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DOMINIQUE DUTSCHER SAS

# CryoCube® F740hi, F740hiw

**Operating manual**

Software version 2.1.5.202.

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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 Version overview . . . 10

**2 Safety . . . 11**
2.1 Intended use . . . 11
2.2 Warnings for intended use . . . 11
2.2.1 Devices with water cooling . . . 12
2.2.2 Devices with flammable refrigerant . . . 13
2.3 User profile . . . 13
2.4 Personal protective equipment . . . 13
2.5 Information on product liability . . . 13
2.6 Maintenance and repairs . . . 14
2.7 Electromagnetic compatibility . . . 14
2.7.1 Europe . . . 14
2.7.2 U.S.A. . . . 14
2.8 Warning symbols on the device . . . 15

**3 Product description . . . 21**
3.1 Product overview . . . 21
3.1.1 Front view . . . 21
3.1.2 Side view . . . 22
3.1.3 Interior view . . . 23
3.1.4 Cooling water supply . . . 24
3.1.5 Interfaces . . . 24
3.2 Features . . . 25
3.3 Models . . . 26
3.4 Alarms, warnings and messages . . . 26
3.4.1 Alarms . . . 26
3.4.2 Warnings . . . 27
3.4.3 Message . . . 28
3.5 Delivery package . . . 28
3.5.1 Device and accessories . . . 28
3.5.2 Documents . . . 28
3.6 Accessories . . . 29
3.6.1 Back-up systems . . . 29
3.6.2 Chart recorder . . . 29
3.6.3 Racks for ULT upright freezers . . . 29
3.6.4 Cardboard boxes and box dividers . . . 30
3.6.5 Eppendorf Storage Box . . . 30

**4 Installation . . . 31**
4.1 Selecting the location . . . 31
4.2 Preparing installation . . . 32

4.2.1 Unpacking the device . . . 32
4.2.2 Checking the delivery . . . 32
4.2.3 Transporting the device to the location . . . 32
4.2.4 Setting up the device . . . 33
4.3 Removing the transport clips from the inner shelves . . . 34
4.4 Changing a shelf position . . . 35
4.5 Connecting the device to the voltage supply . . . 35
4.6 Connecting the device to the cooling water supply . . . 36
4.6.1 Functional description . . . 36
4.6.2 Connecting to a cooling water supply without a water cooler . . . 36
4.6.3 Connecting to a cooling water supply with a water cooler . . . 37
4.6.4 Connecting the device . . . 38
4.7 Connecting the device to external systems . . . 38
4.7.1 Remote alarm interface . . . 38
4.7.2 RS-485 interface . . . 39
4.7.3 Ethernet interface . . . 39
4.8 Switching the device on . . . 39
4.8.1 Enabling the back-up circuit . . . 40
4.8.2 Switching the device on at the mains/power switch . . . 40
4.9 Basic device settings . . . 41
4.10 Registering the device . . . 41
4.10.1 VisioNize onboard devices . . . 41
4.10.2 Registering for VisioNize . . . 43
4.10.3 Registering later . . . 44

**5 Operation . . . 45**
5.1 Opening the outer door . . . 45
5.2 Loading the device . . . 46
5.3 Locking the outer door . . . 47
5.4 Pressure compensation . . . 47
5.5 Switching off the device . . . 48
5.5.1 Disabling the back-up circuit . . . 48
5.5.2 Disconnecting the device from the voltage supply . . . 48
5.5.3 Disconnecting the device from the cooling water supply . . . 48

**6 Operating control overview . . . 49**
6.1 Intuitive operating concept . . . 49
6.2 Operating the user interface . . . 49
6.3 Symbols . . . 49
6.4 Home screen overview . . . 51
6.4.1 Home screen . . . 51
6.4.2 Function area . . . 52
6.4.3 Toolbar . . . 53
6.4.3 Toolbar . . . 53
6.5 Function control . . . 53
6.5.1 Selecting the function . . . 53
6.5.2 Setting the set value . . . 53
6.5.2 Setting the set value . . . 53
6.5.3 Switching between functions . . . 55
6.6 Editing warnings and alarms . . . 56

**7 The Menu area . . . . . 59**
7.1 Alarms . . . . . 59
7.1.1 Configuring the Temperature and Ambient Temperature . . . . . 60
7.1.2 Configuring Door . . . . . 62
7.2 Charts . . . . . 63
7.2.1 Selecting functions . . . . . 64
7.2.2 Selecting the time span . . . . . 65
7.2.3 Displaying the chart's measured values . . . . . 65
7.2.4 Exporting charts . . . . . 65
7.3 Events . . . . . 66
7.3.1 Filtering Events . . . . . 67
7.3.2 EventsEdit . . . . . 67
7.3.3 Exporting Events . . . . . 67
7.4 Export . . . . . 68
7.5 Settings . . . . . 69
7.5.1 About this Freezer F740 menu item . . . . . 69
7.5.2 System Settings menu item . . . . . 70
7.5.3 Device Settings menu item . . . . . 75
7.5.4 Maintenance & Qualification menu item . . . . . 77
7.6 Clean Screen . . . . . 78
7.7 Contact and Support . . . . . 79
7.8 Maintenance & Qualification . . . . . 80

**8 User administration . . . . . 81**
8.1 User groups . . . . . 81
8.2 User administration . . . . . 81
8.2.1 Setting up the user administration . . . . . 81
8.2.2 Editing the user administration . . . . . 82
8.2.3 Deactivating the user administration . . . . . 83
8.3 Editing user accounts as administrator . . . . . 84
8.3.1 Creating a user account . . . . . 84
8.3.2 Editing user accounts . . . . . 85
8.3.3 Deleting a user account . . . . . 85
8.3.4 Changing the password/PIN of a user account . . . . . 86
8.3.5 Changing the password/PIN of the administrator . . . . . 87
8.4 Using your own user account . . . . . 87
8.4.1 Logging in as a user . . . . . 87
8.4.2 Logging off as a user . . . . . 88
8.4.3 Managing your own user account . . . . . 88

**9 Maintenance . . . . . 89**
9.1 Service schedule . . . . . 89
9.2 Defrosting the device . . . . . 89
9.3 Cleaning and decontamination . . . . . 90
9.3.1 Cleaning the device . . . . . 90
9.3.2 Cleaning and disinfecting the touch screen . . . . . 90
9.3.3 Cleaning the seals . . . . . 91
9.3.4 Cleaning the air filter and the air intake grille . . . . . 91
9.3.5 Decontaminating the interior and the inner shelves . . . . . 92
9.4 Fuses . . . . . 93

9.5 Checking the alarm in the case of a mains/power outage . . . 93
9.6 Safety checklist . . . 93

**10 Troubleshooting . . . 95**
10.1 General errors . . . 95
10.1.1 Outer door . . . 95
10.1.2 Cooling water supply . . . 95
10.2 Software error messages . . . 95
10.3 Emergency release . . . 97
10.4 Mains/power outage . . . 97
10.5 Heating up of the interior . . . 97

**11 Transport, storage and disposal . . . 99**
11.1 Decommissioning . . . 99
11.2 Transport . . . 99
11.2.1 Preparing the device for transport . . . 100
11.2.2 Transporting the device . . . 101
11.3 Shipment . . . 102
11.3.1 Shipping regulations . . . 102
11.3.2 Shipping the device . . . 102
11.4 Disposal . . . 103

**12 Technical data . . . 105**
12.1 Power supply . . . 105
12.2 Ambient conditions . . . 105
12.2.1 Operation . . . 105
12.3 Dimensions . . . 106
12.3.1 External dimensions . . . 106
12.3.2 Internal dimensions . . . 107
12.3.3 Packing dimensions . . . 108
12.4 Weight . . . 109
12.5 Noise level . . . 109
12.6 Interfaces . . . 109
12.7 Cooling water supply . . . 109
12.7.1 Device connection . . . 109
12.7.2 Building connection . . . 110
12.7.3 Cooling water . . . 110
12.7.4 Cooling water hose . . . 110
12.7.5 Water filter . . . 110
12.8 Temperature control . . . 110
12.8.1 Temperature range . . . 110
12.8.2 Times for cooling and heating the interior . . . 111
12.8.3 Cooling of the refrigeration cycle . . . 111
12.8.4 Refrigerant . . . 111
12.9 Additional specifications . . . 111
12.9.1 Capacity and carrying capacity . . . 111
12.9.2 Materials . . . 111

**13 Ordering information . . . 113**
13.1 Accessories . . . 113

13.1.1 Back-up systems . . . . . 113
13.1.2 Chart recorder . . . . . 113
13.1.3 Shelf . . . . . 113
13.1.4 Racks for devices with 3 compartments . . . . . 114
13.1.5 Racks for the compartments 1 – 4 for devices with 5 compartments . . . . . 114
13.1.6 Racks for compartment 5 for devices with 5 compartments . . . . . 115
13.1.7 Cardboard boxes and box dividers . . . . . 115
13.1.8 Eppendorf Storage Boxes . . . . . 116
13.1.9 VisioNize system . . . . . 116

**Index . . . . . 117**

**Certificates . . . . . 119**

# 1 Operating instructions

## 1.1 Using this manual

The operating manual describes the device with the software version shown on the title page. Operating manuals for the current software version can be found at the www.eppendorf.com/manuals webpage. If you require operating manuals for other software versions, please contact the Eppendorf AG.

- Please read the complete operating manual before initial operation of the device. Observe the instructions for use of the accessories where applicable.
- The operating manual is part of the product. Store the operating manual at an easily accessible location.
- Enclose this operating manual when transferring the device to third parties.

## 1.2 Danger symbols and danger levels

### 1.2.1 Danger symbols

The safety instructions in this manual have the following danger symbols and danger levels:

| | | | |
|---|---|---|---|
|  | **Risk of tipping over** |  | **Electric shock** |
|  | **Highly flammable substances** |  | **Explosive substances** |
|  | **Low temperatures** |  | **Biohazard** |
|  | **Heavy load** |  | **Risk of crushing** |
|  | **Hazard point** |  | **Material damage** |

### 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.<br>2. | Actions in the specified order |
| ▸ | Actions without a specified order |
| • | List |
| *Text* | Display or software texts |
| ⓘ | Additional information |

## 1.4 Version overview

| Version | Date | Change |
|---|---|---|
| 00 | April 2017 | • Created |
| 01 | September 2018 | • Updated to software version 1.1.0<br>• Complete revision |
| 02 | March 2020 | • New door handle and outer door seal<br>• Updated to software version 2.1.5.202<br>• F740i and F740iw removed |
| 03 | August 2020 | • Warning symbol on the device revised<br>• Adjustable shelves added<br>• Outer dimensions updated |

# 2 Safety

## 2.1 Intended use

CryoCube ULT freezers are designed to provide an ultra-low temperature environment for storing scientific research materials. They allow for storage of samples at ultra-low temperatures of -50 °C to -86 °C and at a maximum ambient temperature of 32 °C.

All country-specific safety requirements for operating electrical equipment in laboratories must be observed.

## 2.2 Warnings for intended use



**DANGER! Risk of severe injury from tipping the device over during transport**
If the device tips over and falls on someone, that person sustains fatal injuries.

- Transport the device with a sufficient number of helpers.
- Observe the transport instructions in the operating manual.



**DANGER! Risk of severe injury from climbing onto the device**
The device cannot carry the weight of a person. If the device tips over and falls on someone, that person sustains fatal injuries.
The device may become damaged.

- Do not climb onto the device.
- Do not pull yourself up on the device or the outer door.



**WARNING! Risk of explosion**

- Do not operate the device in areas where work with explosive substances is carried out.
- Do not store explosive or highly reactive substances in the device.
- Do not use the device to store substances that may generate an explosive atmosphere.
- Do not store any aerogenic substances in the device, e.g., dry ice.



**WARNING! Lethal voltages inside the device.**
If you touch any parts which are under high voltage you may experience an electric shock. Electric shocks cause heart injury and respiratory paralysis.

- Ensure that the housing is closed and undamaged.
- Do not remove the housing.
- Ensure that no liquids can penetrate the device.

Only authorized service staff may open the device.



**WARNING! Electric shock due to damage to the device or unsuitable power cable**
If you touch a damaged or unsuitable mains/power cord, you may experience an electric shock. Electric shocks cause injuries to the heart, respiratory paralysis and burns.

- If the supplied mains/power cord is defective, replace it with a mains/power cord and a plug of the same type.



**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.
- For comprehensive regulations about handling germs or biological material of risk group II or higher, please refer to the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, in the currently valid version).



**CAUTION! Risk of burns from direct contact with cold surfaces.**
The temperature inside the device is low. Direct contact with the interior or samples can cause skin burns.

- Wear cold protection gloves when loading and unloading the device.



**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.

### 2.2.1 Devices with water cooling



**NOTICE! Risk of device damage due to blocked water inlet**
If the water inlet of the device is blocked, the heat exchanger and the condenser may become damaged. The device will no longer cool properly. Stored samples may become damaged.

- Have the water filter checked and cleaned by a technician.

### 2.2.2 Devices with flammable refrigerant



**WARNING! Risk of fire due to escaping flammable refrigerants (R-170 and R-290)**
Refrigerant may leak out if a refrigeration cycle is faulty. The refrigerants R-170 and R-290 are flammable and can form explosive mixtures with the ambient air.

- Ensure adequate ventilation of the location.
- Observe the regulations of the owner.
- Do not allow the device to be maintained or repaired by anyone except authorized service technicians. Components may only be replaced with original spare parts of the same type.

## 2.3 User profile

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

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

## 2.4 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.

## 2.5 Information on product liability

In the following cases, the designated protection of the device may be affected. The liability for any resulting damage or personal injury is then transferred to the owner:

- The device is not used in accordance with the operating manual.
- The device is used outside of its intended use.
- The device is used with accessories or consumables that are not recommended by Eppendorf.
- The device is maintained or repaired by persons not authorized by Eppendorf AG.
- The user makes unauthorized changes to the device.

## 2.6 Maintenance and repairs

Service technicians authorized by Eppendorf AG are appropriately trained and certified by Eppendorf AG.

- Do not allow the device to be maintained by anyone except service technicians who are authorized by Eppendorf AG.

  For more information, please contact your Eppendorf partner or visit www.eppendorf.com.

- Do not allow the device to be maintained by anyone except service technicians who are accredited according to the national and local laws and safety regulations. Service technicians must hold valid certificates.

Australia, Queensland: the legal regulations state that service technicians require a valid gas work license for working on the refrigeration cycle.

Eppendorf AG uses high-quality components for the device which are manufactured especially for this purpose. These components ensure the safe function of the device. Eppendorf AG provides original spare parts for the service and repair of the device.

- Components may only be replaced by original spare parts of the same type.

## 2.7 Electromagnetic compatibility

### 2.7.1 Europe

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### 2.7.2 U.S.A.

Any modification or changes made to this device, unless explicitly approved by Eppendorf, will invalidate the authorization of this device. Operation of an unauthorized device is prohibited under Section 302 of the Communications Act of 1934, as amended, and Subpart I of Part 2 of Chapter 47 of the Code of Federal Regulations.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the operating manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## 2.8 Warning symbols on the device

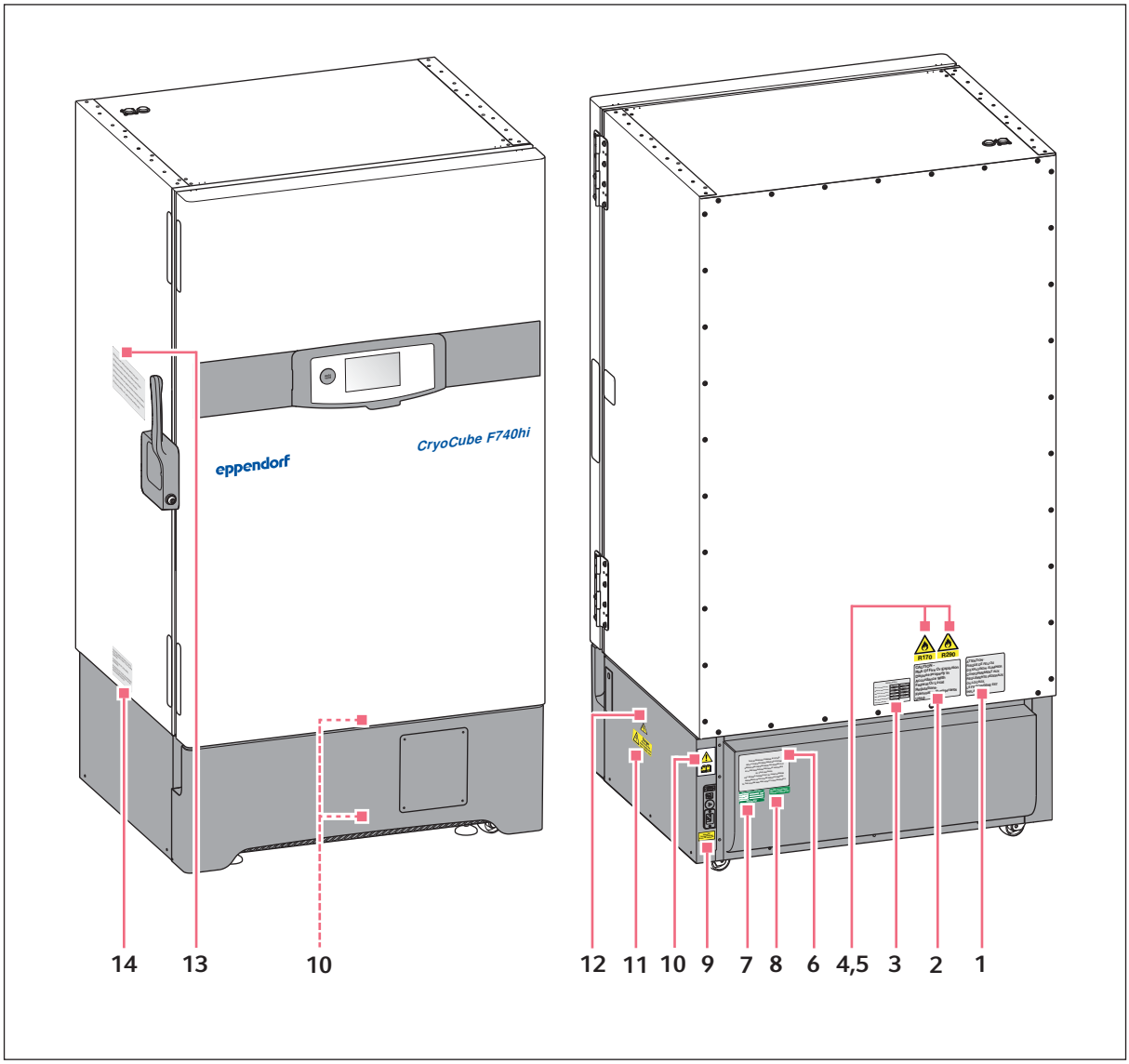
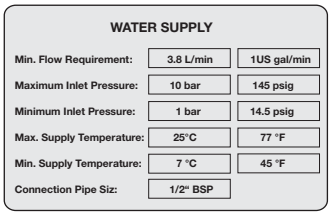
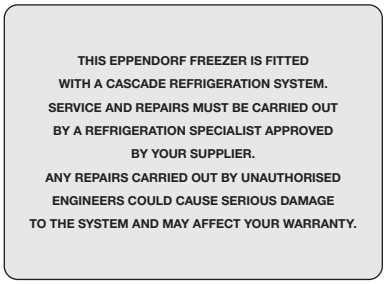
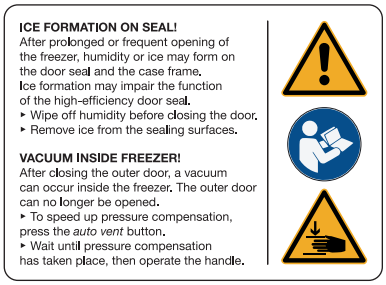
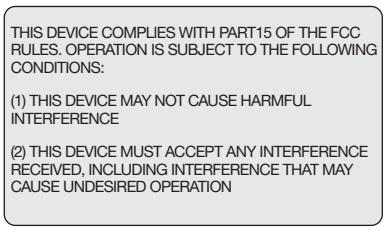



Fig. 2-1: Outside warning symbols

| | Warning symbol | Meaning |
|---|---|---|
| 1 | **ATTENTION-<br>RISQUE DE FEU OU D´EXPLOSION. ELIMINER CONFORMEMENT AUX REGLEMENTS FEDERAUX OU LOCAUX.<br>LE FRIGORIGENE EST INFLAMABLE** | Notice<br>Risk of fire or explosion. Dispose of the device in accordance with federal or local laws and regulations.<br>The device contains flammable refrigerant. |
| 2 | **CAUTION -<br>Risk Of Fire Or Explosion<br>Dispose Properly In Accordance With Federal Or Local Regulations.<br>Flammable Refrigerants Used.** | Notice<br>Risk of fire or explosion. Dispose of the device in accordance with federal or local laws and regulations.<br>The device contains flammable refrigerant. |
| 3 |  | Information on the cooling water supply. |
| 4 |  | Danger due to flammable refrigerant R-170. |
| 5 |  | Danger due to flammable refrigerant R-290. |

| | Warning symbol | Meaning |
|---|---|---|
| 6 |  | The device may only be serviced and repaired by a qualified refrigeration specialist who has been authorized by Eppendorf AG.<br>If the device is serviced or repaired by an unauthorized person, liability on the part of Eppendorf AG shall cease immediately. |
| 7 |  | The device has passed the electrical safety test. |
| 8 |  | The device complies with the Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU. |
| 9 |  | Only connect the device to a mains/power connection with PE conductor. |
| 10 |  | Notice of a hazard point.<br>Read the operating manual. |
| 11 |  | Risk of electric shock.<br>Disconnect the mains/power cord from the voltage supply before removing the cover. |
| 12 |  | Risk of electric shock. |

| | Warning symbol | Meaning |
|---|---|---|
| 13 |  | Notice of a hazard point. Read the operating manual:<br>Risk of crushing injuries when closing the outer door.<br><br>**Ice formation on the seal**<br><br>Opening the device often or leaving it open for a longer period of time will lead to moisture or ice forming on the door seal and on the housing. Ice can impair the function of the door seal.<br>• Wipe off any moisture before closing the door.<br>• Remove any ice from the surface of the seal.<br><br>**Negative pressure in the interior**<br><br>A negative pressure can be generated after closing the outer door. The outer door can no longer be opened.<br>• To speed up pressure equalization, press the *auto vent* button.<br>• Wait for the pressure to equalize. Use the door handle only after this has occurred. |
| 14 |  | The device complies with *FCC Rules Part 15*.<br><br>The device may be operated under the following conditions:<br>• This device may not cause harmful interference.<br>• This device must accept any interference received. This includes interference that may cause undesired operation. |

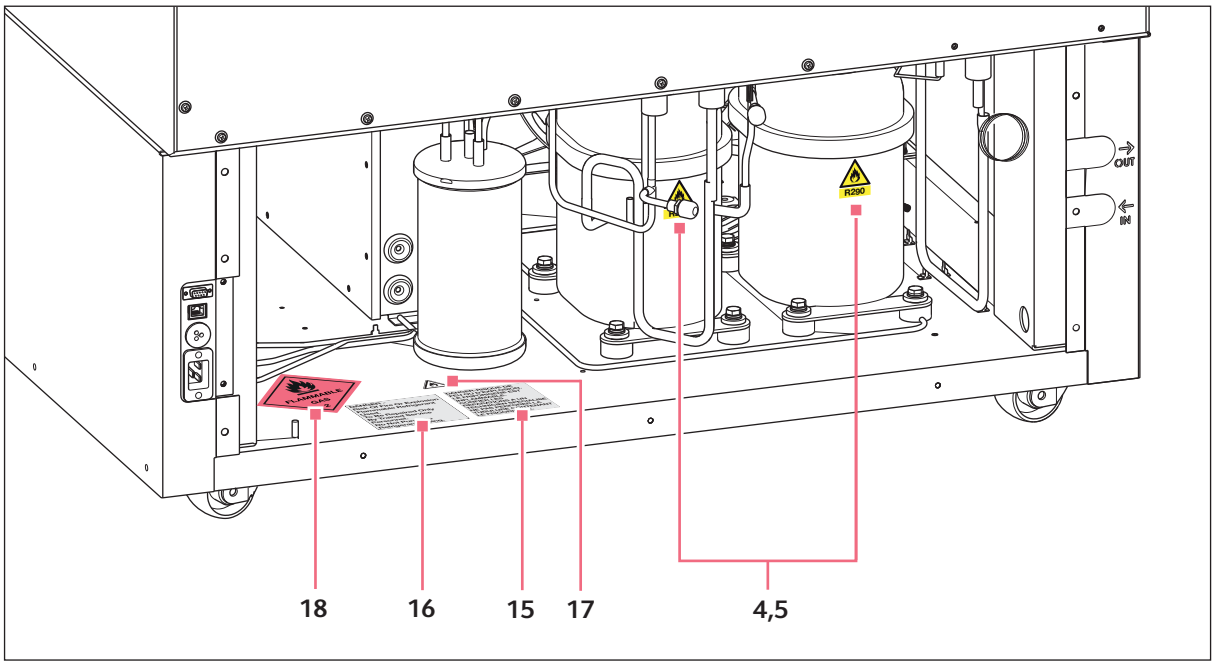



Fig. 2-2: Warning symbols on the rear of the opened device

The warning symbols inside the device can only be accessed by authorized service technicians.

| | Warning symbol | Meaning |
|---|---|---|
| 15 | **DANGER-RISQUE DE FEU OU D´EXPLOSION. LE FRIFORIGENE EST INFLAMMABLE. CONFIER LES REPARATIONS A UN TECHNICIEN SPECIALISE. NE PAS PERFORER LA TUBULURE CONTENANT LE FRIGORIGENE.** | Danger<br>Risk of fire or explosion<br>The device contains flammable refrigerant.<br>Only qualified service technicians are allowed to repair the device.<br>Do not puncture the refrigerant tubing. |
| 16 | **DANGER -<br>Risk Of Fire Or Explosion<br>Flammable Refrigerant Used.<br>To Be Repaired Only By Trained Service Personnel.<br>Do Not Puncture Refrigerant Tubing.** | Danger<br>Risk of fire or explosion<br>The device contains flammable refrigerant.<br>Only qualified service technicians are allowed to repair the device.<br>Do not puncture the refrigerant tubing. |

| | Warning symbol | Meaning |
|---|---|---|
| 17 |  | Danger due to flammable materials |
| 18 |  | Danger due to flammable gas, class 2 |

