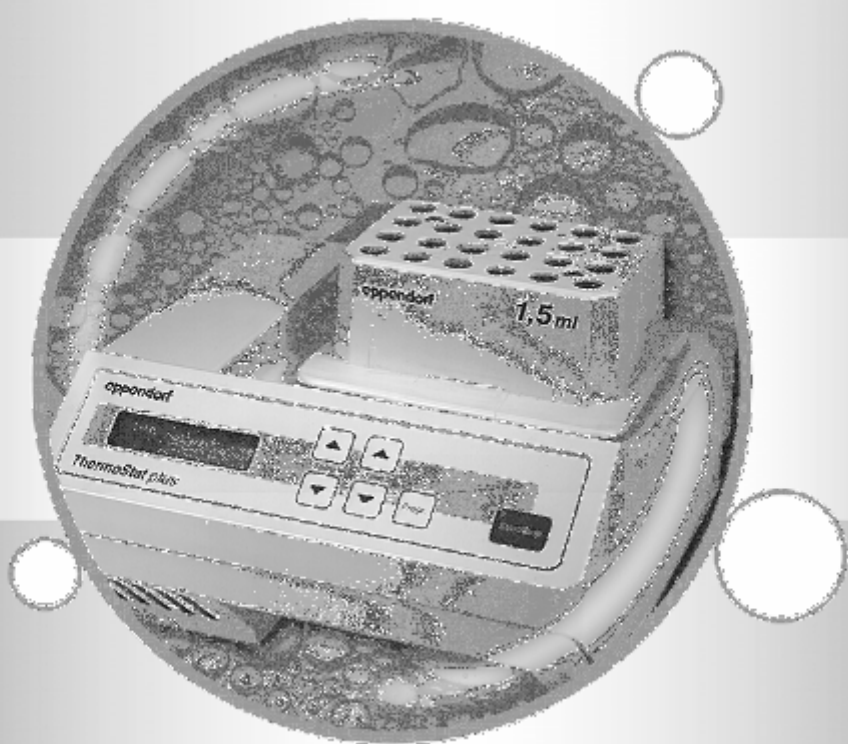




ThermoStat plus

Operating manual

eppendorf

Copyright© 2008 Eppendorf AG, Hamburg. No part of this publication may be reproduced without the prior permission of the copyright owner.

Trademarks

eppendorf®, eppendorf Thermomixer®, eppendorf Plate®, and DualChip® are registered trademarks of Eppendorf AG, Hamburg, Germany.

Thermomixer™ is a trademark of Eppendorf AG, Hamburg, Germany.

Falcon® is a registered trademark of Becton Dickinson, Franklin Lakes, USA.

Trademarks are not marked in all cases with ™ or ® in this manual.



Your Online Product Registration

Register your Eppendorf instruments online and get rewarded!

Learn more: www.eppendorf.com/myeppendorf

Not available in all countries.

Table of contents

1	User instructions	7
1.1	Using this manual	7
1.2	Warning signs and hazard icons	7
1.3	Symbols used	7
1.4	Abbreviations used	7
1.5	Glossary	8
2	Product description	9
2.1	Main illustration	9
2.2	Delivery package	9
2.3	Features	10
2.3.1	ThermoStat plus	10
2.3.2	IsoTherm system (optional accessory)	10
3	Safety	11
3.1	Intended use	11
3.2	User profile	11
3.3	Note on product liability	11
3.4	Warnings for intended use	11
3.5	Warning and instruction signs on the device	14
4	Installation	15
4.1	Preparing installation	15
4.2	Selecting location	15
4.3	Installing instrument	15
5	Operation	16
5.1	Overview of operating controls	16
5.2	Inserting exchangeable thermoblocks	17
5.2.1	Exchangeable thermoblocks for micro test tubes	18
5.2.2	MTP exchangeable thermoblock	18
5.2.3	Adapter plate for 0.2 ml tubes or 96 Well PCR plates	19
5.2.4	Exchangeable thermoblocks for slides and slides DC	19
5.2.5	CombiBox	19
5.3	Inserting tubes and plates	20
5.4	Tempering	20
5.4.1	Basic temperature control	20
5.4.2	Programmable temperature control	21
6	Troubleshooting	23
6.1	General errors	23

Table of contents

7	Maintenance	24
7.1	Cleaning	24
7.2	Disinfection / Decontamination	25
7.3	Decontamination before shipping	25
7.4	Temperature control	25
8	Transport, storage and disposal	26
8.1	Transport	26
8.2	Storage	26
8.3	Disposal	26
9	Technical data	27
9.1	Power supply	27
9.2	Ambient conditions	27
9.3	Weight / dimensions	27
9.4	Application parameters	28
9.5	Additional data	28
9.5.1	Interfaces	28
9.5.2	Time interval	28
10	Ordering information	29
10.1	ThermoStat plus	29
10.2	Exchangeable thermoblocks and adapter plates	29
10.3	Tubes and plates	30
10.4	IsoTherm-System	31
10.5	Temperature sensor	31
11	Index	32

1 User instructions

1.1 Using this manual

- ▶ Before using the device for the first time, please read the operating manual.
- ▶ Please view this operating manual as part of the product and keep it somewhere easily accessible.
- ▶ If the device is transferred to a third party, include this operating manual.

1.2 Warning signs and hazard icons

Depiction	Meaning
	DANGER Risk of electric shock with potential for severe injury or death as a consequence.
	DANGER Risk of explosion with potential for severe injury or death as a consequence.
	WARNING Warning of potential injury or health risk.
	CAUTION Refers to risk of damage to property.
	Refers to particularly useful information and tips.

1.3 Symbols used

Depiction	Meaning
▶	You are requested to perform an action.
1. 2.	Perform these actions in the sequence described.
•	List.
Text	Terms from the device display.

