



KERN & Sohn GmbH

Ziegelei 1

D-72336 Balingen

E-Mail: info@kern-sohn.com

Tel: +49-[0]7433- 9933-0

Fax: +49-[0]7433-9933-149

Internet: www.kern-sohn.com

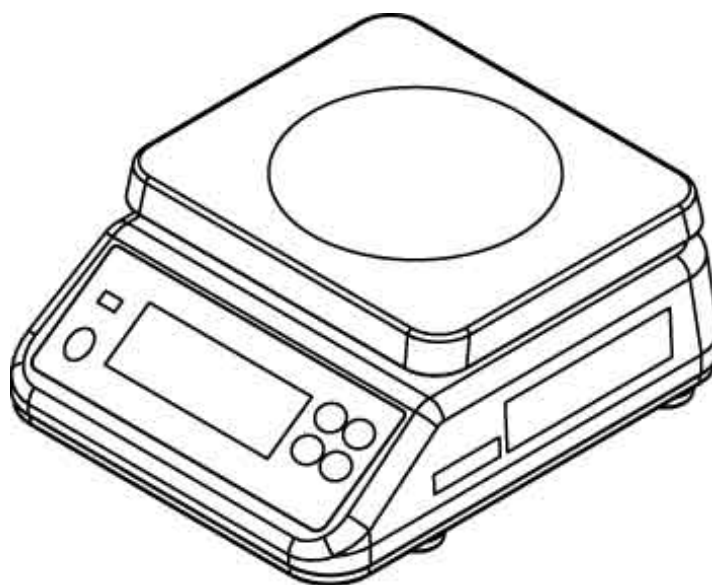
Operating Manual Compact balance

KERN FVN

Version 1.0

06/2008

GB



FVN-BA-e-0810



KERN FVN
Version 1.0 06/2008
Operating Manual
Compact Balance

Table of Contents

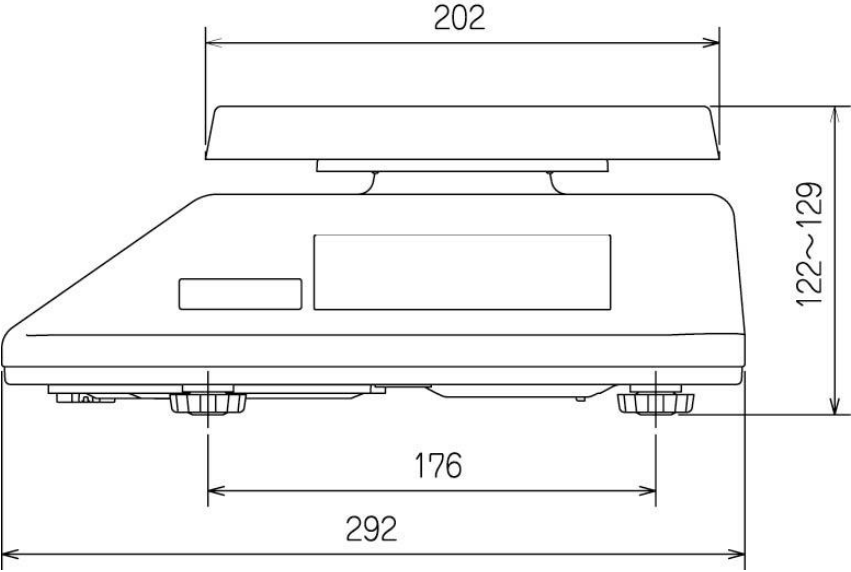
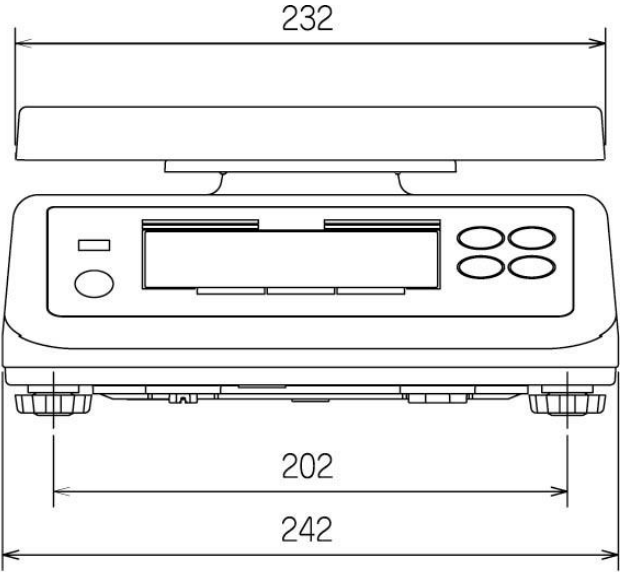
1	TECHNICAL DATA.....	4
1.1	Dimensions	5
2	DECLARATION OF CONFORMITY	6
3	BASIC INFORMATION (GENERAL)	8
3.1	Proper use.....	8
3.2	Improper Use	8
3.3	Warranty	8
3.4	Monitoring of Test Resources.....	8
4	BASIC SAFETY PRECAUTIONS	9
4.1	Pay attention to the instructions in the Operation Manual	9
4.2	Personnel training	9
5	TRANSPORTATION & STORAGE.....	9
5.1	Testing upon acceptance	9
5.2	Packaging.....	9
6	UNPACKING, SETUP AND COMMISSIONING	9
6.1	Installation Site, Location of Use.....	9
6.2	Unpacking and erection.....	11
6.2.1	Scope of delivery.....	12
6.3	Battery operation.....	13
6.4	Initial Commissioning	14
7	ADJUSTMENT	14
7.1	Adjusting non-verifiable models.....	15

7.2	Adjusting verified models	16
7.2.1	Geovalue setting	18
7.2.2	Adjustment using external weight (3-point adjustment)	19
7.2.3	Checking the balance verification settings	20
8	VERIFICATION	21
9	CONTROLS	23
9.1	Overview of display	23
9.2	Keyboard overview	24
10	BASIC OPERATION	25
10.1	Simple weighing	25
10.2	Weighing with taring	26
11	MENU OVERVIEW	27
12	OPERATING MODES	28
12.1	Fill to target	28
12.2	Weighing with tolerance range	33
12.3	Classification	38
13	MENU SETTINGS	44
13.1	Automatic shutdown function (Function "05")	44
13.2	Acoustic signal (Function "03")	45
13.3	Optical signal - flashing display (Function "07")	46
14	ERROR MESSAGES	47
15	SERVICE, MAINTENANCE, DISPOSAL	48
15.1	Cleaning	48
15.1.1	Membrane cleaning	49
15.2	Service, maintenance	49
15.3	Disposal	49
16	INSTANT HELP	50

1 Technical Data

KERN	FVN 6K1IP	FVN 6K2IPM	FVN 15K1IPM
Weighing range (max)	6 kg	6 kg	15 kg
Readability (d)	1 g	2 g	5 g
Tare range	6 kg	2.99 kg	7.475 kg
Minimum load (Min)	-	40 g	100 g
Verification value (e)	-	2 g	5 g
Verification class	-	III	III
Reproducibility	1 g	2 g	1 g
Linearity	± 2 g	± 2 g	± 5 g
Stabilization time (typical)	2 sec	2 sec	2 sec
Warm-up time	30 min	10 min	10 min
Adjustment weight 1/2 max. (Recommended class)	3 kg (M1)	3 kg (M1)	7.5 kg (M1)
Adjustment weight max. (Recommended class)	6 kg (M1)	6 kg (M1)	15 kg (M1)
Battery operation	4 x 1.5V size D, operating hours 1400 h		
Operating temperature	- 10° C + 40° C		
Humidity of air	30 95 %		
Weighing plate dimensions (stainless steel)	232 x 202 mm		
Casing dimensions	242 x 292 x 122 mm		
Weight kg (net)	3.7 kg		
IP protection	IP68 to DIN 60529		

1.1 Dimensions



2 Declaration of conformity



KERN & Sohn GmbH

D-72322 Balingen-Frommern

Postfach 4052

E-Mail: info@kern-sohn.de

Tel: 0049-[0]7433- 9933-0

Fax: 0049-[0]7433-9933-149

Internet: www.kern-sohn.de

Konformitätserklärung

EC-Konformitätserklärung
EC- Déclaration de conformité
EC-Dichiarazione di conformità
EC- Declaração de conformidade
EC-Deklaracja zgodności

EC-Declaration of -Conformity
EC-Declaración de Conformidad
EC-Conformiteitverklaring
EC- Prohlášení o shode
EC-Заявление о соответствии

D	Konformitäts- erklärung	Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.
GB	Declaration of conformity	We hereby declare that the product to which this declaration refers conforms with the following standards.
CZ	Prohlášení o shode	Tímto prohlašujeme, že výrobek, kterého se toto prohlášení týká, je v souladu s níže uvedenými normami.
E	Declaración de conformidad	Manifetamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes
F	Déclaration de conformité	Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.
I	Dichiarazione di conformità	Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.
NL	Conformiteit- verklaring	Wij verklaren hiermede dat het product, waarop deze verklaring betrekking heeft, met de hierna vermelde normen overeenstemt.
P	Declaração de conformidade	Declaramos por meio da presente que o produto no qual se refere esta declaração, corresponde às normas seguintes.
PL	Deklaracja zgodności	Niniejszym oświadczamy, że produkt, którego niniejsze oświadczenie dotyczy, jest zgodny z poniższymi normami.
RUS	Заявление о соответствии	Мы заявляем, что продукт, к которому относится данная декларация, соответствует перечисленным ниже нормам.

