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Operating manual
Industrial Scales

KERN EOC

Version 1.1
2017-11
GB

EOC-BA-e-1711

GB

KERN EOC

Version 1.1 2017-11

Operating manual

Platform balance

English

Contents

English

1 Technical data

KERN	EOC 6K-3	EOC 6K-4A	EOC 10K-3
Readability (d)	1 g / 2 g	0.5 g	2 g / 5 g
Weighing range (max)	3 kg / 6 kg	6 kg	6 kg / 12 kg
Minimum piece weight	0.25 g	0.25 g	0.5 g
Reproducibility	1 g / 2 g	0.5 g	2 g / 5 g
Linearity	± 3 g / 6 g	1.5 g	± 6 g / 15 g
Warm-up time	10 minutes	30 minutes	10 minutes
Reference unit weights at piece count	10, 20, 50, 100, 200		
Weighing Units	Details **„Weighing units“** chapter 7.6		
Recommended adjustment weight, not added (class) Details for **„Selection of the Adjustment weight“** in chapter 7.6	6 kg (M1)	6 kg (F2)	12 kg (M1)
Stabilization time (typical)	3 sec.		
Electric Supply	100 V - 240 V, 50 / 60 Hz		
Auto Off	off, 3 min., 5 min., 15 min., 30 min.		
Operating temperature	- 10° C .... + 40° C		
Humidity of air	max. 80 % (not condensing)		
Terminal (B x D x H) mm	268 x 115 x 80		
Platform (B x D x H)mm	300 x 300 x 100	300 x 300 x 100	300 x 300 x 100
Weight kg (net)	5.2	5.2	5.2

KERN	EOC 10K-3A	EOC 10K-4	EOC 20K-3A
Readability (d)	1 g	0,2 g / 0,5 g	2 g
Weighing range (max)	12 kg	6 kg / 15 kg	24 kg
Minimum piece weight	0.5 g	0.5 g	1 g
Reproducibility	1 g	0.2 g / 0.5 g	2 g
Linearity	± 3 g	± 0.6 g / 1.5 g	± 6 g
Warm-up time	30 minutes	2 hours	30 minutes
Reference unit weights at piece count	10, 20, 50, 100, 200		
Weighing Units	Details **„Weighing units“** chapter 7.6		
Recommended adjustment weight, not added (class) Details for **„Selection of the Adjustment weight“** in chapter 7.6	12 kg (F2)	15 kg (F2)	24 kg (F2)
Stabilization time (typical)	3 sec.		
Electric Supply	100 V - 240 V, 50 / 60 Hz		
Auto Off	off, 3 min., 5 min., 15 min., 30 min.		
Operating temperature	- 10° C .... + 40° C		
Humidity of air	max. 80 % (not condensing)		
Terminal (B x D x H) mm	268 x 115 x 80		
Platform (B x D x H)mm	300 x 300 x 100	300 x 300 x 100	300 x 300 x 100
Weight kg (net)	5.2	5.2	5.2

English

KERN	EOC 30K-3	EOC 30K-3L	EOC 30K-4
Readability (d)	5 g / 10 g	5 g / 10 g	0,5 g / 1 g
Weighing range (max)	15 kg / 35 kg	15 kg / 35 kg	15 kg / 35 kg
Minimum piece weight	1 g	1 g	1 g
Reproducibility	5 g / 10 g	5 g / 10 g	0.5 g / 1 g
Linearity	± 15 g / 30 g	± 15 g / 30 g	± 1.5 g / 3 g
Warm-up time	10 minutes	10 minutes	2 hours
Reference unit weights at piece count	10, 20, 50, 100, 200		
Weighing Units	Details **„Weighing units“** chapter 7.6		
Recommended adjustment weight, not added (class) Details for **„Selection of the Adjustment weight“** in chapter 7.6	30 kg (M1)	30 kg (M1)	30 kg (M1)
Stabilization time (typical)	2 sec.		
Electric Supply	100 V - 240 V, 50 / 60 Hz		
Auto Off	off, 3 min., 5 min., 15 min., 30 min.		
Operating temperature	- 10° C .... + 40° C		
Humidity of air	max. 80 % (not condensing)		
Terminal (B x D x H) mm	268 x 115 x 80		
Platform (B x D x H)mm	300 x 300 x 110	500x400x120	500x400x120
Weight kg (net)	5.2	9.0	9.0

English

KERN	EOC 60K-2	EOC 60K-2L	EOC 60K-3
Readability (d)	10 g / 20 g	10 g / 20 g	1 g / 2 g
Weighing range (max)	30 kg / 60 kg	30 kg / 60 kg	30 kg / 60 kg
Minimum piece weight	2 g	2 g	2 g
Reproducibility	10 g / 20 g	10 g / 20 g	1 g / 2 g
Linearity	± 30 g / 60 g	± 30 g / 60 g	± 3 g / 6 g
Warm-up time	10 minutes	10 minutes	2 hours
Reference unit weights at piece count	10, 20, 50, 100, 200		
Weighing Units	Details **„Weighing units“** chapter 7.6		
Recommended adjustment weight, not added (class) Details for **„Selection of the Adjustment weight“** in chapter 7.6	60 kg (M1)	60 kg (M1)	60 kg (M1)
Stabilization time (typical)	2 sec.		
Electric Supply	100 V - 240 V, 50 / 60 Hz		
Auto Off	off, 3 min., 5 min., 15 min., 30 min.		
Operating temperature	- 10° C .... + 40° C		
Humidity of air	max. 80 % (not condensing)		
Terminal (B x D x H) mm	268 x 115 x 80		
Platform (B x D x H)mm	300 x 300 x 110	500x400x120	300 x 300 x 110
Weight kg (net)	5.2	9.0	5.2

English

KERN	EOC 60K-3A	EOC 60K-3L	EOC 100K-2
Readability (d)	5 g	1 g / 2 g	20 g / 50 g
Weighing range (max)	60 kg	30 kg / 60 kg	60 kg / 150 kg
Minimum piece weight	2 g	2 g	5 g
Reproducibility	5 g	1 g / 2 g	20 g / 50 g
Linearity	± 15 g	± 3 g / 6 g	± 60 / 150 g
Warm-up time	30 minutes	2 hours	10 minutes
Reference unit weights at piece count	10, 20, 50, 100, 200		
Weighing Units	Details **„Weighing units“** chapter 7.6		
Recommended adjustment weight, not added (class) Details for **„Selection of the Adjustment weight“** in chapter 7.6	60 kg (F2)	60 kg (M1)	150 kg (M1)
Stabilization time (typical)	2 sec.		
Electric Supply	100 V - 240 V, 50 / 60 Hz		
Auto Off	off, 3 min., 5 min., 15 min., 30 min.		
Operating temperature	- 10° C .... + 40° C		
Humidity of air	max. 80 % (not condensing)		
Terminal (B x D x H) mm	268 x 115 x 80		
Platform (B x D x H)mm	300 x 300 x 110	500 x 400 x 120	300 x 300 x 110
Weight kg (net)	5.2	9.0	5.2

