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Operating instructions
Counting balance/counting system

KERN CFS/CCS

Version 2.0
08/2012
GB

CFS/CCS-BA-e-1220

KERN CFS/CCS

Version 2.0 08/2012

Operating instructions Counting balance/counting system

Contents

English

1 Technical data

1.1 KERN CFS

KERN	CFS 3K-5	CFS 6K0.1
Readability (d)	0.01 g	0.1 g
Weighing range (max)	3 kg	6 kg
Reproducibility	0.02 g	0.1 g
Linearity	± 0.04 g	± 0.2 g
Stabilization time	2 s	
Weighing Units	kg, lb	
Recommended adjusting weight (not supplied)	2 kg (F1) + 1 kg (F1)	6 kg (F2)
Warm-up time	2 h	
Minimum unit weight at piece count	10 mg	100 mg
Reference unit weights at piece counting	freely selectable	
Net weight (kg)	3.8 kg	
Permissible ambient condition	0° C to 40° C	
Humidity of air	max. 80 % relative (not condensing)	
Weighing plate, stainless steel	300 x 225 mm	294 x 225 mm
Dimensions of the housing (B x D x H)	320 x 350 x 125 mm	
Mains connection	Mains adapter 230 V AC, 50 Hz; 12 V DC balance, 500 mA	
Rechargeable battery (optional)	Operating duration approx. 70 h / loading time approx. 12 hours	

KERN	CFS 15K0.2	CFS 30K0.5
Readability (d)	0.2 g	0.5 g
Weighing range (max)	15 kg	30 kg
Reproducibility	0.2 g	0.5 g
Linearity	± 0.4 g	± 1 g
Stabilization time	2 s	
Weighing Units	kg, lb	
Recommended adjusting weight (not supplied)	15 kg (F2)	30 kg (F2)
Warm-up time	2 h	
Minimum unit weight at piece count	200 mg	500 mg
Reference unit weights at piece counting	freely selectable	
Net weight (kg)	3.8 kg	
Permissible ambient condition	0° C to 40° C	
Humidity of air	max. 80 % relative (not condensing)	
Weighing plate, stainless steel	294 x 225 mm	
Dimensions of the housing (B x D x H)	320 x 350 x 125 mm	
Mains connection	Mains adapter 230 V AC, 50 Hz; 12 V DC balance, 500 mA	
Rechargeable battery (optional)	Operating duration approx. 70 h / loading time approx. 12 hours	

English

KERN	CFS 50K-3
Readability (d)	1 g
Weighing range (max)	50 kg
Reproducibility	1 g
Linearity	± 2 g
Stabilization time	2 s
Weighing Units	kg, lb
Recommended adjusting weight (not supplied)	50 kg (F2)
Warm-up time	2 h
Minimum unit weight at piece count	1 g
Reference unit weights at piece counting	freely selectable
Net weight (kg)	3.8 kg
Permissible ambient condition	0° C to 40° C
Humidity of air	max. 80 % relative (not condensing)
Weighing plate, stainless steel (B x D x H)	370 x 240 x 20 mm
Dimensions of the housing (B x D x H)	370 x 360 x 125 mm
Mains connection	Mains adapter 230 V AC, 50 Hz; 12 V DC balance, 500 mA
Rechargeable battery (optional)	Operating duration approx. 70 h / loading time approx. 14 hours

English

Dimensions of models

- CFS 3K-5
- CFS 6K0.1
- CFS 15K0.2
- CFS 30K0.5
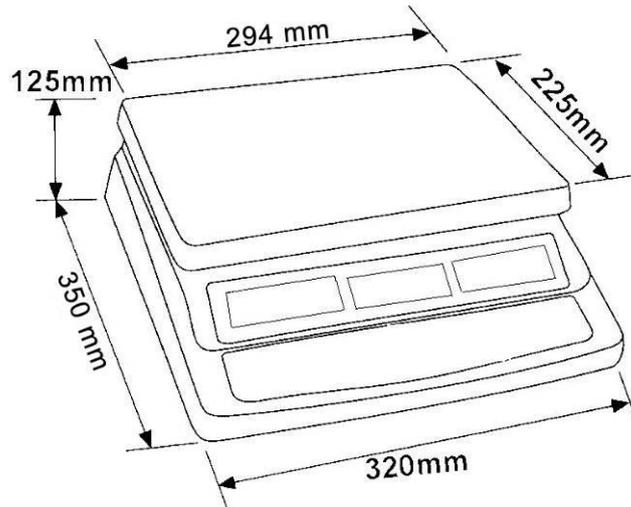
Dimensions of models

- CFS 50K-3
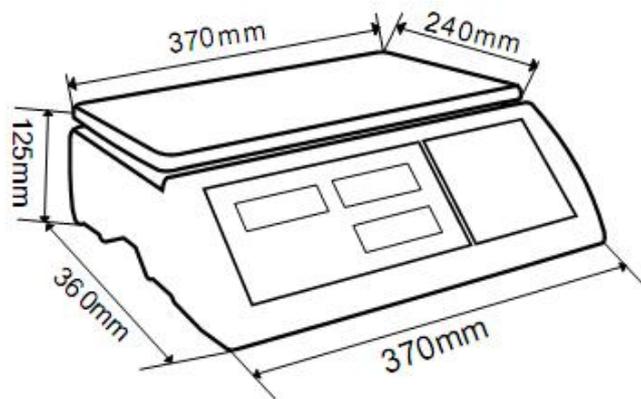
1.2 KERN CCS

Counting system KERN	Bulk material balance KERN	Weighing range (Max) kg	Readability (d) g	Weighing plate stainless steel mm	Recommended adjustment weight, not added, kg (class)
CCS 30K0.1	KFP 30V20M	30	10	400x300x78	30 (M2)
CCS 60K0.1	KFP 60V20M	60	20	400x300x78	50 (M2)
CCS 60K0.1L	KFP 60V20LM	60	20	500x400x79	50 (M2)
CCS 150K0.1	KFP150V20M	150	50	500x400x79	150 (M3)
CCS 150K0.1L	KFP 150V20LM	150	50	650x500x115	150 (M3)
CCS 300K0.1	KFP300V20M	300	100	650x500x115	300 (M3)

2 Declaration of conformity

KERN & Sohn GmbH

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Declaration of conformity

EC-Konformitätserklärung	EC-Declaration of -Conformity
EC- Déclaration de conformité	EC-Declaración de Conformidad
EC-Dichiarazione di conformità	EC-Conformiteitverklaring
EC- Declaração de conformidade	EC- Prohlášení o shode
EC-Deklaracja zgodności	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	Manifestamos 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 conformitá	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 Scale: KERN CFS

Mark applied	EU Directive	Standards
CE	2004/108/EC EMC	EN 61000-6-1 :2007 EN 61000-6-3 :2007 EN 61000-3-3 : 1995+A1 :2001+A2 :2005 EN 61000-3-2 :2006

Date: 14.07.2010   **Signature:**

KERN & Sohn GmbH
Management

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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 balcance", 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.

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". (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.

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.

⇨ All language versions contain a non-binding translation. The original German is binding.

4.2 Personnel training

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

5 Transport and 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.

⇨ 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, 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.

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/installation

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

Level balance with foot screws until the air bubble of the water balance is in the prescribed circle.
When using as counting system balance and weighing bridge must be levelled.

6.3 Transport Securing

⊙ **Ensure that transport guard has been removed (only existing in 6 kg models)**
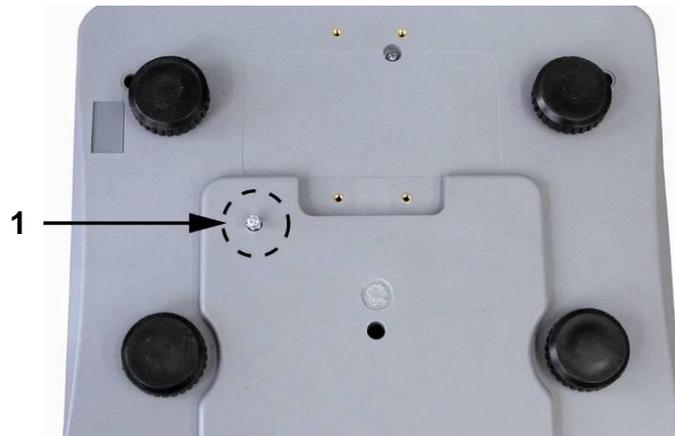
To loosen the transport guard screw out transport screw [**1**] anticlockwise.

For transportation carefully screw-in transport screw clockwise till to the stopper and then fix it using locknut.
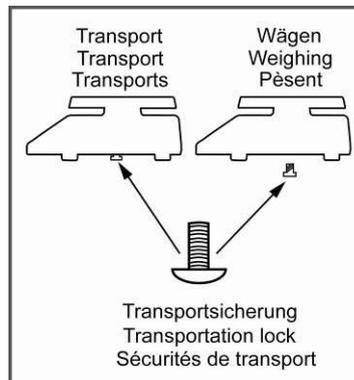
6.3.1 Counting balance

KERN CFS
(CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models)

1. Weighing plate / rechargeable battery compartment (under weighing plate)
2. Bubble level
3. RS 232 interface
4. Second balance interface
5. Footscrews
6. ON/OFF switch
7. Mains adapter connection

KERN CFS
(CFS 50K-3 models)
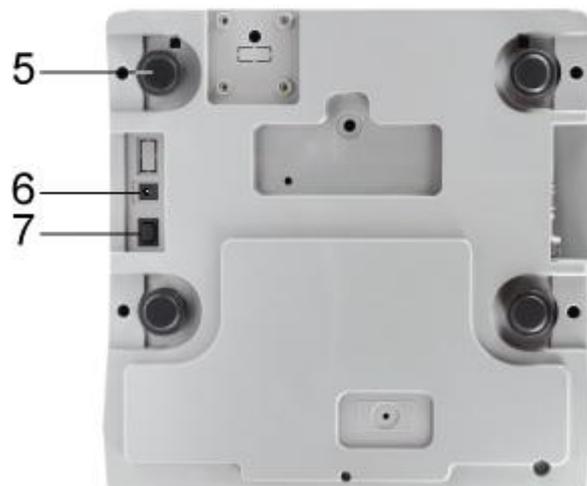
1. Weighing plate
2. Bubble level
3. RS 232 interface
4. Second balance interface
5. Footscrews
6. Mains adapter connection
7. ON/OFF switch

6.3.2 Counting system

KERN CCS

Reference balance CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

↑ **↑**

Bulk material balance KERN KFP   **Reference balance KERN CFS**

Reference scales Models CFS 50K-3

Bulk material balance KERN KFP   **Reference balance KERN CFS**

ℹ In factory the counting system **KERN CCS** is preconfigured in a way that no more changes will be necessary.

