Precision balance

Model series: PKS

Type series: TPKS-A

Operating instructions

Version 1.0 – en_GB

Read the instructions before starting any work!

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Additional instructions

Read the document thoroughly before using the device

Read the document and, in particular, the safety instructions it contains thoroughly before working with the device. The manufacturer is not liable for damage resulting from failure to observe the instructions or improper use.

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1 Introduction

1.1 Validity

This document is part of the product. It is valid for the product versions listed below.

You can identify your product model on the type plate. The following illustration is an example. The actual type plate may differ from the illustration. <Model> indicates the model number and <Type> indicates the type item number.

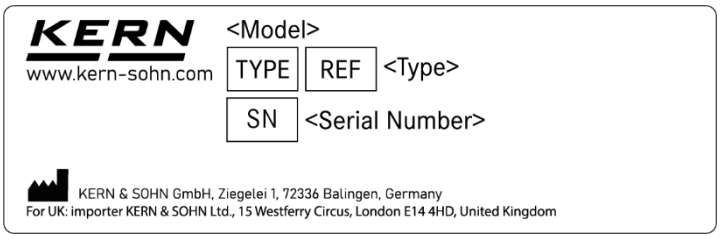


Figure1: Example of the type plate (the actual type plate may differ)

Model	Item number / Type
PKS 300-2	TPKS 300-2-A
PKS 600-2	TPKS 600-2-A
PKS 1000-1	TPKS 1200-1-A
PKS 2000-1	TPKS 2500-1-A
PKS 4000-1	TPKS 4200-1-A
PKS 6000-0	TPKS 6200-0-A
PKS 6000-1	TPKS 6200-1-A
PKS 10K-4	TPKS 10K-4-A
PKS 10K-5	TPKS 10K-5-A

1.2 Purpose of document

This document provides users with descriptions for the safe and efficient use of the product. All users must carefully read and understand this document before using the product.

1.3 Other versions of the document

The original version of this document was created in German. We reserve the right to make subsequent changes to the product documentation. The current version and other language versions of the document can be found on our website ➦ www.kern-sohn.com.

You will find further interesting information about our products in the download area:

- Technical data sheets
- Brochures and catalogues
- Information on the KCP protocol and software

1.4 Presentation conventions

Representations in the text

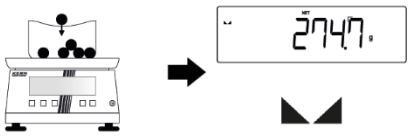
Element	Meaning
Example: **[TARE]**	Designation of keys
Example: <SETUP>	Text on the display of the scale
*	An asterisk * indicates default settings

Instructions

Instructions are presented as step-by-step guidance.

1. This is step 1.
2. Here is step 2.
   ⇨ Here is the result of step 2.

Scales operation

Element	Meaning
	Left = action, right = result
	Navigation keys for input on the device

Other display

Additional information or tips can be found here.

2 General safety instructions

Read the document thoroughly before working with the device. The manufacturer is not liable for damage resulting from failure to observe the instructions or improper use. Keep the document for future reference.

2.1 Meaning of the warnings

Warnings alert you to potential safety risks associated with certain activities. Read warnings thoroughly and follow the instructions. Failure to do so may result in injury, property damage, environmental damage, malfunction or incorrect results.

Meaning of signal words

Signal word	Meaning
DANGER	This combination of symbol and signal word indicates an immediately dangerous situation that will result in death or serious injury if not avoided.
WARNING	This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTE	This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, may result in damage to property or the environment.
ENVIRONMENT	This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, may result in damage to property or the environment.

Meaning of the warning signs

Warning signs	Type of hazard
	Warning of a hazardous location.
	Warning of hazards posed by batteries.
	Warning of dangerous electrical voltage.

2.2 Safe handling of packaging material

Always keep packaging material out of the reach of children and animals to avoid the risk of suffocation.

2.3 Safe handling of electrical equipment

Safe handling of power supply units

Improper handling of power supply units or the use of damaged or unsuitable power supply units and power cables can result in life-threatening injuries. Therefore, observe the following instructions:

- Do not use the device if the electrical equipment is defective (e.g. damage to the power supply unit or power cord, deformation, smoke development, etc.). If you notice any damage, disconnect the device from the power supply immediately and contact your dealer or KERN & SOHN customer service.
- Only connect the device to a properly installed and undamaged power supply. The information on the device (sticker) and the mains voltage at the place of use must be identical.
- Ensure that no moisture (e.g. water vapour or liquids) comes into contact with the electrical equipment at the place of use in order to avoid short circuits.
- Only use original power supplies and connection cables. If you need replacements, please contact your dealer or KERN & SOHN service.
- Work on the electrical equipment of the device may only be carried out by KERN & SOHN service.
- The power cable must be laid in such a way that it does not pose a tripping hazard and is not pinched or kinked.
- In an emergency, it must be possible to disconnect the device from the power supply without any problems.

Safe handling of batteries and rechargeable batteries

Batteries and rechargeable batteries can burn, emit toxic fumes, release corrosive liquids or explode if not used correctly. Therefore, please observe the instructions in the following section.

Damage

- Do not use damaged or deformed batteries and rechargeable batteries.
- Protect batteries and rechargeable batteries from mechanical damage, heat, cold, water and chemicals.
- Protect batteries and rechargeable batteries from short circuits. Never touch the terminals with metal objects.
- When inserting batteries and rechargeable batteries, ensure correct polarity (positive and negative terminals) and use suitable battery/rechargeable battery types. Only use types recommended by the manufacturer.
- Batteries and rechargeable batteries must not be modified.

Charging rechargeable batteries

- Chargers must not be modified.
- Only use the original charger.
- Observe the charging time specified in the technical data and avoid overcharging.
- Do not charge rechargeable batteries that are deformed or show other signs of damage.
- If heat, deformation, smoke or a burning smell occurs, disconnect the charger immediately and take it out of service.

Transport

⇨ When transporting batteries or rechargeable batteries, observe the applicable national and international regulations. Ensure that batteries or rechargeable batteries are protected against short circuits and damage. Do not ship defective batteries or rechargeable batteries or devices that contain defective batteries or rechargeable batteries.

Storage

- Charge the battery if you are not going to use it for a long time.
- Remove batteries or rechargeable batteries if the device is not to be used for a long period of time.
- Protect batteries and rechargeable batteries from short circuits (e.g. by covering the terminals) and store them separately according to type. Ideally, store them in a fireproof container.
- Store batteries and rechargeable batteries at room temperature in a dry place. Avoid extreme cold or extreme heat in the storage environment. Also observe the recommended ambient temperature in the technical data.

Battery fluid

- Avoid contact between leaking fluid and skin, eyes or clothing.
- Wear protective clothing/equipment when removing a defective battery and ensure ventilation.
- Thoroughly clean skin or clothing that has come into contact with battery fluid with soapy water and then rinse with clean water.
- In case of contact with eyes, rinse immediately with clean water and seek medical attention.

Disposal

- Do not dispose of batteries and rechargeable batteries in household waste, but at collection points or recycling centres.
- When disposing of batteries, ensure that the terminals are not short-circuited.
- Observe the instructions for disposing of batteries and rechargeable batteries. ➦ Chapter 17

2.4 Information on IT security

This device is equipped with an interface for data transmission. Unauthorised persons may be able to gain access to the exchanged data. It is the responsibility of the operator to identify potential IT risks at the place of use and to take appropriate countermeasures if necessary.

2.5 Intended use

Intended use of the balance

This scale is used to determine the weight of items being weighed. This scale is a "non-automatic scale". This means that the items to be weighed must be placed carefully and as centrally as possible on the weighing plate. Once a stable weight value is displayed, the result can be read.

2.6 Improper use

Improper use of the scales

- Our scales with strain gauges (SG) are not intended for use in dynamic weighing processes.

  However, the scales can also be used for dosing applications after checking the individual area of application and the accuracy requirements.

  You can find out whether your scale is equipped with strain gauges in the technical data. ➦ Chapter 19.1
- Avoid impact loads and exceeding the maximum load limit (Max.) of the scale to prevent damage.
- The balance must never be operated in potentially explosive environments.
- Any modification to the design of the balance can lead to incorrect weighing results and safety-related defects. Therefore, such modifications are prohibited.
- The scales must only be used in accordance with the specifications described.
- The scales are not designed for weighing people. They are not suitable for medical purposes and do not meet the requirements of the Medical Devices Act.

2.7 Operator's responsibilities

It is the operator's responsibility to comply with the specifications described in this document as well as with legal and official regulations at the place of use. Any disregard of the safety regulations and instructions described in this document is considered improper use. KERN & SOHN is not liable for damage resulting from improper use.

2.8 Required user qualifications

- The installation, commissioning, maintenance and servicing of the device may only be carried out by qualified personnel. A qualified person is someone with the appropriate professional training or qualifications for the activities described. They have in-depth knowledge of the tasks and the relevant safety standards.
- The operation, handling and care of the device may only be entrusted to trained users. A trained user is a person who has been trained in the use of the device and the relevant safety regulations.

2.9 Requirements for the operating environment

In addition to the environmental specifications in the technical data, observe the following requirements for the operating environment:

- The device must not be operated in environments where there is a risk of corrosion.
- The device must be protected from excessive humidity, vapours, mist and dust.
- The device must be protected against excessive moisture due to condensation. Condensation can occur when the device is moved from a cold environment to a significantly warmer environment. If such a change in environment cannot be avoided, allow the device to acclimatise for approx. 2 hours before commissioning.
- The device must not be used in environments with aggressive chemicals, gases or liquids.
- The device must not be used in potentially explosive areas or environments where explosive substances are present.
- The device must not be used in environments with very strong shocks or vibrations.
- The device must not be exposed to extreme heat or strong temperature fluctuations (e.g. by placing the device next to a heater or in direct sunlight).
- Protect the device from direct draughts.
- Select a usage environment with a stable power supply.
- When selecting the location for use, take the surrounding environment into account. Electromagnetic fields and electrostatic charges can distort the weighing result or cause damage.

3 Description of the device

3.1 General product description

This balance is a precision balance. Precision balances are used, for example, for sample preparation or for picking small parts.

3.2 Overview of the device

Figure2: Front (example for TPKS 120-3-A)

1	Weighing plate
2	Display
3	Spirit level
4	Buttons

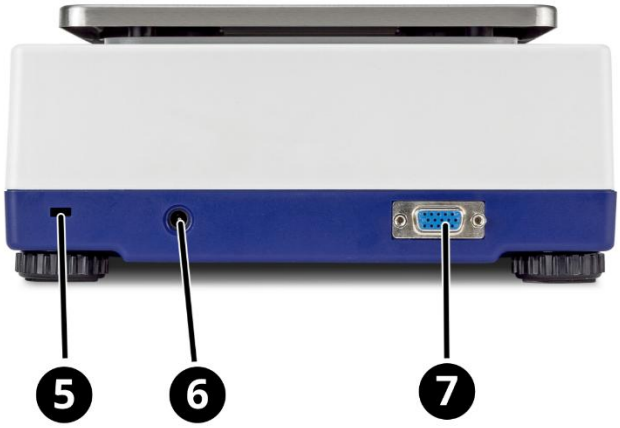


Figure3: Back

5	Connection of anti-theft device
6	Power adapter connection
7	KUP connection (KERN Universal Port)

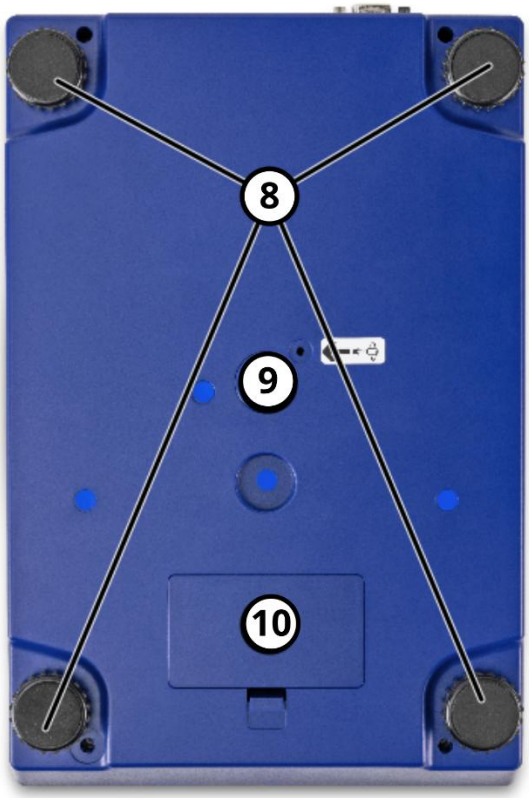


Figure4: Underside

8	Foot screw
9	Underfloor weighing device
10	Battery compartment

Overview of the different versions:

PKS 1000-1

PKS 2000-1

PKS 300-2

PKS 600-2

PKS 10K-4

PKS 10K-5

PKS 4000-1

PKS 6000-0

PKS 6000-1

3.3 Overview of the buttons

3.3.1 Operation using the buttons on the device

Button	Designation in the text	Short key press	Long press
ON OFF	**[ON/OFF]** or **[🡐]**	• Switch on the scales • Return to previous menu level / Exit menu • Previous digit • Open quick menu ○ Switch off: OFF ○ Log out user: LOGOUT (only displayed if user management is active) ○ Standby mode: STANDBY ○ Switch backlight on/off: TOGGLE BACKLIGHT	• Switch off scales
F	**[F]** or **[🡅]**	In menu / input: • Previous menu item • Increase digit	
		Function key ➦ Chapter 6.5.2	
		Application: Weighing • Execute hold function	• Pre-tare
		Application: Counting • Set reference piece count	• The application menu <CHECK COUNTING> for counting with tolerances opens
		Application: Tolerance weighing • The <CHECK WEIGHING> application menu for weighing with tolerances opens	• Pre-tare
		Application: Density determination • Start density determination for solids	• Start density determination for liquids
		Application: Formulation • Execute hold function	• Pre-tare

Key	Designation in text	Short key press	Long press
	[CHANGE] or **[➔]**	In the menu / input: • Select menu item and move to next menu level / Confirm selection • Confirm digit and move to next digit	
		Function key ➦ Chapter 6.5.2	
		All applications • Change unit	• Display gross / net / tare
PRINT	**[PRINT]**	• Output data to connected peripheral device	• End active summation. • End active statistics function
→0←	**[ZERO]**	• Zero	
TARE	**[TARE]** or **[🡻]**	• Tare • Next menu item • Decrease digit	• Open application menu

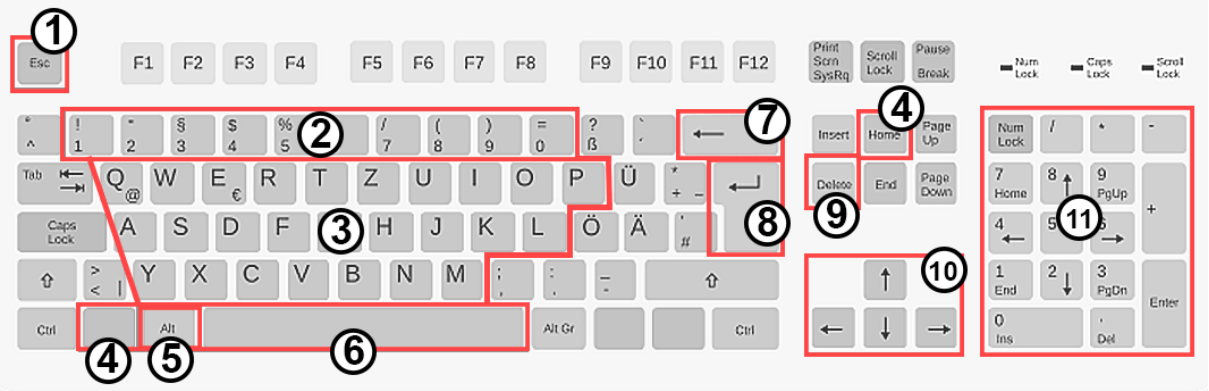
Numeric input:

Key	Description
[↑]	• Increase digit • Move decimal point to the left
[↓]	• Decrease digit • Move decimal point to the right
[→]	• Move to the next digit / confirm entry (short press) **Note:** When entering multiple digits, a long press on the key will jump to the last digit. The entry must then be confirmed with a short press on the key.
[←]	• Return to the previous digit (short press) • Cancel entry (long press)

3.3.2 Operation via USB keyboard

The balance can be operated using a USB keyboard with 104 (105) keys.

For optimal interaction, use accessories from KERN & SOHN. ➦ www.kern-sohn.com

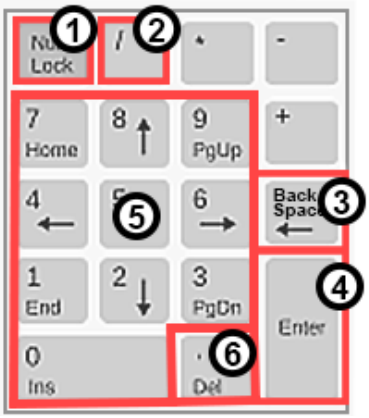


Pos.	Key	Function
1	Esc	Exit menu and return to operating mode
2	Numbers 1–0	Enter numbers
3	Letters	Enter letters
4	• Start button (Win key, logo key) • Home	Open setup menu
5	Alt	Open application menu
6	Space bar	Space
7	Backspace	Delete active character
8	Enter	Confirm input
9	Delete	Delete entire entry
10	Arrow keys	Like the arrow keys on the scales ➦ Chapter 3.3.1
11	Numpad	➦ Chapter 3.3.3

3.3.3 Operation via USB numpad

The scale can be operated using a USB numpad with a maximum of 19 keys.