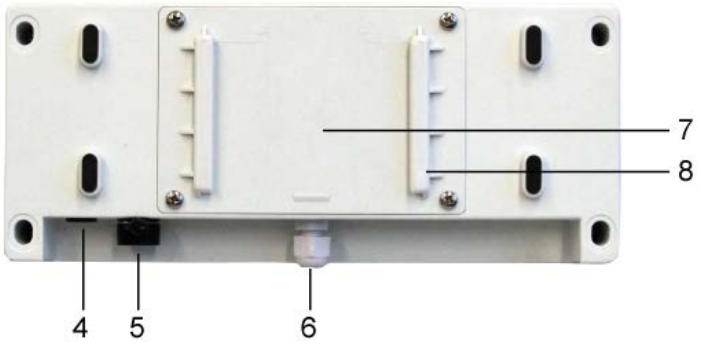
English

KERN	EOC 100K-2L	EOC 100K-2A	EOC 100K-2XL
Readability (d)	20 g / 50 g	10 g	20 g / 50 g
Weighing range (max)	60 kg / 150 kg	120 kg	60 kg / 150 kg
Minimum piece weight	5 g	5 g	5 g
Reproducibility	20 g / 50 g	10 g	20 g / 50 g
Linearity	± 60 / 150 g	± 30 g	± 60 g / 150 g
Warm-up time	10 minutes	30 minutes	10 minutes
Reference unit weights at piece count	10, 20, 50, 100, 200		
Weighing Units	Details **„Weighing units“** chapter 7.6		
Recommended adjustment weight, not added (class) Details for **„Selection of the Adjustment weight“** in chapter 7.6	150 kg (M1)	120 kg (F2)	150 kg (M1)
Stabilization time (typical)	2 sec.		
Electric Supply	100 V - 240 V, 50 / 60 Hz		
Auto Off	off, 3 min., 5 min., 15 min., 30 min.		
Operating temperature	- 10° C .... + 40° C		
Humidity of air	max. 80 % (not condensing)		
Terminal (B x D x H) mm	268 x 115 x 80		
Platform (B x D x H)mm	500 x 400 x 120	500 x 400 x 120	600 x 500 x 150
Weight kg (net)	9.0	9.0	18.4

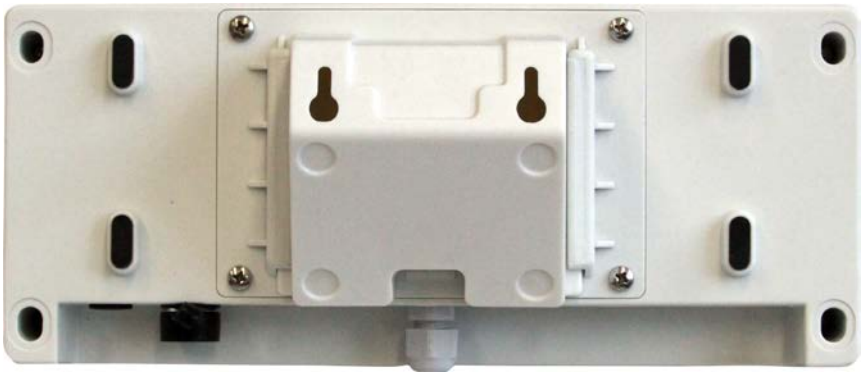
KERN	EOC 100K-2XXL	EOC 100K-3	EOC 100K-3L
Readability (d)	20 g / 50 g	2 g / 5 g	2 g / 5 g
Weighing range (max)	60 kg / 150 kg	60 kg / 150 kg	60 kg / 150 kg
Minimum piece weight	10 g	5 g	5 g
Reproducibility	20 g / 50 g	2 g / 5 g	2 g / 5 g
Linearity	± 60 / 150 g	± 6 g / 15 g	± 6 g / 15 g
Warm-up time	10 minutes	2 hours	2 hours
Reference unit weights at piece count	10, 20, 50, 100, 200		
Weighing Units	Details **„Weighing units“** chapter 7.6		
Recommended adjustment weight, not added (class) Details for **„Selection of the Adjustment weight“** in chapter 7.6	150 kg (M1)	150 kg (F2)	150 kg (F2)
Stabilization time (typical)	2 sec.	3 sec.	3 sec.
Electric Supply	100 V - 240 V, 50 / 60 Hz		
Auto Off	off, 3 min., 5 min., 15 min., 30 min.		
Operating temperature	- 10° C .... + 40° C		
Humidity of air	max. 80 % (not condensing)		
Terminal (B x D x H) mm	268 x 115 x 80		
Platform (B x D x H)mm	950 x 500 x 60	300 x 300 x 110 mm	500 x 400 x 120
Weight kg (net)	15.7	5.2	9.0

KERN	EOC 300K-2	EOC 300K-2L	EOC 300K-3
Readability (d)	50 g / 100 g	50 g / 100 g	5 g / 10 g
Weighing range (max)	150 kg / 300 kg	150 kg / 300 kg	150 kg / 300 kg
Minimum piece weight	10 g	10 g	10 g
Reproducibility	50 g / 100 g	50 g / 100 g	5 g / 10 g
Linearity	± 150 / 300 g	± 150 / 300 g	± 15 g / 30 g
Warm-up time	10 minutes	10 minutes	2 hours
Reference unit weights at piece count	10, 20, 50, 100, 200		
Weighing Units	Details **„Weighing units“** chapter 7.6		
Recommended adjustment weight, not added (class) Details for **„Selection of the Adjustment weight“** in chapter 7.6	300 kg (M1)	300 kg (M1)	300 kg (F2)
Stabilization time (typical)	2 sec.	2 sec.	2 sec.
Electric Supply	100 V - 240 V, 50 / 60 Hz		
Auto Off	off, 3 min., 5 min., 15 min., 30 min.		
Operating temperature	- 10° C .... + 40° C		
Humidity of air	max. 80 % (not condensing)		
Terminal (B x D x H) mm	268 x 115 x 80		
Platform (B x D x H)mm	500 x 400 x 120	600 x 500 x 150 mm	500 x 400 x 120
Weight kg (net)	9.0	18.4	9.0

2 Appliance overview

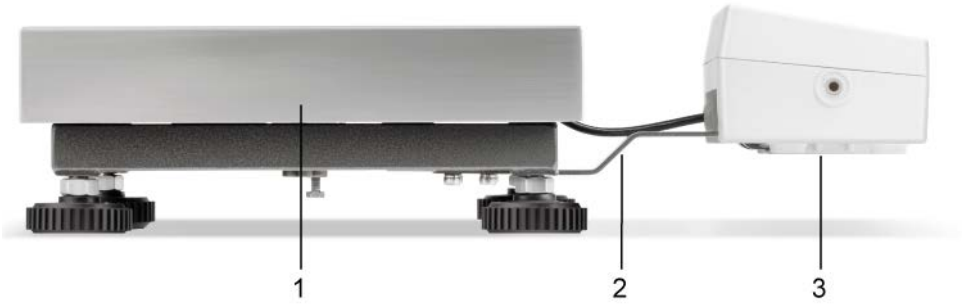


1. Weight display
2. Weighing unit
3. Keyboard
4. Connection of mains adapter
5. RS232
6. Input connection load cell cable
7. Battery compartment
8. Guide rail support base / stand