When connecting a weighing bridge (not preconfigured by **KERN**) the following must be observed:
⇨ Connect weighing bridge with a suitable cable via the second-balance interface.
Allocation of the interface connection see chapter 16.
⇨ Configure weighing bridge, see chapter 14
⇨ Adjust balance / weighing bridge, see chapter 7

6.3.3 Scope of delivery / serial accessories

KERN CFS

- Scales (s. Chap. 6.3.1)

- Power cable

- Protective cover
- Operating instructions

KERN CCS

- Reference balance KERN CFS, see chap. 6.3.1

- Bulk material balance KERN KFP, see chap. 6.3.2

- Operating instructions KERN CFS/CCS
- Operating instructions KERN KFP

English

6.4 Overview of display

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

Weight **Average piece weight** **Quantity**

CFS 50K-3 models:

Weight **Average piece weight**

Quantity
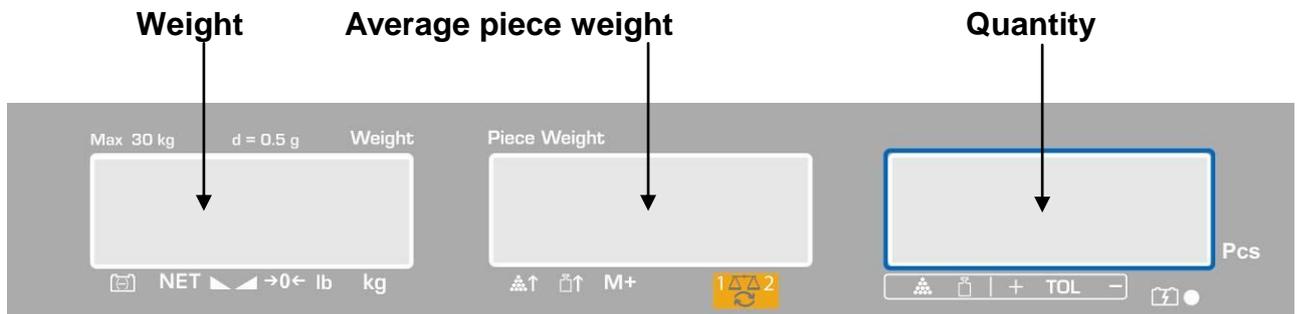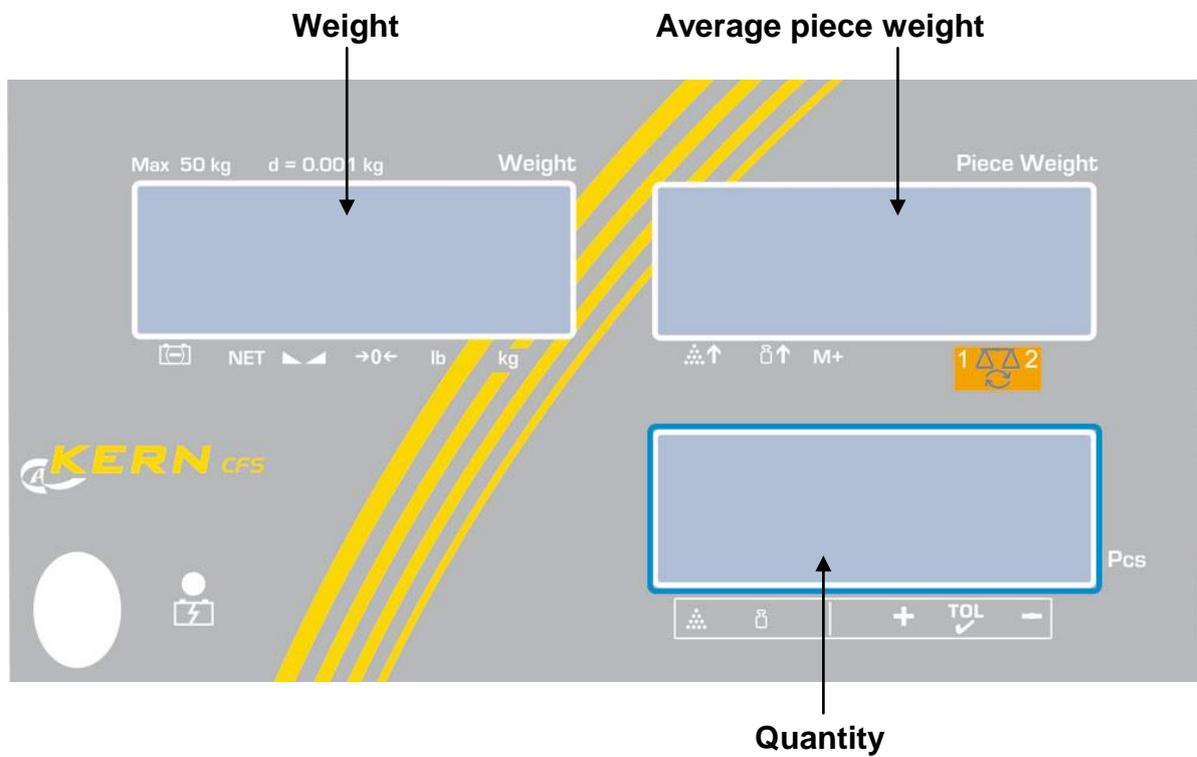
6.4.1 Display weight

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

The arrows [▼] above the symbols show:

[−]	Storage battery status display
NET	Net weight
▶◀	Stability display
→0←	Zeroing display
lb/kg	Current weighing unit

6.4.2 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.

The arrows [▼] above the symbols show:

⣿↑	Number of parts placed on balance too small
◼↑	Piece below minimum weight of piece
M+	Data in summation memory
1◿◺2	Active balance: 1. Reference balance KERN CFS 2. Bulk material balance KERN KFP

6.4.3 Display quantity

Here the current piece quantity (PCS = pieces) or in totalizing mode the sum Sum of the placed parts is displayed, see chapter 10

The arrows [▼] above the symbols show:

♣	Tolerance control in counting mode
♟	Tolerance control in weighing mode
+	Goods to be weighed above tolerance limit
TOL	Goods to be weighed within tolerance range
-	Goods to be weighed below tolerance limit

English

6.5 Keyboard overview
CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

Selection	Function in Weighing mode	Function in Menu
0 ….. **9**	⇨ Numeric keys	
.	⇨ Decimal point • At numeric input digit selection to the left	
C	• Delete key	
M+	• Addition in summation memory • Display total weight /number of weighings / total quantity • At numeric input digit selection to the right • Data output (menu setting "$AU\ oFF$" see chapter 13.2)	
M	• Set or call-up PLU, see chap. 12.3	
PRE SET	• Tolerance control, see chap. 11	• Call up menu
⚖	• Switch-over balance, see chap. 9.3	
REF	• Input of the average piece weight by weighing, see chap. 11.1	

REF	⇨ Numeric input of the average piece weight see chapter 11.2	• Function /parameter selection	
UNIT	• Switch-over weighing unit		
TARE	• Taring key	• Confirm	
→0←	• Zeroing key	• Back to menu/weighing mode	

Modelle CFS 50K-3

Selection	Function in Weighing mode	Function in Menu
[0] ….. [9 WXYZ]	⇨ Numeric keys ▪ Indirect memories (s. chap. 12.3.1)	
[.]	• Decimal point	
[C]	• Delete key	
[M+ PRINT]	• Addition in summation memory • Printout • Display total weight /number of weighings / total quantity • Call up delete memory	• Data output (menu setting "$\overline{AU\ oFF}$" see chapter 13.2)
[1] ….. [5]	• Direct memory locations (s. chap. 12.4)	

PRE SET	⇨ Tolerance control, see chap. 12	• Call up menu
M	• Select memory locations	
(balance switch icon)	• Switch-over balance, see chap. 9.3 • At numeric input digit selection to the left	
REF	• Input of the average piece weight by weighing, see chap. 11.1	• Function /parameter selection
REF / UNIT	• Numeric input of the average piece weight see chapter 11.2 • Switch-over weighing unit	
TARE	• Taring key	• Confirm
→0← ESC	• Zeroing key • At numeric input digit selection to the right	• Back to menu or in weighting mode

6.6 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.

6.7 Rechargeable battery operation (optional)

The rechargeable battery is charged via the delivered power cable.
Before the first use, the rechargeable battery should be charged by connecting it to the mains power cable for at least 15 hours. The operation time of the rechargeable battery is approx. 70 hours. When connecting a second balance, the operation time will be reduced. The charging period for total charge is c. 12 hours
To save the rechargeable battery, in the menu (see chap.12.2) the automatic switch-off function [„F 1 oFF" ⇨ „oFF „] can be activated, switch-off time selectable after 0, 3, 5, 15, 30 minutes.

If an arrow appears on the weight display [▼] above the battery symbol 🔋 or
"**bat lo**" when turning on the balance, this is an indication that the capacity of the rechargeable battery will soon be exhausted. The balance will be ready to operate for about another 10 hrs., then it will switch off automatically. Connect the power cable as soon as possible to load the rechargeable battery.

The LED display informs you during loading about the loading status of the rechargeable battery.

    red: Voltage has dropped below prescribed minimum. Connect mains adapter to load the rechargeable battery.

    green: Battery is completely discharged

    yellow: Battery very low. Connect mains adapter as soon as possible to load the rechargeable battery.

6.8 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.

6.9 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.

Procedure when adjusting:
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.

i
- Information about test weights you will find in the internet under http://www.kern-sohn.com

- In order to avoid errors at the piece quantity determination, both balances must be adjusted with the same acceleration due to gravity.
  In case of non-compliance counting errors will result!

7.1 Adjustment reference balance CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5

Operation	Display
⇨ Switch-on balance and during the selftest press [→0←].	"PIn"
⇨ Use the numeric keys to enter password: ⇨ Input the standard password „0000" ⇨ Confirm input by [TARE].	"PIn" "– – – –"
⇨ When using as counting system, the bulk material balance as well as the reference balance must be adjusted. The adjustment process must be carried out on both balances. Select bulk material or reference balance via [⚖]. The appeared **[▼]** displays the current balance. Acknowledge with [TARE].	"tECH" "LoCAL" ⇕ "tECH" "rEMotE"

⇨	If necessary, at balance zero display using **UNIT** select the weighing unit [kg or lb], which shall be used for adjustment. The appeared **[▼]** displays the current weighing unit. Acknowledge with [TARE].	"*tECH*" "*UNI t*"
⇨	Ensure that there are no objects on the weighing pan. After successful standstill control press the [TARE] button.	"*UNLoAd*"
⇨	The weight value of the adjustment weight appears. Acknowledge with [TARE]. ⇨ Place the adjusting weight carefully in the centre of the weighing plate and press [TARE] to confirm.	"*SEL*" "*000003*" "*LoAd*"
or ⇨ Enter the desired value of the adjustment weight using numeric keyboard and acknowledge with [TARE]. In order to achieve high-quality weighing results in the sense of the measuring technology, it is recommended to select the nominal value as high as possible. We recommend 80 % max. ⇨ Place the adjusting weight carefully in the centre of the weighing plate and press [TARE] to confirm.	"*SEL*" "*000002*" "*LoAd*"
⇨	After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, balance will return into weighing mode automatically. In case of an adjustment error or incorrect adjusting weight the display will show an error message (*FAIL H* / *FAIL L*), repeat adjustment process.	

