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Operating instruction(EN)

Laboratórna váha
KERN PLJ-C/PLJ-G
s internou pamäťou(SK)

Version 1.2
03/2013
GB



PLJ-GM-BA-e-1312

GB

KERN PLJ-GM

Version 1.2 03/2013

Operating instruction

Precision balance

English

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English

1 Technical data

KERN	PLJ 600-2GM	PLJ 6000-1GM
Readability (d)	0.01 g	0.1 g
Weighing range (max)	600 g	6 kg
Taring range (subtractive)	600 g	6 kg
Reproducibility	0.02 g	0.2 g
Linearity	0.02 g	0.2 g
Minimum unit weight at piece counting	0.01 g	0.1 g
Warm-up time	2 hours	2 hours
Adjustment weight	internal	internal
Wind protection	yes	no
Reference quantities at piece counting	10, 20, 50, 100, freely selectable	
Weighing Units	g, kg	
Stabilization time (typical)	3 sec.	
Operating temperature	+ 15° C .... + 30° C	
Humidity of air	max. 80 % (not condensing)	
Underfloor weighing	-	Standard hooks
Housing (B x D x H) mm	210 x 335 x 88	
Weighing plate (stainless steel) mm	128 x 128	195 x 195
Weight kg (net)	3.6 kg	

2 Declaration of conformity

KERN & Sohn GmbH
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Declaration of conformity

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	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 Balance: KERN PLJ ..GM/..NM

EU Directive	**Standards**
2004/108/EC	EN 61326-1:2006
2006/95/EC	EN 61010-1:2011/AC:2002

Datum 21.03.2013
Date

Ort der Ausstellung 72336 Balingen
Place of issue

Signatur
Signature

Albert Sauter
KERN & Sohn GmbH
Geschäftsführer
Managing director

English

3 Basic Information (General)

3.1 Proper use

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

3.2 Improper Use

Do not use balance for dynamic weighing. In the event that small quantities are removed or added to the material to be weighed, incorrect weighing results can be displayed due to the “stability compensation“ in the balance. (Example: Slowly draining fluids from a container on the balance.)
Do not leave permanent load on the weighing plate. This may damage the measuring system.
Impacts and overloading exceeding the stated maximum load (max) of the 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 and damage caused 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.

Versions in other languages are non-binding translations.
The only binding version is the original document in German.

4.2 Personnel training

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

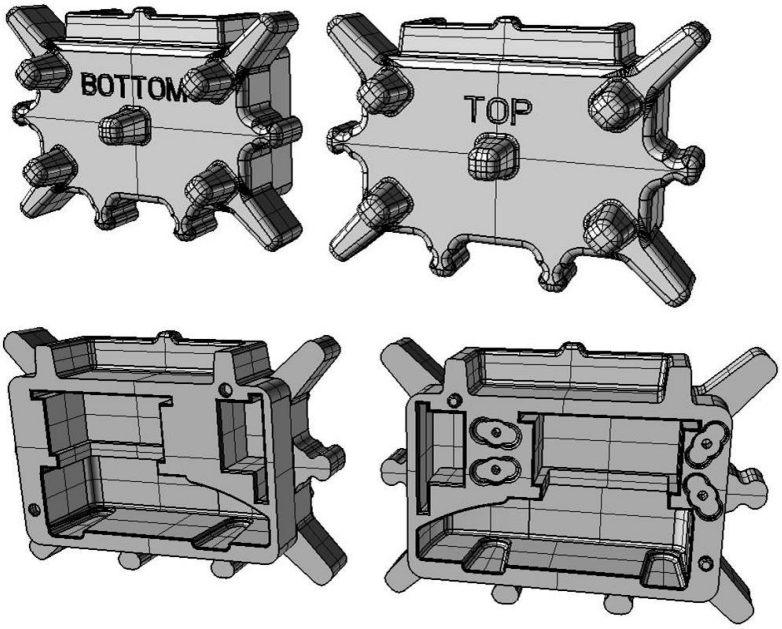
5 Transport and storage

5.1 Testing upon acceptance

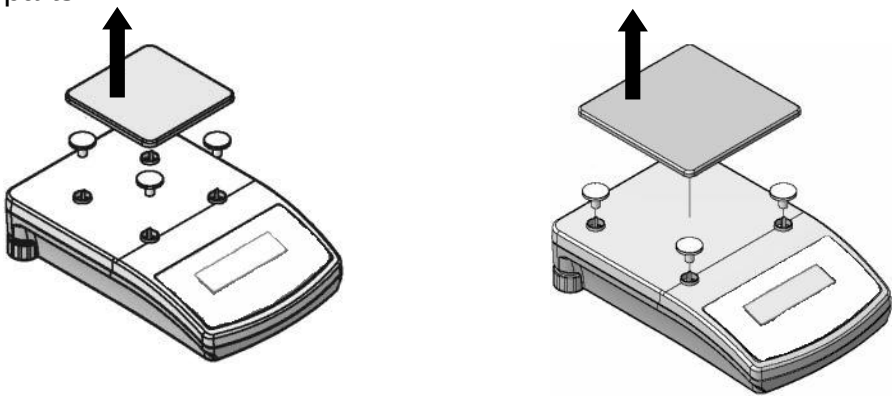
When receiving the appliance, please check packaging immediately, and the appliance itself when unpacking for possible visible damage.

5.2 Packaging / return transport

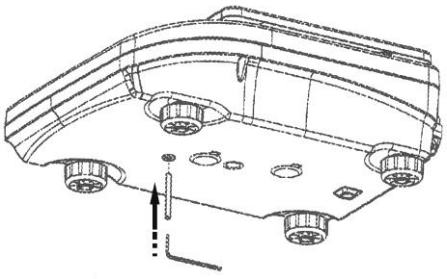
⇨ Keep all parts of the original packaging for a possibly required return.
⇨ Only use original packaging for returning.



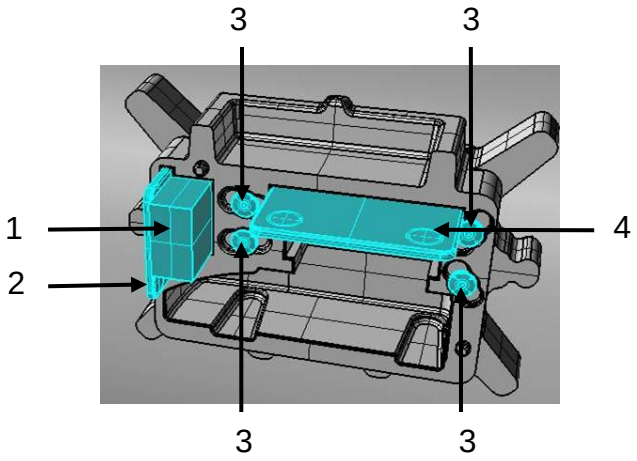
⇨ Prior to dispatch disconnect all cables and remove loose/mobile parts.



