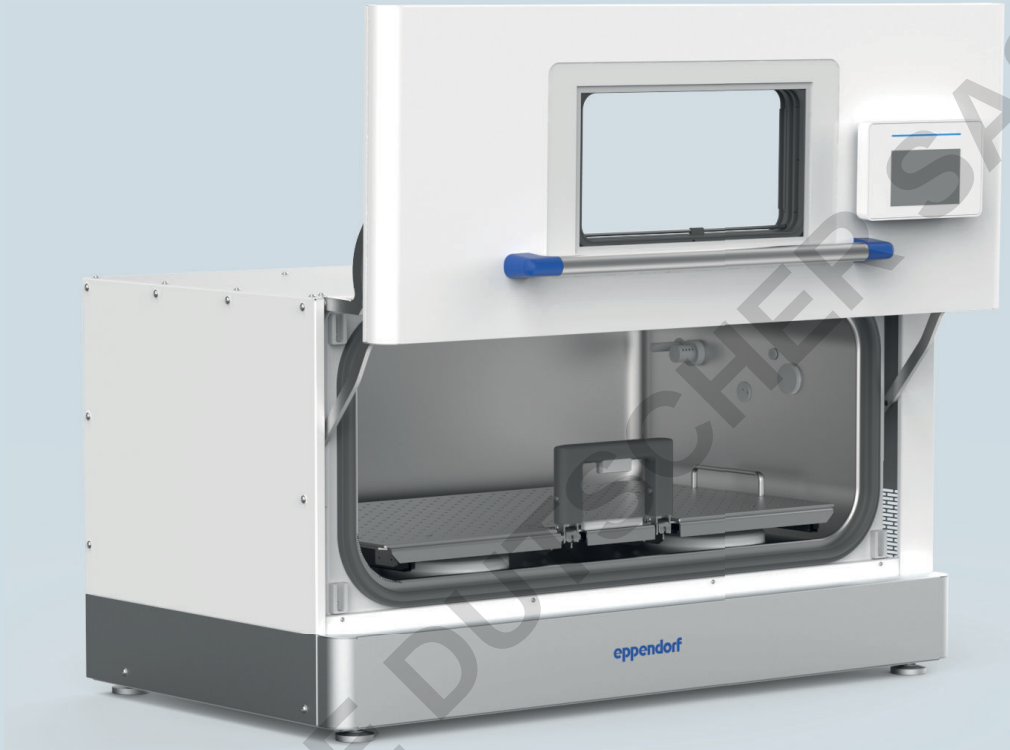
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DOMINIQUE DUTSCHER SAS

Incubator Shaker

CellXpert® CS220

Operating Manual

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DOMINIQUE DUTSCHER SAS

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1 About this manual

1.1 Notes on this manual

The dates in this manual correspond to the international date format as specified in the ISO 8601 standard. All dates are shown in the format YYYY-MM-DD or YYYY-MM.

1. Read this manual completely before using the product.
2. Please ensure that you have the manual available while using the product.

The current version of the manual can be found at www.eppendorf.com/manuals.
- Contact Eppendorf SE to obtain another version of the manual.

1.2 Warning notice structure

HAZARD LEVEL! Type of danger

Source of danger
Consequences of disregarding the danger

– Measures to avoid the danger

Symbol	Hazard level	Type of danger	Meaning
	DANGER	Personal injury	Will lead to severe injuries or death.
	WARNING	Personal injury	May lead to severe injury or death.
	CAUTION	Personal injury	May lead to minor or moderate injuries.
	NOTE	Material damage	May lead to material damage.

1.3 Graphics

Depiction	Meaning
1. 2.	Work steps
•	Bullet point
Text	Display text
Key	Name for port, button, status lamp, or key
	Important information
	Tip

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1.4 Other applicable documents

The following documents supplement this manual:

- Manuals for accessories and consumables
- Information sheet "Information on performing a risk assessment for the operation of incubators with CO_2 and N_2"

1.5 Certificates

Declarations of conformity, certificates, Safety Data Sheets etc. on the product can be found on the respective product page at www.eppendorf.com.

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2 Safety

2.1 Intended use

The incubator shaker is designed to create optimal conditions for cell culture by providing adjustable and stable humidity, temperature and carbon dioxide levels in the workspace. A sample platform with adjustable shaking speed inside the device enables the cultivation of cells in suspension.

This device is intended for general laboratory use and may only be operated by persons trained in laboratory techniques and procedures.

2.2 Residual risks when used as intended

If the product is not used as intended, the installed safety devices may not function correctly. To reduce the risk of personal injury and material damage and to avoid dangerous situations, please observe the general safety instructions.

2.2.1 Personal injury

2.2.1.1 Biological hazards

Pathogenic biological agents can harm your health and the environment.

- Observe the national regulations and the biosafety level of your laboratory.
- Wear suitable personal protective equipment.
- Observe the Safety Data Sheets and instructions for use for the accessories.
- For instructions regarding the handling of germs and biological material in risk group II or above, please refer to the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, check the most current edition).

If the device has come into contact with infectious liquids or pathogenic germs, people can become contaminated and their health can be harmed.

- Clean and decontaminate the device immediately.

2.2.1.2 Chemical hazards

Radioactive, toxic and aggressive fluids can cause serious damage to health.

- Wear suitable personal protective equipment.
- Observe any national regulations regarding the handling of such substances.
- Observe the manufacturers' safety data sheets and instructions for use.

2.2.1.3 Electrical hazards

Touching parts that carry high voltage can cause an electric shock. A life-threatening electric shock can cause cardiac arrhythmia, burns and respiratory paralysis.

- Only use earth/grounded sockets with a protective earth (PE) conductor.
- Ensure that a residual current circuit breaker is present and accessible.
- Ensure that the housing and mains/power cord are not damaged.
- In case of danger, disconnect the device from the mains/power line.

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- Do not open or remove the housing.
- Compare the technical data of the mains/power cord and the mains/power plug with the technical data on the name plate, taking into account national laws and regulations. This also includes legally required test seals. Use only approved mains/power cords with plugs.
- Make sure that the mains/power plug and earth/grounded socket match and that the electrical PE conductors of the device and the building installation are securely connected to each other.
- Only clean and maintain the device when it is disconnected from the mains/power line.
- Have the device regularly checked for electrical safety in accordance with national requirements.

2.2.1.4 Risks of burns

There is a risk of burns from hot components during high-temperature disinfection.

- Do not touch the device while a high-temperature disinfection cycle is running.
- Do not open the doors during the high-temperature disinfection cycle.
- Allow the device to cool down completely if a system crash or mains/power outage occurs during high-temperature disinfection.

2.2.1.5 Mechanical hazards

The device is very heavy. Transporting and lifting the device improperly can lead to serious injuries.

- Only transport and lift the device with a sufficient number of people and with suitable means.
- Use transport aids and load-carrying devices that are designed for the weight of the device.

2.2.1.6 Incorrect handling

If the device or technical equipment is not properly connected to the gas supply or is damaged, the CO_2 concentration in the breathing air may increase. As a result, persons may become unconscious and suffocate due to insufficient oxygen supply.

- Gas tubing may only be installed and connected by trained personnel.
- Observe the national guidelines for handling gases and setting up and operating laboratories.
- Ensure that the CO_2 concentration in the breathing air does not exceed permitted levels when working in the laboratory.
- Use a CO_2/O_2 alarm system.
- Check the hose connection system for leak tightness.
- Read the "Information on performing a risk assessment for the operation of incubators with CO_2 and N_2" by Eppendorf SE.

2.2.2 Material damage

2.2.2.1 Electrical hazards

Connecting the device to an incorrect mains/power supply will damage the device.

- Only connect the device to a mains/power supply that meets the requirements on the name plate.
- Only use earth/grounded sockets with a protective earth (PE) conductor.

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- Compare the technical data of the mains/power cord and the mains/power plug with the technical data on the name plate, taking into account national laws and regulations. This also includes test seals if they are required by law. Use only approved mains/power cords with plugs.
- Make sure that the mains/power plug and earth/grounded socket match and that the electrical PE conductors of the device and the building installation are securely connected to each other.

Condensate may form in the device due to transport of the device from a cool environment to a warmer environment and cause a short-circuit.

- Wait for at least 12 h after setting up the device. Then connect the device to the mains/power line.

This device has been tested and complies with the thresholds for digital instruments of class B in accordance with section 15 of the FCC directives. These thresholds ensure adequate protection against harmful radio interference in residential buildings. This device generates and uses radio frequency energy, which is emitted and can cause harmful interference to radio communications when not used or installed correctly or in accordance with the manufacturer's instructions. There is, however, no guarantee that certain installations will be free of any interference. If a device interferes with radio or television reception, which can be verified by switching the device on and off, try to resolve the problem by implementing one or several of the following measures:

- Readjust the position of the receiving antenna or wireless device, or move it to a different location.
- Increase the distance between the device and the receiver or wireless device.
- Connect the device to a different power circuit than the one to which the receiver is connected.

2.2.2.2 Incorrect handling

The use of accessories and spare parts other than those recommended by Eppendorf SE may impair the safety, functioning, and precision of the device. Eppendorf SE cannot be held liable or accept any liability for damage resulting from the use of accessories and spare parts other than those recommended.

- Only use the accessories and spare parts recommended by Eppendorf SE.
- Only use accessories and spare parts that are in perfect technical condition.

Excessive pressure can cause the gas tubing or the in-line gas filter to burst or break.

- Make sure that the gas inlet pressure does not exceed 0.15 MPa (1.5 bar, 21.8 PSI).

2.3 Application limits

Due to its design, the product is not suitable for use in a potentially explosive atmosphere.

The product may only be used in a safe environment, such as a ventilated laboratory or under a fume hood. Substances which may potentially contribute to an explosive atmosphere may not be used.

2.4 Target groups

This manual is intended for the following target groups, who have different qualifications and levels of knowledge.

Owner

The owner is any natural or legal person who operates or owns the device.

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The owner provides the product and the necessary infrastructure. The owner has a special responsibility to ensure the safety of all persons working on the product.

User

The user operates the product and works with it. The user must be instructed in the use of the product. The user must have read and fully understood the manual.

Any tasks that go beyond operation may only be performed by the user if this is specified in this manual. The owner must explicitly assign these tasks to the user.

Technical personnel

The technical personnel supervises the building services and ensures the technical prerequisites for the operation of the product.

Authorized service technician

The authorized service technician is trained and certified by Eppendorf SE to service, maintain and repair the product.

2.5 Information for the owner

The owner must ensure the following:

- The product is in a safe operating condition.
- The safety devices are all available and functional.
- The product is serviced and cleaned according to the information in this manual.
- The product is disposed of in accordance with local regulations.
- All work on the product is carried out by users, technical personnel, or authorized service technicians who are suitably qualified.
- Personal protective equipment is available and is worn.
- The manual is available during the use of the product.
- The manual is part of the product. Use the following link to download the current version of the manual: https://www.eppendorf.link/documents. For a printed or older version of the manual for your product, please contact your Eppendorf partner.

2.6 Personal protective equipment

Personal protective equipment serves to ensure the safety and protection of the user when working with the product.

Personal protective equipment must comply with country-specific regulations and the regulations of the laboratory.

2.7 Information on product liability

The owner of the device will be held liable for personal and material damage in the following cases:

- The device is used outside of its intended use
- The device is not used in accordance with the operating manual

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- Manipulation of safety devices
- The device has spare parts installed that are not authorized by Eppendorf SE
- The device is used with accessories or consumables that are not recommended by Eppendorf SE
- Cleaning agents are used that are not recommended by Eppendorf SE
- Chemicals are used that are not recommended by Eppendorf SE
- Shipment not in original packing or in improper substitute packing
- The device is maintained or repaired by persons not authorized by Eppendorf SE
- Unauthorized modifications

2.8 Information on the device

Information	Meaning	Location
	Observe the safety-relevant information in the operating manual.	Visible on the right door panel when the door is open
	CAUTION Risk of crushing your hands and fingers when opening and closing the door.	Visible on the right door panel when the door is open
	CAUTION Risk of eye damage.	Visible on the right door panel when the door is open
	WARNING Contact with hot surfaces may cause burn injuries.	Visible on the door and on the right door panel when the door is open
	WARNING The door lock magnets generate strong magnetic fields.	Visible on the right door panel when the door is open

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3 Product description

3.1 Features

The device has the following features:

- Chamber with extendable sample platform
- Suitable for large sample volumes
- Optimum setting of CO_2 content, humidity, and shaking speed
- Touch screen
- Integrated high-temperature disinfection
- Preservation of software settings after mains/power outage
- Interfaces: USB, Ethernet
- Connection to VisioNize possible
- Three devices stackable

3.2 Product overview

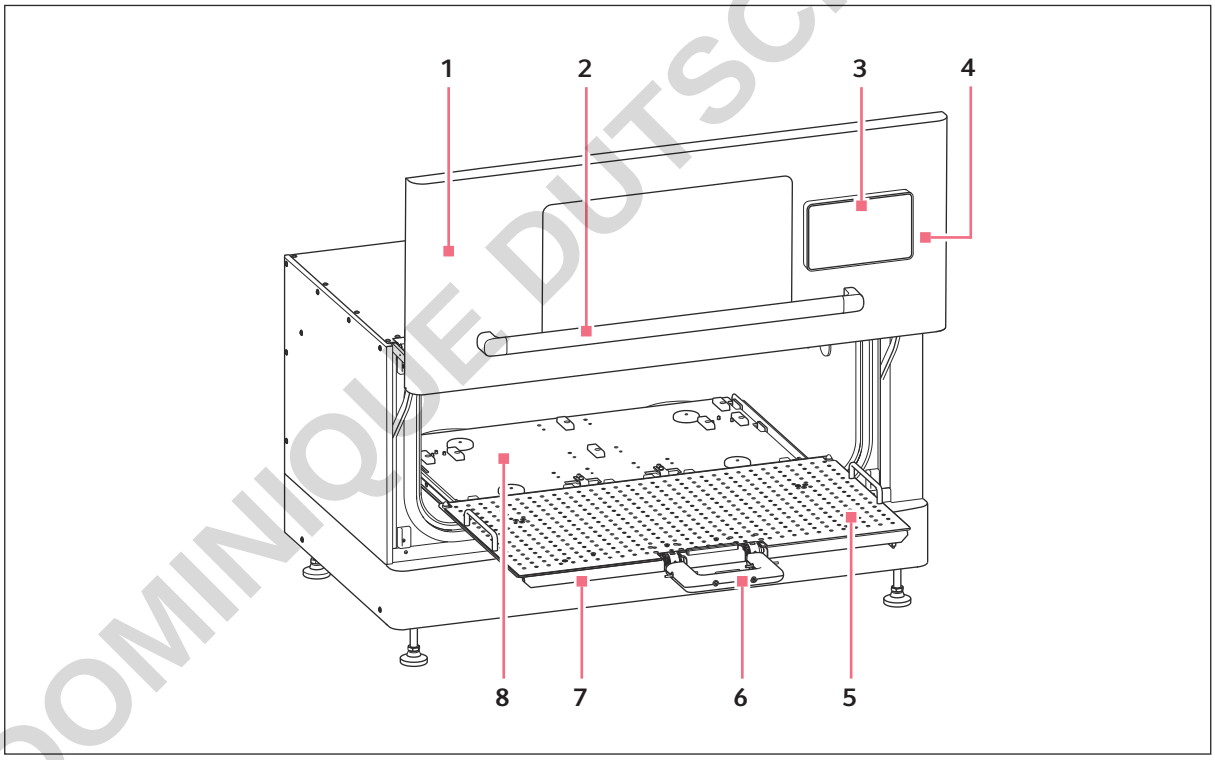


Fig. 3-1: Front view

1 Door

2 Door handle

3 Control panel

4 USB port

5 Sample platform (available as a required accessory)

6 Handle for pulling out the sample platform

7 Pull-out tray

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8 Sub-platform

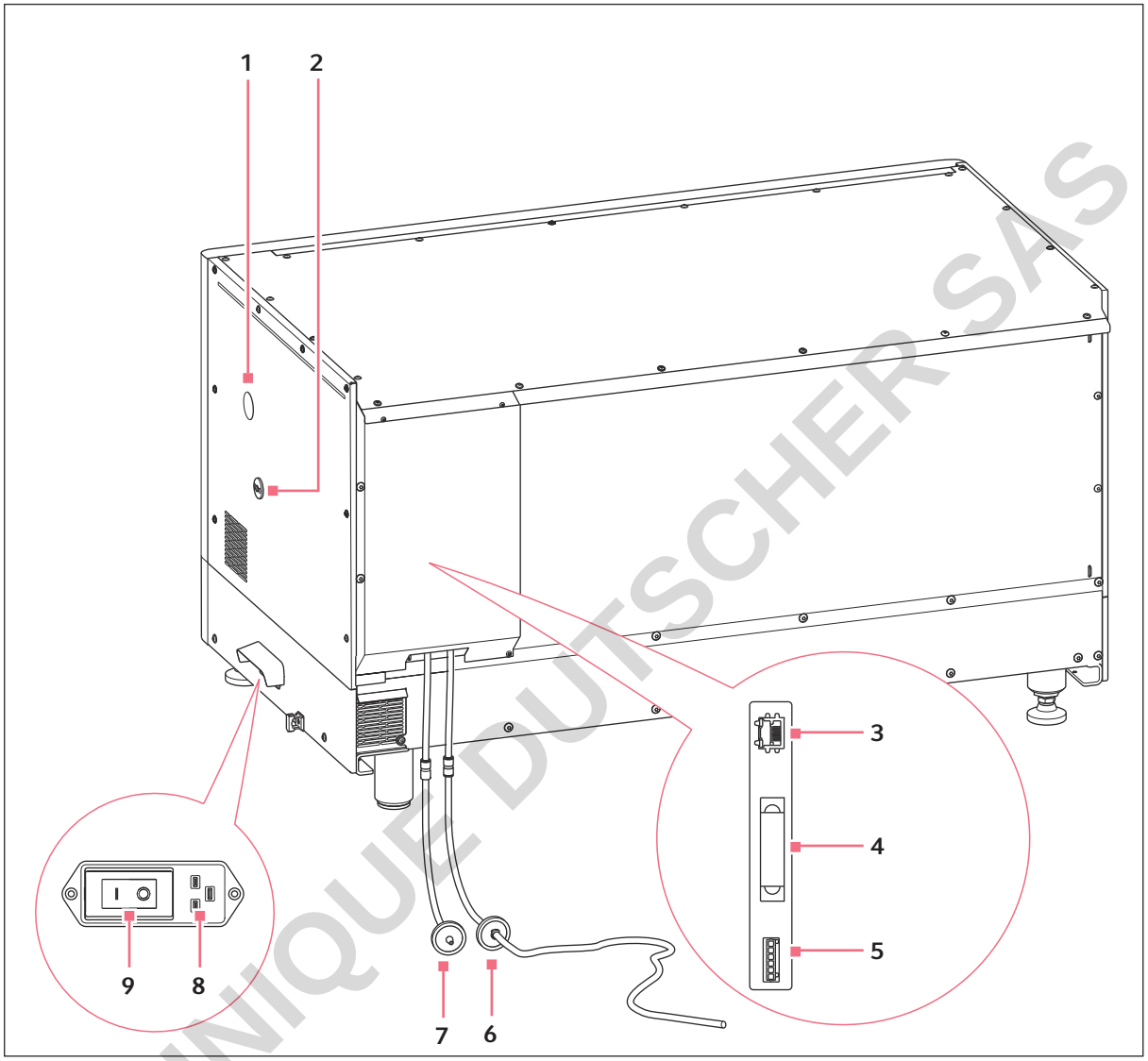


Fig. 3-2: Rear view

1 Access port for external sensors
2 Water connection
3 Ethernet interface (VisioNize connection)
4 Expansion connector (optional)
5 Interface for building management system
6 CO_2 port
7 Air filter with length of tubing
8 Power cord socket
9 Power switch

