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# Operating instructions Industrial Scales

## KERN IFS

Version 1.0  
11/2009  
GB



IFS-BA-e-0910



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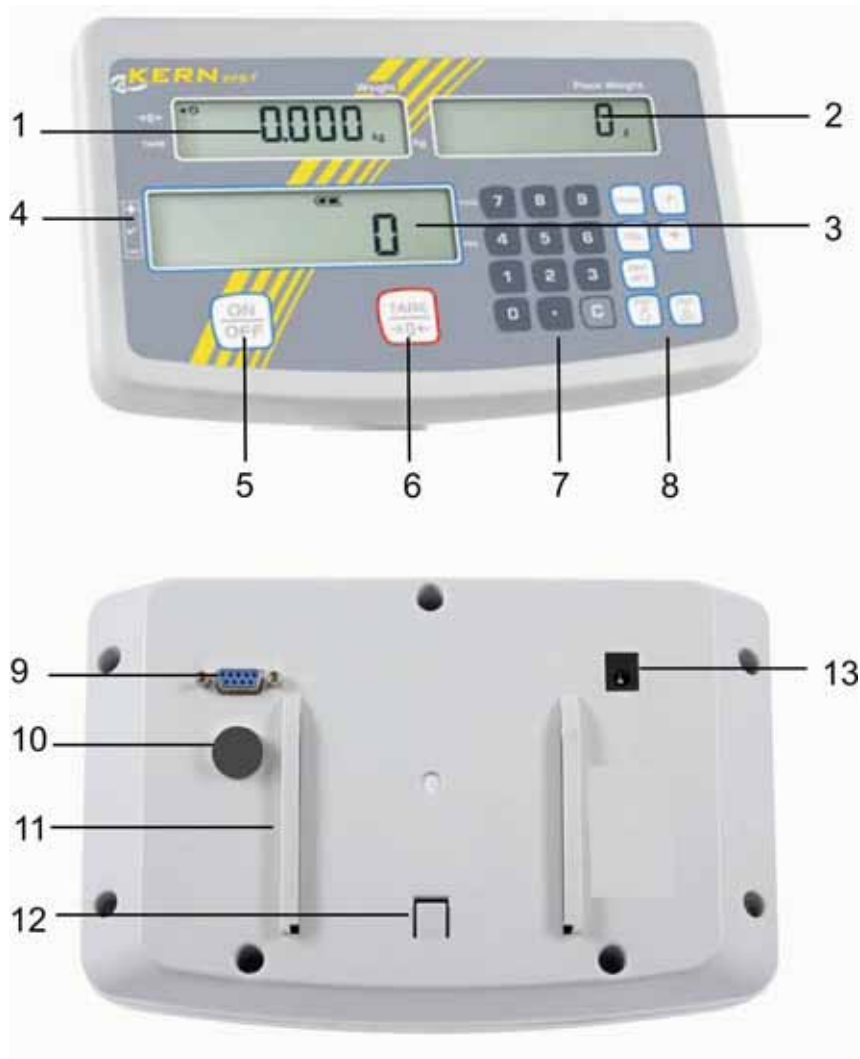
## 1 Technical Data

<b>KERN</b>	<b>IFS 15K0.2D</b>	<b>IFS 30K0.2DL</b>	<b>IFS 60K0.5D</b>
Readability (d)	0.2 g /0.5 g	0.2 g /0.5 g	0.5 g /1 g
Weighing range (max)	6 kg /15 kg	12 kg /30 kg	30 kg /60 kg
Reproducibility	0.2 g /0.5 g	0.2 g /0.5 g	0.5 g /1 g
Linearity	± 0.8g / 2 g	± 0.8g / 2 g	± 2 g / 4 g
Recommended adjustment weight, not added (class)	15 kg (F2)	30 kg (F2)	60 kg (F2)
Minimum piece weight	1 g	2 g	4 g
Warm-up time	2 h		
Stabilization time (typical)	3 s		
Ambient temperature	0°C – 40°C		
Humid environment	max. 80 % (not condensing)		
Electric Supply	Input voltage 220 V – 240 V, 50 Hz		
	Power pack secondary voltage 9V, 800mA		
Rechargeable battery	Option		
Dimensions display unit (B x D x H) mm	260 x 150 x 65		
Weighing surface mm	300 x 240	400 x 300	400 x 300
Net weight kg	6.5	11	11
Interface	RS232		

