RESOTECH- BOD REFRIGERATOR

Professional Manufacturer of Test Equipment

ISO 9001:2008 CERTIFIED COMPANY

MAKE :- RESOTECH

MODEL NO. :- RESOTECH-WINSUN (TOUCH SCREEN PANEL WITH DATA LOAGGER)

RESONANCE AUTOMATION AND MACHINES

MANUFACTURERS & SUPPLERS

SPECIAL PURPOSE MACHINE, MATERIAL TESTING MACHINE, LEAKAGE TESTING MACHINE, PACKIGING TESTING MACHINE, ENVIRONMENTAL TEST CHAMBER, ASSY. LINE EQUIPMENT, SOLUTION FOR ELECTRONIC AUTOMATION AND PRODUCT DEVELOPMENT, COMPUTERIZED CONTROL MACHINE , PLC HMI SCADA VISUAL BASIC SOFTWARE DEVELOPMENT SOLUTION AND OTHER SERVICES.

BASIC

The BASIC version has been designed for those customers who look for professional lab equipment at a very competitive price. The cooled incubators (ST) and refrigerators in the BASIC version feature aluminum interior and powder-coated sheet housing with a graphite front panel. This combination of construction materials maintains the quality of the equipment and guarantees an attractive price.

COMFORT

The COMFORT version is ideal for those customers who appreciate high quality products, reasonably priced. The inner chamber is made of smooth stainless steel-304/316 (to DIN 1.4016) being a great advantage. The external housing can either be constructed of a powder-coated sheet (RAL 7035) with a graphite front panel COMF, or polished stainless steel - COMF/S.

PREMIUM

The PREMIUM version equipment is produced of highest quality materials, mechanically and chemically resistant. It features an acid-proof stainless steel-304/316 (to DIN 1.4301) interior. The external housing can either be constructed of a powder-coated sheet with a graphite front panel PREM, or polished stainless steel - PREM/S. Additionally, the ST units are equipped with class 2.0 temperature protection system to DIN 12880 to protect the samples.

PREMIUM TOP+

The PREMIUM TOP+ version is comprises of all the features of the PREMIUM version with advanced programming possibilities. Constructed of an acid-proof stainless steel (to DIN 1.4301) interior and a powder-coated sheet (RAL 7035) with a graphite front panel PREM, or polished stainless steel - PREM/S housing, the equipment includes a large, full color **LCD touch screen**, Windows CE system and remote control via Ethernet. The temperature values can be displayed on the screen in a tabular or graphic form. There are also adjustable ramps and hold at set point times, individually for each program segment. The TOP+ version can store up to 20 user programs, each of up to 100 temperature-time segments. The Admin function allows to manage Users and set up access policy. Additionally, for ST units in standard, maximum temperature is +70°C. Moreover, the units in TOP+ version are equipped with temperature protection class 3.3 for ST and 3.2 for CHL to DIN 12880.

ResoTech®

Application

BOD Incubator (Bio-Oxygen Demand) are used to maintain temperature for test tissue culture growth, storage of bacterial cultures and incubation where high degree of constant temperature accuracy is required. Thermolab BOD Incubators provide accurate conditions and uniformity throughout the chamber.
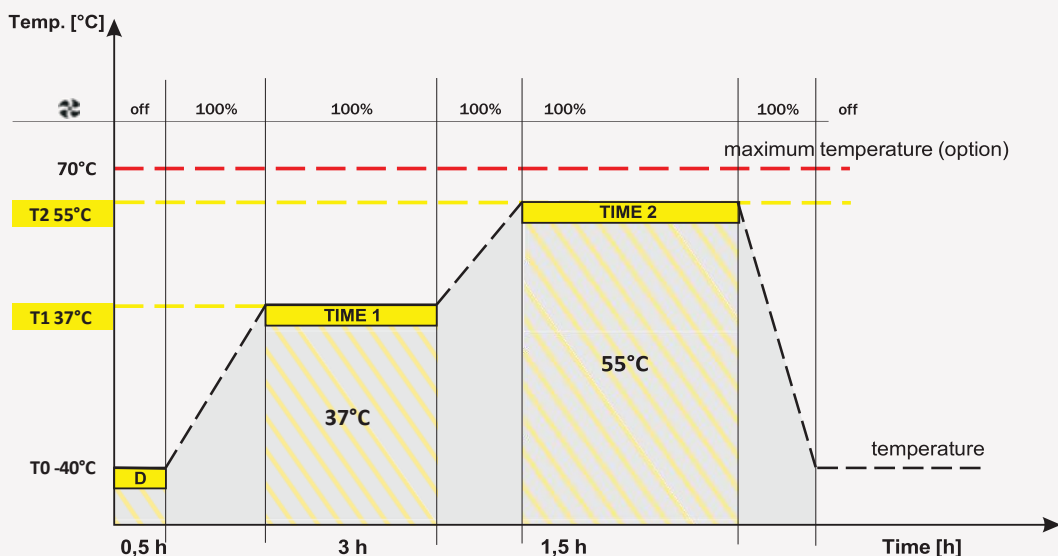
- BOD determination microbiological research
- plant growing and microorganisms breeding at specified temperature
- Interior illumination
- Heavy-duty door hinges and latches to maintain a secure and uniform seal
- Racks & trays – Stainless Steel with adjustable height
- PLC based control system with 7" color touchscreen HMI.
- storage of liquids and samples for physicochemical analysis
- Cooled incubators (ST) can provide stable temperature conditions between.
- -40...+50°C regardless of ambient conditions (equipped with both heating and cooling systems)
- Inside Stainless Steel and Outside Mild Steel Powder Coated OR Stainless Steel
- Door Access Security system