1.4 Abbreviations used

DWP	Deepwell plate
MTP	Microplate
PCR	Polymerase Chain Reaction

1 User instructions

1.5 Glossary

Deepwell plate	Plate with 48, 96 or 384 wells with a larger volume than microplates. Suitable for the preparation, mixing, centrifuging, transporting and storing of solid and liquid samples.	
Microplate	Plates with 24, 48, 96 or 384 wells for the preparation, mixing, centrifuging, transporting and storing of solid and liquid samples.	
semi-skirted PCR plate	PCR plate with surrounding half-edge.	
skirted PCR plate	PCR plate with a surrounding edge.	
unskirted PCR plate	PCR plate without a surrounding edge.	
Well	Cavity. Microplate, PCR plate or Deepwell plate tube.	

2 Product description

2.1 Main illustration

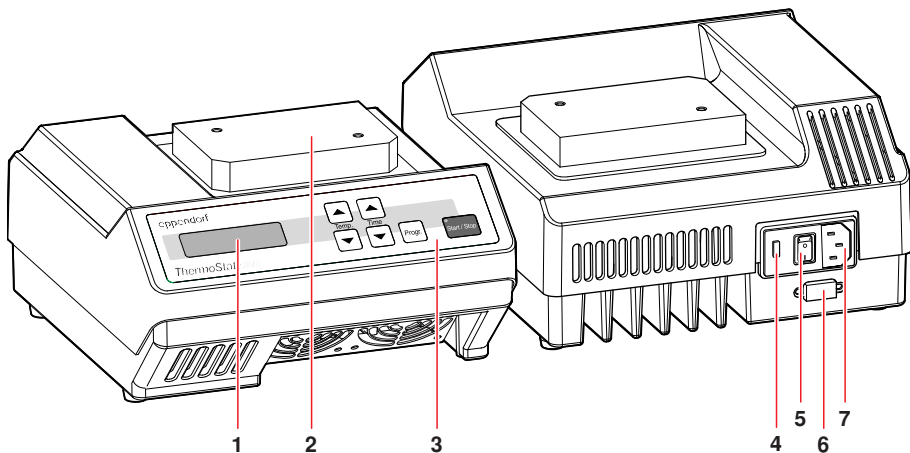


Fig. 1: ThermoStat plus

1 Display	2 Thermosocket
3 Operating controls	4 Fuse compartment
5 Power switch	6 RS-232 interface
7 Power connection socket	

2.2 Delivery package

Quantity	Order No. (International)	Order No. (North America)	Description
1	5352 000.010	022670204	ThermoStat plus basic device without exchangeable thermoblock 100 - 240 V / 50 - 60 Hz
1	-	-	Mains cable
1	-	-	Hexagon socket key
1	5352 900.011		Operating Manual ThermoStat plus

2 Product description

2.3 Features

2.3.1 ThermoStat plus

The ThermoStat plus permits the effective tempering of liquids between $-5\text{ }^{\circ}\text{C}$ (max. $30\text{ }^{\circ}\text{C}$ below room temperature) and $+99\text{ }^{\circ}\text{C}$. For the temperature control of different types of tubes or plates, different exchangeable thermoblocks can be placed on the thermoblock.

In addition to simple tempering without time limit the device can also be programmed. Here a sequence of up to four phases with freely adjustable temperatures and time periods can be executed. These will automatically run in sequence.

The temperature change between two subsequent phases cannot be carried out at the maximum speed possible resulting in a linear temperature change.

2.3.2 IsoTherm system (optional accessory)

With the IsoTherm system the samples can be cooled efficiently and at a constant temperature for several hours and then be thawed gently.

In addition, the tube holder serves as a working aid during the filling of micro test tubes and the preparation, sorting, distribution, transporting, storing and freezing of samples in micro test tubes.

The IsoTherm system includes the components IsoRack, IsoPack, IsoSafe and PCR-Cooler.

Features

- IsoPack and IsoSafe

Cooling batteries for $-21\text{ }^{\circ}\text{C}$ and $0\text{ }^{\circ}\text{C}$ which allow temperature-sensitive samples to be stored for hours on the lab bench in micro test tubes and in a corresponding insulated box (IsoSafe).

- IsoRack

Tube holder for 24 micro test tubes (0.5 ml or 1.5/2.0 ml) each to transfer the tubes from the cooling battery to the exchangeable thermoblocks. The lockable and stackable, snap-together IsoRacks are also particularly suited to the storage of micro test tubes in refrigerators or freezers. The IsoRacks can be autoclaved. The spacing of the test tubes in the IsoRack is determined by the use of multi-channel pipettes.

- PCR-Cooler

Cool pack for $0\text{ }^{\circ}\text{C}$ for the storage of PCR tubes or plates (semi-skirted, unskirted and skirted) on the lab bench and in an insulated box (IsoSafe).

i Further details can be found on our homepage www.ependorf.com and in the operating manual for the IsoTherm system.

3 Safety

3.1 Intended use

The ThermoStat plus is intended exclusively for indoor use and is for the temperature control of liquids in closed micro test tubes and plates.

Use only Eppendorf accessories or accessories recommended by Eppendorf.

3.2 User profile

This device must only be used by skilled personnel with the appropriate training.

Before using the device, read the operating manual carefully and familiarize yourself with the device's mode of operation.

3.3 Note on product liability

In the following cases the protection provided in the device may be impaired. The liability for the function of the device passes to the operator if:

- The device is not used in accordance with the operating manual.
- The device is used outside the range of application described herein.
- The device is used with accessories or consumables (e.g. tubes and plates) which are not recommended by Eppendorf.
- The device is maintained or repaired by persons not authorized by Eppendorf.
- The owner has made unauthorized modifications to the device.

3.4 Warnings for intended use

Please read the operating manual and note the following general safety instructions before using the ThermoStat plus.



Risk of explosion!

- ▶ Do not operate the device in rooms where work is being carried out with explosive substances.
- ▶ Do not use this device to process any explosive or highly reactive substances.
- ▶ Do not use this device to process any substances which could create an explosive atmosphere.



Danger! Electric shock from damage to device/power cable.

