KERN & Sohn GmbH **www.kern-sohn.com**
Ziegelei 1
72336 Balingen-Frommern
Germany
+0049-[0]7433-9933-0
+0049-[0]7433-9933-149
info@kern-sohn.com

Operating instructions
Personal balances

KERN MPN

TMPN 200K-1HM-A
TMPN 200K-1M-A
TMPN 200K-1PM-A
TMPN 300K-1LM-A

Version 1.2
2024-09
GB

TMPN_A-BAPS-e-2412

D	Weitere Sprachversionen finden Sie online unter www.kern-sohn.com/manuals
E	Más versiones de idiomas se encuentran online bajo www.kern-sohn.com/manuals
F	Vous trouverez d’autres versions de langue online sous www.kern-sohn.com/manuals
GB	Further language versions you will find online under www.kern-sohn.com/manuals
I	Trovate altre versioni di lingue online su www.kern-sohn.com/manuals
PL	Inne wersje językowe znajdą Państwo na stronie www.kern-sohn.com/manuals

GB

KERN MPN
Version 1.2 2024-09
Operating instructions
Personal balances with BMI function

Contents

1 Technical data

KERN	MPN 200K-1HM	MPN 200K-1PM
Item no./ Type	TMPN 200K-1HM-A	TMPN 200K-1PM-A
Display	6-digit	
Weighing range (max)	250 kg	
Readability (d)	0.1 kg	
Linearity ±	0.1 kg	
Display	LCD with 25mm high digits	
Recommended adjustment weight, not added, (Category)	200 kg (M1)	
Stabilization time (typical)	3 sec.	
Warm-up time	10 min	
Operating temperature	10° C …. + 40° C	
Storage and transportation environment	-20 to +60°C, and 30% to 90% relative humidity	
Humidity of air	max. 80 % (not condensing)	
Atmospheric pressure (kPa)	70kpa-106kpa	
Input Voltage	6 V / 1 A	
Battery use	6 x 1.5 V AA	
	Battery working range: 48 hours Loading time: 8 hours	
Auto Off	off, after 30 s / 1, 2, 5, 30, 60 min without load change (adjustable)	
Dimensions fully mounted (W x D x H) mm	365 x 570 x 2134	365 x 570 x 1030
Weighing plate mm	365 x 360 x 80	
Weight kg (net)	11.5	10.8
Rechargeable battery operation (optional)	optional; 3.8 VDC – 4.2 VDC / 3700 mAh	
Height measuring rod in tripod integrated, extendable (from 3 cm to 205 cm)	✓	-
Data interface	**Internal:** Wi-Fi **Optional / External:** KUP (RS232, Bluetooth, USB-D, Extension box)	

KERN	MPN 200K-1M	MPN 300K-1LM
Item no./ Type	TMPN 200K-1M-A	TMPN 300K-1LM-A
Display	6-digit	
Weighing range (max)	250 kg	300 kg
Readability (d)	0.1 kg	0.1 kg
Linearity ±	0.1 kg	0.1 kg
Display	LCD with 25mm high digits	
Recommended adjustment weight, (Category)	200 kg (M1)	200 kg (M1)
Stabilization time (typical)	3 sec.	3 sec.
Warm-up time	10 min	10 min
Operating temperature	10° C …. + 40° C	
Storage and transportation environment	-20 to +60°C, and 30% to 90% relative humidity	
Humidity of air	max. 80 % (not condensing)	
Atmospheric pressure (kPa)	70kpa-106kpa	
Input Voltage	6V 1A	
Battery use	6 x 1.5 V AA	
	Battery working range: 48 hours Loading time: 8 hours	
Auto Off	off, after 30 s / 1, 2, 5, 30, 60 min without load change (adjustable)	
Weighing plate mm	365 x 360 x 80	400 x 500 x 120
Weight kg (net)	8.4	10.0
Rechargeable battery operation (optional)	optional; 3.8 VDC – 4.2 VDC / 3700 mAh	
Data interface	**Internal:** Wi-Fi **Optional / External:** KUP (RS232, Bluetooth, USB-D, Extension box)	

