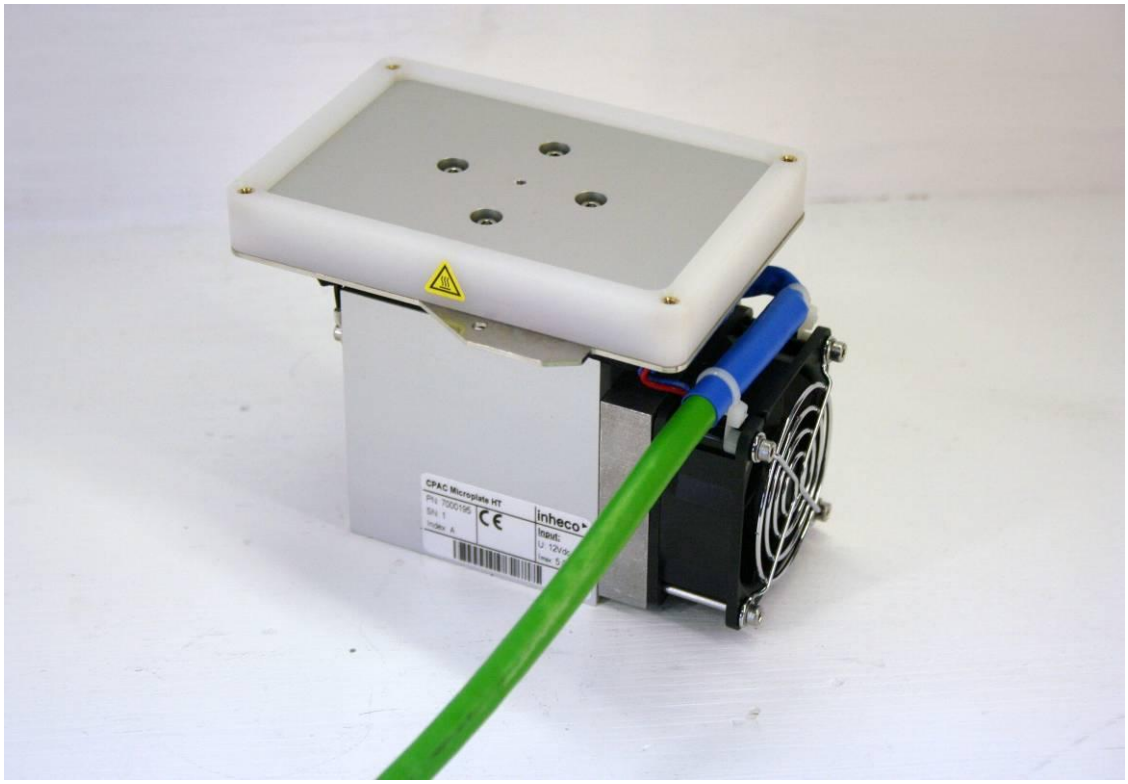
CPAC Microplate

Part No. 7000163 / 7000179 / 7000195

Heating and Cooling Unit



User's Manual

January 2010

INHECO GmbH reserves the right to modify their products in order to improve their quality. These modifications do not have to be documented as a rule.

This manual and the information herein have been assembled with the necessary diligence. INHECO GmbH does not assume liability for misprint or damages caused by misprint.

The brand and product names within this manual are registered trade marks and belong to the titleholders respectively.

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This manual belongs to

Type _____

Serial No. _____

Year of manufacture: _____

Order No. _____

To be filled in by customer:

Inventory No. _____

Place of installation _____

Meaning of this Manual

This manual is part of the *CPAC Microplate* and must be

- retained until the *CPAC Microplate* is disposed.
- passed on when the *CPAC Microplate* is sold or lent.

Please contact the manufacturer in case you do not understand something within this manual.

Your opinion on this manual provides us with valuable insights on how we can serve you better. Please do not hesitate to direct your comments to us at the address or the phone numbers on page 3.

The safety instructions must be read very carefully. They must be understood and observed in order to ensure a safe handling.

Missing or insufficient knowledge of the manual leads to loss of liability against INHECO GmbH. The operator should therefore ask for an instruction confirmation from the manufacturer.

Content

1 Explanation of Symbols

A possible danger, leading to serious bodily harm is being pointed out to you.

Caution: hot surface

!

