KERN & Sohn GmbH
Ziegelei 1
D-72336 Balingen
E-Mail: info@kern-sohn.com
Phone: +49-[0]7433- 9933-0
Fax: +49-[0]7433-9933-149
Internet: www.kern-sohn.com

Operating and Installation Instructions Display Unit

KERN KDE-T

Version 1.0
12/2012
GB



KDE-T-BA_IA-e-1210

GB

KERN KDE-T

Version 1.0 12/2012

Operating and installation instructions
Display unit

Contents

1 Technical data 4

2 Appliance overview 5
2.1 Keyboard overview 6

3 Basic Information (General) 7
3.1 Proper use 7
3.2 Improper Use 7
3.3 Warranty 7
3.4 Monitoring of Test Resources 8

4 Basic Safety Precautions 8
4.1 Pay attention to the instructions in the Operation Manual 8
4.2 Personnel training 8

5 Transport and storage 8
5.1 Testing upon acceptance 8
5.2 Packaging / return transport 8

6 Unpacking and placing 9
6.1 Installation Site, Location of Use 9
6.2 Scope of delivery / serial accessories: 9
6.3 Unpacking/installation 10
6.4 Mains connection 10
6.5 Operation using a rechargeable battery (optional) 10
6.6 Adjustment 11
6.7 Linearization 12
6.7.1 Carry out linearization 13

7 Basic Operation 14
7.1 Start-up 14
7.2 Switching Off 14
7.3 Zeroing 14
7.4 Simple weighing 14
7.5 Weighing with tare 15
7.6 Pre-Tare function 15
7.7 Plus/minus weighings 16
7.8 Parts counting 17
7.9 Net-total weighings 18
7.10 Percent weighings 20

English

8 Menu 21
8.1 Navigation in the menu: 21
8.2 Menu overview 22
8.2.1 Weighing units (Unit) 23
8.2.2 Automatic zero correction (zero tracking) 25
8.2.3 Selection of adjustment weight 26
8.2.4 Display background illumination 27
8.2.5 Animal weighing function 28
8.2.6 Foot switch 29
8.2.7 Reset to factory setting 30
8.3 Interface parameters 31
8.3.1 Data transfer mode 31
8.3.2 Selection printed edition 32
8.3.3 Baud rate 33

9 Data output RS 232 C 34
9.1 Technical data 34
9.2 Pin allocation of the balance output socket (front view) 34
9.3 Explanation of the data transfer 35
9.3.1 Pr PC 35
9.3.2 AU Pr 35
9.3.3 AU PC 35
9.3.4 rE Cr 36
9.4 Output on bar code printer 37
9.5 Printer mode 37

10 Servicing, maintenance, disposal 38
10.1 Cleaning 38
10.2 Servicing, maintenance 38
10.3 Disposal 38

11 Instant help 39

12 Installing display unit / weighing bridge 40
12.1 Technical data 40
12.2 Weighing system design 40
12.3 How to connect the platform 41
12.4 Configuring display devices 42
12.5 Service menu 44

English

1 Technical data

KERN	KDE-T	KDE-TH
Resolution	20.000	35.000
Display	6-digit	
Weighing Units	g, kg, lb, oz	
Display	LCD 25 mm digits with back lighting	
DMS weighing cells	87-1600 Ω Sensitivity 2-3 mV/V	
Range calibration	We recommend ≥ 50 % max.	
Electric Supply	Input voltage 100 V – 240 V, 50 / 60 Hz	
	Power unit secondary voltage 15 V, 600mA	
Housing	225 x 110 x 45	
Admissible ambient temperature	5°C – 35°C	
Net weight	1.0 kg	
Rechargeable battery (optional)	Operating time backlight on 10 h Operating time backlight off 15 h	
	Loading time 10 h	
Data output	RS232	

English

2 Appliance overview





1. Display
2. Function keys
3. RS-232
4. Input connection load cell cable
5. Mains adapter connection

English

2.1 Keyboard overview

Key	Function
	⇨ Turn on/off
	⇨ Calling menu items from menu ⇨ Call adjustment process (long key press) ⇨ Call piece counting and percentage calculation and return to weighing mode (short key press)
	⇨ Select menu items from menu and save your settings ⇨ Confirm the adjustment weight in the adjustment process
	⇨ Menu access (longer pressing of the button) ⇨ Transfer weighing data via interface (short key press)
	⇨ Taring ⇨ For plus/minus and net/total weighing: Return to weighing mode

English

3 Basic Information (General)

3.1 Proper use

The display unit acquired by you is used in combination with a weighing plate and serves to determine the weighing value of material to be weighed. It is intended to be used as a “non-automatic weighing system”, 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 display unit 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 display unit. (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 weighing plate, minus a possibly existing tare load, must be strictly avoided. Both, the weighing plate and the display unit may be damaged during this process.
Never operate display unit in explosive environment. The serial version is not explosion protected.
Changes to the display unit's design are not permitted. This may lead to incorrect weighing results, safety-related faults and destruction of the display unit.
The display unit may only be operated in accordance with the described default settings. 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 display unit 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 display units' test substances and the test weights required for this. In KERN's accredited DKD calibration laboratory test weights and display units 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.

