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Operating instructions
Analytical balance

KERN AEJ_N/AES_N

Version 2.1
03/2013
GB

GB

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Version 2.1 03/2013

Operating instructions

Electronic analytical balance

Contents

English

English

1 Technical data

KERN	AEJ 100-4NM	AEJ 200-4NM	AEJ 200-5NM
Readability (d)	0.1 mg	0.1 mg	0.01 mg / 0.1 mg
Weighing range (max)	160 g	220 g	60 g – 220 g
Minimum load (Min)	10 mg	10 mg	1 mg
Verification value (e)	1 mg	1 mg	1 mg
Verification class	I	I	I
Reproducibility	0.2 mg	0.2 mg	0.04 mg / 0.2 mg
Linearity	± 0.3 mg	± 0.3 mg	± 0.1 mg / ± 0.3 mg
Stabilization time	4 sec.		
Adjustment weight	internal		
Warm-up time	8 h		
Weighing Units	mg, g, ct		
Smallest part weight for piece counting	10 mg	10 mg	1 mg
Reference quantities at piece counting	10, 20, 50, freely selectable		
Weighing plate, stainless steel	ø 85mm		ø 70mm
Net weight (kg)	5.4		
Permissible ambient condition	+18° C to +30° C		
Humidity of air	30 ~ 80 % relative (not condensing)		
Input voltage	110 - 230 V - 240 V AC,50 Hz		
Power pack secondary voltage	13.8 V		
Interface	RS 232C		
Underfloor weighing device	Hooks		

English

KERN	AES 100-4N	AES 200-4N
Readability (d)	0.1 mg	0.1 mg
Weighing range (max)	160 g	220 g
Reproducibility	0.2 mg	0.2 mg
Linearity	± 0.3 mg	± 0.3 mg
Recommended adjusting weight not supplied (class)	150 g (E2)	200 g (E2)
Stabilization time	4 sec.	
Warm-up time	8 h	
Weighing Units	g, mg, ct, oz, ozt, GN, mom, dwt, teal	
Smallest part weight for piece counting	10 mg	
Reference quantities at piece counting	10, 20, 50, freely selectable	
Weighing plate, stainless steel	ø 85mm	
Net weight (kg)	5.4	
Permissible ambient condition	+18° C to +30° C	
Humidity of air	30 ~ 80 % relative (not condensing)	
Input voltage	110 - 230 V - 240 V AC,50 Hz	
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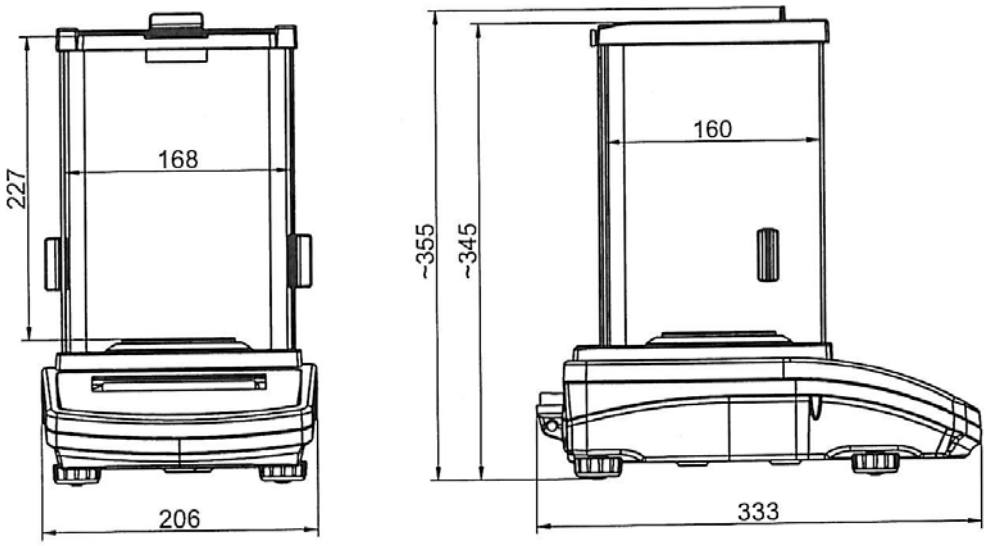
Interface	RS 232C	
Underfloor weighing device	Hooks	

1.1 Dimensions



2 Appliance overview

1. Windshield
2. Weighing pan
3. Display
4. Keyboard
5. Levelling screw
6. Bubble level
7. Terminal power supply unit
8. RS232 interface
9. Not documented

English

2.1 Display and Keyboard Summary

1. Stability display
2. Zero indicator
3. The non-calibrated value is given in brackets in calibrated scales.
4. Weighing unit “g“

Key	Function
ON OFF	• Turn on/off
F	• Call up menu
↻	• Activate operating mode • Scroll backwards in menu
UNIT	• Switch-over weighing unit • Scroll forward in menu
PRINT SET	• Calculate weighing data via interface • Confirm / save
TARE →0← ESC	• Taring • Zeroing • Exit menu / Return to weighing mode

English

2.1.1 Numeric entry

Key	Description	Function
	Navigation button ↑	Increase flashing digit
	Navigation button ↓	Decrease flashing digit
	Navigation button →	Digit selection to the right
	Navigation button ←	Digit selection as per
	Navigation button ↵	Confirm entry
	ESC	Cancel input

English

3 Basic instructions

3.1 Proper use

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

3.2 Improper Use

Do not use balance for dynamic add-on weighing procedures, if small amounts of goods to be weighed are removed or added. The “stability compensation“ installed in the balance may result in displaying an incorrect measuring value! (Example: Slowly draining fluids from a container on the balance.)
Do not leave permanent load on the weighing pan. This may damage the measuring system.
Impacts and overloading exceeding the stated maximum load (max) of the balance, minus a possibly existing tare load, must be strictly avoided. Balance may be damage by this.
Never operate balance in explosive environment. The serial version is not explosion protected.
The structure of the balance may not be modified. This may lead to incorrect weighing results, safety-related faults and destruction of the balance.
The balance may only be used according to the described conditions. Other areas of use must be released by KERN in writing.

3.3 Warranty

Warranty claims shall be voided in case

- Our conditions in the operation manual are ignored
- The appliance is used outside the described uses
- The appliance is modified or opened
- Mechanical damage or damage by media, liquids, natural wear and tear
- The appliance is improperly set up or incorrectly electrically connected
- The measuring system is overloaded

3.4 Monitoring of Test Resources

In the framework of quality assurance the measuring-related properties of the balance and, if applicable, the testing weight, must be checked regularly. The responsible user must define a suitable interval as well as type and scope of this test. Information is available on KERN’s home page (www.kern-sohn.com with regard to the monitoring of balance test substances and the test weights required for this. In KERN's accredited DKD calibration laboratory test weights and balances may be calibrated (return to the national standard) fast and at moderate cost.

4 Basic Safety Precautions

4.1 Pay attention to the instructions in the Operation Manual

- ⇨ Carefully read this operation manual before setup and commissioning, even if you are already familiar with KERN balances.
- ⇨ All language versions contain a non-binding translation. The original German is binding.

4.2 Personnel training

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

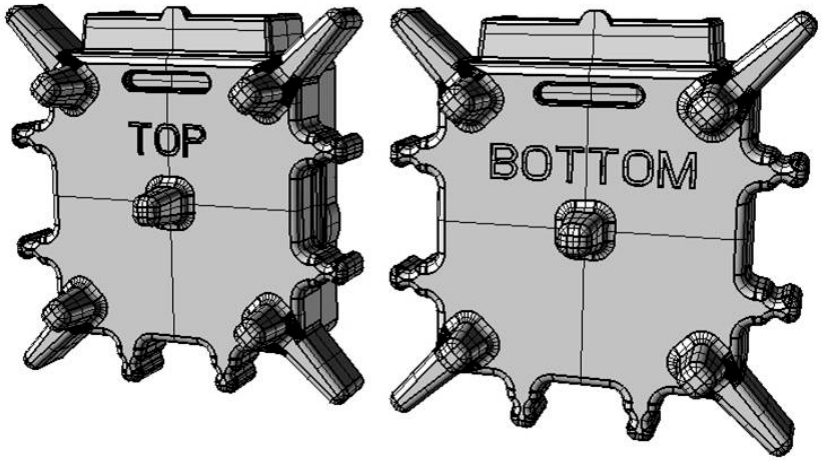
5 Transport and storage

5.1 Testing upon acceptance

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

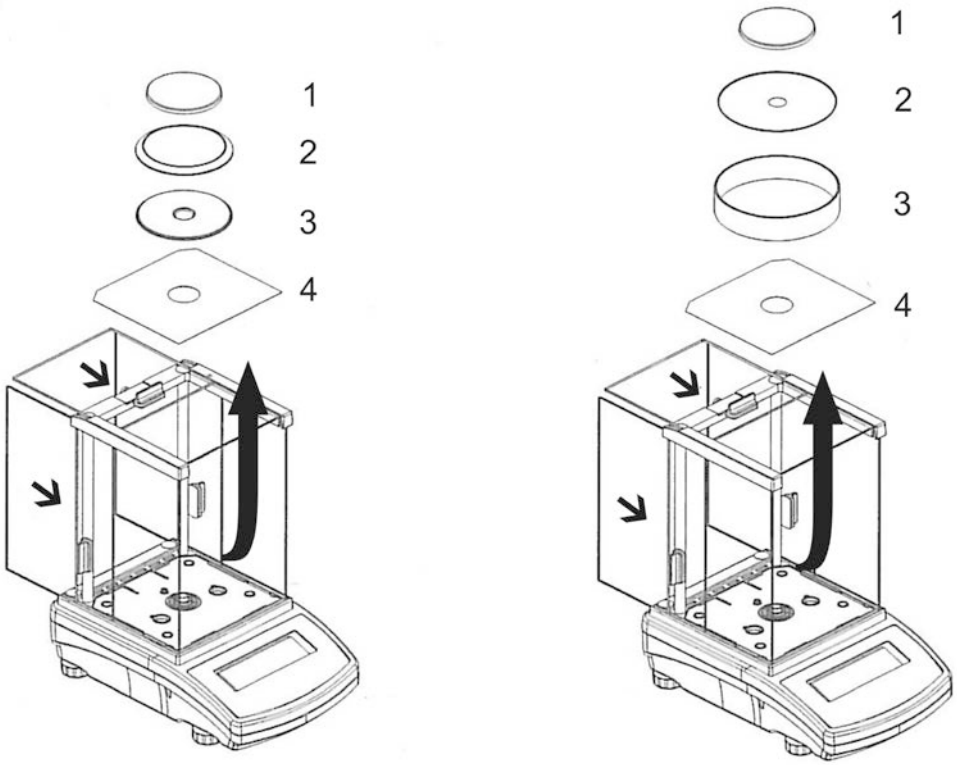
5.2 Packaging / return transport

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



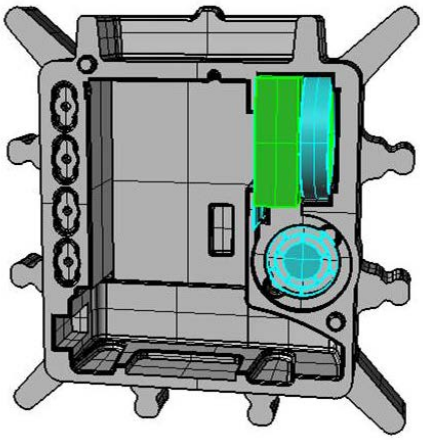
English

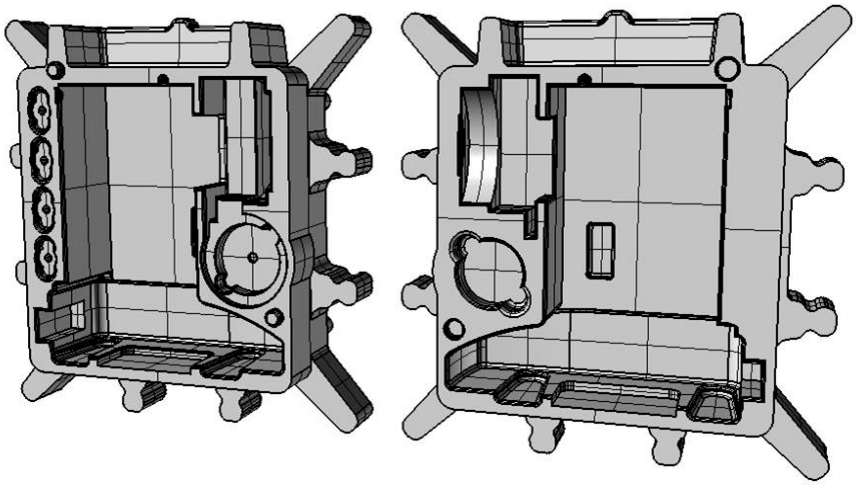
⇨ Prior to dispatch disconnect all cables and remove loose/mobile parts.

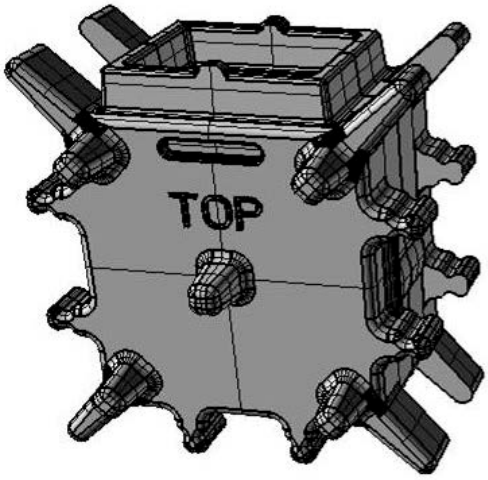


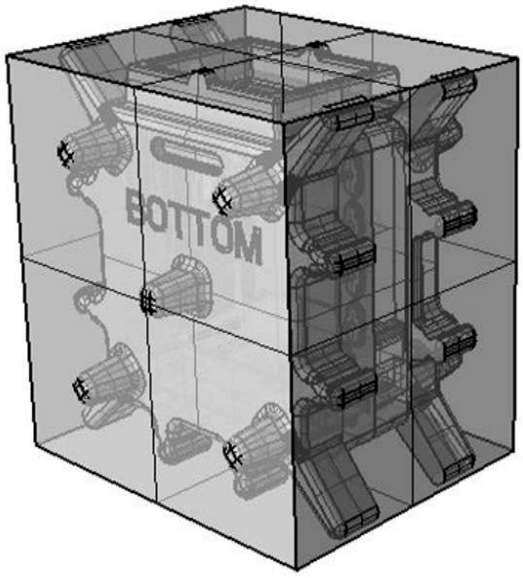
⇨ Reattach possibly supplied transport securing devices.

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









English

6 Unpacking, Setup and Commissioning

6.1 Installation Site, Location of Use

The balances are designed in a way that reliable weighing results are achieved in common conditions of use.
You will work accurately and fast, if you select the right location for your balance.

Therefore, observe the following for the installation site:

- Place the balance on a firm, level surface;
- Avoid extreme heat as well as temperature fluctuation caused by installing next to a radiator or in the direct sunlight;
- Protect the balance against direct draughts due to open windows and doors;
- Avoid jarring during weighing;
- Protect the balance against high humidity, vapours and dust;
- Do not expose the device to extreme dampness for longer periods of time. Non-permitted condensation (condensation of air humidity on the appliance) may occur if a cold appliance is taken to a considerably warmer environment. In this case, acclimatize the disconnected appliance for ca. 2 hours at room temperature.
- Avoid static charge of goods to be weighed or weighing container.

If electro-magnetic fields or static charge occur, or if the power supply is unstable major deviations on the display (incorrect weighing results) are possible. In that case, the location must be changed.

6.2 Unpacking and checking

Open package, take out the appliance and accessories. Verify that there has been no damage and that all packing items are present.

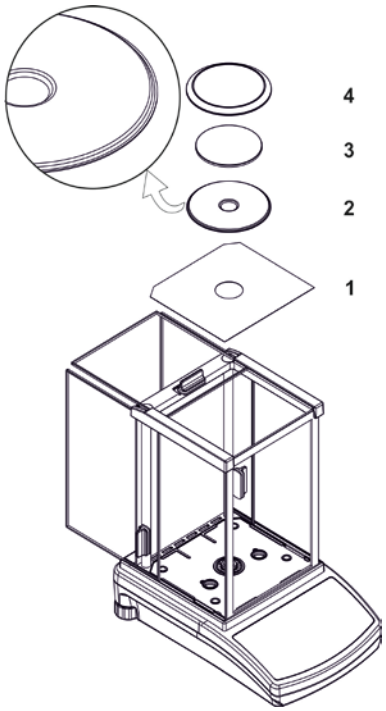
6.2.1 Scope of delivery / serial accessories

- Balance, see chap. 2
- Mains adapter
- Operating instructions
- Protective cover

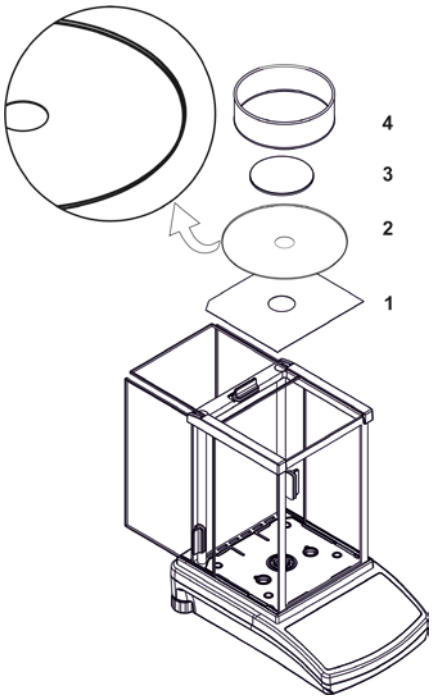
6.2.2 Placing

⇨ Installation of weighing plate

Models with weighing pan ø 85mm

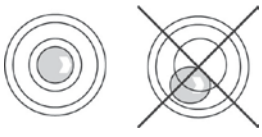


Models with weighing pan ø 70mm



- ➢ Assemble all parts in the right order.
- ➢ Close gates.
- ➢ For instructions on how to connect the weighing scale to the power supply see chap. 6.3.

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



⇨ Check levelling regularly

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.

6.3.1 Turning On the Power

⇨ Supply balance with power via the mains adapter. The display unit lights up and shown the software version. The weighing scale carries out a self-test and automatically moves into weighing mode.
In the AEJ models an automatic adjustment takes place.

6.4 Connection of peripheral devices

Before connecting or disconnecting of additional devices (printer, PC) to the data interface, always disconnect the balance from the power supply.

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

6.5 Initial Commissioning

In order to obtain exact results with the electronic balances, your balance must have reached the operating temperature (see warming up time chap. 1).
During this warming up time the balance must be connected to the power supply (mains, accumulator or battery).
To adapt the balance to ambient conditions, open wind screen doors.
The accuracy of the balance depends on the local acceleration of gravity.
Strictly observe hints in chapter Adjustment.

7 Adjustment

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

Possible adjustments include:

- Automatic adjustment using internal weights (AEJ models only)
  For time and temperature controlled see chap. 7.1.

- Manual adjustment (AEJ models only)
  Activated by pressing the F-key three times, see chap. 7.2.1

- Adjustment with external weight, see chap. 7.2.2

i	• Adjustment can only be carried out when the weighing pan is free of objects. Any loads remaining on the weighing pan will be indicated by error message Er1Hi. • You can cancel the adjustment by pressing the **TARE**-key.

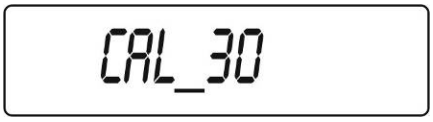
7.1 Automatic adjustment using internal weight (AEJ only)

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

The automatic adjustment function is always enabled. You can start adjustment at any time by pressing the **F**-key 3 times.

Temperature / time controlled adjustment is taking place:
Automatic adjustment will be indicated 5 minutes in advance by "**°C"** (change of temperature ∆t 0.8°C) or the "►"symbol on the display (after a period of 3 hours has passed or a defined time interval).

The user must complete his/her weighing process within this time.
After 5 minutes **[** CAL 30 **]** appears on the display.



This starts a "count down" of 30 seconds **[** CAL 30 **]** → **[** CAL 0 **].** You may cancel adjustment during these 30 seconds by pressing the **TARE**-key. This makes the balance return to weighing mode in order to e. g. complete an unfinished measurement.
After a further 5 minutes the automatic adjustment will restart and **[** CAL 30 **]** appears.
You may interrupt the adjustment process several times. However, keep in mind that an interruption of the adjustment may lead to incorrect weighing results.

English

Automatic adjustment is carried out:

- When balance was disconnected from the mains.
- When the temperature is changing
  The moment a change in temperature of 0.8°C is detected by the temperature sensor, the weighing scale will carry out a fully automatic adjustment. The **°C** symbol indicates the pending adjustment.

- at the end of a time interval

  After the time interval (selectable from 1-12 hours) set in the menu (**P1.5 CALt**) has passed, the weighing scale will indicate the pending adjustment by displaying (indicator ►):

English

In weighing scales with type approval certificate

- menu item **P1.5 CALt** is locked.
- Adjustment takes place every 3 hours

7.2 Menu settings

Menu item “P1 CAL“ [adjustment]

AEJ		AES		
P1.1	iCAL			Internal adjustment AEJ only
P1.2	ECAL	P1.1	ECAL	External adjustment *
P1.3	tCAL	P1.2	tCAL	Adjustment test
P1.4	ACAL			Automatic adjustment AEJ * only
P1.5	CALt			Time controlled automatic adjustment AEJ * only
P1.6	CALr	P1.3	CALr	Printout adjustment log

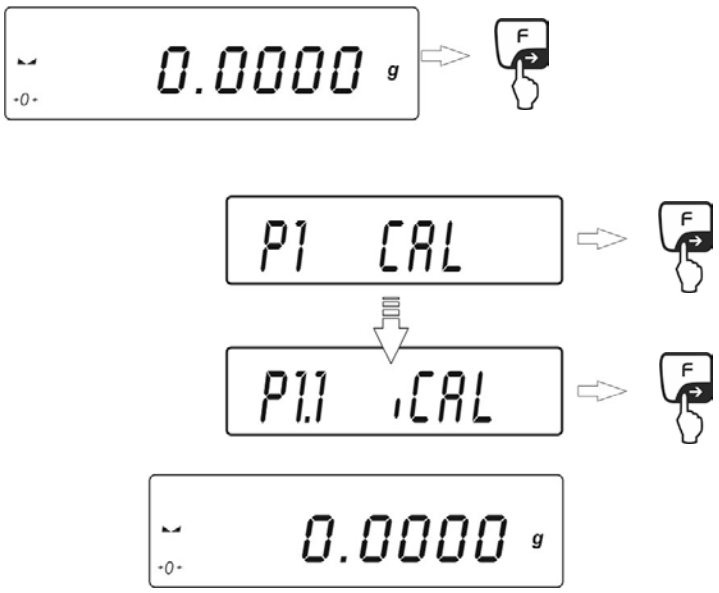
* = Locked in weighing scales with type approval certificate [Er 9 lock].