# 3 Product description
## 3.1 Product overview
### 3.1.1 Front view

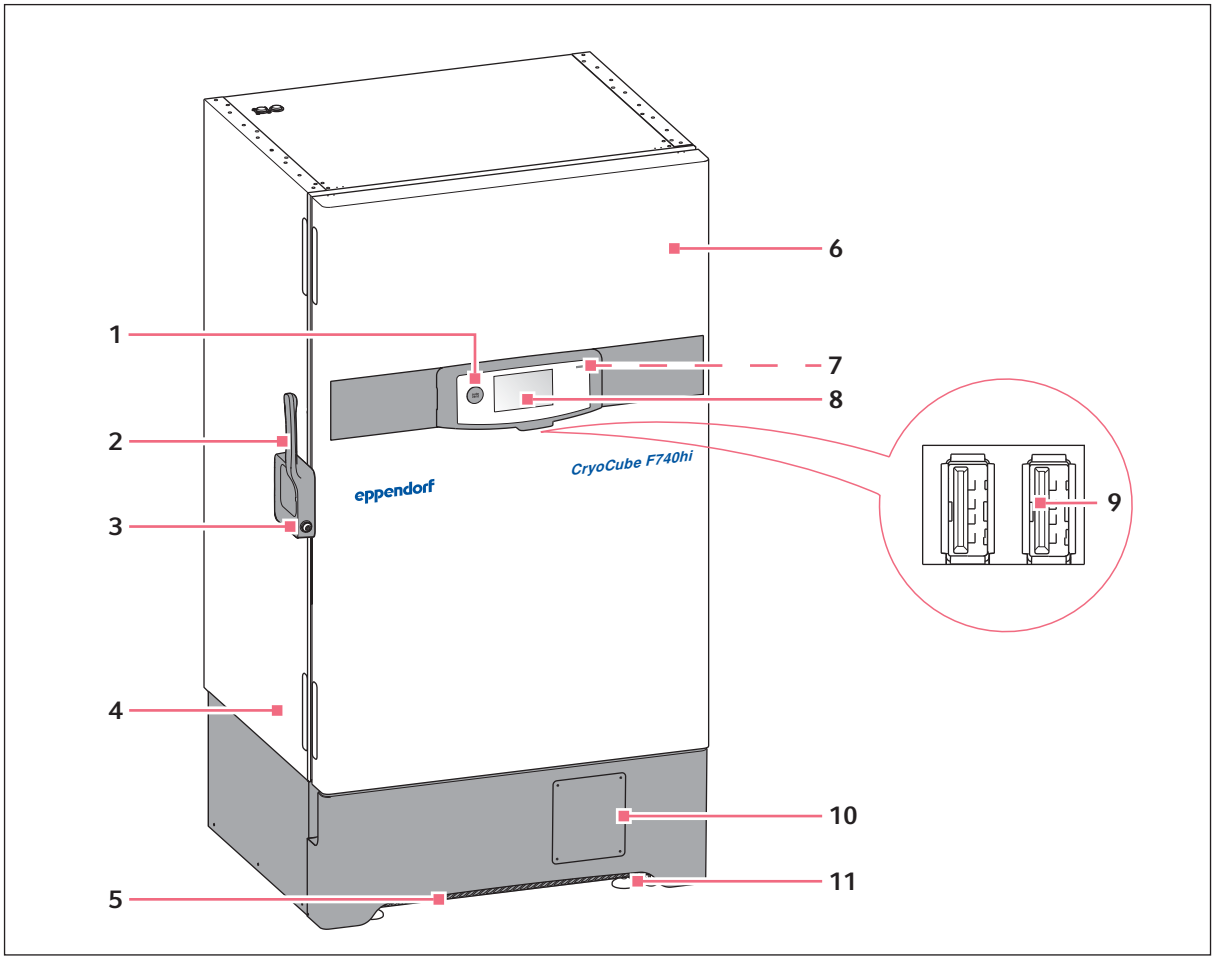



Fig. 3-1: Front view of a model with the door handle mounted on the left side

1 ***auto vent*** **valve**
Automatic pressure compensation

2 **Door handle with electronic lock**

3 **Mechanical lock**
Outer door's emergency release

4 **Name plate**

5 **Air filter**

6 **Outer door**

7 **LED**
Flashes in the event of a mains/power outage

8 **Touch screen**
For device operation

9 **USB ports**

10 **Space for an optional chart recorder**

11 **Leveling feet**

### 3.1.2 Side view

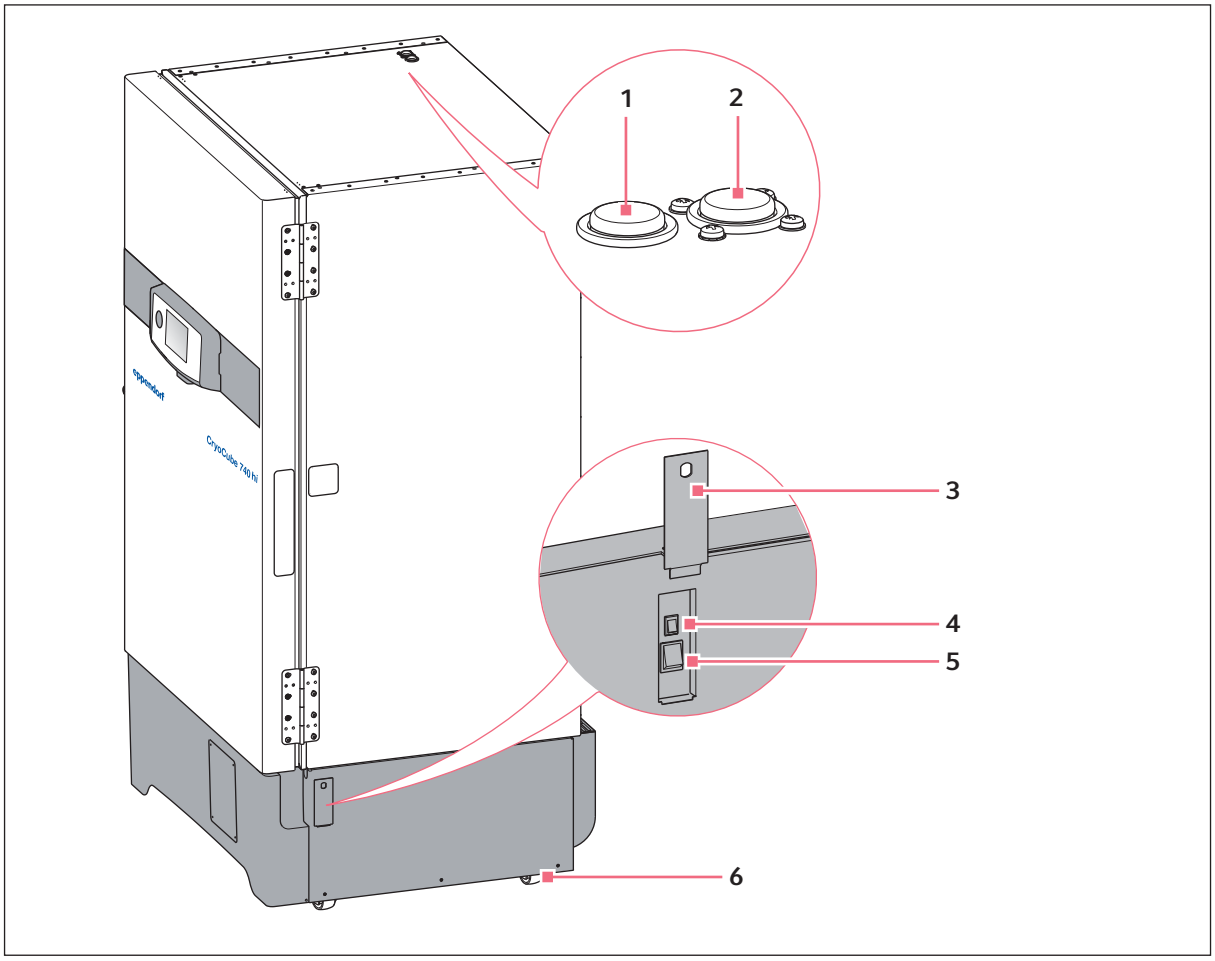



Fig. 3-2: Side view of a model with the door handle mounted on the left side

**1 Access port**
For external sensors

**2 Access port**
For external sensors or an optional back-up system

**3 Switch locking plate**
Lockable cover for the mains/power switch and battery switch

**4 Battery switch**
For activating the back-up circuit

**5 Mains/power switch**

**6 Heavy-duty castors**

### 3.1.3 Interior view

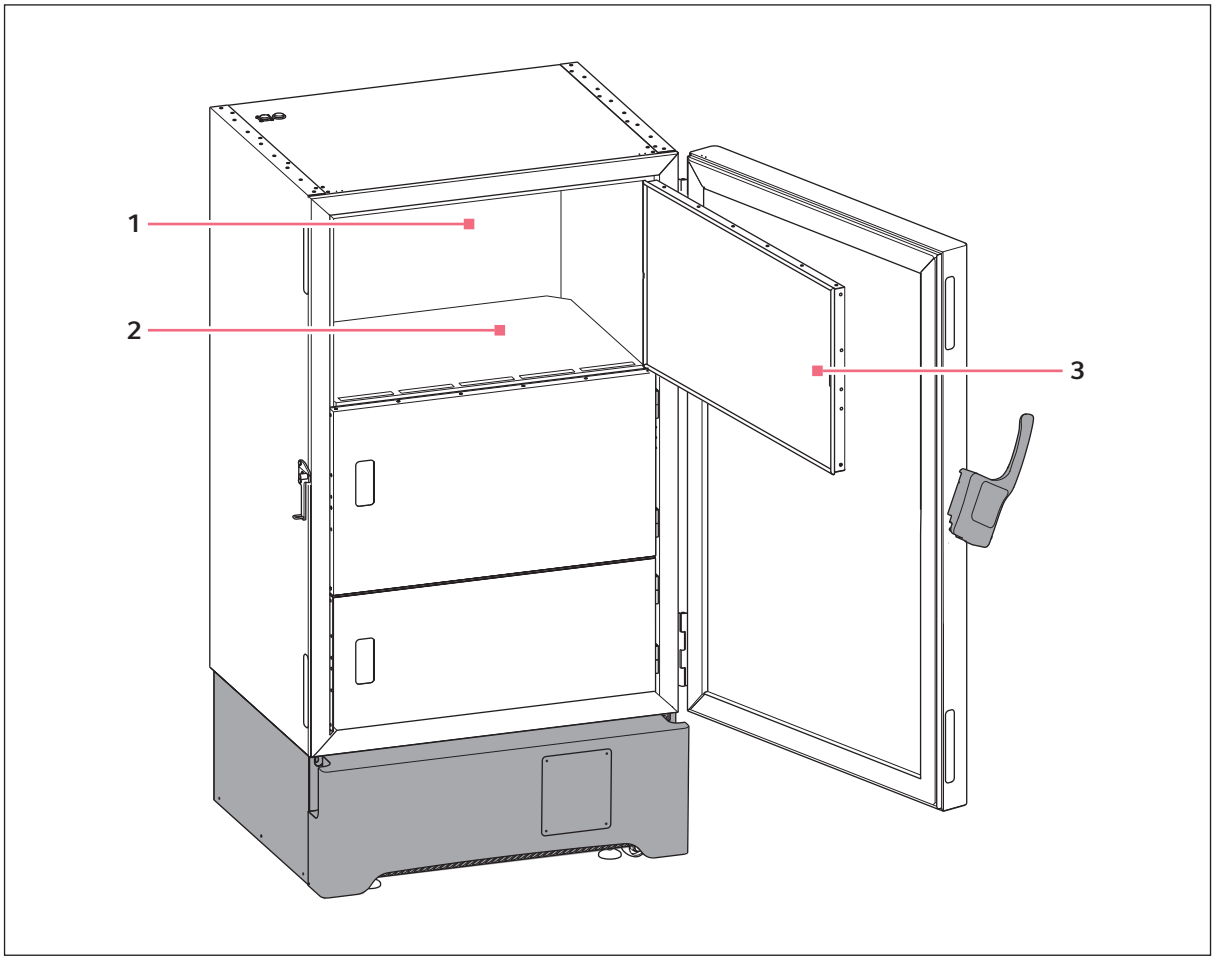



Fig. 3-3: Internal view of a model with three inner doors

**1 Mount for an external temperature probe**
Model 740hiw with 3 compartments and the outer door handle on the left

**2 Shelf**

**3 Inner door with snap-lock system**

### 3.1.4 Cooling water supply

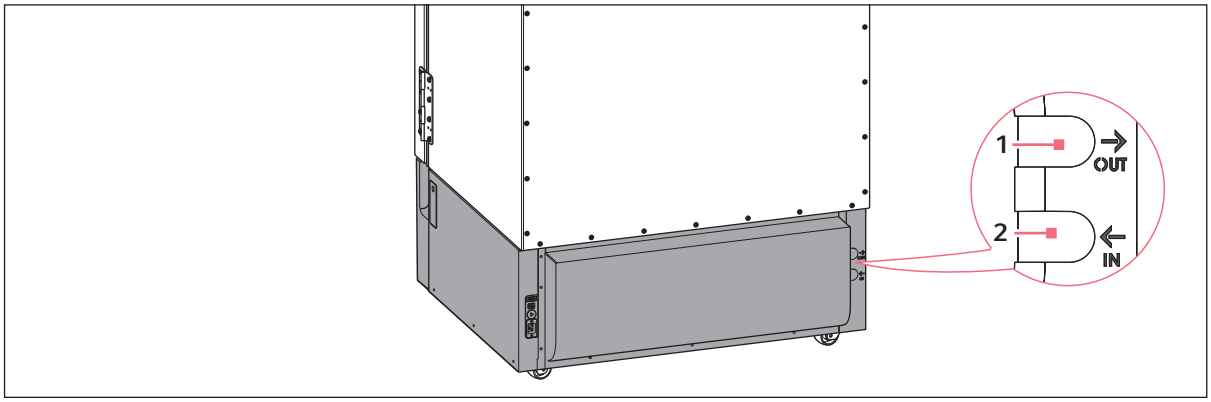



Fig. 3-4: Connections for the cooling water supply

**1 Water outlet from the device**

**2 Water inlet to the device**

### 3.1.5 Interfaces

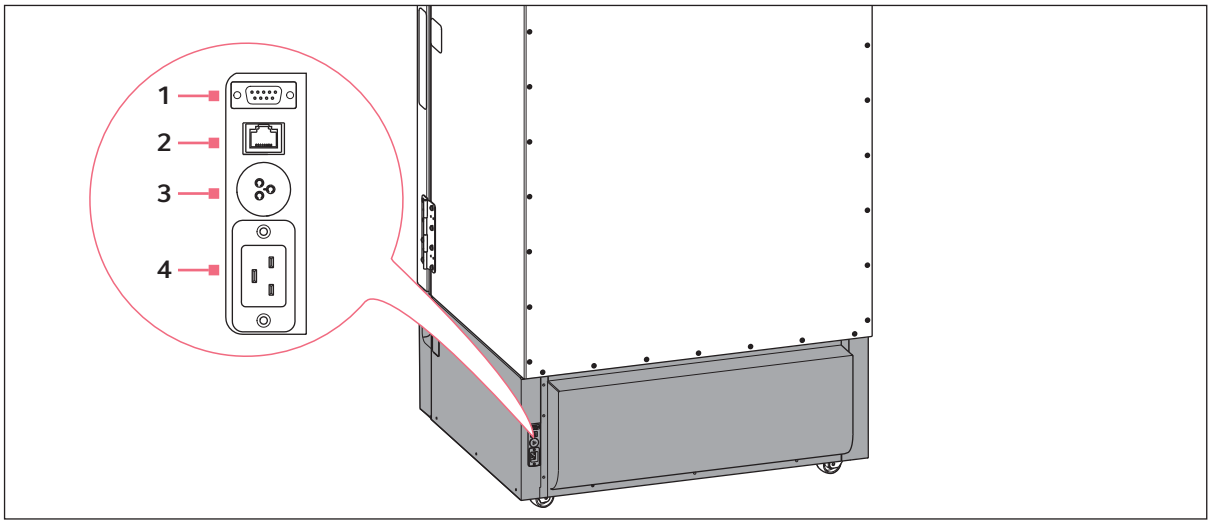



Fig. 3-5: Interfaces

**1 RS-485 serial interface**
Connection for internal use

**2 Ethernet interface**
Connection to an external system

**3 BMS remote alarm interface**
Connection to a building management system

**4 Mains/power connection**
Connection for the mains/power cord

Only connect devices that comply with the IEC 60950 (UL 60590) standards to the interfaces.

## 3.2 Features

The CryoCube is a ULT freezer for storing biological samples.

The device has a two-stage cascade refrigeration system with two closed refrigeration cycles. The refrigeration cycles are cooled by air or by cooling water supply.

The device is operated via the touch screen. There are several USB ports below the touch screen.

The device can be integrated into a network and connected to the Eppendorf AG's VisioNize system. The VisioNize system is a central monitoring software. Further information about the VisioNize system can be found on the www.eppendorf.com website.

The device can be connected to a building management system via the BMS remote alarm interface.

The outer door is locked and unlocked via the software. In case of an emergency, the outer door can be mechanically unlocked using the key contained in the delivery package.

The device features automatic pressure compensation. Automatic pressure compensation occurs as soon as the outer door is closed. Afterwards, the outer door can be opened again. Pressure compensation can also be triggered with the *auto vent* valve.

Each inner door has a seal. With the inner doors closed, cold air loss is minimized and ice formation inside the device is reduced.

The device has 4 shelves. The position of the inner shelves can be changed. You can mount additional shelves.

The device is equipped with a switch locking plate. The mains/power switch and the battery switch are located behind this lockable cover.

An air filter is located below the outer door. The air filter protects the condenser and the assemblies behind it against contamination and dirt.

The heavy-duty castors serve to transport the device safely to its place of installation. Leveling feet ensure the stability and horizontal alignment of the device.

## 3.3 Models

| Name | Door handle | Number of compartments | Cooling |
|---|---|---|---|
| CryoCube F740hi | Left | 3 | Air cooling |
| CryoCube F740hi | Left | 5 | Air cooling |
| CryoCube F740hiw | Left | 3 | Water cooling |
| CryoCube F740hiw | Left | 5 | Water cooling |
| CryoCube F740hi | Right | 3 | Air cooling |
| CryoCube F740hi | Right | 5 | Air cooling |

## 3.4 Alarms, warnings and messages

An alarm or a warning sounds in defined situations.
- If an alarm is triggered, the user must immediately eliminate the cause of the alarm.
- If a warning is displayed, the user must monitor the device and, if necessary, eliminate the cause of the warning.

Optical and acoustic signals have been defined for alarms and warnings. All signals will disappear when the cause has been eliminated. The signals can be configured (see *Alarms on p. 59)*, (see *Device Settings menu item on p. 75)*.

The device will issue a message when the time for a recurring task is reached.

### 3.4.1 Alarms

**Alarm: Interior temperature**
- The interior temperature exceeds the alarm limit for the minimum or maximum interior temperature.
- The alarm is triggered when the delay time has elapsed. The delay time can be defined.
- The signal tone sounds on the device.
- A red triangle appears on the touch screen in the *Temperature* function area.
- The message *Temperature above alarm limit -XX °C* or *Temperature below alarm limit -XX °C* appears in the touch screen's red information bar.
- The alarm is forwarded to an external system.
- The alarm can be activated and deactivated. If the alarm is deactivated, neither an alarm nor a warning will be issued.

**Alarm: Ambient temperature at the refrigeration system**
- The temperature at the measuring point exceeds the alarm limit for the minimum or maximum operating temperature of the refrigeration system.
- The alarm is triggered after a delay time of 30 minutes. The delay time cannot be edited.
- The signal tone sounds on the device.
- A red triangle appears on the touch screen in the *Ambience Temperature* function area.
- The message *Ambience temperature above alarm limit XX °C* or *Ambience temperature below alarm limit XX °C* appears in the touch screen's red information bar.
- The alarm can be activated and deactivated. If the alarm is deactivated, neither an alarm nor a warning will be issued.

**Alarm: Outer door**
- The outer door has been open for longer than defined in the alarm settings.
- The alarm is triggered when the delay time has elapsed. The delay time can be defined.
- The signal tone sounds on the device.
- The message *Door open longer than X:XX min* appears in the touch screen's red information bar.
- The alarm can be activated and deactivated.

**Alarm: Mains/power outage**
- The mains/power supply to the device is interrupted. The battery back-up circuit is switched on and triggers the alarm.
- The signal tone sounds on the device.
- The control panel's indicator light flashes in 10-second intervals.
- The message *Mains/Power Failure* appears in the touch screen's red information bar.
- The interior temperature is displayed on the touch screen.
- The alarm is forwarded to an external system.
- The alarm cannot be deactivated.

**Alarm: Battery**
- The battery voltage is too low.
- The signal tone sounds on the device.
- The message *Low battery voltage* appears in the touch screen's red information bar.
- The alarm cannot be deactivated.

**Alarm: System error**
- The signal tone sounds on the device.
- The cause and solution of the error are displayed on the touch screen.
- The alarm cannot be deactivated.

### 3.4.2 Warnings

**Warning: Interior temperature**
- The interior temperature exceeds the warning limit for the minimum or maximum interior temperature.
- The warning is triggered when the delay time has elapsed. The delay time is the delay time for the "interior temperature" alarm.
- The signal tone sounds on the device.
- A yellow triangle appears on the touch screen in the *Temperature* function area.
- The message *Chamber temperature above warning limit XX °C* or *Chamber temperature below warning limit XX °C* appears in the touch screen's yellow information bar.
- The alarm can be activated and deactivated. If the alarm is deactivated, neither an alarm nor a warning will be issued.

**Warning: Operating temperature of the refrigeration system**

- The temperature at the measuring point exceeds the warning limit for the minimum or maximum operating temperature of the refrigeration system.
- The alarm is triggered after a delay time of 30 minutes. The delay time cannot be edited.
- The signal tone sounds on the device.
- A yellow triangle appears on the touch screen in the *Ambience Temperature* function area.
- The message *Ambience temperature above warning limit XX °C* or *Ambience temperature below warning limit XX °C* appears in the touch screen's yellow information bar.
- The alarm can be activated and deactivated. If the alarm is deactivated, neither an alarm nor a warning will be issued.

### 3.4.3 Message

**Message: Recurring task**

- The defined time for a recurring task has been reached.
- A message appears in the touch screen's yellow information bar.
- The message is forwarded to VisioNize.
- The message can be activated and deactivated.

## 3.5 Delivery package

### 3.5.1 Device and accessories

| Quantity | Description |
|---|---|
| 1 | ULT upright freezer |
| 1 or 2 | Mains/power cord (quantity depends on country) |
| 1 | Safety clamp for mains/power cord |
| 2 | Key for switch locking plate |
| 2 | Key for emergency release |
| 2 | Anti-slip pads |
| 1 | Plug for connection to the building management system |
| 1 | Allen key |

### 3.5.2 Documents

| Quantity | Description |
|---|---|
| 1 | Operating manual |
| 1 | Unpacking instructions |
| 1 | Certificate of conformity |

## 3.6 Accessories

Optional accessories can be ordered separately. Information regarding accessories is available on our website: www.eppendorf.com.

### 3.6.1 Back-up systems

In the event of a mains/power outage, the battery-powered back-up system will start and cool the interior for a limited period of time. The back-up system is connected through the access port.

The following back-up systems are available:
- $CO_2$ back-up system for temperatures from -60 °C to -70 °C.
- $LN_2$ back-up system for temperatures down to -85 °C.

### 3.6.2 Chart recorder

The chart recorder records the interior temperature on a disk over a period of 7 days. The port for connection of the chart recorder is available in the device.

Pens and disks for chart recorders are available.

### 3.6.3 Racks for ULT upright freezers

Racks serve to store and sort samples in boxes, microplates and deepwell plates.

Racks are placed on the inner shelves inside the device. The racks are used to store boxes. Stainless steel racks provide space for 136 mm × 136 mm boxes. Aluminum racks can be used to store boxes up to 133 mm × 133 mm.

Racks are available with drawers or with open sides. The design of the racks ensures an even temperature in the entire rack.

### 3.6.4 Cardboard boxes and box dividers

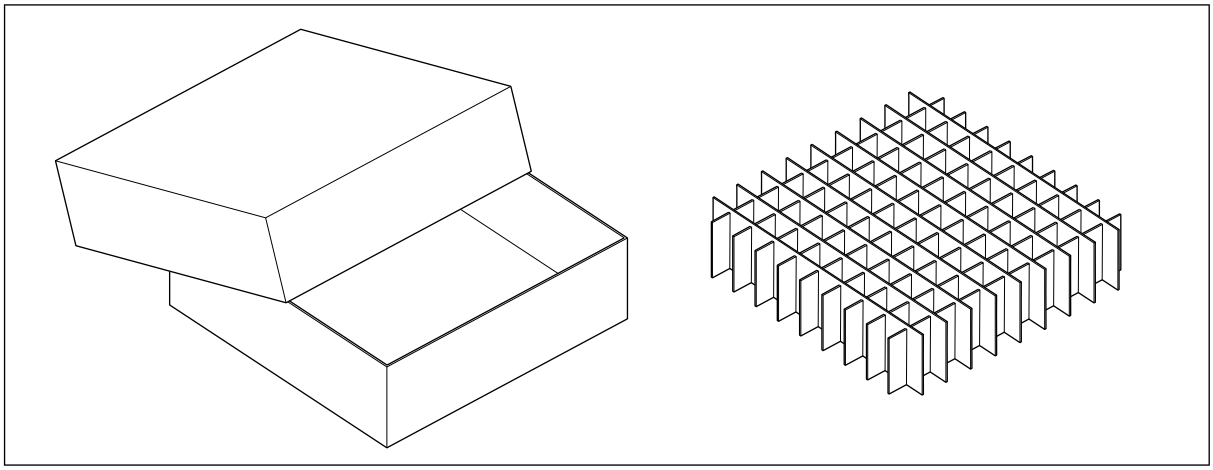


Fig. 3-6: Cardboard box and box divider

Cardboard boxes serve to store samples in tubes at temperatures down to -86 °C. Cardboard boxes have a waterproof coating.

To sort your samples, you can insert box dividers into the cardboard boxes. Eppendorf AG cardboard boxes and box dividers are compatible with each other.

### 3.6.5 Eppendorf Storage Box

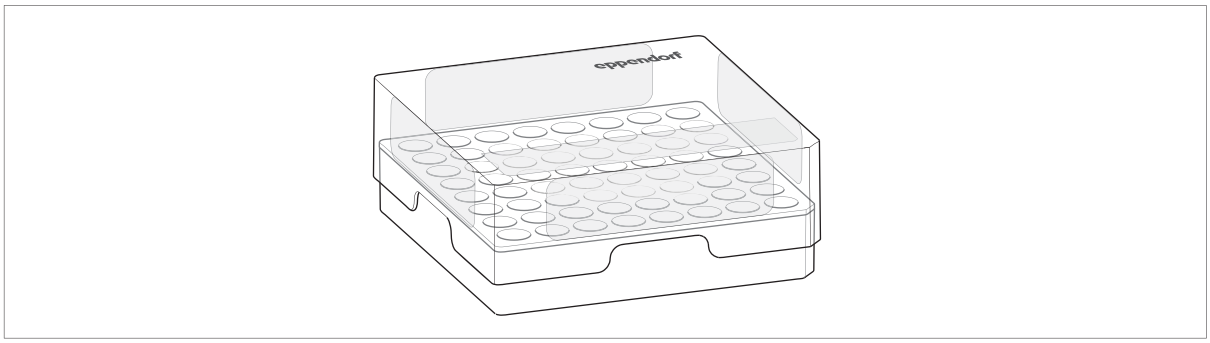



Fig. 3-7: Eppendorf Storage Box

Eppendorf Storage Boxes serve to store samples in tubes at temperatures down to -86 °C.

Eppendorf Storage Boxes are made of polypropylene (PP) and are autoclavable.

# 4 Installation

## 4.1 Selecting the location

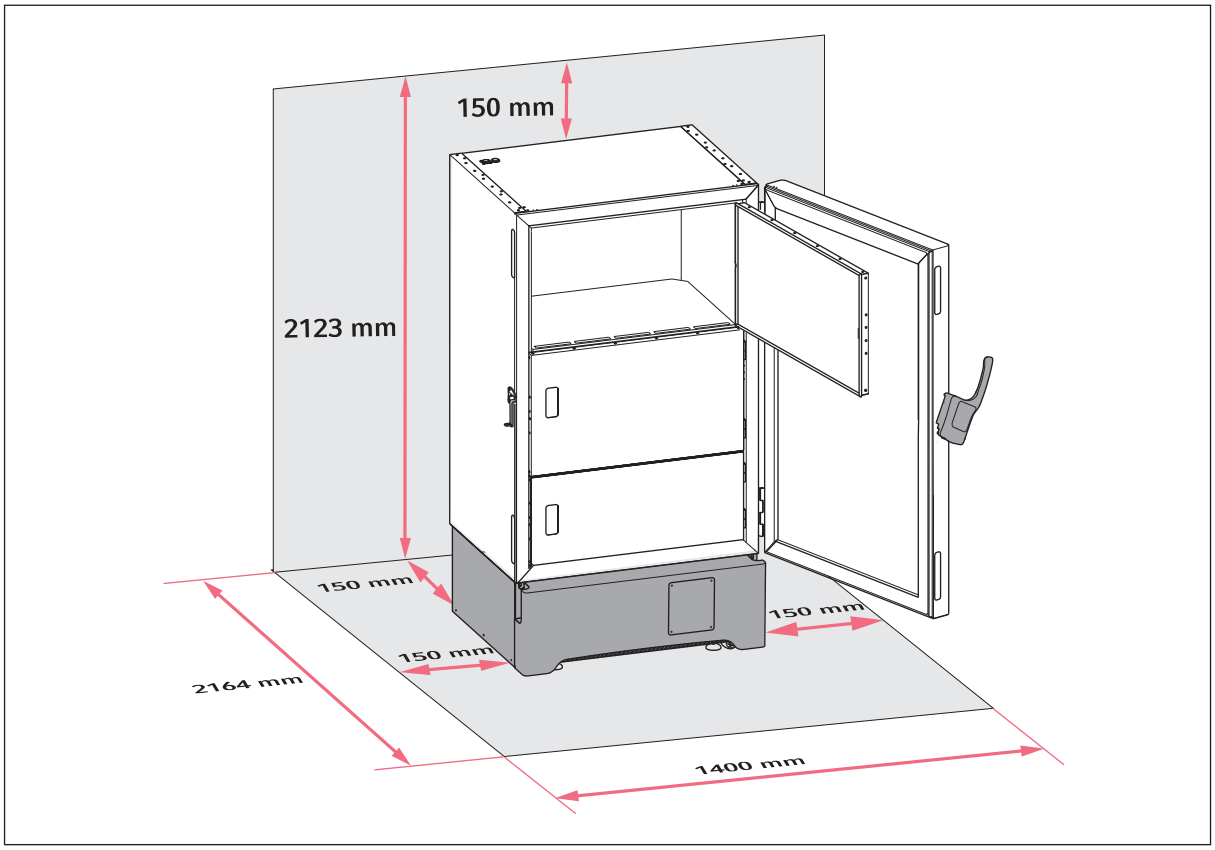



Fig. 4-1: Footprint

Information on ambient conditions, dimensions and weights can be found in the technical data.

