

# Laboratory refrigerators

## Application

- storage of water and sewage samples, piezometer leachate
- storage of AAS, GC or HPLC calibration standards
- storage of reagents
- chemical storage
- storage of medicines and vaccines



**Laboratory refrigerators** are equipped with a cooling system and can provide a stable temperature between 0°C ... +15°C.

## Calibration



All thermostatic equipment manufactured by POL-EKO-APARATURA can be provided with Calibration Certificate issued by accredited Measurement Laboratory. Detailed information on accreditation of POL-EKO Laboratorium Pomiarowe is available on website: [www.polekolab.pl](http://www.polekolab.pl).

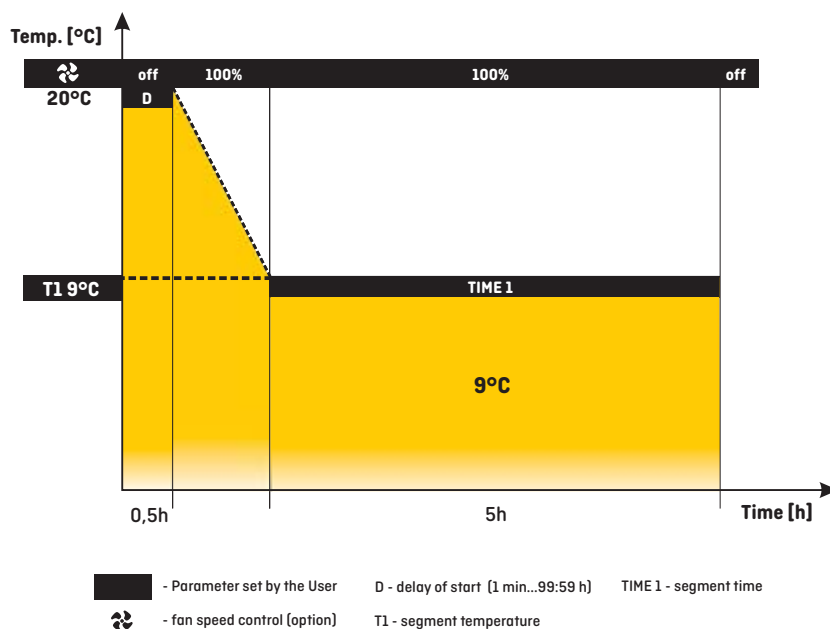


The **BASIC, COMFORT, PREMIUM** models are equipped with a PID microprocessor controller with an LCD graphic display and illuminated touch buttons.

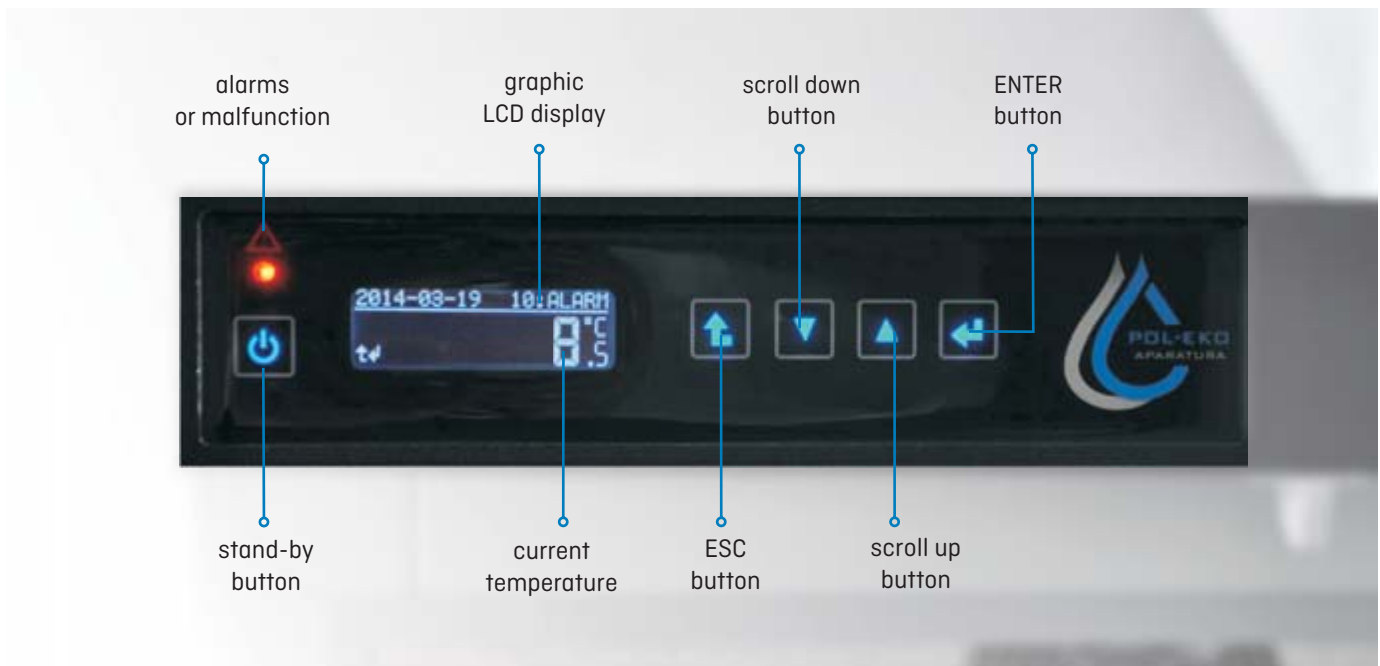
### Controller advantages

- temperature control
- adjustable start delay feature (1 min...99:59 h)
- adjustable hold at set point time for temperature from 1 min to 31 days or continuous operating
- operating with temperature priority mode
- overview of set and current parameters while operating
- recording of min, average and max temperature value for each segment
- operating with temperature priority mode
- defrosting function
- audible and visual temperature alarm
- temperature sensor fail alarm
- power failure control system (program continued after restoring power)
- real-time clock
- auto-diagnostic function
- internal memory to store up to 2046 data records
- forced air convection with optional fan speed control (50-100%)
- automatic fan shut-down after completing the program

Detailed description of parameters on page 82.



