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Mixers and Temperature Control Systems

Eppendorf ThermoMixer® F0.5/F1.5/F2.0/FP

Operating Manual

5386 900 002-05/2025-11

Table of contents

1 About this manual

1.1 Notes on this manual

The dates in this manual correspond to the international date format as specified in the ISO 8601 standard. All dates are shown in the format YYYY-MM-DD or YYYY-MM.

1. Read this manual completely before using the product.
2. Please ensure that you have the manual available while using the product.

The current version of the manual can be found at www.eppendorf.com/manuals.
- Contact Eppendorf SE to obtain another version of the manual.

1.2 Warning notice structure

HAZARD LEVEL! Type of danger

Source of danger
Consequences of disregarding the danger

– Measures to avoid the danger

Symbol	Hazard level	Type of danger	Meaning
	**DANGER**	Personal injury	Will lead to severe injuries or death.
	**WARNING**	Personal injury	May lead to severe injury or death.
	**CAUTION**	Personal injury	May lead to minor or moderate injuries.
	**NOTE**	Material damage	May lead to material damage.

1.3 Graphics

Depiction	Meaning
1. 2.	Work steps
•	Bullet point

Depiction	Meaning
Text	Display text
Key	Name for port, button, status lamp, or key
	Important information
	Tip

1.4 Other applicable documents

The following documents supplement this manual:

- Manuals for accessories and consumables

1.5 Certificates

Declarations of conformity, certificates, Safety Data Sheets, etc. for the product can be found on the respective product page at www.eppendorf.com. This also applies to the China RoHS (Restriction of Hazardous Substances) regulation.

2 Safety

2.1 Intended use

The Eppendorf ThermoMixer F0.5/F1.5/F2.0/FP is used for tempering and mixing liquids in sealed reaction vessels or plates for sample preparation and processing.

This device is intended for general laboratory use and may only be operated by persons trained in laboratory techniques and procedures.

2.2 Residual risks when used as intended

If the product is not used as intended, the installed safety devices may not function correctly. To reduce the risk of personal injury and material damage and to avoid dangerous situations, please observe the general safety instructions.

2.2.1 Personal injury

2.2.1.1 General hazards

When mixing at high speeds, plates can come loose and be thrown out of the thermo mixing device. The plates can cause injury to persons.

- Make sure that the plates are suitable for the desired speed.
- If the plates come loose, reduce the speed.

2.2.1.2 Biological hazards

Pathogenic biological agents can harm your health and the environment.

- Observe national regulations and the biosafety level of your laboratory.
- Wear your personal protective equipment.
- Observe the Safety Data Sheets and instructions for use for the accessories.
- For information on handling germs or biological material of risk group II or higher, read the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, in the current version).

Escaping substances can harm your health.

- Use only sealed and stable vessels and plates.
- When working with hazardous, toxic, and pathogenic samples, comply with nationally prescribed safety regulations. Observe the biosafety level of the laboratory.
- Use your personal protective equipment (gloves, clothing, goggles, etc.).
- If necessary, use a workstation with air extraction.

2.2.1.3 Explosion hazards

The use of explosive substances or substances with violent reactions may cause explosions. Do not operate the device under the following conditions:

- In an explosive atmosphere
- In areas where work with explosive substances is carried out
- With explosive substances or substances with violent reactions
- With substances that may, combined with a reactant or without such reactant, form an explosive atmosphere

2.2.1.4 Electrical hazards

If liquids get inside the device, users may suffer an electric shock. A potentially fatal electric shock causes arrhythmia and respiratory paralysis or severe burns.

- Switch off the device and disconnect it from the mains before starting any cleaning or disinfection work.
- Do not connect the device to the mains/power line unless both the inside and outside of the device are completely dry.

Touching parts that carry high voltage can cause an electric shock. A life-threatening electric shock can cause cardiac arrhythmia, burns and respiratory paralysis.

- Only use earth/grounded sockets with a protective earth (PE) conductor.
- Ensure that a residual current circuit breaker is present and accessible.
- Ensure that the housing and mains/power cord are not damaged.
- In case of danger, disconnect the device from the mains/power line.
- Do not open or remove the housing.
- Compare the technical data of the mains/power cord and the mains/power plug with the technical data on the name plate, taking into account national laws and regulations. This also includes legally required test seals. Use only approved mains/power cords with plugs.
- Make sure that the mains/power plug and earth/grounded socket match and that the electrical PE conductors of the device and the building installation are securely connected to each other.
- Only clean and maintain the device when it is disconnected from the mains/power line.
- Have the device regularly checked for electrical safety in accordance with national requirements.

2.2.1.5 Thermal hazards

The thermoblock can be very hot after heating and cause burns.

- Avoid direct contact with a heated thermoblock.

2.2.1.6 Mechanical hazards

Crushing hazard from moving parts

- Do not change consumables during the mixing process.
- Do not remove the Transfer Rack during the mixing process.
- Attach the Eppendorf ThermoTop or the Lid before the mixing process.
- Do not remove the Eppendorf ThermoTop or the Lid during the mixing process.

