GB

KERN 440

Version 3.4 01/2006

Operating Instructions

Precision balance

Tabel of contents:

1 Technical data

KERN	*440-21N*	*440-21A*	*440-33N*
Readout	*0,001 g*	*0,001 g*	*0,01 g*
Weighing range	*40 g*	*60 g*	*200 g*
Taring range (subtractive)	*40 g*	*60 g*	*200 g*
Reproducibility	*0,001 g*	*0,001 g*	*0,01 g*
Linearity	*±0,003 g*	*±0,003 g*	*±0,0 2 g*
Min. weight for counting parts	*0,002 g*	*0,002 g*	*0,02 g*
Reference pieces for counting parts	*5, 10, 25, 50*		
Unites	*details „Weighing units“ capture 7.8*		
Test weight (included) *The details can be found in capture 8.3 „Select the adjusting weight“*	*20g (F2)*	*50g (F2)*	*100g (M1)*
Stabilisation time (typical)	*3 sec.*		
Optimal temp. of operation	*+ 10° C .... + 40° C*		
Humidity	*max. 80 % (non-condensing)*		
Size (W x D x H) mm	*165 x 230 x 80*		
Weighing plate mm	*Ø 81*	*Ø 81*	*Ø 105*
Weight kg (net)	*1,0*	*1,0*	*1,0*
Underfloor weighing	*-*	*-*	*Standard*
Hook for underfloor weighing	*-*	*-*	*Option*

KERN	*440-35N*	*440-35A*	*440-43N*	*440-45N*
Readout	*0,01 g*	*0,01 g*	*0,1 g*	*0,1 g*
Weighing range	*400 g*	*600 g*	*400 g*	*1000 g*
Taring range (subtractive)	*400 g*	*600 g*	*400 g*	*1000 g*
Reproducibility	*0,01 g*	*0,01 g*	*0,1 g*	*0,1 g*
Linearity	*±0,03 g*	*±0,03 g*	*±0,2 g*	*± 0,2 g*
Min. weight for counting parts	*0,02 g*	*0,02 g*	*0,2 g*	*0,2 g*
Reference pieces for counting parts	*5, 10, 25, 50*			
Unites	*details „Weighing units“ capture 7.8*			
Test weight (included) *The details can be found in capture 8.3 „Select the adjusting weight“*	*200g (M1)*	*500g (M1)*	*200 g (M3)*	*500 g (M2))*
Stabilisation time (typical)	*3 sec.*			
Optimal temp. of operation	*+ 10° C .... + 40° C*			
Humidity	*max. 80 % (non-condensing)*			
Size (W x D x H) mm	*165 x 230 x 80*			
Weighing plate mm	*Ø 105*	*Ø 105*	*130 x 130*	*130 x 130*
Weight kg (net)	*1,0*	*1,0*	*1,0*	*1,0*
Underfloor weighing	*Standard*			
Hook for underfloor weighing	*Option*			

KERN	*440-47N*	*440-49N*	*440-49A*
Readout	*0,1 g*	*0,1 g*	*0,1 g*
Weighing range	*2000 g*	*4000 g*	*6000 g*
Taring range (subtractive)	*2000 g*	*4000 g*	*6000 g*
Reproducibility	*0,1 g*	*0,1 g*	*0,1 g*
Linearity	*± 0,2 g*	*± 0,3 g*	*± 0,3 g*
Min. weight for counting parts	*0,2 g*	*0,2 g*	*0,2 g*
Reference pieces for counting parts	*5, 10, 25, 50*		
Unites	*details „Weighing units“ capture 7.8*		
Test weight (included) *The details can be found in capture 8.3 „Select the adjusting weight“*	*1000 g (M1)*	*2000 g (M1)*	*2000 g (M1)*
Stabilisation time (typical)	*3 sec.*		
Optimal temp. of operation	*+ 10° C .... + 40° C*		
Humidity	*max. 80 % (non-condensing)*		
Size (W x D x H) mm	*165 x 230 x 80*		
Weighing plate mm	*130 x 130*	*150 x 170*	*150 x 170*
Weight kg (net)	*1,0*	*1,0*	*1,0*
Underfloor weighing	*Standard*		
Hook for underfloor weighing	*Option*		