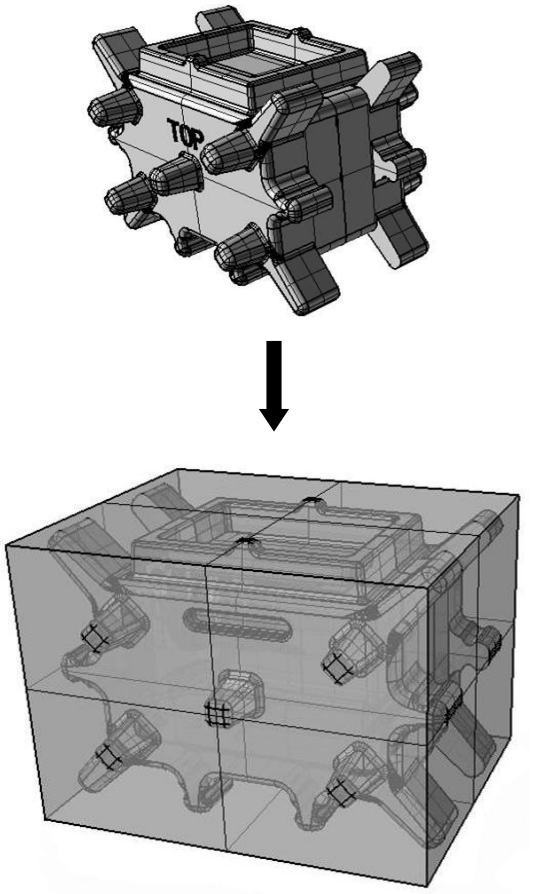
⇨ Reattach possibly supplied transport securing devices.



⇨ Secure all parts such as glass wind screen, weighing platform, power unit etc. against shifting and damage.



1. Mains adapter
2. Weighing pan (128 x 128 mm)
3. Carrier weighing pan
4. Weighing pan (195 x 195 mm)



English

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.

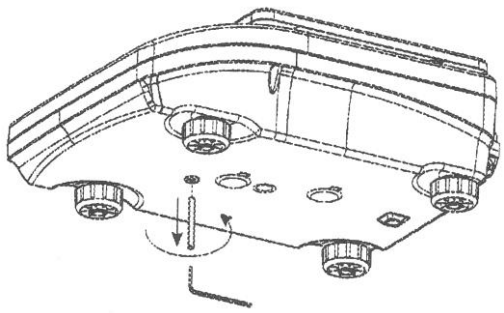
Major display deviations (incorrect weighing results) may be experienced should electromagnetic fields (e.g. due to mobile phones or radio equipment), static electricity accumulations or instable power supply occur. Change location or remove source of interference.

6.2 Unpacking

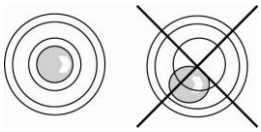
Carefully remove the balance from the packaging, remove plastic cover and setup balance at the intended workstation.

6.2.1 Remove the transportation lock

Remove the transportation lock on the bottom side of the balance (see fig.)



6.2.2 Setup



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

6.2.3 Scope of delivery

Serial accessories:

- Balance
- Weighing plate
- Mains power supply
- Operating Manual
- Protective cover
- Hook for underfloor weighing (only model PLJ 6000-1GM)

6.3 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.

6.4 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.

6.5 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.

6.5.1 Stability display

If the display shows the stability display **[⏛]** the balance is in a stable status. If the status is instable the [⏛] display disappears.

6.5.2 Balance zero display

If an exact zero reading is not displayed on the balance in spite of the weighing dish being empty, press the TARE → and the balance will start resetting to zero **[→0←] .** To reset the balance to zero, the →0← may be used if the load amounts to less than 2% of the maximum weight. If the load exceeds 2% error message **ERR2** will be displayed.

6.6 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.

6.6.1 Automatic adjustment with internal weight

With the internal adjustment weight, the weighing accuracy can be checked and re-adjusted at any time.

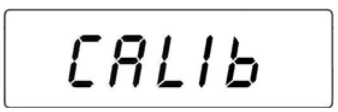
The automatic adjustment function is always enabled. You can start adjustment at any time by pressing the **CAL**-key manually.

Automatic adjustment is started each time

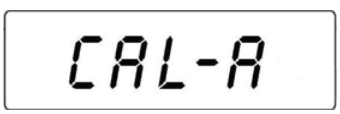
- after the weighing balance was disconnected from the mains
- when temperature changes take place
- at the end of a time interval

6.6.2 Sequence of adjustment after the balance having been switched on:

After the balance having performed a self check, automatic adjustment will start and in the display appears „CALib“



During the adjustment process „CAL-A“ is displayed



If the adjustment process is finished, the balance will automatically return into weighing mode.

6.6.3 Sequence of temperature-controlled adjustment:

At a change in temperature of 3°C the balance announces the internal adjustment via the display „CALib“



The balance starts the adjustment process and displays „CAL-t“.



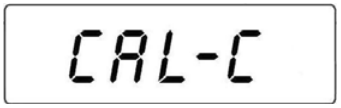
If the adjustment process is finished, the balance will automatically return into the weighing mode.

6.6.4 Sequence of time-controlled adjustment:

After 3 hours, the automatic adjustment is started. „CALib“ is displayed.



The balance starts the adjustment process and displays „CAL-C“.



If the adjustment process is finished, the balance will automatically return into the weighing mode.

6.6.5 Manual adjustment with internal weight

In weighing mode press TARE. „CALib“ appears.



During the adjustment process „CAL-H“ is displayed



If the adjustment process is finished, the balance will automatically return into the weighing mode.

- Use the F ESC button to cancel the adjustment process at any time.



is briefly displayed.

Then the balance returns automatically into weighing mode.

English

6.7 Verification

General:

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

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

In case of doubt, please contact your local office of weights and measures.