7.2.1 P1.1 iCAL

⇨ **For automatic internal adjustment see chap. 7.1**

⇨ **Starting internal adjustment manually**

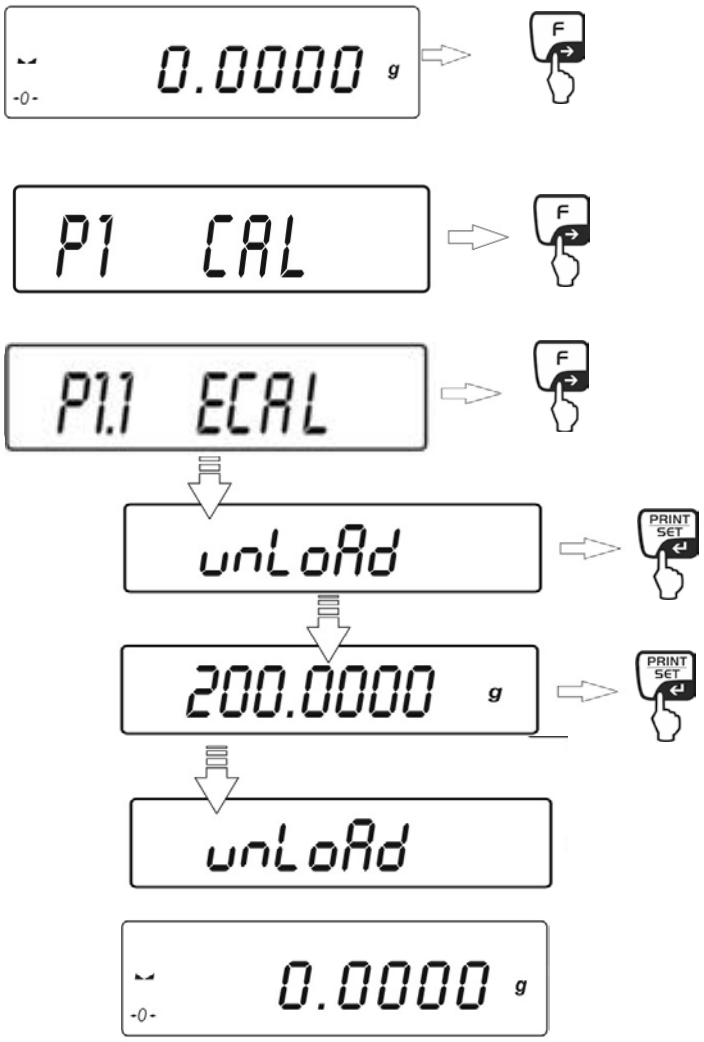
⇨ Press **F**-key three times



- Ensure that there are no objects on the weighing pan.
- You can cancel adjusting by pressing the **TARE**-key.
- After successful adjustment the balance automatically returns to weighing mode.

7.2.2 P1.2 ECAL - External adjustment (AES models)

Carry out adjustment with the help of the recommended adjustment weight (see chapter 1 “Technical Specifications”).
Observe stable environmental conditions. A warming up time (see chapter 1) is required for stabilization.



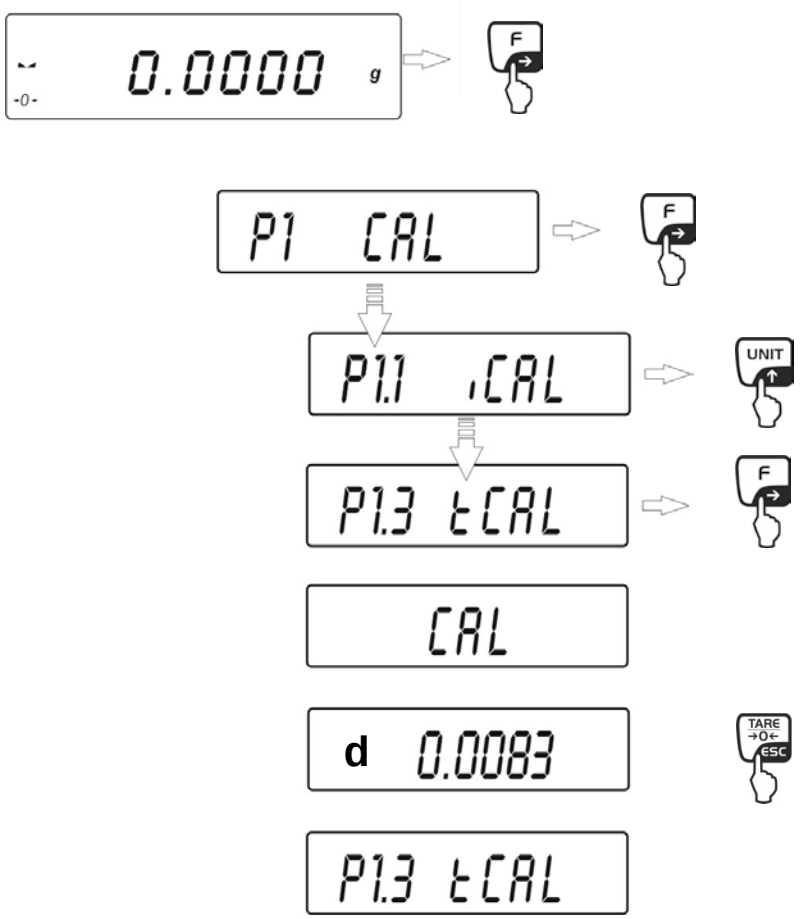
Ensure that there are no objects on the weighing pan. Press **PRINT**-key, **CAL** will be shown.
Wait until the weighed value for the required adjustment weight appears.
Place the required calibration weight carefully in the centre of the weighing plate and press the **PRINT** key.
The display is showing **CAL** and adjustment is starting.
Adjustment will be complete when the display is showing **UNLOAD**; remove the adjustment weight. After successful adjustment the balance automatically returns to weighing mode.

- Return to weighing mode, see chap. 8.2.
- This function is locked in weighing scales with type approval certificate.

7.2.3 P1.3 tCAL – adjustment test

⇨ **AEJ models**

This function is applied to compare the internal adjustment weight with the saved value. The test is carried out automatically. The result is shown on the display and, if an optional printer is connected, a printout will be issued via the RS 232 interface.

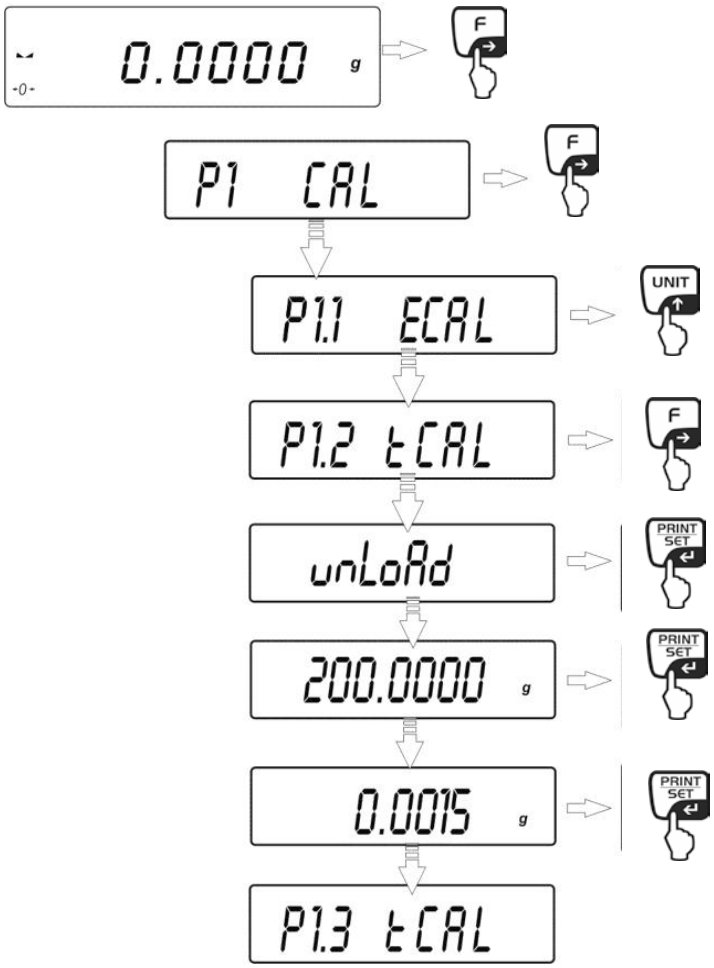


☞ Return to weighing mode, see chap. 8.2.

English

⇨ AES models

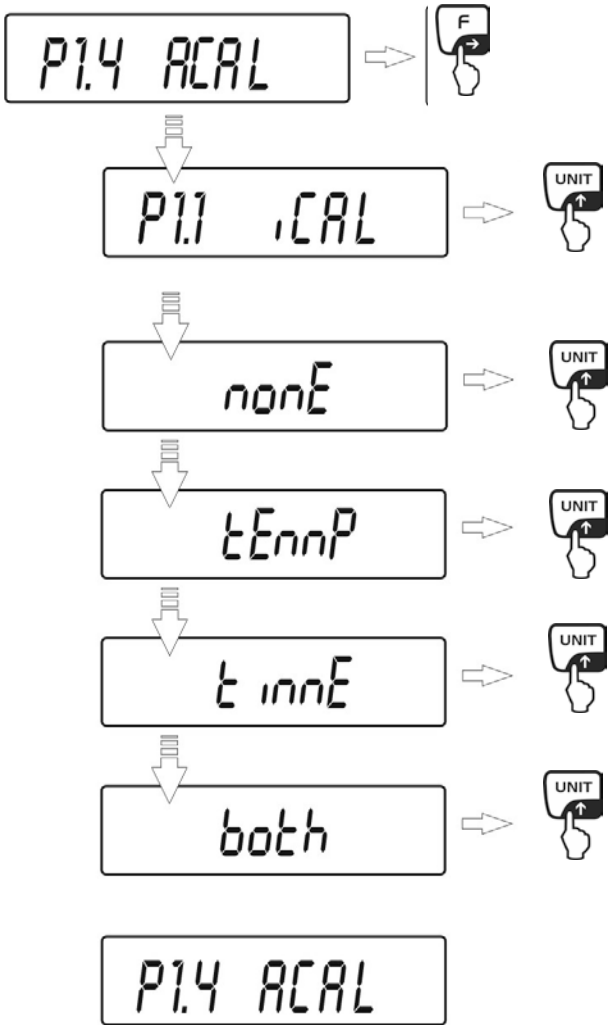
Here, deviation from the last adjustment is determined. This is only a check, i.e. no values are changed.



☞ Return to weighing mode, see chap. 8.2.

7.2.4 P1.4 ACAL – Start criteria of the automatic internal adjustment (AEJ only)

This function is applied to define the criteria required for starting up automatic adjustment.



Settings:

nonE	Automatic adjustment disabled
tEmp	Start automatic Adjustment after change in temperature
timE	The start of time controlled automatic adjustment depends on the setting “P1.5 CALt”
both	Start automatic Adjustment is temperature and time dependent

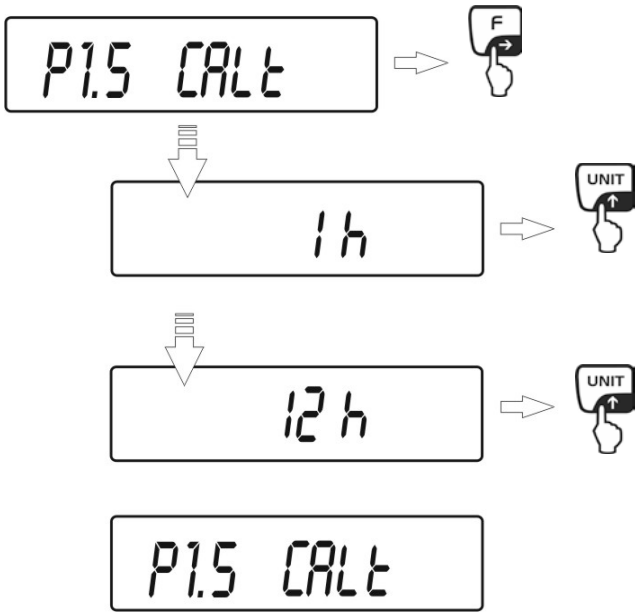
☞ Return to weighing mode, see chap. 8.2.

i	This function is locked in weighing scales with type approval certificate.

English

7.2.5 P1.5 CALt– time controlled automatic adjustment (AEJ only)

This function is applied to define the time interval (selectable from 1-12 hours) for automatic adjustment.

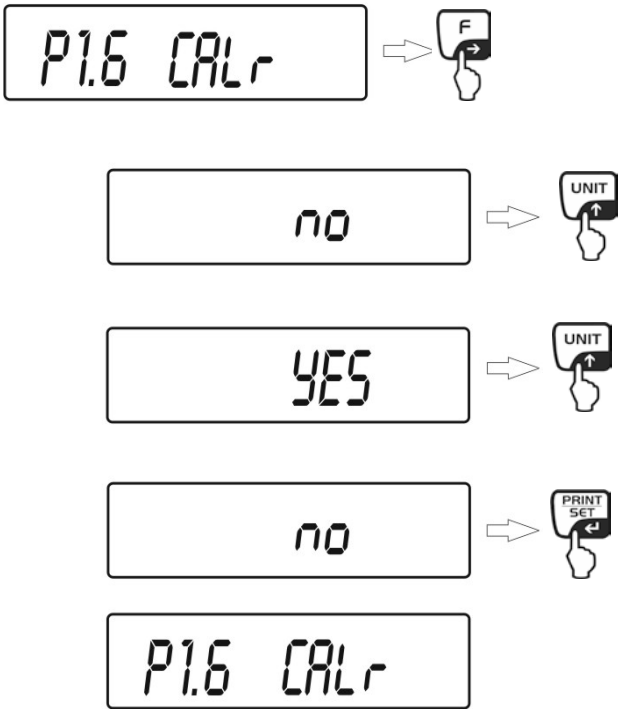


☞ Return to weighing mode, see chap. 8.2.

i	This function is locked in weighing scales with type approval certificate.

7.2.6 P1.5 CALr– Enable/disable issue of adjustment protocol

This function enables automatic log issue after each adjustment. These logs may be issued by using an optional printer.
To define the content of the protocol go to menu item “P2 GLP”, s. chap. 12



no Adjustment protocol disabled

YES Adjustment protocol enabled

☞ Return to weighing mode, see chap. 8.2.

7.3 Verification

General introduction:
According to EU directive 2009/23EG balances must be officially verified if they are used as follows (legally controlled area):

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

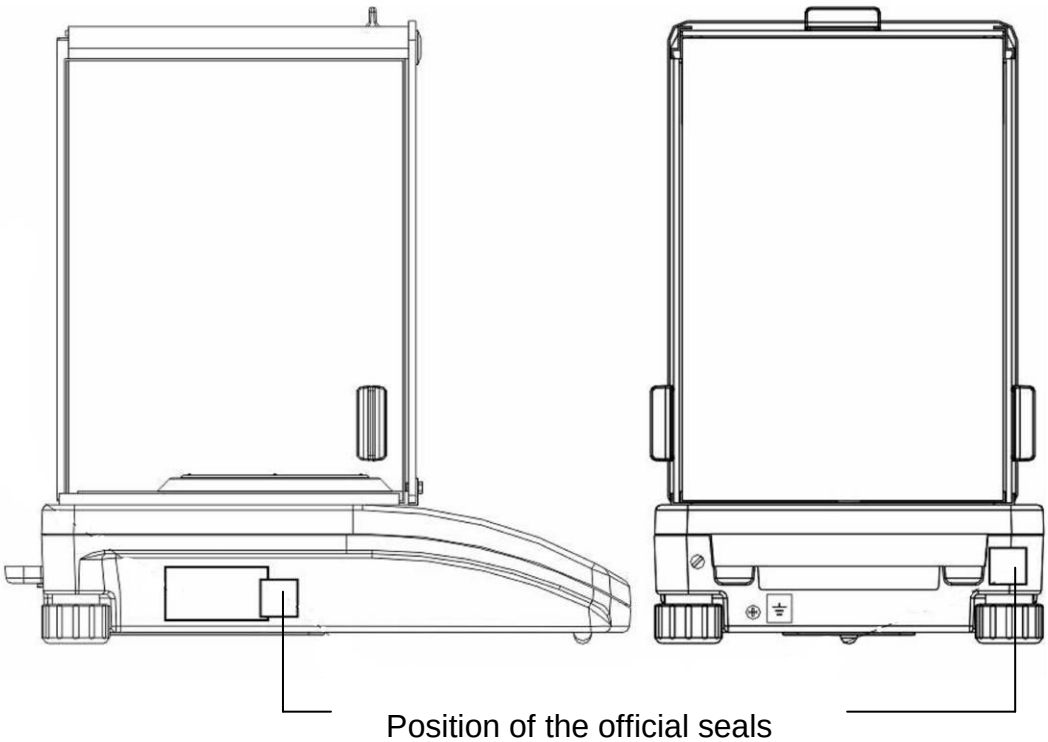
In cases of doubt, please contact your local trade in standard.

Verification notes:
An EU type approval exists for balances described in their technical data as verifiable. If a balance is used where obligation to verify exists as described above, it must be verified and re-verified at regular intervals.
Re-verification of a balance is carried out according to the respective national regulations. The validity for verification of balances in Germany is e.g. 2 years.
The legal regulation of the country where the balance is used must be observed!

Verification of the balance is invalid without the seal.
The seal marks attached on balances with type approval point out that the balance may only be opened and serviced by trained and authorised specialist staff. If the seal mark is destroyed, verification looses its validity. Please observe all national laws and legal regulations. In Germany a re-verification will be necessary.

English

Position of the “official seals“:



Balances with obligation to verify must be taken out of operation if:

- **The weighing result of the balance is outside the error limit.** Therefore, in regular intervals load balance with known test weight (ca. 1/3 of the max. load) and compare with displayed value.
- **The reverification deadline has been exceeded.**

8 Menu

The menu is subdivided into seven menu blocks (P1 – P7).

P1 CAL [adjustment]

P1.1	iCAL	|		[internal adjustment] ALJ only
P1.2	ECAL	|		[external adjustment] *
P1.3	tCAL	|		[adjustment test]
P1.4	ACAL	|	both/nonE/tenno/tinnE	[automatic adjustment] ALJ only *
P1.5	CALt	|	1 h ÷ 12h	[time setting for automatic adjustment] ALJ only *
P1.6	CALr	|	YES/no	[printout adjustment log]

* = locked in devices with type approval certificate

P2 GLP [good lab practice]

P2.1	USr	|	_	[Enter user name]
P2.2	PrJ	|	_	Enter [project name]
P2.3	Ptin	|	YES/no	[printout time]
P2.4	PdAt	|	YES/no	[printout date]
P2.5	PUSr	|	YES/no	[printout user]
P2.6	PPrJ	|	YES/no	[printout project]
P2.7	PId	|	YES/no	[printout serial number weighing balance]
P2.8	PFr	|	YES/no	[frame printout]

P3 rEAd [main functions]

P3.1	AuE	|	Stand/Slouu/FASt	[filter settings]
P3.2	ConF	|	FASt_rEL/Fast/rEL	[rest control display]
P3.3	Auto	|	On/OFF	[Auto zero]
P3.4	Ldi9	|	ALuuAYS/never/uu_StAb	[delete last decimal place]

P4 Print [parameter for serial interface RS 232]

P4.1	bAud	|	2400/4800/9600/19200	[Baud rate]
P4.2	CntA	|	YES/no	[continuous output standard weighing unit]
P4.3	Cntb	|	YES/no	[continuous output currently set weighing unit]
P4.4	rEPL	|	YES/no	[manual (press key) or automatic output]
P4.5	PStb	|	YES/no	[output stable/instable weighing values]
P4.6	Lo	|	000.0000	[input minimal weight for automatic output]

English

P5 unit [weighing unit]

P5.1	StUn	g/mg/ct/oz/ozt/dwt/t/mom/G	[standard weighing unit, e.g. “g”]
P5.2	mg	YES/no	[mg - milligram]
P5.3	Ct	YES/no	[ct – carat]
P5.4	oZ	YES/no	[oz – ounce]
P5.5	oZt	YES/no	[ozt – Troy ounce]
P5.6	dwt	YES/no	[dwt – pennyweight]
P5.7	t	YES/no	[t – Tael]
P5.8	nno	YES/no	[mom - Momme]
P5.9	Gr	YES/no	[gr – Grain]

P6 Func [operating modes]

P6.1	FFun	ALL/PcS/HiLo/PrcA/Prcb/d_Co/d_Li Pipette/FiLL	[selection enabled operating modes]
P6.2	PcS	YES/no	[piece counting]
P6.3	HiLo	YES/no	[weighing with tolerance control]
P6.4	PrcA	YES/no	[percentage weighing, reference weight determination "weighing"]
P6.5	Prcb	YES/no	[percentage weighing, reference weight determination “numeric“]
P6.6	d_Co	YES/no	[determination density “solids”]
P6.7	d_Li	YES/no	[determination density “liquids”]
P6.8	Pi_t	YES/no	[Pipette calibration]
P6.9	Fill	YES/no	[Dispensing]

P7 othEr [additional useful functions]

P7.1	bL	On/Aut/OFF	Display background illumination
P7.2	bEEP	On/OFF	[touch tone]
P7.3	PrnS		[printout “weighing parameters”]

English

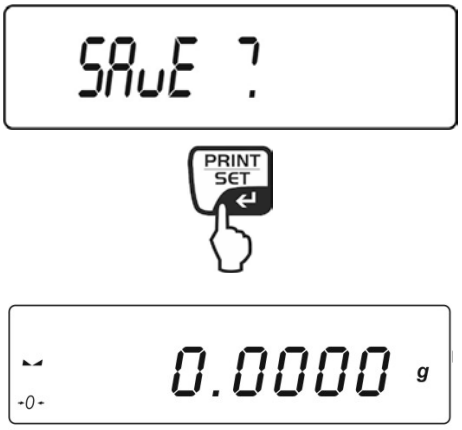
8.1 Navigation in the menu

Call up menu	In weighing mode press the **F**-key and the first menu block “P1 CAL” will appear.
Select menu block	Use the cursor key ↑ to select the individual menu blocks one by one. Use the cursor key ↑ to scroll down. Use the cursor key ↓ to scroll up.
Select menu item	Confirm the selected menu block by pressing the **F**-key. The first menu item of the selected menu block will be shown. Use the cursor key ↑ to select individual menu items one by one. Use the cursor key ↑ to scroll down. Use the cursor key ↓ to scroll up.
Select setting	Acknowledge selected menu item using **F** button, the current setting is displayed
Change settings	Use the cursor keys to change to the available settings. Use the cursor key ↑ to scroll down. Use the cursor key ↓ to scroll up.
Confirm setting / back to menu	Either confirm by pressing the **PRINT**-key or reject by pressing the **TARE**-key.
Save / back to weighing mode	see chap. 8.2

English

8.2 Exit menu / back to weighing mode.

⇨ Press the **TARE**-key repeatedly until **“SAVE**?” is displayed.