Control panel



Standard features:

- temperature range 0...+15°C
- quality control protocol (at +4°C)
- operation manual in English
- available menu languages: Czech, English, Estonian, French, German, Italian, Latvian, Polish, Portuguese, Russian, Spanish
- over temperature protection 1.0 class for BASIC and COMFORT models and 2.0 for PREMIUM models according to DIN 12880
- open door alarm
- wheels in standard for models CHL 1200 and 1450

RS 232 and USB ports for data transfer

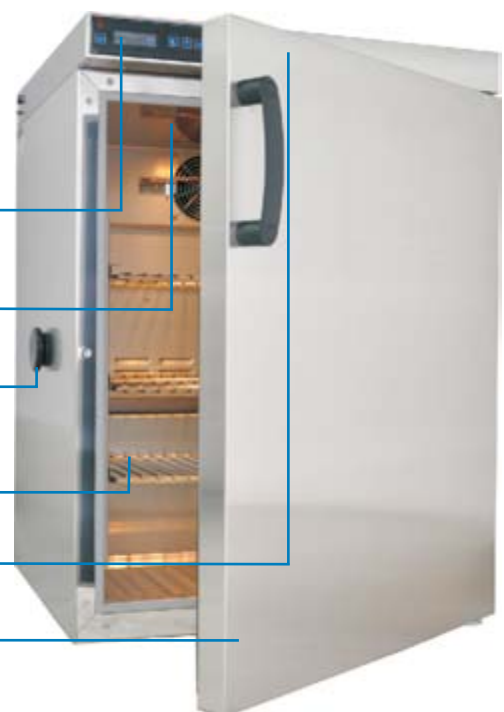
internal LED light

access port: (Ø 30 mm)

wire shelves with slides set for BASIC and stainless steel wire shelves for COMFORT and PREMIUM models

door lock

solid door



**PREMIUM TOP+ version**

All the units in TOP+ version are equipped with a PID microprocessor controller with a large [5,7"] full colour touch screen, intuitive menu and user friendly software. They can be connected to Ethernet network for remote control from any computer, being one of the greatest advantages.

**Controller advantages**

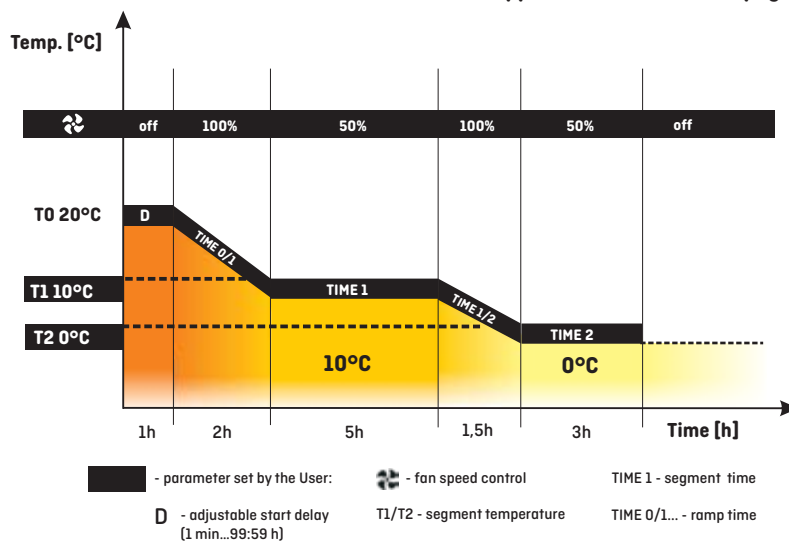
- multi-segment temperature-time profile (up to 100)
- loop function up to 99 times or endless
- adjustable start delay feature (from 1 min to 99:59 h or date/time)
- Administrator function to manage User accounts
- adjustable hold at set point time for temperature from 1 min to 999:59 h or continuous operating
- access control via login
- 7-days programming
- temperature calibration
- adjustable ramps
- overview of set and current parameters while operating
- recording of min, average and max temperature value for each segment
- possibility of temperature calibration by the User
- audible and visual temperature alarm
- operating in temperature or time priority mode
- defrosting function
- temperature sensor fail alarm
- power failure control system (program continued after restoring power)
- digital timer
- real-time clock
- auto-diagnostic function
- forced air convection with fan speed control (50-100%)
- automatic fan shut-down after completing the program

Detailed description of parameters on page 82.