2.2.2 Material damage

2.2.2.1 Sample loss

In the following cases, the closures of reaction vessels or plates may open and sample material may escape:

- High vapor pressure of the contents
- Inadequately sealed lid
- Damaged sealing lip
- Inadequately secured film

Always check that consumables are securely sealed before use.

2.2.2.2 General hazards

The use of accessories and spare parts other than those recommended by Eppendorf SE may impair the safety, functioning, and precision of the device. Eppendorf SE cannot be held liable or accept any liability for damage resulting from the use of accessories and spare parts other than those recommended.

- Only use the accessories and spare parts recommended by Eppendorf SE.
- Only use accessories and spare parts that are in perfect technical condition.

When mixing at high speeds, the work tray vibrates. This may cause objects near the device to move and fall off the workbench.

- Do not place any easily movable objects near the device or secure them adequately.

2.2.2.3 Thermal hazards

The device can be damaged by overheating.

- Do not place the device near heat sources (e.g., heater, drying cabinet).
- Do not expose the device to direct sunlight.
- Ensure unobstructed air circulation. Maintain a clearance of at least 10 cm around all ventilation gaps.

2.2.2.4 Mechanical hazards

The display can be damaged by mechanical pressure.

- Do not apply any mechanical pressure to the display.

2.3 Application limits

Due to its design, the product is not suitable for use in a potentially explosive atmosphere.

The product may only be used in a safe environment, such as a ventilated laboratory or under a fume hood. Substances which may potentially contribute to an explosive atmosphere may not be used.

2.4 Target groups

This manual is intended for the following target groups, who have different qualifications and levels of knowledge.

Owner

The owner is any natural or legal person who operates or owns the device.

The owner provides the product and the necessary infrastructure. The owner has a special responsibility to ensure the safety of all persons working on the product.

User

The user operates the product and works with it. The user must be instructed in the use of the product. The user must have read and fully understood the manual.

Any tasks that go beyond operation may only be performed by the user if this is specified in this manual. The owner must explicitly assign these tasks to the user.

Technical personnel

The technical personnel supervises the building services and ensures the technical prerequisites for the operation of the product.

Authorized service technician

The authorized service technician is trained and certified by Eppendorf SE to service, maintain and repair the product.

2.5 Information for the owner

The owner must ensure the following:

- The product is in a safe operating condition.
- The safety devices are all available and functional.
- The product is serviced and cleaned according to the information in this manual.
- The product is disposed of in accordance with local regulations.
- All work on the product is carried out by users, technical personnel, or authorized service technicians who are suitably qualified.
- Personal protective equipment is available and is worn.
- The manual is available during the use of the product.
- The manual is part of the product. Use the following link to download the current version of the manual: https://www.eppendorf.link/documents. For a printed or older version of the manual for your product, please contact your Eppendorf partner.

2.6 Personal protective equipment

Personal protective equipment serves to ensure the safety and protection of the user when working with the product.

Personal protective equipment must comply with country-specific regulations and the regulations of the laboratory.

2.7 Information on product liability

The owner of the device will be held liable for personal and material damage in the following cases:

- The device is used outside of its intended use
- The device is not used in accordance with the operating manual
- Manipulation of safety devices
- The device has spare parts installed that are not authorized by Eppendorf SE
- The device is used with accessories or consumables that are not recommended by Eppendorf SE
- Cleaning agents are used that are not recommended by Eppendorf SE
- Chemicals are used that are not recommended by Eppendorf SE
- Shipment not in original packing or in improper substitute packing
- The device is maintained or repaired by persons not authorized by Eppendorf SE
- Unauthorized modifications

2.8 Information on the device

Information	Meaning	Location
	WARNING Observe the safety-relevant information in the operating manual.	Rear of the device On the thermoblock
	WARNING Risk of burns on hot surfaces after heating the thermoblock	On the heating/cooling plate

3 Product description

3.1 Features

The device has the following features:

- Simultaneous mixing and tempering of sample material
- Option to connect the device to the VisioNize Lab Suite via a VisioNize box

The following consumables can be used with the device:

- Reaction vessels in the size 0.5 mL for the Eppendorf ThermoMixer F0.5
- Reaction vessels in the size 1.5 mL for the Eppendorf ThermoMixer F1.5
- Reaction vessels in the size 2.0 mL for the Eppendorf ThermoMixer F2.0
- All microplates and deepwell plates for the Eppendorf ThermoMixer FP