KERN	*440-51N*	*440-53N*	*440-55N*
Readout	*1 g*	*1 g*	*0,2 g*
Weighing range	*4000 g*	*6000 g*	*6000 g*
Taring range (subtractive)	*4000 g*	*6000 g*	*6000 g*
Reproducibility	*1 g*	*1 g*	*0,2 g*
Linearity	*± 2 g*	*± 2 g*	*± 0,6 g*
Min. weight for counting parts	*2 g*	*2 g*	*0,4 g*
Reference pieces for counting parts	*5, 10, 25, 50*		
Unites	*details „Weighing units“ capture 7.8*		
Test weight (included) *The details can be found in capture 8.3 „Select the adjusting weight“*	*1000 g (M3)*	*1000 g (M3)*	*1000 g (M1)*
Stabilisation time (typical)	*3 sec.*		
Optimal temp. of operation	*+ 10° C .... + 40° C*		
Humidity	*max. 80 % (non-condensing)*		
Size (W x D x H) mm	*165 x 230 x 80*		
Weighing plate mm	*150 x 170*	*150 x 170*	*150 x 170*
Weight kg (net)	*1,0*	*1,0*	*1,0*
Underfloor weighing	*Standard*		
Hook for underfloor weighing	*Option*		

2 Declaration of conformity

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Konformitätserklärung

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

English We hereby declare that the product to which this declaration refers conforms with the following standards.

Deutsch Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.

Français Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.

Español Manifestamos en la presente que el producto al que se refiere esta declaración est´´a de acuerdo con las normas siguientes

Italiano Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.

Electronic Balance: KERN 440

Mark applied	EU Directive	Standards
CE	89/336EEC EMC	EN 55022 : 1998+A1 : 2000 EN 61000-3-2 : 2000 EN 61000-3-3 : 1995+A1 : 2001 EN 55024 : 1998+A1 : 2001

Date: 15.10.2004 **Signature:**

Gottl. KERN & Sohn GmbH
Management

3 Fundamental information (general)

3.1 Intended use

The balance you have acquired serves to determine the weighing value of the material to be weighed. 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 plate. The weighing value can be read off after a stable weighing value has been obtained.

3.2 Inappropriate use

Do not use the balance for dynamic weighing. In the event that small quantities are removed or added to the material to be weighed, incorrect weighing results can be displayed due to the “stability compensation“ in the balance. (Example: Slowly draining fluids from a container on the balance.)
Do not leave a permanent load on the weighing plate. This can damage the measuring equipment.
Be sure to avoid impact shock and overloading the balance in excess of the prescribed maximum load rating (max.), minus any possible tare weight that is already present. This could cause damage to the balance.
Never operate the balance in hazardous locations. The series design is not explosion-proof.
Structural alterations may not be made to the balance. This can lead to incorrect weighing results, faults concerning safety regulations as well as to destruction of the balance.
The balance may only be used in compliance with the described guidelines. Varying areas of application/planned use must be approved by KERN in writing.

3.3 Guarantee

The guarantee is not valid following

- non-observation of our guidelines in the operating instructions
- use outside the described applications
- alteration to or opening of the device
- mechanical damage and damage caused by media, liquids,natural wear and tear
- inappropriate erection or electric installation
- overloading of the measuring equipment

3.4 Monitoring the test substances

The metrology features of the balance and any possible available adjusting weight must be checked at regular intervals within the scope of quality assurance. For this purpose, the answerable user must define a suitable interval as well as the nature and scope of this check. 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. Test weights and balances can be adjusted quickly and at a reasonable price in KERN's accredited DKD calibration laboratory (return to national normal).

4 Fundamental safety information

4.1 Observe the information in the operating instructions

Please read the operating instructions carefully before erecting and commissioning, even if you already have experience with KERN balances.

4.2 Staff training

The device may only be operated and looked after by trained members of staff.

5 Transport and storage

5.1 Acceptance check

Please check the packaging immediately upon delivery and the device during unpacking for any visible signs of external damage.

5.2 Packaging

Please retain all parts of the original packaging in case it should be necessary to return items at any time.
Only the original packaging should be used for return consignments.
Before despatch, disconnect all attached cables and loose/movable parts.
Apply any intended transport security devices. Secure all parts, e.g. glass windshield, weighing plate, power unit etc., to prevent slipping and damage.

