

 Made in Poland. Established 1990.



# 20<sup>16</sup>/<sub>17</sub> / POL-EKO-APARATURA products



POL-EKO-APARATURA has been present in the Polish market for 26 years.

Highest quality equipment and service we provide ensures your satisfaction. Our wide range of products and professional solutions will suit the most demanding customers.

We remain open to assist in choosing the right product for your needs, as well as to provide you with customized solutions.

We are your partner in lab analysis and technological processes.

Thank you for your confidence.

POL-EKO-APARATURA team.



## Cooled incubators (ST)

### Application

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



**Cooled incubators (ST)** can provide a stable temperature between +3...+70°C regardless of ambient conditions.

### Calibration



All thermostatic equipment manufactured by POL-EKO-APARATURA can be provided with Calibration Certificate issued by accredited Measurement Laboratory. Detailed information on accreditation of POL-EKO Laboratorium Pomiarowe is available on website: [www.polekolab.pl](http://www.polekolab.pl).

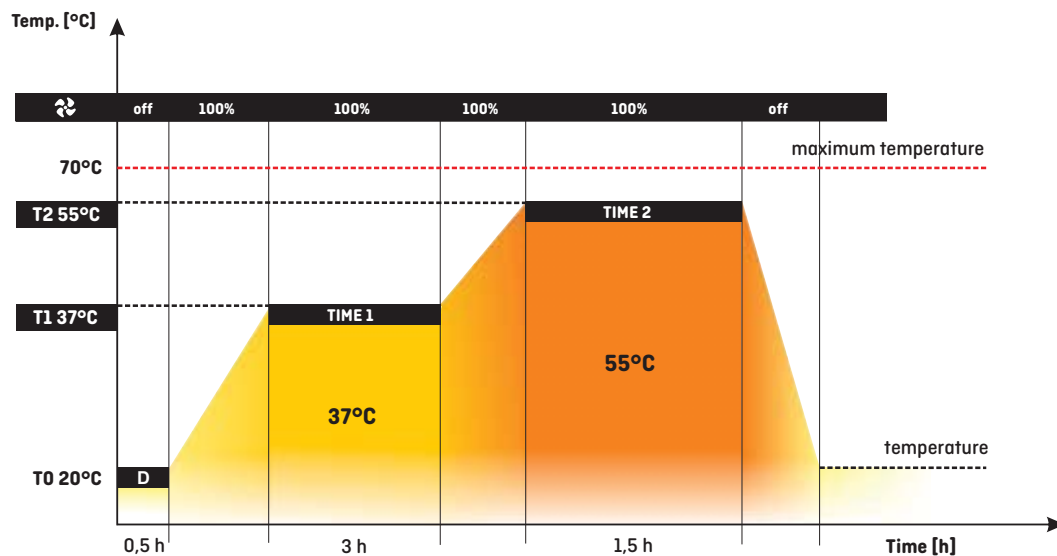


The **BASIC, COMFORT, PREMIUM** models are equipped with a PID microprocessor controller with an LCD graphic display and illuminated touch buttons.

