

# Laboratory refrigerators

## Application

- storing water and sewage samples, piezometer leachate
- storing ASA, GC or HPLC calibration standards
- storing reagents
- chemical storage
- general storage

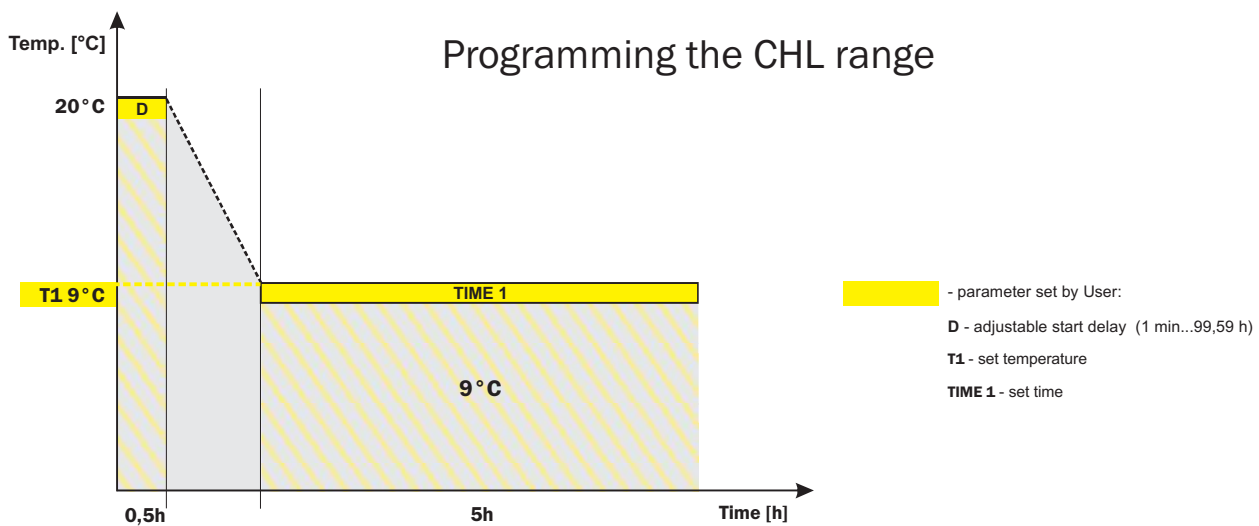


## Advantages

- single or double chamber versions
- aluminium (**NEW CHL+ RANGE!**) or stainless steel interior (depending on model)
- housing, depending on model: powder coated sheet, stainless steel linen finish (**INOX/G**) or polished (**INOX/S**)
- thermal insulation - polyurethane foam
- solid or glass (**CHL\*/A option**) door type
- forced air convection
- heating and cooling systems to hold set temperature regardless of ambient conditions
- wheels with CHL 1200 model
- defrosting function
- two temperature ranges available:
  - 0...+10°C
  - -10...+10°C (**CHL\*/T option**)
- LCD time and temperature display
- microprocessor temperature and time control
- temperature sensor fail alarm
- power failure control system
- real time clock
- sound alarm
- self-check function (auto control)

## Program possibilities

- single segment temperature-time profile
- time program priority
- adjustable start delay feature (from 1 min to 99,59 h)
- adjustable time of holding set temperature (from 1 min to 99,59 h), or continuous operating
- over temperature sound alarm
- overview of set parameters during operating time
- recording min, average and max temperature value for temperature-time segment



All POL-EKO-APARATURA products can be provided with IQ, OQ, PQ qualifications



All POL-EKO-APARATURA products can be supplied with a calibration certificate issued by an accredited Measurement Laboratory. Further information is available on our website: [www.pol-eko.eu](http://www.pol-eko.eu)

# Laboratory refrigerators



## NEW CHL+ RANGE!!!

Models CHL 2...CHL 5 were previously available with plastic interior. These models are available now as new "+" range with aluminum interior and adjustable shelves! Housing remains powder painted. New range of CHL 2+...CHL 5+ gives additionally possibilities of any chambers combination due to the same base structure. Stainless steel interior and housing on request!

