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Operating Manual
Display units

KERN KLB-TM

Version 1.1
01/2008
GB

KLB-TM-BA-e-0811

GB

KERN KLB-TM

Version 1.1 01/2008

Operating Manual

Display Unit

Table of Contents

1 Technical data

KERN	*KLB-TM*
Display	*6-digit*
Resolution verifiable / non-verifiable	*6000 e / 100000 d*
Weighing ranges	*2*
Display	*LCD numeral height 18 mm, backlit*
Nominal load	*1 …50.000*
Warm-up time	*2 hours*
Battery power supply	*Standard*
Weighing cell connection	*4- or 6-wire*
Linearization	*6 points*
Interface	*RS232*
Appropriate for verification	*yes*
Reference quantities at piece counting	*10, 20, 50, freely selectable*
Weighing Units	*g, ct or kg, lb, N*
Stabilization time (typical)	*2 sec.*
Operating temperature	*- 10° C .... + 40° C*
Humidity of air	*max. 80 % (not condensing)*
Housing (B x D x H) mm	*181 x 121 x 60*
Weight kg (net)	*0.5 kg*

2 Declaration of conformity

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Declarations of conformity

Declaration of conformity for apparatus with CE mark
Konformitätserklärung für Geräte mit CE-Zeichen
Déclaration de conformité pour appareils portant la marque CE
Declaración de conformidad para aparatos con marca CE
Dichiarazione di conformità per apparecchi contrassegnati con la marcatura CE

English We hereby declare that the product to which this declaration refers conforms to the following standards.
English Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.
Français Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.
Español Manifestamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes
Italiano Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.

Weighing Indicator: **KLB-TM, KLB**

EU Directive	Standards
73/23/EEC Low Voltage	EN 60950 :2000/A11 :2000
89/336/EEC EMC	EN61000-4-2 :1999 EN 61000-4-3 :1996 EN 61000-4-4 :1999 EN 61000-4-11 :1997

Date: 01.02.2007 **Signature:**

Gottl. KERN & Sohn GmbH
Management

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English We hereby declare that the product to which this declaration refers conforms to the following standards.
This declaration is only valid with the certificate of conformity by a notified body.

English Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt. **Diese Erklärung gilt nur in Verbindung mit der Konformitätsbescheinigung einer benannten Stelle.**

Français Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.
Cette déclaration est valide seulement avec un certificat de conformité d´un organisme notifié.

Español Manifestamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes
Esta declaración solo será válida acompañada del certificado de conformidad de una institución nombrada.

Italiano Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate. **Questa dichiarazione sarà valida solo se accompagnata dal certificato di conformità di un ente riconosciuto.**

Weighing Instrument: KLB-TM, KLB

EU Directive	Standards	Approval/ Test-certificate N°	Issued by
90/384/EEC Non automatic weighing Instruments 1), 2)	EN45501 1), 2)	TCM 128/07 - 4498 2) ZR 128/07 - 0051 2)	CMI

1) applies only to certified balances
gilt nur für geeichte Waagen
valable uniquement pour les balances vérifiées
sólo aplicable a balanzas verficadas
la dichiarazione vale solo per le bilance omologate

2) valid only for KLB-TM terminals in connection with approved load cells
nur gültig für KLB-TM Terminals in Verbindung mit zugelassenen Lastzellen
valable uniquement pour les terminaux KLB-TM en liaison avec des cellules de charge homologuées
sólo válido para terminales KLB-TM en combinación con células de carga aprobadas
valido solo per terminali KLB-TM in collegamento con celle di carico approvate

Date: 01.02.2007 **Signature:**

Gottl. KERN & Sohn GmbH
Management

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 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 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 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

Keep all parts of the original packaging in case you need to return the appliance.
Only use original packaging for returning.
Before sending, disconnect all connected cables and loose/movable parts.
Attach possibly existing transport safeguards. Secure all parts, e.g. weighing plate, power unit etc., to prevent slipping and damage.

6 Unpacking, Setup and Commissioning

6.1 Installation Site, Location of Use

The 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.

Therefore, observe the following for the installation site:

- 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

Carefully take the display unit out of the packaging, remove the plastic jacket and mount the display unit at the intended workplace.

6.2.1 Setup

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

6.2.2 Scope of delivery

Serial accessories:

- Mains power supply
- Operating Manual

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 display unit from the power supply.

With your display unit, only use accessories and peripheral devices by KERN, as they are ideally tuned to your display unit.

6.5 Initial Commissioning

Caution Explosion Hazard: Please refer to 8.6.6 battery charge display!

In order to receive precise weighing results from electronic display units, the display unit must have reached its operating temperature (see warming-up time chapter 1). During this warming up time the display unit must be connected to the power supply (mains, accumulator or battery). The accuracy of the display unit in combination with a weighing plate depends on the local acceleration of fall.
Strictly observe hints in chapter Adjustment.

6.5.1 Stability display

The appearance of the stability symbol **[▂▃]** on the display indicates that the weighing plate is in a stable state. If the status is instable the [▂▃] display disappears.

6.5.2 Display unit zero display

If the display unit does not show exactly zero although the weighing tray is unloaded, press the **TARE** key and the display unit will start resetting to zero **[→0←]** . To reset the display unit to zero, the **→0←-**key 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 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 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 display unit periodically in weighing operation.

6.6.1 Adjustment

Calibration should be carried out by using a recommended calibration weight.
The weighing value is determined during the configuration of the weighing cell. (See chpt. 13.4 “Factory settings“):

Procedure when adjusting:
Observe stable environmental conditions. A warm-up time of 2 hours is necessary for stabilisation.

