Instruction manual SMART

Laboratory incubators

with a cooling system based on Peltier effect

models: **ILP 53, ILP 115, ILP 240, ILP 750**

DOMINIQUE DUTSCHER SAS

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

Version 1.33

Issued 10.04.2024

PN-EN ISO 9001
ISOCERT CERTYFIKAT

CE

Manufacturer's address:

POL-EKO® A.Polok-Kowalska sp.k.
ul. Kokoszycka 172 C
44-300 Wodzisław Śląski
Country of origin: Polska

As a manufacturer, we inform you that we took the necessary measures to ensure that this device fully meets your expectations and is reliable for a long period of use. Due to the continuous improvement of our products, as well as the expansion of our offer, any suggestions regarding additional functions and equipment functioning are welcome. Visit our homepage www.pol-eko.com.pl/home-en/

Equipment disposal



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste. Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment. For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.
By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you!

DOMINIQUE DUTSCHER SAS

Contents:

1. INTENDED USE AND IMPORTANT INFORMATION FOR THE USER 5

2. PACKAGE CONTENTS 6

3. BEFORE THE FIRST USE 6

3.1. Installation of shelves 9

3.2. Condensation in the chamber 10

3.3. Remarks on the placement of samples 10

3.4. Closing chamber door 10

4. DESCRIPTION OF THE DEVICE 11

4.1. Design of ILP devices 11

5. DEVICE EQUIPMENT (standard and optional) 13

5.1. Internal glass door (standard) 13

5.2. External door with viewing window (optionally) 13

5.3. Internal socket (optionally) 13

5.4. Door lock (standard) 14

5.5. Access port for external sensor (standard) 14

5.6. Open door alarm (standard) 14

5.7. Internal LED light (optionally) 15

5.8. USB port (standard) 15

5.9. Display battery backup (optionally) 16

5.10. Consumables 16

6. DEVICE OPERATION 17

6.1. External memory (USB flash drive) 17

6.2. First boot 17

6.3. Main screen 19

6.3.1. Information panel 20

6.3.2. The meaning of icons and symbols 22

6.3.3. Upper menu 24

6.3.4. Alarm bar 25

6.4. Quick Program 25

6.5. Programs 27

6.5.1. Creating / editing a program 28

6.5.2. Segments edition 29

6.5.3. Summary of segments 31

6.5.4. Protection class 32

6.5.5. Temperature protection (option) 32

6.5.6. Priority 33

6.5.7. Loop 33

6.5.8. Defrosting program 33

6.6. Starting the program 34

6.6.1. The first way 34

6.6.2. The second way 35

6.7. Quick Change of parameters 36

DOMINIQUE DUTSCHER SAS

6.7.1. Quick change of set temperature 36
6.7.2. Quick change of set time 37
6.8. Statistics 38
6.9. Data record 39
6.10. Event log 40
6.11. Info 42
6.12. User settings panel 43
6.12.1. Unlocking the touch screen 44
6.13. Time 45
6.14. Alarms 46
6.14.1. Alarms when set parameters are exceeded 46
6.14.2. Open door alarm 47
6.14.3. STM function 48
6.15. Mute option 50
6.16. Network 50
6.17. Corrections 51
7. INTERFACE 52
7.1. MODBUS TCP 52
8. TEMPERATURE PROTECTION 53
8.1. Temperature protection class 53
9. CONNECTING THE DEVICE TO A COMPUTER 53
10. OPERATION OF THE COOLING SYSTEM 53
11. CLEANING AND MAINTENANCE OF THE DEVICE 54
11.1. Exterior cleaning 54
11.2. Interior cleaning 54
11.3. Cleaning the touch screen 56
11.4. Consumables 56
12. ADVICE ON HOW TO SAFELY STORE THE DEVICE 57
13. TROUBLESHOOTING 57
13.1. Possible defects 57
14. WARRANTY CONDITIONS 58
15. RATING PLATE 59
16. TECHNICAL DATA 60
17. DECLARATION OF CONFORMITY 61

DOMINIQUE DUTSCHER SAS

1. INTENDED USE AND IMPORTANT INFORMATION FOR THE USER

ILP incubators are laboratory devices designed for incubation and storage of samples at temperature range from 0°C to +70°C (maximum 20°C below ambient temperature). Incubators have both heating and cooling system based on Peltier modules and forced air convection.

The meaning of information symbols

	**This symbol means that failure to follow the instructions could endanger people's health or life, or damage the device. The manufacturer is not liable for damages resulting from non-compliance with the instructions contained in the manual.**
	This symbol indicates helpful tips.

To guarantee your security and the longevity of the unit, please comply with the following rules:

1.	**The unit cannot be installed:** • outside, • in damp places or places which can be easily flooded, • near flammable or volatile substances, • near acids or in corrosive environments.
2.	**It is forbidden to:** • store inflammable or volatile substances inside the unit, • touch live parts of the unit, • operate the unit with wet hands, • put water vessels on the unit, • climb on the unit, • overload the shelves (the maximum load is described in technical data), • place objects on the bottom of the chamber.
3.	**You should:** • place samples in such a way to provide proper air circulation in the chamber, • open the door for the shortest period of time to reduce temperature fluctuations, • secure samples from being blown out by the chamber fan e.g powdery samples, • always check that the doors are closed correctly, • use only mains with earth to avoid electric shocks, • unplug the power cable holding the protective cover and not the cable itself, • disconnect the unit from the mains before undertaking any repairs or maintenance work (in order to not lose the warranty during its duration, all repairs should be carried out by an authorized service), • protect the power cable and the plug from any damage, • disconnect the power plug before moving the unit, • disconnect the power plug if the device will not be used for a long period of time, • disconnect the unit and protect it from reconnecting if it has any visual fault.

Failure to comply with the above recommendations may result in damage to the device or deterioration of technical parameters, as well as loss of warranty.

DOMINIQUE DUTSCHER SAS

2. PACKAGE CONTENTS

Incubators with Peltier modules (ILP) in SMART version are delivered with:

Device	ILP			
Capacity	**53**	**115**	**240**	**750**
Shelves [pcs.]	2	2	3	5
Slides [pcs.]	4	4	6	10
Power cord [pcs.]	1	1	1	1
Rubber cap [pcs.]	1	1	1	1
Key for door lock [pcs.]	2	2	2	2
Wrench (13mm) for wheels adjustment [pcs.]	x	x	x	1
Quality Control Certificate [pcs.]	1	1	1	1

3. BEFORE THE FIRST USE

The manufacturer sends the device protected by cardboard profiles and foil. The device **should be transported in an upright position** and the package should be secured against sliding during transport.

	**After receiving the device, visually assess its condition and equipment in the presence of the person delivering the goods. A courier company is responsible for any damage caused during transport.**

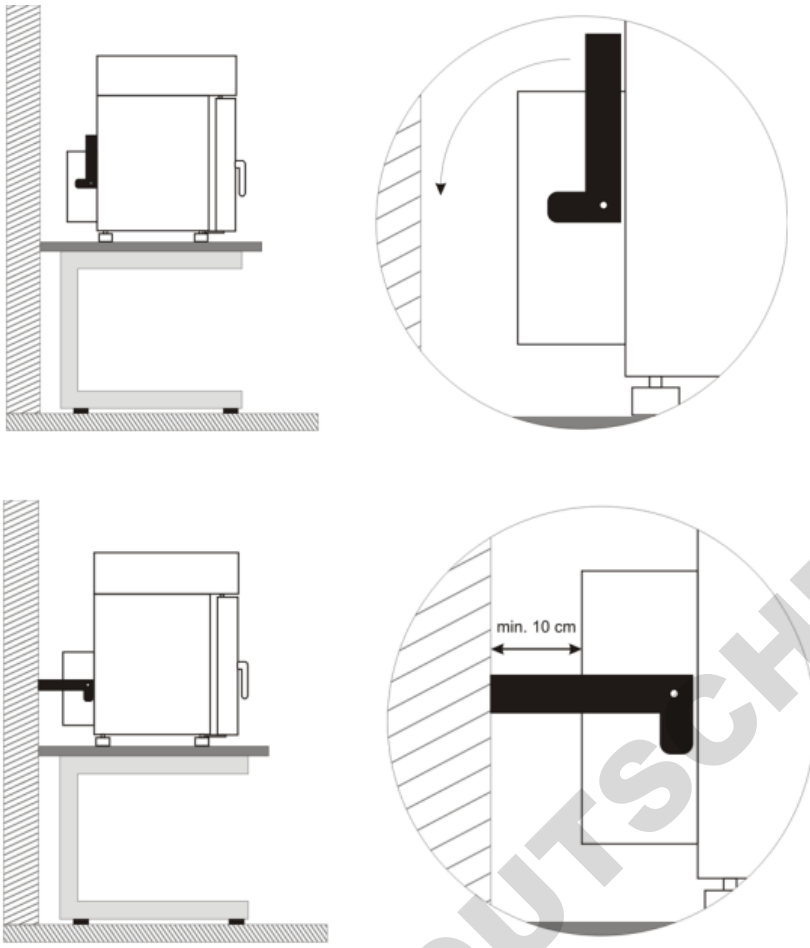
	**After transporting the device at a temperature below 10°C, wait at least 2 hours before connecting it to the mains.**

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 PN-EN 10088-2 standard and it is not a defect of the unit.

The place of installation of the unit should meet the following conditions:

- ambient temperature +10°C...+28°C, for models with glass door +10°C...+25°C,
- recommended relative humidity of the ambient air up to 60%,
- the unit has not been designed to work in highly dusty environments,
- ensure proper ventilation in the room,
- the device should be placed on a hard and stable surface,
- the unit should be placed at least 100mm away from the walls and a spacer bracket should be used:

DOMINIQUE DUTSCHER SAS



- the height of the room must be at least 300mm greater than the height of the unit,
- the unit is not designed to be built-in,
- the place of installation of the device should be equipped with a socket with parameters suitable for the device.

If you don't comply with the above recommendations, the unit may get broken or it may worsen the technical parameters such as:

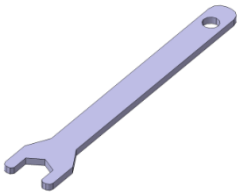
- **temperature fluctuation,**
- **temperature variation,**
- **power consumption,**

and may result in loss of warranty.

Wheels / leveling feet

	**The device has been equipped with wheels or leveling feet. After placing the unit at its destination, secure the device against movement by locking the wheels. In the case of feet, after placing the device in the destination, they should be leveled.**

If the device is equipped with wheels, they must be locked and leveled (wheels in ILP 750 can be leveled). For this purpose use the red knob mounted in the wheel housing. At the beginning, the knob can be turned by hand, if it encounters resistance, use a 13 size wrench.





DOMINIQUE DUTSCHER SAS

	**Leveling wheels are ONLY for positioning the device at its destination. They can not be used to transport the device!**

If the device is to be placed on a table (option) or base (option) which is equipped with the wheels with a lock, the wheels MUST be locked after placing the table / base in its final destination.

Electric installation

	**Power supply of the equipment is indicated on a rating plate on the unit. Connect the device to a socket with ground in order to avoid electric shocks in case of the unit's failure.**

The installation should be protected by a 16A slow-blow fuse and equipped with a residual current device.

DOMINIQUE DUTSCHER SAS

3.1. Installation of shelves

In the ILP models

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

Install the shelf slide at the selected height by inserting it into perforations on the wall of the device. 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.

DOMINIQUE DUTSCHER SAS

3.2. Condensation in the chamber

If the set temperature is much lower than the ambient temperature, condensation may occur, which will cause accumulation of the water at the bottom of the chamber. The amount of accumulated water depends on the following factors:

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

	If water accumulates at the bottom of the chamber, wipe the bottom of the chamber with a dry cloth.

	Too high relative humidity in the chamber can cause icing of the cooling element, and thus reduce the cooling efficiency and increase power consumption.

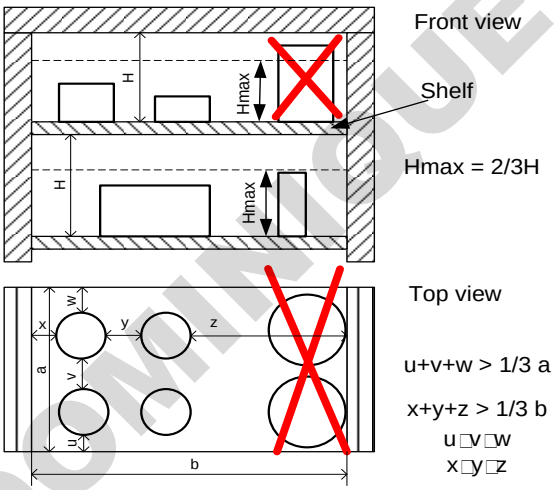
Cartons, sponges and other hygroscopic materials should not be used to store samples, as they may increase the humidity in the chamber.

3.3. 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.



Following the above rules will provide best optimal parameters of temperature fluctuation and variation.

3.4. Closing chamber door

All ILP incubators have been equipped with a gasket and open door sensor. If the door has not been closed properly, an audible and visual alarm will start. You can set delay door alarm by: 30s, 1 min, 2 min, 5 min or 10 min *(see Section 6.14).*

DOMINIQUE DUTSCHER SAS

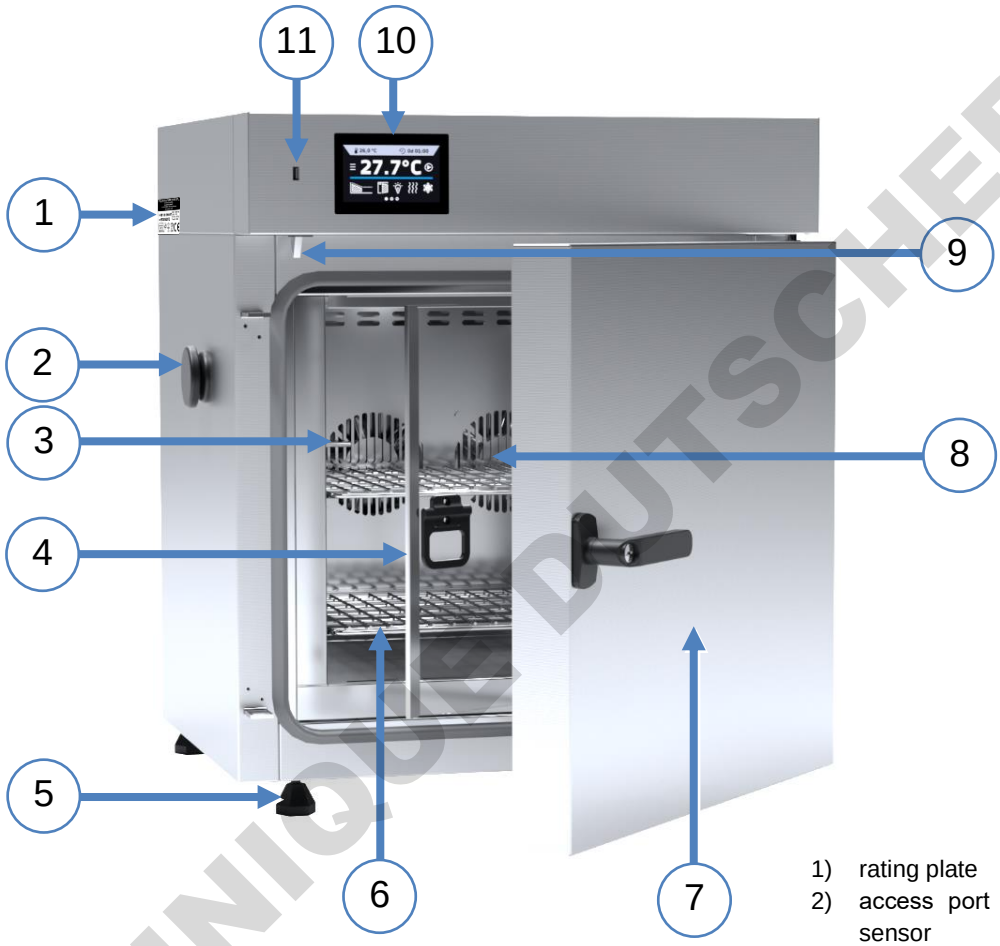
4. DESCRIPTION OF THE DEVICE

SMART models are equipped with a PID microprocessor temperature controller and a 4.3 inch colour touch screen with a resolution of 800x480.

