



**KERN & Sohn GmbH**

Ziegelei 1  
72336 Balingen-Frommern  
Germany

■ +0049-[0]7433-9933-0  
FAX +0049-[0]7433-9933-149  
■ info@kern-sohn.com

# **Operating instructions**

## **Medical Chair scales**

**KERN MCF**

TMCF 300K-1M-A

Version 1.0

2025-07

en



**TMCF-BA-e-2510**

<b>de</b>	Weitere Sprachversionen finden Sie online unter <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>bg</b>	Други езикови версии ще намерите в сайта <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>dk</b>	Flere sprogudgaver findes på websiden <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>et</b>	Muud keeleversioonid leiate Te leheküljel <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>es</b>	Más versiones de idiomas se encuentran online bajo <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>el</b>	Άλλες γλωσσικές αποδόσεις θα βρείτε στην ιστοσελίδα <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>fr</b>	Vous trouverez d'autres versions de langue online sous <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>lv</b>	Citas valodu versijas atradīsiet vietnē <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>fi</b>	Muut kieliversiot löytyvät osoitteesta <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>lt</b>	Kitas kalbines versijas rasite svetainėje <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>en</b>	Further language versions you will find online under <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>ro</b>	Alte versiuni lingvistice veți găsi pe site-ul <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>it</b>	Trovate altre versioni di lingue online in <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>sk</b>	Iné jazykové verzie nájdete na stránke <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>nl</b>	Bijkomende taalversies vindt u online op <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>sl</b>	Druge jezikovne različice na voljo na spletni strani <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>pt</b>	Encontram-se online mais versões de línguas em <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>cs</b>	Jiné jazykové verze najdete na stránkách <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>pl</b>	Inne wersje językowe znajdują Państwo na stronie <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>sv</b>	Övriga språkversioner finns här: <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>hu</b>	A további nyelvi változatok a következő oldalon találhatók: <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>hr</b>	Druge jezične verzije su dostupne na stranici: <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>
<b>no</b>	Andre språkversjoner finnes det på <a href="http://www.kern-sohn.com/manuals">www.kern-sohn.com/manuals</a>

## Contents

<b>1</b>	<b>Technical data</b>	<b>5</b>
<b>2</b>	<b>Declaration of conformity</b>	<b>6</b>
2.1	Explanation of the graphic symbols for medical products	6
<b>3</b>	<b>Device overview</b>	<b>9</b>
3.1	Overview of displays	13
3.2	Keyboard overview	14
<b>4</b>	<b>Basic Information (General)</b>	<b>15</b>
4.1	Specific function	15
4.1.1	Indication	15
4.1.2	Contraindication	15
4.2	Proper use	15
4.3	Non-intended product use / contraindications	17
4.4	Warranty	17
4.5	Monitoring of Test Resources	17
4.6	Plausibility check	18
4.7	Reporting serious incidents	18
<b>5</b>	<b>Basic Safety Precautions</b>	<b>19</b>
5.1	Pay attention to the instructions in the Operation Manual	19
5.2	Personnel training	19
5.3	Preventing contamination	19
5.4	Preparation for use	19
<b>6</b>	<b>Electromagnetic compatibility (EMC)</b>	<b>20</b>
6.1	General hints	20
6.2	Electromagnetic emission of interferences	21
6.3	Electromagnetic immunity to interferences	22
6.3.1	Crucial features of performance	24
6.4	Minimum distances	24
<b>7</b>	<b>Transport and storage</b>	<b>25</b>
7.1	Testing upon acceptance	25
7.2	Packaging / return transport	25
<b>8</b>	<b>Unpacking, Installation and Commissioning</b>	<b>26</b>
8.1	Installation Site, Location of Use	26
8.2	Unpacking	26
8.3	Scope of delivery	26
8.4	Installing the chair scales	27
8.4.1	Levelling	27
8.5	Battery operation	29
8.6	Rechargeable battery operation using an optional battery power pack	30
8.7	Mains connection	31
8.7.1	Safety cable	32
8.8	Initial Commissioning	32

<b>9</b>	<b>Menu .....</b>	<b>33</b>
9.1	Navigation in the menu .....	33
9.2	Menu overview.....	34
<b>10</b>	<b>Operation.....</b>	<b>37</b>
10.1	Weighing.....	37
10.2	Taring .....	38
10.2.1	Subsequent tare weight .....	38
10.2.2	Pretare.....	38
10.3	HOLD function .....	41
10.4	Calculation of the Body Mass Index .....	42
10.4.1	Classification of BMI values .....	43
10.5	Automatic switch-off function „AUTO OFF“ .....	43
10.6	Signal tone when pressing button .....	45
10.7	Setting time and date .....	46
<b>11</b>	<b>Communication with peripheral devices via KUP connection.....</b>	<b>47</b>
11.1	KERN Communications Protocol (KERN Interface Protocol).....	47
11.2	Data output after pressing the PRINT button < PRINT > .....	48
11.3	Automatic data output < AutoPr>.....	49
11.4	Continuous data output < cont >.....	49
11.5	Data format.....	50
11.6	WLAN .....	50
11.7	Print function.....	52
<b>12</b>	<b>Bluetooth .....</b>	<b>53</b>
<b>13</b>	<b>Alibi memory (optional).....</b>	<b>54</b>
<b>14</b>	<b>Error messages.....</b>	<b>55</b>
<b>15</b>	<b>Servicing, maintenance, disposal .....</b>	<b>56</b>
15.1	Cleaning .....	56
15.2	Cleaning / disinfecting.....	56
15.3	Sterilisation .....	56
15.4	Servicing, maintenance.....	56
15.5	Disposal.....	56
<b>16</b>	<b>Instant help for troubleshooting.....</b>	<b>57</b>
<b>17</b>	<b>Verification .....</b>	<b>58</b>
17.1	Verification validity period (current status in D) .....	59
<b>18</b>	<b>Adjustment .....</b>	<b>60</b>
18.1	Adjustment switch and seal marks .....	62

## 1 Technical data

<b>KERN</b>	<b>MCF 300K-1M</b>
Item number / Type	TMCF 300K-1M-A
Display	6 digits
Readability (d)	0.1 kg
Weighing range (max)	300 kg
Minimum load (min)	2 kg
Verification value (e)	100 g
Accuracy at initial calibration	$\leq 50 \text{ kg} = 0.5 \text{ e}$ $> 50 \text{ kg} - 200 \text{ kg} = 1 \text{ e}$ $> 200 \text{ kg} = 1.5 \text{ e}$
Linearity	$\pm 0.1 \text{ kg}$
Display	LCD with 25 mm digit height
Recommended calibration weight not included (class)	300 kg (M1)
Warm-up time	10
Operating temperature	10° C to + 40° C
Storage and transport environment	-20 to +60 ° ° C, and 30% to 90% relative humidity
Air humidity	max. 80% (non-condensing)
Atmospheric pressure (kPa)	70 kPa to 106 kPa
Input voltage	6 V / 1 A
Battery usage	6 x 1.5 V AA Battery life: 48 hours WiFi off 20 hours WiFi on Charging time: 8 hours
Auto Off	after 3, 5, 15, 30 minutes without load change (adjustable)
Dimensions fully assembled, (W x D x H) mm	647 x 860 x 910
Dimensions weighing surface (W x D) mm	390 x 360
Weight kg (net)	24
Battery operation	optional; 3.8 VDC – 4.2 VDC / 3700 mAh
Medical device according to (EU) 2017/745	Class I with measuring function
Calibration according to 2014/31/EU	Class III
Data interface	<b>Internal:</b> Wi-Fi <b>Optional / External:</b> KUP (RS232, Bluetooth, USB-D, extension box)

## 2 Declaration of conformity

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

**www.kern-sohn.com/ce**



For verified weighing scales (= weighing scales assessed for conformity) the declaration of conformity is included in the scope of delivery.  
Only these balances are medical products.

### 2.1 Explanation of the graphic symbols for medical products

All medical balances with this mark fulfill the following guidelines:



1. 2014/31/EU: Guideline for non-automatic balances
2. (EU) 2017/745: Medical products regulation



Unique product identification



Is a medical device



Balances which carry this mark, are conformity-evaluated as per accuracy class III of the EC-guideline 2014/31/EU. Accuracy of the balance see chapter 1 Technical data.

WF 1734331

Designation of the serial number of every device, applied at the device and on the packaging

Number here as example



Identification of the manufacturing date of the medical product.