Support base/Wall fixture

Balance EOC with assembly plate EOC-A03 (optional):



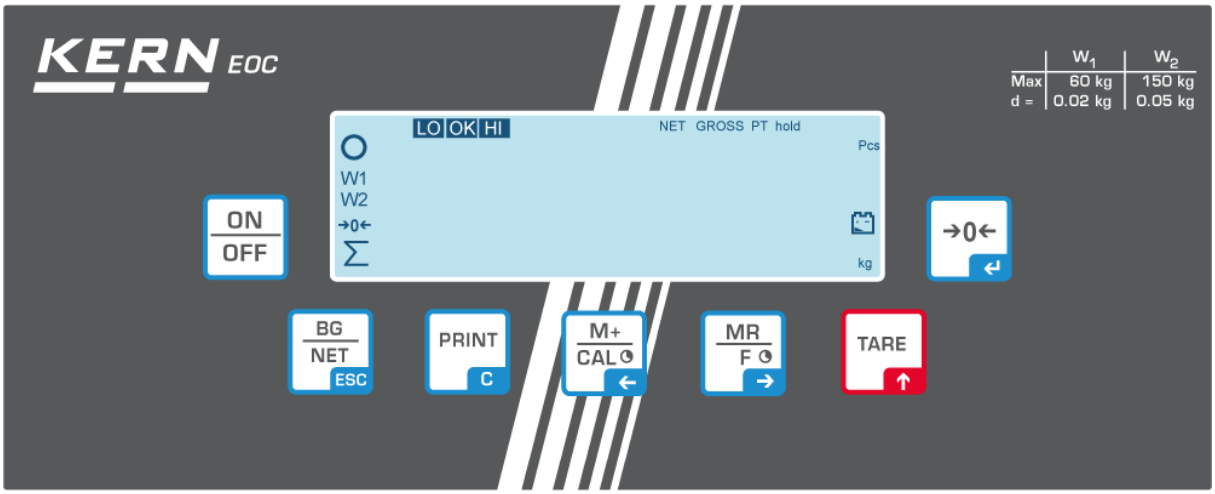
1. Platform
2. Fitting panel
3. Display Unit

Balance with tripod EOC-A05 (optional):

English

Flip/Flop evaluation device:
May be positioned in many ways, e.g. self-supporting or screwed into the wall (optional). By turning the upper housing shell, the angle of the display as well as the exit position of the cables can be changed.

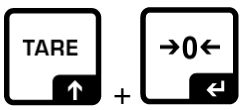
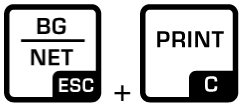
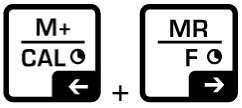
2.1 Overview of display



Display	Significance
W1	Weighing range 1
W2	Weighing range 2
	Battery very low
○	Stability display
→0←	Zero indicator
GROSS	Gross weight
NET	Net weight
PT	Pre-Tare
hold	Hold function
Pcs	Parts counting
Kg	Weighing unit
Σ	Totalization
LO OK HI	Indicators for weighing with tolerance range

English

2.2 Keyboard overview

Buttons	Function
	• Turn on/off
 Navigation button ↵	• Zeroing • Confirm entry
 Navigation button ↑	• Taring • At numeric input increase flashing digit • Scroll forward in menu
 Navigation button →	• Display sum total • Digit selection to the right
 Navigation button ←	• Add weighing value to summation memory • Digit selection to the left
 C	• Calculate weighing data via interface • Delete
 ESC	• Change between gross ⇔ and net weight • Back to menu/weighing mode
	• Call up mean value function
	• Call up weighing with tolerance range
	• Delete total added memory

English

2.2.1 Numerical input via the navigation buttons

⇨ Press 

, the current setting will be displayed. The first digit will be flashing and is ready for changing.

⇨ If you do not wish to change the first digit, press 

, the second digit will start flashing.

Each time you press 

, the display will move to the subsequent digit, after the last digit the display will return to the first digit.

⇨ To change the selected (flashing) digit, press 

repeatedly until the desired value is displayed. Then press 

to access further digits and change them by 

.

⇨ Complete your entry by 

.

English

3 Basic Information (General)

3.1 Proper use

The balance you purchased is intended to determine the weighing value of a load. It is intended to be used as a “non-automatic balance”, i.e. the material to be weighed is manually and carefully placed in the centre of the weighing 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 weighing. In the event that small quantities are removed or added to the load, incorrect weighing results can be displayed due to the “stability compensation“. (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 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 Equipment

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 equipment 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.

4.2 Personnel training

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

5 Transport and storage

5.1 Testing upon acceptance

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

5.2 Packaging / return transport

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

English

6 Unpacking, 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 loads and weighing container.

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

6.2 Unpacking

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

6.2.1 Scope of delivery

Serial accessories:

- Terminal
- Platform
- Mains adapter
- Protective cover
- Support base/Wall fixture
- 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 Rechargeable battery operation

Before the first use, the battery should be charged by connecting it to the mains power supply for at least 12 hours.

When the  symbol keeps flashing on the display, please charge the batteries soon.

6.5 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.

6.6 Initial Commissioning

In order to obtain exact results with the electronic balances, your balance must have reached the operating temperature (see warming up time chap. 1). During this warming up time the balance must be connected to the power supply (mains, accumulator or battery).

The accuracy of the balance depends on the local acceleration of gravity.
Strictly observe hints in chapter Adjustment.

6.7 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.

6.8 Adjustment

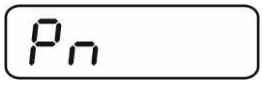
As the acceleration value due to gravity is not the same at every location on earth, each display unit with connected weighing plate must be coordinated - in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the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

	• In weighing systems with a resolution of < 15 000 dividing steps an adjustment is recommended. In weighing systems with a resolution of > 15 000 dividing steps a linearisation is recommended (see chap. 6.10). • Prepare the required adjustment weight. The adjustment weight to be used depends on the capacity of the weighing system. Carry out adjustment as near as possible to the weighing system's maximum weight. Info about test weights can be found on the Internet at: http://www.kern-sohn.com. • Observe stable environmental conditions. Stabilisation requires a certain warm-up time.

English

Call up menu:

Switch-on balance and during the selftest press  . „Pn“ will be displayed



Press  ,  ,  subsequently, the first menu block „PO CHK“ will be displayed.

