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Innova® S44i

Operating manual

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1 Operating instructions

1.1 Using this manual

- Read this operating manual completely before using the device for the first time. Also observe the instructions for use of the accessories.
- This operating manual is part of the product. Thus, it must always be easily accessible.
- Enclose this operating manual when transferring the device to third parties.
- You will find the current version of the operating manual for all available languages on our website under www.eppendorf.com/manuals.

1.2 Danger symbols and danger levels

1.2.1 Danger symbols

The safety instructions in this manual appear with the following danger symbols and danger levels:

	Hazard point		**Danger of cuts**
	Electric shock		**Heavy load**
	Toxic		**Risk of crushing**
	Biohazard		**Material damage**
	Hot surface		

1.2.2 Danger levels

DANGER	*Will* lead to severe injuries or death.
WARNING	*May* lead to severe injuries or death.
CAUTION	May lead to light to moderate injuries.
NOTICE	May lead to material damage.

1.3 Symbols used

Depiction	Meaning
1. 2.	Actions in the specified order
▸	Actions without a specified order
•	List:
Text	Display or software texts
ⓘ	Additional information

1.4 Abbreviations used

rpm
Revolutions per minute

LEL
Lower Explosion Limit

UEL
Upper Explosion Limit

2 Safety

2.1 Intended use

Innova S44i orbital shakers are designed to provide increased aeration in a stable temperature environment with minimal vibration. They support the culturing of bacterial, insect, fungal, yeast, and phototrophic organisms. The shaker is intended for research use only. Innova S44i orbital shakers are intended for indoor laboratory use and can only be operated by qualified personnel.

2.2 User profile

The device and accessories may only be operated by trained and skilled personnel.

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

2.3 User protection

Personal protective equipment protects your life and your health.

- Always wear protective clothing, protective gloves, and safety boots.
- If additional protective equipment is required, this is indicated above the respective instruction.
- Always wear the personal protective equipment required for the biosafety level and by the laboratory regulations.

2.4 Information on product liability

In the following cases, the designated protection of the device may be compromised. Liability for any resulting property damage or personal injury is then transferred to the operator:

- The device is not used in accordance with the operating manual.
- The device is used outside of its intended use.
- The device is used with accessories or consumables which are not recommended by Eppendorf.
- The device is maintained or repaired by people not authorized by Eppendorf.
- The user makes unauthorized changes to the device.

2.5 Warnings for intended use

WARNING! Lethal voltages inside the device.
Touching parts which are under high voltage may cause an electric shock. An electric shock injures the heart and causes respiratory paralysis.

- Ensure that the housing is closed and undamaged.
- Do not remove the housing.
- Ensure that no liquid can penetrate into the device.

Only authorized service staff may open the device.

WARNING! Risk from incorrect voltage supply.

- Only connect the device to voltage sources which correspond with the electrical requirements on the name plate.
- Only use sockets with protective earth conductor.
- Only use the mains/power cord supplied.

WARNING! Electric shock due to damage to device or mains/power cord.

- Only switch on the device if the device and the mains/power cord are undamaged.
- Only use devices that have been properly installed or repaired.
- In case of danger, disconnect the device from the mains supply. Disconnect the mains/power plug from the device or the earth/grounded socket. Use the isolating device intended for this purpose (e.g., the emergency switch in the laboratory).

WARNING! Damage to health due to infectious liquids and pathogenic germs.

- When handling infectious liquids and pathogenic germs, observe the national regulations, the biological security level of your laboratory, the safety data sheets, and the manufacturer's application notes.
- Wear your personal protective equipment.
- Consult the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, in its respectively current valid version).

WARNING! Damage to health due to toxic, radioactive or aggressive chemicals.

- Wear your personal protective equipment.
- Observe the national regulations for handling these substances.
- Observe the safety data sheets and manufacturer's application notes.

WARNING! Risk of crushing fingers with door

- Do not reach between the door and device, or into the door locking mechanism, when opening and closing the door.

WARNING! Burns due to hot metal on the device and hot flasks

- Only touch the device and flasks when wearing protective gloves.

CAUTION! Cutting injuries caused by glass shards.
A damaged touch screen can lead to cuts on the hands.

- Only work with the touch screen if it is not damaged.

CAUTION! Poor safety due to incorrect accessories and spare parts.
The use of accessories and spare parts other than those recommended by Eppendorf may impair the safety, functioning and precision of the device. Eppendorf cannot be held liable or accept any liability for damage resulting from the use of incorrect or non-recommended accessories and spare parts, or from the improper use of such equipment.

- Only use accessories and original spare parts recommended by Eppendorf.

NOTICE! Damage to electronic components due to condensation.
Condensate can form in the device after it has been moved from a cool environment to a warmer environment.

- After installing the device, wait for at least 6 h. Only then connect the device to the mains/power line.

NOTICE! Damage to device or malfunctions due to a damaged touch screen

- Do not operate the device.
- Switch off the device, disconnect the mains/power plug and have the touch screen replaced by a service technician who has been authorized by Eppendorf.

NOTICE! Damage to device from unsuitable cleaning fluids or sharp or pointed objects.
Unsuitable cleaning agents may damage the device.

- Never use any corrosive cleaning agents, strong solvents or abrasive polishes.
- Check the compatibility with the materials used.
- Please note the information on chemical resistance.
- Do **not** clean the device with acetone or organic solvents with a similar effect.
- Do **not** use any sharp or pointed objects to clean the device.

NOTICE! Damage from the use of aggressive chemicals.

- Do not use any aggressive chemicals on the device or its accessories, such as strong and weak bases, strong acids, acetone, formaldehyde, halogenated hydrocarbons or phenol.
- If the device has been contaminated by aggressive chemicals, immediately clean it by means of a mild cleaning agent.

2.6 Warning signs on the device

Representation	Meaning	Location
	Hazard point! Risk of injury from moving parts	On door handle
	Risk of burns from hot surface	Handle of sub-platform
	Risk of crushing from moving parts	Bottom front, bottom left and bottom right side in the chamber

3 Product description

3.1 Product overview

3.1.1 Front view

The configuration of your Innova S44i depends on your order.

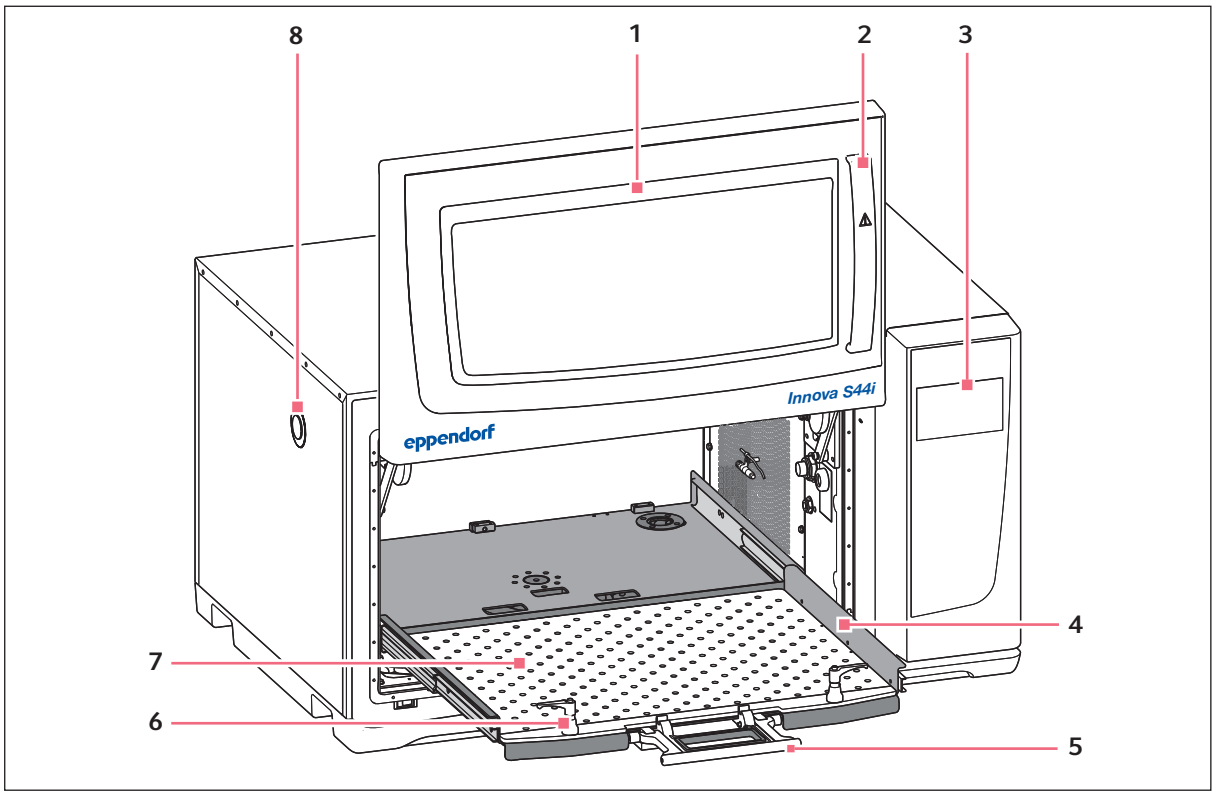


Fig. 3-1: Front view

1 **Door**
The door has a large viewing window

2 **Door handle**

3 **Touch screen**
Display of user-defined parameters and actual values

4 **Sub-platform**

5 **Sub-platform handle**

6 **Platform fastener**
Two platform fasteners attach the interchangeable platform to the sub-platform

7 **Interchangeable platform**

8 **Access port**
Additional access for external cables and equipment

3.1.2 Back view

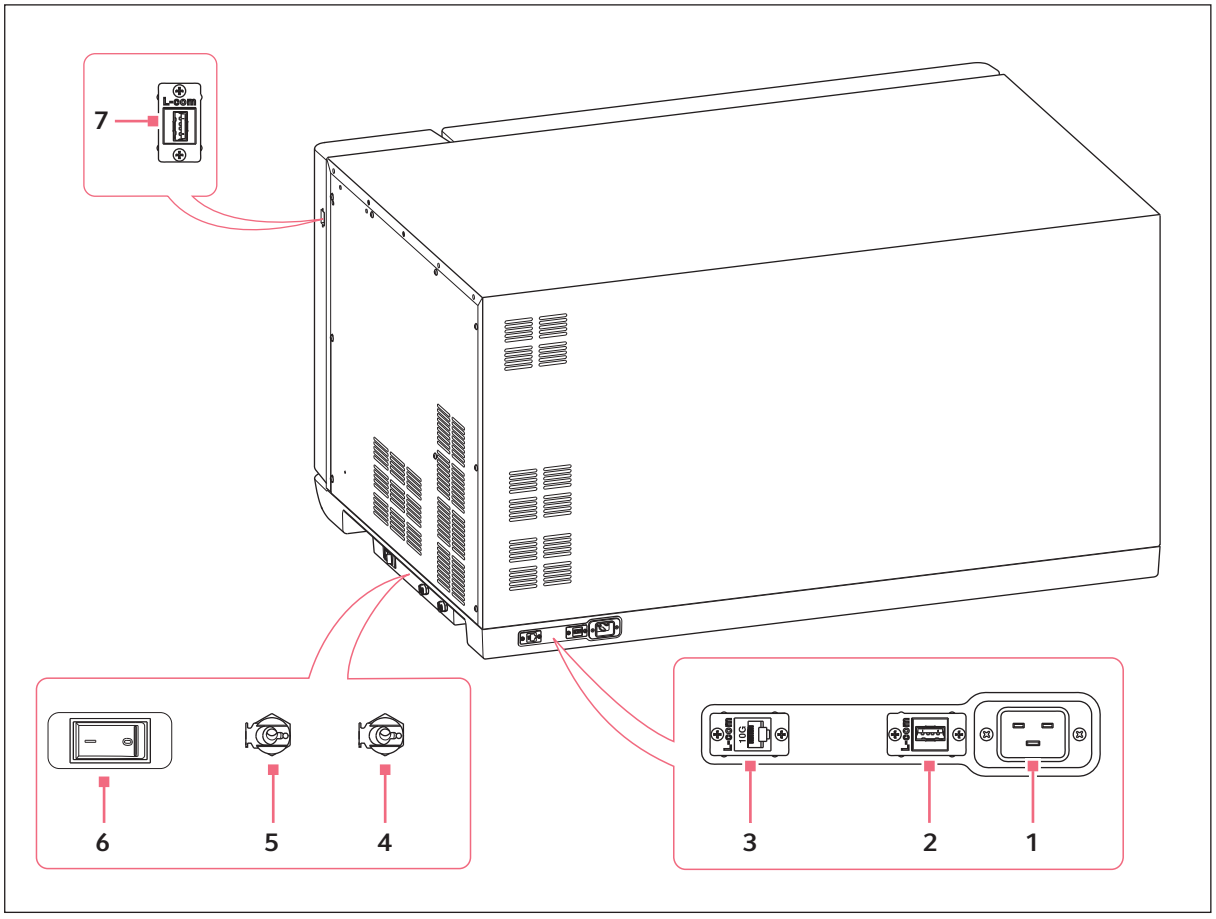


Fig. 3-2: Back view with interfaces

1 **Mains/power cord socket**

2 **USB port**

3 **Ethernet port**

4 **Refrigeration drain**
Drain for condensation water when refrigeration is used

5 **Base drain**
For service purpose only

6 **Mains/power switch**

7 **USB port**

Only devices which meet the prerequisites of IEC 950/EN 60950-1 (UL 1950) standards may be connected to the interfaces.

3.2 Delivery package

Quantity	Description
1	Innova S44i, according to order
1	Mains/power cord, country specific
1	Operating manual
2	Drain tubing

- Check the delivery for completeness.
- Inspect all items for damage that may have occurred during delivery.
- To safely transport and store the device, keep the transport box and packing material.

3.3 Features

Innova S44i is a large capacity, stackable shaker with temperature control functionality. Its innovative drive with counterbalance adjustment is engineered to support smooth shaking of uneven and heavy loads at high speeds. Designed to provide maximum capacity with a compact footprint, the shaker may also be double-stacked or triple-stacked to further expand platform capacity.

The shaker is available with 2 different orbit sizes, refrigerated and non refrigerated, and with optional photosynthetic LED lights. They support a variety of applications including culturing of bacterial, fungal, yeast, insect and phototrophic organisms.

Handling of the shaker is facilitated by:
- Automated imbalance detection and speed reduction
- Software-guided counterweight adjustment
- Space saving glide-up door
- Sub-platform with quick-release handle
- Large, easy-to-read touch screen display
- Integrated data logging function
- Data export via USB port
- Ethernet connection to integrate system into Building Management System

The Innova S44i can be operated in the following ways:
- Continuously: at a set speed and temperature
- In a timed mode: run at a set speed, time and temperature for a period of up to 95:59 hours, after which the shaker automatically shuts off
- In a programmed mode: allows user-defined multiple step programming of parameters including the option to run cycle programs

Innova S44i is a highly versatile shaker with multiple platforms and accessories to customize the shaker for different applications and user needs. An extensive selection of tubes, plates, and Erlenmeyer flasks up to 5 L can be used in the chamber. Optional perforated incubation shelf may be added to incubate static cultures.

3.4 Intuitive operating concept

Eppendorf offers a cross-product operating concept which supports swift familiarization with different Eppendorf products. For different Eppendorf products, the basic operating controls are compatible with each other by using an intuitive touch user interface.

4 Installation

4.1 Selecting the location

WARNING! Risk of injury due to unsuitable work surface.
The device may fall over if placed on an unsuitable work surface.

- Observe the criteria in the operating manual on selecting a location.

NOTICE! Damage due to overheating

- Do not place the device close to sources of heat (e.g. radiator, drying cabinet).
- Do not expose the device to direct sunlight.
- Ensure there is adequate distance to the wall and adjacent devices, on all sides of the device, in order to guarantee unobstructed air circulation.

NOTICE! Material damage due to vibration of device
If you place objects on the device, they might fall to the floor due to vibration.

- Do not place any objects on the device.

Electrical connections

- The mains/power connection as on the name plate.
- Ensure enough room for access to the mains/power switch and plug to be able to reset the circuit.

Location

- A space of at least 12.5 cm (5 in) on the back side of the device is required for proper ventilation.
- A space of 30 cm (12 in) on the left hand side of the device is required.
- A space of 60 cm (24 in) on the right hand side of the device is required for service access.
- The ambient conditions match the specifications in the technical data.
- The device can be safely and easily operated at this location.
- Select a location with an accessible house water drain for devices with refrigeration.
- The location is protected from direct sunlight.
- The ceiling is high enough to open the shaker door.

For dimensions see chapter Technical Data (see p. 93).

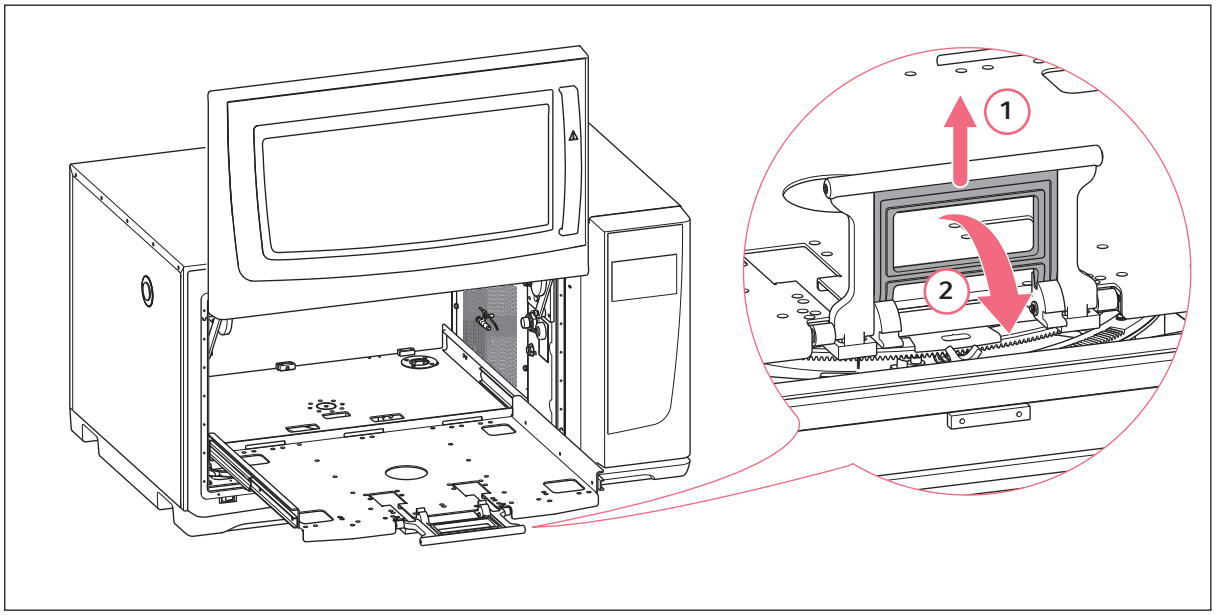
Floor

- The floor of installation area has a solid base (e.g. concrete).
- The floor has a stable base (no hollow under surface, no sinks, etc.).
- The floor covering has no soft foam damping.
- The floor is able to support more than 9 kN/ m^2 (1.3 lbs/in^2) Check with facility management.

4.2 Installing the platform

Prior to use, an interchangeable platform must be installed on the device.

When you set up a device for the first time, start a Balance Master calibration before installing the interchangeable platform (see *Calibrating the Balance Master function on p. 60)*.



1. Open the shaker door.
2. To disengage the platform locking mechanism, squeeze the handle of sub-platform (1) and rotate down (2).

   Apply light pressure towards the inside of chamber to disengage the handle more easily.
3. To slide out the sub-platform, pull the handle.

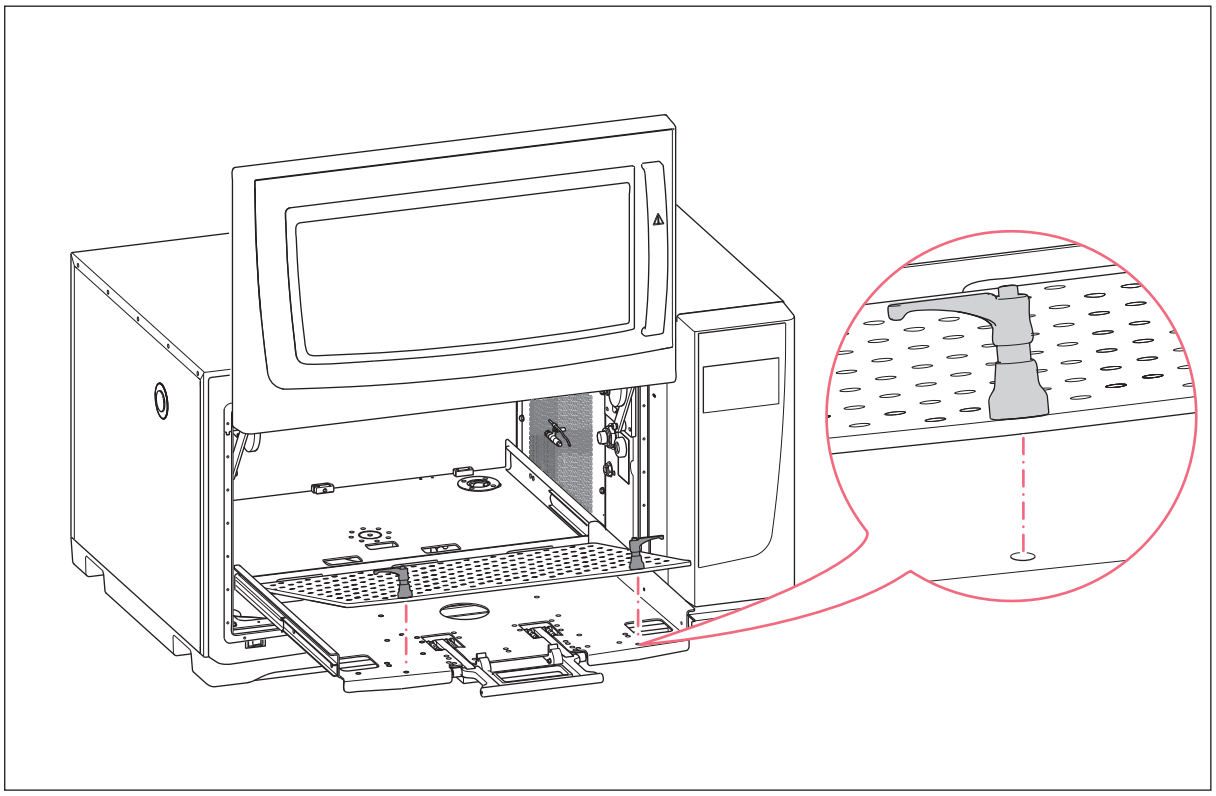


Fig. 4-1: Installation of interchangeable platform

4. Place the interchangeable platform on the sub-platform. Make sure that the platform fastener screw pins are aligned to the holes of the sub-platform.