1.1 Tolerances altimeter

Measured value (cm)	Tolerance (cm)
< 90	± 0.5
100	± 1.0
150	± 1.0
200	± 1.0

2 Declaration of conformity

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

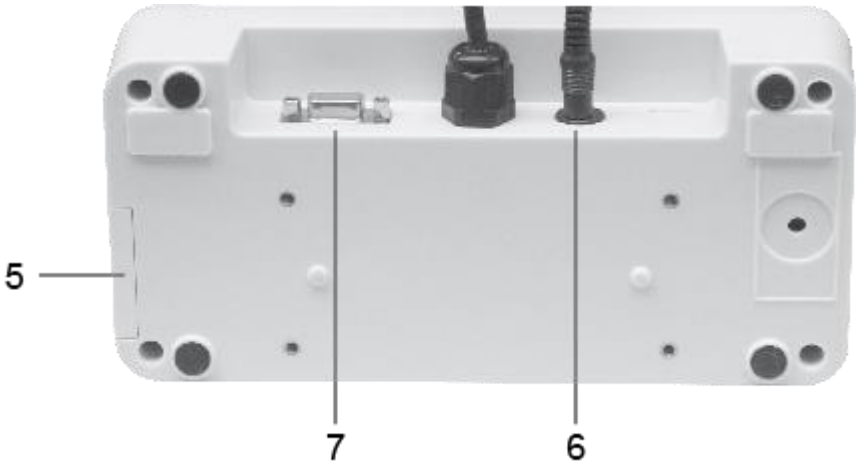
www.kern-sohn.com/ce

3 Appliance overview

<table>
<tr>
<td> 
</td>
<td>1. Height measuring rod
(MPN-HM-A models only)
2. Display Unit
3. Weighing platform
(anti-slip surface)
4. Rubber feet
(height adjustable)</td>
</tr>
<tr><td colspan="2"></td></tr>
<tr>
<td>  </td>
<td>MPN-PM-A</td>
</tr>
</table>

	**MPN-M-A**
	**MPN-LM-A**

Secondary display at rear
(MPN-HM-A and MPN-PM-A)

Display unit at rear  	5 Rechargeable battery/Battery compartment 6 Mains connection 7 KUP

3.1 Overview of displays

Display	Designation	Description
	Stability display	Scales are in a steady state
→0←	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.
NET	Net weight display	Illuminated when net weight is displayed Illuminated after weighing scale was tared
GROSS	Gross weight display	Illuminated when gross weight is displayed
HOLD	HOLD function	HOLD function active
BMI	BMI function	Illuminated while BMI function is enabled
	Battery symbol	Shows the charging capacity of the batteries
kg	Weighing unit	Displays the weighing unit
	WiFi-interface	Shows the connection to the cableless network

3.2 Keyboard overview

Button	Designation	Function
ON/OFF	ON/OFF button	Turn on/off
HOLD	HOLD button	Hold function/Calculation of a stable weight value **In menu:** • Select menu items **For numeric entry:** • Lowering numeric value
BMI	BMI button	Calculation of the Body Mass Index **In menu:** • Return to weighing mode
PRINT	Print button	Data transfer via interface **In menu:** • Select menu items **For numeric entry:** • Increase numerical value
F	Function key	Function quick key
TARE →0←	Zeroing key	Weighing scale will be reset to „0.0“ **In menu:** • Confirm selection **For numeric entry:** • Change decimal digit • Confirm entry
	TARE key	Tare balance

4 Basic Information (General)

4.1 Proper use

This balance is used to calculate the weight of a standing person. The regularly used function of the balance consists of recognising, prevention and treatment of illnesses.

As soon as a stable weighing value is reached, the weighing value can be read.
The weighing scale is designed for continuous duty.

Determination of the body weight.
On personal weighing scales, the person should step onto the centre of the weighing platform and remain standing without moving. Once a steady display value is shown, you can read the weight value

	The weighing platform may only be stepped on by persons capable of standing on both feet on the weighing platform.

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.

The balance should be checked for correct condition prior to each utilisation by a person familiar with proper operation of the balance.