4.1. Design of ILP devices

Below there's a picture of ILP 53 model (exemplary photo) with a description of the important components of the device.

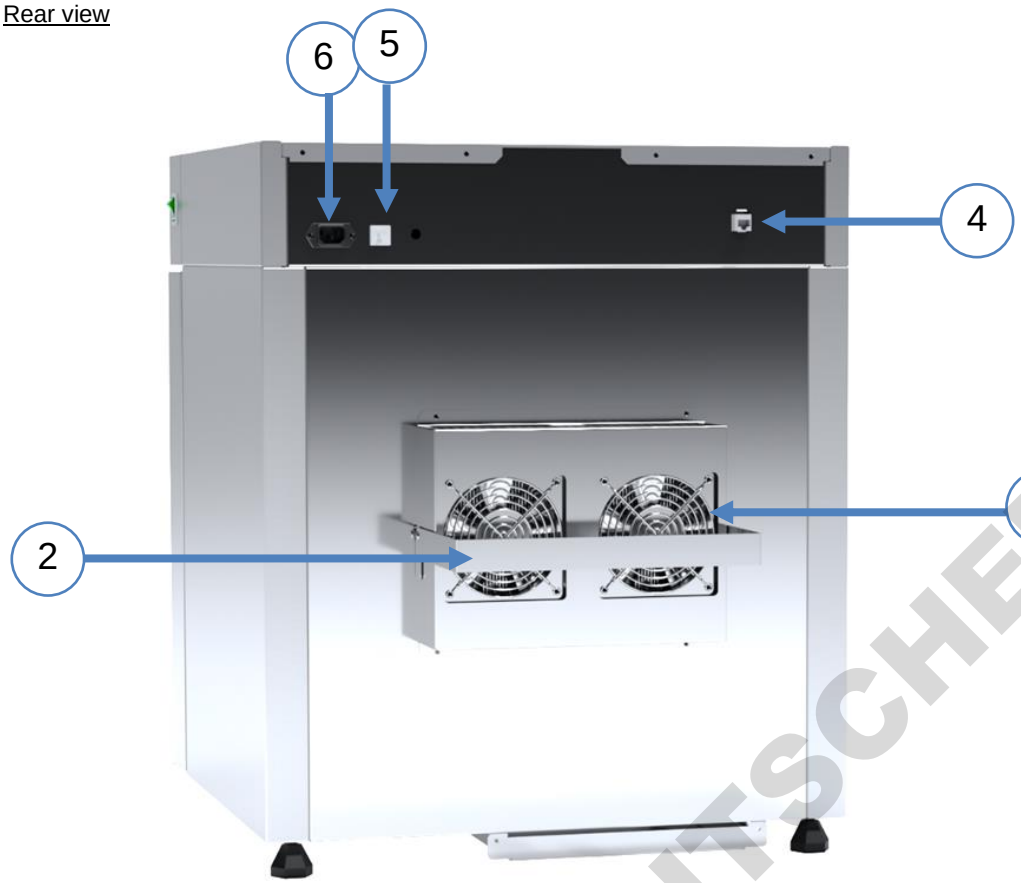
Front view



1) rating plate
2) access port ø30mm for external sensor
3) temperature sensor
4) internal glass door
5) adjustable feet
6) inox wire shelf
7) external solid door
8) Peltier module chamber fan
9) open door sensor
10) touch control panel
11) USB port

DOMINIQUE DUTSCHER SAS

Rear view



1) main switch
2) spacer frame
3) external fans of the Peltier module
4) LAN port
5) fuse
6) main power socket c20

DOMINIQUE DUTSCHER SAS

5. DEVICE EQUIPMENT (STANDARD AND OPTIONAL)

5.1. Internal glass door (standard)

Internal glass door is a standard equipment in ILP cooled incubators. To open and close the door use the plastic handle attached to the glass.



	During operation, when the temperature inside the chamber is high, do not touch the internal components and glass doors, as there is a risk of burns. Use protective gloves to protect yourself against the effects of burns from hot components.

	We do not recommend installing and removing internal glass door. Incorrect assembly or disassembly may result in damage to the glass and injury to the User.

5.2. External door with viewing window (optionally)

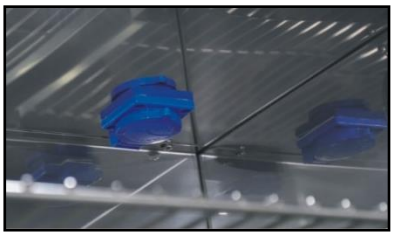
The external door with a viewing window is an optional equipment for ILP cooled incubators.



	During operation, when the temperature inside the chamber is high, do not touch the internal components and glass doors, as there is a risk of burns. Use protective gloves to protect yourself against the effects of burns from hot components.

5.3. Internal socket (optionally)

An internal socket with grounding and IP44 protection is an optional equipment for ILP incubators. The internal socket (depending on the model: 230V 50Hz / 230V 60Hz / 115V 60Hz) is intended for EU plugs or plugs type B. The socket can be used to connect electrical devices inside the device.



	The maximum permissible load of all sockets inside the device (max. 3 pcs.) is 200 [W].

DOMINIQUE DUTSCHER SAS

	Always make sure that the safety rules for working with electrical devices are followed!

5.4. Door lock (standard)

All devices have a key lock. The key lock is situated in the door handle. Two keys are supplied with the device (hung on the back of the device).



5.5. Access port for external sensor (standard)

A Ø30 mm access port can be used to insert an external temperature sensor for independent temperature control inside the device. The access port has been secured with a rubber plug. The plug should cover the access port while the unit is operating. If multiple cables have been inserted through the access port and it is not possible to use the plug, secure the access port with adhesive tape. If you leave the access port open, it may affect temperature fluctuation and variation inside the chamber.





5.6. Open door alarm (standard)

All units have been equipped with an open door sensor. If you open the door, the icon: 

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 device). If the door remains open longer than the time set by the user (30s, 1 min, 2 min, 5 min, 10 min) an acoustic signal, red pulsating alarm bar and *„open door"* alarm with active status will appear.

Open door sensor



DOMINIQUE DUTSCHER SAS

5.7. Internal LED light (optionally)

All ILP incubators can be optionally equipped with LED interior lighting integrated with an open door sensor (Philips Corepro LEDspot 3.5-35W GU10 827 36D). When the light switches on, the icon . will appear on the display. For devices with door with viewing window, pressing the icon allows you to turn the LED light ON or OFF (the lighting is not integrated with the open door sensor).



5.8. USB port (standard)

The USB port on the front panel is used only to transfer data from the device'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 the data to the USB flash drive, before removing it from the USB socket, it should be unmounted by pressing the icon in the top drop-down list. If the pendrive is not unmounted after connecting to the computer, a message about pendrive damage may be displayed with a repair proposal, when actually the pendrive is not damaged

Figure 1 Unmounting USB flash drive



DOMINIQUE DUTSCHER SAS

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. For more information see *Section 6.1.*

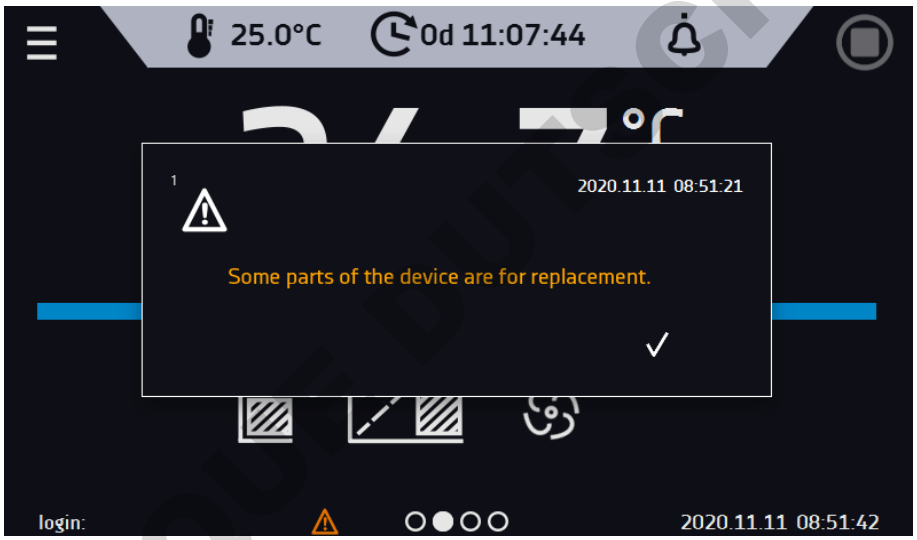
5.9. Display battery backup (optionally)

Units in the SMART version can be optionally equipped with a battery backup of the display. The power loss and switching to the battery backup display mode is signaled by a pulsating red frame around the display and a sound signal (if it is turned on). In the battery backup display mode, all parameters are displayed, ie temperature. Other alarms, e.g. exceeding the temperature range, are also signaled.

In order to extend the battery life, the display is dimmed all the time. Batteries are automatically charged in AC mode.

	Batteries should be replaced every 12 months. When it is time to replace the battery, a message will appear on the display, see. During the warranty period, the replacement should be performed by an authorized service. Otherwise, you will lose your warranty.

Figure 2 Battery replacement message



5.10. Consumables

Consumables during normal operation are:

- silicone door seal - in all units,
- chamber fan - in units with forced air circulation.

DOMINIQUE DUTSCHER SAS

6. DEVICE OPERATION



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

6.1. 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 device memory. Before first use the USB flash drive should be formatted in the FAT 32 file system. Insert the device in the USB slot on the front of the device next to the display. Wait a few seconds, the correct reading is indicated by the message *„USB flashdrive connected"* at the bottom of the screen.



After copying the data to the USB flash drive, before removing it from the USB socket, it should be unmounted (see *Section 5.8.*).



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

6.2. First boot

During the first startup, a wizard appears on the screen 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

Figure 3 Settings wizard

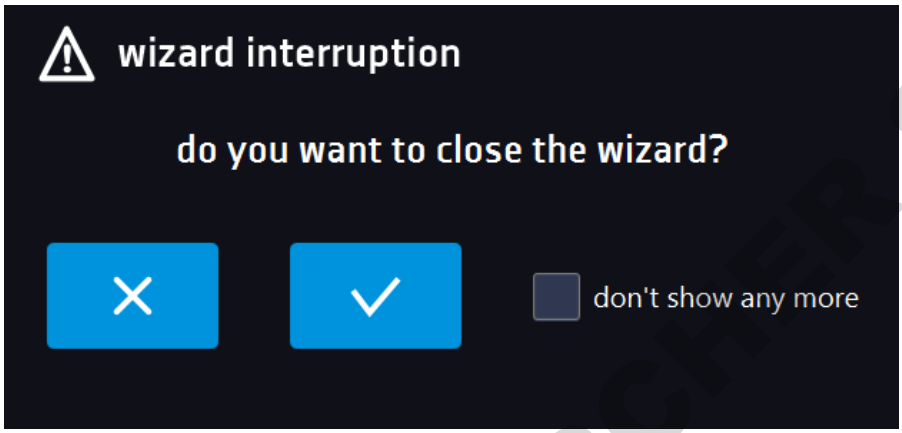


DOCUMENT QUE DUTSCHER SAS

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:

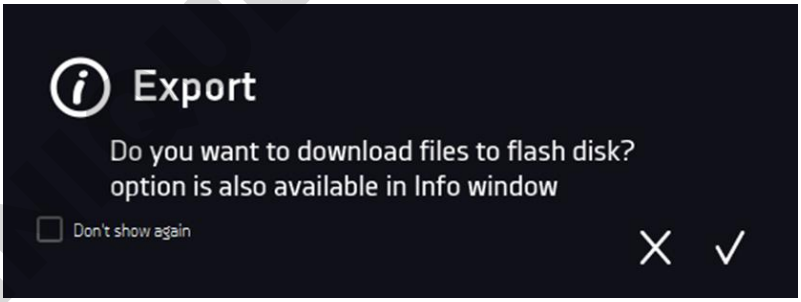
- one-time closing – the wizard will be displayed again during the next launch
- check the option so that the wizard will no longer appear the next time you run it
- return to the wizard

Figure 4.



