Instruction manual

ATEX Laboratory Refrigerators
version: SMART

models:

CHL 1 ATEX, CHL 2 ATEX, CHL 3 ATEX,
CHL 4 ATEX, CHL 5 ATEX, CHL 6 ATEX,

Before using the equipment, please read carefully this instruction manual!

Version 1.06

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As the manufacturer of this device, we want to assure you that we have taken every step to ensure it meets your expectations and provides reliable performance over a long period of use. We are constantly improving our products and expanding our offerings, so we welcome any suggestions you may have regarding additional features or operational enhancements. Please feel free to visit our website at www.pol-eko.com.pl for more information.

The manufacturer takes every possible measure to eliminate post-production contamination. How-ever, small oily residues from material processing, such as contact between tools and the pro-cessed parts, may still be present. To remove these residues, use a soft cloth or paper towel dampened with warm water and a degreasing solution.

Servicing of refrigeration Equipment

The appliance contains R1234ze refrigerant (also known as HFO-1234ze) classified as A2L – a flammable gas with low flammability. Avoid contact with open flames and sources of ignition. The appliance must only be serviced by authorised personnel. In the event of a leak, ventilate the room thoroughly and avoid using electrical equipment that may generate sparks.

Equipment disposal



This device is marked with a crossed-out wheelie bin symbol. This means that it should not be disposed of with unsorted waste. It is the user's responsibility to dispose of it properly, i.e. to hand it over to a company authorised to collect and recycle waste. The user is also responsible for decontaminating the device in the event of biological, chemical and/or radiological contamination, in order to protect the health of those involved in the disposal and recycling process.

Due to the presence of R1234ze refrigerant (HFO-1234ze, A2L), it is essential to avoid dismantling the cooling system yourself. Refrigerants are subject to special regulations (EU Regulation 517/2014). Its recovery and disposal may only be carried out by persons or companies with the appropriate authorisation.

For more information on where to dispose of used electrical and electronic equipment, please contact your local distributor from whom you purchased the equipment.

In this way, we can all contribute to the conservation of natural resources and the protection of the environment, and we can be sure that the equipment is processed in a manner that is safe for human health.

Thank you!

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1. INTENDED USE AND IMPORTANT INFORMATION FOR THE USER

The CHL ATEX series laboratory refrigerator is equipped with a chamber designed in accordance with Ex h explosion protection requirements in order to limit potential ignition sources. The chamber is designed for storing samples of chemicals that may produce an explosive gas atmosphere, classified as Zone 2 in accordance with Directive 2014/34/EU (ATEX).

Stored materials must be kept in sealed and closed containers suitable for their chemical properties.

The device is controlled by a precise SMART controller, ensuring that the set temperature is maintained with high stability and uniformity. The forced air circulation cooling system guarantees even temperature distribution throughout the working chamber, allowing samples to be stored at temperatures ranging from **0°C to +15°C.**

The marking in accordance with the ATEX directive, affixed to the device, is shown below:



where:

- **II** – The device is intended for use in all areas at risk of explosion, with the exception of underground mines. (Group II);
- **3/-** – This category applies only to the interior of the chamber, which is an environment where an explosive atmosphere may occur. It means that the device is safe under normal operating conditions; "/-" means that the device "outside" is not intended for use in a potentially explosive atmosphere.
- **G** – Type of explosive atmosphere: gaseous.
- **Ex** – Explosion-proof design, compliant with the requirements of the ATEX Directive (2014/34/EU) and relevant standards, confirmed by conformity assessment and technical documentation.
- **h** – Type "h" protection according to EN ISO 80079-36 for the interior of the chamber: the manufacturer has carried out an Ignition Risk Assessment and implemented measures to limit and eliminate ignition sources.
- **IIC** – Gas explosion group, device approved for operation in the presence of highly explosive gases such as hydrogen or acetylene (group IIC);
- **T6** – The temperature class of the appliance, the interior of the cooling compartment, is safe for substances with a self-ignition temperature of at least 85°C;
- **Gc/-** – The level of protection of the device chamber (EPL Gc), corresponding to the requirements for zone 2 of a gas atmosphere. The symbol "/-" means that the external part of the device does not have an EPL assigned to it – it is not intended for use in Ex zones.

1.1. Installation location

The installation site for the device should meet the following conditions:

- **Location:** indoors, in a well-ventilated area.
- **Ambient temperature:** recommended range from **+18°C to +28°C**.
- **Air humidity: up to 60%, RH,** non-condensing.
- **Hazard zones:** the device **must not** be installed in a potentially explosive atmosphere.
- **Installation height:** up to 2,000 metres above sea level.
- **Working environment:** The device is not designed for operation in environments with high dust levels
- (pollution degree 2 according to EN 61010-1:2010).
- **Base / supporting surface:**
    - hard, stable, and **with sufficient load-bearing capacity**,
    - allowing **permanent and proper levelling of the device**.
      If the device is placed on a tabletop, cabinet, furniture, or supporting frame, the supporting structure must be **rigid, stable, and designed to carry the total weight of the device including the maximum operating load**.
- **Mounting distances:** at least 100 mm from walls and a minimum of 300 mm of free space above the appliance.
- **Built-in installation: the appliance is not suitable for built-in installation**,
- **Power supply:** The installation site for the device should be equipped with a mains socket with parameters suitable for the device.
- **Stabilisation:** Models CHL 4 ATEX to CHL 6 ATEX require anchoring to a wall or equivalent structure using the brackets provided.

Warning: Failure to comply with the above requirements may:

- **adversely affect safe operating conditions,**
- **cause geometrical deformation of the device structure and deterioration of chamber tightness,**
- **impair temperature stability and uniformity,**
- **increase electricity consumption,**
- **cause the evaporator to freeze,**
- **result in loss of warranty.**

1.2. Improper use

The following cases constitute foreseeable misuse of the device and are **prohibited**:

- **Installation in explosion hazard areas**
  The device is not intended for use in explosive atmospheres. It may only be installed in a safe environment (outside Ex zones).
- **Storage of chemically unstable substances**
  It is prohibited to store materials that may undergo self-heating, decomposition or violent exothermic reactions.
- **Placing the load in open or leaky containers**
  Stored substances must be kept in sealed, closed and appropriately selected containers. It is unacceptable to introduce a load that could cause an explosive atmosphere inside the chamber in a manner exceeding Zone 2 classification (e.g. leading to Zone 1 or 0).
- **Use for medical purposes**
  The device is not a medical device within the meaning of Directive 93/42/EEC (MDD) or Regulation (EU) 2017/745 (MDR). It should not be used to store medicinal products, blood or biological materials requiring medical devices.

2. OPERATING INSTRUCTIONS – GENERAL INFORMATION

The user manual is an integral part of the device. It contains information on safe installation, start-up, use, maintenance, cleaning and disposal of the device. It is intended for use by trained personnel designated by the owner who are responsible for operating and maintaining the device. In the case of non-standard devices or devices equipped with non-standard options, the photographs and drawings contained in the manual may differ slightly from the actual design.

The manual is provided in electronic form and stored in the device's memory. To download the user manual, follow the instructions in section 5. Before the first use.

The manual should be kept in a place accessible to personnel operating the device, preferably in its immediate vicinity.



WARNING! The recommendations and warnings contained in the manual must be strictly observed. Failure to comply with them may result in personal injury, danger to life, damage to the device or deterioration of its operating parameters.

Before using the device, it is necessary to carefully read this manual and follow the recommendations and warnings contained therein throughout the entire period of use.

In addition to the information contained in this user manual, it is essential to comply with the health and safety regulations applicable at the place of installation of the device. The user is obliged to supplement the manual with information on accident prevention and procedures to be followed in the event of an accident, in accordance with the applicable laws of the country concerned.

Ensure that all persons authorised to operate the device have read and fully understood the operating instructions and the warnings contained therein.

POL-EKO® shall not be liable for any direct or indirect damage resulting from failure to comply with these instructions.

3. SAFETY

The manufacturer has made every effort to ensure that the device supplied is safe to use. However, it should be remembered that a significant proportion of potential hazards are beyond the manufacturer's control.

Aby zmaksymalizować bezpieczeństwo oraz zapewnić optymalne parametry pracy urządzenia, należy uważnie zapoznać się z poniższymi kluczowymi środkami ostrożności przed przystąpieniem do instalacji, obsługi lub konserwacji urządzenia.

3.1. Meaning of signal words

This manual uses standardised signal words to indicate different levels of hazard or important information. These words are used throughout the documentation and on safety labels to draw attention to risks and necessary precautions. Knowledge of these words is essential for safe use of the device.

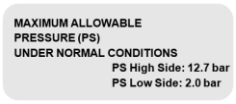
DANGER!	Indicates a situation that poses an immediate danger and, if not avoided, will result in death or serious injury. Used only for the most serious hazards.
WARNING!	Refers to a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION!	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE!	Indicates important technical information regarding the correct use of the device. Failure to comply with these instructions may result in damage to the device, but does not pose a threat to the user's safety.

3.2. Symbols used

	DANGER WARNING – RISK OF INJURY OR DAMAGE. READ THE INSTRUCTION MANUAL BEFORE USE!		RISK OF ELECTRIC SHOCK
	WARNING – HEAVY OBJECT		RISK OF BEING CRUSHED BY THE DEVICE
	FIRE RISK		RISK OF HAND INJURY
	EXPLOSION RISK		RISK OF TOXIC GASES/VAPOURS
	BIOLOGICAL HAZARD		RISK OF CORROSIVE OR CHEMICAL SUBSTANCES
	MANDATORY REGULATION		HOT SURFACE

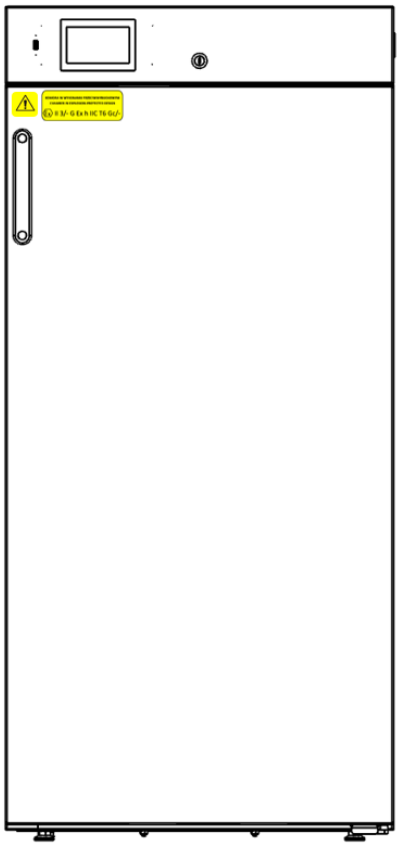
	WEAR PROTECTIVE GLOVES		WEAR PROTECTIVE FOOTWEAR
	PROHIBITED (prohibited activity))		TIP – This symbol indicates tips for optimal use of the device.

3.3. Explanation of the meaning of labels visible on the device:

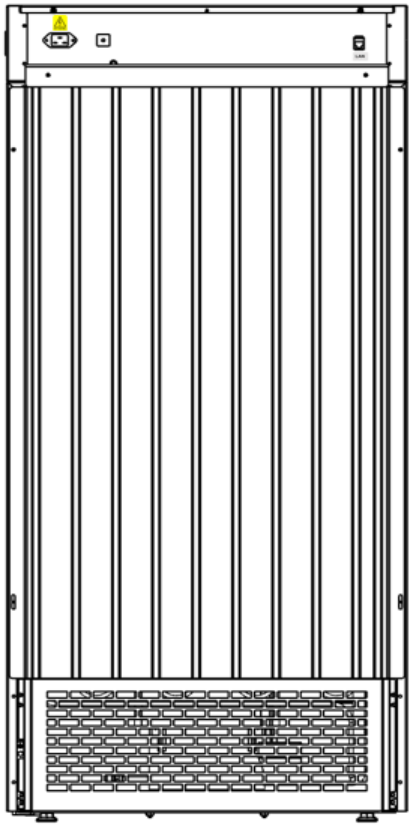
	**ATEX LABEL** The information label indicates the explosion protection marking of the device chamber in accordance with ATEX Directive 2014/34/EU. The marking specifies the device category, explosion group, temperature class and EPL protection level. A detailed explanation of the code can be found in section 1 of the operating instructions.
	**RATING PLATE** A detailed explanation of the information contained on the nameplate can be found in section 15. RATING PLATE.
	**MAXIMUM PERMISSIBLE PRESSURE** The information label specifies the maximum permissible pressure values under normal refrigeration system operating conditions: **High side: 12.7 bar** **Low side: 2.0 bar** These values correspond to the design limits of the refrigerant circuit under normal operating conditions. They are intended as reference data for service personnel during maintenance or repair of the refrigeration system.
	**LAN** This label indicates the Ethernet communication port. It is used to connect the device to a local area network (LAN) for data transfer, remote monitoring, or integration with laboratory systems. Only standard network cables (RJ-45) should be used.
	**230 V AC 50 Hz** or **120 V AC 60 Hz** The information label specifies the power supply requirements for the device: The device must only be connected to a properly earthed mains socket with the specified voltage and frequency. Connection to an incorrect power source may result in malfunction, electric shock or fire hazard.

3.4. Location of labels and safety symbols

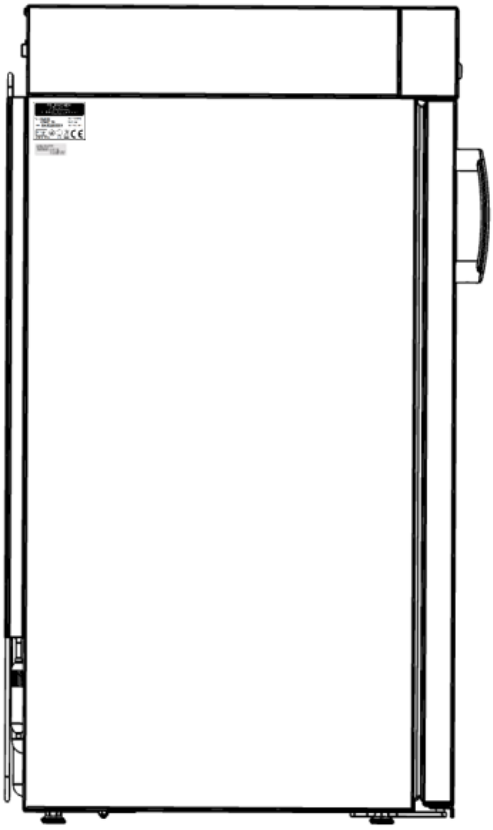
Front



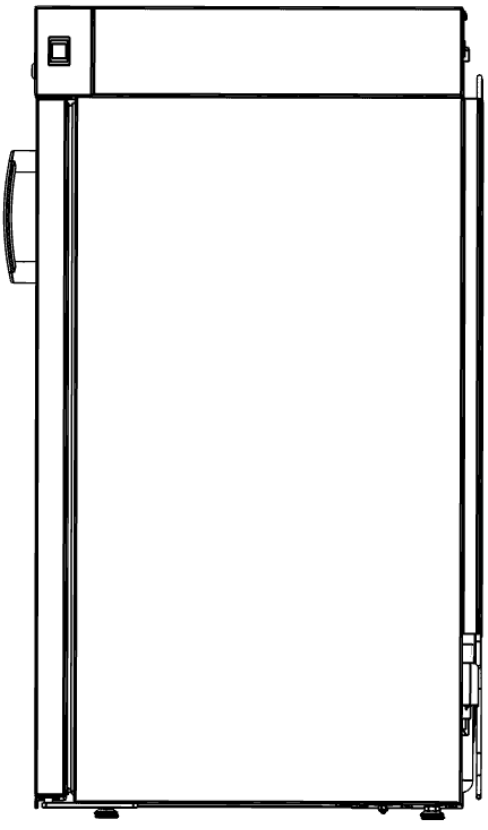
Rear



Left side

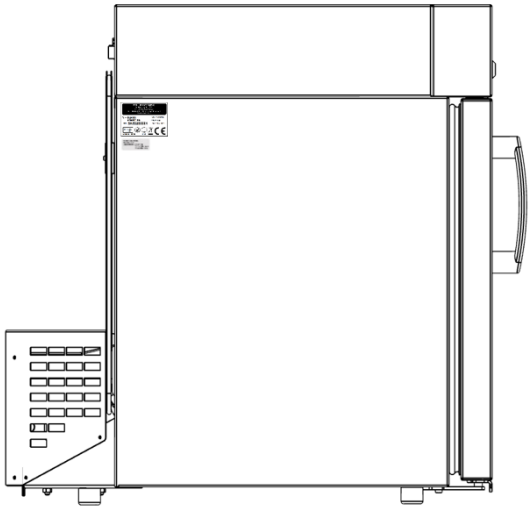


Right side

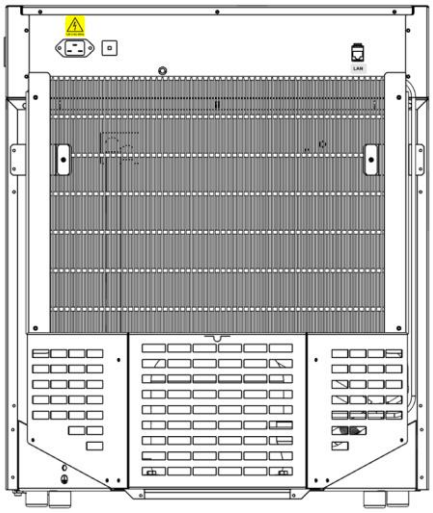


CHL 1 ATEX only:

Left side



Rear



3.5. Lifting and transport instructions

	**WARNING! – There is a risk of personal injury and damage to the device.** All activities related to the movement and transport of the device must be carried out in accordance with applicable health and safety regulations and internal guidelines of the organisation. If the device has been used previously, before transport it is necessary to: • Disconnect the device from the power supply. • Empty the chamber of its contents. • Clean the device (in accordance with the cleaning instructions), • Protect against scratches and other transport damage (e.g. with plastic film, foam). • When transporting outdoors, protect the device from water. The enclosure has an IP20 rating and does not provide protection against water ingress.
	**WARNING! – There is a risk of fire, explosion, or injury.** The appliance contains R1234ze refrigerant – classified as an A2L flammable gas with low flammability. **During lifting, moving and transport:** • DO NOT damage the refrigerant pipes, condenser, compressor or other components of the refrigeration system. • Avoid using sharp tools and striking components of the cooling system.. • Ensure that the forks of the forklift, transport straps or other mechanical devices do not come into contact with the components of the refrigeration system and do not cause them to deform (e.g. the condenser at the rear of the unit). • In the event of damage to the refrigeration system and suspected leakage, ventilate the room immediately and avoid open flames and sources of ignition. • Repairs to the cooling system may only be carried out by qualified service personnel.

Personal protective equipment:

During all transport operations, appropriate personal protective equipment (PPE) must be worn, such as:

- Protective gloves.
- Protective footwear.



WARNING! – DO NOT LIFT THE DEVICE BY HAND! Risk of injury and damage to equipment.

Check the weight and dimensions of your device in section 16. TECHNICAL DATA or in the shipping documents. This will help you determine the appropriate lifting method, the number of people required, or the parameters of the mechanical means of transport (e.g. forklifts, pallet trucks).

To minimise risk, it is advisable to use mechanical means of transport.

WARNING! – MECHANICAL MEANS OF TRANSPORT

When using mechanical equipment such as pallet trucks, forklifts or hoists, they should be selected according to the parameters of the load and the route to be covered.



It is recommended that the device attached to the transport pallet be delivered to the planned workplace.

WARNING! – Risk of instability and crushing by the device.

When lifting or lowering the device, keep it in an upright position to prevent it from tipping over.

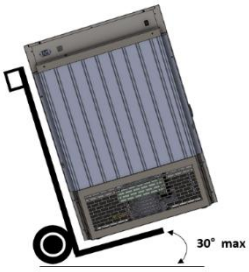
During mechanical transport, it is recommended to secure the load with transport straps to eliminate the risk of the device slipping or tipping over.

When transporting with a trolley, observe the transport guidelines below.

WARNING! – Transport by trolley is only possible for models CHL-1 ATEX to CHL-4 ATEX.

In the case of transport using a transport trolley:

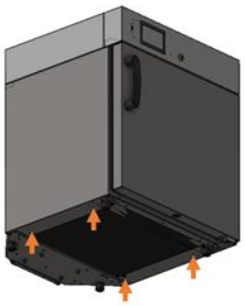
- if there is no packaging, protect external components with protective materials such as felt or foam to prevent mechanical damage.
- to avoid damage, only charge the device on the side wall..
- Tilt the trolley at an angle not exceeding 30°, ensuring even weight distribution and stability of the device.
- Transport with another person who should supervise the transport, especially on uneven terrain or slopes.



