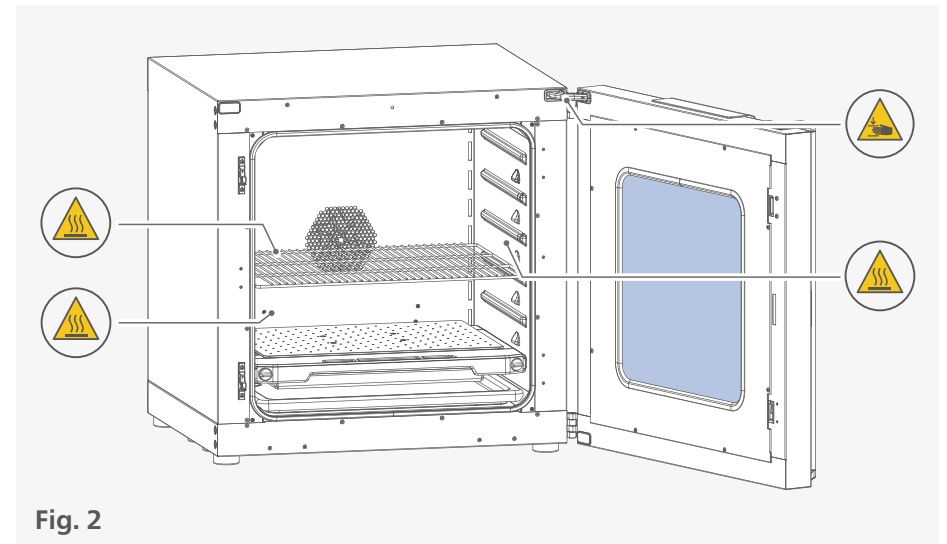
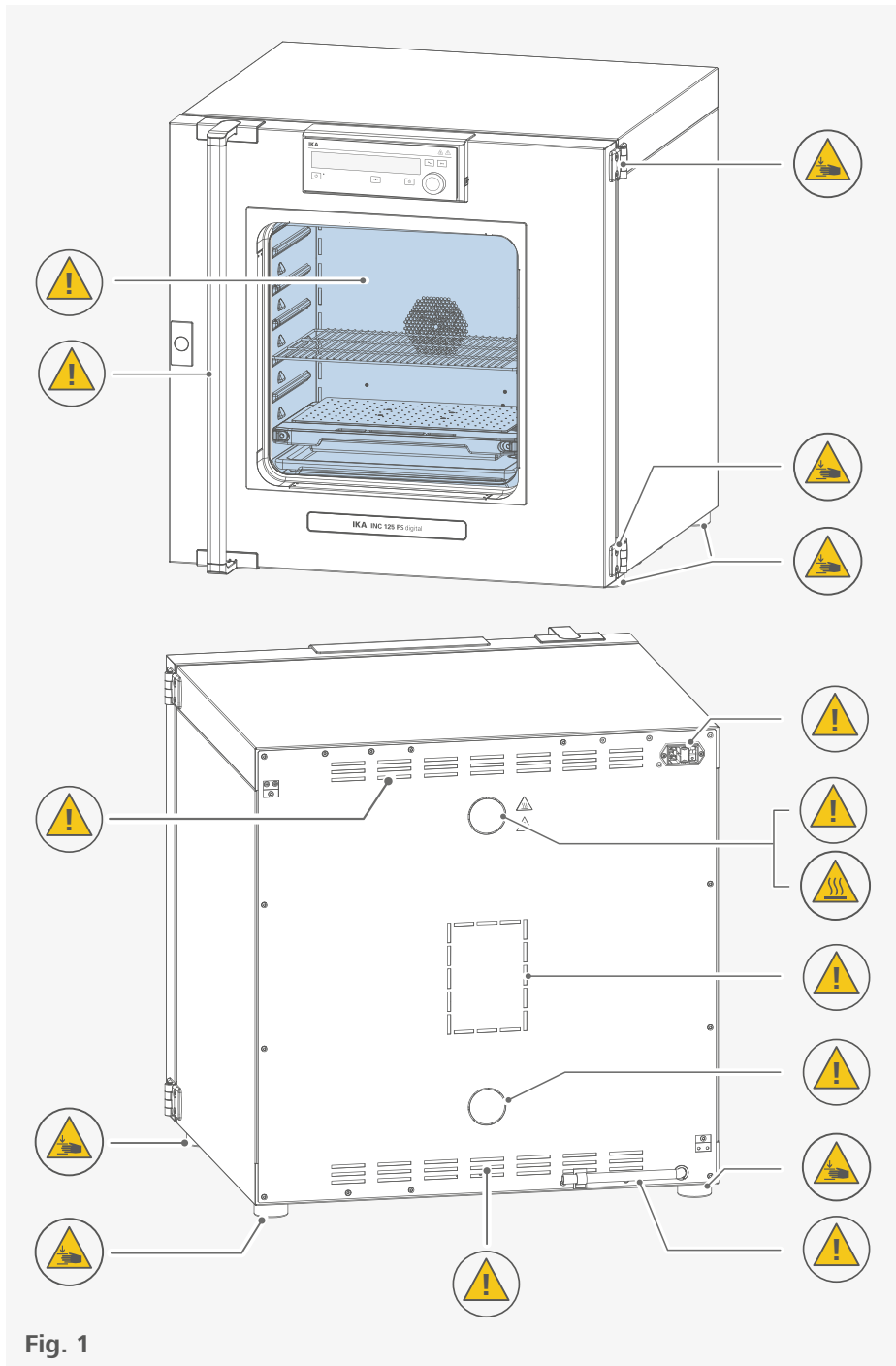











# IKA

designed for scientists

**INC 125 FS digital**

ENGLISH



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## EU Declaration of Conformity







We declare under our sole responsibility that this product corresponds to the directives 2006/42/EG, 2014/35/EU, 2014/30/EU and 2011/65/EU and conforms with the following standards or normative documents: EN 61010-1, EN 61010-2-010, EN 61326-1, EN 60529, EN ISO 12100 and DIN 12880.

A copy of the complete EU Declaration of Conformity or further declarations of conformity can be requested at [sales@ika.com](mailto:sales@ika.com).



## Explication of warning symbols

/// Warning symbols

-  **Danger!** Indicates an (extremely) hazardous situation, which, if not avoided, will result in death, serious injury.
-  **Warning!** Indicates a hazardous situation, which, if not avoided, can result in death, serious injury.
-  **Caution!** Indicates a potentially hazardous situation, which, if not avoided, can result in injury.
-  **Notice!** Indicates practices which, if not avoided, can result in equipment damage.
-  **Warning!** Risk of biohazard infection.
-  **Caution!** Indicates a hazardous situation that cause from a hot surface!
-  **Caution!** Indicates crushing risk to fingers / hands.





## /// General Symbols

**A** — Position number



**Correct / Result!**  
Shows the correct execution or the result of an action step.



**Wrong!**  
Shows the incorrect execution of an action step.



**Note!**  
Displays action steps that require particular attention to detail.



**Closed lock**  
Indicates the status of "locked".



**Open lock**  
Indicates the status of "Unlocked".



## Safety instructions

### /// General information

- › **Read the operating instructions completely before starting up and follow the safety instructions.**
- › Keep the operating instructions in a place where it can be accessed by everyone.
- › Ensure that only trained staff work with the device.
- › Follow the safety instructions, guidelines, occupational health and safety and accident prevention regulations.
- › The device must only be used in a technically perfect condition.

#### **Notice!**

- › Pay attention to the marked sites in Fig. 1 and Fig. 2.

### /// Transportation / Device setup

#### **Danger!**

- › Beware of the high dead weight of the device when transporting.

#### **Caution!**

- › Ensure that your fingers do not get crushed when setting down the device.

#### **Caution!**

- › The power switch of the device must be accessed immediately, directly and without risk at any time. If access to the power switch cannot be ensured, an additional emergency stop switch that can be easily accessed must be installed in the work area.

#### **Notice!**

- › Set up the device in a spacious area on an even, stable, clean, non-slip, dry and fireproof surface.
- › The feet of the equipment must be clean and undamaged.
- › Ensure the anti-tilt bracket is properly fixed, in particular when the device is stacked.
- › Make sure that the ventilation slots are not blocked at back of the device.
- › Observe the minimum distances: between devices and wall min. 150 mm.

### /// Working with the device

#### **Danger!**

- › Do not use the device in explosive atmospheres, it is not EX-protected.
- › To avoid body injury and property damage, observe the relevant safety and accident prevention measures when processing hazardous materials.

#### **Warning!**

- › Only process samples that will not react dangerously to the extra energy produced through processing. This also applies to any extra energy produced in other ways, e.g. through light irradiation.
- › Do not start up the device if:
  - it is damaged
  - cable is damaged.

#### **Warning!**

- › Risks may also be posed by biological or microbiological substances.
- › Observe the national regulations for handling these substances, the biological security level of your laboratory, the material safety data sheets and the manufacture's application notes.
- › For complete instructions on handling of germs or biological material in risk group II or higher, please refer to the "Laboratory Biosafety Manual" (source: World Health Organization).

#### **Caution!**

- › There is a crushing risk when opening or closing the door. Keep your hands away from squeezing edges.

#### **Caution!**

- › The inner chamber, the glass window on the door and the door gasket may become hot during operation. Do not touch these part during operation.
- › Risk of burns caused by vapour or hot surface. Pay attention to the residual heat after switching off the device.

#### **Caution!**

- › Media may only be processed or heated with this device in safe operation without monitoring if their flash point lies above the set safety temperature limit. The set safety temperature limit must be at least 25°C below the flash point of the medium in use (EN 61010-2).
- › The device must have cooled down before loading / unloading.
- › Heavy loads can lead to tilting of the device. Observe loading recommendations for the shelves.
- › Do not move any loaded racks.

#### **Notice!**

- › Covers or parts that can be removed from the device without tools must later be refitted to ensure safe operation. This will prevent the infiltration of foreign objects, liquids and other contaminants.
- › Never use the device for:
  - heating food
  - drying living beings
  - heating room
- › Pay attention to the vessels on the shaker platform when setting the shaking speed. This will prevent any of the medium to be shaken from spurting out of the sample vessels.
- › If the shaking vessels break during operation or the media be spilt, interrupt the shaking process immediately, remove any vessel residue and clean the device.
- › All accessories and vessels in place for the shaking process must be firmly secured.
- › Shaking vessels which are not properly secured could get damaged or be projected out. It is essential to regularly check that the vessels to be shaken and the attachments are firmly secured, especially before using the device again.
- › Avoid allowing objects to push or strike the shaker platform.

### /// Accessories

#### **Caution!**

- › Use the locking brake when using the roller frame or roller box.
- › Protect the device and accessories from bumping and impacting.
- › Check the device and accessories beforehand for damage each time when you use them. Do not use damaged components.
- › Safe operation is only guaranteed with the accessories described in the "Accessories" section.
- › Only use IKA approved accessories.
- › Use only original IKA spare parts.

### /// Power supply / switching off the device

- › The voltage stated on the type plate must correspond to the power voltage.
- › The device can only be disconnected from the power supply by pulling out the power plug or the connector plug.
- › The device must only be operated with the original power cord set.
- › The socket for the power cord must be easily accessible.
- › Socket must be earthed (protective ground contact).
- › After a power failure during operation, the device may start automatically (depending on operating mode).
- › Disconnect the power plug before cleaning, maintenance and transportation of the device.

### /// Maintenance

- › The device must only be opened by trained specialists, even during repair. The device must be unplugged from the power supply before opening. Live parts inside the device may still be live for some time after unplugging from the power supply.

### /// Disposal instructions

- › The device, accessories and packaging must be disposed of in accordance with local and national regulations.

## Intended use

### /// Use

The device is suitable for heating / shaking of non-explosive, non-flammable or harmless substance and objects. It is also suitable for drying e.g. glassware or warm storing of liquids in container.

Due to the highly precise temperature control, the device is especially suitable for incubation of cultures at a standard temperature of 37 °C.

**Note:** The device must only be used for heating up non-explosive and non-flammable substances and objects. Do not process substances or objects that might cause explosive vapour. The device is not classified as a medical device as defined by Medical Device Directive.

### /// Range of use

Indoor environments similar to that a laboratory of research, teaching, trade or industry.

The safety of the user cannot be guaranteed:

- › if the device is operated with accessories that are not supplied or recommended by the manufacturer.
- › if the device is operated improperly or contrary to the manufacture's specifications.
- › if the device or the printed circuit board are modified by third parties.



## Useful information

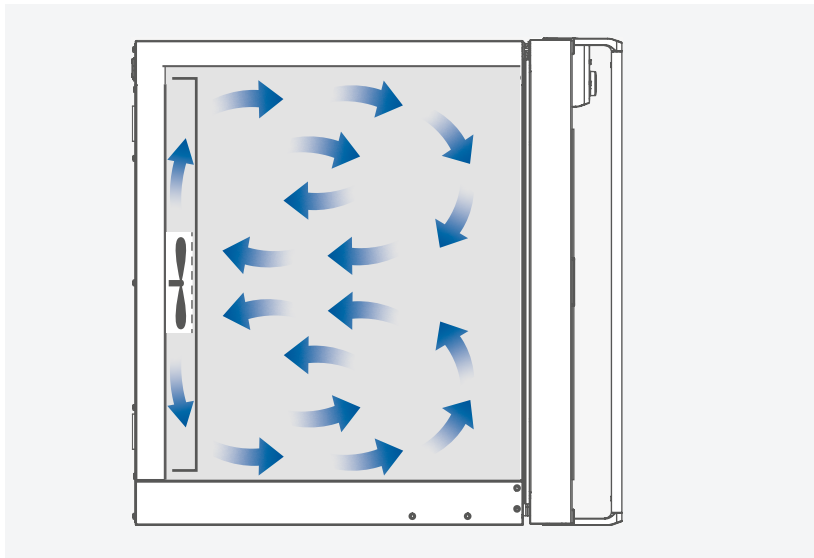
### /// Material

The inner chamber of the device is made of high quality stainless steel. The window on the door is made of tempered glass.

**Note:** Do not heat substances containing acids and halogenoids with this device!

### /// Air flow

In recirculation mode, the fan gently and evenly distributes the temperature in the incubator. The supply air coming from outside is guided through the vents into the inner chamber and preheated in the working chamber.



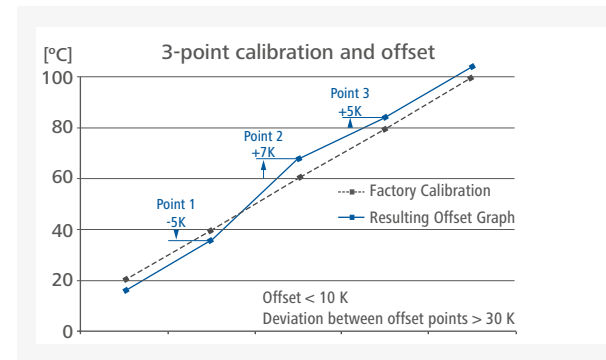
**Note:** Any component of the heating / drying material must not be able to release toxic gases.

### /// Temperature monitoring

The device has a temperature limiter (TB) class 1 according DIN 12880. This means that in case of a single failure the device is switched off at 150 °C. The temperature may be higher for a short time in the area of the heater and on the walls. So beware of risk of fire or explosion of unsuitable load.

### /// Calibration and adjustment

This menu shows how the values can be entered after the respective temperatures are approached and with an external measuring device cross-checked (calibrated).



Individual load and ambient condition might influence the temperature behaviour of the chamber. To compensate that influence there's the option to neutralize by using the 3-point calibration and offset function. This function allows the temperature to be calibrated and adjusted at three different temperature values.

Use a calibrated reference measuring device in case of adjustment.

