



Medical–Biological
Research & Technologies

Dry block thermostat for spectrocells DB-10C



**Operating Manual
Certificate**

for version
V.2AW

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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 2-3 hrs before connecting it to the mains.
- Before using any cleaning or decontamination methods except those recommended by the manufacturer, check with the manufacturer that the proposed method will not damage the equipment.
- Do not make modifications in design of the unit.

ELECTRICAL SAFETY

- Connect only to external power supply with voltage corresponding to that on the serial number label.
- Use only the external power supply provided with this product.
- Ensure that the external power supply is easily accessible during use.
- Disconnect the external power supply from power socket before moving the unit.
- If liquid penetrates into the unit, disconnect it from the external power supply and have it checked by a repair and maintenance technician.
- Do not operate the unit in premises where condensation can form. Operating conditions of the unit are defined in the Specifications section.

DURING OPERATION

- Do not operate the unit in premises with aggressive or explosive chemical mixtures. Please contact manufacturer for possible operation of the unit in specific atmospheres.
- Do not check the temperature by touch. Use a thermometer.
- Do not operate the unit outside the laboratory rooms.
- Do not operate the unit 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-10C dry block has been designed for sample thermostating in cuvettes before optical density measurements.

Thermostat together with any photometer for cuvettes make the basic set for conducting biochemical indicators diagnostics methods (enzyme reaction intensity and metabolite concentration).

With the help of the software-enabled temperature calibration function, the user can calibrate the unit for approximately $\pm 6\%$ of the selected temperature to compensate differences in the thermal behaviour of spectrocells from different manufacturers.

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-10C Dry block thermostat for spectrocells1 pce
- external power supply1 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;
- remove protective film from the display;
- plug the external power supply 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.

4. Operation

- 4.1. Connect the external power supply to the mains.
- 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 mode 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 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 s 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. After thermal stabilisation of the unit (i.e. after the set and the current temperature become equal) place spectrocells into the sockets.
- 4.6. Use the ▲ and ▼ keys (fig. 1/6) to set the desired time interval. Time resolution is 1 min. The set time value will be displayed in the upper line of the display (fig. 1/1). Pressing the key for more than 2 s will increase the increment.
- 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.

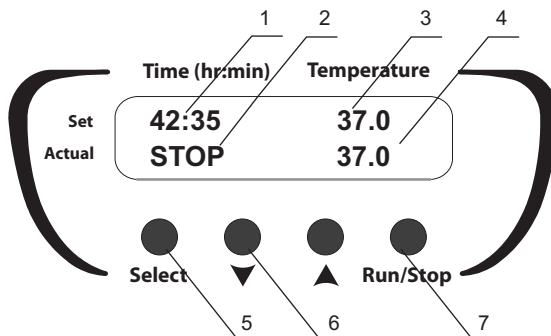


Fig.1 Control panel

**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 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 from the mains.

5. Calibration

- 5.1. The device is pre-calibrated at the factory (calibrating coefficient is 1.00) for operation with temperatures, measured by a sensor, installed in the heating block.
- 5.2. To enter the calibration coefficient, hold the **Select** key (fig. 1/5) pressed for more than 8 s to activate calibration mode. The calibration coefficient will be shown on the display (fig. 2/1).
- 5.3. **Restoring factory settings.** Set 1.000 value using the ▲ and ▼ keys (fig. 1/6) as shown on Fig. 2/1 to restore the factory settings. Press the **Run/Stop** key (fig. 1/4) once to save the changes and exit the calibration mode.

**Note.**

Coefficient value changes are recommended after the unit has reached 30°C.

- 5.4.1. **Calibration procedure.** Install independant sensor (0.5°C accuracy) into spectrocels, placed into the block sockets.
- 5.4.2. Set the required temperature in operation mode (e.g. 40°C).