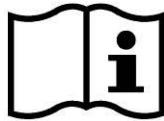
Year and month here as example



“Attention, please note the accompanying document“,  
or “Please note operating instructions”



“Observe operating instructions”



“Observe operating instructions”

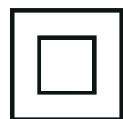


Identification of manufacturer of medical product  
including address

**Kern & Sohn GmbH**  
**D-72336 Balingen, Germany**  
**www.kern-sohn.com**



“Electro-medical device“  
with attachment for type B

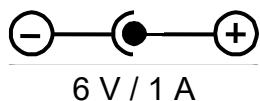


Device protection class II



Dispose of old appliances separately from your  
household waste!

Instead, take them to communal collection points.

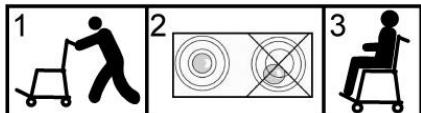


Display of supply voltage for scales with polarity  
display



The chair scales may not be used for the transport of people and objects!

Do not step onto the foot rests when stepping or leaving the chair scales!



After the balance having been transported to the patient, the balance must be levelled prior to weighing.



Mains connection



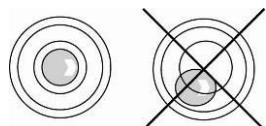
Sealing mark KERN SEAL



Supply voltage direct current



Information



Level balance before use

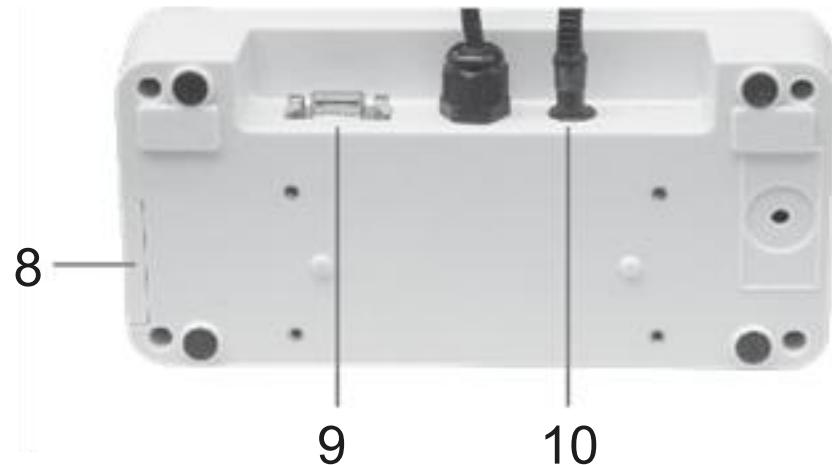


Electrostatically endangered structural components

### 3 Device overview



Item	Description
1	Handle
2	Display
3	Armrest
4	Locking brake
5	Wheel (for transporting the scale)
6	Seat shell
7	Footrest



Item	Description
8	Battery compartment
9	KUP connection
10	Power connection



Bubble level (located on the back of the scale)

Locking brake and levelling foot



Locking brake open

Locking brake closed



Footrest and levelling foot

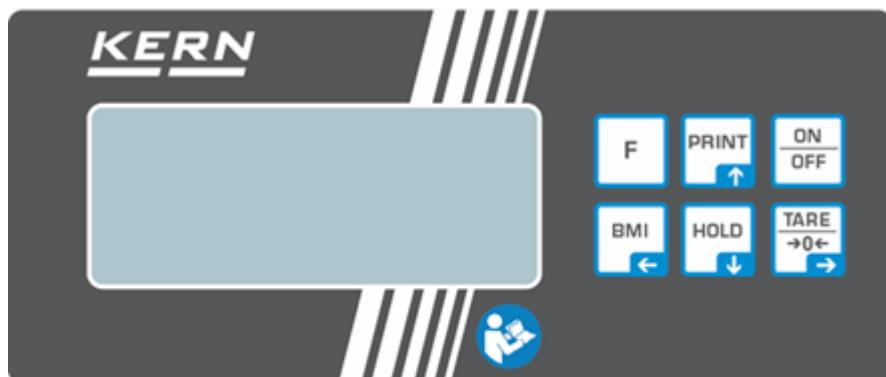


**Foldable armrests**

### 3.1 Overview of displays

	Stability display	Scales are in a steady state
	Zeroing display	Should the balance not display exactly zero despite empty weighing plate, press the  button. Your balance will be set to zero after a short standby time.
<b>NET</b>	Net weight display	Illuminated when net weight is displayed Illuminated after weighing scale was tared
<b>GROSS</b>	Gross weight display	Illuminated when gross weight is displayed
<b>HOLD</b>	HOLD function	HOLD function active
<b>BMI</b>	BMI function	Illuminated while BMI function is enabled
	Battery symbol	Shows the charging capacity of the batteries
<b>kg</b>	Weighing unit	Displays the weighing unit
	WiFi-interface	Shows the connection to the cableless network

### 3.2 Keyboard overview



Button	Designation	Function
	ON/OFF-button	Turn on/off
	HOLD button	Hold function/Calculation of a stable weight value <b>In menu:</b> <ul style="list-style-type: none"> <li>• Select menu items</li> </ul> <b>For numeric entry:</b> <ul style="list-style-type: none"> <li>• Lowering numeric value</li> </ul>
	BMI button	Calculation of the Body Mass Index <b>In menu:</b> <ul style="list-style-type: none"> <li>• Return to weighing mode</li> </ul>
	Print button	Data transfer via interface <b>In menu:</b> <ul style="list-style-type: none"> <li>• Select menu items</li> </ul> <b>For numeric entry:</b> <ul style="list-style-type: none"> <li>• Increase numerical value</li> </ul>
	Function key	Function quick key
	Zeroing key	Weighing scale will be reset to „0.0“ <b>In menu:</b> <ul style="list-style-type: none"> <li>• Confirm selection</li> </ul> <b>For numeric entry:</b> <ul style="list-style-type: none"> <li>• Change decimal digit</li> <li>• Confirm entry</li> </ul>
	TARE key	Tare balance

## 4 Basic Information (General)



Balances have to be verified for the purposes stated below in accordance with Directive 2014/31/EU. Article 1, paragraph 4. "Determination of mass in the practice of medicine that is, weighing patients for reasons of medical supervision during medical surveillance, examination and treatment."

### 4.1 Specific function

#### 4.1.1 Indication

- Determining the body weight in the medical practice area.
- Using as „non-automatic balance“
  - Place the person carefully in the middle of the seat surface.

Once a steady display value is shown, you can read the weight result.

#### 4.1.2 Contraindication

No contraindication known.

### 4.2 Proper use

These scales are used to determine weight of people sitting at rest in medical treatment rooms. The scales are suitable for recognizing, preventing and controlling illnesses.

- The person to be weighed should carefully sit down on the center of the seat of the chair scales and remain seated quietly.

Once a steady display value is shown, you can read the weight result. The weighing scale is designed for continuous duty.



The balances shall only be used by people who can sit still.

- The foot rests of the chair scales are fitted with an anti-slip surface that must not be covered during weighing a person.
- The balances should be checked for correct condition prior to each utilization by a person familiar with proper operation of the balance.

			
<ul style="list-style-type: none"> <li>▪ The chair scales may not be used for the transport of people and objects!</li> <li>▪ As long as the patient is sitting on the chair scales, the wheel brakes must be locked <b>without fail</b></li> <li>▪ The arm rests of the chair scales may only be used to rest the lower arms, not for bracing</li> <li>▪ When leaving the balance, fold up the arm rests and have the patient braced by a trained person</li> <li>▪ Install the chair scales always on a level, even surface</li> <li>▪ Do not step onto the foot rests when stepping or leaving the chair scales!</li> </ul>			

The WIFI interface allows a wireless transfer of the measurement results to a PC.

	Scales fitted with a serial interface may only be connected to appliances in compliance with Directive EN60601-1.
	If the balance doesn't have any contact with the transfer cable, do not touch the transfer port in order to avoid an ESD-failure. 

#### 4.3 Non-intended product use / contraindications

	<ul style="list-style-type: none"><li>• Do not use these scales for dynamic weighing processes.</li><li>• Do not leave permanent load on the weighing pan. This may damage the measuring system.</li><li>• Impacts and overloading exceeding the stated maximum load (max) of the weighing plate, minus a possibly existing tare load, must be strictly avoided. This could cause damage to the balance.</li><li>• Never operate the balance in explosive environment. The serial version is not explosion protected. It should be noted that a flammable mixture of anaesthetics and oxygen or laughing gas may occur.</li><li>• The structure of the balance may not be modified. This may lead to incorrect weighing results, safety-related faults and destruction of the balance.</li><li>• The balance may only be used according to the described conditions. Other areas of use must be released by KERN in writing.</li><li>• If the balance is not used for a longer time, take out the batteries and store them separately. Leaking battery liquid could damage the balance.</li><li>• The balance may only be used for weighing persons. Persons who are heavier than the indicated maximum load, may not step onto the balance.</li></ul>
---	--

#### 4.4 Warranty

Warranty claims shall be voided in case:

- Our conditions in the operation manual are ignored
- The appliance is used beyond the described uses
- Modification or opening of appliances
- 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
- Dropping of scales

#### 4.5 Monitoring of Test Resources

In the framework of quality assurance the measuring-related weighing properties of the balances 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](http://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.