### 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

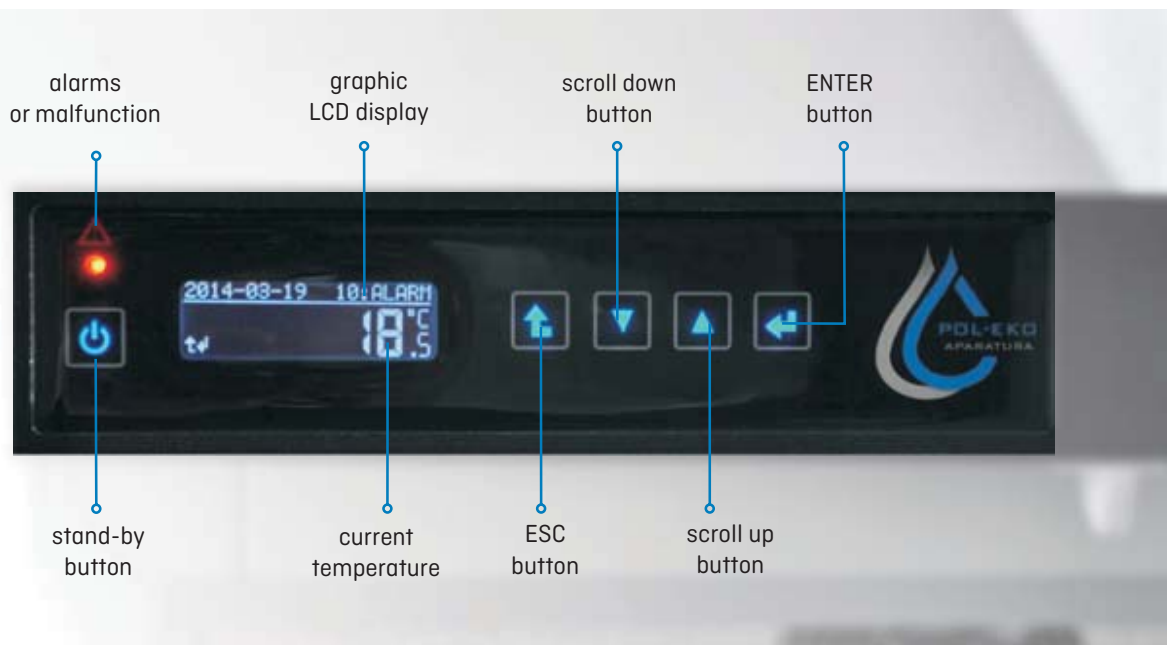
Detailed description of parameters on page 82.



■ - parameter set by the User D - adjustable start delay (1 min...99:59 h) 🌀 - fan speed control (option) T1/T2/ - segment temperature TIME 1/2/3 - segment time



## Control panel



## Standard features

- temperature range +3...+40°C
- quality control protocol (at +37°C)
- English instruction manual
- available menu languages: Czech, English, Estonian, French, 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

RS 232 and USB ports for data transfer

internal LED light

access port: Ø30 mm

door lock

wire shelves for BASIC and stainless steel wire shelves for COMFORT and PREMIUM models