The weighing platforms are fitted with an anti-slip surface that must not be covered during weighing a person.

When using balances with body height measuring rod, ensure that the top flap is turned downwards immediately after use in order to avoid risk of injury.

	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. 

4.2 Non-intended product use / contraindications

	• Do not use these scales for dynamic weighing processes. • Do not leave permanent load on the weighing pan. This may damage the measuring system. • Impacts and overload 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. • Never operate 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. • 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. • 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. • The balance may only be used for weighing persons. Persons who are heavier than the indicated maximum load, may not step onto the balance.
	**Non-intended use of the body height meter** • The body height meter may only be assembled as specified in the operating instructions. The structure of the body height measuring rod may not be modified. This may result in incorrect measuring results, safety-related defects as well as destruction. • The height measuring rod 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 beyond the described uses
- The appliance is modified or opened
- Mechanical damage and damage caused by media, liquids,
- Natural wear and tear
- Improper installation or faulty electrical connection
- The measuring system is overloaded
- Dropping the balance

4.4 Monitoring of Test Resources

In the framework of quality assurance the measuring-related weighing 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.

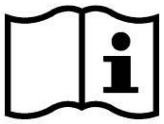
Using measuring technology to check the accuracy of the measuring rod is recommended for personal balances with body height measurement but is not absolutely essential as the calculation of the human body height is always subject to a great deal of inaccuracy.

4.5 Plausibility check

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

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 Preventing contamination

The prevention of cross-contamination (fungal skin infections,……) requires regular cleaning of the weighing platform. Recommendation: After any weighing procedure that could potentially result in contamination (e. g. after weighing that involves direct skin contact).

5.3 Preparation for use

- Check the balance for damage before any use
- Maintenance and re-verification
  The balance must be serviced and re-verified 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 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 / return transport	
	⇨ Keep all parts of the original packaging for a possibly required return. ⇨ Only use original packaging for returning. ⇨ Prior to dispatch disconnect all cables and remove loose/mobile parts. ⇨ Reattach possibly supplied transport securing devices. ⇨ Secure all parts such as the weighing plate, power supply unit etc. against shifting and damage.

7 Unpacking, Installation 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.

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, disconnect the appliance from mains and acclimatize it for approx. 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.

7.2 Unpacking

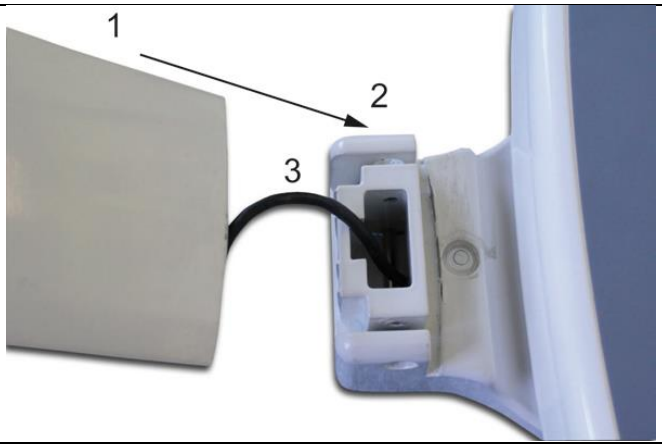
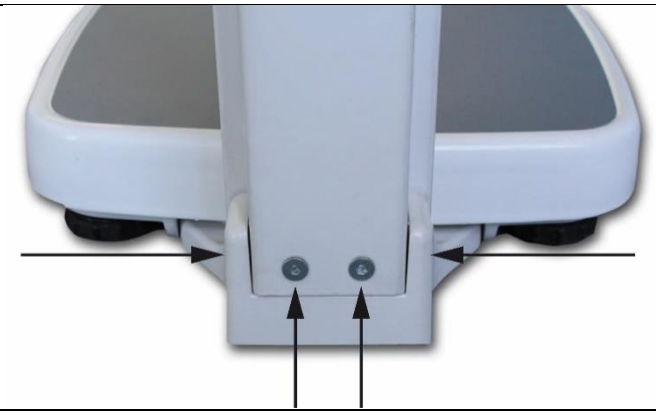
Take the balance out of its packaging and place it at the intended position. When using the power supply unit, ensure that the power cable does not produce any risk of stumbling.

