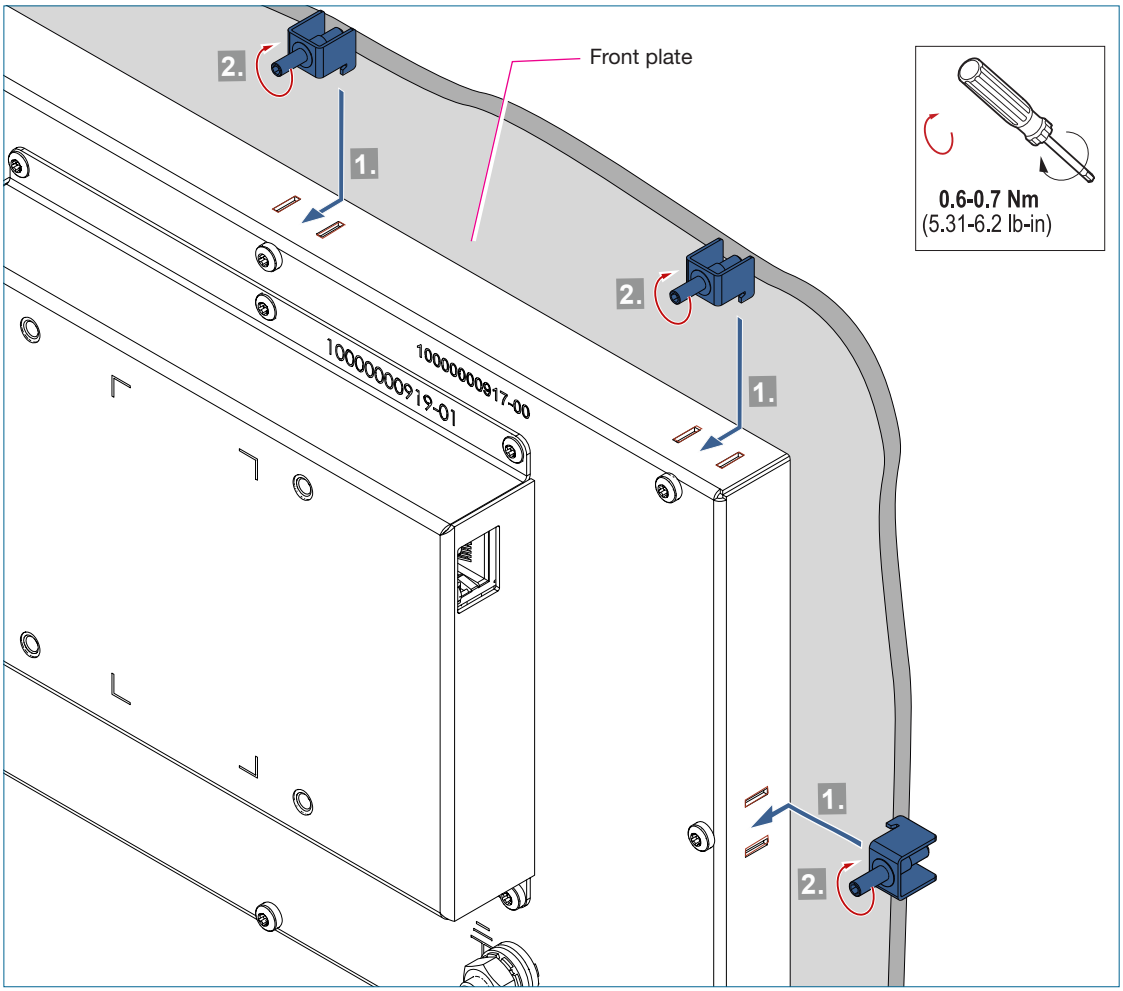


Fig. 3-2: Installing the mounting clamps

3.2 Mounting on a VESA mount

During installation, also observe the additional instructions for the VESA mount!

⚠ VORSICHT

When fastening the VESA mount, make sure not to exceed the maximum depth of engagement of 6 mm in the threaded holes of the device!

The housing is open in some places; without any additional housing, it achieves protection rating IP20!

i

It is recommended to tighten the bolts (min. property class 6.8) with a torque of 2 Nm.

– To attach the VESA mount (VESA 75x75) 3, screw suitable bolts 1 and washers 2 into the four threaded holes 4 at the back of the device and tighten the bolts 1 with a tightening torque of 2 Nm.