Press  repeatedly until „P3 CAL“ will be displayed.

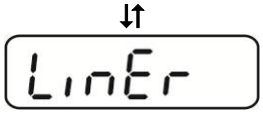
Confirm with  ; press  repeatedly until „CAL“ appears.

Acknowledge using  , the current setting is displayed.

Press  to confirm; press  to select the desired setting.

noLin = adjustment

LineAr = linearization, see chap. 6.9



How to carry out adjustment:

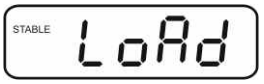
Confirm menu setting „noLin“ by →0←.
Ensure that there are no objects on the weighing plate.

Wait for stability display, then press →0←.

The currently set adjustment weight will be displayed.

(example)

To change by using the navigation buttons (see chap. 2.2.1) select the desired setting, the active digit is flashing.



Carefully place adjusting weight in the centre of the weighing plate. Wait for stability display, then press →0←. “PASS“ will be displayed.

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

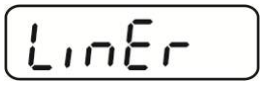
English

6.9 Linearisation

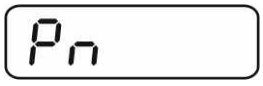
Linearity shows the greatest deviation of a weight display on the scale to the value of the respective test weight according to plus and minus over the entire weighing range. If linearity deviation is discovered during a monitoring of test equipment, you can improve this by means of linearization.

- In balances with a resolution of > 15 000 dividing steps carrying out a linearisation is recommended.
- Carrying out linearization is restricted to specialist staff possessing well acquainted with the workings of weighing scales.
- The test weights to be used must be adapted to the weighing scale's specifications; see chapter "Monitoring of test equipment".
- Observe stable environmental conditions. Stabilisation requires a certain warm-up time.
- After successful linearisation you will have to carry out calibration; see chapter "Monitoring of test equipment".

⇨ Call-up menu item P3 CAL⇨Cal⇨Liner, see chap. 8.2



⇨ Confirm by →0← ↵, the password query „Pn" will be displayed.



⇨ Press BG NET ESC, M+ CAL ←, MR F →, successively .
Ensure that there are no objects on the weighing pan.

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

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

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

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

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

English

7 Operation

7.1 Start-up

Start balance by pressing ON/OFF. The unit will carry out a self-test. As soon as the weight display appears, the instrument will be ready to weigh.	

7.2 Switching Off

Press ON/OFF, the display will disappear.	

7.3 Zeroing

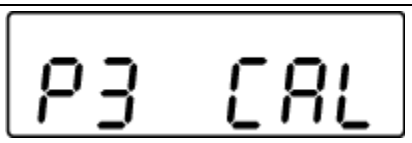
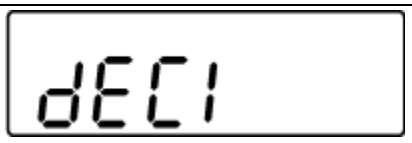
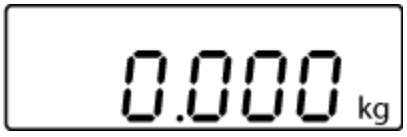
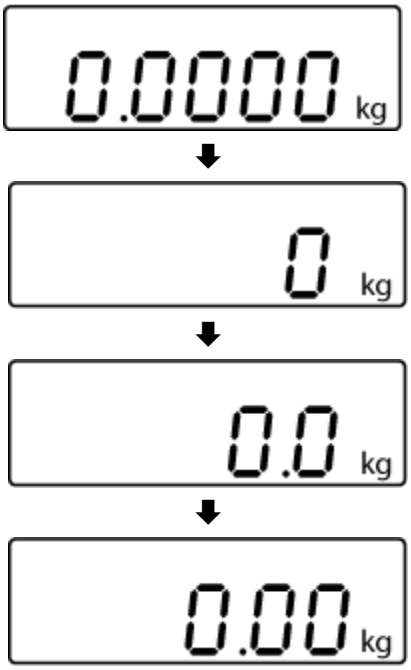
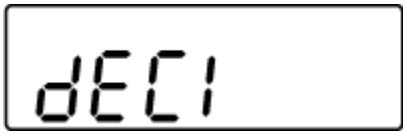
Resetting to zero corrects the influence of light soiling on the weighing plate. The unit is equipped with an automatic zero setting function. Therefore the unit can be reset to zero at any time as follows:

Unload the balance Press →0← and zero display as well as indicator →0← will appear.	

English

7.4 Decimal point

The position of the decimal point can be adjusted in the menu as follows:

Invoke menu item „P3 CAL“, see chap. 8.2	
Press →0←. „Count“ is displayed.	
Press TARE, „Deci“ will be displayed	
Press →0←, the last saved decimal points will be displayed: Example: „0.000 kg“	
Press TARE to change through the different decimal places.	
Press →0← to confirm the desired position of the decimal point. „deCi“ is displayed.	
Return to weighing mode using BG NET ESC	

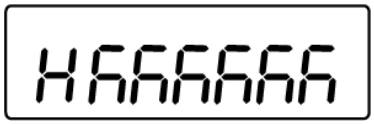
English

7.5 Simple weighing

Place load – Wait for stability display ○ – Read-off weighing result.

Overload warning

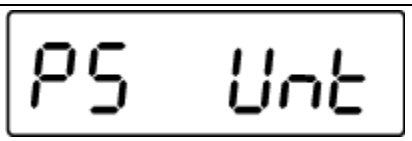
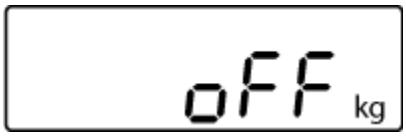
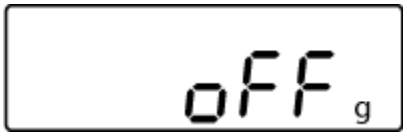
Overloading exceeding the stated maximum load (max) of the device, minus a possibly existing tare load, must be strictly avoided. This could damage the instrument.
Exceeding the maximum load is indicated by the display



and an audio sound. Unload weighing system or reduce preload.