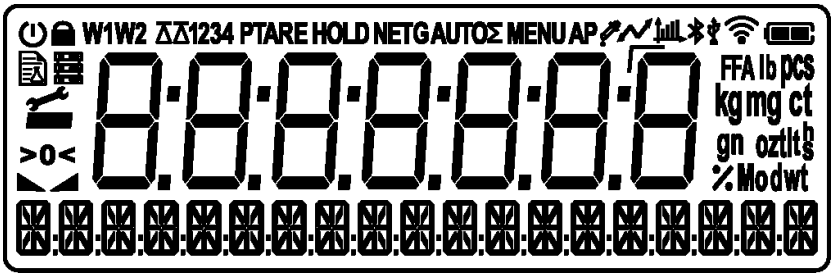
For optimal interaction, use accessories from KERN & SOHN. ➦ *www.kern-sohn.com*



Pos	Key	Function
Operating mode		
2	/	Open application menu
5	Home	Open setup menu
Menu		
5	End	Exit menu and return to operating mode
	Arrow keys	Like the arrow keys on the scales ➦ Chapter 3.3.1
Selecting the unit / position of the decimal point		
4	Enter	Confirm entry
5	Arrow keys	[↑]: Move decimal point to the left / Select unit [↓]: Move decimal point to the right / select unit

Pos.		Key	Function
Input dialogues (numbers and letters)			
1		Num Lock	Activate/deactivate number keys
deactivated	3	Backspace	Delete active character
	4	Enter	Confirm entire entry
	5	Arrow keys	Like the arrow keys on the scales ➦ Chapter 3.3.1
	6	Delete	Delete entire entry (first number/letter must be selected)
acti-vated	3	Backspace	Delete active character
	5	Number keys	Enter numbers

3.4 Overview of the advertisement



Display	Designation	Description
	Stability indicator	Displayed when weighing values are stable
>0<	Zero display	Displayed when set to zero
	Minus	Displayed when the weighing value is negative
	Recipe mode	Displayed when recipe mode is used
	Pre-tare memory location	Displays the currently active pre-tare memory location (slot)
PTARE	Pre-tare	Displayed when pre-tare is active
TARE	Tare	Displayed when switching between gross, net and tare to tare
HOLD	Hold	Displayed when weighing values are held
NET	Net	Displayed value is net weight (displayed after taring)
G	Gross weight value	Displayed value is gross weight (displayed after zeroing)
∑	Total	Displayed during summing function
MENU	Menu	Displayed when the application or setup menu is open
AP	Autoprint	Displayed when the autoprint function is active
	Statistics symbol	Displayed when the statistics function is active

Display	Designation	Description
	Bluetooth	Bluetooth connection has been established or is available
	USB	Displayed when USB host is connected
	WiFi	Displayed when WiFi connection is established
	Charging indicator	Displayed when running on battery power
pcslbFFA %ct g/mol kgmgn dwtoztl	Units	Active unit is displayed on the right-hand side of the display

Tolerance display

The tolerance display is shown both when counting with tolerances and when tolerance weighing. The number of bars displayed changes depending on the mean value of the limit values or the set target value.

Display	Designation	Description
LLOJ	LOW	Lower tolerance / Below lower limit
LOKJ	OK	Tolerances / limits complied with
LHIJ	HIGH	Upper tolerance / Upper limit exceeded

4 Unpack, check and transport the device

4.1 Unpack and check device

⚠ WARNING

Risk of tripping or suffocation due to packaging material

Packaging material lying on the floor can become a tripping hazard.

Unattended packaging material can pose a suffocation hazard to children or animals.

- ⇨ Do not leave packaging material unattended, especially if children or animals are in the vicinity.
- ⇨ Remove the packaging material immediately after unpacking and dispose of it properly. However, we recommend keeping the packaging material in the original box in case of any returns.

- *Keep the original packaging and its components for transport, storage or possible returns.*
- *Contact your dealer if you notice any missing parts or damage. Information on warranty and returns can be found in ➦ Chapter 16*

1. Check the packaging for visible external damage that may have occurred during delivery.
2. Remove all parts of the scope of delivery (➦ Chapter4.2) and remove the packaging materials.
3. Check that all parts of the scope of delivery are complete and undamaged.

   ⇨ You can now transport the device to its place of use. ➦ Chapter 4.3

4.2 Scope of delivery

- Scales
- Weighing plate
- Weighing plate support
- Underfloor hook
- Allen key
- Safety guard
- Power supply
- Mains plug adapter set
- Operating instructions

4.3 Transporting the device

NOTE

Damage caused by improper transport

Improper transport can cause damage to the device.

- ⇨ Remove all loads from the weighing plate before transporting the balance.
- ⇨ Remove all loose components from the device before transporting it.
- ⇨ Reattach the transport lock before transporting the balance. This applies in particular to transport in vehicles.
- ⇨ Transport the device over longer distances in its original packaging.
- ⇨ When transporting batteries or rechargeable batteries, observe the applicable national and international regulations. Ensure that batteries or rechargeable batteries are protected against short circuits and damage.

  Do not ship defective batteries or rechargeable batteries or devices that contain defective batteries or rechargeable batteries.
- ⇨ Hold the balance by the housing and not by the weighing plate or weighing plate support when transporting it.

5 Assembly, installation and commissioning

5.1 Selecting the place of use

The scales are designed to provide reliable weighing results under normal conditions of use. You will work accurately and quickly if you choose the right location for your scales.

When selecting the location, please note:

➦ Chapter 19.1

➦ Chapter 2.9

5.2 Installing the device

5.2.1 Safety during installation

⚠ DANGER

Electric shock from live parts

Contact with live parts can result in electric shock and burns.

- ⇨ Installation, cleaning, maintenance and repair work must only be carried out by qualified personnel.
- ⇨ Disconnect live parts from the power supply.
- ⇨ Only carry out installation, cleaning, maintenance and repair work on devices that have been switched off and disconnected from the power supply, unless the relevant instructions specify otherwise.
- ⇨ Follow the instructions in this document.

5.2.2 Preparing for installation

1. Transport the device to the place of use (➦ Chapter4.3 and Chapter2.9).
2. Have all parts included in the scope of delivery, any tools that may be required and the documentation ready.

5.2.3 Remove the transport lock

Tool:

⇨ Allen key

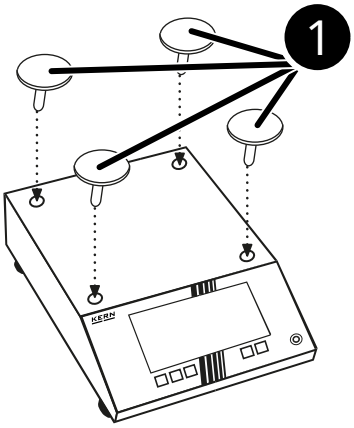
1. Remove all loose parts from the scale.
2. Carefully turn the scale over so that the underside is facing upwards.
3. Remove the transport lock (position: see illustration below) and keep it for possible future transport.

   ⇨ You have now successfully removed the transport lock.

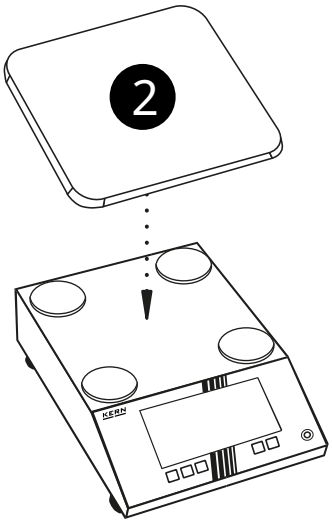
Models from 1 kg

Models smaller than 1 kg

5.2.4 Installing the weighing plate



1. Insert the 4 weighing plate supports [1] into the openings provided on the top of the balance.



2. Place the weighing plate [2] on the weighing plate supports.
   ⇨ You have successfully installed the weighing plate.

5.2.5 Connecting wired peripheral devices

Only use accessories and printers from KERN. These are optimally matched to your balance.

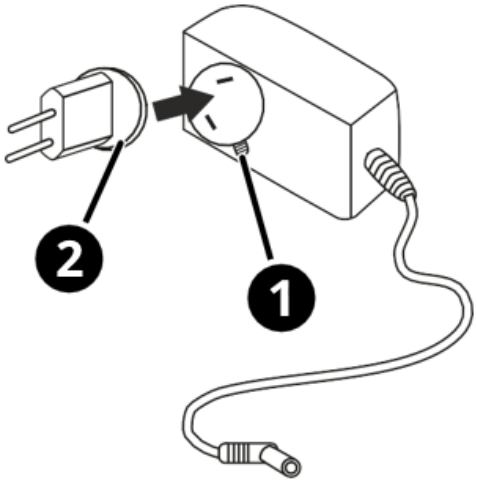
Disconnect the balance from the mains before connecting an additional device (e.g. printer, PC).

For information on setting up the interfaces, see ➦ Chapter7 .

5.2.6 Mains operation

Installing the mains plug adapter

The device comes with a mains plug adapter set so that it can be used flexibly in different locations with different mains plug standards. The installation of the mains plug adapter is described below.



1. Press release tab *1*.

2. Insert the mains plug adapter *2* so that it fits into the recess.

3. Turn the inserted mains plug until the mains plug adapter clicks into place.
   - ➢ The power supply unit is now ready for use.
   - ➢ To remove the power plug adapter, press the release tab and proceed in reverse order.

Connecting the power supply to the mains

⚠ WARNING

Serious injury from damaged power supplies

Damaged power supplies can cause short circuits, fires and serious injury.

⇨ Before each use, check the power supply unit and power cord for visible damage. Do not use the power supply unit if it is damaged.

⚠ WARNING

Injuries caused by incorrect handling of power adapters

Incorrect handling of power adapters can lead to short circuits, fires and serious injury.

- ⇨ Observe the safety instructions for handling mains devices. ➦ Chapter 2.3
- ⇨ Avoid moisture on the mains connection, mains device and socket.
- ⇨ Only connect the device to a properly installed power socket.
- ⇨ Ensure that the power supply unit cable is never kinked or pinched.
- ⇨ Ensure that the power supply unit is accessible at all times.
- ⇨ Ensure that the power cable does not pose a tripping hazard.
- ⇨ Only connect the power supply unit to the mains if the information on the device (sticker) and the mains voltage at the place of use are identical.

1. Plug the power cord connector into the power connection on the device (for the power connection, see ➦ Chapter3.2).
2. Plug the mains plug into the mains socket.
   - ➢ The device is now ready for use. ➦ Chapter 5.3

5.2.7 Inserting the batteries

⚠ WARNING

Injuries caused by incorrect handling of batteries or rechargeable batteries

Incorrect handling of batteries can lead to short circuits, fires, leakage and injury.

- ⇨ Never use damaged or deformed batteries or rechargeable batteries.
- ⇨ Never touch the terminals of batteries or rechargeable batteries with metal objects, as this can cause short circuits.
- ⇨ When inserting batteries or rechargeable batteries, ensure that the polarity (positive and negative terminals) is correct.
- ⇨ Do not use different types of batteries or old and new batteries together if multiple batteries are required for operation. This can cause damage.
- ⇨ Only replace batteries or rechargeable batteries with types recommended by the manufacturer.
- ⇨ Remove the batteries or rechargeable batteries from the device if you wish to store them for a longer period of time. This protects the device from damage caused by any battery fluid that may leak.

1. Remove all loose parts from the scales.
2. Carefully turn the scale over so that the underside is facing upwards.
3. Open the battery compartment cover.
4. Insert the batteries.
5. Close the battery compartment cover.

5.2.8 Battery operation

Optional accessories are required for battery operation. For more information, visit our website ➦ www.kern-sohn.com. The necessary steps are described in the documentation for the optional accessories.

Charging the battery

⚠ WARNING

Injuries caused by improper battery charging

Improper charging of batteries may cause them to catch fire or explode.

- ⇨ Chargers must not be modified.
- ⇨ Only use the original charger.
- ⇨ Observe the charging time specified in the technical data and avoid overcharging.
- ⇨ Do not charge batteries that are deformed or show other signs of damage.
- ⇨ If heat, deformation, smoke or a burning smell occurs, disconnect the charger immediately and take it out of service.
- ⇨ Observe the general safety instructions for batteries and rechargeable batteries. ➦ Chapter 2.3

The battery should be fully charged before first use. The charging time can be found in the technical data ➦ Chapter19.1 .

➢ To charge the battery, connect the power supply unit to the scales.

5.3 Putting the device into operation

Carry out measures before commissioning

In order to obtain accurate weighing results with electronic scales, the scales must have reached their operating temperature. The scales must be connected to the power supply for this acclimatisation period (➦ Chapter19.1).

Performing commissioning

Complete all necessary installation work and preparations before commissioning.

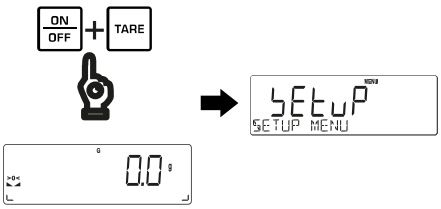
1. Switch on the device. ➦ Chapter8.1 .
2. Initial adjustment may be necessary at the installation site. ➦ Chapter 6.3

6 Settings

Settings marked in grey are user settings.

6.1 Opening the setup menu and operating the

Note: If user management is activated, the setup menu can only be opened if the logged-in user has permission to make changes in the setup menu . ➦ Chapter 6.8



- In operating mode, press and hold **[TARE]** and **[ON/OFF]** simultaneously.
  - is displayed.
  - The scale is now in the setup menu.

Navigating the menu

Key	Function
[↑]	Previous menu item
[↓]	Next menu item
[→]	Select menu item and move to the next menu level / Confirm selection
[←]	Return to previous menu level / Exit menu

Numeric input

Key	Function
[↑]	Increase digit
[↓]	Decrease digit
[→]	Confirm digit and move to next digit
[←]	Previous section

Operation is also possible with a USB keyboard or USB numpad. ➦ Chapter3.3.2 & 3.3.3

6.2 Overview Setup Menu

Menu level	Description	Further information
<CALIBRATION>	Adjustment	➦ Chapter 6.3
<COM INTERFACES>	Interface parameters	➦ Chapter 7.3
<PRINT SETTINGS>	Data output and printing	➦ Chapter 7.4
<DEVICE>	Device settings	➦ Chapter 6.4
<EXTRA>	Additional settings	➦ Chapter 6.5
<ENERGY SETTINGS>	Energy settings	➦ Chapter 6.6
<AMBIENT>	Ambient settings	➦ Chapter 6.7
<USER ADMINISTRATION>	User administration	➦ Chapter 6.8
<INFO>	Device info	➦ Chapter 6.9
<RESET SETTINGS>	Restore factory settings	➦ Chapter 6.10

6.3 Adjustment settings

Gravitational acceleration varies in different locations on Earth. For accurate weighing results, the balance must be adjusted to the gravitational acceleration at the location where it is installed. The balance must have reached its operating temperature before adjustment.

The balance must be adjusted in the following cases:

- Before initial commissioning, if the balance has not already been adjusted to the installation location at the factory.
- After each change of location.
- After significant changes in environmental conditions (e.g. temperature or humidity).
- When the balance has been disconnected from the power supply.

To ensure accurate measurements, it is also recommended that the balance be calibrated regularly.

CAUTION

Incorrect weighing results

⇨ Avoid unstable environmental conditions during calibration (e.g. vibrations or air currents).

⇨ Ensure that the balance has reached its operating temperature.

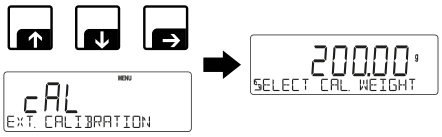
⇨ Only perform the adjustment with the standard weighing plate in place.

⇨ Ensure that there is no load on the weighing plate during internal adjustment.

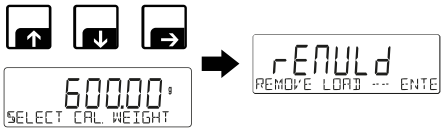
6.3.1 Calibration with external calibration weight

Menu: <CALIBRATION>→ <EXT.CALIBRATION>

Performing adjustment

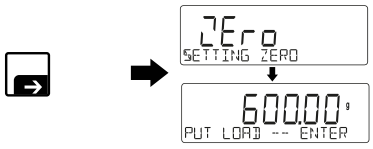


1. Call up the adjustment settings in the setup menu.
2. Select <EXT.CALIBRATION> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The selection of the adjustment weight is displayed.



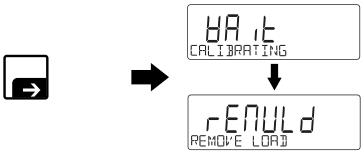
3. Select the desired adjustment weight (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ <rEMULd | REMOVE LOAD --- ENTER> is displayed.

4. Remove the load from the weighing plate.

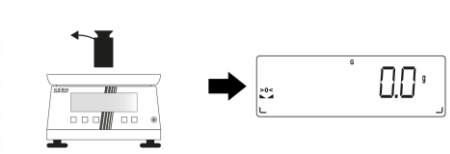


5. Confirm **[➔]**.
   - ➢ The balance performs a zero adjustment.
   - ➢ The balance switches to display the adjustment weight to be placed on it.

6. Place the adjustment weight in the centre of the balance.



7. Confirm **[➔]**.
   - ➢ <WAit|CALIBRATING>→ <rEMULd|REMOVE LOAD> are displayed.



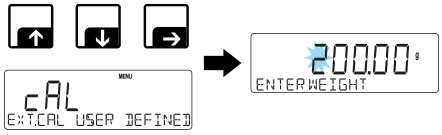
8. Remove the calibration weight.
   - ➢ The balance switches to operating mode.
   - ➢ Calibration is complete.

The adjustment can be cancelled by pressing and holding **[🡐]**.

