INSTRUCTION MANUAL

Thermostatic cabinets
> models: ST BASIC, ST COMF, ST COMF/S, ST PREM, ST PREM/S

Laboratory Refrigerators
> models: CHL BASIC, CHL COMF, CHL COMF/S, CHL PREM, CHL PREM/S

Laboratory Freezers
> models: ZLN COMF, ZLN COMF/S, ZLN PREM, ZLN PREM/S

also in photoperiodic (FOT) versions, options: PLUS, 'T' and internal battery

Caution:
Before using the device first read carefully this manual!

Manufacturer:
POL-EKO-APARATURA
version 4.95
Date 30.09.2014

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1   SAFETY PRECAUTIONS

⚠	**All warnings included in this instruction manual, especially these which appear next to the warning or informative symbols, should be obeyed at all times to ensure the safety of the user and to maintain the proper operation of the unit!** **The manufacturer does not take any responsibility for any damage which results from disobeying the instruction manual and misuse!**

💡	This symbol indicates helpful tips.

To guarantee your security and the longest efficiency 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 or put any objects on the unit,
	- touch the compressor and condenser while the unit is connected to the mains
	- do not overload the shelves (the maximum load is described in technical data)
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
	• defrost the chamber more often if you open the door a lot or store humid samples
	• if possible, do not store warm samples
	• secure powdery samples from being blown out by the chamber fan
	• always check that the doors are closed
	• 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 works,
	• protect the power cable and the plug from any damage and do not use the plug if it is improperly plugged in or if the cable is laid incorrectly,
	• disconnect the power plug before moving the unit,
	• disconnect the unit and protect it from reconnecting if it has any visual faults.

2   ENVIRONMENTAL PROTECTION AND DISPOSAL OF THE UNIT

The packaging protects the unit from any damage during transportation. The packaging is harmless to the environment and can be recycled. Please handle it according to the environmental protection regulations or dispose it. The unit itself can be recycled in order to save the resources. The unit is marked according to European Union directives on waste electrical and electronic equipment (WEEE). This directives determine the return and recycling conditions and are valid in all European Union member states.

PLEASE HELP US PROTECT THE ENVIRONMENT!

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We would like to inform you that we have taken all the necessary steps to make sure that the unit will meet your requirements and will work reliably. Due to the fact that we constantly improve our products and extend their range, we invite you to provide us with any feedback. All opinions are welcome! Visit us at: www.polekolab.com

3   GENERAL CHARACTERISTICS

The ST - thermostatic cabinets and CHL – laboratory refrigerators are used to store a variety of samples in constant temperature. The devices – thermostatic cabinets can work in temperatures ranging from +3°C to +40°C or +70°C (option) there are various versions with photoperiodic system available for night/day simulation, refrigerators from -10°C to +15°C - depending on the version. ZLN freezer can work in temperature ranging from -40°C to 0°C (not applicable for ZLN85 in which temperature range is from -25°C to 0°C).

CHL and ST devices are available in the following configurations::

Model:	Material of housing	Material of interior	Class of temperature protection	
			CHL	ST
BASIC	Powder coated sheet	aluminum	kl. 1.0	kl. 1.0
COMF	Powder coated sheet	Stainless steel DIN 1.4016	kl. 1.0	kl. 1.0
COMF/S	Polished stainless steel	Stainless steel DIN 1.4016	kl. 1.0	kl. 1.0
PREM	Powder coated sheet	Stainless steel DIN 1.4301	kl. 1.0	kl. 2.0
PREM/S	Polished stainless steel	Stainless steel DIN 1.4301	kl. 1.0	kl. 2.0

ZLN devices are available in the following configurations:

Model:	Material of housing	Material of interior	Class of temperature protection
COMF	Powder coated sheet	Stainless steel DIN 1.4016	kl. 1.0
COMF/S	Polished stainless steel	Stainless steel DIN 1.4016	kl. 1.0
PREM	Powder coated sheet	Stainless steel DIN 1.4301	kl. 1.0
PREM/S	Polished stainless steel	Stainless steel DIN 1.4301	kl. 1.0

The insulation layer is made of polyurethane foam. Shelves inside the cabinet, made of polyethylene-coated steel wire, have adjusted height..

The thermostatic cabinet can be ordered with glass door (A version), solid door (B version) or double door (C version), refrigerator with glass or solid door and freezer with solid door. At the top of the device on the front there is the control panel, on the back there is the main switch.

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Control Panel which control the unit is located in the front, upper part above the doors (ST, CHL, ZLN85) or in the front, lower part below the door (ZLN-T125, ZLN-T200, ZLN-T300).

You can record temperature data (and relative humidity if featured) in the memory. After you have connected your unit to a PC, you can view all stored data.

Door can be locked with a key (except ZLN 75, ZLN 145 and ZLN 180).

4   BEFORE THE FIRST USE

By default, the unit is sent in a cardboard box. It is necessary to transport it in the upright position and prevent it from any unintended movements.

On the surface of unit 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.

⚠️	**Once you receive the unit, please check its the technical condition and all accessories. Any claims regarding latent defects should be reported to the manufacturer, while any damage during transport or incomplete accessories need to be passed to the entities who are responsible for the transport and unloading.**

⚠️	**While carrying the unit, please do not tilt it to one side more than 45° from the upright position, as there is a high probability of the damaging the compressor. If it is necessary to tilt it to one side more than 45°, then after placing it, please wait at least 3 hours before connecting the unit to the mains.**

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

- Ambient temperature +10°C...+28°C, for cabinets with glass door (A version) +10°C...+25°C,
- Low relative humidity of the ambient air to 60%*
- The unit has not been designed to work in highly dusty environments
- The unit should be put on a hard and stable substrate
- The unit should be placed at least 100mm away from the wall
- The height of the room must be at least 300mm greater than the height of the unit
- This unit may not be exposed to direct sunlight
- The unit should be kept away from any heat sources*
- The unit is not designed to be built-in
- The place of installation of the unit should contain a mains socket.

If you don't comply with the above recommendations, it may deteriorate the following technical parameters:

- temperature stability
- temperature homogeneity
- power consumption
- frosting of evaporator

If you don't comply with the above recommendations, the unit may get broken.

_____
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If you don't comply with the recommendations of place of installation, you may lose your warranty rights.

*) If it is not possible to locate the unit in a place that fully complies with the above requirements, make sure that the following points are obeyed:

- if the room temperature is higher than recommended, monitor the temperature in the chamber using an additional independent temperature sensor; if the room temperature is equal or higher than 45°C, the compressor will not start working. It will not be possible to cool the chamber.

- if the room temperature is lower than recommended, under no circumstances should you turn the cooling system on, as this may damage the compressor; At room temperatures between 0° to 10°C it is only possible to heat up the chambers.

- in highly humid environments, control the frosting of evaporator and walls more often than recommended. If necessary, perform the defrosting operation.

The electric installation should meet the following conditions:

⚠	Please connect it to a socket with ground in order to avoid electric shocks in case of the unit's failure.

The electric installation should be secured by a 16 A antisurge fuse.

⚠	After placing the unit, please secure it by blocking the wheels (if they are provided along with it).

⚠	**Only for 500, 700, 1200, 1450 models:** **There is a pipe at the rear of the units to remove condensation. You should install a container at the end of the pipe (not supplied with the unit).**

⚠	**The castors should not be used for transporting the unit. Use them only to place the unit in its destination.**

⚠	During operation: door units must be tightly closed, the access ports for the introduction of an external sensors must be sealed plugs supplied. Failure to follow these guidelines may cause unstable operation, excessive deposition of ice, in extreme cases, can lead to damage of unit.

4.1 Wear parts

During normal work the following parts could be worn:

- halogen bulb of interior lighting

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4.2   Information on the stored samples

Water may gather on the bottom of the chamber. It is a result of condensation of the water vapour located in air if the set temperature is considerably lower than the ambient temperature.

The amount of water depends on the following factors:

- Differences between ambient and set temperatures
- Number and frequency of door openings
- Temperature of samples

💡	If water gathers, use a dry cloth to wipe the bottom of the chamber.

Do not use any cardboard boxes, sponges and other hygroscopic materials for storing the samples since they may increase the relative humidity in the chamber.

💡	Too high relative humidity in the chamber may frost the refrigerant and lower the performance of the cooling system. It may lead to higher energy consumption.

4.3   Placement of the 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 below the shelves
- the samples should be placed in such a way that so that the horizontal surface between the containers does not exceed 1/3 of the width and height of the empty shelf
- the space between the samples and between the samples and the wall should be more or less equal

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

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Front view

Shelf

Hmax = 2/3H

Top view

$u+v+w > 1/3\ a$

$x+y+z > 1/3\ b$

$u \cong v \cong w$

$x \cong y \cong z$
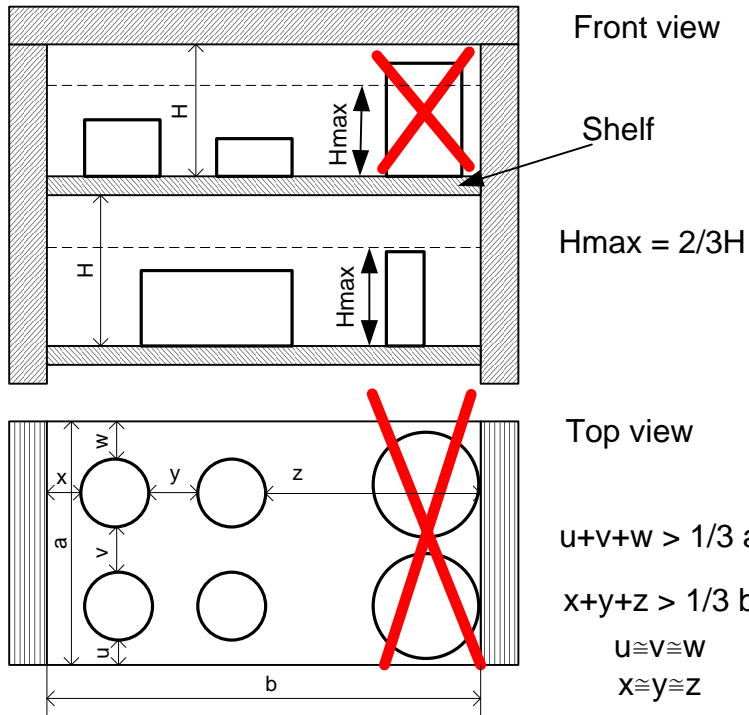
Following the above rules will provide best temperature stability.