6 Unpacking, installation and commissioning

6.1 Place of installation, place of use

The balance is constructed in such a way that reliable weighing results can be achieved under normal application conditions.
By selecting the correct location for your balance, you will be able to work quickly and precisely.

Therefore please observe the following at the place of installation:

- 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. Inadmissible bedewing (condensation of air moisture on the device) can occur if a cold device is taken into a significantly warmer environment. In this case, please acclimatise the device for approx. 2 hours at room temperature after it has been disconnected from the mains.
- Avoid static charging of the material to be weighed, weighing container and windshield.

Major display deviations (incorrect weighing results) are possible if electromagnetic fields occur as well as due to static charging and instable power supply. It is then necessary to change the location.

6.2 Unpacking

Carefully remove the balance from its packaging, remove the plastic wrapping and position the balance in its intended working location.

6.2.1 Installation

Install the balance in such a fashion that the weighing plate is absolutely horizontal.

Please make sure that the transportation lock of the models 440-21N and 440-21A has been removed before placing the weighing plate.

6.2.2 List of items supplied

Standard accessories:

- *Balance (protective working cover encl.)*
- *Weighing pan*
- *Mains cable*
- *Test weight*
- *Operating instructions*
- *Draft shield (440-21N, 440-21A)*

6.3 Mains supply

Electric power supply is by means of the external mains supply circuit. The printed voltage level must comply with the local voltage.
Only use original KERN mains supply circuits. The use of other makes is subject to approval by KERN.

6.4 Battery Operation

Remove the battery cover from the bottom of the balance. Connect a 9 V block battery. Re-insert the battery cover.
For battery operation the balance has an automatic switchoff function which can be activated and deactivated in the menu (chap. 8.1).
Please follow the below instruction for the setting:

Switch the balance on by pressing the ON/OFF key, then wait until display shows "**0"**

Press and hold the PRINT key until display shows **„UNIT".**

Press the MODE/CAL key 3 times, then **„AF"** will appear.

Confirm with the SET/M key.

Press the MODE/CAL key to switch among the modes:

1) **„AF on":** Battery conservation through automatic power-off 3 minutes after ending a weighing operation.
2) **„AF off":** switchoff function deactivated.

Confirm with the SET/M key.

When the battery power is used up the display will show "**LO**". Press the ON/OFF key and change the batteries at once.
When the balance is not in use for a longer period of time remove batteries and keep them separately. Leakage of battery liquid might damage the balance.

6.5 Connecting peripheral equipment

The balance must be disconnected from the mains before connecting or disconnecting additional equipment (printer, PC) to or from the data interface.
Only use KERN accessories and peripheral equipment with your balance. These have been ideally coordinated to your balance.

6.6 Initial start-up

A warm-up time of 5 minutes stabilises the measured values after switching on.
The accuracy of the balance depends on the local acceleration of the fall.
Please be sure to observe the information in the chapter on adjusting.

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 during the initial start-up, after change in location and variation of surrounding temperature. It is also recommendable to adjust the balance periodically during weighing operation in order to obtain exact measured values.

6.8 Adjusting

Using a precision weight, the accuracy of the balance can be checked at any time and adjusted.

Adjustment procedure:

Check that the surrounding conditions are stable.
A short warm-up time of about 5 minutes are recommended for stabilisation.
Switch the balance on by pressing the ON OFF key, then wait until "**0**" is indicated.
Press the MODE CAL key and hold. After the acoustic signal is heard "**CAL**" will appear on the display for a brief period. The exact size of the selected adjusting weight flashes on the display following this (capture 8.3 **„**Select the adjusting weight**").** Now place the adjusting weight in the middle of the weighing plate.
Now operate the SET M key. Shortly after "**CAL F**" appears, and then the automatic return to the normal weighing mode will follow. On the display the weight of the adjusting weight appears.
In case of an adjusting error or a wrong adjusting weight "**CAL E**" will appear. Repeat the adjusting procedure.
Keep the adjusting weight near the balance. Daily verification of the balance accuracy is recommended for quality assured applications.

6.9 Underfloor weighing

Objects which, because of their size or shape, cannot be put on the scale, can be weighed by means of underfloor weighing.