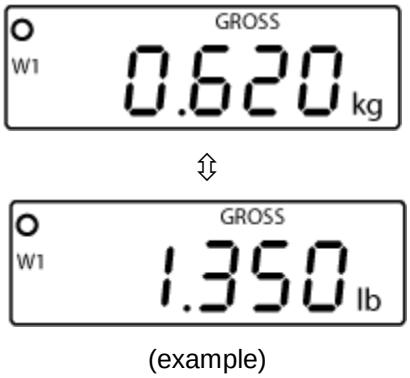
7.6 Switch-over weighing unit

Enable weighing unit:

Call-up menu item „P5 Unt“, see chap. 8.2	
Press →0← and the first weighing unit with the current setting will be displayed.	
Use TARE to enable (on) or to disable (oFF) the displayed unit.	
Acknowledge with →0←. The display change automatically to the next unit.	
Use TARE to enable (on) or to disable (oFF) the displayed unit.	
Repeat sequence for each weighing unit. Return to weighing mode using BG NET ESC	

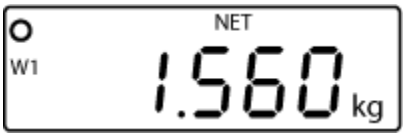
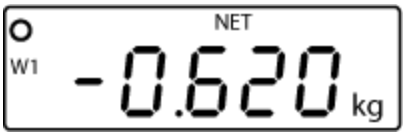
English

Switch-over weighing unit:

Keep BG/NET ESC pressed, the display changes over to the weighing units activated before (e.g. kg ⇆ lb)	 (example)

7.7 Weighing with tare

English

Deposit weighing vessel. After successful standstill control press the TARE button. Zero display and indicator „NET“ will appear. The weight of the container is now internally saved.	
Weigh the load, the net weight will be indicated.	
The weight of the weighing container will be displayed as a minus number after removing the load and the weighing container. The tare procedure can be repeated as many times as necessary, for example with initial weighing of several components for a mix (add-on weighing). The limit is reached when the taring range capacity (see type plate)is full. To change between gross weight and net weight, press BG/NET ESC. To delete the tare value, remove load from weighing plate and press TARE.	

7.8 Weighing with tolerance range

You can set an upper or lower limit when weighing with tolerance range and thus ensure that the weighed load remains exactly within the set limits.
During tolerance tests such as dosing, portioning and sorting the unit will indicate exceeded or undershot limits by emitting an optical or acoustic signal.

Audio signal:
The acoustic signal depends on the settings in menu block „BEEP“.
Options:

- no Acoustic signal turned off
- ok An acoustic signal sounds when load is within tolerance limits
- ng An acoustic signal sounds when load is beyond tolerance limits

Optical signal:

The symbols 

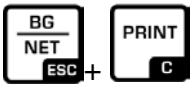
indicate whether the load is within the two tolerance limits.

Target quantity / target weight below minimum tolerance limit

Target quantity / target weight within tolerance range

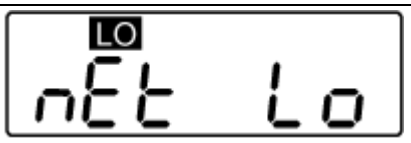
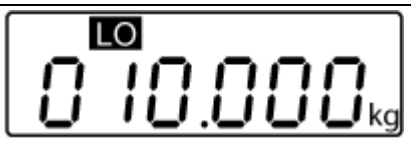
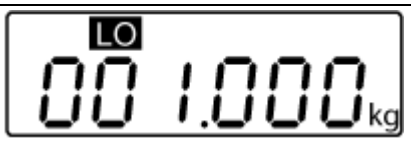
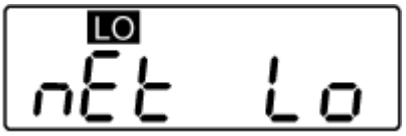
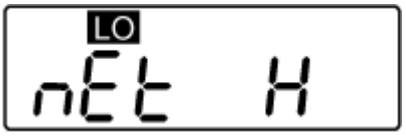
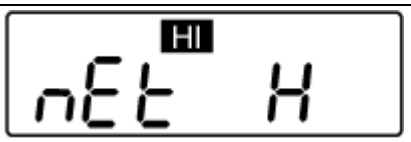
Target quantity / target weight exceeds maximum tolerance limit

The settings for tolerance check may be called up either via menu block „P0 CHK“ (see chap. 8.2) or faster via the key combination

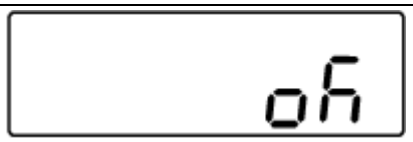


English

7.8.1 Tolerance check for target weight

Settings Press BG/NET ESC and PRINT C at the same time in weighing mode. „net H“ will be displayed.	
Press TARE, the display for entering the lower limit value „nEt Lo“ appears.	
Press →0←, the current setting will be displayed. The decimal point at the extreme left flashes.	
To enter the lower limit, e. g. 1000 Kg, press the navigation keys (See chap. 2.2.1); the currently enabled digit will be flashing.	
Confirm input by →0←.	
Press TARE repeatedly until „nEt H“ will be displayed.	
Press →0←, the current setting for the upper limit will be displayed.	
Press the navigation keys (see chap. 2.2.1) to enter the upper limit, e.g. 10.000 kg; the currently enabled digit will be flashing.	
Confirm input by →0←.	
Press TARE repeatedly until „BEEP“ will be displayed.	

English

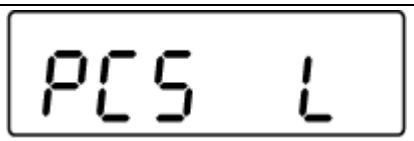
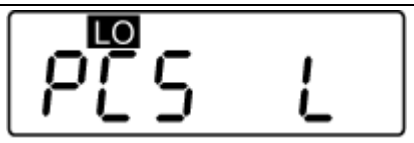
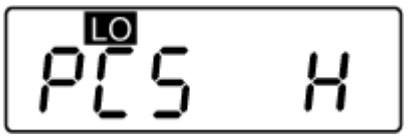
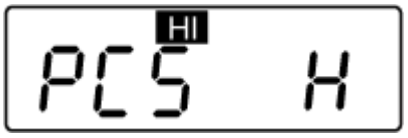
Press →0← and the current setting for the acoustic signal will be shown.	
Select desired setting (no, ok, ng) by TARE.	
Confirm input by →0←.	
Press BG NET ESC; weighing system is in tolerance weighing mode. From here evaluation takes place whether the load is within the two tolerance limits.	

Weighing with tolerance range: Tare when using a weighing container.		
Put on load, tolerance control is started. The symbols LO OK HI show whether the load is within the two tolerance limits.		
Load below specified tolerance	Load within specified tolerance	Load exceeds specified tolerance
		

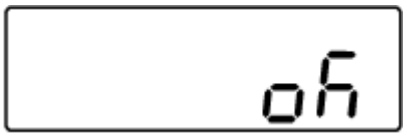
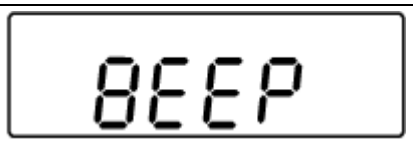
- The tolerance control is not active when the weight is under 20d.
- To delete limits, enter “00.000 kg“.

