



KERN VB

Version 1.4 01/2007

Operating Manual

Electronic platform balance

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1 Technical data

KERN	VB 6K1DM	VB 15K2DM	VB 30K5DM
<i>Readability (d)</i>	1 g/2 g	2 g/5 g	5 g/10 g
<i>Weighing range (max)</i>	3 kg/6 kg	6 kg/15 kg	15 kg/30 kg
<i>Minimum load (Min)</i>	20 g	40 g	100 g
<i>Verification value (e)</i>	1/2 g	2/5 g	5/10 g
<i>Verification class</i>	III	III	III
<i>Reproducibility</i>	1 g/2 g	2 g/5 g	5 g/10 g
<i>Linearity</i>	+/-1 g/2 g	+/-2 g/5 g	+/-5 g/10 g
<i>Recommended adjustment weight, not added (class)</i>	5 kg (M1)	10 kg (M1)	20 kg (M1)
<i>Stabilization time (typical)</i>	2-3 sec.		
<i>Weighing Units</i>	kg / lb		
<i>Auto Off</i>	optional cut-off after 3 min;		
<i>Operating temperature</i>	- 10° C + 40° C		
<i>Warm-up time</i>	10 minutes		
<i>Humidity of air</i>	15 % - 85 % (non-condensing)		
<i>Housing (B x D x H) mm</i>	300 x 300 x 65 (platform) 200 x 140 x 50 (terminal)	380 x 380 x 90 (platform) 200 x 140 x 50 (terminal)	
<i>Weighing plate mm</i>	300 x 300	380x380	
<i>Weight kg (net)</i>	5.5	11	
<i>Rechargeable battery</i>	Option (factory-assembly only)		
<i>Interface RS232</i>	Option (factory-assembly only)		

KERN	VB 30K5DSM	VB 60K10DM	VB 60K10DLM
<i>Readability (d)</i>	5 g//10 g	10 g//20 g	10 g//20 g
<i>Weighing range (max)</i>	15 kg//30 kg	30 kg//60 kg	30 kg//60 kg
<i>Minimum load (Min)</i>	100 g	200 g	200 g
<i>Verification value (e)</i>	5/10 g	10/20 g	10/20 g
<i>Verification class</i>	III	III	III
<i>Reproducibility</i>	5 g//10 g	10 g//20 g	10 g//20 g
<i>Linearity</i>	+/-5 g/10 g	+/-10 g/20 g	+/-10 g/20 g
<i>Recommended adjustment weight, not added (class)</i>	20 kg (M1)	50 kg (M1)	50 kg (M1)
<i>Stabilization time (typical)</i>	2-3 sec.	2-3 sec.	2-3 sec.
<i>Weighing Units</i>	kg / lb		
<i>Auto Off</i>	optional cut-off after 3 min;		
<i>Operating temperature</i>	- 10° C + 40° C		
<i>Warm-up time</i>	10 minutes		
<i>Humidity of air</i>	15 % - 85 % (non-condensing)		
<i>Housing (B x D x H) mm</i>	300 x 300 x 65 (platform) 200 x 140 x 50 (terminal)	380 x 380 x 90 (platform) 200 x 140 x 50 (terminal)	480 x 480 x 96 (platform) 200 x 140 x 50 (terminal)
<i>Weighing plate mm</i>	300 x 300	380 x 380	480 x 480
<i>Weight kg (net)</i>	5,5	11	21
<i>Rechargeable battery</i>	Option (factory-assembly only)		
<i>Interface RS232</i>	Option (factory-assembly only)		