Proceed as follows:

- Switch off the balance.
- Turn the balance over.
- Open the cover plate (1) on the base of the balance.
- The hook for underfloor (2) weighing must be screwed **carefully and completely without damaging the balance.**
- Place the balance over an opening.
- Hang the item to be weighed on the hook and carry out weighing.

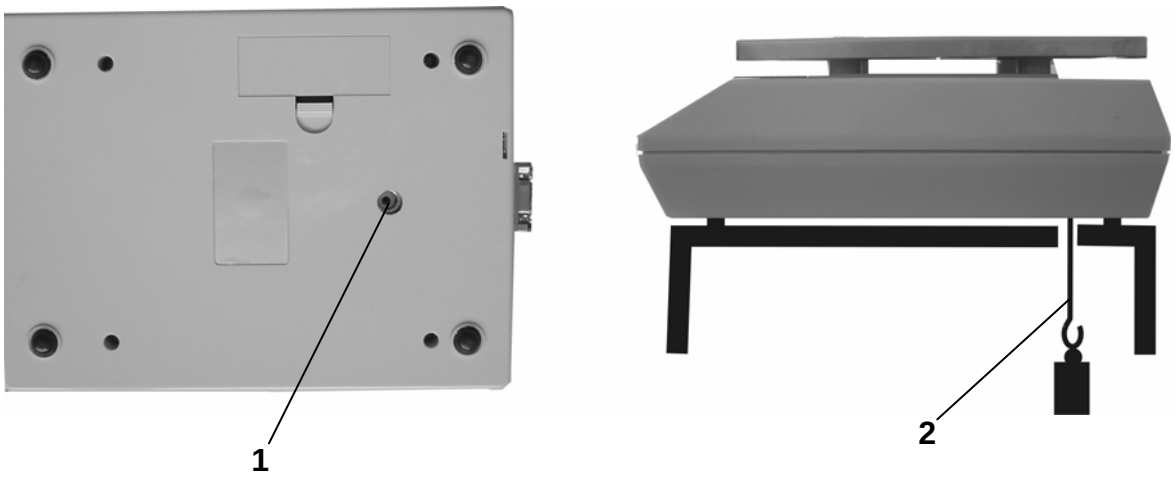


Fig. 1: Setting up the balance for underfloor weighings

CAUTION

- **For the underfloor weighing use only the original hook of KERN.**
- **Take care that all hanged items are stable enough to hold the goods which you wish to weigh (!!Danger of breaking!!).**
- **Never hang goods more than the maximum permitted weight (!!Danger of breaking!!).**

Always make sure that there are no living beings or materials below the load that could be injured or damaged.

NOTE

After completing the underfloor weighing, the opening in the floor of the balance must be closed again (dust protection).

7 Operation

7.1 Overview of display

7.2 Weighing

Switch the balance on by pressing the ON OFF key.

The balance will show “88888“ for approx. 3 seconds and then change to “0“. Now it is ready for use.

Important: If the display does not show “0“ press the TARE key.

Only now (!) place object on the weighing pan. Make sure that the weighing object does not stripe or touch the housing or base.

Now the weight will be indicated. After a successful „resting position“ control the weighing unit (e.g. g or kg) will appear on the far right at the bottom of the display.

If the object should be heavier than the weighing range allowance, the symbol “E“ (overload) will appear on the display and a tone can be heard.

7.3 Taring

Switch the balance on by pressing the ON OFF key, then wait for the **“0“** indication.

Place the jiffy on the weighing pan and press the TARE key. Display again shows **“0“.** Now the weight of the jiffy is memorised internally.

By pressing the TARE key after a weighing procedure, **“0“** will appear on the display again.

The taring procedure can be repeated continuously, for instance when mixing several components.

The limit is reached when the full weighing range is overlaid.

After having removed the jiffy the total weight will appear as a minus indication.

7.4 Plus / Minus Weighings

For instance to control piece-weights, filling process control etc.

Switch the balance on by pressing the ON OFF key, then wait until **“0“** is indicated.

Place rated weight on the weighing pan and tare on **“0“** by pressing the TARE key. Remove rated weight.

Place the objects on the weighing pan successively, the balance will show any deviation from the rated weight in “+“ and “-“.