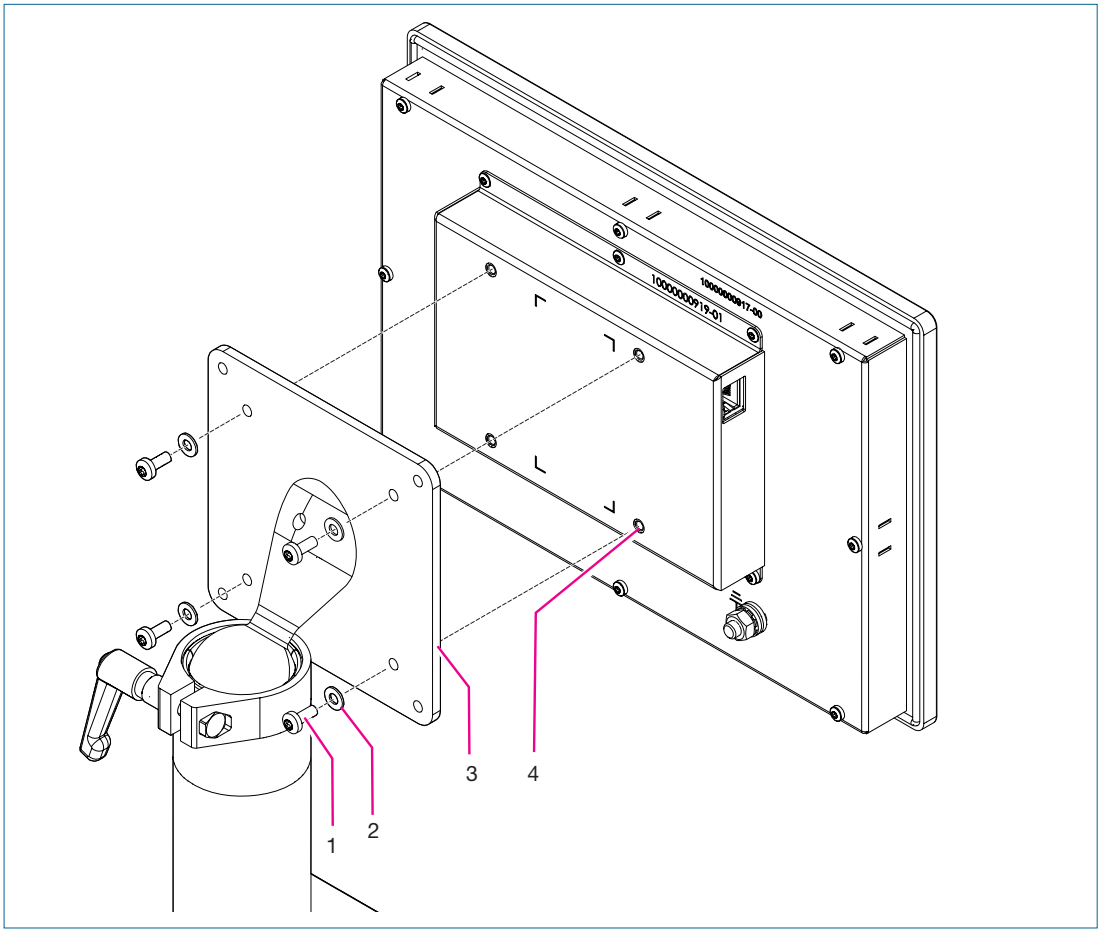


Fig. 3-3: Mounting device on VESA mount

4 Connection, commissioning and operation

4.1 Establishing operational readiness

⚠ VORSICHT

Qualified personnel only may open the device.

Open the device only when it is de-energized.

Interference resistance

Industrial environment according to EN 61000-6-2

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 device 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 the “Annex | Grounding concept” on page A-1.

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 any static electricity from your body before touching the device
(e.g. by touching a grounded metal object).

4.2 Expanding the Select Panel Client Installation

Limitation of liability

The Select Panel Client comes with a fixed hardware and software configuration. The device is not intended to be opened by the user.

We do not accept any liability if the components are used for any use other than the intended use.

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 device 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 device 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 device while the housing is 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!

4.3 Power supply

Power supply via PoE++ (Power over Ethernet Plus Plus)

The Select Panel Client Installation has been designed for operation with a PoE++ supply according to IEEE 802.3bt.

Voltage range, see chapter “Technical data”

Functional earth is via a screw connection on the panel.