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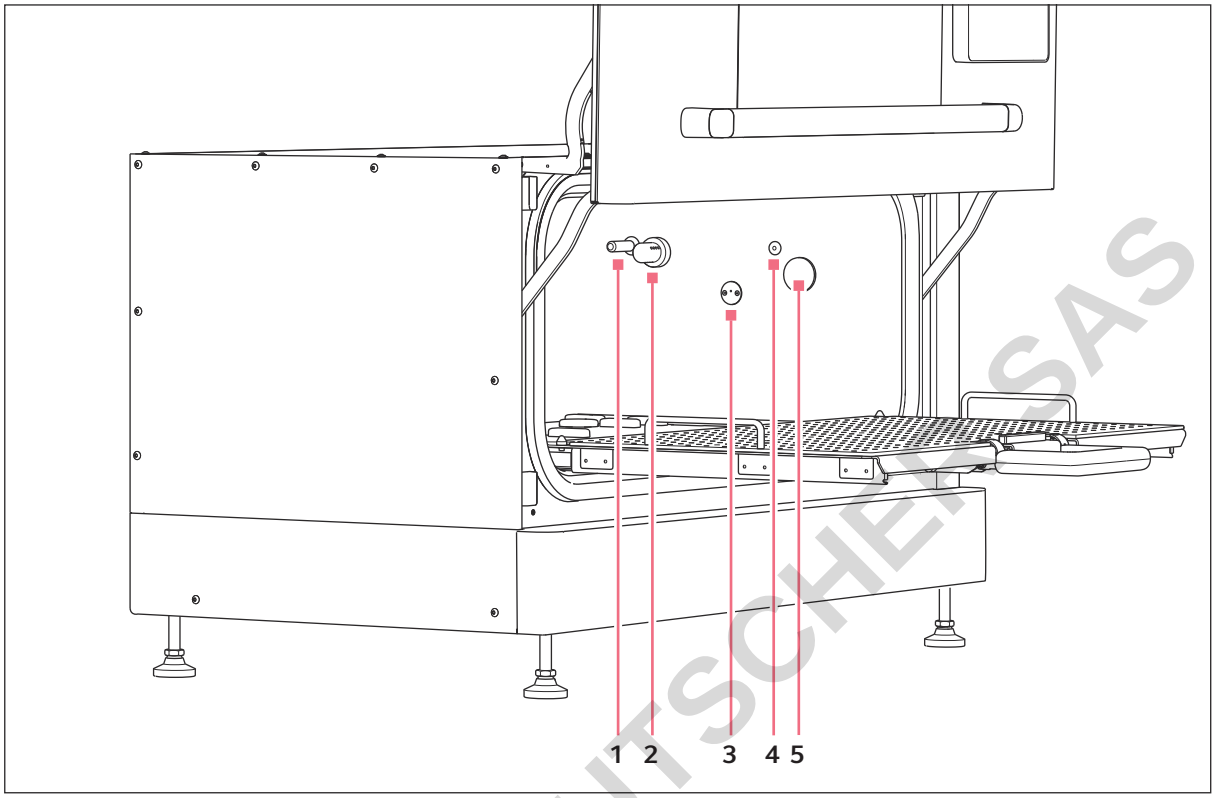


Fig. 3-3: Internal view

1 Humidity sensor

2 CO_2 sensor

3 Water vapor inlet

4 Gas inlet and interior lighting

5 Access port, e.g., for external sensors with blind plug

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3.3 Control panel

3.3.1 Touch screen

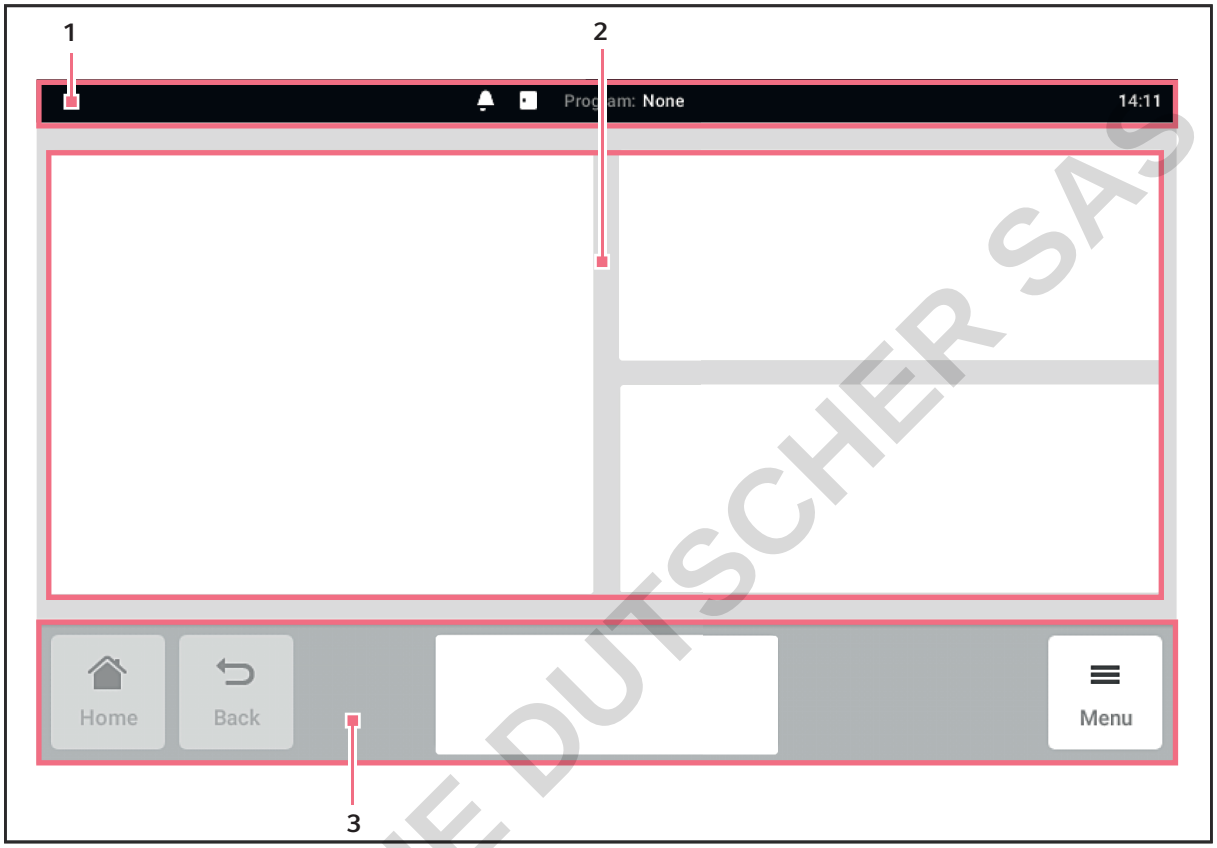


Fig. 3-4: Schematic structure of the software surface

1 Status bar
2 Display
3 Toolbar

Status bar

The status bar contains information about the user, time, device status, and messages.

Display

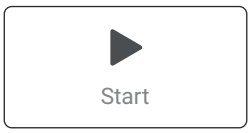
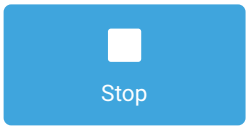
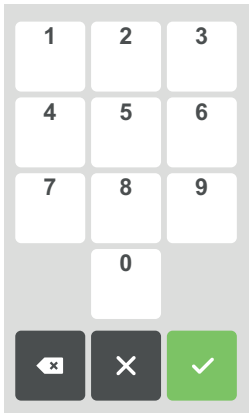
The touch screen display is divided into separate function areas. The function areas are configurable.

Toolbar

The toolbar contains buttons for navigating the software and operating the device.

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3.3.2 Operating controls

Operating control	Function
	Start the application with the set parameters
	Stop the application with the set parameters
	Increase or decrease reduce values gradually
	Enter a value
	Activate the function Active elements are blue.

3.3.3 Symbols

Symbol	Description
	Status: Function active
	Status: Function inactive
	Door open
	Error message
	Alarm message
	Warning message

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Symbol	Description
	Notification
	Alarms
	Call events
	Open the charts area
	Select the time span to be shown in the chart. Display of the selected time span
	Close
	Activate filter
	Open the export area and export data
	Change function position
	Restore factory settings
	Fine adjustment
	Display recently used parameters
	Switch on interior lighting
	Start decontamination

3.4 Accessories

3.4.1 Required accessories

Required accessories must be ordered separately. More information on accessories can be found on our website www.eppendorf.com.

Sample platform

The sample platform has several M4 holes allowing you to use virtually any combination of flask clamps, test tube racks and other accessories.

The sample platform facilitates safe use of the device in accordance with the intended use. Do not operate the device without a sample platform.

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Sample holder

The following material is available to securely attach sample tubes to the sample platform:

- Flask clamps
- Sticky pad

The flask clamps for flasks are made of stainless steel and are supplied complete with the required screws. They are fitted with coiled wire springs for added stability at elevated speeds.

The sticky pads are supplied as 20 cm × 20 cm pads. They can cover the complete surface of the sample platform or the can be used in combination with screw accessories such as test tube racks or flask clamps.



Only use the screws supplied with the sample platform for test tube racks and microplate holders.

Water supply package

The water supply package includes all parts required for safe water supply of up to 3 stacked devices:

- Water tank
- Hose distributor with sealing washers
- Air filter
- Hose weight with o-rings
- 3 water hoses
- 3 water filters

Water tank with hose distributor set

The plastic water tank can hold a volume of max. 5 L.

The hose distributor set is used for proper distribution and ventilation of the water hoses in the water tank. It includes the following:

- Lid
- Air filter
- Caps
- Sealing rings
- Hose weight with o-rings

Water hose package

The water hose package enables safe connection between the device and the water tank. The package contains the following:

- Water hose
- Water filter

3.4.2 Optional accessories

Optional accessories can be ordered separately. More information on accessories can be found on our website www.eppendorf.com.

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Stacking kit

A stacking kit allows two devices to be stacked one on top of the other in a safe and stable manner. The stacking kit may only be installed by an authorized service technician.

Positioning base with storage space

The positioning base with storage space is used to position a single device at the ideal working height and to create space for other laboratory equipment. The base may only be installed by an authorized service technician.

Water tank holder

The water tank is accessibly positioned at the side of the device thanks to the water tank holder. It can also be used as a holding fixture for the humidity sensor dust cap and sub-platform tool.

3.5 Name plate

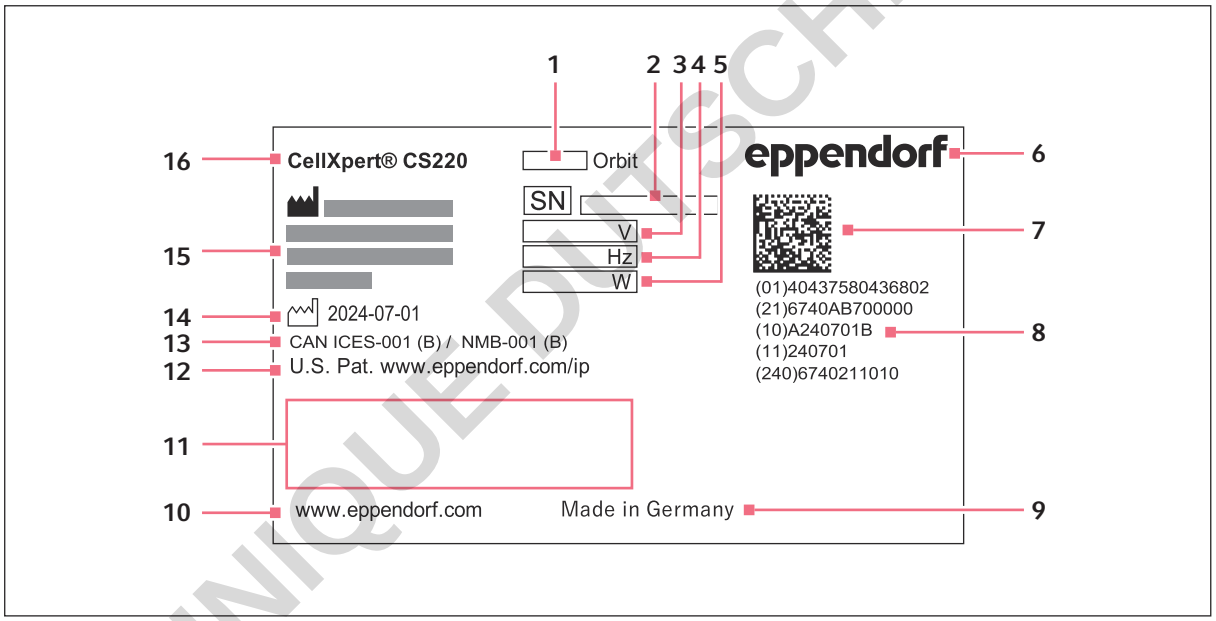


Fig. 3-5: Device identification (example)

1	Device variant	9	Designation of origin
2	Serial number	10	Manufacturer’s Internet address
3	Voltage	11	Regulatory symbols
4	Frequency	12	Patents
5	Power consumption	13	Additional regulatory information
6	Manufacturer	14	Date of manufacture
7	Data matrix code for serial number	15	Manufacturer's address

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8 Readable information of the data matrix code 16 Product name

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4 Functional description

4.1 Principle of application

To create optimum conditions for the cell culture in the workspace, the following application parameters can be configured on the device:

- Temperature
- Rotational speed
- CO_2 concentration
- Relative humidity

4.2 Safety features

Temperature limitation

In accordance with DIN EN 12880, the device switches off automatically at 10 K above or 5 K below the setpoint of a heat circuit.

Gas pressure limitation

At pressures above 1.8 bar (0.18 MPa), the gas supply inlet valve closes.

Drive limitation

If the device load is too high, the speed is automatically reduced. The drive of the device switches off when the door is opened.

Redundant door switch

The door switch comprises two mechanical door switches, which both need to be closed. This enables the system to recognize that the door is closed. If the rotation of the sample platform is not stopped beforehand at the touch display and the door is opened, the movement of the sample platform is braked and stopped. As soon as the door is closed again, movement of the sample platform resumes.

Door monitoring

If the door is opened during operation with the sample platform rotating, without stopping the shaking beforehand via the device software, a signal tone will sound and a message will appear on the display until the sample platform has come to a standstill.

Overcurrent shutdown and overspeed

The motor is switched off in the event of excessive output. This also prevents excessively high motor rotational speeds.

Imbalance cut-off

If vibrations are identified, the drive motor will be switched off.

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Mains/power outage

In the event of a mains/power outage, the hardware brake of the drive motor is activated and quickly brings the drive motor to a standstill.

Monitoring the fan of the power electronics

If the fan speed is too slow, this will lead to the drive motor being switched off.

Speed control

The speed control checks that the target speed set by the user is reached within one minute. If this is not the case, the drive motor switches off in order to prevent any damage to the drive.

Continuous slip testing

Slippage at the drive belt is monitored continuously. In the event of excessive slippage over a longer period of time, the drive motor switches off in order to prevent any damage to the drive.

4.3 Message concept

The device issues different types of messages:

- **Alarms**
  An alarm is triggered when a safety-relevant situation occurs. The user must immediately eliminate the cause of the alarm.
- **Warnings**
  A warning is triggered if a safety-relevant situation may occur. The user must observe the device.
- **Messages**
  The device issues a message when the time for a recurring task is reached.
- **Error messages**
  The device issues a error message when the software detects an error.

Optical and acoustic signals are defined for each message type.

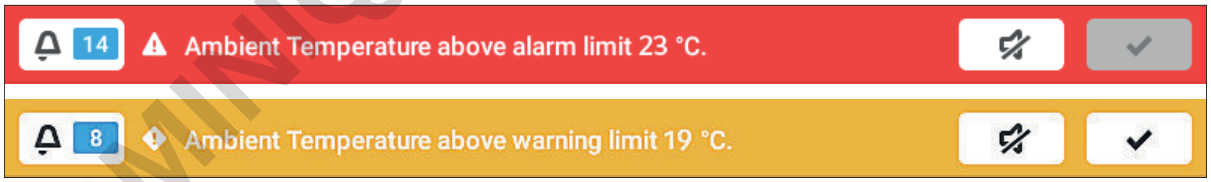


Fig. 4-1: Notification bar for alarm and warning (example)

The messages are shown in the notification bar. The color indicates the message type.

- Red corresponds to an alarm
- Yellow corresponds to a warning
- Green corresponds to a message

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4.4 Device-specific messages

Alarms

The device can generate the following alarms and forward them to a building management system (BMS):

- "Door alarm" is triggered if the outer door is left open for too long.
- "Interior temperature" is triggered if the alarm limit is exceeded or not reached.
- " CO_2 alarm" is triggered if the CO_2 concentration in the interior is exceeded or not reached.
- "Relative humidity alarm" is triggered if the humidity in the interior is exceeded or not reached.

4.5 VisioNize Lab Suite

VisioNize Lab Suite is a cloud-based platform.

To send, for example, performance data to the VisioNize Lab Suite, you can integrate the device into a local network via a standard SF/FTP, S/FTP, SF/UTP, or S/UTP Ethernet cable.

For more information, contact your local Eppendorf partner and refer to the VisioNize Lab Suite Setup Guide.

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5 Installation

The device may only be installed and put into operation by an authorized service technician.

5.1 Checking the delivery package

1. Check that the supplied components match the specifications of the delivery package.
2. If any parts are missing, contact your Eppendorf partner.