**Location in general**

- The ambient conditions match the specifications set out in the Technical data chapter.
- The location is well ventilated or air-conditioned.
- The location is not next to heat sources.
- The location is protected against sparks and open fire.
- The floor space corresponds to the technical data.
- The floor is level, vibration-free and designed for the weight of the device.

**Electrical connection**

- Mains/power connection in accordance with the name plate
- The mains/power switch of the device and the disconnecting device of the power system circuit (e.g., residual current circuit breaker) are accessible during operation.

**Cooling water supply**

- The building connection, cooling water and accessories match the specifications set out in the Technical data chapter.

**Air volume for devices with refrigerant R-290 or R-170**

The CryoCube F740hi and CryoCube F740hiw contain the flammable refrigerants R-290 and R-170. Refrigerant may leak out through a leak in the refrigeration cycle. If the ambient air contains a certain concentration of the refrigerant, the oxygen in the air and the refrigerant will form a flammable gas-air mixture. You can prevent this from happening by ensuring the following

- Sufficient air volume
- Controlled ventilation and venting of the location
- The refrigeration cycles of the device contain less than 0.15 kg of refrigerant.
- Access to and use of the room in which the device is located is not restricted according to EN 378.

Contact your safety officer for information on further requirements when installing the device.

## 4.2 Preparing installation

### 4.2.1 Unpacking the device

1. Check the packaging for damage.
2. Unpack the device in accordance with the unpacking instructions.

### 4.2.2 Checking the delivery

1. Check the delivery for completeness.
2. Check the device and accessories for transport damage.
3. Do not commission the device if the packing or the device is damaged. Contact Eppendorf AG customer service or your Eppendorf partner.

### 4.2.3 Transporting the device to the location

Personal protective equipment

- Protective clothing, protective gloves, safety shoes

Prerequisites

- The location meets the requirements.

▸ Transport the device to the location (see *Transport on p. 99)*.

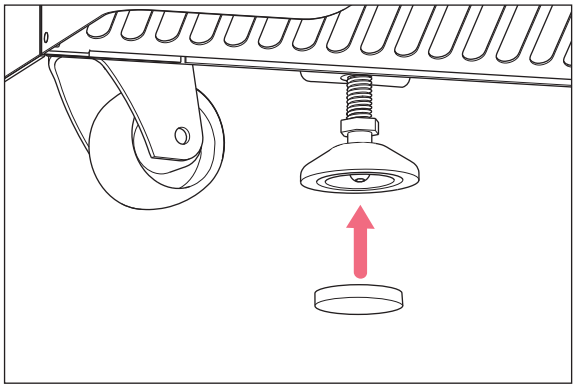
### 4.2.4 Setting up the device

**CAUTION! Risk of cut injuries due to sharp-edged components**
When aligning the leveling feet, cut injuries can result from sharp-edged components on the bottom of the device.

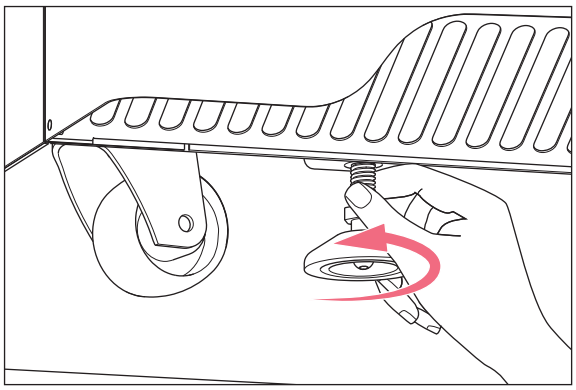
▸ Wear protective gloves when setting up the device.

Personal protective equipment
- Protective clothing, protective gloves, safety shoes

Prerequisites
- The device is in its intended position.



1. Attach anti-slipping pads to the underside of the leveling feet.



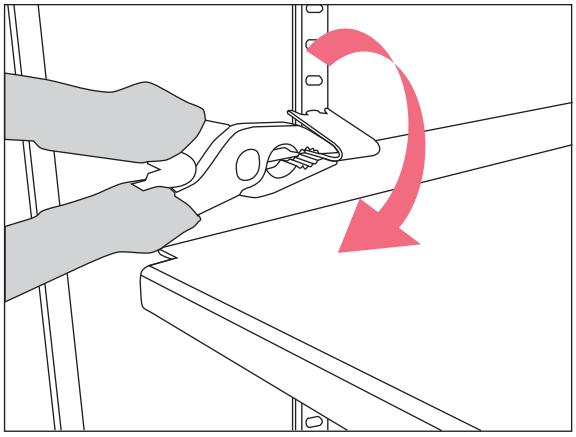
2. Rotate the leveling feet down.

3. Remove the adhesive tape from the air intake grille.

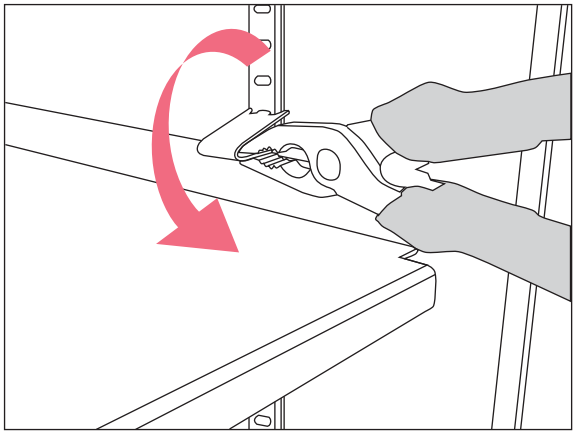
## 4.3 Removing the transport clips from the inner shelves

The device is supplied with the inner shelves installed. The inner shelves are secured for transport with transport clips. Each inner shelf is secured with 2 transport clips.

Tools and auxiliary equipment
- Pliers



1. Use pliers to hold the lower part of the assembly clip.
2. Carefully turn the pliers clockwise for removing the assembly clips on the left side.



3. Carefully turn the pliers counter-clockwise for removing the assembly clips on the right side.
4. Take off the assembly clip.

## 4.4 Changing a shelf position

**CAUTION! Risk of burns from direct contact with cold surfaces.**
The temperature inside the device is low. Direct contact with the interior or samples can cause skin burns.

- Wear cold protection gloves when loading and unloading the device.

You can change the position of the shelves. You can mount additional shelves.

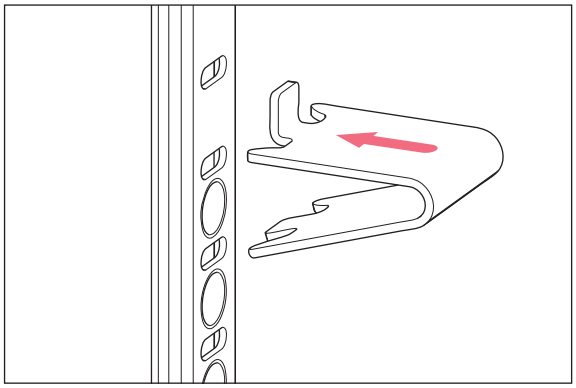


Fig. 4-2: Pilaster rail and shelf clip

1. Insert the upper part of the shelf clip into the bore above.
2. Insert the bracket of the shelf clip into the bore of the pilaster rail.
3. You need 4 shelf clips to safely mount a shelf. Mount one shelf clip in each pilaster rail.
4. Place the shelf on the shelf clips.

## 4.5 Connecting the device to the voltage supply

**WARNING! Risk 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.

Prerequisites

- Mains/power connection in accordance with the name plate

1. If several mains/power cords are included, select the mains/power cord according to the mains/power supply voltage.
2. Connect the mains/power cord at the rear of the device.
3. Fasten the safety clamp.
   If the device is moved, the mains/power cord cannot be pulled out of the device.

## 4.6 Connecting the device to the cooling water supply

### 4.6.1 Functional description

The cooling water absorbs the heat of the refrigerant at the condenser. This lowers the temperature of the refrigerant in the condenser. How much the refrigerant is cooled by is determined by the input temperature and volume flow of the cooling water.

The cooling water's input temperature can be measured at the water inlet. The volume flow is regulated via the water regulation valve.

The water regulation valve's factory settings assume a cooling water input temperature of approx. 20 °C and an ambient temperature of 21 °C – 23 °C. The valve regulates the volume flow so that the refrigerant leaves the condenser with a temperature of 25 °C. These settings allow for the greatest energy efficiency for the device.

### 4.6.2 Connecting to a cooling water supply without a water cooler

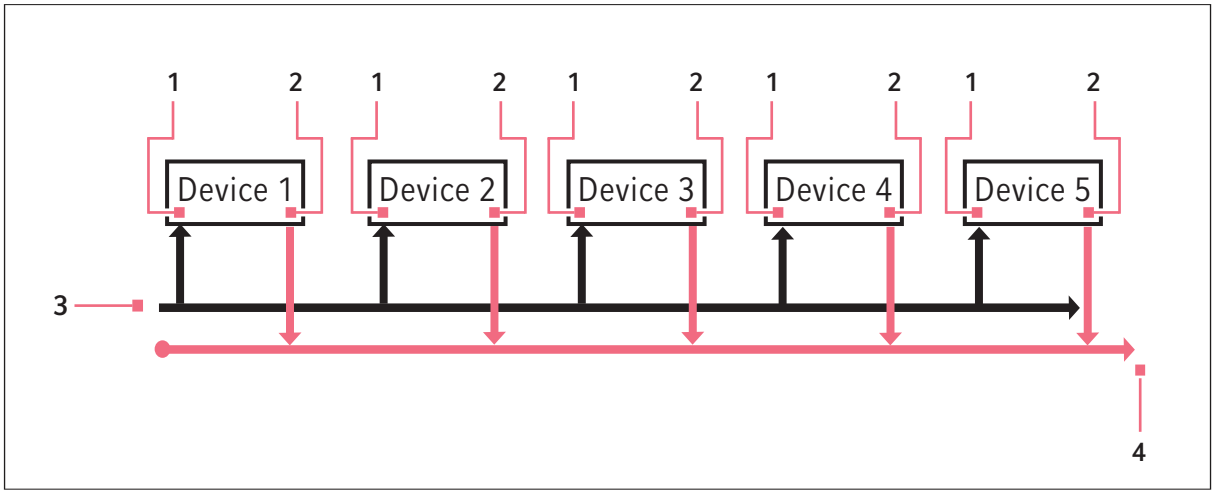



Fig. 4-3: Connection principle

**1 Water inlet to the device**

**2 Water outlet from the device**

**3 Water inlet to the cooling water supply**

**4 Water outlet from the cooling water supply**

### 4.6.3 Connecting to a cooling water supply with a water cooler

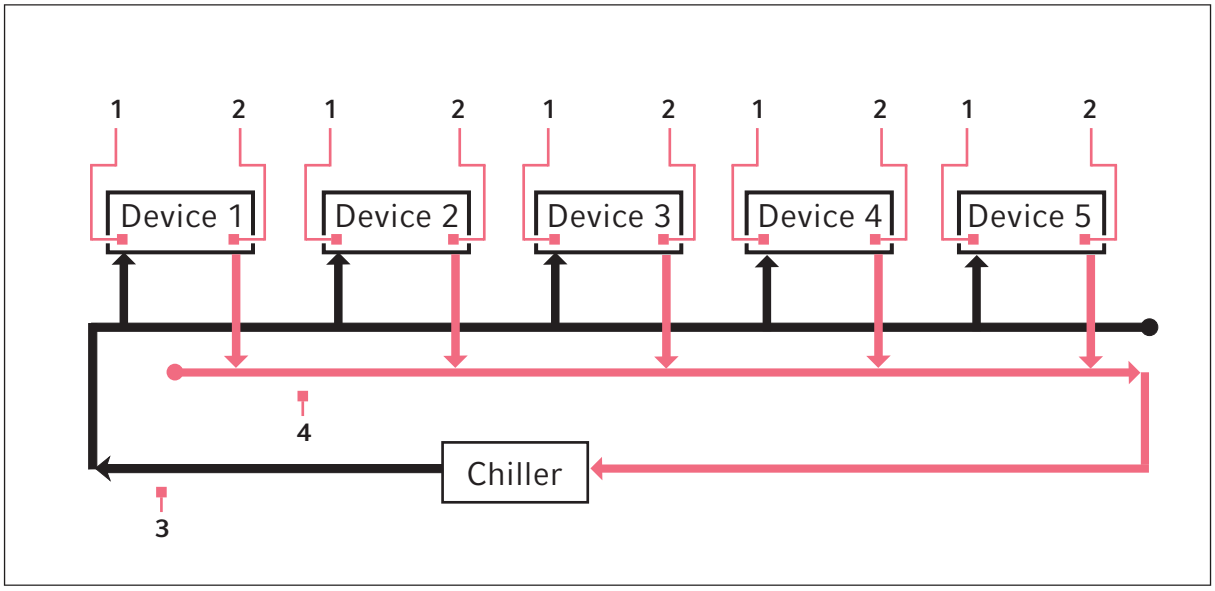



Fig. 4-4: Connection principle

**1 Water inlet to the device**

**2 Water outlet from the device**

**3 Water inlet to the cooling water supply**

**4 Water outlet from the cooling water supply**

**NOTICE! Damage due to too high cooling water temperature**
Cooling water coming from a ULT freezer is hot. This water cannot be used to cool other devices.

- Connect several ULT freezers to one cooling water supply in parallel.

If the device is connected to a cooling water supply with a water cooler, a technician must check the cooling water pressure. The technician must adjust the water regulation valve.

### 4.6.4 Connecting the device

Accessories

- Cooling water hose
- Mounting material for the cooling water hose
- Water filter (if necessary)
- Stop valve (if necessary)
- Pressure regulator

Requirements

- The building connection and cooling water match the specifications set out in the Technical data chapter.
- The water regulation valve has been adjusted by a technician, if necessary.

Specialized knowledge and skills are required to work on the laboratory's water supply. Only qualified persons are allowed to work on the water supply. National and local safety regulations and legal provisions must be observed.

The owner is responsible for connecting the device to the water supply. The device must be connected according to local standards and regulations.

## 4.7 Connecting the device to external systems

### 4.7.1 Remote alarm interface

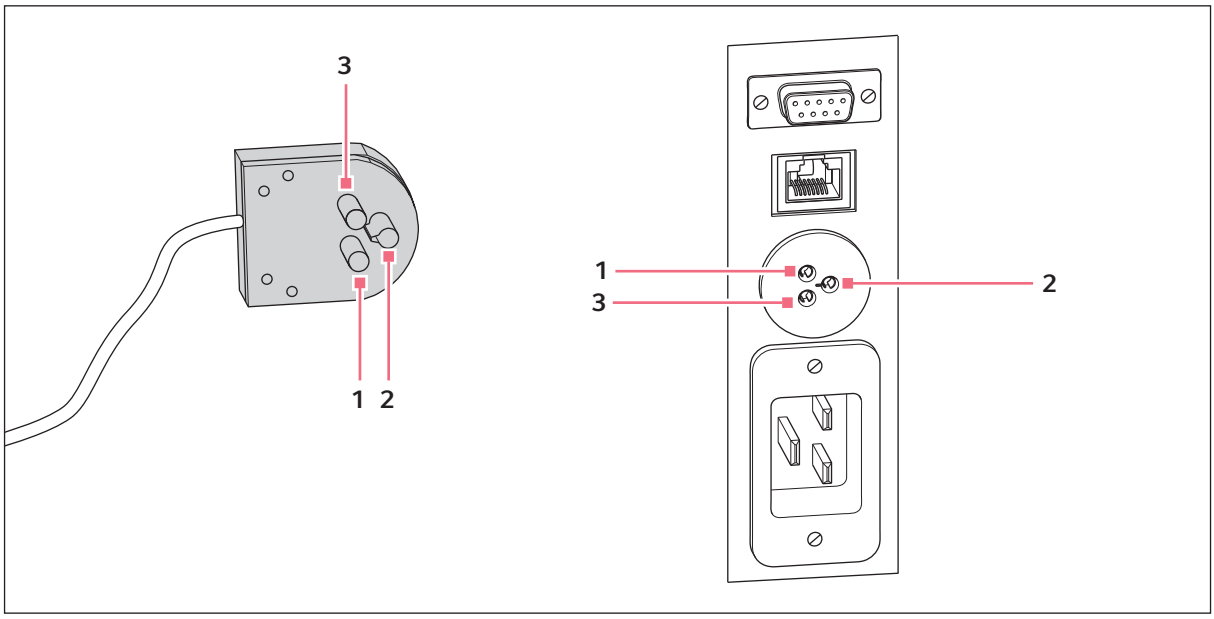



Fig. 4-5: Plug and remote alarm interface

**1 Pin 1 and socket 1**

**2 Pin 2 and socket 2**

**3 Pin 3 and socket 3**

You can connect the device to a building management system via the remote alarm interface.

The following alarms are forwarded to the building management system:
- Alarm in the case of a mains/power outage
- Alarm that the temperature inside the device is too high
- Alarm that the temperature inside the device is too low

The plug is included in the delivery package. Connections must have double or reinforced insulation as described in DIN EN 61010-1.

### 4.7.2 RS-485 interface

The RS-485 interface is reserved for internal use.

### 4.7.3 Ethernet interface

The device can be connected to the VisioNize system of Eppendorf AG via the Ethernet interface.

Connections must have double or reinforced insulation as described in DIN EN 61010-1.

## 4.8 Switching the device on



**WARNING! Risk of electric shock due to damage to the device or to the 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 the event 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 isolating device intended for this purpose (e.g., the emergency switch in the laboratory).



**NOTICE! Damage to electronic components due to condensation.**
Condensate may form in the device when it has been transported from a cool environment to a warmer environment.

- After installing the device, wait for at least 6 h. Only then connect the device to the mains/power line.



**NOTICE! Improper door sealing due to ice**
Humidity inside the device causes ice formation. Ice causes damage to the seals of the inner and outer doors.

1. Dry the device completely, especially all seals.
2. Switch on the device afterwards.

### 4.8.1 Enabling the back-up circuit

The back-up circuit is battery-powered. In the event of a mains/power outage, the battery will supply power to the control panel and the alarm for 72 hours.

Tools and auxiliary equipment
- Key for the switch locking plate

Prerequisites
- The device has been installed and connected according to the operating manual.
- The device has been acclimatized for at least 6 h.

1. Unlock the switch locking plate and remove the cover.
2. Switch on the battery switch.

The back-up circuit is activated.
- An alarm is triggered in the event of a mains/power outage.
- In the event of a mains/power outage, power will still be supplied to the control panel.
- The software settings are saved in the event of a mains/power outage.
- The battery is charged with mains power. The battery is fully charged after approx. 24 hours.

3. Fit the cover and lock it.

### 4.8.2 Switching the device on at the mains/power switch

Tools and auxiliary equipment
- Key for the switch locking plate

Prerequisites
- The device has been installed and connected according to the operating manual.
- The device has been acclimatized for at least 6 h.
- The interior, seals, doors and lids are dry.
- Devices with cooling water supply: The water inlet is open.

1. Unlock the switch locking plate and remove the cover.
2. Switch on the mains/power switch.
   - The display shows the software version number.
   - The compressor starts running after a short time delay.

3. Fit the cover and lock it.

## 4.9 Basic device settings

For the initial operation of the device, set the following values. Further settings are described in the *Menu* chapter.

1. Set the interior set temperature (see p. 53).
2. Set the temperature offset (Fig. 7-5 on p. 76).
3. Activate the signal tone (Fig. 7-5 on p. 75).
4. Activate the hazard messages. Set the alarm limits and the warning limits (see p. 59).
5. Set a delay time for the alarm (Fig. 7-5 on p. 76).
6. To regulate and document access to the device, you can enable the user management (see p. 81).

## 4.10 Registering the device

To register a VisioNize onboard device for VisioNize Services, a connection to the local network with Internet access is required. the device is connected to the Internet, it can be logged into VisioNize via the administrator account access data. Information on VisioNize can be found in the manual under https://www.eppendorf.com/visionize-software-manual.

### 4.10.1 VisioNize onboard devices

**Prerequisites:**
- Available Ethernet port near the device
- Standard Ethernet cable
- Internet access
  Administrator account (Tenant) for VisioNize

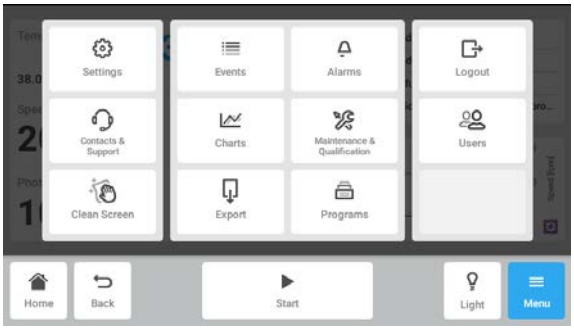
Prevention of data loss, loss of sample or misuse of data

▸ Protect the VisioNize onboard device from unauthorized access.
Contact IT systems administration for questions.

Security risks

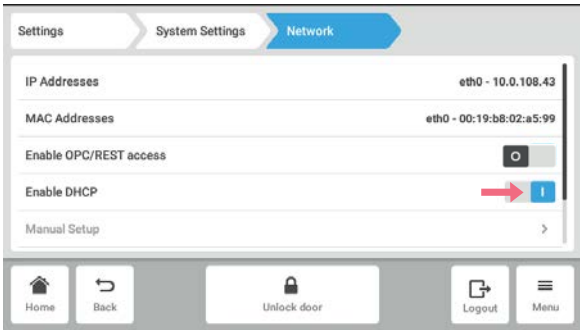
▸ Only activate OPC/REST when required. Every communication protocol used to transmit data via the Internet represents a potential security risk.

### Connecting to the network

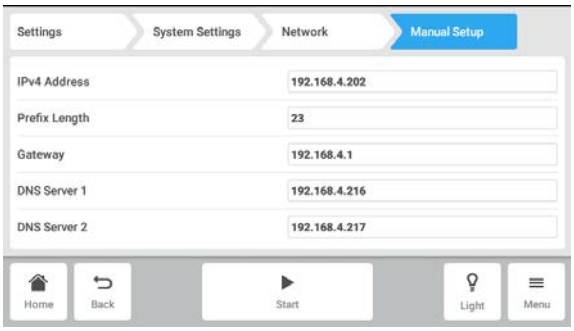



1. Connect the Ethernet port of the device to the local network with a standard Ethernet cable via an available Ethernet port.
2. To check the network connection, tap the *Settings* button.
3. Tap *Menu* > *Settings* > *System Settings* > *Network*.

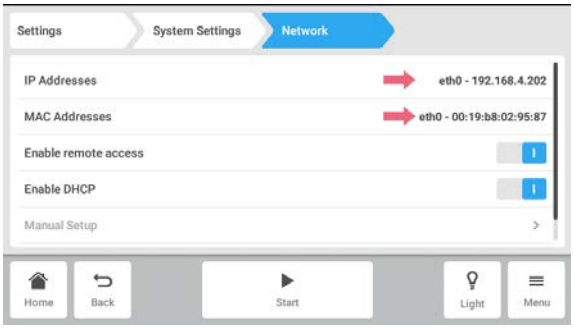
### DHCP




4. The device can be easily integrated into the network using the DHCP network protocol. Activate the *Enable DHCP* slider.
5. If no DHCP is in use, deactivate *Enable DHCP*.
6. Tap the *Manual Setup* button.




7. Tap the *Manual Setup* button.
8. Enter the device parameters for the network.

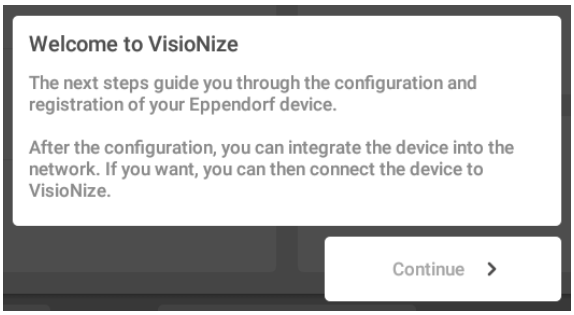



9. Tap the *Back* button to check the entries. When the device has been integrated into the network, the IP address of the device will appear next to *IP addresses*.

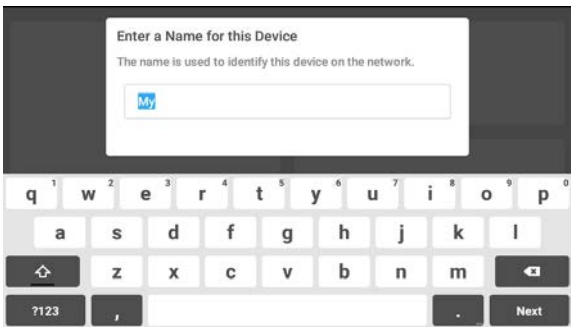
If the IP address is not displayed, note the MAC address and contact systems administration.

### 4.10.2 Registering for VisioNize

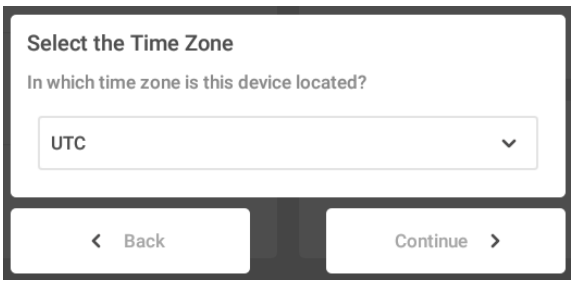
VisioNize onboard devices require a certificate for VisioNize. After the device has been put into operation and connected to the local network, the registration dialog will start automatically.



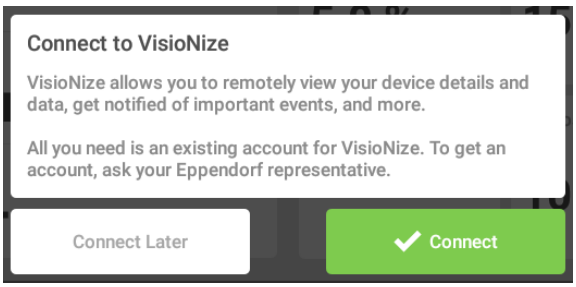

1. To configure the device for VisioNize, tap the *Continue >* button and follow the instructions.



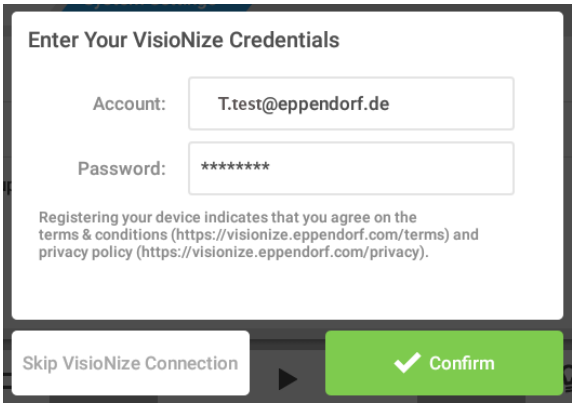

2. Enter a name for the device.
   The device is identified in the network with this name.



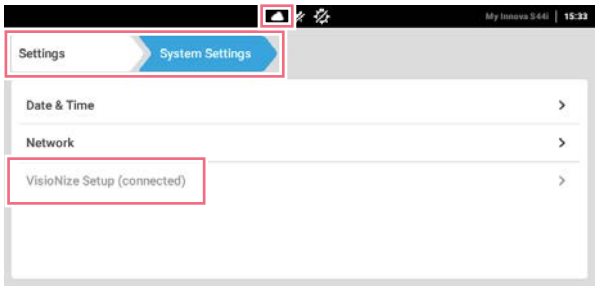

3. Select the time zone for the device in the drop-down list and tap *Continue >*.




4. To link the device directly to the VisioNize account, tap the *Connect* button.
   To connect the device to the Cloud at a later date, tap *Connect later* and follow the instructions under Registering later (see *Registering later on p. 44)*.

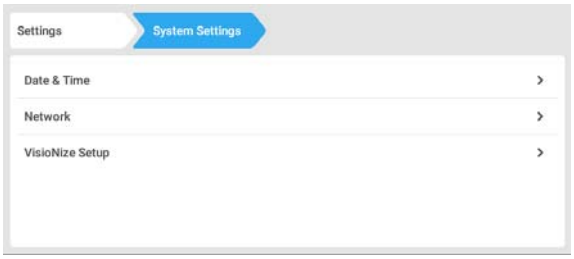



5. Enter the administrator account's login data.
6. Press *Confirm* to confirm.




7. Check the registration for VisioNize.
   The device is registered under VisioNize in the Cloud.
   If the device is registered in the Cloud, a cloud is displayed in the status bar. Additionally, the *VisioNize Setup (connected)* menu item under *System Settings* is displayed in gray.