PROHIBITION OF TRANSPORT BY TRANSPORT TROLLEY MODELS CHL-5 ATEX and CHL-6 ATEX.

WARNING – Guidelines for lifting and lowering:

The most convenient grip points for lifting and lowering the device are located near the legs of the device.



WARNING – Risk of injury

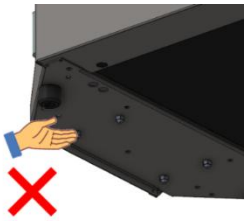
When lifting the device, grasp it from the side near the feet, but not directly under the feet, to avoid injury caused by crushing your hands between the device and the ground when putting it down.

The device should be lifted and lowered:

- slowly and evenly,
- avoiding sudden movements,
- avoiding tilting.

Do not lift the device:

- holding them by the door or handle used to open it
- for extensions found in CHL-1 ATEX structures (drawings below).



AFTER TRANSPORT AND LIFTING, ALWAYS FOLLOW THE RECOMMENDATIONS CONTAINED IN THE SECTION BEFORE THE FIRST START-UP!

3.6. Safety precaution for installation

The devices may only be used if they are correctly installed. Otherwise, they may pose a risk to the life and health of the user and cause damage to stored materials.

CAUTION!

FIRE AND EXPLOSION RISK ASSOCIATED WITH THE USE OF FLAMMABLE REFRIGERANT

WARNING: Ensure that all ventilation openings are not covered.

WARNING: Do not damage the refrigerant circuit.

NOTE: Follow the instructions for handling the device strictly, in accordance with applicable regulations.



DANGER!

RISK OF FIRE, EXPLOSION, ELECTRIC SHOCK OR CONTACT WITH CORROSIVE SUBSTANCES

DO NOT install the device:

- outside buildings,
- in damp places or places exposed to flooding,
- in buildings, small rooms or recesses with insufficient ventilation,
- near concentrated acids or corrosive vapours.
- Near flammable or volatile substances or in areas classified as Zone 0 or Zone 1 explosion hazard zones in accordance with Directive 1999/92/EC (ATEX USERS) and standard EN 60079-10-1.
  The device is intended for use only in safe (non-explosive) areas, while its internal chamber is designed to operate in explosive atmospheres classified as Zone 2, in accordance with the requirements of Directive 2014/34/EU.

Ensure good ventilation in the room and free space around the appliance to prevent overheating and allow proper air circulation.

The device should be **INSTALLED** only on a stable, level surface to avoid the risk of tipping over.

Failure to follow these instructions may result in serious injury or damage to the device.



DANGER!

RISK OF ELECTRIC SHOCK

- **USE ONLY:** a properly grounded power source that meets the electrical specifications of the device.
- **MAKE SURE** the power cord and plug are undamaged and accessible for emergency disconnection.
- **PROTECT** the power cord and plug from damage.
- **DO NOT**: install the unit near water sources, in damp or flooded areas, or in areas where conductive materials may create an electrical hazard.
- **DO NOT**: touch live electrical parts.

Failure to follow these recommendations may result in **electric shock, serious injury, or damage to the device.**

3.7. Safety precaution for operation



DANGER!

RISK OF FORMATION OF AN EXPLOSIVE ATMOSPHERE IN THE CHAMBER

The following instructions must be observed to ensure safe operation of the device in accordance with the ATEX classification (Zone 2).

Always ensure that:

- Before loading, the device has reached a stable operating temperature.
- Substances are stored exclusively in sealed containers suitable for storing chemical or volatile samples.
- The quantity of substances introduced into the chamber is kept to the minimum possible, limiting the risk of gas or vapor emissions.
- Containers are undamaged and leak-free, and do not emit noticeable amounts of gases or vapors.
- The device is used only after proper compliance with all installation-related safety precautions (see 3.6. Safety precautions for installation).The device is intended for use only in safe (non-explosive) areas, while its internal chamber is designed to operate in explosive atmospheres classified as Zone 2, in accordance with the requirements of Directive 2014/34/EU.

DO NOT place inside the chamber:

- Chemically unstable substances that may lead to uncontrolled reactions (explosion, implosion, strong exothermic reaction).
- Open, unsealed, or damaged containers that may continuously emit gases or vapors.
- Containers that may generate electrostatic charges as a result of friction.
- Food or beverages.

The device should be **INSTALLED** only on a stable, level surface to avoid the risk of tipping over.

Failure to follow these instructions may result in fire, explosion, serious injury, death, severe health damage, or contamination and damage to the equipment.



DANGER!

DANGER OF ELECTRIC SHOCK

To prevent the risk of electric shock, burns, injury, and damage to the device during use:

DO NOT:

- touch live electrical parts.
- touch the device with wet hands.
- place open containers with liquids (e.g. water, chemicals) on the device).
- disconnect devices by pulling on the cable – always grasp the plug directly.

USE ONLY properly earthed power sources.

SECURE power cable and plug from damage.

ALWAYS disconnect the device from the power supply before:

- Performing maintenance or repairs (only authorised personnel should service the device).
- Moving or relocating the device.
- If the device will not be used for an extended period of time.

If visible damage is detected, you should **SWITCH OFF AND SECURE** the device.

For repairs or replacement of electrical components, use **ONLY** original spare parts.

Failure to observe the precautions regarding electrical installation may result in serious injury and electric shock or damage to the device.



WARNING!

FLAMMABLE REFRIGERANT – WARNINGS

CAUTION: Do not block any ventilation openings.

CAUTION: Do not use mechanical devices or other methods to accelerate defrosting other than those recommended by the manufacturer. Do not damage the refrigeration circuit.



NOTE!

PROPER MAINTENANCE AND SERVICE ENSURE SAFE AND EFFICIENT USE OF THE EQUIPMENT.

The following recommendations should be observed:

- Place samples in such a way as to ensure free air circulation and avoid the risk of local explosive atmospheres forming.
- Open the chamber door only for as short a time as necessary (to minimise the risk of vapour emissions into the environment).
- Regularly check the condition of the door seals and the correct operation of the fan and temperature sensor in the Ex version.
- Use only a grounded power source (ATEX requirement, electric shock and antistatic protection).
- Protect the power cord and plug from mechanical damage.
- Before any maintenance or cleaning, it is mandatory to disconnect the device from the power supply.
- Do not repair the device yourself – all service work during and after the warranty period should only be performed by an authorised service centre trained to service ATEX devices.
- If the device is not used for a long time, disconnect it from the power supply and leave the door slightly ajar for ventilation.
- If you notice any signs of damage or malfunction of the device (especially Ex parts – temperature sensor, fan), switch it off immediately, disconnect it from the power supply and contact the service department.

Failure to comply with the above recommendations may result in deterioration of the device's technical parameters, loss of ATEX compliance, risk of an explosive atmosphere, and loss of warranty.



OSTRZEŻENIE!

IMPROPER HANDLING AND FORESEEABLE IMPROPER USE

DO NOT:

- climb, sit, lean or place excessive weight on the appliance, its shelves, drawers or doors;
- use the appliance on moving platforms (e.g. ships, trains, aeroplanes or vehicles).
- place objects on the bottom of the chamber, as this may impede air flow and affect performance.
- overload the shelves – information on the maximum load can be found in the technical data.

Before starting work, ALWAYS ensure that the door is securely closed.

Improper handling or foreseeable misuse may result in injury, risk of tipping, overheating, or damage.

NOTE!

The manufacturer shall not be liable for corrosion, damage to electronics or other components of the device caused by the introduction of substances into the device that have an adverse effect on the materials from which it is made.

3.8. Obligations of the device owner

The owner is obliged to:

- Ensure that the device has been installed in accordance with the recommendations described in the user manual.
- Use the device only for its intended purpose, as specified in this manual.
- Conduct a risk assessment, including an explosion risk assessment (in accordance with Directive 1999/92/EC and standard EN 60079-10-1), before starting to use the device.
- Ensure that personnel operating the device have been trained in its use in explosive atmospheres (Zone 2) and are familiar with the rules for the safe handling of chemicals.
- Organise periodic inspections of Ex components (e.g. fan, temperature sensor) in the device chamber, in accordance with the requirements of EN 60079-17. The frequency and scope of inspections should be determined on the basis of a risk analysis. Inspections must only be carried out by persons authorised to operate Ex devices.
- Provide appropriate personal protective equipment (PPE) in accordance with the results of the risk assessment and applicable health and safety regulations.
- Comply with national regulations regarding the qualifications, authorisations and age of personnel working in potentially explosive atmospheres.
- Use only original spare parts and accessories approved for use in ATEX-certified equipment.

The owner of the device **may not**:

- Allow persons who are not trained in explosion safety and the operation of ATEX equipment to operate the device.
- Allow the device to be used if its technical condition indicates faults, damage or malfunction of any of the Ex components.
- Allow unauthorised personnel to repair or maintain the device. Repairs must only be carried out by an authorised service centre with the appropriate qualifications to work with ATEX devices. Violation of this condition will void the warranty and release the manufacturer from liability.

3.9. Responsibilities of personnel operating the device

The user of the device **must**:

- Operate the device in accordance with the instructions and safety guidelines contained in the device manual.
- Use personal protective equipment (PPE) provided by the owner, in accordance with the scope of duties and risk assessment.
- Check that containers are not damaged and are tightly closed.
- Always ensure that the chamber door is properly closed and that the samples are arranged in such a way as to ensure proper air circulation and prevent local accumulation of explosive atmospheres.

The user of the device **may not**:

- Improper use of the device, including:
  - Storing substances that are chemically unstable, excessively volatile, highly toxic or radioactive in the device without first confirming their compatibility with the operating conditions of the device..
  - Cooling of food or beverages in a laboratory unit intended for research purposes.
  - Operating the device with wet hands or when the device is wet.
  - Overloading shelves beyond their recommended load capacity.
- Use the device if you suspect or know that it is in poor technical condition or if unauthorised technical interference has been made to it.

3.10. Residual risk

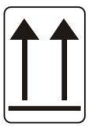
Despite compliance with applicable EU directives, safety standards and the implementation of all possible technical and organisational protective measures, certain risks may still arise during operation, maintenance or transport of this device. These risks include, among others:

- Risk of an explosive atmosphere forming inside the chamber of the device if samples that do not comply with the manufacturer's guidelines and emit excessive amounts of flammable gases or vapours are placed inside.
- Risk of electric shock in the event of damage or improper servicing of the device.
- Risk of fire or explosion in the event of mechanical damage to the refrigeration system, leading to the release of R1234ze(E) refrigerant, class A2L (non-toxic, slightly flammable, low flame propagation speed), or the formation of local explosive atmospheres (especially when the chamber is used incorrectly or leaky containers are used).
- Exposure to hazardous substances when using unsuitable materials in the chamber (e.g. biological, chemical or toxic samples).
- Risk of mechanical or ergonomic injuries when manually carrying, moving or positioning the device (due to its weight and dimensions).
- Risk of data loss or device malfunction resulting from connecting inappropriate or damaged external devices (e.g. USB memory sticks or LAN cables).

To minimise residual risks, strictly follow the operating instructions and consult any doubts with the person responsible for explosion safety in your company.

4. PACKAGING INFORMATION

4.1. Important labels on the packaging

	**Up sign, do not turn the load** Indicates that the unit should be handled and stored in a fixed position (arrows pointing up). Failure to comply and turn the packaging upside down may result in damage to the unit.		**Do not stack** Indicates that one unit must not be stacked on top of another.
	**Protect from moisture** Indicates that the unit may not be transported on open means of transport without protection and stored in open spaces without protection		**Recyclable** Means that the packaging is made from recyclable material.
	**Caution, fragile (be careful, fragile)** Indicates a fragile unit that may be damaged by falls, impacts and shocks.		**Do not step on. Glass.** Indicates that you must not step on the package.

4.2. Package contents

Unit	CHL ATEX					
Capacity	**1**	**2**	**3**	**4**	**5**	**6**
Shelves [pcs.]	**2**	**2**	**2**	**3**	**3**	**3**
Slides [pcs.]	**4**	**4**	**4**	**6**	**6**	**6**
Bottom shelves [pcs.]	**x**	**1**	**1**	**1**	**1**	**1**
Slides for bottom shelves [pcs.]	**x**	**2**	**2**	**2**	**2**	**2**
Drip tray [pcs.]	**1**	**1**	**1**	**1**	**1**	**1**
Wall mounting brackets [pcs.]	**x**	**x**	**x**	**2**	**2**	**2**
Power cord [pcs.]	**1**	**1**	**1**	**1**	**1**	**1**
Key for door lock [pcs.]	**2**	**2**	**2**	**2**	**2**	**2**
Quality Control Certificate [pcs.]	**1**	**1**	**1**	**1**	**1**	**1**

5. BEFORE THE FIRST USE

The manufacturer ships the device secured with polystyrene corners and foil. The device should be **transport in an upright position** and secure the package against movement during transport. Remove the transport locks before starting up.



NOTE!

Upon receipt of the device, visually inspect its condition and accessories in the presence of the delivery person. The courier company is responsible for any damage caused during transport.



CAUTION!

PRECAUTIONARY MEASURES FOR TRANSPORT

- When moving the unit, do not tilt it more than 45° from the vertical position – risk of damage to the compressor..
- If you need to tilt the device at a greater angle, wait approximately 4 hours after setting up the device before plugging it into the power socket.

Failure to comply with this recommendation may result in damage to the equipment and invalidate the warranty.



WARNING!

CONDENSATION AND ELECTRICAL HAZARD

- If the device has been transported at a temperature below 10°C, allow it to acclimatise for at least 2 hours before connecting it.
- DO NOT connect the device to the power supply until it has reached room temperature.
- Before installation, check the device for visible damage. If any damage is observed, report it immediately to the carrier..

Failure to heed this warning may result in damage to the equipment, as well as serious personal injury or electric shock.

Note on stainless steel components:
On the surface of unit's components made of stainless steel, slight discoloration may occur. It is a result of the technologies used in the production of metal sheet in accordance with the requirements of EN 10088-2 standard and it is not a defect of the unit.

5.1. Placing and leveling of the unit

Before commissioning the device, ensure that the **supporting surface or structure** on which the unit is placed is **stable, rigid, and has sufficient load-bearing capacity**.

If the device is installed on a tabletop, cabinet, furniture, or any supporting structure, the user is responsible for verifying that the supporting surface is **designed to carry the total weight of the device together with the maximum intended load**.
For safety reasons, the supporting surface or structure should be capable of carrying a load **significantly higher than the total operating weight of the device**.

The device is equipped with adjustable leveling feet.
After positioning the device at its final installation site, **adjust the leveling feet to ensure that the unit is level**.
The unit must be installed **only on a stable, rigid, and properly leveled surface**.



WARNING!

DEVICE LEVELING AND ATEX SAFETY

Improper leveling may cause **geometrical deformation of the device structure**, including misalignment of panels and improper door closing. Such conditions may, over time:

- compromise the tightness of the chamber,
- adversely affect ventilation and gas dispersion conditions,
- increase mechanical stress on structural components,
- negatively impact safe operating conditions required for ATEX applications.

Correct leveling of the device is a **mandatory requirement for safe operation and continued compliance with ATEX-related safety conditions**.

After positioning the device at its final installation site, **the leveling feet must be adjusted to ensure proper leveling before commissioning**.

Failure to comply with this requirement may result in equipment malfunction, loss of functional safety, or damage to the device.

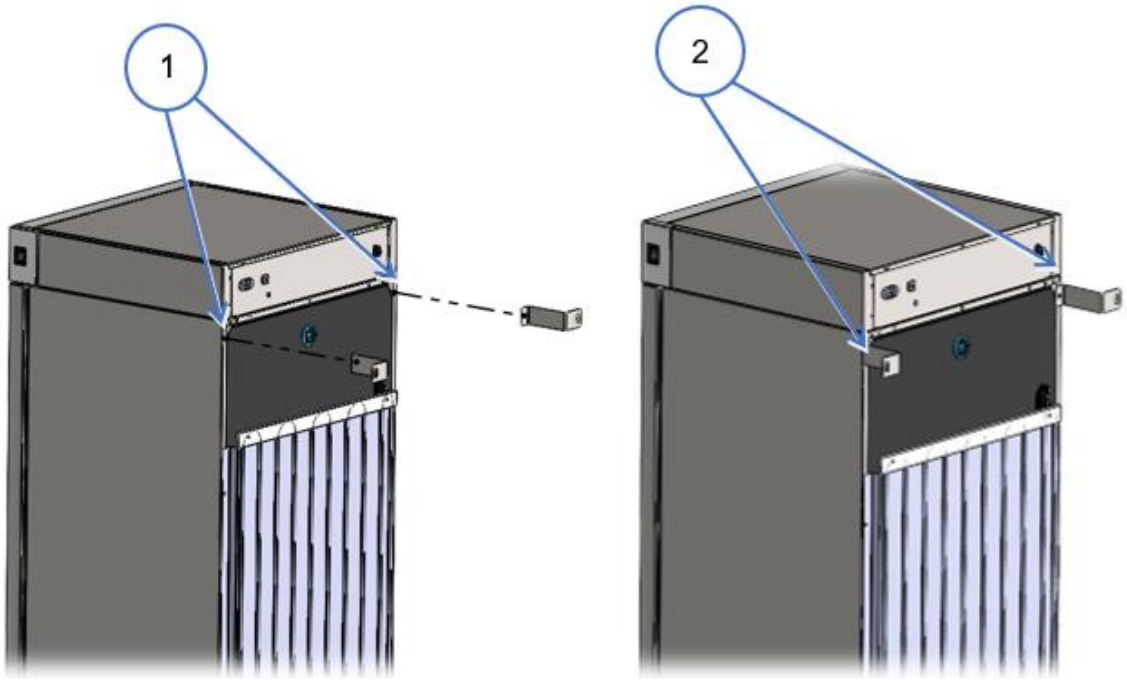
If the device is to be placed on a table (optional) or rack (optional) equipped with lockable castors, **the castors MUST be locked after the table or rack has been placed in its final position**!

5.2. Anchoring of the unit

Due to centre of gravity, units CHL ATEX 4, 5 i 6 require anchoring to a wall. Mounting brackets are supplied with the delivery.

	CAUTION!
	**RISK OF UNIT TIPPING AND INJURY** • Ensure that the equipment is securely anchored to a solid, load-bearing wall or structure capable of withstanding applied forces. • Do NOT anchor the unit to weak surfaces such as drywall (plasterboard), unless reinforced appropriately. • Verify that the wall plugs and fasteners used match the wall material and can support the weight and potential forces acting on the unit. • The unit must be secured to prevent tipping if pressure or force is applied to it (e.g., accidental leaning or pushing). Failure to follow these instructions may result in serious injury, damage, or equipment instability.

Rear view



- Install the mounting brackets (2) into the holes marked (1) on the back of the unit using the supplied screws and nuts. The handles can be installed in either an upright or sideways position.
- Place the unit at the designated installation location.

Note: **Fastening elements are not included in the delivery.:**

- Use Ø 6 mm (1/4 in) expansion anchors, chemical anchors, or anchor bolts suitable for the wall material (e.g., concrete, brick) to secure the brackets. The mounting bracket 10 x 100 mm (3/8 x 3/8 in) features an elongated hole for adjustment. Avoid using plastic wall plugs unless specified by a qualified installer.

5.3. Connecting the unit to electrical mains



DANGER!

RISK OF ELECTROCUTION

- Read and follow the guidelines presented in section 3.6. Safety precautions for installation
- The unit must NOT be placed in damp or wet locations.
- Containers with water or other liquids must NOT be placed on the unit.
- **The unit must NOT be operated with wet hands. Do NOT touch live parts**!

Failure to follow electrical installation precautions may result in severe injury, electric shock, or unit damage.

Power cable

Laboratory refrigerators with an EX chamber are connected to the mains using a cable with a plug.



WARNING!

USE ONLY THE ORIGINAL POWER CORD

- Use only the power supply cord provided with the unit. Replacing it with an inadequate cord may create a fire or electrocution hazard.
- DO NOT use an extension cord, power strip, or any unapproved adapter.
- If the power cord is damaged, it must be replaced by qualified personnel.
- Free access to the power socket must be ensured; the power socket must be accessible at all times for emergency disconnection!

Failure to follow electrical installation precautions may cause severe injury, electric shock, or damage to the unit.

Installation requirements

The table below provides information on the electrical requirements and the protective components that must be installed when connecting the unit to the power supply.