Electronic Balance: KERN FVN

Mark applied	EU Directive	Standards
CE	2004/108/EEC EMC 2006/95/EC	EN 55022 :1994+A1 : 1995+A2 :1997 Class B EN 60950-1 :2001

Date: 14.07.2008

Signature: _____

Gottl. KERN & Sohn GmbH
Management

Gottl. KERN & Sohn GmbH, Ziegelei 1, D-72336 Balingen, Tel. +49-[0]7433/9933-0, Fax +49-[0]7433/9933-149

Konformitätserklärung

EC-Konformitätserklärung
EC- Déclaration de conformité
EC-Dichiarazione di conformità
EC- Declaração de conformidade
EC-Deklaracja zgodności
EC-Declaration of -Conformity
EC-Declaración de Conformidad
EC-Conformiteitverklaring
EC- Prohlášení o shode
ЕС-Заявление о соответствии

D	Konformitäts- erklärung	Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt. Diese Erklärung gilt nur in Verbindung mit der Konformitätsbescheinigung einer benannten Stelle.
GB	Declaration of conformity	We hereby declare that the product to which this declaration refers conforms with the following standards. This declaration is only valid with the certificate of conformity by a notified body.
CZ	Prohlášení o shode	Tímto prohlašujeme, že výrobek, kterého se toto prohlášení týká, je v souladu s níže uvedenými normami. Toto prohlášení platí pouze ve spojitosti s deklarací o souladu uvedeného pracoviště se směrnicemi EU.
E	Declaración de conformidad	Manifestamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes. Esta declaración solo será válida acompañada del certificado de conformidad de una institución renombrada.
F	Déclaration de conformité	Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après. Cette déclaration est valide seulement avec un certificat de conformité d'un organisme notifié.
I	Dichiarazione di conformità	Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate. Questa dichiarazione sarà valida solo se accompagnata dal certificato di conformità della parte nominale.
NL	Conformiteit- verklaring	Wij verklaren hiermede dat het product, waarop deze verklaring betrekking heeft, met de hierna vermelde normen overeenstemt. Deze verklaring geldt uitsluitend in verbinding met het certificaat van overeenstemming vanwege een daarmee belaste instantie.
P	Declaração de conformidade	Declaramos por meio da presente que o produto no qual se refere esta declaração, corresponde às normas seguintes. Esta declaração vale só em combinação com um certificado de conformidade duma instituição nomeada.
PL	Deklaracja zgodności	Niniejszym oświadczamy, że produkt, którego niniejsze oświadczenie dotyczy, jest zgodny z poniższymi normami. Niniejsze oświadczenie obowiązuje wyłącznie w połączeniu z oświadczeniem o zgodności danego miejsca.
RUS	Заявление о соответствии	Мы заявляем, что продукт, к которому относится данная декларация, соответствует перечисленным ниже нормам. Эта декларация действует совместно с удостоверением соответствия названной лаборатории.

Electronic Balance: KERN FVN...M

EU Directive	Standards	EC-type-approval certificate no.	Issued by	Modell
90/384/EEC	EN 45501	T7438	NMI	FVN...M

Date: 14.07.2008

Signature:



Gottl. KERN & Sohn GmbH
Management

Gottl. KERN & Sohn GmbH, Ziegelei 1, D-72336 Balingen, Tel. +49-[0]7433/9933-0, Fax +49-[0]7433/9933-149

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 weighings. 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 balance, minus a possibly existing tare load, must be strictly avoided. Balance may be damaged 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.

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) 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

Keep all parts of the original packaging in case you need to return the appliance.

Only use original packaging for returning.

Before sending, disconnect all connected cables and loose/movable parts.

Attach possibly existing transport safeguards. Secure all parts, e.g. weighing plate, power unit etc., to prevent slipping and damage.

6 Unpacking, Setup and Commissioning

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.

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.

Special protection against moisture:

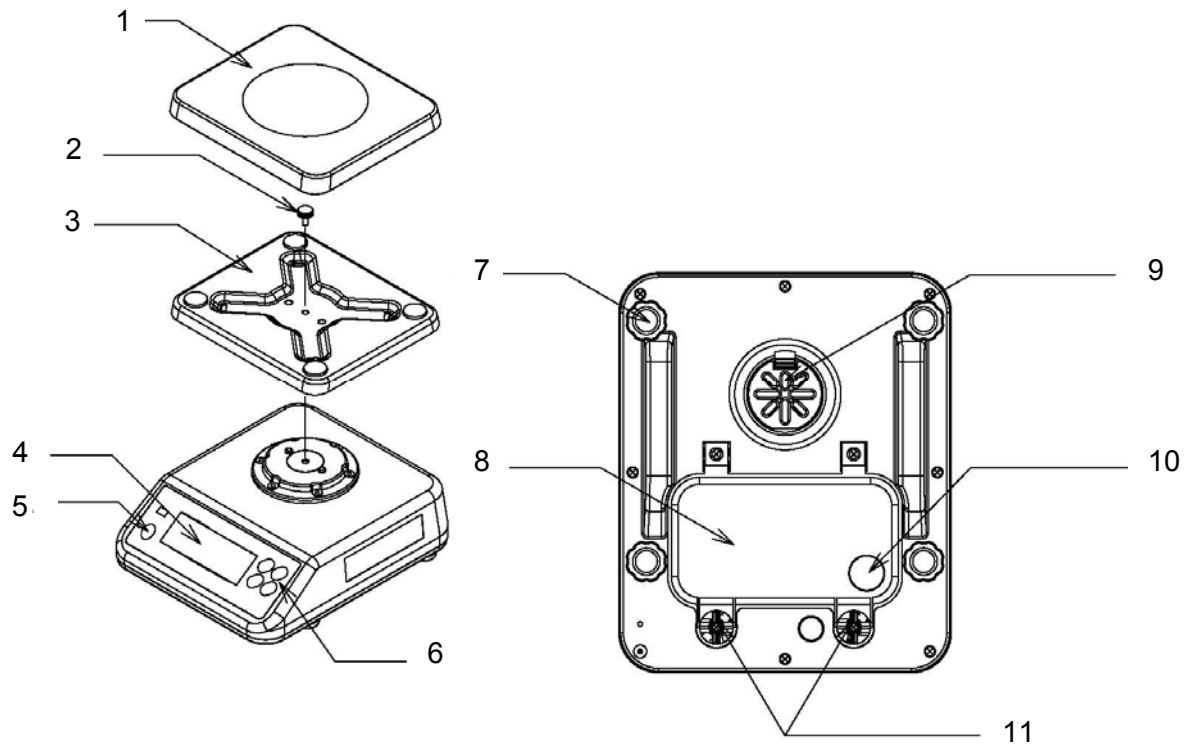
The KERN FVN in battery operation fulfills the requirements of the **DIN EN 60529** for the **protection type IP68**.

The KERN FVN is suitable for continuous deployment in wet conditions. Cleaning is possible by water jet and immersion. Dustproof in battery mode.

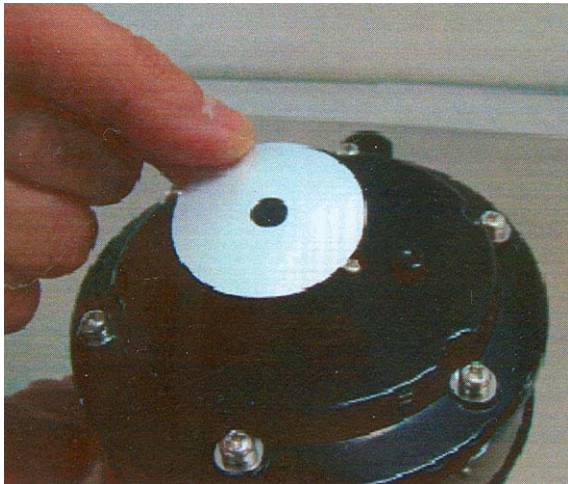
Major display deviations (incorrect weighing results) may be experienced should electromagnetic fields (e.g. due to mobile phones or radio equipment), static electricity accumulations or instable power supply occur. Change location or remove source of interference.