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

⇨ Then the balance returns automatically into the weighing mode.

English

9 Weighing functions P6 func

9.1 Turn on/off balance

⇨ The weighing scale will carry out a self-test after having been connected to the power supply and will then automatically go into weighing mode.

⇨ To switch off pres the **ON/OFF**-key; “oFF“, will be displayed. The balance is now in stand-by mode No warming-up up time is required and it will be ready for operation immediately after switching on (Press **ON/OFF**-key).

⇨ To switch-off the balance completely, separate balance from power supply.

9.2 Weighing

A warm-up time is required for stabilisation (see chap. 1).

⇨ Check zero display [→0←] and set to zero with the help of the **TARE** key, as required.

⇨ Place the goods to be weighed and close the wind screen doors

⇨ Wait until the stability display appears (▬).

⇨ Read weighing result.

When an optional printer is connected, the weighing value can be edited.

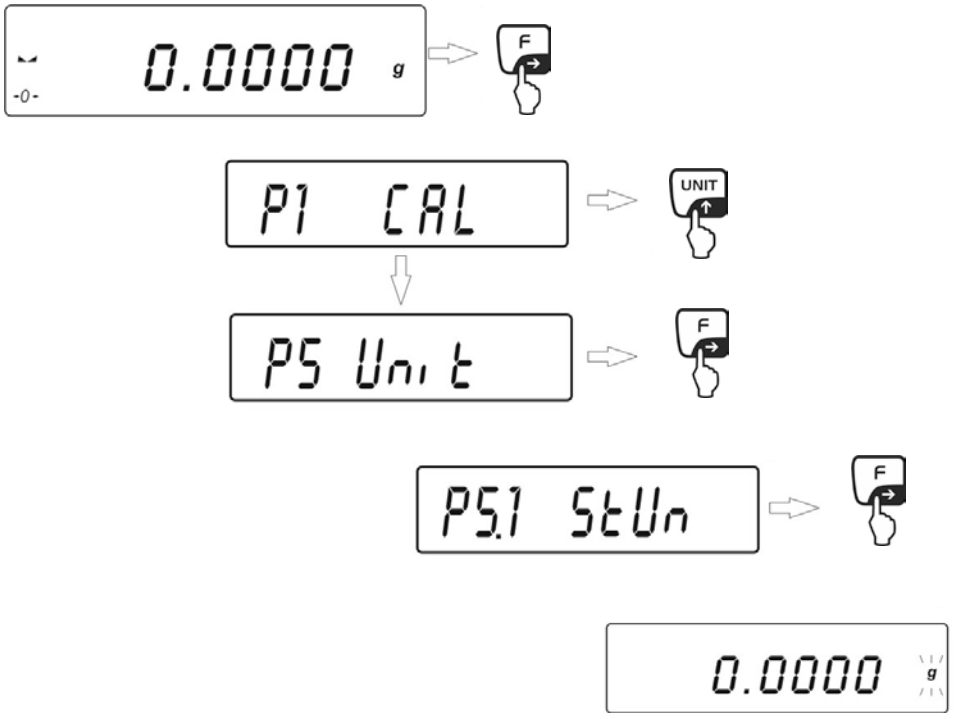
Printout example (KERN YKB-01N):

Date	: 23/07/12
Time	: 09:16
User Id	: KERN
Project Id	: ABC
Balance Id	: 350938
19.999[3] g	

The non-calibrated value is given in brackets in calibrated scales.

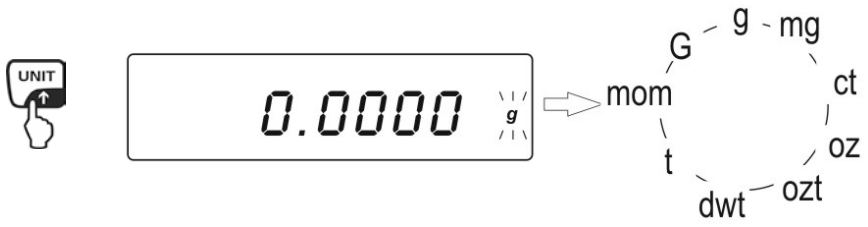
9.3 Standard weighing unit

The weighing unit selected here remains even after disconnection from the mains.



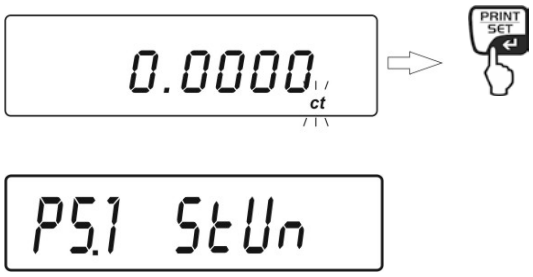
⇨ Press the **UNIT**-key repeatedly until the desired weighing unit is shown.
[g] → [mg] → [ct] → [oz] → [ozt] → [dwt] → [t] → [mom]→ [G] → [g]

In balances without type-approval certificate selection is restricted to options **[g] → [mg] → [ct]**



English

⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.



⇨ For returning to weighing mode with set weighing unit, see chap. 8.2.

9.4 Weighing units switch-over

A weighing unit may be changed by pressing the **UNIT-**key several times:

[g] → [mg] → [ct] → [oz] → [ozt] → [dwt] → [t] → [mom]→ [G] → [g]

Note:
In calibrated model selection is restricted to options **[g] → [mg] → [ct]**.

9.5 Taring

The dead weight of any weighing container may be tared away by pressing a button, so that the following weighing procedures show the net weight of the goods to be weighed.

⇨ Put vessel of goods to be weighed on weighing plate and close the wind screen doors.

⇨ Wait until the stability display appears (▬), then press **TARE**. The weight of the container is now internally saved.

⇨ Weigh the goods to be weighed and close the wind screen doors.

⇨ Wait until the stability display appears (▬).

⇨ Read net weight.

- When the balance is unloaded the saved taring value is displayed with negative sign.
- To delete the stored tare value, remove load from weighing pan and press **TARE**.
- The taring process can be repeated any number of times. The limit is reached when the whole weighing range is exhausted.

9.6 Underfloor weighing

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

- Switch off the balance.
- Open closing cover at the balance bottom.
- Suspend hook for underfloor weighing **carefully and completely**.
- Place weighing balance over an opening.
- Attach load to hook and carry out weighing procedure.

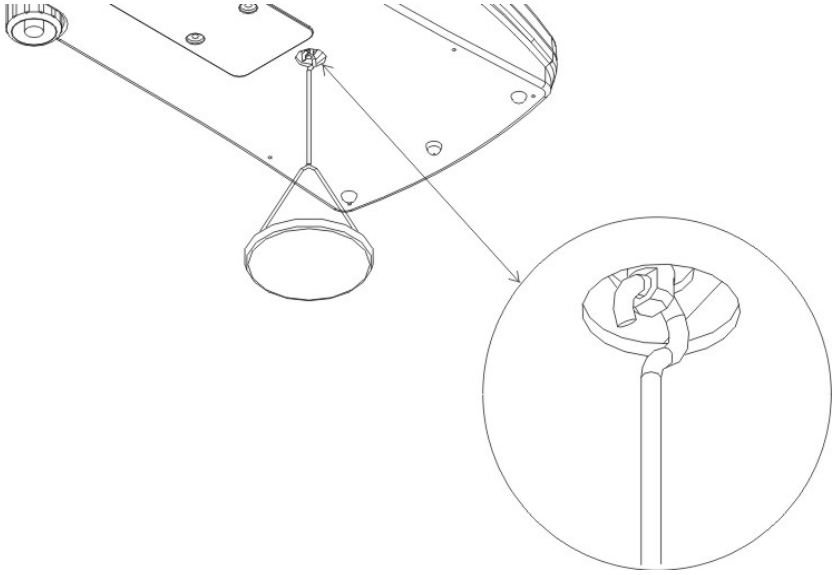


Fig. 1: Setting up a weighing scale for underfloor weighing

CAUTION

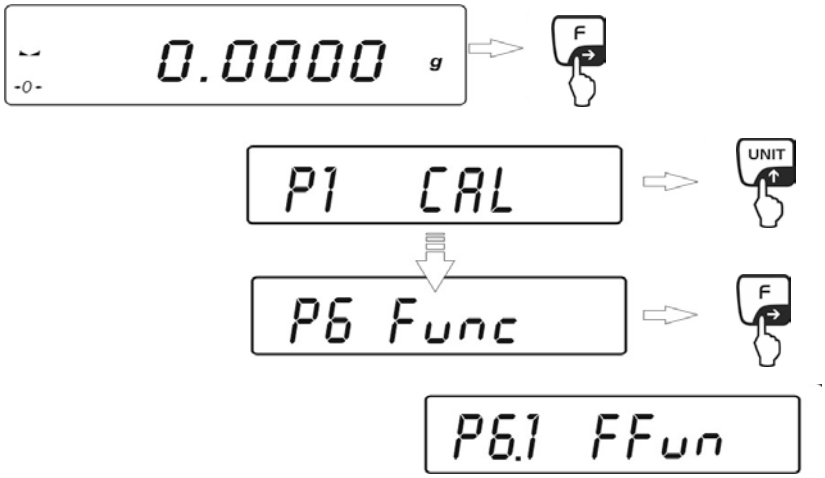
- Always ensure that all suspended objects are stable enough to hold the desired goods to be weighed safely (danger of breaking).
- Never suspend loads that exceed the stated maximum load (max) (danger of breaking)
- Always ensure that there are **no persons, animals or objects** that might be damaged underneath the load.

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

English

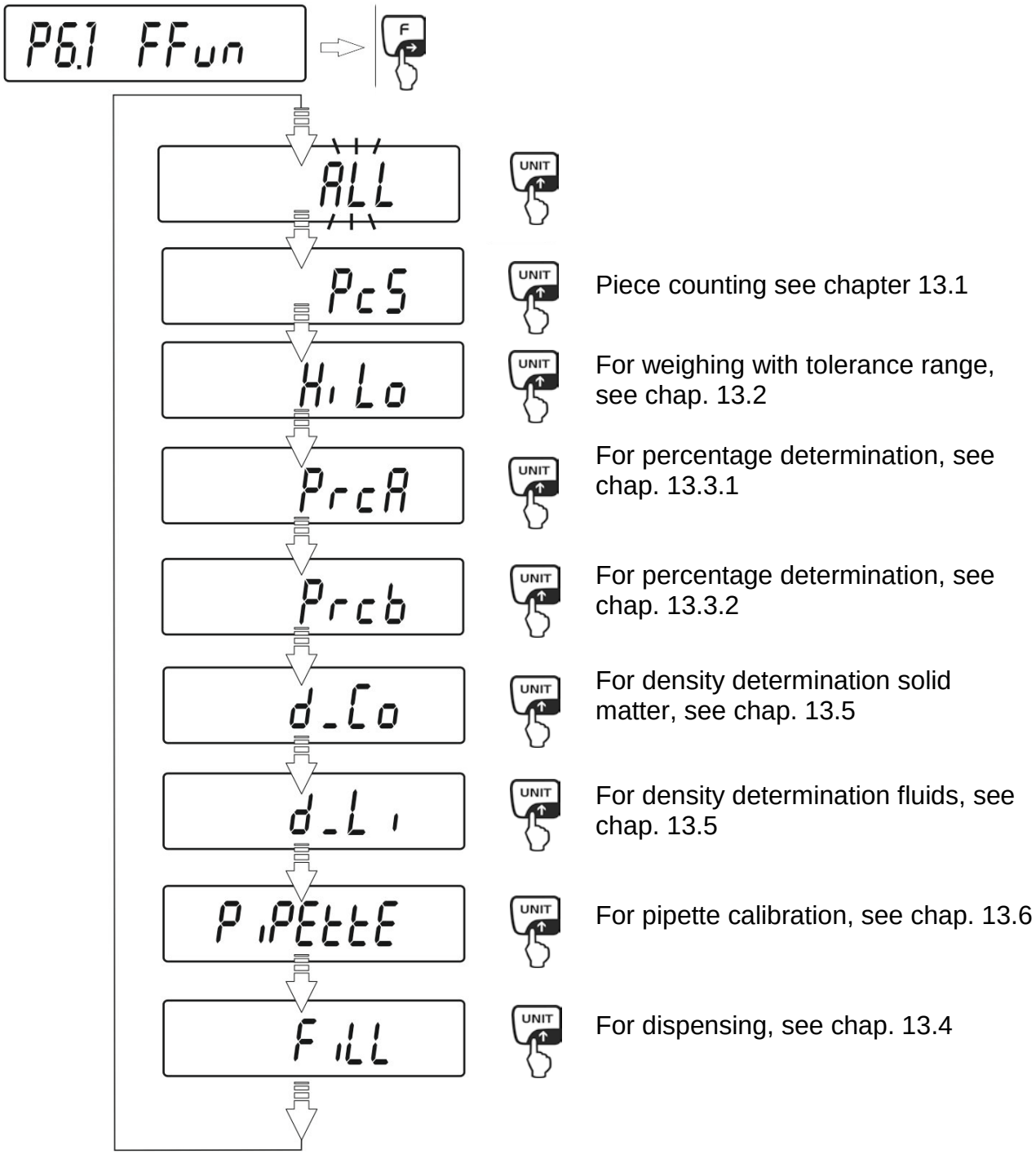
9.7 Selecting the operating mode

To enable operating modes that are available to the user without having to go to the menu every time, go to the **“P6 Func”** menu. All activated operating modes can be called directly by pressing the key.



- ⇨ If you wish to have several operating modes callable via the key, select **ALL** for a setting.
  For selection of accessible operating modes, see chap. 9.7.1.
- ⇨ If you wish to access only one operating mode via the key, select it directly via the **UNIT** key. (For instance PcS for piece counting)

English



⇨ Confirm selection by pressing the **PRINT**-key; weighing scale will return to menu **P6.1 FFun**.

Either

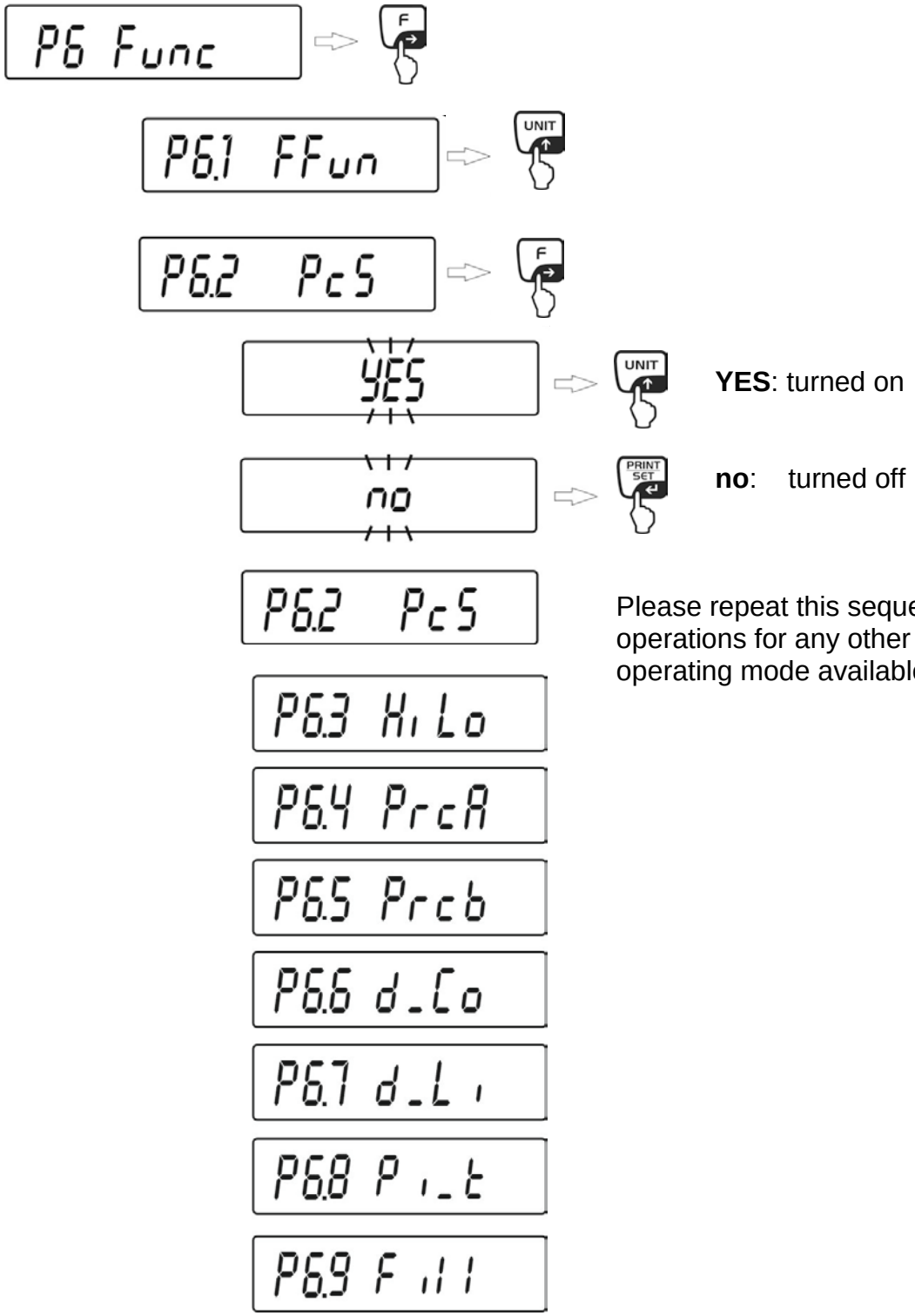
⇨ For how to return to weighing mode after selecting an operating mode, see chap. 8.2

or

⇨ For how to enable accessible operating modes after selecting **ALL**, see chapter 9.7.1 below.

9.7.1 Selecting accessible operating modes

Go there to select operating modes that subsequently will be selectable directly via the key.



YES: turned on

no: turned off

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

⇨ Confirm your selection by pressing the **PRINT**-key; balance will return to menu.

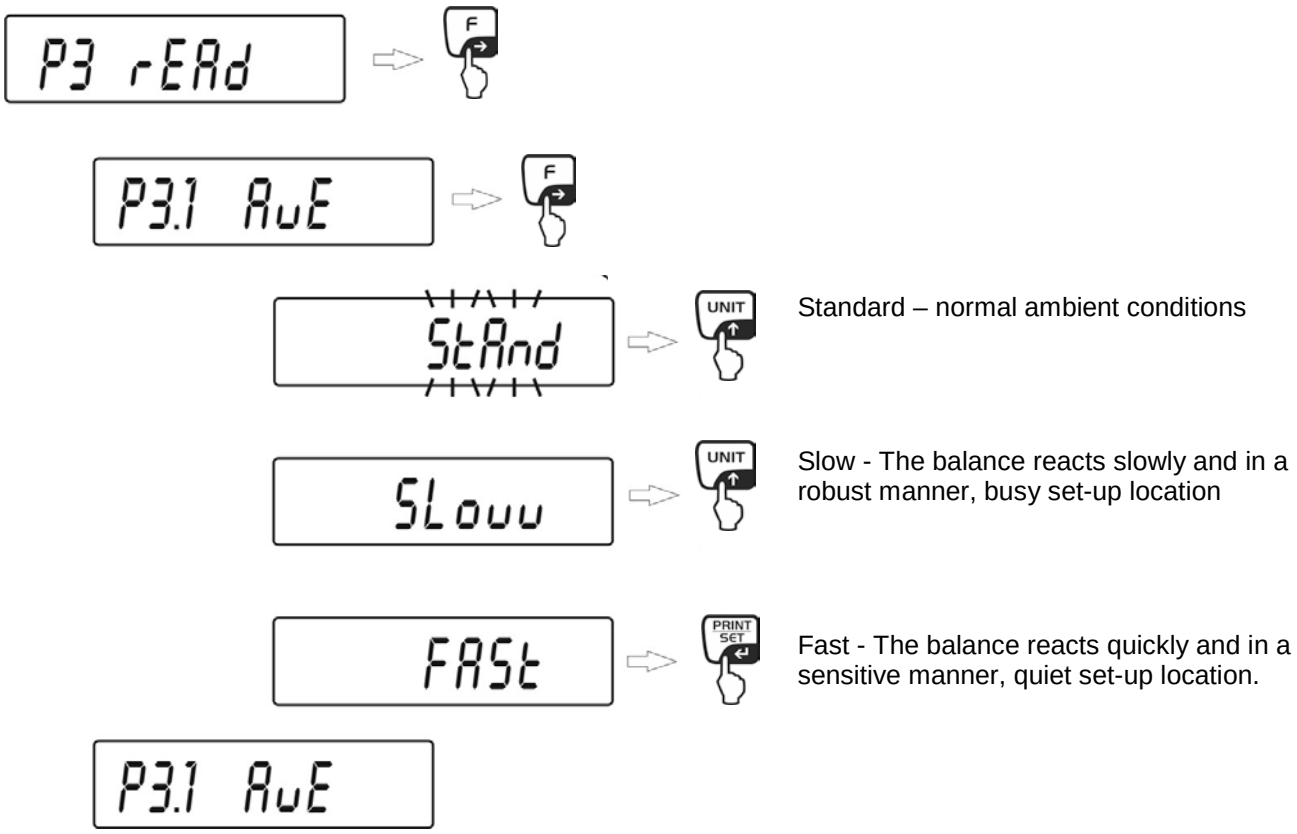
⇨ Return to weighing mode, see chap. 8.2.

