

Grant-bio

Thermo-shaker with cooling PCMT

Operating instructions



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1. Safety

The following symbols mean:



Caution: Read these operating instructions fully before use and pay particular attention to sections containing this symbol!



Caution: Surfaces can become hot during use!

GENERAL SAFETY

- ☞ Use only as specified in the operating instructions provided.
- ☞ The unit should be saved from shocks or drops.
- ☞ The unit must be stored and transported in a horizontal position (see package label).
- ☞ After transport or storage allow the unit to dry out (2-3 hrs) before connecting to the mains.
- ☞ Use only standard qualitative tubes.
- ☞ Before using any cleaning or decontamination method except those recommended by the manufacturer, check with the manufacturer that the proposed method will not damage the equipment.
- ☞ Do not make modifications to the design of the unit.

ELECTRICAL SAFETY

- ☞ Connect only to the mains with a voltage corresponding to that on the serial number label. Use only the external power supply unit provided with this product.
- ☞ Ensure that the mains switch and external power supply are easily accessible during use.
- ☞ Do not plug the unit into the mains outlet without grounding, and do not use extension lead without grounding.
- ☞ Before moving the unit, disconnect it from the mains outlet.
- ☞ To turn off the unit, disconnect the external power supply from the mains outlet.
- ☞ If liquid is spilt inside the unit, disconnect it from the external power supply and have it checked by a competent person.

DURING OPERATION

- ☞ Do not leave the operating unit unattended.
- ☞ Do not impede the platform motion during operation.
- ☞ Do not operate the unit in environments with aggressive or explosive chemical mixtures.
- ☞ Do not operate the unit if it is faulty or been incorrectly installed.
- ☞ For indoor use only.
- ☞ Intended for laboratory use only.
- ☞ Do not check the temperature by touch. Use a thermometer.

BIOLOGICAL SAFETY

- ☞ It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilled on or inside the equipment.

2. General Information

Thermo-Shaker PCMT is an ideal instrument for intensive mixing of samples in the regulated temperature conditions.

Heating (up to +100°C), cooling (up to 15°C below room temperature - RT) and mixing modes and can be used both simultaneously and independently i.e. the unit implements three products in one: 1) a shaker, 2) a thermostat and 3) a thermal shaker.

PCMT is used for sample preparation in DNA analysis, extraction of proteins, polysaccharides, lipids and other cell components.

Cooling system – Peltier elements.

Heating system – flat heating element (12V).

Mixing type – orbital.

PCMT is applicable in:

- DNA analysis for DNA extraction and further sample preparation;
- Biochemistry for studies of enzymatic reactions and processes;
- Metabolite extraction from cell materials.

3. Getting started

3.1 Unpacking

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

Attention! Automatic balancing system in this product produces light metal-like noise when moving the unit which is likely to be heard during unpacking. It is normal occurrence and does not indicate to a fault.

3.2 The Thermo-shaker PCMT set includes:

- Thermo-shaker PCMT1 piece
- Microtube block1 piece
- Spare rubber belt2 pieces
- External Power Supply.....1 piece
- Operating instructions; CE Certificate.....1 copy

3.3 Optional blocks

- HC32 blockfor 20x0.2 ml microtubes + 12x1.5 ml microtubes
- HC15 blockfor 20x1.5 ml microtubes
- HC20 blockfor 20x2.0 ml microtubes
- HC18 blockfor 20x0.5 ml + 12x1.5 ml microtubes
- HC24 Block.....for 24x2 ml microtubes
- HC96 Block.....for 96-well PCR microplate (semi-skirted, unskirted)

3.4 Set up:

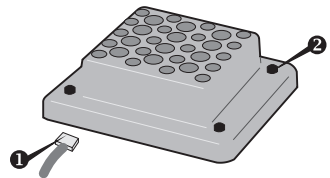
- place the unit upon even horizontal non-flammable surface away from any flammable materials.
- to provide optimum ventilation ensure clearance around the device - 20 cm on side faces.
- plug the external power supply into the socket at the rear side of the unit and position the unit so that there is easy access to the power switch and external power supply.