KERN	VB 150K20DM	VB 150K20DLM	VB300K50DLM
<i>Readability (d)</i>	20 g//50 g	20 g//50 g	50 g//100 g
<i>Weighing range (max)</i>	60 kg//150 kg	60 kg//150 kg	150 kg//300 kg
<i>Minimum load (Min)</i>	400 g	400 g	1 kg
<i>Verification value (e)</i>	20/50 g	20/50 g	50/100 g
<i>Verification class</i>	III	III	III
<i>Reproducibility</i>	20 g//50 g	20 g//40 g	50 g//100 g
<i>Linearity</i>	+/-20 g/50 g	+/-20 g/40 g	+/-50 g/100 g
<i>Recommended adjustment weight, not added (class)</i>	100 kg (M1)	100 kg (M1)	200 kg (M1)
<i>Stabilization time (typical)</i>	2-3 sec.	2-3 sec.	2-3 sec.
<i>Weighing Units</i>	kg / lb		
<i>Auto Off</i>	optional cut-off after 3 min;		
<i>Operating temperature</i>	- 10° C + 40° C		
<i>Warm-up time</i>	10 minutes		
<i>Humidity of air</i>	15 % - 85 % (non-condensing)		
<i>Housing (B x D x H) mm</i>	380 x 380 x 90 (platform) 200 x 140 x 50 (terminal)	480 x 480 x 96 (platform) 200 x 140 x 50 (terminal)	480 x 480 x 96 (platform) 200 x 140 x 50 (terminal)
<i>Weighing plate mm</i>	380 x 380	480 x 480	480 x 480
<i>Weight kg (net)</i>	11	21	21
<i>Rechargeable battery</i>	Option (factory-assembly only)		
<i>Interface RS232</i>	Option (factory-assembly only)		

2 Declaration of conformity



KERN & Sohn GmbH

D-72322 Balingen-Frommern

Postbox 4052

email: info@kern-sohn.de

Phone: 0049-[0]7433- 9933-0

Fax: 0049-[0]7433-9933-149

Internet: www.kern-sohn.de

Declaration of conformity

Declaration of conformity for apparatus with CE mark

Konformitätserklärung für Geräte mit CE-Zeichen

Déclaration de conformité pour appareils portant la marque CE

Declaración de conformidad para aparatos con marca CE

Dichiarazione di conformità per apparecchi contrassegnati con la marcatura CE

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

Electronic Scale: KERN VB, BVBP

Mark applied	EU Directive	Standards
	89/336/EEC EMC	EN 55022
	73/23/EEC Low Voltage	EN 60950

Date: 03.01.2007

Signature: 

Gottl. KERN & Sohn GmbH
Management

Gottl. KERN & Sohn GmbH, Ziegelei 1, D-72336 Balingen, Tel. +49-[0]7433/9933-0, Fax +49-[0]7433/9933-149



KERN & Sohn GmbH

D-72322 Balingen-Frommern

Postbox 4052

email: info@kern-sohn.de

Phone: 0049-[0]7433- 9933-0

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This declaration is only valid with the certificate of conformity by a notified body.
- English** Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.
Diese Erklärung gilt nur in Verbindung mit der Konformitätsbescheinigung einer benannten Stelle.
- Français** Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.
Cette déclaration est valide seulement avec un certificat de conformité d'un organisme notifié.
- Español** Manifestamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes
Esta declaración solo será válida acompañada del certificado de conformidad de una institución nombrada.
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Questa dichiarazione sarà valida solo se accompagnata dal certificato di conformità di un ente riconosciuto.

Model:	KERN VB, BVBP
---------------	----------------------

EU Directive	Standards	EC-type-approval certificate no.	Issued by
90/384/EEC	EN 45501	T 5783	NMI

Date: 03.01.2007

Signature:

**Gottl. KERN & Sohn GmbH
Management**

Gottl. KERN & Sohn GmbH, Ziegelei 1, D-72336 Balingen, Tel. +49-07433/9933-0, Fax +49-074433/9933-149

3 Appliance overview

Model VB



4 Basic Information (General)

4.1 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“ balance, i.e. the material to be weighed is manually and carefully placed in the centre of the weighing plate. As soon as a stable weighing value is reached the weighing value can be read.

4.2 Improper Use

Do not use 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 permanent load on the weighing plate. 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 damaged 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.

4.3 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

4.4 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.

5 Basic Safety Precautions

5.1 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.

