KERN & Sohn GmbH
Ziegelei 1
D-72336 Balingen
email: 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 KFF-T

Version 1.1
01/2011
GB

KFF-T-BA_IA-e-1111

GB

KERN KFF-T

Version 1.1 02/2011

Operating and installation instructions
Display unit

English

Table of Contents

English

1 Technical Specifications

KERN	KFF-T
Display	6-digit
Resolution	30.000
Weighing ranges	2
Divisions	1,2,5,…10, n
Weighing Units	g, kg, lb, oz, tJ, hJ
Display	LCD 0.87 in digits with back lighting
DMS weighing cells	80-100 Ω. Max. 4 item per 350 Ω; Sensitivity 2-3 mV/V
Electric Supply	Input voltage 220 V – 240 V, 50 Hz
	Power pack secondary voltage 9V, 800mA
Housing	175 x 84 x 39
Admissible ambient temperature	0°C – 40°C
Net weight	1.9 kg
Rechargeable battery Operating charging time	35 h / 12 h
Interface RS 232	Standard
Radio transmission to weighing platform	Range ≤100 m

2 Appliance overview

Front view display unit (receiver):

1. Antenna
2. Status of rechargeable battery
3. Weight display
4. Keyboard

Back view display unit (receiver):

5. RS-232
6. Mains adapter connection
7. Table leg

Connecting box (sender)

8. Antenna
9. ON/OFF switch
10. Mains adapter connection
11. Input connection Load cell cable

English

2.1 Keyboard overview

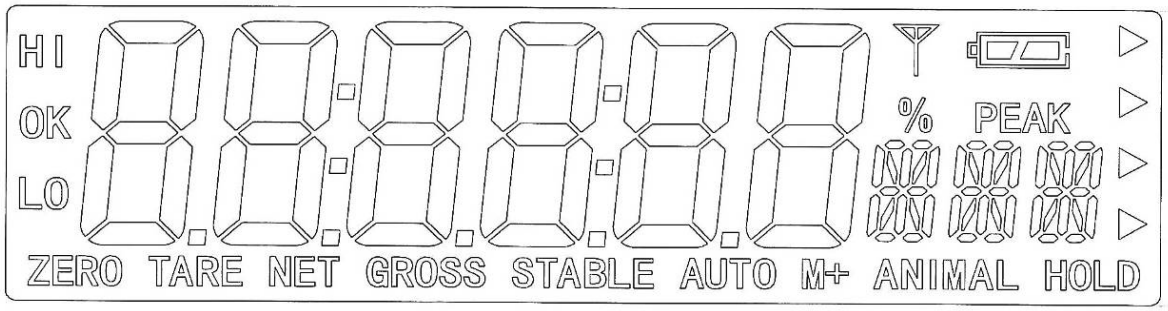
Button	Function
	• Turn on/off
	• Zeroing
Navigation key ↵	• Confirm entry
	• Taring
Navigation key ↑	• At numeric input increase flashing digit • Scroll forward in menu
	• Add weighing value to summation memory • Display sum total • Calculate weighing data via interface
C	• Delete
 Navigation key →	• Change between gross ⇔ and net weight • Digit selection to the right
	• Switch-over weighing unit
ESC	• Back to menu/weighing mode

English

2.1.1 Numerical input via the navigation buttons

Button	Navigation keys	Function
TARE	Arrow key ↑	Increase flashing digit
M+ C	Arrow key ←	Digit selection to the left Delete
BG NET	Arrow key →	Digit selection to the right
→0←	Arrow key ↵	Terminate input

2.2 Overview of displays



Display	Significance
	Charging status of rechargeable battery
STABLE	Stability display
ZERO	Zero display
GROSS	Gross weight
NET	Net weight
AUTO	Automatic add-up enabled
M+	Adding
HI OK LO	Indicators for weighing with tolerance range

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

4.2 Personnel training

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

5 Transportation & Storage

5.1 Testing upon acceptance

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

5.2 Packaging / return transport

- ⇨ Keep all parts of the original packaging for a possibly required return.
- ⇨ Only use original packaging for returning.
- ⇨ Prior to dispatch disconnect all cables and remove loose/mobile parts.
- ⇨ Reattach possibly supplied transport securing devices.
- ⇨ Secure all parts such as the glass wind screen, the weighing platform, power unit etc. against shifting and damage.