6.2 Unpacking and erection

Carefully remove the balance from the packaging, remove plastic cover and setup balance at the intended workstation.

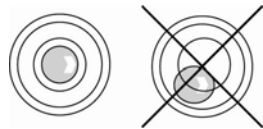


- 1 Weighing plate
- 2 Locking screw
- 3 Carrier weighing plate
- 4 Display
- 5 Bubble level
- 6 Keyboard
- 7 Footscrews
- 8 Battery cover
- 9 Membrane cover
- 10 Cable duct for optional storage battery operation with waterproof seal
- 11 Screws for battery cover



Ensure that the waterproof seal for the IP68 protection is fitted to the weighing plate holder.

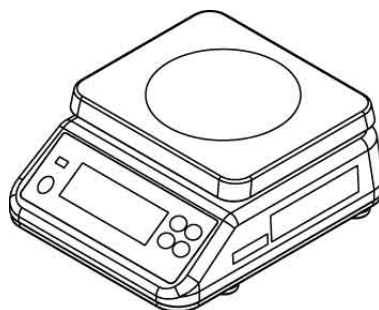
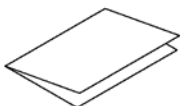
Level balance with foot screws until the air bubble of the water balance is in the prescribed circle.



6.2.1 Scope of delivery

Serial accessories:

- Balance, see chpt. 6.2
- Operating Manual



- Water-tight sealing for support of weighing plate

6.3 Battery operation

(1) Turn-over the balance

(2) Remove any adherent moisture



(3) Undo screws in accordance with illustration



(4) Remove battery cover



(5) Remove any adherent moisture



(6) Change batteries and ensure correct polarity.

(7) Check correct insertion of batteries



(8) Reinsert the battery cover.




(9) Fasten battery cover with screws.
Attention: Check correct seating of battery cover to ensure that the balance are water-proof once more.



Information:

Avoid excess pressure on the balance in order to avoid damaging them, particularly as they are supported by the weighing plate.

For battery operation the balance has an automatic switch-off function which can be activated or deactivated in the menu (chapter 13.1).

If the battery symbol  is displayed, this means that the batteries will soon be flat. If **-bat-** is displayed, this means that the batteries are completely flat. Change the batteries as described above.

6.4 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 Adjustment








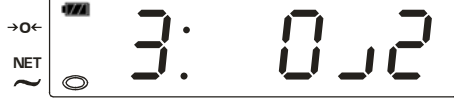

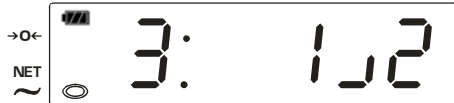





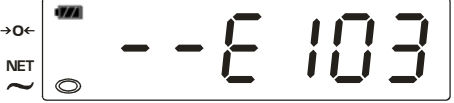
As the acceleration value due to gravity is not the same at every location on earth, each balance must be coordinated - in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the balance has not already been adjusted 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.

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

7.1 Adjusting non-verifiable models

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

i Using  adjustment can be interrupted at any time or adjustment mode can be exited.

<p>Start balance by pressing </p>	
<p>Call-up user menu: Keep the button depressed  and press . The menu function "01" is displayed with the current setting "000" (for example).</p>	
<p>Adjustment mode call-up: Keep the button depressed  and press .</p>	
<p>Ensure that there are no objects on the weighing plate. Press </p>	
<p>Place the first adjustment weight 1/2 max. (see chapter 1 "Technical Data") carefully in the centre of the weighing plate and await the stability display. Press </p>	
<p>Place the second adjustment weight max. (see Section 1 "Technical Data") carefully in the centre of the weighing plate and await the stability display. Press  After successful adjustment the balance automatically returns to weighing mode.</p>	
<p>An error message [-E103] will be displayed in the event of an adjustment error or incorrect adjustment weight. Take away adjustment weight, Press  and repeat adjustment,</p>	

7.2 Adjusting verified models

The adjustment is locked for verified balances. Therefore, adjustment can only be carried out in Service mode. The two contacts on the printed circuit board must be short-circuited as described below.

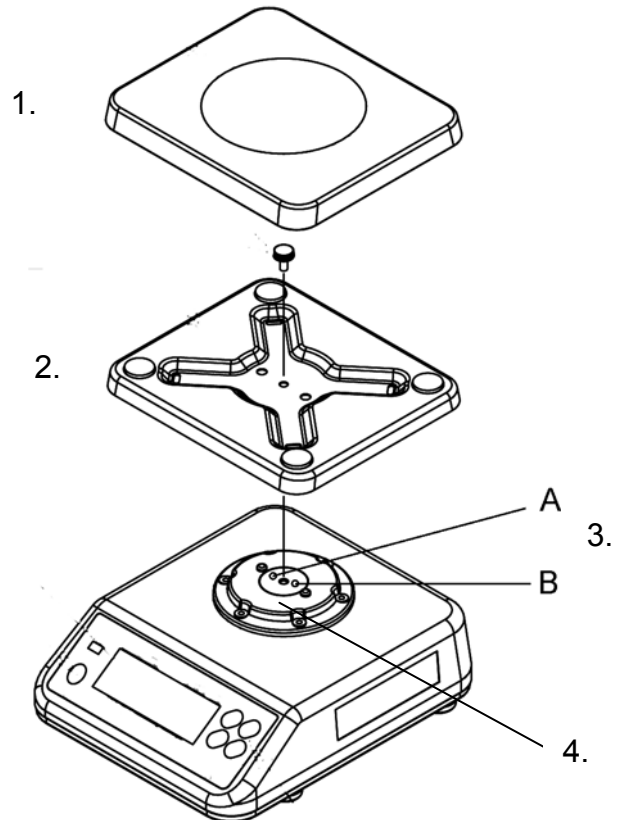
Service mode call-up:

1. Remove weighing plate
2. Undo locking screw, remove holder from weighing plate
3. Undo screws A and B in accordance with the illustration and puncture the waterproof seal.

Attention:

The IP 68 protection will be lost. A new seal must be fitted after the adjustment in order to restore the IP 68 protection.

4. Remove holder

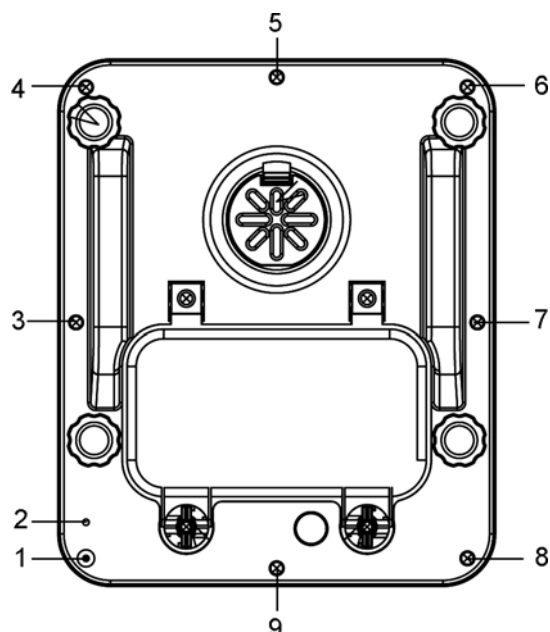


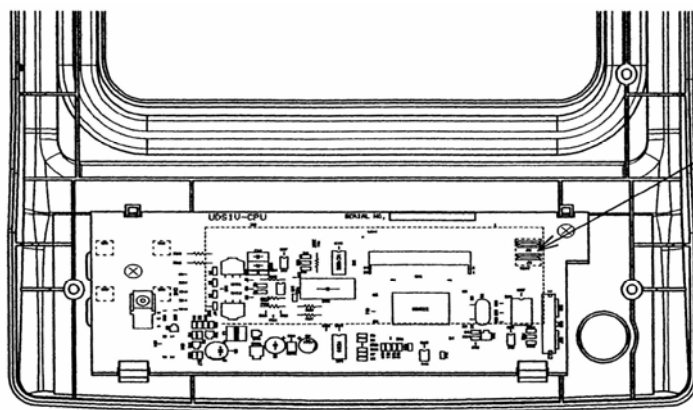
5. Rotate balance carefully
6. Remove verification wire or seal mark

Attention:

The verification wire/seal mark must be destroyed in order to open the casing. Then the balance must be re-verified by an authorised agency and a new verification wire/seal mark fitted before they can be used again as verified balance!