To locate the mounting holes more easily, push down the platform fasteners with both hands when the interchangeable platform is in the locked position.

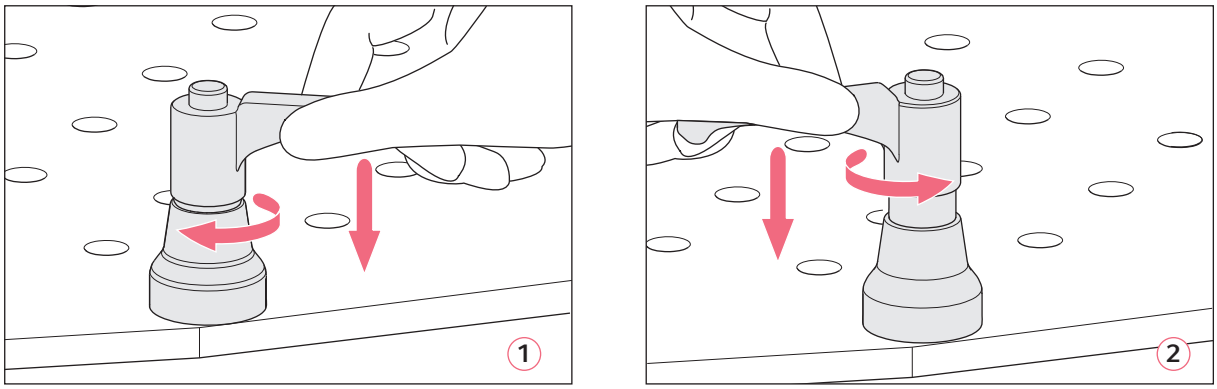


Fig. 4-2: Fasten of platform (1); Loosen of platform (2)

5. To fasten the interchangeable platform, press down handle of platform fastener and turn clockwise (1).

   If you are unable to turn the handle in full rotation due to the platform load, lift the platform fastener handle and turn it counterclockwise. To fasten the interchangeable platform, press down handle and turn clockwise again. Repeat the process several times.

6. To fully attach the interchangeable platform, repeat process with the other platform fastener. Make sure that the interchangeable platform sits tight and secure.
7. Align the platform fastener handles sideways, so that it does not interfere with the application. To align the handle properly, lift and turn the handle.
8. Push the sub-platform back into the device.
9. Squeeze and rotate the sub-platform handle up. Make sure that the sub-platform handle is fully engaged and in the locked position.

Uninstalling the platform

1. To loosen the interchangeable platform from the sub-platform, press down platform fastener handle and turn counterclockwise (2).
2. Remove the platform from the device.

4.3 Installing flask clamps

NOTICE! Material damage due to incorrect accessories.
Too long screws can affect the stability and functionality of the interchangeable platform.

- Make sure that only the provided screws are used to secure the flasks clamps.

Auxiliary equipment

- Phillips screwdriver
- Flat Phillips head screws, provided

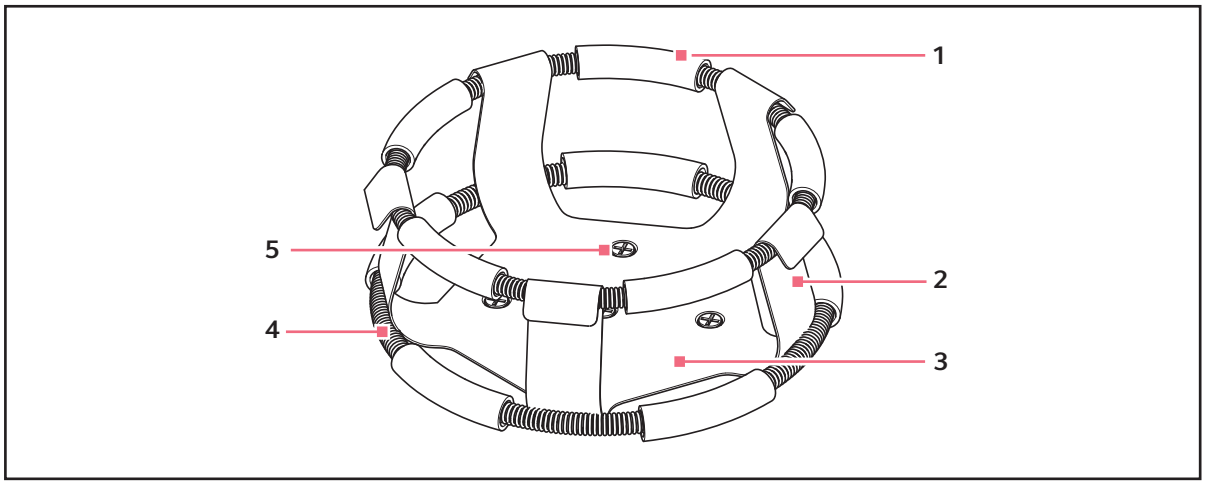


Fig. 4-3: Double girdle clamp installation

1 Girdle tube

2 Clamp finger

3 Clamp body

4 Girdle

5 Clamp mounting hole

The upper girdle secures the flask within the clamp, and the bottom girdle keeps the flask from spinning.

Flasks clamps for 2 L or larger Erlenmeyer flasks are shipped with an additional girdle to keep the flasks in place. The girdle is an assembly of springs and sections of rubber tubing. One girdle is already in place on the clamp, the other is packed separately.

Flask clamps purchased for use with the universal platform require installation.

To secure the clamp to the platform, proceed as follows:

1. Place the clamp on the platform, aligning its mounting holes with holes on the platform.
2. Secure the clamp in place using the provided flat Phillips head screws.
3. Insert an empty flask into the clamp. Keep the first girdle in place on the upper part of the clamp body.
4. Make sure the girdle tubes are located between the clamp fingers and roll the first girdle down the clamp fingers as far as it can go.

   The girdle tubes will rest against the platform, and the springs will be under the clamp base.
5. Place the second girdle around the upper part of clamp, just as the first girdle was initially. Make sure that its spring sections rest against the clamp fingers, while its girdle tubes sit in between the clamp fingers to hold the flask.

Flask clamps and other accessories can be interchangeably used on a variety of Eppendorf platforms. Flat head screws of different lengths and pitches are provided.

Ensure the use of the proper screw with the proper platform and accessory configuration.1 L and larger flask clamps are fastened with 5 screws.

4.4 Making connections

4.4.1 Electrical connection

WARNING! Risk of electrical hazard

- Before making electrical connections, verify that your mains/power supply voltage matches the voltage of the device and that the on/off switch is in the OFF position.

1. Verify that your supply voltage matches the voltage specified on the name plate of your device.
2. Verify that the mains/power switch is in the OFF position.
3. Plug the mains/power cord into the mains/power cord socket on the rear of the device.

4.4.2 Ethernet connection

The Innova S44i can be connected to a third party monitoring system, e.g. building management system (BMS), via the Ethernet connection. The interface provides data on the current status and identity of the device. For further technical information contact your local Eppendorf partner. The contact addresses can be found online at www.eppendorf.com/worldwide.

4.4.3 Drain connection

The refrigeration drain is used in the following events:
- For draining the condensation water when using refrigeration
- For draining the flush water after contamination. See chapter Decontamination for further information.

1. Connect the supplied drain tubing to the refrigeration drain on the right side of the device before application.
2. Insert the other end of the drain tubing into a container or to an accessible house water drain.
3. Allow the condensation or flush water to drain completely.

   Leave the drain tubing connected while using refrigeration or flushing the chamber bottom cover.
4. Disconnect the drain tubing after use.

5 Operation

5.1 Opening the door

WARNING! Risk of crushing fingers with door

- Do not reach between the door and device, or into the door locking mechanism, when opening and closing the door.

CAUTION! Risk of injury due to moving parts

- Be careful when you open the door. The door opens upwards.
- Always fully open the door so it can not fall and close.

1. To open the door, pull the door handle and move the door up to the open position.

   When the latching mechanism of the door is released:
   - Door open icon is displayed.
   - Heater turns off.
   - Shaker stops.
   - Chamber light turns on if set to *Auto*.
   - Fans continue for 30 s.

When the door is closed, the shaker will continue to operate under the previously entered values.

5.2 Loading the device

WARNING! Risk of personal injury.

- Do not reach inside chamber until the shaker has come to a complete stop.

NOTICE! Material damage due to imbalance
Damage on the drive or on platform

- Only operate the device when the platform is installed.
- Evenly distribute the weight of the flasks on the platform.

Prerequisites

- The platform is installed.
- The maximum load is observed.

1. Squeeze handle and pull out the sub-platform.
2. Fill the flasks or your accessories up to 25 - 35 % with liquid.
3. Place the flasks or other vessels in corresponding accessories.
4. Push the sub-platform back into the device.

The sub-platform can only be pushed back when the handle is down.

5.3 Switching the device on/off

Prerequisites

- The device is connected to mains/power supply.

1. Press the mains/power switch to switch on the device.
   The device is switched on and ready for operation.
2. Press the mains/power switch to switch off the device.

6 Overview of operating controls

6.1 Operating the user interface

The touch screen is designed to be operated with your fingers only without the need for tools. Laboratory gloves made of nitrile or latex can be worn. Alternatively, a stylus can be used, for example, when thick gloves need to be worn in the laboratory.

If liquid comes into contact with the touch screen, the functions displayed on the touch screen may be triggered.

- Do not drop any liquids onto the touch screen.
- Do not spill any liquids onto the touch screen.

6.2 Symbols

Symbol	Description
	Activate function
	Deactivate function
	Door open
	Door close
	Active alarm
	Notification
	Open alarm setting
	Open event log
	Open chart
	Balance Master optimization
	Open temperature function
	Open to display offset values
	Open speed function

Symbol	Description
	Open timer function
	Chart duration
	Close
	Filter
	Export data
	Chamber light on/off
	Open photosynthetic light function
	Change function position
	Default alarm setting
	Fine increment adjustment
	Display recently used values

6.3 Overview home screen

6.3.1 Home screen

Fig. 6-1: Home screen

1 Status bar
Information to user, time, device status, device name

2 Function area
Standard functions of the device

3 Toolbar
Buttons for navigation and operation of the device

6.3.2 Function area

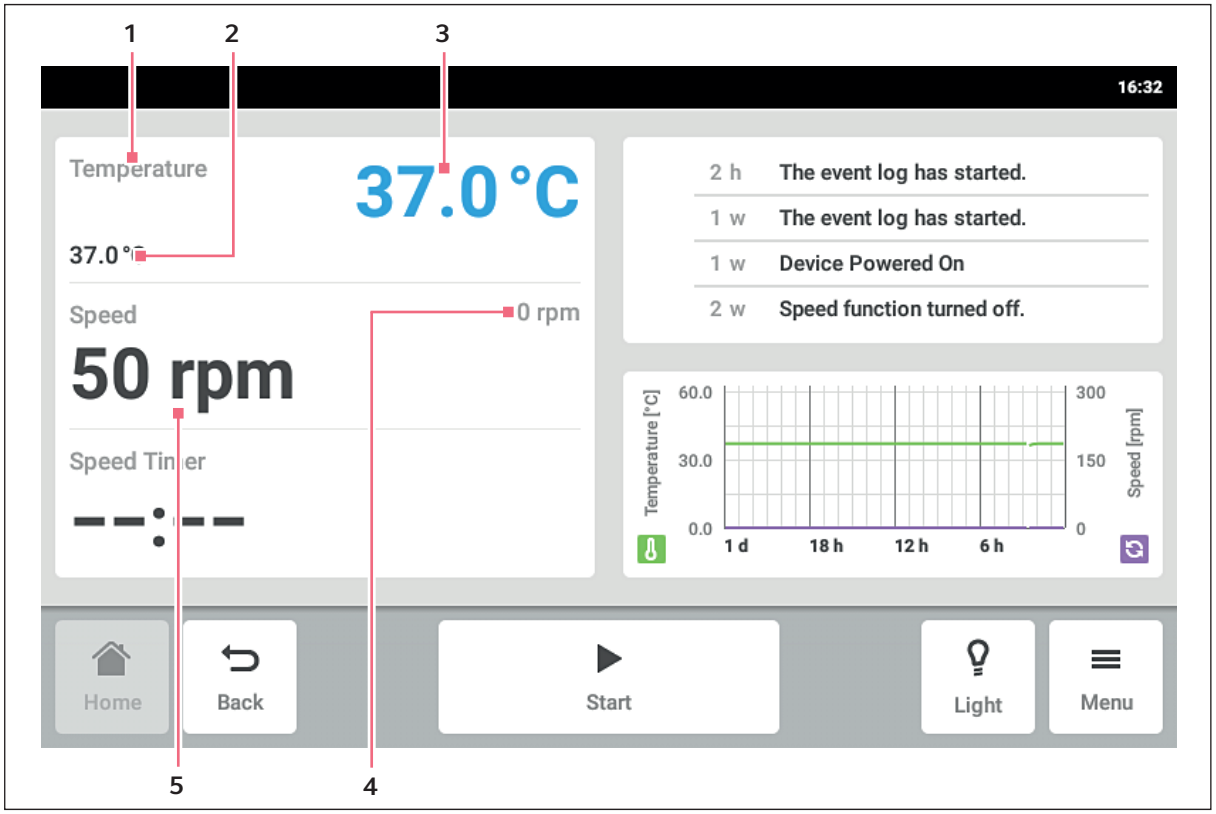


Fig. 6-2: Function area

1 Name of a function

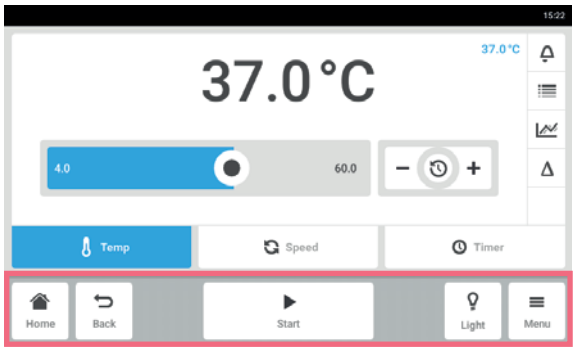
2 Set value of an active function
The set value of an active function is displayed in small black numbers.

3 Actual value of an active function
The actual value of an active function is displayed in large blue numbers.

4 Actual value of an inactive function
The actual value of an inactive function is displayed in small gray numbers.

5 Set value of an inactive function
The set value of an inactive function is displayed in large black numbers.

6.3.3 Toolbar



- Tap the *Home* button.
  The home screen is displayed.
- Tap the *Back* button.
  The previous window is displayed.
- Tap the *Menu* button.
  The menu appears. With the menu items, functions such as *Settings*, *Alarms* or *Event Log* can be called up.

6.3.4 Status bar/information bar

If messages are present, the information bar appears instead of the status bar. The information bar displays alarm messages and warning messages.

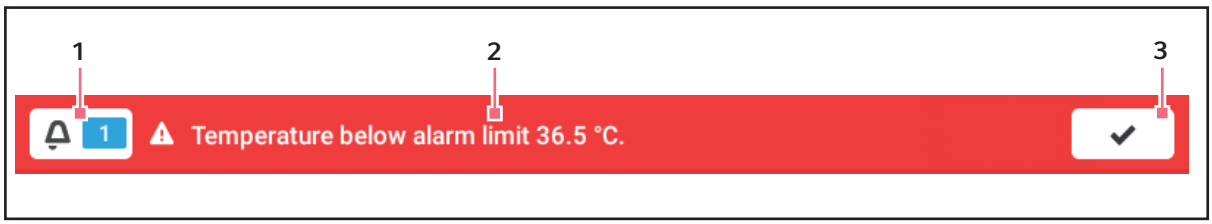


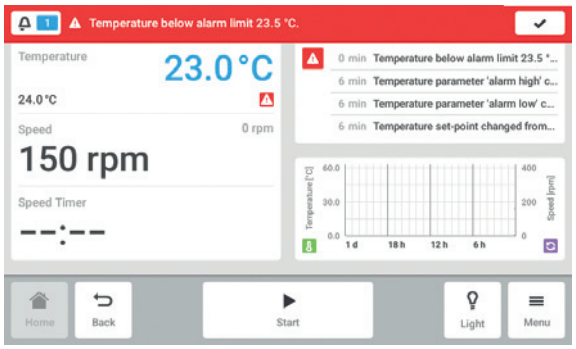
Fig. 6-3: Information bar

1 Number of unacknowledged messages

2 Current message
Red information bar: Unacknowledged alarm messages.
Yellow information bar: Unacknowledged warning messages.

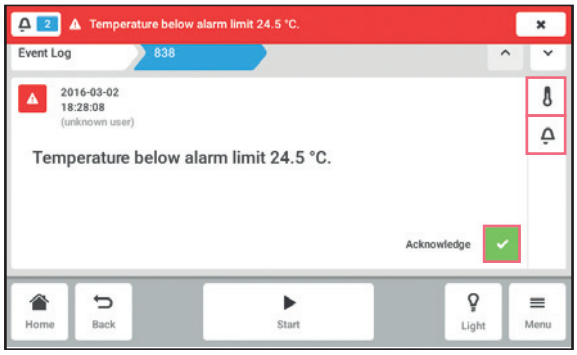
3 Acknowledging the current message
When the current message has been acknowledged, it is deleted from the information bar.
When all messages have been acknowledged, the information bar disappears.

Editing the information bar



- To display the log, tap the number next to the bell symbol.
- To confirm the current message, tap the checkmark symbol.
- To call up the current message, tap the information bar.
  The message appears in the log.

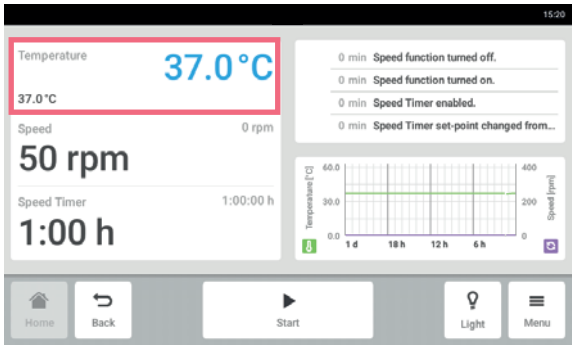
Editing the message



- To call up the current message, tap the information bar.
  The message appears in the log.
- To acknowledge the message, tap the *Acknowledge* button.
- To change the alarm limits, tap the *Alarm* (bell symbol) symbol.
- To change the set value of the function, tap the button above the *Alarm* symbol.

6.4 Function control

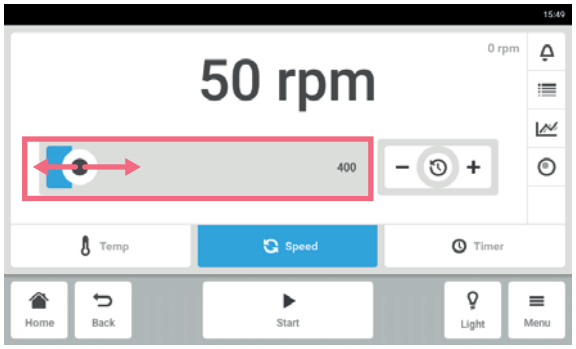
6.4.1 Selecting the function



- Tap the function in the function area.
  The window for setting the set value appears.

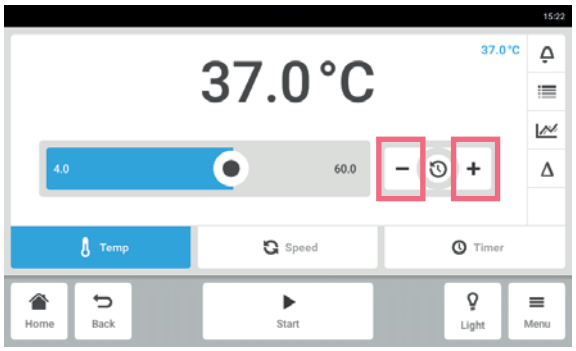
6.4.2 Setting the set value

Setting the set value with the slider



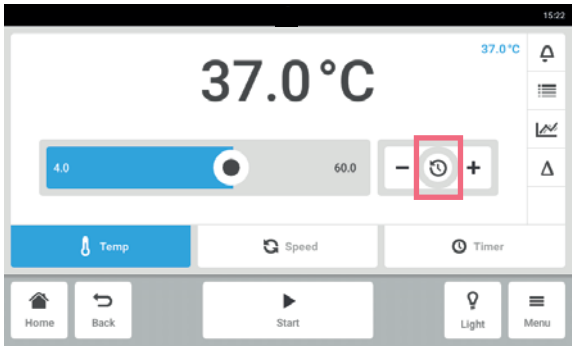
- Tap the slider and drag it to the right or to the left.
  The set value changes.

Changing the set value incrementally with the fine adjustment



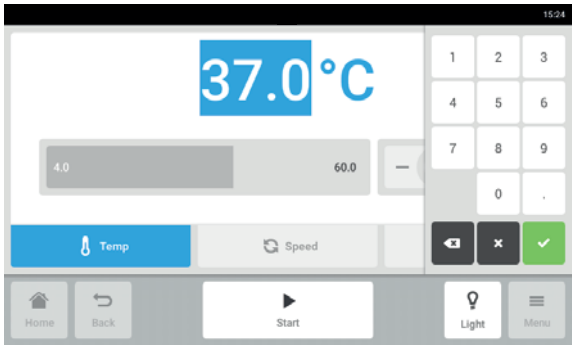
- Tap the + button.
  The set value is incrementally increased.
- Tap the - button.
  The set value is incrementally decreased.

Selecting the last used set value



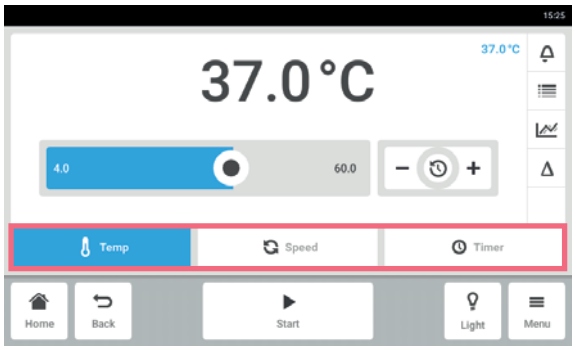
1. Tap into the center of the fine adjustment.
   A list with the last used set values is displayed.
2. Select the set value.

