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DOMINIQUE DUTSCHER SAS

CellXpert® C170i

Operating Manual

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Table of contents

1 Operating instructions 9
1.1 Using this manual 9
1.2 Danger symbols and danger levels 9
1.2.1 Danger symbols 9
1.2.2 Danger levels 9
1.3 Symbols used 10
1.4 Glossary 10

2 Safety 11
2.1 Intended use 11
2.2 User profile 11
2.3 Personal protective equipment 11
2.4 Application limits 12
2.4.1 Description of ATEX Guideline 94/9EC 12
2.5 Warnings for intended use 13
2.5.1 Personal injury and damage to device 13
2.6 Warning signs on the device 17

3 Product description 19
3.1 Product overview 19
3.1.1 CellXpert C170i 19
3.1.2 Inside the chamber 22
3.1.3 Inner doors 23
3.1.4 Water level sensor (option) 26
3.1.5 Relative humidity sensor (option) 26
3.1.6 Connectivity 26
3.2 Delivery package 27

4 Installation 29
4.1 Utilities requirements 29
4.2 Selecting the location 29
4.3 Positioning the incubator 31
4.4 Initial setup 33
4.4.1 Leveling the incubator 33
4.4.2 Fixing the incubator 34
4.5 Making connections 36
4.5.1 Electrical connection 36
4.5.2 Gas connection 36
4.5.3 O_2 sensor (option) 38
4.6 Door damper 38
4.6.1 Installation of the door damper 39
4.6.2 Disassembly of the door damper 39
4.7 Alarm relay for Building Management System 40
4.7.1 Incubator operating with and without alarm 42
4.8 Connecting to VisioNize Lab Suite 43
4.8.1 Registration to VisioNize Lab Suite 45

5 Operation 47
5.1 Preparing for operation 47
5.2 Functions and limitations 49
5.2.1 Temperature management 49
5.2.2 Gas pressure 49
5.2.3 CO_2 49
5.2.4 O_2 (option) 49
5.2.5 Relative humidity (option) 50
5.2.6 Water level (option) 50
5.2.7 Feature for maintenance 50
5.3 Opening and closing doors 51
5.3.1 Opening the inner and the outer door 51
5.3.2 Closing the inner and the outer door 52
5.3.3 Opening and closing door segments (option) 52
5.4 Using the water tray 53
5.4.1 Using the water tray with the optional water level sensor 53
5.5 Using the access ports 54
5.6 Safety shutdown 55
5.6.1 Temperature 55
5.6.2 Gas 55
5.7 Switching off the device 55

6 Overview of operating controls 57
6.1 Intuitive operating concept 57
6.2 Symbols 57
6.3 Home screen overview 58
6.3.1 Status bar 58
6.3.2 Function area 59
6.3.3 Toolbar 60
6.4 Information bar 61
6.4.1 Editing the information bar 62
6.4.2 Editing the message 63

7 Starting the application 65
7.1 Operating the user interface 65
7.2 Selecting functions 65
7.3 Setting the values 66
7.3.1 Setting a value with the slider 66
7.3.2 Changing a value incrementally with the fine adjustment 66
7.3.3 Selecting the last used value 67
7.3.4 Setting a value with the number pad 68
7.3.5 Activate or deactivate the gas control 69
7.4 Switching between the functions 70

8 Menu area 71
8.1 Selecting the menu 72
8.2 Settings 73
8.2.1 The About this CellXpert C170i menu item 74
8.2.2 The System Settings menu item 75
8.2.3 The Device Settings menu item 78

8.3 Alarms . . . 82
8.3.1 Calling up the alarm overview. . . . 83
8.3.2 Setting alarms and alarm limits . . . 84
8.4 Events . . . 87
8.4.1 Retrieving events. . . . 88
8.4.2 Filtering events . . . 88
8.4.3 Calling up more information . . . 88
8.4.4 Exporting events . . . 88
8.5 Charts . . . 89
8.5.1 Opening the chart . . . 90
8.5.2 Selecting functions . . . 90
8.5.3 Selecting the time span. . . . 91
8.5.4 Displaying values from the chart . . . 92
8.5.5 Exporting the chart . . . 92
8.6 Export . . . 92
8.7 Recurring tasks . . . 93
8.7.1 Predefined tasks . . . 93
8.7.2 Perform a recurring task . . . 93
8.7.3 Edit a recurring task . . . 94
8.7.4 Define a new recurring task . . . 96
8.8 Operation Records . . . 99
8.8.1 Accessing Operation Records . . . 99
8.8.2 Creating an experiment. . . . 99
8.8.3 Filtering entries. . . . 99
8.8.4 Exporting entries. . . . 99
8.8.5 Displaying information on an experiment . . . 100
8.9 Screen Lock. . . . 100
8.9.1 Locking the touchscreen . . . 100
8.9.2 Unlocking the touchscreen . . . 101
8.9.3 Activating or deactivating the Automatic Screen Lock . . . 101

9 User administration . . . 103
9.1 The user administration concept . . . 103
9.1.1 User roles for working with user administration . . . 103
9.1.2 Working without user administration . . . 103
9.1.3 User rights. . . . 104
9.2 Establishing the user management. . . . 105
9.2.1 Creating an administrator . . . 105
9.2.2 Editing the user administration. . . . 106
9.2.3 Deactivating the user administration . . . 107
9.3 User login . . . 108
9.4 Editing user accounts as an administrator . . . 109
9.4.1 Creating a user account . . . 109
9.4.2 Editing user accounts . . . 110
9.4.3 Deleting a user account . . . 111
9.4.4 Resetting the password/PIN for a user account . . . 111
9.5 Administrating your own user account. . . . 112

10 Maintenance 113
10.1 Routine maintenance 113
10.1.1 General 113
10.1.2 Daily checks 113
10.1.3 Weekly checks 113
10.1.4 Monthly checks 113
10.1.5 Yearly checks 114
10.2 Performance check 114
10.3 Exterior cleaning 121
10.3.1 Cleaning the touch screen 122
10.4 Disinfection/Decontamination 123
10.4.1 Preparing the disinfection/decontamination 124
10.4.2 Disinfecting the exterior 124
10.4.3 Disassembling the interior equipment 124
10.4.4 Disinfecting/Decontaminating the interior 124
10.4.5 Reassembling the interior equipment 125
10.4.6 Putting into operation 126
10.5 High-temperature disinfection 127
10.6 Contamination Status 134
10.6.1 Set the status to Contaminated 134
10.6.2 Reset the status to Not Contaminated 134

11 Troubleshooting 135
11.1 General errors 135

12 Transport, storage and disposal 147
12.1 Transport 147
12.1.1 Conditions of transport 147
12.2 Storage 147
12.3 Decontamination before shipment 148
12.4 Disposal 148

13 Technical data 149
13.1 Weight/dimensions 149
13.1.1 Equipment dimensions 149
13.1.2 Internal dimensions 149
13.1.3 Floor space required 150
13.1.4 Transporting dimensions 150
13.1.5 Shelves 150
13.1.6 Stacked CellXpert C170i 151
13.2 Power supply 152
13.3 Interfaces 152
13.4 Ambient conditions 152
13.4.1 Temperature management 152
13.4.2 High-temperature disinfection 153
13.4.3 CO_2 control 153
13.4.4 Humidity 153
13.4.5 O_2 control 154
13.4.6 Calibration 154

14 Ordering Information 155
14.1 Shelves and shelf rack 155
14.2 Gas system 155
14.3 Electrics 155
14.4 Connectivity 155
14.5 Housing 156
14.6 Accessories 156
14.7 Upgrade options 157

Index 158

Certificates 161

1 Operating instructions

1.1 Using this manual

- Read this operating manual completely before using the device for the first time. Observe the instructions for use of the accessories where applicable.
- This operating manual is part of the product. Please keep it in a place that is easily accessible.
- Enclose this operating manual when transferring the device to third parties.
- The current version of the operating manual for all available languages can be found on our webpage www.eppendorf.com/manuals.

1.2 Danger symbols and danger levels

The safety instructions of this operating manual indicate the following danger symbols and danger levels:

1.2.1 Danger symbols

	**Hazard point**		**Hot surface**
	**Electric shock**		**Material damage**
	**Explosion**		**Heavy load**
	**Inhalation**		**Danger of cuts**
	**Biohazard**		**Magnetic fields**

1.2.2 Danger levels

DANGER	*Will* lead to severe injuries or death.
WARNING	*May* lead to severe injuries or death.
CAUTION	May lead to light to moderate injuries.
NOTICE	May lead to material damage.

1.3 Symbols used

Depiction	Meaning
1. 2.	Actions in the specified order
▸	Actions without a specified order
•	List
Text	Display or software texts
ⓘ	Additional information

1.4 Glossary

High-temperature disinfection/HTD: Germ reducing method used to destroy microorganisms with temperatures of 120-180 °C.

Relative humidity/RH: The ratio of the amount of water vapor present in the air at a specific temperature to the maximum amount that the air could hold at that temperature, expressed as a percentage.

Stacking stand: Rack system for at most two devices to place them on top of each other and to fix them to the wall.

VisioNize touch enabled device: Device from Eppendorf, which comes with the VisioNize touch interface. VisioNize touch enabled devices are able to connect with the web application *VisioNize Lab Suite*, when connected to the Internet.

VisioNize Lab Suite: *VisioNize Lab Suite* is a cloud-based platform where customers can access services that can be tailored to their specific needs. The *VisioNize Lab Suite* is designed as a provider-independent solution and works with different degrees of connectivity from Eppendorf devices to devices from third-party suppliers.

VisioNize Services: Applications for data management, notification by e-mail/SMS, remote monitoring, maintenance planning, and for accessing device-related documents of connected and non-connected devices. Use of *VisioNize Lab Suite* and Services requires purchase of additional subscription. For more information: https://www.eppendorf.com/visionize

2 Safety

2.1 Intended use

The CellXpert C170i CO_2 incubator is designed to and serve to provide a stable and homogeneous atmosphere required for cell culture by controlling temperature, carbon dioxide, and optionally oxygen for cultivating samples and cells from biological laboratories. It is intended exclusively for use indoors and for operation by qualified staff for research purposes only.



CAUTION! Lack of safety due to incorrect accessories or spare parts

- Accessories and spare parts that are not recommended by Eppendorf compromise the safety, functions, and precision of the device. Eppendorf cannot be held liable or accept any liability for damage resulting from the use of non-recommended accessories and spare parts.
- Only use accessories and original spare parts recommended by Eppendorf.

2.2 User profile

The device and accessories may only be operated by trained and skilled personnel.

Before using the device, read the operating manual carefully and familiarize yourself with the device's mode of operation.



CAUTION! Risk of personal injury or damage to equipment due to misappliance of equipment

- The equipment must be operated as described in this manual. If operational guidelines are not followed, equipment damage and personal injury can occur.
- Do not use the equipment in a hazardous atmosphere or with hazardous materials for which the equipment was not designed.
- Eppendorf is not responsible for any damage to the equipment that may result from the use of an accessory not manufactured by Eppendorf.

2.3 Personal protective equipment

Personal protective equipment protects your life and your health.

- Always wear the personal protective equipment required for the biosafety level and by the laboratory regulations.
- Always wear protective clothing, protective gloves, and safety boots.
- If additional protective equipment is required, this is indicated above the respective instruction.

2.4 Application limits

2.4.1 Description of ATEX Guideline 94/9EC



DANGER! Explosion hazard

- Do not operate the device in areas where work is completed with explosive substances.
- Do not use this device to process any explosive or highly reactive substances.
- Do not use this device to process any substances which could create an explosive atmosphere.



DANGER! Explosion hazard

- Use gases in this equipment only within the range between their lower explosion limit (LEL) and their upper explosion limit (UEL).
- If your process requires or produces gases, be sure to verify their LEL and UEL concentration range (available online or ask your gas supplier).



CAUTION! Lack of safety due to incorrect use of materials

- Do not use this device to process any flammable materials, or use materials where the transfer of mechanical energy to glass apparatus could lead to breakage.

Due to its design and the ambient conditions in its interior, the device is not suitable for use in potentially explosive atmospheres.

The device may only be used in a safe environment, e.g., the open atmosphere of a ventilated lab.

The use of substances which may contribute to a potentially explosive atmosphere is not permitted.

The final decision regarding the risks associated with using these types of substances is the user's responsibility.

2.5 Warnings for intended use

Before using the device, read the operating manual and observe the following general safety instructions.

2.5.1 Personal injury and damage to device



DANGER! Unconsciousness and death by elevated levels of CO_2
Elevated levels of CO_2 may be found in the operating area of the CO_2 incubator.

- Wear personal protective equipment.
- If the laboratory is not properly ventilated, use a CO_2/O_2 alarm system.
- Check the tube connection system with a leakage test.
- Read the *Information on performing a risk assessment for the operation of incubators with CO_2 and N_2* from Eppendorf SE.



WARNING! Lack of safety due to incorrect gas installation or insufficient ventilation

- Only trained personnel may install and connect the gas tubing.



WARNING! Risk of personal injury and of material damage
Heavy devices placed on the incubator may topple and injure persons or cause damage to the material.

- Only stack one CellXpert incubator on top of the other CellXpert incubator. Use the stacking stand and the safety fastening kit.
- Do not place any other heavy devices on the incubator.



WARNING! Risk of suffocation

- Observe the national guidelines on handling gases and on the equipment and operation of laboratories.
- Prevent a too high concentration of CO_2 in breathing air while working in the laboratory.
- Prevent a displacement of O_2 in breathing air due to working with N_2.



WARNING! Risk of personal injury
Burns due to hot surface.

- Do not touch the equipment during the high-temperature disinfection cycle.
- Do not open the doors during the cycle.
- Do not open the doors after a system crash or a mains/power outage during the high-temperature disinfection.



WARNING! Risk of personal injury
Scalding due to hot water.

- Remove water from the water tray before starting the high-temperature disinfection cycle.



WARNING! Damage to health due to infectious liquids and pathogenic germs.

- When handling infectious liquids and pathogenic germs, observe the national regulations, the biosafety level of your laboratory, and the manufacturers' Safety Data Sheets and application notes.
- Wear your personal protective equipment.
- Consult the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, as amended) for comprehensive regulations on the handling of germs or biological material of risk group II or higher.



WARNING! Damage to health due to toxic, radioactive or aggressive chemicals.

- Wear your personal protective equipment.
- Observe the national regulations for handling these substances.
- Observe the manufacturers' Safety Data Sheets and application notes.



WARNING! Electric shock due to damage to the device or mains/power cord.

- Only switch on the device if the device and the mains/power cord are undamaged.
- Only operate devices which have been installed or repaired properly.
- In case of danger, disconnect the device from the mains/power supply voltage. Disconnect the mains/power plug from the device or the earth/grounded socket. Use the disconnecting device intended for this purpose (e.g., the emergency switch in the laboratory).



WARNING! Danger due to strong magnetic field
Magnetic fields may affect pacemakers and defibrillators. Pacemakers may be reset.

- Keep a distance of at least 20 cm from the magnet.



WARNING! Risk of personal injury

- Do not open the device!
- Do not operate a broken device! (*E.g.* if the exterior is damaged)
- Do not modify the device!



WARNING! Risk of personal injury and equipment damage
Single devices or stacked devices on the stacking stand may tip over if not secured with the safety latch.

- Secure basic devices or two stacked devices on the stacking stand to the wall with the safety latch.



CAUTION! Risk of personal injury

- At least 4 people are required to safely lift the incubator.
- The incubator has a high center of gravity. Make sure that it does not topple over when it is moved.



CAUTION! Risk of personal injury

- Observe the safety standards of your lab.
- Use your personal protective equipment.



CAUTION! Risk of personal injury

- Before closing the glass door, make sure that the shelves are properly installed inside the chamber. Slamming the glass door against the shelf could cause broken glass and injury.



NOTICE! Material damage due to incorrect connections.

- Only make electrical connections to devices that are described in the operating manual.
- Other connections are only permitted the consent of Eppendorf SE.
- Only connect devices that meet the safety requirements defined in DIN EN 62368-1.



NOTICE! Damage to the incubator
Lifting the incubator by the door will cause permanent damage to the incubator.

- Lift the incubator only by the lifting handles.
- Never lift the incubator by its door.



NOTICE! Damage to door latch and hinge

- Do not lean on the door.
- Do not put any items on the door.



NOTICE! Risk of material damage

- Never put any liquid material on the top of the incubator. Spilled liquid could cause a short circuit. This will cause permanent damage to the incubator.



NOTICE! Risk of material damage

- To avoid possible damage to the CO_2 sensor due to condensation, never leave water in the water tray while the incubator is switched off, or when a high-temperature disinfection cycle is initiated.

NOTICE! Risk of material damage
The gas tubing and in-line gas filter will burst or crack due to high pressure.

- Incoming CO_2 and N_2 gas pressure must not exceed 0.15 MPa (1.5 bar, 21.8 psi).

NOTICE! Risk of material damage

- The instrument or equipment, and its external connections, to be used inside the chamber should be specified as suitable for use in a humid environment, and at 37 °C. If in doubt, consult with the manufacturer of the equipment.
- Always ensure that the connections are properly and securely made.
- Instruments transfer heat into the chamber. Do not allow too much heat to be transferred into the chamber. Too much heat will affect the temperature control or activate the temperature limiter; this could cause the loss of sample.

NOTICE! Risk of material damage

- Do not modify the device; this could cause the loss of sample.

NOTICE! Damage due to overheating.

- Do not place the device close to sources of heat (e.g., radiator, drying cabinet).
- Do not expose the device to direct sunlight.
- Ensure that all sides of the device are an adequate distance from the wall and adjacent devices to guarantee unobstructed air circulation.

NOTICE! Damage to device or malfunctions due to a damaged touch screen.

- Do not operate the device.
- Switch off the device, disconnect the mains/power plug and have the touch screen replaced by a service technician who has been authorized by Eppendorf.

The mains/power switch and the disconnecting device for the mains/power line must be easily accessible during operation (e.g., a residual current circuit breaker).

Do not use a USB stick with a cable.

If high-temperature settings are used, be aware of heated parts, when touching the incubator or coming into contact with interior parts.

2.6 Warning signs on the device

Symbol	Meaning	Location
	Hazard point ▸ Observe the operating manual	On the name plate at the right side next to the mains/power switch
	Risk of burns from hot surfaces	Top left and right on the door panel, visible when outer door is opened
	Read the operating manual	Right side, next to the mains/ power switch
	Warning Strong magnetic fields produced by the magnets used for door locking	Top left and top right on the front panel, visible when outer door is opened. Right side next to the door closing magnets (left side when door hinge is on the right side).

3 Product description

3.1 Product overview

3.1.1 CellXpert C170i

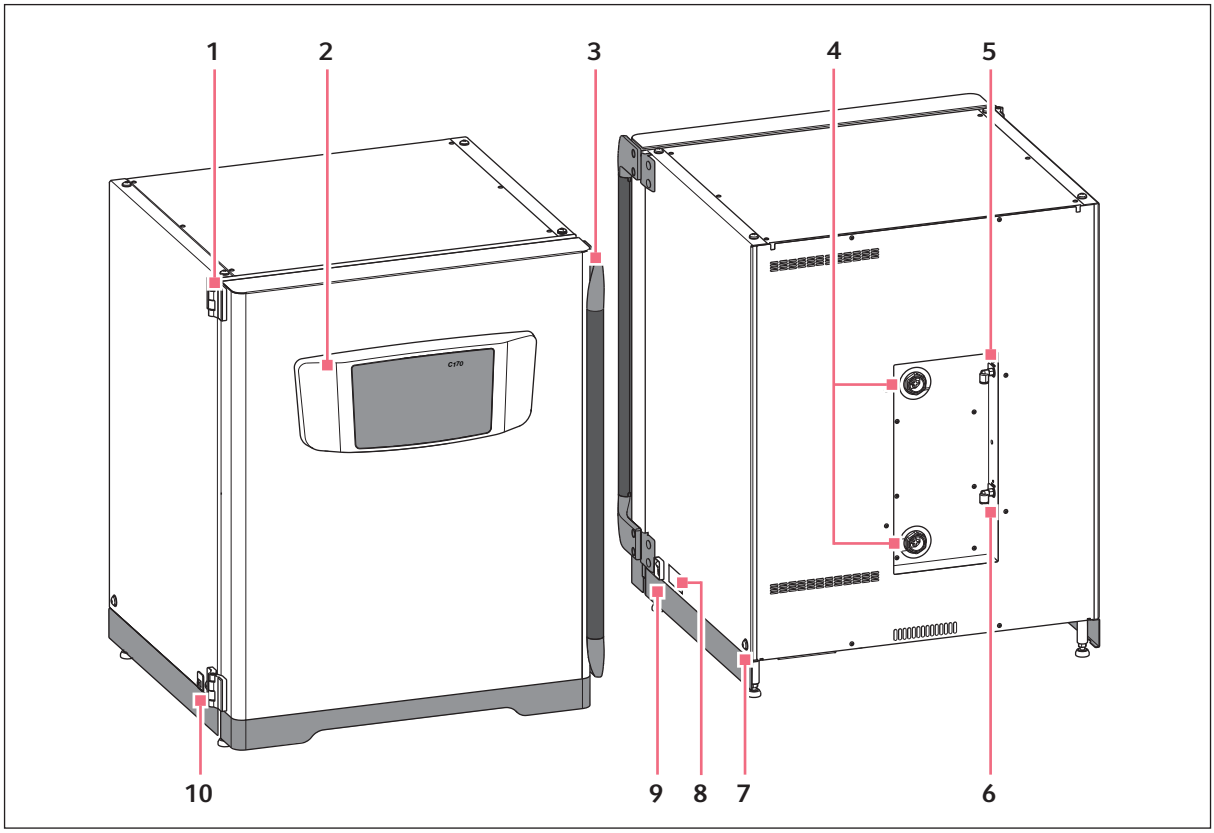


Fig. 3-1: CellXpert C170i: Front and rear view

1 **Door hinge**

2 **Control panel**

3 **Door handle**

4 **Access ports**

5 **CO_2 gas connection**

6 **N_2 gas connection**
(option)

7 **Hole for installing the lifting handle**
(4)

8 **Name plate**

9 **Mains/power switch**

10 **Service interface**

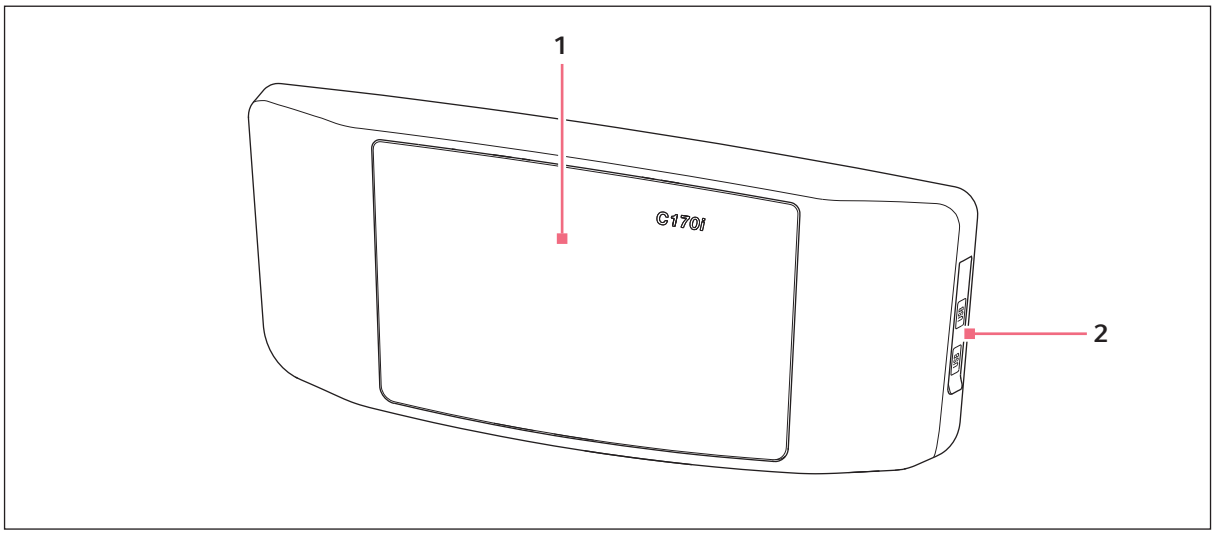


Fig. 3-2: CellXpert C170i: Control unit

1 Touch screen

2 USB port

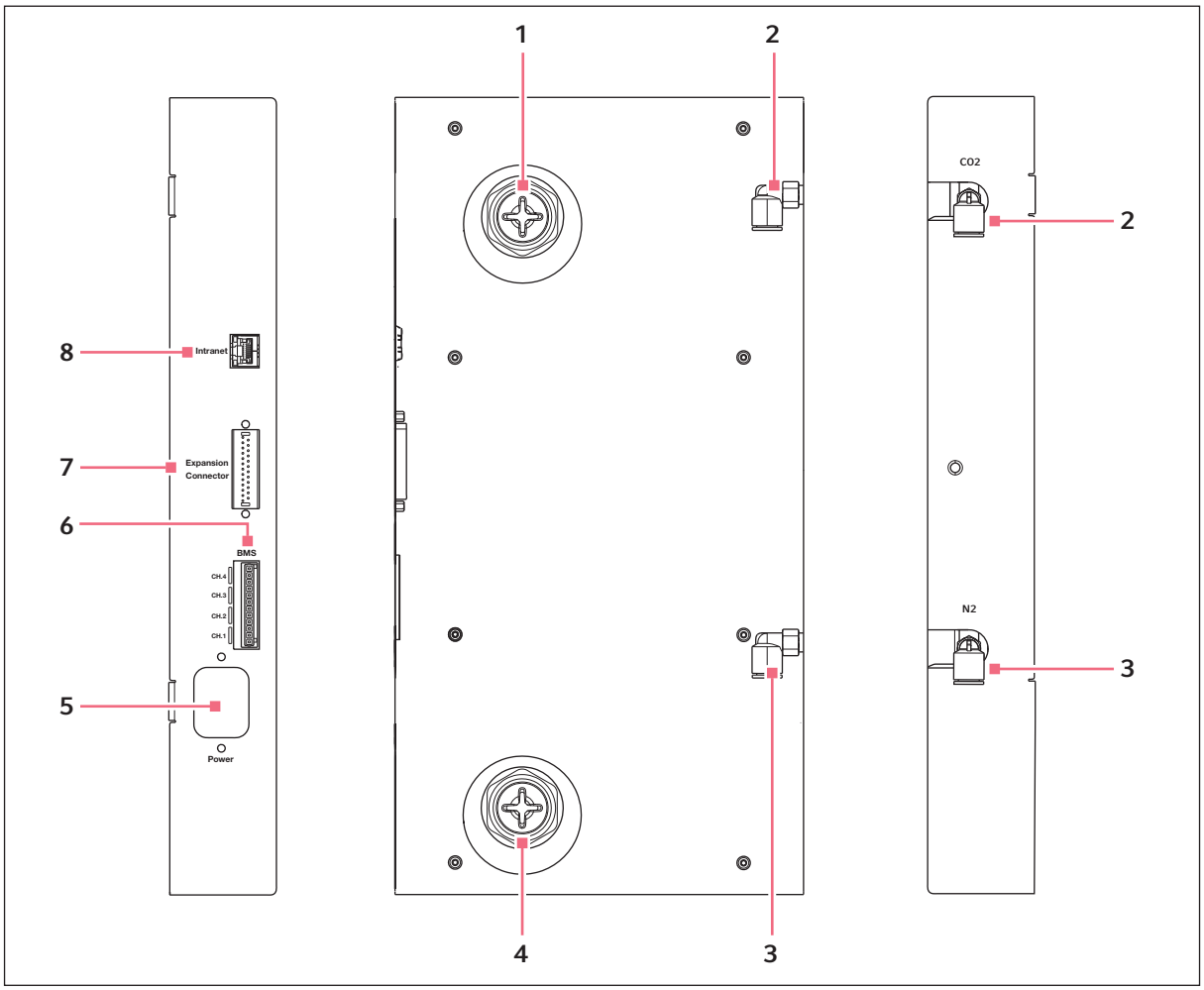


Fig. 3-3: CellXpert C170i: Connections at the rear of the device

1 **Upper access port**

2 **CO_2 tube connector**

3 **N_2 tube connector**
(option)

4 **Lower access port**

5 **Mains/power cord socket**

6 **Connection for Building Management System (BMS)**
4 channels

7 **Expansion connector**
(option)

8 **Connection for intranet**

3.1.2 Inside the chamber

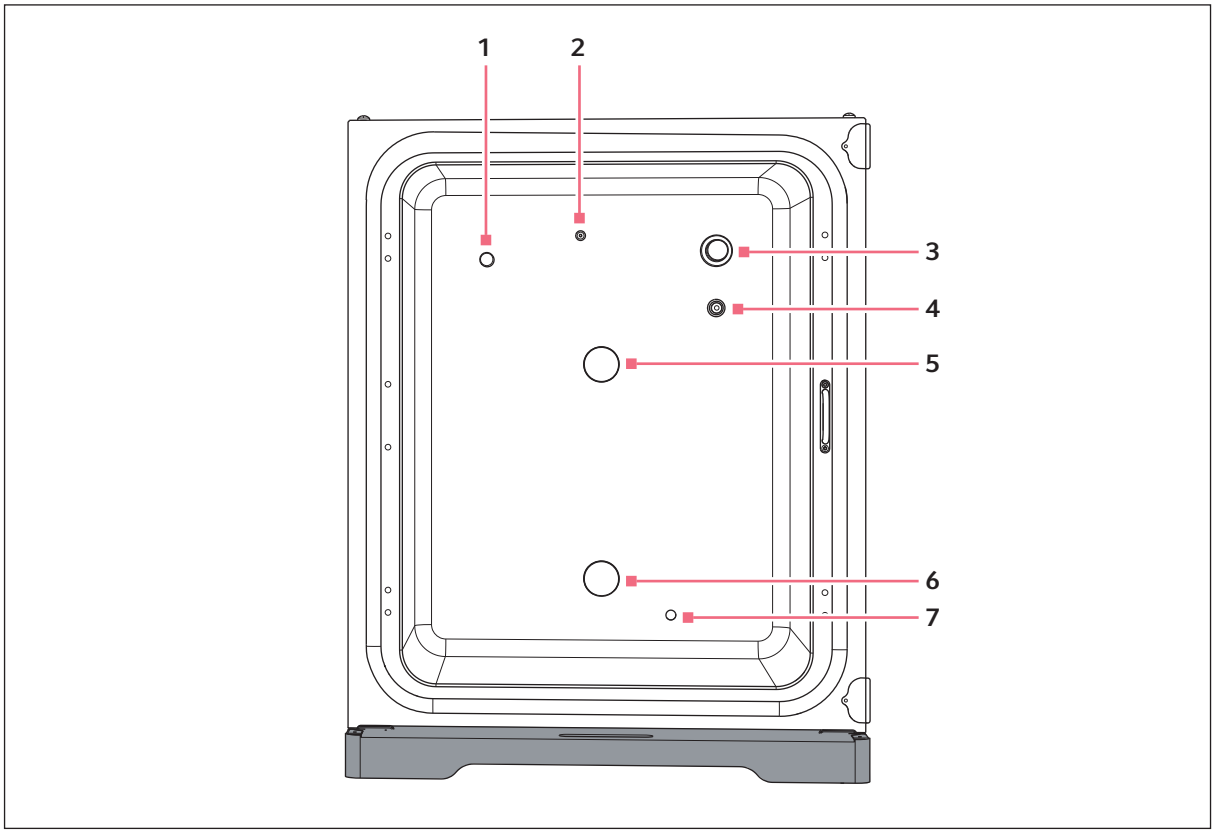


Fig. 3-4: CellXpert C170i: Inside the chamber

1 **Humidity sensor** (option)

2 **Combined inlet for N_2 gas (option) and for CO_2 gas**

3 **CO_2 sensor**

4 **O_2 sensor** (option)

5 **Upper access port**

6 **Lower access port**

7 **Water level sensor** (option)

3.1.3 Inner doors

There are three options available for the inner doors:

- Non-segmented inner door
- Inner door with 4 door segments
- Inner door with 8 door segments

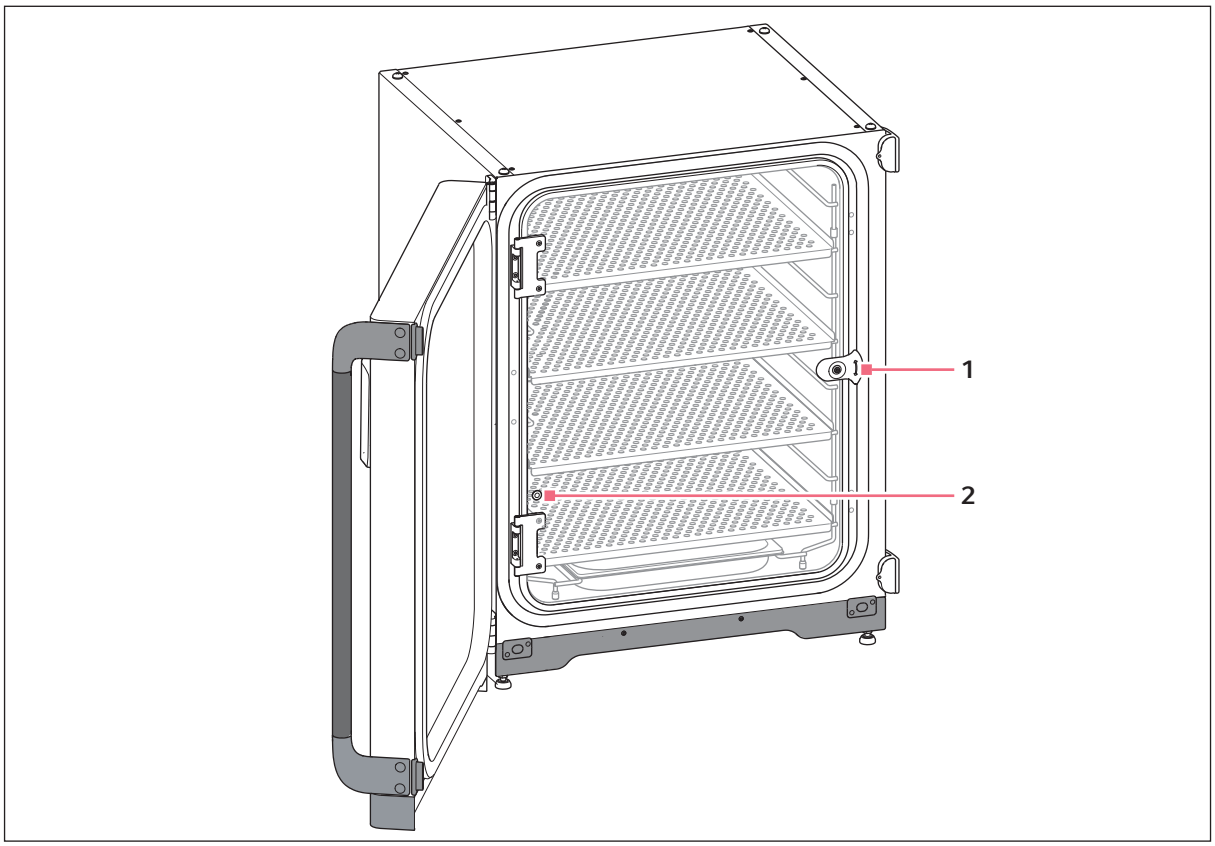


Fig. 3-5: Non-segmented inner door

1 Inner door latch

2 Sample port

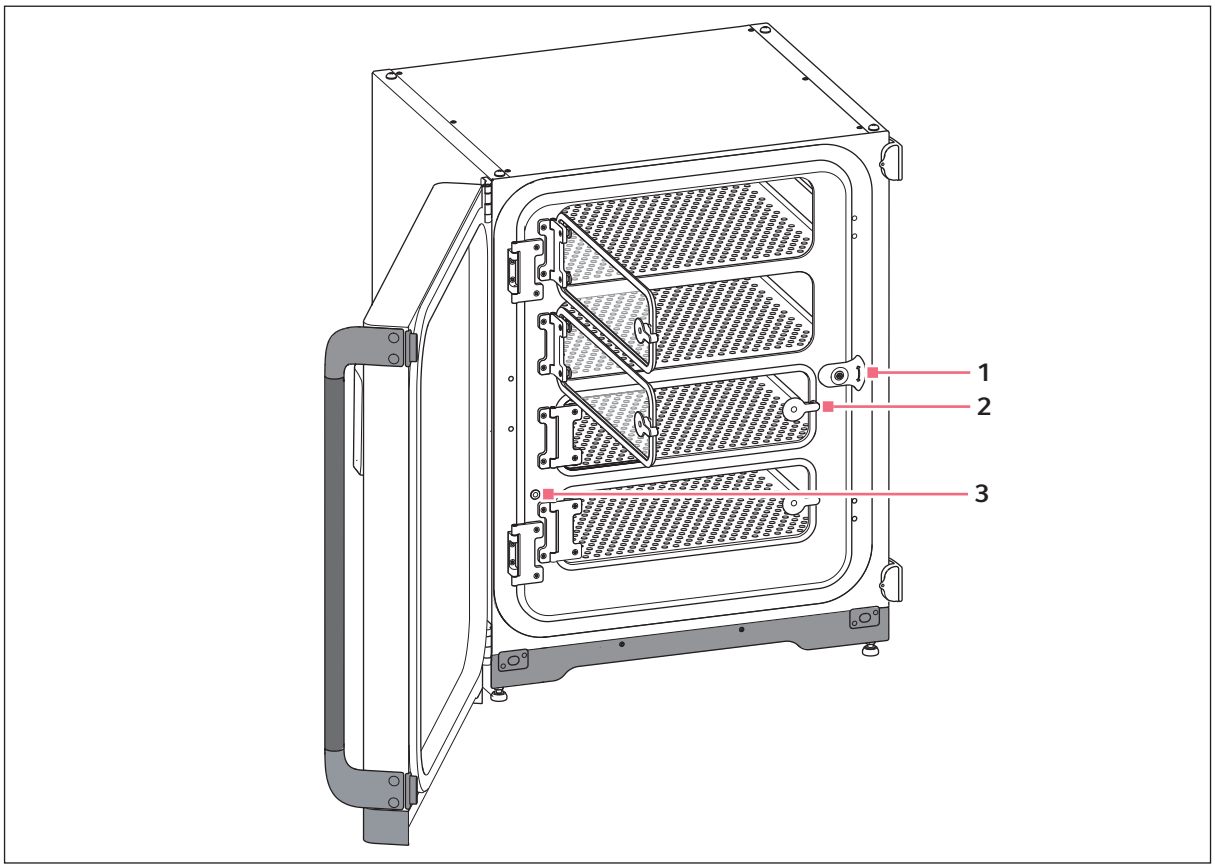


Fig. 3-6: Inner door with 4 door segments

1 Inner door latch

2 Door segment handle

3 Sample port

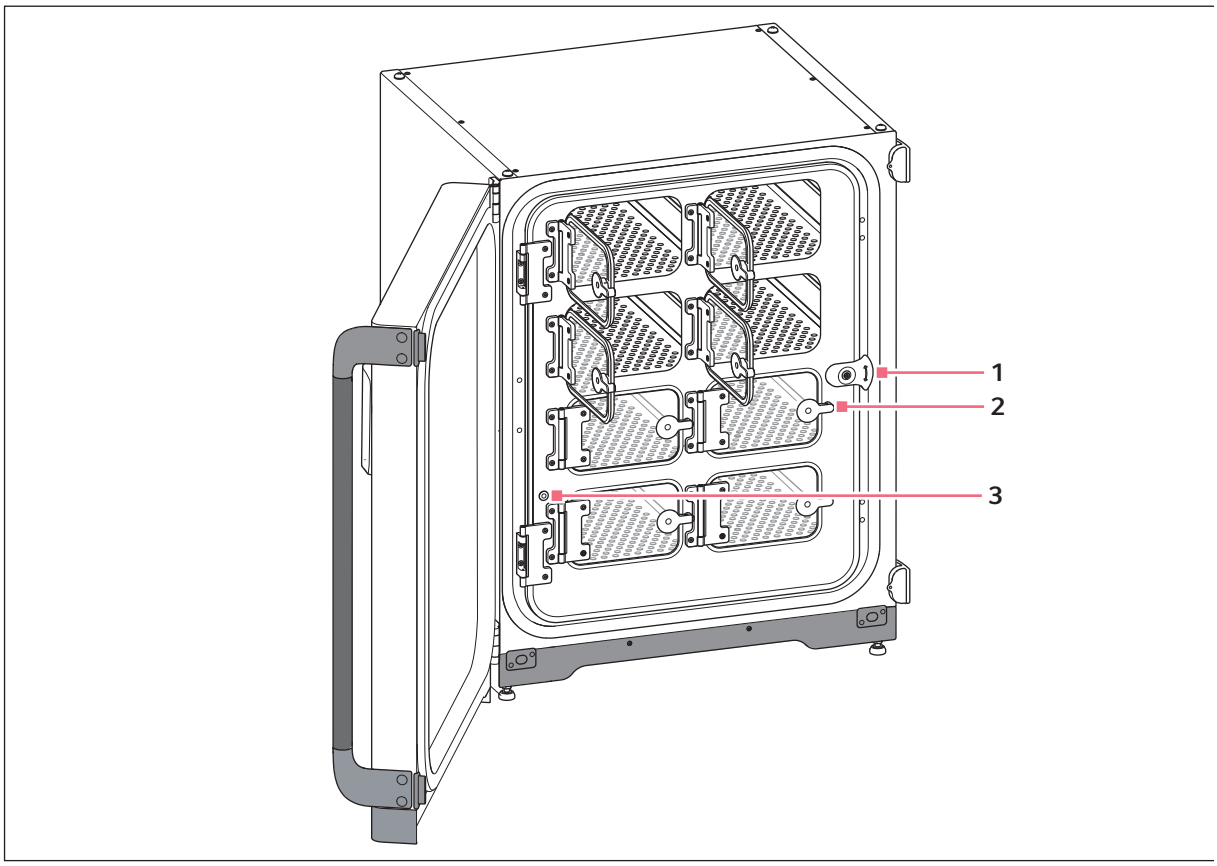


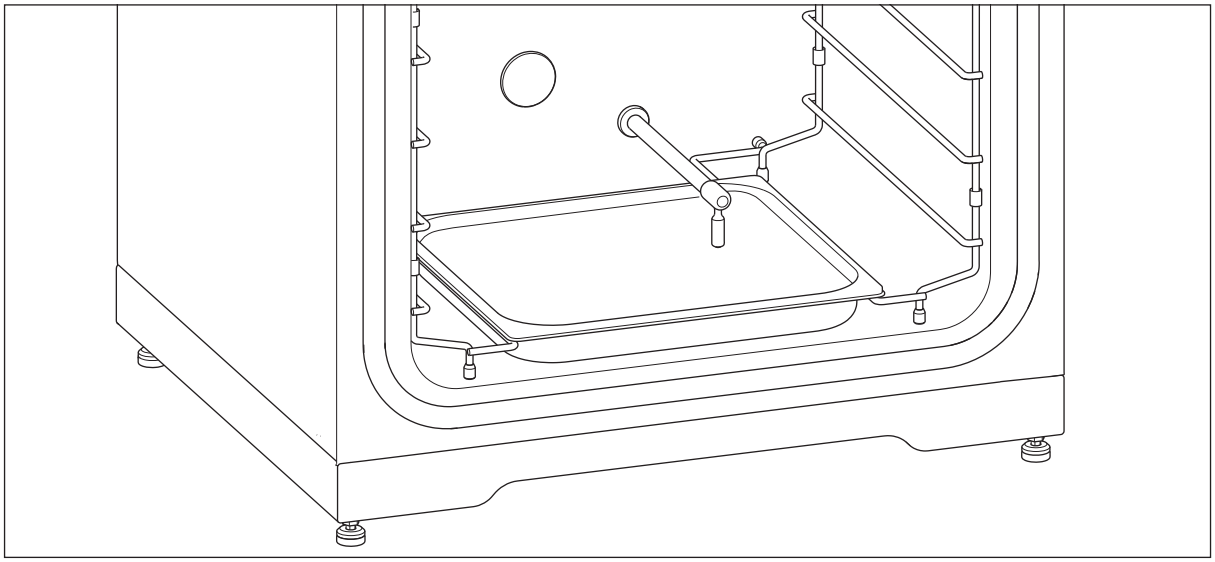
Fig. 3-7: Inner door with 8 door segments

1 Inner door latch

2 Door segment handle

3 Sample port

3.1.4 Water level sensor (option)



The water level sensor is located above the water tray. The flexible end of the water level sensor allows the user to remove and insert the water tray easily.

