

Thermo Scientific

Environmental Chambers

Heratherm

EIS, EIG, ESS, ESG, ECS, ECG

250

Operating Instructions

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Thermo Electron LED GmbH
Robert-Bosch-Straße 1
D-63505 Langenselbold
Germany

Thermo Electron LED GmbH is a subsidiary of:
Thermo Fisher Scientific Inc.
168 3rd Avenue
Waltham, MA 02451
USA

UK Importeur

Life Technologies, 3 Fountain Drive
Inchinnan Business Park
PA4 9RF
Scotland

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Preface

General Notes



WARNING

Improper use of this environmental chamber can result hazards and injury if not used as intended.

These operating instructions describe Heratherm environmental chambers. The environmental chambers are manufactured with the current state of the art standards and are tested to ensure they meet published specifications before delivery.

The environmental chamber may only be operated by trained personnel. Service and repair may only be performed by Thermo Fisher Scientific authorized service provider.

Safety instructions on the device must be kept legible and must not be removed.

Keep these operating instructions near the device so that safety instructions and important information on operation can be looked up at any time.

If individual points have not been covered in sufficient detail in these operating instructions, please contact Thermo Fisher Scientific for your own safety.

The device must be operated using only Thermo Fisher Scientific original spare parts and accessories.

The regulations of occupational health and safety must be observed at all times!

Requirements for the Personnel



DANGER

Persons that have not completed training on this device will need supervision from someone who has experience with the environmental chamber.

Operating Personnel

Operating Personnel consists of trained specialists and instructed users.

Trained professional staff

Instructed technical personnel are persons who have suitable technical training and/or many years of experience in the relevant field of work. Based on their knowledge and experience, they can recognize and avoid hazards emanating from laboratory equipment. They meet the country-specific requirements for compliance with a minimum age.

Service Personnel

Trained staff

Trained personnel are persons who have been trained by Thermo Scientific in the case of the equipment and who are authorized to repair, maintain and service the equipment.

Electricians

Qualified electricians are persons who trained to safely connect equipment to avoid any potential electrical hazards.

Characteristics of the Device and Device Documentation

Device Identification

Device designation: Heratherm EIS250, EIG250, ESS250, ESG250, ECG250, ECS250

Certification and Conformity:

Conformity: CE Conformity, UKCA

Certification mark: cULus

List of Abbreviations:

EIS	E nvironmental Chamber I ncubation S olid Door: Control of temperature only, exterior solid door with inner glass door
EIG	E nvironmental Chamber I ncubation G lass Door: Control of temperature only, exterior glass door
ESS	E nvironmental Chamber S tability S olid Door: Control of temperature and humidity, exterior solid door with inner glass door
ESG	E nvironmental Chamber S tability G lass Door: Control of temperature and humidity, exterior glass door
ECS	E nvironmental Chamber C O ₂ S olid Door: Control of temperature, humidity and CO ₂ , exterior solid door with inner glass door
ECG	E nvironmental Chamber C O ₂ G lass Door: Control of temperature, humidity and CO ₂ , exterior glass door
RH	Relative Humidity
SSI	Summarized Safety Instructions
IPA	Isopropyl Alcohol

Responsibility of the Operator in Charge

The operator is responsible for the proper condition of the device. In particular, must ensure that

- the device is operating correctly before commissioning.
- the device is used properly and as intended for the intended use.
- that the performance of the products is suitable for the customer's specific use or application.
- the environmental chamber is operated only by operating personnel
- such personnel wear the required protective equipment at all times when working on or with the equipment.
- appropriate cleaning procedures will be implemented if hazardous materials have been spilled on or in the environmental chamber.
- they have knowledge of all rules and regulations and also communicates these to the staff.
- written procedural instructions are prepared for personnel working with this equipment.

These must be based on:

- this operating manual

Preface

Briefing of the Personnel

- the valid safety data sheets
- the company's hygiene guidelines and
- the corresponding technical rules,

In particular, these shall include procedural instructions:

- which disinfection measures are to be applied to the device and the aids used,
- which protective measures must be observed when processing certain agents,
- for wearing protective equipment, e.g. when handling microbiological and biological samples,
- which safety measures must be observed when using gases and pressurized gas containers,
- what measures are to be taken in the event of accidents,
- that repair work on the device is only carried out by trained personnel, who have knowledge of the handling of gases and gas containers
- that the specified maintenance intervals are observed
- that the device is only operated in a clean, tidy and suitable environment
- that unauthorized persons do not gain access to the device.

Briefing of the Personnel

Equipment with CO₂ Supply

Personnel working on equipment with CO₂ supply must be instructed on the special handling of CO₂ before starting work:

- the proper operation of compressed gas containers and gas supply systems
- the obligation to report damage and defects in the CO₂ supply lines
- measures to be taken in the event of accidents and malfunctions

The instructions are to be repeated at appropriate intervals. The special operating instructions of the gas suppliers are to be included in the instructions.

Validity of the Instructions

- The contents of these operating instructions may be changed at any time and without notice
- For translations into foreign languages, the English version of these operating instructions is binding

If you have any questions that you feel are not covered in sufficient detail in these operating instructions, please contact Thermo Scientific for your own safety.

Warranty

Thermo Fisher Scientific warrants the safety and functionality of the environmental chambers for 2 years on parts and labor only on the condition that:

- The device is used exclusively for its intended purpose and is operated and maintained in accordance with information in these operation instructions,
- no structural changes are made to the device,
- only original and Thermo Scientific approved spare parts or accessories are used,
- inspections and maintenance work are carried out according to the specified time intervals,
- a functional test is carried out after all repair work.

Explanation of the Safety Instructions and Pictograms

Safety Instructions



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injuries.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injuries.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injuries.



ATTENTION

Indicates a situation which, if not avoided, could result in property damage.

Note Is used for application hints and useful information.

Supplementary Pictograms to the Safety Instructions



Wear safety gloves!



Wear safety goggles!



Switch off and block operating equipment! Devices may only be maintained or repaired when they are switched off and blocked in order to avoid possible dislocations.



Observe the operating instructions!



Pull out the mains plug!



Danger of crushing!



Danger! Electric shock!



Hot surfaces!



Fire hazard!



Explosion hazard!



Suffocation hazard



Tilting hazard!



Watch out for gas!



Danger of frost!



Biohazard!



Substances harmful to health!



Use mechanical help for lifting!



Observe environmental protection!



Do not touch!



Do not step on the device!



Don't use a forklift!

Signs on the Device



Hot surfaces



Caution! Observe the operating instructions!



Do not step!

General Safety Instructions

- Always wear appropriate protective equipment (clothing, gloves, goggles, etc.)
- Always deflect extreme cold or heat and wear protective clothing
- It is imperative that you observe the relevant hygiene regulations
- Please note that each person is responsible for their own safety
- Never step on the device with your feet
- Note that environmental chambers may only be put into operation if these operating instructions have been read and understood in full beforehand
- Disconnect any power supply before performing cleaning, troubleshooting or other maintenance on the product or its controls. Unplug the power cord connected to the rear of the unit to remove power to the environmental chamber.

Notes for Safety Instructions

DANGER

Risk of electric shock!



In a humid environment, there is a risk of electric shock from the electrical outlet indoor! Please pay attention to the following points:

- When using active humidification, only operate devices on the electrical outlet that are suitable for moist applications. Please refer to the manufacturer's instructions for this!
 - Before establishing the power connection, make sure that there is no condensation or moisture present on the electrical outlets or the device plug.
 - Switch off the electrical outlet when not in use!
 - Make sure the electrical outlet is switched off before operating a device connected to it.
-
- Observe the permissible load of the entire unit and in particular of the inserts; see Chapter „Technical Data“.
 - Distribute the samples evenly and do not place them too close to the walls in the interior to achieve good temperature distribution.
 - Do not load the environmental chambers with substances that overwhelm the ability of personal protective equipment to provide adequate protection for users.
 - Do not load the environmental chambers with substances that overwhelm the ability of the available laboratory equipment to provide adequate protection for users and third parties.
 - Check the door seal annually for function and any damage
 - Do not process samples containing hazardous chemical substances that may be released into the ambient air through leaks in the instrument or that may have a corrosive or otherwise damaging effect on parts of the environmental chamber.
 - The temperature control of defined substances or materials with a higher moisture content can lead to increased condensate formation in the usable space. Observe the corresponding measures.
 - Be careful not to pour any liquids on the inner bottom.
 - The user is responsible for carrying out appropriate decontamination procedures if hazardous substances are spilled on or inside the environmental chamber.

WARNING

If the environmental chamber is used in a manner not specified in the operating instructions, the device safety may not be ensured by the existing protective measures.



ATTENTION

Damage to the environmental chamber due to humidity.



After transport, decommissioning or storage in a damp environment, the device must undergo a drying process. During the drying process, the device cannot be expected to meet all the safety requirements of IEC 61010-2-010. The drying process takes approx. 2 hours.

Safety Instructions for Carbon Dioxide

Since CO₂ is rated as a harmful gas, certain safety instructions must be observed when the CO₂ incubator is started up and when the device is operated.



DANGER

Suffocation Hazard!

Large amounts of carbon dioxide (CO₂) released into the room atmosphere may cause suffocation. If CO₂ is released, initiate safety measures immediately!

- Leave the room immediately and do not allow others to enter the room!
- Inform security service or fire department.



Intended Use of the Device

WARNING

These products are not approved or intended for, and should not be used for medical, clinical, surgical, or other patient-oriented applications or diagnostics.

It is the customers' responsibility to ensure that the performance of the products is suitable for customers' specific use or application.



The Environmental Chambers are intended for general laboratory use to maintain a defined, controlled interior environment for scientific research applications including:

- Stability testing (e.g. drugs, packaging, cosmetics, food samples)
- Cultivation of cells, tissues, microorganism cultures in the range of 0 °C to 70 °C (32 °F to 158 °F)
- Storage of substances and samples
- Controlled thawing of materials

A constrained set of internal conditions is maintained in the workspace of the device by exerting precise control of the following parameters:

- Temperature control - from 0 to 70 °C
- Humidity control (on option/only in some models) - from 10 % to 90 % RH (relative humidity)
- CO₂ content (on option/only in some models) - from 0 to 20 %

This Environmental Chamber has been designed for operation in the following sectors:

- Academic research laboratories, including those focused on microbiology, molecular biology, genetics, pharmacology, immunology, biochemistry, biophysics, etc.
- Research and quality control laboratories that require mammalian and non-mammalian cell culture at temperatures below ambient.
- Research laboratories - conducting experiments classified under Biological Safety Levels 1 and 2 (BSL 1 and BSL 2).
- Industrial research laboratories focused on aging and stress testing under strict environmental conditions
- Forensic laboratories conducting fingerprint analysis
- Facilities that require environmental controlled storage of non-clinical samples and materials.

This device is intended for professional use only and must only be operated by trained staff.

Standards and Guidelines

- Low Voltage Directive 2014/35/EU
- IEC 61010-1:2010/AMD1:2016
- IEC 61010-2-010:2019
- EMC Directive 2014/30/EU
- IEC 61326-1:2020

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 instruction 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.

This ISM device complies with Canadian ICES-001.

Delivery

Content

- „Packaging” on Page 1-1
- „Acceptance Inspection” on Page 1-2
- „Scope of Delivery” on Page 1-3

ATTENTION

Humidity



After transport and decommissioning, or storage under humid conditions a drying-out process must be performed. During the drying-out process the equipment cannot be assumed to meet all the safety requirements of the IEC 61010-2-010 standard. The drying-out period is 2 hours.

Packaging

The environmental chamber is delivered in a stable packaging box. All packaging materials can be separated and are reusable:

- Packaging carton: Recycled paper
- Packaging film: Polyethylene
- Packaging ribbons: Polypropylene
- Pallet: untreated wood

Acceptance Inspection



WARNING

Risk of injury due to sharp edges

If the device has been damaged and sharp edges have formed in the damaged area or elsewhere on the device, there is a risk of injury.

Take all necessary precautions to protect persons involved in handling the device. For example, ensure that the persons concerned wear protective gloves or other personal protective equipment if necessary.

Upon delivery, check immediately for:

- All necessary parts and accessories,
- possible damage.

If components are missing or damage is found on the device or the packaging, esp. damages caused by humidity and water, please contact the carrier as well as the customer service immediately.

Scope of Delivery

Included device components	Quantity
Environmental Chamber	1
SSI	1
Shelving System (Shelves and Shelf supports)	1 (2 ^a and 4 ^b)
Set of Accessories (4 (6) plugs (cone shaped inserts), wall brackets, water connection, water reservoir) ^c	1
Pair of keys for door lock	1
Operating Instructions	1
CO ₂ -Hose-Set	1
Power cord added depends on where the unit is shipped. Available cords:	
NEMA 5-15P ^d	1
EU Schuko	1
UK	1
China	1
India	1
Australia	1
Japan	1
Switzerland	1
Denmark	1

^aPerforated stainless steel shelves.

^bShelf supports.

^cDepends on the variant.

^dOptionally available/orderable: NEMA 6-20P (Order Number 50135319). Note: This cable cannot be used in case the chamber has the optional interior socket!

Description

Content

- „General” on Page 2-1
- „Variants” on Page 2-2
- „Environmental Chamber Rear View” on Page 2-5
- „Technical Features” on Page 2-7
- „Factory Installed Options” on Page 2-12
- „Field Installable Options” on Page 2-13

General

The Heratherm environmental chambers allow the user to create an environment where he can control the parameters of temperature, humidity, and CO₂¹.

The devices are available in different versions. Depending on the design, applications range from incubation of cells to testing in pharmaceutical research and plant cultivation under controlled conditions.

Compared to previous designs, the focus is on reduced and controlled energy and water consumption as well as sustainable production and high environmental compatibility.

With the help of electronic control via the contemporary touchscreen display, it is possible to both precisely adapt each device to one's own needs and to program it to automatically execute standardized procedures.

¹ Available parameters depend on the chamber model.

Variants

A total of 6 different basic climate chamber types with a volume of 250 l are available. All climatic chambers have a display with touch-screen control and Peltier technology:

Type	Main Function	Door Type	Temperature	Relative Humidity
EIS	Incubation	Environmental Chamber Incubation Solid Door: Control of temperature only, exterior solid door with inner glass door	0 °C to 70 °C (32 to 158 °F)	-
EIG	Incubation	Environmental Chamber Incubation Glass Door: Control of temperature only, exterior glass door	0 °C to 70 °C (32 to 158 °F)	-
ESS	Stability	Environmental Chamber Stability Solid Door: Control of temperature and humidity, exterior solid door with inner glass door	0 °C to 70 °C (32 to 158 °F)	10 - 90 %
ESG	Stability	Environmental Chamber Stability Glass Door: Control of temperature and humidity, exterior glass door	0 °C to 70 °C (32 to 158 °F)	10 - 90 %
ECS	CO ₂	Environmental Chamber CO ₂ Solid Door: Control of temperature, humidity and CO ₂ ; exterior solid door with inner glass door	15 °C to 45 °C (32 to 122 °F)	10 - 90 %
ECG	CO ₂	Environmental Chamber CO ₂ Glass Door: Control of temperature, humidity and CO ₂ ; exterior glass door	15 °C to 45 °C (32 to 122 °F)	10 - 90 %

Environmental Chamber Front View

Note Depending on application, ambient situation and combination of parameter settings, range of temperature or humidity might be reduced.

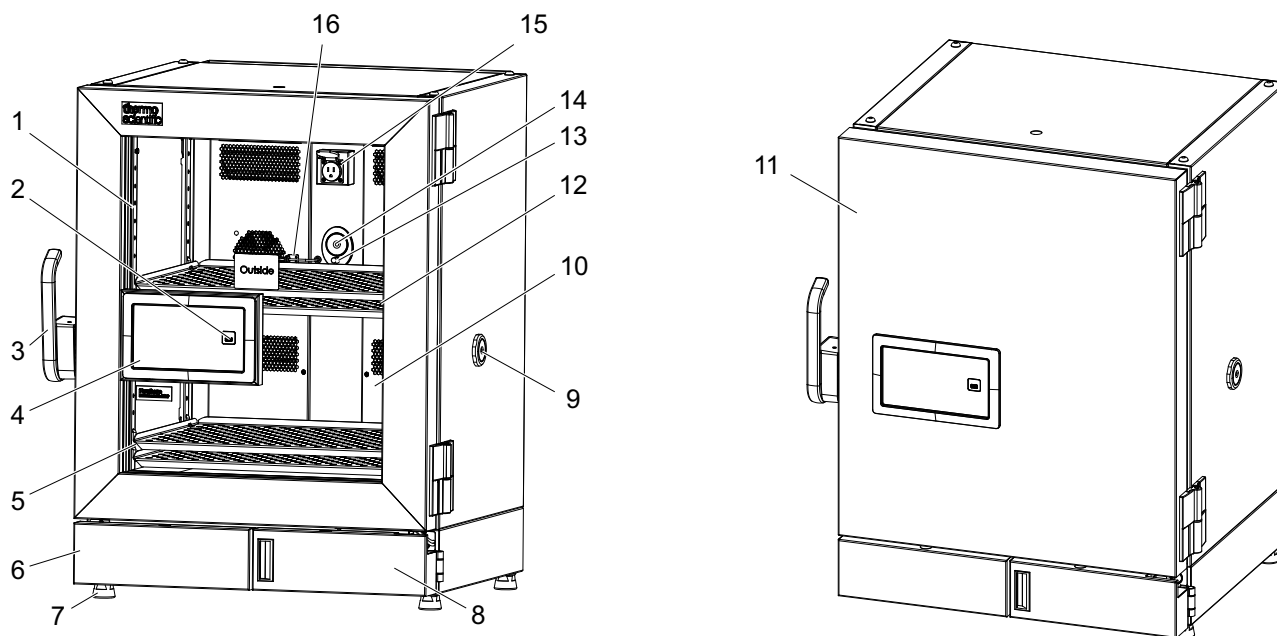


Figure 2-1. Front View

Pos.	Name	Description	Qty
1	Wall-mounted rails	They are used to hook the shelf supports into them. They are fixed with screws.	4
2	USB-Port	Visible and easily accessible, allows 2-way communication via USB stick.	1
3	Lockable Door handle	Is used to open, to close and to lock the door.	1
4	Display	The 7" Display is used for operating, status display and monitoring.	1
5	Shelf Supports	They are hooked into the support rails to accommodate the shelves.	4
6	Removable cover	It covers the lower filters and the E-deck.	1
7	Feet	They are height adjustable and suitable for stacking.	4
8	Water reservoir door ^a	The door covers the water reservoir and the CPC-connections for the water tubing.	1
9	Access ports	At the left and the right side of the unit.	2
10	Exterior Glass Door	Allows visual inspection of the inner volume without opening it.	1
11	Exterior Solid Door ^b	Solid metal door. It always comes with an inner glass door.	1

2 Description

Environmental Chamber Front View

Pos.	Name	Description	Qty
12	Perforated stainless steel shelves	Are used to put samples on it. Observe the load limitations!	2
13	RH-Sensor ^a	Measures the humidity in the device.	1
14	CO ₂ -Sensor ^c	Measures the CO ₂ content in the device.	1
15	Socket ^d	Is used to connect additional devices, for example a shaker.	1
16	Temperature Sensor	Measures the temperature in the device.	1

^aOptional. Only available for ECS, ECG, ESS, ESG.

^bDepends on the variant.

^cOptional. Only available for ECS and ECG.

^dOptional. Available for all models/ choose relevant type of socket (US, EU, UK, China, India, Australia, Switzerland).

Environmental Chamber Rear View

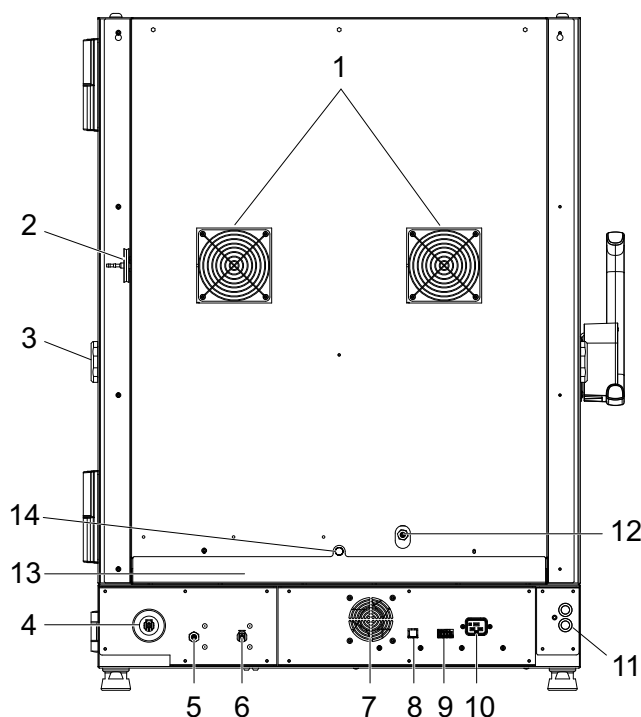


Figure 2-2. Rear View



WARNING

The cover of the E-Deck may only be removed by service technicians.

Pos.	Name	Description	Qty
1	Peltier System	Cooling and heating the environmental chamber	2
2	CO ₂ Connection ^a	Port on which you can connect the CO ₂ supply	1
3	Accessports	At the left and the right side of the unit.	2
4	Passage to the water reservoir	Here the tubing of the manual water supply coming from the front is passed through	1
5	CPC Connection 1 ^a	Used to connect the fixed water connection to the evaporator via a tube.	1
6	Fix water connection ^b	The environmental chamber is connected to the water supply here	1
7	Fan	This is the fan of the e-deck	1
8	USB	Connecting the data cable	1

2 Description

Environmental Chamber Rear View

Pos.	Name	Description	Qty
9	Dry Contact	Alarm output: 50 VDC/2 A (trained technician only)	1
10	Mains connection	To plug in the power cord	1
11	Fuses	T2A interior sockets	2
12	CPC Connection 2 ^a	Evaporator pump input	1
13	Condensate tray	Condensate collection container	1
14	Knurled screw	Used to secure the condensate tray	1

^aOptional. CO₂ only available for ECS and ECG. CPC connections and fix water connection are only available for ECG, ECS, ESG and ESS.

^bOptional.

Technical Features

Peltier System

The installed „Peltier-air-air-system“ (Figure 2-3 and Figure 2-4) is integrated in the rear wall and designed for tempering (cooling and heating) of the usable space. The peltier module consists of two heat sinks (heat exchanger), each equipped with an axial fan. In cooling mode, heat from the usable space is absorbed and conducted to the environment on the device outside. In heating mode the heat is absorbed from the outside of the unit and emitted into the device usable space.

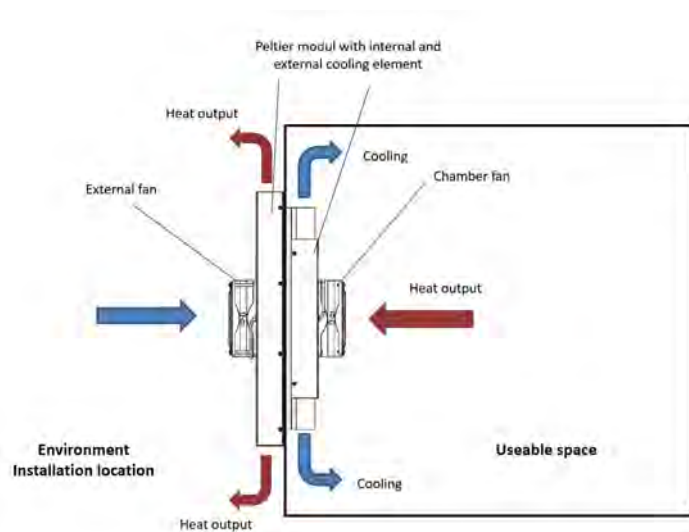


Figure : IMP-Peltier-Refrigerated incubator in cooling mode

Figure 2-3. Peltier refrigerated chamber in cooling mode

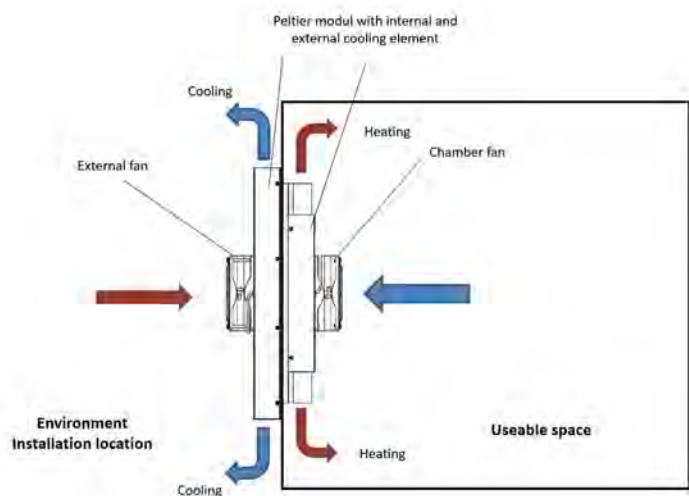


Figure : IMP-Peltier-Refrigerated incubator in heating mode

Figure 2-4. Peltier refrigerated chamber in heating mode

Doors



WARNING

Cut injuries from broken glass and splinters!

Do not damage the glass doors! Please note that there may be splinters in the device if a glass door has been damaged!

Clean the device thoroughly if a glass panel has been damaged.

Exterior Doors

The exterior doors have heater built in to reduce condensation and have a right side hinge.

The exterior solid door consists of stainless steel.



WARNING

Damage to the specimens and risk of injury due to incorrect closing and opening of the door.

Opening and closing the door too roughly can cause vibrations. Condensation dripping from the door can cause pools of water in front of the device.

Do not open or close the glass and metal outer door too roughly to avoid damage to the samples caused by vibrations.



WARNING

Risk of injury due to slipping on puddles of water.

Wipe up any water that may have leaked from the unit immediately. Do not continue operation until the cause of the leakage has been determined and eliminated.



WARNING

Risk of crushing body parts.

Close the door only with the handle to avoid crushing your fingers or hand, for example on the stop side between the door and the upper housing.

Inner Glass Door (optional)



ATTENTION

To prevent loss, the CO₂ sample port must be capped when it is not in use.

The inner glass door comes always with an exterior solid door and has also a right hand hinge.

It is for enabling operators to view or inspect the inner chamber without disturbing the chamber atmosphere.

For cleaning see „Glass Doors” on [Page 8-7](#).

CO₂ Alarm



ATTENTION

CO₂ alarm - The CO₂ alarm is factory set to activate when the chamber CO₂ content deviates from configured alarm set points. When a CO₂ alarm occurs, the CO₂ alarm indicator on the control panel lights and the audible alarm sounds.

CO₂ Control and Indicators²

The CO₂ sample port (inner glass door) is used for checking CO₂ percentage in the environment chamber by an independent test instrument (such as with a G100, or similar CO₂ test instrument).

Remote Alarm Contacts

Remote alarm connections are also included on the terminal strip providing Normally Open (N.O.) and Normally Closed (N.C.) contacts. C is the Common terminal. The remote alarm will activate when either the chamber's temperature, humidity or CO₂ go out of the set alarm limits.

These remote alarm connections can be used to connect an external alarm device, the socket is at the back side of the unit (see [Figure 2-2, 9](#)).

Maximum rating is 50 VDC/2 A. Installation of devices should only be implemented by a trained technician.

Note

A corresponding connector is available as a spare part:

50050736 CONNECTOR ORANGE F. ZERO-POT. CONTACT

² CO₂ is only available at ECS and ECG.

Access Ports

Note When closing the access ports, insert 2 plugs in each case (one from the inside and one from the outside) so that no unwanted condensate forms there.

Note At least every 3 months the access ports should be checked for condensation and wiped dry if necessary.

At the left and at the right side of the unit are access ports to feed-in cables to the inner chamber. To minimize the openings, use the cone shaped inserts supplied with the unit. If not in use, the inside and outside openings should be closed using the 2 plugs supplied with the unit.

Shelf System Components

The supports rails of the shelf system (already installed) are perforated every 38.1 mm (1.5 inch) so that the shelf supports can be inserted variably for any culture container size required. The shelves have an integrated tilt protection and pull-out stop.

Water Reservoir³

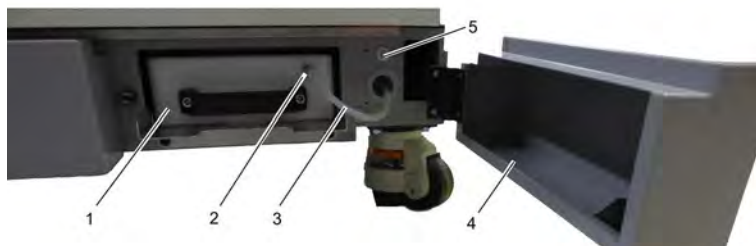


Figure 2-5. Water Reservoir

The water reservoir (Figure 2-5, 1) is pushed into the device from the front to the back at the bottom right on a stainless steel plate. The water reservoir has a pull-out stop when it is pulled out in refill position.

The water reservoir is located behind an openable hinged door. (Figure 2-5, 4).

At the upper right corner of the water reservoir is a CPC connector (Figure 2-5, 2) to which a hose (Figure 2-5, 3) is attached.

A blind CPC connector is used to hold the hose while the water reservoir is being filled (Figure 2-5, 2)

The water tubing is led away to the rear through an opening at the bottom right, where it is attached to the CPC connection of the peristaltic pump (Figure 2-2, 13).

It's possible to clean or exchange the water tube, which connects the water reservoir and the supply pump (see „Water Reservoir” on Page 8-8).

³ Humidity is only available at ESS, ESG, ECS and ECG. This unit will in standard include the water system with reservoir.

Display - Main Screen⁴

The 7" display with a resolution of 133 ppi has a capacitive touchscreen. It can also be operated with nitrile gloves.

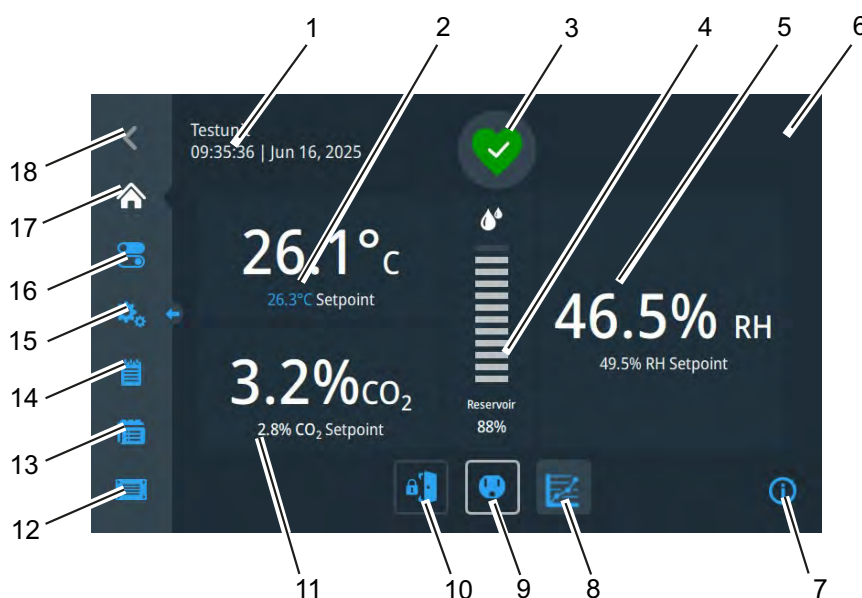


Figure 2-6. Overview Display

- | | |
|----|--|
| 1 | Display Unit Name |
| 2 | Main box temperature: Displays temperature in degrees Celsius or Fahrenheit. Possibility to change setpoint |
| 3 | Unit health status: Good, Alert, Alarm or Snoozed Alarm |
| 4 | Water reservoir in Percent |
| 5 | Main box relative humidity: Displays current relative humidity in percent. Possibility to change setpoint. |
| 6 | Login Area: Displays whether the secure mode is selected |
| 7 | Information about the current display |
| 8 | Display, setting and export of tables on temperature, relative humidity and CO ₂ |
| 9 | Socket |
| 10 | Lock/Unlock button |
| 11 | Main box CO ₂ : Displays CO ₂ in percent. Possibility to change setpoint. |
| 12 | Files and Info: Device information, factory reset and manual (Open Mode)
User Profile/User Administration (Secure Mode) |
| 13 | Programs: Imported or created programs |
| 14 | Event Log: Recorded events |
| 15 | Settings |

⁴ The elements on the display vary depending on the device option selected.