solid door



**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.

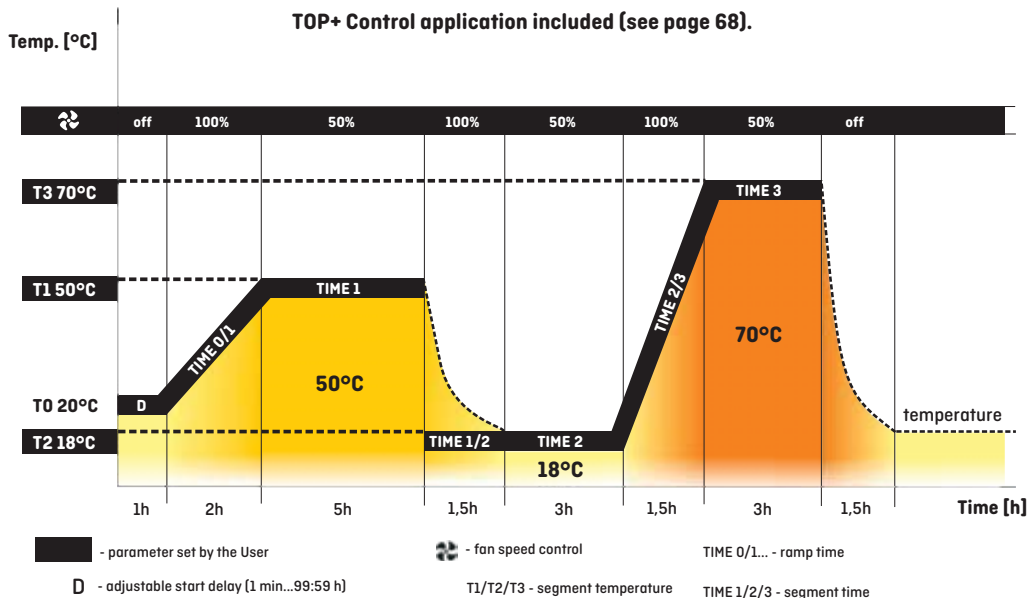
**Controller advantages**

- 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

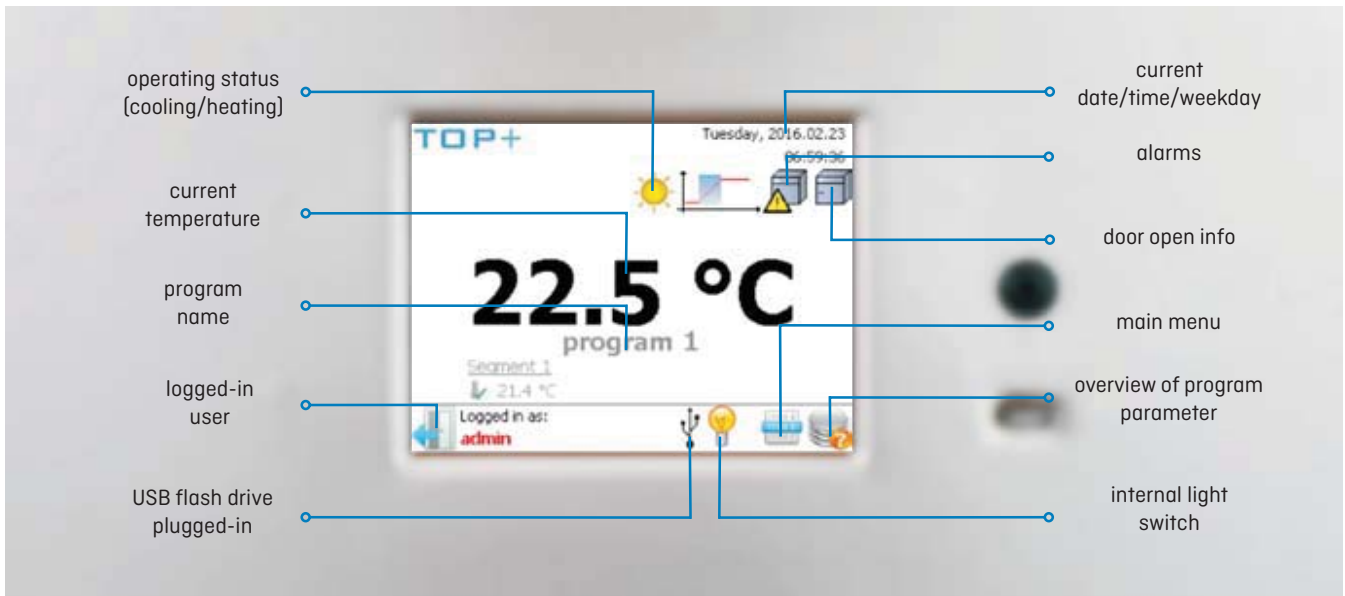
Detailed description of parameters on page 82.

**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 tabular or graphic form
- USB port to allow direct data recording or transfer into a flash drive
- 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: 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