The operation can be done at a single, or up to three temperature levels:

**Point 1:** Temperature calibration and adjustment at low value of temperature.

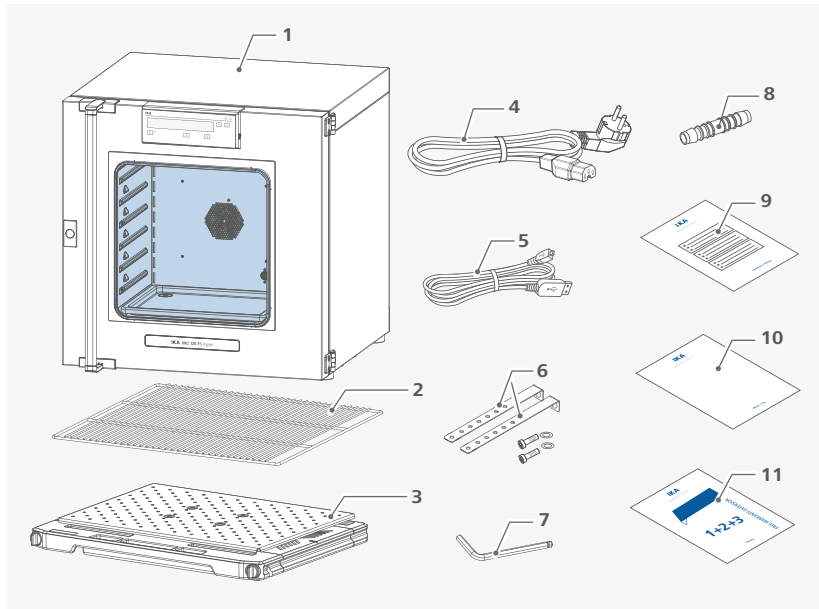
**Point 2:** Temperature calibration and adjustment at medium value of temperature.

**Point 3:** Temperature calibration and adjustment at high value of temperature.



## Unpacking

- › Please unpack the device carefully.
- › Any damage should be notified immediately to the shipping agent (post office, railway network or logistics company).



1	INC 125 FS digital	7	Hexagon socket offset screw key
2	Shelf	8	Hose adapter
3	SP 20 shaking platform	9	Calibration certification
4	Power cord set	10	User guide
5	USB cable	11	Warranty card
6	Tilt protections		



## Installation

### /// Transportation / setting down the device

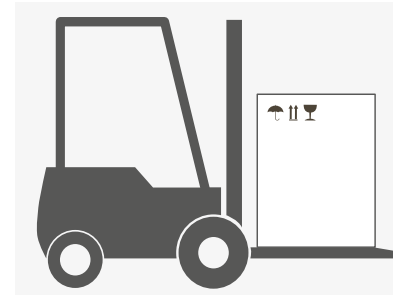
#### ⚠ Warning!

- › Beware of the high dead weight of the device when transporting.
- › The device should only be transported by qualified persons with suitable handling equipment, such as a pallet truck and forklift!

The device can be transported:

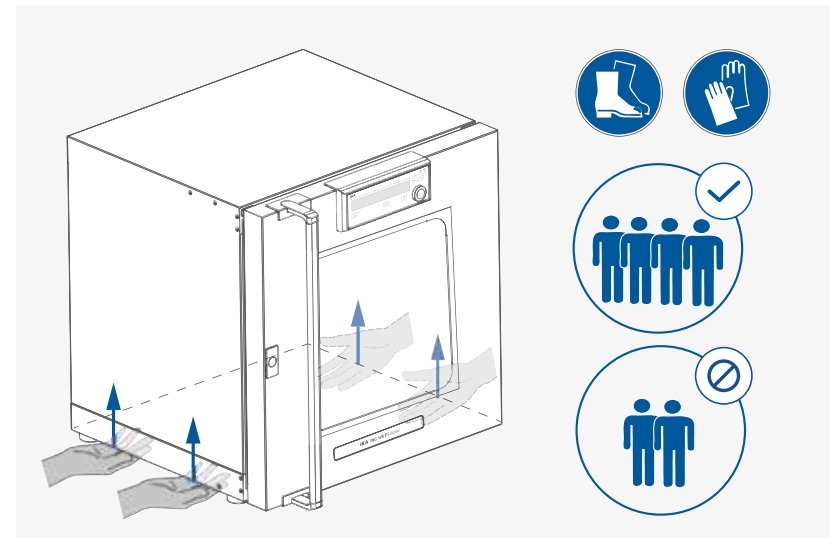
- With a forklift truck

- With a pallet truck.



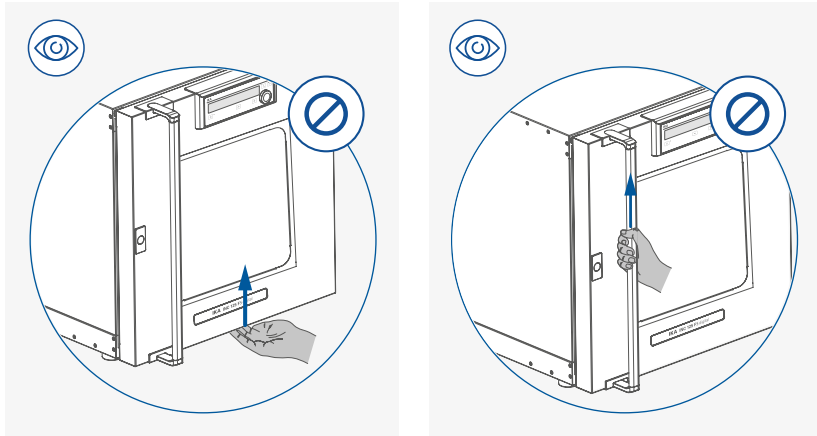
#### ⚠ Caution!

- › Ensure that your fingers do not get crushed when setting down the device.
- › For lifting the device, four people are required.
- › You may get your hands or feet squashed when transporting and setting down the device. Wear protective gloves and safety boots.



**⚠ Notice!**

When lifting the device, do not use the door / door handle. This may damage the device.



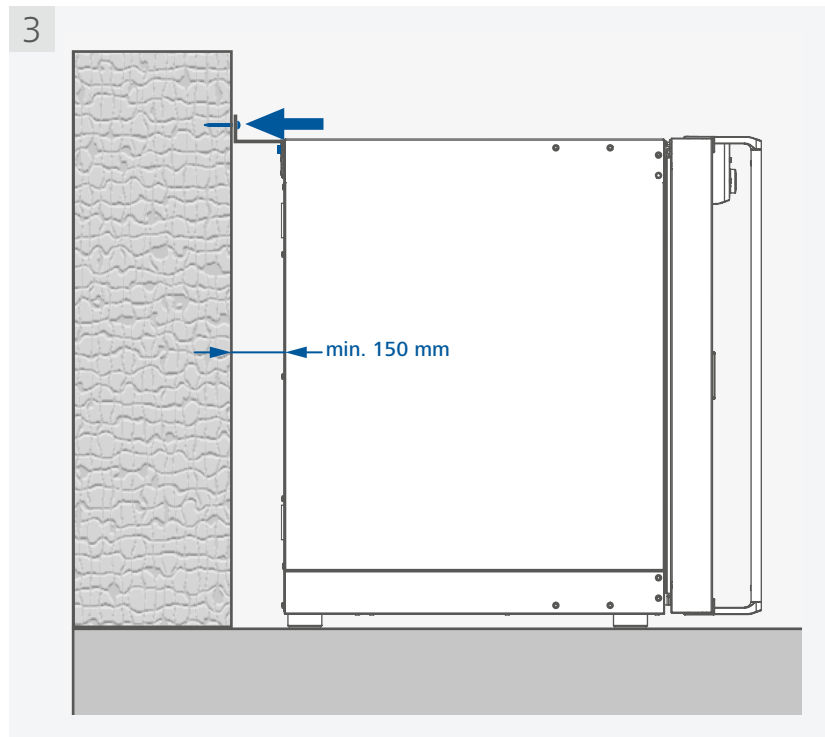
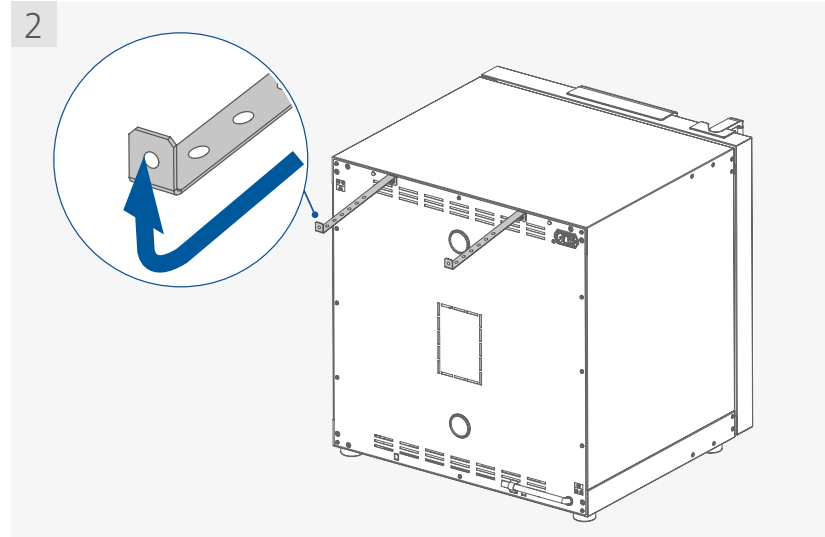
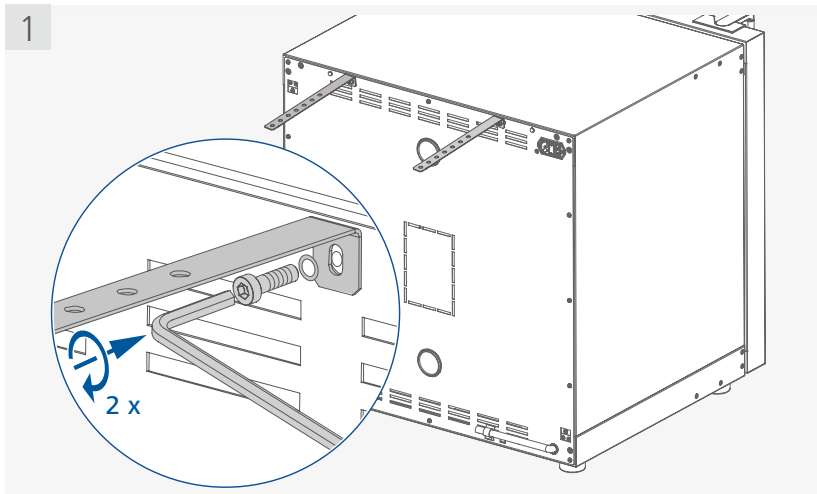
### /// Setting up / Fixing the device to the wall

- › Place the device on an even, clean, dry and fireproof surface in well-ventilated environment.
- › Keep sufficient distance to radiators and other heat sources.
- › Keep at least 150 mm between walls and the device.

**⚠ Caution!**

Fixation against the wall is compulsory!

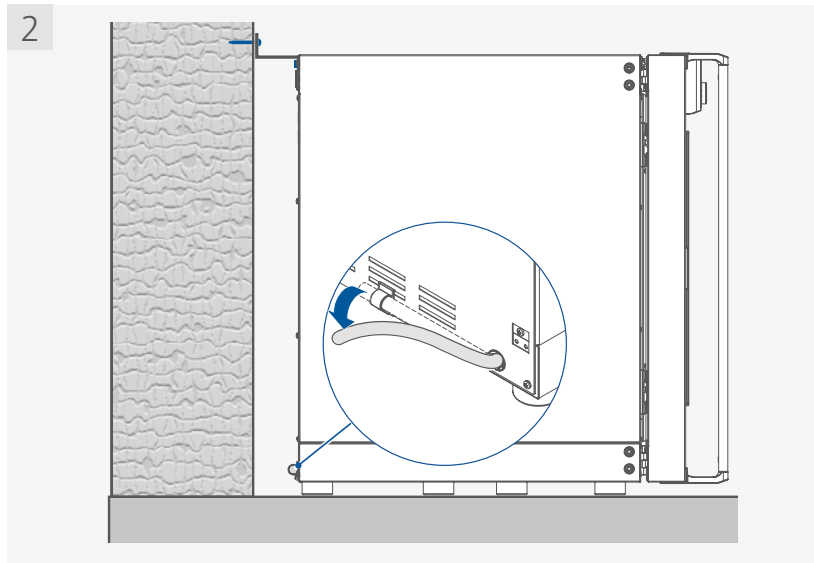
As indicated in following figures, attach the device to a wall with the tilt protections included with the device. Fasten the tilt protections to the rear side of the device with included hexagon socket screws and screw key.



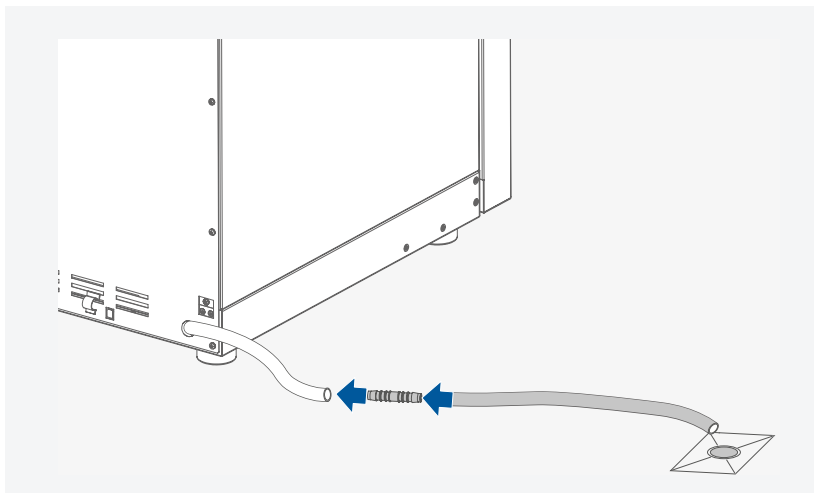
**Note:** The screws used for fixing is selected according to the wall conditions and is not included.

### /// Placing the drain hose in laboratory drain

- › Take off the hose from the bracket



- › Extend the drain hose with included hose adapter as necessary

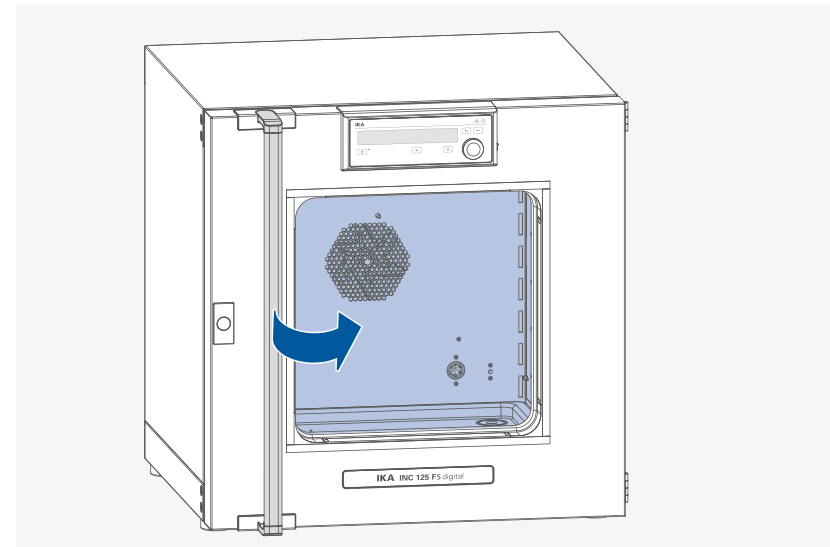


In the event of glass vessels breakage, the leaked liquid is collected by the drain pan (not included in delivery scope) below the shaker platform and is guided to the drain hose. Place the drain hose in laboratory drain.