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5 DEVICE DESCRIPTION

5.1 ST and CHL
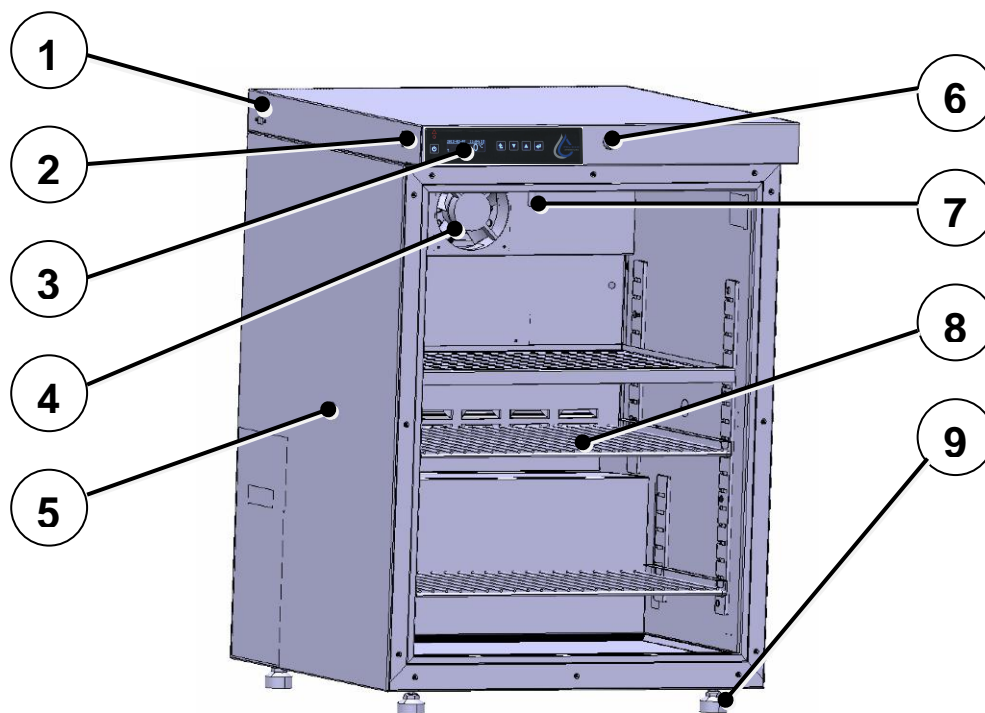
(1) RS-232C (or RS-485-option) and USB socket
(2) Main switch
(3) Electronic controller with LCD display
(4) Chamber fan
(5) Access port
(6) Key lock
(7) Temperature sensor
(8) Shelve
(9) Adjustable legs

5.2 ZLN and ZLN-T

(1) Access port
(2) Door handle
(3) Electronic controller with LCD display
(4) Main switch
(5) Cooling system
(6) Adjustable legs with blockade

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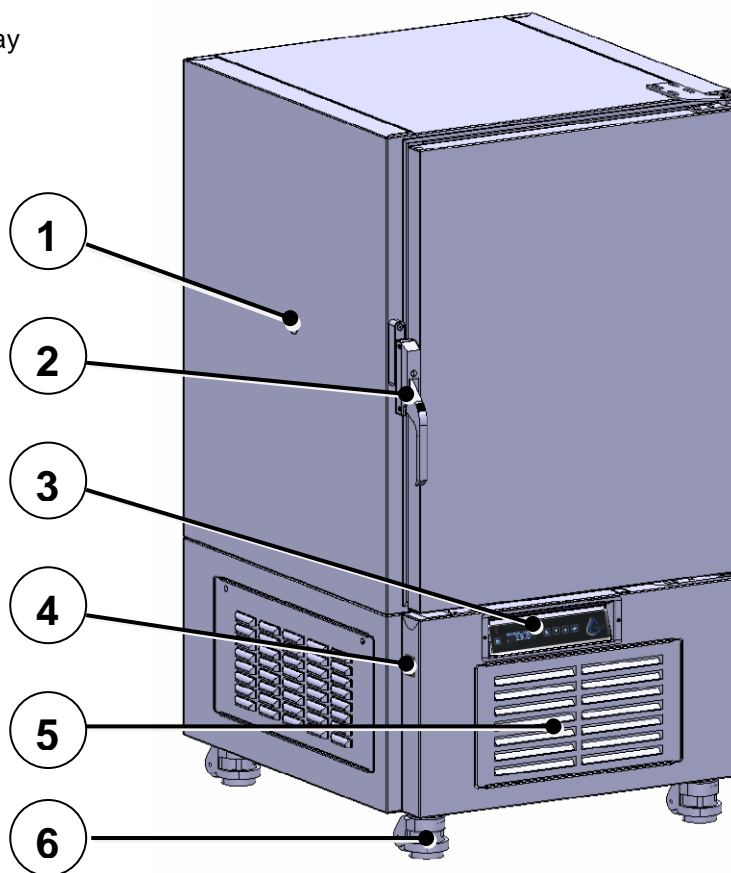
5.3   Control panel

The control panel is used to check the current temperature inside the chamber as well as to program and set up the parameters of the device.
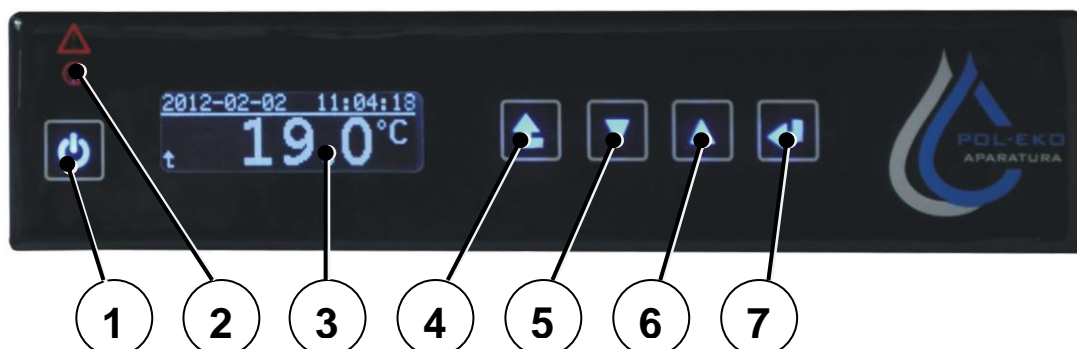
(1) ⏻ Quick turn on/off button
(2) Alarm signalization (red LED).
(3) LCD graphical display.
(4) ⬆ Escape/exit button.
(5) ▼ Down button.
(6) ▲ Up button
(7) ↵ Enter/accept button*.*

The value may be changed by the following buttons: ▲/▼ *up/down* (selection keys) . Confirm using the enter button. ↵ The program continues to set the next parameter. If the parameter value is incorrect, using the selection keys ▲/▼ *up/down* select the parameter again and set the correct value. To exit the current window, please press down the ESC ⬆ button.

For units with internal lighting (OWW):
Interior lighting is switch on automatically after door opening and it switch off after door closing. Please press down the enter button ↵ and hold it for about 1 sec to switch on the light. Once the light has been switch on, a bulb icon will appear on the display.
When buttons are illuminated   and the display is blank, the touch keyboard is locked. To unlock, press and hold the button

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5.4 Programming possibilities

There are two temperature program modes of the device: simple and complex. In the simple mode the stress is on maximum simplification of the programming procedure. The only parameter needed to start the program is setting up the desired temperature.

The complex mode (in ST devices) offers more possibilities in terms of programming the temperature, it is also possible to set up a six-segment time-temperature program.

Programming mode is defined in the menu settings (parameter **Prog.mode**)

The possibilities of the program controlling the operation of the device depend on the type of the device. The most advanced software allows storing up to 3 six-segment programs. The software controlling the operation of the cooling cabinet, the low-temperature cooling cabinet and the freezer allows storing only one single-segment program.

Device series	ST, ST+	CHL, CHL+	CHL-T, CHL-T+	ZLN, ZLN-T
Number of programs	3	1	1	1
Number of segments in each program	6	1	1	1

Simple mode
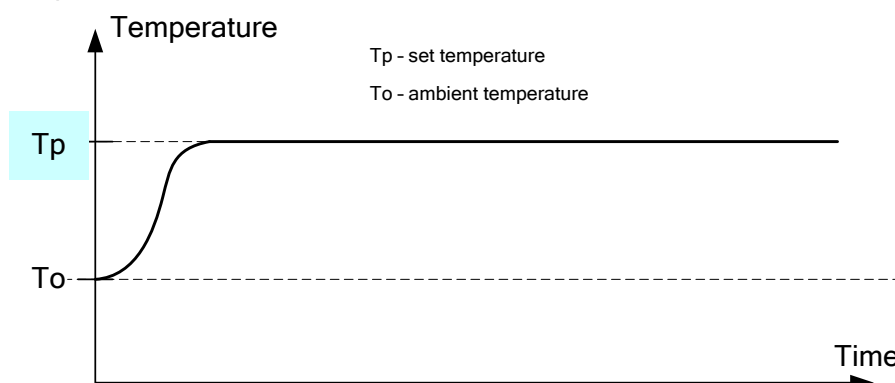
Operating the device in this mode is extremely simple, with temperature being the only parameter needed to set up.