USB port to allow direct recording and data transfer onto a flash drive

RS 232 interface and LAN port

internal LED light

access port: Ø30 mm

wire stainless steel shelves

solid door



## Cooled incubators (ST)

ST

		ST 1	ST 2	ST 3	ST 4	ST 5	ST 6	ST 500	ST 700	ST 1200	ST 1450	
Parameter												
air convection		forced										
chamber capacity [l]		70	150	200	250	300	400	500	625	1365	1460	
working capacity [l]		55	122	163	203	243	324	386	450	1229	1307	
door type		solid / glass or double <sup>1</sup> (option)										
temperature range [°C]		+3...+40 / up to +70 (option) / +3...+70 in PREM TOP+										
temperature resolution [°C]		every 0,1										
controller		microprocessor with external LCD graphic display										
interior	BASIC	aluminum										
	COMF	stainless steel to DIN 1.4016										
	COMF/S	stainless steel to DIN 1.4016										
	PREM (TOP+)	stainless steel to DIN 1.4301										
	PREM/S (TOP+)	stainless steel to DIN 1.4301										
housing	BASIC	powder coated sheet										
	COMF	powder coated sheet										
	COMF/S	polished stainless steel										
	PREM (TOP+)	powder coated sheet										
	PREM/S (TOP+)	polished stainless steel										
overall dims <sup>2</sup> [mm]	A width	570	620	620	620	620	620	660	750	1480	1450	
	B height	600	860	1060	1260	1460	1860	1990	1990	1990	1970	
	C depth	680	650	650	650	650	650	810	860	860	950	
	D width	430	480	480	480	480	480	430	480	2x480	2x490	
	D' width	470	520	520	520	520	520	510	600	1310	1340	
	E height	430	660	860	1060	1260	1660	1510	1510	1510	1460	
	F depth	300	420	420	420	420	420	650	690	690	750	
	F' depth	360	480	480	480	480	480	-	-	-	-	
	G depth	-	320	320	320	320	320	-	-	-	-	
internal dims <sup>3</sup> [mm]	H height	-	440	640	840	1050	1440	-	-	-	-	
	I height	-	-	-	-	-	-	1380	1360	1360	1300	
	max shelf workload <sup>4</sup> [kg]	-	10	10	10	10	10	10	20	30	30	30
		Pw <sup>5</sup> version	on request						100	100	100	100
	max unit workload [kg]	-	20	30	40	50	60	60	100	150	300	300
		W <sup>6</sup> version	on request									
	nominal power [W]		160	170	170	330	330	330	400	400	550	550
	weight <sup>7</sup> [kg]		32	54	59	69	75	90	105	115	185	200
	over temperature protection		class 1.0 to DIN 12880 / class 3.3 (option) / class 3.3 in PREM TOP+									
power supply*		230V 50 Hz										
shelves fitted/max		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>	
warranty		24 months										
manufacturer		POL-EKO-APARATURA										

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

\* - 230V 60Hz, 115V 60Hz also available

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

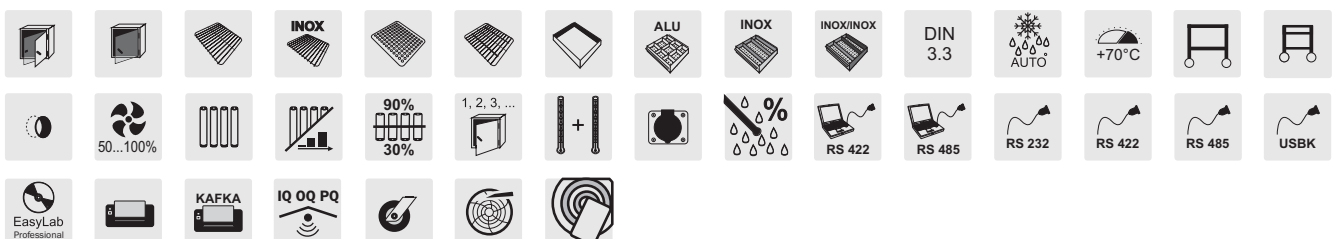
6 - reinforced version

7 - for units in BASIC version with solid door

8 - two columns with 3 shelves each

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### Options and accessories (icon description see pages 80-81)





		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 [l]		70/70	70/70/70	150/150	150/200	150/250	200/200
working capacity [l]		55/55	55/55/55	122/122	122/163	122/203	163/163
door type		solid / glass or double <sup>1</sup> (option)					
temperature range [°C]		+3...+40 / up to +70 (option) / +3...+70 in PREM TOP+					
temperature resolution [°C]		every 0,1					
controller		microprocessor with external LCD graphic display					
interior	BASIC	aluminum					
	COMF	stainless steel to DIN 1.4016					
	COMF/S	stainless steel to DIN 1.4016					
	PREM (TOP+)	stainless steel to DIN 1.4301					
	PREM/S (TOP+)	stainless steel to DIN 1.4301					
housing	BASIC	powder coated sheet					
	COMF	powder coated sheet					
	COMF/S	polished stainless steel					
	PREM (TOP+)	powder coated sheet					
	PREM/S (TOP+)	polished stainless steel					
overall dims <sup>2</sup> [mm]	A width	570	570	620	620	620	620
	B height	1170	1740	1680	1880	2080	2080
	C depth	680	680	650	650	650	650
internal dims <sup>3</sup> [mm]	D width	470	470	520	520	520	520
	D' width	470	470	520	520/520	520/520	520
	E height	430	430	660	660/860	660/1060	860
	F depth	300	300	420	420	420	420
	F' depth	360	480	480	480/480	480/480	480
	G depth	-	320	320	320	320	320
	H height	-	440	640	820	1050	1440
	I height	-	440	640	820	1050	1440
max shelf workload <sup>4</sup> [kg]	-	10	10	10	10	10	10
	Pw <sup>5</sup> version	on request					
max unit workload [kg]	-	20	20	30	30/40	30/50	40
	W <sup>6</sup> version	on request					
nominal power [W]		320	480	350	350	350	350
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*		230V 50 Hz					
shelves fitted/max		see table for single chamber models					
warranty		24 months					
manufacturer		POL-EKO-APARATURA					

