# Cooled incubators (ST)

# Application

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



## **►** Calibration



All thermostatic equipment manufactured by POL-EKO-APARATURA can be provided with Calibration Certificate issued by accredited Measurement Laboratory. Detailed information on accreditation is available on website: www.pol-eko.eu.

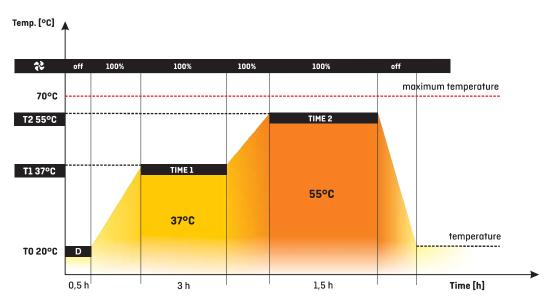


The **BASIC**, **COMFORT**, **PREMIUM** models are equipped with a PID microprocessor controller with an LCD graphic display and illuminated touch buttons.

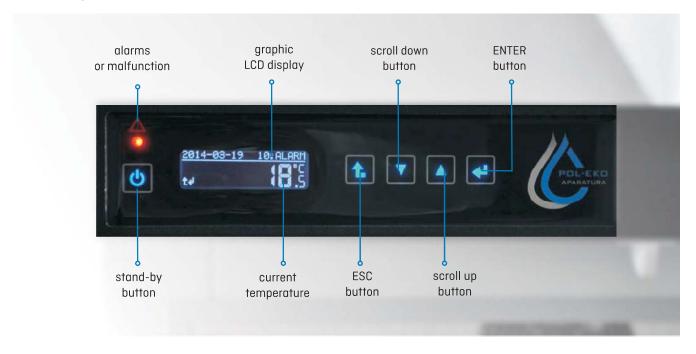
### **►** Controller advantages

- six segment temperature-time profile
- loop function up to 99 times or endless
- 3 user programs memory
- adjustable start delay feature (from 1 min to 99:59 h)
- adjustable hold at set point time for temperature and lighting (for ST/FOT) from 1 min to 31 days / 1 min to 99:59 h or continuous operating
- recording of min, average and max temperature value for each segment
- overview of set and current parameters while operating
- audible and visual temperature alarm
- operating with temperature 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
- 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

# $\label{eq:description} \textbf{Detailed description of parameters on page 80}.$

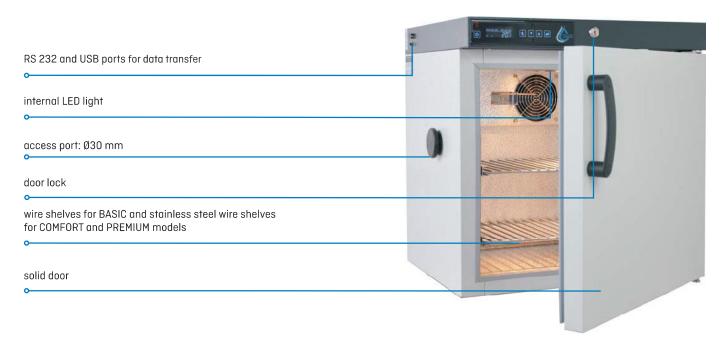


## **►** Control panel



## Standard features

- temperature range +3...+40°C
- quality control protocol (at +37°C)
- English instruction manual
- available menu languages: Czech, English, Estonian, German, Italian, Latvian, Polish, Portuguese, Russian, Spanish
- temperature protection 1.0 class for BASIC and COMFORT models and 2.0 for PREMIUM models to DIN 12880
- open door alarm
- wheels in standard for models ST 1200 and 1450



#### **▶ PREMIUM TOP+ version**

All the units in TOP+ version are equipped with 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.

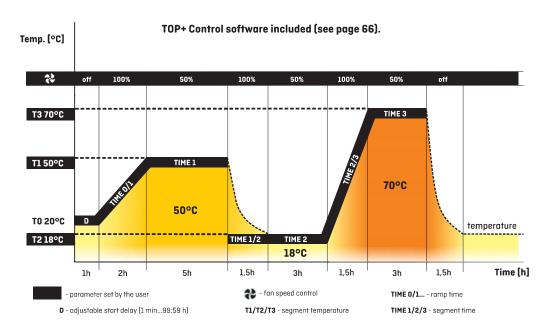
## Controller advantages

- 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)
- access control via login
- 7-days programming
- adjustable hold at set point time for temperature and lighting (for ST/FIT) from 1 min to 999:59 h, or continuous operating
- adjustable ramps
- overview of set and current parameters while operating
- recording of min, average and max temperature value for each segment
- Administrator function to manage user accounts
- 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

