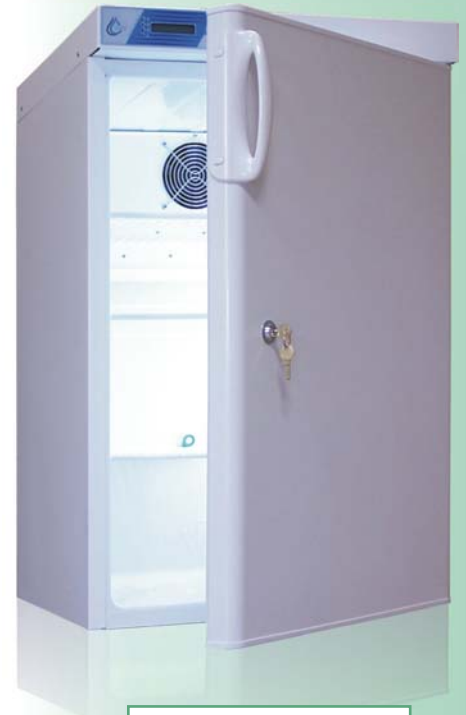


## Refrigerators



**CHL2/B/10 + ZKL**

### FEATURES

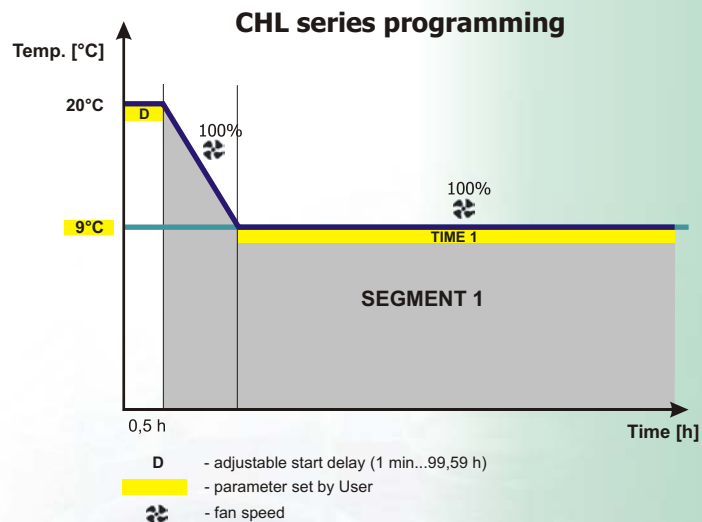
- double or single chamber versions
- interior made of: plastic, aluminium or stainless steel (**INOX type**)
- powder coated sheet or stainless steel (**INOX type**) housing
- thermal insulation: polyurethane foam
- door versions: solid (**B version**) or glass (**A version**)
- forced air circulation
- heating and cooling system
- defrosting function (see below)
- temperature range: 0...+10°C (**10 version**) or low temperature version -10...+10°C (**T version**)
- external display of the time and the temperature
- microprocessor time and temperature controller
- temperature sensor failure alarm
- power failure controll system
- RS 232 interface

### DEFROSTING FUNCTION

Household equipment has usually got an automatic defrosting function. It's very useful feature if it concerns on household equipment, but if it's about laboratory devices, an automatic defrosting function turns out to be very dangerous. Automatic defrosting function bases on temporary chamber heating. This is not permitted in case of laboratory devices, which keep selected temperature in a very careful way. There would be no warranty for keeping stable temperature if the temperatue inside the device might increase about 20 or 30°C at every moment, without user's permission. That's why the devices offered by POL-EKO APARATURA have got the defrosting function which may be turned on olny with user's permission in the particularly chosen moment, for example when there are no samples inside the chamber.



**CHL350B10/350B10**



### PROGRAMMING POSSIBILITY

- single segment temperature-time profile
- adjustable start delay (1 min...99,59 h)
- adjustable working time for selected temperature 1 min...99,59 h or continuous operation
- monitoring of parameters during program run
- overtemperature acoustic alarm
- real time clock
- timer