#### **4.6 Plausibility check**

Please make sure that the measurement values computed by the appliance are plausible and are allocated to the respective patient, before storing and using the values for further purposes. This applies especially also for values transferred via interface.

#### **4.7 Reporting serious incidents**

All serious incidents appeared related to this product must be reported to the manufacturer and the responsible authority of the member state where the user and/or the patient are residents.

„Serious incident“ that means an incident which directly or indirectly had, could have or could have had one of the following consequences:

- the death of a patient, a user or another person,
- the temporary or permanent fatal deterioration of the health status of a patient, a user or other persons,
- a serious danger for public health.

## 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 medical staff must apply and follow the operating instructions for proper use and care of the product.

The balance must be set up via the interfaces and integrated into a network only by experienced administrators or hospital technicians.

### 5.3 Preventing contamination

The prevention of cross-contamination (fungal skin infections,.....) requires regular cleaning of the seating surface.

Recommendation: After any weighing procedure that could potentially result in contamination (e. g. after weighing that involves direct skin contact).

### 5.4 Preparation for use

- Check the balance for damage before any use
- Maintenance and reverification: The balance must be serviced and reverified at regular intervals.
- Do not use the appliance on slippery surfaces or in facilities with risk of vibration
- During installation the balance must be levelled.
- If possible, the product must remain in its original packaging for transportation purpose. Should this not be possible, make sure that the product is protected against damage
- Step onto and leave the personal balance only when a qualified person is present

## 6 Electromagnetic compatibility (EMC)

### 6.1 General hints

This device complies with the limits set for medical electrical devices of group 1, class B (as per EN 60601-1-2). The appliance is suitable for home care, as well as for commercial clinic environment.



The installation and use of this electrical medical device requires special precautionary measures as outlined in the EMC information below.



Do not install the appliance near active surgical high-frequency devices and radio-frequency-shielded rooms of a ME system for magnetic resonance production, where high intensity of electromagnetic interferences occurs.



Do not operate the appliance near or stacked on other appliances as could have as consequence inaccurate measuring results. If such use should be necessary, this appliance and other devices should be observed in order to ensure that they work normally.



The use of accessories, transformers and other cables than the ones specified by the dealer and delivered by him with the device could have as consequence amplified electromagnetic radiation or a weakened resistance against electromagnetic interferences and by that way less functionality.



Portable radiofrequency communication device (incl. periphery, antenna cable and external antennae) should be placed at a distance of at least 30 cm (12 inch) from each part of MWN including the cables admitted by the manufacturer. Otherwise the performance of the appliance could drop down.

Electromagnetic compatibility (EMC) describes a device's ability to perform reliably within an electromagnetic environment without causing inadmissible electromagnetic interference at the same time. Amongst other things, such disturbances may be transmitted by connecting cables or by the air.

Inadmissible interferences from the environment may result in wrong displays, inaccurate measured values or incorrect behavior of the medical device.

By the same token the medical device may in some cases cause such disturbances in other devices. To eliminate problems of that kind, we recommend you to take one or several of the measures listed below:

- Change the alignment or distance of the device to the source of EMI.
- Install or use the balance on another place.
- Connect the balance to another power source.
- For further questions please contact our customer services.

Disturbances may be caused by improper modification or add-ons to the device or not recommended accessories (such as power supply units or connecting cables). The manufacturer will not be responsible for these. Modifications may also result in a loss of authorization relating to the use of the device.



Devices emitting high frequency signals (mobile telephones, radio transmitters, radio receivers) may cause interference in the balance. For that reason do not use them near the balance. Chapter 6.4 contains details about recommended minimum distances.

## 6.2 Electromagnetic emission of interferences

<b>Guidelines and manufacturer's declaration – electromagnetic interferences</b>	
The balance is determined for the use in an electromagnetic environment, which complies with the requirements specified below. The customer or user of the medical electrical device must ensure that operation takes place in such an environment.	
<b>Irradiation test</b>	<b>Conformity</b>
Radio irradiation CISPR 11	Assembly 1
Radio irradiation CISPR 11	Class B
Harmonic irradiations IEC 61000-3-2	Category A
Voltage fluctuations/ Flicker irradiation IEC 61000-3-3	Compliance

### 6.3 Electromagnetic immunity to interferences

Guidelines and manufacturer's declaration - electromagnetic immunity to interferences		
The balance is determined for the use in an electromagnetic environment, which complies with the requirements specified below. The customer or user of the medical electrical device must ensure that operation takes place in such an environment.		
Test for immunity to interference	IEC 60601-1-2 Test level	Matching level
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ±2 kV, ±4 kV, ±8 kV, ±15 kV air	± 8 kV contact ±2 kV, ±4 kV, ±8 kV, ±15 kV air
Electrical quick transient / Burst IEC 61000-4-4	± 2 kV for power cables ± 1 kV Signal input/output 100 kHz repeated frequency	± 2 kV for power cables ± 1 kV Signal input/output 100 kHz repeated frequency
Excess voltage IEC 61000-4-5	±0.5 kV, ±1 kV differential mode ±0.5 kV, ±1 kV, ±2 kV General mode	±0.5 kV, ±1 kV differential mode ±0.5 kV, ±1 kV, ±2 kV General mode
Drops of voltage, short interruptions and voltage fluctuations on power feeding lines IEC 61000-4-11	0 % UT; 0.5 cycle. At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°. 0 % UT; 1 cycle and 70 % UT; 25/30 cycles; single phase: at 0°. 0 % UT; 250/300 cycle	0 % UT; 0.5 cycle. At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°. 0 % UT; 1 cycle and 70 % UT; 25/30 cycles; single phase: at 0°. 0 % UT; 250/300 cycle
Power frequency magnetic field IEC 61000-4-8	30 A/m 50Hz / 60Hz	30 A/m 50Hz / 60Hz
Guided radio frequency IEC61000-4-6	3 V 0.15 MHz – 80 MHz 6 V in ISM and amateur radio strip widths between 0.15 MHz and 80 MHz 80 % AM and 1 kHz	3 V 0.15 MHz – 80 MHz 6 V in ISM and amateur radio strip widths between 0.15 MHz and 80 MHz 80 % AM and 1 kHz
Irradiation radio frequency IEC61000-4-3	10 V/m 80 MHz – 2.7 GHz 80 % AM and 1 kHz	10 V/m 80 MHz – 2.7 GHz 80 % AM and 1 kHz
NOTE $U_T$ equals AC mains voltage prior to application of test level.		

**Guidelines and manufacturer's declaration - electromagnetic immunity to interferences**

Irradiation radio frequency IEC61000-4-3 (Test Specification for appendix port immunity to interference to wireless radio- frequency communication plant)	Test Frequency (MHz)	Strip (MHz)	Service	Modulation	Max. intensity (W)	Distance (m)	IEC 60601-1-2 Test level (V/m)	Matching level (V/m)
385	380 – 390	TETRA 400	Pulse modulation 18 Hz	1,8	0.3	27	27	
450	430 – 470	GMRS 460, FRS 460	FM ± 5 kHz deviation 1 kHz sine	2	0.3	28	28	
710	704 – 787	LTE strip 13, 17	Pulse modulation 217 Hz	0,2	0.3	9	9	
745								
780								
810	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE strip 5	Pulse modulation 18 Hz	2	0.3	28	28	
870								
930								
1720	1 700 – 1 990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE strip 1, 3, 4, 25; UMTS	Pulse modulation 217 Hz	2	0.3	28	28	
1845								
1970								
2450	2 400 – 2 570	Bluetooth WLAN 802.11 b/g/n, RFID 2450, LTE strip 7	Pulse modulation 217 Hz	2	0.3	28	28	
5240	5 100 – 5 800	WLAN 802.11 a/n	Pulse modulation 217 Hz	0,2	0.3	9	9	
5500								
5785								

### 6.3.1 Crucial features of performance



The balance does not have any crucial features of performance as per IEC 60601-1. The system may be subject to interference by other devices even if these devices conform to current emission requirements as per CISPR.

### 6.4 Minimum distances

#### Recommended safety distances between portable and mobile HF telecommunication devices and the medical device

This balance is designed for use in an electromagnetic environment in which high-frequency disturbance variables are controlled. The customer or user of the medical electrical device can help avoiding electromagnetic disturbances by keeping the minimum distance between portable and mobile HF telecommunication devices (transmitters) and the balance – depending on the output performance of the communication device, as stated below.