7.2 Adjustment reference balance CFS 50K-3 models

Operation	Display
⇨ Switch-on balance and during the selftest press [→0← ESC].	"PI N"
⇨ Use the numeric keys to enter password: ⇨ Enter sandard password „0000" ⇨ Confirm input by [TARE ↵].	"PI N" "- - - -"
⇨ When using as counting system, the bulk material balance as well as the reference balance must be adjusted. The adjustment process must be carried out on both balances. With [⚖ ⟳] select reference balance („LoCAL"). The appeared **[▼]** displays the current balance. Acknowledge with [TARE ↵].	"tECH" "LoCAL" ⇕ "tECH" "rEMotE"
⇨ If necessary, at balance zero display using [REF UNIT] select the weighing unit [kg or lb], which shall be used for adjustment. The appeared **[▼]** displays the current weighing unit. Acknowledge with [TARE ↵].	"tECH" "UNI t"
⇨ Ensure that there are no objects on the weighing pan. After successful standstill control press the [TARE ↵] button.	"UNLoAd"
⇨ Place the required adjusting weight carefully in the centre of the weighing plate and press [TARE ↵] to confirm.	" LoAd "
⇨ After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, balance will return into weighing mode automatically. In case of an adjustment error or incorrect adjusting weight the display will show an error message (FAI L H / FAI L L), repeat adjustment process.	

7.3 Adjustment bulk material scales CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5

Not pre-configured by KERN

Operation	Display
⇨ Switch-on balance and during the selftest press [→0←].	"*PI N*"
⇨ Use the number keys to enter password: standard password „0000" ⇨ Confirm input by [TARE].	"*PI N*" "*- - - -*"
⇨ Use [⟳] to select bulk material scales („remote"). The appeared **[▼]** displays the current balance. Acknowledge with [TARE].	"*tECH*" "*LoCAL*" ⇕ "*tECH*" "*rENotE*"
⇨ If necessary, at balance zero display using [UNIT] select the weighing unit [kg or lb], which shall be used for adjustment. The appeared **[▼]** displays the current weighing unit. Acknowledge with [TARE].	"*tECH*" "*UNI t*"
⇨ Ensure that there are no objects on the weighing pan. After successful standstill control press the [TARE] button.	"*UNLoAd*"
⇨ Enter value of the necessary adjustment weight using numeric keyboard and acknowledge with [TARE]. In order to achieve high-quality weighing results in the sense of the measuring technology, it is recommended to select the nominal value as high as possible. We recommend 80 % max. ⇨ Place the required adjusting weight carefully in the centre of the weighing plate and press [TARE] to confirm.	"*SEL*" "*000003*" "*LoAd*"
⇨ After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, balance will return into weighing mode automatically. In case of an adjustment error or incorrect adjusting weight the display will show an error message (*FAI L H / FAI L L*), repeat adjustment process.	

7.4 Adjustment bulk material scales CFS 50K-3 models
Not pre-configured by KERN

Operation	Display
⇨ Switch-on balance and during the selftest press [→0←/ESC].	"PI N"
⇨ Use the numeric keys to enter password: ⇨ Default password "0000" ⇨ Confirm input by [TARE].	"PI N" "----"
⇨ Use [⇄] to select bulk material scales („ Remote"). The appeared **[▼]** displays the current balance. Acknowledge with [TARE].	"tECH" "LoCAL" ⇕ "tECH" "rENotE"
⇨ If necessary, at balance zero display using [REF/UNIT] select the weighing unit [kg or lb], which shall be used for adjustment. The appeared **[▼]** displays the current weighing unit. Acknowledge with [TARE].	"tECH" "UNI t"
⇨ Ensure that there are no objects on the weighing pan. After successful standstill control press the [TARE] button.	"UNLoAd"
⇨ Enter value of the necessary adjustment weight using numeric keyboard and acknowledge with [TARE]. In order to achieve high-quality weighing results in the sense of the measuring technology, it is recommended to select the nominal value as high as possible. We recommend 80 % max. ⇨ Place the required adjusting weight carefully in the centre of the weighing plate and press [TARE] to confirm.	"LoAd""000.000" " LoAd "
⇨ After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, balance will return into weighing mode automatically. In case of an adjustment error or incorrect adjusting weight the display will show an error message (FAIL H / FAIL L), repeat adjustment process.	

8   Linearisation

Linearity shows the greatest deviation of a weight display on the scale to the value of the respective test weight according to plus and minus over the entire weighing range.
If linearity deviation is discovered during a testing instrument control, you can improve this by means of linearization.

- Carrying out linearization is restricted to specialist staff possessing well acquainted with the workings of weighing scales.
- The test weights to be used must be adapted to the weighing scale's specifications; see chapter 3.4 "testing instruments control".
- Observe stable environmental conditions. Stabilisation requires a certain warm-up time.
- After successful linearisation you will have to carry out calibration; see chapter 3.4 "testing instruments control".

8.1   Linearisation CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

Operation	Display
⇨ Switch-on balance and during the selftest press [→0←].	"PI N"
⇨ With the numerical keys input the password „ 9999": Confirm with [TARE].	"PI N" "- - - -"
⇨ „tECH LoCAL" is displayed, should it not be displayed, with [⟳] select „tECH LoCAL". Acknowledge with [TARE]. The appeared **[▼]** displays the current balance.	"tECH" "LoCAL" ⇕ "tECH" "rEMotE"

⇨ If necessary, at balance zero display using **UNIT** select the weighing unit [kg or lb], which shall be used for linearisation. The appeared **[▼]** displays the current weighing unit. Acknowledge with ⌷TARE⌷.	"tECH" "UNI t"
⇨ Ensure that there are no objects on the weighing pan. After successful standstill control press the ⌷TARE⌷ button.	"UNLoAd"
⇨ The weighing value of the first weight will be displayed. ⇨ Place weight 1 carefully in the centre of the weighing plate, wait for the stability display and confirm by ⌷TARE⌷.	"A 10kG" (example)
⇨ The weighing value of the second weight will be displayed. ⇨ Remove weight 1 ⇨ Place weight 2 carefully in the centre of the weighing plate, wait for the stability display and confirm by ⌷TARE⌷.	"A 30kG" (example)
⇨ After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, balance will return into weighing mode automatically. In case of fault or a wrong weight an error message (FAIL H / FAIL L) will appear, then repeat the linearization procedure.	
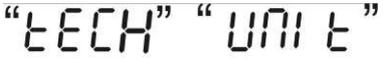
English

8.1.1 Table Linearization points

Max	Display Weight 1	Weight	Display Weight 2	Weight
6 kg	„A 2 kg"	2 kg	„A 6 kg"	6 kg
15 kg	„A 5 kg"	5 kg	„A 15 kg"	15 kg
30 kg	„A 10 kg"	10 kg	„A 30 kg"	30 kg

8.2 Linearisation CFS 50K-3 models

Operation	Display
⇨ Switch-on balance and during the selftest press [→0← / ESC] .	"PI N"
⇨ With the numerical keys enter the password „ 9999": Confirm input with [TARE ↵].	"PI N" "----"
⇨ „tECH LoCAL" is displayed, should it not be displayed, with [⊿⊿ ↻] select „tECH LoCAL". Acknowledge with [TARE ↵]. The appeared **[▼]** displays the current balance.	"tECH" "LoCAL" ⇕ "tECH" "rENotE"
⇨ If necessary, at balance zero display using [REF UNIT] select the weighing unit [kg or lb], which shall be used for adjustment. The appeared **[▼]** displays the current weighing unit. Acknowledge with [TARE ↵].	"tECH" "UNI t"
⇨ Ensure that there are no objects on the weighing pan. After successful standstill control press the [TARE ↵] button.	"LoAd 0"
⇨ „LoAd **1**" will be displayed ⇨ 15 kg adjustment weight placed carefully in the centre of the weighing plate, wait for stability display and confirm with [TARE ↵].	"LoAd 1"
⇨ „LoAd **2**" will be displayed, ⇨ 30 kg adjustment weight placed carefully in the centre of the weighing plate, wait for stability display and confirm with [TARE ↵].	"LoAd 2"

⇨ „LoAd **3**" will be displayed ⇨ 50 kg adjustment weight placed carefully in the centre of the weighing plate, wait for stability display and confirm with [TARE ⏎].	$"LoAd\ 3"$
• After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, balance will return into weighing mode automatically. In case of fault or a wrong weight an error message ($FAIL\ H\ /\ FAIL\ L$) will appear, then repeat the linearization procedure.	

8.2.1 Table linearisation points CFS 50K-3 models.

Max: 50 kg

Display	Weight
„L0Ad 0"	0 kg
„L0Ad 1"	15 kg
„L0Ad 2"	30 kg
„L0Ad 3"	50 kg

9 Basic Operation

9.1 Switching on/off

⇨ to switch-on actuate forward the switch-on/switch-out on the right lower side of the balance. The balance will carry out a self-test As soon as the weight display appears, the balance is ready for weighing.

⇨ To switch off press the on/off switch on the right bottom side of the balance at the back in the CFS 50K-3 models also press forwards.

9.2 Zeroing

Resetting to zero corrects the influence of light soiling on the weighing plate. The resetting range of the balance was adjusted to ± 2% max. by factory.
Further adjustments are possible in the menu, see chapter 13.

When using as counting system the zeroing range of both balances can be set in the menu, see chapter 13.

Manual

⇨ Unload the balance

⇨ Press the **ZERO** button, the balance begins to reset to zero.
The **[▼]** symbol over a appears.

Automatic

In the menu the automatic zero point correction can be switched off or the amount can be changed, see chapter 13.

9.3 Switch over balance/weighing bridge

For piece counting a weighing bridge can be connected via the second balance interface. In the counting system KERN CCS the quantity counting is made on the bulk material balance KERN KFP. The reference balance KERN CFS permits due to its high resolution a very precise determination of the average piece weight.

The second balance can be operated in the same manner like the first balance.

By pressing [⚖] the display changes from one to the other balance.

In the display appears "CHANGE" "LoCAL" or "CHANGE" "rEnotE".

The appeared [▼] displays the current balance.

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

"CHANGE" "LoCAL"	Piece weight 0 ▼	**(1)** Reference balance **KERN CFS**
"CHANGE" "rEnotE"	Piece weight 0 ▼	**(2)** Bulk material scales Example: KERN KFP (Counting system CCS)

CFS 50K-3 models:

Weight CHAnGE	Piece Weight LoCAL ▼	**(1)** Reference balance **KERN CFS**
Weight CHAnGE	Piece Weight rEnotE ▼	**(2)** Bulk material scales Example: KERN KFP (Counting system CCS)

9.4 Weighing with tare

A tare value can be entered for the reference as well as for the bulk material balance. Before setting a tare values select active balance, s. chap. 9.3.

9.4.1 Taring

⇨ Deposit weighing vessel. After successful stop check press the **TARE** button. The zero display and the symbol [▼] above **NET** will appear.
The weight of the container is now internally saved.

⇨ Weigh the material, the net weight will be indicated.

⇨ After removing the weighing container, the weight of the weighing container appears as negative display.

⇨ To delete the tare value, remove load from weighing pan and press the **TARE**-key.

⇨ 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.

9.4.2 Numeric entering of tare weight

⇨ Unload and reset to zero the balance

⇨ Input known tare weight numerically with decimal point and press key **TARE**. The entered weight will be stored as tare weight and displayed with negative sign. The **[▼]** symbol over **NET** appears.