16	Main Controls
17	Home button (Brings you back to this main screen)
18	Back button (No history button: Brings you back up one level)

Factory Installed Options⁵

Electrical Outlet



WARNING

Regarding the power socket, please pay attention to the safety instructions mentioned in the preface.

An interior socket provides power to the user. For detailed information on the connection values, please refer to the technical data in the "Technical data" chapter.

Left Hinge Door

It is possible to order the device with a left-hinged door.

Fix Water Connection

A fixed water connection is located on the rear of the environmental chamber, with which the environmental chamber can be connected to the laboratory water supply. This chamber does not contain a water reservoir.

Automated Door Lock

The devices are equipped with an automated door lock system that allows for secure access control to the environmental chamber, ensuring only authorized personnel can open or close the door.

Shaker Support Shelf

The shaker support shelf is reinforced and secured to the environmental chamber walls. They have a load limit of 90 kg (198_lbs) per shelf, one shelf being the floor of the unit. A maximum of 2 shakers can be used per environmental chamber.

⁵ Optional.

Field Installable Options

Shaker Support Shelf

It is possible to have the device retrofitted with a shaker shelf by a service technician. Please refer to the installation instructions for the shaker shelf.

Fix Water Connection

It is possible to have the device retrofitted with a fix water connection by a service technician.

Automated Door Lock

It is possible to have the device retrofitted with an automated door lock by a service technician.

Transport, Lifting and Moving

Content

- „Lifting and Moving” on Page 3-1
- „Transport” on Page 3-3

Lifting and Moving

DANGER

Danger to life from falling equipment!



If the device is lifted at points other than the defined lifting points (e.g., at the device feet), these may not be able to withstand the load. This could cause the device to fall to the ground and cause serious injury to people, which could result in death.

Only lift the device at the defined lifting points!

In particular, do not loop a rope around the device feet to lift the device with a crane.

WARNING

Heavy loads! Take care when lifting!



To prevent overload-related injuries, such as strains and damaged intervertebral discs, never attempt to lift the environmental chamber without a suitable lifting gear (e. g. pallet truck)!

To avoid injuries from falling loads, always wear personal protective equipment, such as safety shoes and non-slip gloves, when lifting the device.

ATTENTION

Equipment damage due to unsuitable lifting gear!

Only lift the unit using suitable lifting gear (e.g. a pallet truck)!

Only move the device in conjunction with a pallet!

Only use a forklift to transport the device on pallets to the installation site and only for short distances.

Only lift the unit at the lifting points (Figure 3-1).



ATTENTION

After unpacking and bringing in upright position, the unit is designed to be moved on even surfaces, in a laboratory, to its operation position, only.

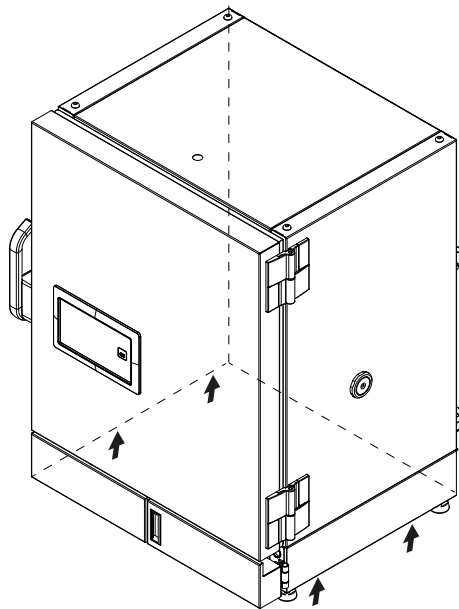


Figure 3-1. Lifting Points

Transport



WARNING

Injuries due to tipping over

Multiple personnel are required to prevent injury from unexpected tipping when removing the unit from the shipping pallet.



ATTENTION

Humidity

After transport and decommissioning, or storage under humid conditions a drying-out process must be performed. During the drying-out process the equipment cannot be assumed to meet all the safety requirements of the IEC 61010-2-010 standard. The drying-out period is 2 hours.

1. Remove the steel bands carefully.
2. Discard band protectors and shipping plastic.

Set Up and Installation

Content

- „Environmental Conditions” on Page 4-1
- „Set Up” on Page 4-3
- „Installation” on Page 4-6
- „Fill Water Reservoir” on Page 4-8
- „Lab Water Connection” on Page 4-10
- „Shaker Support Shelf” on Page 4-11
- „Shakers” on Page 4-11

Environmental Conditions

The device may only be operated at installation sites that meet the special environmental conditions listed below:



ATTENTION

Always connect the device to a suitable power supply! Only use the supplied power cord. The respective power consumption of the device is specified in the chapter "Technical data".



ATTENTION

Humidity!

After transport and decommissioning, or storage under humid conditions a drying-out process must be performed. During the drying-out process the equipment cannot be assumed to meet all the safety requirements of the IEC 61010-2-010 standard. The drying-out period is 2 hours.

If condensation is present, wait until the condensate has dried before connecting or starting up the environmental chamber.

- The device is very heavy! If you place it on a table, make sure that the table is sufficiently dimensioned and has an appropriate load-bearing capacity.

4 Set Up and Installation

Environmental Conditions

- Draft-free and dry installation location indoors. The ventilation must not blow directly onto the device.
- The dust load must not exceed the values of contamination category 2 according to EN 61010-1. The use of the environmental chamber in atmospheres with conductive dusts is not permitted.
- The operating room must be equipped with suitable room ventilation.
- Solid, level and non-combustible installation surface.
- No flammable materials on the back wall of the climatic chamber.
- The electrical system of the climatic chamber is designed for operation at a location at max. 2000 m above sea level.
- Ambient temperature between 18 °C and 28° C (64.4 °F and 82.4 °F).
- Relative humidity up to 70%, non-condensing, at an ambient temperature of 28 °C decreasing linearly to 55% at 28°C (82.4 °F).
- No direct exposure to sunlight or in front of a window.
- No devices with high heat radiation may be installed or parked in the near vicinity of the environmental chamber.
- Any mains voltage fluctuations must not exceed $\pm 10\%$ of the nominal voltage.
- An adjustment of the mains voltage ($< -10\%$ & $> 10\%$) during the device operation is not permitted.
- Transient overvoltages must be within the range of values normally occurring in the supply network. The nominal level of the transient overvoltage is the impulse withstand voltage according to overvoltage category II of IEC 60364-4-443.
- The mains connection to which the device is connected must be equipped with a Listed Class A "Ground Fault Circuit Interrupter".

Set Up

Space Requirements



ATTENTION

Observe the minimum distances specified below for the installation of the device.

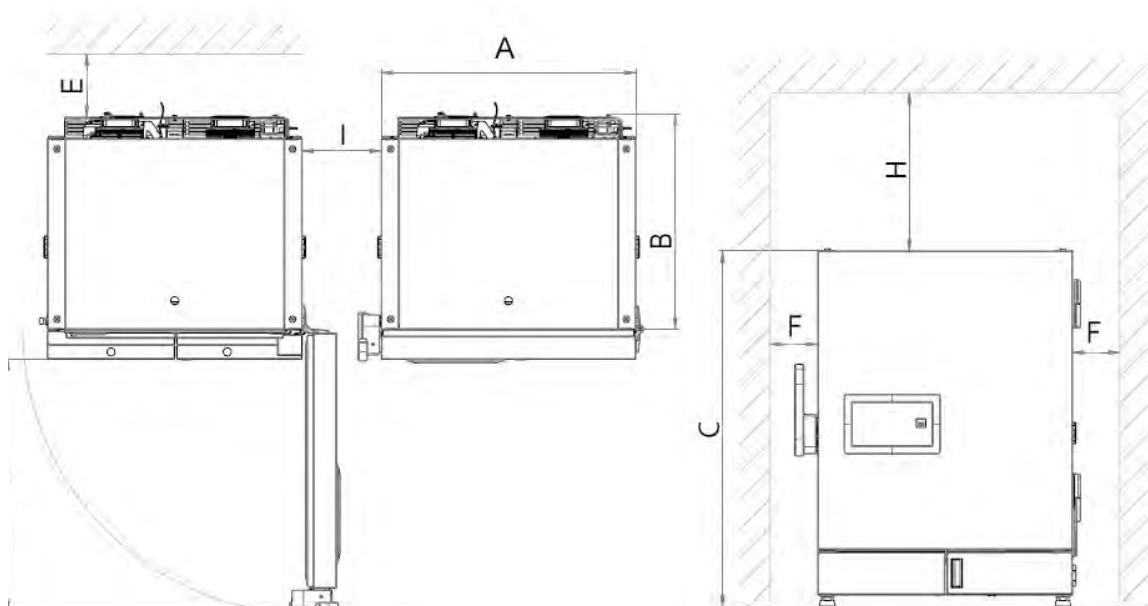


Figure 4-1. Space Requirements

A (mm/inch)	B (mm/inch)	C (mm/inch)	D (mm/inch)
804 mm / 31.6"	667 mm / 26.3"	1128 mm / 44.4"	895 mm / 35.2"
E (mm/inch)	F (mm/inch)	H (mm/inch)	I (mm/inch)
200 mm / 7.87"	150 mm / 5.91"	500 mm / 19.68	150 mm / 5.91"

Attaching the wall brackets



DANGER

To prevent the device from tipping over, we recommend attaching the supplied wall brackets to the wall to secure the device before use.

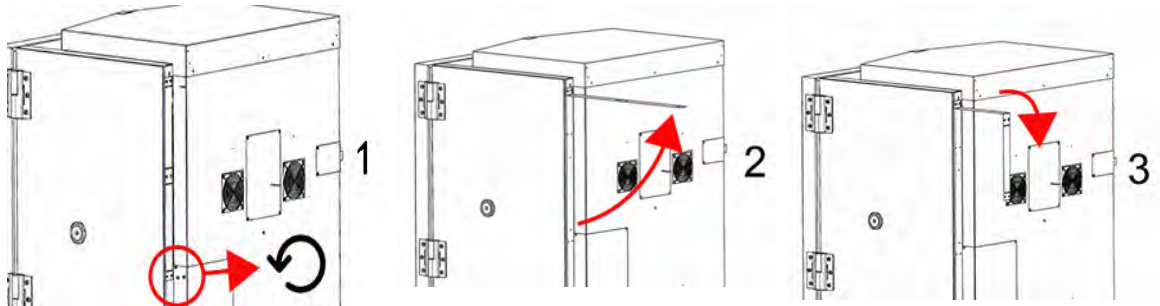


Figure 4-2. Attaching the wall brackets – 1

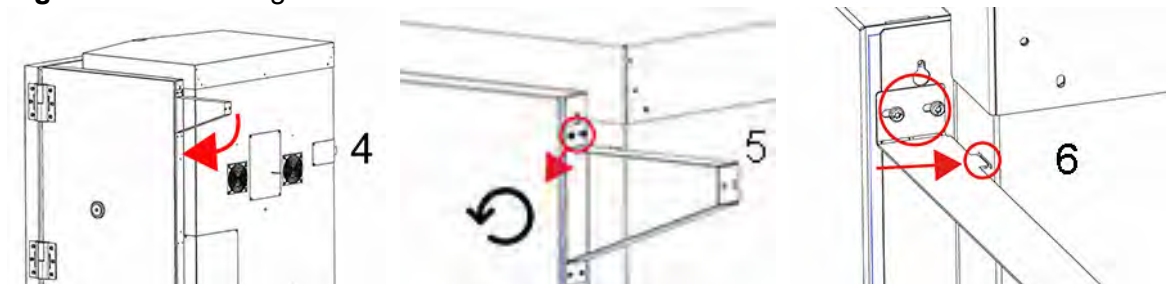


Figure 4-3. Attaching the wall brackets – 2

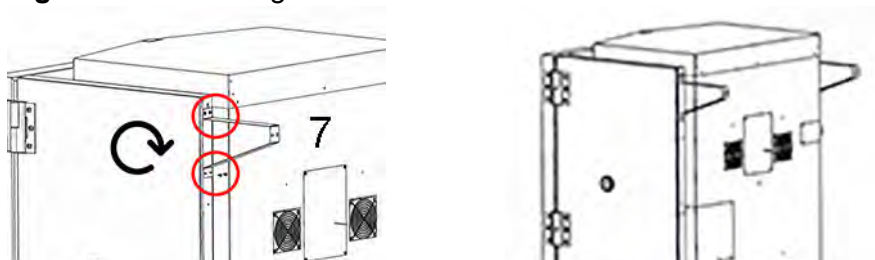


Figure 4-4. Attaching the wall brackets – 3

Installing the Shelf System

Shelf Support Installation

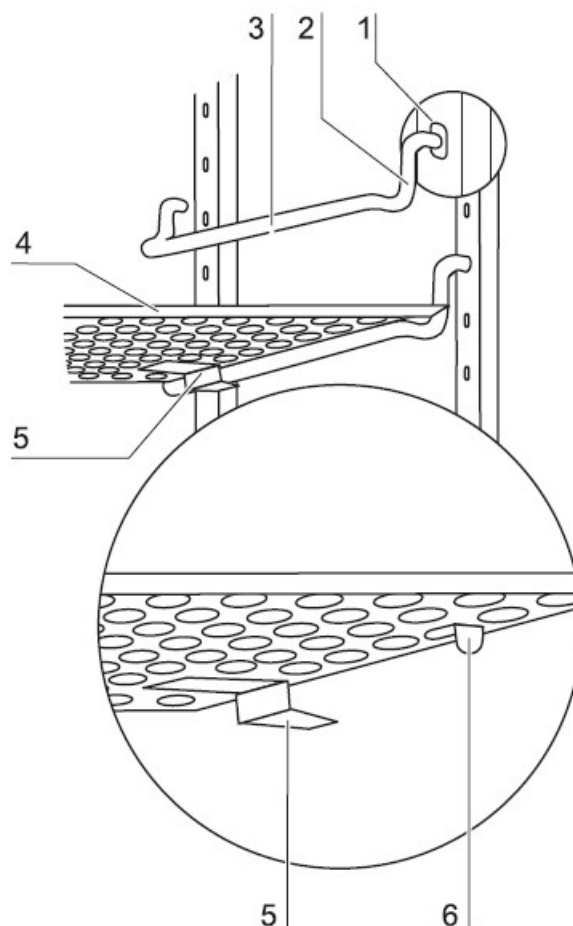


Figure 4-5. Shelf Support Installation

1. Insert the shelf support into the perforation of the wall-mounted rail (1) with the bar (3) facing down.
2. Make sure that the two vertical elements (2) of the shelf support are flush with the wall-mounted rail.

Installing the Shelves

Note The shelves can be installed at any height in the environmental chamber.

Note Make sure that the guides (5) on both sides are at the same height so that the installed shelf is horizontal.

1. Slide the shelves (4) with the tilt protection (6) device ahead onto the shelf support. The tilt protection is also used as a guide for the shelf.
2. Slightly raise the shelf so that the pull-out stop can be routed over the shelf supports.

3. Make sure that the shelf support is positioned in the two tilt protections in a way that allows it to move freely.

Leveling the Device



WARNING

The unit may only be used resting on its feet!

1. Place a spirit level on one of the shelves in the environmental chamber.
2. Rotate the adjustable device stands using a 36 mm (1.41 inch) wrench until the shelf is positioned horizontally in all directions. Perform the height adjustment of the device stands from left to right and from rear to front.

Installation

Mains Connection

The electrical data are indicated on the nameplate on the side of the device or in the "Technical data" section.



WARNING

Always connect the environmental chamber to a properly grounded power outlet. Always position the chamber so that there is unobstructed access to the power cord connection so that the unit can be easily disconnected from the mains in case of emergency.

- Establish a mains connection by plugging the plug of the supplied power cord into a properly grounded outlet.

Connect the water supply of the humidification system work in progress¹



ATTENTION

Distilled or deionized water used in the evaporator must be within a water quality resistance range of 50 K to 1 MΩm, to protect the stainless steel and extend its life. Use of water outside the specified range will shorten the life of the unit and may void the warranty.

Note The humidity system is activated not until the unit temperature in the chamber is reached. During initial start-up of the humidity system, filling of the water circuit is additionally taking usually 1 to 3 minutes.

¹ Depends on variant.

Water reservoir



ATTENTION

Make sure that the water reservoir is properly installed and all hoses are properly installed and connected.

Fix Water Connection



ATTENTION

The water inlet pressure must not exceed 43.5 psi (3 bar).



ATTENTION

Make sure that the hose connection is properly installed and connected.

Note The water consumption of this environmental chamber can be up to 0.25 l per day. When using this alternative water supply method, the supply source should be checked at regular intervals depending on capacity.

Note To connect your lab water system to the fix water connection at the device, you will need a CPC-connector with a nominal diameter of 32 mm.

The fixed water connection is located at the bottom at the rear of the environmental chamber (Figure 2-2, 6).

- Connect your lab water system with a suitable hose to the fix water connection.

CO₂ Supply



DANGER

Keep the inner glass door or the exterior door closed when using CO₂.



DANGER

Danger of suffocation with increased CO₂ content. Use only in well-ventilated rooms.



ATTENTION

At CO₂ input pressures above 1 ± 0.2 bar, liquid CO₂ could enter the unit and damage the CO₂ control system, valves, hoses, and filters.



ATTENTION

Only CO₂ supplies may be connected to the CO₂ connection. Connecting gases other than CO₂ could damage the device.

The system works most economically with CO₂ supply cylinders without a siphon, with which only CO₂ gas enters the injection device of the climatic chamber. For continuous operation purposes, two CO₂ supply cylinders can be connected together via a manifold.

The supply connection of the gas cylinder must be equipped with a two-stage pressure regulating valve with pressure gauge. To monitor the cylinder pressure, the high-pressure manometer should have a display range of 0 to 150 bar. To monitor the feed pressure to the injection device of the environmental chamber, the low-pressure manometer should have a display range of 0 to 2.0 bar. A suitable two-stage pressure regulating valve can be supplied on request.

The CO₂ source must be set to a pressure level of 1 ± 0.2 bar.

Connect CO₂ Supply

1. Connect the CO₂ hose to the 1/4" hose nozzle connection in the CO₂ inlet (Figure 2-2, 2).
2. Check the hose connection for any leaks.

Fill Water Reservoir

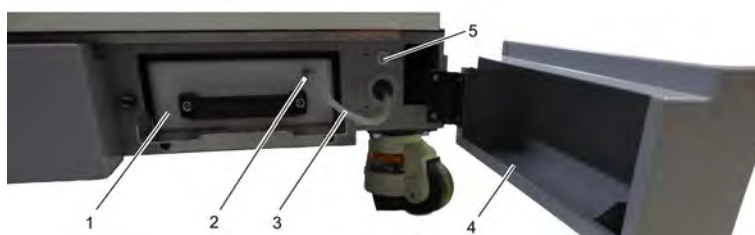


Figure 4-6. Water Reservoir cover open



Figure 4-7. Water Reservoir



ATTENTION

To avoid damage to the device and its components, use only water that meets the required specifications.

The use of unsuitable water leads to premature wear and contamination of the components involved.

Manual Filling on the Device

1. Open the water reservoir door at the lower front ([Figure 4-6, 4](#)).
2. Pull out the reservoir drawer up to the mechanical pull-out limit ([Figure 4-6, 1](#)).
3. Unscrew the filling cap ([Figure 4-7, 1](#)).
4. Fill the water reservoir with the recommended water until it is full (see [„Connect the water supply of the humidification system work in progress”](#) on [Page 4-6](#)).
5. Close the reservoir again with the filler neck and push the reservoir drawer back as far as it will go.
6. Close the reservoir door again.

Manual filling at the filling station

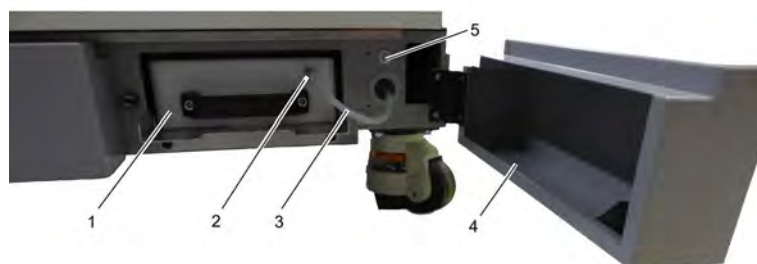


Figure 4-8. Water reservoir open

WARNING

Contamination due to contaminated connections!

Make sure that the hose does not come into contact with the floor or other potentially contaminated objects. Be sure to attach the loose end to the device provided for this purpose or to an adherent surface with the aid of the magnet.



1. Open the water reservoir door at the lower front (Figure 4-8, 4).
2. Disconnect the tubing (Figure 4-8, 3) off the CPC connection on the water reservoir (Figure 4-8, 2) and attach the loose end to the device on the right (blind CPC receptacle; Figure 4-8, 5).
3. Pull out the reservoir drawer (Figure 4-8, 1) up to the mechanical pull-out limit, then lift it slightly and remove the water reservoir completely.
4. Unscrew the filling nozzle.
5. Fill the water reservoir with the recommended water at your filling station until it is full.
6. Close the reservoir again and put it back into the drawer.
7. Attach CPC connector to the reservoir.
8. Close the door again.

Lab Water Connection

Note

Chambers with this factory installed option cannot be used with water reservoir.

Note To connect your lab water system to the fix water connection at the device, you will need a CPC-connector with a nominal diameter of 32 mm.

- Connect your Water Filling system to the CPC connection at the rear wall (Figure 2-2, 6).

Shaker Support Shelf

For installing the shaker support shelf, please refer to the installation instructions for the shaker support shelf.

Shakers



Figure 4-9. Example Shaker Installation

DANGER

Danger to life due to falling loads!

When operating the device with one or a maximum of two shakers, strong vibrations occur. These could cause the device to fall off a table.



Only operate the device on the floor when using it with one or a maximum of two shakers.

Please note that Thermo Fisher accepts no liability for the use of the device with shakers on a table.

Please also note the information on operation with third-party devices (see „[Operation](#)” on [Page 6-1](#)) as well as the specifications („[Technical Data](#)” on [Page 13-1](#)).

ATTENTION



When installing a shaker, observe the maximum power of the interior outlet supplied^a and/or, if applicable, the maximum current limits of the domestic installation.

^aOnly available with the factory installed option.



ATTENTION

When installing one or max. two shakers, observe the maximum permissible waste heat in the device chamber (see „[Technical Data](#)“ on [Page 13-1](#)).



ATTENTION

Keep sufficient distance to the side walls and to the glass panes/door.

Note

The closer the shaker is to the floor, the lower the dynamic forces acting on its point of application and the more stable it runs.

It is best to load the chamber from bottom to top. Place a single shaker at the bottom of the device, two at the bottom and in the middle.

You can operate up to two shakers in the environmental chamber at the same time.

- Put the shakers on the floor of the environmental chamber or on a shaker support shelf. Regard:
 - the max. loading of the shelf (90 kg / 198 lbs)
 - the max. loading of the shaker (6 kg / 13_lbs; platform included)
 - the secure stand of the shaker
- Connect them in one of the following ways:
 - to the internal power socket
 - or feed the power cables through the access port ([Figure 2-1](#), 9) on the side of the environmental chamber and use the power from the domestic power supply.
- Operate the shakers in accordance with the manufacturer's operating instructions and observe the information in the technical data. Regard the cautions in the chapter „[Operation](#)“.

Commissioning

1. Tap the Start Setup - button:



Figure 5-1. Main Screen with Thermo Scientific logo

2. Set your language via the drum/wheel selection. Then tap "Next".



Figure 5-2. Choose your language

3. Tap into the form field and set the unit name. Chose an own name for your Thermo Scientific Environmental Chamber.
4. Tap „Next“.

Note

A maximum of 20 characters (letters and/or numbers) is allowed. The only special characters allowed are the hyphen (-) and the underscore (_). The name must contain at least 3 characters.



Figure 5-3. Name your unit

5. Set your region by entering your town and your country.
6. Toggle on the „DST-feature“, if you want to use the automatically update of time when DST changes.
7. Tap „Next“.

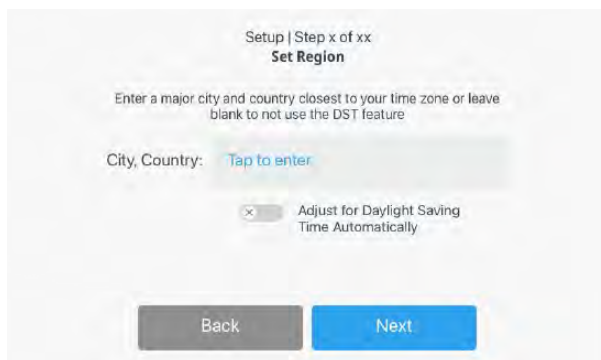


Figure 5-4. Choose your region

8. Choose your favorite date display format by tapping the radio buttons on the left side of the screen.
9. Set your date via the drum/wheel picker. You can gesture to move the picker - either by swiping the drum or by tapping the up/down arrows.
10. Tap „Next“.

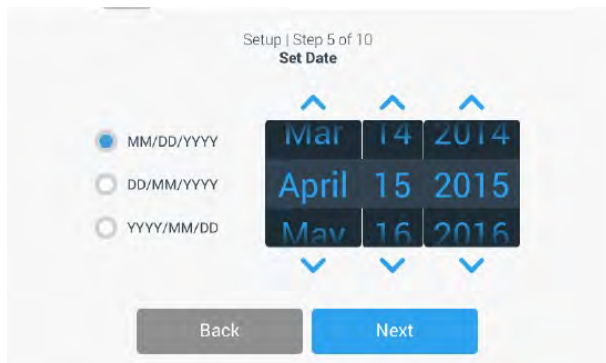


Figure 5-5. Choose the current date

11. Set the current time via the drum/wheel picker. You can use gestures to move the picker - either tapping the up/down arrows or by swiping your finger on the drum up or down.
12. Choose your favorite format to display the time by tapping the radio buttons on the left side of the screen.
13. Tap „Next“.



Figure 5-6. Choose your time

14. Select the applicable temperature unit. Celsius is the default.
15. Tap „Next“.



Figure 5-7. Choose temperature unit

16. You will be prompted to select the access mode to run the unit in now. Default option is open mode.
17. Select the access mode and tap „Next“.

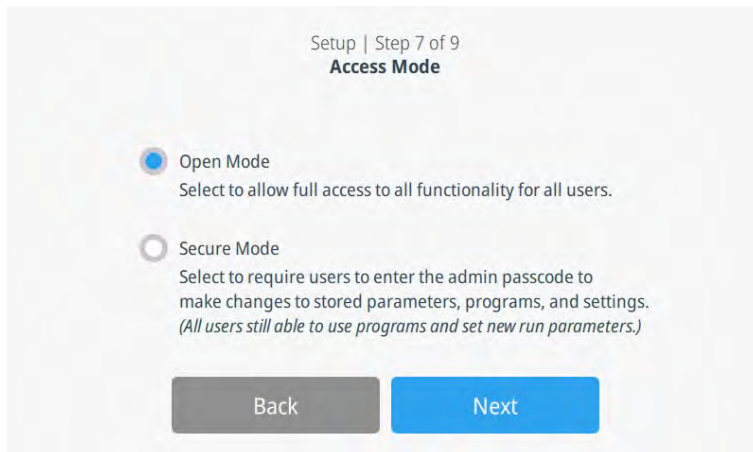


Figure 5-8. Choose Access Mode

18. If you choose „Open Mode“, enter an admin passcode.

Note

The passcode must be 5 digits long. Each keystroke should advance the cursor to the next input. The user can press „Next“ on the keypad or the „Next“-button to continue or „Back“ to return to the previous screen.

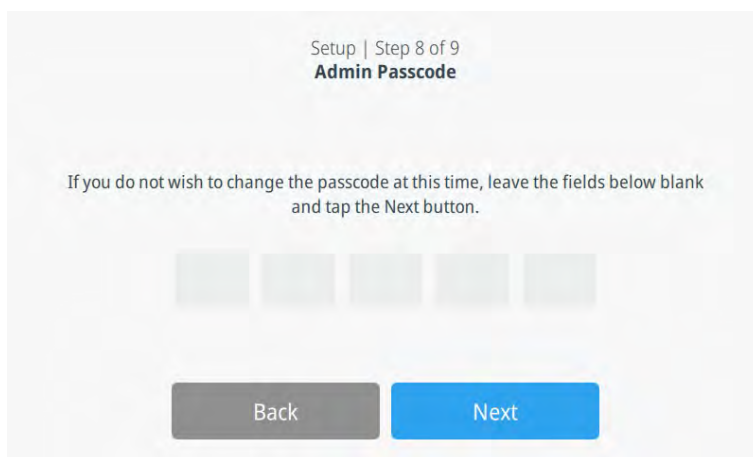


Figure 5-9. Setup Admin Passcode

19. If you choose „Secure Mode“ in [Figure 5-8](#), you will be prompted to create a new administrative account.

Note

Users are required to enter all fields and then tap the „Next“ button to finish the setup.

Setup | Step x of xx
Administrator Account

Please create an administrator account by filling out the following fields:

First Name: Tap to enter

Last Name: Tap to enter

Email: Tap to enter

Back Next

Figure 5-10. Setup Administrative Account

20. Use the scrollbar to see all fields.

Note

You can tap the “eye” icon to view the password as real characters rather than the hidden format (i.e. *****.) Tap the icon again to revert to the asterisk characters.

Make sure to have a unique password that is not easy to guess and keep it secret. Change your password regularly.

21. If you completed a form field, tap „Next“ in the displayed keyboard either to move to the next form field or to save your account in the last form field.

22. As soon as you finished the form and saved it , you will be directed to the account confirmation screen. Tap „Next“.

23. Now you have to tap the „Finish“ button to complete the setup and be brought to the main home screen.

Note

Once you have finished setting up the unit, all of the settings can be edited by tapping the settings icon in the left-hand navigation bar.

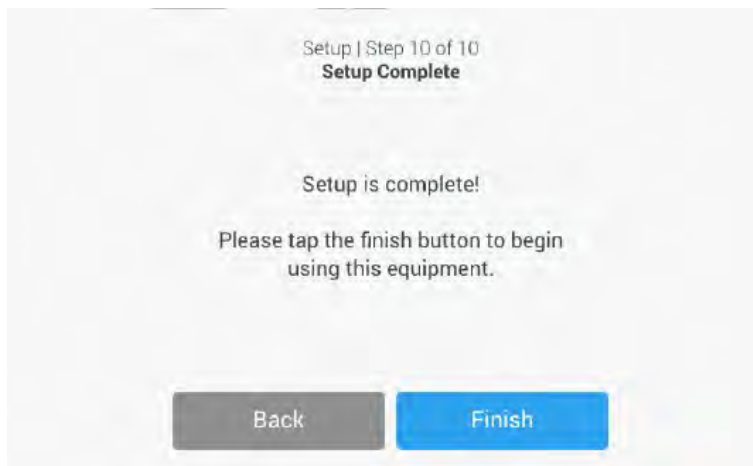


Figure 5-11. Setup complete

Operation

Content

- „Prepare Device” on Page 6-3
- „Device Check” on Page 6-3
- „Pre-cleaning and disinfection” on Page 6-3
- „Operating Modes” on Page 6-3
- „Health Status” on Page 6-4

DANGER

Danger to life due to falling loads!

When operating the device with one or a maximum of two shakers, strong vibrations occur. These could cause the device to fall off a table.

Only operate the device on the floor when using it with one or a maximum of two shakers.

Please note that Thermo Fisher accepts no liability for the use of the device with shakers on a table.

Please also note the information on operation with third-party devices as well as the specifications („[Technical Data](#)” on [Page 13-1](#)).

WARNING

Regarding the power sockets, please pay attention to the safety instructions mentioned in the preface.

WARNING

Risk of Condensate

Pass the mains cable of the used devices through the cable conduits, if the internal power sockets cannot be used due to condensation risk.





