

DB-4S

Dry block thermostat for strips and micro tubes



**Operating Manual
Certificate**

for version
V.1AW

Contents

1. Safety Precautions
2. General Information
3. Getting Started
4. Operation
5. Specifications
6. Maintenance
7. Warranty and Claims
8. Declaration of Conformity

1. Safety Precautions

The following symbols mean:



Caution! Make sure you have fully read and understood the present Manual before using the equipment. Please pay special attention to sections marked by this symbol.



Caution! Surfaces can become hot during use.

GENERAL SAFETY

- ♦ Use only as specified in the Operating Manual provided.
- ♦ The unit should be saved from shocks and falling.
- ♦ After transportation or storage keep the unit under room temperature for 2-3hrs before connecting it to the electric circuit.
- ♦ Use only cleaning and decontamination methods recommended by the manufacturer.
- ♦ Do not make modifications in design of the unit.

ELECTRICAL SAFETY

- ♦ Connect only to external power supply unit with voltage corresponding to that on the serial number label.
- ♦ Use only the external power supply unit provided with this product.
- ♦ Ensure that the external power supply unit is easily accessible during use.
- ♦ Disconnect the external power supply unit from electric circuit before moving the unit.
- ♦ If liquid penetrates into the unit, disconnect it from the external power supply unit and have it checked by a repair and maintenance technician.

DURING OPERATION

- ♦ Do not check the temperature by touch. Use a thermometer.
- ♦ Do not operate the unit in premises with aggressive or explosive chemical mixtures.
- ♦ Do not operate the unit outside the laboratory rooms.

- ♦ Do not operate the unit which if it is faulty or has been installed incorrectly.
- ♦ Do not leave the operating unit unattended.

BIOLOGICAL SAFETY

- ♦ It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or penetrates into the equipment.

2. General Information

DB-4S thermostat has been designed for maintaining constant temperature of samples in strips (0.2 ml tubes) inserted into the aluminium block sockets. The device possesses unprecedentedly high precision and temperature uniformity over the block. It is widely used for PCR-analysis and for extraction of DNA and RNA from cell cultures.

3. Getting started

3.1. Unpacking.

Remove packing materials carefully and retain them for future shipment or storage of the unit.

Examine the unit carefully for any damage incurred during transit. The warranty does not cover in-transit damage.

3.2. Complete set.

Package contents:

- DB-4S thermostat for strips/micro tubes1 pce.
- external power supply unit1 pce.
- Operating manual, Certificate1 copy.

3.3. Set up:

- place the unit upon even horizontal non-flammable surface at least 20 cm away from any flammable materials;
- plug the external power supply unit into the socket at the rear side of the unit and position the unit so that there is easy access to the external power supply unit.

4. Operation

Recommendations during operation

- Don't heat the tubes over the melting point of the material they are made of (use thermoresisting polypropylene tubes). Remember that thin-walls tubes have a higher thermoconducting factor.
- Tube caps can open under the action of high temperature ($> 85^{\circ}\text{C}$), thus causing sample volume shrinkage or potential health risk when working with infected material. Take all necessary precautions to ensure safe operation.
- Do not fill tubes more than 3-5 mm over the level they are immersed in the heat block slot.

4.1. Connect external power supply unit to electric circuit.

4.2. The unit will turn on and the following readouts will be shown on the display:

- previously set time and set temperature in the upper line (**Set**);
- timer or indication STOP and current temperature in the lower line (**Actual**).

4.3. Press the **Select** key (Fig.1/5) to choose the parameter to change (each pressing of the **Select** key consecutively activates the parameters; the active parameter is flashing).

4.4. Use the **▲** and **▼** keys (Fig.1/6) to set the required temperature. Temperature setting resolution is 0.1°C . The set temperature will be displayed in the upper line of the display (Fig.1/3). Pressing the key for more than 2 sec will increase the increment. The unit will start heating. The actual temperature will be shown in the lower line of the display (Fig.1/4).

4.5. When the required temperature is reached (when the set and actual temperature became the same) place strips into the sockets.

4.6. Use the **▲** and **▼** keys (Fig.1/6) to set the required time interval. Time setting

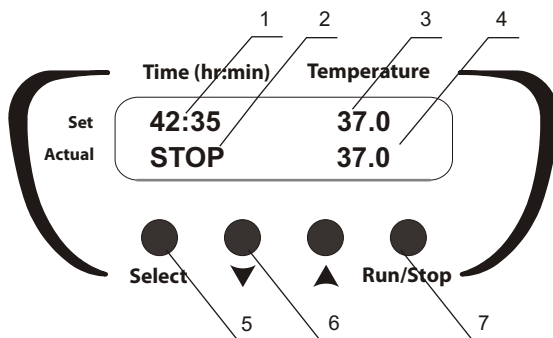


Fig.1 Control panel

resolution 1 min. The set time value will be displayed in the upper line of the display (Fig. 1/1). Pressing down and holding the button for more than 2 sec will increase the values change speed.