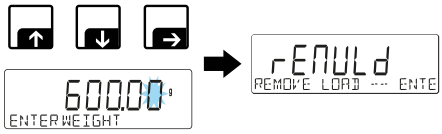
6.3.2 Adjustment with user-defined weight

Menu: <CALIBRATION>→ <EXT.CAL USER DEFINED>

Perform adjustment

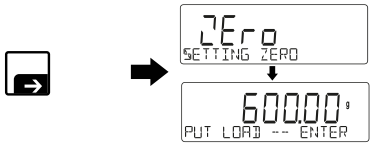


1. Call up the adjustment settings in the setup menu.
2. Select <EXT.CAL USER DEFINED WEIGHT> ([↑] / [↓]) and confirm ([→]).
   - ➢ The display changes to numerical input.

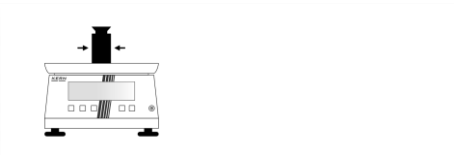


3. Enter the weight value (select number: [↑] / [↓], next number: [→] and confirm [→]).
   - ➢ <rEMOVE LOAD --- ENTER> is displayed.

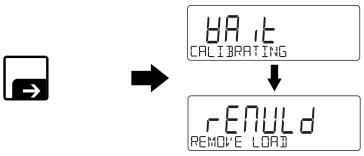
4. Remove the load from the weighing plate.



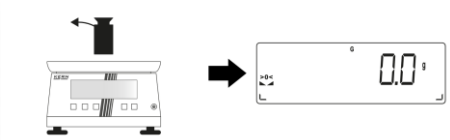
5. Confirm [→].
   - ➢ The balance performs a zero adjustment.
   - ➢ The balance switches to the display of the adjustment weight to be placed on the balance.



6. Place the adjustment weight in the centre of the balance.



7. Confirm [→].
   - ➢ <WAIt | CALIBRATING>→ <rEMOVE LOAD | REMOVE LOAD> are displayed.



8. Remove the calibration weight.
   - ➢ The balance switches to operating mode.
   - ➢ Calibration is complete.

The adjustment can be cancelled by pressing and holding [←].

6.4 Device settings

Menu: <DEVICE>

Submenu	Description	Further information
INPUT	User input	➦ Chapter 6.4.1

6.4.1 User input

Menu: <DEVICE>→ <INPUT>

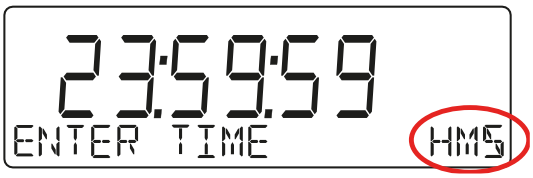
Submenu	Settings	Selection level	Description
DATE AND TIME SETTINGS	VIEW DATE		Displays date
	VIEW TIME		Displays time
	EDIT DATE		Enter date
	EDIT TIME		Enter time
	DATE FORMAT		Set date format
		SET DATE FORMAT	Select format
		• YMd*	Year-month-day
		• MdY	Month-day-year
		• dMY	Day-Month-Year
	TIMEFORMAT		Set time format
		SET TIME FORMAT	Format selection
		• 24H*	24h
		• 12H	12h
BALANCE ID			Enter device ID (Default: Model name)
USER-DEFINED TEXT			Enter user-defined text (Default: none)
COMPANY			Enter company name (Default: KERN & SOHN GmbH)

Set date:

The date format is displayed in the lower right corner of the screen. The date must be entered in accordance with this format. The format depends on the setting under <DATE&TIME SETTINGS>→ <DATE FORMAT>. The first line shows the current entry. The entry is made using the arrow keys.

Set time:

The time is entered in hours-minutes-seconds (HMS) format. The first line shows the current entry. The entry is made using the arrow keys . The entry depends on the set time format (12 h or 24 h).



6.5 Additional settings

Menu: <EXTRA>

Submenu	Description	Further information
BEEPER	Acoustic signal	➦ Chapter 6.5.1
HOTKEYS SETTINGS	Key assignment	➦ Chapter 6.5.2
AUX INFO SETTINGS	Information in the second line	➦ Chapter 6.5.3
SET ACTIVE UNITS	Set available units	➦ Chapter 6.5.4
SET ACTIVE MODES	Set available applications	➦ Chapter 6.5.5

6.5.1 Setting the acoustic signal

Menu: <EXTRA>→ < BEEPER>

Submenu	Settings	Selection level	Description
KEYS BEE-PER			Key tone
	SET KEYS BEE-PER		Activate/deactivate key tone
		• on*	Key tone on
		• oFF	Key tone off

6.5.2 Set key assignment

Menu: <EXTRA> → <HOTKEYS SETTINGS>

(Information on operation according to the tables)

Submenu	Settings	Description
GENERAL		General key assignment (independent of the application)
	SELECT PRE-TARE SLOT	Select pre-tare slot
	CHANGE AUX INFO	Switch information in the second line
	SHOW NET/GROSS/TARE	Switch display between net, gross and tare
	SELECT DIS-PLAY/HOST UNIT	Change display unit
	SELECT MODE	Select application mode
	CAL EXT	Perform external calibration
	OFF	Standby mode
	END STATISTICS	End statistics
	LOGOUT	Log out user (only visible if user management is active)

Settings under <GENERAL> override the application-specific key assignments.

Submenu	Settings	Description
WEIGHING MODE		Key assignment in application: Weighing
	HOLD	Execute hold function
COUNTING MODE		Key assignment in application: Counting
	REF	Set reference quantity
	CHECK	Application menu <CHECK> for the Counting with tolerances opens
CHECK WEIGHING MODE		Key assignment in application: Tolerance weighing
	CHECK	The application menu <CHECK> for weighing with 0.01 g tolerances opens.
DENSITY MODE		Key assignment in application: Density determination
	SOLID DETERMINATION	Start density determination for solids
	LIQUID DETERMINATION	Start density determination for liquids

Operation:

The functions can be assigned to different buttons. These are then executed either by pressing the button briefly or holding it down. All button assignment settings are carried out in the same way:

1. Select the desired function from the menu
2. Select the desired key

chnG	**[CHANGE]**
F-KEY	**[F]**

3. Select key press

SPUSH	Short key press
LPUSH	Long key press

6.5.3 Set second line

Menu: <EXTRA>→ <AUX INFO SETTINGS>

- *To display information in the second line, at least one button must be assigned the <CHANGE AUX INFO> function. ➞ Chapter 6.5.2*
- *There are 2 general slots and 2 application-specific slots each→ . The user can therefore switch between 4 different displays in the second line once all slots have been assigned.*
- *The slots set in <GENERAL> can be viewed in any application. The application-specific slots can only be viewed in the respective application.*
- *The default settings for the second line are listed at the end of the chapter.*

Submenu	Settings	Description
GENERAL		Information that is displayed independently of the current application
	DISPLAY CURRENT USER	Display currently logged-in user
	DISPLAY BAR GRAPH	Display bar graph
	DISPLAY TARE	Display tare weight
	DISPLAY 2ND UNIT	Display current net weight in the second unit (further information after the table)
	DISPLAY DATE & TIME	Display date and time
	DISPLAY DATE	Display date
	DISPLAY TIME	Display time
	DISPLAY SUM	Display sum
	DISPLAY SUM COUNT	Display number of totals
	DISPLAY STATISTICS	Display statistics (more information after the table)

Submenu	Settings	Description
COUNTING MODE		Settings for application: Counting
	SINGLEPIECE WEIGHT	Display piece weight in standard unit
	UPPERLIMIT or UPPERTOLERANCE	Display upper limit/deviation (menu selection depends on current setting in counting with tolerances)
	LOWERLIMIT or LOWERTOLERANCE	Display lower limit/deviation (menu selection depends on current setting in counting with tolerances)
CHECK-WEIGHINGE MODE		Settings for application: Tolerance weighing
	UPPERLIMIT or UPPERTOLERANCE	Display upper limit/deviation (menu selection depends on current setting in tolerance weighing)
	LOWERLIMIT or LOWERTOLERANCE	Display lower limit/deviation (menu selection depends on current setting in tolerance weighing)

Operation :

The functions can be assigned to different display slots. All settings in the second line are carried out in the same way:

1. Select the desired function in the menu
2. Select the desired slot

oFF	Do not display
1	Slot 1
2	Slot 2

Additional submenus:

Menu: <GENERAL>→ <DISPLAY 2.UNIT>

Operation

1. Select the desired slot

1	Slot 1
2	Slot 2

➢ <SELECT UNIT> appears and unit flashes

2. Select unit and confirm

➢ Display returns to menu

Menu: <GENERAL>→ <DISPLAY STATISTICS>

Operation:

1. Select the desired setting

AVERAGE VALUE	Average value
STANDARD DEVIATION	Standard deviation
MEDIAN	Median
MINIMUM VALUE	Minimum
MAXIMUM VALUE	Maximum

2. Select desired slot

1	Slot 1
2	Slot 2

:

Submenu	Slot 1	Slot 2
GENERAL	DISPLAY BARGRAPH	
COUNTING MODE	SINGLE PIECE WEIGHT	
CHECK-WEIGHING ING MODE	UPPER LIMIT or UPPER TOLERANCE	LOWER LIMIT or LOWER TOLERANCE

6.5.4 Set available units

Menu: <EXTRA>→ <SET ACTIVE UNITS>

The standard unit of the scale cannot be deactivated (depending on the model, g or kg).

GRAM	Gram
KILOGRAM	Kilogram
MILLIGRAM	Milligram
CARAT	Carat
POUND	Pound
GRAIN	Gran
PENNYWEIGHT	Pennyweight
TOLA TAIWAN	Tola (Taiwan)
TOLA HK	Tola (Hong Kong)
TOLA SP	Tola (Singapore)
TROY OUNCE	Troy ounce
OUNCE	Ounce
MOMME	Momme
PERCENT	Per cent
FREE FACTOR	Multiplication factor

Selection:

on*	available
oFF	lock

6.5.5 Set available applications

Menu: <EXTRA>→ <SET ACTIVE MODES>

WEIGHING MODE	Weighing
COUNTING MODE	Counting
RECIPE MODE	Recipe
CHECKWEIGHING MODE	Tolerance weighing
DENSITY MODE	Density determination

Selection:

on*	available
oFF	lock

6.6 Energy settings

Menu: <ENERGY SETTINGS>

Submenu	Settings	Selection level	Description
BACKLIGHT SETTINGS			Backlight
	BACKLIGHT		Lighting mode
		• oFF	Backlight disabled
		• ALWAYS*	Backlight always on (can be switched on/off by briefly pressing **[ON/OFF]**)
		• t.MEr	Automatic switch-off of backlight after 5 s*, 10 s, 30 s, 1 min, 2 min, 5 min, 30 min (selectable)
ECOMODE SET-TINGS			Eco mode
	MODE		Select mode
		• oFF*	Eco mode deactivated
		• AutoFF	Automatic switch-off function ➦ Information according to the table
		• StndbY	Standby mode ➦ Information after the table

Submenu	Settings	Selection level	Description
	TIMER MODE		Auto-off mode (only displayed if MODE = Aut oFF or StndbY)
		• Auto*	If there is no further change in load, the balance is switched off after the time defined under TIME.
		• onLY0	Timer starts when display reads zero (time setting under TIME. If the balance is loaded during this time, the timer is interrupted and restarted when the display reads zero again).
	TIME		Switch-off time (only displayed if MODE = Aut oFF or StndbY)
		• 30S*	30 seconds
		• 1M in	1 minute
		• 2M in	2 minutes
		• 5M in	5 minutes
		• 30M in	30 minutes
		• 60M in	60 minutes
AUTO.-ON			Automatic switch-on when connected to the mains
		• oFF*	deactivated
		• on	activated

6.7 Environment settings

Menu: <AMBIENT>

Submenu	Settings	Selection level	Description
TARE RANGE			Set tare range (0–100%, Default setting 100%)
ZERO RANGE			Set zero range (0–100%, Default setting 2%)
ZERO TRA-CKING			Automatic zero tracking
		• oFF	deactivated
		• on*	enabled
FILTER SET-TINGS			Set display speed (0–100%→ 0 = very fast, 100 = very slow, Default setting = 40)

Note on zero tracking

If small quantities of material are removed or added, the "stability compensation" function may produce incorrect weighing results (e.g. in the case of slow-flowing liquids or evaporation). For dosing operations with small weight fluctuations, this function should therefore be deactivated .

6.8 User management

The balance offers user management with a role and rights concept. This prevents unauthorised persons from changing settings.

- *User management is deactivated by default.*
- *When activated, the Admin and Guest roles are created automatically.*
- *Please contact KERN & SOHN to restore your access if you have forgotten the Admin password.*

Menu: <USER ADMINISTRATION>

Submenu	Settings	Selection level	Description
CURRENT USER			Displays the currently logged-in user in the second line
CURRENT ROLE			Shows the role of the currently logged-in user in the second line
LOGOUT			Log out the current user and switch to the login screen
STATUS			Enable/disable user management
		• oFF*	User management deactivated (if management was activated, the password of the currently logged-in administrator must be entered)
		• on	Enable user management (further information after the table)
ADD NEW USER			Add new user (only visible to admin, maximum 10 users possible)

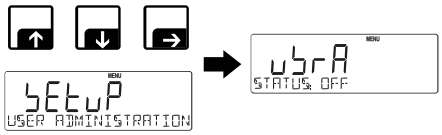
Submenu	Settings	Selection level	Description
EDIT USER			Edit user: opens list of users (only visible to admin)
	ADMIN ... USER X	USER ID	Change user name
		ENTER NEW PASSWORD	Assign new password
		LEVEL	Define role (see authorisation concept according to the table)
		STATUS	Activate/deactivate user
		• ACTIVE*	activated
		• inACTIV	deactivated
		DELETE USER	Delete user (Factory admin and guest cannot be deleted. Users you have created yourself can be deleted.)
		• ARE YOU SURE?	Confirm **[➔]** to delete users. The dialogue can be cancelled with **[🡐]**.
AUTO LOGOUT			Automatically log out user
		• SET TIME	Select time until automatic logout
RESET USER ADMINISTRATION			Reset user administration to default settings (all created users will be deleted; only visible to admin)
		• ARE YOU SURE?	Confirm **[➔]** to reset user administration. The dialogue can be cancelled with **[🡐]**.

Activate/deactivate user administration

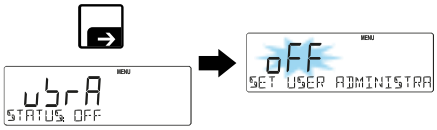
When user management is activated for the first time or reactivated, an administrator password must first be set. This password is required when the default admin logs in.

- *Multiple admins can be created. To deactivate user management, the password of the currently logged-in admin must be entered.*
- *If a keyboard is connected to the scale, the password can be entered using it.*
- *Users that have been created are retained when user management is deactivated. They are simply set to inactive. When user management is reactivated, the users are available again.*

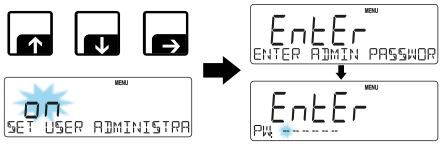
Activating user administration / setting admin password



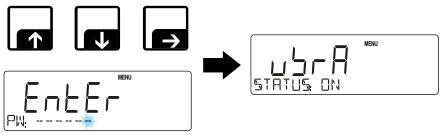
1. Select <SETUP | USER ADMINISTRATION> ([↑] / [↓]) and confirm ([➔]).
   - ➢ <USRA | STATUS: OFF> is displayed



2. Confirm ([➔]).
   - ➢ <OFF> is displayed in the first line and flashes.



3. Select <ON> ([↑] / [↓]) and confirm ([➔]).
   - ➢ The display switches to password assignment for the admin password (<PW: -- -- -- -- -- --> is displayed in the second line and the first input position flashes).



4. Enter a 6-digit password ([↑] / [↓]) and confirm ([➔]).
   - ➢ The display returns to the menu.
   - ➢ User management is now active.

Create new user

1. Select the <ADD NEW USER> menu item in the setup menu.
2. Enter a name for the user.
3. Enter a password for the user.
4. Select the user's role.

   → After successful entry, <SUCCESS | NEW USER ADDED> appears.

Authorisation concept (roles)

The following table defines the rights of the various roles.

Roles / Rights	Output data, tare, zero	Open/set application menu (application change locked)	Change application	Open/set up setup menu (<CALIBRATION> and <USER ADMINISTRATION> locked)	<CALIBRATION> and <USER ADMINISTRATION>
Admin	x	x	x	x	x
Professional	x	x	x	x	
Power user	x	x	x		
User	x	x			
Guest	x				

Automatic logout

In the <AUTOLOGOUT> section, you can set a time after which a user is automatically logged out of . After this time, the password must be entered to log in again.

- *The user is only logged out if no input (key press or KCP command) is made.*
- *If automatic logout is deactivated, the user will still be logged out when the scale is switched off or switches to standby mode.*
- *The user can also be logged out manually using a key if this key has been assigned the logout function.* *➞ Chapter 6.5.2*

Operation:

1. Select the <AUTOLOGOUT> menu item in the setup menu.
   ➢ <SET TIME> and the switch-off times are displayed.
2. Select switch-off time:

oFF	Automatic logout deactivated
5n in	Log out after 5 minutes
10n in*	Log out after 10 minutes
30n in	Log out after 60 minutes
60n in	Log out after 60 minutes
2h	Log out after 2 hours

   ➢ Display returns to menu after selection.

6.9 Device information Display

Menu: <INFO>

Device information can be displayed in this menu.

Submenu	Settings	Selection level	Description
MODEL			Display model name
SN			Display serial number
SW'ER			Display software version
ALIBI ID			View values in alibi memory
	SELECT ALIBI ID		Select alibi ID
		• DATE	Date of measurement
		• TIME	Time of measurement
		• LARGE	Gross weight
		• NET	Net weight
		• TARE	Tare weight
		• RANGE	Indicates the weighing range in which the measured value is located ( ) (always 1 for PKS)

6.10 Restore factory settings

Menu: <RESET SETTINGS>

When this menu item is selected, the question <ARE YOU SURE?> appears in the second line of the display. Confirming with [➔] resets all settings . The dialogue can be cancelled with **[🡐]**.