3.2 Product overview

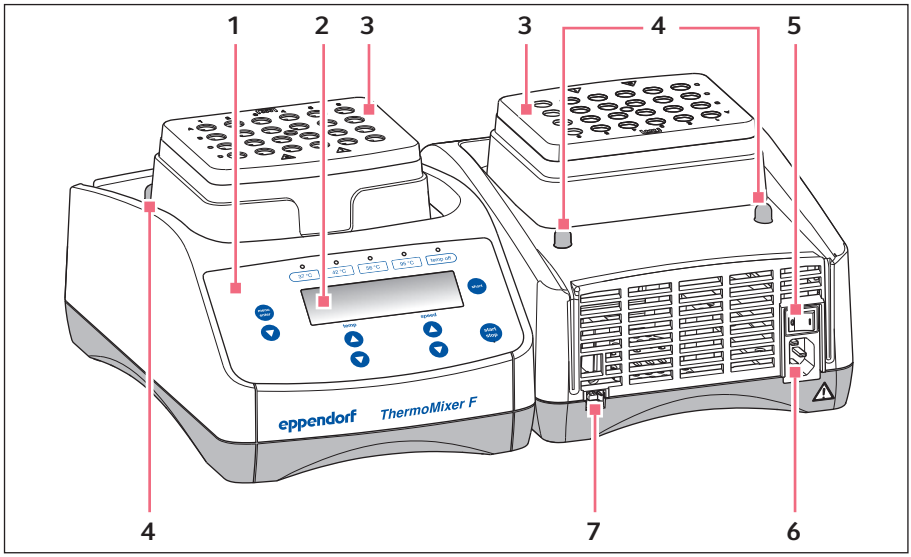
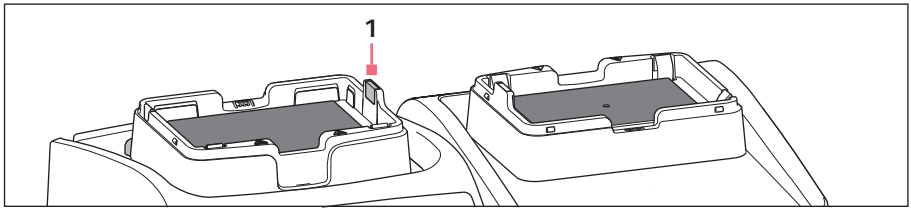


Fig. 3-1: Front and rear of the device

1 Control panel
2 Display
3 Thermoblock
4 Spigots
5 Power switch
6 Power cord socket
7 USB interface



1 ThermoMixer FP height sensor

3.3 Control panel

3.3.1 Overview

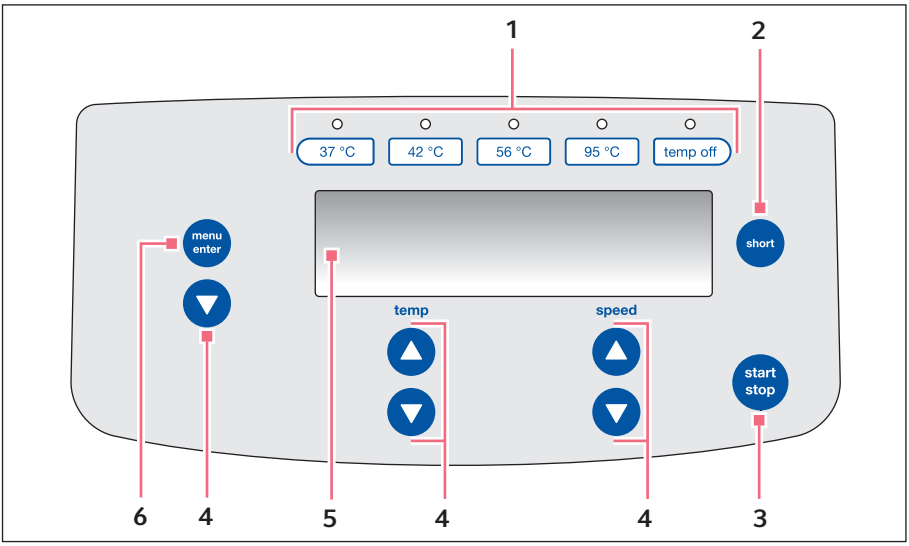


Fig. 3-2: Control panel

1 Temperature keys with control LEDs
2 **short** softkey (Short Mix)
3 **start stop** softkey (start or stop mixing/tempering)
4 Navigation keys and setting keys
5 Display
6 **menu enter** softkey (call up functions)

3.3.2 Operating controls

Operating control	Function
menu enter	Call up functions Execute the displayed function Confirm the *Back* function to navigate to the higher menu level
37 °C	Select temperature control directly
temp off	Switch off temperature control

Operating control	Function
short	Perform a Short Mix
start stop	Start and stop mixing/tempering
▲ ▼	Navigate the software Change values