Complex mode (only ST, ST+)
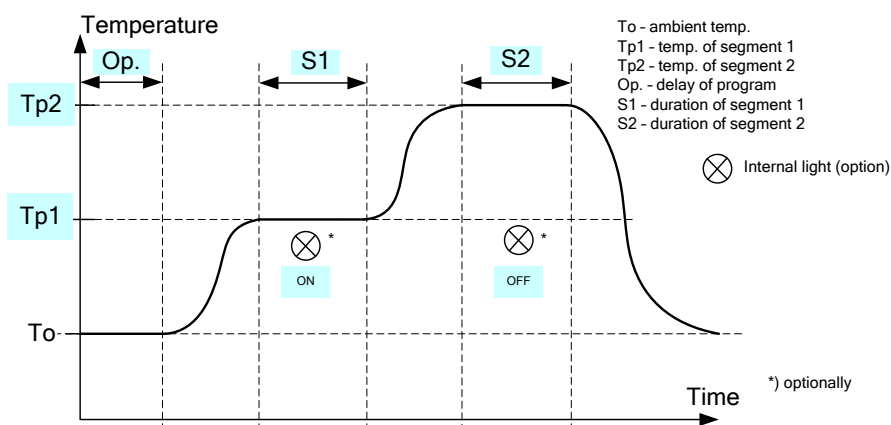
The complex mode is used when there is a need to conduct research requiring varied temperature with specific duration. In this mode you can also store programs consisting of a maximum of six seg-

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ments. For each segment you can set up temperature and its duration. For units with photoperiodic system you may also switch on/off the light inside the chamber.

6 OPERATING THE DEVICE

6.1 Start-up

To start-up the unit, please use the on/off switch that is located either in the upper front, upper left or upper rear part of the equipment (depending on the model). In the ST+ and CHL+ range the main switch is located on the left side of the front panel.

To enter the parameters, please use the control panel which is located in the upper front part of the unit.

After the unit has been switched on, there is a self test of the following parts performed: EEPROM memory, Data Flash memory, real time clock RTC, and a temperature sensor. After a successful auto-test, you will see the main screen on the display:

After switching the power, automatic buttons are locked. To start the work, hold the button.
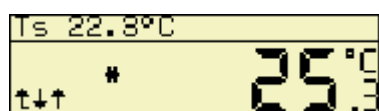
 - unit working in simple mode (see point 7.1)
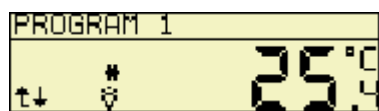
 - unit working in complex mode (see point 7.3), program 1 is active.

💡	If the device has been switched off during an active program, it will automatically resume once the device has been switched on again.
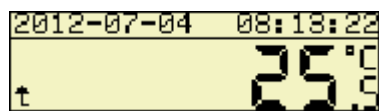
 - no program is being carried out.

Equipment with a power failure alarm battery suspension option:

💡	In case of power failure, the unit sends a text message with the information. The control panel will remain switched on, but the unit will not maintain any parameters, as heating/cooling systems will be inactive.

💡	If you don't follow the sequence below, the unit may send text messages about power failure.

Start-up

To start-up the unit, please perform the following sequence:

⇒ after connecting the unit to the mains, please switch it on using the on/off switch that is located in the front part of the equipment

⇒ please press down the button which is located below the control panel

⇒ after a successful start-up

⇒ operating the unit is the same as in case of a standard version

Switching off the unit

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⇒ please press down the button which is located below the control panel

⇒ after a successful shut down, there is no illumination of the display

⇒ the user may switch off the unit completely using the on/off switch located in the front panel

> Use the main switch to turn off the unit only if you are not going to use it for a longer period of time (e.g. a couple of days) or for maintenance.

6.2 Temperature control

The device has been adjusted and calibrated by the manufacturer. The calibration is carried out in accordance with the manufacturer's procedures and instructions, using instruments which are inspected regularly.

Temperature is measured by a sensor built inside the chamber and its value shows on the display of the control panel. The device has been calibrated in such a way that the display shows the temperature in the middle of the chamber.

6.3 Fan chamber

Inside the chamber of the device ventilator is installed which is to provide appropriate air circulation. The air intake and exhaust of blower cannot be blocked out. In devices with WENT option, you can adjust the fan speed in %.To avoid air exchange between air in the chamber and air outside, after open the door fan is automatically shut down. In ST/CHL5 units when working in low temperature the fan may be cyclical turning on and off, it's a normal way of working.

> If you adjust fan chamber below 100%, the stability and uniformity of temperature inside chamber could be worst than declared into catalogue parameters.
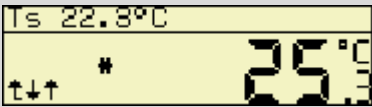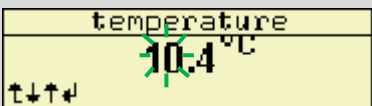
7 HOW TO OPERATE THE CONTROLLER
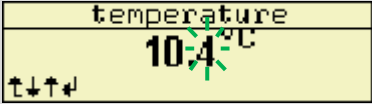
7.1 Simple mode
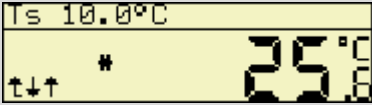
This mode arised to simplify the operation of the unit. The unit turned on in this mode will work constantly (non-stop), with possibility to change set temperature anytime.

After the unit has been turned on, you can see the set temperature on the display. You can change the value using the UP/DOWN ▲/▼ buttons. Press ENTER ⏎ to confirm.

Example:

Ts 22.8°C # **25°** t↓↑	Press UP ▲ or ▼ DOWN to edit the temperature.
temperature **10.4°C** t↓↑↵	The temperature will flicker. Use UP ▲ or DOWN ▼ to set a new temperature. Press ENTER ⏎ to confirm.

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temperature 10.4°C	Use UP [↑] or [↓] DOWN to set the decimal value and confirm with ENTER [←].
Ts 10.0°C # 25.6°C	A new temperature has been set.

You can press ESC [↑] at any time to cancel.
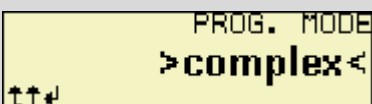
Pushing [⏻] button will cause the stop of program and switch the unit to standby. When you quit standby mode the device will not continue to maintain the temperature. Pushing the main switch will cause switching off the device, after turning it on again, the device will continue to maintain the set temperature.

7.2   Switching between simple and complex modes

Concerning only ST devices

The complex mode is used when there is a need to conduct research requiring varied temperature with specific duration. In this mode you can also store programs consisting of a maximum of six segments. For each segment you can set up temperature and its duration. For units with photoperiodic system you may also switch on/off the light inside the chamber.

To switch from simple to normal mode, perform the following steps:

SETUP	In the main window press ESC [↑] to enter the MENU.
PROG. MODE <simple>	Enter SETUP using ENTER [←]. Press down [↓] and choose PROG.MODE.
PROG. MODE <simple>	Press ENTER [←]. The setting will flicker.
PROG. MODE >complex<	Press [↓] and choose **>complex<**. Confirm with ENTER [←].

To switch from complex to simple mode, perform the above steps analogically.

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7.3 Complex mode

7.3.1 Editing program parameters

It is impossible to make changes to a currently running program – it needs to be terminated first.

You can press ESC ⬆ at any time to cancel.
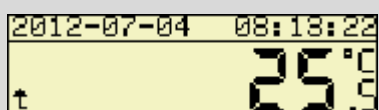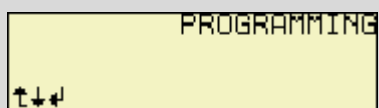
2012-07-04 08:18:22 **25.3**°C t	In the main window press ESC ⬆ twice.
PROGRAMMING t↓⏎	Enter PROGRAMMING using ENTER ⏎.
PROGRAM 1 t↓⏎	Choose the program you want to edit using ▲ and ▼.
number of segm. 3 t↓⏎	Press ENTER ⏎, then use ▲ and ▼ to set the number of segments. Confirm with ENTER ⏎.
SEG1 temperature -22.3°C t↓↑⏎ SEG1 temperature 22.3°C t↓↑⏎	Then you can choose the set temperature for segment 1. Use ▲ and ▼ to set a new value, then confirm with ENTER ⏎. Set the decimal value in the same way.
SEG1 time -0d00:07 t↓↑⏎ SEG1 time 0d00:07 t↓↑⏎ SEG1 time 0d00:07- t↓↑⏎	Now you can set the segment time in dd:hh:mm format.
	If the unit has been equipped with photoperiodic system, you can
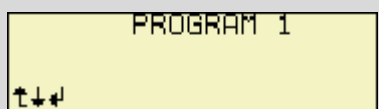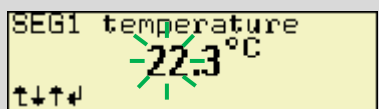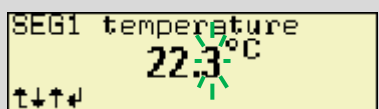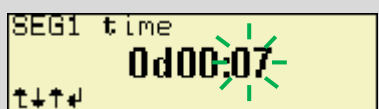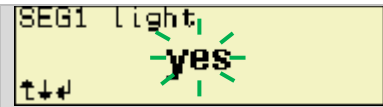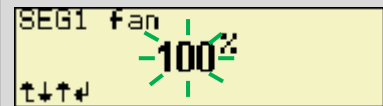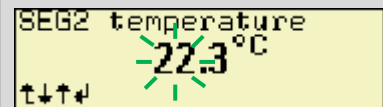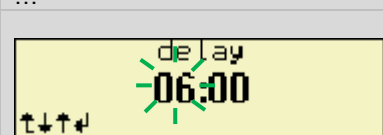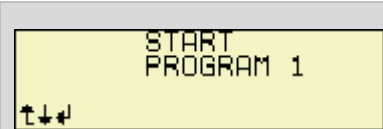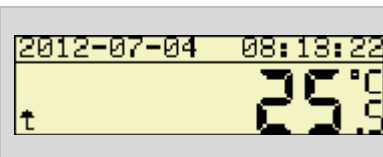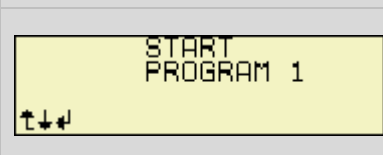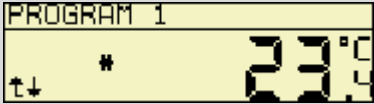
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SEG1 light **yes**	switch it on for the segment.
SEG1 fan **100%**	Here you can set the fan speed.
SEG2 temperature **22.3°C** ...	If the program has more than one segment, you can set its parameters here.
delay **06:00**	Here you can set start delay in hh:mm format if required.
loop **off**	Here you can set if the program should run in cycles: - it can be OFF, the program will stop after finishing
loop **oo**	- infinite cycles – the program will continue to run till it is stopped by the user
loop **20**	- you can define the number of cycles between 2 and 99

START PROGRAM 1	After all parameters have been set, you can start the program. Use ENTER ⏎ to confirm.
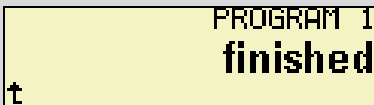
7.3.2 To start a saved program

2012-07-04 08:13:22 **25.5°C** t	In the main window, press ESC ⬆.
START PROGRAM 1	Using ⬆ and ⬇ choose the program you would like to start and press ENTER ⏎.