According to the same procedure packages with the same weight, related to a rated weight, can be produced.

Return to the weighing mode by pressing the TARE key.

7.5 Piece counting

Switch the balance on by pressing the ON OFF key, then wait until **“0“** is indicated.
Briefly press the MODE CAL key.

Reference number 5 will appear.

To call up the reference numbers 10, 25 and 50 press the MODE CAL key several times.
Put so many pieces on the weighing pan as the set reference number requires.

Confirm by pressing the SET M key.

The balance is now in the piece counting mode and will count all pieces laying on the weighing pan.
By pressing the MODE CAL key the balance returns to the weighing mode and displays the weight of the counted pieces.

Important: The higher the reference number, the more accurate the piece counting is.

See the table “Technical Information“ on page 12 for minimum counting weight. If the number of pieces is below the minimum weight the display shows “**Er1**“. Return to the weighing mode by pressing the MODE CAL key.

Jiffies can also be used to count pieces. Tare the jiffy by pressing the TARE key before beginning the piece counting operation.

7.6 Gross-total Weighings

Useful when several individual weighing operations should be carried out additively and successively, and when you want to know the total weighed-in weight (gross-total, this means without the weight of the jiffy).

Example:

Tare a jiffy by pressing the TARE key.

Weigh component ❶, and tare back to “0“ with the SET M key. The activation of the memory is shown by a triangle on the far left of the display.

Weigh component ❷, by pressing the SET M key the gross-total is displayed, this means the sum of component ❶ and ❷. Tare to “0“ by pressing the SET M key.

Weigh component ❸, by pressing the SET M key the gross-total is displayed, this means the sum of the components ❶ and ❷ and ❸.

If necessary fill the formula container up to the desirable level.

To return to the weighing mode press the TARE key.

7.7 Percentage weighing

Symbol on display: %

Percentage weighing allows the weight to be displayed as a percentage in relation to a reference weight.

Use the ON OFF key to switch the balance on and wait for “0“ to appear.

Repeatedly press the MODE CAL key briefly. This runs through the reference piece numbers of the counting function ”100%” will subsequently appear on the display.

Place the reference items in the weighing basin.

Press the SET M key and the item weight is accepted as a reference (100%).

You may now place the test pieces on the weighing plate. The percentage value as against the reference item will appear on the display.

Return to weighing mode by pressing the MODE CAL key.

7.8 Weighing units

Switch the balance on using the ON OFF key and wait for ”0“ to be displayed.
Press the PRINT key until an acoustic signal is heard and “UNIT” is seen on the display.
Operate SET M briefly. The set unit will appear on the display.
Use the MODE CAL key to choose between the various units (see chart).
Press the SET M key to accept the set weighing unit.

	Display	***Conversion factor 1 g =***
Gramm	g	1.
Pound	lb	0.0022046226
Unze	oz	0.035273962
Troy Unze	ozt	0.032150747
Tael Hongkong	tlh	0.02671725
Tael Taiwan	tlt	0.0266666
Grain	gn	15.43235835
Pennyweight	dwt	0.643014931
Momme	mom	0.2667
Tola	tol	0.0857333381
Carat	ct	5

Different foreign weighing units are integrated into the various balance models.
The details can be found on this chart:

Models / ***Unites***	**440-21N**	**440-21A**	**440-33N**	**440-35N**	**440-35A**	**440-43N**	**440-45N**	**440-47N**	**440-49N**	**440-49A**	**440-51N**	**440-53N**	**440-55N**
Gramm	x	x	x	x	x	x	x	x	x	x	x	x	x
Pound			x	x	x	x	x	x	x	x	x	x	x
Unze	x	x	x	x	x	x	x	x	x	x	x	x	x
Troy Unze	x	x	x	x	x	x	x	x	x	x	x	x	x
Tael Hongkong	x	x	x	x	x	x	x	x	x	x	x	x	x
Tael Taiwan	x	x	x	x	x	x	x	x	x	x	x	x	x
Grain	x	x	x	x	x								x
Pennyweight	x	x	x	x	x	x	x	x	x	x	x	x	x
Momme	x	x	x	x	x	x	x	x	x	x	x	x	x
Tola	x	x	x	x	x	x	x	x	x	x	x	x	x
Karat	x	x	x	x	x								

7.9 Rear illuminated display

To choose the backlight mode, please follow the below instruction for the setting:

Switch the balance on by pressing the ON/OFF key, then wait until display shows "**0"**.