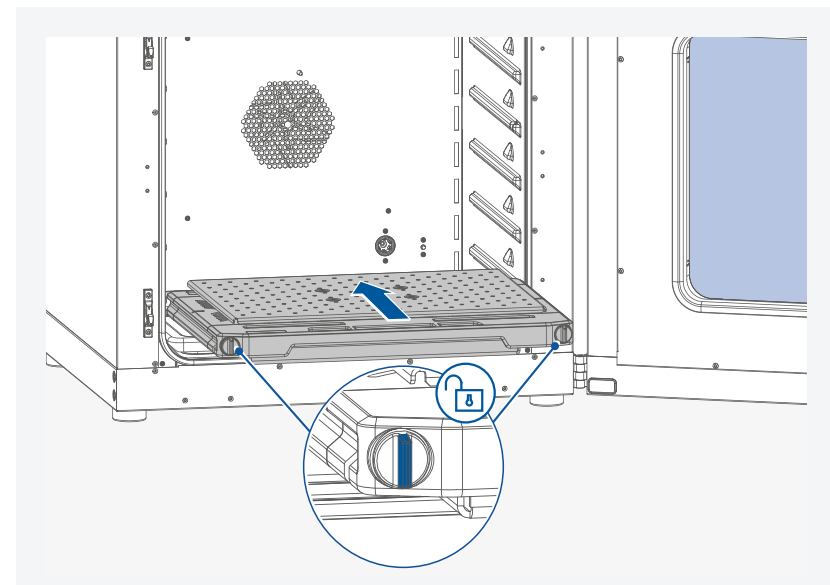
**Note:** The extension hose is not included in delivery scope.

### /// Inserting the shaker platform and shelf

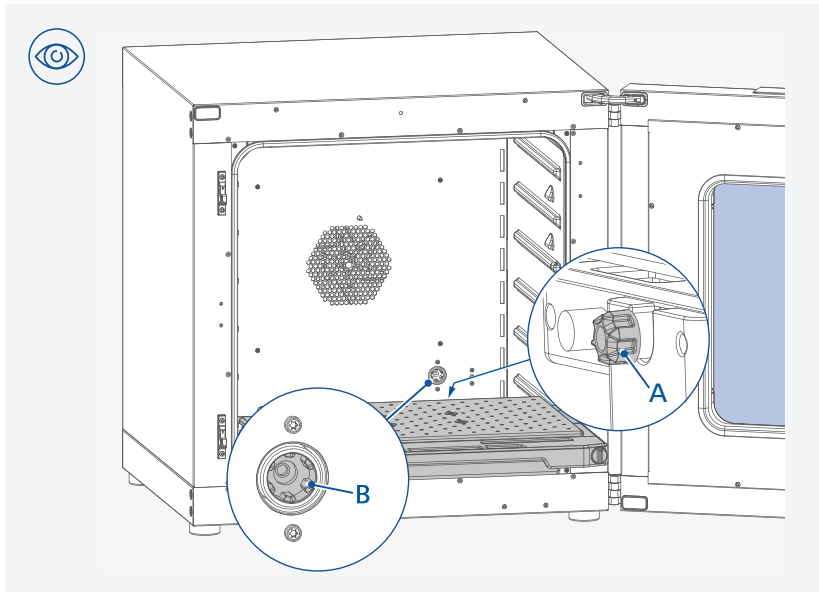
- › Open the door



- › Insert the shaker platform

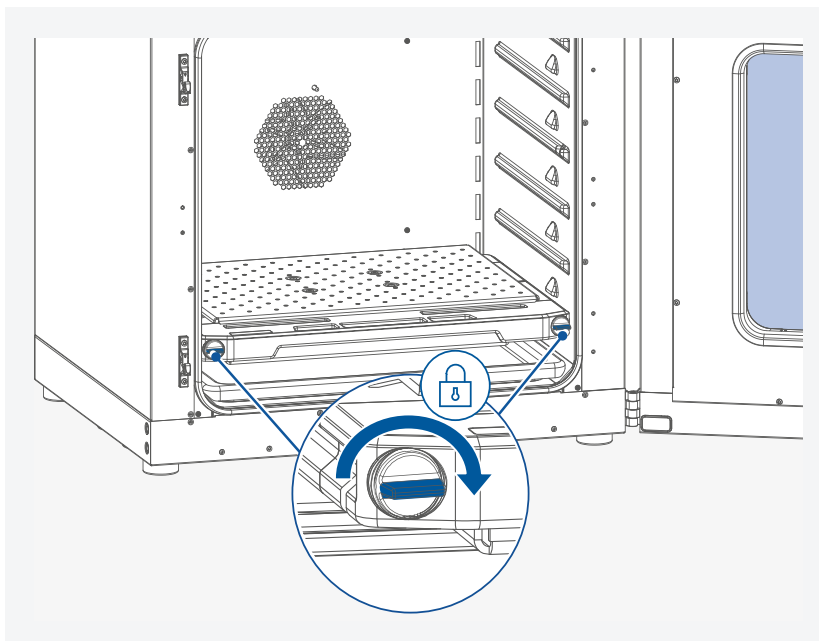


**Note:** When assembling the shaker platform, ensure the shaker platform locking knobs are turned to unlock status.

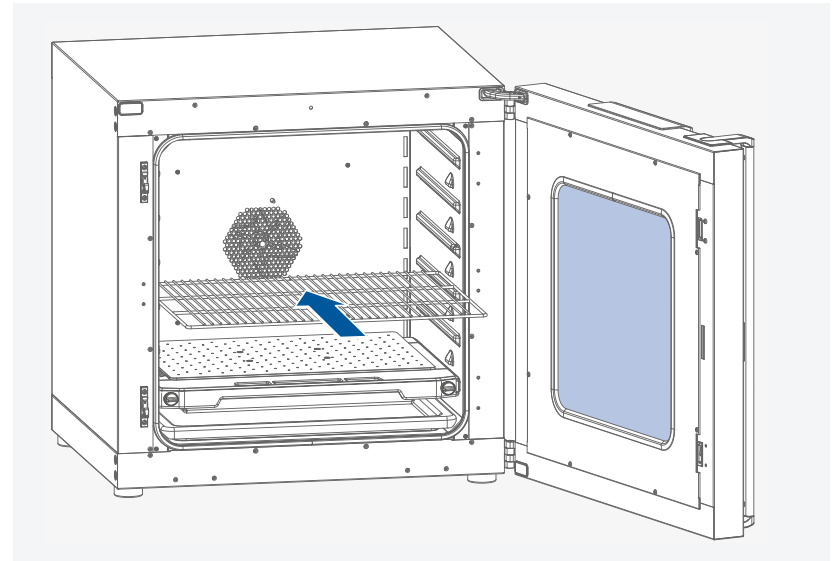


**Note:** When assembling the shaker platform, ensure the shaker platform coupling (A) is inserted into the coupling (B) correctly in the device.

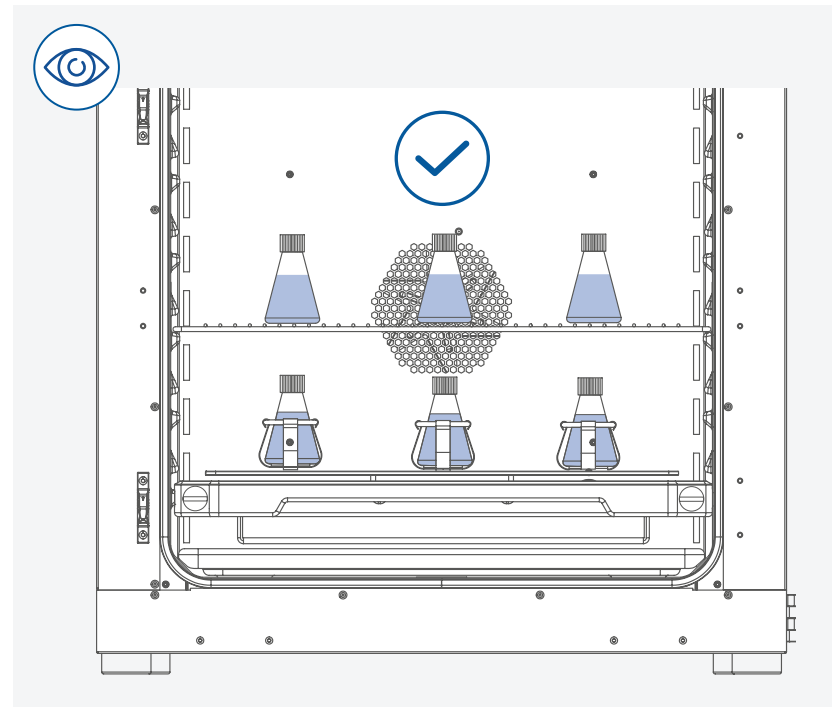
› Lock the shaker platform

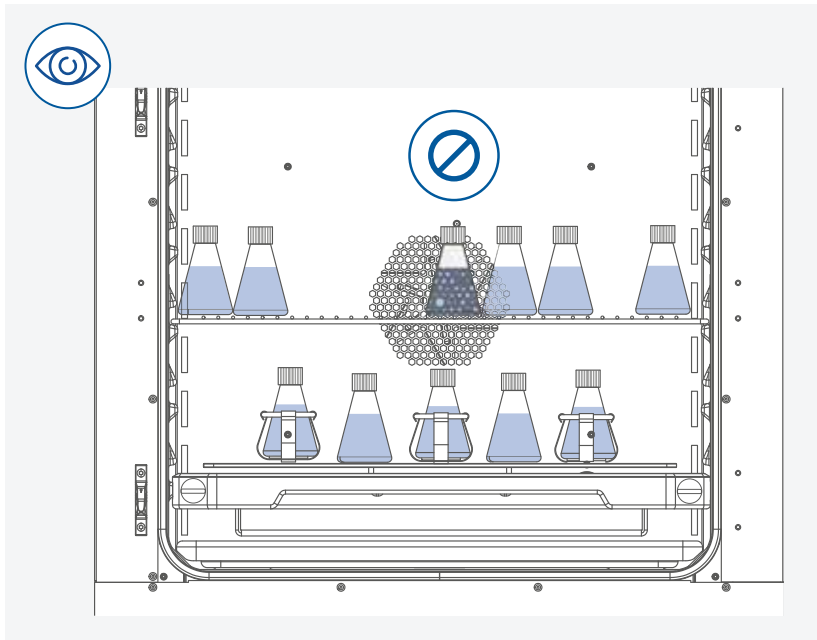


› Insert the shelf



/// Correctly loading

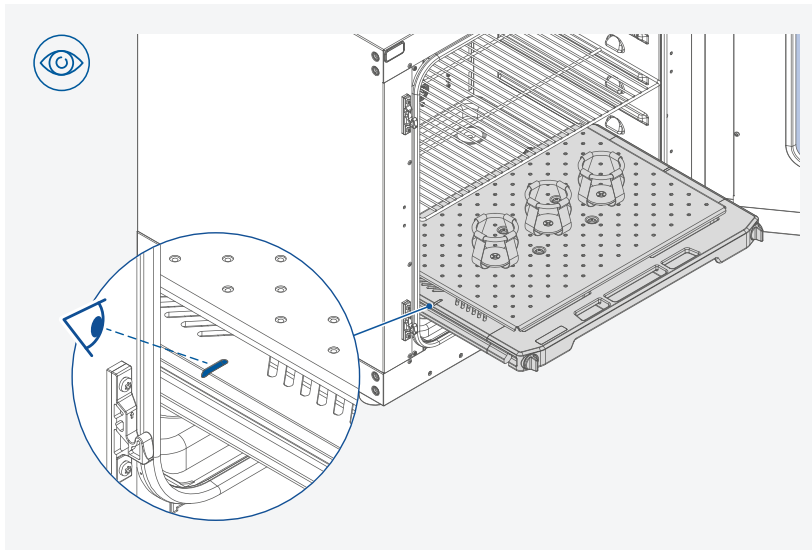




**Note:**

- › Don't load sample directly on the shaking platform.
- › Keep distance between samples and hot inner surface. Temperature of the inner wall may be much higher than set temperature.
- › Ensure sufficient air circulation in the chamber by not placing the sample too close.

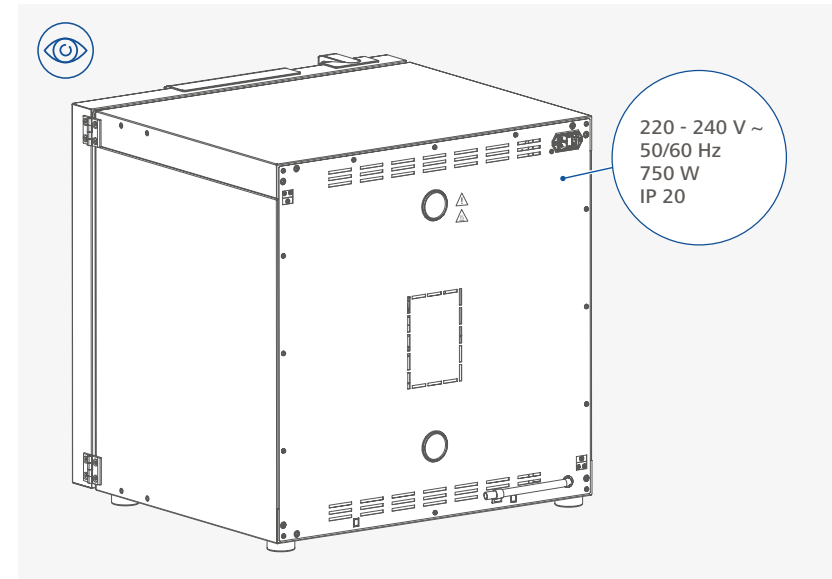
For loading, pull out the shaker platform to a maximum of halfway.



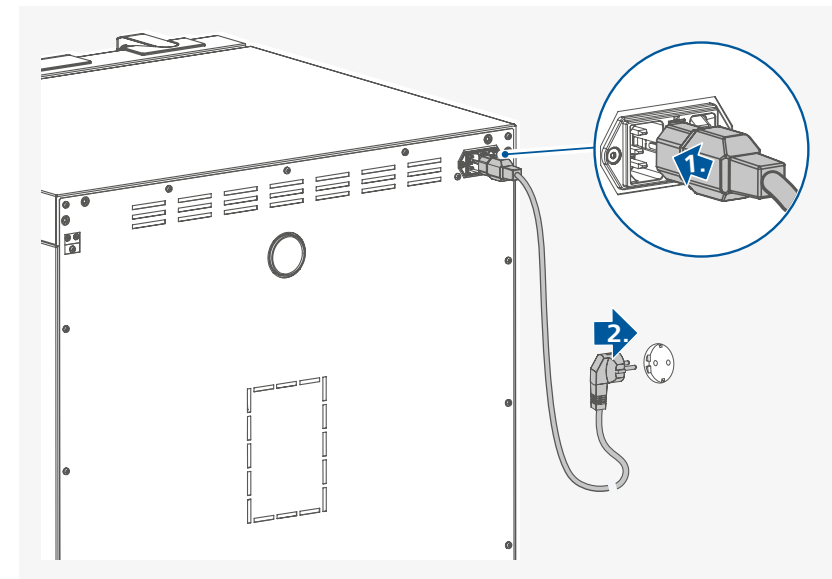
### /// Connecting to power

**⚠ Notice!**

The socket used must be earthed (fitted with earth contact).  
Observe the ambient conditions (temperature, humidity etc.) listed under "Technical Data".