A possible danger leading to less serious bodily harm is being pointed out to you. This signal also warns you of tangible damage.

A possible dangerous situation leading to material damage is being pointed out to you.

Important!

This sign refers to useful information as to installation etc.

- Bullet points refer to enumeration.

⇒ These arrows are intended to give instructions.

■ These squares refer to procedures which run automatically and results which should be achieved.

2 Safety Instructions

Technical Changes

- For safety reasons no technical changes to this unit are allowed. Any modification or change which is not approved by the manufacturer leads to loss of guaranty.
- The original parts are designed especially for the *MTC*. Parts provided by other suppliers are not tested and therefore not approved by INHECO GmbH. Using them can lead to the impairment of the functionality of the unit.
- For damages which may occur due to the usage of non original parts, liability is excluded by INHECO GmbH.

Burn Hazard

You can burn your skin when touching the inner parts and especially contact surface and disposables. These parts can reach up to 50°C [122°F]! Do not use materials that are not sufficiently temperature resistant up to 110°C [230°F].

Use in Biosafety Laboratory Environment

When using the Thermoshake in a Biosafety Laboratory Environment the user of the Thermoshake is responsible for labeling the device according to the WHO Laboratory Biosafety Manual (ISBN 92 4154650 6). The user is furthermore responsible for operating the Thermoshake depending on the biosafety level regulations according the WHO Laboratory Biosafety Manual.

The safety regulations valid for the lab are to be constantly observed when working with the device.

Malfunctions

⇒ Report occurring malfunctions immediately to the responsible person.
⇒ Make sure the unit is secured against violation and misuse.
⇒ Dismantled safety relevant parts have to be mounted and checked before initial operation.

Name Plate and Labels

⇒ Please observe all name plates and labels and make sure to maintain their legibility.
⇒ Replace all name plates and labels if their legibility is no longer ensured.

Conventional Usage

The CPAC Microplate meets the current technical level and complies with today's standards. The manufacturer attached much importance to the user's safety.

The following rules obtain to the user:

- Rules of accident prevention
- General rules for technical safety
- EU and other country specific directives

The conventional usage contains the usage according to the user's manual. This unit is to be used only in non-precipitating and dry environment.

The CPAC device is designed for the usage in Life Science and IVD (in vitro diagnostic) environments. The CPAC device is prepared for an easy integration into IVD applications, but the final IVD validation has to be performed by the first marketer.

You must able to disconnect the main power supply the unit immediately if necessary.

Explosive, flammable and volatile materials may not be heated in the CPAC Microplate. The unit may not be operated in rooms at risk of explosions.

The CPAC Microplate may only be operated in an upright position.

The CPAC Microplates are optimized maintaining a constant temperature in the disposable and thermal cycling, see chapter Technical Data.

It should be ascertained that no liquids penetrate into the unit.

The CPAC Microplate unit may not be stored below –10°C.

Who is Permitted to Operate this Unit?

Only instructed and skilled personnel are permitted to operate this unit. Only specialized staff is allowed to make any amendments of the operating menu.

Service of CPAC Microplate

No service is necessary for this unit. Therefore no inspection is needed.

Shut Down and Disposal

The unit is to be disposed according to the effective environmental directives.

Safety instructions in case of contamination have to be preserved.
The Thermoshake is RoHS and WEEE compliant.

3 Initial Operation

Scope of Supply

Before initial operation make sure that shipment was complete and no part had been damaged. These components should be included in each shipment:

- Tempering Unit *CPAC Microplate*
  - Integrated mounting flange
  - Patch cord with connector
- Mounting frame for PCR-adapter plate + 4 mounting screws
- User's Manual on USB-stick (not shown on the picture below)