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

\* - 230V 60Hz, 115V 60Hz also available

1 - additional internal glass door

2 - 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

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

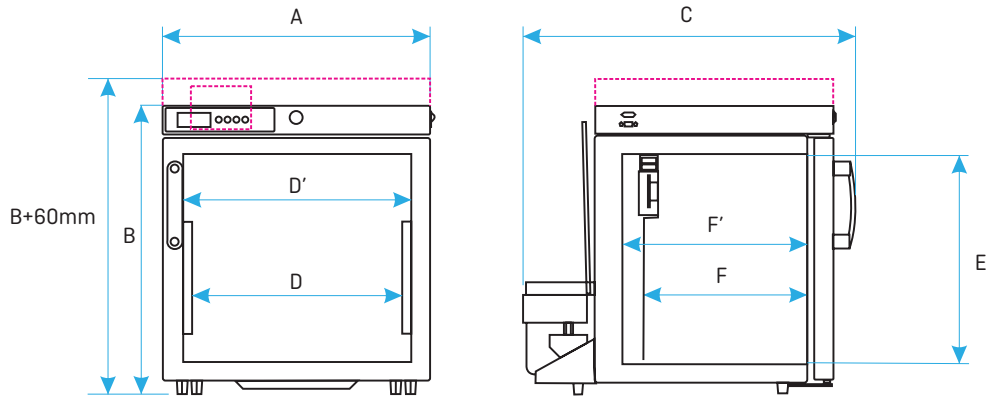
### Options and accessories (icon description see pages 80-81)



Cooled incubators (ST)