- ▶ Only switch on the device if the device and the power cable are undamaged.
- ▶ Only use devices that have been properly installed or repaired.



Danger! Lethal voltages inside the device.

- ▶ Ensure that the housing is always closed and undamaged so that no parts inside the device can be contacted by accident.
- ▶ Do not remove the housing of the device.
- ▶ Do not allow the device to be opened by anyone except service personnel who have been specifically authorized by Eppendorf.

3 Safety



Danger! Electric shock as a result of penetration of liquid.

- ▶ Switch off the device and disconnect it from the power supply before starting cleaning or disinfecting.
- ▶ Do not allow any liquids to enter the inside of the housing.
- ▶ Do not perform spray disinfection.
- ▶ Only reconnect the device to the power supply once it is completely dry.



Danger! Damage to health from biologically or chemically hazardous substances.

Hazardous chemicals cause burns and other health hazards.

- ▶ Observe the material safety data sheets for the biological and chemical substances used.
- ▶ Wear personal protective equipment (PPE) at all times when working with biological or chemical substances.
- ▶ Follow the instructions for cleaning and decontamination, and ensure that hygiene safety standards are maintained.



Risk when handling toxic or radioactively-marked liquids or pathogenic germs.

- ▶ Follow national regulations governing the handling of these substances.
- ▶ For complete instructions regarding the handling of germs or biological material of risk group II or higher, please refer to the "Laboratory Biosafety Manual" (Source: World Health Organization, current edition of the Laboratory Biosafety Manual).



Warning! Risk of burns from hot surfaces.

The exchangeable thermoblock and the thermal base can be very hot after heating and cause burns.

- ▶ Allow heated exchangeable thermoblocks and the thermal base to cool down completely before removing the exchangeable thermoblock.



Warning! Damage due to incorrect power supply.

- ▶ Only connect the device to power sources that match the electrical specifications on the device's nameplate.
- ▶ Use only sockets with protective earth.



Warning! Poor safety due to incorrect accessories and spare parts.

The use of accessories and spare parts other than those recommended by Eppendorf may impair the safety, function and precision of the device. Eppendorf accepts no warranty or liability for damage caused by non-recommended accessories and spare parts or incorrect use.

- ▶ Use only accessories recommended by Eppendorf and original spare parts.

3 Safety

**Warning! Contamination due to opening tube lids.**

In the following cases, the lids of PCR tubes can spring open and the sample material can escape:

- high vapor pressure of the content
 - improperly sealed lid
 - damaged sealing lip
- Always check that micro test tubes have been sealed tightly before use.

**Warning! Risk to health from contaminated device**

- Perform decontamination before storing or dispatching the device and/or its accessories.

Caution! Device damage from improper use.

- Only use the ThermoStat plus with the exchangeable thermoblock.

Caution! Damage to the display due to mechanical pressure.

- Do not exert mechanical pressure on the display.

Caution! Damage to electronic components from condensation.

- After moving the device from a cooler environment (e.g. cool room or outdoors), wait at least an hour before connecting it to the mains power supply.

Caution when using aggressive chemicals.

Aggressive chemicals may damage both the device and its accessories.

- Do not use any aggressive chemicals on the device and accessories such as strong or weak bases, strong acids, acetone, formaldehyde, halogenated hydrocarbons or phenol.
- If the device becomes contaminated with aggressive chemicals, clean it immediately with a neutral cleaning agent.

Caution! Lack of safety due to missing operating manual.

- When passing on the device, always enclose the operating manual.
- If you lose the operating manual, request a replacement. The current version of the operating manual and the safety instructions can also be found on our website www.eppendorf.com.

3 Safety

3.5 Warning and instruction signs on the device

Depiction	Meaning	Location
 Caution: Hot surface	Warning! Risk of burns from hot surfaces. The exchangeable thermoblock and the thermal base can be very hot after heating and cause burns. ▶ Allow heated exchangeable thermoblocks and the thermal base to cool down completely before removing the exchangeable thermoblock.	Upside of device

4 Installation

4.1 Preparing installation

-  Retain the transport carton and the packing material for subsequent safe transport or storage.

- ▶ Check the completeness of delivery based on the details of the scope of delivery (see *Delivery package* on page 9)
- ▶ Check all parts for any transport damage.

4.2 Selecting location

Select a location for the ThermoStat plus in accordance with the following criteria:

- Mains power connection (230 V/120 V) as per device identification plate. This is located on the rear side of the device.
- At least 10 cm away from adjacent devices and walls.
- Solid bench with stable, horizontal and even work surface.

4.3 Installing instrument



Warning! Damage due to incorrect power supply.

- ▶ Only connect the device to power sources that match the electrical specifications on the device's nameplate.
- ▶ Use only sockets with protective earth.

1. Place the ThermoStat plus on a suitable work surface so that the ventilation slots on the base of the device are not blocked.
2. Connect the power cable supplied to the mains connection socket (7) of the ThermoStat plus and the power supply (see Fig. 1 on page 9).
3. Switch on the ThermoStat plus using the mains switch (5) (see Fig. 1 on page 9).
4. Fit the exchangeable thermoblock (see *Inserting exchangeable thermoblocks* on page 17).

5 Operation

5.1 Overview of operating controls

Before using the ThermoStat plus for the first time, familiarize yourself with the operating controls and the display.

