

THERMO-SHAKERS



PST-60HL
Plate Shaker-Thermostat



TS-100C
Thermo-Shaker with cooling
for microtubes and PCR plates



TS-DW
Thermo-Shaker for Deep Well Plates

PST-60HL, PST-60HL-4 and PST-100HL, Thermo-Shakers

DESCRIPTION **PST-60HL, PST-60HL-4** and **PST-100HL** Thermo-shakers are designed for shaking standard 96-well microtiter plates in the thermal regulation mode. Models **PST-60HL** and **PST-100HL** hold 2 plates, model **PST-60HL-4** holds 4 plates.

A multisystem principle, used in design of the Thermo-Shaker, allows operating it as 3 independent devices:

- Incubator;
- Microplate shaker;
- Thermo-Shaker.

A distinctive feature of Biosan Plate Thermo-Shakers is the patented by the company **Two-Side Microplates Heating**, which allows to achieve full correspondence of the set and actual temperature in the microplate wells.

Standard versions of Thermo-shakers provide heating up to 60°C, which is sufficient for carrying out ELISA tests.

Thermo-shaker **PST-100HL** with the ability to stabilize the temperature up to 100°C is specially designed for the hybridization reactions.

Plate Thermo-Shakers provides:

- Soft or intensive sample shaking;
- Rotation speed regulation, stabilization and indication;
- Even rotation amplitude throughout the Thermo Automatic
- Setting and indication of the required temperature on the platform;
- Automatic fault diagnostics (temperature sensor, platform heating, lid heating etc.);
- With the help of the temperature calibration function, the user can calibrate the unit to compensate differences in the thermal behavior of plates from different manufacturers; (**PST-60HL, PST-60HL-4**).

Application fields:

PST shakers can be used in various applications such as:

- **Immunochemistry** — Enzyme-Linked Immuno Sorbent Assay (ELISA). Unique bottom and top heating while shaking, ensures the most efficient linkage of target thus providing the most reliable results;
- **Molecular biology** — Micro and Macro array applications - incubation with shaking provides more efficient hybridization of target nucleic acid with on the surface of Micro and Macro chip printed probes (**Specific holder is required**)

Premium
Product Class

Ø 2 mm
orbit

PST-60HL



Product video is available
on the website

Premium
Product Class

Ø 2 mm
orbit

PST-60HL-4



Premium
Product Class

Ø 2 mm
orbit

PST-100HL

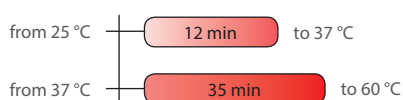


PST-60HL, PST-60HL-4 and PST-100HL, Thermo-Shakers

SPECIFICATIONS

	PST-60HL	PST-60HL-4	PST-100HL
Temperature setting range	+25°C... +60°C		+25°C... +100°C
Temperature control range	+5°C above ambient... +60°C		+5°C above ambient... +100°C
Temperature setting resolution	0.1°C		
Temperature stability	±0.1°C		
Temperature uniformity @ +37°C	±0.25°C		±0.2°C
Temperature calibration coefficient range	0.936–1.063 (± 0.063)		—
Heating	Two-side microplate heating (platform and lid)		Two-side microplate heating (platform and lid) + double heating contour of the platform
Orbit	2 mm		
Speed regulation range	250–1,200 rpm (increment 10 rpm)		
Digital time setting	1 min–96 h/non-stop (increment 1 min)		
Timer sound signal	yes		
Display	LCD, 2 × 16 signs		
Max. height of microtest plate	18 mm		
Number of microtest plates	2	4	2
Weight	6.1 kg	8.8 kg	5.9 kg
Platform dimensions (W×D)	250 × 150 mm	290 × 210 mm	250 × 150 mm
Overall dimensions (W×D×H)	270 × 260 × 125 mm	380 × 390 × 140 mm	270 × 260 × 125 mm
Input current/power consumption	12 V DC, 3.3 A/40 W	12 V DC, 4.15 A/50 W	12 V, 5 A/60 W
External power supply	Input AC 100–240 V 50/60 Hz, Output DC 12 V		

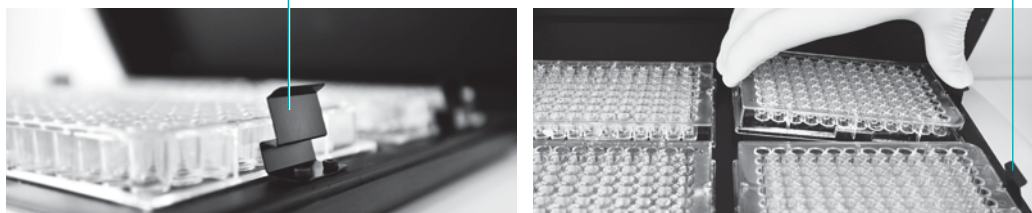
Heat up time PST-60HL and PST-60HL-4:



Heat up time PST-100HL:



PST-60HL-4 spring holders



ORDERING INFORMATION:

PST-60HL

PST-60HL-4

PST-100HL

Cat. number

BS-010119-AAI

BS-010128-AAI

BS-010142-AAI

TS-100, TS-100C, and TS-100C Smart Thermo-Shakers

DESCRIPTION

TS-100 and **TS-100C** thermo-shakers are designed for intensive mixing of samples in microtest tubes or PCR plates in a temperature control environment. The **TS-100C** model of thermo-shaker differs from **TS-100** in the possibility of cooling samples down to +4°C.