3.5 Installing blocks (if block is not installed at the moment of delivery).

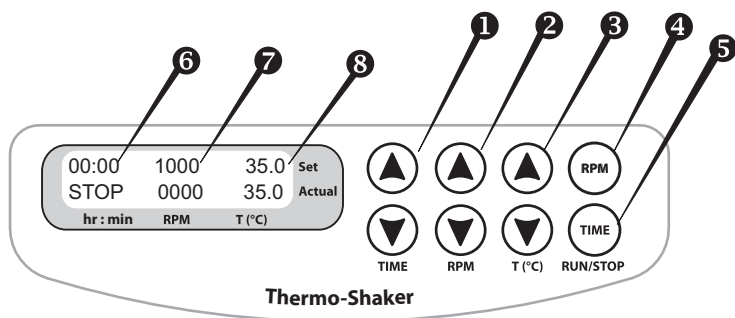
Connect the plug ❶ to the contact terminal on the underside of the block. Align the block so that the warning label is facing the front of the unit and secure with the four knurled screws ❷.

3.6 Changing blocks

Disconnect the external power supply from the mains. Remove the four knurled screws ❷, disconnect the plug ❶. Select the new block. Connect the plug. Align the block so that the warning label is facing the front of the unit and secure with the four knurled screws.



4. Operation of PCMT



Recommendations during operation

- Please check the tubes/microwell plates before using, be sure that tubes/microwell plates are thermoresistant. Don't heat the tubes/microwell plates 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.
- Under the action of high temperature (> 85°C) tube caps can open, thus causing sample volume shrinkage or potential health risk when working with infected material. To prevent such cases it is recommended to use tubes with cap lock of Safe-Lock® type.
- For efficient mixing it is recommended to fill test tubes up to 75% of the rated volume.

- 4.1 Connect external power supply to the mains and switch ON the power switch located on the rear panel of the unit.
- 4.2 The display will turn on with the upper line (set) showing time (6), RPM (7) and temperature (8) set earlier and the lower line (actual point) showing current readings of the same parameters (thermoblock temperature °C, which automatically starts rising according to the temperature set in the upper line). The time of temperature stabilisation depends on the initial temperature.

How to set the necessary parameters

Use the readings in the upper line of the display (set), while setting the necessary parameters.

Time set (TIME)

- 4.3 With the help of “▲” and “▼” keys (①) set the required working time interval (⑥) in hours and minutes (increment - 1 min). If the key is pressed for longer time the increment becomes bigger.

Speed set (RPM)

- 4.4 With the help of “▲” and “▼” keys (②) set the required speed (⑦ increment 10 RPM). If the key is pressed for longer time the increment becomes bigger.

Temperature set (T,°C)

- 4.5 With the help of “▲” and “▼” keys (③) set the necessary temperature (⑧ increment 0.1°C). If the button is pressed for longer time the increment becomes bigger.

The set parameters can also be changed during operation.

Program execution

After the thermal stabilisation of the Thermo-shaker (when the set and current temperature readings become the same):

- 4.6 Insert tubes into the block sockets or place the microwell plate on the block and close the lid.
- 4.7 Press the **RPM-RUN/STOP** key (④). The block will start rotation and the timer indicator will start counting up the time interval (with 1 min precision).

Note! If the rotation speed is set to zero, pressing **RPM-RUN/STOP** key starts the timer but the block does not move.

- 4.8 At the end of the program (after the set time elapses) the block motion stops and the timer shows the flashing reading STOP accompanied by the repetitive sound signal until the **RPM-RUN/STOP** key is pressed.
- 4.9 If the working time is not set (or deleted) and the timer indicator in the upper line shows 00:00, pressing the **RPM-RUN/STOP** button cause the Thermo-shaker to operate continuously until the **RPM-RUN/STOP** button is pressed again.
- 4.10 If required, there is possibility to restart the timer when it is running. Press the **TIME-RUN/STOP** key once (⑤) to stop the timer. Press the **TIME-RUN/STOP** key again to restart the timer.
- 4.11 The block motion can be stopped at any time by pressing the **RPM-RUN/STOP** key. In this case the program realisation and the thermoblock motion stops and timer is set back to zero switching into the STOP mode. Press the **RPM-RUN/STOP** key to repeat the operation with the same time and speed.
- 4.12 At the end of operation turn OFF the unit with power switch at the rear panel and disconnect the external power supply from the mains.