6 Unpacking and erection

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 Unpacking and erection

Take display unit and connecting box carefully from packaging, remove plastic sleeve and install at the designated work space. Mount the display unit in a way that facilitates operation and where it is easy to see.

Transmission frequency and connecting box are factory-set.

6.3 Scope of delivery / serial accessories:

- Display unit, see chapter 2
- Connection box, see chapter 2
- 2 Mains power supplies
- Cable screwing
- Operating instructions

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 Rechargeable battery operation

Before the first use, the battery should be charged by connecting it to the mains power supply for at least 12 hours.
The appearance of the rechargeable battery symbol in the weight display indicates that the battery is almost exhausted. The unit will be ready for operation for approx. another 10 hours before switching off automatically. Charge the battery with the help of the supplied power pack.
The rechargeable battery symbol shows the charge status of the rechargeable battery:

 Voltage has dropped below prescribed minimum.

 Rechargeable battery very low.

 Rechargeable battery is completely charged

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.

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

Invoke menu

⇨ Press UNIT/ESC and M+/C simultaneously in weighing mode.
The first menu block F0 H-L is displayed.

⇨ Press TARE repeatedly until ProG is displayed.

⇨ Press →0←, password query Pin will appear.

⇨ Press subsequently BG/NET, UNIT/ESC, →0←| until the first menu item P1 rEF is shown.

⇨ Press TARE, P2 CAL will be shown.

⇨ Confirm by →0←|, dEC i will be displayed.

⇨ Press TARE repeatedly until CAL is displayed.

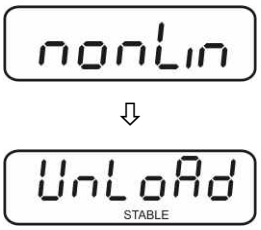
⇨ Confirm by pressing →0←| and select the desired setting by TARE.

nonLin = Adjustment

nonLin = Linearization, see chpt.6.7

English

How to carry out adjustments



⇨ Acknowledge by →0←|.
Ensure that there are no objects on the weighing plate.

⇨ Wait for stability display, then press →0←|. The currently set adjustment weight will be displayed.

⇨ To change by using the navigation buttons (see chap. 2.1.1) select the desired setting, the active digit is flashing.

⇨ Acknowledge by →0←|.

⇨ Carefully place adjusting weight in the centre of the weighing plate. Wait for stability display, then press →0←|.

⇨ After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, the appliance will return into weighing mode automatically.
An adjusting error or incorrect adjusting weight will be indicated by the error message; repeat adjustment procedure.

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 3.4 "testing instruments control".
- Observe stable environmental conditions. Stabilisation requires a certain warm-up time.
- After successful linearization you will have to carry out calibration; see chapter "testing instruments control"

How to carry out linearization:

⇨ Invoke menu item LinEAr, see chapter 6.6 "Invoke menu".

⇩

⇨ Acknowledge by →0←.
Ensure that there are no objects on the weighing plate.

⇨ Wait for stability display, then press →0←. When "LoAd 1" is displayed, put the first adjustment weight (1/3 max) carefully in the centre of the weighing platform.

⇨ Wait for stability display, then press →0←. When "LoAd 2" is displayed, put the second adjustment weight (2/3 max) carefully in the centre of the weighing platform.

⇨ Wait for stability display, then press →0←. When "LoAd 3" is displayed, put the third adjustment weight (1/3 max) carefully in the centre of the weighing platform.

⇨ Wait for stability display, then press →0←.

⇨ After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, the appliance will return into weighing mode automatically.

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

English

7 Operation

7.1 Start-up

⇨ Turn on connecting box. Press ON/OFF on the display unit; the unit 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 ± 4 % max.
The unit is equipped with an automatic zero setting function. Therefore the unit can be reset to zero at any time as follows:

⇨ To unload the weighing system

⇨ Press →0← and zero display as well as indicator **ZERO** will appear.