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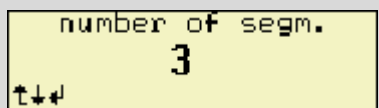
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7.3.3   To stop a program
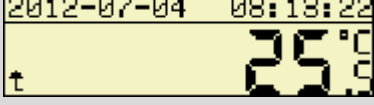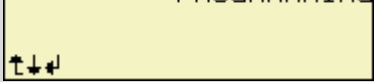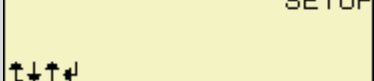
PROGRAM 1 # **23.9**°C t↓	In the main window press ESC ⬆ twice.
STOP t↵	Confirm with ENTER ↵.

7.3.4   Ending the program
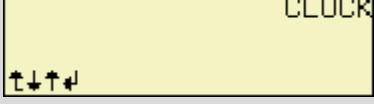
PROGRAM 1 **finished** t	After finishing program, the device will emit a sound alarm and show information on the display.
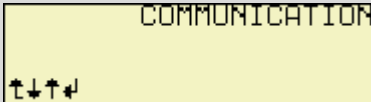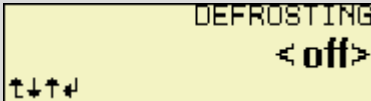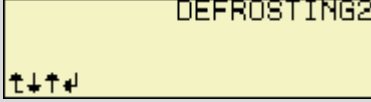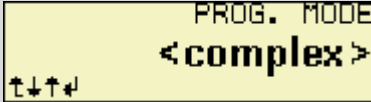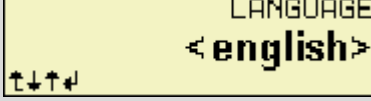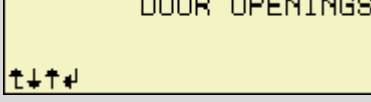
8   SETTINGS OF DEVICE
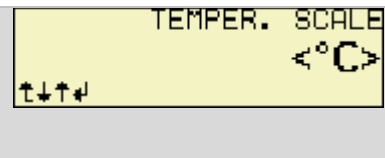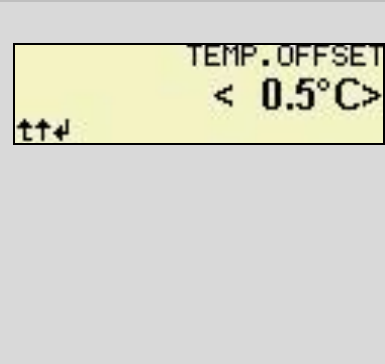
To set up working parameters of the device go to the 'SETUP' menu. Using ⬆/⬇ the UP/DOWN and then ↵ ACCEPT buttons you can change the relevant options.

2012-07-04 08:18:22 **25.9**°C t	In the main window press ESC ⬆ twice to enter MENU.
PROGRAMMING t↓↵	Choose SETUP using ⬇.
SETUP t↓↑↵	Press ENTER ↵ to enter the menu.

Description of options available in the 'SETUP' menu:

ALARMS t↓↵	CLOCK ALARM TEMP. ALARM POWER ALARM	see point. 10.1.
CLOCK t↓↑↵	[hh:mm], first you set up the hour, then the minutes. You change the value using ⬆/⬇ the up/down buttons and confirm with ↵ the accept button. The program automatically moves to setting the next value.	

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COMMUNICATION	After selecting a sub-menu the user is able to choose a protocol for each socket separately – Please press the ⏎ button. Available protocols: - **none** (interface off) - **EasyLabPro** (protocol complies with EasyLab Professional, EasyLab Basic), - **text** (protocol for printers with serial port, EasyTemp, terminal), - **service** (service and text protocol). - **modbus RTU** (for units equipped with RS-485) After selecting a protocol with ▲/▼ buttons, the user is able to determine its settings. - **Print interval**: [mm:ss] determines the interval after which data is sent to the serial port (available in service and text protocols), - **address** [1-255] – determines the address of the instrument connected to the network which is using the EasyLab-T PLUS protocol
DEFROSTING < off >	For ST, ST+ i CHL, CHL+: To start defrosting you have to select **on** using ▲/▼ the UP/DOWN buttons. To confirm the choice press ⏎ the ACCEPT button. Defrosting consists of keeping the temperature of +30°C inside the chamber for 30 minutes, which allows melting any ice in the evaporator. During defrosting the display shows '**defrosting**'. Pressing ▲/▼ the UP button displays the defrosting remaining time (in seconds). Having finished defrosting the program will carry on with the selected profile.
DEFROSTING2	option for devices in PLUS version, for more information see point 11.6
PROG. MODE < complex >	selecting the type of programming the device, there are two options available 'simple'– simple mode and 'complex ' – complex mode of programming the device. See point 5.4. Concerning only ST devices
LANGUAGE < english >	this option allows to choose Polish 'POLISH' or English 'ENGLISH' displayed language. Pressing ▲/▼ the UP/DOWN button language can be choosing and accept by pressing ⏎ ACCEPT button.
DOOR OPENINGS	option, see point. 11.2.
	This option allows to choose between Celsius (**°C**) or Fahrenheit (**°F**)

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TEMPER. SCALE <°C>	temperature scale. It affects also the RS232 communication in text mode.
BACKLIGHT <fixed>	There is a possibility to chose controller backlight mode. "**Fixed**" mode means constant backlight. "**Temporary**" mode means that the back-light will go off in approximately one minute from the last bottom touch.
TEMP.OFFSET < 0.5°C>	It allows you to correct the temperature indicated on the display by adding the correction value. The set correction value is taken in the whole temperature range operation of the device. For example, if the average temperature displayed by the device indicates 100°C and the average temperature measured by independent, external sensor indi-cates 100,5°C, the correction should be set on +0,5°C. The average temperature should be calculated from chosen period of time e.g 30min.
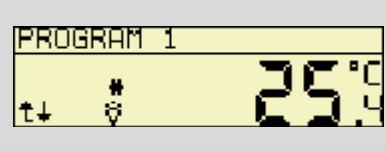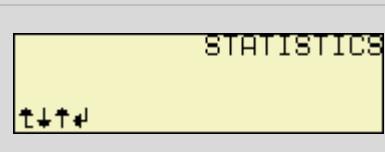
9   STATISTICS

While a program is operating it is possible to check the average, minimum and maximum temperature value for all time-temperature segments. Temperature values are recorded from the moment the chamber reaches the set temperature (or to be more precise when the temperature inside the chamber is different by 0,2°C from the programmed temperature) at a ten-second interval.

Once the program reaches the end of a segment, the recording stops and the device moves to the next temperature – defined for the next segment. Once the device reaches the next set temperature – the recording starts again. For multi-segment programs there are available statistics for each segment. If the program has not reached a segment yet, the display shows 'none data ' (there is no data availa-ble using which the average, minimum and maximum values are calculated).

	If the simple mode is active the statistics selection step for the segment is omitted.

You can RESET the statistics data.

PROGRAM 1 25.5°C	In the main window press ESC ⬆.
STATISTICS	Enter STATISTICS using ENTER ⬅.
	Using ▲ and ▼ choose the segment which you want to see the

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SEG#1 STATISTICS	statistics of, then press ENTER [←].

SEG#1 Tavg **25.0°C**	Using [▲] and [▼] you can see the average, max and min temperature recordings.
SEG#1 Tmax **25.5°C**	
SEG#1 Tmin **24.5°C**	
SEG#1 data **8**	You can also see how many recordings are available.
SEG#1 RESET	Choose RESET and confirm with ENTER [←] to zero the recordings.

10 ALARMS

Every alarm is signaled by red diode placed on front panel, sound and 'ALARM' text shows on display.

Pressing [←] the accept button you can see date and time of alarm event and kind of alarm.

When the cause of the alarm stops, the alarm may be cancelled. To cancel the information of the event, press down the enter button [←] for a while.
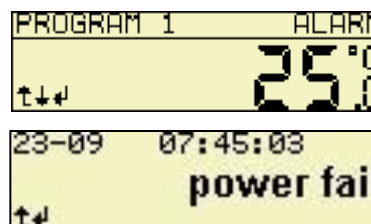
Type of alarms:

Sort of event	Red diode	Audible signal	Displayed command	Terminate of event
Temperature sensor fault.	Yes	Yes	**T#1 ERR - basic sensor** **T#2 ERR- protection sensor**	Replacing of temperature sensor.
Temperature of sensor over range.	Yes	Yes	**T#1 OVF - basic sensor** **T#2 OVF - protection sensor**	Temperature decrease/increase till work range.
Over temperature alarm.	Yes	Yes	**HI temp** **LO temp**	Temperature decrease till hysteresis Range. Too short period or delay is set (see point 10.1.2).
Power alarm.	Nie	Nie	**power fail**	Pressing EXIT button

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Open door alarm.	Yes	Yes	**door open**	Closing door.
Temperature protection LO	Yes	Yes	**LO prot.**	Remove from the chamber any objects which are too cold and might cause a fall of temperature. Restart the device. If the problem recurs, call the service. (see point 12.1)
Temperature protection HI	Yes	Yes	**HI prot.**	Remove from the chamber any objects which are too hot and might cause a rise of temperature. Restart the device. If the problem recurs, call the service. (see point 12.1)
Time alarm.	No	Yes	**Clock al.**	Pressing ⏎ button.

