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DOMINIQUE DUTSCHER SAS

Centrifuge

Centrifuge SpinPro 6 R

Original Operating Instructions

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1 About this manual

1.1 Version overview

Version	Change	Content approved
00	• Document created	2025-12-08

1.2 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.

1.3 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.

1.4 Graphics

Depiction	Meaning
1. 2.	Work steps
•	Bullet point

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

1.5 Further documents

The following documents accompany the instructions:

- Instructions for use for rotors

1.6 Certificates

Declarations of conformity, certificates, Safety Data Sheets etc. on the product can be found on the respective product page at www.eppendorf.com.

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2 Safety

2.1 Intended use

The centrifuge is used for separating aqueous solutions and suspensions of different densities in approved sample tubes.

The centrifuge is intended for indoor use only. All country-specific safety requirements for operating electrical equipment in laboratories must be observed.

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 Biological hazards

Pathogenic biological agents can harm your health and the environment.

- Observe the national regulations and the biosafety level of your laboratory.
- Wear suitable personal protective equipment.
- Observe the Safety Data Sheets and instructions for use for the accessories.
- For instructions regarding the handling of germs and biological material in risk group II or above, please refer to the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, check the most current edition).

2.2.1.2 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

2.2.1.3 Electrical hazards

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.

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- 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.

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.

2.2.2 Material damage

2.2.2.1 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.

2.2.2.2 Chemical hazards

Aggressive chemicals as well as aggressive cleaning agents and disinfectants can damage the material of the device, rotor and accessories. This may cause damage to the interior of the device during operation.

- Protect all components from aggressive chemicals.
- Clean and disinfect all components only with recommended cleaning agents and disinfectants.
- Clean the rotor, device and accessories immediately if they come into contact with aggressive chemicals.
- Check all components for material changes before each use.
- Take a damaged device out of operation.
- Replace a damaged rotor.
- Replace damaged accessories.

2.2.2.3 Electrical hazards

Connecting the device to an incorrect mains/power supply will damage the device.

- Only connect the device to a mains/power supply that meets the requirements on the name plate.
- Only use earth/grounded sockets with a protective earth (PE) conductor.

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- 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.

Condensate may form in the device due to transport of the device from a cool environment to a warmer environment and cause a short-circuit.

- Wait for at least 4 h after setting up the device. Connect the device to the mains/power line after this.

Liquid may escape the sample tubes and reach the electronics, causing a short-circuit.

- Only use undamaged sample tubes.
- Do not use deformed or brittle sample tubes.
- Only place closed sample tubes in the rotor.
- Wipe away any spilled liquids immediately.

2.2.2.4 Mechanical hazards

If the device is switched on when tilted or directly after tilting, the compressor and refrigeration system may become damaged.

- Leave the device to stand in its normal position for at least 4 h before switching it on.
- Do not place the device upside down.

2.2.2.5 Incorrect handling

Improperly attached rotors can damage the device, rotor and vessels.

- Insert the rotor as described in the manual.
- Tighten the rotor nut.
- If present, close the rotor lid and caps as described in the manual.
- Stop centrifugation immediately if there are any unusual noises.

High-energy radiation may lead to damage of the device.

- Do not use UV, beta or gamma rays, or any other high-energy forms of radiation for disinfection.
- Avoid storage in areas with strong UV radiation.

If buckets sealed with caps are cooled during centrifugation, a vacuum is created in the buckets. It may not be possible to release the caps after centrifugation.

- Temper buckets without caps before centrifugation with a FastTemp run.

2.2.2.6 Information security

To minimize the risk of data theft and misuse, proceed as follows:

- Enable user management.
- Register only as many users as necessary.
- Create a separate account for each user.

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- Keep your password secret.
- Operate the device only within an internal network or use a firewall.
- If you leave the device unattended, log off.
- When you are not using the device, switch it off.

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.

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- 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.

Laboratory gloves

The gloves provide protection against infectious liquids and pathogenic germs.

Laboratory protective clothing

The clothing protects against contamination and infection.

Safety boots

The boots protect the wearer against injury from heavy loads and improve grip on slippery floors.

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

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2.8 Information on the device

Information on the device

Symbol	Meaning	Location
	WARNING Risk of injuring your hands when closing the centrifuge lid.	Front of the device
	WARNING Risk of damage to health when handling infectious liquids or pathogenic germs.	Upper side of the device
	WARNING Risk of cryogenic burns.	Upper side of the device, under the centrifuge lid
	Fasten the rotor by tightening the rotor nut with the rotor key provided.	Upper side of the device, under the centrifuge lid
	Turn the rotor key in the emergency release opening in the direction of the arrow.	Left side of the device

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3 Product description

3.1 Features

The device has the following specific features:

- Cooling function
- RFID rotor detection
- Touch screen
- Imbalance detection
- Interfaces: USB and Ethernet
- VisioNize connection possible
- User management
- Various rotors can be used

The following consumables can be used with the device:

- Reaction vessels in sizes 0.2 mL – 5.0 mL
- Microtainers
- Spin columns
- Conical vessels in sizes 15 mL and 50 mL
- Cryogenic vessels
- Flasks in sizes 175 mL to 1000 mL
- Microplates
- PCR plates
- Deepwell plates
- Slides with CombiSlide adapter
- Blood collection tubes

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3.2 Product overview

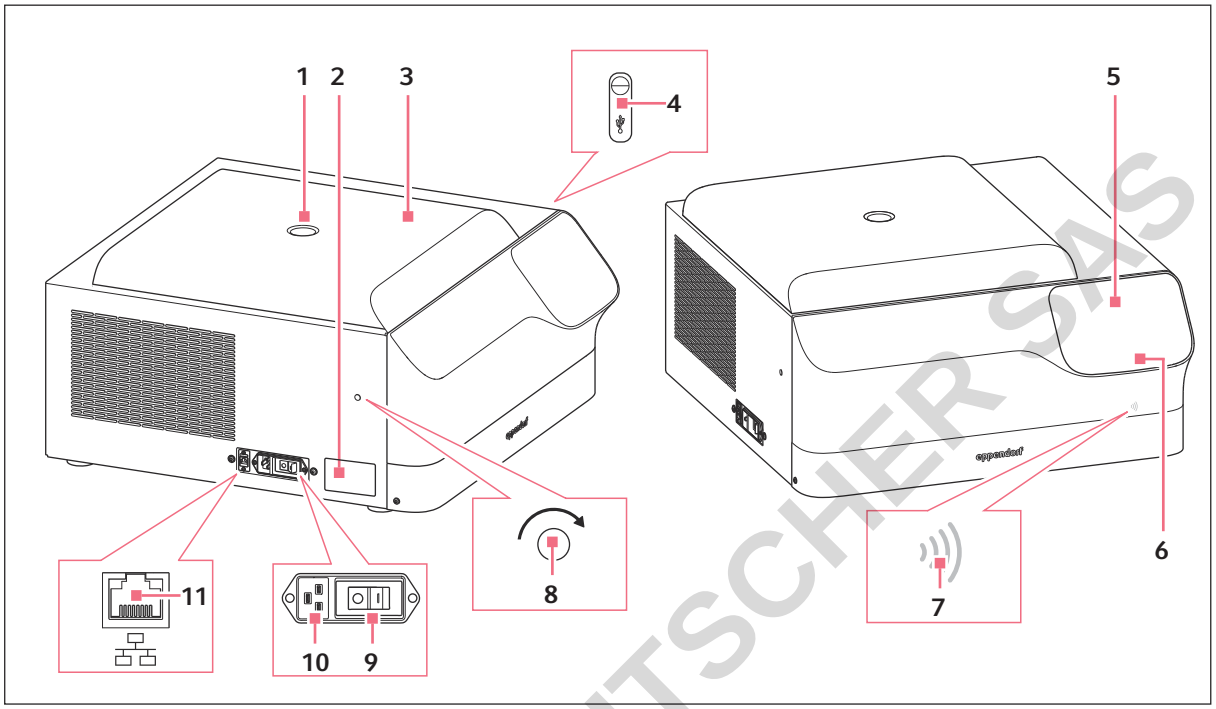


Fig. 3-1: Side and front view of the device

1 Monitoring glass
2 Name plate
3 Centrifuge lid
4 USB interface
5 Touch screen with status lamp
6 Motion sensor
7 RFID reading device
8 Emergency release
9 Power switch
10 Power connection
11 Ethernet connection

3.3 Product components

Emergency release

Use the emergency release to open the centrifuge lid if it cannot be opened using the *Open* button.

Monitoring glass

The monitoring glass is used for visual inspection for rotor stop and allows a speed check with a stroboscope.

Status lamp

The status lamp indicates the current device health. It reflects the colors displayed on the touch screen. It can also indicate warnings or messages unrelated to the centrifugation run.

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Color	Meaning
White	The device is ready for use.
Pink	The device is performing a FastTemp run.
Blue	A centrifugation run is active.
Green	The device has completed the current process.
Yellow	A warning has occurred.
Red	An error has occurred.