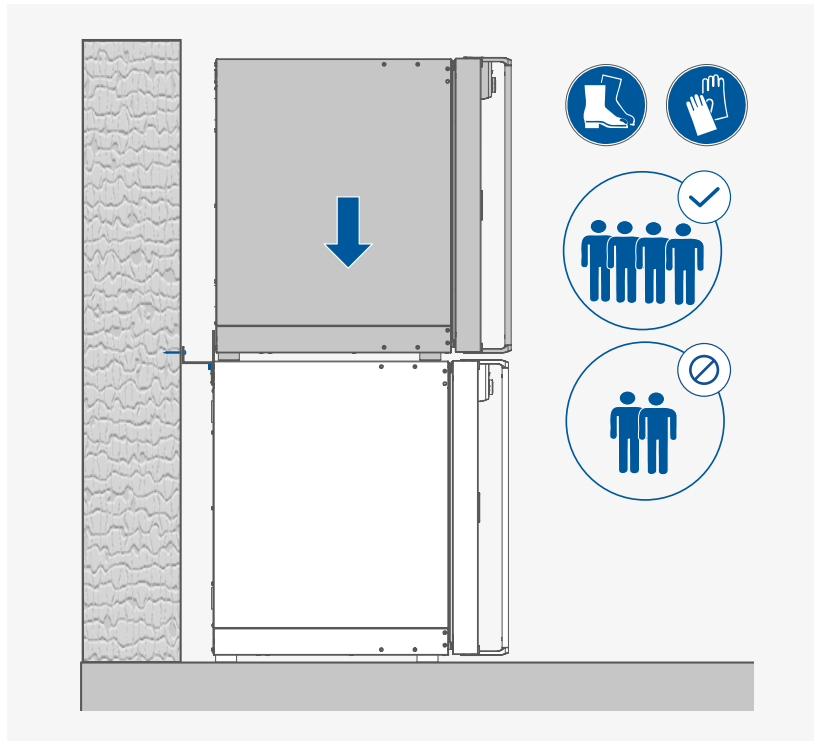
**Note:** The voltage stated on the type plate must correspond to the power voltage.





### /// Other installation information (Stacking two devices)

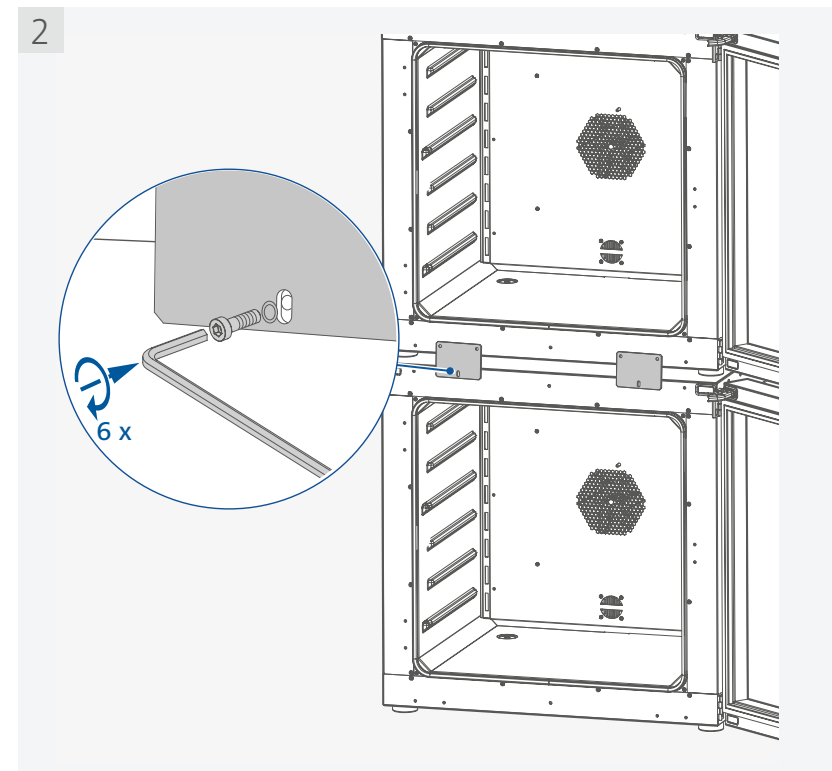
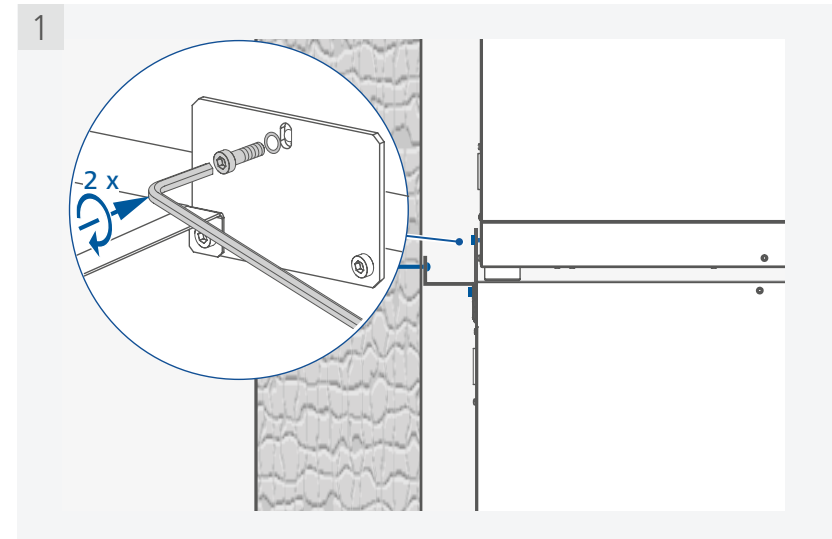
- › Fixing the bottom device to the wall (see section "Setting up / Fixing the device to the wall")
- › Place the top device



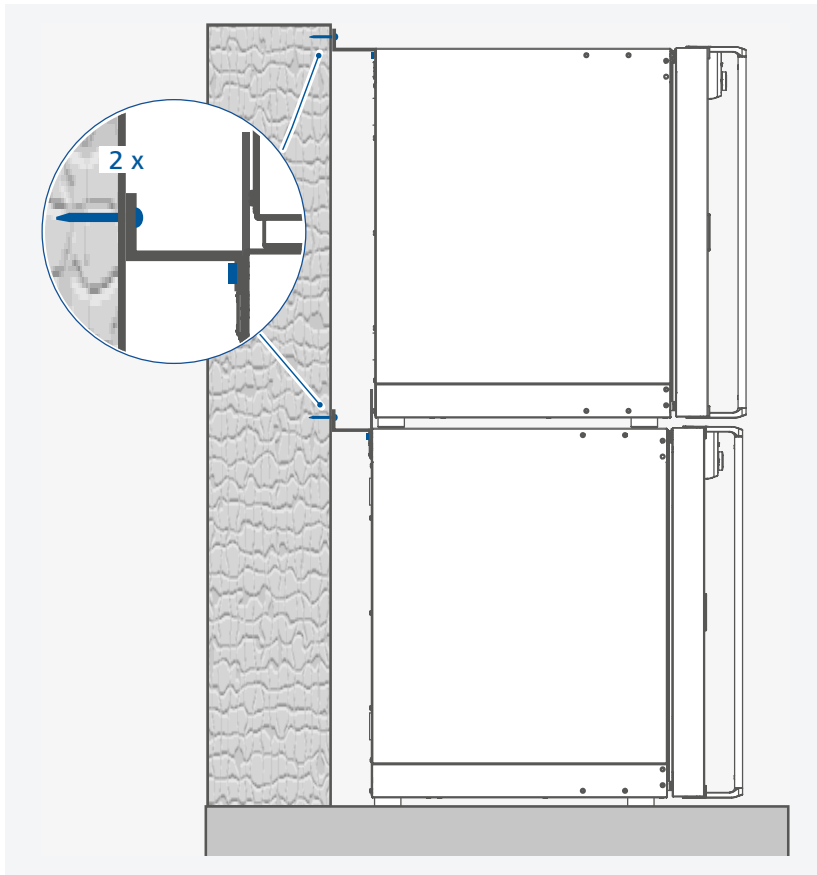
#### **Caution!**

When stacking the device, four persons are required to lift it.  
Never stack more than two devices.

- › Fixing the top device to the bottom device



› Fixing the top device to the wall

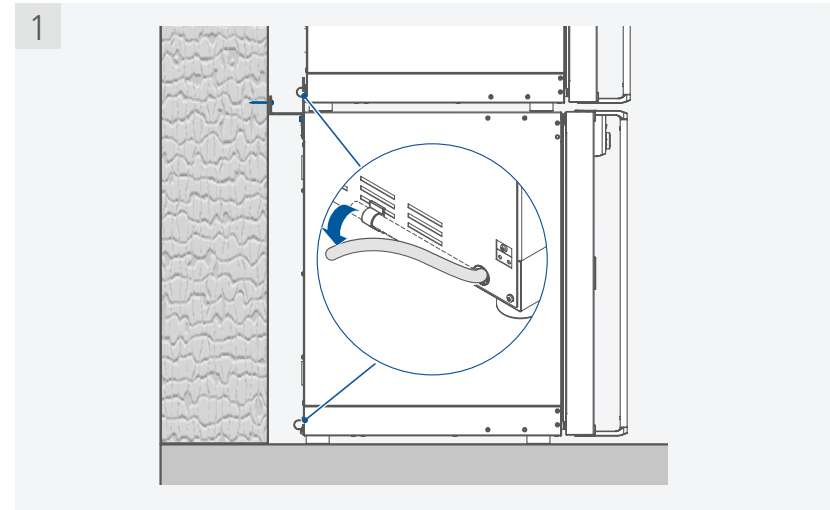


**Note:**

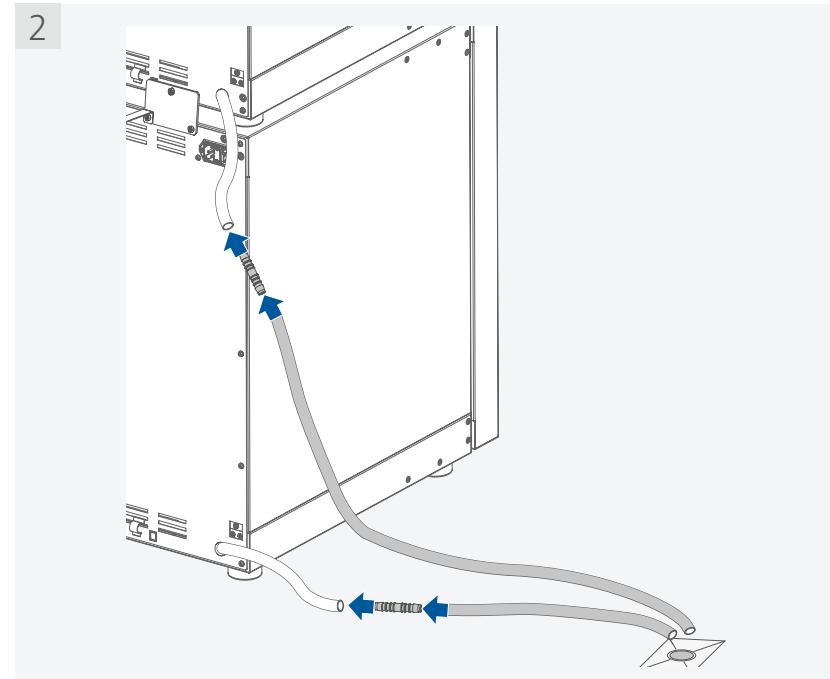
- › The screws used for fixing is selected according to the wall conditions and is not included.
- › The stacking kit is not included. Please order it separately.

› Placing the drain hoses in laboratory drain

Take off the hose from the bracket



Extend the drain hose with included hose adapter as necessary

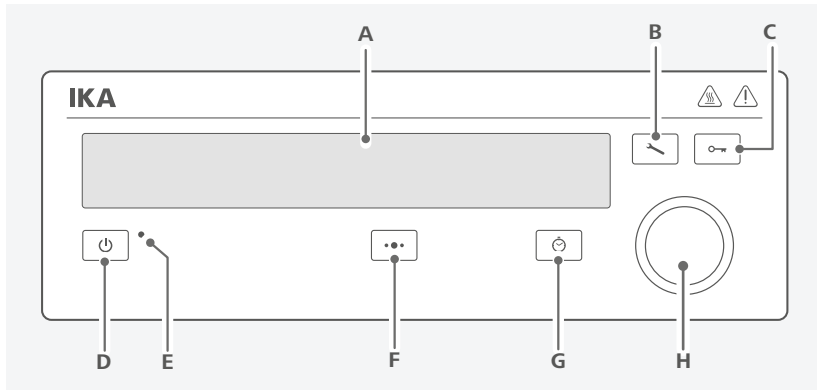


The devices drain hoses must be guided to the laboratory drain with the hose adapters and extension hoses.

**Note:** The extension hoses are not included in delivery scope.

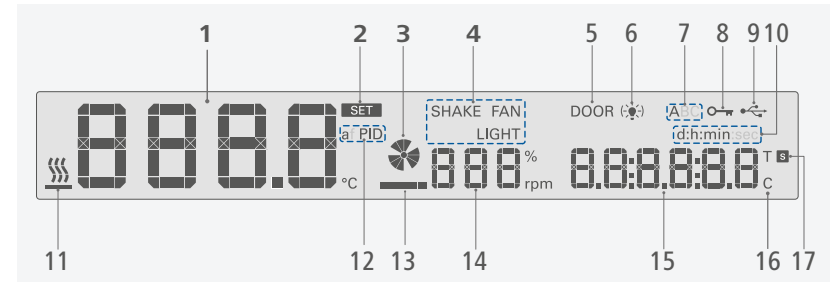
## Operator panel and display

/// Explanation of the control elements



Item	Designation	Function
A	Display	Screen.
B	Menu button	Press it once: menu option is display Press it once again: back to working screen.
C	Lock button	Lock / unlock the settings.
D	Standby button	Switch on / off the device.
E	Standby LED	The light LED indicates the device is in standby status.
F	Multifunction button	Switch between shaker (SHAKE), fan (FAN) and light (LIGHT) setting.
G	Timer button	Switch between "Counter (C)" and "Timer (T)", "Timer Auto (Ts)" setting.
H	Control knob (rotating / pressing)	Adjust the temperature setting. Adjust shaking speed (rpm) / fan speed (%) and light mode. Adjust time value in Timer (T) or Timer Auto (Ts). Navigation, selecting and changing the settings. Start / stop running of the device.

/// Explanation of symbols on the working screen

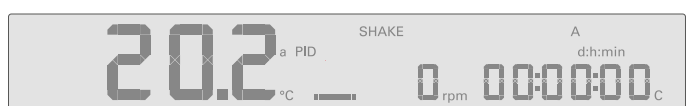
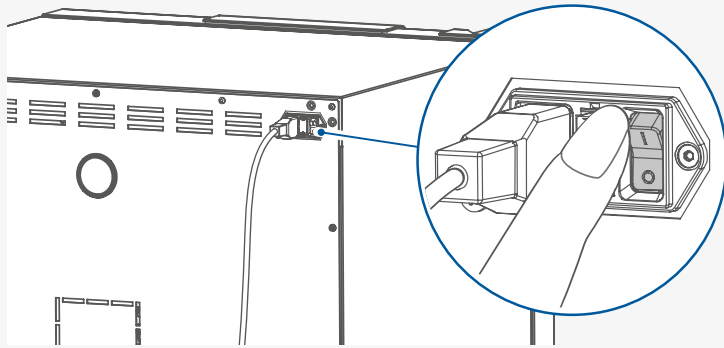


Item	Designation	Function
1	Temperature value	Display the settings and actual temperature value.
2	"Set" symbol	Indicate the temperature set value is shown on the display.
3	Fan symbol	Indicate the fan is activated.
4	SHAKE / FAN / LIGHT symbol	Indicate the selected function (shaker / fan / light).
5	Door symbol	Indicate the door is opened.
6	Light symbol	Indicate the light is activated.
7	Operating mode symbol	Indicate the device is in operating mode (A, B or C).
8	Lock button symbol	Indicate the settings of the device is locked.
9	USB connection symbol	Indicates a USB cable is connected.
10	Time range	Indicate the selected timer / counter range ((d:h:min) or (h:min:sec))
11	Heating Symbol	Indicate the heating function is activated.
12	Temperature control symbol	Indicate the selected temperature control mode (a PID or f PID).
13	Shaker platform symbol	Indicate the shaker platform is assembled.
14	SHAKE / FAN speed	Display the shaker speed (rpm) or fan speed (%).
15	Timer / counter value	Display the timer / counter value.
16	Counter symbol	Indicate the counter is activated.
17	Timer symbol	Indicate the timer is activated.

