

## Thermostatic cabinets

### 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**), glass (**A version**) or double (**C version**)
- forced air circulation
- heating and cooling system keeps the temperature stable, regardless of ambient temperature
- defrosting function
- three temperature ranges available:
  - +3...+40°C (**40 version**)
  - +3...+50°C (**50 version**)
  - +3...+60°C (**60 version**)
- external display of the time and temperature
- microprocessor time and temperature controller
- temperature sensor failure alarm (see below)
- power failure control system (see below)
- RS 232 interface



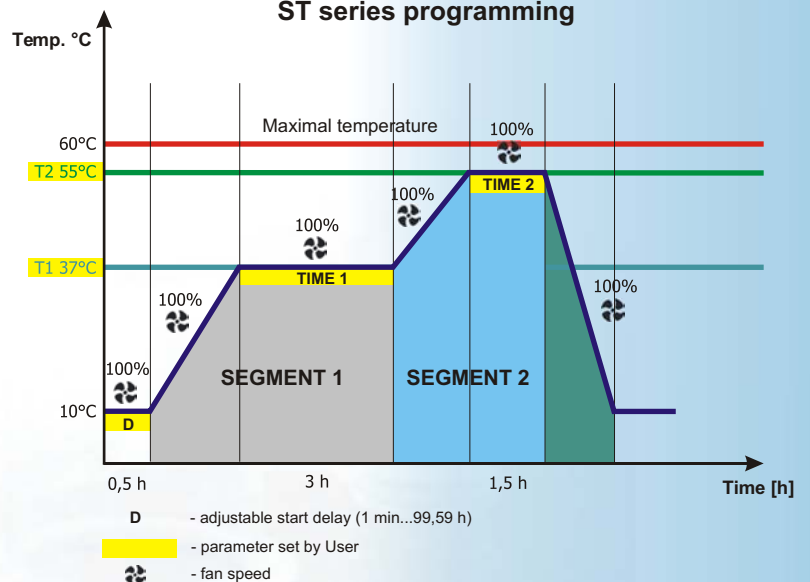
### TEMPERATURE SENSOR FAILURE ALARM

In case the temperature sensor fails, the alarm message pops up in the display

### POWER FAILURE CONTROL SYSTEM

Temporarily power failure while running the programme is not noticeable for the user, because the power failure control system continues running the programme just when the power is back. That's why the system is so useful. In case of power failure, the alarm message pops up in the display, with the power failure time period.

### ST series programming



ST2/C/60

### PROGRAMMING POSSIBILITY

- six segments temperature-time profile
- programe cycles
- three user's programs memory
- adjustable start delay (1 min...99,59 h)
- adjustable working time for current temperature 1 min... 99,59 h or continuous operation
- average, min and max temperature value recording for each segment
- monitoring of parameters during program run
- overtemperature accoustic alarm
- real time clock
- timer

## THERMOSTATIC CABINETS

Type		ST1	ST2	ST3	ST4	ST5	ST500	ST700	ST1200	
<b>Parameter</b>										
<b>air circulation</b>		forced								
<b>chamber volume* [l]</b>	A version	67	150	195	242	279	493	625	1365	
	B version	67	150	195	242	279	493	625	1365	
	C version	63	143	186	237	266	477	607	1325	
<b>door</b>	A version	glass (e.g. ST1/A/60)								
	B version	solid (e.g. ST1/B/60)								
	C version	double** (e.g. ST1/C/60)								
<b>temperature range [°C]</b>	40 version	+3...+40 (e.g. ST1/C/40)								
	50 version	+3...+50 (e.g. ST1/C/50)								
	60 version	+3...+60 (e.g. ST1/C/60)								
<b>controller</b>		microprocessor with external display								
<b>interior</b>	-	plastic					aluminium			
	INOX type	-					stainless steel			
<b>housing</b>	-	powder coated sheet								
	INOX type	-							stainless steel	
<b>exterior dimensions [mm]</b>	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	
<b>interior dimensions [mm]</b>	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
	C version	width	460	480	510	480	530	510	600	1310
		height	430	745	920	1140	1220	1510	1510	1510
		depth	320	440	430	460	430	620	670	670
<b>nominal power [W]</b>		170	170	170	330	330	400	400	550	
<b>weight [kg]</b>	A version	30	37	41	48	63	117	127	225	
	B version	27	32	35	41	54	105	115	195	
	C version	28	33,5	37	47	60	109	120	203	
<b>temperature regulation [°C]</b>		every 0,1								
<b>temp.*** fluctuation [°C]</b>	in +37°C	±0,1	±0,1	±0,2	±0,2	±0,3	±0,5	±0,5	±0,5	
<b>temperature variation [°C]</b>	in +37°C	±0,3	±0,3	±0,4	±0,4	±0,5	±0,5	±0,5	±0,7	
<b>overtemperature protection</b>		1.0 class; option: 2.0 or 3.3 class (according to DIN 12880)								
<b>power supply 50 Hz [V]</b>		230								
<b>shelves number (standard/max)</b>		2/2	3/4	3/4	4/6	4/7	5/11	5/11	2 x 5/11****	
<b>warranty</b>		24 months								
<b>producer</b>		POL-EKO-APARATURA								