Table 1: Scope of delivery

Quantity	Description
1	Incubation shaker
1	Power cord
1	Dust cap for humidity sensor
1	Blind plug for access port
1	Air filter with length of tubing
1	Tubing with 10 mm outer diameter and 6.5 mm inner diameter with in-line gas filter, 3 m long
1	6.0 mm hex key for sub-platform
1	Plug for building management system
1	Download instructions
1	Information sheet "Information on performing a risk assessment for the operation of incubators with CO_2 and N_2"

5.2 Checking prerequisites

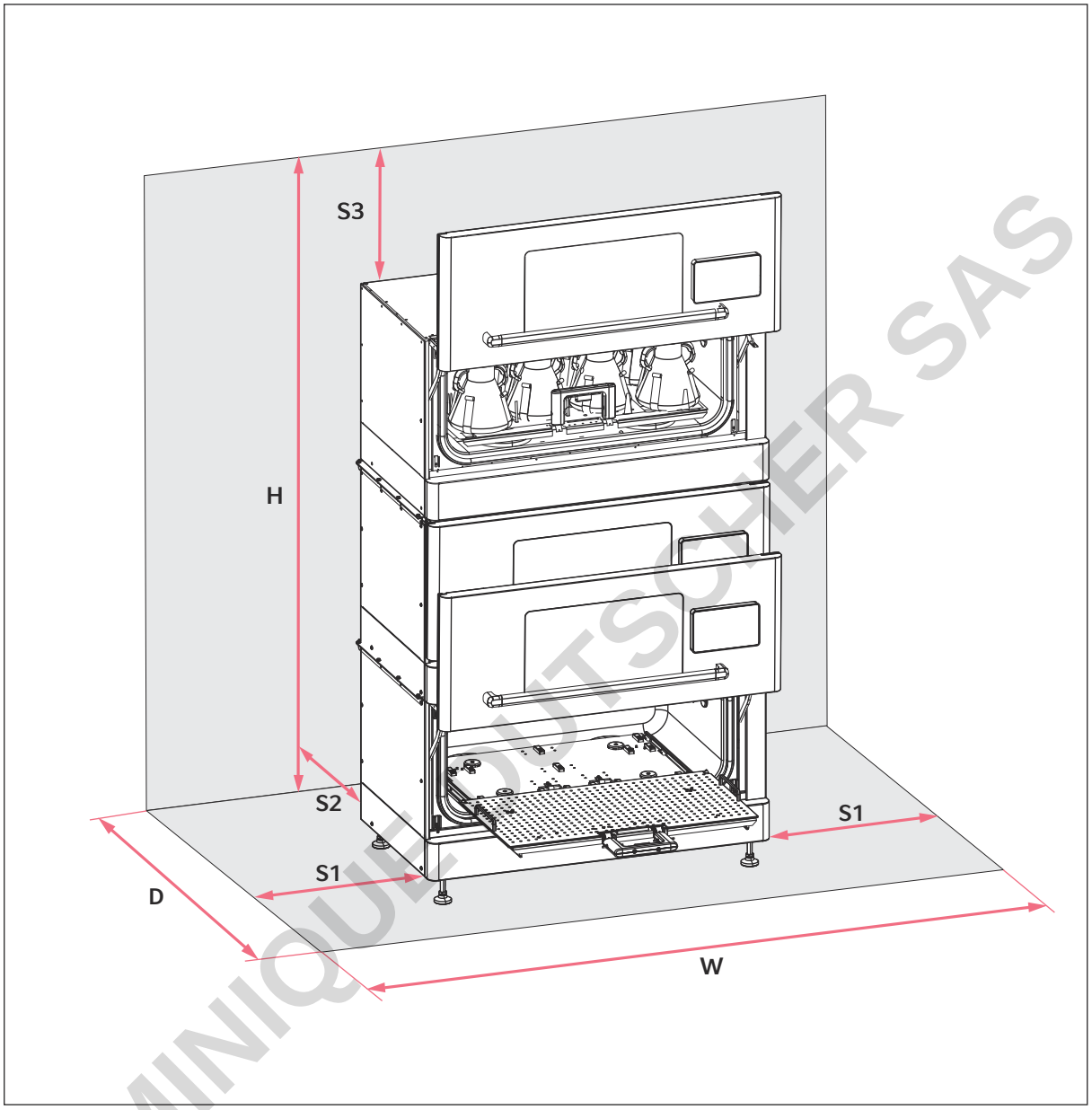
All prerequisites must be met before the device can be installed and put into operation.

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Checking the location

1. Check that the location meets the following requirements:
    - The ambient conditions correspond to the specifications in the Technical data chapter
    - Minimum distance to other devices and walls:
        - 20 cm on the left and right sides
        - 5 cm on top
        - 10 cm on the rear
    - Good ventilation
    - Sufficient air volume
    - Non-explosive environment
2. Check whether the location is protected from the following influences:
    - Heat sources
    - Cold sources
    - Sparks
    - Open flames
    - Direct exposure to sunlight
    - Air currents
    - UV radiation
    - Strong electromagnetic radiation

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Fig. 5-1: Three stacked devices with long device feet

W	167.7 cm	S1	20.0 cm
D	96.5 cm	S2	10.0 cm
H	255.4 cm	S3	47.0 cm

Checking the floor conditions

To prevent impaired function, set up the device at a safe distance from other particularly vibration-sensitive devices. When the device is set up on a floor, devices on adjacent ceiling panels may be affected.

1. Check with Building Management that the floor conditions meet the following requirements.
   - Setup on the foundation in the lowest building level (basement/cellar if present, ground floor otherwise):
     - For new buildings: solid reinforced concrete all the way through
     - In existing buildings with foundations: possibly only a poured foundation without reinforcement
   - Setup on a floor, e.g., 1st floor:
     - Static load-bearing capacity for a single device: 4 kN per m^2
     - Static load-bearing capacity for 2 stacked devices: 6 kN per m^2
     - Static load-bearing capacity for 3 stacked devices: 9 kN per m^2
     - Ceiling constructions that are as rigid as possible with the smallest possible spans
   - Setup directly on the building foundation or bare ceiling, if necessary on the bonded screed:
     - Do not use floor structures with soft intermediate layers such as floating screed and/or thermal insulation
     - Use hard, level and non-skid surfaces, no soft floor covering
2. To plan and implement more extensive structural measures, consult with the following:
   - Operations
   - Structural dynamics
   - Structural engineering, possible special building physics
   - Architecture
   - Building services
   - Geotechnics

No negative ceiling vibration is to be expected a natural ceiling frequencies > 18.75 Hz.

Checking the electrical connection

DANGER! Electric shock

If the PE conductor connection is missing, you may receive an electric shock. An electric shock causes cardiac injuries and respiratory paralysis.

– Make sure that the mains/power plug and earth/grounded socket match and that the electrical PE conductors of the device and the building installation are securely connected to each other.

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1. Check whether the electrical connection meets the following requirements:
   - The mains/power connection matches the details on the name plate.
   - An earth/grounded socket with a PE conductor is available.
   - The earth/grounded socket can be reached with the provided mains/power cord. Junction boxes or extension cables are not allowed.
   - A residual current circuit breaker is available and accessible.
   - The mains/power plug on the device or the earth/grounded socket is accessible at all times during operation so that the device can be properly disconnected from the mains/power line.

Checking the gas connection



WARNING! Personal injury

If the device is not connected correctly to the gas supply, increased levels of CO_2 can occur in the breathing air. This poses a risk of poisoning and suffocation.

– Make sure that gas tubing is only installed and connected by trained personnel.
– Ensure that the CO_2 concentration in the breathing air does not exceed permitted levels when working in the laboratory.



NOTICE! Damage to the device and accessories

Excessive pressure can cause the gas tubing or the in-line gas filter to burst or break.

– Make sure that the gas inlet pressure does not exceed 0.15 MPa (1.5 bar, 21.8 PSI).

1. Check that the gas connection meets the following requirements:
   - The main gas valve is easily accessible.
   - A large CO_2 cylinder with vapor recovery and a two-stage CO_2 pressure reducer to regulate the pressure between 0.05 MPa – 0.15 MPa (0.5 bar – 1.5 bar, 7.2 PSI – 21.8 PSI) are available.

Checking the water supply



NOTICE! Damage to device

If no ultrapure water is used in the water tank, the device can become damaged due to internal corrosion.

– Only use ultra-pure water with a conductivity of < 5 µS/cm in the water tank.

1. The water tank is positioned above the water inlet of the top device.
2. The max. volume of the water tank is 5 L.
3. The water tank contains sterile water only.

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6 Preparing the device for use

6.1 Switching on the device

Prerequisites:

- The device has been set up and connected by Eppendorf Service.
- The device has been allowed to acclimatize for at least 12 h.

1. Switch on the device using the mains/power switch. Leave the device switched on until the set chamber temperature and CO_2 concentration have been reached.

   The display lights up.

   The CO_2 sensor requires 30 min for initialization after the device has been switched on. No process value is displayed during the initialization phase.

2. Leave the device switched on for at least 2 h for the conditions to stabilize.

   The pump for setting the relative humidity works at an increased rate for the first water supply of the device.

6.2 Preparing the sample platform

Installing the flask clamps

NOTICE! Damage to device

If you do not use the screws listed below, the screws may protrude at the bottom of the sample platform and damage the sub-platform of the device.

– Do not use any other screws than those listed below to attach the accessories to the sample platform.

Tool:

- Cross-head screwdriver PH 2

Material:

- M4x7 Phillips screws with countersunk heads

Prerequisites:

- A sample platform is available.

1. Place the flask clamp on the sample platform so that its mounting holes are aligned with the holes in the sample platform.
2. Secure the flask clamp with the specified screws.

Only use the screws supplied with the sample platform for test tube racks and microplate holders.

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Using the sticky pads

Prerequisites:

- A sample platform is available.

1. Remove the protective foil from the bottom of the sticky pad.
2. Apply the sticky pad evenly on the surface of the sample platform.
3. To change the position, pull the sticky pad off of the sample platform and apply it again.
4. Ensure that the vessel adheres properly to the sticky pad.

6.3 Configuring the network

Configuring the network automatically

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Settings* > *System Settings* > *Network*.
2. Activate the function *Enable DHCP*.

   The device will automatically connect to the network.

   If the device is integrated in the network, its IP address will appear in the field *IP Addresses*.

Configuring the network manually

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Settings* > *System Settings* > *Network*.
2. Disable the function *Enable DHCP*.

   The field *Manual Setup* is enabled.
3. Tap on *Manual Setup*.
4. Enter the parameters.
5. Confirm the parameters.

   The entries are saved. The device connects to the network.

   When the device is integrated in the network, its IP address will appear in the field *IP Addresses*.

6.4 Registering the device for VisioNize

You can connect the device to the VisioNize Lab Suite for remote monitoring and alarm notifications.

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Prerequisites:

- Use the following required network components:
  - DNS server
  - NTP server
- Use an automated NTP time server protocol to ensure smooth data transfer between your laboratory devices and the software.
- To enable communication between your lab devices and the cloud-based VisioNize Lab Suite services, define the following exceptions for the firewall settings:
  - URL: *.eppendorf.com
  - Interface: 443 TCP
  - Protocol: MQTT via web sockets
- The Eppendorf device that you want to connect is ready for operation.
- The latest device software version is installed on the Eppendorf device.
- You are logged in to the VisioNize Lab Suite as an administrator.

1. Use a standard Ethernet cable to connect the device with your local network.
2. Check whether the device is connected to the Internet and the VisioNize Lab Suite cloud servers by tapping on *Menu* > *Contacts & Supports* > *Diagnostics* > *Check Cloud Connectivity Prerequisites* on the device's touch screen.

   As soon as the device is connected to the Internet and the VisioNize Lab Suite cloud servers the top menu ribbon of the touch screen will display a cloud symbol.

   If the cloud symbol is crossed out although all prerequisites are fulfilled and an Internet connection has been established, please contact your local Eppendorf partner.

3. Click on *Device Management* in the VisioNize Lab Suite.
4. Click on *Add Device* +.
5. Click on *A VisioNize Touch Enabled Device*.
6. Enter the serial number of the device which you want to connect.

   You will find the serial number on the device's name plate on the rear of the device.

   The *Next Step* button is enabled.
7. Click on *Next Step*.
8. To send a registration request for the device, click on *Submit*.

   You must send an individual registration request for each VisioNize touch enabled device that you want to register. This request can only be accepted or rejected by an administrator. If you have entered the wrong serial number, the registration request cannot be accepted.

   The registration request is displayed in the *Requests* tab in the top left corner.
9. Click on the *Requests* tab.

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10. Select the device from the list of registration requests.
11. Click on *Accept Device* to accept the registration request.

The device data are only documented after the registration request was accepted successfully.

The device is added to the device list in the *Device* tab.

The device is added to the *Monitoring* device list.

6.5 Setting the date and time

If the date, time or time zone is changed, the display of the *Charts* function may be temporarily impaired. The *Events* function sorting may be incorrect.

If a connection to the VisioNize Lab Suite exists, use the automatic date and time setting function to prevent deviations.

Setting the date and time automatically

Prerequisites:
- The device is connected to the network and to a time server.
- You have administrator rights.

1. Tap on *Menu* > *Settings* > *System Settings* > *Date & Time*.
2. Activate the function *Automatic date & time*.
3. Tap on *Select time zone*.
4. Select the continent.
5. Select the time zone.

   The entries are saved.

Setting the date and time manually

Prerequisites:
- You have administrator rights.

1. Tap on *Menu* > *Settings* > *System Settings* > *Date & Time*.
2. Disable the function *Automatic date & time*.

   The *Set date* and *Set time* fields are enabled.
3. Tap on *Set date*.
4. Set the current date and confirm your entry.
5. Tap on *Set time*.
6. Set the current time and confirm your entry.

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7. Tap on *Select time zone*.
8. Select the continent.
9. Select the time zone.

   The entries are saved.

6.6 Entering device parameters

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Settings* > *About this CellXpert CS220*.
2. Enter the device-specific parameters.

6.7 Configuring signal tones

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Settings* > *Device Settings* > *Acoustic Signals*.
2. To activate the signal tones without an interface signal (door alarm), tap on *Alarms*.
3. To activate the signal tones with an interface signal (door alarm), tap on *Alarms and Interface*.
4. Check the signal tones by tapping on *Test*.

6.8 Configuring the touch screen

Adjusting brightness, power saving mode and screensaver

1. Tap on *Menu* > *Settings* > *Device Settings* > *Display Settings*.
2. Tap on *Display brightness*.
3. Adjust to the required brightness.
4. Activate the *Energy save mode* function to save energy.
5. Tap on *Display timeout*.
6. Select the time after which the display will be dimmed.

6.9 Changing the function areas of the touch screens

The home screen shows the most important information for the different functions. You can select the function areas to be displayed:

- Temperature
- Velocity
- CO_2 concentration

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- Relative humidity
- Timer function for velocity

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Settings* > *Device Settings* > *Home Screen Configuration*.
2. To display a function area on the home screen, use the slider to activate the corresponding function area.
3. To hide a function area on the home screen, use the slider to deactivate the corresponding function area.
4. To adjust the order of the function areas on the home screen, hold and move the function areas with the arrow keys.



The order of the function areas also determines which graphs are displayed in the chart area.

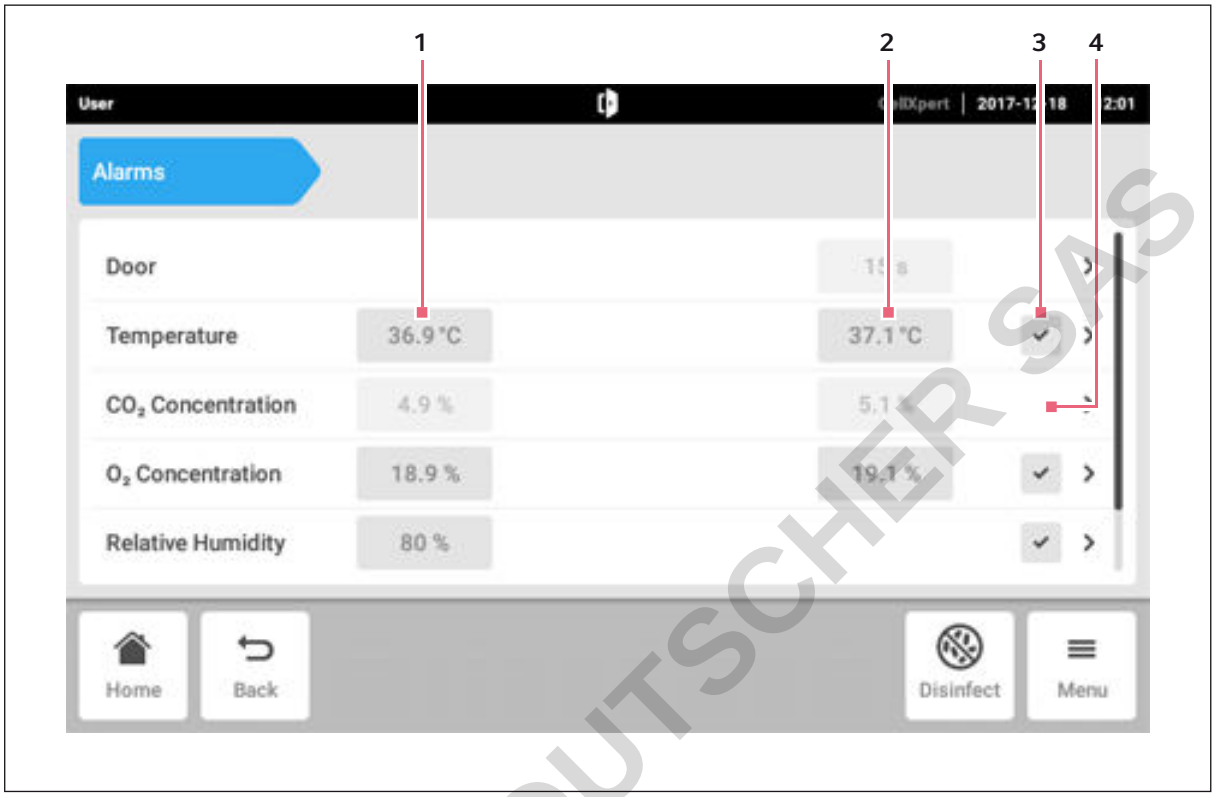
6.10 Setting alarm limits

An alarm message appears in the notification bar if a value is outside of a specified setpoint range. The alarm remains active until the value returns to inside the defined alarm limits. The alarm system is deactivated for a defined time period so that no unnecessary alarms are generated after:

- switching on the device
- changing a setpoint
- closing the door
- high-temperature disinfection

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Accessing the alarm overview



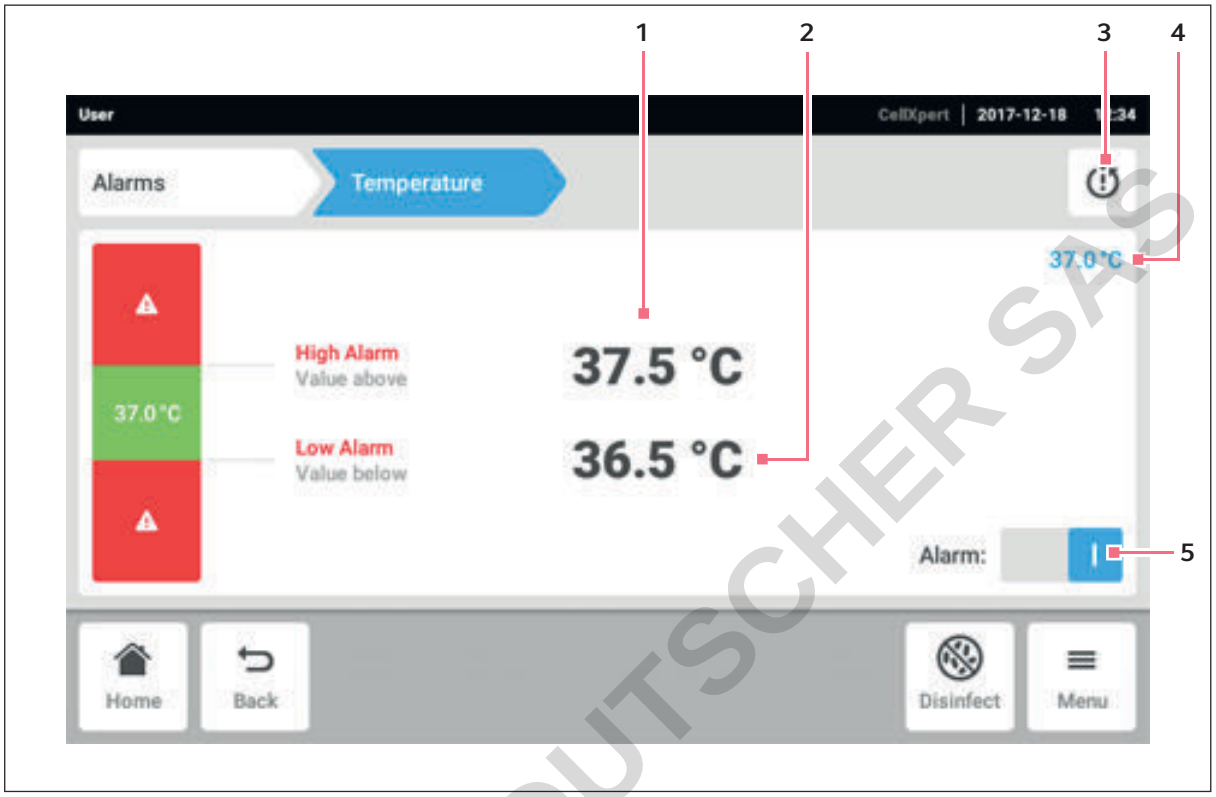
1 Lower alarm limit
2 Upper alarm limit
3 Alarm enabled (temperature)
4 Alarm disabled (CO_2)

1. Tap on *Menu* > *Alarms*.

   When an alarm is active, the exceeded alarm limit is highlighted in red.