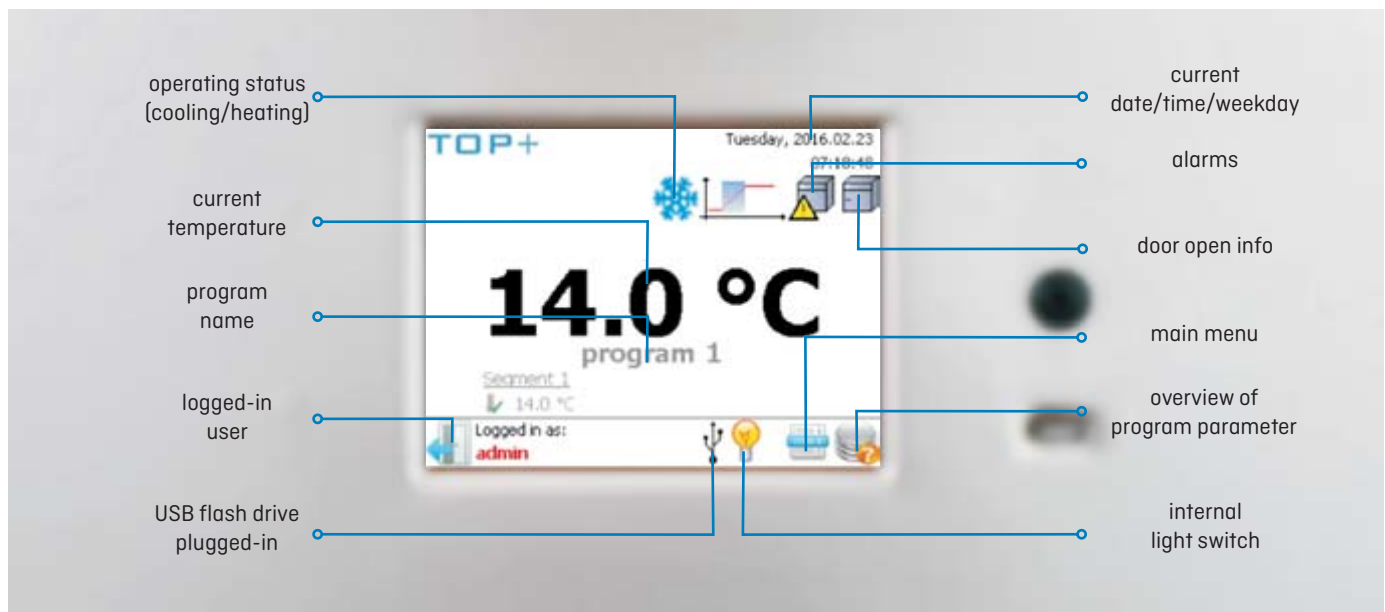
**GLP supporting functions**

- password protected settings
- 20 user programs memory
- internal memory to store up to 4100 data records for each User, possibility to overview the values on the display or a PC computer in tabular or graphic form
- USB port to allow direct data recording or transfer into a flash drive
- events registry

TOP+ Control application included (see page 68).



Control panel



Standard features

- temperature range 0...+15°C
- Ethernet cable
- TOP+ Control software
- quality control protocol (at +4°C)
- English instruction manual
- available menu languages: English, Estonian, French, German, Hungarian, Italian, Latvian, Polish, Portuguese, Romanian, Russian, Spanish
- temperature protection 3.2 class to DIN 12880
- open door alarm
- wheels in standard for models CHL 1200 and 1450

door lock

USB port to allow direct recording and data transfer onto a flash drive

RS 232 interface and LAN port

internal LED light

access port: Ø30 mm

stainless steel wire shelves

solid door



# Laboratory refrigerators

CHL

		CHL 1	CHL 2	CHL 3	CHL 4	CHL 5	CHL 6	CHL 500	CHL 700	CHL 1200	CHL 1450
Parameter											
air convection		forced									
chamber capacity [l]		70	150	200	250	300	400	500	625	1365	1460
working capacity [l]		55	122	163	203	243	324	386	450	1229	1307
door type		solid / glass or double <sup>1</sup> (option)									
temperature range [°C]		0...+15					0...+15 / -10...+15 (option)				
temperature resolution [°C]		every 0,1									
controller		microprocessor with external LCD graphic display									
interior	BASIC	aluminum									
	COMF	stainless steel to DIN 1.4016									
	COMF/S	stainless steel to DIN 1.4016									
	PREM (TOP+)	stainless steel to DIN 1.4301									
	PREM/S (TOP+)	stainless steel to DIN 1.4301									
housing	BASIC	powder coated sheet									
	COMF	powder coated sheet									
	COMF/S	polished stainless steel									
	PREM (TOP+)	powder coated sheet									
	PREM/S (TOP+)	polished stainless steel									
overall dims <sup>2</sup> [mm]	A width	570	620	620	620	620	620	660	750	1480	1450
	B height	600	860	1060	1260	1460	1860	1990	1990	1990	1970
	C depth	680	650	650	650	650	650	810	860	860	950
internal dims <sup>3</sup> [mm]	D width	430	480	480	480	480	480	430	480	2x480	2x490
	D' width	470	520	520	520	520	520	510	600	1310	1340
	E height	430	660	860	1060	1260	1660	1510	1510	1510	1460
	F depth	300	420	420	420	420	420	650	690	690	750
	F' depth	360	480	480	480	480	480	-	-	-	-
	G depth	-	320	320	320	320	320	-	-	-	-
	H height	-	440	640	840	1050	1440	-	-	-	-
	J height	-	-	-	-	-	-	1380	1360	1360	1300
max shelf workload <sup>4</sup> [kg]	-	10	10	10	10	10	10	20	30	30	30
	Pw <sup>5</sup> version	on request						100	100	100	100
max unit workload [kg]	-	20	30	40	50	60	60	100	150	300	300
	W <sup>6</sup> version	on request									
nominal power [W]		160	170	170	330	330	330	400	400	550	550
weight <sup>7</sup> [kg]		32	54	59	69	75	90	105	115	185	200
over temperature protection		class 1.0 to DIN 12880 / class 3.2 (option) / class 3.2 in PREM TOP+									
power supply*		230 V 50 Hz									
shelves fitted/max		2/2	3/4	3/4	4/6	4/7	4/10	3/11	3/11	2 x 3/11 <sup>8</sup>	2 x 3/11 <sup>8</sup>
warranty		24 months									
manufacturer		POL-EKO-APARATURA									

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - additional internal glass door

2 - CHL 1-5 in TOP+ version are 60 mm higher, depth doesn't include 50 mm of power cable