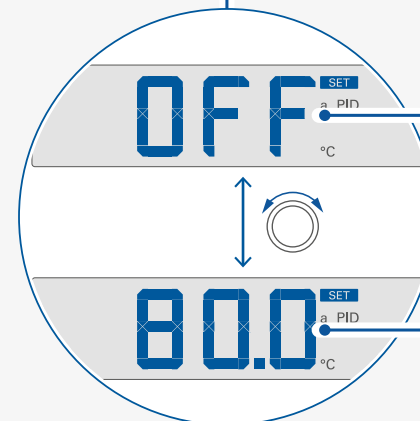
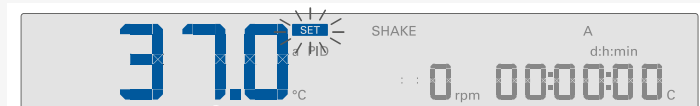
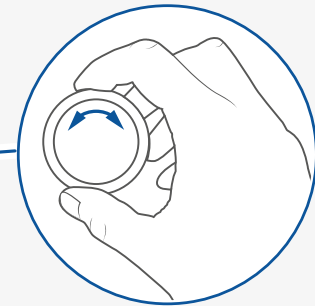
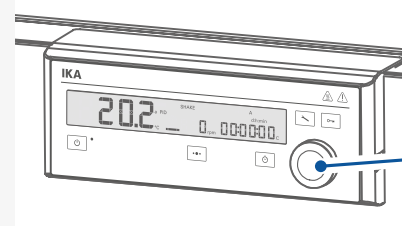


# Operation

/// Switching on



/// Setting the temperature

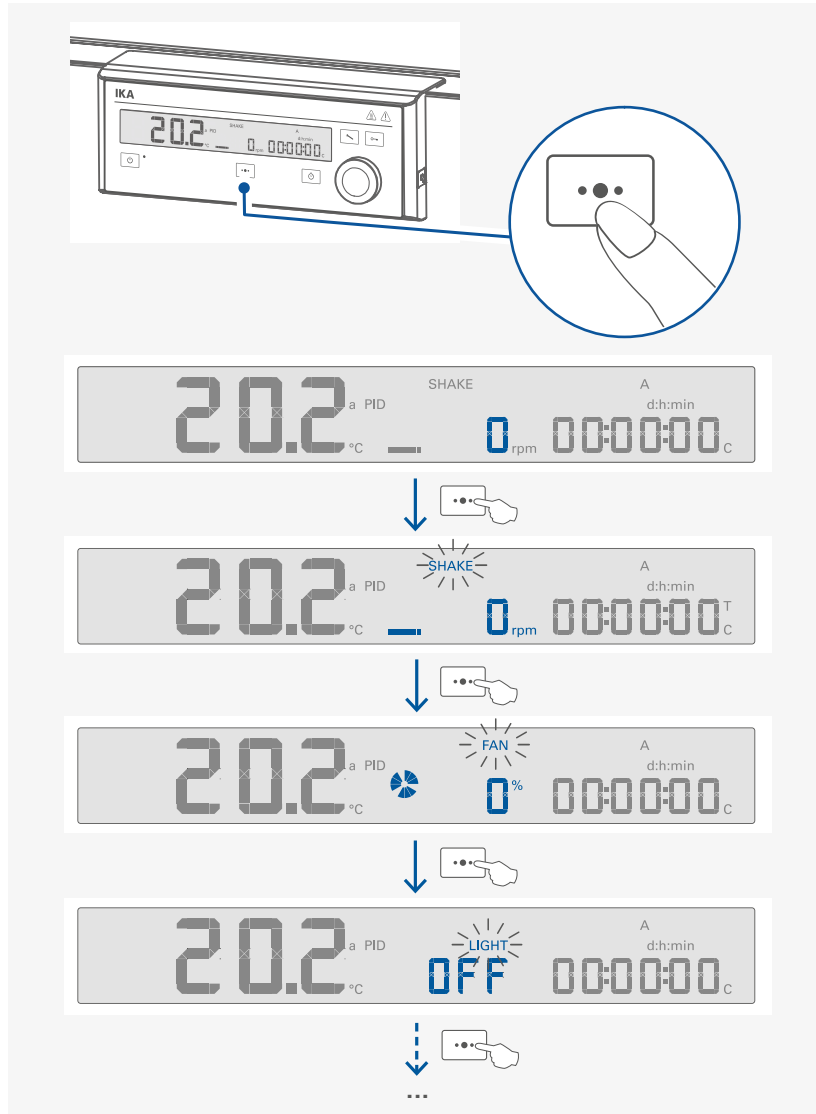


Min.

Max.

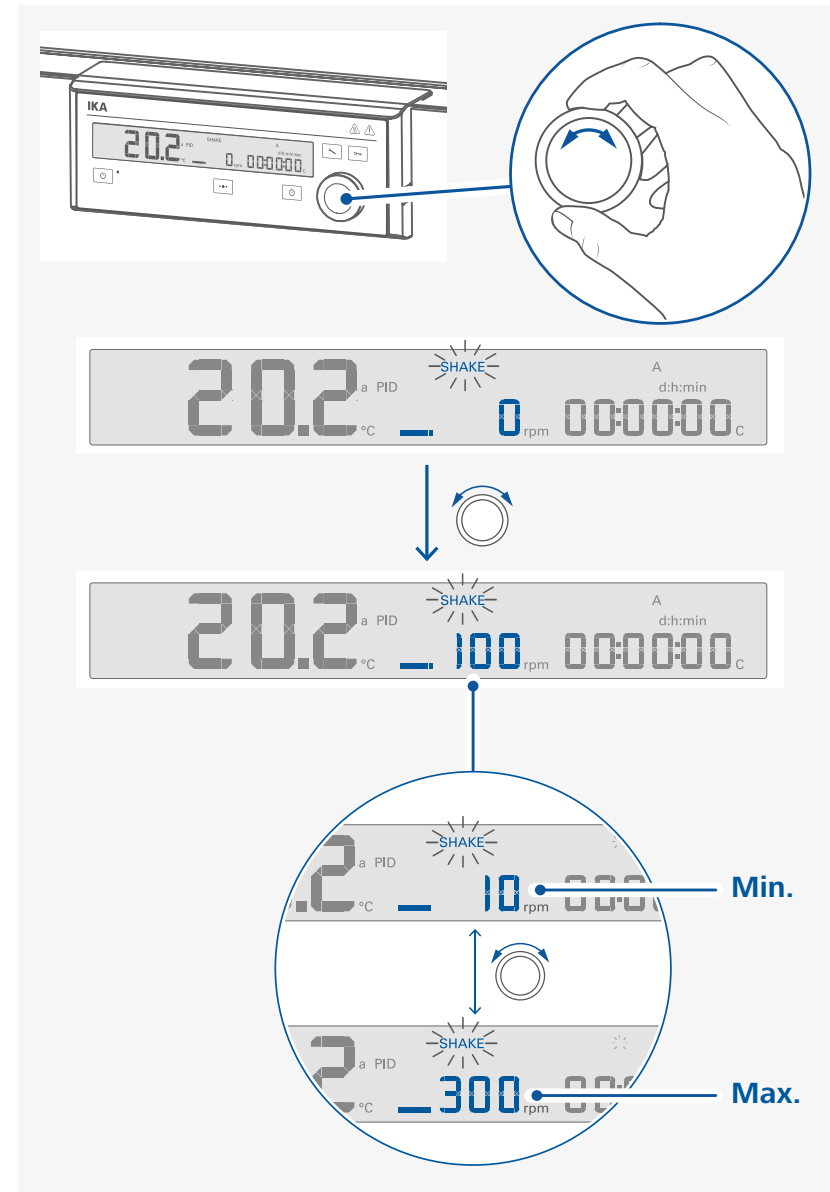
### /// Setting the shaker speed / fan speed / light

› Switch between shaker / fan / light



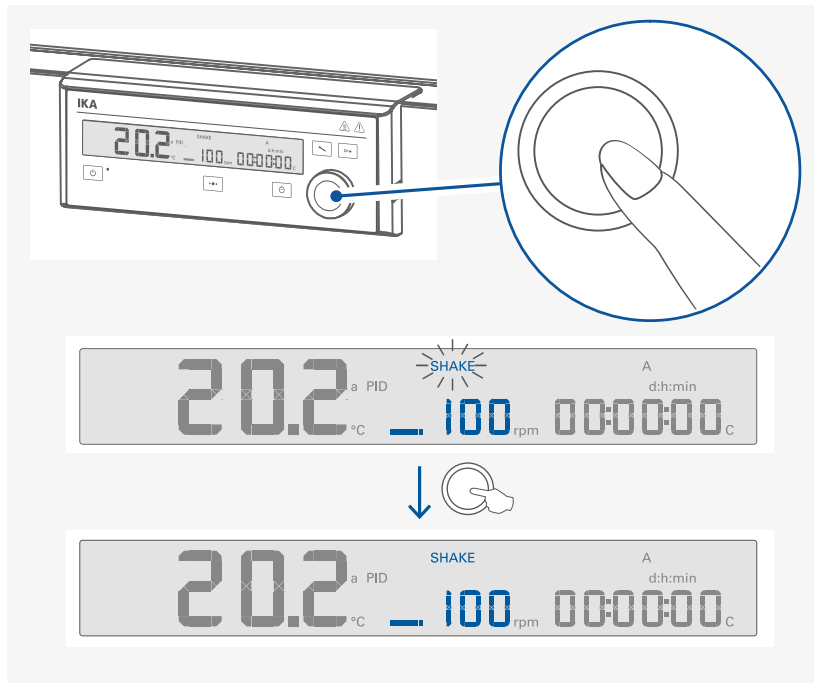
**Note:** Switching between the shaker / fan and light function by touching the multifunction button (F). The selected function blinks. Then, the value can be adjusted respectively by rotating the control knob (H).

› Adjust the shaker speed

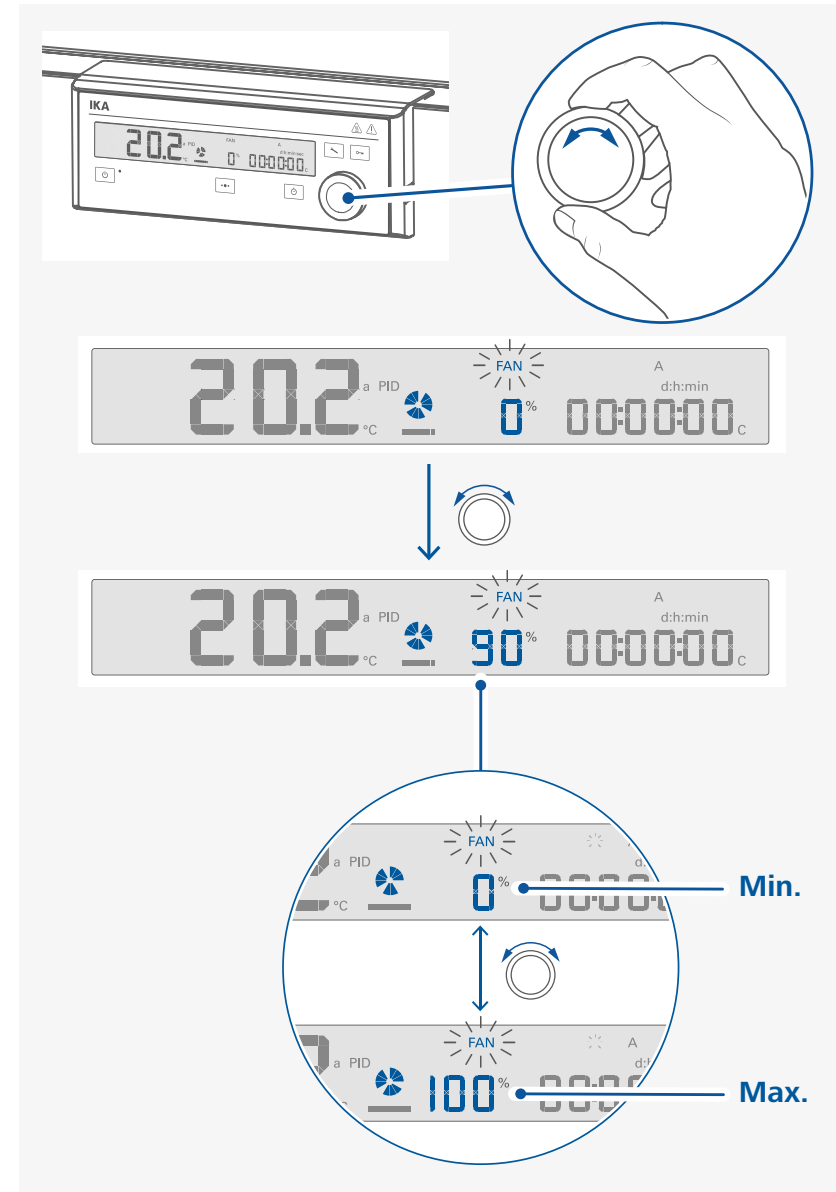


**Note:** When the device is running, the shaker speed can also be adjusted.

› Confirm the setting of shaker speed



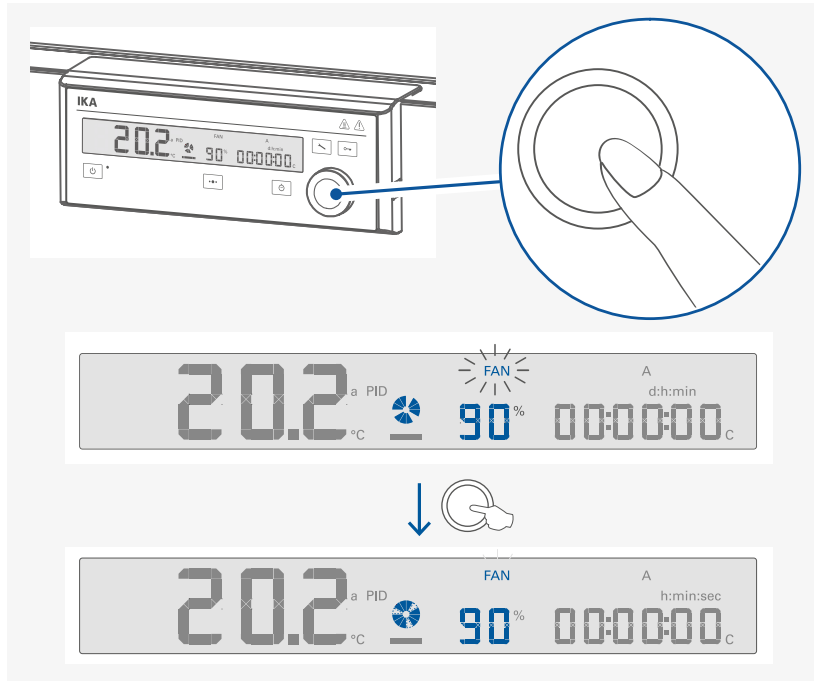
› Adjust the fan speed value



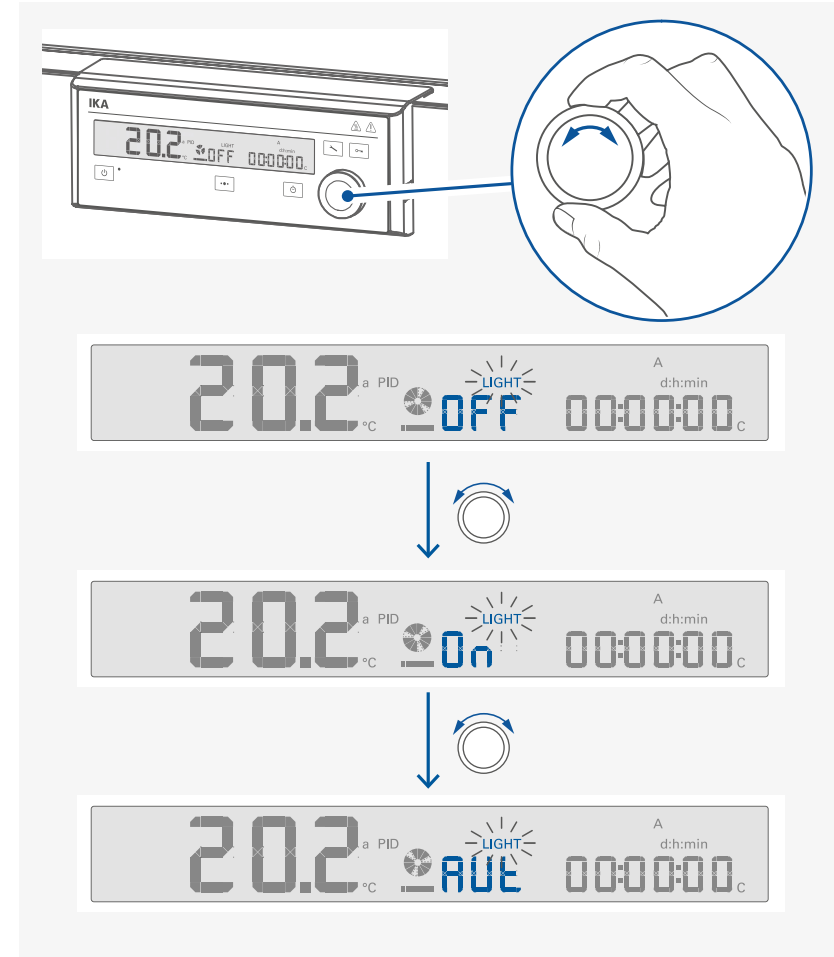
**Note:**

- › The fan speed value can also be adjusted during the device running.
- › Higher fan speed can improve the temperature homogeneity in the chamber.