5.2 Personnel training

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

6 Transport and storage

6.1 Testing upon acceptance

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

6.2 Packaging

Keep all parts of the original packaging in case you need to return the appliance. Only use original packaging for returning. Before sending, disconnect all connected cables and loose/movable parts.

7 Unpacking, Setup and Commissioning

7.1 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 charging of the material to be weighed, weighing container and windshield.

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.

7.2 Setup

The balance must be installed in a way that the weighing plate is exactly in horizontal position.

7.2.1 Unpacking

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

7.2.2 Scope of delivery

Serial accessories:

KERN VB
<ul style="list-style-type: none">• Platform and display unit• Mains cable• Operating Manual

7.3 Mains connection

Power supply is achieved via integrated power pack. The voltage value printed on the type plate must match the local voltage. Connect the plug of the mains cable to the mains.

7.4 Storage battery operation (optional)

If the appliance was ordered with this option, it will be delivered with the storage battery pre-installed.

As long as the balance is connected to the mains it will be supplied from the mains. When it is cut-off from the mains, it will switch over to battery operation.

To save storage battery life, you can activate a function that triggers a cut-off after weighing is completed. (selection of time or continuous mode, options in menu).

To increase the service life of the storage battery, it is also possible to turn off the display backlighting.

When the storage battery is low, the battery symbol appears on the display.

If the balance continues to be operated and does no longer work properly, the display will be turned off with the exception of the battery symbol.

After 1 minute the balance will then be completely turned off.

The balance monitors the state of the storage battery and controls the charging process automatically. The storage battery display is active whilst the battery is being charged.

7.5 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).

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

7.6 Adjustment

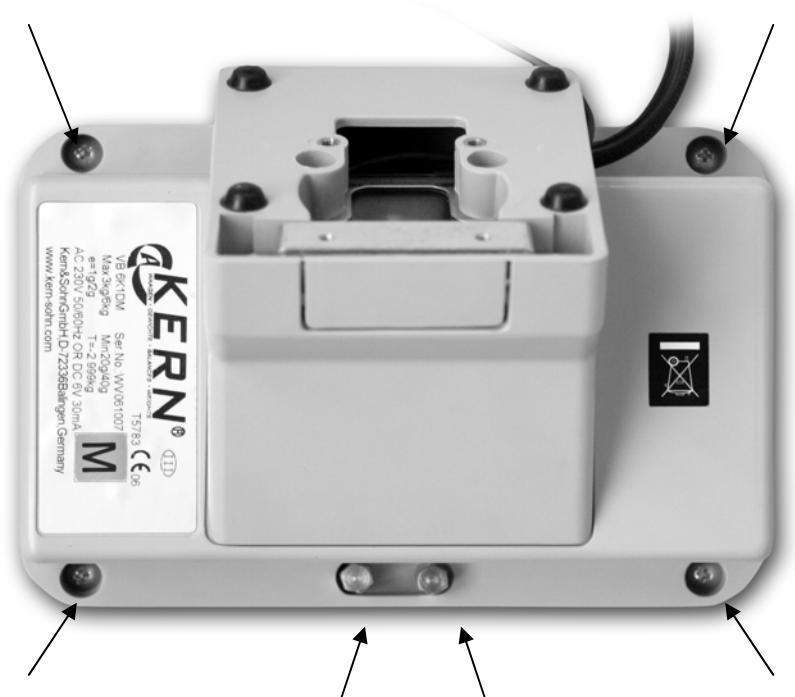
As the acceleration value due to gravity is not the same at every location on earth, each balance must be coordinated - in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the balance has not already been adjusted 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. To receive accurate measuring values it is also recommended to adjust the balance periodically in weighing operation.

Carry out adjustment with the help of the recommended adjustment weight (see chapter 1 "Technical Specifications").

Procedure when adjusting:

Note: Access to the adjustment switch of verified appliances can only be gained by destroying the safety seal area (first unscrew terminal from platform or tripod). This invalidates the verification.