Entering the set value with the number pad



1. Tap the set value.
   The number pad appears.
2. Enter the new set value.
3. Confirm your entry.
   The entry is completed. The number pad disappears.

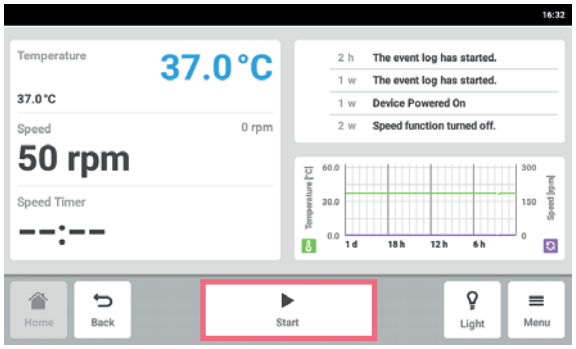
6.4.3 Switching between the functions



- To switch to another function, tap on the symbol of the function.
  The active function is highlighted in blue.

7 Starting application

7.1 Starting and stopping the device

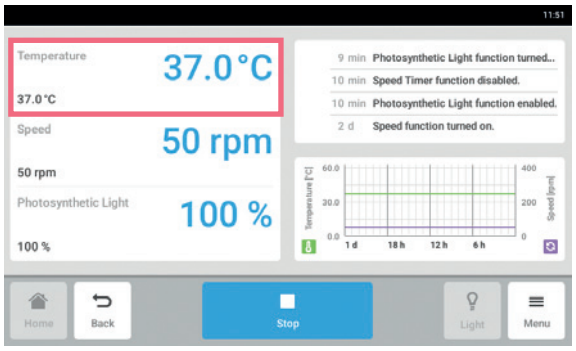


- Tap the *Start* button in the toolbar.
  The device starts with the set values.

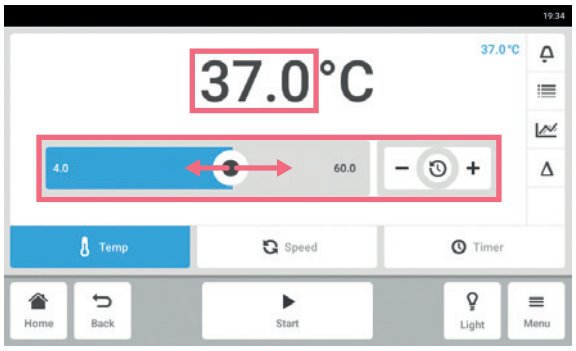
- Tap the *Stop* button in the toolbar.
  The device stops.

7.2 Setting the temperature value

The temperature value can be adjusted with the slider or with the number pad.



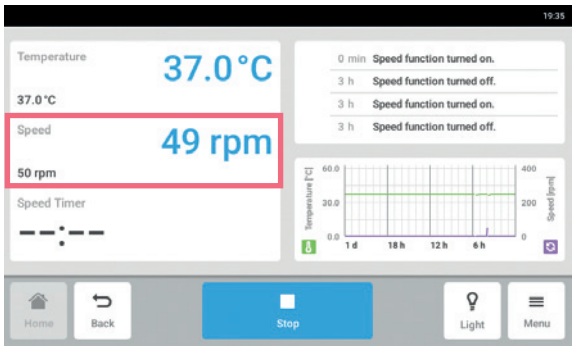
1. Tap the function *Temperature* on the home screen.
   The temperature parameters screen is shown.



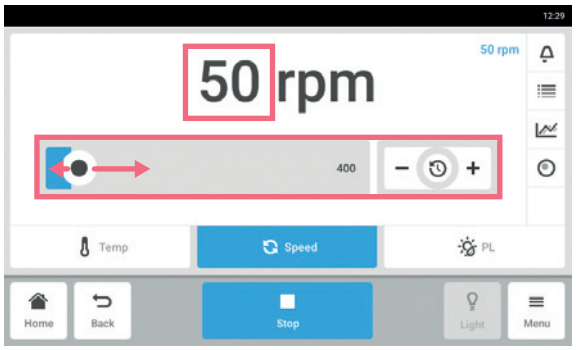
2. Tap the displayed set value.
   The number pad is shown.

3. Enter the desired set value with the number pad.
4. Confirm your entry.
   The number pad disappears.
5. To return to the home screen, tap the *Home* button.

7.3 Setting the speed value

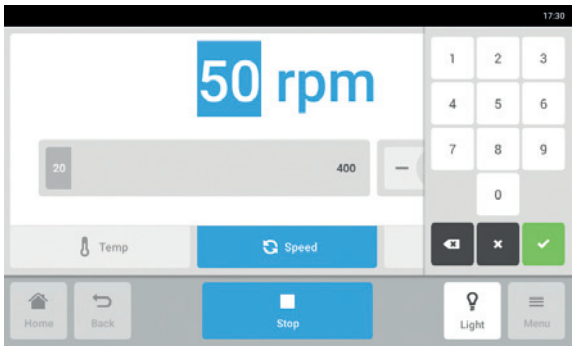


1. Tap the *Speed* function on the home screen.
   The speed parameters screen will be shown.



2. Tap the displayed set value.
   The number pad will be shown.

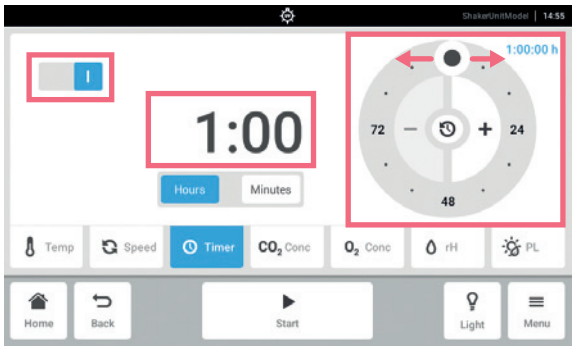
The speed value can also be adjusted with the slider.



3. Enter the desired set value with the number pad.
4. Confirm your entry.
   The number pad disappears.
5. To return to the home screen, tap the *Home* button.

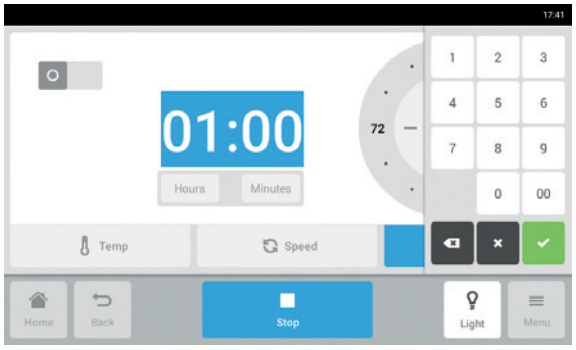
7.4 Setting the speed timer

1. Tap the *Speed Timer* function on the home screen.
   The speed timer screen will be shown.



2. Tap the displayed time.
   The number pad will be shown.

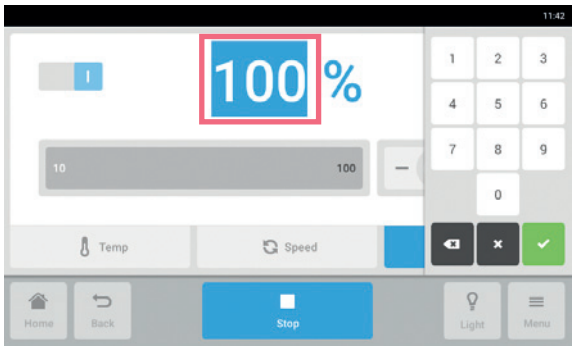
The speed timer can also be adjusted with the rotary adjuster.



3. Enter the desired time with the number pad.
4. Confirm your entry.
   The number pad disappears.
5. Activate or deactivate the speed time function.
6. To return to the home screen, tap the *Home* button.

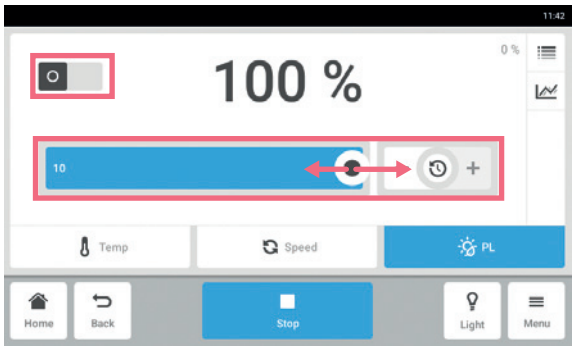
7.5 Setting the Photosynthetic Light

1. Tap the function *Photosynthetic Light* on the home screen.
   The photosynthetic light parameters screen will be shown.



2. Tap the displayed set value.
   The number pad will be shown.
3. Enter the desired set value with the number pad.
4. Confirm your entry.
   The number pad disappears.

The photosynthetic light value can also be adjusted with the slider.



5. Activate or deactivate the photosynthetic light function.
6. To return to the home screen, tap the *Home* button.

8 *Menu* area

The *Menu* area contains all the software settings.

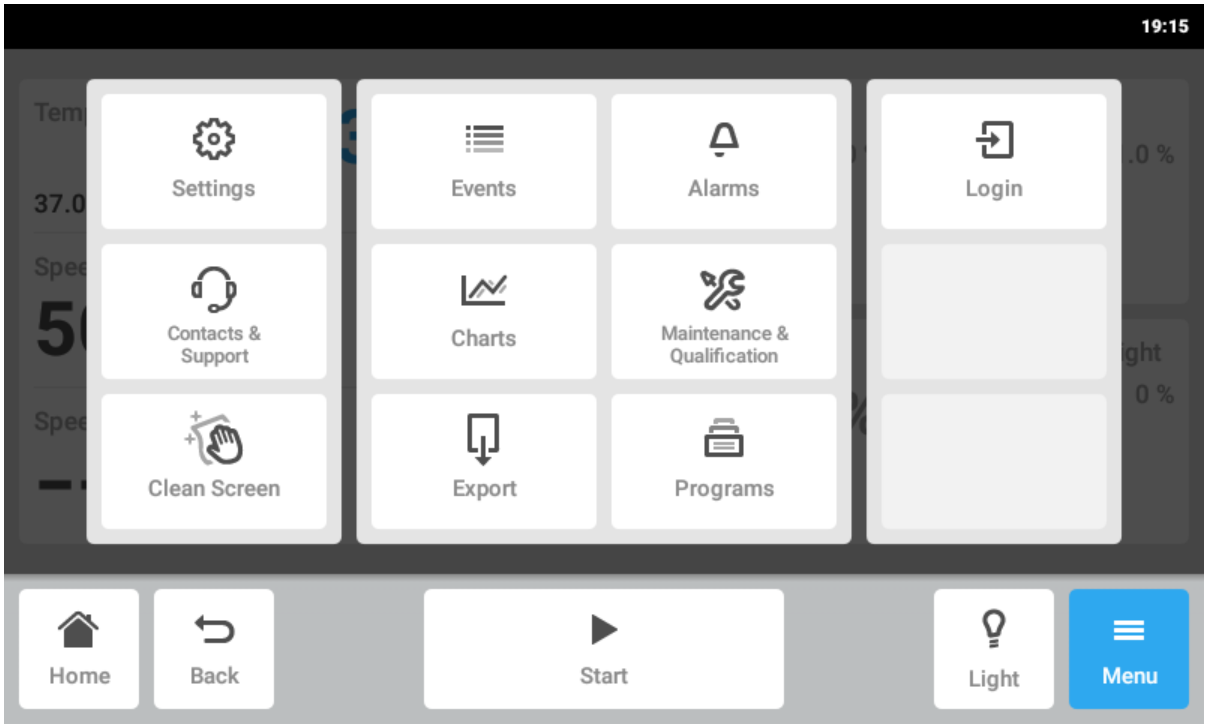


Fig. 8-1: *Menu* screen

Settings
Information about device and licenses
Settings for device and system
Activate the user management

Contacts & Support
Information about local contact persons

Clean Screen
Activate and deactivate the touch screen
Use it for cleaning the touch screen

Events
Event log with messages and alarms

Charts
Displays functions in a diagram

Export
Export charts, logs and data

Alarms
Activate alarms and set alarm limits for door alarm, speed alarm and temperature alarm

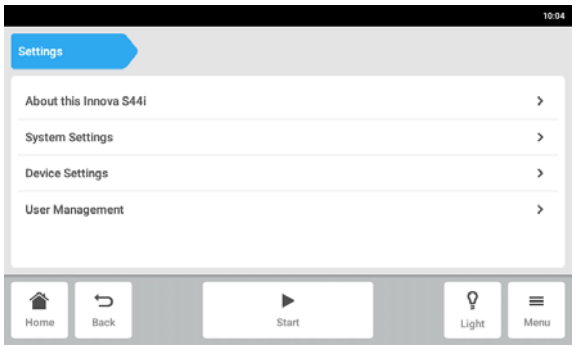
Maintenance & Qualification
Balance Master Qualification

Programs
Create user-defined programs

Login
User management

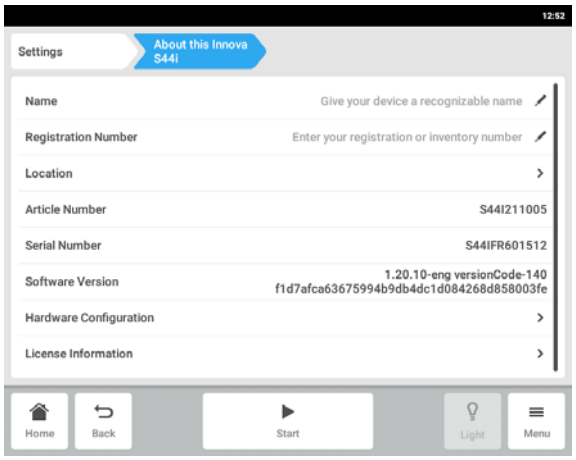
8.1 *Settings*

This area provides you with information about the device. You can make device settings and enable the user management.



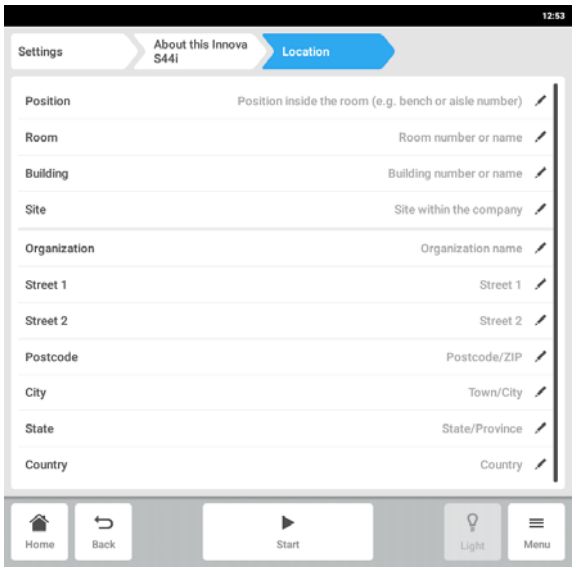
- The following settings are available:
  - *About this Innova S44i*: View information about the device and licenses.
  - *System Settings* Configure the date, time and network.
  - *Device Settings*: Configure the alarm and display.
  - *User Management* Create user management (see *User administration on p. 73)*.

8.1.1 *About this Innova S44i* menu item



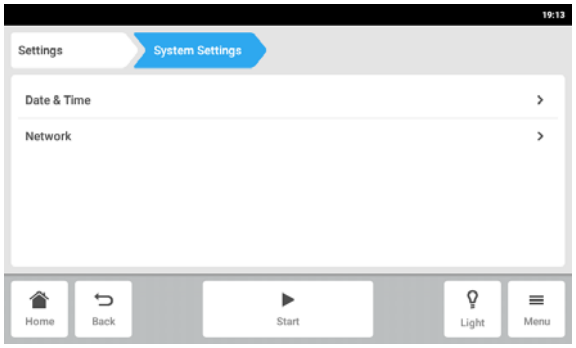
- Tap the *Menu* > *Settings* > *About this Innova S44i* menu item.
  The following fields are available:
  - *Name*: Enter the device name.
  - *Registration Number*: Enter the inventory number of the device.
  - *Location*: Enter the location of the device.
  - *Article number*: The article number of the model
  - *Serial number*: The serial number of the device, see the name plate.
  - *Software Version*: User software version
  - *Hardware Configuration*: View information about optional extensions.
  - *License Information*: View information about licenses.

Location - **entering the location of the device**



- Enter information about the location of the device.

8.1.2 *System Settings* menu item



1. Tap the *Menu* > *Settings* > *System Settings* line.

The following settings are available:

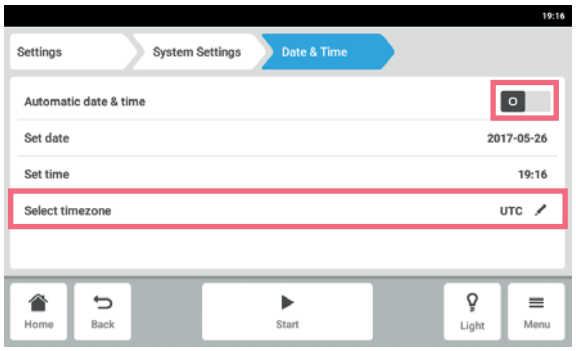
- *Date & Time*: Set the date, time and time zone.
- *Network*: Set the parameters for network operation.

8.1.2.1 *Data & Time* – Setting the date and time automatically

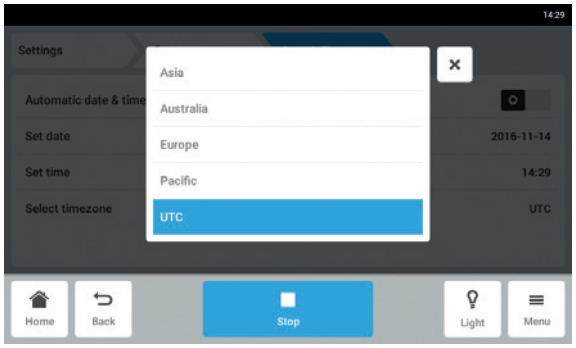
Prerequisites

- The device is connected to the network.
- A time server is available.

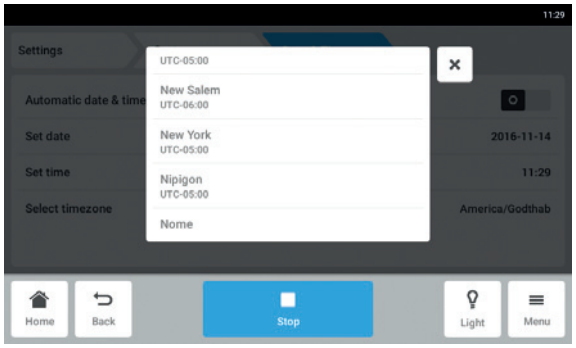
Changing the date, time or time zone may temporarily affect the appearance of the chart. The log may be incorrectly sorted.



1. Tap the *Menu* > *Settings* > *System Settings* > *Date & Time* > buttons.
2. Switch on the *Automatic date & time* switch.
3. Tap the *Select timezone* menu item.



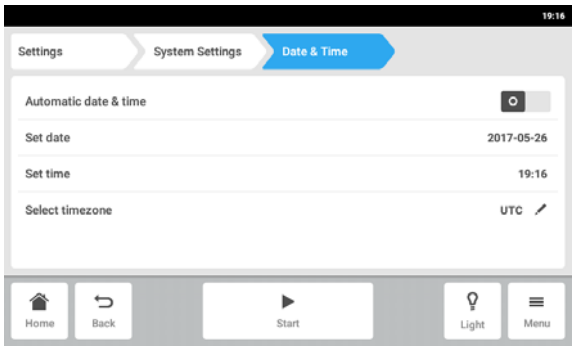
4. Select the continent.



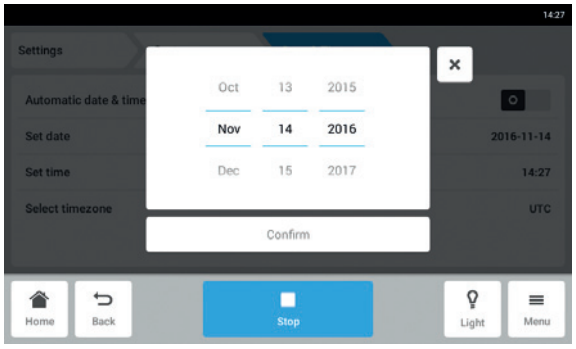
5. Select the time zone.
6. Close the selection.
   The *Date & Time* menu appears.

8.1.2.2 *Data & Time* – Setting the date and time manually

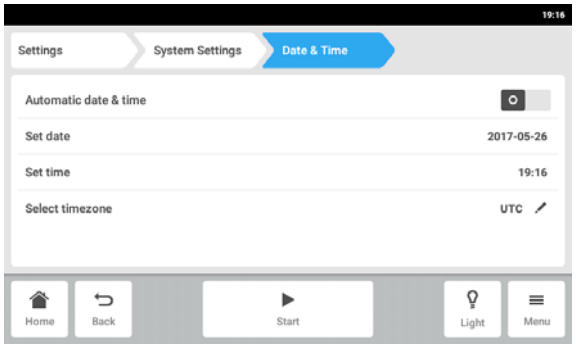
Changing the date, time or time zone may temporarily affect the appearance of the chart. The log may be incorrectly sorted.



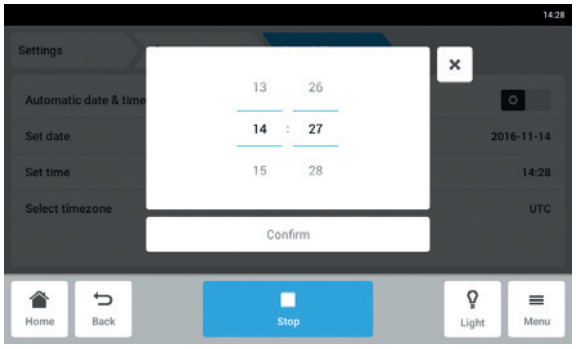
1. Tap the *Menu* > *Settings* > *System Settings* > *Date & Time* buttons.
2. Switch off the *Automatic date & time* switch.
   The *Set date* and *Set time* menu items become active.
3. Tap the *Set date* menu item.