Press and hold the PRINT key until display shows **„UNIT".**

Press the MODE/CAL key 6 times, then **„bl"** will appear.

Confirm with the SET/M key.

Press the MODE/CAL key to switch among the backlight modes:

Display	Mode	Function
„bl" on	Backlight on	Contrasting display which can also be read in the dark.
„bl" off	Backlight off	Save the battery
„bl" Ch	Backlight switches automatically off 10 sec after stable indication	Save the battery

Confirm with the SET/M key.

8 Settings

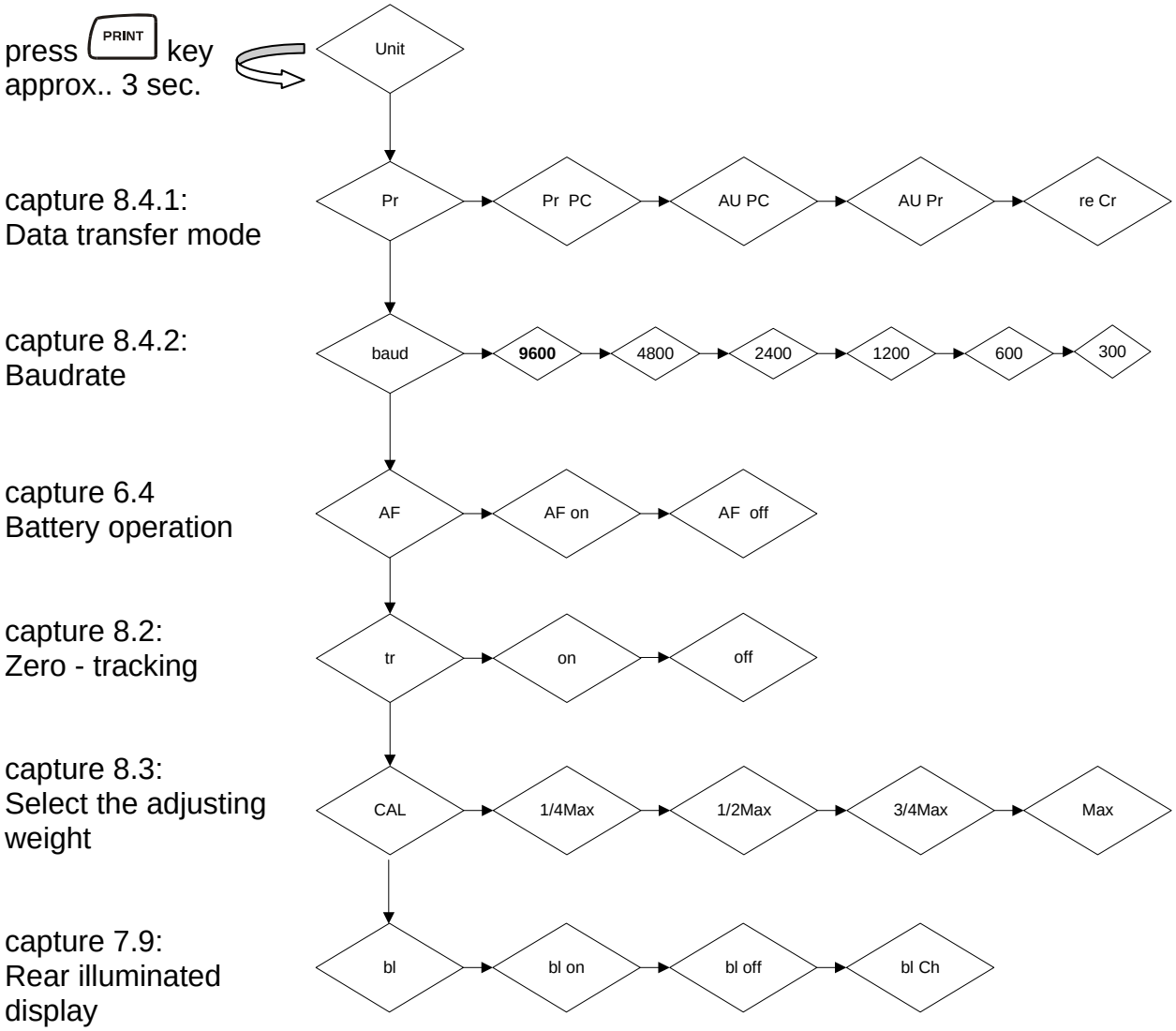
8.1 Menu structure:

Switch the balance on using the ON OFF key and wait for ”0“ to be displayed.