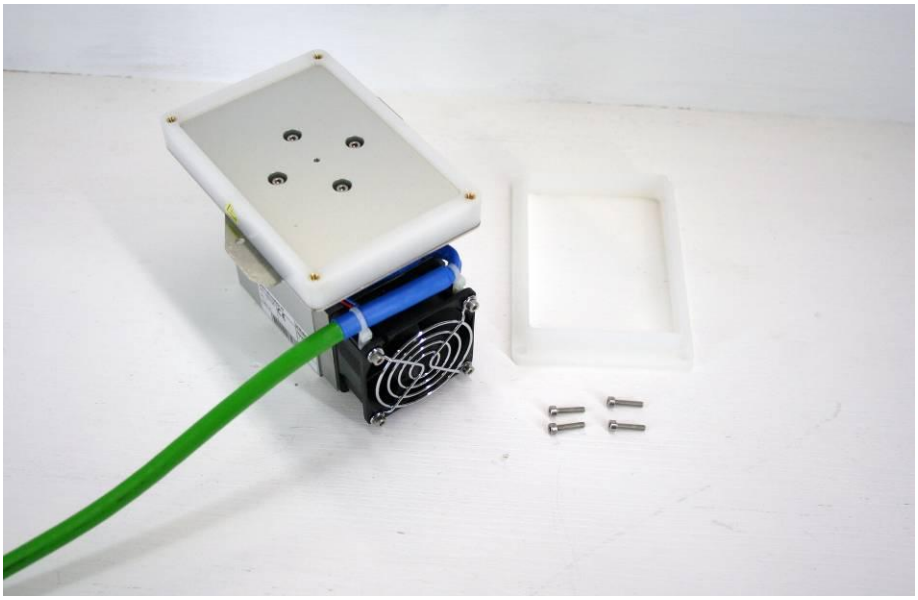


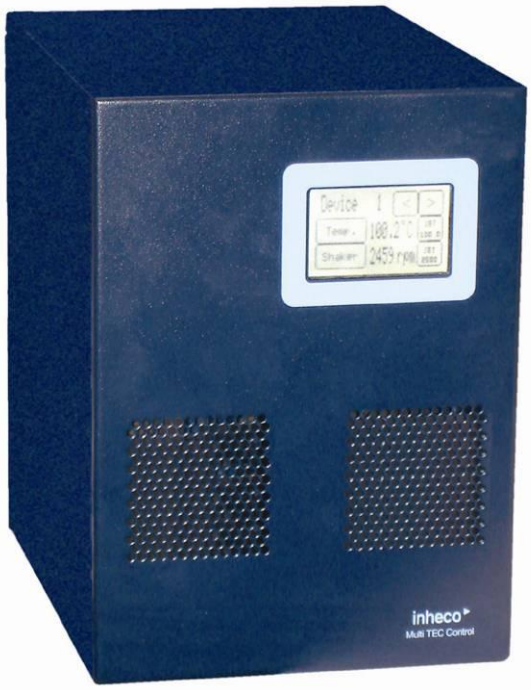
Fig 1: Scope of Supply – Basic Version

The *CPAC Microplate* tempering unit matches INHECO's *MTC/STC* perfectly. The special *MTC* settings for the *CPAC Microplate* are listed on page *15*

Additional Options

Controller:

Multi Tec Control (MTC) and Single Tec Control (STC)



- Comfortable Plug & Play MTC

Adapter Plates:

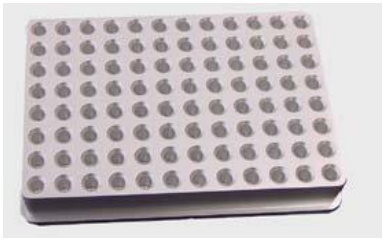
Plate Flat Bottom

- Adapter Plate for Tempering of Microplates with Flat Bottom
- Reproducible Positioning of Plates by Spring System

Plate Multi Purpose

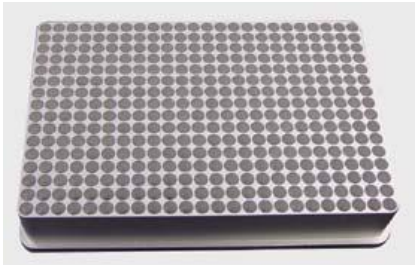
- Universal Adapter for Divers Applications

Plate 96 pos. PCR



- Adapter for the Tempering of 96-Pos. PCR-Plates

Plate 384 pos. PCR



- Adapter for the Tempering of 384-Pos. PCR-Plates

Tube Rack 24x1,5ml #7900015

- Adapter for the Tempering of Standard Reaction Tubes of 1,5ml (for example: Eppendorf make)

- Other adapter plates are available on request. Please contact INHECO.

More detailed information about reachable temperature differences, temperature uniformities, heating and cooling rates on request.

Safety Instructions for Operation

To avoid injuries and damage, an unimpeded air supply must be ensured. The maximum ambient temperature must not be exceeded in order to prevent the *CPAC Microplate* from damage. Also see the technical data on page 16.