3 - dims of units with double door can be smaller

4 - on uniformly loaded surface

5 - reinforced shelf

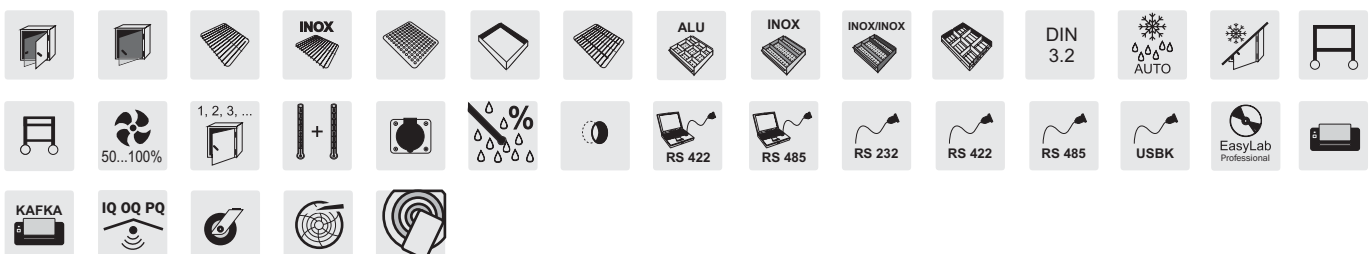
6 - reinforced version

7 - for units in BASIC version with solid door

8 - two columns with 3 shelves each

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

## Options and accessories (icon description see pages 80-81)



		CHL 1/1	CHL 1/1/1	CHL 2/2	CHL 2/3	CHL 2/4	CHL 3/3	
Parameter								
air convection		forced						
chamber capacity [l]		70/70	70/70/70	150/150	150/200	150/250	200/200	
working capacity [l]		55/55	55/55/55	122/122	122/163	122/203	163/163	
door type		solid / glass or double <sup>1</sup> (option)						
temperature range [°C]		0...+15						
temperature resolution [°C]		every 0,1						
controller		microprocessor with external LCD graphic display						
interior		BASIC	aluminum					
		COMF	stainless steel to DIN 1.4016					
		COMF/S	stainless steel to DIN 1.4016					
		PREM (TOP+)	stainless steel to DIN 1.4301					
		PREM/S (TOP+)	stainless steel to DIN 1.4301					
housing		BASIC	powder coated sheet					
		COMF	powder coated sheet					
		COMF/S	polished stainless steel					
		PREM (TOP+)	powder coated sheet					
		PREM/S (TOP+)	polished stainless steel					
overall dims <sup>2</sup> [mm]		A width	570	570	620	620	620	620
		B height	1170	1740	1680	1880	2080	2080
		C depth	680	680	650	650	650	650
internal dims <sup>3</sup> [mm]		D width	430	480	480	480	480	480
		D' width	470	520	520	520/520	520/520	520
		E height	430	430	660	660/860	660/1060	860
		F depth	300	420	420	420	420	420
		F' depth	360	480	480	480/480	480/480	480
		G depth	-	320	320	320	320	320
		H height	-	440	640	840	1050	1440
max shelf workload <sup>4</sup> [kg]		-	10	10	10	10	10	10
		Pw <sup>5</sup> version	on request					
max unit workload [kg]		-	20	20	30	30/40	30/50	40
		W <sup>6</sup> version	on request					
nominal power [W]		320	480	350	350	350	350	
weight <sup>7</sup> [kg]		65	98	109	114	124	119	
over temperature protection		class 1.0 to DIN 12880 / class 3.2 (option) / class 3.2 in PREM TOP+						
power supply*		230 V 50 Hz						
shelves fitted/max		see table for single chamber models						
warranty		24 months						
manufacturer		POL-EKO-APARATURA						

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - additional internal glass door

2 - depth doesn't include 50 mm of power cable

3 - dims of units with double door can be smaller

4 - on uniformly loaded surface

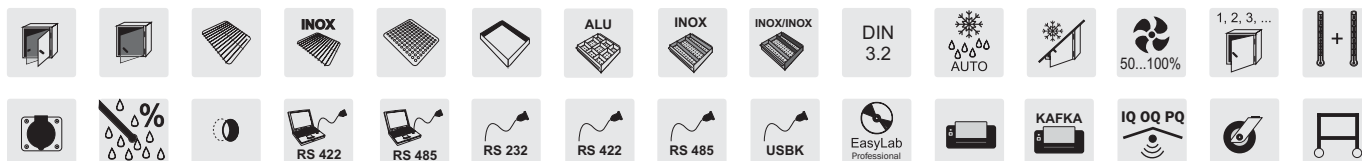
5 - reinforced shelf

6 - reinforced version

7 - for units in BASIC version with solid door

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

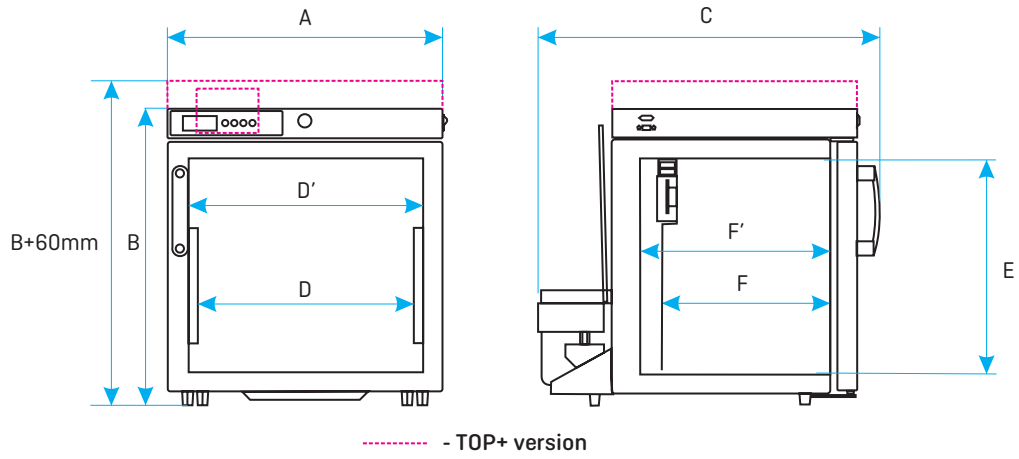
### Options and accessories (icon description see pages 80-81)