\* working space of the chamber is always smaller

\*\* glass inside and solid outside

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

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

### EXAMPLES OF APPLICATIONS

- BOD<sub>5</sub> determination
- microbiological tests
- plant raising and microorganisms breeding in well specified temperature conditions



Available models:  
**FOT** - with photoperiodic system  
**INOX** - stainless steel exterior



**ST1/C/50**

Double-chamber thermostatic cabinets consist of any chamber type combination (A, B or C and 40, 50 or 60 version).

## DOUBLE-CHAMBER THERMOSTATIC CABINETS

Chamber type*		ST1	ST2	ST3	ST350	
<b>Parameter</b>						
<b>air circulation</b>		forced				
<b>chamber volume** [l]</b>	A version	67	150	195	294	
	B version	67	150	195	294	
	C version	63	143	186	286	
<b>door</b>	A version	glass				
	B version	solid				
	C version	double****				
<b>temperature range [°C]</b>	40 version	+3...+40				
	50 version	+3...+50				
	60 version	+3...+60				
<b>controller</b>		microprocessor with external display (independent for each chamber)				
<b>interior</b>	-	plastic			aluminium	
	INOX type	-			stainless steel	
<b>housing</b>	-	powder coated sheet				
	INOX type	-			stainless steel	
<b>exterior dimensions [mm]</b>	width	525	550	595	720	
	height	1105	1720	2090	2010	
	depth	590	605	610	865	
<b>interior dimensions [mm]</b>	A version B version	width	460	480	510	600
		height	430	745	920	700
		depth	340	460	450	700
	C version	width	460	480	510	600
		height	430	745	920	700
		depth	320	440	430	680
<b>nominal power of device [W]</b>		350	350	350	800	
<b>weight of device (depending on model) [kg]</b>		54...60	64...74	73...85	150...162	
<b>temperature regulation [°C]</b>		every 0,1				
<b>temp. fluctuation*** [°C]</b>	in +37°C	±0,1	±0,1	±0,2	±0,4	
<b>temp. variation [°C]</b>	in +37°C	±0,3	±0,3	±0,4	±0,5	
<b>overtemperature protection</b>		1.0 class; optionally: 2.0 or 3.3 class (according to DIN 12880)				
<b>power supply 50 Hz [V]</b>		230				
<b>shelves number (standard/max)</b>		2/2	3/4	3/4	3/6	
<b>warranty</b>		24 months				
<b>producer</b>		POL-EKO-APARATURA				

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

\*\*\*\* glass inside and solid outside

### EXAMPLE:

Order number for double-chamber thermostatic cabinet; upper chamber with solid door and temperature range +3...+60°C, lower chamber with double door and temperature range +3...+40°C:

for model ST1/1 - **ST1B60/1C40**

for model ST2/2 - **ST2B60/2C40**

for model ST3/3 - **ST3B60/3C40**

for model ST350/350 - **ST350B60/350C40**



Available models:

**FOT** - with photoperiodic system

**INOX** - stainless steel exterior



**ST350B60/350B60**

Features		ST/A	ST/B	ST/C
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	•	•	•
	twenty			
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				
certificate of calibration	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		•	•	•

# THERMOSTATIC CABINETS

Options and accessories	ST/A	ST/B	ST/C	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)	2.0 3.3	2.0 3.3	2.0 3.3	*/**
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>	●	● <td ●	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

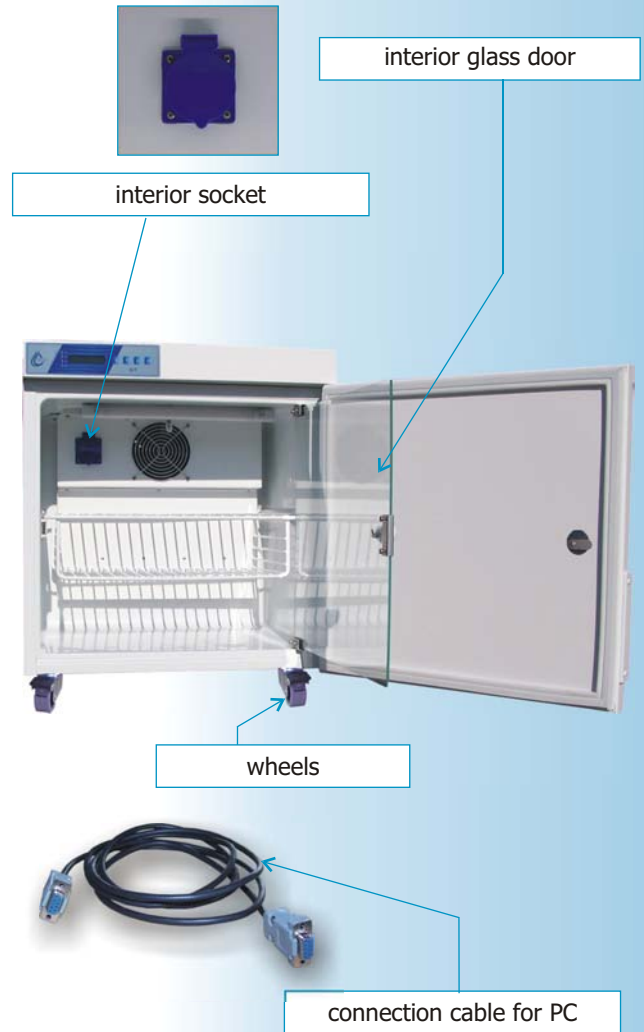
\* - model (e.g. ST1, IL 53, ZL 75)