7.4 Simple weighing

⇨ Place goods to be weighed on balance.

⇨ Wait until stability display **STABLE** appears.

⇨ 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 “ol“, and an audio sound. Unload weighing system or reduce preload.

7.5 Weighing with tare

⇨ Deposit weighing vessel. After successful stop check press the TARE button. Zero display and indicator **NET** appear.

The weight of the container is now internally saved.

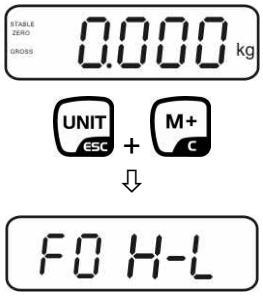
⇨ Weigh the material, the net weight will be indicated.
⇨ The weight of the weighing container will be displayed as a minus number after removing the weighing container.
⇨ The taring process can be repeated any number of times, e.g. when adding several components for a mixture (adding). The limit is reached when the whole weighing range is exhausted.
⇨ To change between gross weight and net weight, press BG/NET.
⇨ To delete the tare value, remove load from weighing plate and press TARE.

English

7.6 Weighing Units

1. How to enable weighing units

⇨ In weighing mode press UNIT and M+ at the same time and the first menu block F0 H-L will appear.



⇨ Press TARE repeatedly until F2 Unt is displayed

⇨ Press →0← and current setting will be displayed.

⇨ To enable [on] / disable [off] the displayed weighing unit, press TARE

⇨ Acknowledge by →0←.

⇨ To select further weighing units, press →0←

⇨ To enable [off] / disable [on] the displayed weighing unit, press TARE.

⇨ Acknowledge by →0←.

⇨ Repeat sequence for each desired weighing unit.

⇨ Press UNIT repeatedly and the device will return to weighing mode.

2. How to change weighing units

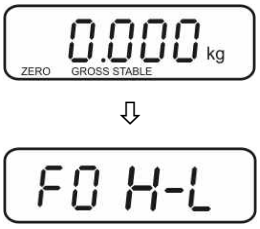
⇨ To return to the previously enabled weighing units go to weighing mode by UNIT.

7.7 Weighing with tolerance range

You can set an upper or lower limit when weighing with tolerance range and thus ensure that the weighed load remains exactly within the set limits.
During tolerance controls such as dispensing, portioning or sorting the unit will indicate whether a value exceeds or falls short of limits with an optical [ok] as well as an audio signal according to the setting in the menu block “F4 oFF_BEEP“; see chapter 8.2.

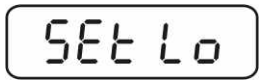
Selectable mode	Description
bp 1	Acoustic signal turned off
bp 2	If load is within tolerance range, [ok] will be displayed and audio signal will be sounded.
bp 3	If the load is beyond the tolerance range [ok] will be shown and the audio signal will sound.

1. Call up menu



⇨ In weighing mode press UNIT/ESC und M+/C simultaneously and the first menu block F0 H-L will appear.

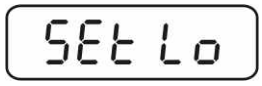
Set limit values



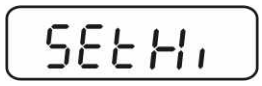
⇨ Press →0← until the display used for entering the lower limit **SET LO** appears.

⇨ Press →0←, current setting will be displayed.

⇨ To enter the lower limit, e. g. 1000 Kg, press the navigation keys (See chpt. 2.1.1); the currently enabled digit will be flashing.



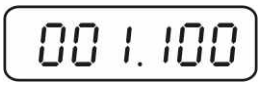
⇨ Confirm input by →0←.



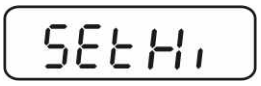
⇨ Select **SET HI** by pressing TARE.

⇨ Press →0← and the current setting for the upper limit will be displayed.