WARNING

Risk of Condensate

Please note that condensation can easily form inside the device, which can accumulate on the power sockets when you open the door in a cold environment.



WARNING Door opening/closing

To avoid sample damage by vibration, do not roughly open or close the glass and solid door. To avoid slipping due to a water puddle in front of the unit caused by condensed water dropped down on the door, do not roughly open or close the solid door.



WARNING

If water leaks the unit, clean up the water immediately to avoid slipping. Check for the cause of the leakage and eliminate before continuing operation.



WARNING Pinch of body parts

To avoid pinching of fingers or hand, e.g. on hinge side between door and topbox, close the solid door only with the handle.



ATTENTION

Make sure that the load on the shelves does not hit the sensors on the rear wall.



ATTENTION

If you use one or more shakers with the device, make sure that the shaker does not hit the glass door during operation.

Note

At low setpoint temperatures and high ambient conditions, the RH value can increase significantly due to door openings. As a result, the interior outlet will be turned off.

Note

Only use technical flawless and design-tested third-party devices.

Note

Thermo Fisher shall not be held liable for any damages, losses, or issues arising from the use of third-party devices in or with the environmental chamber. The use of such devices is at the user's own risk, and the company does not provide any warranties or guarantees regarding their compatibility, performance, or safety. Users are advised to ensure that any third-party devices used in conjunction with this environmental chamber meet all relevant safety and regulatory standards.

Prepare Device

The device may only be released for ongoing operation when all important measures for commissioning have been carried out (see Chapter 4, "Set-up and installation").

Device Check

Before starting operation, the condition of the following components must be checked in an equipment check:

- The door seal on the front frame and the on the metal outer door must not be damaged.
- The glass door must not be damaged.
- The components of the shelves must be securely installed.

Pre-cleaning and disinfection



ATTENTION

Cleaning or decontamination methods that are not listed here in these operating instructions (see chapter „Cleaning“ on [Page 8-2](#)) must be discussed with the manufacturer in order to avoid damaging the device.

- Disinfect all internal surfaces with the recommended cleaning agent (see chapter „Cleaning“ on [Page 8-2](#)).
- Rinse thoroughly with 70% alcohol and then with distilled water.

Note

Teroson-Seams may turn dull after unification with alcohol. However, this did not result in further deterioration of the seam.

- Dry with a clean cloth if necessary.
- Disinfect shelf guides and shelves before installation and rinse with distilled water.

Operating Modes

The operating mode of the Heratherm Environmental Chamber is shown in the upper right corner of the Main Screen.


Open Mode

The device is in "Open mode" by default. In „Open Mode“, a passcode will not be required to perform any function, except for the following:

- Factory reset

- Access the service section


In this mode, the Log in text will not appear to the top right corner.

The "Files and Infos" icon appears in the bottom left-hand corner: 

Secure Mode

There are two levels of access in secure mode:

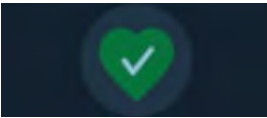



- Admin : Everything that is not in the service menu
- Service: All functions, including some testing functionalities for trouble shooting.

In admin mode, an admin symbol appears in the bottom left-hand corner:  and the word "Login" in the top right-hand corner.

Service mode can only be accessed via the "Service" menu item in the setup menu. If it is accessed after entering the correct passcode, (Service only), the words "Logout" and "Service Tech" appear in the top right-hand corner.

Health Status

One of 4 icons in the middle of the display is related to the health of the unit:

Symbol	Name
	<p>Healthy status icon on home screen. A green heart with a white hook. It indicates that everything is OK and there is no error, alert or alarm.</p>
	<p>Alert status icon on home screen. An orange triangle with a white exclamation mark. It indicates that there is a warning that needs to be fixed. Blue circle contains number of active alerts.</p>
	<p>Alarm status actively alarming icon on all screens. A red jingling bell on a white background. It indicates that there is a potentially dangerous situation that must be remedied and requires caution. An alarm tone sounds. Blue circle contains number of active alarms.</p>
	<p>Alarm status snoozed alarm icon on home screen. A white, crossed-out bell on a red background. It indicates that there is a potentially dangerous situation that must be remedied and requires caution. The alarm sound is turned off. Blue circle contains number of active alarms</p>

Handling

Content

- „Main Screen – Overview” on Page 7-2
- „Main Controls” on Page 7-4
- „Main Settings” on Page 7-6
- „Main Programs Screen” on Page 7-13
- „Event Log” on Page 7-59
- „Chart” on Page 7-62
- „Main Screen Alarm” on Page 7-65
- „Main Screen Alert” on Page 7-68
- „Outlet” on Page 7-70
- „Door Lock | Unlock” on Page 7-70

Main Screen – Overview¹

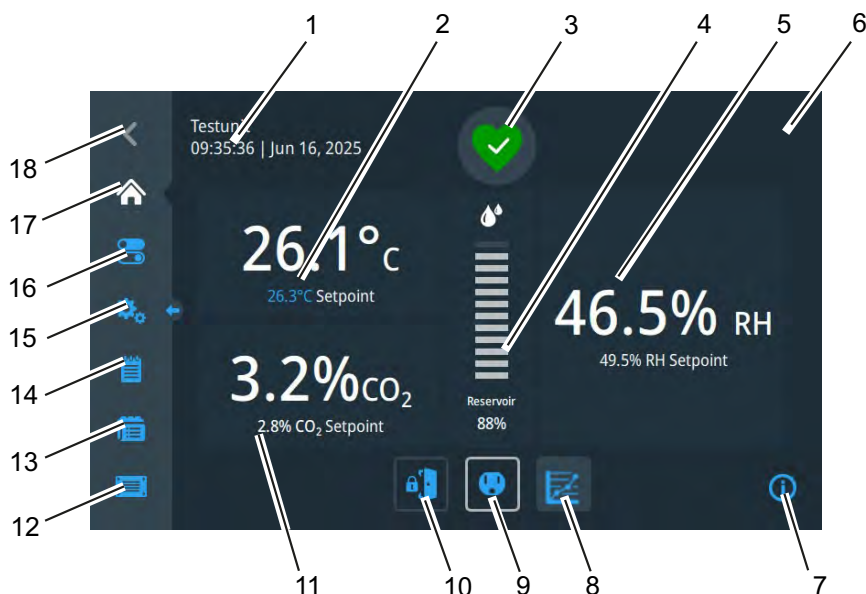


Figure 7-1. Main Screen Overview

1	Display Unit Name
2	Main box temperature: Displays temperature in degrees Celsius or Fahrenheit. Possibility to change setpoint
3	Unit health status: Good, Alert, Alarm or Snoozed Alarm
4	Water reservoir in Percent
5	Main box relative humidity: Displays current relative humidity in percent. Possibility to change setpoint ^a .
6	Login Area: Displays whether the secure mode is selected
7	Information about the current display
8	Display, setting and export of tables on temperature, relative humidity and CO ₂ ^b .
9	Socket
10	Lock/Unlock button
11	Main box CO ₂ : Displays CO ₂ in percent. Possibility to change setpoint ^c .
12	Files and Info: Device information, factory reset and manual (Open Mode) User Profile/User Administration (Secure Mode)
13	Programs: Imported or created programs
14	Event Log: Recorded events
15	Settings

¹ The elements on the display vary depending on the device option selected.

16 Change Setpoints

17 Home-Button (Brings you back to this main screen)


18 Back-Button (No history button: Brings you back up one level)

^aOnly available at ESS, ESG, ECS and ECG.

^bHumidity only available at ESS, ESG, ECS and ECG. CO₂ only available at ECS, ECG. Depends on the variant.

^cOnly available at ECS and ECG.

Main Controls

- Tap the control icon  from the left navigation bar. The following screen is displayed:

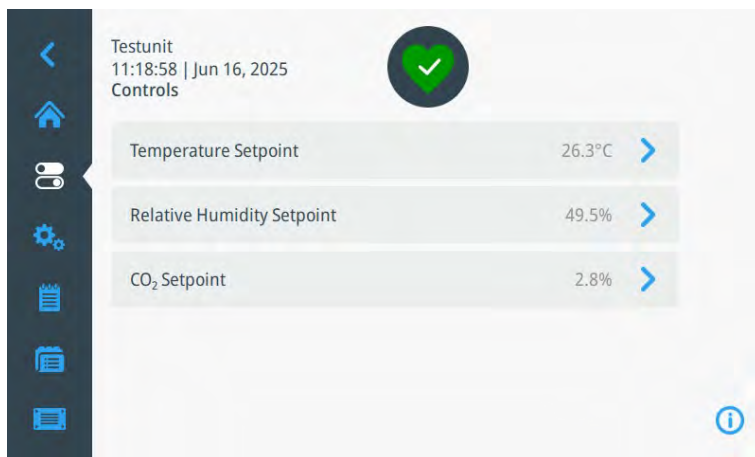


Figure 7-2. Main Controls

Temperature Setpoint

The temperature setpoint can be accessed from either the home screen by tapping on the temperature block or from the controls menu.



Figure 7-3. Setting Temperature Display

- Use the up/down chevrons or swipe up/down on the wheelpicker itself to change the setting.
- After you made your change, tap „Save“ button at the bottom of the screen.

Relative Humidity Setpoint

The relative humidity setpoint can be accessed from either the homescreen by tapping on the temperature block or from the controls menu.

Note While the RH control is enabled, the water level alarm is also enabled. It is not possible to deactivate the water level alarm separately from the control.



Figure 7-4. Relative Humidity Setpoint

- Use the up/down chevrons or swipe up/down on the wheelpicker itself to change the setting.
- After you made your change, tap „Save“ button at the bottom of the screen.

CO₂ Setpoint

The CO₂ setpoint can be accessed from either the home screen by tapping on the CO₂ block or from the controls menu.




Figure 7-5. CO₂ Setpoint

- Use the up/down chevrons or swipe up/down on the wheel picker itself to change the setting.
- After you made your change, tap „Save“ button at the bottom of the screen.

Main Settings

Overview

- Tap the setting icon  from the left navigation bar. The following screen is displayed:

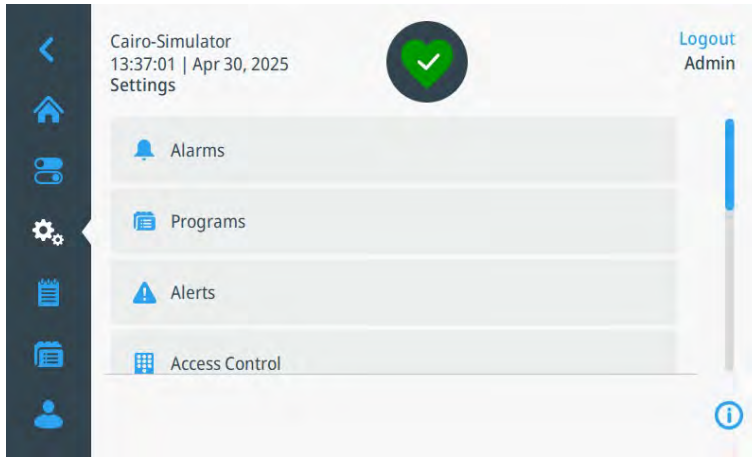


Figure 7-6. Main settings screen - 1

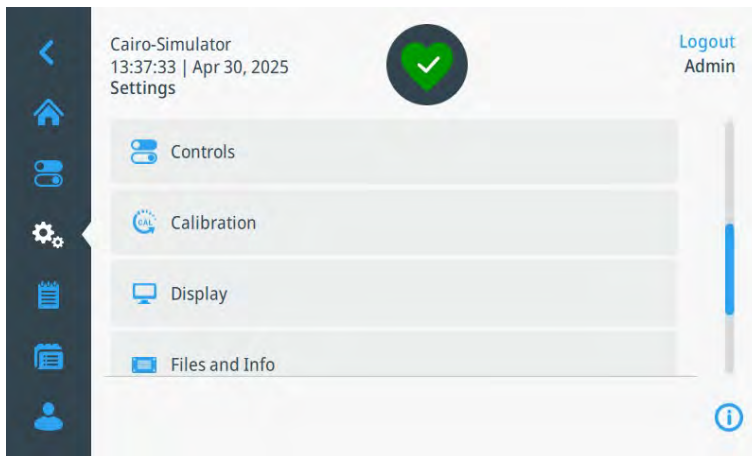


Figure 7-7. Main settings screen - 2

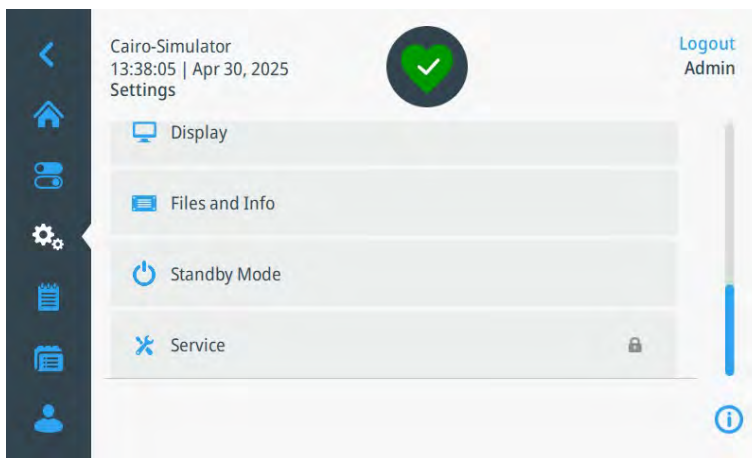


Figure 7-8. Main settings screen - 3

Alarm Settings

Overview

Note

RH-alarm will only be available if the unit is equipped with RH. The RH-alarm is relative to the setpoint and will be shifting based on new setpoints.

- Tap “Alarms” in the settings menu. The following screen is displayed:

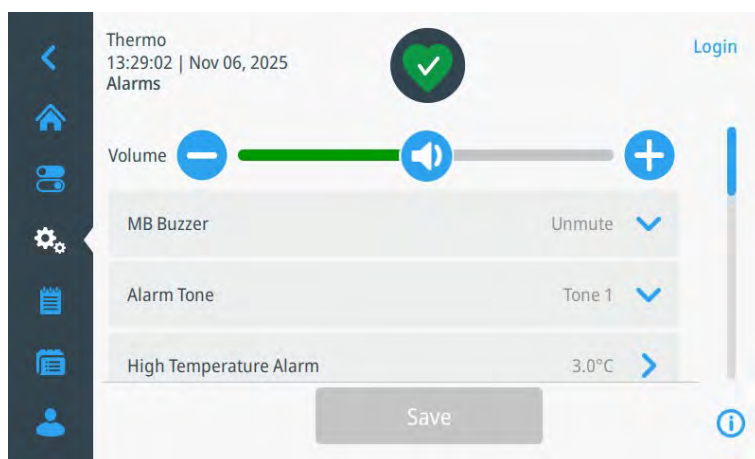


Figure 7-9. Alarm Settings -1



Figure 7-10. Alarm Settings -2

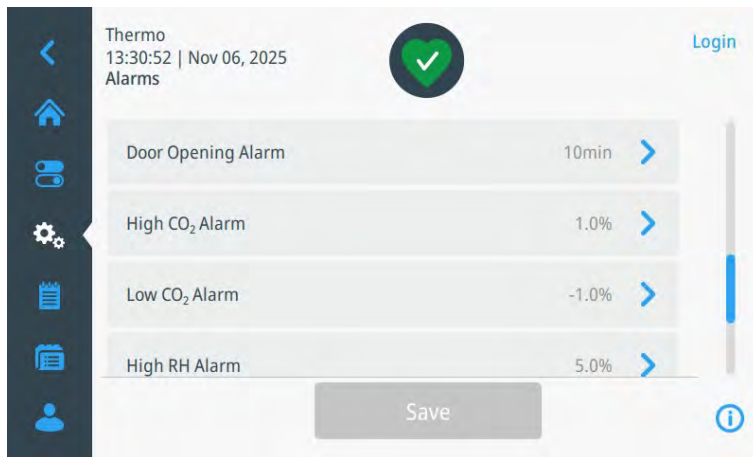


Figure 7-11. Alarm Settings -3

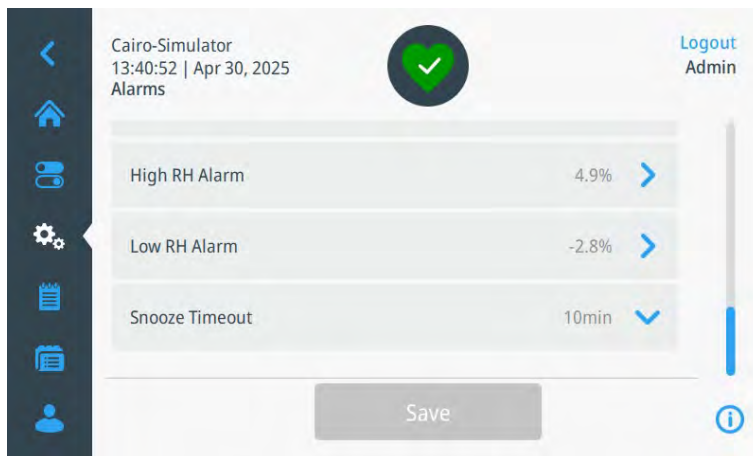


Figure 7-12. Alarm Settings -4

- Change the desired parameters and then tap the „Save“ button.

Temperature Protection and High Temp Shutoff

The device offers the option of automatic temperature monitoring.

- Tap “Temperature Protection”. The following screen is displayed:

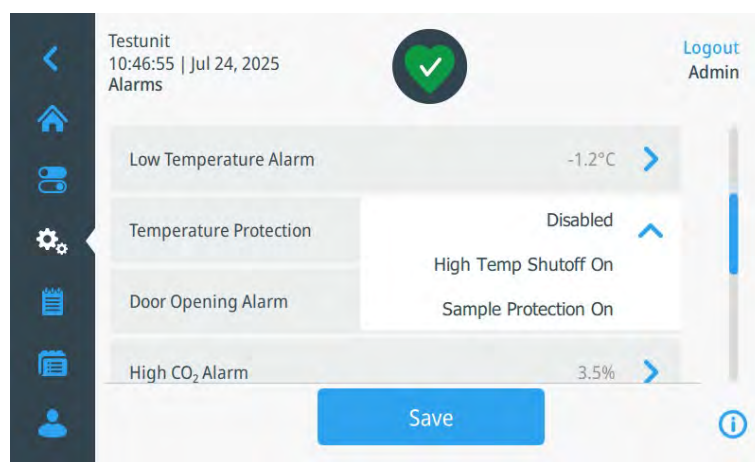


Figure 7-13. Temperature Protection

High Temperature Shutoff

- Select "High Temp Shutoff On" to define a maximum temperature value. If the device reaches this value, it will be switched off automatically. The following screen is displayed:

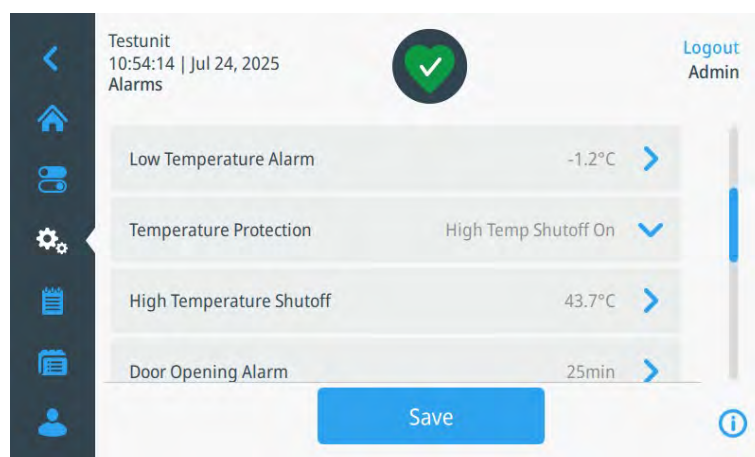


Figure 7-14. High Temperature Shut-Off - 1

- Tap “Save” to save your settings. You will be directed back to the “Setup-Menu”
- Tap “Alarm”, scroll to “High Temperature Shutoff” and tap it. The following screen is displayed:

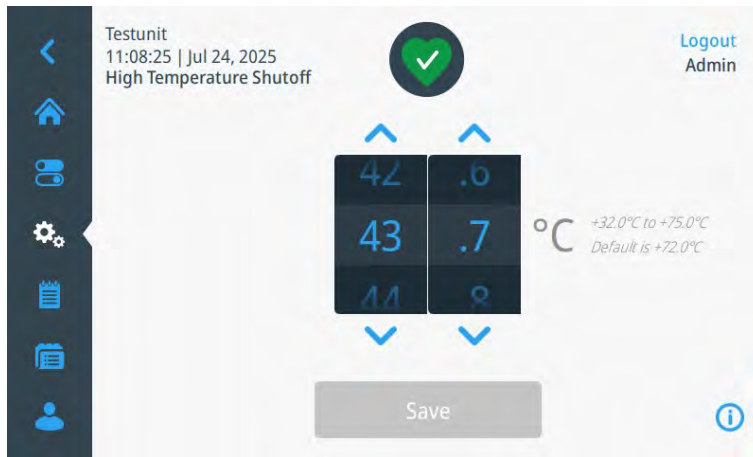


Figure 7-15. High Temperature Shutoff - 2

- Use the up/down chevrons or swipe up/down on the wheelpicker itself to change the setting.
- After you made your change, tap „Save“ button at the bottom of the screen.

The following symbol appears on the main screen:

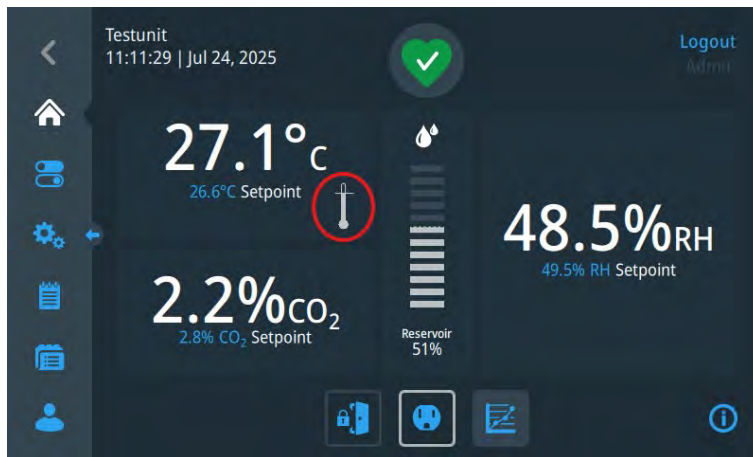


Figure 7-16. High Temperature Shutoff - 3

- To end the High Temperature Shutoff function, return to the Menu “Temperature Protection” (Figure 7-13) and choose “Disabled”.

Sample Protection

- Select “Sample Protection on“ (Figure 7-13) to define a desired temperature range that should be maintained. The following screen is displayed:

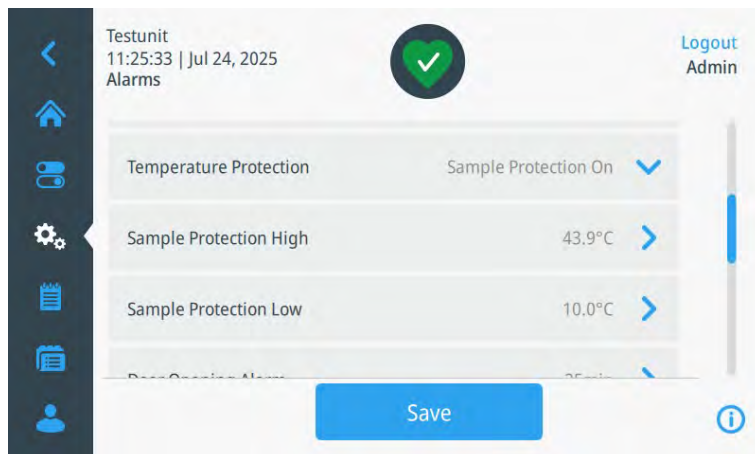


Figure 7-17. Sample Protection On - 1

- Tap “Save” to save your settings. You will be directed back to the “Setup-Menu”
- Tap “Alarm”, scroll to “Sample Protection High” and tap it. The following screen is displayed:



Figure 7-18. Sample Protection On - 2

- Use the up/down chevrons or swipe up/down on the wheelpicker itself to change the setting and to define the highest temperature value that the device should reach.
- After you made your change, tap „Save“ button at the bottom of the screen.
- Repeat the process with the menu item "Sample Protection Low" to define the lowest temperature value that the device should reach.

The following symbol appears on the main screen:

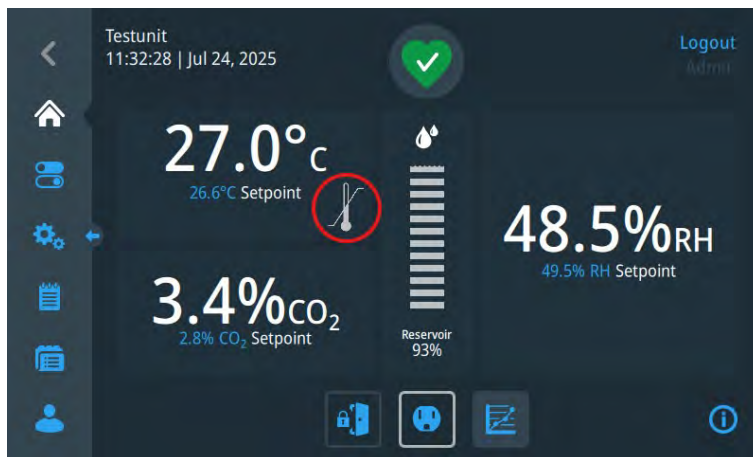



Figure 7-19. Sample Protection On - 3

- To end the High Temperature Shutoff function, return to the Menu “Temperature Protection” (Figure 7-13) and choose “Disabled”.

Main Programs Screen

Overview

The main programs screen can be accessed from either by tapping the program icon from the left navigation bar or by tapping “programs” in the settings menu. 

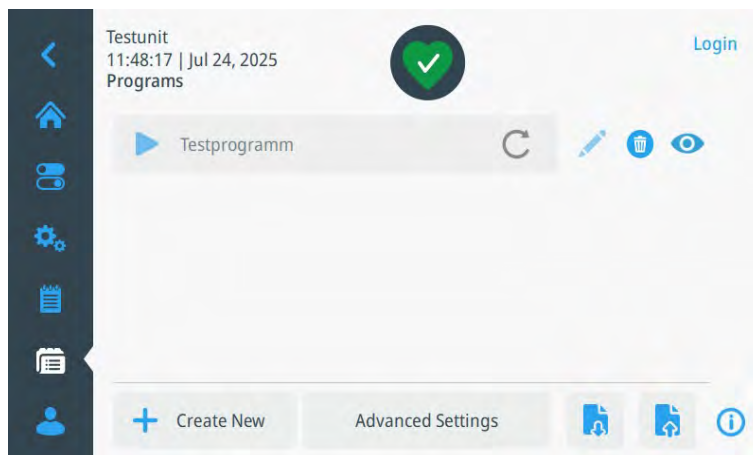




Figure 7-20. Main Programs Screen

- The program names appears as the button text in this list.
- Any program that repeats, shows the repeat icon with the number of repeats, max. 99. An infinite repeat shows the arrow, but no number.
- If the corresponding control mechanisms are deactivated the program is not started and is disabled.
- Tap the eye-icon  to view a Quick View of the program.
- Tap directly on the custom named program button to run a program.
- Tap the Symbol  to delete a program.

Program Quick View

- Tap the eye-icon  to view a Quick View of the program.

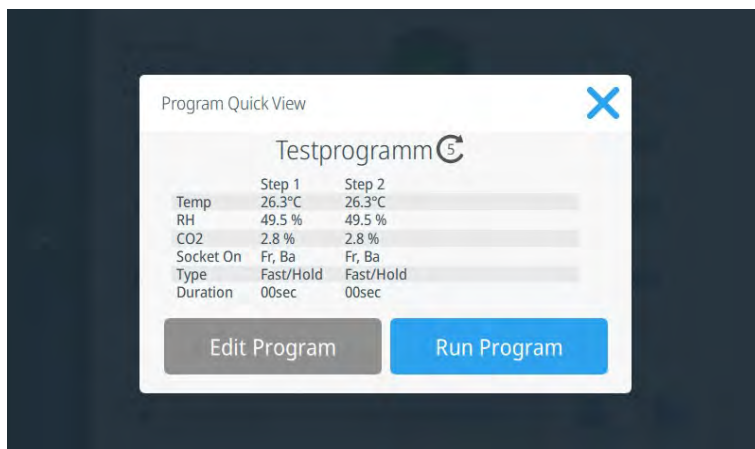



Figure 7-21. Program Quick View

Start a Program

- If you wish to start the program, tap the “Run Program”-Button  .
The display returns to the main menu.

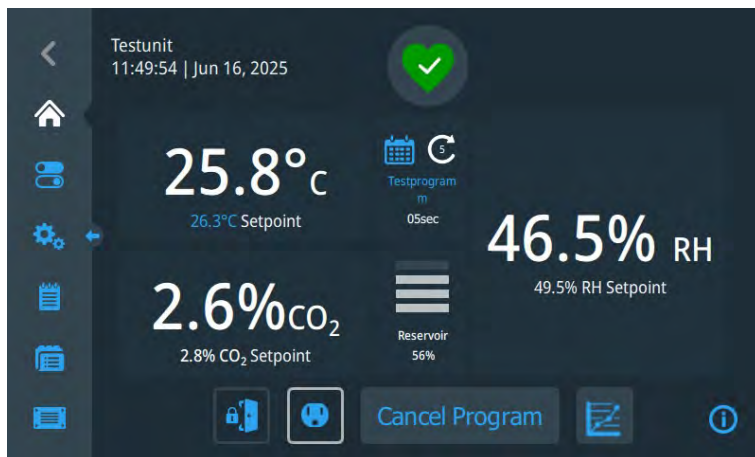


Figure 7-22. Start program

- If you wish to cancel the program, tap the „Cancel Program“ at the bottom of the mainscreen. A pop-up window appears:

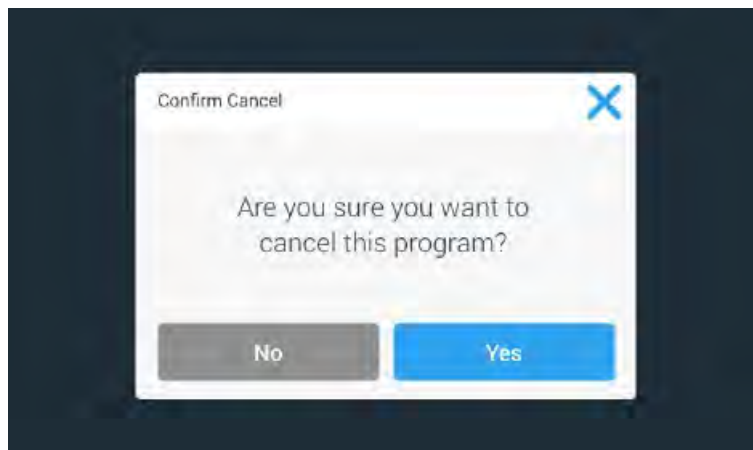


Figure 7-23. Cancel Program

- If you want to cancel the program, confirm with „Yes“.
- If you don't want to cancel the program, tap „X“ or „No“. You return to the Main screen with the program still running.

Create New Program

Overview

- Tap the „Create New“ button to create a new program. The maximum number of programs allowed is 99.

Note The maximum number of characters allowed for a program name is 20.