3.4 Control panel

3.4.1 Home screen

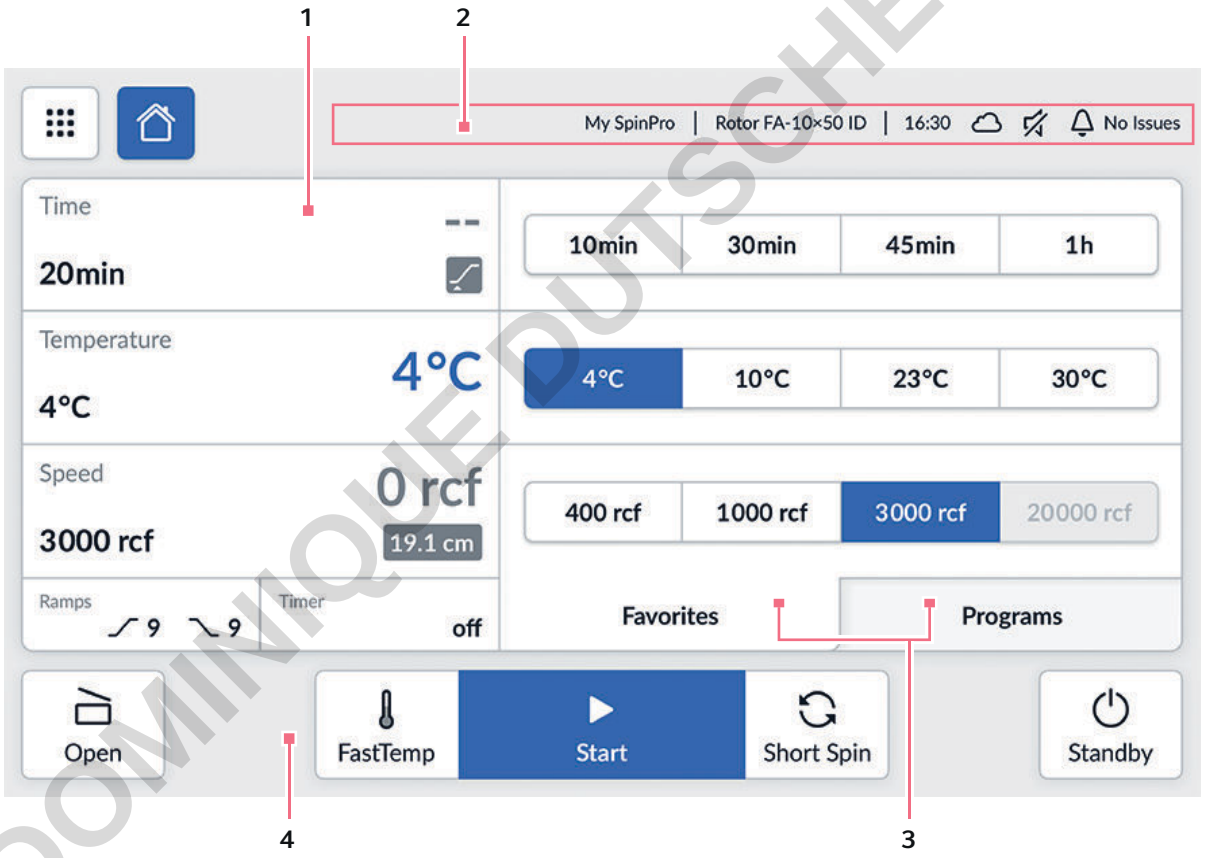


Fig. 3-2: Centrifuge home screen

1 Current device health information
2 Status bar
3 Favorites / programs
4 Action bar

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3.4.2 Main menu



Fig. 3-3: Centrifuge main menu

3.4.3 Operating controls

Operating control	Function
	Function enabled
	Function disabled
	Enter value
	Checkbox enabled
	Checkbox disabled
	Navigation arrows

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3.4.4 Symbols

Table 1: Main menu

Symbol	Description
	Main menu
	Home screen
	User login
	User logout
	User
	Settings
	Events
	Device status / shelf life
	Export
	Centrifugation run records
	Lid
	FastTemp
	Short Spin
	Standby

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Table 2: Dialog window

Symbol	Description
	Edit
	Filter
	Active filter
	Export
	Confirm
	Indicates an invalid entry

Table 3: Status bar and notification bar

Symbol	Description
	Active message
	Dormant message
	Paused message
	No messages
	Connected Cloud
	Disabled Cloud
	No connection to Cloud
	Open lid
	Disabled audible notifications

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3.5 Name plate

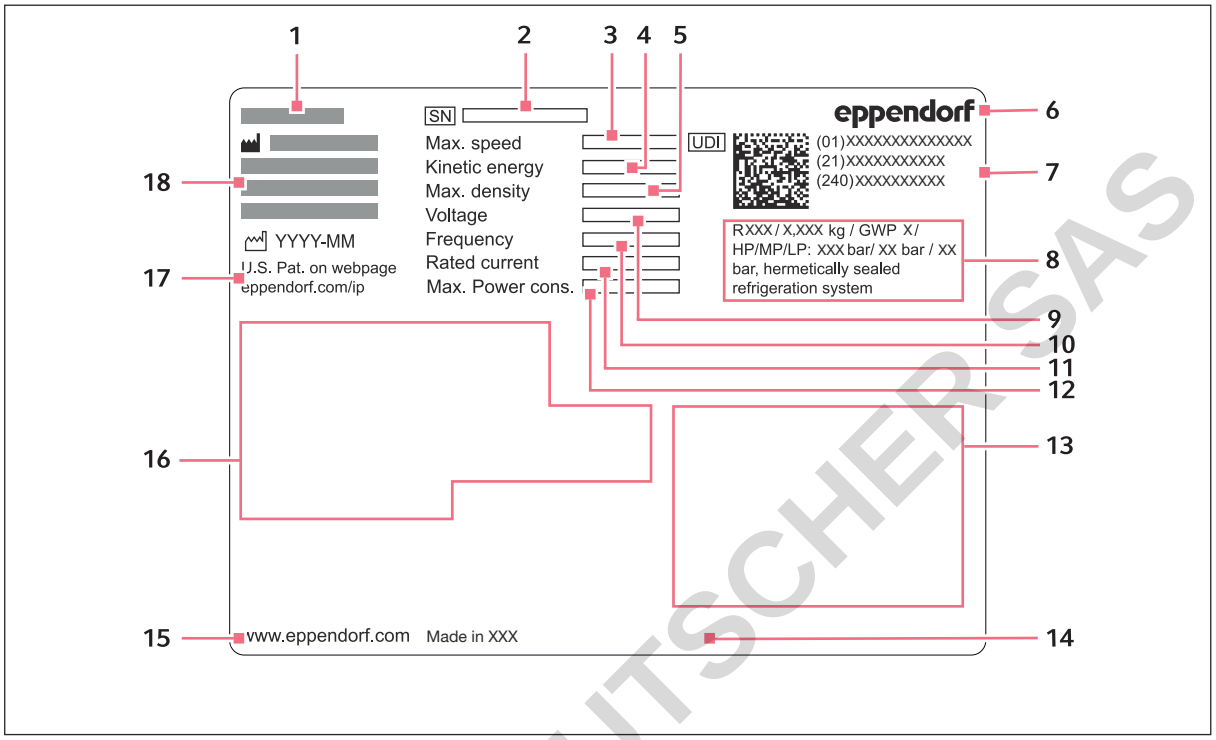


Fig. 3-4: Labeling of Eppendorf SE (example)

1 Product name
2 Serial number
3 Maximum speed
4 Maximum kinetic energy
5 Maximum density of the material for centrifuging
6 Manufacturer
7 UDI code
8 Information on the refrigerant/refrigeration system
9 Rated voltage
10 Rated frequency
11 Rated current
12 Maximum rated power
13 Markings for RFID technology
14 Development site
15 Manufacturer's webpage
16 Device-specific certification marks and symbols
17 Patent information
18 Address of the manufacturer

Certification and conformity marks and symbols (device-specific)

Symbol	Meaning
SN	Serial number

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Symbol	Meaning
	Manufacturer's name and address
	Date of manufacture
	Identifier for unique product identification
	Mark indicating an in-vitro diagnostic device
	Mark for the conformity of electronic and electrical devices with the standard DIN EN 50419 in accordance with the directive 2012/19/EU of the European Union
	Certification mark for compliance with European-wide requirements for the protection of health, safety and the environment
	Certification mark indicating that representative samples of the device have been tested by Underwriters Laboratories (UL) against safety standards recognized by the USA and Canada
	Certification mark indicating electromagnetic compatibility in accordance with the requirements of the Federal Communications Commission (FCC, USA)
	Certification mark indicating that representative samples of the device have been tested by the Korean Agency for Technology and Standards (KATS) against safety standards recognized by South Korea
	Mark indicating the environmentally compatible usage of the product according to the standard SJ/T 11364 from the People's Republic of China
	Mark indicating that a medical device conforms to the technical regulations of the Eurasian Customs Union

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Symbol	Meaning
	Mark indicating conformity with all technical regulations of the Eurasian Customs Union
	Mark indicating conformity for the UK economic area
	Note indicating that the pressure must be observed
	Note indicating that the operating manual must be observed
	Note indicating that safety-relevant information in the operating manual must be observed

3.6 Required accessories

3.6.1 Fixed-angle rotors

Aerosol-tight fixed-angle rotors with Eppendorf QuickLock Pro

Identifying features:

- Rotor designated with "FA"
- QuickLock Pro unlocking mechanism
- Rotor lid label "aerosol-tight"
- Rotor lid with red sealing washer

3.6.2 Swing-bucket rotors

Identifying features:

- Rotor designated with "S"
- Rotor cross
- Various rotor buckets

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4 Functional description

4.1 Centrifugation runs

You can perform different centrifugation runs:

- A timed centrifugation will end after the set duration.
- A non-timed centrifugation must be stopped manually.
- A Short Spin centrifugation is performed by briefly pressing the *Short Spin* button once. No temperature can be selected during this function. The acceleration and deceleration time settings are not used.

4.2 Temperature control

Before centrifugation, a temperature control run can be started to adjust the temperature of the rotor chamber, rotor, and accessories.

During centrifugation, the rotor chamber is adjusted to the set temperature.

After centrifugation, the rotor chamber is adjusted to the set temperature without any time limit while the centrifuge is switched on and the lid is closed.

If the rotor is not rotating, the set temperature is reached more slowly.

To quickly adjust the rotor chamber, rotor, and adapters to the set temperature, you can start a temperature control run without samples using the FastTemp function. The speed for the temperature control run is determined by the device software. Temperatures above 40 °C can occur during the temperature control run.