3.3.3 Display

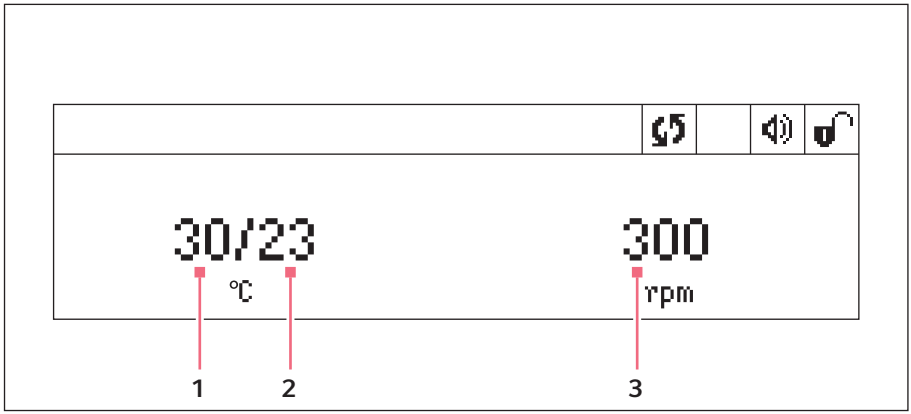


Fig. 3-3: Display of the Eppendorf ThermoMixer F

1 Set temperature
2 Actual temperature
3 Mixing frequency

3.3.4 Symbols

Symbol	Description
	The key lock is activated.
	The key lock is deactivated.

Symbol	Description
	The Eppendorf ThermoTop is attached.
	The SmartExtender is attached.
	The device is running a program.
	The signal tone is activated.
	The signal tone is deactivated.

3.3.5 Menu structure

Menu items and options	Description
Key lock (*Key lock*) • *Key lock on* • *Key lock off*	• Parameters cannot be changed. • Parameters can be changed.
Volume (*Volume*)	The signal tone for error messages is always played at medium volume, regardless of the speaker settings. • Adjust the speaker volume: *Volume 1*, *Volume 2*, *Volume 3* • Switch off the speaker: *Volume off*
Contrast (*Contrast*)	• Adjust the contrast: *0 %*, *25 %*, *50 %*, *75 %*, *100 %*
Service (*Service*)	• Set the service interval: *After 500 operating hours* *After 1000 operating hours* *After 2000 operating hours* *No notification*
Back	Go up one menu level.

3.4 Accessories

Lid

The Lid ensures uniform temperature control and protects samples from unwanted light exposure.

ThermoTop

The ThermoTop prevents the formation of condensate on the vessel inner wall or vessel lid thanks to ***condens.***protect® technology.

SmartExtender

The SmartExtender heats laboratory vessels, independently of the Eppendorf Smart-Block, in a second temperature zone.

4 Functions

Anti-Spill

Anti-spill technology prevents wetting of the vessel lids and cross-contamination.

^{2D}Mix-Control

^{2D}Mix-Control technology ensures controlled and complete mixing of even the smallest volumes of sample material.

Short Mix

The *Short Mix* function mixes sample material at the selected speed as long as you keep the **short** key pressed.

Height sensor

The ThermoMixer FP's height sensor automatically distinguishes between deepwell plates and microplates.

condens.protect technology

This process prevents the formation of condensate on the vessel inner wall or vessel lid when using the Eppendorf ThermoTop.

Tempering

The 5 most common temperature parameters for tempering are already predefined and can be selected directly using the temperature keys.

5 Installation

5.1 Preparing installation

5.1.1 Checking connection requirements

All prerequisites must be met before the device can be installed and put into operation.

Checking the electrical connections

DANGER! Electric shock

If the PE conductor connection is missing, you may receive an electric shock. An electric shock causes cardiac injuries and respiratory paralysis.

– Make sure that the mains/power plug and earth/grounded socket match and that the electrical PE conductors of the device and the building installation are securely connected to each other.

Do **not** use multiple earth/grounded sockets.

1. Check that the electrical connection meets the following conditions:
   - The power connection complies with the requirements on the name plate.
   - An earth/grounded socket with a PE conductor is available.
   - The earth/grounded socket can be reached with the power cord. Distribution boxes or extension cables must not be used.
   - The earth/grounded socket is always freely accessible.
   - A residual current circuit breaker is present and accessible.
   - The power plug on the device or the earth/grounded socket is accessible at all times during operation so that the device can be properly disconnected from the power line.
2. Connect the power cord of each device directly to an earth/grounded socket.

5.1.2 Checking the location

All requirements must be met before the device can be installed and put into operation.

1. Check that the location meets the following conditions:
   - Ambient conditions as specified in *Chapter 12 "Technical data" on page 38*
   - Resonance-free bench with a horizontal, level, and non-slip work surface
   - Footprint designed to support the weight of the device
   - Good ventilation, no obstructions within 30 cm of the ventilation gaps
   - The power switch and disconnecting device of the power system circuit are accessible
   - Ergonomic height of the footprint
   - The room has access control according to the biosafety level of the device.
2. Check that the location is protected from the following influences:
   - Heat sources
   - Sparks
   - Open flames
   - Direct sunlight
   - UV radiation
   - Strong electromagnetic radiation
   - Humidity

5.1.3 Checking the delivery and packing

1. Check whether the packages indicated on the delivery note match the packages actually delivered.
2. Check the packing for transport damage.
3. Report any visible damage to your Eppendorf partner.

