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Operating manual
Table scales

KERN FKB

Version 1.1
2021-07
GB

FKB-BA-e-2111

GB

KERN FKB

Version 1.1 2021-07

Operating manual

Table scales

English

Content

English

English

1 Technical data

KERN	FKB 6K0.02	FKB 8K0.1	FKB 8K0.05	FKB 15K0.5
Item no./ Type	TFKB 6K-5-A	TFKB 8K-4-A	TFKB 8K-5-A	TFKB 15K-4-A
Readability (d)	0.02 g	0.1 g	0.05 g	0.5 g
Weighing range (max)	6,000 g	8,000 g	8,000 g	15,000 g
Taring range (subtractive)	6,000 g	8,000 g	8,000 g	15,000 g
Reproducibility	0.02 g	0.1 g	0.05g	0.5 g
Linearity	± 0.06 g	± 0.3 g	± 0.15g	± 0.15 g
Stabilization time (typical)	3 sec.	2 sec.	3 sec.	3 sec.
Smallest part weight for piece counting - under lab conditions*	20 mg	100 mg	50 mg	1 g
Smallest part weight for piece counting - under normal conditions**	200 mg	1 g	500 m	10 g
Adjustment points	1 / 3 / 5 / 6 kg	2 / 5 / 7 / 8 kg	2/4/5/7/8 kg	5/10/15 kg
Recommended adjustment weight (not supplied)	5 kg; 1 kg (F1)	5 kg; 2 kg; 1 kg (F1)	5 kg; 2 kg; 1 kg (F1)	15 kg (F2)
Warm-up time	2 hrs.			
Weighing Units	kg, g, gn, dwt, ozt, lb, oz			
Humidity of air	max. 80% rel. (non-condensing)			
Allowable ambient temperature	-10 °C ... + 40 °C			
Input voltage Appliance	9 V, 1 A			
Input voltage Mains adapter	110V – 240V AC; 50Hz/60Hz			
Batteries (option)	6 x 1.5V AA			
Storage battery operation (optional)	Operating period 90 h (background illumination OFF) Operating period 40 h (background illumination ON) Loading time approx. 10 hrs.			
Auto-Off (battery, rechargeable battery)	3 min			
Auto off (net))	Selectable 30s, 1, 2, 5, 30, 60 min			
Dimensions housing	350 x 390 x 120 (W x D x H) [mm]			
Weighing pan stainless steel mm	340 x 240			
Net weight (kg)	7	7	7	6
Interfaces	• RS-232 (DB9 female), as per series • USB-appliance connection (USB B), Factory option • Ethernet, Factory option • WLAN, Factory option			
Underfloor weighing device	yes (hook supplied)			

English

KERN	FKB 16K0.1	FKB 16K0.05	FKB 30K1	FKB 36K0.1
Item no./ Type	TFKB 16K-4-A	TFKB 16K-5-A	TFKB 30K-3-A	TFKB 36K-4-A
Readability (d)	0.1 g	0.05 g	1 g	0.0001 kg
Weighing range (max)	16,000 g	8,000 g	30,000 g	36 kg
Taring range (subtractive)	16,000 g	8,000 g	30,000 g	36 kg
Reproducibility	0.1 g	0.05g	1 g	0.0001 kg
Linearity	± 0.3 g	± 0.15 g	± 2 g	± 0.0003 kg
Stabilization time (typical)	3 sec.	3 sec.	2 sec.	3 sec.
Smallest part weight for piece counting - under lab conditions*	100 mg	50 mg	2 g	100 mg
Smallest part weight for piece counting - under normal conditions**	1 g	500 mg	20 g	1 g
Adjustment points	5/10/15/16 kg	5/10/15/16 kg	10/20/30 kg	10/15/30/36 kg
Recommended adjustment weight (not supplied)	10 kg; 5 kg; 1 kg (F1)	10 kg; 5 kg; 1 kg (F1)	30 kg (F2)	20 kg + 10 kg (E2)
Warm-up time	4 hrs.	2 hrs.	2 hrs.	2 hrs.
Weighing Units	kg, g, gn, dwt, ozt, lb, oz			
Humidity of air	max. 80% rel. (non-condensing)			
Allowable ambient temperature	-10 °C ... + 40 °C			
Input voltage Appliance	9 V, 1 A			
Input voltage Mains adapter	110V – 240V AC; 50Hz/60Hz			
Batteries (option)	6 x 1.5V AA			
Storage battery operation (optional)	Operating period 90 h (background illumination OFF) Operating period 40 h (background illumination ON) Loading time approx. 10 hrs.			
Auto-Off (battery, rechargeable battery)	3 min			
Auto off (net))	Selectable 30s, 1, 2, 5, 30, 60 min			
Dimensions caisse (l x L x h) [mm]	350 x 390 x 120			
Weighing pan stainless steel mm	340 x 240			
Net weight (kg)	7	7	6	7
Interfaces	• RS-232 (DB9 female), as per series • USB-appliance connection (USB B), Factory option • Ethernet, Factory option • WLAN, Factory option			
Underfloor weighing device	yes (hook supplied)			

KERN	FKB 36K0.2	FKB 65K1	FKB 65K0.2
Item no./ Type	TFKB 36K-4B-A	TFKB 65K-3-A	TFKB 65K-4-A
Readability (d)	0.0002 kg	0.001 kg	0.0002 kg
Weighing range (max)	36 kg	65 kg	65 kg
Taring range (subtractive)	36 kg	65 kg	65 kg
Reproducibility	0.0002 kg	0.001 kg	0.0002 kg
Linearity	± 0.0006 kg	± 0.003 kg	± 0.0006 kg
Stabilization time (typical)	3 sec.		
Smallest part weight for piece counting - under lab conditions*	200 mg	2 g	200 mg
Smallest part weight for piece counting - under normal conditions**	2 g	20 g	2 g
Adjustment points	10 / 20 / 30 / 36 kg	20/40/60 kg	15 / 30 / 50 / 60 kg
Recommended adjusting weight F1 (not supplied)	20 kg; 10 kg (F1)	60 kg (F2)	50 kg; 10 kg (E2)
Warm-up time	2 hrs.		
Weighing Units	kg, g, gn, dwt, ozt, lb, oz		
Humidity of air	max. 80% rel. (non-condensing)		
Allowable ambient temperature	-10 °C ... + 40 °C		
Input voltage Appliance	9 V, 1 A		
Input voltage Mains adapter	100 V - 240V AC 50/60Hz 0.3A		
Batteries (option)	6 x 1.5V AA		
Storage battery operation (optional)	Operating period 90 h (background illumination OFF) Operating period 40 h (background illumination ON) Loading time approx. 10 hrs.		
Auto-Off (battery, rechargeable battery)	3 min		
Auto off (net))	Selectable 30s, 1, 2, 5, 30, 60 min		
Dimensions caisse (l x L x h) [mm]	350 x 390 x 120		
Weighing pan stainless steel mm	340 x 240		
Net weight (kg)	7	6	7
Interfaces	• RS-232 (DB9 female), as per series • USB-appliance connection (USB B), Factory option • Ethernet, Factory option • WLAN, Factory option		
Underfloor weighing device	yes (hook supplied)		