7. Remove screws 1 - 9 in order to open the casing.





Position adjustment by-pass

Switch the balance on and short-circuit the contacts on the printed circuit board with a suitable tool (e.g. screwdriver) in accordance with the illustration. An acoustic signal will be emitted and the balance will be in Service mode.



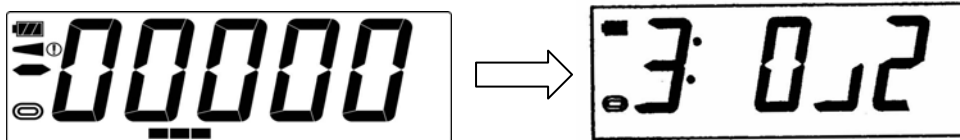
Refit the weighing plate in reverse order (Steps 1 - 4).

7.2.1 Geovalue setting



After major geographical location changes, the geovalue must be adjusted and the balance then re-adjusted as necessary (Section 7.2.2).


1. Call up Adjusting mode in Service mode (Section 7.2).



Keep the button depressed  and press . The 3-point adjustment function will be displayed.



2. Call up Factory parameter mode

Keep button depressed  and press button , "b0;000" will be displayed.


3. Press  repeatedly until parameter "40" is displayed.


Press  or  to select the setting calculated in accordance with the formula below for the local acceleration due to gravity.

Calculation formula:

(Acceleration due to gravity at the deployment location [m/s²] - 9.7600) x 10000/5+30

Example: Balingen-Frommern, Germany
(Local acceleration due to gravity 9.8076 m/s²)
 $(9.8076 \text{ m/s}^2 - 9.7600) \times 10000/5 + 30 = 125.2 \rightarrow$ rounded to 125
Input value = 125

4. Confirm by pressing  and the next function will be displayed.

5. To save press  to switch the balance off and on again.

7.2.2 Adjustment using external weight (3-point adjustment)

Start of the 3-point adjustment procedure:

Call up Adjusting mode in Service mode (Section 7.2).

Keep the button depressed  and press . The 3-point adjustment function will be displayed.

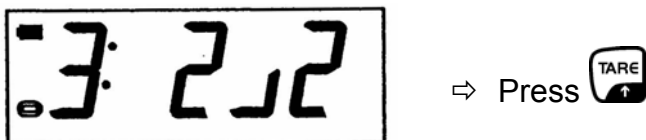
Ensure that there are no objects on the weighing plate.



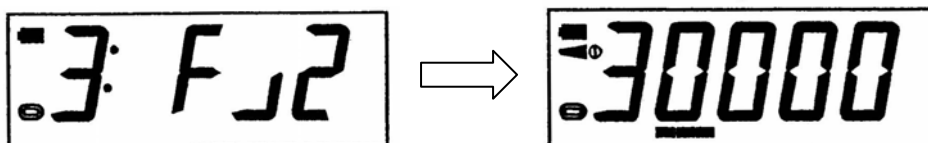
Place the first adjustment weight 1/2 max. (see chapter 1 "Technical Data") carefully in the centre of the weighing plate and await the stability display.



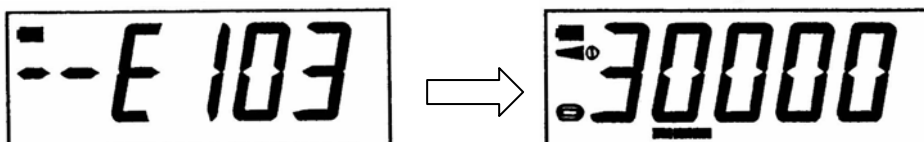
Place the second adjustment weight max. (see Section 1 "Technical Data") carefully in the centre of the weighing plate and await the stability display.




The following will be displayed upon successful completion of the adjustment.



The following will be displayed in the event of an adjustment error or incorrect adjustment weight.



Press  and repeat adjustment.

To save press  to switch the balance off and on again.

7.2.3 Checking the balance verification settings

In the service mode all parameters of the balance can be modified. The service parameters may not be modified, as this could damage the balance settings.

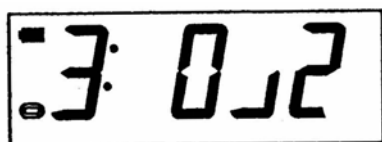
The simplest way of ensuring this is to reset all balance parameters to factory settings.

1. Call up Service mode (See chapt. 7.2)





2. Call up Adjustment mode

Keep the button depressed  and press . The 3-point adjustment function will be displayed.




3. Call up Factory parameter mode


Keep button depressed  and press button , "b0;000" will be displayed.



The setting for resetting to factory settings depends on the model.

For Model FVN 6K2IPM press  or  to select Setting "002".

For Model FVN 15K1IPM press  or  to select Setting "003".

Confirm by pressing  and the next function will be displayed.

Press  to switch the balance off and on again and „- PRO“ will be displayed.

Keep button depressed  and press button , „= PRO" will be displayed.

The bargraph bar is increasing, therefore, wait until "8888" is displayed and the balance will then be reset to the factory settings. The balance returns automatically into weighing mode.

8 Verification

General introduction:

According to EU directive 90/384/EEC balances must be officially verified if they are used as follows (legally controlled area):

- a) For commercial transactions if the price of goods is determined by weighing.
- b) For the production of medicines in pharmacies as well as for analyses in the medical and pharmaceutical laboratory.
- c) For official purposes.
- d) For manufacturing final packages.

In cases of doubt, please contact your local trade in standard.

Verification instructions

An EU type approval exists for balances described in their technical data as verifiable. If a balance is used where obligation to verify exists as described above, it must officially verified and re-verified in regular intervals.

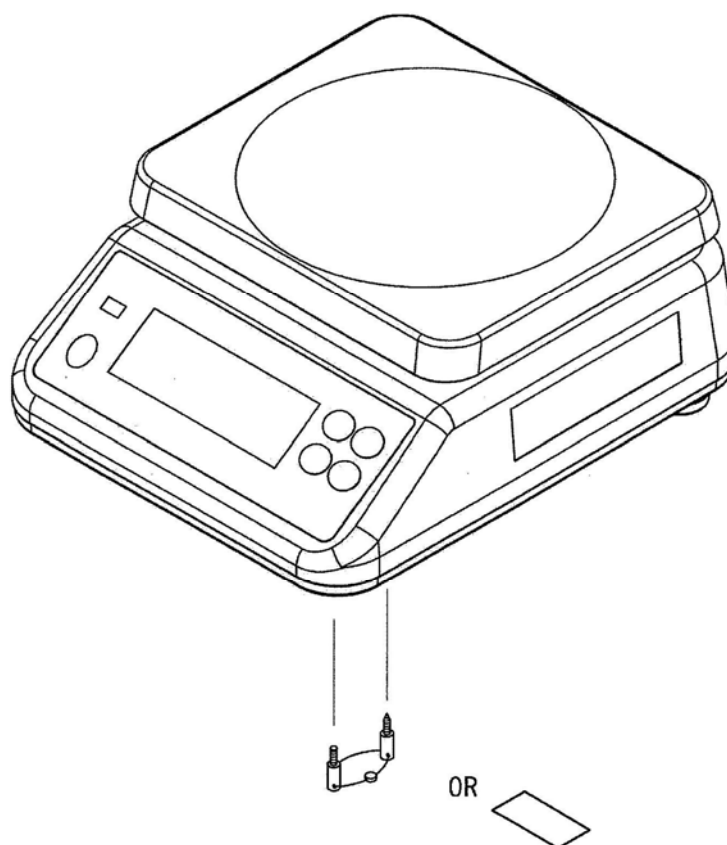
Re-verification of a balance is carried out according to the respective national regulations. The validity for verification of balances in Germany is e.g. 2 years.

The legal regulation of the country where the balance is used must be observed!

After verification the balance is sealed at the indicated positions.

Verification of the balance is invalid without the "seal/verification wire".