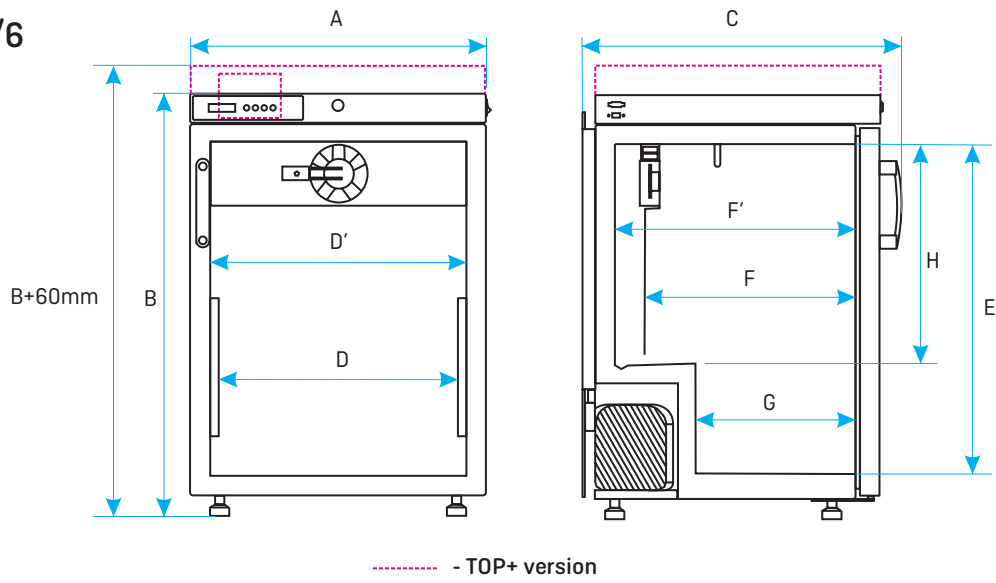
Laboratory refrigerators

CHL

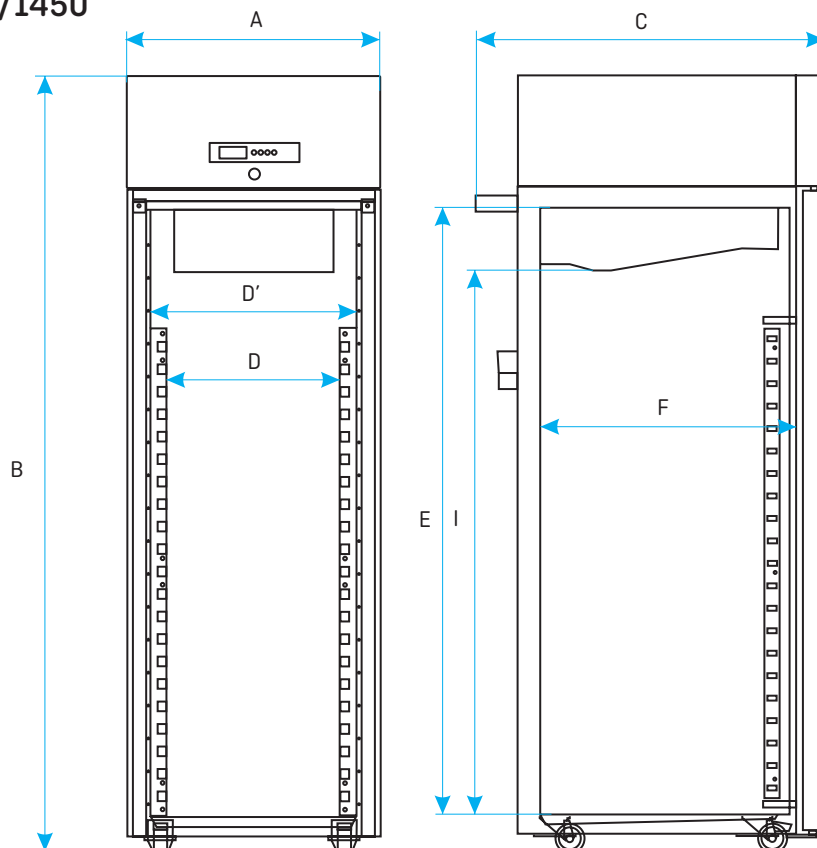
CHL 1



CHL 2/3/4/5/6



CHL 500/700/1200/1450





# Laboratory freezers

## Application

- long-term storage of samples and biological material for research
- storage of easily decomposing material (e.g. solid state)
- freeze resistance tests (e.g. of building materials: concrete, wood etc.)
- pre-freezing
- plasma storage



**Laboratory freezers can freeze and store frozen samples.**

## Calibration



All thermostatic equipment manufactured by P0L-EK0-APARATURA can be provided with Calibration Certificate issued by accredited Measurement Laboratory. Detailed information on accreditation of P0L-EK0 Laboratorium Pomiarowe is available on website: [www.polekolab.pl](http://www.polekolab.pl).