English

7.8.2 Tolerance check for target quantity

Settings Press BG/NET ESC and PRINT C at the same time in weighing mode. „net H“ will be displayed.	
Press TARE repeatedly, until the display for entering the lower limit value „PCS L“ appears.	
Press →0←, the current setting will be displayed.	
To enter the lower limit, e. g. 75 items, press the navigation buttons (see chap. 2.2.1); the currently enabled digit will be flashing.	
Confirm input by →0←.	
Press TARE repeatedly, until the display for entering the upper limit value „PCS H“ appears.	
Press →0←, the current setting for the upper limit will be displayed.	
To enter the upper limit, e. g. 100 items, press the navigation buttons (see chap. 2.2.1); the currently enabled digit will be flashing.	
Confirm input by →0←.	

English

Press TARE repeatedly until „BEEP“ will be displayed.	
Press →0←, the current setting for the acoustic signal will be shown.	
Select desired setting (no, ok, ng) by TARE.	
Confirm input by →0←.	
Press BG NET ESC; weighing system is in tolerance weighing mode. From here evaluation takes place whether the load is within the two tolerance limits.	

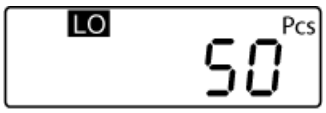
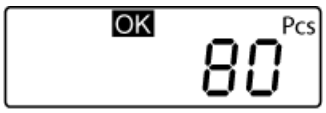
Weighing with tolerance range:

Determine the item weight, see chap. 7.11

Tare when using a weighing container.

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

The symbols LO OK HI show whether the load is within the two tolerance limits.

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

- The tolerance control is not active when the weight is under 20d.
- To delete limits, enter „00000 PCS“.

English

7.9 Manual totalizing

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

- Menu setting:
  „P2 COM“ ⇨ „MODE“ ⇨ „PR2“, see chap. 8.2
- The totalizing function is not active when the weight is under 20d.

Add up: Place load A. Wait until the stability display O appears, then press M+ CAL. „ACC 1“ will be displayed shortly, then the weighing value will be displayed. The weight value will be saved and printed if an optional printer is connected. The symbol for Total Σ will be displayed.	 (example)  
Remove the load. More loads can only be added when the display ≤ zero.	
Place load B. Wait until the stability display appears, then press M+ CAL. „ACC 2“ is shortly displayed. The weight value will be added into the summation memory and printed if necessary.	 (example) 
Add more loads as described before. Please note that the weighing system must be unloaded between the individual weighing procedures.	
This process may be repeated 99 times or till such time as the capacity of the weighing system has been exhausted.	

English

Display and output sum „Total“: Press MR F, number of weighing, followed by the total weight will be displayed for 2 sec. Press PRINT C to print out this display.	
Delete weighing data: ⇨ Press M+ CAL and MR F at the same time The data in the summation memory are deleted.	

Printout example:

**********	
No.: 1	**1**
NT: 6.20oz	
TW: 0.00oz	
GW: 6.20oz	
**********	
**********	
No.: 2	**2**
NT: 9.40oz	
TW: 0.00oz	
GW: 9.40oz	
**********	
**********	
Total	**3**
No.: 2	
Total: 15.60oz	
**********	

1 First weighing M+ CAL

2 Second weighing M+ CAL

3 Number of weighings / total MR F + PRINT C

English

7.10 Automatic adding-up

With this function the individual weighing values are automatically added into the summation memory when the balance is unloaded without pressing 

and edited, when an optional printer is connected.

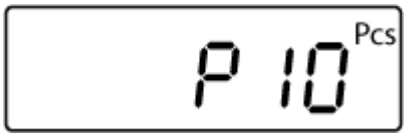
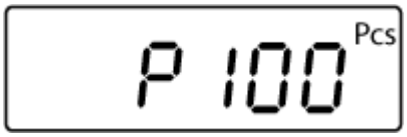
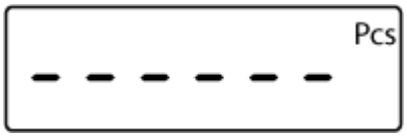
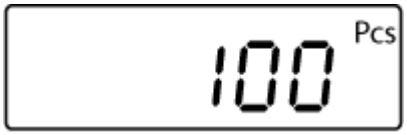
- Menu setting:
  „P2 COM“ ⇨ „MODE“ ⇨ „AUto““, see chap. 8.2

Add up: Place load A. After the standstill control sounds a signal tone. The weighing value will be added to the summation memory and printed. „ACC 1“ will be displayed shortly, then the weighing value will be displayed.	  (example)
Remove the load. More loads can only be added when the display ≤ zero.	
Place load B. After the standstill control sounds a signal tone. The weighing value will be added to the summation memory and printed. „ACC 2“ will appear briefly, followed by the weighing value.	 
Add more loads as described before. Please note that the weighing system must be unloaded between the individual weighing procedures.	
This process may be repeated 99 times or till such time as the capacity of the weighing system has been exhausted.	

Display and delete the weighing data, as well as printout example see chap. 7.8.

7.11 Parts counting

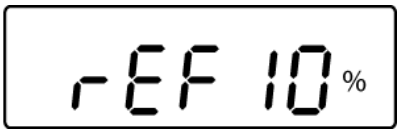
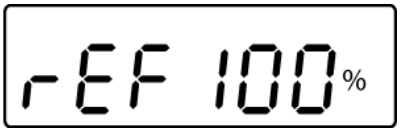
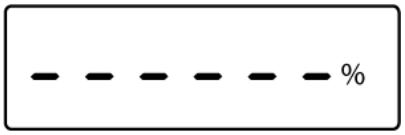
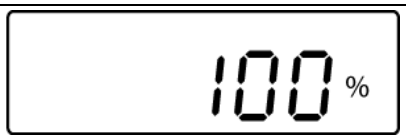
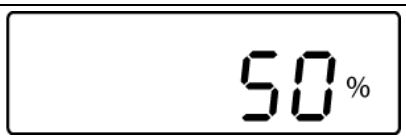
Before the balance can count parts, it must know the average part weight (i.e. reference). Proceed by putting on a certain number of the parts to be counted. The balance determines the total weight and divides it by the number of parts, the so-called reference quantity. Counting is then carried out on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

In weighing mode MR F, press and hold until the message „P 10“ appears that is used to set the reference quantity.	
Use TARE to set the desired reference quantity (such as 100), options include P 10, P 20, P 50, P100, P 200.	
Place as many items to be counted (such as 100 items) as demanded by the set reference quantity and confirm by →0←. The weighing scales calculate the reference weight. The current quantity (such as 100 items) will be displayed.	 
Remove reference weight. The balance is from now in parts counting mode counting all units on the weighing plate.	
Back to Weighing mode by MR F .	

English

7.12 Percentage weighing

Percentage weighing allows for displaying the weight in percentages with regard to the reference load mass.

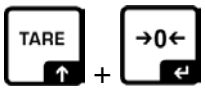
In the weighing mode, push TARE button (ca. 3 s) until „rEF 10%” is displayed.	
Using TARE button, select the desired percentage value which shall serve as a reference value. Here, for example 100%.	 (example)
Put a sample with the mass corresponding to the set percentage value on the plate and push →0← button. The following indication „-------%” shall be displayed for a while.	
The sample mass percentage value will be displayed.	 (example)
Put away the reference load. „0.0%” shall be displayed again.	
Put the controlled object. The percentage value of the controlled object mass shall be displayed with regard to the reference load.	 (example)
Return to the weighing mode, pushing TARE button, again.	