5. Specifications

5.1 Thermo-shaker PCMT provides:

- Soft, but intensive rotational stirring of the samples,
- Smooth regulation, stabilisation and indication of rotation speed (time and speed regulation)
- Even amplitude over all thermoblock,
- Setting up and indication of the required working time; shaking mode,
- Automatic stop of the rotation after the time expiration,
- Indication of the current working time,
- Setting up and indication of the required temperature over the thermoblock.

5.2 Operating conditions

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.

5.3 Temperature specifications

- Temperature setting range+4 to +100°C
- Temperature control range15 below RT to +100°C
- Temperature setting resolution0,1°C
- Temperature stability±0.1°C
- Temperature accuracy at +37°C±0.5°C
- Temperature uniformity over the block at + 37°C.....±0.1°C
- Average heating speed on PSC20C from +25°C to +100°C.....5 °C/min
- Average cooling speed on PSC-20C from +100°C to RT (+25°C).....5°C/min
from RT (+25°C) to 15°C below RT1.8°C/min
- Time of block heating from +25°C till +37°C 15 min

5.4 General specifications

- Speed range250 -1400 RPM
- Speed setting resolution10 RPM
- Maximal speed deviation
 - for 250 RPM.....2%
 - for 1400 RPM.....0.7 %
- Digital time setting1 min - 96 hrs
- Time setting resolution1 min
- Maximum continuous operation time 96 hours
(recommended interval between operation sessions not less than 8 hours)
- Orbit2 mm
- Display16x2 signs, LCD
- Dimensions205x230x130 mm
- Input current/power consumption12V, 4,9 A / 60W
- External power supply input AC 100-240 V 50/60Hz, output DC 12V
- Weight with block and external power supply, not more4.9 kg

Optional accessories	Description
HC15	block for 20x1.5 ml microtubes
HC32	block for 20x0.2 ml microtubes + 12x1.5 ml microtubes
HC20	block for 20x2.0 ml microtubes
HC18	block for 20x0.5 ml + 12x1.5 ml microtubes
HC24	block for 24x2 ml microtubes
HC96	block for 96-well PCR microplate (semi-skirted, unskirted)

PCMT blocks and PHMT blocks are not interchangeable, i.e. PCMT blocks cannot be used on PHMT and vice versa.

Replacement parts	Description
Rubber belt	117x5x0.6 mm

Grant is committed to a continuous programme of improvement, specifications may be changed without notice.

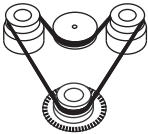
6. Guarantee and Service

6.1 Guarantee

When used in laboratory conditions and according to these working instructions, this product is guaranteed for TWO YEARS against faulty materials or workmanship.

6.2 Service

For service, return for repair to our Service Department in the UK or, in other countries, to our distributor.



6.2.1 Rubber belt replacement

1. Disconnect the external power supply from the mains.
2. Remove 4 fixation screws on the shaker bottom and remove the bottom plate.
3. Replace the rubber belt.
4. Re-assemble the unit.

Declaration of Conformity

Manufacturer:

BIOSAN LTD.
Ratsupites 7, build.2, Riga, LV-1067, Latvia

Equipment name/type number:

PCMT

Description of Equipment:

Thermo Shaker with cooling

Directives:

EMC Directive 2004/108/EC
Low Voltage Directive 2006/95/EC

Applied Standards:

Harmonized Standards:

EN 61326-1

Electrical equipment for
measurement, control and
laboratory use
General requirements

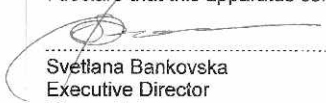
EN 61010-1:

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.

I declare that this apparatus conforms to the requirements of the above Directive(s)


.....
Svetlana Bankovska
Executive Director
Biosan Ltd.

Dated 14.01.2012

Grant-bio

**Grant Instruments
(Cambridge) Ltd**
Shepreth,
Cambridgeshire
SG8 6GB
UK

Tel: +44 (0)1763 260811
www.grantinstruments.com
sales@grantinstruments.com
Fax: +44 (0)1763 262410