<b>KERN</b>	<b>IFS 60K0.5DL</b>	<b>IFS 120K1D</b>
Readability (d)	0.5 g /1 g	1 g /2 g
Weighing range (max)	30 kg /60 kg	60 kg /120 kg
Reproducibility	0.5 g /1 g	1 g /2 g
Linearity	± 2 g / 4 g	± 4 g / 8 g
Recommended adjustment weight, not added (class)	60 kg (F2)	120 kg (F2)
Minimum piece weight	4 g	8 g
Warm-up time	2 h	
Stabilization time (typical)	3 s	
Ambient temperature	0°C – 40°C	
Humid environment	max. 80 % (not condensing)	
Electric Supply	Input voltage 220 V – 240 V, 50 Hz	
	Power pack secondary voltage 9V, 800mA	
Rechargeable battery	Option	
Dimensions display unit (B x D x H) mm	260 x 150 x 65	
Weighing surface mm	500 x 400	
Net weight kg	18	
Interface	RS232	













<b>KERN</b>	<b>IFS 150K2DL</b>	<b>IFS 300K5D</b>
Readability (d)	2 g /5 g	5 g /10 g
Weighing range (max)	60 kg /150 kg	150 kg /300 kg
Reproducibility	2 g /5 g	5 g /10 g
Linearity	± 8 g / 20 g	± 20 g / 40 g
Recommended adjustment weight, not added (class)	150 kg (F2)	300 kg (F2)
Minimum piece weight	10 g	20 g
Warm-up time	2 h	
Stabilization time (typical)	3 s	
Ambient temperature	0°C – 40°C	
Humid environment	max. 80 % (not condensing)	
Electric Supply	Input voltage 220 V – 240 V, 50 Hz	
	Power pack secondary voltage 9V, 800mA	
Rechargeable battery	Option	
Dimensions display unit (B x D x H) mm	260 x 150 x 65	
Weighing surface mm	650 x 500	
Net weight kg	24	
Interface	RS232	

## 2 Appliance overview display device



1. Display "weight"
2. Display "average item weight"
3. Display "quantity"
4. Tolerance margin, see chpt 7.6
5. ON/OFF key
6. Tare and zero set key
7. Numeric keys
8. Function keys
9. RS-232
10. Input connection load cell cable
11. Guide rail support base / stand
12. End stop support base / stand
13. Mains adapter connection

## 2.1 Keyboard overview

Button	Function
	<ul style="list-style-type: none"> <li>▪ Turn on/off</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Taring (&gt;2 % Max)</li> <li>▪ Zero setting (&lt; 2 % Max)</li> <li>• Change menu settings</li> </ul>
	<ul style="list-style-type: none"> <li>• For entering of item weight by weighing see chpt 7.8</li> </ul>
	<ul style="list-style-type: none"> <li>• For numeric entry of item weight see chpt 7.9</li> </ul>
	<ul style="list-style-type: none"> <li>• Reference optimisation</li> </ul>
	<ul style="list-style-type: none"> <li>• Set / call limits for tolerance control</li> </ul>
	<ul style="list-style-type: none"> <li>• Addition in total memory</li> </ul>
	<ul style="list-style-type: none"> <li>• Calculate weighing data via interface</li> </ul>
	<ul style="list-style-type: none"> <li>• Call function menu</li> <li>• How to select menu items</li> <li>• Display total quantity of items</li> </ul>
	<ul style="list-style-type: none"> <li>• Numeric keys</li> </ul>
	<ul style="list-style-type: none"> <li>• Decimal point</li> </ul>
	<ul style="list-style-type: none"> <li>• Delete key</li> </ul>

## 2.2 Overview of displays

### • Display weight

Here the weight of your goods is displayed in [kg].