Press the PRINT key approximatly 3 sec. to enter in the Setting modus.

By pressing the MODE CAL key the different menuoption be showed.

By pressing the SET M key a menuoption is selected. In this menuoption the choice is made by the MODE CAL key. By repeated pressing the SET M key the setting is saved.



8.2 Dosage und Zero-tracking

When the Auto-Zero-function is activated, any slight changes of the zero readout are automatically tared.
In the event that small quantities are removed or added to the material to be weighed, incorrect weighing results can be displayed due to the “stability compensation“ in the balance. (Example: Slowly draining fluids from a container on the balance.)
Having dosages with slight changes of weight it is recommended to deactivate this function.

With switched off **Zero-Tracking** the display however is more unstably.

Activate/deactivate Zero-Tracking	***Display***
1. Press the PRINT key until ”unit" is displayed.	Unit
2. Repeatedly press the MODE CAL key until ”tr“ is displayed.	tr
3. The function can be activated by pressing the SET M key.	tr on
4. The function is deactivited by pressing the MODE CAL key again.	tr off
5. The changed setting is accepted by using the SET M key.	
6. The balance will return to weighing mode.	0,0 g

8.3 Select the adjusting weight

The calibrating weight can be selected from four prescribed nominal values (1/4; 1/2; 3/4 or max.) on the KERN 440 model (also see Table 1, manufacturers settings grey underlayed). We recommend the selection of as high a nominal value as possible in order to achieve high-grade measuring technique weighing results. Alternatively the non-included adjustment weights can be purchased from KERN.

Table 1:

440-21N	440-21A	440-33N	440-35N	440-35A	440-43N	440-45N
10g	10g	50g	100g	100g	100g	200g
20g	20g	100g	200g	200g	200g	500g
30g	50g	150g	300g	500g	300g	700g
40g	60g	200g	400g	600g	400g	1000g

440-47N	440-49N	440-49A	440-51N	440-53N	440-55N
500g	1000g	1000g	1000g	1000g	1000g
1000g	2000g	2000g	2000g	2000g	2000g
1500g	3000g	5000g	3000g	4000g	4000g
2000g	4000g	6000g	4000g	6000g	6000g

8.4 RS 232 C Data output via interface RS 232 C

General information
As a condition for the data transfer between the balance and a peripheral device (for instance printer, PC ...) both devise have to be set on the same interface parameter (for instance baud rate ...).

8.4.1 Data transfer mode

Setting data transfer mode	*Display*
1. Press the PRINT key until “unit" is displayed.	Unit
2. Press the MODE CAL key. The set mode will now appear “Pr”.	Pr PC
3. By pressing the SET M key the setting can be changed.	
4. Use the MODE CAL key to adjust the mode . (Pr PC; AU PC; **AU Pr** ; re Cr ; details **capture 8.5.**	AU Pr
5. The changed setting is accepted by using the SET M key.	
6. The balance will return to weighing mode.	0,0 g

8.4.2 Baudrate

The Baud rate for the data transfer is selctable.
The following example demonstrates how to set the Baud rate 9600.

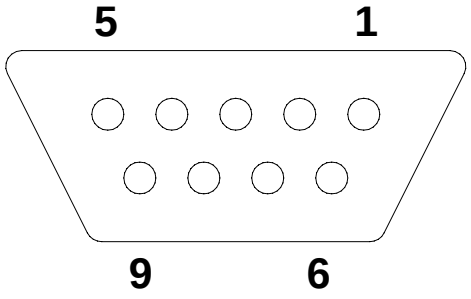
Setting the baud rate	*Display*
1. Press the PRINT key until “unit" is displayed.	Unit
2. Press the MODE CAL key.	Pr
3. Press the MODE CAL key. The set baud rate will now appear (e.g. 4800 baud).	Baud
4. Confirm with the SET M key.	4800
5. Use the MODE CAL key to adjust the baud rate . (1200, 2400, 4800, **9600**).	9600
6. The changed setting is accepted by using the SET M key.	
7. The balance will return to weighing mode.	0,0 g