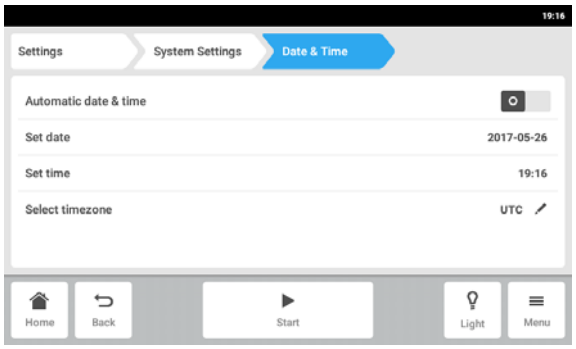
4. Set the current date.
5. Tap the *Confirm* button.
   The date is saved.
   The *Date & Time* menu appears.



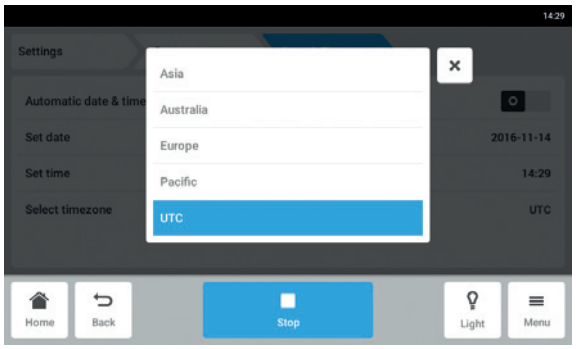
6. Tap the *Set time* menu item.



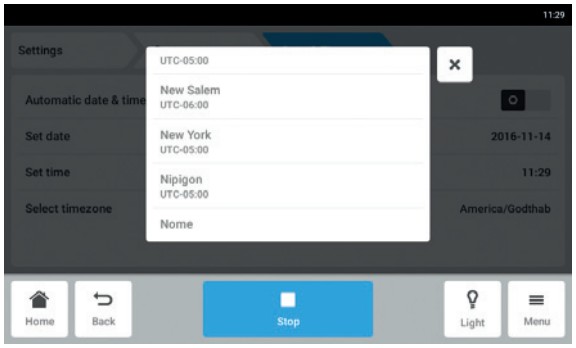
7. Set the time.
8. Tap the *Confirm* button.
   The time is saved.
   The *Date & Time* menu appears.



9. Tap the *Select timezone* menu item.

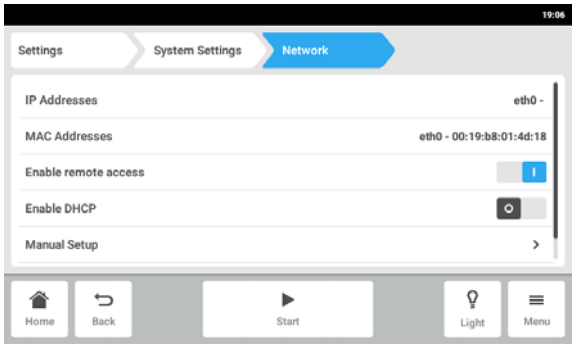


10. Select the continent.



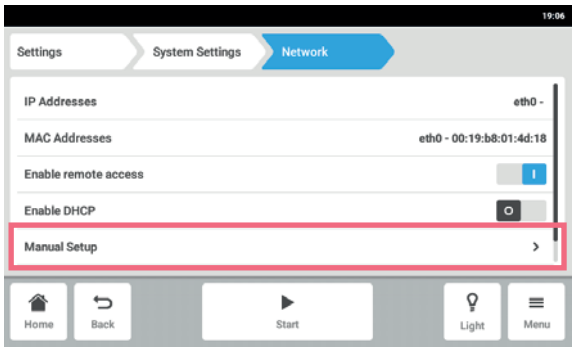
11. Select the time zone.
12. Close the selection.
    The *Date & Time* menu appears.

8.1.2.3 *Network*

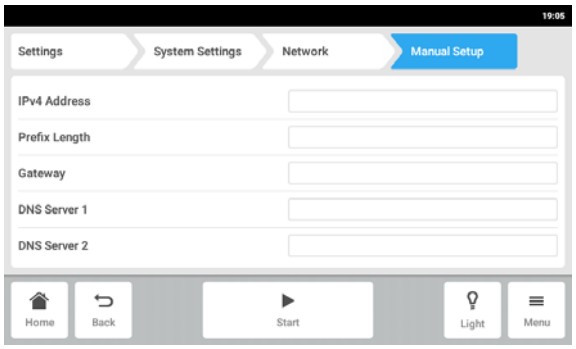


1. Tap the *Menu* > *Settings* > *System Settings* > *Network* buttons.
   The following settings are available:
   - *IP Adresses*: Current IP address of the device
   - *MAC Adresses*: Address by which the device can be uniquely identified in the network
   - *Enable remote access*: The device allows communication with external software.
   - *Enable DHCP*: The device uses an IP address that was assigned by a DHCP server.
   - *Manual Setup*: Enter the network settings manually. Active when the *Enable DHCP* switch is switched off.

Network – **Entering the network settings manually**

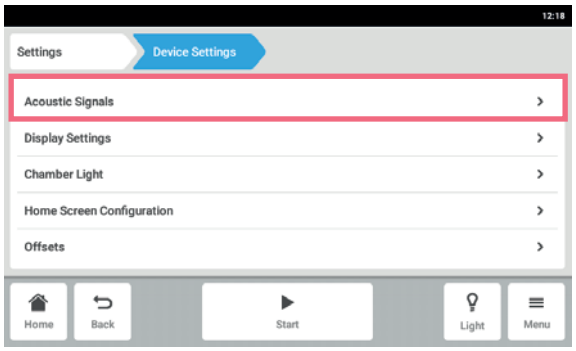


2. Tap the *Menu* > *Settings* > *System Settings* > *Network* > *Manual Setup* menu item.



3. To enter a value, tap the edit box.
   The number pad appears.
4. Enter the value.
5. Confirm your entry.
6. Tap the *Back* button.
   The data is saved. The window for the network settings appears.

8.1.3 *Device Settings* menu item

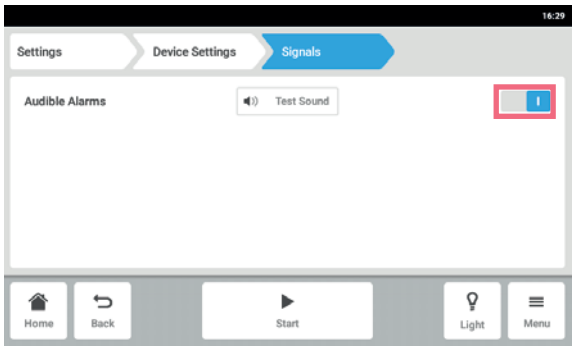


1. Tap the *Menu* > *Settings* > *Device Settings* > *Device* entry.

The following settings are available:

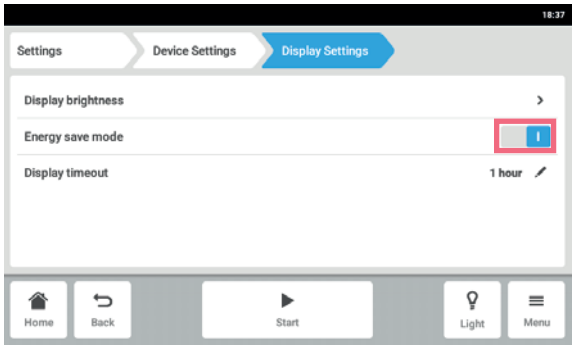
- *Acoustic Signals*: Set the audible alarm.
- *Display Settings*: Set the brightness, power saving mode and timeout of the display.
- *Chamber Ligth* Set the light in set chamber
- !Invalid cross reference to: D-NBS-008073.1
- *Home Screen Configuration*: Configure the Homescreen.
- *Offsets* Setting and calculating the temperature offset,

8.1.3.1 *Acoustic Signals* – Setting the audible alarm



1. Tap the *Menu* > *Settings* > *Device Settings* > *Acoustic Signals* menu line.
2. To enable or disable the audible alarm, tap the *O I* switch.
3. To test the audible alarm, tap the *Test Sound* button.

8.1.3.2 *Display settings* – Setting the touch screen



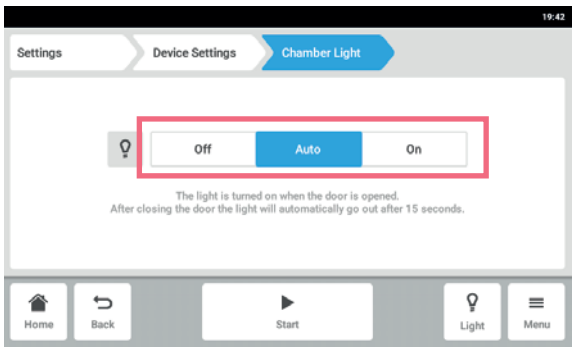
1. Tap the *Menu* > *Settings* > *Device Settings* > *Display settings* menu line.

The following settings are available:

- Display brightness
- Energy save mode
- Time after which the display is dimmed

2. To enable or disable the energy save mode, tap the *O I* button.
3. Set after which time the display will be dimmed
4. Configure the *Display timeout* und *Display brightness* settings accordingly.

8.1.3.3 *Chamber Light* – Setting the chamber light

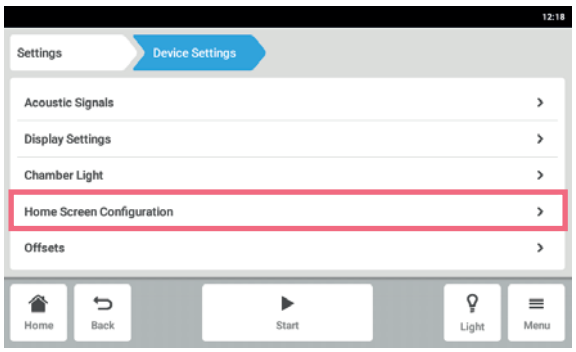


1. Tap *Menu* > *Settings* > *Device* > *Chamber Light* menu line.

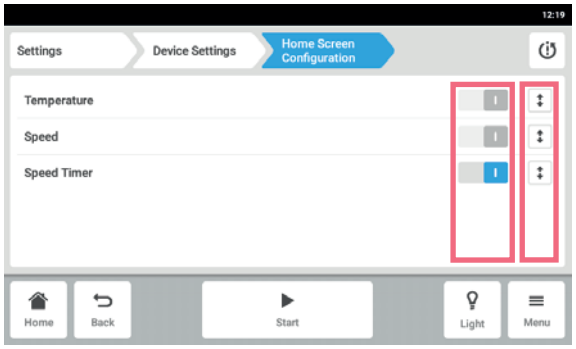
The following settings are available:
- *Off* - The light is always turned off.
- *Auto* - The light is turned on when the door is opened. After closing the door the light will automatically go out after 30 seconds.
- *On* - The light is always on.

2. Tap the button *Off* | *Auto* | *On*.

8.1.3.4 *Home Screen Configuration* – Configure the Homescreen



1. Tap the *Menu* > *Settings* > *Device Settings* > *Home Screen Configuration* menu line.
   You can specify which functions appear on the Home screen. You can set the order of the function on the home screen. You can choose the following functions:
- *Temperature*
- *Speed*
- *Speed Timer*



2. For a function to appear on the home screen, activate the switch.
3. Set the order of the functions on the home screen using the arrow keys.
   On the Home screen, the functions appear in the same order as in the list.
- If 2 areas are not occupied on the Home screen, the chart appears on the home screen.
- If 4 areas are not occupied on the home screen, the chart and event log appears on the home screen.

8.1.3.5 *Offset* – Calculating and setting the temperature offset

The Innova S44i displays the chamber temperature measured at the temperature sensor location. To display the temperature of the media rather than the temperature of the chamber, an offset must be set.

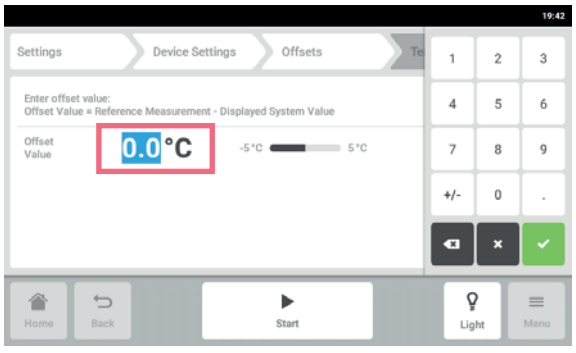
Calculating the temperature offset

1. Insert the vessel with the media.
2. Insert external temperature probe.
3. Set the device to the desired temperature and speed.
4. To start the agitation, tap the *Start* button.
5. Allow the media to equilibrate for up to 3 hours.

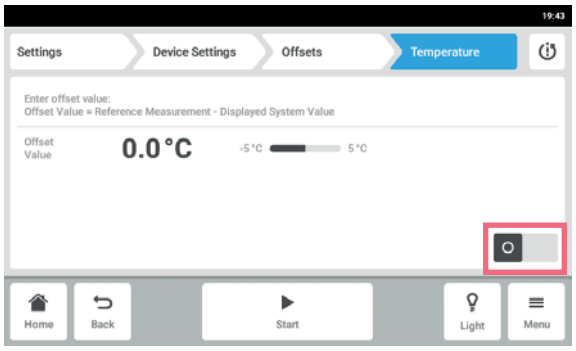
   Actual temperature value is displayed in blue.
6. Record the actual temperature value displayed on the *Temperature* function of the home screen.
7. Record the temperature of the media measured by the temperature probe.
8. To calculate the offset value, subtract the actual temperature from the media temperature.

   The result is the offset value.
   Example:
   Media temperature 35 ° C
   Actual temperature value 37 ° C
   35 - 37 = -2
   Offset = -2

Setting the temperature offset



1. Select *Menu* > *Settings* > *Device Settings* > *Offsets* > *Temperature*.
   The offset value is shown.
2. Tap the displayed offset value.
   The number pad is shown.
3. Enter the calculated offset value with the number pad.
4. Confirm your entry.
   The number pad disappears.



5. Activate or deactivate the temperature offset function.

6. To return to the home screen, tap the *Home* button.
   The offset symbol is shown below the actual temperature on the home screen.

8.2 *Events*

This area contains messages and alarms with the corresponding time and, if applicable, the user. You can filter and export *Events*.

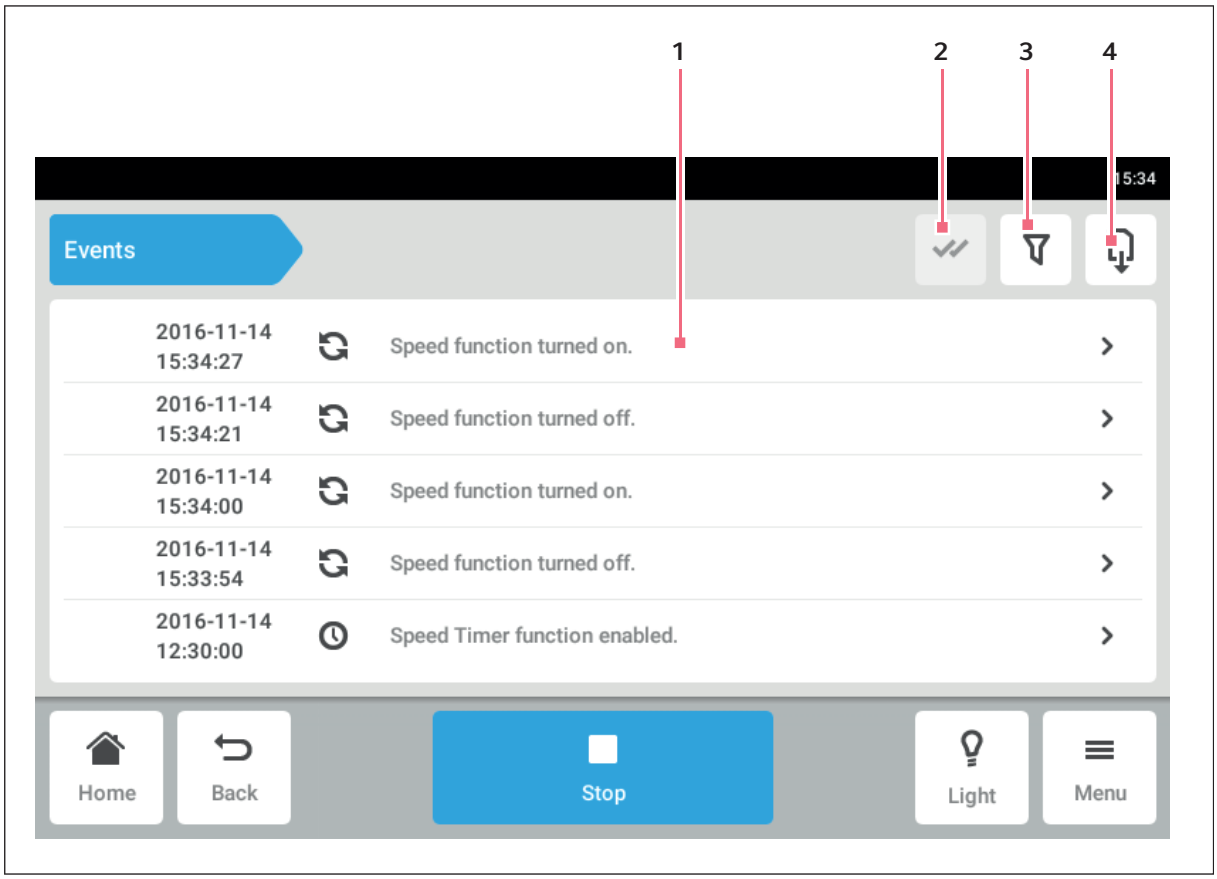


Fig. 8-2: *Event Log* screen

1 List with all notifications and messages

2 Confirm all notifications

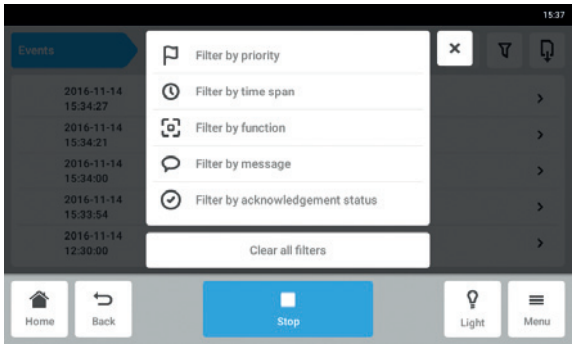
3 Filter options
The button is highlighted in blue if messages are filtered.

4 Export list with messages to a USB storage medium

Calling *Events*

- Tap the *Menu* > *Events* button.

Filtering *events*



- Tap the *Filter* button.
- Select the filter.
  If a filter is enabled, a checkmark appears next to the filter. The *Filter* symbol is highlighted in blue.
- To disable all the filters, tap the *Clear all filters* button.

Exporting *Events*

- To export *Events*, tap the Export button (see *Export on p. 66)*.

8.3 *Alarms*

You can set alarms and alarm limits for the device.

The device has three alarms:
- Temperature alarm - Alarm if the temperature in the interior exceeds the alarm limits.
- Speed alarm - Alarm if the speed exceeds the alarm limits.
- Door alarm - Alarm if the outer door has been open for too long.

8.3.1 Setting alarms and alarm limits

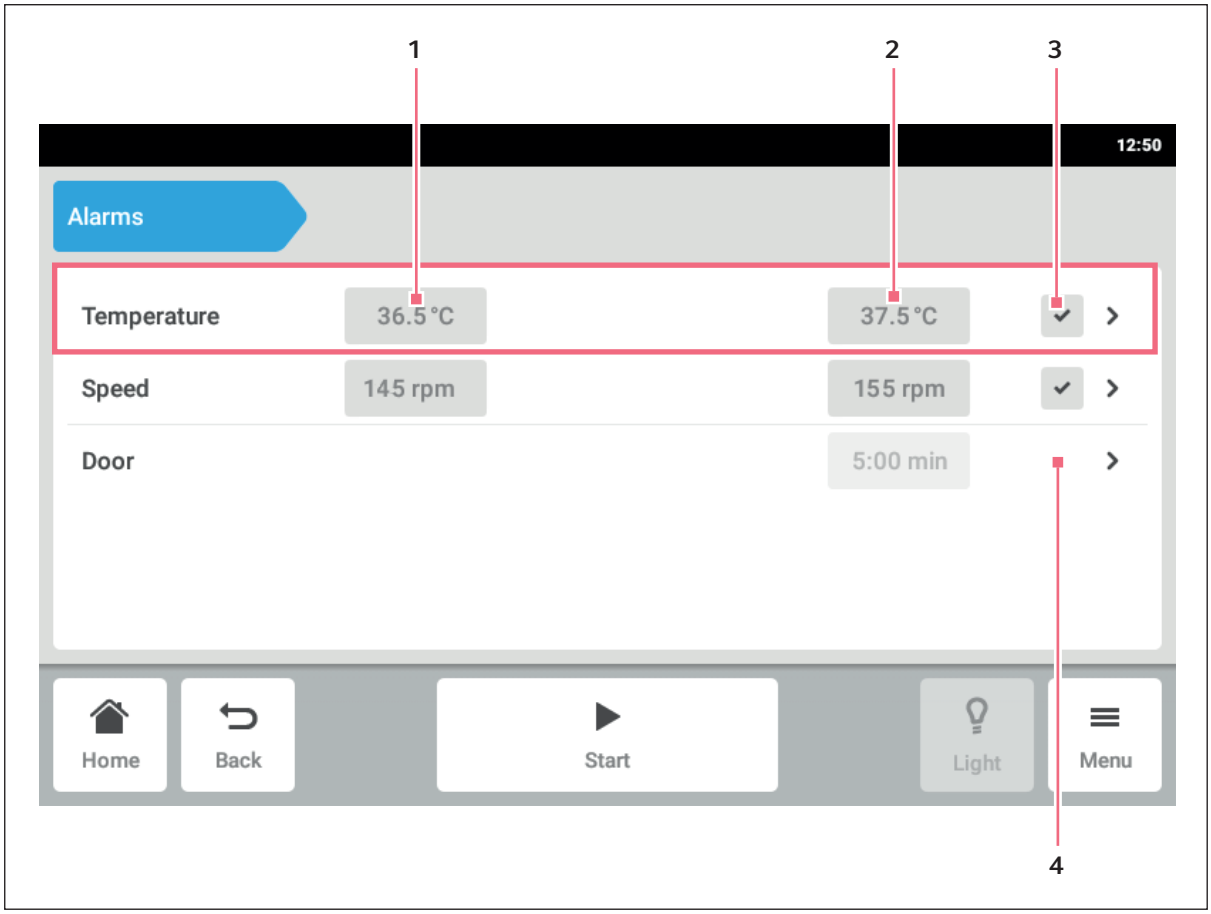


Fig. 8-3: *Alarms* screen

1 Lower alarm limit
2 Upper alarm limit
3 Alarm activated
4 Alarm not activated

1. To access the device alarm overview, tap the *Menu* > *Alarms* line.
   A window containing all the device alarms, the warning limits and the alarm limits appears.
2. To call up an alarm, tap the corresponding line.
   The overview window for this alarm appears.