English

6 Unpacking and placing

6.1 Installation Site, Location of Use

The display units are designed in a way that reliable weighing results are achieved in common conditions of use.
Precise and fast work is achieved by selecting the right place for your display unit and your weighing plate.

On the installation site observe the following:

- Place the display unit and the weighing plate on a stable, even surface.
- Avoid **extreme heat as well as temperature fluctuation** caused by installing next to a radiator or in the direct sunlight;
- Protect the display unit and the weighing plate against direct draft from open windows or doors.
- Avoid jarring during weighing;
- Protect the display unit and the weighing plate against high humidity, vapours and dust.
- Do not expose the display unit 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 Scope of delivery / serial accessories:

- Display Unit
- Mains adapter
- Protective cover
- Operating instructions

6.3 Unpacking/installation

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

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

6.4 Mains connection

Power is supplied via the external mains adapter. The stated voltage value must be the same as the local voltage.
Only use original KERN mains adapters. Using other makes requires consent by KERN.

6.5 Operation using a rechargeable battery (optional)

Lift-off the battery cover on the lower side of the balance. Connect 9 V compound battery. Replace the battery compartment cover.

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

- ⇨ Keep pressed PRINT in the weighing mode until “**Unit**” is displayed.
- ⇨ Press MODE/CAL repeatedly until "**AF**" appears.
- ⇨ Acknowledge with SET/M.
- ⇨ Use MODE/CAL now to select between the following two settings:

  „AF on“: In order to save the battery, the balance switches automatically off after 3 minutes without weighing.

  „AF off“: Switch-off function deactivated.

- ⇨ Acknowledge selection by SET/M. The balance returns to weighing mode.

6.6 Adjustment

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

- Provide adjustment weight.
- The required adjustment weight depends on the capacity of the weighing system. Carry out adjustment as near as possible to the scale's maximum weight. Info about test weights can be found on the Internet at: http://www.kern-sohn.com
- Observe stable environmental conditions. Stabilisation requires a certain warm-up time.

English

How to carry out adjustment:

0.0000 kg	⇨ Start balance by pressing ON/OFF
CAL ò 30.000 kg	⇨ Press MODE/CAL key and hold. "**CAL**" will appear briefly followed by a flashing display of the value for an adjustment weight Here is an example of "**30.000 kg**" (You can select the size of an adjustment weight in the menu under menu item "**CAL**".)
	⇨ Place the adjustment weight in the centre of the weighing plate and press SET/M to confirm.
CAL F	"**CAL F**" will appear before the weighing scale changes to weighing mode. Adjustment has now been completed successfully.

An error during adjustment or the use of an incorrect adjusting weight will result in an error message „**CAL E**". Repeat adjustment.

6.7 Linearization

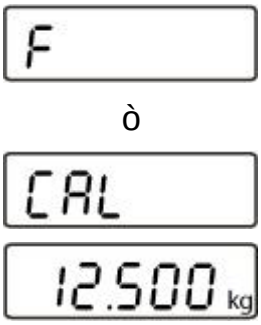
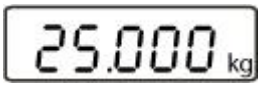
Linearity shows the greatest deviation of a weight display on the scale to the value of the respective test weight according to plus and minus over the entire weighing range. If linearity deviation is discovered during a testing instrument control, you can improve this by means of linearization.

- 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 "testing instruments control".
- Observe stable environmental conditions. Stabilisation requires a certain warm-up time.
- Do not remove adjustment weight in steps 1 to 3 during linearization, only increase it.
- After successful linearisation you will have to carry out calibration; see chapter "testing instruments control".

English

6.7.1 Carry out linearization

Set menu item “**CAL**” in service menu (chap. 12.5). Afterward proceed as follows:

	“**F**” will appear briefly before the weighing scale changes to adjusting mode and “**CAL**” will be displayed. ⇨ Press SET M, the value for the first weight will be displayed. Here is an example of “12.500 kg”
	⇨ Put on first weight in the centre of the weighing pan ⇨ Press SET M, the value for the first weight will be displayed. Here is an example of “25.000 kg”
	⇨ Put on second weight in the centre of the weighing pan ⇨ Press SET M, the value for the third weight will be displayed. Here is an example of “50.000 kg”
	⇨ Put on third weight in the centre of the weighing pan ⇨ Press SET M
	“**F**” will appear briefly before the weighing scale turns itself off. Linearization has now been completed successfully. We recommend that you adjust the weighing scale after linearization. (see chapter 6.6)

An adjusting error or incorrect adjusting weight will be indicated by the error message; repeat adjustment procedure.

7 Basic Operation

7.1 Start-up

⇨ Press ON/OFF, the appliance will carry out a self-test. As soon as the weight display appears, the instrument will be ready to weigh.



7.2 Switching Off

⇨ Press ON/OFF, the display will disappear.