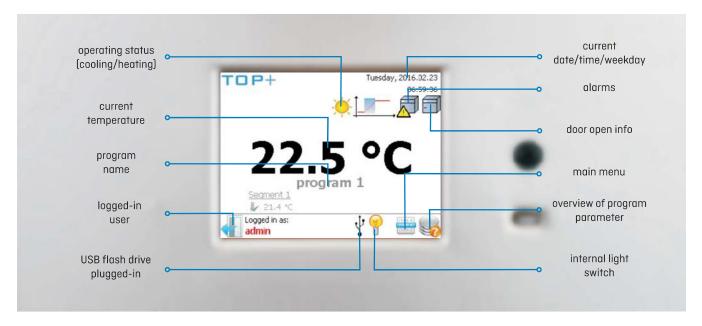
#### Detailed description of parameters on page 80.

## **■ 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 a tabular or graphic form
- USB port to allow direct data recording or transfer to a USB mass storage device
- events registry



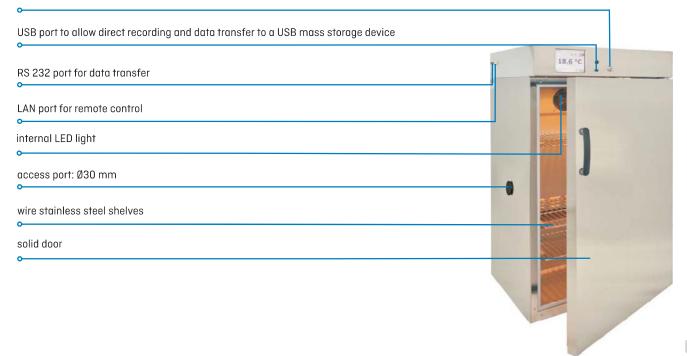
## **►** Control panel



#### Standard features

- temperature range +3...+70°C
- Ethernet cable
- TOP+ Control software
- quality control protocol (at +37°C)
- English instruction manual
- available menu languages: Czech, English, Estonian, French, German, Hungarian, Italian, Latvian, Polish, Portuguese, Romanian, Russian, Spanish
- temperature protection 3.3 class to DIN 12880
- open door alarm
- wheels in standard for models ST 1200 and 1450

door lock



ST		ST1	ST 2	ST 3	ST 4	ST 5	ST 6	ST 500	ST 700	ST 1200	ST 1450	
Parameter	1		1			1				11	11	
air convection			***************************************	***************************************		for	ced	***************************************				
chamber capacity [I]		70	150	200	250	300	400	500	625	1365	1540	
working capacity [I]		55	122	163	203	243	324	411	499	1239	1376	
door type					SC	olid / glass or	double¹ (opti	on)				
temperature range [°C	[]				+3+40 / u	up to +70 (opt	ion) / +3+70	in PREM TO	P+			
temperature resolutio	n [°C]					evei	ry 0,1					
controller		microprocessor with external LCD graphic display										
	BASIC	aluminum										
	COMF	stainless steel to DIN 1.4016										
interior	COMF/S	stainless steel to DIN 1.4016										
	PREM (TOP+)	acid-proof stainless steel to DIN 1.4301										
	PREM/S (TOP+)	acid-proof stainless steel to DIN 1.4301										
	BASIC	powder coated sheet										
	COMF	powder coated sheet										
housing	COMF/S	polished stainless steel										
Ŭ	PREM (TOP+)	powder coated sheet										
	PREM/S (TOP+)											
	A width	570	620	620	620	620	620	650	740	1470	1450	
overall dims <sup>2</sup> [mm]	B height	600	860	1060	1260	1460	1860	1990	1990	1970	1970	
ovordii diirio [iriiri]	C depth	680	650	650	650	650	650	810	860	860	950	
	D width	430	480	480	480	480	480	480	540	1270	1270	
	D' width	470	520	520	520	520	520	510	600	1340	1340	
	E height	430	660	860	1060	1260	1660	1510	1510	1510	1460	
	F depth	300	420	420	420	420	420	630	680	680	790	
internal dims³ [mm]	F' depth	360	480	480	480	480	480	-	-	- 000	700	
	G depth	-	320	320	320	320	320					
	H height		440	640	840	1050	1440					
	I height	-			-	-	-	1360	1360	1360	1300	
max shelf	-	10	10	10	10	10	10	20	30	30	30	
workload <sup>4</sup> [kg]	PW⁵ version		. 10	on red	:	: 10	: ==	100	100	100	100	
may unit	- PW Version	20	30	40	50	60	60	100	150	300	300	
max unit workload [kg]	W <sup>6</sup> version		30	70	. 30		quest	100	100	: 500	300	
nominal power [W]	W VEISIOII	250	250	250	250	350	350	450	450	550	950	
weight <sup>7</sup> [kg]		32	54	59	69	75	90	105	115	185	200	
over temperature prot	ection	32	J4	:	1.0 to DIN 128	:	:	:	:	100	200	
power supply*	CONTON			ciuss	1.0 10 DIN 120		/ 50 Hz	100 U.U III PR	LITTOPT			
		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>	
shelves fitted/max		2/2	5/4	: 3/4	: 4/0			: 0/11	3/11	. C v 3/11	2 x 3/11	
manufacturer							onths APARATURA					