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Setting alarms and alarm limits



1 Upper alarm limit
2 Lower alarm limit
3 Factory settings
4 Actual-value
5 Alarm activation/deactivation

Upon delivery, the factory-set alarm limits are as follows:

- Temperature: ±0.5 K
- CO_2: ±0.5 %
- Humidity: lower alarm limit 80 %, upper alarm limit 93 %
- Door: 30 s

1. Tap on *Menu* > *Alarms*.
2. To access the alarm, tap on the corresponding line.

   The alarm settings window opens.
3. Tap on the value to be changed.

   The number pad appears.

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4. Enter the desired value.

   When a setpoint is changed, the alarm limits are changed relative to it. Alarm limits can set closer to the setpoint. Alarm messages will then occur more frequently.

5. Confirm the entry.

   The entered alarm limit appears on the display.

6.11 Deactivating alarms

Deactivating the "Door" alarm

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Alarms* > *Door*.
2. Deactivate the alarm with the slider.

Deactivating the "Temperature in the interior" alarm

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Alarms* > *Temperature*.
2. Deactivate the alarm with the slider.

Deactivating the "Rotational speed" alarm

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Alarms* > *Speed*.
2. Deactivate the alarm with the slider.

Deactivating the "CO_2 concentration" alarm

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Alarms* > *CO_2-Concentration*.
2. Deactivate the alarm with the slider.

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Deactivating the "Humidity" alarm

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Alarms* > *Relative Humidity*.
2. Deactivate the alarm with the slider.

6.12 Setting the chamber light

1. Tap on *Settings* > *Device Settings* > *Chamber Light*.
2. Tap on a setting:
   - *Off*: The chamber light is always switched off. The light key is not displayed on the home screen.
   - *Auto*: The chamber light goes out 15 s seconds after the door is closed and after the light key on the home screen has been pressed.
   - *On*: The chamber light is always switched on. The light key is displayed on the home screen.

6.13 Setting gas pressure monitoring

Without low pressure monitoring, error messages may be generated for the gas concentration as the device might be operating below the specified conditions of between 0.05 MPa – 0.15 MPa.

When gas pressure monitoring is activated, an alarm is triggered if the gas pressure drops too much.

1. Tap on *Settings* > *Device Settings* > *Gas System*.
2. Tap on the switch to activate or deactivate gas pressure monitoring.

6.14 Connecting the water supply package

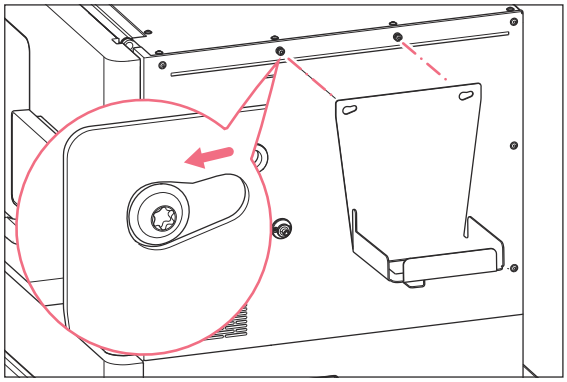
Checking prerequisites

1. Make sure that the following requirements are met:
   - The device has been properly installed or stacked at the location.
   - The water tank is positioned above the water inlet of the top device in the stack.

Assembling the water tank holder (optional)

The water tank holder is not included in the delivery package and can be ordered as an option.

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1. Hang the water tank holder on the screws with the spacers on the right outer housing plate of the top device in the stack.
2. Secure the water tank holder to the device by pushing it to the side until the screws click into place.

Filling the water tank

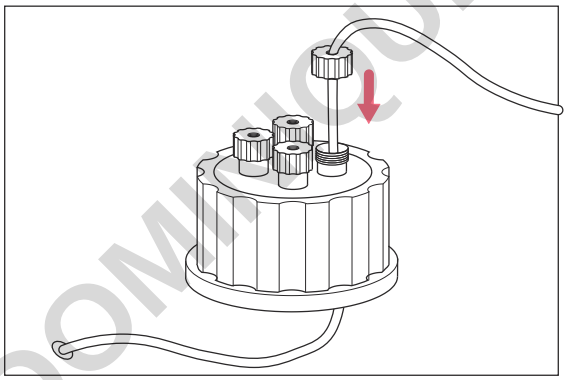
NOTICE! Damage to device

If no ultrapure water is used in the water tank, the device can become damaged due to internal corrosion.

– Only use ultra-pure water with a conductivity of < 5 µS/cm in the water tank.

1. Remove the lid from the water tank.
2. Fill the water tank with suitable water.
3. Close the water tank with the hose distributor.
4. Place the water tank in the water tank holder, if available.

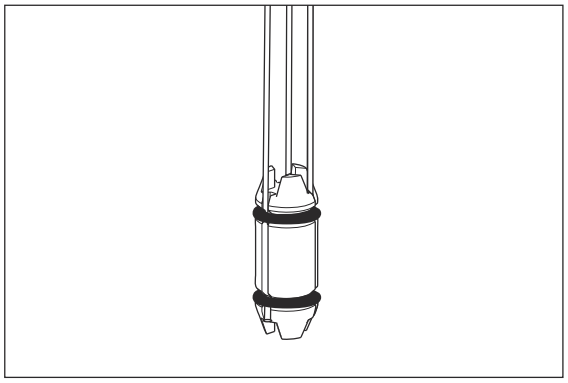
Preparing the hose distributor



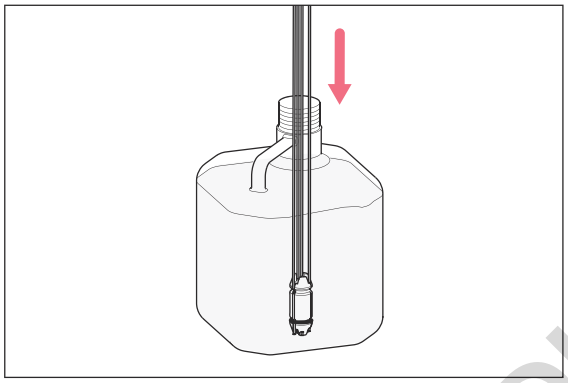
1. Unscrew the hose distributor from the water tank.
2. Depending on the number of water hoses, unscrew one or more caps from the hose distributor.
3. Insert a sealing washer with a small diameter into each of the unscrewed caps.
4. Pull one water hose each through the caps with the sealing washer.

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Using the hose weight

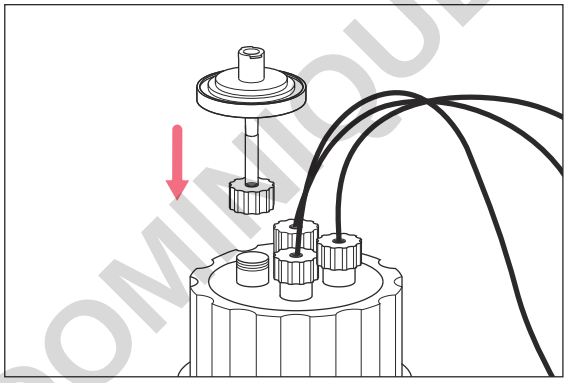


1. Place the water hoses into the grooves of the hose weight.
2. To secure the water hoses, pull both o-rings over the hose weight.



3. Hang the water hoses with hose weight in the water tank.
4. Ensure that the water hoses reach the bottom of the water tank.
5. Screw the hose distributor onto the water tank.

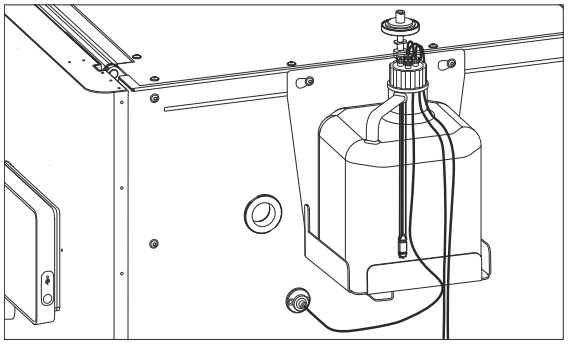
Inserting the air filter



1. Remove a cap from the hose distributor.
2. Screw the air filter onto the hose distributor.

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Assembling the water filter



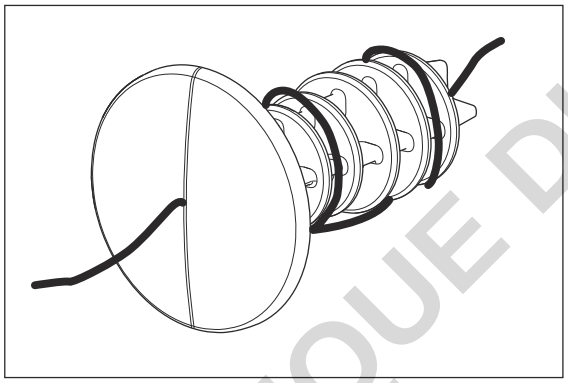
1. Screw the water filter into the water connection of the device.
2. Screw a water hose into the water filter of each device.
3. Make sure that all water hoses are properly and tightly connected to the devices.

6.15 Using the access port

It is possible to insert a component (e.g., sensor) into the chamber via the access port.

Prerequisites:

- The access port is sealed from the inside with a blind plug.
- The assembly (e.g., sensor) is not larger than the inner diameter of the access port of 30 mm.



1. Remove the blind plug.
2. Pull the cable of the assembly through the open access port.
3. To ensure optimum gas tightness, make a cut into the blind plug cover.
4. Wrap the cable of the assembly around the blind plug.
5. Re-insert the blind plug.

   Make sure that the blind plug is firmly seated and flush with the side panel.

   Make sure that the access port is clean and dry before the blind plug is re-inserted.
6. Guide the end of the cable up onto the device.

6.16 Connecting the device to the building management system

The owner is responsible for connecting the plug to the building management system.

The device has an interface to a building management system. A plug for the interface to the building management system is included in the delivery.

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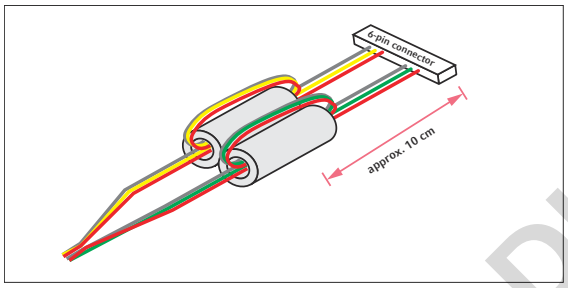
An alarm is forwarded to the building management system in the following cases:

- The interior temperature is too high
- The interior temperature is too low
- In the event of a mains/power outage
- CO_2 too high or too low
- Error and warning messages

Channel	Factory-set alarms
Channel 1 (relay 1)	Temperature alarm
Channel 2 (relay 2)	CO_2 alarm

Prerequisites:

- Unshielded single harness or multi-core harness
  - Cross section 0.08 mm^2 – 1.5 mm^2
  - Maximum length 30 m



1. Connect the cable harness to the device and the building management system.
2. Attach the ferrite core at a distance of 10 cm from the plug.
3. Ensure that the cable is looped around the ferrite core.

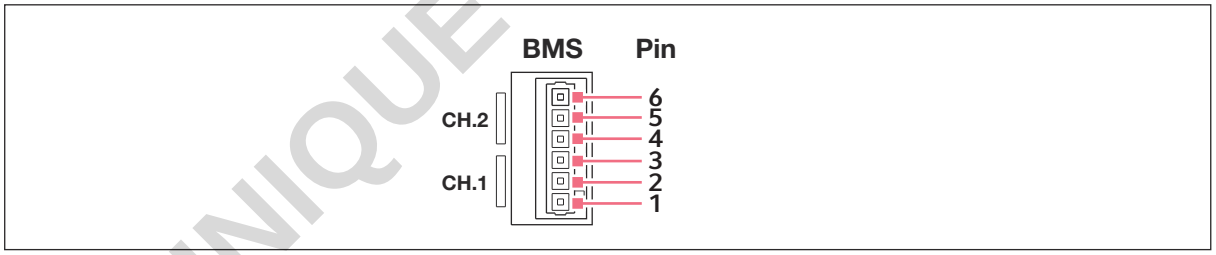


Fig. 6-1: Connection to building management system

1	Channel 1 common contact	4	Channel 2 common contact
2	Channel 1 normally closed	5	Channel 2 normally closed
3	Channel 1 normally open	6	Channel 2 normally open

The relay may not be operated with more than 2 A and 30 V.

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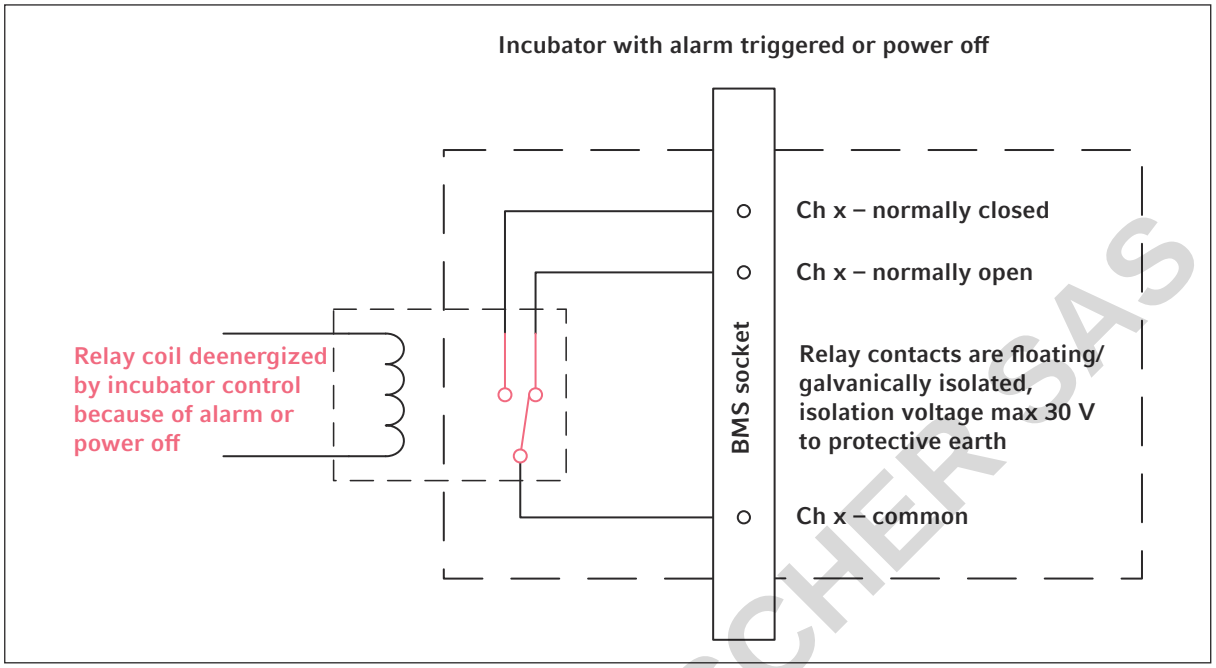


Fig. 6-2: Device operation with alarm

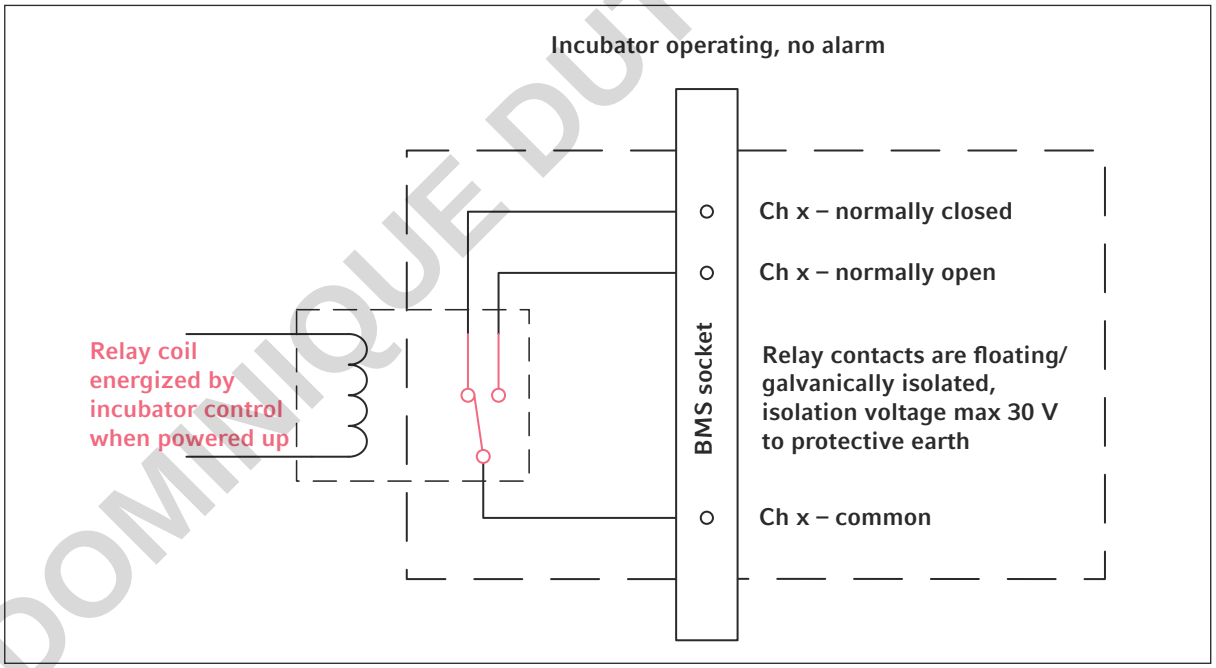


Fig. 6-3: Device operation without alarm

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7 User management

7.1 User administration concept

User management is used to organize the access to the device.