3.1.5 Relative humidity sensor (option)

The humidity sensor is located near the top left corner of the chamber. During the high-temperature disinfection, the humidity sensor must be covered with the protective cover.

3.1.6 Connectivity

CellXpert C170i can be integrated into the digital solution of Eppendorf: VisioNize Lab Suite.

VisioNize Lab Suite is a cloud-based platform intended to be used for:

- connecting internet-enabled laboratory devices for data management, notification services by e-mail/ SMS, remote monitoring, maintenance planning, and for accessing device-related documents
- manually managing laboratory devices for data management, maintenance planning, and for accessing device-related documentation

Learn more about VisioNize Lab Suite by visiting www.eppendorf.com/visionize

Accessories are required for connecting to VisioNize (see *Connectivity on p. 155)*.

3.2 Delivery package

- Check whether the delivery is complete.
- Check all parts for transport damage.
- Keep the transport box and packing material in order to transport and store the device safely.

Report any damage to the carrier and to your local Eppendorf sales order department immediately.

Quantity	Description	Notes
1	Device	Provided
1	Operating manual	Provided
1	*Information on performing a risk assessment for the operation of incubators with CO_2 and N_2*	Provided
4	Non-tip perforated shelf	Installed
1	Shelf rack	Installed
1	Water tray	Installed
2	Plug for access port	Installed
1 (O_2 option)	O_2 sensor	Installed
1 (H_2O level option)	Water level sensor	Installed
1 (rH sensor option)	Relative humidity sensor	Installed
1 (rH sensor option)	Protective cover for relative humidity sensor	Packed in accessory kit
1	Mains/power cord	Packed in box inside outer carton
1 (2 for O_2 option)	10 mm (0.4 in) outer diameter tubing with 6.5 mm (0.2 in) inner diameter with in-line gas filter Length: 3 m	Packed in accessory kit
4	Lifting handle	Packed in accessory kit
3	Spare shelf rack foot	Packed in accessory kit
3	Spare shelf rack spacer	Packed in accessory kit
4	Silicone foot	Packed in accessory kit
1	Safety fastening kit	Packed in accessory kit
1	BMS plug	Packed in accessory kit
2	Open-end wrench for adjusting the feet (8 mm and 13 mm)	Packed in accessory kit
4	Non-slipping cap for adjustable feet	Packed in accessory kit
1	Door damper	Packed in accessory kit

4 Installation

4.1 Utilities requirements

The following utilities requirements are needed for operation:

Utility	Requirement
Electricity	Use an earthed/grounded mains/power supply which corresponds to the electrical prerequisites on the name plate. The mains/power supply has to be equipped with a residual current circuit breaker.
Mechanical	Use the safety fastening kit for fixing the incubator or 2 stacked incubators to the wall.
CO_2 gas	Cylinder with 100 % CO_2 vapor withdrawal, together with a two-stage regulator for pressure control between 0.05 MPa and 0.15 MPa (7.2–21.8 psi, 0.5–1.5 bar)
For O_2 option: N_2 gas	Cylinder with 100 % N_2 vapor withdrawal, together with a two-stage regulator for pressure control between 0.05 MPa and 0.15 MPa (7.2–21.8 psi, 0.5–1.5 bar)

Keep the packaging and the transport securing device for later transport or storage.

4.2 Selecting the location

CAUTION! Lack of safety due to humid storage and transport conditions

- Evaluate the device for condensation, when received and unpacked for installation.
- If condensation due to storage and transport in humid conditions has occurred, allow the device to dry out for 12 hours in an environment of 18–28 °C and 20–80 % relative humidity. Only with a drying-out process is the device able to meet safety requirements.

NOTICE! Damage due to overheating.

- Do not place the device close to sources of heat (e.g., radiator, drying cabinet).
- Do not expose the device to direct sunlight.
- Ensure that all sides of the device are an adequate distance from the wall and adjacent devices to guarantee unobstructed air circulation.

The mains/power switch and the disconnecting device for the mains/power line must be easily accessible during operation (e.g., a residual current circuit breaker).

The main gas valve must be easily accessible during operation.

Do not place the incubator directly on the floor as it will aspirate dust.

The CellXpert C170i fits on the workbench, under a workbench or it can be double-stacked to save space. Select a level surface capable of withstanding the operating weight of the incubator. The actual operating weight depends on both the options installed, and the material stored in the incubator.

Minimum floor space required
- Width: 81 cm (31.9 in)
- Depth: 60 cm (23.6 in)
- Height: 95 cm (37.4 in)

Optimal distance
- 15 cm (6 in) at the door hinge side (opening of 90°)
- 10 cm (4 in) at the opposite side for mounting the lifting handles

The correct location features
- a minimum ventilation clearance of 5 cm (2 in) to the left and to the right
  a minimum ventilation clearance of 5 cm (2 in) upward
  a minimum ventilation clearance of 3 cm (1.2 in) at the rear side
- a minimum clearance of 5 cm (2 in) on the right side to use the mains/power switch
- protection from direct sunlight
- protection from vibrations
- a clear distance to heat sources, e.g., heaters, autoclaves, or drier compartments
- a clear distance to airflow of heating, air-conditioning ducts, or other drafts
- a clear distance to cold sources, e.g., ultra-low temperature freezers
- an even, stable ground to avoid the device falling down

The electrical connections feature
- a matching of the mains/power connection with the specifications on the name plate
- access to the cutting unit of the power system circuit (to unplug the mains/power cord) during operation

Unplug the device to completely disconnect it from the power source. Install the device in a way that allows easy access to the mains/power plug in case of emergency.

4.3 Positioning the incubator



WARNING! Danger due to strong magnetic field
Magnetic fields may affect pacemakers and defibrillators. Pacemakers may be reset.

- Keep a distance of at least 20 cm from the magnet.



CAUTION! Risk of injury from lifting and carrying heavy loads

- At least 4 people are required to safely lift the incubator.
- Use a transport aid for transporting the incubator.



CAUTION! Risk of personal injury

- The incubator has a high center of gravity. Make sure that it does not topple over when it is moved.



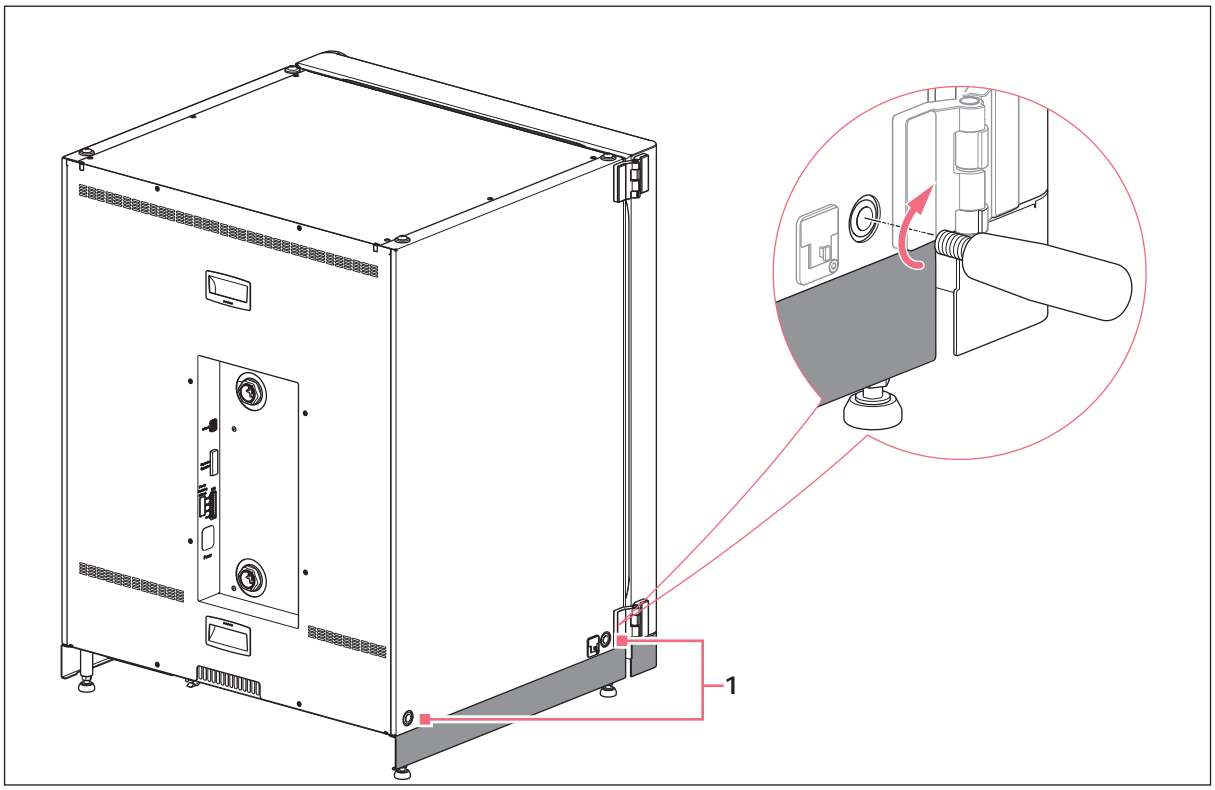
NOTICE! Damage to the incubator
Lifting the incubator by the door will cause permanent damage to the incubator.

- Lift the incubator only by the lifting handles.
- Never lift the incubator by its door.



NOTICE! Damage to the incubator
Pushing, pulling, or turning the incubator on its feet and over barriers will cause damage to the incubator feet.

- Only lift the incubator by the lifting handles.
- At least 4 people are required to safely lift the incubator.
- Check if the lock nuts are tightened to the bottom plate of the incubator.



1 Holes for lifting handles

1. Install the 4 lifting handles into the tapped holes.
2. Carefully move the incubator to the operational location using the lifting handles.
3. Check to ensure that the door cable is not pinched and may be moved.

For non-slip application use the supplied non-slipping caps:

1. Lift the incubator on one side with the lifting handles.
2. Place one non-slipping cap under each of the 2 incubator feet.
3. Repeat the procedure on the other side of the incubator.
4. Remove the lifting handles and store them for further use.
5. Install the cover caps into the tapped holes on both sides of the incubator.

4.4 Initial setup

4.4.1 Leveling the incubator

Prerequisites

A spirit level with the ends facing to the left and to the right is placed on one shelf.

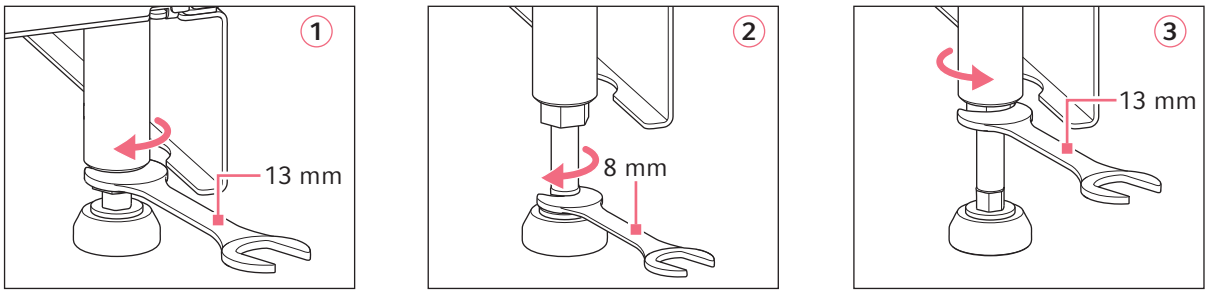
Do not place the spirit level on the housing.

NOTICE! Risk of material damage
Due to an unleveled device, it is possible that not all cells are covered with the medium. This could cause the loss of sample.

- Level the device by adjusting its feet.

NOTICE! Damage to the incubator
The feet may bend if they are turned out to far.

- Turn out the feet less than of 2 cm.
- Tight the lock nut on each foot.



1. Loosen the lock nut with the supplied wrench of 13 mm.
2. Adjust the leveling feet with the wrench of 8 mm until the incubator is level and stable.
3. Turn the spirit level so that the ends face forward and rearward.
4. Level the incubator by adjusting the height of the feet.
5. Place the spirit level on other shelves. Adjust the height of the feet if necessary.
6. Lock the leveling feet by tightening the lock nuts on each foot with the wrench of 13 mm.

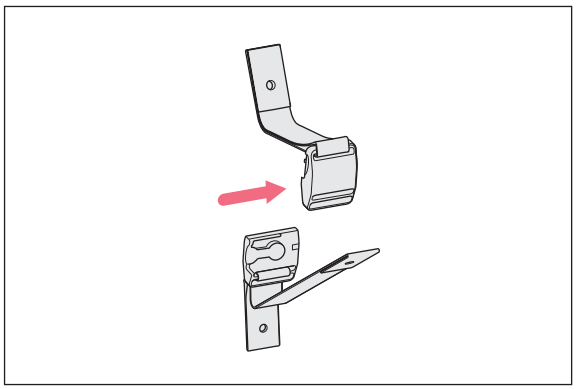
4.4.2 Fixing the incubator

WARNING! Risk of personal injury and equipment damage
Single devices or stacked devices on the stacking stand may tip over if not secured with the safety latch.

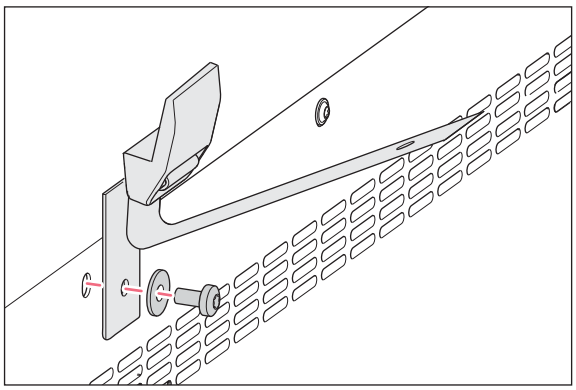
- Secure basic devices or two stacked devices on the stacking stand to the wall with the safety latch.

WARNING! Risk of personal injury and equipment damage
When moving a stack of two incubators, the upper incubator may topple, if it is still fixed to the wall.

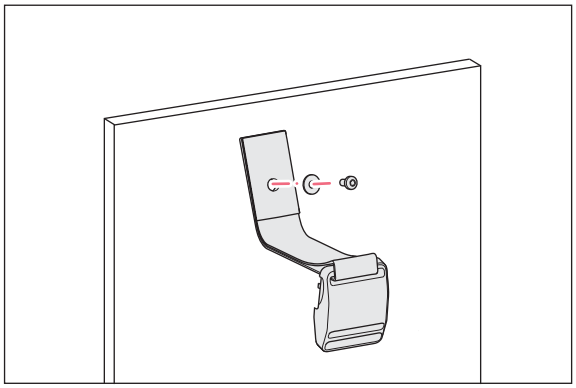
- Disengage the safety latch before moving the incubators.



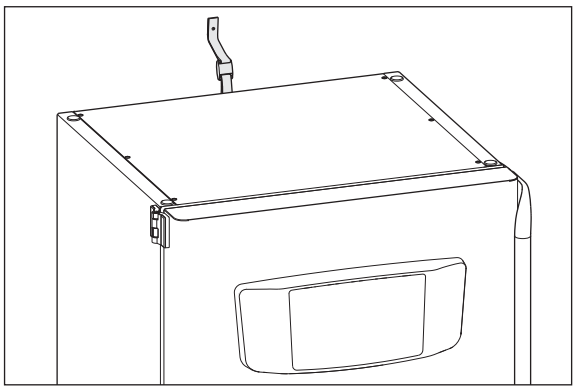
1. Disconnect the upper and the lower part of the magnetic safety latch by pushing them aside from each other.



2. To attach the lower part of the safety latch to the top side of the incubator, use the spare part screw M4x8, Torx 20, and a washer.



3. Attach the other part of the safety latch and a washer to the wall. The screw must have a pullout strength of at least 250 N (25 kg).



4. Click the two parts of the magnetic safety latch together.

5. Fasten the belt. Do not fasten too tightly.

4.5 Making connections

4.5.1 Electrical connection



WARNING! Danger due to incorrect voltage supply.

- Only connect the device to voltage sources which correspond with the electrical requirements on the name plate.
- Only use earth/grounded sockets with a protective earth (PE) conductor.
- Only use the mains/power cord supplied.



WARNING! High voltage

- Before taking this device in operation, always make sure that this equipment is properly earthed / grounded by means of the supplied mains/power cord.



Do not use a multiple socket extension cord.

- Make sure that the voltage requirements match the information on the name plate.
- Incubators with 100 V – 127 V: Connect only 1 device to 1 fuse.
- Incubators with 220 V – 240 V: Connect up to 2 devices to 1 fuse.
- Use the mains/power cord supplied to connect the incubator to the correct mains/power supply voltage.

4.5.2 Gas connection



DANGER! Unconsciousness and death by elevated levels of CO_2

Elevated levels of CO_2 may be found in the operating area of the CO_2 incubator.

- Wear personal protective equipment.
- If the laboratory is not properly ventilated, use a CO_2/O_2 alarm system.
- Check the tube connection system with a leakage test.
- Read the *Information on performing a risk assessment for the operation of incubators with CO_2 and N_2* from Eppendorf SE.



WARNING! Lack of safety due to incorrect gas installation or insufficient ventilation

- Only trained personnel may install and connect the gas tubing.



WARNING! Risk of suffocation

- Observe the national guidelines on handling gases and on the equipment and operation of laboratories.
- Prevent a too high concentration of CO_2 in breathing air while working in the laboratory.
- Prevent a displacement of O_2 in breathing air due to working with N_2.

NOTICE! Risk of material damage
The gas tubing and in-line gas filter will burst or crack due to high pressure.

- Incoming CO_2 and N_2 gas pressure must not exceed 0.15 MPa (1.5 bar, 21.8 psi).

The main gas valve must be easily accessible during operation.

Only use dry gas.

Do not bend the gas tubing.

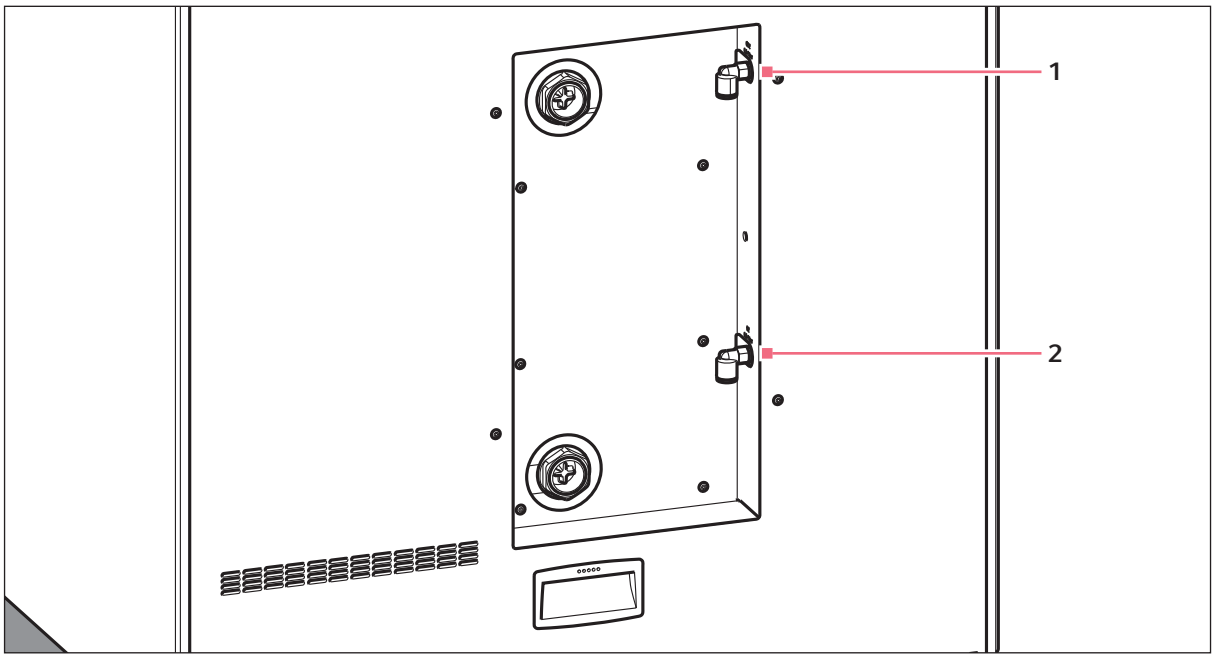


Fig. 4-1: Connections for CO_2 and N_2 at the rear of CellXpert C170i

1 CO_2 tube connector **2 N_2 tube connector (option)**

1. Attach the longer part of the supplied gas tubing to the pressure regulator outlet. Ensure that the gas supply is connected to the *INLET* side of the in-line gas filter. Attach the shorter part of the supplied gas tubing to the CO_2 tube connector at the rear of the incubator. Push the gas tubing into the tube connector until it stops. Check if the gas tubing is fixed by lightly pulling on it. It must not move. Secure the connected end at the pressure regulator.

2. For O_2 option: Attach the longer part of the supplied gas tubing to the pressure regulator outlet. Ensure that the gas supply is connected to the *INLET* side of the in-line gas filter. Attach the shorter part of the supplied gas tubing to the N_2 tube connector at the rear of the incubator. Push the gas tubing into the tube connector until it stops. Check if the gas tubing is fixed by lightly pulling on it. It must not move. Secure the connected end at the pressure regulator.
3. A large-size cylinder of CO_2 with vapor withdrawal (and optional a large-size cylinder of N_2 with vapor withdrawal) is required to supply the incubator. The cylinder controls primary gas pressure. Fitting a two-stage CO_2 (and optional N_2) pressure regulator is recommended.
4. Check the pressure settings of the CO_2 and the N_2 connections.

   A default pressure setting for CO_2 of 0.1 MPa (14.5 psi, 1 bar) or in the range of 0.05–0.15 MPa (7.2–21.8 psi, 0.5–1.5 bar) is recommended.
   O_2 option: A default pressure setting for N_2 of 0.1 MPa (14.5 psi, 1 bar) or in the range of 0.05–0.15 MPa (7.2–21.8 psi, 0.5–1.5 bar) is recommended.
5. To disconnect the gas tubing, switch off the gas pressure and press down the small ring of the tube connector and pull out the gas tubing.

4.5.3 O_2 sensor (option)

Never disconnect the O_2 sensor.

If the incubator is provided with the O_2 option, the O_2 sensor already is mounted. The sensor is individually calibrated for each incubator. Do not use O_2 sensors from other devices. If an O_2 sensor is defective, contact the authorized service.

4.6 Door damper

The door damper allows a soft closing of the outer door. If required, you can install the door damper additionally.

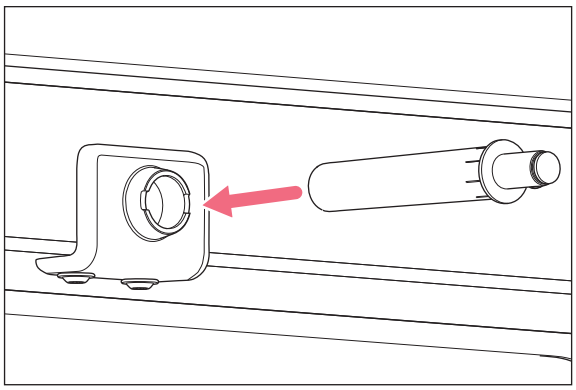
Delivery package
- Door damper
- Cranked wrench key Tx10
- Flat head screwdriver
- Plug

4.6.1 Installation of the door damper

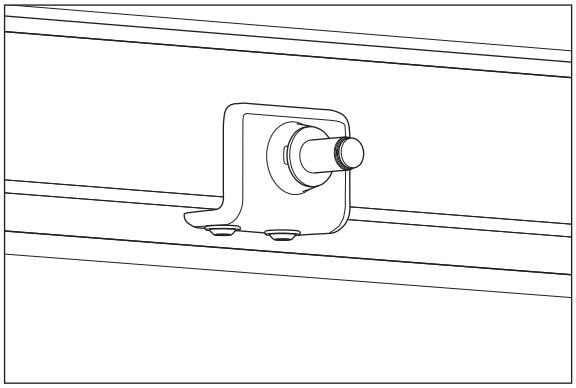
The installation point is at the bottom of the inner side of the outer door.

Prerequisites

The holder for the door damper is installed.

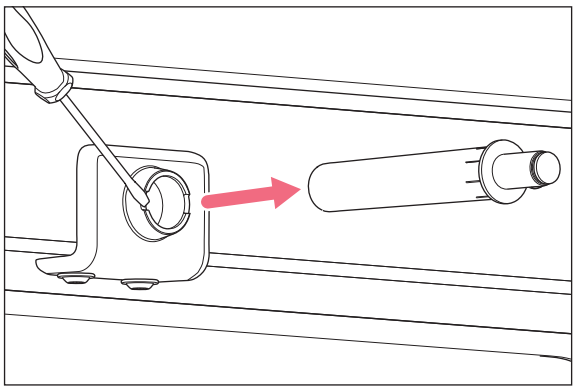


1. Insert the longer and thicker part of the door damper into the holder.



2. Press the door damper into the holder until it stops.

4.6.2 Disassembly of the door damper



1. Remove the door damper with the flat head screwdriver.

4.7 Alarm relay for Building Management System

Only connect devices that meet the safety requirements defined in IEC 60950-1.

The connection to the Building Management System (BMS) allows the centralized monitoring of the device. Alarm sources are programmable with the user interface.

The system is activated by alarm conditions:

- over-temperature
- under-temperature
- errors and warnings
- CO_2 high
- CO_2 low
- power failure

The power failure alarm cannot be switched off. If mains/power supply voltage fails or the device is being switched off, all relays switch to alarm: Common and normally open contacts are connected.

The system is connected via a 12-pin connector at the rear of the incubator. The matching plug is provided.

Connect the device to the BMS with an unshielded cable harness of single-conductor or multi-conductor type with a cross section of AWG 28–16 or 0.08–1.5 mm^2. Mount the ferrite core to the cable as described in the instructions for use for the ferrite core.

The maximum cable length must be shorter than 30 m.

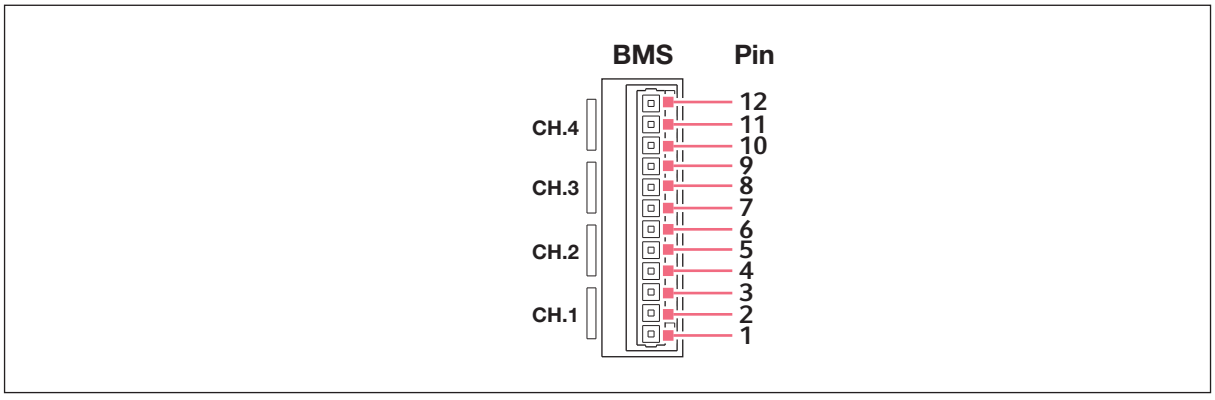


Fig. 4-2: BMS connector

Pin	Designation
1	Channel 1 common
2	Channel 1 normally closed
3	Channel 1 normally open
4	Channel 2 common
5	Channel 2 normally closed
6	Channel 2 normally open
7	Channel 3 common
8	Channel 3 normally closed
9	Channel 3 normally open
10	Channel 4 common
11	Channel 4 normally closed
12	Channel 4 normally open

The relays must not be operated at more than 2 A and 30 V DC/AC.

Default settings are:

Channel 1 (relay 1)	Temperature alarm
Channel 2 (relay 2)	CO_2 alarm
Channel 3 (relay 3)	O_2 alarm (OFF, if option is not available)
Channel 4 (relay 4)	Water level alarm (OFF, if option is not available)

The alarm sources for the channels can be programmed at the user interface.

4.7.1 Incubator operating with and without alarm

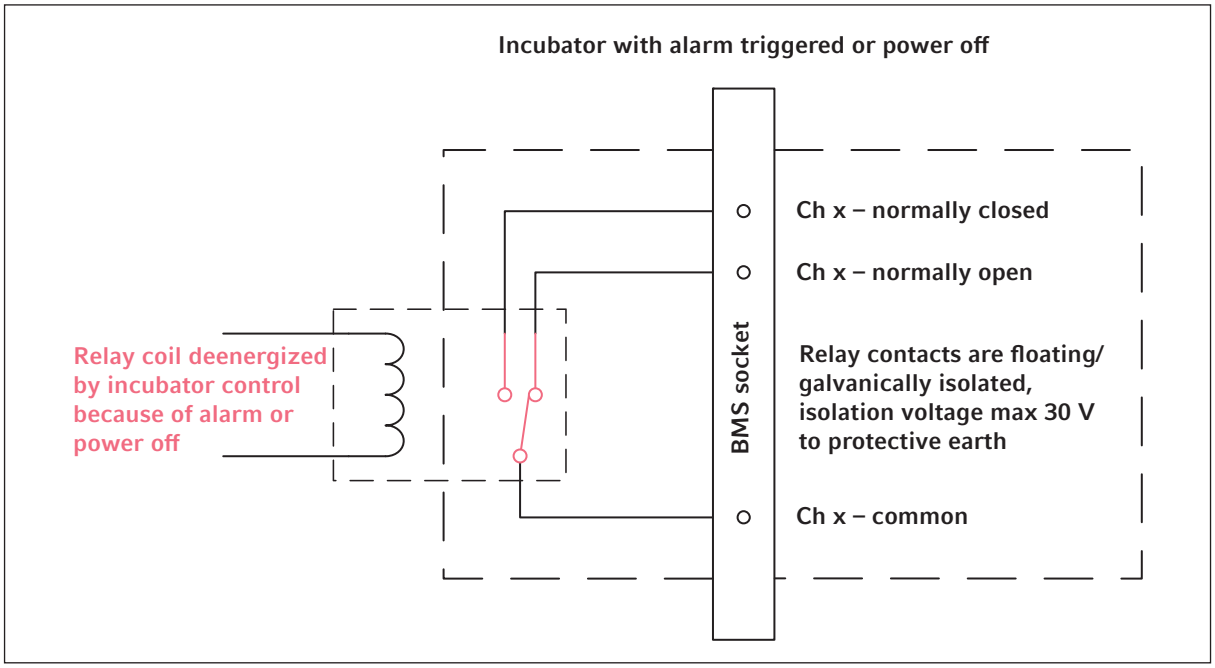


Fig. 4-3: Incubator operating with alarm

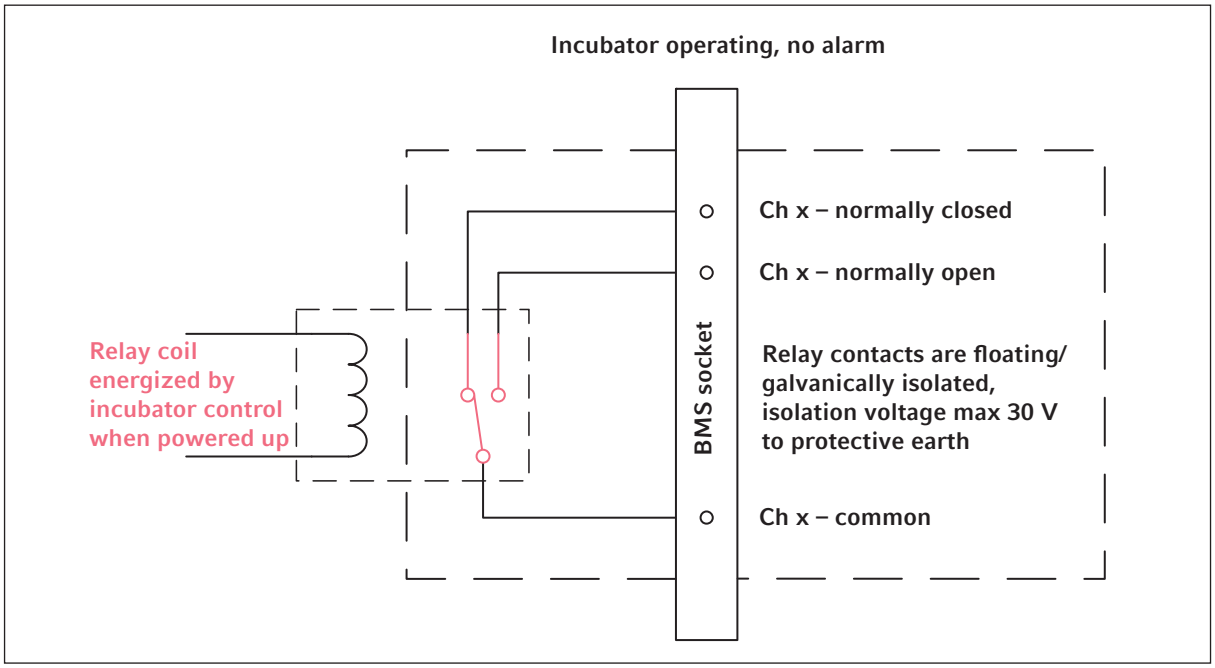


Fig. 4-4: Incubator operating without alarm

4.8 Connecting to VisioNize Lab Suite

The following steps describe how to connect a device with VisioNize touch interface to VisioNize Lab Suite.

Requirements:

- Network socket of the local network near the device
- Standard Ethernet cable
- Internet access with open ports to the following URL:
  - URL: www.eppendorf.com
  - Port: 443 TCP
  - Protocol: MQTT via web sockets

To avoid unauthorized access, data loss, sample loss, and data abuse, protect your VisioNize touch enabled device against unauthorized access from the Internet.

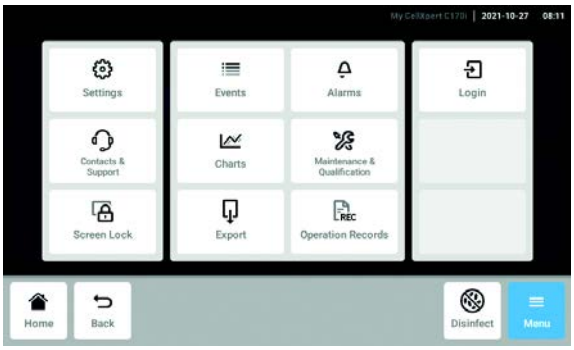
▸ Ask your IT system administrator for advice.

Connect to the network

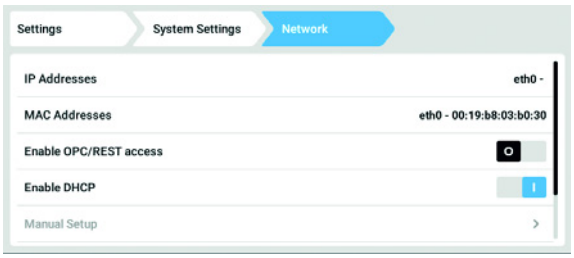
Prerequisites

All devices are integrated into the local network and have the port open to the following URL www.eppendorf.com.

The software version of the device is compatible with VisioNize Lab Suite. (Check by tapping *Menu* > *Settings* > *About this device*: scroll down to *Software version*.)

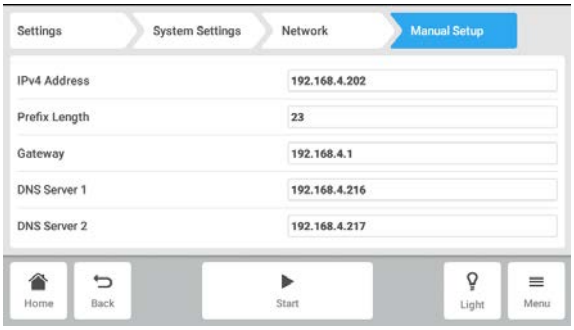


1. Connect the ethernet socket at the rear site of the device to an unlocked socket of the network with a standard ethernet cable.
2. To check the network connection, open the settings on the touch screen of the device.
3. Tap *Menu* > *Settings* > *System Settings* > *Network*.

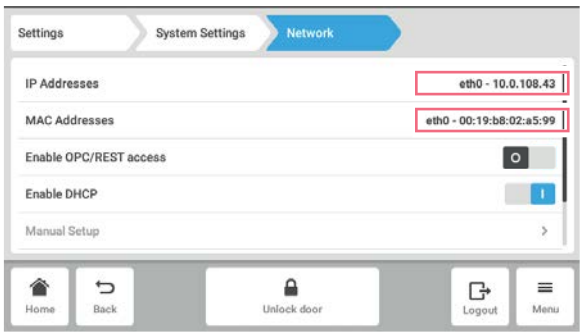


4. Switch on DHCP as network protocol.

DHCP



5. If you do not use DHCP, switch off *Enable DHCP* and tap *Manual Setup*.
6. Enter the device settings.



7. To check the entries, tap *Back*.
   When the device is successfully connected, the IP address is displayed next to *IP Addresses*.
   If the IP address is not displayed, note the MAC address and contact your local IT administrator.

8. To check if your device is correctly configured to connect to VisioNize, use the function *Check Cloud Connectivity Prerequisites* in *Menu* > *Contacts & Support* > *Diagnostics*.

4.8.1 Registration to VisioNize Lab Suite

VisioNize touch enabled devices already have the certificate to connect to VisioNize Lab Suite.

Log in to your VisioNize Lab Suite account by visiting: https://<your_tenant_name>.visionizelabsuite.eppendorf.com. To request a demo or learn more about VisioNize Lab Suite, visit https://www.eppendorf.com/visionize. To subscribe to VisioNize Lab Suite, visit: https://www.eppendorf.com/visionize-subscription.

After logging in to your VisioNize Lab Suite account:

1. Add the device to your device list.
2. Navigate to the *Device management*.
3. Click *Add device*.
4. Select a VisioNize touch enabled device.
5. Enter the serial number.
6. Navigate to *Menu* > *Settings* > *About this device* at the device display to check the serial number.
7. Confirm by clicking *Submit*.
8. Navigate to the tab *Requests* in the device management app.
9. Select the device you want to add.
10. Click *Accept device* once you have connected the device to your local network.
11. If the button *Accept device* is grayed out, check if your device is connected to the local network.

5 Operation

5.1 Preparing for operation



DANGER! Unconsciousness and death by elevated levels of CO_2
Elevated levels of CO_2 may be found in the operating area of the CO_2 incubator.

- Wear personal protective equipment.
- If the laboratory is not properly ventilated, use a CO_2/O_2 alarm system.
- Check the tube connection system with a leakage test.
- Read the *Information on performing a risk assessment for the operation of incubators with CO_2 and N_2* from Eppendorf SE.



NOTICE! Damage to electronic components due to condensation
Condensate can form in the device after it has been moved from a cool environment to a warmer environment.

- After installing the device, wait for at least 12 hours. Only then connect the device to the mains/power supply.



NOTICE! Risk of material damage
The gas tubing and in-line gas filter will burst or crack due to high pressure.

- Incoming CO_2 and N_2 gas pressure must not exceed 0.15 MPa (1.5 bar, 21.8 psi).

After switching on the incubator, sensors have to initialize. It may take a few minutes until values are displayed.