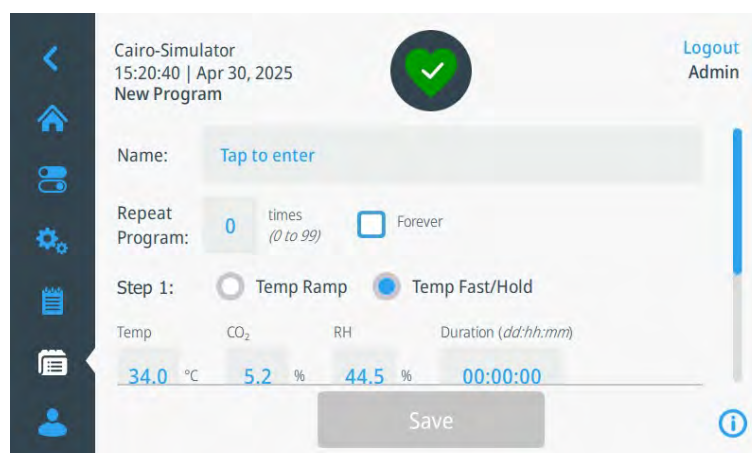


Figure 7-24. Create New Program - 1

- Tap on the name field to display the full alphabetical display:

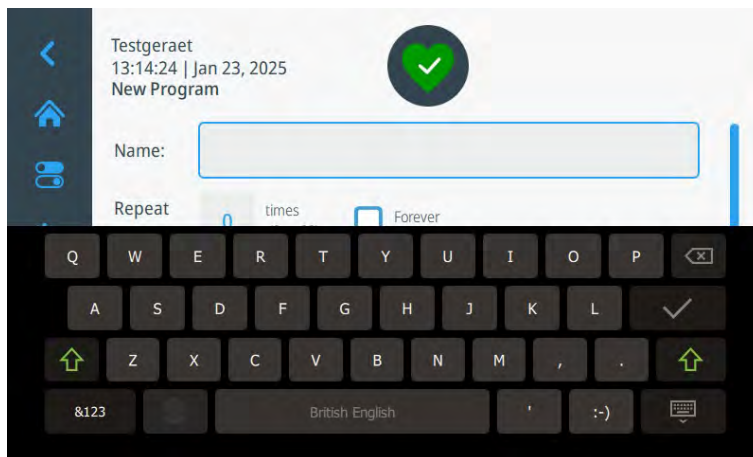


Figure 7-25. Create New Program - 2

- Tap on any of the additional fields to set temperature, relative humidity, and duration.
- Contact Thermo Fisher Scientific for a description of Temp Ramp and Temp Fast/Hold.

Parameter Fields

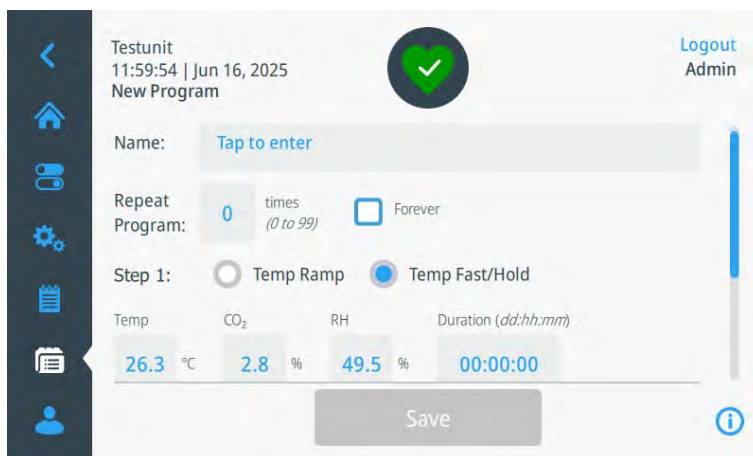


Figure 7-26. Parameter Fields

- Input a time in the format dd:hh:mm (days, hours, minutes) into the duration field. This value cannot be 00:00:00 or blank.
- Type in all values you desire.
- Quit with „Save“.
- If you don't want to finish the creation of the program, tap „Back“ or any of the other buttons in the left navigation or the heart icon. A pop-up window message appears that asks if you want to leave without saving. Choose either to save your changes or to discharge and navigate away from this screen.

Adding a Step

- Add an additional step by tapping the „Add Step“ button. You may add up to 99 steps in each program.

Tapping the „Add Step“ button creates the new rows of options directly under the previous row.

Deleting a Step

- Tap the circle/delete icon. You will be asked, if you really want to delete this step. Tap „Delete“ to delete the step from the program.

Advanced Settings

Overview

- Tap „Advanced Settings“ to customize your program:

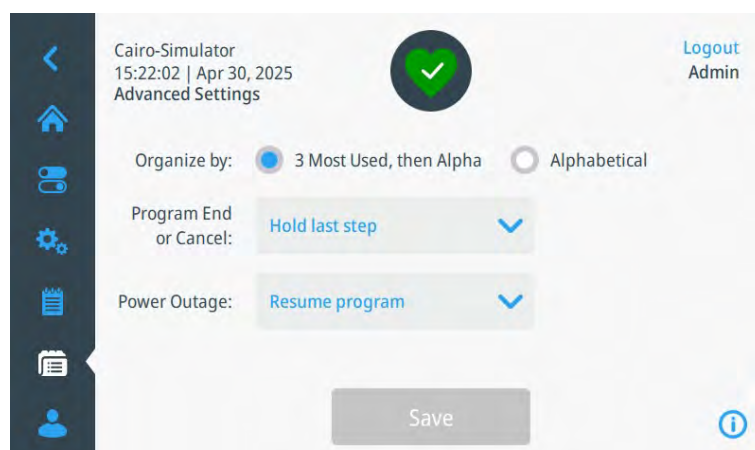


Figure 7-27. Advanced Settings in Programs

Organize by

- Organize the program list alphabetical or by the 3 most used, then Alpha.

Program End

This setting dictates what the unit will do when a program ends.

- Hold last step (default):

The unit holds all program values indefinitely

- Enter standby:

The unit enters standby mode

- Pre-program value:

The unit sets the values to the values before the program start and holds them indefinitely.

Power Loss

This setting dictates what the unit will do when the unit loses power. Along with this setting, the unit will also show an alert message.

- Resume program (Default for all units).

The unit resumes the program at the point when power was lost. The unit will recover back to the step parameters then resume the program.

- Resume step from start.

The unit starts at the beginning of the step when power was lost. The unit will recover back to the step parameters then resume the program.

- Cancel program

Boots to home page and set values to those before the program started.

- Hold parameters at outage

The unit indefinitely holds the parameters at the time of the outage.

- Go to standby

The unit boots, the program is canceled and unit enters standby.

Editing an existing Program

- Tap the pencil „edit“ icon next to the program button to navigate to the edit screen for the program you want to edit.

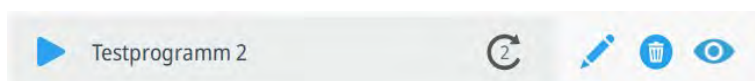


Figure 7-28. Editing an existing Program -1

The following screen is displayed:

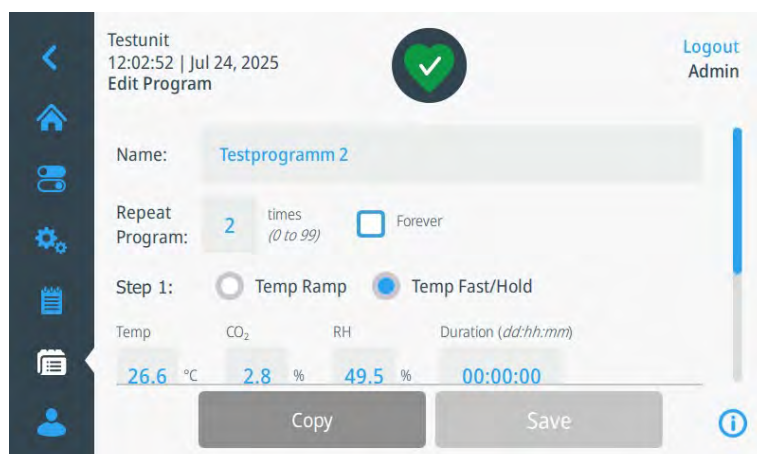


Figure 7-29. Editing an existing Program -2

- Make your changes to the existing program.
- Tap „Save“ at the bottom of the screen.

Copying a program

- Tap the pencil „edit“ icon next to the program button to navigate to the edit screen for the program you want to copy.

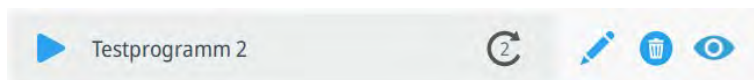


Figure 7-30. Copying a program - 1

The following screen is displayed:

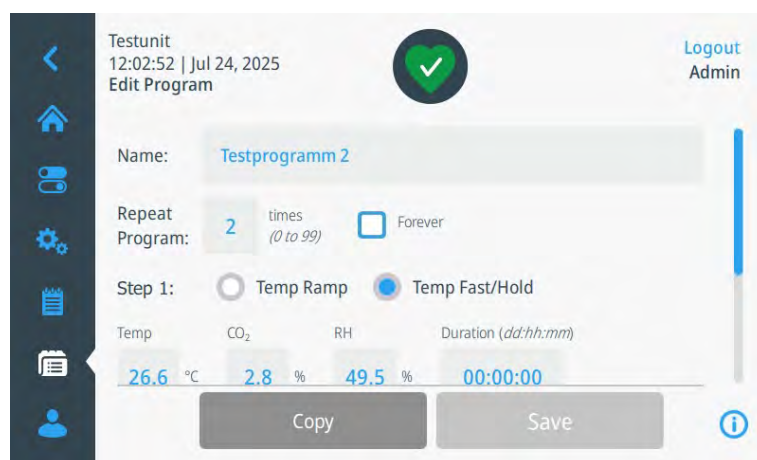


Figure 7-31. Copying a Program - 2

- Tap the „Copy“ button at the bottom of the screen.
- A pop-up window overlay appears. Confirm it to copy the program.

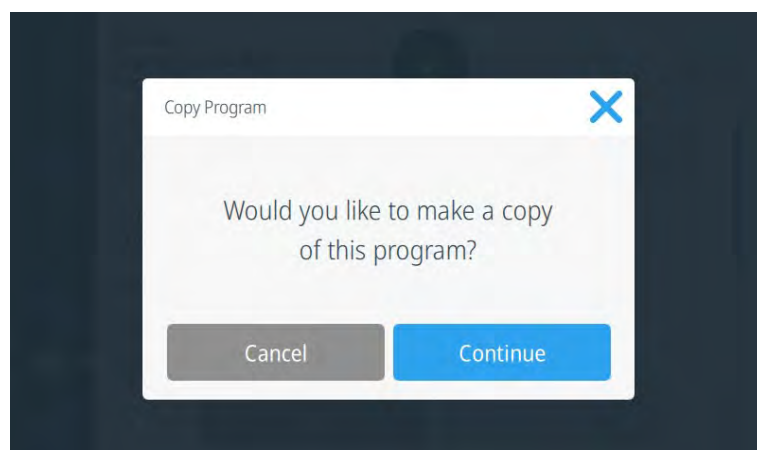


Figure 7-32. Copying a Program - 3

- Tap „X“ or „Cancel“ to close the confirmation window without copying the program.
- Tap “Continue” to copy the program. The following screen is displayed:

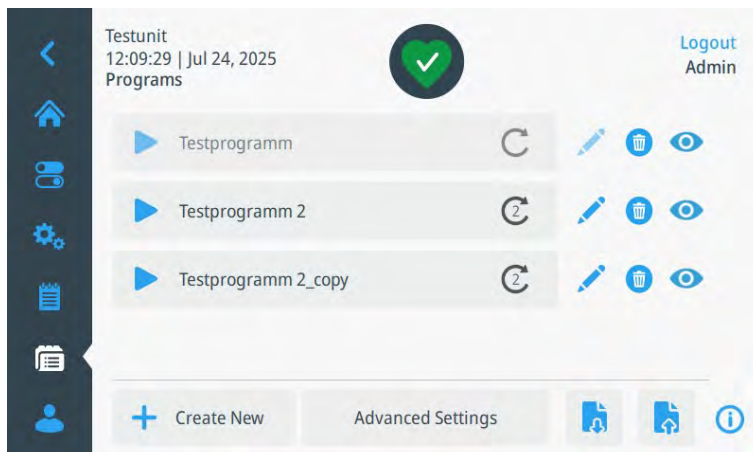


Figure 7-33. Copying a Program - 4

Deleting a program

- Tap the Recycle Bin icon next to the program button to navigate to the screen for the program you want to delete.

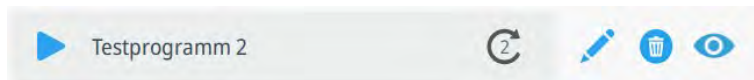


Figure 7-34. Deleting a program - 1

The following screen is displayed:

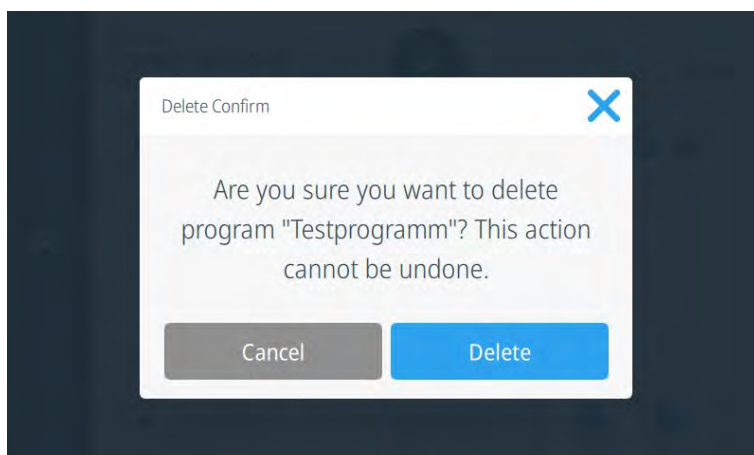


Figure 7-35. Deleting a Program - 2

- Tap „X“ or „Cancel“ to close the confirmation window without deleting the program.
- Tap “Delete” to delete the program. The following screen is displayed:

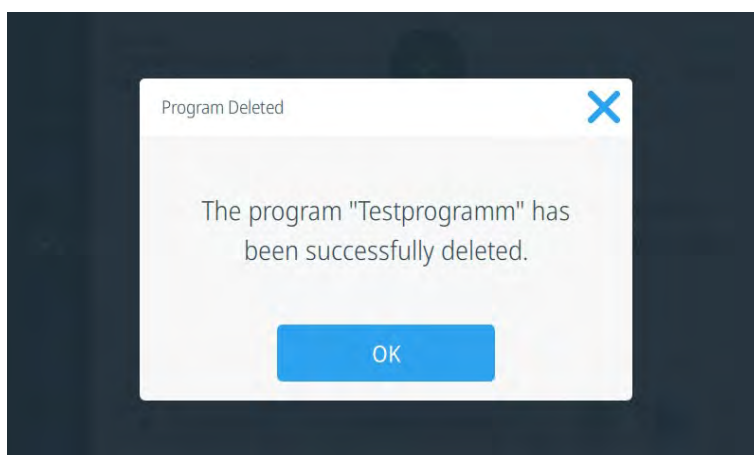


Figure 7-36. Deleting a Program - 3

Import Programs

- Tap the  symbol at the bottom of the Main programs screen.

If no USB stick is detected, the following pop-up window overlay is displayed:

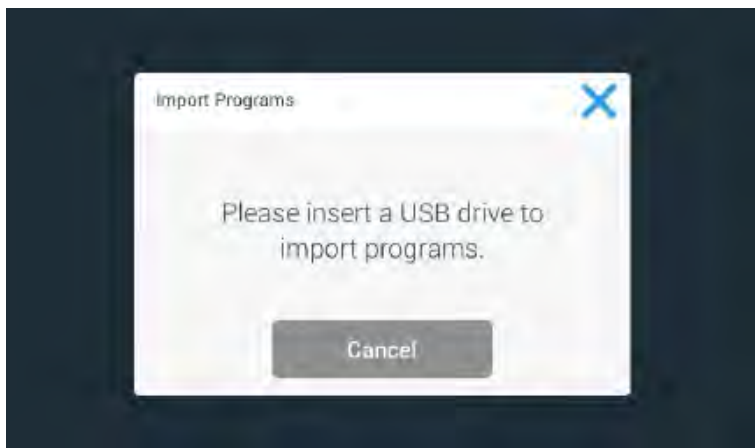


Figure 7-37. Import Program - 1

If a USB stick has been detected, the following screen is displayed:

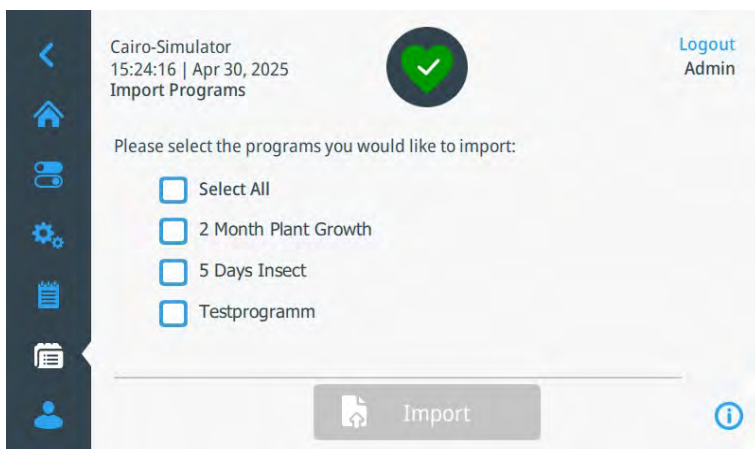


Figure 7-38. Import Program - 2

All programs available for import from the USB stick are listed.

- Select the desired programs to import.
- Once you finished selecting, tap „Import“ at the bottom of the screen.

The following pop-up window message is displayed:

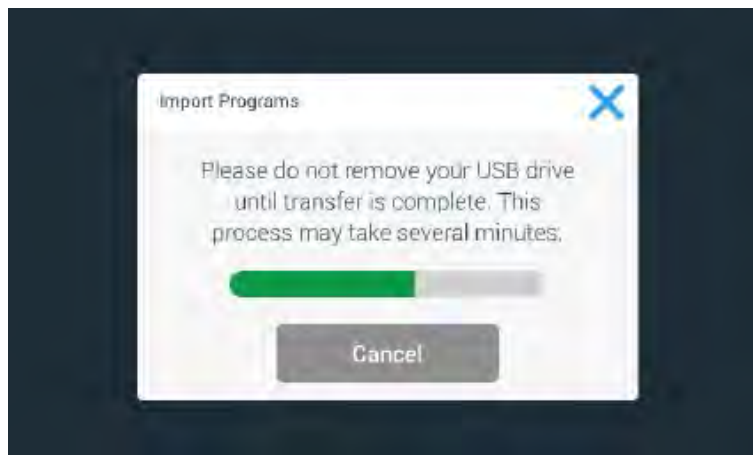


Figure 7-39. Import Program - 3

- Tap „X“ or „Cancel“ to cancel this operation and return to the import programs screen if you wish to.
- Once the import is successfully completed, the following pop-up window overlay is displayed:

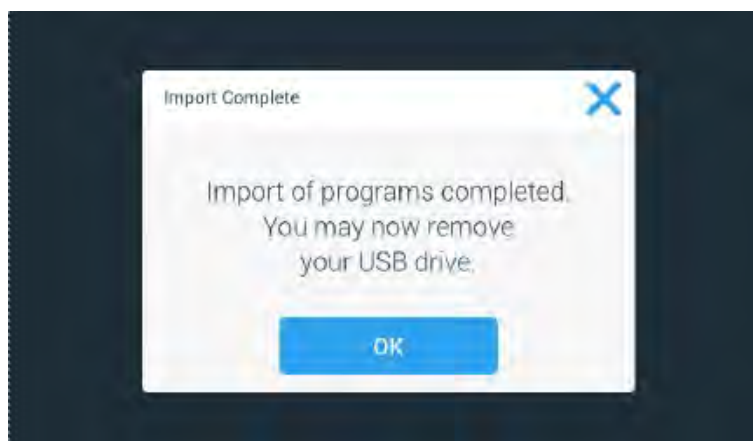


Figure 7-40. Import Program - 4

- Tap „X“ or „Cancel“ to cancel this operation and return to the import programs screen if you wish to.

Note

If the files are not compatible, the import progress sequence will not occur and instead the following message is displayed:



Figure 7-41. Import Program - 5

If you cancels the import either by tapping „X“ or by tapping „Cancel“, the following message is displayed:



Figure 7-42. Import Program - 6

Note

It is not possible to import programs, that contains settings that are not available on the chamber or user disabled.

In this case, the following message appears:

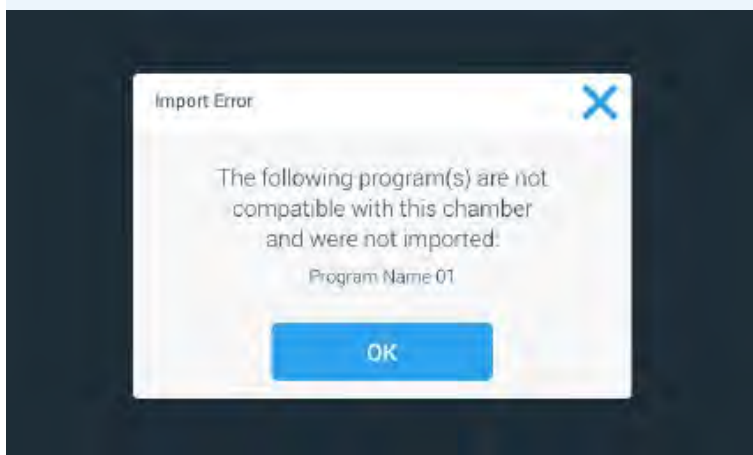



Figure 7-43. Import Program - 7

Export Programs

- Tap the  symbol at the bottom of the main programs screen to export programs you have created on the environmental chamber.

If no USB stick is detected, the following pop-up window overlay is displayed:

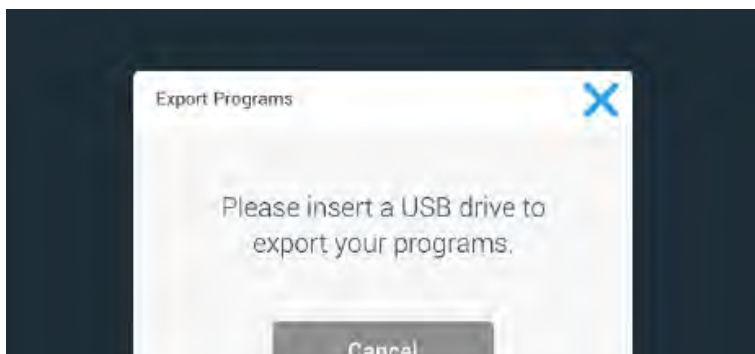


Figure 7-44. Export Programs - 1

If a USB stick has been detected, the following screen is displayed:

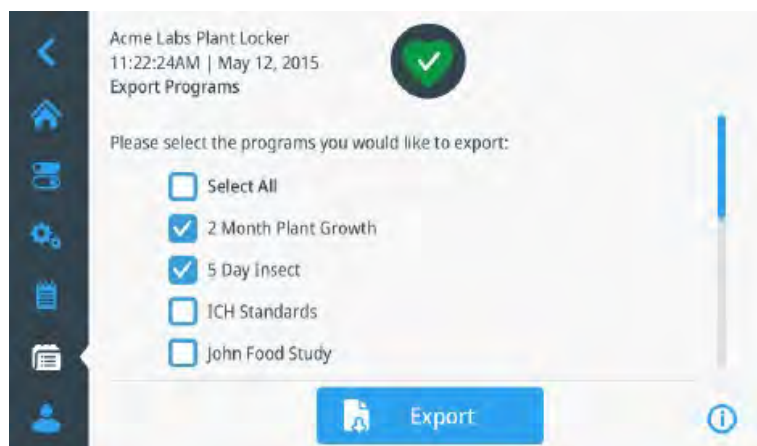


Figure 7-45. Export Programs - 2

All programs available for export from the USB stick are listed.

- Select the desired programs to export.
- Once you finished selecting, tap „Export“ at the bottom of the screen.

The following pop-up window message is displayed:

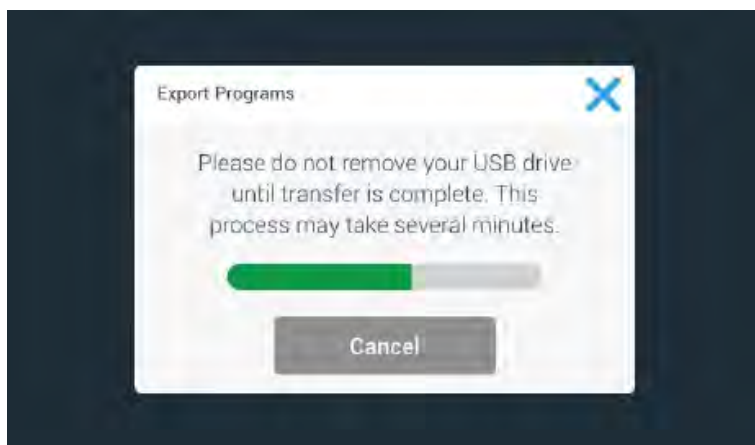


Figure 7-46. Export Programs - 3

- Tap „X“ or „Cancel“ to cancel this operation and return to the import programs screen if you wish to.

Once the import is successfully completed, the following pop-up window overlay is displayed:

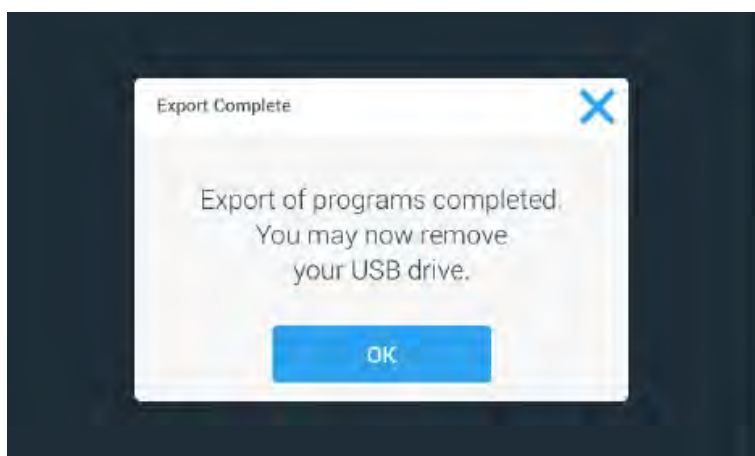


Figure 7-47. Export Programs - 4

- Tap „X“ or „Cancel“ to cancel this operation and return to the export programs screen if you wish to.

If the USB drive is removed, the following message is displayed:

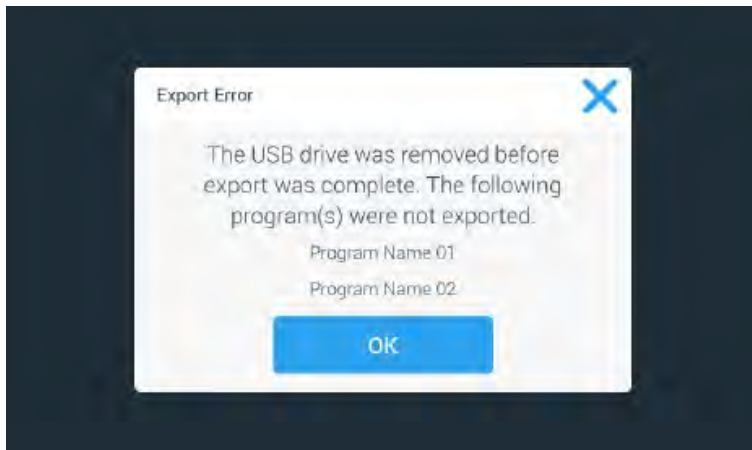


Figure 7-48. Export Programs - 5

If you cancel the import either by tapping „X“ or by tapping „Cancel“, the following message is displayed:

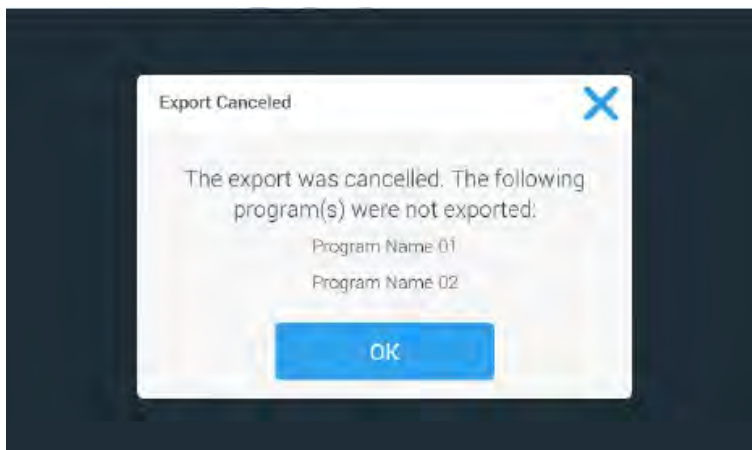


Figure 7-49. Export Programs - 6

If the USB stick does not have enough space to export the selected program to the following message is displayed:

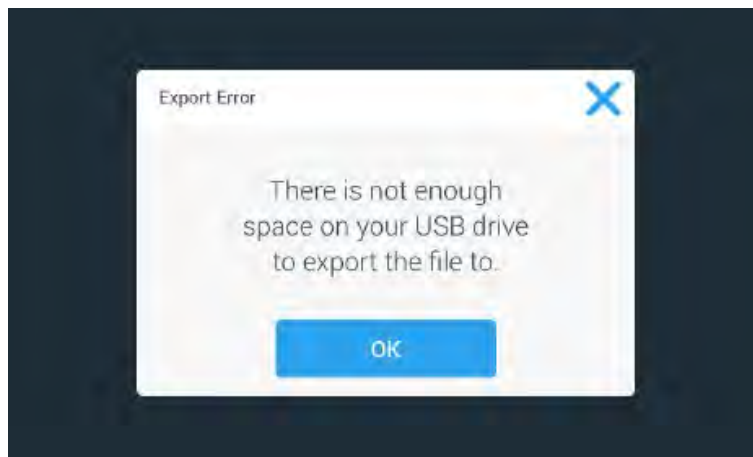


Figure 7-50. Export Programs - 7

- Tap „X“ or „OK“ to close this window and return to the export programs screen.

Program Power Loss

If power is lost to the unit while a program is running the unit must boot normally when power is restored.

Follow the setting for „power loss“ in the „Advanced settings“ section.

An alert is showing on the home page.

Alert Settings

Overview

- Tap “Alerts” in the settings menu. The following screen is displayed:

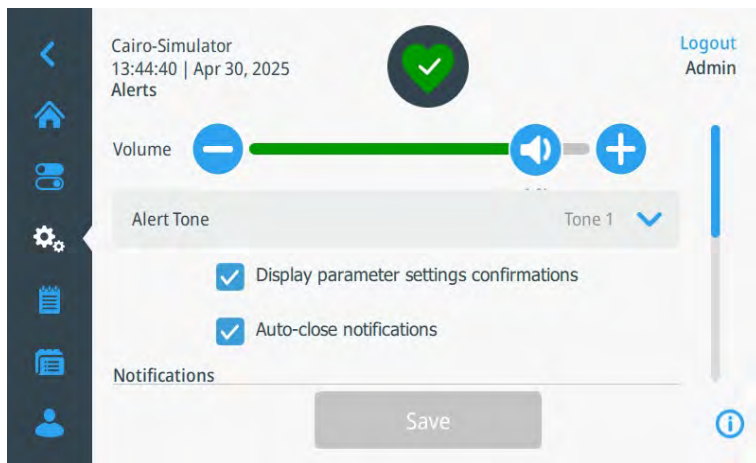


Figure 7-51. Alert Settings - 1

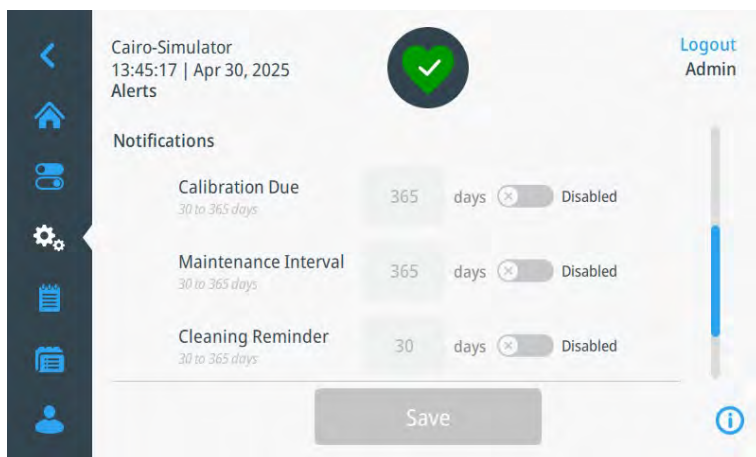


Figure 7-52. Alert Settings - 2

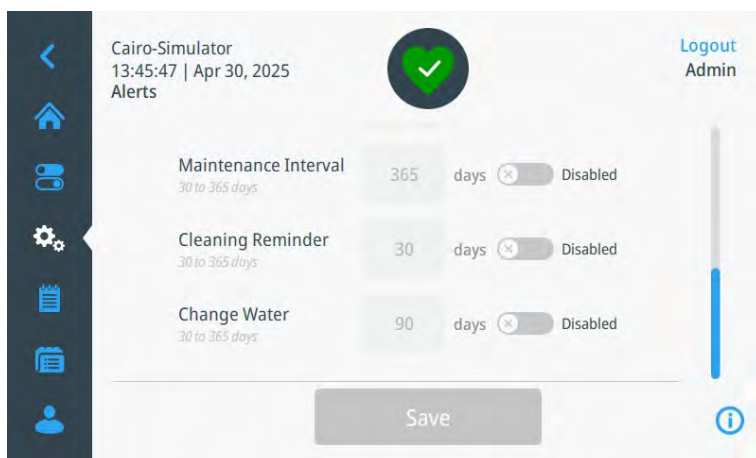


Figure 7-53. Alert Settings - 3

Volume

- Change the alert volume by dragging the slider from left to right.
- Tap „Save“ at the bottom of the screen.