10.1 Settings alarms

10.1.1 Clock alarm

An audible signal is emitted at a specified time, setting up the alarm [hh:mm] – is done similarly to setting up real time. The alarm can be activated selecting **(on)** and deactivated selecting **(off)**.

10.1.2 Over and under temperature alarm

The function allows to define the variation from the set temperature. Once the temperature exceeds the set variation the device (**TEMP. ALARM LO** and **TEMP.ALARM HI** parameters) activates an audible alarm signal. The variation can be set up ±10.0°C and with a 0.1°C leap or deactivated by selecting off. To set up the parameter value in the SETUP menu, select the 'ALARM TEMP.' option and then the threshold of acceptable variation. Exceeding the allowed variation is signaled by short audible signals once every five seconds, even after the device goes back to the desired temperature, until ⏎ the ACCEPT button is pressed.
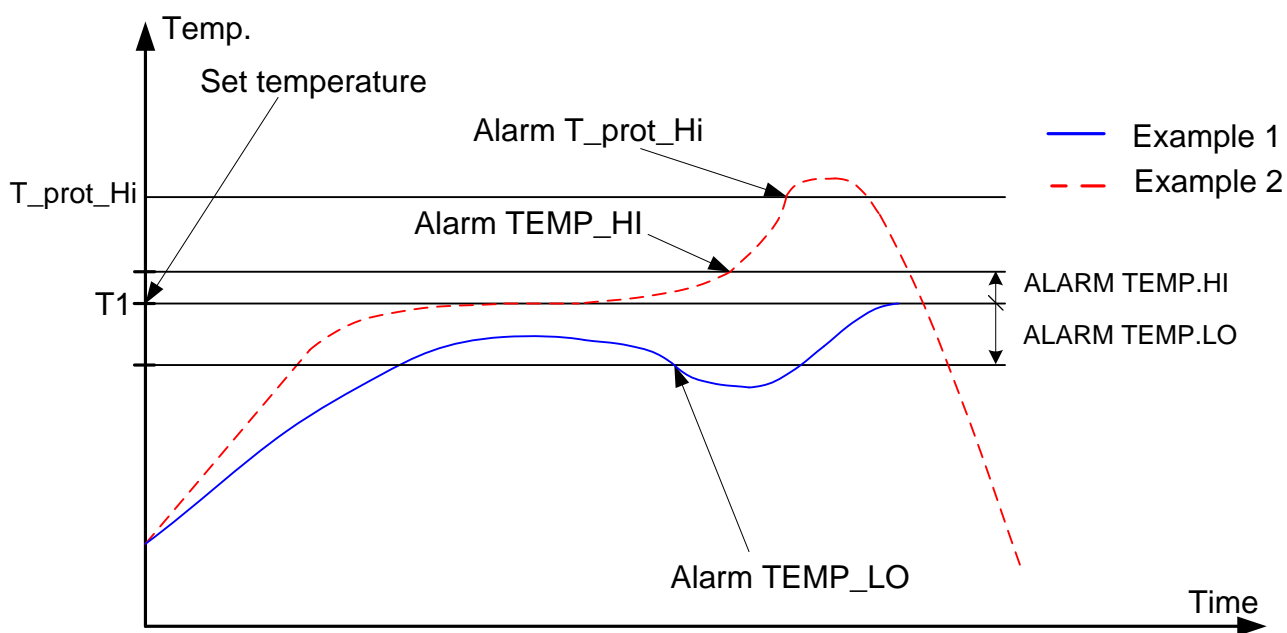
The alarm activates once the set temperature has been reached (it's inactive while reaching the set temperature) (example 1). You can also set the alarm delay from 0 to 30min using the **ALARM TEMP. DELAY** parameter.

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For example, if you set the alarm delay at 3 minutes, the alarm will go off 3 minutes after the set temperature has been beyond the set point. If the temperature goes back to the set point within 3 minutes, the alarm will not sound.

10.1.3 Alarm door

Determines, in how many minutes after opening the door, the alarm should be activated (adjustment in the range of 1-10min or disabled).

10.1.4 Power alarm
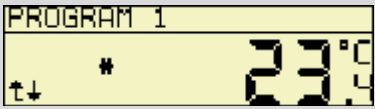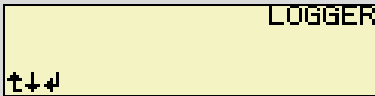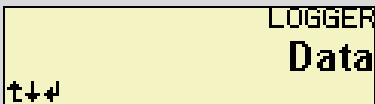
If this function is turned ON and the program is running, after the power shortage over 1 minute and after switching on again a message pops up in the display saying at what time did the power shortage occur.
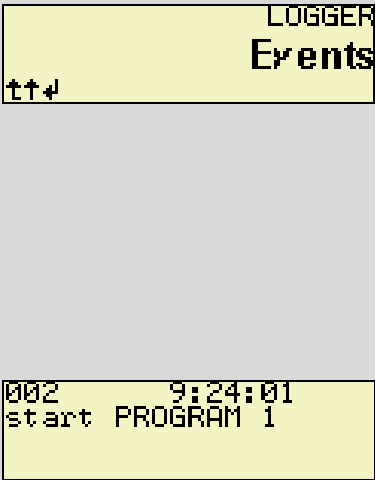
When you turn the alarm on **(on)** you can adjust the following parameters:

- **pause** – from 1 min up to 24h with 1min resolution or **(off) –** setting max length of power shortage after which the program will be resumed

- **decrease temp** – from 0,5°C to 25°C or **(off)** – max drop below set temperature after which the program will continue

- **increase temp** – from 0,5°C to 25°C or **(off)** – max increase over set temperature after which the program will continue

11 LOGGER

The unit is equipped with internal memory which save information about events and sample temperature. Registered event consists of date and description.

PROGRAM 1 * 23.9°C t↓	In the main window press twice button ⬆ to enter MENU.
LOGGER t↓⏎	By pressing ⬇, choose submenu LOGGER and confirm by pressing ⏎. Use ⬆ and ⬇ buttons to choose DATA or EVENTS. Press ⏎ to confirm.
LOGGER Data t↓⏎	In submenu DATA, the following options are available: use ⬆ and ⬇ buttons to choose: - send – sending by RS232/USB port to connected computer all logged data. To receive data on the computer use type program like 'terminal' (not supplied). - interval – determines the interval after which data is store in the internal memory. - erase – remove all stored data.

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LOGGER Events ↑↑↵ 002 9:24:01 start PROGRAM 1	In submenu EVENTS, the following options are available: use ▲ and ▼ buttons to choose: - send – sending by RS232/USB port to connected computer all logged data. To receive data on the computer use type program like 'terminal' (not supplied). - show – enable to view stored events. - erase – remove all stored data. Sample event. To view the event press ↵

Sample temperatures stored in the internal memory can be downloaded to your computer using free program EasyLab Basic. Downloaded data can be saved in .txt or .csv format. The program is not supplied with the device, it can be downloaded from: www.polekolab.com.

12 OPTIONAL FEATURES

12.1 Over and under temperature protection

The unit could be equipped with samples protection – over/under temperature protection, which is realized on the basis of temperature value measured on the second, independent temperature sensor (protection sensor). The purpose of samples protection is to protect from uncontrolled raise or drops of the temperature. At the time of operation, the transmitter disconnects the power supply circuit.

There is 4 classes of protection:

2.0 class – over temperature protection – no automatic switch on the circuit when the temperature go down below the set value protection – intervention of the user is required.

3.1 class – over temperature protection – automatic switch on the circuit when the temperature go down below the set value protection

3.2 class – under temperature protection - automatic switch on the circuit when the temperature raise above the set value protection

3.3 – under and over temperature protection – combination of class 3.1 and 3.2.

In class 3.x – in case of damage, the temperature will oscillate around the set temperature protection value.

During setting the value of protection, please note that when achieving the temperature and after opening the door the set temperature may exceed by 2%. If the temperature value of protection will be set to 'close' to set temperature in program, it may cause unexpected activation of the protection. It is especially important in 2.0 protection class because after activation, the intervention of the User is needed to keep the unit to maintain the set temperature.

It's recommended to set the values to:

over temperature protection: 10°C above set temperature

under temperature protection 10°C below set temperature

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The activation of protection generates audible alarm and display the alarm icon.

The chart below exemplifies the way the protections work.
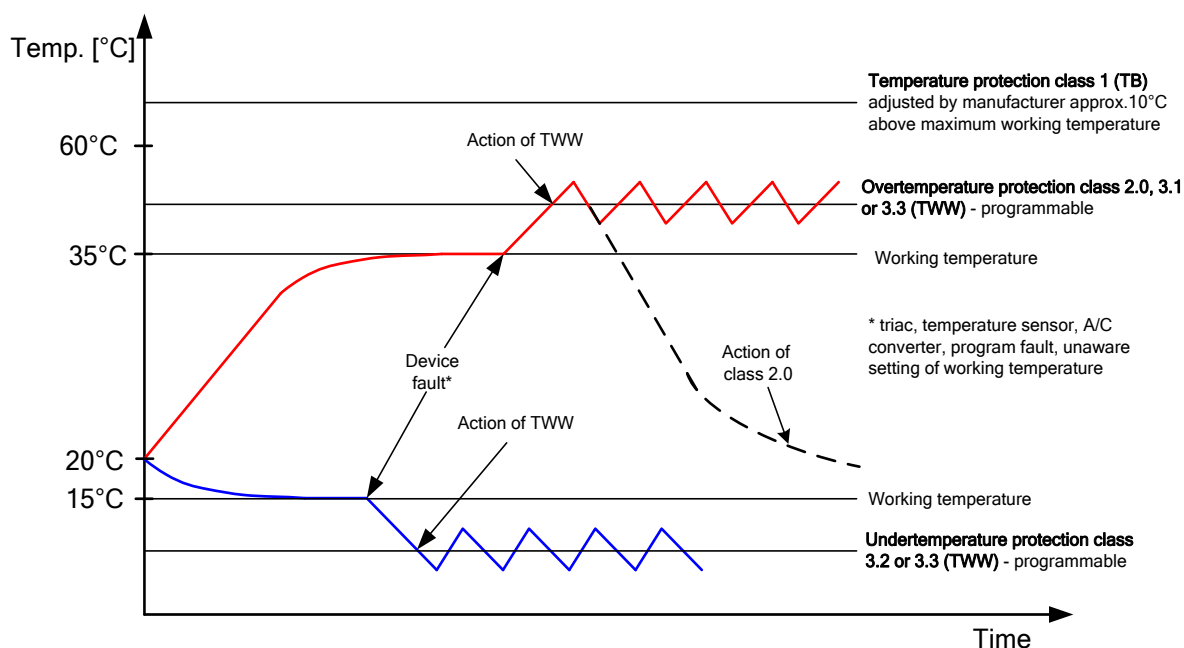
12.2 Open door counter

In sub menu "Settings" please choose "door count". The following window will appear on the display:

```
Number :    6
Mode : continous
```

where:

- „**State**" - shows how many times the door has been open.
- „**Mode**" – shows the counting / cancelling mode. The user is able to choose one of 3 modes: *continuous*, *program*, *segment*.