⇨ Press the navigation keys (See chpt. 2.1.1) to enter the upper limit, e.g. 1,100 kg; the currently enabled digit will be flashing.



⇨ Confirm input by →0←.

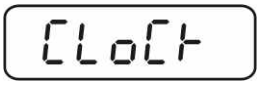


⇨ Press UNIT ESC, the unit will return to the menu

⇨ **How to set tolerance weighing mode**

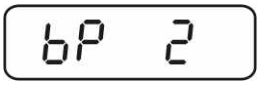
⇨ Press TARE repeatedly until F4 oFF is displayed.

⇨ Acknowledge by →0←.



⇨ Select **BEEP** by pressing TARE

⇨ Press →0← and current setting will be displayed.



⇨ Select desired setting by TARE (bp 1, bp 2, bp 3) and confirm by pressing →0←.

⇨ Press TARE repeatedly; weighing system is in tolerance weighing mode. From here evaluation takes place whether the goods to be weighed are within the two tolerance limits.

2. Weighing with tolerance range

⇨ Tare when using a weighing container

⇨ Put on goods to be weighed, tolerance control is started

Load below specified tolerance	Load within specified tolerance	Load exceeds specified tolerance
		

- The tolerance control is not active when the weight is under 20d.
- To delete limits, enter “00.000 kg“.

7.8 Manual totalizing

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

- Menu settings:
  „**F5 Prt**“ ⇨ „**P Prt**“, see chapter 8.2 „Interface parameters“
  „**P4 CHk**“ ⇨ „**mode 1**“, see chap. 12.4
- The totalizing function is not active when the weight is under 20d.

Add up:

⇨ Place goods to be weighed A.

Wait until the stability display **STABLE** appears, then press M+. The weight value will be saved and printed if an optional printer is connected.

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

⇨ Place goods to be weighed B.

Wait until the stability display appears, then press M+. Weighing value will be added to summation memory and possibly printed.
The number of weighing actions, followed by the total weight will be displayed for 2 sec.

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

⇨ You can repeat this process until the capacity of the weighing system is exhausted.

Display of the saved weighing data:

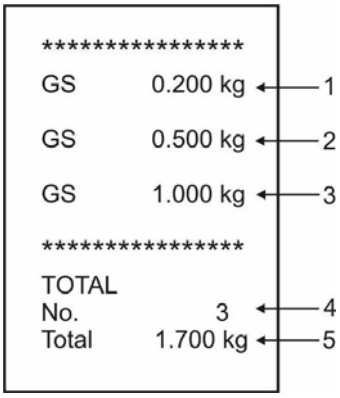
⇨ If you see a display of zero M+, press and the number of weighings, followed by the total weight will be shown for 2 sec and printed if an optional printer is connected.

English

Delete weighing data:

⇨ If you see a display of zero, press M+ C and the number of weighing, followed by the total weight will be shown for 2 sec. Press M+ C during this display.
The data in the summation memory are deleted.

Printout example (menu setting "F5 Prt" ⇨ „ pr 0 / Lab 0"):



1 First weighing M+ C

2 Second weighing M+ C

3 Third weighing M+ C

4 Number of weighings / total M+ C

Further printed samples independent of the settings in the menu „**F5 Prt**" ⇨ „**pr/Lab**", s. Kap. 8.2 „Tab. 1".

7.9 Automatic adding-up

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

- Menu settings:
  „**F5 Prt**“ ⇨ „**P AUTO**“, see chapter 8.2 „Interface parameters“
  „**P4 CHk**“ ⇨ „**mode 1**“, see chap. 12.4
- The indicator **AUTO** will be shown.

Add up:

⇨ Place goods to be weighed A.
After the standstill control sounds a signal tone.

⇨ Unload the weighing good, the weighing value is added into the summation memory and printed out.

More weighed goods can only be added when the display = zero.

⇨ Place goods to be weighed B.
After the standstill control sounds a signal tone. Unload the weighing good, the weighing value is added into the summation memory and printed out. Number of weighing, followed by the total weight will be displayed for 2 sec.

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

⇨ You can repeat this process until the capacity of the weighing system is exhausted.