4.3 FastTemp function

With the FastTemp function, you can directly start a temperature control run without samples at a rotor-specific and temperature-specific speed to quickly bring the rotor chamber, including the rotor and adapters, to the set temperature. The FastTemp function offers the option of choosing between *Fast* and *Precise* modes.

Fast mode

In *Fast* mode, the desired temperature is reached quickly. This mode ensures that the desired sample temperature is maintained during the subsequent run with a pre-tempered sample. In this mode, the rotor chamber temperature may differ from the set temperature.

Precise mode

Precise mode ensures that the rotor chamber temperature is precisely reached after the FastTemp run or before the start of the subsequent run.

4.4 VisioNize

VisioNize is a cloud-based platform.

To send, for example, performance data to VisioNize, you can integrate the device into the local area network via a standard SF/FTP, S/FTP, SF/UTP, or S/UTP Ethernet cable.

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Further information is available from your local Eppendorf partner and in the VisioNize Setup Guide.

4.5 Communication with external devices

You can read various device status values via an external interface. To query a specific value, use an HTTP request in a command-line interpreter on the external PC.

In particular, the special requirements for the JSON RPC interface must be observed.

4.6 Presence detection

The device uses a motion sensor to determine whether the user is in front of the device. As soon as the user leaves the area in front of the device and there is no interaction with the user interface for at least 20 s, the device automatically activates the focus screen. The information shown on this screen is clearly legible even from a distance.

If the device detects the presence of the user again or an interaction with the user interface, it deactivates the focus screen and restores the previous status.

4.7 Rotor detection

The rotor is automatically detected when inserted because it is equipped with RFID rotor detection. The device limits the speed of the detected rotor to its maximum permissible speed. Rotor detection allows the rotor to count the number of cycles used. Rotor detection prevents a rotor from being used in a device that is incompatible with the rotor. Even if a rotor is used in different devices, rotor detection prevents further use after the number of cycles has been exceeded.

4.8 Shelf life of rotors

After the rotor is inserted, the centrifuge automatically detects the rotor type. The maximum number of cycles for the rotors is set by the manufacturer and cannot be changed. You can check the number of cycles completed in the main menu under *Device Health* > *Rotors* > Rotor Name.

4.9 Overview of basic functions

Imbalance detection

Due to the imbalance detection, the device detects if the rotor is loaded asymmetrically. The device stops the centrifugation and prevents damage to the device and rotor.

***Time Counting* function**

You can set the start time for centrifugation time measurement.

The following settings are available:

Option	Symbol	Function
Immediately		Time measurement starts immediately.

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Option	Symbol	Function
Speed Reached		Time measurement starts when up to 97 % of the set speed has been reached.

Favorites function

Use the Favorites function to create individual favorites. You can overwrite preset favorites.

Time, Temperature, and Speed each specify a permitted value range that cannot be exceeded when creating favorites. If a favorite is grayed out in the Speed category, that speed or *g*-force is not compatible with the rotor used.

If user management is enabled, the Favorites function is linked to user rights. Users with restricted rights cannot create or modify favorites.

***Programs* function**

The order of the programs can be freely selected.

If parameters of a program are incompatible with the rotor used, a red icon with a warning symbol will appear behind the program name.

If user management is enabled, the Programs function is linked to user rights. Users with restricted rights can only start programs. They cannot create or modify programs.

You manage a program via the Options menu. The following options are available:

Option	Function
Overwrite with Current Parameters	Overwrite parameters saved in the program with the currently set parameters
Set New Program Name	Change the program name
Delete	Delete a program
Show Info	Display parameters saved in the program

Standby mode

If the device is inactive for a designated period of time, it will change to standby mode. The device can be programmed to activate standby mode on certain days and at certain times, once or on a recurring basis.

In order to continue operation as scheduled, the device can be set so that it exits standby mode at a specific time.

Device health

The device health provides an overview of the following device components:

- Data storage
- Rotors
- Device usage

The device health shows whether the device is ready for operation or requires maintenance.

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There are 3 statuses:

Symbol	Status
	good
	marginal, Warning, Issue
	Critical, action required

Data storage

Under data storage, you will find an overview of the percentage occupancy by the data records of events or run records.

When you access the data records of events or run records, you can view the status of current or remaining data records, necessary actions, and the number of data records in the data storage.

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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 connection

1. Check whether the electrical connection meets the following requirements:
    - The mains/power connection matches the details on the name plate.
    - An earth/grounded socket with a PE conductor is available.
    - The earth/grounded socket is always freely accessible.
    - A residual current circuit breaker is available and accessible.

5.1.2 Checking the location

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

1. Check that the location meets the following conditions:
    - The ambient conditions correspond to the specifications in the Technical data chapter
    - Minimum distance to other devices and walls: 30 cm
    - Resonance-free bench with a horizontal, flat work surface
    - Footprint designed for the weight of the device
    - Good ventilation
    - Non-explosive environment
    - Room with access control
2. Check that the location is protected from the following:
    - Heat sources
    - Sparks
    - Open fire
    - Direct sunlight
    - UV radiation
    - Strong electromagnetic radiation

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.

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5.1.4 Unpacking the device

Protective equipment:
- Safety boots

Prerequisites:
- A lifting aid is available.
- The device is already at the location.

1. Open the packing.
2. Remove the accessories from the packing.
3. To prevent excessive load on the front side of the device, attach the lifting aid to the side parts of the device.
4. Use a suitable lifting aid to lift the device out of the packing. Set the device down at the location of use.
5. Remove the plastic wrapping from the device.
6. Keep the original packing for shipping and storage.

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.

Quantity	Description
1	Centrifuge as ordered
1	Power cord
1	Rotor key
5	RFID card
1	Short instructions

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5.2 Performing the installation

5.2.1 Setting up the device

Protective equipment:
- Safety boots

Prerequisites:
- The location meets the requirements.
- Sufficient transport aids are available.

1. Place the device in its intended location with the help of another person.
2. Align the device horizontally.
3. Let the device stand for at least 4 h.

5.2.2 Connecting the device to the mains/power supply

Only connect one device per circuit.

Prerequisites:
- The device has been set up in accordance with this manual.
- The device has been left standing at the location for at least 4 h.

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

5.2.3 Switching on the device

Prerequisites:
- The device has been set up and connected in accordance with this operating manual.

1. Switch on the device using the mains/power switch.

5.2.4 Setting up the device

If setting up the device for the first time, instructions will be provided as guidance.

1. Follow the instructions in the software.
2. If necessary, activate the user management.

If you skip a step, the corresponding settings can be changed at a later stage.

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5.3 Protecting the device against cyber attacks and data loss

Protecting the device from cyberattacks

Only enable the JSON-RPC interface if it is actually used.

NOTICE! Data security

After enabling JSON-RPC, unencrypted device data can be queried on the local area network.

- Do not connect the device directly to the Internet.
- Only enable JSON-RPC if you need to query data over the network.

1. Select *Main Menu* > *Settings* > *Network*.
2. Disable all unnecessary access authorizations.
3. Select *Main Menu* > *Settings* > *Data Exchange*.
4. Disable all unnecessary data exchange options.
5. Use user management.
6. Ensure users regularly change their strong passwords.
7. Enable automatic logout.
8. Log out after using the device.

Protecting the device from data loss

Only enable the JSON-RPC interface if it is actually used.

NOTICE! Data security

After enabling JSON-RPC, unencrypted device data can be queried on the local area network.

- Do not connect the device directly to the Internet.
- Only enable JSON-RPC if you need to query data over the network.

1. Enable user management for additional data security.
2. Avoid data loss by exporting your device data.

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5.4 Establishing a network connection

5.4.1 Connecting the device to a network

Material:

- Standard ethernet cable

Prerequisites:

- There is a free **Ethernet** port in the vicinity of the device.
- You have administrator rights.

1. Insert the end of the standard ethernet cable into the **Ethernet** port of the device.
2. Insert the other end of the standard ethernet cable into a free **Ethernet** port of the local network.

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6 User management

6.1 User management concept

With user management, you organize user access to various device functions.

Three user roles are defined by default:

- Administrator
- User with standard rights
- User with restricted rights

As an administrator, to specify which user roles can be used, tap *Main Menu* > *User* > *Settings*.

If user management is not used and no user account has been created, every user has the same rights as an administrator. The first user account created is automatically an administrator account.

6.2 Roles and rights

An administrator with user management enabled, or a user with user management disabled, has all rights. When user management is enabled, the roles and rights for the other user roles are assigned as follows by default:

Function/menu	Right	User	Restricted user	Not logged in
Main menu > *Settings* > *Certificates*	Export public key	X	X	–
Main menu > *Settings* > *Data Exchange*	Enable VisioNize	–	–	–
	Enable JSON-RPC	–	–	–
Main menu > *Settings* > *Date & Time*	Enable and disable the *Automatic date & time* switch	–	–	–
	Edit NTP server	–	–	–
	Edit date	–	–	–
	Edit time	–	–	–
	Edit time zone	–	–	–
Main menu > *Settings* > *Date & Time* > *NTP Server*	Enable public NTP server	–	–	–
	Enable manual setup for the NTP server	–	–	–
	Edit NTP server configuration	–	–	–
	Server synchronization	–	–	–

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Function/menu	Right	User	Restricted user	Not logged in
Main menu > Settings > Device Information	Edit device information	–	–	–
Main menu > Settings > Display	Adjust display	X	X	–
Main menu > Settings > Network > IP Configuration	Edit network	X	X	–
	Edit IP configuration	–	–	–
Main menu > Settings > Sound	Enable and disable audible notifications	–	–	–
	Test	X	X	–
	Edit notification level	–	–	–
Main menu > Settings > Software	*Show Update*	–	–	–
	Perform software update	–	–	–
Run Records	*Archive*	X	X	–
	Export	X	X	X
	Filter	X	X	X
Events	*Archive*	X	X	–
	Export	X	X	–
	Filter	X	X	X
Issues	*Stop*	X	X	X
	Stop & Acknowledge	–	–	–
	Snooze	X	X	X
Users > Settings > Automatic Logout	Enable and disable automatic logout	–	–	–
Main menu > Screen Lock	Enable screen lock	–	–	–
Users > Accounts	*Add User*	–	–	–
	Reset Password	–	–	–
	Delete	–	–	–
	Edit user role	–	–	–
	Export	–	–	–
	Import	–	–	–

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Function/menu	Right	User	Restricted user	Not logged in
Users	Deactivate User Management	–	–	–
	Import	–	–	–
	Export	–	–	–
Users > Settings	Edit settings	–	–	–
Standby	Enable and disable standby	X	X	–

6.3 Editing user management

Prerequisites:

- User management is enabled.
- You are logged in as an administrator.