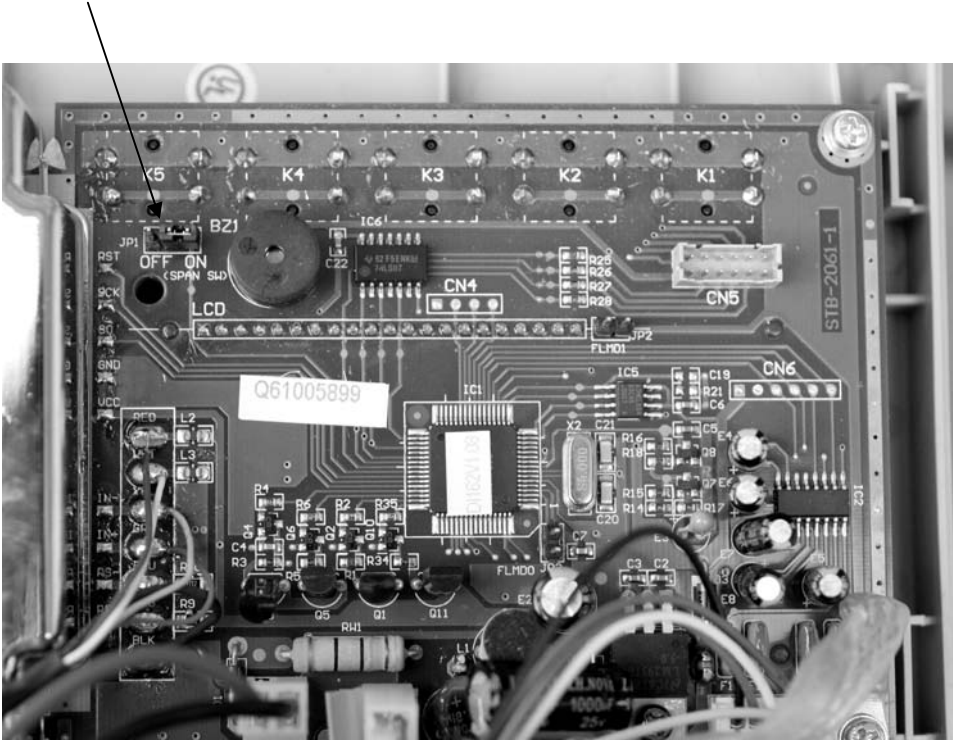
Observe stable environmental conditions. A warming up time (see chapter 1) is required for stabilization.



Remove 6 screws at the rear of the display and keyboard unit, as shown in the picture.












Open up the top of the display and keyboard unit by pulling it upwards.

To enable the adjustment function set **JP1** (SPAN SW) to **On** (see arrow).




After having finished adjustment, reset **JP1** (SPAN SW) to **OFF** and carefully close the case .