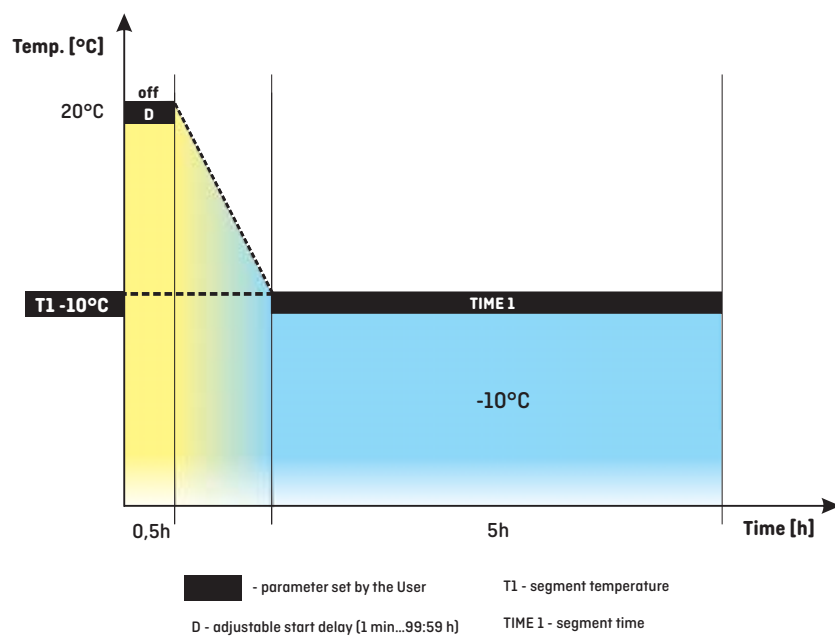


The COMFORT and PREMIUM models are equipped with a PID microprocessor controller with an LCD graphic display and illuminated touch buttons.

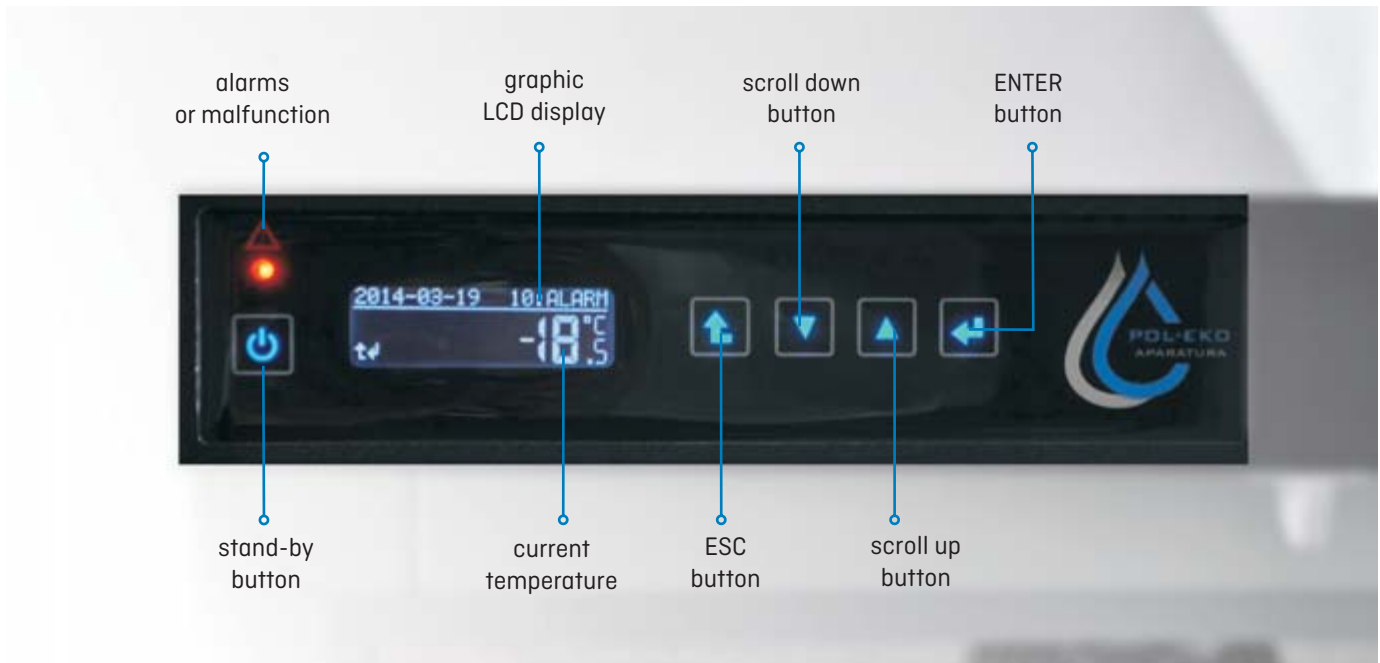
### Controller advantages

- temperature control
- operating with temperature priority
- adjustable start delay feature (1 min...99:59 h)
- loop function up to 99 times or endless
- overview of set and current parameters while operating
- recording of min, average and max temperature value for each segment
- audible and visual temperature alarm
- temperature sensor fail alarm
- power failure control system (program continued after restoring power)
- digital timer
- real-time clock
- auto-diagnostic function
- internal memory to store up to 2046 data records
- natural (ZLN-T) or forced (ZLW-T) air convection

Detailed description of parameters on page 82.



