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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

<table>
<thead>
<tr>
<th>Depiction</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>![DANGER]</td>
<td>Risk of electric shock with potential for severe injury or death as a consequence.</td>
</tr>
<tr>
<td>![DANGER]</td>
<td>Risk of explosion with potential for severe injury or death as a consequence.</td>
</tr>
<tr>
<td>![WARNING]</td>
<td>Warning of potential injury or health risk.</td>
</tr>
<tr>
<td>![CAUTION]</td>
<td>Refers to risk of damage to property.</td>
</tr>
<tr>
<td>![i]</td>
<td>Refers to particularly useful information and tips.</td>
</tr>
</tbody>
</table>

1.3 Symbols used

<table>
<thead>
<tr>
<th>Depiction</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>![]</td>
<td>You are requested to perform an action.</td>
</tr>
<tr>
<td>1.</td>
<td>Perform these actions in the sequence described.</td>
</tr>
<tr>
<td>2.</td>
<td>List.</td>
</tr>
<tr>
<td>![Text]</td>
<td>Terms from the device display.</td>
</tr>
</tbody>
</table>

1.4 Abbreviations used

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DWP</td>
<td>Deepwell plate</td>
</tr>
<tr>
<td>MTP</td>
<td>Microplate</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase Chain Reaction</td>
</tr>
</tbody>
</table>
## 1.5 Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deepwell plate</td>
<td>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.</td>
</tr>
<tr>
<td>Microplate</td>
<td>Plates with 24, 48, 96 or 384 wells for the preparation, mixing, centrifuging, transporting and storing of solid and liquid samples.</td>
</tr>
<tr>
<td>semi-skirted PCR plate</td>
<td>PCR plate with surrounding half-edge.</td>
</tr>
<tr>
<td>skirted PCR plate</td>
<td>PCR plate with a surrounding edge.</td>
</tr>
<tr>
<td>unskirted PCR plate</td>
<td>PCR plate without a surrounding edge.</td>
</tr>
<tr>
<td>Well</td>
<td>Cavity. Microplate, PCR plate or Deepwell plate tube.</td>
</tr>
</tbody>
</table>
2 Product description

2.1 Main illustration

![ThermoStat plus](image)

Fig. 1: ThermoStat plus

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Order No. (International)</th>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5352 000.010</td>
<td>022670204</td>
<td>ThermoStat plus basic device without exchangeable thermoblock 100 - 240 V / 50 - 60 Hz</td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>Mains cable</td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>Hexagon socket key</td>
</tr>
<tr>
<td>1</td>
<td>5352 900.011</td>
<td></td>
<td>Operating Manual ThermoStat plus</td>
</tr>
</tbody>
</table>
2 Product description

2.3 Features

2.3.1 ThermoStat plus

The ThermoStat plus permits the effective tempering of liquids between −5 °C (max. 30 °C below room temperature) and +99 °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°C and 0 °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 °C for the storage of PCR tubes or plates (semi-skirted, unskirted and skirted) on the lab bench and in an insulated box (IsoSafe).

Further details can be found on our homepage www.eppendorf.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 spay 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.
### 3.5 Warning and instruction signs on the device

<table>
<thead>
<tr>
<th>Depiction</th>
<th>Meaning</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Caution: Hot surface" /></td>
<td><strong>Warning! Risk of burns from hot surfaces.</strong>&lt;br&gt;The exchangeable thermoblock and the thermal base can be very hot after heating and cause burns.&lt;br&gt;- Allow heated exchangeable thermoblocks and the thermal base to cool down completely before removing the exchangeable thermoblock.</td>
<td>Upside of device</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th></th>
<th>Setting the temperature</th>
<th>Setting the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Call program function</th>
<th>Starting or stopping a run</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 3: Display programmable tempering phase

<table>
<thead>
<tr>
<th></th>
<th>Phase number</th>
<th>Nominal temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Tempering duration</th>
<th>Actual temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 4: Display programmable temperature change phase

<table>
<thead>
<tr>
<th></th>
<th>Number of temperature change phase</th>
<th>Nominal temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Duration of temperature change phase</th>
<th>Current actual temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

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).
5.2.1 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.
5.2.3 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.

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.
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.

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.

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

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 $T_{1-2}$ 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 $T_{2-3}$ 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 $T_{3-4}$ 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

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.

<table>
<thead>
<tr>
<th>Symptom / message</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No indication</td>
<td>Power supply is interrupted.</td>
<td>▶ Check the mains connection and the power supply.</td>
</tr>
<tr>
<td>Low temperature value is not reached.</td>
<td>Ambient temperature too high.</td>
<td>▶ Set up the device in a cooler environment.</td>
</tr>
</tbody>
</table>
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.
### 7.2 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 spay 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.