7.3 Zeroing

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

⇨ To unload the weighing system

⇨ Press TARE, the zero display appears.



7.4 Simple weighing

⇨ Place goods to be weighed on balance.

⇨ As soon as the unit is shown the weighing scale will be in a steady state.

⇨ Read weighing result.

Overload warning

Overloading exceeding the stated maximum load (max) of the device, minus a possibly existing tare load, must be strictly avoided. This could damage the instrument.
Exceeding maximum load is indicated by the display of "**Error**", and an audio sound. Unload weighing system or reduce preload.

English

7.5 Weighing with tare

⇨ Deposit weighing vessel. After successful standstill control press the TARE button. The zero display appears. 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.

⇨ The tare procedure can be repeated as many times as necessary, for example with initial weighing of several components for a mix (add-on weighing). The limit is reached when the total weighing range capacity is full.

⇨ To delete the tare value, remove load from weighing plate and press TARE .

7.6 Pre-Tare function

Setting the pre-tare function:
Using this function the weight of a tare vessel can be stored.
This value also remains saved if the balance meanwhile has been switched off and switched on again.

⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



⇨ Put on empty vessel and press MODE/CAL repeatedly until a flashing display of "**PrEtArE**" appears.



⇨ Press SET/M. The current weight on the weighing pan will be saved as pre-tare weight.

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

English

Turning off pre-tare function:

⇨ Unload weighing pan and press TARE to set to zero

⇨ Press MODE CAL repeatedly until „**PrETArE**“ is displayed flashing

⇨ SET M Press SET M to delete the saved pre-tare value.

7.7 Plus/minus weighings

For example unit weight control, fabrication control etc.

⇨ Turn on weighing scale by ON OFF and wait for zero to be displayed.



⇨ Put desired weight on weighing pan



(example)

⇨ Press TARE to tare and “**0.0000 kg**” will be displayed



⇨ Remove desired weight and the desired weight will be shown as negative value



⇨ Put the test objects subsequently on the weighing plate, the respective deviation from the nominal weight is displayed with the respective sign to „+“ and „-“.

According to the same procedure also packages with the same weight can be produced, referring to a nominal weight.

Back to weighing mode by pressing the TARE button.

English

7.8 Parts counting

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

- The average piece weight can only be determined by stable weighing values.
- If weighing values are under zero, the piece counter display shows a negative number of items.

⇨ Reset balance to zero or tare the empty weighing container if necessary.



⇨ Press MODE CAL to show a flashing display of reference number of pieces "**5 PCS**"



⇨ Press MODE CAL to select further reference numbers of pieces



(example)

⇨ Place as many parts to count on the weighing plate as the set reference quantity requires.

⇨ Press SET M to confirm the selected reference number of pieces and the display will stop flashing.

The balance is now in parts counting mode and counts all units on the weighing plate.

The larger the reference quantity, the more accurate the parts counting.

Pressing MODE CAL will return the weighing scale to weighing mode and show the weight for all the pieces counted.

Printout example:

P 2pcs

7.9 Net-total weighings

It is useful if a mixture of several components is weighed into a tare vessel and finally the sum weight of all weighed components is necessary for control purposes (net-total, i.e. the weight of the tare vessel).

Example:

⇨ Turn on weighing scale [ON/OFF] and wait for zero to be displayed.



⇨ Put on empty vessel



⇨ and use [TARE] to tare to “0.0000 kg”.



⇨ Weigh in component 1 (2 kg)



⇨ and use [SET/M] to tare to “0.0000 kg”.



The memory function is shown by the symbol on the left side of the screen.

⇨ Weigh in component 2 (0.5 kg)



⇨ Press [SET/M] and the total weight (2.5 kg) following from component 1 and component 2 will be shown.



⇨ Press [SET/M] and the weighing scale moves to “0.0000 kg”. The memory symbol reappears.



English

⇨ Weigh in component 3 (5 kg)



⇨ Press SET/M and the total weight (7.5 kg) following from component 1, component 2 and component 3 will be shown.



Follow the same sequence of operations for additional components.

Back to weighing mode by pressing the TARE button.



English

7.10 Percent weighings

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

⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



⇨ Press MODE/CAL repeatedly until a flashing display of "**100.0 %**" appears. First the reference numbers of pieces of the counting function appear, followed by "**100.0 %**".

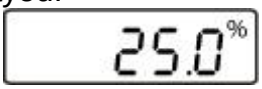


⇨ Place the reference object on the weighing plate

⇨ Press SET/M and the weight of the substance will be imported as reference (100%). The display stops flashing.

⇨ Remove reference object

⇨ Put test specimen on the weighing pan and the percentage in relation to the reference weight will be displayed.



(example)

⇨ Press MODE/CAL to return weighing scale to weighing mode and the weight of the test specimen will be displayed.