### 4.10.3 Registering later




1. Start the registration for VisioNize via *Settings* > *System Settings* > *VisioNize Setup*.
2. Follow the instructions for registration (see *Registering for VisioNize on p. 43)*.

# 5 Operation

## 5.1 Opening the outer door

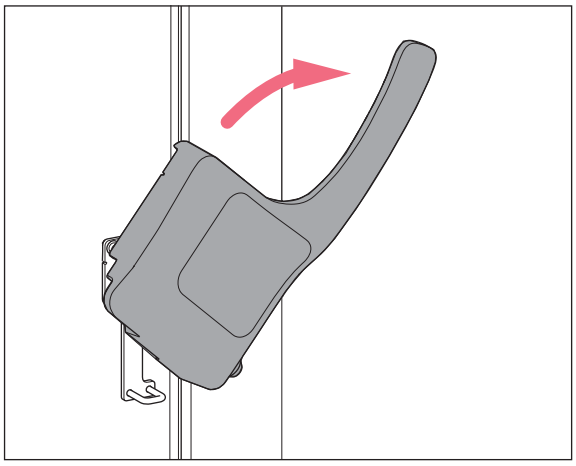


**CAUTION! Hand injuries**
There are moving parts on the inside of the door handle.

- Do not touch the inside of the door handle.

Prerequisites

- Pressure compensation has finished.



1. Unlock and remove the padlock, where applicable.
2. Pull the door handle forward and down until it stops.
3. To open the outer door, pull the door handle forward.

If the outer door will not open, press the *auto vent* button to accelerate pressure equalization.

## 5.2 Loading the device



**CAUTION! Risk of head injury due to open inner door**
If the upper inner doors are opened you can hit your head on the inner doors.

- Only open one inner door at a time.
- Immediately close the inner door after completing your work.



**CAUTION! Risk of fingers being crushed when closing the inner doors.**
Incorrect handling of the inner doors can cause crushing injuries.

- Only grasp the inner doors by the handle.
- Always open only one inner door.



**NOTICE! Longer pull-down time because the device is loaded too early**
The pull-down time is the time needed for the device to cool the interior from the ambient temperature to the set temperature.
If you load the device during the cooling phase, the pull-down time will be longer. The pull-down time specified in the technical data cannot be achieved.

1. Allow the device to cool down from ambient temperature to the set temperature.
2. Place the samples in the device after the device has reached the set temperature.



The interior temperature of the device increases when loading it:
- Outer and inner doors are open.
- The sample temperature differs from the interior temperature.

- To minimize the temperature increase in the interior, load the device step by step.

Prerequisites
- Racks and accessories have been placed in the compartments.
- Device, racks and accessories have reached the set temperature.

1. Open the outer door.
2. Open the inner door of the compartment in which you want to place the samples.
3. Place the samples in the device.
   Information on the maximum carrying capacity of the inner shelves can be found in the technical data.
4. Close the inner door.
5. Close the outer door.

## 5.3 Locking the outer door

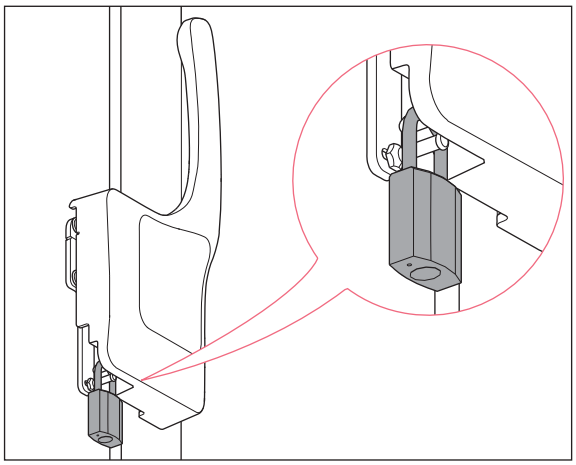
**CAUTION! Risk of hand being crushed when closing the outer door**

- Do not place your fingers between the device and the outer door.
- Lock the door handle slowly and carefully.

**NOTICE! Damage to the door handle due to incorrect closing of the outer door.**
Closing the outer door while the door handle is in the upright position damages the door handle.

1. Pull the door handle forward and down first.
2. Then close the outer door.

If the door handle is not properly engaged and there is negative pressure in the interior, the outer door is closed. However, as soon as the negative pressure is compensated, the outer door opens again.



1. Press the door handle forward and down.
2. Close the outer door.
3. Lock the outer door. To do so, press the door handle up.
   Automatic pressure compensation takes place as soon as the outer door is closed.
4. Check if the door handle is engaged in locked position.
5. Mount the padlock and lock it, where applicable.

## 5.4 Pressure compensation

If you leave the outer door open for a while, the temperature in the interior will increase. After closing the outer door, the air in the interior will cool down and the atmospheric pressure will decrease. Negative pressure may occur in the device. If negative pressure occurs, the outer door can no longer be opened.

Pressure compensation takes place automatically to reestablish ambient pressure in the device. Pressure compensation starts as soon as the outer door is closed.

- To speed up pressure compensation, press the *auto vent* valve.
  With the *auto vent* valve, pressure compensation takes 1 min – 2 min.

## 5.5 Switching off the device



**WARNING! Risk of electric shock due to damage to the device or to the 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 the event 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 isolating device intended for this purpose (e.g., the emergency switch in the laboratory).

### 5.5.1 Disabling the back-up circuit

Tools and auxiliary equipment
- Key for the switch locking plate

1. Unlock the switch locking plate and remove the cover.
2. Switch off the battery switch.

The back-up circuit is disabled.
- No alarm is triggered in the event of a mains/power outage.
- During a mains/power outage, there will be no power supply to the control panel.
- The battery is not charged.

### 5.5.2 Disconnecting the device from the voltage supply

Tools and auxiliary equipment
- Key for the switch locking plate

1. Unlock the switch locking plate and remove the cover.
2. Switch off the battery switch.

The back-up circuit is disabled.
- No alarm is triggered in the event of a mains/power outage.
- During a mains/power outage, there will be no power supply to the control panel.
- The battery is not charged.

3. Switch off the mains/power switch.

### 5.5.3 Disconnecting the device from the cooling water supply

- Close the water inlet.

# 6 Operating control overview

## 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 Operating the user interface

The touch screen is designed to be operated with your fingers only without the need for tools. You can wear laboratory gloves made of nitrile or latex. Alternatively, you can also use a stylus, 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.

## 6.3 Symbols

| Symbol | Description |
|---|---|
| | Enter data. |
| | Select filters.<br>If a filter is active, the symbol will be highlighted in blue. |
| | Reset the parameters to the factory settings. |
| | Close the window. |
| | Outer door |
| | Ambient temperature |
| | Device's interior temperature |
| | The offset is activated.<br>Open the *Offset* area. |
| | Open the user administration.<br>Log in as a user. |
| | Open the *Alarms* area.<br>Activate hazard messages. Check alarm limits and warning limits. |
| | The signal tone is deactivated. |

| Symbol | Description |
|---|---|
|  | Open the *Events* area. |
|  | Alarm message |
|  | Warning message |
|  | Notification |
|  | Call up unacknowledged messages.<br>The number displayed is the number of unacknowledged messages. |
|  | Acknowledge the current message in the information bar. |
|  | Acknowledge all messages in the information bar. |
|  | The message has not been acknowledged. |
|  | The message has been acknowledged. |
|  | Open the *Charts* area. |
|  | Select the time span to be shown in the chart.<br>The number displayed is the selected time span. |
|  | Open the *Export* area.<br>Export data. |
|  | The function is active. |
|  | The function is not active. |
|  | Display the last used parameters. |

## 6.4 Home screen overview

### 6.4.1 Home screen

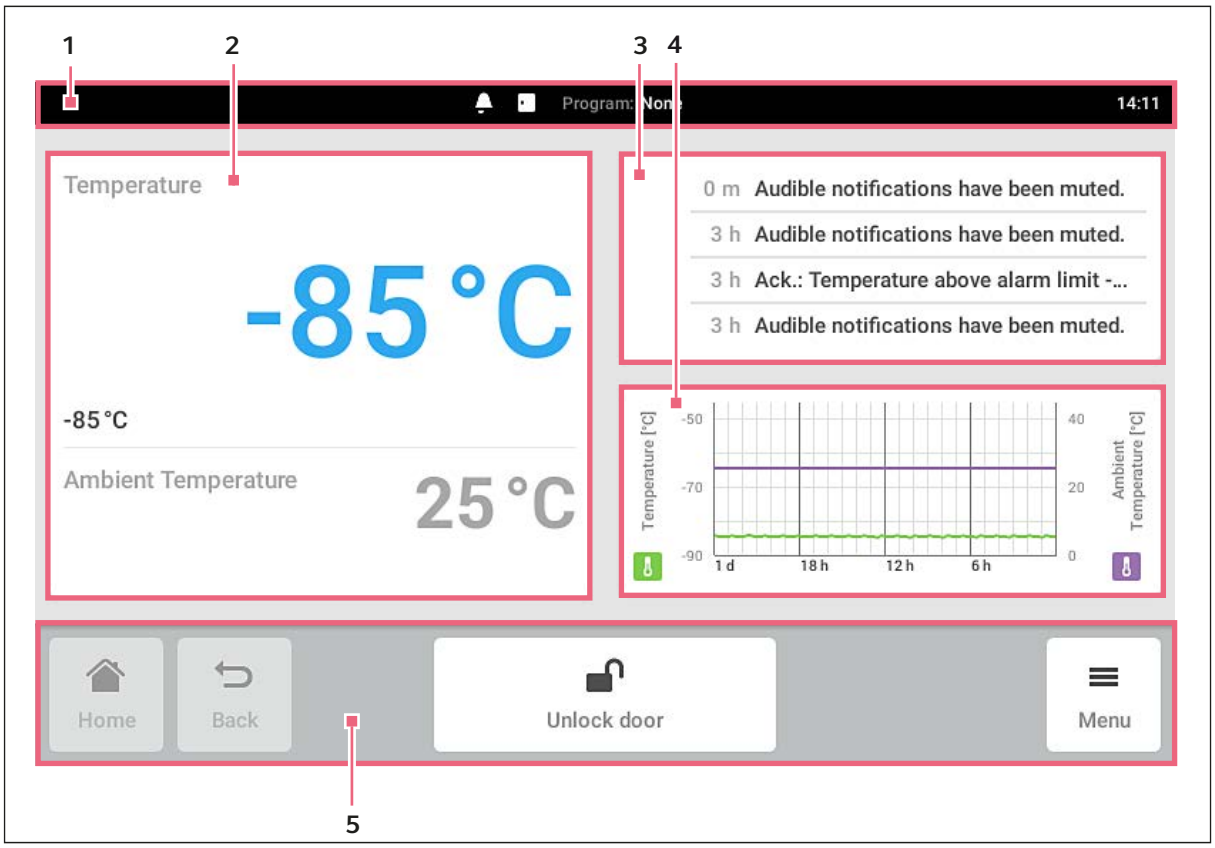



Fig. 6-1: Home screen

**1 Status bar**
Information about the operator, time, device status
Display and editing of messages

**2 Function area**
Display of the interior's set temperature and actual temperature
Display of the ambient temperature at the refrigeration system

**3** ***Events***
Log

**4** ***Chart***
Chart with the refrigeration system's interior and ambient temperatures

**5 Toolbar**
Buttons for navigation and operation of the device

### 6.4.2 Function area

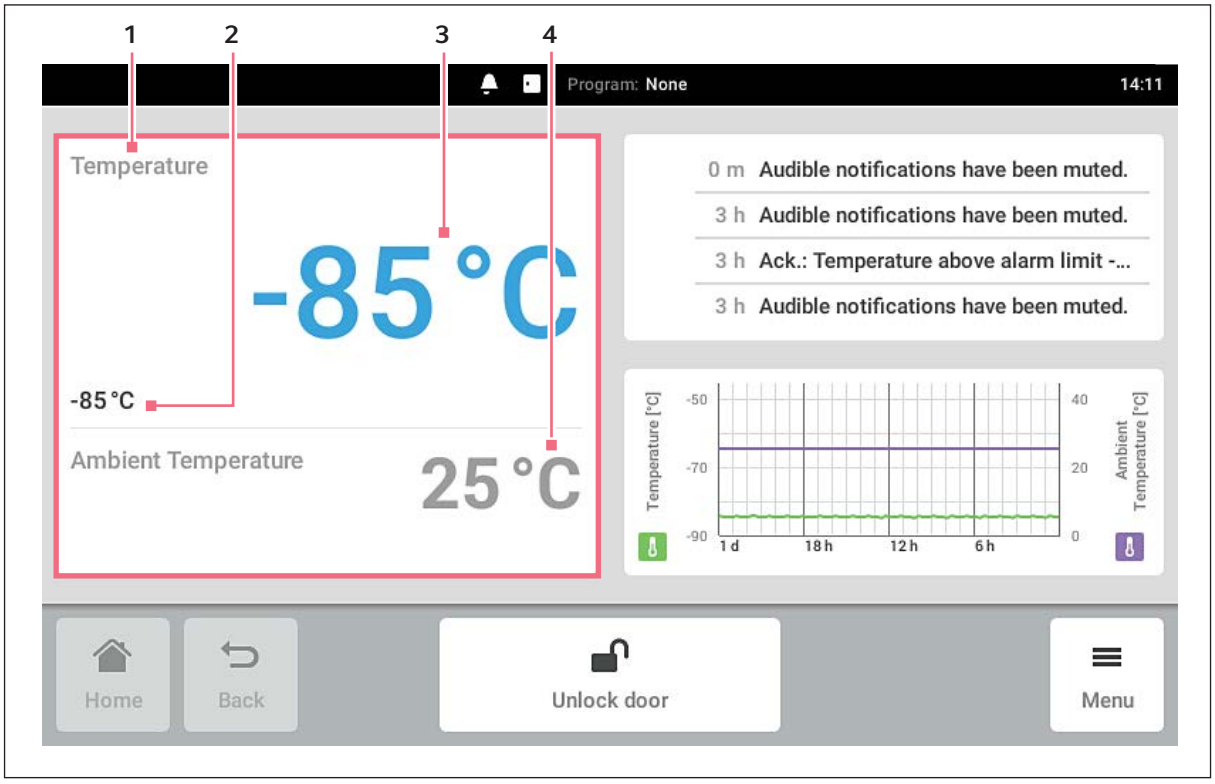



Fig. 6-2: Function area

**1 Name of the function**

**2 Set value of the function**
An editable set value of a function is displayed in small black numbers.

**3 Actual value of the function**
The function is monitored and can be edited. The actual value is displayed in large blue numbers.

**4 Measured value of a function**
The function is monitored and cannot be edited. The actual value is displayed in large gray numbers.

### 6.4.3 Toolbar

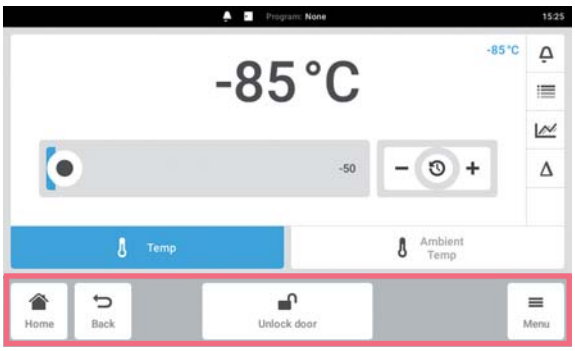
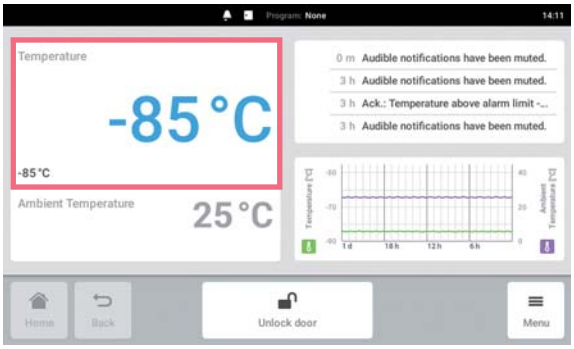



Fig. 6-3: Toolbar

- Tap the *Home* button.
  The home screen appears.
- Tap the *Back* button.
  The previous window appears.
- Tap the *Menu* button.
  The menu appears. With the menu items, functions such as *Settings*, *Alarms* or *Event Log* can be opened.

## 6.5 Function control

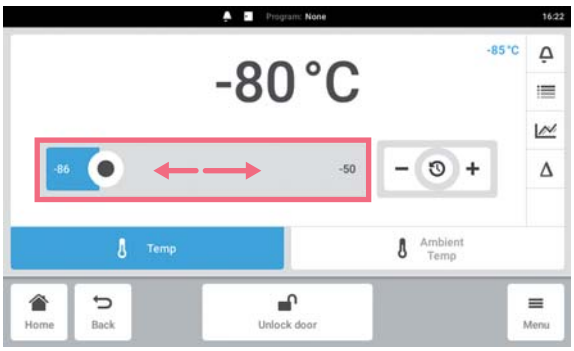
### 6.5.1 Selecting the function




- Tap the function in the function area.
  The window for setting the set value appears.

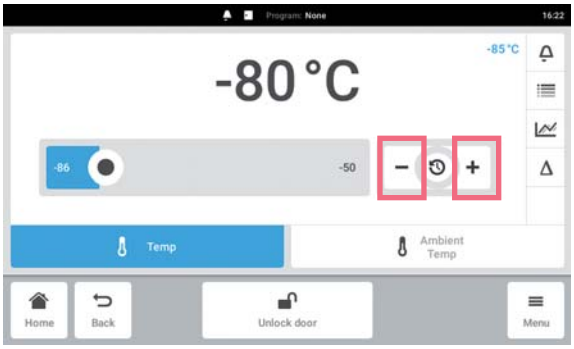
### 6.5.2 Setting the set value

**Setting the set value with the slider**



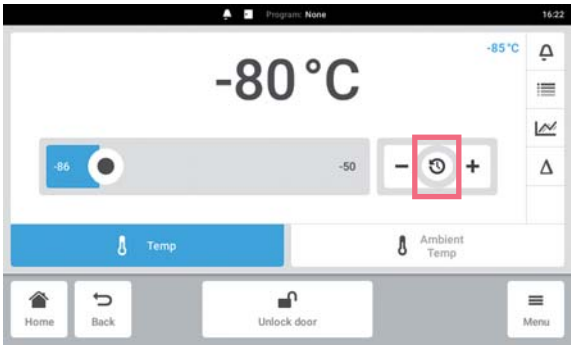

- Tap the slider and drag it to the right or to the left.
  The set value changes.

### Changing the set value incrementally with the fine adjustment



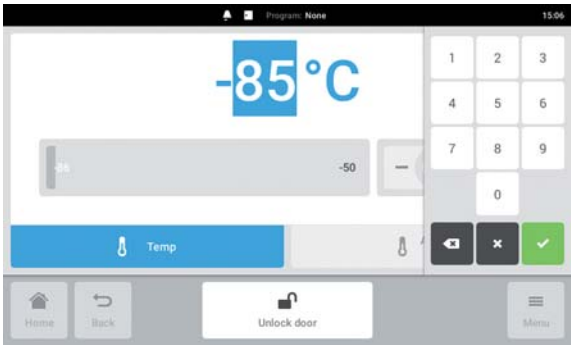

- Tap the + button.
  The set value is incrementally increased.
- Tap the - button.
  The set value is incrementally decreased.

### Selecting the last used set value



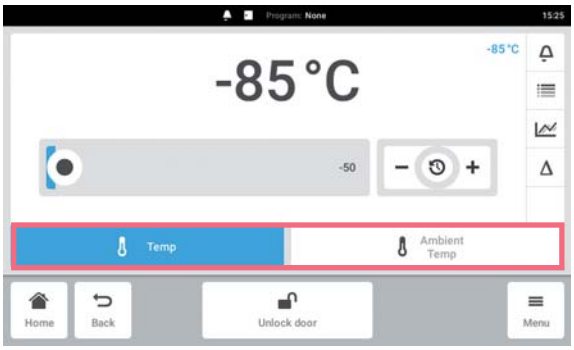

1. Tap into the center of the fine adjustment.
   A list with the last used set values is displayed.
2. Select the set value.

**Entering the set value with the number pad**




1. Tap the set value.
   The number pad appears.
2. Enter the new set value.
3. Confirm your entry.
   The entry is completed. The number pad disappears.

## 6.5.3 Switching between functions




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

## 6.6 Editing warnings and alarms

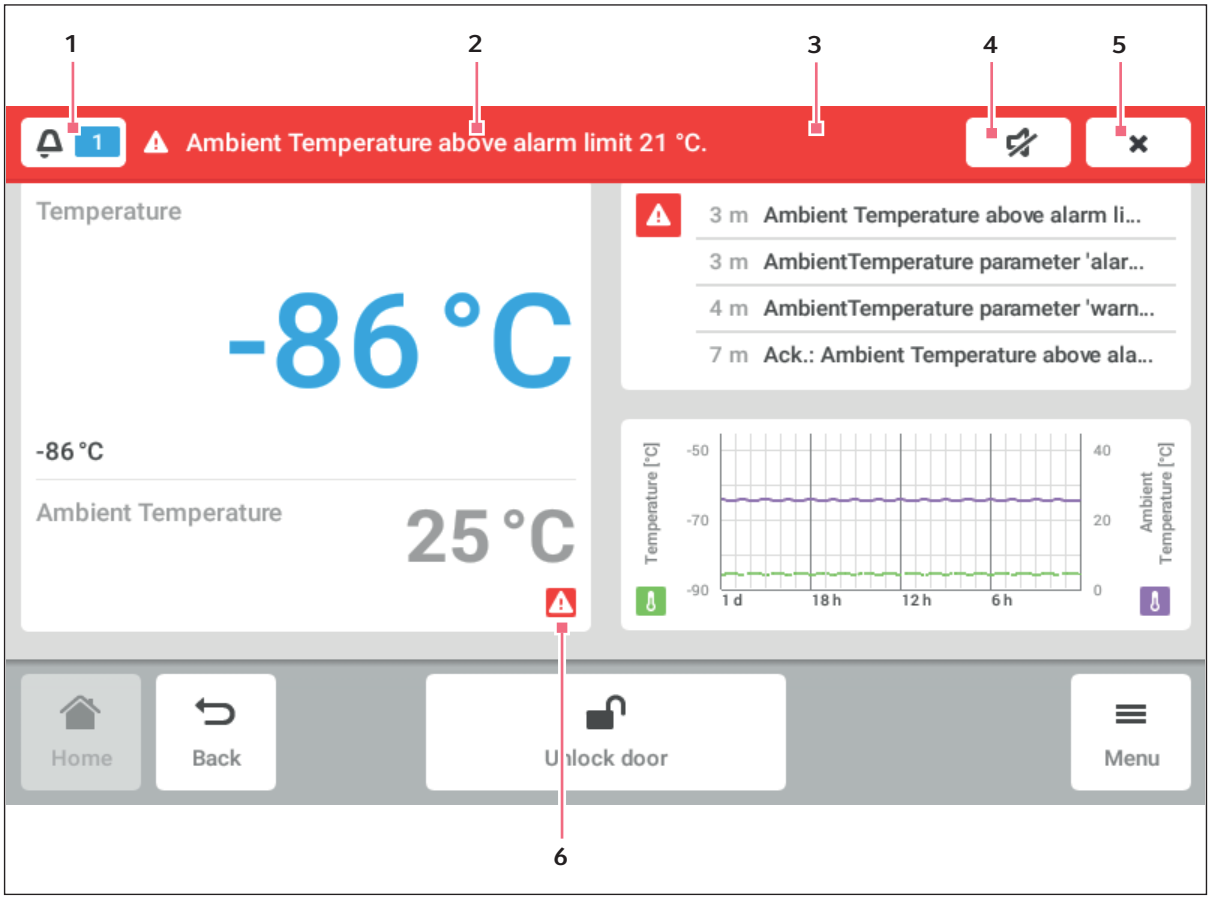



Fig. 6-4: Home screen with alarm

**1 Number of unacknowledged messages**

**2 Message**
Last unacknowledged message

**3 Information bar**
The color of the information bar shows the danger level.
Red = alarm, yellow = warning

**4 Deactivate the signal tone**
If the hazardous situation is still not remedied after 5 minutes, the signal tone will sound again.

**5 Acknowledge the current message**
The current message will be removed from the information bar when it has been acknowledged. When all messages have been acknowledged, the information bar will disappear. The status bar will then appear.

**6 Triangle**
The triangle appears in the function area in which a hazard situation is present.
The triangle's color indicates the danger level.
Red = alarm, yellow = warning
If the hazard situation is remedied, the triangle will disappear.

All hazard signals will disappear when the hazard situation is remedied. Only the message will remain in the information bar until it is acknowledged.

- To call up all messages that have not yet been acknowledged, tap the symbol (1) on the left side.

  The log displays all messages that have not been acknowledged. The *acknoledgement status > not acknowledged* filter is active.
- To call up the displayed message, tap the message (2) itself.
- To deactivate the signal tone, tap the loudspeaker symbol (3).
- To acknowledge the displayed message, tap the check symbol (4).

  The message will be removed from the information bar.

# 7 The *Menu* area

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

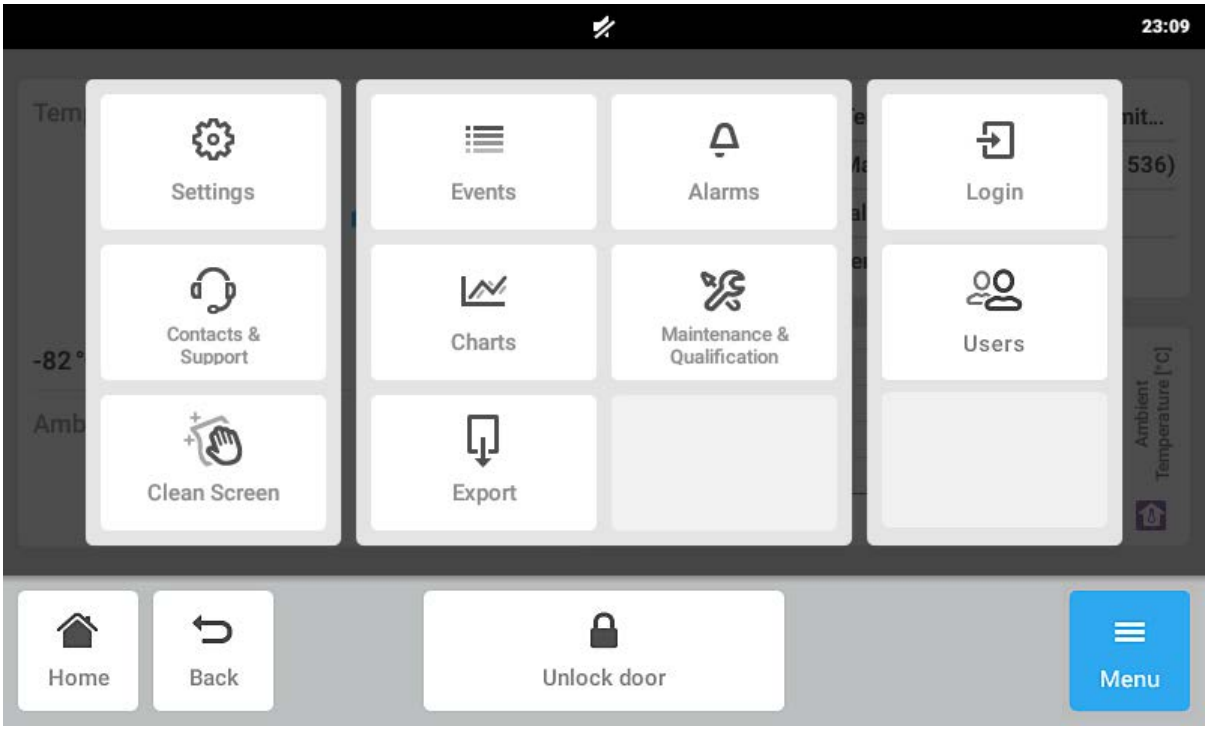



Fig. 7-1: Menu items

## 7.1 *Alarms*

Hazard messages can be activated in this area. Alarm limits as well as warning limits can be defined.

The following hazard messages can be configured:
- *Temperature*: Interior temperature
- *Ambient Temperature*: Ambient temperature at the refrigeration system
- *Door*: Outer door

The mains/power outage, battery and system error hazard messages are always active and not configurable.