5.1.4 Unpacking the device

1. Transport the device to its designated location.
2. Open the packing.
3. Remove the transport pads.
4. Remove the accessories from the packing.
5. Lift the device out of the packing.
6. Remove the plastic wrapping from the device.

5.1.5 Checking the delivery condition

1. Check the device and accessories for visible damage.
2. Report any damage to your Eppendorf partner.

5.1.6 Checking the delivery package

1. Check that the supplied components match the specifications of the delivery package.
2. If any parts are missing, contact your Eppendorf partner.

Table 1: Eppendorf ThermoMixer F0.5/F1.5/F2.0

Quantity	Description
1	Eppendorf ThermoMixer
1	Power cord
1	Transfer Rack with lid and instructions for use
1	Short instructions

Table 2: Eppendorf ThermoMixer FP

Quantity	Description
1	Eppendorf ThermoMixer FP
1	Power cord
1	Lid
1	Short instructions

5.2 Performing the installation

5.2.1 Setting up the device

Prerequisites:

- The location meets the requirements.

1. Place the device in its intended location.

5.2.2 Connecting the device to the power supply

DANGER! Electric shock

If the PE conductor connection is missing, you may receive an electric shock. An electric shock causes cardiac injuries and respiratory paralysis.

– Make sure that the mains/power plug and earth/grounded socket match and that the electrical PE conductors of the device and the building installation are securely connected to each other.

Prerequisites:

- The device has been set up in accordance with this manual.
- The device has been unpacked and left standing at the location for at least 3 h.

1. Connect the power cord to the device.
2. Plug the power plug into the earth/grounded socket.

6 Operation

6.1 Preparing the device for the application

6.1.1 Switching on the device

Prerequisites:

- The device is set up and connected according to this operating manual.

1. Switch on the power switch.

6.1.2 Adjusting the contrast

1. Press the **menu/enter** key.
2. Select *Settings* > *Contrast* and confirm with **menu/enter**
3. Select a contrast level and confirm with **menu/enter**.

6.1.3 Adjusting the volume

1. Press the **menu/enter** key.
2. Select *Settings* and confirm with **menu/enter**.
3. Select *Signal tones* and confirm with **menu/enter**.
4. Select a volume level and confirm with **menu/enter**.

6.2 Applications

6.2.1 Loading the device

Inserting vessels

CAUTION! Glass splinters

Poorly fitting glass vessels may become detached from the thermoblock. Breakage of glass vessels can lead to sharp glass splinters that can cause personal injury.

– Only place recommended vessels and plates in the thermoblock.

Prerequisites:

- The vessels are sealed.
- The plates are sealed.

1. To ensure optimal temperature transfer, insert the vessels firmly into the holes.

Inserting the plate

WARNING! Personal injury

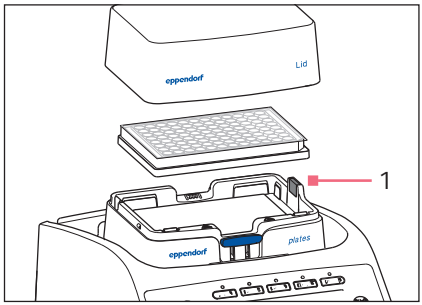
When mixing at high speeds, plates can become loose and be thrown out of the thermomixer. The plates can cause injury.

– Make sure the plates are suitable for the desired speed.
– If the plates become loose, reduce the speed.

When inserting microplates, make sure that the height sensor is not covered.

Prerequisites:

- The plate is sealed.
- The height sensor is clean.



1 ThermoMixer FP height sensor

1. Place the rear edge of the plate against the thermoblock.
2. Press the front edge of the plate down onto the thermoblock.
3. To ensure uniform temperature control in all wells, place the Lid on the thermoblock.

6.2.2 Tempering

NOTICE! Damage to plate

Polystyrene microplates melt at temperatures above 70 °C. Polypropylene deepwell plates can deform at temperatures above 80 °C. Deformed plates may detach from the thermoblock or be more difficult to remove.

– Only temper polystyrene microplates up to 70 °C.
– When tempering deepwell plates above 80 °C, do not exceed a mixing frequency of 1000 rpm.

1. Use the **temp** arrow keys to set the set temperature.
2. Use the **speed** arrow keys to set the nominal speed to 0.
3. Start the process with the **start/stop** key.

6.2.3 Mixing with Short Mix

The Short Mix function enables short mixing without temperature control.

1. Use the **speed** arrow keys to set the nominal speed.
2. Press and hold the **Short Mix** key for the desired duration.
3. To end the mixing process, release the **Short Mix** key.

6.2.4 Mixing

1. Use the **speed** arrow keys to set the nominal speed.
2. Use the **temp off** key to switch off temperature control.
3. Start the process with the **start/stop** key.
4. To end the process, press the **start/stop** key.