4.3.1 Connecting cable for PoE++

The following cable types are recommended for the power supply connection via Ethernet cable:

- Category — At least Cat 5e, better Cat 6 or Cat 6A
- Conductor type — Solid conductor instead of stranded
- Shielding — Recommended, e.g. F/UTP, S/FTP, in particular for longer distances or a high-interference environment
- Pair count — 4 wire pairs (all 8 wires) because PoE++ uses all pairs
- Max. length — Standard according to IEEE: 100 meters (including patch cable)

4.3.2 Ground connection

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

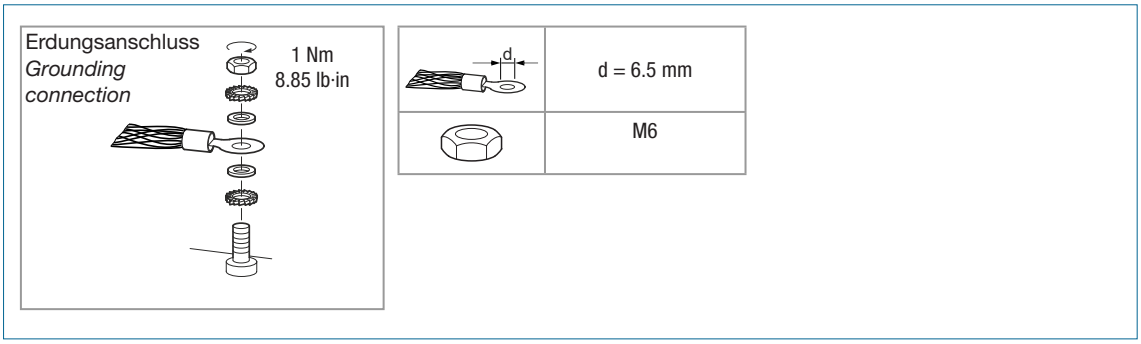


Fig. 4-1: Ground connection

4.4 Connecting peripheral devices

4.4.1 Interfaces

Access to connections and drives

- Connections to the peripherals are located on the side of the computer housing.
  For more details on the connections, see chapter “5 Technical data” on page 17.

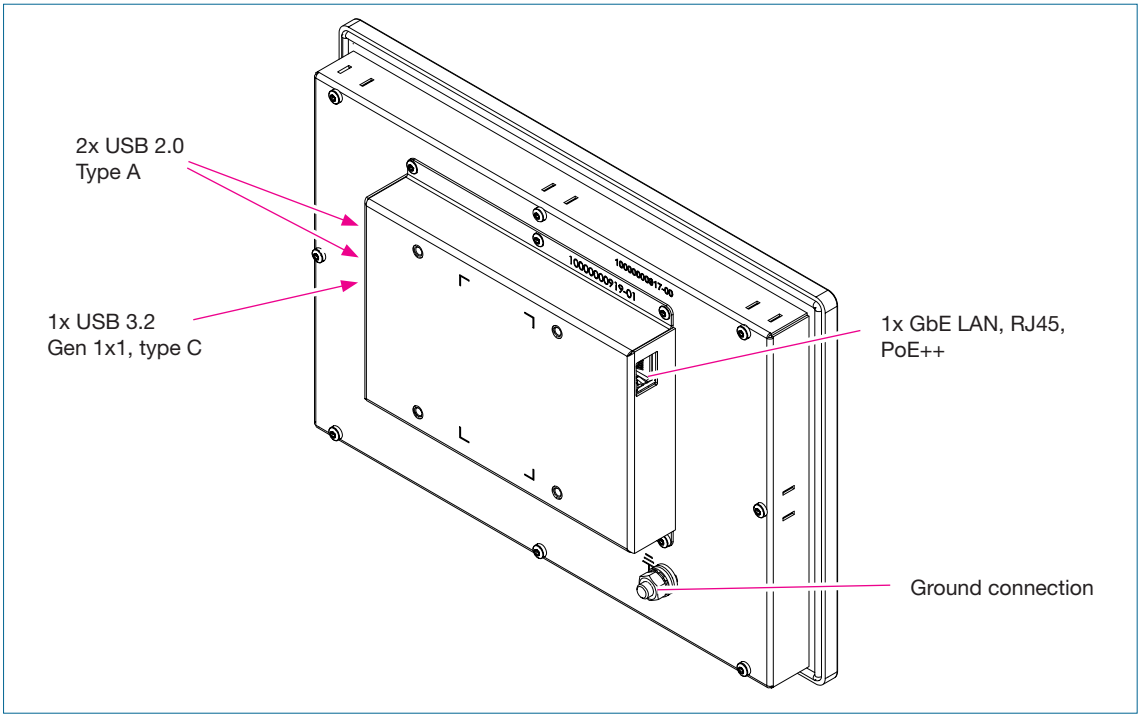


Fig. 4-2: Overview of connections for peripherals

The connections are standardized contacts with standard pin assignments.