Position of the seal mark/verification wire:



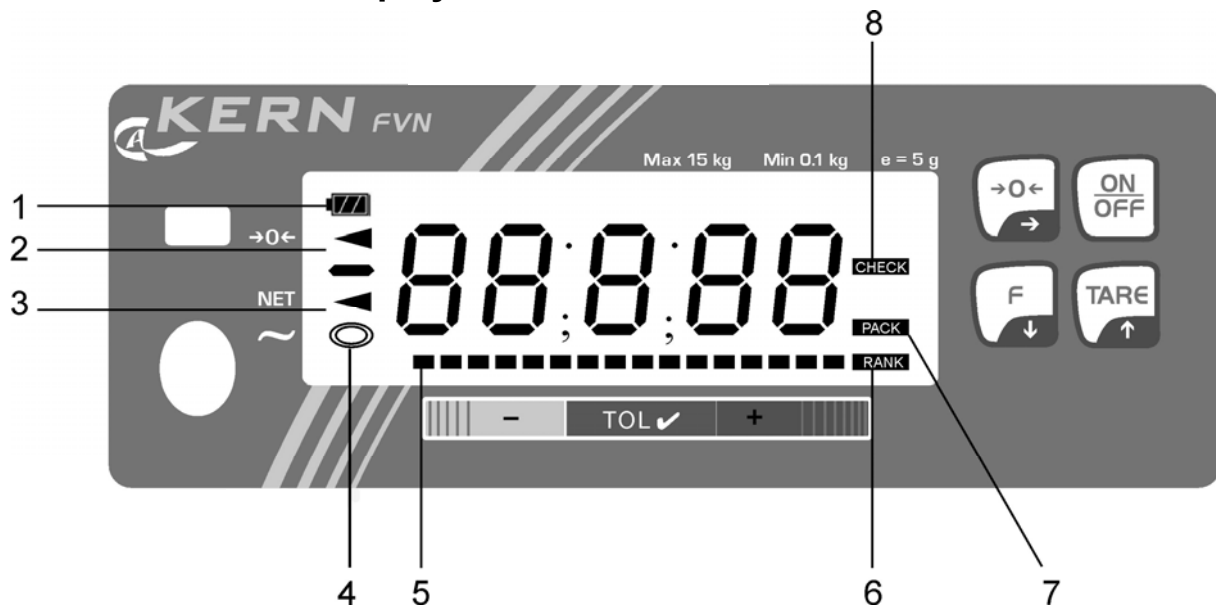
seal mark or verification wire

Balances with obligation to verify must be taken out of operation if:

- **The weighing result of the balance is outside the error limit.** Therefore, in regular intervals load balance with known test weight (ca. 1/3 of the max. load) and compare with displayed value.
- **The reverification deadline has been exceeded.**






9 Controls

9.1 Overview of display






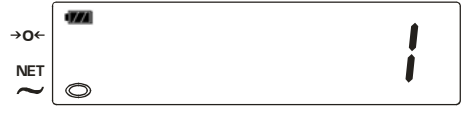




- 1 Battery capacity display (3 stages -bat-)
- 2 Zeroing display
- 3 Net display
- 4 Stability display
- 5 Bargraph display (display bar) for tolerance weighing
- 6 Balance is in Classification mode
Display flashes during menu settings
- 7 Balance is in "Fill to target mode"
Display flashes during menu settings
- 8 Balance is in Tolerance weighing mode
Display flashes during menu settings

9.2 Keyboard overview

Key	Function in Weighing mode	Function in Menu
	<ul style="list-style-type: none"> • Turn on/off • Call up activated Operating mode 	<ul style="list-style-type: none"> • Save settings
	<ul style="list-style-type: none"> • Taring 	<ul style="list-style-type: none"> • Navigate forwards in menu • Select the next number (+1) for numerical input
	<ul style="list-style-type: none"> • Switch-over button in weighing mode / operating modes 	<ul style="list-style-type: none"> • Navigate backwards in menu • Select the next number (-1) for numerical input
	<ul style="list-style-type: none"> • Zeroing 	<ul style="list-style-type: none"> • Confirm settings • Menu function selection • Every time  is pressed, the display changes to the next number in numerical input, after the final number the display reverts to the first number








10 Basic Operation

10.1 Simple weighing

<p>Press  to switch on the balance and the balance will execute a self-test. Await zero display.</p>	
<p>Should the balance not display exactly zero despite empty scale pan, press the  button. The balance starts with resetting to zero.</p>	 
<p>Place goods to be weighed on balance</p> <p>Wait until the stability display appears []</p> <p>Read weighing result.</p>	
<p>Keep  depressed briefly in order to switch off the balance.</p>	

10.2 Weighing with taring

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

<p>Deposit weighing receptacles. The weight of the container is displayed.</p>	
<p>Press  and the zero display will be displayed and the pictogram ◀ next to the NET symbol (net weight) will be displayed.</p> <p>The weight of the container is now internally saved.</p>	
<p>Place goods to be weighed in the weighing container.</p> <p>The net weight of the goods to be weighed is displayed.</p>	
<p>The weight of the weighing container will be displayed as a minus number after removing the weighing container.</p>	
<p>The tare weight is saved until it is deleted. Remove the load from the balance and press . The zero display will be displayed and the pictogram ◀ next to the NET symbol will go out.</p>	

⇒ **Information:**

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.

11 Menu overview

In the menu the settings of the balance can be modified and functions can be activated.

Function	Description	Parameter selection	
01	Operating modes	000:	Operating modes deactivated
		001:	Fill to target (Tolerance value for target weight)
		002:	Weighing with tolerance control]
		003:	Classification
02	Relation Article/Class for the Classification function See Table 1 in Section 12.3	000:	Function deactivated
		001~015:	006 (Factory setting)
03	Audio signal for the "Fill to target" and "Weighing with tolerance control" functions	000 :	Signal tone off
		001:	Signal tone on, if weighing value < target value
		002:	Signal tone on, if weighing value = target value
		003:	Signal tone on, if weighing value > target value
		004:	Signal tone on, if weighing value below or above target value
04	Classification of stable/unstable weighing values	000 :	Classification even in the event of unstable weighing values (Factory settings).
		001:	Classification only in the event of stable weighing values
05	Automatic switch-off function AUTO OFF	000:	Function deactivated
		001:	Automatic shutdown after 5 min
		002:	Automatic shutdown after 10 min
		003 :	Automatic shutdown after 15 min
		004:	Automatic shutdown after 30 min
		005:	Automatic shutdown after 60 min
06	Automatic taring for the "Fill to target" functions	000 :	Auto-tare off
		001:	Auto-tare on
07	Optical signal for the "Fill to target" and "Weighing with tolerance control" functions and "classification"	000 :	Flashing display off
		001:	Flashing display on, if weighing value < target value
		002:	Flashing display on, if weighing value = target value
		003:	Flashing display on, if weighing value > target value
		004:	Flashing display on, if weighing value under or over target value
		005:	Flashing display depending on the setting in Menu function 03.
08-19	not documented		

bold print = factory setting

12 Operating modes

The following three operating modes can be activated in Menu function "01":

- ⇒ Fill to target
- ⇒ Weighing with tolerance control]
- ⇒ Classification

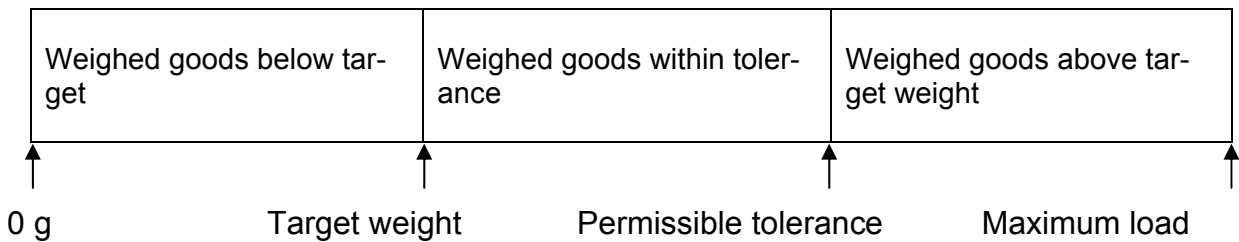


Only one operating mode can be activated. The settings for the preceding operating mode will be deleted when changing from one operating mode to another.

12.1 Fill to target













99 target weights can be programmed with this function. Reaching the target weight within the specified tolerance will be displayed:




- with the bargraph display
- by an acoustic or optical signal
(Depends on the respective settings in the menu).