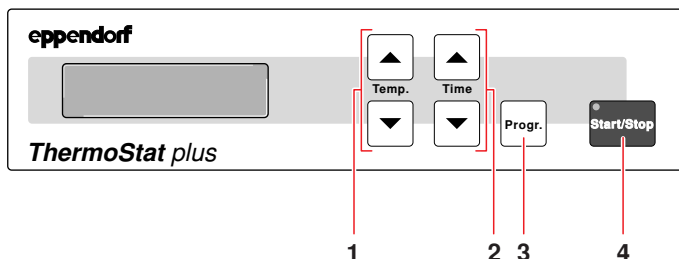


Fig. 2: Operator control elements and display

1 Setting the temperature	2 Setting the time
3 Call program function	4 Starting or stopping a run

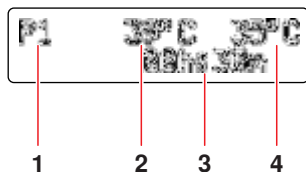


Fig. 3: Display programmable tempering phase

1 Phase number	2 Nominal temperature
3 Tempering duration	4 Actual temperature

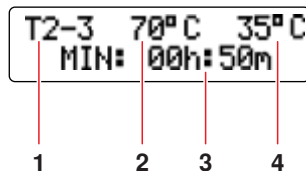


Fig. 4: Display programmable temperature change phase

1 Number of temperature change phase	2 Nominal temperature
3 Duration of temperature change phase	4 Current actual temperature



After switching on, the display shows the values of the last run.

5 Operation

5.2 Inserting exchangeable thermoblocks



Warning! Contamination due to opening tube lids.

In the following cases, the lids of PCR tubes can spring open and the sample material can escape:

- high vapor pressure of the content
- improperly sealed lid
- damaged sealing lip

► Always check that micro test tubes have been sealed tightly before use.

The following exchangeable thermoblocks can be set on the ThermoStat plus:

Exchangeable thermoblock 0.5:	24 x 0.5 ml micro test tubes
Exchangeable thermoblock 1.5:	24 x 1.5 ml micro test tubes
Exchangeable thermoblock 2.0:	24 x 2.0 ml micro test tubes
Exchangeable thermoblock Cryo:	24 x 1.5 or 2.0 ml Cryo tubes
Exchangeable thermoblock lab tubes:	24 tubes at 11 – 11.9 mm, height 30 to 76 mm
Exchangeable thermoblock 15 ml Falcon:	8 x 15 ml Falcon tubes
Exchangeable thermoblock 50 ml Falcon:	4 x 50 ml Falcon tubes
Exchangeable thermoblock MTP:	MTP and DWP, PCR tubes and plates
Exchangeable thermoblock slides:	4 slides
Exchangeable thermoblock slides DC:	4 slides DC
CombiBox	



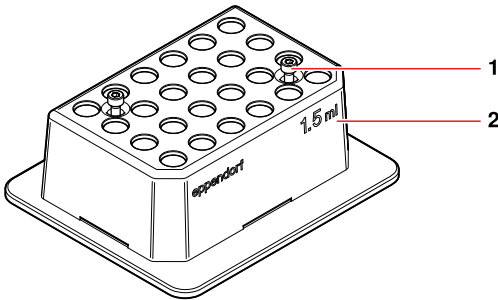
To insert the exchangeable thermoblocks, use the accessories supplied (e.g. screw driver, screws, flat washers and lock washers).

5 Operation

EN

Operating Manual

5.2.1 Exchangeable thermoblocks for micro test tubes



1. Place the exchangeable thermoblock (2) on the thermosocket with both flat edges and the writing facing the front.
2. Tighten the captive screws (1).

5.2.2 MTP exchangeable thermoblock

Caution! Microplates melt at extremely high temperatures.

- Only heat microplates made of polystyrene to a maximum 70 °C.

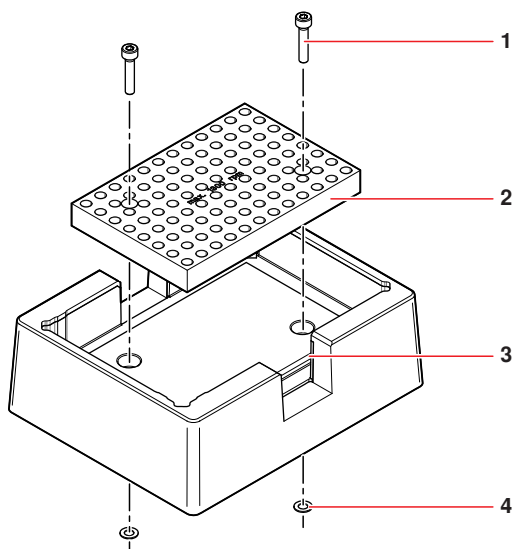
1. Insert the short screws in the MTP exchangeable thermoblock with the flat washers.
2. Secure the screws from below using the lock washers.
The lock washers prevent the screws from falling out of the bores if the exchangeable thermoblock is not fixed on the unit.
3. Place the MTP thermoblock on the device in such a way that the spring plate is to the front left.
4. Tighten the screws.

5 Operation

EN

Operating Manual

5.2.3 Adapter plate for 0.2 ml tubes or 96 Well PCR plates



1. Remove the lock washers (4) from the short screws in the exchangeable thermoblock.
2. Remove the short screws.
3. Connect the adapter plate (2) to the MTP thermoblock (3) using the long screws (1).
4. Secure the screws from below using the lock washers.
The lock washers prevent the screws from falling out of the bores if the exchangeable thermoblock is not fixed on the unit.
5. Place the adapter plate on the device with the MTP thermoblock.
6. Tighten the screws.

5.2.4 Exchangeable thermoblocks for slides and slides DC

1. Open the lid.
2. Place the exchangeable thermoblock on the heating/cooling plate with the writing facing the front.
3. Tighten the screws of the exchangeable thermoblock.

5.2.5 CombiBox

The CombiBox must not be screwed together.

- ▶ Place the CombiBox on the heating/cooling plate.

5 Operation

5.3 Inserting tubes and plates

Caution! Microplates melt at extremely high temperatures.

- ▶ Only heat microplates made of polystyrene to a maximum 70 °C.

1. Select a suitable exchangeable thermoblock and mount it (see *Inserting exchangeable thermoblocks* on page 17).
2. Place the tubes or plate on the thermoblock.
For optimum temperature control transfer the micro test tubes to the exchangeable thermoblocks using IsoRacks. The IsoRack reduces the heat exchange of the thermoblock with the environment. If necessary close the IsoRack lid.
3. If using the MTP thermoblock: put the lid on.