English

*** Smallest component weight for part counting - under lab conditions:**

- There are ideal ambient conditions for high-resolution counting
- The parts to be counted have no variation

**** Smallest component part for part counting – under normal conditions:**

- There are unsteady ambient conditions (draft, vibrations)
- The parts to be counted are subject to variation

2 Declaration of conformity

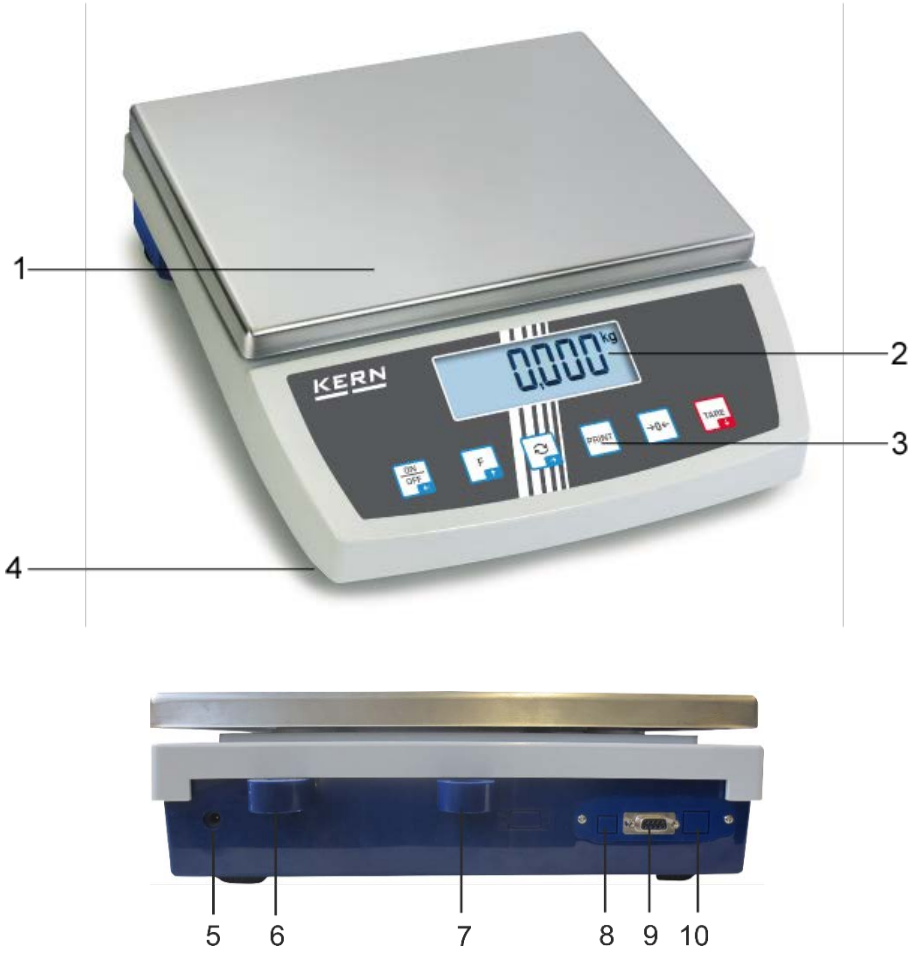
The current EC/EU Conformity declaration can be found online in:

www.kern-sohn.com/ce

For verified weighing scales (= weighing scales assessed for conformity) a declaration of conformity is included in the scope of delivery.

3 Appliance overview

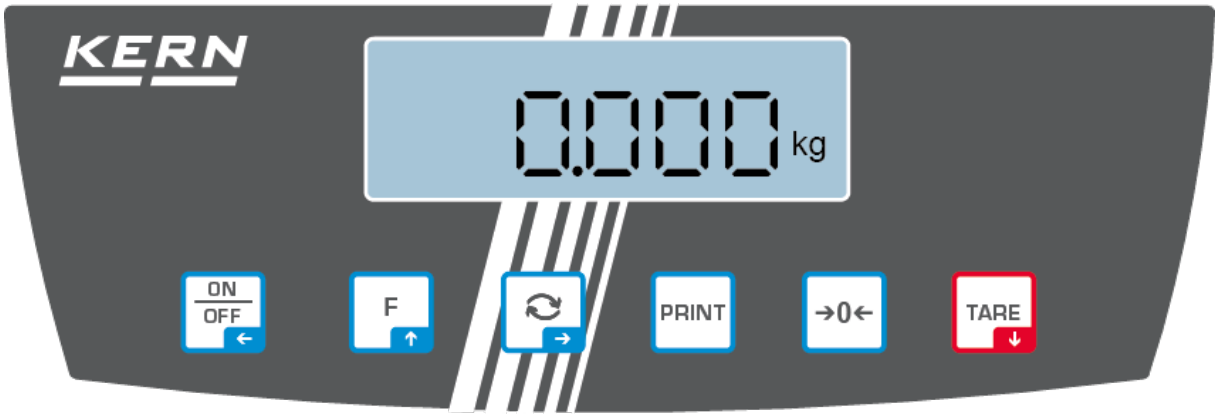
3.1 Components



Pos.	Designation
1	Weighing pan
2	Display
3	Keyboard
4	Levelling screw
5	Mains adapter connection
6	Bubble level
7	Anti-theft protection device connection
8	USB-interface (Factory option)
9	RS 232 interface
10	Ethernet (Factory option)

English

3.2 Operating elements



3.2.1 Keyboard overview

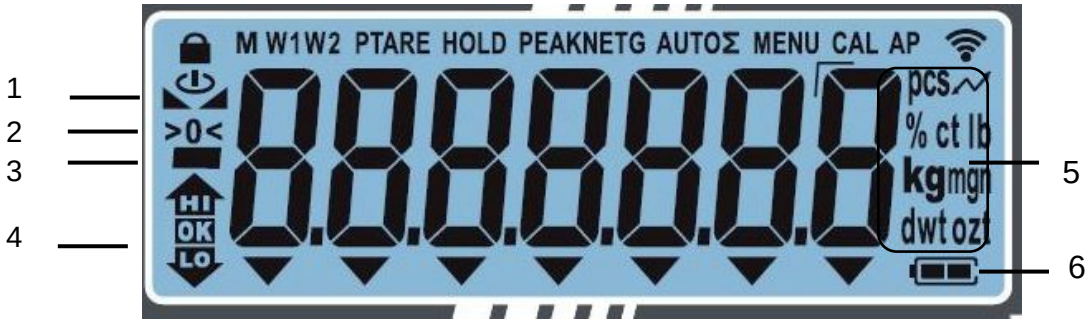
Button	Name	Function in Operating mode	Function in Menu
ON OFF	**ON/OFF** button	➢ Switch on/off (press button long time) ➢ Switch on/off the display background illumination (press button long time)	➢ Menu level back ➢ Exit menu / back to weighing mode.
TARE	**TARE**-key	➢ Taring ➢ PRE-TARE (press button long time)	➢ Invoke application menu (press button long time) ➢ Navigation key 🡻 ➢ Select menu item
→0←	ZERO key	➢ Zeroing	
F	F-key		➢ Navigation key 🡹 ➢ Select menu item
	-key	➢ Switch over between weight display and piece quantity display	➢ Navigation key 🡺 ➢ Activate menu item ➢ Confirm selection
PRINT	PRINT button	➢ Calculate weighing data via interface	