The Saved Settings workflow is shown.

Alert Tone

- Tap the dropdown shown in figure 6-8. Choose a tone.
- Tap „Save“ at the bottom of the screen.

Checkboxes

Display parameter settings confirmation:

Displays a Save confirmation popup window overlay each time you changes a main setpoint character by default.

Auto-close notifications after 5 seconds:

By default, all save, run and import/export notifications are automatically closed after 5 seconds of no activity.

Calibration due Notification

Note

Options to choose the number of days before the notification is shown on screen are listed under the heading and range from 30 to 365 days.

Note

If you set notification to „enable“ and 30 days, then every 30 days an alert notification will be shown on screen with a message to reflect what the alert is for.

- Elect, if, and from when you want to be notified when a calibration is due.

Maintenance Interval Notification

Note

Options to choose the number of days before the notification is shown on screen are listed under the heading and range from 30 to 365 days.

Note

If you set notification to „enable“ and 30 days, then every 30 days an alert notification will be shown on screen with a message to reflect what the alert is for.

- Elect, if, and from when you want to be notified when maintenance (typically performed by service) is due.

Cleaning/Disinfection Reminder Notification

Note

Options to choose the number of days before the notification is shown on screen are listed under the heading and range from 30 to 365 days.

Note

If you set notification to „enable“ and 30 days, then every 30 days an alert notification will be shown on screen with a message to reflect what the alert is for.

- Elect, if, and from when you want to be notified when the interior should be clean.

Change Water Notification

Only if the unit is equipped with a water reservoir.

Note

Options to choose the number of days before the notification is shown on screen are listed under the heading and range from 30 to 365 days.

Note

If you set notification to „enable“ and 30 days, then every 30 days an alert notification will be shown on screen with a message to reflect what the alert is for.

- Elect, if, and from when you want to be notified when the water should be changed.

Access Control

Open Mode

- Tap “Access Control” in the settings menu. The following screen is displayed:

Note

Changing the mode from open to secure will require the entry of the admin passcode. Changing the mode from secure to open mode will require an admin to log in with their unique username and password.

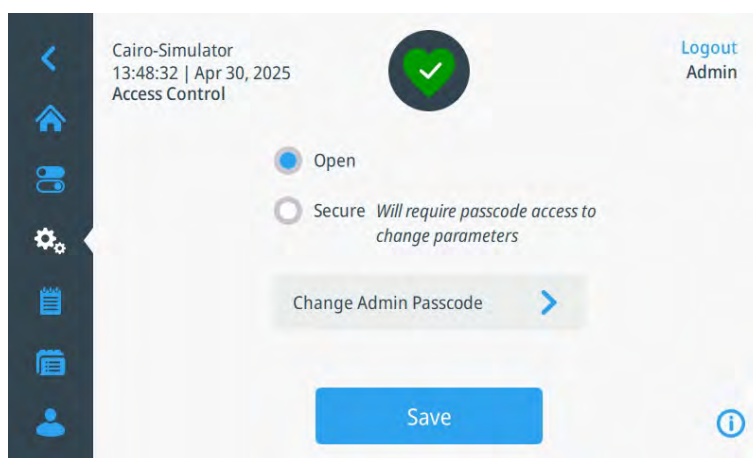


Figure 7-54. Access Control Open Mode

Changing Admin Passcode

Note

If you forgot the passcode, please contact the service.

- Change the passcode by tapping on the „Change Admin Passcode“ button.
- Enter the new passcode and confirm it.

You will get a notification that the change was successful.

- Tap „OK“ in the notification.

Changing the mode from open to secure

- Tap the radio button labeled Secure.
- Enter the admin passcode.

A confirmation appears.

Secure Mode

Note

Changing the mode from open to secure or secure to open will require the entry of the admin passcode

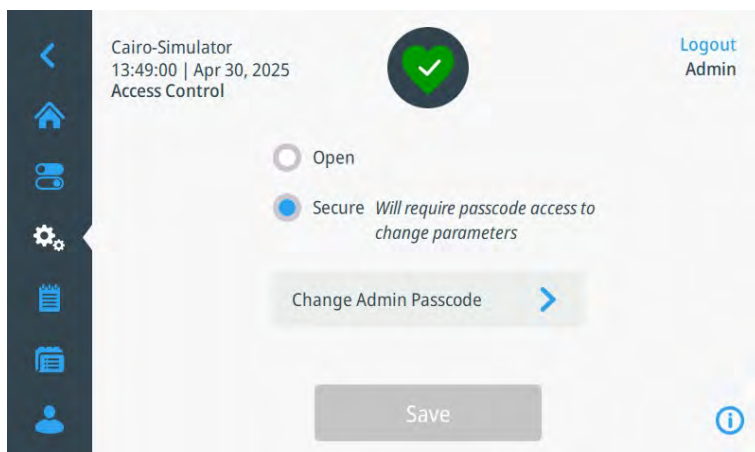


Figure 7-55. Access Control Secure Mode

Change the mode from Secure to Open

- Tap the „Open“ radio button.

Password

Note Passwords must contain at least one number, one uppercase letter, one lowercase letter, and one special character and must be 6-12 characters long. It must not match the last 3 passwords.

Door Passcode

Note The access code for the door corresponds to the admin code.

Controls

See „Main Controls“ on [Page 7-4](#).

Calibration

Overview

- Tap “Calibration” in the settings menu. The following screen is displayed:



ATTENTION

Before making any calibrations or adjustments to the unit, it is imperative that all reference instruments be properly calibrated. Read and understand all reference operating manuals before use. Double-check all values entered into the environmental chamber for accuracy before completing calibration.



Figure 7-56. Main Calibration Screen

- Select which type of calibration you would like to perform.
- Place the calibrated instrument in the center of the chamber. The instrument should be in the airflow, not against the shelf.

Temperature Calibration

1. Place a reference temperature sensor as close to the center of the interior of the device as possible.
2. Adjust the setpoint temperature.
3. Wait for unit to reach the setpoint and is stabilized (min. 4 hours).

Until the setpoint and the process variable achieved the range of ± 0.1 °C, the following screen appears:

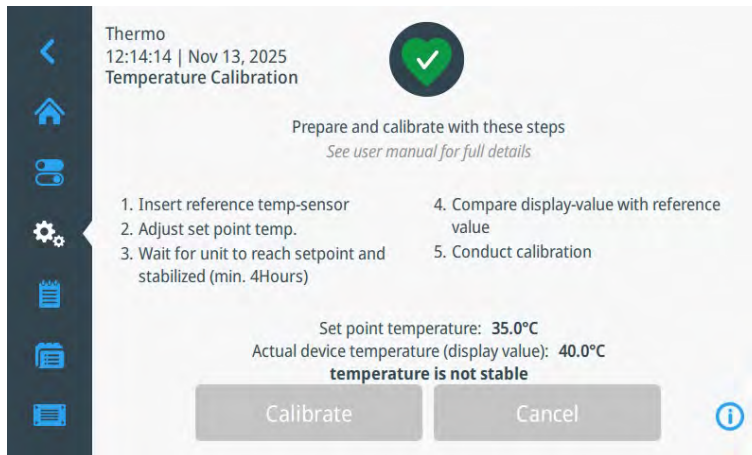


Figure 7-57. Temperature not stable

Once the range of ± 0.1 °C is reached, the content of the screen is updated and displayed in the following screen:

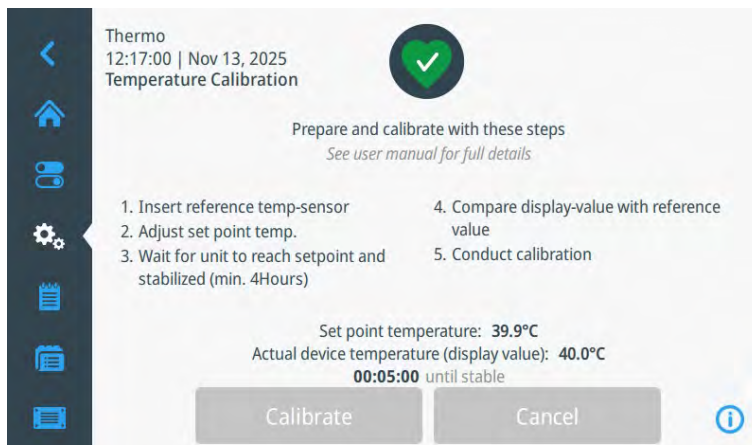


Figure 7-58. 5:00 until stable

When the timer reaches zero, the display is updated again and shows that the temperature is stable like in the image below:

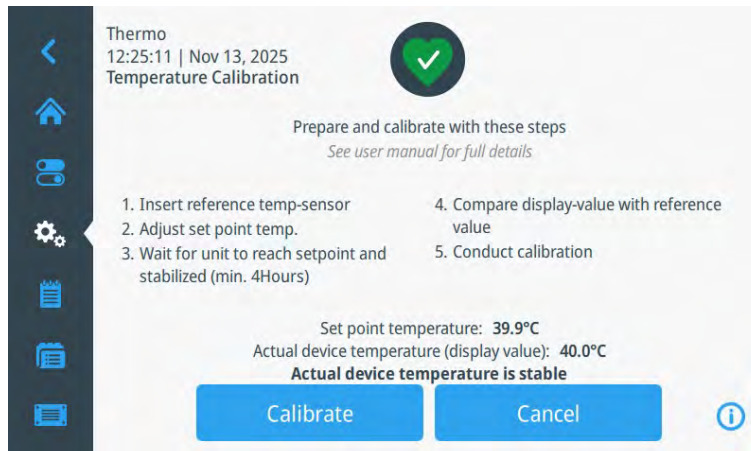


Figure 7-59. Temperature Calibration

4. Tap „Calibrate“ if the temperature measurements are equal. Screen „Adjust Temperature Calibration“ appears (Figure 7-60).
5. Tap „Cancel“, if you want to stop the calibration.

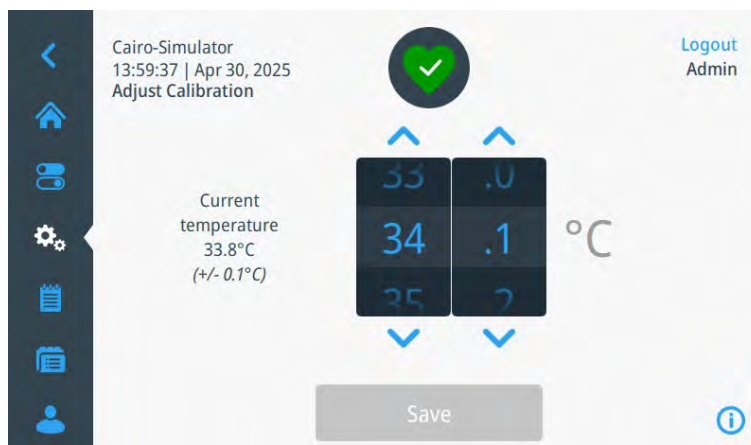


Figure 7-60. Adjust Temperature Calibration

6. Tap the up/down chevrons or swipe the wheel-picker up/down to change the temperature setting.
7. Once finished, tap the „Save“ button.

The following screen appears:

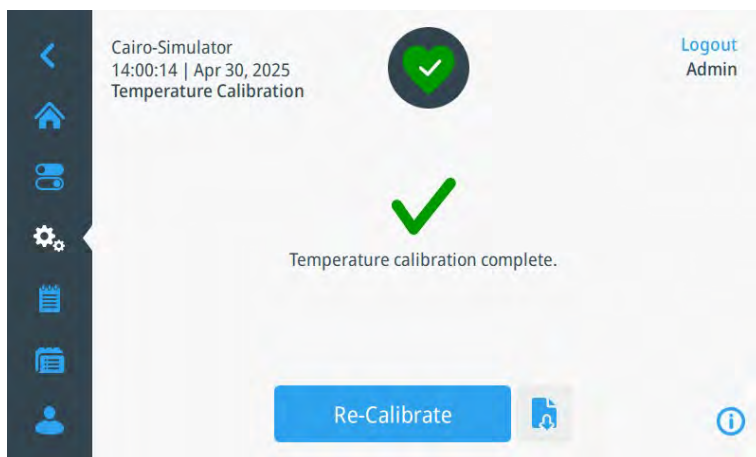


Figure 7-61. Temperature Calibration Complete

8. Tap „Re-Calibrate“ if you want to be taken back to the main calibration screen.
9. Tap the download-symbol if you want to download a calibration report.

CO₂ Calibration

1. Place a reference CO₂-sensor as close to the center of the interior of the device as possible.
2. Adjust the CO₂-setpoint.
3. Wait for unit to reach the setpoint and is stabilized.

Until the Setpoint and the process variable achieved the range of $\pm 0.3\%$, the following screen appears:

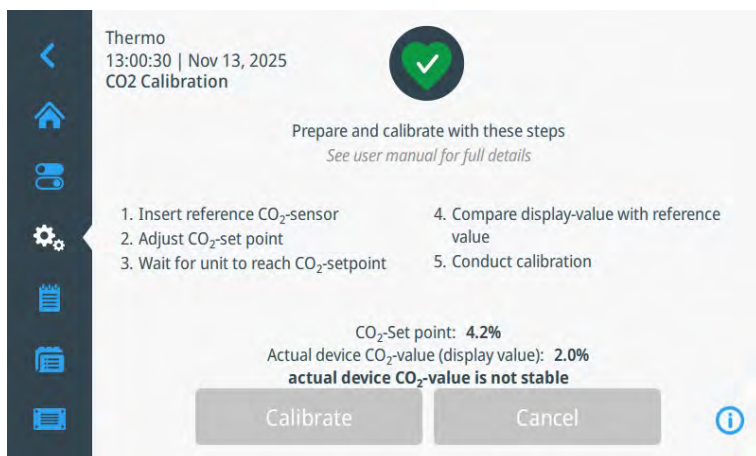


Figure 7-62. CO₂ not stable

Once the range of $\pm 0.3\%$ is reached, the content of the screen is updated and displayed in the following screen:

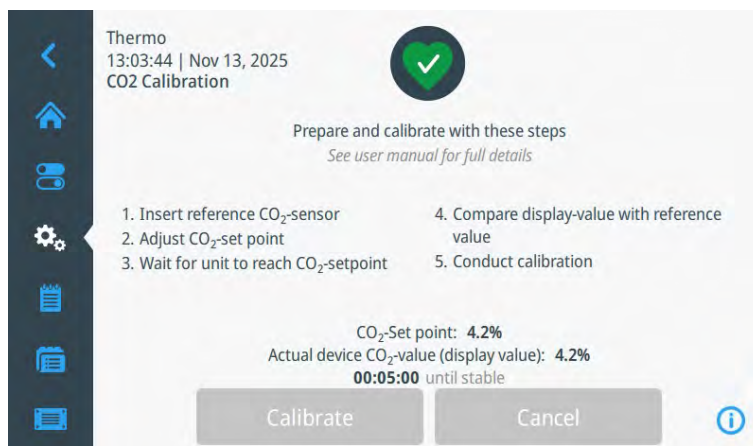


Figure 7-63. 5:00 until stable

When the timer reaches zero, the display is updated again and shows that CO₂ is stable like in the image below:



Figure 7-64. CO₂ Calibration

4. Tap „Calibrate“ if the CO₂-measurements are equal. Screen „Adjust CO₂ Calibration“ appears (Figure 7-65).
5. Tap „Cancel“, if you want to stop the calibration.

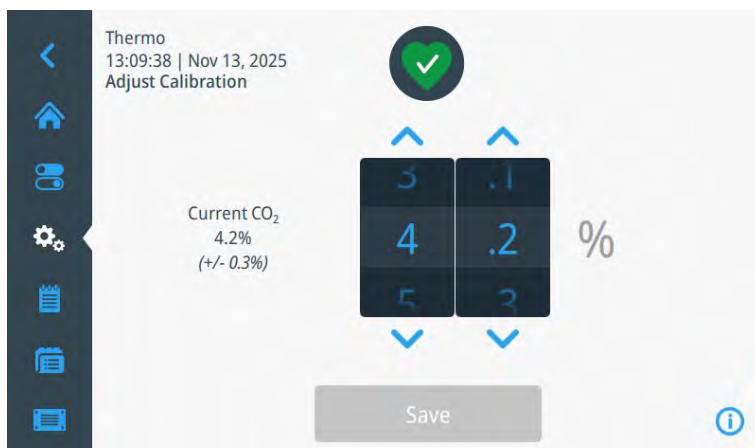


Figure 7-65. Adjust CO₂ Calibration

6. Tap the up/down chevrons or swipe the wheel-picker up/down to change the CO₂-setting.
7. Once finished, tap the „Save“ button.

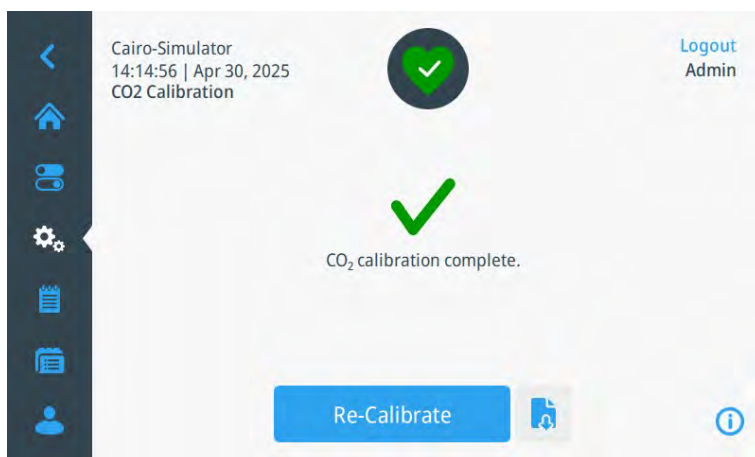


Figure 7-66. CO₂ Calibration Complete

8. Tap „Re-Calibrate“ if you want to be taken back to the main calibration screen.
9. Tap the download-symbol if you want to download a calibration report.

Note Calibration can only be performed when the CO₂ concentration has been set to 4.0% CO₂ or more.

Relative Humidity Calibration

1. Place a reference RH-sensor as close to the center of the interior of the device as possible.
2. Adjust the RH-setpoint.
3. Wait for unit to reach the setpoint and is stabilized (min. 4 hours).

Until the setpoint and the process variable achieved the range of $\pm 2\%$, the following screen appears:

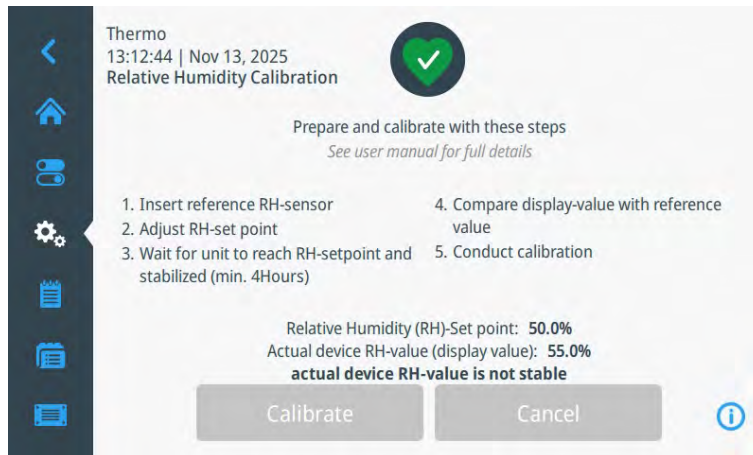


Figure 7-67. RH not stable

Once the range of $\pm 2\%$ is reached, the content of the screen is updated and displayed in the following screen:

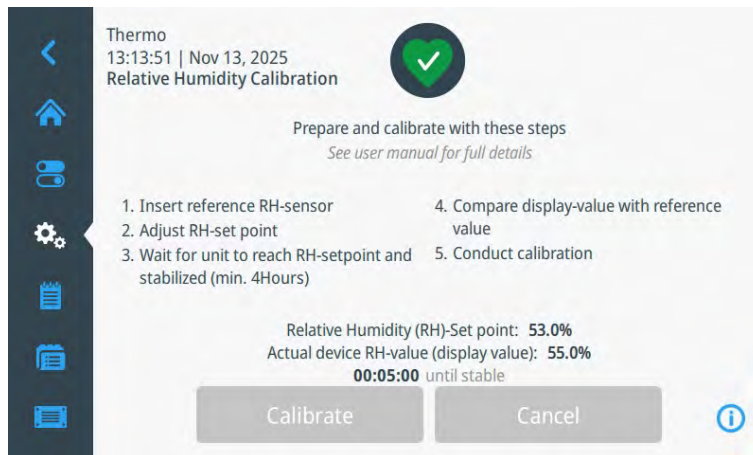


Figure 7-68. 5:00 until stable

When the timer reaches zero, the display is updated again and shows that the relative humidity is stable like in the image below:

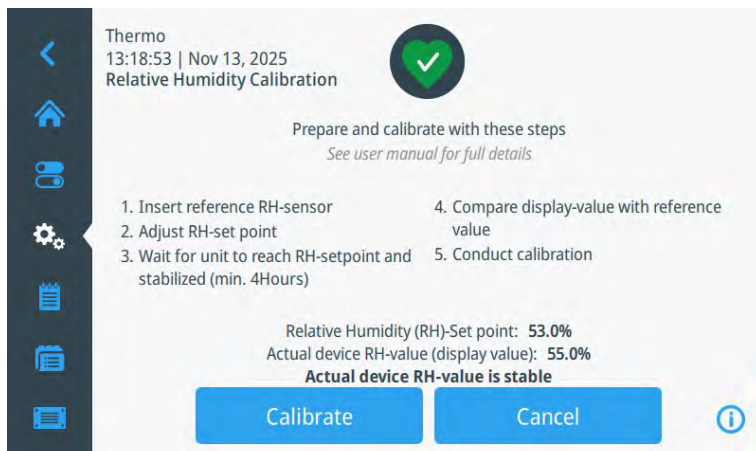


Figure 7-69. RH Calibration

4. Tap „Calibrate“ if the RH measurements are equal. Screen „Adjust RH Calibration“ appears (Figure 7-70).
5. Tap „Cancel“, if you want to stop the calibration.



Figure 7-70. Adjust RH Calibration

6. Tap the up/down chevrons or swipe the wheel-picker up/down to change the RH setting.
7. Once finished, tap the „Save“ button.

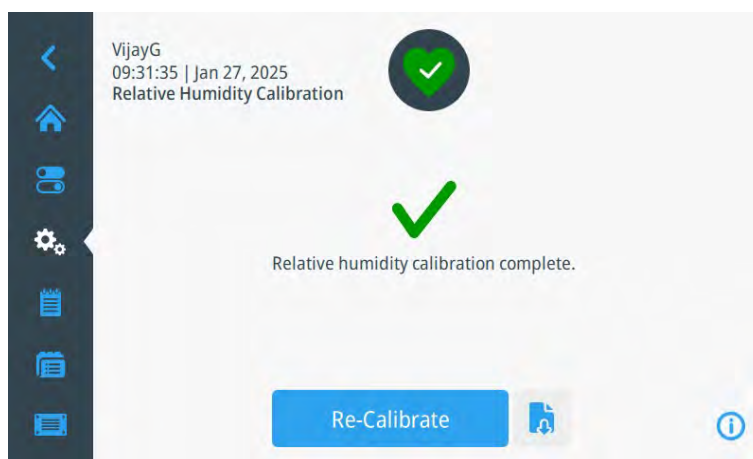


Figure 7-71. RH Calibration Complete

8. Tap „Re-Calibrate“ if you want to be taken back to the main calibration screen.
9. Tap the download-symbol if you want to download a calibration report.

Reservoir Calibration

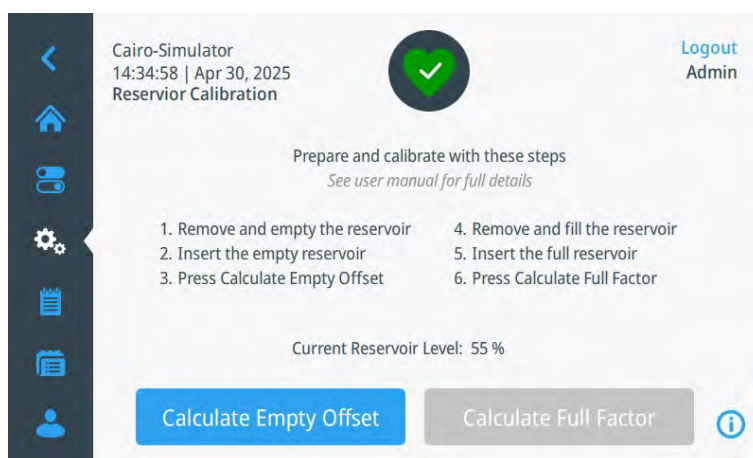


Figure 7-72. Reservoir Calibration - 1

1. Insert the empty water reservoir at the device right bottom side in the correct position. Please wait 1 minute for stabilization of empty reservoir weight.
2. Press „Calculate Empty Offset“. „Calculate Full Factor“ is active now.
3. Fill the water reservoir with max. 4 liter distilled or deionized water. The water quality must be according to section 4 „Set up and Installation“.
4. Insert the filled water reservoir at the device right bottom side in the correct position. Please wait 1 minute for stabilization of filled water reservoir.

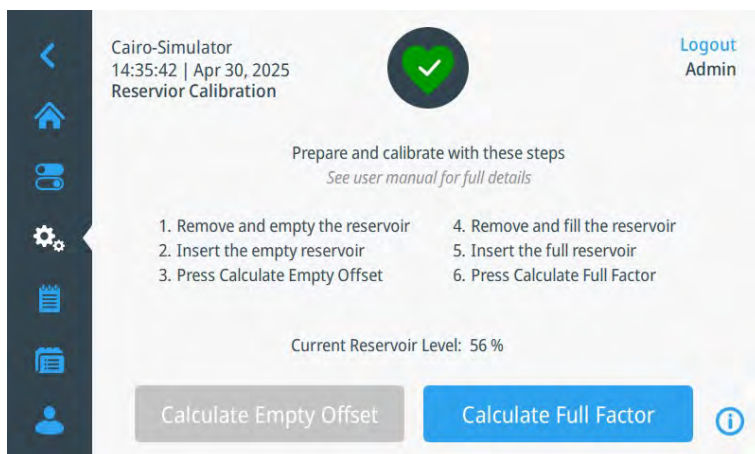


Figure 7-73. Reservoir Calibration - 2

5. Press „Calculate Full Factor“. If everything was successful, the following screen appears:

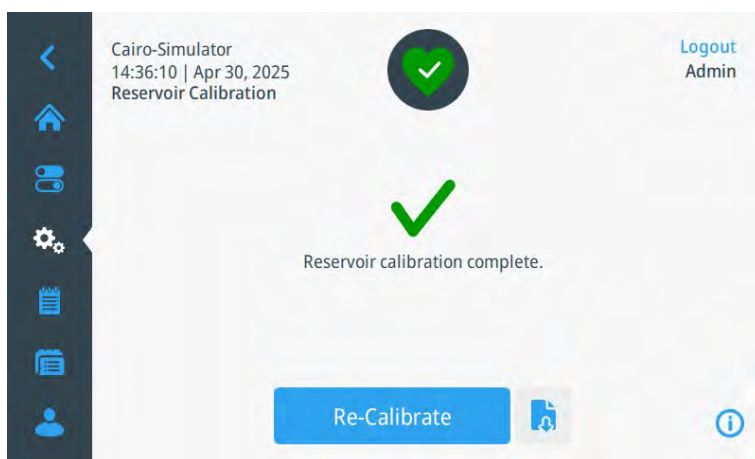


Figure 7-74. Reservoir Calibration - 3

6. If you recalibrate, you will be redirected to the instruction page.

Export Calibration Report

Exporting Calibrations reports is the same for all calibrations.

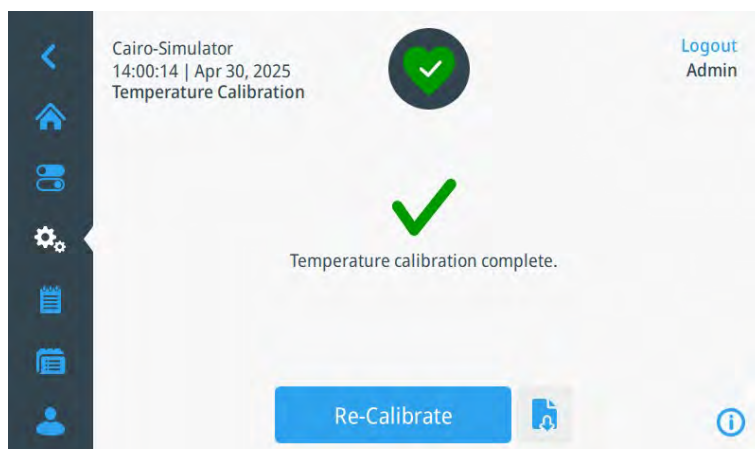



Figure 7-75. Export Calibration - 1

- Insert an USB stick
- Tap the  symbol to start the export process.