9 Interface RS 232 C

9.1 Technical Data

- 8-bit ASCII Code
- 1 start bit, 8 data bits, 1 stop bits, no parity bit
- Baud rate adjustable to, 1200, 2400, 4800 and **9600** baud
- Miniature plug is necessary (9 PIN D-Sub)
- When working with an interface correct operation is secured only if the corresponding KERN-interface-cable (max. 2m) is used.

9.2 Description of the jack



Pin 2: transmit data
Pin 3: receive data
Pin 5: signal ground

9.3 Description of the data transfer

9.3.1 Pr PC

A reading will be transmitted, only if the PRINT key is pressed and the weight is stable.

a. stable weight/pieces/percentage format

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B*	B	B	B	B	B	B	B	B	0	.	0	B	g	B	B	CR	LF

b. “Error” format

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

9.3.2 AU Pr

If a stable reading comes up, the reading will be sent once automatically.

c. stable weight/pieces/percentage format

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B*	B	B	B	B	B	B	B	B	0	.	0	B	g	B	B	CR	LF

d. “Error” transmit

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

9.3.3 AU PC

Weight readings will be sent automatically and continuously, no matter the weight reading is stable or unstable.

e. Stable weight/pieces/percentage format

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B*	B	B	B	B	B	B	B	B	0	.	0	B	g	B	B	CR	LF

f. "Error" format

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

g. unstable weight/pieces/percentage format

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
B*	B	B	B	B	B	B	B	B	0	.	0	B	CR	LF

9.3.4 rE Cr

Remote commands s/w/t will be sent from the remote to the balance as ASCII code. When the balance received the s/w/t command, following data will be transmitted.

- **s** function: a stable weight reading is sent via RS232 interface
- **w** function: a weight reading (stable or unstable) is sent via RS232 interface
- **t** function: no data transmitted, balance perform Tare function.

h. stable weight/pieces/percentage format

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B*	B	B	B	B	B	B	B	B	0	.	0	B	g	B	B	CR	LF

i. "Error" format

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

j. unstable weight/pieces/percentage format

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
B*	B	B	B	B	B	B	B	B	0	.	0	B	CR	LF

SYMBOLS:

B*	= Blank or M
B / 0 / .	= Blank / weigh reading / decimal point, depending on the weight reading
g	= weight unit / pieces / %
E, o, r	= ASCII CODE of "E, o, r"
CR	= Carriage Retur
LF	= Line Feed

10 Maintenance, upkeep, disposal

10.1 Cleaning

Please disconnect the device from the operating voltage before cleaning.

Only use a cloth dampened with mild suds and not aggressive cleaning agents (solvents or similar). Please ensure that fluids are not able to get into the device and rub off using a clean, soft cloth.
Loose sample residue/powder can be removed carefully using a brush or hand vacuum cleaner.
Remove any spilt material to be weighed immediately.

10.2 Maintenance, upkeep

The device may only be opened by trained service engineers authorised by KERN.
Disconnect from the mains supply before opening.

10.3 Disposal

The operating company shall dispose of the packaging and the device in compliance with the valid national or regional law of the operating location.

11 Troubleshooting

The balance should be switched off for a short time following an interruption in the programme sequence and disconnected from the mains supply. It is then necessary to repeat the weighing process from the beginning.

Help:

Interruption	***Possible cause***
Weight display is not illuminated.	• *The balance is not switched on.* • *The mains supply connection has been interrupted (mains cable not plugged in/faulty).* • *Power supply interrupted. .* • *The batteries are wrongly inserted, the batteries are empty* • *No batteries are attached*
The weight display changes continually	• *Draught/air movement* • *Table/floor vibrations* • *The weighing plate is in contact with foreign matter.* • *Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)*
The weighing result is obviously incorrect	• *The balance display is not set to zero* • *Adjustment is no longer correct.* • *Great fluctuations in temperature.* • *Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)*

Switch the balance off if other error messages should appear and then switch on again. Contact the manufacturer if the error message does not disappear.