Power Supply Type	Number of Live Conductors	Connection*	Fuse in Unit	Fuse or Breaker in Installation
Single-phase 230V, with E/F socket type	1P+N	plug E/F, cable with C13 plug	1x 6A	B16
Single-phase 120V, with B socket type	1P+N	plug type B, cable with C13 plug	1x 10A	15A
A Ground Fault Circuit Interrupter (GFCI) should be installed on the protected circuit where the unit is connected, with minimum parameters of: In = 25 A, IΔn= 0.03 A, (Type A).				
* The cable used may vary depending on the localisation version and delivery configuration.				

The device must be connected to the mains via a socket with a correctly installed protective PE conductor (protective earthing).

The earthing connection is responsible for:

- protection against electric shock in the event of insulation damage,
- safe discharge of electrostatic charges from device components.

For safety reasons, ensure that the electrical installation supplying the socket is properly earthed. **It is recommended to check the effectiveness of the protective conductor in accordance with local regulations and standards.**



WARNING!

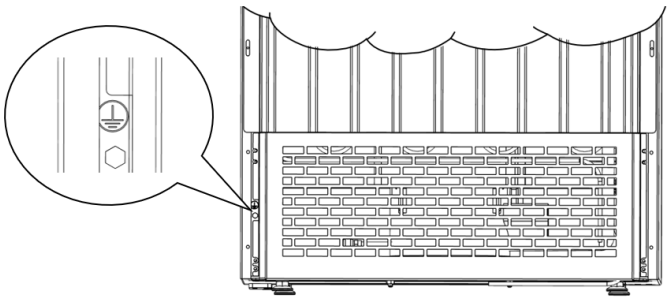
GROUNDING AND CIRCUIT REQUIREMENTS

- The power specifications for this device are listed on the rating plate..
- Ensure that the device is connected to a grounded socket to prevent electric shock in the event of a malfunction..
- Proper grounding is crucial for ensuring both protection against electric shock and explosion protection inside the chamber.

Failure to follow the electrical installation instructions may result in serious injury, electric shock, or damage to the appliance.

Potential equalisation terminal (EP)

The device is equipped with an additional potential equalisation terminal (marked with the symbol ⏚), located on the rear panel of the housing.



This terminal is used for structural earthing and connection to the local equipotential bonding system.

This connection is required when installing the device in an environment where potential differences may occur (e.g. floors with dielectric insulation, metal racks, other Ex devices). Making an EP connection is particularly recommended, even if it is not required for standard installation.

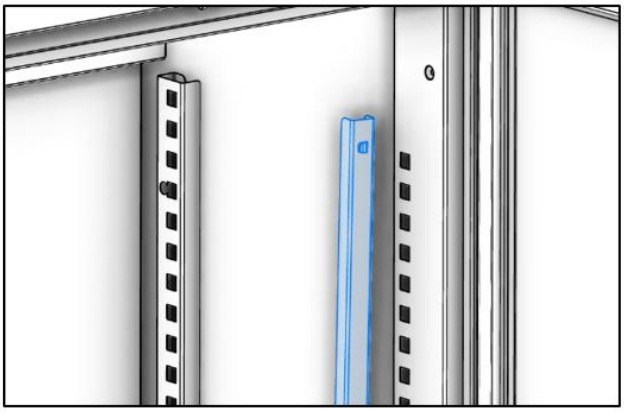
Installation requirements:

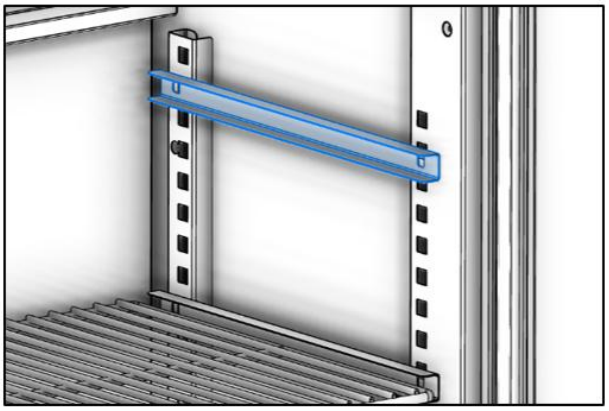
- Use a copper cable with a cross-section of **4–6 mm²** terminated with a ring connector (M5) for connection.
- The terminal should be connected to the common potential equalisation bus in the room.
- **This connection does not replace the PE conductor** in the power cable – it provides additional protection.

5.4. Installation of shelves

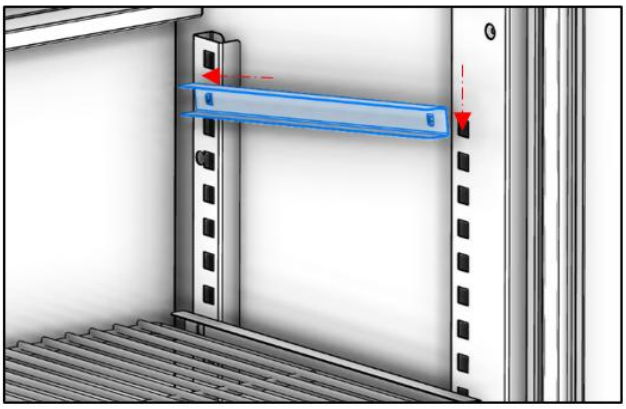
To install the shelf or to change its position, follow these steps:

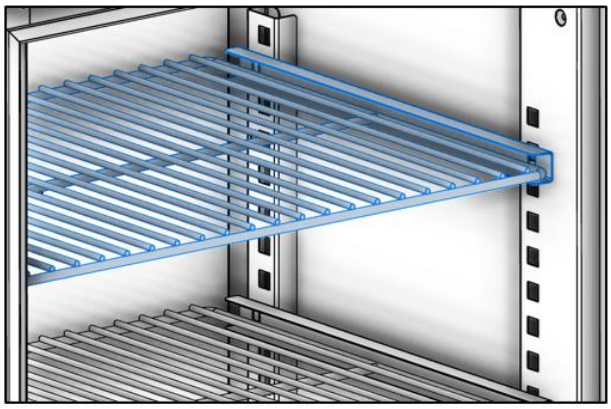
Install the shelf slide at the selected height by inserting it securely into the corresponding slots on the chamber walls. Do the same with the slide on the opposite wall.





Slide the shelf into the installed shelf slides. Now, the shelf is correctly installed.





To remove a shelf, perform the above steps in reverse order. To remove the shelf slide from the slots, lift it up and slide it towards the rear of the chamber.

5.5. Condensation in the chamber

During operation, water vapour contained in the air inside the chamber may condense. If the set temperature is significantly lower than the ambient temperature, water vapour may naturally condense.
Condensation forming on the surface of the evaporator flows through a gutter into a drip tray located at the bottom of the chamber. Condensation may also settle on other cold structural elements inside the chamber. Water may also accumulate at the bottom of the chamber.
Condensate may also settle on other components inside the chamber, and water may accumulate at the bottom of the chamber. The amount of water accumulated depends on the following factors:

- the difference between the ambient temperature and the temperature in the chamber,
- the frequency of door opening,
- the temperature of the samples.



Water drainage in the device is gravity-fed (unforced).
Small amounts of water appearing at the bottom of the chamber are typical for this type of device. If you notice water accumulation, immediately remove the excess with a clean, dry, lint-free cloth.



Excessive relative humidity in the appliance chamber may cause the cooling element to ice up, thereby reducing cooling capacity and increasing electricity consumption.

Recommended actions to minimise condensation:

- reducing the frequency and duration of door opening,
- preparing samples to the chamber temperature before placing them inside,
- regularly checking and removing accumulated water,
- Avoid placing hygroscopic materials or unprotected cardboard boxes in the chamber, as they may increase humidity levels.



NOTE!

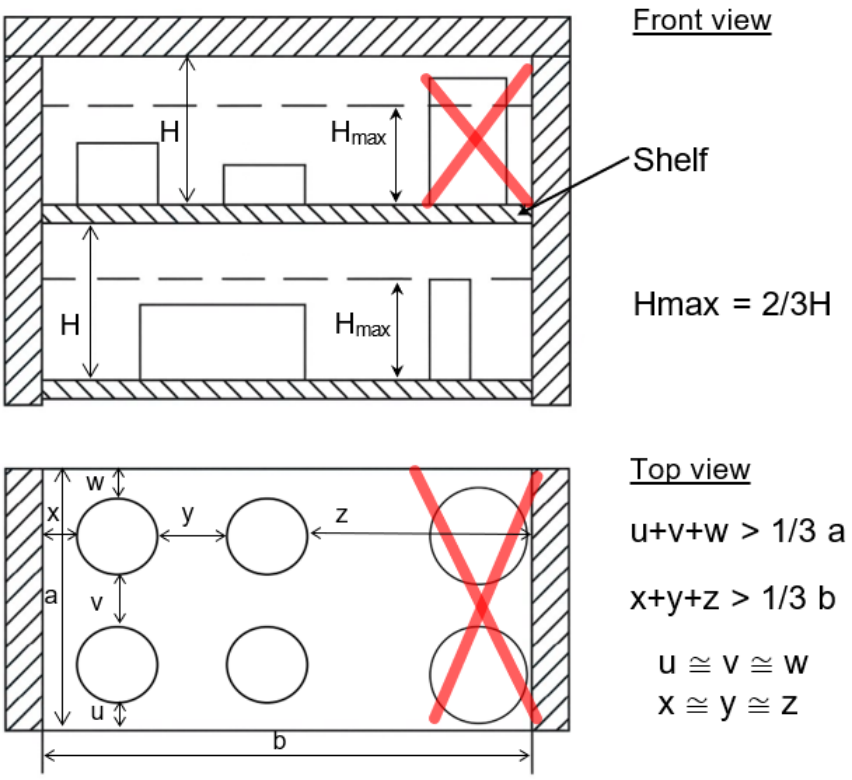
The drip tray should be checked and emptied periodically to prevent it from overflowing and potentially spilling water. More details are provided in the section 12.4. Emptying the drip tray.

5.6. Remarks on the placement of samples

To provide proper air circulation and stable conditions in which the samples are stored in the chamber, it is necessary to keep the following rules:

- the max height of the samples should not exceed 1/3 of the space between the shelves,
- approx. 1/3 of the width and depth of the shelf should remain empty, while the distances between the samples, as well as between the samples and the wall should be approximately equal.

The picture below is an example of the placement of samples in the chamber.



DANGER!

Risk of injury, damage to equipment or creation of an explosive atmosphere

IT IS PROHIBITED TO ADD OR POUR FLAMMABLE MIXTURES AND SUBSTANCES NEAR THE DEVICE OR WHEN THE CHAMBER IS OPEN.

Failure to follow these warnings and precautions could result in serious injury, death, or serious bodily harm.





DANGER!

Risk of injury, damage to equipment or creation of an explosive atmosphere

Before placing samples in the chamber of the device, you should:

- Check the material safety data sheets (MSDS/SDS) to confirm that the sample will not create an explosive atmosphere more frequently than briefly or occasionally (as defined in Zone 2 of EN 60079-10-1).
- Use only sealed containers approved for sample storage.
- Visually inspect the containers for leaks and ensure that the samples do not release vapours or gases in noticeable quantities (e.g. odour, leaks, hissing).
- If you have any doubts, contact the person responsible for explosion safety in your company.
- Comply with the guidelines specified in Section 3.7. Precautions for operation of the device.

Failure to follow these warnings and precautions may result in serious injury, death, or serious bodily harm.



WARNING!

Biological hazard risk (if applicable)

If placing biological, infectious, toxic, or radioactive samples inside the unit, ensure compliance with all applicable biosafety guidelines. Always properly label and handle such materials to prevent contamination or exposure hazards.

Before servicing or maintenance, **the unit must be fully decontaminated**, and written confirmation (decontamination protocol) provided to service personnel.

Failure to follow safety precautions may result in serious injury, death, serious health hazards, or contamination**.**



WARNING!

RISK OF TOXIC FUMES (if applicable)

Toxic vapours may occur inside the chamber if the user places substances in it that may emit toxic or irritating gases, even at low temperatures.

The manufacturer shall not be liable for any risks arising from the user's incorrect assessment of the risks associated with the material stored.

The user is obliged to assess the chemical hazard each time in accordance with the company procedure and applicable regulations, in particular taking into account the substance safety data sheets (SDS).

Failure to observe the precautions may result in serious injury, death, or serious health hazard or contamination.

5.7. Closing the device chamber

The external doors of the devices are equipped with a seal and an open door sensor. If the door is not closed properly, the sensor will activate an audible and visual alarm. It is possible to set the door opening alarm delay to: 30 seconds, 1 minute, 2 minutes, 5 minutes or 10 minutes (see section 8.14*).*



NOTE!

OPERATIONAL SAFETY AND SAMPLE QUALITY

- The chamber door should always be kept closed to ensure stable temperature conditions and limit the ingress of moisture from the air.
- Only open the door for the time necessary to load or unload samples.
- Regularly check the condition of the door seal and the cleanliness of the contact surface.
- In the event of a leak, sensor damage or alarm, please contact the service department.



WARNING!

The interior of the CHL ATEX chamber is classified as Zone 2 (occasional presence of explosive atmosphere), while the exterior of the device is not intended for use in Ex zones.

Proper door closure limits air exchange between the chamber and the environment during operation and helps maintain safe storage conditions, especially in the case of potentially leaky containers.

The device should only be used in rooms with adequate volume and good general ventilation, in accordance with the explosion risk assessment of the plant (Zone 2 applies only to the interior of the chamber).

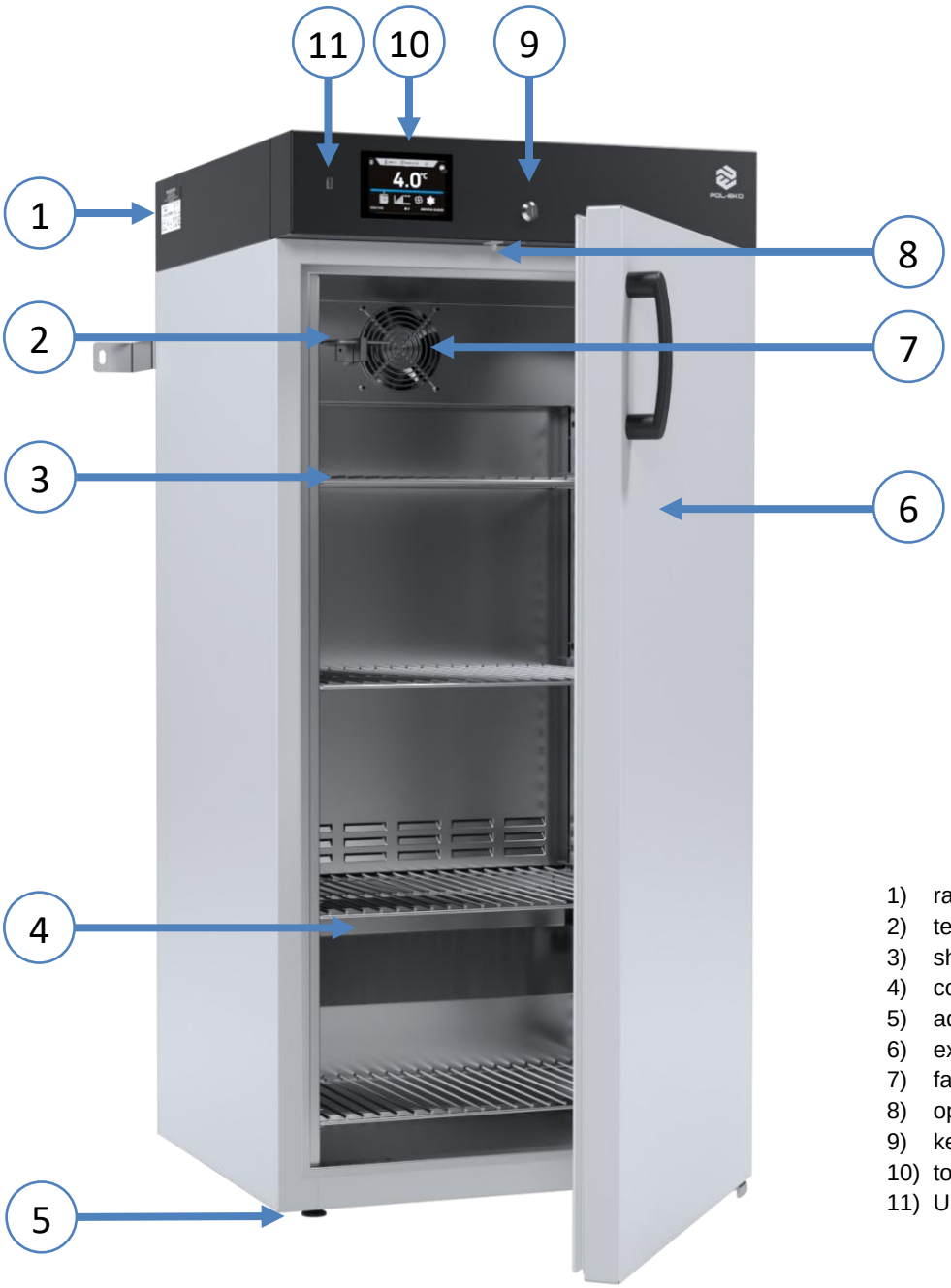
6. DESCRIPTION OF THE UNIT

SMART models are equipped with a PID microprocessor temperature controller and a 4.3 inch color touch screen.

6.1. Design of CHL ATEX

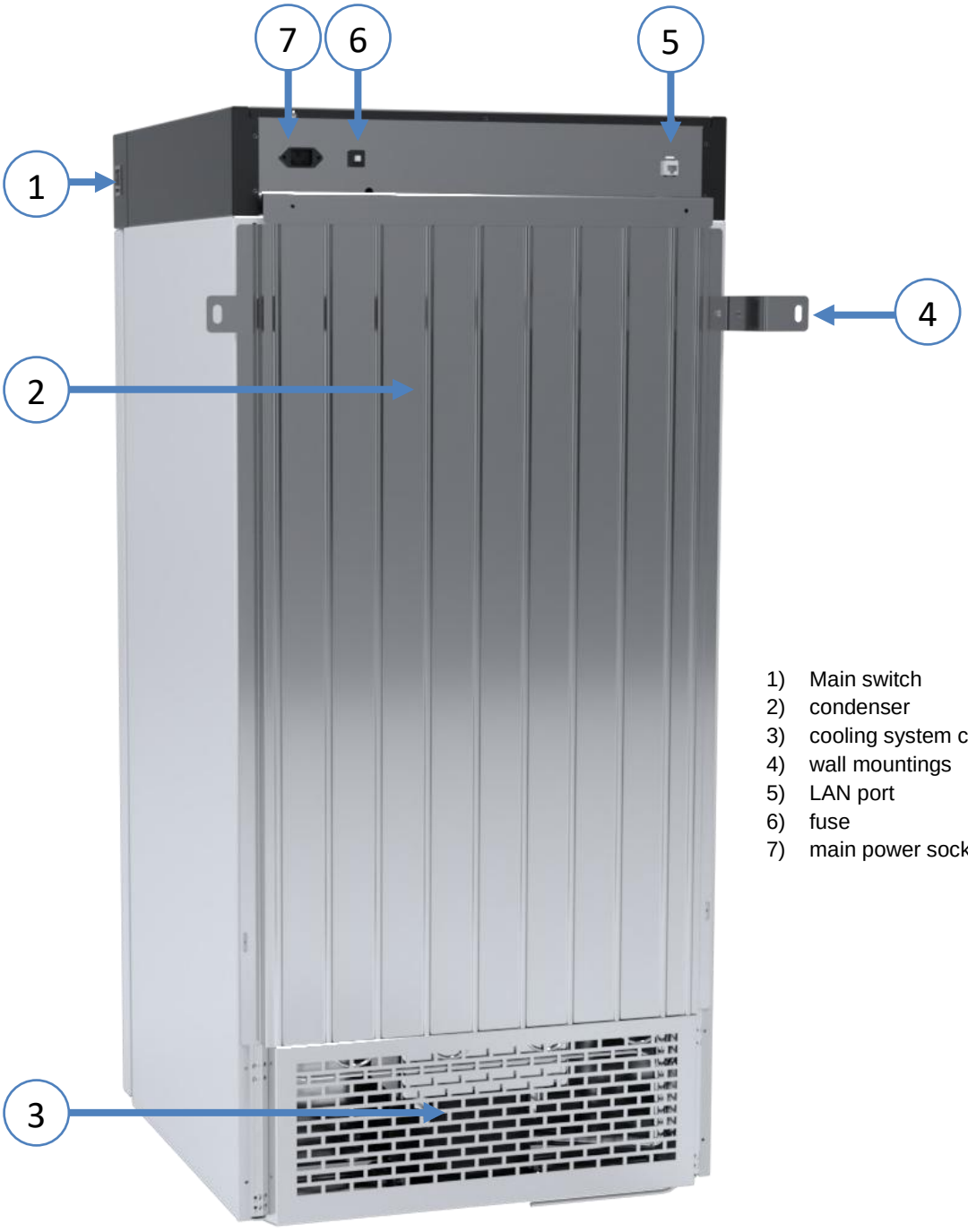
Below there's a picture of CHL mode (exemplary photo) with a description of the important components of the unit.