3 user roles have been defined:

- Administrator
- User with standard rights
- User with restricted rights

If user management has not been set up, all users have the same rights as an administrator. The first user account that is created will automatically be the administrator account.

7.2 Roles and rights

Tasks	***Administrator***	***User***	***Restricted User***
Changing parameters	×	×	–
Changing alarm limits	×	–	–
Changing settings	×	–	–
Changing relay settings	×	–	–
Changing the alarm volume	×	×	–
Changing the configuration of the home screen	×	×	–
Changing your own PIN/password	×	×	×
Changing the user name	×	–	–
Changing user rights	×	–	–
Acknowledging alarms	×	×	–
Acknowledging errors	×	–	–
Acknowledging warnings	×	×	×
Staring high-temperature decontamination	×	×	–
Starting a performance check	×	–	–
Starting a relay function	×	–	–
Exporting the event log	×	×	×
Exporting charts	×	×	×
Login/logout	×	×	×
Viewing administrator settings	×	×	×
Viewing user settings	×	×	×

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Tasks	*Administrator*	*User*	*Restricted User*
Viewing device information	×	×	×
Configuring network settings	×	–	–
Creating a user account	×	–	–
Resetting the user password	×	–	–
Deleting a user account	×	–	–

7.3 Setting up user management

To set up user management, you need to create an administrator account.

Creating an administrator account

If the administrator's credentials are lost, it is no longer possible to make any changes to the user administration and system settings.In this case, an authorized service engineer must reset the factory default settings on the device.All user accounts as well as all data and settings stored on the device will be deleted.

- Keep the user ID and the administrator password in a safe location.
- Create a second user account with administrator rights.

1. Tap on *Menu* > *Settings* > *User Management*.
2. Activate *User Management*.
3. Select whether users log in with a password or a PIN.
4. Tap on *Continue*.
5. Enter the user name for the administrator.
6. Tap on *Continue*.
7. Enter the password or the PIN. Repeat the entry.
8. Tap on *Confirm*.

   The user account for the administrator has been created.

   User management is now active and can be edited.

   Login data is displayed.
9. Note down the login data for the administrator account.

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7.4 Editing the user management

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Settings* > *User Management*.
2. Define the user management settings:
   - *User Management*: Enable or disable the user management.
   - *Automatic Logout*: Time after which an inactive user will be logged out automatically.
   - *Login Mode*: Login via password or PIN.
   - *Grant all users extra privileges*: If this function is enabled, no login is required and all users of the device have the rights of the selected user role.Even users who are not registered in the user administration can operate the device with the rights that were set.

7.5 Disabling the user management

Disabling the user management will delete all user accounts.

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Settings* > *User Management*.
2. Disable the user management.
3. Tap on *Continue*.
4. Enter the password or the PIN.
5. Tap on *Confirm*.

   The user management is disabled.

7.6 Creating a user account

You can create 999 user accounts.

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Users*.

   The overview of user accounts appears.
2. Tap on *Add User*.

   The *New User Credentials* window appears.
3. Enter the name of the new user in the *Enter user name* field and confirm the entry.
4. Assign either the password or the four-digit PIN for the new user. Repeat the entry to confirm.
5. Tap on *Continue*.

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6. Select the desired user group from the *Select role* drop-down menu.

   User name, user ID and role are displayed.

   The new user is assigned to the selected user group.

7. Write down or export the user data you just created.

7.7 Editing a user account

Editing your own user account

Prerequisites:

- A user is logged in.

1. Tap on *Menu* > *Users*.
2. Select your user account.
3. Edit the required user data.

Editing user accounts as administrator

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Users*.
2. Select a user account.
3. Tap on the corresponding field to change the data.

   You can change the entries in the following fields:

   - *Full Name*
   - *E-mail*
   - *User ID*
   - *Role*

7.8 Deleting a user account

It is not possible to delete the last remaining user account of the user group Administrator.

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Users*.
2. Highlight the user account you wish to delete.
3. Tap on the recycling bin symbol and confirm your selection.

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7.9 Logging in as a User

If you are logging in for the first time or have received a new password, change the old password.

Prerequisites:

- User management has been enabled.
- The user accounts have been created.

1. Tap on *Login*.
2. Enter your login details.

7.10 Editing password or PIN

Changing the password or PIN

Prerequisites:

- A user is logged in.

1. Tap on *Menu* > *Users*.
2. Select your user account.
3. Tap on *Change Password/PIN*.
4. Enter the current password in the *Enter current password/PIN* field.
5. Enter the new password in the *Enter new password/PIN* field.
6. Repeat the entry in the *Repeat new password/PIN* field.
7. Confirm the entry.

Resetting the password or PIN

If a user has forgotten his or her password, the administrator can generate a new password.

Prerequisites:

- You have administrator rights.

1. Tap on *Menu* > *Users*.
2. Select a user account.
3. Tap on *Reset password/PIN*.
4. Tap on *Reset*.

   The new password or PIN is generated and displayed automatically.

7.11 Logging off as a user

Prerequisites:

- You are logged in as a user.

1. Tap on *Logout*.

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8 Operation

8.1 Opening the door



CAUTION! Personal injury

If the spring force of the door springs decreases, the door may fall down and cause injury.

– Have the door springs replaced by an authorized service technician according to the specified service interval.



CAUTION! Crushing injuries to hands

There is a risk of crushing your hands and fingers when opening and closing the door.

– Always open and close the door fully using the door handle.
– Do not reach between the housing and the door.
– Do not reach into the door locking mechanism.

Prerequisites:

- The application has been stopped.

1. Pull the door handle.
2. Push the door up until it engages in the open position.

   The "Door open" symbol is displayed.

   The device stops operating.

8.2 Closing the door



CAUTION! Crushing injuries to hands

There is a risk of crushing your hands and fingers when opening and closing the door.

– Always open and close the door fully using the door handle.
– Do not reach between the housing and the door.
– Do not reach into the door locking mechanism.

If the application was not stopped before the door was opened, the device drive will start again after the door is closed.

1. Push the door down until it engages.

   The "Door closed" symbol is displayed.

   The device will continue operating with the previously entered values if the application was not stopped before.

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8.3 Loading the device

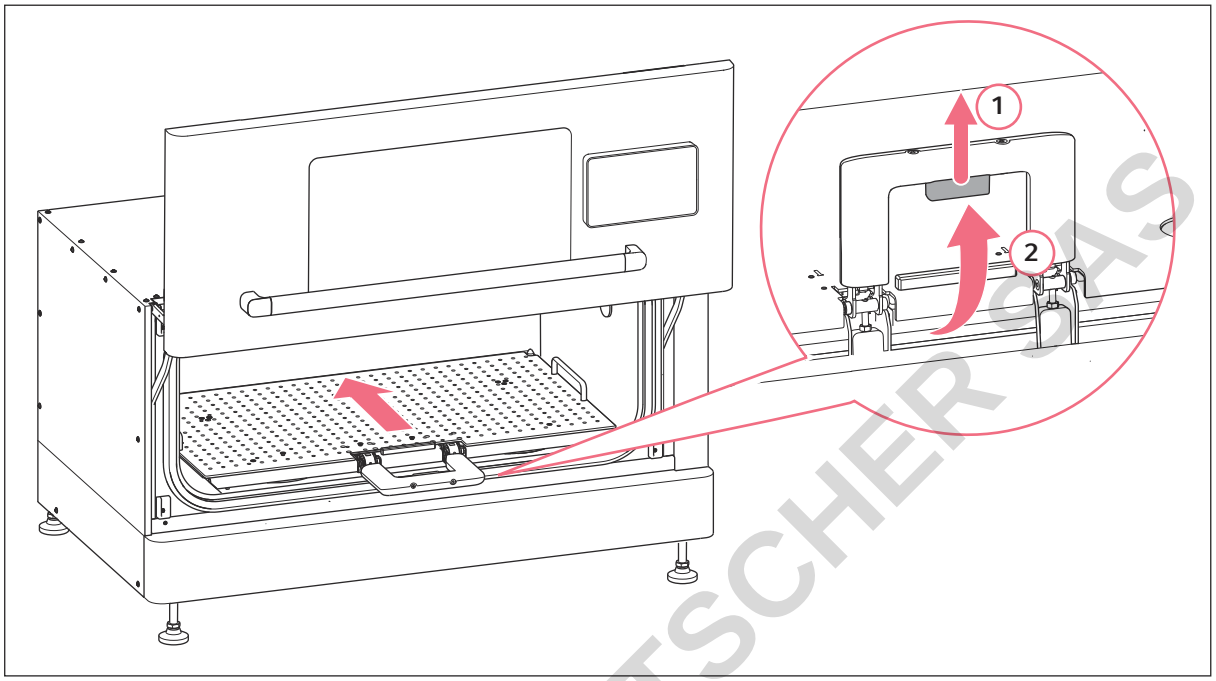


Fig. 8-1: Locking the sample platform

CAUTION! Personal injury

Improperly secured sample tubes on the sample platform can cause injuries or material damage.

- Before operating the device, make sure that the sample tubes (particularly those made from glass) are properly secured and do not protrude beyond the edge of the sample platform.
- Make sure that the sample platform is locked before closing the door. The handle must be folded up.

Prerequisites:

- The sample platform is installed on the sub-platform.

1. To unlock the sample platform, keep the button at the handle pressed and fold the handle down.
2. Pull out the sample platform.
3. Only load the sample platform on the extension tray. Secure the tubes using the flask clamps or sticky pads.
4. Slide the sample platform back into the device as far as it will go.
5. To lock the sample platform, keep the button at the handle pressed and fold the handle up.

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8.4 Starting the application

After a power outage, all software settings are retained and the device drive starts up again.

DANGER! Electric shock

In the event of a technical defect, condensation water may form between the door panes and get near live parts. If you continue to operate the device, you may suffer an electric shock. Electric shocks cause heart injury and respiratory paralysis.

– Switch off the device immediately.
– Unplug the power plug from the power socket.
– Have the device repaired by an Eppendorf service technician.

Prerequisites:

- The device is loaded and the door is closed.

1. Make sure that all parameters for the application are set correctly.

   Make changes if necessary.

2. Tap on *Start* in the toolbar.

   The device starts the application with the set parameters:

   - Temperature
   - Speed
   - CO_2 concentration
   - Relative humidity

8.5 Stopping the application

Prerequisites:

- The door is closed.

1. Tap on *Stop* in the toolbar.

   The device stops the application with the set parameters:

   - Temperature
   - Speed
   - CO_2 concentration
   - Relative humidity

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8.6 Administration of programs

8.6.1 Creating a program

Creating a program

1. Tap on *Menu* > *Programs*.
2. Tap on the + symbol.

   The Program Editor opens.

Duplicating the program

1. Tap on *Menu* > *Programs*.
2. Tap on the program you want to duplicate.
3. Tap on the ... symbol.

   A query window opens.
4. Tap on *Duplicate*.

   The duplicated program is displayed in the Program Editor.

8.6.2 Editing programs

Selecting a program

1. Tap on the program you want to edit.
2. Tap on the pen symbol.

Editing program settings

1. To edit global settings, tap on an element.
   - Name of the program (editable)
   - Duration
   - Status (editable)
   - Number of steps
   - Loop options (editable)

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Inserting program steps

1. To add a new program step at the end of the sequence, tap on the + symbol.
2. To insert a program step between two existing steps, tap on a program step.

   The editing options are displayed.
3. Tap on one of the buttons:
   - Insert on the left
   - Insert on the right
   - Move step to the left
   - Move step to the right

Editing program steps

1. Tap on a program step.

   The editing options are displayed.
2. Tap on the pen symbol.
3. To adjust the values, tap on a parameter.

Deleting program steps

1. Tap on a program step.

   The editing options are displayed on the right-hand side.
2. Tap on the recycling bin symbol.

8.6.3 Deleting a program

1. Tap on *Menu* > *Programs*.
2. Tap on the program you want to delete.
3. Tap on the ... symbol.

   A query window opens.
4. Tap on *Delete* and confirm.



You can select and delete several programs together.

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8.7 Starting a program

Prerequisites:

- The device is loaded and the door is closed.

1. Tap on *Menu* > *Programs*.

   The device displays the available programs.

2. To select a program, tap on a program.
3. Tap on *Start Program*.
4. Edit or adopt the details in the *Run identification* edit box.
5. Tap on *Confirm*.

   The program starts.

8.8 Locking and unlocking the touch screen

You can lock the touch screen to prevent any unwanted changes during operation.

Locking the touch screen manually

1. Tap on *Menu* > *Screen Lock*.

   There is a black border around the touch screen.

Unlocking the touch screen manually

1. Tap on the *Unlock Screen* button and keep it pressed until the touch screen is unlocked.

Automatically locking and unlocking the touch screen



1. Tap on *Menu* > *Settings* > *Device Settings* > *Screen Lock*.
2. Tap on the slider to activate or deactivate *Automatic Screen Lock*.
3. When you have activated *Automatic Screen Lock*, set the time after which the *screen lock* will be activated.
4. Tap on *Set Timer* and select the desired time.

8.9 Accessing *Events*

The event log stores a maximum of 100 000 user-specific and device-specific events. If there are more than 100 000 entries, the oldest entries are overwritten.

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Accessing the details of an entry

1. Tap on *Menu* > *Events*.
2. Tap on an entry.

   The details of the entry are displayed.

Filtering *Events*

1. Tap on *Menu* > *Events*.
2. Tap on the filter symbol.
3. Select the required filter.

To deactivate all filters, tap on *Reset Filters*.

8.10 Editing *charts*

In the charts, you can assign different functions to the two y-axes as required. The x-axis only displays the time.

Selecting *Y-Achsen* functions

1. Tap on *Menu* > *Charts*.
2. Tap on the symbol next to the y-axes.

   A selection window appears on the touch screen.
3. To assign a function to the left y-axis, tap on the top row in the selection window.

   A selection window appears on the touch screen.
4. Select the desired y-axis function.
5. To select the function for the right y-axis, tap on the bottom row.

   A selection window appears on the touch screen.
6. Select the desired y-axis function.
7. Confirm the entry.

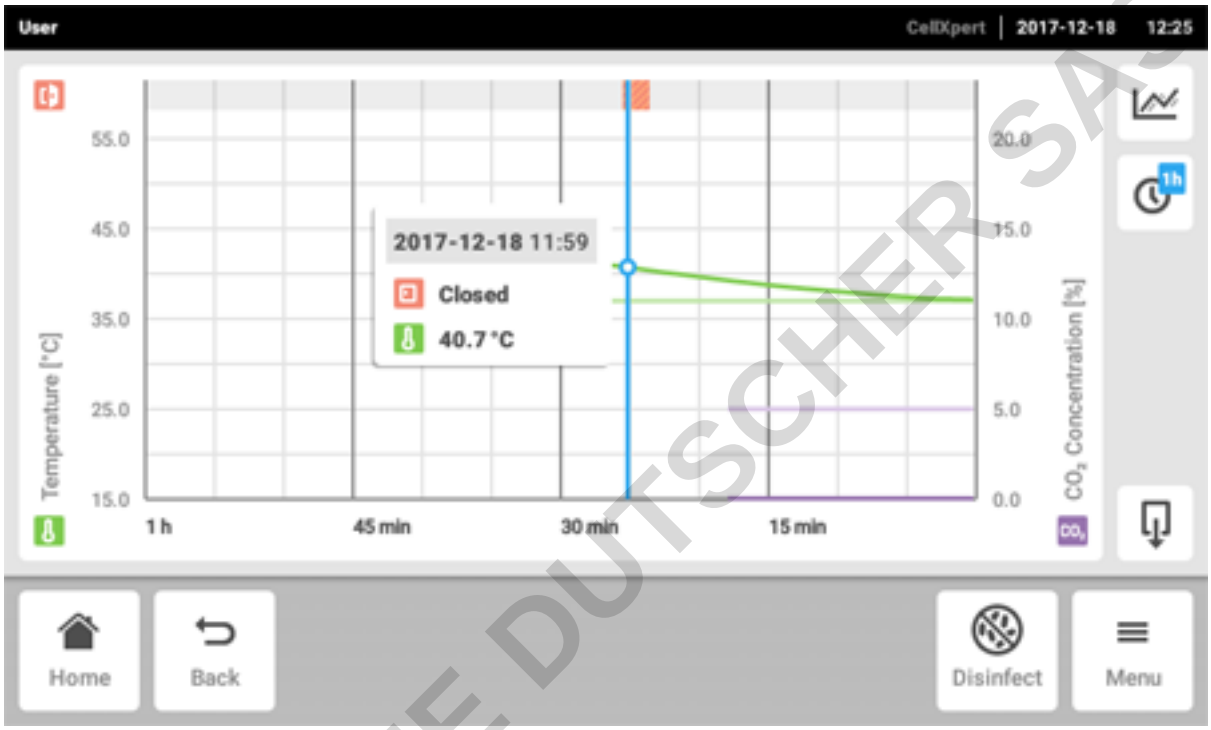
Selecting the time span for the y-axis function

The program measures the data of a function every 10 s. If you select a larger time span, the resolution of the displayed data changes.

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1. Tap on *Menu* > *Charts*.
2. Tap on the symbol next to the x-axis.
3. Select the time span.

Displaying measured values from the charts



1. Tap on *Menu* > *Charts*.
2. Tap on a point in the chart to display numeric values.

   The measured values of the functions are displayed in a separate window.