English

10 Balance settings “P3 rEAd”

This menu block can be used to adapt the behaviour of the weighing scale to your requirements (such as ambient conditions, special weighing procedures).

10.1 Filter - adaptation to ambient conditions and weighing options

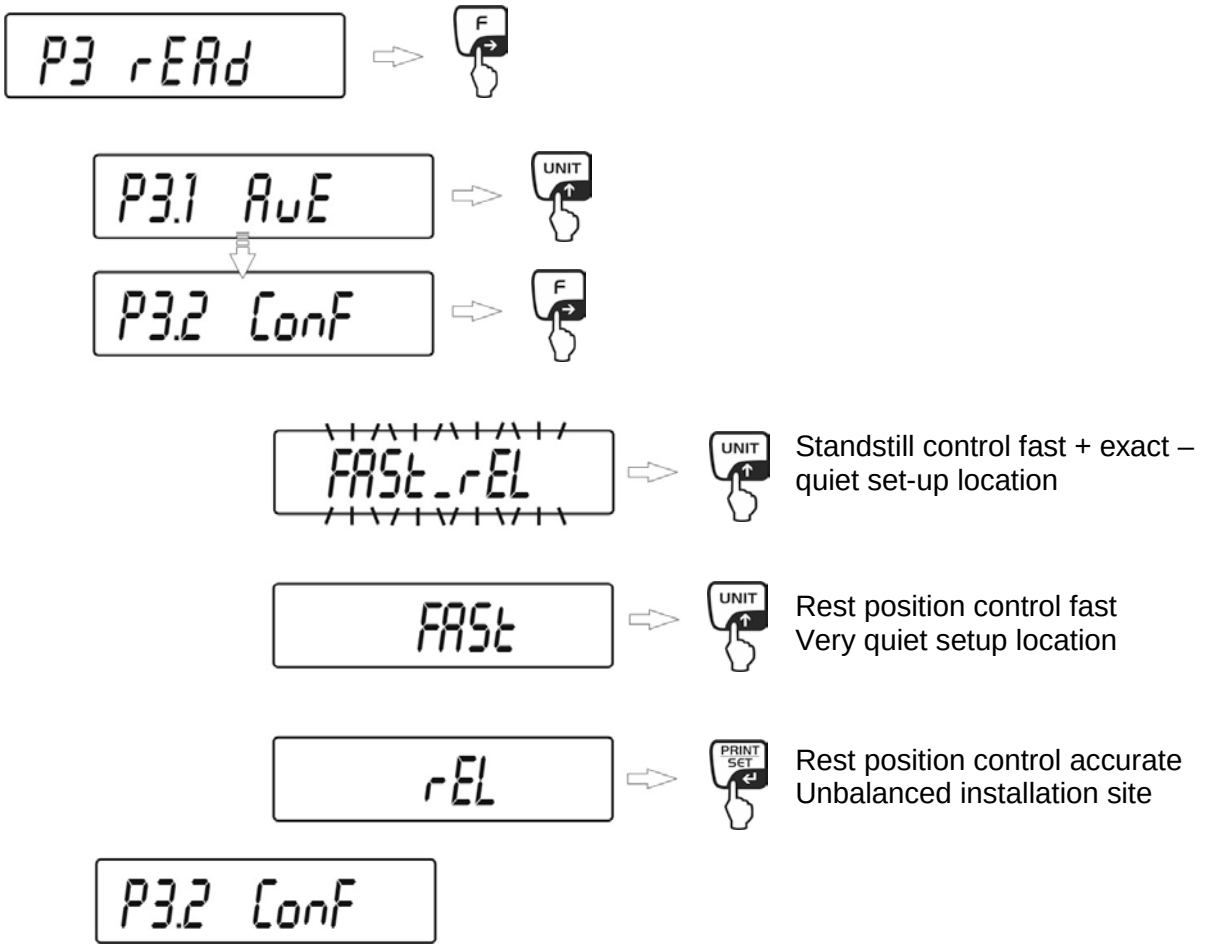


⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.

⇨ Return to weighing mode, see chap. 8.2.

English

10.2 Rest position control display – Adaptation of weighing speed

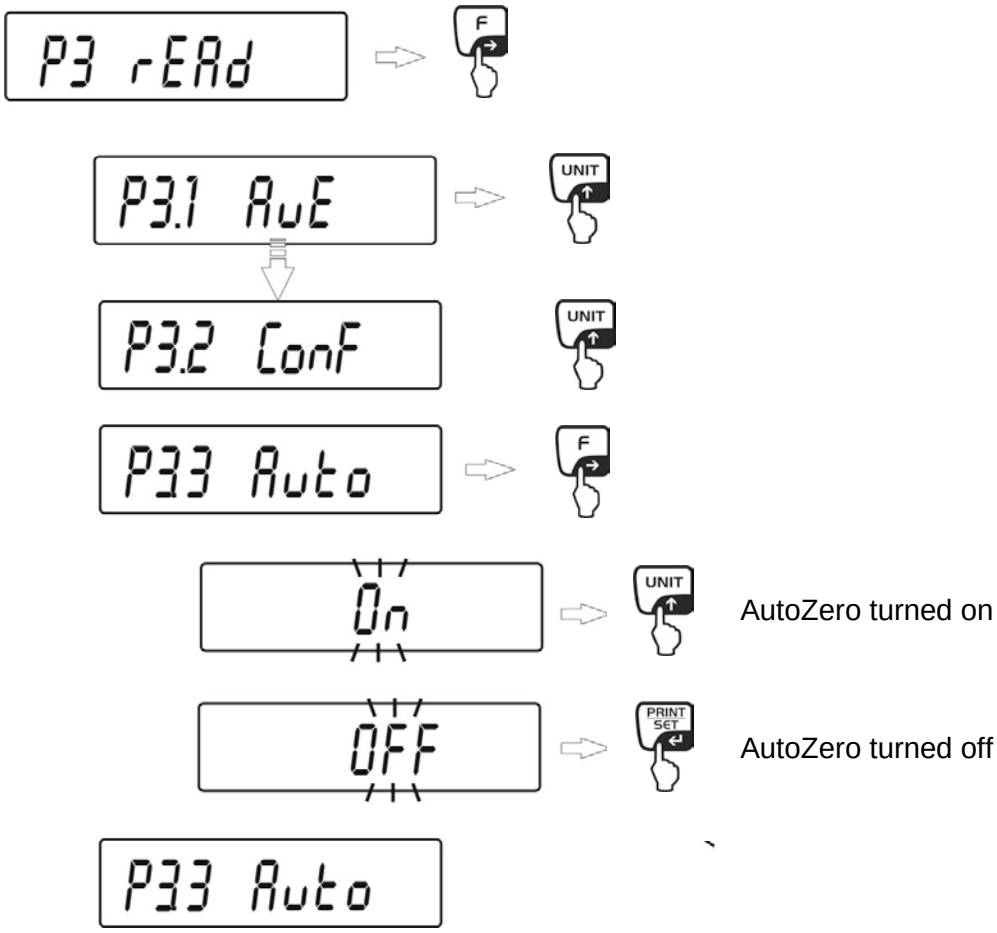


⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.

⇨ Return to weighing mode, see chap. 8.2.

10.3 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“. (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.

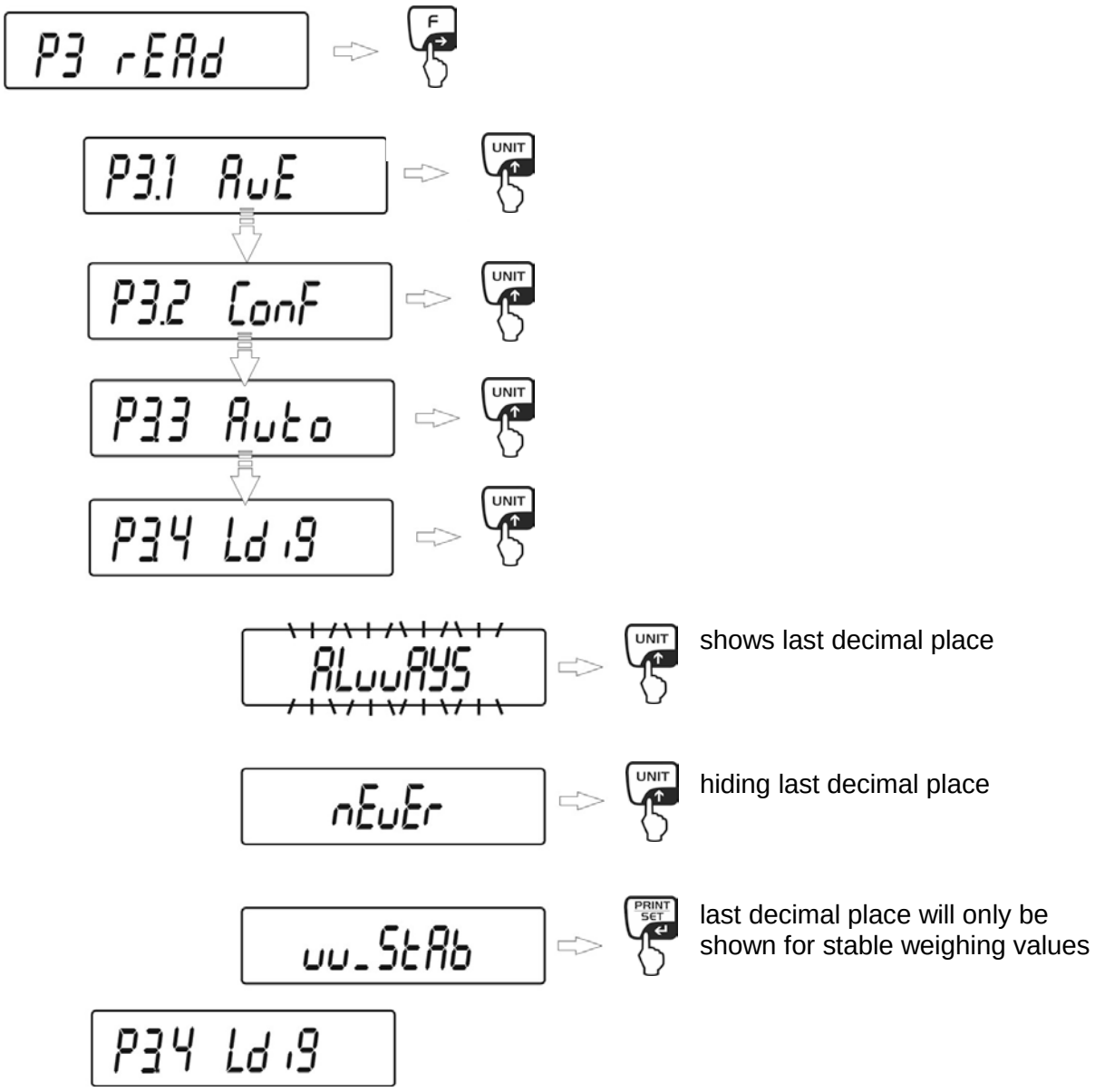


⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.

⇨ Return to weighing mode, see chap. 8.2.

10.4 Hide last decimal place

Readability may be reduced by 1 digit on the weighing balances, as required. The last decimal place will be rounded and removed from the display.



⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.

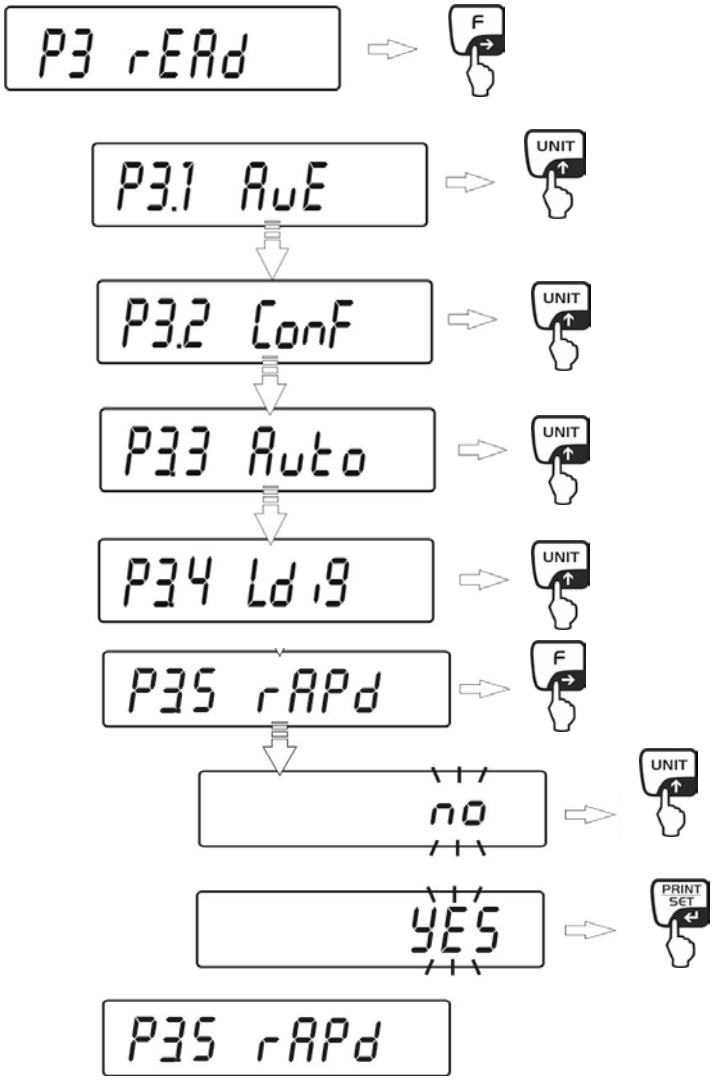
⇨ Return to weighing mode, see chap. 8.2.

10.5 Dispensing mode “RAPID”

This setting is used to automatically adjust all parameters required for dispensing.
In this way you do not have to call and change each menu item individually.

Menu settings:

RAPID = NO	Standard settings for all weighing options and normal loads The weighing scale works according to the parameters set (P3.1 AUE, see chap. 10.1 / P3.2 CONF, see chap.10.2)
RAPID = YES	Parameters for dispensing are set automatically. The weighing scale automatically works at increased weighing speed.



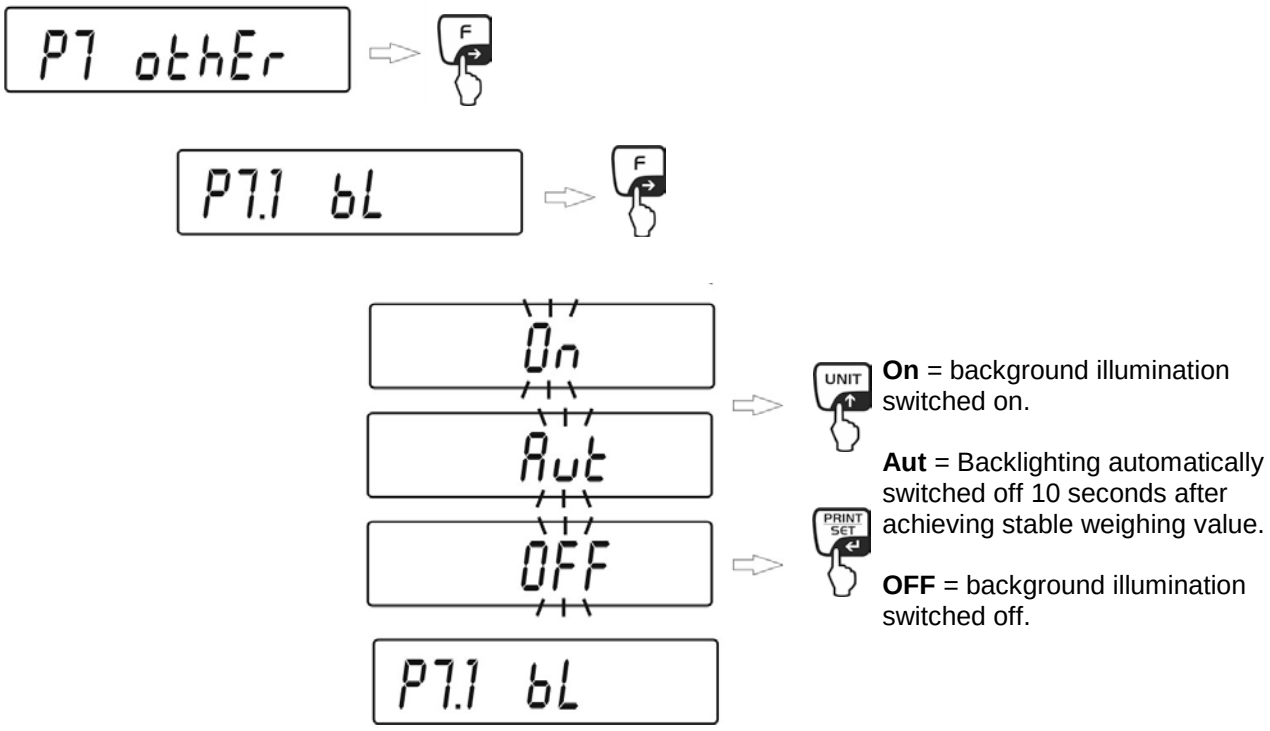
⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.

⇨ Return to weighing mode, see chap. 8.2.

11 Further useful functions “P7 othEr“

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

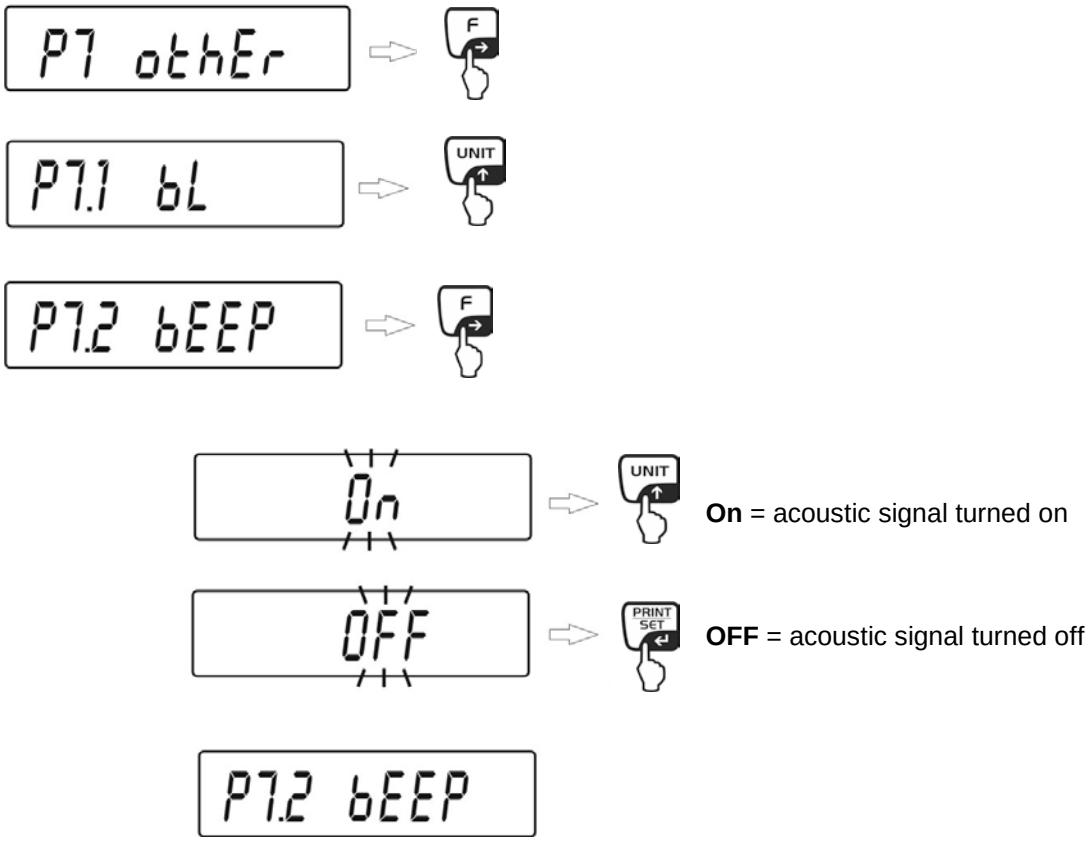
11.1 Display background illumination



- ⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.
- ⇨ Return to weighing mode, see chap. 8.2.

English

11.2 Acoustic signal for key operation

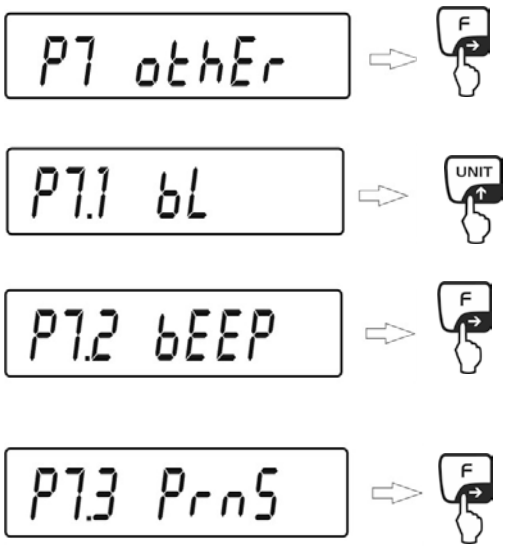


⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.