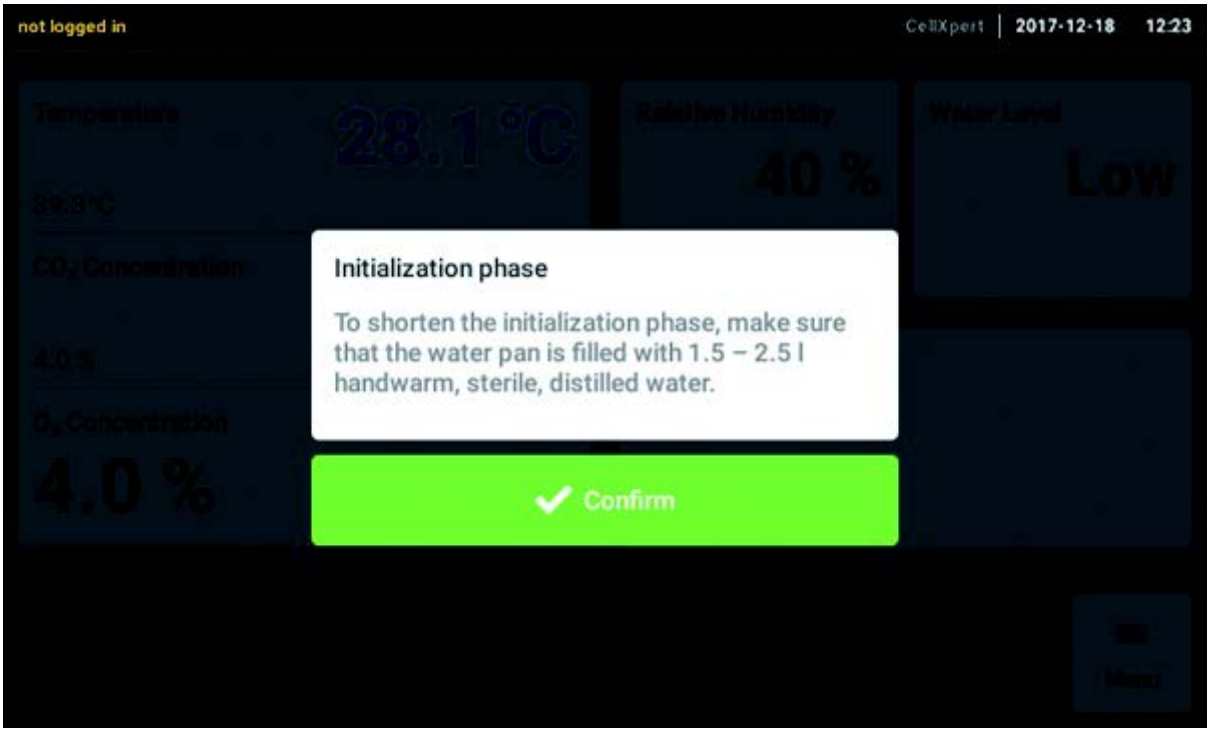
1. Using the mains/power cord provided, connect the incubator to an earthed/grounded mains/power supply.
2. Turn on the CO_2 gas supply with the pressure regulator. Set the gas pressure to 0.1 MPa (1 bar, 14.5 psi). For O_2 option: Turn on the N_2 gas supply with the pressure regulator. Set the gas pressure to 0.1 MPa (1 bar, 14.5 psi).

   The CO_2 gas pressure range is adjustable between 0.05 MPa (flow pressure; 0.5 bar; 7.2 psi) and 0.15 MPa (pressure at rest; 1.5 bar; 21.8 psi). The N_2 gas pressure range is adjustable between 0.05 MPa (flow pressure; 0.5 bar; 7.2 psi) and 0.15 MPa (pressure at rest; 1.5 bar; 21.8 psi).
   Open the stop valve completely to ensure an adequate volume flow.
   Ensure that the gas pressure and the volumetric gas flow rate are sufficient, especially if more than one device is connected to the CO_2 gas source.

3. The chamber setpoints are pre-programmed at 37 °C and 5 % CO_2.

- The CO_2 sensor needs 30 minutes for initialization after the switch-on of the device. No process value is displayed during the initialization phase.
- The O_2 sensor (option) needs 10 minutes for initialization after the switch-on of the device. No process value is displayed during the initialization phase.
- If power is interrupted to the incubator long enough for the temperature to drop below the setpoint, the CO_2 valve is deactivated until the temperature setpoint is achieved again. (The deactivation serves to avoid spurious CO_2 readings while the incubator is below its temperature setpoint).

4. Switch on the incubator using the on-off switch at the right side of the device. Leave the incubator on until the set chamber temperature and CO_2 concentration have been reached.



The display illuminates immediately.

5. To allow conditions to stabilize, leave the incubator running for at least 2 hours (preferably overnight).

CO_2 sensors are calibrated at the factory to control accurately at 5 % CO_2 and 37 °C. Changing the temperature or the CO_2 setpoint leads to deviations in accuracy.

5.2 Functions and limitations

5.2.1 Temperature management

The temperature is adjustable from 22 °C to 50 °C. Incubators are meant to operate with 4 °C above ambient temperature at minimum. If the setpoint is below 4 °C above ambient temperature, the incubator tries to adjust the temperature. It is possible that a sensor error occurs after a certain period. Restart the incubator and adjust another setpoint.

Avoid condensation and reduce the temperature setpoint by:
- cooling down the incubator as fast as possible by opening the doors
- emptying and refilling the water tray with water with a maximum temperature of the new setpoint

5.2.2 Gas pressure

CO_2 and N_2 are connected to the tube connector. Gas pressures range from 0.05 – 0.15 MPa (7.2 – 21.8 psi, 0.5 – 1,5 bar). If the pressure is out of the range, the following reactions occur at certain values:

Pressure Value	Reaction
> 1.8 bar	The valve closes to protect the device. The CO_2 control is stopped until the pressure is low enough.
< 0.2 bar	An error occurs. The CO_2 control is stopped until the pressure is high enough.

You can switch off the pressure monitor for low gas pressure (see *Gas system – Pressure Monitor on p. 81)*.

5.2.3 CO_2

The CO_2 concentration is adjustable from 0.1 % to 20 %. It is possible to deactivate the gas control and to operate with temperature control only.

If you want to reduce the setpoint for the CO_2 concentration during the operation, let CO_2 escape by opening the outer and the inner door.

The sensors have to reinitialize after a switch-on of the device or after a high-temperature disinfection took place. The status *Initializing Sensor* is described in the function areas. It is not possible to adjust a setpoint during this period.

5.2.4 O_2 (option)

If you want to know whether the O_2 option is installed on your device, tap *Menu* > *Settings* > *About this CellXpert C170i* > *Hardware Configuration*.

The O_2 concentration is adjustable from 1 % respective from 0.1 % to 20 % via N_2 connection. It is possible to deactivate the gas control.

If the O_2 sensor is temporarily not needed, deactivate the O_2 sensor. Tap the *Settings* > *Device Settings* > *Home Screen Configuration* menu items.

If you want to increase the setpoint for the O_2 concentration during the operation, let O_2 stream into the incubator by opening the outer and the inner door.

It is not possible to adjust a high CO_2 concentration together with a high O_2 concentration. If setpoints have been chosen beyond physical opportunities, an alarm message may occur.

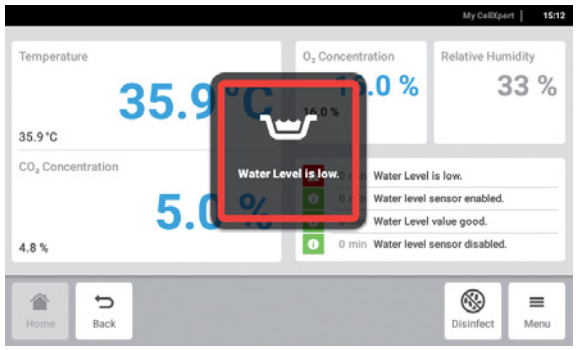
After the switch-on of the device or after a high-temperature disinfection, the O_2 sensor has to reinitialize. The status *Initializing Sensor* is described in the function areas. It is not possible to adjust a setpoint during the initialization.

A low O_2 concentration of 1 % respective from 0.1 % to 20 % might lead to a formation of small droplets outside the chamber. If small droplets appear, adjust the ambient conditions by increasing the ambient temperature to >22 °C and/or by decreasing the relative humidity to <40 %.

5.2.5 Relative humidity (option)

The humidity sensor detects the relative humidity in the incubator. During a high-temperature disinfection, it is necessary to protect the sensor with the cover. The alarm has a time-out for 3.5 h after the door closing and for 5 h after the switch-on of the device.

5.2.6 Water level (option)



A hint appears on the screen, when the water level falls below 0.5 L. The hint recurs every 15 minutes until the water tray is refilled. The alarm function is ready for action 2 hours after the door has been closed and 1 hour after the device has been switched on.

5.2.7 Feature for maintenance

The CellXpert C170i features the option of activating an automatic reminder for common tasks (see *Recurring tasks on p. 93)*.

5.3 Opening and closing doors

WARNING! Danger due to strong magnetic field
Magnetic fields may affect pacemakers and defibrillators. Pacemakers may be reset.

- Keep a distance of at least 20 cm from the magnet.

CAUTION! Cuts due to broken glass
A damaged glass door leads to cuts on the hands.

- Remove the broken glass with a suitable tool.

CAUTION! Risk of personal injury

- Before closing the glass door, be sure that the shelves are properly installed inside the chamber. Slamming the glass door against the shelf could cause broken glass and potential injury.

5.3.1 Opening the inner and the outer door

1. To open the outer door, pull the door handle.

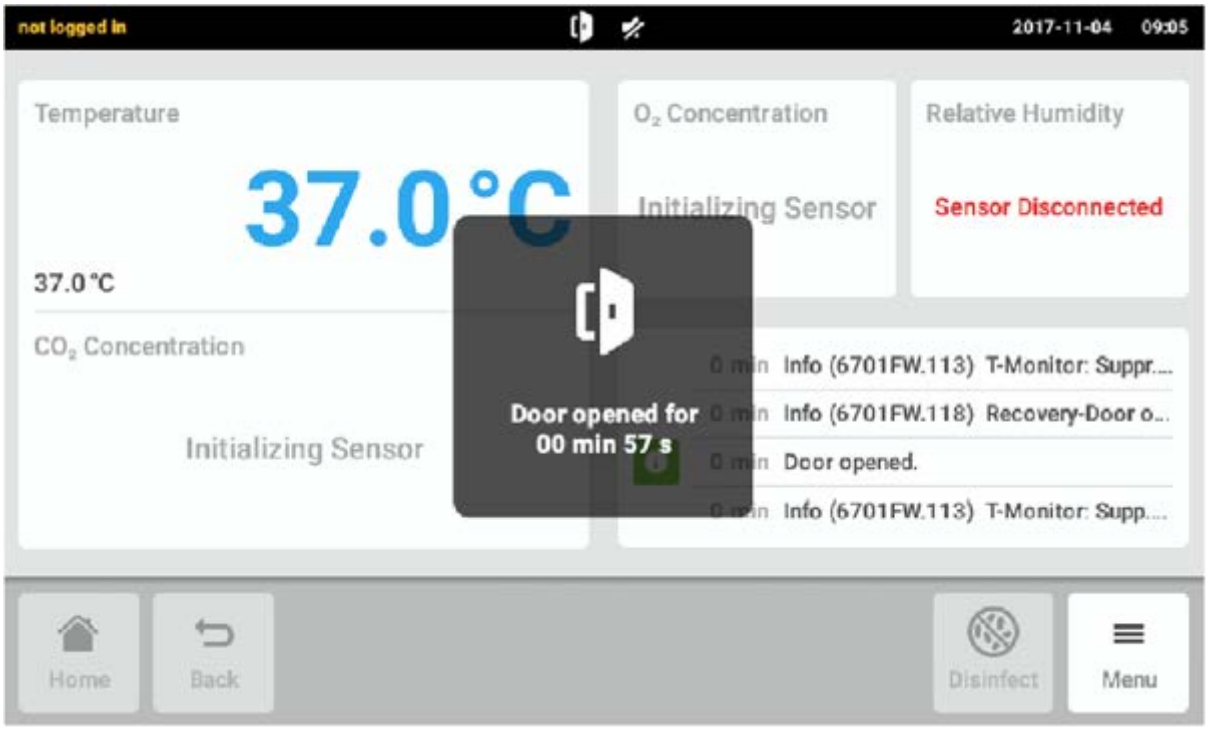


Fig. 5-1: Hint on the touch screen
When the outer door is opened, a hint is displayed on the touch screen.

2. Turn the inner door latch 90° to the top. To open the inner door, pull on the inner door latch.

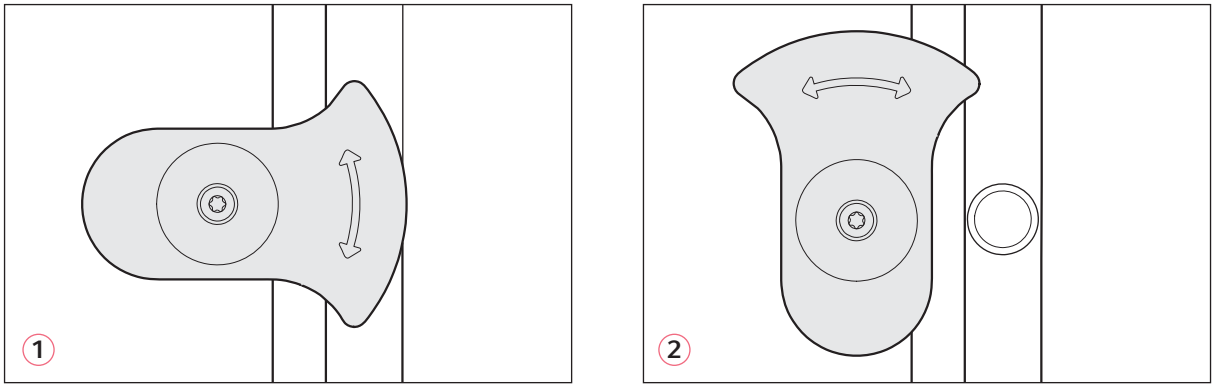


Fig. 5-2: Inner door latch with magnet

1 Inner door latch closed

2 Inner door latch opened

5.3.2 Closing the inner and the outer door

1. Close the inner door and turn the inner door latch 90° to the side until it is fixed by the magnet.

   The inner door is not correctly closed until the inner door latch is oriented horizontally. An incorrectly closed door could cause condensation.

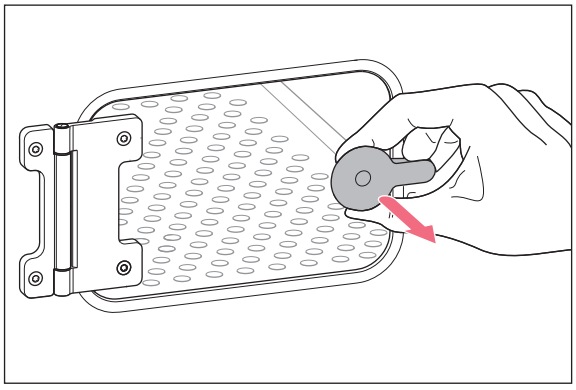
2. Close the outer door until it is fixed by the magnets.

5.3.3 Opening and closing door segments (option)

Prerequisites:

- A 4 or 8-segmented inner door is installed.
- The outer door is open.

1. To open the door segment, pull the door segment handle.



2. Close the door segment.

   The handle is fixed by the magnet.

5.4 Using the water tray

NOTICE! Risk of material damage

- To avoid possible damage to the CO_2 sensor, never leave water in the water tray while the incubator is switched off, or when a high-temperature disinfection cycle is initiated.

NOTICE! Risk of material damage due to spilled water
Spilled water could cause corrosion.

- To avoid possible damage to the device, observe the maximum capacity of the water tray.
- Do not move the device when the water tray is filled.

- Always leave the water tray in place.
- Use warm, distilled, sterile water only in the water tray. The usage of any other types of water including deionized water may cause corrosion inside the incubator.

1. Fill the water tray with 1.5–2.5 liters of warm, distilled, sterile water.
2. The usage of any biocide in the water tray is not recommended. To reduce the possibility of contamination, empty the tray every 7–14 days, clean it with a solution of 70 % isopropyl alcohol and 30 % distilled water, and then refill it with 1.5–2.5 liters of warm distilled, sterile water.

The humidity level within the chamber is not adjustable. The chamber reaches between 85 % and 95 % relative humidity at 37 °C (depending on ambient humidity) with the water tray.

5.4.1 Using the water tray with the optional water level sensor

NOTICE! Risk of material damage

- Do not push parts of the interior equipment against the water level holder.

1. The flexible part of the water level sensor flips forward or backward when you pull out or push in the water tray.

5.5 Using the access ports

It is possible to insert components, e.g., sensors, into the chamber via the access ports.

Prerequisites

- The component, e.g., sensor, with wire is placed in the chamber.
- Both of the access ports are closed with the blind plugs.
- Make sure that the component is not bigger than the inner diameter of 25 mm (0.98 in) of the access port.

1. Remove one of the blind plugs.
2. Pull the component wire through the open access port.
3. For optimal gas tightness, make a cut into the cover of the blind plug. Wrap the component wire around the plug.

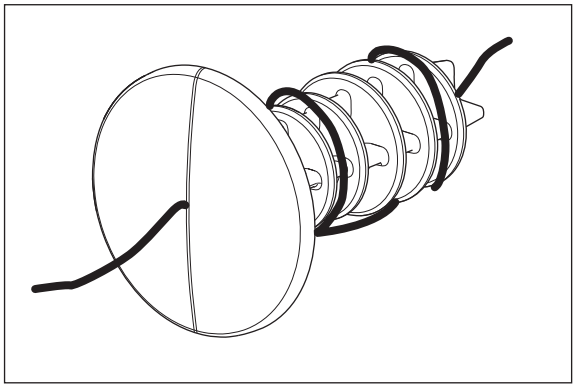


Fig. 5-3: Wire wrapped around the blind plug

4. Refit the blind plug. Make sure that the plug is securely fixed and flush with the rear panel.
5. Put the end of the wire on the top of the incubator.

Make sure that the access port is cleaned and dried before reinstallation of the plug.

5.6 Safety shutdown



NOTICE! Risk of material damage
The gas tubing and in-line gas filter will burst or crack due to high pressure.

- Incoming CO_2 and N_2 gas pressure must not exceed 0.15 MPa (1.5 bar, 21.8 psi).

5.6.1 Temperature

The CellXpert C170i features a shutdown at 10 K over the setpoint of one heat circuit or 5 K below the setpoint according to standard **DIN 12880** (temperature limiter class 1).

- Restart the device.
- If the error occurs again, contact Eppendorf Service.

5.6.2 Gas

The inlet gas valve switches off above 1.8 bar (0.18 MPa).

5.7 Switching off the device

1. Switch off the device.
2. Disconnect the power cord.
3. Switch off the gas pressure.
4. Disconnect the pressure tube.
5. Empty the water tray.
6. Clean the device.
7. Let the incubator dry with opened doors.
8. Let the incubator cool down.

6 Overview of operating controls

6.1 Intuitive operating concept

Eppendorf offers a cross-product operating concept which supports swift familiarization with different Eppendorf products. For different Eppendorf products, the basic operating controls are compatible with each other by using an intuitive touch user interface.

6.2 Symbols

Symbol	Description
	Status: Function active
	Status: Function inactive
	Door open
	Active error
	Active alarm
	Warning
	Notice
	Open alarm setting
	Open event log
	Open chart
	Chart duration
	Close
	Filter
	Export data
	Change function position
	Default alarm setting

Symbol	Description
	Fine increment adjustment
	Display recently used values

6.3 Home screen overview

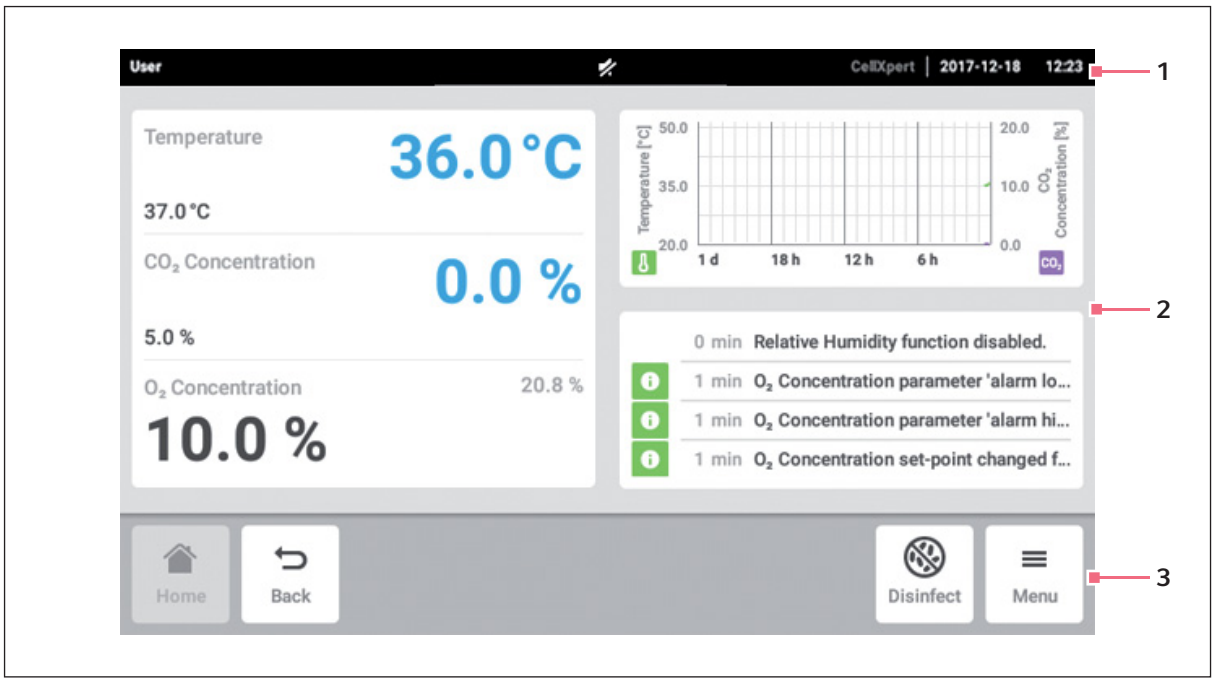


Fig. 6-1: Home screen

1 Status bar
Information on user logged in, date, time, device status, device name

2 Function area
Standard functions of the device

3 Toolbar
Buttons for navigation and operation of the device

6.3.1 Status bar

- Define the device name in *Menu* > *Settings* > *About this CellXpert C170i*.
- Log in as a user via *User Management*.
- Define time and date in *Menu* > *Settings* > *System Settings* > *Date & Time*.

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

6.3.2 Function area

Primary functions are displayed on the left. Additional functions and options are displayed on the right.

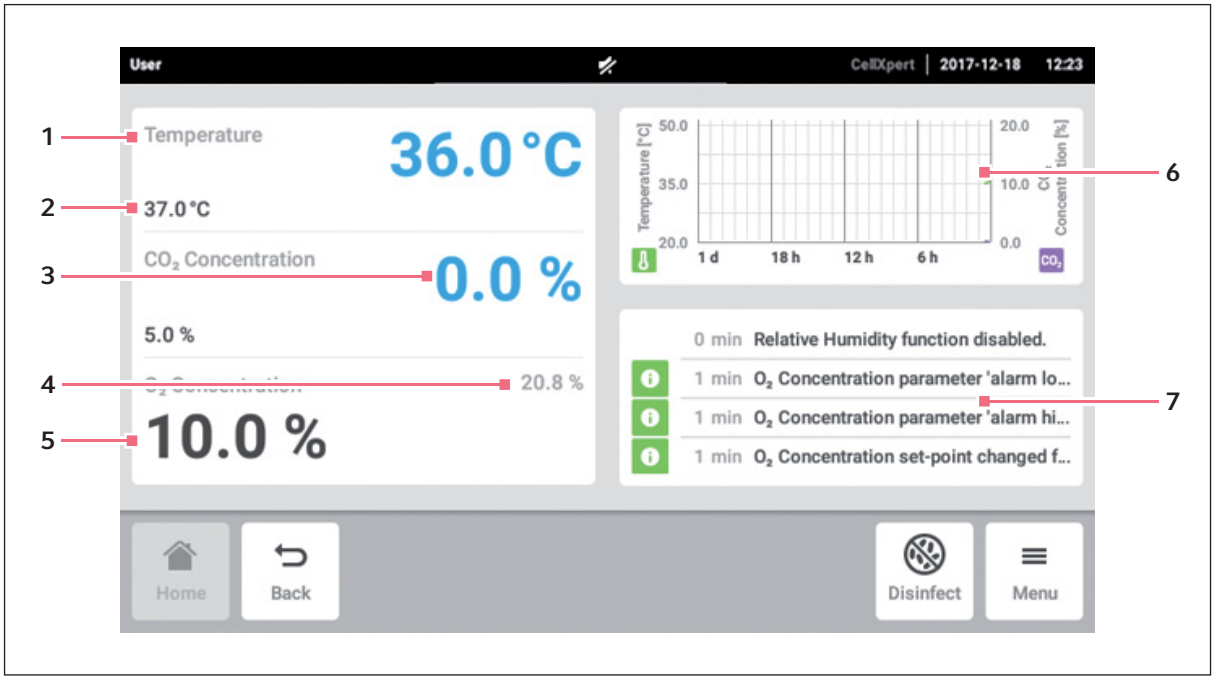


Fig. 6-2: Function area

1 **Name of the function**

2 **Setpoint of a controlled function**
displayed in small black characters

3 **Actual value of a controlled function**
displayed in large blue characters

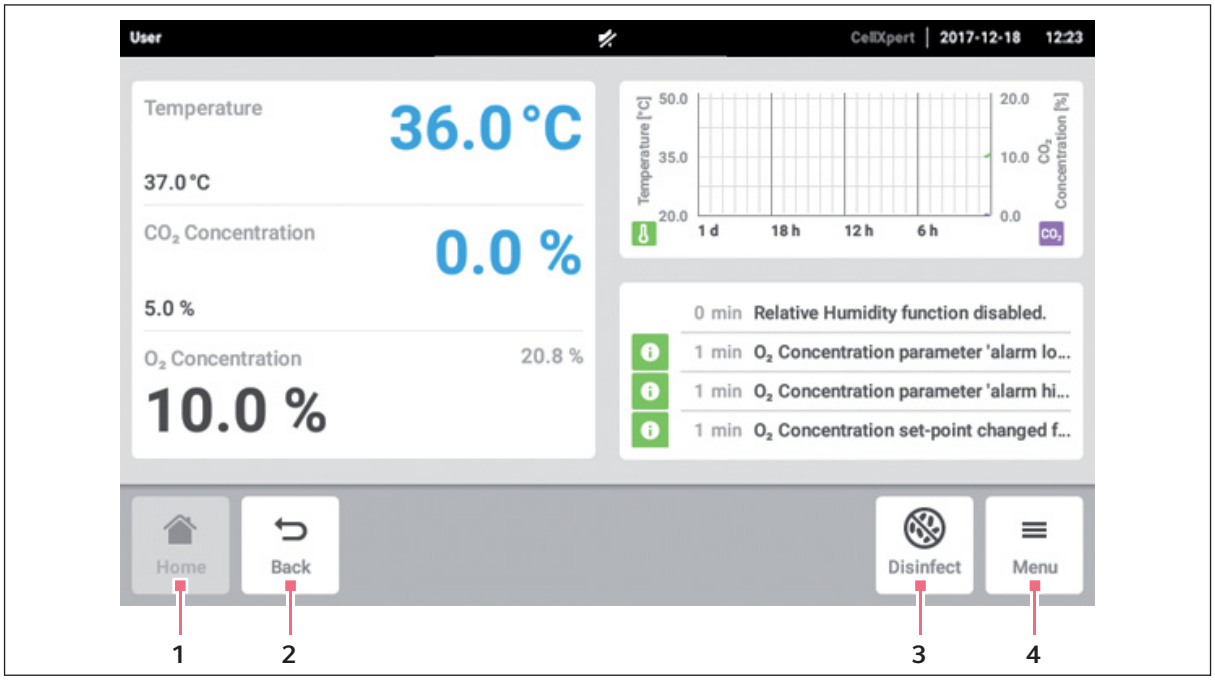
4 **Actual value of a non-controlled function**
displayed in small grey characters

5 **Setpoint of a non-controlled function**
displayed in large black characters

6 **Chart**
preview of the two most important functions

7 **Event log**
preview of the notifications and messages

6.3.3 Toolbar



1 Home
Tap the *Home* button to show the home screen.

2 Back
Tap the *Back* button to go the previous window.

3 Disinfect
Tap the *Disinfect* button to start the high-temperature disinfection program (see *High-temperature disinfection on p. 127)*.

4 Menu
Tap the *Menu* button to open functions such as Settings, Alarms, or Events.

6.4 Information bar

If messages are present, the information bar appears instead of the status bar. The information bar displays warning, alarm, and error messages.

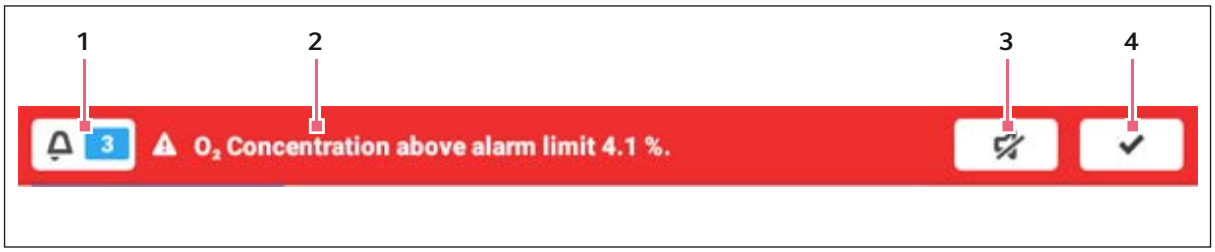


Fig. 6-3: Information bar

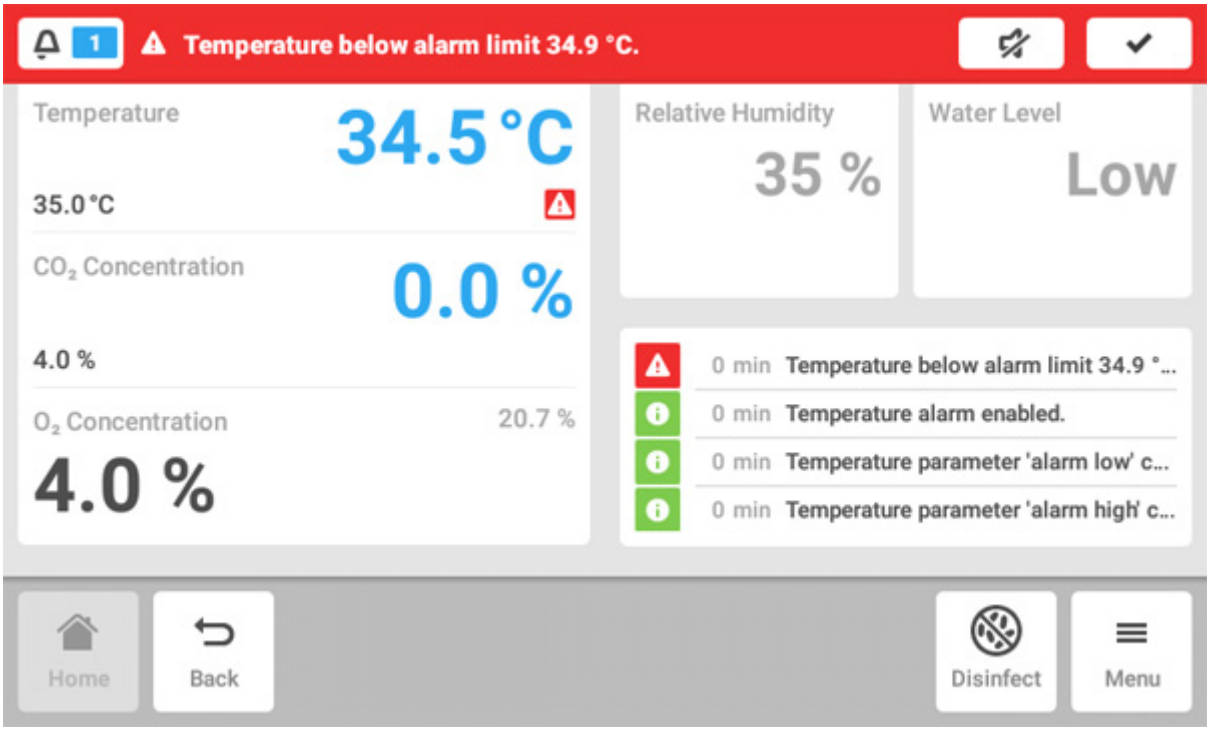
1 Number of unacknowledged messages

2 Current messages
Red information bar: Unacknowledged alarm or error messages
Yellow information bar: Unacknowledged warning messages

3 Mute the audible alarm
Temporarily disables the audible alarm

4 Acknowledge the current message
When the current message has been acknowledged, it is deleted from the information bar.
When all messages have been acknowledged, the information bar disappears.

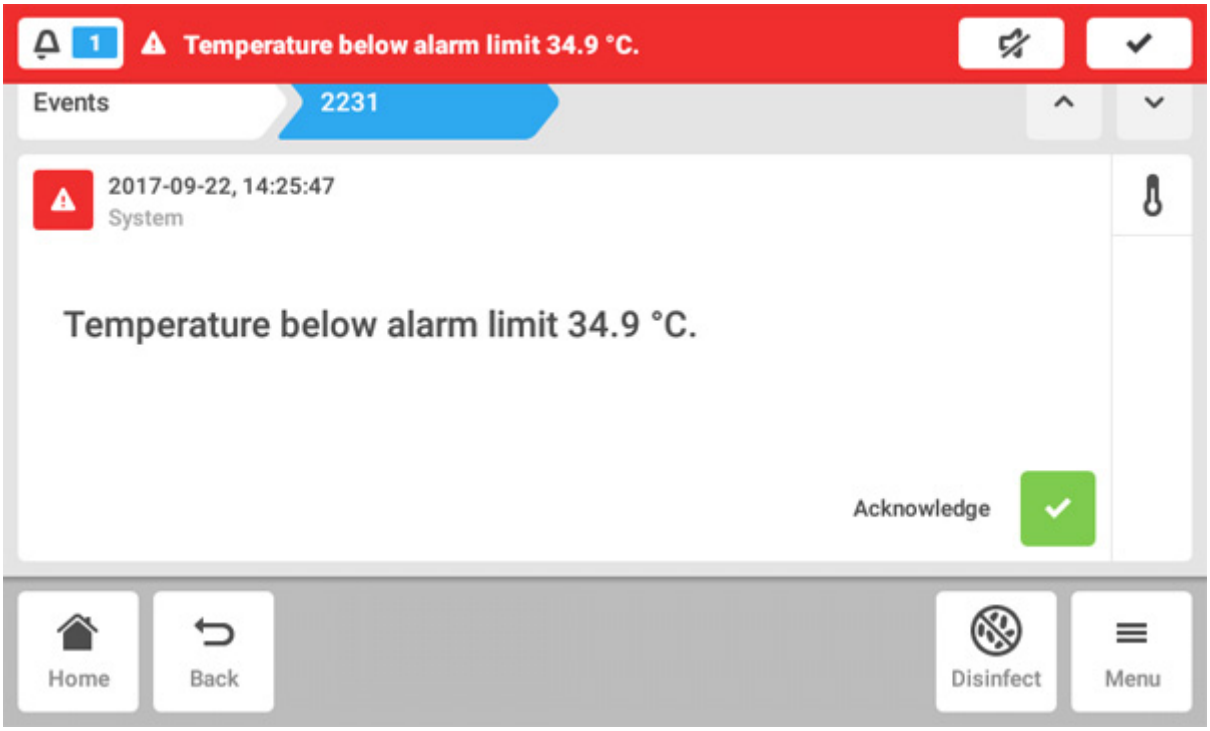
6.4.1 Editing the information bar



- To display the log of all unacknowledged messages, tap the number next to the bell symbol.
- To disable the audible alarm temporarily, tap the mute symbol.
- To confirm the current message, tap the checkmark symbol.

The alarm symbol is displayed until values are within the alarm limits.

6.4.2 Editing the message



- To call up the current message, tap the information bar. The message appears in the *Event log*.
- To acknowledge the message, tap the *Acknowledge* button.
- To change the alarm limits, tap the *Alarm* (bell symbol) symbol.
- To change the setpoint of the function, tap the button above the *Alarm* symbol.

7 Starting the application

7.1 Operating the user interface

The touch screen is designed to be operated with your fingers only without the need for tools. Laboratory gloves made of nitrile or latex can be worn. Alternatively, a stylus can be used, for example, when thick gloves need to be worn in the laboratory.

If liquid comes into contact with the touch screen, the functions displayed on the touch screen may be triggered.

- Do not drop any liquids onto the touch screen.
- Do not spill any liquids onto the touch screen.

7.2 Selecting functions

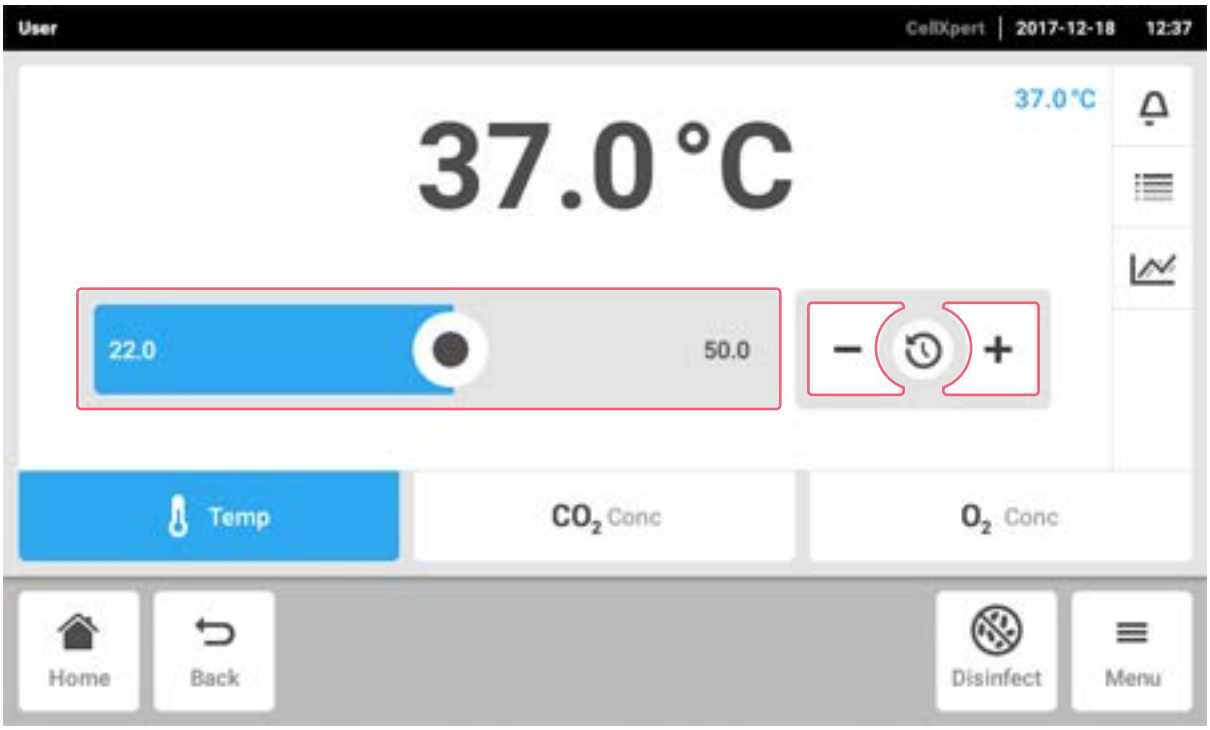


Tap the *Temperature* function in the function area. The parameter settings are displayed.

7.3 Setting the values

The setpoints can be adjusted with the slider or with the number pad.

7.3.1 Setting a value with the slider



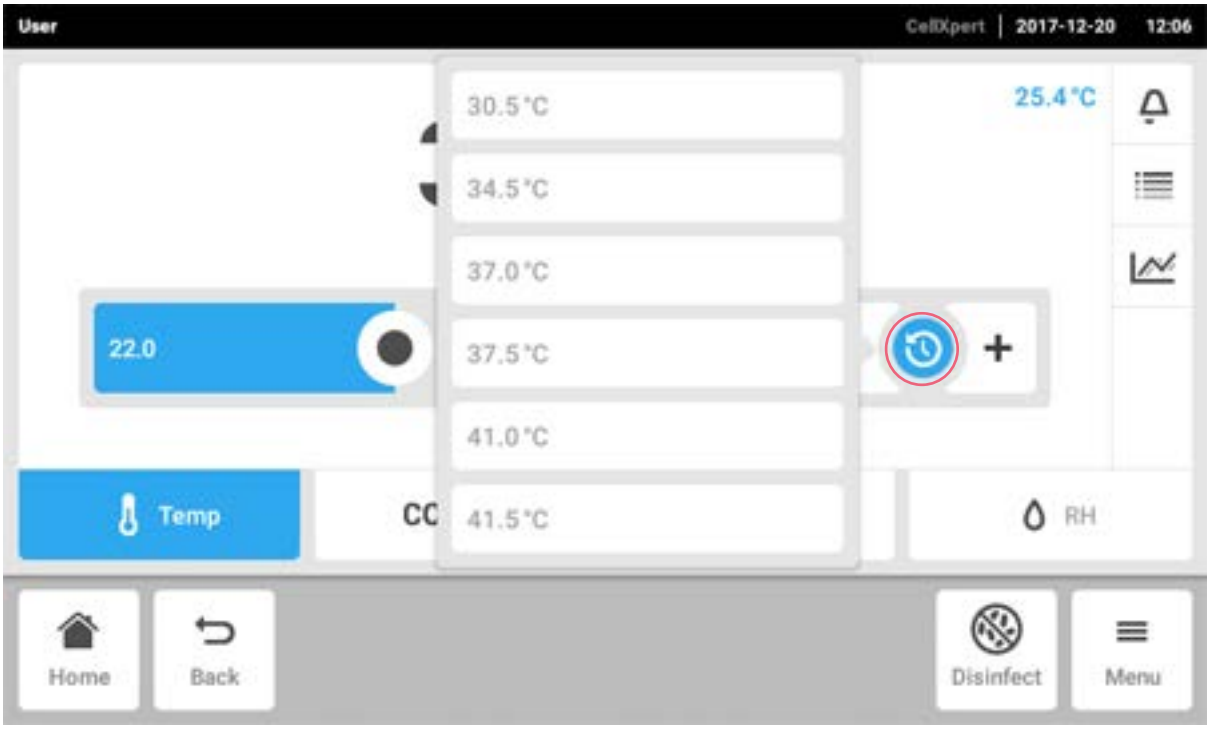
Tap the slider and drag it to the right or to the left.

The setpoint changes.

7.3.2 Changing a value incrementally with the fine adjustment

- Tap the + button. The setpoint is incrementally increased.
- Tap the - button. The setpoint is incrementally decreased.