### 7.1.1 Configuring the *Temperature* and *Ambient Temperature*

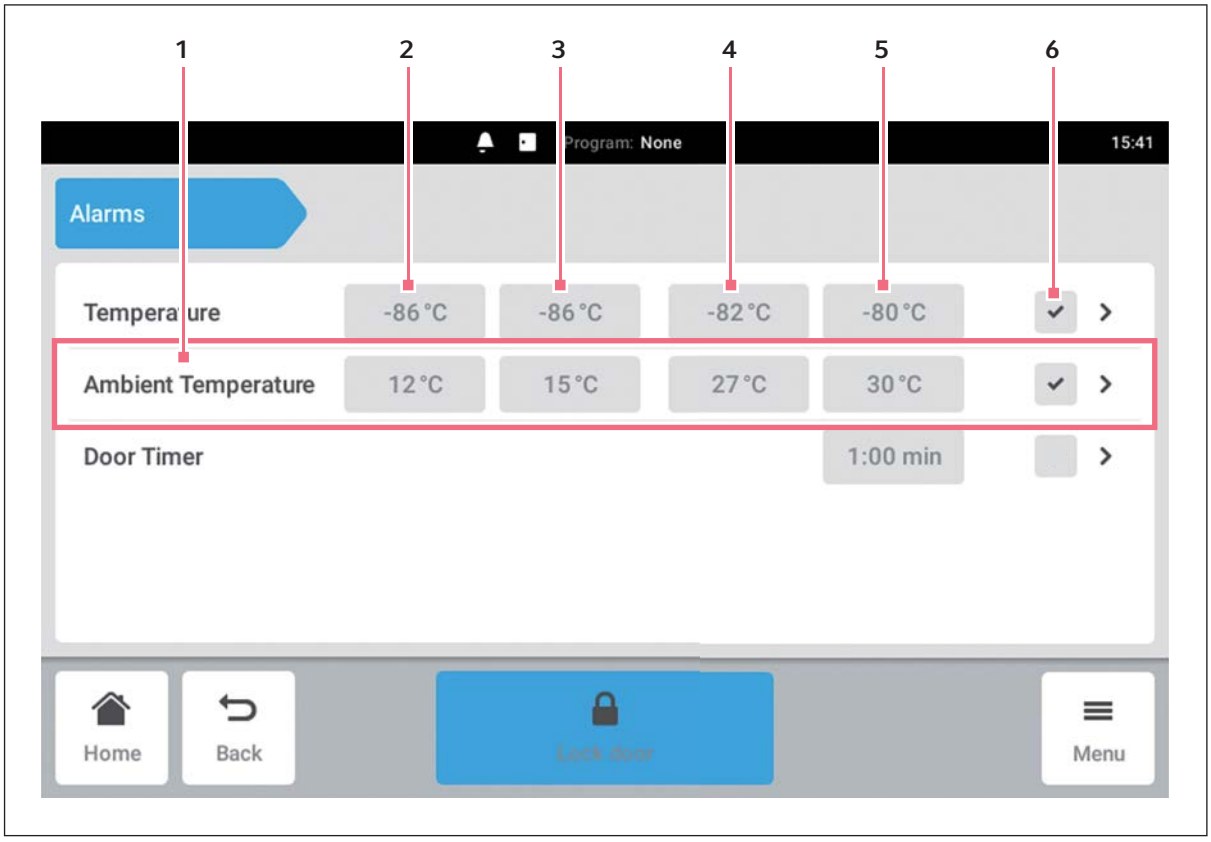



Fig. 7-2: *Alarms* window

**1 Overview of a hazard message**
**2 Alarm limit for the minimum temperature**
**3 Warning limit for the minimum temperature**
**4 Warning limit for the maximum temperature**
**5 Alarm limit for the maximum temperature**
**6 Hazard message is activated or deactivated.**

1. Tap *Menu* > *Alarms*.
2. Tap *Temperature* or *Ambient Temperature*.
   An overview of the hazard message appears.

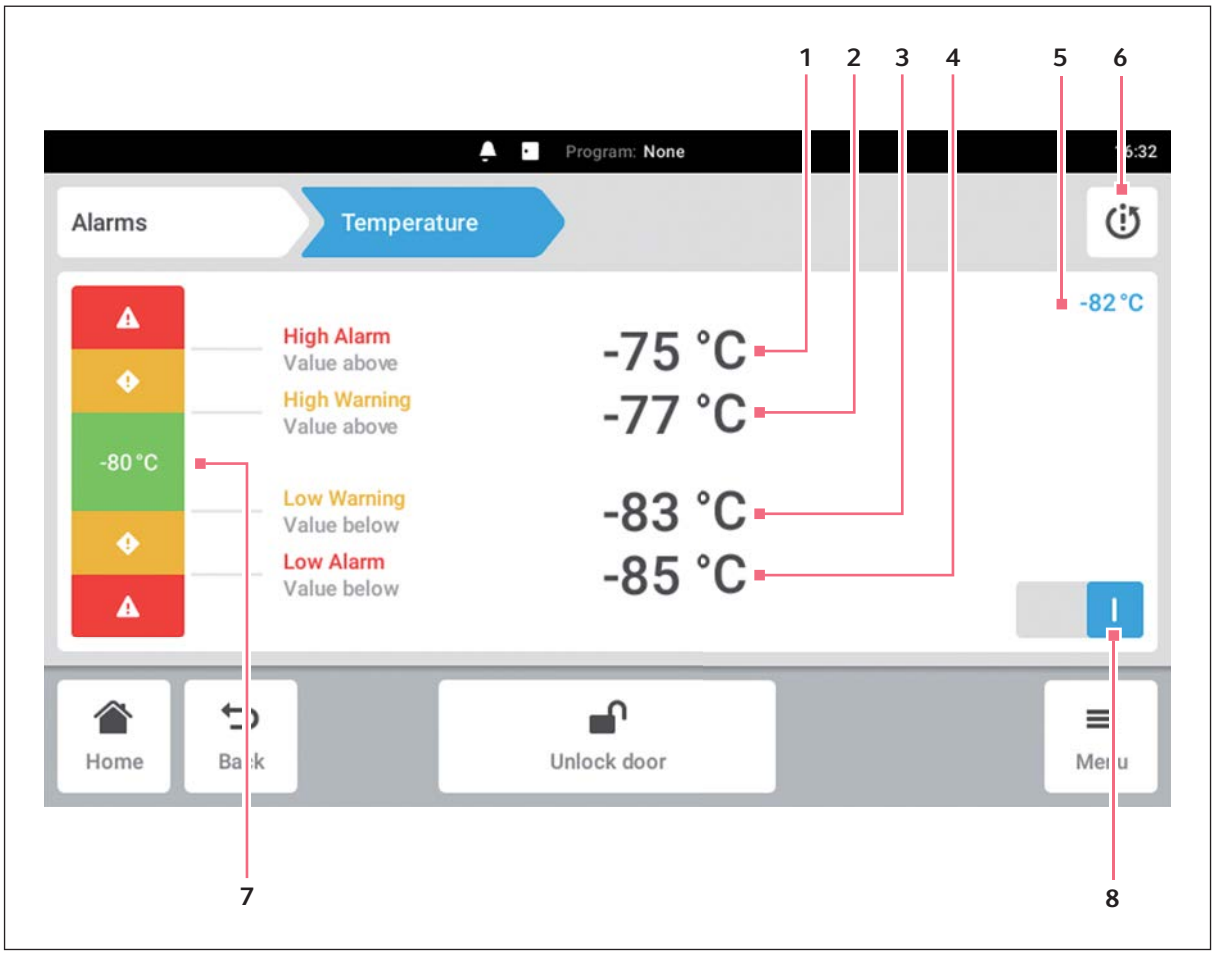



Fig. 7-3: Overview of the *Temperature* hazard message

1 **Alarm limit for the maximum temperature**

2 **Warning limit for the maximum temperature**

3 **Warning limit for the minimum temperature**

4 **Alarm limit for the minimum temperature**

5 **Interior actual temperature**

6 **Factory settings symbol**
Reset values to factory settings.

7 **Interior set temperature**

8 **Activate or deactivate the hazard message.**

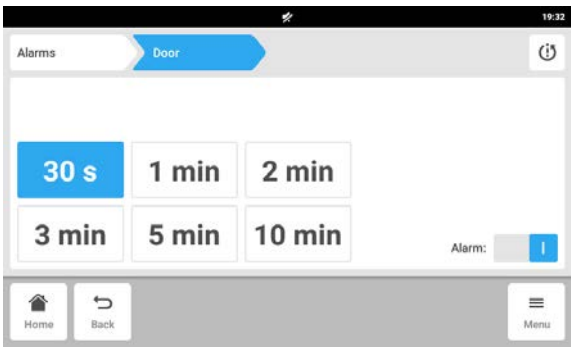
3. Activate the hazard message with the *OI* switch.
4. Define the alarm limits and warning limits. Tap the appropriate field to do this.
5. Enter and confirm the new value.

   If the current value exceeds the warning limit, a warning will be triggered.
   If the current value exceeds the alarm limit, an alarm will be triggered.




In the event of a hazard message, the exceeded value will be highlighted in red in the *Alarms* window.

### 7.1.2 Configuring *Door*




1. Tap *Menu* > *Alarms* > *Door* .
2. Activate the alarm with the *OI* switch.
3. Select the time delay after which an alarm is triggered.

## 7.2 *Charts*

Data is displayed in chart form in this area.

The chart has 2 different y-axes, each with a different scale. This allows it to show 2 functions. A function has the same color as the scale it has been assigned. The time is shown on the x-axis.

The following functions are displayed:
- Interior temperature
- Ambient temperature at the refrigeration system




Fig. 7-4: Chart

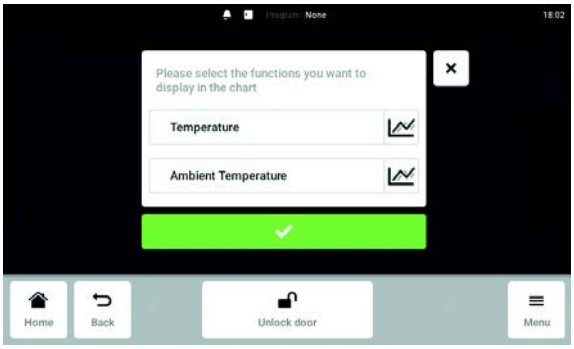
**1 Function symbol**
Select the function to be shown in the chart.

**2 Time span symbol**
Select the time span to be shown in the chart.

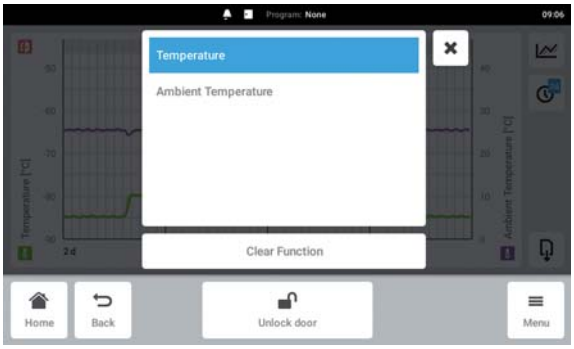
**3 Name of the function shown.**

**4 Export button**
Export data.

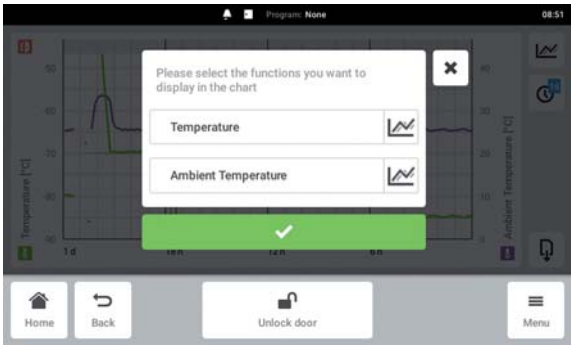
### 7.2.1 Selecting functions




- Tap *Menu* > *Charts*.
- Tap the Function button.
- To select the functions for the left y-axis, tap the upper line.
- To select the functions for the right y-axis, tap the lower line.
  A window with the available functions appears.

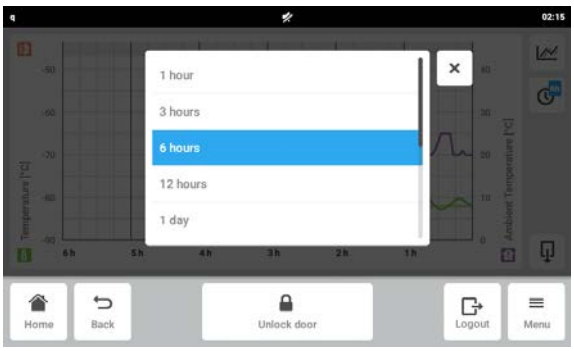



- Select the function.
  The function appears in the tapped line.




- Confirm your selection.
  The function is displayed in the selected y-axis.

### 7.2.2 Selecting the time span




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

### 7.2.3 Displaying the chart's measured values




1. Tap *Menu* > *Charts*.
2. To display numerical measured values, select a defined time.
3. Tap the corresponding point in the chart.
   The measured values of all functions are displayed.

### 7.2.4 Exporting charts

1. Tap *Menu* > *Charts*.
2. Tap *Export* (see *Export on p. 68)*.

## 7.3 *Events*

This area lists the device's messages. You can filter, edit and export messages.

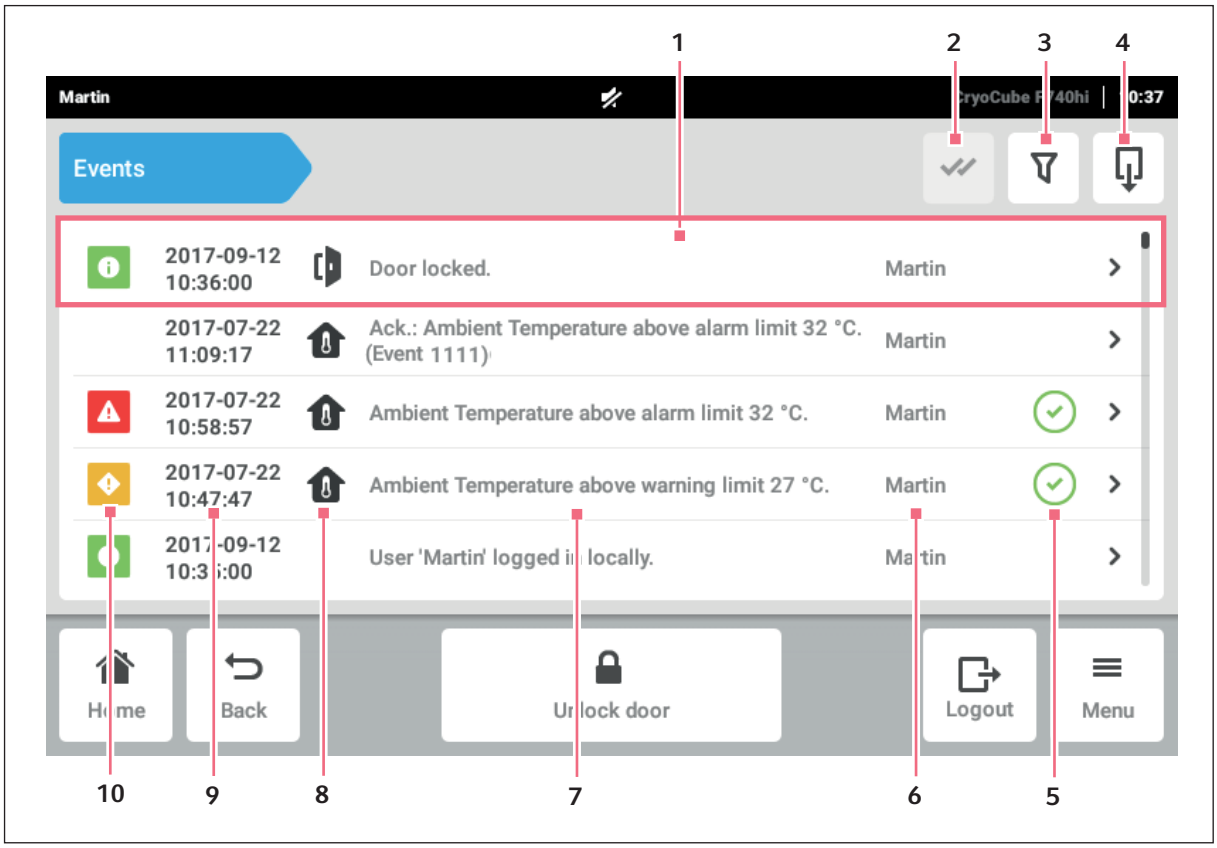



Fig. 7-5: *Events* window

1 **Overview of a message**

2 **Acknowledge all alarms in the information bar.**

3 **Call up filters.**
If a filter is active, the symbol will be highlighted in blue.

4 **Export *Events*.**

5 **Acknowledgement status**
The message has been acknowledged or must still be acknowledged.

6 **User that was logged in during this time.**

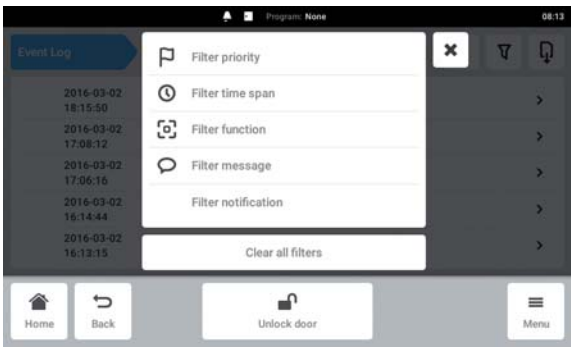
7 **Message text**

8 **Symbol for the exceeded threshold**

9 **Date and time of the message**

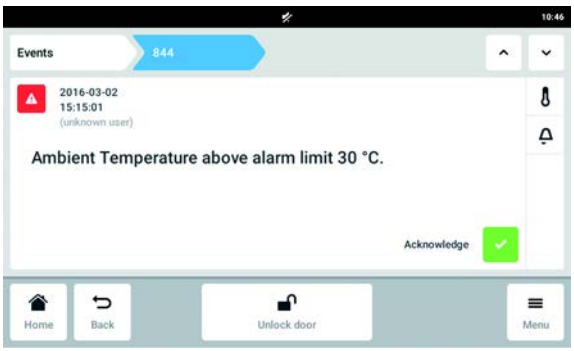
10 **Message status**

### 7.3.1 Filtering *Events*




- Tap *Menu* > *Events*.
- Tap the Filter button.
- Select filters.
  If a filter is enabled, a checkmark appears next to the filter.
  In the *Events* window, the filter symbol is highlighted in blue.
- To disable all the filters, tap *Clear all filters*.

### 7.3.2 *Events*Edit




1. To edit a message, tap the line with the message.

The following parameters are displayed:

- Message number
- Status
- Date and time
- User that was logged in at the time of the message.
- Message text
- Button to acknowledge the message
- Symbols to call up corresponding parameters

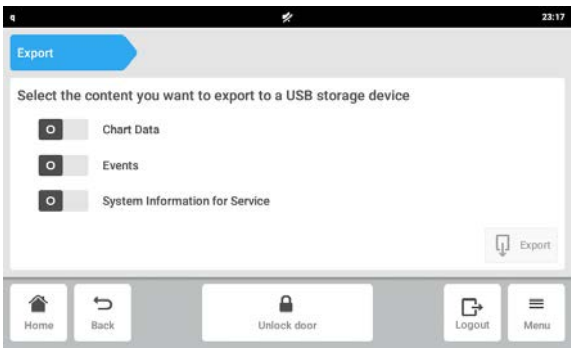
2. To acknowledge a message, tap *Acknowledge*.
   The button's appearance will change.
3. To check the parameters of the message, tap the symbols to the right.

### 7.3.3 Exporting *Events*.

- Tap *Menu* > *Events*.
- Tap *Export* (see *Export on p. 68)*.

## 7.4 *Export*

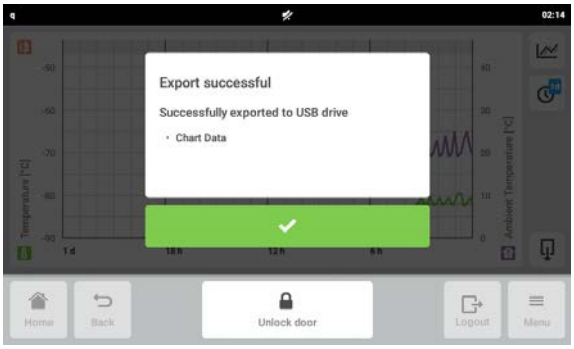
You can export charts, logs and data for service to a USB storage medium.




1. Connect a USB storage medium.
2. Tap *Menu* > *Export*.
3. Use the sliders to select data for export.
   Data shown in gray cannot be exported.
4. Tap *Export*.



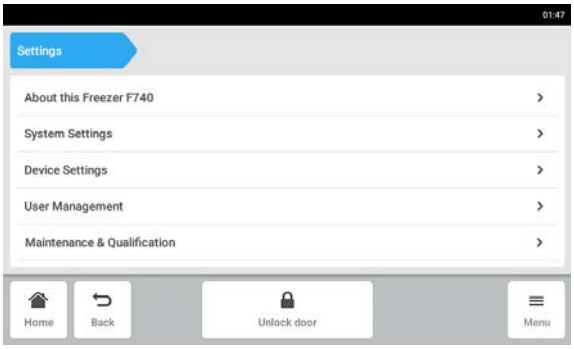

5. Confirm the connected USB storage medium.




6. Confirm the export.
7. Remove the USB storage medium.

## 7.5 *Settings*

This area provides you with information about the device. You can configure system and device settings and activate the user administration.

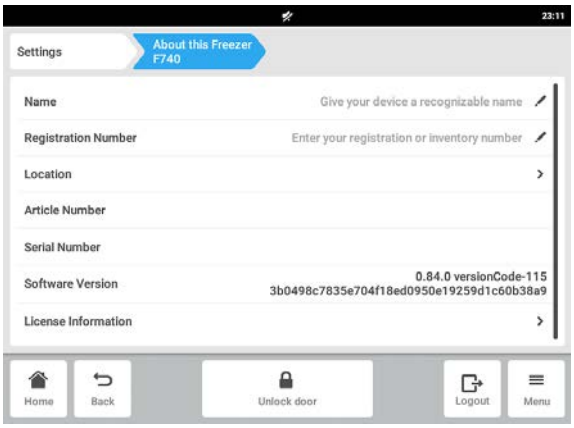



▸ Tap *Menu* > *Settings*.

The following parameters are available:

- *About this Freezer F740*: View or enter device information. View software licenses.
- *System Settings*: Configure the date, time and network.
- *Device Settings*: Configure hazard messages, the touch screen and the offset.
- *User Management*: Set up the user administration (see *User administration on p. 81)*.
- *Maintenance & Qualification*: Define and edit recurring tasks.

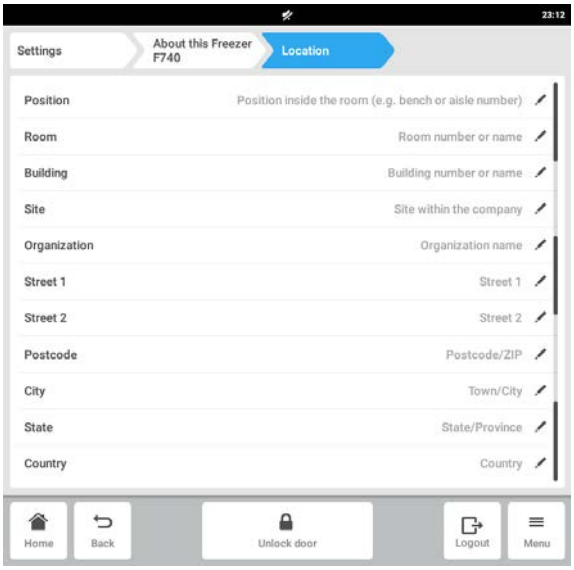
### 7.5.1 *About this Freezer F740* menu item




▸ Tap *Menu* > *Settings* > *About this Freezer F740*.
The following parameters are available:

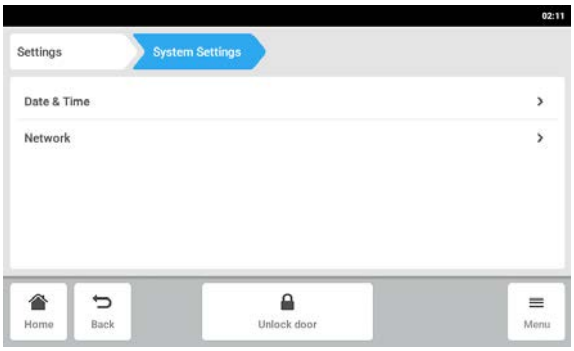
- *Name*: Enter the device name.
- *Registration Number*: Enter the inventory number of the device.
- *Location*: Enter the location of the device.
- *Article Number*: View the article number of the model.
- *Serial number*: View the serial number of the device. The serial number is also located on the name plate.
- *Software Version*: View the user software version.
- *License Information*: View information on software licenses.

### *Location* - Entering the location of the device




- Tap *Menu* > *Settings* > *About this Freezer F740* > *Location*.
- Enter information about the location of the device.

## 7.5.2 *System Settings* menu item



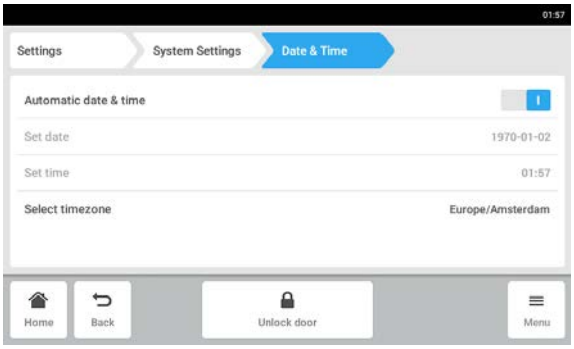

- Tap *Menu* > *Settings* > *System Settings*.
  The following parameters are available:
  - *Date & Time*: Enter date and time.
  - *Network*: Set the parameters for network operation.

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

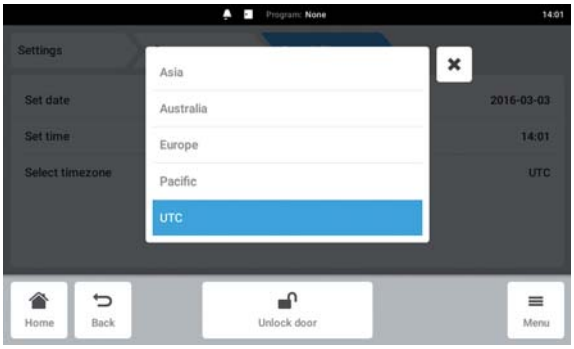
Prerequisites

- The device is connected to the network.
- A time server is available.
- On devices that are monitored via the VisioNize core software, the current local time and the current date must be set.

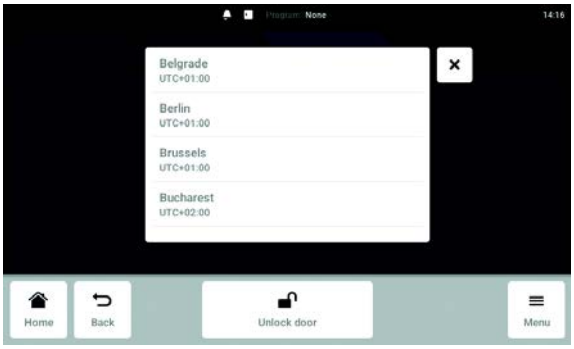
Changing the date, time or time zone may temporarily affect the appearance of the chart. The log may be incorrectly sorted.




- Tap *Menu* > *Settings* > *System Settings* > *Date & Time*.
- Activate the *Automatic date & time* switch.
- Tap *Select timezone*.



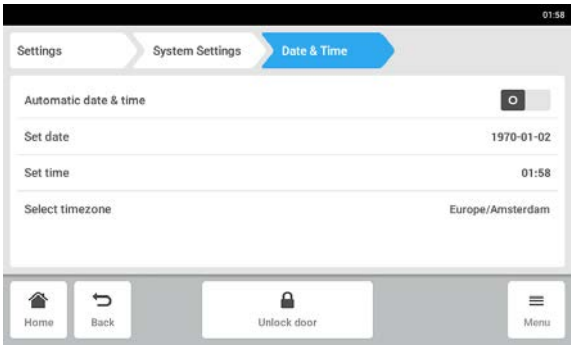

- Select the continent.
  UTC = Coordinated Universal Time
  (Coordinated universal time)



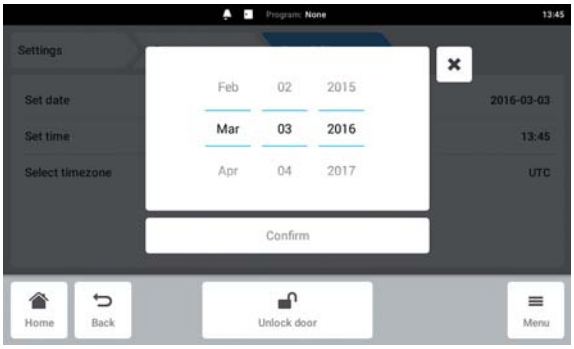

- Select the time zone.