English

3.2.2 Numeric entry

Button	Designation	Function
	Navigation key ➔	Select cipher
		Confirm entry. Press button repeatedly for every digit. Wait until the numeric input window extinguishes.
	Navigation key 🡻	Reduce flashing cipher (0 – 9)
	Navigation key 🡹	Increase flashing cipher (0 – 9)

3.2.3 Display overview



Position	Display	Description
1		Stability display
2	**>0<**	Zero indicator
3		Minus display
-	**NET**	Net weight value display
4		Tolerance marks for check weighing
5	**Units display / Pcs/ %**	selectable g, kg, lb, gn, dwt, oz,ozt or Application icon [**Pcs**] for piece counting or [%] for determination of percentage
6		Rechargeable battery charge indicator
-	**G**	Optional reference piece number enabled
-	Σ	Weighing data can be found in the sum memory

English

4 Basic Information (General)

4.1 Proper use

The balance you purchased is intended to determine the weighing value of material to be weighed. It is intended to be used as a “non-automatic balance”, i.e. the material to be weighed is manually and carefully placed in the centre of the weighing pan. As soon as a stable weighing value is reached, the weighing value can be read.

4.2 Improper Use

Do not use balance for dynamic add-on weighing procedures, if small amounts of goods to be weighed are removed or added. The “stability compensation“ installed in the balance may result in displaying an incorrect measuring value! (Example: Slowly draining fluids from a container on the balance.)

Do not leave permanent load on the weighing pan. This may damage the measuring system.

Impacts and overloading exceeding the stated maximum load (max) of the balance, minus a possibly existing tare load, must be strictly avoided. Balance may be damage by this.

Never operate balance in explosive environment. The serial version is not explosion protected.

The structure of the balance may not be modified. This may lead to incorrect weighing results, safety-related faults and destruction of the balance.

The balance may only be used according to the described conditions. Other areas of use must be released by KERN in writing.

4.3 Warranty

Warranty claims shall be voided in case

- Our conditions in the operation manual are ignored
- The appliance is used outside the described uses
- The appliance is modified or opened
- Mechanical damage and damage by media, liquids, natural wear and tear
- The appliance is improperly set up or incorrectly electrically connected
- The measuring system is overloaded

4.4 Monitoring of Test Resources

In the framework of quality assurance the measuring-related properties of the balance and, if applicable, the testing weight, must be checked regularly. The responsible user must define a suitable interval as well as type and scope of this test. Information is available on KERN's home page (www.kern-sohn.com) with regard to the monitoring of balance test substances and the test weights required for this. In KERN's accredited DKD calibration laboratory test weights and balances may be calibrated (return to the national standard) fast and at moderate cost.

5 Basic Safety Precautions

5.1 Pay attention to the instructions in the Operation Manual

- ⇨ Carefully read this operation manual before setup and commissioning, even if you are already familiar with KERN balances.
- ⇨ All language versions contain a non-binding translation. The original German is binding.

5.2 Personnel training

The appliance may only be operated and maintained by trained personnel.

6 Transport and storage

6.1 Testing upon acceptance

When receiving the appliance, please check packaging immediately, and the appliance itself when unpacking for possible visible damage.

6.2 Packaging / return transport

- ⇨ Keep all parts of the original packaging for a possibly required return.
- ⇨ Only use original packaging for returning.
- ⇨ Prior to dispatch disconnect all cables and remove loose/mobile parts.
- ⇨ Reattach possibly supplied transport securing devices.
- ⇨ Secure all parts such as wind screen, weighing pan, power unit etc. against shifting and damage.

7 Unpacking, Setup and Commissioning

7.1 Installation Site, Location of Use

The balances are designed in a way that reliable weighing results are achieved in common conditions of use.

You will work accurately and fast, if you select the right location for your balance.

Therefore, observe the following for the installation site:

- Place the balance on a firm, level surface.
- Avoid extreme heat as well as temperature fluctuation caused by installing next to a radiator or in the direct sunlight.
- Protect the balance against direct draughts due to open windows and doors.
- Avoid jarring during weighing;
- Protect the balance against high humidity, vapours and dust.
- Do not expose the device to extreme dampness for longer periods of time. Non-permitted condensation (condensation of air humidity on the appliance) may occur if a cold appliance is taken to a considerably warmer environment. In this case, acclimatize the disconnected appliance for ca. 2 hours at room temperature.
- Avoid static charge of goods to be weighed or weighing container.

If electro-magnetic fields or static charge occur, or if the power supply is unstable major deviations on the display (incorrect weighing results) are possible. In that case, the location must be changed.

7.2 Unpacking and checking

Remove device and accessories carefully from packaging, remove packaging material and install the device at the planned work place. Check if that there has been no damage and that all packing items are present.

Scope of delivery / serial accessories:

- Balance, see chap. 3.1
- Mains adapter
- Operating manual
- Protective cover
- Flush-mounted hook

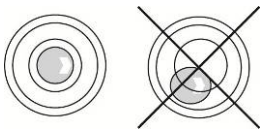
7.3 Assembling, Installation and Levelling

⇨ Remove the four transport securing devices above the supports of the weighing pan

⇨ Install weighing pan and wind shield if necessary.

⇨ Ensure that the balance is installed in a level position.

⇨ Level balance with foot screws until the air bubble of the water balance is in the prescribed circle.



⇨ Check levelling regularly

7.4 Mains connection

Select a country-specific power plug and insert it in the mains adapter.

Check, whether the voltage acceptance on the scales is set correctly. Do not connect the scales to the power mains unless the information on the scales (sticker) matches the local mains voltage.

Only use KERN original mains adapter. Using other makes requires consent by KERN.

Important:

- ➢ Before starting your weighing balance, check the mains cable for damage.
- ➢ Ensure that the power unit does not come into contact with liquids.
- ➢ Ensure access to mains plug at all times.

7.5 Battery operation (optional)

When the batteries are exhausted, in the display will appear < **InSt Ab>.**

⇨ Rotate the balance carefully in a way that the bottom of the balance is freely accessible.

⇨ Open the battery compartment and exchange the batteries.

Ensure correct polarisation.

⇨ Close again the lid.