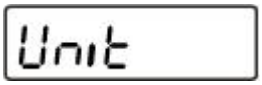
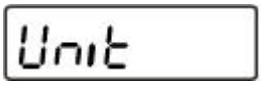
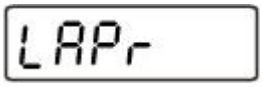
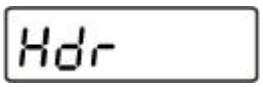
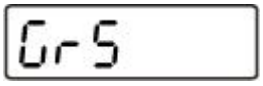


(example)

English

8 Menu

8.1 Navigation in the menu:

Call up menu	In weighing mode keep PRINT pressed until **Unit** appears.  ò 
Select menu items	With help of MODE CAL, the individual menu items can be selected one after the other.  ò  ò  and so on
Change settings	Confirm selected menu item with SET M and the current setting will be shown. Change setting in selected menu item by pressing MODE CAL. Example:  ò 
Confirm setting **Back to weighing mode**	Press SET M to confirm required setting and the device will return to weighing mode.

English

8.2 Menu overview

Menu item	Available settings	
Unit Weighing Units	kg*	Kilogram
	g	Gram
	oz	Pound
	lb	Troy ounce
	FFA	Freely selectable factor
Pr Data transfer mode	rE Cr*	Data output via remote control commands
	Pr PC	Data output using the PRINT key
	AU PC	Continuous data output
	bA Pr	Output on bar code printer
	AU Pr	Autom. data output of stable weighing values
LAPr Selection printed edition	Hdr*	Edition of the headlines
	GrS	Edition of the total weight
	NEt	Edition of net weight
	tAr	Edition of tare weight
	N7E	Edition of the stored weight
	PCS	Edition of quantity
	AUJ	Edition of piece weight
	rgt	Edition of the reference quantity
	FFd	Edition of a page forward feed when printout is started
	FFE	Edition of a page forward feed when printout is ended
bAUd Baud rate	9600*	
	19200	
	1200	
	2400	
	4800	
AF Auto off (battery mode)	on*	Automatic shut-off function on
	off	Automatic shut-off function off
tr Automatic zero point correction (zero tracking)	on*	Automatic zero tracking on
	off	Automatic zero tracking off
CAL Selection of adjustment weight	Dependent on max load of weighing scale	

English

bL Display backlight	on*	Switch-on background illumination
	Ch	The backlight will turn itself off 10 minutes after reaching a stable weighing value.
	off	Background illumination switched-off
ANL Animal weighing function	off*	Off
	3	Period 3 seconds
	5	Period 5 seconds
	10	Period 10 seconds
	15	Period 15 seconds
FOOt S Foot switch	tAr*	Tare weighing scale by operating the foot switch
	Pr	Print the weighing value by pressing the foot switch
rSt Reset to factory setting	no*	The balance keeps its individual setting
	yes	Balance will be reset to factory setting.

English

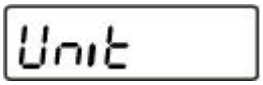
* = default setting

8.2.1 Weighing units (Unit)

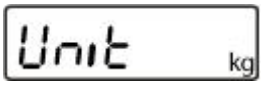
⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



⇨ Press PRINT and keep it pressed until **„Unit“** appears on the display.



⇨ Press SET/M, the set unit will appear on the screen.



(example)

⇨ You can now use MODE/CAL to change between individual units.

⇨ Press SET/M and the set unit will be imported.

	Display indication	Conversion factor 1 g =
Gram	g	1.
Pound	lb	0.0022046226
Ounce	oz	0.035273962
Freely selectable factor *)	FFA	xx.xx

In order to enter an own conversion factor, press the 

button as explained above until „**FFA**“ is displayed. Press the 

button to reach to the selection. The last digit begins to flash. Using the 

button, the displayed value is increased by 1, with the 

button it is reduced by 1. Use the 

button to jump one digit to the left. When all the changes are ready, use the 

button to save this value and by pressing the 

button the „Freely selectable factor“ is taken over as current weighing unit.

English

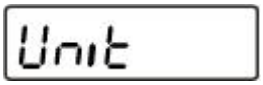
8.2.2 Automatic zero correction (zero tracking)

The Auto-Zero function is used to tare small variations in weight automatically.
If **Zero-Tracking** however is switched off, the weighing display becomes more busy.

⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



⇨ Press PRINT and keep it pressed until **„Unit“** appears on the display.



⇨ Press MODE/CAL repeatedly until “**tr**” appears.



⇨ Press SET/M, the last selected setting will be displayed.



(example)

⇨ Select desired setting by MODE/CAL.

⇨ Acknowledge with SET/M. The balance changes then into weighing mode.



English

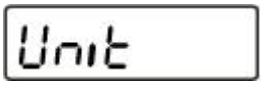
8.2.3 Selection of adjustment weight

The adjustment weight can be selected from the default nominal values in accordance with the max load for the weighing scale. 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. The non delivered adjustment weights can be purchased from KERN as option.

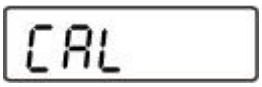
⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



⇨ Press PRINT and keep it pressed until **„Unit“** appears on the display.



⇨ Press MODE/CAL repeatedly until “**CAL**” appears.