### SINGLE-CHAMBER REFRIGERATORS

Parameter		Type*	CHL1	CHL2	CHL3	CHL4	CHL5	CHL500	CHL700	CHL1200
air circulation		forced								
chamber volume** [l]	A version	67	150	195	242	279	493	625	1365	
	B version	67	150	195	242	279	493	625	1365	
door	A version	glass								
	B version	solid								
temperature range [°C]	10 version	0...+10 (e.g. CHL500/B/10)								
	T version	-							-10...+10 (e.g. CHL500-T/B/10)	
controller		microprocessor with external display								
interior	-	plastic						aluminium		
	INOX type	-						stainless steel		
housing	-	powder coated sheet								
	INOX type	-						stainless steel		
exterior dimensions [mm]	width	525	550	595	550	595	620	720	1435	
	height	580	885	1075	1280	1430	2010	2010	2010	
	depth	590	610	610	610	610	800	865	865	
interior dimensions [mm]	A version B version	width	460	480	510	480	530	510	600	1310
		height	430	745	920	1140	1220	1510	1510	1510
		depth	340	460	450	470	450	640	690	690
nominal power [W]		170	170	170	330	330	400	400	550	
weight [kg]	A version	30	37	41	48	63	117	127	225	
	B version	27	32	35	41	54	105	115	195	
temperature regulation [°C]		every 0,1								
temp. fluctuation*** [°C]	in +4°C	±0,3	±0,3	±0,3	±0,4	±0,5	±0,9	±0,9	±1,2	
temp. variation [°C]	in +4°C	±0,2	±0,2	±0,2	±0,3	±0,3	±0,4	±0,4	±0,4	
overtemperature protection		thermal fuse; option 3.2 class (according to DIN 12880)								
power supply 50 Hz [V]		230								
shelves number (standard/max)		2/2	3/4	3/4	4/6	4/7	5/11	5/11	2 x 5/11***	
warranty		24 months								
producer		POL-EKO-APARATURA								

\* working space of the chamber is always smaller

\*\* fluctuation measured in geometrical centre of the chamber, variation measured in vertical axis of the chamber in 4°C

\*\*\* two columns, each with 5 shelves

### EXAMPLES OF APPLICATIONS

- sample storage, (e.g. water and sewage samples, OPZ leachate samples)
- AAS, GC or HPLC standards storage
- chemicals storage (e.g. volatile ethers)



Available models:  
**T** - lower-temperature version  
**INOX** - stainless steel exterior







**CHL2/A/10**

Double-chamber refrigerators consist of any chamber type combination ( A or B and 10 or T version).



**CHL2B10/2B10**

## DOUBLE-CHAMBER REFRIGERATORS

Chamber type*		CHL1	CHL2	CHL3	CHL350
Parameter					
air circulation		forced			
chamber volume** [l]	A version	67	150	195	294
	B version	67	150	195	294
door	A version	glass			
	B version	solid			
temperature range [°C]	10 version	0...+10			
	T version	-			-10...+10
controller		microprocessor with external display (independent for each chamber)			
interior	-	plastic			aluminium
	INOX type	-			stainless steel
housing	-	powder coated sheet			
	INOX type	-			stainless steel
exterior dimensions [mm]	width	525	550	595	720
	height	1105	1720	2090	2010
	depth	590	605	610	865
interior dimensions [mm]	width	460	480	510	600
	height	430	745	920	700
	depth	340	460	450	700
nominal power of device [W]		350	350	350	800
weight of device (depending on model) [kg]		54...60	64...74	73...85	150...162
temperature regulation [°C]		every 0,1			
temp. fluctuation*** [°C]	in +4°C	±0,3	±0,3	±0,3	±0,9
temperature variation [°C]	in +4°C	±0,2	±0,2	±0,2	±0,3
overtemperature protection		thermal fuse; option 3.2 class (according to DIN 12880)			
power supply 50 Hz [V]		230			
shelves number (standard/max)		2/2	3/4	3/4	3/6
warranty		24 months			
producer		POL-EKO-APARATURA			

\*it is possible to combine only chambers of the same size and type of the housing

\*\* working space of the chamber is always smaller

\*\*\* fluctuation measured in geometrical centre of the chamber; variation measured in vertical axis of the chamber

### EXAMPLE:

Order number for double-chamber refrigerator; upper and lower chamber with solid door and temperature range 0...+10°C:

for model CHL1/1 - **CHL1B10/1B10**

for model CHL2/2 - **CHL2B10/2B10**

for model CHL3/3 - **CHL3B10/3B10**

for model CHL350/350 - **CHL350B10/350B10**



Available models:

**T**- lower-temperature version

**INOX**- stainless steel exterior

Features		CHL/A	CHL/B
version	single-chamber	•	•
	double-chamber	•	•
interior	plastic	•	•
	aluminium	•	•
	stainless steel	•	•
housing	power coated sheet	•	•
	powder coated stainless steel		
	stainless steel - INOX type	•	•
door	solid		•
	solid with viewing window		
	glass	•	
	double		
air circulation	natural		
	forced	•	•
fan speed regulation	0...100%		
	10...100%		
fan Auto-Off			
air flap control	manually		
	automatically		
system	heating	•	•
	cooling	•	•
defrosting		•	•
display	LED		
	LCD	•	•
	graphic LCD		
microprocessor time and temperature controller		•	•
temperature-time profile	single segment	•	•
	six segments		
	nine segments		
program cycles			
user's programs memory	three		
	nine		
adjustable start delay	1 min...99,59 h	•	•
adjustable heating and cooling time	1 min...99,59 h		
adjustable working time for current temperature or continuous operation	1 min...99,59 h	•	•
	1 min...999 h		
monitoring of parameters during program run		•	•
average, minimum and maximum temperature value recording for each segment			
overtemperature acoustic alarm		•	•
temperature sensor failure alarm		•	•
power failure control system		•	•
real time clock		•	•
timer		•	•
PC and printer interface	RS 232	•	•
	RS 485 MODBUS		
Ethernet and Internet connection			
measurement results memory			
SELFCHECK function - self test after turning on			
administrator function			
login access control			
password memory protection			
temperature variation certificate (at three points in vertical axis)	in -10°C		
	in +5°C	•	•
	in +37°C		
	in +170°C		
24 months warranty		•	•
CE mark		•	•
producer's certificates PN-EN ISO 9001, PN-N 18001		•	•

## LABORATORY REFRIGERATORS

Options and accessories	CHL/A	CHL/B	Order number
internal glass door <sup>1</sup>			*/C
glass door	•		*/A
door with viewing window	•		*/A
internal socket <sup>1</sup>	•	•	GNZ
internal lighting <sup>1</sup>	•	•	OWW
door lock (only for B and C models) <sup>1</sup>		•	ZKL
wire shelf	•	•	*/P
perforated shelf <sup>3</sup>	•	•	*/PP
full plate shelf			*/P
reinforced shelf			*/PW
stainless steel cuvet	•	•	KUW
stainless steel drawer <sup>3</sup>	•	•	*/SW
access port <sup>1</sup>	•	•	OCZ
humidity measurement			PHR
open door alarm <sup>1</sup>	•	•	SOD
open door counter <sup>1</sup>	•	•	LOD
over -undertemperature protection (DIN 12880)	3.2	3.2	*/**
additional Pt 100 temperature sensor (A class)			*/Pt100
fresh-air filter (HEPA)			*/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
cable for RS 232 <sup>1</sup>	•	•	RSK
cable for RS 422 <sup>1</sup>	•	•	RSK/422
cable for RS 485 <sup>1</sup>	•	•	RSK/485
EasyLab-T software	•	•	EasyLab-T
EasyLab software	•	•	EasyLab
dot-matrix printer	•	•	TM-U210D
KAFKA thermal printer	•	•	KAFKA
temp. variation certificate (9 points in chamber)	•	•	BRT/9
temp. variation certificate (5 points on shelf)	•	•	BRT/5
qualification procedures (IQ, OQ, PQ)	•	•	IQ/OQ/PQ

\* - model (e.g. CHL1, CHL2)

\*\* - temperature protection type (e.g. 3.1)

1 - for double-chamber devices optional equipment available for each chamber separately