### Control panel



### Standard features

- temperature range -25...0°C for ZLN 85 and -40...0°C for ZLN-T 125, 200, 300
- wire stainless steel shelves for ZLN 85 and perforated stainless steel for ZLN-T 125, 200, 300
- quality control protocol (at -20°C)
- English instruction manual
- available menu languages: Czech, English, Estonian, French, German, Italian, Latvian, Polish, Portuguese, Russian, Spanish
- open door alarm

access port: Ø20 mm

door lock







solid door

RS 232 and USB ports for data transfer

internal memory to store up to 2046 data records

wheels in standard for ZLN-T 300



	ZLN 85	ZLN-T 125	ZLN-T 200	ZLN-T 300	<b>new!</b> ZLW-200	<b>new!</b> ZLW-300	
Parameter							
air convection	natural			forced			
chamber capacity [l]	95	130	210	310	210	310	
working capacity [l]	76	109	180	262	140	213	
door type	solid						
temperature range [°C]	-25...0		-40...0				
temperature resolution [°C]	every 0,1						
controller	microprocessor with external LCD graphic display						
interior	COMF	stainless steel to DIN 1.4016					
	COMF/S	stainless steel to DIN 1.4016					
	PREM	stainless steel to DIN 1.4301					
	PREM/S	stainless steel to DIN 1.4301					
housing	COMF	powder coated sheet					
	COMF/S	polished stainless steel					
	PREM	powder coated sheet					
	PREM/S	polished stainless steel					
overall dims <sup>1</sup> [mm]	A width	610	660	760	760	760	760
	B height	880	1190	1380	1730	1380	1730
	C depth	650	800	800	800	800	800
internal dims [mm]	D width	380	370	450	450	450	450
	D+ width	420	420	520	520	520	520
	E height	590	600	770	1120	770	1120
	F depth	400	520	520	520	520	520
	F+ depth	440	530	530	530	530	530
	G depth	230	-	-	-	-	-
	I depth	210	-	-	-	-	-
	J depth	-	-	-	-	600	910
max shelf workload <sup>2</sup> [kg]	-	10	10	10	-	-	
	Pw <sup>3</sup> version	-	50	50	50	-	-
max unit workload [kg]	-	30	50	65	80	-	-
	W <sup>4</sup> version	-	100	130	160	160	160
nominal power [W]	200	450	470	470	500	500	
weight [kg]	60	90	120	185	120	185	
power supply*	230 V 50 Hz						
shelves fitted/max	2/4	2/3	2/4	3/6	2/4	3/6	
warranty	24 months						
manufacturer	POL-EKO-APARATURA						

all the above technical data refer to standard units (without optional accessories)

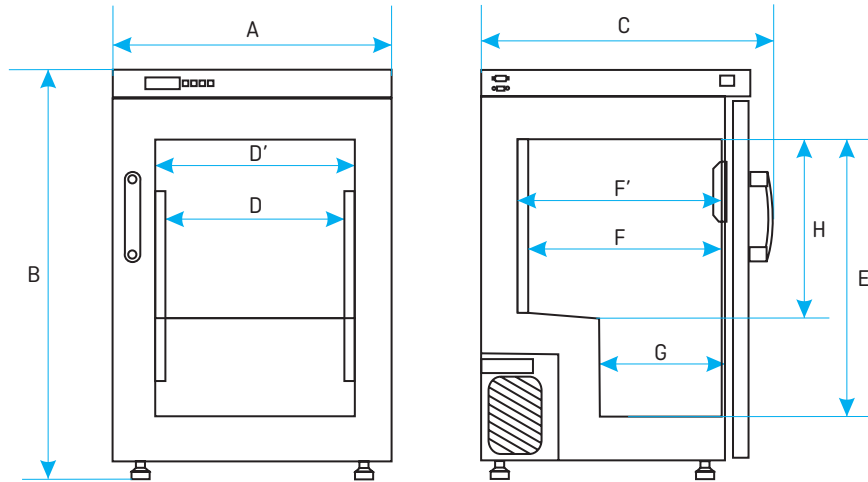
- \* - 230V 60Hz, 115V 60Hz also available
- 1 - depth doesn't include 50 mm of power cable
- 2 - on uniformly loaded surface
- 3 - reinforced shelf
- 4 - reinforced version

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

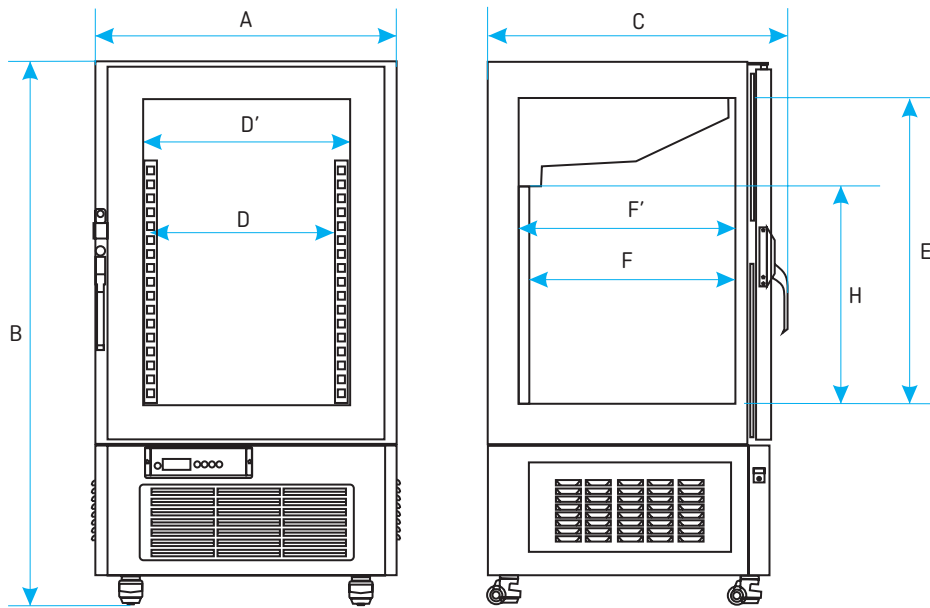
### Options and accessories (icon description see pages 80-81)