⇨ Return to weighing mode, see chap. 8.2.

English

11.3 Print weighing settings



All weighing scale settings are issued via the RS232 interface.

⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.

⇨ Return to weighing mode, see chap. 8.2.

12 GLP/ISO log “P2 GLP“

Quality assurance systems require logs of weighing results as well as of correct adjustment of the balance stating date and time and balance identification. The easiest way is to have a printer connected.
The content of the data output is determined in menu “P2 GLP“. All parameters set to “YES“ will be issued.
Examples:

P2 GLP

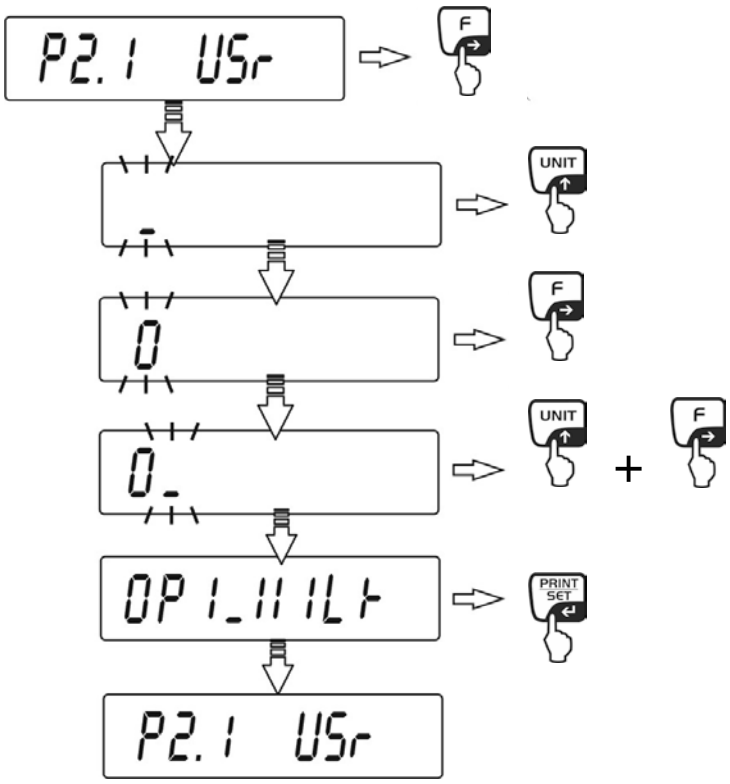
P2.1 uSr	|	max. 8 digits
P2.2 PrJ	|	max. 8 digits
P2.3 Ptin	|	YES
P2.4 PdAt	|	YES
P2.5 PuS	|	YES
P2.6 PPrJ	|	YES
P2.7 Pid	|	YES
P2.8 PFrn	|	YES

```
----------------------
Date      : 09/02/2007
Time      : 11:21:39
User Id   : 12345678
Project Id: 87654321
Balance Id: 114493

  100.0216 g
----------------------
```

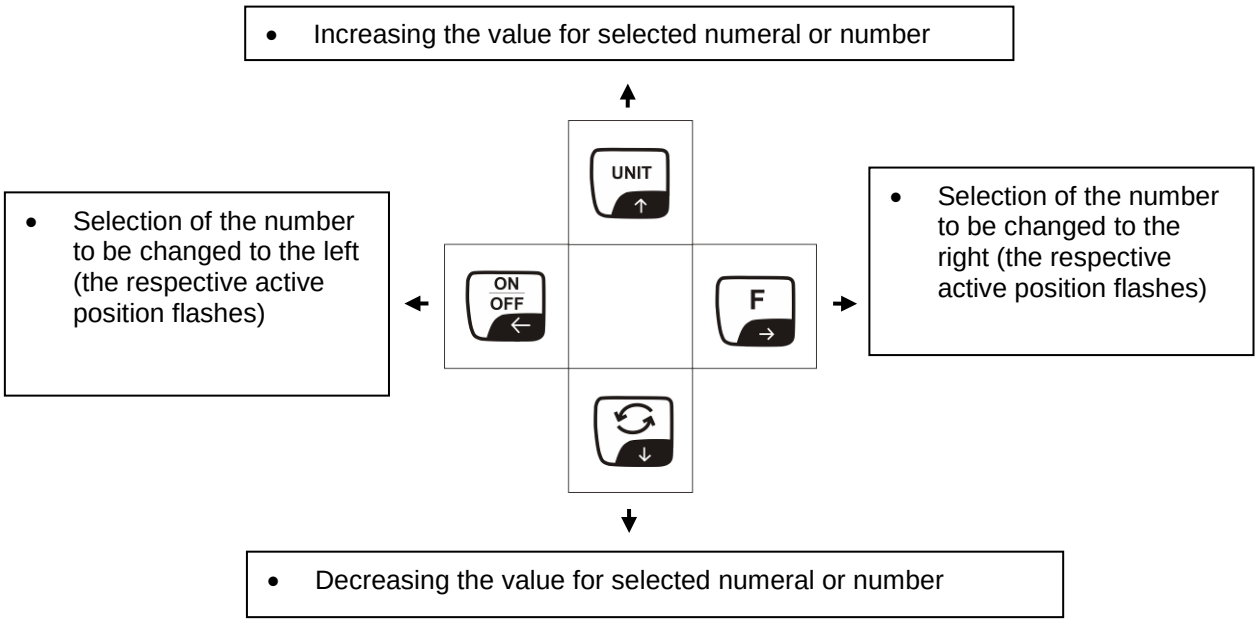
Definition of a standard log:

- **P2.1 USr – Enter user name**

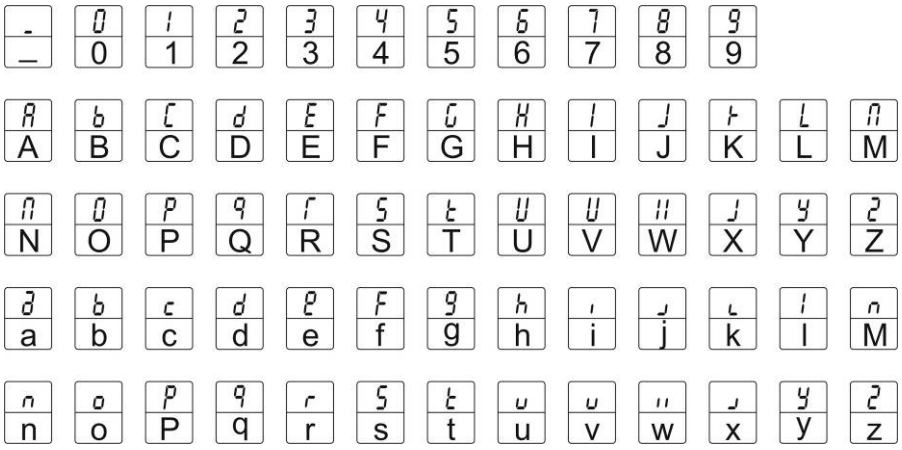


⇨ Press the **UNIT-**key and the next menu item “**P2.2 PrJ**“, will appear.

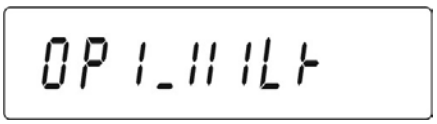
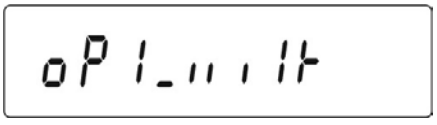
Input via cursor keys



Overview data input / data output:



Examples:

Data input	Data output
1. Upper case characters	
	OP1_WILK
2. Lower case characters	
	op1_wilk

- **P2.2 PrJ – Enter project name**

⇨ Press the **F**-key; the first digit is flashing.

⇨ Press the navigation keys to enter project name or number (max. 8 digits).

⇨ Confirm settings by pressing the **PRINT** key. Weighing balance returns to menu.

⇨ Press the **UNIT**-key and the next menu item "**P2.3 Ptin**", will appear.

- **P2.3 tin – Issue time**

⇨ Press the **F**-key, current setting is flashing

⇨ Use the **UNIT**-key to select among the following settings:

no = Do not display time
YES = Display time

⇨ Confirm settings by pressing the **PRINT** key. Weighing balance returns to menu.

⇨ Press the **UNIT**-key and the next menu item „**P2.4 PdAt"** will appear.

- **P2.4 PdAt – Display date**

⇨ Press the **F**-key; current setting is flashing.

⇨ Use the **UNIT**-key to select among the following settings:

no = Do not display date
YES = Display date

⇨ Confirm settings by pressing the **PRINT** key. Weighing balance returns to menu.

⇨ Press the **UNIT**-key and the next menu item „**P2.5 PUSr"** will appear.

- **P2.5 PUSr – Display user**

⇨ Press the **F**-key; current setting is flashing.

⇨ Use the **UNIT**-key to select among the following settings:

no = Do not display user
YES = Display user

⇨ Confirm settings by pressing the **PRINT** key. Weighing balance returns to menu.

⇨ Press the **UNIT**-key; the next menu item "**P2.6 PPrJ"** used to display the date appears.

- **P2.6 6 PPrJ – Display project**

⇨ Press the **F**-key; current setting is flashing.

⇨ Use the **UNIT**-key to select among the following settings:

no = Do not display project
YES = Display project

⇨ Confirm settings by pressing the **PRINT** key. Weighing balance returns to menu.

⇨ Press the **UNIT**-key and the next menu item „**P2.7 PId"** will appear.

- **P2.7 PId – Display serial number**

⇨ Press the **F**-key; current setting is flashing

⇨ Use the **UNIT**-key to select among the following settings:

no = Do not display date
YES = Display date

⇨ Confirm settings by pressing the **PRINT** key. Weighing balance returns to menu.

⇨ Press the **UNIT-**key and the next menu item "**P2.8 PFr**" will appear.

- **P2.8 PFr – Frame Protocol**

⇨ Press the **F**-key; current setting is flashing.

⇨ Use the **UNIT**-key to select among the following settings:

no = Do not frame protocol
YES = Frame protocol

Example:

P2.8 PFr: YES

Date :20.03.12
Time :11.31.12
UserID :Mustermann
Balance ID :180151
19.3406 g

Using broken line at protocol begin and end.

P2.8 PFr: no
Date :20.03.12
Time :11.31.12
UserID :Mustermann
Balance ID :180151
19.3406 g

Without broken lines

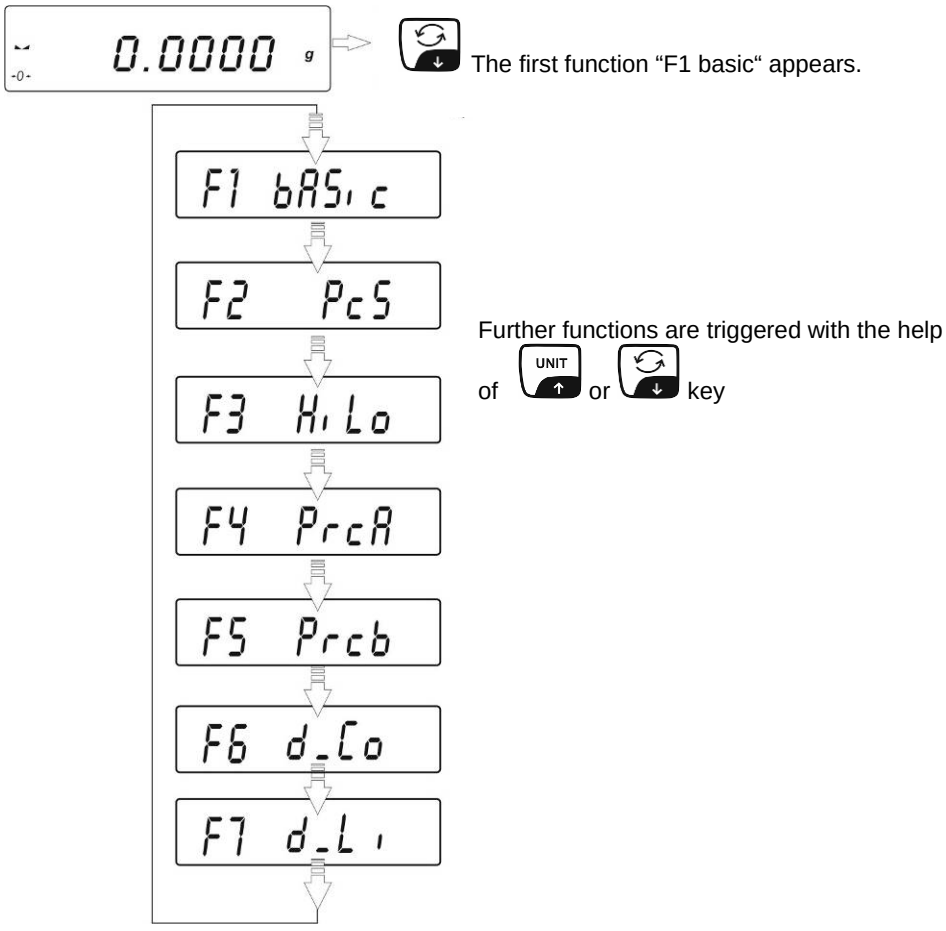
⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.

⇨ Return to weighing mode, see chap. 8.2.

13 Operation Modes

- Weighing **<bASic>**
- Parts counting **<PcS>**
- Weighing with tolerance range **<HiLo>**
- Percentage determination Reference defining by weighing **<PrcA>**
- Percentage determination Numeric reference entry **<PrcB>**
- Density determination solid matter **<d_Co>**
- Density determination fluids **<d_Li>**
- Pipette calibration **<PiPEt>**
- Dosing **<Fill>**

Calling operating modes (See also chap.9.7):



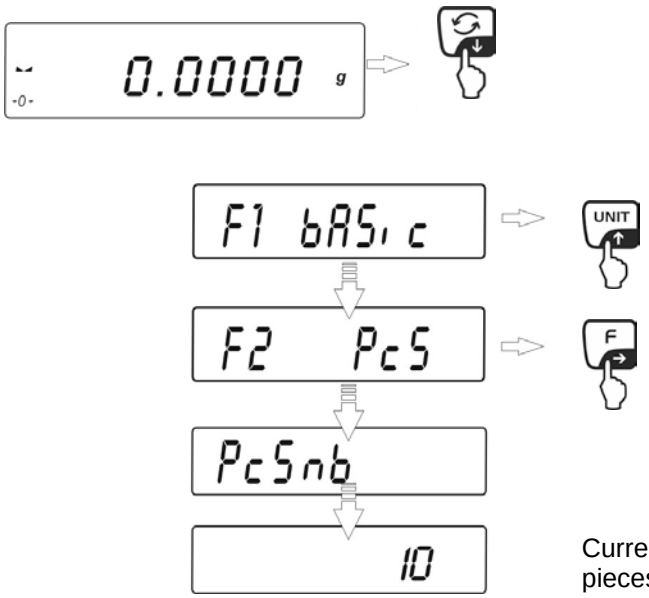
The first function “F1 basic“ appears.

Further functions are triggered with the help of UNIT or key

13.1 Parts counting

Before the balance can count parts, it must know the average part weight (i.e. reference). Proceed by putting on a certain number of the parts to be counted. The balance determines the total weight and divides it by the number of parts (the so-called reference quantity). Counting is then carried out on the basis of the calculated average piece weight.
As a rule:
The higher the reference quantity the higher the counting exactness.

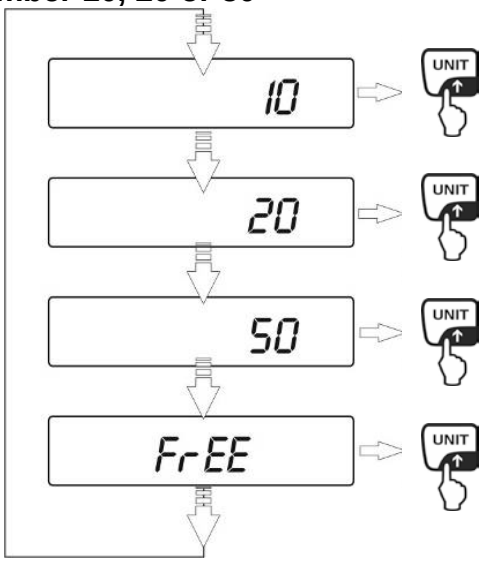
- **Call add-up function**



Current reference number of pieces is displayed.

⇨ Press the **UNIT**-key to select the desired reference number of pieces, selectable options include 10, 20, 50 or free.

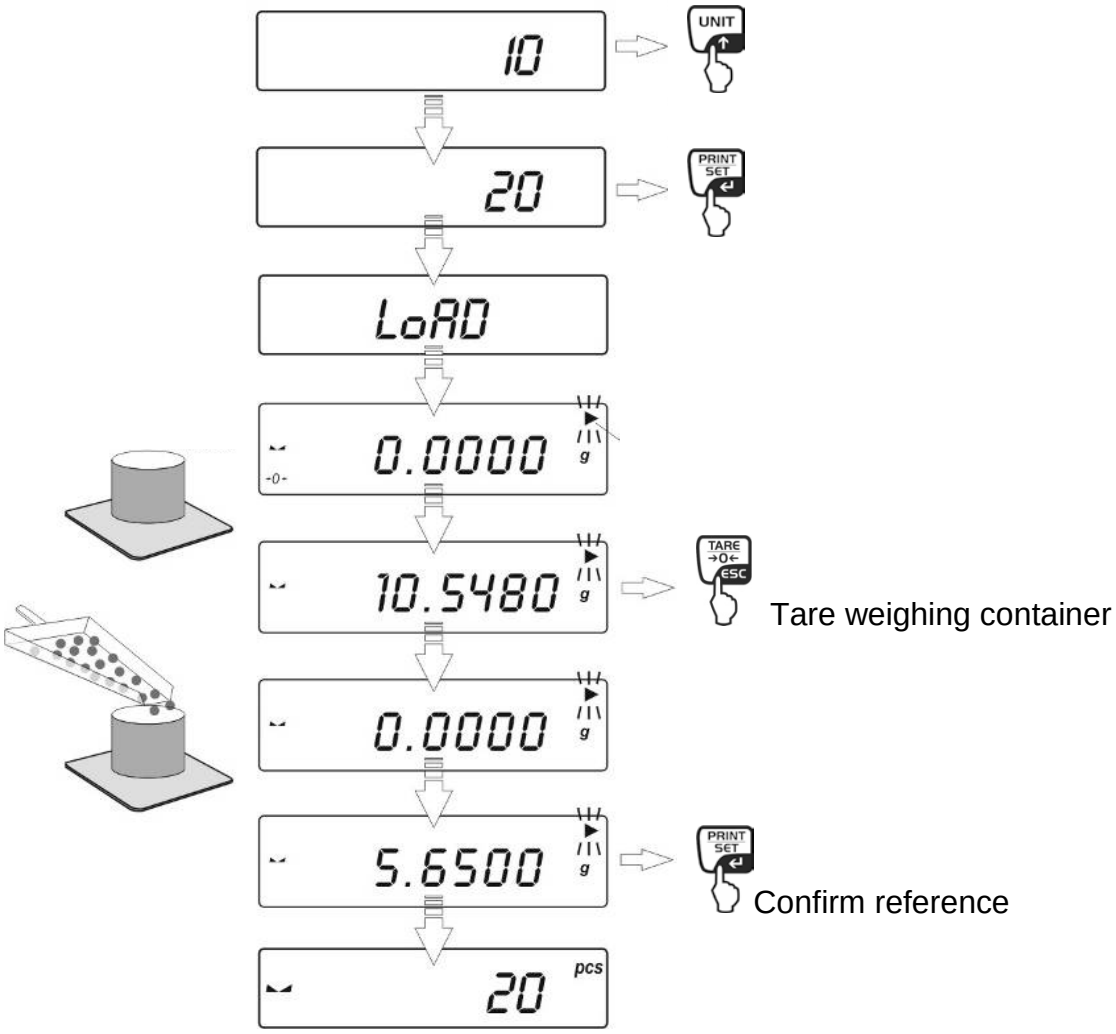
- **Reference piece number 10, 20 or 50**



⇨ Confirm your selected reference number of pieces by pressing the **PRINT**-key (such as 20).

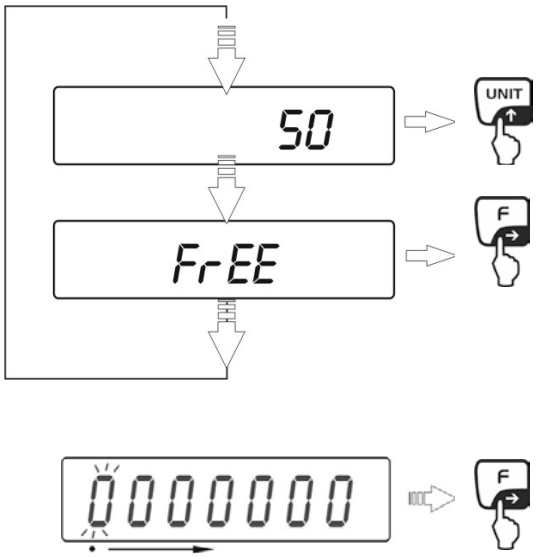
Make reference

⇨ Place as many pieces to add-up as required by the set reference piece number.

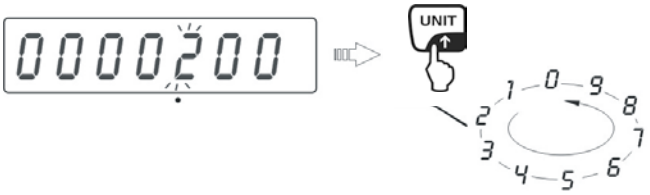


Remove reference weight. The balance is now in parts counting mode counting all units on the weighing pan.