2 - not available for: 500, 700, 1200, 1000 and 350/350 series

3 - for models 500, 700, 1200, 350/350



access port



door lock



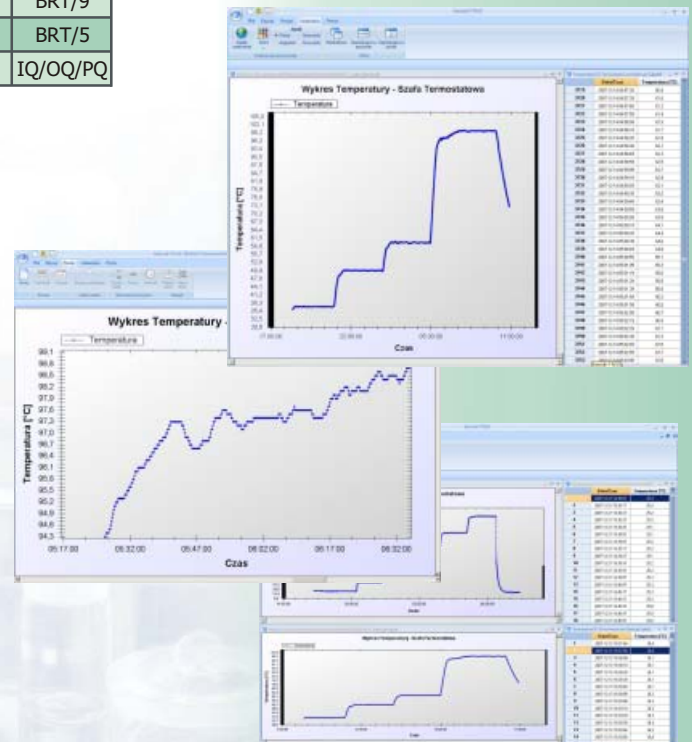
wheels



table with wheels



connection cable for PC



EasyLab-T PLUS software

## Calibration and measuring laboratory

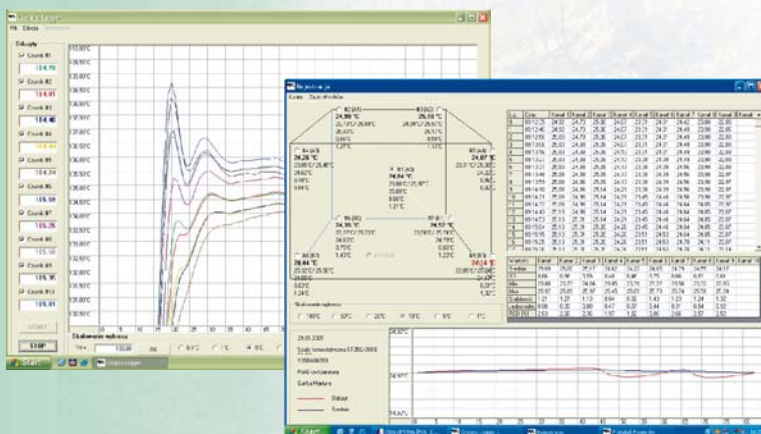
POL-EKO-APARATURA company has already been offering professional control of laboratory devices for many years. However because of constantly growing demand for this type of services as well as increasing requirements of our customers, we decided to extend our offer and make it even more reliable by creating fully professional Measurement Laboratory.

Our Measurement Laboratory has introduced Integrated management system according to PN/EN ISO/IEC 17025 as well as PN-EN ISO 9001:2001. Our offer contains following services: performing control tests for laboratory measuring and thermostatic devices, their calibration, validation (IQ, OQ, PQ qualification procedures), homogeneity and variation of temperature tests and many others. For more details see: [www.polekolab.com](http://www.polekolab.com).

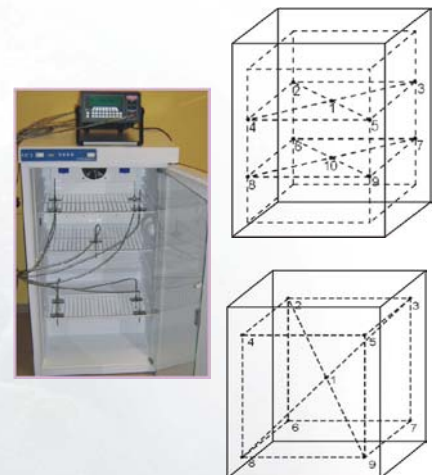


### Technical characteristics and main parameters of temperature variation and homogeneity testing method in our Measurement Laboratory

Parameter	Characteristics of the parameter
types of tested devices	laboratory thermostatic devices: drying ovens, incubators, cooled incubators, thermostatic cabinets, refrigerators, freezers, climatic chambers, sterilizers, muffle furnaces, laboratory baths
temperature range	-70...+1000°C
best measuring ability (laboratory uncertainty)	from 0,03°C
number of measuring points	up to 30 points simultaneously
location of the measuring points	according to measurement procedure of our laboratory based on DIN 12880 regulation. <ul style="list-style-type: none"> <li>Standard test 9 measuring points (corners area and geometric middle of the chamber.</li> <li>Test for microbiology purposes: 5 or more points on each shelf).</li> <li>Customized test- according to individual demands</li> </ul>
load influence test	optionally
testing temperature	according to customer demand
traceability	maintained at every level of tests
documentation	calibration certificates, Validation books, IQ OQ PQ Qualification documentation



### Examples of sensors location during tests performing



All tests and calibrations are performed using not only professional equipment, but also sophisticated software created for individual demand of our laboratory

Measurement Laboratory performs also complex test of laboratory thermostatic devices (**Installation Qualification, Operation Qualification and Performance Qualification**) which are required for complete validation of those devices. Those test are very often required in pharmaceutical laboratories or biotechnology and cosmetics industry laboratories. IQ, OQ and PQ test are delivered with a complete Validation book containing all the necessary data.

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