

Grant-bio

Peltier cooler/heater PCH-1 / PCH-2

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.

-  Use only as specified by the operating instructions, or the intrinsic protection may be impaired.
-  After transport or storage in humid conditions, dry out the unit before connecting it to the supply voltage. During drying out the intrinsic protection may be impaired.
-  Connect only to a power supply with a voltage corresponding to that on the serial number label.
-  Ensure that the mains switch and isolating device (power supply connector) are easily accessible during use.
-  Connect only to a power supply which provides a safety earth (ground) terminal.
-  Use only with the power supply provided or a replacement supplied by Grant.
-  Before moving, disconnect at the power supply socket.
-  If liquid is spilled inside the unit, disconnect it from the power supply and have it checked by a competent person.
-  It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilled on or inside the equipment.
-  Use only standard and good quality tubes. Remember that thin-walls tubes have a higher thermoconducting factor;
-  Don't heat the tubes over the melting point of the material they are made of. Use thermoresisting polypropylene tubes.
-  Don't fill tubes more than 3-5 mm over the level they are immersed in the thermoblock;
-  Before using any cleaning or decontamination method except those recommended by the manufacturer, user should check with the manufacturer that the proposed method will not damage the equipment.
-  The unit has an air intake for cooling and ventilation. Do not block or impede the ventilation grille.
-  Clean the unit only with a damp cloth, do not use chemical cleaning agents.

2. General Information

2.1 Introduction

Peltier cooler/heater PCH-1/2 is designed for maintaining the set temperature, in the temperature range from -10°C to $+100^{\circ}\text{C}$ on the aluminum block with special sockets for tubes. The device can also be used for maintaining stable temperature in the room where the temperature is fluctuating, e.g. $+20 \pm 0.1^{\circ}\text{C}$ at room temperature (RT) changing from $+18^{\circ}\text{C}$ to $+22^{\circ}\text{C}$.

PCH-1/2 has obvious advantages when, for example working with micro quantities of reagents used in the Eppendorf tubes.

The device can be used in:

- molecular and cell biology for sample cooling,
- biochemistry for enzyme processes analysis.

2.2 Construction of the Device

Cooling-heating thermostat consists of:

① Control panel.

Thermostat attached to the device block.

On the control panel of the unit are:

Control keys and LCD display. (see Fig 1)

On the rear panel of the unit are:

Plug-in cable.

Power switch.

3. Getting started

3.1 Unpacking

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

3.2 The PCH-1 set includes:

Peltier heater/cooler PCH-1	1 piece
12 x 1.5ml + 20 x 0.5ml capacity block	1 piece
External power supply unit	1 piece
Mains lead	1 piece
Operating Manual; CE Certificate	1 copy

3.3 The PCH-2 set includes:

Peltier heater/cooler PCH-2	1 piece
20 x 1.5ml capacity block	1 piece
External power supply unit	1 piece
Mains lead	1 piece
Operating Manual; CE Certificate	1 copy