Verification information

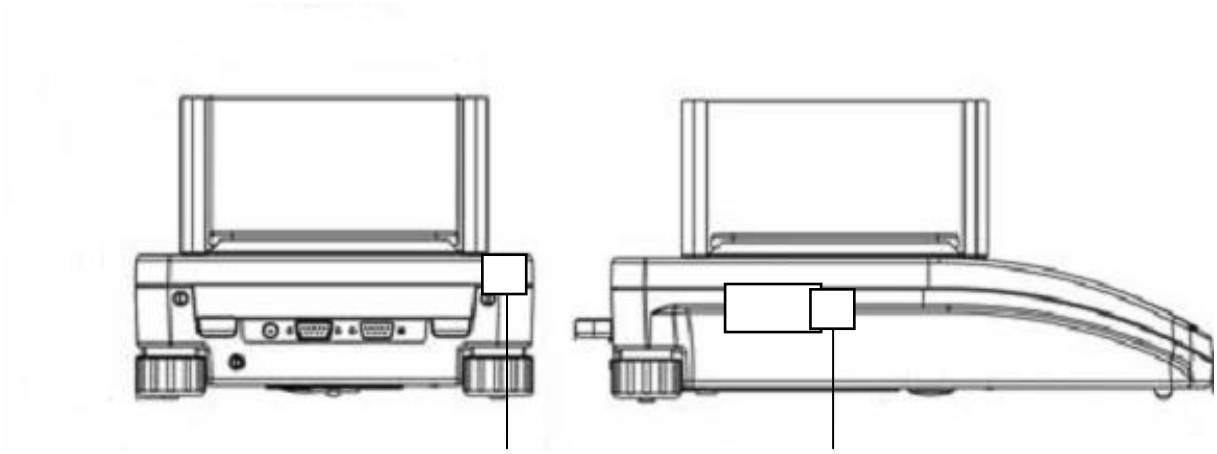
An EU qualification approval is available for those balances marked as appropriate for verification in the technical data. In the event that the balance is applied in an area subject to verification as described above, it must be verified and re-verified at regular intervals.

Re-verification of a balance is carried out in compliance with the respective legal provisions of the states. The term of verification validity for balances in Germany, for example, is normally 2 years.

The legal provisions of the country of use are to be observed.

English

Position of the "official seals":



Position of the official seals

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.**

6.8 Underfloor weighing

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

- Switch off balance.
- Open the closing lid on the bottom of your balance.
- Suspend hook for underfloor weighing **carefully and completely**.
- Place your balance over an opening.
- Suspend the goods to be weighed from the hook and carry out the weighing.

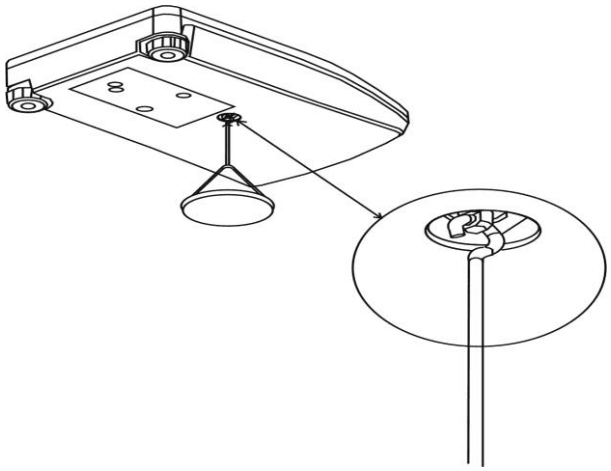


Fig. 1: Setup of balance for underfloor weighing

CAUTION

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

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

NOTICE

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

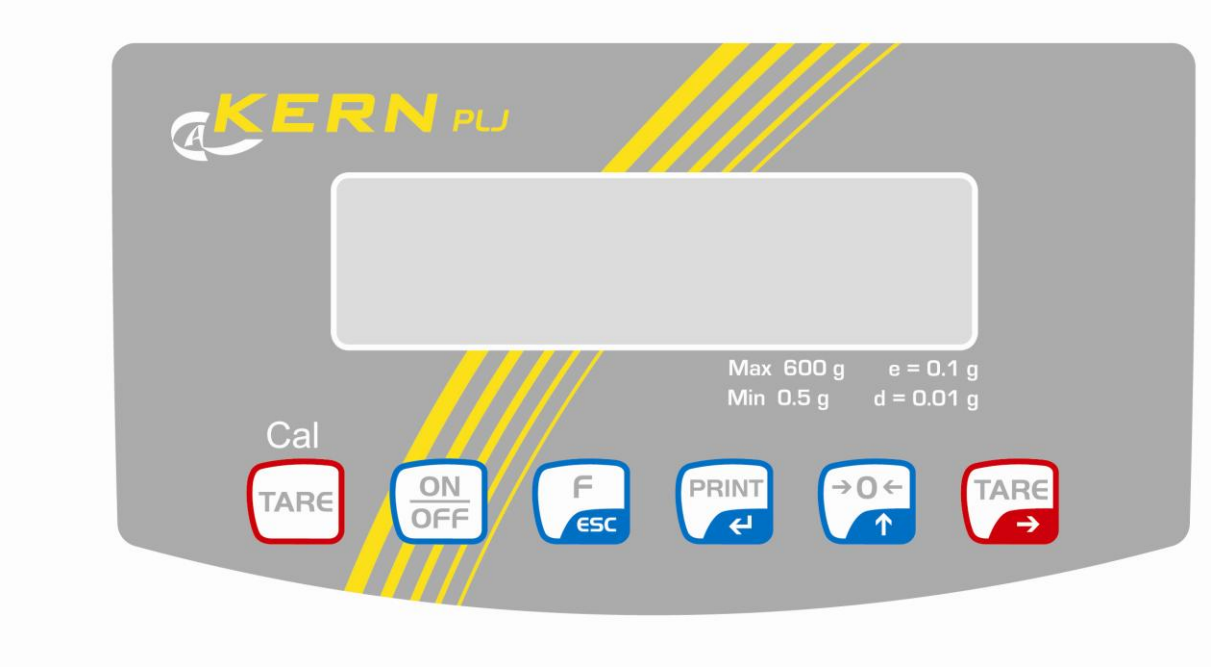
English

7 Operation

7.1 Operating elements

7.1.1 Backlit display

Very contrastful display which can also be red in the darkness.



7.1.2 Keyboard overview

Button	Function
ON OFF	• Turn on/off
F ESC	• Function key (to select operating mode)
PRINT	Printout of the weighed value on an external appliance (printer or PC)
→0←	⇨ Set weight display at zero
TARE	⇨ Taring
TARE	⇨ Start manual adjustment

The balance carries out an automatic check, when started. First this involves all display elements being lit up. Next the software version appears.
After the message **–test-** , **SLA** will appear which indicates the use of rechargeable batteries.