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

Controller advantages

- Can be switched ON-OFF manually
- cyclic programs memory
- Proportional band
- Alarm on equipment Door remaining open for more then set time period
- SSR Drive voltage
- Rear panel digital input for process alarm (High/Low Deviation)& Event alarm (Door Open / Timer End)
- Digital input (Potential-free contacts) from Door switch
- Overview of set and current parameters while operating
- operating with temperature priority mode
- Cool Control. Switches ON-OFF Based on temperature PV & SP
- In Built Buzzer (Beeper)
- Independent High/Low Deviation Process alarms
- Not suitable for use in corrosive or Explosive Atmospheres. The panel in switch the instrument is mounted must be free of Electrically conductive pollution
- Power fail Recovery (Resume/ Reset/ Abort)
- Alarm alert on Door Opening for longer then set time
- Detailed description of parameters
- Defrosting function temperature sensor fail alarm
- Recording of min, average and max temperature value for each segment audible and visual temperature alarm
- In- built cold-junction compensation for thermocouples
- In built lead Resistance compensation for RTD (Upto 22 Ohms in each lead)
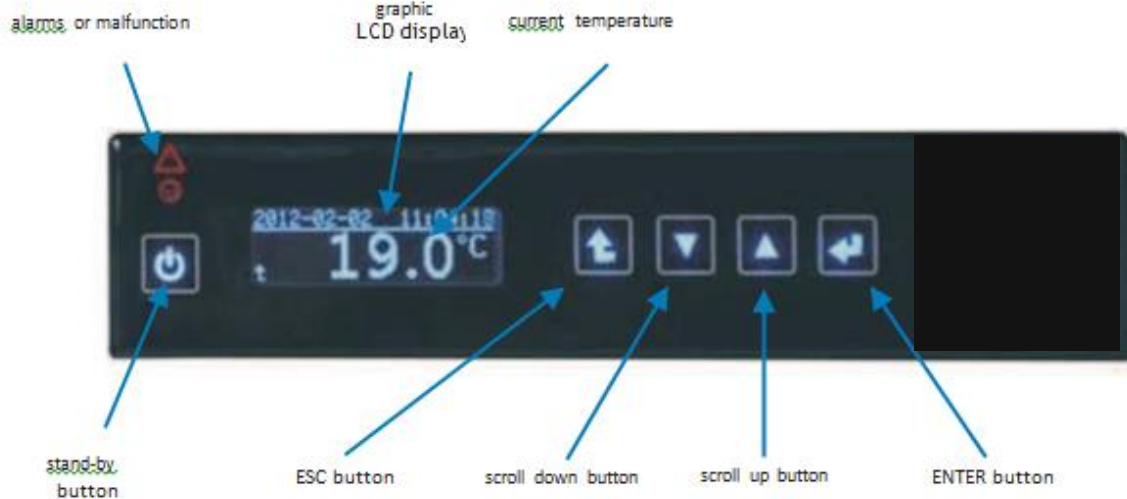
Control panel

alarms or malfunction

graphic LCD display

current temperature

2012-02-02 11:04:18
19.0°C

stand-by button

ESC button

scroll down button

scroll up button

ENTER button

Standard features

- solid door
- temperature range -40...+50°C
- RS 232 and USB interface allow to download relevant program data with the free EasyLab Basic software available on the website or with the EasyLab Professional software (see page 68); cables to be ordered separately (RSK or USBK option)
- wire shelves for BASIC and stainless steel wire shelves for COMFORT and PREMIUM models quality control protocol
- 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 units and 2.0 for PREMIUM units to DIN 12880
- door lock
- wheels in standard for models ST 1200 and 1450
- open door alarm access port: Ø30 mm
- internal LED light