After completing the wizard, a question will appear on the screen regarding 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 device. You can always download the *„Download"* folder in the Info submenu. More information *Section 6.11.*

Figure 5 Downloading files



DOMINIQUE DUTSCHER SAS

6.3. Main screen

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

Figure 5 Main screen

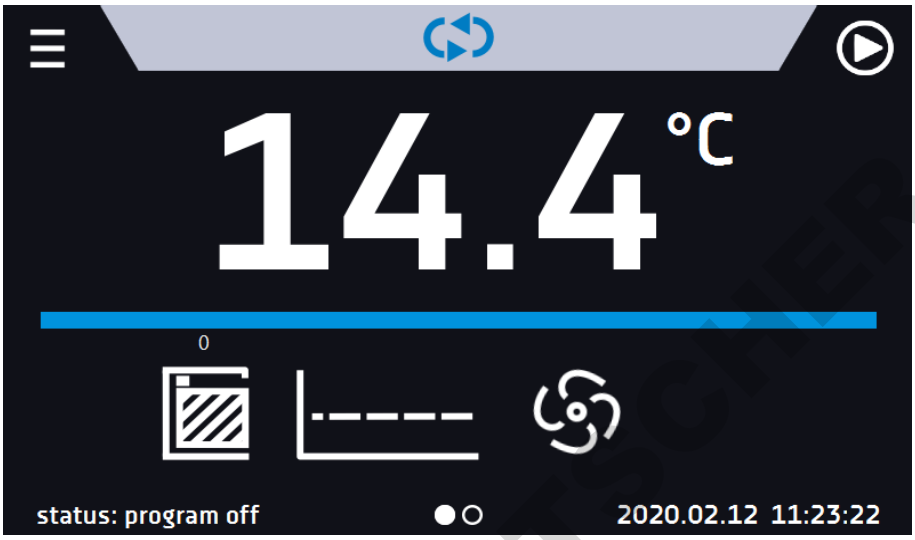
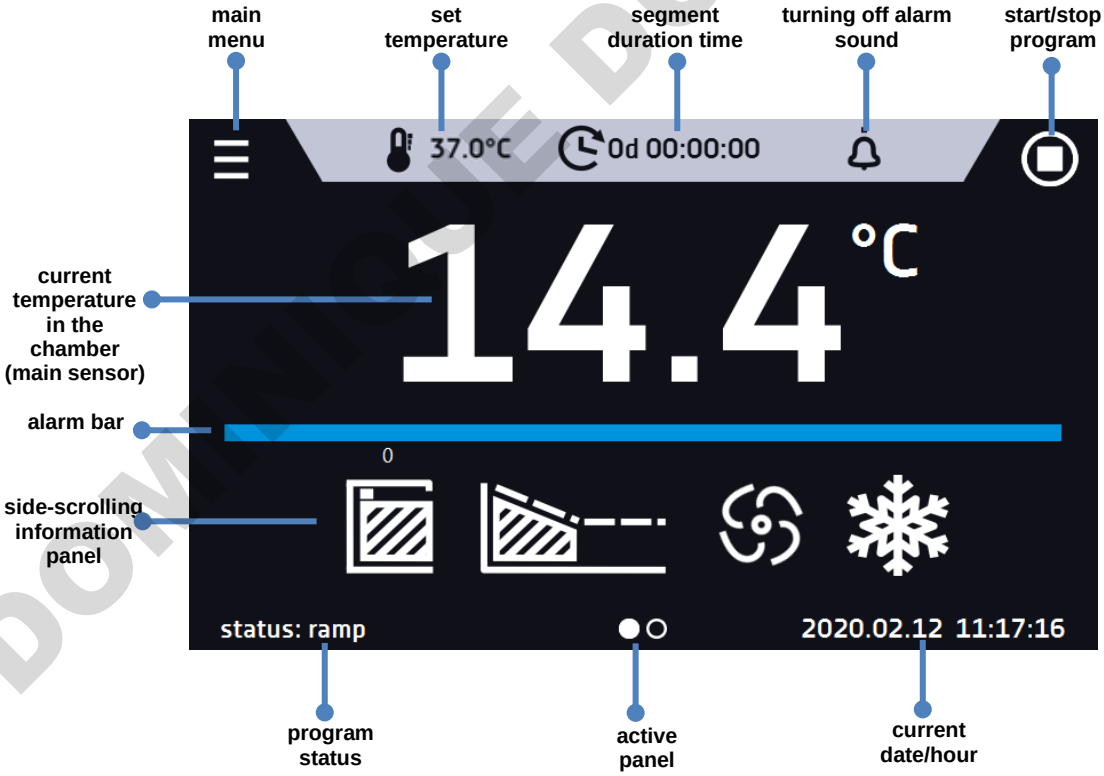


Figure 6 Main screen – running program



DOMINIQUE DUTSCHER SAS

6.3.1. 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.

6.3.1.1.  Alarms panel

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

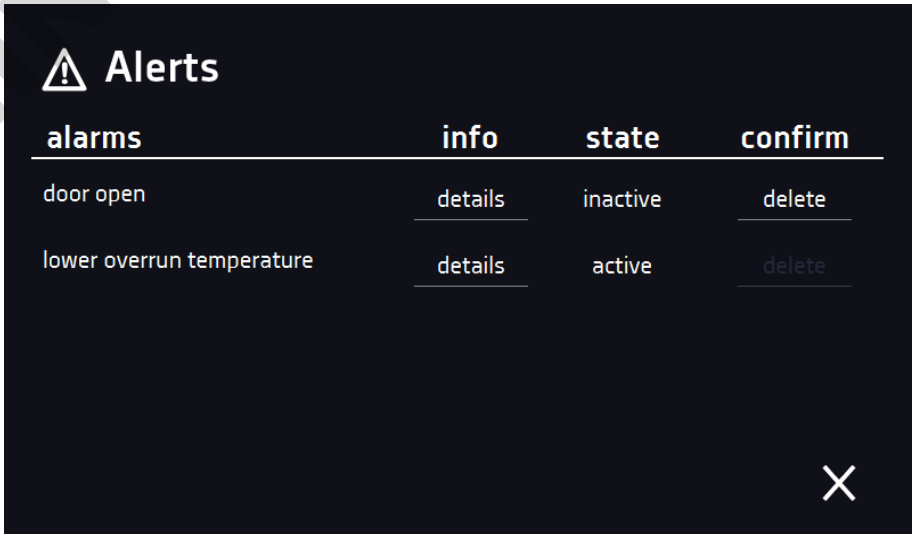
Figure 8 Icon: Alarms panel



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"*.

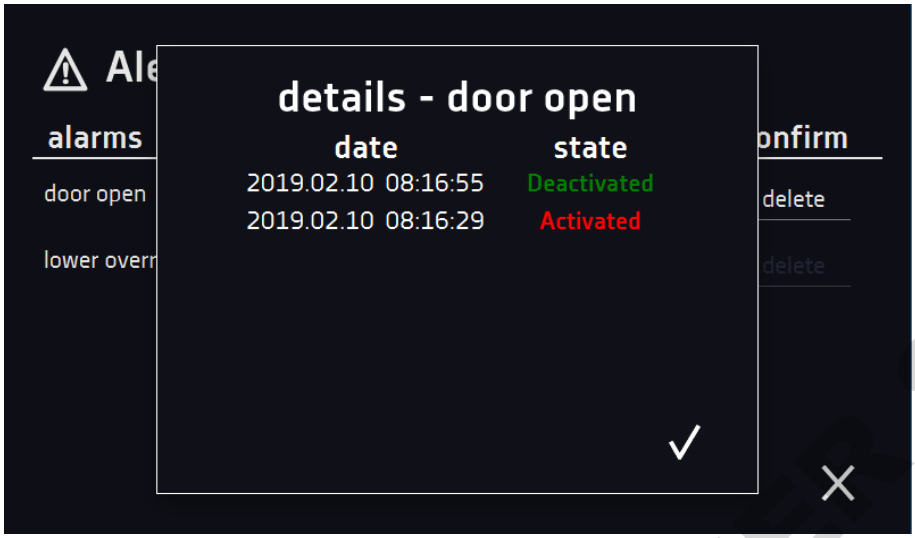
- "**delete**" button – confirms and removes the alarm from the list (only inactive alarms can be deleted),
- "**confirm**" button – confirms an alarm,
- "**details**" button – displays a preview of all instances of selected alarm.

Figure 9 Alarms panel



DOMINIQUE DUTSCHER SAS

Figure 10 Alarm details



6.3.1.2. Status panel

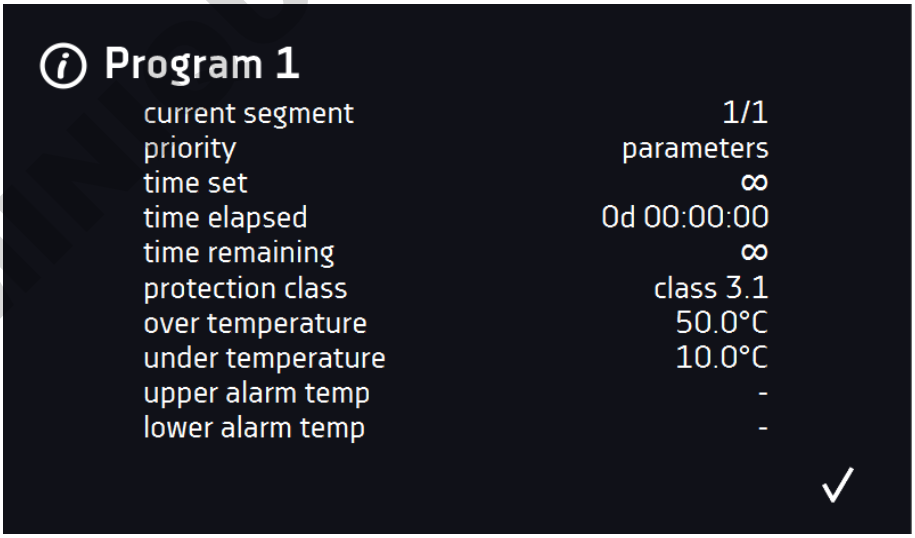
The icon which is on the second page of the information panel, allows you to go to the status panel.

Figure 11 Icon: Status panel



The status of the device is indicated also by description.

Figure 12 Status – description



DOMINIQUE DUTSCHER SAS

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

6.3.2. The meaning of icons and symbols

	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.
	Internal light is switched on. The icon appears when the incubator is optionally equipped with internal light (OWW). Light switched off – icon is inactive. By clicking the icon  on the status panel you can manually turn on / off the light (applies to devices with the door with viewing window).
 	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 device.
	Fan icon. Rotating icon means that the program is active. If it is not rotating – the program is inactive.
 	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.
	Icon is visible only when the chamber is cooling down.
	Icon is visible only when the chamber is heating up.

DOKUMENT DUTSCHER SAS

	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.
	The arrow icon allows navigation between: segments, program parameters and summary.
	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.
	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.
	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).
	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.
	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

DOMINIQUE DUTSCHER SAS

6.3.3. Upper menu

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

There are the following icons:

-  USB flash drive unmounting – more information *Section 5.8.*
-  mute option. Critical alarms (i.e. damage to the temperature sensor, temperature protection – if available, etc.) continue emitting a sound. See the *Section 6.14.1.*
- Quick Change (more information *Section 6.7.*) of:
  -  program duration time
  -  set temperature

Figure 13 Upper menu when the program is running

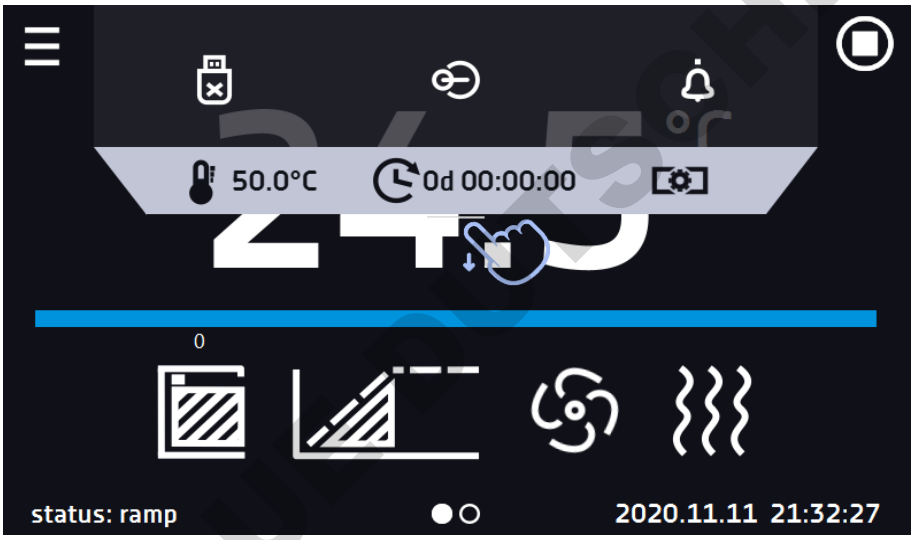
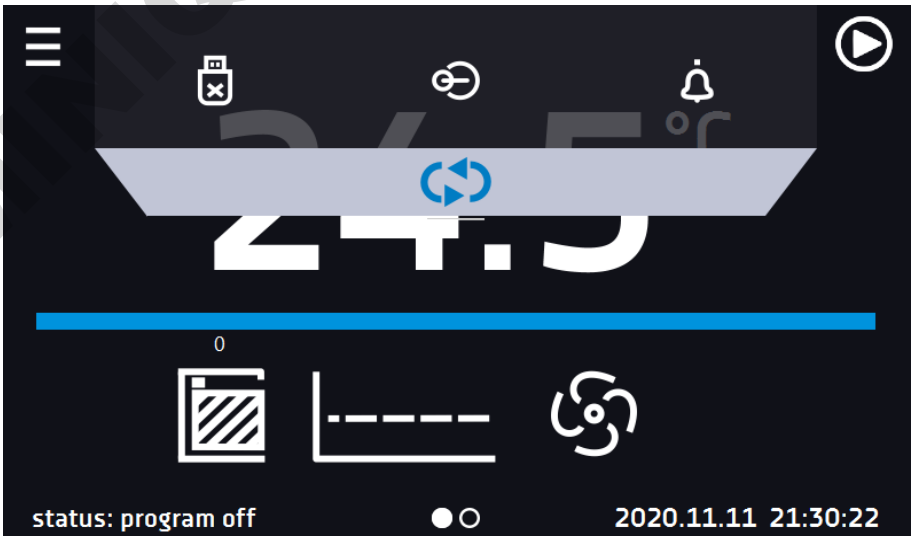


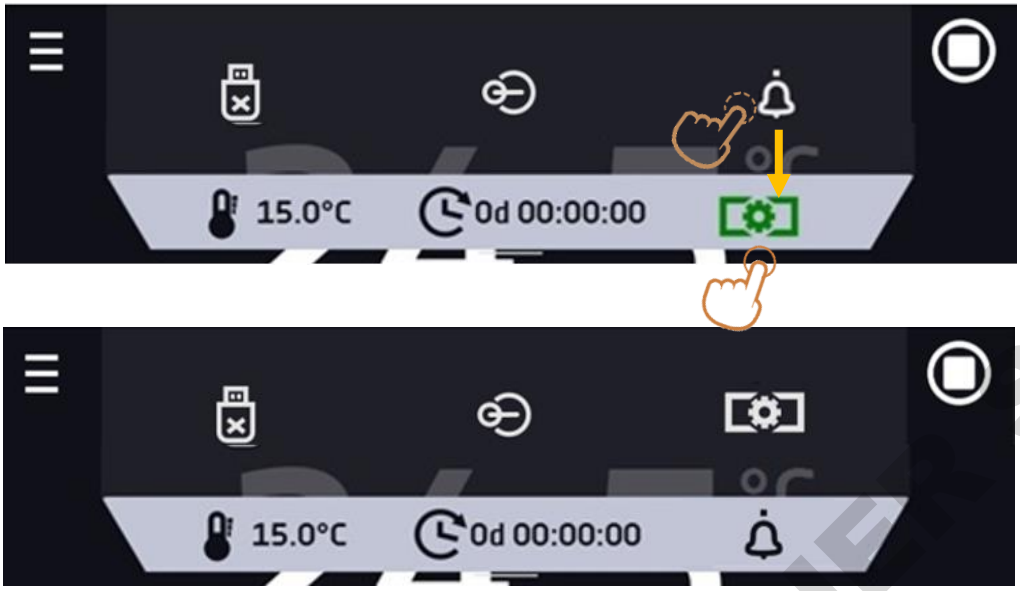
Figure 14 Upper menu when the program is stopped



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

DOMINIQUE 24.5°C HER SAS

Figure 15 Changing icon´s position



6.3.4. Alarm bar

The alarm bar is a quick visual information about the device status. The colour of the bar indicates the status of the device:

– blue - the device is working properly

– red bar and pulsating frame – active alarm

6.4. Quick Program

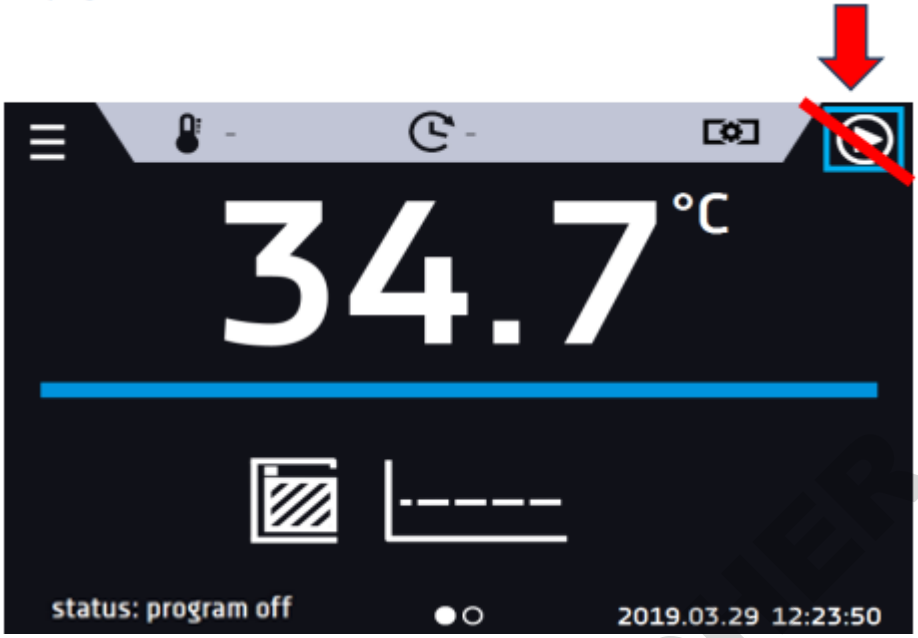
Quick program allows you to quickly start the program from the main screen position without having to enter to the menu ☰.