3.4 Plug the external power supply unit into the 12 V socket at the rear side of the PCH-1/2.

4. Operation of PCH-1

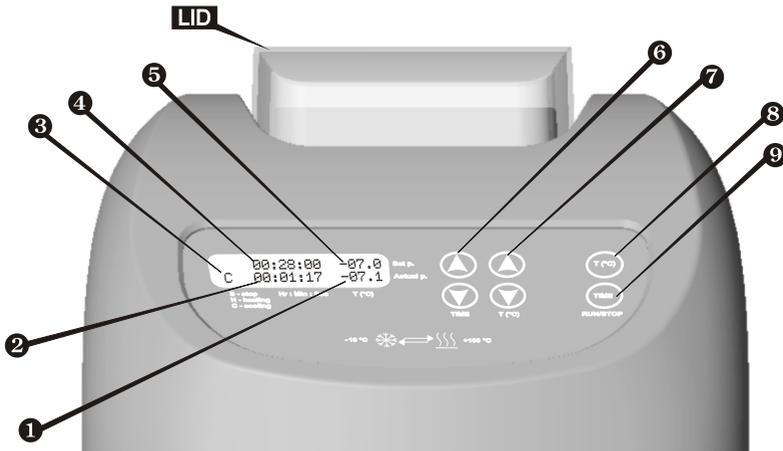


Fig 1 Control panel

- 4.1 Connect power supply unit to the mains power.
- 4.2 Switch **ON** the power switch located on the rear panel of the PCH-1.
- 4.3 The backlit display on the PCH-1 shows the following:
 - ④ ⑤ Previously set time and temperature.
 - ① ② Operation mode indicator, current time and temperature.
- 4.4 Temperature setting, use the **T(°C)** up/down keys (⑦) to set the necessary temperature, (When the key is pressed down for 1 second or more, the temperature display changes quickly). Temperature increment is 0.1 °C.
Note that it is possible to change the set temperature in the real time, i.e. it is not necessary to stop heating/cooling process to make these changes.

- 4.5 To start heating/cooling to the set temperature press **T(°C)** on the RUN/STOP key (Ⓢ) once.
- 4.6 The PCH-1/2 starts heating/cooling and the corresponding operation mode is indicated on the display (H - heating, C - cooling) (Ⓢ). Current temperature is displayed in the second line of the display (Ⓢ).
- 4.7 To stop the heating/cooling process press **T(°C) RUN/STOP** key once again. It may take a few moments before the process stops and the operation mode indicator shows Ⓢ - stopped.
- 4.8 When the necessary temperature is reached, open the PCH-1/2 block lid, place tubes into the sockets and close the lid. Use standard tubes, since the block sockets are made precisely in compliance with their size and shape.
- 4.9 The PCH-1/2 is equipped with an independent reaction timer. This alerts time-up with an audible alert; it does not control the heating/cooling process.
- 4.10 Use the **TIME** up/down keys (Ⓢ) to set the necessary time, shown in the first line of the display (Ⓢ). (When the key is pressed down for 1 second or more, the time display changes quickly). Time increment is 1 minute.
Note that it is possible to change the set time in the real time, i.e. it is not necessary to stop the timer to make these changes.
- 4.11 Press **TIME RUN/STOP** key (Ⓢ) once, to start the timer. When the set time is reached the timer will stop and a buzzer will sound.
ATTENTION!:
The timer does not switch off the heating/cooling.
- 4.12 If necessary, the timer can be stopped before the set time is reached by pressing **TIME RUN/STOP** key.
- 4.13 When **TIME RUN/STOP** key is pressed again, the timer starts counting up the time from zero.
- 4.15 Once the heating/cooling process has finished, turn **OFF** the PCH-1/2 with power switch located on the rear panel and disconnect the external power supply unit from the mains.

5. Maintenance

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

-
- **Temperature regulation range**- 10°C to + 100°C
range of possible temperature from +30°C below Room Temperature to + 100°C
 - **Setting resolution**±0.1°C
 - **Working room temperature range**+15°C to +27°C
 - **Independent timer with sound signal**0 to 96 hours
 - **Time setting unit**minutes
 - **Current time display unit**.....seconds
 - **Display**.....16x2 LCD
 - **Capacity**
 - PCH-10,5 ml tubes x 20 psc + 1,5 ml tubes x 12 psc
 - PCH-21.5ml tubes x 20 psc
 - **Thermoblock cover**transparent
 - **External power supply;**
 - input**AC 100-240 V, ~ 50-60 Hz, 1.5 A
 - output**.....DC 12 V, = 5.0 A
 - **Maximum power consumption**60 W
 - **Dimensions**.....240x260x165 mm
 - **Weight**.....3.6 kg

7. Guarantee and Service

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

Manufacturer:-	GRANT INSTRUMENTS (CAMBRIDGE) LTD, Shepreth, Cambridgeshire SG86GB
Equipment name/type number:-	PCH-1 / PCH-2
Description of Equipment:-	Cooling/heating dry blocks
Directives:-	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC

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

Applied Standards:-	<u>EN 61326:</u> Electrical equipment for measurement, Control and laboratory use - EMC requirements
Harmonized Standards:-	<u>Part 1:</u> General requirements
	<u>EN 61010:</u> Safety requirements for electrical equipment for measurement, control and laboratory use.
	<u>Part 1:</u> General requirements
	<u>Part 2-010:</u> Particular requirements for laboratory equipment for the Heating of materials

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