8.11 Opening logs

The device saves 1000 program runs. If there are more than 1000 program runs, the oldest data will be overwritten.

Entering the company name for *Operation Records*

You can enter the name of your company to appear on all the logs that are to be exported.

1. Tap on *Menu* > *Settings* > *Device Settings* > *Operation Records Settings*.
2. Enter a company name.

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Creating *Operation Records*

1. Tap on *Menu* > *Operation Records*.
2. Enter the name of the experiment.
3. Enter the start date.
4. Enter the end date.
5. Confirm the entry by tapping on *Confirm*.

Accessing *Operation Records*

1. Tap on *Menu* > *Operation Records*.
2. Tap on an entry.

   The following entry details are displayed which can also be exported:
   - *Result*: result of *Successfully Created*, *Record contains warnings*, *Record contains alarm* or *Record contains error*
   - *Initial Parameters*: set temperature, CO_2 concentration including alarm limit and alarm limit of relative humidity
   - *Time Span*: start and end times
   - *Event*: event information
   - *System*: system information

Filtering *Operation Records*

1. Tap on *Menu* > *Operation Records*.
2. Tap on the filter symbol.
3. Select the required filter.



To deactivate all filters, tap on *Reset Filters*.

8.12 Exporting data

You can export *Charts*, *Events*, *Operation Records* and system information as an Excel file onto a USB stick.

1. Connect a USB storage medium.
2. Tap on *Menu* > *Export*.
3. Select which data is to be exported.
4. Tap on *Export*.
5. Confirm the export.

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9 Maintenance

9.1 Maintenance plan

Interval	Maintenance work
As required	*Chapter 9.2.7 "Carrying out a performance check" on page 64*
	Chapter 9.3.1 "Cleaning the device on the outside" on page 67
	Chapter 9.3.2 "Cleaning the inside of the device" on page 68
	Chapter 9.3.3 "Cleaning the touch screen" on page 69
	Chapter 9.4.3 "Carrying out a wipe disinfection" on page 71
	Chapter 9.4.4 "Performing high-temperature disinfection" on page 73
Daily	*Chapter 9.2.2 "Checking the device for damage" on page 62*
	Chapter 9.2.3 "Checking the gas supply" on page 62
Weekly	*Chapter 9.3.4 "Change water in the water tank" on page 69*
Monthly	*Chapter 9.4.1 "Disinfecting the water tube with tube weight" on page 69*
	Chapter 9.4.2 "Disinfecting the water tank" on page 70
Yearly	*Chapter 9.2.4 "Replacing the device filter" on page 63*
	Chapter 9.2.5 "Replacing the water supply filter" on page 63

9.2 Maintenance

Eppendorf SE recommends having your device inspected and maintained at regular intervals by trained and skilled personnel.

Eppendorf SE offers customized service solutions for preventive maintenance, qualification and calibration of your device. For information, offers and contact options, visit our website www.eppendorf.com/epservices.

9.2.1 Managing recurring tasks

Adding a recurring task

1. Tap on *Menu* > *Settings* > *Maintenance & Qualification* > *Recurring Task*.
2. Tap on *Add*.
3. Enter the name of the task.
4. Tap on *Next*.
5. Activate or deactivate the notification.
6. Tap on *Continue*.

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7. Determine the following time frames:
   - Task interval
   - Notification

   Determine the time after which the device triggers the notification.
8. Tap on *Finish*.

   The task has been saved.

Confirming the execution of recurring tasks

1. Tap on *Menu* > *Settings* > *Maintenance & Qualification* > *Recurring Task*.
2. Select the completed task.
3. Tap on *Perform Task*.
4. Confirm the execution of the task.

Deleting a recurring task

1. Tap on *Menu* > *Settings* > *Maintenance & Qualification* > *Recurring Task*.
2. Select the task you want to delete.
3. Tap on the *recycling bin* symbol and confirm your selection.

9.2.2 Checking the device for damage

1. Check that the device, the touch screen and the power cord are undamaged.

   If the device, the touch screen or the power cord is damaged, inform your authorized service technician.

   Take the damaged device out of operation.

9.2.3 Checking the gas supply

Checking the primary gas supply

When full, the gas pressure is 50 bar (725 PSI). If the gas pressure drops significantly, the CO_2 cylinder is almost empty and must be replaced.

1. Check the reserve pressure in the CO_2 cylinder.
2. Make sure that the connections to the CO_2 cylinder are not leaking.

Checking the secondary gas supply

1. Check the secondary pressure via the building supply.

   The secondary pressure is set to approx. 1 bar (14.5 PSI).

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9.2.4 Replacing the device filter

Replacing the air filter with length of tubing

1. Remove the used air filter with length of tubing.
2. Insert a new safety air filter with length of tubing.

Replacing the device CO_2 tubing with gas filter



WARNING! Personal injury

If the device is not connected correctly to the gas supply, increased levels of CO_2 can occur in the breathing air. This poses a risk of poisoning and suffocation.

– Make sure that gas tubing is only installed and connected by trained personnel.
– Ensure that the CO_2 concentration in the breathing air does not exceed permitted levels when working in the laboratory.

Prerequisites:

- The device is disconnected from the gas supply.

1. Remove the used CO_2 tubing with gas filter.
2. Insert a new CO_2 tubing with gas filter.

9.2.5 Replacing the water supply filter

Replacing the air filter of the tube distributor

1. Remove the used air filter from the tube distributor.
2. Replace the used air filter with a new air filter.
3. Screw the new air filter onto the tube distributor.

Replacing the water filter on the device

Prerequisites:

- The tube distributor has been unscrewed from the water tank.
- The water tube with tube weight has been removed from the water tank.
- The water tube has been unscrewed from the water filter of the device.

1. Unscrew the used water filter from the water connection of the device.
2. Replace the used water filter with a new water filter.
3. Screw the new water filter into the water connection of the device.
4. Screw the water tube into the water filter of the device.
5. Hang the water tubes with tube weight in the water tank.

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6. Ensure that the water tubes reach the bottom of the water tank.
7. Screw the tube distributor onto the water tank.

9.2.6 Setting the contamination status

If the device is contaminated, other users can be informed by means of a message on the touch screen.

The message *Contaminated* appears in the notification bar.

Setting the status to *Contaminated*

1. Tap on *Menu* > *Maintenance & Qualification*.
2. Tap on *This device is not contaminated*.

   The *Change Qualification* window appears.
3. Select *Contaminated*.
4. Confirm the selection.
5. Carry out a high-temperature disinfection.

Setting the status to *Not Contaminated*

1. Tap on *Menu* > *Maintenance & Qualification*.
2. Tap on *This device is contaminated*.

   The *Change Qualification* window appears.
3. Select *Not Contaminated*.
4. Confirm the selection.

   The message *Not Contaminated* appears in the notification bar for 24 h.

9.2.7 Carrying out a performance check

The performance check cannot replace the verification by the Eppendorf service.

The performance check is used to check the accuracy of the temperature, gas concentration and relative humidity with an external measuring device. Each performance check is to be considered and carried out separately. Programmable time intervals remind you to carry out the performance check.

Any values that were set by the user and are not to be checked will not be changed during the performance check. Any values that are not to be checked will be set to 0 for the performance check. The values that are to be checked will be set to the factory settings for the duration of the performance check.

Default settings:

- Temperature: 37 °C
- CO_2 concentration: 5 %

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- Relative humidity: 85 %
- Rotational speed: 150 rpm

If your samples tolerate the presetting of a value that is to be checked, they can remain in the device. If not, remove the samples from the device.

Use a calibrated measuring device. Observe the specifications of the measuring device, particularly the operating conditions and the measuring accuracy.

Prerequisites:

- External measuring devices are available.
- The device is ready for use.
- The home screen appears on the touch screen.
- If user management is used, the administrator must be logged in.

1. Tap on *Menu* > *Maintenance & Qualification* > *Recurring Tasks*.
2. Select *Performance check temperature* or *Performance check CO_2* or *Performance check relative humidity*.
3. Confirm the selection with *Continue*.
4. Enter the name of the measuring device and the last calibration date.

Carry out a temperature performance check

Prerequisites:

- The cable is guided through the access port into the chamber to ensure that the door is tight.

1. Open the door.
2. Position the measuring probe approx. 1.5 cm above the center of the sample platform.
3. Securely attach the measuring probe to ensure that it does not move at a speed of 150 rpm.
4. Close the door.

Carrying out a relative humidity performance check

Prerequisites:

- The cable is guided through the access port into the chamber to ensure that the door is tight.

1. Open the door.
2. Position the measuring probe approx. 1.5 cm above the center of the sample platform.
3. Securely attach the measuring probe to ensure that it does not move at a speed of 150 rpm.
4. Close the door.

Carrying out a CO_2 performance check

1. Open the door.
2. Guide the cable through the access port.

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3. Position the measuring probe approx. 1.5 cm above the center of the sample platform.
4. Securely attach the measuring probe to ensure that it does not move at a speed of 150 rpm.
5. Close the door.
6. Tap on *Start Verification*.
7. Enter the determined temperature or gas concentration values on the touch screen.
8. Confirm the entered value.
9. Tap on *Continue*.
10. Tap on *Export* to save the result on a USB storage medium.
11. Confirm the selection with *Confirm*.
12. Remove the measuring probe.

    The device automatically reverts to the previously set temperature and gas concentration.

9.2.8 Installing a software update

Downloading the software from the website

Material:
- A computer with Internet access
- USB storage medium

1. Use *Menu* > *Settings* > *About this CellXpert CS220* to check which software version is installed on the device.
2. Check whether a higher software version is available on the webpage www.eppendorf-support.com.
3. Download the current software version from the webpage. Save the ZIP file to the computer.
4. Extract the ZIP file to the top level of the USB storage medium (FAT32 formatted).

   The folder *vti2* is located in the top level. The data in this folder must not be extracted or altered.

Performing a software update

Do not cancel the software update. If you cancel the software update, data will be lost and the device must be reset to factory settings. Contact your local Eppendorf partner.

1. Tap on *Menu* > *Settings* > *Install Software Update from USB Drive*.
2. Connect the USB storage medium to the USB port of the device.

   An installation dialog appears on the display.
3. Confirm the installation.

   The device prepares the installation and then restarts.
4. Wait until the update file has been copied to the device.
5. Remove the USB storage medium to start the installation procedure.

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9.3 Cleaning

For any questions regarding cleaning and decontamination, or the cleaning agents used, please contact your local Eppendorf partner.

9.3.1 Cleaning the device on the outside



DANGER! Electric shock

If liquids get inside the device, you may receive an electric shock. A life-threatening electric shock leads to cardiac arrhythmia and respiratory paralysis.

- Switch off the device and disconnect it from the mains/power line before starting cleaning or disinfection.
- Do not allow any liquids to penetrate the inside of the housing.
- Do not spray the device.
- Do not connect the device to the mains/power line unless both the inside and outside of the device are completely dry.



DANGER! Electric shock

If the door cable is damaged when cleaning the device, you are at risk of receiving an electric shock. Electric shocks cause heart injury and respiratory paralysis.

- Take care not to pull or bend the door cable when cleaning the device.



NOTICE! Damage to the device and accessories

The use of unsuitable cleaning agents or sharp objects may damage the device and its accessories.

- Do not use any aggressive cleaning agents, strong solvents or abrasive polishes.
- Check the compatibility with the materials used.
- Do not clean the device with acetone or organic solvents with a similar effect.
- Do not use any sharp or pointed objects to clean the device.

Material:

- Water
- pH-neutral soap
- Cloth

Prerequisites:

- The device is disconnected from the mains/power line.

1. Moisten a lint-free cloth with water and soap.
2. Use the cloth to clean the outer surfaces.
3. Clean the outer surfaces again with a rinsed lint-free cloth.

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9.3.2 Cleaning the inside of the device



DANGER! Electric shock

If liquids get inside the device, you may receive an electric shock. A life-threatening electric shock leads to cardiac arrhythmia and respiratory paralysis.

- Switch off the device and disconnect it from the mains/power line before starting cleaning or disinfection.
- Do not allow any liquids to penetrate the inside of the housing.
- Do not spray the device.
- Do not connect the device to the mains/power line unless both the inside and outside of the device are completely dry.



DANGER! Electric shock

If the door cable is damaged when cleaning the device, you are at risk of receiving an electric shock. Electric shocks cause heart injury and respiratory paralysis.

- Take care not to pull or bend the door cable when cleaning the device.



CAUTION! Damage to eyes

Looking into the interior light lamp may cause damage to your eyes.

- Do not look directly into the interior light lamp. The interior lighting is classified in risk group 1 according to IEC 62471.



NOTICE! Damage to the device and accessories

The use of unsuitable cleaning agents or sharp objects may damage the device and its accessories.

- Do not use any aggressive cleaning agents, strong solvents or abrasive polishes.
- Check the compatibility with the materials used.
- Do not clean the device with acetone or organic solvents with a similar effect.
- Do not use any sharp or pointed objects to clean the device.

Material:

- Cloth

Prerequisites:

- The device is disconnected from the mains/power line.

1. If liquid has been spilled, clean it up with a cloth.
2. Wipe down splashed surfaces inside the device with a cloth. Be careful not to touch the sensors and light unit of the device.
3. Wipe down the device with disinfectant.

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9.3.3 Cleaning the touch screen

Material:

- Soap-based cleaning agent
- Disinfectant with at least 70 % ethanol
- Cloth

1. Tap on *Menu* > *Screen Lock*.

   The touch screen is locked.
2. Dampen the cloth with cleaning agent or disinfectant.
3. Clean the touch screen.
4. To enable the touch screen, tap on *Unlock Screen*.

   The touch screen is unlocked.

9.3.4 Change water in the water tank

Prerequisites:

- The tube distributor has been unscrewed from the water tank.
- The water tube with tube weight has been removed from the water tank.

1. Change the water in the water tank.
2. Hang the water tubes with tube weight in the water tank.
3. Ensure that the water tubes reach the bottom of the water tank.
4. Screw the tube distributor onto the water tank.

9.4 Decontamination

9.4.1 Disinfecting the water tube with tube weight

NOTICE! Damage to the device and accessories

The use of unsuitable cleaning agents or sharp objects may damage the device and its accessories.

- Do not use any aggressive cleaning agents, strong solvents or abrasive polishes.
- Check the compatibility with the materials used.
- Do not clean the device with acetone or organic solvents with a similar effect.
- Do not use any sharp or pointed objects to clean the device.

The water is heated to a high temperature before it enters the workspace. Therefore, contamination cannot occur inside.

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Material:
- Ethanol 70 %
- Deionized water

Prerequisites:
- The tube distributor has been unscrewed from the water tank.
- The water tube with tube weight has been removed from the water tank.
- The water tube has been unscrewed from the water filter of the device.

1. Rinse the outside of the water tube below the tube distributor and the tube weight with disinfectant.
2. Allow the disinfectant to take effect.
3. Rinse the outside of the water tube and the tube weight thoroughly with deionized water.
4. Allow the water tube and the tube weight to dry.

9.4.2 Disinfecting the water tank

NOTICE! Damage to the device and accessories

The use of unsuitable cleaning agents or sharp objects may damage the device and its accessories.
- Do not use any aggressive cleaning agents, strong solvents or abrasive polishes.
- Check the compatibility with the materials used.
- Do not clean the device with acetone or organic solvents with a similar effect.
- Do not use any sharp or pointed objects to clean the device.

Material:
- Ethanol 70 %
- Deionized water

Prerequisites:
- The tube distributor has been unscrewed from the water tank.
- The water tube with tube weight has been removed from the water tank.
- The water tank is empty.

1. Rinse the inside of the water tank with disinfectant.
2. Allow the disinfectant to take effect.
3. Rinse the water tank thoroughly with deionized water.
4. Allow the water tank to dry.

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9.4.3 Carrying out a wipe disinfection



DANGER! Electric shock

If liquids get inside the device, you may receive an electric shock. A life-threatening electric shock leads to cardiac arrhythmia and respiratory paralysis.

- Switch off the device and disconnect it from the mains/power line before starting cleaning or disinfection.
- Do not allow any liquids to penetrate the inside of the housing.
- Do not spray the device.
- Do not connect the device to the mains/power line unless both the inside and outside of the device are completely dry.



DANGER! Electric shock

If the door cable is damaged when cleaning the device, you are at risk of receiving an electric shock. Electric shocks cause heart injury and respiratory paralysis.

- Take care not to pull or bend the door cable when cleaning the device.



CAUTION! Personal injury

The sample platform is heavy. Incorrect transport and locking of the sample platform can cause injury.

- Lift and move the sample platform only at the provided handles.
- Transport the sample platform only when it is not loaded.
- Make sure that the sample platform is locked before closing the door. The handle must be folded up.



CAUTION! Personal injury

The sub-platform is heavy. Improper lifting and moving of the sub-platform can cause injury.

- The sub-platform should only be removed and transported by two persons.



NOTICE! Damage to the device and accessories

The use of unsuitable cleaning agents or sharp objects may damage the device and its accessories.

- Do not use any aggressive cleaning agents, strong solvents or abrasive polishes.
- Check the compatibility with the materials used.
- Do not clean the device with acetone or organic solvents with a similar effect.
- Do not use any sharp or pointed objects to clean the device.



NOTICE! Component damage

If disinfectant gets inside the device, it can cause electronic components to corrode. This will impair the function of the device.

- Only spray disinfectant onto a cloth.

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Tool:

- 6.0 mm Allen key

Material:

- Ethanol 70 %
- Deionized water
- Cloth

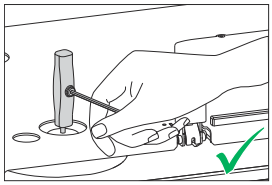
Prerequisites:

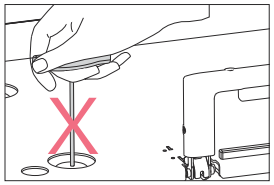
- The device is not loaded.

1. Tap on *Disinfect*.
2. In the selection menu, tap on *Wipe Disinfection*.

   The device starts the software-supported procedure. Follow the instructions on the screen.
3. Tap on *Continue*.
4. Remove the sample platform.
   - Use the handle to pull the sample platform out of the chamber.
   - Remove the sample platform.
   - Remove the sticky pads and flask clamps.
   - Clean the sample platform and accessories.
   - Tap on *Continue*.
5. Remove the sub-platform.
   - Slide the sub-platform back into the chamber.
   - To fix the sub-platform in place, press and hold the button on the handle and fold the handle up.
   - Loosen the 4 screws using the tool provided.
   - Lift the sub-platform out of the chamber with the help of another person.
   - Clean the sub-platform.
   - Tap on *Continue*.

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6. Clean the chamber.
   - Clean the surfaces.
   - Reinsert the sub-platform.
   - Reinsert the sample platform.
   - Tap on *Continue*.
7. Make the device ready for use again.
   - Install flask clamps and sticky pads on the sample platform.
   - Tap on *Continue*.