- To save the battery, in menu (see chap. 13.3.1.) the automatic switch-off function < AutoFF> can be activated.
- If the balance is not used for a longer time, take out the battery and store it separately. Leaking battery liquid could damage the balance.

English

7.6 Rechargeable battery operation (optional)

ATTENTION   	⇨ The rechargeable battery and the battery match with each other. Only use the delivered mains adapter. ⇨ Do not use the balance during the loading process. ⇨ The rechargeable can only be replaced by the same or by a type recommended by the manufacturer. ⇨ The rechargeable battery is not protected against all environmental influences. If the rechargeable battery is exposed to certain environmental influences, it may set on fire or explode. Persons may be injured or material damage may occur. ⇨ Protect the rechargeable battery against fire and heat. ⇨ Do not bring the rechargeable battery in contact with fluids, chemical substances or salt. ⇨ Do not expose the rechargeable battery to high pressure or microwaves. ⇨ Under no circumstances the rechargeable batteries and the charging unit may be modified or manipulated. ⇨ Do not use a defective, damaged or deformed rechargeable battery. ⇨ Do not connect or short-circuit the electrical contacts of the rechargeable battery with metallic objects. ⇨ Liquid may squirt out from a damaged rechargeable battery. If the liquid gets into contact with the skin or the eyes, the skin and the eyes may be irritated. ⇨ Ensure the correct polarity when inserting or changing the rechargeable battery (see instructions in the battery compartment) ⇨ The rechargeable battery operation is overridden when the mains adapter is connected. For weighing in mains operation > 48 hrs., the rechargeable batteries must be removed! (Danger of overheating). ⇨ If the rechargeable battery starts to smell, being hot, changing the colour or being deformed, it must be immediately unplugged from mains supply and from the balance if possible.

English

7.6.1 Recharge battery

The rechargeable battery package is charged via the delivered power cable.

Before the first use, the rechargeable battery package should be charged by connecting it to the mains power cable for at least 15 hours.

To save the rechargeable battery, in menu (see chap.0.) the automatic switch-off function <AUtoFF> can be activated.

If the capacity of the rechargeable battery is exhausted, in the display < InStAb> will appear. Connect the power cable as soon as possible to load the rechargeable battery. Charging time until complete recharging is approx. 10 h.

7.7 Connection of peripheral devices

Before connecting or disconnecting of additional devices (printer, PC) to the data interface, always disconnect the balance from the power supply.

With your balance, only use accessories and peripheral devices by KERN, as they are ideally tuned to your balance.

7.8 Initial Commissioning

In order to obtain exact results with the electronic balances, your balance must have reached the operating temperature (see warming up time chap. 1). During this warming up time the balance must be connected to the power supply (mains, accumulator or battery).

The accuracy of the balance depends on the local acceleration of gravity.

Strictly observe hints in chapter Adjustment.

7.9 Adjustment

As the acceleration value due to gravity is not the same at every location on earth, each display unit with connected weighing pan must be coordinated - in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the weighing system has not already been adjusted to the location in the factory). This adjustment process must be carried out for the first commissioning, after each change of location as well as in case of fluctuating environment temperature. To receive accurate measuring values it is also recommended to adjust the display unit periodically in weighing operation.

- Arrange the required adjustment weight, see chap. 1.
  Carry out adjustment as near as possible to the highest load of the balance (recommended adjustment weight see chap. 1). Weights of different nominal values or tolerance classes may be used for adjustment but are not optimal for technical measuring. The accuracy of the adjustment weight must correspond approximately to or, if possible, be better than, the readability [**d]** of the balance. Info about test weights can be found on the Internet at: http://www.kern-sohn.com
- Observe stable environmental conditions. A warming up time (see chapter 1) is required for stabilization.
- Ensure that there are no objects on the weighing pan.

7.9.1 External adjustment <cALEHt>

⇨ Observe stable environmental conditions. A warm up time (see chapter 1) is required for stabilization.

⇨ Ensure that there are no objects on the weighing pan.

⇨ To invoke the setup menu press the TARE and ON/OFF button at the same time and keep them pressed until the first menu item <cAL> will be displayed.

⇨ Navigation key Press ➔ button, <cALEHt> will be displayed.

⇨ Navigation key Press ➔ button, the first selectable adjustment weight will be displayed.

⇨ Use the navigation keys 🡻🡹 to select the desired adjustment weight, see chap. 1 „Adjustment points“ or „Recommended adjustment weight“

⇨ Prepare the required adjustment weight.

⇨ Acknowledge selection by ➔ button. < ZEro >, < PtLd > followed by the weight value of the adjustment weight to be placed will be displayed.

⇨ Place the adjustment weight and confirm with ➔ button,
< HA it > followed by < SuccESS > will be displayed.

⇨ After successful adjustment the balance automatically returns to weighing mode. In case of an adjustment error (e.g. objects on the weighing pan) the display will show the error message < HronG >. Switch off balance and repeat the adjustment process.

English

7.9.2 External adjustment with user-defined adjustment weight < CALEud >

⇨ Observe stable environmental conditions. A warm up time (see chapter 1) is required for stabilization.

⇨ Ensure that there are no objects on the weighing pan.

⇨ To invoke the setup menu press the TARE and ON/OFF button at the same time and keep them pressed until the first menu item < CAL > will be displayed.

⇨ Navigation key Press ➔ button, < CALEHt > will be displayed.

⇨ Use the navigation keys to select 🡻 🡹 < CALEud >.

⇨ Confirm with ➔ button. The numeric input window for the weight value of the adjustment weight appears.

⇨ Enter weight value and confirm using the ➔ button, numeric entry see chap. 3.2.2.

⇨ < ZEro >, < PtLd > followed by the weight value of the adjustment weight to be placed will be displayed.

⇨ Place the adjustment weight and confirm with ➔ button,
< HA it > followed by < SuccESS > will be displayed.

After successful adjustment the balance automatically returns to weighing mode.
In case of an adjustment error (e.g. objects on the weighing pan) the display will show the error message < HronG >. Switch off balance and repeat the adjustment process.

8 Basic Operation

8.1 Turn on/off

Start-up:

⇨ Press the **ON/OFF** button.
The display lights up and the balance carries out a selftest.
Wait until the weight display appears, then the balance is ready for weighing.

Switch off:

⇨ Keep **ON/OFF** button pressed until the display disappears

8.2 Simple weighing

⇨ Check zero display [**>0<**] and set to zero with the help of the **ZERO**–key, as required.

⇨ Place goods to be weighed on balance.

⇨ Wait until the stability display appears (▬).

⇨ Read weighing result.

> **Overload warning**
> Overloading exceeding the stated maximum load (max) of the device, minus a possibly existing tare load, must be strictly avoided. This could damage the instrument. Exceeding the maximum load is indicated by [- - - -]. Unload balance or reduce preload.