7 Interfaces and data output

7.1 Optional software

BalanceConnection

BalanceConnection enables communication between scales and peripheral devices. This software supports various interfaces and protocols to ensure flexible integration into existing systems. It is particularly useful for applications that require centralised collection and processing of measurement data.

EasyTouch

EasyTouch sends your weighing data directly to a PC, laptop or tablet, where it can be processed immediately. EasyTouch also allows you to add useful functions to your balance and tailor it to your specific application.

Further information about KERN software can be found on our website ➦ *www.kern-sohn.com*.

7.2 Description of the interfaces

KUP (KERN Universal Port)

All available KUP interface adapters can be found in our web shop at ➦ *www.kern-sohn.com*. Installation and setup are described in the respective interface adapter documentation.

7.3 Set interface parameters

Menu: <COM INTERFACES>

The setting options are only displayed after the interfaces have been fully initialised. During initialisation, <SYSTEM BUSY> is displayed. This may take a short time.

Submenu	Settings	Selection level	Description
RS232 SET-TINGS			RS232 settings
	BAUDRATE		Set baud rate
		• 1200 … • 9600*	Baud rate can be set between 1200 and 9600
	DATABITS		Set the number of data bits
		• 7	7 data bits
		• 8*	8 data bits
	PARITY		Set parity
		• nonE*	No parity
		• odd	Odd parity
		• EUEn	even parity
	STOP BITS		Set number of stop bits
		• 1*	1 stop bit
		• 2	2 stop bits
	HANDSHAKE		Set handshake
		• nonE*	No handshake

Submenu	Settings	Selection level	Description
LANSETTINGS			RS232 settings
	IP-ADDRESS		IP address
		• 192.168.0.55	
	SUBNETMASK		Subnet mask
		• 255.255.255.0	
	GATEWA-ADRESS		Gateway address
		• 192.168.0.1	
	RESET		Reset interface settings to default
		• ARE YOU SURE?	Confirm reset
USB DEVICE SETTINGS			USB D settings
	BAUDRATE		Set baud rate
		• 1200 … • 9600*	Baud rate can be set between 1200 and 9600
	DATABITS		Set the number of data bits
		• 7	7 data bits
		• 8*	8 data bits
	PARITY		Set parity
		• nonE*	No parity
		• odd	Odd parity
		• EUEn	even parity

Submenu	Settings	Selection level	Description
	STOP BITS		Set number of stop bits
		• 1*	1 stop bit
		• 2	2 stop bits
	HANDSHAKE		Set handshake
		• nonE*	No handshake
	PROTOCOL		Select communication protocol
		• KcP*	KCP (KERN Communications Protocol)
	RESET USB-D SETTINGS		Reset interface settings to default
		• ARE YOU SURE?	Confirm reset
USB HOST SETTINGS			USB-Host
	KEYBOARD		Set the language of the connected keyboard
		• dE*	German
		• En	English

7.4 Set data output

Menu: <PRINT SETTINGS>

Submenu	Settings	Selection level	Description
INTERFACE			Output interface Select (manual selection required)
		• rs232	Output via RS232 (also displayed if no KUP is connected)
		• usb-d	Output via USB-D
		• LAn	Output via Ethernet
		• WLAn	Output via WiFi
		• bLE	Output via Bluetooth
PRINT TRIGGER			Select data output mode (see chapter7.4.1 for instructions). Only one mode can be active at a time (when one mode is selected, the others are automatically deactivated).
		• MAnuAL*	Manual output after pressing **[PRINT]**
		• cont	Continuous output at specified time intervals
		• AutoPr	Automatic output for stable and positive values
PRINT FUNCTION			Select additional function for data output ➡ Chapter 7.4.2
		• oFF*	No function
		• SuM	Sum
		• diFF	Subtract
		• StAt	statistics
STATISTIC			Settings for the statistics function (is only displayed if statistics are activated for <PRINT FUNCTION> is)

Submenu	Settings	Selection level	Description
CHECK LIMITS			Display tolerance limits (Only displayed if tolerance limits have been set n)
		• on	Output tolerances
		• oFF*	Do not output tolerances
BATCH ID			Enable/disable batch ID
		• oFF*	Deactivate batch ID
		• on	Enable batch ID
			When the batch ID function is activated, an input dialogue box for the ID appears after pressing **[PRINT]**. Enter the desired batch ID and then confirm by pressing and holding **[PRINT]**. If the balance is connected to a peripheral device, both the weighing result and the entered batch ID are output.
PRINT LAYOUT SETUP			Setting the print layout ➦ Chapter 7.4.3

7.4.1 Set data output mode

Menu: <PRINT SETTINGS>→ <PRINT TRIGGER>

Manual data output <MAnuAL>

When manual data output is set, printing only occurs after pressing **[PRINT]**.

Initial setting of an output mode

1. Open the setup menu
2. <PRINT SETTINGS>→ Select <PRINT TRIGGER> (**[↑]** / **[↓]**) and confirm (**[→]**).
   - ➢ <SET PRINT TRIGGER> is displayed and the current selection flashes.
3. Select <MAnuAL> (**[↑]** / **[↓]**) and confirm (**[→]**).
   - ➢ The selection is saved and <PRINT FUNCTION> is displayed.
4. Press **[←]** repeatedly to exit the menu.

When changing the setting from <cont> or <AutoPr>

1. Open the setup menu
2. <PRINT SETTINGS>→ <PRINT TRIGGER>→ Select <CHANGE TRIGGER> (**[↑]** / **[↓]**) and confirm (**[→]**).
   - ➢ <SET PRINT TRIGGER> is displayed and the current selection flashes.
3. Select <MAnuAL> (**[↑]** / **[↓]**) and confirm (**[→]**).
   - ➢ The selection is saved and <PRINT FUNCTION> is displayed.
4. Press **[←]** repeatedly to exit the menu.

Outputting data

1. If necessary, place the weighing container and tare.
2. Place the weighing material on the weighing plate.
3. Press **[PRINT]**.
   - ➢ The result is output.

Automatic data output <AutoPr>

When automatic data output is set, printing takes place as soon as the weighing value is stable and positive.

In the settings for <ChrAnGE>, a factor for d can be defined to determine the range in which no data output occurs.

Example

ChrAnGE> = 5

d = 0.1 g

Result: Values <= 0.5 g are not printed

1. Open the setup menu
2. <PRINT SETTINGS>→ <PRINT TRIGGER>→ Select <CHANGE TRIG-GER> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ <SET PRINT TRIGGER> is displayed and the current selection flashes.
3. Select <AutoPr> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The selection stops flashing and <ZERO RANGE: OFF> is displayed.

Define zero range

4. Confirm **[➔]**.
   - ➢ Settings are displayed.
5. Select the desired setting (**[🡅]** / **[🡇]**) and confirm (**[➔]**).

oFF *	Deactivated
1d	1 x d
2d	2 x d
3d	3 x d
4d	4 x d
5d	5 x d

6. Press **[🡄]** repeatedly to exit the menu.

Output data

1. If necessary, place the weighing container and tare.
2. Place the weighing goods on the weighing plate.
   - ➢ As soon as the "Stability indicator" (◣◢) appears, the result is displayed.

A new reading can only be taken after the display has returned to zero and stabilised (remove any weight from the scales→ , wait for the display to return to zero and for the "Stability" indicator to appear (◣◢) must be waited for).

Continuous data output <cont>

1. Open the setup menu
2. <PRINT SETTINGS>→ <PRINT TRIGGER>→ Select <CHANGE TRIGGER> ([↑] / [↓]) and confirm ([→]).
   - ➢ <SET PRINT TRIGGER> is displayed and the current selection flashes.
3. Select <cont> ([↑] / [↓]) and confirm ([→]).
   - ➢ The selection stops flashing and <INTERVAL:500MS> is displayed.
4. Make the following settings one after the other (select ([↑] / [↓]) and confirm ([→])).

INTERVAL	Enter the output interval in milliseconds
PRINT ZERO	• on = Output zero display (unloaded) • oFF* = No output when zero display (unloaded)
STABLE ONLY	• on = output stable values only • oFF* = output all values (including unstable ones)

5. Press [←] repeatedly to exit the menu.

Output data

1. If necessary, place the weighing container and tare.
2. Place the weighing material on the weighing plate.
   - ➢ Results are output according to the settings made.

Availability of data output modes

Application	Additional function	Data output mode		
		MAnuAL	cont	AutoPr
WEIGHING MODE COUNTING MODE CHECKWEIGHING MODE	oFF	x	x	x
	SuM	x	-	-
	diFF	x	-	-
	StAt	x	-	-
RECIPE MODE DENSITY MODE	oFF	x	-	-
	SuM	-	-	-
	diFF	-	-	-
	StAt	-	-	-

7.4.2 Set additional function for data output

Additional calculations can be performed with the balance. The results can then be output to a connected PC or printer.

Menu: <PRINT FUNCTION>

Overview

Setting	Description
oFF*	No additional function
SuM	Sum
diFF	Subtract
StAt	Calculate statistics

- *An active function is cancelled if*
  - *the scale is switched off*
  - *it is disconnected from the power supply*
  - *another weighing mode is selected during the function*
- *The values are not temporarily stored. In the event of the above points, the function must be restarted.*
- *If the statistics settings are changed during the statistics function, the statistics are not cancelled.*
- *As soon as a data output function is activated, the data output mode is automatically set to manual.*

7.4.2.1 Sum

Menu: <PRINT FUNCTION>→ <SUM>

Operation:

1. Zero or tare the balance if necessary
2. Place the load on the balance
3. Once a stable value has been reached, press **[PRINT].**
   - ➢ Value is added up and result is displayed
4. Remove the load and place a new load on the scales
5. Once a stable value has been reached, press **[PRINT]**
   - ➢ Value is totalled and result is output
6. If necessary, apply further loads and add them up as described above

Press and hold **[PRINT]** *to end the summation.*

7.4.2.2 Subtract

Menu: <PRINT FUNCTION>→ < d iFF >

The difference can only be calculated between two loads.

Operation:

1. Zero or tare the balance if necessary
2. Place the load on the scale
3. Press **[PRINT]**
   ⇨ Once a stable value has been reached, the weight is displayed
4. Remove the load and place a new load on the scales (or add the load to the previous load)
5. Press **[PRINT]**
   ⇨ Once a stable value has been reached, the weight of the second load and the difference between the two loads are displayed (the second weight value is subtracted from the first weight value)

7.4.2.3 Calculate statistics

Activate function

1. Open the setup menu
2. <PRINT SETTINGS>→ <PRINT FUNCTION>→ Select <StAt> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The display returns to the menu.

Set statistical values

Menu: <STATISTIC>

Submenu	Description
AVERAGEVALUE	Average
STANDARDDEVIATION	Standard deviation
MEDIAN	Median
MINIMUMVALUE	Minimum
MAXIMUMVALUE	Maximum

When the statistics are displayed, the values can either be shown or hidden.

1. Select the desired value from the menu
2. Activate or deactivate value

on	Output value
oFF	Do not output value

Operation:

Start function and record values

1. Apply load
2. Press **[PRINT]**
   - ⇨ After pressing **[PRINT]** for the first time after selecting the function or after the function has been completed, the statistics function is started
   - ⇨ Weight value is recorded in the statistics
   - ⇨ The current weight value and the average of all previous statistical values are displayed
3. Record further values as described above

End the function and output the total statistics

4. Press and hold **[PRINT].**
   - ⇨ All statistical values activated in the menu are displayed
   - ⇨ The statistics function is terminated

7.4.3 Set print layout

Menu: <PRINT SETTINGS>→ <PRINT LAYOUT SETUP>

Submenu	Settings	Selection level	Description
WEIGHT PRINT: GNT			Set output of gross, net, tare (only displayed if WEIGHT PRINT = Gnt)
	GROSS WEIGHT		Gross weight
	NET WEIGHT		Net weight
	TARE WEIGHT		Tare weight
		For the above settings:	
		• on*	Output
		• oFF	Do not output
	CHANGE TO SIN-GLE		Output only the weight value
		• on*	Output
		• oFF	Do not output / switch to Gnt
WEIGHT PRINT: SINGLE	SET WEIGHT PRINT MODE		Change output mode
		• SINGLE	Output only the weight value (on = output, oFF = do not output / switch to Gnt)
		• Gnt*	

Submenu	Settings	Selection level	Description
PRINT LAYOUT			Set layout
		• nonE*	Standard layout
		• dtU	In addition to the standard layout, the date and time are displayed.
		• GLP	GLP-compliant layout
		• uSEr	User-defined layout
ACTUAL LAY-OUT			Customised Customise layout (only applied if PRINT LAY-OUT = uSEr)
	COMPANY	*	Company name
	DIVIDER	*	Divider
	MODEL NO	*	Model number of the device
	SERIAL NO	*	Serial number of the device
	BALANCE ID	*	Device ID
	ALIBI ID	*	Alibi ID
	USER	*	User
	DIVIDER	*B	Separator
	USER TEXT	*	Custom text
	DIVIDER	*B	Separator
	DATE	*	Date
	TIME	*	Time
	DIVIDER	*B	Separation mark
	BATCH ID	*	Batch ID
	WEIGHT DATA		Measured values (configuration under <WEIGHT PRINT>)

Submenu	Settings	Selection level	Description
	DIVIDER	*B	Separator
	SIGNATURE	*A	Signature line
	DIVIDER	*B	Separator
		*Settings A:	
		• on	Output
		• oFF*	Do not output
		*Settings B:	
		• nonE*	No paragraph separation
		• bLAnk	Blank line
		• L inE	line
DEF PRINT END			Number of line feeds at the end of the printout (numeric input in the value range 0–99, Default: 0)
FACTORY RE-SET			Reset layout to factory settings
		• no	Do not reset
		• YES	Reset

Submenu	Settings	Selection level	Description
DATE & TIME FORMAT			format Set date and time for printing
	DATE FORMAT		format for date
		DIVIDER	Separator
		• . *	Full stop
		• –	Hyphen
	TIME FORMAT		sformat for time
		DIVIDER	Separator
		• : *	Double p oint
		• .	Full stop

Print images (Examples)

The versatile setting options result in a wide range of possible print images.

The following sections show some examples of the GLP-GNT layout in the "Weighing" application.

Output weight value

```
------------------------
    KERN & SOHN GMBH

Model:        PKS 2000-2
   SN:       WD240067323
BalID:        Test-ID154
AliID:               349
 User:      Professional

User Text
------------------------
 Date:        27.01.2026
 Time:          11:56:12
------------------------
BatID:              BD97
  Net:          399.93 g
 Tare:            0.92 g
Gross:          400.85 g
------------------------
 -Signature-

------------------------
```

Summation

```
------------------------
       Summation
------------------------
    KERN & SOHN GMBH

 Model:       PKS 2000-2
    SN:      WD240067323
 BalID:       Test-ID154
 AliID:              349
  User:     Professional

User Text
------------------------
  Date:       27.01.2026
  Time:         11:56:12
------------------------
    No:                1
 BatID:              A09
   Net:         125.01 g
  Tare:          50.01 g
 Gross:         175.01 g

    No:                2
 BatID:              B09
   Net:          55.03 g
  Tare:          50.01 g
 Gross:         105.04 g
------------------------
TotNo =                2
  Sum =         180.04 g
------------------------
  Date:       27.01.2026
  Time:         11:58:17
------------------------
 -Signature-

------------------------
```

Differentiation

```
------------------------
    Differentiation
------------------------
    KERN & SOHN GMBH

Model:        PKS 2000-2
   SN:       WD240067323
BalID:        Test-ID154
AliID:               349
 User:      Professional

User Text
------------------------
 Date:        27.01.2026
 Time:          11:56:12
------------------------
   No:                 1
BatID:               AB0
  Net:           90.06 g
 Tare:           20.70 g
Gross:          110.76 g

   No:                 2
BatID:               AB3
  Net:          101.06 g
 Tare:           30.70 g
Gross:          131.76 g
------------------------
Diff =          -11.00 g
------------------------
 -Signature-

------------------------
```

Statistic

```
------------------------
       Statistic
------------------------
    KERN & SOHN GMBH

 Model:       PKS 2000-2
    SN:      WD240067323
 BalID:       Test-ID154
 AliID:              349
  User:     Professional

User Text
------------------------
  Date:       27.01.2026
  Time:         11:56:12
------------------------
    No:                1
 BatID:              A09
   Net:         250.03 g
  Tare:         120.60 g
 Gross:         370.63 g

    No:                2
 BatID:              AB3
   Net:          50.00 g
  Tare:          20.70 g
 Gross:          70.70 g
------------------------
TotNo =                2
  Avg =         150.02 g
   SD =         100.02 g
  Mdn =         150.02 g
  Min =          50.00 g
  Max =         250.03 g
------------------------
  Date:       27.01.2026
  Time:         11:58:17
------------------------
 -Signature-

------------------------
```

The following sections illustrate the differences between the layout settings in <PRINT SETTINGS> → <PRINT LAYOUT SETUP> → <PRINT LAYOUT> using the example of the ‘Density Determination’ application.