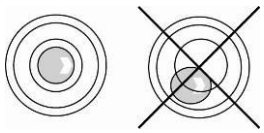
7.3 Scope of delivery

- Balance
- Mains adapter (in conformity with EN 60601-1)
- Wall fixture (only for models TMPN-1M-A and TMPN-1LM-A)
- Operating instructions

7.4 Balance assembly and installation

Refitting Procedure:

⇨ Mount tripod (1) on tripod holder (2) at weighing platform Ensure that the cable (3) does not get clamped!	
⇨ Fasten tripod, using 4 screws	

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

	Once installation is complete, check all screws for tight fit. Otherwise the person to be weighed may suffer injury.

General instructions for installing the aforementioned balance

Install the personal balance at the intended location and align it using the screwed height-adjustable rubber feet, until the air bubble of the bubble level (on the weighing plate) is in the centre.

Wall fixture for models TMPN-1M-A and TMPN-1LM-A:

1	Screws for affixing the wall fixture on the display unit
2	Position of the screws to affix the display unit to the wall

7.4.1 Affixing the height meter

The force necessary for extending the telescopic height meter can be adapted with the help of two adjustment screws on the tripod (see fig.).

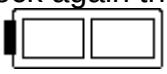
For this purpose proceed as follows:

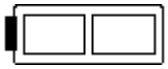
⇨ Retract the height meter completely into the tripod	
⇨ Remove the two plastic plugs on the lower side of the tripod	
⇨ Using a suitable slotted screw driver turn the two adjustment screws to adjust the desired effort ⇨ (if frequently used, this procedure possibly has to be repeated after a certain time)	

	Once installation is complete, check all screws for tight fit. Otherwise the person to be weighed may suffer an injury.

7.5 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. 9.5 Auto off).

 + **Lo bAt**	Capacity of batteries exhausted.
	Capacity of batteries will soon be exhausted.
	Batteries completely charged

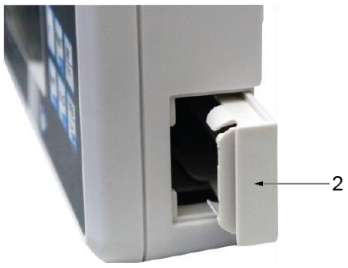
	If the balance is not used for a longer time, take out the batteries and store them separately. Leaking battery liquid could damage the balance.

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.

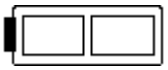
	Replacement for rechargeable battery by inadequately trained personnel could result in a hazard.

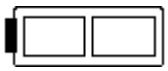
Insert batteries

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.	

7.6 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.

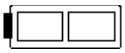
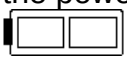
The appearance of the symbol  in the weight display indicates that the rechargeable battery is almost exhausted. The weighing scale will remain ready for operation for a few more minutes before switching off automatically in order to save the rechargeable battery (see chap. 9.5 Auto off). Charge rechargeable battery.

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

⚠	• 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). • 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. • When the optional WIFI-interface is used, power consumption increases

7.7 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.
Always use genuine approved KERN power pack units as per EN 60601-1 directive.

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.

⚠	When the optional WIFI-interface is used, power consumption increases

7.8 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 warm-up time the balance must be connected to the power supply (mains, rechargeable battery 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.

8 Menu

	Access to service menu „x10“ is locked in verified balances. To disable the access lock, destroy the seal mark and actuate the adjustment switch. **Attention**: After destruction of the seal the weighing system must be re-verified by an authorised agency and a new verification wire/seal mark fitted before it can be reused for applications subject to verification.

8.1 Navigation in the menu

Call up menu	⇨ In weighing mode press ON/OFF TARE →0← simultaneously, „SetuP“ followed by „coM“ will appear.
Select function	⇨ With help of HOLD or PRINT, the individual functions can be selected one after the other.
Change settings	⇨ Confirm selected function by TARE →0←. The current setting will be displayed. ⇨ Select desired setting with HOLD PRINT and confirm by TARE →0←, the balance returns to the menu.
Exit menu/ **Return to weighing mode**	⇨ Press BMI repeatedly until the zero display appears. The balance is now in weighing mode.

