

TS 9000 SERIES:

STERILIZERS, LABORATORY DRYING OVENS

Series TS9000 consists of four different cabinets available in sizes from 26 litres to 430 litres.

Interior housing and shelves are in stainless steel. Externally, the cabinets are constructed of electrolytically galvanized steel sheets, coated with a grey epoxy polyester paint (RAL 7035).

The three smallest models are table models that are stackable. They can be wall mounted using brackets. The largest model is freestanding and has adjustable feet.



KEY FEATURES

- **Automatic safety thermostat** Increased safety – simpler to operate
- **LCD display** Explanatory text – simpler to operate
- **Motorised valve** Automatic shut off end of cycle and overheating
- **Touch buttons** Extended lifetime in humid surroundings
- **Software** Alternates between two temperatures at specified time, daily or weekly
- **Extended temperature range** Can operate down to 2°C above ambient temperature
- **Keypad with PIN code** Prevents undesirable settings
- **Potential free alarm contact** Can connect to external alarm system
- **USB outlet** Simple updates possible via PC
- **10 speed fan**

TIMERS

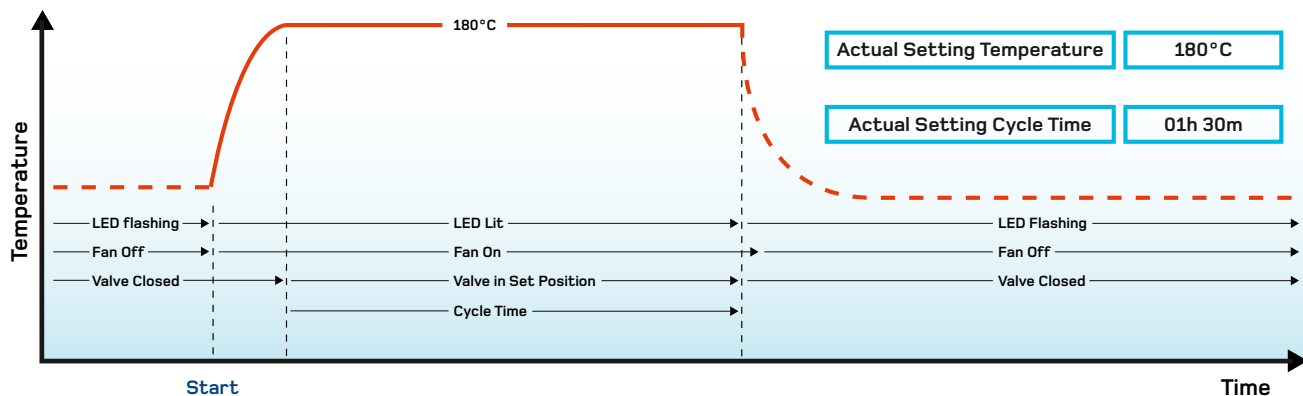
In the **System Setup**, one of **two timer systems** can be chosen:



STANDARD TIMER (DEFAULT):

- Can be set to maximum 99 hours and 59 minutes.
- Starts counting down when the Set Temperature is reached.
- In the case of power failure, lasting more than 5 minutes, the counting will restart from the beginning.
- The Fan and Air valve are controlled as illustrated below.
- If the chamber shall run without any timing, the time setting should be set to 00h 00m. This will avoid accidental start of the timer.

STANDARD TIMER, EXAMPLE



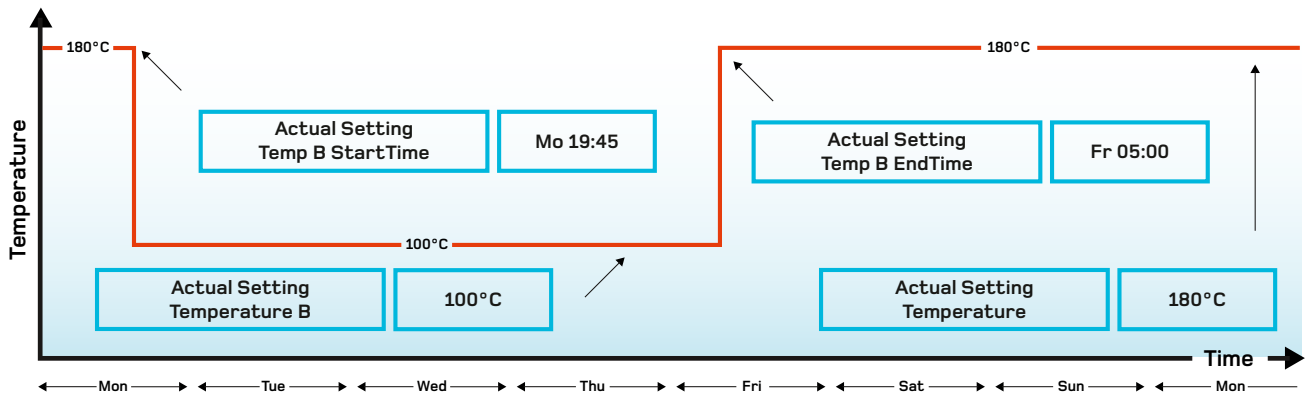
REAL TIME PROGRAM:

- Optional, can be chosen in the System Setup Menu.
- Makes it possible to operate the chamber at two different temperatures.
- The extra temperature is named **Temperature B** in the menus.
- Setting Temperature B to 000°C means that heater and fan are turned off in that period (Sleep Mode).
- **Start- and end Time** for Temperature B can be set to any time during the **week or on daily basis**.
- When choosing **xx** instead of a specified day, the change will occur daily at the given time.
- The **Real Time Clock** is backed up for about 10 minutes if power fails. A warning is given if adjustment is needed.

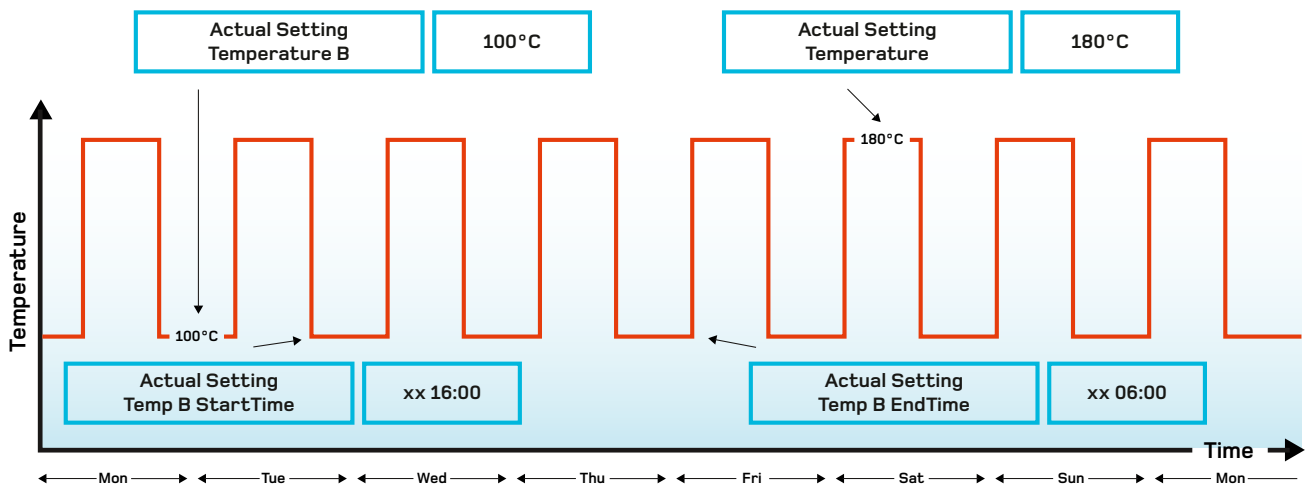




WEEK CYCLE, EXAMPLE



DAY CYCLE, EXAMPLE



THE FAN

- Adjustable speed, 1 to 10.
- When heating up, settings lower than 6 will be ignored.
- Stops for about 30 seconds when the door is opened while running at set temperature. This function is disabled for 4 minutes after last door opening or after last Air Valve adjustment.
- May reduce speed, or even stop, if operating at a temperature close to the ambient temperature.

THE AIR VALVE

- Adjustable opening in steps of 10% (00 = closed, 100 = open).
- Movement may be 10 sec delayed.
- Should be open when used for drying purposes.
- Closes automatically when heating up, when a timer cycle is completed or in Sleep mode (Real Time Program).