- After the audio sound was sounded you can remove the load or add to it.
- For how to display and delete weighing data, as well as a printout example, see chpt. 7.8.

English

7.10 Animal weighing

The mean value function is suitable for weighing restless loads.

Menu setting:

P4 CHt ⇨ modE 2, see chap. 12.4

The indicator **ANIMAL** will be shown.

⇨ Move load onto weighing system.

⇨ When the load has somewhat calmed down, you will hear an audio sound. The mean value achieved will be shown.

⇨ Whilst averaging is taking place you can add or remove loads as the measuring value will be constantly updated.

To disable the animal weighing function, return to weighing mode

Select menu setting P4 CHt ⇨ modE 1, see chpt. 12.4.

English

8 Menu

8.1 Navigation in the menu:

Call up menu	⇨ In weighing mode press UNIT ESC and M+ C at the same time and the first menu block F0 H-L will appear.
Select menu block	⇨ With help of TARE, the individual menu blocks can be selected one after the other.
Select setting	⇨ Confirm selected menu item by pressing →0←. The current setting will be displayed.
Change settings	⇨ To change to the available settings, press the navigations keys as described in chpt. 2.1.1.
Acknowledge setting / exit the menu	⇨ Either save by pressing →0← or cancel by pressing UNIT ESC.
Return to weighing mode	⇨ Press UNIT ESC repeatedly to exit menu.

English

8.2 Overview

Menu block	Menu item	Available settings / explanation	
F0 H-L Weighing with tolerance range, see chpt. 7.7	SET Lo	Upper limit value, input see chapter 7.7 (factory setting 000.000)	
	SET Hi	Lower limit value, input see chapter 7.7 (factory setting 000.000)	
F1 toL	to Clr	Not documented	
	to P-C	Not documented	
	to Prt	Not documented	
F2 Unt Weighing units see chap. 7.6		g→lb→oz→tJ→h Factory setting „kg“	
F3 ti Date/time	SET dA	Set date Press →0← and the currently set date (yy.mm.dd) will be displayed. To make changes, press the navigation keys as explained in chpt. 2.1.1.	
	SET ti	Set time Press →0← and the currently set time (hh.m.ss) will be displayed. To make changes, press the navigation keys as explained in chpt. 2.1.1..	
F4 oFF	Clock	Clk on	Display of time ON (display will appear after 5 min)
		Clk of*	Display of time OFF
	bl	EL on	Background lighting of display is switched on permanently
		EL AU	Display background illumination off
		EL off	Automatic background illumination on when weighing pate is loaded or key pressed.
	bEEP see chpt 7.7	bp 1	Audio signal switched off during tolerance weighing
		bp 2	If load is within tolerance, [ok] will be displayed and audio signal will be sounded
		bp 3	If the load is beyond the tolerance range, [ok] will be shown and the audio signal will sound.

English

<table>
<tr><td>FS PrE

Interface parameter</td><td colspan="2">1. RS-232-Mode

When changing a setting cut connection to output device!

Mit Select the desired printer type by pressing TARE and confirm by →0←.</td></tr>
<tr><td></td><td>P Prt</td><td>Press M+ C and the weighing value will be added to the summation memory and issued.</td></tr>
<tr><td></td><td>P Cont</td><td>Continuous data output</td></tr>
<tr><td></td><td>Series</td><td>Not documented</td></tr>
<tr><td></td><td>ASK</td><td>Remote control instructions:
R, „Send“
T, „Tare“
Z, „Zero reset“</td></tr>
<tr><td></td><td>P cnt 2</td><td>Not documented</td></tr>
<tr><td></td><td>P Stab</td><td>Automatic data output of stable weighing values
Printout example:
ST, GS 0.500 kg
ST = stable
GS = gross</td></tr>
<tr><td></td><td>P Auto</td><td>For automatic add-up see chpt. 7.9.
This function is used to issue and add individual weighing values automatically to the summation memory on unloading of weighing scale.</td></tr>
<tr><td></td><td colspan="2">2. Baud rate
The currently set baud rate (b xxx) will be shown after the RS-232 mode was confirmed. Select desired baud rate by pressing TARE and confirm by pressing →0←.
Available baud rate: 600, 1200, 2400, 4800, 9600</td></tr>
</table>