7.7 Checking the weighing range, adjustment weight input and adjustment


System requirements:	Display																		
Set adjustment switch to ON																			
Keep pressing the key  and actuate the keys    one after the other. Flashing ->	CAL																		
Check / possibly change constant of gravitation by pressing keys  and 	GO 9.7946																		
Operate the  key	dP																		
Actuate the  key required to change the position of the decimal point.	<table border="0"> <tr><td>VB6K1DM</td><td style="text-align: right;">000.000</td></tr> <tr><td>VB15K2DM</td><td style="text-align: right;">000.000</td></tr> <tr><td>VB30K5DSM</td><td style="text-align: right;">000.000</td></tr> <tr><td>VB30K5DM</td><td style="text-align: right;">000.000</td></tr> <tr><td>VB60K10DM</td><td style="text-align: right;">0000.00</td></tr> <tr><td>VB60K10DLM</td><td style="text-align: right;">0000.00</td></tr> <tr><td>VB150K20DM</td><td style="text-align: right;">0000.00</td></tr> <tr><td>VB150K20DLM</td><td style="text-align: right;">0000.00</td></tr> <tr><td>VB300K50DLM</td><td style="text-align: right;">0000.00</td></tr> </table>	VB6K1DM	000.000	VB15K2DM	000.000	VB30K5DSM	000.000	VB30K5DM	000.000	VB60K10DM	0000.00	VB60K10DLM	0000.00	VB150K20DM	0000.00	VB150K20DLM	0000.00	VB300K50DLM	0000.00
VB6K1DM	000.000																		
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VB60K10DM	0000.00																		
VB60K10DLM	0000.00																		
VB150K20DM	0000.00																		
VB150K20DLM	0000.00																		
VB300K50DLM	0000.00																		
Confirm by pressing the  key	CAP 1																		
Check / change maximum load (max.) for balance using the keys  and  weighing range 1 (see table)	<table border="0"> <tr><td>VB6K1DM</td><td style="text-align: right;">6</td></tr> <tr><td>VB15K2DM</td><td style="text-align: right;">15</td></tr> <tr><td>VB30K5DSM</td><td style="text-align: right;">30</td></tr> <tr><td>VB30K5DM</td><td style="text-align: right;">30</td></tr> <tr><td>VB60K10DM</td><td style="text-align: right;">60</td></tr> <tr><td>VB60K10DLM</td><td style="text-align: right;">60</td></tr> <tr><td>VB150K20DM</td><td style="text-align: right;">150</td></tr> <tr><td>VB150K20DLM</td><td style="text-align: right;">150</td></tr> <tr><td>VB300K50DLM</td><td style="text-align: right;">300</td></tr> </table>	VB6K1DM	6	VB15K2DM	15	VB30K5DSM	30	VB30K5DM	30	VB60K10DM	60	VB60K10DLM	60	VB150K20DM	150	VB150K20DLM	150	VB300K50DLM	300
VB6K1DM	6																		
VB15K2DM	15																		
VB30K5DSM	30																		
VB30K5DM	30																		
VB60K10DM	60																		
VB60K10DLM	60																		
VB150K20DM	150																		
VB150K20DLM	150																		
VB300K50DLM	300																		

Confirm by pressing the  key



d 1

Press  key until the display (model-related) shows the following value:
(resolution weighing range 1)

VB6K1DM	2
VB15K2DM	5
VB30K5DSM	10
VB30K5DM	10
VB60K10DM	2
VB60K10DLM	2
VB150K20DM	5
VB150K20DLM	5
VB300K50DLM	10

Confirm by pressing the  key


CAP 2

Check / change maximum load (max.) for
balance using the keys  and 
of weighing range 2
(see table)


VB6K1DM	3
VB15K2DM	6
VB30K5DSM	15
VB30K5DM	15
VB60K10DM	30
VB60K10DLM	30
VB150K20DM	60
VB150K20DLM	60
VB300K50DLM	150

Confirm by pressing the  key


d 2

Press  key until the display (model-related) shows the following value:
(resolution weighing range 2)


VB6K1DM	1
VB15K2DM	2
VB30K5DSM	5
VB30K5DM	5
VB60K10DM	1
VB60K10DLM	1
VB150K20DM	2
VB150K20DLM	2
VB300K50DLM	5

Confirm by pressing the  key


Unit kg



You may use the  key to switch
between kg and lb

kg



Confirm by pressing the  key.
Weighing pan must be unloaded

CAL 00

Confirm by pressing the  key, zero
point is being reset.
Wait until **CAL SP** appears on the display.

Use the keys  and  to make your
selections and select the size of the used
adjustment weight, see chapter 1
“Technical Specifications”, e. g. 5 kg. If a
different weight is displayed, use the arrow
keys to change the weight value.

CAL SP : 5.000

 Number is increased,  shift digit

Place the adjustment weight onto the
weighing pan.

CAL SP: 5.000

Confirm by pressing the  key

5.000

Remove the adjustment weight.
Adjustment is completed.

0.000

Set adjustment switch to **OFF**.
Attach the keyboard top and fasten it with
the 6 screws.

Check, if adjustment is accurate by placing,
one at a time, the 1/3, 2/3 test weights as
well as the maximum weight on the
balance.