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

- you can not 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 window.

DOMINIQUE DUTSCHER SAS

Figure 16 SMART program



In order to go to Quick program click the icon in the main screen. By clicking set the temperature

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

Figure 17 Starting the 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:

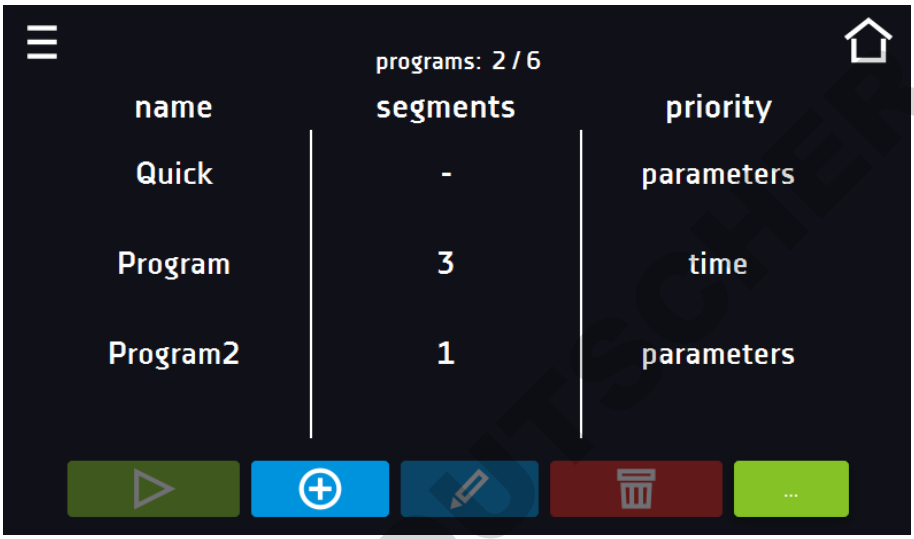
DOMINIQUE DUTSCHER SAS

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 configuriation 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 Quick program is running you can change the temperature by pressing the icon . During next launch of the Quick program, your previous settings will be remembered.

6.5. 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.

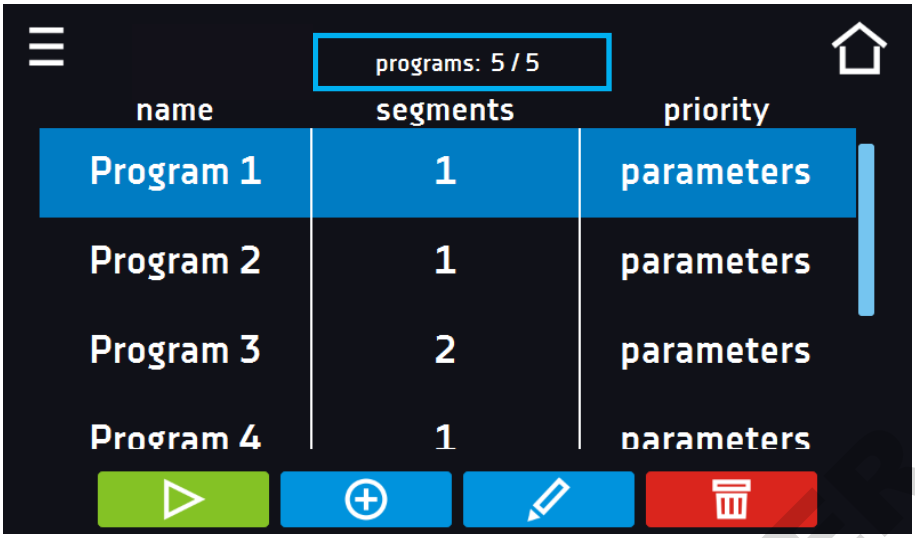
Add a new program.

Edit the selected program.

Delete the selected program.

DOMINIQUE DUTSCHER SAS

Figure 19 List of programs



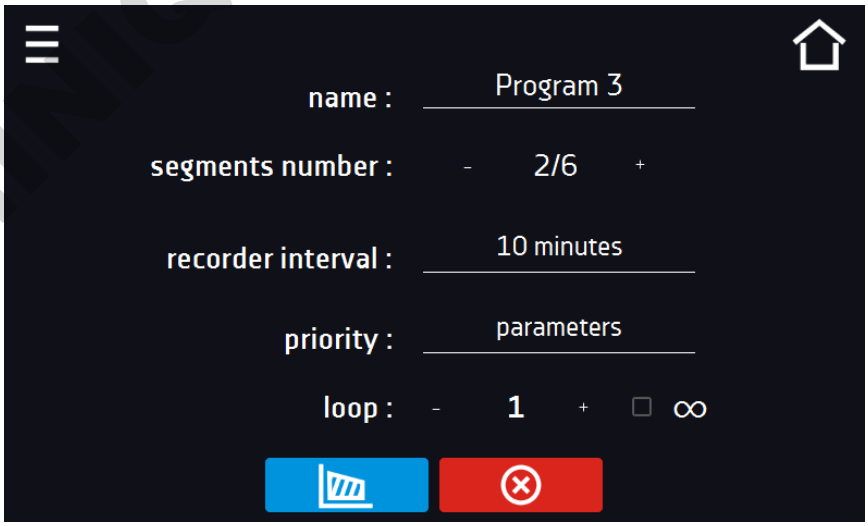
Information on the number of created programs / the maximum number of programs that can be created is at the top of the screen (programs: 5/5).

6.5.1. 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
- **Interval** – frequency of saving the data in the data record (1 min, 2 min, 5 min, 10 min, 15 min, 30 min, 1 h),
- **Protection class** – more information *Section 6.5.4.*
- **Protection temperature** – temperature range for the protection class, more information *Section 6.5.5.*
- **Priority** – the priority of time or parameters, more information *Section 6.5.6.*
- **Loop** – the number of program repetitions, more information *Section 6.5.7.*

Figure 20 Program parameters



DOMINIQUE DUTSCHER SAS



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.

6.5.2. Segments 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. 30°C, time 2 hours (after reaching the temperature 30°C, it is maintained for 2 hours)
segment2: temp. 40°C, time 3 hours (after reaching the temperature 40°C, it is maintained for 3 hours)
segment3: temp. 50°C, time 3 hours (after reaching the temperature 50°C, it is maintained for 3 hours)
segment4: temp. 40°C, time 2 hours (after reaching the temperature 40°C, it is maintained for 2 hours)
segment5: temp. 30°C, time 2 hours (after reaching the temperature 30°C, it is maintained for 2 hours)
segment6: temp. 20°C, time 1 hours (after reaching the temperature 20°C, it is maintained for 1 hour)

Press the buton  and the first program segment will appear.
In this window you can set:

- **temperature –** target temperature which the device is to achieve in this segment (needs to be minimum 2°C below the value for over temperature protection and minimum 2°C above the value for under temperature protection),
- **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 device or the protection temperature.



The fan efficiency is factory set to 100% and it cannot be changed.



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 device.

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 ramp edition field 

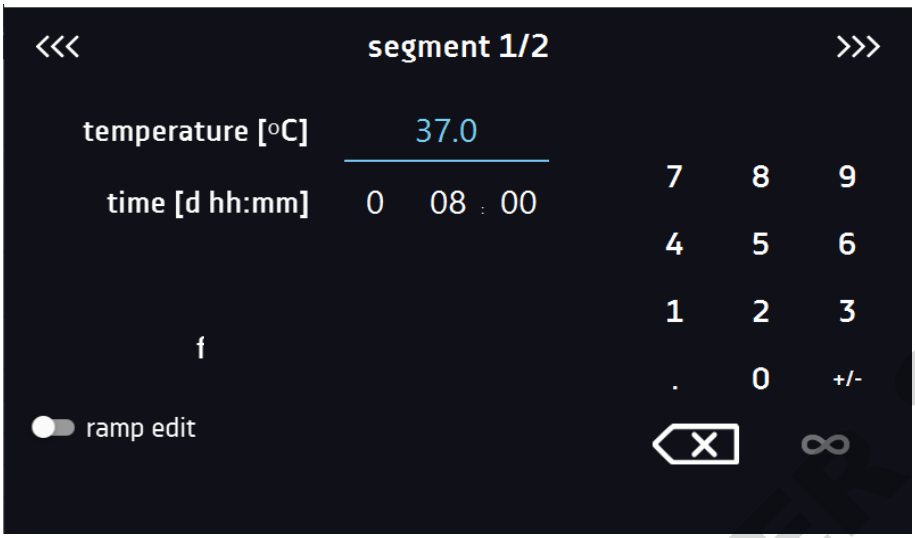
and set your own values.



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

DOMINIQUE DUTSCHER SAS

Figure 21 Program segment edition

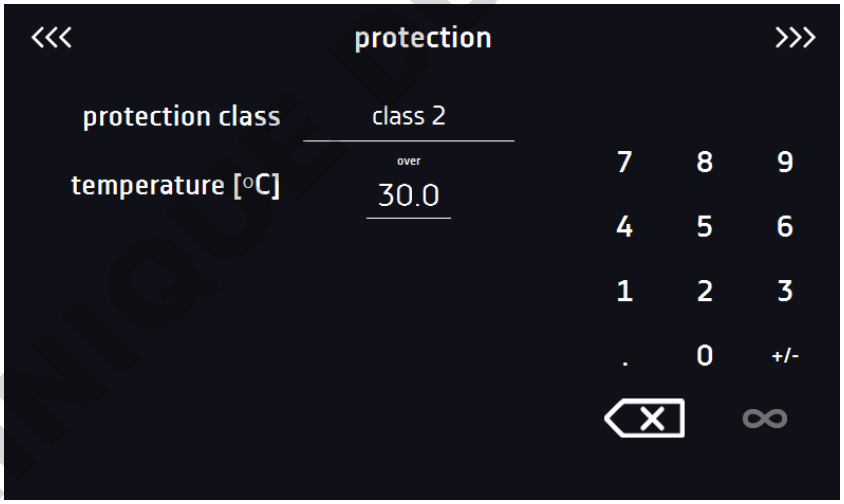


The navigation between: segments, program parameters and summary is done by touching the icon .

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

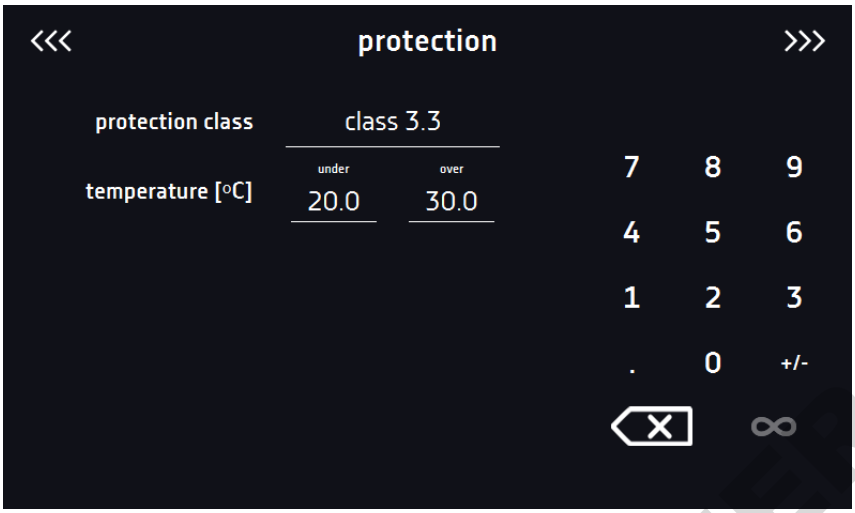
After configuring all segments, a window with the protection class is displayed. For class 2.0 and 3.3 (optional), you can set the protection temperature.

Figure 22. *Security class*



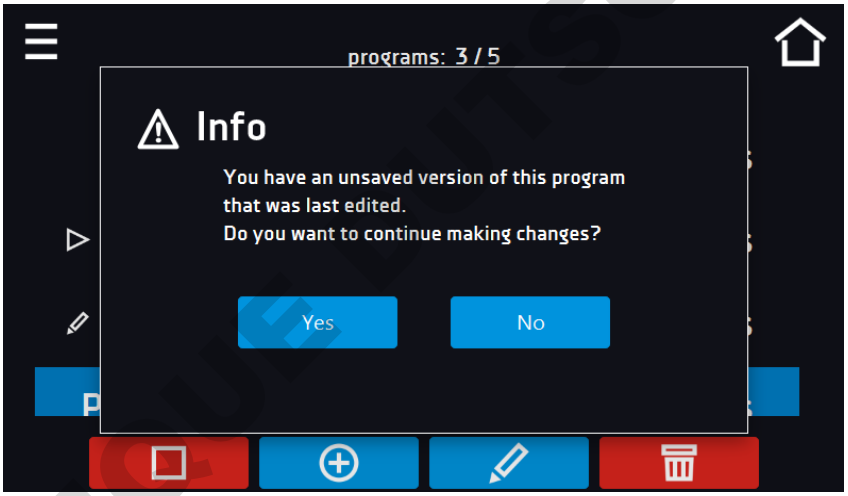
DOMINIQUE DUTSCHER SAS

Figure 22. *Security class 3.3*



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

Figure 23



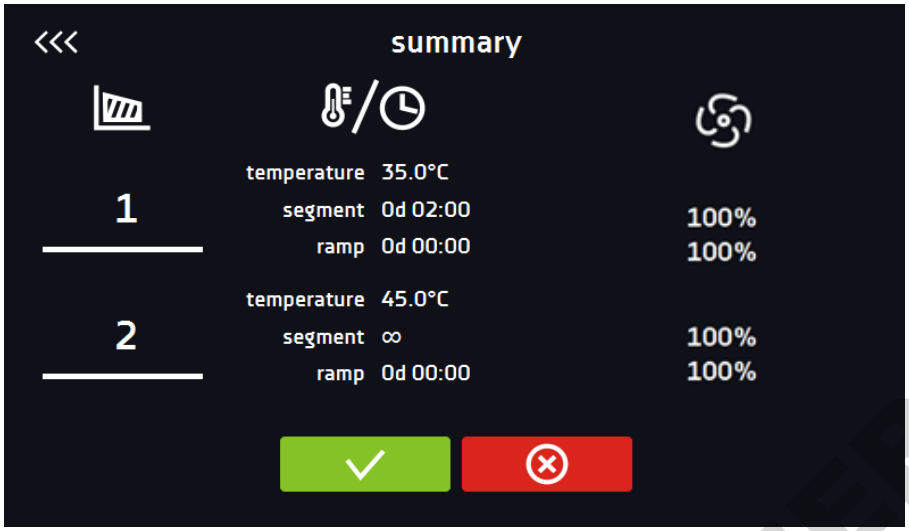
6.5.3. Summary of segments

In the segments summary all segments can be seen along with introduced parameters:

- number of segments,
- temperature, duration time, target time of reaching temperature of a given segment,
- fan efficiency is factory set to 100% and cannot be changed.