7.1.3 Overview of display

Display	Description
• FIL	• Filter setting
⇨ bAud	⇨ RS 232 interface speed
⇨ PCS	⇨ Parts counting
⇨ HiLo	⇨ +/- tolerance with respect to reference weight
⇨ rEPL	⇨ Automatic display printout
⇨ StAb	⇨ Printing will be started as soon as the stability display appears
⇨ Auto	⇨ Monitoring weight display at 0
⇨ t1	⇨ Automatic cutout
⇨ toP	⇨ Maximum weight storage
⇨ →**0**←	⇨ Weight display at 0
⇨ **[▂▃▂]**	⇨ Display value is stable
⇨ PCS	⇨ Display operating mode “piece counting”
⇨ kg (g)	⇨ Display operating mode “weighing”
⇨ 	⇨ Low battery level / battery charge status or damaged mains adaptor
⇨ Net	⇨ Balance is tared
⇨ Min ⇨ 	⇨ +/- tolerance with respect to reference weight entry of lower limit or weight below tolerance

English

⇨ ok ⇨ 	⇨ +/- tolerance with respect to reference weight within prescribed limits
⇨ Max ⇨ 	⇨ +/- tolerance with respect to reference weight entry of upper limit or weight above tolerance
⇨ CALib	⇨ Stability test for internal adjustment
⇨ CAL-H	⇨ Manual internal adjustment
⇨ CAL-A	⇨ Automatic internal adjustment after switching on
⇨ CAL-t	⇨ Temperature-controlled internal adjustment
⇨ CAL-C	⇨ Time-controlled internal adjustment
⇨ Abort	⇨ Cancelling the internal adjustment process

English

8 User menu

The user menu has six main menus (P1 – P6), arranged in the following sub-menus:

P1 rEAd

1.1 FiL	2	Filter settings
1.2 Auto	YES	Auto Zero
1.3 tArA	no	Tare function
1.4 Fnnd	no	Weighing value averaging

P2 Prnt

2.1 Pr_n	StAb	Setting data output type
2.2 S_Lo		Entering minimum weight
2.3 bAud	9600	Setting baud rate
2.4 S_rS	8d1SnP	Setting transmission parameter

P3 Unit

3.1 StUn	kg	Setting standard weighing unit

P4 Func

4.1 FFun	ALL	Parameter for selection with F key
4.2 Funi	YES	Weighing units switch-over
4.3 PcS	YES	Parts counting
4.4 HiLo	YES	Tolerance weighing
4.5 PrcA	YES	Percentage weighing (by means of weighing)
4.6 Prcb	YES	Percentage weighing (by manual entry)
4.7 AtAr	YES	Automatic taring
4.8 toP	YES	Storing maximum value of weight
4.9 Add	no	Adding function
4.A AnLS	no	Animal weighing function
4.b tArE	no	Saving pretaring values

P5 othr

5.1 bL	Auto	Background lighting
5.2 blbA	50	Intensity of background lighting
5.3 bEEP	YES	Key sound
5.4 t1	YES	Automatic disconnection
5.5 CHr6	no	Disconnection battery control

P6 CAL

6.4 CA-r	YES	not documented

8.1 Keyboard overview in menu

Button	Function
Press PRINT and F ESC at the same time	• Access to Main menu
→0← and TARE	• Enter pretaring value
F ESC and TARE	• Battery/rechargeable battery loading status display
PRINT and TARE	⇨ Change between gross and net weight value
F ESC	⇨ Exit function without storing ⇨ Jump to higher level in menu
→0←	⇨ Selecting parameter level ⇨ Changing parameter value
TARE	⇨ Entering the selected sub-menu ⇨ Activating a changed parameter
PRINT	⇨ Confirm entry

8.2 Calling a menu / jumping back to weighing mode

8.2.1 Calling up menu

Turn on balance by pressing ON OFF.

Press F ESC and PRINT simultaneously

To go from **P1.rEAD** to **P6.CAL** in the menu press the →0← repeatedly.

8.2.2 Storing / jumping back to weighing mode

Any changes made in the balance memory will only be saved when the storing process is complete.

For this, press F ESC repeatedly until **SAuE ?** appears on the display.

Any changes carried out are stored by pressing PRINT. To cancel changes, press F ESC.

Afterwards the balance automatically jumps back to weighing mode.

8.3 Weighing

8.3.1 Simple weighing

Operation:	**Display:**
⇨ Turn on balance by pressing ON OFF. The balance will carry out a self-test	
⇨ Your balance is ready to weigh as soon as the "**0.00"** display appears.	**0.00 g**
⇨ Put on items to be weighed, weighed value is displayed. Wait until the stability display appears ▬. Read the weighing value.	**19.68 g**
⇨ To turn off the balance press ON OFF	

English

8.3.2 Standard weighing unit

Selected weighing unit will be retained even after disconnection from the mains.

⇨ Start balance by pressing 	**0.00 g**
⇨ Press  and  at the same time	**P1.rEAd**
⇨ Repeatedly press  until P3.Unit appears	**P3.Unit**
⇨ Press 	**P3.1.StUn**
⇨ Press  anew	**g**
⇨ Press  to change selection	**ct**
⇨ Setting will be imported by pressing the  button.	**P3.1.StUn**

For this, press  repeatedly until **SavE ?** appears on the display.

Store changes carried out by pressing .

English

8.4 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.

Operation:	Display:
⇨ Turn on balance by pressing ON/OFF	
⇨ Your balance is ready to weigh as soon as the "**0.00"** display appears.	**0.00 g**
⇨ Put on items to be weighed, weighed value is displayed. Wait for standstill display **[▂▃▂]**	**19.68 g**
⇨ To start the taring process press TARE →. The weight of the container is now saved internally. The display shows the symbol **Net**	**0.00 g**
⇨ Place the goods to be weighed into the tare container. Read the weight of the goods on the display.	**53.25 g**

The taring process can be repeated any number of times, e.g. when adding several components for a mixture (adding).
The limit is reached when the whole weighing range is exhausted.
After removing the taring container the total weight is displayed as negative display.

English

8.5 P4 Func – operating modes

Go to menu "**P4 Func**“, to activate or deactivate functions that are then made available to the operator. All activated operating modes can be called directly by pressing the **F** key.

Call **P4 Func:**

Operation:	Display:	Description:
⇨ Turn on balance by pressing the ON/OFF	**0.00 g**	
⇨ Press F/ESC and PRINT simultaneously	**P1.rEAd**	
⇨ Repeatedly press →0← until P4.Func appears	**P4.Func**	
⇨ Press TARE	**4.1.FFun**	
⇨ Press TARE	**ALL**	All operating modes enabled in menu 4.2 to 4.8 are callable via the F key
⇨ Press →0←	**Funi**	Weighing Units
⇨ Press →0←	**PcS**	Parts counting
⇨ Press →0←	**HiLo**	Tolerance weighing
⇨ Press →0←	**PrcA**	Percentage display by weighing
⇨ Press →0←	**Prcb**	Percentage display via manual default
⇨ Press →0←	**AtAr**	Auto-taring
⇨ Press →0←	**toP**	Peak value function

⇨ Press →0←	**toP**	Peak value function
⇨ Press →0←	**Add**	Adding function
⇨ Press →0←	**AnLS**	Animal weighing function
⇨ Press →0←	**tArE**	Pretaring value

Confirm settings by pressing PRINT. Balance jumps back to sub-menu **4.1.FFun**.