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

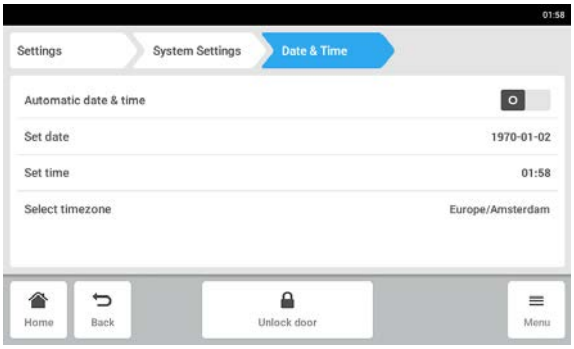
Changing the date, time or time zone may temporarily affect the appearance of the chart. The log may be incorrectly sorted.



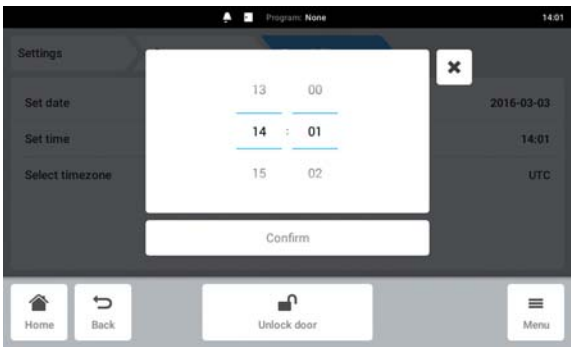

- Tap *Menu* > *Settings* > *System Settings* > *Date & Time*.
- Deactivate the *Automatic date & time* switch.
  The *Set date* and *Set time* parameters will become active.
- Tap *Set date*.



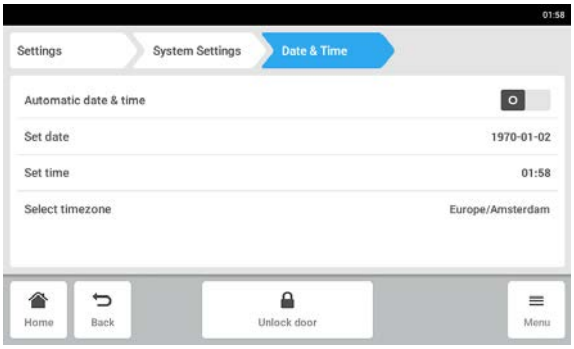

- Set the current date.
- Tap *Confirm*.



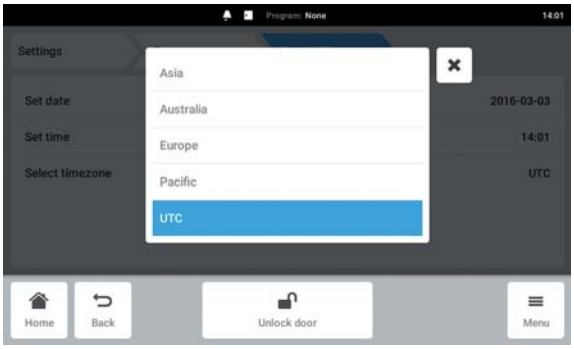

- Tap *Set time*.



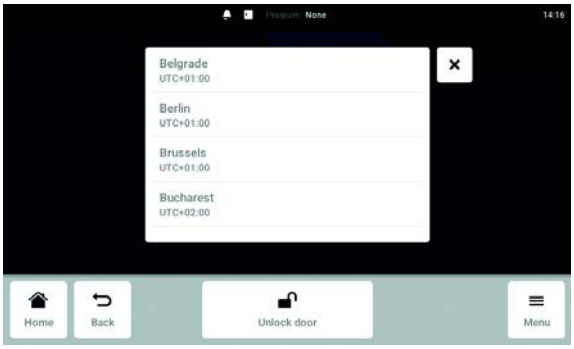

- Set the time.
- Tap *Confirm*.




- Tap *Select timezone*.

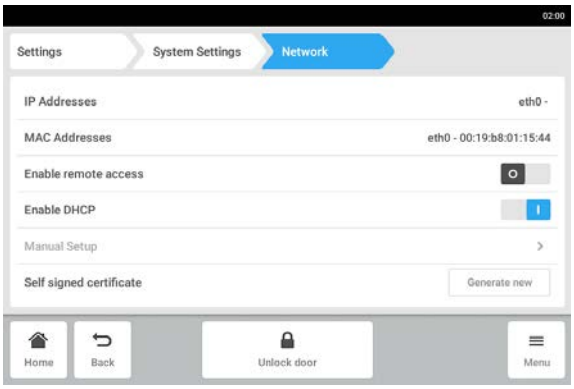



- Select the continent.
  UTC = Coordinated Universal Time
  (Coordinated universal time)



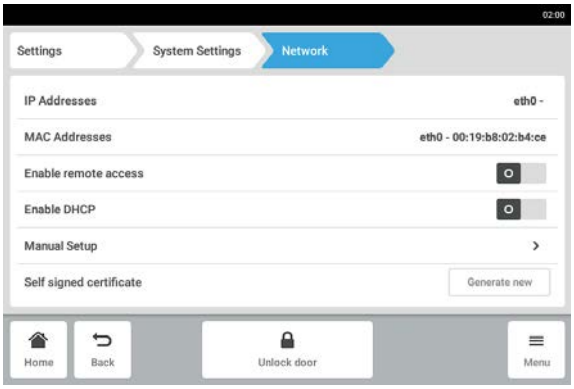

- Select the time zone.

## *Network* – Network operation settings



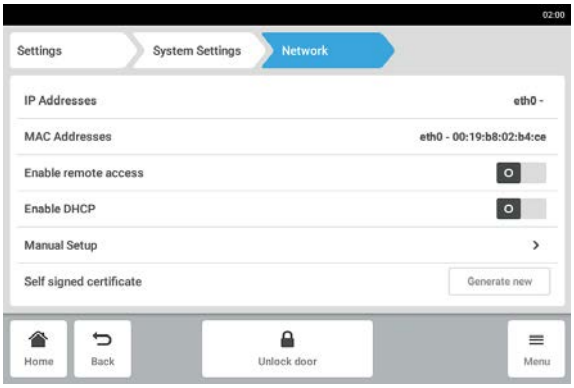

- Tap *Menu* > *Settings* > *System Settings* > *Network*.
  The following parameters are available:
  - *IP Addresses*: Current IP address of the device
  - *MAC Addresses*: Address by which the device can be uniquely identified in the network.
  - *Enable remote access*: Enable device communication with VisioNize.
  - *Enable DHCP*: The device uses an IP address assigned to it by a DHCP server.
  - *Manual Setup*: Configure the network manually.
  - *Self signed certifcate*: Certificate with which the device identifies itself in the network.

### *Network* – Configuring the network automatically

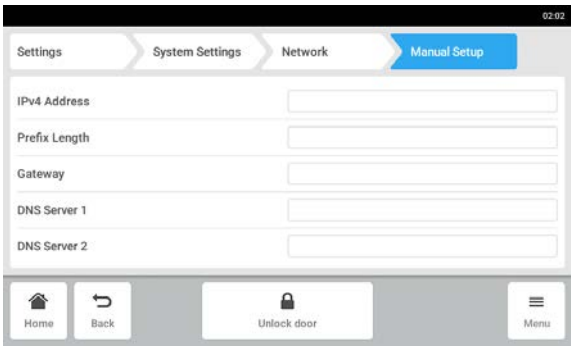



- Tap *Menu* > *Settings* > *System Settings* > *Network*.
- Activate the *Enable remote access* switch.
  The device will automatically connect to the network.

### *Network* – Configuring the network manually

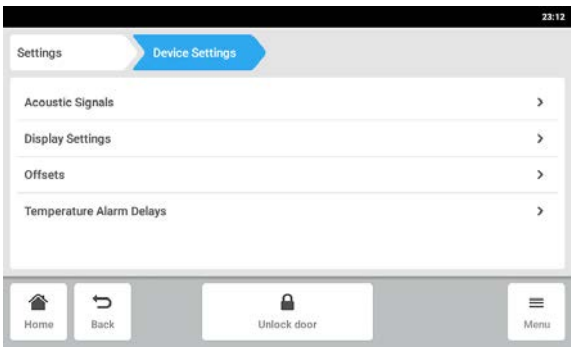



- Tap *Menu* > *Settings* > *System Settings* > *Network*.
- Deactivate the *Enable DHCP* switch.
  The *Manual Setup* parameter will become active.
- Tap *Manual Setup*.



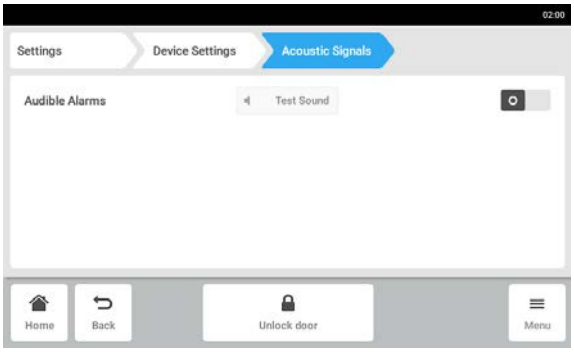

- Enter and confirm parameters.

### 7.5.3 *Device Settings* menu item



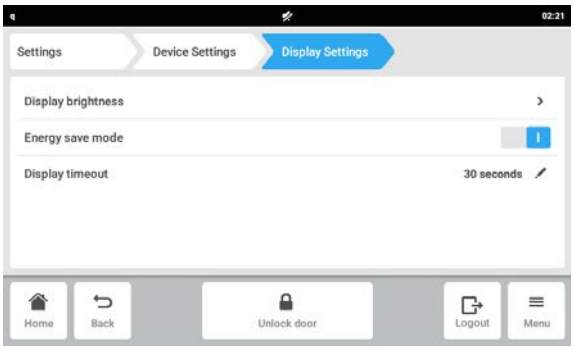

- Tap *Menu* > *Settings* > *Device Settings*.
  The following parameters are available:
  - *Acoustic Signals*: Configure the signal tone.
  - *Display Settings*: Configure the touch screen.
  - *Offset*: Enter the offset for the interior set temperature.
  - *Temperature Alarm Delays*: Enter which systems the hazard message is forwarded to.

*Acoustic Signals* – **Configuring the signal tone**



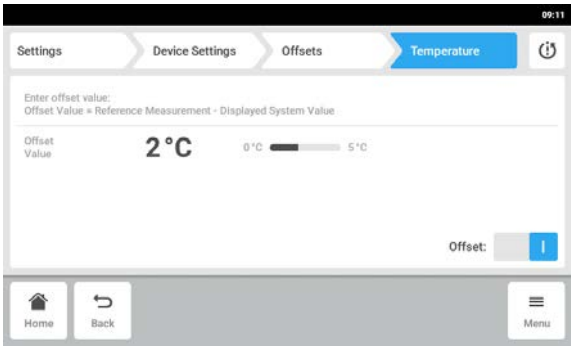

- Tap *Menu* > *Settings* > *Device Settings* > *Acoustic Signals*.
- To switch on the signal tone, activate the *O I* switch.
- To test the signal tone, tap *Test Sound*.

*Display Settings* – **Configuring the touch screen**




- Tap *Menu* > *Settings* > *Device Settings* > *Display Settings*.
- Tap *Display brightness*.
- Configure the touch screen's brightness.
- Activate the *O I* switch.
  The *Display timeout* parameter will become active.
  Activating the *Display timeout* function saves energy. The touch screen's service life will be extended.
- Tap *Display timeout*.
- Select the time after which the display will be dimmed.

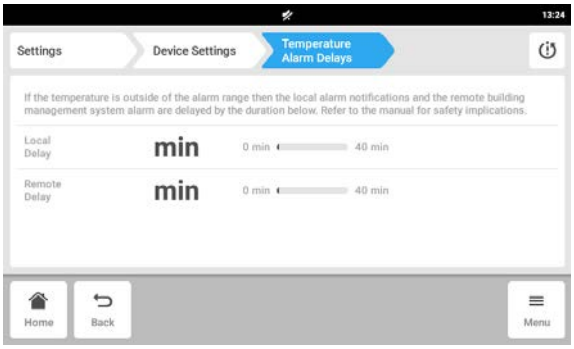
### *Offset* – Entering the offset for the interior set temperature




- Tap *Menu* > *Settings* > *Device Settings* > *Offset*.
  You can set an offset between 0 °C and -5 °C for the set temperature value in the interior. The offset is added to the set temperature.
  The device temperature cannot fall below -86 °C.
- Tap *Temperature*.
- Activate the *Offset* switch.
- Tap *Offset Value*.
- Enter and confirm the offset.

### *Temperature Alarm Delays* – Entering the delay time for the "interior temperature"

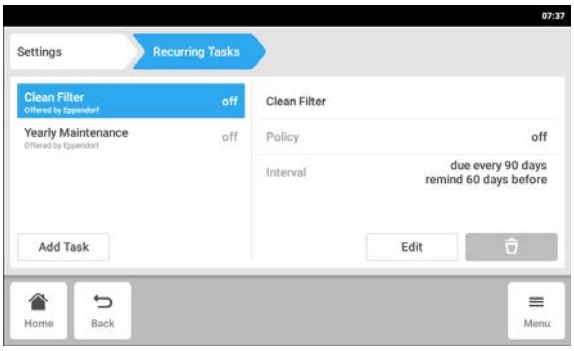
Example: You open the outer door for a longer time to load the device. The temperature inside the device increases. The alarm limit is exceeded. If you have defined a delay time, the alarm will not be triggered immediately. It will only be triggered if the interior temperature still exceeds the alarm limit after the delay time has elapsed.



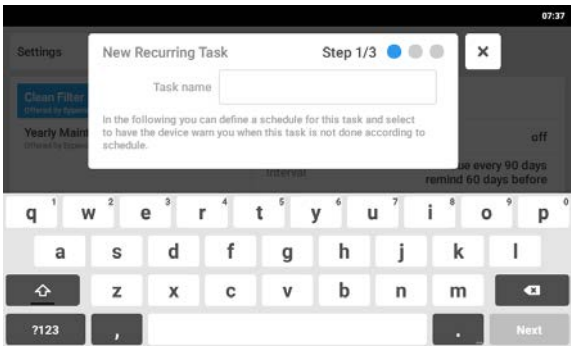

- Tap *Menu* > *Settings* > *Device Settings* > *Temperature Alarm Delays*.
- Tap *Local Delay*.
- Enter the time after which the device triggers the local hazard message.
  The factory setting is 30 min.
- Tap *Remote Delay*.
- Enter the time after which the device sends the hazard message to a building management system.
  The factory setting is 30 min.

### 7.5.4 *Maintenance & Qualification* menu item

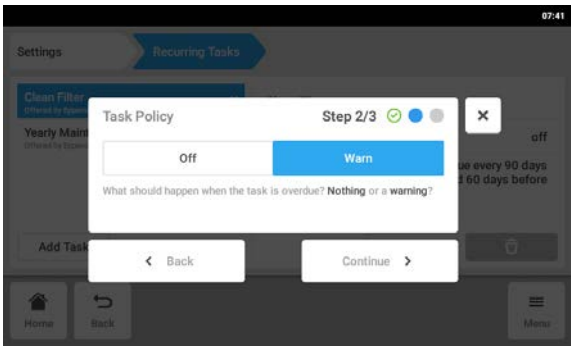
***Recurring Tasks* – Defining and editing recurring tasks**



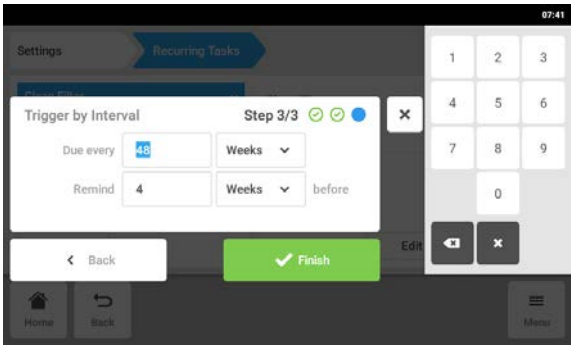

1. Tap *Settings* > *Maintenance & Qualification*.
2. Tap *Add Task*.




3. Enter the name of the task.
4. Tap the *Next* button.




5. Activate the warning.
6. Tap the *Continue* button.




7. Enter the time after which the device triggers the warning.
8. Tap *Finish*.
   The task has been saved.
9. To edit a defined task, mark the task and tap *Edit*.
   Edit the task as described from step 5 onward.

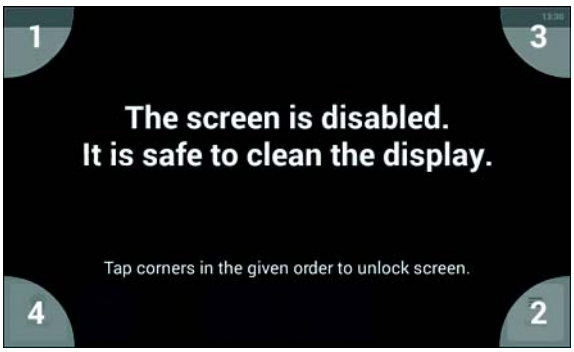
The following tasks have been defined by the Eppendorf AG. These tasks can be edited, but not deleted.

- *Clean Filter*: Cleaning the air filter
- *Yearly Maintenance*: Yearly maintenance of the device by an authorized service technician

## 7.6 *Clean Screen*

The touch screen can be locked to clean the touch screen.

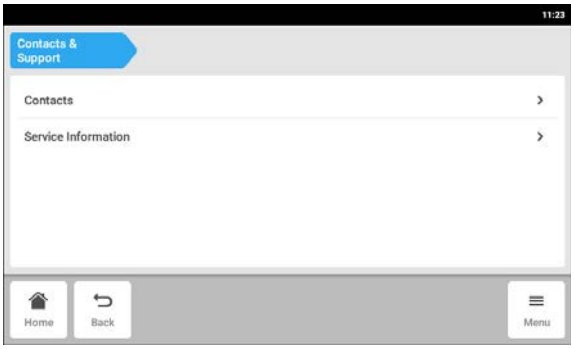
**Locking and unlocking the touch screen**




1. Tap *Menu* > *Clean Screen*.
   The touch screen is locked.
2. To unlock the touch screen, tap the numbered corners in their numerical sequence.
   The touch screen is unlocked. The previous screen is displayed.

## 7.7 *Contact and Support*

Information on your Eppendorf partner can be entered in this area. can receive information on contacting the authorized service.

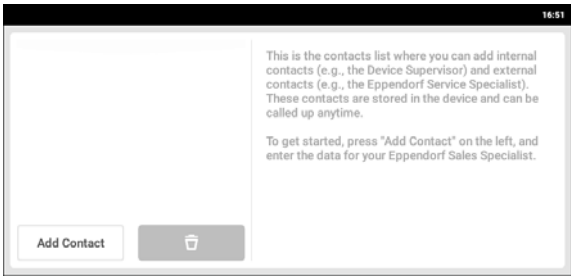



▸ Tap *Menu* > *Contact &Support*.

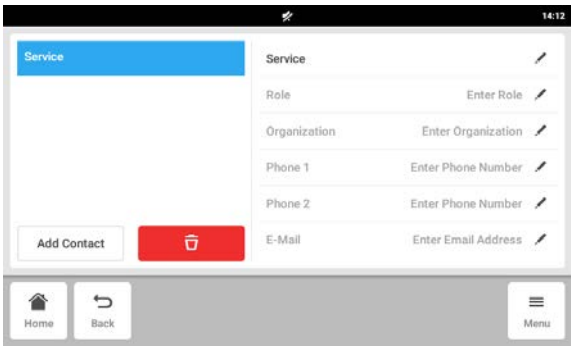
The following parameters are available:

- *Contacts*: Enter the addresses of the Eppendorf partners
- *Service Information*: Information on contacting the authorized service

***Contacts* menu item – Entering contact partners**




1. Tap *Menu* > *Contact & Support*.
2. Tap *Add Contact*.
3. Enter and confirm the name of the Eppendorf partner.



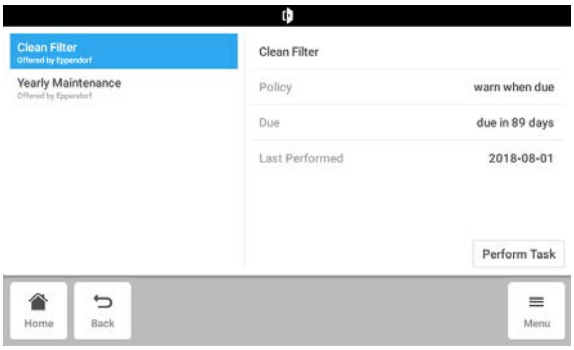

4. Enter the contact information of the Eppendorf partner.
5. To delete an entry, tap the recycle bin symbol.

## 7.8 *Maintenance & Qualification*

**Performing recurring tasks**

Prerequisites

- The task has been defined.




1. Tap *Menu* > *Maintenance & Qualification*.
2. Mark the task.

The touch screen will display the current settings:

- *Policy*: Warning activated or deactivated
- *Due*: Target date for the task
- *Last Performed*: Last time the task was performed

3. Tap *Performe Task*.
   The task is described.
4. Confirm that the task has been performed.
   The *Last Performed* field will display the current date.

# 8 User administration

## 8.1 User groups

The user administration can be used to manage access to the device. 3 user roles are available.

| **Tasks** | *Administrator* | *User* | *Restricted User* |
|---|---|---|---|
| Open the outer door. | × | × | × |
| Edit settings. | × | - | - |
| Acknowledge alarms. | × | × | - |
| Acknowledge warnings. | × | × | × |
| Manage user accounts. | All | Own | Own |
| Set up the user administration. | × | - | - |

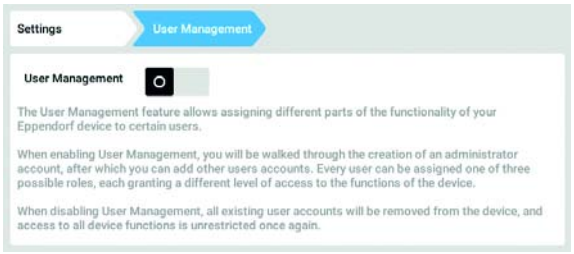
If user administration is not active, all users have the same rights as an administrator.

## 8.2 User administration

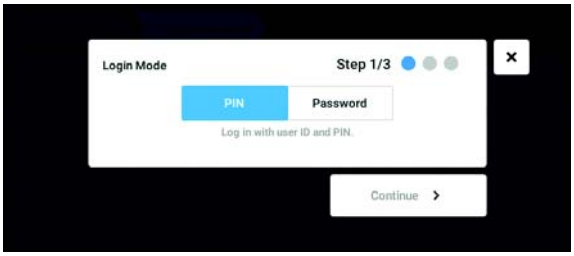
### 8.2.1 Setting up the user administration

Prerequisites

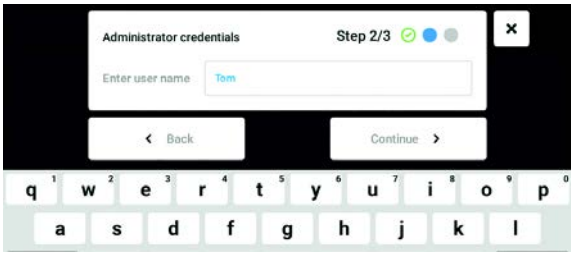
- The device is ready for operation.
- The home screen appears on the touch screen.



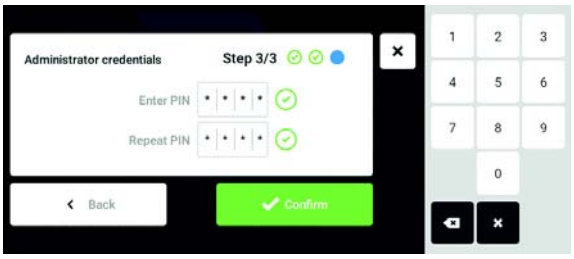

1. Tap *Menu* > *Settings* > *User Management*.
2. To activate the user administration, slide the *User Management* switch to the *I* position.
   The *Login mode* window will appear.



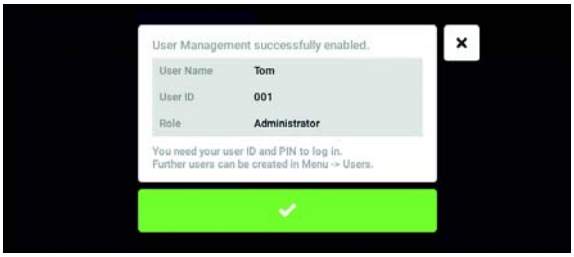

3. Select whether the users log in with a password or PIN.
4. Tap *Continue*.




5. Enter the user name for the administrator in the *Enter User Name* field.
6. Tap *Continue*.




7. Enter the PIN or password in the *Enter password/PIN* field. Confirm the entry via the *Repeat password/PIN* field.
8. Tap *Confirm*.
   The *User Management succesfully enabled* window appears.
   The user administration is activated.
   The user account for the administrator has been created.

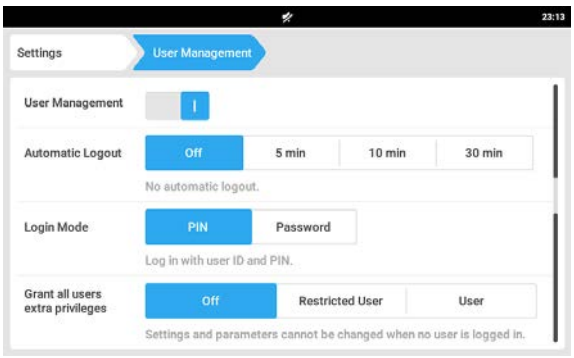



9. Confirm the message.
   The *User management* window will appear.
   It is now possible to edit the user administration.

## 8.2.2 Editing the user administration

Prerequisites

- The device is ready for operation.
- The home screen appears on the touch screen.
- You are logged in as an administrator.




1. Tap *Menu* > *Settings* > *User Management*.
2. Define the settings for the user administration.
   - *User Management*: Activate or deactivate the user administration.
   - *Automatic Logout*: Time for the touch screen to be idle before a user is automatically logged out.
   - *Login Mode*: Select whether the users log in with a password or PIN.
   - *Grant all users extra privileges*: When this function is active, all users of the device have the same *Restricted user/User* rights. Even users not registered in the user administration can use the device with the rights that have been set.

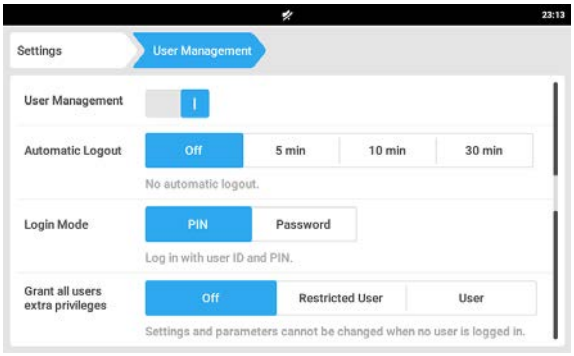
### 8.2.3 Deactivating the user administration

**NOTICE! Data loss when the user administration is deactivated**
Deactivating the user administration deletes all user accounts.

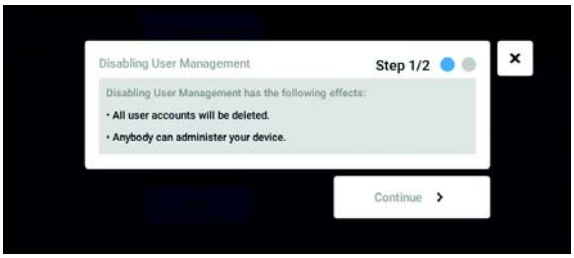
- Check whether deactivation of the user administration is necessary.
- Inform all users that the user administration has been deactivated.

Prerequisites

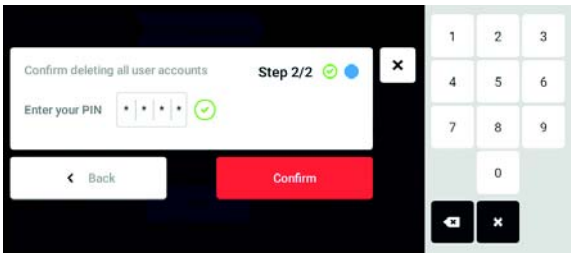
- The device is ready for operation.
- The home screen appears on the touch screen.
- You are logged in as an administrator.