8.2 Menu overview

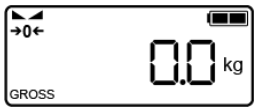
Level 1	Level 2	Further levels / description	
		Description of the	
coM Communication	rs232 ↕ usb-d	bAud	600
			1200
			2400
			4800
			9600
			14400
			19200
			38400
			57600
			115200
			128000
			256000
		dAtA	7db its
			8db its
		PAr ity	nonE
			odd
			EUEn
		StoP	1sb it
			2sb its
		HAndsh	nonE
		Protoc	AcP
	ULAn	on	
		oFF	

Print Data output	intFcE		rs232		RS 232 interface*
			usb-d		USB interface* *Only in conjunction with KUP interface
			WiFi		WiFi interface
	PrModE	trIG	MAnuAL		on, oFF Data output after pressing the **PRINT button**, see chap. **Fehler! Verweisquelle konnte nicht gefunden werden.**
			AutoPr		on, oFF Automatic data output with stable and positive weight value s. Chap.**Fehler! Verweisquelle konnte nicht gefunden werden.**. Renewed output only after zero display and stabilisation, depending on the settings < ZrAnGE >, selectable **(off, 1, 2, 3,4,5)**. < ZrAnGE > 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	on, oFF 0 (unloaded) also transmit continuously
					StAbLE	on, oFF Only transfer stable values
		WEIGHt	SGLPrt		on, oFF	Displayed weight value is transferred
			GntPrt		LArGE	on, oFF
					nEt	on, oFF
					tArE	on, oFF
					FormAt	LonG (detailed measurement protocol)
						short (standard measurement protocol)
		LAYout	none		on, oFF Standard layout
			user		ModEL	on, oFF Output the model designation of the scale
					SEr IAL	on, oFF Output the serial number of the scale
		rESEt	no		Do not delete settings
			YES		Delete settings

bEEPEr Acoustic signal	KEYS	oFF	Switch acoustic signal on/off when button is pressed
		on	
AutoFF Automatic Switch-off function in battery mode	ModE	oFF	Automatic switch-off function switched off
		cAr	The scale is switched off automatically after the time defined in the < t IME > menu item without load change or operation
		onLY0	Automatic switch-off only on zero display
	t IME	30S	The scale is automatically switched off after the set time without load change or operation
		1M in	
		2M in	
		5M in	
		30M in	
		60M in	
dAt IME Date and time	SEt	-2022- 12-31 23.59.59	Enter date & time
	dAForM	MdY; dMY; YMd	Select date format (MdY = month-day-year; dMY = day-month-year; YMd = year-month-day)
	t IForM	12h; 24h	Select time format
rESEt	Reset scale settings to factory settings		

9 Operation

9.1 Weighing

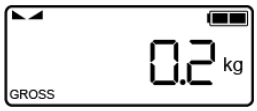
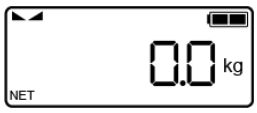
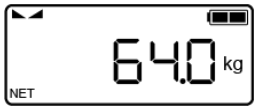
	⇨ Start balance by pressing ON/OFF. The balance will carry out a self-test The balance is ready for operation as soon as the weight display for “0.0 kg“ has appeared.

	▪ At any moment you can reset the balance to zero by pressing the TARE →0← button.

⇨ Have person stand in the centre of the scales. Wait until the stability display ◣◢ appears, then read the weighing result.

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

9.2 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.	
 (example)	⇨ Place the object on the weighing plate.
	⇨ Press TARE →0←, the zero display appears. „NET" is shown at the bottom on the left.
 (example)	⇨ Allow the person to step onto the centre of the weighing platform. Wait until the stability display ◣◢ appears, then read the weighing result.

ℹ	▪ When the balance is unloaded the saved taring value is displayed with negative sign. ▪ To delete the stored tare value, unload the balance and press TARE →0←.