   The procedure is complete.

   The device returns to normal operation.

9.4.4 Performing high-temperature disinfection

You cannot cultivate your cells in the device during high-temperature disinfection. The temperature in the device stacked directly above may increase.

An odor can develop during the first performed high-temperature disinfections. Make sure the room is ventilated.

WARNING! Burns

There is a risk of burns from hot components during high-temperature disinfection.

– Do not touch the device while a high-temperature disinfection cycle is running.
– Do not open the doors during the high-temperature disinfection cycle.
– Allow the device to cool down completely if a system crash or mains/power outage occurs during high-temperature disinfection.

CAUTION! Personal injury

The sample platform is heavy. Incorrect transport and locking of the sample platform can cause injury.

– Lift and move the sample platform only at the provided handles.
– Transport the sample platform only when it is not loaded.
– Make sure that the sample platform is locked before closing the door. The handle must be folded up.

CAUTION! Personal injury

The sub-platform is heavy. Improper lifting and moving of the sub-platform can cause injury.

– The sub-platform should only be removed and transported by two persons.

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Tool:

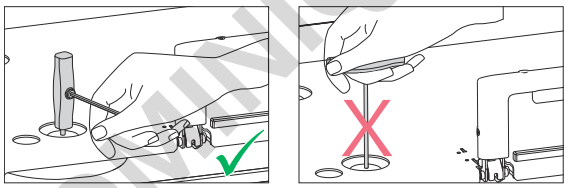
- 6.0 mm Allen key

Prerequisites:

- The device is not loaded.

1. Tap on *Disinfect*.
2. In the selection menu, tap on *High Temperature Disinfection*.

   The device starts the software-supported procedure. Follow the instructions on the screen.
3. Tap on *Continue*.
4. Remove the sample platform.
   - Use the handle to pull the sample platform out of the chamber.
   - Remove the sample platform.
   - Remove the sticky pads and flask clamps.
   - Clean the sample platform and the accessories.
   - Tap on *Continue*.
5. Remove the sub-platform.
   - Slide the sub-platform back into the chamber.
   - To secure the sub-platform, keep the button at the handle pressed and fold the handle up.
   - Loosen the 4 screws using the tool provided.
   - Lift the sub-platform out of the chamber with the help of another person.
   - Clean the sub-platform.
   - Tap on *Continue*.



6. Clean the chamber.
   - Clean the surfaces.
   - Reinsert the sub-platform.
   - Reinsert the sample platform.
   - Tap on *Continue*.
7. Place the dust cap on the humidity sensor. Tap on *Continue*.
8. Close the door.

   The *Start Disinfection* button turns green.

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9. Tap on *Start Disinfection*.

   The progress of the procedure is displayed.

   After the procedure is completed, the result is displayed. You can export the result as a PDF to a USB stick.

10. Make the device ready for use again.
    - Remove the dust cap from the humidity sensor.
    - Install flask clamps and sticky pads on the sample platform.
    - Tap on *Continue*.

    The procedure is complete.

    The device returns to normal operation.

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10 Troubleshooting

10.1 Editing messages

When the dangerous situation has been corrected, all signals will stop. Only the message will remain in the information bar until it is acknowledged.

1. To deactivate the signal tone, tap on the speaker symbol in the notification bar.

   If the hazardous situation is still not remedied after 5 min, the signal tone will sound again.
2. To call up the message, tap on the notification bar.
3. Remove the hazardous situation.
4. To confirm the message tap on the, tap on the cross symbol.

   The message will be removed from the information bar. When all messages have been acknowledged, the information bar will disappear. The status bar becomes visible.

10.2 Entering contact details

Information on your Eppendorf partners can be entered in this area.

1. Tap on *Menu* > *Contacts & Support* > *Contacts*.
2. Tap on *Add Contact*.
3. Enter the name of the Eppendorf partner.
4. Confirm the entry.
5. Enter all desired information about the Eppendorf partner.

10.3 Accessing service information

In this area, you can access device information for communication with the authorized service.

1. Tap on *Menu* > *Contact & Support* > *Diagnostics* > *Service Information*.
2. Pass the information on to the authorized service.

10.4 General errors

Error description	Cause	Solution
The USB stick is not recognized.	The USB stick is invalid.	Use another USB stick.
The sample is contaminated.	The contamination occurs consistently.	Perform a high-temperature disinfection.

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Error description	Cause	Solution
The sample is contaminated.	The contamination occurs occasionally.	Check your sample handling. Check for contamination during your application steps.
Fatal Error - Restart the device.	A software error has occurred.	Switch off the device. Switch the device back on after 10 s.
The sensor error *CO_2 6740FW.203* appears.	Sensor initialization has failed following activation of the device.	Start the device again.
The sensor error *RH 6740FW.403* appears.	Sensor initialization has failed following activation of the device.	Start the device again.
XY value over range: x.y CO_2 6740FW.204 or *XY value under range: x.y CO_2 6740FW.204*.	The measured value lies above the permitted range or the measured value lies below the permitted range.	Start the device again.

10.5 Error of the door

Error description	Cause	Solution
Door longer open than	The door is left open for longer than ... min.	Close the door. Tap on the notification in the display to switch off the alarm. Set the alarm limit for the door to a different time span.
6740FW.50 Long door opening. Close the door.	The door is left open for longer than ... min.	Close the door. Tap on the warning in the display to remove it.
When opening the door, an alarm signal sounds.	The drive of the device has not yet switched off completely.	In the display, tap on *Stop* and wait until the sample platform has come to a complete standstill before opening the door.
Service life of door gas lift springs has expired, please contact Service.	The door springs have reached 6500 cycles.	Have the door springs replaced by an authorized service technician.

10.6 Drive errors

Error description	Cause	Solution
The speed cannot be achieved.	Too much vibration in the stacked device due to the load.	Change the loading of the sample platform. Try more weight or less weight. Avoid using an empty sample platform.

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Error description	Cause	Solution
The sub-platform is making a rattling noise.	The screws in the coupling rods have not been tightened or have come loose.	Tighten the screws with the supplied tool.
The sub-platform sticks.	The screws of the sub-platform have not been tightened or have come loose.	Tighten the screws with the supplied tool.

10.7 Error messages due to the temperature

Error description	Cause	Solution
Condensation has formed in the device.	There is a (constant) airflow due to an open window, an open door or an air conditioning unit.	Move the device to a more suitable location. Relocate the air conditioning unit. Stop the airflow.
	Humidity control was switched on too early. The device has not yet warmed through.	Only activate the humidity control after a restart when the device has warmed through completely (> 5 h) and no message appears on the display.
	The set temperature is above 40 °C.	Switch off humidity control or set a lower rH value.
Temperature below alarm level (x.y °C).	The door has been open too long.	Check how long the door has been open. Increase the temperature alarm limit, e.g., by 1 °C.
	The door has been opened too often.	Check how often the door has been opened throughout the day.
	Due to the introduction of a large quantity of cold samples, the temperature set value could not be reached within a certain period of time.	Use a preheated medium or a smaller number of cold samples.
	There is a (constant) airflow due to an open window, an open door or an air conditioning unit.	Move the device to a more suitable location. Relocate the air conditioning unit. Stop the airflow.
Temperature above alarm level (x.y °C).	The temperature set value has been lowered without opening the doors.	Open the door to allow the device to cool down. Increase the temperature alarm limit, e.g., by 1 °C.
	Due to the introduction of a large quantity of hot samples, the temperature set value could not be reached within a certain period of time.	Use a colder medium or a smaller number of hot samples.

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Error description	Cause	Solution
Temperature above alarm level (x.y °C).	There is a (constant) airflow due to an open window, an open door or an air conditioning unit.	Move the device to a more suitable location. Relocate the air conditioning unit. Stop the airflow.
	Another heat-emitting device is too close to the device.	Move the device to a more suitable location. Relocate the heat-emitting device. Check the distance between the devices and increase it if necessary.
	A heat-emitting device is located inside the device and is generating too much heat.	Remove the heat-emitting device. Increase the upper alarm limit for the temperature.
6740FW.107 Temperature sensor (XY) is out of range. Check acclimatization and ambient conditions.	The device is located in a cold room < 10 °C.	Allow the device to acclimatize for at least 12 h after receipt.
	>The sensor is defective.	Contact your local Eppendorf partner.
6740FW.108 Setpoint not reached. Cooldown too slow. Check environment conditions.	The ambient temperature is too close to the temperature set value (less than 8 °C difference). The ambient temperature is above the temperature set value.	Change the set value to a higher temperature (≥ 8 °C above ambient temperature). Lower the ambient temperature to ≥ 8 °C to the temperature set value, e.g., by ventilating the room.
6740FW.109 X.Y °C not reached.	A technical error has occurred.	Restart the device.
6740FW.110 X.Y °C not reached in time. Check environment conditions.	A technical error has occurred.	Restart the device.
6731FW.111 Over-temp detected by Temp limiter. Setpoint not reached. Cooldown too slow. Check environment conditions.	The device switches off at 10 K above the set value of a heat circuit in accordance with DIN EN 12880 (temperature limiter class 1).	Change the set value to a higher temperature (≥ 8 °C above ambient temperature). Lower the ambient temperature to ≥ 8 °C to the temperature set value, e.g., by ventilating the room. Restart the device and increase the temperature set value to ≥ 8 °C above ambient temperature.
6731W.112 Subnormal temperature detected by Temp limiter.	The device switches off at 5 K below the set value of a heat circuit in accordance with DIN EN 12880 (temperature limiter class 1).	Restart the device. Increase the temperature set value to ≥ 8 °C above ambient temperature.

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10.8 Error message due to the CO_2 concentration

Error description	Cause	Solution
CO_2 Concentration above alarm level (x.y %).	The set CO_2 value has decreased. The CO_2 cannot escape from the device.	Open the door to let the CO_2 escape from the device.
	The alarm limit is too close to the set value.	Set the alarm limit to the standard limit.
CO_2 Concentration below alarm level (x.y %).	The set CO_2 value has increased.	The CO_2 concentration cannot be restored in time. Check the gas pressure supply.
	The alarm limit is too close to the set value.	Set the alarm limit to the standard limit.
CO_2 pressure below warning level of 0.04 MPa.	The CO_2 cylinder is nearly empty.	Check the CO_2 supply. Replace the CO_2 cylinder and set the gas supply to 0.1 MPa (or to a range of 0.05 MPa – 0.15 MPa). Check whether the gas connection is disconnected or leaking, e.g., in-line gas filter and gas connection. Check the flow direction of the in-line gas filter: The gas supply must be connected to the INLET side of the in-line gas filter.
	The volume flow is too small.	Increase the volume flow, e.g., by opening the CO_2 gas shut-off valve.
CO_2 pressure below warning level of 0.02 MPa.	The CO_2 cylinder is empty.	Check the CO_2 supply. Replace the CO_2 cylinder and set the gas supply to 0.1 MPa (or to a range of 0.05 MPa – 0.15 MPa). Check whether the gas connection is disconnected or leaking, e.g., in-line gas filter and gas connection. Check the flow direction of the in-line gas filter: The gas supply must be connected to the INLET side of the in-line gas filter. Ventilate the room, if required.
	The volume flow is too small.	Increase the volume flow, e.g., by opening the CO_2 gas shut-off valve.

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Error description	Cause	Solution
Alternates quickly between notification and alarm *CO_2 pressure below warning level of 0.04 MPa* and *CO_2 pressure below alarm level of 0.02 MPa*.	The CO_2 pressure has fallen significantly due to a closed gas pressure supply, an interruption or a crack in the pressure connection.	Check whether the gas connection is disconnected or leaking, e.g., in-line gas filter and gas connection. Check the flow direction of the in-line gas filter: The gas supply must be connected to the INLET side of the in-line gas filter. Ventilate the room, if required.
	The volume flow is too small.	Increase the volume flow, e.g., by opening the CO_2 gas shut-off valve.
CO_2 pressure above alarm level of 0.18 MPa. Check gas supply.	The CO_2 pressure is above the alarm value of 0.18 MPa. The inlet valve is closed because of the high pressure.	Reduce the CO_2 pressure to 0.1 MPa (14.5 PSI, 1 bar) or to a range of 0.05 – 0.15 MPa (7.2 – 21.8 PSI, 0.5 – 1.5 bar). Release the pressure from the gas tubing that leads to the device. To disconnect the gas tubing, switch off the gas pressure, push the thin ring of the hose connection downwards and pull out the gas tubing.
No CO_2 value is displayed.	After (re)starting the device or a high-temperature disinfection *Initialization sensor* appears on the display.	Wait until the device switches to normal operation.
The set value is displayed in red.	The CO_2 control is defective.	Tap on CO_2 in the function area. Restart CO_2 control using the active error symbol by tapping on the red button with the X.
	The CO_2 sensor is defective.	Switch off the device and restart it.
6731FW213 CO_2 control software error	The CO_2 control loop took too long, the CO_2 control loop was interrupted or the CO_2 sensor or the sensor software is defective.	Check whether the gas connection is disconnected or leaking, e.g., in-line gas filter and gas connection. Check whether the access port is closed. Restart the device. Contact your local Eppendorf partner.
6731FW214 CO_2 control timeout error	A CO_2 value error has occurred. The CO_2 set value was not reached in time. There are tubes in front of the CO_2 sensor. Under extreme conditions there are too many tubes in the chamber.	Check whether the gas connection is disconnected or leaking, e.g., in-line gas filter and gas connection. Check whether the access port is closed. Rearrange the tubes and restart the device. Contact your local Eppendorf partner.
6731FW215 CO_2 control timeout error	The CO_2 value is too high as the cells are, e.g., producing too much CO_2.	Open the door. Reduce the number of samples or the sample volume.

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Error description	Cause	Solution
Various CO_2 errors occur, e.g., *timeout.*	Gas pressure monitoring is switched off. CO_2 low pressure is not monitored.	Switch on gas pressure monitoring. Look out for warning and error messages. Check the CO_2 supply. Replace the CO_2 cylinder and set the gas supply to 0.1 MPa (or to a range of 0.05 MPa – 0.15 MPa).
	The gas cylinder is empty.	Check whether the gas connection is disconnected or leaking, e.g., in-line gas filter and gas connection. Ventilate the room, if required.
CO_2 concentration control is not active.	The application for CO_2 control was not started or it is not activated when the device is started.	Tap on *Start* on the display. Adjust the start/stop behavior in *Device Settings* > *Start/Stop Behaviour*, if required.

10.9 Error message due to the humidity

Error description	Cause	Solution
6740FW.412 No water detected timeout.	The water tank is empty.	Fill the water tank.
The humidity control setpoint cannot be achieved.	To much humidity from the sample tubes in the chamber is increasing the humidity value.	Increase the relative humidity setpoint in the device or reduce the number of samples. Other alternative: Increase the upper alarm limit or deactivate the "Humidity" alarm.
	The relative humidity setpoint is below the ambient humidity.	Increase the relative humidity setpoint in the device.
The relative humidity control is not active.	The relative humidity control application has not been started.	In the display, tap on *Start*. Adjust the start/stop behavior in *Device Settings*, if required.
6740FW.415 No rising rh detected, please check that rh sensor has no cap.	The rel. humidity value does not increase when the door has been closed because the dust cap is still on the humidity sensor.	Remove the dust cap from the humidity sensor after every high-temperature disinfection.

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10.10 Error due to high-temperature disinfection

Error description	Cause	Solution
6740FW.110 180 °C not reached in time. Check environment conditions.	A technical error has occurred.	Contact your local Eppendorf partner.
Sensor switched off because temperature too high: *CO_2 (6740FW.202)*	The device was restarted with a residual temperature that was too high following an interruption to the high-temperature disinfection.	Leave the device to cool to < 50 °C before restarting the high-temperature disinfection.
Sensor switched off because temperature too high: *RH (6740FW.402)*	The device was restarted with a residual temperature that was too high following an interruption to the high-temperature disinfection.	Leave the device to cool to < 50 °C before restarting the high-temperature disinfection.
6731FW.750 Error occurred during High Temperature Disinfection.	Another error has occurred during the high-temperature disinfection.	Check the previous error messages and follow the advice given in the solution table.
6731FW.751 High Temperature Disinfection interrupted due to power loss.	The device was switched off during the high-temperature disinfection. A mains/power outage has occurred.	Restart the high-temperature disinfection.
6731FW.753 Door has been opened during High Temperature Disinfection.	Do not open the door during the high-temperature disinfection cycle.	Restart the high-temperature disinfection.

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11 Shut down

11.1 Disconnecting the device from the water supply

Prerequisites:

- The relative humidity control is active.

1. Unscrew the hose distributor from the water tank.
2. Remove the water hose with hose weight from the water tank.
3. Unscrew the water tube from the water filter of the device.
4. Let the device continue to run with active humidity control until the water pump is empty and the *6740FW.412 No water detected timeout.* error message appears.

   The device can be switched off

11.2 Switching off the device

If the application was not stopped before the device was switched off, the drive starts again when the device is switched on.

Prerequisites:

- The device is not loaded.
- The application has been stopped.

1. Switch off the device at the mains/power switch.

11.3 Disconnecting the device from the voltage supply

Prerequisites:

- The device has been switched off.

1. Disconnect the mains/power plug from the earth/grounded socket.

11.4 Disconnecting the device from the gas supply

Prerequisites:

- The device is switched off and disconnected from the mains/power line.

1. Switch off the gas pressure.
2. Press down the thin ring of the barbs.
3. Remove the gas tubings.

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12 Transport



WARNING! Personal injury

The device is heavy. Improper lifting and moving of the device can lead to serious injuries.

- Use a suitable transport aid to transport the device.
- Move the device only with a sufficient number of transport helpers..
- Keep the door closed when the device is on the transport aid.



WARNING! Contamination

Storing or shipping a contaminated device or contaminated accessories may lead to contamination of persons or to damage to health.

- Clean and decontaminate the device and accessories before storage or shipment.

The device must only be transported and installed by Eppendorf service or service providers authorized by Eppendorf. To organize correct transport, contact the authorized service.

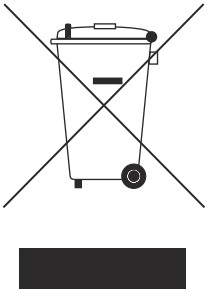
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13 Disposal

Electrical and electronic equipment in EU countries

Electrical and electronic equipment must be disposed of in EU member states in accordance with Directive 2012/19/EU. This directive has been implemented into national law by all EU member states.

Electrical and electronic equipment placed on the market after August 13, 2005, must be specially marked. According to the European standard EN 50419, the following symbol can be used for this marking:



Batteries and rechargeable batteries in EU countries

Batteries and rechargeable batteries must be disposed of in an environmentally sound manner in EU member states in accordance with Regulation (EU) 2023/1542. They must not be disposed of with household waste.

Consumers are required to dispose of used batteries and rechargeable batteries at an authorized collection point.