Indicator [◀] next to symbol displays:

TARE	Net weight
○	Stability display
→0←	Zeroing display



- **Display average piece weight**

Here the average reference weight of a sample is displayed in [g]. This value is either numerically entered by user or calculated by weighing on balance.


- **Display quantity**

Here the current piece quantity (PCS = pieces) or in totalizing mode the sum Sum of the placed parts is displayed, see chapter 7.10.

**Indicator [◀] next to symbol displays:**

<b>TOTAL</b>	Total number of pieces
<b>+</b>	Target quantity of items above upper tolerance limit
<b>✓</b>	Target quantity of items within tolerance limits
<b>-</b>	Target quantity of items below lower tolerance limit

- **Other displays**

	<ul style="list-style-type: none"> <li>• Power supply via line adapter</li> <li>• Status display battery (optional)</li> </ul>
<b>BUSY</b>	<ul style="list-style-type: none"> <li>• Saving / calculating weighing data</li> </ul>
<b>LIGHT</b>	<ul style="list-style-type: none"> <li>• Piece below minimum weight of piece</li> </ul>

### 2.3 Audio signal

1 x briefly	Confirm by pressing key
1 x longer	Saving was successful
2 x briefly	Invalid entry
3 x briefly	Missing entry
continuous	Tolerance control depends on For menu setting, see chpt 7.11

### 3 Basic Information (General)

#### 3.1 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 plate. As soon as a stable weighing value is reached the weighing value can be read.

#### 3.2 Improper Use

Do not use balance for dynamic weighing. In the event that small quantities are removed or added to the material to be weighed, incorrect weighing results can be displayed due to the “stability compensation“ in the balance. (Example: Slowly draining fluids from a container on the balance.)

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

Impacts and overloading exceeding the stated maximum load (max) of the weighing plate, minus a possibly existing tare load, must be strictly avoided. Balance may be damaged.

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.

#### 3.3 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 or damage by media, liquids, natural wear and tear
- The appliance is improperly set up or incorrectly electrically connected
- The measuring system is overloaded

### 3.4 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](http://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.

## 4 Basic Safety Precautions

### 4.1 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.

### 4.2 Personnel training

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

## 5 Transportation & Storage

### 5.1 Testing upon acceptance

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

### 5.2 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.
- ⇒ Evt. Reattach possibly supplied transport securing devices.
- ⇒ Secure all parts such as the glass wind screen, the weighing platform, power unit etc. against shifting and damage.

## 6 Unpacking and implantation

### 6.1 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.

#### On the installation site observe the following:

- 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, vapors and dust;
- Do not expose the balance to strong humidity for extended periods. 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.

Major display deviations (incorrect weighing results) may be experienced should electromagnetic fields (e.g. due to mobile phones or radio equipment), static electricity accumulations or instable power supply occur. Change location or remove source of interference.

### 6.2 Unpacking/implantation

Carefully remove the weighing scale from packaging, remove plastic cover and place it in the designated work area.

Mount the display unit in a way that facilitates operation and where it is easy to see.

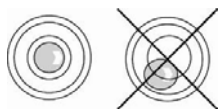
### 6.3 Scope of delivery / serial accessories:

- Balance
- Mains power supply
- Support base incl. wall bracket
- Protective cover
- Operating instructions

Accurate weighing results require a weighing bridge with perfect horizontal alignment. During initial installation and after each change of work area it is necessary to level the weighing bridge.

⇒ As the spirit level is underneath the weighing platform it has to be removed.

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



### 6.4 Mains connection




Power is supplied via the external mains adapter. The stated voltage value must be the same as the local voltage.



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

## 6.5 Adjustment

As the acceleration value due to gravity is not the same at every location on earth, the balance 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 balance 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 balance periodically in weighing operation.


- i**
  - The weight to be used depends on the capacity of the scale. Carry out adjustment as near as possible to the scale's maximum weight. Info about test weights can be found on the Internet at: <http://www.kern-sohn.com>
  - Observe stable environmental conditions. For warm-up time required for stabilisation see chpt 1.