8.3 Weighing with tare

8.3.1 Taring

The dead weight of any weighing container may be tared away by pressing a button, so that the following weighing procedures show the net weight of the goods to be weighed.

⇨ Put the weighing container on the weighing pan

⇨ Wait until the stability display appears (▬), then press **TARE** key.
The weight of the container is now internally saved. The zero display and the indicator „**NET“** will appear. „**NET“** informs that all shown weight values are net values.

⇨ Weigh the material.

⇨ Wait until the stability display appears (▬).

⇨ Read net weight.

English

- When the balance is unloaded the saved taring value is displayed with negative sign.
- To delete the stored tare value, remove load from weighing pan and press the **TARE** button.
- The taring process can be repeated any number of times, e.g. when adding several components for a mixture (adding). The limit is reached when the taring range capacity is full.
- Numeric input of the tare weight (PRE-TARE), see chap. 10.1.2.2

8.4 Underfloor weighing

Objects unsuitable for placing on the weighing scale due to size or shape may be weighed with the help of the flush-mounted platform.

Proceed as follows:

⇨ Switch off the balance.

⇨ Open closing cover (1) at the balance bottom.

⇨ Place weighing balance over an opening.

⇨ Completely screw-in the hook

⇨ Hook-on the material to be weighed and carry out weighing.

CAUTION

- **Always ensure that all suspended objects are stable enough to hold the desired goods to be weighed safely (danger of breaking).**
- **Never suspend loads that exceed the stated maximum load (max) (danger of breaking)**

Always ensure that there are no persons, animals or objects that might be damaged underneath the load.

NOTICE

After completing the underfloor weighing the opening on the bottom of the balance must always be closed (dust protection).

9 Operating concept

From factory the balance is delivered with various applications (normal weighing, check weighing, counting). After the first start-up the balance is in the <Weighing> application.

In the **application menu** (see chap.13.2.) however, you can define, selecting an application, in which mode the balance after switching-on has to continue working. Either as per standard in weighing mode or e.g. as check balance or counting balance

Note: The number of the installed applications depends on the model.

Selecting an application:

⇨ Press the TARE button and keep it pressed until the first menu item will be displayed

⇨ Use the TARE button to select the menu setting < ModE > and acknowledge with ➔ button. The current setting will be displayed.

⇨ Use the TARE button to select the desired mode, selectable

WEIGH	Weighing mode
count	Counting mode
CHECK	Check mode

⇨ Confirm with ➔ button.

According to the selected application in the application menu just appear the application-specific settings, so that you reach the target quickly without detour.

- Information about the application-specific settings you will find in the description of the respective application.
- All basic settings and parameters, which influence the whole operation of the balance, are resumed in the **Setup Menu** (see chap.13.3.). These settings remain valid for all applications.

Change application:

⇨ Press and hold **TARE** button until the first setup menu item is displayed

⇨ Use the TARE button to select the menu setting < ModE > and acknowledge with ➔ button. The current setting will be displayed.

⇨ Use the TARE button to select the desired mode and acknowledge with ➔ button.

English

10 Application <Weighing>

How to carry out a simple weighing and taring, please refer to chap. 8.2 or 8.3. Further specific settings you will find in the following chapters.

Shouldn't the application <Weighing> already be enabled, select the menu setting < nodE ➡ WE iGh >, see chap. 9

10.1 Application-specific settings

+ Navigation in the application menu see chap. 13.1

10.1.1 Overview

⇨ Press the TARE button and keep it pressed until the first menu item < PrEtArE > will be displayed

Level 1	Level 2	Level 3	Description / Chapter
PtArE PRE-TARE	ActuAL	Take over the placed weight as PRE-TARE value, see chap. 10.1.2.1	
	nAnuAL	Numeric input of the tare weight, see chap. 10.1.2.2.	
	CLEAR	Delete PRE-TARE value	
hoLd	**-**	Start-Hold function	
un it Units	**g**	This function defines in which weighing unit the result will be displayed. In verified models not all the weighing units are available, see chap. 1.	
	kg		
	lb		
	gn		
	dwt		
	ozt		
	oz		
	%		
	Free factor multiplication factor		
	Pcs		
nodE Applications see chap. 9.	WE iGh	Application <Weighing>	
	count	Application <Counting>	
	chEcK	Application <Check weighing>	

10.1.2 Description of individual functions

10.1.2.1 Take over the placed weight as PRE-TARE value, < PtArE➡ ActuEL >

⇨ Deposit weighing container

⇨ Invoke menu setting < PtArE > and confirm by ➔ button.

⇨ To take over the placed weight as a PRE-TARE value, use the navigation keys ↓↑ to select < ActuEL >

⇨ Confirm with ➔ button. < YA it > is displayed.

⇨ The weight of the weighing container is stored as tare weight.

⇨ Remove the weighing container, the indicator (NET) and the tare weight with minus sign will appear.

⇨ Place the filled weighing container.

⇨ Wait until the stability display appears (✉).

⇨ Read net weight.

The entered tare weight remains invalid until a new tare weight is input. To delete press the TARE key or confirm the menu setting < cLEAr > using the ➔ button.

English

10.1.2.2 Enter the known tare weight numerically < PtArE➡ MAnuEL >

⇨ Invoke menu setting < PtArE > and confirm by ➔ button.

⇨ Use the navigation keys ⇵ to select the setting < MAnuEL > and confirm with ➔ button.

⇨ Enter the known tare weight, numeric input see chap. 3.2.2

⇨ The input weight is automatically saved as tare weight, the indicator (NET) and the tare weight with minus sign will appear.

⇨ Place the filled weighing container.

⇨ Wait until the stability display appears (▬).

⇨ Read net weight.

ℹ The entered tare weight remains invalid until a new tare weight is input. To delete enter the zero value or confirm the menu setting <clear> using the ➔ button.

10.1.2.3 Data-Hold function < hoLd >

⇨ Invoke menu setting < hoLd >

⇨ Place goods to be weighed on balance.

⇨ Confirm with ➔ button.

⇨ The first stable weighing value is kept for 15 s, symbolised by [HOLD] in the upper edge of the display.

11 Application <Counting>

Shouldn't the application <Counting> already be enabled, select the menu setting < ModE ➡ count >, see chap. 9

11.1 Application-specific settings

+ Navigation in menu see chap. 13.1

11.1.1 Overview

⇨ Press the TARE button and keep it pressed until the first menu item < rEF > will be displayed

Level 1	Level 2	Level 3	Description / Chapter
rEF Reference quantity	5	Reference piece number 5	
	10	Reference piece number 10	
	20	Reference piece number 20	
	50	Reference piece number 50	
	FrEE	Optional, numeric input, see chap. 3.2.2.	
	inPut	Input unit weight	
PtArE	ActuAL	Take over the placed weight as PRE-TARE value, see chap. 10.1.2.1	
	MAnuAL	Numerical input of the tare weight, see chap. 10.1.2.2.	
	cLEAr	Delete PRE-TARE value	

English

11.2 Using the application

11.2.1 Parts counting

Before the balance can count parts, it must know the average piece weight (i.e. reference). Proceed by putting on a certain number of the parts to be counted. The balance determines the total weight and divides it by the number of parts, the so-called reference quantity. Counting is then carried out on the basis of the calculated average piece weight.

