

# Thermostatic cabinets

## Application

- BOD determination
- microbiological research
- plant growing and microorganisms breeding at specified temperature
- storing infusion liquids and samples for physicochemical analysis



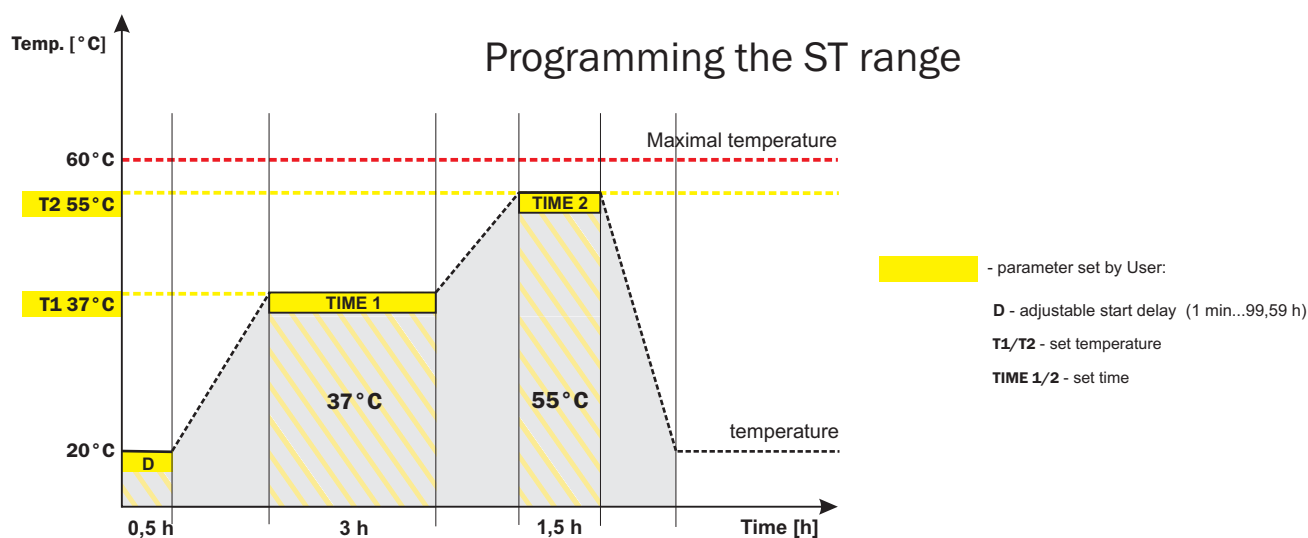
# Thermostatic cabinets

## Advantages

- single or double chamber versions
- aluminum (**NEW ST+ 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, glass (**ST\*/A option**) or double (**ST\*/C option**) door type
- forced air convection
- heating and cooling systems to hold set temperature regardless of ambient conditions
- defrosting function
- wheels with ST 1200 model
- three temperature ranges available
  - +3...+40 °C
  - +3...+50 °C (**ST/50 option**)
  - +3...+60 °C (**ST/60 option**)
- LCD time and temperature display
- microprocessor time and temperature control
- temperature sensor fail alarm
- power failure control system
- real time clock
- sound alarm
- self-check function (auto control)
- automatic fan shut down after completing the program

## Program possibilities

- six segment temperature-time profile
- temperature or time program priority
- cycle run of the program
- 3 user programs memory
- adjustable start delay feature (from 1 min to 99,59 h)
- adjustable time of holding the set temperature (from 1 min to 99,59 h), or continuous operating
- recording min, average and max temperature value separately for each segment
- overview of set parameters during operating time
- over temperature sound alarm



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)