- **for selection ”optional reference piece number“ FrEE**



⇨ Select the place to be changed by pressing the **F**-key



⇨ Select the digit by pressing the **UNIT**-key

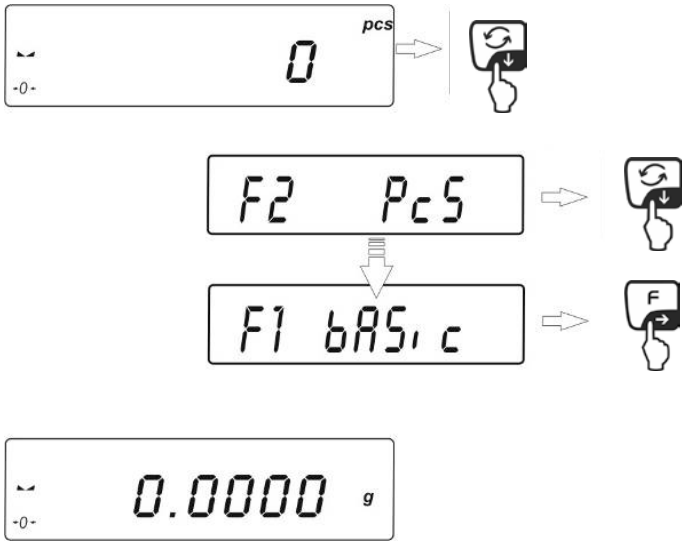
⇨ Confirm the entered reference piece number by pressing the **PRINT**-key

⇨ “LoAd“ appears on the display.

– Place as many counting parts on the balance as the set reference quantity requires, confirm by pressing the PRINT key.
Note:
If there is no load on the weighing plate when the **PRINT**-key is pressed, “**Er5 outr**“ will appear briefly on the display before the display of the balance returns automatically to weighing mode.

⇨ Remove reference weight. The balance is now in parts counting mode counting all units on the weighing plate.

- **Return to weighing mode**



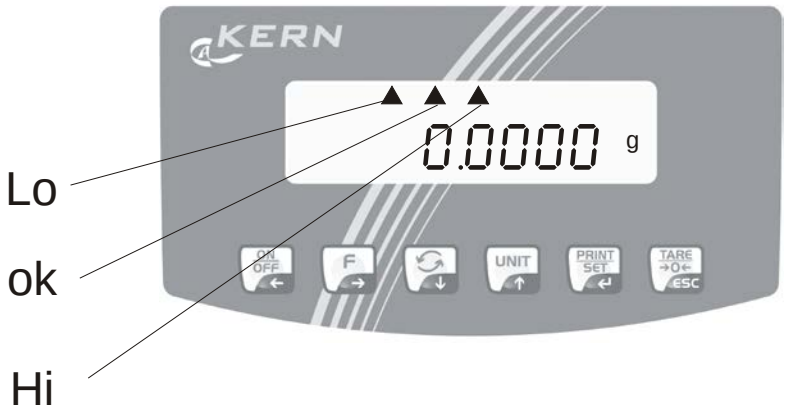
English

13.2 Weighing with tolerance range

For weighing with tolerance ranges you can enter individual upper and lower limits. For tolerance controls such as dosaging, apportioning or sorting the scale will display violated upper or lower limits and show the tolerance tag.

The triangular tolerance marker (▲) in the upper part of the display shows whether the goods to be weighed are within the two tolerance limits.
The tolerance marker is only in operation during operating mode tolerance weighing; it is otherwise not visible.

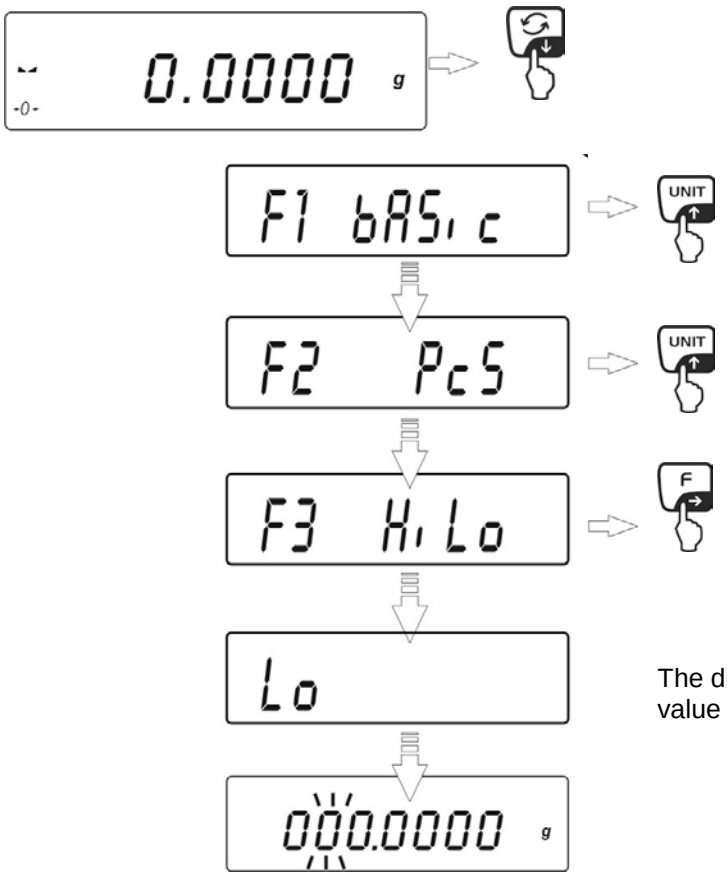
The tolerance marker provides the following information:



lo	Goods to be weighed below tolerance limit
ok	Goods to be weighed within tolerance range
Hi	Goods to be weighed above tolerance limit

English

- **Call function**



The display for entering the lower limit value will appear.

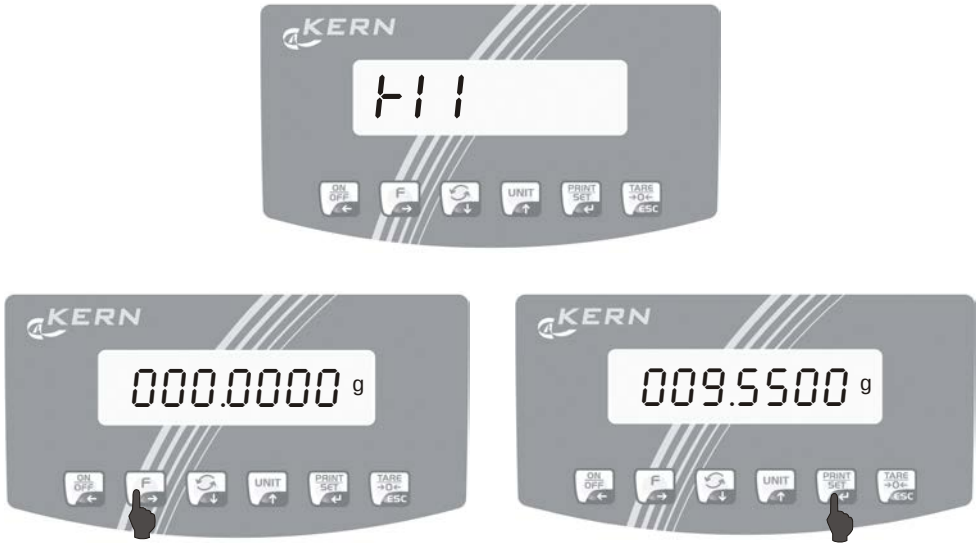
- **Enter lower limit “Lo“**

⇨ Select the digit to be changed by pressing the **F**-key; each digit currently active will be flashing.

⇨ Select the digit by pressing the **UNIT**-key

⇨ Confirm by pressing the **PRINT** key. The display for entering the upper limit value will appear.

- **Enter upper limit „Hi“**



⇨ Select the digit to be changed by pressing the **F**-key; each digit currently active will be flashing.

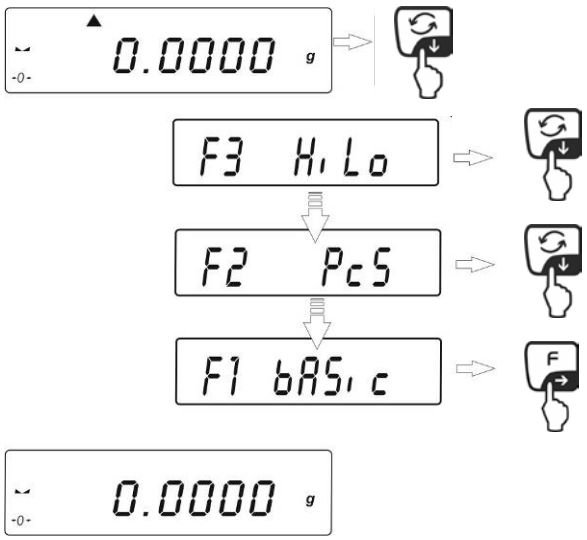
⇨ Select the digit by pressing the **UNIT** key

⇨ Confirm by pressing the **PRINT** key

From now the balance is in checkweighing mode. Put on goods to be weighed, tolerance control is started With the help of the indicator check if the weighed goods are under, inside or over the default tolerance.

Note:
If invalid values are entered such as lower tolerance limit greater than upper tolerance limit, the balance will issue the error message “**Er8 outr**“ and return automatically to weighing mode.

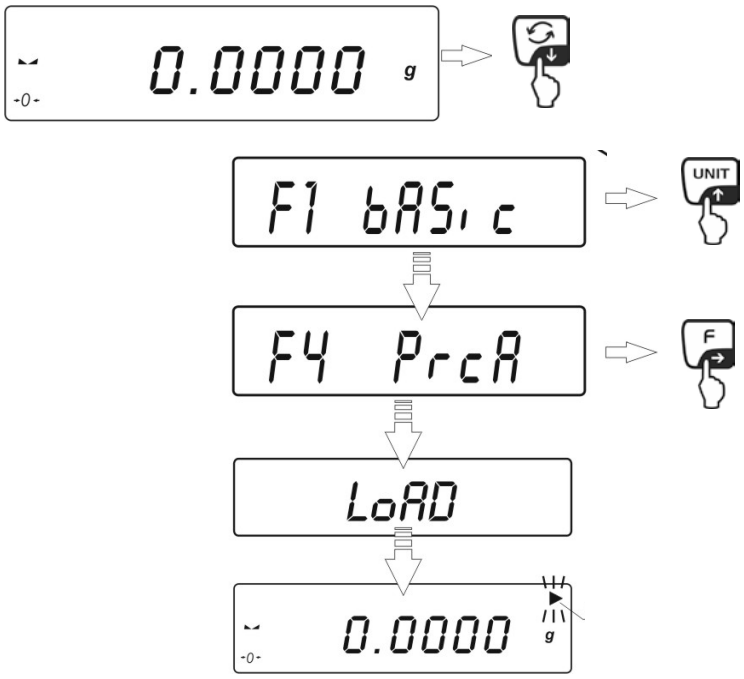
- **Return to weighing mode**



13.3 Percent determination

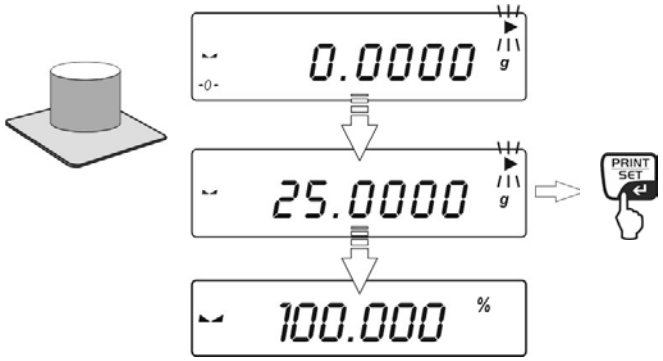
Percent determination allows weight display in percent, in relation to a reference weight. The reference weight can either be determined by weighing (F4 PrcA) or entered numerically (F4 Prcb).

13.3.1 Determining the reference weight by weighing (function F4 PrcA)

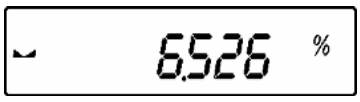


⇨ 100 % equals placing.

⇨ Confirm by pressing the **PRINT**-key and the weight will be adopted as reference (100%).

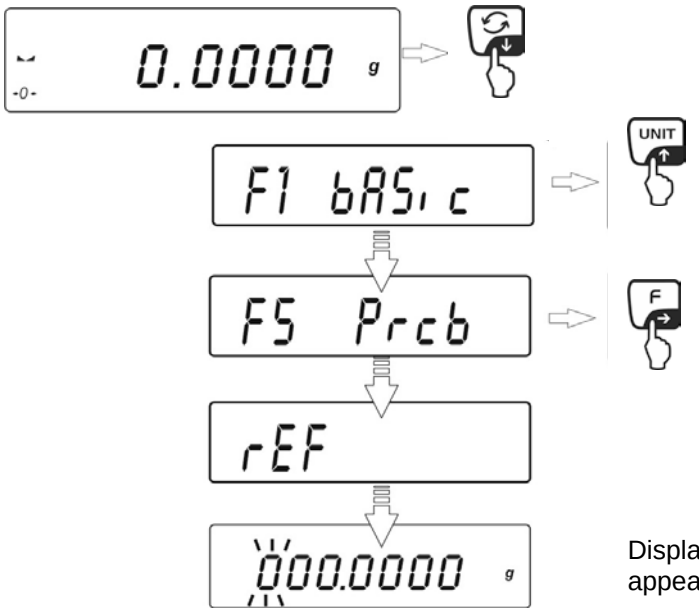


⇨ Remove reference weight; from here the weight of load is shown in percent based on the reference weight.



English

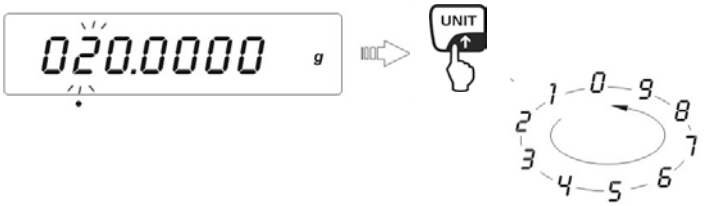
13.3.2 Numeric entry of reference weight (function F4 Prcb)



Display for entering reference (= 100%) appears.

⇨ Enter percentage of your choice, using cursor keys.

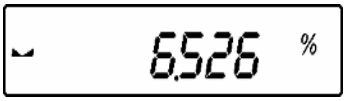
⇨ Select the digit to be change by pressing the **F**-key; each time the currently active digit will be blinking.



⇨ Select the digit by pressing the **UNIT** key

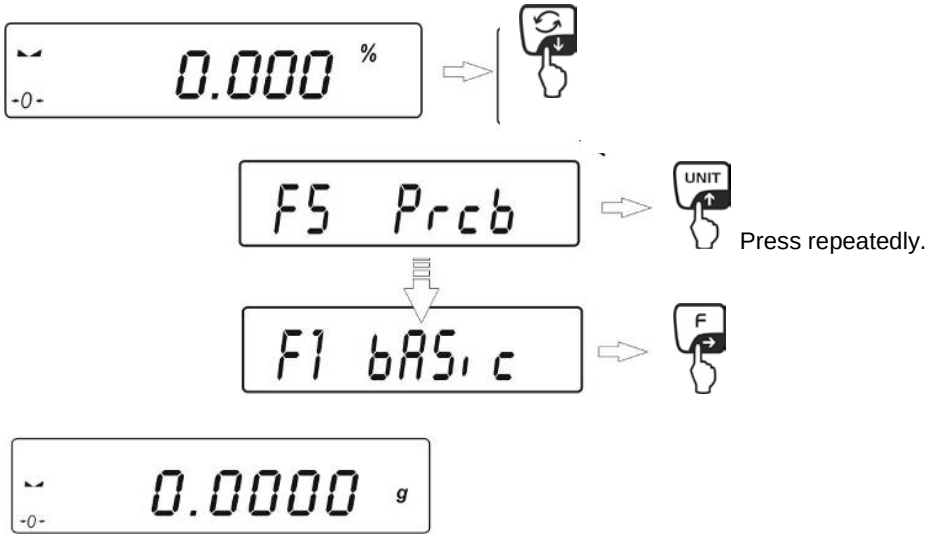
⇨ Confirm by pressing the **PRINT** key

From now on the weight of the load will be shown in percent based on the reference weight.



English

Return to weighing mode:

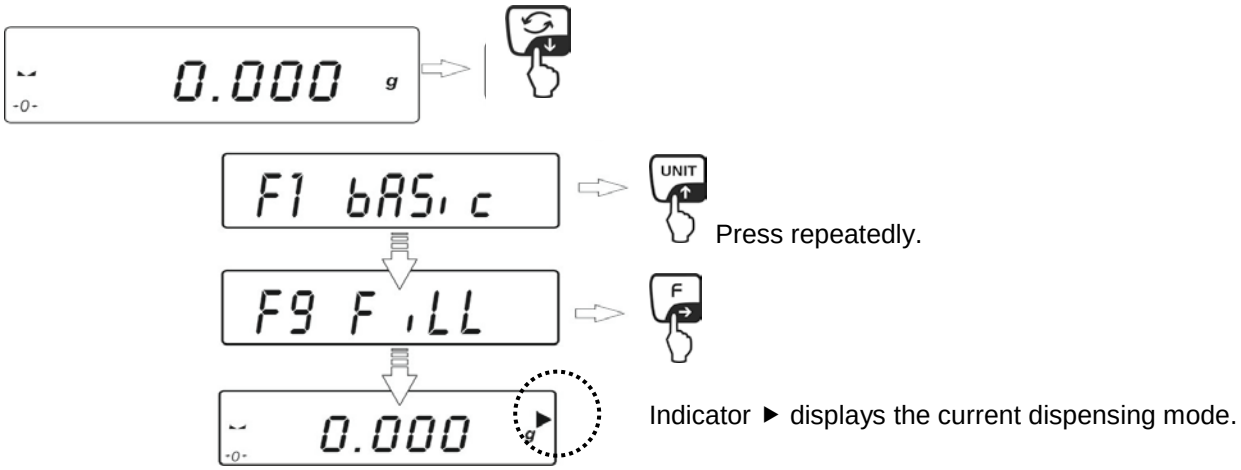


English

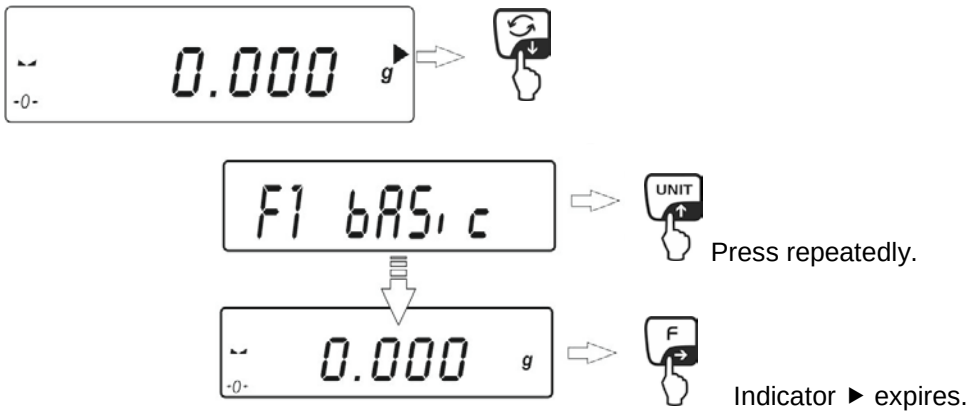
13.4 Dosing

The weighing scale works at an increase display speed when dispensing mode is enabled (factory setting).
However, please keep in mind that the weighing scale reacts very sensitively to ambient conditions.
To disable the setting "**P6 Func → P6.1 FFun → All**" set function "F9 Fill" to "n"; see chap. 9.7

- **Enabling dispensing mode**



- **Return to weighing mode**



English

13.5 Determining the density of solid matter and fluids

For determining density we recommend that you work with the optionally available density kit KERN AES-A01N. This contains all the accessories and aids required for easy and precise density determination.
For instructions please see the operating instructions enclosed with the density kit.