Operation:	Display:
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.00 g**
⇨ Press the **F** key and **PRINT** key simultaneously	**P1.rEAd**
⇨ Repeatedly press the **→0←** key until P6.CAL appears	**P6.CAL**
⇨ Press **TARE** key	**6.1.St_u**
⇨ Press the **→0←** key until 6.2.uCAL appears	**6.2.uCAL**
⇨ Press the **TARE** key; the weight value of the required calibration weight pops up.	**noCAL** **Load** **1000.00 g**
⇨ Place the required calibration weight carefully in the centre of the weighing plate and press the **PRINT** key. **CAL** appears on the display, calibration is started.	**CAL**
⇨ **unLoAd** appears on the display, calibration is complete	**unLoAd**
⇨ Remove the test weights	**DonE** **6.2.uCAL**

⇨ Pressing the **F** key repeatedly produces	**SAuE?**
⇨ A. on the display. The change is stored by pressing the **PRINT** key. B. To cancel the change, press the **F** key. The display unit returns to weighing mode.	**SAuE?** 🡻 **0.00 g**

Message **Err 4** appears for a calibration error or incorrect test weight. In this case, repeat the calibration sequence.

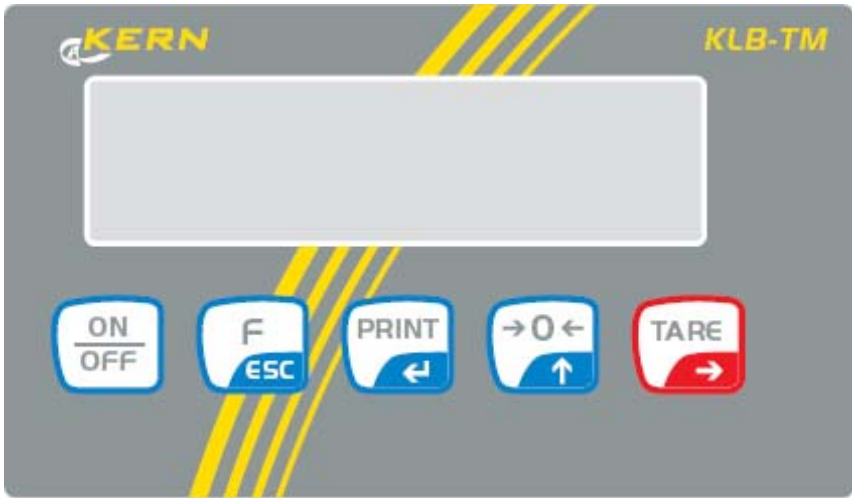
Keep the test weight with the weighing plate. Daily control of the weighing exactness is recommended for quality-relevant applications.

7 Operation

7.1 Operating elements

7.1.1 Backlit display

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

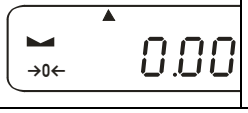


7.1.2 Keyboard overview

Key	Function
ON/OFF	• Turning ON/OFF (keep key pressed for approx. 1 second)
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

The display unit 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-** , **nInnH** will appear which indicates the use of chargeable batteries.

7.1.3 Overview of display

No.	Display	Description
1	• FIL	• Filter setting
2	• bAud	• RS 232 interface speed
3	• PCS	• Parts counting
4	• HiLo	• +/- tolerance with respect to reference weight
5	• rEPL	• Automatic display printout
6	• StAb	• Printing will be started as soon as the stability display appears
7	• Auto	• Monitoring weight display at 0
8	• t1	• Automatic cutout
9	• toP	• Maximum weight storage
10	• →**0**←	• Weight display at 0
11	• **[▂▃]**	• Display value is stable
12	• PCS	• Display operating mode “piece counting”
13	• kg (g)	• Display operating mode “weighing”
14	• 	• Low battery level / battery charge status or damaged mains adaptor
15	• Net	• Balance is tared
16	• Min • 	• +/- tolerance with respect to reference weight entry of lower limit or weight below tolerance
17	• ok • 	• +/- tolerance with respect to reference weight within prescribed limits
18	• Max • 	• +/- tolerance with respect to reference weight entry of upper limit or weight above tolerance

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	Median filter

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	YES	Add function

P5 othr

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

P6 CAL

6.1 St_u		not documented
6.2 uCal		Adjustment

8.1 Keyboard overview in menu

Key	Function
Press the **F** key and **PRINT** key simultaneously	• Jump to main menu
PRINT	• Configuration change
F	• Exit function without storing • Jump to higher level in menu
→0←	• Selecting parameter level • Changing parameter value
TARE	• Jump to selected sub-menu • Activating a changed parameter

8.2 Calling a menu / jumping back to weighing mode

8.2.1 Calling up menu

Turn on display unit by pressing the **ON/OFF** key.

Press the **F** key and **PRINT** key simultaneously

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

8.2.2 Storing / jumping back to weighing mode

Any changes made in the display unit memory will not be saved until the storing process is completed.

For this, press the **F** key repeatedly until **SauE ?** appears on the display.

Any changes carried out are stored by pressing the **PRINT** key. To cancel changes, press the **F** key.

Afterwards the balance automatically jumps back to weighing mode.