7.3.3 Selecting the last used value



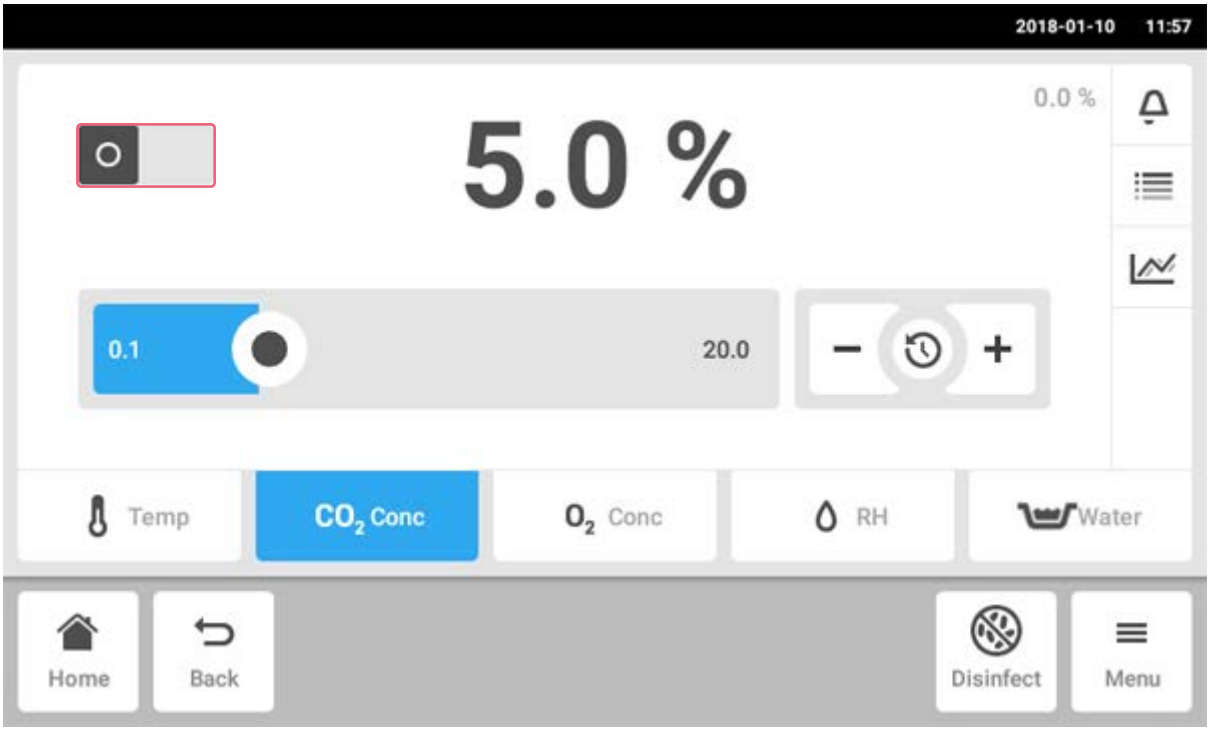
1. Tap into the center of the fine adjustment. A list with the last used setpoints is displayed.
2. Select the setpoint from the list.

7.3.4 Setting a value with the number pad



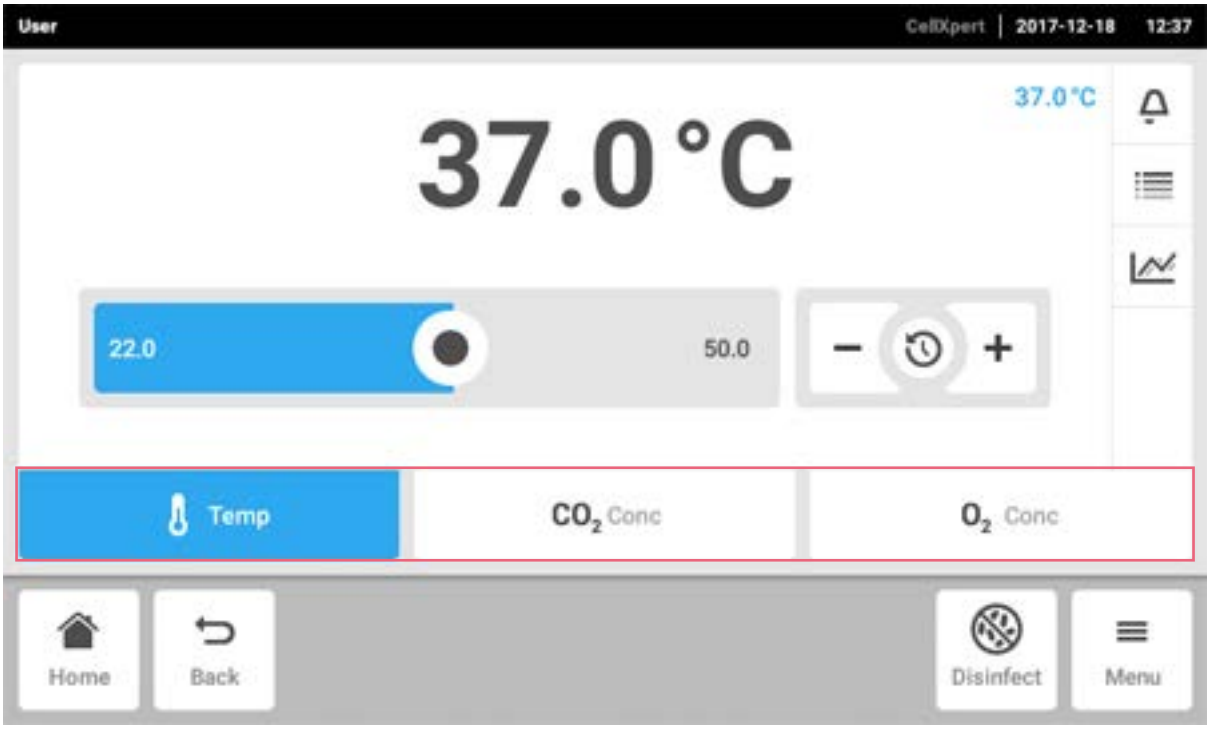
1. Tap the displayed setpoint. The number pad appears.
2. Enter the new setpoint.
3. Confirm your entry. The number pad disappears.

7.3.5 Activate or deactivate the gas control



- To activate or to deactivate the CO_2 control tap the status button.
- To activate or to deactivate the O_2 control (option) tap the status button.

7.4 Switching between the functions



To switch to another function, tap on the symbol of the required function. The active function is highlighted in blue.

8 *Menu* area

The *Menu* area contains all of the software settings.

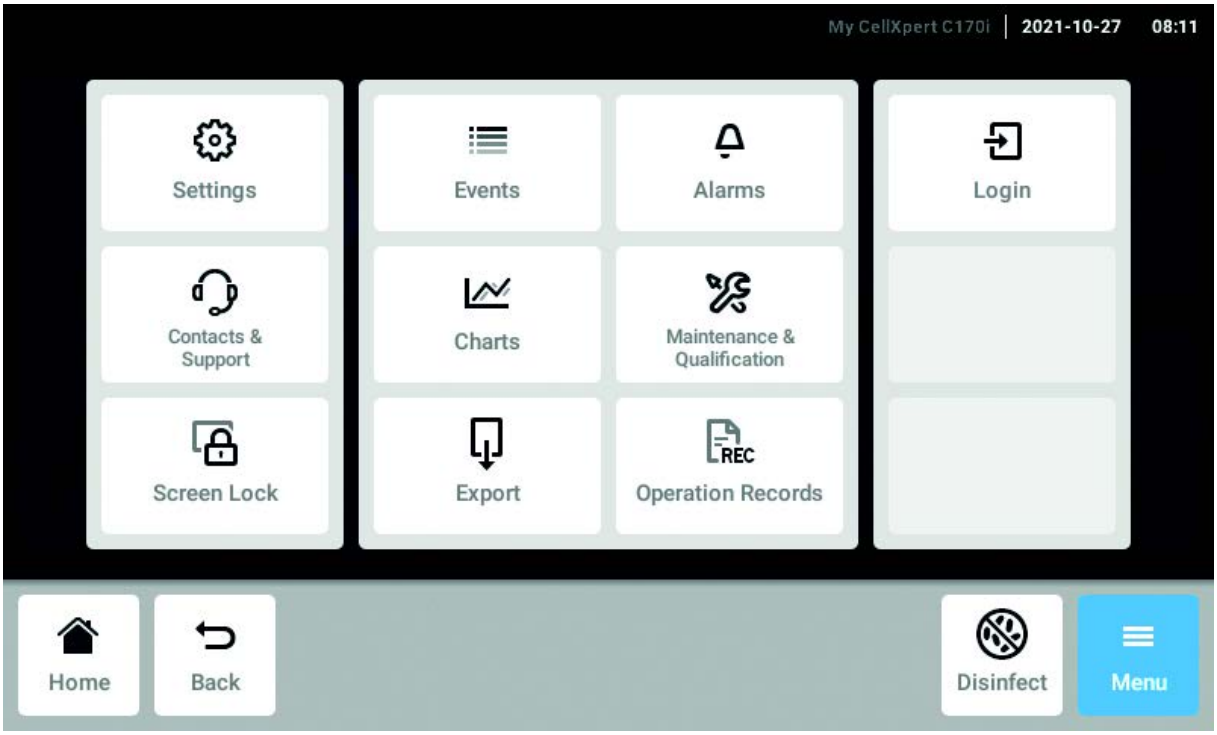


Fig. 8-1: The *Menu* screen

Settings
Information on the device and licenses
Device, maintenance and system settings
Activate user management

Contacts & Support
Information on local contact persons

Screen Lock
Lock and unlock the touch screen
Clean the touch screen

Events
Event log with messages and alarms

Charts
View functions in a diagram

Export
Export charts, logs, data and *Operation Records*

Alarms
Activate alarms and set alarm limits

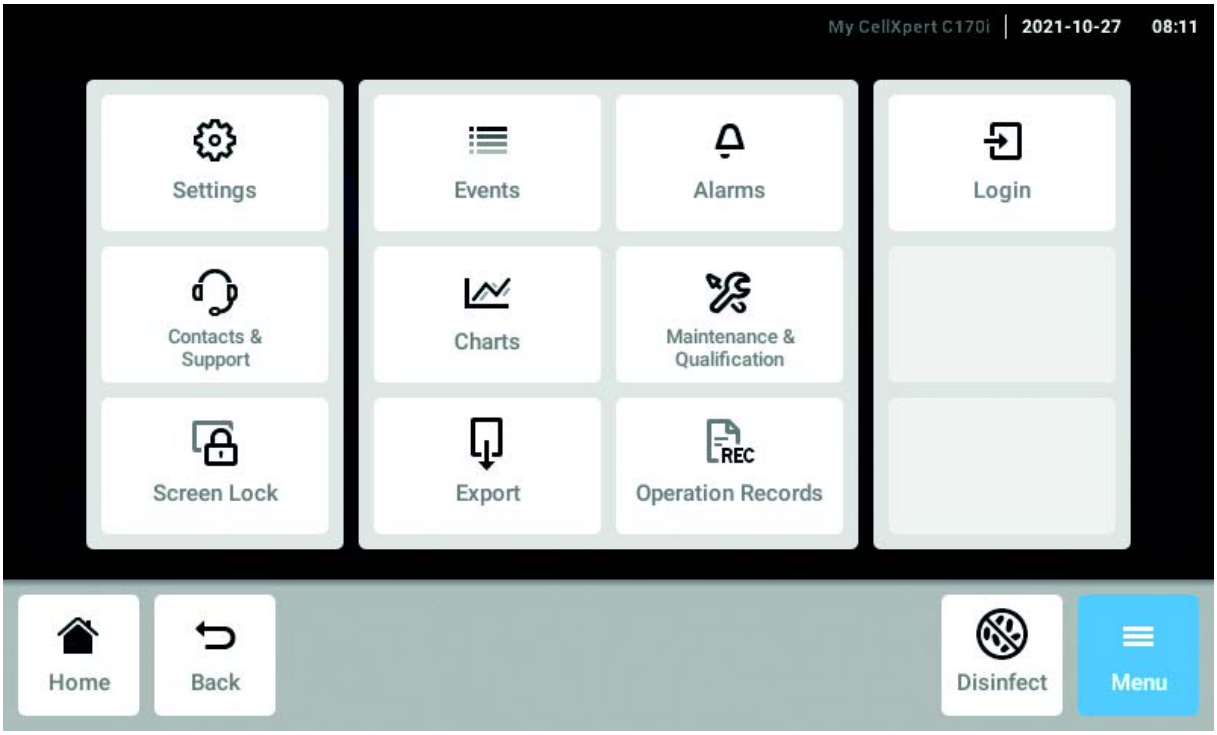
Maintenance & Qualification
Perform recurring tasks

Login/Logout
User management

Users
User profile settings

Operation Records
Define and export records of your experiments

8.1 Selecting the menu



Tap the *Menu* button. The menu items available for the device are displayed.

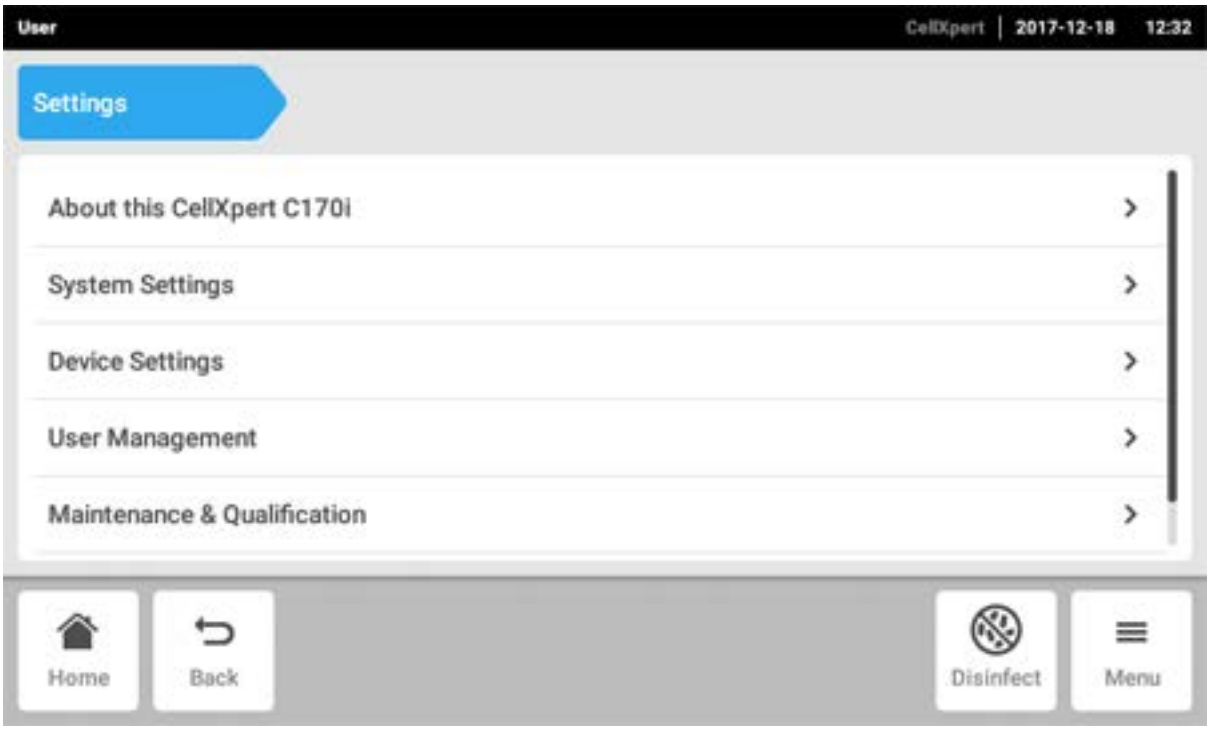
Select a menu item.

8.2 Settings

This area provides you with information on the device. You can adjust device settings and enable the user management.

- Tap the *Menu* > *Settings* menu items.

The following settings are available:



About this CellXpert C170i
View information on the device and licenses

System Settings
Configure date, time, and network

Device Settings
Configure sounds, relays, display, and *Operation Records*

User Management
Create user management

Maintenance & Qualification
Configure recurring tasks

8.2.1 The *About this CellXpert C170i* menu item

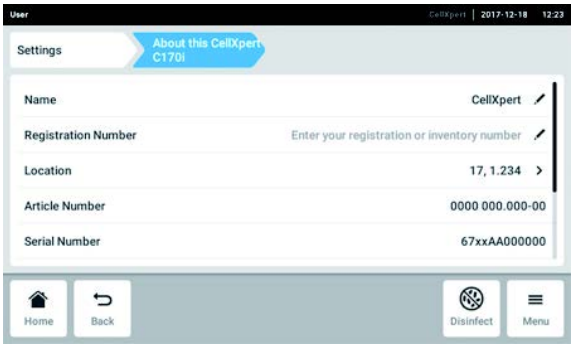


Fig. 8-2: Available fields

Name
The administrator can enter the device name.

Registration Number
The administrator can enter the inventory number of the device.

Location
The administrator can enter the location of the device.

Article Number
The article number of the model.

Serial number
The serial number of the device, see the name plate.

Software Version
User software version

Hardware Configuration
View information on optional extensions.

License Information
View information on licenses.

- Tap the *Menu* > *Settings* > *About this CellXpert C170i* menu items.

8.2.2 The *System Settings* menu item

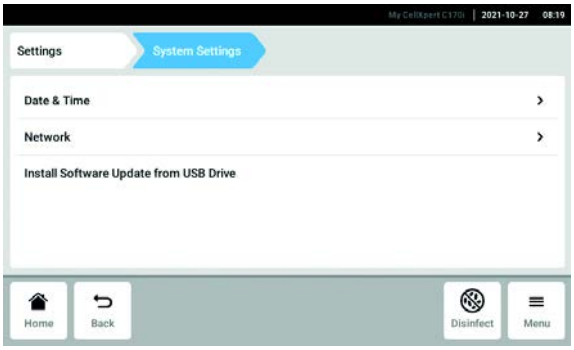


Fig. 8-3: Available settings

Date & Time
Set the date, time, and time zone.

Network
Set the parameters for network operation.

Install Software Update from USB Drive

- Tap the *Menu* > *Settings* > *System Settings* menu items.

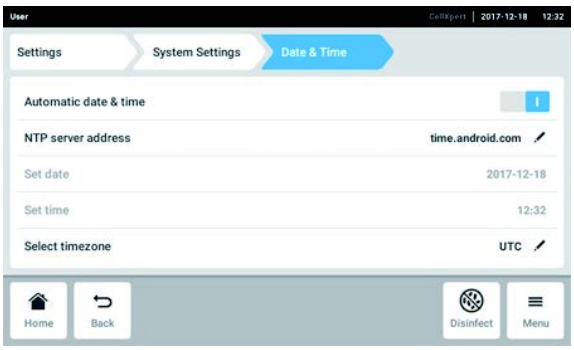
8.2.2.1 *Date & Time* – Setting the date and time automatically

Prerequisites

- The device is connected to the network.
- A time server is available.

If you are connected to the VisioNize Lab Suite, use the automatic date and time setting to avoid asynchronism.

Changing the date, time, or time zone may temporarily affect the appearance of the chart. The log may be incorrectly sorted.

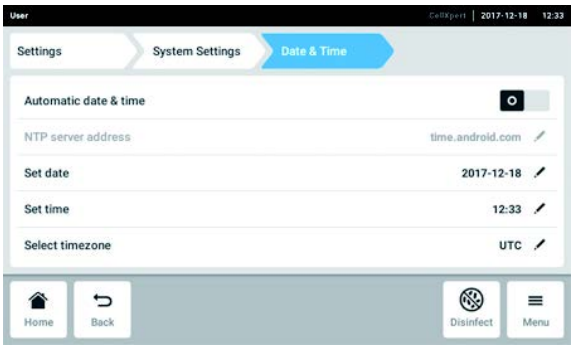


1. Tap the *Menu* > *Settings* > *System Settings* > *Date & Time* menu items.
2. Switch on the *Automatic date & time* switch.
3. Tap the *Select timezone* menu item.
4. Select the continent.
5. Select the time zone.
6. Close the selection.
   The *Date & Time* menu appears.

8.2.2.2 *Date & Time* – Setting the date and time manually

If you set the date and time incorrectly, some features of the VisioNize Lab Suite might not work, e.g., *Events*.

Changing the date, time, or time zone may temporarily affect the appearance of the chart. The log may be incorrectly sorted.



1. Tap the *Menu* > *Settings* > *System Settings* > *Date & Time* menu items.
2. Switch off the *Automatic date & time* switch.
   The *Set date* and *Set time* menu items become active.
3. Tap the *Set date* menu item.
4. Set the current date.
5. Tap the *Confirm* button.
   The date is saved.
   The *Date & Time* menu appears.
6. Tap the *Set time* menu item.
7. Set the time.
8. Tap the *Confirm* button.
   The time is saved.
   The *Date & Time* menu appears.
9. Tap the *Select timezone* menu item.
10. Select the continent.
11. Select the time zone.
12. Close the selection.
    The *Date & Time* menu appears.

8.2.2.3 *Network*

An Internet connection is not needed for the operation. The operator is responsible for the data security when connecting the device with the Internet.

Only a network administrator is allowed to connect the device with an internal network or the Internet.

Check the settings for the internal network or the Internet before connecting the device.

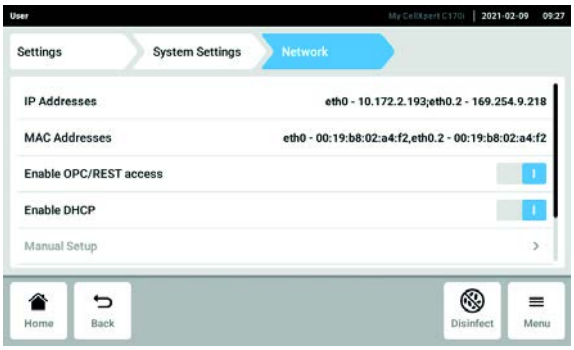


Fig. 8-4: Available settings

IP Addresses
Current IP address of the device

MAC Addresses
Address by which the device can be uniquely identified in the network

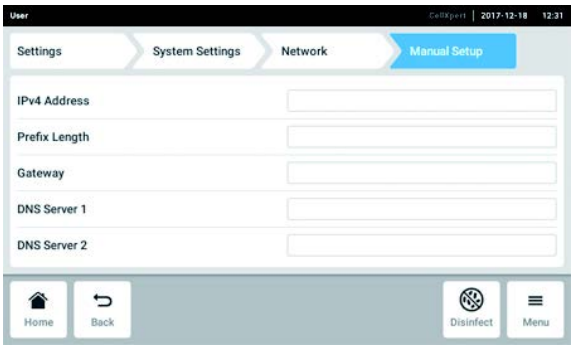
Enable remote access
Allow device communication with external software

Enable DHCP
The device uses an IP address that was assigned by a DHCP server

Manual Setup
Enter the network settings manually. Active when the *Enable DHCP* switch is switched off

Self Signed Certificate
Generates an own certificate

Enable OPC/REST access



1. Tap the *Menu* > *Settings* > *System Settings* > *Network* > *Manual Setup* menu items.
2. Deactivate *Enable DHCP* with the switch.
   The *Manual Setup* button appears.
3. Tap the *Manual Setup* button.
4. Enter and confirm your entry.
5. Tap the *Back* button.
   The data is saved. The window for the network settings appears.

6. Deactivate *Enable DHCP* with the switch.
   The *Manual Setup* button appears.
7. Tap the *Manual Setup* button.
8. Enter and confirm your entry.
9. Tap the *Back* button.
   The data is saved. The window for the network settings appears.

8.2.2.4 *Install Software Update from USB Drive*

1. Download the update from the website www.eppendorf.com/software-downloads/ .
2. Unzip the update file at the top level directory of a USB drive.

The device has only access to data at the top level of the USB drive.
- Do not save the data in a folder.

3. Tap *Menu* > *Settings* > *Install Software Update from USB Drive*.
4. Insert the USB drive into the USB port of the device.
   An installation dialogue appears on the screen.
5. Confirm the installation.
   The device will prepare the update and then reboot.
6. Wait for the update file to be copied to the device.
7. Unplug the USB drive to start the installation process.

Do not abort the software update. If the update is stopped, this may result in loss of data and the device will have to be reset to the factory settings. If this happens contact the authorized service.

8.2.3 The *Device Settings* menu item

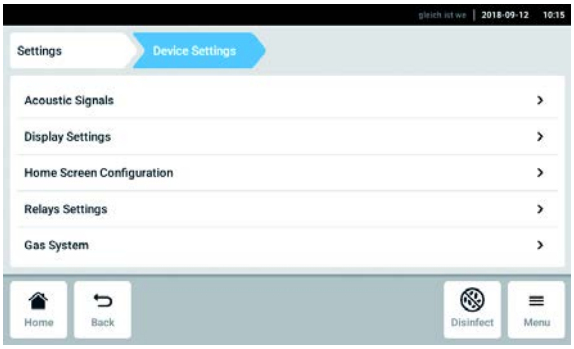


Fig. 8-5: Available settings

Acoustic Signals
Settings for the audible alarm and the volume

Display Settings
Settings for the brightness of the display

Home Screen Configuration
Configuration of the home screen

Relays Settings
Configuration of the BMS relay contact alarm

Gas System
Configuration of the low pressure monitor

Operation Records
Configuration of the Operation Records template

1. Tap the *Menu* > *Settings* > *Device Settings* menu items.

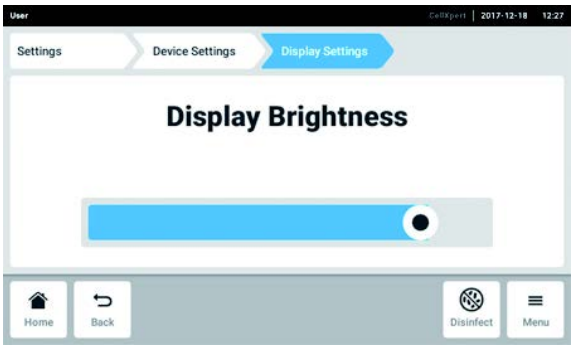
8.2.3.1 *Acoustic Signals* – Setting the audible alarm

Due to safety reasons, it is not possible to totally disable the alarm signals.



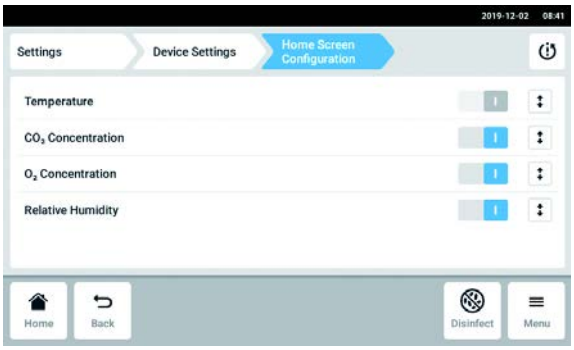
1. Tap the *Menu* > *Settings* > *Device Settings* > *Acoustic Signals* menu items.
2. To activate the interface signals incl. door alarm, tap the *Alarms and Interface* button.
3. To change the volume of the interface signals, swipe the slider.
4. To check the volume of the alarms or interface signals, tap the respective *Test* button.
5. To activate only the alarm signals (all notifications from the information bar like errors, alarms, and warnings), tap the *Alarms* button.

8.2.3.2 *Display settings* – Setting the touch screen



1. Tap the *Menu* > *Settings* > *Device Settings* > *Display Settings* menu items.
   The slider for *Display Brightness* is displayed.
2. To change the brightness of the display, swipe the slider.

8.2.3.3 *Home Screen Configuration* – Configuring the home screen



1. Tap the *Menu* > *Settings* > *Device Settings* > *Home Screen Configuration* menu items.
   You can specify which functions appear on the home screen. You can set the order of the functions on the home screen. You can choose the following functions:
   - *Temperature*
   - *CO_2 Concentration*
   - *O_2 Concentration* (option)
   - *Relative Humidity* (option)
2. For a function to appear on the home screen, activate the switch.

3. Set the order of the functions on the home screen using the arrow keys.
   On the home screen, the functions appear in the same order as in the list.
   - If 2 areas are not occupied on the home screen, the event log appears on the home screen.
   - If 4 areas are not occupied on the home screen, the event log and chart appears on the home screen.

If the O_2 sensor is temporarily not needed, deactivate the switch. After activating the switch, the sensor needs some time to reinitialize.

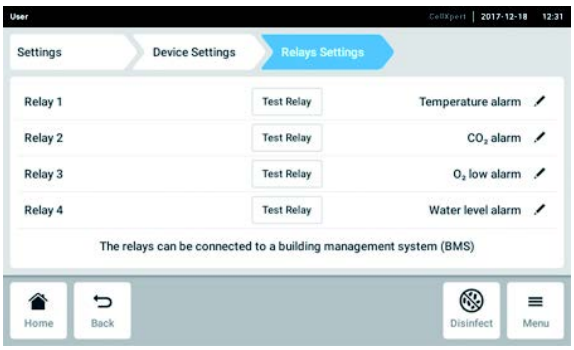
8.2.3.4 *Relay settings* – Configuring the BMS relay contact alarm

You can choose events for the 4 relays of the device. A signal is transmitted to the respective relay if a chosen event occurs. The relays can be connected to a BMS.

1. Select the relay you want to edit.
2. Tap on the black pen of the relay.
   An overlay appears with events to select for each relay:
   - Temperature alarm
   - Temperature high alarm
   - Temperature low alarm
   - CO_2 alarm
   - CO_2 high alarm
   - CO_2 low alarm
   - O_2 alarm (option)
   - O_2 high alarm (option)
   - O_2 low alarm (option)
   - Humidity alarm (option)
   - Water level alarm (option)
   - Warnings
   - Error
   - Any alarm/Warning/Error
   - Off
3. Select an event.

The selected relay transmits a signal, if there is an event happening.

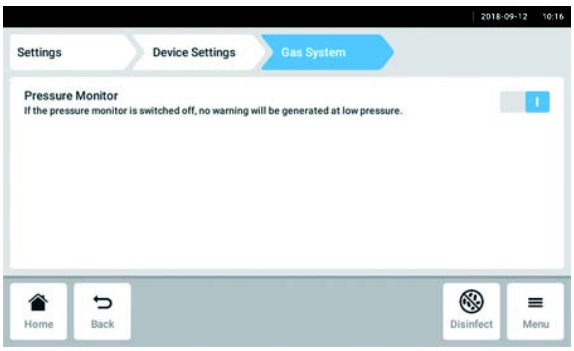
8.2.3.5 *Relay settings* – Test Relay



1. Tap the *Menu* > *Settings* > *Device Settings* > *Relay Settings* menu items.
2. Tap the *Test Relay* button.
   The relay is active for 15 seconds to check the correct connection to the BMS.

8.2.3.6 *Gas system* – Pressure Monitor

If applications need low or very low pressure, switch off the pressure monitor for low gas pressure to prevent warnings and errors to be generated.



1. Tap the *Menu* > *Settings* > *Device Settings* > *Gas System* menu items.
2. To deactivate the pressure monitor, slide the switch to the *O* position.

Without the monitoring of the low pressure, other messages may occur. Since the gas system might work beyond the specified conditions (0.05–0.15 MPa), timeout warnings for the gas concentration may occur, followed by error messages.

8.2.3.7 *Operation Records* Settings

1. If you want to see your company name on all exported documents of the *Operation Records*, tap the *Menu* > *Settings* > *Device Settings* > *Operation Records Settings* menu items and enter your company name.

8.3 Alarms

Alarms can be triggered for several conditions.

- Door alarm: triggers if the outer door has been open for too long.
- Temperature alarm: triggers if the temperature in the interior exceeds the alarm limits.
- CO_2 alarm: triggers if the CO_2 concentration in the interior exceeds the alarm limits.
- O_2 alarm (option): triggers if the O_2 concentration in the interior exceeds the alarm limits.
- Relative humidity alarm (option): triggers if the humidity in the interior deceeds the alarm limits.
- Water level alarm (option): triggers if the filling level of the water tray is below 0.5 L.

An alarm message appears in the information bar if a value is out of a specified range of setpoints. The alarm is active until the value is within the set alarm limit again. The alarm system is paused for a defined time span so that no unnecessary alarm messages are triggered after:

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

8.3.1 Calling up the alarm overview

- Tap the *Menu* > *Alarms* menu items.

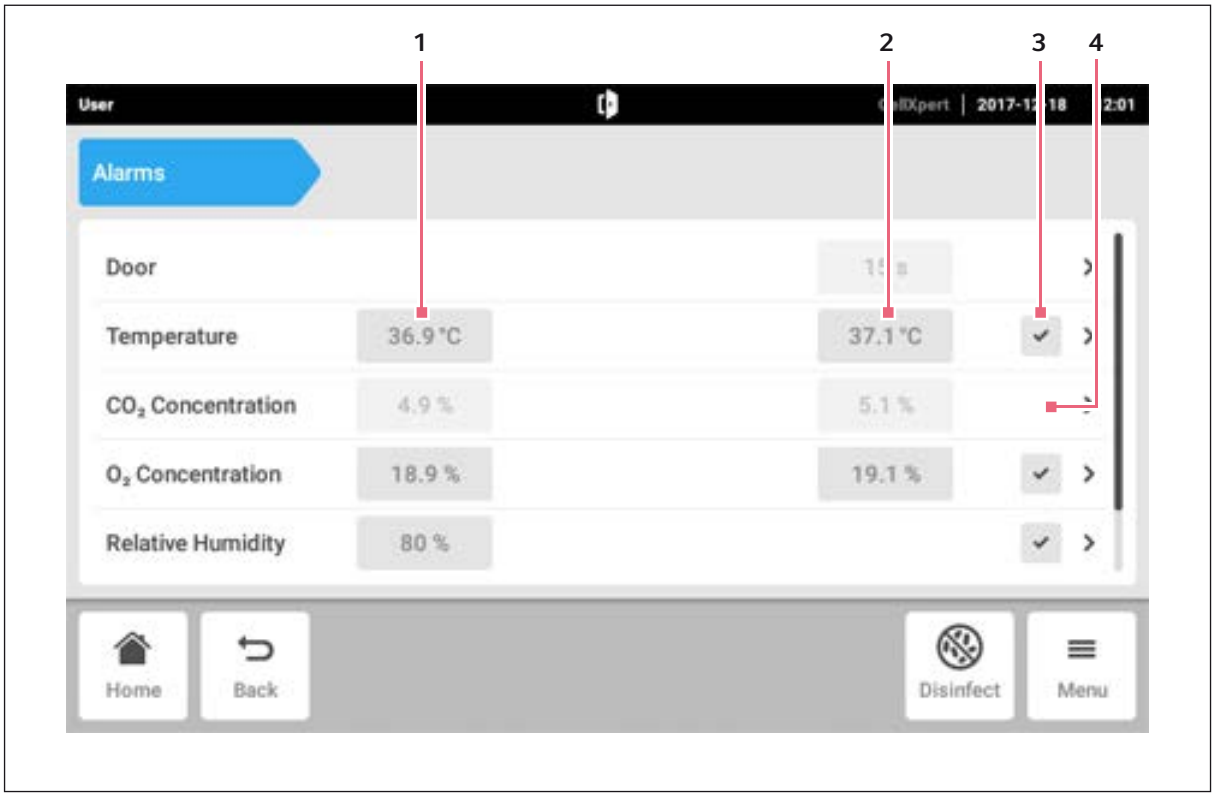


Fig. 8-6: Overview with device alarms, warning limits and alarm limits

1 Lower alarm limit

2 Upper alarm limit

3 Alarm activated (temperature)

4 Alarm not activated (CO_2)

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



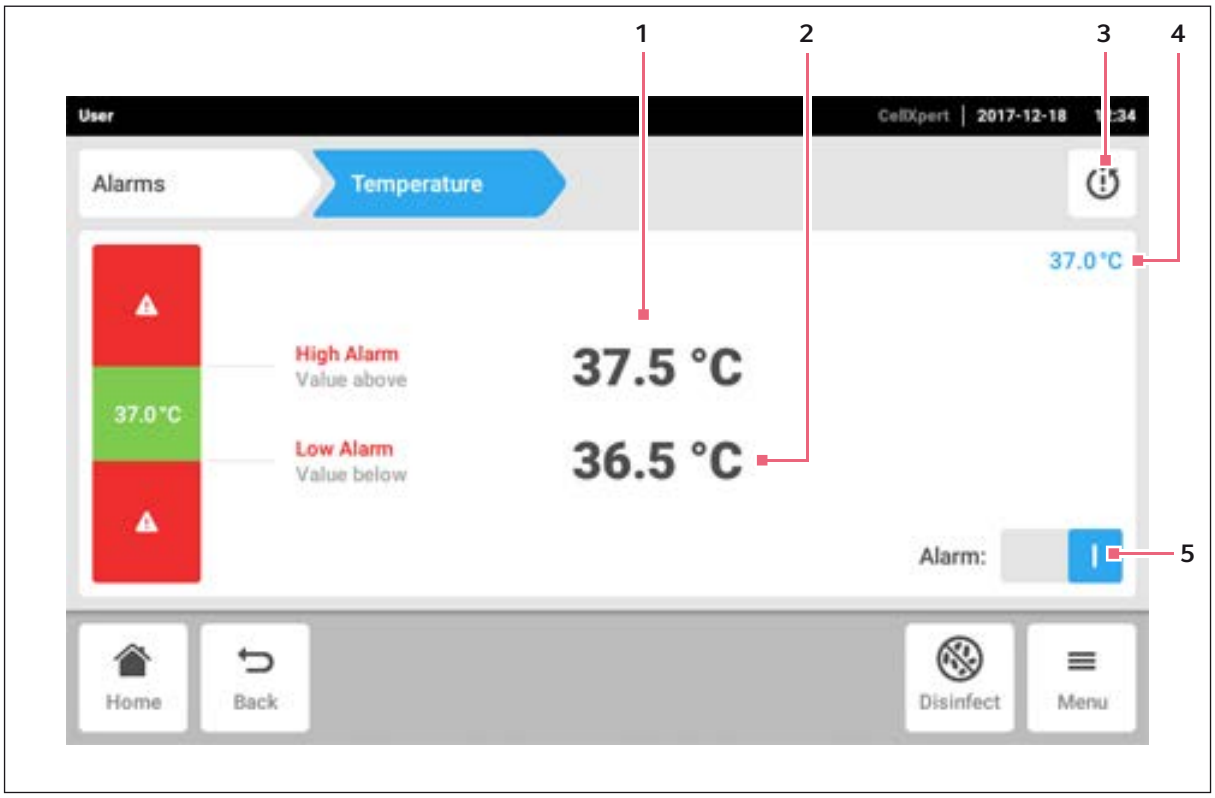
8.3.2 Setting alarms and alarm limits

When delivered the factory set alarm limits are:
- Temperature: ±0.5 K
- CO_2 and O_2: ±0.5 %
- RH: 80 %
- Door: 30 s
- Water level: on

You can set the alarm limits closer to the setpoint. Alarm messages may occur more frequently then.

If you change a setpoint, the alarm limits change relatively.

1. Tap the *Menu* > *Alarms* menu items.
2. To call up an alarm, tap the corresponding line.



1 **High alarm**

2 **Low alarm**

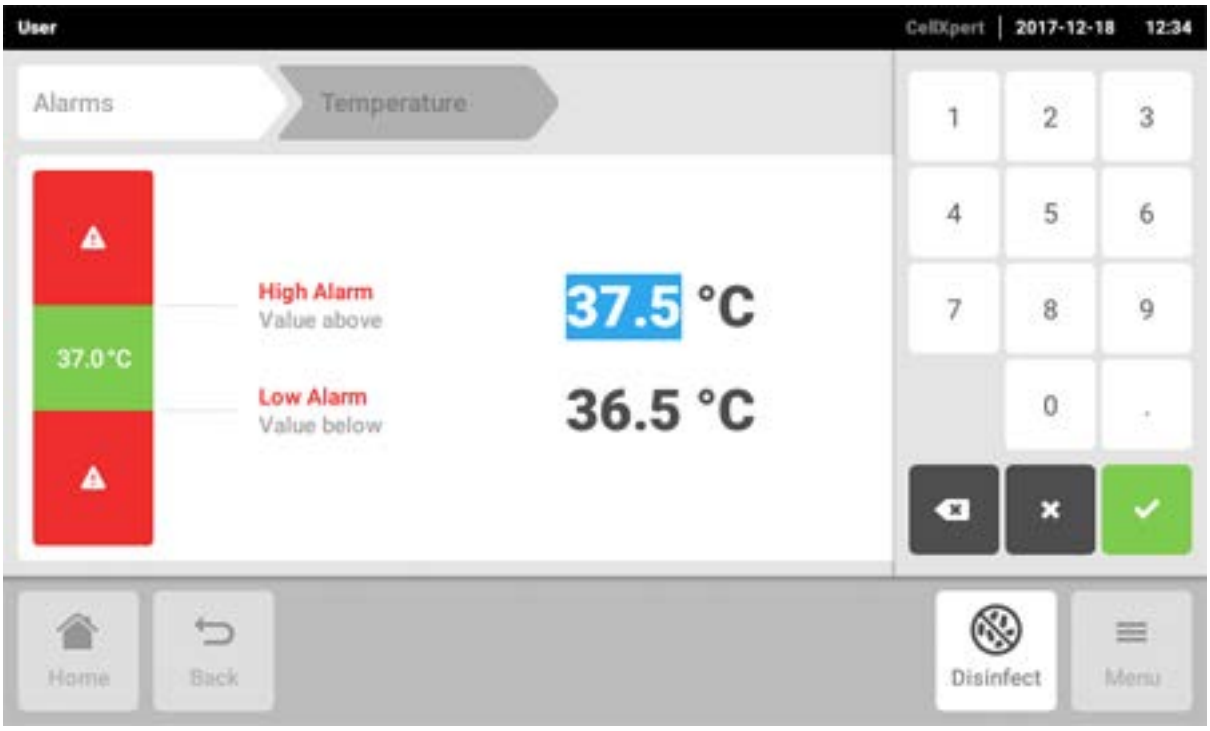
3 **Sets the alarm limits around the setpoint in line with factory settings**

4 **Actual value**

5 **Activate or deactivate alarm**

The window for the alarm settings appears.

3. To change an alarm limit, tap the alarm limit.



The number pad appears.

4. Enter the new alarm limit.
5. Confirm your entry.

   The entered alarm limit appears on the display.