1. Tap *Main Menu > Users > Settings*.
2. Configure the user management settings as follows:
   - *Change of Login Mode*
     - *Simplified*: Login requires a user name without a password. An administrator must log in with a user name and password.
     - *Secure*: Login requires a user name and password for all users.
   - *Personalization*: Settings, such as language, are saved for the logged-in user.
   - *Automatic Logout*: Specifies the time after which an inactive user is automatically logged out.
   - *Assignable User Roles*: Specifies which user roles can be created for user accounts.
   - *Recovery Method* – disabled by default
     - *Off*: Access cannot be restored by Service. If you forget or lose the password for your administrator accounts, data may be lost.
     - *Service*: You can have an Eppendorf SE service technician restore user management, provided the *Service* recovery method was enabled before the administrator password was lost. Only a service technician can access and restore user management as a *Service* user.

6.4 Restoring user management

Data loss due to loss of the administrator password

If you forget or lose the password for your administrator accounts, you will no longer be able to edit user management.

Prerequisites:

- The *Service* recovery method was enabled before the administrator password was lost.

1. An Eppendorf SE service technician creates a user account with an administrator role as the *Service* user.

   The *Service* user can access and restore user management.

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6.5 Exporting user management

Prerequisites:

- You are logged in as an administrator.
- User management with additional user roles is used.

1. Insert the USB stick into the USB interface of the device.
2. Tap *Main Menu* > *Users* > *Export*.
3. Select the parameters you want to export:
   - User management settings
   - User accounts
   - Personalizations
4. Confirm your entry.
   - The data is exported.
   - The data is located on the USB stick in the *Eppendorf* > *Model name* > *user_management* folder.
5. Remove the USB stick from the USB interface of the device.

6.6 Importing user management

If you import a user management, the previous user management will be overwritten. You cannot restore the previous user management.

To back up the previous user management, export the data.

Prerequisites:

- The previous user management of the device has been exported.
- The user management to be imported is stored on a USB stick.

1. Insert the USB stick into the USB interface of the device.
2. If user management is enabled, log in to the device as an administrator.
3. Tap *Main Menu* > *Users* > *Import* > *Next*.
4. Tap *Next*.
5. Select the user management you want to import.
6. Confirm your entry.
7. Select which parameters you want to import:
   - User management settings
   - User accounts
   - Personalizations
8. If you have enabled user management, enter the password for the administrator account.

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9. Confirm that you want to delete the existing data.

   The user data will be imported.

10. Remove the USB stick from the USB interface of the device.

6.7 Adding a user account

Prerequisites:

- You are logged in as an administrator.
- User management with additional user roles is used.

1. Tap *Main menu* > *Users* > *Accounts* > *Add User*.
2. In the *Enter user name* field, enter a unique name without spaces at the beginning and end of the name and confirm your entry.
3. Assign a password of at least 4 characters and confirm your entry.
4. If necessary, enable RFID card use.
5. To use RFID cards, hold the RFID card against the front of the device below the display.

   A confirmation message will appear on the display.

6. Select the desired role from the *Select role* drop-down menu.
7. Provide the user with their initial password. The user will be prompted to change this initial password upon first login.

6.8 Editing a user account

Editing your own user account

You cannot change the user name because it is a unique ID.

1. Tap *Main Menu* > *Users* > *Accounts*.
2. Select your own user account.
3. To change the data, tap the corresponding field.

   You can change the entries in the following fields:

   - *Password*
   - *RFID Tag Login*

Editing user accounts as an administrator

You cannot edit the user name because it is a unique ID.

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Prerequisites:

- You are logged in as an administrator.

1. Tap *Main Menu* > *Users* > *Accounts*.
2. Select a user account.
3. To change the data, tap the corresponding field.

   You can change the entries in the following fields:
   - *Password*
   - *RFID Tag Login*
   - *Role*

6.9 Deleting a user account

Prerequisites:

- You are logged in as an administrator.

1. Tap *Main Menu* > *Users*.
2. Select the user account you want to delete.
3. Tap the recycling bin symbol and confirm your selection.

6.10 Logging in as a user via touch screen

If you are logging in for the first time or have received a new password, change the previous password.

Prerequisites:

- User management with additional user roles is used.
- The user account is set up.

1. Tap *Login*.
2. Enter your login details.

If you have set up simplified login mode, simply select the user name. You do not need to enter a password in simplified login mode unless you have the administrator user role.

6.11 Logging in as a user with an RFID card

If you are logging in for the first time or have received a new password, change the old password.

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Prerequisites:

- User management is enabled.
- The user account is set up.
- The RFID login process is enabled for the user account.

1. Hold your RFID card against the front of the device below the display.

   The login screen will appear.

2. Enter your login details.

If you have set up simplified login mode, simply hold the RFID card against the front of the device below the display. You do not need to enter a password in simplified login mode unless you have the admin user role.

6.12 Changing the password

Change the password

Each user can only change their own password.

1. Tap *Main Menu* > *Users* > *Accounts* > *Change Password*.
2. Change the password of your user account and confirm your entry.

Resetting the password

Prerequisites:

- You are logged in as an administrator.

1. Tap *Main Menu* > *Users* > *Accounts*.
2. Select a user account and tap *Reset Password*.
3. Change the password and confirm your entry.

6.13 Logging out as a user

Prerequisites:

- You are logged in as a user.

1. Tap *Logout*.

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7 Operation

7.1 Preparing the device for use

7.1.1 Selecting the rotor and accessories

1. Select the rotor, adapter, and tubes according to your application.
2. Use a rotor lid suitable for the fixed-angle rotor. Ensure that the rotor designation on the rotor and the rotor lid match.
3. Ensure that rotors, the rotor lid, and accessories meet the following requirements:
   - Maximum service life not exceeded
   - Intact
   - No corrosion
   - No material changes
   - Undamaged and clean seals
   - Seals not protruding at any point
4. Make sure the tubes comply with the following requirements:
   - Approved by the manufacturer for this application
   - Chemically resistant to the sample
   - Designed for the intended load
   - Intact
   - No deformation
   - Not brittle

7.1.2 Opening the device lid

1. Tap *Open*.
   - The device lid opens automatically.
   - The display shows:
     – *Opening*… during the opening process
     – *Close* when the device lid is open

7.1.3 Closing the device lid



CAUTION! Crushing injuries to hands

When closing the device lid, there is a risk of hand injury.

– Do not reach into the space between the device and lid.
– Do not reach into the locking mechanism of the device lid.

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1. Tap *Close*.
   - The device lid closes automatically.
   - The display shows:
     - *Closing…* during the closing process
     - *Open* when the device lid is closed

7.1.4 Replacing the rotor

7.1.4.1 Removing the rotor

Tool:
- Rotor key

1. Loosen the rotor nut by turning the rotor key counterclockwise.
2. Lift the rotor vertically out of the device.

7.1.4.2 Inserting the rotor

Tool:
- Rotor key

Prerequisites:
- A usable rotor is available.

1. Place the rotor vertically on the motor shaft.
2. Tighten the rotor nut. To do this, turn the rotor key clockwise.

7.1.5 Tempering the rotor chamber with FastTemp

Prerequisites:
- There are no samples in the rotor.
- The rotor is correctly inserted and secured.
- The rotor buckets and adapters are correctly inserted.
- The rotor lid is correctly installed.
- The device lid is closed.

1. Tap *Temperature*.
2. Set the target temperature.
3. Confirm your entry.

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4. Tap *FastTemp*.
   - The temperature control run starts.
   - The expected duration and the current speed appear on the display.
   - The temperature control run ends automatically.
5. To use other functions, tap the *Open* button after the temperature control run has finished.

You can change the mode for the FastTemp function at any time under *Main Menu* > *Settings* > *FastTemp*.

7.1.6 Preparing accessories and consumables

Preparing vessels

NOTICE! Damage to rotor, accessories and samples

If the maximum *g*-force is exceeded, glass sample tubes may break and damage the device, accessories and samples.

– Observe the information provided by the tube manufacturer.
– Only use undamaged tubes.

Protective equipment:
- Laboratory protective clothing

Prerequisites:
- The vessels have been checked and are suitable for the centrifugation parameters.
- The adapters are suitable for the vessels.

1. Ensure that the load does not exceed the permissible weight.
2. Ensure that the filled vessels facing each other have the same weight.

The permissible load weight is indicated on each rotor and in the instructions for use for the rotor.

7.2 Performing a centrifugation

7.2.1 Performing centrifugation with a time setting

Previously entered values for the speed in rpm or the *g*-force in rcf are automatically converted when switching between rpm and rcf input. The radius can only be set for rcf. The radius is not relevant for entering the rpm value.

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Prerequisites:

- The rotor is inserted.
- The rotor nut is tightened.
- The rotor is loaded.
- The rotor lid is closed.
- The device lid is closed.