# Thermostatic cabinets



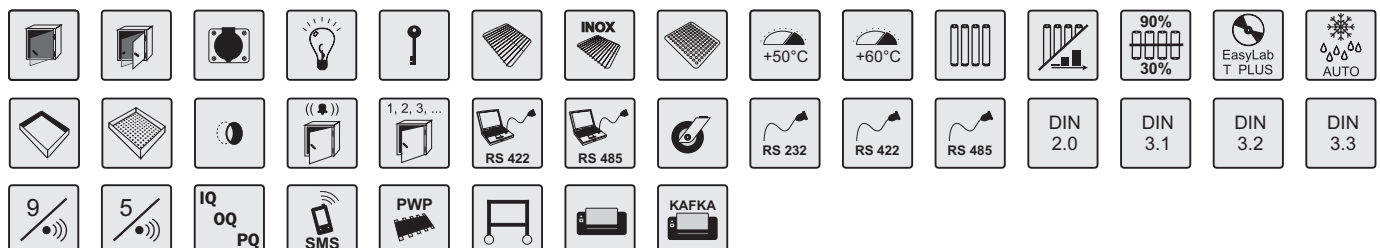
## NEW ST+ RANGE!!!

Models ST 2...ST 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 ST 2+...ST 5+ series 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 +3...+40 °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 of stainless steel interior
- manufacturer's test certificate at +37 °C
- operation manual in English and English menu (other languages on request)
- over temperature protection 1.0 class according to DIN 12880

## Options and accessories



# ST Thermostatic cabinets

## Single chamber cabinets



### Available options

**ST/50** - extended temperature range to +50 °C










**ST/60** - extended temperature range to +60 °C

**ST\*/C** - internal glass door

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

**PLUS** - automatic defrosting during operating

**FOT** - photoperiodic system

Model		ST 1+	ST 2+	ST 3+	ST 4+	ST 5+	ST 500	ST 700	ST 1200	ST 1450	
Parameter											
	air convection	forced									
chamber capacity <sup>1</sup>	[l]	68	150	200	250	300	493	625	1365	1460	
	[cu ft]	2,4	5,2	7,0	8,8	10,5	17,4	22,0	48,2	51,6	
door type		solid / glass or double <sup>2</sup> (option)									
temperature range	[°C]	+3...+40 / up to +50, +60 or +70 (option)									
	[°F]	+37...+104 / up to +122, +140 or +158 (option)									
controller		microprocessor with external display									
interior		aluminum / stainless steel									
housing		powder coated sheet / stainless steel (INOX/G or INOX/S)									
overall dims [mm]	width	550	600	600	600	600	635	725	1440	1440	
	height	600	850	1050	1250	1450	2025	2025	2025	2025	
	depth	650	600	600	600	600	810	860	860	860	
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	420	420	420	420	640	690	690	690	
nominal power [W]		160	170	170	330	330	400	400	550	550	
weight [kg]		30	48	52	61	66	105	115	195	195	
temperature resolution [°C]		every 0,1									
temperature fluctuation <sup>3</sup> at +37 °C [°C]		±0,2	±0,2	±0,3	±0,3	±0,3	±0,2	±0,2	±0,3	±0,3	
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>4</sup>	2 x 3/11 <sup>4</sup>	
warranty		24 months									
manufacturer		POLEKO-APARATURA									

1 - working capacity of chamber can be smaller

2 - glass inside, solid outside

3 - fluctuation measured in centre of the chamber

4 - two columns with 3 shelves each

# Double chamber cabinets



## Available options








- ST/50** - extended temperature range up to +50 °C
- ST/60** - extended temperature range up to +60 °C
- ST\*/C** - internal glass door
- ST\*/A** - external glass door
- PLUS** - automatic defrosting during operating
- FOT** - photoperiodic system

## Example of configuration

To configure a double-chamber thermostatic cabinet, e.g.:

- upper chamber equipped with solid door and temperature up to +60 °C
- lower chamber equipped with double door and temperature up to +40 °C, you select:

for ST 1/1+: ST 1/1+ and ST/60 option for upper chamber + ST 1/C option for lower chamber

Parameter		Model	ST 1/1+	ST 1/1/1+	ST 2/2+	ST 2/3+	ST 2/4+	ST 3/3+	ST 350/350
									
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 or double <sup>3</sup> (option)						
temperature range	[°C]		+3...+40 / up to +50, +60 or +70 (option)						
	[°F]		+37...+104 / up to +122, +140 or +158 (option)						
controller			microprocessor with external display separate for each chamber						
interior			aluminum / stainless steel						
housing			powder coated sheet / stainless steel (INOX/G or INOX/S)						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	660/1060	860/860	700
	depth		300	300	420	420	420	420	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 (each chamber)			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  
 3 - glass inside, solid outside