8.4 Events

This area contains messages and alarms with the corresponding time and, if applicable, the user. You can filter and export *Events*.

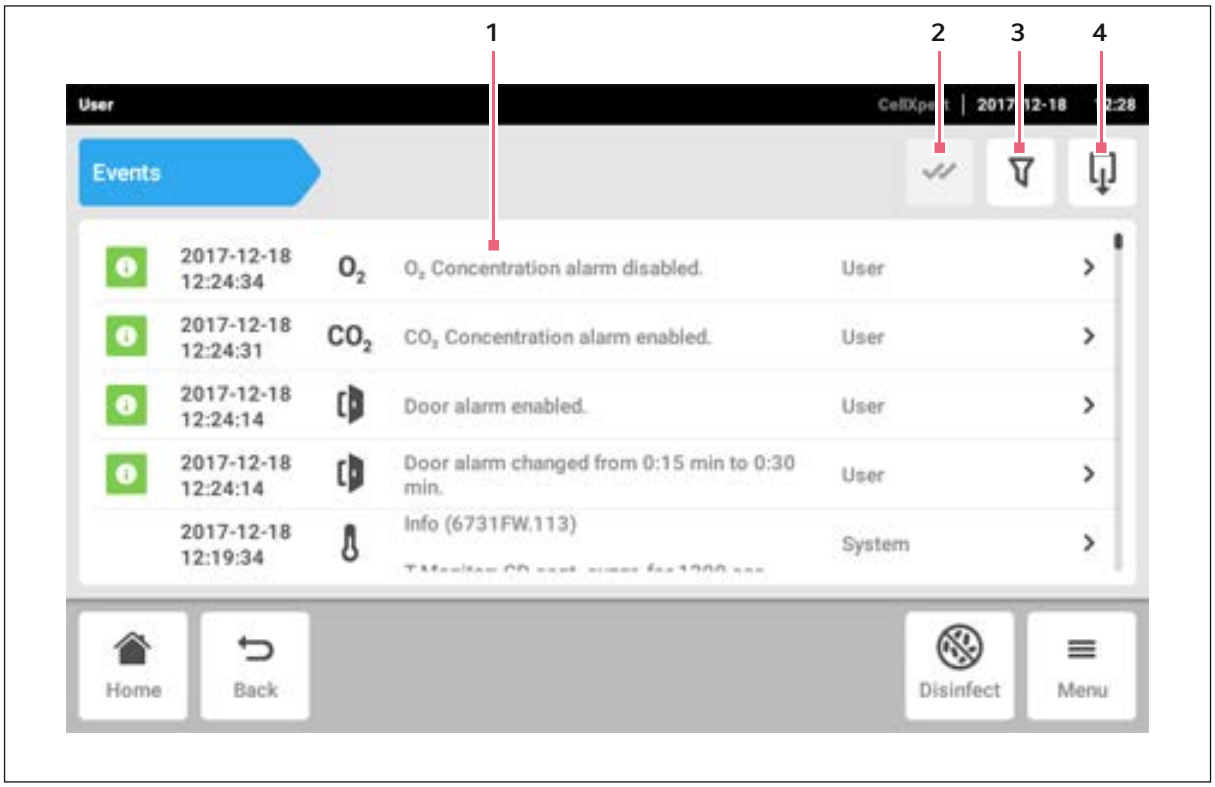


Fig. 8-7: The *Event log* screen

1 List with all notifications and messages

2 Confirm all notifications

3 Filter options: This button is highlighted in blue if messages are filtered.

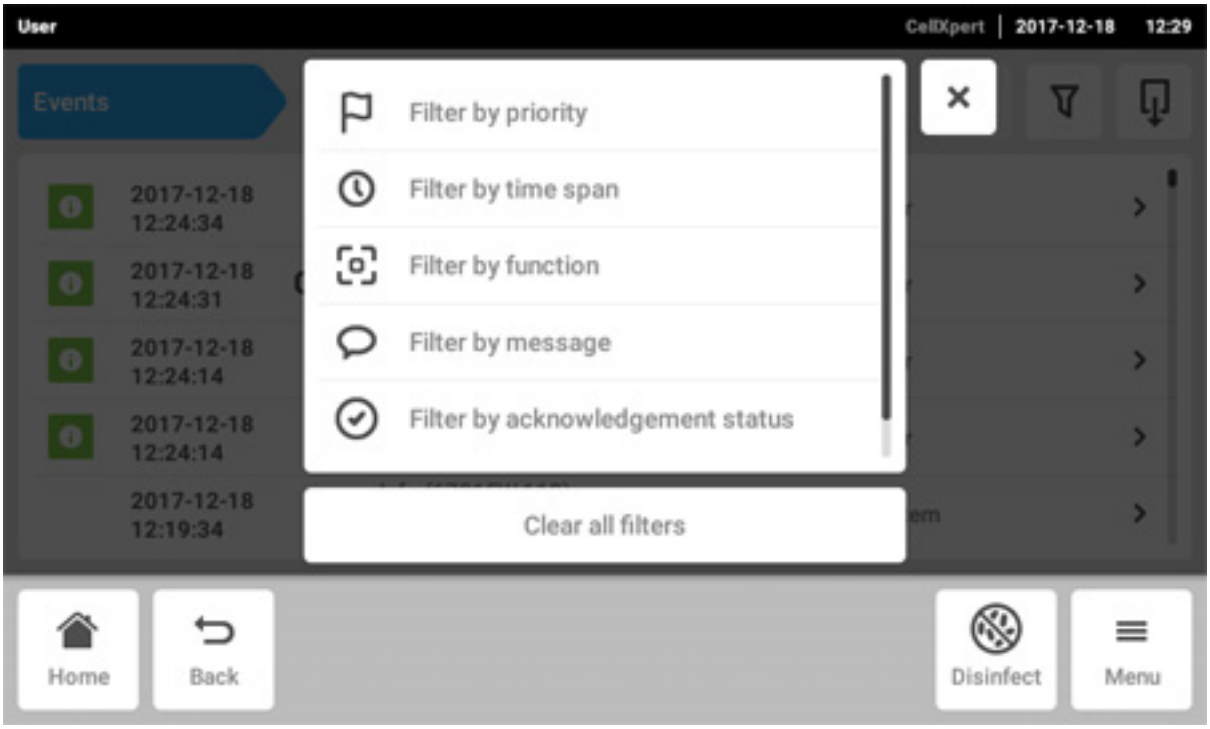
4 Export list with messages to a USB storage medium

Up to 100000 notifications and messages can be saved. The oldest entries are overwritten if there are more than 100000 entries.

8.4.1 Retrieving events

1. Tap the *Menu* > *Events* menu items.

8.4.2 Filtering events



1. Tap the *Filter* button
2. Select the filter. If a filter is enabled, a checkmark appears next to the filter. The *Filter* symbol is highlighted in blue.
3. To disable all filters, tap the *Clear all filters* button.

8.4.3 Calling up more information

1. Select a message or notification from the event list.
   A window with further information appears.
2. To navigate to messages or notifications, use the arrow keys.

8.4.4 Exporting events

Currently filtered event logs are exported.

1. Plug in a USB storage medium.
2. To export *Events* as a list, tap the *Export* button.
3. To finish the procedure, acknowledge the notification.

8.5 Charts

The chart shows 2 functions on 2 y-axes. The time is shown on the x-axis.

The data of the last 7 days is stored uncompressed. Data older than 7 days up to 6 months is stored compressed. The compression of the data may affect the appearance of the chart.



Fig. 8-8: Chart screen

1 Select the function
The chart displays the values of the selected function.

2 Select the time span

3 Name of the function of the displayed values

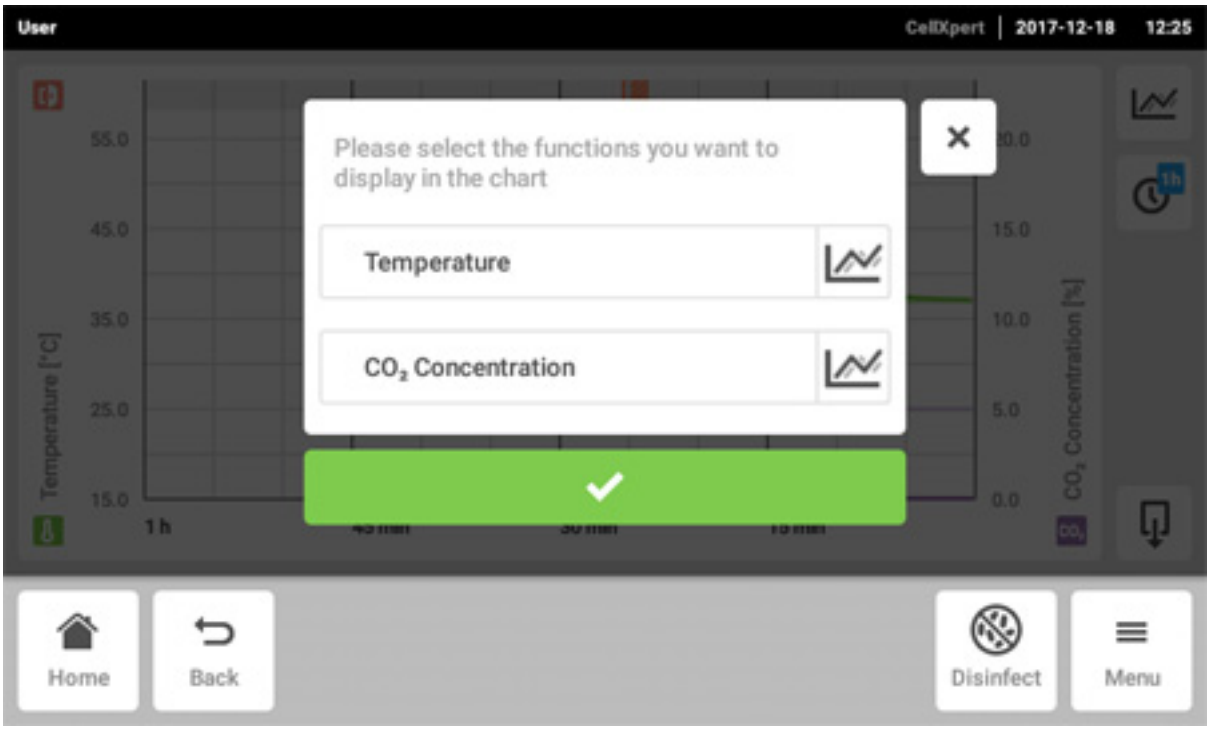
4 Export chart data to a USB storage medium

8.5.1 Opening the chart

1. Tap the *Menu* > *Charts* menu items.

8.5.2 Selecting functions

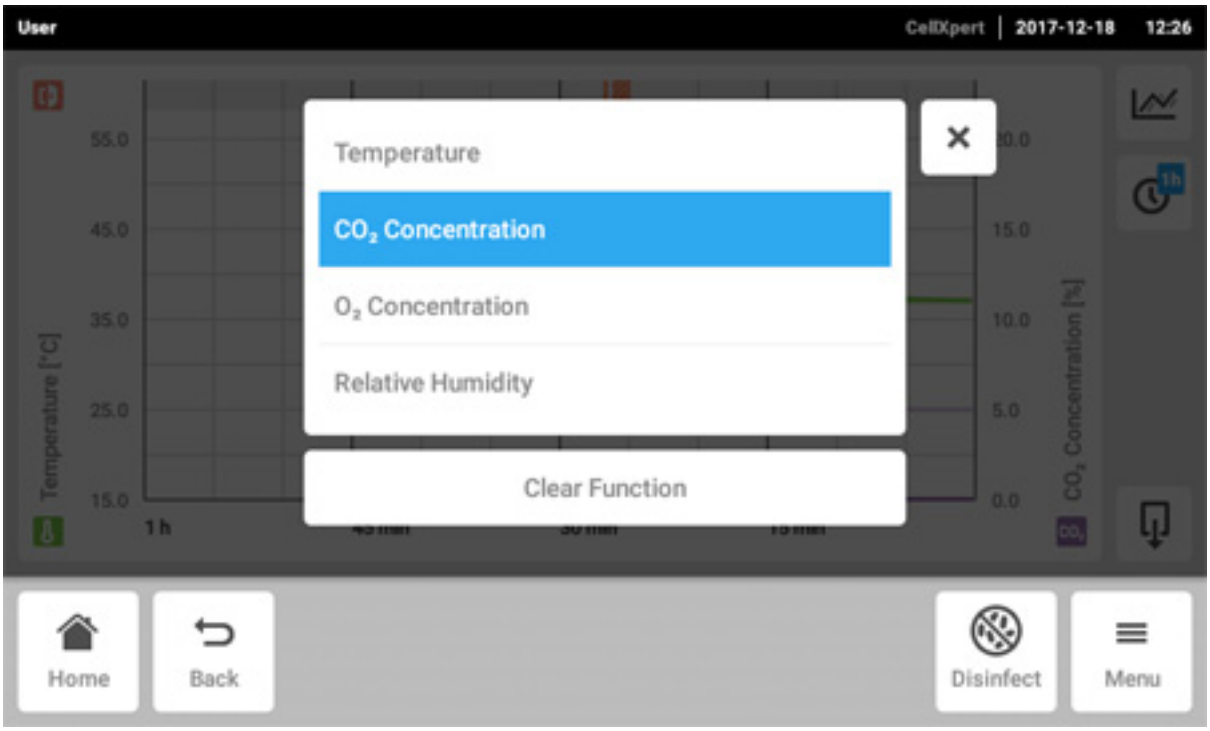
1. To select which function is shown, tap the correspondent button.



A window with 2 lines appears.

2. To select the function for the left y-axis, tap the upper line.

3. To select the function for the right y-axis, tap the lower line.



A window with the available functions appears.

4. Select the function.
   The function appears in the tapped line.
5. Confirm your selection.
   The functions appear in the chart.

8.5.3 Selecting the time span

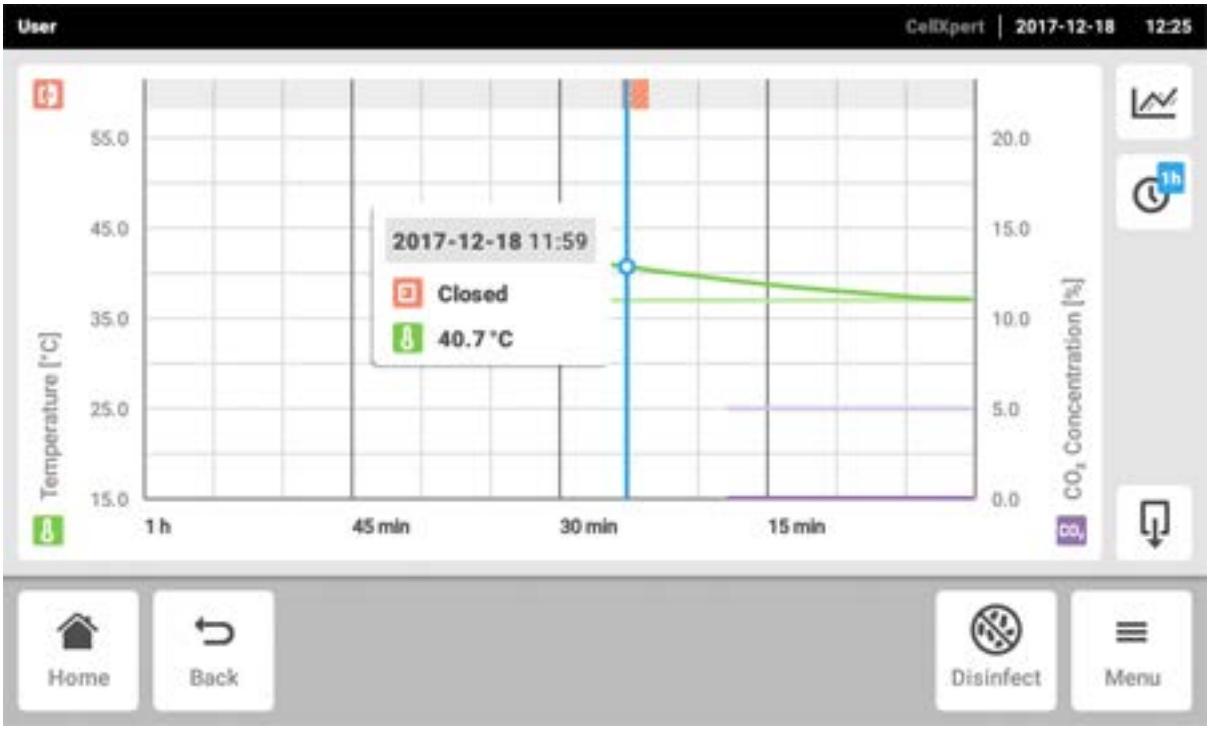
1. To select the time span, tap the correspondent button.
2. Select the time span.

The time span appears on the x-axis.

The program measures the data of a function every 10 seconds. If you select a large time span, the resolution of the displayed data is adjusted.

8.5.4 Displaying values from the chart

1. To display numerical values from the chart, select a defined time.
2. Tap the corresponding point in the chart. The functions appear in a separate window.

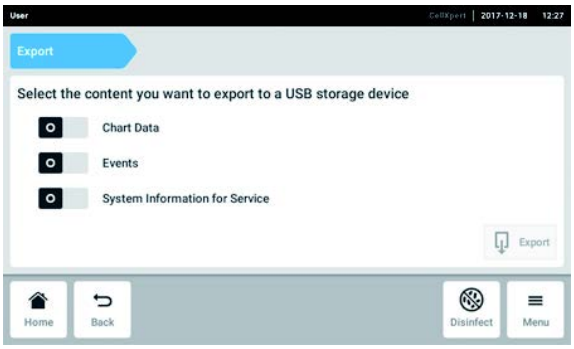


8.5.5 Exporting the chart

1. To export the data from the chart, tap the *Export* button.
   The currently selected time span and the currently selected parameters are exported.

8.6 Export

You can export charts, logs and data for service to a USB storage medium.



1. Connect a USB storage medium.
2. Tap the *Menu* > *Export* menu items.
   A list for the export appears.
3. Select which data to export.
   Data shown in gray will not be exported.
4. Tap the *Export* button.
   The data is stored. The notice *Export successful* appears if the export is finished.
5. Confirm the export.
6. Remove the USB storage medium.

8.7 Recurring tasks

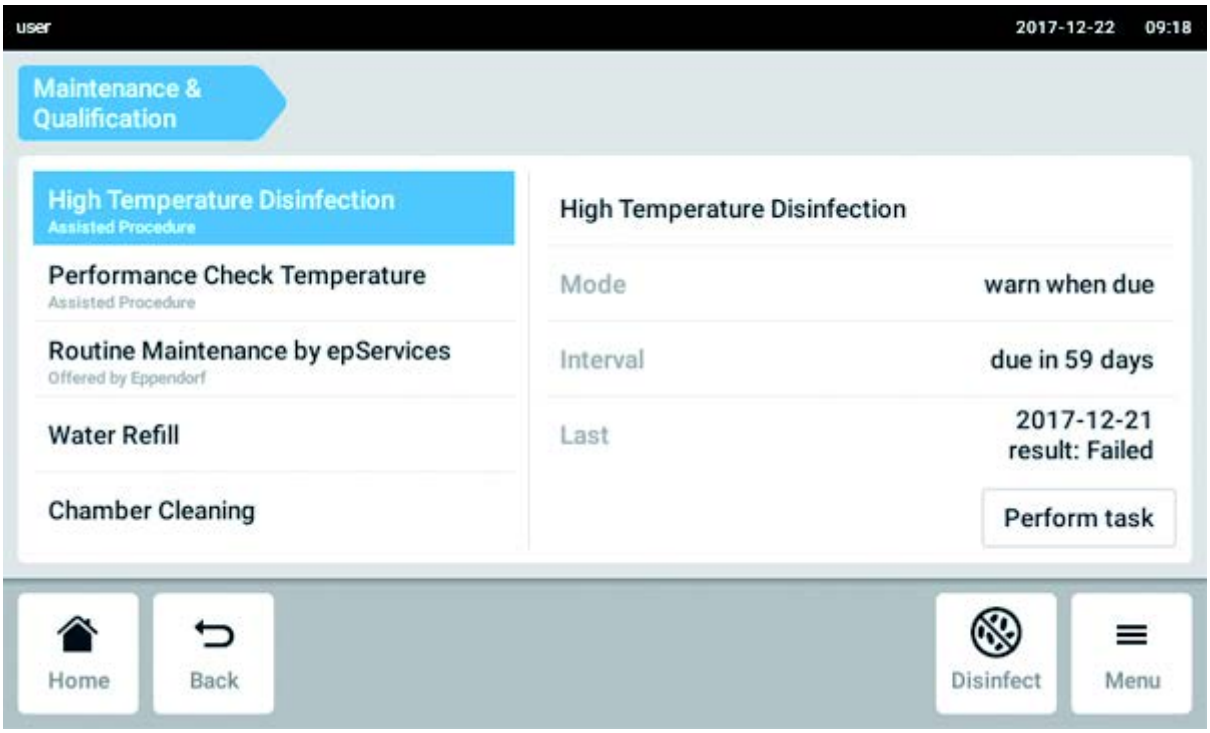
The CellXpert C170i features the option of activating an automatic reminder for common tasks. Eppendorf provides a set of predefined tasks with the delivery of the incubator. The user can edit existing tasks or define new tasks.

8.7.1 Predefined tasks

Task name	Description
Routine maintenance by epServices	Tasks offered by Eppendorf: If you want maintenance to be executed regularly, contact your local Eppendorf partner.
High-temperature disinfection	Tasks assisted by the operation of the incubator.
Performance check	
Chamber cleaning	Tasks executed manually and independently from the operation software.
Water refill	

8.7.2 Perform a recurring task

1. Tap the *Menu* > *Maintenance & Qualification* > *Recurring Tasks* menu items.



A list with predefined tasks is displayed.

2. Select a task.

3. Tap the *Perform task* button.

If you select the *High Temperature Disinfection* task, a software-guided procedure starts.

If you select the *Performance Check* tasks, a software-guided procedure starts.

If you select other tasks, you can confirm the execution of the tasks.

Only an authorized service technician can execute tasks offered by Eppendorf.

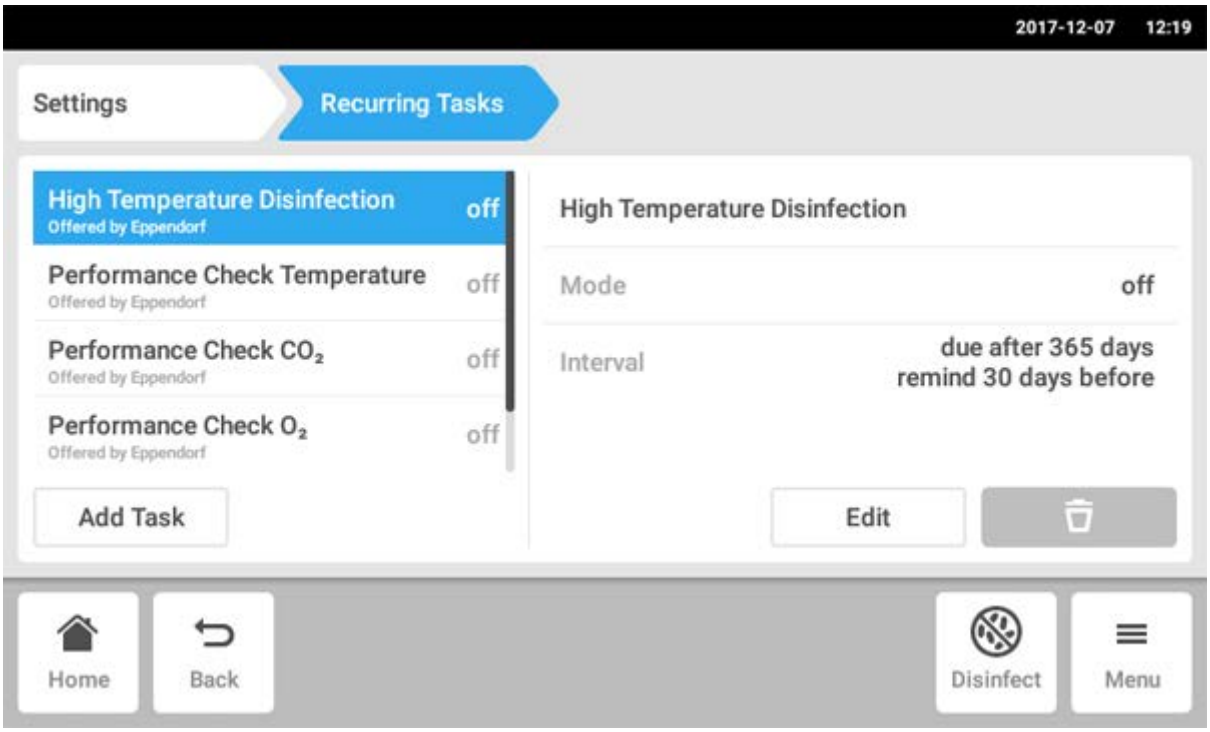
The entry of the last execution of a task is updated, when this task is executed again.

A warning gives the user a hint, that a task has to be executed. To define an interval for the warning, see *Edit a recurring task*.

8.7.3 Edit a recurring task

You can edit an existing task.

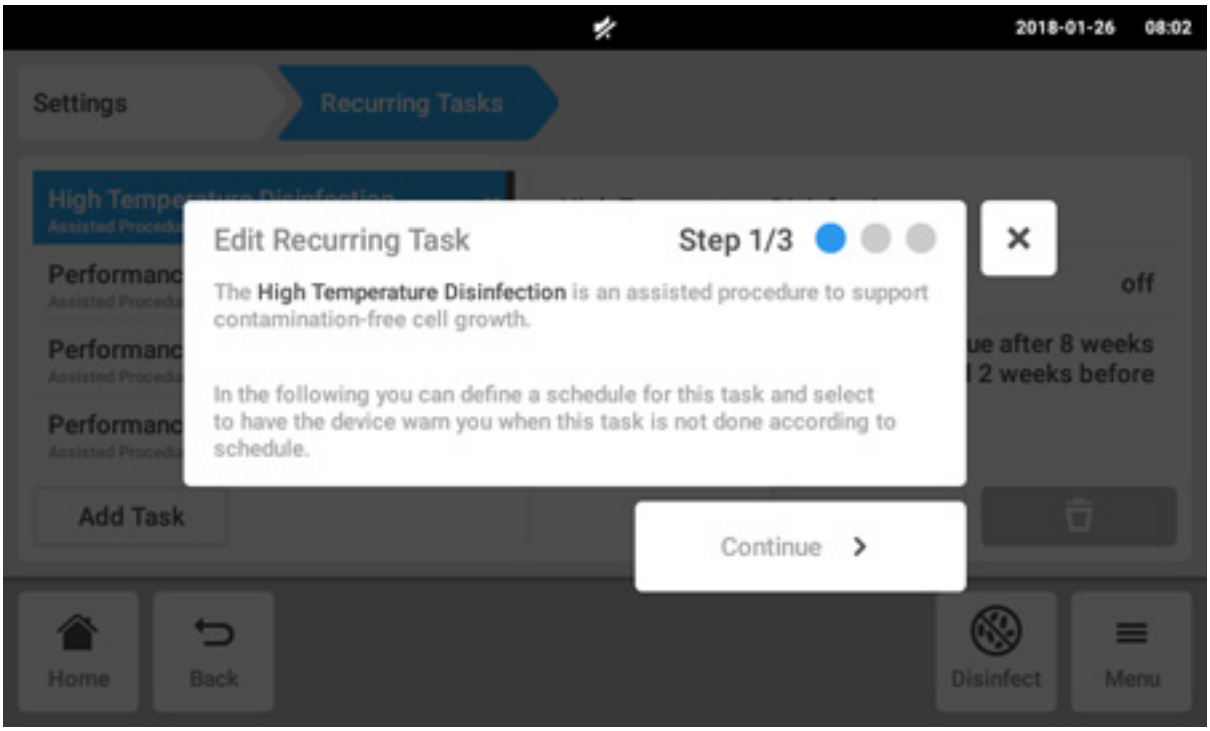
1. Tap the *Menu* > *Settings* > *Recurring Tasks* menu items.



A list with predefined tasks is displayed.

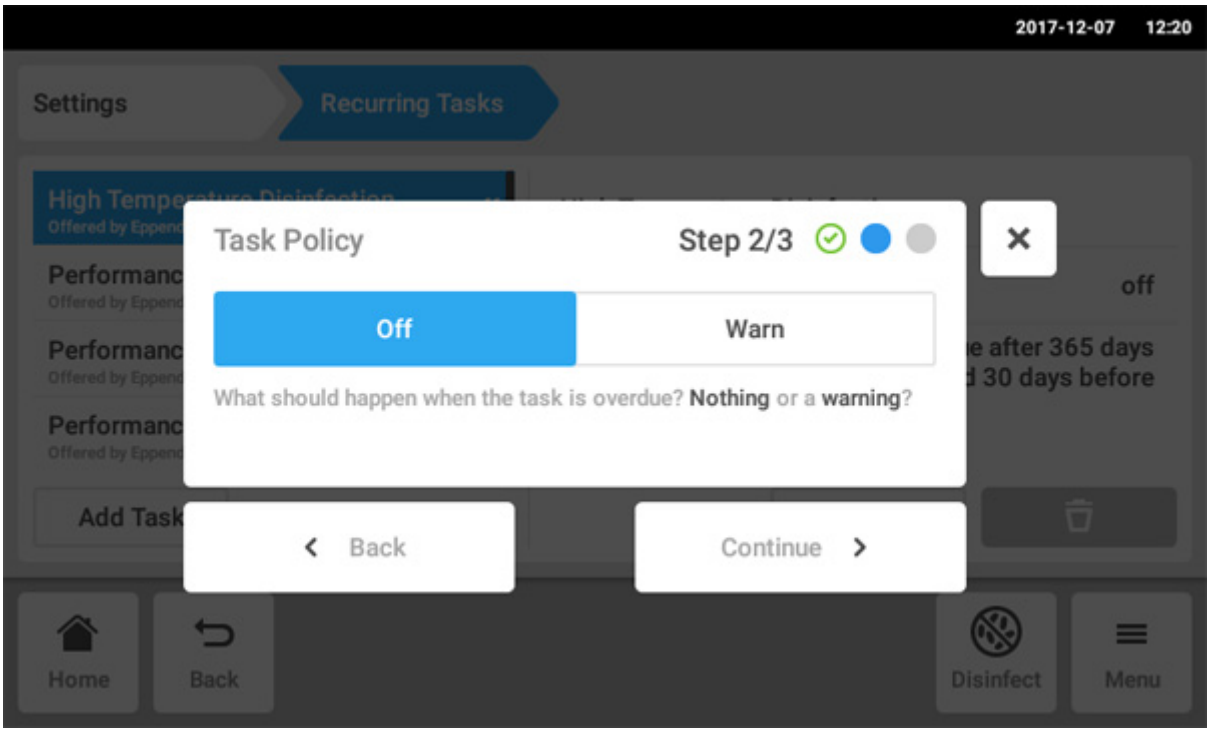
2. Select a task.

3. Tap the *Edit* button.

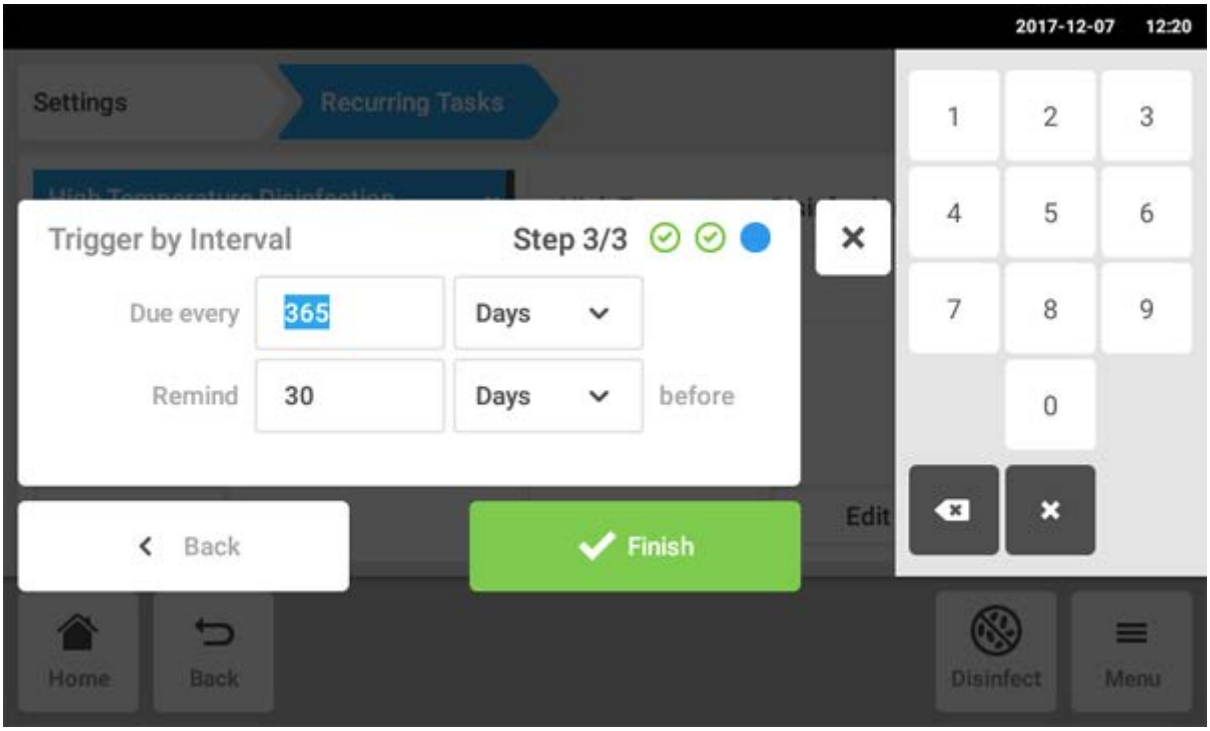


A wizard window appears that explains the task.

4. Tap the *Continue* button.



5. Select to have the incubator warn you when the task is overdue. When selecting *Off*, you can still define an interval without a warning.
6. Tap the *Continue* button.

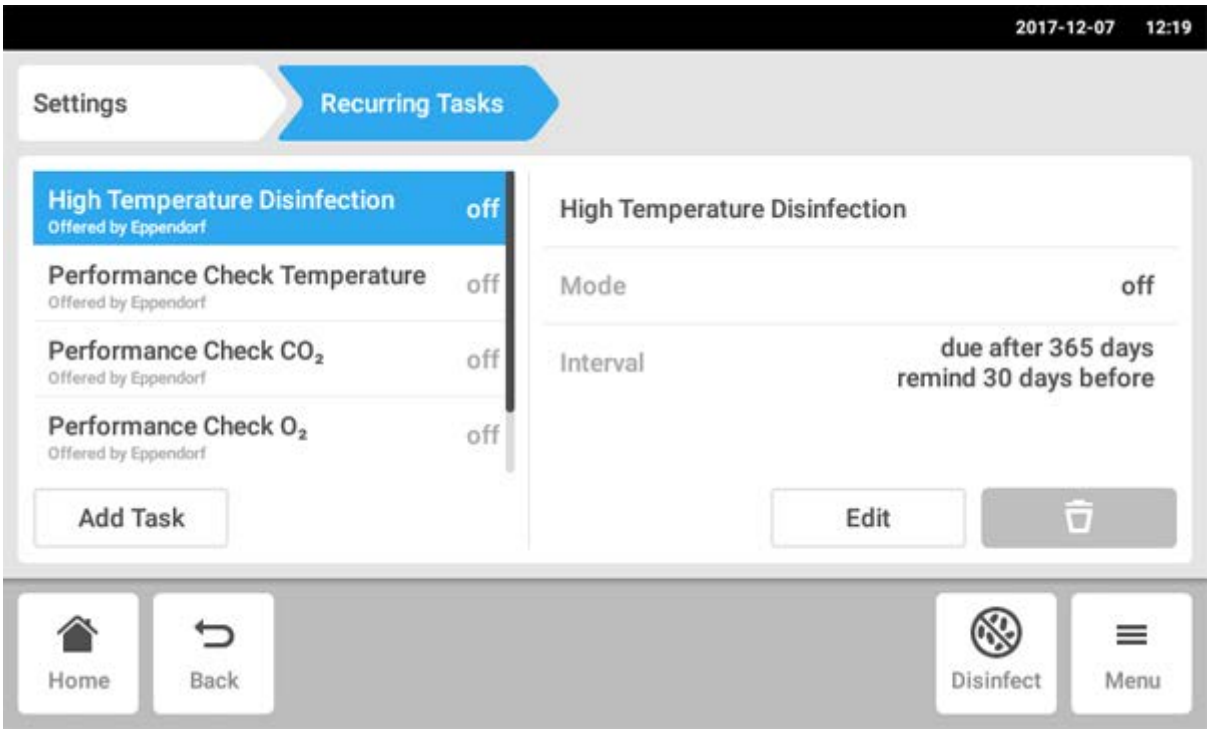


7. Define the interval: yearly, monthly, weekly, or daily. Additionally you can set a reminder.
8. Tap the *Finish* button.

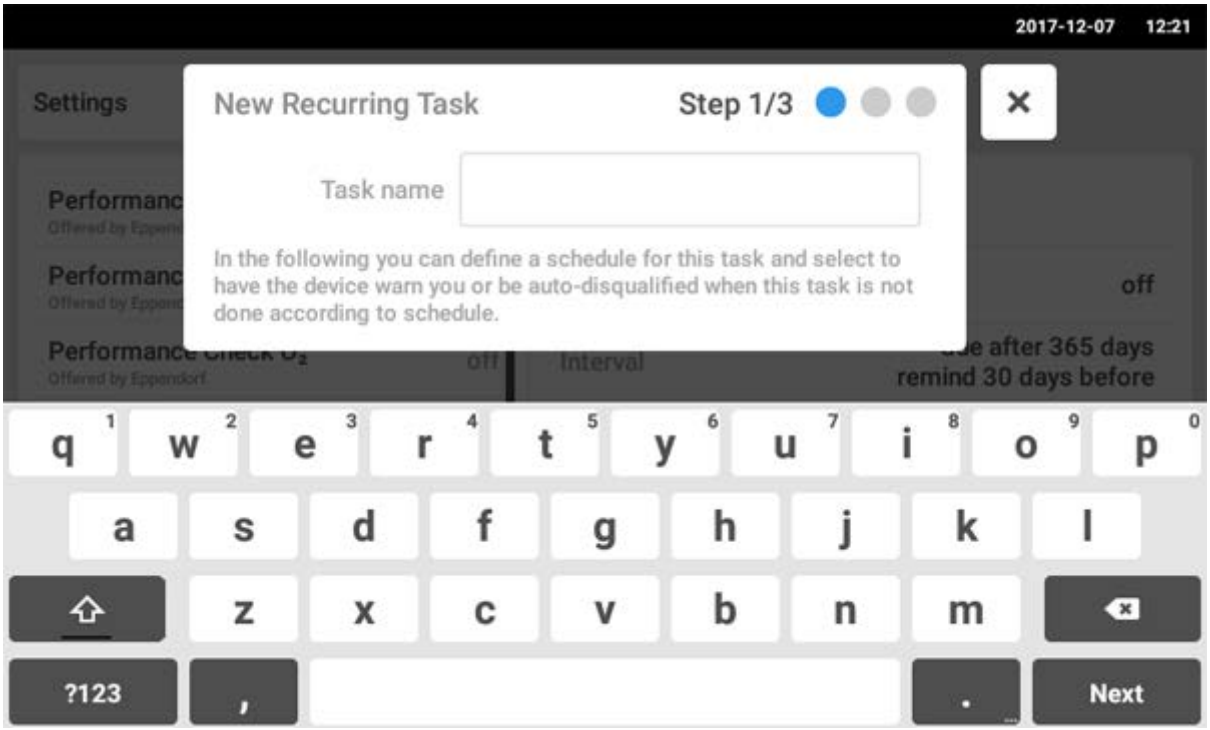
8.7.4 Define a new recurring task

To set a customized reminder, you can define a new task. Tasks that have been defined by yourself are deletable.

1. Tap the *Add Task* button.

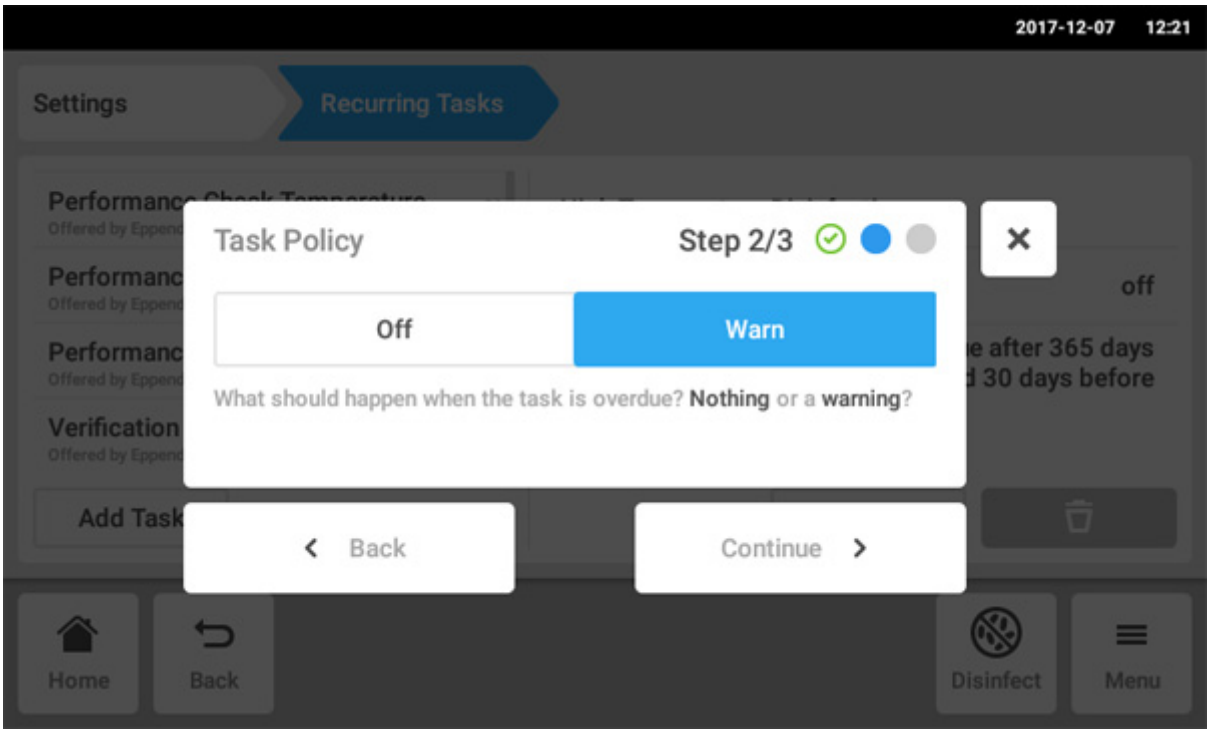


A wizard window appears.