DOMINIQUE DUTSCHER SAS

Figure 24 The summary of the segment





Confirms and saves the changes.



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

6.5.4. Protection class

As standard the device is equipped with temperature protection class 2.0 according to DIN 12880 where the user programs the protection temperature and once it's exceeded, the heating system will be cut off. To restart the device, the user must turn the device off and on.

Figure 25 Confirmation of protection alarm class 2.0



Optionally the incubator can be equipped with temperature protection class 3.3 according to DIN 12880 – over and under temperature protection – combination of classes 3.1 and 3.2. - the user programs the protection temperature (over and under) and once it's exceeded, the heating or cooling system will be cut off. When the temperature returns to the allowed range, the device resumes operation.

The set temperature in the segment cannot be higher than the over temperature protection minus 2°C, e.g. the over temperature protection is 50°C, therefore the maximum set temperature in the segment that can be set is 48°C.

6.5.5. Temperature protection (option)

The temperature protection value for protection class 3.3 is as follows:

- for set temperature <= + 15°C the bottom protection temperature = set temperature -2°C, upper protection = + 30°C
- for set temperature >= + 15°C the bottom protection temperature = set temperature -5°C (max. 20°C), upper protection = set temperature +5°C (max. 30°C)

DOMINIQUE DUTSCHER SAS

6.5.6. Priority

Can be set in terms of:

Parameters:

In the program without ramp – the device starts the countdown of the segment time when the set temperature is reached.
In the program with ramp – first, the device counts down the time of the ramp and then proceeds to the segment countdown when the set temperature is reached. Regardless of whether the time of ramp elapsed.



It may happen that the device 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:

In the program without ramp – the device starts counting down the segment time when the program is started. Regardless of whether the temperature has been reached.
In the program with ramp – first, the device 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 device 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 device operating in the set temperature will be shortened.

6.5.7. Loop

The option is available if the number of segments is equal to 2 or more. When the program finishes the last segment, the device 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. 10°C, time 2 h
segment2: temp. 30°C, time 2 h,
segment3: temp. 40°C, time „∞"

The device will run segment1 and segment2 three times and then will go to segment3 which will last indefinitely.

6.5.8. Defrosting program

In ILP cooled incubators in which the sample is stored at a temperature of ≤ 5°C, ice or frost on the chamber walls may appear. It can be thawed by raising the temperature in the chamber to approx. + 30°C and keeping it for 30 min (you can create a program with the given parameters, which will be visible on the program list and run it if it's necessary to defrost.



When the defrosting has finished, you need to wipe out the chamber. This will reduce the risk of quick frosting of the chamber.

DOMINIQUE DUTSCHER SAS

6.6. Starting the program

The created program can be started in two ways:

6.6.1. The first way

- Go to the main menu and press the icon „programs”.
- Then select the program you want to activate and press „start” button .

Figure 26 Main menu

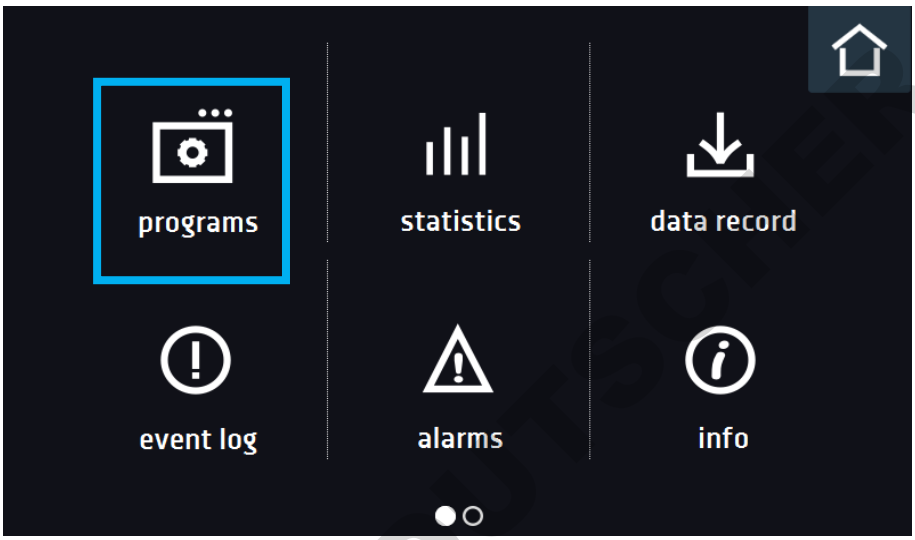
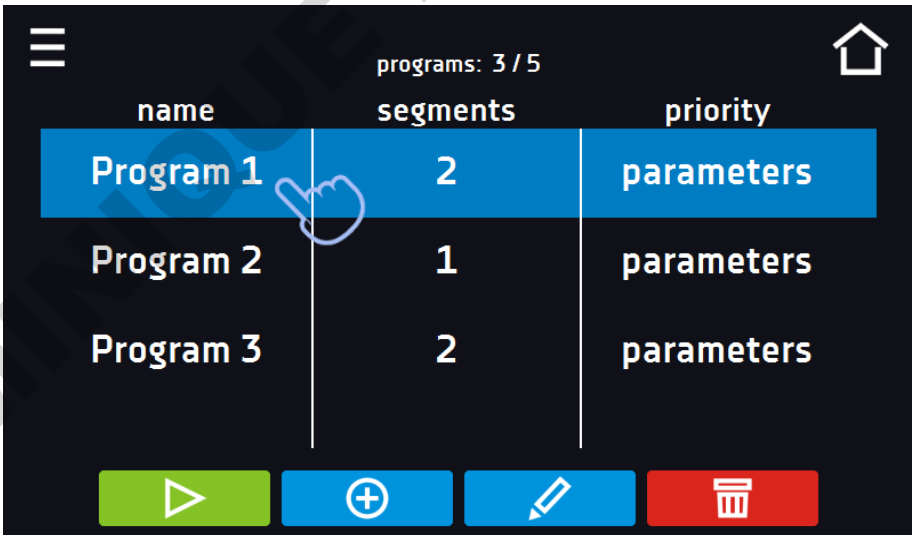


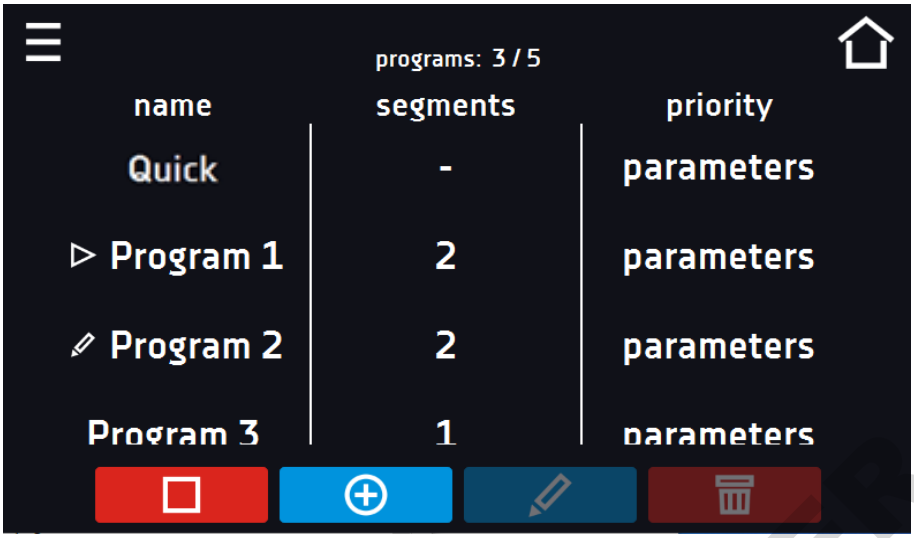
Figure 27 Program management menu



Start the program

POMIOT DOTSCHER SAS

Figure 28 List of programs with the selected status



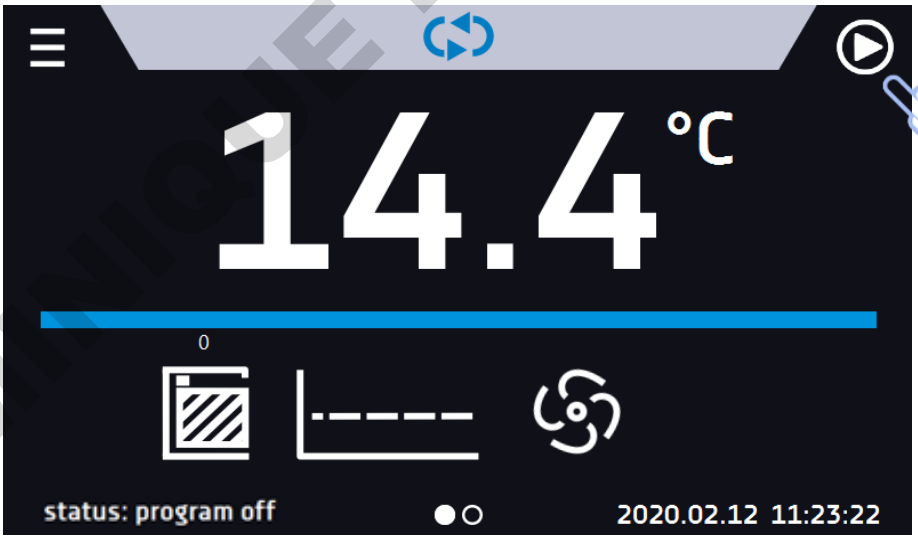
6.6.2. The second way

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


Immediate start of the program.

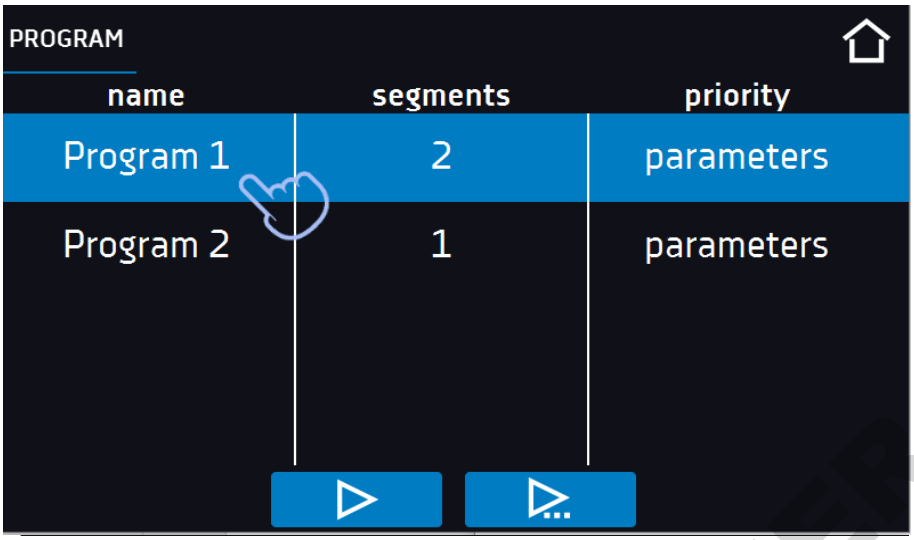

Scheduled program start according to the set date and time.

Figure 29 Main screen



DOMAGNE DUTSCHER SAS

Figure 30 Selection from the program list



	A delayed start of backdated program is possible (up to 7 days back). 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.

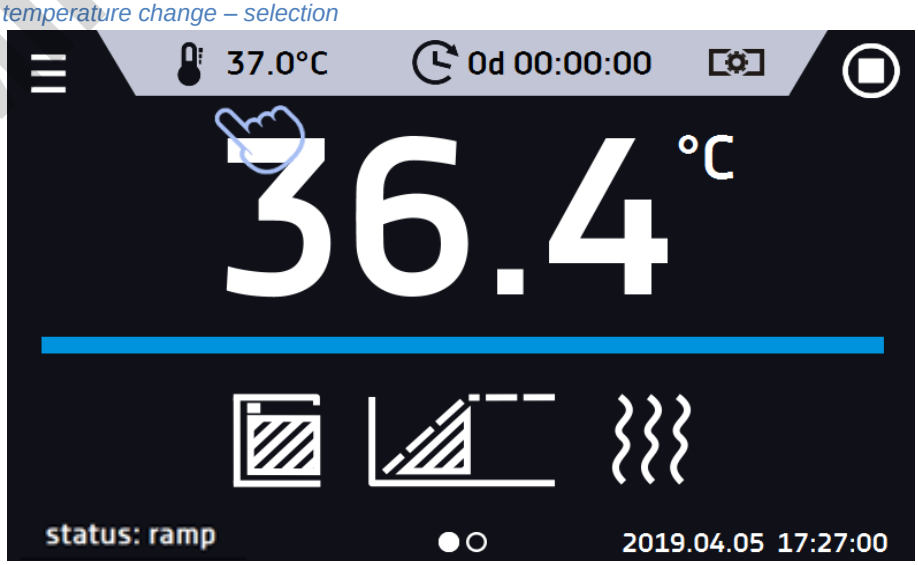
6.7. Quick Change of parameters

	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.