6.2.5 Tempering and mixing

1. Use the **temp** arrow keys to set the set temperature.
2. Use the **speed** arrow keys to set the nominal speed.
3. Start the process with the **start/stop** key.
4. To end the process, press the **start/stop** key.

7 Maintenance

7.1 Maintenance plan

Interval	Maintenance work
As required	↳ *Chapter 7.3.1 "Cleaning the device" on page 29*
	↳ *Chapter 7.3.2 "Disinfecting the device" on page 29*

7.2 Maintenance

Eppendorf SE recommends having your device inspected and maintained at regular intervals by trained and skilled personnel.

Eppendorf SE offers customized service solutions for preventive maintenance, qualification and calibration of your device. For information, offers and contact options, visit our website www.eppendorf.com/epservices.

7.2.1 Setting the service interval

You can set a service reminder. When the service interval has expired, a message will appear on the display.

1. Press the **menu/enter** key.
2. Select *Settings* and confirm with **menu/enter**.
3. Select *Service* and confirm with **menu/enter**.
4. Select a service interval and confirm with **menu/enter**.
5. If you do no want a notification, select *No notification* and confirm with **menu/enter**.

7.2.2 Updating the software

Do not cancel the software update. If you cancel the software update, data will be lost and you will need to reset the device to its factory settings. Contact your local Eppendorf partner.

Install a software update only if it provides new functions. This applies, for example, if you want to use a SmartExtender. To do so, download the automatic update from the Eppendorf website.

1. Download the automatic update from the Eppendorf website www.eppendorf.com/software-downloads.
2. Unzip the ZIP file on your computer.
3. Connect the device to the computer using a suitable USB cable.
4. Start the installation wizard and follow the instructions on the screen.

7.3 Cleaning

For any questions regarding cleaning and decontamination, or the cleaning agents used, please contact your local Eppendorf partner.

7.3.1 Cleaning the device

NOTICE! Component damage

If disinfectant gets inside the device, it can cause electronic components to corrode. This will impair the function of the device.

– Only spray disinfectant onto a cloth.

Material:

- Distilled water
- Soap-based cleaning agent
- Cloth

Prerequisites:

- The device has been disconnected from the power line.
- The device has cooled down.

1. Clean all external parts of the device with a mild soap solution and a lint-free cloth.
2. Wipe off the soap solution with distilled water.
3. Allow all cleaned parts to dry.

7.3.2 Disinfecting the device

Material:

- Disinfectant containing 70 % ethanol
- Cloth

Prerequisites:

- The device has been disconnected from the power line.
- The device has cooled down.

1. Dampen a lint-free cloth with disinfectant.
2. Wipe all parts of the device with the cloth.

8 Troubleshooting

If you cannot rectify the error using the suggested measures, contact your local Eppendorf partner. You can find the address online at www.eppendorf.com.

8.1 Software error messages

Error description	Cause	Solution
Error message preceded by a number code.	Internal error.	Switch off the device and wait for 10 s. Switch on the device. If the error message appears again, contact your local Eppendorf partner.

8.2 General errors

Error description	Cause	Solution
The display remains dark.	There is no power connection.	• Check the power connection and the power supply. • Switch on the device.
The set temperature is not reached.	The set temperature is less than 4 °C above the ambient temperature.	Place the device in a cooler environment.
The LED on the ThermoTop does not light up.	The interface between the device and the ThermoTop is contaminated.	• Remove any contamination from the front of the ThermoTop. • Remove any contamination from the top of the device, especially from the viewing window in front of the thermoblock.
The ThermoTop does not fit on the device.	Another accessory is being used (Lid, Transfer Rack, SmartExtender).	Remove the accessory. Place the ThermoTop directly on the device.
The device does not mix or temper.	Internal error.	Contact your local Eppendorf partner.

Error description	Cause	Solution
The SmartExtender is not recognized by the device.	The Eppendorf ThermoMixer® requires software version 3.0.0 or higher to recognize the SmartExtender.	Perform a software update.
Automatic plate detection is not working.	The height sensor is contaminated or covered.	• Remove any contamination from the height sensor. • When inserting microplates, make sure that the height sensor is not covered.

9 Shut down

9.1 Disconnecting the device from the mains/power supply

Prerequisites:

- The device is switched off.

1. Unplug the power plug from the earth/grounded socket.
2. Remove the IEC connector at the rear of the device.

10 Transport

10.1 Preparing the device for transport

Prerequisites:

- The device is not in operation.
- The device has been cleaned and decontaminated.

1. Ensure that there is no condensate in the thermoblock.

10.2 Shipping the device

Use the original packing to transport the device. If the original packing is no longer available, please ensure that the device is sufficiently protected by replacement packing during storage and further transport. Eppendorf SE is not liable for damage caused by improper replacement packing.

WARNING! Contamination

Shipping or storing a contaminated device or contaminated accessories may lead to contamination of persons or cause damage to health.

– Decontaminate the device and accessories before shipping or putting them into storage.