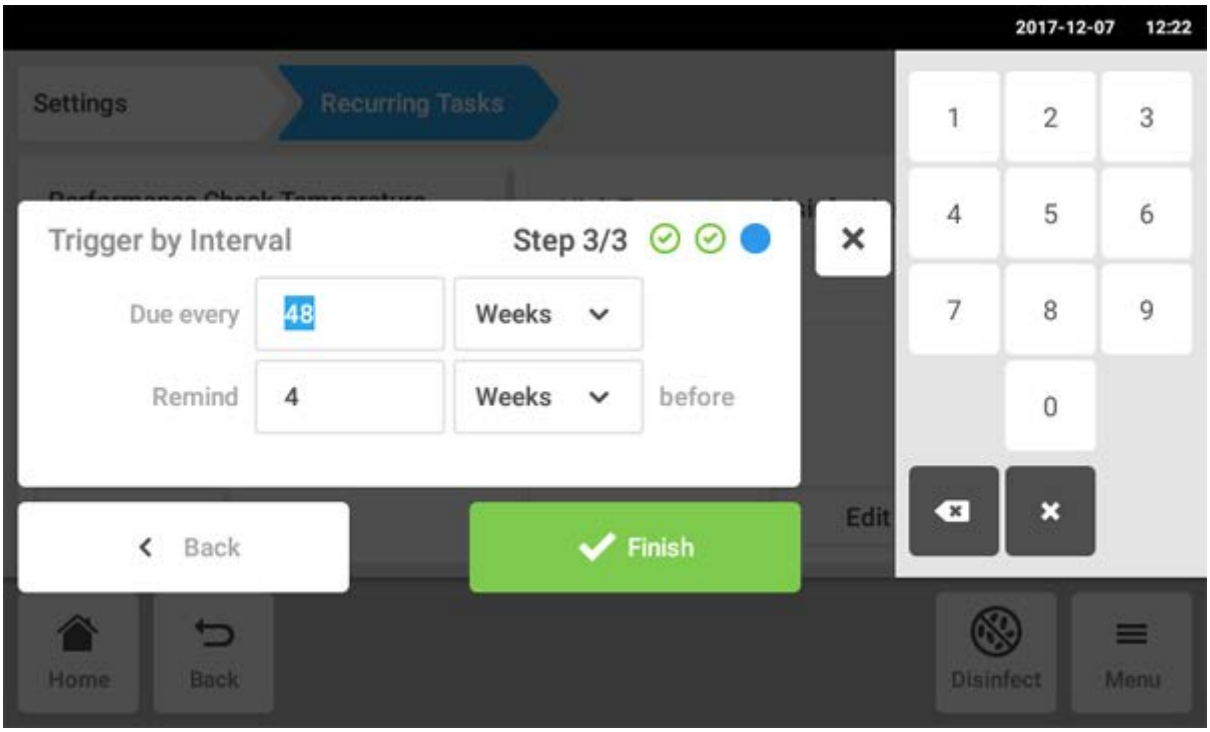


2. Enter the task name

3. Tap the *Next* button.



4. Select to have the incubator warn you when the task is overdue. When selecting *Off*, you can still define an interval without a warning.
5. Tap the *Continue* button.



6. Define the interval: yearly, monthly, weekly, or daily. Additionally you can set a reminder.
7. Tap the *Finish* button.

8.8 Operation Records

All experiments are documented and stored. If there are more than 1000 entries, the oldest entries are overwritten.

8.8.1 Accessing *Operation Records*

1. Tap the *Menu* button.
2. Tap the *Operation Records* button.
   The list of experiments that have been completed is displayed.

8.8.2 Creating an experiment

1. Tap the + button.
2. Enter the record name for the experiment.
3. Enter the start date.
4. Enter the finish date.
5. Confirm the entries.

8.8.3 Filtering entries

1. Tap the button for the filter options.
   The *Set Filters* window with the following filter options opens:
   - *Result*: filter by result *All Records*, *Record contains warnings*, *Record contains alarm* or *Record contains error*
   - *From date*: filter from a date
   - *Until date*: filter up to a date
   - *Operation name*: filter by operation name
   - *User*: filter by user if user management has been set

   In this window, entries are confirmed with the *Confirm* button or reset with the *Reset Filters* button.
2. Assign values to the required filter options and tap on *Confirm*.
   The filtered entries are displayed.

8.8.4 Exporting entries

1. Connect a USB stick and tap the *Export* button.
   The entries are saved in a PDF document. If the export was successful, the *Export successful* window appears.

8.8.5 Displaying information on an experiment

1. Tap the desired list entry.
   Information on the selected experiment is displayed and can also be exported.
   - *Result*: The result *Successfully Created*, *Record contains warnings*, *Record contains alarm* or *Record contains error* is displayed.
   - *Initial Parameters*: The set temperature, CO_2 concentration, O_2 concentration including alarm limits, and RH alarm limit are displayed.
   - *Time Span*: The start time and end time are displayed.
   - *Events*: Event information is displayed.
   - *System*: The system information is displayed.

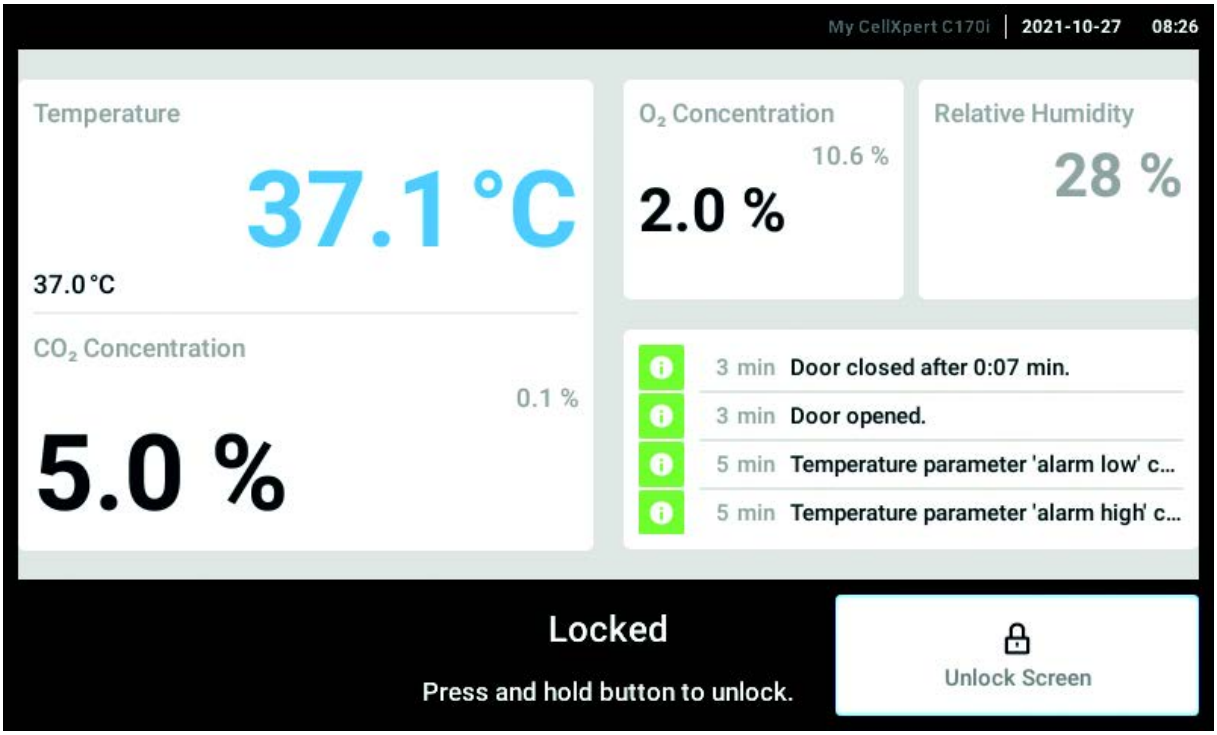
You can define your company name for the *Operation Records* (see *Operation Records Settings on p. 81)*.

8.9 Screen Lock

You can lock the touchscreen to avoid inadvertent changes during operation.

8.9.1 Locking the touchscreen

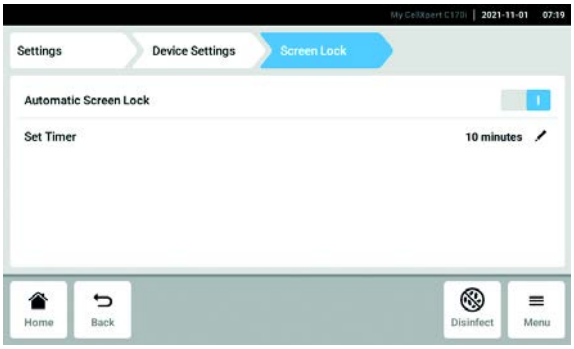
▸ Tap the *Menu* > *Screen Lock* menu items.



8.9.2 Unlocking the touchscreen

- Press and hold *Unlock Screen* until the touchscreen becomes unlocked.

8.9.3 Activating or deactivating the *Automatic Screen Lock*



1. Tap the *Menu* > *Settings* > *Device Settings* > *Screen Lock* menu items.
2. To activate or deactivate the *Automatic Screen Lock* tap the status button.
3. If you activate the *Automatic Screen Lock*, you can adjust the time for the *Screen Lock* to come on by tapping *Set Timer*.

9 User administration

9.1 The user administration concept

The user administration can be used to organize access to the incubator. There are three user roles:

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

9.1.1 User roles for working with user administration

Administrator (role with extra rights)
- Configuring the incubator
- Access to user administration

User with standard rights
- A normal user can operate the incubator without restrictions.

User with restricted rights
- A user with restricted rights can operate the incubator with certain restrictions, i.e. acknowledge notifications and view settings.

Logged out user
- A logged out user can view all relevant information.

9.1.2 Working without user administration

Without user administration, all users have the same rights as an administrator.

9.1.3 User rights

Tasks	User with restricted rights	User with standard rights	Administrator/user (rights without user administration)
Change parameters		x	x
Change alarm limits			x
Change settings			x
Change relay settings			x
Change alarm volume		x	x
Change home screen configuration		x	x
Change own PIN/ password	x	x	x
Change user name			x
Change user rights			x
Acknowledge alarm		x	x
Acknowledge error			x
Acknowledge warnings	x	x	x
Start high-temperature disinfection		x	x
Start performance check			x
Start relay test function			x
Export event log	x	x	x
Export charts	x	x	x
Login/logout	x	x	x
View administrator settings	x	x	x
View user settings	x	x	x
View device information	x	x	x
Configure network settings			x
Create user account			x
Reset user password			x
Delete user account			x

9.2 Establishing the user management

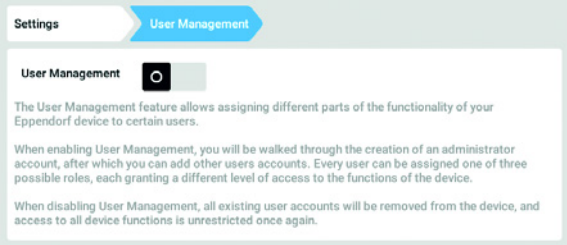
NOTICE! Data loss due to loss of the administrator password
The administrator is only able to change his password or PIN using his access data. No changes will be possible in the user administration or the system settings if the administrator's access data is lost.
In this case, the device will have to be reset to the factory settings by an authorized service technician. All user accounts and data and settings stored on the device will be deleted.

- Create a second user account with administrator rights.
- Keep the administrator password secure.

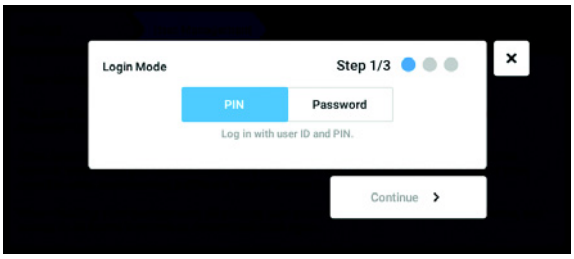
9.2.1 Creating an administrator

Prerequisites

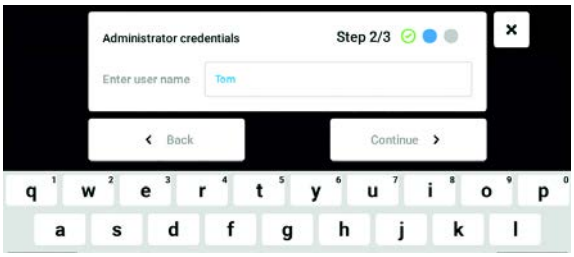
- The incubator is ready to operate.
- The home screen is active.



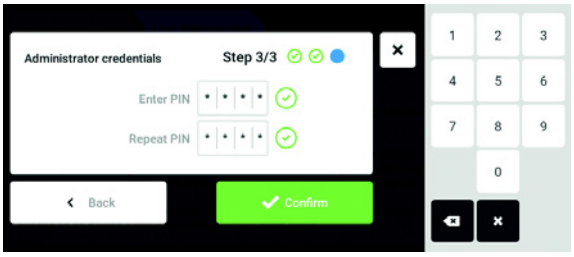
1. Tap the *Menu* button and navigate to the *Settings > User Management* menu item.
2. To activate the user administration, slide the *User Management* switch to the *I* position.
   The *Login mode* window appears.



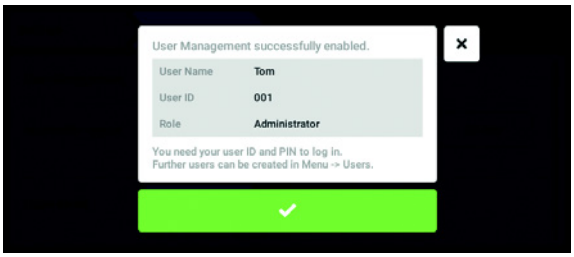
3. Define the login mode for all users.
4. Continue the process with *Continue*.
   The *Administrator credentials* window appears.



5. Enter the user name for the first administrator in the *Enter User Name* field.
6. Continue the process with *Continue*.
   The *Administrator credentials* window appears.



7. Enter PIN or password in the *Enter PIN/Password* field. Confirm the entry in the *Repeat PIN/ Password* field.
8. Continue the process with *Continue*.
   The *User Management successfully enabled* window appears.
   The user administration is activated.
   The user account for the first administrator is created.

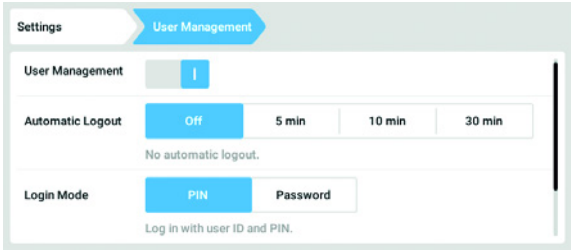


9. Confirm the message.
   The *User Management* window appears.
   It is now possible to edit the user administration.

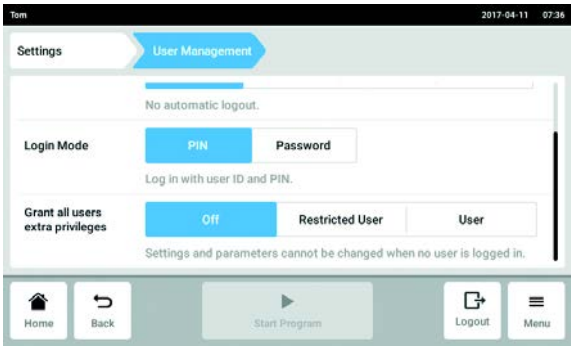
9.2.2 Editing the user administration

Prerequisites

- The incubator is ready to operate.
- The administrator is logged in.
- The home screen is active.



1. Tap the *Menu* button and navigate to the *Settings > User Management* menu item.



2. Define the settings for the user administration.

- *User Management*: Switch the user administration on and off.
- *Automatic Logout*: Define the time after which a user is automatically logged out if the touch screen is not used.
- *Login Mode*: Define the login mode for all users.
- *Grant all users extra privileges*: Restricted rights (*Restricted User*) or standard rights (*User*) are active for all users.

When the *Grant all users extra privileges* option is activated, a login is not necessary. Also, users who are not recorded in the user administration can operate the device with these rights (*Restricted User* / *User*).

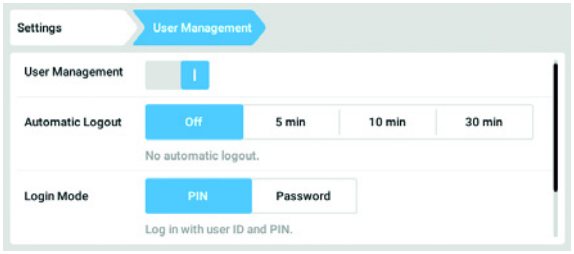
9.2.3 Deactivating the user administration

NOTICE! Data loss in case of deactivation of the user administration
Deactivating the user administration deletes all user accounts.

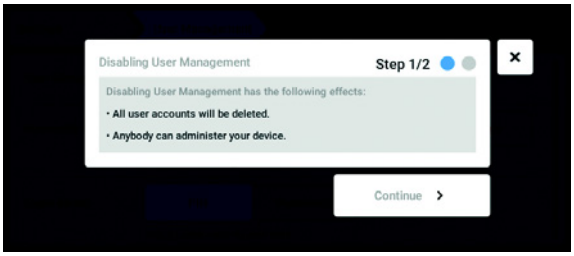
- Check whether deactivation of the user administration is required.
- Inform all users that the user accounts have been deleted.

Prerequisites

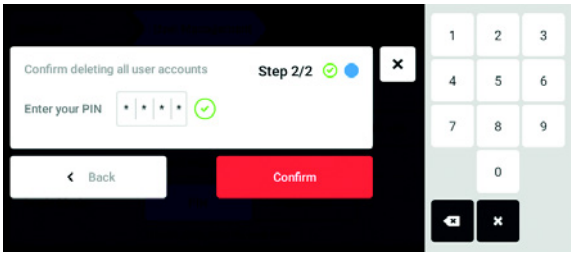
- The incubator is ready to operate.
- The administrator is logged in.
- The home screen is active.



1. Tap the *Menu* button and navigate to the *Settings* > *User Management* menu item.
2. To deactivate the user administration, slide the *User Management* switch to the *0* position.
   The *Disabling User Management* window appears.



3. Continue the process with *Continue*.
   The *Confirm deleting all user accounts* window appears.



4. Enter the PIN/password.
5. Complete the process with *Confirm*.
   The user administration is deactivated. All user accounts are deleted.

9.3 User login

Prerequisites

The user administration is set up, and you can login as a user or administrator.

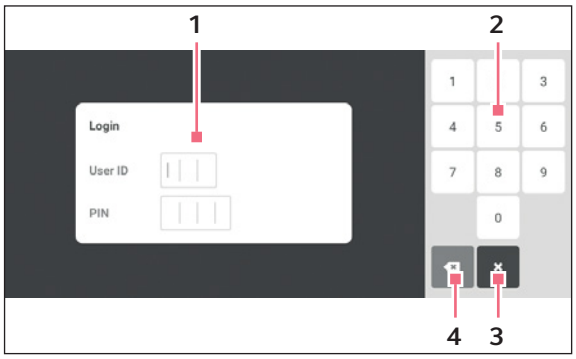


Fig. 9-1: The *Login* screen

1 Edit box

2 Number pad

3 Abort login

4 Delete the entry step by step

Logging in as a user

1. Tap the *Menu* > *Login* menu items.
2. Enter your user ID/user name and your PIN/password.
   If the correct PIN or password was entered, the user is automatically logged in.

Logging out as a user

1. Tap the *Menu* > *Logout* menu items.

9.4 Editing user accounts as an administrator

NOTICE! Data loss due to unauthorized use of the administrator password.
The administrator password protects the device software from unwanted access.

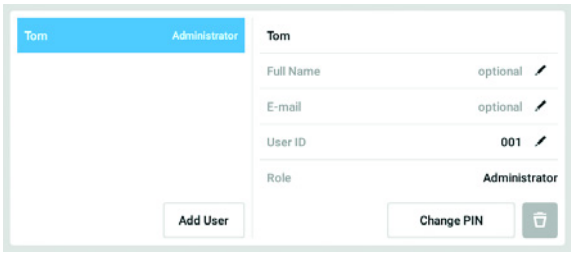
- Make a note of the administrator password.
- Store the administrator password in a secure location.
- Only provide the administrator password to individuals who work with the system configuration.
- Please contact Eppendorf SE if you have any problems with the administrator password.

9.4.1 Creating a user account

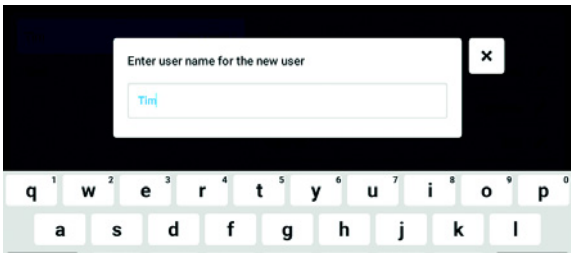
You can create 999 user accounts.

Prerequisites

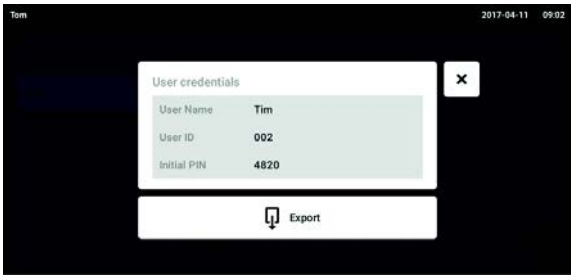
- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts is displayed.
2. Tap the *Add User* button.
   The *Enter User Name for the new user* field appears.



3. Enter the user name.
4. Confirm your entry.
   The *User credentials* window appears.
   The user account is created. The user data appears in the window.
   The user is assigned to the user group *Restricted User*.



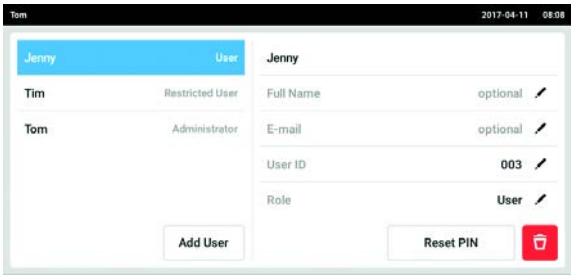
5. **Optional export of user data:** Connect a USB storage medium and tap the *Export* button.
6. Confirm the export.
   The user data is exported to the USB storage medium in a TXT file.
7. If the export is successful, the *Export successful* window appears.
   To complete the process, confirm the message.

9.4.2 Editing user accounts

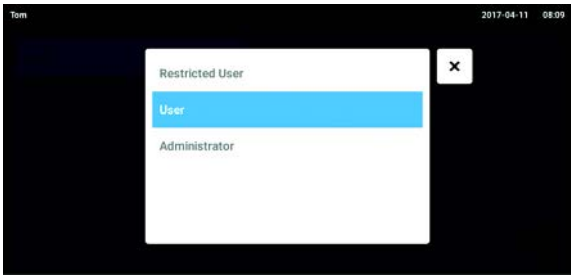
Users with restricted user rights or standard rights can only edit their own *Full Name* and *E-mail* entries. Users can always change their own PIN or password.
Administrators can assign a new user ID to a user account and change the rights.

Prerequisites

- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts appears. Entries that can be edited are indicated by a black pen.
2. Select the user account.
3. Optional: Enter the full name.
4. Optional: Enter the e-mail address.
5. To change the user ID, tap *User-ID*.
6. Select the new user ID.



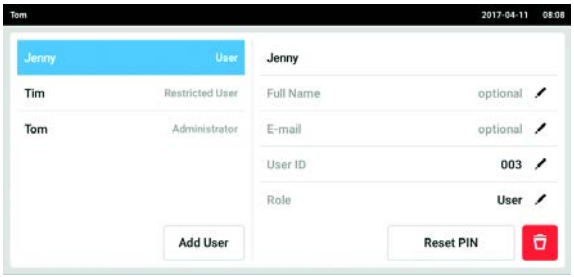
7. To change the user group and the corresponding rights, tap *Role*.
   The list with the available user groups appears.
8. Assign a user group to the user.
   - Restricted User
   - User
   - Administrator

   The selected parameters are stored and appear in the user account.

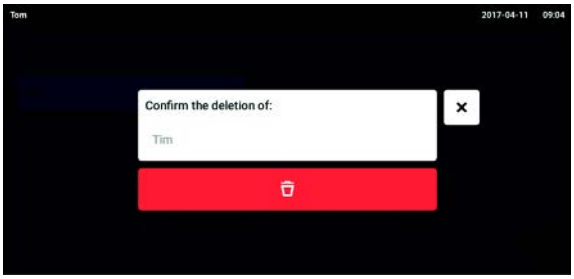
9.4.3 Deleting a user account

Prerequisites

- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts appears.
2. Select the user account to be deleted.
3. Tap the *Recycle bin* symbol.
   The *Confirm the deletion of:* window appears.



4. Confirm that you want to delete the user account.
   The user account is deleted.

9.4.4 Resetting the password/PIN for a user account

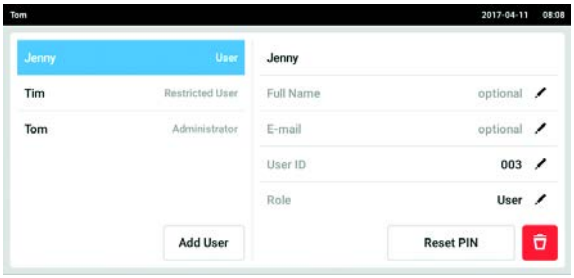
If a user has forgotten their password/PIN, the administrator can generate a new password.

The administrator can only change their password or PIN with their current access data. If the administrator's access data is lost, changes are no longer possible in the user administration. In this case, the device must be reset to the factory settings by an authorized service technician. All user accounts and the programs, log files, and logs stored on the device will be deleted.

▸ Create a second user account with the administrator rights.

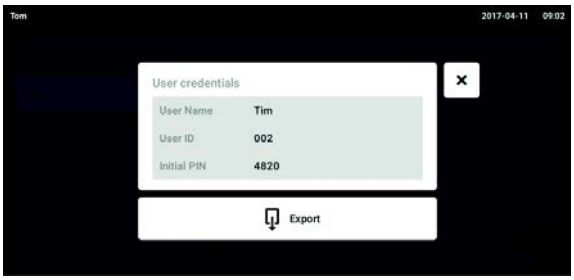
Prerequisites

- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts appears.
2. Select the user account.
3. Tap the *Reset Password/PIN* button.
   The *Do you want to reset the Password/PIN for:* window appears.

4. Confirm the process with *Reset*.
   The *New Credentials* window appears.
   The new password/PIN is created automatically.



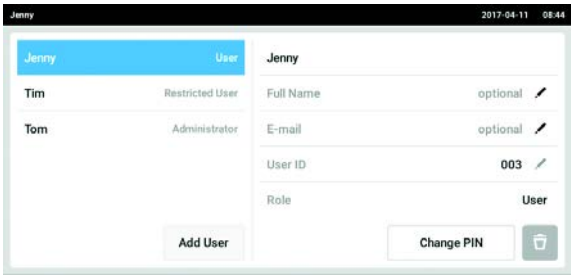
5. To export the user data, connect the USB storage medium and tap the *Export* button.
6. Confirm the export.
   The user data is exported to the USB storage medium in a TXT file.
7. If the export is successful, the *Export successful* window appears.
   To complete the process, confirm the message.

9.5 Administrating your own user account

Users can only edit their own *Full Name* and *E-mail* entries. Users can always change their own PIN or password.

Prerequisites

- The user is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts appears. Entries indicated by a black pen can be edited.
2. Select the user account.
3. Optional: Enter the full name.
4. Optional: Enter the e-mail address.
5. To change the password/PIN, tap the *Change Password/PIN* button.
6. Enter the current password/PIN in the *Enter current Password/PIN* field.
7. Enter the new password/PIN in the *Enter new Password/PIN* and *Repeat new Password/PIN* fields.
8. Confirm your entry.
   The message *Password/PIN successfully changed* appears.
   The new password or the new PIN is active.

10 Maintenance

10.1 Routine maintenance

10.1.1 General



WARNING! Risk of injury to personnel or damage to equipment!

- Do not move 2 stacked incubators for maintenance or cleaning.



WARNING! Risk of injury to personnel or damage to equipment!

- While moving the incubator, ensure that the door is closed.
- Two trained persons are needed for moving an incubator.
- Risk of the device falling due to its high center of gravity.



WARNING! Risk of injury to personnel or damage to equipment

- While cleaning or disinfecting/decontaminating the chamber, take care not to break small sensors/other parts or destroy your protective gloves by wiping with too much force.

To ensure that chamber conditions remain stable, minimize the length of time that the door is open. When you open the door, wipe off any condensation that may have formed at the inner seal to avoid condensation build-up.

10.1.2 Daily checks

1. Check if the temperature level and the CO_2 level are within the specification.
2. Check the reserve pressure in the CO_2 cylinder (normally 725 psi (50 bar) when full). The design of the incubator ensures low consumption of CO_2. If there is a significant drop at the cylinder pressure, it means that the cylinder is almost empty and should be replaced. Make sure that there are no leaks at any of the connections. Checking the pressure and the connections helps to increase the lifetime of the CO_2 supply and to avoid accidentally running out of CO_2.
3. Clean any spills in the chamber immediately.
4. Routinely check the screen for any alarms or events that may have occurred.

10.1.3 Weekly checks

Clean and refill the water tray with an appropriate amount of warm, distilled, sterile water. The use of warm water ensures a rapid return to optimum chamber conditions.

10.1.4 Monthly checks

Clean the exterior and interior of the device.

10.1.5 Yearly checks

Let the sensors be maintained by a qualified service technician.

Exchange the in-line gas filter.

10.2 Performance check

The performance check cannot replace a verification by Eppendorf Service.

Consider the accuracy and the measuring principle of the measuring instrument.
Check the accuracy of the measuring instrument, if there is a discrepancy between the measured values and the displayed values. Exact limits are not definable for the values as they depend on the measuring method.

If the measurement is reliable and the measuring instruments are suitable:
- Export the measuring result
- Contact your local Eppendorf partner

The performance check is used to check the accuracy of temperature and gas concentration with an external measuring instrument. A programmable interval reminds you of the need to run a performance check.

During a performance check the values, that were set by the user and that are not to be checked, do not have to be modified. The device has default settings. Only the value you want to check will be switched to its default setting.

Default settings
- Temperature: 37 °C
- CO_2: 5 %
- O_2: 10 %

If your samples tolerate the default setting of a value to be checked, they may remain in the device. If not, take the samples out of the device.

Performance check for temperature
- If your cells are growable at 37 °C, samples may remain in the device during the performance check. If not, take the samples out of the device.

Performance check for CO_2
- If your cells are growable at 5 % CO_2, samples may remain in the device during the performance check. If not, take the samples out of the device.

Performance check for O_2
- If your cells are growable at 10 % O_2, samples may remain in the device during the performance check. If not, take the samples out of the device.

Prerequisites

- External measuring instruments are available.
- The incubator is ready to operate.
- The home screen is displayed on the touch screen.
- If using a user administration, the administrator has to be logged in.

1. Tap the button *Menu* on the control panel.
2. Tap the button *Maintenance & Qualification*.
3. Tap on *Recurring Tasks*.
4. Tap *Performance check temperature*, *Performance check CO_2* or *Performance check O_2*.

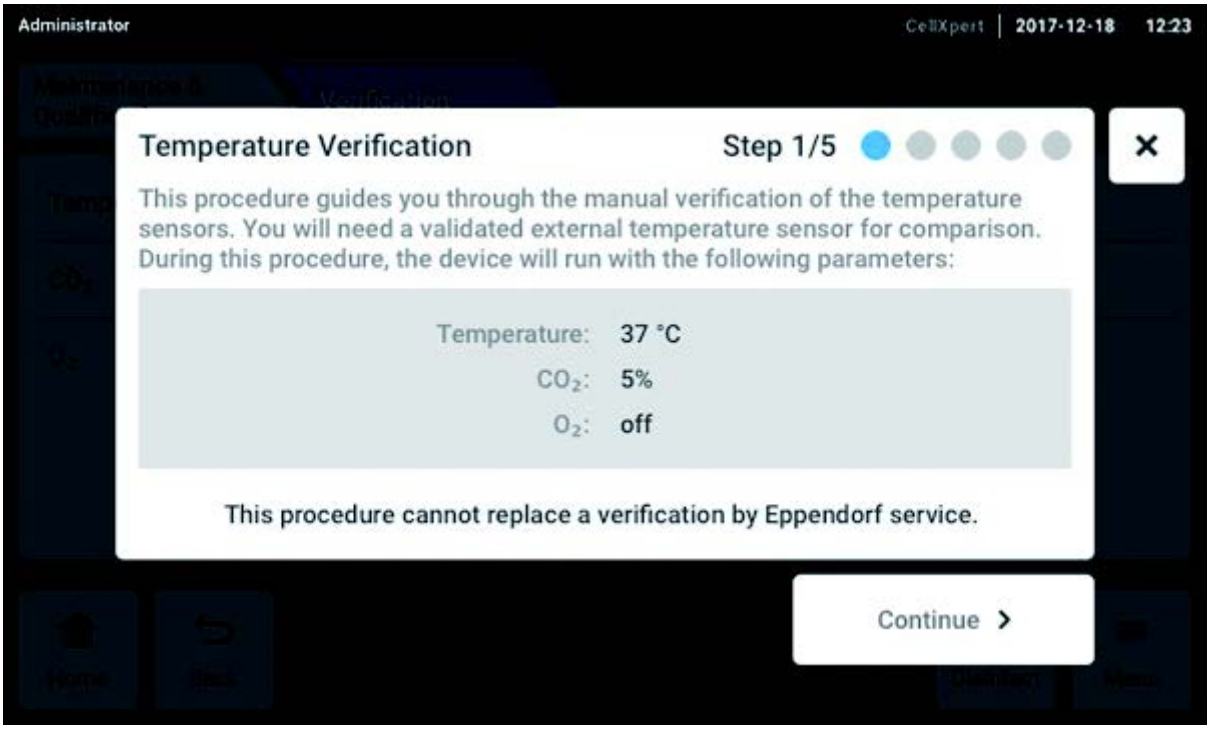


Fig. 10-1: The guided procedure starts

5. Tap the button *Continue*.

Use a calibrated measuring instrument. Consider the specification of the measuring instrument, particularly the operating conditions, and measurement accuracy.

6. Specify the external measuring instrument by entering its name. Enter the last calibration date of the measuring instrument.

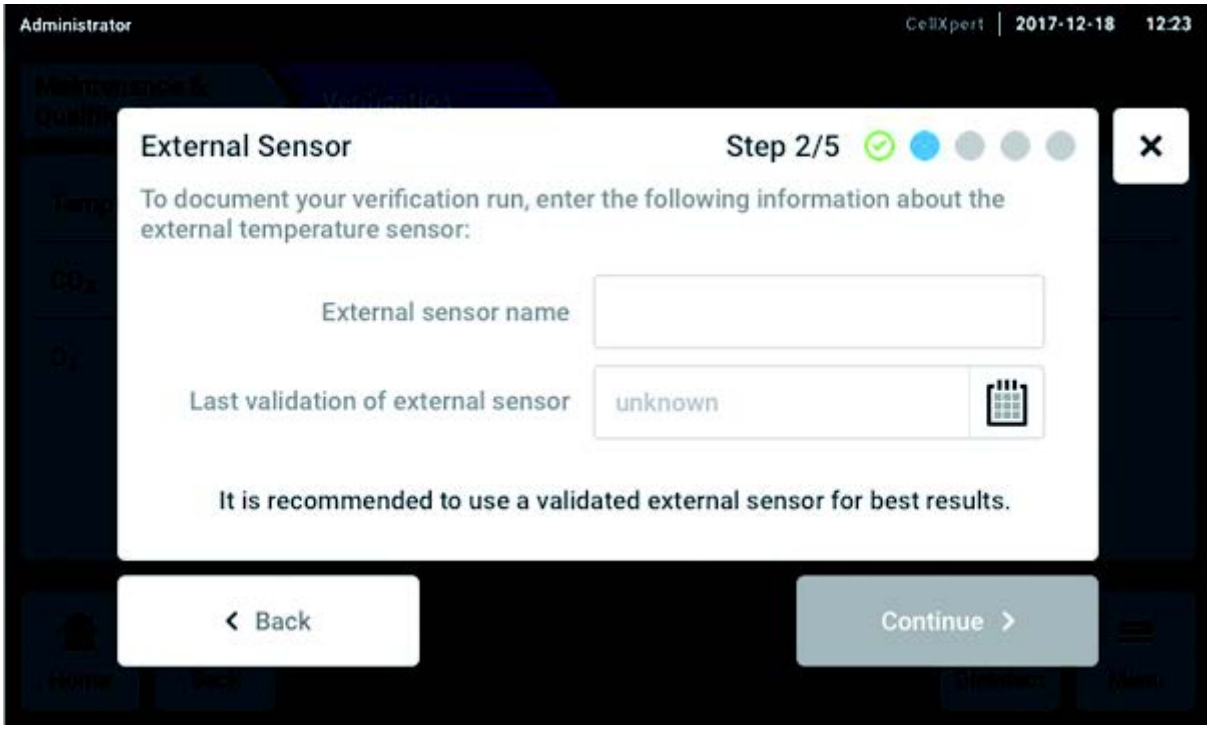


Fig. 10-2: Documentation of the verification run

For temperature

To preserve the door seals, use the access port to bring the cable into the chamber.

1. Open the outer and the inner door.
2. Place the measuring instrument at the middle of the second shelf from the top.
3. Close the inner and outer door.

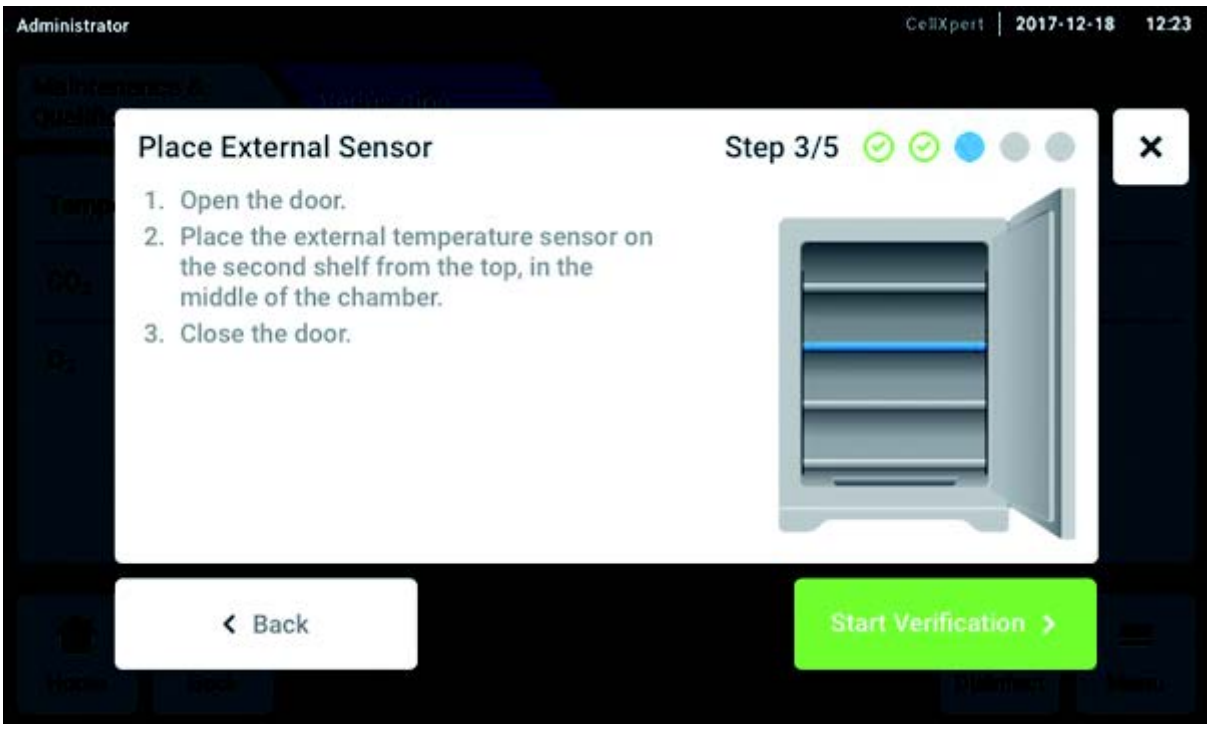


Fig. 10-3: Placement of the external temperature sensor

For CO_2 and O_2

Use a thin, but solid tubing with a maximum diameter of 6 mm. Take care that the tubing does not become damaged.

1. Open the outer door.
2. Conduct the tubing through the sample port.

3. Close the outer door.

If the displayed value at the analyzer is too low (CO_2) or too high (O_2), the analyzer cannot draw the sample correctly. The displayed values from the analyzer and the incubator display differ.

Solution

- Pull out the blind plug at the rear of the incubator.
- Repeat the measurement.
- Refit the blind plug after drawing the sample.

▸ Tap the button *Start Verification*.