1. Tap *Time*.
2. Tap *Duration*.
3. Set a centrifugation time.
4. To define the start of time measurement, select the corresponding button for the *Time Counting* function.
5. Confirm your entries.
6. Tap *Temperature*.
7. Set the target temperature.
8. Confirm your entry.
9. Tap *Speed*.
10. Select the desired mode.
11. Set a target value for rcf or rpm.
12. Set the radius under rcf.
13. Confirm your entry.
14. To define the acceleration and deceleration ramps, tap *Ramps*.
15. Confirm your entry.
16. Start centrifugation with the *Start* button.
    - The *Open* button is disabled.
17. Wait until the centrifugation time has elapsed.
    - Centrifugation stops automatically.
    - The rotor brakes to a stop.
    - A signal tone sounds several times if enabled in the settings.
    - The *Open* button flashes.
    - The display shows the following from the rotor stop:
      - The time since the rotor stop
      - *Finished*

    The centrifuge cools the rotor chamber as long as the device lid remains closed.
18. To open the device lid and use additional functions, tap the *Open* button.
19. Remove the samples.

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7.2.2 Performing centrifugation without a time setting

Previously entered values for the speed in rpm or the *g*-force in rcf are automatically converted when switching between rpm and rcf input. The radius can only be set for rcf. The radius is not relevant for entering the rpm value.

Prerequisites:

- The rotor is inserted.
- The rotor nut is tightened.
- The rotor is loaded.
- The rotor lid is closed.
- The device lid is closed.

1. Tap *Time*.
2. Tap *Continuous*.
3. To define the start of time measurement, select the corresponding button for the *Time Counting* function.
4. Confirm your entries.
5. Tap *Temperature*.
6. Set the target temperature.
7. Confirm your entry.
8. Tap *Speed*.
9. Select the desired mode.
10. Set a target value for rcf or rpm.
11. Set the radius under rcf.
12. Confirm your entry.
13. To define the acceleration and deceleration ramps, tap *Ramps*.
14. Confirm your entry.
15. Start centrifugation with the *Start* button.
    - The *Open* button is disabled.
16. Wait until the centrifugation time has elapsed.
    - Centrifugation stops automatically.
    - The rotor brakes to a stop.
    - A signal tone sounds several times if enabled in the settings.
    - The *Open* button flashes.
    - The display shows the following from the rotor stop:
      - The time since the rotor stop
      - *Finished*

    The centrifuge cools the rotor chamber as long as the device lid remains closed.

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17. To open the device lid and use additional functions, tap the *Open* button.
18. Remove the samples.

7.2.3 Carrying out centrifugation with Short Spin

Prerequisites:

- The rotor is inserted.
- The rotor nut is tightened.
- The rotor is loaded.
- The rotor lid is closed.
- The device lid is closed.

1. To change the speed settings, select *Main Menu* > *Settings* > *Short Spin*.
2. Choose between maximum speed and set speed.

   The speed setting is applied to the Short Spin function.
3. Tap the *Home screen* button.
4. Tap *Short Spin*.
   - The *Open* button is disabled.
   - The display shows:
     – Actual values for centrifugation time, temperature, and speed
   - The centrifugation run ends automatically after 5 s.
   - The rotor brakes to a stop.

7.2.4 Switching off the device

Prerequisites:

- The centrifugation run is finished.
- The device lid is open.

1. Switch off the device using the mains/power switch.

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7.3 Advanced settings

7.3.1 Entering and accessing device information

Prerequisites:

- To enter device information, you must be logged in as an administrator.

1. Tap *Main Menu* > *Settings* > *Device Information*.
2. Enter the following information for this device or access the corresponding device information:
   - *Name*: Enter the device name.
   - *Model*: Displays the model name of the device, which appears, for example, in the directory on the USB stick.
   - *Serial Number*: Displays the serial number of the device.
   - *Inventory Number*: Enter the inventory number of the device.
   - *Location*: Edit the information about your specific device location.
   - *License Information*: Displays the license information of implemented programs and functions.

If you have enabled user management, log in.

7.3.2 Configuring the network

You can connect the device directly to the Internet and an internal network. An Internet connection is not required for operation. If the device is connected to the Internet, the owner is responsible for data security.

- Only a network administrator is authorized to establish the connection to the internal network or the Internet.
- Check the settings for the internal network or the Internet before establishing a connection.

1. Tap *Main Menu* > *Settings* > *Network*.
2. To configure the network, make the settings as follows:
   - *Lan 1*: Internet connection status display:
     - Green = connected
     - Red = not connected
     - Gray = unknown
   - *IP Address*: Displays IP addresses.
   - *MAC Address*: Displays MAC addresses.
   - *IP Configuration*:
     - *DHCP*: The device uses an IP address that has been automatically assigned to it by an existing DHCP server.
     - *Manual Setup*: Enter network settings for the IPv4 address, subnet mask, gateway, and DNS server.

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7.3.3 Registering the device for VisioNize

You can connect your device to VisioNize for remote monitoring and alarm notification.

Prerequisites:

- Use the following required network components:
  - DNS server
  - NTP server
- To ensure smooth data transfer between your lab devices and the software, use an automated NTP time server protocol.
- Define the following exceptions in your firewall settings to enable communication between your lab devices and the cloud-based VisioNize services:
  - URL: *.eppendorf.com
  - Interface: 443 TCP
  - Protocol: MQTT via WebSockets
- The Eppendorf device you want to connect is ready for use.
- The latest device software version is installed on the Eppendorf device.
- You are logged in to VisioNize as an administrator.

1. Connect the device to your local area network using a standard Ethernet cable.

   A cloud symbol appears in the top menu bar of the touch screen as soon as a connection to the Internet and the VisioNize cloud servers is established.

   If the cloud symbol is crossed out even though all prerequisites are met and an Internet connection is established, contact your local Eppendorf partner.

2. In VisioNize, click *Device Management*.
3. Click *Add Device* +.
4. Click *A VisioNize Touch Enabled Device*.
5. Enter the serial number of the device you want to connect.

   The serial number can be found on the name plate on the left side of the device.

   The *Next Step* button is enabled.

6. Click *Next Step*.
7. To submit a registration request for the device, click *Submit*.

   A registration request must be submitted for each VisioNize touch enabled device you wish to register. This registration request can only be confirmed or rejected by an administrator. If the serial number is entered incorrectly, the registration request cannot be accepted.

   The registration request appears in the *Requests* tab in the upper left corner.

8. Click the *Requests* tab.

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9. Select the device from the list of registration requests.
10. To confirm the registration request, click *Accept Device*.

    Device data will not be documented until the registration request has been successfully confirmed.

    The device appears in the device list on the *Device* tab.

    The device appears in the *Monitoring* device list.

7.3.4 Setting the date and time

Setting the date and time manually

1. Tap *Main Menu* > *Settings* > *Date & Time*.
2. Disable *Automatic Date & Time*.

   The menu item for the *NTP Server* network time protocol is disabled.
3. Enter the current date under *Date*.
4. Enter the current time under *Time*.
5. Select a time zone under *Time Zone*.

Setting the date and time automatically

1. Tap *Main Menu* > *Settings* > *Date & Time*.
2. Enable *Automatic Date & Time*.

   The software automatically detects the date and time in your time zone. This disables the *Date* and *Time* fields.
3. Configure the *NTP Server* settings as follows:
   - *NTP Server Configuration*: Enable a public NTP server or a manual setup.
   - *NTP Server*:
     - Select the public NTP server from the drop-down list.
     - For a manual setup, enter up to four NTP server addresses.
   - Server synchronization: To display the synchronization status for a configured NTP server, update the synchronization.
4. Select a time zone under *Time Zone*.

   The following menu items will be displayed as follows:
   - *Date*: Country-specific date format
   - *Time*: Format: hh:mm

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7.3.5 Setting the language

If user management is disabled, personalization is disabled. The language setting you select will be applied to all other users.

Prerequisites:

- User management and personalization are enabled.

1. Tap *Main Menu* > *Settings* > *Language*.
2. Select the display language for the device.

   You have set the display language for your account.

7.3.6 Setting standby mode

7.3.6.1 Enabling standby mode

Prerequisites:

- User management is disabled.
- There are no critical messages.
- The device is not currently performing a centrifugation run, data transfer, or software update.

1. Tap the *Standby* button.

If user management is enabled, the *Logout* button will be located here. You can access the *Standby* button via the main menu.

7.3.6.2 Disabling standby mode

Prerequisites:

- Standby mode is enabled.

1. Tap the touch screen.

If you have enabled user management, log in.

7.3.6.3 Setting the duration of inactivity for standby mode

1. Tap *Main Menu* > *Settings* > *Standby* > *Automatic Standby after Inactivity*.
2. Set the duration of inactivity after which the device will switch to standby mode.

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7.3.6.4 Configuring scheduled standby mode

1. Tap *Main Menu* > *Settings* > *Standby* > *Scheduled Standby*.
2. Specify how often scheduled standby mode is enabled.
3. Select the times for standby mode.
4. Save your settings.

7.3.6.5 Configuring scheduled wake-up

1. Tap *Main Menu* > *Settings* > *Standby* > *Scheduled Wake-up*.
2. Specify how often the device is scheduled to wake from standby mode.
3. Select the times for scheduled wake-up.
4. To resume operation on time, save your settings.

7.3.7 Changing display settings

7.3.7.1 Adjusting the brightness

Adjust the display brightness automatically

1. Tap *Main Menu* > *Settings* > *Display* > *Display Brightness*.
2. To enable automatic display brightness, tap the Enable button.

   The display brightness automatically adjusts to the ambient brightness.

Adjust the display brightness manually

1. Tap *Main Menu* > *Settings* > *Display* > *Display Brightness*.
2. To adjust the display brightness, use the slider.

   The display brightness is adjusted synchronously.

7.3.7.2 Enabling power saving mode

1. Tap *Main Menu* > *Settings* > *Display*.
2. Enable the *Energy Save Mode* switch.

   The *Timeout* function is enabled.

If you tap *Timeout*, you can set the time period after which the display is dimmed.

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7.3.7.3 Setting the timeout

If no user input is made within the selected time period, the display brightness will be dimmed by the timeout.

Prerequisites:

- Power saving mode is enabled.