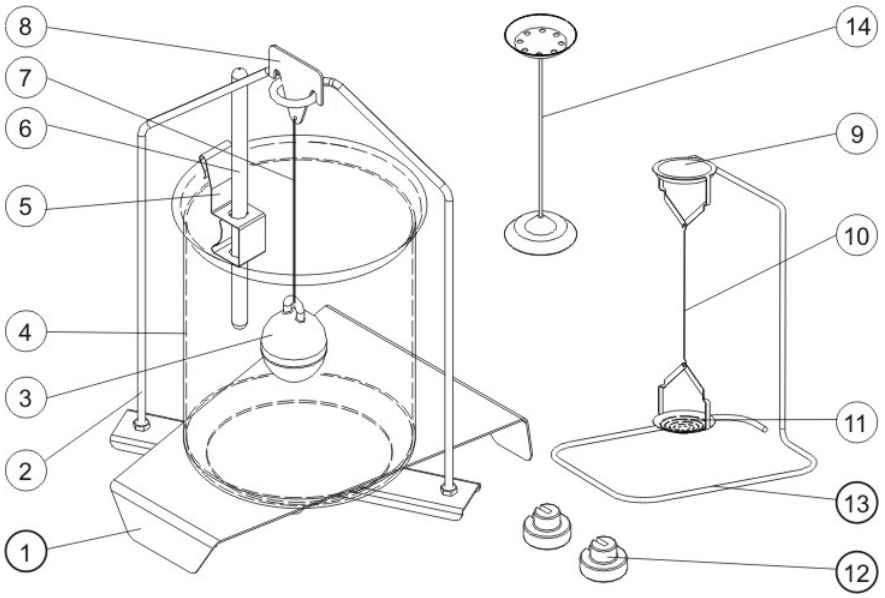


Fig.: KERN AES-A01N

No.	Description		
1	Platform for glass beaker	8	Hook for plummet
2	Frame	9	Sample dish
3	Glass sinker	10	Wire
4	Beaker	11	Filter bowl
5	Holder for thermometer	12	Additional weights
6	Thermometer	13	Additional frame (tray for sample dishes/plummets)
7	Wire	14	Immersion basket for density < 1g/cm^3

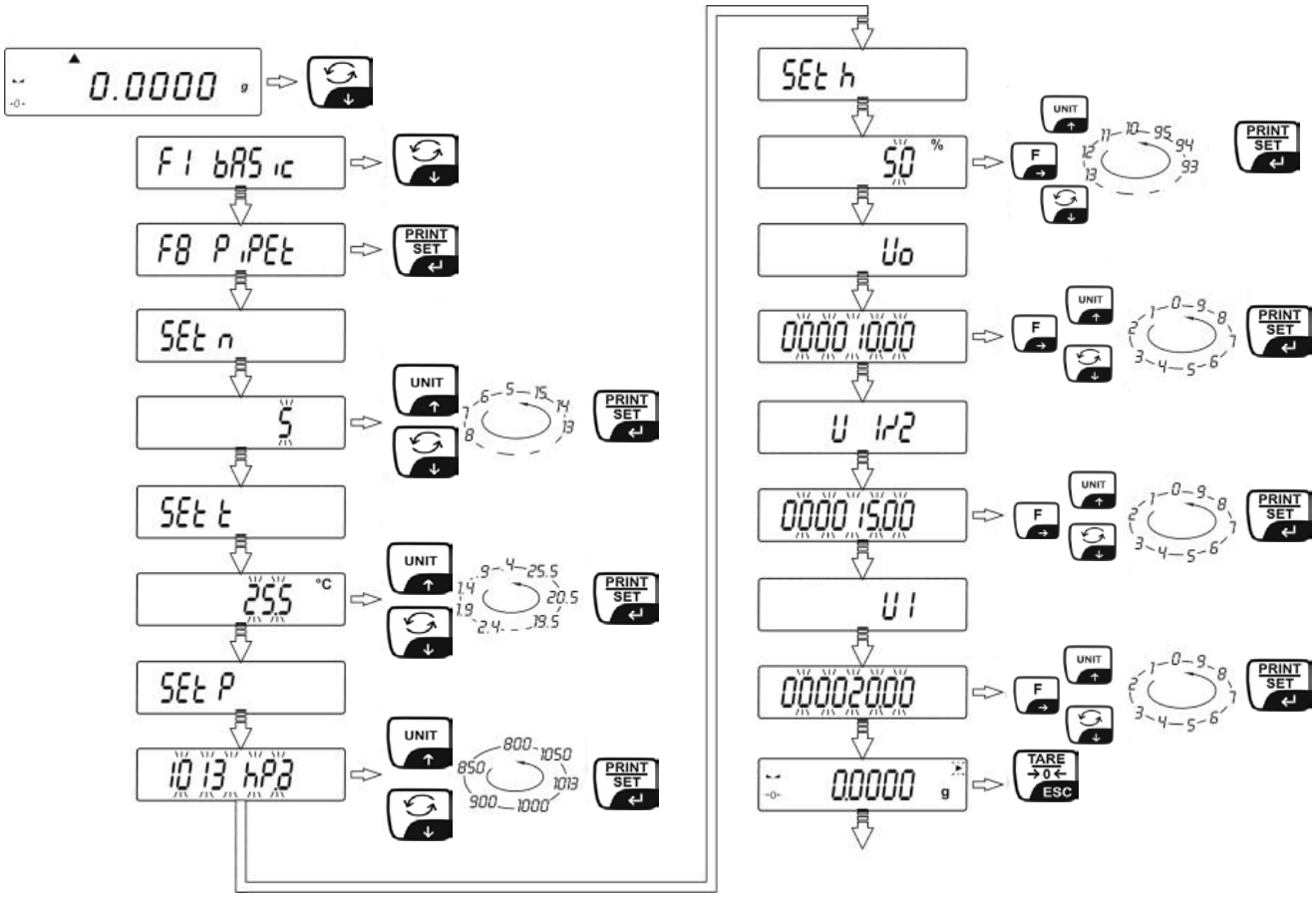
English

13.6 Pipette calibration

13.6.1 Entering parameters

Prior to measuring you will have to enter the parameters below.

Parameters	Description
Set n	Number of measurements per test volume, selectable from 5 -15 measurements
Set t	Test temperature, selectable from 0.4 – 25.5°C
Set P	Air pressure test chamber, selectable from 800 – 1050 hPa
Set h	Air humidity test chamber, selectable from 10 – 95 %
	For devices with a fixed volume, test volume equals nominal volume. For devices with variable volume, the following three volumes need to be tested:
V_0	The lower limit for the effective volume or 10 % of the nominal volume [µl], depending on whichever is the larger.
$V_{1/2}$	About 50 % of the nominal volume [µl]
V_1	Nominal volume [µl]



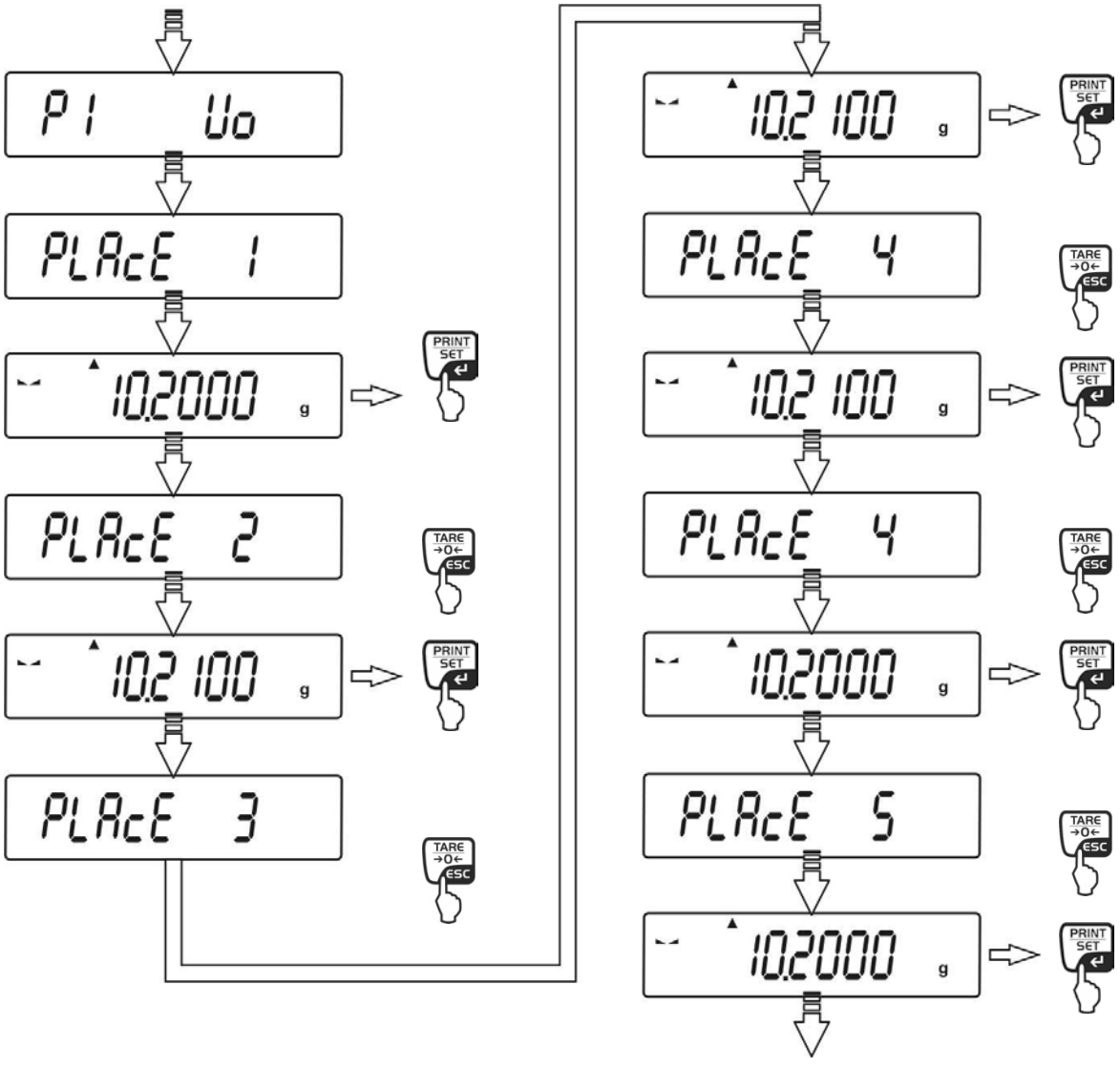
13.6.2 Carry out series of measurements for test volume V_0

⇨ After entering all parameters (See chap. 13.6.1), position the weighing vessel, wait for the stability display to appear, then tare by pressing the **TARE**-key; **P1 V_0** will appear, followed by **Place 1**.

1. Dispense the test fluid (such as distilled water) into the weighing vessel of conduit "**V_0**".
2. Wait for stability display, then press the **PRINT** button. **Place 2** followed by the current weight display will appear.
3. Tare, by pressing the **TARE**-key.

⇨ Repeat this test cycle (steps 1 -3) as often as set in "**Set n**" (see chap. 13.6.1).

⇨ After the last test cycle has been confirmed, a display announcing the start of the second series of measurements "**P2 $V_{1/2}$**", followed by **Place 1**, see chap. 13.6.3, will appear.



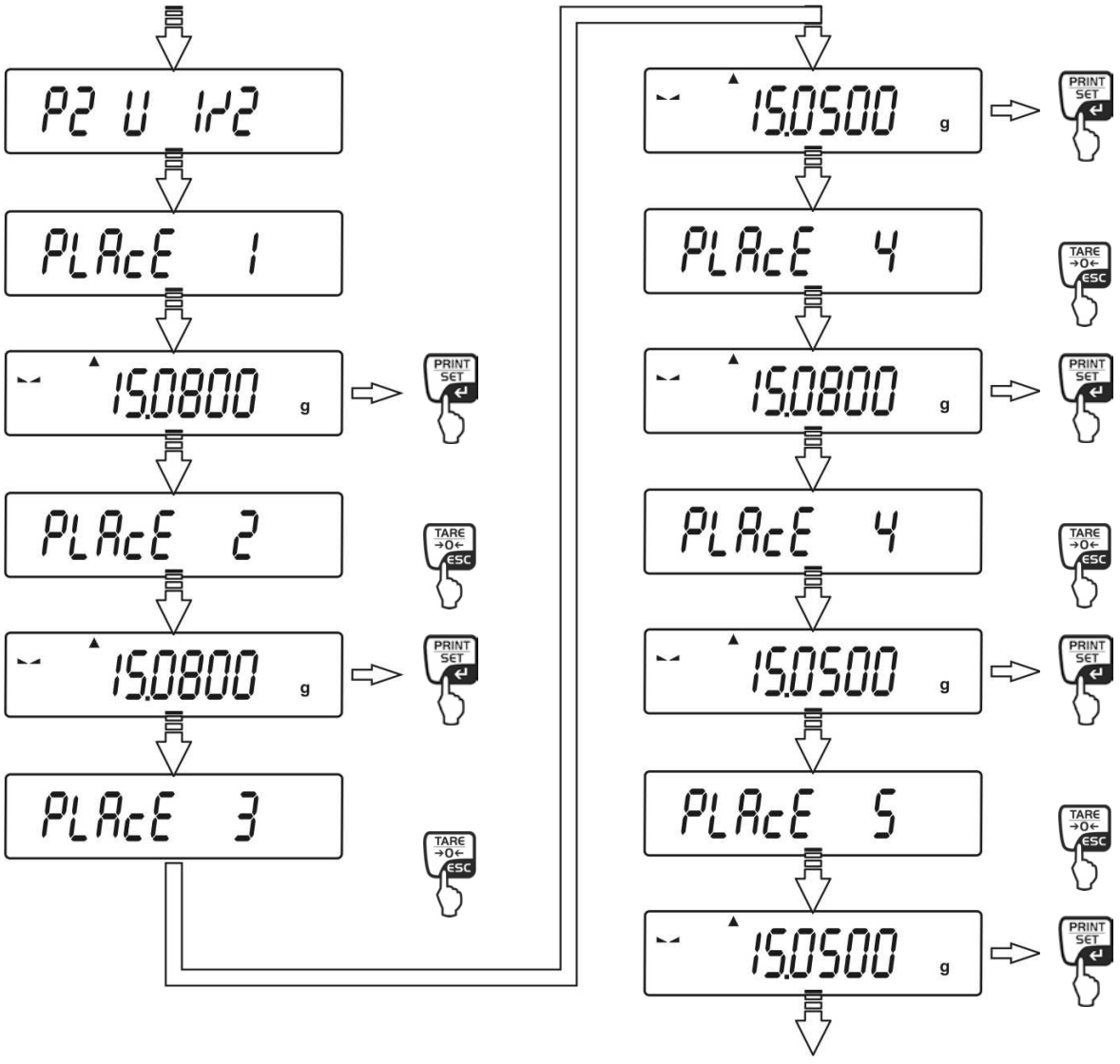
13.6.3 Carry out series of measurements for test volume $V_{1/2}$

⇨ Carry out the second series of measurements by following the same sequence of operations as the first, see chap. 13.6.2

1. Dispense the test fluid (such as distilled water) into the weighing vessel of conduit "**$V_{1/2}$**" to be measured.
2. Wait for stability display, then press the **PRINT** button. **Place 2** followed by the current weight display will appear.
3. Tare, by pressing the **TARE**-key.

⇨ Repeat this test cycle (steps 1 -3) as often as set in "**Set n**"
(See chap. 13.6.1).

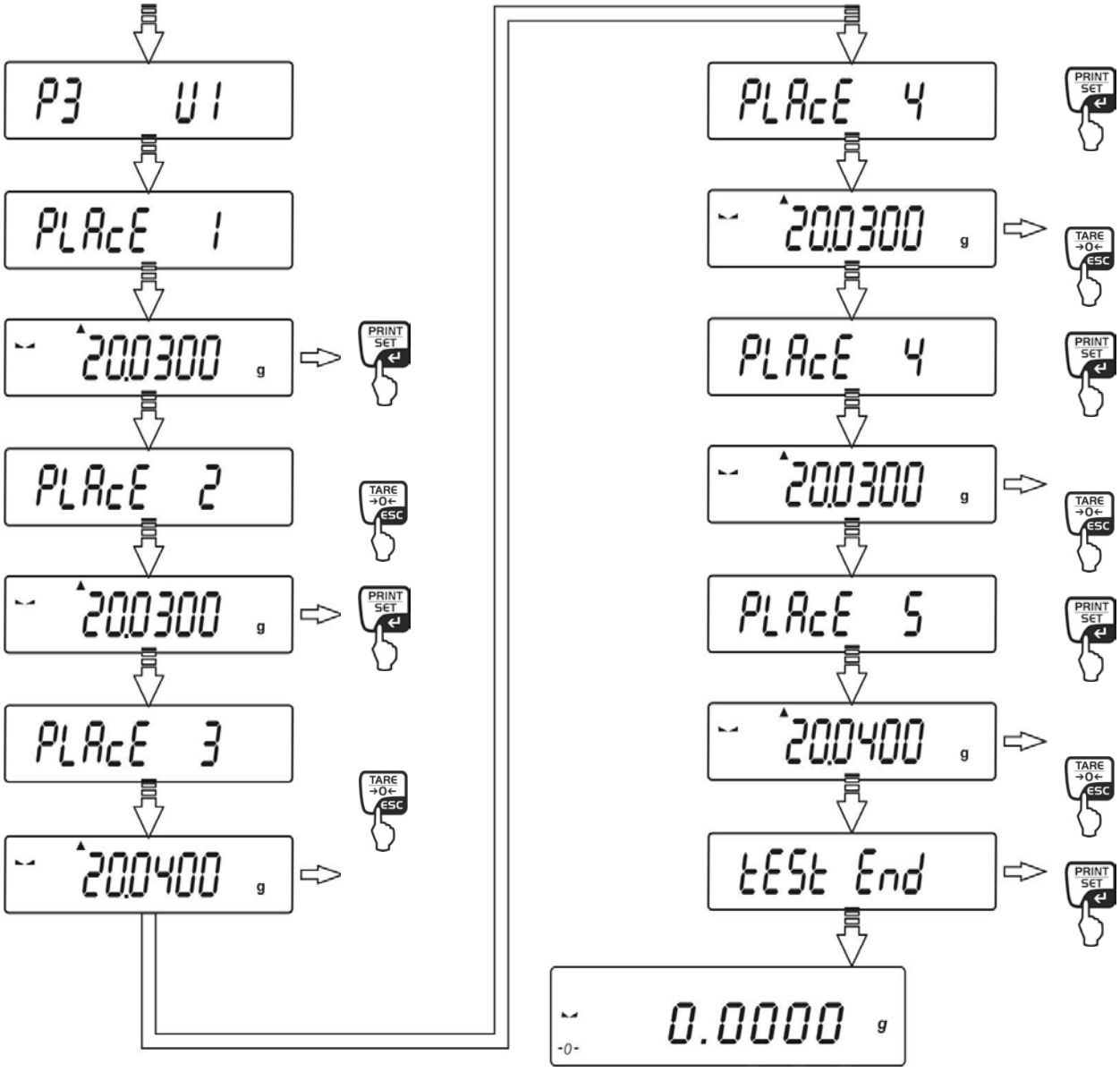
⇨ After the last test cycle has been confirmed a display announcing the start of the third series of measurements "**P2 V_1**", followed by **Place 1**, see chap. 13.6.4, will appear.



13.6.4 Carry out series of measurements for test volume V_1

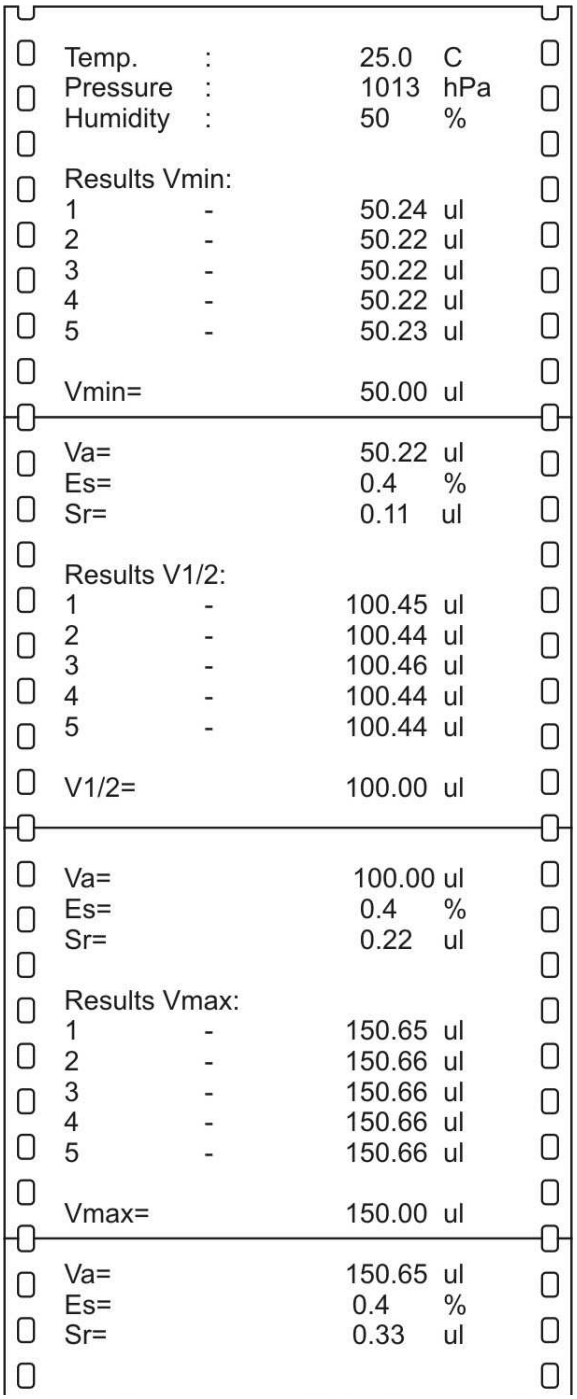
⇨ Carry out the third series of measurements by following the same sequence of operations as the previous.

1. Dispense the test fluid (such as distilled water) into the weighing vessel of conduit "**V_1**" to be measured.
2. Wait for stability display, then press the **PRINT** button. **Place 2** followed by the current weight display will appear.
3. Tare, by pressing the **TARE**-key.
4. Repeat this test cycle (steps 1 -3) as often as set in "**Set n**" (See chap. 13.6.1).
5. After the last test cycle has been confirmed by pressing the **PRINT**-key a protocol will be issued via the RS232 interface. See printout example below.



English

Printout example “calibration data“:



```
Temp.      :        25.0   C
Pressure   :        1013   hPa
Humidity   :        50     %

Results Vmin:
1          -        50.24  ul
2          -        50.22  ul
3          -        50.22  ul
4          -        50.22  ul
5          -        50.23  ul

Vmin=               50.00  ul
-------------------------------
Va=                 50.22  ul
Es=                 0.4    %
Sr=                 0.11   ul

Results V1/2:
1          -       100.45  ul
2          -       100.44  ul
3          -       100.46  ul
4          -       100.44  ul
5          -       100.44  ul

V1/2=               100.00  ul
-------------------------------
Va=                 100.00 ul
Es=                  0.4    %
Sr=                  0.22   ul

Results Vmax:
1          -       150.65  ul
2          -       150.66  ul
3          -       150.66  ul
4          -       150.66  ul
5          -       150.66  ul

Vmax=               150.00  ul
-------------------------------
Va=                 150.65  ul
Es=                  0.4    %
Sr=                  0.33   ul
```

V_{min} (V_0)	The lower limit for the effective volume or 10 % of the nominal volume [µl], depending on whichever is the larger.
$V_{1/2}$	About 50 % of the nominal volume [µl]
V_{max} (V_1)	Nominal volume [µl]
V_a	Arithmetic mean from measurement series
E_s	Systematic measurement deviation
S_r	Standard Deviation

14 Data output RS 232 “P4 Print“

You can print weighing data automatically via the RS 232C interface or manually pressing the **PRINT** button via the interface according to the setting in the menu.

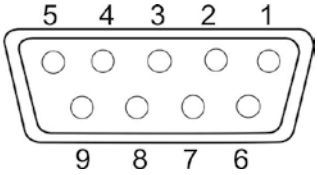
This data exchange is asynchronous using ASCII - Code.

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.