Rated capacity of transmitter %W	The safety distance depends on the transmission frequency m		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.20	1.20	2.30
10	3.80	3.80	7.30
100	12.00	12.00	23.00

For transmitters with a maximum rated capacity not stated in the table above you can calculate the recommended safety distance in meters (m) yourself by using the equation belonging to the respective column, whereby P equals the maximum rated capacity of the transmitter in Watt (W) as per details provided by the transmitter manufacturer.

NOTE 1 Higher frequency range applies to 80 MHz and 800 MHz.

NOTE 2 These guidelines may not be applicable in all cases.

The spread of electromagnetic variables is influenced by absorption and reflections in buildings, objects and persons.

## 7 Transport and storage

### 7.1 Testing upon acceptance

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

### 7.2 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 against shifting and damage.

## 8 Unpacking, Installation and Commissioning

### 8.1 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.

#### On the installation site observe the following:

- Place the balance on a stable, even surface
- Avoid extreme heat as well as temperature fluctuation caused by installing next to a radiator or in the direct sunlight
- Protect the 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 the balance and of the person to be weighed
- Avoid contact with water.

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.

### 8.2 Unpacking

Remove the individual components of the balance or the complete balance from the packaging with care and install at the intended location. When using the power supply unit, ensure that the power cable does not produce a risk of stumbling.

### 8.3 Scope of delivery

- Balance
- Mains adapter
- Operating instructions

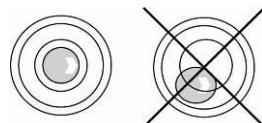
## 8.4 Installing the chair scales



In delivery state the balance is adjusted in a manner that when placed on an even surface the air bubble of the water balance is in the prescribed circle.



- ⇒ Place scales on an even surface.
- ⇒ Check if the air bubble of the level is within the prescribed circle.



- ⇒ If the air bubble in the level is **not** within the prescribed circle, the wheel height has to be adjusted, see chap. 8.4.1.
- ⇒ Check levelling regularly.

### 8.4.1 Levelling

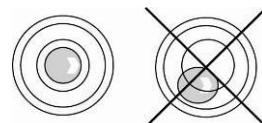
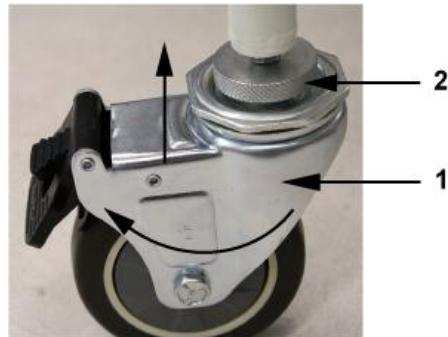


- The wheel height has to be adjusted for levelling.
- Levelling is restricted to specialist staff possessing well acquainted with the workings of weighing scales.

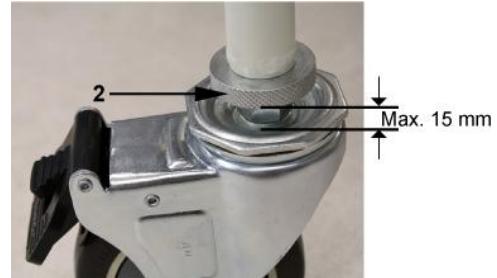
- ⇒ Place scales on an even surface.
- ⇒ Arrest the brake



- ⇒ Turn the wheel (1) clockwise until the air bubble of the water balance is in the prescribed circle



**Screw counternut (2) upwards till to the stop and it with a suitable tool (e.g. pliers).**



**Gap width must not exceed 15 mm!**

## 8.5 Battery operation

As an alternative for the rechargeable battery operation, the balance offers also the possibility to be operated with 6x AA-batteries.

Open the battery cover (1) at the lower side of the display unit and insert the batteries according to the example shown below. Lock again the battery compartment cover. If

the batteries are exhausted, the symbol  and „Lo bAt“ is displayed on the balance; replace the batteries. To save the battery, the balance switches automatically off (see chap. 10.5 Auto off).

 + <b>Lo bAt</b>	Capacity of batteries exhausted.
	Capacity of batteries will soon be exhausted.
	Batteries completely charged

### Disclaimer:

Only use KERN type rechargeable battery YMR-01 (RC 193650) or batteries AA 1.5 V (6x). Other may cause damages to the product, which can lead to injuries of persons

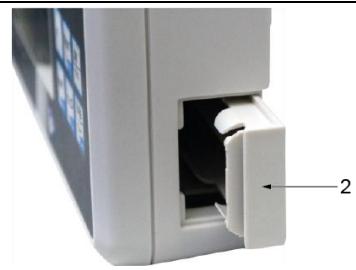
	If the balance is not used for a longer time, take out the batteries and store them separately. Leaking battery liquid could damage the balance.
	Replacement for rechargeable battery by inadequately trained personnel could result in a hazard

### Insert batteries:

Remove the battery compartment cover at the side of the display unit (1)



Remove the battery holder (2)



Insert the batteries into the battery holder



Insert batteries with the battery holder into the battery compartment and lock it with battery compartment cover.



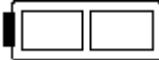
Insert batteries in the battery compartment and lock them with battery compartment cover.

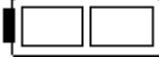


## 8.6 Rechargeable battery operation using an optional battery power pack



Open the battery compartment cover (1) at the base of the display unit and insert the rechargeable battery. Charge the rechargeable battery for at least 12 hours before initial use.

The appearance of the symbol  in the weight display indicates that the rechargeable battery is almost exhausted. The weighing scale will remain ready for operation for a few more minutes before switching off automatically in order to save the rechargeable battery (see chap. 10.5 Auto off). Charge rechargeable battery.

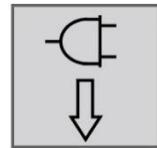
	Voltage has dropped below prescribed minimum
	Rechargeable battery very low
	Rechargeable battery completely recharged

	<ul style="list-style-type: none"> <li>• If the rechargeable battery is exhausted, „LobAt“ is displayed. The rechargeable battery is charged via the provided plug-in power supply unit (charging time 12 h for a complete charging).</li> <li>• If the balance is not used for a longer time, take out the rechargeable battery and store it separately. Leaking liquid could damage the balance.</li> </ul>
---	---

## 8.7 Mains connection

Power is supplied by the external mains adapter which also serves to isolate the mains supply from the scale. The stated voltage value must be the same as the local voltage. Only approved genuine KERN mains adapters may be used in compliance with Directive EN 60601-1.

The small sticker attached to the side of the display unit indicates the power port:



If the symbol appears in the display, the rechargeable battery will soon be exhausted. Connect the power supply unit and charge the rechargeable battery.

The flashing symbol informs you during charging about the charging status of the rechargeable battery.

### 8.7.1 Safety cable

#### **Safety cable for strain relief of the mains cable.**

(cable length incl. Mains cable less than 3 m)



#### **Application:**

Installation for strain relief between mains cable (plug-in power supply unit) and display unit.

## 8.8 Initial Commissioning

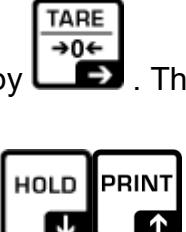
In order to obtain exact weighing results with the electronic balances, your balance must have reached the operating temperature (see warming up time chap.1). During this warming up time the balances must be connected to the power supply (mains, accumulator or battery) and be switched on.

The accuracy of the balance depends on the local acceleration of gravity. The value of gravity acceleration is shown on the type plate.