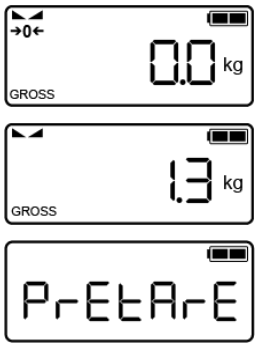
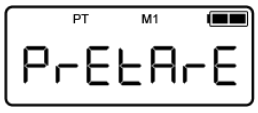
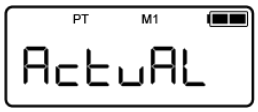
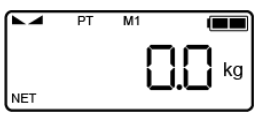
9.2.1 Subsequent tare weight

The balance can be tared several times successively.

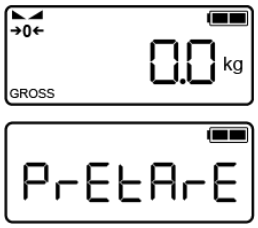
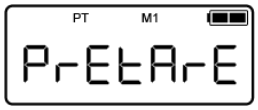
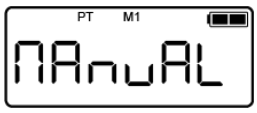
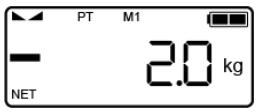
9.2.2 Pretare

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:

	⇨ Switch on the scales with ON/OFF. Wait for the stability display ◣◢. ⇨ 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") ⇨ Press and hold TARE →0← to open the application menu. "PtArE" appears automatically. Press TARE →0← again.
	⇨ PT" and "M1" flash on the display. ⇨ Now use the HOLD or PRINT button to select the desired memory location between M1 and M4.
	⇨ Press TARE →0← again, "ActuAL" appears. Confirm with the TARE button.
	⇨ "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.

Enter the pre-tare value manually via the keyboard:

	⇨ Switch on the scales with **[ON/OFF]**. Wait for the stability display◣ ◢ . ⇨ Press and hold TARE →0← , the application menu is called up. "PtArE" appears automatically.
	⇨ Confirm with TARE →0← , "PT" and "M1" flash on the display. ⇨ Now use the HOLD or PRINT button to select the desired memory location between M1 and M4.
	⇨ Press TARE →0← again, "ActuAL" is displayed.
	⇨ Press HOLD , "ManuAL" is displayed.
	⇨ Press TARE →0← , the display for entering the pre-tare value flashes. Enter numerical values with HOLD and PRINT , change to the next decimal place with TARE →0← and finally confirm the entered value with the TARE button. The scale switches to weighing mode and the entered pre-tare value is displayed with a minus sign as a negative value.

Call up pre-tare value:

⇨ Press F in operating mode

⇨ PT’ and “Mx” (M1-M4) flash on the display

⇨ Use HOLD or TARE →0← to select the desired memory location and confirm with TARE →0←

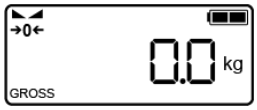
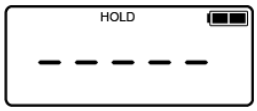
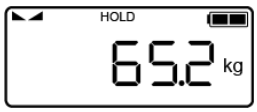
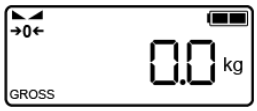
⇨ The pre-tare value appears in the display of the scale

Delete pre-tare value:

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

9.3 HOLD function

The balance has an integrated standstill function (mean value calculation). With this function it is possible to weigh people accurately even if they do not stand still on the weighing plate.

	⇨ Start balance by pressing ON/OFF. Wait for stability display ◣◢ .
	⇨ Press HOLD, in the display „**---------**“ will appear and the „HOLD“ symbol appears flashing. ⇨ During this display place the person in the middle of the weighing plate.
 (example)	⇨ 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“. After unloading the balance, the weighing value remains displayed for approx. 10 seconds, the „HOLD“ symbol appears during that time. Then the balance returns automatically into the weighing mode. The „HOLD“ symbol goes out, and the zero display appears.
	