⇨ 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 **TARE**.

> The tare value will be rounded up according to the readability of the balance, e.g. at a balance 60 kg max/5 g readability the input value of 103 g will be displayed as -105 g.

10 Totalization

The balance can totalize weight values or piece quantities.
When using in the counting system, no matter, if the weighed goods are on the reference or on the bulk material balance.

Preparing:

⇨ When using as counting system select using ⚖ the balance, on which will be totalized. The appeared **[▼]** displays the current balance.

⇨ When totalizing in counting mode set the average piece weight.
(see chap. 10.1 or 10.2)

⇨ If necessary, tare the empty balance container.

10.1 Manual totalizing

10.1.1 Manual totalizing CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models

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

ℹ • Menu settings:
„**F1 off**" ⇨ „**ACC**" ⇨ „**ON**" and „**F2 Prt**" ⇨ „**P mode**" ⇨ „**Print**" ⇨ „**Au OFF**"
(see chap. 13.2)
• When using as counting system there can be totalized on the reference as well as on the bulk material balance.
Before the totalizing process select the active balance, see chap. 9.3.

Add up:

⇨ Place weighing goods A.

Wait until the stability display appears, then press [M+]. The weight value or the number of items are stored and printed out.

⇨ Remove the weighed good. More weighed goods can only be added when the display ≤ zero.

⇨ Place goods to be weighed B.

Wait until the stability display appears, then press [M+]. The weight value or the number of items are added in the summation memory and printed out. Total weight, number of weighing procedures as well as total parts counting appear 2 sec.

⇨ Add more weighed goods as described before. Please note that the balance must be unloaded between the individual weighing procedures.

⇨ This process can be repeated 99 times or until the weighing range of the balance is exhausted.

Display of the saved weighing data:

⇨ Press [M+], the total weight, number of weighing procedures as well as total number of items are displayed.

Total weight placed on balance:	Number of weighing procedures:	Total number of pieces:
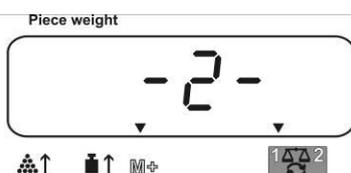
Delete weighing data:

⇨ Press [M+], the total weight, number of weighing procedures as well as total number of items are displayed. During this display press [C]. The data in the summation memory are deleted.

10.1.2 Manual Adding CFS 50K-3 models

With this function the individual weighing values are added into the summation memory by pressing [M+ PRINT] and edited, when an optional printer is connected.

Add up:

⇨ Place weighing goods A.

Wait until the stability display appears, then press [M+ PRINT]. The weight value or the number of items are stored and printed out.

⇨ Remove the weighed good. More weighed goods can only be added when the display ≤ zero.

⇨ Place goods to be weighed B.

Wait until the stability display appears, then press [M+ PRINT]. The weight value or the number of items are added in the summation memory and printed out. Total weight, number of weighing procedures as well as total parts counting appear 2 sec.

⇨ Add more weighed goods as described before.
Please note that the balance must be unloaded between the individual weighing procedures.

⇨ This process can be repeated 99 times or until the weighing range of the balance is exhausted.

⇨ This operation can be repeated until 999999 or 199999 is shown on the display

Display of the saved weighing data:

- Press ⌷M+/PRINT⌷, the total weight, number of weighing procedures as well as total number of items are displayed.

Total weight placed on balance:

Number of weighing procedures:

(example)

Total number of pieces
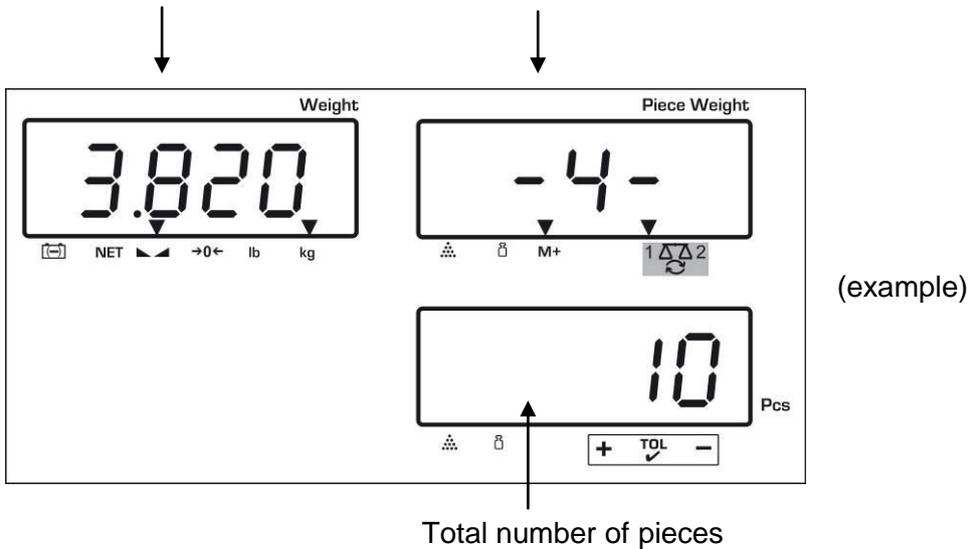
Delete weighing data:

⇨ Press ⌷M+⌷, the total weight, number of weighing procedures as well as total

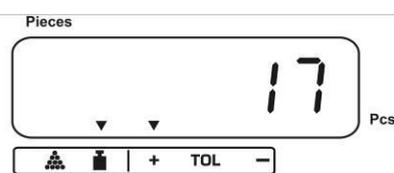number of items are displayed. During this display press ⌷C⌷. The data in the summation memory are deleted.

Printout example:
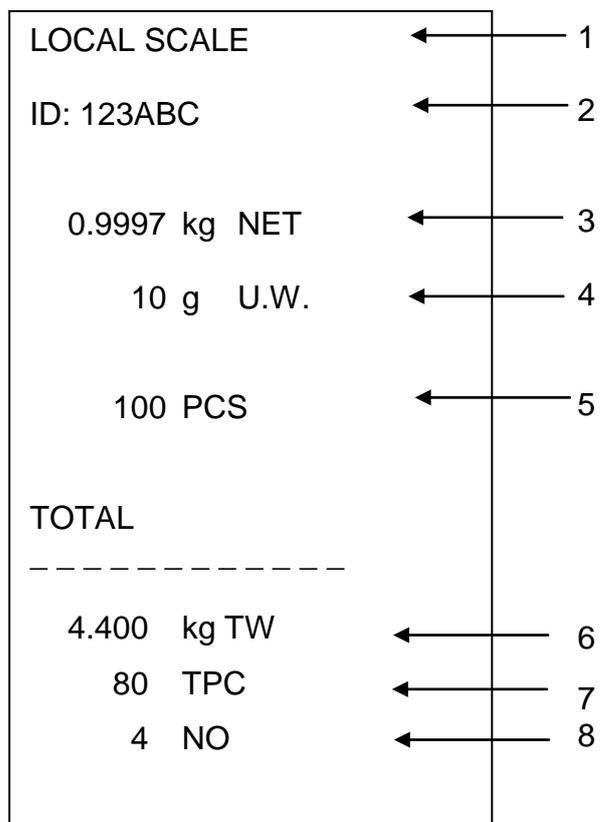
```
┌─────────────────────────────┐
│ LOCAL SCALE            ←──── │──── 1
│                              │
│ ID: 123ABC             ←──── │──── 2
│                              │
│   0.9997  kg  NET      ←──── │──── 3
│                              │
│      10  g    U.W.     ←──── │──── 4
│                              │
│                              │
│     100  PCS           ←──── │──── 5
│                              │
│                              │
│ TOTAL                        │
│ _ _ _ _ _ _ _ _ _ _ _ _      │
│                              │
│   4.400   kg TW        ←──── │──── 6
│      80   TPC          ←──── │──── 7
│       4   NO           ←──── │──── 8
└─────────────────────────────┘
```

1	LOCAL/REMOTE SCALE	Active balance, see chap. 9.3.
2	ID	User identification number, see chapter 13.2
3	NET	Currently placed net weight
4	U. W.	Average piece weight (Unit weight)
5	PCS	Currently placed number of pieces (Pieces)
6	TW	Placed total weight (Total weight)
7	TPC	Total number of pieces (Total pieces)
8	NO	Number weighing processes

English

10.2 Automatic adding-up

With this function the individual weighing values are automatically added into the summation memory when the balance is unloaded without pressing ⊡ and edited, when an optional printer is connected.

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

- Menu settings:
  „**F1 off**" ⇨ „**ACC**" ⇨ „**ON**" and „**F2 Prt**" ⇨ „**P mode**" ⇨ „**Print**" ⇨ „**Au ON**", (see chap. 13.2)

i
- When using as counting system there can be totalized on the reference as well as on the bulk material balance.
  Before the totalizing process select the active balance, see chap. 9.3.

CFS 50K-3 models:

- Menu settings:
  „**F1 off**" ⇨ „**F2 Prt**" ⇨ „**P mode**" ⇨ „**Print**" ⇨ „**Au on**", see chap. 13.2

i
- When using as counting system there can be totalized on the reference as well as on the bulk material balance.
  Before the totalizing process select the active balance, see chap. 9.3.

Add up:

⇨ Place weighing goods A.
  After the standstill control sounds a signal tone. Unload the weighing good, the weighing value is added into the summation memory and printed out.

⇨ Place goods to be weighed B.
  After the standstill control sounds a signal tone. Unload the weighing good, the weighing value is added into the summation memory and printed out.

⇨ Add more weighed goods as described before. Please note that the balance must be unloaded between the individual weighing procedures.

⇨ This process can be repeated 99 times or until the weighing range of the balance is exhausted.

i
Display and deletion of weighing data as well as print example (see chap. 10.1.1 and/or 10.1.2 (CFS 50K-3)

11 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.

i
- 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 precision of the average unit weight can be increased at any time while units are being counter by inputting the displayed number of units and confirming by [REF] or [REF] (in CFS 50K-3 models). After the reference optimization sounds a signal tone. As the additional pieces increase the base for the calculation, the reference also becomes more exact.

11.1 Determination of the average piece weight by weighing

11.1.1 CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

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, than enter the number of individual items via the numeric keypad.

Confirm within 5 sec by pressing [REF].

The balance determines the average piece weight.

Count the items

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

When an optional printer is connected, the displayed value can be edited by pressing [M+] (menu settings „**P mode**" ⇨ „**Print**" ⇨ „**Au OFF**", chap. 13.2).

11.1.2 CFS 50K-3 models:

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, than enter the number of individual items via the numeric keypad.

Confirm within 5 sec by pressing [REF].

The balance determines the average piece weight.

Count the items

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

When an optional printer is connected, the displayed value can be edited by pressing [M+ PRINT] (menu settings „**P mode**" ⇨ „**Print**" ⇨ „**Au OFF**", chap. 13.2).

Delete reference value

⇨ Press [C]

11.2 Numeric input of the average piece weight

Set reference

⇨ Input known average unit weight with numerical keys and confirm within 5 secs. with [REF] or [REF/UNIT] (CFS 50K-3 models).