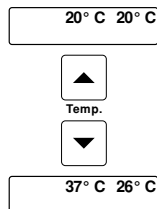
5.4 Tempering

After being switched on, the device is in simple tempering mode.

On the display, the target temperature is displayed on the left and the actual temperature on the right. The target temperature is the last set target value. Until the device reaches the target value "°C" flashes next to the actual temperature.

5.4.1 Basic temperature control

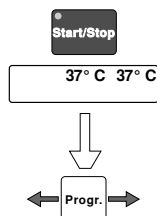
1. Set the temperature using the "Temp." arrow keys.
The temperature between -5 °C and 99 °C is immediately readjusted. Additionally you can switch on the timer.



2. To start the timer press the "Start/Stop" key.
The control lamp illuminates in green. The tempering duration ("--h : --m") is displayed.



3. To stop the timer press the "Start/Stop" key.
The timer is no longer shown in the display and the control lamp goes out. Tempering continues with the target value set. The values are retained even after the device has been switched off.

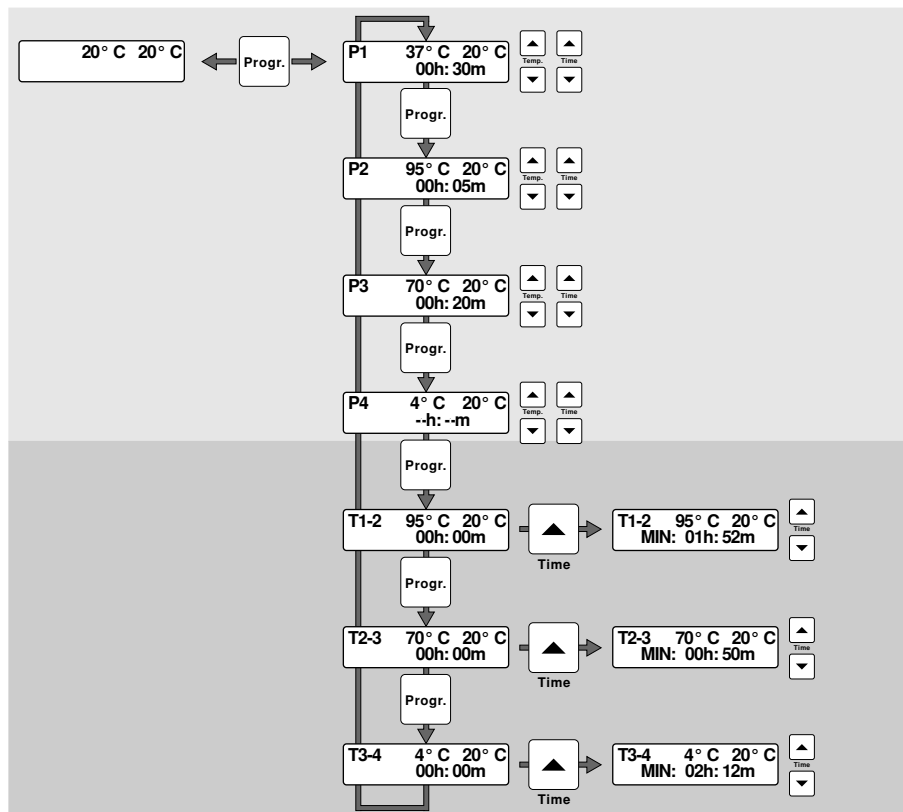


5 Operation

5.4.2 Programmable temperature control

In addition to simple tempering you can also create a program with up to 4 different phases which are sequenced automatically. You can set the desired temperature and the desired tempering duration.

i If the time is enabled you have to disable it to enter programmable tempering.



1. Switch the device on.
On the display, the nominal temperature is displayed on the left, the actual temperature on the right.
2. Press "Prog" for approx. 1 second.
On the display the phase (P1) appears on the left and to the right of it the target and actual temperatures. In the bottom line the tempering duration is shown.
3. Set the desired temperature using the "Temp." arrow keys.

5 Operation

EN

4. Set the desired tempering duration for this phase using the "Time" arrow keys.
5. Press the "Prog." key.

On the display the parameters for Phase 2 appear.

6. Set the parameters as desired using the arrow keys.
7. Repeat steps 5 and 6 to set the parameters for Phase 3 and Phase 4.

The timer in the programmable mode works continuously, i.e. the device does not take into account the time required to reach the next temperature. You can program these so-called temperature change phases if you have set the parameters for the phases:

8. Press the "Prog." key to change to the temperature change phases between the program phases.

On the display the first temperature change phase **T1-2** appears on the left, to its right the target temperature of phase 2 and the current actual temperature. In the bottom line the tempering duration of this phase is shown. The duration is always automatically disabled ("**--h: --m**").

9. Enable the temperature change phase using the "Time" arrow keys.

The minimum time the device needs to change from the temperature of phase 1 to the temperature of phase 2 is shown.

10. Press the "Time" arrow keys to extend the temperature change phase or disable it, if necessary.

11. Press the "Prog." key.

On the display the parameters for the second temperature change phase **T2-3** are shown, which you can modify or enable as described above.

12. Press the "Prog." key.

On the display the parameters for the third temperature change phase **T3-4** are now shown, which you can modify or enable as described above.

13. Press the "Prog." key.

The programming is complete and the parameters of the first phase (P1) are shown.

14. Press the "Start/Stop" key to start the programmed tempering.

The program step shown in the display will always be started. The phases then run automatically sequenced until phase 4 has been completed. A maximum of 4 phases can be sequenced automatically, however, without roll-over (not via P4 back to P1). The values are retained even after the device has been switched off.

6 Troubleshooting

6.1 General errors

- i** If the proposed measures to remedy the fault repeatedly do not deliver the desired result, contact your local Eppendorf partner. The addresses of our dealers are available on our website www.eppendorf.com, the addresses of our sales offices are on the penultimate page of this operating manual.

Symptom / message	Cause	Remedy
No indication	Power supply is interrupted.	▶ Check the mains connection and the power supply.
Low temperature value is not reached.	Ambient temperature too high.	▶ Set up the device in a cooler environment.