Front view



1) rating plate
2) temperature sensor (ATEX)
3) shelf
4) condensation tray
5) adjustable feet
6) extrenal solid door
7) fan (ATEX)
8) open door sensor
9) key lock
10) touch control panel
11) USB port

Rear view



1) Main switch
2) condenser
3) cooling system cover
4) wall mountings
5) LAN port
6) fuse
7) main power socket C14

7. UNIT EQUIPMENT (STANDARD AND OPTIONAL)

7.1. Door lock



All devices are equipped with a key lock. The lock is located above the door. Two keys are supplied with the device.

Only persons trained in the use of the device and familiar with the rules for storing materials that may create an explosive atmosphere should have access to the key.

If you lose your key or need to replace the lock, please contact the manufacturer's authorised service centre.

7.2. Open door sensor

All devices are equipped with an open door sensor. When the door is opened, an icon appears on the display:  will appear (the number above the icon presents open door counter. Press the icon to cancel the counter. The counter is also cancelled by turning of the unit). If the door remains open longer than the time set by the user (30s, 1 min, 2 min, 5 min, 10 min, see section 8.14. Alarms) an acoustic signal, red pulsating alarm bar and „open door" alarm with active status will appear".



7.3. USB port

	**WARNING!** **RISK OF ELECTRIC SHOCK OR EQUIPMENT DAMAGE** The USB port on this device is intended solely for connecting external storage devices (e.g. flash drives). • **DO NOT** connect any external circuits, devices or equipment that could cause an electrical or energy hazard. • **ONLY** use USB devices that comply with IEC 61010-1 or comparable safety standards. • Connecting a faulty or incompatible USB device may result in system malfunction, data loss or, in extreme cases, damage to the device. Failure to observe these precautions may result in malfunction, equipment failure, or loss of data.

The USB port on the front panel is used only to transfer data from the unit's internal memory to the flash drive. To do this insert the flash drive into the USB port on the front panel and then:

- go to the main menu ,
- go to the data record ,
- press and choose type of the file: *.csv, or *.plkx.
- press . Data has been copied.

After copying data to the USB flash drive, make sure to unmount it before removing it from the USB socket. To unmount, press the icon in the top drop-down list. If the USB drive is removed without unmounting and then connected to a computer, the operating system may display a warning message suggesting possible data corruption or drive damage. This message is automatically generated and does not indicate actual damage to the flash drive.

Figure 1. Unmounting USB flash drive



Data saved in the * .csv file can be opened in a spreadsheet. Data saved as * .plkx can be opened in the Lab Desk program (additionally paid option). This program allows, among others, for data preview in the form of a table or a graph. It also allows you to prepare a statistic report for a selected range of data, see section *8.9. Data record*

7.4. Replacement parts

The following parts are subject to wear and may require replacement during normal operation:

- Silicone door seal – in all appliances,
- Chamber fan meeting ATEX requirements in accordance with the chamber's intended use,

8. UNIT OPERATION



This symbol means that a given window can be moved in the direction shown in the picture.

Note: Presented screens are provided for reference only and may not reflect the exact temperature range of the unit.

8.1. External memory (USB flash drive)

The external memory (USB flash drive) allows to copy: instruction manual, data record, event log and service log from the unit memory. Before first use the USB flash drive should be formatted in the FAT 32 file system.
Insert the unit in the USB slot on the front of the unit next to the display. Wait a few seconds, the correct reading indicated by the message „USB flashdrive connected" at the bottom of the screen.



USB slot is used to connect only a flash memory – a pendrive or a card reader with a memory card. Connecting any other unit (e.g. external hard drive) without consultation is not authorized by the manufacturer and may damage the USB slot.



After copying the data to the USB flash drive, before removing it from the USB socket, it should be unmounted (see *7.3. USB port*).

8.2. First boot

During the first startup, a wizard appears on the screen (Fig. 2) allowing you to configure settings such as:

- language selection
- downloading the manual
- connection to a computer network
- setting the time zone and time
- connection to the LabDesk Cloud cloud service
- unit registration,

Figure 2. Settings wizard

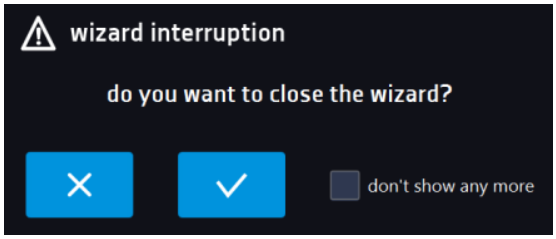


It is recommended to complete the entire wizard, but you can interrupt it at any time by pressing 
You can then choose one of the options (Fig. 3):

- one-time closing – the wizard will be displayed again during the next launch
- check the option so that the wizard will no longer appear the next time you run it

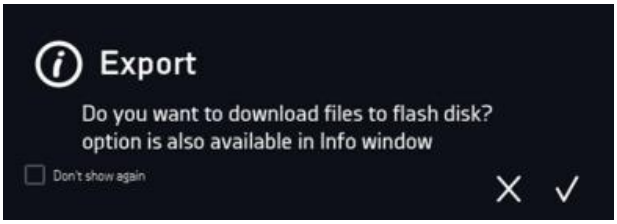
- return to the wizard

Figure 3. Wizard interruption



After completing the wizard, a question will appear on the screen about downloading the "Download" folder containing the operating instructions in PDF format to the pendrive. To do this, insert the pendrive into the USB port and wait a moment for the hardware to be detected, then press . If you press you quit downloading the folder. The window will appear again during the next boot. You can tick „Don't show again" so that the window will not be displayed after switching on the unit. You can always download the „Download" folder in the Info submenu. More information *section 8.11.*

Figure 4. Downloading files



8.3. Main screen

After switching on the unit, the main screen appears. It contains the information about the unit status. After starting the program, additional information appears on the screen.

Figure 5. Main screen

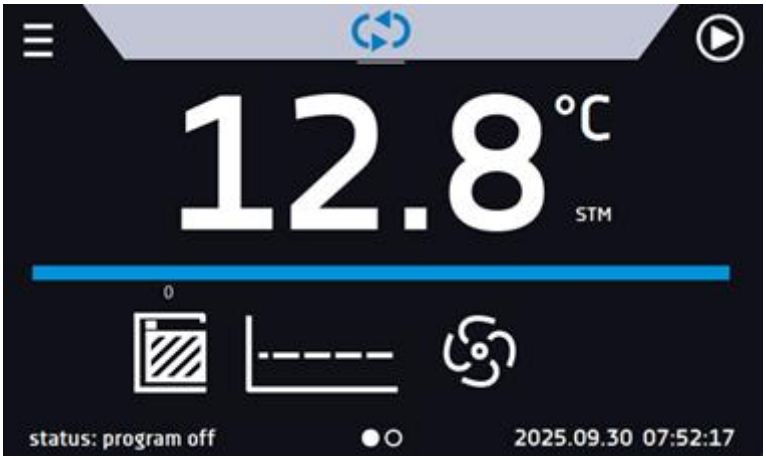
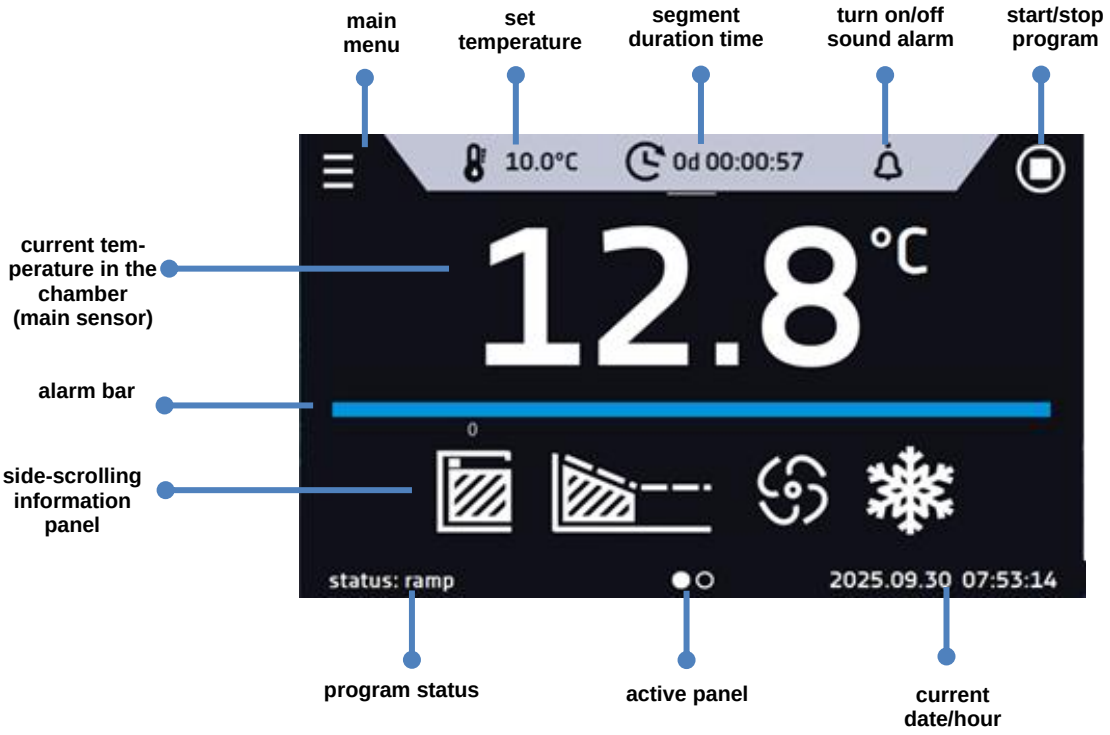


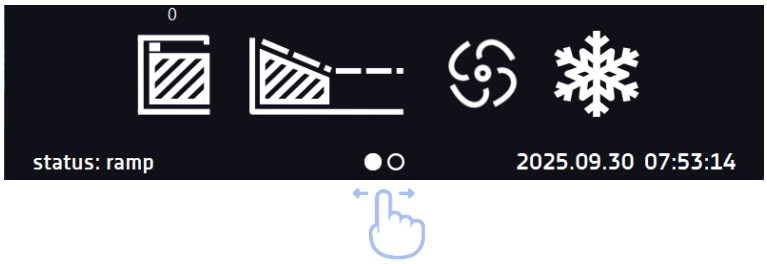
Figure 6. Main screen – running program in CHL ATEX



8.3.1. *Information panel*

There are two different windows in the information panel. Switching between them is done by swiping the finger left or right.

Figure 7. Information panel



The icon indicates information about which window is active.

8.3.1.1. *Alarms panel*

The icon which is on the second page of the information panel, allows you to go to the alarms panel.

Figure 8. Icon: Alarms panel



In the alarms panel there's a list with active alarms or the alarms that have occurred but have not been confirmed. When the alarm is active, the alarm bar is red and the alarm event is displayed in the list with the status "active". When the alarm event stops, the state changes to "inactive":

- "delete" button – confirms and removes the alarm from the list (only inactive alarms can be deleted),
- "confirm" button – confirms an alarm,
- "details" button – displays a preview of all instances of selected alarm.

Figure 9. Alarms panel



Figure 10. Alarm details



8.3.1.2. Status panel

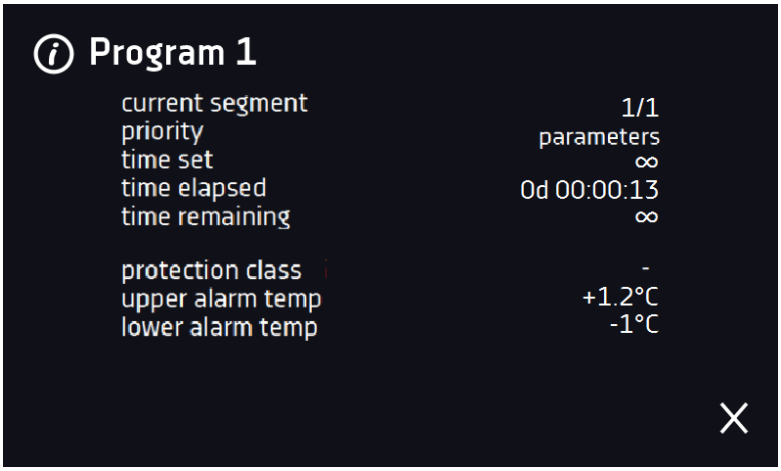
The icon which is on the second page of the information panel, allows you to go to the status panel.

Figure 11. Icon: status panel



The status of the unit is indicated also by description.

Figure 12. Status - description.



program name	the name of running program
current segment	currently running segment / total number of segments in the program
priority	of time or parameters
time set	set time of running segment
time elapsed	elapsed time since the segment has started
time remaining	remaining time until the end of the segment
current loop	currently performing cycle/ total number of cycles to perform
protection class over temperature under temperature	information about the protection temperature of a running or completed program. The protection parameters can be set in the program parameters. Information about protection classes
upper alarm temp lower alarm temp	information about set alarms, separately for upper and lower alarm temperature. Setting of the alarms

8.3.2. Meaning of the symbols and icons

The icon	Function
	The icon allows you to go to the main screen.
	Automatic return to the home screen. Factory setting: disabled.
	The icon allows you to go to the main menu.
	Automatic screen lock. Factory setting: disabled.
	Unmounting the USB flash drive before removing it from the USB socket.
	Fan icon. If it is spinning, it means that the fan is working. Quick Change function – clicking on the icon allows you to change the fan performance (without having to edit the programme).
	Icon is visible only when the chamber is cooling down.
	Icon is visible only when the chamber is heating up.
	Icon is visible only when the automatic defrosting function or defrosting program is running.
	Available when the program is running Clicking the icon allows you to quickly change the set temperature (Quick Change function).
	When the program is running, click the icon to quickly change the time of program duration (Quick Change function). Indicates the time that has elapsed from the program start.
	Countdown of the time remaining to the end of the program.
	Going to alarms panel.
	Going to the status panel with information about the program parameters.
	Going to the menu to create, edit, delete and start programs.
	Turning off of the alarm sound (open door alarm, exceeding temperature range). Critical alarms (i.e. damage to the temperature sensor, temperature protection, etc.) continue emitting a sound.
	After clicking on the icon, a reminder message appears.
 	Closed door, open door. The number above the icon presents open door counter. Press the icon to cancel the counter. The counter is also cancelled by turning of the unit.

The icon	Function
	The arrow icon allows navigation between: segments, program parameters and summary.
	Ramp status: Chamber is currently heating up or cooling down.
	Set temperature is reached.
	The program will start on the given date / time. Start delay activated
	Starting the selected program. In the list of programs - the program is running.
	Stopping the program.
	Adding a new program to the program list. The user can create up to 5 programs.
	Editing the selected program from the list. In the program list, a new program has been created but not approved yet.
	Removing selected program from the list.
	Canceling adding or editing of the program. Canceling changes.
	Editing individual program segments (the program can have max. 6 segments).
	Immediate start of the program selected from the program list.
	Delayed start of the program from the list of programs. The program starts according to the set date and time.
	Going to the SMART program (Quick Program function).
	Active STM function (Smart Temperature Monitor) informs the user about the problem of reaching or maintaining the set temperature. • white color - option enabled, the program is stopped • blue color - option enabled, the program is running • red color - warning about problems with reaching / maintaining the temperature

8.3.3. Upper expandable and configurable menu

When the program is running, in the upper part of the main screen there's a bar menu with parameter icons (temperature, time, mute function). These parameters can be quickly changed (Quick Change).

Depending on the model, after swiping your finger down you will see icons for all parameters which can be quickly changed (*Quick Change, Section 8.7*). Among the options available in the bar you will find the following icons:

- USB flash drive unmounting – more information *section 7.8. USB port*
- mute option. Critical alarms (i.e. damage to the temperature sensor, temperature protection, etc.) continue
- emitting a sound, see section 8.14. Alarms
- Quick Change (more information *section 8.7. Quick change.)*
  - program duration time,
  - set temperature,

Figure 13. Upper menu view

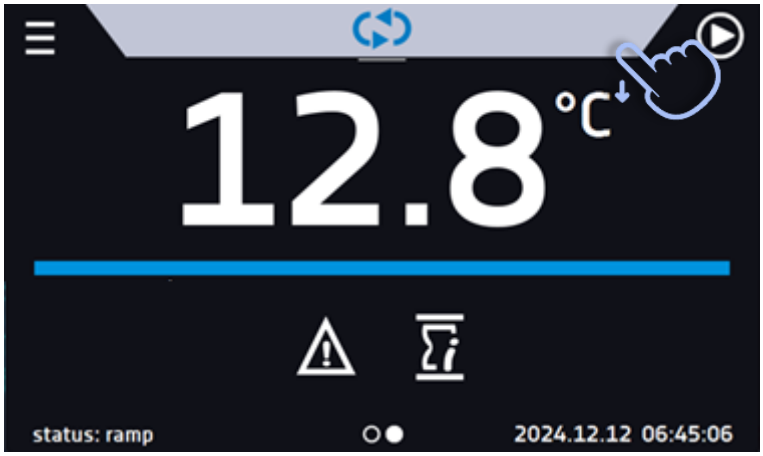
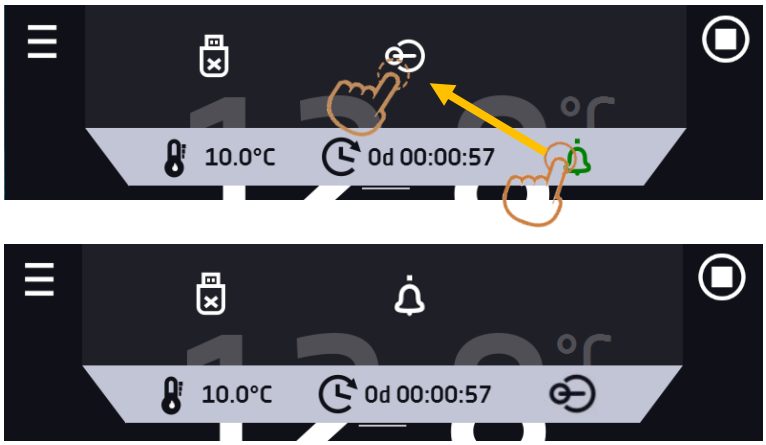


Figure 14. Upper menu when the program is stopped



Positions available on the upper bar can be personalized. Just drag the selected icon to a new location.

Figure 15. Changing icon´s position



8.3.4. Alarm bar

The Alarm bar is a quick visual information about the unit status. The color of the bar indicates the status of the unit:

- blue bar - the unit is working properly
- red bar and pulsating frame – active alarm.

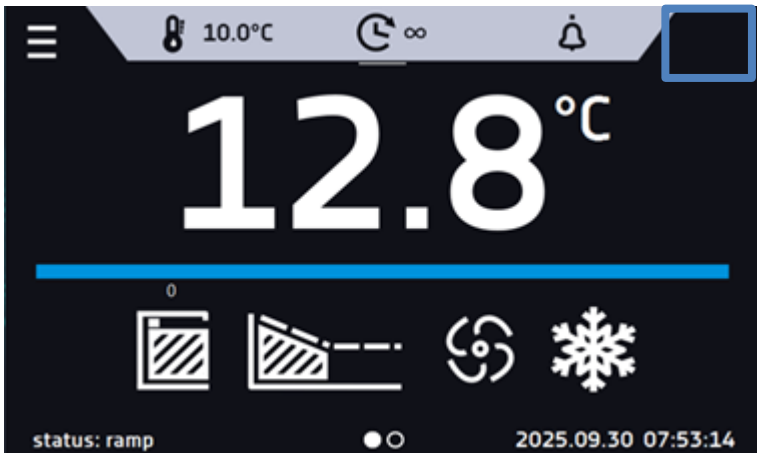
8.4. Quick Program

Quick program allows you to quickly start the program from the main screen position without having to enter to the menu .

The Quick Program has several features that guarantee its uninterrupted operation:

- you cannot set the duration of the program - time is always set to infinity,
- if the display fails, the program continues,
- after the power supply is resumed (after its failure), the program continues,
- to prevent the program from stopping accidentally, the STOP button was removed from the main screen.

Figure 16. Quick Program



In order to go to Quick Program click the icon on the main screen. By clicking the appropriate icon you can set:

– temperature

Clicking the icon starts the program in continuous mode (time set to infinity).