6.7.1. Quick change of set temperature

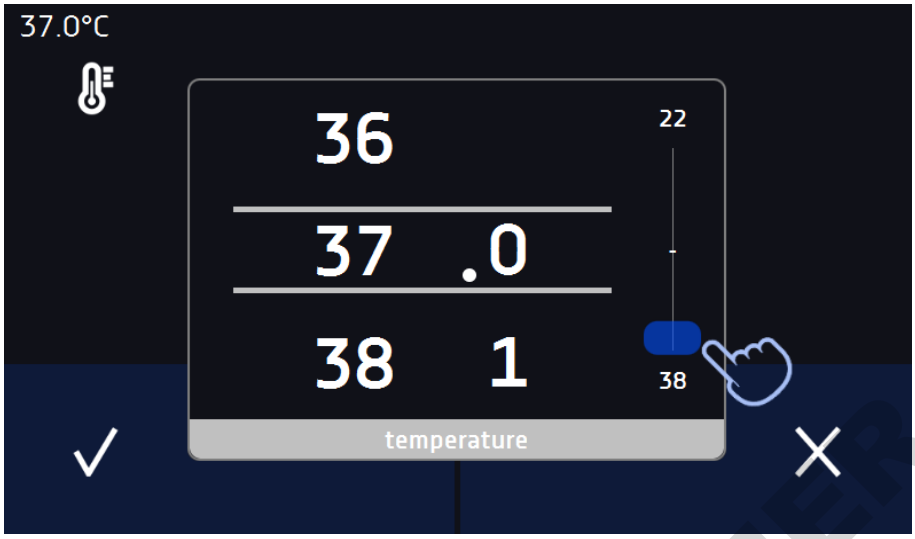
In order to quickly change the value of set temperature of a running program, press the icon in the main screen. The value of the temperature should be selected by scrolling the list up or down. Click ✓ to confirm the change. **The temperature can't be higher than the over temperature protection -2°C and lower than the under temperature protection +2°C.**

Figure 31 Quick temperature change – selection



DOMINIQUE DUTSCHER SAS

Figure 32 Quick temperature change - setting the value



6.7.2. Quick change of set time

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

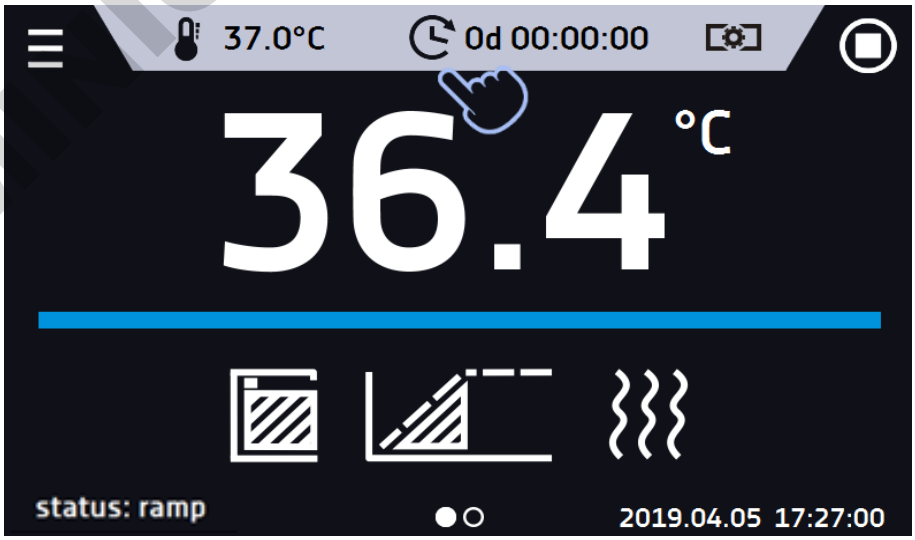
To change the way of displaying the time, press::

– 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 33 Quick change of the set time - selection



DOMINIQUE DUTSCHER SAS

Figure 34 Quick change of the set time - setting the value



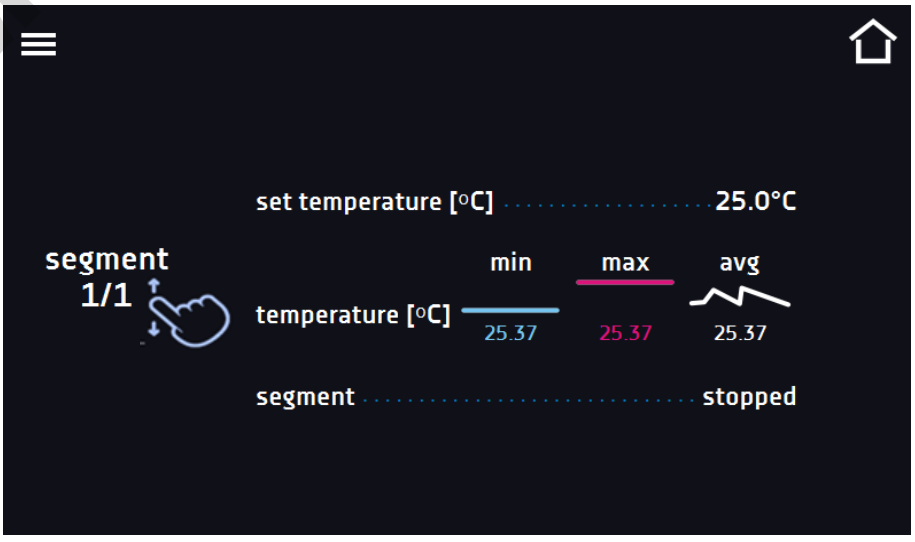
6.8. Statistics

Go to the main menu and press the icon . This panel displays statistics 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 35 Statistics



DOMINIQUE DUTSCHER SAS

6.9. Data record

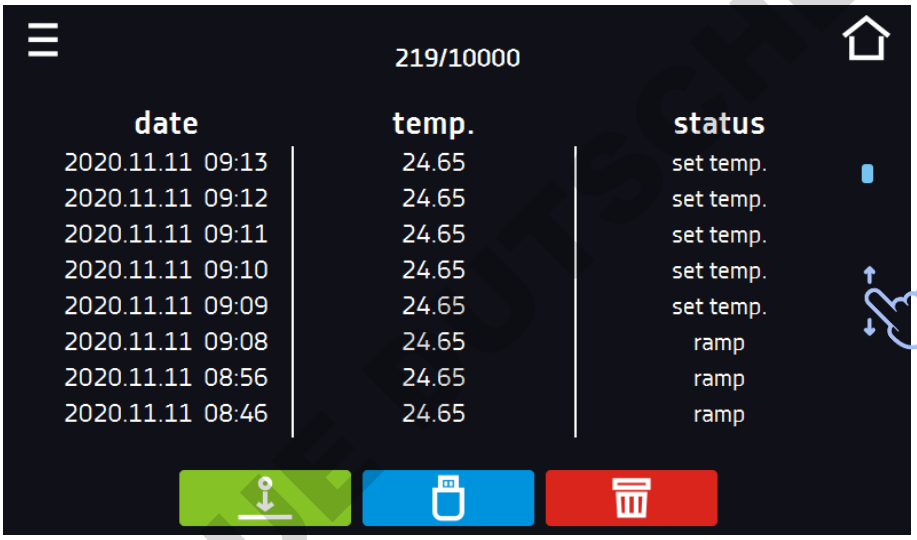
Go to the main menu and press the icon . Data record window contains the following information:

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

Each user can 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 downoading of the rest of the data.

Figure 36 Data record



Press to continue downloading data.

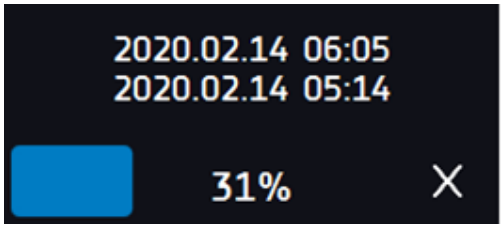
Recording data onto the USB flash drive. .csv files are available - separated by semicolon when opening e.g. with a spreadsheet, .plkx - opening with the Lab Desk application (option)

Before removing the USB flash drive from the USB port, it must be unmounted, see *Section 5.8.*

Deleting data

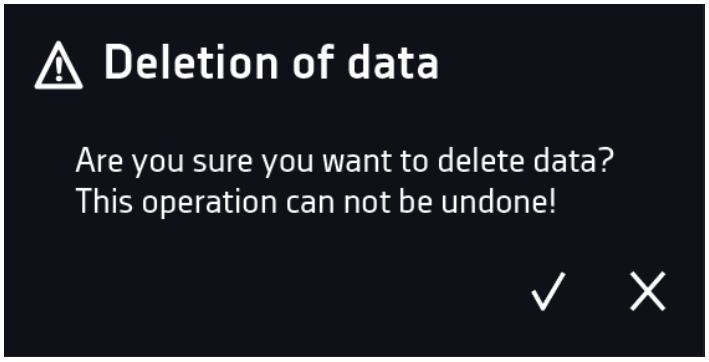
If there is a lot of data, a progress bar appears on the displa:

Figure 37 Progress bar



DOMINIQUE DUTSCHER SAS

Figure 38 Deleting data



6.10. Event log

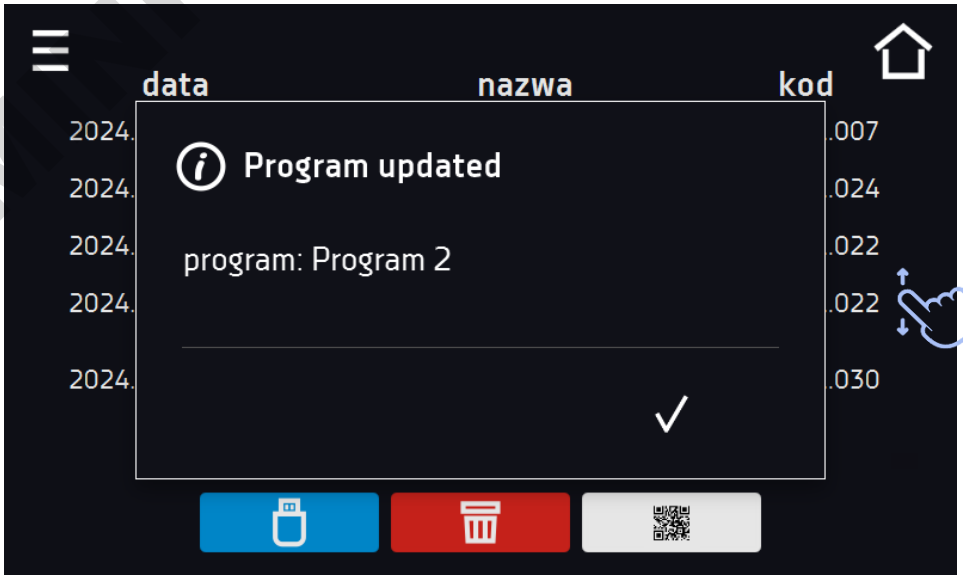
Go to the main menu and press the icon . The window displays information about registered events, alarms and errors.

Figure 43 Event log



For program-related events, after pressing the event name, the program name is displayed.

Figure 44 Event log



DOMINIQUE DUTSCHER SAS

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 5.8.*

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 40 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 5.8.*

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
DeviceOn	the device is switched on (on the main switch)
DeviceOff	the device is switched off (on the main switch)
Door opened	the door is opened

DOMINIQUE DUTSCHER SAS

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
Emergency stop of the program	the program has been automatically stopped – there was a situation that didn't allow the program to be continued. PLEASE CONTACT THE SERVICE
Power Fail Start	power failure / device fuse blown out.
Power Fail Stop	power reasumed, returned to maintain program parameters

6.11. Info

Go to the main menu and press the icon . The panel contains the following information:

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

DOMINIQUE DUTSCHER SAS

Figure 41 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 6.1.* Press the icon to write the service data on the USB flash drive – contact the service department for more information. Press the icon to see additional information about software version. Press to go to the main screen.

	Before removing the USB flash drive from the USB port, it must be unmounted, see *Section 5.8.*

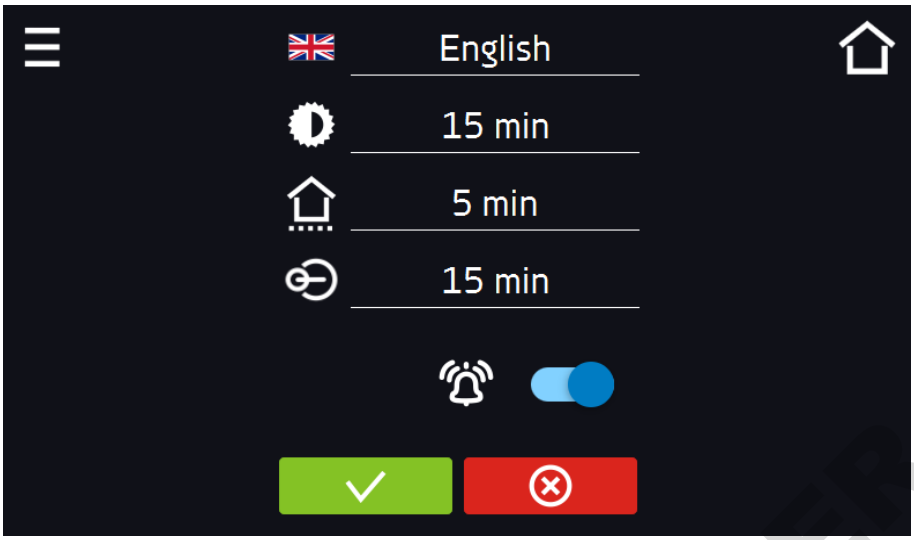
6.12. User settings panel

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

	Change the name of the equipment – by default, the device serial number is entered.
English	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.

DOMINIQUE DUTSCHER SAS

Figure 42 User settings panel





Confirms changes



Cancels the entered changes

6.12.1. Unlocking the touch screen

When the automatic touch screen lock is enabled *(Section 6.16)*, slide the blue circle into the white circle to unlock the screen.

Figure 43 Unlocking the touch screen





DOMAINE DUTSCHER SAS

6.13. 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 device 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. The window will appear and you will be able to make changes.

Figure 44 Time zone change

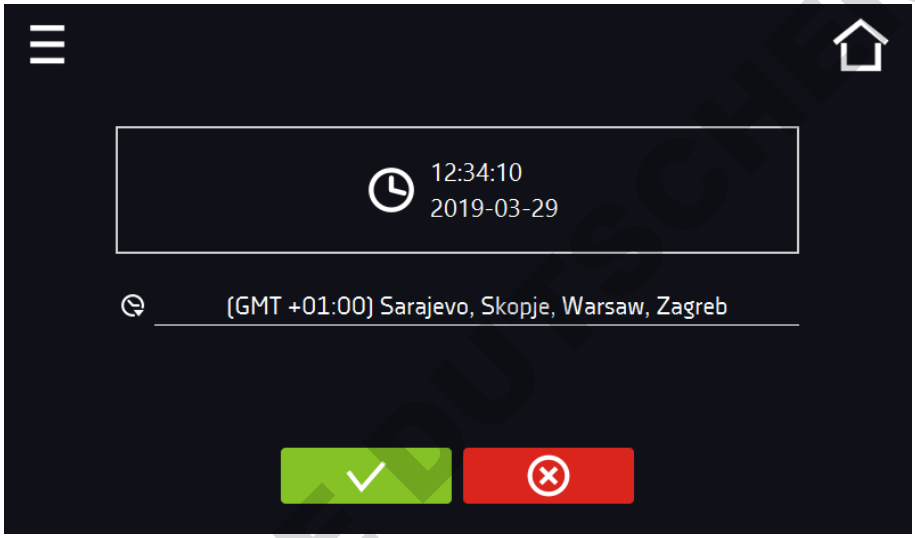


Figure 45 Date / time change



	Confirms changes and restarts the device
	Cancels the entered changes

DOMINIQUE DUSCHER SAS

6.14. Alarms

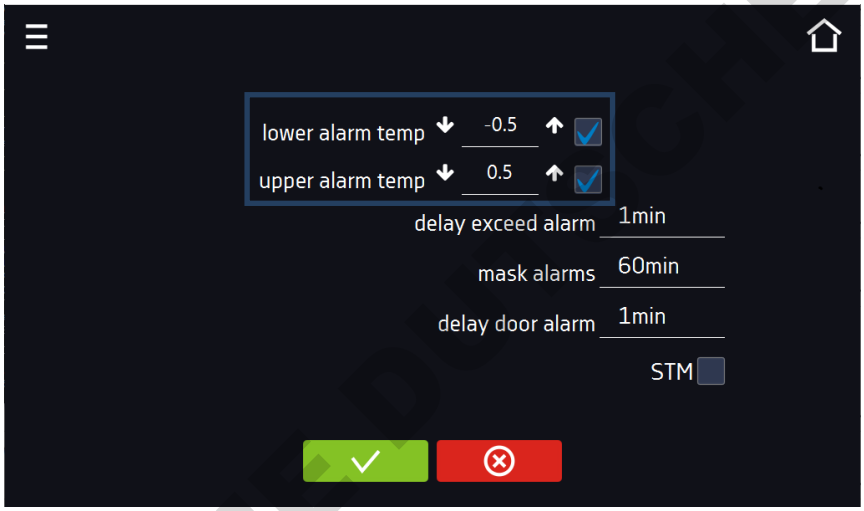
6.14.1. Alarms when set parameters are exceeded

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

- **low alarm –** an 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. 46. 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.