You can burn your skin when the contact surface, heat sink and disposables. These parts can reach up to 50°C [122°F]! Do not use materials that are not sufficiently temperature resistant up to 110°C [230°F].

!

An unimpeded air supply must be ensured to avoid injuries to persons and/or damage to the unit. Do not operate the CPAC Microplate above the maximum ambient temperature to prevent the CPAC Microplate from damage. Ensure that there is a minimum of at least 25 cm [10 inches] free space at the ventilation openings.

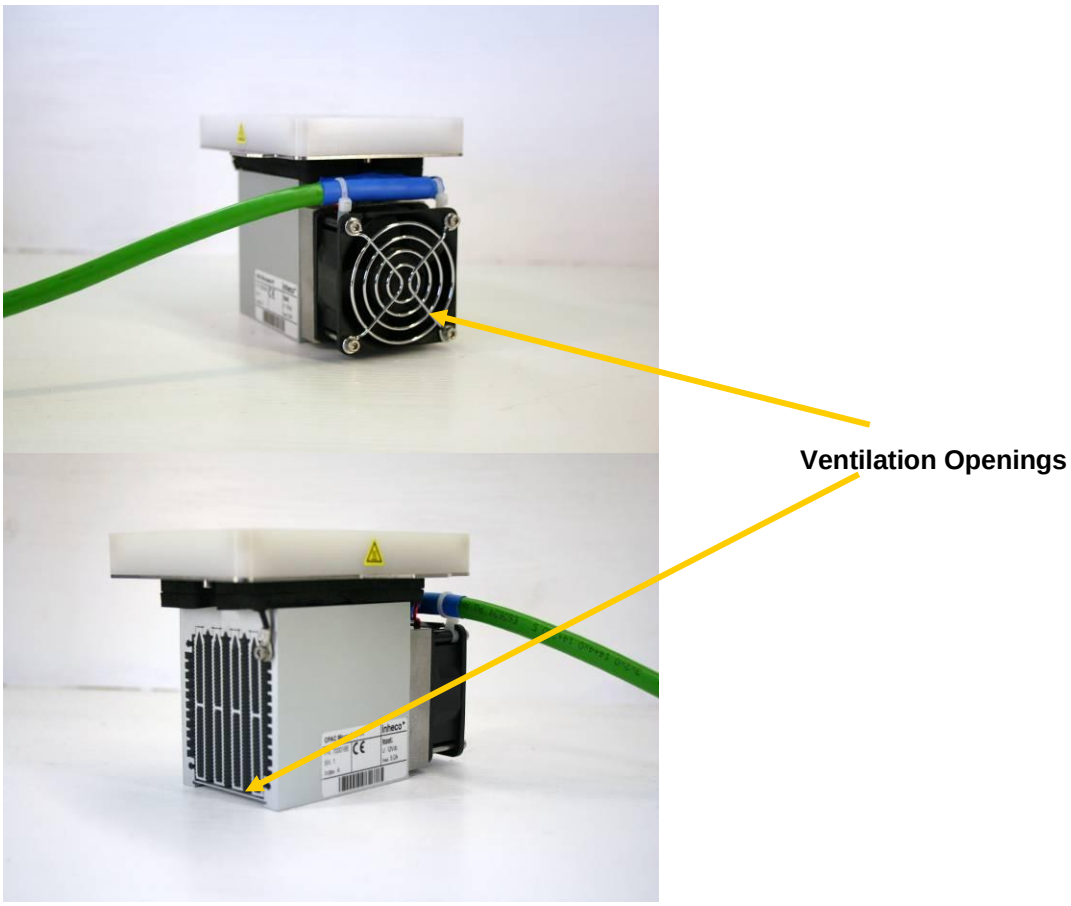


Fig 2: Ventilation Openings

4 MTC Adjustment

For the precise procedure please refer to the MTC Control user's manual.

The adjustment of the PID-parameters has been done for the *CPAC Microplate* basic version. Depending on the optional attachment (for example: plate 96 pos. PCR) a new adjustment of the PID-parameters may be necessary in order to achieve an optimized result. Information about the adjustment of the PID-parameters can be found in the *MTC* manual.
If you need any assistance, please contact us.