› Confirm the setting of the fan speed value and start the fan

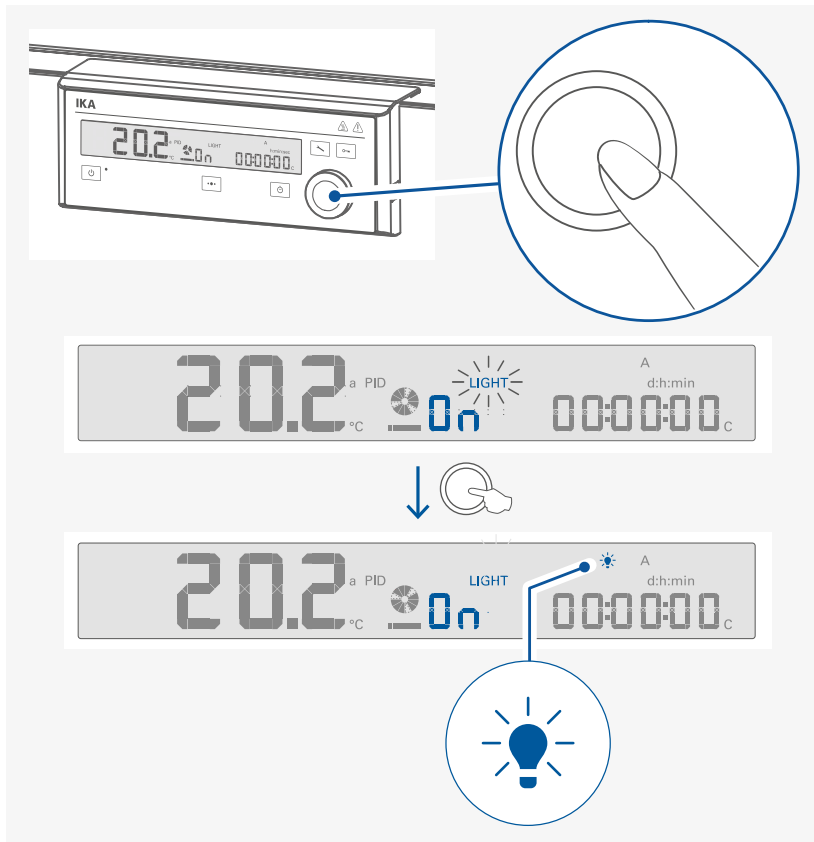


› Adjust the light setting



**Note:** When the device is running, the light status can also be changed.

> Confirm the light setting and activate the light



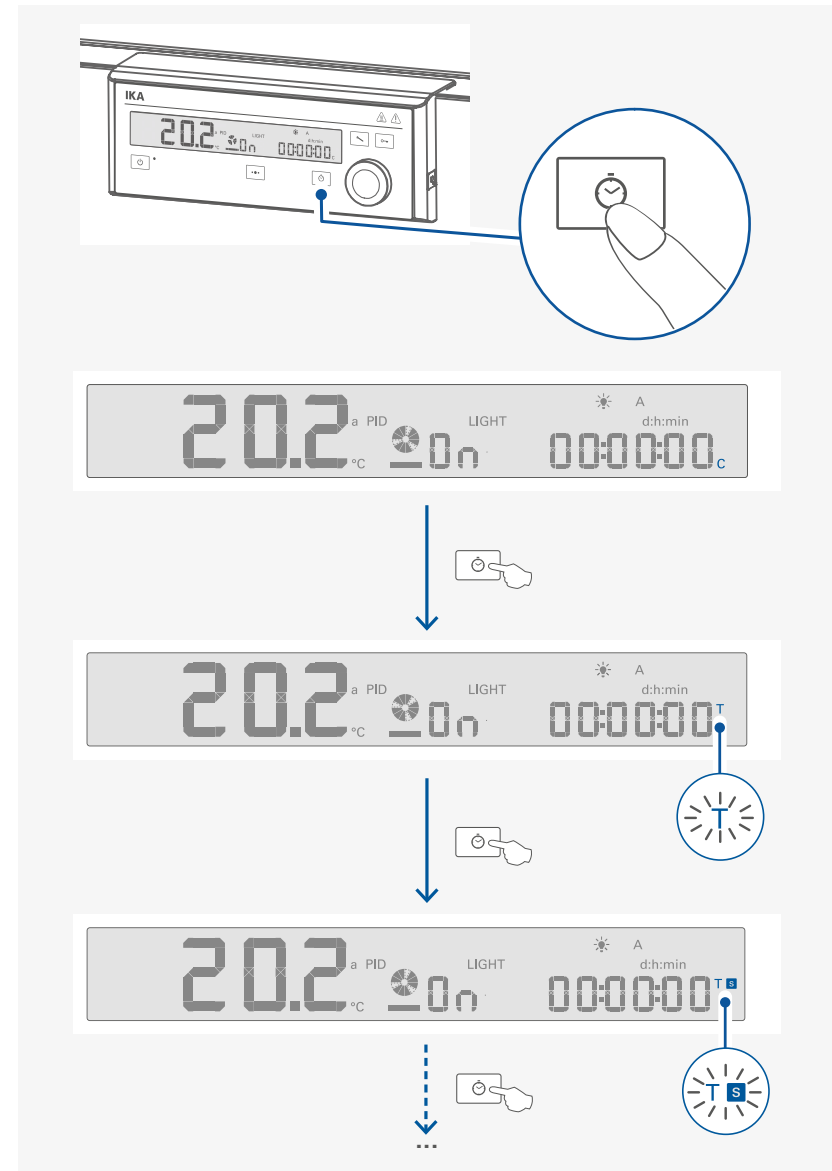
**Note:**

☀ indicates the light is set to "on (On)" status.

☀ indicates the light is set to "Auto (AUT)" status. When the door is opened, the light is switched on automatically and this symbol appears.

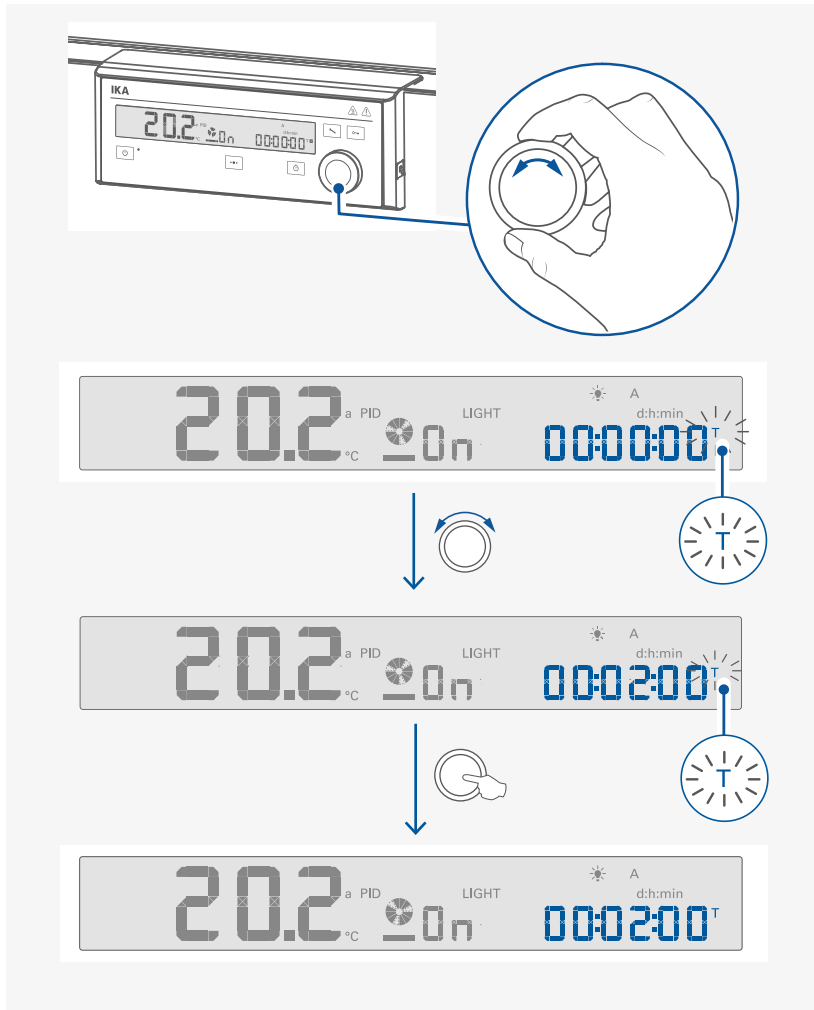
### /// Setting Counter (C) / Timer (T) or Timer Auto (Ts)

> Switch between Counter (C) / Timer (T) / Timer Auto (Ts)

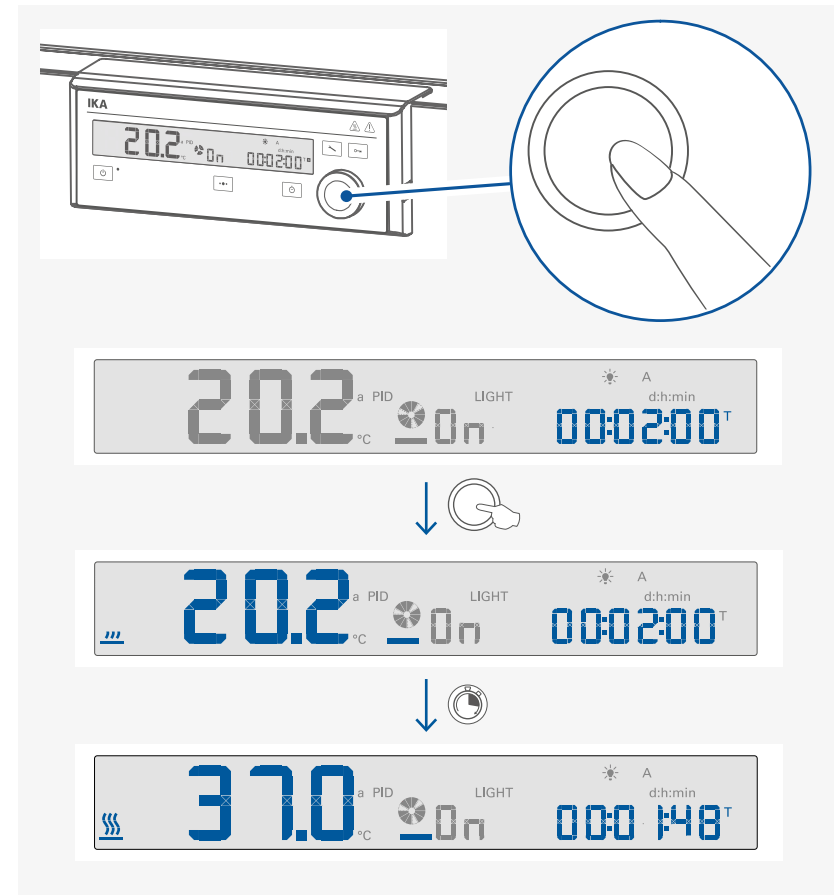




› Adjust and confirm the Timer (T) or Timer Auto (Ts) value



/// Starting heating / shaking function



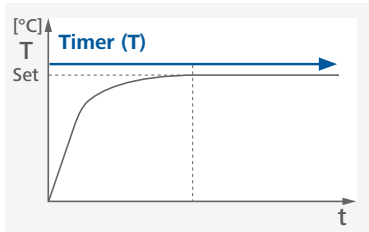
**Note:**

**Counter (C):**

- › If the "Counter (C)" function is activated, the counter automatically starts to run from 00:00:00 [h:min:sec] to the maximum value (99:23:59 [d:h:min]) when the heating / shaking is started.
- › If the device running time exceeds 24 hours, the time range switch from [h:min:sec] to [d:h:min] automatically.
- › If the heating process of the device is stopped during a "Counter (C)" process, the run time is shown on the display.

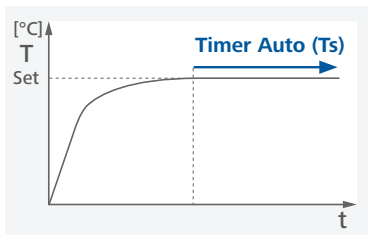
**Timer (T):**

- › If the "Timer (T)" is set and activated, the timer automatically starts to count down from the set timer value. When the timer reach 00:00:00 [h:min:sec], the device stops heating / shaking and last "Timer (T)" setting is shown on the display.