- 4.7. Press the **Run/Stop** key (Fig. 1/7) to start the timer. The elapsed time interval will be shown in the lower line of the display (Fig. 1/2).
- 4.8. After the set time interval is elapsed the timer will give a sound signal and the flashing STOP indication will be shown on the display. Press the **Run/Stop** key (Fig. 1/7) to stop the signal.



Attention! Stopping the timer does not stop the heating / temperature maintenance process. The heating can be stopped by reducing the temperature below 25°C using the ▼ T, C key (Fig. 1/6) (OFF indication will be shown on the display, fig. 1/3).

- 4.9. The timer can be stopped before the set time interval elapses if required by pressing the **Run/Stop** key. Press the **Run/Stop** key to restart the timer with the same set time interval.
- 4.10. If the working time is set to 00:00, the unit will operate non-stop.
- 4.11. After finishing the operation disconnect the external power supply unit from electric circuit.

5. Specification

The unit is designed for operation in cold rooms, incubators and closed laboratory rooms at ambient temperature from +4°C to +40°C and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

5.1. Temperature specifications

- Temperature setting range+25...+100°C
- Temperature control range5°C above ambient ...+100°C
- Temperature setting resolution0.1°C
- Temperature stability±0.1 °C
- Temperature uniformity
 - at +37°C.....±0.1°C
 - at +60°C.....±0.3°C
 - at +100°C.....±1.2°C

5.2. General specifications

- Digital time setting range.....1 min - 96 hrs or non-stop
- Display2x16 signs, LCD
- Number of sockets32 for 0.2 ml tubes or for 4 strips 8x0.2 ml
- Dimensions140x120x70 mm
- Operating voltage / power consumption12 V, 850 mA / 10.2 W
- External power supply unit..... input AC 100-240 V 50/60 Hz, output DC 12 V
- Weight*0.7 kg

* Accurate within ±10%.

Biosan is committed to a continuous programe of improvemet and reserves the right to alter design and specifications of the equipment without additional notice.

6. Maintenance

- 6.1. If the unit requires maintenance, disconnect the unit from the electric circuit and contact Biosan or your local Biosan representative.
- 6.2. All maintenance and repair operations must be performed only by qualified and specially trained personnel.
- 6.3. Standard ethanol (75%) or other cleaning agents recommended for cleaning of laboratory equipment can be used for cleaning and decontamination of the unit.

7. Warranty and Claims

- 7.1. The Manufacturer guarantees the compliance of unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 7.2. The warranted service life of unit from date of delivery to the Customer is 24 months. Contact your local distributor to check availability of extended warranty.
- 7.3. If any manufacturing defects are discovered by the Customer, an unsatisfactory equipment claim shall be compiled, certified and sent to the local distributor address. Please visit www.biosan.lv, Technical support section to obtain the claim form.
- 7.4. The following information will be required in the event that warranty or post-warranty service comes necessary. Complete the table below and retain for your records.

Model	DB-4S Dry block thermostat for strips and micro tubes
Serial number	
Date of sale	

8. Declaration of Conformity

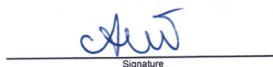
Declaration of Conformity

Equipment name:	DB-4S
Type of equipment:	Dry block thermostat for strips/microtubes
Directive:	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC
Manufacturer:	SIA BIOSAN Ratsupites 7, build.2, Riga, LV-1067, Latvia
Applied Standards:	<p>EN 61326-1: Electrical equipment for measurement, control and laboratory use EMC requirements. General requirements</p> <p>EN 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements</p> <p>EN 61010-2-010: Particular requirements for laboratory equipment for the heating of materials</p>

We declare that this product conforms to the requirements of the above Directive(s)


Signature

Svetlana Bankovska
Managing director


Signature

Aleksandr Shevchik
Engineer of R&D

15.10.2012
Date

15.10.2012
Date

Biosan SIA

Ratsupites 7, build.2, Riga, LV-1067, Latvia
Phone: +371 67426137 Fax: +371 67428101
<http://www.biosan.lv>

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