English

7.13 Animal weighing

The mean value function is suitable for weighing restless loads.
The weighing system will display a mean value derived from several weighing results.

The animal weighing program can be enabled by either calling up menu block „P4 OTH“ ⇨ „ANM“ ⇨ „ON“ (See chap. 8.2) or faster via key combination.



The symbol „hold“ is displayed as long as the animal weighing function remains enabled.	
Place the load on the weighing system and wait until the scale is steady. Press TARE and →0← at the same time; you will hear an acoustic signal, indicating that the mean value function is enabled. Whilst averaging is taking place you can add or remove loads as the measuring value will be constantly updated. To deactivate the animal weighing function press TARE and →0← at the same time. The symbol „hold“ disappears.	

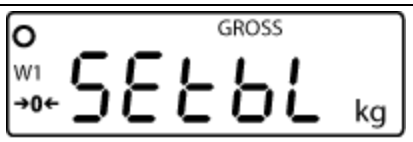
7.14 Lock keyboard

In the menu item „P4 OTH“ ⇨ „LOCK“ (see chap. 8.2) the keyboard lock can be enabled/disabled.
Whilst the function is enabled the keyboard will self-lock after no key has been pressed for 10 minutes. „K-LCK“ will be displayed as soon as a key is pressed.

To disable the lock, press PRINT C, MR F ➔ and →0← hold plus (2 s) until „**U LCK**“ appears.

English

7.15 Display background illumination

Keep →0← pressed (3s) until „SEtbL“ appears.	
Press →0← again, the current setting will be displayed.	
Press TARE to select the desired setting.	

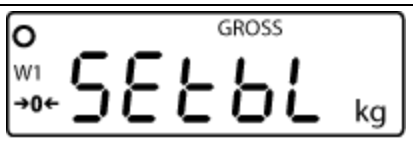
bl on	Continuous background lighting
bl off	Background illumination off
bl Auto	Automatic background illumination on when weighing pate is loaded or key pressed.

Either save by →0← or cancel by pressing BG/NET ESC. Back to Weighing mode by BG/NET ESC .	

English

7.16 Automatic switch-off function „AUTO OFF“

The unit is automatically switched off within the preset time when the display unit or the weighing bridge are not operated.

Keep →0← pressed (3s) until „SEtbL“ appears.	
Press TARE to call up Auto-Off function. „SEtoF“ appears.	
Press →0←, the current setting will be displayed.	

of 0 **AUTO OFF -** function disabled

of 3 Weighing system will be turned off after 3 min.

of 5 Weighing system will be turned off after 5 min.

of 15 Weighing system will be turned off after 15 min.

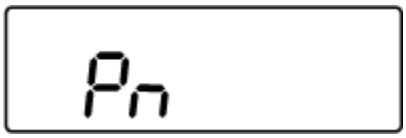
of 30 Weighing system will be turned off after 30 min.

Either save by →0← or cancel by pressing BG/NET ESC. Back to Weighing mode by BG/NET ESC.	

English

8 The menu

8.1 Navigation in the menu

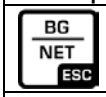
Call up menu	⇨ Switch-on balance and during the selftest press M+ CAL.  ⇨ Press M+ CAL, BG NET ESC, TARE subsequently, the first menu block „PO CHK“ will be displayed. 
Select menu block	⇨ With help of TARE, the individual menu items can be selected one after the other.
Select setting	⇨ Confirm selected menu item by pressing →0←. The current setting will be displayed.
Change settings	⇨ To change to the available settings, press the navigation keys (see chap. 2.2.1).
Acknowledge setting / exit the menu	⇨ Either save by pressing →0← or cancel by pressing BG NET ESC.
Return to weighing mode	⇨ Press BG NET ESC repeatedly to exit menu.

English

8.2 Menu overview

Menu block Main menu	Menu item Submenu	Available settings / explanation		
PO CHK Weighing with tolerance range, see chap. 7.8	nEt H	Upper limit value „Tolerance check weighing“, input see chap. 7.8.1		
	nEt L	Lower limit value „Tolerance check weighing“, input see chap. 7.8.1		
	PCS H	Upper limit value „Tolerance check counting“, input see chap. 7.8.2		
	PCS L	Lower limit value „Tolerance check counting“, input see chap. 7.8.2		
	BEEP	no	Acoustic signal for weighing with tolerance range switched off	
		ok	Audio sound when load is within tolerance limits	
		nG	Audio sound when load is beyond tolerance limits	
P1 rEF Zero point settings	A2n0	Automatic zero point correction (Autozero) by changing the display, digits selectable (0.5d, 1d, 2d, 4d)		
	0AUto	Zero setting range Load range where the display after switching-on the balance is set to zero. Selectable 0, 2, 5, 10, 20, 30, 50, 100 %		
	0rAGE	Zero setting range Load range where the display is set to zero by pressing  . Selectable 0, 2, 4, 10, 20* , 50, 100%.		
	0tArE	Automatic taring „on / off“, taring range adjustable in menu item „0Auto“.		
P2 COM Interface parameters	MODE	CONT	S0 off	Continuous data output, selectable „sending 0“, yes / no
			S0 on	
		ST1	One output for stable weighing value	
		STC	Continuous data output of stable weighing values	
		PR1	Output after pressing 	
		PR2	Manual totalizing, see chap. 7.9. Press  and the weighing value will be added to the summation memory and issued.	

English

		AUTO*	For automatic add-up see chap. 7.10. This function is used to issue and add individual weighing values automatically to the summation memory on unloading of weighing scale.	
		ASK	Remote control instructions	
		wirel	Not documented	
	BAUd	Available Baudrate: 600, 1200, 2400, 4800, 9600*		
	Pr	7E1	7 bits, even parity	
		7o1	7 bits, odd parity	
		8n1*	8 bits, no parity	
	PtYPE	tPUP*	Standard printer setting	
		KCP	Not documented	
	LAb	Lab x	Data output format	
	Prt	Prt x		
	LAnG	eng*	Standard settings English	
		chn		
P3 CAL Configuration data	CoUnt	Display internal resolution		
	dECL	Position of the decimal point		
	dUAL	Setting balance type, capacity (Max) and readability (d)		
		off	Single-range balance	
			r1 inC	Readability
			r1 CAP	Capacity
		on	Dual range balance	
			r1 inc	Readability 1st weighing range
			r1 cap	Capacity 1st weighing range
				
			r1 inc	Readability 2nd weighing range
			r1 cap	Capacity 2nd weighing range
	CAL	noLin	Adjustment, see chap. 6.7	
		LinEr	For linearisation see chapter 6.9	
	Grb	not documented		
P4 otH	LoCK	on	Keyboard lock enabled	
		oFF*	Keyboard lock disabled	
	Anm	on	Animal weighing enabled, see chap. 7.12	
		oFF*	Animal weighing disabled	

P5 Unt Switch-over weighing unit see chap. 7.6	kg	on*	
		off	
	g	on*	
		off	
	lb	on*	
		off	
	oz	on*	
		off	
P6 XCL		not documented	
P7 rSt		Use  to reset balance settings to factory default.	