Counting the door openings depending on different modes:

- *continuous* – all door openings are counted,
- *program* – counting only when a program is running (after the program has been finished / interrupted the door openings are not counted)
- *segment* - counting the door openings only when the program is running and when it has reached the set temperature for a segment, so the door openings are not counted when the program is reaching the set temperature, or when the start delay is set, or it is switching to another segment, or it has been finished / interrupted / stopped

Cancelling the open door counter depending on the mode :

- **continuous** – cancelling the counter after the unit has been restarted
- **Program** and **Segment** – cancelling when the program has started

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Additionally, for each mode it is possible to cancel the open door counter by pressing down for 2 seconds the ⮐ button in the door counter window

12.3 Power failure alarm battery suspension

It is possible to equip the unit with power failure alarm battery suspension option. This option alarms the user when there is a power failure. Moreover, it allows the user to monitor the temperature inside the chamber and change the parameters.

In case there is a power failure, the program is stopped. The alarm is signalized by a red LED light in the control panel and short sound signals. After the power is back, the program is resumed.

12.4 Photoperiodic system

It is possible to equip the unit with the photoperiodic system, which allows the user to turn of the interior lighting during each segment. Therefore, it is possible to simulate day and night time. While programming each segment, it is possible to turn on/off this feature.

12.5 Additional temperature sensor

It is possible to equip the unit with additional temperature sensor. In this case, during the unit's operation, there are 2 temperature values displayed on the screen and marked 1 (basic temperature sensor) and 2 (additional temperature sensor). Additionally, it is possible to record the temperature simultaneously from 2 sensors, or separately.

12.6 Defrosting for low temperature refrigerator

The defrosting of the evaporator is carried out by raising the temperature inside the chamber by a few degrees and then going back to the previously defined temperature. There are 2 options available:
1. 'Auto' – automatic mode (AUTO ON/OFF) in which the controller of the device decides about turning on the defrosting option as frequent as it needs. The defrosting is carried out by following scheme: is activated always after first reach of temperature or it is activated when the device has to work very hard to keep set temperature.
2. "defr2. Freq." Programmable mode – user can set frequency of defrosting with following scheme:
   '0' – defrosting is off;
   '1' – defrosting activates once a day – at midnight (00:00);
   '2' – defrosting activates twice a day – at noon (12:00) and midnight (00:00);
   '3' – defrosting activates three times a day – at midnight (00:00), 8 am (08:00) and 4 pm (16:00);

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'4' – defrosting activates four times a day – at midnight (00:00), 6 am (06:00), at noon (12.00) and 6 pm (18:00);

Defrosting time can be programmable between 60 to 240 seconds.

Automatic mode and programmable mode can be set both.

Notice:

Defrosting time should be match individually and its depends of chamber's charge.

If defrosting time is to short the ice will be not melt down. It can be cause more ice.

If defrosting time is to long it will cause undesirable increase of chamber temperature.

13 OPERATION OF THE COOLING SYSTEM

If the device is operating in low temperatures the evaporator may get covered with ice. One symptom of too much ice on the evaporator is lower cooling efficiency of the device. To ensure proper operation of the device you should obey these principles:

1.	In temperatures above +8ºC the air automatically defrosts the ice cover, defrosting is self-operating.
2.	In temperatures below +8ºC the evaporator may be covered in ice and the device should be defrosted manually. In order to do that you need to open the door and turn on the defrost function on the controller. After the defrosting has finished, please wait ca. 30 min, then wipe the chamber precisely. Disobeying this precaution will make the evaporator freeze again quickly. If the unit works in a temperature below +8°C and the user does not defrost it periodically, it may make the compressor overheat and break down the unit.
3.	The device is equipped with a protection mechanism against damaging the cooling system. The mechanism makes it impossible to turn on cooling when the temperature exceeds 45ºC. As a result if the device has been programmed to go down with temperature (e.g. from 60ºC to 20ºC) it may take longer for the program to operate until it reaches 45ºC. The temperature inside the device is lowered naturally by emitting the heat to the surrounding environment.
4.	**Always make sure that the door has been closed properly!**

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14 CLEANING AND MAINTENANCE OF THE DEVICE

⚠	**Before cleaning the device, it needs to be disconnected from the electrical supply!**

To clean products made of stainless steel (INOX) we recommend using cleaning solution dedicated particularly to stainless steel material. It preserves the steel surface from permanent stains and at the same time retains aesthetic appearance of the product. Recommended cleaning solution is in POL-EKO-APARATURA offer.

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 user manual (or in the safety data sheet) of the cleaning solution.**

14.1 Housing 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.	At least once a month aggregate and condenser have to be cleaned by using vacuum cleaner, dry cloth or brush. Placement of condenser as per units: in the upper part of the unit (models 350, 500, 700, 1200, 1450), in the back (models 1, 2, 3, 4, 5, 85), in the front lower part (ZLN-T125, ZLN-T200, ZLN-T 300). To get acces to condenser (when it's placed in front lower part) pull ventilation cover towards you (A), then pull up (B). After cleaning condenser (1) install the cover. Disobeying recommended cleaning can cause damage of the compressor and loss of the right of warranty repair (see Warranty Conditions).

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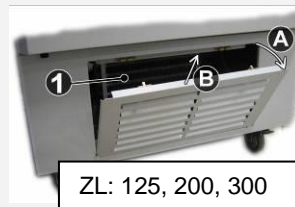
14.2 Interior cleaning

1.	The chamber should be emptied of any samples before cleaning.
2.	Open the door of the device and wait for the frost to melt (in case of working in low temperatures), take out the shelves and start cleaning the device,
3.	Only water or water with mild detergent should be used.
4.	Having finished cleaning, you should allow the device to dry fully and fit all parts removed before cleaning.
5.	During cleaning you should make sure not to damage the temperature sensor built in on the top of the chamber.

14.3 Internal LED lighting replacement

Halogen light is consumable part

Type of halogen bulb: GU10 230V 50Hz 3,7W LED

1.	Disconnect the unit from the power supply and the computer.
2.	Unscrew light fixing (1) screws and remove the light support (2).(Pic. 1.)
3.	Pull out the halogen bulb and replace it with a new one. (Pic. 1.)
4.	Insert the light socket and mount the support.
5.	Reconnect the unit to the power supply and check if it works properly.

Pic. 1.

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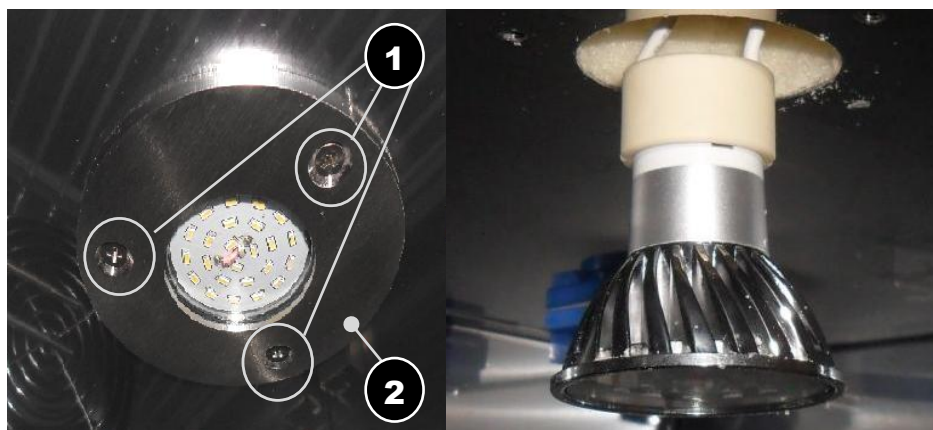
15 RESUMING OPERATION AFTER A LONGER PERIOD OF TIME

1.	Remove all objects from the chamber.
2.	Disconnect the device from the mains.
3.	If the instrument has worked in low temperatures, please wait until the frost melts.
4.	Clean and dry the chamber.
5.	Leave the door open to avoid nasty smells.
6.	Store in temperature between 0°C and 50°C and relative humidity maximum 70%.

16 PROBLEMATIC SITUATIONS

If the device is not working

You should check if:

1.	There is not an electrical supply failure?
2.	The power cord is plugged in the mains socket properly?
3.	The fuse has not been blown?
4.	The power cord has not been damaged?
5.	When you turn on the device with main switch and the display is unreadable (works only the backlight) turn off the device, wait for about 1 minute and turn on the unit again.

Inefficient cooling

1.	What is the temperature outside the device?
2.	Is the door shut tight? Is access ports for external sensors is sealed?
3.	Is the condenser clean?
4.	Is the device placed in direct sunlight?
5.	Is there any heat source near the device?
6.	Are there too many objects inside the device that are not cool enough?

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Water is condensing inside the chamber

1.	Is the defrosted water outlet not blocked?

Frost occurs on walls:

1.	Usual condition while working in low temperatures.
2.	If necessary, set a new defrosting parameters (see point 11.6).
3	Is the door shut tight? Is access ports for external sensors is sealed?