For this, press F ESC repeatedly until **SavE ?** appears on the display. Store changes carried out by pressing PRINT.

Is the parameter set to **ALL** in menu **4.1.FFun**, access to the functions set to **YES** in the **P4FFunc** menu is available via the F key.

However, if in menu **4.1.FFun** one of the above parameters is selected, e. g. **PcS,** F ESC can merely be used to call just this particular menu item.

8.5.1 Settings for menu item P4.1 FFun for “ALL”

Here, you select the menu items that are subsequently selectable with 

.

no function not available.
YES function is available.

Operation:	Display:
⇨ Selecting the menu item	**P4 Func**
⇨ Press 	**4.1.FFun**
⇨ Press 	**4.2.Funi**
⇨ Press  until the operating mode “piece counting” appears	**4.3.PcS**
⇨ Press  until active setting appears: “no“ = deactivated, “yes“ = activated	**no**
⇨ To change the setting, press  .	**YES**
⇨ Setting will be imported by pressing  .	**4.3.PcS**
⇨ Press  until the operating mode “tolerance weighing” appears. Activation as described for piece counting	**4.4.HiLo**

Please repeat this sequence of operations for any other operating mode available.

4.2.Funi
4.3.PcS
4.4.HiLo
4.5 PrcA
4.6 Prcb
4.7 AtAr
4.8 toP

For this, press 

repeatedly until **SavE ?** appears on the display. Store changes carried out by pressing 

.

8.6 P5 othr – operating parameter

Here, you can set the parameters that influence the operation of the balance, such as background lighting and key sounds.

8.6.1 Background lighting for mains operation

Possible settings:

no	Background lighting turned off
YES	Background lighting turned on
Auto	Background lighting is turned off automatically every 10 seconds if no change of display takes place

Operation:	Display:
⇨ Selecting the menu item	**P5 othr**
⇨ Press TARE	**5.1.bl**
⇨ Press TARE	**Auto**
⇨ To change your selection, press →0←	**no**
⇨ To change your selection, press →0←	**YES**
⇨ Setting will be imported by pressing PRINT.	**5.1.bl**

For this, press F ESC repeatedly until **SavE ?** appears on the display. Store changes carried out by pressing PRINT.

English

8.6.2 Intensity of background lighting for battery operation

To optimize readability and energy consumption, the intensity of the background lighting can be adjusted from 0 to 100%. Low intensity prolongs battery life. When operated by battery, the background lighting is turned off automatically every 10 seconds if no change of display takes place.

Operation:	Display:
⇨ Selecting the menu item	**P5 othr**
⇨ Press TARE	**5.1.bl**
⇨ Press →0←	**5.2.blbA**
⇨ Press TARE	**20**
⇨ To change your selection, press →0←.	**30 ⇨ 40 ⇨ … ⇨ 100 ⇨ no**
⇨ Setting will be imported by pressing PRINT.	**5.2.blbA**

For this, press F ESC repeatedly until **SavE ?** appears on the display. Store changes carried out by pressing PRINT.

8.6.3 Keyboard sound for pressed key

bEEP no Keyboard sound is turned off
bEEP YES Keyboard sound is turned on

Operation:	Display:
⇨ Selecting the menu item	**P5 othr**
⇨ Press 	**5.1.bl**
⇨ Repeatedly press  until the following display appears	**5.3.bEEP**
⇨ To change your selection, press  .	**no**
⇨ To change your selection, press  .	**YES**
⇨ Setting will be imported by pressing  .	**5.3.bEEP**

English

8.6.4 Automatic cutout

t1 YES Balance will be turned off, if weighing does not take place within 5 minutes.

t1 no Balance is not turned off

Operation:	Display:
⇨ Selecting the menu item	**P5 othr**
⇨ Press TARE	**5.1.bl**
⇨ Repeatedly press →0← until the following display appears	**5.4.t1**
⇨ To change your selection, press TARE.	**no**
⇨ To change your selection, press →0←.	**YES**
⇨ Setting will be imported by pressing PRINT.	**5.4.t1**

Change the battery immediately if the battery symbol lights up during battery operation or charge the accumulator during accumulator operation or the balance will be turned off shortly.
This symbol will be flashing whilst the battery is being loaded.

8.6.5 Battery status display

This function is used to display the charge status of the battery.

Operation:	Display:
	0.00 g
⇨ Press F ESC and TARE simultaneously	**batt**
⇨ 1 second later	**94%**
⇨ 2 seconds later	**0.00 g**

The balance returns to weighing mode after the charge status of the battery was shown. The display symbol (bat low) will be activated when the charge status of the battery drops below 18%.

8.6.6 Charge display

This function can be used to suppress the charge function.
This suppresses the short illumination of the battery symbol if the balance is operated without battery or accumulator. (supply by power pack)
The kind of supply is shown when the balance is started. SLA

CHr6 YES **SLA** Function activated / SLA battery in use

ATTENTION! Explosion hazard: For battery operation the setting must be **no**

Operation:	Display:
⇨ Selecting the menu item	**P5 othr**
⇨ Press 	**5.1.bl**
⇨ Repeatedly press  until the following display appears	**5.5. CHr6**
⇨ To change your selection, press .	**no**
⇨ To change your selection, press .	**YES**
⇨ Setting will be imported by pressing .	**5.5.CHr6**

English

8.7 P1 rEAd – basic settings

8.7.1 Filter settings

This menu item allows the balance to be set according to specific ambient conditions and measuring purposes.

OFF Filter turned off
1-4 Filter levels:

1 Sensitive and fast (very quiet set-up location).

↓

4 Robust but slow (very busy set-up location)

Operation:	Display:
⇨ Selecting the menu item	**P1 rEAd**
⇨ Press TARE	**1.1.Fil**
⇨ Press TARE	**1**
⇨ To change your selection, press →0←.	**OFF ⇨ 1 ⇨ 2 ⇨ 3 ⇨ 4**
⇨ Setting will be imported by pressing PRINT.	**1.1.Fil**

For this, press F ESC repeatedly until **SavE ?** appears on the display. Store changes carried out by pressing PRINT.

8.7.2 Auto Zero

This function is used to tare small variations in weight automatically.
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. (e.g. slow flow of liquids from a container placed on the balance, evaporating processes).
When apportioning involves small variations of weight, it is advisable to switch off this function.

Auto Zero	no	Disconnection of auto zero function
Auto Zero	YES	Auto zero function turned on

Operation:	Display:
⇨ Selecting the menu item	**P1 rEAd**
⇨ Press TARE	**1.1.Fil**
⇨ Press →0← until the following display appears	**1.2 Auto**
⇨ To change your selection, press TARE.	**no**
⇨ To change your selection, press →0←.	**YES**
⇨ Setting will be imported by pressing PRINT.	**1.2 Auto**

For this, press F ESC repeatedly until **SavE ?** appears on the display. Store changes carried out by pressing PRINT.