⇨ Press SET/M, the current set format is displayed.

⇨ Press MODE/CAL to select required weight

⇨ Acknowledge with SET/M. The balance changes into weighing mode



The required adjustment weight has now been set. The weighing scale is ready for adjustment.

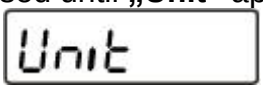
8.2.4 Display background illumination

To turn the display backlight function on or off go to the menu.

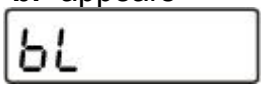
⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



⇨ Press PRINT and keep it pressed until **„Unit“** appears on the display.



⇨ Press MODE/CAL repeatedly until “**bl**“ appears



⇨ Acknowledge with SET/M. The last selected setting will be shown.



(example)

⇨ Use MODE/CAL now to select between the following three settings:

Display	Adjustment	Function
„bl“ on	Background illumination on	Contrastful display which can also be red in the darkness.
„bl“ off	Background illumination off	Battery saving
„bl“ Ch	The background illumination will be switched off automatically 10 sec after having reached a stable weighing value.	Battery saving

⇨ Press SET/M to confirm the selected setting. The balance returns automatically into weighing mode.

8.2.5 Animal weighing function

The balance has an integrated animal weighing function (mean value calculation). With this function it is possible to weigh domestic or small animals exactly, although they do not stand quiet on the weighing plate.

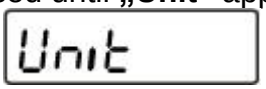
If they move too much, an exact weighing will not be possible.

In the menu the animal weighing function can be switched on or off:

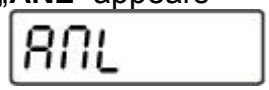
⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



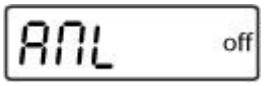
⇨ Press PRINT and keep it pressed until **„Unit“** appears on the display.



⇨ Press MODE/CAL repeatedly until „**ANL**“ appears



⇨ Acknowledge with SET/M. The last selected setting will be shown.



(example)

⇨ Use the SET/M key to choose one of the following settings:

Display	Function
„ANL“ off	Animal weighing function is switched off
„ANL“ 3	Weighing value calculation above 3 sec. till to the value display
„ANL“ 5	Weighing value calculation above 5 sec. till to the value display
„ANL“ 10	Weighing value calculation above 10 sec. till to the value display
„ANL“ 15	Weighing value calculation above 15 sec. till to the value display

⇨ Press SET/M to confirm the selected setting. The balance returns automatically into weighing mode.

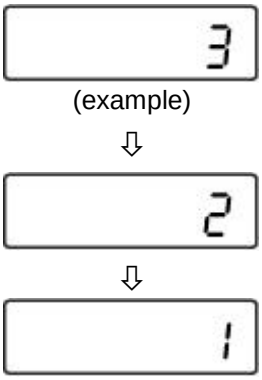
English

Operation:

⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



⇨ Put weighed load (animal) on weighing pan and press SET/M. The selected time will be displayed onscreen and countdown will start.



(example)

During this time the balance takes up several measuring values. The weighing value will be displayed after the time specified has passed.



(example)

⇨ Press SET/M once, the balance goes to weighing mode

⇨ Press SET/M twice and the function will be restarted.

8.2.6 Foot switch

The foot switch is used to send the weighing values to a printer or a PC. Alternatively can also be tared.
Connection and operation see in the operating instructions supplied with this foot switch.

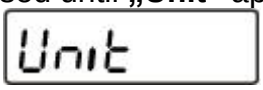
8.2.7 Reset to factory setting

This function resets all balance settings to factory setting.

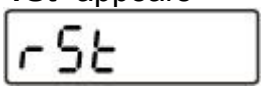
⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



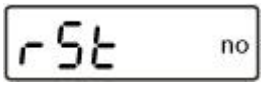
⇨ Press PRINT and keep it pressed until **„Unit“** appears on the display.



⇨ Press MODE/CAL repeatedly until “**rSt**“ appears



⇨ Acknowledge using SET/M, the current setting is displayed.



⇨ Select desired setting by MODE/CAL.

⇨ Confirm you selection by pressing SET/M, the weighing scale will return to weighing mode.



English

8.3 Interface parameters

Data output via interface RS 232 C

General hints

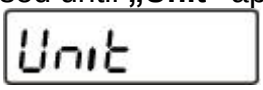
The previous condition for the data transfer between balance and a peripherical device (e.g. printer, PC ...) is that the appliances are set to the same interface parameters (e.g. baud rate, transfer mode ...).

8.3.1 Data transfer mode

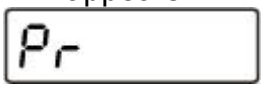
⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



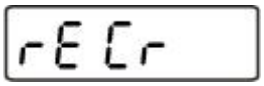
⇨ Press PRINT and keep it pressed until **„Unit“** appears on the display.