7.8 Safety seal area for adjustment

General introduction:

According to EU directive 90/384/EEC 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.



The arrows show the two locking pins that are used by the gauging office to attach seals.

Verification instructions

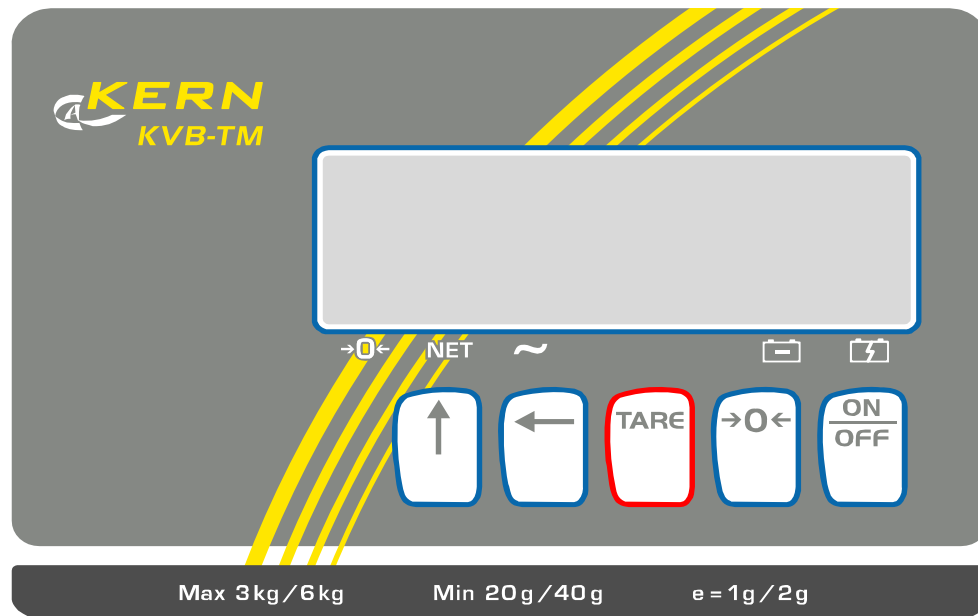
An EU type approval exists for balances described in their technical data as verifiable. If a balance is used where obligation to verify exists as described above, it must officially verified and re-verified in regular intervals.

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!

8 Operation

8.1 Operating elements

8.1.1 Overview of display



- 0←** **Reset display**
Weight display at zero
- NET** **Net display**
Illuminated when tare value is stored
- ~** **Stability display**
Illuminated when display of weight value is shown as stable
- 🔋** **Storage battery status display**
Almost empty, please charge
- 🔌** Charging storage battery
- kg** Weighing unit kg
- lb** Weighing unit lb
- HIGH** Weighing value above upper tolerance limit
- OK** Weighing value within tolerance range (between upper and lower limit)
- LOW** Weighing value below lower tolerance limit and > 1 d

8.1.2 Keyboard overview



Numeric value key / unit switch-over
Up arrow key / output via interface (during activation)



Numeric key / left arrow key



Taring key



Zeroing key



ON/OFF key

Information:


The balance is able to only store one taring value at a time.
When the balance is unloaded the saved taring value is displayed with negative sign.
To delete the stored tare value, unload the weighing tray and afterwards press the **TARE** key.

8.2.4 Entering the tare value manually


kg

If the numeric value of the tare weight (e. g. 0.28 kg) is known, this value may be entered by using the cursor keys.

0.00

To enter the tare weight, use the cursor key  to select the digit to be changed. The selected digit is flashing.


0.0“0“

The numeric value may be changed by pressing the cursor key  for numeric values.

0.0“8“

This is the way to enter the complete tare weight (e. g. 0.28 kg).

0.28

A subsequent actuation of the -key will store the value. Pressing again as well as turning off the balance will delete the value.


0.00

8.2.5 Weighing units switch-over

This function is only available if bit 3 in SPEC 28 is set at 0, as otherwise the actuation of the key triggers an output via the interface.