⇒ **Activate function**









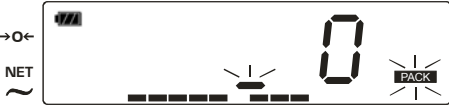







<p>Start balance by pressing </p>	
<p>Calling up the User menu: Keep the button depressed and press . The menu function "01" is displayed with the current setting "000" (for example).</p>	
<p>Press or to select the Fill to target Function "001"</p>	


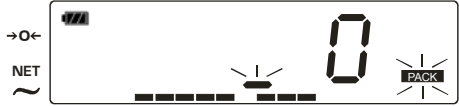





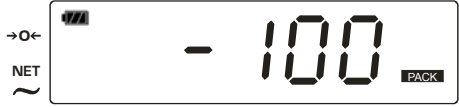
<p>Acoustic signal setting:</p> <p>Press  twice. Function "03" will be displayed with the current setting "003" (for example).</p>	
<p>Press  and  to select the following settings:</p>	
<p>000 Signal tone off</p>	
<p>001 Signal tone on, if weighing value < target value</p>	
<p>002 Signal tone on, if weighing value = target value</p>	
<p>003 Signal tone on, if weighing value > target value</p>	
<p>004 Signal tone on, if weighing value below or above target value</p>	
<p>Setting for Automatic taring:</p> <p>press  three times. Function "06" will be displayed with the current setting "001" (for example).</p>	
<p>Press  and  to select the following settings:</p> <p>000 Auto-Tare off</p> <p>001 Auto-Tare on</p>	
<p>Setting for optical signal:</p> <p>Press  Function "07" will be displayed with the current setting "001" (for example).</p>	
<p>Press  and  to select the following settings:</p>	
<p>000 Flashing display off</p>	
<p>001 Flashing display on, if weighing value < target value</p>	
<p>002 Flashing display on, if weighing value = target value</p>	
<p>003 Flashing display on, if weighing value > target value</p>	

<p>004 Flashing display on, if weighing value below or above target value</p>	
<p>005 Flashing display depends on the setting in Menu function "03".</p>	
<p>Confirm setting by pressing . The next Menu function will be displayed.</p>	
<p>Keep  depressed for a short time. The balance will be switched off.</p>	

⇒ **Save settings (max. 99 memory locations)**











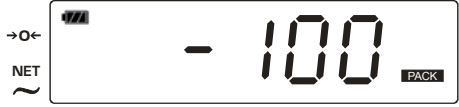
Input example: Memory location No. 14
 Target weight 100 g
 Tolerance 6 g








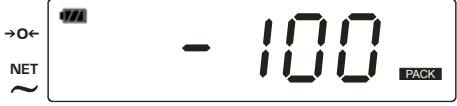
<p>Start balance by pressing </p>	
<p>Activate  for a short time. The current memory location No. will be displayed.</p>	
<p>Press  and  to select required memory location No. (e.g. 14).</p>	
<p>Press  until the target weight input display appears.</p>	
<p>Press ,  and  to enter required target weight (e.g. 100 g).</p> <p> = Selection of the position to be changed, the respectively active position flashes</p> <p> = Selection of the next number (+1)</p> <p> = Selection of the preceding number (-1)</p>	

Press  to display the tolerance input display.	
Press  ,  and  as before to enter the required tolerance (e.g. 6 g).	
Press  to save settings. The saved target weight will be displayed as a minus display. Information: The settings remain saved if the balance are switched off.	

⇒ Call up and apply settings

Example: Memory location No. 14
Target weight 100 g
Tolerance 6 g

Start balance by pressing 	
Activate  for a short time. The current memory location No. will be displayed.	
Press  and  to enter the required memory location No. (e.g. 14).	
Press  to confirm and the saved target weight will be displayed as a minus number	
If necessary, put the weighing container on. The weight of the container will be automatically tared if Menu function "06" Auto-tare = ON. If Auto-tare = OFF, press  to tare.	

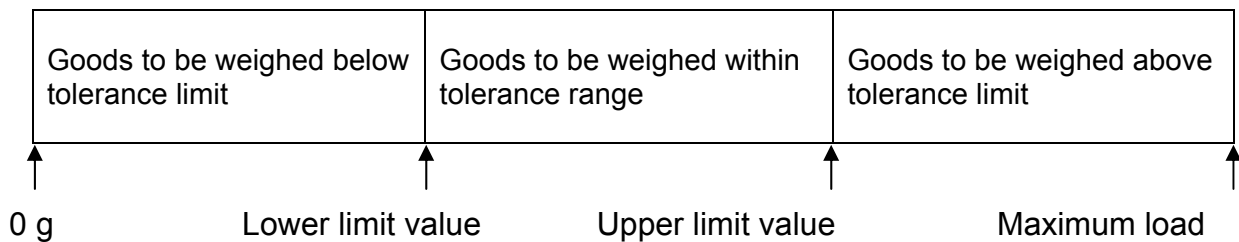
<p>Place goods to be weighed on balance. Reaching the target weight is indicated by the decreasing minus display and the increasing bargraph display.</p> <p>The bargraph display (below the digital display) runs from left to right and progresses to the same extent as the balance are loaded. Its full width is reached at maximum load.</p> <p>This is an analogue display of the current allocation of the weighing area.</p> <p>E.g. If the deposited weight weighs 55 g, another 45 g is required to reach the target weight (100 g). "- 45" will be displayed</p>	 <p>The display shows a digital readout of "-45" and a bargraph that is approximately 45% filled from left to right. To the left of the display are three icons: a left-pointing arrow, the text "NET", and a tilde symbol. To the right is a "PACK" label.</p>
<p>Deposit further goods to be weighed in order to reach the target weight. Once the target weight is reached, "0" will be displayed. Reaching the target weight will be indicated by the acoustic/optical signal depending on the setting in Menu function "03" or "07".</p>	 <p>The display shows a digital readout of "0" and a fully filled bargraph. The icons and "PACK" label are the same as in the previous image.</p>
<p>If the target weight is exceeded, overload will be displayed. The bargraph display continues to increase.</p>	 <p>The display shows a digital readout of "2" and a fully filled bargraph. The icons and "PACK" label are the same as in the previous images.</p>
<p>The bargraph display goes into the overload range with increasing load.</p>	 <p>The display shows a digital readout of "9" and a fully filled bargraph. The icons and "PACK" label are the same as in the previous images.</p>
<p>Press  to return to Weighing mode after relieving the weighing plate and waiting for the standstill control display.</p> <p>Press  once more to return to "Fill to target mode".</p>	  <p>The first image shows a digital readout of "0" and a partially filled bargraph. The second image shows a digital readout of "-100" and a partially filled bargraph. The icons and "PACK" label are the same as in the previous images.</p>

12.2 Weighing with tolerance range











An upper and a lower limit value can be established to ensure that the weighed goods are exactly within the established tolerance limits.











For tolerance controls such as dosaging, apportioning or sorting the balance will display violated upper or lower limits via the bargraph display. The analogue bargraph display (length of displayed bars) indicates where the weight of the weighed goods comes in the tolerance range. The tolerance range is always standardised between target value and limit values so that it corresponds to the bar length of the bargraph.

Information as to whether the weighed goods are within the tolerance limits can be given in addition by an acoustic or optical signal (depends on the respective settings in the menu).











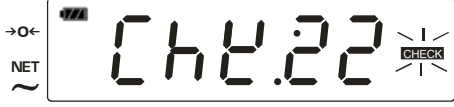

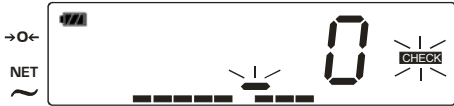







⇒ **Activate function**






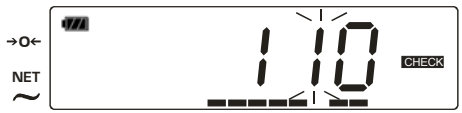


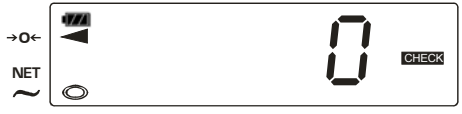
Start balance by pressing 	
Calling up the User menu: Keep the button depressed  and press  . The menu function "01" is displayed with the current setting "000" (for example).	
Use  or  to select the tolerance weighing function „002“	
Acoustic signal setting: Press  twice. Function "03" will be displayed with the current setting "003" (for example).	