- The higher the reference quantity the higher the counting exactness.
- Especially high reference must be selected for small parts or parts with considerably different sizes.
- Smallest counting weight see table „Technical data“

Procedure:

1. Calculate reference

Reference piece quantity 5, 10, 20 or 50:

⇨ If necessary, put on and tare the weighing container.

⇨ Put on the desired quantity of reference pieces.

⇨ Press the TARE button and keep it pressed until the first menu item < rEF > will be displayed

⇨ Confirm with ➔ button.

⇨ Use the navigation keys ↓↑ to select the reference piece quantity (5, 10, 20, 50) according to the placed reference and confirm with the ➔ button.

⇨ The balance will calculate the average item weight and then displays the quantity of pieces.

⇨ Remove reference weight. The balance is now in parts counting mode counting all units on the weighing pan.

Reference piece quantity user-defined:

⇨ If necessary, put on and tare the weighing container.

⇨ Put on the desired quantity of reference pieces.

⇨ Press the TARE button and keep it pressed until the first menu item < rEF > will be displayed

⇨ Confirm with ➔ button.

⇨ Use the navigation keys ↓↑ to select the reference piece quantity < FrEE > and confirm with ➔ button.

⇨ The numeric input window appears.

⇨ Enter and confirm the quantity of the placed reference parts, numeric input see chap. 3.2.2

⇨ The balance will calculate the average item weight and then displays the quantity of pieces.

⇨ Remove reference weight. The balance is now in parts counting mode counting all units on the weighing pan.

Numerical input of the reference piece count::

⇨ In Iweighing mode, press and hold the TARE key until the first menu item < rEF > is displayed.

⇨ Confirm with the ➔ key..

⇨ Select unit and confirm with ➔ key

⇨ Select the input of the piece weight <input> with the navigation keys ↓↑and confirm with ➔-key.

⇨ Enter the desired reference sample quantity and confirm with the TARE key.

⇨ The reference sample quantity is now set

2. Parts counting

⇨ Put the empty container on the weighing pan and press the TARE button. The container is tared, the zero display will appear.

⇨ Fill the counting quantity. The piece quantity is shown in the display.

i With the ⮌- key you can switch between number of items and weight display

12 Application <Check weighing>

Shouldn't the application <Check weighing> already be enabled, select the menu setting < MODE ➡ CHECK >, see chap. 9

12.1 Application-specific settings

+ Navigation in menu see chap. 13.1

12.1.1 Overview

⇨ Press the TARE button and keep it pressed until the first menu item < LIMITS > will be displayed

Level 1	Level 2	Level 3	Description / Chapter
LIMITS	LIMLOW	Lower limit value, numeric input see chap. 3.2.2	
	LIMUPP	Upper limit value, numeric input see chap. 3.2.2	
PTARE PRE-TARE	ACTUEL	Take over the placed weight as PRE-TARE value, see chap. 10.1.2.1	
	MANUEL	Numeric input of the tare weight, see chap. 10.1.2.2.	
	CLEAR	Delete PRE-TARE value	

12.2 Using the application

With the application <**Check weighing**> you can set an upper or lower limit value and thus ensure that the weighed load remains exactly within the set tolerance limits.

When limit values are exceeded below or above, an optical and acoustic signal will be displayed (if enabled in menu)

Optical signal:

The tolerance marks provide the following information:

HI	Target quantity exceeds defined tolerance
OK	Target quantity within defined tolerance
LO	Target quantity below defined tolerance

Audio signal:

The acoustic signal depends on the menu setting
< SEtuP ➡ bEEPEr >, see chap. 13.3.1.

Procedure:

1. **Define upper and lower limit value:**

   ⇨ Make sure that the balance is in Checkweighing mode. If necessary, switch over with the Select weighing unit for checkweighing mode

⇨ Press the TARE button and keep it pressed until the first menu item < L iN it > will be displayed.

⇨ Confirm with ➔ button. < L iNLoH > will be displayed.

⇨ Press ➔ button to confirm, the numeric input window for entering the lower limit value will appear. Enter the lower limit value for the target piece quantity (numeric input see chap. 3.2.2) and confirm with ➔ button.
The balance returns to the < L iNLoH > menu.

⇨ Use the navigation keys ⇵ to select the setting < L iNuPP > and confirm with ➔ button.

⇨ The numeric input window for entering the upper limit value < will appear. Enter the upper limit value for the target piece quantity (numeric input see chap. 3.2.2) and confirm with ➔ button. < L iNuPP > will appear.

⇨ Press repeatedly ➔ button to exit menu.

Finished the setting works, the weighing balance is ready now for check weighing.

2. **Start tolerance check:**

⇨ Place the weighed material and check by means of the tolerance marks / acoustic signal if the weighed material is within the defined tolerance.

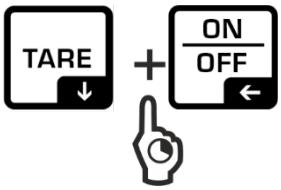
Load below specified tolerance	Load within specified tolerance	Load exceeds specified tolerance
		

English

13 Menu

13.1 Navigation in the menu

Call up menu:

Application menu	Setup menu
	
Press the TARE button and keep it pressed until the first menu item will be displayed	Press the TARE and ON/OFF button at the same time and keep it pressed until the first menu item will be displayed

Select and adjust parameter:

Scrolling on one level	Use the navigation buttons to select the individual menu blocks one by one. Use the navigation key 🡻 to scroll down. Use the navigation key 🡹 to scroll up.
Activate menu item / **Confirm selection**	Press navigation key 🡺
Menu level back / back to weighing mode	Press navigation key 🡸

13.2 Application menu

The application menu allows you a fast and targeted access to the respectively selected application (see chap. 9.).

- An overview of the application-specific settings you will find in the description of the respective application.

13.3 Setup menu

In the setup menu you have the possibility to adapt the behaviour of the balance to your requirements (e.g. environmental conditions, especial weighing processes).

These settings are global and do not depend on the selected application.