Display **kg**
0.400 **kg**

Place a weight (e. g. 440 g) onto the platform.





Each actuation of the cursor key  for the numeric value switches the weighing units from kg to lb and vice versa.

lb

8.2.6 Tolerance weighing

Weighing mode


0.0000 kg

Keep pressing the key  and actuate the keys 
  one after the other.

8 8 8 8 8 8

SPT1 / 00.000

To enter the lower tolerance limit, use the cursor key

 for digits to select the digit to be changed. The selected digit is flashing.


00.000"0"

The numeric value may be changed by pressing the

cursor key  for numeric values.


00."7"000

This is the way to enter the complete lower tolerance limit.

Press the  key to carry out the next step.


SPT2 / 00.000

To enter the upper tolerance limit, use the cursor key

 for digits to select the digit to be changed. The selected digit is flashing.


00.000"0"

The numeric value may be changed by pressing the

cursor key  for numeric values.

0"1".0000

This is the way to enter the complete upper tolerance limit.

To store the setting, press the  key.

0.0000

This function will remain stored even in a shut-off state. To disable this function, call it and reset the values to 0.00.

Example:

Place a 0.5 kg weight onto the weighing plate	0.5000	kg	Low
Add a 0.4 kg weight on the weighing plate	0.9000	kg	Ok
Add a 0.2 kg weight on the weighing plate	1.1000	kg	High
Remove all weights from the weighing plate	0.0000	kg	

In order to support the display you can activate a buzzer signal in the SPEC 1 bit 1 menu. The buzzer will be activated when the weighing value is outside the tolerance. (For setting see chapter 9.2).

If bit 0 is set in the SPEC 2 menu, the value SPT2 is used to enter the percentage by which the upper tolerance limit lies above the lower tolerance limit. (For setting see chapter 9.2).

Example: SPT1 = 0.200 kg and SPT2 = 1.500; from this follows an upper limit of 0.300 kg.

9 Settings

9.1 Call-up menu structure

Balance is in weighing mode		kg 0,000
Press the zero key		888888
Keep pressing the zero key and press the TARE key three times, SPEC number and related data, SP data are shown alternately	Short SPC00	141 / 0000
To call SPEC no. 20 – 30, keep pressing the zero key and press the left arrow key three times		
The left arrow key is used to shift the flashing digit to the left.		00“0“0
Each time the up arrow key is actuated, the number of the corresponding digit changes between 0 and 1.		00“1“0
The zero key stores the change that was made and switches to the next SPEC no.	SPC01	/ 0000
To store the SPEC setting and return to weighing mode press the TARE key.		0,000

The chapters below show the menu structure that allows carrying out individual settings.

The display in this menu structure indicates the following actions:

Bit 3	Bit 2	Bit 1	Bit 0
1	1	0	0

Flashing digit indicates current position.

Zero key: Counts up to SPEC number and stores content of last SPEC number

TARE key: Cancels change of current SPEC data and exits menu

Left arrow key: Shifts flashing digit to the left.

Up arrow key: Alternates value at current digit between 0 and 1

9.2 Menu structure

SPEC no.	Bit 3	Bit 2	Bit 1	Bit 0
0	Automatic cut-off (when balance is in resting position) 0000 – Automatic cut-off turned off if balance is not in use 0001 – after 3 minutes 0010 – not documented 0011 – not documented 0100 – not documented 0101 – not documented 0110 ~ 1111 – not used			
1	Buzzer 0 - ON 1 - OFF	Error alarm 0 - ON 1 - OFF	Tolerance balance Buzzer 0 - ON 1 - OFF	
2	Backlighting (LCD) 00 – always ON 01- always OFF 10 - Automatic 11- not used			Tolerance balance Unit 0 - % weight 1 - weight
3	RTS/CTS handshake of RS-232C 0 - ON 1 - OFF	Baud Rate of RS-232C 000 – 1200 bps 100 – 19200 bps 001 – 2400 bps 101 – not used 010 – 4800 bps 110 – not used 011 – 9600 bps 111 – not used		
4	Stop Bit of RS-232C 0 – 1 Bit 1 – 2 Bit	Data length of RS-232C 0 – 7 Bit 1 – 8 Bit	Parity of RS-232C 00- None 01- Odd 10- Even 11- not used	
5	RS-232 PC protocol 0000 – No data transfer 0001 – Standard version (continuous) type A (chapter 10.4.1) 0010 – not documented 0011 – not documented 0100 – for this application no function 0101 – for this application no function 1110 – printer output (chapter 10.4.2) 0110- 1111 not used			