## 9 Menu

	<p>Access to service menu „tCH“ is locked in verified balances. To disable the access lock, destroy the seal mark and actuate the adjustment switch. For position of adjustment switch, see chap. 18.1.</p> <p><b>Attention:</b> After destruction of the seal mark the weighing system must be re-verified by an authorised agency and a new seal mark fitted before it can be reused for applications subject to verification.</p>
---	--

### 9.1 Navigation in the menu

<b>Call up menu</b>	 <p>⇒ In weighing mode press  and  simultaneously, „SetuP“ followed by „coM“ will appear.</p>
<b>Select function</b>	 <p>⇒ With help of  or , the individual functions can be selected one after the other.</p>
<b>Change settings</b>	 <p>⇒ Confirm selected function by . The current setting will be displayed.</p> <p>⇒ Select desired setting with  and confirm by , the balance returns to the menu.</p>
<b>Exit menu/ Return to weighing mode</b>	 <p>⇒ Press  repeatedly until the zero display appears. The balance is now in weighing mode.</p>

## 9.2 Menu overview

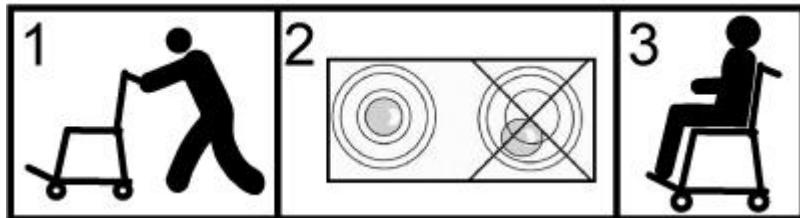
Level 1	Level 2	Further levels / description	
		Description of the	
com Communication	rּבּ32 ♦ עַבּ-d	bAud	600 1200 2400 4800 9600 14400 19200 38400 57600 115200 128000 256000
		dRtr	7db_it5 8db_it5
		PRr_it5	nonE odd EUEn
		StoP	15b_it 25b_it5
		hAndbh	nonE
		Protoc	fcP
		BLAn	on off

Pr int Data output	intFce	rs232	RS 232 interface*	
		usb-d	USB interface* *Only in conjunction with KUP interface	
		Wi-Fi	WiFi interface	
	PrNode	Er .G	Manual	on, off Data output after pressing the <b>PRINT</b> button, see chap. <b>Fehler! Verweisquelle konnte nicht gefunden werden.</b>
			AutoPr	on, off Automatic data output with stable and positive weight value s. Chap. <b>Fehler! Verweisquelle konnte nicht gefunden werden..</b> Renewed output only after zero display and stabilisation, depending on the settings <ErAnG>, selectable (off, 1, 2, 3, 4, 5). <ErAnG> defines factor for d. This factor multiplied by d results in the range in which values are not printed.
			cont	off Continuous data output
				on SPEED Set output interval
				Zero 0 (unloaded) also transmit continuously
				Stable Only transfer stable values
	WE iGht	SOLPrt	on, off	Displayed weight value is transferred
			Large	on, off
			Net	on, off
			Rate	on, off
			Format	Long (detailed measurement protocol)
				Short (standard measurement protocol)
	LAYOUT	none	on, off	Standard layout
			Model	on, off Output the model designation of the scale
		User	Serial	on, off Output the serial number of the scale
			no	Do not delete settings
		yes		Delete settings

<b>bEEPER</b> Acoustic signal	<b>REyS</b>	<b>oFF</b> <b>on</b>	Switch acoustic signal on/off when button is pressed
<b>AutoFF</b> Automatic Switch-off function in battery mode	<b>AutoE</b>	<b>oFF</b> <b>ceAr</b> <b>onLy0</b>	Automatic switch-off function switched off  The scale is switched off automatically after the time defined in the < <b>E nE</b> > menu item without load change or operation  Automatic switch-off only on zero display
	<b>E nE</b>	<b>30s</b> <b>1m in</b> <b>2m in</b> <b>5m in</b> <b>30m in</b> <b>60m in</b>	The scale is automatically switched off after the set time without load change or operation
<b>DATE nE</b> Date and time	<b>SET</b>	<b>-2022-12-31 23:59:59</b>	Enter date & time
	<b>dateFormat</b>	<b>ndY; dny; ynd</b>	Select date format (ndY = month-day-year; dny = day-month-year; ynd = year-month-day)
	<b>E tForA</b>	<b>12h; 24h</b>	Select time format
<b>RESET</b>	Reset scale settings to factory settings		

## 10 Operation

After the balance having been transported to the patient, the balance must be levelled prior to weighing, see graphic below.



Step onto and leave the balance

Step onto and leave the chair scales only when a qualified person (see chap. 5.2) is present

### 10.1 Weighing



⇒ Start balance by pressing . The balance will carry out a self-test. The balance is ready for operation as soon as the weight display “0.0 kg” appears.



- However, you can reset the weighing scale to zero by pressing the key.

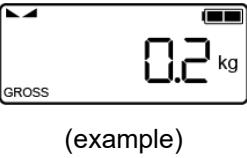
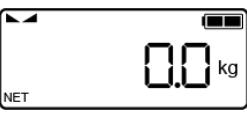
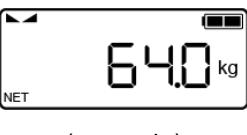
⇒ Have person sit in the center of the scales.  
⇒ Fold the footrests and the arm rests downwards. Put both feet of the patient on the respective foot rest.  
⇒ Put the lower arms of the patient on the arm rests.  
⇒ Wait for the rest position display , then read the weighing result.  
⇒ Once the weighing process is completed fold up the foot- and arm rests.



- If the person is heavier than the weighing range, (=overload) will appear in the display.

## 10.2 Taring

The tare weight of any preloads can be deducted by pressing a button so that the actual weight of the person is displayed in subsequent weighings.

	⇒ Put object (such as towel or padding) on the seating pan.
	⇒ Press  , the zero display appears. ⇒ „NET“ is shown at the bottom on the left.
	⇒ Seat person in the center of the seat pan. Wait until the stability display  appears, then read the weighing result.

	<ul style="list-style-type: none"><li>When the balance is unloaded the saved taring value is displayed with negative sign.</li><li>To delete the stored tare value, unload the balance and press </li></ul>
---	--

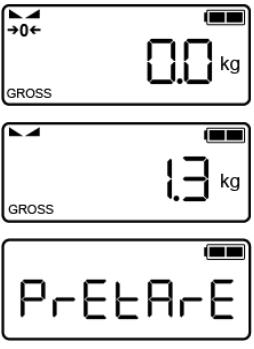
### 10.2.1 Subsequent tare weight

The balance can be tared several times successively.

### 10.2.2 Pretare

The possibility exists to enter either a known pre-tare value via the keyboard or to store the weight of an object placed on the weighing plate as a pre-tare value.

**Store the weight of an object placed on the weighing plate:**

	<p>⇒ Switch on the scales with . Wait for the stability display .</p> <p>⇒ Place the desired object, the weight of which is to be saved as a pre-tare value, on the weighing plate. (Here in the example "1.3 kg")</p> <p>⇒ Press and hold  to open the application menu. "PtArE" appears automatically. Press  again.</p>
	<p>⇒ PT" and "M1" flash on the display.</p> <p>⇒ Now use the HOLD or PRINT button to select the desired memory location between M1 and M4.</p>
	<p>⇒ Press  again, "ActuAL" appears. Confirm with the TARE button.</p>
	<p>⇒ "Wait" appears briefly and the weight currently on the scales is accepted as the pre-tare value. The scale switches to zero display. "NET" is displayed.</p>

**Enter the pre-tare value manually via the keyboard:**

 	<p>⇒ Switch on the scales with <b>[ON/OFF]</b>. Wait for the stability display .</p> <p>⇒ Press and hold , the application menu is called up. "PtArE" appears automatically.</p>
	<p>⇒ Confirm with , "PT" and "M1" flash on the display.</p> <p>⇒ Now use the HOLD or PRINT button to select the desired memory location between M1 and M4.</p>
	<p>⇒ Press  again, "ActuAL" is displayed.</p>
	<p>⇒ Press , "ManuAL" is displayed.</p>
	<p>⇒ Press , the display for entering the pre-tare value flashes. Enter numerical values with  and , change to the next decimal place with  and finally confirm the entered value with the TARE button.</p> <p>The scale switches to weighing mode and the entered pre-tare value is displayed with a minus sign as a negative value.</p>

**Call up pre-tare value:**



⇒ Press  in operating mode

⇒ PT' and "Mx" (M1-M4) flash on the display

⇒ Use  or  to select the desired memory location and confirm with 

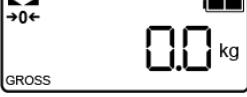
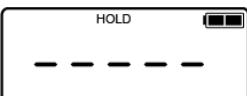
⇒ The pre-tare value appears in the display of the scale

## Delete pre-tare value:

- With the weighing pan unloaded, press , the scale switches to zero display.
- Press and hold  until the application menu opens. Make the following setting: **<PEARE> → cELEArE>** (confirm with )

## 10.3 HOLD function

The balance has an integrated standstill function (mean value calculation). This allows correct weighing determination of a person although the latter is not keeping still on the seat surface.

	<p>⇒ Start balance by pressing . Wait for stability display .</p>
	<p>⇒ Press , in the display „-----“ will appear and the „HOLD“ symbol appears flashing.</p>
 <p>(example)</p>	<p>⇒ During this display place the person in the middle of the seat surface.</p> <p>⇒ As soon as the „HOLD“-symbol does not more flash and the stability display  appears, the weighing value of the person will be displayed and „frozen“.</p>
	<p>After unloading the balance, the weighing value remains displayed for approx. 10 seconds, the „HOLD“ symbol appears flashing during that time.</p> <p>Then the balance returns automatically into the weighing mode.</p> <p>The „HOLD“ symbol goes out, and the zero display appears.</p>
	<p>There is no average value calculation in the event of too much movement.</p>

## 10.4 Calculation of the Body Mass Index

You need to know a person's body height before you can calculate the BMI for that person. This should be known.