The total power output of all USB interfaces is limited to **18 W**.

⚠ VORSICHT

The device may only be connected to in-house Ethernet networks that remain inside one building and are not subjected to TNVs.

4.4.2 Connection options for USB devices:

The provided USB ports can be used to connect peripherals such as a keyboard or mouse. USB memory devices can be used for updates, recovery or back-up of the device software.

The use as USB interface for data storage via a file manager is not part of the design.

We are happy to implement customer-specific solutions.
Talk to us!

4.5 Setting up and operating the device

Commissioning

After connecting the supply voltage, the system starts automatically.

4.6 Software

4.6.1 Operating system

In the BASE configuration, Schubert System Elektronik GmbH installs one of the operating systems specified in chapter “5 Technical data” on page 17. At the STYLE or CUSTOM configuration levels, it is also possible for a customer-specific operating system to be preinstalled.

4.6.2 Information on Prime OS and LINUX operating systems

- Setting the password
  - The password must be changed at the first use of the system.
  - A login is not possible without changing the password.
  - There are no preconfigured password guidelines.
  - For adequate password security, we recommend compliance with the **BSI password guideline**.
- Changing the password
  - The password can be changed even after the initial password has been set.
  - The change is made using the **Prime Tool Set**.
- Protection from brute-force attacks
  - After 5 failed attempts at entry, the user will be locked out for 10 minutes.
  - For access via *SSH*, the operation is aborted after 3 failed attempts, and the connection must be re-established.
- Updates
  - Functional updates and security patches are applied by a built-in update mechanism.
  - To apply updates, use the **Update, Backup & Recovery** tool in the **System Management** category of the **Prime Tool Set**.
  - We recommend rolling out all provided updates immediately to all affected systems. **The skipping of updates is on your own responsibility!**
  - Before updates are applied, a plausibility check is performed in the system. However, only those updates intended for the system are to be applied in order to prevent potential malfunction later.
- Backups
  - Backups can be created of the entire systems, parts of the system or of individual files.
  - We recommend creating backups in particular of customized items such as configuration files or data to allow for a system restore after a failure.
  - To create backups, use the **Update, Backup & Recovery** tool in the **System Management** category of the **Prime Tool Set**.
- Except for the */data* partition, which is intended for customer applications and configurations, the system on the whole is read-only.
- The system language is English only.
- System time
  - The default system time is **UTC**.
  - To set the system time, use the **Time** tool in the **System Management** category of the **Prime Tool Set**.
  - To set an NTP server for synchronizing the system time, use the **Time** tool in the **System Management** category of the **Prime Tool Set**.
- Any modification of system settings is **on your own responsibility**; an assessment of the security risk must always be performed.
- System log
  - The system comes with an internal system log.
  - The system log uses a rotation procedure that prevents overflow.
  - To view the log file, use the **Log View** tool in the **System Info** category of the **Prime Tool Set**. This tool can also be used to export the log files.

- Network
  - The system supports LAN, VLAN and WLAN by **default**.
  - To set the network type, use the **Network** tool in the **System Management** category of the **Prime Tool Set**.
- Other interfaces
  - The USB interfaces are activated by **default** (mount deactivated).
  - In order to avoid security risks, all unused interfaces should be deactivated. Otherwise, effective access protection of the interfaces is required.
  - For support for additional interfaces (e.g. CAN, EtherCAT, etc.) contact our **Technical Customer Service**.
- Licenses and versions
  - The system uses **open-source licenses**.
  - To view the licenses used, use the **SBOM & Licenses** tool in the **System Info** category of the **Prime Tool Set**.
- BIOS / UEFI
  - The system ships without any preconfigured default password.
  - Depending on the security requirements of the intended environment or application, security mechanisms and password protection may be required.
  - **We recommend setting a password.**
  - **Warning: The password cannot be reset.**
- Services: **SSH** and **SCP**
  - The system ships with **SSH** and **SCP** services configured and the port opened.
  - We recommend closing the port if access is not needed.
  - Note: The SSH key can be modified via SSH features.