Figure 17. Starting he Quick Program



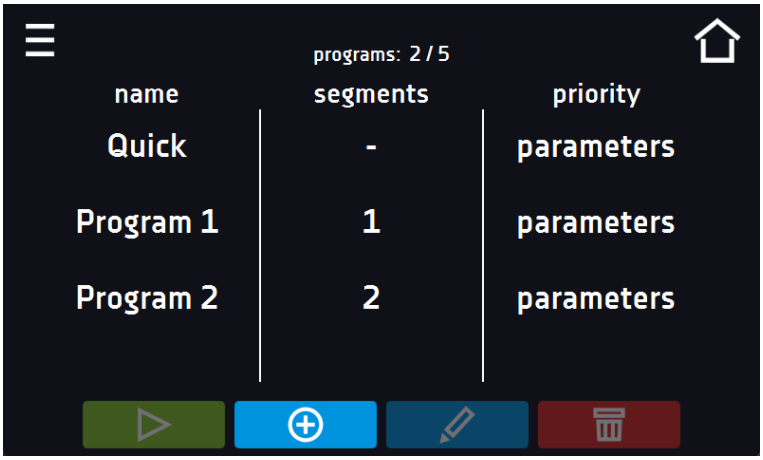
Stopping a Quick program has been made difficult on purpose (this prevents the program from being stopped accidentally) – to stop a program, you have to:

1. go to the menu ,
2. click the program window
3. keep pressing STOP button for 5 seconds.

The over and under temperature protections are set automatically: the over temperature protection is the set temperature + 10°C, the under temperature protection is the set temperature -10°C.

After configuration of the Quick Program, it appears in the programs list. Quick Program is displayed at the top of the list by default.

Figure 18. Quick Program on programs list



In Quick Program editing mode, you can change:

- settings of the data recording interval,
- settings of the protection class.

When the program is running, you can change the parameters (temperature) by pressing the icon . The modified settings will be retained and applied the next time the Quick Program is started.

8.5. Programs

Press the icon of main menu , and then press In this panel you can run the selected program, add a new one, edit the program or delete it. The user can create 5 independent programs.

Start the selected program.

Stop the program.

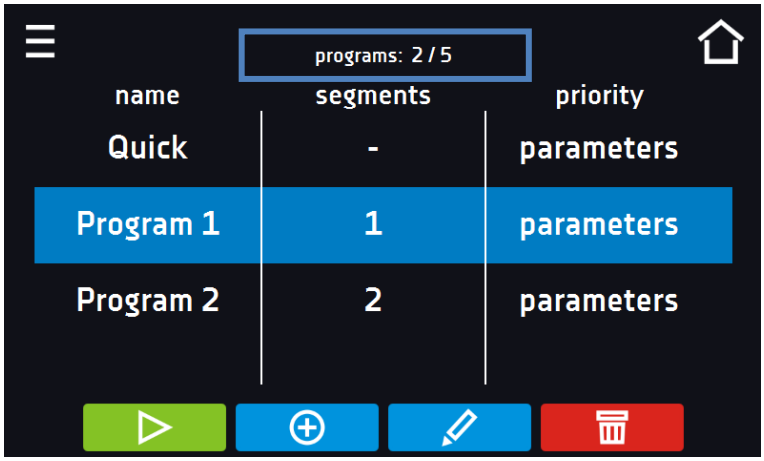
Add a new program

Edit the selected program.

Delete the selected program.

.

Figure 19. List of programs



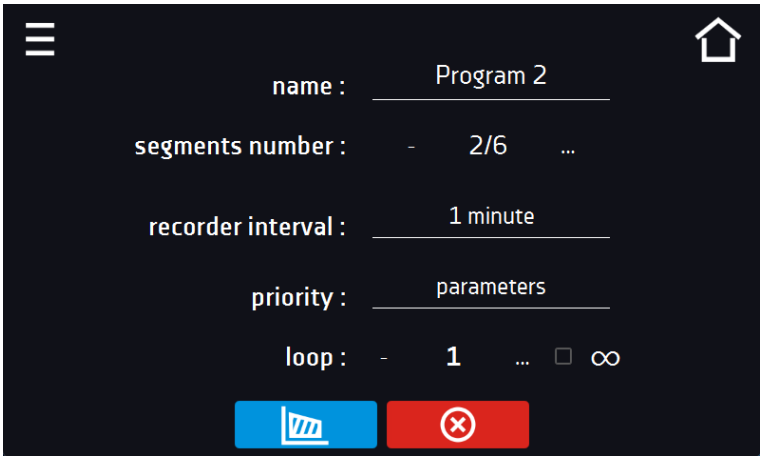
Information on the number of created programs / the maximum number of programs that can be created is at the top of the screen (programs: 2/5).

8.5.1. Creating / editing a program

Press the button  or , and a panel with program parameters will appear.
The program name is given automatically and it can't be changed. In this panel you can set:

- **Segments number** – max. 6 segments, more information section 8.5.3.
- **Interval** – frequency of saving the data in the data record (1 min, 2 min, 5 min, 10 min, 15 min, 30 min, 1 h)
- **Priority** – the priority of time or parameters, more information section 8.5.4.
- **Loop** – the number of program repetitions, more information section 8.5.5.

Figure 20. Program parameters




Cancels adding or editing of the program.


Going to the edition of program segments.


With more parameters, the window can be scrolled up and down.

8.5.2. Segment edition

For each of the 5 programs, you can set maximum 6-segment time-temperature profiles that allow you to gradually increase or decrease the incubation temperature of the samples. This can e.g. protect the sample from so-called thermal shock. Example of program operation with programmed segments (parameters priority):
Program 1
segment1: temp. 5°C, time 2 hours (after reaching the temperature 5°C, it is maintained for 2 hours)
segment2: temp. 10°C, time 3 hours (after reaching the temperature 10°C, it is maintained for 3 hours)
segment3: temp. 15°C, time 3 hours (after reaching the temperature 15°C, it is maintained for 3 hours)
segment4: temp. 10°C, time 2 hours (after reaching the temperature 10°C, it is maintained for 2 hours)
segment5: temp. 5°C, time 2 hours (after reaching the temperature 5°C, it is maintained for 2 hours)
segment6: temp. 2°C, time 1 hours (after reaching the temperature 2°C, it is maintained for 1 hour)

Press the button , and the first program segment will appear (Fig. 20).

In this window you can set:

- **temperature –** the set temperature that the device is required to reach in this segment (it must not be lower than the under-temperature protection setpoint +5°C and not higher than the over-temperature protection set-point −5°C),
- **time –** the time of maintaining the set temperature ([d hh:mm]) in days, hours and minutes. It is possible to select continuous work ∞ in the last segment,
- **ramp time –** the time of reaching the set temperature ([d hh:mm]) in days, hours, minutes.

The active value is highlighted in blue. The item highlighted in red means that the value is out of range and you should enter another one, e.g. the temperature is above / below the operating range of the unit or the protection temperature.



Ramp time - setting a short time will not accelerate reaching the ramp, but the ramp will be reached in the shortest possible time depending on the set temperature, ambient conditions and the possibilities of the cooling or heating system in the unit.

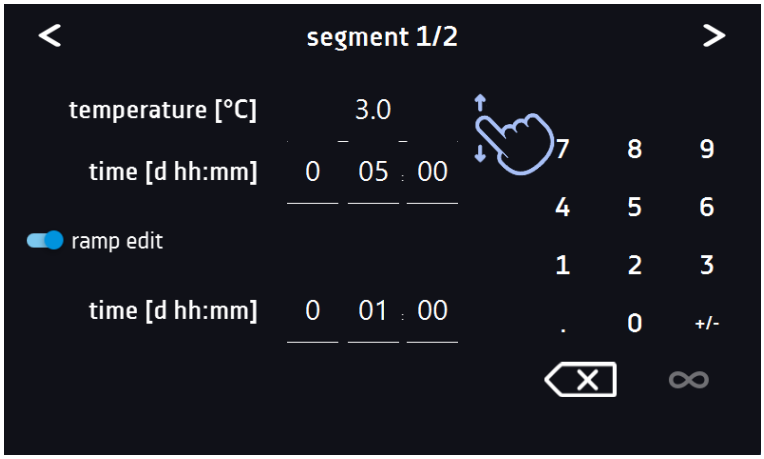
The ramp parameters are factory set in accordance with the manufacturer's instructions. If it is necessary to set individual parameters when reaching the segment temperature, activate the edit ramp field 

and set your own values.



With more parameters, the window can be scrolled up and down.

Figure 21. Program segment edition

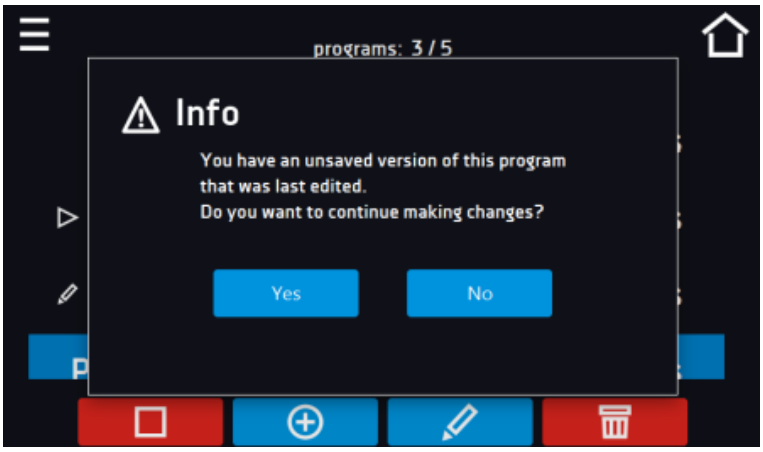


The navigation between: segments, program parameters and summary is done by touching the icon < >.

If you automatically return to the home screen while editing a program, the edited program will not be lost, but saved as a draft (see below).

After switching to the program edition, the information about the possibility of continuing changes in the program settings appears (Fig. 22).

Figure 22. Info

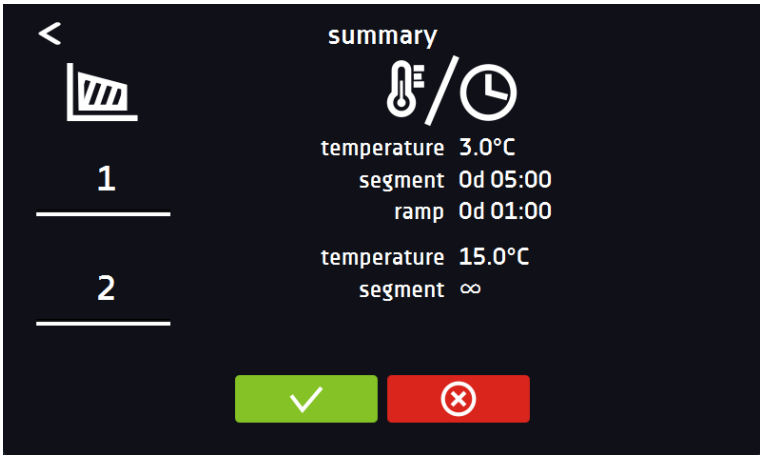


8.5.3. Summary of segments

In the segments summary (Fig. 23) all segments can be seen along with introduced parameters:

- number of segments,
- temperature, duration time, target time of reaching temperature of a given segment (ramp),

Figure 23. The summary of the segment



Confirms and saves the changes

Cancels the entered changes in the segments and goes to program parameters

8.5.4. Priority

The unit can operate with parameter or time priority.

Parameter priority:

Program without ramp – the segment time countdown starts when the set temperature is reached.
Program with ramp – first, the ramp time is counted down; then the segment time countdown starts when the set temperature is reached, regardless of whether the entire ramp time has elapsed.

It may happen that the unit failed to reach the set temperature within the set time because the reaching time was too short. In such situation the reaching time will be prolonged and the segment's time countdown will start when the set temperature will be reached.

Time priority:

Program without ramp – the segment time countdown starts when the program is started, regardless of whether the set temperature has been reached.
In the program with ramp – first, the unit counts down the ramp time and after its expiry it proceeds to the countdown of the segment time. Regardless of whether the temperature has been reached.

It may happen that the time of reaching was too short and the unit failed to reach the set temperature within the set time. Then the countdown of the segment time will start before reaching the set temperature. Thus, the actual time of unit operating in the set temperature will be shortened.

8.5.5. Loop

The option is available if the number of segments is equal to 2 or more (max 6). When the program finishes the last segment, the unit starts the program again from the first segment. You can define if the program should be carried out once (loop: 1) or multiple times (loop: 2 to 255). In order to set the program to be carried out continuously, tick the „∞" option. If the time of the last segment is set to infinity, it will be treated as infinite only in the last cycle. In other cycles it will be treated as 0.

Example:
Loop: 3
segment1: temp. 5°C, time 2 h
segment2: temp. 10°C, time 2 h
segment3: temp. 15°C, time „∞"
The unit will run segment1 and segment2 three times and then will go to segment 3 which will last indefinitely.

8.6. Starting the program

The created program can be started in two ways:

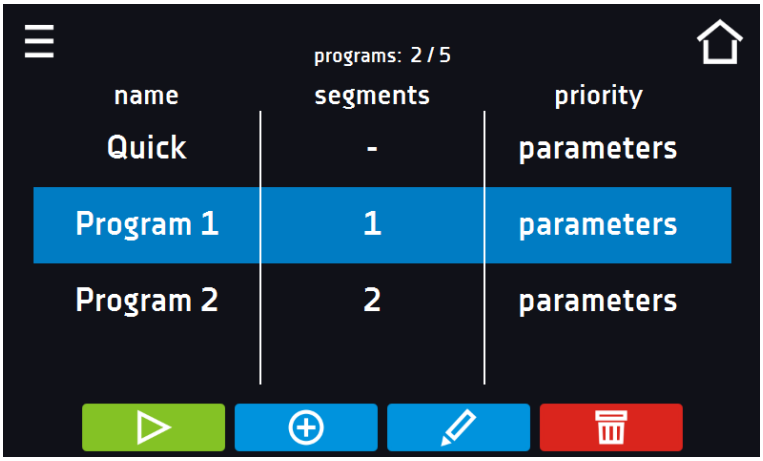
8.6.1. The first way

- Go to the main menu , and press the icon „programs" (Fig. 24) .
- Then select the program you want to activate and press „start" button (Fig. 25).

Figure 24. Main menu

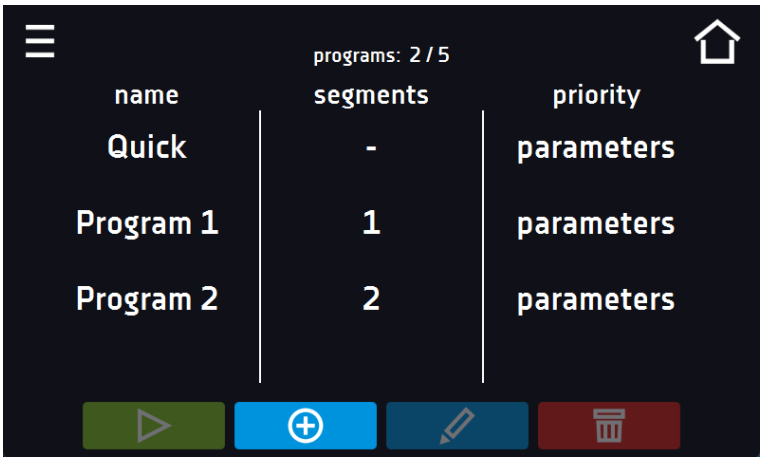


Figure 25. Program management menu



If the program is running, the symbol ▷ appears next to the program name on the list. The symbol ✎ means that the program has been edited, but the changes have not been confirmed (Fig 26).

Figure 26. List of programs with the selected status



8.6.2. The second way

- In the main screen (Fig. 27) press the icon in the upper right corner .
- Select the program you want to start (Fig. 28). You have two additional options to start the program:

 Immediate start of the program.

 Scheduled program start according to the set date and time.

Figure 27. Main menu

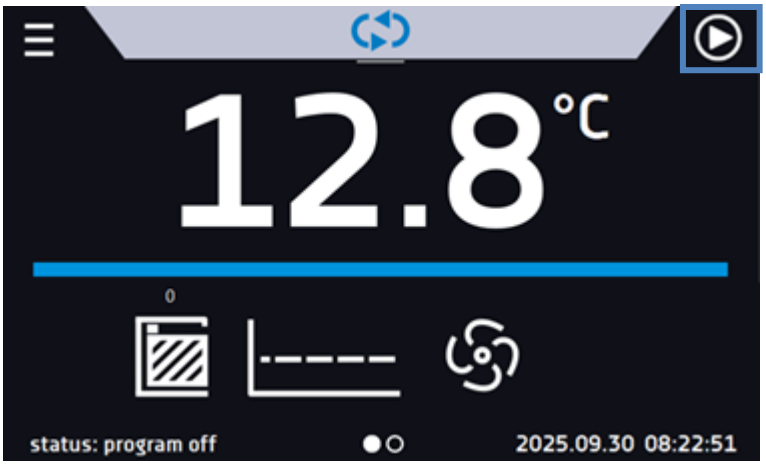


Figure 28. Lists of programs





It is possible to delay the program start (up to a maximum of 7 days).. This is possible for the programs with time priority. Program segments that would last from the back date to the current date will be skipped.

If the program is running, the symbol  appears next to the program name on the list.

8.7. Quick Change of parameters

	Although the ramp time has been included in the program, the Quick Change of parameters will take place immediately while the temperature is being reached.

8.7.1. Quick change of set temperature

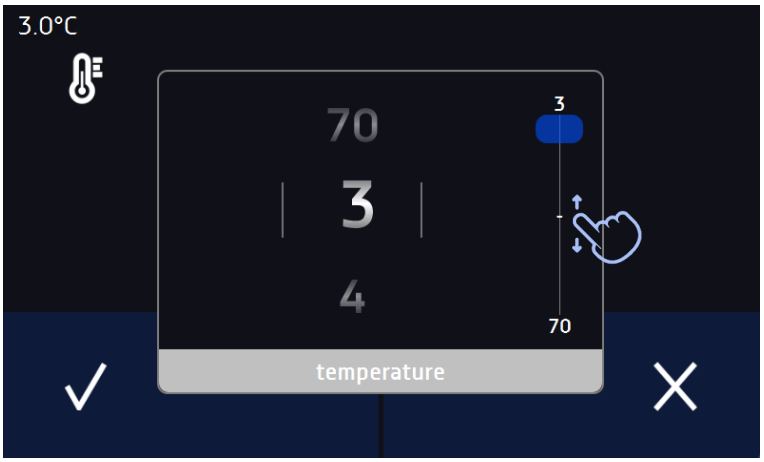
In order to quickly change the value of set temperature of a running program, press the icon in the main screen (Fig 29). The value of the temperature should be selected by scrolling the list up or down (Fig 30). Click to confirm the change.

The temperature can't be higher than the over temperature protection -2°C and lower than the under temperature protection +2°C.

Figure 29. Quick change of set temperature – selection



Figure 30. Quick change of set temperature - value setting



8.7.2. Quick change of set time

In order to quickly change the duration time of a running program, press the icon in the main screen (Fig. 31). Select the number of days, hours and minutes by scrolling the list up or down (Fig. 32). Click to confirm the change. To set the continuous work press ∞.

To change the way of displaying the time, press:

– to display the elapsed time

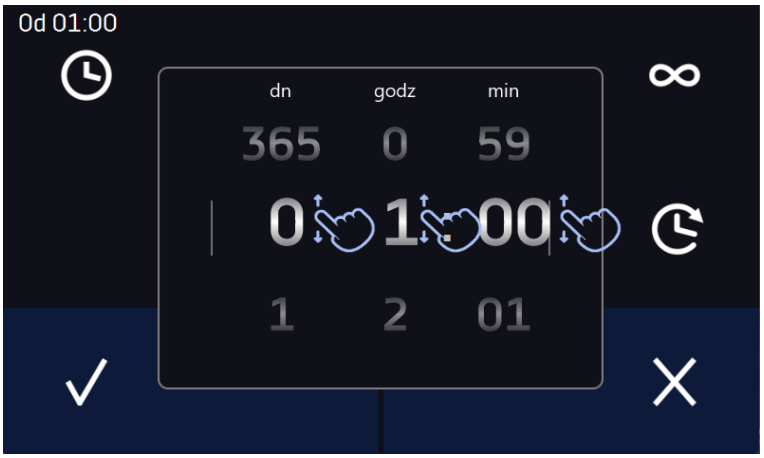
– to display the remaining time

To change only the way of displaying, you do not have to confirm it by .