13.3.1 Overview < SEtuP >

Level 1	Level 2	Level 3	Level 4 / Description
		Description	
CAL Adjustment	CALEHt	➔ For external adjustment, see chap. 0	
	CALEud	➔ External adjustment, user-defined, see chap. 7.9.2	
	GrAAdJ	➔ Constant of gravity adjustment place numeric input see chap. 3.2.2	
	GrAuSE	➔ Constant of gravity installation place, numeric input see chap. 3.2.2	
CoM Communication	r5232 ⇕ uSb-d	bAud	300
			600
			1200
			2400
			4800
			9600
			14400
			19200
			38400
			57600
			115200
			128000
			256000
		dAtA	7db itS
			8db itS
		PAr itY	nonE
			odd
			EUEn
		StoP	1b it
			2b itS
		hAndSh	nonE
		Protoc	AcP
	bLAn	on	
		oFF	

English

Pr int Data output	intFcE	rs232	RS 232 interface	
		usb-d	USB device interface	
	SuM	on	Switch on / off add-up mode, see chap. 14.4.1	
		oFF		
	PrModE	MAnuAL	on, oFF Data output by pressing the **PRINT** button (see chapter 14.4.2)	
		Auto	on, oFF Automatic data output with stable and positive weighing value see chap.14.4.3. Another output only after zero display and stabilisation, depending on the settings < ZrAnGE >, selectable **(off, 1, 2, 3,4,5)**	
		cont	on, oFF Continuous data output depending on the set time interval < SPEEd >, see chap. 14.4.4	
		FormAt	Short	Standard measuring protocol
			LonG	Detailed measuring protocol
		LAYout	Not documented	
bEEPEr Audio signal	KEYS	oFF	Switch on / off acoustic signal by pressing button	
		on		
	chEcK	oK	oFF	Acoustic signal off
			SLoW	Slow
			Std	Standard
			FASt	Fast
			cont.	Continuous
		LoW	oFF	Acoustic signal off
			SLoW	Slow
			Std	Standard
			FASt	Fast
			cont.	Continuous
		HIGH	oFF	Acoustic signal off
			SLoW	Slow
			Std	Standard
			FASt	Fast
			cont.	Continuous

AutoFF Automatic switch-off function	ModE	oFF	Automatic switch-off function switched off
		Auto	The balance is automatically switched-off according to the time without load change or without operation defined in menu item < t iME >
		onLy0	Automatic switch-off only with zero display
	t iME	30 s	After the set time without load change or operation the balance will switch off automatically
		1 0 in	
		2 0 in	
		5 0 in	
		30 0 in	
		60 0 in	
buttons Function button allocation	**Not documented**		
bL iGht Display background illumination	ModE	ALWAYS	Background lighting of display is switched on permanently
		t iMEr	The background illumination is automatically switched-off according to the time without load change or without operation defined in menu item < t iME >
		nobL	Display background illumination always switched off
	t iME	5 s	The background illumination of the display will switch off automatically after the set time without load change or operation
		10 s	
		30 s	
		1 0 in	
		2 0 in	
		5 0 in	
		30 0 in	
tArErG Taring range	100% ⇕ 10%	Defining the maximum taring range, you can choose 10–100%. To enter the numerical value	

English

0tr AcA Maintaining zero	on	Automatic maintaining zero [≤ 3 *d*]
	oFF	If the amount of the weighed material is reduced or increased significantly, the scale's "stabilizing and compensating" mechanism can result in displaying erroneous weighing results! (e.g.: slow outflow of the liquid from the container placed on the scale, evaporating processes). When dosing with small weight fluctuations, it is recommended to switch this function off.
rESEt	Reset balance settings to factory settings	

English

14 Interfaces

Via the interfaces weighing data may be exchanged with connected peripheral devices.

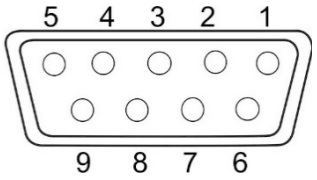
Issue may be made to a printer, PC or control displays. In the same way, control commands and data inputs may occur via the connected devices (such as PC, keyboard, barcode reader).

The available interfaces can be used in a parallel manner.

14.1 Interface cable (RS232)

Connection

Sub-D bushing 9 pol. (bushing = to balance)



Pin 1: VB
Pin 2: TXD (RS232)
Pin 3: RXD (RS232)
Pin 4: VCC
Pin 5: Signal ground (RS232)
Pin 6: Low Signal (signal light “IN4”)
Pin 7: Hi Signal (signal light ”IN2”)
Pin 8: OK Signal (signal light ”IN1”)
Pin 9: No assignment

KERN Standard setting

- 8 Data bit
- 1 Stop bit
- No parity

English

14.2 Connect printer

⇨ Turn off scale and printer.

⇨ Use a suitable cable to connect the weighing balance to the interface of the printer.
Faultless operation requires an adequate KERN interface cable (optional).

⇨ Turn on scale and printer.

Communication parameters (baud rate, bits and parity) of balance and printer must match; see menu item < conf ➡ rs232. >. (chap. 13.3.1)

Printout examples KERN YKB-01N

N:	S S	2.998 kg	Net weight (stable weighing value)
T:		0.3000 kg	Tare weight
G		3.2999 kg	Gross weight

N:	S D	2.998 kg	Net weight (instable weighing value)
T:		0.3000 kg	Tare weight
G		3.2999 kg	Gross weight

N:	S D	3.2998 kg	Net weight (instable weighing value)
T:		0.0000 kg	Tare weight
G:		3.2998 kg	Gross weight
PCS:		33 pcs	Quantity placed on balance
UW:		0.1000 kg	Average piece weight
REF:		10 pcs	Reference quantity

14.3 KCP-interface commands

A detailed description you will find in the „KERN Communications Protocol“ manual, available in the download area on our KERN homepage.

14.4 Issue functions

14.4.1 Add-up mode < SUM >

With this function the individual weighing values are added into the summation memory by pressing a button and edited, when an optional printer is connected.

Activate function:

- ⇨ In Setup menu invoke the menu setting < Pr int ➡ SUM> and confirm with button ➔.
- ⇨ Use the navigation keys ⇵ to select the setting < on > and confirm with ➔ button.
- ⇨ To exit the menu press the navigation key ⬅ repeatedly

ℹ Condition: **Menu setting** ▯ PrModE ➡ MAnuAL ➡ on >

Add-up weighed goods:

- ⇨ If required, place empty container on scale and tare.
- ⇨ Place first good to be weighed on balance. Wait until stability display (◣◢) appears and then press the PRINT button. The display changes to < SUM 1 >, followed by the current weighing value. The weighing value is stored and edited by the printer. The symbol ∑ pops up. Remove the weighed good.
- ⇨ Place second good to be weighed on balance. Wait until stability display (◣◢) appears and then press the PRINT button. The display changes to < SUM2 >, followed by the current weighing value. The weighing value is stored and edited by the printer. Remove the weighed good.
- ⇨ Add-up more weighed goods as described above.
- ⇨ You can repeat this process until the capacity of the scales is exhausted.