6.14.1.1. Masking of parameter exceedance alarms

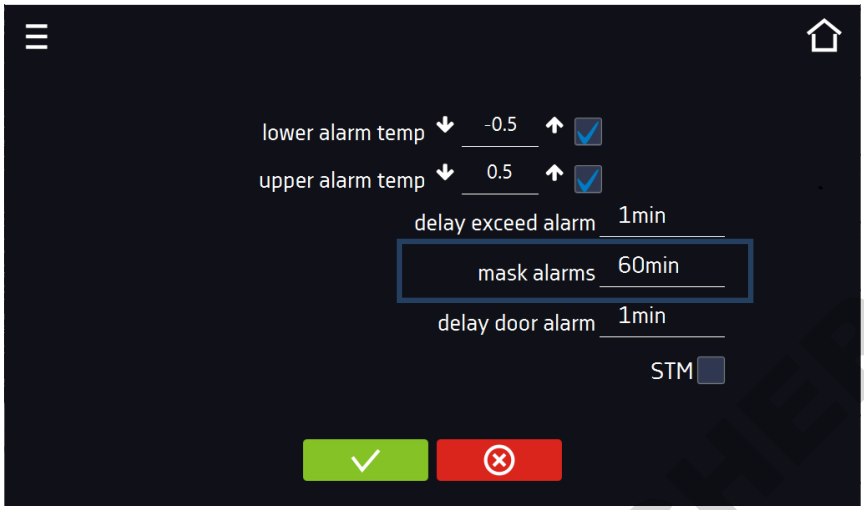
Masking of alarms when the set parameters are exceeded can be used when new samples are added to the chamber or samples are added to those already incubated. During these activities, the set parameters, i.e. temperature, may be exceeded and alarms may be activated - parameter exceedance alarms are set 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.

DOMINIQUE DUTSCHER SAS

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

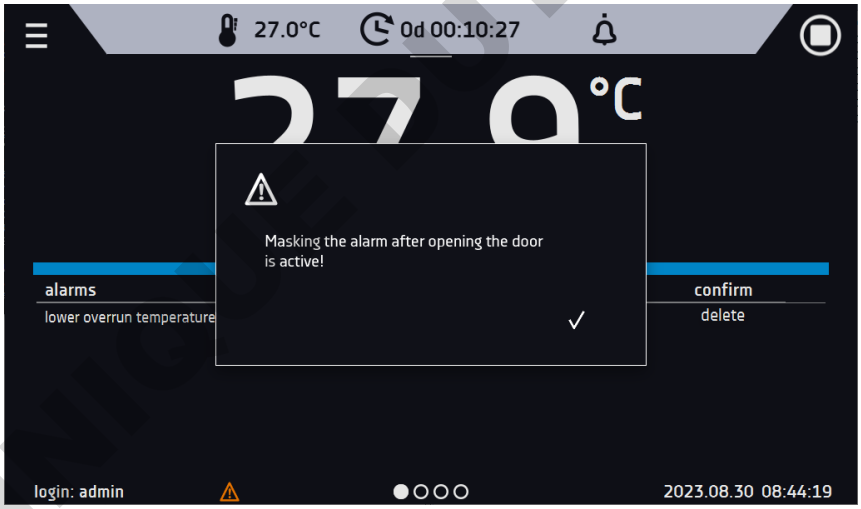
Figure.47. Alarm masking



Confirm the changes.

Cancels the entered changes.

Figure.48. Alarm masking enabled



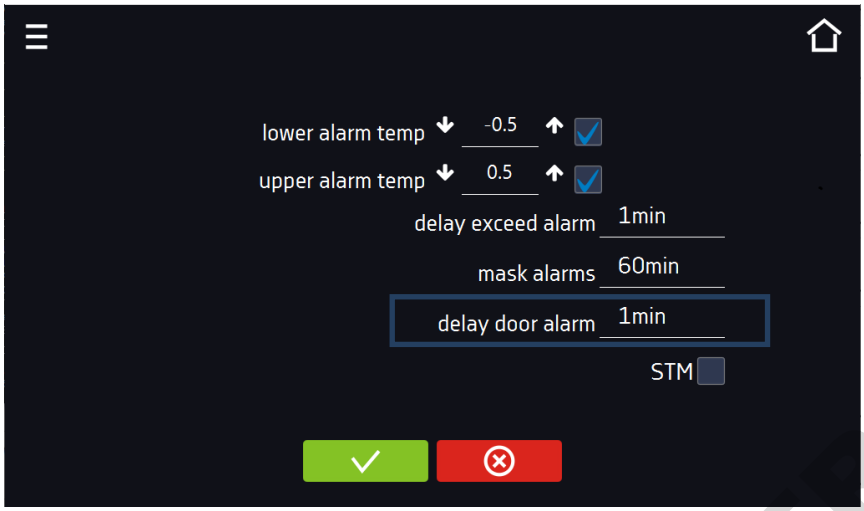
6.14.2. Open door alarm

All devices 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).

DOMINIQUE DUTSCHER SAS

Figure.49. Open door alarm delay





Confirm the changes.

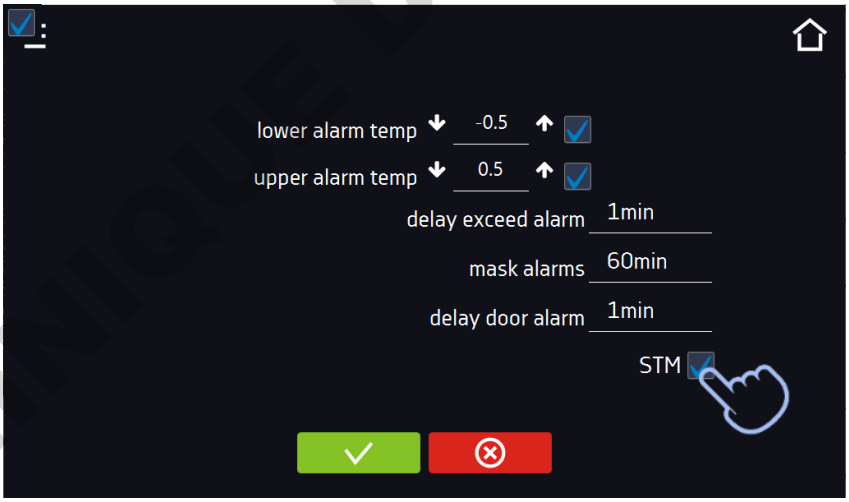


Cancels the entered changes.

6.14.3. 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. 50. 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,
- blue color – option enabled (temperature monitoring), program running,
- red color – option enabled, warning about problems with achieving/maintaining temperature.

DOMINIQUE DUTSCHER SAS

Figure. 51.



Figure. 52.



Figure. 53.



DOMINIQUE DUTSCHER SAS

Possible causes of operation:

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

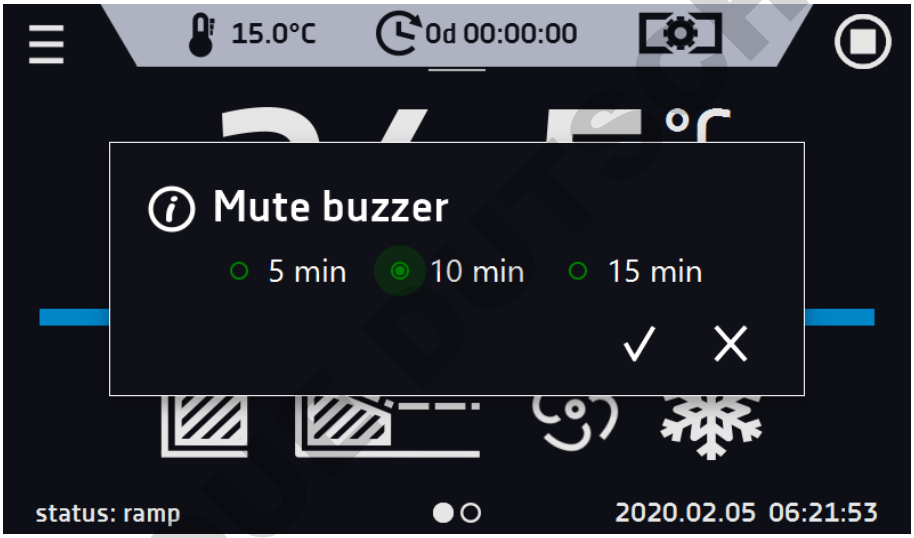
If the color was red before opening the door, then the color changes to blue after opening the door.
If the function is activated (detection of problems with achieving/maintaining temperature):

- 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.

6.15. 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. There are options to turn off the sound for 5, 10 and 15 minutes, however, the sounds of critical alarms (e.g. damage to the temperature sensor, over- and under-temperature protection) will be still emitted.

Figure 54 Mute function



6.16. Network

Go to the main menu and press the icon . In this panel you can change LAN settings:

- **IP** – the device's IP address
- **Mask** – an Ethernet network mask to which the device 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
-

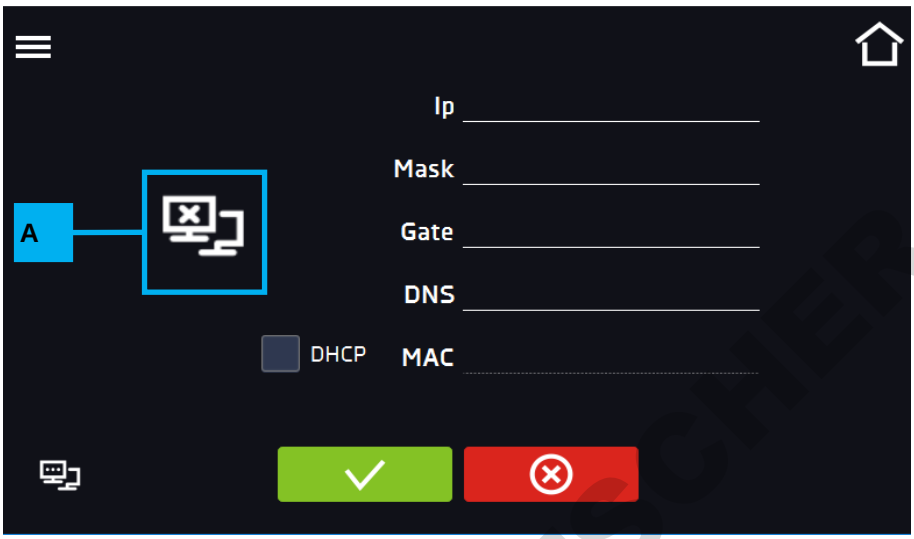
Icon A indicates the connection status:

DOMINIQUE DUTSCHER SAS

Device connected to the network

Device disconnected from the network

Figure 55 LAN settings



Confirms changes

Cancels the entered changes

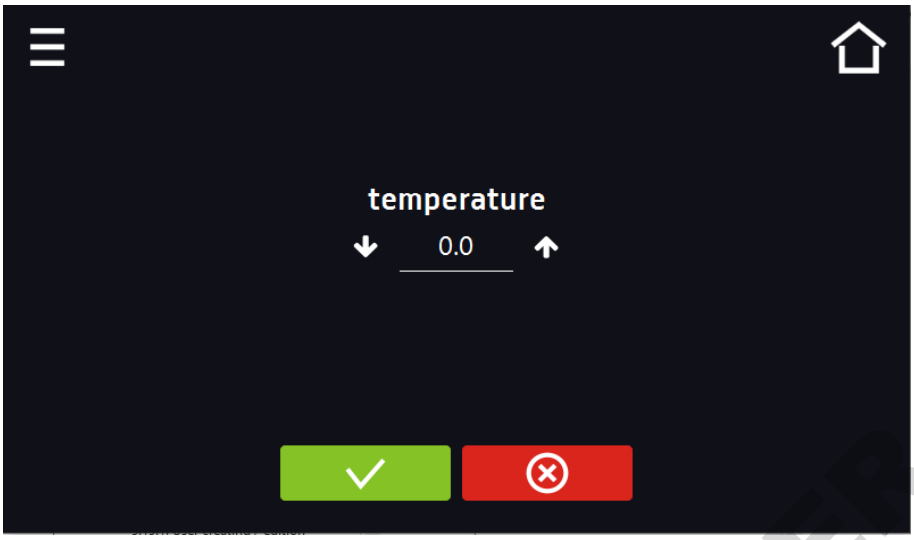
6.17. +/- Corrections

Go to the main menu ☰ and press the icon +/-. In this window 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 device. For example, if the average temperature displayed by the device indicates 20,0°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 device 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 device 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**.

DOMINIQUE DUTSCHER SAS

Figure 56 User's correction





Confirms changes



Cancels the entered changes

7. INTERFACE

7.1. MODBUS TCP

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

- IP address: same as device's (set in the panel *Section 6.15*)
- port: 502

register INPUT REGISTERS function READ_INPUT_REGISTERS (0x30001)			
Address	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 b7 – protection sensor error b8 – temperature sensors error b10 – hardware error b11 – MRW error

DOMINIQUE DUTSCHER SAS

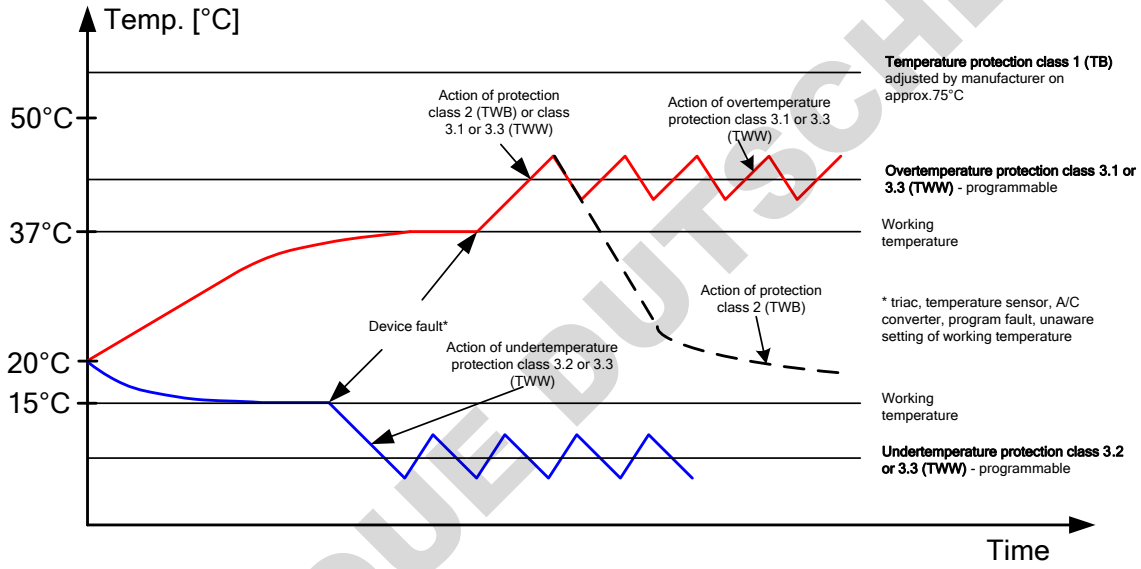
8. TEMPERATURE PROTECTION

The device is factory fitted with sample protection - temperature protection. If any of the elements responsible for maintaining the set temperature is damaged or the user sets the temperature unconsciously, the set protection will work.