English

8.7.3 Tare function

This function enables individual selection of tare functions:

Tara AtAr Automatic taring turned on,
remains stored even after disconnection
Tara no Automatic taring turned off,
User can turn on automatic tare function via F6 AtAr and this will remain active until disconnection is carried out.
(For description see chpt. 8.11)

Tara tArF Taring, including storage of last tare value.
Value is displayed showing minus sign when balance is started and as a **NET** symbol on the display.
User can turn on automatic tare function via F6 AtAr and this will remain active until disconnection is carried out.

Operation:	Display:
⇨ Selecting the menu item	**P1 rEAd**
⇨ Press TARE	**1.1.Fil**
⇨ Repeatedly press →0← until the following display appears	**1.3.tArA**
⇨ To change your selection, press TARE.	**AtAr**
⇨ To change your selection, press →0←.	**no**
⇨ To change your selection, press →0←.	**tArF**
⇨ Setting will be imported by pressing PRINT.	**1.3.tArA**

8.7.4 Weighing value - averaging

This filter function eliminates short-term changes of the weighing value (impulse).

Weighing value - averaging	no	Function turned off
Weighing value - averaging	YES	Function turned on

Operation:	Display:
⇨ Selecting the menu item	**P1 rEAd**
⇨ Press TARE	**1.1.Fil**
⇨ Repeatedly press TARE until the following display appears	**1.4.Fnnd**
⇨ To change your selection, press TARE.	**YES**
⇨ To change your selection, press TARE.	**no**
⇨ Setting will be imported by pressing PRINT.	**1.4.Fnnd**

8.8 Parts counting

For instance, 10 identical pieces are weighed; from this follows 10 as a reference number of items. Then the average weight is given automatically by the balance. As of now the pieces to be counted will be shown as items. As a rule:

The higher the reference quantity the higher the counting exactness.

Explanations for the balance adjustment:
The reference formation needs an exact determination of the weight value.
In order to use counting function PcS must be enabled in menu P4.

Operation:	**Display:**
⇨ Selection of menu item **P4 Func**	**P4 Func**
⇨ Press TARE	**4.1.FFun**
⇨ Press TARE anew until **PcS** appears flashing	**PcS**
⇨ Press TARE	**4.1.FFun**
⇨ Press F esc repeatedly until “SAVE?“ appears.	**SAVE?**
⇨ Confirm by pressing PRINT, „0.0“ appears	**0.00 g**
⇨ Press F esc, „FREE“or „10“ or „20“ or „50“ appears	**FREE** (Example)
⇨ Select the required reference quantity by pressing →0←	**10** (Example)
⇨ Confirm by pressing PRINT, „0.0“ appears and „PCS“ flashes	**0.0 g**
⇨ Place the indicated quantity of pieces	**PcS** (Example)
⇨ Acknowledge by PRINT.	**PcS** (Example)
⇨ Place the quantity of the pieces to be counted, the number of pieces will be displayed	**PcS** (Example)

English

For selection of FrEE follow sequence of operations below	
⇨ Enter random reference number of items **FrEE** ⇨ Press PRINT ⇨ Use the TARE key, to select the digit to be changed, the →0← key is used to increase the numerical value (active digit flashing) ⇨ Confirm entered reference number of items by pressing the PRINT button	**FrEE** **00000** pcs ↓ **00015** pcs ↓ **LoAD**
⇨ Place as many parts to count on the weighing plate as the set reference quantity requires. ⇨ Acknowledge by PRINT.	**100.0 g** **15** pcs
⇨ The balance is now in piece counting mode and counts all pieces present on the weighing plate (e. g. 100 pieces)	**100** pcs
⇨ Back to weighing mode by pressing the F ESC button.	**666.66 g**

If you select this function (press the F key) but no reference pieces are present on the weighing plate, the message **–Lo**- will appear briefly on the display and the balance's display will return to weighing mode.

English

8.9 Tolerance weighing

For tolerance weighing compare the current weight value to a lower and upper limit. These limits must have been stored beforehand.
When placing for instance ready-made packaging, it will be shown whether the weight is within the allowable tolerance.

Operation:	**Display:**
⇨ Selection of menu item **P4 Func**	**P4 Func**
⇨ Press TARE	**4.1.FFun**
⇨ Press TARE anew the menu item set as last flashes	**PcS** (Example)
⇨ Press →0← repeatedly until „HiLo“ is displayed flashing	**HiLo**
⇨ Press TARE	**4.1.FFun**
⇨ Press F ESC repeatedly until “SAVE?“ appears.	**SAVE?**
⇨ Confirm by pressing PRINT, „0.0“ appears	**0.0 g**
⇨ Press F ESC, „00000.0“ appears, the first digit flashes and „Min“ is displayed	**00000.0**
⇨ Enter the minimum weight using →0← and TARE	**2.0 g** (Example)
⇨ Press PRINT, „00000.0“ appears, the first digit flashes and „Max“ is displayed	**00000.0**
⇨ Enter the maximum weight using →0← and TARE	**10.0 g** (Example)

English

⇨ Confirm by pressing PRINT, „0.0“ appears and „Min“ is displayed	**0.0 g**
⇨ Place the test items, the entered tolerance range is displayed by „Min“, „OK“ and „Max“	

The value entered for the upper tolerance limit must be greater than the lower tolerance value. Error message **–Lo-** appears on the display and the display returns to weighing mode.

8.10 Percent determination

Percent determination allows weight display in percent, in relation to a reference weight.

8.10.1 Determination of the reference weight by weighing

Operation:	**Display:**
⇨ Selection of menu item **P4 Func**	**P4 Func**
⇨ Press TARE	**4.1.FFun**
⇨ Press TARE**,** the menu item set as last flashes	**PcS** (Example)
⇨ Press →0← repeatedly until „HiLo“ is displayed flashing	**PrcA**
⇨ Press TARE	**4.1.FFun**
⇨ Press F ESC repeatedly until “SAVE?“ appears	**SAVE?**
⇨ Confirm by pressing PRINT, „0.0“ appears	**0.0 g**
⇨ Press F ESC, „0.0“ appears and % is displayed flashing	**0.0** %

English

⇨ Put a reference weight which corresponds to 100%	**35.8 g** (Example)
⇨ Acknowledge by PRINT, „100.00%“ appears	**100.00 %**
⇨ Place the test item, the weight is displayed in %	**56,9 %**
⇨ Back to weighing mode by pressing the F ESC button.	**35.8 g** (Example)

8.10.2 Calculate the reference weight by numeric input

Operation:	**Display:**
⇨ Selection of menu item **P4 Func**	**P4 Func**
⇨ Press TARE	**4.1.FFun**
⇨ Press TARE, the menu item set as last flashes	**PcS** (Example)
⇨ Press →0← repeatedly until „Prcb“ is displayed flashing	**Prcb**
⇨ Press TARE	**4.1.FFun**
⇨ Press F ESC repeatedly until “SAVE?“ appears	**SAVE?**
⇨ Confirm by pressing PRINT, „0.0“ appears	**0.0 g**
⇨ Press F ESC, the percent value entered as last is entered, the first digit flashes, the % symbol is displayed flashing	**00035.7** % (Example)

⇨ Enter the reference weight using →0← and TARE	**40.0 %**
⇨ Confirm by pressing PRINT, „0.0“ appears	**0.0 g**
⇨ Place the test weight, the weight is displayed in percent	**20.0 %**

8.11 Automatic taring

This function is to be used for faster calculation of the net weight, in case the tare load changes for each weighing.