<nonE>

```
  Ref:    7.85000 g/cm^3
WtAir:          249.96 g
WtLiq:          199.96 g
------------------------
   D =    1.57141 g/cm^3
------------------------
```

<dtU>

```
 Date:        27.01.2026
 Time:          11:56:12
  Ref:    7.85000 g/cm^3
WtAir:          249.96 g
WtLiq:          199.96 g
------------------------
   D =    1.57141 g/cm^3
------------------------
```

<GLP>

```
------------------------
     Liquid density
------------------------
    KERN & SOHN GMBH

Model:        PKS 2000-2
   SN:       WD240067323
BalID:        Test-ID154
AliID:               349
 User:      Professional

User Text
------------------------
 Date:        27.01.2026
 Time:          11:56:12
------------------------
  Ref:    7.85000 g/cm^3
WtAir:          249.96 g
WtLiq:          199.96 g
------------------------
   D =    1.57141 g/cm^3
------------------------
 -Signature-

------------------------
```

<uSEr>

```
    KERN & SOHN GMBH
------------------------
Model:        PKS 2000-2
   SN:       WD240067323
BalID:        Test-ID154
AliID:               349
 User:             Admin
------------------------
User Text
------------------------
 Date:        05-02-2026
 Time:          11.44.12
------------------------
  Ref:    7.85000 g/cm^3
WtAir:          249.96 g
WtLiq:          199.96 g
------------------------
   D =    1.57141 g/cm^3
------------------------
 -Signature-

------------------------
```

7.5 Interface protocol / input codes

KCP is a standardised interface command set for KERN balances that allows many parameters and device functions to be retrieved and controlled. KERN devices with KCP can therefore be easily connected to computers, industrial control systems and other digital systems. A detailed description can be found in the "KERN Communications Protocol" manual, available in the download area on our KERN homepage (➦ *www.kern-sohn.com*).

KCP is based on simple ASCII commands and responses. Each interaction consists of a command, possibly with arguments separated by spaces, and is terminated with <CR><LF>.

The KCP commands supported by your scale can be queried by sending the command "I0" followed by <CR><LF>.

1 table: Excerpt of the most frequently used KCP commands:

Command	Description
I0	Display all implemented KCP commands
S	Send stable value
SI	Send current value (even if unstable)
SIR	Send current value (even if unstable) and repeat
T	Tare
Z	Zero

Example: Possible responses for command "S"

Possible response	Description
S␣S␣␣␣␣100.00␣g	Command executed successfully. A stable weight value is output.
S␣I	The menu is open, another command is currently being executed, or a timeout has been reached.
S␣+ or S␣-	Overload or underload

8 Basic operation

8.1 Switch on device

⚠ WARNING

Serious injury due to damaged power supplies

Damaged power adapters can cause short circuits, fires and serious injury.

- ⇨ Before each use, check the power supply unit and power cord for visible damage. Do not use the power supply unit if it is damaged.

⚠ WARNING

Injuries caused by incorrect handling of power adapters

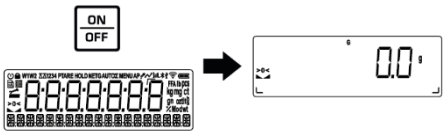
Incorrect handling of power adapters can lead to short circuits, fires and serious injuries.

- ⇨ Observe the safety instructions for handling power adapters. ➦ Chapter 2.3
- ⇨ Avoid moisture on the mains connection, power supply unit and socket.
- ⇨ Only connect the device to a properly installed power outlet.
- ⇨ Ensure that the power supply unit cable is never kinked or pinched.
- ⇨ Ensure that the power supply unit is accessible at all times.
- ⇨ Ensure that the power cable does not pose a tripping hazard.
- ⇨ Only connect the power supply unit to the mains if the information on the device (sticker) and the mains voltage at the place of use are identical.

NOTE

Incorrect weighing results

Ensure that the scales have reached their warm-up time for stabilisation before you start weighing. ➦ Chapter 19.1

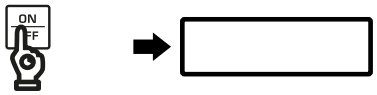


- Press **[ON/OFF]**.
  - The display lights up.
  - Scales are ready for use.

8.2 Switching off the device

NOTE

Do not leave a permanent load on the weighing plate if you are switching off the scales for a longer period of time. This could damage the measuring mechanism.



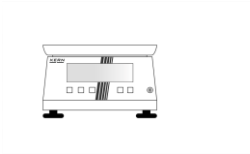
- Press and hold **[ON/OFF]**.
  - The display switches off.
  - The balance is switched off.

8.3 Zeroing

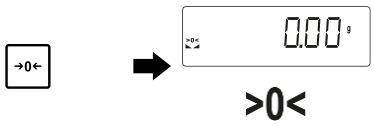
Zeroing a balance sets the display to zero so that no weight is displayed when the weighing plate is unloaded. This ensures measurement accuracy by compensating for slight deviations or external influences.

Zeroing is possible within a range of +/- 2 % of the maximum weighing range as standard. If the range is exceeded or not reached, an error message appears. ➞ Chapter 18.1

The zero setting range can be adjusted individually. ➞ Chapter 6.7



1. Remove the load from the balance.



2. Press **[ZERO]**.

- Zero and the "zero display" indicator (**>0<**) are displayed.
- The balance is set to zero.

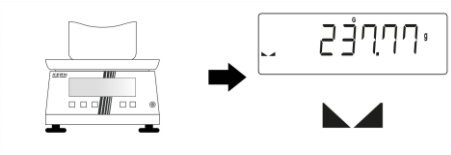
8.4 Taring

At the touch of a button, the tare weight of any weighing container can be compensated for so that the net weight of the weighed goods is displayed for subsequent weighings.

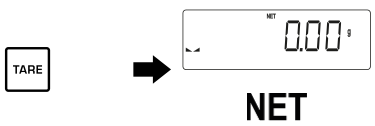
- *After removing the container, the weight of the container appears as a negative value (minus).*
- *To delete the stored tare value, remove the load from the weighing plate and tare or reset to zero.*
- *The taring process can be repeated any number of times. The limit is reached when the taring range is exhausted.*
- *The tare range can be adjusted individually. ➞ Chapter 6.7*
- *With the pre-tare function, a tare weight can be stored permanently. ➞ Chapter 8.4.2*

8.4.1 Taring

Taring

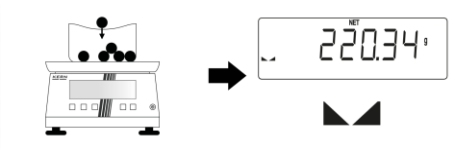


1. Place the empty container on the weighing plate.
   ⇨ The weight of the container and the "Stability Indicator" (◣◢) are displayed.



2. Press **[TARE]**.
   ➢ Zero and the "net weight value" indicator (**NET**) are displayed.
   ➢ The weight of the container is stored as tare.

Weighing with tare



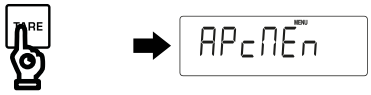
3. Fill the container with the item to be weighed .
   ⇨ Weight and "stability indicator" (◣◢) are displayed.
   ⇨ The result can be read.

8.4.2 Save known tare weight (pre-tare)

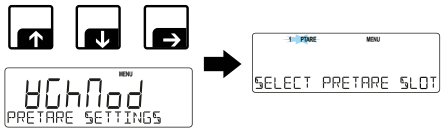
The pre-tare function allows the weight of a container to be permanently stored in the scales. This is useful in processes where containers of the same weight are always used.

- *The tare weight remains valid until a new tare weight is saved or the tare weight is deleted.*
- *As soon as a pre-tare value is active, this is shown at the top of the display via the PTARE indicator and the memory slot number.*
- *There are two ways to delete the tare weight:*
  - *Unload the scale and press* **[TARE]**.
  - *Open the application menu→ Open the pre-tare settings and select the slot→ <CLEAR VALUE>.*

1. Place an empty container on the weighing plate.

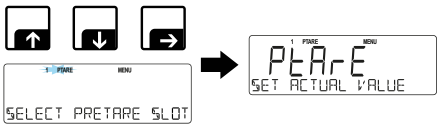


2. Open the application menu.



3. Select <PRETARE SETTINGS> (**[↑]**/**[↓]**) and confirm (**[→]**).

- ➢ < PtArE 1SELECT PRETARE SLOT> is displayed.
- ➢ The currently selected pre-tare slot (storage space for the tare value – in the example: 2. There are 4 slots in total) flashes in the top line.



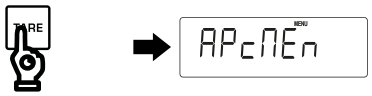
4. Select the pre-tare slot (**[↑]**/**[↓]**) and confirm (**[➔]**).

➢ The settings menu opens.

CURRENT VALUE	Displays the currently stored value in the slot (only displayed if a weight has already been stored)
SET ACTUAL VALUE	Save the weight of the load as a tare value (the scale returns to operating mode after saving).
ENTER MANUAL VALUE	Enter tare weight manually (scale returns to operating mode after entry)
CLEAR VALUE	Delete currently stored value (only displayed if a weight has already been stored)

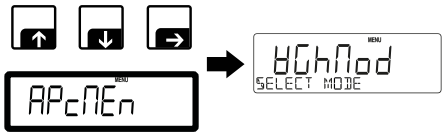
8.5 Select application

Open application menu

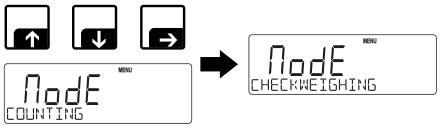


1. Hold down **[TARE]**.
   - ➢ <APcMEn> followed by the currently active application is displayed.

Select application



2. Select <SELECT MODE> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The application selection is displayed .



3. Select the desired application (**[↑]** / **[↓]**) and confirm (**[➔]**).

WEIGHING	Weighing ➦ *Chapter 9*
COUNTING	Counting ➦ *Chapter 10*
CHECKWEIGHING	Tolerance weighing ➦ *Chapter 11*
RECIPE	Recipe ➦ *Chapter 12*
DENSITY	Density determination ➦ *Chapter 13*

- ➢ The balance returns to operating mode.
- ➢ Application is now active.

9 Application Weighing

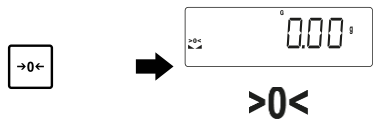
The instructions for zeroing and taring are described in ➦ Chapter8 . Further specific setting options can be found in the following chapters.

9.1 Overview of the "Weighing" application menu

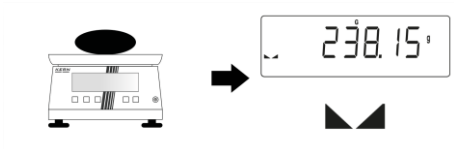
Menu level	Description	Chapter
PRETARE SET-TINGS	Save known tare weight (pre-tare)	➦ Chapter 8.4.2
HOLD FUNC-TION	Hold weighing value (data hold)	➦ Chapter 0
SELECT UNIT	Set weighing units	➦ Chapter 9.5
SELECT MODE	Select application	➦ Chapter 8.5

9.2 Perform simple weighing

To use this function, the "Weighing" application must be active.



1. Check the zero display and, if necessary, reset to zero with **[ZERO]**.



2. Place the item to be weighed on the weighing plate.
   - ➢ The weight value and the "Stability Indicator" (◣◢) are displayed.
   - ➢ The result can be read.

9.3 Performing underfloor weighing

Underfloor weighing can be used to weigh objects that cannot be placed on the weighing plate due to their size or shape.

⚠ CAUTION

Risk of breakage due to overloading the hook

Falling loads can cause injury

- ⇨ Never exceed the specified maximum load (Max.) of the scales.
- ⇨ Ensure that there are no living beings or objects under the load that could be damaged.

NOTE

Damage to the scales due to ingress of dirt

Dirt (e.g. dust) entering the measuring system can cause damage and incorrect results.

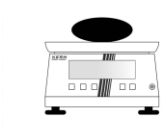
- ⇨ Close the opening for the underfloor hook after completing underfloor weighing (dust protection).

1. Switch off the balance.
2. Turn the balance upside down.
3. Open the cover on the underside of the balance. ➦ Chapter 3.2
4. Place the balance over an opening.
5. Screw the hook in completely.
6. If necessary, attach the weighing container and tare.
7. Attach the weighing goods and weigh.

9.4 Hold function

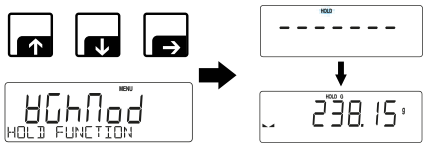
The hold function allows you to "freeze" the displayed weight value. After removing the load from the balance, the value remains visible on the display for 10 seconds.

To use this function, the "Weighing" application must be active.



1. Place the weighing item on the scale.

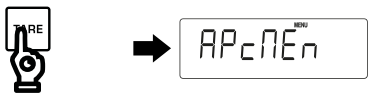
2. Press and hold **[TARE]**.
   - ➢ The application menu opens.



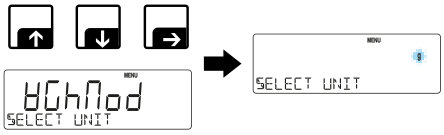
3. Select <HOLD FUNCTION> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The "HOLD" indicator flashes.
   - ➢ The first stable weighing value is "frozen" and indicated by the "Hold" indicator (**HOLD**).

For faster access, the hold function can be assigned to a key. ➞ Chapter 6.5.2

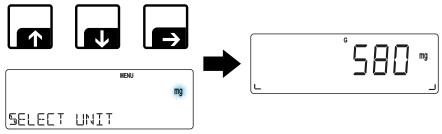
9.5 Set unit



1. Press and hold **[TARE]**.
   - ➢ The application menu opens.



2. Select <SELECT UNIT> (**[🡅]** / **[🡇]**) and confirm (**[➔]**).
   - ➢ The unit flashes.



3. Select unit (**[🡅]** / **[🡇]**) and confirm (**[➔]**).
   - ➢ Unit stops flashing.
   - ➢ Scale switches to operating mode.
   - ➢ Value is displayed in the set unit.

Use **[CHANGE]** *to switch the display between units (default setting).*

10 Application Counting

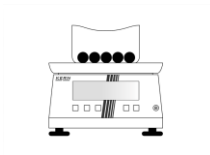
10.1 Overview of the "Counting" application menu

Menu level	Description	Chapter
SET REFE-- RENCE	Select reference quantity or enter reference weight	➦ Chapter 10.2
PRETARE SET-- TINGS	Save known tare weight (pre-tare)	➦ Chapter 8.4.2
CHECK COUNTING	Counting with tolerances	➦ Chapter 10.4
SELECT UNIT	Setting weighing units	➦ Chapter 9.5
COUNT OPTI-- MIZATION	Automatic updating of the reference weight during piece counting (default setting: on)	➦ Chapter 10.2
SELECT MODE	Select application	➦ Chapter 8.5

10.2 Set reference piece count

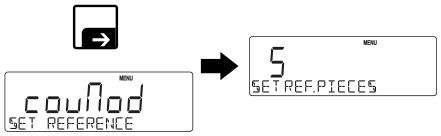
Option 1: Select preset reference quantity

1. If necessary, place the weighing container and tare it.

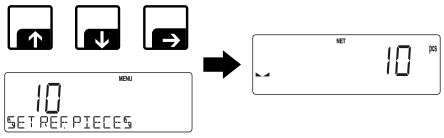


2. Place the desired number of reference pieces on the weighing container.

3. Press and hold **[TARE]**.
   - ➢ The application menu opens.
   - ➢ <SET REFERENCE> is displayed as .



4. Confirm with **[➔]**.
   - ➢ The selection for the reference quantity is displayed.

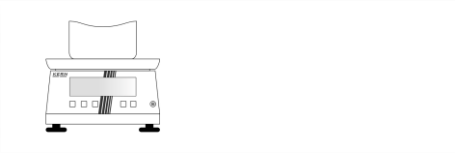


5. Select the desired reference quantity (**[↑]** / **[↓]**) and confirm (**[→]**).

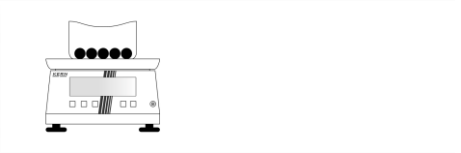
5	Reference quantity 5
10	Reference quantity 10
20	Reference quantity 20
50	Reference quantity 50
FrEE	Set custom reference quantity ➞ Variant 2
inPut	Enter average piece weight ➞ Variant 3

- ➢ The scale switches to operating mode and displays the number of pieces.
- ➢ The scale is now ready to count parts.

Variant 2: Set user-defined reference piece count



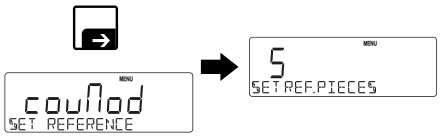
1. If necessary, place the weighing container and tare.



2. Place the desired number of reference pieces on the scale.

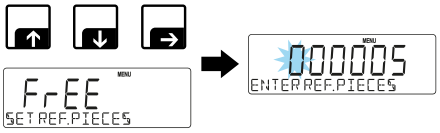
3. Press and hold **[TARE]** .

- ➢ The application menu opens.
- ➢ <SET REFERENCE> is displayed.



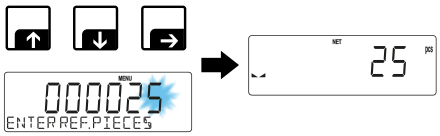
4. Confirm with **[➔]**.

- ➢ The selection for the number of reference pieces is displayed: <set reference> .



5. Select <FrEE | SET REF.PIECES> (**[↑]** / **[↓]**) and confirm (**[➔]**).

- ➢ The display changes to numerical input.
- ➢ The last setting is displayed and flashes.



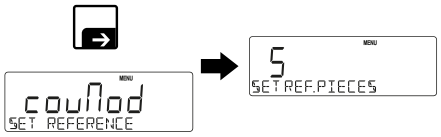
6. Enter the desired reference quantity (select number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).

- ➢ The balance returns to operating mode and displays the number of items.
- ➢ The balance is now ready to count parts.

Option 3: Enter average piece weight

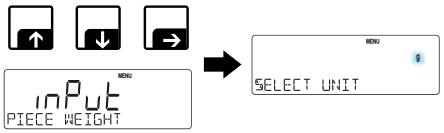
1. Press **[TARE] and** hold .