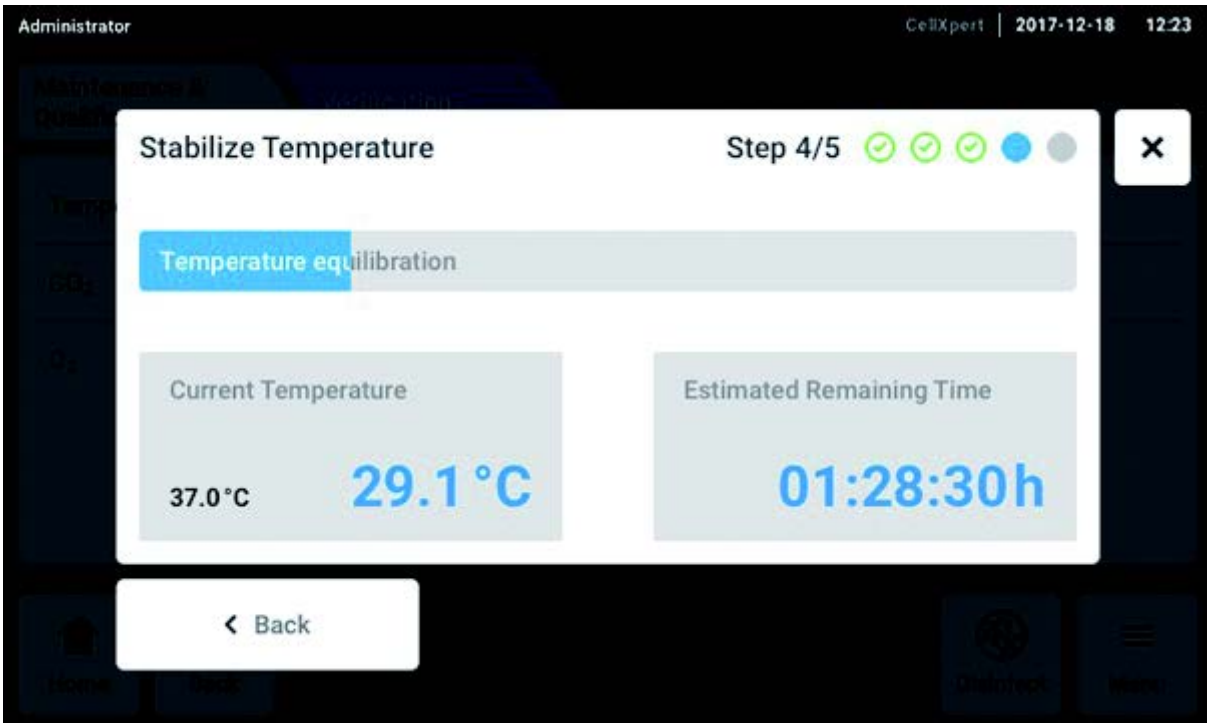


Fig. 10-4: Depending on the performance check, temperature or gas concentration are equilibrated. The remaining run time is displayed.

▸ Enter the detected value of temperature or gas concentration at the touch screen.

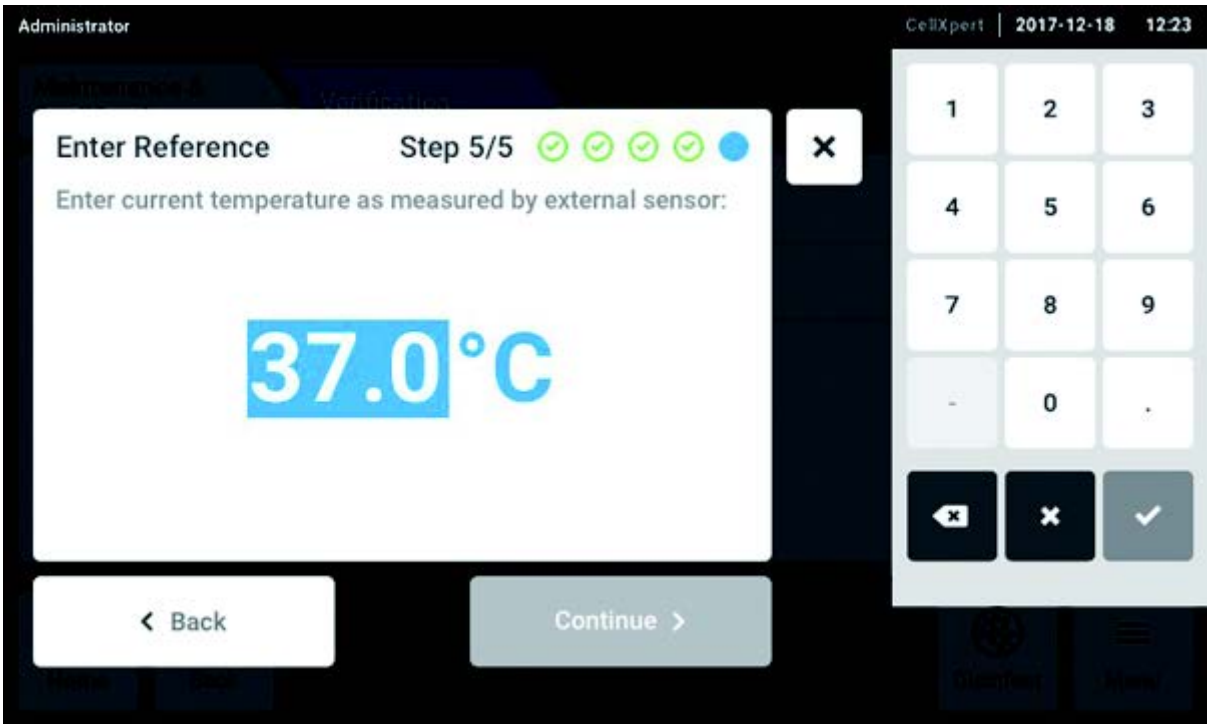


Fig. 10-5: Entering the reference value

- Confirm the value.
- Tap the button *Continue*.

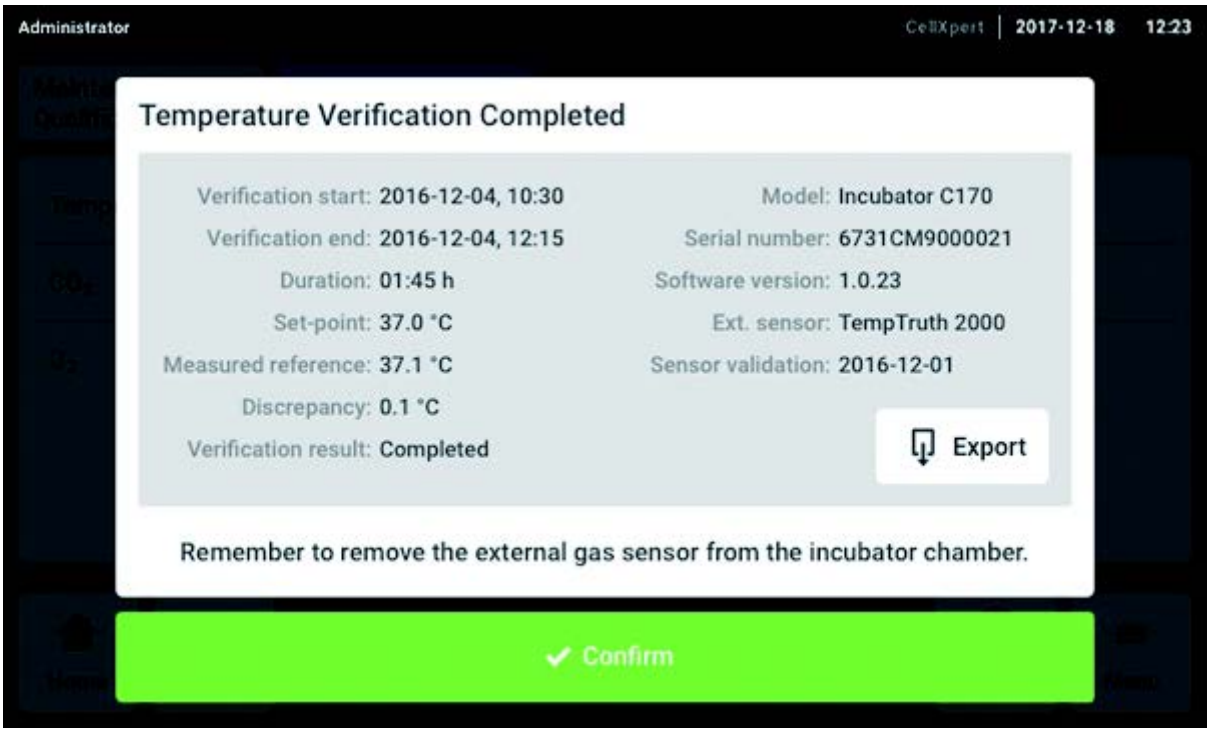


Fig. 10-6: The result of the performance check is displayed

- To store the result on a USB storage medium, tap the button *Export*.
- Tap the button *Confirm*.
- Remove the external measuring instrument.

The incubator is automatically reset to the previously used temperature and gas concentration.

10.3 Exterior cleaning



DANGER! Risk of electric shock from spilled liquid

- Switch off the device and disconnect it from the mains/power supply before starting cleaning or disinfecting work.
- Do not allow any liquids to penetrate the inside of the housing.
- Do not spray the housing.
- Only connect the device to the mains/power supply, if it is completely dried.



NOTICE! Damage due to aggressive cleaning agent or sharp objects
Incorrect cleaning agents can damage the display, surfaces, and printing.

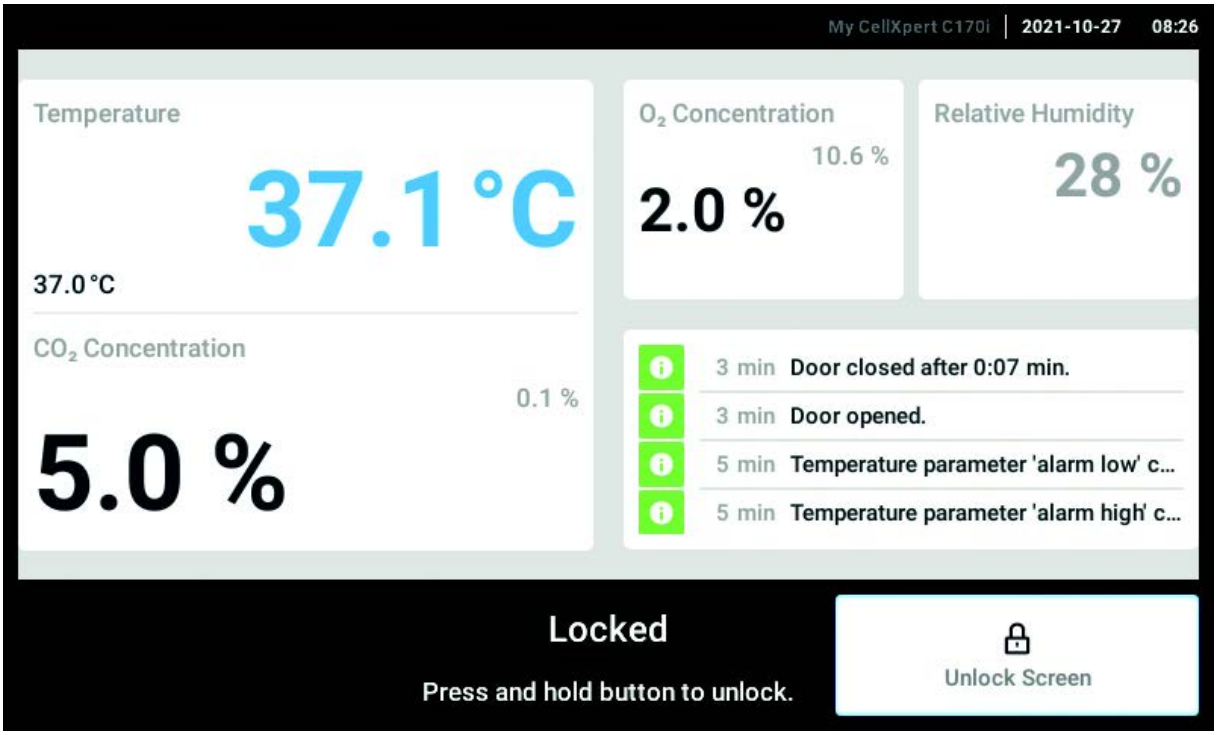
- Do not use corrosive cleaning agents, aggressive solvents, or abrasive polishes.
- Do not incubate the accessories in aggressive cleaning agents or disinfectants for an extended period of time.
- Do not use sharp objects to clean the device.

1. Clean the exterior of the incubator by wiping it over with a soft cloth, moistened with soapy water.
2. Wipe the exterior surfaces again with a rinsed cloth.

10.3.1 Cleaning the touch screen

The recommended cleaning agent for cleaning the touch screen is a solution of 70 % isopropanol (isopropyl alcohol) and 30 % distilled water. Follow the appropriate safety regulations while you are using this solution.

1. Tap *Menu* and then *Screen Lock* to activate the screen lock.
   The touch screen is disabled.



2. Dampen a clean cloth with the alcoholic solution and wipe the touch screen.
3. To unlock the touch screen, press and hold *Unlock Screen*.

10.4 Disinfection/Decontamination



WARNING! Danger due to contact with decontamination agent

- Wear protective equipment, gloves, and protective goggles during the cleaning process.
- Wear respiratory protection when aerosolization is suspected.



WARNING! Risk of personal injury or damage to equipment due to spilled infectious material

- Immediately decontaminate the exterior and the interior of the device, if infectious material was spilled.



WARNING! Risk of personal injury or damage to equipment

- While cleaning or disinfecting/decontaminating the chamber, take care not to break small sensors/other parts or destroy your protective gloves by wiping with too much force.



NOTICE! Corrosion due to aggressive cleaning agents and disinfectants.

- Do not use any corrosive cleaning agents, aggressive solvents or abrasive polishes.
- Do not incubate the accessories in aggressive cleaning agents or disinfectants for longer periods.



NOTICE! Risk of material damage

- Never use any of the following substances to clean the stainless steel, it will result in damage: sodium azide, aqua regia, iodine, ferric chloride, or sulphuric acid.



NOTICE! Risk of material damage

- Do not spray disinfecting agent inside the chamber. Spraying will lead to sensor damage.



NOTICE! Risk of material damage

- Ensure that no liquid is spilled on the white porous cover of the humidity sensor in the chamber.

10.4.1 Preparing the disinfection/decontamination

The recommended disinfecting agent for use with the incubator is a solution of 70 % Isopropanol or Ethanol with 30 % sterile distilled water.

If you have any further questions regarding the cleaning and disinfection or decontamination or regarding the cleaning fluid to be used, contact your local distributor. The contact details are provided on the back of this manual.

10.4.2 Disinfecting the exterior

It is not necessary to switch off and disconnect the device, when cleaning and disinfection are part of the software-guided process of high-temperature disinfection.

1. Switch off the incubator.
2. Unplug the incubator from the mains/power supply.
3. Dampen a clean cloth with the alcoholic solution and wipe down all external surfaces, taking care to keep the alcoholic solution from coming into contact with any mains/electrical outlets or assemblies.

10.4.3 Disassembling the interior equipment

1. Remove the water tray from the chamber.
2. Remove the shelves, bottom to top.
3. Remove the tie rod from the shelf racks.
4. Remove the shelf racks.

10.4.4 Disinfecting/Decontaminating the interior

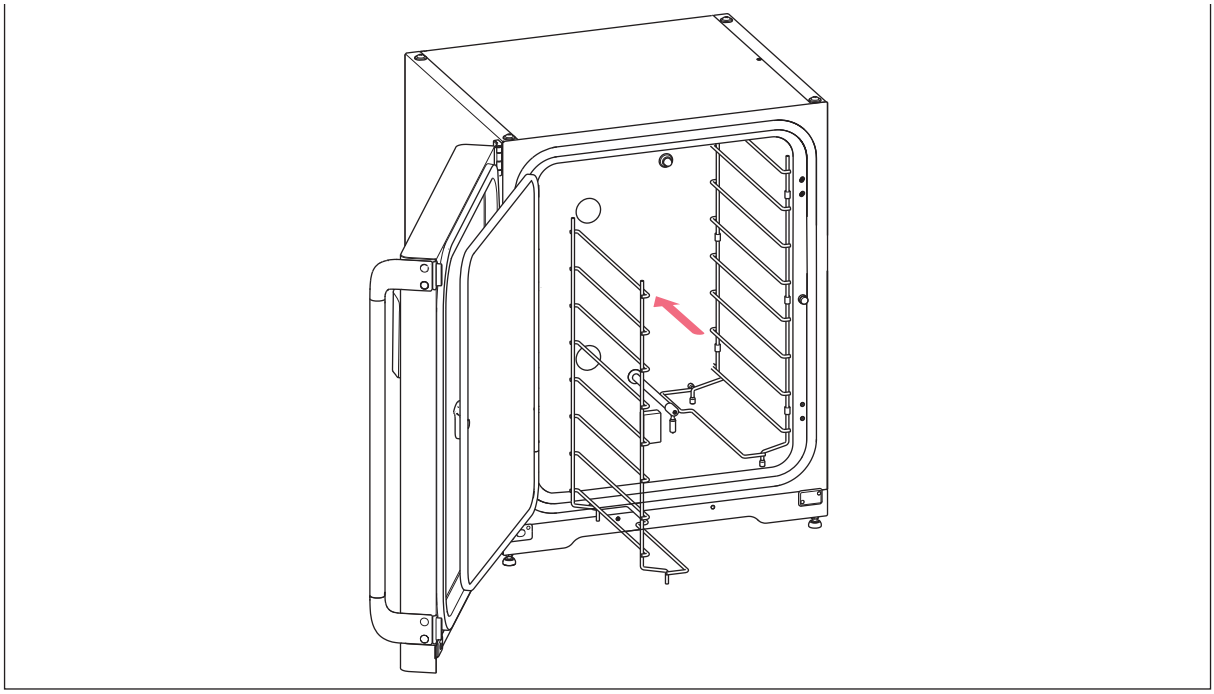
It is not necessary to switch off and disconnect the device, when cleaning and disinfection are part of the software-guided process of high-temperature disinfection.

1. Switch off the incubator.
2. Unplug the incubator from the mains/power supply.
3. Clean the water tray by rinsing it in sterile water, wiping it down with the alcoholic solution, and then rinsing it again with sterile water.

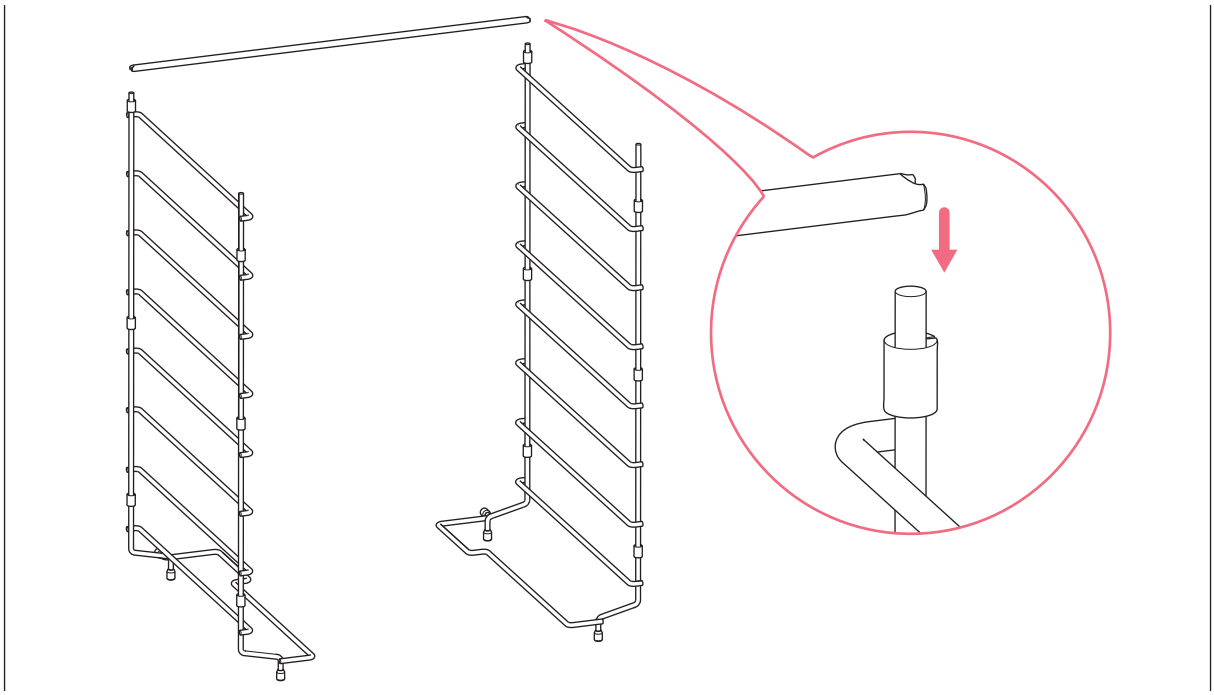
   To avoid liquid come into contact with the sensor or the sensor connection, wring out the cloth.
4. Wipe down the inside of the chamber with the alcoholic solution, and leave it to dry completely.
5. Wipe the internal components of the chamber twice with the alcoholic solution. Wipe off excess liquid and leave it to dry.
6. Wipe the inner door seal with the alcoholic solution, rinse, and leave it to dry.

10.4.5 Reassembling the interior equipment

1. Place the shelf racks inside the chamber. Ensure that the shelf rack spacers fit snugly to the side walls.

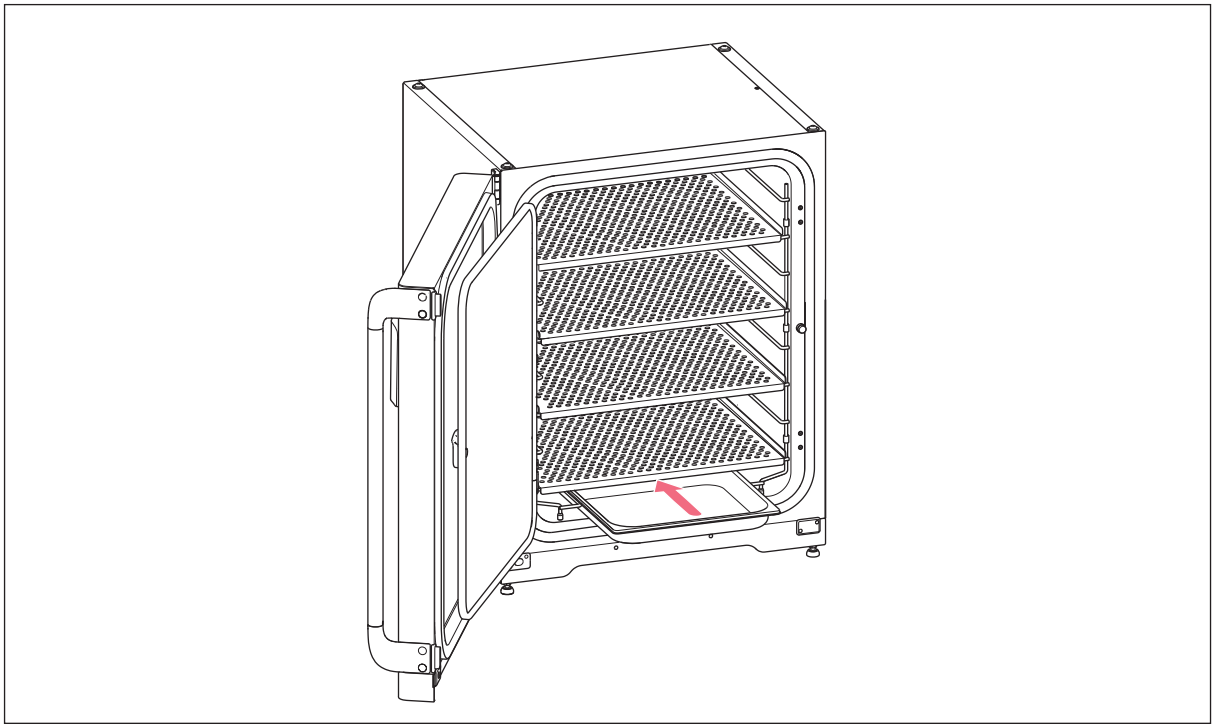


2. To stabilize the shelf rack, install the tie rod.



Do not forget to mount the tie rod. Shelves can wobble and samples can be lost, especially when using just one or two shelves.

3. Install the shelves, top to bottom. Ensure that each shelf's anti-tip groove is properly inserted (faced downward and to the rear of the incubator) onto each of the shelf rack guides.
4. Refill the water tray. Slide the water tray onto the lowest shelf rack support. Ensure that the water tray is pushed fully back.



10.4.6 Putting into operation

1. Plug in the incubator and switch it on.
2. To allow conditions to stabilize, leave the incubator on for at least 2 hours (preferably overnight).

10.5 High-temperature disinfection



WARNING! Risk of personal injury
Burns due to hot surface.

- Do not touch the equipment during the high-temperature disinfection cycle.
- Do not open the doors during the cycle.
- Do not open the doors after a system crash or a mains/power outage during the high-temperature disinfection.



WARNING! Risk of personal injury
Scalding due to hot water.

- Remove water from the water tray before starting the high-temperature disinfection cycle.



WARNING! Risk of personal injury or damage to equipment

- While cleaning or disinfecting/decontaminating the chamber, take care not to break small sensors/other parts or destroy your protective gloves by wiping with too much force.



NOTICE! Risk of material damage

- Never let electrical equipment come into contact with the alcoholic solution.



NOTICE! Risk of material damage

- To avoid possible damage to the CO_2 sensor due to condensation, never leave water in the water tray while the incubator is switched off, or when a high-temperature disinfection cycle is initiated.



NOTICE! Risk of material damage

- Put the protective cover up on the humidity sensor when executing a high-temperature disinfection.
- Follow the instructions on the touch screen.



When using the high-temperature disinfection for the first time, it may cause a smell to develop. Make sure that the location is ventilated.

To work contamination-free, clean and decontaminate the CO_2 incubator regularly. The CellXpert C170i offers the option of activating a reminder that the device is to be decontaminated (see *Recurring tasks on p. 93)*.

Prerequisites

The samples have been taken out of the device.

The device is ready to operate.

The protective cover for the humidity sensor is readily available.

The *Home* screen is displayed on the touch screen.

When using a user administration, a user or an administrator has to be logged on.

1. Tap the button *Disinfect*.

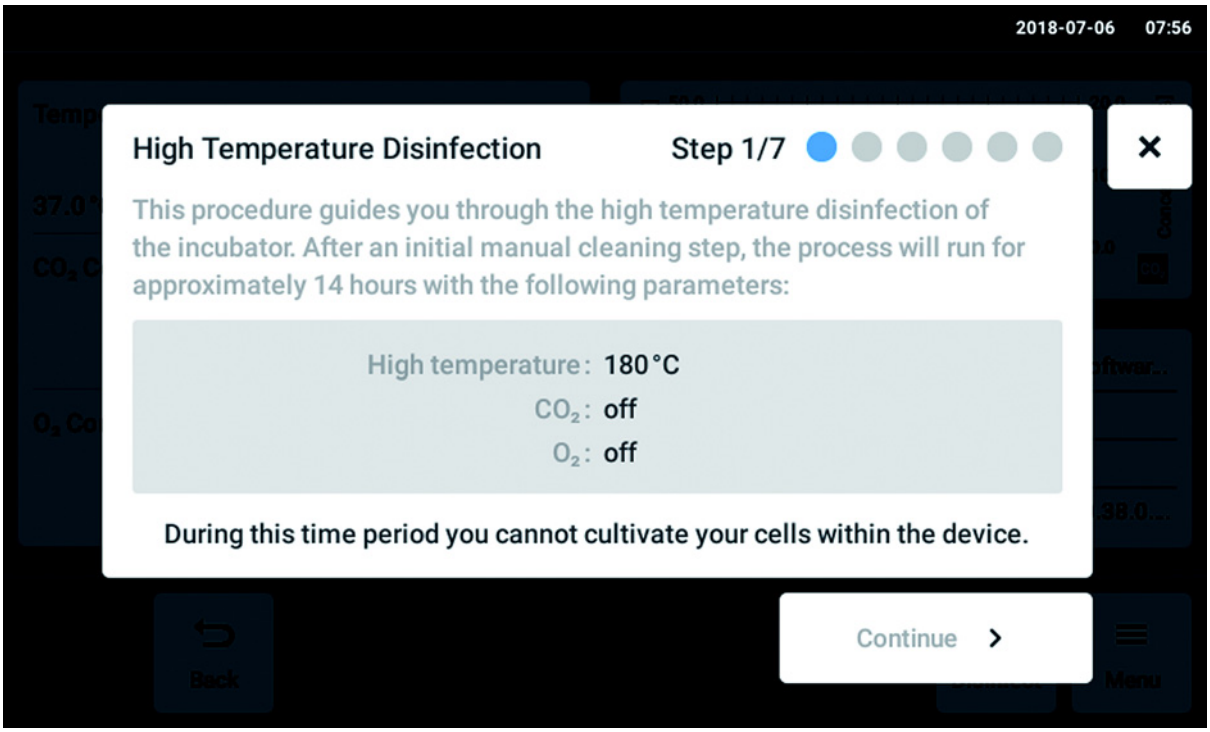
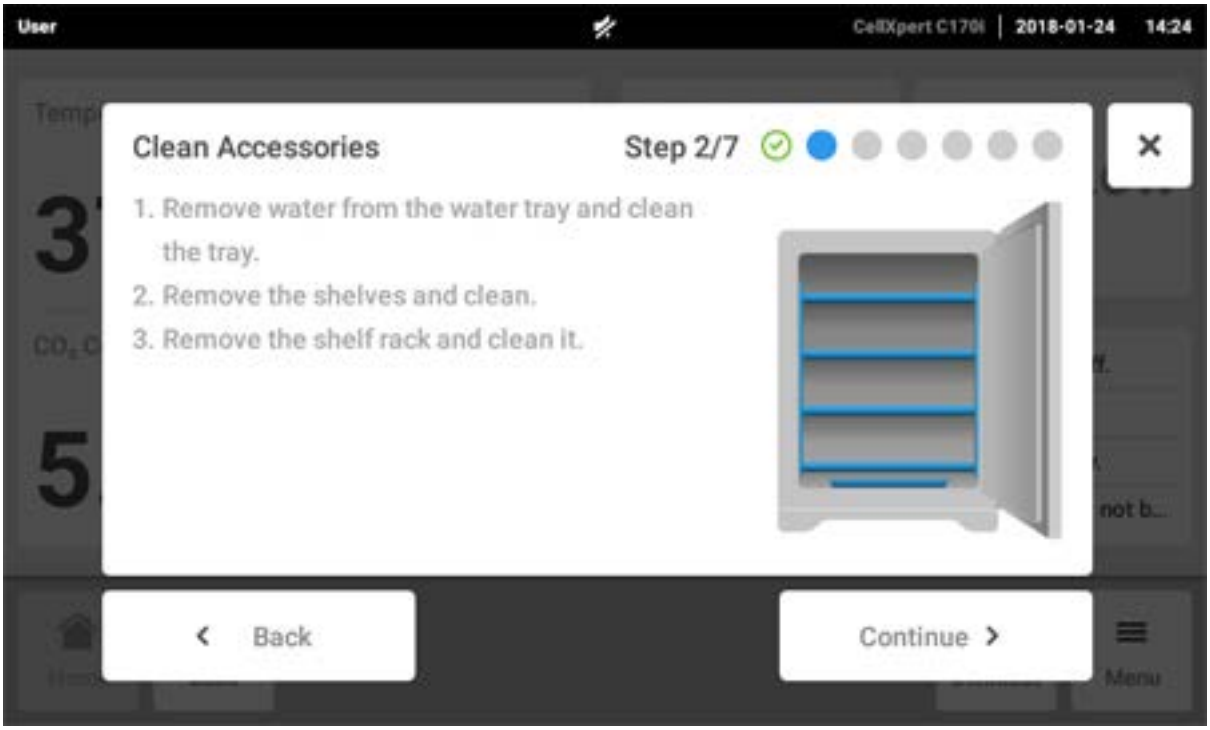


Fig. 10-7: A software-guided process starts.

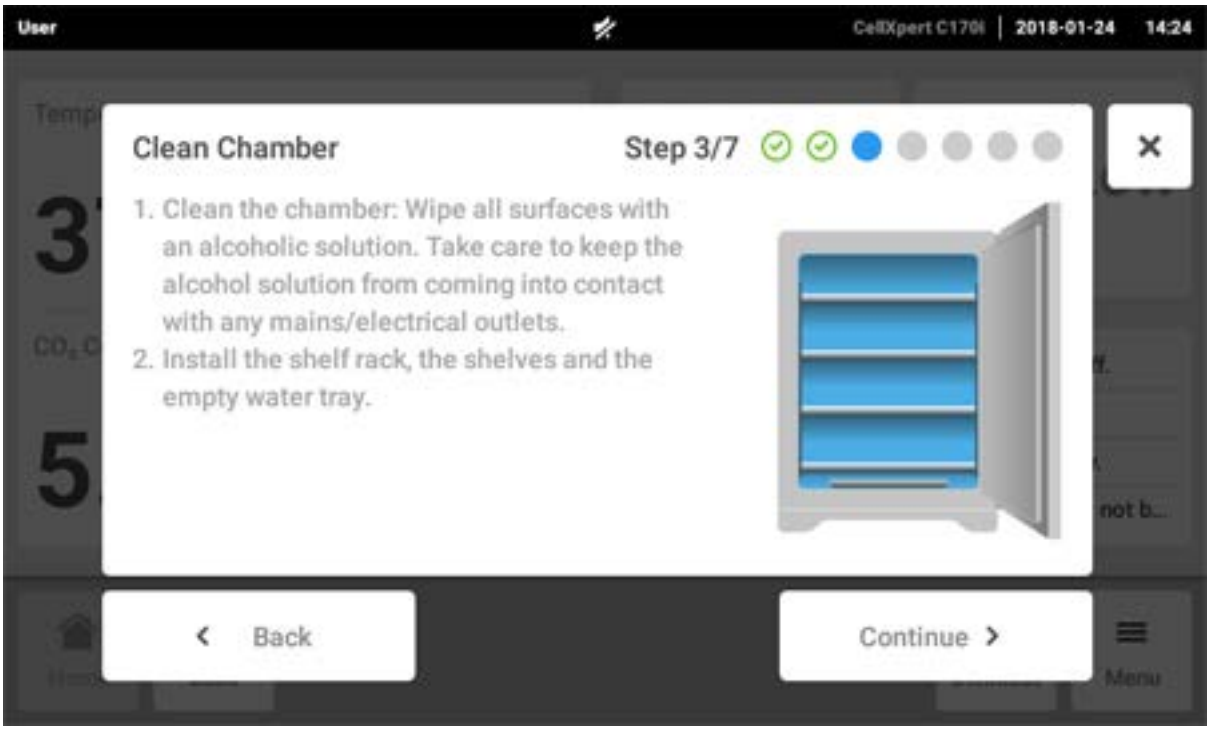
Tap the button *Continue*. During the period of 14 hours, it is not possible to cultivate cells within the device.

2. Follow the instructions on the touch screen.



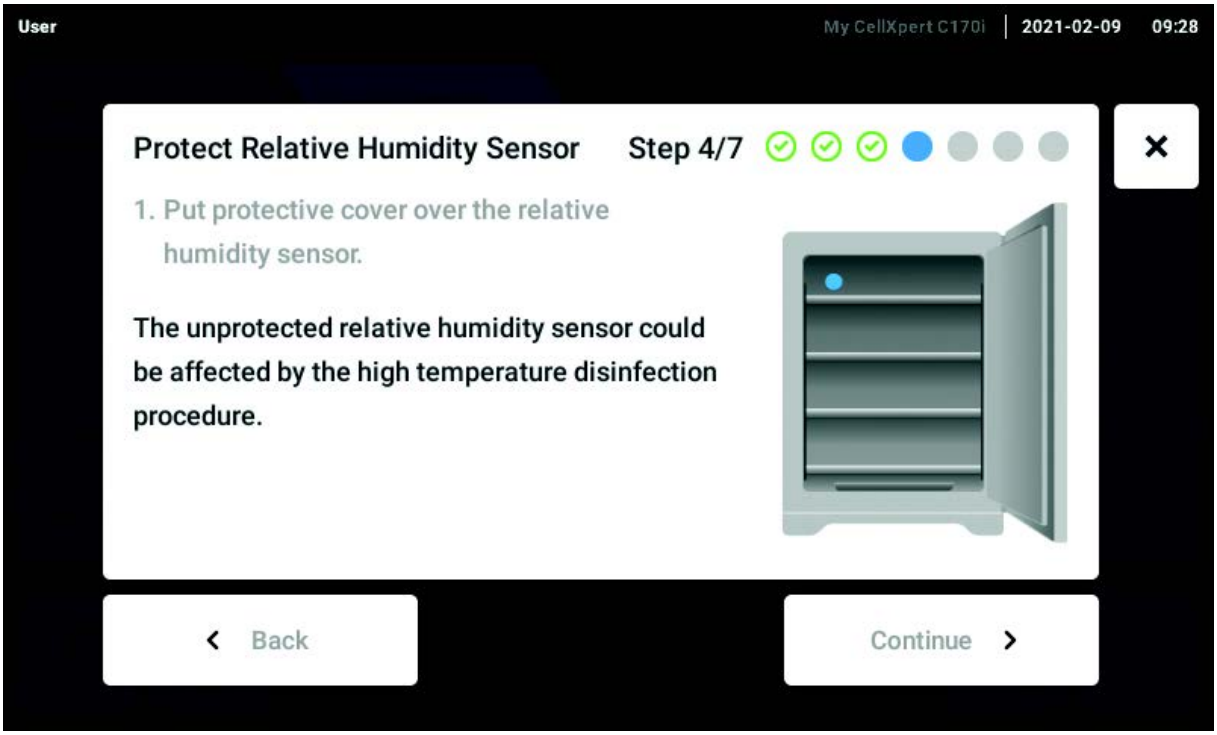
Tap the button *Continue*.

3. Follow the instructions on the touch screen.



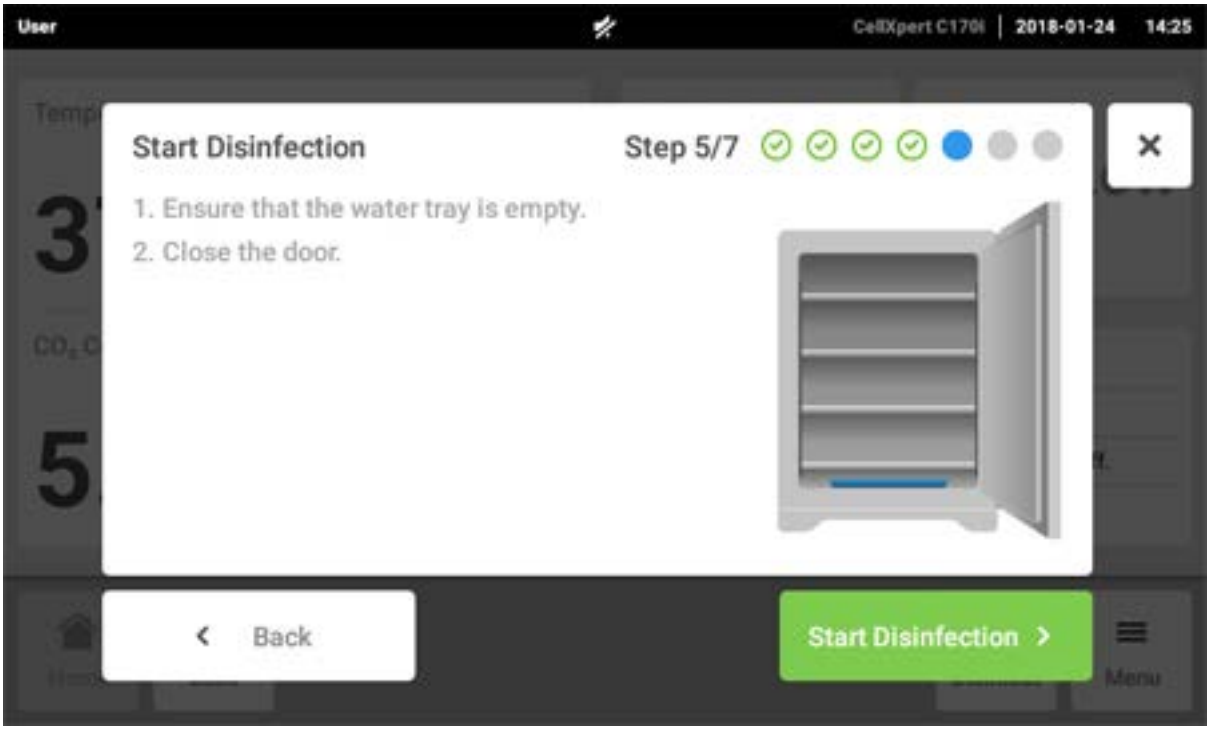
Tap the button *Continue*.

4. For the humidity sensor option: Follow the instructions on the touch screen.



Put the protective cover up on the humidity sensor and tap the button *Continue*.

5. Follow the instructions on the touch screen.



Tap the button *Start Disinfection*.

6. The high-temperature disinfection proceeds in 3 steps: Heating to a disinfection temperature of 180 °C (heating ramp), holding the disinfection temperature of 180 °C for 2 hours (disinfection) and cooling down to the preassigned incubation temperature.

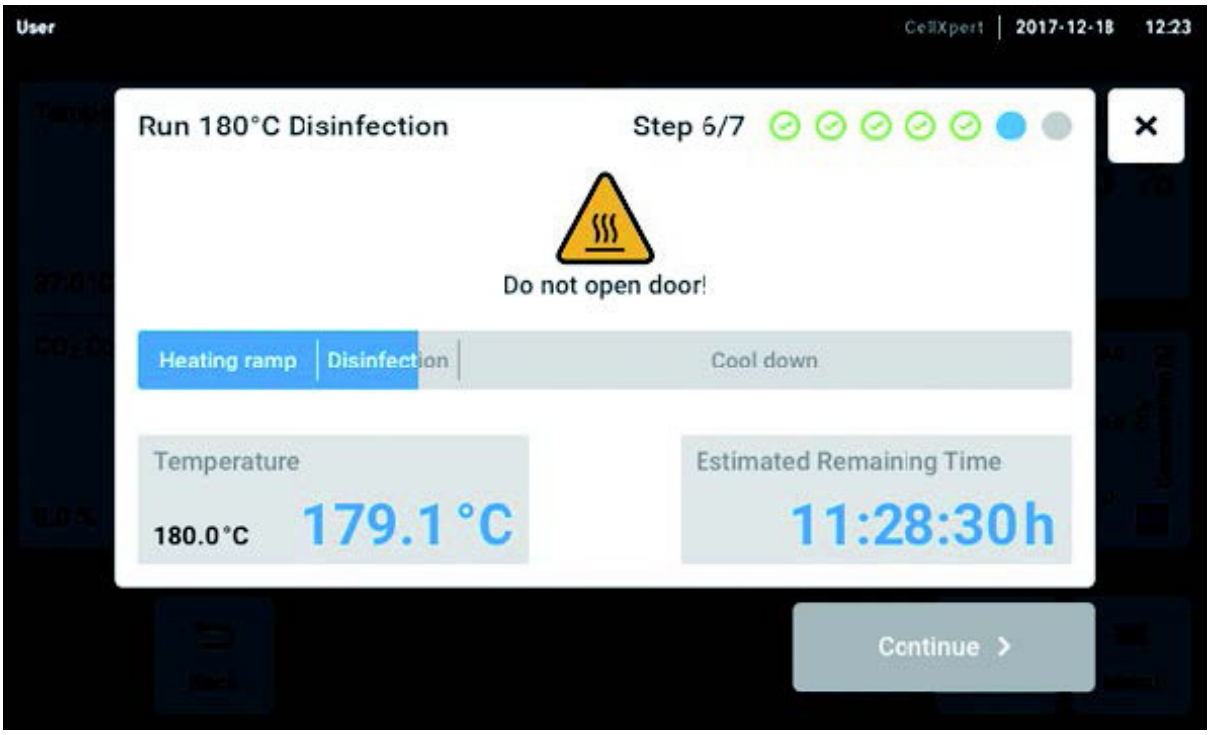


Fig. 10-8: Display of the current temperature and estimated time remaining

In order to obtain a successful result, keep the incubator doors closed until the high-temperature disinfection process is completed.
If doors are opened during a high-temperature disinfection, you are asked whether to continue or to cancel the process.