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

- \* also available: 230V 60Hz, 115V 60Hz
- 1 additional internal glass door
- 2 ST 1-6 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, without optional equipment
- 8 two columns with 3 shelves each

## ▶ Options and accessories (icon description see pages 78-79)



























































		ST 1/1	ST 1/1/1	ST 2/2	ST 2/3	ST 2/4	ST 3/3			
Parameter	:		:	•	:					
air convection		forced								
chamber capacity [I]		70/70	70/70/70	150/150	150/200	150/250	200/200			
working capacity [I]		55/55	55/55/55	122/122	122/163	122/203	163/163			
door type		solid / glass or double¹ (option)								
temperature range [°C]		+3+40 / up to +70 (option) / +3+70 in PREM TOP+								
temperature resolution [°C]		every 0,1								
controller			micropro		ternal LCD graphi	c display				
	BASIC	aluminum								
	COMF	stainless steel to DIN 1.4016								
interior	COMF/S	stainless steel to DIN 1.4016								
	PREM (TOP+)	acid-proof stainless steel to DIN 1.4301								
	PREM/S (TOP+)									
	BASIC	acid-proof stainless steel to DIN 1.4301 powder coated sheet								
	COMF	powder coated sheet								
nousing	COMF/S	polished stainless steel								
	PREM (TOP+)	powder coated sheet								
	PREM/S (TOP+)	polished stainless steel								
	A width	570	570	620	620	620	620			
overall dims²[mm]	B height	1170	1740	1680	1870	2080	2080			
	C depth	680	680	650	650	650	650			
	D width	430	430	480	480	480	480			
	D' width	470	470	520	520	520	520			
	E height	430	430	660	660/860	660/1060	860			
	F depth	300	300	420	420	420	420			
internal dims³ [mm]	F' depth	360	360	480	480	480	480			
	G depth	-	-	320	320	320	320			
	H height	-	-	440	440/640	440/840	640			
	-	10	10	10	10	10	10			
max shelf workload⁴[kg]	PW⁵version	on request								
and the state of t	-	20	20	30	30/40	30/50	40			
max unit workload [kg]	W <sup>6</sup> version	on request								
nominal power [W]		500	750	500	500	500	500			
weight <sup>7</sup> [kg]		65	98	109	114	124	119			
over temperature protection		class 1.0 to DIN 12880 / class 3.3 (option) / class 3.3 in PREM TOP+								
power supply*		230 V 50 Hz								
shelves fitted/max	see table for single chamber models									
warranty				24 n	nonths					
manufacturer	POL-EKO-APARATURA									

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

- \* also available: 230V 60Hz, 115V 60Hz
- 1 additional internal glass door
- 2 depth doesn't include 50 mm of power cable
- $\ensuremath{\mathtt{3}}$  dims of units with double door can be smaller
- 4 on uniformly loaded surface

- 5 reinforced shelf
- 6 reinforced version
- $\boldsymbol{7}$  for units in BASIC version with solid door, without optional equipment

Anchoring kit for double chamber units included.