If no USB stick was inserted, the following pop-up window appears:

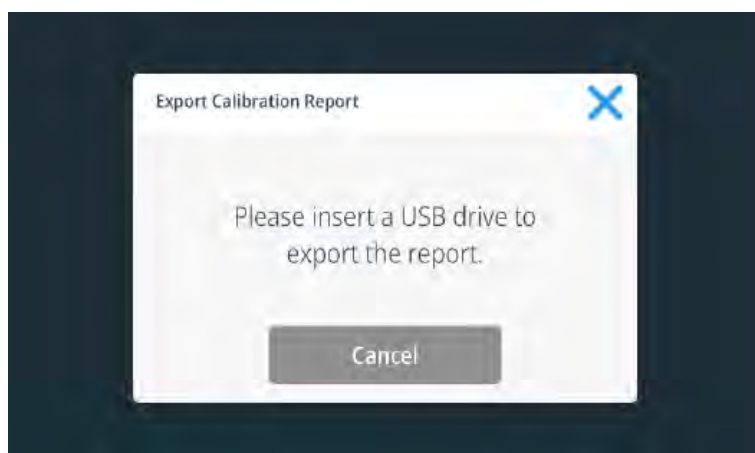


Figure 7-76. Export Calibration - 2

While the export is in progress, the following pop-up window overlay appears:

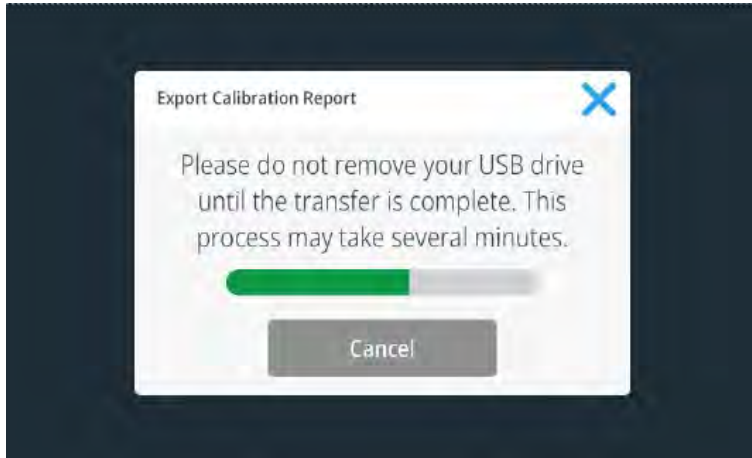


Figure 7-77. Export Calibration - 3

Once export is complete, the following pop-up window overlay appears:

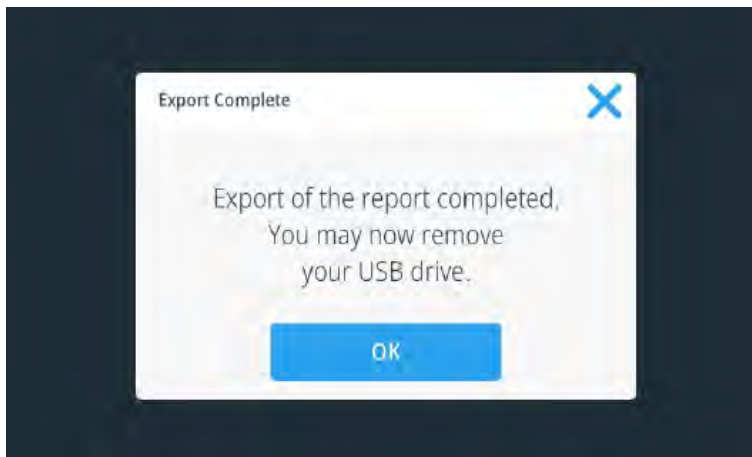


Figure 7-78. Export Calibration - 4

If the USB stick is removed before export is complete, the following message appears:

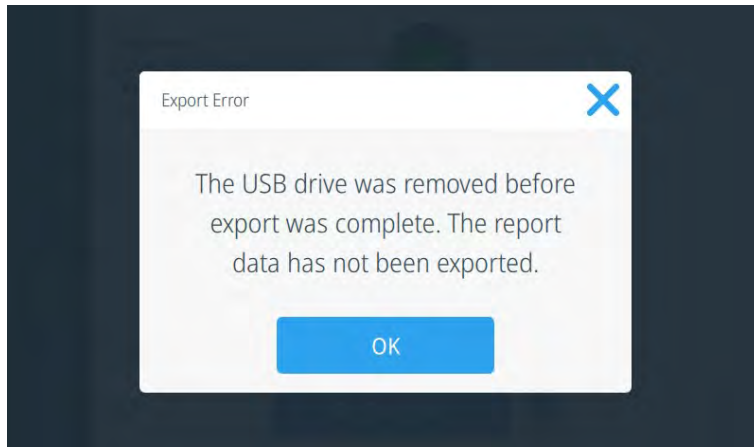


Figure 7-79. Export Calibration - 5

If you cancel the export by either tapping the „X“ icon or the „Cancel“ button during export, the following message is displayed:

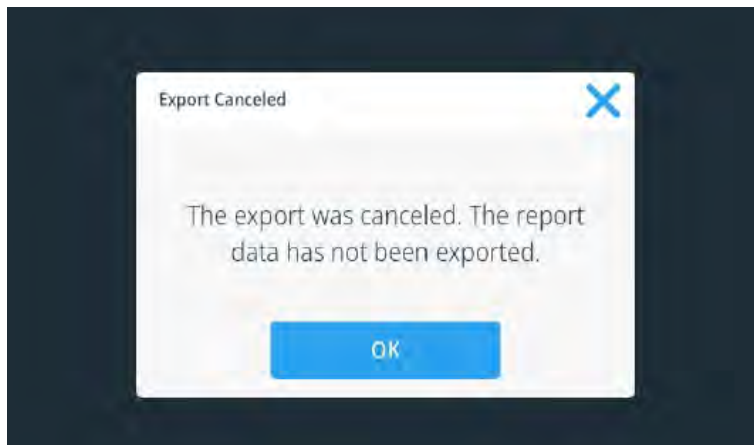


Figure 7-80. Export Calibration - 6

If the USB stick is full and the event log cannot be exported to it, the following message is displayed:

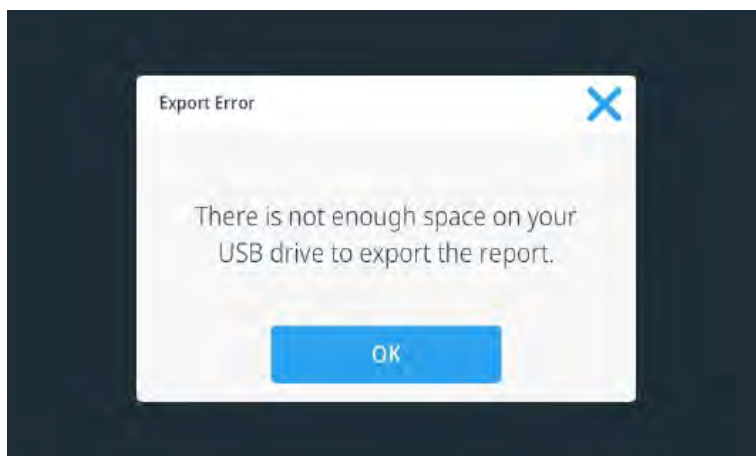


Figure 7-81. Export Calibration - 7

- Tap „X“ or „OK“ and you will be returned to the calibration screen.

Display

Overview

Tap “Display” in the settings menu. The following screen is displayed:

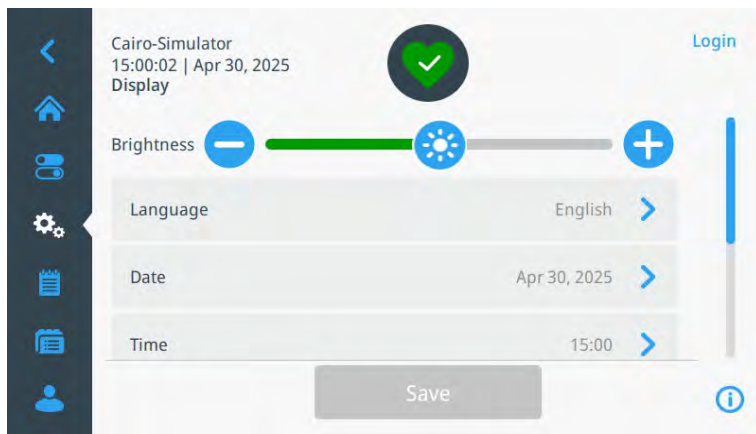


Figure 7-82. Display - 1

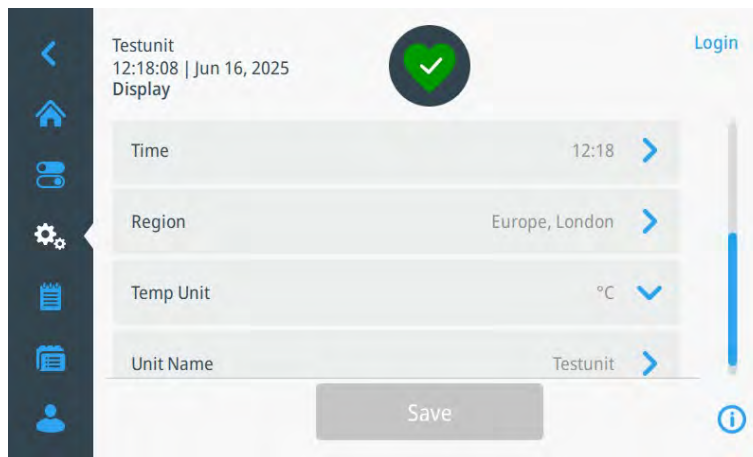


Figure 7-83. Display - 2

- Choose your settings as desired.
- Quit with „Save“.

Brightness



Figure 7-84. Brightness

- Change the brightness on the screen directly on the main display screen by dragging the slider icon from left to right or by tapping the + or - icons.
- Once you finished, quit with „Save“ at the bottom of the screen.

Language

Available languages:

- Chinese
 - English
 - French
 - German
 - Italian
 - Spanish
- Choose your desired language by turning the wheel picker.

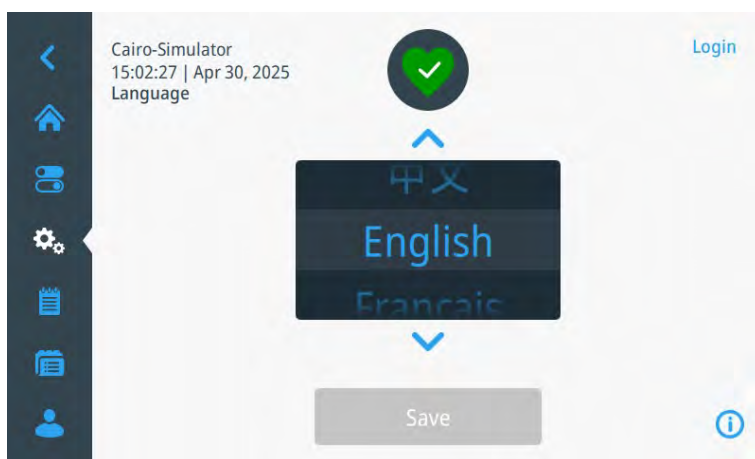


Figure 7-85. Choose Language

- Quit with „Save“.

Date

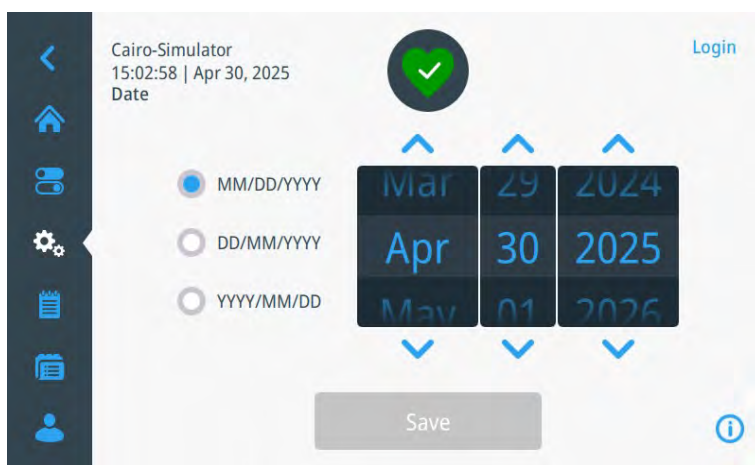


Figure 7-86. Choose Date

- Tap the radio buttons on the left side of the screen to choose the display of the date in a different format.
- Tap or tap and drag either the wheel picker itself or tap the up/down chevron icons above/below the wheel picker.
- Once you made a change, quit with „Save“.

Time

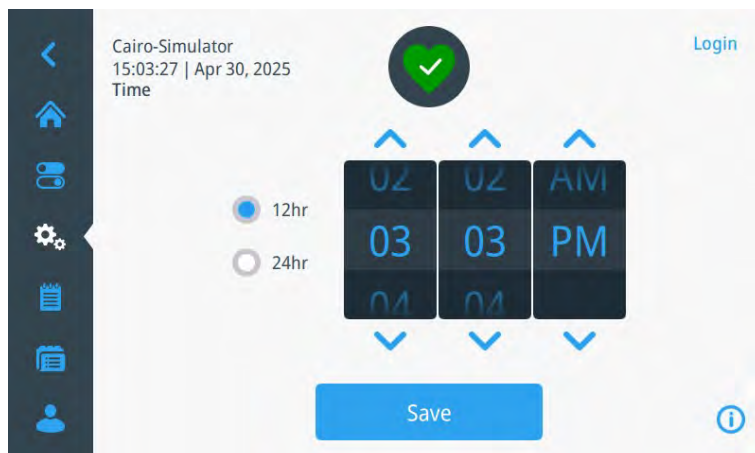


Figure 7-87. Choose Time - 1

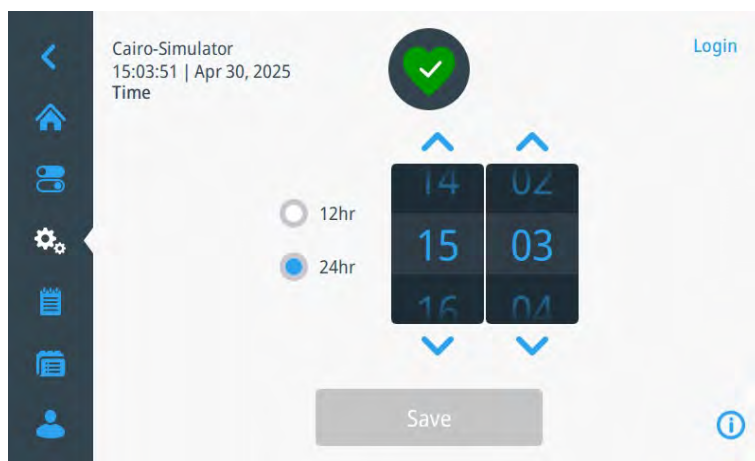


Figure 7-88. Choose Time - 2

- Tap the radio buttons on the left side of the screen to choose the display of the time in a different format.
- Tap or tap and drag either the wheel picker itself or tap the up/down chevron icons above/below the wheel picker.
- Once you made a change, quit with „Save“.

Region

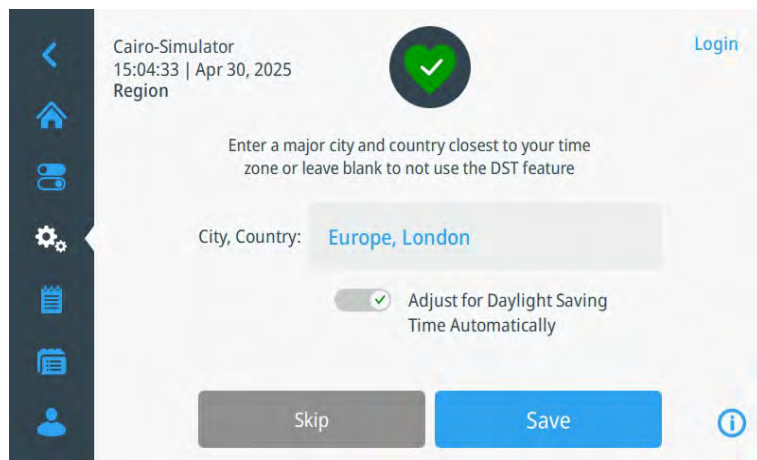


Figure 7-89. Choose Region

- Tap into the City, Country form field and type your city and country.
- Use the toggle on/off control to turn the Daylight-Saving time feature on or off.
- Once you made your changes, quit with „Save“.

Temp Unit



Figure 7-90. Choose Temp Unit

- Choose via dropdown:
 - °C
 - °F

Unit Name

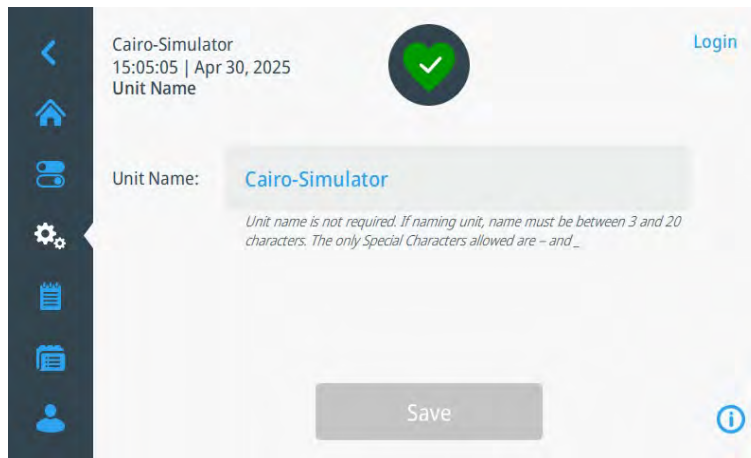


Figure 7-91. Set Unit Name

- Set a name for the unit. This name will be displayed above the time display on all screens.

Note Minimum of characters is three, maximum is 20. Special characters are not allowed.

- Confirm with „Save“.

Files + Infos

Overview

The main programs screen can be accessed from either by tapping the program icon from the left navigation bar or by tapping “programs” in the settings menu.



Figure 7-92. Files and Infos - Overview

Factory Reset

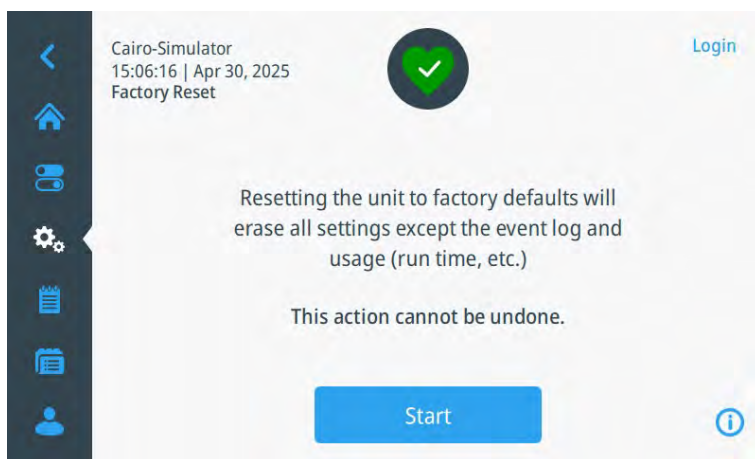


Figure 7-93. Factory Reset - 1

- Tap „Start“ to reset the following items:
 - User settings
 - User calibrations
 - User programs
 - Controls (rH) to default state (enabled/disabled)
- You are prompted to enter in the admin passcode.

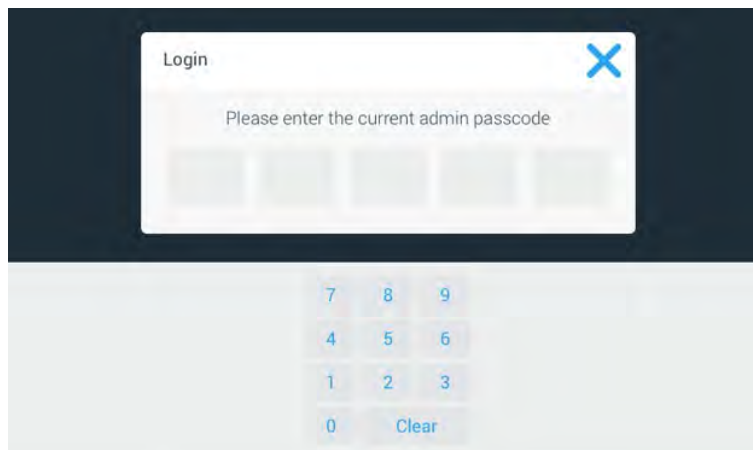


Figure 7-94. Factory Reset - 2

- Enter your Username/Password and tap „login“ resp. your admin passcode and confirm with „enter“.

A pop-up window overlay with a progress bar appears:

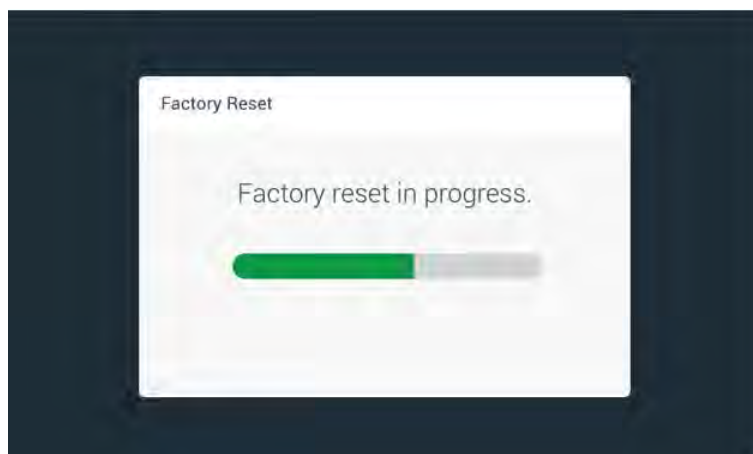


Figure 7-95. Factory Reset - 4

- Tap „X“ or „OK“ to be returned to the Factory Reset Screen ([Figure 7-92](#)).

Export PDF Manual



Figure 7-96. Export PDF Manual - 1

- Tap „Export PDF Manual“. The following message is displayed:

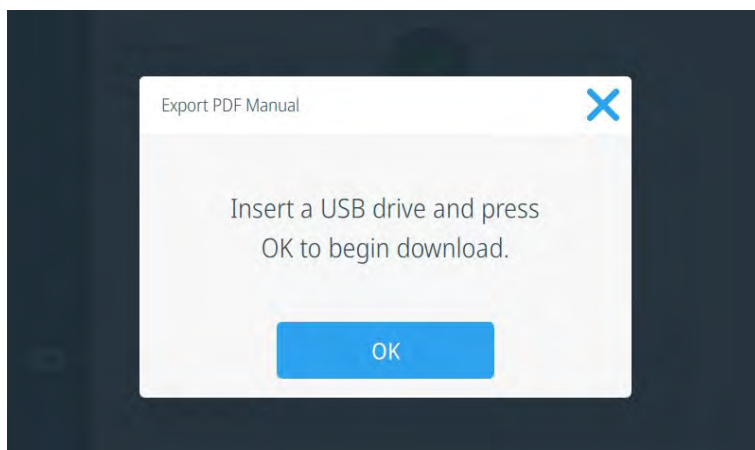


Figure 7-97. Export PDF Manual - 2

- Press „OK“ to start the download. The following screen appears:

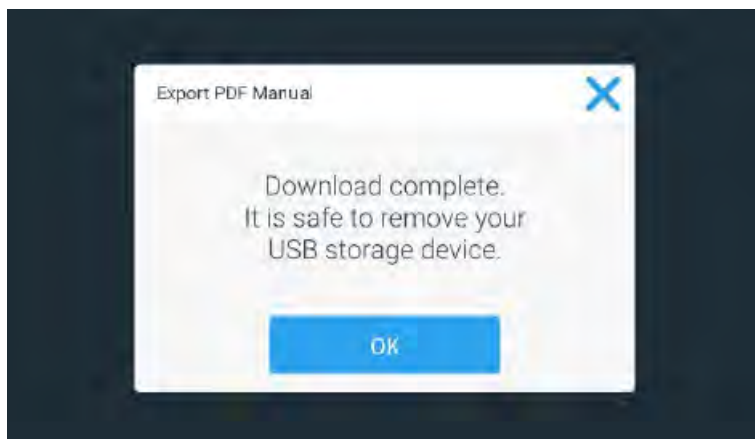


Figure 7-98. Export PDF Manual - 3

If no USB stick is detected, the following screen appears:

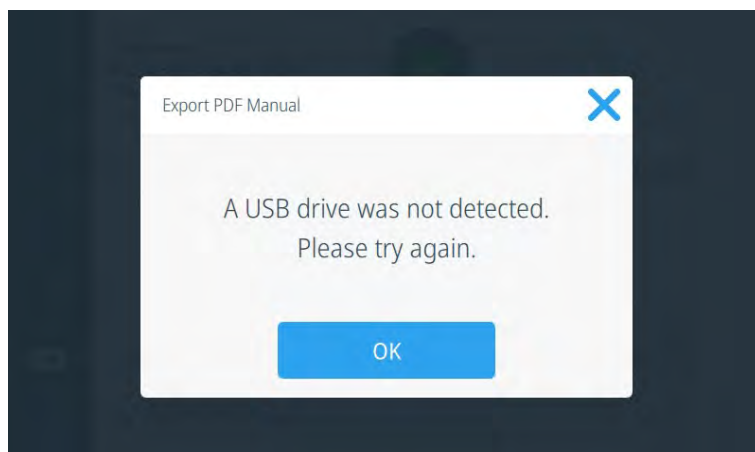


Figure 7-99. Export PDF Manual - 4

If an error occurs while downloading, the following screen is displayed:

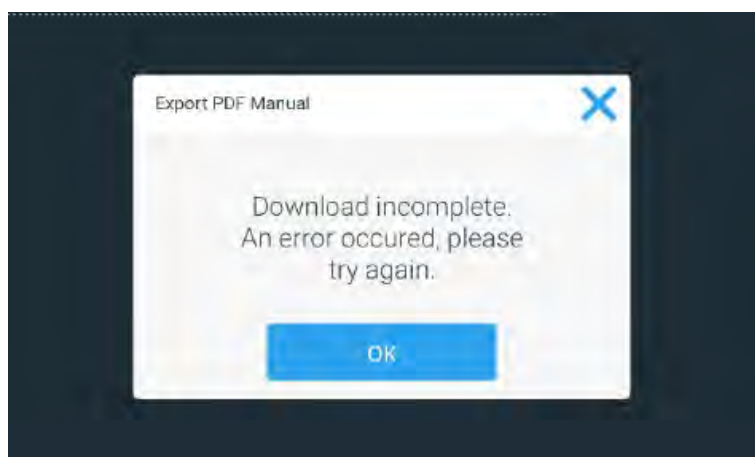


Figure 7-100. Export PDF Manual - 5

Unit Standby Mode

- Tap “Standby Mode” in the settings menu. The standby screen ([Figure 7-111](#)) is displayed.

Secure Mode: The feature is limited to:

- Admin
- Service

The door is unlocked, and stays unlocked while in standby.

Open Mode: The feature is available to anyone.

The door is unlocked and stays unlocked while in standby.

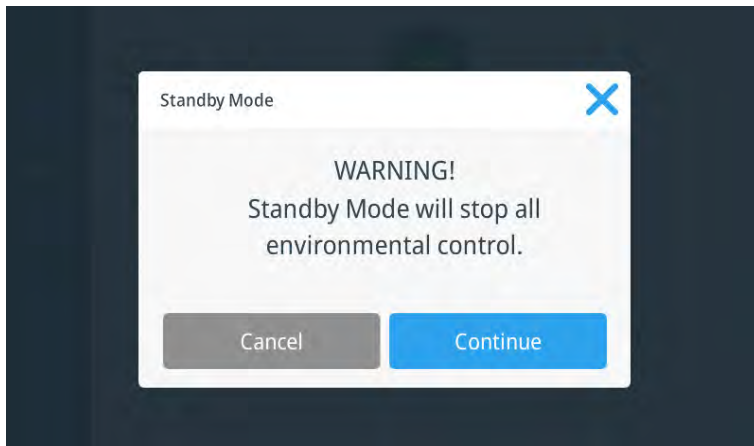


Figure 7-101. Standby Mode Warning

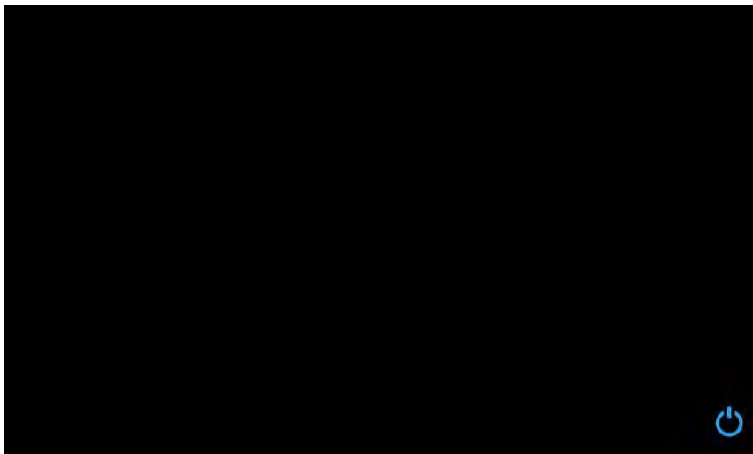



Figure 7-102. Standby Mode Display

While the unit is in standby mode it will:

- Ignore all setpoint values
- Cancel a running program
- Switch all outlets off
- Display the standby mode screen
- Unlock the door
- Log out an active user

To start the unit again, tap the standby at which point the unit returns to the home screen. The unit will now operate normally.

Event Log

- Tap the Event log icon  from the left navigation bar. The following screen is displayed:

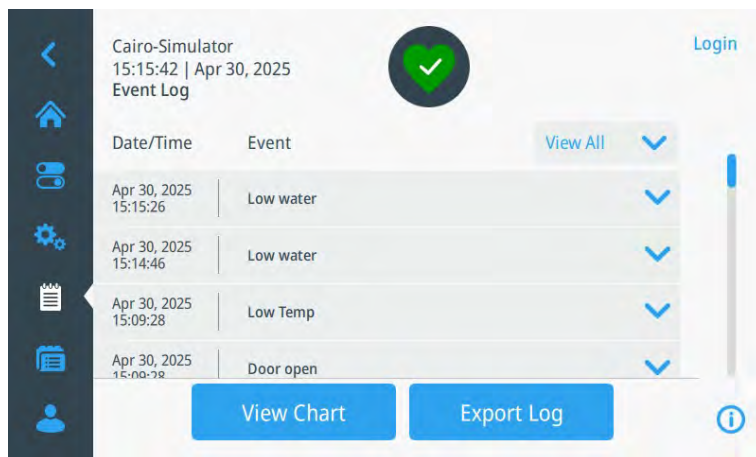


Figure 7-103. Event Log

The unit keeps:

- 30 days of logs accessible on screen in the UI
- 90 days of logs accessible via the export log function
- Data older than 90 days will be pruned/overwritten

Note If you want to store your logs for a longer time period, the unit needs to be connected to the cloud.

Types of events to log:

- Alarms
- Alerts (includes notification reminders)
- Settings (connectivity, controls)
- Activity (Calibration Performed, Programs Added/Edited/Deleted or Run, Users Added/Deactivated/Password Changed, Service)
- Logins/Logouts

View All Flyout

- Tap the „View all“ button in the top right corner to display the full flyout with a list of options:

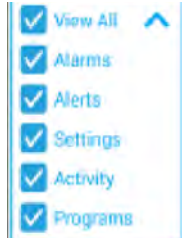


Figure 7-104. View Flyout

- Tap on a event to view it in the on-screen log.

Export Log

- Tap the „Export Log“ button at the bottom of the screen to see the Export log screen:

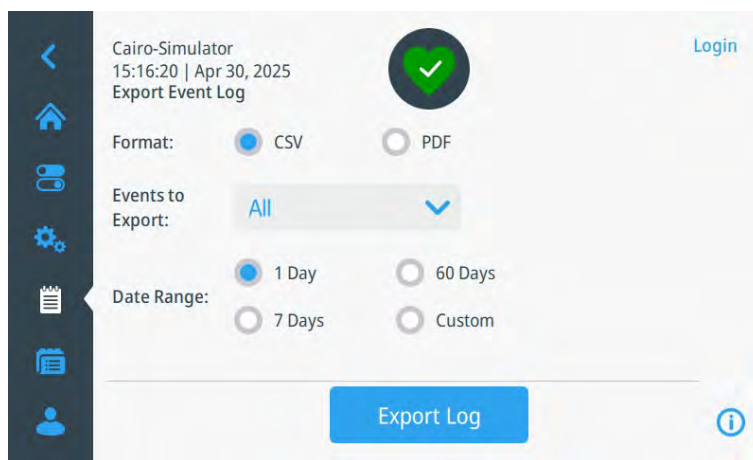


Figure 7-105. Export Log Screen

- Choose your favorite format, Date Range and type of event.
- Insert a USB stick.
- Tap „Export“.