If in the weight display as weighing unit [kg] is active, the average piece weight will be displayed in [g]. If as weighing unit [lb] is active, the average piece weight is also displayed in [lb].

Count the items

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

When an optional printer is connected, the displayed value can be edited by pressing (menu settings „**P mode**" ⇨ „**Print**" ⇨ „**Au OFF**", chap. 13.2).
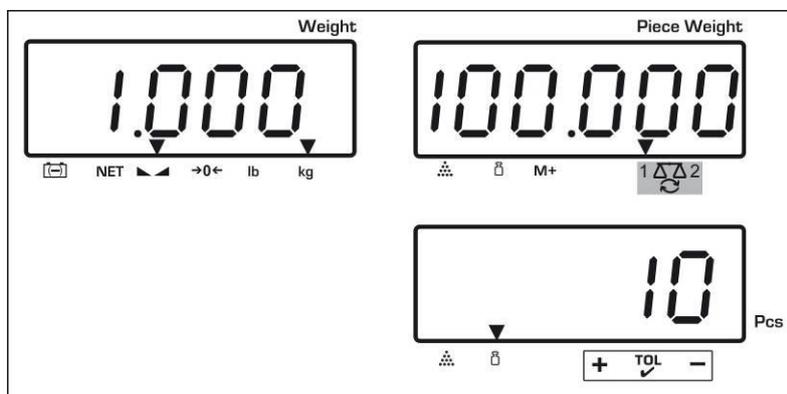
Delete unit weight

⇨ Press [C]

11.3 Automatic reference optimization

If at the reference determination the placed weight or the placed piece number is too small, in the display of the average piece weight the triangle symbol will appear over [⚬⇧] or [⬛⇧].
To optimize the calculated average piece weight automatically, add further parts whose number is smaller than that of the first reference determination. After the reference optimization sounds a signal tone. For each reference optimization the average piece weight is newly calculated. As the additional pieces increase the base for the calculation, the reference also becomes more exact.

By pressing [REF] or [REF/UNIT] (CFS 50K-3 models) recalculation can be avoided and thus the reference weight locked.

Automatic reference optimization will be deactivated as soon as the number of added parts exceeds the saved reference quantity.

11.4 Counting with counting system

(Display example)

Bulk material balance e.g. KERN KFP	Reference balance KERN CFS
• Here pieces of huge quantities will be counted.	• Due to its high resolution it is useful for accurate determination of the average piece weight.
• Big parts (max > 3kg) are counted on the weighing bridge.	• Smallest parts (max < 3kg) are counted on the precise **KERN CFS.**
• If in the determination of the average piece weight no such high resolution is asked for as that of the **KERN CFS**, the reference formation can also be made in the bulk material balance.	

Counting with bulk material balance:

1. On the reference balance **KERN CFS** set average piece weight, see chap. 11.1. or chap. 11.2.

2. Switch over balance with 🔄 (s. chap. 9.3)

3. Put empty vessel on the weighing plate of the bulk material balance **KERN KFP** and tare.

4. Fill counted quantity in the vessel on the bulk material balance. The piece number is shown in the display.

> **i** In order to avoid errors at the piece number determination, both balances must be adjusted with the same acceleration due to gravity (see chap. 7). In case of non-compliance counting errors will result!

12 Weighing to a certain target weight /target quantity and tolerance control

The balance allows weighing of goods to a certain target weight (net weight) or target piece number within defined tolerances. With this function one can also check if the weighing good is within a defined tolerance range. Tolerance control is possible in weighing or target mode.
Reaching the target value is indicated by an acoustic (if activated in menu) and an optic signal (tolerance mark ▼).

12.1 Tolerance control in weighing mode

Operation	Display
⇨ Press $\boxed{\text{PRE SET}}$, the active tolerance weighing mode is indicated. ⇨ If necessary select with $\boxed{\text{REF}}$ or $\boxed{\text{REF}}$ (CFS 50K-3 models) „Tolerance control weighing mode" [" nEt "].	" PSt " " nEt "
⇨ Press the key **TARE**, which shows the currently set upper threshold. ⇨ Using numeric keyboard enter desired value or delete using $\boxed{\text{C}}$.	"Hi nEt" "0.0000" ⇩ "Hi nEt" "0.3234"
⇨ Press the key **TARE** which shows the currently set lower threshold. ⇨ Using numeric keyboard enter desired value or delete using $\boxed{\text{C}}$.	"Lo nEt" "0.0000" ⇩ "Lo nEt" "0.2234"

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

⇨ Press [TARE], tolerance control is started. The ▼ symbol over ▮ appears.

⇨ Place the weighing goods and with help of the tolerance mark ▼ check if the net weight of the weighed goods is under, within or over the specified tolerance.

Display of tolerance mark ▼, if weighing goods are under the specified tolerance:
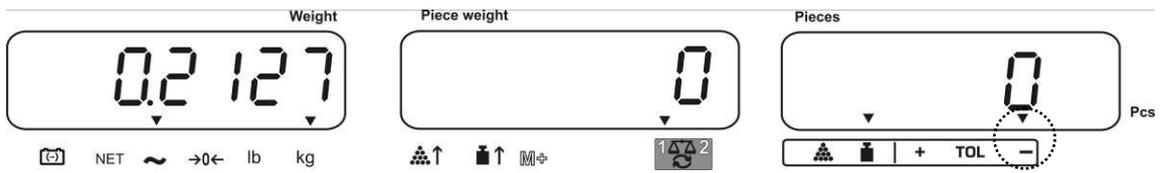
Display of tolerance mark ▼, if weighing goods within the specified tolerance:

Display of tolerance mark ▼, if weighing goods above the specified tolerance:

The information if the goods to be weighed are within the tolerance limits, can additionally be given by an acoustic signal (menu item „ｂｅｅｐ„ see chap. 13.2)

Modelle CFS 50K-3 models:

⇨ Press [TARE], tolerance control is started. The ▼ symbol over ⧖ appears.

⇨ Place the weighing goods and with help of the tolerance mark ▼ check if the net weight of the weighed goods is under, within or over the specified tolerance.

Display of tolerance mark ▼, if weighing goods are under the specified tolerance:

Display of tolerance mark ▼, if weighing goods within the specified tolerance:

Display of tolerance mark ▼, if weighing goods above the specified tolerance:

The information if the goods to be weighed are within the tolerance limits, can additionally be given by an acoustic signal (menu item „*BEEP*„ see chap. 13.2)

i ▪ For tolerance control, also only one limit value can be set.
  ▪ If both limit values are deleted, the tolerance control is deactivated.

12.2 Tolerance control in counting mode

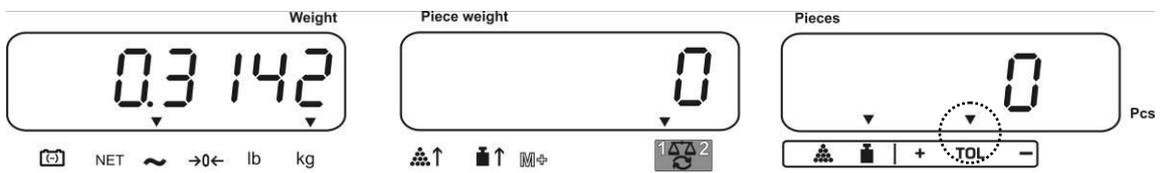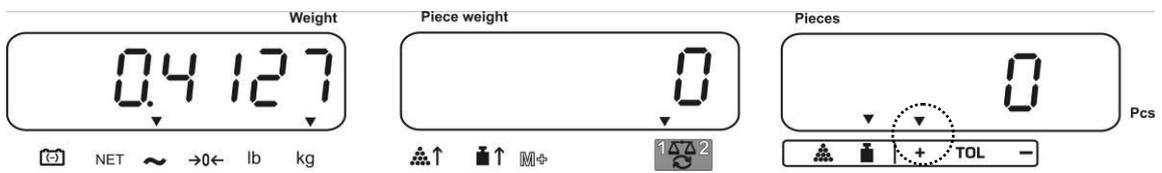| Operation	Display
⇨ Press [PRE SET], the active tolerance weighing mode is indicated. ⇨ If necessary select with [REF]. or [REF] (CFS 50K-3 models) „Tolerance control counting mode" ["*Cnt*"].	
⇨ Press [TARE], the currently set upper limit value is displayed. ⇨ Using numeric keyboard enter desired value e.g. 50 items or delete using [©].	"*Hi Cnt*" " *0*" ⇩ "*Hi Cnt*" " *50*"
⇨ Press [TARE], the currently set lower limit value is displayed. ⇨ Using numeric keyboard enter desired value e.g. 40 items or delete using [©].	"*Lo Cnt*" " *0*" ⇩ "*Lo Cnt*" " *40*"

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

⇨ Press [TARE], tolerance control is started. The ▼ symbol over ⚥ appears.

⇨ Determine the average piece weight (see chap. 11.1 or 11.2), place the weighing goods and check using the tolerance mark ▼, if the number of the placed pieces is under, within or above the specified tolerance.

Display of tolerance mark ▼, if weighing goods are under the specified tolerance

Weight	Piece weight	Pieces
0.3500	10.0000	35 Pcs

Display of tolerance mark ▼, if weighing goods within the specified tolerance

Weight	Piece weight	Pieces
0.4500	10.0000	45 Pcs

Display of tolerance mark ▼, if weighing goods above the specified tolerance:

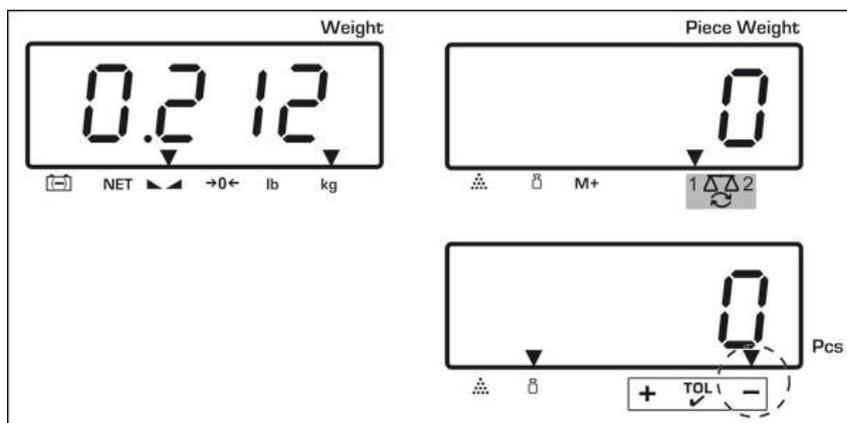| Weight	Piece weight	Pieces
0.6000	10.0000	60 Pcs

The information if the goods to be weighed are within the tolerance limits, can additionally be given by an acoustic signal (menu item „BEEP„ see chap. 13.2)
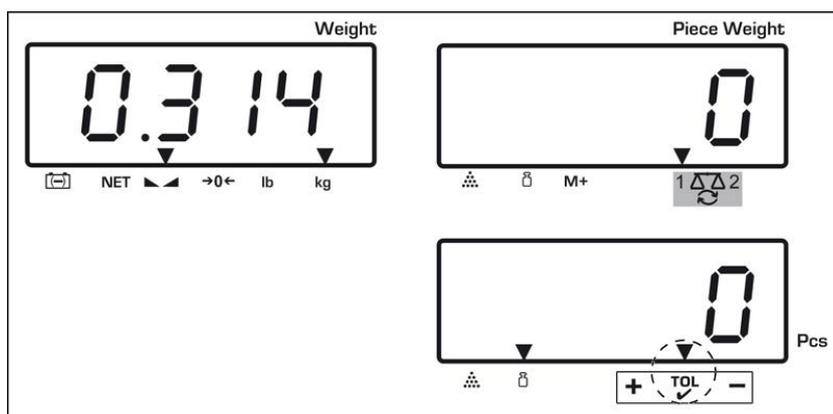
ℹ
- For tolerance control, also only one limit value can be set.
- If both limit values are deleted, the tolerance control is deactivated.