8.3 Weighing

8.3.1 Simple weighing

Operation:	Display:
⇨ Turn on display unit by pressing the **ON/OFF** key. The display unit will carry out a self-test.	
⇨ The display unit is ready for weighing when the weight display shows "**0.00**".	**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 display unit press the **ON/OFF** key	

8.3.2 Standard weighing unit

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

Operation:	Display:
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.00 g**
⇨ Press the **F** key and **PRINT** key simultaneously	**P1.rEAd**
⇨ Repeatedly press the **→0←** key until P3.Unit appears	**P3.Unit**
⇨ Press **TARE** key	**P3.1.StUn**
⇨ Press **TARE** key	**kg**
⇨ To change your selection, press the **→0←** key.	**lb**
⇨ To change your selection, press the **→0←** key.	**N**
⇨ Setting will be imported by pressing the **PRINT** key.	**P3.1.StUn**

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

Selection possibility:
The options available depend on the setting made during the configuration of the connected weighing plate. You may switch either between kg, lb and N or between g and ct.

8.3.3 Weighing units switch-over

Operation:	Display:
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.000 kg**
⇨ Press **F** key	**1 Funi**
⇨ Press **TARE** key	**0.000 kg**
⇨ To change your selection, press the **→0←** key.	**0.000 lb**
⇨ To change your selection, press the **→0←** key.	**0.000 N**
⇨ Setting will be imported by pressing the **PRINT** key.	**0.000 N**

Selection possibility:
The options available depend on the setting made during the configuration of the connected weighing plate. You may switch either between kg, lb and N or between g and ct.

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 display unit by pressing the **ON/OFF** key	
⇨ The display unit is ready for weighing when the weight display shows "**0.00**".	**0.00 g**
⇨ Put on items to be weighed, weighed value is displayed.	**19.68 g**
⇨ To start the taring process press the **TARE** key. 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.

8.4.1 Taring by setting a weight

Operation:	Display:
⇨ Press the **→0←** key and **TARE** key simultaneously	**NET 000.00 g**
⇨ Press **TARE** key	**NET 000.00 g**
⇨ Use the **TARE** key, to select the digit to be changed, the **→0←** key is used to increase the numerical value (active digit flashing)	**NET 020.000 kg**
⇨ Setting is imported by pressing the **PRINT** key and balance returns to weighing mode.	**0.00 g**

This type of taring may be carried out in weighing mode at any time.

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 display unit by pressing the **ON/OFF** key	**0.00 g**	
⇨ Press the **F** key and **PRINT** key simultaneously	**P1.rEAd**	
⇨ Repeatedly press the →0← key until P4.Func appears	**P4.Func**	
⇨ Press **TARE** key	**4.1.FFun**	
⇨ Press **TARE** key	**ALL**	All operating modes enabled in menu 4.2 to 4.9 are callable via the F key
⇨ Press the a key	**Funi**	Weighing Units
⇨ Press the a key	**PcS**	Parts counting
⇨ Press the a key	**HiLo**	Tolerance weighing
⇨ Press the a key	**PrcA**	Display of percentage
⇨ Press the a key	**Prcb**	Percentage display via manual default
⇨ Press the a key	**AtAr**	Auto-taring
⇨ Press the a key	**toP**	Peak value function
⇨ Press the a key	**Add**	Adding

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

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.
(See chpt. 8.5.1)

However, if in menu **4.1.FFun** one of the above parameters is selected, e. g. **PcS,** the **F** key 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 the **F** key. **no** function not available.
YES function is available.

Operation:	Display:
⇨ Selecting the menu item	**P4 Func**
⇨ Press **TARE** key	**4.1.FFun**
⇨ Press the a key	**4.2.Funi**
⇨ Press the a key until the operating mode "piece counting" appears	**4.3.PcS**
⇨ Press the **TARE** key until active setting appears: "no" = deactivated, "yes" = activated	**no**
⇨ To change the setting, press the a key.	**YES**
⇨ Setting will be imported by pressing the **PRINT** key.	**4.3.PcS**
⇨ Press the →0← key 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
4.9 Add

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

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 Backlighting for mains operation

Possible settings:

no	Background illumination off
YES	Background illumination on
Auto	Background lighting is turned off automatically every 20 seconds, if no change of display takes place

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

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

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 20 seconds if no change of display takes place.

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

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

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 **TARE** key	**5.1.bl**
⇨ Repeatedly press the →0← key until the following display appears	**5.3.bEEP**
⇨ To change your selection, press the **TARE** key.	**no**
⇨ To change your selection, press the →0← key.	**YES**
⇨ Setting will be imported by pressing the **PRINT** key.	**5.3.bEEP**

8.6.4 Automatic cutout

t1	YES	The display unit will be shut off, if no weighing takes place within the next 5 minutes.
t1	no	No shut-off of display unit

Operation:	Display:
⇨ Selecting the menu item	**P5 othr**
⇨ Press **TARE** key	**5.1.bl**
⇨ Repeatedly press the →0← key until the following display appears	**5.4.t1**
⇨ To change your selection, press the **TARE** key.	**no**
⇨ To change your selection, press the →0← key.	**YES**
⇨ Setting will be imported by pressing the **PRINT** key.	**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 the **F** key and **TARE** key simultaneously	**batt**
⇨ 1 second later	**94%**
⇨ 2 seconds later	**0.00 g**

The display unit 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 weighing unit is operated without battery or accumulator. (supply by power pack)
The kind of supply is shown when the balance is started. bAtt / SLA / nlnnH

CHr6	YES	**nlnnH**	Function activated / 6 x NiMH battery in use
CHr6	YES	**SLA**	Function activated / SLA battery in use
CHr6	no	**bAtt**	Battery operation

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

Operation:	Display:
⇨ Selecting the menu item	**P5 othr**
⇨ Press **TARE** key	**5.1.bl**
⇨ Repeatedly press the **→0←** key until the following display appears	**5.5. CHr6**
⇨ To change your selection, press the **TARE** key.	**no**
⇨ To change your selection, press the **→0←** key.	**YES**
⇨ Setting will be imported by pressing the **PRINT** key.	**5.5.CHr6**

Notice:

Display unit is equipped with rechargeable NiMH batteries and plug-in power pack. During initial operation it is very important to charge the batteries for c. 12 hours. Afterwards discharge the batteries completely 3 times (watch display message and automatic disconnection) and recharge. If this is done, the life of the batteries will be increased and the nominal capacity of the batteries reached.