Figure 31. Quick change of set time- selection



Figure 32. Quick change of set time - value setting



8.8. Statistics

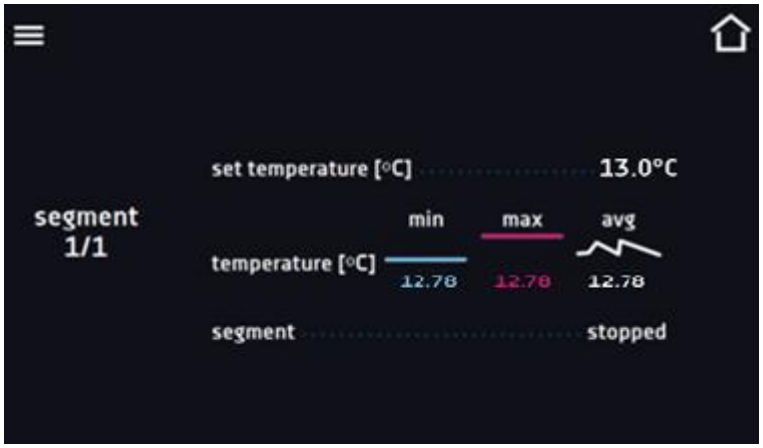
Go to the main menu , and press the icon . This panel displays statistics (Fig. 33) of the currently running program or program that has ended. Statistics are calculated separately for each segment. Data logging for calculation starts after 30 seconds from reaching the set temperature in the segment. Further data is registered every 1 minute.
The following information is available:

- **set temperature [°C] –** set temperature in the segment,
- **minimum temperature [°C] –** the lowest recorded temperature,
- **maximum temperature [°C] –** the highest recorded temperature,
- **average temperature [°C] –** average temperature,
- **segment** – status of the segment:
  - in progress – currently running segment (data is being constantly updated),
  - finished – the segment has been completed,
  - interrupted – the segment was interrupted by the user before the set time has elapsed,

segment 1/2 – the number of the currently overviewing segment / number of the currently performed or completed segment. Navigating between the segments is done by swiping your finger up or down.

You cannot overview the segment / cycle data that has not started yet.

Figure 33. Statistics



8.9. Data record

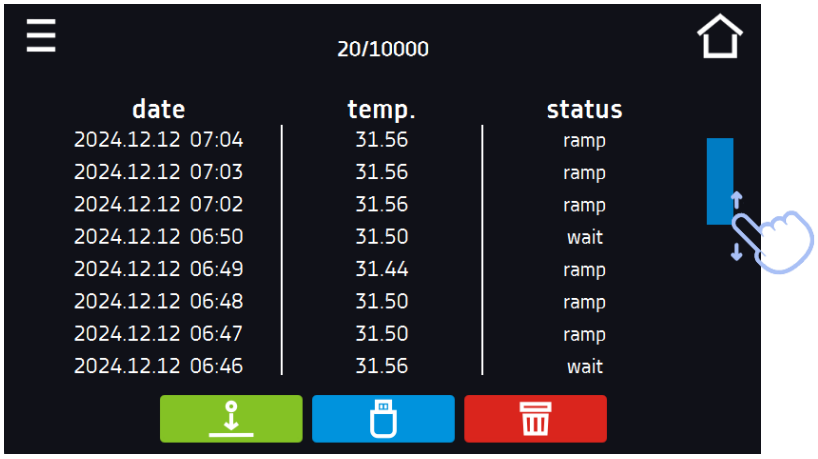
Go to the main menu , and press the icon . Data record window (Fig. 34) contains the following information:

- time and date of sample registration [date],
- temperature value measured with the main sensor in the chamber [temp.].

It is possible to register 10 000 data records for the max period of 6 months. If all the memory cells are full, the oldest ones are overwritten. The data appears in the table in the order they were added, not in chronological order by the date. The most recently added record is at the top. The samples are only registered when the program is running. The frequency of registration depends on the program parameters settings.

When opening the data record, all data is downloaded. If the data download is interrupted by the user, press  to continue downloading of the rest of the data.

Figure 34. Data record





Press to continue downloading data.

Recording data onto the USB flash drive. .csv files are available - separated by semicolon when opening e.g. with a spreadsheet, .plkx - opening with the Lab Desk application (option)

Before removing the USB flash drive from the USB port, it must be unmounted, see *section 7.3.*



Deleting data (Fig. 36)

If there is a lot of data, a progress bar appears on the display (Fig 35):

Figure 35. Progress bar

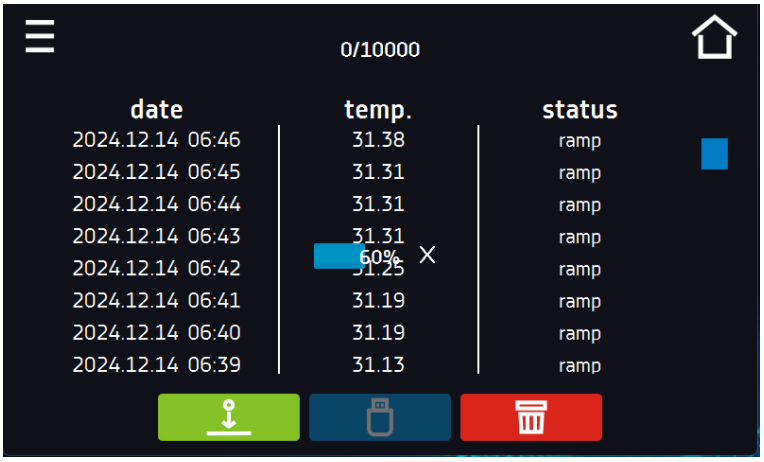
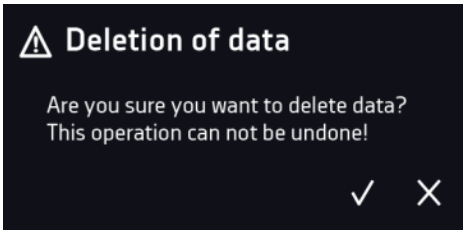


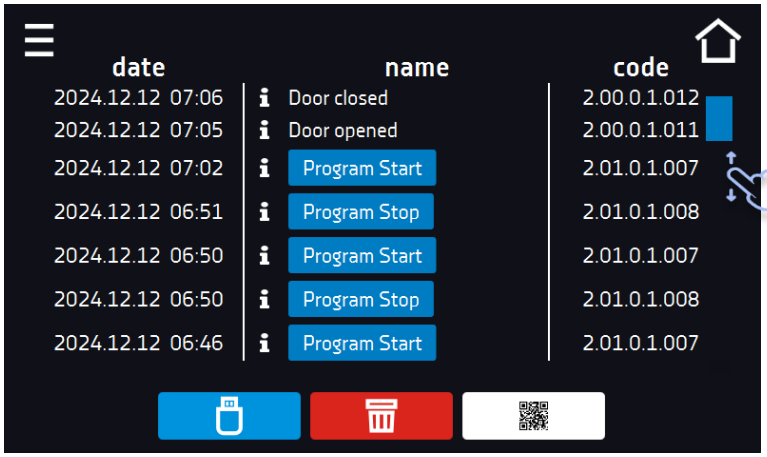
Figure 36. Deleting data



8.10. Event log

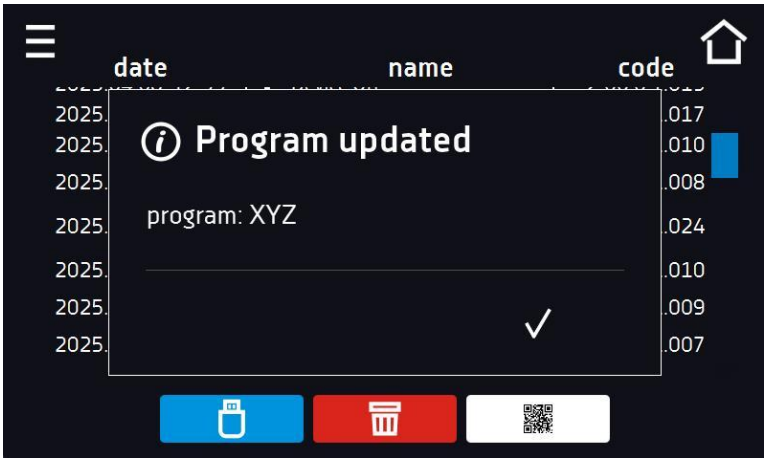
The log can store up to 10,000 events. When the memory reaches its capacity, new data automatically overwrites the oldest entries. Go to the main menu, and press the icon. The window displays information about registered events, alarms and errors.

Figure 37. Event log



For program-related events, after pressing the event name, the program name is displayed (Fig. 38).

Figure 38. Event log – program changed



Recording data onto the USB flash drive. .csv files are available - separated by semicolon when opening e.g. with a spreadsheet, .plkx - opening with the LabDesk application (option)

Before removing the USB flash drive from the USB port, it must be unmounted, see section 7.8.

Deleting data

QR code – opens smart4lab.eu (in the "Support" tab there are explanations of some of the information appearing in the event log). Press the symbol and enlarge the code QR, and then scan it with your smartphone

Figure 39. QR code



The events in the event log are sorted chronologically. However, it may happen that the event "Program restarted" will not be displayed according to the chronology but the date and time of the event will be correct. This is not an error.

Before removing the USB flash drive from the USB port, it must be unmounted, see *section 7.3.*

Information signs in the event log:

- Information event
- Alarm event
- Error
- Warning

Possible events:

Program start	starting the program
Program stop	stopping the program
Program edit	changing the program parameters
Program end	program is completed
UnitOn	the unit is switched on (on the main switch)
UnitOff	the unit is switched off (on the main switch)
Door opened	the door is opened
Open door alarm start	open door alarm has been activated
Door closed	the door is closed
Open door alarm stop	open door alarm has been deactivated
Program Restarted	program has been reasumed after power failure
Under Protection Start	under-temperature protection has been activated
Under Protection Stop	under-temperature protection has been deactivated
Upper temp. alarm Start	over- temperature protection has been activated
Upper temp. alarm End	over- temperature protection has been deactivated
Date/time change	date/time has been changed
Lower temp. alarm Start	activation of the alarm of exceeding the temperature below the set temperature
Lower temp. alarm End	deactivation of the alarm of exceeding the temperature below the set temperature
Upper temp. alarm Start	activation of the alarm of exceeding the temperature above the set temperature
Upper temp. alarm End	deactivation of the alarm of exceeding the temperature above the set temperature

Program saved	new program has been saved
Program deleted	program has been deleted
Program updated	program has been updated
Time Zone Changed	in the time settings the time zone has been changed
Temperature Correction Changed	main sensor temperature correction has been changed
Defrosting Start	starting the defrosting process
Defrosting Stop	stopping the defrosting process
Power Fail Start	power failure / unit fuse blown out.
Power Fail Stop	power reasumed, returned to maintain program parameters

8.11. Info

The panel contains the following information:

- name of unit,
- temperature range of the unit,
- serial number of the unit,
- Software version,
- manufacturer's address,
- manufacturer's website,
- QR code.

Figure 40. Info window (example)



Press icon . to save the "Download" folder (with instruction manual) on the USB flash drive. After inserting the flash drive into USB port wait few seconds until the information "Flashdrive connected" will appear on the display - for more information go to the *section 8.1*). Press the icon to write the service data on the USB flash drive – contact the service for more information. After pressing the icon , additional information about the software version is displayed.

Press to go to the main screen.

Before removing the USB flash drive from the USB port, it must be unmounted, see *section 7.3.*

8.12. User settings panel

Go to the main menu , and press the icon . In this panel you can:



Change the language in the equipment´s menu.



Set the time after which the screen will be dimmed.



Turn on/off the sound . Critical alarms will continue emitting a sound.



Set the time after which the user will return to the home screen. Available settings: off, 1 min, 3 min, 5 min, 10 min.



Set the automatic screen lock. Available settings: off, 5 min, 15 min, 30 min, 60 min. Factory setting: disabled.

Figure 41. User settings panel





Confirms changes



Cancels the entered changes .

8.12.1. Unlocking the touch screen

When the automatic touch screen lock is enabled, slide the blue circle into the white circle to unlock the screen.

Figure 42. Unlocking the touch screen





8.13. Time

Go to the main menu, and press the icon. In this panel you can:

- change the date / system time

If the date / system time is changed to the later date / time comparing with the data and events which are stored in the memory, they will remain in the register. If the date / system time is changed to the earlier date than the date / time which is stored in the memory, they will be transferred to the archive.

After changing the date / system time the unit will be restarted.

- change time zone - the change of time zone will not affect the date / time in data and events previously saved.

To change the date / system time it is necessary to press . in the window (Fig. 43).
The window (Fig. 44) will appear and you will be able to make changes.

Figure 43. Time zone change

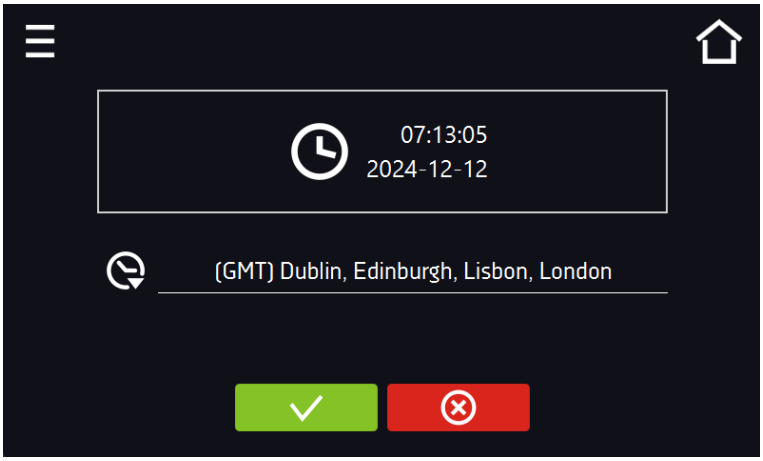


Figure 44. Date / time change



Confirms changes and restarts the unit

Cancels the entered changes

8.14. Alarms

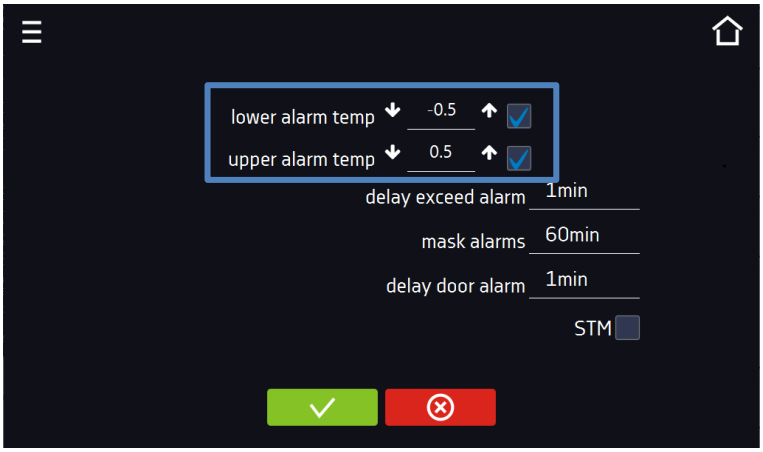
8.14.1. Alarms when set parameters are exceeded

Press the main menu icon , and then press . Here you can set parameters related to alarms.

- **low alarm – a**n alarm will be generated if the temperature drops below the set value by the value specified in this field,
- **high alarm –** an alarm will be generated if the temperature increases above the set value by the value specified in this field.

In the "lower alarm" field you can enter a value from the range of -0.5°C to -5°C, and in the "upper alarm" field from the range of 0.5°C to 5°C.

Figure 45. Parameter exceedance alarms



Confirm the changes.

Cancels the entered changes.

The upper and lower alarms can only be generated when the set temperature is reached.

- **temperature alarm delay:**
  the alarm will be activated with a delay (1 min, 2 min, 5 min, 10 min, 15 min) after exceeding the permitted temperature.

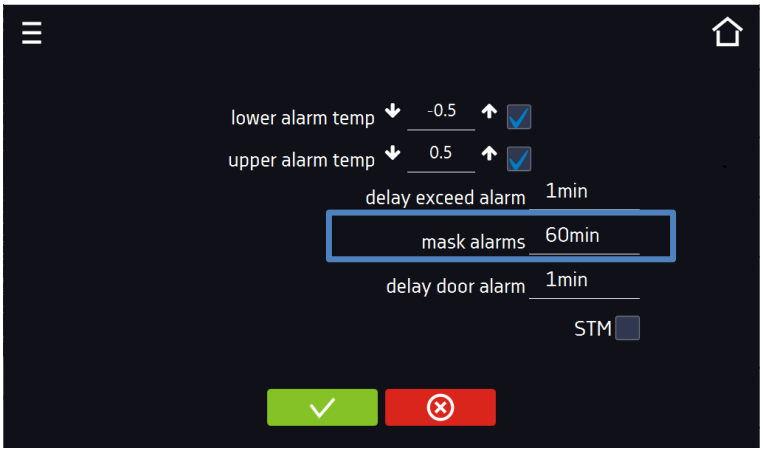
8.14.1.1. Masking of parameter exceedance alarms

Masking of alarms when the set parameters are exceeded can be used when new samples are added to the chamber or samples are added to those already incubated. During these activities, the set parameters, i.e. temperature, may be exceeded and alarms may be activated - parameter exceedance alarms are set assuming that stable conditions prevail in the chamber (temperature) and the door is closed. After opening the door and placing the samples in the chamber, time is needed for the parameters to stabilize - the alarm masking function allows you to delay alarms when the parameters are exceeded.

The parameter exceedance alarm will be triggered with a delay (15 min, 30 min, 45 min, 60 min, 120 min, 150 min, 180 min) after inserting new samples. The time is counted from the last time the door was opened. Setting 0 s means masking is disabled.

If the door is opened during the parameter exceedance alarm, the ongoing alarm will not be "masked". Only the next alarm can be masked.

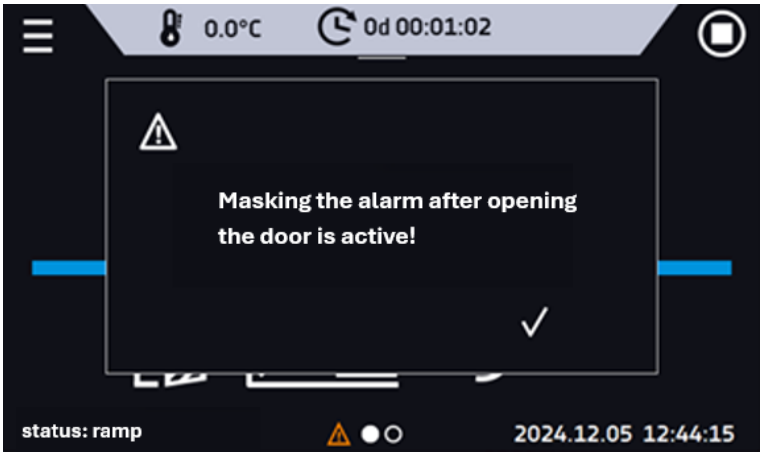
Figure 46. Alarm masking



Confirm the changes.

Cancels the entered changes.

Figure 47. Alarm masking enabled

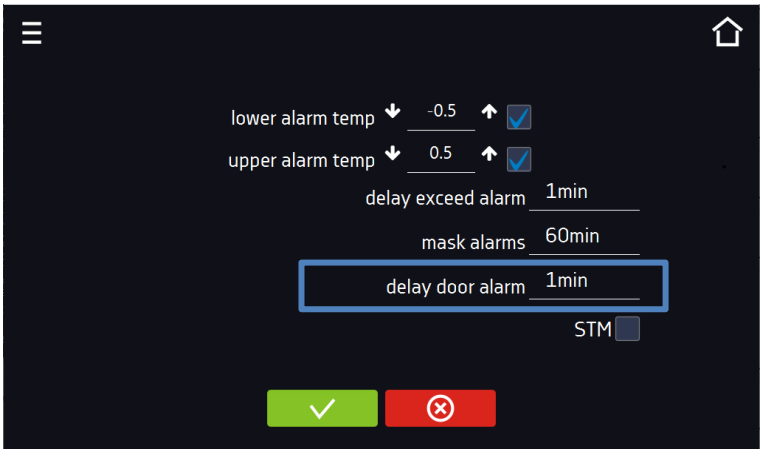


8.14.2. Open door alarm

All units are equipped with an open door sensor. If the door is left open longer than the time set by the user, an acoustic signal, a red flashing alarm bar and a "door open" alarm with the status "active" will appear.

- **door open alarm delay:**
  The door alarm will sound when the door is open for the user-selected time
  (30 sec, 1 min, 2 min, 5 min, 10 min).