PIN CODE

- Optional system to stop unwanted settings from unauthorized persons.
- A **personal pin code** can be entered during the first 30 seconds after turning the chamber on with the main switch or waking up from Standby Mode. Actual code is displayed after pressing the Set key in that period. A unique code can be chosen in the range from 001 to 999.
- 000 means deactivated Pin Code System.
- When activated, **Pin Code?** will be displayed in the left display.
- **Actual code must be set by Up/Down Keys**, followed by pressing the **Enter Key**.
- The system will remain opened for 30 seconds after the last key operation.
- Alarms can be acknowledged by the Standby Key even if the keys are locked.
- If assembled with door lock system, the door will be locked as the keys are locked.

STANDBY

- Preferred way to shut down the chamber. Keeps the real time clock running.
- Turns off Heaters, Fan and Display.
- Press the Standby Key for about 3 seconds until the backlight in the display turns off.
- The Standby LED turns on when the key is released.
- The chamber can be restarted by pressing the Standby Key for 3 seconds.
- The right display will show **Wait... for a moment** during initialization.

ALARMS

- A number of alarm situations may occur, listed below.
- Actual warning is given in the lower line of the left display.
- The backlight starts flashing and the buzzer starts sounding whenever an alarm occurs.
- The flashing and the sound can be stopped by pressing the Standby Key.

CALIBRATION

Two calibration constants can be adjusted in order to bring the temperature measurement equal to the true value according to a control device.

ALARM OUTPUTS

- A potential free contact is available for external use (see drawing Main Switch and External Connections).
- The output switches when an alarm situation occurs, one minute delayed.
- Switches immediately at power failure.
- Immediate return to normal when the alarm situation is over.

SAFETY THERMOSTAT

- Automatic system, preventing risky temperatures in the case of a controller failure.
- Completely independent from the ordinary temperature control system
- Automatically adjusted whenever a new Temperature Set is entered
- Adjustable limit (offset from target)
- Cuts power to the heaters when the limit is exceeded
- Generates an alarm warning
- Turns to normal when the temperature has dropped 0.5°C below the limit



STERILIZERS – LABORATORY DRYING OVENS

TEMPERATURE CONTROL		TS 9026	TS 9053	TS 9135	TS 9430
Variation	+ / - °C	1	1	1	1
Deviation (spatial)	+ / - %	1,5	1,5	1,5	1,5
Readability / Setability	°C	1	1	1	1
Range	°C	t _b -250	t _b -250	t _b -250	t _b -250
Sensor thermocouple "K"		Yes	Yes	Yes	Yes
Controller		PID	PID	PID	PID
Display		LCD	LCD	LCD	LCD
TIMER					
Standard hours/minutes		99h/59m	99h/59m	99h/59m	99h/59m
Real time program *		Yes	Yes	Yes	Yes
SAFETY					
Alarm flashing / Acoustic		Yes	Yes	Yes	Yes
Alarm limit settable		Yes	Yes	Yes	Yes
Automatic safety setting		Yes	Yes	Yes	Yes
FEATURES					
Fan speed control		1/10	1/10	1/10	1/10
Exhaust valve	mm	30 × 30	30 × 30	30 × 30	60 × 60
Ventilation slide	0-100 %	Yes	Yes	Yes	Yes
Data Port, Serial USB		Yes	Yes	Yes	Yes
Pot. free alarm output		Yes	Yes	Yes	Yes
SHELVES					
Standard / Max	pcs	2/7	2/8	4/16	4/23
Dimensions W×D	mm	346 × 235	434 × 325	534 × 325	602 × 570
Max load pr shelf	kg	20	20	20	30
Permitted total load	kg	50	50	70	100
HEATING					
Heating up time to 250 °C	mins	40	50	65	20
Heat transfer at 250 °C	W	400	460	710	1500
Air changes	Hz	110	50	20	60
POWER					
Nominal Power	W	930	1430	1430	4600
Nominal voltage	V	230,1~	230,1~	230,1~	230/400,3~
Frequency	Hz	50/60	50/60	50/60	50/60
DIMENSIONS					
Exterior W×D×H	mm	490×480×500	580×575×550	680×675×750	753×845×1360
Interior W×D×H	mm	350×255×300	440×345×350	540×455×555	610×600×1180
Volume	litres	26	53	135	430
WEIGHTS / VOLUME					
Net weight	kg	20	35	52	120
Shipping weight	kg	25	40	60	140
Shipping volume	dm ³	0,21	350	558	1280

t_b = 2°C ABOVE AMBIENT

* CAN BE SET AT TWO TEMPERATURES, DAILY OR WEEKLY