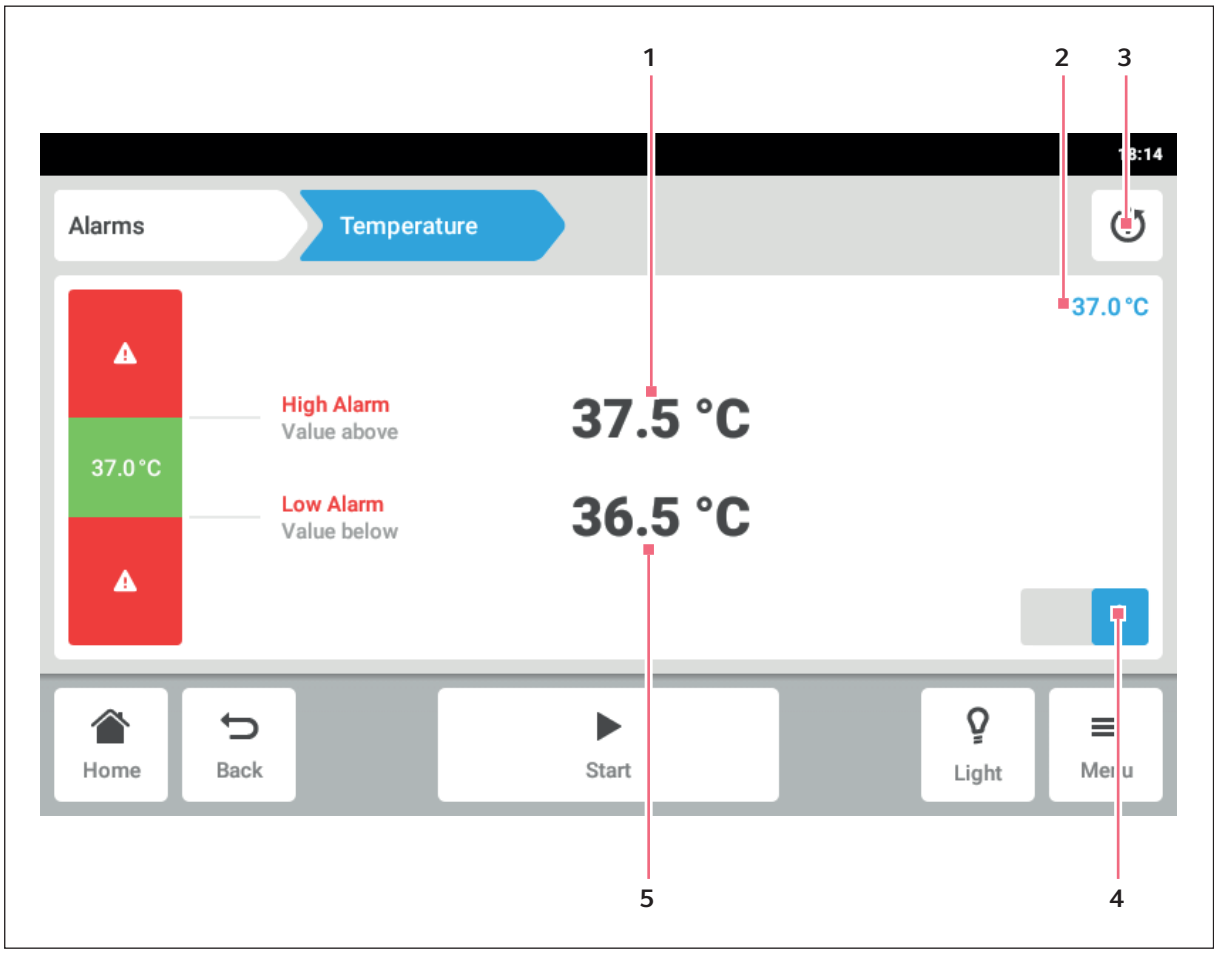


Fig. 8-4: Setting a alarm

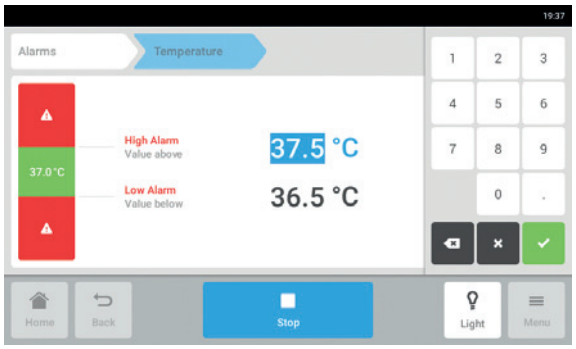
1 Upper alarm limit

2 Actual value

3 Return to default setting

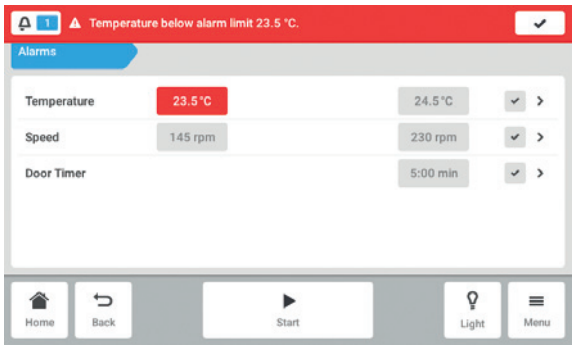
4 Activate or deactivate alarm

5 Lower alarm limit



3. To change an alarm limit, tap the alarm limit.
   The number pad appears.
4. Enter the new alarm limit.
5. Confirm your entry.
   The entered alarm limit appears on the touch screen.

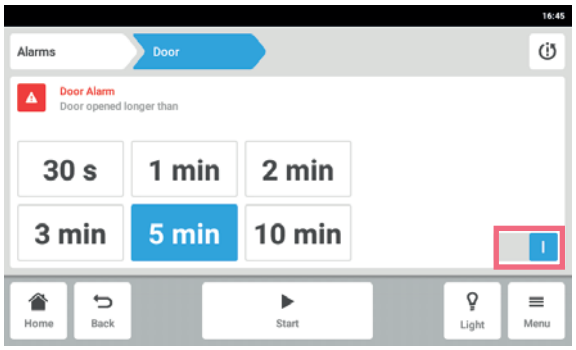
8.3.2 Active alarm



If an alarm is active, the exceeded alarm limit is highlighted in red in the alarm overview. The alarm appears in the information bar.

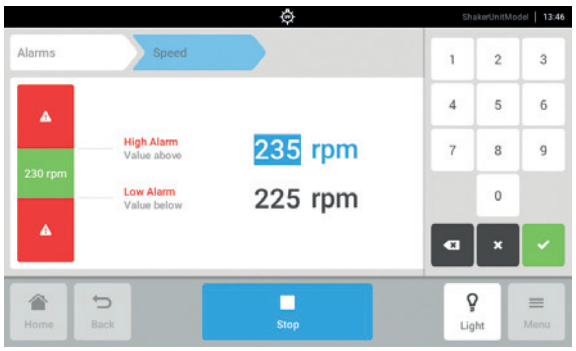
8.3.3 Setting the door alarm

The *Door* alarm can be set to alert when the door is opened for longer than: *30 s* (seconds), *1 m* (minutes), *2 m* (minutes), *3 m* (minutes), *5 m* (minutes), or *10 m* (minutes).

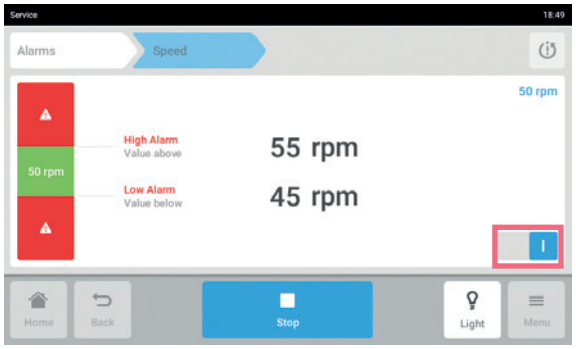


1. Select *Menu* > *Alarms* > *Door* line.
2. Activate or deactivate the alarm function.
3. Choose the alarm time.

8.3.4 Setting the speed alarm

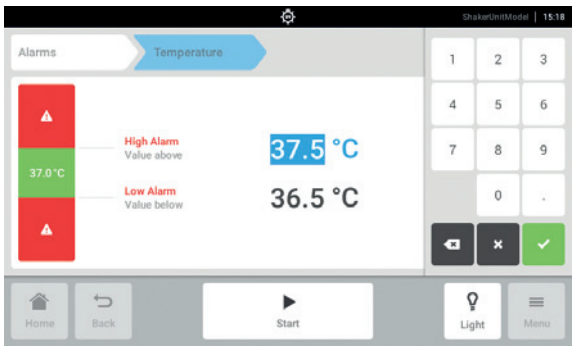


1. Tap the button *Menu* > *Alarms* > *Speed*.
   The speed high alarm and low alarm values will be shown.
2. Tap the displayed set values.
   The number pad will be shown.
3. Enter the desired set values with the number pad.
4. Confirm your entry.
   The number pad disappears.

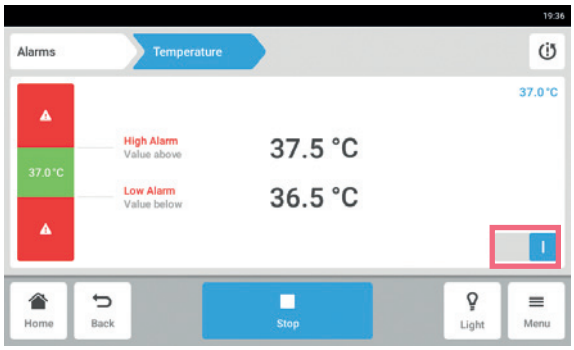


5. Activate or deactivate the speed alarm function.
6. To return to the home screen, tap the *Home* button.

8.3.5 Setting the temperature alarm

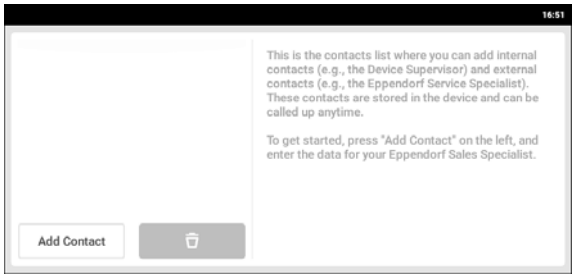


1. Select *Menu* > *Alarms* > *Temperature*.
   The temperature high alarm and low alarm values will be shown.
2. Tap the displayed set values.
   The number pad will be shown.
3. Enter the desired set values with the number pad.
4. Confirm your entry.
   The number pad disappears.



5. Activate or deactivate the temperature alarm function.

8.4 *Contact and Support*



Information about your local contact persons can be entered here.

8.5 *Charts*

The chart shows two functions on two y-axes. The time is shown on the x-axis.

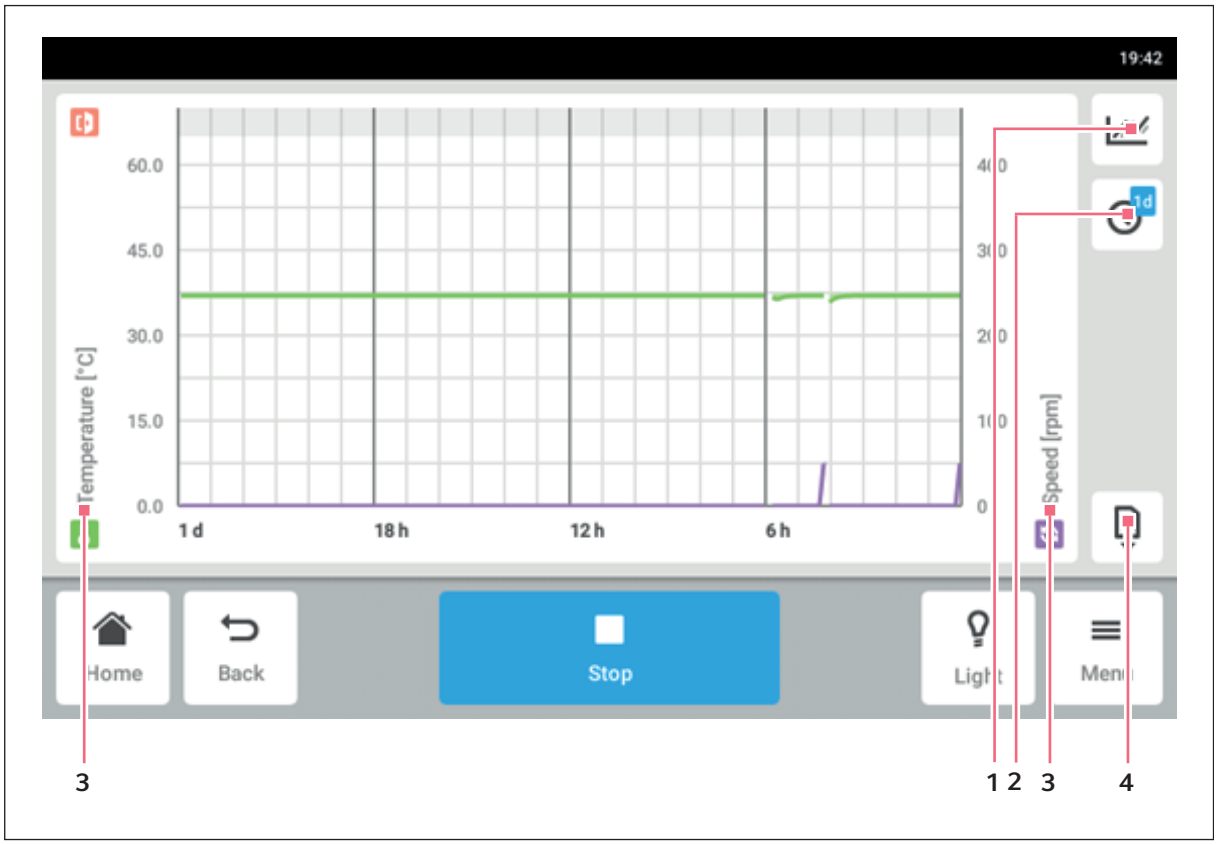


Fig. 8-5: *Chart* screen

1 **Select the function.**
The values of the selected function are displayed on the chart.

2 **Select the time span.**

3 **Name of the function for which values are displayed on the chart.**

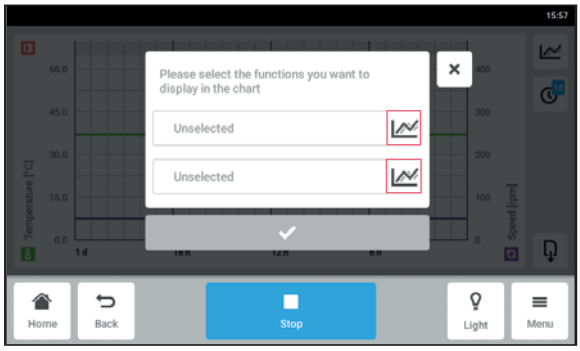
4 **Export chart data to a USB storage medium.**

Calling up the chart

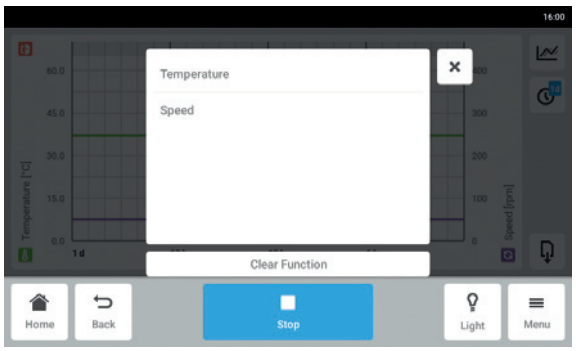
- Tap the *Menu* > *Charts* button.

Selecting functions

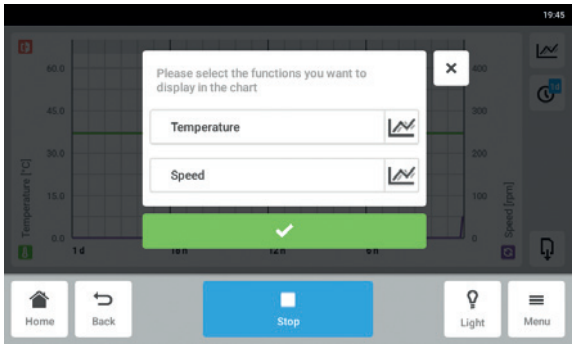
- To select which function is shown, tap the **(1)** button.
  A window with two lines appears.



- To select the functions for the left y-axis, tap the upper line.
- To select the functions for the right y-axis, tap the lower line.
  A window with the available functions appears.

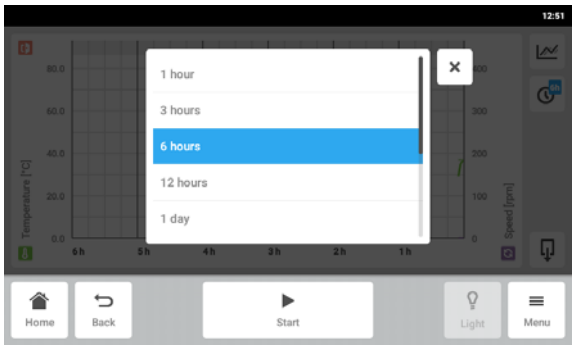


- Select the function.
  The function appears in the tapped line.



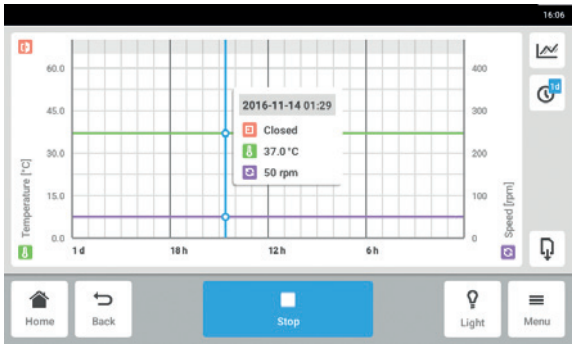
- Confirm your selection.
  The functions appear in the chart.

Selecting the time span



- To select the time span, tap the **(2)** button (see p. 57).
- Select the time span.
  The time span appears on the x-axis.
  The program measures the data of a function every 15 seconds. If you select a large time span, the resolution of the displayed data is adjusted.

Displaying values from the chart



- To display numerical values from the chart, select a defined time.
- Tap the corresponding point in the chart.
  The functions are displayed in a separate window.

Exporting the chart

- To export the data from the chart, tap the Export button (see *Export on p. 66)*.

8.6 *Maintenance & Qualification* – Balance Master function

Balance Master functionality allows reliable and consistent operation of the shaker at various loads and stacking configurations. It includes a calibration feature for proper installation and an optimization feature for semi-automated counterweight adjustment during excessive vibration.

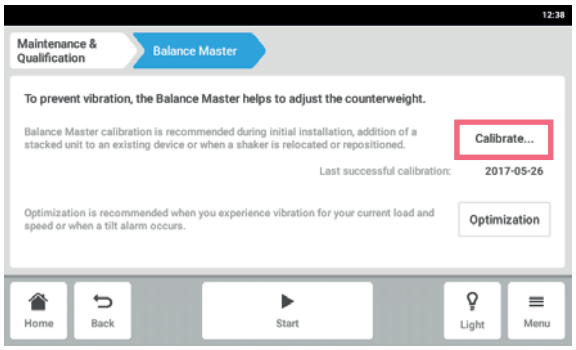
The integrated Balance Master function enables the automated imbalance detection and intelligent counterweight adjustment. In case an imbalance condition is detected, e.g. at high speeds with heavy or imbalanced loads, it reduces the speed automatically and routes the user through a software-guided counterweight adjustment process (Balance Master optimization) to facilitate the run at the set speed.

8.6.1 Calibrating the Balance Master function

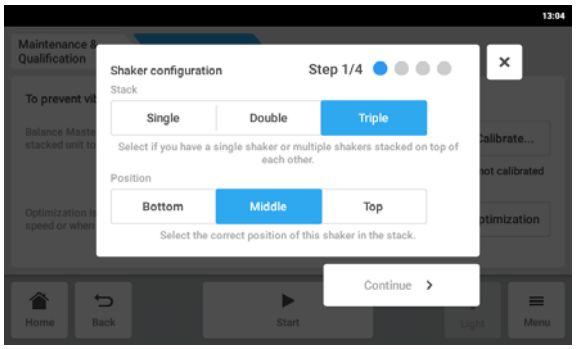
A successful calibration of the Balance Master is recommended for consistent, reliable results when using the Balance Master optimization function. Counterbalance set values for calibration of the Balance Master are dependent on the shaker configuration, a reference of this set values specific to the orbital diameter and position in a stack can be found in the chapter technical data (see p. 97). Calibrate the Balance Master of devices in stacked configurations successively in any order. If shakers are stacked on an already installed device, both the new device and the existing device have to be calibrated to ensure reliable results for the Balance Master optimization.

The Balance Master calibration is recommended in the following events:
- Initial installation
- Stacking of multiple shakers
- Shaker is repositioned
- Shaker is relocated

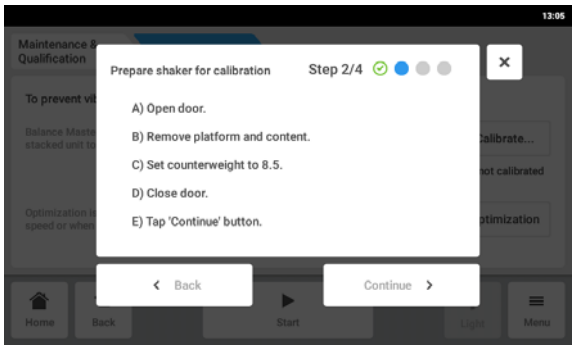
Prerequisites
- The base is installed properly.
- The single device/bottom device is installed on base.
- The devices are stacked properly on top of each other.
- The 5.1 cm (2 in) orbit devices are set up on the bottom in a stack configuration.
- Balance Master calibration must be performed on one device at a time.
- No other device in the stacked configuration is running the speed function.