- ➢ The application menu opens.
- ➢ <SET REFERENCE> is displayed.



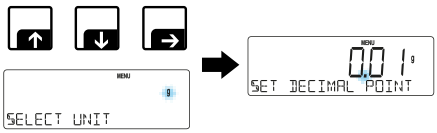
2. Confirm with **[➔]**.

- ➢ The selection for the reference piece count is displayed: .



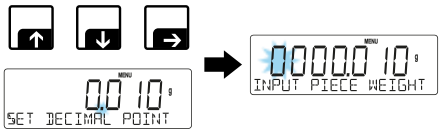
3. Select < inPut | PIECE WEIGHT> (**[↑]** / **[↓]**) and confirm (**[➔]**).

- ➢ The display changes to the setting for the weighing unit .

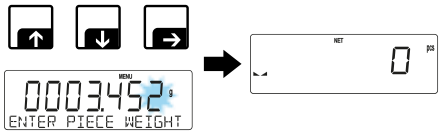


4. Select the weighing unit (**[↑]** / **[↓]**) and confirm **[➔]**).

- ➢ The display changes to the decimal place setting.



5. Select the decimal place ([↑] / [↓]) and confirm [➔]).
   - ➢ The display changes to numerical input.

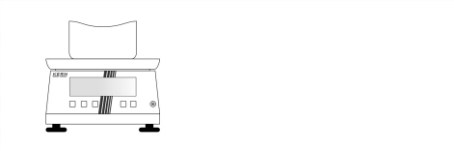


6. Enter the piece weight (select number: [↑] / [↓], next number: [➔] and confirm [➔]).
   - ➢ The scale returns to operating mode and displays the number of pieces.
   - ➢ The balance is now ready to count parts.

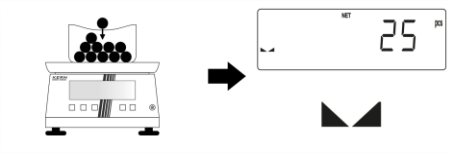
Reference piece count optimisation

If the setting <COUNT OPTIMISATION> is set to <on> in the application menu, the piece weight is automatically updated during use. This makes the piece counting more accurate.

10.3 Performing simple piece counting



1. Set the reference piece count. ➦ Chapter 10.2
2. If necessary, place the weighing container and tare it.



3. Weigh the parts.
   - ➢ The number of pieces and the "Stability indicator" (◣◢) are displayed.
   - ➢ The number of pieces can be read.

> *Press* **[CHANGE]** *to switch the display between the current number of pieces and the total weight (default setting).*

10.4 Counting with tolerances

Application menu: <CHECK COUNTING>

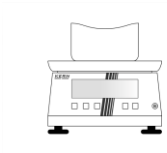
Submenu		Settings	Selection level	Description
MODE				Selection of tolerance mode
			• AbsoLut → 1	Control counting (upper and lower limits) ➡ Chapter 10.4.2
			• rELAt iU → 2	Weigh target quantity (relative tolerances) ➡ Chapter 10.4.1
Only for 1	LIMIT UP			Upper limit
	LIMIT LOW			Lower limit
only at 2	TARGET			Target quantity
	TOLERANCE UP			Upper deviation
	TOLERANCE LW			Lower deviation
NO SIG RANGE				Below this limit, no acoustic signal or tolerance display is issued.
BEEPER SETTINGS				Acoustic signal
		OK	Settings according to the table	Signal if quantity is within tolerances
		LOW		Signal when quantity is below the lower tolerance
		HIGH		Signal if quantity is above the upper tolerance
RESET			• ARE YOU SURE?	Reset tolerance values

Settings for acoustic signal:

oFF	No acoustic signal
SLoW	Slow beeping
Std	Standard
FASt	Fast beep
cont	Continuous tone

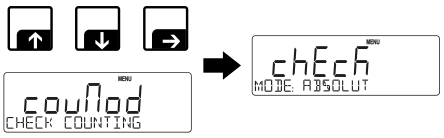
10.4.1 Target counting

Set reference number of pieces and tolerances

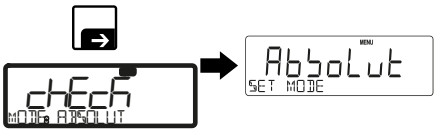


1. Set reference quantity. ➦ Chapter 10.2
2. If necessary, place the weighing container and tare.

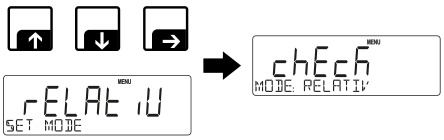
3. Press and hold **[TARE]**.
   - ➢ The application menu opens .
   - ➢ <SET REFERENCE> is displayed.



4. Select <CHECK COUNTING> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The display changes to <MODE>.

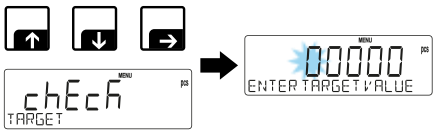


5. Confirm (**[➔]**).
   - ➢ The display changes to <SET MODE>.



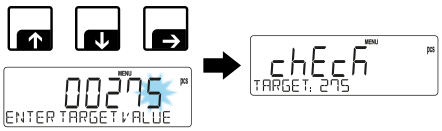
6. Select <rELAt iU> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The display changes to <MODE>.

Enter target number of pieces



7. Select ([↑] / [↓]) and confirm ([➔]).

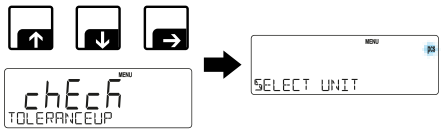
➢ The display changes to numerical input.



8. Enter the target number (select number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).

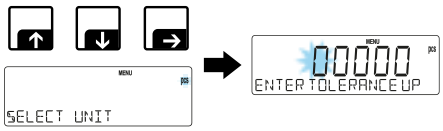
➢ Display changes to <TARGET> with the target number entered.

Enter upper tolerance



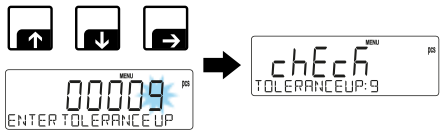
9. Select <TOLERANCE UP> ([↑] / [↓]) and confirm ([➔]).

➢ The display changes to the unit selection.



10. Select the desired unit ([↑] / [↓]) and confirm ([➔]).

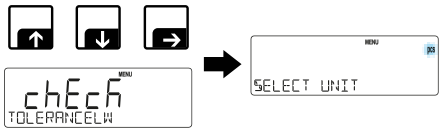
➢ The display changes to numerical input.



11. Enter upper tolerance (select number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).

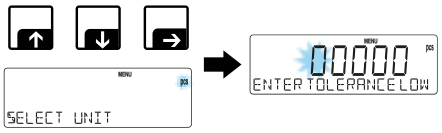
➢ Display changes to <TOLERANCE UP> with the entered tolerance displayed.

Enter lower tolerance



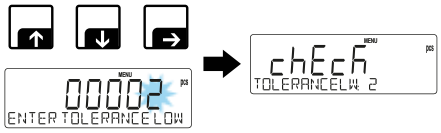
12. Select <TOLERANCE LW> ([↑] / [↓]) and confirm ([➔]).

➢ The display changes to the unit selection.



13. Select the desired unit ([↑] / [↓]) and confirm ([➔]).

➢ The display changes to the numerical input .

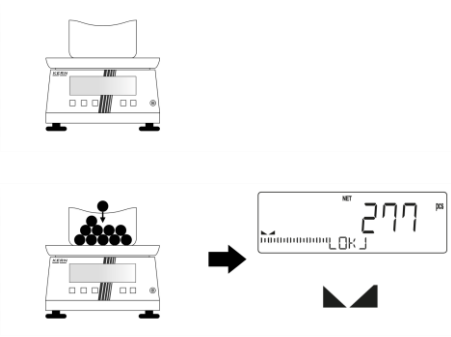


14. Enter the lower tolerance (select number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).

➢ The display changes to <TOLERANCE LW> with the entered tolerance shown.

15. Press **[🡐]** repeatedly to exit the menu.

Weigh target quantity



16. If necessary, place the weighing container and tare.

17. Weigh the parts .

- ➢ Number of pieces, "Stability indicator" (◣◢) and tolerance graph are displayed.
- ➢ The result can be read.

10.4.2 Control counting

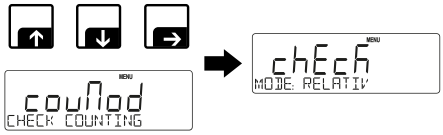
Set reference number of pieces and tolerances

1. Set the reference number of items. ➡ Chapter 10.2

2. If necessary, place the weighing container and tare.

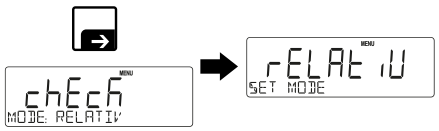
3. Press and hold **[TARE]** .

- ➢ The application menu opens.
- ➢ <SET REFERENCE> is displayed.



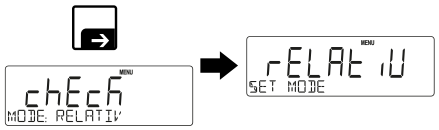
4. Select <CHECK COUNTING> (**[↑]** / **[↓]**) and confirm (**[➔]**).

- ➢ The display changes to <MODE>.



5. Confirm (**[➔]**).

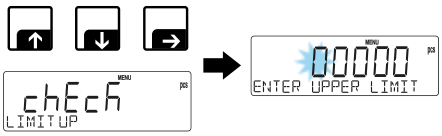
- ➢ The display changes to <SET MODE>.



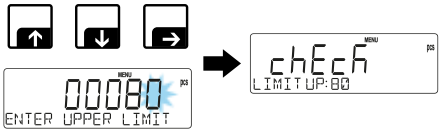
6. Select <AbSoLut> (**[↑]** / **[↓]**) and confirm (**[➔]**).

- ➢ The display changes to <MODE>.

Enter upper limit

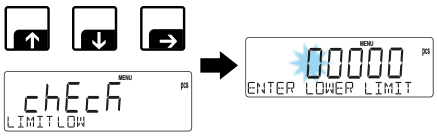


7. Select <LIMIT UP> ([↑] / [↓]) and confirm ([➔]).
   - ➢ The display changes to numerical input.

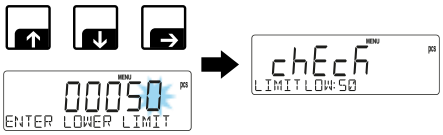


8. Enter upper limit (select number: [↑] / [↓], next number: [➔] and confirm [➔]).
   - ➢ Display changes to <LIMIT UP> with the entered tolerance displayed.

Enter lower limit



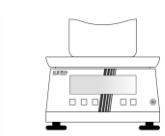
9. Select <LIMIT LOW> ([↑] / [↓]) and confirm ([➔]).
   - ➢ Display changes to numerical input.



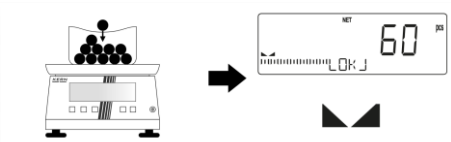
10. Enter lower limit (select number: [↑] / [↓], next number: [➔] and confirm [➔]).
    - ➢ Display changes to <LIMIT LOW> with the entered tolerance displayed.

11. Press [🡐] repeatedly to exit the menu.

Check the number of items



12. If necessary, place the weighing container and tare.



13. Weigh the parts.
    - ➢ Number of pieces, "Stability indicator" (◣◢) and tolerance graph are displayed.
    - ➢ The result can be read.

11 Application Tolerance weighing

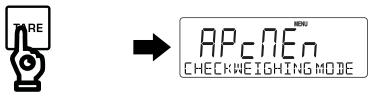
11.1 Overview of the "Tolerance weighing" application menu

Menu level	Description	Chapter
CHECK WEIGHING	Tolerance weighing	➦ Chapter 11.2
PRETARE SETTINGS	Save known tare weight (pre-tare)	➦ Chapter 8.4.2
SELECT UNIT	Set weighing units	➦ Chapter 9.5
SELECT MODE	Select application	➦ Chapter 8.5

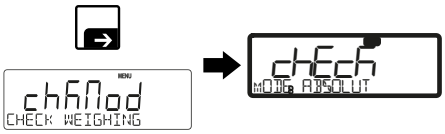
11.2 Weighing with tolerances

11.2.1 Weighing the target weight

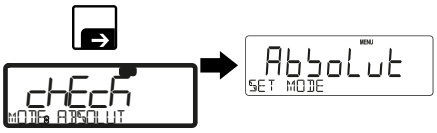
Select application mode



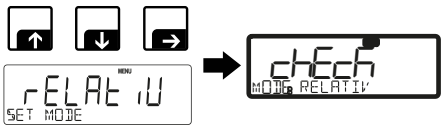
1. Press and hold **[TARE]**.
   - ➢ The application menu opens.
   - ➢ <CHECK WEIGHING> is displayed.



2. Confirm with **[➔]**.
   - ➢ is displayed in the second line.

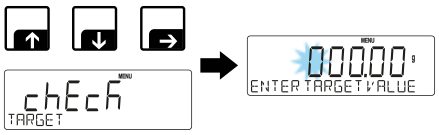


3. Confirm (**[➔]**).
   - ➢ The display changes to <SET MODE>.

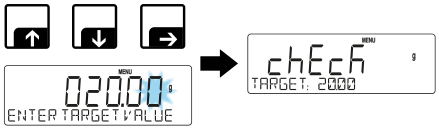


4. Select <rELAt iU> (**[🡅]** / **[🡇]**) and confirm (**[➔]**).
   - ➢ The display changes to <MODE>.

Enter target weight

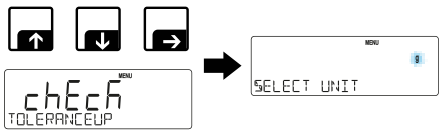


5. Select ([↑] / [↓]) and confirm ([➔]).
   - ➢ The display changes to numerical input.

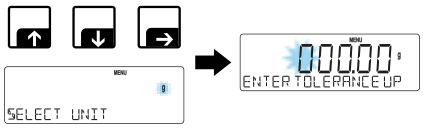


6. Enter target weight (select number: [↑] / [↓], next number: [➔] and confirm [➔]).
   - ➢ Display changes to <TARGET> with the target weight entered.

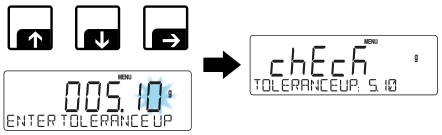
Enter upper tolerance



7. Select <TOLERANCEUP> ([↑] / [↓]) and confirm ([➔]).
   - ➢ The display changes to the selection of the unit .

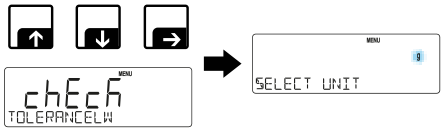


8. Select the desired unit ([↑] / [↓]) and confirm ([➔]).
   - ➢ The display changes from to numerical input.



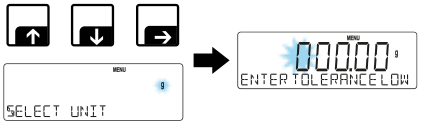
9. Enter upper tolerance (select number: [↑] / [↓], next number: [➔] and confirm [➔]).
   - ➢ The display changes to <TOLERANCE UP> with the entered tolerance shown.

Enter lower tolerance



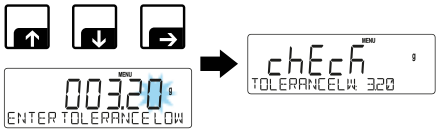
10. Select <TOLERANCELW> ([↑] / [↓]) and confirm ([➔]).

- ➢ The display changes from to Select the unit.



11. Select the desired unit ([↑] / [↓]) and confirm ([➔]).

- ➢ Display changes from to for numerical input.

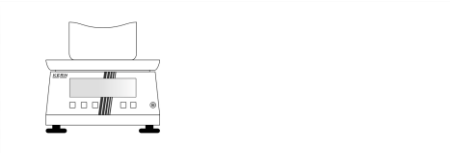


12. Enter the lower tolerance (select number: [↑] / [↓], next number: [➔] and confirm [➔]).

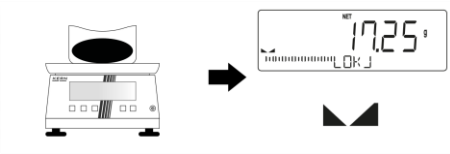
- ➢ The display changes to <TOLERANCELW> with the entered tolerance displayed.

13. Press [🡐] repeatedly to exit the menu.

Weighing the target weight



14. If necessary, place the weighing container and tare.

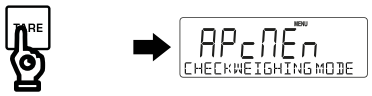


15. Weigh the weight.

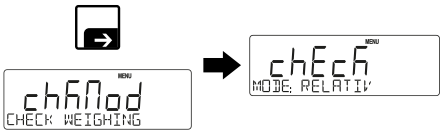
- ➢ Weight, "Stability indicator" (◣◢) and tolerance marks are displayed.
- ➢ The result can be read.

11.2.2 Check weight (limit values)

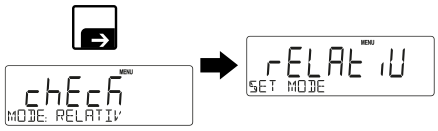
Select application mode



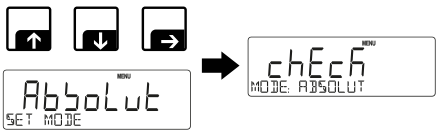
1. Press and hold **[TARE]**.
   - ➢ The application menu opens.
   - ➢ <CHECK WEIGHING> is displayed.