English

<table>
<tr><td></td><td colspan="4">3. Data output format
(P Prt, P Auto, P Cont settings only)
the currently set data output format will be shown after the baud rate was confirmed. Use TARE to select the desired format and confirm by →0←.</td></tr>
<tr><td rowspan="2">Only when set
P Prt, P Auto</td><td>Pr x</td><td>M+ Format
Date/Time</td><td rowspan="2">Details see following table 1</td></tr>
<tr><td>Lab x</td><td>M+ format
Gross / summation data</td></tr>
<tr><td rowspan="3">Only when set
P Cont</td><td>Cont 1</td><td colspan="2">Default</td></tr>
<tr><td>Cont 2</td><td colspan="2">Not documented</td></tr>
<tr><td>Cont 3</td><td colspan="2">Not documented</td></tr>
<tr><td></td><td colspan="4">4. Printer type

After the data output format has been confirmed, the currently set printer type will be displayed.

Mit Select the desired printer type by pressing TARE and confirm by pressing →0←.
KERN P (ty-tp) Standard printer setting
LP50 Not documented
Ty 711 Not documented</td></tr>
<tr><td>PrOG</td><td>Pin</td><td colspan="3">see chpt 12.4</td></tr>
</table>

* = default setting

Tab. 1. Printout examples

Lab / pr	0	1	2	3
0	GS: 0.888 kg	NT: 0.666 kg TW: 0.222 kg GW: 0.888 kg	GS: 0.222 kg TOTAL: 0.222 kg	NT: 0.222 kg TW: 0.666 kg GW: 0.888 kg TOTAL: 0.222 kg
1	DATE: 10/06/06 GS: 0.888 kg	DATE: 10/06/06 NT: 0.666 kg TW: 0.222 kg GW:: 0.888 kg	DATE: 10/06/06 GS: 0.222 kg TOTAL: 0.444 kg	DATE: 10/06/06 NT: 0.222 kg TW: 0.666 kg GW: 0.888 kg TOTAL: 0.444 kg
2	TIME: 11/11/11 GS: 0.888 kg	TIME: 11/11/11 NT: 0.666 kg TW: 0.222 kg GW:: 0.888 kg	TIME: 11/11/11 GS: 0.222 kg TOTAL: 0.666 kg	TIME: 11/11/11 NT: 0.222 kg TW: 0.666 kg GW: 0.888 kg TOTAL: 0.666 kg
3	DATE: 10/06/06 TIME: 11/11/11 GS: 0.888 kg	DATE: 10/06/06 TIME: 11/11/11 NT: 0.666 kg TW: 0.222 kg GW:: 0.888 kg	DATE: 10/06/06 TIME: 11/11/11 GS: 0.222 kg TOTAL: 0.888 kg	DATE: 10/06/06 TIME: 11/11/11 NT: 0.222 kg TW: 0.666 kg GW: 0.888 kg TOTAL: 0.888 kg
4	NO: 4 GS: 0.888 kg	NO: 4 NT: 0.666 kg TW: 0.222 kg GW:: 0.888 kg	NO: 4 GS: 0.222 kg TOTAL: 1.000 kg	NO: 4 NT: 0.222 kg TW: 0.666 kg GW: 0.888 kg TOTAL: 1.000 kg
5	DATE: 10/06/06 NO: 5 GS: 0.888 kg	DATE: 10/06/06 NO: 5 NT: 0.666 kg TW: 0.222 kg GW:: 0.888 kg	DATE: 10/06/06 NO: 5 GS: 0.222 kg TOTAL: 1.222 kg	DATE: 10/06/06 NO: 5 NT: 0.222 kg TW: 0.666 kg GW: 0.888 kg TOTAL: 1.222 kg
6	TIME: 11/11/11 NO: 6 GS: 0.888 kg	TIME: 11/11/11 NO: 6 NT: 0.666 kg TW: 0.222 kg GW:: 0.888 kg	TIME: 11/11/11 NO: 6 GS: 0.222 kg TOTAL: 1.444 kg	TIME: 11/11/11 NO: 6 NT: 0.222 kg TW: 0.666 kg GW: 0.888 kg TOTAL: 1.444 kg
7	DATE: 10/06/06 TIME: 11/11/11 NO: 7 GS: 0.888 kg	DATE: 10/06/06 TIME: 11/11/11 NO: 7 NT: 0.666 kg TW: 0.222 kg GW:: 0.888 kg	DATE: 10/06/06 TIME: 11/11/11 NO: 7 GS: 0.222 kg TOTAL: 1.666 kg	DATE: 10/06/06 TIME: 11/11/11 NO: 7 NT: 0.222 kg TW: 0.666 kg GW: 0.888 kg TOTAL: 1.666 kg