1. Tap *Menu* > *Settings* > *User Management*.
2. To deactivate the user administration, slide the *User Management* switch to the *0* position.
   The *Disabling User Management* window will appear.




3. Tap *Continue*.
   The *Confirm deleting all user accoounts* window will appear.




4. Enter the *Passwort/PIN*.
5. Tap *Confirm*.
   The user administration is deactivated. All user accounts are deleted.

## 8.3 Editing user accounts as administrator

**NOTICE! Risk of data loss due administrator password loss**
The administrator is able to change his password or PIN only with his access data. If the administrator's access data is lost, changes cannot be made to the user administration and to the system settings.
In this case, the device will have to be reset to the factory settings by an authorized service technician. All user accounts and any data and settings stored on the device will be deleted.

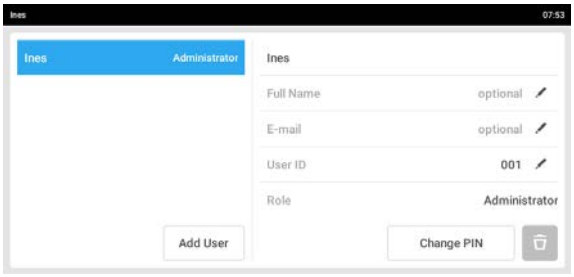
- Create a second user account with administrator rights.
- Keep the administrator password secure.

### 8.3.1 Creating a user account

999 user accounts can be created.

Prerequisites

- The device is ready for operation.
- The user administration is activated.
- The home screen appears on the touch screen.
- You are logged in as an administrator.




1. Tap *Menu* > *Users*.
   The overview of user accounts will appear.
2. Tap *Add User*.
   The *Enter User Name for the new user* field will appear.

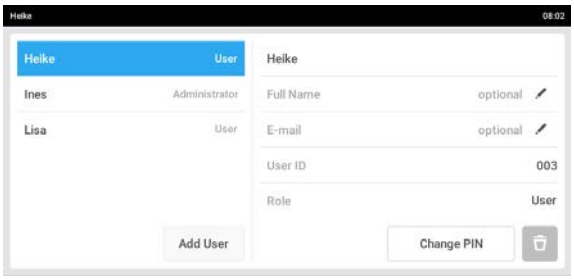



3. Enter the name of the user in the field.
4. Confirm the entry.
   The *Credentials for user* window will appear.
   The user account has been created. The user data will appear in the window.
   The user is assigned to the *Restricted user* user group.

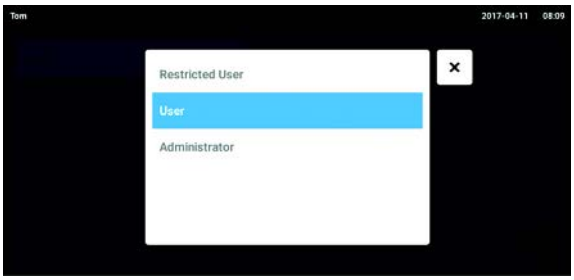
### 8.3.2 Editing user accounts

Prerequisites

- The device is ready for operation.
- The user administration is activated.
- The user account has been created.
- The home screen appears on the touch screen.
- You are logged in as an administrator.




1. Tap *Menu* > *Users*.
   The overview of user accounts will appear.
2. Mark the user account.
3. Enter the user's name in the *Full Name* field.
4. Enter the user's e-mail address in the *E-mail* field.
5. To change the user ID, tap *User-ID*.
   Three suggestions for a new user ID will appear.
   Alternately, you can select a user ID from a list of available user IDs.
6. To change the user group, tap *Role*.
   A window with the user groups will appear.

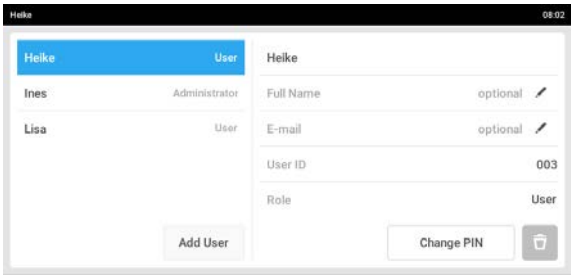



7. Select the user group.
   The selected parameters are stored and will appear in the user account.

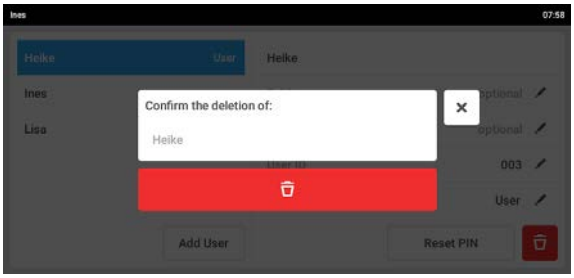
### 8.3.3 Deleting a user account

Prerequisites

- The device is ready for operation.
- The user administration is activated.
- The user account has been created.
- The home screen appears on the touch screen.
- You are logged in as an administrator.




1. Tap *Menu* > *Users*.
   The overview of user accounts will appear.
2. Mark the user account to be deleted.
3. Tap the *Recycle bin* symbol.
   The *Confirm the deletion of* window will appear.



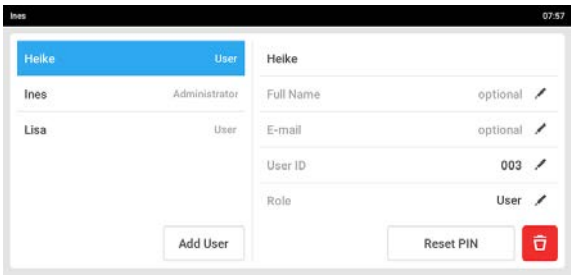

4. Confirm that you want to delete the user account.
   The user account is then deleted.
   The last user account of the Administrator user group cannot be deleted.

### 8.3.4 Changing the password/PIN of a user account

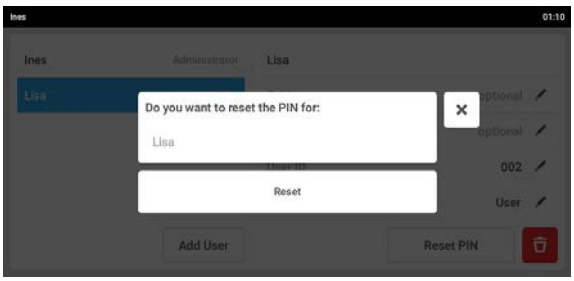
If a user has forgotten his password/PIN, the administrator can generate a new password.

Prerequisites

- The device is ready for operation.
- The user administration is activated.
- The user account has been created.
- The home screen appears on the touch screen.
- A USB stick is connected to the control panel (optional).
- You are logged in as an administrator.




1. Tap *Menu* > *Users*.
   The overview of user accounts will appear.
2. Mark the user account.
3. Tap *Reset password/PIN*.
   The *Do you want to reset the password/PIN for XXX* window will appear.

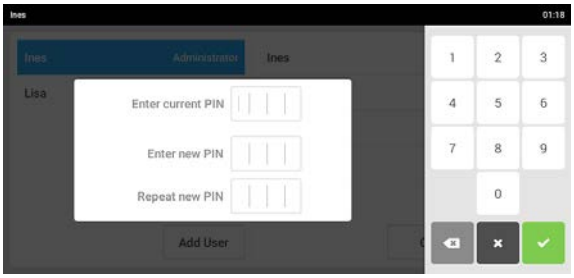



4. Tap *Reset*.
   The *New Credentials* window will appear.
   The new password/PIN is created automatically

### 8.3.5 Changing the password/PIN of the administrator

Prerequisites

- The device is ready for operation.
- The user administration is activated.
- The home screen appears on the touch screen.
- You are logged in as an administrator.



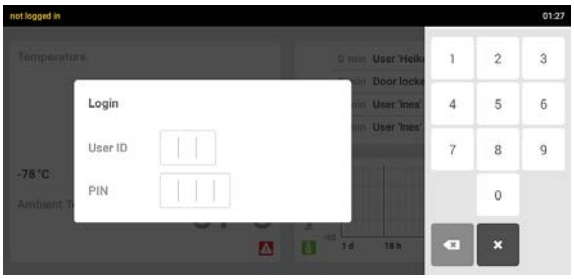

1. Tap *Menu* > *Users*.
   The overview of user accounts will appear.
2. Highlight the user account of the administrator.
3. Tap *Change password/PIN*.
4. Enter the current password/PIN.
5. Enter and confirm the new password/PIN.
6. Confirm the entry with the green checkmark.
   The message *Password/PIN successfully changed* will appear.
   The password/PIN of the administrator has been changed.

## 8.4 Using your own user account

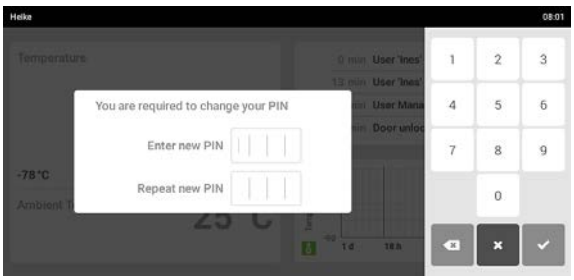
### 8.4.1 Logging in as a user.

Prerequisites

- The device is ready for operation.
- The user administration is activated.
- The user accounts have been created.
- The home screen appears on the touch screen.




1. Tap *Login*.
   The *Login* window will appear.
2. Enter the user ID in the *Username/User-ID* field.
3. Enter the password/PIN in the *Password/PIN* field.
   If the user ID and the password/PIN has been entered correctly, the user will be logged in.
   The home screen will appear on the touch screen.

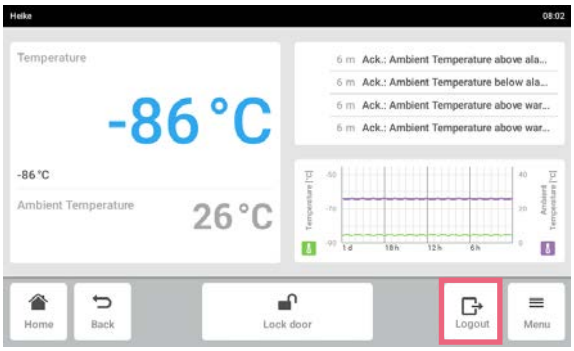



4. If a user is logging in for the first time, the *You are required to change your password/PIN* window will appear.
5. Enter the new PIN in the *Enter new password/PIN* field.
6. Repeat the new PIN in the *Repeat new password/PIN* field to confirm.
   The user will be logged in.
   The home screen will appear on the touch screen.

### 8.4.2 Logging off as a user

Prerequisites

- The device is ready for operation.
- The user administration is activated.
- The user accounts have been created.
- You are logged in as user.



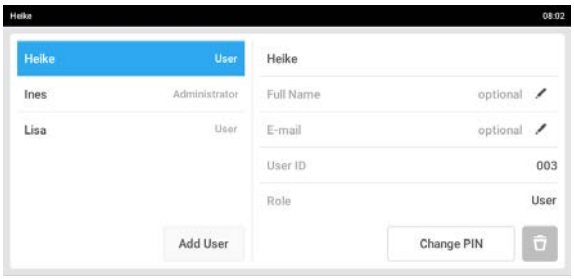

▸ Tap *Logout*.
The user will be logged off from the device.

### 8.4.3 Managing your own user account

Users in the *User* and *Restricted User* user groups can edit the *Full Name*, *E-mail* and *Passoword/PIN* fields.

Prerequisites

- The device is ready for operation.
- The user administration is activated.
- The home screen appears on the touch screen.
- You are logged in as user.




1. Tap *Menü* > *Users*.
2. Mark the user account.
3. Edit the user's name in the *Full Name* field.
4. Edit the user's e-mail address in the *E-mail* field.
5. To change the password/PIN, tap *Change Password/PIN*.
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 the entry.
   If the entries differ, an error message will appear.
   If the entries match, the *Password/PIN successfully changed* message will appear.
   The new password will then be active.

# 9 Maintenance

## 9.1 Service schedule

| Service | Service cycle |
|---|---|
| Defrost the device. | As required |
| Clean the interior and exterior of the device. | As required |
| Clean the seals. | Once a month |
| Clean the air filter and the air intake grille. | Every 3 months under normal ambient conditions. Clean more frequently if the surroundings are very dusty or dirty. |

## 9.2 Defrosting the device



**CAUTION! Risk of slipping due to melt water**
Puddles may form on the laboratory floor when defrosting the device.

- Wipe up melt water immediately.



**NOTICE! Risk of device damage due to scraping off ice**
Removing ice with a sharp object may damage the device.

- Wait until the ice has thawed by itself.



**NOTICE! Improper door sealing due to ice**
Humidity inside the device causes ice formation. Ice causes damage to the seals of the inner and outer doors.

1. Dry the device completely, especially all seals.
2. Switch on the device afterwards.

Tools and auxiliary equipment
- Personal protective equipment: Cold protection gloves, protective goggles, dust protection mask
- Material for absorbing the melt water
- "Defrosting device" notice sign

Prerequisites
- The samples have been transferred to another ULT freezer.
- The device is switched off and disconnected from the mains/power line (see p. 48).

1. Put up the notice sign.
2. Open the outer and inner doors of ULT upright freezers. Open the outer and inner lids of ULT chest freezers.
3. Wait until the ice has thawed.
4. Wipe up the melt water.
5. Dry the device completely, especially all seals.

## 9.3 Cleaning and decontamination



**DANGER! Electric shock.**

- Switch off the device and disconnect the mains/power plug before commencing any service or cleaning procedures.



**NOTICE! Damage from the use of aggressive chemicals.**

- Do not use any aggressive chemicals on the device or its accessories, such as strong and weak bases, strong acids, acetone, formaldehyde, halogenated hydrocarbons or phenol.
- If the device has been contaminated by aggressive chemicals, clean it immediately using a mild cleaning agent.

### 9.3.1 Cleaning the device

Tools and auxiliary equipment
- Water
- Mild cleaning agent
- Soft, lint-free cloth

Prerequisites
- For cleaning the interior: The device is switched off and disconnected from the mains/power line.
- The device is defrosted.

1. If required, lift the inner shelf upwards out of the device.
2. Moisten the lint-free cloth with water and cleaning agent.
3. Clean the surfaces.

### 9.3.2 Cleaning and disinfecting the touch screen

Tools and auxiliary equipment
- Laboratory cleaner
- Lint-free cloth
- Disinfectant: Ethanol 70%, sodium hypochlorite solution 1%, Dismozon pur, Hexaquart S, Biozid ZF or another suitable disinfectant

1. Lock the touch screen.
2. Moisten the lint-free cloth with laboratory cleaner or disinfectant.
3. Wipe the touch screen with the cloth.
4. Unlock the locked touch screen.

### 9.3.3 Cleaning the seals

Tools and auxiliary equipment
- Dry soft lint-free cloth

1. Wipe the seal with a soft, lint-free cloth.
2. Wipe the contact surface for the seal with a soft, lint-free cloth.

### 9.3.4 Cleaning the air filter and the air intake grille

**CAUTION! Risk of cut injuries due to sharp-edged components**
When working on the air intake grille, cut injuries can be caused by sharp-edged components.

▸ Wear protective gloves to avoid cut injuries.

**NOTICE! Refrigeration failure due to blocked air filter**
If the air filter is blocked, the refrigerant will not be liquefied. This will damage the compressor.

▸ Regularly check that the air flow into the device is not obstructed.

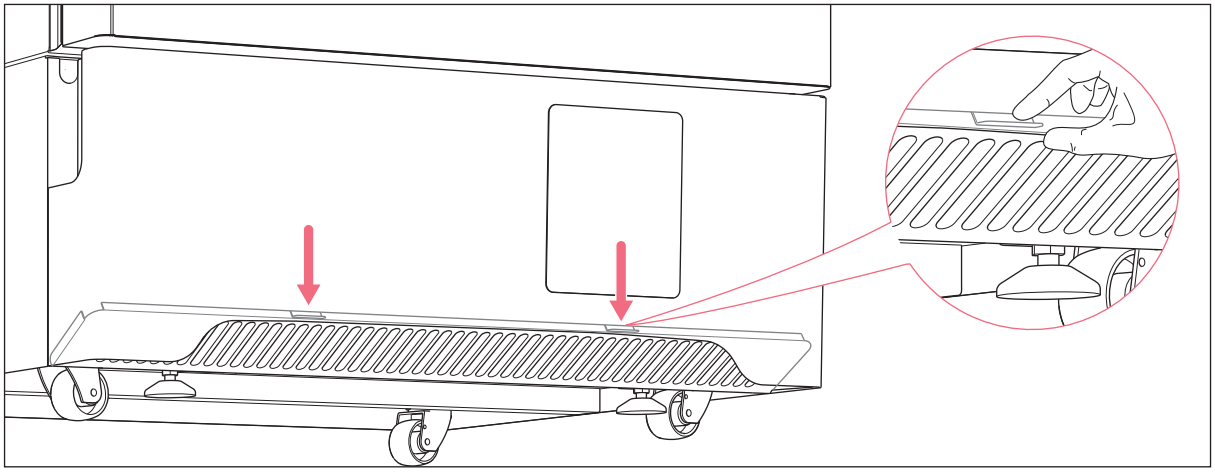


Fig. 9-1: Folding down the air intake grille

An airflow from the surroundings flows through the air filter to the condenser. The airflow carries the heat away from the condenser.

The air filter protects the condenser and the assemblies behind it against contamination and dirt. If the air filter is dirty, not enough air will reach the condenser. The condenser will overheat and the refrigeration cycle may fail.

Personal protective equipment
- Protective gloves

Tools and auxiliary equipment
- Vacuum cleaner
- Warm water

1. Place your fingers into the recesses on the air intake grille. Press the air intake grille downwards.
   The air intake grille folds down.
2. Remove the air filter.
3. Clean the air intake grille with the vacuum cleaner.
4. Alternatively, clean the air intake grille with a soft brush.
5. Remove the coarse dirt from the air filter by vacuuming or tapping it.
6. Clean the air filter with warm water.
7. Let the air filter dry.
8. Insert the air filter.
9. Press the air intake grille upwards and close it.

### 9.3.5 Decontaminating the interior and the inner shelves

The interior and the shelves are made of stainless steel.

Tools and auxiliary equipment
- Decontamination agent consisting of 70 % isopropyl alcohol and 30 % distilled water
- Soft, lint-free cloth

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

1. Moisten the lint-free cloth with decontamination agent.
2. Clean the surfaces using a lint-free cloth.
   The surfaces are coated with a decontamination agent.
3. Allow the decontamination agent to take effect.
4. Wipe off the decontamination agent with deionized water.
5. Allow the surfaces to dry.

## 9.4 Fuses

Fuses may only be replaced by authorized service technicians. Users must not replace the fuses.

## 9.5 Checking the alarm in the case of a mains/power outage

Prerequisites

- The back-up circuit is activated.

▸ Switch off the device using the mains/power switch.

The *Mains/power failure* message is displayed on the touch screen.
The interior temperature is displayed on the touch screen.
The control panel's indicator light flashes in 10-second intervals.
The signal tone sounds on the device.
The alarm is forwarded to a building management system.

## 9.6 Safety checklist

1. Fill in the safety checklist prior to repair or service of the device.
2. Hand a copy of the safety checklist to the authorized service technician.

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1. Freezer contents ☐Yes ☐No
   Risk of infection ☐Yes ☐No
   Risk of toxicity ☐Yes ☐No
   Risk from radioactive sources ☐Yes ☐No

   (List all potentially hazardous materials that have been stored in this unit.)
   Notes:

2. Contamination of the unit:
   Unit interior ☐Yes ☐No
   No contamination ☐Yes ☐No
   Decontaminated ☐Yes ☐No
   Contaminated ☐Yes ☐No
   Others

3. Instructions for safe repair/maintenance of the unit:
   a) The unit is safe to work on ☐Yes ☐No
   b) There is some danger (see below) ☐Yes ☐No
   Procedure to be adhered to in order to reduce safety risk indicated in b) below.

Date :
Signature :
Address, Division :
Telephone :

Product name :
Model :
Serial number :
Date of installation :

*Please decontaminate the unit yourself before calling the service engineer.*

# 10 Troubleshooting

## 10.1 General errors

If you are unable to resolve the error with the suggested measures, please contact your Eppendorf partner. The address can be found on our website: www.eppendorf.com.

### 10.1.1 Outer door

| Problem | Cause | Solution |
|---|---|---|
| The outer door cannot be opened. | • The door handle is locked. | ▸ Unlock the door handle. |
| | • The *auto vent* valve is blocked. The negative pressure in the interior is preventing the outer door from being opened. | ▸ Wait until pressure compensation has taken place. Balancing the pressure takes 1 to 2 hours.<br>▸ After opening the outer door, remove the ice from the *auto vent* valve. |
| | • The touch screen is not responding. | ▸ Open the outer door via the emergency release (see *Emergency release on p. 97)*. |

### 10.1.2 Cooling water supply

| Problem | Cause | Solution |
|---|---|---|
| The device is not in operation. | • The water inlet and outlet connections are reversed. | ▸ Connect the water inlet and outlet properly. |

## 10.2 Software error messages

| Problem | Cause | Solution |
|---|---|---|
| *Cabinet temperature sensor failure. Refrigeration system shut down. Call service.* | • The temperature sensor that measures the interior temperature is not working properly. | ▸ Contact your local Eppendorf partner. |
| *Heat exchanger temperature sensor failure. Refrigeration system shut down. Call service.* | • The temperature probe on the heat exchanger is not working properly. | |

| Problem | Cause | Solution |
|---|---|---|
| *Condenser temperature sensor failure. Refrigeration system shut down. Call service.* | • The temperature probe on the condenser is not working properly. | |
| *Ambient temperature sensor failure. Call service.* | • The temperature probe for the ambient temperature at the refrigeration system is not working properly. | |
| *Fan failure. Refrigeration system shut down. Call service.* | • The fan is not working properly. | |
| *First stage overpressure. Refrigeration system shut down. Call service.* | • The pressure of the refrigerant in the first stage refrigeration cycle is too high. | |
| *Second stage overpressure. Refrigeration system shut down. Call service.* | • The pressure of the refrigerant in the second stage refrigeration system is too high. | |
| *Battery voltage low. Set battery switch to "I" to charge.* | • The battery's charge status is low. | ▸ Switch on the battery switch. |
| *Mains/power failure. Check power supply to the device.* | • Mains/power failure<br>• The battery is only supplying the display with power. | ▸ Check to see if the mains/power cord is connected properly.<br>▸ Check to see of the device is switched on at the mains/power switch.<br>▸ Contact your local Eppendorf partner. |
| *First stage compressor failure. Refrigeration system shut down. Call service.* | • The first-stage refrigeration cycle's compressor is faulty. | ▸ Contact your local Eppendorf partner. |
| *Second stage compressor failure. Refrigeration system shut down. Call service.* | • The second-stage refrigeration cycle's compressor is faulty. | ▸ Contact your local Eppendorf partner. |
| *Starting first stage compressor failed.* | • The first-stage refrigeration cycle's compressor is not starting. | ▸ Contact your local Eppendorf partner if the device's interior temperature rises. |

| Problem | Cause | Solution |
|---|---|---|
| *Starting secound stage compressor failed.* | • The second-stage refrigeration cycle's compressor is not starting. | |

## 10.3 Emergency release

If the outer door does not open, you can release the electronic lock manually. To this end, use the emergency release key included in the delivery package.

1. Insert the emergency release key into the mechanical lock on the outer door.
2. Unlock the lock.
3. Open the outer door using the handle.

## 10.4 Mains/power outage

During a mains/power outage, no mains/power supply is supplied to the device. The device will trigger the "Mains/power outage" alarm . All danger signals go out once the device is supplied with power again.

The interior temperature may rise during a longer mains/power outage.
- If the interior temperature is below the alarm limit for the maximum temperature in the interior after the mains/power outage, the device continues to operate normally.
- If the interior temperature is above the alarm limit for the maximum interior temperature, the "Interior temperature” alarm is triggered after the delay time has elapsed.

## 10.5 Heating up of the interior

In case of a mechanical or electrical defect, the temperature inside the device may rise after some time. The temperature inside the device rises when the doors of the device are open and warm ambient air enters the device.

When the temperature inside the device exceeds the alarm limit, the "Interior temperature" alarm is triggered.

Open the outer doors and inner doors as briefly as possible to avoid that the temperature inside the device rises. In case of a malfunction, the back-up systems keeps the interior temperature stable over a longer period of time.

# 11 Transport, storage and disposal

## 11.1 Decommissioning

Tools and auxiliary equipment
- Adhesive tape

Prerequisites
- Racks and samples have been transferred to another ULT freezer.

1. Secure the air intake grille with adhesive tape.
2. Disable the back-up circuit (see p. 48).
3. Disconnect the device from the voltage supply (see p. 48).
4. Remove the safety clamp of the mains/power cord. Remove the mains/power cord from the device.
5. Devices with cooling water supply: Close the water inlet. Drain cooling water from the device.
6. Defrost the device (see p. 89).
7. Decontaminate the device (see p. 92).

## 11.2 Transport



**DANGER! Risk of severe injury from tipping the device over during transport**
If the device tips over and falls on someone, that person sustains fatal injuries.

- ▸ Transport the device with a sufficient number of helpers.
- ▸ Observe the transport instructions in the operating manual.



**CAUTION! Risk of foot injury due to little ground clearance**
Feet can easily get trapped under the device.

- ▸ Wear safety shoes with steel toes.



**CAUTION! Risk of cut injuries due to sharp-edged components**
When working on the air intake grille and on the leveling feet, cut injuries can be caused by sharp-edged components on the bottom of the device.

- ▸ Wear protective gloves to avoid cut injuries.



**NOTICE! Risk of device damage due to lifting the device without the original pallet**
Lifting the device without the original pallet will damage the base of the device.

1. Place the device on the original pallet.
2. Secure the device.
3. Use a transport aid to lift the device.

**NOTICE! Damage to the compressor and refrigeration cycle during transport**
Tilting the device or transporting it in a horizontal position will damage the compressors and the refrigeration cycle. Refrigerant and oil may leak out.
Shocks may dislodge the compressors from the brackets.

- Transport the device in upright position.
- Move the device with due caution and care. Do not knock the device into anything.
- Protect the device from impacts.
- After setting up the device, wait for 6 h before switching it on.

**NOTICE! Damage to the door handle due to too high loads**
Pulling or pushing the device on the door handle during transport may damage the door handle.

- Grip the device at the housing to pull or push it.

**NOTICE! Transport damage to the control panel**
The control panel protrudes from the door. The control panel may become damaged during transport.

- Only transport the device with the transport protection attached to the control panel.

### 11.2.1 Preparing the device for transport

Personal protective equipment
- Protective gloves

Tools and auxiliary equipment
- Open-end wrench
- Adhesive tape

Prerequisites
- Racks and samples have been transferred to another ULT freezer.

1. Secure the air intake grille with adhesive tape.
2. Attach the transport protection to the control panel.
3. Disable the back-up circuit (see p. 48).
4. Disconnect the device from the voltage supply (see p. 48).
5. Remove the safety clamp of the mains/power cord. Remove the mains/power cord from the device.
6. Devices with cooling water supply: Close the water inlet.
7. Use the open-end wrench to turn the leveling feet upward (Fig. 4-1 on p. 33).

### 11.2.2 Transporting the device

Personal protective equipment
- Protective clothing, safety shoes

Tools and auxiliary equipment
- Transport aid
- Original pallet

**General transport**

1. Transport the device in an upright position.
2. Grasp the device by the housing and wheel it to its new location.

   Do not grasp the device by the door handle.

**Lifting the device**

3. Place the device on the original pallet and secure it.
4. Lift the device with a transport aid.

**Sloping surfaces**

5. Transport the device sideways over ramps.
6. Do not transport the device over ramps at an angle > 17 % (10°).

**Narrow passageways**

7. Open the door of the device 180°.
8. Push the device, with one side panel to the front, through the passageway.

   If the passageway is too narrow for the device, housing parts may have to be disassembled. Contact your local Eppendorf partner for more information.

**Outside of buildings**

9. Transport the device with a transport aid.

   The heavy-duty castors are not suitable for transport outside of buildings.

If you need help to transport the device, contact the authorized service.

## 11.3 Shipment

### 11.3.1 Shipping regulations

ULT freezers that contain more than 100 g of flammable refrigerant are classified as refrigerating machines containing flammable, non-toxic, liquefied gas (UN no. 3358).

The ULT freezer contains more than 100 g of flammable refrigerant and must not be transported via air freight.

### 11.3.2 Shipping the device



**WARNING! Risk of personal injury due to contamination.**
People may get contaminated if you store or ship a contaminated device.

- Clean and decontaminate the device before shipping or storage.