# TOP+ - professional version

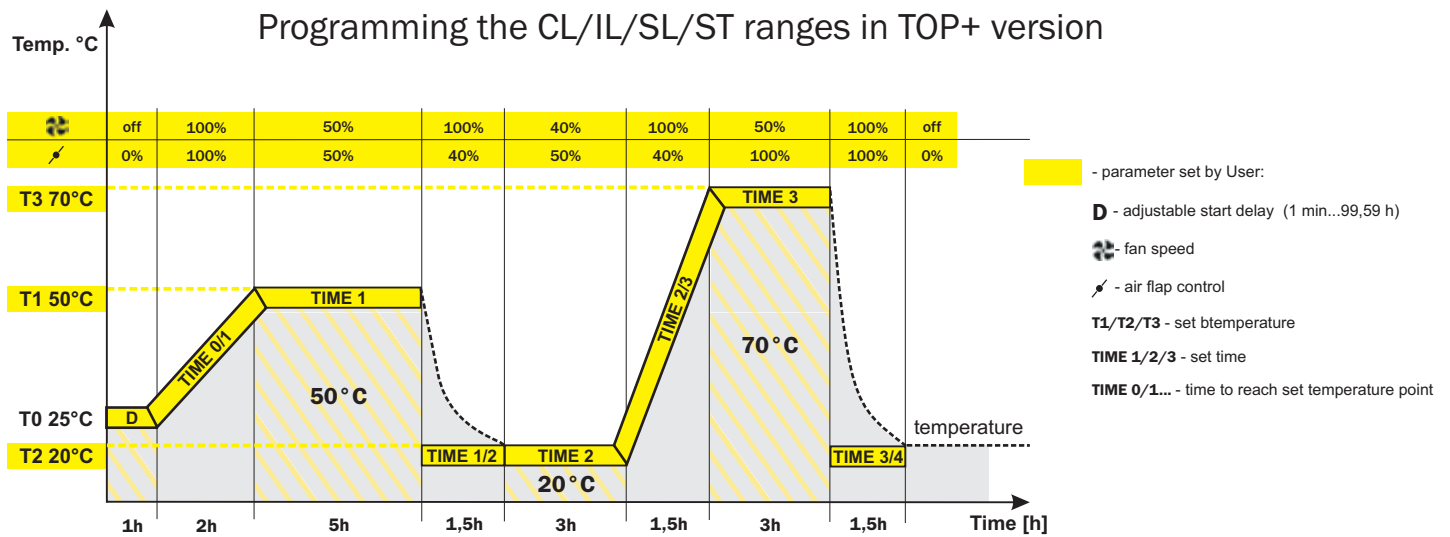
## Equipment available in TOP+ version

- Incubators (CL 53-1000)
- Cooled incubators (IL)
- Drying ovens (SL 53-1000)
- Climatic chambers (KK)
- Thermostatic cabinets (ST)

## TOP+ - professional version

### World's first full colour touch screen thermostatic equipment with Ethernet network connection!

To meet the expectations of the most demanding customers, POL-EKO-APARATURA has introduced a new professional range of ovens, incubators, cooled incubators and climatic chambers called "TOP+". First in the market to feature Ethernet network connection which allows to connect several units and program, monitor or record their parameters on any computer inside a laboratory or remotely via internet. Equipped with a full colour, transparent 5.7" LCD touch screen, easy-to-use intuitive software, USB slot for data transfer make the operating comfortable. The large size of the display enables the user to view the unit's current parameters and program stage with only one touch of the screen.