GS / GW	Gross weight
NT	Net weight
TW	Tare weight
NO	Number weighing processes
TOTAL	Total of all individual weighings
DATE	Date
TIME	Time

English

9 Service, maintenance, disposal

9.1 Cleaning

Before cleaning, disconnect the appliance from the operating voltage.
Do not use aggressive detergents (solvents or similar).

9.2 Service, maintenance

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

9.3 Disposal

Disposal of packaging and appliance must be carried out by operator according to valid national or regional law of the location where the appliance is used.

9.4 Error messages

Error message	Description	Possible causes
- - - - -	Maximum load exceeded	• Unload weighing system or reduce preload.
Err 1	Incorrect data input	• Follow format “yy:mm:dd“
Err 2	Incorrect time entry	• Follow format “hh:mm:ss“
Err 4	Zeroing range exceeded due to switching-on balance or pressing →0← (normally 4% max)	• Object on the weighing plate • Overload when zeroing
Err 6	Value outside the A/D changer range	• Weighing plate not installed • Damaged weighing cell • Damaged electronics
Err 10	No signal	• Distance sender / receiver too long • Sender (connecting box) not switched on

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

10 Data output RS 232C

You can print weighing data automatically via the RS 232C interface or manually by pressing M+ via the interface according to the setting in the menu.
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 (baud rate, bits and parity) of display unit and printer must match. For a detailed description of interface parameters, please see chapter 8.2, menu block “F5 Prt”

10.1 Technical Specifications

Connector: Pin allocation plug

Pin 2 input
Pin 3 output
Pin 5 signal earth

Baud rate: 600, 1200, 2400, 4800, 9600 selectable

10.2 Printer mode

ST	stable
GS / GW	gross
NT	net
TW	tare
NO	Number weighing processes
TOTAL	Total of all individual weighings
DATE	Date
TIME	Time

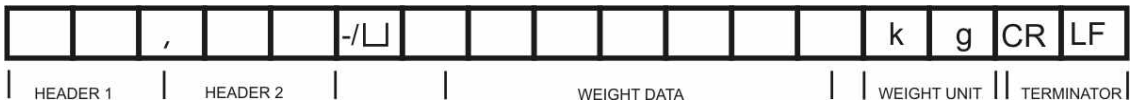
Standard printout:

ST, GS 0.500 kg

For further printout examples see chapters 7.8 and 8.2 “tab. 1“

10.3 Continuous data output

con1: Weighing mode



HEADER1: ST=STABLE， US=UNSTABLE
HEADER2: NT=NET， GS=GROSS

English

11 Instant help

In case of an error in the program process, briefly turn off the display unit 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 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 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)

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 Specifications

Power supply	5 V/150mA
Max. signal voltage	0 ~ 15 mV
Zeroing range	0 ~ 5 mV
Sensitivity	2-3 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.