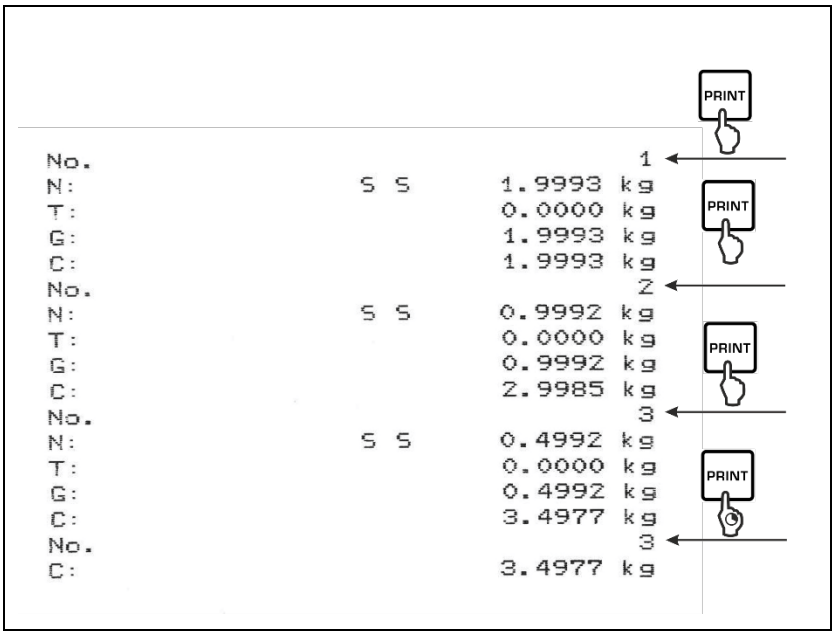
Display and edit sum „Total“:

- ⇨ Press the **PRINT** key long time. The number of weighings and the total weight are edited. The sum memory is deleted; the symbol [.∑.] extinguishes.

English

Sample log (KERN YKB-01N):

Menu setting PrModE ➡ ForMAt ➡ short



First weighing

Second weighing

Third weighing

Number of weighings/
Total sum

English

14.4.2 Data output after pressing the PRINT button < MAnuAL >

Activate function:

- ⇨ In Setup menu invoke the menu setting <Pr int➡ PrModE> and confirm with button ➔.
- ⇨ For a manual data output select the menu setting < MAnuAL > with the navigation keys ↓↑ and confirm with the ➔ button.
- ⇨ Use the navigation keys ↓↑ to select the setting < on > and confirm with ➔ button.
- ⇨ To exit the menu press the navigation key ← repeatedly.

Place goods to be weighed on balance:

- ⇨ If required, place empty container on scale and tare.
- ⇨ Place goods to be weighed on balance. The weighing value is edited by pressing the PRINT button.

14.4.3 Automatic data output < AUto >

Data output happens automatically without having to press the **PRINT**-key as soon as the corresponding output condition has been met, dependent on the setting in the menu.

Enable function and set the output condition:

- ⇨ In Setup menu invoke the menu setting < Pr int➡ PrModE > and confirm with button ➔.
- ⇨ For an automatic data output select the menu setting < AUto > with the navigation keys ↓↑and confirm with the ➔ button.
- ⇨ Use the navigation keys ↓↑ to select the setting < on > and confirm with ➔ button. < CHAnGE > is displayed.
- ⇨ Confirm with ➔ button and set the required output condition with the navigation keys ↓↑.
- ⇨ Confirm with ➔ button.
- ⇨ To exit the menu press the navigation key ➔ repeatedly.

Place goods to be weighed on balance:

- ⇨ If required, place empty container on scale and tare.
- ⇨ Place weighed goods and wait until the stability display (◣◢) appears. The weighing value is issued automatically.

14.4.4 Continuous data output < cont >

Enable function and set the output interval:

- ⇨ In Setup menu invoke the menu setting < Pr int➡ PrModE > and confirm with ➔ button.
- ⇨ For a continuous data output select the menu setting < cont > with the navigation keys ↓↑and confirm with the ➔ button.
- ⇨ Use the navigation keys ↓↑ to select the setting < on > and confirm with ➔ button.
- ⇨ <bPEdd> is displayed.
- ⇨ Acknowledge with the ➔ button and set the required time interval with the navigation keys ↓↑ (numeric input see chap. 3.2.2)
- ⇨ To exit the menu press the navigation key ➔ repeatedly.

Place goods to be weighed on balance.

- ⇨ If required, place empty container on scale and tare.
- ⇨ Place goods to be weighed on balance.
- ⇨ The weighing values are issued according to the defined interval.

English

Sample log (KERN YKB-01N):

```
S D      1.9997 kg
S D      1.9999 kg
S D      1.9999 kg
S D      1.9999 kg
S S      2.0000 kg
S S      2.0000 kg
S S      2.0000 kg
S S      2.0000 kg
S D      1.9998 kg
S D      1.9998 kg
S D      2.0002 kg
S D      2.4189 kg
S D      2.9998 kg
S D      2.9996 kg
S D      2.9996 kg
S D      2.9997 kg
S D      2.9997 kg
S S      2.9996 kg
         2.9996 kg
```

14.5 Data format

⇨ In Setup menu invoke the menu setting < PrInt➡ PrModE > and confirm with button ➔.

⇨ Use the navigation keys ↓↑ to select the menu setting < FormAt > and confirm with ➔ button.

⇨ Use the navigation buttons ↓↑ to select the desired setting.
Options:

< short >Standard measuring protocol

< LonG > Detailed measuring protocol

⇨ Confirm setting with ➔ button.

⇨ To exit the menu press the navigation key ➔ repeatedly.

Sample log (KERN YKB-01N):

FormAt ➡ short	FormAt ➡ LonG
N: S S 2.0000 kg T: 0.5000 kg G: 2.5000 kg	N: S D 2.0000 kg Tara weight after x: 0.5000 kg Gross weight: 2.5000 kg

15 Servicing, maintenance, disposal

Before any maintenance, cleaning and repair work disconnect the appliance from the operating voltage.

15.1 Cleaning

Please do not use aggressive cleaning agents (solvents or similar agents), but a cloth dampened with mild soap suds. Ensure that no liquid penetrates into the device. Polish with a dry soft cloth.

Loose residue sample/powder can be removed carefully with a brush or manual vacuum cleaner.

Spilled weighing goods must be removed immediately.

15.2 Servicing, maintenance

⇨ The appliance may only be opened by trained service technicians who are authorized by KERN.

⇨ Before opening, disconnect from power supply.

15.3 Disposal

Disposal of packaging and appliance must be carried out by operator according to valid national or regional law of the location where the appliance is used.

16 Instant help

In case of an error in the program process, briefly turn off the balance and disconnect from power supply. The weighing process must then be restarted from the beginning.

Fault	Possible cause
The displayed weight does not glow.	• The balance is not switched on. • The mains supply connection has been interrupted (mains cable not plugged in/faulty). • Power supply interrupted.
The displayed weight is permanently changing	• Draught/air movement • Table/floor vibrations • Weighing pan has contact with other objects. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)
The weighing result is obviously incorrect	• The display of the balance is not at zero • Adjustment is no longer correct. • The balance is on an uneven surface. • Great fluctuations in temperature. • Warm-up time was ignored. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)