RS 232 and USB interface

door lock

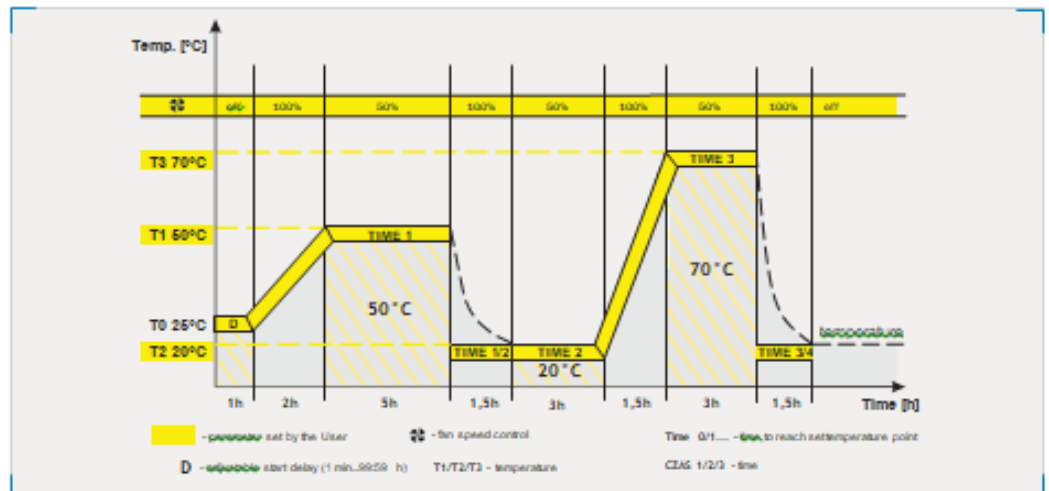access port for external sensor

internal LED light

All the units in TOP+ version are equipped with PID microprocessor controller with a large (5,7") fullcolor 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

- Administrator function to manage User
- Accounts access control via login
- 7-days programming
- 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)
- 4 SSR Outputs: Heater control, Compressor control, Process Alarm & Event Alarm
- continuous operatingadjustable ramps
- overview of set and current parameters while operating
- recording of min, average and max temperature value for each segmentpossibility of temperature calibration by the User audible and visual temperature alarm
- operating in temperature or time
- priority modedefrosting 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%)
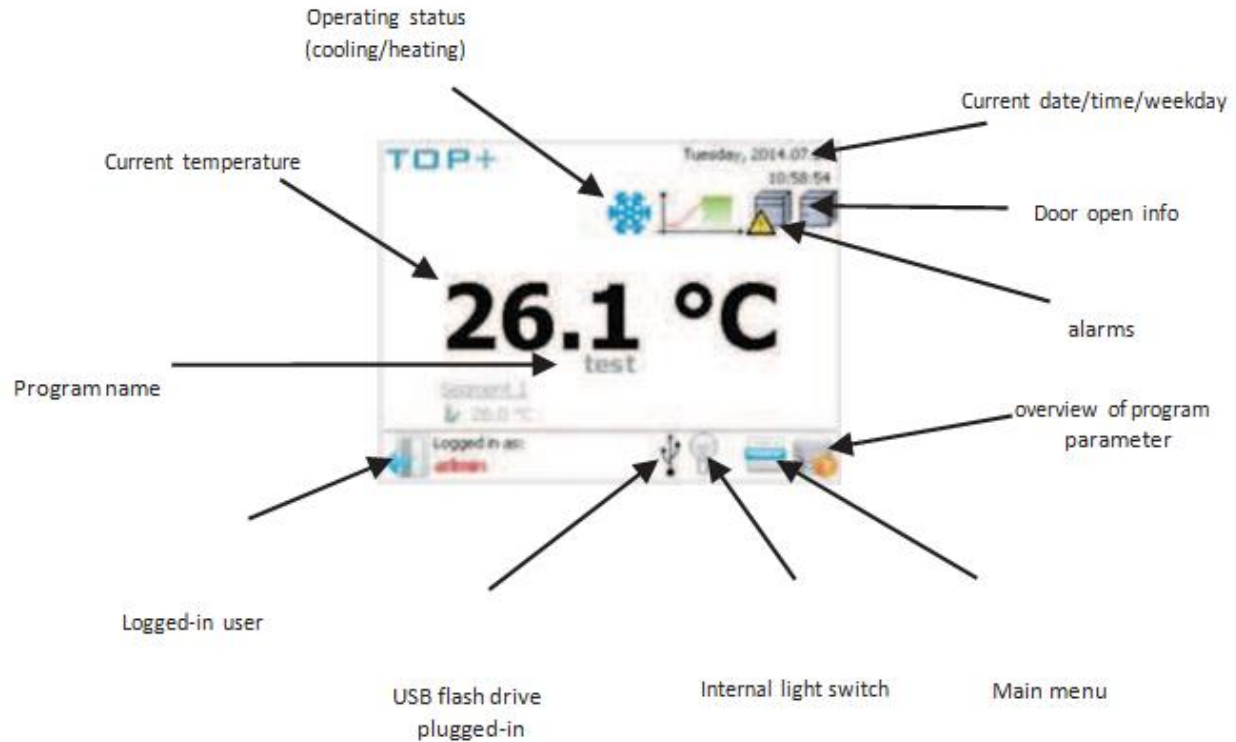
GLP supporting functions