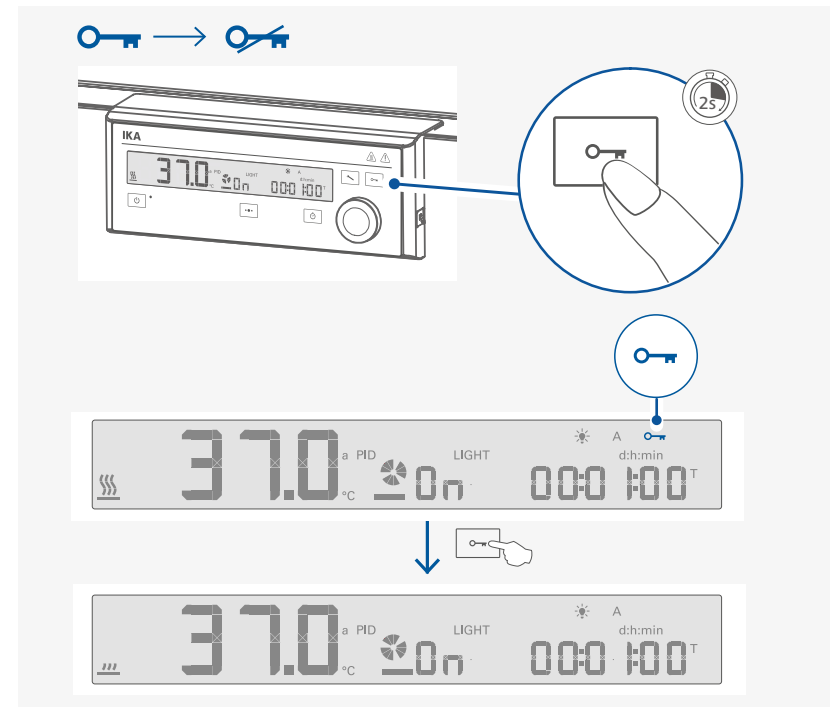
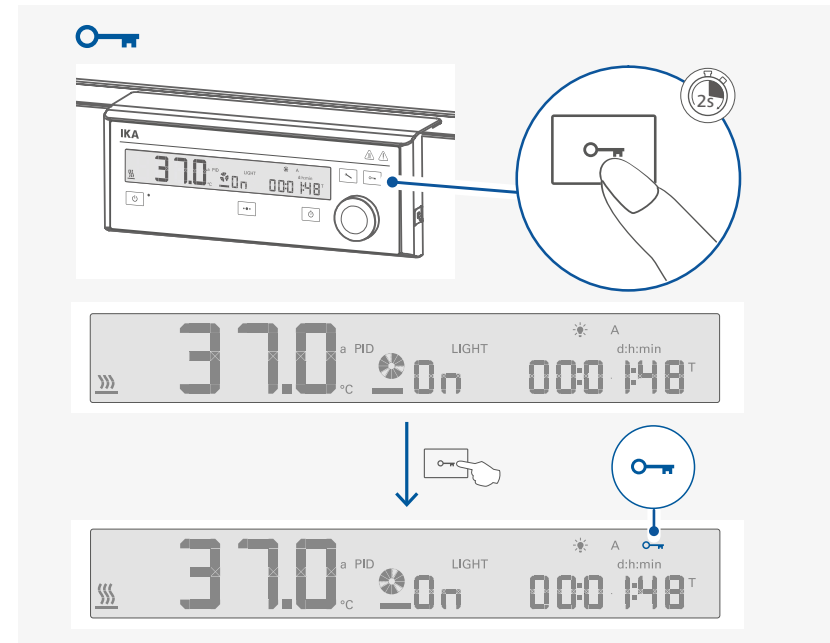


**Timer Auto (Ts):**

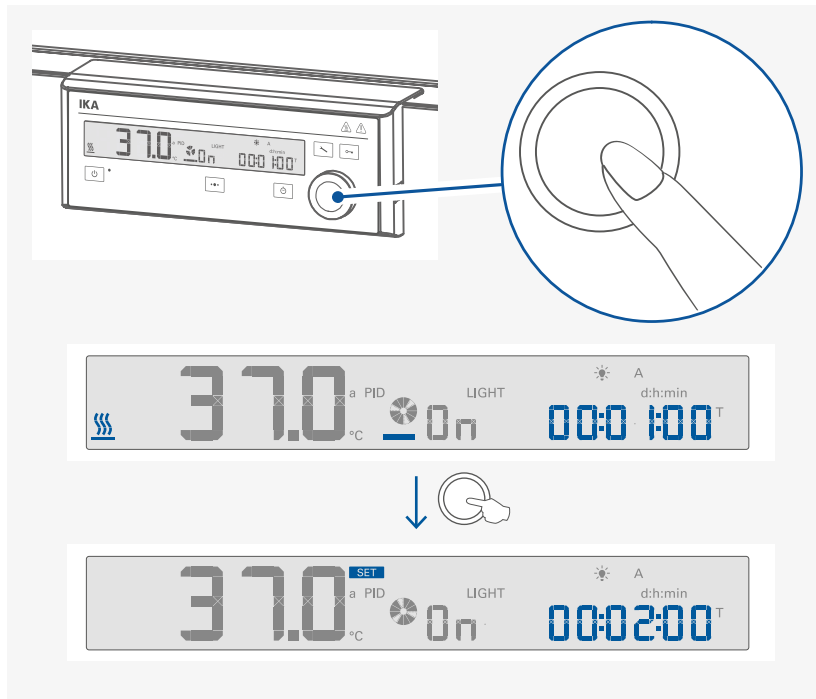
- › If the "Timer Auto (Ts)" is set and activated, the timer only starts to count down from the set timer value when the set temperature is reached. When the timer reach 00:00:00 [h:min:sec], the device stops heating / shaking and last "Timer Auto (Ts)" setting is shown on the display.
- › When the device is set to timer auto (TS) mode, the display shows "WAIT (uR it)" until set temperature value is reached.



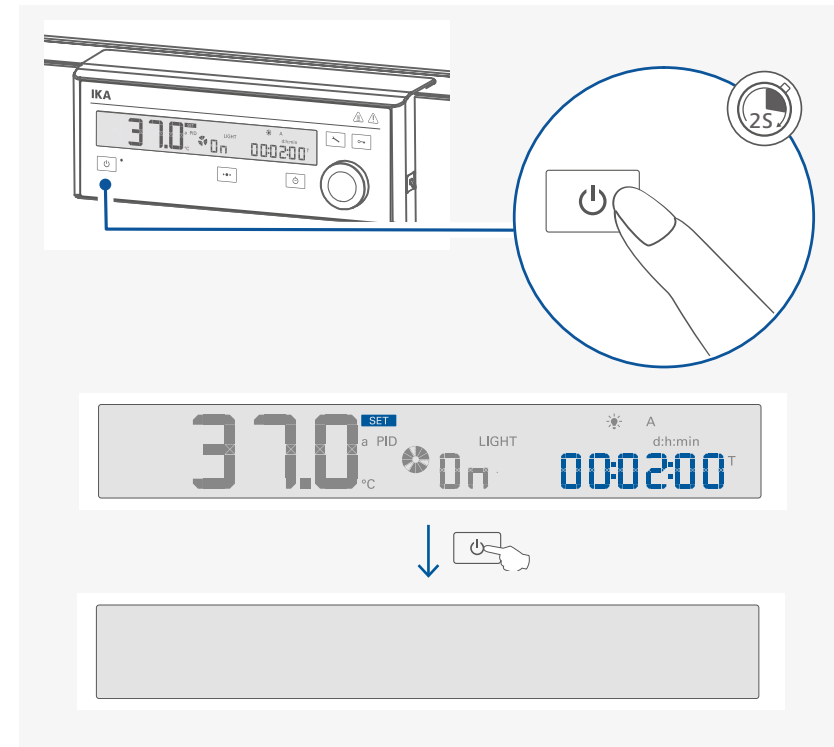
/// Locking / unlocking the settings



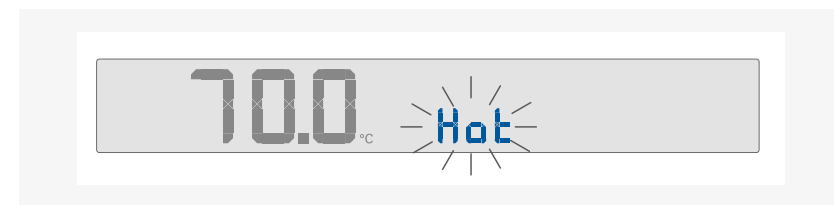
### /// Stopping heating / shaking function



### /// Activate standby status



**Note:** When switching the device to standby status, if the device chamber temperature is higher than 50 °C, the actual temperature is displayed, e.g. 70 °C and "hot" symbol blinks.



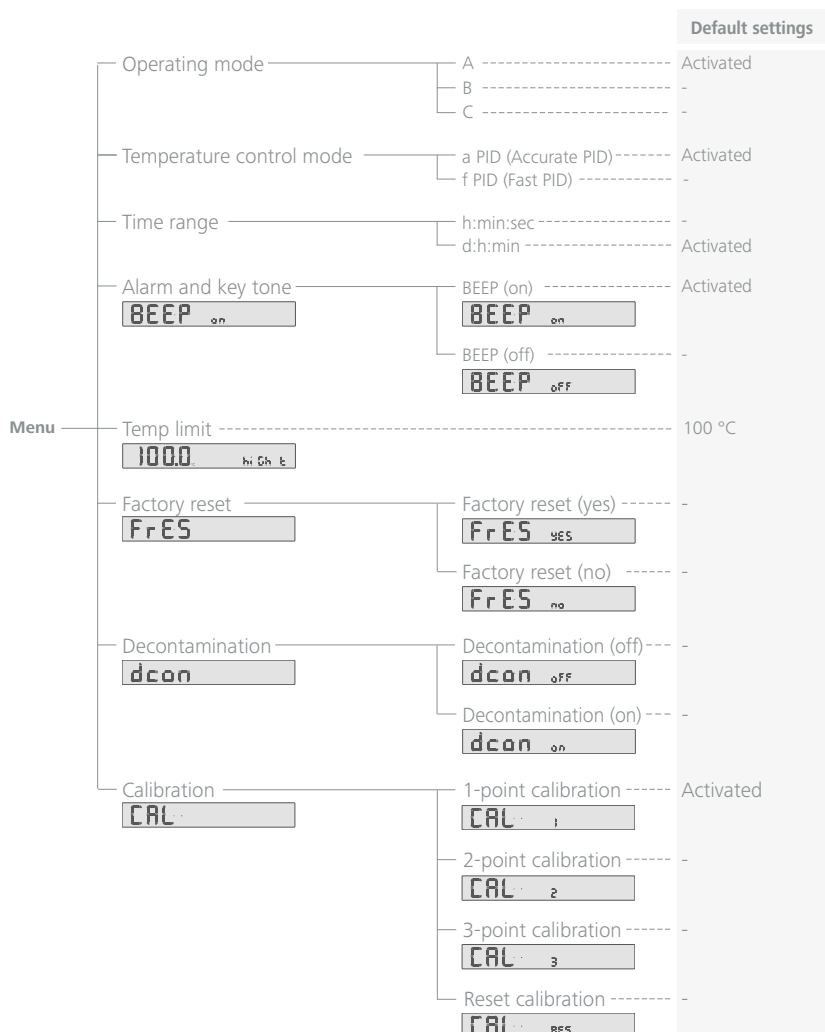


## Menu navigation and structure

### /// Menu navigation

- › Press the menu button (B).
- › Select the desired menu or sub-menu by turning the control knob to left or right and then pressing the control knob.
- › Press or turn the control knob again to select the desired menu option and edit the values or settings, or activate / deactivate a function.

### /// Setting menu structure



### /// Menu details

#### Operating mode:

In this menu item you can choose between three different operating modes.

**Mode A:** All settings will be stored if the device is switched off or disconnected from the power supply. The heating / shaking function will be set to OFF when the device is powered on.

**Mode B:** All settings will be stored if the device is switched off or disconnected from the power supply. The heating / shaking function will be set to ON or OFF when the device is powered on, depending on the previous status of the device.

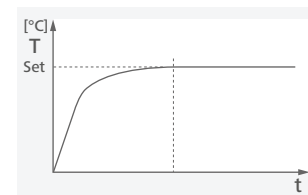
**Mode C:** In Mode C the device behaves the same as in mode B and all settings cannot be changed.

#### Temperature control mode:

In this menu option, you can select between two PID control modes:

##### a PID (Accurate PID):

For using with temperature sensitive materials that must be handled with care.



##### Advantages:

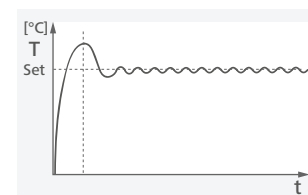
- Accurate temperature control.
- Minimum deviation above / below the target temperature.

##### Disadvantage:

- Longer heating up time.

##### f PID (Fast PID):

For use when a fast heating up time is needed and there should then be precise temperature control.



##### Advantages:

- Short heating up time.

##### Disadvantage:

- There will be a certain level of deviation above and below the target temperature.

#### Time range:

In this menu option, you can select time range [h:min:sec] or [d:h:min] as your request.

**Note:** In Counter (C) mode, if the time exceeds 24 hours, the time range will automatically switch from time range [h:min:sec] to [d:h:min].

### Alarm and key tone:

In this menu option, you can select and activate key tone and alarm.



Beep (on): alarm and key tone is activated.



Beep (off): no alarm and key tone.

### Temperature limit:

In this menu option, you can set the temperature limit from 38 °C to 100 °C for the device.



The set safety temperature limit must be at least 25°C below the flash point of the medium in use (EN 61010-2).

### Factory reset:

In this menu option, you can reset device settings to factory settings.



Factory reset (yes): Resetting to factory settings



Factory reset (no): Without resetting to factory settings.

### Decontamination:

In this menu option, you can perform decontamination to the chamber of the device.



Decontamination (off): Deactivate the decontamination function.



Decontamination (on): Activate the decontamination function.

#### Note:

All inflammable goods must be removed from the interior before decontamination.

When activating the decontamination function, the device will perform hot-air decontamination at 120 °C for 2 hours without the shaker platform as following:



wait



When the decontamination process is finished, the "dcon done" appear on the display. Press control knob to confirm it and screen back to "dcon off" as below:



**Note:** The decontamination process can be stopped by pushing the control knob for 2 seconds. The "dcon stop?" appear on the display as below:



Stop?

Confirm to stop the decontamination by pushing the control knob again. The screen back to "dcon off" as below:



If the performing of decontamination is interrupted by power failure, the decontamination process will not restart again automatically. The "dcon failed" will appear on the display.



failed

### Calibration:

The device is calibrated and adjusted in the factory.

Individual sample loading and ambient condition might influence the temperature behaviour of the chamber. You can select and make 1-point, 2-point or 3-point calibration and adjustment as necessary.

By using 3-point calibration to compensate that influence, the device can get the optimal result. This function allows the temperature to be calibrated and adjusted to three different temperature values.

When calibration, locate a calibrated reference measuring sensor at the center of the cabinet.



Calibration 1: 1-point calibration.



Calibration 2: 2-point calibration.



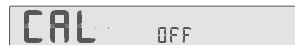
Calibration 3: 3-point calibration.



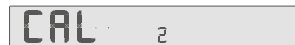
Calibration reset: Reset to original calibration.

### Example: 2-point calibration:

Switch to calibration screen by pressing multifunction button (F) and rotating the control knob (H). Following screen appears:



Press and rotate the control knob (H) to select 2-point calibration, following screen appears:



Press the control knob (H) to confirm the 2-point calibration, the first point calibration screen appears:



Rotate the control knob (H) to set the first point temperature (e.g. 25 °C), following screen appears:



Press the control knob (H) to confirm this step, "Yes" appears on the screen:



Press the control knob (H) again to start the first point calibration. The set temperature changes to the right side of the screen and actual temperature appears on the left side of the screen.



Wait for about one to two hours until temperature is stable (e.g. reach about 24.8 °C), the "set" symbol appears and blinks. Meanwhile, a "beep" sound is heard.



Press the control knob (H), the "key" symbol appear:



Now, you can input the calibration value from the reference measuring device (e.g. 24.9 °C) by rotating the control knob (H).



Press the control knob (H) to finish the first point calibration. Then, the second point calibration screen appears automatically.