⇨ Press MODE/CAL repeatedly until “**Pr**“ appears



⇨ Acknowledge using SET/M, the current setting is displayed.



(example)

⇨ Select desired setting by MODE/CAL.

⇨ Acknowledge selection by SET/M. The balance returns to weighing mode.



English

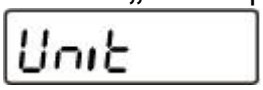
8.3.2 Selection printed edition

Using this function data are selected which are to be sent via the RS232C (**not** valid for data transfer mode BAPr).

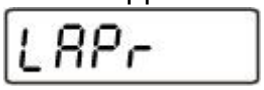
⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



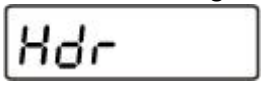
⇨ Press PRINT and keep it pressed until **„Unit“** appears on the display.



⇨ Press MODE/CAL repeatedly until “**LAPr**“ appears

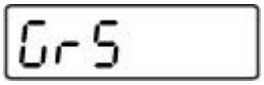


⇨ Acknowledge using SET/M, the current setting is displayed.



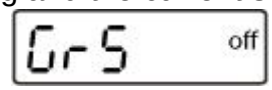
(example)

⇨ Select desired setting by MODE/CAL.



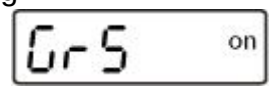
(example)

⇨ Press SET/M to confirm setting and the current setting will be displayed.



(example)

⇨ Press MODE/CAL to change setting



(example)

⇨ Acknowledge with SET/M. The balance returns to weighing mode.





By that way the user can configure his own data block, which then is sent to a printer or to a PC.

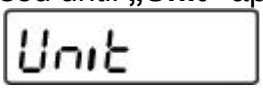
8.3.3 Baud rate

The baud rate defines the transfer speed vie the interface, 1 Baud = 1 Bit/second.

⇨ Turn on weighing scale by ON/OFF and wait for zero to be displayed.



⇨ Press PRINT and keep it pressed until **„Unit“** appears on the display.



⇨ Press MODE/CAL repeatedly until “**bAUd**“ appears

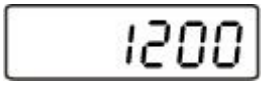


⇨ Acknowledge using SET/M, the current setting is displayed.



(example)

⇨ Press MODE/CAL to change setting



(example)

⇨ Acknowledge with SET/M. The balance returns to weighing mode.



English

9 Data output RS 232 C

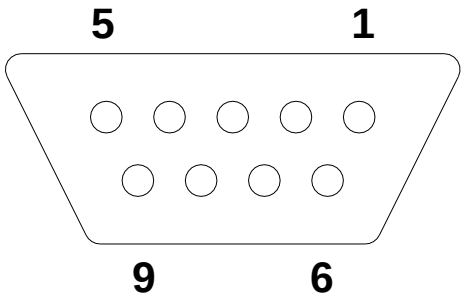
The RS 232C interface allows a bi-directional data exchange from the balance to external devices. This data exchange is asynchronous using ASCII - Code.
The following conditions must be met to provide successful communication between the weighing system and the printer.

- Use a suitable cable to connect the display unit to the interface of the printer. Faultless operation requires an adequate KERN interface cable.
- Communication parameters (Baudrate, parity) of display device and printer must match.

9.1 Technical data

- 8-bit ASCII Code
- 1 start bit, 8 data bits, 1 stop bit, no parity bit
- Baud rate selectable at 1200, 2400, 4800, **9600** and 19200 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)

9.2 Pin allocation of the balance output socket (front view)



Pin 2: Transmit data
Pin 3: Receive data
Pin 5: Signal ground

9.3 Explanation of the data transfer

9.3.1 Pr PC

Press the PRINT key, at stable weight the format is transferred from **LAPR**.

a. Format for stable values for weight/quantity/percentage

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	S	N1	N2	N3	N4	N_5	N6	N7	N8	N9	N10	B	U1	U2	U_3	CR	LF

b. Format in case of fault

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	B	B	B	B	B	B	B	B	B	B	E	r	r	o	r	CR	LF

9.3.2 AU Pr

As soon as the weighing value is stable, the format is automatically transferred from **LAPR**.

c. Format for stable values for weight/quantity/percentage

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	S	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	B	U_1	U_2	U_3	CR	LF

d. Format in case of fault

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	B	B	B	B	B	B	B	B	B	B	E	r	r	o	r	CR	LF

9.3.3 AU PC

The weighing values are sent automatically and continuously, no matter if the value is stable or unstable.

e. Format for stable values for weight/quantity/percentage

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	S	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	B	U_1	U_2	U_3	CR	LF

f. Format in case of fault

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	B	B	B	B	B	B	B	B	B	B	E	r	r	o	r	CR	LF

g. Format for unstable values for weight/quantity/percentage

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	S	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	B	B	B	B	CR	LF

9.3.4 rE Cr

The remote control commands s/w/t are sent from the remote control unit to the balance as ASCII code. After the balance having received the s/w/t commands, it will send the following data.