- ⇒ Unload and reset to zero the balance.
- ⇒ In weighing mode press and hold  for approx. 5-6 sec until **FUNC** followed by **CAL** appears. Release button.
- ⇒ Keep key  pressed down and press  briefly then release both keys simultaneously. „on. 0“ appears.  
Ensure that there are no objects on the weighing plate.
- ⇒ When “on F.S“ is displayed. carefully place adjusting weight in the centre of the weighing plate.
- ⇒ Adjusting process starts, “on. F.S“ is flashing.
- ⇒ After successful adjustment the balance automatically returns to weighing mode.


- i**
  - An adjusting error or incorrect adjusting weight will be indicated by the error message; repeat adjustment procedure.
  - You can cancel adjustment by pressing any key with the exception of  and .

## 7 Operation

### 7.1 Start-up


- ⇒ Press  and the instrument will carry out a self-test. As soon as the weight display appears, the instrument will be ready to weigh.

### 7.2 Switching Off

- ⇒ Press  and the display will disappear.

### 7.3 Zeroing

Resetting to zero corrects the influence of light soiling on the weighing plate.  
Resetting range  $\pm 2\%$  max.

- ⇒ To unload the weighing system
- ⇒ Press , the zero display as well as the indicator [◀] next to  $\rightarrow 0 \leftarrow$  will appear.

### 7.4 Simple weighing

- ⇒ Place goods to be weighed on balance.
- ⇒ Wait for stability display [O].
- ⇒ 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 maximum loads is indicated by the display of "O-err", and an audio sound. Unload weighing system or reduce preload.

### 7.5 Weighing with tare

- ⇒ Deposit weighing vessel. After successful stop check press the  button. Zero display and the indicator [◀] next to TARE appear. The weight of the container is now internally saved.
- ⇒ Weigh the material, the net weight will be indicated.
- ⇒ The weight of the weighing container will be displayed as a minus number after removing the weighing container.
- ⇒ The tare procedure can be repeated as many times as necessary, for example with initial weighing of several components for a mix (add-on weighing). The limit is reached when the total weighing range capacity is full.
- ⇒ To delete the tare value, remove load from weighing plate and press .

## 7.6 PRE-TARE (Numerical input of tare)

- ⇒ Unload and reset to zero the balance.
- ⇒ Enter the established tare weight including decimal point by pressing the numeric keys and press . The entered weight will be stored as tare weight and displayed with negative sign.
- ⇒ Put the filled weighing container on the balance, the net weight will be displayed.
- ⇒ The tare value remains stored until it will be deleted by .




- The tare value will be rounded off according to the readability of the weighing scales.
- Tare range: Max – 1d


## 7.7 Counting

During piece counting parts can either be counted into a container or out of a container. To count a greater number of parts the average weight per part has to be determined with a small quantity (reference quantity). The larger the reference quantity, the higher the counting exactness.

High reference must be selected for small parts or parts with considerably different sizes.



- The average piece weight can only be determined by stable weighing values.
- If weighing values are under zero, the piece counter display shows a negative number of items.
- The message **LIGHT** appearing on the display indicates that load falls below minimum weight value.
- Delete incorrect entries by pressing .
- The accuracy of an average item weight can be improved at any time during additional counting processes.


For this purpose add additional items and press . After the reference optimization sounds a signal tone. As the additional pieces increase the base for the calculation, the reference also becomes more exact.



## 7.7.1 Determination of the average piece weight by weighing

### Set reference

- ⇒ Reset balance to zero or tare the empty weighing container if necessary.
- ⇒ Place on the weighing plate a known number (e.g. 10 items) of individual pieces as a reference.  
Wait for the stability display, then enter the number of individual items via the numeric keypad.

Acknowledge by .


The balance determines the average piece weight.

### Count the items

- ⇒ Tare if necessary, place weighing good and read off the number of items.

## 7.7.2 Numeric input of the average piece weight

### Set reference

- ⇒ Enter established item weight by pressing numeric keys and confirm by pressing .

### Count the items

- ⇒ Tare if necessary, place weighing good and read off the number of items.


## 7.8 Adding

### Adding-up during weight display:

Weight display:	Currently placed weight
Item weight display:	Selected item weight
Item quantity display:	Currently placed quantity of items

Select the reference weight and place the items to be counted.