ℹ	There is no average value calculation in the event of too much movement.

9.4 Calculation of the Body Mass Index

You need to know a person's body height before you can calculate the BMI for that person. It should either be known or can be determined directly with the MPN-HM-A model.

9.4.1 Determing the body height (MPN-HM-A only)

⇨ Push measuring rod upwards and set the headpiece horizontally.

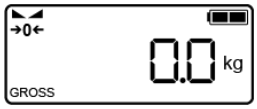
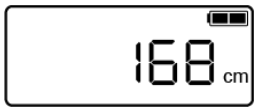
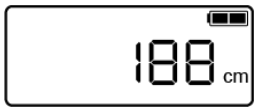
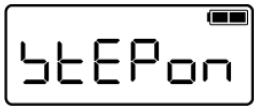
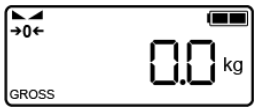
⇨ Push measuring rod carefully down until the headpiece touches the person's head (measuring without shoes).

A fixed headpiece pointing outwards poses a risk of injury.

⇨ Read body height on measuring stick.

A correctly exercised height measurement will achieve an accuracy of up to 5 mm.

9.4.2 Calculating Body Mass Index

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

- 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, the display can be stabilised via the Hold function.

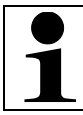
9.4.3 Classification of BMI values

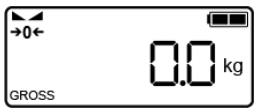
Weight classification for adults over 18 years of age using the BMI in accordance with WHO, 2000 EK IV and WHO 2004.

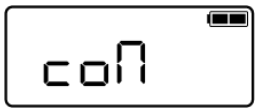
Category	**BMI (kg/m²)**	**Risk of diseases associated with overweight**
Underweight	< 18.5	Low
Normal weight	18.5 – 24.9	Average
Overweight	≥ 25.0	
Pre-adipose	25.0 – 29.9	A bit increased
Adipose degree I	30.0 – 34.9	Increased
Adipose degree II	35.0 – 39.9	High
Adipose degree III	≥ 40	Very high

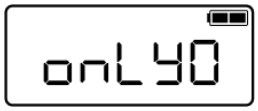
9.5 Automatic switch-off function „AUTO OFF“

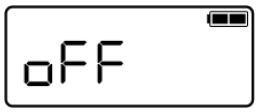
The weighing scale will switch off automatically after the allotted time as long as neither the display unit nor the weighing plate is operated.

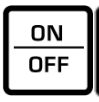
	• Menu settings: **[AutoFF]** (see chap. 8.2)









⇨ In weighing mode keep 

simultaneously pressed, „SetuP“ followed by „coM“ 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

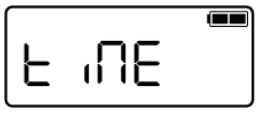
⇨ Select the required setting by 

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  :

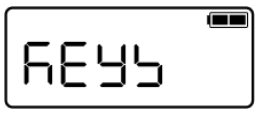
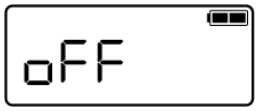
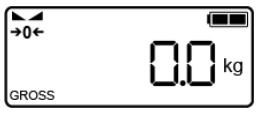
[2 min]	Weighing system will be turned off after 2 min.
[5 min]	Weighing system will be turned off after 5 min.
[30 min]	Weighing system will be turned off after 30 min.
[60 min]	Weighing system will be turned off after 60 min.
[30 S]	Weighing system will be turned off after 30 sec.
[1 min]	Weighing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

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

9.6 Acoustic signal when pressing button

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

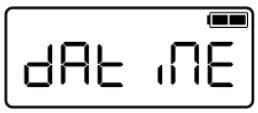
	• Menu settings: **[bEEPEr] ⇨ [KEYS – on/oFF]**