The device is operating too loud

1.	Is the device not leaning against furniture or other objects?
2.	Are the pipes at the back in direct contact or are they vibrating?
3.	Is the device leveled properly?

	CAUTION: Buzz and noise from decompression coming from the cooling circuit are normal noises.

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17 EXTERNAL RECORDING OF TEMPERATURE

The temperature can be recorded using a printer connected directly to the device or using a computer and communication set of software available in Polish and English EasyLab-T PLUS (or EasyLab/EasyLab-T) and interface cable. This enables recording of the temperature currently shown on the display. If an independent temperature recording is needed (measured using an additional sensor) you should use a special inlet for additional sensors (comes as an option) or independent electronic temperature recorders (if you need any information on temperature recorders please call 0048 32 453 91 70).

Example window from EasyLab-T PLUS PC software:

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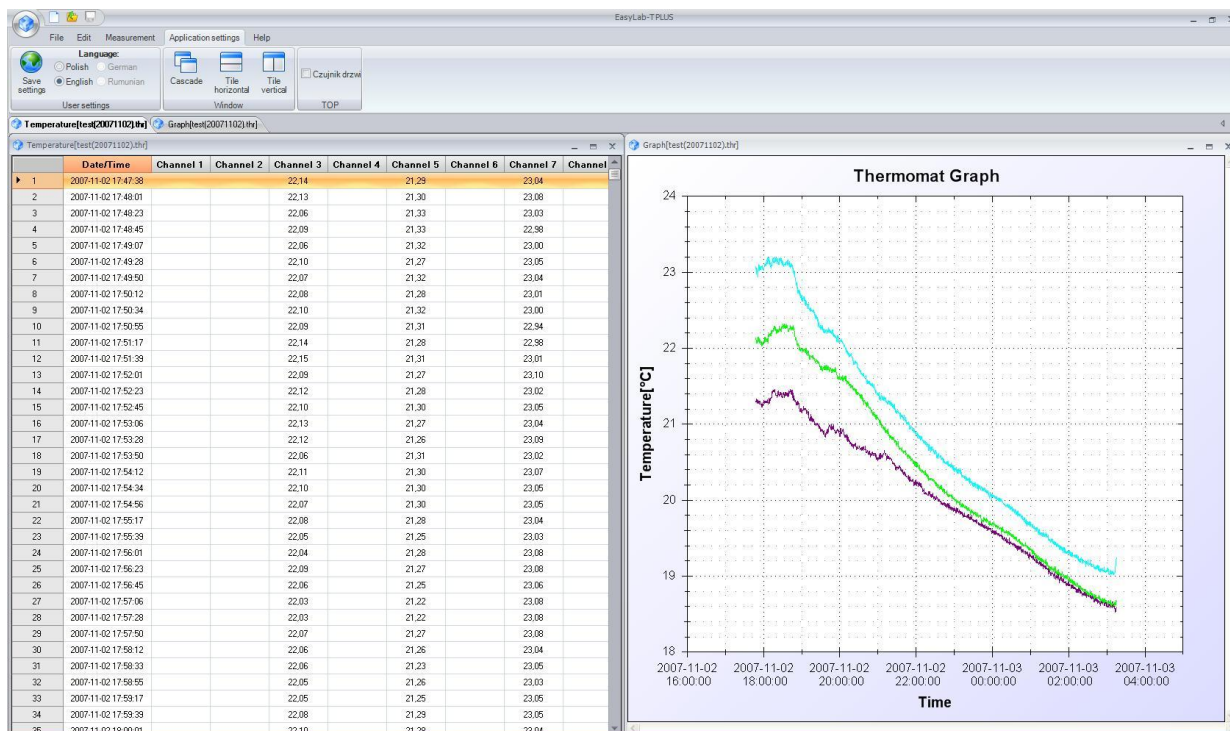
18 RATING PLATE

The rating plate is located on the left wall of the unit, in the upper left corner.

Below there is a example of rating plate:
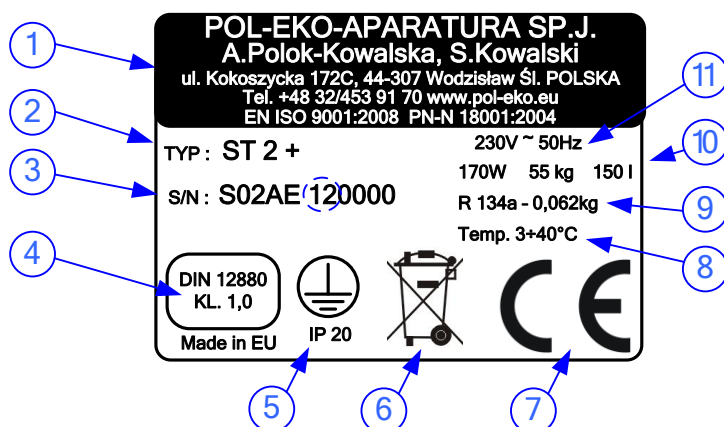
1. Name and address of manufacturer
2. Type of device
3. Serial number (2 indicated numbers state the year of production of the device)
4. Temperature safety device according with DIN12880
5. Electric shock protection: protection against indirect contact and IP code
6. Disposal of used device according with 2002/96/EC
7. CE sign
8. Temperature range
9. Type and weight of refrigerant
10. Maximum power consumption, weight and capacity of device
11. Voltage and Frequency of mains

19 WARRANTY CONDITIONS

1. The warranty does not cover any damage resulting from inappropriate transport.
2. In case of a justified warranty repair, the user/buyer covers the cost of transporting the unit to the service, and the warrantor covers the cost of transporting the unit to the user/buyer. In case of an unjustified claim the user/buyer covers the cost of transporting the unit in both ways.
3. Justified faults and damage of the unit will be repaired free of charge within 20 days of delivering the unit to the service.
4. The warranty period for the user/buyer is extended for the time the unit has spent at the service.
5. Warranty covers data carriers delivered along with the equipment; warranty does not cover data saved on any additional data carriers plugged to the equipment by the User, like e.g. memory card or pendrive. Manufacturer recommends to make additional copy of significant data.
6. Warranty does not cover parts that are being exploited during equipment normal use, e.g. battery.
7. The term "repair" does not cover the installation and conservation of the unit, or improving the mechanical-electrical connections.
8. The only entity approved to carry out all warranty repairs is the POL-EKO-APARATURA service or other party authorized by POL-EKO-APARATURA to provide service.
9. Warranty does not cover any damage to the glass parts and any mechanical damage.
10. The user loses the warranty rights if during the warranty period:
    - they use the unit contrary to the instruction manual,
    - **does not perform the maintenance and inspection works, or does not comply to the recommendations (see point "Maintenance…"),**
    - they carry out the repairs or modifications of the unit on their own or have them made by others, not authorized by POL-EKO-APARATURA
    - the warranty seal is torn,
    - they use their guarantee rights in the first year of using the device (counting from the date of sale),
    - there are no anti-surge protections in the building which may result in a damage to the unit (e.g. due to an atmospheric discharge),

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Warranty conditions shall be subject to Polish law

Warranty repairs have to be reported to:

Address:	**POL-EKO-APARATURA Sp.j.**
	ul. Kokoszycka 172 C
	44-300 Wodzislaw Slaski
	POLAND
Phone:	**+48 32 453 91 70**
Fax:	**+48 32 453 91 86**
e-mail:	**info@pol-eko.com.pl**

Before you contact the service:

- Make sure you cannot remove the failure by yourself.
- Turn the unit off and on again to make sure it is not working properly. If this is the case, disconnect the unit from the mains and repeat the procedure after an hour,

If the unit is still not working properly, contact the service giving the following information:
- type and serial number of the device,
- date of purchase,
- type of damage (detailed description),
- full address and place where the unit has been installed,
- time when we can contact you,

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20 TECHNICAL DETAILS

The technical data allows for ± 5% tolerance.

Model / Parameter		ST1 / CHL1	ST2 / CHL2	ST3 / CHL3	ST4 / CHL4	ST5 / CHL5	ST500 / CHL500	ST700 / CHL700	ST1200 / CHL1200	ST1450 / CHL1450
air convection		forced								
chamber capacity ¹	[l]	68	150	200	250	300	493	625	1365	1460
	[cu ft]	2,4	5,2	7,0	8,8	10,5	17,4	2,0	48,2	51,6
door type		solid / glass or double²(option)								
temperature range [ºC]	ST	+3...+40 / up to +70 (option) / +3...+70 in TOP+ version								
	CHL	+0...+15					+0...+15 / -10...+15 (option)			
temperature range [ºF]	ST	+37...+104 / up to +158 (option) / +37...+158 in TOP+ version								
	CHL	+32...+59					+32...+59/+14...+59 (option)			
controller		microprocessor with external LCD graphic display								
interior		aluminum / stainless steel								
housing		powder coated sheet / stainless steel polished INOX/S								
overal dims [mm]**	width	570	620	620	620	620	645	735	1140	1450
	height	600	860	1060	1260	1460	2025	2025	2045	1970
	depth	670	640	640	640	640	820	870	860	950
internal dims ³ [mm]	width	470	520	520	520	520	510	600	1310	1340
	height	430	660	860	1060	1260	1510	1510	1510	1460
	depth	300	420	420	420	420	640	690	690	750
shelves fitted/max⁵		2/2	3/4	3/4	4/6	4/7	3/11	3/11	2x3/11⁴	2x3/11⁴
max shelf workload [kg]*		10	10	10	10	10	20	30	30	30
max unit workload [kg]		20	30	40	50	60	100	150	300	300
voltage 50/60 Hz [V]		110-120/220-240								
nominal powder [W]		160	170	170	330	330	400	400	550	550

* - at even surface workload
** - ST 1-5 in TOP+ version are 60 mm higher
dims of power cable (50 mm) not included
1 - working capacity of chamber can be smaller
2 - additional internal glass door

3 - dims of units with double door can be smaller
4- two columns with 3 shelves each
5 - "fitted" number of shelves fitted, included in price
 - "max" number of shelves which can be fitted

