

# Peltier cooler/heater PCH-1 / PCH-2 / PCH-3

*Operating instructions*

*For versions: V.3GW  
V.4GW  
V.5GW*



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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 not be used if dropped or damaged.
-  After transport or storage allow the unit to dry out (2-3 hrs) before connecting to the mains.
-  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 attempt to modify the unit.

## ELECTRICAL SAFETY

-  Connect only to a power supply with a voltage corresponding to that on the serial number label. Use only the external power supply unit provided with this product.
-  Do not plug the unit into the main outlet without grounding, and do not use extension lead without grounding.
-  Ensure that the switch and external power supply connector are easily accessible during use.
-  Before moving the unit, disconnect the external power supply from the power outlet.
-  If liquid is spilled inside the unit, disconnect it from the mains and have it checked by a competent person.
-  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 environments with aggressive or explosive chemical mixtures. Please contact manufacturer for possible operation of the unit in specific atmospheres.
-  Do not operate the unit if it is faulty or been incorrectly installed.
-  For indoor use only. Do not use outside laboratory rooms.
-  Use only standard and good quality tubes.
-  Don't heat the tubes over the melting point of the material they are made of (use thermoresisting polypropylene tubes). Remember that thin-wall tubes have a higher thermoconducting factor;
-  Do not leave the operating unit unattended.
-  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 spilt on or inside the equipment.

## 2. General Information

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Peltier cooler/heater PCH-1 / PCH-2 / PCH-3 has been designed for maintaining the set temperature in the temperature range from -10°C to +100°C in the aluminium block with special sockets for tubes.

This product is the result of combining two popular instruments:

1. Heating Dry block and
2. Cooling thermostat

The combined construction of aluminum tube block and Peltier element module provides fast changing of the cooling and heating modes.

Peltier cooler/heater PCH-1 / PCH-2 / PCH-3 has obvious advantages when working with the microquantities of reagents used in the microtubes.

Peltier cooler/heater PCH-1 / PCH-2 / PCH-3 is a very effective instrument of sample preparation during enzyme reactions, hybridization reactions, DNA analysis.

# 3. Getting started

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## 3.1 Unpacking

Remove packaging carefully and retain 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 The PCH-1 set includes:

Peltier heater/cooler PCH-1  
12 x 1.5ml + 20 x 0.5ml capacity block.....1 piece  
External power supply unit .....1 piece  
Power cord .....1 piece  
Operating instructions; Declaration of Conformity .....1 copy

## 3.3 The PCH-2 set includes:

Peltier heater/cooler PCH-2  
20 x 1.5ml capacity block .....1 piece  
External power supply unit .....1 piece  
Power cord .....1 piece  
Operating instructions; Declaration of Conformity .....1 copy

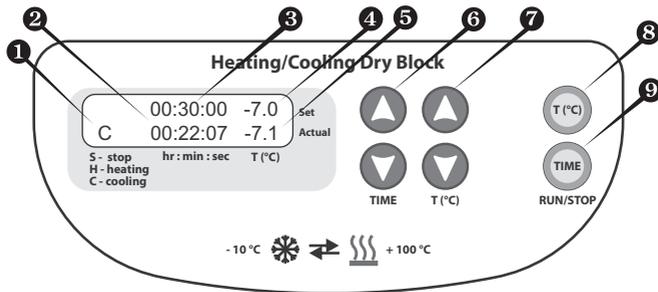
## 3.4 The PCH-3 set includes:

Peltier heater/cooler PCH-3  
20 x 2ml capacity block .....1 piece  
External power supply unit .....1 piece  
Power cord .....1 piece  
Operating instructions; Declaration of Conformity .....1 copy

## 3.5 Set up

- place the unit upon even horizontal non-flammable surface away from any flammable materials;
- remove protective film from the display;
- provide sufficient clearance around the device (40 cm from the rear panel and 20 cm from the side surfaces) to provide optimum ventilation;
- 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 power switch and the external power supply unit.

# 4. Operation of PCH-1/2/3



## Recommendations during operation

- Please check the tubes before using, be sure that tubes are thermoresistant. Don't heat the tubes over the melting point of the material they are made of. Remember that thin-walled tubes have a higher thermoconducting factor.
- Tube caps can open under the action of high temperature (85°C) 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.
- Do not fill tubes more than 3- 5 mm over the level they are immersed into the heating/cooling block slot.

- 4.1. Connect the external power supply unit to a grounded power socket.
- 4.2. Switch ON (position I) the power switch located on the rear panel of the unit.
- 4.3. The unit will turn on and the following readouts will be shown on the display:
  - previously set time and temperature in the upper line (**Set**);
  - operation mode indicator, current time and temperature in the lower line (**Actual**).
- 4.4. Temperature setting. Use the ▲ and ▼ T(°C) keys (7) to set the required temperature, using as a guide the set temperature readouts shown in the upper line of the display (3). Temperature increment is 0.1°C. Pressing the key for more than 2 sec will increase the increment.