**NOTICE! Risk of damage due to incorrect packing.**
Eppendorf AG is not liable for any damage caused by improper packing.

- Only store and transport the device in its original packing.
- If you do not have the original packing, request the original packing from Eppendorf AG.

Prerequisites

- The device has been taken out of operation.
- The device has been cleaned and decontaminated.
- The original packing is available.

1. Download the "Decontamination declaration for product returns" from the www.eppendorf.com website.
2. Complete the decontamination certificate.
3. Pack the device.
4. Put the decontamination certificate into the packing.
5. Ship the device according to the shipment regulations.



For service and repairs, send the device to Eppendorf AG or to an authorized service partner.

## 11.4 Disposal

The product must be disposed of in accordance with the relevant legal provisions.

**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:



Do not dispose of batteries as household waste. Dispose of batteries in accordance with the local regulations.

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

# 12 Technical data

## 12.1 Power supply

| | | | |
|---|---|---|---|
| Mains/power supply voltage | 100 V – 230 V ±10 % | | |
| Mains/power frequency | 50 Hz - 60 Hz | | |
| Current consumption | 100 V – 230 V (50 Hz); 15 A – 6 A<br>100 V – 220 V (60 Hz); 12 A – 6 A | | |
| Power consumption<br>The device is empty.<br>The interior temperature is -80 °C.<br>The ambient temperature is 20 °C. | CryoCube F740hi | (100 V)<br>(120 V)<br>(208 V)<br>(230 V) | 11.6 kWh/day<br>11.6 kWh/day<br>10.5 kWh/day<br>10.5 kWh/day |
| | CryoCube F740hiw | (100 V)<br>(120 V)<br>(208 V)<br>(230 V) | 11.7 kWh/day<br>11.7 kWh/day<br>10.6 kWh/day<br>10.6 kWh/day |
| Electromagnetic compatibility (EMC) | The device meets the following requirements:<br>• IEC/EN 61326-1<br>• EN 55011 (CISPR 11)<br>• FCC Part 15 – Class A | | |
| Overvoltage category | II | | |
| Degree of pollution | 2 | | |

## 12.2 Ambient conditions

### 12.2.1 Operation

| | |
|---|---|
| Ambience | For indoor use only |
| Ambient temperature | 15 °C – 32 °C |
| Relative humidity | Maximum 80 %, non-condensing |
| Atmospheric pressure | 80 kPa – 106 kPa |

## 12.3 Dimensions

### 12.3.1 External dimensions

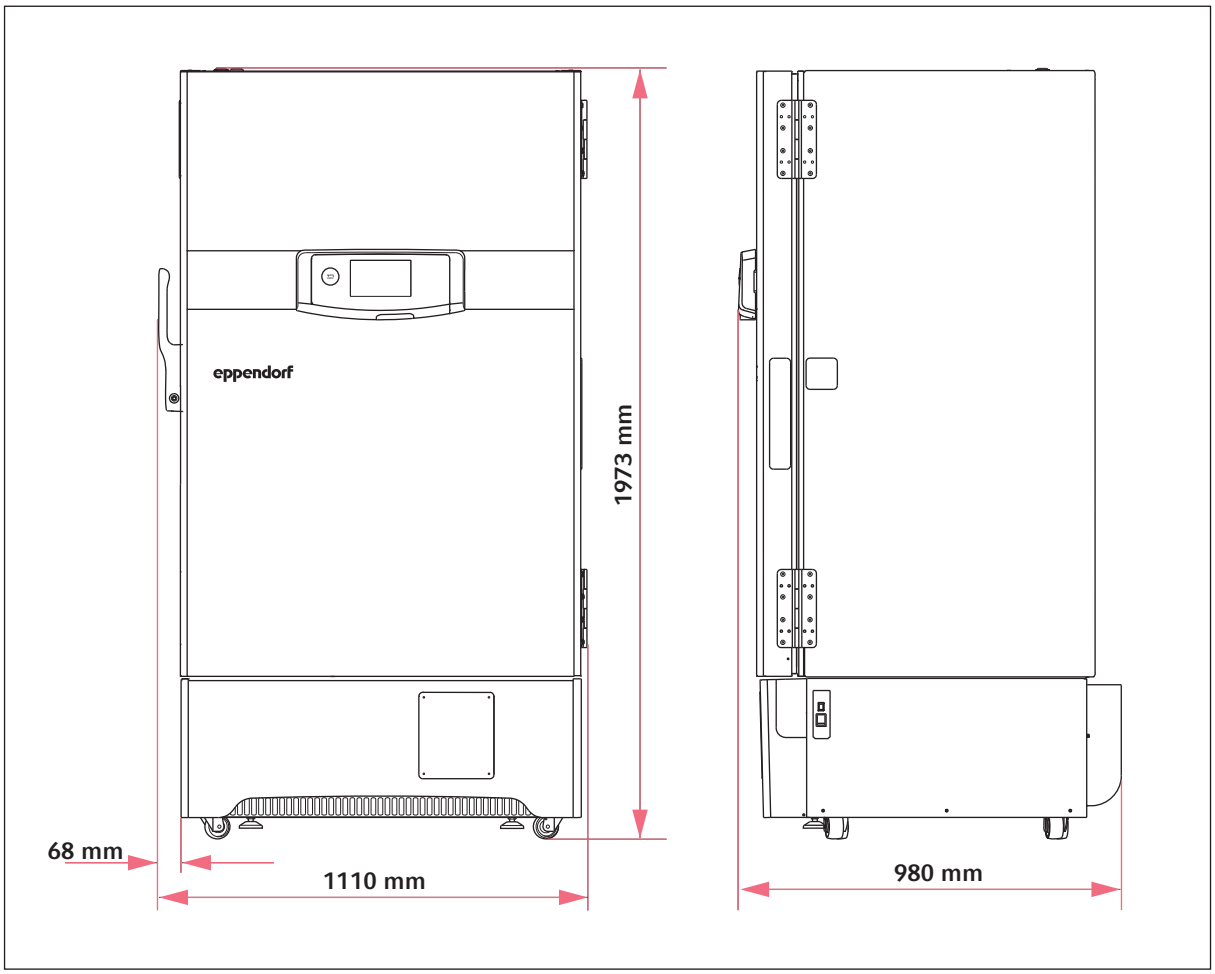



Fig. 12-1: External dimensions

### 12.3.2 Internal dimensions

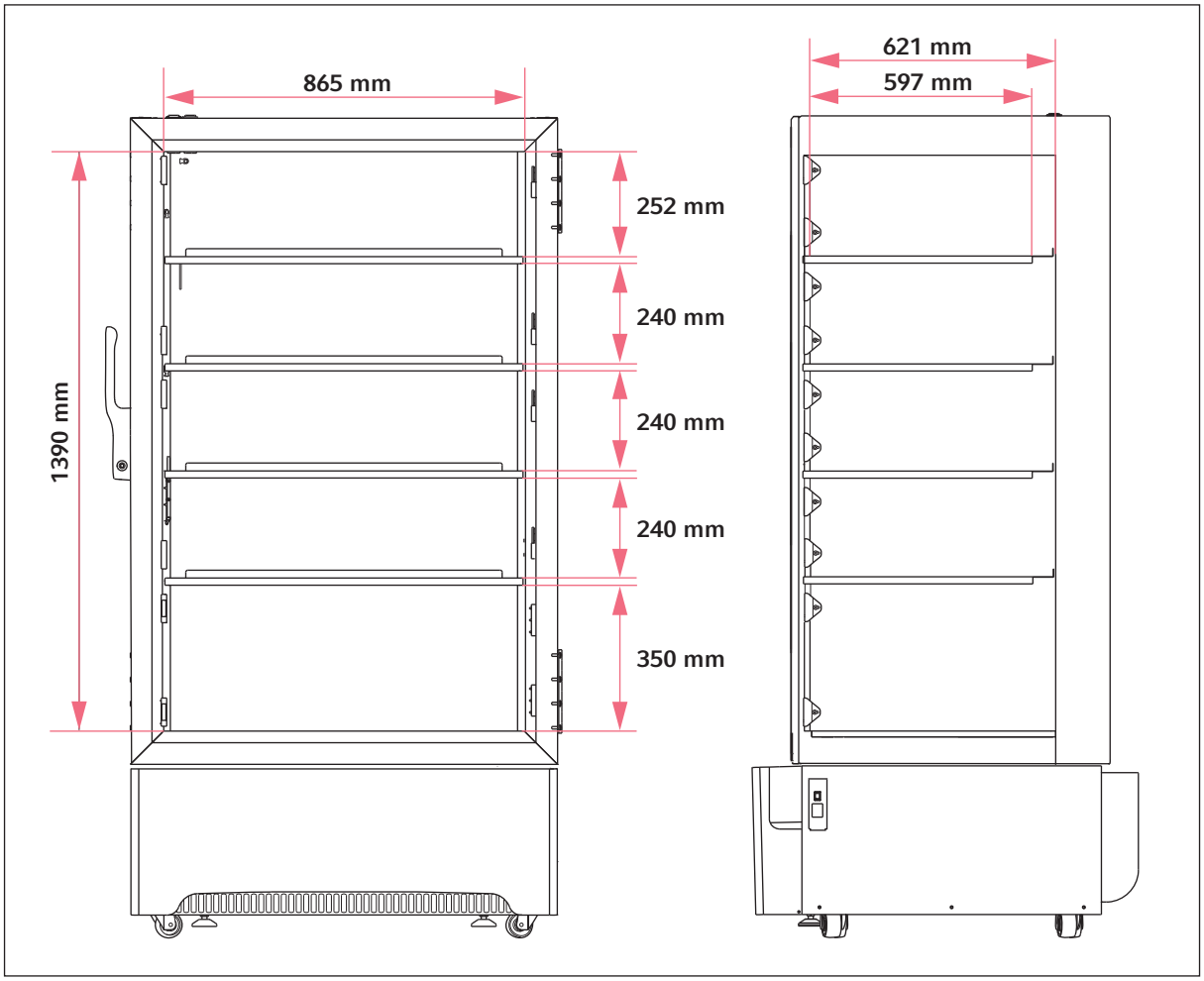



Fig. 12-2: Internal dimensions for devices with 5 inner compartments

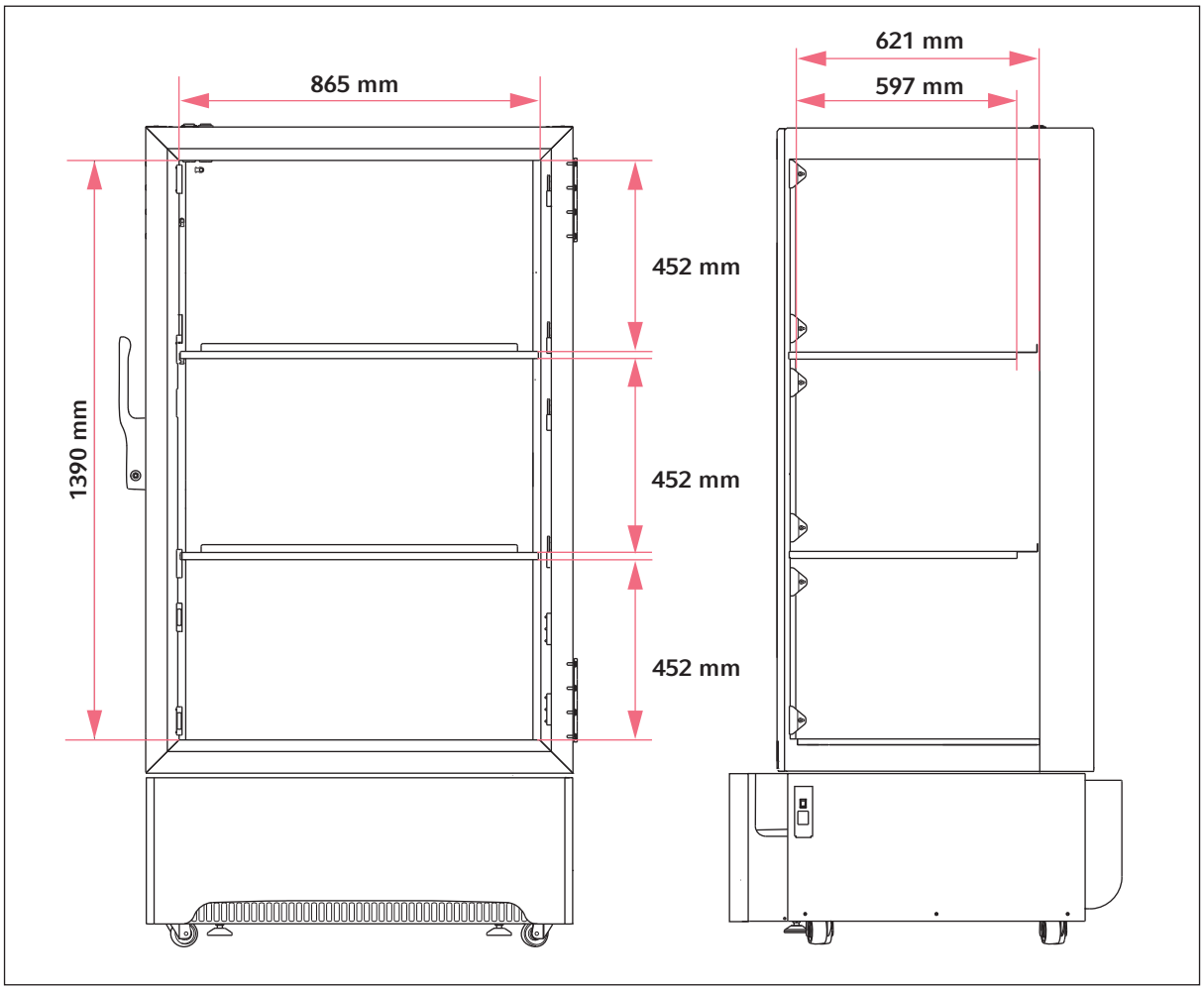



Fig. 12-3: Internal dimensions for devices with 3 inner compartments

### 12.3.3 Packing dimensions

| | |
|---|---|
| Width | 1200 mm |
| Depth | 1045 mm |
| Height | 2225 mm |

## 12.4 Weight

| Device | Model with 3 compartments | Model with 5 compartments |
|---|---|---|
| CryoCube F740hi | 333 kg | 349 kg |
| CryoCube F740hiw | 320 kg | 328 kg |

| Packaged device | Model with 3 compartments | Model with 5 compartments |
|---|---|---|
| CryoCube F740hi | 383 kg | 399 kg |
| CryoCube F740hiw | 369 kg | 377 kg |

## 12.5 Noise level

| | |
|---|---|
| CryoCube F740i | 41.3 dB (A) |
| CryoCube F740iw | 41.3 dB (A) |
| CryoCube F740 | 47.8 dB (A) |
| CryoCube F740hi | 41.3 dB (A) |
| CryoCube F740hiw | 41.3 dB (A) |

## 12.6 Interfaces

| | |
|---|---|
| USB | |
| Ethernet | |
| BMS (remote alarm) | 24 V, 1 A |
| Serial interface | RS-485 (for internal use) |

Only connect devices that comply with the IEC 60950 (UL 60590) standards to the interfaces.

## 12.7 Cooling water supply

### 12.7.1 Device connection

| | |
|---|---|
| Connection for water inlet and water outlet | Whitworth pipe thread<br>15 mm × 12.7 mm (1/2" BSP) acc. to DIN 2999 |

### 12.7.2 Building connection

| | |
|---|---|
| Pressure at the water inlet | 100 kPa – 1000 kPa |
| Minimum pressure difference between water inlet and water outlet | 50 Pa |
| Nominal cooling water supply volume flow rate | 3.8 L/min |
| Connection for water inlet and water outlet | alternately 1/2" screw thread, 3/4" screw thread or bayonet coupling |

### 12.7.3 Cooling water

| | |
|---|---|
| Temperature at the water inlet | 7 °C – 25 °C |
| Cooling water quality | Clean<br>Free of particles that could clog the valves and the temperature sensors |

### 12.7.4 Cooling water hose

Cooling water hoses are not included in the delivery package. Cooling water hoses and connecting elements are not available from Eppendorf AG and must be procured separately.

| | |
|---|---|
| Pressure resistance | 1000 kPa |
| Temperature resistance | 25 °C |
| Length | Distance from the building connection to the floor + 1 m |
| | To reduce microbial growth and deposits, use oxygen-tight hoses. |

### 12.7.5 Water filter

If well water is used, mount the water filter in front of the device's water inlet.

| | |
|---|---|
| Mesh size | 0.25 mm (60 mesh) |

## 12.8 Temperature control

### 12.8.1 Temperature range

| | |
|---|---|
| Setting range | -50 °C to -86 °C |

### 12.8.2 Times for cooling and heating the interior

| | | |
|---|---|---|
| Cooling<br>from 22 °C to -80 °C | CryoCube F740hi | 4 h 10 min |
| | CryoCube F740hiw | 4 h 10 min |
| Heating<br>from -80 °C to 0 °C<br>The device is 2/3 full. | CryoCube F740hi | 45 h |
| | CryoCube F740hiw | 45 h |

### 12.8.3 Cooling of the refrigeration cycle

| | |
|---|---|
| CryoCube F740hi | Air cooling |
| CryoCube F740hiw | Water cooling |

### 12.8.4 Refrigerant

| **Device** | **Refrigeration cycle 1** | **Refrigeration cycle 2** |
|---|---|---|
| CryoCube F740hi | R-290 (96 g) | R-170 (106 g) |
| CryoCube F740hiw | R-290 (96 g) | R-170 (106 g) |

| **Refrigerant** | **Components** |
|---|---|
| R-170 | Ethane |
| R-290 | Propane |

## 12.9 Additional specifications

### 12.9.1 Capacity and carrying capacity

| | |
|---|---|
| Capacity | 740 L |
| Carrying capacity per inner shelf | 150 kg (with an evenly distributed load) |
| Carrying capacity per device | 420 kg |

### 12.9.2 Materials

| | |
|---|---|
| Outer door insulation | Vacuum insulation panels<br>Polyurethane foam |
| Device insulation | Vacuum insulation panels<br>Polyurethane foam |
| Interior | Stainless steel (304 2B) |

# 13 Ordering information

## 13.1 Accessories

### 13.1.1 Back-up systems

| Order no. (International) | Description |
|---|---|
| | **CO2 back-up system** |
| F652999005 | 100 V/50 Hz - 60 Hz |
| U9043-0002 | 120 V - 220 V/60 Hz |
| U9043-0004 | 230 V/50 Hz |
| | **LN2 back-up system** |
| F652999006 | 100 V/50 Hz - 60 Hz |
| U9044-0002 | 120 V - 220 V/60 Hz |
| U9044-0004 | 230 V/ 50 Hz |

### 13.1.2 Chart recorder

| Order no. (International) | Description |
|---|---|
| | **Chart recorder type 2** |
| | Connection to mains/power supply in the ULT freezer |
| F652999001 | 100 V/120 V, 50 Hz – 60 Hz |
| F652999002 | 208 V – 230 V, 50 Hz – 60 Hz |
| | **Discs for chart recorder type 2** |
| | -100 °C – 0 °C |
| F652999003 | 60 pieces |
| | **Pens for chart recorder type 2** |
| F652999004 | 3 pieces |

### 13.1.3 Shelf

| Order no. (International) | Description |
|---|---|
| | **Shelf, height adjustable** |
| | with 4 shelf supports |
| F740850125 | F740x |

### 13.1.4 Racks for devices with 3 compartments

| Order no. (International) | Description |
|---|---|
| | **Rack with drawers** |
| | material stainless steel |
| 6001 072.210 | for 32 boxes, box height 53 mm |
| 6001 072.910 | for 24 boxes, box height 63.5 mm |
| 6001 072.310 | for 20 boxes, box height 78 mm |
| 6001 072.410 | for 16 boxes, box height 103 mm |
| 6001 072.510 | for 12 boxes, box height 133 mm |
| | **Rack with side access** |
| | material stainless steel |
| 6001 071.210 | for 32 boxes, box height 53 mm |
| 6001 071.910 | for 24 boxes, box height 63.5 mm |
| 6001 071.310 | for 20 boxes, box height 78 mm |
| 6001 071.410 | for 16 boxes, box height 103 mm |
| 6001 071.510 | for 12 boxes, box height 133 mm |
| 6001 071.110 | with compartments for 48 deepwell plates up to 53 mm |

### 13.1.5 Racks for the compartments 1 – 4 for devices with 5 compartments

| Order no. (International) | Description |
|---|---|
| | **Rack with drawers** |
| | material stainless steel |
| 6001 022.210 | for 16 boxes, box height 53 mm |
| 6001 022.910 | for 12 boxes, box height 63 mm |
| 6001 022.310 | for 8 boxes, box height 78 mm |
| 6001 022.410 | for 8 boxes, box height 103 mm |
| | **Rack with side access** |
| | material stainless steel |
| 6001 021.210 | for 16 boxes, box height 53 mm |
| 6001 021.910 | for 12 boxes, box height 63 mm |
| 6001 021.310 | for 8 boxes, box height 78 mm |
| 6001 021.410 | for 8 boxes, box height 103 mm |
| 6001 021.110 | with compartments for 24 deepwell plates up to 53 mm |

### 13.1.6 Racks for compartment 5 for devices with 5 compartments

| Order no. (International) | Description |
|---|---|
| | **Rack with drawers** |
| | material stainless steel |
| 6001 082.210 | for 24 boxes, box height 53 mm |
| 6001 082.910 | for 20 boxes, box height 63.5 mm |
| 6001 082.310 | for 16 boxes, box height 78 mm |
| 6001 082.410 | for 12 boxes, box height 103 mm |
| 6001 082.510 | for 8 boxes, box height 133 mm |
| | **Rack with side access** |
| | material stainless steel |
| 6001 081.210 | for 24 boxes, box height 53 mm |
| 6001 081.910 | for 20 boxes, box height 63.5 mm |
| 6001 081.310 | for 16 boxes, box height 78 mm |
| 6001 081.410 | for 12 boxes, box height 103 mm |
| 6001 081.510 | for 8 boxes, box height 133 mm |
| 6001 081.110 | with compartments for 36 deepwell plates up to 53 mm |

### 13.1.7 Cardboard boxes and box dividers

| Order no. (International) | Description |
|---|---|
| | **Cardboard box** |
| B50-SQ | width 133 mm, depth 133 mm, height 50 mm |
| B75-SQ | width 133 mm, depth 133 mm, height 75 mm |
| B95-SQ | width 133 mm, depth 133 mm, height 100 mm |
| | **Box divider** |
| D49 | for 7 × 7 vessels, maximum vessel diameter 17.4 mm |
| D64 | for 8 × 8 vessels, maximum vessel diameter 15 mm |
| D81 | for 9 × 9 vessels, maximum vessel diameter 13 mm |
| D100 | for 10 × 10 vessels, maximum vessel diameter 11.8 mm |

### 13.1.8 Eppendorf Storage Boxes

| Order no. (International) | Description |
|---|---|
| 0030 140.508 | **Eppendorf Storage Box 10 × 10, 2 inch**<br>height 52.8 mm, for 100 cryogenic tubes with internal thread<br>3 pieces |
| 0030 140.516 | **Eppendorf Storage Box 9 × 9, 2 inch**<br>height 52.8 mm, for 81 screw cap (cryogenic) tubes 1 mL - 2 mL<br>3 pieces |
| 0030 140.524 | **Eppendorf Storage Box 8 × 8, 2 inch**<br>height 52.8 mm, for 64 micro test tubes 1 mL - 2 mL<br>3 pieces |
| 0030 140.532 | **Eppendorf Storage Box 5 × 5, 2.5 inch**<br>height 63.5 mm, for 25 micro test tubes 5 mL<br>4 pieces |
| 0030 140.540 | **Eppendorf Storage Box 9 × 9, 3 inch**<br>height 76.2 mm, for 81 screw cap (cryogenic) tubes 3 mL<br>2 pieces |
| 0030 140.567 | **Eppendorf Storage Box 9 × 9, 4 inch**<br>height 101.6 mm, for 81 screw cap (cryogenic) tubes 4 mL - 5 mL<br>2 pieces |
| 0030 140.583 | **Eppendorf Storage Box 5 × 5, 5 inch**<br>height 127 mm, for 25 conical tubes 15 mL<br>2 pieces |
| 0030 140.591 | **Eppendorf Storage Box 3 × 3, 5 inch**<br>height 127 mm, for 9 conical tubes 50 mL and 4 conical tubes 15 mL<br>2 pieces |
| 0030 140.613 | **Eppendorf Storage Box 5 × 5, 3 inch**<br>height 76.2 mm, for 25 screw cap tubes 5 mL<br>2 pieces |

### 13.1.9 VisioNize system

Further information about the Eppendorf VisioNize system can be found on the www.eppendorf.com webpage. Contact your local Eppendorf partner for more information.

# Index

**A**

Alarm ..... 26, 26

**B**

Battery switch
- Switching off ..... 48
- Switching on ..... 40

**D**

Degree of pollution ..... 105

Device
- Switching off ..... 48
- Switching on ..... 40

Disposal ..... 103

**E**

Electromagnetic compatibility (EMC) ..... 105

**M**

Mains/power supply ..... 105

Message ..... 26, 28

**N**

Noise level ..... 109

**S**

Switching off
- Back-up circuit ..... 48
- Battery switch ..... 48
- Device ..... 48

Switching on
- Back-up circuit ..... 40
- Battery switch ..... 40
- Device ..... 40

**T**

Technical data
- Ambient conditions ..... 105
- Noise level ..... 109
- Operation ..... 105

Technical data
- Mains/power supply ..... 105

**W**

Warning ..... 26, 27

Weight ..... 109

eppendorf

# 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:**

CryoCube® F740h, CryoCube® F740hi, CryoCube® F740hiw

including accessories

| | | | |
|---|---|---|---|
| F740320011 | F740320021 | F740320031 | F740320041 |
| F740320111 | F740320131 | F740340011 | F740340021 |
| F740340031 | F740340041 | | |

**Product type:**

Ultra-low temperature freezer
"i" designates model with touch user interface, in general
"h" designates model with refrigerant hydrocarbon, air-cooled
"hi" designates model with refrigerant hydrocarbon, air-cooled
"hiw" designates model with refrigerant hydrocarbon, water-cooled

**Relevant directives / standards:**

| | |
|---|---|
| 2014/35/EU: | EN 61010-1, IEC 61010-1 |
| | UL 61010A-1, CAN/CSA C22.2 No. 61010-1 |
| 2014/30/EU: | EN 61326-1 |
| | 47 CFR FCC part 15 |
| 2011/65/EU: | EN 50581 |
| 2006/42/EC: | EN 378-2 (partial) |
| Further applied standards: | UL 60730-1, UL 471, CAN/CSA-E60730-1, CSA C22.2 No. 120, IEC 60335-2-89 |

**Hamburg, October 15, 2018**

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ISO 9001 Certified
ISO 13485 Certified
ISO 14001 Certified

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UT9450 9999 02-02

# CERTIFICATE OF COMPLIANCE

| | |
|---|---|
| **Certificate Number** | 2018-03-29; 2018-07-09 (A1)-E215059 |
| **Report Reference** | E215059-D1001-1/A1/C0-UL-UL |
| **Issue Date** | 2018-03-29; 2018-07-09 (A1) |
| **Issued to:** | Eppendorf A G |
| **Applicant Company:** | Barkhausenweg 1<br>22339 Hamburg Germany |
| **Listed Company:** | Same as Applicant |
| **This is to certify that representative samples of** | Laboratory Freezer<br>CryoCube F740, CryoCube F740i, CryoCube F740iw, CryoCube F740h, CryoCube F740hi, CryoCube F740hiw<br><br>Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate. |
| **Standard(s) for Safety:** | UL 61010-1, 3rd Edition, May 11, 2012, Revised July 15 2015, CAN/CSA-C22.2 No. 61010-1-12, 3rd Edition, Revision dated July 2015 |
| **Additional Standards:** | UL 471 (edition Tenth 06/17/2016), Sections 42, 44, 49 and 68 and CSA C22.2 No. 120-13 (March 2013) Sections 6.11, 6.3, 6.4 and 6.26<br>Models F740hi, F740hiw and F740h were investigated to UL 471 Tenth Edition, with revisions through December 8, 2016, and the Canadian Standard for Refrigeration Equipment, CAN/CSA C22.2 No. 120-13 dated March 2013 under report SA45018 Vol1, Sec. 1.<br>Fluid-containing parts of refrigeration systems meet the relevant pressure-related requirements of IEC 60335-2-89. |
| **Additional Information:** | See the UL Online Certifications Directory at www.ul.com/database for additional information. |

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Bruce Mahrenholz, Assistant Chief Engineer, Global Inspection and Field Services, UL LLC
Joseph Hosey, General Manager, Director of Sales – Canada, UNDERWRITERS LABORATORIES OF CANADA INC.

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