7 Maintenance

7.1 Cleaning

Regularly clean the housing of the ThermoStat plus and the exchangeable thermoblocks.



Danger! Electric shock as a result of penetration of liquid.

- ▶ Switch off the device and disconnect it from the power supply before starting cleaning or disinfecting.
- ▶ Do not allow any liquids to enter the inside of the housing.
- ▶ Do not perform spray disinfection.
- ▶ Only reconnect the device to the power supply once it is completely dry.

Caution when using aggressive chemicals.

Aggressive chemicals may damage both the device and its accessories.

- ▶ Do not use any aggressive chemicals on the device and accessories such as strong or weak bases, strong acids, acetone, formaldehyde, halogenated hydrocarbons or phenol.
- ▶ If the device becomes contaminated with aggressive chemicals, clean it immediately with a neutral cleaning agent.

Caution! Corrosion from aggressive cleaning agents and disinfectants.

- ▶ Do not use corrosive cleaning agents, aggressive solvents or abrasive polishes.

Auxiliary aids

- Lint free cloth
- Mild, soap-based household cleaning agent
- Dist. water

Cleaning the ThermoStat plus

1. Switch the ThermoStat plus off and isolate from the power supply.
2. Clean all of the outer parts of the ThermoStat plus with a mild, soap-based solution and a lint-free cloth.
3. Wipe off the soap solution with dist. water.
4. Dry all cleaned parts.

Cleaning exchangeable thermoblocks

- ▶ Remove any contamination with a damp, lint-free cloth. Use a mild lab cleaner if necessary.

7 Maintenance

7.2 Disinfection / Decontamination



Danger! Electric shock as a result of penetration of liquid.

- ▶ Switch off the device and disconnect it from the power supply before starting cleaning or disinfecting.
- ▶ Do not allow any liquids to enter the inside of the housing.
- ▶ Do not perform spray disinfection.
- ▶ Only reconnect the device to the power supply once it is completely dry.

Auxiliary equipment

- lint-free cloth,
 - disinfectant.
1. Switch the ThermoStat plus off and isolate from the power supply.
 2. Allow the device to cool down.
 3. Clean the device (see *Cleaning* on page 24).
 4. Select a disinfection method which complies with the legal requirements and regulations applicable to your range of application.
 5. Wipe the surfaces with the lint-free cloth and disinfectant.

7.3 Decontamination before shipping

If you are shipping the device to the authorized Technical Service for repairs or to your authorized dealer for disposal please note the following:



Warning! Risk to health from contaminated device

1. Follow the instructions in the decontamination certificate. It is available in PDF format on our homepage (www.eppendorf.com/decontamination).
2. Decontaminate all the parts you want to dispatch.
3. Enclose the fully-completed decontamination certificate for returned goods (incl. the serial number of the device) with the dispatch.

7.4 Temperature control

The application parameters in the technical data (see p. 28) define the limits and deviations (tolerances) on all positions of a thermoblock / exchangeable thermoblock.

Use the temperature validation system for an exact control of the temperatures. For the 1.5 ml reference exchangeable thermoblock there is a temperature sensor - 1.5 mL for all Thermomixer and ThermoState from Eppendorf which can measure the exact temperature in the block (see *Temperature sensor* on page 31).

8 Transport, storage and disposal

8.1 Transport

- Only transport the device in the original packaging.

	Air temperature	Rel. humidity	Air pressure
General transportation	-20 to 60 °C	10 to 95%	30 to 106 kPa
Air freight	-20 to 55 °C	10 to 95%	30 to 106 kPa

8.2 Storage

	Air temperature	Rel. humidity	Air pressure
in transport packaging	-20 to 55 °C	10 to 95%	70 to 106 kPa
without transport packaging	-5 to 45 °C	10 to 95%	70 to 106 kPa

8.3 Disposal

In the event of disposing of the product, please observe the applicable legal regulations.

Information on the disposal of electrical and electronic devices in the European Community:

The disposal of electrical devices is regulated within the European Community by national regulations based on EU Directive 2002/96/EC pertaining to waste electrical and electronic equipment (WEEE).

In accordance with this, any devices delivered after 13/08/2005 on a business-to-business basis, which includes this product, may no longer be disposed of in household waste. To document this they have been marked with the following identification:



Because disposal regulations may differ from one country to another within the EU please contact your supplier if necessary.

9 Technical data

9.1 Power supply

Main power connection:	100 to 240 V $\pm 10\%$, 50 to 60 Hz Voltage is automatically adjusted.
Fuse for 100 to 240 V:	T1,6 A, 250 V (2 off)
Power consumption:	75W
Maximum current consumption:	< 0.8 A
Protection class:	I
Overvoltage category:	II (IEC 61010-1)
Degree of contamination:	2 (IEC 664)

9.2 Ambient conditions

Environment:	For indoor use only
Ambient temperature:	4 to 40 °C
Relative humidity:	80 % max.

9.3 Weight / dimensions

Dimensions (W x D x H):	220 x 250 x 125 mm
Weight:	5.0 kg

9 Technical data

9.4 Application parameters

Temperature control range:	–5 °C to 99 °C
Usable tempering range:	from 30 °C below room temperature to 99 °C
Usable tempering range CombiBox:	30 °C below room temperature to 95 °C (dependent on filling level)
Tempering accuracy for:	
0 °C	±1.0 °C
37 °C	±0.5 °C
90 °C	1.0 °C
Heating rate:	5 °C/min
Cooling rate:	
simple tempering operation:	6.0 °C/min between 99 °C and 25 °C 1.5 °C/min between 25 °C and –5 °C
programmable tempering operation:	1 to 2 °C/min
Temperature deviation across the 24 exchangeable thermoblock:	max. 0.2 °C

9.5 Additional data

9.5.1 Interfaces

EDP connection:	RS-232, Sub-D9 male
-----------------	---------------------

- i** Only connect devices to interfaces that meet the IEC 950/EN 60950 (UL 1950) standards.