Factory settings are marked by *.

Tab. 1. Printout examples Standard printer

Lab / Prt	0	1	2	3
0~3	GS: 5.000kg	******** NT: 5.000kg TW: 5.000kg GW: 10.000kg ********	********** GS: 5.000kg TOTAL: 10.000kg **********	********** NT: 5.000kg TW: 5.000kg GW: 10.000kg TOTAL: 10.000kg **********
4~7	******** No.: 1 GS: 5.000kg ********	******** No.: 1 NT: 5.000kg TW: 5.000kg GW: 10.000kg ********	********** No.: 1 GS: 5.000kg TOTAL: 10.000kg **********	********** No.: 1 NT: 5.000kg TW: 5.000kg GW: 10.000kg TOTAL: 10.000kg **********

GS / GW	Gross weight	**NO**	Number weighing processes
NT	Net weight	**TOTAL**	Total of all individual weighings
TW	Tare weight		

English

9 Servicing, maintenance, disposal

9.1 Cleaning

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

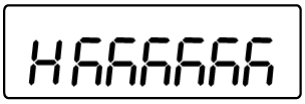
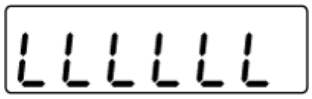
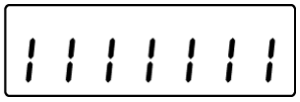
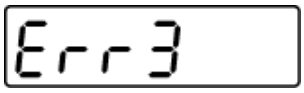
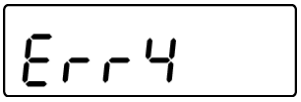
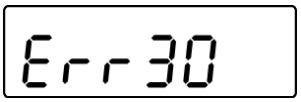
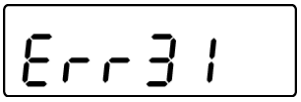
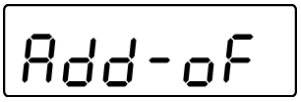
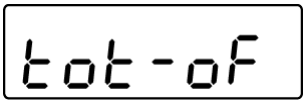
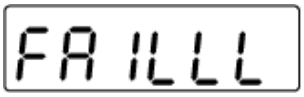
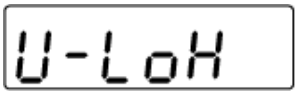
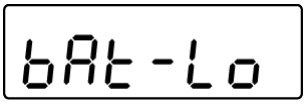
9.2 Servicing, maintenance

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

9.3 Disposal

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

9.4 Error messages

Error message	Description
	Excess load if weight exceeds capacity of +9d
	Underweight (less than 20 d)
	The weight is too low (less than -20 d)
	Zero setting range exceeded on start-up of balance.
	Zero setting range during start-up of weighing scale or on pressing of  exceeded.
	Is displayed on setting weighing scale to zero with  , without load
	For parts counting and percentage calculation: Weighed value ≤ zero
	For add-up: Total number of weighings above 999
	For add-up: Total weight above 999999
	Adjustment failed
	Keyboard locked
	Keyboard unlocked
	Capacity of batteries exhausted. (Battery voltage below 5.7 V, automatic shutdown happens at less than 5.4 V)

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

English

10 Data output RS232C

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

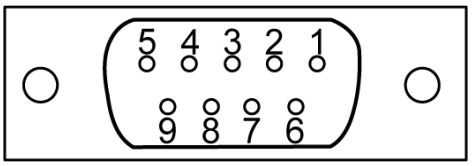
This data exchange is asynchronous using ASCII - Code.

The following conditions must be met to provide successful communication between the weighing system and the printer.

- Use a suitable cable to connect the display unit to the interface of the printer. Faultless operation requires an adequate KERN interface cable.
- Communication parameters (baud rate, bits and parity) of display unit and printer must match. For a detailed description of interface parameters, please refer to chapter 8, Menu block “P2 COM“

10.1 Technical data

Connection 9 pin d-subminiature bushing



Pin 2 input
Pin 3 output
Pin 5 signal earth

Baud rate Optional 600/1200/2400/4800/9600

Parity 8 bits, no parity / 7 bits, even parity / 7 bits, odd parity

10.2 Printer mode

Printout examples (KERN YKB-01N):

- Weighing

ST, GS	1.000kg

Symbols:

ST	Stable value
US	Instable value
GS / GW	Gross weight
NT	Net weight
TW	Tare weight
NO	Number weighing processes
TOTAL	Total of all individual weighings
<lf>	Space line
<lf>	Space line

- Counting

```
****************************
PCS                  100
****************************
```

10.3 Remote control instructions

Command	Function	Printout examples
S	Stable weighing value for the weight is sent via the RS232 interface	ST,GS 1.000KG
W	Weighing value for the weight (stable or unstable) is sent via the RS232 interface	US,GS 1.342KG ST,GS 1.000KG
T	No data are sent, the balance carries out the tare function.	-
Z	No data are sent, the zero-display appears.	-
P	Quantity will be sent via the RS232-interface	10PCS

English

10.4 KERN Communications Protocol (KERN Interface Protocol)

I0 0 "I0"	Shows all implemented KCP commands
I0 0 "I1"	Showing KCP level and KCP version
I0 0 "I2"	Sending weighing data
I0 0 "I3"	Inquiry software version
I0 0 "I4"	Inquiry serial number
I0 0 "S"	Sending stable value
I0 0 "SI"	Sending current value (also instable)
I0 0 "SIR"	Sending current value (also instable) and repeating
I0 0 "Z"	Zeroing
I0 0 "ZI"	Zeroing (also instable)
I0 0 "@"	Delete all settings
I0 1 "T"	Taring
I0 1 "TAC"	Delete tare value
I0 1 "TI"	Taring (stable and unstable)

11 Instant help

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

Help:

Fault	**Possible cause**
The displayed weight does not glow.	• The balance is not switched on. • The mains supply connection has been interrupted (mains cable not plugged in/faulty). • Power supply interrupted. • (Rechargeable) batteries are inserted incorrectly or empty • No (rechargeable) batteries inserted
The displayed weight is permanently changing	• Draught/air movement • Table/floor vibrations • Weighing pan has contact with other objects. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)
The weighing value is obviously wrong	• The display of the balance is not at zero • Adjustment is no longer correct. • Great fluctuations in temperature. • The balance is on an uneven surface. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)

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

English

12 Declaration of conformity

The current EC/EU Conformity declaration can be found online in:

www.kern-sohn.com/ce

English