Operation:	**Display:**
⇨ Selection of menu item **P4 Func**	**P4 Func**
⇨ Press TARE	**4.1.FFun**
⇨ Press TARE**,** the menu item set as last flashes	**PcS** (Example)
⇨ Press →0← repeatedly until „AtAr“ is displayed flashing	**AtAr**
⇨ Press TARE	**4.1.FFun**
⇨ Press F esc repeatedly until “SAVE?“ appears	**SAVE?**
⇨ Confirm by pressing PRINT, „0.0“ appears	**0.0 g**
⇨ Press F esc, place the weighing container, „------„ will be displayed briefly, then the balance changes automatically to the „0.0“ display and „NET“ will be displayed	**0.0** g
⇨ Place test item in weighing container, net weight value will be displayed.	

English

8.12 Storing maximum value of weight

This function is to be used for the calculation of the maximum weight.
During this process the maximum value will be displayed and stored. Is the weight reduced, the maximum value will continue to be shown.

Operation:	**Display:**
⇨ Selection of menu item **P4 Func**	**P4 Func**
⇨ Press TARE	**4.1.FFun**
⇨ Press TARE **,** the menu item set as last flashes	**PcS** (Example)
⇨ Press →0← repeatedly until „toP“ is displayed flashing	**toP**
⇨ Press TARE	**4.1.FFun**
⇨ Press F ESC repeatedly until “SAVE?“ appears	**SAVE?**
⇨ Confirm by pressing PRINT, „0.0“ appears	**0.0 g**
⇨ Press F ESC, „0.0“ is displayed and the „Max“ symbol appears	**0.0 g**
⇨ Place weight	**123.4 g** (Example)
⇨ Place another weight	**235.8 g** (Example)
⇨ The maximum weight will still be displayed even if all weight pieces have been removed	**235.8 g** (Example)

English

8.13 Adding function

This function is used to automatically add any number of single weighings to a total sum.

Operation:	Display:
⇨ Selection of menu item **P4 Func**	**P4 Func**
⇨ Press TARE	**4.1.FFun**
⇨ Press TARE, the menu item set as last flashes	**PcS** (Example)
⇨ Press →0← repeatedly until „Add“ is displayed flashing	**Add**
⇨ Press TARE	**4.1.FFun**
⇨ Press F ESC repeatedly until “SAVE?“ appears	**SAVE?**
⇨ Confirm by pressing PRINT, „0.0“ appears	**0.0 g**
⇨ Press F ESC, „0.0“ appears and „P“ is displayed	**P 0.0 g**
⇨ Place the test item and wait for the standstill display **[▁◢]** ⇨ Press PRINT, the weight is displayed and under the totalizing symbol appears a triangle	**17.9 g** (Example)
⇨ Remove the test item , „P“ and „0.0 g“ are displayed	**P 0.0 g**
⇨ Place the second test item and wait for the standstill display **[▁◢]** ⇨ Press PRINT, the total weight of both test items is displayed	**40.8 g** (Example)
⇨ Repeat the procedure as often as required	

English

8.14 Animal weighing function

The animal weighing function can be applied for busy weighing. During a defined period the mean value of the weighing results is formed.
The more unquiet the weighed item, the longer the period should be selected.

Operation:	**Display:**
⇨ Selection of menu item **P4 Func**	**P4 Func**
⇨ Press TARE	**4.1.FFun**
⇨ Press TARE, the menu item set as last flashes	**PcS** (Example)
⇨ Press →0← repeatedly until „AnLS“ is displayed flashing	**AnLS**
⇨ Press TARE	**4.1.FFun**
⇨ Press F esc repeatedly until “SAVE?“ appears	**SAVE?**
⇨ Acknowledge by PRINT, „0.0“	**0.0 g**
⇨ Press F esc, „tiNNE“ appears briefly, followed by a flashing display which shows the number of seconds where the mean value has to be formed	**tiNNE** ⇩ **5 S**
⇨ Select seconds by →0← and TARE and confirm by pressing PRINT, „A…0.0“ will be displayed	**A 0.0 g**
⇨ Place the test item; as long as the mean value is formed, the balance displays „-----„. ⇨ After that the weight value is displayed with the „OK“ symbol	**15.8 g**

8.15 Save the pretaring value

Using this function the weight of a tare vessel is stored. Even after turning off/on the weighing balance will continue working with the saved tare value.

Operation:	Display:
⇨ Selection of menu item **P4 Func**	**P4 Func**
⇨ Press TARE	**4.1.FFun**
⇨ Press TARE, the menu item set as last flashes	**PcS** (Example)
⇨ Press →0← repeatedly until „tArE“ is displayed flashing	**tArE**
⇨ Press TARE	**4.1.FFun**
⇨ Press F ESC repeatedly until “SAVE?“ appears	**SAVE?**
⇨ Acknowledge by PRINT, „0.0“	**0.0 g**
⇨ Press F ESC, „tArE 0“ will be displayed	**tArE 0**
⇨ Press →0← to select memory location where the pretaring value shall be filed	**tArE 1** (Example)
⇨ Acknowledge by TARE, „00000.0“ appears, the first digit and the „NET“ symbol are flashing	**00000.0**
⇨ Enter pretaring value by →0← and TARE and confirm by pressing PRINT, „tArE“ will be displayed	**tArE 1**
⇨ Return to weighing mode using F ESC	

8.15.1 Call-up pretaring value from memory

Operation:	Display:
⇨ Call-up pretaring by pressing 	**tArE 0**
⇨ Call-up memory location using  where the pretaring value has been stored	**tArE 1** (Example)
⇨ Confirm by pressing  , the pretaring value is displayed as negative value	**-5.0 g** (Example)
⇨ Place the test item, the net weight of the test item is displayed	**35.8 g** (Example)

English

9 Data output RS 232 C

9.1 Technical data

- 7 / 8 data bits, 1 / 2 stop bit, no / even / odd parity bit
- Baud rate selectable at 2400, 4800, **9600**, 19200 and 38400 Baud
- Miniature plug-in necessary (9 pole D-Sub)
- For operation with interface faultless operation is only ensured with the correct KERN – interface cable (max. 2m)