## Standard equipment

- solid door
- temperature range 0...+10 °C
- RS 232 interface; RS 232 cable must be purchased additionally (RSK)
- wire shelves (with slides set) in case of aluminum interior and stainless steel wire shelves in case stainless steel interior
- manufacturer's test certificate at +4 °C
- operation manual in English and English menu (other languages on request)
- over temperature protection 1.0 class according to DIN 12880

## Options and accesories



# Laboratory refrigerators **CHL** Single chamber

**TB 35 INOX**



## Available options

**CHL\*/T** - extended temperature range to -10 °C

**CHL\*/A** - external glass door

**PLUS** - automatic defrosting function during operating

*A mini refrigerator TB 35 INOX with an additional battery power supply guarantees continuous operating in case of power failure.*

Parameter		Model	CHL 1+	CHL 2+	CHL 3+	CHL 4+	CHL 5+	CHL 500	CHL 700	CHL 1200	CHL 1450	
air convection			forced									
chamber capacity <sup>1</sup>	[l]		68	150	200	250	300	493	625	1365	1365	
	[cu ft]		2,4	5,2	7	8,8	10,5	17,4	22	48,2	48,2	
door type			solid / glass (option)									
temperature range	[°C]		0...+10				0...+10 / -10...+10 (option)					
	[°F]		+32...+50				32...+50/+14...+50 (option)					
controller			microprocessor with external display									
interior			aluminum / stainless steel									
housing			powder coated sheet / stainless steel (INOX/G or INOX/S)						powder coated sheet / stainless steel (INOX/S)		powder coated sheet / stainless steel (INOX/S)	
overall dims [mm]	width		550	600	600	600	600	620	720	1435	1435	
	height		600	850	1050	1250	1450	2010	2010	2010	2010	
	depth		650	600	600	600	600	800	865	865	865	
internal dims [mm]	width		470	520	520	520	520	510	600	1310	1310	
	height		430	660	860	1060	1260	1510	1510	1510	1510	
	depth		300	490	490	490	490	640	690	690	690	
nominal power [W]			160	170	170	330	330	400	400	550	550	
weight [kg]			30	48	52	61	66	117	127	225	225	
temperature accuracy [°C]			every 0,1									
temperature fluctuation <sup>2</sup> at +4 °C [°C]			±0,5	±0,5	±0,5	±0,5	±0,5	±0,5	±0,5	±0,8	±0,8	
over temperature protection			class 1.0 according to DIN 12880									
voltage 50 / 60 Hz [V]			110-120/220-240									
shelves fitted / max			2/2	3/4	3/4	4/6	4/7	3/11	3/11	2 x 3/11 <sup>3</sup>	2 x 3/11 <sup>3</sup>	
warranty			24 months									
manufacturer			POL-EKO-APARATURA									

1 - working capacity of chamber can be smaller  
 2 - fluctuation measured in centre of the chamber  
 3 - two columns with 3 shelves each

# Double chamber

## Available options for each chamber

**CHL\*/T** - extended temperature range to -10 °C

**CHL\*/A** - external glass door








**PLUS** - automatic defrosting during operating

There is a possibility to combine different sizes of **ST+** and **CHL+** chambers between models **ST/CHL+ 2-5**.  
(e.g **ST 2+/CHL 3+**)

## Example of configuration

To configure a double chamber laboratory refrigerator, e.g.:  
- upper chamber with solid door and temperature range 0...+10 °C  
- lower chamber with solid door and temperature range -10...+10 °C,  
you select:

for CHL 350/350 model: **CHL 350/350**  
and **CHL 350/T** option for lower chamber

Model		CHL 1/1+	CHL 1/1/1+	CHL 2/2+	CHL 2/3+	CHL 2/4+	CHL 3/3+	CHL 350/350	
Parameter									
air convection		forced							
upper/lower <sup>1</sup> chamber capacity	[l]	68/68	68/68/68	150/150	150/200	150/250	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 (option)							
temperature range	[ °C]	0...+10/-10...+10 (only for CHL 350/350)							
	[ °F]	+32...+50/+14...+50 (only for CHL 350/350)							
controller		microprocessor with external display separate for each chamber							
interior		aluminum (stainless steel on request)							aluminum / stainless steel
housing		powder coated sheet (stainless steel on request)							powder coated sheet / stainless steel (INOX/S)
overall dims [mm]	width	550	550	600	600	600	600	720	
	height	1170	1740	1670	1870	2070	2070	2025	
	depth	600	600	600	600	600	600	860	
internal dims [mm] (each chamber)	width	470	470	520	520	520	520	600	
	height	430	430	660	660/860	860	660/1060	700	
	depth	300	300	490	490	490	490	700	
nominal power [W]		320	480	350	350	350	350	800	
weight [kg]		65	100	100	105	110	115	162	
temperature resolution [ °C]		every 0,1							
temperature fluctuation <sup>2</sup> at +37 °C [ °C]		±0,2	±0,2	±0,3	±0,3	±0,3	±0,3	±0,5	
over temperature protection		class 1.0 according to DIN 12880							
voltage 50/60Hz [V]		110-120/220-240							
shelves fitted / max		2/2	2/2	3/4	3/4	3/4	3/4	2/6	
warranty		24 months							
manufacturer		POL-EKO-APARATURA							