Figure 48. Open door alarm delay



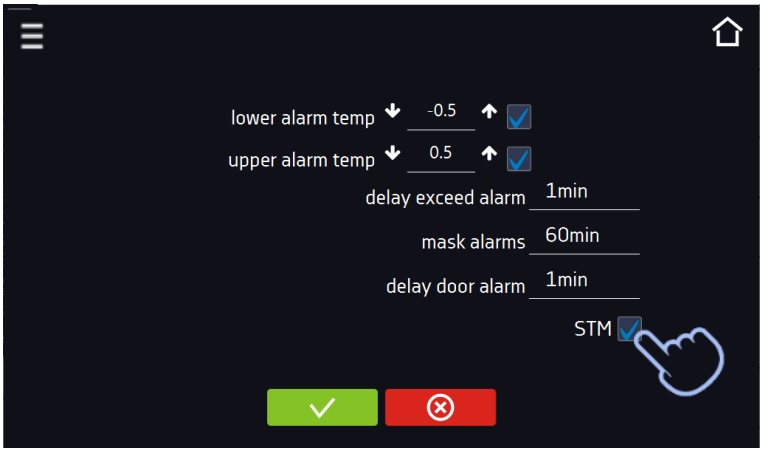
Confirm the changes.

Cancels the entered changes.

8.14.3. STM function

The STM (Smart Temperature Monitor) function informs the user if there is a problem in reaching or maintaining the set temperature. The user can enable/disable the function.
If the STM function is enabled, the STM symbol will appear on the screen next to the temperature of the main sensor.

Figure 49. Enable/disable STM function



Confirm the changes.

Cancels the entered changes.

The function status is indicated by color:

- no inscription – option disabled,
- white color – option enabled, program is stopped (Fig. 50),
- blue color – option enabled (temperature monitoring), program running (Fig. 51),
- red color – option enabled, warning about problems with achieving/maintaining temperature (Fig. 52).

Figure 50. STM function - option enabled, program is stopped.

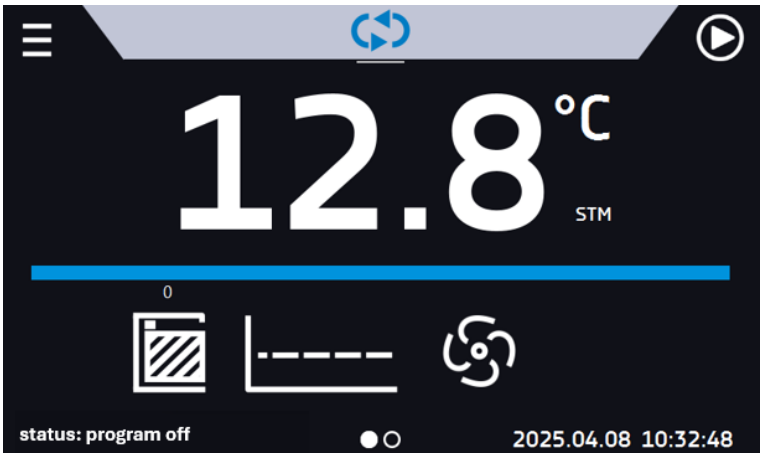


Figure 51. STM function - option enabled, program running.

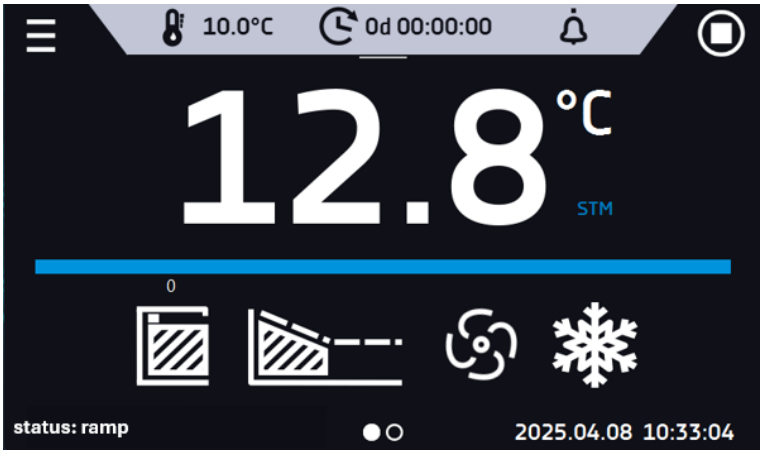
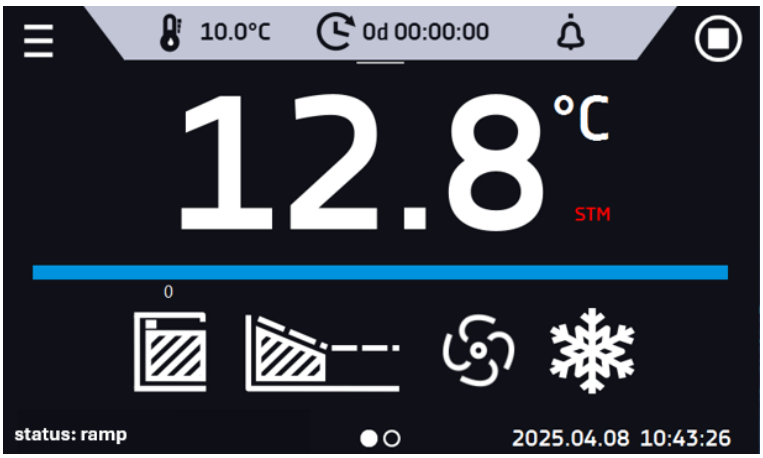


Figure 52. STM function - option enabled, warning about problems with achieving/maintaining temperature.



Possible causes of operation:

1. damaged heater,
2. the cartridge inserted into the chamber absorbs / releases too much energy.

If the color was red before opening the door, then the color changes to blue after opening the door.
If the function is activated (detection of problems with achieving/maintaining temperature):

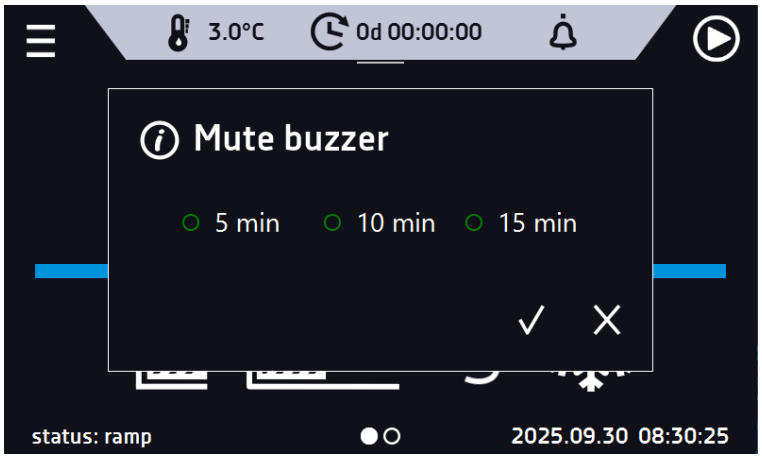
- the warning 4.00.0.1.009… appears in the event log.
- the color of the STM inscription changes to red and remains red throughout the disruption, segment change, and program shutdown.
- when the state changes from red to blue, an entry about the end of function 4.00.0.1.010 appears in the event log.

8.14.4. Mute option

The icon in the main screen in the upper menu allows temporary switching off of the alarms sound (open door alarm, exceeding temperature range), e.g. to avoid door alarm during planned loading of the samples into the chamber.

To set the mute time, press the icon and choose: 5, 10 or 15 minutes (Fig. 53), however, the sounds of critical alarms (e.g. damage to the temperature sensor, over- and under-temperature protection) will be still emitted.

Figure 53. Setting the time of mute function



8.15. Network

Go to the main menu , and press the icon . In this panel (Fig. 54) you can change settings for LAN settings:

- **IP** – the unit's IP address,
- **Mask** – an Ethernet network mask to which the unit is connected,
- **Gate** – Server's IP address or router's that manages the Ethernet network,
- **DNS** – IP address of the domain name system,
- **MAC** – the address of the network card, read-only,
- **DHCP** you can select if the server that allocates IP addresses is running on the local network. You can then skip setting IP, Masks, Gates.

Indicates the connection status with the icon:

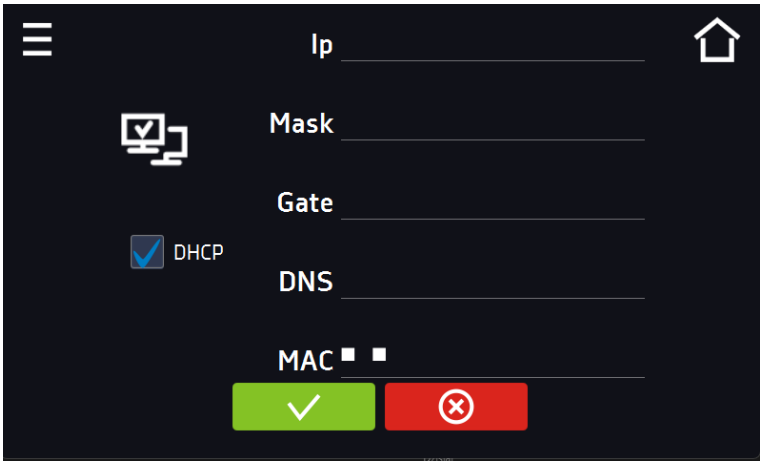


Unit connected to the network



Unit disconnected from the network

Figure 54. LAN settings





Confirms changes



Cancels the entered changes

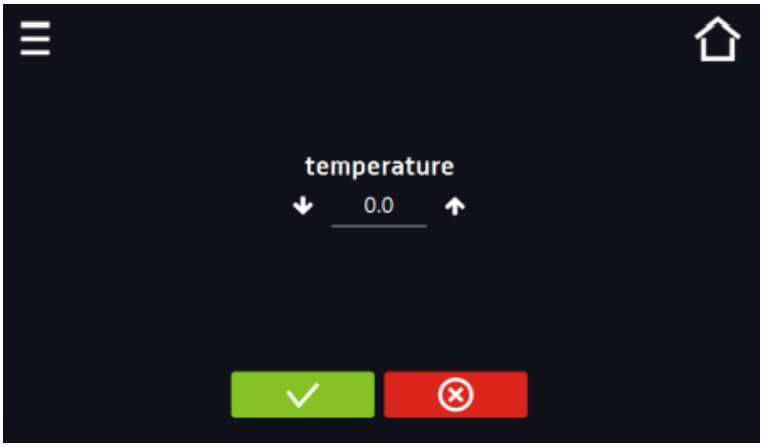
8.16.  Corrections

Go to the main menu , and press the icon . In this window (Fig. 55) you can correct temperature value indicated on the display by adding the correction value. The set correction value applies to the whole temperature range of the unit. For example, if the average temperature displayed by the unit indicates 20°C and the average temperature measured by independent, external sensor indicates 20,5°C, the correction should be set on +0,5°C. The average temperature should be calculated from chosen period of time e.g. 30 min. The correction available range is between -5°C to +5°C.



The unit has been calibrated by the manufacturer in accordance with applicable norms. The temperature shown on the display corresponds with a great accuracy to the temperature near chamber's sensor.
For the correct operation of the unit it is not necessary to use user's calibration. The user is performing temperature correction **on his own responsibility** and must be aware of consequences of changing manufacturer's settings.
If the equipment was calibrated, calibration certificate **loses its validity.**

Figure 55. User's correction



Confirms changes

Cancels the entered changes

9. INTERFACE

9.1. MODBUS TCP

The unit allows status monitoring using the MODBUS TCP communication interface.
Connection parameters:

- IP address: same as unit's (set in the panel in the *section 8.15.*)
- port: 502

rejestr INPUT REGISTERS funkcja READ_INPUT_REGISTERS (0x30001)			
Adress	Type	Multiplier	Description
0	int	10	temperature from the main sensor
3	bool	-	Open door
4	bit	-	b0 – door alarm b1 – upper temperature alarm b2 – lower temperature alarm b3 – over Protection b5 – main sensor error b6 – additional sensor error b7 – protection sensor error b8 – temperature sensors error b10 – hardware error b11 – MRW error

10. CONNECTING THE UNIT TO A COMPUTER

Each unit in the SMART version can be connected to an Ethernet network or directly to a computer with a LAN cable (optional equipment). To read data (stored data and event log), you need the Lab Desk software (optional equipment). If you purchase the software, a LAN cable is included together with a hardware key, which should be inserted into the USB port of the computer. The installed Lab Desk software and hardware key allow reading the data stored in the internal memory of the unit. The features of the software have been described in a separate instruction manual.

	WARNING!
	**RISK OF ELECTRICAL HAZARD OR NETWORK SECURITY COMPROMISE** The LAN port on this unit is **intended only for safe connection to an internal network**. • DO NOT connect external devices or circuits that could compromise the unit's safety requirements or introduce electrical or energy hazards. • ONLY use network connections that comply with IEC 61010-1 or equivalent safety standards. • An unsuitable external device may bypass energy limitations, creating potential safety hazards and leading to IEC 61010-1 non-compliance. Failure to follow these precautions may result in **safety risks, equipment malfunction, or violation of regulatory compliance**.

The LAN connection is used exclusively for the transmission of diagnostic data and remote operation in accordance with its intended purpose. **Do not interfere with the device configuration (e.g. alarm parameters, emergency temperatures, safety limits) from the network level if this could affect operating conditions in an explosive atmosphere.** Any changes to the device configuration that may affect the conditions inside the chamber must be carried out only by trained personnel and in accordance with the manufacturer's instructions.

11. OPERATION OF THE COOLING SYSTEM

In CHL EX laboratory refrigerators, models 1 to 6, the evaporator may freeze at low operating temperatures. A sign of excessive ice build-up on the evaporator is reduced cooling efficiency.

	DANGER!
	**RISK OF FIRE OR EXPLOSION. FLAMMABLE REFRIGERANT USED.** **Do Not Use Mechanical Devices To Defrost Refrigerating Equipment.** **Do Not Puncture Refrigerant Tubing.** Failure to follow these instructions may lead to **fire, explosion, serious injury, death, and unit damage**.

To ensure proper operation of the unit, follow these guidelines:

1.	When the chamber operating temperature is above +8°C, the air automatically defrosts the ice cover (defrosting occurs automatically).
2.	At temperatures below +8°C, the evaporator may freeze. Defrosting is then necessary. **If the appliance operates below +8°C and the user does not defrost the chamber periodically, this may lead to overheating of the refrigeration unit and failure of the appliance.**
3.	**Before leaving your post, ensure that the chamber door is securely closed.**

12. CLEANING AND MAINTENANCE OF THE UNIT

12.1. Maintenance of the device

The components inside the chamber (e.g. fan, temperature sensor) are manufactured in accordance with the requirements of Directive 2014/34/EU. Therefore, the device is subject to periodic inspections in accordance with **EN 60079-17.** The scope and frequency of inspections should be determined by the user based on a risk analysis and local regulations. Inspections may only be carried out by persons authorised and trained in the inspection of Ex equipment. The manufacturer recommends that inspections be carried out **at least once a year** or in accordance with the frequency specified in the plant's safety management system.

12.2. Warnings



DANGER!

RISK OF ELECTRIC SHOCK

Before cleaning or maintenance, disconnect the appliance from the power supply.

Failure to comply with this recommendation may result in serious injury or death

from electric shock.



NOTICE!

DECONTAMINATION REQUIRED BEFORE MAINTENANCE

The unit does not inherently pose biohazard risks. However, if the unit was used to store potentially hazardous biological materials (infectious, toxic, radioactive), it **must be properly decontaminated** before cleaning, maintenance, or servicing. Written confirmation of completed decontamination must be provided to service personnel to ensure safety.

The stainless steel interior surfaces may show discoloration (spots), especially when the unit is new. These spots are not manufacturing defects but result from the steel production process. They can be cleaned using a suitable stainless steel cleaning solvent or extraction gasoline.

INOX products are made of stainless steel. Under normal laboratory conditions, they resist rust; however, certain types of samples or environmental conditions can cause surface staining that resembles rust. In these cases, we recommend using specialized stainless steel cleaning solutions (e.g., **Pelox FR-D**) specifically designed for removing rust-like stains..



NOTICE!

When using specialized cleaning products for stainless steel, carefully follow the manufacturer's recommendations provided in the product instructions and the safety data sheet.

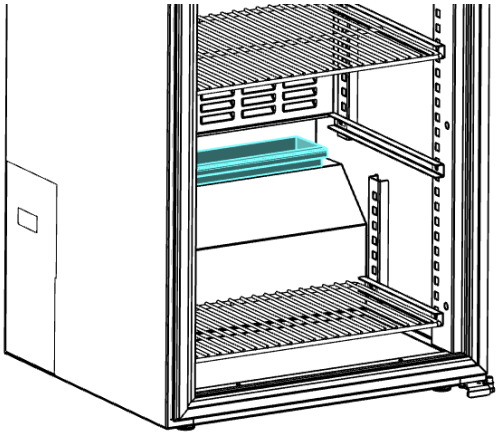
12.3. Exterior cleaning

1.	The housing of the unit should be cleaned at least once a week, depending on the working conditions.
2.	The housing and door should be cleaned with caution using a soft cloth dampened with water.
3.	Only mild cleaning products should be used to clean the unit.
4.	Electrical parts should not get in contact with water or detergent.
5.	The touch panel should be cleaned with a soft cloth designed for cleaning touch panels. You can also use special foams designed for cleaning LCD monitors.
6.	**The USB port** should be cleaned with compressed air spray designed for electronics to prevent dirt from accumulating inside the port. Do not use wet cleaning agents or compressed air from a compressor.

12.4. Emptying the condensation tray

NOTICE!

To ensure the correct and safe operation of the CHL ATEX cooler, periodically check the level of the condensate tray and empty it.



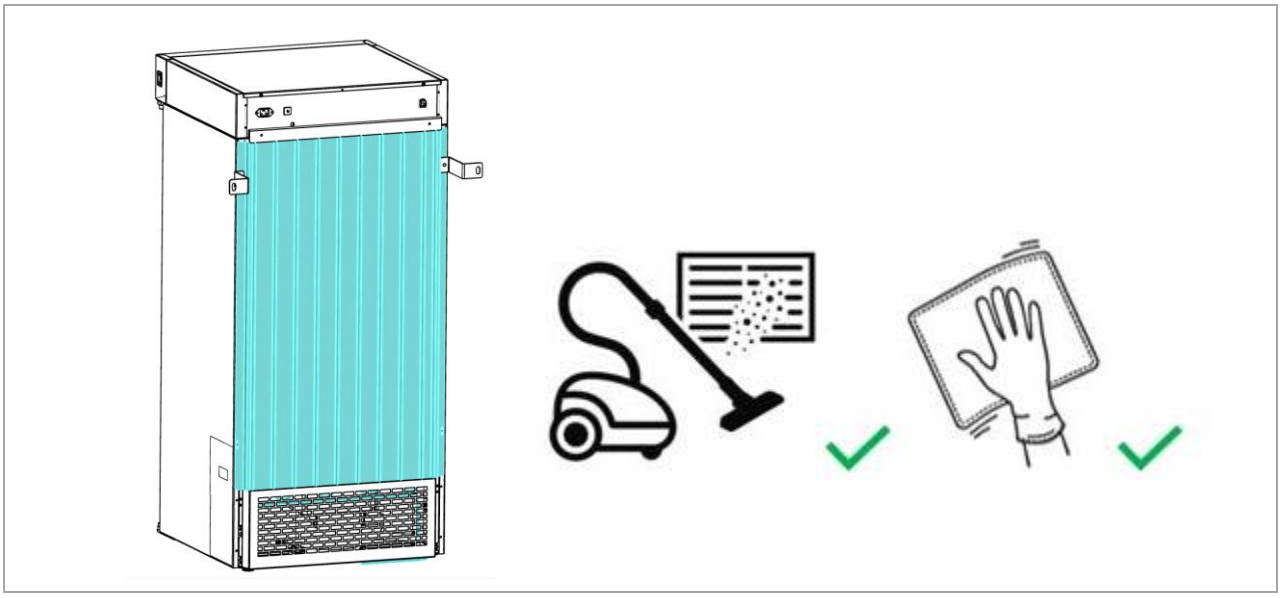
Frequency of inspection and emptying:

- at least once a week under standard conditions,
- more often in case of intensive use (e.g. frequent door opening, high humidity in the room),
- immediately if a water leak is noticed.

12.5. Interior cleaning

The interior of COMFORT and PREMIUM laboratory refrigerators is made of 0H18 stainless steel in accordance with DIN 1.4301 or 0H17 in accordance with DIN 1.4016. Stainless steel is also susceptible to corrosion. To slow down the corrosion process as much as possible, this type of steel requires regular maintenance and cleaning. Avoid aggressive cleaning agents and chlorine-based preparations and bleaches, do not allow stainless steel to come into contact with non-alloy steel, unless you are dealing with ground steel, avoid materials that may scratch the surface.