Information on Prime OS Edge

- This system is a **headless system**.
- It does not support any graphical output.
- **Docker and Docker Compose**
  - Docker and Docker Compose are preinstalled.
  - No default images or containers are provided.
  - By default, no other Docker management software is provided aside from Docker Runtime.
  - Users can themselves add a range of management software on their own responsibility and at their own risk.
  - The use of Docker images is on the users' own responsibility and at their own risk. Containers and networks change the system, which requires a risk assessment to be performed by the user due to the modification of the system's attack vector.

Information on Prime OS Client

- The **Prime OS Client** is a system with a user interface and has been designed for **KIOSK mode** via **Chromium web browsers**.
- Depending on the underlying platform, it uses **X11** or **Wayland**.
- Rotation in **landscape** or **portrait** orientation is supported.
- For configuration, use the **Client Service** tool from the **Prime Tool Set**.

4.6.3 Prime Tool Set

Each Prime Cube system includes the browser-based Prime Tool Set software framework. This easy-to-use user interface allows you to manage important system settings quickly and easily from one central location and to efficiently configure both WINDOWS and LINUX systems.

- Launching the Prime Tool Set

  WINDOWS

  - The Prime Tool Set is part of the Start menu:
    Start menu -> All -> Prime Tool Set
  - Using the installed web browser, the Prime Tool Set can be accessed directly via URL *localhost:8008*.

  Prime OS/LINUX Box IPC

  - The Prime Tool Set is configured as a web server and can be reached externally via the device IP address and *port :8008*.

  Prime OS/LINUX panel systems

  - The Prime Tool Set is part of the software and can be operated directly on the screen of the device.
  - With the appropriate configuration, the Prime Tool Set can be reached as web server via the device IP address and *port :8008*.

- Using the Prime Tool Set

  - The Prime Tool Set offers a range of features and intuitive usability.

  Home

  - Display the Home screen with the available menu items.

  System Info

  - **Log View**
    Displays the current system log file. A number of filters and download options for the log files are available.
  - **SBOM & Licenses**
    Lists all software components and packages as well as software licenses. Includes a search function.
  - **Service Report**
    Creates a comprehensive service report for the device.
  - **System Summary**
    Shows important system data, e.g. memory, CPU, running processes and networks.

  System Management

  - **Network**
    Options for displaying and configuring network interfaces.
    Displays information on all virtual network interfaces.
  - **Power**
    Restarting or shutting down the system.
  - **Time**
    Configuration of system time and NTP.
  - **Update, Backup & Recovery**
    Creation of backup files. Loading and installing updates, backup or recovery files.
    Upload option for backup/recovery or update files.

  Welcome screen (only Prime OS Client)

  - **Startup page**
    Launches the Prime OS Client startup page. Loads the target URL according to the client configuration (see Web Client Configuration).
    Also launches a Quick Setup Wizard if no target URLs have been defined. This wizard can be used for the configuration of target URLs and network interfaces.
  - **Web Client Configuration**
    Configuration settings for target URLs with alias and time delay for loading the target URL from the startup page.

- Configuring the Prime Tool Set

  - The parameter configuration of the Prime Tool Set itself is done via configuration files. For detailed instructions and assistance, please contact our support team directly.

4.7 Disposal

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

The device is dismounted and completely disassembled:

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

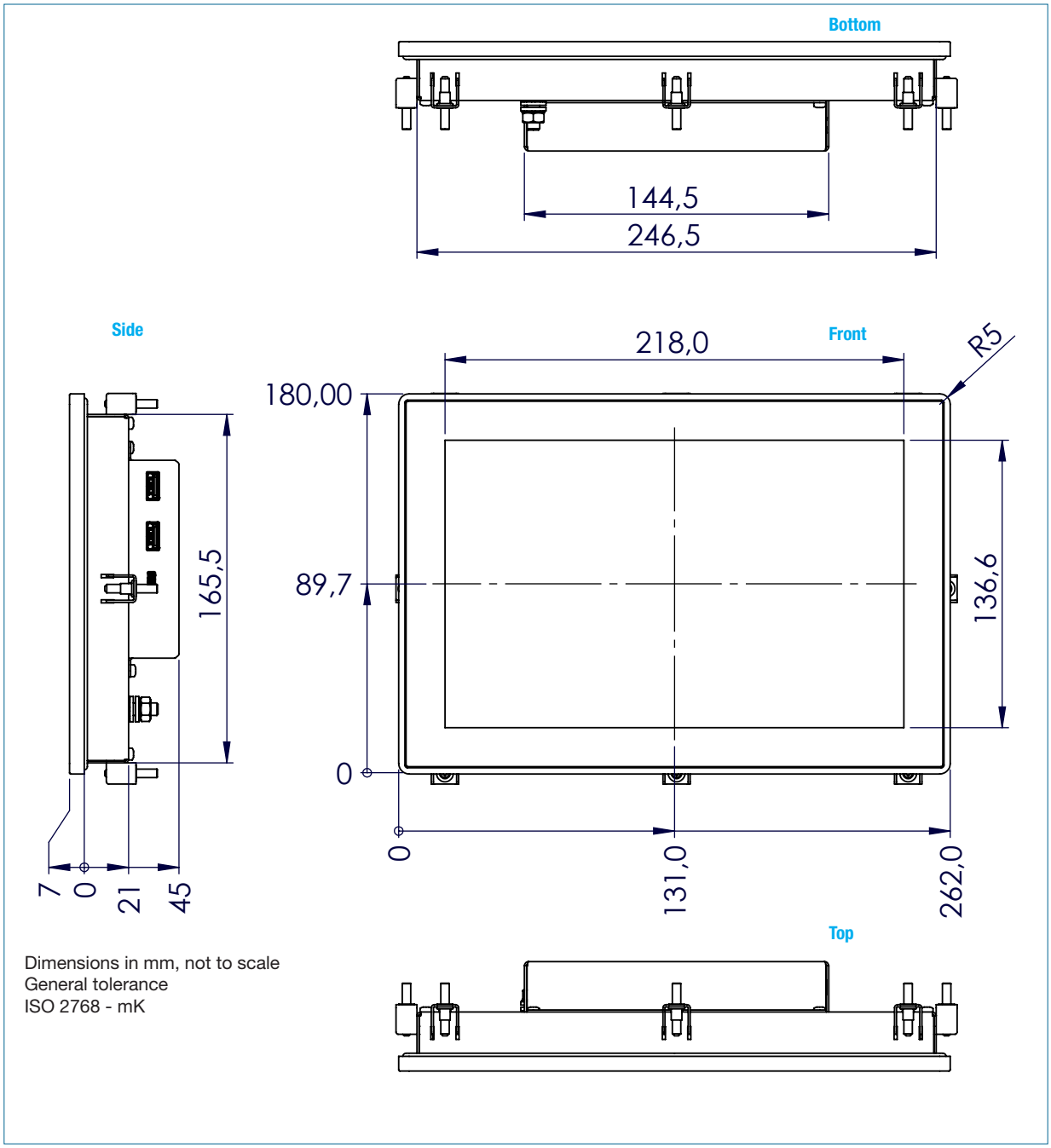
5 Technical data

5.1 General

Component	Description
Model code	SPA1000ED_101
Display	• 10.1" WXGA display, 1280 x 800 pixels, 16:10 • Brightness: 500 cd/m² • Contrast ratio: 900 • View angle: 85/85/85/85° • Service life of lighting: min. 50,000 h
Housing	• Aluminum front frame, black, powder-coated • Steel plate back wall, galvanized • Steel plate computer kernel, galvanized • Tempered front glass • Designed for front installation using mounting clamps.
Touch	• Projected Capacitive Touch (PCT), 5-finger operation
Protection class	• IP65 (not evaluated by UL) according to EN 60529, front • IP20 (not evaluated by UL) according to EN 60529, back
Computer	• Processor ARM64 i.MX 8M Plus Quad
RAM	• 16 Gbit / 2 GB LPDDR4 DRAM
Mass storage	• 8 GB eMMC Flash
Interfaces (standard)	• 1x GbE LAN Ethernet, RJ45 / PoE++ • 2x USB 2.0, type A • 1x USB 3.2 Gen 1x1, type C
Power supply	48 V DC (42.5 ... 57 V DC) via PoE++
Power consumption	0.65 A / 31 W
Overvoltage category	II
Operating system	Prime OS Client
Weight	approx. 1.50 kg
Ambient temperature range	0 °C to +50 °C with natural convection
Storage temperature	-20 °C to +60 °C
Air humidity	20 % to 90 %, non-condensing
Elevation	Max. 3000 m
Degree of pollution	2
EMC immunity	Industrial environment according to EN 61000-6-2
EMC emitted interference	Industrial environment according to EN 61000-6-4
Shock	15 g: 11 ms and 25 g: 6 ms according to EN 60068-2-27
Vibration	2 ... 9 Hz: 3.5 mm amplitude, 9 ... 200 Hz: 1 g according to EN 60068-2-6
Approvals	CE, UL upon request