Material:

- Packing

Prerequisites:

- The device has been taken out of operation.
- The device has been decontaminated.

1. Download the decontamination certificate for returned goods from the website www.eppendorf.com.
2. Fill out the decontamination certificate.
3. Pack the device.
4. Attach the decontamination certificate securely to the outside of the packing.
5. Ship the device.

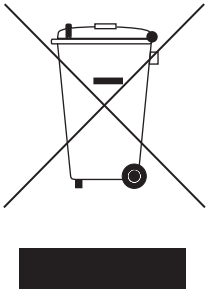
11 Disposal

11.1 Legal regulations

Electrical and electronic equipment in EU countries

Electrical and electronic equipment must be disposed of in EU member states in accordance with Directive 2012/19/EU. This directive has been implemented into national law by all EU member states.

Electrical and electronic equipment placed on the market after August 13, 2005, must be specially marked. According to the European standard EN 50419, the following symbol can be used for this marking:



Batteries and rechargeable batteries in EU countries

Batteries and rechargeable batteries must be disposed of in an environmentally sound manner in EU member states in accordance with Regulation (EU) 2023/1542. They must not be disposed of with household waste.

Consumers are required to dispose of used batteries and rechargeable batteries at an authorized collection point.

Table 3: Marking on batteries

Symbol	Meaning
	Battery must not be disposed of with household waste.
	Battery contains cadmium. Battery must not be disposed of with household waste.

Symbol	Meaning
	Battery contains mercury. Battery must not be disposed of with household waste.
	Battery contains lead. Battery must not be disposed of with household waste.

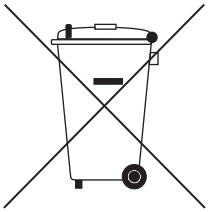
Non-EU countries

Non-EU countries have country-specific standards for the disposal of waste electrical and electronic equipment and the disposal of batteries and rechargeable batteries.

Notes on disposal of electrical and electronic equipment in the United Kingdom

In the United Kingdom, the disposal of electrical and electronic equipment is governed by national regulations which are based on national legislation from 2013, The Waste Electrical and Electronic Equipment Regulations 2013 (as amended), which apply to these devices.

According to these regulations, any electrical and electronic equipment that was put on the market after August 13, 2005 in the business-to-business sector – which applies to this product – must no longer be disposed of with household waste. They are marked with the following symbol to indicate this:



As the disposal regulations may differ from one country to another, please contact your supplier for more information.

11.2 Preparing for disposal

Preparing disposal according to legal regulations

For information on the legal regulations that apply in your country, contact your local authority and your Eppendorf partner.

Dispose of non-decontaminable devices as hazardous waste.

1. Check which legal regulations apply to disposal in your country.
2. Choose a certified waste disposal company or contact your Eppendorf partner.

Creating a decontamination certificate

Prerequisites:

- The device has been decontaminated.

1. Download the decontamination certificate from the website https://www.eppendorf.link/decontamination/.
2. Complete the decontamination certificate.

11.3 Handing over the device to the disposal company

1. Inform the disposal company of any hazards posed by the device, e.g., locking devices, flammable substances.
2. Hand over the device and the decontamination certificate to the certified disposal company.

12 Technical data

12.1 Dimensions

Eppendorf ThermoMixer F0.5

Width	20.6 cm
Depth	30.4 cm
Height	16.3 cm

Eppendorf ThermoMixer F1.5

Width	20.6 cm
Depth	30.4 cm
Height	17.0 cm

Eppendorf ThermoMixer F2.0

Width	20.6 cm
Depth	30.4 cm
Height	17.0 cm

Eppendorf ThermoMixer FP

Width	20.6 cm
Depth	30.4 cm
Height	16.4 cm

12.2 Weight

Eppendorf ThermoMixer F0.5

Weight	6.2 kg

Eppendorf ThermoMixer F1.5

Weight	6.3 kg

Eppendorf ThermoMixer F2.0

Weight	6.3 kg

Eppendorf ThermoMixer FP

Weight	6.1 kg

12.3 Power supply

Power supply voltage	100 V – 130 V ± 10% 220 V – 240 V ± 10%
Power frequency	50 Hz – 60 Hz
Power consumption	Max. 200 W
Overvoltage category	II
Pollution degree	2
Protection class	I
Specifications for power cords in Europe with E/F power plugs	Cable type AC 250 V / 10 A 3G 1 mm^2 with double insulation Power plug according to IECEE CEE-7 / IEC 60884-1 and C13 appliance coupler according to IEC 60320-1
Specifications for power cords in Europe with other power plugs	Use the power cord in accordance with national regulations Cable type AC 250 V / 10 A 3G 1 mm^2 with C13 appliance coupler according to IEC 60320-1 and with power plug according to national regulations and IEC 60884-1
Specifications for power cords in Canada and the USA	Cable type AC 125 V / 10 A SJT 3x18 AWG with double insulation Power plug NEMA 5-15 according to ANSI/NEMA WD-6 and C13 appliance coupler according to UL/IEC 60320-1
Specifications for power cords outside Europe, Canada and the USA	Use the power cord in accordance with national regulations