- automatic fan shut-down after completing the program
- Password protected settings20 user
- Internal memory to store up to 4100 data records for each User, possibility to overview the values on the display or a PC computer intabular or graphic form USB port to allow direct data recording or transfer into a flash driveevents registry
- programs memory

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Control panel

Operating status
(cooling/heating)

Current date/time/weekday

Current temperature

TOP+

Tuesday, 2014.07
10:58:54

Door open info

26.1 °C
test

alarms

Program name

Segment 1
26.0 °C

overview of program
parameter

Logged in as:
admin

Logged-in user

USB flash drive
plugged-in

Internal light switch

Main menu

Standard features

- solid door
- temperature range -40…+50°C
- RS 232 interface and USB port to allow direct recording and data transfer onto a flash drive;
- data can also be downloaded with the free TOP+ Control software (see page 69) or the
- cableTOP+ Control software
- wire stainless steel shelves
- quality control protocol
- English instruction manual
- available menu languages: English, Estonian, French, German, Hungarian, Italian, Latvian, Portuguese, Romanian, Russian, Spanish protection 3.3 class to
- door lock
- open door alarm
- access port: Ø30
- mminternal LED light

door lock

RS 232 interface
and LAN port

RS 232   LAN

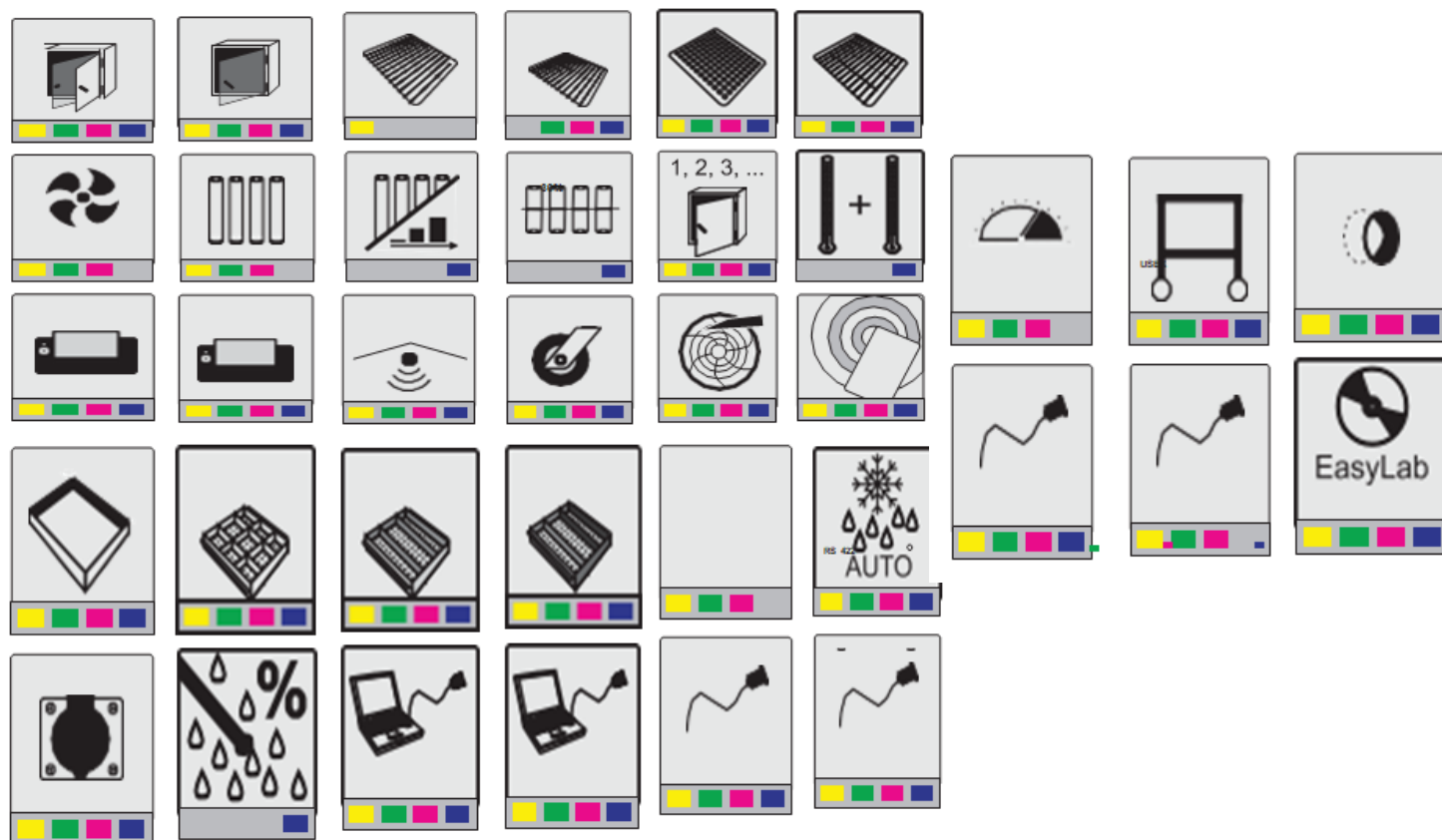access port

internal
LED