9.5.2 Time interval

Programmable time interval:	1 min to 99:59 hours, infinitely adjustable
-----------------------------	---

10 Ordering information



Warning! Poor safety due to incorrect accessories and spare parts.

The use of accessories and spare parts other than those recommended by Eppendorf may impair the safety, function and precision of the device. Eppendorf accepts no warranty or liability for damage caused by non-recommended accessories and spare parts or incorrect use.

- ▶ Use only accessories recommended by Eppendorf and original spare parts.

10.1 ThermoStat plus

Order No. (International)	Order No. (North America)	Description
5352 000.010	022670204	ThermoStat plus basic device without exchangeable thermoblock 100 - 240 V / 50 - 60 Hz

10.2 Exchangeable thermoblocks and adapter plates

Order No. (International)	Order No. (North America)	Description
5361 000.015 5360 000.011 5362 000.019	022670506 022670522 022670549	Exchangeable thermoblock for microcentrifuge tubes complete with IsoTherm Rack and IsoTherm cool pack 0°C 24 x 0.5 mL 24 x 1.5 mL 24 x 2.0 mL
5363 000.012	022670565	Exchangeable thermoblock for MTPs and deepwell plates with lid
5363 007.009	022670573	Adapter plate for 96 x 0.2 mL PCR tubes to insert in blocks for MTPs
5364 000.016	022670581	Exchangeable thermoblock for 24 micro test tubes 11 - 11.9 mm diam., height 30 - 76 mm
5366 000.013 5365 000.010	022670531 022670514	Exchangeable thermoblock for Falcon tubes for 8 x 15 mL for 4 x 50 mL
5367 000.017	022670557	Exchangeable thermoblock for 1.5 - 2 mL Cryo tubes
5368 000.010	022670590	Exchangeable thermoblock for 4 slides for hybridization experiments
5368 000.100	022670786	Exchangeable thermoblock for slides DC holds 4 DualChip slides, with clamping plate

10 Ordering information

10.3 Tubes and plates

Order No. (International)	Order No. (North America)	Description
0030 121.023	022363611	Safe-Lock micro test tubes 0.5 mL per 500 pcs. colorless
0030 120.086	-	Safe-Lock micro test tubes 1.5 mL per 1,000 pcs. colorless
0030 120.094	-	Safe-Lock micro test tubes 2.0 mL per 1,000 pcs. colorless
0030 124.502	951010057	PCR tubes thin-walled with hinged lid, colorless, 500 pcs. 0.5 mL
0030 124.332	951010006	0.2 mL PCR tubes 1,000 pcs., colorless
0030 124.340	951010014	Five-tube strip for 0.2 mL PCR Tubes colorless, pack of 125 (= 625 tubes)
0030 124.359	951010022	Eight-tube strip, for 0.2 mL PCR Tubes colorless, pack of 120 (= 960 tubes)
0030 124.200	951010006	PCR Tubes 0.2 mL per 1,000 pcs. colorless
0030 128.648	951020401	twin.tec PCR Plate 96, skirted Wells colorless, 25 pcs. clear
0030 128.575	951020303	twin.tec PCR Plate 96, semi-skirted Wells colorless, 25 pcs. clear
0030 521.102	951031003	Eppendorf Deepwell Plate 384/200 µL 40 plates, border color white Standard
0030 501.101	951031801	Eppendorf Deepwell Plate 96/500 µL 40 plates, border color white Standard
0030 501.209	951032603	Eppendorf Deepwell Plate 96/1000 µL 20 plates, border color white Standard
0030 501.306	951033405	Eppendorf Deepwell Plate 96/2000 µL 20 plates, border color white Standard

All plates are also available with different border colors (red, yellow, green and blue) and purity qualities, in large packs as well as with barcoding on request. You can find further information in our catalog or our website www.eppendorf.com.

10 Ordering information

10.4 IsoTherm-System

Order No. (International)	Order No. (North America)	Description
3880 001.018 3880 000.011	022510053 022510002	IsoTherm System includes IsoSafe, IsoRack, 0 °C IsoPack and -21 °C for 1.5 mL / 2.0 mL tubes 0.5 mL tubes
3881 000.015 3881 000.023 3881 000.031	022510509 022510541 022510525	PCR-Cooler Starter Set (1 x pink, 1 x blue) Pink Blue

10.5 Temperature sensor

Order No. (International)	Order No. (North America)	Description
0055 000.298	950008059	Temperature validation system for Mastercycler, Mastercycler ep and Mastercycler pro
5354 850.500	on request	Temperature sensor - 1.5 mL

Index

EN

A	
Ambient conditions	27
Application parameters	28
C	
Cleaning	24, 24, 24
D	
Decontamination	25
Deepwell plate	8
Dimensions	27
Display	16
Disposal	26
E	
Error messages	23
Error removal	23
G	
Glossary	8
H	
Hazard icons	7
I	
Installation	
Device	15
Preparation	15
Select location	15
Intended use	
Hazards	11
IsoPack	10
IsoSafe	10
IsoTherm system	10
M	
Microplate	8
O	
Operating controls	16

P	
PCR plate	
semi-skirted	8
skirted	8
unskirted	8
PCR-Cooler	10
Power supply	27
S	
Safety instructions	11
Safety notes	
Meaning of the symbols	7
Select location	15
Storage	26
T	
Technical data	
Application parameters	28
Dimensions	27
Power supply	27
Technical data	
Ambient conditions	27
Temperature control	25
Transport	26
W	
Warning signs	
Device	14
Instructions	7
Weight	
Device	27
Well	8

EG-Konformitätserklärung EC Conformity Declaration

Das bezeichnete Produkt entspricht den einschlägigen grundlegenden Anforderungen der aufgeführten EG-Richtlinien und Normen. Bei einer nicht mit uns abgestimmten Änderung des Produktes oder einer nicht bestimmungsgemäßen Anwendung verliert diese Erklärung ihre Gültigkeit.