1. Tap *Main Menu* > *Settings* > *Display*.

If you tap *Timeout*, you can set the time period after which the display is dimmed.

7.3.8 Setting presence detection

7.3.8.1 Setting the distance for presence detection

1. Tap *Main Menu* > *Settings* > *Motion Sensor*
2. Select the distance at which the focus screen appears.

7.3.9 Adjusting the signal tone

7.3.9.1 Enabling audible notifications

1. Tap *Main Menu* > *Settings* > *Sound*.
2. Enable *Audible Notifications*.

- Tap the *Test* button to trigger a short test sound of the audible notification.
- If you have enabled user management, log in.

7.3.9.2 Disabling audible notifications

1. Tap *Main Menu* > *Settings* > *Sound*.
2. Disable *Audible Notifications*.

If you have enabled user management, log in.

7.3.9.3 Setting the notification level

1. Tap *Main Menu* > *Settings* > *Sound* > *Notification Level*.
2. Select the notification level for audible notifications.

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7.3.9.4 Activating the tone at the end of a run

1. Tap *Main Menu* > *Settings* > *Sound*.
2. Activate *End of Run Sound*.

Tapping the *Test* button triggers a brief, test tone for the acoustic notifications.

7.3.9.5 Disabling the tone at the end of a run

1. Tap *Main Menu* > *Settings* > *Sound*.
2. Disable *End of Run Sound*.

7.3.10 Checking the device health

Here you can view the current status of the data storage, all rotors, and device usage.

1. Tap *Main Menu* > *Device Health*.

7.3.11 Managing data

7.3.11.1 Accessing data exchange

1. To enable data exchange in an available format, tap *Main Menu* > *Settings* > *Data Exchange*.

7.3.11.2 Enabling VisioNize

Once you have registered the device in VisioNize, you can enable data exchange with it. If you do not have an account yet, you can obtain one from the eShop of Eppendorf SE.

1. Tap *Main Menu* > *Settings* > *Data Exchange*.
2. Enable VisioNize.
3. Follow the instructions on the device.

7.3.11.3 Enabling JSON-RPC

NOTICE! Data security

After enabling JSON-RPC, unencrypted device data can be queried on the local area network.

- Do not connect the device directly to the Internet.
- Only enable JSON-RPC if you need to query data over the network.

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An HTTP interface is available with which various device data can be queried using the JSON-RPC (JavaScript Object Notation Remote Procedure Call) data exchange format.

1. Tap *Main Menu* > *Settings* > *Data Exchange*.
2. Enable *JSON-RPC*.

7.3.11.4 Querying data via external devices

Prerequisites:

- *JSON-RPC* is enabled.
- The device and the end device with which the data is to be queried are connected.

1. Visit the Eppendorf website for a detailed interface description and a usage example.

7.3.12 Creating a program

Prerequisites:

- The device is not performing a centrifugation run.
- *Programs* is enabled.

1. Set the desired parameters.
2. At the end of the program list, select *Tap here to create a new program*.
3. Assign a program name.
4. Confirm your entry.

7.3.13 Creating a multi-step program

You can only set radii and acceleration and deceleration times in a single-step program or during a centrifugation run.

Prerequisites:

- The device is not performing a centrifugation run.
- *Programs* is enabled.

1. At the end of the program list, select *Tap here to create a new program*.
2. Assign a program name.
3. Tap *Add Step*.
4. Set a centrifugation time.
5. Confirm your entries.
6. Set the target temperature.
7. Confirm your entries.
8. Tap *Speed*.

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9. Select the desired mode.
10. Set the nominal speed or *g*-force.
11. Confirm your entry.

    An overview of the set values appears.
12. To add up to 5 steps, repeat steps 3—11.
13. To set the duration, tap *Add Timer*.
14. Set the duration.
15. Confirm your entries.

7.3.14 Accessing a program

Prerequisites:
- The device is not performing a centrifugation run.

1. Tap the *Home screen* button
2. Select *Programs*.
3. Select a program from the program list.
4. Start centrifugation with the *Start* button.

7.3.15 Setting favorites

Prerequisites:
- The device is not performing a centrifugation run.

1. Tap the *Home screen* button.
2. Select *Favorites*.
3. To adjust a value, press and hold a preset value for about 2 s.
4. Enter the new value.
5. Confirm your entry.

7.3.16 Accessing events

100000 notifications and messages are stored. If there are more than 100000 entries, the oldest entries will be overwritten. To avoid losing these records, export them. Under *Device Health*, you can see how many events you can still store under *Data Storage*.

1. Tap *Main Menu* > *Events*.
2. Select an event from the list.

   A window with information about the event appears.

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7.3.17 Run Records

7.3.17.1 Filtering run records

The device stores 1000 centrifugation runs. If there are more than 1000 centrifugation runs, the oldest data will be overwritten.

1. Tap *Main Menu* > *Run Records*.
2. Tap the Filter symbol.
3. Select the desired filter.

To disable all filters, tap *Reset Filters*.

7.3.17.2 Accessing run records

1. Tap *Main Menu* > *Run Records*.
2. Select a centrifugation run from the list.

   A window with information about the centrifugation run appears.

7.3.18 Accessing data storage

100000 notifications and messages are stored. If there are more than 100000 entries, the oldest entries will be overwritten. To avoid losing these records, export them.

1. Tap *Main Menu* > *Device Health* > *Data Storage*.

7.3.19 Exporting data

You can export events, run records, system information for service, and device information to a USB stick as a CSV table. Run records can also be exported as a PDF file.

1. Connect a USB stick.
2. Tap *Main Menu* > *Export*.
3. Select the data to export.
4. Tap *Export*.
5. Confirm the export.

If user management is enabled, you can also export favorites and other personalized settings for individual users.

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7.3.20 Exporting certificates

This menu provides an overview of the certificates available on the device.

Prerequisites:

- You have connected a USB stick.

1. Tap *Main Menu* > *Settings* > *Certificates*.
2. To verify the signatures of exported or archived data with the public key, tap *Export*.

   The certificates have been exported to the USB stick.

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8 Maintenance

The chapter for the maintenance of the rotors can be found in the respective instructions for use provided with the rotor.

Cleaning and decontamination may be necessary as a safeguard before laboratory centrifuges, rotors and any accessories are maintained, repaired, or transferred. Manufacturers may provide a format for users to document that such treatment has been carried out (source: IEC 61010-2-020, in the current version).

8.1 Maintenance plan

Interval	Maintenance work
As required	*Chapter 8.3.1 "Cleaning a soiled device" on page 59*
	Chapter 8.3.2 "Cleaning the device after glass breakage" on page 59
	Chapter 8.3.3 "Cleaning the touch screen" on page 60
	Chapter 8.4.1 "Decontaminating the device" on page 60
Before each use	*Chapter 8.2.1 "Checking the device" on page 57*

8.2 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.

Eppendorf SE recommends that the device and the associated rotors are serviced by an authorized service technician at least every 12 months. Please note the country-specific regulations.

8.2.1 Checking the device

1. Check the device, mains/power cord and motor shaft for visible damage.

   If the device is damaged, take it out of operation.

   Inform the authorized service technician.
2. Check the rotor chamber for:
   - Corrosion
   - Ice
   - Condensation water

   In case of corrosion, recurring ice formation or condensation water in the rotor chamber, inform the authorized service technician.

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8.2.2 Viewing the shelf life of rotors

To view the number of cycles completed for each rotor, proceed as follows:

1. Tap *Main Menu* > *Device Health* > *Rotors* > *Rotor*.

   A list of the rotors used so far appears.

2. Tap the rotor for which you want to view information.

   A list of parameters for the rotor appears, including the number of cycles completed.

8.2.3 Software update

Performing a software update via the Internet

Prerequisites:

- An Internet connection is available.
- The green notification bar indicates a software update.
- The device is not performing a centrifugation run.

1. Tap *Main Menu* > *Settings* > *Software*.
2. Tap the *Show Update* button.
3. Download and install the update.

   If installation was successful, the device will restart.

Performing a software update using a USB stick

Prerequisites:

- A USB stick with the software update is available.
- There is no critical message.

1. Insert the USB stick into the USB interface.
2. Follow the instructions on the display.
3. Install the update.

   If installation was successful, the device will restart.

8.3 Cleaning

Before using any cleaning or decontamination methods except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment (source: IEC 61010-2-020, in the current version).

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8.3.1 Cleaning a soiled device

Protective equipment:

- Laboratory protective clothing

Material:

- Water
- Soap-based cleaning agent
- Cloth
- Brush
- Care product

Prerequisites:

- The device has been disconnected from the mains/power supply.
- The device lid is open.
- The rotor has been removed from the device.

1. Clean the ventilation gaps of the housing with a paintbrush or hand brush.
2. Wet a cloth with the cleaning agent.
3. Clean all accessible surfaces, including the mains/power cord, with a damp cloth.
4. Thoroughly clean the rubber seals with water.
5. Clean the motor shaft with a dry cloth.

   Do not grease the motor shaft.
6. Leave the device to dry with the lid open.
7. Rub care product, e.g. glycerol, into the dry rubber seals.

8.3.2 Cleaning the device after glass breakage

Micro glass particles collect in rubber parts, e.g. in the motor sleeve, seals and rubber mats, and have a sandblasting effect. Clean these parts and the inner parts of the device very carefully.

WARNING! Contamination

Biological substances leak from broken tubes. People who come into contact with these substances may suffer damage to their health.

– Wear your personal protective equipment.
– If necessary, carry out decontamination before cleaning.

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Material:
- Water
- Cloth

Prerequisites:
- The device has been disconnected from the mains/power supply.
- The rotor and the accessories have been removed.

1. Remove all glass splinters.
2. Use damp cloths to clean the rotor chamber.
3. Leave the device to dry with the lid open.

8.3.3 Cleaning the touch screen

Protective equipment:
- Laboratory protective clothing

Material:
- Water
- Soap-based cleaning agent
- Cloth

Prerequisites:
- The device is switched off.