light

B.O.D INCUBATOR

RESOTECH®

TECHNICAL SPECIFICATION

		68	150	200	250	300	493	625	1365	1460
air convection		forced								
chamber capacity[1] [l]		68	150	200	250	300	493	625	1365	1460
door type		solid/glass or double[2] (option)								
temperature range [°C]		-40...+50°C / up to +70°C (option) / -40...+70°C in PREM TOP+								
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	stainless steel								
	PREM (TOP+)	powder coated sheet								
	PREM/S (TOP+)	stainless steel								
INTERNAL DIMENSIONS	WXHXD	112	171	280		336	420	500		
	mm. size	455x610x410	505x830x415	570x875x550		650x900x550	700x900x650	410x410x1010		
	Cu.ft	4.0	6.1	10		12	15	18		
max shelf workload[5] [kg]	-	10	10	10	10	10	20	30	30	30
	PW[6] version	on request					100	100	100	100
max unit workload [kg]	-	20	30	40	50	60	100	150	300	300
	W[7] version	on request								
nominal power [W]		160	170	170	330	330	400	400	550	550
weight[8] [kg]		32	54	59	69	75	105	115	185	200
temperature resolution [°C]		every 0,1								
temperature fluctuation[9] at +37°C [°C]		±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2
temperature variation[10] at +37°C [°C]		±0,4	±0,4	±0,4	±0,5	±0,6	±0,6	±0,6	±0,6	±0,6
over temperature protection		class 1.0 to DIN 12880 / class 3.3 (option) / class 2.0 in PREM / class 3.3 in PREM TOP+								
voltage*		230V 50Hz								
shelves fitted		2	3	3	4	4	3	3	2 x 3[11]	2 x 3[11]
Warranty MODEL NUMBER		24 months RESOTECH-WINSUN								