Take into account that the following remote control commands must be sent without a subsequent CR LF.

s Function: Stable weighing value for the weight is sent via the RS232 interface

w Function: Weighing value for the weight (stable or unstable) is sent via the RS232 interface

t Function: No data are sent, the balance carries out the tare function.

h. Format for stable values for weight/quantity/percentage

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	S	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	B	U_1	U_2	U_3	CR	LF

i. Format in case of fault

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	B	B	B	B	B	B	B	B	B	B	E	r	r	o	r	CR	LF

j. Format for unstable values for weight/quantity/percentage

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	S	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	B	B	B	B	CR	LF

English

Symbols

M	Blank or M
S	Space character or negative sign (-)
N_1 … N_{10}	10 numeric ASCII codes for weight values including decimal places or blanks
U_1 … U_3	3 ASCII codes for weighing unit pcs. / % / or blank
B	Blank
E, o, r	ASCII code or “E, o, r”
CR	Carriage Return
LF	(Line Feed)

English

9.4 Output on bar code printer

The data transfer mode has to be set on **„BA Pr“** (chapter 8.5.1).
As bar code printer a Zebra printer model LP2824 is provided.
Take into account that the output format of the balance is fixedly defined and cannot be changed.
The printer format is stored in the printer, i.e. in case of a failure the printer cannot be changed with a new one from factory, previously it is necessary that KERN installs the respective software.

The Zebra printer and the balance must be connected to the delivered interface cable when they are switched off.

After switching-on both appliances, and after reaching the status ready-for-operation, a label will be printed out when pressing the PRINT button.

9.5 Printer mode

Printout example (KERN YKB-01N):

G	1.000kg

10 Servicing, maintenance, disposal

10.1 Cleaning

Before cleaning, disconnect the appliance from the operating voltage.

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

Spilled weighing goods must be removed immediately.

10.2 Servicing, maintenance

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

10.3 Disposal

Disposal of packaging and appliance must be carried out by operator according to valid national or regional law of the location where the appliance is used.
Should other error messages occur, switch balance off and then on again. If the error message remains inform manufacturer.

11 Instant help

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

Fault	Possible cause
The displayed weight does not glow.	• The display unit is not switched on. • Mains power supply interrupted (mains cable defective). • 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 platform has contact with other objects. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)
The weighing result is obviously incorrect	• The display of the balance is not at zero • Adjustment is no longer correct. • The weighing pan is not level • 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 device off and then on again. If the error message remains inform manufacturer.

12 Installing display unit / weighing bridge

Installation / configuration of the weighing system must be carried out by a well acquainted specialist with the workings of weighing balances.

12.1 Technical data

Supply voltage:	5 V/150mA
Sensitivity	1-2 mV/V
Resistance parameter	80 - 100 Ω, max 4 items per 350 Ω load cell

12.2 Weighing system design

The display unit is suitable for connection to any analogue platform in compliance with the required specifications.
The following data must be established before selecting a weighing cell:

- **Weighing balance capacity**
  This usually corresponds to the heaviest load to be weighed.
- **Preload**
  This corresponds to the total weight of all parts that are to be placed on the weighing cell such as upper part of platform, weighing pan etc.
- **Total zero setting range**
  This is composed of the start-up zero setting range (± 2%) and the zero setting range available to the user via the ZERO-key (2%). The total zero setting range equals therefore 4 % of the scale's capacity.

  The addition of weighing scales capacity, preload and the total zero setting range give the required capacity for the weighing cell.
  To avoid overloading of the weighing cell, include an additional safety margin.
- **Smallest desired display division**

English

12.3 How to connect the platform

⇨ Disconnect the display unit from the power supply.

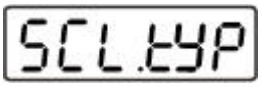
⇨ Weld the individual wires of the load cell cable to the printed circuit board.

⇨ Pin assignment is shown on the diagram below.

Load cell	Display	
red	green	Sig+
green	red	Sen+
white	white	Sig-
black	black	Sens-

12.4 Configuring display devices

Navigation in the menu:

Call up menu	⇨ Weighing scale is turned off. ⇨ Press PRINT and hold; ⇨ Keep holding PRINT pressed down and also hold down ON/OFF at the same time until software version "**P1.0x**" is displayed. Release both keys. "**SCL.tYP**" will be displayed  followed by "**1rAnGE**" 
Select menu items	With help of MODE/CAL, the individual menu items can be selected one after the other.  ò 
Change settings	Press PRINT to change settings
Confirm setting	Use SET/M to acknowledge settings

English

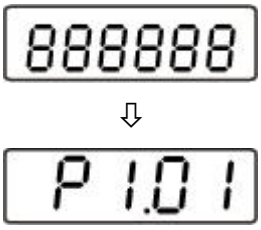
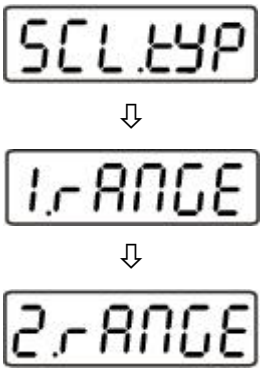
Configuration menu overview:

Menu block Main menu	Menu item sub menu	Available settings / explanation	
SCL.tYP	1.rANGE	**Single-range balance** Press SET/M to confirm, bASUNTkg will be displayed where you can select the weighing unit.	
		SCL.CAP	Weighing balance capacity (max) freely selectable
		rESOLE	Readability selectable, dependent on max load
		After configuration linearize the weighing system	
		CAL	Linearization (See chap. 6.7.1)
	2.rANGE	**Dual range balance** Press SET/M to confirm, bASUNTkg will be displayed where you can select the weighing unit.	
		SCL.CAP 1	Balance capacity (Max) 1st weighing range
		rESOLE 1	Readability for first weighing range selectable, dependent on max load
		SCL.CAP 2	Balance capacity (Max) 2nd weighing range
		rESOLE 2	Readability for 2nd weighing range selectable, dependent on max load
		After configuration linearize the weighing system	
		CAL	Linearization (See chap. 6.7.1)

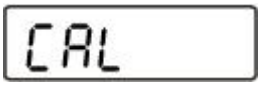
English

12.5 Service menu

Configure display unit:
Single-range balance:

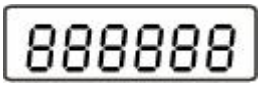
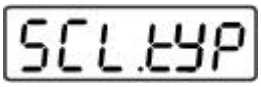
	Weighing scale is turned off
 (example)	⇨ Press PRINT and hold; ⇨ Keep holding PRINT pressed down and also hold down ON/OFF at the same time until software version "**P1.0x**" is displayed. Release both keys.
	"**SCL.TYP**"will appear briefly followed by "**1.rAnGE**". ⇨ Setting single range ("1.rAnGE") – or dual range ("2.rAnGE") weighing scale ⇨ Press PRINT to change between "**1.rAnGE**"and "**2.rAnGE**". Select „**1.rAnGE**" and confirm by SET/M.
	„**bASUnt**" is displayed. This is where you can set the required weighing unit. ⇨ Press PRINT to change between the individual units and press SET/M to select the required unit (ex. here: „kg").
 (example)  (example)	"**SCL.CAP**" will appear briefly. ⇨ Setting weighing scale capacity A numeric value appears and the digit on the right is flashing. ⇨ Press PRINT to increase the numeric value or MODE/CAL to decrease. Press SET/M to change to a different decimal place. Set weighing scale capacity (here is an example of 50 kg) and press SET/M to confirm.

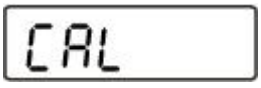
English

 ⇩  (example)	"**rESOLE**"will appear briefly followed by a numeric value. ⇨ Now set readability. You can select between default values that are dependent on the max load of the weighing scale. ⇨ Press PRINT to change between values. ⇨ Press SET M to confirm the required value. Here is an example: 0.001 kg - 0.002 kg - 0.005 kg – 0.010 kg – 0.020 kg – 0.050 kg
 ⇩ 	"**F**" will appear briefly before the weighing scale changes to adjusting mode and "**CAL**" will be displayed. ⇨ Linearize weighing scale (See chap.6.7.1)

English

Dual range balance:

	Weighing scale is turned off
 ⇩  (example)	⇨ Press PRINT and hold; ⇨ Keep holding PRINT pressed down and also hold down ON OFF at the same time until software version "**P1.0x**" is displayed. Release both keys.
 ⇩  ⇩ 	"**SCL.TYP**"will appear briefly followed by "**1.rAnGE**". ⇨ Setting single range ("1.rAnGE") – or dual range ("2.rAnGE") weighing scale ⇨ Press PRINT to change between "**1.rAnGE**"and "**2.rAnGE**". Select „**2.rAnGE**" and confirm by SET M.

	„**bASUnt**“ is displayed. This is where you can set the required weighing unit. ⇨ Press PRINT to change between the individual units and press SET M to select the required unit (ex. here: „kg“).
 ⇩  (example)  (example)	“**SCL.CAP 1**”will appear briefly. ⇨ Setting first range A numeric value appears and the digit on the right is flashing. ⇨ Press PRINT to increase the numeric value or MODE CAL to decrease. Press SET M to change to a different decimal place. Set weighing scale capacity (here is an example of 50 kg) and press SET M to confirm.
 ⇩  (example)	“**rESOLE 1**”will appear briefly followed by a numeric value. ⇨ Set readability for first range. You can select between default values that are dependent on the max load of the weighing scale. ⇨ Press PRINT to change between values. ⇨ Press SET M to confirm the required value.
	“**rESOLE 2**”will appear briefly followed by a numeric value. As above, enter required readability and press SET M to confirm the required value.
 ⇩ 	“**F**” will appear briefly before the weighing scale changes to adjusting mode and “**CAL**” will be displayed. ⇨ Linearizing a weighing scale (see chap 6.7.1)

English