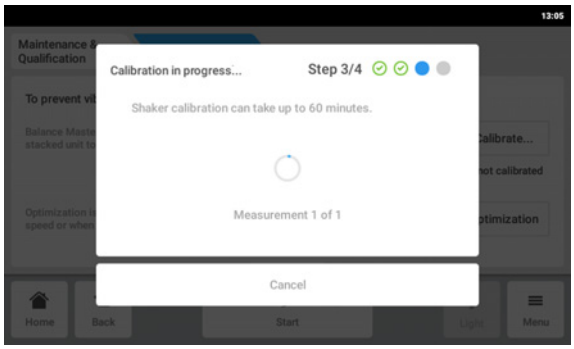
1. Select *Menu > Maintenance & Qualification > Balance Master.*
2. Tap the button *Calibrate.*



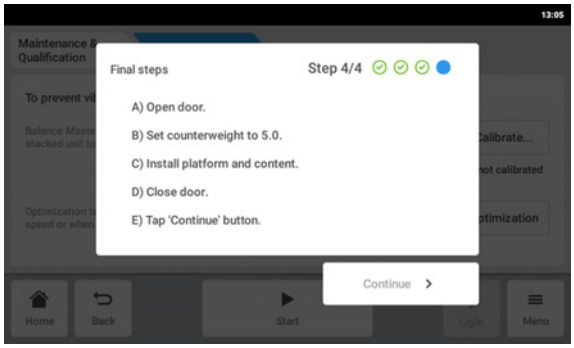
3. Select your shaker configuration *Single*, *Double* or *Triple.*
4. Select the correct position *Bottom*, *Middle* or *Top* for your shaker.
5. Tap the button *Continue*.



6. Open door.
7. Remove the platform and content.
8. Set counterweight adjustment knob (see Fig. 8-6 on p. 62) to the determined value as shown on the touch screen.
   The value is determined according to the shaker configuration. The sample screen shows the counterweight setting 8.5 for a single device with a 2.5 cm (1 in) orbit.
9. Close shaker door.
10. Tap the button *Continue*.



11. The device starts shaking in order to calibrate the Balance Master. The calibration can take up to 60 minutes.



12. Open door.
13. Set counterweight adjustment knob to displayed value.
    The sample screen shows the value for a single device with a 2.5 cm (1 in) orbit.
14. Reinstall platform and content.
15. Close door.
16. Tap the button *Continue*.
    Balance Master has been successfully calibrated.

If the Balance Master calibration was not successful, check the following criteria:

1. Check if the shaker is properly installed, level, and without vertical movement.
2. Check if the platform is removed.
3. Check the position of counterweight adjustment knob.
4. To start the Balance Master calibration again, tap the button *Restart calibration*.
   If the Balance Master calibration is still not successful, see chapter troubleshooting.

8.6.2 Using the Balance Master function for optimization

NOTICE! Fatal agitation imbalance error
If a fatal error occurs, a visual and audible alarm will be triggered and the device will come to stop.

1. Acknowledge the alarm.
2. Do not start the device.
3. Contact Eppendorf support.

In case excessive vibration of the platform occurs during agitation, the platform speed will decrease. An alarm or a warning will appear on the touch screen. In order to mitigate vibration, run the Balance Master optimization. The Balance Master optimization will provide a value in a ± fashion. Increase or decrease the setting of the counterweight by the determined value using the counterweight adjustment knob.

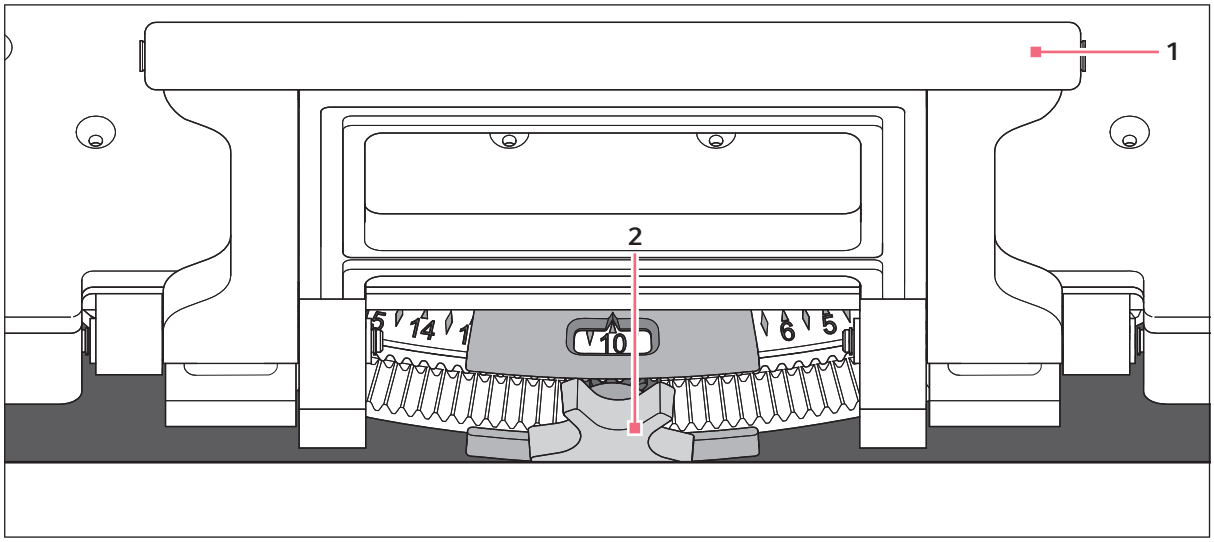


Fig. 8-6: Adjusting counterweight

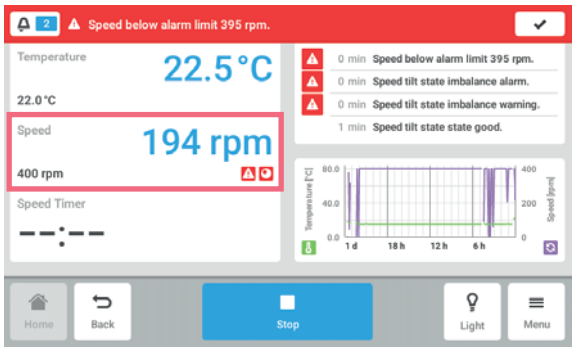
1 Sub-platform handle **2 Counterweight adjustment knob**

You can start the Balance Master optimization under the following conditions:
- The device is running the speed function.
- The platform is stationary.

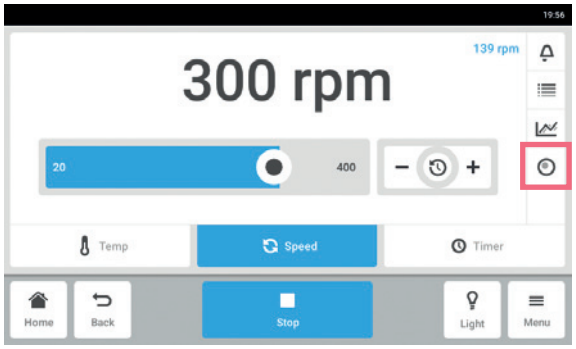
If the device detects an agitation imbalance, a speed alarm and a tilt state imbalance warning will appear on the touch screen. The device will operate at the safest speed closest to the set value. The agitation will run at a reduced speed for the current counterbalance setting and weight load.

Prerequisites

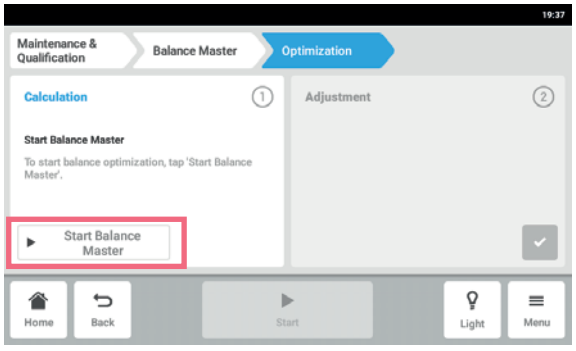
- Balance Master of the device is calibrated.
- Balance Master optimization symbol is shown below the speed value.



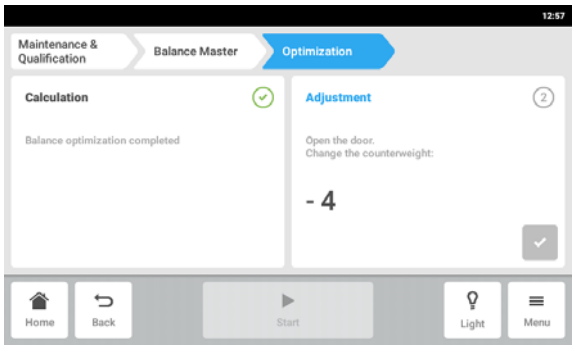
1. To access the Balance Master optimization, tap *Speed* function on the home screen.



2. Tap the button *Balance Master Optimization* on the speed parameters screen.
3. Alternative tap the *Menu > Maintenance & Qualification > Balance Master*.



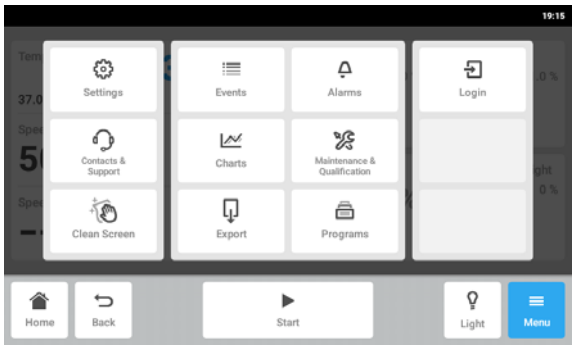
4. Tap the button *Start Balance Master*.
   The device starts shaking in order to determine the counterweight adjustment value. The Balance Master optimization can take up to 10 min.



5. Open the door, after the device has stopped shaking.
6. To adjust the counterweight calculated by the Balance Master, turn the counterweight adjustment knob to the right or left.
   For example, if the previous setting of the counterweight is 2, and the calculated value for the adjustment is + 8, set the counterweight to 10.
7. To confirm the counterweight adjustment, tap the green check button.
   The day and time of the Balance Master optimization will be logged in the event log.

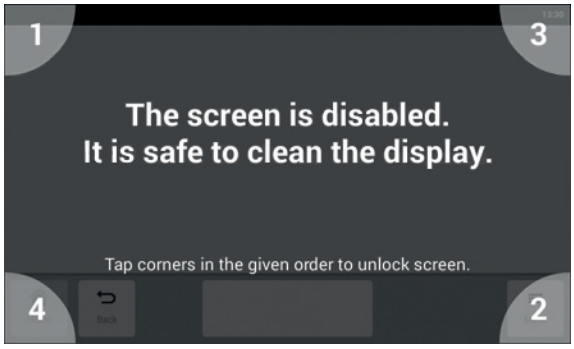
8.7 *Clean Screen*

8.7.1 Locking the touch screen



- Tap the *Menu* > *Clean Screen* button.
  The touch screen is locked and can be cleaned.

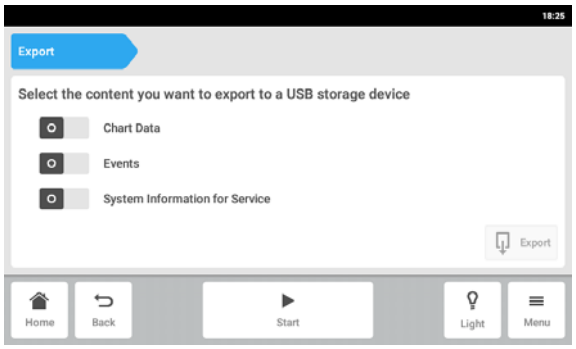
8.7.2 Unlocking the touch screen



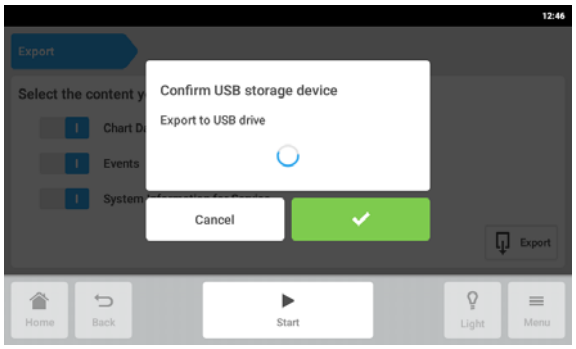
- Tap the corners of the touch screen in the numbered sequence.
  The touch screen is unlocked. The previous screen is displayed.

8.8 *Export*

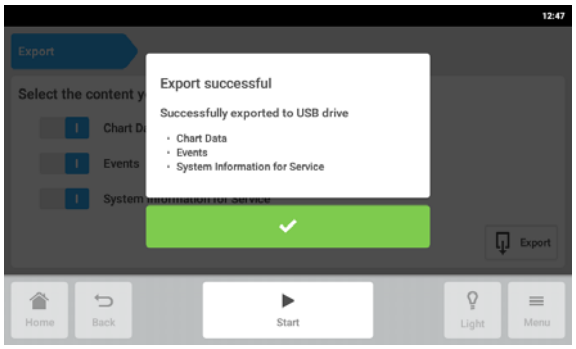
You can export charts, logs and data for service to a USB storage medium.



1. Connect a USB storage medium.
2. Tap the *Menu* > *Export* menu items.
3. Use the sliders to select which data to export.
   Data shown in gray will not be exported.
4. Tap the *Export* button.



5. Confirm the connected USB storage medium.



6. Confirm the export.
7. Remove the USB storage medium.

8.9 *Programs*

The Innova S44i can be set to run user-defined programs for an extended period of time.

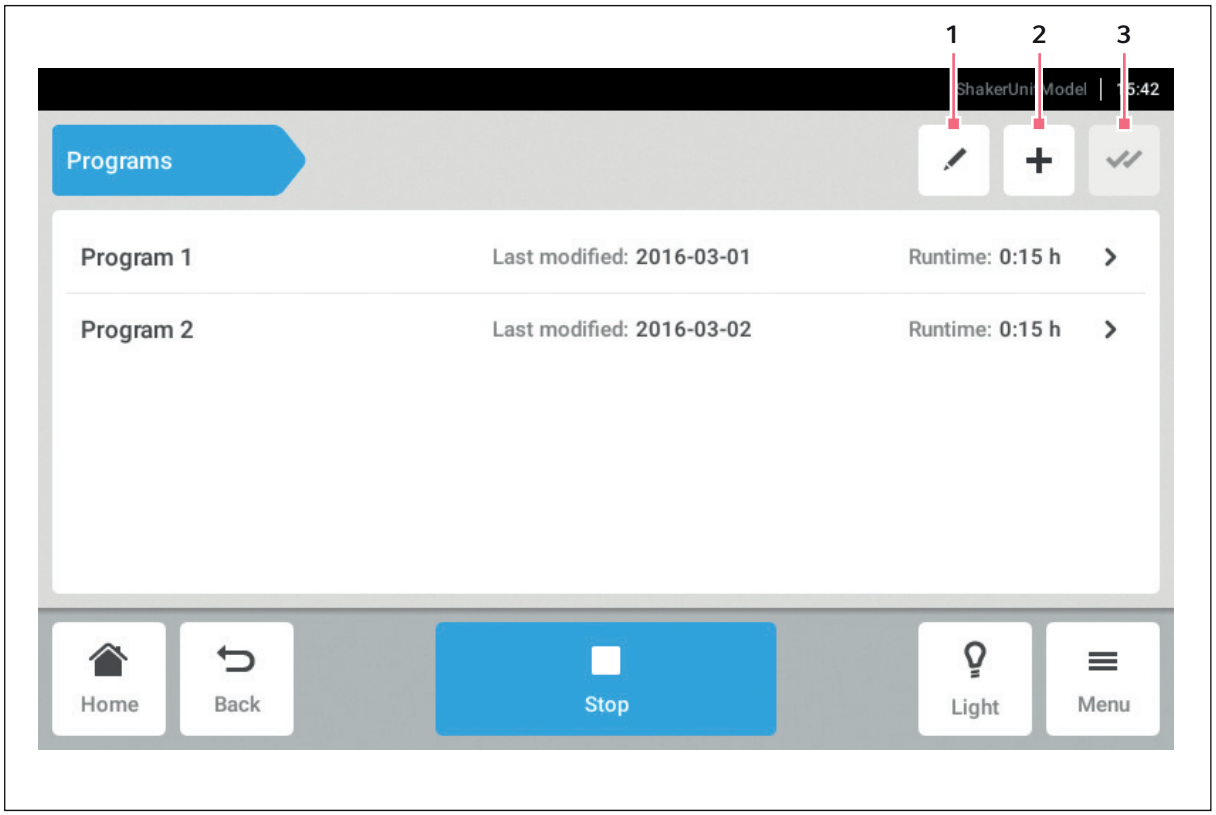


Fig. 8-7: Program screen

1 Edit program

2 Add program

3 Select all

- Select *Menu* > *Programs*.
- To get to the program details screen, tap on a program.

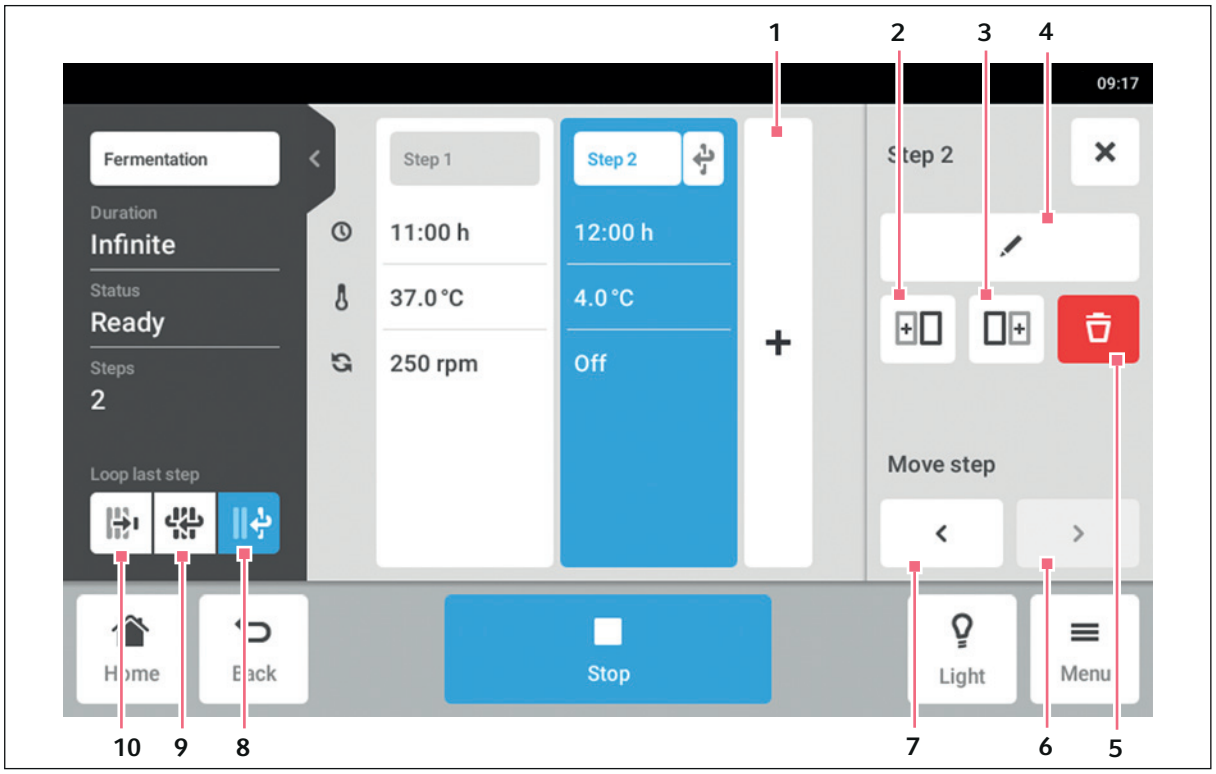


Fig. 8-8: Program details screen

1 **Add step**
A step is added to the program. The step has all parameters of the previous step.

2 **Insert copy before**

3 **Insert copy after**

4 **Edit step**

5 **Delete step**

6 **Move forward**
With the *Move forward* button it is possible to move single steps forward within a program.

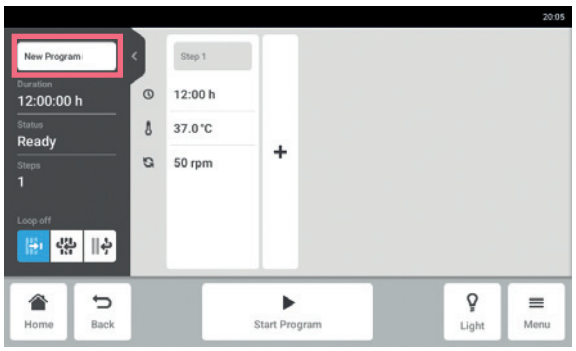
7 **Move backward**
With the *Move backward* button it is possible to move single steps backward within a program.

8 **Loop last step**
The last step of a program is repeated in a loop.

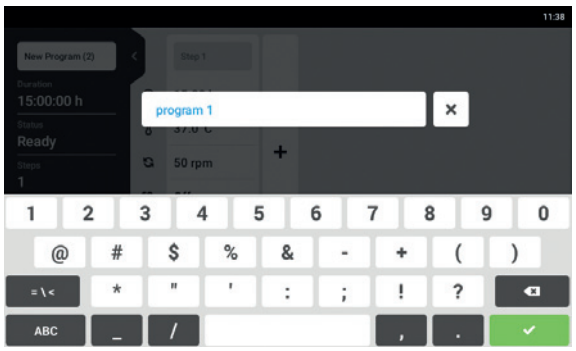
9 **Loop program**
The program is repeated in a loop.

10 **Loop off**
Default setting for programs. The Loop function is deactivated. The program ends with the last step.