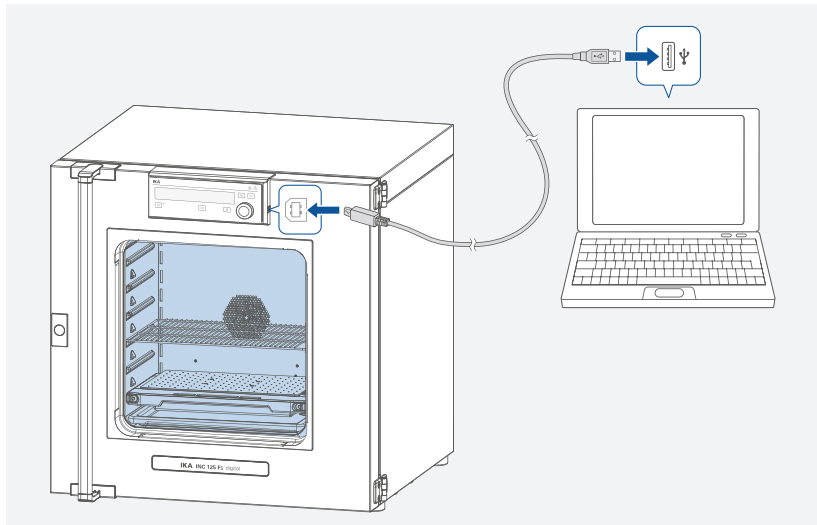


The calibration can be performed in the same steps.

## Interfaces and outputs

The device can be connected to a PC and operated with the laboratory software labworldsoft® through USB interface. The device software can also be updated with a PC via the USB port.

**Note:** Please comply with the system requirements together with the operating instructions and help section included with the software.



### /// USB interface

The Universal Serial Bus (USB) is a serial bus for connecting the device to the PC. Equipped with USB devices can be connected to a PC during operation (hot plugging). Connected devices and their properties are automatically recognized.

### /// USB device drivers

First, download the latest driver for IKA devices with USB interface from: [www.ika.com/ika/lws/download/usb-driver.zip](http://www.ika.com/ika/lws/download/usb-driver.zip).

Install the driver by running the setup file. Connect the IKA device through the USB data cable to the PC. The data communication is via a virtual COM port.

**Note:** the USB driver is unnecessary for Windows 10 system. Don't install it for Windows 10 system!

### /// Command syntax and format:

The following applies to the command set:

- > Commands are generally sent from the computer to the device.
- > The device sends only at the computer's request. Even fault indications cannot be sent spontaneously from the device to the computer (automation system).
- > Commands are transmitted in capital letters.
- > Commands and parameters including successive parameters are separated by at least one space (Code: hex 0x20).
- > Each individual command (incl. parameters and data) and each response are terminated with CR LF (Code: hex 0x0d hex 0x0A) and have a maximum length of 80 characters.
- > The decimal separator in a number is a dot (Code: hex 0x2E).

The above details correspond as far as possible to the recommendations of the NAMUR working party (NAMUR recommendations for the design of electrical plug connections for analogue and digital signal transmission on individual items of laboratory control equipment, rev. 1.1). The NAMUR commands and the additional specific IKA commands serve only as low level commands for communication between the device and the PC. With a suitable terminal or communications programme these commands can be transmitted directly to the device. The IKA software package, Labworldsoft®, provides a convenient tool for controlling the device and collecting data under MS Windows, and includes graphical entry features, for motor speed ramps for example.

Commands	Function
IN_PV_2	Read the internal actual temperature.
IN_SP_2	Read the internal setting temperature.
IN_SP_3	Read the safety setting temperature.
IN_SP_4	Read the fan setting.
OUT_SP_2 X (X=0 ... 80)	Set the internal setting temperature, X = 0 to 80.
OUT_SP_12@n	Setting WD safety limit temperature with set value echo.
OUT_SP_42@n	Setting WD safety limit speed with set value echo.
OUT_SP_4 X (X=0 ... 100)	Set the fan speed value, X= 0 to 100 in steps of 10%
OUT_WD1@m	Watchdog mode 1: if event WD1 should occur, the heating functions are switched off and PC1 is displayed. Set watchdog time to m (20 - 1,500) seconds, with watchdog time echo. This command launches the watchdog function and must be transmitted within the set watchdog time.
OUT_WD2@m	Watchdog mode 2: if event WD2 should occur, the temperature target value is changed to the WD safety temperature limit value. The warning PC2 is displayed. The WD2 event can be reset with OUT_WD2@0 - this also stops the watchdog function. Set watchdog time to m (20 - 1,500) seconds, with watchdog time echo. This command launches the watchdog function and must be transmitted within the set watchdog time.
START_2	Start the heating function.
STOP_2	Stop the heating function.
RESET	Switch off the device function.

**Note:** when disconnecting the USB cable while the device is running, the device stays in PC mode. To reset to function without PC, switch the device off and on again.

#### “Watchdog” function, monitoring the serial data flow:

The following applies to situations where the watchdog function is enabled (see Namur instructions). If no new transmissions of these commands from the PC take place within the preset watchdog time, the heating function will be shutdown according to the watchdog mode selected or will be controlled using the preset setpoints. An operating system crash, a PC power failure or a fault in the connecting cable to the device can cause an interruption in data transmission.

#### “Watchdog” – Mode 1

If an interruption in data transmission occurs which is longer than the preset watchdog time, the heating function will be shutdown and the error message PC 1 will be displayed.

#### “Watchdog” – Mode 2

If an interruption in data transmission occurs which is longer than the preset watchdog time, the temperature setpoint will be set to the WD safety temperature setpoint. The PC 2 warning message will be displayed.

### /// Connections between device and external devices:

#### USB 2.0 cable (A - B):

This cable is required to connect USB interface to a PC.



### /// Device software update

Keep your device up-to-date with the IKA Firmware update tool.

The firmware update can be done with a computer connected through USB-Interface.

For this, you need register on our website MylKA first.

After registering your device IKA will inform you about available updates for your devices.

Please download the software "FWUToolSetup.zip" from our IKA service website [www.ika.com](http://www.ika.com).

## Error codes

Any malfunctions during operation will be identified by an error message on the display.

Proceed as follows in such cases:

- › Turn off the device by using the power switch.
- › Carry out corrective measures.
- › Restart the device.

#### **E10412324**

Causes	› Temperature inside device (PCB power) too high
Effect	› Tempering function off
Solutions	› Switch off device and allow it to cool down.

#### **E10393524**

Causes	› Set temperature limit exceeded
Effect	› Tempering function off
Solutions	› Contact IKA service department.

#### **E10322713 / 10332713**

Causes	› Safety relay does not open
Effect	› Tempering function off
Solutions	› Contact IKA service department.

#### **E10144420**

Causes	› Heater1 error
Effect	› Tempering function off
Solutions	› Contact IKA service department.

#### **E10412923**

Causes	› No internal sensor
Effect	› Tempering function off
Solutions	› Contact IKA service department.

If the action described fails to resolve the fault or another error code is displayed then take one of the following steps:

- › Contact the service department.
- › Send the device for repair, including a short description of the fault.



## Maintenance and cleaning

The device is maintenance-free. It is only subject to the natural wear and tear of components and their statistical failure rate.

### /// Cleaning

For cleaning disconnect the mains plug!

Use only cleaning agents which have been approved by IKA to clean the devices:

These are: water (containing surfactant) and isopropyl alcohol.

- › Wear protective gloves during cleaning the devices.
- › Electrical devices may not be placed in the cleansing agent for the purpose of cleaning.
- › Do not allow moisture to get into the device when cleaning.
- › Before using another than the recommended method for cleaning or decontamination, the user must ascertain with that this method does not destroy the device.

### /// Decontamination

- › The device allows hot air decontamination at 100 °C for 2 hours with built in shaker platform and 120 °C for 2 hours without built in shaker platform.  
For details, refer to "Cleaning" in section "Menu details".

**Note:** Before decontamination, the device must be completely emptied.

### /// Ordering spare parts

When ordering spare parts, please indicate:

- › Device type.
- › Serial number, see type plate
- › Item and designation of the spare part, see: [www.ika.com](http://www.ika.com), spare parts diagram and spare parts list.
- › Software version (Briefly visible in the display when the device is switched on).

### /// Repairs

**Please send in device for repair only after it has been cleaned and is free from any materials which may constitute a health hazard.**

For repair, please request the "Decontamination Certificate" from IKA, or download printout of it from the IKA website [www.ika.com](http://www.ika.com).

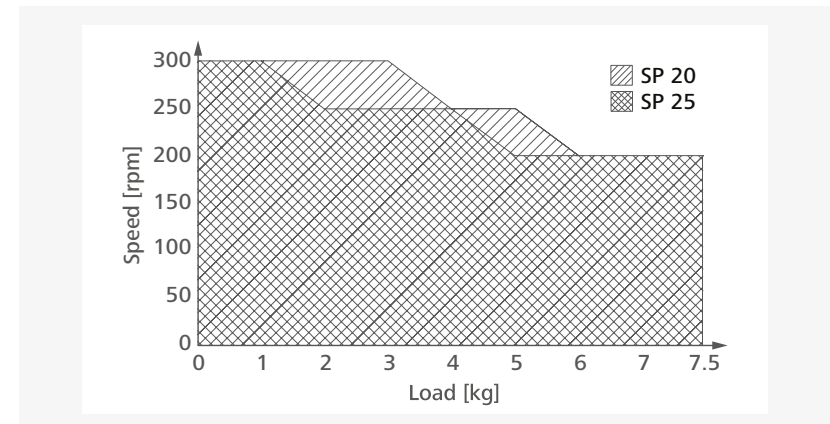
If you require servicing, return the device in its original packaging. Storage packaging is not sufficient. Please also use suitable transport packaging.

## Shaker platform

The following shaker platform are offered as accessories:

**SP 20** Shaking platform

**SP 25** Shaking platform



In order to ensure safe and secure operation, the shaker platform must only be operated within the range of usable weight and speed (see diagram - hatched area).

If you notice that the device is running unevenly, the speed must in any case be reduced until the running irregularities no longer occur.

Make certain that individual vessels are placed in the middle of the shaker platform and multiple shaking vessels are placed evenly on the shaker platform, and that all vessels are securely fastened in place.

## Accessories

<b>IO T 1.10</b>	Enhanced wire grid tray
<b>IO F 1.10</b>	Roller frame
<b>IO B 1.10</b>	Roller box
<b>IO P 1.10</b>	Table top work plate

<b>AS 2.0</b>	Fixing clip, 10 ml
<b>AS 2.1</b>	Fixing clip, 25 ml
<b>AS 2.2</b>	Fixing clip, 50 ml
<b>AS 2.3</b>	Fixing clip, 100 ml
<b>AS 2.4</b>	Fixing clip, 200 / 250 ml
<b>AS 2.5</b>	Fixing clip, 500 ml
<b>AS 2.6</b>	Fixing clip, 1000 ml
<b>AS 2.7</b>	Fixing clip, 2000 ml

**STICKMAX**

See more accessories on [www.ika.com](http://www.ika.com).



## Technical data

Operating voltage	VAC	230 ± 10 % / 115 ± 10 % / 100 ± 10 %
Frequency	Hz	50 / 60
Max. input power	W	850 (115 / 230 V) / 600 (100 V)
Heating power	W	750 (115 / 230 V) / 567 (100 V)
Fuse		5A (230V) / 10A (115V, 100V)
Working temperature range	°C	RT + 8 ... + 80
Working temperature limit, safety class TB 1 (150 °C)	°C	+ 38 ... + 100
Temperature setting resolution	K	0.1
Temperature stability (at 37°C)	K	± 0.1
Temperature homogeneity (at 37°C)	K	± 0.2
Temperature heating up time (from RT: 22°C to 37°C)	min	12
Temperature recovery time (from 37°C to RT: 22°C, open door 30 seconds)	min	2
Temperature display		LCD
Shaking function		Yes
Shaking stroke: with <b>SP 20</b> shaker platform	mm	20
with <b>SP 25</b> shaker platform	mm	25
Shaking speed range	rpm	10 ... 300
Permissible shaking weight (include attachment)	kg	7.5
Timer / counter function		Yes
Timer / counter display		LCD
Max. timer / counter		100 days (99:23:59 [d:h:min])
Max. number of tray		6
Max. load for one tray	kg	20
Chamber volume	l	125
Inside dimensions (W x H x D)	mm	550 x 550 x 415
Interface		USB
Permissible ambient temperature	°C	+ 15 ... + 32
Permissible relative humidity	%	80
Permitted on-time	%	100
IP code according to EN 60 529		IP 20
Protection class		I
Overvoltage category		II
Contamination level		2
Dimensions (W x H x D)	mm	700 x 720 x 635 (+70 with hand grip)
Weight	kg	70
Operation at a terrestrial altitude	m	max. 2000

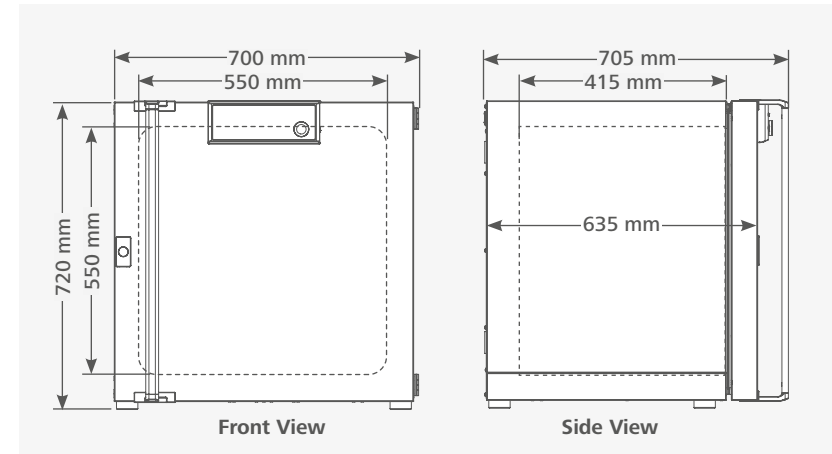
**Note:** Measurements done according to DIN 12880 with ambient temperature  $22 \pm 3$  °C.

Subject to technical changes!

## Warranty

In accordance with IKA warranty conditions, the warranty period is 24 months. For claims under the warranty please contact your local dealer. You may also send the machine direct to our factory, enclosing the delivery invoice and giving reasons for the claim. You will be liable for freight costs. The warranty does not cover worn out parts, nor does it apply to faults resulting from improper use, insufficient care or maintenance not carried out in accordance with the instructions in this operating manual.

## Dimensions





designed for scientists

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#### **IKA-Werke GmbH & Co. KG**

Janke & Kunkel-Straße 10, 79219 Staufen, Germany  
Phone: +49 7633 831-0, Fax: +49 7633 831-98  
eMail: sales@ika.de

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#### **USA**

IKA Works, Inc.  
Phone: +1 910 452-7059  
eMail: sales@ika.net

#### **KOREA**

IKA Korea Ltd.  
Phone: +82 2 2136 6800  
eMail: sales-lab@ika.kr

#### **BRAZIL**

IKA Brazil  
Phone: +55 19 3772 9600  
eMail: sales@ika.net.br

#### **MALAYSIA**

IKA Works (Asia) Sdn Bhd  
Phone: +60 3 6099-5666  
eMail: sales.lab@ika.my

#### **CHINA**

IKA Works Guangzhou  
Phone: +86 20 8222 6771  
eMail: info@ika.cn

#### **POLAND**

IKA Poland Sp. z o.o.  
Phone: +48 22 201 99 79  
eMail: sales.poland@ika.com

#### **JAPAN**

IKA Japan K.K.  
Phone: +81 6 6730 6781  
eMail: info\_japan@ika.ne.jp

#### **INDIA**

IKA India Private Limited  
Phone: +91 80 26253 900  
eMail: info@ika.in

#### **UNITED KINGDOM**

IKA England LTD.  
Phone: +44 1865 986 162  
eMail: sales.england@ika.com

#### **VIETNAM**

IKA Vietnam Company Limited  
Phone: +84 28 38202142  
eMail: sales.lab-vietnam@ika.com

#### **THAILAND**

IKA Works (Thailand) Co. Ltd.  
Phone: +66 2059 4690  
eMail: sales.lab-thailand@ika.com

#### **TURKEY**

IKA Turkey A.Ş.  
Phone: +90 216 394 43 43  
eMail: sales.turkey@ika.com

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