<p>Press  and  to select the following settings:</p>	
<p>000 Signal tone off</p>	
<p>001 Signal tone on, if weighed goods are below lower tolerance limit</p>	
<p>002 Signal tone on, if weighed goods are within tolerance range</p>	
<p>003 Signal tone on, weighed goods are above upper tolerance limit</p>	
<p>004 Signal tone on, if weighed goods are below or above limit value</p>	
<p>Setting for optical signal: Press  repeatedly until Function "07" is displayed with the current setting "001" (for example).</p>	
<p>Press  and  to select the following settings:</p>	
<p>000 Flashing display off</p>	
<p>001 Flashing display on, if weighed goods are below lower tolerance limit</p>	
<p>002 Flashing display on, if weighed goods are within tolerance range</p>	
<p>003 Flashing display on, Goods to be weighed above tolerance limit</p>	
<p>004 Flashing display on, if weighed goods are below or above limit value</p>	
<p>005 Flashing display depends on the setting in Menu function "03".</p>	
<p>Confirm setting by pressing . The next Menu function will be displayed.</p>	
<p>Keep  depressed for a short time. The balance will be switched off.</p>	

⇒ **Save settings (max. 99 memory locations)**




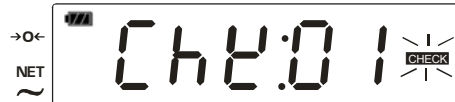











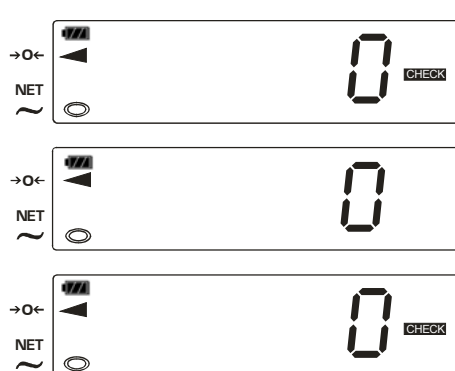
Input example: Memory location No. 22
 lower limit value 100 g
 upper limit value 110 g

<p>Start balance by pressing </p>	
<p>Activate  for a short time. The current memory location No. will be displayed.</p>	
<p>Press  and  to select required memory location No. (e.g. 22).</p> <p> = Selection of the next number (+1)</p> <p> = Selection of the preceding number (-1)</p>	
<p>Press  until the display for entering the lower limit value appears</p>	
<p>Press ,  and  to enter required limit value (e.g. 100 g).</p> <p> = Selection of the position to be changed, the respectively active position flashes</p> <p> = Selection of the next number (+1)</p> <p> = Selection of the preceding number (-1)</p>	

<p>Press  to confirm and the display for entering the upper limit value will appear.</p>	
<p>Press ,  and  as before to enter the upper limit value (e.g. 110 g).</p> <p>Information:</p> <p>The upper limit value must be above the lower limit value. The balance will issue an error message in the event of invalid inputs (e.g. limit value = 0).</p>	 
<p>Press  to save settings. The balance is now in checkweighing mode.</p> <p>Put on goods to be weighed, tolerance control is started</p> <p>Information:</p> <p>The settings remain saved if the balance are switched off.</p>	

⇒ **Call up and apply settings**

Example: Memory location No. 22
 lower limit value 100 g
 upper limit value 110 g

<p>Start balance by pressing </p>	
<p>Activate  for a short time. The current memory location No. will be displayed.</p>	
<p>Press  and  to enter the required memory location No. (e.g. 22).</p>	
<p>Acknowledge with . The balance is now in checkweighing mode</p>	
<p>If necessary, place the empty weighing container and tare with . Put on goods to be weighed, tolerance control is started. If the weighed goods are below the tolerance limit, the bargraph display only goes as far as the initial third.</p>	
<p>If the weighed goods are within the tolerance limits, the bargraph display increases as far as the centre. The acoustic/optical signal will be displayed depending on the setting in the menu.</p>	
<p>If the weighed goods are above the upper limit value, the bargraph display will go into the overload area. The acoustic/optical signal will be displayed depending on the setting in the menu.</p>	
<p>Remove the weighed goods and carry out further control weighings or Press  to return to Weighing mode after relieving the weighing plate and waiting for the standstill control display. Press  once more to return to "Tolerance control weighing mode".</p>	

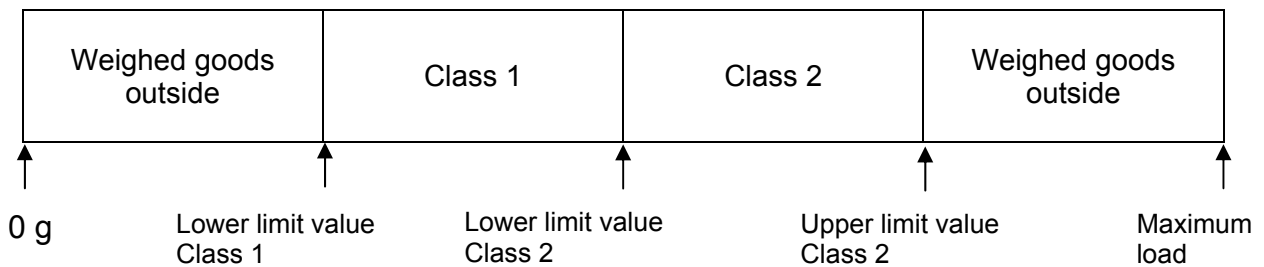
12.3 Classification

The Classification function can be used to classify identical objects in specified classes in accordance with their mass.

Max. memory capacity for number of articles/number of classes:

Number of classes	Max. number of articles	Number of classes	Max. number of articles	Number of classes	Max. number of articles
2	66	7	24	12	15
3	49	8	22	13	14
4	39	9	19	14	13
5	33	10	18	15	12
6	28	11	16		

e.g. classification in 2 classes:















⇒ **Activate function**

Start balance by pressing	
Calling up the User menu: Keep the button depressed and press . The menu function "01" is displayed with the current setting "000" (for example).	
With or select classification function „003“	
Press until the next Menu function "02" is displayed with the current setting "002" (for example). Setting "002" is used to classify in 2 classes. The memory capacity is designed for 69 articles.	
Press and to select the following settings:	




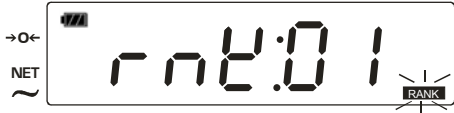






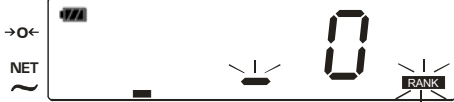






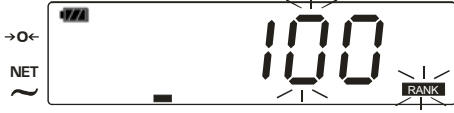
Tab. 1:


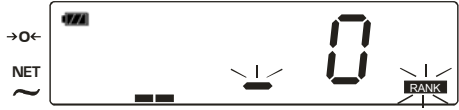





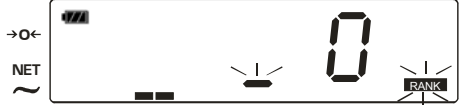





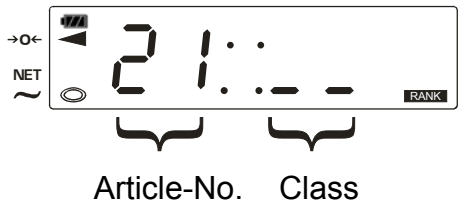
Adjustment	002	003	004	005	006	007	008	009	010	011	012	013	014	015
Number of classes	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of articles	66	49	39	33	28	24	22	19	18	16	15	14	13	12

<p>Press  twice. Function "04" will be displayed with the current setting "001" (for example).</p>	
<p>Press  and  to select the following settings:</p> <p>000 Classification even in the event of unstable weighing values</p> <p>001 Classification only in the event of stable weighing values</p>	
<p>Setting for optical signal:</p> <p>Press  repeatedly until Function "07" is displayed with the current setting "001" (for example).</p>	
<p>Press  and  to select setting "000" (deactivated)</p>	
<p>Confirm setting by pressing . The next Menu function will be displayed.</p>	
<p>Keep  depressed for a short time. The balance will be switched off.</p>	

⇒ **Save settings**




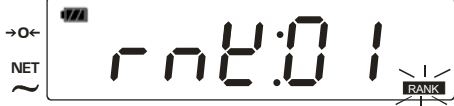




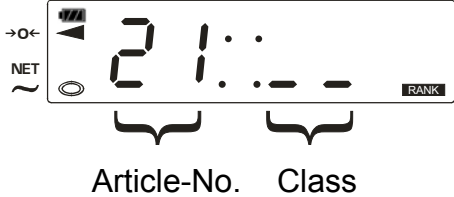

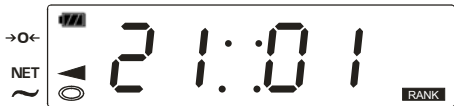


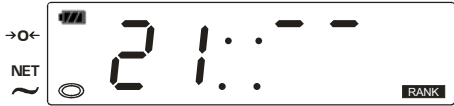
Input example: Classify article No. 21 in 2 classes
 Class 1 = 100 g - 199 g
 Class 2 = 7.05 oz - 10.58 oz

<p>Start balance by pressing </p>	
<p>Activate  for a short time. The current article No. will be displayed.</p>	
<p>Press  and  to select required article number (e.g. 21).</p> <p> = Selection of the next number (+1)</p> <p> = Selection of the preceding number (-1)</p>	
<p>Press  until the display for input for Class 1 will appear.</p>	
<p>Press , , and  to enter required limit value (e.g. 100 g).</p> <p> = Selection of the position to be changed, the respectively active position flashes</p> <p> = Selection of the next number (+1)</p> <p> = Selection of the preceding number (-1)</p>	