6	Interval of the time-out error of RS-232C 00 – 1 second 01 – 3 seconds 10 – 5 seconds 11 – 10 seconds		Transfer condition if display is 0 – stable 1 – stable or unstable	Additional parity display in version RS232 0 – no 1 - yes
7	Data output of tare weight via RS-232 0 – no 1 - yes	Data output of balances no. via RS-232 0 – no 1 - yes	Header in version RS232 0 – no 1 – yes (preceding 0)	Data output within weighing range 0 - always 1 – over 20e
8			Data output of status via RS-232 0 – no 1 – yes	
9 ~ 19	not used			

SPEC no.	Bit 3	Bit 2	Bit 1	Bit 0
28	Up key function 0 – Weigh unit convert 1 – Data send			

10 RS 232C interface

10.1 Specification

Baud rate : 1200 / 2400 / 4800 / 9600 / 19200 bps.

Start Bit : 1 Bit

Stop Bit : 1 / 2 Bit

Data Bit : 7 / 8 Bits

Parity Even / Odd / None

10.2 Pin allocation 9-channel interior

Pin 2: RXD
Pin 7: RTS
Pin 3: TXD
Pin 8: CTS
Pin 5: GND

If handshake is not required, connection of RTS and CTS may be void.

10.3 Data format

Final character	CR	End-of-line	0x0d
	LF	End-of-record	0x0a
Data	„0“ – „9“	Numeric data	0x30- 39
	„-“ (Minus)	Minus sign	0x2d
	„.“ (Decimal)	Decimal	0x2e
	„ “ (Space)	Data error or space	0x20
	OF	Overload	0x4f 0x46
	UF	Underload	0x55 0x46
ID	„0“	Net weight	0x30
	„4“	Tare weight	0x34

10.4 Communication options


The extent and type of data output is to be set in the menus SPEC 5 to 8.

10.4.1 Standard version (continuous) type A


Data is transferred continuously to the PC.
Data output of stable / unstable weighing values according to setting.
Additional information, such as parity bit, tare load, balance no. or ID may be activated in the menu above.
(For setting see chapter 9.2).

10.4.2 Printer output



With pressing the key-  data will be printed on the printer, set in SPEC 6 to 8.
Up-key will be released in SPEC 28 .

11 Error messages

Error message	Possible cause	Remedy
8 8 8 8 8 8	Zero point outside range	Readjust balance
O F	If the material to be weighed exceeds the maximum display value or when the weighing plate already bears a load at the start-up of the balance.	Remove material from weighing pan.
U F	The weighing value is in negative range.	 -key or turn off again.

12 Service, maintenance, disposal

12.1 Cleaning

Before cleaning, please disconnect the appliance from the operating voltage.

Please do not use aggressive cleaning agents (solvents or similar agents), but a cloth dampened with mild soap suds. Ensure that no liquid penetrates into the device and wipe with a dry soft cloth.

Loose residue sample/powder can be removed carefully with a brush or manual vacuum cleaner.

Spilled weighing goods must be removed immediately.

12.2 Service, maintenance

The appliance may only be opened by trained service technicians who are authorized by KERN.

Before opening, disconnect from power supply.

12.3 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.

13 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.*

The displayed weight is permanently changing

-

- *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 value is obviously wrong

- *The display of the balance is not at zero*
- *Adjustment is no longer correct.*
- *Great fluctuations in temperature.*
- *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 manufacturer.