8.7 P1 rEAd – basic settings

8.7.1 Filter settings

This menu item allows the display unit 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** key	**1.1.Fil**
⇨ Press **TARE** key	**1**
⇨ To change your selection, press the **→0←** key.	**OFF ⇨ 1 ⇨ 2 ⇨ 3 ⇨ 4**
⇨ Setting will be imported by pressing the **PRINT** key.	**1.1.Fil**

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 display unit. (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** key	**1.1.Fil**
⇨ Press the →0← key until the following display appears	**1.2 Auto**
⇨ To change your selection, press the **TARE** key.	**no**
⇨ To change your selection, press the →0← key.	**YES**
⇨ Setting will be imported by pressing the **PRINT** key.	**1.2 Auto**

8.7.3 Tare function

This function enables individual selection of tare functions:

Tara	AtAr	Automatic taring turned on, remains stored even after disconnection (For description see chpt. 8.11)
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** key	**1.1.Fil**
⇨ Repeatedly press the →0← key until the following display appears	**1.3.tArA**
⇨ To change your selection, press the **TARE** key.	**AtAr**
⇨ To change your selection, press the →0← key.	**no**
⇨ To change your selection, press the →0← key.	**tArF**
⇨ Setting will be imported by pressing the **PRINT** key.	**1.3.tArA**

8.7.4 Median filter

Especially useful in case of impacts or shocks (average value formation).

Fnnd no Filtering switched off
Fnnd YES Filtering switched on

Operation:	Display:
⇨ Selecting the menu item	**P1 rEAd**
⇨ Press **TARE** key	**1.1.Fil**
⇨ Repeatedly press the →0← key until the following display appears	**1.4.Fnnd**
⇨ To change your selection, press the **TARE** key.	**no**
⇨ To change your selection, press the →0← key.	**YES**
⇨ Setting will be imported by pressing the **PRINT** key.	**1.4.tArA**

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

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 display unit. 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.

Explanation to display unit setting:

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

Operation:	**Display:**
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.00 g**
⇨ Press **F** -key	**1 Funi**
⇨ Press the a key	**2 PcS**
⇨ Press **TARE** key	**FrEE**
⇨ To set the reference number of items on the display press the a key repeatedly. A selection of 10, 20, 50 or FrEE (to be picked at liberty).	**10** pcs
⇨ Confirm selected reference number of items by pressing the **PRINT** key.	**LoAD** **0.00 g**
⇨ Place the reference number of items on the weighing plate	**100.0 g**
⇨ Operate the **PRINT** key	**10 pcs**
For selection of FrEE follow sequence of operations below	
⇨ Enter random reference number of items FrEE Operate the **PRINT** key 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** key.	**FrEE** **00000** pcs ↓ **00015** pcs ↓ **LoAD**

⇨ Place as many parts to count on the weighing plate as the set reference quantity requires. ⇨ Confirm by pressing the **PRINT** key.	**100.0 g** **15** pcs
⇨ The display unit is now in piece counting mode and counts all pieces present on the weighing plate (e. g. 100 pieces)	**100** pcs
⇨ Go back to weighing mode by pressing the **F** key twice.	**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 display unit's display will return to weighing mode.

8.9 Percent determination

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

8.9.1 Determination of the reference weight by weighing

Operation:	Display:
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.00 g**
⇨ Press **F** -key	**1 Funi**
⇨ Repeatedly press the a key until 4 PrcA appears	**4 PrcA**
⇨ Press **TARE** key	**LoAD**
⇨ Place the reference weight	**120.00 g**
⇨ Press **PRINT** key, the weight is taken as reference (100%).	**100.00 %**
⇨ Now you can place the test objects onto the weighing plate; the percentage is displayed	**70.37 %**
⇨ Go back to weighing mode by pressing the **F** key twice.	**0.00 g**

8.9.2 Calculate the reference weight by numeric input

Operation:	Display:
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.00 g**
⇨ Press **F** -key	**1 Funi**
⇨ Repeatedly press the a key until 5 Prcb appears	**5 Prcb**
⇨ Press **TARE** key	**0100.00 g**
⇨ Enter the reference weight (e. g. 90.33 g) Use the **TARE** key, to select the digit to be changed, the **→0←** key is used to increase the numerical value (active digit flashing)	**0090.33 g**
⇨ Press **PRINT** key, the weight is taken as reference (100%).	**0.00 %**
⇨ Now you can place the test objects onto the weighing plate; the percentage is displayed	**70.37 %**
⇨ Go back to weighing mode by pressing the **F** key twice.	**0.00 g**