CFS 50K-3 models:

⇨ Press [TARE], tolerance control is started. The ▼ symbol over ⛰ appears.

⇨ Determine the average piece weight (see chap. 11.1 or 11.2), place the weighing goods and check using the tolerance mark ▼, if the number of the placed pieces is under, within or above the specified tolerance.
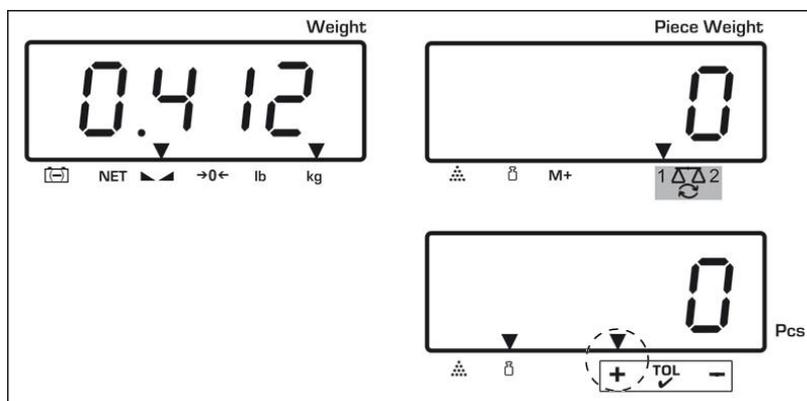
Display of tolerance mark ▼, if weighing goods are under the specified tolerance

Display of tolerance mark ▼, if weighing goods within the specified tolerance

Display of tolerance mark ▼, if weighing goods above the specified tolerance:

English

The information if the goods to be weighed are within the tolerance limits, can additionally be given by an acoustic signal (menu item „*bEEP*„ see chap. 13.2)

⇨ For tolerance control, also only one limit value can be set.
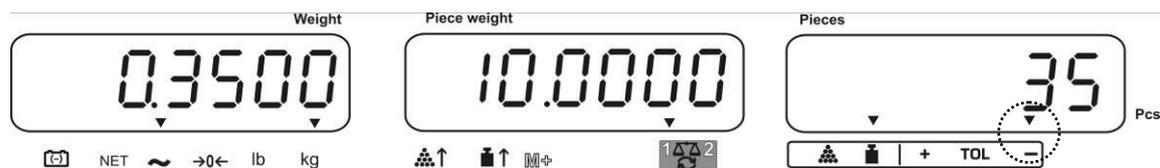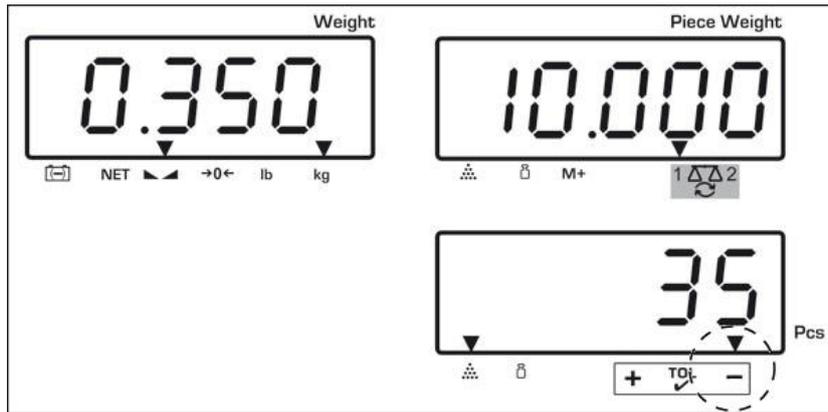⇨ If both limit values are deleted, the tolerance control is deactivated.

12.2.1 Delete limit values:

When entering upper and lower threshold, press [C] key and confirm with [TARE].

12.3 Store data

The balance has over 100 **indirect** memories and 5 **direct** memories (only CFS 50K-3 models) for frequently used tare values, average unit weights and additional texts. These data can be accessed by calling up the corresponding number of a certain article.

12.3.1 Store in indirect memories

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

Buttons [0] ~ [9] :

Operation	Windows		
⇨ If necessary set balance to zero using [→0←].	"*0.0000*"	" *0*"	" *0*"
⇨ Tare, as required. If it's used as counting system, observe if bulk material or counting balance shall be tared. Select using bulk material or reference balance accordingly by [⚖]. The appeared **[▼]** displays the current balance. Or place the weighing container and tare with [TARE] (see chap. 9.4.1) or enter tare value numerically (see chapter 9.4.2). Tare values can only be saved when they are situated in the admitted taring range (factory setting > 2 % max). At values < 2 % max, reset balance with [→0←].			

⇨ If used as a counting system select reference balance using ⬚.			
⇨ Determine the average piece weight or by weighing (see chap. 11.1) or enter via numeric keyboard (see chap. 11.2).			
⇨ Input memory location, for example, PLU 27 press [M]	"PLU"	"- -"	
⇨ Via numeric keys "2" and "7" enter memory location "27".	"PLU"	"27"	
⇨ Press [PRE SET], the currently stored additional text will appear. The first digit is flashing.	"PLU 27"	"XXXXXX"	"XXX"
⇨ Delete additional text with [C] if necessary.	"PLU 27"		
⇨ Enter the additional text as follows (max. 12 characters, e.g. "KERN 1234 AB").	"PLU 27"	"HErn 1"	"234 Ab"
For input of numbers, actuate shortly the numeric button			
For input of letters press the numeric button and keep it pressed until the desired letter is displayed. The characters according to keyboard assignation run through.			

1	- / \	
2	A B C	
3	D E F	
4	G H I	
5	J K L	
6	M N O	
7	P Q R S	
8	T U V	
9	W X Y Z	
0	_ [ ]	_ = Space

Overview data input / data output:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	-	/	\	(	)

Use [•] to move number selection to the left, the respective active position flashes.

Use [M+] to move the number selection to the right, the respective active position flashes.

⇨ Confirm input by [TARE]. The data are stored under the entered PLU-number; the data can be called-up at any time by calling the respective PLU-number.

CFS 50K-3 models:

Buttons [0 _()] ~ [9 WXYZ] :

Operation	Windows	
⇨ If necessary set balance to zero using [→0← ESC] .	"0.0000"	" 0 " " 0 "
⇨ Tare, as required. If it's used as counting system, observe if bulk material or counting balance shall be tared. Select bulk material or reference balance accordingly by [⚖↻]. The appeared **[▼]** displays the current balance. Or place the weighing container and tare with [TARE↵] (see chap. 9.4.1) or enter tare value numerically (see chapter 9.4.2). Tare values can only be saved when they are situated in the admitted taring range (factory setting > 2 % max). At values < 2 % max, reset balance with [→0←].		
If used as a counting system select reference balance using [⚖↻] . ⇨ Determine the average piece weight or by weighing (see chap. 11.1) or enter via numeric keyboard (see chap. 11.2).		
⇨ Press [M] button for approx. 3 seconds.	"PLU"	" - - "
⇨ Via numeric keys "2" and "7" enter memory location "27".	"PLU"	" 27 "
⇨ Press [PRE SET], the currently stored additional text will appear. The first digit is flashing.	"PLU 27"	"XXXXXX" "XXX"
⇨ Delete additional text with [C] if necessary.	"PLU 27"	
⇨ Enter the additional text as follows (max. 12 characters, e.g. "KERN 1234 AB").	"PLU 27"	"HErn 1" "234 Ab"

For input of numbers, actuate shortly the numeric button	

For input of letters press the numeric button and keep it pressed until the desired letter is displayed. The characters according to keyboard assignation run through.

1	- / \	
2	A B C	
3	D E F	
4	G H I	
5	J K L	
6	M N O	
7	P Q R S	
8	T U V	
9	W X Y Z	
0	_ [ ]	_ = Space

Overview data input / data output:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	-	/	\	(	)

⇨ Confirm input by [TARE].

The data are stored under the entered PLU-number; data can be called-up at any time by calling the respective PLU-number (see chap. 12.3.2) .

The stored unit weight is displayed.

12.3.2 Call up stored values

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

Operation	Windows		
⇨ When using as counting system select using ⟳ the balance, on which the tare value is stored. The appeared **[▼]** displays the current balance.			
⇨ Press 〔M〕	"PLU"	" - -"	
⇨ Via numeric keys "2" and "7" enter memory location "27".	"PLU"	"27"	
⇨ Press 〔M〕 anew, the memory location and the stored additional text are displayed for 1 s. If the data shall be displayed longer time, keep 〔M〕 pressed. The display changes into the counting mode, the stored tare value e.g. 100 g and the average piece weight e.g. 10g /pce. are displayed. ⇨ Place load on pan and read the number of pieces.	"PLU 27" ⇩ "-0.100"	"HErn 1" ⇩ "10"	"234 Ab" ⇩ "- 10"

CFS 50K-3 models:

Operation	Windows	
⇨ When using as counting system select the balance using [icon], on which the tare value is stored. The appeared **[▼]** displays the current balance.		
⇨ Press [M]	"PLU"	"– –"
⇨ Via numeric keys "2" and "7" enter memory location "27".	"PLU"	"27"
⇨ Press [M] anew, the memory location and the stored additional text are displayed for 2 s. ⇨ The display changes into the counting mode, the stored tare value e.g. 100 g and the average piece weight e.g. 10g /pce. are displayed. ⇨ Place load on weighing pan and read the number of pieces..	"PLU 27" ⇩ "-0.100"	"tErn 1" "234 Ab" ⇩ "10" "- 10"

12.3.3 Printing

- When connecting an optional printer, the data can be edited by pressing   .

    Printout example:

    ```
    LOCAL SCALE                    ◄──────── 1

    ID: 123ABC                     ◄──────── 2

    NAME: KERN 1234 AB             ◄──────── 3

       1.9003  kg  NET             ◄──────── 4

          10 g    U.W.             ◄──────── 5


          190  PCS                 ◄──────── 6
    ```

1	LOCAL/REMOTE SCALE	Active balance, see chap. 9.3
2	ID	User identification number, see chapter 13.2
3	NAME	Additional text
4	NET	Placed net weight
5	U. W.	Average piece weight (Unit weight)
6	PCS	Placed number of pieces (Pieces)

12.4 Storing into indirect memory locations (only CFS 50K-3 models)

Buttons [1] ~ [5].