Features of thermo-shakers meet the highest expectations of users according to many parameters:

- Fast reaching of specified mixing speed and maintenance of equal amplitude of rotation throughout the thermo-shaker block;
- Stability of maintaining the set temperature in a wide range throughout the block surface of thermo-shakers;
- With the help of the temperature calibration function, the user can calibrate the unit approximately $\pm 6\%$ of the selected temperature to compensate differences in the thermal behaviour of tubes from different manufacturers;
- LCD display indicates pre-set and current values of temperature, speed and time of operation;
- Quiet motor operation, compact size, prolonged service life.

Functions of heating and mixing can be performed either simultaneously or independently, that allows using the unit as three independent devices:

- **Thermostat;**
- **Shaker;**
- **Thermo-shaker.**

We offer five heating and cooling blocks for each model, including a block with a plastic lid for PCR-plates. Within one model of thermo-shaker, the blocks are mutually interchangeable and can be easily installed.



Mixing Efficiency Video is available on the website



Premium
Product Class

Ø 2 mm
orbit

TS-100



Premium
Product Class

Ø 2 mm
orbit

TS-100C



Product video is available on the website

The new model allows you to control the device in the following modes:

1. Manual using the front panel interface.
2. Through a computer program using Bluetooth® technology.

The software allows you to manage the following parameters:

- Rotation speed
- Temperature
- Time
- Sound signal
- Creating Profiling programs using controlled parameters
- Visualization of temperature vs time and speed vs time graphs
- Data export to Excel and CSV formats
- Error messages/Fault diagnostics

Possibility of control up to 7 units from PC. Independent parameter setting allows to perform different tasks simultaneously on several units.



Smart Plus
Product Class

Ø 2 mm
orbit

TS-100C Smart



Bluetooth®
connection

NEW

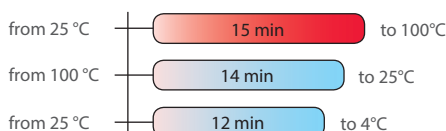
TS-100, TS-100C, and TS-100C Smart Thermo-Shakers

	TS-100	TS-100C, TS-100C Smart
Temperature setting range	+25°C ... +100°C	+4°C ... +100°C
Temperature control range	5°C above ambient ... +100°C	15°C below ambient ... +100°C
Temperature setting resolution		0.1°C
Temperature stability		±0.1°C
Temperature accuracy @ +37°C		±0.5°C
Average heating speed:	4°C/min from +25°C to +100°C	5°C/min from +25°C to +100°C
Average cooling speed:	—	from +100°C to +25°C 5°C/min from +25°C to +4°C 1.8°C/min
Temperature uniformity over the block:	@ +37°C ±0.1°C @ +60°C ±0.2°C @ +100°C ±0.2°C	@ +4°C ±0.6°C @ +37°C ±0.1°C @ +100°C ±0.3°C
Temperature calibration coefficient range		0.936–1.063 (±0.063)
Speed control range		250–1,400 rpm
Acceleration time		3 s
Orbit		2 mm
Display		LCD, 2 × 16 signs
Microprocessor controlled temperature, mixing speed and operation time		
Digital time setting		1 min–96 h (1 min increment)
Timer sound signal		yes
Maximum continuous operation time		96 h
Overall dimensions (W × D × H)		220 × 240 × 130 mm
Weight		3.7 kg
Input current/power consumption	12 V, 3.5 A/42 W	12 V, 4.9 A/60 W
External power supply		Input AC 100–240 V, 50/60 Hz; Output DC 12 V
PC software	—	only for TS-100C Smart

Heat up times for TS-100:



Heat up and cool down times for TS-100C and TS-100C Smart:



Thermo-Shakers are capable to support various application such as:

- **Molecular diagnostics** — Sample lysis for further Nucleic acid automated or manual extraction;
- **Genetic** — Amplicon denaturation for NGS Library preparation;
- **Biochemistry** — Enzymatic reaction;
- **Genomics** — Protein degradation studies;
- **Cellular biology** — Extraction of metabolites from cellular material.