The product named below fulfills the relevant fundamental requirements of the EC directives and standards listed. In the case of unauthorized modifications to the product or an unintended use this declaration becomes invalid.

Produktbezeichnung, Product name:

ThermoStat plus 5352

einschließlich Zubehör / including accessories

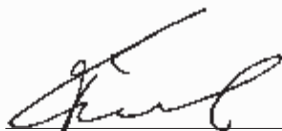
Produkttyp, Product type:

Thermostat für Reaktionsgefäße / Thermostat for micro test tubes

Einschlägige EG-Richtlinien/Normen, Relevant EC directives/standards:

2006/95/EG, EN 61010-1, EN 61010-2-010

2004/108/EG, EN 55011/B, EN 61000-6-1, EN 61000-3-2, EN 61000-4-14



Vorstand, Board of Management:

05.11.2009

Hamburg, Date:



Projektmanagement, Project Management:

eppendorf



Eppendorf AG · Barkhausenweg 1 · 22339 Hamburg · Germany

Eppendorf offices

AUSTRALIA & NEW ZEALAND

Eppendorf South Pacific Pty. Ltd.
Telefon: +61 2 9889 5000
Fax: +61 2 9889 5111
E-Mail: Info@eppendorf.com.au
Internet: www.eppendorf.com.au

AUSTRIA

Eppendorf Austria GmbH
Telefon: +43 (0) 1 890 13 64 - 0
Fax: +43 (0) 1 890 13 64 - 20
E-Mail: office@eppendorf.at
Internet: www.eppendorf.at

BRAZIL

Eppendorf do Brasil Ltda.
Telefon: +55 11 30 95 93 44
Fax: +55 11 30 95 93 40
E-Mail: eppendorf@eppendorf.com.br
Internet: www.eppendorf.com.br

CANADA

Eppendorf Canada Ltd.
Telefon: +1 905 826 5525
Fax: +1 905 826 5424
E-Mail: canada@eppendorf.com
Internet: www.eppendorfn.com

CHINA

Eppendorf China Ltd.
Telefon: +86 21 38560500
Fax: +86 21 38560555
E-Mail: market.info@eppendorf.cn
Internet: www.eppendorf.cn

CZECH REP. & SLOVAKIA

Eppendorf Czech & Slovakia s.r.o.
Telefon: +420 323 605 454
Fax: +420 323 605 454
E-Mail: eppendorf@eppendorf.cz
Internet: www.eppendorf.cz /
www.eppendorf.sk

FRANCE

Eppendorf France S.A.R.L.
Telefon: +33 1 30 15 67 40
Fax: +33 1 30 15 67 45
E-Mail: eppendorf@eppendorf.fr
Internet: www.eppendorf.fr

GERMANY

Eppendorf Vertrieb
Deutschland GmbH
Telefon: +49 2232 418-0
Fax: +49 2232 418-155
E-Mail: vertrieb@eppendorf.de
Internet: www.eppendorf.de

INDIA

Eppendorf India Limited
Telefon: +91 44 42 11 13 14
Fax: +91 44 42 18 74 05
E-Mail: info@eppendorf.co.in
Internet: www.eppendorf.co.in

ITALY

Eppendorf s.r.l.
Telefon: +390 2 55 404 1
Fax: +390 2 58 013 438
E-Mail: eppendorf@eppendorf.it
Internet: www.eppendorf.it

JAPAN

Eppendorf Co. Ltd.
Telefon: +81 3 5825 2363
Fax: +81 3 5825 2365
E-Mail: info@eppendorf.jp
Internet: www.eppendorf.jp

NORDIC

Eppendorf Nordic Aps
Telefon: +45 70 22 2970
Fax: +45 45 76 7370
E-Mail: nordic@eppendorf.dk
Internet: www.eppendorf.dk

SOUTH & SOUTHEAST ASIA

Eppendorf Asia Pacific Sdn. Bhd.
Telefon: +60 3 8023 2769
Fax: +60 3 8023 3720
E-Mail: eppendorf@eppendorf.com.my
Internet: www.eppendorf.com.my

SPAIN

Eppendorf Ibérica S.L.U.
Telefon: +34 91 651 76 94
Fax: +34 91 651 81 44
E-Mail: iberica@eppendorf.es
Internet: www.eppendorf.es

SWITZERLAND

Vaudaux-Eppendorf AG
Telefon: +41 61 482 1414
Fax: +41 61 482 1419
E-Mail: vaudaux@vaudaux.ch
Internet: www.eppendorf.ch

UNITED KINGDOM

Eppendorf UK Limited
Telefon: +44 1223 200 440
Fax: +44 1223 200 441
E-Mail: sales@eppendorf.co.uk
Internet: www.eppendorf.co.uk

USA

Eppendorf North America, Inc.
Telefon: +1 516 334 7500
Fax: +1 516 334 7506
E-Mail: info@eppendorf.com
Internet: www.eppendorfn.com

OTHER COUNTRIES

Internet: www.eppendorf.com/
worldwide



Evaluate your operating manual

www.eppendorf.com/manualfeedback

eppendorf

In touch with life

Your local distributor: www.eppendorf.com/worldwide

Eppendorf AG · 22331 Hamburg · Germany · Tel: +49 40 538 01-0 · Fax: +49 40 538 01-556

E-Mail: eppendorf@eppendorf.com

Eppendorf North America, Inc. · 102 Motor Parkway, Suite 410 · Hauppauge, NY 11788-5178 · USA

Tel: +1 516 334 7500 · Toll free phone: +1 800 645 3050 · Fax: +1 516 334 7506 · E-Mail: info@eppendorf.com

Application Support

Europe, International: Tel: +49 1803 666 789 · E-Mail: support@eppendorf.com

North America: Tel: +1 800 645 3050 ext. 2258 · E-Mail: techserv@eppendorf.com

Asia Pacific: Tel: +60 3 8023 6869 · E-Mail: support_asiapacific@eppendorf.com