2. Confirm with **[➔]**.
   - ➢ is displayed in the second line.

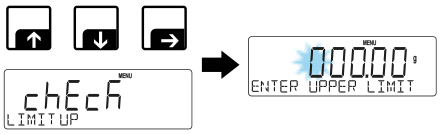


3. Confirm (**[➔]**).
   - ➢ The display changes to <SET MODE>.

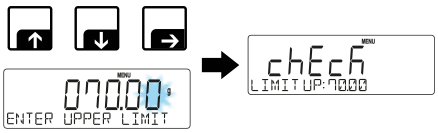


4. Select <AbsoLut> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The display changes to <MODE>.

Enter upper limit

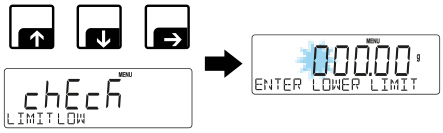


5. Select <LIMIT UP> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The display changes to numerical input.

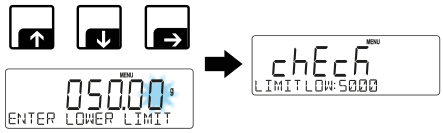


6. Enter upper limit (select number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).
   - ➢ Display changes to <LIMIT UP> with the entered tolerance displayed.

Enter lower limit

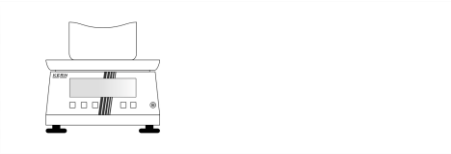


7. Select <LIMIT LOW> ([↑] / [↓]) and confirm ([➔]).
   - ➢ Display changes to numerical input.

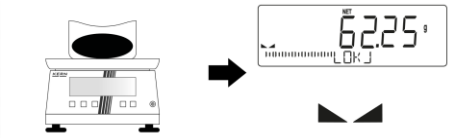


8. Enter lower limit (select number: [↑] / [↓], next number: [➔] and confirm [➔]).
   - ➢ Display changes to <LIMIT LOW> with the entered tolerance displayed.
9. Press [🡐] repeatedly to exit the menu.

Check weight



10. If necessary, place the weighing container and tare.



11. Weigh the load.
    - ➢ Weight, "Stability indicator" (◣◢) and tolerance graph are displayed.
    - ➢ The result can be read off.

12 Application Recipe mode

12.1 Overview of the "Recipe mode" application menu

Menu level	Description	Chapter
RECIPE MODE	Select and execute recipe	➦ Chapter 12.3
RECIPE DATABASE	Create, edit and delete recipes	➦ Chapter 12.2
RECIPE PRINT	Enable/disable printing (if no interface is connected, this should be disabled)	-
PRE-TARE SETTINGS	Save known tare weight (pre-tare)	➦ Chapter 8.4.2
SELECT MODE	Select application	➦ Chapter 8.5

12.2 Manage recipe s

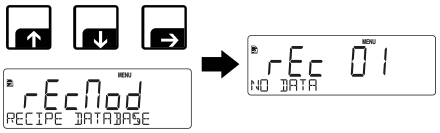
Application menu: <RECIPE DATABASE>

Menu level	Description
ENTER RECIPE NAME	Enter/change recipe name
ADD COMPONENT	Add new component
EDIT COMPONENT	Edit component (only displayed if a component has already been added)
DELETE RECIPE	Delete recipe
RECIPE UNIT	Set unit for weight measurement

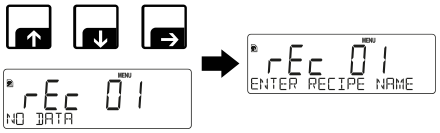
- *A maximum of 20 recipes can be saved.*
- *A recipe can contain a maximum of 20 components.*

Add new recipe:

1. Press and hold **[TARE]**.
   - ➢ The application menu opens.



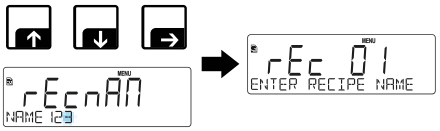
2. Select <RECIPE DATABASE> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The display changes to the list of recipes. Free memory locations contain <NO DATA> in the second line.



3. Select the desired recipe (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The display changes to <ENTER RECIPE NAME>.

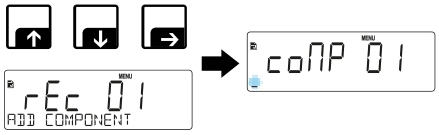
Enter the name of the recipe.

4. Confirm (**[➔]**).
   - ➢ The display changes to the entry of the recipe name.

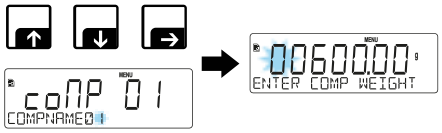


5. Enter the name (select characters: **[↑]** / **[↓]**, next character: **[➔]** and confirm **[➔]**).
   - ➢ Display changes to <ENTER RECIPE NAME>.

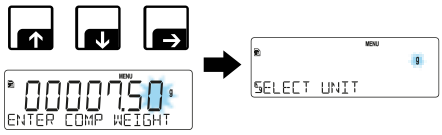
Add components



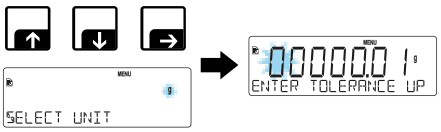
6. Select <ADD COMPONENT> (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The display changes to the component ID and entry of the name.



7. Enter the name (select characters: **[↑]** / **[↓]**, next character: **[➔]** and confirm **[➔]**).
   - ➢ The display changes to the target weight of the component.



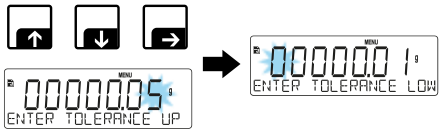
8. Enter the target weight (select number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).
   - ➢ The display changes to the selection of the unit for the tolerances.



9. Select the desired unit for the tolerances (**[↑]** / **[↓]**) and confirm (**[➔]**).

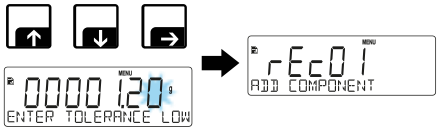
Note: You can select either absolute tolerances (standard unit) or relative deviations (percentage).

➢ Display changes to upper tolerance entry.



10. Enter the upper tolerance (select a number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).

➢ The display changes to the entry of the lower tolerance.



11. Enter lower tolerance (select number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).

➢ Display changes to <ADD COMPONENT>

...

12. Add further components according to steps 6 to 11. The component ID is automatically incremented (maximum 20 components).

Set the unit of the recipe:

Menu: <RECIPE DATABASE>→ <rEc 01>...<rEc 20>→ <RECIPE UNIT>

A unit can be selected within the menu item. After confirming the unit, the set weight values of the components are automatically converted to the changed unit.

Edit components:

Menu: <RECIPE DATABASE>→ <rEc 01>...<rEc 20>→ <EDIT COMPONENT>→ <coMP 01> ... <coMP 20>

Submenu	Description
EDIT NAME	Edit component name
COMP WEIGHT	Edit target weight of component
TOLERANCE UP	Edit upper tolerance (first select the unit, then enter the tolerance)
TOLERANCE LOW	Edit lower tolerance (first select the unit, then enter the tolerance)

Delete components:

Menu: <RECIPE DATABASE>→ <rEc 01>...<rEc 20>→ <EDIT COMPONENT>→ <coMP 01>...<coMPo 20>→ <DELETE COMP>

When you select this menu item, the question <ARE YOU SURE?> appears in the second line of the display. If you confirm with **[➔]**, the component is deleted. The IDs of the remaining components are automatically adjusted.

Delete recipe:

Menu: <RECIPE DATABASE>→ <rEc 01>...<rEc 20>→ <DELETE RECIPE>

When you select this menu item, the question <ARE YOU SURE?> appears in the second line of the display. If you confirm with **[➔]**, the recipe is deleted.

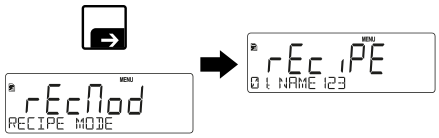
12.3 Execute recipe

Application menu: <RECIPE MODE>

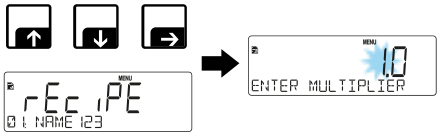
Menu level	Description
01: RECIPENAME 123456 … 20: RECIPENAME XYZ	Select and execute recipe. If no recipe is stored, <NO DATA> is displayed as the recipe name.

Select recipe

1. Press and hold **[TARE]**.
   - ➢ The application menu opens.
   - ➢ The display changes to <RECIPE MODE>.

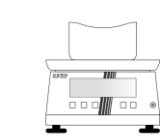


2. Confirm with **[➔]**.
   - ➢ The display changes to the list of recipes.

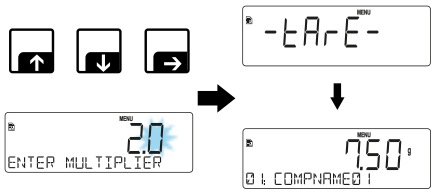


3. Select the desired recipe (**[🡅]** / **[🡇]**) and confirm (**[➔]**).
   - ➢ The display changes to numerical input and <ENTER MULTIPLIER> appears in the second line.

Enter quantity/portion size



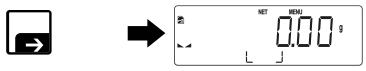
4. Place the weighing container.



5. Enter the desired quantity of the recipe (select number: **[🡅]** / **[🡇]**, next number: **[➔]** and confirm **[➔]**).
   - ➢ The container is tared.

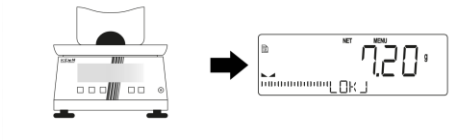
     Note: Taring a weighing container is also possible when a recipe is active. This does not interrupt the recipe.
   - ➢ Component 1 and its target weight are displayed.

Weigh the first component



6. When component 1 is displayed, confirm with **[➔]**.

➢ The display automatically switches to the weight display.



7. Fill the component into the container until <OK> is displayed in the tolerance display. becomes .

8. Wait for the "Stability indicator" and confirm the weight value with **[PRINT]**.

➢ The weight value is accepted.

➢ The next component and its target weight are displayed.

Note: If the tolerances have been exceeded or not reached, a message appears. Further details on this can be found after these instructions.

If no interface is connected, <SEt Prt> is displayed after confirmation. To avoid this, the user can deactivate <RECIPE PRINT> in the application menu.

Weigh further components and complete the recipe

...

9. Repeat steps 6 and 7 until the maximum number of components is reached.

- After saving the last component, the message <RECIPE SUCCESSFUL > appears in the second line.
- The display returns to <rEc ıPE|RECIPE MODE>.

10. Select another recipe or press **[🡐]** repeatedly to exit the menu.

Press **[🡐]** *to cancel a recipe that has been started.*

If tolerances have been exceeded or not reached:

If the weight of a component is not within the defined tolerances, a message appears on the display.

Case	Message	Description / Procedure
Tolerance exceeded	<oUEr | ADJUST COMPONENT> is displayed. The second line flashes. This is a selection menu.	
	<ADJUST COMPONENT> (Only recommended for non-critical, fully separable components)	**Remove component** **1.** Confirm the message with **[➔]**. ➢ The display returns to the weight display. **2.** Skim off the component until the weight is within the tolerances. **3.** Continue with step 7 of the instructions above.
	<RECALC RECIPE> (Only suitable if the order of the components is irrelevant. If it influences chemical reactions or material properties, the recipe should be cancelled and started again from scratch.)	**Recalculate the quantity of the recipe** **1.** Confirm the message with **[➔]**. ➢ The balance calculates a new multiplier based on the overdosed component. ➢ The next component is displayed with the new target weight. **Note:** Components that have already been weighed are displayed again. These must be refilled according to the display. Example: If component 3 is overdosed, components 1 and 2 must first be redosed. **2.** Continue with step 6 of the instructions above.
	<ABORT RECIPE> (Recommended for recipes with critical components that cannot be completely separated – especially if several components have already been weighed)	**Cancel recipe** **1.** Confirm the message with **[➔]**. ➢ The message <RECIPE unsuccessful > is displayed in the second line. ➢ The display switches to the recipe list in the menu.
Tolerance not met	and the target weight of the component are displayed.	**1.** Confirm the message with **[➔]**. ➢ Display switches back to weight display. **2.** Fill the component until the weight is within the tolerances. **3.** Continue with step 7 of the instructions above.

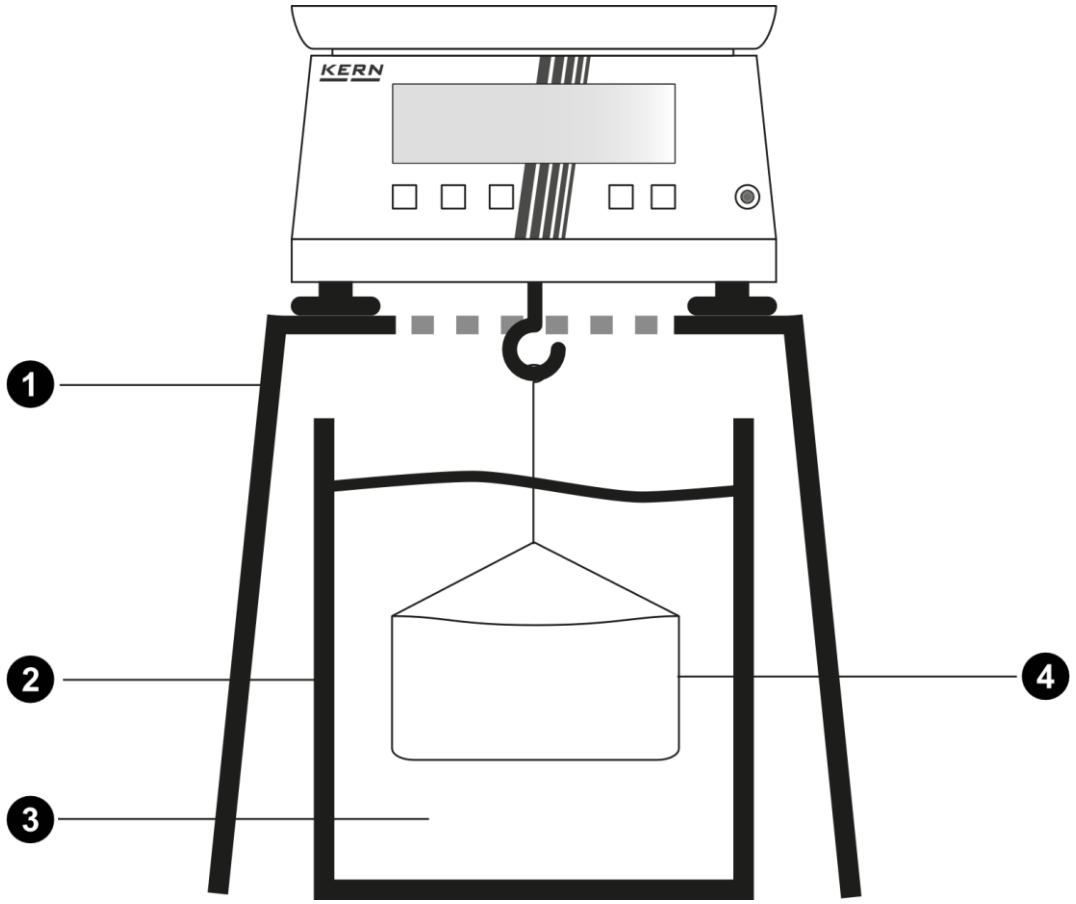
13 Application Density determination

13.1 Prepare density determination

Density determination can be carried out in the following ways:

- *Using the underfloor weighing device with a dip basket (installation of underfloor hook ➦ Chapter0)*
- *With a density determination set from KERN& SOHN. Further information can be found online at ➦ www.kern-sohn.com*

Example of density determination using an underfloor weighing device:



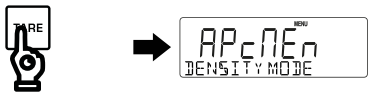
1	Stable surface (e.g. table)
2	Container for liquid
3	Liquid
4	Immersion basket

13.2 Overview of the "Density determination" application menu

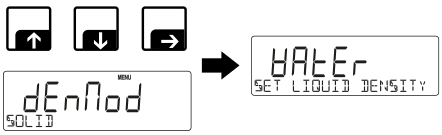
Menu level	Description	Chapter
SOLID	Density determination of solids	➦ Chapter 13.3
LIQUID	Density determination of liquids	➦ Chapter 0
SELECT MODE	Select application	➦ Chapter 8.5

13.3 Density determination of solids

Density determination with liquid (example: water)



1. Hold down **[TARE]**.
   - ➢ The application menu opens.

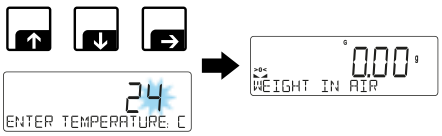


2. Select (**[↑]** / **[↓]**) and confirm (**[➔]**).
   - ➢ The display changes to <SET LIQUID DENSITY>.

3. Set the desired liquid (**[↑]** / **[↓]**) and confirm with (**[➔]**):

WATEr	Water
EthAnoL	ethanol
FrEE	Numerical entry of a density value in g/cm³

4. Confirm with **[➔]**.
   - ➢ Temperature input is displayed. (If <FrEE>, the density value of the liquid must be entered instead of the temperature.)

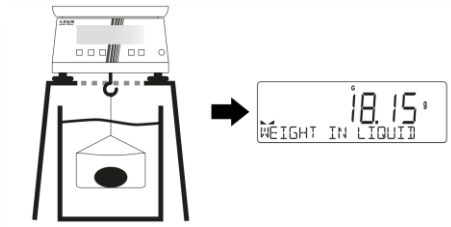


5. Enter the temperature (select number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).
   - ➢ The display changes to <WEIGHT IN AIR>.