8.1. Temperature protection class

Standard equipment in the ILP cooled incubators with SMART controller is protection class 2.0 according to DIN 12880.

Optionally in ILP SMART cooled incubators there's a protection class 3.3 according to DIN 12880. When the set temperature is exceeded, the cooling or heating system power will be turned off. When the temperature returns to the allowed range, the device will resume operation. The figure below shows how this works.



9. CONNECTING THE DEVICE TO A COMPUTER

Each device in the SMART version can be connected to an Ethernet network or directly to a computer with a LAN cable (optional). 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 device. The features of the software have been described in a separate instruction manual.

10. OPERATION OF THE COOLING SYSTEM

The ILP incubators have a cooling system based on Peltier cell technology. The cooling system consists of Peltier modules that act as a heat pump which transports heat / cold in a direction dependent on the direction of current flow. The incubator's cooling system is constructed of Peltier modules, fans and heat sinks. Unlike systems with refrigeration units, it is characterized by long trouble-free operation, no moving parts, the possibility of reverse operation (quick and easy transition from cooling to heating mode and vice versa), quiet operation and lack of environmentally harmful and flammable refrigerants.

DOMINIQUE DUTSCHER SAS

11. CLEANING AND MAINTENANCE OF THE DEVICE

	**Disconnect the device from the power supply before carrying out any activities related to the cleaning! In the case of the battery back-up of the controller, also turn it off.**

On the internal walls of the device (in particular the new one) made of stainless steel, discoloration (spots) may appear - which are not caused by factory defects, but only by the steel production process. They can be cleaned using extraction gasoline.

INOX products are manufactured with stainless steel. When used in standard laboratory conditions they do not rust. However it is possible that stains (which may look like rust) form on the steel surface (e.g. due to the kind of samples that are incubated in the chamber). In such case we recommend using cleaning solution (to clean the stains) which is dedicated to this particular application, e.g. Pelox.

	**When cleaning stainless steel product with dedicated cleaning solution, one should pay attention to the suggestions and recommendations given in the instruction manual or in the safety data sheet of the cleaning solution.**

11.1. Exterior cleaning

1.	The housing of the device 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 device.
4.	Electrical parts should not get in contact with water or detergent.
5.	Clean **the touch screen** using a soft cloth or a foam for cleaning touch screens.
6.	**USB port** can be cleaned with a vacuum cleaner to prevent accumulation of dirt inside the port.

11.2. Interior cleaning

The interior of ILP incubators is made of stainless steel 0H18 acc. with DIN 1.4301. Stainless steel 0H18 also corrodes, but much less and slower than other types of steel. To slow down the corrosion process as much as possible, this type of steel requires regular maintenance and cleaning. Avoid aggressive cleaning agents and preparations based on chlorine and bleach, do not allow stainless steel to come into contact with non-alloy steel, unless you are dealing with ground steel, and avoid materials that may scratch the surface.

1.	Before cleaning the interior of the device, empty the chamber.
2.	Open the door of the device, if necessary wait till the chamber has cooled down, take out the shelves and start cleaning of the device
3.	To clean the device, use a lint-free, lint-free, soft cloth and water or water with a mild detergent.
4.	In the case of ground steel, movements should be made in the direction of grinding on the surface.
5.	If rust occurs: - slight discoloration - use household cleaners for stainless steel containing calcium carbonate or citric acid, - medium discoloration - clean with a 10% phosphoric acid solution; after cleaning, neutralize the acid with diluted ammonia or a mild alkaline detergent, - severe rust - use products for pickling and passivation of steel - for example Pelox FR-D

DOMINIQUE DUTSCHER SAS

	After each cleaning, wipe the surface thoroughly with clean water.
6.	Having finished cleaning, you should allow the device to dry fully and instal all parts removed before cleaning.
7.	During cleaning you should make sure not to damage the temperature sensors which are located inside the chamber.
8.	At least one a month clean the radiator and external fans with a vacuum cleaner. The radiator and external fans are located at the back of ILP incubator. 

DOMINIQUE DUTSCHER SAS

11.3. 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.

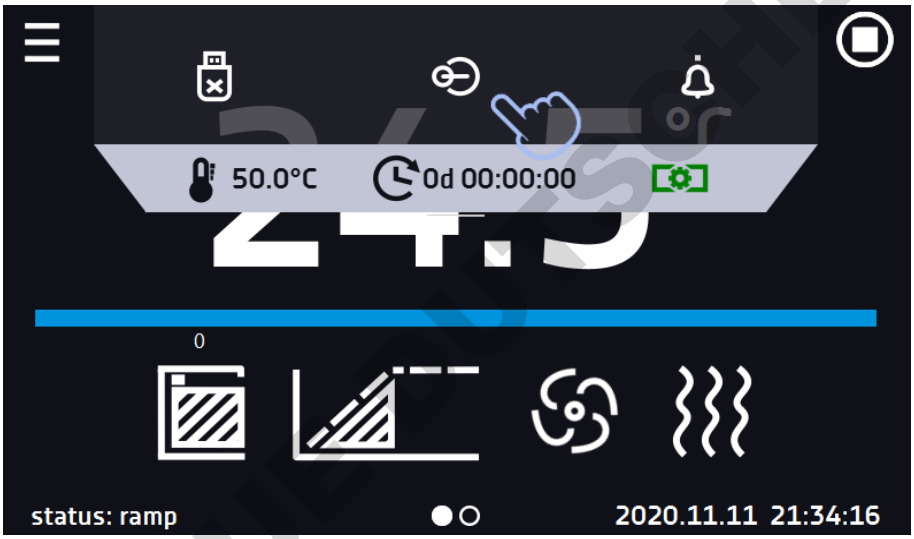
⚠	**Before using the cloth, make sure that on the surface there are no crumbs or particles. During cleaning, they can act like sandpaper and scratch the surface of the screen.**

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

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

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

Figure 57 Locking the screen



The screen is ready to be cleaned.

To unlock the touch screen, slide the blue circle into the white circle.

Figure 58 Unlocking the screen





11.4. Consumables

Consumables during normal operation are:

- silicone door seal - in all units,

- chamber fan,
- interior lighting bulb - in units with the option of interior lighting.

12. ADVICE ON HOW TO SAFELY STORE THE DEVICE

1.	Remove all objects from the chamber.
2.	Disconnect the device from the mains. If the unit is equipped with battery back-up of the controller (optional), also turn it off.
3.	Clean and dry the chamber.
4.	Leave the door open to avoid unpleasant odors.
5.	Store in temperatures between 0°C and 50°C and relative humidity maximum 70%.

13. TROUBLESHOOTING

Before you contact Service Department:

1.	Make sure that the operation complies with the instruction manual of the device.
2.	Restart the device 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. Do the same with optional battery back-up of the controller.

Service

Visit the POL-EKO® website at: www.pol-eko.com.pl in order to:
• 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

13.1. Possible defects

Malfunction	What to check?	What to do?
The unit is not working	Check if the unit is plugged in correctly	Plug in the unit correctly
	Check if the circuit-breaker has tripped	Press the circuit breaker on the back of the device
	Check the voltage in the socket	Connect the device 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 unit is exposed to direct sunlight	Change the location of the unit
	Check if there is a heat emitter near the device	Change the location of the unit

DOMINIQUE DUTSCHER SAS

	Check if the door is closed properly	Clean the gasket
The unit is not heating up	Check if the door of the unit is closed properly	Clean the gasket
	Check if the fan is turned on	Set the fan operation in the program
	Check if the ambient temperature is within the permissible values given in the technical data table?	Adjust the ambient temperature to the value given in this manual
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 device
The door has dropped or is skewed	Check if the door is properly leveled	Level the device. If this does not help, contact the service.

14. WARRANTY CONDITIONS

POL-EKO® warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of the invoice. If a defect is present, POL-EKO will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. 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.

The device that is being returned must be secured by the customer in the event of any damage or loss. The warranty will be only limited to the situations listed above. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

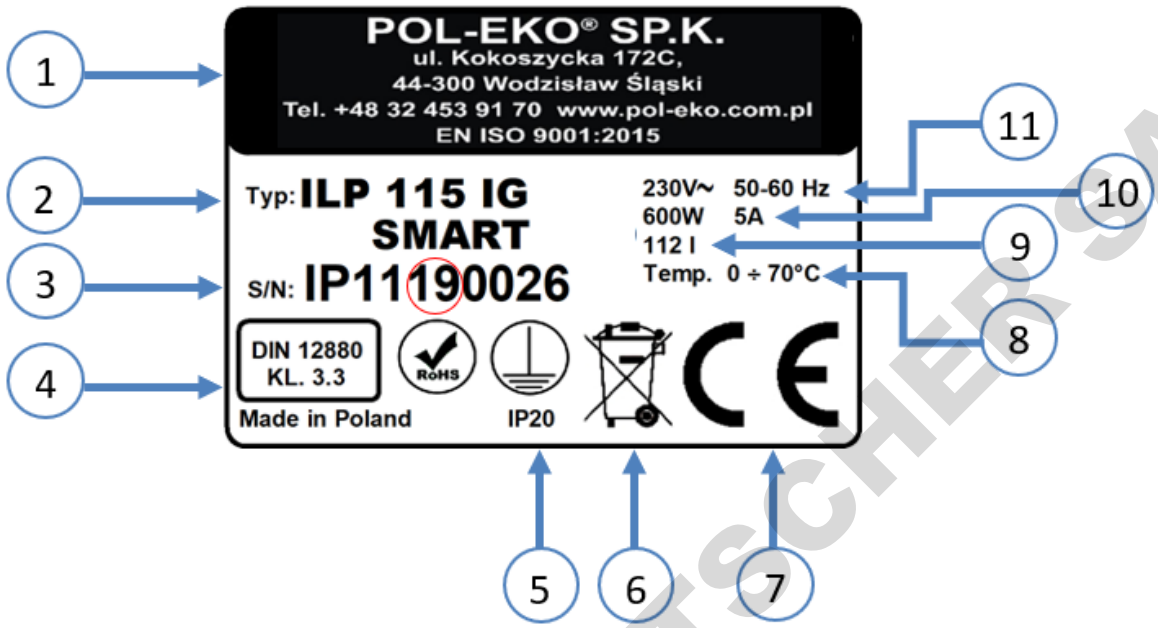
All complaints should be reported using the form available on the website **http://www.pol-eko.com.pl/en/service**

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 in the above matter except when the refusal to obtain authorization is caused by a product defect.

DOMINIQUE DUTSCHER SAS

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
2. Type of device
3. Serial number (the two marked digits indicate the year of manufacture of the device)
4. Temperature protection class according to DIN 12880
5. Degree of protection against electric shock (class I: protection against indirect contact) and IP enclosure protection rating
6. Disposal of used device according to WEEE2
7. CE marking as confirmation of compliance with the directives
8. Temperature range of the device
9. Information about the device - capacity of the chamber
10. Information about the device - maximum power consumption,
11. Acceptable range of voltage and frequency of mains supply

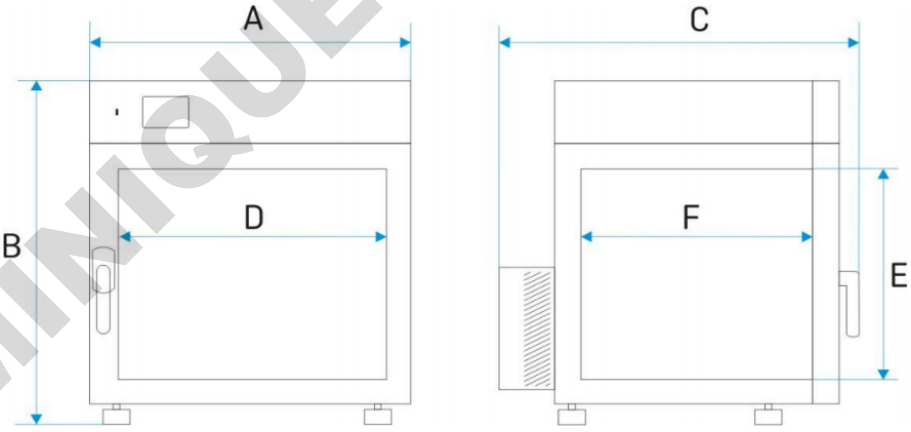
DOMINIQUE DUTSCHER SAS

16. TECHNICAL DATA

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

Parameter		**ILP 53**	**ILP 115**	**ILP 240**	**ILP 750**
Air convection		forced			
Chamber capacity[1] [l]		56	112	245	749
Door		solid + internal glass door			
Temperature range [ºC]		0...+70 (max 20ºC below ambient temperature)			
Controller		microprocessor with external touch screen			
Interior		stainless steel			
Housing		linen finish stainless steel			
Overall dims [mm]	A widith	590	650	810	1260
	B height	710	850	1140	1580
	C depth [2]	690	780	840	1040
Internal dims [mm]	D widith	400	460	600	1040
	E height	390	540	800	1200
	F depth	350	440	510	600
Weight (kg)		52	70	115	245
Shelves fitted/max		2/5	2/7	3/10	5/16
Max shelf workload [kg][3]		25	25	25	25
Max unit wor-kload [kg]		50	50	90	140
Power supply 50/60 Hz [V]		220-240			
Nominal power [W]		500	650	800	1400
Warranty		24 months			

1 – working capacity of the chamber is always smaller
2 - depth does not include 50mm of power cable
3 - on uniformly loaded surface



DOMINIQUE DUTSCHER SAS

17. DECLARATION OF CONFORMITY

DEKLARACJA ZGODNOŚCI UE

EU DECLARATION OF CONFORMITY

Produkt:	***Product:***
Inkubator z chłodzeniem Peltiera	*Peltier- cooled incubator*
Model:	***Model:***
ILP 53; ILP 115; ILP 240; ILP 750	
w wersjach:	***in version:***
SMART; IG SMART	
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	LVD 2014/35/EU EMC 2014/30/EU RoHS 2011/65/EU & 2015/863EU WEEE 2012/19/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 PN-EN 61010-2-010:2020-10 PN-EN 60529:2003/A2:2014-07
EMC	PN-EN IEC 61326-1:2021-10
RoHS	PN-EN IEC 63000:2019-01

Wodzisław Śl. 10.07.2024

Podpis / Signature:

Dawid Rybarz
Dyrektor Techniczny (CTO)

DOMINIQUE DUTSCHER SAS

We produce:

- thermostatic cabinets
- laboratory refrigerators
- laboratory incubators
- devices 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

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

AP 115

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.

DOMINIQUE DUTSCHER SAS

POL-EKO®
(+48) 32 453 91 70
info@pol-eko.com.pl
www.pol-eko.com.pl
POL-EKO® A.Polok-Kowalska sp.k.
44-300 Wodzisław Śląski
ul. Kokoszycka 172 C