1. Wet a cloth with water and cleaning agent.
2. Clean the touch screen with the damp cloth.
3. Dry the touch screen with a cloth.

8.4 Decontamination

Before using any cleaning or decontamination methods except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment (source: IEC 61010-2-020, in the current version).

8.4.1 Decontaminating the device



DANGER! Electric shock

If you touch any parts which are under voltage, you may experience an electric shock. Electric shocks cause heart injury and respiratory paralysis.

– Switch off the device and disconnect the mains/power plug before commencing work on the device.

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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.

Protective equipment:

- Laboratory protective clothing
- Laboratory gloves

Material:

- Disinfectant with at least 70 % ethanol
- Deionized water
- Cloth

Prerequisites:

- The device has been disconnected from the mains/power supply.
- The device is defrosted.

1. Wet a cloth with disinfectant.
2. Wipe out the rotor chamber of the device with the cloth.
3. Allow the disinfectant to act.
4. Wipe off the disinfectant with deionized water.
5. Leave the device to dry with the lid open.

8.5 Care instructions

- Leave the lid open if the device is not in use for an extended period of time.
- Remove the condensation water from the rotor chamber.

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9 Troubleshooting

9.1 General errors

Error description	Cause	Solution
No display	Power outage	Check: • The laboratory's power fuse
	The device is not supplied with voltage.	Check: • The position of the power switch
The centrifuge lid does not open automatically.	The rotor is rotating.	Wait for the rotor to stop. Then open the centrifuge lid.
	Power outage	Check: • The position of the power switch • The laboratory's power fuse Open the centrifuge lid using the emergency release.
	The centrifuge lid is blocked.	Remove all objects between the device and the lid. Remove all objects on and above the centrifuge lid.
The centrifuge lid does not close automatically.	The centrifuge lid is blocked.	Remove all objects between the device and the lid.
The device shakes when accelerating.	The rotor is not loaded symmetrically.	Stop centrifugation. Load the rotor symmetrically. Start centrifugation again. Check that the location complies with the specifications.
Cooling: Warning: Sample temperature deviation of 3K	The device has not reached the set temperature. The difference between the actual temperature and the set temperature is > 3 K.	Check: • The set temperature Wait until the device has reached the set temperature. Switch off the device. Allow the device to cool down for at least 15 min. Ensure that air circulates freely through the ventilation gaps. Clear any ice from the rotor chamber if necessary.

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Error description	Cause	Solution
Cooling: Warning: Sample temperature deviation of 3K	The device has not reached the set temperature. The difference between the actual temperature and the set temperature is > 3 K.	Check that the location complies with the specifications.
Cooling: Error: Sample temperature deviation of 5K	The device has not reached the set temperature. The difference between the actual temperature and the set temperature is > 5 K.	Check: • The set temperature Wait until the device has reached the set temperature. Switch off the device. Allow the device to cool down for at least 15 min. Ensure that air circulates freely through the ventilation gaps. Clear any ice from the rotor chamber if necessary. Check that the location complies with the specifications.
There is black metal debris in the rotor chamber.	The vessels in the rotor are too long.	Clean the device. Use vessels that are suitable for the rotor.
	The permitted speed of the vessels has been exceeded.	Clean the device. Use vessels that are approved for the required speed.
There is ice in the rotor chamber.	The humidity in the rotor chamber is too high and the minimum temperature is too low.	Carry out a temperature control run at approx. 30 °C. Remove the condensation water with an absorbent cloth. Leave the device to stand with the centrifuge lid open.
The display shows "no rotor" and centrifugation cannot be started.	Rotor detection does not detect the rotor.	If the device does not detect the rotor, use a different rotor. If other rotors are not detected, contact an authorized service technician.
The display shows a message indicating a missing connection to VisioNize.	The device has no connection to the network.	Insert the LAN cable.
The display brightness does not adjust to the ambient light.	The brightness sensor does not detect the ambient brightness.	Remove any objects in front of the device.

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Error description	Cause	Solution
The device does not recognize the RFID card.	The card is not compatible with the RFID reading device.	Use only type 5 RFID cards according to ISO/IEC 15693, e.g., original Eppendorf RFID cards.
	The RFID reading device is defective.	Contact Service.
The expected focus screen is not displayed.	The motion sensor detects the presence of people.	Step further back from the device. Remove any objects in front of the device.

For any errors not listed, we recommend switching the device off and on again. If the problem persists or you cannot resolve the error with the suggested actions, contact your local Eppendorf partner. The address can be found at www.eppendorf.com.

9.2 Message concept

A message describes a situation in the device that deviates from normal operation and has a starting point and an end point. As long as the message is present, it is counted in the status bar under the message symbol and shown on the display. When a message occurs, it is displayed in the notification bar. If the message requires confirmation, it will be displayed even after the end of the associated situation and will be counted in the status bar.

The following table lists examples of notification bar messages according to their type:

Message type	Message in the notification bar
Notification	
Warning	
Error	
Critical, action required	

9.3 Viewing a message

Prerequisites:

- The notification bar displays a message.

1. To view the complete message, tap the message in the notification bar.

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Alternatively, tap *Issues*. Select the desired message.

9.4 Snoozing a message signal tone

Not every message triggers a signal tone.

1. Under *Issues*, tap the *Snooze* button.

   The corresponding notification bar disappears.

   The signal tone will sound again in 10 min.

Alternatively, tap the *Snooze* symbol in the notification bar.

9.5 Switching off the signal tone of a message

Prerequisites:

- The signal tone of a message is sounding.

1. To stop the signal tone of a message without the need for acknowledgment, tap under *Issues* on the *Stop* button.

   The notification bar for the message disappears.

Alternatively, tap the *Stop* symbol in the notification bar.

9.6 Confirming the message

Prerequisites:

- You have the necessary user rights.
- The signal tone of a message is sounding.

1. To stop the signal tone of a message with the need for acknowledgment, tap under *Issues* on the *Stop & Acknowledge* button.

   The notification bar for the message disappears.

Alternatively, tap the *Confirm* symbol in the notification bar.

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9.7 Reacting to cyber attacks

If a cyber attack has taken place or a malware inspection is suspected, proceed as follows:

1. Disconnect the device from the network connection immediately.
2. In order to allow for a problem analysis to take place, do not turn off the device.
3. Remove the rotor.
4. Attach a sticker or label to the device warning against reuse.
5. Inform the internal IT department and Eppendorf Service about the suspected cyber attack.

9.8 Unlocking the device lid in an emergency

Only use the emergency release in an emergency.

WARNING! Hand injury

If the emergency release of the lid is used, the rotor may continue to rotate. Reaching into the rotor chamber while the rotor is still rotating may cause hand injuries.

– Wait for the rotor to stop moving.
– Grasp the rotor or reach into the rotor chamber only after this.

Tool:

- Rotor key

Prerequisites:

- The rotor is stationary.
- The device is disconnected from the power supply.

1. Insert the rotor key into the emergency release opening until you feel resistance.
2. Push the rotor key against the resistance. At the same time, turn the rotor key in the direction of the arrow.

   The device lid unlocks and pops open slightly.
3. Open the device lid.
4. Remove the rotor key.

9.9 Troubleshooting technical errors

Prerequisites:

- The device is switched off.

1. Check the cable connections.
2. Switch the device back on after 10 s.

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10 Shut down

10.1 Disconnecting the device from the mains/power supply

Prerequisites:

- The device is switched off.

1. Pull the mains/power plug from the socket.

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11 Transport

11.1 Preparing the device for transport

1. Remove the rotor from the device.
2. Close the device lid.
3. Disconnect the device from the power line.

11.2 Transporting the device



WARNING! Personal injury

The device is heavy. Improper lifting and moving of the device can lead to injury.

– At least two people are required to transport the device.
– Use a suitable transport aid to move the device.

Protective equipment:

- Safety boots

Material:

- Transport aid

Prerequisites:

- There is a sufficient number of people ready to help with transport.

1. Transport the device in an upright position. Use a transport aid for this, such as a mobile table.
2. Avoid shaking the device.

11.3 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.

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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.

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12 Storage

12.1 Storing the device

Prerequisites:

- The device is decontaminated.
- The device is protected from environmental influences.

1. Ensure that the storage location meets the permissible environmental conditions.
2. Place the device in its storage location.

12.2 Storing accessories

1. Store rotors with the rotor lid open.
2. Do not store rotors, rotor lids and accessories in areas with strong UV radiation.

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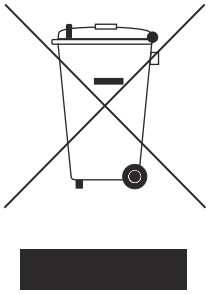
13 Disposal

13.1 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 4: Marking on batteries

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

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

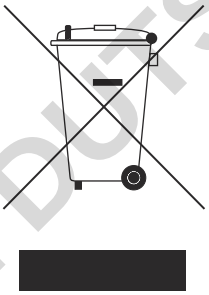
Non-EU countries

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.

13.2 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.

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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.

13.3 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.

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14 Technical data

14.1 Dimensions

Device

Width	706 mm
Depth	745 mm
Height with lid closed	385 mm
Height with lid open	867 mm

Packing

Width	1200 mm
Depth	800 mm
Height	490 mm

14.2 Weight

Device without rotor	100 kg
Packing	9 kg

14.3 Power supply

Power connection (±10 %)	220 V – 240 V, 50 Hz – 60 Hz 120 V – 127 V, 50 Hz – 60 Hz 100 V – 110 V, 50 Hz – 60 Hz
Current consumption	220 V – 240 V: 13 A 120 V – 127 V: 12 A 100 V – 110 V: 15 A
Power consumption	220 V – 240 V: 1600 W 120 V – 127 V: 1440 W 100 V – 110 V: 1500 W
Electromagnetic compatibility Noise emission (radio interference)	Class B
Electromagnetic compatibility Noise immunity	Domestic environment
Protection class	I

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Overvoltage category	II
Pollution degree	2

14.4 Refrigeration system

Refrigerant	R744 (250 g)

14.5 Laser

Laser class	Laser class 1 in acc. with IEC 60825-1 (EN 60825-1)
Wavelength	940 nm
Laser type	invisible laser eye-safe

14.6 Ambient conditions

Operation

Ambient environment	For indoor use only
Ambient temperature	10 °C – 35 °C
Relative humidity	10 % – 80 %, non-condensing
Atmospheric pressure	79.5 kPa – 106 kPa Use up to an altitude of 2 000 m above sea level.