	<p>⇒ Switch on the scales with  <b>ON</b>      ⇒ Wait for the stability display .</p>
	<p>⇒ Press  <b>BMI</b>      The last height entered is displayed in centimetres, the active digit flashes.</p>
   	<p>⇒ Use the  <b>PRINT</b> and  <b>HOLD</b> buttons to enter the current body height. Use  <b>TARE</b> to move to the next decimal place</p> <p>⇒ Confirm the value entered with  <b>TARE</b>. "StEPon" is displayed</p> <p>⇒ Place the person in the centre of the weighing plate. "-----" is displayed briefly, followed by the person's BMI value. The "BMI" symbol appears.</p>
	<p>⇒ Relieve the load on the weighing plate</p> <p>⇒ The scale automatically returns to weighing mode. The "BMI" symbol goes out and the zero display appears.</p>



- Reliable calculation of BMI is restricted to a body height of 100 cm to 200 cm and a weight of >10 kg.
- If weighing has to take place under unsteady conditions, you can be stabilise the display by applying the Hold function.

#### 10.4.1 Classification of BMI values

Weight classification for adults over 18 years of age using the BMI in accordance with WHO, 2000 EK IV and WHO 2004.

Category	BMI (kg/m <sup>2</sup> )	Risk of diseases associated with overweight
Underweight	< 18.5	Low
Normal weight	18.5 – 24.9	Average
Overweight	≥ 25.0	
Pre-adipose	25.0 – 29.9	A bit increased
Adipose degree I	30.0 – 34.9	Increased
Adipose degree II	35.0 – 39.9	High
Adipose degree III	≥ 40	Very high

#### 10.5 Automatic switch-off function „AUTO OFF“

The weighing scale will switch off automatically after the allotted time as long as neither the display unit nor the weighing surface is operated.

⇒ In weighing mode press simultaneously, „SetuP“ followed by „coN“ will appear.

⇒ Press repeatedly until „AutoFF“ appears.

⇒ Press , „ModE“ is displayed

⇒ Press again, „onLY0“ is displayed  
Here you can select between these settings:  
onLY0: Auto Off only with zero display  
oFF: Auto Off switched off  
Auto: Auto off independent on the load on the balance

⇒ Select the required setting by and acknowledge on

⇒ Press repeatedly until the zero display appears. The balance is now in weighing mode

To set a determined switch-off time, proceed as follows:

	⇒ As described above, call-up the menu item „ModE“
	⇒ Press  „tiME“ appears, acknowledge on  select the required setting by .

<b>[2 min]</b>	Weighing system will be turned off after 2 min.
<b>[5 min]</b>	Weighing system will be turned off after 5 min.
<b>[30 min]</b>	Weighing system will be turned off after 30 min.
<b>[60 min]</b>	Weighing system will be turned off after 60 min.
<b>[30 S]</b>	Weighing system will be turned off after 30 sec.
<b>[1 min]</b>	Weighing system will be turned off after 1 min.

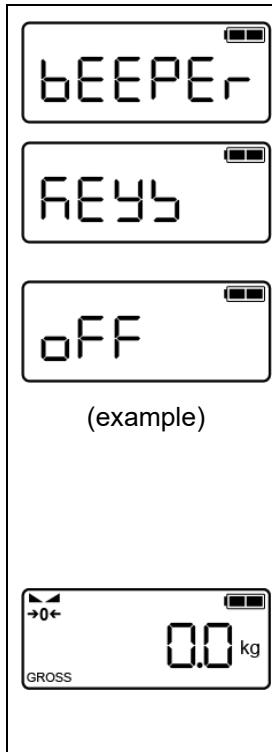
 (example)	⇒ Confirm selected time with  and return to weighing mode using .
---------------	---

## 10.6 Signal tone when pressing button

The balance offers the possibility to switch off or on an acoustic signal by pressing the keys.



- Menu settings:  
[bEEPEr]  $\Rightarrow$  [KEYS – on/oFF]



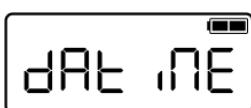
- $\Rightarrow$  In menu call-up the menu item „bEEPEr“
- $\Rightarrow$  Press „KEYS“ is displayed
- $\Rightarrow$  Press again, the last saved setting will be displayed. Here as example “OFF”
- $\Rightarrow$  Select desired setting with and acknowledge by
- $\Rightarrow$  Press repeatedly until the zero display appears. The balance is now in weighing mode

## 10.7 Setting time and date

(only available with Real Time Clock)



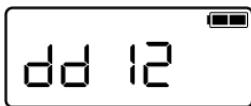
- Menu settings:  
[dAtIME]



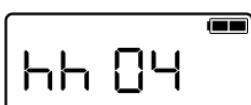
(example)



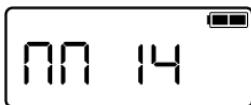
(example)



(example)



(example)



(example)



(example)



### Setting date:

- ⇒ In menu call-up the menu item „dAtIME“
- ⇒ Press repeatedly until the prompt for entering the year appears „YY20xx“. Enter the current year with or and confirm by .
- ⇒ The display changes automatically to the prompt for entering the month: „MM xx“
- ⇒ Enter the current month with or and confirm by .
- ⇒ The display changes to the prompt for entering the day: „dd xx“. Enter the current day with or and confirm by .

### Setting time:

- ⇒ Now the display changes automatically to the prompt for entering the **time**, first the hour: „hh xx“.
- ⇒ Enter the hour with or and confirm by .
- ⇒ The minutes appear: „MM xx“. Enter the current minutes and confirm on.
- ⇒ The seconds appear: „SS xx“. Enter the seconds and confirm on.
- ⇒ Date and time have now been entered; the display changes to the weighing mode.

## 11 Communication with peripheral devices via KUP connection

Via the interfaces weighing data may be exchanged with connected peripheral devices. Issue may be made to a printer, PC or check displays. In reverse order, control orders and data inputs may be made via the connected devices.

The balances of the TMCN series are equipped with a KUP connection (KERN Universal Port) as per standard.

The following options are available as interfaces:

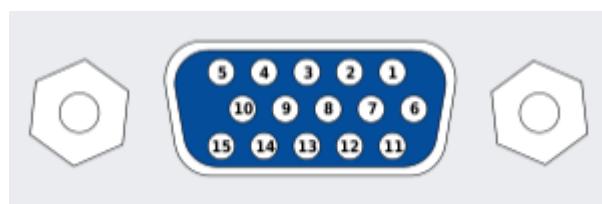
	Interface adapter with cable	
	Model	Example for application
RS232	YKUP-01	Serial printer
USB	YKUP-03	PC
Ethernet	YKUP-04	PC
Bluetooth	YKUP-06	Android terminal unit or PC
Kern Extension Box	YKUP-13	Several interfaces in parallel



The available interfaces can be used via the KUP (YKUP-13) in parallel manner.

Additional equipment connected to medical electrical equipment must comply with the respective IEC or ISO standards (e.g. IEC 60950 for data processing equipment). Furthermore all configurations shall comply with the requirements for medical electrical systems (See IEC 60601-1 or clause 16 of the 3Ed. of IEC 60601-1, respectively). Anybody connecting additional equipment to medical electrical equipment configures a medical system complies with the requirements for medical electrical systems. Attention is drawn to the fact that local laws take priority over the above mentioned requirements. If in doubt, consult your local representative or the technical service department.

### Connector assignment balance:



Warning: Only for use with KUP interfaces



Externally attached third party interface cables, which are connected to the KUP interfaces, may not exceed 10 m in length.

### 11.1 KERN Communications Protocol (KERN Interface Protocol)

KCP is a standardized set of interface orders for KERN balances, which allows many parameters and device functions to be called up and controlled. KERN devices that have KCP can use it to connect easily to computers, industrial control systems and other digital systems. A detailed description you will find in the „KERN Communications

Protocol“ manual, available in the download area on our KERN homepage ([www.kern-sohn.com](http://www.kern-sohn.com)).

To activate KCP please observe the menu overview of your balance’s operating instructions.

KCP is based on simple ASCII orders and replies. Every interaction consists of an order, possibly with arguments separated by spaces and finished by <CR><LF>.

The KCP orders supported by your balance may be queried emitting the order „I0“ followed by CR LF.