1 - working capacity of chamber can be smaller

2 - fluctuation measured in centre of the chamber

## Parameters list

# Parameters list

Features		
interior	plastic (ZLN 75, 145, 180)	1.
	aluminum	2.
	stainless steel (ST/CHL 500, 700, 1200 INOX ; ZLN 125, 200, 300)	3.
housing	powder coated sheet	4.
	stainless steel (ST/CHL 500, 700, 1200 INOX ; ZLN 125, 200, 300 INOX)	5.
air convection	natural	6.
	forced	7.
fan speed regulation	0...100%	8.
	10...100% (CL/SL/SR 400/750/1000)	9.
automatic fan shut down after completing the program		10.
air-flap control (flap diameter 37 mm)	manual	11.
	automatic	12.
system	heating	13.
	cooling (ST/CHL/IL/KK)	14.
defrosting function		15.
automatic defrosting function		16.
external display	(CL/SL 15 , 32) LED	17.
	LCD	18.
	5.7" LCD touch screen	19.
microprocessor control of time and temperature (and humidity in KK; light with FIT option)		20.
temperature-time profile (and humidity in KK)	1 segment	21.
	6 segment	22.
	9 segment	23.
program priority	temperature	24.
	time (ST and IL in STD with FOT/FIT option)	25.
cycle run of the program		26.
user programs memory	1	27.
	3	28.
	20	29.
start delay	1 min...99,59 h	30.
	date/time	31.
adjustable heating up time	1 min...99,59 h	32.
adjustable hold at set point (temperature; humidity in KK)	1 min...99,59 h	33.
	1 min...999,59 h	34.
overview of parameters during operating time		35.
recording the min, average and max temperature (and humidity in KK) value for each segment		36.
over/under temperature and humidity sound alarm (humidity in KK)		37.
over temperature protection 1.0 class according to DIN 12880		38.
over/under temperature protection according to DIN 12880	class:	39.
temperature sensor fail alarm (and humidity sensor fail alarm in KK)		40.
power failure control system		41.
real time clock		42.
sound alarm		43.
interface	RS 232	44.
Ethernet connection and remote control via Internet		45.
measurement memory		46.
self-check function (auto control)		47.
Administrator function		48.
access control via login		49.
manufacturer's test certificate	at -10 °C	50.
	at +4 °C	51.
	at +25 °C and 60% rH	52.
	at +37 °C	53.
	at +105 °C	54.
	at +170 °C	55.
24 months warranty		56.
CE mark		57.
manufacturer's certificates PN-EN ISO 9001, PN-N 18001		58.

# Parameters list

	ST		CHL	ZL	CL			IL		SL			SR	KK	
	P*	TOP+			ECO	STD	TOP+	STD	TOP+	ECO	STD	TOP+	STD	STD	TOP+
1.				•											
2.	•	•	•												
3.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
4.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
5.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
6.				•	•	•	•			•	•	•	•		
7.	•	•	•		•	•	•	•	•	•	•	•	•	•	•
8.						•	•				•	•	•	•	•
9.		•				•	•	•	•		•	•	•		
10.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
11.					•	•				•	•				
12.							•					•	•		
13.	•	•			•	•	•	•	•	•	•	•	•	•	•
14.	•	•	•	•				•	•					•	•
15.	•		•												
16.														•	•
17.				•	•					•					
18.	•		•		•	•		•		•	•		•	•	
19.		•					•		•			•			•
20.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
21.			•	•	•					•					
22.	•					•		•			•		•	•	
23.		•					•		•			•			•
24.	•	•	•	•	•	•	•	•	•	•	•	•			•
25.	•	•					•	•	•			•		•	•
26.	•	•				•	•	•	•		•	•	•	•	•
27.			•	•	•					•					
28.	•						•				•			•	
29.		•					•		•			•	•		•
30.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
31.		•				•	•	•	•		•	•	•	•	•
32.		•				•	•	•	•		•	•	•	•	•
33.	•	•	•	•	•	•	•	•	•	•	•	•	•		
34.						•	•	•			•	•	•	•	•
35.				•	•	•	•	•		•	•	•	•	•	•
36.	•	•	•			•	•	•	•		•	•	•	•	•
37.	•	•	•	•		•	•	•	•		•	•	•	•	•
38.	•	•	•		•	•	•	•	•	•	•	•	•	•	•
39.		3.3				2.0	3.1	2.0	3.3		2.0	3.1	2.0	3.3	3.3
40.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
41.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
42.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
43.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
44.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
45.		•					•		•			•			•
46.		•					•		•			•			•
47.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
48.		•					•		•			•			•
49.		•					•		•			•			•
50.				•											
51.			•												
52.														•	•
53.	•	•			•	•	•	•	•						
54.										•	•	•			
55.													•		
56.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
57.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
58.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