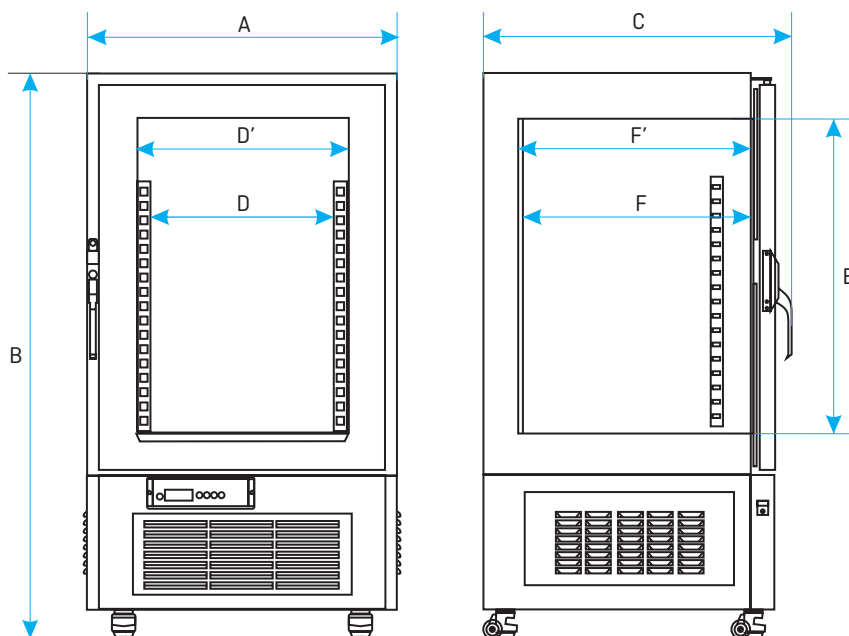
ZLN 85

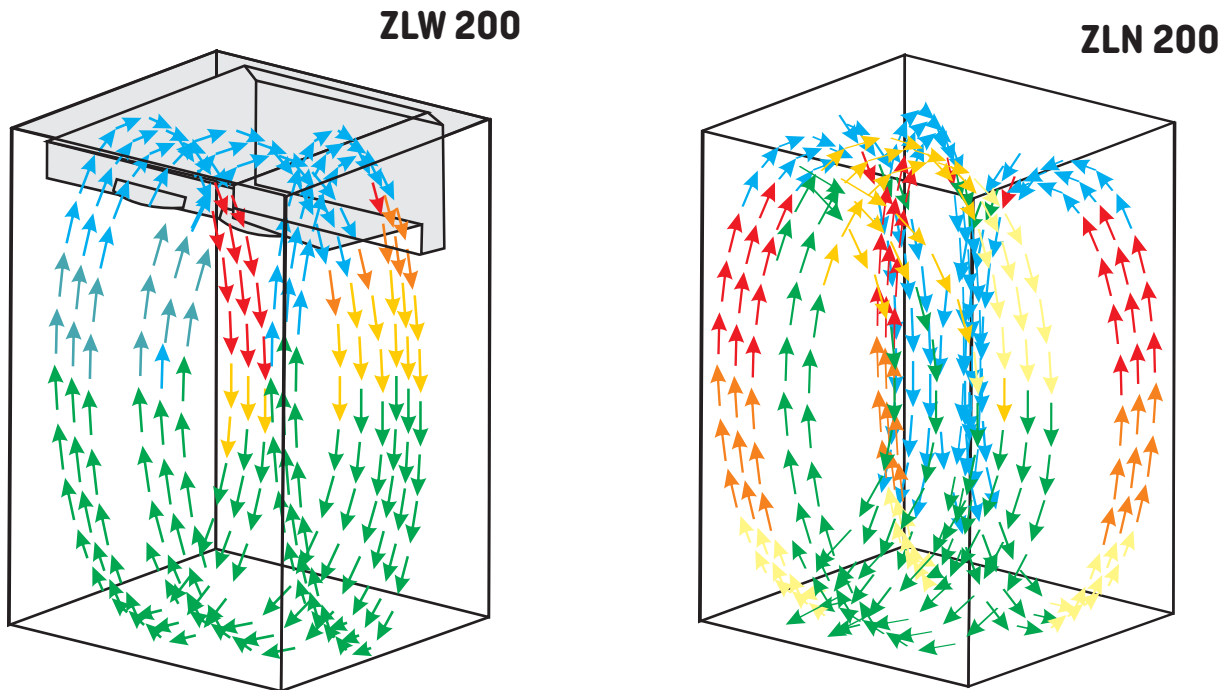


ZLW 200/300



ZLN-T/125/200/300





Freezers with forced air convection are “no frost” freezers. The basic principle of such system is to manage humidity inside the unit and prevent frost formation on the walls. The fan in the chamber mechanically forces the air circulation and ensures continuous air exchange. It blows continuously over the cooling element, the air is cooled down and gets into the chamber through special channels. Humid air converts into frost, but is directed to a special evaporator compartment and settles on the coldest element. The compressor periodically turns off, the frost layer melts down by a heating element and is drained outside as a condensate.

#### Advantages

- Uniform distribution of cool air through the chamber
- No need to defrost the unit
- Faster achieving of set temperature even with a large filling of the chamber
- Stable operation of the unit (in case of natural air convection freezers - the bigger ice layer on the evaporator, the less efficient operation of the unit)

#### Disadvantages in comparison to natural air convection unit

- Due to continuous operation of fan and dehumidification of the chamber air stored samples may be subject to ‘drying up’. This can be easily prevented by proper packing of material
- Louder operation unit (due to fan noise operation)
- Higher power consumption (due to fan operation)