1.	Before cleaning, disconnect the device from the power supply. This is mandatory even if the chamber has been ventilated and does not contain an explosive atmosphere..
2.	Empty the refrigerator compartment and remove the shelves..
3.	Ensure that there is no explosive atmosphere inside the chamber (ventilate the chamber).
4.	**After removing the shelves, proceed to clean the appliance.**
5.	Cleaning should only be carried out using a damp, soft, lint-free and dust-free cloth, with the addition of a mild, pH-neutral detergent.
6.	In the case of ground steel, movements should be made in the direction of the grinding on the surface..
7.	If rust appears, appropriate measures should be taken: • light discolouration – use household stainless steel cleaners containing calcium carbonate or citric acid, • moderate discolouration – clean with a 10% phosphoric acid solution; after cleaning, neutralise the acid with diluted ammonia or a mild alkaline detergent, • Heavy rust – use steel pickling and passivation products, such as Pelox FR-D. After each cleaning, wipe the surface thoroughly with clean water.
8.	After cleaning, all surfaces should be thoroughly dried and the previously removed parts should be reinstalled.
9.	When cleaning, pay particular attention to the temperature sensors built into the chamber so as not to damage them.
10.	At least once every 6 months, clean the condenser located at the rear of the appliances using a vacuum cleaner, dry cloth or soft brush.



	NOTICE!
	Failure to clean regularly may result in damage to the compressor and loss of warranty.

12.6. Cleaning the touch screen

The touch screen is exposed to dirt, so it must be cleaned regularly. To clean the touch screen, use a clean and dry microfiber cloth. It is a very delicate material and collects dirt well.

	NOTICE!
	Before using the cloth, check that there are no crumbs or particles on its surface. During cleaning, they can act like sandpaper and scratch the screen surface.

If the stains cannot be removed by dry cleaning, the cloth can be lightly dampened with water.

	NOTICE!
	Do not use paper towels to clean the screen as it may cause microdamages.

Before cleaning, lock the screen by pressing Before cleaning, lock the screen by pressing  on the top drop-down list.

Figure 56. Locking the screen



The screen is ready to be cleaned.
To unlock the touch screen, slide the blue circle into the white circle.

Figure 57. Unlocking the screen





12.7. Storing the unit

1.	Empty the chamber of the device of all objects, especially substances that may create an explosive atmosphere.
2.	Disconnect the device from the mains. If the device is equipped with a battery backup for the display (optional), switch it off as well.
3.	Clean and dry the chamber of the appliance.
4.	To prevent unpleasant odours from developing, leave the door open. **If volatile substances have been stored in the chamber previously, ensure that it is thoroughly ventilated before closing the appliance.**
5.	Store at a temperature between 0°C and 50°C and a relative humidity of max. 70%.

13. SERVICE AND TROUBLESHOOTING



DANGER!

RISK OF FIRE OR EXPLOSION.

FLAMMABLE REFRIGERANT AND COMPONENTS USED IN ATEX DESIGN

- Repairs may only be carried out by trained service personnel.
- Do not puncture refrigerant lines.
- Components marked Ex (e.g. fan, temperature sensor) must not be removed or replaced without the manufacturer's authorisation.
- Repairs must be carried out in accordance with the requirements of Directive 2014/34/EU and in compliance with ATEX precautions.

Failure to follow these instructions may result in fire, explosion, serious injury, damage to the appliance or loss of Ex certification.

13.1. Spare parts

The following parts are subject to wear and tear and may need to be replaced during normal operation:

- silicone seal – in all devices (it is recommended to check the condition of the seal regularly to ensure the chamber is airtight),
- fan – in devices with forced air circulation, equipped with a fan.



NOTICE!

ATEX version:

- In devices with an explosion-proof chamber (Ex), the components used (e.g. fan, temperature sensor) comply with ATEX requirements.
- Replacement of Ex components (e.g. fan in the chamber) may only be carried out by an authorised service centre using original parts with the appropriate Ex markings.

The use of unauthorised parts or unauthorised interference with Ex components may result in loss of compliance with Directive 2014/34/EU (ATEX) and loss of warranty.

Detailed information on prices can be obtained from an authorised service centre.

13.2. Possible defects

Malfunction	What to check?	What to do?
The unit is not working	Verify the unit is properly connected to a functional power outlet	Plug in the unit correctly
	Check if the circuit-breaker has tripped	Press the circuit breaker on the back of the unit
	Check the voltage in the socket	Connect the unit to a different socket, preferably from a different electrical circuit. Call a licensed electrician to check the electrical installation.
	Check if the power cable is broken	Change the cable
The unit is not cooling down	Check if the condenser is dirty	Clean the condenser
	Check if the unit is exposed to direct sunlight	Change the location of the unit
	Check if there is a heat emitter near the unit	Change the location of the unit
	Check if the door is closed properly	Clean the gasket
The unit is working too loud	Check if the unit is not touching other objects or furniture etc.	Remove other objects
	Check if the door is properly leveled	Level the unit
The door has dropped or is skewed	Check if the door is properly leveled	Level the unit. If this does not help, contact the service.



For CHL devices: gurgling and murmuring sounds caused by the flow of refrigerant in the refrigeration circuit are normal.

13.3. Service contact

Before you contact Service Department:

1.	Make sure that the operation complies with the instruction manual of the unit..
2.	Restart the unit to make sure that the unit is not functioning properly. If it still does not work, disconnect the unit again from the mains and repeat the operation after one hour.

If the malfunction cannot be resolved using the troubleshooting guide, contact POL-EKO service department:

- Visit the POL-EKO sp.k website.: www.pol-eko.com.pl to obtain contact details, service forms, product information and special offers
- get full contact details of technical service
- access to POL-EKO® online catalogue, and information about accessories and related products
- receive additional product information and special offers

To receive information or technical assistance, contact the Service Department or visit the website: www.pol-eko.com.pl

14. WARRANTY CONDITION

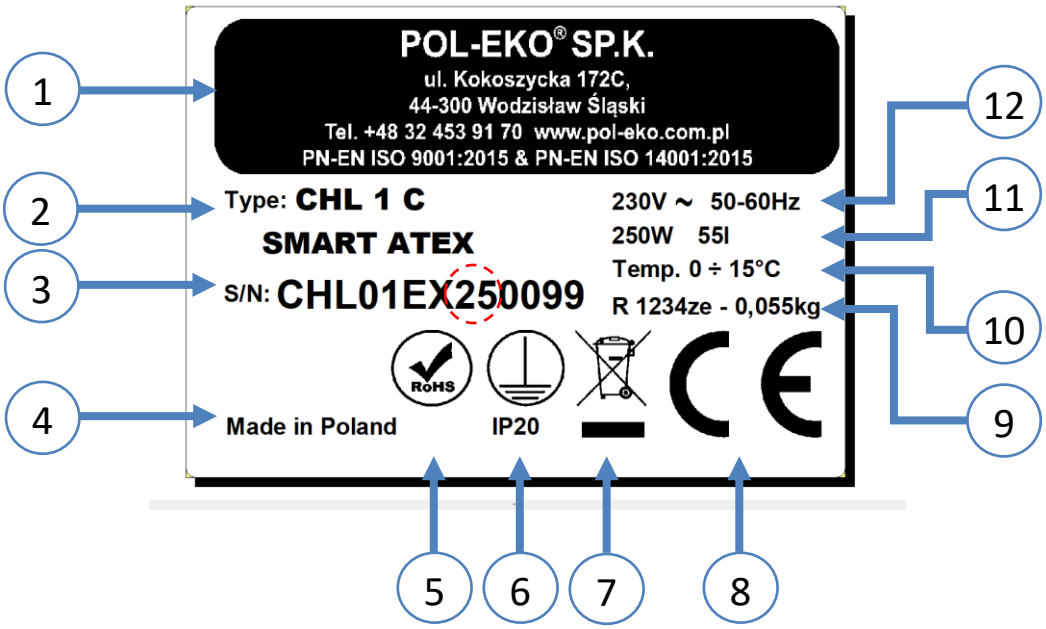
POL-EKO® warrants that this product will be free from defects in material and workmanship for a period of two (2) years from the date of the invoice. In the event of a defect, contact your dealer. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid.

Compliance with local laws and regulations

The user is responsible for obtaining any approvals or authorizations required to launch and use the product. POL-EKO® shall not be liable for any negligence

15. RATING PLATE

The rating plate is located on the left side wall in the upper left corner. Below there is an example of a rating plate:



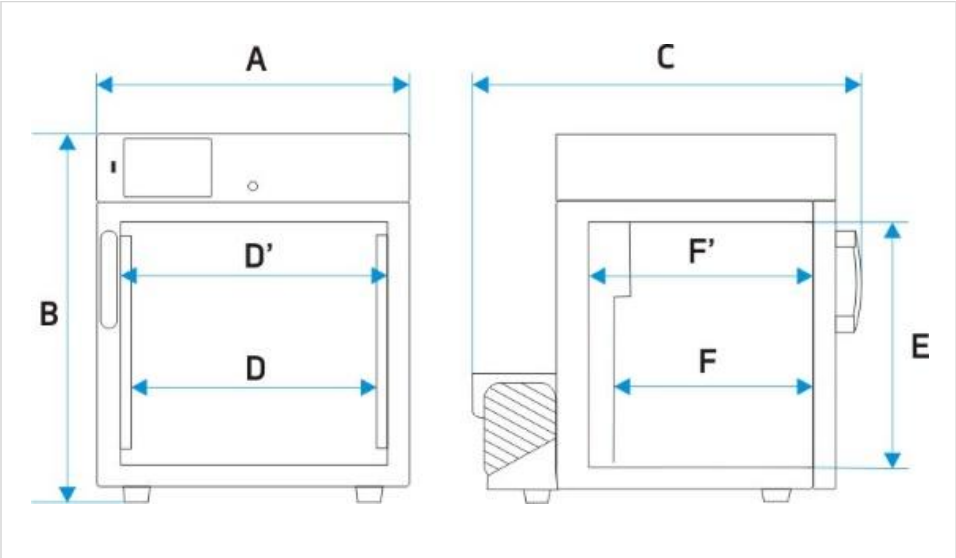
1. Manufacturer’s data - Contains the manufacturer's name, address, and contact information.
2. Type of unit
3. Serial number (the two marked digits indicate the year of manufacture of the unit).
4. Country of origin.
5. The RoHS (Restriction of Hazardous Substances) mark indicates that the unit complies with the RoHS EU Directive, which restricts the use of certain hazardous materials in electrical and electronic equipment.
6. Degree of protection against electric shock (class I: protection against indirect contact) and IP enclosure protection rating according to IEC 60529.
7. Disposal of used unit according to WEEE2 Directive (Waste Electrical and Electronic Equipment Directive).
8. CE marking as confirmation of compliance with the EU directives.
9. Type of cooling agent used, amount of coolant.
10. Max. temperature range of the unit in degrees Celsius.
11. Nominal power in watts, and chamber capacity in liters.
12. Operating voltage and frequency.

16. TECHNICAL DATA

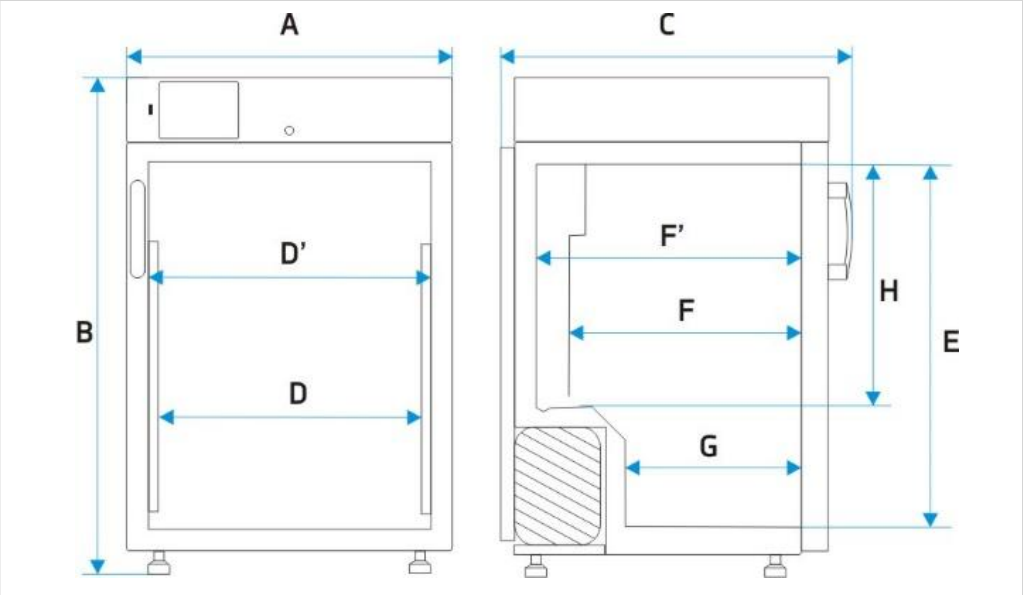
Technical data are given with a tolerance of ± 5% unless otherwise stated, the working capacity of the chamber is always smaller. All the below technical data refers to standard units (without optional accessories).

Parameter			CHL 1 ATEX	CHL 2 ATEX	CHL 3 ATEX	CHL 4 ATEX	CHL 5 ATEX	CHL 6 ATEX
Air convection			forced					
Chamber capacity [1] [l]			74	157	208	259	312	414
Working capacity [2] [l]			54	129	171	212	255	339
Door			solid					
Temperature range [°C]	CHL	[°C]	0…+15					
		[°F]	+32…+59					
Temperature resolution [°C]			every 0,1					
Controller			microprocessor with external touch screen					
Interior	Smart C		stainless steel according to DIN 1.4016					
	Smart P		acid-resistant stainless steel according to DIN 1.4301					
Housing	Smart C		powder-coated steel					
	Smart CS		brushed stainless steel					
	Smart P		powder-coated steel					
	Smart PS		brushed stainless steel					
Overall dims[3] [mm]	A width		570	620	620	620	620	620
	B height		660	900	1100	1300	1500	1900
	C depth		680	650	650	650	650	650
Internal dims [mm]	D width		430	480	480	480	480	480
	D' width		470	520	520	520	520	520
	E height		430	660	860	1060	1260	1660
	F depth		300	420	420	420	420	420
	F' depth		360	480	480	480	480	480
	G depth		-	320	320	320	320	320
	H height		-	440	640	840	1040	1440
Max shelf work-load[4] [kg]	-		10	10	10	10	10	10
	version PW[5]		as ordered					
Max unit work-load [kg]	-		20	30	40	50	60	60
	Wersja W[6]		as ordered					
Power supply [W]			250	250	250	250	350	350
Installation environment / IP protection class according to IEC 60529			indoors / IP 20					
Pollution degree			2 (according to IEC 61010-1)					
Weight [kg]			46	58	70	82	98	114
ATEX marking of the chamber			II 3/- G Ex h IIC T6 Gc/-					
Power supply			230 [V]] ± 10% 50/60 Hz or 120 [V] ± 10%, 50/60 Hz					
Overvoltage category			II (according to IEC 61010-1)					
Number of shelves std/max			2/2	3/4	3/4	4/6	4/7	4/10
Type of refrigerant / Global Warming Potential (GWP)			R1234ze / GWP=7					
Refrigerant [g]			55	62	75	110	110	110
Number of doors			1	1	1	1	1	1
Warranty			24 months					
Manufacturer			POL-EKO A. Polok-Kowalska sp.k.					

1. Chamber capacity (gross)
   The maximum theoretical internal volume of the chamber, calculated based on its internal dimensions, without taking into account equipment and structural elements. An informational value, always higher than the working (net) capacity.
2. Working capacity (net)
   The actual working space of the chamber available for loading products, excluding fixed and structural elements (e.g. fans, evaporators, air ducts, guide rails). It defines the real amount of material that can be placed inside the device.
3. depth does not include the 50 mm power cable connection
4. with even load distribution across the entire surface
5. reinforced shelf
6. reinforced version (additional charge)



CHL 1 ATEX



CHL- 2,3,4,5,6 ATEX:

17. DECLARATION OF CONFORMITY, CE

CE

DEKLARACJA ZGODNOŚCI UE

EU DECLARATION OF CONFORMITY

POL-EKO

Produkt:	***Product:***
Chłodziarka laboratoryjna	*Laboratory refrigerators*
Model:	***Model:***
CHL 1 ATEX; CHL 2 ATEX; CHL 3 ATEX; CHL 4 ATEX; CHL 5 ATEX; CHL 6 ATEX;	
w wersjach:	***in version:***
C SMART; CS SMART; P SMART; PS SMART;	
Oznakowanie ATEX komory urządzenia:	***ATEX marking of the unit chamber:***
Ex II 3/- G Ex h IIC T6 Gc/-	
Nazwa i adres producenta:	***Name and address of the manufacturer:***
POL-EKO A.Polok-Kowalska sp.k. ul. Kokoszycka 172 C, 44-300 Wodzisław Śląski, Polska/Poland	
Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta.	***This declaration of conformity is issued under the sole responsibility of the manufacturer.***
Wymieniony powyżej przedmiot niniejszej deklaracji jest zgodny z odnośnymi wymaganiami unijnego prawodawstwa harmonizacyjnego:	***The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:***
LVD 2014/35/UE EMC 2014/30/UE RoHS 2011/65/UE & 2015/863UE WEEE 2012/19/UE **Wyłącznie komora urządzenia:** ATEX 2014/34/UE	LVD 2014/35/EU EMC 2014/30/EU RoHS 2011/65/EU & 2015/863EU WEEE 2012/19/EU **Unit's chamber only:** ATEX 2014/34/EU
Odniesienia do odnośnych norm zharmonizowanych, które zastosowano lub do innych specyfikacji technicznych, w stosunku, do których deklarowana jest zgodność:	***References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:***
LVD	PN-EN 61010-1:2011/A1:2019-04 PN-EN IEC 61010-2-011:2022-01 PN-EN 60529:2003/A2:2014-07
EMC	PN-EN IEC 61326-1:2021-10
RoHS	PN-EN IEC 63000:2019-01
ATEX	PN-EN 1127-1:2019 PN-EN ISO 80079-36:2016

Wodzisław Śląski 29.09.2025

Podpis / Signature:

Dawid Rybarz
Dyrektor Techniczny (CTO)

We produce:

- thermostatic cabinets
- laboratory refrigerators
- laboratory incubators
- units with photoperiod and phytotron system
- drying ovens and sterilizers
- drying ovens with nitrogen blow
- laboratory freezers
- ultra-low freezers
- climatic chambers
- Caldera fluid and blanket warmers
- colony counters
- laboratory shakers
- stationary samplers
- Hydromat water dispensers
- Eurodrop stations
- FEKO+ waste water receipt station
- heating ovens
- cooled incubators
- fume hoods

We offer portable, laboratory and on-line equipment:

- pH-meters
- ionmeters
- dissolved oxygen meters
- conductivity meters
- photometers and spectrophotometers
- thermo reactors
- turbidity metres
- pH electrodes
- conductivity sensors
- oxygen probes
- heavy metals trace analyzers
- water baths
- autoclaves
- pH buffer solutions
- conductivity standards
- photometric tests
- laboratory accessories
- consumables

We organize:

- regional trainings
- individual trainings
- seminars

We provide:

- warranty and post-warranty service
- consultancy in the selection, maintenance and operation of laboratory equipment

POL-EKO LAB is Accredited by the Polish Centre for Accreditation (a member of ILAC) and provides accredited calibration of:

- thermostatic and climatic chambers (incubators, drying ovens, thermostatic cabinets, climatic chambers, freezers)
- water baths and thermo reactors
- autoclaves
- electric and electronic thermometers
- data loggers
- high temperature laboratory furnaces
- thermohygrometers
- laboratory sieves

POL-EKO Laboratorium Pomiarowe

PCA Polskie Centrum Akredytacji WZORCOWANIE

AP 115

Calibration is confirmed with the issue of 'Calibration Certificate'.

Services outside the scope of accreditation:

- checking equipment for physicochemical measurements (meters and probes),
- carrying out IQ, OQ, PQ qualification procedures,
- mapping of temperature and humidity in the rooms

Manufacturer of control and measurement equipment
for laboratory tests and technological processes,
distributor in Poland of the following companies:
HAMILTON, THERMO SCIENTIFIC, WTW, XYLEM

PN-EN ISO 9001 ISOCERT CERTIFICATE

PN-EN ISO 14001 ISOCERT CERTIFICATE

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