6. Check the zero display and reset to zero if necessary. Place the sample on the weighing plate or hang it on the hook (do not weigh in liquid).
   - ➢ The weight value is displayed.

7. Wait for the stability indicator and confirm with **[➔]** (if stability is not waited for, an acoustic signal sounds and the weight is not saved).

- ➢ The weight value continues to be displayed.
- ➢ <WEIGHT IN LIQUID> is displayed.

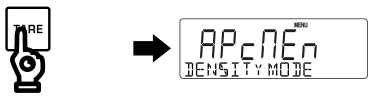


8. Place the sample in the immersion basket and immerse it in the liquid.

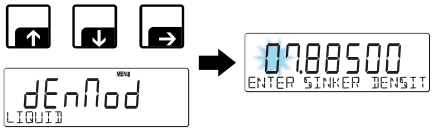
9. Wait for the stability indicator and confirm with **[➔]** (if stability is not waited for, an acoustic signal sounds and the weight is not saved).

- ➢ The calculated density of the solid is displayed.

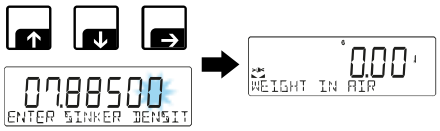
13.4 Density determination of liquids



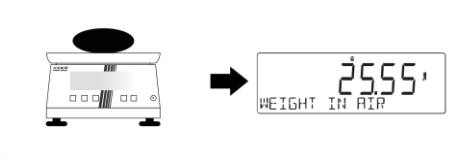
1. Press and hold **[TARE]**.
   - ➢ The application menu opens.



2. Select <LIQUID> ([↑] / [↓]) and confirm with [ ] ([➔]).
   - ➢ The display changes to <ENTER SINKER DENSITY>.

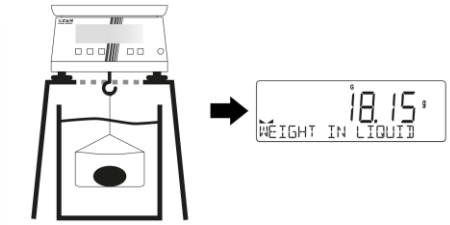


3. Enter the density of the sinker in $^{g/cm^3}$(select number: **[↑]** / **[↓]**, next number: **[➔]** and confirm **[➔]**).
   - ➢ The display changes to <WEIGHT IN AIR>.

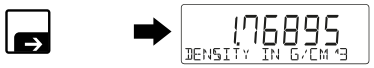


4. Check the zero display and reset to zero if necessary. Place the weighing bottle on the weighing plate or hang it on the hook (do not weigh in the liquid).
   - ➢ The weight value is displayed.

5. Wait for the stability indicator and confirm with **[➔]** (if stability is not waited for, an acoustic signal sounds and the weight is not saved).
   - ➢ The weight value continues to be displayed.
   - ➢ <WEIGHT IN LIQUID> is displayed.



6. Place the sinker in the immersion basket and immerse it in the liquid whose density is to be determined.



7. Wait for the stability indicator and confirm with **[➔]** (if stability is not waited for, an acoustic signal sounds and the weight is not saved).
   - ➢ The density of the liquid is displayed.

14 Care, maintenance and servicing

14.1 Cleaning

14.1.1 Safety during cleaning

⚠ DANGER

Electric shock from live parts

Contact with live parts can result in electric shock and burns.

- ⇨ Installation, cleaning, maintenance and repair work may only be carried out by qualified personnel.
- ⇨ Disconnect live parts from the power supply.
- ⇨ Only carry out installation, cleaning, maintenance and repair work on devices that have been switched off and disconnected from the power supply, unless the relevant instructions specify otherwise.
- ⇨ Follow the instructions in this document.

NOTE

Property damage due to incorrect cleaning

Unsuitable cleaning agents can cause damage to the device.

- ⇨ Do not use aggressive cleaning agents (e.g. solvents).
- ⇨ Do not use cleaning agents containing caustic soda, vinegar, salt, sulphuric acid or citric acid on stainless steel parts.
- ⇨ Do not use metal brushes or steel wool cleaning pads.
- ⇨ Do not open the appliance. There are no parts inside that may be cleaned.

14.1.2 Recommended cleaning

1. Switch off the appliance.
2. Disconnect the device from the power supply.
3. Remove any spilled material (e.g. loose sample residues or powder) immediately with a brush or hand vacuum cleaner.
4. Clean the device with a mild cleaning agent (e.g. soapy water) and a soft cloth.
5. Wipe the device dry with a dry, lint-free cloth.

14.2 Maintenance

14.2.1 Safety during maintenance

⚠ DANGER

Electric shock from live parts

Contact with live parts can result in electric shock and burns.

- ⇨ Installation, cleaning, maintenance and repair work may only be carried out by qualified personnel.
- ⇨ Disconnect live parts from the power supply.
- ⇨ Only perform installation, cleaning, maintenance and repair work on devices that have been switched off and disconnected from the power supply, unless the relevant instructions specify otherwise.
- ⇨ Follow the instructions in this document.

14.2.2 Maintenance schedule

Interval	Maintenance work	Description
Regular	Levelling	• Level the scales after each change of location. • Check the levelling regularly.
As required	Replace the battery	Replace the battery when the capacity is exhausted.
As required	Charge the battery	Charge the battery when the capacity is exhausted.

14.3 Test equipment monitoring

As part of quality assurance, the metrological properties of the balance and any test weights must be checked at regular intervals. The responsible user must define a suitable interval for this as well as the type and scope of this test. Information regarding test equipment monitoring for scales and the test weights required for this purpose is available on the KERN website (www.kern-sohn.com). Test weights and scales can be calibrated quickly and cost-effectively at KERN's accredited calibration laboratory (traceable to the national standard).

15 Decommissioning and storage

15.1 Decommissioning the device

1. When operating with a rechargeable battery: Charge the battery if the device is to be stored for a long period of time to avoid deep discharge.
2. Switch off the device.
3. Disconnect the device from the power supply:
   - Disconnect the power supply from the mains and remove it from the device.
   - Remove the batteries from the device
4. Remove all loose/movable parts from the device.
5. Remove all interface cables.
6. Pack the device and all associated parts neatly in the original packaging.
   ⇨ The device is now ready for storage. ➦ Chapter 15.2

15.2 Storing the device

NOTE

Damage caused by incorrect storage

Improper storage can cause damage to the device.

⇨ Take the device out of service in accordance with the instructions in this document. ➦ Chapter 15.1

⇨ Store the device in its original packaging.

⇨ Do not store the device outdoors.

⇨ Observe the environmental conditions specified in the technical data.

16 Warranty and returns

16.1 Warranty

The warranty claim only applies to defects that were already present at the time of purchase. Damage or defects caused by improper use, incorrect handling or normal wear and tear are excluded from the warranty.

16.2 Returns

- *Returns are not possible if you have used the device improperly and it has been damaged as a result.*
- *The original packaging with all associated parts must be used for returns.*
- *In the case of returns, the entire delivery must be returned.*

Procedure for returns

1. Check that all parts of the delivery are present.
2. Remove all loose and movable parts as well as connected cables from the device.
3. Reattach the transport lock.
4. Reapply any protective films that may be present.
5. Pack all parts of the scope of delivery in the original packaging and secure them so that they cannot slip and become damaged.

17 Disposal

ENVIRONMENT

Damage to people and the environment due to improper disposal

Non-degradable materials (e.g. plastics or metals) can enter the environment and cause damage if disposed of improperly.

Non-recycled material is a waste of resources and leads to increased environmental pollution.

Electrical appliances may contain substances that are not biodegradable and are harmful to the environment and human health.

Batteries and rechargeable batteries may contain substances that are harmful to the environment and human health.

⇨ Dispose of the device via appropriate recycling measures or recycling centres in accordance with the applicable national or regional law of the place of use.

Disposal of electronic devices

The crossed-out wheelie bin symbol means that old electronic devices must not be disposed of with household waste. Disposal must be carried out by the operator in accordance with the applicable national or regional legislation of the place of use.

If this device contains confidential data, it is the responsibility of the operator to delete this data before disposal.

Remove batteries and rechargeable batteries before disposing of the device and dispose of them separately.

Disposal of batteries and rechargeable batteries

The crossed-out wheelie bin symbol means that batteries and rechargeable batteries must not be disposed of in household waste. The disposal of batteries and rechargeable batteries must be carried out by the operator in accordance with the applicable national or regional law of the place of use.

We are obliged to inform end users in accordance with the Battery Ordinance:

- End users are legally obliged to return used batteries and rechargeable batteries.
- Batteries and rechargeable batteries can be returned free of charge to municipal collection points or retailers after use. Unused batteries/rechargeable batteries must be prevented from short-circuiting.
- Returns are limited to batteries and rechargeable batteries that we carry or have carried, as well as to normal household quantities.
- If batteries or rechargeable batteries contain cadmium (Cd), mercury (Hg) or lead (Pb), the respective symbol is shown under the dustbin symbol.

18 troubleshooting

18.1 Error messages

Error description	Cause	Remedy
ZL in it	Zero setting outside the zero setting range	Observe the zero setting range (reduce the load on the device / increase the load on the device)
		Adjust the zero setting range in the setup menu (if possible, depending on the device used)
		Delete the set pre-tare value in the application menu
underZ	Tare weight below zero	Tare positive value
		Set the scales to zero using the zero button.
instAb	Load unstable	Apply load gently
		Create stable environmental conditions
		Eliminate electromagnetic fields
WrongCALIBRATION FAILED	Adjustment error	Perform adjustment again
WrongTARE FAILED	Taring not possible (only displayed in recipe mode)	Same remedies as for instAb or underZ
		Observe taring range (reduce load on device / increase load on device)
		Adjust taring range in setup menu (if possible, depending on device used)
WrongZERO FAILED	Zero setting outside the zero setting range (only displayed in recipe mode)	Same remedy as for ZL in it
SEtrtc	Date & time not set	Set date and time in setup menu
		Replacing the real-time clock battery
		Check the switch position (on/off) on the real-time clock battery holder (depending on the device).
SEtPrt	Print interface not selected	Select the print interface in the setup menu

Error description	Cause	Remedy
L_ _ _ J	Underload	Weight must be at least equal to the minimum weight
⌈ - - - ⌉	Overload	Apply lower weight
LobAt	Battery/rechargeable battery capacity exhausted	Replace batteries / charge rechargeable batteries

18.2 Breakdown assistance

Fault description	Cause	Remedy
Display does not switch on	Display defective	Contact KERN Service
Device cannot be switched on	Power button defective	Contact KERN customer service
	Power supply defective or not plugged in	Check the power supply unit and plug it in
	Mains voltage failure	Wait
	Battery empty	Replace battery
	Battery empty	Charge battery
Display does not respond to load changes	Display defective	Contact KERN Service
	Load cell defective	Contact KERN Service
Displayed weight changes constantly	Load is moving	Place load gently
	Unstable environmental conditions (e.g. B. Draughts/air movements, vibrations of the table or floor)	Stabilise the environmental conditions or move the device to another location
	Weighing plate is in contact with foreign objects	Remove foreign objects
	Electromagnetic fields / static charge	If possible, switch off the interfering device or change the location of the balance
	Load cell defective	Contact KERN Service

Error description	Cause	Remedy
Result is incorrect	Scales are not set to zero	Unload the scales and reset to zero
	Adjustment is no longer correct	Perform adjustment
	Scales are not level	Level the scales
	Warm-up time not observed	Observe the warm-up time specified in the technical data
	Significant fluctuations in ambient temperature	Stabilise ambient conditions or move the device to another location
	Electromagnetic fields / static charge	If possible, switch off the interfering device or change the location of the scales.

19 Product specifications

19.1 Technical data

KERN	PKS 300-2	PKS 600-2	PKS 1000- e 1
Item number / Type	TPKS 300-2-A	TPKS 600-2-A	TPKS 1200-1-A
Readability (d)	0.01 g	0.01 g	0.1 g
Weighing range (max)	300	600	1200
Reproducibility	0.01 g	0.01 g	0.1 g
Linearity	0.02 g	0.03 g	0.3 g
Settling time (typical)	3 s	3 s	2 s
Minimum part weight when counting pieces under laboratory conditions*	20 mg	20 mg	200 mg
Smallest piece weight when counting pieces under normal conditions**	200 mg	200 mg	2 g
Adjustment points		100 g / 200 g / 400 g / 500 g / 600 g	100 g / 120 g
Recommended adjustment weight, not included, (class)	300 g (M1)	600 g (F2)	120 g (F2)
Warming time	120 min	120 min	30 min
Weight units	kg, g, gn, dwt, tl (Tw), tl (HK), ozt, tl (Singap, Malays), ct, mo, lb, oz		
Humidity	max. 80% rel. (non-condensing)		
Permissible ambient temperature	5–35 °C		
Input voltage device	5.9 V, 1 A		
Input voltage power supply	100 V - 240 V AC, 50/60 Hz		
Dimensions fully assembled (windshield/tripod)	-	-	205 x 315 x 180 mm
Dimensions of housing (without removable parts)	205 x 315 x 95 mm	205 x 315 x 95 mm	205 x 315 x 95 mm
Weighing surface	131 x 131 mm	131 x 131 mm	131 x 131 mm
Dimensions of rectangular windshield - exterior	-	-	158 x 158 x 82 mm
Dimensions of rectangular windscreen - inside	-	-	145 x 145 x 80 mm
Net weight (kg)	2.0 kg	2.0 kg	2.0 kg
Interfaces	Optional interfaces via KUP: RS232, Ethernet, USB host/master, Bluetooth BTC (v4.0), USB device, WLAN, analogue		
Underfloor weighing device	Hook (included in delivery)		

KERN	PKS 2000-1	PKS 4000-1	PKS 6000-0
Item number / Type	TPKS 2500-1-A	TPKS 4200-1-A	TPKS 6200-0-A
Readability (d)	0.1 g	0.1 g	1 g
Weighing range (max)	2500	4200	6200
Reproducibility	0.1 g	0.1 g	1 g
Linearity	0.3 g	0.2 g	2 g
Settling time (typical)	2 s	3 s	2 s
Minimum part weight when counting pieces under laboratory conditions*	200 mg	200 mg	2 g
Minimum piece weight when counting pieces under normal conditions**	2 g	2 g	20 g
Adjustment points	2 kg / 2.5 kg	2 kg / 4 kg	2 kg / 4 kg / 6 kg
Recommended adjustment weight, not included, (class)	2.5 kg (F1)	4 kg (F2)	6 kg (F2)
Warm-up time	30 min	120 min	30 min
Weight units	kg, g, gn, dwt, tl (Tw), tl (HK), ozt, tl (Singap, Malays), ct, mo, lb, oz		
Humidity	max. 80% rel. (non-condensing)		
Permissible ambient temperature	5–35 °C		
Input voltage device	5.9 V, 1 A		
Input voltage power supply	100 V - 240 V AC, 50/60 Hz		
Housing dimensions (without removable parts)	205 x 315 x 95 mm	205 x 315 x 95 mm	205 x 315 x 95 mm
Weighing surface	131 x 131 mm	180 x 170 mm	180 x 170 mm
Net weight (kg)	2.4 kg	2.4 kg	2.4 kg
Interfaces	Optional interfaces via KUP: RS232, Ethernet, USB host/master, Bluetooth BTC (v4.0), USB device, WLAN, analogue		
Underfloor weighing device	Hook (included in delivery)		

KERN	PKS 6000-1	PKS 10K-4	PKS 10K-5
Item number / Type	TPKS 6200-1-A	TPKS 10K-4-A	TPKS 10K-5-A
Readability (d)	0.1 g	0.1 g	0.05 g
Weighing range (max)	6200	10,000	10,000
Reproducibility	0.1 g	0.1 g	0.05 g
Linearity	0.2 g	0.2 g	0.15 g
Settling time (typical)	3 s	2 s	2 s
Minimum part weight when counting pieces under laboratory conditions*	200 mg	2 g	2 g
Smallest part weight when counting pieces under normal conditions**	2 g	20 g	20 g
Adjustment points	2 kg / 4 kg / 6 kg		
Recommended adjustment weight, not included, (class)	6 kg (F2)	10 kg (F1)	10 kg (F1)
Warm-up time	120 min	120 min	120 min
Weight units	kg, g, gn, dwt, tl (Tw), tl (HK), ozt, tl (Singap, Malays), ct, mo, lb, oz		
Humidity	max. 80% rel. (non-condensing)		
Permissible ambient temperature	5–35 °C		
Input voltage device	5.9 V, 1 A		
Input voltage power supply	100 V - 240 V AC, 50/60 Hz		
Housing dimensions (without removable parts)	205 x 315 x 95 mm	205 x 315 x 95 mm	205 x 315 x 95 mm
Weighing surface	180 x 170 mm	180 x 170 mm	180 x 170 mm
Net weight (kg)	2.4 kg	2.4 kg	2.4 kg
Interfaces	Optional interfaces via KUP: RS232, Ethernet, USB host/master, Bluetooth BTC (v4.0), USB device, WLAN, analogue		
Underfloor weighing device	Hook (included in delivery)		

19.2 Declaration of conformity

The current EC/EU declaration of conformity can be found online at ➦ https://www.kern-sohn.com/shop/de/downloads/.

20 Contact

KERN hotlines	**Technical questions about our products?** **You can find quick help here: +49 7433 9933- ...**
Service hotline	For general technical questions about your KERN product→ **199**
Laboratory and analytical balances	For all technical questions about our high-quality precision balances and analytical balances (especially those with force-compensated measuring systems, tuning forks and high application density)→ **444**
EasyTouch (software)	For all technical questions regarding the installation and commissioning of the EasyTouch software, please contact→ **322.**