8.10 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:**
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.00 g**
⇨ Press **F** -key	**1 Funi**
⇨ Repeatedly press the a key until 3 **HiLo** appears	**3 HiLo**
⇨ Press **TARE** key	**Min 0000.00g**
⇨ To enter the lower tolerance limit (e. g. 90.00 g): Use the **TARE** key, to select the digit to be changed, the **→0←** key is used to increase the numerical value (active digit flashing)	**Min 0090.00g**
⇨ Press the **PRINT** key; the lower tolerance limit will be imported.	
⇨ To enter the upper tolerance limit (e. g. 110.00 g): Use the **TARE** key, to select the digit to be changed, the **→0←** key is used to increase the numerical value (active digit flashing)	**Max 0100.00g**
⇨ Press the **PRINT** key; the upper tolerance limit will be imported and jumps to tolerance weighing mode.	
⇨ Example for application: Weight: 50 g on weighing plate ⇨ Weight: 100g on weighing plate ⇨ Weight: 150g on weighing plate	**Min 50.00g** **Ok 100.00g** **Max 150.00g**
⇨ Go back to weighing mode by pressing the **F** key twice.	**0.00 g**

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 of the unit returns to weighing mode.

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:
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.00 g**
⇨ Press **F** -key	**1 Funi**
⇨ Repeatedly press the a key until **6 AtAr** appears	**6 AtAr**
⇨ Press **TARE** key	**0.00 g**
⇨ When the weighing plate is without load, press the a key	**0.00 g**
⇨ Put vessel of goods to be weighed on weighing plate	**123.45 g**
⇨ A stable weighing value will start automatic taring	**------**
⇨ The display shows	**NET 0.00 g**
⇨ Place weight in weighing container, net weight of weighed item will be shown.	**NET 67.23 g**
⇨ Remove weight together with weighing container	**0.00 g**
⇨ Set up weighing container etc. for next weighing process	
⇨ Go back to weighing mode by pressing the **F** key twice.	**0.00 g**

Important: Ensure that the minimum weight
entered (For setting see chpt. 9.5) is lower than the weight of the weighing container or the weighing container will not be tared automatically.

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:**
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.00 g**
⇨ Press **F** -key	**1 Funi**
⇨ Repeatedly press the a key until **7 toP** appears	**7 toP**
⇨ Press **TARE** key	**Max 0.00 g**
⇨ Place weight on weighing plate.	**Max 123.45 g**
⇨ Set up additional weight	**Max 234.56 g**
⇨ Remove 1 weight	**Max 234.56 g**
⇨ Remove all weights	**Max 234.56 g**
⇨ To reset, press the a key	**Max 0.00 g**
⇨ Go back to weighing mode by pressing the **F** key twice.	**0.00 g**

8.13 Summation of weighing values

This function enables you to determine the sum of several weighings.
The current sum of the last weighings is shown when the arrow pointing to the sigma summation sign (∑) above the display is active.

Operation:	Display:
⇨ Turn on display unit by pressing the **ON/OFF** key	**0.000 kg**
⇨ Press **F** -key	**1 Funi**
⇨ Repeatedly press the **→0←** key until **8 Add** appears	**8 Add**
⇨ Press **TARE** key	**P 0.000 kg**
⇨ Place weight (e.g. 0.2 kg) on weighing plate	**0.200 kg**
⇨ Press **print** key (import to summation memory)	**∑ 0.200 kg**
⇨ Remove weight	**P 0.000 kg**
⇨ Place weight (e.g. 0.5 kg) on weighing plate	**0.500 kg**
⇨ Press **print** key (import to summation memory)	**∑ 0.700 kg**
⇨ To cancel current summation, press the **Print** key again, and the following message will appear	**unLoAd**
⇨ Unload weighing plate	**P 0.000 kg**
⇨ Place weight for next summation	**1.000 kg**
⇨ Press **Print** key (import to summation memory) etc.	**∑ 1.000 kg**

Go back to weighing mode by pressing the **F** key twice.

Once again, the value for the sum will be stored when this function is cancelled (by disconnection or power cut) and you may continue from where the interruption took place. To achieve this, call the function as described above and the sum so far will appear automatically.

If the display range of the display unit is exceeded by the sum total, "**5-Full**" will appear.

9 Data output RS 232 C

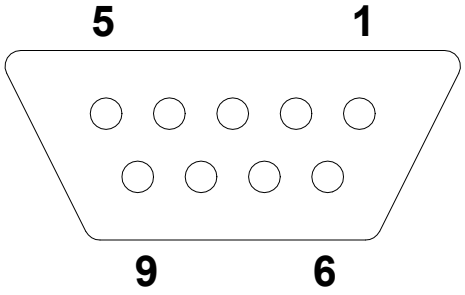
9.1 Technical data

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

9.2 Pin allocation (front view)



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

9.3 Interface cable

⇨ Display unit - printer

3 (TxD)	**1** (RxD)
5 (GND)	**3** (GND)
7 - 8 clench	

⇨ Display unit – PC 9-channel

2 (RxD)	**3** (TxD)
3 (TxD)	**2** (RxD)
5 (GND)	**5** (GND)
4 - 6 clench	**4 - 6** clench
7 - 8 clench	**7 - 8** clench

9.4 Description of data output type

Operation:	Display:
⇨ Selecting the menu item	**P2 Prnt**
⇨ Press **TARE** key	**2.1.Pr_n**
⇨ Press **TARE** key	**StAb**
⇨ To change your selection, press the →0← key.	**rEPL ⇨ CntA ⇨ Cntb ⇨ noStAb ⇨ StAb**
⇨ Setting will be imported by pressing the **PRINT** key.	**2.1.Pr_n**