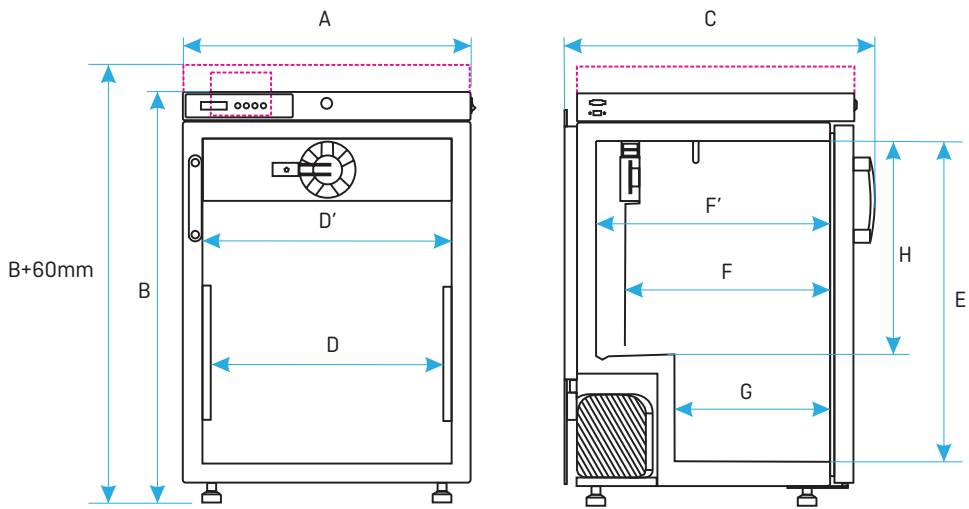
ST

ST 1



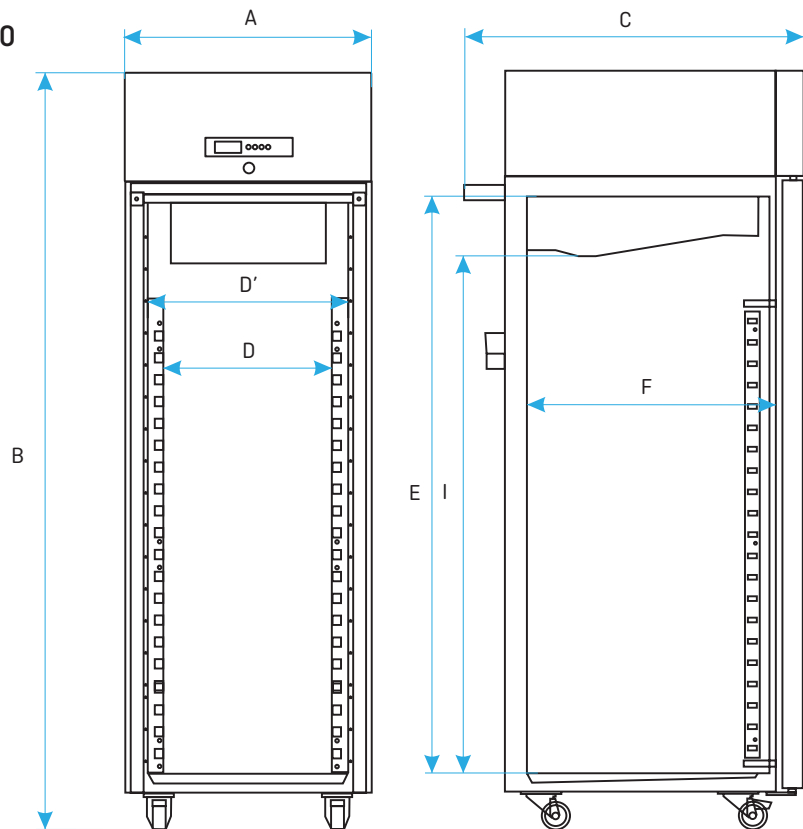
----- - TOP+ version

ST 2/3/4/5/6



----- - TOP+ version

ST 500/700/1200/1450



# 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.

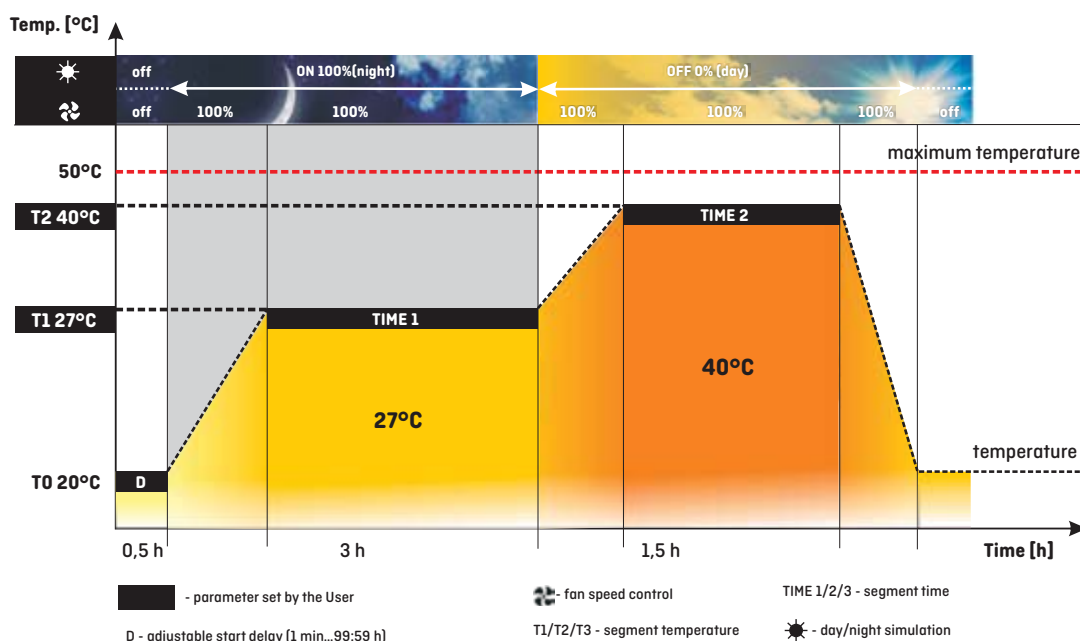
## ■ Program possibilities with FOT option