14.1 Technical data

Connection	9 pin d-subminiature bushing



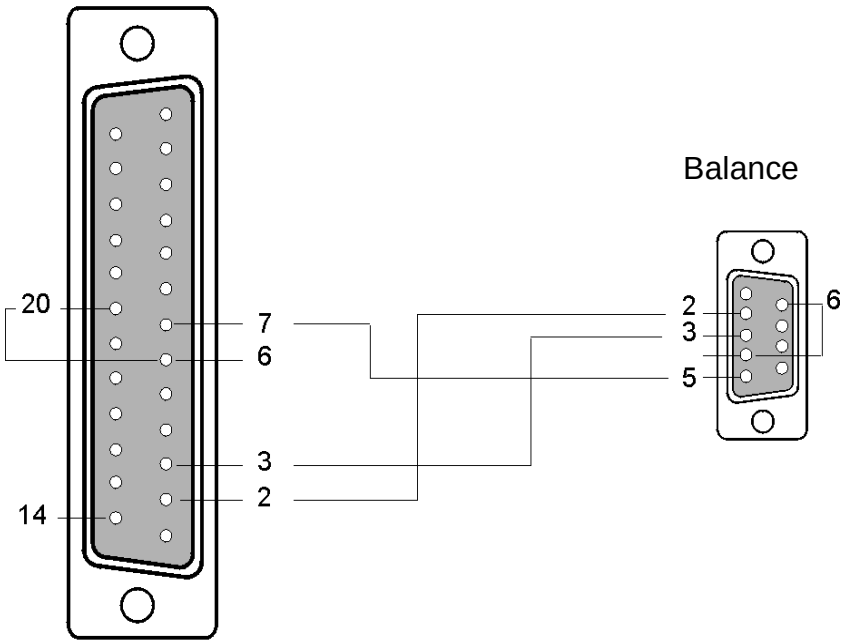
Pin 2: Receive data
Pin 3: Transmit data
Pin 5: Signal ground

Baud rate	2400/4800/9600/19200 selectable
Parity	8 bits, no parity / 1 stop bit
Transfer modes	• Manually after pressing the **PRINT** key • Automatically according to stability display • Continuously, according to setting • On request by external device (For remote control commands, see chap. 14.6)

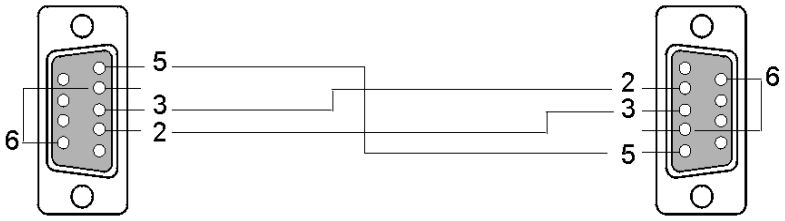
English

14.2 Interface cable

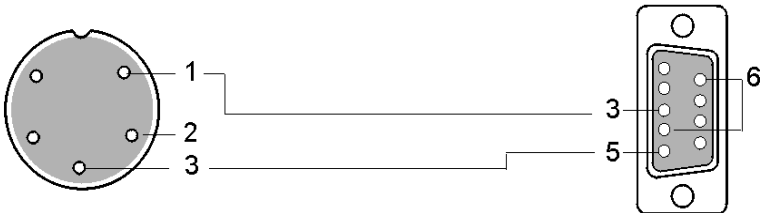
PC 25 poles



PC 9 poles



Printer



Balance
2 (RxD)
3 (TxD)
4 (DTR)
5 (GND)
6 (DSR)
7 (RTS)
8 (CTS)

English

14.3 Menu settings “P4 PRINT“

Menu call “P4 PRINT“, see chap. 8.1.

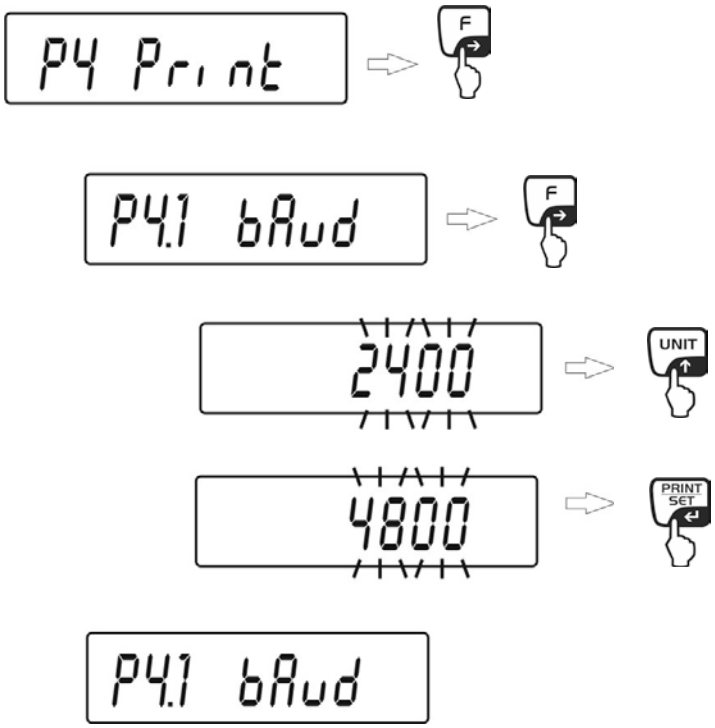
Menu overview

Function	Settings	Description of options
P4.1 bAud	2400 bit/s	Transfer speed
	4800 bit/s *	
	9600 bit/s	
	19200 bit/s	
P4.2 CntA	no*	Continuous output disabled in standard weighing unit, Output requires key operation
	YES	Continuous output in standard weighing unit
P4.3 Cntb	no*	Continuous output disabled in current weighing unit, output requires key operation
	YES	Continuous output in current weighing unit
P4.4 rEPL	no*	Manual issue after pressing the PRINT key.
	YES	Automatic issue of first stable weighing value Sequence of operations: 1. Taring 2. Place weight, issue of first stable weighing value 3. Renewed output only possible after weight was removed. Prerequisite: Display +/- 50 display steps from zero. 4. Place next weight.
P4.5 PStb Locked in models with type approval certificate	no	Output even for unstable weighing value
	YES*	Output for stable weighing value only
P4.6 Lo	0.01*	Input minimum weight for automatic output: Weighing value issued automatically if current weighing value exceeds entered minimum value. The next weighing value will not be issued unless the weighing value has meanwhile dropped below the entered weighing value.

Factory settings are marked by *.

English

1. Baud rate

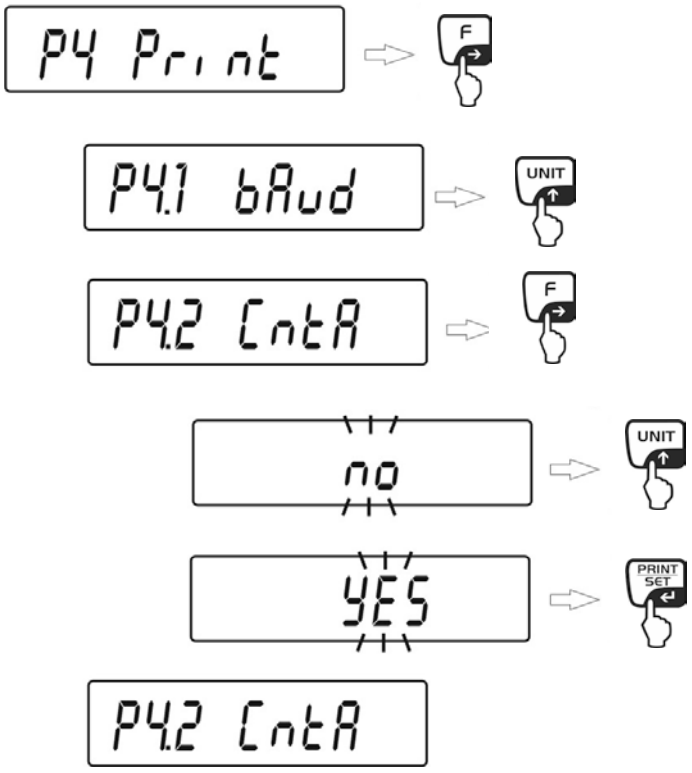


English

⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.

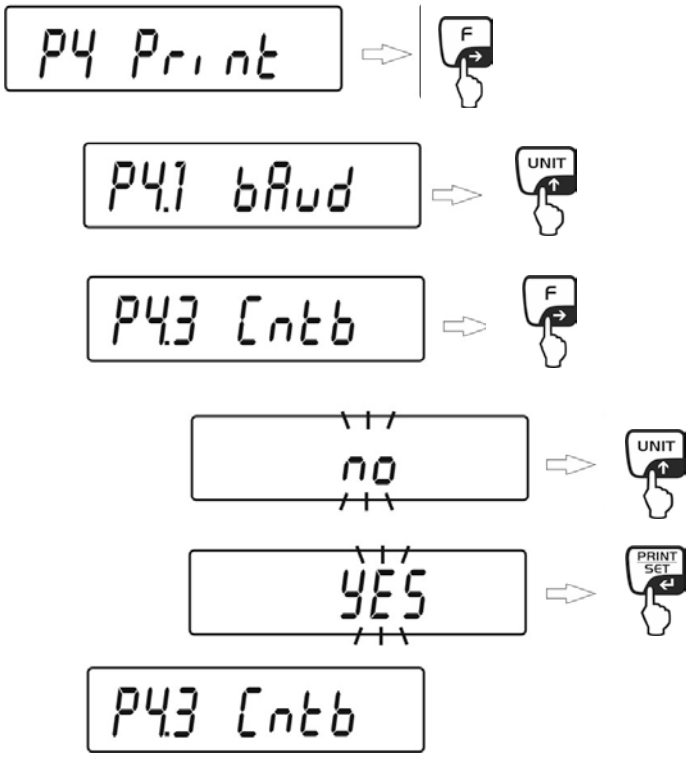
⇨ Return to weighing mode, see chap. 8.2.

2. Continuous output in standard weighing unit



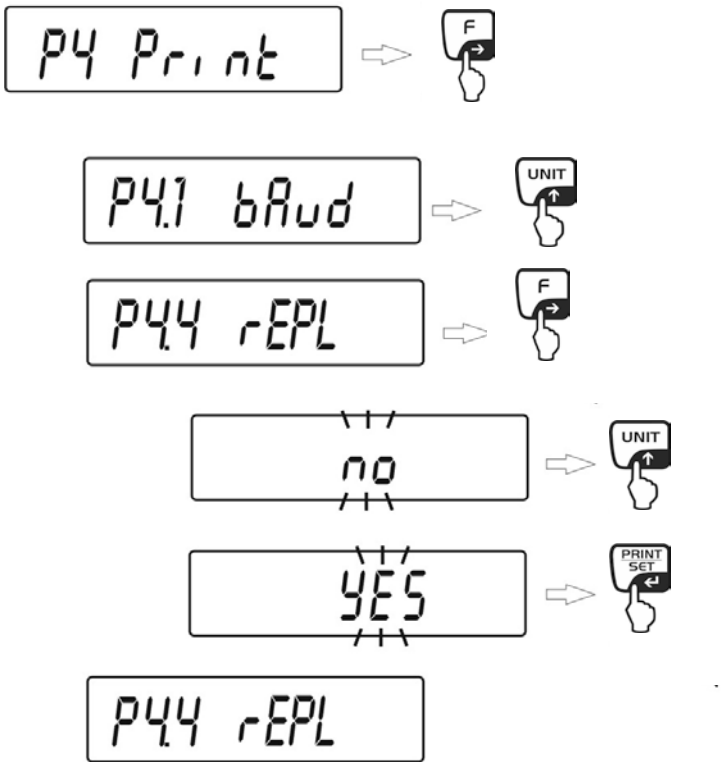
⇨ Confirm your selection by pressing the **PRINT**-key; balance will return to menu.
⇨ Return to weighing mode, see chap. 8.2.

3. Continuous output in current weighing unit



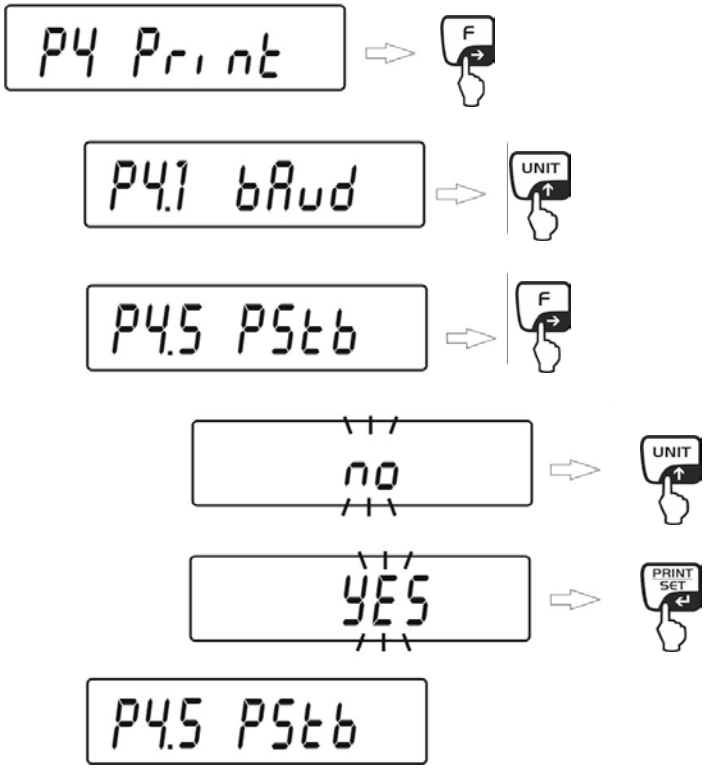
⇨ Confirm your selection by pressing the **PRINT**-key; weighing scale will return to menu.
⇨ Return to weighing mode, see chap. 8.2.

4. Set manual or automatic output



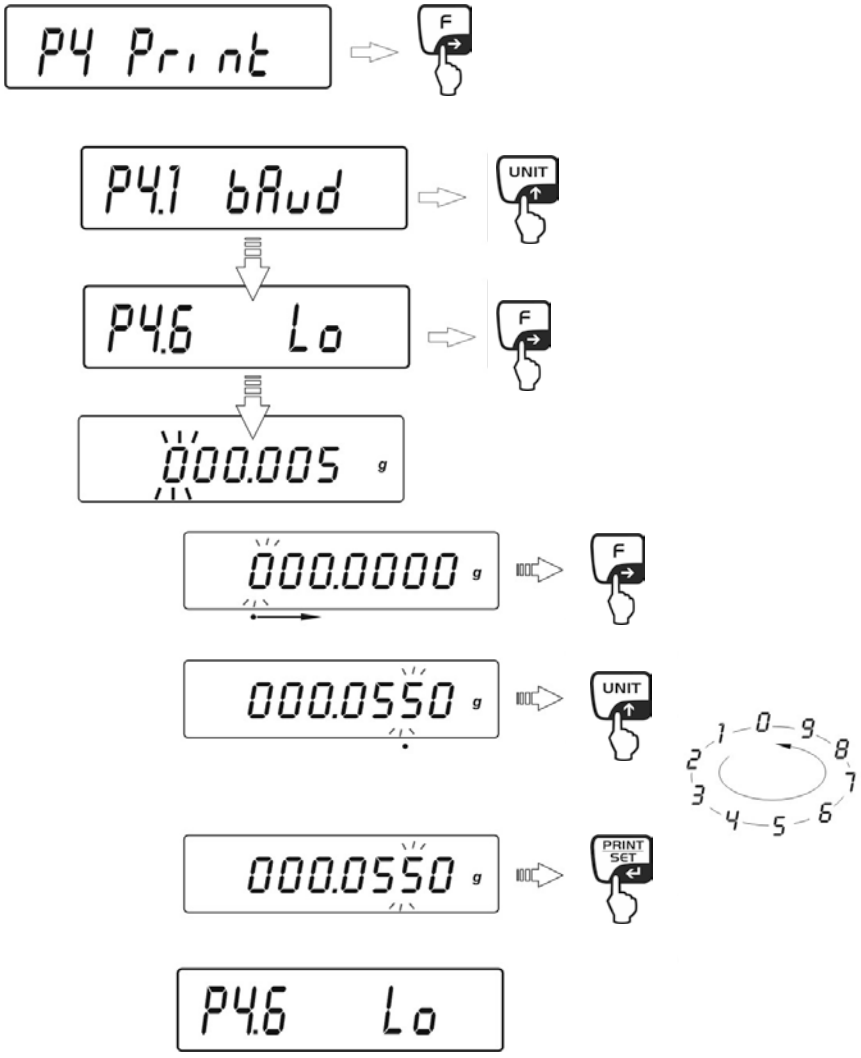
⇨ Confirm your selection by pressing the **PRINT**-key; balance will return to menu.
⇨ Return to weighing mode, see chap. 8.2.

5. Set output stable/instable weighing values



⇨ Confirm your selection by pressing the **PRINT**-key; balance will return to menu.
⇨ Return to weighing mode, see chap. 8.2.

6. Set minimum weight for automatic output



English

14.4 Printout examples (KERN YKB-01N)

Stable weighing value	19.9994 g
Instable weighing value	? 29.6343 g
Negative weighed value	- 19.9997 g
Positive weighing value	19.9994 g
Overload	^
Percent determination	24.995 %
Parts counting	10 pcs

English

14.5 Output log

14.5.1 Issue after pressing the PRINT ´button

Stable or instable weighing values are sent according to menu settings “P4.5” PStb (see chap. 14.3)

Data record format:

1	2	3	4 - 12	13	14 - 16	17	18
Stability display	Blank	Signs	Weight value	Blank	Unit	CR	LF

Stability display	Blank character for stable value
	? For instable value
	^ for excess load
	v for underload
Signs	Blank character for positive value
	Minus sign for negative value
Weight value	9 signs, right justified
Unit	3 signs, left justified

English

14.5.2 PC controlled output

Response message of balance after remote instruction was sent:

XX_	Instruction:
XX_A CR LF	Instruction accepted; will be executed
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:

1 - 3	4	5	6	7	8 - 16	17	18 - 20	21	22
Remote control command	Blank	Stability display	Blank	Signs	Weight value	Blank	Unit	CR	LF

Instruction:	1. up to 3 signs
Stability display	Blank character for stable value
	? For instable value
	^ for excess load
	v for underload
Signs	Blank character for positive value
	Minus sign for negative value
Weight value	9 signs, right justified
Unit	3 signs, left justified

14.5.3 Output of date/time

The display of date and time can be enabled under menu item "**P2 GLP**" (see chap. 12):

- **PdAt – yes**
- **Ptin - yes**

14.6 Remote control instructions

Commands	Function
T CR LF	Taring
Z CR LF	Zeroing
SI CR LF	Send weighing value in standard weighing unit immediately
S CR LF	Send stable weighing value in standard weighing unit
SU CR LF	Send stable weighing value in current weighing value
SUI CR LF	Send weighing value immediately in current weighing unit
C1 CR LF	Start continuous output in standard weighing unit
C0 CR LF	Stop continuous output in standard weighing unit
CU1 CR LF	Start continuous output in current weighing unit
U0 CR LF	Stop continuous output in current weighing unit

	In the case of faulty entries the weighing balance generates feedback message “ES CR LF”.

English

15 Service, maintenance, disposal

Before any maintenance, cleaning and repair work disconnect the appliance from the operating voltage.

15.1 Cleaning

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. Polish 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.

15.2 Service, maintenance

- ⇨ The appliance may only be opened by trained service technicians who are authorized by KERN.
- ⇨ Ensure that the balance is regularly calibrated, see chap. Testing instruments control.

15.3 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.

16 Instant help

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

Fault	Possible cause
The displayed weight does not glow.	• The balance is not switched on. • The mains supply connection has been interrupted (mains cable not plugged in/faulty). • Power supply interrupted.
The displayed weight is permanently changing	• Draught/air movement • Glass doors not closed • Table/floor vibrations • Weighing pan has contact with other objects. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)
The weighing result is obviously incorrect	• The display of the balance is not at zero • Adjustment is no longer correct. • The balance is on an uneven surface. • Great fluctuations in temperature. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)
Automatic adjustment carried out frequently.	• Severe temperature variations in the room or the instrument
No data transfer between printer and balance.	• Communication settings are wrong.
The menu setting cannot be changed.	• Menu item is locked for models with type approval certificate.

English

16.1 Error messages

Er1 Hi	Initial weight error
Er2 nuLL	Value below allowed range
Er3 FuL1	Value above allowed range
Er4 FuL2	Weighing range exceeded
Er5 rout	Value outside allowed range e.g. tare value <= 0, Reference weight = 0
Er7 tout	Disconnecting time too short
Er8 outr	Entry exceeding permitted range for instance during tolerance control: entry upper limit<lower limit
Er9 Lock	Function blocked
Er10 cal	Adjustment error e.g. incorrect adjustment weight

17 Declaration of conformity

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Declaration of conformity

EC-Konformitätserklärung
EC- Déclaration de conformité
EC-Dichiarazione di conformità
EC- Declaração de conformidade
EC-Deklaracja zgodności

EC-Declaration of -Conformity
EC-Declaración de Conformidad
EC-Conformiteitverklaring
EC- Prohlášení o shode
EC-Заявление о соответствии

D	Konformitäts-erklärung	Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.
GB	Declaration of conformity	We hereby declare that the product to which this declaration refers conforms with the following standards.
CZ	Prohlášení o shode	Tímto prohlašujeme, že výrobek, kterého se toto prohlášení týká, je v souladu s níže uvedenými normami.
E	Declaración de conformidad	Manifestamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes
F	Déclaration de conformité	Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.
I	Dichiarazione di conformitá	Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.
NL	Conformiteit-verklaring	Wij verklaren hiermede dat het product, waarop deze verklaring betrekking heeft, met de hierna vermelde normen overeenstemt.
P	Declaração de conformidade	Declaramos por meio da presente que o produto no qual se refere esta declaração, corresponde às normas seguintes.
PL	Deklaracja zgodności	Niniejszym oświadczamy, że produkt, którego niniejsze oświadczenie dotyczy, jest zgodny z poniższymi normami.
RUS	Заявление о соответствии	Мы заявляем, что продукт, к которому относится данная декларация, соответствует перечисленным ниже нормам.

Electronic Balance: KERN AEJ_NM / AES_N

EU Directive	**Standards**
2004/108/EC	EN 61326-1 : 2006
2006/95/EC	EN 61010-1: 2010

Datum 26.03.2013
Date

Ort der Ausstellung 72336 Balingen
Place of issue

Signatur
Signature

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English