ORDERING INFORMATION:

TS-100 without block	BS-010120-AAI
TS-100C without block	BS-010143-AAI
TS-100C Smart with software, without block	BS-010171-A01

Photos and descriptions of all blocks can be found on next page

Cat. number 

Interchangeable Blocks for TS-100

Optional Blocks:		Tube's volume	Cat. number	
1	SC-18	20 and 12 microtubes	0.5 ml and 1.5 ml	BS-010120-AK
2	SC-18/02	20 and 12 microtubes	0.2 ml and 1.5 ml	BS-010120-CK
3	SC-24	24 microtubes	2 ml	BS-010120-EK
4	SC-24N	24 microtubes	1.5 ml	BS-010120-GK
5	SC-96A	96-well unskirted or semi-skirted microplate (0.2 ml) for PCR		BS-010120-FK



Interchangeable Blocks for TS-100C and TS-100C Smart

Optional Blocks:		Tube's volume	Cat. number	
1	SC-18C	20 and 12 microtubes	0.5 ml and 1.5 ml	BS-010143-AK
2	SC-18/02C	20 and 12 microtubes	0.2 ml and 1.5 ml	BS-010143-CK
3	SC-24C	24 microtubes	2 ml	BS-010143-EK
4	SC-24NC	24 microtubes	1.5 ml	BS-010143-GK
5	SC-96AC	96-well unskirted or semi-skirted microplate (0.2 ml) for PCR		BS-010143-FK



TS-DW, Thermo-Shaker for deep well plates



Product video is available on the website

Premium
Product Class

2 Block B-2S

TS-DW Thermo-Shaker is designed for shaking and incubating deep well plates.

A multisystem principle, used in the design of the Thermo-Shaker, allows operating it as 3 independent devices: Incubator, Plate shaker and Thermo-Shaker.

TS-DW provides excellent temperature uniformity across the plate due to patented two-sided heating of the block and the lid, contour heating of the block and close proximity of heating elements to plate walls.

There is a number of interchangeable blocks to suit different plates such as Eppendorf® 96/1000 µl, Sarstedt® Megablock 96/2200 µl, Porvair® 96/2000 µl, Axygen® 96/2200 µl. Also we can manufacture a customized block on request.

1 Block B-2E



The block for deepwell plate is mountable, thus a custom plate module can be manufactured on request

Deep Well Plate Thermo-Shaker provides:

- Soft or intensive sample shaking;
- Rotation speed regulation, stabilization and indication;
- Even rotation amplitude throughout the Thermo-Shaker platform;
- Exceptional temperature uniformity across the plate;
- Required operation time setting and indication;
- Automatic stopping of the platform movement after expiration of the set time;
- Setting and indication of the required temperature on the platform;
- A variety of changeable blocks that can accommodate most popular deepwell plates;
- Automatic fault diagnostics (temperature sensor, platform heating, lid heating etc.).

Separate blocks to accommodate different deepwell plates will be released. For example:

- Deep Well Plates NUNC® 96/2000 µl
- Deep Well Plates Eppendorf® 96/0.5 ml

Application fields:

- **Cytochemistry** — for in situ reactions;
- **Immunochemistry** — for immunofermentative reactions;
- **Biochemistry** — for enzyme and protein analysis;
- **Molecular biology** — for nucleic acid extraction.

Temperature setting range	+25 °C ... +100 °C
Temperature control range	5 °C above ambient ... +100 °C
Temperature setting resolution	0.1°C
Temperature uniformity @ +37 °C	±0.1 °C*
Temperature accuracy @ +37 °C	±0.5 °C*
Temperature calibration coefficient range	0.936 – 1.063 (± 0.063)
Time of platform heating from +25 °C to +37 °C	6 min*
Speed control range	250–1,400 rpm
Orbit	2 mm
Display	LCD, 2 × 16 signs
Digital time setting	1 min–96 h (1 min increment)
Timer sound signal	yes
Overall dimensions (W × D × H)	240 × 260 × 160 mm
Weight	5.1 kg
Input current/power consumption	12 V, 4.8 A/58 W
External power supply	Input AC 100–240 V 50/60 Hz; Output DC 12 V

* — For B-2E block

ORDERING INFORMATION:

TS-DW without block

Cat. number

BS-010159-A02

Interchangeable Blocks:		Cat. number
1 B-2E	Block for one deep-well plate Eppendorf® 96/1000 µl	BS-010159-AK
2 B-2S	Block for one deep-well plate Sarstedt® Megablock 96/2200 µl	BS-010159-CK
3 B-2P	Block for one deep-well plate Porvair® 96/2000 µl	BS-010159-EK
4 B-2A	Block for one deep-well plate Axygen® 96/2200 µl	BS-010159-FK
5 B-06A	Block for one deep-well plate Axygen® 96/600 µl	BS-010159-KK
—	Please, enquire about blocks for other plates	