Note

If no USB stick was inserted, the following pop-up window overlay screen appears:

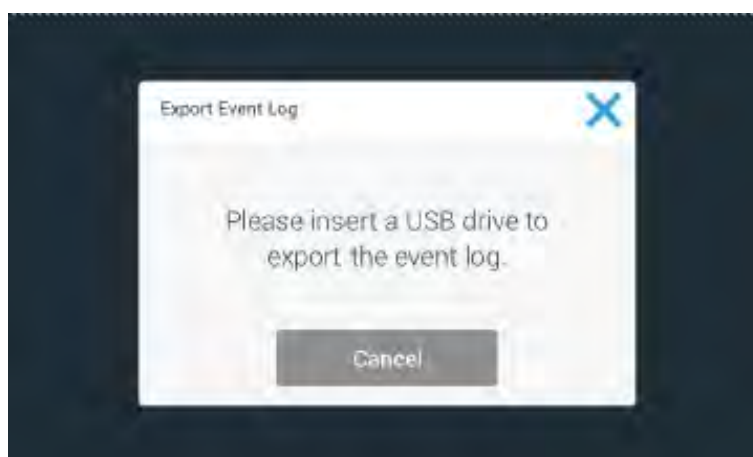


Figure 7-106. Pop up - Export Event Log

- Once the export is completed, following window appears:

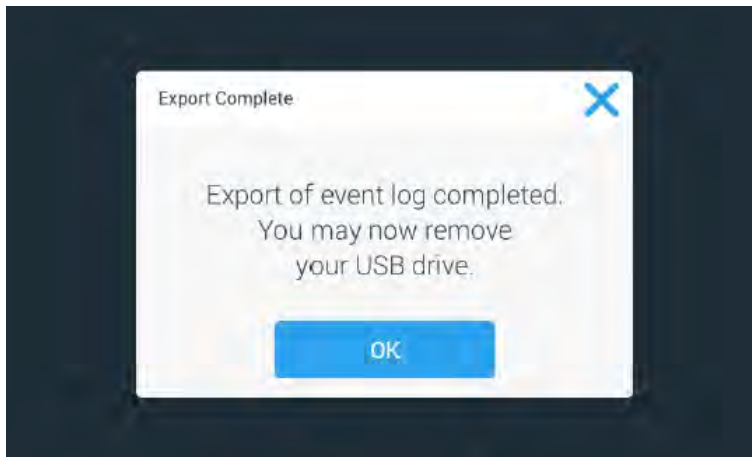


Figure 7-107. Export Event Log completed

Note

If you remove the USB stick before export is completed or if you cancel the export, the event log will not be exported.

Note

If there is not enough space on your USB stick to export the event log, a message will inform you.

Chart


The chart screen can be accessed from the Event Log screen by tapping “View Chart” or from the main screen by tapping the chart icon .



Figure 7-108. Chart Screen

The chart only shows parameters that are actively being controlled.

- You can gesture to move around the chart.

Edit Chart

- Tap „Edit Chart“ button at the bottom of the screen shown above. The following screen appears:



Figure 7-109. Edit Chart

- Choose what you want to show or hide: setpoints and/or actual values.
- Choose the x-axis as you prefer.
- Choose the data interval as you prefer.
- Quit with „save“.

Export Chart Data

- Tap the „Export Chart“ button at the bottom of the chart screen (figure 6-12) to export chart data:

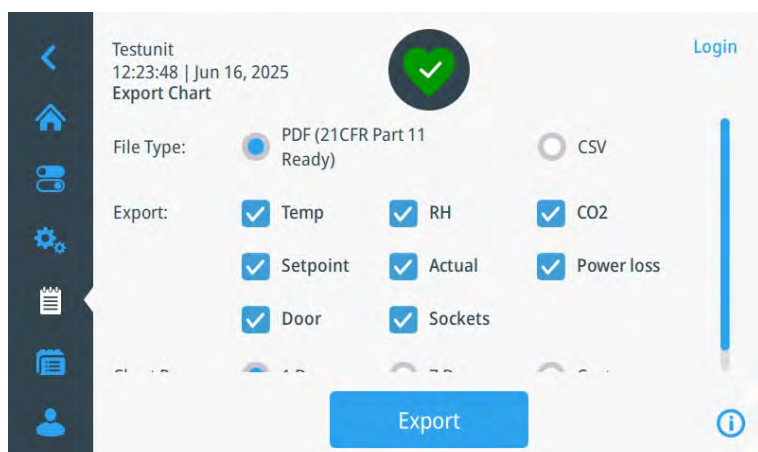


Figure 7-110. Export Chart Data

- Choose your applicable options.
- Insert a USB stick.
- Tap „Export“.

Note

If no USB stick was inserted, the following pop-up window overlay screen appears:

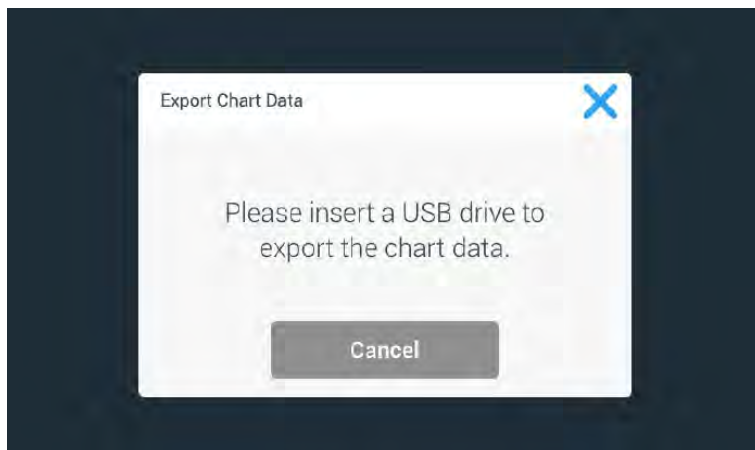


Figure 7-111. Pop up - Export Chart Data

- Once the export is completed, following window appears:

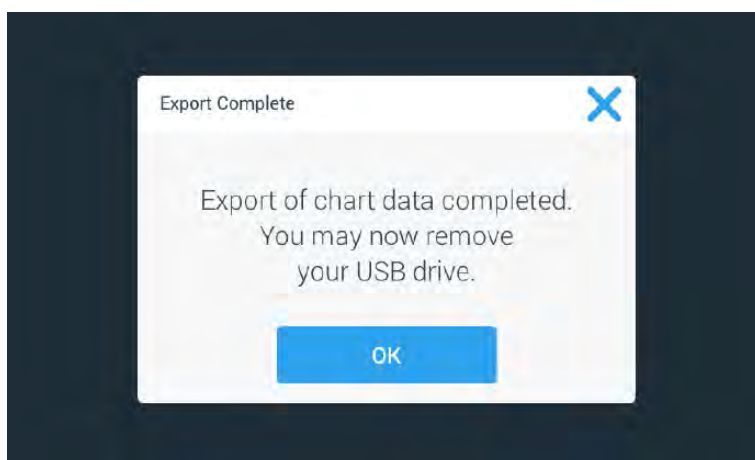


Figure 7-112. Export Chart Data completed

Note

If you remove the USB stick before export is completed or if you cancel the export, the chart data will not be exported.

Note

If there is not enough space on your USB stick to export the chart data, a message will inform you.

Main Screen Alarm

In the event that an alarm is triggered, a constant audible alarm is sounding.

- Tap the snooze button to silence the audible alarm for the duration of the snooze sequence.

The silence bell is shown along with the snooze countdown timer.

The screen displays a large red overlay at the top of screen to notify the user:

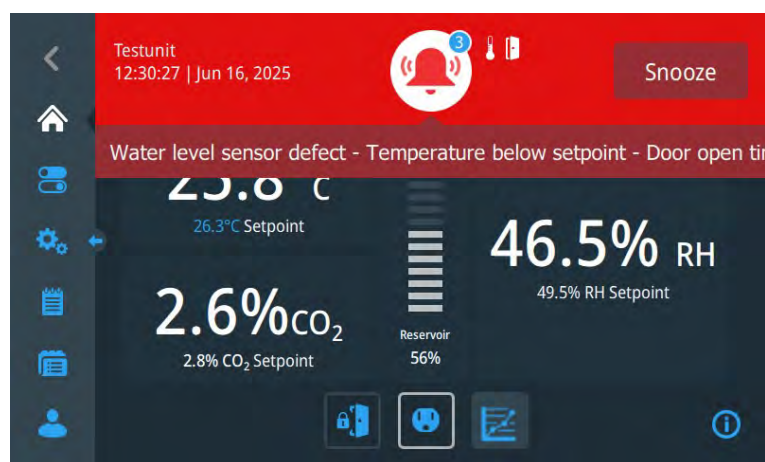


Figure 7-113. Main Screen Alarm



Figure 7-114. Alarm Snoozed

A message explains what type of alarm it is.

Overlaying the red bell icon is a blue circle with white border listing the number of events that have occurred. If there is more than one event, the most recent alarm will be shown in the ticker box.

Alarm List

- Tap during an alarm state on the red bell icon at the top of the screen. The following alarm list is displayed:

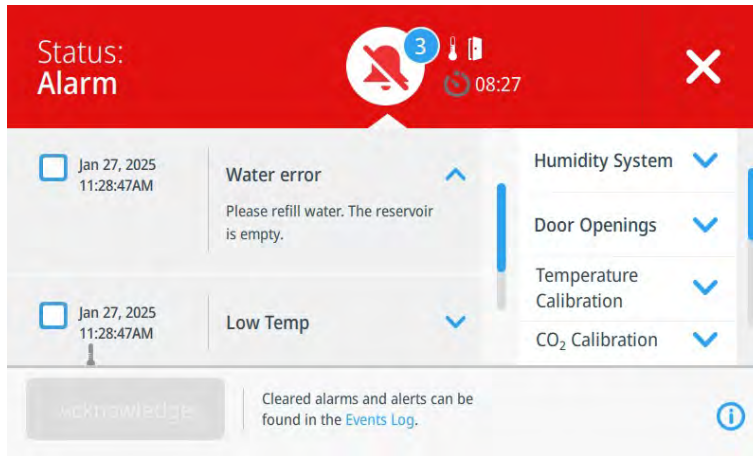


Figure 7-115. Alarm Display

The left side of the screen shows a list of alarms.

- Tap the X icon in the top right corner to close this screen and get returned to the previous screen.

Full Screen Alarm

In the event a serious alarm has occurred and you cannot interact with the main UI, an audible alarm sounds and the following full screen is displayed:

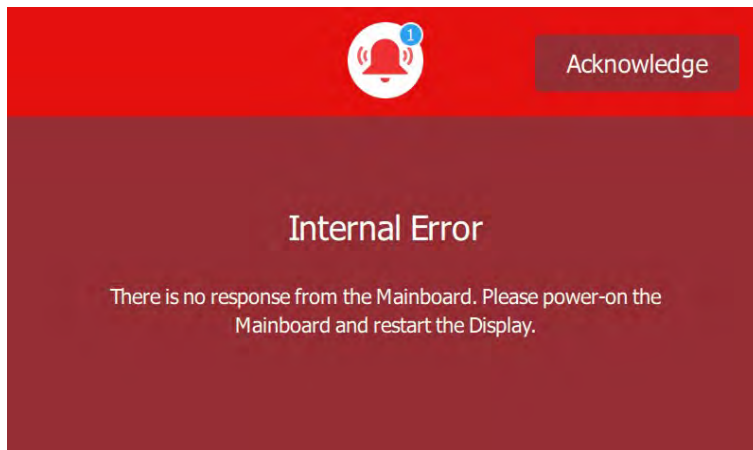


Figure 7-116. Full Screen Alarm

- Tap the „Acknowledge“ button to stop the audible alarm. The following screen is displayed:

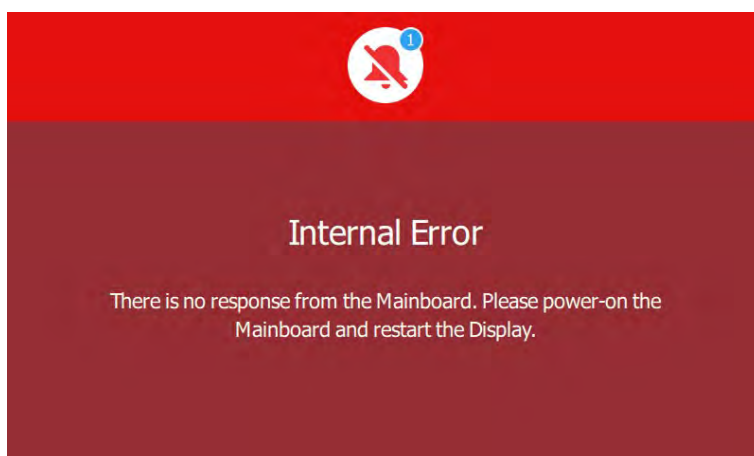


Figure 7-117. Full Screen Alarm Snoozed

- Unplug the unit and plug it back in.

If restarting the unit does not fix the issue, then the full screen alarming screens must be display again.

If restarting the unit does fix the issue, then the unit will boot up in a grey healthy state. Event will be logged in the event log.

Multiple Alarms and/or Alerts

In the event that more than one alarm is occurring at the same time, the most recent alarm will take precedence over older alarms in the ticker section as in this example:

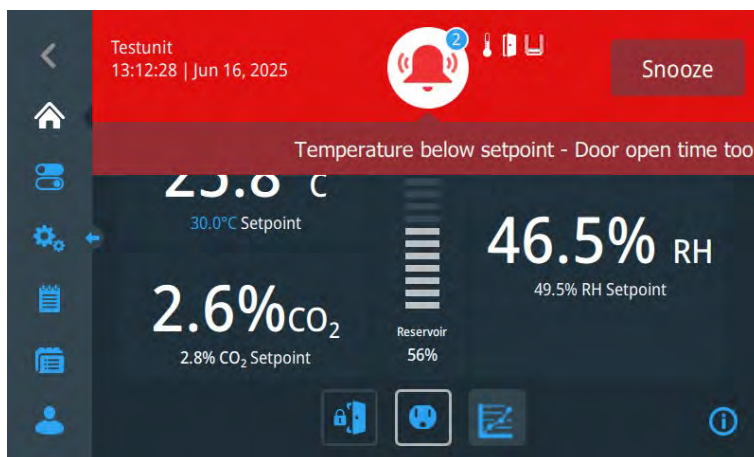


Figure 7-118. Example Multiple Alarms

First alarm: In the example above the door was open too long (door symbol next the temperature symbol). This caused the first alarm.

Second alarm: Because the door was open too long, the temperature dropped. This caused the second alarm.

The second alarm for low temperature is now the primary focus of the alarm messaging.

Alert: The Alert „Low water level“ is third to the thermometer and door open icons. Alert icons will always be listed behind active alarms.

Acknowledging Alarm

Note

If you acknowledge the alarm, but don't fix the issue, the alarm sequence will start again.

1. Tap the checkbox to the left of the alarm header.
2. Tap the „Acknowledge“ button at the bottom of the screen.

Main Screen Alert

In the event that an alert is triggered, a constant audible alarm is sounding.

The audible tone is not constant and sounds less than 3 seconds in duration. It will only be audible the first time the yellow audible state is triggered.

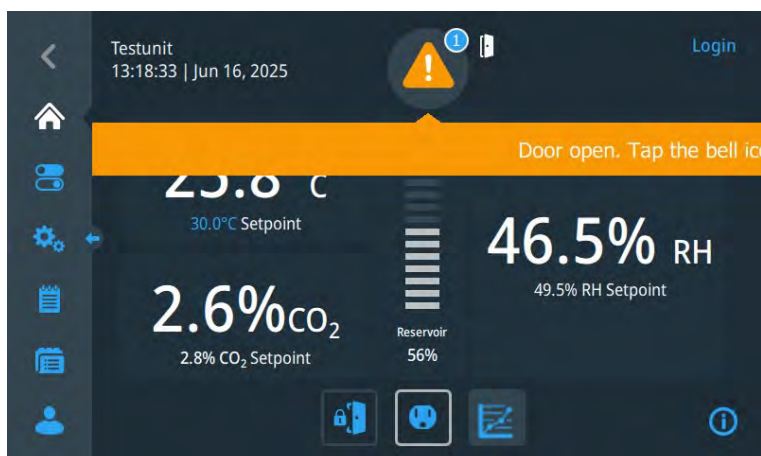


Figure 7-119. Main Screen Alert

In addition to the visual display of alert (yellow bar overlay) a message explaining what the alert is.

Overlay the yellow alert icon is a blue circle with white border listing the number of events that have occurred.

Alert List

Note

This notification is for active alerts only. Alerts that have been resolved and cleared will not be displayed during this sequence.

Note

If an alert occurs at the same time as an alarm, the alarm sequence will take precedence.

- Tap during an alert state on the yellow triangle icon at the top of the screen. The following alert list is displayed:

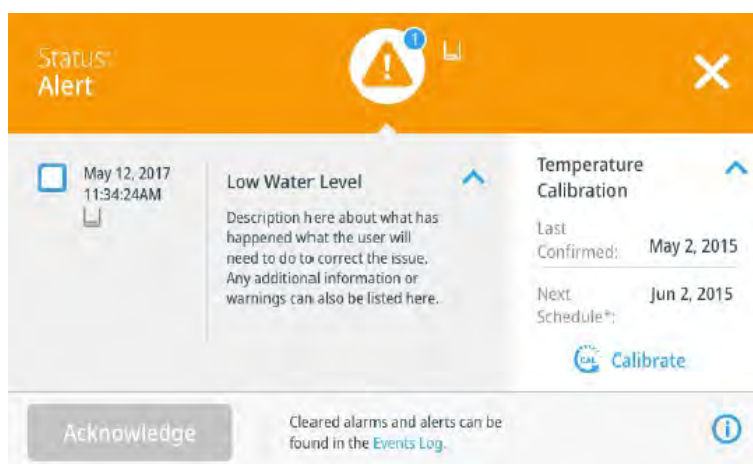


Figure 7-120. Alert Display

The left side of the screen shows a list of alerts.

Tap the X icon in the top right corner to close this screen and get returned to the previous screen.

Acknowledging Alerts


Note

If you acknowledge the alert, but don't fix the issue, the alert sequence will start again.

1. Tap the checkbox to the left of the alert header.
2. Tap the „Acknowledge“ button at the bottom of the screen.


Outlet

Switch-On Outlet

- To switch on the outlet, press the deactivated icon  (faded frame) on the display. (Figure 7-1, 10, 11).

The activation frame lights up and the outlet is active.

Switch-Off Outlet

- To switch off the outlet, press the activated icon  (illuminated frame) on the display (Figure 7-1, 10, 11).

The activation frame fades. The outlet is deactivated.

Door Lock | Unlock²

Open mode:

The door remains unlock at all times. The door lock/unlock button does not appear.

Secure mode:

The door lock/unlock icon is shown on the home page at all times.

See „Door Passcode” on Page 7-34 for handling passcodes.

- Tap the lock/unlock button  to open the door.

Note

The access code for the door corresponds to the admin code.

- Tap the lock/unlock button  to lock the door.

Note

The door is locked again one minute after it has been closed.

² Optional. Depends on the type.

Cleaning and Disinfection

Content

- „Cleaning” on Page 8-2
- „Wipe/spray disinfection” on Page 8-9



WARNING

If the chamber needs service, disconnect the power cord from both the unit and the power source. Allow the unit to cool before proceeding with any maintenance.



CAUTION

It is the responsibility of the user to immediately clean up after all accidental spills of hazardous materials. Be certain to follow local EHS policies (Environment, Health and Safety) with regards to personal protective equipment, cleaning, and disposal.



ATTENTION

Before using any cleaning or decontamination method except those recommended by the manufacturer, users should check with the manufacturer that the proposed method would not damage equipment.

Cleaning



WARNING

Alcohol, even a 70% solution, is volatile and flammable. Use it only in a well ventilated area that is free from open flame. If any component is cleaned with alcohol, do not expose the component to open flame or other possible hazards.



ATTENTION

Do not use strong alkaline or caustic agents. Stainless steel is corrosion resistant, not corrosion proof. Do not use solutions of sodium hypochlorite (bleach) as they may cause pitting and rust.

Teroson-Seams may turn dull after unification with alcohol. However, this did not result in further deterioration of the seam.

Recommended Cleaning/Disinfection Agents

- The inner chamber may be cleaned with a general-use laboratory disinfectant, such as quaternary ammonium, lactic acid, or alcohol (ethanol 70%).
- The chamber interior may be cleaned with a general-use laboratory disinfectant, such as quaternary ammonium, hydrogen peroxide 6% or alcohol (ethanol 70%).
- The cabinet exterior may be cleaned with soap and water or any nonabrasive commercial glass cleaner.
- The Thermopane glass door may be cleaned with commercial glass cleaner or with a solution of ammonia and water.

Cleaning Condensate Drain



DANGER

Make sure that the mains plug is disconnected before removing the condensate tray.



ATTENTION

Make sure to reinstall the condensate drain after cleaning!

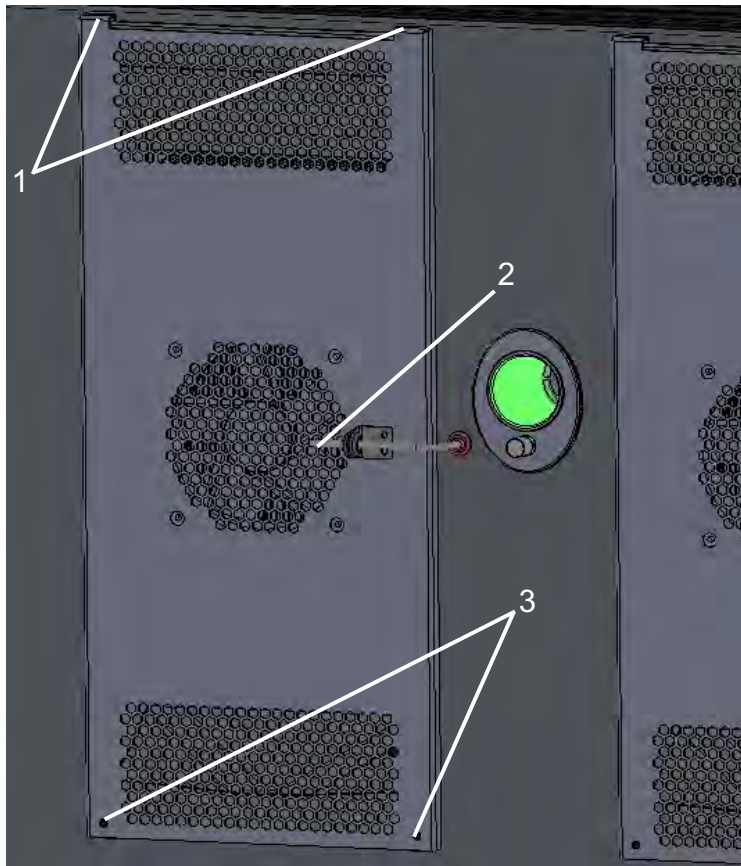


Figure 8-1. Cleaning Condensate Drain - 1

1. Pull the temperature sensor with the rubber sleeve (Figure 8-1, 2) out slightly and turn it slightly away from the left air baffle.
2. Loosen two bolts each (Figure 8-1, 3). Dismantle and remove the air baffles to the chamber interior rear wall by unhooking them from the upper hooks (Figure 8-1, 1).

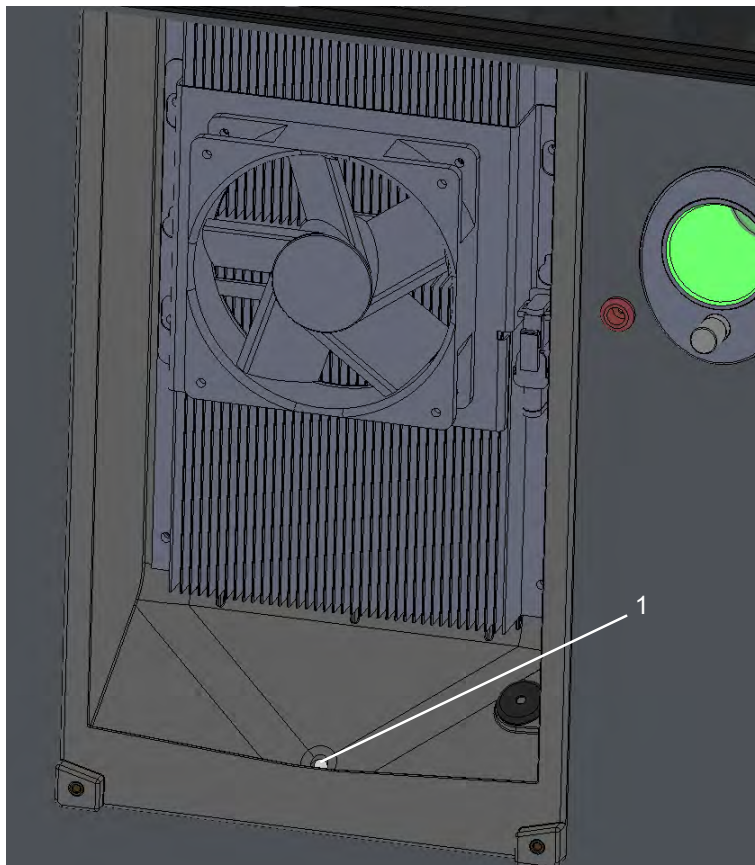


Figure 8-2. Cleaning Condensate Drain - 2

3. Clean the condensate drain ([Figure 8-2](#), 1) with a suitable brush.
4. Check whether other components need to be cleaned. If necessary, clean them using the next section „Peltier-System“.
5. Check, if the condensate pan is full and empty it if necessary:
 - a. Loosen the knurled screw on the back of the device. ([Figure 2-2](#), 14).
 - b. Pull out the condensate tray ([Figure 2-2](#), 13).
 - c. Empty the condensate tray. Clean it if necessary.
 - d. Slide the empty condensate tray back into the slot provided and secure it with the knurled screw.
6. Reattach the air baffles and screw them in place with two bolts each ([Figure 8-1](#), 3).
7. Bend the temperature sensor ([Figure 8-1](#), 2) back into place and reattach it.

Peltier-System (Cooling and Heating) - Chamber Side

1. Remove all internals from the specimen chamber.
2. Make the Peltier-System in the chamber accessible for cleaning:

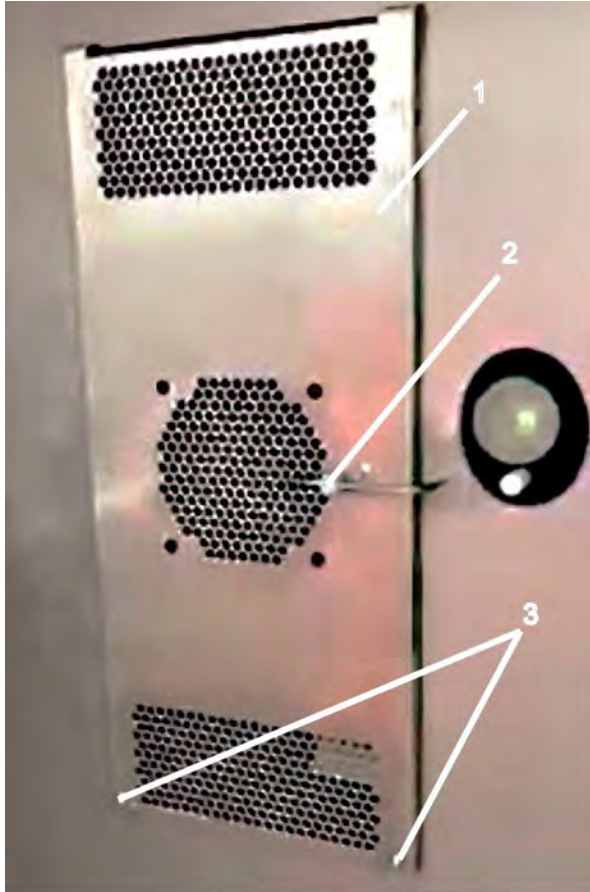


Figure 8-3. Cleaning Peltier-System - 1

3. Pull the temperature sensor ([Figure 8-3, 2](#)) off the air baffle ([Figure 8-3, 1](#)) and swivel it downwards to the side.
4. Loosen 2 bolts ([Figure 8-3, 3](#)).
5. Remove the air baffle to the chamber interior rear wall and spray it with disinfectant.



Figure 8-4. Cleaning Peltier System - 2

6. Loosen cable connector (Figure 8-4, 3)
7. Loosen 2 fixing bolts (Figure 8-4, 2) from the peltier fan (Figure 8-4, 1) but do not remove them completely.
8. Remove peltier fan (Figure 8-4, 1) and carefully wipe with disinfectant and lukewarm water.
9. Protect cable connector (Figure 8-4, 3) with insulation tape against moisture.

Glass Doors



DANGER

Electrical Shock

Contact with current-carrying components may cause a lethal electric shock.

Prior to cleaning and disinfection work, disconnect the device from the power supply!

- Turn the device off.
- Unplug the power connector and protect it against accidental reconnection.
- Make sure the device is de-energized.



WARNING

Health Hazard due to contaminated surfaces

The surfaces of the workspace may be contaminated. Contact with contaminated cleaning liquids may cause infections. Disinfectants may contain harmful substances.

When cleaning and disinfecting, always observe the safety instructions and hygiene regulations!

- Wear safety gloves!
- Wear safety goggles!
- Wear mouth and respiratory system protection gear to protect your mucous membranes.
- Observe the safety instructions of the disinfectant's manufacturer and the hygiene supervisor.



ATTENTION

Damage to the device due to incompatible cleaning agent

Some device components are made of plastic. Solvents can dissolve plastics. Strong acids or caustic solutions can cause plastic to become brittle. For cleaning plastic components and surfaces, do not use solvents that contain hydrocarbons, solvents with an alcohol content of more than 10% or strong acids or caustic solutions!

The "Thermo Scientific" company or their agent is to be consulted if there is any doubt about the compatibility of decontamination or cleaning agents.



ATTENTION

Damage to the glass due to corrosion

Moisture dissolves alkaline materials (sodium, Na) from glass surfaces. As a result of moisture evaporation, the alkali concentrates and may leave white discoloration or clouds on the glass surface. Chemicals with pH above 9 accelerate the corrosion process.

Repairing corroded glass is costly. In most cases, the glass must be replaced.

- Wash the glass door after cleaning.
- Dry the glass door after cleaning.

Moisture-Sensitive Components

- Do not spray cleaning agent onto the controllers of the device.
- When wiping the device clean, always make sure that moisture does not enter into these components.

Exterior Surfaces

1. Thoroughly remove dirt residues and deposits using a solution of tepid water and dishwashing agent.
2. Wipe the surfaces clean using a clean cloth and clear water.
3. Then, wipe the surfaces dry using a clean cloth.

Display



ATTENTION

Moisture-sensitive display! Do not wipe the display with a damp cloth. Do not spray it with cleaning agent!

- Clean using a dry cloth of 100% micro fiber.

Water Reservoir

Note Use a filter system (for example the TFS Filter System) to remove impurities and particles from the water.

- Disconnect the water tube at the cpc-connector on the water reservoir ([Figure 2-5](#), 3) and by the pump ([Figure 2-2,3](#)).
- Clean the tube and the water reservoir. If necessary, replace the water reservoir¹.
- Connect the water tube at the cpc connector on the water reservoir and by the pump

¹ Order Number 333267.

Wipe/spray disinfection

DANGER

Danger due to alcoholic disinfectants

Disinfectants having an alcohol content of more than 10% may form, in combination with air, easily combustible and explosive gas mixtures.



When using such disinfectants, avoid open flames or exposure to excessive heat during the entire disinfection process!

- Use such disinfectants only in adequately ventilated rooms.
- After the disinfectant has been allowed to react, wipe the cleaned device components thoroughly dry.
- Observe safety regulations to avoid fire and explosion hazard caused by alcohol-containing disinfectants.

ATTENTION

Damage due to chloride-containing disinfectants!

Do not use chloride-containing disinfectants!



The manual wipe/spray disinfection is carried out in three stages:

- Predisinfection
- Cleaning
- Final disinfection

Predisinfection

WARNING

Risk of injury by removing the glass panel

The glass panel may only be removed by properly trained and authorized personnel. The glass panel must be held by two persons.



Note Disinfecting hard-to-reach component.

Spray hard-to-reach components with disinfectant!

- Remove all samples from the work space and store them in a safe place.
- Spray disinfectant onto the surfaces of the work space and of the accessories or wipe the surfaces clean using disinfectant.
- Allow time for disinfectant to act as specified by the manufacturer!