<p>Press  to confirm and the display for input for Class 2 will appear.</p>	
<p>Press ,  and  as before to enter the lower limit value for Class 2 (e.g. 200 g).</p> <p>Information:</p> <p>The acoustic signal will be emitted in the event of invalid entries (e.g. lower limit value for Class 2 ≤ 100) and the balance will be locked for further entries.</p>	
<p>Press  to confirm and the display for entering the upper limit value for Class 2 will appear.</p>	
<p>Press ,  and  as before to enter the upper limit value for Class 2 (e.g. 300 g).</p> <p>Information:</p> <p>The acoustic signal will be emitted in the event of invalid entries (e.g. lower limit value for Class 2 ≤ 100) and the balance will be locked for further entries.</p>	
<p>Press  to save settings. The balance is now in classification mode</p> <p>Information:</p> <p>The settings remain saved if the balance are switched off.</p>	

⇒ **Call up and apply settings**

Example: Classify article No. 21 in 2 classes
 Class 1 = 100 g - 199 g
 Class 2 = 200 g – 300 g


<p>Start balance by pressing </p>	
<p>Activate  for a short time. The current article No. will be displayed.</p>	
<p>Press  and  to enter required article number (e.g. 2).</p>	
<p>Acknowledge with . The balance is now in checkweighing mode</p>	 <p style="text-align: center;">Article-No. Class</p>
<p>If necessary, place the empty weighing container and tare with .</p> <p>Put on goods to be weighed, classification is started</p> <p>If the net weight of the weighed material (e.g. 120 g) is within class 1, in the display appears accordingly „01“</p>	
<p>If the net weight of the weighed material (e.g. 95 g) is less than class 1, in the display appears accordingly „ -- “</p>	
<p>If the net weight of the weighed material (e.g. 220 g) is within class 2, in the display appears accordingly „02“</p>	
<p>If the weighed goods are above the upper limit value for Class 2, „ -- “ will be displayed accordingly</p>	

If setting "001" (classification of stable weighing values only) has been selected in Menu function "04", two horizontal central lines will be displayed before the classification




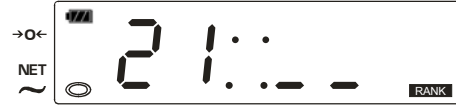
Remove the weighed goods and carry out further classifications

or

Press  to return to Weighing mode after relieving the weighing plate and waiting for the standstill control display.


















Press  once more to return to "Classification mode".



13 Menu settings

13.1 Automatic shutdown function (Function "05")
















<p>Start balance by pressing </p>	
<p>Calling up the User menu: Keep the button depressed  and press . The first Menu function "01" will be displayed.</p>	
<p>Press  repeatedly until Auto-off function "05" is displayed with the current setting "003" (for example).</p>	
<p>Press  and  to select the following settings:</p>	
<p>000 Function deactivated</p>	
<p>001 Automatic shutdown after 5 min</p>	
<p>002 Automatic shutdown after 10 min</p>	
<p>003 Automatic shutdown after 15 min</p>	
<p>004 Automatic shutdown after 30 min</p>	
<p>005 Automatic shutdown after 60 min</p>	
<p>Confirm setting by pressing . The next Menu function will be displayed.</p>	
<p>Keep  depressed for a short time. The balance will be switched off.</p>	
<p>Start balance by pressing . The balance is now in the selected setting.</p>	

13.2 Acoustic signal (Function "03")

The acoustic signal (beep) can be activated for the "Fill to target" and "Tolerance weighing" modes in Menu function "03".

Condition:
















With Menu function "04", setting "001" (stable weighing values).

<p>Start balance by pressing </p>	
<p>Calling up the User menu: Keep the button depressed  and press . The first Menu function "01" will be displayed.</p>	
<p>Press  repeatedly until Function "03" is displayed with the current setting "000" (for example).</p>	
<p>Press  and  to select the following settings:</p>	
<p>000 Signal tone off</p>	
<p>001 Signal tone on, if weighing value < target value</p>	
<p>002 Signal tone on, if weighing value = target value</p>	
<p>003 Signal tone on, if weighing value > target value</p>	
<p>004 Signal tone on, if weighing value below or above target value</p>	
<p>Confirm setting by pressing . The next Menu function will be displayed.</p>	
<p>Keep  depressed for a short time. The balance will be switched off.</p>	
<p>Start balance by pressing . The balance is now in the selected setting.</p>	







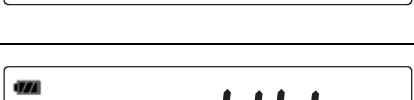

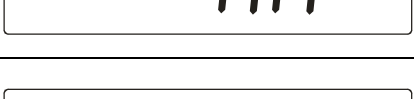

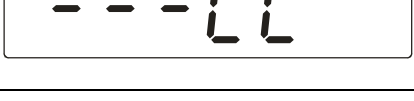


13.3 Optical signal - flashing display (Function "07")



The flashing display can be activated for the "Fill to target", "Tolerance weighing" and "Classification" modes in Menu function "07". It depends on the setting, 000, 001, 002, 003, 004 or 005 can be selected (See Section 11 Menu Overview)

Information: In the event of classification the display flashes constantly in settings 001-005 after classification.

<p>Start balance by pressing </p>	
<p>Calling up the User menu: Keep the button depressed  and press . The first Menu function "01" will be displayed.</p>	
<p>Press  repeatedly until Function "07" is displayed with the current setting "001" (for example).</p>	
<p>Press  and  to select the following settings:</p>	
<p>000 Flashing display off</p>	
<p>001 Flashing display on, if weighing value < target value</p>	
<p>002 Flashing display on, if weighing value = target value</p>	
<p>003 Flashing display on, if weighing value > target value</p>	
<p>004 Flashing display on, if weighing value below or above target value</p>	
<p>005 Flashing display depends on the setting in Menu function "03".</p>	
<p>Confirm setting by pressing . The next Menu function will be displayed.</p>	
<p>Keep  depressed for a short time. The balance will be switched off.</p>	
<p>Start balance by pressing . The balance is now in the selected setting.</p>	

14 Error messages

Display	Cause/reason	Remedy
	Batteries will soon be flat	Change batteries
	Batteries are completely flat	Change batteries
	Underload, Weighing value < 5 d	Press  to reset to zero
	Overload, deposited load exceeds balance capacity > 5d	Remove load
	Measuring system error	Switch balance off and on again. If the error message remains inform manufacturer.
	When the balance were switched on, there was a large weight on the weighing plate.	Remove load and press  to reset to zero.
	When the balance were switched on, the weighing plate was in contact with foreign bodies.	Remove foreign bodies and press  to reset to zero.
	Zero range exceeded	Remove load and press  to reset to zero.
	Zero error	Remove load and switch balance off and on again.

	Electronic error	Switch balance off and on again. If the error message remains inform manufacturer.
	Electrostatic charge/Electronic error	Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)

15 Service, maintenance, disposal

15.1 Cleaning

Before cleaning, please 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. Ensure that no liquid penetrates into the device and wipe 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.

15.1.1 Membrane cleaning

Information:

Avoid excess pressure on the balance in order to avoid damaging them, particularly as they are supported by the weighing plate.

(1) Turn-over the balance

(2) Remove any adherent moisture



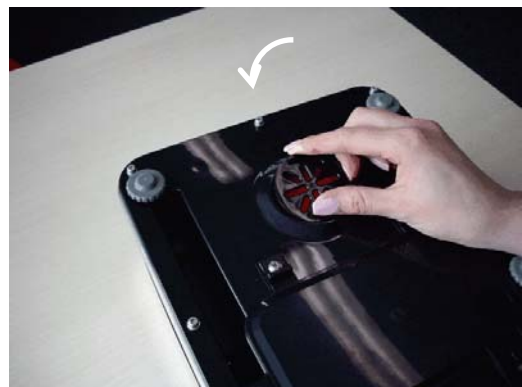
(3) Remove the cover plate



(4) Clean membrane with care.
Attention: Avoid excess pressure on the membrane!



(5) Replace the cover plate.



15.2 Service, 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.

Help:

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.
- (Rechargeable) batteries are inserted incorrectly or empty
- No (rechargeable) batteries inserted.

The displayed weight is permanently changing

- Draught/air movement
- Table/floor vibrations
- Weighing plate 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.
- Great fluctuations in temperature.
- Warm-up time was ignored.
- Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)

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