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

Meaning of settings:

noStAb immediate data output, even if not stable (PRINT key)
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

9.5 Input minimum weight for some functions

The minimum weight affects the following functions:

Automatic taring (Chpt. 8.11): 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 (Chpt. 9.4): 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** key	**2.1. Pr_n**
⇨ Press the a key	**2.2. S_Lo**
⇨ Press **TARE** key	**0010.00g**
⇨ Enter the minimum weight (e. g. 30.00 g). Use the **TARE** key, to select the digit to be changed, the **→0←** key is used to increase the numerical value (active digit flashing)	**0030.00g**
⇨ Press the **PRINT** key; the minimum weight will be imported.	**2.2. S_Lo**

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

9.6 Baud rate for RS232 interface

The baud rate is set as follows:

Operation:	Display:
⇨ Selecting the menu item	**P2 Prnt**
⇨ Press **TARE** key	**2.1. Pr_n**
⇨ Press the a key twice until **2.3. bAud** appears on the display	**2.3. bAud**
⇨ Press **TARE** key	**9600**
⇨ To change your selection, press the **→0←** key.	**19200 ⇨ 38400 ⇨ 2400 ⇨ 4800 ⇨ 9600**
⇨ Press the **PRINT** key; the baud rate will be imported.	**2.3. bAud**

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

9.7 Baud rate for RS232 interface

Operation:	Display:
⇨ Selecting the menu item	**P2 Prnt**
⇨ Press **TARE** key	**2.1. Pr_n**
⇨ Repeatedly press the a key until **2.4** appears **S_rS** appears on the display	**2.4. S_rS**
⇨ Press **TARE** key	**8d1SnP**
⇨ To change your selection, press the **→0←** key.	**7d2SnP ⇨ 7d1SEP⇨ 7d1SoP ⇨8d1SnP ⇨ 8d2SnP⇨ 8d1SEP ⇨ 8d1SoP**
⇨ Press the **PRINT** key; the selection will be imported.	**2.3. bAud**

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

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

9.8 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**.

9.8.1 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	Operational sign	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

Presign: Space, if positive
negative sign, if negative

Weight: 9 signs, right justified

Unit: 3 signs, left justified

9.8.2 Manual output

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

Data record format:

1	2	3	4 -12	13	14	15	16	17	18
Stability indicator	Space	Operational sign	Weight	Space	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

9.8.3 Continuous output

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

Settings (**rEPL,** see chapter 9.4) / start - stop commands:

C1 CR LF	Turn on continuous transmission in standard weighing unit
C0 CR LF	Turn off continuous transmission in standard weighing unit
CU1 CR LF	Turn on continuous transmission in current weighing unit
CO1 CR LF	Turn off continuous transmission in current weighing unit

Data record format:

1	2	3	4	5	6	7-15	16	17	18	19	20	21
S	I	Space	Stability indicator	Space	Operational sign	Weight	Space	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%
„Lo“:	Display unit waiting for weight on weighing tray but none detected

“5-Full“: The display range of the Add Function is insufficient for the display of the sum total.

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 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.* • *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)*

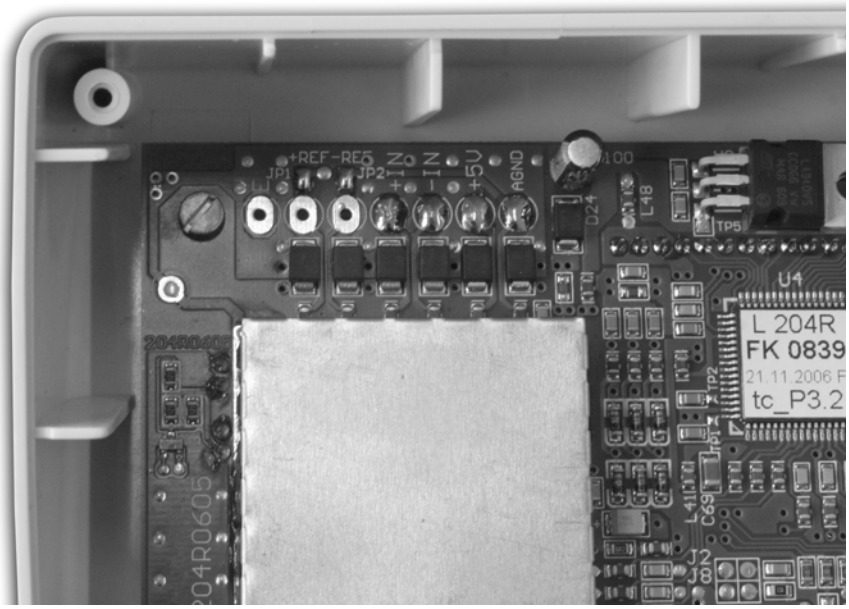
Should other error messages occur, switch display unit off and then on again. If the error message remains inform manufacturer.

13 Connecting a weighing cell to the display unit

13.1 Wiring diagram

It is possible to connect a weighing cell to the display unit by applying 4- or 6-wire technology.

Open the battery compartment on the display unit and remove the storage batteries. Loosen the 4 screws at the back of the unit (2 of which are in the battery compartment) and open the unit.



The contact tabs for the weighing cell are positioned on the top left-hand corner of the board.