Extract of the mostly used KCP orders:

I0	Shows all implemented KCP orders
S	Sending stable value
SI	Sending current value (also instable)
SIR	Sending current value (also instable) and repeating
T	Taring
Z	Zeroing

Example:

Order	S	
Possible replies	S_S_100.00_g S_I S_+ or S_-	Order accepted, execution of the order started, currently another order is executed, timeout reached, over- or underload

## 11.2 Data output after pressing the PRINT button <PRINT>

**Activate function:**

- ⇒ In the Setup menu, call up the menu setting <Pr\_inE> → <PrModE> → <Er\_ü> and confirm with → .
- ⇒ For manual data output, use the navigation buttons ↑ to select the menu setting <PRINT> and confirm with → .
- ⇒ Use the navigation buttons ↑ to select the <on> setting and confirm with the → button.
- ⇒ To exit the menu, press the navigation button ← repeatedly.

**Output value:**

- ⇒ Place the person on the scale. The weight value is output after pressing the PRINT button.

### 11.3 Automatic data output <AutOp>

Data is output automatically without pressing the **PRINT** button as soon as the corresponding output condition is met, depending on the setting in the menu.

#### Activate function and set output condition:

- ⇒ In the Setup menu, call up the menu setting <Pr inE> → <Pr Node> → <Er inE> and confirm with → .
- ⇒ For automatic data output, use the navigation buttons ↑ to select the menu setting <AutOp> and confirm with → .
- ⇒ Use the navigation buttons ↑ to select the < on > setting and confirm with → . <ErAnGE> is displayed.
- ⇒ Confirm with → and use the navigation buttons ↑ to set the desired output condition.
- ⇒ Confirm with → button.
- ⇒ To exit the menu, press the navigation button ← repeatedly.

#### Output value:

- ⇒ If necessary, place the empty container on the scales and tare.
- ⇒ Place the person on the scales and wait until the stability indicator (◀ ▶) appears.  
The weight value is output automatically.

### 11.4 Continuous data output <cont>

#### Activate function and set output interval:

- ⇒ In the Setup menu, call up the menu setting <Pr inE> → <Pr Node> → <Er inE> and confirm with → .
- ⇒ For continuous data output, use the navigation buttons ↑ to select the menu setting <cont> and confirm with → .
- ⇒ Use the navigation buttons ↑ to select the setting < on > and confirm with the → button.
- ⇒ <PEEd> is displayed.
- ⇒ Confirm with → and set the desired time interval with the navigation buttons ↑ (in ms)
- ⇒ To exit the menu, press the navigation button ← repeatedly.

#### Output value:

- ⇒ Place person on the scale
- ⇒ The weight values are output at the defined interval

### Sample log (KERN YKB-01N):

S D	1.9997 kg
S D	1.9999 kg
S D	1.9999 kg
S D	1.9999 kg
S S	2.0000 kg
S S	2.0000 kg
S S	2.0000 kg
S D	1.9998 kg
S D	1.9998 kg
S D	2.0002 kg
S D	2.4189 kg
S D	2.9998 kg
S D	2.9996 kg
S D	2.9996 kg
S D	2.9997 kg
S D	2.9997 kg
S S	2.9996 kg
S S	2.9996 kg



The balances which have a serial interface, may only be connected to electrical office machines.

### 11.5 Data format

- ⇒ In Setup menu invoke the menu setting <Pr inE → PrNode → HE chE → EntPrE > and confirm with button ➔.
- ⇒ Use the navigation keys ↓ to select the menu setting <ForNRE > and confirm on ➔ button.
- ⇒ Use the navigation buttons ↓ to select the desired setting. Options:
  - <Short > Standard measurement protocol
  - <Long > Detailed measurement protocol
- ⇒ Confirm setting with ➔ button.
- ⇒ To exit the menu, press the navigation button ← repeatedly.

### Sample log (KERN YKB-01N):

ForNRE → Short	ForNRE → Long
N: S S 2.0000 kg T: 0.5000 kg G: 2.5000 kg	

### 11.6 WLAN

- W-LAN standard: IEEE 802.11 b/g/n (Wi-Fi)
- Network log: TCP/IP with DHCP
- Supported encryption methods: WPA, WPA2
- Transmission frequency: 2412 - 2472 MHz
- Maximum transmission performance: < 20dBm
- Application log: KCP (KERN Communications Protocol):

## Set up WIFI connections:

1. The balance creates a WIFI access point as soon as it has started up (WLAN symbol in the balance display appears).  
Use your computer to connect to this access point.  
The SSID (name of the balance's access point) is „AI\_THINKER\_xxxxxx“
2. Using a web browser visit the website <http://192.168.4.1/> .  
In the website:
  - A. Set the mode „Mode“ to “apsta”
  - B. Enter information about the network which you want to integrate the balance into (network „AP Name“ and password „AP Password“)
  - C. Save the settings „Save“ and update the site

**ESP8266 WebConfig**

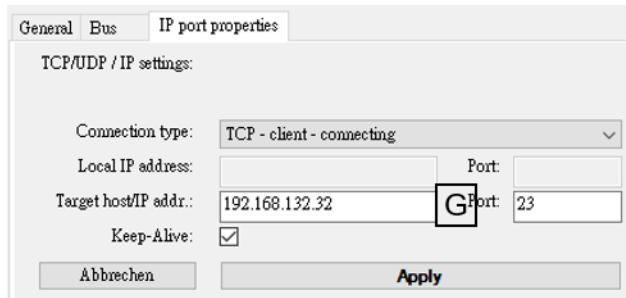
Serial Setting		SoftAP		Station	
Baud:	115200	SSID:	AI-THINKER_872B77	Mode:	apsta
Databits:	8	Passwd:		AP Name:	YKV_Net
Parity:	NONE	Auth Mode:	OPEN	AP Password:	YKV123456
Stopbits:	1	IP addr:	192.168.4.1	IP address:	0.0.0
		Subnet mask:	255.255.255.0	Subnet mask:	0.0.0
		Gateway:	192.168.4.1	Gateway:	0.0.0
		Mac:	be:dd:c2:87:2b:77	Mac:	bc:dd:c2:87:2b:77
<b>Save</b>		<b>Save</b>		<b>Save</b>	

3. Separate the access point from the computer
4. Cut the power supply to the balance for a short moment
5. Connect the computer again to the access point of the balance and update the website
  - D. Now the IP-address „IP address“ is displayed

**ESP8266 WebConfig**

Serial Setting		SoftAP		Station	
Baud:	115200	SSID:	AI-THINKER_872B77	Mode:	apsta
Databits:	8	Passwd:		AP Name:	YKV_Net
Parity:	NONE	Auth Mode:	OPEN	AP Password:	YKV123456
Stopbits:	1	IP addr:	192.168.4.1	IP address:	192.168.132.32
		Subnet mask:	255.255.255.0	Subnet mask:	255.255.255.0
		Gateway:	192.168.4.1	Gateway:	192.168.132.1
		Mac:	be:dd:c2:87:2b:77	Mac:	bc:dd:c2:87:2b:77
<b>Save</b>		<b>Save</b>		<b>Save</b>	

6. Close the website
7. Connect the computer to the selected network
8. Enter the IP / Port into the target software: 23



## 11.7 Print function

After a correct connection of the software and the balance, the weighing data can be



transferred using the button on the balance.

## 12 Bluetooth

The balance is optionally available with **Bluetooth Low Energy** (BLE) and will then be visible to Bluetooth Master devices using its serial number.

To access this, please use an appropriate software program / app which supports Bluetooth Low Energy (BLE). Applications exclusively using Bluetooth Classic (BLC) will not work.

The following profile must be adjusted:

<b>Service UUID</b>
0000fff0-0000-1000-8000-00805f9b34fb

<b>Read characteristic UUID</b>
0000fff1-0000-1000-8000-00805f9b34fb

<b>Write characteristic UUID</b>
0000fff2-0000-1000-8000-00805f9b34fb

- Transmission frequency: 2402 - 2480 MHz
- Maximum transmission performance: < 20dBm

## 13 Alibi memory (optional)

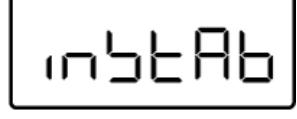
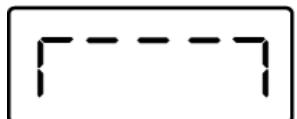
For weighings where verification is mandatory and which are to be analysed and processed by a PC electronic archiving is required by the metrological authorities by a verifiable data memory which cannot be manipulated. These stored data strings can be retrieved & displayed at any time via a connected PC

- The Alibi memory offers the possibility to store up to 250.000 weighing results, when the memory is exhausted, already used IDs are overwritten (starting with the first ID).
- By pressing the Print key or by KCP remote control command "S" or "MEMPRT" the storage process can be performed.
- The weight value (N, G, T), date and time and a unique alibi ID are stored.
- When using a print option, the unique alibi ID is also printed for identification purposes as well.
- The stored data can be retrieved via the KCP command "MEMQID". This can be used to query a specific single ID or a series of IDs.
- Example:
  - o MEMQID 15 → The data record which is stored under ID 15 is returned.
  - o MEMQID 15 20 → All data sets, which are stored from ID 15 to ID 20, are returned.