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

1- working capacity of chamber can be smaller

2- additional internal glass door

3- TOP+ version are 60 mm higher, depth doesn't include 50 mm of power cable

4- dims of units with double door can be smaller

5 - on uniformly loaded surface

6- reinforced shelf

7- reinforced version

8- for units in BASIC version with solid door

9- fluctuation measured in centre of chamber 10 - in space

10 - two columns with 3 shelves each

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Options and accesories

BASIC   COMF   PREM   PREM TOP+

RESOTECH®

air convection		forced						
chamber capacity[1] uper/lower [l]		68/68	68/68/68	150/150	150/200	150/250	200/200	294/294
door type		solid / glass or double[2] (option)						
temperature range [°C]		-40...+50 / up to +70°C (option) / -40...+70°C in PREM TOP+						
controller		microprocessor with externall 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	powered coated sheet						
	COMF	powered coated sheet						
	COMF/S	stainless steel						
	PREM (TOP+)	powered coated sheet						
	PREM/S (TOP+)	stainless steel						
INTERNAL DIMENSIONS	WXHXD	112	171	280	336	420	500	
	mm. size	455x610x410	505x830x415	570x875x550	650x900x550	700x900x650	410x410x1010	
	Cu.ft	4.0	6.1	10	12	15	18	
max shelf workload[5] [kg]	-	10	10	10	10	10	10	30
	PW[6] version	on request						
max unit workload [kg]	-	20	20	30	30/40	30/50	40	75
	W[7] version	on request						
nominal power [W]		320	480	350	350	350	350	800
weight[8] [kg]		65	98	109	114	124	119	175
temperature resolution [°C]		every 0,1						
temperature fluctuation[9] at +37°C [°C]		see table of single chamber units						0,3
temperature variation[10] at +37°C [°C]		see table of single chamber units						0,5
over temperature protection		class 1.0 to DIN 12880 / class 3.3 (option) / class 2.0 in PREM / class 3.3 in PREM TOP+						
voltage*		230V 50Hz						
shelves fitted		see table of single chamber units						2/2
Warranty MODEL NUMBER		24 months RESOTECH-WINSUN						

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

1 - working capacity of chamber can be smaller
2- additional internal glass door
3- depth doesn't include 50 mm of power cable
4- dims of units with double door can be smaller
5- on uniformly loaded surface
6- for units in BASIC version with solid door
7 - fluctuation measured in centre of chamber 10 - in space

Options and accesories

BASIC   COMF   PREM   PREM TOP+

Thanks to the photoperiodic (FOT) and phytotron (FIT) systems the simulation of day and night is possible. The FOT option allows the lights to be turned on or off, while the FIT option additionally enables intensity control.

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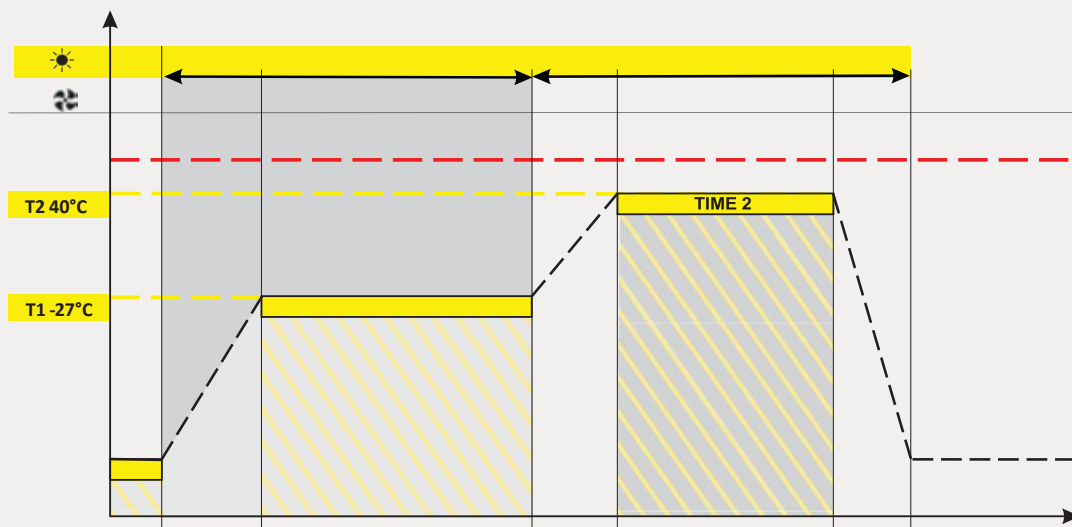
Program possibilities with FOT option:

- day and night simulation software to control light (on/off), time and temperature separately for each segment temperature range.
- simulation: -40 ... +50°C (when purchasing extended temperature range to +70°C) lamps installed on side walls
- fluorescent lamp 840 type (daylight) used as standard
- operating with time priority

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

MODEL NO.	RESOTECH-WINSUN	RESOTECH-WINSUN	RESOTECH-WINSUN	RESOTECH-WINSUN	RESOTECH-WINSUN	RESOTECH-WINSUN
temperature range with photoperiod ON [°C]	-40... +50°C					
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
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

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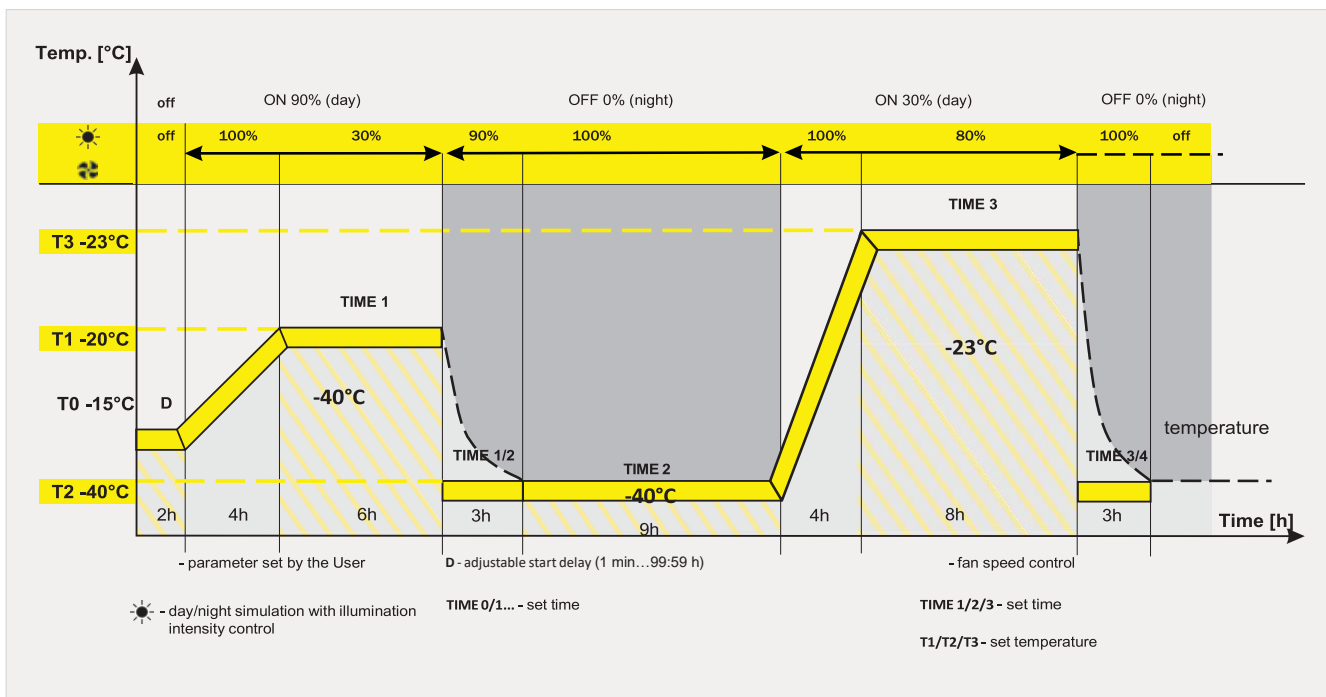
Program possibilities with FIT* option

- day and night simulation software to control light intensity [%], time temperature and fan speed separately for each segment.
- temperature range for „night" simulation:
- simulation: -40... +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
- operating with temperature or time

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

MAKE	RESOTECH	RESOTECH	RESOTECH	RESOTECH	RESOTECH
temperature range with photoperiod ON [°C]	-10 ... +50°C	-10 ... +50°C	-10 ... +50°C	-10 ... +50°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

- parameter set by the User   **D** - adjustable start delay (1 min…99:59 h)   - fan speed control

☀ - day/night simulation with illumination intensity control

TIME 0/1… - set time

TIME 1/2/3 - set time

T1/T2/T3 - set temperature

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