Transport

	General transport	**Air freight**
Air temperature	-40 °C – 60 °C	-40 °C – 60 °C
Relative humidity	10 % – 95 %	10 % – 95 %
Atmospheric pressure	79.5 kPa – 106 kPa	79.5 kPa – 106 kPa

Storage

	In transport packing	**Without transport packing**
Air temperature	-25 °C – 55 °C	-5 °C – 45 °C
Relative humidity	10 % – 95 %	10 % – 95 %
Atmospheric pressure	70 kPa – 106 kPa	70 kPa – 106 kPa

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14.7 Interfaces

USB interface	USB 2.0, type A
Ethernet interface	100 MBit/s Maximum cable length 3 m

14.8 Noise level

< 70 dB(A)

14.9 Temperatures

Rotor	**Temperature at max. rpm**	**rpm for safe maintenance of 4 °C ±2 °C**
FA-6×250 ID	4 °C ±2 °C	7535 rpm
FA-10×50 ID (220 V – 240 V)	9 °C ±2 °C	8800 rpm
FA-10×50 ID (100 V – 110 V / 120 V – 127 V)	19 °C ±2 °C	8800 rpm
FA-48×2 ID	4 °C ±2 °C	13300 rpm
FA-30×2 ID	4 °C ±2 °C	13500 rpm
S-2×Universal ID	4 °C ±2 °C	4660 rpm

14.10 Acceleration and deceleration times

Acceleration and deceleration times were measured with the rotor at maximum load. For swing-bucket rotors, the values were determined using a round bucket. Deviations are possible depending on the condition of the device and the load.

- Level 9: Shortest acceleration/deceleration time

Rotor		**9**
		All values are given in seconds
FA-6x250 ID (220 V – 240 V)	Acceleration time	≤75
	Deceleration time	≤72
FA-6x250 ID (120 V – 127 V, 100 V – 110 V)	Acceleration time	≤70
	Deceleration time	≤72
FA-10x50 ID (220 V – 240 V)	Acceleration time	≤50
	Deceleration time	≤50

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Rotor		**9**
		All values are given in seconds
FA-10x50 ID	Acceleration time	≤55
(120 V – 127 V, 100 V – 110 V)	Deceleration time	≤50
FA-48x2 ID	Acceleration time	≤30
(220 V – 240 V, 120 V – 127 V, 100 V – 110 V)	Deceleration time	≤32
FA-30x2 ID	Acceleration time	≤25
(220 V – 240 V, 120 V – 127 V, 100 V – 110 V)	Deceleration time	≤28
S-2xUniversal ID	Acceleration time	≤30
(220 V – 240 V)	Deceleration time	≤32
S-2xUniversal ID	Acceleration time	≤40
(120 V – 127 V, 100 V – 110 V)	Deceleration time	≤32

14.11 Application parameters

Run time	1 s – 99:59 h, infinite (∞) Adjustable in increments of 1 s
Temperature	-11 °C – 40 °C
Relative centrifugal force	1 × g – 20000 × g Adjustable in increments of 1 g
Speed	100 rpm – 13500 rpm Adjustable in increments of 1 rpm
Maximum load	Fixed-angle rotor: 6 × 250 mL Swing-bucket rotor: 2 × 1000 mL
Maximum kinetic energy	35730 J
Permissible density of the material for centrifuging at maximum speed and maximum load	1.2 g/mL
Requires testing in Germany	Yes

14.12 Service life

Lifetime	10 years

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14.13 Shelf life of rotors and accessories

Eppendorf SE specifies the maximum shelf life of rotors and accessories in cycles.

Each centrifugation run in which the rotor is accelerated and decelerated is counted as a cycle, regardless of the speed and duration of the centrifugation run.

The specified shelf life applies if the following conditions are met:

- Proper use
- Recommended care
- Damage-free condition

Fixed-angle rotors

	Service life from first use
Applies to rotor FA-6×250 ID, rotor FA-10×50 ID	
Rotor body	70000 cycles
Rotor lid	27000 cycles

	Service life from first use
Applies to rotor FA-30×2 ID, rotor FA-48×2 ID	
Rotor body	100000 cycles
Rotor lid	27000 cycles

	Number of autoclaving cycles	**Time / temperature**
Rotor body	100 autoclaving cycles	20 min/121 °C
	50 autoclaving cycles	20 min/134 °C
Rotor lid	100 autoclaving cycles	20 min/121 °C

Swing-bucket rotors

The specified shelf life applies to both the rotor cross and the buckets, unless otherwise stated.

	Service life from first use
Rotor cross	100000 cycles
Bucket	50000 cycles
Bucket cap with replaceable seal	50000 cycles

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Components and accessories	Number of autoclaving cycles	Time / temperature
Cap with seal	100 autoclaving cycles	20 min/121 °C
	50 autoclaving cycles	20 min/134 °C
Bucket	100 autoclaving cycles	20 min/121 °C
	50 autoclaving cycles	20 min/134 °C
Rotor cross	100 autoclaving cycles	20 min/121 °C
	50 autoclaving cycles	20 min/134 °C

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15 Suitable rotors

Eppendorf SE centrifuges can only be operated with rotors designed for the device. Further information on rotors can be found at www.eppendorf.com

Observe the manufacturer's specifications regarding the centrifugation stability of the sample vessels (maximum *g*-force).

15.1 Overview of usable rotors

- FA-6×250 ID
- FA-10×50 ID
- FA-48×2 ID
- FA-30×2 ID
- S-2×Universal ID

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16 Ordering information

16.1 Accessories

Description	Order no.
Rotor key	0113 005 106

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17 Glossary

Autoclaving
Physical method of sterilization. Thermal process used to kill microorganisms and inactivate viruses and enzymes. This process does not completely destroy the DNA. The objects to be autoclaved are stored in a pressure vessel with water vapor at 121 °C, 1000 hPa (1 bar) positive pressure for 20 min.

CE
Conformité Européenne – The CE marking indicates that a product has been assessed before reaching the market and is deemed to meet EU safety, health and/or environmental protection requirements.

Centrifugation cycle
Each run during which the rotor is accelerated and braked again. A cycle is independent of the speed and the duration of the centrifugation run.

Certificate, digital
Data record with which a digital signature is assigned to the identity of a person, organization or system.

Deepwell plate
Plate with 48, 96, or 384 wells with larger volumes than microplates. Suitable for preparing, mixing, centrifuging, transporting and storing solid and liquid samples.

DHCP
Dynamic Host Configuration Protocol - DHCP is a network protocol that automatically provides clients in a TCP/IP network with configuration data such as IP addresses, network masks, gateway addresses and DNS server addresses.

Events
Software function that records event logs.

***g*-force**
Indicates the acceleration during centrifugation, which is calculated from the rotational speed and the radius of the rotor bowl.

IP
Internet Protocol – Network protocol that controls the transfer of data packets between computers and other devices in a network.

JSON-RPC
JavaScript Object Notation Remote Procedure Call – JSON-RPC is a simple, platform-independent protocol that facilitates the easy application and transfer of data through the use of JSON. It is often used for communication between web applications and servers or in distributed systems.

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LAN
Local Area Network – A local area network (LAN) that connects digital terminal equipment such as computers, servers, printers and other network devices within a restricted area such as a building or data center. It comprises at least two terminal devices, however can also comprise several thousand.

Microplate
A microplate is a laboratory consumable. Microplates contain wells insulated from each other in rows and columns. The exact dimensions of the plate are set in the ANSI standard on the recommendation of the Society for Biomolecular Screening. Microplates contain 24, 48, 96, or 384 wells for preparing, mixing, centrifuging, transporting and storing solid and liquid samples.

NTP
Network Time Protocol – Network protocol for time synchronization of computer systems across networks such as the Internet.

PCR
Polymerase Chain Reaction - A polymerase chain reaction refers to methods for the in vitro multiplication of genetic material (deoxyribonucleic acid). Depending on the method applied, various forms of the DNA polymerase enzyme are used. The use of "chain reaction" here refers to the use of products from previous cycles as starting material for the next cycles, therefore facilitating an exponential replication. With the classic PCR, these cycles are controlled via a temperature program. With the further development of isothermal DNA amplification, this replication takes place continuously at a constant temperature.

Ramp
The user sets the acceleration time and the deceleration time of the device via ramps. The ramps are factory set and actively controlled.

rcf
relative centrifugal force – The relative centrifugal force represents the centrifugation force as a multiple of the gravitational acceleration.

Residual current circuit breaker
Protective device that disconnects the voltage when there is a dangerously high rated residual current flowing to ground. Residual current circuit breakers protect persons from electric shock.

RFID
Radio Frequency Identification – Technology for transmitter-receiver systems for automatic and contactless identification and localization of objects via radio waves.

rpm
revolutions per minute – Mechanical unit of rotational speed, which gives the number of complete revolutions during a period of 60 s.

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Status display
Word or symbol in the graphical user interface showing the status of a device or a connected module or component.

Status lamp
The current status of the device is indicated by the color and function of an LED.

Vessel
Micro test tube or individual well in a plate.

VisioNize
System for laboratory monitoring offered by Eppendorf SE, providing services related to Eppendorf devices.

Well
Cavity in a micro plate, PCR plate, deepwell plate, cell-imaging slide, and cell-imaging coverglass.

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