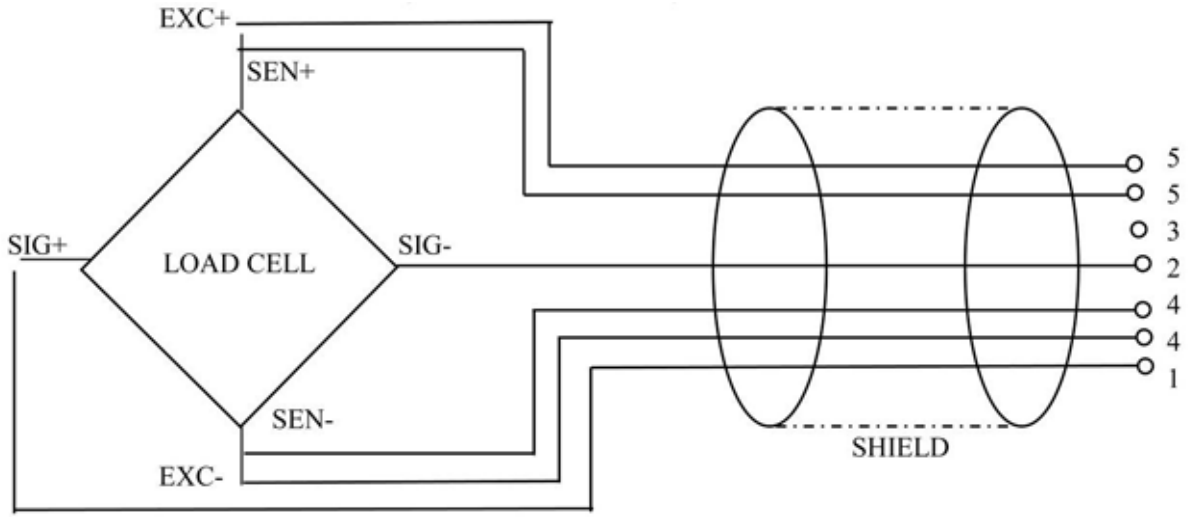
- **Total zero setting range**
  This is composed of the start-up zero setting range (± 2%) and the zero setting range available to the user via the ZERO-key (2%). The total zero setting range equals therefore 4 % of the scale's capacity.

  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**

12.3 How to connect the platform

⇨ Disconnect connecting box (sender) from mains.
⇨ Attach the individual wires of the load cell cable to the plug of the connecting box.
⇨ Please see diagram below for plug allocation.



English

12.4 Configure display unit

Call up menu

⇨ In weighing mode press simultaneously UNIT und M+ until the first menu item F0 H-L is shown.

⇨ Press TARE repeatedly until ProG is displayed.

⇨ Press →0←, password query Pin will appear.

⇨ Press subsequently BG/NET, UNIT, →0← until the first menu item P1 rEF is shown.

Navigation in the menu

⇨ With help of TARE, the individual menu items can be selected one after the other.

⇨ Confirm selected menu item by pressing →0←. The current setting will be displayed.

⇨ Mit TARE Switch into the available settings using TARE.

⇨ Either save by pressing →0← or cancel by pressing UNIT.

Press UNIT repeatedly to exit menu.

English

Configuration menu overview:

Menu block Main menu	Menu item Submenu		Available settings / explanation
P1 rEF	A2n 0		Automatic zero point correction (Autozero) by changing the display, digits selectable (0.5d, 1d, 2d, 4d)
	0 - AUto		Zero setting range Load range where the display after switching-on the balance is set to zero. Selectable 0 %, 2 %, 5 %, 10 %, 20 %
	0 - rAnG		Zero setting range Load range where the display is set to zero by pressing →0← Selectable 0 %, 2 %, 5 %, 10 %, 20 %
	SPEEd		Not documented
P2 CAL	dECi		Position decimal point available selection 0, 0.0, 0.00, 0.000
	inC		Readability selectable 1, 2, 5, 10, 20, 50
	CAP		Balance capacity (max)
	CAL	LinEAr	For linearisation see chapter 6.7
		nonLin	Adjustment, see chapt. 6.6
P3 Pro	tri		Not documented
	CoUnt		Internal A/D converter value
	rESEt		Reset to default setting
P4 CHt	node 1		Weighing mode (tolerance weighing, add-up)
	node 2		Animal weighing mode
	node 3		Not documented
	node 4		Not documented

↵