8.9.1 Adding programs

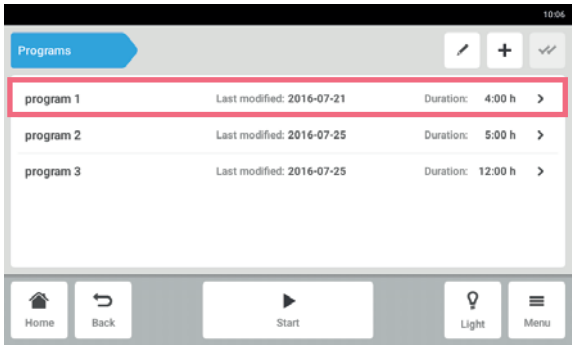


1. To add a new program, tap the *Add program* button on the program screen.
   The program details screen will be shown.
2. To enter or edit the program name, tap the edit box.
   The touch keyboard is shown.



3. Enter the desired name.
4. Confirm your entry.
   The program details screen will be shown.

8.9.2 Editing programs



1. To edit a program, tap on the program on the program screen.
   The program details screen will be shown.

2. Tap on the step you want to edit.
   The editing options for the step are shown on the program detail screen.
3. To change the parameters of a step, tap *Edit step* button.

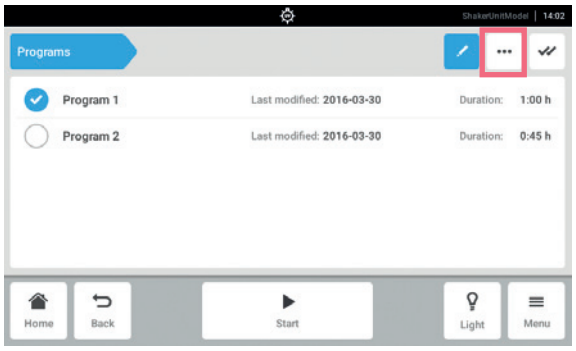
4. To edit a single parameter, tap on the function in the list.
5. Tap the displayed value.
6. Enter the desired set value with the number pad.
7. Confirm your entry.
   To return to the program details screen, tap the *Back* button.

If you want to activate or deactivate a function of a step, proceed as follows:
- Tap on the step you want to edit.
- Tap *Edit step* button.
- Tap on the function in the list.
- Activate or deactivate the function.

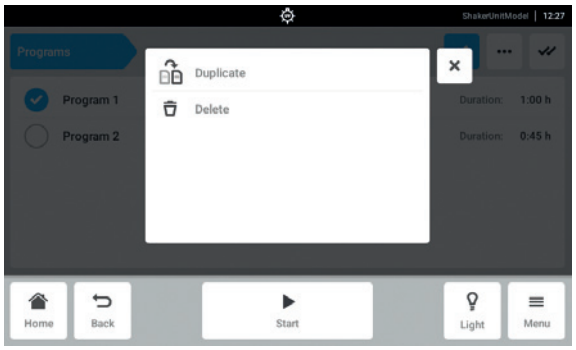
To duplicate a step, you can also tap the *Add step* button on the program details screen.

8.9.3 Deleting or duplicating programs

The *Options* button is only available in the edit mode. To enter the edit mode, tap the *Edit program* button.



1. Tap the *Edit program* button.
2. Select a program.
3. Tap the *Options* button.
   The options *Duplicate* and *Delete* are shown.



4. Tap the desired option.
   - When *Delete* is selected, confirmation is required.
   - When *Duplicate* is selected, the program screen is shown.

To duplicate a step, you can also tap the *Add step* button on the program details screen.

8.10 *Login*

User administration is set up you can login as user or administrator.

8.10.1 Logging in and out as a user

Prerequisites

- User administration is set up.

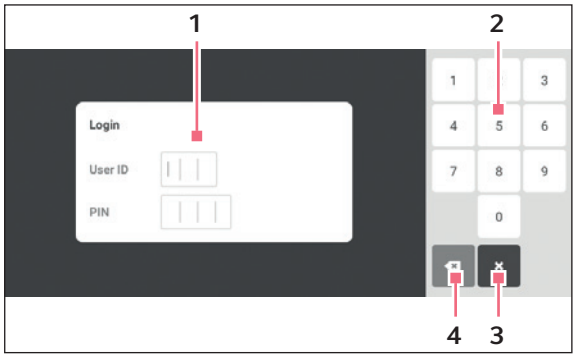


Fig. 8-9: *Login* screen

1 Edit box

2 Number pad

3 Abort login

4 Delete the entry step by step

Logging in as a user

1. Tap the *Menu* > *Login* button.
2. Enter your PIN or password.

   If the correct PIN or password was entered, the user is automatically logged in.

Logging out as a user

1. Tap the *Menu* > *Logout* button.

9 User administration

9.1 The user administration concept

The user administration can be used to organize access to the Innova S44i. There are three user roles:
- Administrator
- User with standard rights
- User with restricted rights

9.1.1 User roles for working with user administration

Administrator

The administrator has additional rights:
- Configuring Innova S44i
- Access to user administration

User with standard rights
- A normal user can operate the Innova S44i without restrictions and create new programs and folders.

User with restricted rights
- A user with restricted rights can operate the Innova S44i with certain restrictions, i.e. select, start and stop existing programs.

Logged out user
- A logged out user can stop a program execution.

9.1.2 Working without user administration

Without user administration all users have the same rights as an administrator has.

9.1.3 User rights

Tab. 9-1: User administration

Tasks	**User with restricted rights**	**User with standard rights**	**Administrator/ Operator (rights without user administration)**
Users button in *Menu*	×	×	×
User list and all users attributes			
Add user			×
Delete other user			×
Change own User name			
Change other User name			
Change own Full name	×	×	×
Change others' Full name			×
Change own e-mail	×	×	×
Change others' e-mail			×
Change own User ID			×
Change others' User ID			×
Change own Role			
Change others' Role			×
Change own PIN/Password	×	×	×
Reset others PIN/Password			×

Tab. 9-2: Common settings

Tasks	**User with restricted rights**	**User with standard rights**	**Administrator/ Operator (rights without user administration)**
Settings button in menu	×	×	×
About/Device			
About/Device/Name			×
About/License Information			
About/Export	×	×	×
About/Export –> System Information for Service	×	×	×
About/Export –> All other entries	×	×	×
Device/Acoustic Signals –> Switch			×
Device/Acoustic Signals –> Test button	×	×	×
Device/Display Settings	×	×	×
System/Date and time			×
System/Network			×

Tab. 9-3: User management

Tasks	**User with restricted rights**	**User with standard rights**	**Administrator/ Operator (rights without user administration)**
User Management (Access)			×
User Management/Disable User Management			×
User Management/Automatic Logout			×
User Management/Login Mode			×
User Management/Grant all users extra privileges			×
Change set value of functions	×	×	×
Agitation function control (Start/Stop)	×	×	×
Control for all other functions (Start/Stop)	×	×	×
Change offset parameter of functions		×	×
Change alarm parameters of functions		×	×
Balance Master Calibration			×
Balance Master Optimization	×	×	×

Tab. 9-4: Device settings

Tasks	**User with restricted rights**	**User with standard rights**	**Administrator/ Operator (rights without user administration)**
Device Settings/Chamber Light			×
Chamber Light Button in menu bar	×	×	×
Device Settings/Home Screen Configuration			×

Tab. 9-5: Notification acknowledgement

Tasks	**User with restricted rights**	**User with standard rights**	**Administrator/ Operator (rights without user administration)**
Acknowledge alarm		×	×
Acknowledge error			×

Tab. 9-6: Product-specific feature 1 (Programming)

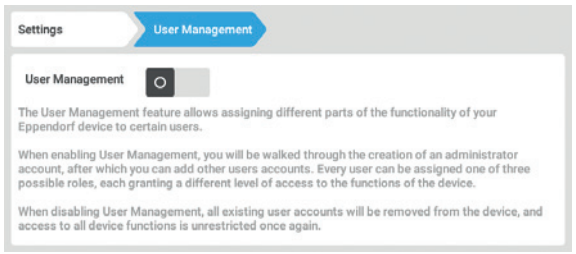
Tasks	**User with restricted rights**	**User with standard rights**	**Administrator/ Operator (rights without user administration)**
Access to *Menu > Program*	×	×	×
Create new program		×	×
Duplicate program		×	×
Delete program		×	×

Tab. 9-7: Rights in program editor

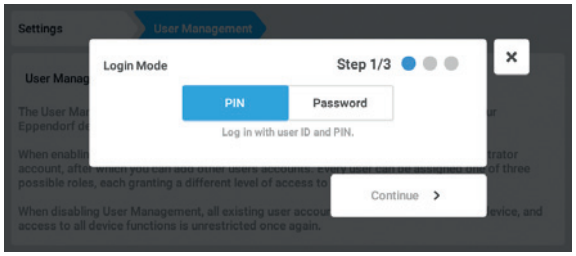
Tasks	**User with restricted rights**	**User with standard rights**	**Administrator/ Operator (rights without user administration)**
Start program execution	×	×	×
Stop program execution	×	×	×

9.2 Defining settings in the user administration

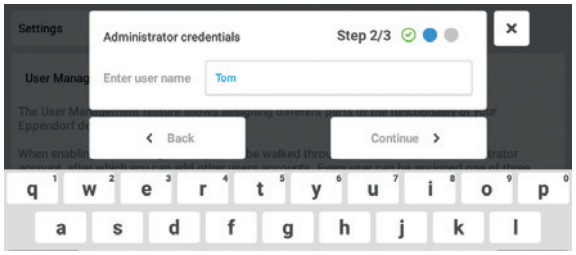
9.2.1 Creating an administrator



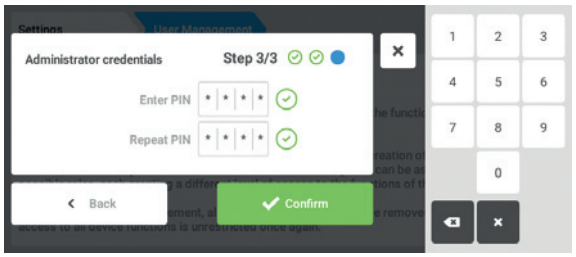
1. Tap the *Menu* button and navigate to the *Settings > User Management* menu item.
2. To activate the user administration, slide the *User Management* switch to the *I* position.
   The *Login mode* window appears.



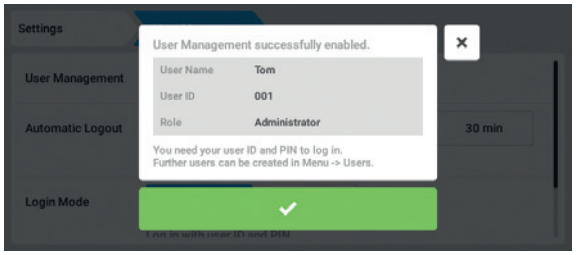
3. Define the login mode for all users.
4. Continue the process with *Continue*.
   The *Administrator credentials* window appears.



5. Enter the user name for the first administrator in the *Enter User Name* field.
6. Continue the process with *Continue*.
   The *Administrator credentials* window appears.



7. Enter PIN or password in the *Enter PIN/Password* field. Confirm the entry in the *Repeat PIN/ Password* field.
8. Continue the process with *Continue*.
   The *User Management succesfully enabled* window appears.
   The user administration is activated.
   The user account for the first administrator is created.

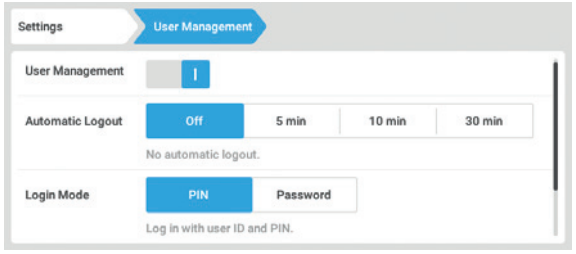


9. Confirm the message.
   The *User Management* window appears.
   It is now possible to edit the user administration.

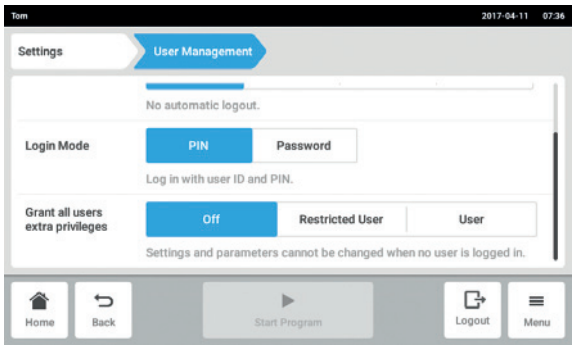
9.2.2 Editing the user administration

Prerequisites

- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *Settings* > *User Management* menu item.



2. Define the settings for the user administration.

- *User Management*: Switch the user administration on and off.
- *Automatic Logout*: Define the time after which a user is automatically logged out if the touch screen is not used.
- *Login Mode*: Define the login mode for all users.
- *Grant all users extra privileges*: Restricted rights (*Restricted User*) or standard rights (*User*) are active for all users.

When the *Grant all users extra privileges* option is activated a login is not necessary. Also users who are not recorded in the user administration can operate the device with these rights (*Restricted User* / *User*).

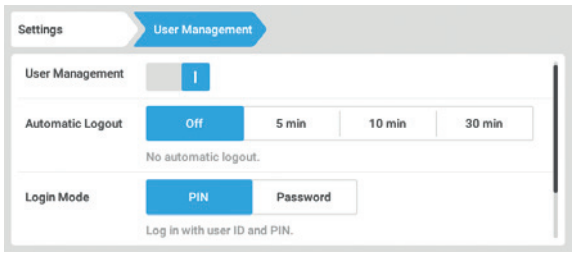
9.2.3 Deactivating the user administration

NOTICE! Data loss in case of deactivation of the user administration
Deactivating the user administration deletes all user accounts.

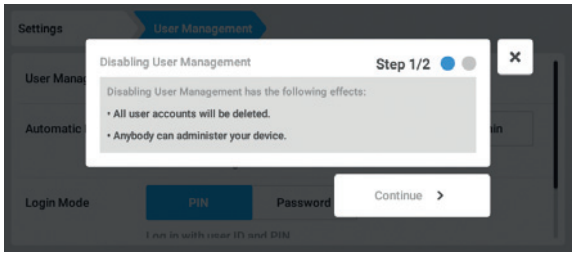
- Check whether deactivation of the user administration is required.
- Inform all users that the user accounts have been deleted.

Prerequisites

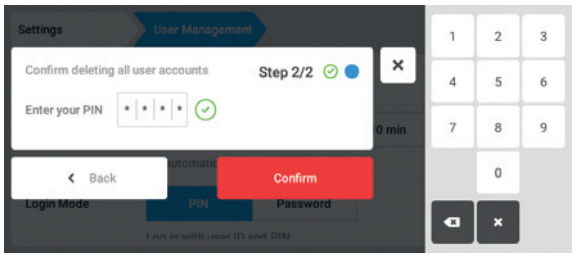
- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *Settings > User Management* menu item.
2. To deactivate the user administration, slide the *User Management* switch to the *0* position.
   The *Disabling User Management* window appears.



3. Continue the process with *Continue*.
   The *Confirm deleting all user accounts* window appears.



4. Enter the PIN/password.
5. Complete the process with *Continue*.
   The user administration is deactivated. All user accounts are deleted.

9.3 Editing user accounts as administrator

NOTICE! Data loss due to loss of the administrator password
The administrator can only change his password or PIN with his access data. If the administrator's access data is lost, no changes will be possible in the user management and system settings.
In this case, the device will have to be reset to the factory settings by an authorized service technician. All the user accounts and the data and settings stored on the device will be deleted.

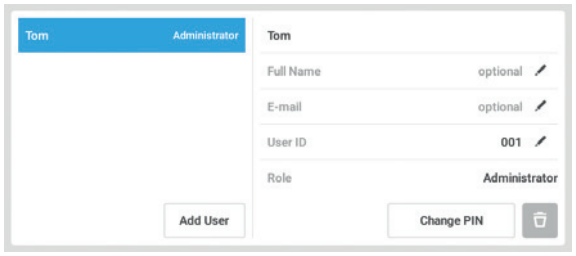
- Create a second user account with administrator rights.
- Keep the administrator password secure.

9.3.1 Creating a user account

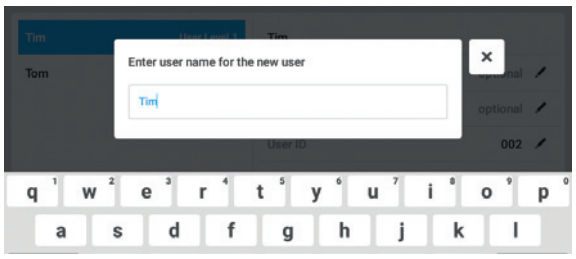
You can create 999 user accounts.

Prerequisites

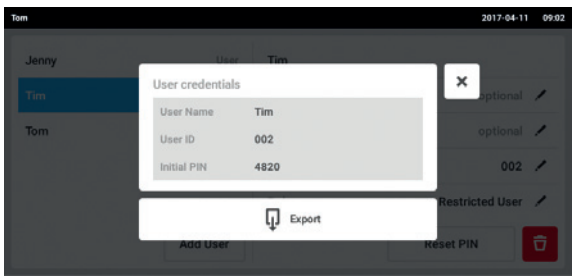
- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts is displayed.
2. Tap the *Add User* button.
   The *Enter User Name for the new user* field appears.



3. Enter the user name.
4. Confirm your entry.
   The *User credentials* window appears.
   The user account is created. The user data appears in the window.
   The user is assigned to the user group *Restricted User*.



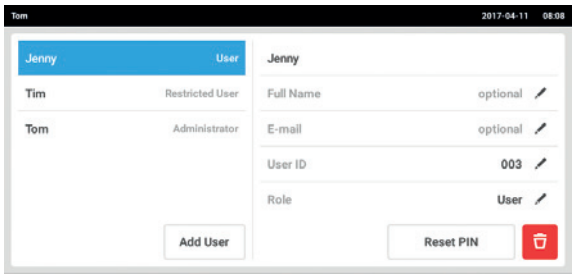
5. **Optional export of user data:** Connect the USB stick and tap the *Export* button.
6. Confirm the export.
   The user data is exported to the USB stick in a TXT file.
7. If the export was successful, the *Export successful* window appears.
   To complete the process, confirm the message.

9.3.2 Editing user accounts

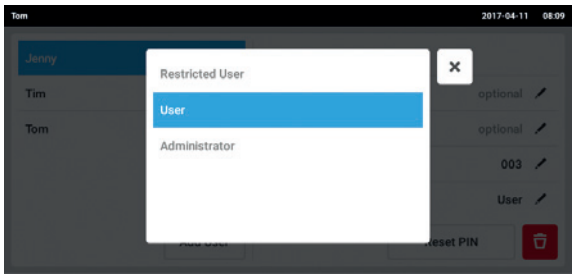
Users with restricted user rights or standard rights can only edit their own entries *Full Name* and *E-mail*. Users can always change their own PIN or password.
Administrators can assign a new user ID to a user account and change the rights.

Prerequisites

- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts is displayed.
   Entries that can be edited are indicated by a black pen.
2. Select the user account.
3. Optional: Enter the full name.
4. Optional: Enter the e-mail address.
5. To change the user ID, tap *User-ID*.
6. Select the new user ID.



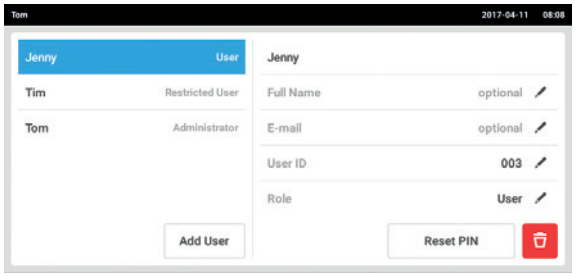
7. To change the user group and the corresponding rights, tap *Role*.
   The list with the available user groups is displayed.
8. Assign a user group to the user.
   - Restricted User
   - User
   - Administrator

   The selected parameters are stored and appear in the user account.

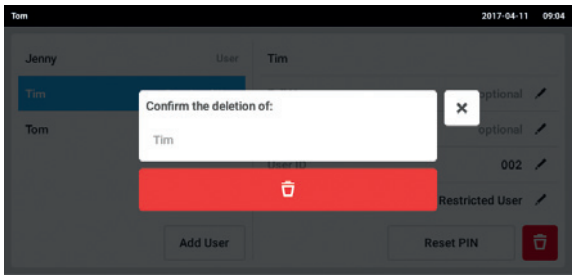
9.3.3 Deleting a user account

Prerequisites

- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts is displayed.
2. Select the user account to be deleted.
3. Tap the *Recycle bin* symbol.
   The *Confirm the deletion of:* window appears.



4. Confirm that you want to delete the user account.
   The user account is deleted.

9.3.4 Resetting the password/PIN for a user account

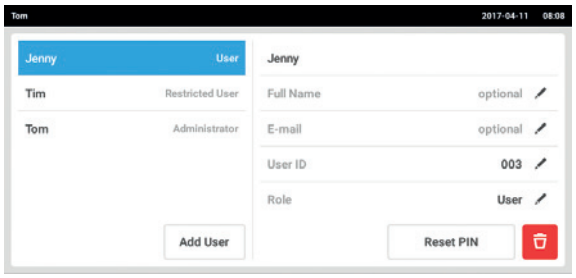
If a user has forgotten his password/PIN, the administrator can generate a new password.

The administrator can only change his password or PIN with his current access data. If the administrator's access data is lost, changes are no longer possible in the user administration. In this case, the device must be reset to the factory settings by an authorized service technician. All user accounts and the programs, log files and logs stored on the device will be deleted.

- Create a second user account with administrator rights.

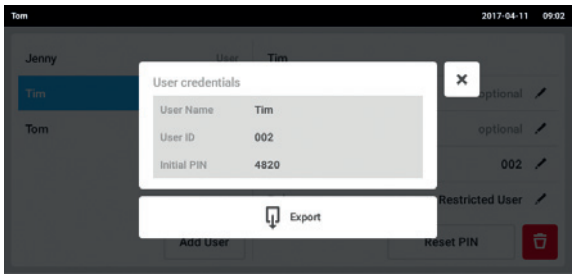
Prerequisites

- The administrator is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts is displayed.
2. Select the user account.
3. Tap the *Reset Password/PIN* button.
   The *Do you want to reset the Password/PIN for:* window appears.