5.2 Mechanical dimensions

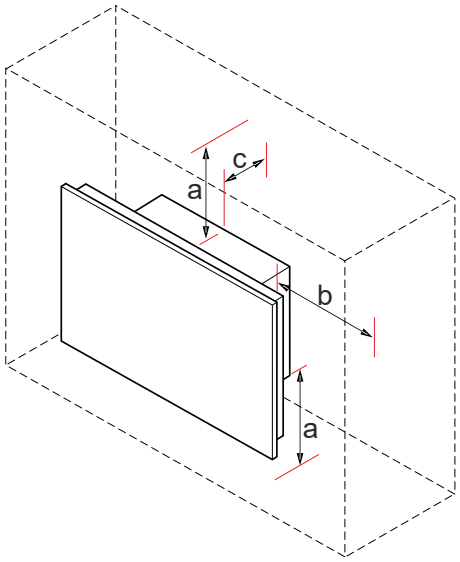
5.2.1 Device dimensions

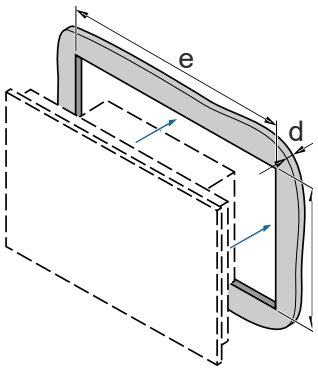


Dimensions in mm, not to scale
General tolerance
ISO 2768 - mK

Fig. 5-1: Device dimensions

5.2.2 Installation conditions





[mm]	Min. interior spacing for convection			Installation cut-out and thickness of front plate		
	a	b	c	d	e	f
	>30	>30	>30	1.0 ≤ d ≤ 6	248 +2/-1	167 +2/-1

Fig. 5-2: Installation conditions

MODULARITY IS PRIME.

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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

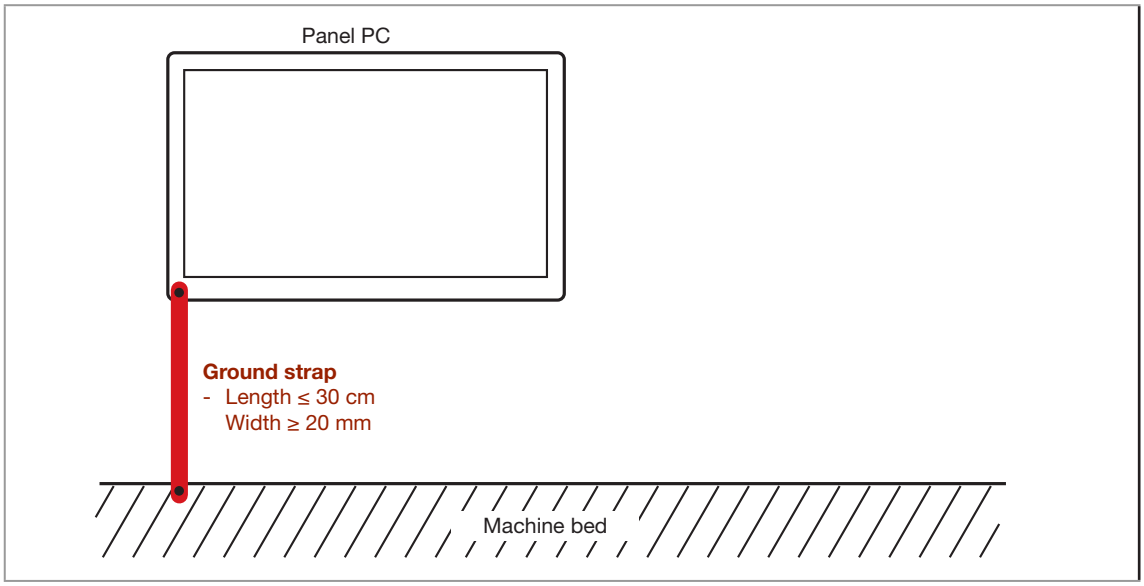

Fig. A-1: Grounding concept - panel PC

- Contact surfaces must be designed to be conductive (free of paint, etc.) and corrosion-resistant.
  - Use lock washers to prevent corrosion at 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