5 User Maintenance

Cleaning

Before cleaning the CPAC Microplate, disconnect the power and make sure that the temperature at the contact surface is below +50°C [122°F].

The contact surface (anodized aluminum) should be cleaned regularly to ensure optimum heat transfer to the disposables. Always clean the contact surface if there has been a spillage. Use a cloth dipped in 50:50 water / isopropanol solution, and make sure that no deposits are left on the surface.

Care should be exercised to prevent water from running inside the unit.

The plastic frame of the CPAC Microplate can be cleaned with a cloth dipped in water or methanol. No part of the body should be immersed in the solvents. Do not use aggressive cleaning fluids such as acetone, or abrasive cleaners.

Please check with INHECO any cleaning method that is not mentioned in this paragraph to prevent damage to the CPAC Microplate.

Decontamination

The most common decontamination method is by fumigation with formaldehyde or ethylene oxide gas.
The surface decontamination can include a wipe-down of the housing surface. A solution of 70% alcohol should be used where effective for target organisms. It is recommended that the CPAC is left running during decontamination and is running for at least 5 minutes in order to purge the atmosphere inside before it is switched off.
Make sure, that no moisture enters inner parts!

Calibration

For proper thermal performance of the MTC Unit and the connected devices, it is recommended to check the calibration once a year. Depending on the application, shorter calibration intervals may be required. This job has to be done by authorized service stuff only or at the INHECO service center Munich – Germany.

Spare Parts

Spare Parts for the device must be ordered by INHECO. Only original parts from INHECO may be used.

6 Technical Data

Electrical Data	
supply voltage	12Vdc (#7000179, #7000195) 24Vdc (#7000163)
maximum power input	60W (#7000179, #7000195) 113W (#7000163)

Other Data	
temperature range plate*	+4 to +70°C [39 to 158°F] (#7000179) +4 to +90°C [39 to 194°F] (#7000195) +4 to +110°C [39 to 230°F] (#7000163)
temperature range ambient	15°C to + 32°C
transportation and storage conditions	-10°C to +60°C, non condensing [+14.0°F to +140°F]
max. reachable temperature difference in the heating mode*	up to 80K
max. reachable temperature difference in the cooling mode*	up to 30K
sensor type	two PT100
LxWxH of basic version	128mmx89mmx103mm (#7000179) 128mmx89mmx103mm (#7000195) 128mmx89mmx113mm (#7000163)
weight including cord	approx. 1,0 kg
maximum admissible relative atmospheric moisture	80% non condensing
temperature cycling CPAC	On request
steady state CPAC	#7000179, #7000195, #7000163

Table 1: Technical Data

*depends on the used adapter plates and disposables.

7 Declaration of Conformity

INHECO GmbH
Fraunhoferstr. 11
82152 Martinsried
Germany

Declares that the following product:

CPAC Microplate (HT)

meets the essential requirements of the following European Union Directive(s) using the relevant section(s) of the normalized standards and related documents shown:

Standard and Date of Issue	
IEC 61010 – 1 : 2001 (2nd Edition) EN 61010 – 1 : 2001 (2nd Edition)	Safety requirement for electrical equipment for measurement, control and laboratory use.
EN 61010-2-010: 2004	Particular requirements for laboratory equipment for the heating of materials.
EN 61000-3-2 EN 61000-3-3	Electrical equipment for measurement, control and laboratory use. EMC requirements.
EN 61326-1: 2006	Electrical equipment for measurement, control and laboratory use. EMC requirements.

This product is in complies with the essential requirements of the Low Voltage Directive 73/23/EWG and
EMC directive 2004/108/EC, when used for its intended purpose.

Place	*Martinsried/ Munich*
Date	*March , 2009*
Signature	
Name, Position	*Günter Tenzler, Managing Director*

Annex A: Index of Acronyms

Acronyms	Explanation
°C	Degree Celsius
B/ W	Width
H	Height
Hz	Hertz [1/s]
Iac	Alternating Current
Idc	Direct Current
K	Kelvin
kg	Kilogram
L	Length
PID	Proportional-, Integral-, Derivative Function of *TEC Control*
TEC	**T**hermo-**E**lectric-**C**ooler (Thermoelectric Module)
Uac	Alternating Voltage
Udc	Direct Voltage
W	Watt

Table 2: Index of Acronyms

Annex B: Index of Illustrations

Annex C: Index of Tables

Annex D: Index