Various transmission modes are available:

- Manually after pressing PRINT
- Continuously, according to setting
- Automatically according to stability display
- Prompted by external device
  (For remote control commands see chpt. 9.8)

9.2 Description of data output type

Operation:	Display:
⇨ Selecting the menu item	**P2 Prnt**
⇨ Press TARE, „2.2.Pr_n“ appears	**2.1.Pr_n**
⇨ Press TARE anew, the parameter selected as last appears flashing	**StAb** (Example)
⇨ Use →0← and TARE to select data output type	**rEPL ⇨ CntA ⇨ Cntb ⇨ StAb**
⇨ Setting will be imported by pressing PRINT, „2.1.PR_N“ appears	**2.1.Pr_n**
⇨ Press F ESC repeatedly until “SAVE?“ appears	**SAVE?**
⇨ Acknowledge by PRINT, „0.0“	**0.0 g**

English

Meaning of settings:

StAb data output for stable weighing value (PRINT key)
rEPL automatic output function (See chpt. 9.5)
CntA continuous output in standard weighing unit
Cntb continuous output in current weighing unit

9.3 Input minimum weight for some functions

The minimum weight affects the following functions:

Automatic taring: In order to apply this function, the weight of the weighing plate must have dropped below the entered weighing value first, before another greater weight can be tared automatically.

Automatic output function: If the current weighing value exceeds the entered weighing value, a weighing value will be issued automatically. The next weighing value will not be issued unless the weighing value has meanwhile dropped below the entered weighing value.

Operation:	**Display:**
Selecting the menu item	**P2 Prnt**
Press TARE, „2.1.Pr_n“ will be displayed	**2.1. Pr_n**
Press →0←, „2.2.S.Lo“ will be displayed	**2.2. S_Lo**
Press TARE, the value entered as last is displayed, the first digit flashes	**0010.00g** (Example)
Enter the minimum weight using →0← and TARE	**0030.00g** (Example)
Press the PRINT button, the minimum weight will be imported.	**2.2. S_Lo**
Press F ESC repeatedly until “SAVE?“ appears	**SAVE?**
Acknowledge by PRINT, „0.0“	**0.0 g**

9.4 Baud rate for RS232 interface

The baud rate is set as follows:

Operation:	**Display:**
Selecting the menu item	**P2 Prnt**
Press TARE, „2.2.Pr_n“ appears	**2.1. Pr_n**
Press →0← repeatedly until **2.3. bAud** appears	**2.3. bAud**
Press TARE, the Baud rate set as last will be shown and flashing	**9600** (Example)
Select desired Baud rate by pressing →0←.	**19200 ⇨ 38400 ⇨ 2400 ⇨ 4800 ⇨ 9600**
Acknowledge by PRINT.	**2.3. bAud**
Press F ESC repeatedly until “SAVE?“ appears	**SAVE?**
Acknowledge by PRINT, „0.0“	**0.0 g**

Meaning of settings:

7d2SnP : 7 data bit, 2 stop bit, no parity
7d1SEP : 7 data bit, 1 stop bit, EVEN parity
7d1SoP : 7 data bit, 1 stop bit, ODD parity

8d1SnP : 8 data bit, 1 stop bit, no parity
8d2SnP : 8 data bit, 2 stop bit, no parity
8d1SEP : 8 data bit, 1 stop bit, EVEN parity
8d1SoP : 8 data bit, 1 stop bit, ODD parity

9.5 Communication protocol / remote control commands

Table 1: Instruction list for RS232 interface

Instruction:	Meaning of Instruction:
Z	Set weight display at zero
T	Taring
S	Send stable weighing value in standard weighing unit
SI	Send weighing value immediately in standard weighing unit
SU	Send stable weighing value in current weighing value
SUI	Send weighing value immediately in current weighing unit
C1	Turn on continuous transmission in standard weighing unit
C0	Turn off continuous transmission in standard weighing unit
CU1	Turn on continuous transmission in current weighing unit
CO1	Turn off continuous transmission in current weighing unit
PC	Send all implemented instructions

Complete each instruction with **CR LF**.

9.5.1 Response messages from balance

Response message of balance after instruction was sent:

XX_	Instruction:
XX_A CR LF	Instruction accepted; will be executed
XX_D CR LF	Instruction complete (appears after XX_A only)
XX_ I CR LF	Instruction received; impossible to carry out
XX_^ CR LF	Instruction received but *time overflow error* occurred
XX_v CR LF	Instruction received, but insufficient load
XX_E CR LF	Error during execution, timeout for stable weighing value exceeded

Data record format:

Instruction:	Space / instr.: 3. Character	Stability indicator	Space	Presign	Weight	Space	Unit	CR	LF

Instruction: 1. up to 3 signs
In case of a 3 digit instruction use the next space. This will not affect the length of the data record.

Stability indicator: Space if stable,
? if not stable
^ if overload
v if underload

Sign: Space, if positive
negative sign, if negative

Weight: 9 signs, right justified

Unit: 3 signs, left justified

9.5.2 Manual output

The user may start output by pressing PRINT.
Settings in chapter 9.4

Data record format:

1	2	3	4 -12	13	14	15	16	17	18
Stability indicator	Space	Presign	Weight	Space	Unit			CR	LF

Stability indicator: Space if stable,
? if not stable
^ if overload
v if underload

Sign: Space, if positive
negative sign, if negative

Weight: 9 signs, right justified

Unit: 3 signs, left justified

English

9.5.3 Continuous output

The balance may be operated in a mode enabling continuous output of weighing results. This mode can be turned on/off by commands via RS232.

Data record format:

1	2	3	4	5	6	7-15	16	17	18	19	20	21
S	I	Space	Stability indicator	Space	Pre sign	Weig ht	Spac e	Unit			CR	LF

Stability indicator Space if stable,
? if not stable
^ if overload
v if underload
Presign: Space, if positive
negative sign, if negative
Weight: 9 signs, right justified
Unit: 3 signs, left justified

10 Error messages

„Err2“: Value outside zero range
„Err3“: Value outside taring range
„Err4“: Calibration weight outside allowable range (+-1% for calibration weight)
„Err5“: Piece weight smaller than readability
„Err7“: Disconnection time was too short (should be more than 3 seconds)
„Err8“: Impossible to carry out taring / resetting
„NULL“: Underload
„FULL2“: Weighing range exceeded
„LH“: Initial weight error Weight of weighing plate outside allowable tolerance of 10%
„5-Full“: Display range exceeded upon totalising

11 Service, maintenance, disposal

11.1 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.

11.2 Service, maintenance

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

11.3 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.

12 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.