

Thermo-Shakers

PST-60HL / PST-60HL4, Plate Shaker-Thermostat

Thermo-shaker is designed for shaking 1-4 standard 96-well microplates in the thermostating mode.

Thermo-Shaker was designed using the multi-system principle which allows using it as three independent devices:

- 1) *incubator* for lasting incubation without shaking of micro quantities (insect, plant cell cultures, etc.) in immunoplates;
- 2) *microplate shaker* for operation in the cold room or other conditions, which do not require temperature stabilisation;
- 3) *microplate thermo-shaker* for immunochemistry and molecular diagnostics, where the requirements to the result reproducibility and thus to the precise method regulation are particularly high.

A distinctive feature of BioSan thermo-shakers PST-60HL and PST-60HL4 is the patented two-side heating of microtest plates that allows achieving exact correspondence of the set and actual temperature in wells of the microtest plates.

Thermo-Shaker **PST-60HL/PST-60HL4** provides:

- Gentle or vigorous shaking of samples;
- Regulation, stabilisation and indication of rotation speed;
- Even shaking amplitude throughout Thermo-Shaker platform;
- Setting and indication of the required operation time;
- Automatic stop of platform movement after the set time expires,
- Indication of the current operation time,
- Setting and indication of the required temperature on the platform.

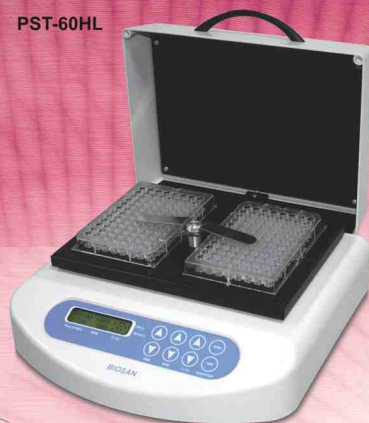
The device can be used in:

- *Cytochemistry* for in situ reactions;
- *Immunochemistry* for immunofermentative reactions;
- *Biochemistry* for enzyme and protein analysis;
- *Molecular chemistry* for matrix analysis.

Specifications:

- Temperature regulation range + 25 °C ... + 60 °C
(thermo-shaker provides stable thermoregulation when the set temperature is at least 5°C higher than the ambient temperature)
- Nominal regulation accuracy ±0.1 °C
- Temperature uniformity over the platform 0.2 °C
- Orbit 2 mm
- Speed regulation 250 - 1200 RPM (increment 10 RPM)
- Independent timer with sound signal 0 - 96 hours (increment 1 min)
- Time of thermoblock heating from RT till +37°C 15 - 20 min
- Simultaneous display of set and actual temperature, time and speed
- Display 16x2 signs, LCD

PST-60HL



PST-60HL-4



A modified version with temperature range up to +100°C can be produced on request.

General characteristics for PST-60HL

- Overall dimensions 270x260x125 mm
- Platform's dimensions 250x150 mm
- Number of microtest plates 2 pcs.
- Weight, not more 7 kg
- External power supply: DC 12 V, 4.16 A

General characteristics for PST-60HL-4

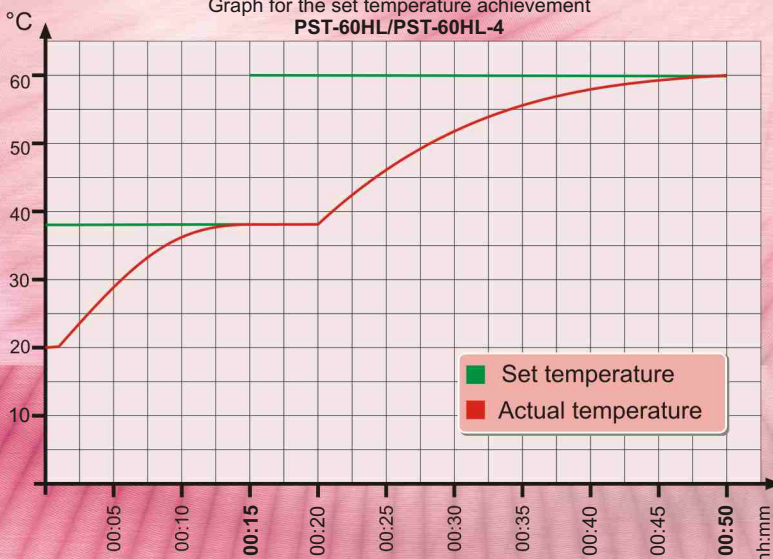
- Overall dimensions 380x390x140 mm
- Platform's dimensions 210x290 mm
- Number of microtest plates 4 pcs
- Weight, not more 9 kg
- External power supply: DC 12 V, 4.16 A

Catalogue number

PST-60HL BS-010119-AAI

PST-60HL4 BS-010128-AAI

Graph for the set temperature achievement
PST-60HL/PST-60HL-4



TS-100, Thermo-Shaker for microtubes

Thermo-Shaker **TS-100** is an ideal instrument for intensive mixing of samples in the regulated temperature conditions. Mixing and heating modes can be used both simultaneously and independently i.e. the device can work as a shaker and as a thermostat.