12.4 Ambient conditions

Operation

Ambience	For indoor use only
Ambient temperature	5 °C – 40 °C
Relative humidity	10% – 90%, non-condensing
Atmospheric pressure	79.5 kPa – 106 kPa
Maximum geographical altitude	2000 m above MSL (approx. 80 kPa)

Transport

Ambient temperature general transport	-25 °C – 60 °C
Ambient temperature air freight	-40 °C – 55 °C
Relative humidity	10% – 95%
Atmospheric pressure	30 kPa – 106 kPa

Storage

Ambient temperature in transport packing	-25 °C – 55 °C
Ambient temperature without transport packing	-5 °C – 45 °C
Relative humidity	10% – 95%
Atmospheric pressure	70 kPa – 106 kPa

12.5 Electromagnetic compatibility

Electromagnetic compatibility	IEC 61326-1, Class B ICES-001, Class B Class B is the basic electromagnetic environment (at locations which are directly supplied with low voltage from the public supply network) FCC Part 15, Class B

12.6 Interfaces

USB interface	For connection to VisioNize and for software updates with the automatic update of Eppendorf ThermoMixer.

12.7 Noise level

Eppendorf ThermoMixer F

The noise level was measured frontally in a sound measuring room with accuracy class 3 (DIN EN ISO 3746) at a distance of 1 m from the device and at lab bench height.

Device	< 40 dB(A)

12.8 Application parameters

12.8.1 Eppendorf ThermoMixer F0.5

Temperature

The heating and cooling rates refer exclusively to the thermoblock and can change with the filling volume in the vessels.

Temperature control range	1 °C – 100 °C, adjustable in increments of °C Minimum: 4 °C above ambient temperature Maximum: 100 °C	
Temperature accuracy	Set temperature 20 °C – 45 °C ± 0.5 °C	Set temperature < 20 °C or > 45 °C ± 0.5 °C
Temperature homogeneity in relation to all thermoblock positions	Set temperature 20 °C — 45 °C ± 0.5 °C	Set temperature < 20 °C or > 45 °C ± 1.5 °C
Heating rate	15 °C/min The change of temperature in filled vessels is slower	

Mixing frequency

Mixing range	300 rpm – 2 000 rpm Adjustable in increments of 50 rpm

12.8.2 Eppendorf ThermoMixer F1.5

Temperature

The heating and cooling rates refer exclusively to the thermoblock and can change with the filling volume in the vessels.

Temperature control range	1 °C – 100 °C, adjustable in increments of 1 °C Minimum: 4 °C above ambient temperature Maximum: 100 °C	
Temperature accuracy	Set temperature 20 °C – 45 °C ± 0.5 °C	Set temperature < 20 °C or > 45 °C ± 0.5 °C
Temperature homogeneity in relation to all thermo-block positions	Set temperature 20 °C — 45 °C ± 0.5 °C	Set temperature < 20 °C or > 45 °C ± 1.5 °C
Heating rate	11 °C/min The change of temperature in filled vessels is slower	

Mixing frequency

Mixing range	300 rpm – 1 500 rpm Adjustable in increments of 50 rpm

12.8.3 Eppendorf ThermoMixer F2.0

Temperature

The heating and cooling rates refer exclusively to the thermoblock and can change with the filling volume in the vessels.

Temperature control range	1 °C – 100 °C, adjustable in increments of 1 °C Minimum: 4 °C above ambient temperature Maximum: 100 °C	
Temperature accuracy	Set temperature 20 °C – 45 °C ± 0.5 °C	Set temperature < 20 °C or > 45 °C ± 0.5 °C
Temperature homogeneity in relation to all thermoblock positions	Set temperature 20 °C — 45 °C ± 0.5 °C	Set temperature < 20 °C or > 45 °C ± 1.5 °C
Heating rate	13 °C/min The change of temperature in filled vessels is slower	

Mixing frequency

Mixing range	300 rpm – 1 500 rpm Adjustable in increments of 50 rpm

12.8.4 Eppendorf ThermoMixer FP

Temperature

The heating and cooling rates refer exclusively to the thermoblock and can change with the filling volume in the vessels.

Temperature control range	1 °C – 100 °C, adjustable in increments of 1 °C Minimum: 4 °C above ambient temperature Maximum: 100 °C	
Temperature accuracy	Set temperature 20 °C – 45 °C ± 1 °C	Set temperature < 20 °C or > 45 °C ± 4 °C

Temperature homogeneity in relation to all thermo-block positions	Set temperature 20 °C — 45 °C ± 0.5 °C	Set temperature < 20 °C or > 45 °C ± 1.5 °C
Heating rate	18 °C/min The change of temperature in filled vessels is slower	

Mixing frequency

Mixing range	300 rpm – 2 000 rpm Adjustable in increments of 50 rpm

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