Cleaning the Workspace

- Thoroughly remove dirt residues and deposits using a solution of tepid water and dishwashing agent.
- Wipe the surfaces clean using a clean cloth and plenty of clear water.
- Remove the cleaning liquid and wipe all surfaces of the workspace thoroughly dry.

Final Disinfection

- Spray the surfaces of the workspace, the shelving system and the parts removed with disinfectant one more time and wipe dry.
- Allow the disinfectant to act as specified by the manufacturer.
- Reinstall the shelf system and the removed components.

Maintenance

Content

- „Cleanliness” on Page 9-2
- „Preventive Maintenance for Environmental Chambers” on Page 9-2
- „Check by service technician” on Page 9-3
- „Returns for Repair” on Page 9-3



DANGER

Danger due to electric shock!

De-energize and lock out all potential power supplies to this equipment. Turn off the controls.



WARNING

Maintenance work may only be carried out by trained personnel



ATTENTION

Damage due to solvents

Do not use chlorinated solvents on stainless steel as they can cause rusting and pitting.



ATTENTION

Contamination by solvents

Do not use volatile or aromatic solvents to clean the chamber interior, as their residues may contaminate the chamber environment.

Cleanliness

The continued cleanliness of the stainless steel used in this unit has a direct effect on the appearance and operation of the unit.

- Use the mildest cleaning procedure that will do the job effectively.
- Clean the outside of the environmental chamber with soap and water or with any non-abrasive commercial spray cleaner.
- Clean the inside of the chamber with alcohol and/or soap and water.
- Disinfect the interior panels with a general use laboratory disinfectant, diluted according to the manufacturer's instructions
- Rinse the surface thoroughly after each cleaning and wipe the surfaces dry.
- Always rub in the direction of the finish polish lines.
- The Thermopane glass door may be cleaned with commercial glass cleaner or with a solution of ammonia and water.

Preventive Maintenance for Environmental Chambers

Your equipment has been thoroughly tested and calibrated before shipment. Regular preventive maintenance is important to keep your unit functioning properly. The operator should perform routine cleaning and maintenance on a regular basis. For maximum performance and efficiency, it is recommended that the unit be checked and calibrated periodically by a qualified service technician. We have qualified service technicians, using NIST traceable instruments, available in many areas. For more information on Preventive maintenance or Extended Warranties, contact Technical Services. The following is a condensed list of preventive maintenance requirements. See the specified section of the instruction manual for further details. Cleaning and calibration adjustment intervals are dependent upon use, environmental conditions and accuracy required.

See Manual Section	Action	3 Months	Yearly
	Inspect door latch, hinges and door gasket seal.		✓
	Visual inspection of the connection points of the water supply, the duckbill valves, the pump head, and the drain hoses.		✓
„Wipe/spray disinfection” on Page 8-9	Perform a complete decontamination procedure. Wipe down interior, shelves, side panels and gaskets with disinfectant. Rinse everything well with sterile water.		✓ ^a
	Verify and document all calibrations, at minimum.		✓

See Manual Section	Action	3 Months	Yearly
„Cleaning Condensate Drain” on Page 8-3	Clean drain lines.		✓
„Water Reservoir” on Page 8-8	Check water reservoir and tube and clean or replace if necessary.	✓	
	Check the water cycle due to dirt /biofouling (Reservoir and Lab Water)		✓
	Check the tightness of the Lab Water Assembly		✓
„Peltier-System (Cooling and Heating) - Chamber Side” on Page 8-5	Check and clean Peltier -air baffle sheet metal from the chamber side if necessary.	✓	
„Access Ports” on Page 2-10	Check and replace the cone shape inserts in the access ports if necessary.		✓
„Access Ports” on Page 2-10	Check the access ports for condensation and wipe dry if necessary.	✓	

^aBetween Experiments. more frequent decontamination may be required, depending on use and environmental conditions.

Check by service technician

To ensure maximum performance and efficiency, an annual inspection by a qualified service technician is recommended.

Returns for Repair

Prior to returning any materials, please contact our Customer Service Department for a „Return Materials Authorization“ number (RMA).

Material returned without a RMA number will be refused.

Consumable parts and accessories

Components	Order Number
Shelving System (Shelves and Shelf supports)	333947
Pair of keys for door lock	122005
Water reservoir	333267
CO ₂ -Hose-Set	50062701
Power cord added depends on where the unit is shipped. Available cords:	
NEMA 5-15P ^a	50135037
EU Schuko	430270
UK	430269
China	430366
India	430271
Australia	430268
Japan	334327H01
Switzerland	185144
Denmark	185141

^aOptionally available/orderable: NEMA 6-20P (Order Number 50135319). Note: This cable cannot be used in case the chamber has the optional interior socket!

Decommissioning and Storage

Content

- „Take device out of operation” on Page 10-1
- „Intermediate Storage” on Page 10-1

Take device out of operation

WARNING

Risk of contamination!

The environmental chamber may have been used for treating and processing infectious substances, which may have caused contamination of the environmental chamber and its components.

Prior to disposal, it is therefore mandatory that all environmental chamber components be properly decontaminated.

Clean the environmental chamber components thoroughly, then disinfect or decontaminate them (depending on application).

Fill in and attach a declaration of decontamination with details on decontamination activities performed to the items that are to be disposed of.



Intermediate Storage

When the chamber is placed in intermediate storage, which is permissible for a maximum of four weeks, make sure that the ambient temperature is between 20°C to 60°C (68°F to 140°F) and the maximum relative humidity does not exceed 90%, non-condensing.

Error Messages

Alert Messages

Text Banner	Warning Description
Door Open	Climate in Chamber might be impacted by door open
Temperature setpoint has been adapted	Temperature setpoint adapted due to changed parameters. Please verify new setpoint.
CO ₂ setpoint has been adapted	CO ₂ setpoint adapted due to changed parameters. Please verify new setpoint.
Relative humidity setpoint has been adapted.	Relative humidity setpoint adapted due to changed parameters. Please verify new setpoint.
Low water	Please refill water. The water level is low.

Alarm Messages

Text Banner	Warning Description
Door open time too long.	Please close door - climate in chamber is impacted by open door.
Memory error.	Please call Service: There is an issue with the memory on the mainboard.
Mainboard error.	Please call Service: There is an issue with the main board.
Voltage detection Error, low voltage.	Voltage detection error, voltage too low. Please check main voltage and compare with type plate of chamber.
Voltage detection Error, wrong voltage.	Voltage detection Error, voltage undefined. Please check main voltage and compare with type plate of chamber.
Temperature sensor breakage.	Please call Service: The temperature sensor is broken.
Temperature above setpoint.	Temperature in chamber is above setpoint. Check samples and setpoint. If error is recurring, please call service.
Temperature below setpoint.	Temperature in chamber is below setpoint. Check samples and setpoint. If error is recurring, please call service.
Temperature sensor error.	Please call Service: There is an issue with the temperature sensor. Sensors not in agreement.
Temperature calibration out of range.	Temperature calibration values too high/low. Please change values.
Temperature setpoint cannot be maintained.	Please check sample protection high/low values. In case these are o.k., please call Service: Temperature setpoint cannot be maintained. Sample protection active.

11 Error Messages

Alarm Messages

Text Banner	Warning Description
Temperature too high: Exceeded limit.	Temperature limit exceeded. Heaters shut off. Please check for problems, then re-set. If error persists, call Service.
Mainboard error.	Please call Service: Door heater control defect.
CO ₂ Sensor breakage.	Please call Service: The CO ₂ sensor is broken.
CO ₂ above setpoint.	CO ₂ level in chamber is above setpoint. Check samples and setpoint. If error is recurring, please call service
CO ₂ below setpoint.	CO ₂ level in chamber is below setpoint. Check samples and setpoint. If error is recurring, please call service.
CO ₂ calibration out of range.	CO ₂ calibration values too high/low. Please change values
CO ₂ sensor error.	Please call Service. There is an issue with the CO ₂ sensor: CO ₂ sensor communication error.
Humidity Sensor breakage.	Please call Service: The humidity sensor is broken.
Relative humidity above setpoint.	Humidity level in chamber is above setpoint. Check samples and setpoint. If error is recurring, please call service.
Relative humidity below setpoint.	Humidity level in chamber is below setpoint. Check samples and setpoint. If error is recurring, please call service.
Relative humidity calibration out of range.	Relative humidity calibration values too high/low. Please change values.
Humidity sensor error.	Please call Service. There is an issue with the humidity sensor: Relative humidity sensor communication error.
Water reservoir not inserted.	Please insert water reservoir: Water reservoir not inserted.
Water level sensor defect.	Please call Service: Water level sensor defect.
No water	Please call Service: Water level sensor defect.
Weight sensor calibration out of range.	Weight sensor calibration values of water reservoir too high/low. Please change values.

Disposal



WEEE Conformity:

This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2012/19/EC. It is marked with the adjacent symbol.

WARNING

Risk of contamination!

The device may have been used to process infectious substances. The device or parts of the device may therefore be contaminated. All components of the device must be decontaminated before disposal!

Clean the components of the device thoroughly and then disinfect or decontaminate them, depending on the intended use.

Include a declaration of no objection with the disposal material with precise instructions on how to carry out the decontamination measures.

All components of the equipment may be disposed of in accordance with relevant national guidelines after undergoing appropriate decontamination.

Note

Recycling Services:

Thermo Fisher Scientific provides environmentally responsible recycling services for end-of-life equipment.

Note

Before disposing of equipment, all stored personal data must be completely and irreversibly deleted to comply with international and national data protection laws and regulations.

Technical Data

Note

The technical data applies only to an empty device with three shelves, painted outer housing, and mains voltages of 230 V/50 Hz. Options may affect the technical values.

Temperature & RH-Performance	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Chamber Volume	250 Liters / 8.83 cu.ft					
Chamber Temperature Range	0 °C to 70 °C (32 °F to 158 °F)				15 °C to 45 °C (59 °F to 113 °F)	
Chamber Temperature Range with interior power socket option	15 °C to 40 °C (59 °F to 104 °F)					
Chamber Temperature Range with installed shakers	15 °C to 40 °C (59 °F to 104 °F)					
Peltier Cooling / Heating Capacity	$\Delta T \geq 25 \text{ C} / \Delta T \geq 50 \text{ C}$	$\Delta T \geq 23 \text{ C} / \Delta T \geq 50 \text{ C}$	$\Delta T \geq 25 \text{ C} / \Delta T \geq 50 \text{ C}$	$\Delta T \geq 23 \text{ C} / \Delta T \geq 50 \text{ C}$	$\Delta T \geq 25 \text{ C} / \Delta T \geq 50 \text{ C}$	$\Delta T \geq 23 \text{ C} / \Delta T \geq 50 \text{ C}$
Chamber Temperature Uniformity: typical/maximal value (spatial, according to DIN 12880)	$\leq \pm 0.2 \text{ K @} 20 \text{ to } 25 \text{ °C (} @68 \text{ to } 77 \text{ °F)}$ $\leq \pm 0.5 \text{ K @} 20 \text{ to } 25 \text{ °C (} @68 \text{ to } 77 \text{ °F)}$ $\leq \pm 0.3 \text{ K @} > 25 \text{ to } 30 \text{ °C (} @77 \text{ to } 86 \text{ °F)}$ $\leq \pm 0.5 \text{ K @} 25 \text{ to } 30 \text{ °C (} @77 \text{ to } 86 \text{ °F)}$ $\leq \pm 0.4 \text{ K @} 37 \text{ °C (} @99 \text{ °F)}$ $\leq \pm 0.5 \text{ K @} 37 \text{ °C (} @99 \text{ °F)}$		$\leq \pm 0.2 \text{ K @} 25 \text{ °C (} @68 \text{ °F) } 60 \% \text{ RH}$ $\leq \pm 0.5 \text{ K @} 25 \text{ °C (} @68 \text{ °F) } 60 \% \text{ RH}$ $\leq \pm 0.3 \text{ K @} 30 \text{ °C (} @86 \text{ °F) } 75 \% \text{ RH}$ $\leq \pm 0.5 \text{ K @} 30 \text{ °C (} @68 \text{ °F) } 75 \% \text{ RH}$ $\leq \pm 0.4 \text{ K @} 37 \text{ °C (} @99 \text{ °F) } 90 \% \text{ RH}$ $\leq \pm 0.5 \text{ K @} 37 \text{ °C (} @68 \text{ °F) } 90 \% \text{ RH}$			
Chamber temperature stability, temporal mid of work space according to DIN 12880	20 to 37 °C : $\leq \pm 0.1 \text{ K (} 68 \text{ to } 99 \text{ °F)}$		$\leq \pm 0.1 \text{ K @} 25 \text{ °C (} @77 \text{ °F) } 60 \% \text{ RH}$ $\leq \pm 0.1 \text{ K @} 30 \text{ °C (} @86 \text{ °F) } 75 \% \text{ RH}$ $\leq \pm 0.1 \text{ K @} 37 \text{ °C (} @99 \text{ °F) } 90 \% \text{ RH}$			

13 Technical Data

Temperature & RH-Performance	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Heat up / Cool down time (work space unoccupied), from ambient temperature of 22 °C (72 °F) to (according to DIN 12880)	≤ 200 min @0 °C (32 °F) ≤ 50 min @37 °C (99 °F) ≤ 110 min @60 °C (140 °F)		≤ 80 min@5 °C (41 °F) 80 % RH ≤ 25 min@30 °C (86 °F) 75 % RH ≤ 110 min@60 °C (140 °F) 70 % RH		≤ 25 min@30 °C (86 °F) 75 % RH	
Temp. Recovery times (30 sec. door opening - w/o humidity according to DIN 12880)	≤ 45 min @0 °C (32 °F) ≤ 7 min @37 °C (99 °F) ≤ 60 min @60 °C (140 °F)		≤ 40 min@5 °C (41 °F) 80 % RH ≤ 10 min@30 °C (86 °F) 75 % RH ≤ 60 min@60 °C (140 °F) 70 % RH		≤ 10 min@30 °C (86 °F) 75 % RH	
Chamber humidity stability, temporal mid of work space according to DIN 12880	–	–	≤ ± 2 % RH @20 to 37 °C (68 to 99 °F)			
Energy consumption (without humidity control). Measured at ambient temperature of 22°C (72°F)	@ 0 °C (32 °F): ≤ 7.0 kWh/ per day	@ 0 °C (32 °F): ≤ 7.5 kWh/ per day	@ 0 °C (32 °F): ≤ 7.0 kWh/ per day	@ 0 °C (32 °F): ≤ 7.5 kWh/ per day	–	
	@ 20 °C (68 °F): ≤ 2.7 kWh/ per day	@ 20 °C (68 °F): ≤ 3.0 kWh/ per day	@ 20 °C (68 °F): ≤ 2.7 kWh/ per day	@ 20 °C (68 °F): ≤ 3.0 kWh/ per day	@ 20 °C (68 °F): ≤ 2.7 kWh/ per day	@ 20 °C (68 °F): ≤ 3.0 kWh/ per day
	@37 °C (99 °F): ≤ 3.0 kWh/ per day	@37 °C (99 °F): ≤ 4.5 kWh/ per day	@ 37 °C (99 °F): ≤ 3.0 kWh/ per day	@ 37 °C (99 °F): ≤ 4.5 kWh/ per day	@37 °C (99 °F): ≤ 3.0 kWh/ per day	@37 °C (99 °F): ≤ 4.5 kWh/ per day
	@60 °C (140 °F): ≤ 6.0 kWh/ per day	@60 °C (140 °F): ≤ 7.5 kWh/ per day	@ 60 °C (140 °F): ≤ 6.0 kWh/ per day	@ 60 °C (140 °F): ≤ 7.5 kWh/ per day	–	
Energy consumption (with humidity control) Measured at ambient temperature of 22°C (72°F)	–		@ 5 °C (41 °F) - 80 % RH: ≤ 7.5 kWh/ per day	@ 5 °C (41 °F) - 80 % RH: ≤ 7.5 kWh/ per day	–	
	–		@ 30 °C (68 °F) - 75 % RH: ≤ 2.8 kWh/ per day	@ 30 °C (68 °F) - 75 % RH: ≤ 3.7 kWh/ per day	@ 30 °C (68 °F) - 75 % RH: ≤ 2.8 kWh/ per day	@ 30 °C (68 °F) - 75 % RH: ≤ 3.7 kWh/ per day
	–		@ 37 °C (99 °F) - 90 % RH: ≤ 3.8 kWh/ per day	@ 37 °C (99 °F) - 90 % RH: ≤ 4.8 kWh/ per day	@ 37 °C (99 °F) - 90 % RH: ≤ 3.8 kWh/ per day	@ 37 °C (99 °F) - 90 % RH: ≤ 4.8 kWh/ per day
	–		@ 60 °C (140 °F) - 70 % RH: ≤ 7.0 kWh/ per day	@ 60 °C (140 °F) - 70 % RH: ≤ 8.0 kWh/ per day	–	

Temperature & RH-Performance	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Water supply		–	Water reservoir 5 liter (as standard in device installed) or as option directly connected at lab water system			
Water specification		–	Demineralized water Resistance = 0.05 - 1 MΩ cm			
Input water pressure (Clean water line)		–	Min: 14.5 Psi (1 bar)			
		–	Max: 43.5 Psi (3 bar)			
Water consumption for humidity system		–	≤ 0.25 l per day			

Electrical Data	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Name-plate	100-240 VAC; 50/60 Hz; 600 W		100-240 VAC; 50/60 Hz; 900 W			
Name-plate with interior socket US	120 VAC; 50/60 Hz; 900 W		120 VAC; 50/60 Hz; 1100 W			
Current/power interior socket (US)	120 VAC; max. 2A					
Name-plate with interior socket EU, AUS, CN, IN, SW, UK	230 VAC; 50-60 Hz; 1100 W		230 VAC; 50-60 Hz; 1400 W			
Current/power interior socket (EU, SW, UK, IN, CN, AUS)	230 VAC; max. 2A					
US power cable ^a	NEMA 5-15P ^b					
Dry Contact / Alarm output	0 - max. 50 VDC / 0 - max. 2 A					
Device fuse	T 16 A					

^a Or country specific power cord:

EU Schuko (order number 430270)

UK (order number 430269)

China (order number 430366)

India (order number 430271)

Australia (order number 430268)

Japan (order number 334327H01)

Switzerland (order number 185144)

Denmark (order number 185141)

^b Order number 50135037. Optionally available/orderable: NEMA 6-20P (order number 50135319).

Installation Conditions	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Application Environment	Non-Corrosive, Non-Flammable, Non-Explosive, Good Air Ventilation					
Maximum altitude above sea level	2000m NN / 2187y NN					
Ambient temperature range	18 °C to 28°C (64 °F to 82 °F)					
Ambient Temperature Range with interior power socket option	18 °C to 26 °C (64 °F to 79 °F)					
Max. rel. humidity in service at or below 28 °C (64 °F), non condensing	70 % RH					

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Installation Conditions	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Storage temperature range	20 °C -to 60 °C (68 °F to 140 °F)					
Max. humidity in storage, non condensing	90 % RH					
Post-transport acclimation time	2 hours					
Max. Heat load to the environment	460 W (1570 BTU/ hour) @ 0 °C (32 °F) at ambient temp.: 28 °C (82 °F)					
Minimum side clearance	150 mm / 5.91 "					
Minimum front clearance	890 mm / 35.04 "					
Minimum back wall clearance	200 mm / 7.87 "					
Minimum top clearance	500 mm / 19.68 "					

Dimensions and Construction	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
External Dimensions (with feet/casters) W x H x D	901 mm x 1128 mm x 790 mm / 35.5" x 44.4"					
Exterior Construction	Standard: Galvannealed steel, 20 Gauge (0.9 mm), powder coated Optional: Stainless Steel Type 304, 20 Gauge (0.9 mm), brushed					
Insulation	High Density HFC-free-blown Polyurethane Foam of 2.76" (7.0 cm) on left, right, top and bottom of cabinet, back of cabinet PU-foam with 3.15" (80 mm)					
Internal dimensions W x H x D	660 mm x 800 mm x 790 mm (26" x 31.5" x 20.4")					
Interior Construction	Stainless Steel Type 304, 18 Gauge, 2B finish Stainless Steel EN standard 1.4301, 1.2 mm, 2B finish					
Footprint	0.7 m ² (7.6 ft ²)					
Number of Shelves / Positions	2 (standard) / 17 (maximum)					
Shelf construction	Perforated stainless steel; 1 mm Type 1.4301 / AISI 304					
Shelf size (W x D)	615 mm x 460 mm (24.2" x 18.1")					
Shelf surface area	0.283 m ² (3.046 ft ²)					
Maximum load capacity per shelf ^a	15 kg (33 lbs) (slide in / out) / 30 kg (66 lbs) (stationary)					
Maximum load capacity per reinforced shelf ^a	15 kg (33 lbs) (slide in / out) 90 kg (198 lbs) (stationary)					
Maximum overall device load capacity ^b	136 kg (300 lbs)					
Device net weight ^c	160 kg / (353 lbs) net weight	160 kg / (353 lbs) net weight	160 kg / (353 lbs) net weight	160 kg / (353 lbs) net weight	160 kg / (353 lbs) net weight	160 kg / (353 lbs) net weight
Device shipping weight	200 kg / (441_lbs)	200 kg / (441_lbs)	200 kg / (441_lbs)	200 kg / (441_lbs)	200 kg / (441_lbs)	200 kg / (441_lbs)

^a Loading including the weight of the shelves. The loading of the shelves must be evenly distributed (surface load).

^b The evenly loaded shelves must be evenly spaced from each other.

^c Without shelves.

Controller / Electrical System Configuration and Features	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Controller System	Microprocessor, PID (T, RH, CO ₂)					
Temperature Readability & Setability	0.1 °C					
Humidity Readability & Setability	0.1 % RH					
Data Outputs	Temperature		Temperature, Rel. Humidity		Temperature, Rel. Humidity CO ₂	

General information	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Door Types	Solid Door with inner glass door	Exterior glass door	Solid door with inner glass door	Exterior glass door	Solid Door with inner glass door	Exterior glass door
Accessport - standard	2-left side wall & right side wall					
Calibration Certificate Calibrated Temperature & Climate Conditions (single measuring point is chamber center)	10 °C (50 °F) 37 °C (99°F) 30 °C (86 °F) - 60 % RH					
CO ₂ -Control	available in chambers ECS 250 and ECG 250					
IP Protection System	20					
Protection Class	I					
Pollution degree	2					
Overvoltage category according to IEC 60364-4-443	CAT II					
EMC Class according to IEC 61326-1	B					
Noise Level						
Device measured from front side (distance 1m; height = 1,60 m)						
Set temperature 15 °C to 40 °C	≤ 43 dBA					
Min. & Max. set temperature 0 °C & 70 °C	≤ 46 dBA					
Device measured from back side (distance 1m; height = 1,60 m)						
Set temperature 15 to 40 °C	≤ 53 dBA					
Min. & Max. set temperature 0 °C & 70 °C	≤ 57 dBA					

CO ₂ Gas Supply System	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Gas purity	-				Min. 99.5 or med. quality	
Primary pressure	-				Min. 0.8 - max. 1.0 bar (11.6 psi - 14.5 psi)	
Measurement and control range	.-				0 ... 20 % Vol	
CO ₂ -Control deviation over time	-				± 0.1 % Vol.	
CO ₂ -Sensor accuracy at 37 °C and 5 % CO ₂	-				± 0.2 % Vol.	

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CO ₂ Gas Supply System	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
CO ₂ -Fumigation time at climate set point 37 °C- 90 % RH and 5 % CO ₂ according to DIN 12880			–			≤ 14 min
CO ₂ -Recovery time at climate set point 37 °C- 90 % RH and 5 % CO ₂ according to DIN 12880			–			≤ 13 min
CO ₂ -s consumption at climate set point 37 °C- 90 % RH and 5 % CO ₂			–			≤ 0.25 l per day

Shaker	EIS 250	EIG 250	ESS 250	ESG 250	ECS 250	ECG 250
Max. numbers of shaker support shelf				1		
Max. number of shakers				2		
Max. weight per shelf				90 kg (198 lbs).		
Max. weight per shaker (platform included)				6 kg (13 lbs)		
Max. revolutions (orbit =19 mm); maximum load = 6 kg (13 lbs); platform included				200 rpm		
Maximum waste heat of two installed shakers in the device chamber				approx. 120 W (approx. 410 BTU/hours)		

E-Series – Environmental (Stability) Chamber with Temperature & RH-Control

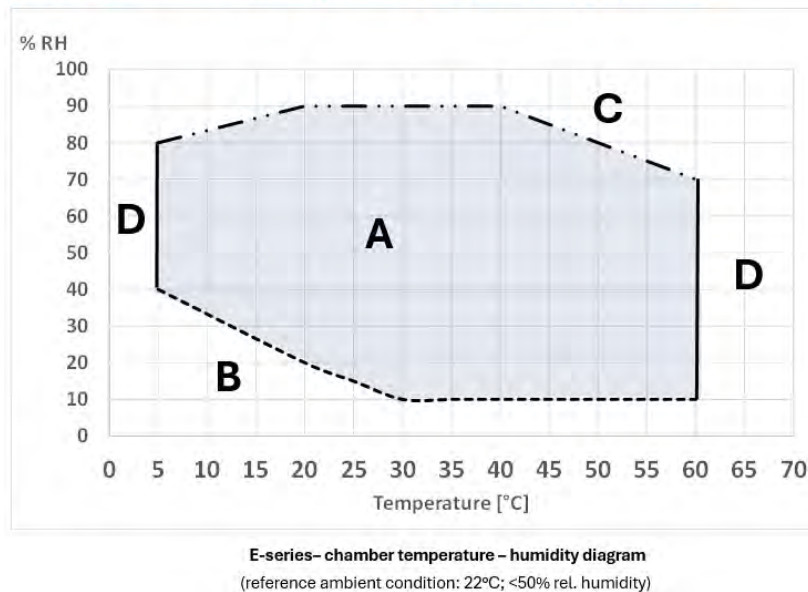
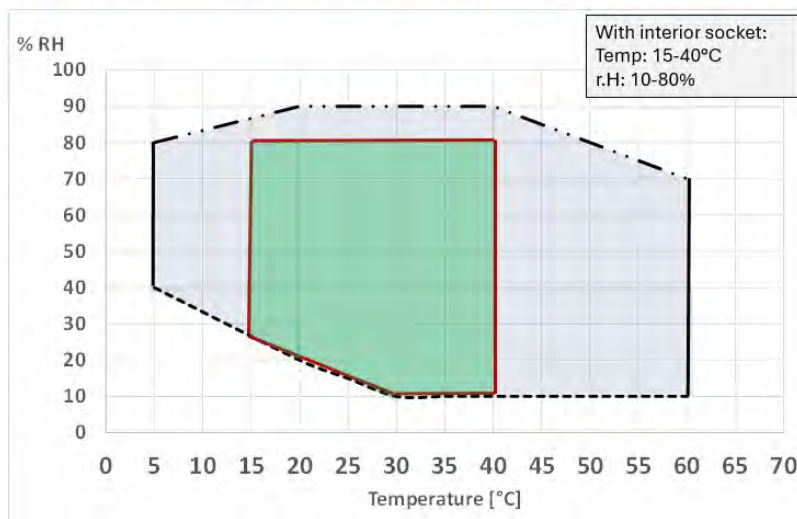


Figure 13-7. ESS 250 and ESG 250

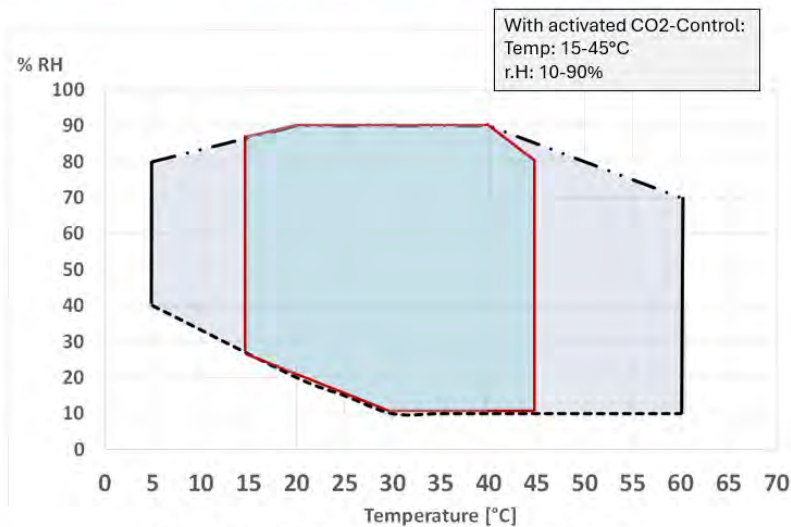
E-Series - Environmental Chamber with Temperature & RH-Control - with interior socket



E-series with interior socket – chamber temperature – humidity diagram
 (reference ambient condition: 22°C; <50% rel. humidity)

Figure 13-8. ESS 250 and ESG 250 with interior socket

E-Series - Environmental CO2 Chamber with Temperature & RH-Control



ECS250 & ECG250 – chamber temperature – humidity diagram
 (reference ambient condition: 22°C; <50% rel. humidity)

Figure 13-9. ECS 250 and ECG 250

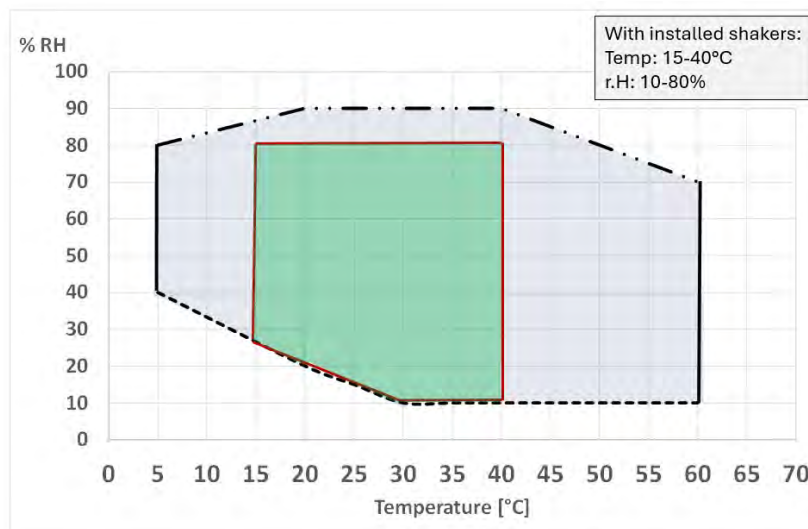


Figure 13-10. E-Series with installed shakers - chamber temperature - humidity diagram¹

Continuing research and improvements may result in specification changes at any time. Performance plus or minus the least significant digit unless otherwise specified.

1 Installation category (overvoltage category) defines the level of transient overvoltage which the instrument is designed to withstand safely. It depends on the nature of the electricity supply and its overvoltage protection means. For example, in CAT II which is the category used for instruments in installations supplied from a supply comparable to public mains such as hospital and research laboratories and most industrial laboratories, expected transient overvoltage is 2500V for a 230V supply.

2 Pollution degree describes the amount of conductive pollution present in operating environment. Pollution degree 2 assumes that normally only non-conductive pollution such as dust occurs with the exception of occasional conductivity caused by condensation.

¹ Reference ambient condition: 22 °C ; < 50 % rel. humidity.

Contact Details Thermo Scientific

Contact

Postal address USA:

Thermo Fisher Scientific LLC
401 Millcreek Road, Box 649
Marietta, OH 45750

Direct 1-740-373-4763

Toll Free, U.S. and Canada 1-800-438-4851

FAX 1-877-213-8051

Internet <http://thermoscientific.com>

Technical Support service.led.marietta@thermofisher.com

Certified Service Web Page www.unitylabservices.com

EMEA

Postal Address Germany:

Thermo Electron LED GmbH
Robert-Bosch-Straße 1
D - 63505 Langenselbold

Sales: Toll free 0800 1 536 376 or +49 6184 90 6940

Service: Toll free 0800 1 112110 or +49 6184 90 6940

E-Mail : info.labequipment.de@thermofisher.com

Find out more at [thermofisher.com](https://www.thermofisher.com)

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