\*\* - 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



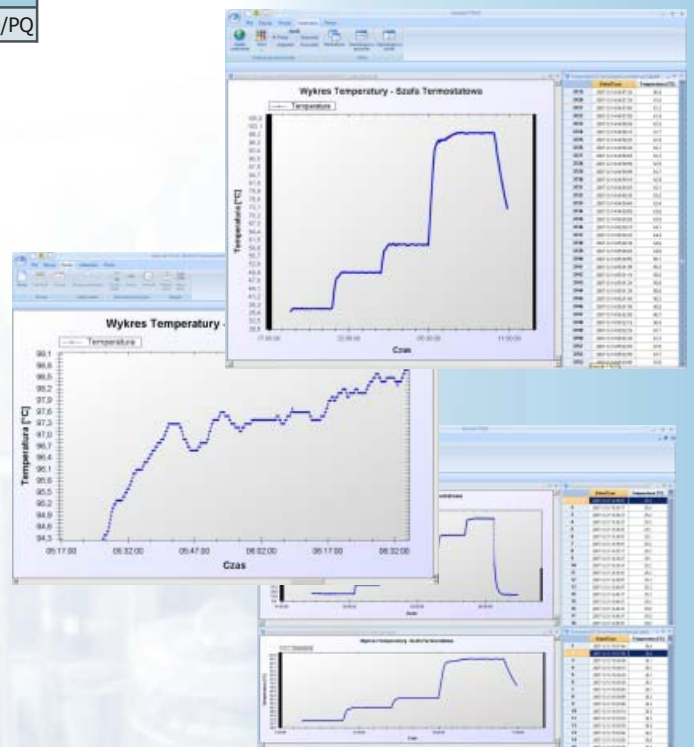
door lock



access port



table with wheels



EasyLab-T PLUS software

Calibration and measuring laboratory

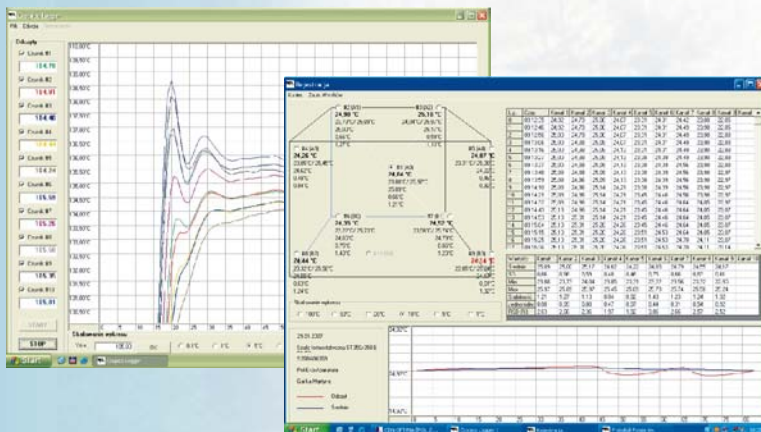
POL-EKO-APARATURA company has already been offering professional control of laboratory devices for many years. However because of constantly growing demand for this type of services as well as increasing requirements of our customers, we decided to extend our offer and make it even more reliable by creating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

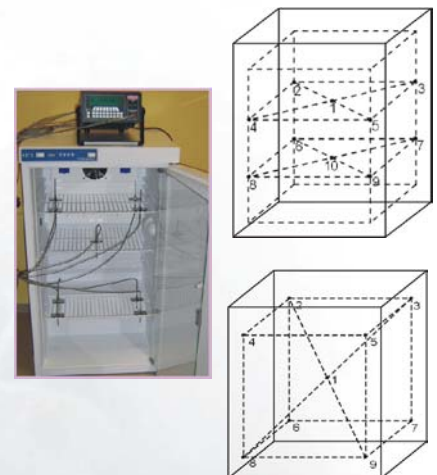


Technical characteristics and main parameters of temperature variation and homogeneity testing method in our Measurement Laboratory

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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