12.4.1 Save

Operation	Windows	
⇨ When using as counting system use [⚖] to select the balance, on which the tare value is stored. The appeared **[▼]** displays the current balance.		
⇨ Input average unit weight using the numerical keys and confirm with [REF UNIT].	"0.000"	"1.000" (example) " 0"
⇨ Desired direct key [1] ~ [5] (for example [1]) keep pressed for about 3 seconds, „1" and „ _" are displayed or the last input product name is displayed. The first digit is flashing.	" 1"	" ✳ "
⇨ If necessary, also delete product name with [C] and with the keys [0] ~ [9] input a new product name (keep key pressed to show characters) With [→0← ESC] move number selection to the **right**, the active area blinks. With [⚖] move number selection to the **left**, the active area blinks.	" 1"	"AbCdEF" (example) "GHILNO"
⇨ Press [TARE]. Product name and item weight are stored under the selected direct key. In the display the input unit weight is displayed.	"0.000"	"1.000" (example) " 0"

12.4.2 Calling up

Put on the goods, press direct keys [1] ~ [5], and in the display the product name and the unit weight are displayed for some two seconds.

By pressing [M+ PRINT] data are printed

Printout example:

```
LOCAL SCALE          ◄──────── 1

ID: 123ABC           ◄──────── 2

NAME: bAnAnEn        ◄──────── 3

   1.9003  kg  NET   ◄──────── 4

      10 g   U.W.     ◄──────── 5


      190  PCS        ◄──────── 6
```

1	LOCAL/REMOTE SCALE	Active balance, see chap. 9.3
2	ID	User identification number, see chapter 13.2
3	NAME	Additional text
4	NET	Placed net weight
5	U. W.	Average piece weight (Unit weight)
6	PCS	Placed number of pieces (Pieces)

13 Menu

The menu is structured in the following menu blocks.

1. $F1oFF$ Balance and application settings

2. $F2 Prt$ Settings serial interface

3. Uid Setting user identification number

4. $SCid$ Setting balance identification number

5. $tECH$ Configuration balance or balance bridge

13.1 Navigation in the menu

Call up menu	⇨ Turn on balance and during the self-test press **PRE-SET** The first menu block $F1oFF$ is displayed.
Select menu block	⇨ Using [REF] or [REF] in CFS 50K-3 models the separate menu blocks can be accessed in succession.
Select menu item	⇨ Confirm selected menu block with **TARE**. The first menu item is displayed, e.g.z.B. $F1oFF$ ⇨ $bEEP$ ⇨ Using [REF] or [REF] in CFS 50K-3 models the separate menu items can be accessed in succession.
Select setting	⇨ Confirm selected menu point with **TARE**. The current setting will be displayed.
Change settings	⇨ Using [REF] or [REF] in CFS 50K-3 models one can switch to the available settings.
Acknowledge setting / exit the menu	⇨ Press **TARE** , the balance will return to submenu ⇨ Set further settings either in the menu or with [→0←] or [→0← ESC] in CFS 50K-3 models return to the main menu.
Return to weighing mode	⇨ Press again [→0←] or [→0← ESC] in CFS 50K-3 models

13.2 Menu overview

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

Menu block Main menu	Menu item Submenu	Available Settings		Explanation
F1 oFF	bEEP	"bEEP" "oFF"		Signal tone switched off
		"bEEP" "on in"		Signal tone on, if weighing value within tolerance limits
		"bEEP" "on oUt"		Signal tone on, if weighing value outside tolerance limits
	EL	"LItE" "oFF"		Display background illumination off
		"LItE" "on"		Display background illumination on
		"LItE" "AUt"		Background illumination switches on automatically when loaded or a button is pressed
	Unit	"Unit" "KG/Lb"		Balance switchable kg ⇔ lb
		"Unit" "KiLo"		Weighing unit "kg"
		"Unit" "Lb"		Weighing unit "lb"
	oFF	0/3/5/15/30		Auto-off function, balance will switch off automatically after the set time. Selectable 0/3/5/15/30 minutes.
	"ACC"	"ACC" "on"		Totalizing mode on
		"ACC" "oFF"		Totalizing mode off
F2 Prt	PmodE	Print	"AU oFF"	Data output of stable weighing values after pressing [M+]
			"AU on"	Automatic data output of stable weighing values after unloading the balance
		P Cont		Continuous data output of all weighing data, (totalizing deactivated)
		P SErrE		Continuous data output only weight value.
	P bAUd	b 600		Baud rate 600
		b 1200		Baud rate 1200
		b 2400		Baud rate 2400
		b 4800		Baud rate 4800
		b 9600		Baud rate 9600

	PArItY	8 n 1	8 bits, no parity
		7 E 1	7 bits, even parity
		7 o 1	7 bits, odd parity
	PtYPE	tPUP	Standard printer setting
		LP50	Not documented
U id	"U id" "AbC234" " "	Shows the current user identification number, max. 6 digits
SC id	"SC id" "AbC234" " "	Shows the current balance identification number, max. 6 digits
tECH	Details s.Chap. 14	password-protected

CFS 50K-3 models:

Menu block Main menu	Menu item Submenu	Available Settings	Explanation
F1oFF	bEEP	"bEEP" "oFF "	Signal tone switched off
		"bEEP" "on in"	Signal tone on, if weighing value within tolerance limits
		"bEEP" "on oUt"	Signal tone on, if weighing value outside tolerance limits
	bt	"LiGHt" "on"	Display background illumination on
		"LiGHt" "AUto"	Background illumination switches on automatically when loaded or a button is pressed
		"LiGHt" "oFF"	Display background illumination off
	oFF	0/3/5/15/30	Auto-off function, balance will switch off automatically after the set time. Selectable 0/3/5/15/30 minutes.

F2 Prt	PñodE	Print	"AU oFF"	Data output of stable weighing values after pressing [M+ PRINT]
			"AU on"	Automatic data output of stable weighing values after unloading the balance
		P Cont		Continuous data output of all weighing data, (totalizing deactivated)
		P SErrE		Continuous data output only weight value.
	P bAUd	b 600		Baud rate 600
		b 1200		Baud rate 1200
		b 2400		Baud rate 2400
		b 4800		Baud rate 4800
		b 9600		Baud rate 9600
	PArity	8 n 1		8 bits, no parity
		7 E 1		7 bits, even parity
		7 o 1		7 bits, odd parity
	PtYPE	tPUP		Standard printer setting
		LP50		Not documented
U id	"U i d" "AbC234" "⎯"			Shows the current user identification number, max. 6 digits
SC id	"SC id" "AbC234" "⎯"			Shows the current balance identification number, max. 6 digits
tECH	Details s.Chap. 14			password-protected

14 Configuration bulk material balance / technical parameters

i
⇨ Changes should only be carried out by trained specialized personnel.

⇨ Navigation in menu see chap. 13.1

In factory the balance **KERN CFS** or the counting system **KERN CCS** are preconfigured in a way that normally no more changes will be necessary.
But if there are special conditions of use or if as bulk material balance an other weighing bridge (not preconfigured by **KERN**) is connected, in the menu block "ᴛᴇᴄʜ" the required settings can be made.

Technical data

Supply voltage:	5 VDC
Max. signal voltage	0-20 mV
Zeroing range	0-5 mv
Sensitivity	> 0.02 µv
Resistance parameter	87 O Min., 4 x 350 Ω load cell
Connection	4 poles
Max. cable length	6 meter
Connection plug	9 pin d-subminiature bushing

Menu settings:

Call up menu ⇨ Switch-on balance and during the selftest press [PRE SET]. The first menu block $F\,1\,oFF$ is displayed.	$F\,1\,oFF$
⇨ Press repeatedly [REF ⬛] or [REF ⬛] (in CFS 50K-3 models) press again until $tECH$ is displayed. $F\,1\,oFF ⇨ F2\,Prt ⇨ U\,id ⇨ SC\,id ⇨ tECH$	$tECH$
⇨ Confirm with **TARE**. The request to enter the password appears.	"$PI\,N$"
⇨ Or as standard password enter four times zero "0000" or the stored password (input see parameter "$PI\,N$"). Any other password can be overwritten with "9999". ⇨ Confirm with **TARE**	"$PI\,N$" "$----$"
⇨ Use [⬛] to select the balance which should be configured (bulk material/reference balance). The appeared **[▼]** displays the current balance. Confirm with **TARE**.	"$tECH$" "$LoCAL$" ⇕ "$tECH$" "$rEMotE$"
⇨ Use **UNIT** to select the weighing unit [kg or lb], where the adjustment shall be made. The appeared **[▼]** displays the current weighing unit. Confirm with **TARE** , the first menu item "Cnt" is displayed.	"$tECH$" "$UNI\,t$" ⇩ "Cnt"

English

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

Navigation in the menu ⇨ With help of [REF], the individual menu items can be selected one after the other. ⇨ Confirm selected menu item by pressing [TARE]. The current setting will be displayed. ⇨ Switch into the available settings using [REF]. ⇨ Either save by pressing [TARE] or cancel by pressing [→0←].	
Parameter selection ⇨ Display internal resolution	"Cnt"

⇨ Balance capacity.
 	
   Settings only possible on the bulk material balance.
 	
⇨ Press [TARE], the currently set position of the decimal dot is displayed.
 	
   Select desired setting with [REF] and acknowledge by [TARE]. The currently set capacity is displayed.
 	
   For changes delete display using [→0←] and enter the desired value via the numeric keyboard. Confirm input by [TARE].
   The currently set readability is displayed, for changes see step 3 "Readability".
	"CAP"
	⇩
	"dESC" "0.00"
	⇩
	"SEL" "0.00 100"
	⇩
	"InC" "1"

⇨ Readability ⇨ Press [TARE], the currently set readability is displayed. Select desired setting with [REF] and acknowledge by [TARE].	"diu" Display at selection reference balance ⇩ "InC" "1"

⇨ Automatic zero point correction (Autozero) by changing the display, digits selectable (0.5d, 1d, 2d, 4d) ⇨ Press [TARE], the currently set value is displayed. Press [REF] to select the desired setting (0.5d, 1d, 2d, 4d) and acknowledge by pressing [TARE].	" *R2t* " ⇩ " *R2n* " " *Id* "
⇨ Zero setting range Load range where the display after switching-on the balance is set to zero ⇨ Press [TARE], the currently set zero setting range is displayed. Press [REF] to select the desired setting (0 %, 2 %, 5 %, 10 %, 20 %) and acknowledge by pressing [TARE].	" *0 RUto* " ⇩ " *0 RUto* " " *10* "
⇨ Zero setting range Load range where the display is set to zero by pressing [→0←]. ⇨ Press [TARE], the currently set auto-zero range is displayed. Press to select the desired setting (0 %, 2 %, 5 %, 10 %, 20 %) and acknowledge by pressing .	" *0 nRnL* " ⇩ " *0 nRnL* " " *2*
⇨ Password input for menu block „*tECH*" ⇨ Press [TARE], " *P in 1* " will be shown. Use the numeric keyboard to enter the desired code and acknowledge with [TARE]. ⇨ " *P in2* " is displayed, request to repeat the password input. Enter code anew and press [TARE] to acknowledge. If entry was successful, " *donE* " is displayed, if false, " *FRI L* " appears. In this case repeat the code input.	" *P in* " ⇩ " *P in1* " ⇩ " *P in2* " ⇩ " *donE* "