4. Confirm the process with *Reset*.
   The *New Credentials* window appears.
   The new password/PIN is created automatically



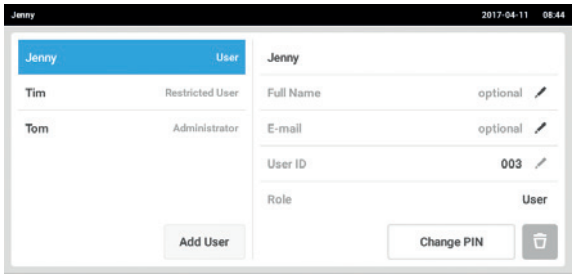
5. To export the user data, connect the USB stick and tap the *Export* button.
6. Confirm the export.
   The user data is exported to the USB stick in a TXT file.
7. If the export was successful, the *Export successful* window appears.
   To complete the process, confirm the message.

9.4 Administrating your own user account

Users can only edit their own *Full Name* and *E-mail* entries. Users can always change their own PIN or password.

Prerequisites

- The user is logged in.



1. Tap the *Menu* button and navigate to the *User* menu item.
   The list with the user accounts is displayed.
   Entries indicated by a black pen can be edited.
2. Select the user account.
3. Optional: Enter the full name.
4. Optional: Enter the e-mail address.
5. To change the password/PIN, tap the *Change Password/PIN* button.
6. Enter the current password/PIN in the *Enter current Password/PIN* field.
7. Enter the new password/PIN in the *Enter new Password/PIN* and *Repeat new Password/PIN* fields.
8. Confirm your entry.
   The message *Password/PIN successfully changed* appears.
   The new password or the new PIN is active.

10 Maintenance

10.1 Cleaning/Decontamination

DANGER! Electric shock.

- Switch off the device and disconnect the mains/power plug before starting maintenance or cleaning work.

WARNING! Danger due to contact with decontamination agent.

- Wear protection equipment, gloves and protective goggles during the cleaning process.
- Wear respiratory protection when aerosolization is suspected.

NOTICE! Spilled liquid can cause damage to the device.

- Switch off the device.
- Disconnect the mains/power plug.
- Collect the spilled liquid. Observe the specifications for the liquid in the safety data sheets.

NOTICE! Damage due to agressive cleaning agent or sharp objects
Incorrect cleaning agents can damage the display, surfaces and printing.

- Do not use corrosive cleaning agents, aggressive solvents or abrasive polishes.
- Do not incubate the accessories in aggressive cleaning agents or disinfectants for a longer period of time.
- Do not use sharp objects to clean the device.

10.1.1 Routine cleaning

To maintain the functionality and appearance of the device, clean the device regularly.

Auxiliary equipment
- Lint-free cloth
- Deionized water
- Laboratory cleaner

Prerequisites
- The device is switched off and disconnected from the mains/power supply.

1. To ensure proper air flow in and around the device, remove dust and dirt near the device.
2. Remove the interchangeable platform.
3. To clean the device, wipe over the following components with a lint free cloth moistened with laboratory cleaner:
   - External surfaces
   - Internal surfaces
   - Interchangeable platform
4. Reinstall the interchangeable platform.

10.1.2 Wipe decontamination

NOTICE! Risk of material damage
Other methods of decontamination than those specified by the manufacturer may damage the device.

- ▸ Use the decontamination methods specified by the manufacturer.
- ▸ For further question regarding the disinfection of the device, contact Eppendorf support.

Auxiliary equipment
- Lint-free cloth
- 70 % Ethanol, 1 % sodium hypochlorite solution or other suitable disinfectant (e.g.Dismozon pur, Hexaquart S, Biocidal ZF)

Prerequisites
- The device is switched off and disconnected from the mains/power supply.

1. Remove the interchangeable platform.
2. To decontaminate the device, wipe over the following components with a lint-free cloth moistened with suitable disinfectant:
   - External surfaces
   - Internal surfaces
   - Interchangeable platform
3. Reinstall the interchangeable platform.

10.1.3 Wipe decontamination of the touch screen

Auxiliary equipment
- Lint-free cloth
- Laboratory cleaner
- 70 % Ethanol, 1 % sodium hypochlorite solution or other suitable disinfectant (e.g. Dismozon pur, Hexaquart S, Biocidal ZF)

1. To clean or decontaminate the touch screen of the Innova S44i, lock the touch screen (see *Clean Screen on p. 65)*.
2. Wipe over the touch screen with a lint-free cloth moistened with laboratory cleaner or suitable disinfectant.
3. Remove residues from disinfectant with a lint-free cloth moistened with distilled water.
4. Unlock the touch screen.

10.1.4 Decontamination of chamber bottom cover after spillages

The bottom of the chamber is protected by a cover that catches spillages. The bottom cover can be flushed for decontamination. The maximum filling volume is 3 Liter.

NOTICE! Risk of material damage
The incorrect removal of the sub-platform may damage the device.

- In case the drive or chamber bottom must be accessed after severe spillages, contact an authorized Eppendorf service.

Prerequisites

- The device is switched off and disconnected from the mains/power supply.

Auxiliary equipment

- distilled water
- 1 % sodium hypochlorite solution or other suitable disinfectant

1. Connect the supplied drain tubing to refrigeration drain on the right side of the device.
2. Flush carefully from the front with a maximum of 2 L of disinfection solution.
3. Allow the solution to drain completely.
4. To remove residues, flush 3 × with 3 L of distilled water.
   Allow the flush water to drain.
5. Disconnect the drain tubing after decontamination.

To drain liquid properly from a device installed on a small base, shorten the drain tubing or use vacuum pump.

10.2 Service intervals

Component	Service interval
Temperature sensor accuracy	12 months
Drive belt inspection	12 months

The maintenance of the components must be performed by an authorized service technician. Contact your local Eppendorf partner. The contact addresses can be found online at www.eppendorf.com/worldwide.

10.3 Shipping the device

WARNING! Personal injury due to contamination.
People may get contaminated if you store or ship a contaminated device.

- Clean and decontaminate the device before shipping or storage.

NOTICE! Damage as a result of incorrect packing.
Eppendorf AG is not liable for damage caused by improper packing.

- The device may only be stored and transported in its original packaging.
- If you do not have the original packing, request original packing from Eppendorf AG.

Prerequisites

- The device has been cleaned and decontaminated.
- The original packing is available.

1. Download the "Decontamination declaration for product returns" from www.eppendorf.com.
2. Complete the decontamination declaration.
3. Pack the device.
4. Put the decontamination declaration into the packaging.
5. Send the device to Eppendorf AG or an authorized service center.

11 Troubleshooting

If you cannot remedy an error with the recommended measures, please contact your local Eppendorf partner. The contact addresses can be found on the Internet at www.eppendorf.com.

Problem	Cause	Solution
Shaker does not run.	• Door open.	▸ Close door firmly, making sure latch is engaged.
	• Fuses burned out.	▸ Call an authorized service partner.
	• Mains/power switch is not working. • The door switch is defective.	▸ Call an authorized service partner.
Shaker does not run at set speed.	• Shaker is overloaded.	▸ Remove some contents and balance the load.
	• Shaker is out of balance.	▸ Run Balance Master optimization. ▸ Adjust the counterweight.
Actual values are not indicated on the touch screen.	• The device is not properly calibrated.	▸ Call an authorized service partner.
Temperature control loop error.	• Device is not well-sealed due to issue with door, gasket, latches, ports/ plugs.	▸ Check door gasket for blockage/ interference. ▸ Ensure that the access port plug is inserted and is properly seated.
The shaker stops and a visual and audible alarm will be triggered.	• A fatal error occurred.	1. Mute the alarm. 2. Do not start the device and call an authorized service partner.
Balance Master Calibration unsuccessful	• Vertical movement of base • Unstable base installation	▸ Locate corner that shows movement. ▸ Shim until stable.
	• Floor conditions	▸ Move the device to an area with stable floor. ▸ Set counterweight positon according to optimal counterweight setting table (see *Counterweight on p. 97)*.
	• The base is unstable.	▸ Locate corner that shows movement. ▸ Shim until stable.

12 Transport, storage and disposal

12.1 Transport

CAUTION! Risk of injury from lifting and carrying heavy loads
The device is heavy. Lifting and carrying the device can lead to back injuries.

- Only lift and transport the device with a sufficient number of helpers.
- Use a transport aid for transporting the device.

- Use the original packing for transport.

	Air temperature	Relative humidity	Atmospheric pressure
General transport	-25 °C – 55 °C	10 % – 95 %, non-condensing	0.7 bar (70 kPa) – 1.06 bar (106 kPa)
Air freight	-25 °C – 55 °C	10 % – 95 %, non-condensing	0.7 bar (70 kPa) – 1.06 bar (106 kPa)

12.2 Storage

	Air temperature	Relative humidity	Atmospheric pressure
In transport packing	-25 °C – 55 °C	10 % – 95 %, non-condensing	0.7 bar (70 kPa) – 1.06 bar (106 kPa)
Without transport packing	-25 °C – 55 °C	10 % – 95 %, non-condensing	0.7 bar (70 kPa) – 1.06 bar (106 kPa)

12.3 Disposal

In case the product is to be disposed of, the relevant legal regulations are to be observed.

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

Within the European Community, the disposal of electrical devices is regulated by national regulations based on EU Directive 2012/19/EU pertaining to waste electrical and electronic equipment (WEEE).

According to these regulations, any devices supplied after August 13, 2005, in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. To document this, they have been marked with the following identification:

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

13 Technical data

13.1 Power supply

	Innova S44i Incubated	Innova S44i Incubated/Refrigerated
Mains/power supply voltage	100 V ±10 %, 50 Hz/60 Hz 120 V ±10 %, 50 Hz/60 Hz 230 V ±10 %, 50 Hz/60 Hz	
Fuse	10 A	
Power consumption	1800 W	2200 W
Power consumption maximum	2200 W	
Overvoltage category	II	
Degree of pollution	2	
Protection class according to IEC 61010-1	I	

13.2 Ambient conditions

Environment	For indoor use only.
Ambient temperature	10 °C – 35 °C
Relative humidity	20 % – 80 %, non-condensing.
Atmospheric pressure	79.5 kPa – 106 kPa Use up to a height of 2 000 m above sea level.

13.3 Weight/dimensions

13.3.1 Device

Device	Innova S44i Incubated	Innova S44i Incubated/Refrigerated
Weight	186 kg (411 lb)	198 kg (437 lb)
Outer dimensions of device		
Width	118.2 cm (46.5 in)	
Depth	86.9 cm (34.2 in)	
Heigh	63.1 cm (24.8 in)	
Internal dimensions		
Width	89.6 cm (35.3 in)	
Depth	86.9 cm (34.2 in)	
Height (chamber bottom to chamber ceiling)	57.5 cm (22.6 in)	
Height (platform to chamber ceiling)	43.7 cm (17.2 in)	
Height (platform to photosynthetic light bank)	–	57.5 cm (22.6 in)

13.3.2 Platform

Platform	
Weight	10 kg (22.0 lb)
Width	76.2 cm (30 in)
Depth	62.0 cm (24.4 in)
Height	0.8 cm (0.3 in)

13.3.3 Base

Base	**Short Base**	**Tall Base**
Weight	16.8 kg (37.0 lb)	37.7 kg (83.0 lb)
Width	118.2 cm (46.5 in)	
Depth Depth with spacer handles	73.7 cm (29.0 in) 83.8 cm (33.0 in)	
Height	10.5 cm (4.1 in)	30.7 cm (12.1 in)

13.4 Stacking dimensions

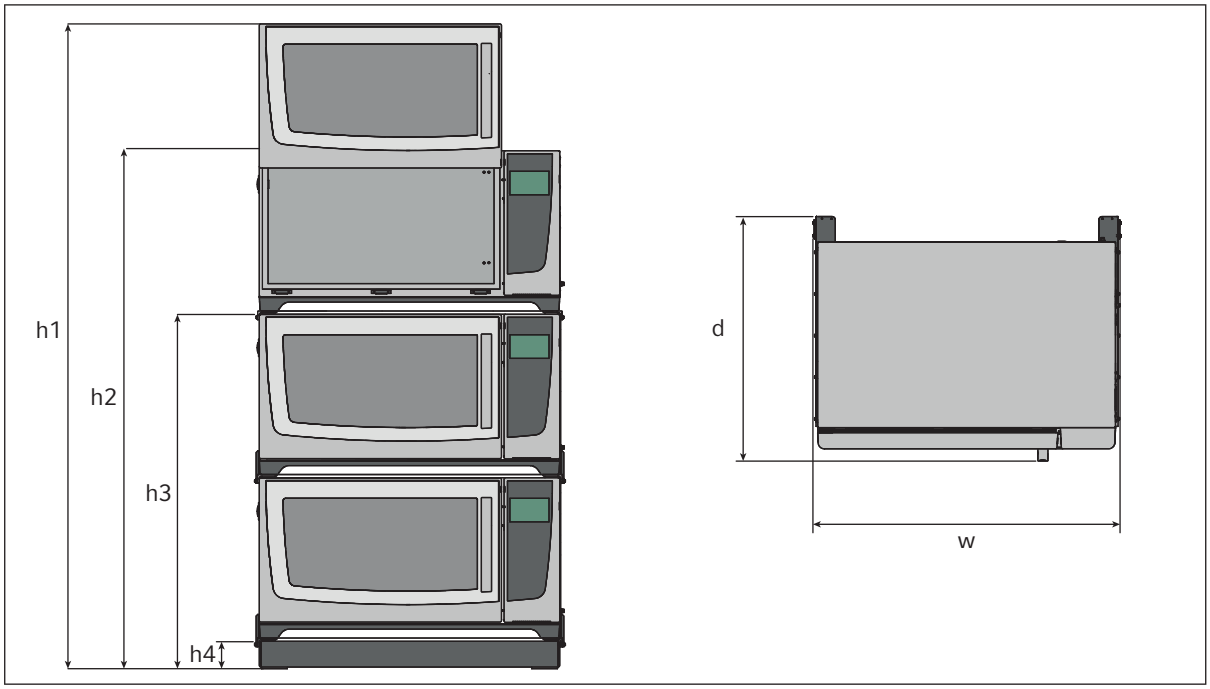


Fig. 13-1: Stacking dimensions with short base

Height				**Depth**	**Width**
h1	h2	h3	h4	d	w
254.5 cm (100.2 in)	203.7 cm (80.2 in)	139.4 cm (54.9 in)	10.5 cm (4.1 in)	95.8 cm (37.7 in)	118.2 cm (46.5 in)

13.5 Interfaces

USB	USB 2.0
Ethernet	Ethernet 100 MBit/s

Only devices which meet the requirements of IEC 950/EN 60950-1 (UL 1950) standards may be connected to the interfaces.

13.6 Application parameters

The following specifications assume a maximum load of 45.5 kg (100 lb), including platforms, clamps, glassware and contents.

13.6.1 Agitation

	Orbit 2.5 cm (1 in)	**Orbit 5.1 cm (2 in)**
Speed	20 rpm – 400 rpm	20 rpm – 300 rpm
	Speed can be set in increments of 1 rpm	
Control accuracy	±0.5 rpm	
Innova S44i stacked on Innova 44/44R	2 devices stacked: 20 rpm – 300 rpm 3 devices stacked: 20 rpm – 250 rpm	

13.6.2 Load

	Orbit 2.5 cm (1 in)	**Orbit 5.1 cm (2 in)**
Maximun load (including platforms, clamps, glassware and contents)	45.5 kg (100 lb)	
Platform load	35.4 kg (78 lb)	

13.6.3 Temperature

Temperature	**Innova S44i Incubated**	**Innova S44i Incubated/Refrigerated**
Minimum	5 °C above ambient temperature	20 °C below ambient temperature (minimum 4 °C)
Maximum	80 °C	
Control accuracy	±0.1 ° C at 37 ° C	
Uniformity	±0.25 ° C at 37 ° C and 250 rpm	
Indication	Displayed in increments of 0.1 ° C	

13.6.4 Photosynthetic light

Main wave length	Wideband Spectrum 400 nm – 700 nm
Intensity range	15 PAR – 150 PAR
Accuracy	±10 %
Indication	Displayed in increments of 5 %
Output	125 W
Voltage	48 VDC

13.7 Counterweight

13.7.1 Counterweight set values for Balance Master calibration

Counterweight set values for Balance Master calibration of single and stacked devices.

Position of device in stacked configuration	Orbit	Counterweight setting
Single	2.5 (1 in)	8.5
	5 cm (2 in)	17
Bottom of double	2.5 (1 in)	12
	5 cm (2 in)	17
Top of double	2.5 (1 in)	5
	5 cm (2 in)	12
Bottom of triple	2.5 (1 in)	13.5
	5 cm (2 in)	20
Middle of triple	2.5 (1 in)	6.5
	5 cm (2 in)	15
Top of triple	2.5 (1 in)	3.0
	5 cm (2 in)	7

13.7.2 Optimal counterweight settings

The following table gives guidance for optimal counterweight settings depending on the load.

Tab. 13-1: Counterweight settings for devices with 2.5 cm (1 in) orbit

Optimal counterweight setting	Load in kg	Load in lb
2	-	-
2.5	3	6.7
3	6.1	13.6
3.5	9.3	20.4
4	12.4	27.3
4.5	15.5	34.1
5	18.6	40.9
5.5	21.7	47.8
6	24.8	54.6
6.5	27.9	61.5
7	31	68.3
7.5	34.1	75.1
8	37.2	81.9
8.5	40.3	95.6
9	43.4	95.6
9.5	46.4	102.4
10	49.5	109.2
10.5	52.6	116.0

Tab. 13-2: Counterweight settings for devices with 5.0 cm (2 in) orbit

Optimal counterweight setting	Load in kg	Load in lb
7	3.7	8.1
7.5	5.2	11.5
8	6.8	14.9
8.5	8.3	18.4
9	9.9	21.8
9.5	11.4	25.2
10	13	28.6
10.5	14.5	32
11	16	35.4
11.5	17.6	38.8
12	19.1	42.2
12.5	20.7	45.6
13	22.2	49
13.5	23.8	52.4
14	25.3	55.8
14.5	26.8	59.1
15	28.4	62.5
15.5	29.9	65.9
16	31.4	69.3
16.5	33	72.7
17	34.5	76
17.5	36	79.4
18	37.5	82.8
18.5	39.1	86.1
19	40.6	89.5
19.5	42.1	92.8
20	43.6	96.2

14 Ordering information

14.1 Devices

230V 50/60 Hz

Order no. (International)	Description
	Innova S44i
	230 V, 50 Hz/60 Hz
S44I300001	Orbit 2,54 cm (1 in)
S44I320001	Orbit 5,08 cm (2 in)
S44I310001	Orbit 2,54 cm (1 in), refrigeration
S44I311001	Orbit 2,54 cm (1 in), refrigeration, photosynthetic light
S44I313001	Orbit 2,54 cm (1 in), refrigeration
S44I330001	Orbit 5,08 cm (2 in), refrigeration
S44I331001	Orbit 5,08 cm (2 in), refrigeration, photosynthetic light

120V 50/60 Hz

Order no. (International)	Description
	Innova S44i
	120 V, 50 Hz/60 Hz
S44I200005	Orbit 2,54 cm (1 in)
S44I220005	Orbit 5,08 cm (2 in)
S44I210005	Orbit 2,54 cm (1 in), refrigeration
S44I213005	Orbit 2,54 cm (1 in), refrigeration
S44I211005	Orbit 2,54 cm (1 in), refrigeration, photosynthetic light
S44I230005	Orbit 5,08 cm (2 in), refrigeration
S44I231005	Orbit 5,08 cm (2 in), refrigeration, photosynthetic light

100V 50/60 Hz

Order no. (International)	Description
	Innova S44i
	100 V, 50 Hz/60 Hz
S44I000006	Orbit 2,54 cm (1 in)
S44I020006	Orbit 5,08 cm (2 in)
S44I010006	Orbit 2,54 cm (1 in), refrigeration
S44I030006	Orbit 5,08 cm (2 in), refrigeration

14.2 Accessories

Order no. (International)	Description
	Stacking Base
	Innova S44i
S44I041001	10.16 cm (4 in)
S44I041002	30.48 cm (12 in)
	Universal platform
S44I040001	Innova S44i
	Static incubation shelf
S44I042001	Innova S44i
	Window shade
S44I042002	Innova S44i
	Stacking kit for triple stack
S44I041003	Innova S44i
	Stacking kit
S44I041005	Innova S44i – Innova S44i
S44I041006	Innova S44i – Innova 44/R

Tab. 14-1: Accessories for universal platform

Erlenmeyer flasks up to 5 L in size can be accommodated. If photosynthetic light or the static incubation shelf is installed, Erlenmeyer flask clamps up to 5 L can be accommodated. If static Incubation shelf is installed flasks up to 3 L Fernbach can be accommodated.

Order no. (International)	Description	Maximum quantity on platform
ACE-10S	10 mL Erlenmeyer flask clamp	238
M1190-9004	25 mL Erlenmeyer flask clamp	238
M1190-9000	50 mL Erlenmeyer flask clamp	130
M1190-9001	125 mL Erlenmeyer flask clamp	81
M1190-9002	250 mL Erlenmeyer flask clamp	49
M1190-9003	500 mL Erlenmeyer flask clamp	36
ACE-1000S	1 L Erlenmeyer flask clamp	20
ACE-2000S	2 L Erlenmeyer flask clamp	13
ACE-3000S	3 L Erlenmeyer flask clamp	8
ACE-4000S	4 L Erlenmeyer flask clamp	8
ACE-5000S	5 L Erlenmeyer flask clamp	6
M1190-9005	2 L Lauber Thompson flask clamp	15
ACFE-2800S	2.8 L Fernbach flask clamp	8
ACSB-500S	500 mL Media Bottle clamp	20
ACBS-1000S	1000 mL Media Bottle clamp	20

Order no. (International)	Description	Maximum quantity on platform
Different hole diameters available, refer to www.eppendorf.com	Test tube rack small	12
	Test tube rack medium	10
	Test tube rack large	8
M1289-0700	Plate holder layer	4
TTR-221	Plate holder stack	20
M1250-9700	Sticky pad	12

Tab. 14-2: Dedicated platforms

Order no. (International)	Description	Maximum quantity on platform
S44I040002	125 mL Erlenmeyer flask clamp	86
S44I040003	250 mL Erlenmeyer flask clamp	53
S44I040004	500 mL Erlenmeyer flask clamp	39
S44I040005	1 L Erlenmeyer flask clamp	23
S44I040006	2 L Erlenmeyer flask clamp	15
S44I040007	2.8 L Fernbach flask clamp	8
S44I040008	4 L Erlenmeyer flask clamp	8
S44I040010	2 L Lauber flask clamp	15

Tab. 14-3: Sticky pad platform

Order no. (International)	Description	Maximum quantity on platform
M1250-9700	Sticky pad	12

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