TS-100 is applicable for DNA analysis, extraction of lipids and other cell components, DNA library creation.

Specifications:

- Microprocessor controlled time, speed and temperature
 - Orbit 2 mm
 - Speed range 250-1400 RPM
 - Digital timer 1 min - 96 hours
 - Temperature range +25° - +100°C
 - (Thermo-shaker provides stable thermoregulation when the set temperature is atleast 5°C higher than the ambient temperature)
 - Nominal regulation accuracy ±0.1 °C
 - Temperature uniformity over the platform
 - in temperature range +25°C ... +40°C ±0.1°C
 - in temperature range +40°C ... +80°C ±1.0°C
 - in temperature range +80°C ... +100°C ±2.0°C
 - Simultaneous display of set and actual temperature, time and speed
 - Interchangeable blocks for Eppendorf microtubes:
 - SC-18** 20x0.5 ml microtubes + 12x1.5 ml microtubes;
 - SC-20** 20x1.5 ml microtubes;
 - SC-18/02** 20x0.2 ml microtubes + 12x1.5 ml microtubes;
 - SC-20N** 20x2 ml microtubes.
 - Overall dimensions 205x230x130 mm
 - Weight, not more 4 kg
 - Power supply External power supply DC 12V, 4, 16 A
- For operation at temperatures below 25°C **TS-100** can be used in a cold room or incubator starting from +5°C (temperature control switched off).

Catalogue number

TS-100 without block	BS-010120-AAI		
SC-18	BS-010120-AK	SC-18/02	BS-010120-CK
SC-20N	BS-010120-DK	SC-20	BS-010120-BK

TS-100



SC-18/02



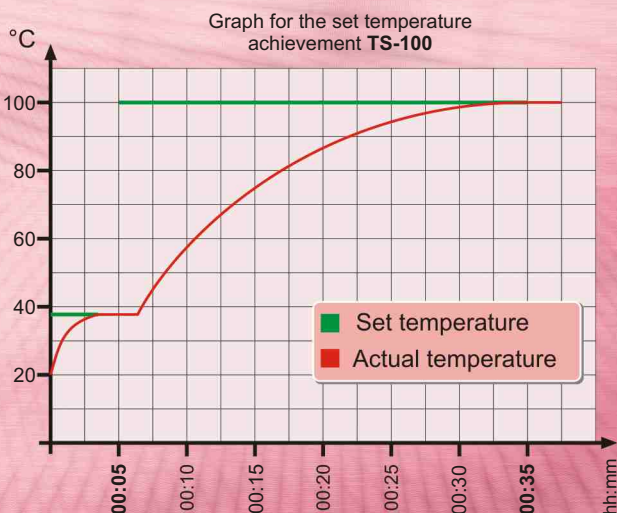
SC-18



SC-20N



SC-20



Interchangeable blocks for TS-100

- **SC-18** 20x0.5 ml microtubes + 12x1.5 ml microtubes
- **SC-20** 20x1.5 ml microtubes
- **SC-18/02** 20x0.2 ml microtubes + 12x1.5 ml microtubes
- **SC-20N** 20x2 ml microtubes

Shakers-Incubators

ES-20, Environmental Shaker-Incubator

The **ES-20** is a compact bench-top shaker-incubator used for mixing of biological liquids as well as the incubation and cultivation of biological liquids according to the operator set program

Built-in microprocessor thermocontroller provides constant temperature control in the incubator chamber. Forced heated air circulation inside the transparent plexiglass chamber guarantees even temperature distribution. Dismountable construction makes transportation easy.

Orbital shaking is controlled by the digital tachometer (rpm) and digital timer independently of the temperature. The unit is equipped with the direct-drive system ensuring most reliable stable long-time operation (up to 30 day nights).

The **ES-20** is extremely easy to operate, with very straightforward set-up of temperature, speed and time, using the two line set-up and status display, which clearly indicates both set and actual values for each of the three parameters.