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Parameter \ Model			ZLN75	ZLN180	ZLN85	ZLN-T 125	ZLN-T 200	ZLN-T 300
air convection			natural					
chamber capacity [1]		[l]	85	196	86	125	200	299
		[cu ft]	3,0	6,9	3,0	4,4	7,0	10,5
Temperature range		[ºC]	-25 … 0			-40 … 0		
		[ºF]	-13...+32			-40 … +32		
door type			solid					
controller			microprocessor with external LCD graphic display					
interior			plastic		stainless steel			
housing			powder coated sheet		powder coated sheet / stainless steel polished INOX/S			
overal dims [mm] [mm]**	Width		560	600	620	675	775	775
	Height		850	1455	885	1170	1385	1735
	Depth		610	650	640	800	800	800
Internal dims [mm]	Width		410	450	420	396	496	496
	Height		630	1160	590	600	770	1120
	Depth		390	420	395	524	524	524
shelves fitted / max[2]			2/2	5/5	2/4	2/3	2/4	3/6
max shelf workload [kg]*			10	10	10	10	10	10
max unit workload[kg]			30	50	30	50	65	80
voltage		50Hz[V]	220-240		110-120/220-240			
		60Hz[v]	-					

* - at even surface workload

** - dims of power cable (50 mm) not included

1 - working capacity of chamber can be smaller

2 - "fitted" number of shelves fitted, included in price, "max" number of shelves which can be fitted

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Parameter / Model		ST1/1 CHL1/1	ST1/1/1 CHL1/1/1	ST2/2 CHL2/2	ST2/3 CHL2/3	ST2/4 CHL2/4	ST3/3 CHL3/3	ST350/350 CHL350/350
air convection		forced						
chamber capacity [1]	[l]	68/68	68/68/68	150/150	150/200	1500/250	200/200	294/294
	[cu ft]	2,4/2,4	2,4/2,4/2,4	5,2/5,2	5,2/7,0	5,2/8,5	7,0/7,0	10,3/10,3
door type		solid / glass or double[2](option)						
Temperature range[°C]	ST	+3...+40 / up to +70 (option) / +3...+70 in TOP+ version						
	CHL	0...+15 / -10...+15 (option only for CHL 350/350)						
Temperature range[°F]	ST	+37...+104 / up to +158 (option) / +37...+158 in TOP+ version						
	CHL	+32...+59 / +14...+59 (option only for CHL 350/350)						
controller		microprocessor with external LCD graphic display						
interior		aluminum / stainless steel						
housing		powder coated sheet / stainless steel polished INOX/S						
overal dims [mm]**	width	570	570	620	620	620	620	720
	height	1170	1740	1680	1875	2080	2080	2045
	depth	670	670	640	640	640	640	860
internal dims [3] [mm]	width	470	470	520	520	520	520	600
	height	430	430	660	660/860	660/1060	860	700
	depth	300	300	420	420	420	420	700
shelves fitted / max[4]		2/2/2/2	2/2/2/2/2	3/4/3/4	3/4/3/4	3/4/4/6	3/4/3/4	2/6/2/6
max shelf workload [kg]*		10	10	10	10	10	10	30
max unid workload [kg]		20/20	20/20/20	30/30	30/40	30/50	40/40	75/75
voltage 50/60 Hz [V]		110-120/220-240						
nominal power [W]		320	480	350	350	350	350	800

* - at even surface workload
** - dims of power cable (50 mm) not included
1 - working capacity of chamber can be smaller
2 - additional internal glass door

3 - dims of units with double door can be smaller
4 - "fitted" number of shelves fitted, included in price - "max" number of shelves which can be fitted

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POL-EKO-APARATURA sp.j.

A. Polok-Kowalska, S. Kowalski

$C\epsilon$

DEKLARACJA ZGODNOŚCI
POL-EKO-APARATURA sp.j.
A. Polok-Kowalska, S. Kowalski
ul. Kokoszycka 172c
44-300 Wodzisław Śl.

Deklarujemy z pełną odpowiedzialnością, że następujące wyroby:

Zamrażarki Laboratoryjne:
ZLN 85; ZLN 125; ZLN 200; ZLN 300
w wersjach COMFORT oraz PREMIUM

Urządzenia dwukomorowe:
ST 2 / ZLN 85; ST 3 / ZLN 85; ST 4 / ZLN 85; CHL 2 / ZLN 85; CHL 3 / ZLN 85;
CHL 4 / ZLN 85
w wersjach COMFORT oraz PREMIUM

do których odnosi się niniejsza deklaracja są zgodne z przepisami prawnymi określonymi
w następujących dyrektywach:

Dyrektywa niskonapięciowa 2006/95/WE
- PN-EN 61010-1:2011 - Wymagania bezpieczeństwa elektrycznych przyrządów pomiarowych, automatyki i urządzeń laboratoryjnych. Część 1: Wymagania ogólne
- PN-EN 61010-2-010:2006 - Wymagania bezpieczeństwa elektrycznych przyrządów pomiarowych, automatyki i urządzeń laboratoryjnych. Wymagania szczegółowe dotyczące urządzeń laboratoryjnych przeznaczonych do nagrzewania materiałów
- PN-EN 60519-1:2011 – Bezpieczeństwo urządzeń elektrotermicznych. Część 1: Wymagania ogólne.

Dyrektywa kompatybilności elektromagnetycznej 2004/108/WE
- PN-EN 61326-1:2013-06 - Wyposażenie elektryczne do pomiarów, sterowania i użytku w laboratoriach. Wymagania dotyczące kompatybilności elektromagnetycznej (EMC)

Dwie ostatnie cyfry roku, w którym oznakowanie CE zostało umieszczone: 06

POL-EKO-APARATURA sp.j.
DYREKTOR
Sebastian Kowalski

Wodzisław Śl. 04.06.2014
(miejsce i data wystawienia)   (nazwisko i podpis osoby upoważnionej)

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A. Polok-Kowalska, S. Kowalski

C E

DECLARATION OF CONFORMITY

POL-EKO-APARATURA sp.j.
A. Polok-Kowalska, S. Kowalski
ul. Kokoszycka 172c
44-300 Wodzisław Śl.

We declare with full responsibility, that our products:

Refrigerators
CHL 1; CHL 2; CHL 3; CHL 4; CHL 5; CHL500; CHL700; CHL1200; CHL1450; CHL1/1; CHL1/1/1; CHL2/2; CHL2/3; CHL2/4; CHL3/3; CHL350/350
in versions: BASIC, COMFORT, PREMIUM

are produced in accordance with regulations described in following directives:

Low-voltage directive 2006/95/WE
- PN-EN 61010-1:2011 – Safety requirements in electrical measuring devices, automatics and laboratory equipment. Part 1: "General requirements"
- PN-EN 60519-1:2011 - Safety in electroheat installations - Part 1: General requirements
- PN-EN 61010-2-010:2006 - Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-010: Particular requirements for laboratory equipment for the heating of material

Electromagnetic compatibility directive 2004/108/WE
- PN-EN 61326-1:2013-06 – Electrical laboratory measurement equipment. Requirements of electromagnetic compatibility (EMC)

The last two digits of the year in which the CE marking was affixed: 06

Wodzisław Śl. 04.06.2014

POL-EKO-APARATURA sp.j.
DYREKTOR
Sebastian Kowalski

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A. Polok-Kowalska, S. Kowalski

$$C \in$$

DECLARATION OF CONFORMITY
POL-EKO-APARATURA sp.j.
A. Polok-Kowalska, S. Kowalski
ul. Kokoszycka 172c
44-300 Wodzisław Śl.

We declare with full responsibility, that our products:

Thermostatic cabinets
ST1; ST2; ST3; ST4; ST5; ST500; ST700; ST1200; ST 1450
in versions: BASIC, COMFORT, PREMIUM

Double chamber
ST1/1; ST1/1/1; ST2/2; ST2/3; ST2/4; ST3/3; ST350/350, CHL 1/ ST 1; ST 2 / CHL 2;
ST 2 / CHL 3; ST 2 / CHL 4; ST 3 / CHL 3;
in versions: BASIC, COMFORT, PREMIUM

are produced in accordance with regulations described in following directives:

Low-voltage directive 2006/95/WE
- PN-EN 61010-1:2011 – Safety requirements in electrical measuring devices, automatics and laboratory equipment. Part 1: "General requirements"
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- PN-EN 61010-2-010:2006 - Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-010: Particular requirements for laboratory equipment for the heating of material

Electromagnetic compatibility directive 2004/108/WE
- PN-EN 61326-1:2013-06 – Electrical laboratory measurement equipment.
  Requirements of electromagnetic compatibility (EMC)
The last two digits of the year in which the CE marking was affixed: **06**

POL-EKO-APARATURA sp.j.
DYREKTOR
Sebastian Kowalski

Wodzisław Śl. 04.06.2014

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Notes:

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**Producer of basic and indispensable laboratory equipment
as well as continuous measurement equipment.
Authorized dealer of:
Arctiko, Eutech, Hamilton, Istran, Knick
Lovibond, MAXX, Nickel-Electro, Rodwell,
Thermo Scientific, WTW**

TÜV NORD
PN-EN ISO 9001

POL–EKO–APARATURA sp.j.

**A. Polok-Kowalska, S. Kowalski
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We produce:
- thermostatic cabinets
- refrigerators
- laboratory freezers
- heating ovens
- cooled incubators
- drying ovens
- colony counters
- stationary samplers
- specialized devices for controlled sewage and waste waters taking

We organize:
- trainings
- seminaries

We provide:
- warranty service
- post–warranty service

We offer portable, laboratory and on-line equipment:
- pH-meters
- ISE measuring
- dissolved oxygen meters
- conductivity meters
- photometers
- spectrophotometers
- thermo reactors
- turbidity meters
- heavy metals trace analyzers
- pH electrodes
- conductivity sensors
- D.O. sensors
- pH buffer solutions
- conductivity standards
- photometric tests
- chromatography syringes
- laboratory accessories

We advise our customers as far as the choice and maintenance of the equipment are concerned !