English

CFS 50K-3 models:

Reference balance: „tECH LoCAL"

Navigation in the menu	
⇨ With help of [REF], the individual menu items can be selected one after the other.	
⇨ Confirm selected menu item by pressing [TARE]. The current setting will be displayed.	
⇨ Switch into the available settings using [REF].	
⇨ Either save by pressing [TARE] or cancel by pressing [→0← ESC].	
Parameter selection	"$\overline{Cnt}$"
⇨ Display internal resolution	
⇨ Press [REF], „CAP." is displayed	"$\overline{CAP}$"
Balance capacity.	
Settings only possible on the bulk material balance.	
⇨ Press [REF] „rES" is displayed	"rES"
⇨ Press [TARE], the current setting for resolution are displayed	⇩
⇨ Select desired resolution by pressing [REF].	"3000"
⇨ Acknowledge by [TARE].	(example)
⇨ Press [REF], „A2t" is displayed	"$\overline{A2t}$"
Automatic zero point correction (Autozero) by changing the display, digits selectable (0.5d, 1d, 2d, 4d)	
⇨ Press [TARE], the currently set value is displayed.	⇩
Press [REF] to select the desired setting (0.5d, 1d, 2d, 4d) and acknowledge by pressing [TARE].	"$\overline{A2n}$" "$\overline{1d}$"

English

⇨ Press [REF], „0 Auto" is displayed	
⇨ Zero setting range	
Load range where the display after switching-on the balance is set to zero	" 0 AUto "
	⇩
⇨ Press [TARE], the currently set zero setting range is displayed.	" 0 AUto " " 10 "
With [REF] select desired setting (0 %, 2 %, 5 %, 10%, 20%, 30%, 40%, 50 %) and confirm.	(example)
⇨ Press [REF], „0 mAnL" is displayed	
⇨ Zero setting range	" 0 ṁAnL "
Load range where the display is set to zero by pressing [→0← ESC] .	⇩
⇨ Press [TARE], the currently set auto-zero range is displayed.	" 0 ṁAnL " " 2 "
With [REF] select desired setting (0 %, 2 %, 4 %, 10 %, 50 %, 100 %) and confirm with .	(example)
⇨ Press [REF], „Pin" is displayed	" Pin "
Password input for menu block „tECH"	
⇨ Press [TARE], " Pin1 " will be shown. Use the numeric keyboard to enter the desired code and acknowledge with [TARE].	⇩ " Pin1 " ⇩
⇨ " Pin2 " is displayed, request to repeat the password input.	" Pin2 " ⇩ " donE "
Enter code anew and press [TARE] to acknowledge. If entry was successful, " donE " is displayed, if false, " FAIL " appears. In this case repeat the code input.	

Bulk material scales: „tECH rEmotE"

1 ⚖⚖ 2

Navigation in the menu ⇨ With help of [REF ▲] , the individual menu items can be selected one after the other. ⇨ Confirm selected menu item by pressing [TARE ↵]. The current setting will be displayed. ⇨ Switch into the available settings using [REF ▲]. ⇨ Either save by pressing [TARE ↵] or cancel by pressing [→0← ESC].	
Parameter selection ⇨ Display internal resolution	"Cnt"
⇨ Press [REF ▲] ,"dESC" is displayed ⇨ Press [TARE ↵], the currently set position of the decimal dot is displayed. Select desired setting with [REF ▲] and acknowledge by [TARE ↵].	"dESC" ⇩ "dESC" "0.00"
⇨ Press [REF ▲] , „CAP." is displayed ⇨ Balance capacity. ⇨ Settings only possible on the bulk material balance. ⇨ Press [TARE ↵] The currently set capacity is displayed. For changes delete display using [C] and enter the desired value via the numeric keyboard. Confirm input by [TARE ↵].	"CAP" ⇩ "SEL" "000 100"

English

⇨ Press [REF], „div" is displayed ⇨ Press [TARE], the currently set legibility is displayed, ⇨ Using [REF] select the desired readibility ⇨ Acknowledge by [TARE].	⇩ "¹ₙₑ" "¹" (example)
⇨ Press [REF] , „A2t" is displayed Automatic zero point correction (Autozero) by changing the display, digits selectable (0.5d, 1d, 2d, 4d) ⇨ Press [TARE] , the currently set value is displayed. Press [REF] to select the desired setting (0.5d, 1d, 2d, 4d) and acknowledge by [TARE].	"A2t" ⇩ "A2n" "¹d"
⇨ Press [REF], „0 mAnL" is displayed ⇨ Zero setting range: Load range where the display is set to zero by pressing [→0← ESC] . ⇨ Press [TARE], the currently set auto-zero range is displayed. Press [REF] to select the desired setting (0 %, 2 %, 5 %, 10 %, 20 %) and acknowledge by pressing [TARE] .	"0 ᴍAnL" ⇩ "0 ᴍAnL" "2"
⇨ Press [REF], „Pin" is displayed ⇨ Password input for menu block „tECH" ⇨ Press [TARE], " Pin¹ " will be shown. Use the numeric keyboard to enter the desired code and acknowledge with . ⇨ " Pin2 " is displayed, request to repeat the password input. Enter code anew and press [TARE] to acknowledge. If entry was successful, " donE " is displayed, if false, " FAiL " appears. In this case repeat the code input.	"Pin" ⇩ "Pin¹" ⇩ "Pin2" ⇩ "donE"

15 Second balance interface

When using as counting system, the weighing bridge must be connected with a suitable cable via the second-balance interface.

9 pin d-subminiature bushing of the balance		Connection of weighing bridge KERN KFP
Pin no.:	**Balance connection**	
Pin 1 or 2	EXC+ (5V)	see labelling of load cell
Pin 4 or 5	EXC- (0)	
Pin 7	SIG–	
Pin 8	SIG+	

16 RS 232C interface

The balance is typically equipped with a RS 232C interface. The weighing data can be output depending on the setting in the menu either automatically or by pressing

$\boxed{\text{M+}}$ (or $\boxed{\text{M+ PRINT}}$ in CFS 50K-3) via the interface.

This data exchange is asynchronous using ASCII - Code.
The following conditions must be met to provide successful communication between the weighing balance and the printer.

- Use a suitable cable to connect the weighing balance to the interface of the printer. Faultless operation requires an adequate KERN interface cable.

- Communication parameters (baud rate, bits and parity) of balance and printer must match. Detailed description of the interface parameters see chap. 13.2, Menu block "$F2\ Prt$".

16.1 Pin allocation of balance output bushing:

CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:
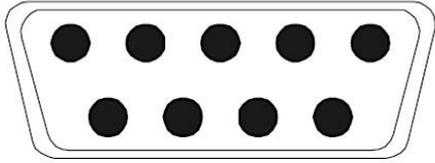
Pin 2: TXD - Output
Pin 3: RXD - Input
Pin 5: GND - Signal ground

CFS 50K-3 models:

```
   1   2   3   4   5

   ●   ●   ●   ●   ●

     ●   ●   ●   ●
     6   7   8   9
```

Pin 2: RXD - Input
Pin 3: TXD - Output
Pin 5: GND - Signal ground
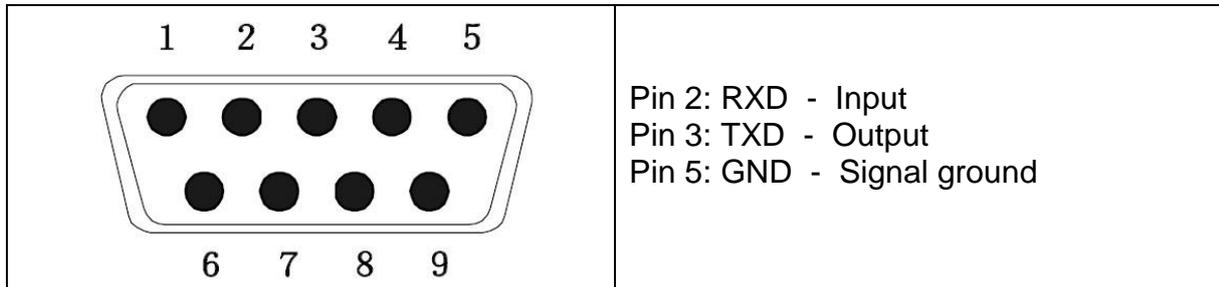
16.2   Technical data
CFS 3K-5, CFS 6K0.1, CFS 15K0.2, CFS 30K0.5 models:

Connection   D-Sub 9 poles jack

                    Pin 2 output

                    Pin 3 input

                    Pin 5 signal earth

Baud rate   600/1200/2400/4800/**9600**

Parity   **8 bits, no parity** / 7 bits, even parity / 7 bits, odd parity

bold printed = factory setting

CFS 50K-3 models:

Connection   D-Sub 9 poles jack

                    Pin 2 input

                    Pin 3 output

                    Pin 5 signal earth

Baud rate   600/1200/2400/4800/**9600**

Parity   **8 bits, no parity** / 7 bits, even parity / 7 bits, odd parity

bold printed = factory setting

16.3 Remote control instructions

All inputs finish with <CR><LF> (carriage return / line feed).
At wrong inputs the command will be preceded by "ER", e.g. order "NN<CR><LF>",
error message "ER NN<CR><LF>".

16.3.1 Control commands

PLU$_{xx}$	Call-up PLU from data memory
T	Tare placed weighing vessel
T123.456	Numeric tare value
Z	Zeroing
P	Printing
M+	Add and print weighing data in the summation memory
MR	Call-up data from memory
MC	Delete memory
U123.456	Save the average piece weight 123.456 [g] or [lb]
S123	Input number of pieces e.g. 123 pieces
SL	Switch over to reference balance
SR	Switch over to bulk material scales

16.3.2 Printing commands

\L	Selection reference or bulk material balance
\I	User identification number
\S	Balance identification number
\N	Net weight
\G	Gross weight
\U	Average piece weight
T	Tare value
\P	Counting
\C	Total number of pieces
\W	Total weight
\M	Number weighing processes
\B	Insert space line

English

17 Service, maintenance, disposal

17.1 Clean

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.

17.2 Service, maintenance

The appliance may only be opened by trained service technicians who are authorized by KERN.
Before opening, disconnect from power supply.

17.3 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.

English

18 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. • (Rechargeable) batteries are inserted incorrectly or empty • No (rechargeable) batteries inserted.
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. • Great fluctuations in temperature. • Warm-up time was ignored. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)

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18.1 Error messages

Error message	Description	Possible causes
"$Err\ 4$"	Zeroing range exceeded due to switching-on balance or pressing ⌐0⌐ (normally 4% max)	• Object on the weighing plate • Overload when zeroing • Inappropriate adjustment • Damaged weighing cell • Damaged electronics
"$Err\ 5$"	Keyboard error	• Improper use of the balance
"$Err\ 6$"	Value outside the A/D changer range	• Weighing plate not installed • Damaged weighing cell • Damaged electronics
FAIL H / FAIL L	Adjustment error	• Inappropriate adjustment

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