The detailed description can be found in the *KERN Communication Protocol* manual, available in the Downloads tab on the home page of KERN ([www.kern-sohn.com](http://www.kern-sohn.com)).

<b>i</b>	<ul style="list-style-type: none"><li>- Protection of stored legally relevant data:<ul style="list-style-type: none"><li>o After a record is stored, it will be read back immediately and be verified byte by byte. If error is found that record will be marked as an invalid record. If no error, then the record can be printed if needed.</li><li>o There is checksum protection stored in every record.</li><li>o All information on a printout is read from the memory with checksum verification, instead of direct from buffer.</li></ul></li><li>- Data loss prevention measures:<ul style="list-style-type: none"><li>o The memory is write-disabled upon power-up.</li><li>o A write enable procedure is performed before writing a record to the memory.</li><li>o After a record is stored, a write disable procedure will be performed immediately (before verification).</li><li>o The memory has a data retention period longer than 20 years.</li></ul></li></ul>
----------	--

## 14 Error messages

Display	Description
	<b>Battery capacity exhausted</b>
	<b>Battery capacity soon exhausted</b>
	<b>Zero setting range exceeded</b>
	<b>Zero setting range not achieved</b>
	<b>Adjustment error</b>
	<b>Load instable</b>
	<b>Underload</b>
	<b>Overload</b>

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

## 15 Servicing, maintenance, disposal

### 15.1 Cleaning



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

### 15.2 Cleaning / disinfecting

Clean weighing platform (such as seat) as well as casing with household detergents or commercially available disinfectants, e.g. 70% isopropanol. We recommend a disinfectant suitable for wiping disinfection. Please follow manufacturer's instructions.

Do not use abrasive or aggressive cleaners such as spirits or alcohol or similar as they might damage the high-quality surface.

To prevent cross-contamination (fungal skin infection) please observe the following time intervals for disinfection:

- Weighing plate before and after any measurement with direct skin contact
- When required:
  - Display
  - Touch-sensitive keyboard



Do not spray the device with disinfectant, just wipe it.  
Make sure that disinfectant does not penetrate the interior of the balance.  
Remove dirt immediately.

### 15.3 Sterilisation

Sterilisation of the appliance not allowed.

### 15.4 Servicing, maintenance

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

We recommend a regular safety-related technical check (STK).

Disconnect scales from mains before opening.

### 15.5 Disposal

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

## 16 Instant help for troubleshooting

In case of a fault in the program sequence, the balance should be shortly switched off. The weighing process must then be restarted from the beginning.

Fault:	Possible causes:
The weight display does not glow.	<ul style="list-style-type: none"><li>• The balance is not switched on</li><li>• The mains supply connection has been interrupted (mains cable not plugged in/faulty).</li><li>• Power supply interrupted.</li><li>• Rechargeable battery inserted incorrectly or empty</li><li>• No rechargeable battery inserted</li></ul>
The displayed weight is permanently changing	<ul style="list-style-type: none"><li>• Draught/air movement</li><li>• Table/floor vibrations</li><li>• The seating surface is in contact with foreign bodies or is not correctly positioned.</li><li>• Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)</li></ul>
The weighing result is obviously incorrect	<p>The display of the balance is not at zero Adjustment is no longer correct</p> <ul style="list-style-type: none"><li>• Great fluctuations in temperature</li><li>• The balance is on an uneven surface</li><li>• Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)</li></ul>
No data can be transferred to the WIFI interface	<ul style="list-style-type: none"><li>• The mains signal is not stable or too weak</li><li>• Wrong interface configuration</li></ul>
Should other error messages occur, switch balance off and then on again. If the error message remains inform manufacturer.	

## 17 Verification

### General:

According to EU directive 2014/31/EU 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
- e) Determination of mass in the practice of medicine that is, weighing patients for reasons of medical supervision during medical surveillance, examination and treatment,

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

### Verification notes:

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

Re-verification of a balance is carried out according to the respective national regulations. For verification validity period, see chap. 17.1.

The legal regulation of the country where the balance is used must be observed!



#### **Verification of the balance is invalid without the seal.**

The seal marks attached on balances with type approval point out that the balance may only be opened and serviced by trained and authorized specialist staff. If the seal mark is destroyed, verification loses its validity. Please observe all national laws and legal regulations. In Germany a re-verification will be necessary.

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

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

## 17.1 Verification validity period (current status in D)

Personal scales (including chair and wheelchair scales) in hospitals	4 years
Personal balances, when not located in hospitals (for example, doctor's offices and nursing homes)	unlimited
Baby weighing scales and mechanical birth weight scales	4 years
Bed scales	2 years
Scales in dialysis stations	unlimited

### Notes:

- Also rehab clinics and health authorities are treated as hospitals
- Not treated as hospitals (verification validity not limited) are dialysis stations, nursing homes and doctor's surgeries.

(Data source: "Bureau of Standards News, Weighing Instruments in Medicine")

## 18 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.



- Prepare the required adjustment weight. The adjustment weight to be applied depends on the capacity of a weighing scale, see chap. 1. Carry out adjustment as closely as possible to admissible maximum load of weighing scale. Info about test weights can be found on the Internet at: <http://www.kern-sohn.com>.
- Observe stable environmental conditions. For warm-up time required for stabilisation see chap.1.



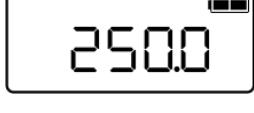
Access to service menu „x10“ is locked in verified balances.

To disable the access lock, destroy the seal mark and actuate the adjustment switch. Position of the adjustment switch see chap. 18.1.

**Attention:**

After destruction of the seal the weighing system must be re-verified by an authorized agency and a new verification wire/seal mark fitted before it can be reused for applications subject to verification.

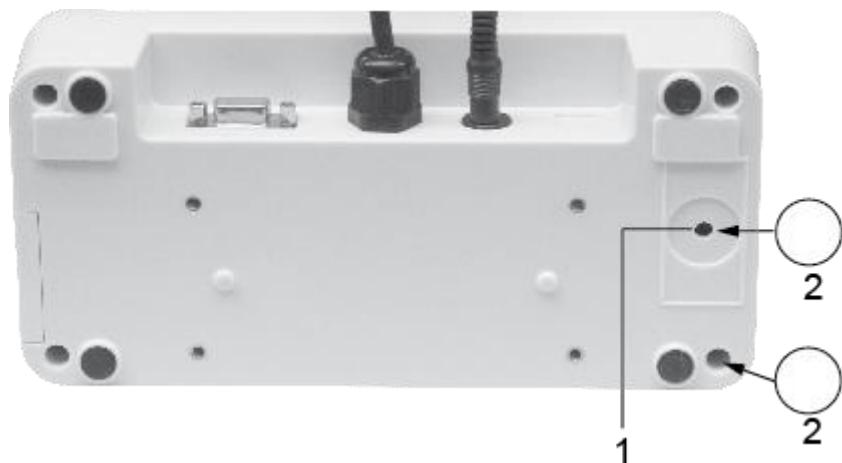
**Procedure:**

 	<p>⇒ In weighing mode <b>Actuate adjustment switch</b>. The service menu is called up. The first menu item “X10“ appears.</p>
	<p>⇒ Press   , the next menu item “AdJuSt” appears</p>
	<p>⇒ Acknowledge by  „cAL“ is displayed.</p>
	<p>⇒ Press  again , „cALExt“ is displayed.             (should this not be displayed, press   repeatedly until „cALExt“ is displayed)</p>
	<p>⇒ Press  , the required adjustment weight is shown  </p> <p>⇒ Acknowledge by  , „Zero“ is shortly displayed:          Ensure that there are no objects on the weighing plate.</p>
	<p>⇒ „PutLd“ is displayed. During this display place the required adjustment weight on the weighing surface</p>
 	<p>⇒ Press  , „rENULD“ is displayed. Remove the adjustment weight.          The balance changes automatically into the weighing mode,          the adjustment is concluded now.</p>

An adjusting error or incorrect adjustment weight will generate an error message („WronG“), repeat the adjustment process.

## 18.1 Adjustment switch and seal marks

**Position adjustment switch and seal marks:**



1. Adjustment switch
2. Self-destroying seal mark