\* - basic version of thermostatic cabinets

# Options and accessories

Options and accessories	ST		CHL	ZL	CL			IL		SL			SR	KK		Order no.
	P <sub>e</sub>	TOP+			ECO	STD	TOP+	STD	TOP+	ECO	STD	TOP+	STD	STD	TOP+	
internal glass door <sup>1,5</sup>	•	•			•	•	•	•	•					•	•	*/C
external glass door <sup>1</sup>	•		•											•	•	*/A
door with viewing window <sup>4</sup>		•		•	•	•	•	•	•	•	•	•				*/A
internal socket <sup>1</sup>	•	•	•			•	•	•	•							GNZ
interior lighting <sup>1,4,5</sup>	•	•	•	•		•	•	•	•		•	•	•	•	•	OWW
door lock <sup>1</sup>	•	•	•	•		•	•	•	•		•	•	•	•	•	ZKL
wire shelf <sup>1</sup>	•		•											•	•	*/P
stainless steel wire shelf <sup>1</sup>	•	•	•		•	•	•	•	•	•	•	•	•	•	•	*/P INOX
perforated shelf <sup>1</sup>		•			•	•	•	•	•	•	•	•	•	•	•	*/PP
glass shelf <sup>3</sup>				•												*/PL
reinforced shelf	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	*/PW
extended temperature range to +50 °C <sup>1</sup>	•															ST/50
extended temperature range to +60 °C <sup>1</sup>	•															ST/60
extended temperature range to +70 °C <sup>1</sup>	•															ST/70
reinforced version		•		•	•	•	•	•	•	•	•	•				*/W
low temperature version <sup>1</sup>			•					•	•							*/T
photoperiodic system - FOT <sup>1</sup>	•							•	•							FOT
phytotron system - FIT	•							•	•				•	•		FIT
automatic defrosting function	•		•					•	•							PLUS
over temperature protection system according to DIN 12880 <sup>1</sup>	2.0 3.1 3.2 3.3		3.2			3.1		3.1 3.2 3.3		3.1		3.1				*/**
stainless steel cuvettes	•	•	•		•	•	•	•	•	•	•	•	•	•	•	KUW
stainless steel drawers	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	*/SW
access port for external sensor <sup>1</sup>	•	•	•	•		•	•	•	•		•	•	•	•	•	OCZ
humidity measurement <sup>5</sup>		•				•	•	•	•							PHR
open door alarm <sup>1</sup>	•	•	•	•		•	•	•	•		•	•	•	•	•	SOD
door openings counter <sup>1</sup>	•	•	•	•		•	•	•	•		•	•	•	•	•	LOD
additional Pt 100 temperature sensor		•				•	•	•	•		•	•	•	•	•	*/Pt100
HEPA - fresh air filter		•				•	•				•	•	•			*/HEPA
RS 422 interface (instead of RS 232) <sup>1</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	*/RS422
RS 485 interface (instead of RS 232) <sup>1</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	*/RS485
wheels	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QLK/*
table with wheels <sup>2</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	*/S
RS 232 cable <sup>1</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	RSK
RS 422 cable <sup>1</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	RSK/422
RS 485 cable <sup>1</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	RSK/485
EasyLab-T PLUS software	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	EasyLab-T
dot printer	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	TM-U210D
"Kafka" thermal printer	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	KAFKA
calibration in 9 points <sup>1</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	BRT/9
chamber calibration in 5 points on shelf <sup>1</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	BRT/5
IQ, OQ, PQ qualification <sup>1</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	IQ/OQ/PQ
SMS Info <sup>1</sup>	•	•	•			•	•	•	•		•	•	•	•	•	SMS INFO
container for deionized water														•	•	KK/Z
container for waste water														•	•	KK/K
test's results memory <sup>1</sup>	•		•			•		•			•		•	•		PWP
FIT shelves independent control	•													•	•	FIT/R2

\* - model (e.g. ST 1+, IL 53, ZL 75)

\*\* - over temperature protection system (e.g. 3.1)

1 - for double chamber units, the function available for both chambers separately

2 - unavailable for 400, 500, 700, 750, 1200, 1000 and 350/350 models, ST/CHL 4+ and 5+

3 - only for ZL 75, 145, 180

4 - in case of SL range, maximum temperature is reduced to +250°C

5 - in case of CL/IL in TOP+ version, maximum temperature is reduced to +70°C

6- basic version of thermostatic cabinets