# ▶ Options and accessories (icon description see pages 78-79)



























































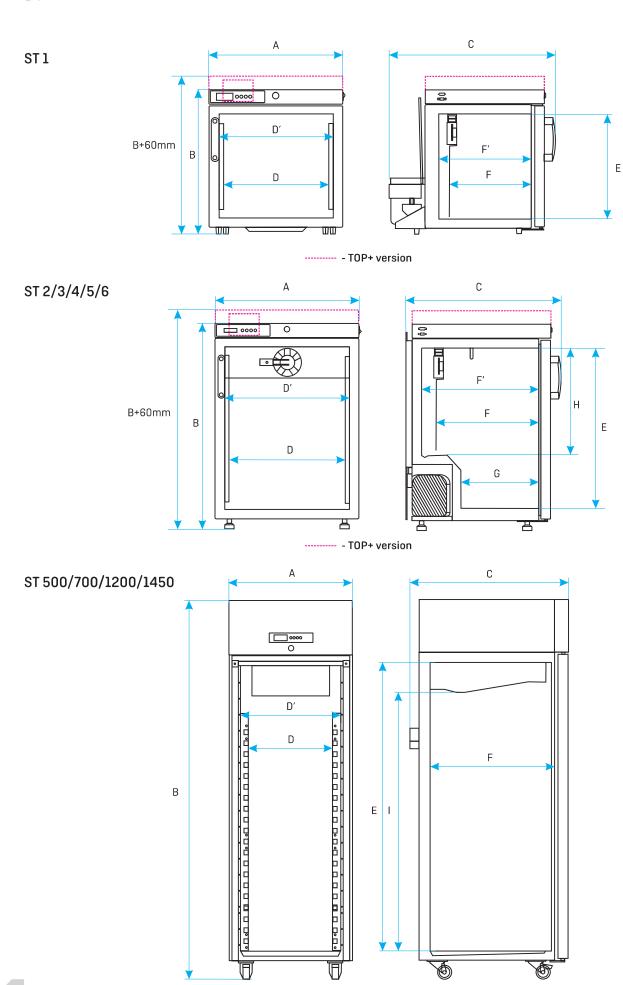












# Cooled incubators (ST) with photoperiodic system

# **►** Cooled incubators (ST) with photoperiodic system

The photoperiodic (FOT) and phytotron (FIT) systems allow day and night simulation. The FOT option allows the lights to be turned on or off, while the FIT option features additional intensity control.

The BASIC, COMFORT and PREMIUM versions of cooled incubators (ST) can be equipped with the FOT option, while the PREMIUM TOP+ version (ST 500, 700, 1200, 1450) with the FIT system.

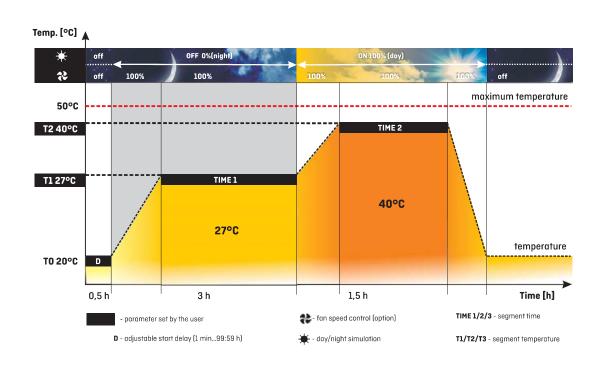
## **▶** Program possibilities with FOT option

- day and night simulation software to control light (on/off), time and temperature separately for each segment
- temperature range for "night" simulation: +3 ... +50°C
- temperature range for "day" simulation: +10 ... +50°C
- lamps installed on side walls
- fluorescent lamp 840 type (daylight) as standard
- operating with time priority (see page 80)
- automatic defrosting function included

## ▶ Photoperiodic system (\*/FOT option) for single and double chamber cooled incubators (ST)\*\*

Option	ST/F0T2	ST/F0T4	ST/F0T6	ST/F0T8	ST/F0T10	ST/FOT15		
available for models	ST 1 ST 1/1 ST 1/1/1	ST 2 ST 2/2	ST 2; ST 3 ST 2/2 ST 3/3	ST 4 ST 5 ST 6	ST 500 ST 700	ST 1200 ST 1450		
temperature range with photoperiod ON [°C]	+10 +50							
number of lamps on walls	2 (in ceiling)	4	6	8	10	15 (3 columns with 5 pieces)		
adjustable illumination intensity	no							

<sup>\*\*</sup> for ST models with \*/FOT option, inner dims can be narrower by 4 cm on each side. FOT option is factory preinstalled. There is no possibility to order it separately.



# Cooled incubators (ST) with phytotron system

The PREMIUM TOP+ version of cooled incubators (ST 500, 700, 1200, 1450) can be equipped with the FIT system.

## **▶** Program possibilities with FIT option

- day and night simulation software to control light intensity [%], time temperature and fan speed separately for each segment
- temperature range for "night" simulation: +3...+60°C
- temperature range for "day" simulation: +10... +50°C
- lamps installed in over-shelf panel (FIT P), side walls (FIT S), door (FIT D), door and side walls (FIT DS)
- fluorescent lamp 840 type (daylight) used as standard
- temperature or time priority program (see page 80)
- automatic defrosting function included

# ▶ Phytotron system (\*/FIT option) for cooled incubators (ST) (PREMIUM TOP+)

Option**	ST/500/700/FIT DS	ST/500/700/FIT P	ST/500/700/FIT S	ST/1200/FIT P	ST/1450/FIT P			
temperature range with phytotron ON [°C]	+10 +50°C							
number of over-shelf panels with illumination std/max	-	1/3	<u>-</u>	1/3	1/3			
lamps in door	yes	no	no	no	no			
lamps in walls	yes	no	yes	no	no			
adjustable illumination intensity			yes					

<sup>\*\*</sup> FIT DS - lamps in door and walls; FIT S - lamps in walls; FIT P - over-shelf panels