The estimated time remaining may vary depending on the target temperature and ambient conditions.

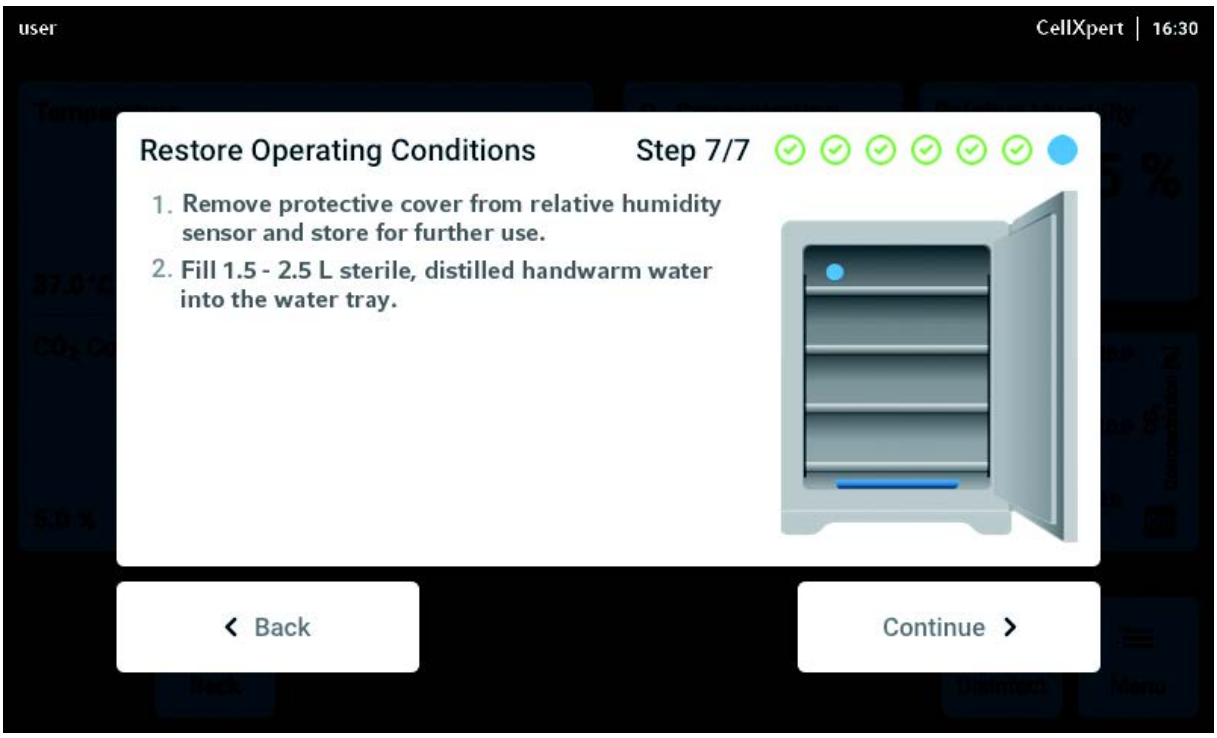
The result of the high-temperature disinfection can be stored on a USB storage medium. Tap the button *Export*.

7. Tap the button *Continue*.



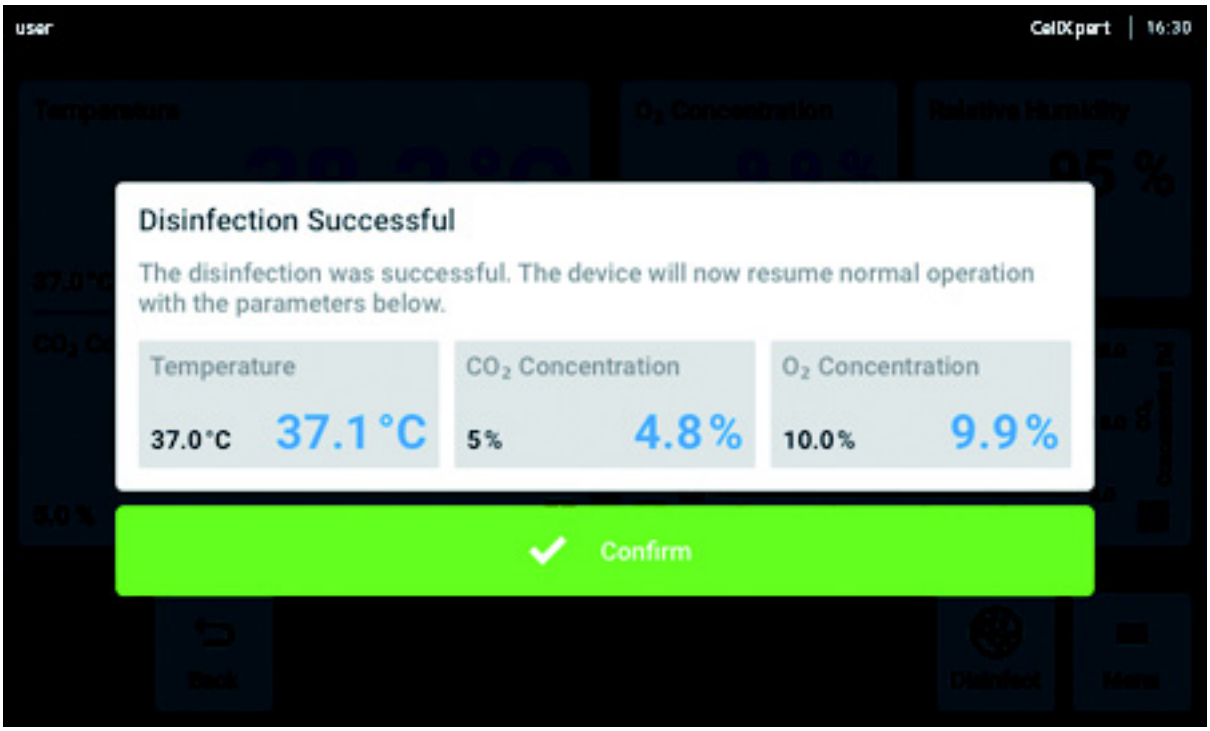
Fig. 10-9: Display of the result of the high-temperature disinfection after achieving the target temperature

8. Follow the instructions on the touch screen.



Tap the button *Continue*.

9. If the high-temperature disinfection was successful, tap the button *Confirm*.



10.6 Contamination Status

If you have noticed a contamination in the device, you have the chance to inform other users via a message on the touch screen.

10.6.1 Set the status to *Contaminated*

1. Tap the *Menu* > *Maintenance & Qualification* menu items.
2. Tap on *This device is not contaminated*.
   The window *Change Qualification* appears.
3. Select *Contaminated*.
4. Tap the button *Confirm*.

The information bar displays the *Contaminated* message.

10.6.2 Reset the status to *Not Contaminated*

The following steps describe how to reset the status to *Not Contaminated*.

1. Tap the *Menu* > *Maintenance & Qualification* menu items.
2. Tap on *This device is not contaminated*.
   The window *Change Qualification* appears.
3. Select *Not Contaminated*.
4. Tap the button *Confirm*.
   The information bar displays the *Not Contaminated* message for 24 hours.
5. Perform a high-temperature disinfection.

11 Troubleshooting

11.1 General errors

Technical faults may be triggered by faults such as a power failure or power fluctuations. Therefore, it is sufficient to switch off the device briefly and switch it on after approximately 10 seconds. Check the cable connections if necessary.

If the suggested troubleshooting measures fail repeatedly, please contact your local Eppendorf partner. You can find the addresses on the webpage www.eppendorf.com/worldwide.

Tab. 11-1: Door

Problem	Possible cause	Solution
Door longer open than (x)	Door is open longer than 30 seconds.	Close the door. Touch the hint on the display to switch off the sound. Set the signal time for door open signal to another time span: 15, 30, 45, 60 or 90 seconds.
6731FW.50 Long door opening. Close the door.	Door is open longer than 5 minutes.	Close the door. Quit the warning note. The warning note for *Door open* will not be shown again.

Tab. 11-2: Temperature

Problem	Possible cause	Solution
Condensation	(Permanent) airflow due to open window or open door or air conditioning device	Relocate the incubator to a more suitable place. Relocate the air conditioning device. Stop the airflow.
Temperature below alarm level (x.y °C)	Door is opened too long.	Check the door opening time. Increase the temperature alarm limit, e.g., 1.0 °C.
	Door was opened too often.	Check how often the door was opened throughout a day.
	Due to high impact of cold samples, the temperature setpoint could not be reached in a specific time span.	Use a prewarmed medium. Use a smaller number of cold samples.
	(Permanent) airflow due to open window or open door or air conditioning device	Relocate the incubator to a more suitable place. Relocate the air conditioning. Stop the airflow.

Problem	Possible cause	Solution
Temperature above alarm level (x.y °C)	Temperature setpoint was decreased without opening doors.	To let the incubator cool down, open the outer and the inner door. Increase the temperature alarm limit, e.g. 1.0 °C.
	Due to high impact of hot samples, the temperature setpoint could not be reached in a specific time span.	Use a colder medium. Use a smaller number of hot samples.
	(Permanent) airflow due to open window or open door or air conditioning device	Relocate the incubator to a more suitable place. Relocate the air conditioning device. Stop the airflow.
	Another hot device is too close to the incubator.	Relocate the incubator to a more suitable place. Relocate the heat emitting device. Check the distance between the devices. Increase the distance if necessary.
	A heat emitting device was inserted into the incubator and generates too much heat.	Take out the heat emitting device. Increase the upper alarm limit.
6731FW.107 Temperature sensor (XY) is out of range. Check acclimatization and ambient conditions.	The incubator is located in a cold room <10 °C.	Let the incubator acclimate at least 12 h after shipment.
	Sensor defect	Contact your local Eppendorf partner.
6731FW.108 Setpoint not reached. Cooldown too slow. Check environment conditions.	Ambient temperature is too close to the temperature setpoint (less than 4 °C difference). Ambient temperature is above the temperature setpoint.	Change the setpoint to a higher temperature (>=4 °C above ambient temperature). Reduce the ambient temperature to >=4 °C to the temperature setpoint, e.g., by venting the room.
6731FW.109 X.Y °C not reached	Technical fault	Restart the incubator.
6731FW.110 X.Y °C not reached in time. Check environment conditions.	Incubator has been started with cold water.	Restart the incubator.
	Technical fault.	Restart the incubator.

Problem	Possible cause	Solution
6731FW.111 Over-temp detected by Temp limiter. Setpoint not reached. Cooldown too slow. Check environment conditions.	The incubator features a shutdown at 10 K above the setpoint of a heat circuit according to standard DIN 12880. (Temperature limiter class 1).	Change the setpoint to a higher temperature (>=4 °C above ambient temperature). Reduce the ambient temperature to >=4 °C to the temperature setpoint, e.g., by venting the room. Restart the device. Increase the temperature setpoint to >=4 °C above ambient temperature.
6731W.112 Subnormal temperature detected by Temp limiter	The incubator features a shutdown at 5 K under the setpoint of a heat circuit according to standard DIN 12880. (Temperature limiter class 1).	Restart the device. Increase the temperature setpoint to >=4 °C above ambient temperature.

Tab. 11-3: CO_2

Problem	Possible cause	Solution
CO_2 Concentration above alarm level (x.y%)	CO_2 set parameter decreased. CO_2 cannot pass off the incubator.	Open the outer and the inner door to let CO_2 pass off the incubator.
	The alarm limit is too close to the setpoint.	Set the alarm limit to the default limit.
	Vessels located in front of the CO_2 sensor.	Relocate the vessels.
CO_2 Concentration below alarm level (x.y%)	CO_2 set parameter increased.	CO_2 concentration cannot recover in time: Check the pressure supply.
	The alarm limit is too close to the setpoint.	Set the alarm limit to the default limit.
CO_2 pressure below warning level of 0.04 MPa	CO_2 cylinder is almost empty.	Check CO_2 supply. Exchange CO_2 cylinder and adjust gas supply to 0.1 MPa (or range of 0.05 MPa to 0.15 MPa). Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Check flow direction of the in-line gas filter: Gas supply must be connected to the *INLET* side of the in-line gas filter.
	The volumetric flow rate is too low.	Increase the volumetric flow rate, e. g., by opening the CO_2 gas stop valve.

Problem	Possible cause	Solution
CO_2 pressure below alarm level of 0.02 MPa	CO_2 cylinder is empty.	Check CO_2 supply. Exchange CO_2 cylinder and adjust gas supply to 0.1 MPa (or range of 0.05 MPa to 0.15 MPa). Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Check flow direction of the in-line gas filter: Gas supply must be connected to the *INLET* side of the in-line gas filter. Ventilate the room, if necessary.
	The volumetric flow rate is too low.	Increase the volumetric flow rate, e. g., by opening the CO_2 gas stop valve.
In a short time alternating notice/ alarm message CO_2 pressure below warning level of 0.04 MPa and CO_2 pressure below alarm level of 0.02 MPa	CO_2 pressure dramatically decreased because of closed pressure supply or disconnection/ crack of the pressure connection.	Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Check flow direction of the in-line gas filter: Gas supply must be connected to the *INLET* side of the in-line gas filter. Ventilate the room, if necessary.
	The volumetric flow rate is too low.	Increase the volumetric flow rate, e. g., by opening the CO_2 gas stop valve.
CO_2 pressure above alarm level of 0.18 MPa. Check gas supply.	The CO_2 pressure is above the alarm level of 0.18 MPa. The inlet valve is closed due to the high pressure.	Reduce the CO_2 pressure to 0.1 MPa (14.5 psi, 1 bar) or to the 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 incubator. To disconnect the gas tubing, switch off the gas pressure, press down the small ring of the tube connector, and pull out the gas tubing.
No CO_2 value displayed	*Initialization sensor* is displayed after (re-)starting the incubator or after HTD.	Wait until the incubator is running in the normal mode.

Problem	Possible cause	Solution
Setpoint is displayed in red color	The CO_2 control ran into failure.	1. Tap the CO_2 function in the function area. 2. Restart CO_2 control via active error symbol by tapping the red button with the X..
	The CO_2 sensor is defective.	Switch off and restart the incubator.
6731FW213 CO_2 control software error	CO_2 control loop took too long or CO_2 control loop aborted or CO_2 sensor or sensor software defect.	Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Check if access port is closed. Restart the incubator. Contact your local Eppendorf partner.
6731FW214 CO_2 control timeout error	CO_2 value error. CO_2 setpoint not reached in time. Vessels located in front of the CO_2 sensor. Too many vessels in the chamber under extreme conditions.	Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Check if access port is closed. Relocate the vessels. Restart the incubator. Contact your local Eppendorf partner.
Different CO_2 errors occur, e.g. timeout	Pressure monitor is switched off. Low CO_2 pressure is not monitored.	Switch on the pressure monitor. Check for warnings or errors. Check CO_2 supply. Exchange CO_2 cylinder and adjust gas supply to 0.1 MPa (or range of 0.05 MPa to 0.15 MPa).
	Gas cylinder is empty.	Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Ventilate the room, if necessary.

Tab. 11-4: O_2

Problem	Possible cause	Solution
No O_2 value displayed	*Initialization sensor* is displayed after (re-)starting the incubator or after HTD.	Wait until the incubator is running in the normal mode.
	The O_2 option is not available.	The O_2 option was not ordered.
	The O_2 option is deactivated.	Activate the O_2 option.
Setpoint is displayed in red color	The O_2 control ran into failure.	1. Tap the O_2 function in the function area. 2. Restart O_2 control via active error symbol by tapping the red button with the X..
	The O_2 sensor is not plugged in.	Switch off the incubator and plug in the O_2 sensor.
	The O_2 sensor is defective.	Switch off and restart the incubator.
O_2 Concentration above alarm level (x.y%)	The O_2 set parameter has been decreased. O_2 cannot come into the chamber because door is closed.	Open the outer and the inner door to let O_2 stream in the incubator.
	The alarm limit is too close to the setpoint.	Set the alarm limit to the default limit.
	Vessels located in front of the O_2 sensor.	Relocate the vessels.
O_2 Concentration below alarm level (x.y%)	The O_2 setpoint has been increased.	If the O_2 concentration cannot build up in time, check the N_2 pressure supply.
	The alarm limit is too close to the setpoint.	Set the alarm limit to the default limit.
N_2 pressure below warning level of 0.04 MPa	N_2 gas cylinder is almost empty.	Check N_2 supply. Exchange the gas cylinder and adjust gas supply to 0.1 MPa (or range of 0.05 MPa to 0.15 MPa). Check flow direction of the in-line gas filter: Gas supply must be connected to the *INLET* side of the in-line gas filter. Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection.

Problem	Possible cause	Solution
N_2 pressure below alarm level of 0.02 MPa	N_2 gas cylinder is empty.	Check N_2 supply. Exchange the gas cylinder and adjust gas supply to 0.1 MPa (or range of 0.05 MPa to 0.15 MPa). Check flow direction of the in-line gas filter: Gas supply must be connected to the *INLET* side of the in-line gas filter. Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Ventilate the room, if necessary.
In a short time alternating notice/ alarm message N_2 pressure below warning level of 0.04 MPa and N_2 pressure below alarm level of 0.02 MPa	N_2 pressure dramatically decreased because of closed pressure supply or disconnection/ crack of the pressure connection.	Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Check flow direction of the in-line gas filter: Gas supply must be connected to the *INLET* side of the in-line gas filter. Ventilate the room, if necessary.
N_2 pressure above alarm level of 0.18 MPa. Check gas supply.	N_2 pressure above alarm level of 0.18 MPa. The inlet valve is closed due to the high pressure.	Reduce the N_2 pressure to 0.1 MPa (14.5 psi, 1 bar) or to the 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 incubator. To disconnect the gas tubing, switch off the gas pressure, press down the small ring of the tube connector, and pull out the gas tubing.
6731FW313 O_2 control software error	O_2 control loop took too long or O_2 control loop aborted or O_2 sensor or sensor software defect.	Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Check if access port is closed. Restart the incubator. Contact your local Eppendorf partner.
6731FW314 O_2 control timeout error	O_2 value error. O_2 setpoint not reached in time. Vessels located in front of the O_2 sensor. Too many vessels in the chamber under extreme conditions.	Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Check if access port is closed. Relocate the vessels. Restart the incubator. Contact your local Eppendorf partner.

Problem	Possible cause	Solution
Different O_2 errors occur, e.g. timeout	Pressure monitor is switched off. Low N_2 pressure is not monitored. Gas cylinder is empty.	Switch on the pressure monitor. Check for warnings or errors. Check N_2 supply. Exchange N_2 cylinder and adjust gas supply to 0.1 MPa (or range of 0.05 MPa to 0.15 MPa). Check gas connection on disconnection or leakage, e.g., in-line gas filter, gas connection. Ventilate the room, if necessary.
Formation of droplets visible outside the chamber at the front panel	No well-balanced ambient conditions.	Adjust the ambient conditions. Increase ambient temperature to >22 °C. Decrease ambient relative humidity to <40 %. Wipe off the droplets.

Tab. 11-5: Humidity

Problem	Possible cause	Solution
RH below alarm level (x.y%)	Door is opened too long. Door was opened too often.	Check the door opening time. Check how often the door was opened in a day. Decrease the alarm limit for humidity to a lower value.
	Relative humidity did not reach the alarm limit within 3.5 hours after door opening respective 5 hours after switching on the device.	Confirm the notification and check the RH value again after some time or change the alarm limit to a lower value.
	The sensor measures wrong values, because the protective cover is still covering the humidity sensor.	Remove the protective cover.
No RH value displayed	The RH option is not available.	The RH option was not ordered.
	The RH option is deactivated.	Activate the RH option.
Water level hint is displayed	Water level is below 0.5 L.	Check the water tray weekly. Refill the water tray or clean and refill the water tray weekly.

Problem	Possible cause	Solution
No water level alarm displayed	The water level is at its optimum.	See *Settings* > *About this CellXpert C170i* and hardware configuration.
	The water level option is not installed.	The water level option was not ordered.
	The water level alarm is deactivated.	Activate the water level alarm.
	The water level sensor is defective.	Switch off and restart the incubator.
	A low water level is not recognized during a timeout. The alarm is disabled for 2 hours after door closing, 1 hour after switching on the device.	Fill the water tray, if necessary.
Water level sensor notifies **low** although there is water in the water tray.	Water tray filled with too warm water.	Fill the water tray with water that is a little cooler than the set temperature.
6731FW.454 Water level sensor error	The measured value is out of range.	Restart the incubator.
No RH alarm	The RH alarm is switched off.	Switch on the RH alarm.
	After a door was opened, it takes 3.5 hours until the relative humidity alarm is armed.	Wait until the alarm is armed. Do not open the door.
Varying RH values	Ambient humidity level or water level or other factors vary.	Accept slight deviations. If necessary change the alarm limit to a lower value.

Tab. 11-6: High-temperature disinfection (HTD)

Problem	Possible cause	Solution
6731FW.110 180 °C not reached in time. Check environment conditions	The water tray is not empty.	Switch off and restart the incubator. Empty the water tray. Restart the HTD.
	Technical fault.	Contact your local Eppendorf partner.
HTD can not start with the last step of the software-guided process for HTD	Water level sensor detects water.	Empty the water tray.
Sensor has been switched off due to high temperature • CO_2 (**6731FW.202**) • O_2 (**6731FW.302**) • RH (**6731FW.402**) • Water level (**6731FW.452**)	The incubator was restarted with a too high residual temperature after the HTD has been interrupted.	Let the incubator cool down to <50 °C before restarting the HTD.
6731FW.750 Error occurred during High Temperature Disinfection	Another error occurred during the HTD.	Check previous error messages and follow the solution table.
6731FW.751 High Temperature Disinfection interrupted due to power loss	The incubator has been turned off during the HTD. A mains/power failure occurred.	Restart the HTD.
6731FW.753 Door has been opened during High Temperature Disinfection	Do not open the door during the HTD.	Restart the HTD.

Tab. 11-7: General errors

Problem	Possible cause	Solution
USB stick is not recognized	Invalid USB stick	Use another USB stick.
Sample is partially dry	Shelves are not properly leveled.	Level the incubator by placing a spirit level on a shelf: • aligned left to right • aligned front to rear Add more medium to the cells.
	No water in the water tray.	Check the water tray weekly. Refill it or clean and refill it weekly.
Sample evaporation	Low humidity due to empty water tray.	Check the water tray weekly. Refill it or clean and refill it weekly.
Circular cell growth in cell culture dish	Vibrations from other devices result in sample vibrations.	Check if vibration generating elevators or devices like freezers or centrifuges are too close to the incubator, see *Installation*.
Sample contaminated	Consistent contamination	Perform an HTD.
	Contamination of sample	Check your sample handling. Check for contamination during your application steps.
Condensation at the inner door after filling of the water tray	Water tray filled with too warm water.	Let the water cool down. Fill the water tray with water that is a little cooler than the set temperature.
Fatal Error – Restart the device displayed on red screen	Software error	Switch off and restart the incubator.
Sensor error • CO_2 (**6731FW.203**) • O_2 (**6731FW.303**) • RH (**6731FW.403**) • Water level (**6731FW.453**)	The initialization of the sensor failed after switching on the incubator.	Restart the incubator.
XY value over range: x.y or XY value under range: x.y • CO_2 (**6731FW.204**) • O_2 (**6731FW.304**) • Water level (**6731FW.404**)	The measured value is above the allowed range or the measured value is below the allowed range.	Restart the incubator.

12 Transport, storage and disposal

12.1 Transport



CAUTION! Risk of injury from lifting and carrying heavy loads

- At least 4 people are required to safely lift the incubator.
- Use a transport aid for transporting the incubator.



CAUTION! Risk of tipping over
Stacked incubators may topple during transport.

- Do not move 2 stacked incubators.



NOTICE! Damage due to incorrect packing.
Eppendorf SE is not liable for any damage caused by improper packing.

- Only store and transport the device in its original packing.



NOTICE! Damage to the incubator
Lifting the incubator by the door will cause permanent damage to the incubator.

- Lift the incubator only by the lifting handles.
- Never lift the incubator by its door.

12.1.1 Conditions of transport

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

12.2 Storage

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

12.3 Decontamination before shipment

If you are going to ship the device to the authorized Technical Service for repairs or to your authorized dealer for disposal, note:

WARNING! Risk to health from contaminated device.

1. Observe the information contained in the decontamination certificate. It is available as a PDF document on our webpage (https://www.eppendorf.com/decontamination).
2. Decontaminate all parts to be shipped.
3. Include the fully completed decontamination certificate in the shipment.

12.4 Disposal

Observe the relevant legal regulations when disposing of the product.

Information on the disposal of electrical and electronic devices in the European Community:

Within the European Community, the disposal of electrical devices is regulated by national regulations based on EU Directive 2012/19/EU pertaining to waste electrical and electronic equipment (WEEE).

According to these regulations, any devices supplied after August 13, 2005, in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. They are marked with the following symbol to indicate this:



As the disposal regulations may differ from one country to another within the EU, please contact your supplier for more information.

13 Technical data

13.1 Weight/dimensions

13.1.1 Equipment dimensions

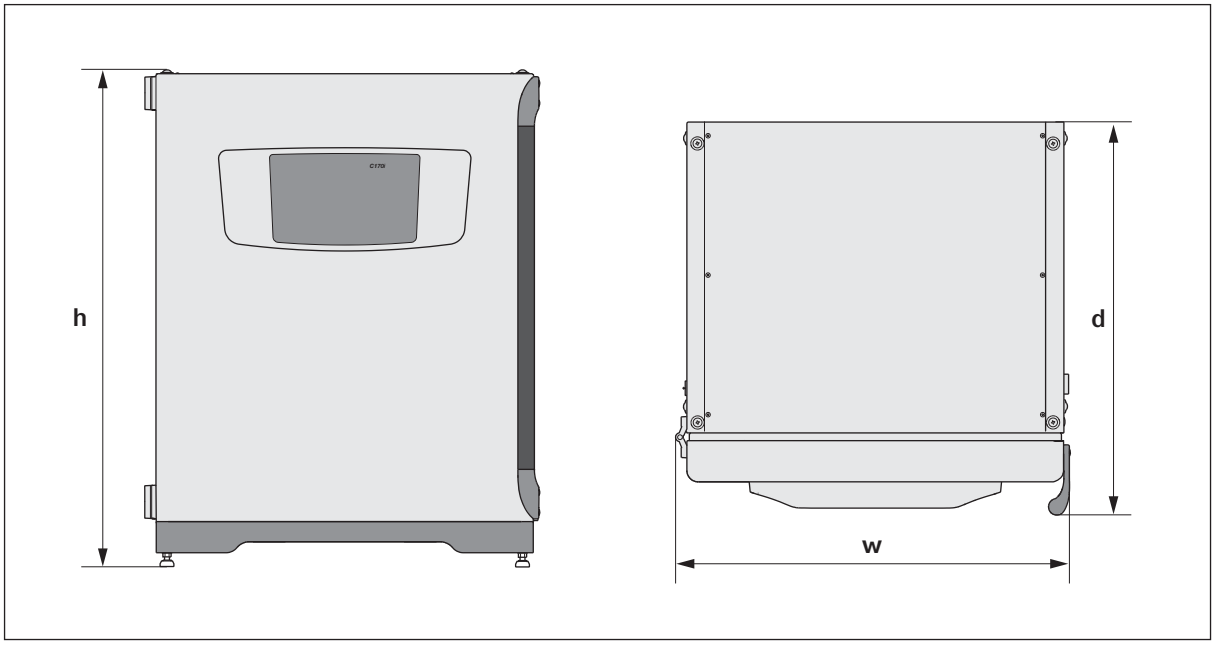


Fig. 13-1: Dimensions of CellXpert C170i (without safety latch)

Width (w)	71.8 cm (28.3 in)
Height (h)	90.0 cm (35.4 in)
Depth (d)	71.5 cm (28.1 in)
Depth w/o handle/control panel	65.5 cm (25.8 in)
Weight	107 kg (236 lb) – 113 kg (249 lb) depending on options, w/o accessories

13.1.2 Internal dimensions

Width	53.9 cm (21.2 in)
Height	69.2 cm (27.2 in)
Depth	44.5 cm (17.5 in)
Volume (total)	167 L
Volume (useable, with 4 shelves)	124 L

13.1.3 Floor space required

Width	81 cm (31.9 in)
Depth	60 cm (23.6 in)
Height	95 cm (37.4 in)

13.1.4 Transporting dimensions

Width	120.4 cm (47.4 in), pallet included
Height	117.6 cm (46.3 in), pallet included
Depth	80 cm (31.5 in), pallet included
Weight	126 kg (278 lb) – 132 kg (291 lb) depending on options

13.1.5 Shelves

Polished stainless steel, perforated (standard)

Width	52.2 cm (20.6 in)
Depth	42.8 cm (16.9 in)
Number of shelves	4 standard; upgrade to 8 shelves
Flatness tolerance of shelf	1.3 mm
Thickness of shelf	1.5 mm
Max. load to the shelf	10 kg
Max. load of the shelf rack	40 kg

13.1.6 Stacked CellXpert C170i

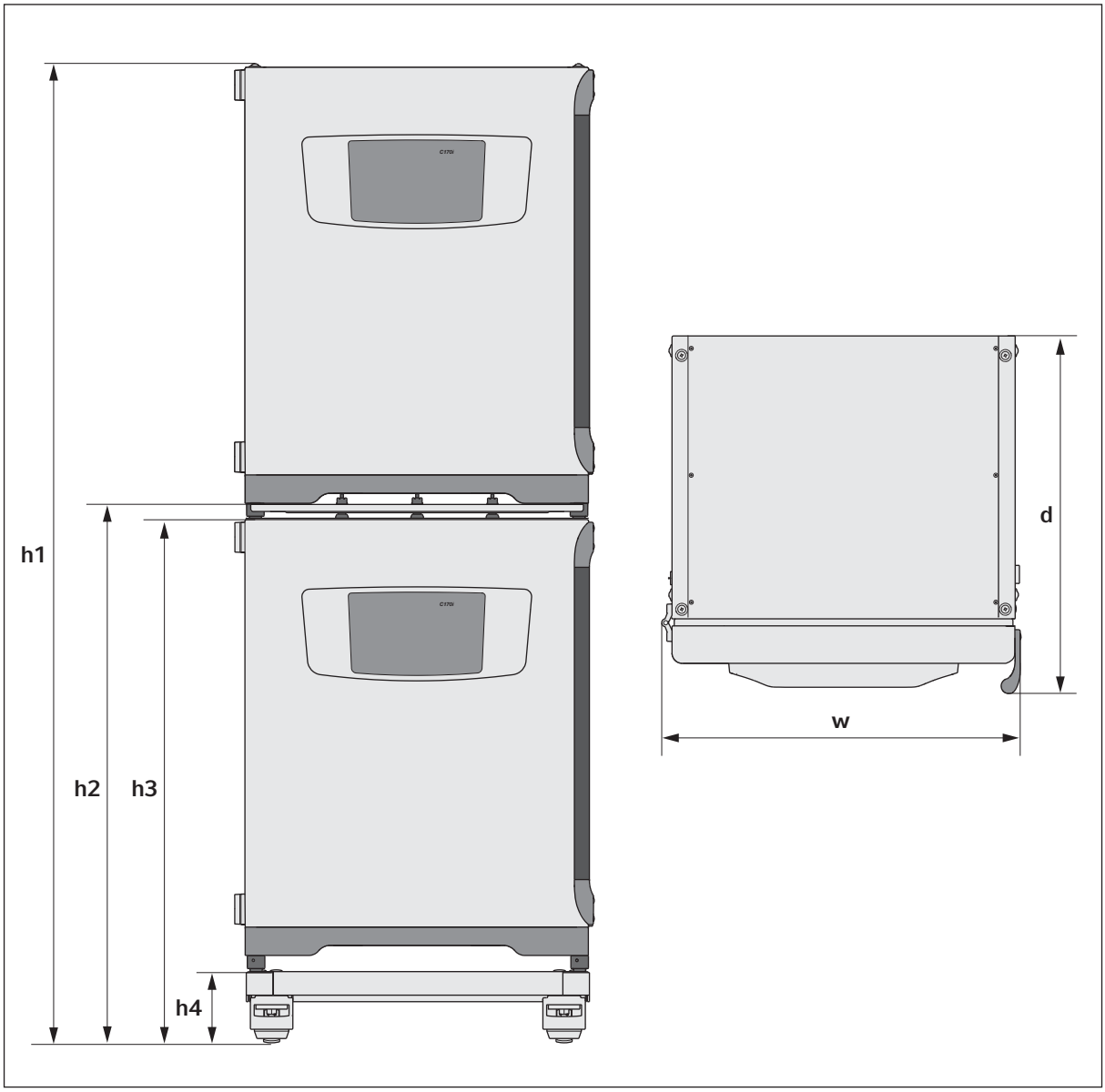


Fig. 13-2: Dimensions of 2 stacked CellXpert C170i (without safety latch)

Height				**Depth**	**Width**
h1	h2	h3	h4	d	w
194.6 cm	107.3 cm	104.5 cm	14.2 cm	71.5 cm	71.8 cm
(76.7 in)	(42.3 in)	(41.2 in)	(5.6 in)	(28.1 in)	(28.3 in)

13.2 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 – 127 V	1150 W
Power consumption for 220 V – 240 V	1150 W
Overvoltage category	II (IEC 61010-1)
Protection class	I
Specifications for mains/power cord	AC 250V / 16A 3G 1.5 mm_2 appliance coupler C19 according IEC 60320-1:2015

13.3 Interfaces

BMS relays	4
BMS max. current	2 A
BMS max. voltage	30 V DC/AC
USB	2 x USB 2.0
Ethernet	1 x user 1 x service

13.4 Ambient conditions

Environment	For indoor use only. No wet environment.
Ambient temperature	18–28 °C
Relative humidity	20–80 %, non-condensing
Pollution degree	2
Atmospheric pressure	79.5–106 kPa (use up to a height of 2000 m above sea level)

13.4.1 Temperature management

Range	4 °C above ambient temperature to 50 °C
Control increment	0.1 °C
Accuracy	±0.4 °C (DIN 12880) at 37 °C and ambient 22 °C
Stability	±0.1 °C at 37 °C and ambient 22 °C
Uniformity	±0.3 °C at 37 °C and ambient 22 °C

13.4.2 High-temperature disinfection

Max. temperature	180 °C / 2 h
Approx. duration	14 h

13.4.3 CO_2 control

Range	0.1–20 %
Control increment	0.1 %
Accuracy	±0.3 % at 5 % CO_2 at specified relative humidity and at 37 °C and ambient 22 °C
Stability	±0.1 % at 5 % CO_2 at specified relative humidity and at 37 °C and ambient 22 °C
Uniformity	±0.1 % at 5 % CO_2 at specified relative humidity and at 37 °C and ambient 22 °C
Gas tubing	Inner diameter of 6.5 mm and outer diameter of 10 mm
Pore sizes of in-line gas filter	0.2 µm
Sensor type	NDIR sensor
Required gas pressure	0.1 MPa (1 bar, 14.5 psi), range 0.05–0.15 MPa (0.5–1.5 bar; 7.2–21.8 psi)

13.4.4 Humidity

Water tray capacity	2.5 Liters
Humidity	95 % at 37 °C

The relative humidity attained could vary in the range of 92.5 ±2.5 % depending on the ambient humidity level and other factors.

13.4.5 O_2 control

Range	1–20 % or 0.1–20 %, depending on option
Control increment	0.1 %
Accuracy	±0.25 vol% at 37 °C and at specified relative humidity
Stability	±0.1 % at 37 °C and at specified relative humidity
Uniformity	±0.1 % at 37 °C and at specified relative humidity
Gas tubing	Inner diameter of 6.5 mm and outer diameter of 10 mm
Pore sizes of in-line gas filter	0.2 µm
Sensor type	ZrO_2 (Zirconium dioxide)
Required gas pressure	0.1 MPa (1 bar, 14.5 psi), range 0.05–0.15 MPa (0.5–1.5 bar; 7.2–21.8 psi)

13.4.6 Calibration

The maximum operating ambient temperature is 28 °C.
Factory calibration of the incubator is carried out at 37 °C, 5 % CO_2 and 90–95 % RH, in an ambient temperature of 20–25 °C with no heat-generating apparatus inside the chamber.

Software calibration adjustments are required to optimize performance if the incubator is being used outside the operating conditions. Performance specifications are also affected.

Contact Eppendorf Service for advice on calibration adjustments and relevant performance specifications. Be prepared with the model and serial number of your incubator and the complete details of your operating conditions.

Performance values represent the average of instruments checked in the factory under optimum conditions.

14 Ordering Information

14.1 Shelves and shelf rack

Order no. (International)	Description
6731 070.123	**Shelf** for 170 L incubators, 1 piece
6710 859.009	**Shelves** for 170 L incubators, 2 pieces
P0628-6390	**Shelf rack** for 170 L incubators
P0628-6140	**Water tray** for 170 L incubators
6710 859.106	**Copper shelves** for 170 L incubators, 2 pieces
P0628-6260	**Copper water tray** for 170 L incubators
6731 080.013	**Copper kit** copper water tray and 4 copper shelves

14.2 Gas system

Order no. (International)	Description
6731 070.107	**Gas tubing** 3 m, with in-line gas filter

14.3 Electrics

Order no. (International)	Description
6731 070.069	**BMS connector**

14.4 Connectivity

Order no. (International)	Description
1006 073.006	**Cable** to connect devices with ethernet interface to VisioNize VisioNize box, Ethernet, length 5 m

14.5 Housing

Order no. (International)	Description
6731 070.034	**Plug for access port** 2 pieces
6731 070.093	**Stacking stand, lower frame** with castors
6731 070.085	**Stacking stand, upper frame** for CellXpert C170/C170i
6731 070.158	**Universal upper stacking stand** for 170 L incubators
6710 070.235	**Safety fastening kit**
6731 070.115	**Door damper kit**
6731 070.166	**Door lock**
6731 070.140	**Protective cover for RH sensor** for high-temperature disinfection

14.6 Accessories

Order no. (International)	Description
P0628-5000	**Automatic gas cylinder change-over unit**
P0628-6150	**New Brunswick™ Galaxy® Gas Analyzer** CO_2
P0628-6831	**New Brunswick™ Galaxy® Gas Analyzer** CO_2, O_2
P0628-7890	**New Brunswick™ Galaxy® Gas Analyzer** CO_2, O_2, RH
P0628-7880	**Temperature probe 100 mm tip**
P0628-7881	**Temperature probe 5 mm tip**

14.7 Upgrade options

The following upgrade options are available:

- Reversal of door opening
- Inner door with 4 door segments
- Inner door with 8 door segments
- O_2 option
- Humidity package (water level sensor and humidity sensor)
- Water level sensor
- Humidity sensor
- Copper kit (copper water tray and copper shelves)

Contact your local Eppendorf partner for ordering upgrade options.

Index

A

Acoustic signal 79
Administrator 105
Alarm conditions 82
Alarm limits 84
Alarm message 61
Alarm relay
BMS 40
Alarm setting 84
Ambient conditions 152
Audible alarm 79

B

BMS relay contact alarm 80

C

CO2 49
CO2 control 69
Connections 36
Contamination information 134

D

Daily checks 113
Date 75
Device
Register 43
Device settings 78
Disinfecting agent 124
Disinfection/Decontamination 123
Display 58
Display settings 79
Disposal 148
Door segment handle 52
Doors 51

E

Error list 135
Error message 61
Error messages 135
Events 87
Export chart 92
Export data 92
Exporting event 88
External sensor 54

F

Filling quantity 53
Functions
Switch functions 70

G

Gas pressure monitoring 81

H

High-temperature disinfection 127, 144
Home screen 58, 79
HTD 127, 144
Humidity 142
Humidity sensor 50

I

Inner door latch 52
Inspection of boxes 27
Internet 76

L

Location 30
Login 108

M

Menu 71
Monthly checks 113

N

Network 76
VisioNize touch enabled device 43

O

O2 49
O2 control 69
O2 sensor 38
Outer door handle 51

P

Pressure setting 38
Protocol 87

R

Records 87
Register 43
Reminder 93

S

Safety latch 34
Settings 73

T

Task reminder 93
Temperature 49, 135
Time 75
Touch screen 57, 58, 79, 122

U

User administration 106, 107
User requirement 11
Utilities requirements 29

V

Values
Setting values 66

W

Warning message 61
Water level 50
Water tray 53
Weekly checks 113

Y

Yearly checks 114

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Declaration of Conformity

The product named below fulfills the requirements of directives and standards listed. In the case of unauthorized modifications to the product or an unintended use this declaration becomes invalid. This declaration of conformity is issued under the sole responsibility of the manufacturer.

Product name:

CellXpert® C170i, CellXpert® C170

including accessories

Product type:

CO_2-incubator

Relevant directives / standards:

2014/35/EU:	EN 61010-1, EN 61010-2-010
	UL 61010-1, CAN/CSA C22.2 No. 61010-1
2014/30/EU:	EN 61326-1, EN 55011
2011/65/EU:	EN 50581

Hamburg, September 21, 2018

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ISO 13485 Certified

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