Wait until the stability display appears and indicator [◀] next to **TOTAL** disappears.

Press  and the display value will be added to the summation memory.

Indicator [◀] next to **TOTAL** will appear.

The total item quantity will flash for approx. 3 sec. on the item quantity display.

Please note that the balance must be unloaded between the individual weighing procedures.


Press  to change to item display where the total item quantity is continuously displayed.

### Adding-up during item display:

Press  and the display changes to item display.

Select the reference weight and place the items to be counted.

Wait until the stability display appears and indicator [◀] next to **TOTAL** disappears.


Press  and the display value will be added to the summation memory.

The item quantity display shows the indicator [◀] next to **TOTAL** and the total for the added-up display values.

Weight display:	Currently placed item quantity
Item weight display:	Currently placed item quantity + total of added display values
Item quantity display:	Total of added-up display values

Please note that the balance must be unloaded between the individual weighing procedures.

### Delete weighing data:

⇒ When displayed, press total .

## 7.9 Tolerance control for target quantity

The weighing scales allow weighing of items within set limits in keeping with the target quantity. With this function one can also check if the weighing good is within a defined tolerance range. Reaching target quantity is indicated by an audio sound (if enabled in menu) and a visual signal (tolerance marker ◀) is displayed.

### Menu setting:

Target quantity with Tolerance	2 limits	For menu setting "13.Pn 2" see chpt 8
Exact target quantity without tolerance	1 limit	For menu setting "13.Pn 1" see chpt 8

### Audio signal:




The audio sound depends on the settings made in menu block "14bu", see chpt 8.

Options:

- 0 Acoustic signal turned off
- 1 Audio sound when load is within tolerance limits
- 2 Audio sound when load is beyond tolerance limits

### Optical signal:




The triangular tolerance marker [◀] in the display of the display shows whether the goods to be weighed are within the two tolerance limits.

	◀	Target quantity of items above upper tolerance limit
	◀	Target quantity of items within tolerance limits
	◀	Target quantity of items below lower tolerance limit


## Activate function

⇒ For menu setting “1 sel 2“ see chpt 8




## Set limit values

- ⇒ Press  and the lower limit **Li-LO** showing current settings will be displayed.
- ⇒ Press the numeric keys to enter item quantity for the lower limit and confirm by pressing .
- ⇒ The upper limit **Li-HI** showing current settings will be displayed.
- ⇒ Press the numeric keys to enter item quantity for the upper limit and confirm by pressing .

## Start tolerance control






- ⇒ For setting of item weight see chpt 7.7.1 or 7.7.2
- ⇒ Place load and wait until tolerance margin [] appears. The latter indicates whether load is within the two set limits.

## Display limits

- ⇒ Press  and the lower limit **Li-LO** showing current settings will be displayed.
- ⇒ Again press  and the upper limit **Li-HI** showing current settings will appear.
- ⇒ Instrument will return to weighing mode after  was pressed.

## 8 Function menu

### Navigation in the menu:

<b>Call up menu</b>	⇒ Press and hold  in weighing mode until <b>FUNC</b> appears. Release button. First menu item 1.SEL with current setting will be displayed.
<b>How to select menu items</b>	⇒ With help of  , the individual menu items can be selected one after the other.
<b>Change settings</b>	⇒ Change setting in selected menu item by pressing  .
<b>Confirm setting</b>	⇒ Once the desired setting has appeared on the display you can select the next menu item by  .
<b>Return to weighing mode</b>	⇒ Return to weighing mode by pressing any key apart from  . Display will show "busy" and afterwards return automatically to weighing mode.