Table 2: Marking on batteries

Symbol	Meaning
	Battery must not be disposed of with household waste.
	Battery contains cadmium. Battery must not be disposed of with household waste.
	Battery contains mercury. Battery must not be disposed of with household waste.
	Battery contains lead. Battery must not be disposed of with household waste.

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Non-EU countries

Non-EU countries have country-specific standards for the disposal of waste electrical and electronic equipment and the disposal of batteries and rechargeable batteries.

13.1 Preparing for disposal

Preparing disposal according to legal regulations

For information on the legal regulations that apply in your country, contact your local authority and your Eppendorf partner.

Dispose of non-decontaminable devices as hazardous waste.

1. Check which legal regulations apply to disposal in your country.
2. Choose a certified waste disposal company or contact your Eppendorf partner.

Removing batteries and rechargeable batteries

1. Check whether your device contains permanently installed batteries or rechargeable batteries.
2. Only remove the batteries and rechargeable batteries that are not permanently installed.
3. Dispose of the removed batteries and rechargeable batteries in accordance with the legal regulations of your country.

Creating a decontamination certificate

Prerequisites:

- The device has been decontaminated.

1. Download the decontamination certificate from the website https://www.eppendorf.link/decontamination/.
2. Complete the decontamination certificate.

13.2 Handing over the device to the disposal company

1. Inform the disposal company of any hazards posed by the device, e.g., locking devices, flammable substances.
2. Hand over the device and the decontamination certificate to the certified disposal company.

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14 Technical data

14.1 Dimensions

Device with positioning base

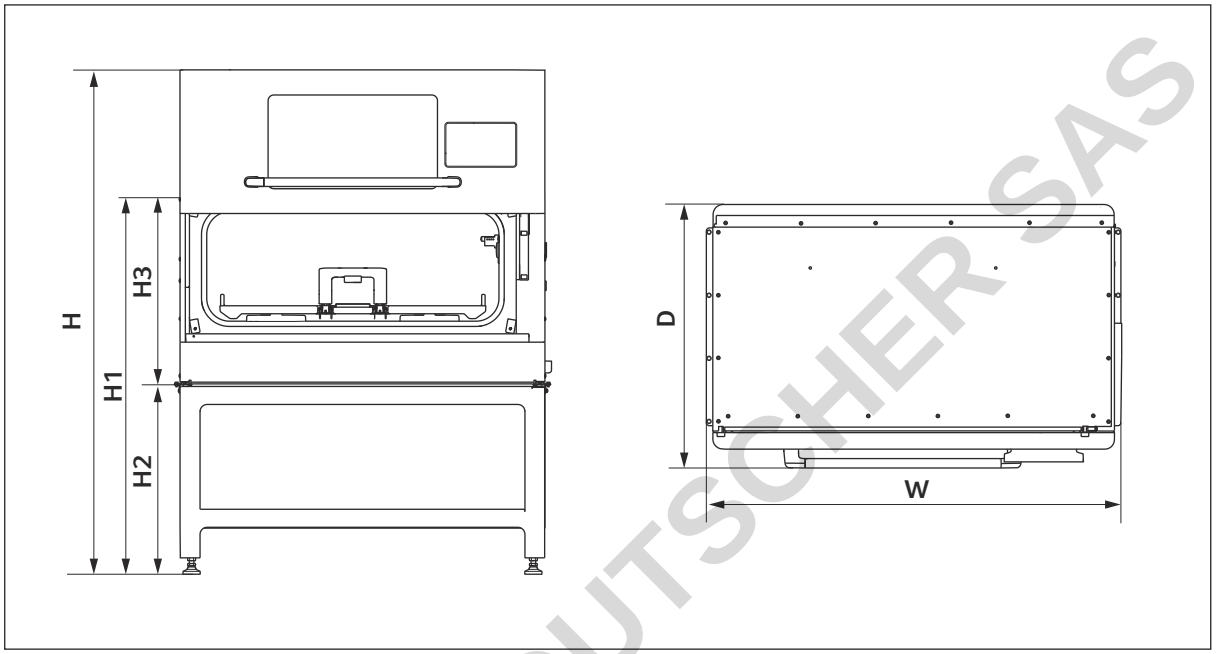


Fig. 14-1: Device with positioning base

W	131,8 cm	H1	133,0 cm
D	83,8 cm	H2	65,7 cm
H	178,5 cm	H3	67,3 cm

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Device with positioning base and water tank

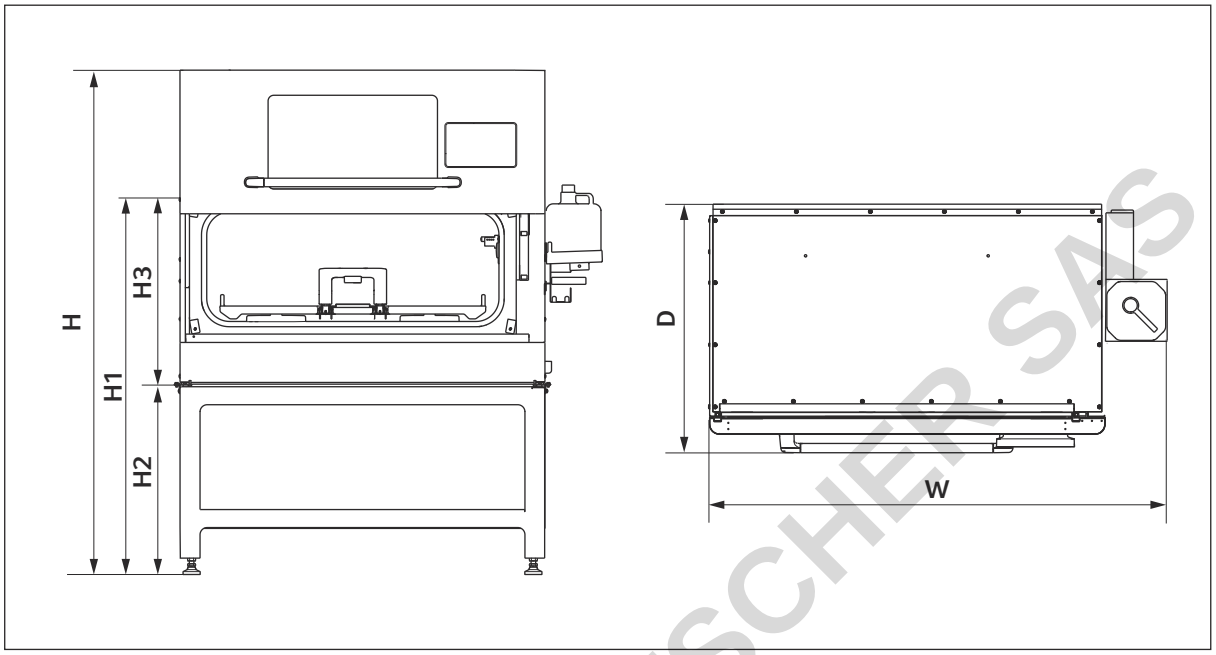


Fig. 14-2: Device with positioning base and water tank

W	149,8 cm	H1	133,0 cm
D	83,8 cm	H2	65,7 cm
H	178,5 cm	H3	67,3 cm

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Two stacked devices

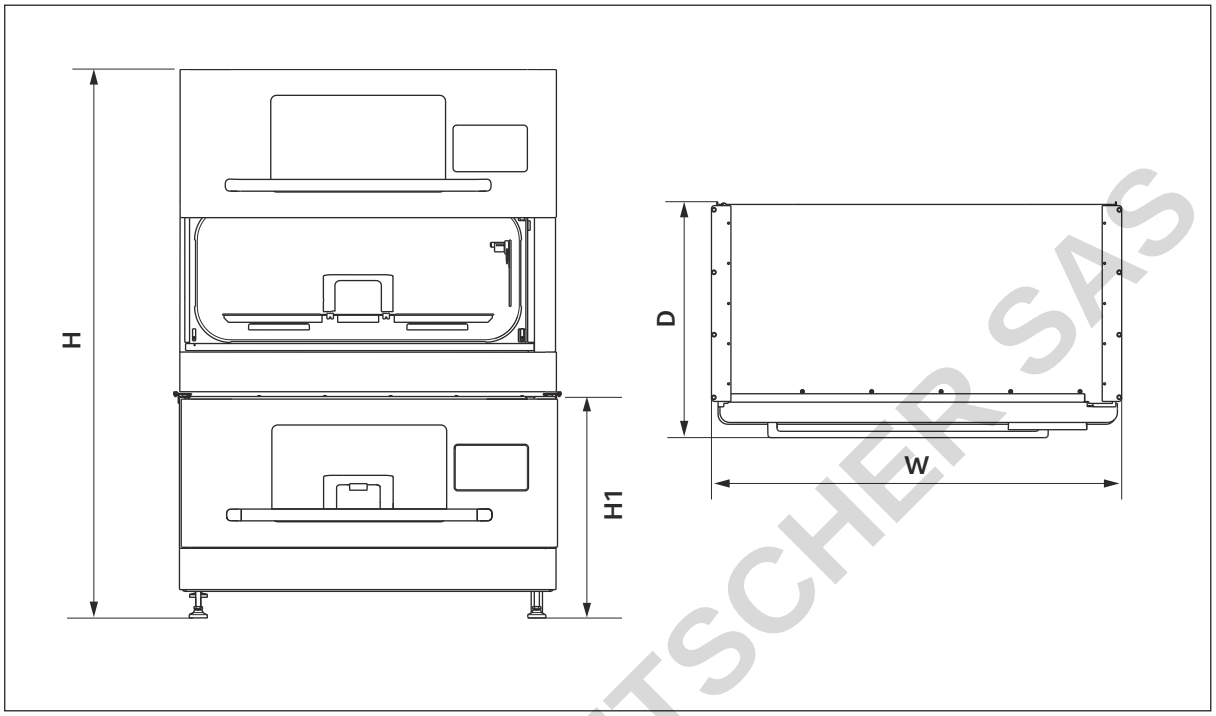


Fig. 14-3: Two stacked devices

W	131,8 cm	H	188,4 cm
D	80,5 cm	H1	75,6 cm

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Three stacked devices

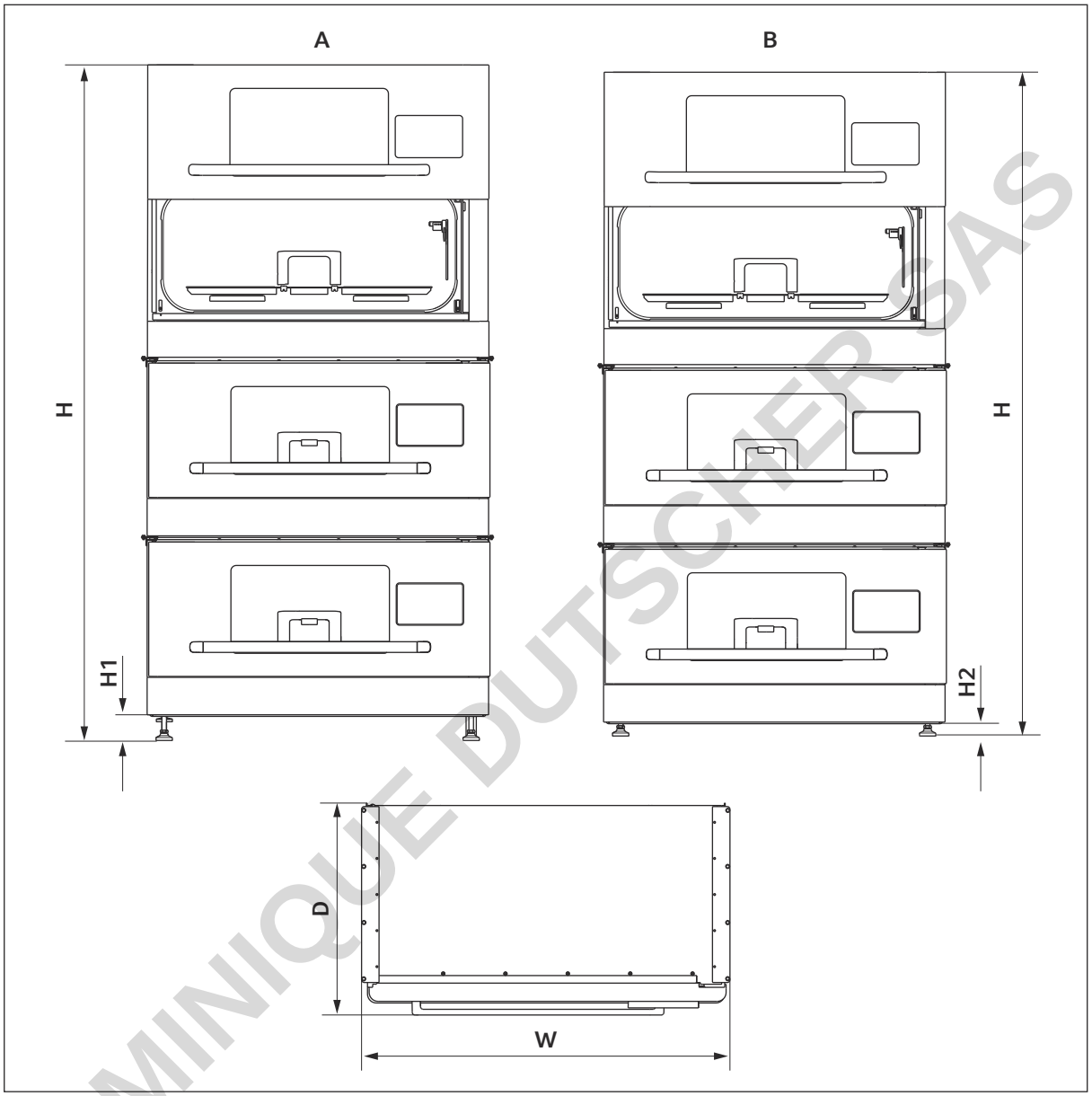


Fig. 14-4: Three stacked devices

W	131,8 cm	H1	9 cm
D	80,5 cm	B – H	247,9 cm
A – H	255,4 cm	H2	2 cm

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Internal dimensions

Width	102,5 cm
Depth	58,0 cm
Chamber bottom to chamber ceiling height	38,5 cm
Sample platform to chamber ceiling height	33,0 cm
Volume (total)	224,2 L

Sample platform

Width	93 cm
Depth	51,4 cm
Height	5,9 cm

14.2 Weight

Device without accessories	approx. 240 kg
Device transport weight without accessories	approx. 275 kg
Sample platform	6,8 kg
Mounting base	90 kg
Transport weight of positioning base	approx. 113 kg

14.3 Mains/power supply

Mains/power connection	100 V – 127 V ±10 %, 50 Hz – 60 Hz 220 V – 240 V ±10 %, 50 Hz – 60 Hz
Power consumption for 110 V – 120 V	900 W
Power consumption for 220 V – 240 V	900 W
Protection class	I
Overvoltage category	II
Pollution degree	2
Specifications for mains/power cords in Europe with E/F mains/power plugs	Cable type AC 300 V / 16 A 3G 1,5 mm^2 with mains/power plug according to IECEE CE-7 / IEC 60884-1 and C19 appliance coupler according to IEC 60320-1

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Specifications for mains/power cords in Europe with other mains/power plugs	Use the mains/power cord in accordance with national regulations Cable type AC 300 V / 16 A 3G 1.5 mm^2 with C19 coupler according to IEC 60320-1 and with mains/power plug according to national regulations and IEC 60884-1
Specifications for mains/power cords in Canada and the USA	Mains/power cord set according to UL 817 and CSA 22.2 No. 21-95 Cable type AC 125 V / 15 A SJT 3x14 AWG with NEMA 5-15 mains/power plug according to ANSI/NEMA WD-6 and C19 appliance coupler according to UL/IEC 60320-1
Specifications for mains/power cords outside Europe, Canada and the USA	Use the mains/power cord in accordance with national regulations

14.4 Ambient conditions

Operation

Ambience	For indoor use only
Ambient temperature	18 °C – 28 °C
Relative humidity	20 % – 80 %, non-condensing
Atmospheric pressure	79,5 kPa – 106 kPa Can be used up to an altitude of 2000 m above MSL

Transport

Air temperature	-25 °C – 60 °C
Relative humidity	10 % – 95 %
Atmospheric pressure	30 kPa – 106 kPa

Storage

Air temperature	-25 °C – 55 °C
Relative humidity	10 % – 95 %
Atmospheric pressure	70 kPa – 106 kPa

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14.5 Electromagnetic compatibility

Electromagnetic compatibility	IEC 61326-1, Class B ICES-001, Class B Class B is the basic electromagnetic environment (environment at locations which are directly supplied with low voltage from the public supply network) FCC Part 15, Class B

14.6 Application parameters

The specified values are based on a temperature of 37 °C, a relative humidity of 85 %, a CO_2-concentration of 5 %, a speed of 150 rpm and an ambient temperature of 22 °C.

Temperature

Range	8 °C above ambient temperature – 60 °C
Control steps	0,1 °C
Accuracy	±0,4 °C (DIN EN 12880)
Stability	±0,1 °C
Uniformity	±0,3 °C

Speed

Speed with orbit 2.5 cm (1 inch)	20 rpm – 300 rpm
Speed with orbit 5.1 cm (2 inch)	20 rpm – 250 rpm
Control steps	1 rpm
Control accuracy	±1 rpm

CO_2 concentration

Range	0,1 % – 20 %
Control steps	0,1 %
Accuracy	±0,3 %
Stability	±0,1 %
Uniformity	±0,1 %
Gas tubing	Inner diameter 6.5 mm Outer diameter 10 mm

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Pore size of the in-line gas filter	0,2 µm
Sensor type	NDIR sensor
Required gas pressure	0.1 MPa (1 bar, 14.5 PSI), range 0.05 MPa – 0.15 MPa (0.5 bar – 1.5 bar, 7.2 PSI – 21.8 PSI)

Relative humidity

Range	20 % to 85 %
Control steps	1 %
Accuracy (averaged over 10 min)	±5 %
Sensor type	capacitative sensor

High-temperature decontamination

Temperature	max. 180 °C/2 h
Approximate duration	19 h

14.7 Interfaces

Building management system	2 relays max. 30 V, max. 2 A
USB	2.0 type A
Ethernet	100 MBit/s
Access port	1x 30 mm

Only connect devices to the interfaces that meet the requirements of IEC 62368-1 and IEC 60950-1.

14.8 Load

Maximum load on the sample platform	18 kg
Maximum load on the device (including flask clamps, glassware and contents)	25,4 kg

14.9 Noise level

The noise level was measured frontally in a sound measuring room with accuracy class 1 (DIN EN ISO 3745) at a distance of 1 m from the device and at lab bench height.

Device	< 60 dB(A)

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14.10 Schott bottles

Maximum size Erlenmeyer flask Fernbach flask	5 L max.

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15 Ordering information

15.1 Accessories and spare parts

Current ordering information for accessories and spare parts can be found on the webpage www.eppendorf.com.

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