## Standard equipment

- stainless steel interior
- housing, depending on model: powder coated sheet, stainless steel linen finish (**INOX/G**) or polished (**INOX/S**)
- solid door
- forced or natural air convection (depending on model)
- automatic fan shut down after completing the program
- automatic air-flap control, adjustable (CL/SL)
- full colour, transparent 5.7" LCD touch screen
- microprocessor time, temperature (and humidity in KK; light with FIT option)
- temperature (and humidity in KK) sensor fail alarm
- power failure control system
- real time clock
- sound alarm
- USB slot
- RS 232 interface
- self-check function (auto control)
- automatic defrosting in KK range
- manufacturer's test certificate
- operation manual in English and English menu (other languages on request)
- stainless steel wire shelves (2-6 pieces, depending on model) with slides set
- over temperature protection according to DIN 12880: 1.0 class in CL/IL/SL/KK; 3.1 class in CL/SL; 3.3 class in IL/KK
- Ethernet connection
- TOP+ Control software, temperature (and humidity in KK, light with FIT option) control and monitoring via PC



# TOP+ - professional version

## Advanced program possibilities of the “TOP+” range:

- administrator function that allows to manage user accounts
- access control via login
- nine segment temperature-time profile or 7 days programming
- automatic air-flap control (each 10% regulation)
- cycle run of the program
- adjustable heating up / cooling down system
- adjustable start delay feature (from 1 min to 99,59 h)
- adjustable hold at set point (from 1 min to 999 h), or continuous operating (temperature; humidity in KK; light with FOT and FIT options)
- overview of parameters during operating time
- recording min, average and max temperature (and humidity in KK) value for each segment
- over temperature (and humidity in KK) sound alarm
- fan speed regulation (for instruments with forced air convection)



5.7" LCD touch screen panel

### GLP supporting functions:

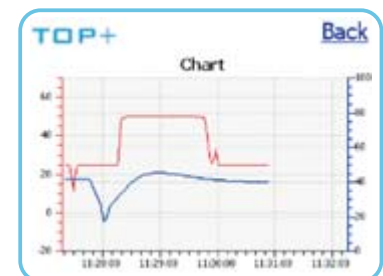
- password protected settings
- 20 user programs memory
- measurement memory with possibility of displaying the values in tabular or graphic form
- measurement data saving on external memory through the USB port



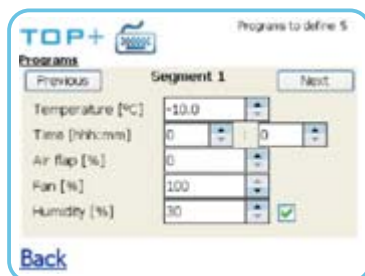
Main screen



User's menu



Temperature chart



Program settings



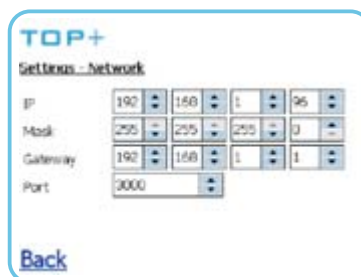
Administrator panel settings



Administrator panel settings



Administrator panel settings



Administrator panel settings

Date	Temperature	Humidity	Program
2010-05-27 11:09:03	25.3	42.2	SimpleProg
2010-05-27 11:09:08	25.2	42.2	SimpleProg
2010-05-27 11:40:03	25.3	42.2	SimpleProg
2010-05-27 11:40:08	25.3	42.1	SimpleProg
2010-05-27 11:40:03	25.3	42.1	SimpleProg
2010-05-27 11:40:08	25.3	42	SimpleProg

Measurement recording

# TOP+ professional version

## TOP+ - professional version

### TOP+ Control

To facilitate the configuration of complex programs, a TOP+ Control software has been introduced. Moreover, the user is able to program and control the "TOP+" equipment with ease from any corner of the world by accessing the unit via Internet!



Device manager



Login window



Program selection



Status



Temperature and humidity chart

Time	Temp	Humidity	Temp	Humidity
2010-08-08 10:00:00	26.5	44.4	26.5	44.4
2010-08-08 10:05:00	26.5	44.4	26.5	44.4
2010-08-08 10:10:00	26.5	44.4	26.5	44.4
2010-08-08 10:15:00	26.5	44.4	26.5	44.4

Measurement recording



Program settings

Program	Min	Max	Avg
Temp	20.0	30.0	25.0
Humidity	30.0	70.0	50.0

Program statistic



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>6</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