## Overview:

Menu item		Available settings	
1.SEL.		1	Tolerance control re target quantity disabled
		2	Tolerance control re target quantity enabled
Menu setting "1.SEL2" only.	11.Co. Display conditions of the tolerance marker	1	Tolerance marker is always displayed, even if standstill control is not yet displayed.
	12.Li. Tolerance range	2	Tolerance marker is only displayed in connection with standstill control.
		0	Tolerance marker is only displayed above zero range.
	13.Pn. Number of limiting points	1	1- Limiting point (OK/ -)
		2	2- Limiting points (+/OK/-)
	14.bu. Audio signal	0	Audio sound during tolerance control disabled
		1	Audio sound when load is within tolerance limits
		2	Audio sound when load is beyond tolerance limits
2 A.O Automatic zero point correction (zero tracking)		0	Automatic zero tracking off
		1	Automatic limiting point correction on, 0.5 d
		2	Automatic limiting point correction on, 1 d
		3	Automatic limiting point correction on, 2 d
		4	Automatic limiting point correction on, 4 d
3. A.P. Automatic shutdown for battery operation		0	AUTO OFF function disabled
		1	Instrument will be switched off after 3 minutes of inactivity of display unit or weighing bridge.
4. If. RS232		0	disabled
		1	6-digit data format
		2	7-digit data format
		3	Standard printer setting (tPUP)
		4	Non-recorded (LP50)

For menu setting "4. If. 1 ~ 4" only	41. dA. Content of data output	1	such as item quantity / weight / item weight
		2	
		3	
		4	
		5	
		6	
	42.o.c. Output condition at interface	0	No data output
		1	Continuous data output
		2	Continuous data output stable weighing values
		3	Issue takes place after pressing the PRINT key.
		4	Output for stable weighing value after previous relief of balance
		5	One output for stable weighing value. No output for stable weighing values. Renewed output after stabilization
		6	One output for stable weighing value. Continuous output for instable weighing values.
		7	Output of stable weighing value after pressing the PRINT-key
	43. b.l. Baudrate	1	1200 bps
		2	2400 bps
		3	4800 bps
		4	9600 bps
	44. PA. Parity	1	No parity bit
		2	Odd parity
3		Even parity	
5. bkl. Display background illumination	1	Background illumination off	
	2	Automatic background illumination on when weighing pate is loaded	
	3	Continuous background lighting	

## **9 Service, maintenance, disposal**

### **9.1 Cleaning**

Before cleaning, disconnect the appliance from the operating voltage.

Please do not use aggressive cleaning agents (solvents or similar agents), but a cloth dampened with mild soap suds. Take care that the device is not penetrated by fluids and polish it 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.**

### **9.2 Service, maintenance**

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

Before opening, disconnect from power supply.

### **9.3 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.

Should other error messages occur, switch balance off and then on again. If the error message remains inform manufacturer.



## 10 Error messages, troubleshooting guide

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

<b>Fault</b>	<b>Possible cause</b>
The displayed weight does not glow.	<ul style="list-style-type: none"><li>• The display unit is not switched on.</li><li>• Mains power supply interrupted (mains cable defective).</li><li>• Power supply interrupted.</li><li>• (Rechargeable) batteries are inserted incorrectly or empty</li><li>• No (rechargeable) batteries inserted.</li></ul>
The displayed weight is permanently changing	<ul style="list-style-type: none"><li>• Draught/air movement</li><li>• Table/floor vibrations</li><li>• Weighing plate has contact with other objects.</li><li>• Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)</li></ul>
The weighing result is obviously incorrect	<ul style="list-style-type: none"><li>• The display of the balance is not at zero</li><li>• Adjustment is no longer correct.</li><li>• Great fluctuations in temperature.</li><li>• Warm-up time was ignored.</li><li>• Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)</li></ul>

<b>Error message</b>	<b>Possible cause</b>
<b><i>o-Err</i></b>	<ul style="list-style-type: none"><li>• Weighing range exceeded</li></ul>
<b><i>u-Err</i></b>	<ul style="list-style-type: none"><li>• Insufficient preload, e. g. missing weighing pan</li></ul>
<b><i>b-Err</i></b>	<ul style="list-style-type: none"><li>• Missing internal memory</li></ul>
<b><i>1-Err</i></b>	<ul style="list-style-type: none"><li>• Incorrect adjusting weight</li></ul>
<b><i>2-Err</i></b>	<ul style="list-style-type: none"><li>• Inappropriate adjustment</li></ul>
<b><i>l-Err</i></b>	<ul style="list-style-type: none"><li>• Item weight too low</li></ul>

Should other error messages occur, switch device off and then on again. If the error message remains inform manufacturer.