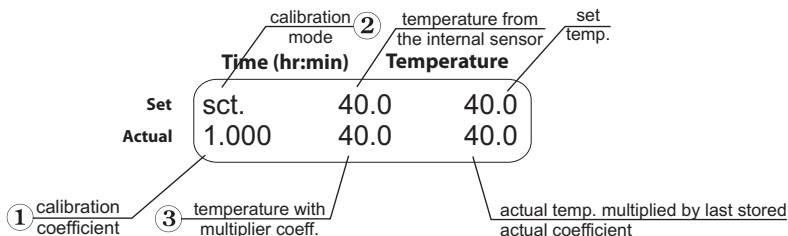


Fig.2 Control panel in calibration mode

- 5.4.3. After the unit reaches the set temperature (when the set and current temperature readings equal) leave the unit for 30 min for thermal stabilization.
- 5.4.4. Let us assume that the readings of independent sensor is 39°C, but the display's actual temperature is 40 °C (fig. 1/4). Then it is necessary to add 1°C correction.
- 5.4.5. Hold **Select** key (fig. 1/5) pressed for more than 8 s to activate calibration mode. The following parameters will be shown on the display (fig. 2).
- 5.4.6. Using the ▲ and ▼ keys (fig. 1/6), change the calibration coefficient (fig. 3/1) so that the new temperature value (fig. 3/2) corresponds to the independent sensor temperature. In our example, the calibration coefficient will be 0.974.



Note.

Calibration coefficient can be changed in range from 0.936 up to 1.063 with increment 0.001. This calibrating coefficient will correct temperature through all the operation range.



Note.

Coefficient value changes are recommended after the unit has reached 30°C.

- 5.4.7. After finishing the calibration press the **Run/Stop** key (fig. 1/4) once to save the changes and exit the calibration mode.
- 5.4.8. The display will show calibrated temperature as shown on fig. 4/1 and the unit will continue thermal stabilization according to the previously set temperature.

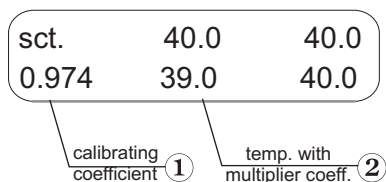


Fig. 3 Control panel in calibration and operation mode

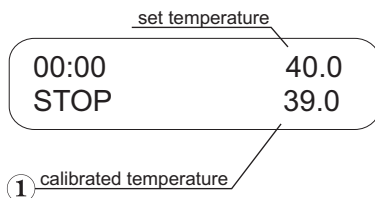


Fig. 4 Control panel in operation mode after calibration

6. Specification

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

6.1. Temperature specifications

- Setting range+25°C...+60°C
- Control range5°C above ambient ...+60°C
- Setting resolution0.1°C
- Stability±0.1 °C
- Temperature calibration option
- Calibration coefficient range0.936 ...1.063 (± 0.063)

6.2. General specifications

- Digital time setting range1 min - 96 hrs or non-stop
- DisplayLCD, 2x16 signs
- Number of sockets.....10 spectrocells (with 10 mm optical path length)
- Dimensions140x120x70 mm
- Input current / power consumption12 V, 1 A / 12 W
- External power supply input AC 100-240 V 50/60 Hz, output DC 12 V
- Weight*0,8 kg

* Accurate within ±10%.

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

7. Maintenance

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

8. Warranty and Claims

- 7.1. The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 7.2. The warranted service life of the unit from the date of its 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-10C Dry block thermostat for spectrocells
Serial number	
Date of sale	

8. Declaration of Conformity

Declaration of Conformity

Equipment name:	DB-10C
Type of equipment:	Dry Block Thermostat for spectrocells
Directive:	EMC Directive 2014/30/EC Low Voltage Directive 2014/35/EC RoHS 2011/65/EC WEEE 2002/96/EC & 2012/19/EU
Manufacturer:	SIA BIOSAN Ratsupites 7, build.2, Riga, LV-1067, Latvia
Applied Standards:	EN 61326-1: Electrical equipment for measurement, control and laboratory use EMC requirements. General requirements. EN 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements. EN 61010-2-010: Particular requirements for laboratory equipment for the heating of materials.

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



Signature
Svetlana Bankovska
Managing director

28.01.2015

Date



Signature
Aleksandr Shevchik
Engineer of R&D

28.01.2015

Date

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