Specifications:

• Speed range	50 - 250 RPM
• Orbit	10 mm
• Temperature range	+25° ... + 42°C
• Temperature setting resolution	0.1°C
• Timer	1 min - 96 hours / non-stop
• Plexiglass walls (thickness)	7 mm
• Load capacity	2.5 kg
• Overall dimensions	340x340x435 mm
• Weight, not more	15 kg
• Power supply	230V, 50/60 Hz, 150 W

Catalogue number

ES-20 without platform	BS-010111-AAA	UP-12	BS-010108-AK
		PP-4	BS-010108-BK
		P-12/100	BS-010108-EK
		P-6/250	BS-010108-DK

Four interchangeable platform types allow using the **ES-20** for:

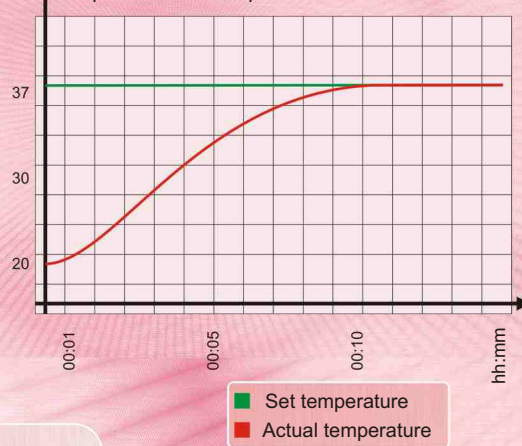
- growing cell cultures in flasks and other laboratory glassware;
- extracting tissue samples at physiological temperatures;
- other sample preparation processes.

ES-20



Horizontal uni-rotation

°C Graph for the set temperature achievement ES-20



Platforms for ES-20

- **UP-12** Universal platform with adjustable bars for different types of flasks, bottles and beakers 285x215 mm
 - **PP-4** Flat platform with non-slip rubber mat for Petri dishes, culture flasks, agglutination cards 220x220 mm
 - **P-12/100** Platform with clamps for flasks, 100-150 ml (12 places) 250x190 mm
 - **P-6/250** Platform with clamps for flasks, 250 - 300 ml (6 places) 250x190 mm
- A special platform for 4x500ml flasks can be produced on request.

UP-12



PP-4



P-12/100



P-6/250



ES-20/60, Environmental Shaker-Incubator

Shaker-incubator **ES-20/60** for biotechnological and pharmaceutical laboratories is a pilot category equipment designed for cultivation of micro organisms cells and eukaryotic cells including animal, plant and insect cells. Shaker is equipped with a direct-drive mechanism for platform motion. It provides reliable and stable operation for the long term experiments needed for cell growth. Shaker-incubator **ES-20/60** provides even (or vigorous) mixing in flasks installed on the platform.

Built-in noiseless thermo resistant brushless fan provides precise temperature distribution inside the chamber (adjustable from room temperature up to 60°C). The chamber inside is made of stainless steel. State-of-the-art motor, latest thermal insulation materials, soft-start of the platform motion and temperature PID-control decrease the energy consumption and make the shaker-incubator highly energy efficient despite its relatively large size. The metal exterior casing allows placing shaker in two/three floors (stacking upon each other) for saving efficiently the work space (additional fittings required).

The rocker-incubator version **ER-20/60** provides platform rocking motion with electronically adjustable speed and angle (Speed range 1 - 99 RPM; angle 1 - 10°)

Catalogue number

ES-20/60 without platform	BS-010135-AAA
P-30/100	BS-010135-BK
P-16/250	BS-010135-CK
P-9/500	BS-010135-AK
P-6/1000	BS-010135-DK
ER-20/60 with platform	BS-010141-AAA

ES-20/60



20 mm Horizontal uni-rotation

Specifications:

- Orbit 20 mm
- Speed 50 - 250 RPM (increment 10 RPM)
- Temperature adjustment range +25°...+60°C
(Unit provides stable thermoregulation when the set temperature is at least 5°C higher than the ambient temperature)
- Temperature setting resolution 0.1 °C
- Timer 1 min - 96 hours
- Continuous operation, max 168 hrs
- Platform dimensions 400 x 360 mm
- Chamber volume 60 l
- Maximal load 8 kg
- Overall dimensions 590x525x510 mm
- Weight, not more 51 kg
- Power supply 220 V, 50 Hz, 500 W

ER-20/60



Rocking uni-rotation

PP-400



P-30/100



P-16/250



P-9/500



P-6/1000



Platforms for ES-20/60

- **P-30/100** Platform with clamps for 30x100ml flasks
- **P-16/250** Platform with clamps for 16x250ml flasks
- **P-9/500** Platform with clamps for 9x500ml flasks
- **P-6/1000** Platform with clamps for 6x1000ml flasks
- **PP-400** Flat platform with non-slip rubber mat (400x360 mm)