Anschluss :	Function:
AGND	Dimensions of weighing cell
+5 V	Supply for weighing cell
- IN	- Signal of weighing cell
+ IN	+ Signal of weighing cell
- REF	For 4-wire cell, close JP2, otherwise – reference signal
+ REF	For 4-wire cell, close JP1, otherwise – reference signal
E	Connect cable shield of weighing cell unless shield is already connected to weighing cell. If the shield is already connected to the weighing cell, this terminal remains empty.

13.2 Parameter description for configuration

Parameter	Ground setting	Range	Description
P 0.0 A/d	-	-	A/D converter value
P 0.1 Uni	g	kg - lb - g	Weighing unit
P 0.2 div1	0.001	0.000 - 50	Lowest value digit and zero position of first range
P 0.3 div2	0.001	0.000 - 50	Lowest value digit and zero position of second range
P 0.4 FulS	006.009	-	Maximum load
P 0.5 rn 2	000.000	-	Switch point between first and second range
P 0.6 Auto	0.25 d	0.10 d– 5.00 d	Auto zero range
P 0.7 wEi	000.500	0 - 1	Adjustment weight in respect of maximum load
P 0.8 St_u	-	-	Initial weight for adjustment
P 0.9 CAL	-	-	Default adjustment
P 0.A Gcor	1.00000	0.90000 – 1.10000	Factor for gravity constant
P 0.b LFt	no	no - yes	Verified display unit
P 0.c rAn	yes	no - yes	Initial weight adjustment yes – ON, no – OFF
P 0.d Acu	no	no – SLA-NiMH	Selecting power supply No- without Bat-Lo display SLA- battery pack 6V with Bat-Lo display NiMH-batteries 6x 1.2V with Bat-Lo display
P 0.E toSC	IndSt	IndSt-HunnA-Hunnb	Firmware version: IndSt Industrial balance HunnA Medical balance (Hold + BMI) Hunnb Medical balance (Hold)
P 0.F dFLt	-	-	Reset to default setting
P 0.L Line	-	-	Linearization (max. 6 points)

13.3 Calling menu for entering parameter of configuration

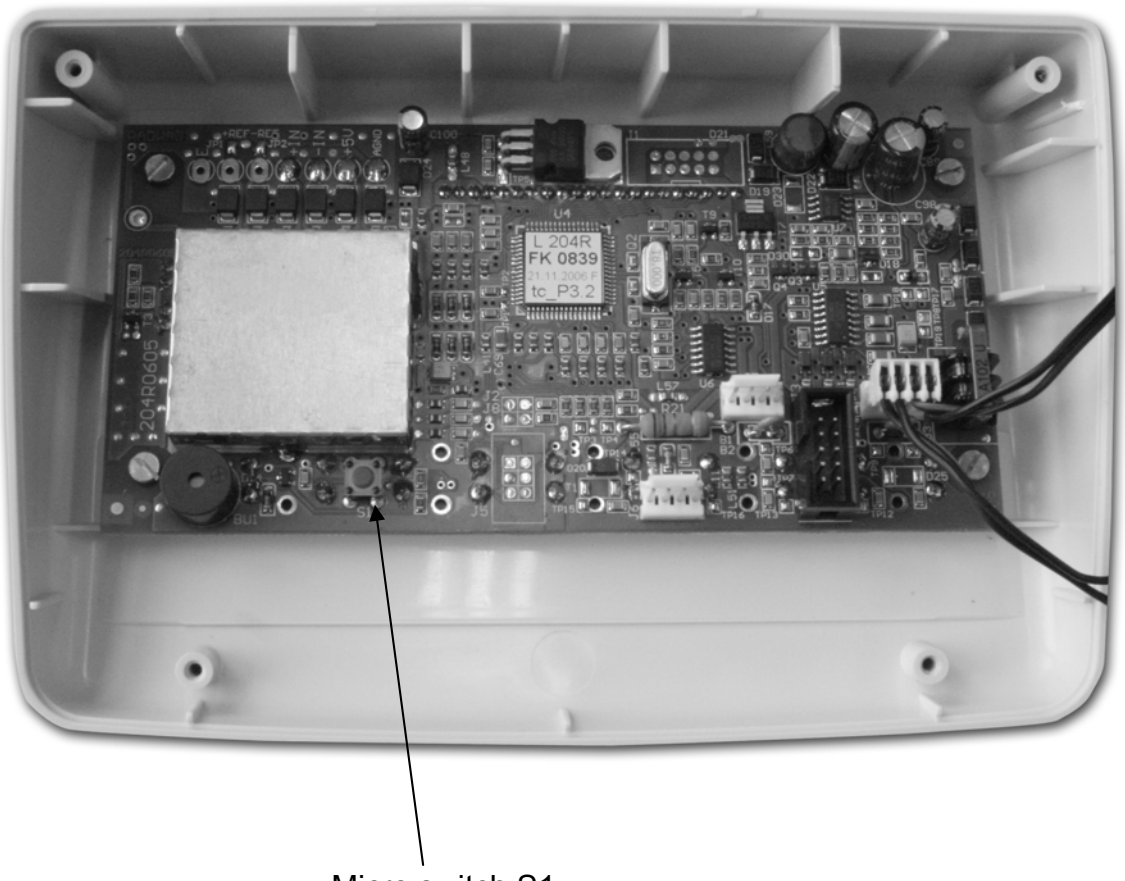
Turn on display unit by pressing the **ON/OFF** key and simultaneously press the micro switch **S1** (for approximately 5 seconds) (see image below).

After the auto test of the balance, press the **F** and the **PRINT** key simultaneously. After the menu was called, select **P.0 FAct** by pressing the **→0←** key.