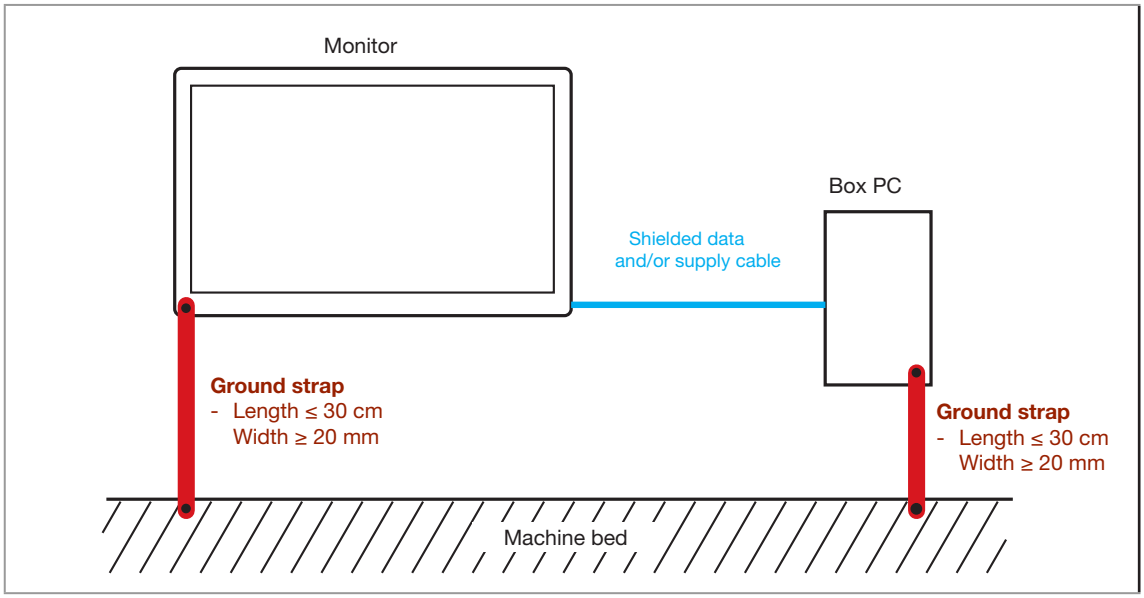

Fig. A-3: Grounding concept - monitor PC

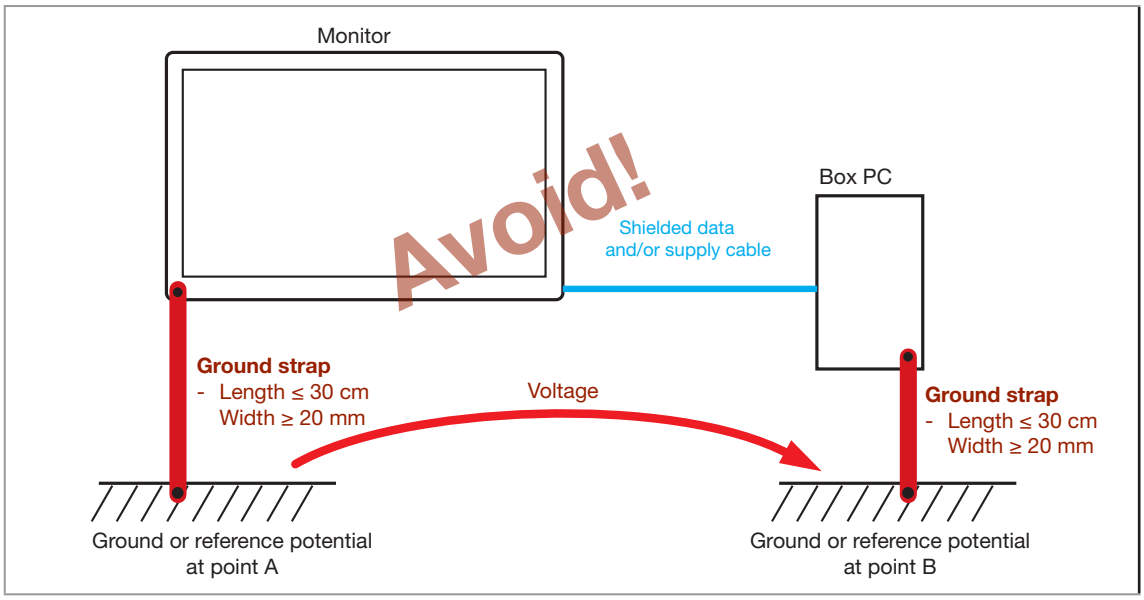

Fig. A-4: Grounding to be avoided

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Logbook
Operating manual

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