<table>
<thead>
<tr>
<th>Air temperature</th>
<th>Rel. humidity</th>
<th>Air pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>General transportation</td>
<td>-20 to 60 °C</td>
<td>10 to 95%</td>
</tr>
<tr>
<td>Air freight</td>
<td>-20 to 55 °C</td>
<td>10 to 95%</td>
</tr>
</tbody>
</table>

8.2 Storage

<table>
<thead>
<tr>
<th>Air temperature</th>
<th>Rel. humidity</th>
<th>Air pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>in transport packaging</td>
<td>-20 to 55 °C</td>
<td>10 to 95%</td>
</tr>
<tr>
<td>without transport packaging</td>
<td>-5 to 45°C</td>
<td>10 to 95%</td>
</tr>
</tbody>
</table>

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:

![Crossed-Out Symbol]

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

## 9.1 Power supply

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main power connection</td>
<td>100 to 240 V ±10 %, 50 to 60 Hz Voltage is automatically adjusted.</td>
</tr>
<tr>
<td>Fuse for 100 to 240 V</td>
<td>T1.6 A, 250 V (2 off)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>75W</td>
</tr>
<tr>
<td>Maximum current consumption</td>
<td>&lt; 0.8 A</td>
</tr>
<tr>
<td>Protection class</td>
<td>I</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>II (IEC 61010-1)</td>
</tr>
<tr>
<td>Degree of contamination</td>
<td>2 (IEC 664)</td>
</tr>
</tbody>
</table>

## 9.2 Ambient conditions

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>For indoor use only</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>4 to 40 °C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>80 % max.</td>
</tr>
</tbody>
</table>

## 9.3 Weight / dimensions

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (W x D x H)</td>
<td>220 x 250 x 125 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>5.0 kg</td>
</tr>
</tbody>
</table>
9 Technical data

9.4 Application parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature control range:</td>
<td>−5 °C to 99 °C</td>
</tr>
<tr>
<td>Usable tempering range:</td>
<td>from 30 °C below room temperature to 99 °C</td>
</tr>
<tr>
<td>Usable tempering range CombiBox:</td>
<td>30 °C below room temperature to 95 °C (dependent on filling level)</td>
</tr>
<tr>
<td>Tempering accuracy for:</td>
<td></td>
</tr>
<tr>
<td>0 °C</td>
<td>±1.0 °C</td>
</tr>
<tr>
<td>37 °C</td>
<td>±0.5 °C</td>
</tr>
<tr>
<td>90 °C</td>
<td>1.0 °C</td>
</tr>
<tr>
<td>Heating rate:</td>
<td>5 °C/min</td>
</tr>
<tr>
<td>Cooling rate:</td>
<td></td>
</tr>
<tr>
<td>simple tempering operation:</td>
<td>6.0 °C/min between 99 °C and 25 °C</td>
</tr>
<tr>
<td>programmable tempering operation:</td>
<td>1.5 °C/min between 25 °C and −5 °C</td>
</tr>
<tr>
<td>Temperature deviation across the 24 exchangeable thermoblock:</td>
<td>max. 0.2 °C</td>
</tr>
</tbody>
</table>

9.5 Additional data

9.5.1 Interfaces

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

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

<table>
<thead>
<tr>
<th>Order No. (International)</th>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
</table>
| 5352 000.010              | 022670204                  | ThermoStat plus  
  basic device without exchangeable thermoblock  
  100 - 240 V / 50 - 60 Hz |

### 10.2 Exchangeable thermoblocks and adapter plates

<table>
<thead>
<tr>
<th>Order No. (International)</th>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
</table>
| 5361 000.015              | 022670506                  | 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 |
| 5360 000.011              | 022670522                  |             |
| 5362 000.019              | 022670549                  |             |
| 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              | 022670531                  | Exchangeable thermoblock for Falcon tubes  
  for 8 x 15 mL  
  for 4 x 50 mL |
| 5365 000.010              | 022670514                  |             |
| 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

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

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](http://www.eppendorf.com).
## 10 Ordering information

### 10.4 IsoTherm-System

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

### 10.5 Temperature sensor

<table>
<thead>
<tr>
<th>Order No. (International)</th>
<th>Order No. (North America)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0055 000.298</td>
<td>950008059</td>
<td>Temperature validation system for Mastercycler, Mastercycler ep and Mastercycler pro</td>
</tr>
<tr>
<td>5354 850.500</td>
<td>on request</td>
<td>Temperature sensor - 1.5 mL</td>
</tr>
</tbody>
</table>
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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:
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- **Internet:** www.eppendorf.com.au

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- **Internet:** www.eppendorf.at

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- **Internet:** www.eppendorfna.com

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