- 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 82)

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

Option	ST/FOT2	ST/FOT4	ST/FOT6	ST/FOT8	ST/FOT10	ST/FOT15
available for models	ST 1 ST 1/1	ST 2 ST 2/2	ST 2; ST 3 ST 2/2 ST 3/3	ST 4 ST 5	ST 500 ST 700	ST 1200 ST 1450
temperature range with photoperiod ON [°C]	+10 ... +50					
number of lamps on walls	2	4	6	8	10	15 (3 columns with 5 pieces)
adjustable illumination intensity	no	no	no	no	no	no

\*\* 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.

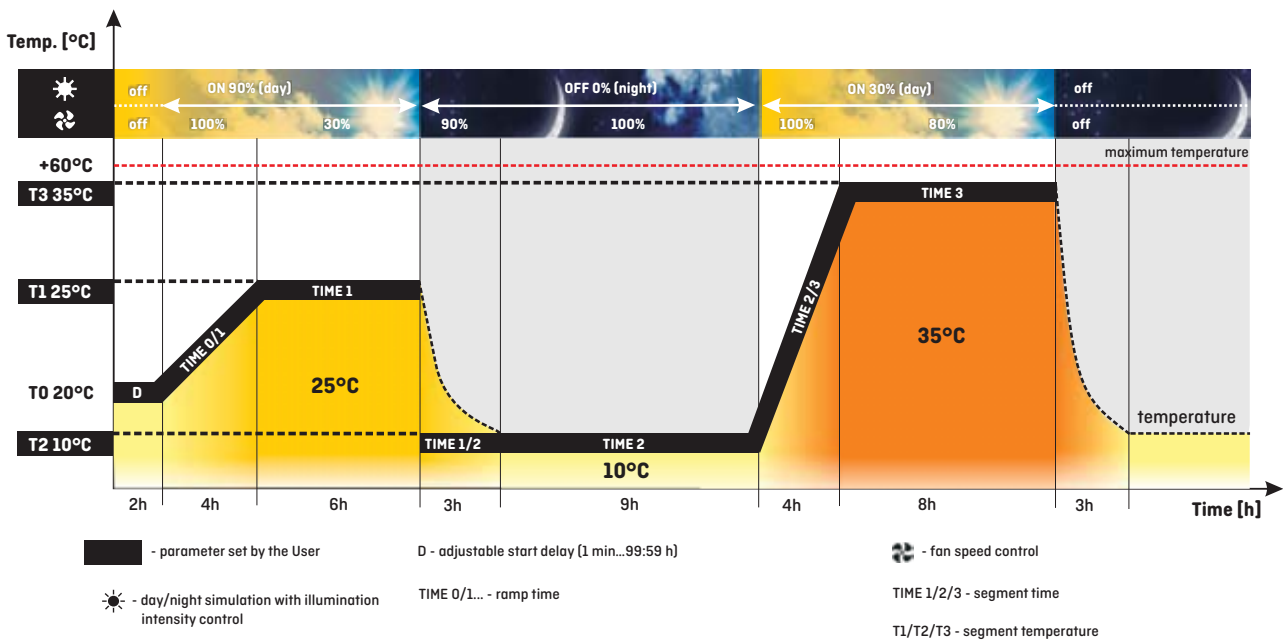
### Program possibilities with FIT option

- 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 82)

### 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 photoperiod ON [°C]	+10 ... +50°C				
number of over-shelf panels with illumination std/max	-	1/3	-	1/3	1/3
lamps in door	yes	no	no	no	no
lamps in walls	yes	no	yes	no	no
adjustable illumination intensity	yes	yes	yes	yes	yes

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



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## 20<sup>16</sup><sub>17</sub>

### **POL-EKO-APARATURA**

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and technological processes,  
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