- 4.5. Press the **RUN/STOP T(°C)** key (Ⓢ) once to start heating/cooling.
- 4.6. The unit will start heating/cooling and the corresponding operation mode value will be indicated on the display (H for heating, C for cooling) (Ⓛ). Current temperature value will be displayed in the lower line of the display (Ⓢ).
- 4.7. To stop heating/cooling press the **RUN/STOP T(°C)** key once again. It may take a few moments before the heating/cooling process stops and the operation mode indicator shows S - stopped.
- 4.8. The set temperature can be changed during operation, i.e. it is not necessary to stop heating/cooling process to make these changes.
- 4.9. When the required temperature is reached, open the thermostating block lid, place samples and close the lid. Use standard tubes since the block sockets are made precisely in compliance with their form.
- 4.10. Timer setting. The unit is equipped with an independent timer for convenient control over the samples heating/cooling time.
- 4.11. Use the ▲ and ▼ **Time** keys (Ⓢ) to set the required time period, using as a guide the set time readouts shown in the upper line of the display (Ⓢ). Pressing the key for more than 2 sec will increase the increment. Time increment is 1 min.
- 4.12. Press the **TIME RUN/STOP** key (Ⓢ) once to start the timer. The elapsed time is indicated in the lower line of the display (Ⓢ). When the set time will be reached the timer will stop and an alarm will sound.  
 **Attention!** After the set time elapses and the timer stops, the device doesn't stop the heating/cooling process. Press the **RUN/STOP T (°C)** key (Ⓢ) manually to stop the heating/cooling process.
- 4.13. The timer can be stopped before the set time elapses if required by pressing the **TIME RUN/STOP** key. Pressing the **TIME RUN/STOP** key again will restart the timer.
- 4.14. The set time value can be changed during operation, i.e. it is not necessary to stop the timer to make these changes.
- 4.15. After finishing the operation turn OFF (position O) the unit switching off the power switch on the rear panel.
- 4.16. Disconnect the external power supply unit from electric circuit.

# 5. Maintenance

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Where applicable all Grant laboratory products are designed to comply with IEC61010-1 and can be flash tested. Some are fitted with radio frequency interference suppressers. Therefore it is recommended that only a D.C. test be performed.

No other routine service is required.

## 5.1 Cleaning

The cases can be cleaned with a damp cloth after disconnection. Do not use solvents. Before using any decontamination or cleaning method except that recommended, check with our Service Department, or in other countries with our distributor, that the proposed method will not damage the equipment.

# 6. Specifications

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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

- Temperature setting range .....- 10°C ... + 100 °C
- Temperature control range .....30°C below ambient ...+100°C
- Temperature setting resolution ..... 0.1°C
- Working room temperature (RT) range .....+15°C ... +27°C
- Temperature stability in the range from -10°C to +100°C .....±0,1°C
- Temperature uniformity at +37°C .....± 0.1°C
- Heat up time (from 25 °C to +100°C) .....16 min
- Cool down time (from 25 °C to -10°C).....21 min
- Heater (cooler) power .....55 W

## 6.2. General specifications

- Digital time setting range.....1 min - 96 hours
- Time setting resolution ..... 1 min
- Current time display unit.....1 s
- Display .....2 lines, LCD
- Transparent lid for thermostating block
- Dimensions.....240x260x165 mm
- Input current/power consumption ..... 12V, 4,4 A / 55 W
- External power supply unit..... input AC 100-240 V 50/60Hz, output DC 12V
- Weight\* .....3.6 kg

\* Accurate within ±10%.

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

# 7. Guarantee and Service

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## 7.1 **Guarantee**

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

## 7.2 **Service**

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

# Declaration of Conformity

<b>Equipment name:</b>	<b>PCH-1 / PCH-2 / PCH-3</b>
<b>Type of equipment:</b>	Dry block heating/cooling systems
<b>Directive:</b>	EMC Directive 2014/30/EC Low Voltage Directive 2014/35/EC RoHS 2011/65/EC WEEE 2002/96/EC & 2012/19/EU
<b>Manufacturer:</b>	BIOSAN SIA Ratsupites 7, build.2, Riga, LV-1067, Latvia
<b>Applied Standards:</b>	<b><u>EN 61326-1:</u></b> Electrical equipment for measurement, control and laboratory use EMC requirements. General requirements  <b><u>EN 61010-1:</u></b> Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements  <b><u>EN 61010-2-010:</u></b> 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

  
\_\_\_\_\_  
Signature  
Aleksandr Shevchik  
Engineer of R&D

  
\_\_\_\_\_  
Date

  
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Date

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