For navigation around menu refer to chapter 8.2.

To call specific parameters, press the **TARE** key. To change the parameter, press the **→0←** key.
To store, press the PRINT key; to exit without storing, press the **F** key.

Notice: After making and storing changes, turn the display unit off, then turn it on again.



Micro switch S1

After carrying out the configuration, close the case and insert the screws.

13.4 Default adjustment parameter P 0.9 CAL

The parameters **P0.0** to **P0.7** are preset by the connected weighing cell and need to be entered accordingly.

Adjustment is to be carried out by applying the weight value that is set for parameter **P0.7 wEi.** In doing this, ensure that this value for adjustment is as closely as possible to the maximum load of the weighing cell, that is, between 80 and 100% of the maximum load. The accuracy of the adjustment weight must correspond approximately to or, if possible, be better than, the readability of the balance (display unit in combination with weighing cell). Weights of different nominal values may be used for calibration but are not optimal for technical measuring.

Sequence of operations for adjustment:

Unload weighing plate, select parameter **0.9 CAL**.

Adjustment is activated by pressing the TARE key, followed by **noCal** appearing on the display. The display unit with the weighing cell connected carries out adjustment for the zero point.
Once this is completed, **LoAD** will appear on the display, followed by the weight value of the adjustment weight (value of **P 0.7 wEi**).
Place the adjustment weight on the weighing plate and press the **PRINT** key.
During calibration **CAL** will appear on the display, followed by **unLoAD**.
Remove the adjustment weight and **donE** will appear on the display.

Afterwards **0.9 CAL** will be shown and you can edit additional parameters.

Parameter **0.8 St_u** allows you to set the initial weight.

13.4.1 Linearization Parameter P 0.L LinE

An existing non-linearity can be corrected with the help of this parameter.

For this purpose can be defined up to 6 linearization points. In order to do that, the parameter **0.L LinE** must be selected after the factory adjustment (chap. 13.4) and the weighing plate unloaded.

After having pressed the **TARE**-button, the function is activated and **„Pnt1“** appears on the display (first linearization point).
When pressing the **PRINT** button, **„0“00.000 kg** appears on the display.
The first number flashes and with the help of the **TARE** and **→0←-** buttons the respective position and the value can be selected, the first linearization point is taken over using the **PRINT** button.

For approx. 2 seconds appears **„LOAD“** on the display, after that the defined value of the correction point. With unloaded weighing plate, **0.000kg** is shown in the display.
First look for that no load is on the weighing plate and the following symbols can be seen (→0←, ▂▃), if not, press the →0←- button.

Now put a defined weight on the weighing plate.
After the weight display having been stabilized, press the **PRINT**-button in order to reach the next step.

After the stabilization of the weight display at some models the next step is automatically called up.
The message **„nEHt ?“** appears on the display. Now you must make up your decision if you want further linearization points.

If you wish further linearization points, unload the weighing plate and subsequently press the **PRINT**-button, **„Pnt2“** appears on the display (second linearization point). Now you must procede here as described aboce in **„Pnt1“**.
The program allows to define up to 6 linearisation points. After having set the last point (the 6th one), **„DonE“** appears on the display and subsequently returns to the menu, on the display appears **0.L LinE** .

If less than 6 linearization points are necessary, press the **F**-button when the message **„nEHt ?“** appears, in order to finish the function and to return to the selection menu.
In the display appears **„donE“** and then **0.L LinE** .
Jumping back to the weighing mode saves the settings made.

Notice:
If after pressing the **PRINT**-button appears the **„-LO-“** display for approx 2 seconds, followed by **„donE“** and after that **0.L LinE**, the function of the linearization correction is locked.

13.5 Factor for constant of gravitation P 0.A Gcor

This correction factor is used to adapt the constant of gravitation for locations at different degrees of latitude.
This makes it possible to carry out adjustment at a different location than that where the display unit with connected weighing cell will later be operated.

This factor is computed by applying the formula below:

g (usage) / g (adjustment location) = g_cor

Allowable values range from 0.90000 to 1.10000.

Notice: Is the display unit with connected weighing cell operated at the place of adjustment, this factor is to be set at 1.00000.

13.6 Calibrated display unit P 0.b LFt

This parameter was included because of the verifiable display units, as these have some restrictions. This way, access to illegal functions is barred The edition of unstable weighing values and user adjustment become impossible.

Settings **O.b LFt**: YES : verifiable
No.: non-verifiable

The identification of verifiable and non-verifiable display units is indicated immediately after start-up by showing the version number.

Program version for non-verifiable display unit: **tcnP x.x**
Program version for verifiable display unit: **tcLP x.x**

13.7 Selecting the power supply P 0.d Acu

This parameter is used to set the available power supply.

No.: No Bat-Lo display
SLA : 6V battery block, Bat-Lo display appears when voltage drops below 5.7 V.
nimh : 6 x 1.2V battery block (type AA) , Bat-Lo display appears when voltage drops below 7.2 V.

Attention: When 6 x 1.5 V batteries are used, it is essential that the parameter 5.5 CHr6 is set to “NO”. This switches off the charging process as otherwise the batteries and possibly even the display unit might be destroyed.

Notice: During configuration it is important that this parameter is set according to the selection above. A drop in voltage is indicated by a voltage monitor displaying the battery symbol and the subsequent switch-off of the balance according to the used storage battery type. All voltage limits for the various storage batteries are determined by setting this parameter.

This parameter is ineffective if the display unit is powered by the plug-in power unit.