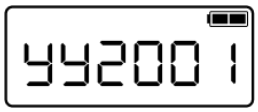
	⇨ In menu call-up the menu item „bEEPEr“
	⇨ Press TARE →0← „KEYS“ is displayed
 (example)	⇨ Press TARE →0← again, the last saved setting will be displayed. Here as example “OFF”
	⇨ Select desired setting with HOLD and acknowledge by TARE →0←.
	⇨ Press BMI repeatedly until the zero display appears. The balance is now in weighing mode

9.7 Setting time and date

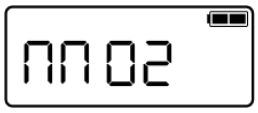
(only available with Real Time Clock)

- Menu settings:
  [dAtiME]

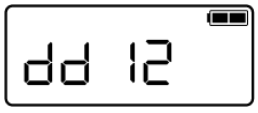




(example)



(example)



(example)

Setting date:

⇨ In menu call-up the menu item „dAtiME“

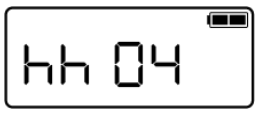
⇨ Press TARE repeatedly until the prompt for entering the year appears „YY20xx“. Enter the current year with HOLD or PRINT and confirm by TARE.

⇨ The display changes automatically to the prompt for entering the month: „MM xx“

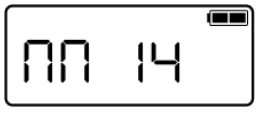
⇨ Enter the current month with HOLD or PRINT and confirm by TARE.

⇨ The display changes to the prompt for entering the day: „dd xx“. Enter the current day with HOLD or PRINT and confirm by TARE.

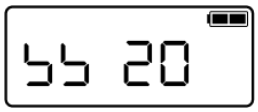
Setting time:



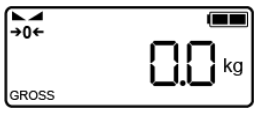
(example)



(example)



(example)



⇨ Now the display changes automatically to the prompt for entering the **time**, first the hour: „hh xx“.

⇨ Enter the hour with HOLD or PRINT and confirm by TARE.

⇨ The minutes appear: „MM xx“. Enter the current minutes and confirm on TARE.

⇨ The seconds appear: „SS xx“. Enter the seconds and confirm on TARE.

⇨ Date and time have now been entered; the display changes to the weighing mode.

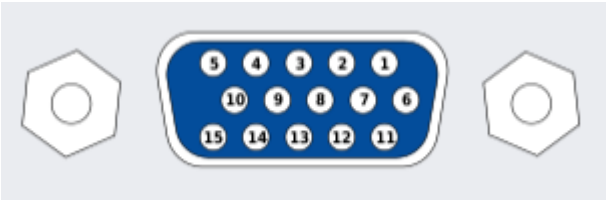
10 Communication with peripheral devices via KUP connection

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 TMPN 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

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

Connector assignment balance:



Warning: Only for use with KUP interfaces

⚠	Max. length of externally attached cables on the KUP interface: 10 m.

10.1 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).
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

10.2 Data output after pressing the PRINT button < MANUAL >

Activate function:

⇨ In the Setup menu, call up the menu setting < Pr int >➡ < PrMode>➡ < tr iG > and confirm with ➔ .

⇨ For manual data output, use the navigation buttons↓↑ to select the menu setting < MANUAL > 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.

10.3 Automatic data output <AutoPr>

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 int >➡ < PrMode>➡ < tr iG > and confirm with ➔ .

⇨ For automatic data output, use the navigation buttons↓↑ to select the menu setting <AutoPr> and confirm with ➔ .

⇨ Use the navigation buttons↓↑ to select the < on > setting and confirm with ➔. <CrANGE> 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.

10.4 Continuous data output < cont >

Activate function and set output interval:

⇨ In the Setup menu, call up the menu setting < Pr int >➡ < PrMode>➡ <tr iG > 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.

⇨ < SPEEd > 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 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
        2.9996 kg
```

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

10.5 Data format

⇨ In Setup menu invoke the menu setting < Pr int ➡ PrModE ➡ WE iGht ➡ GntPrt > and confirm with button ➔.

⇨ Use the navigation keys ⇵ to select the menu setting < FormAt > 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):

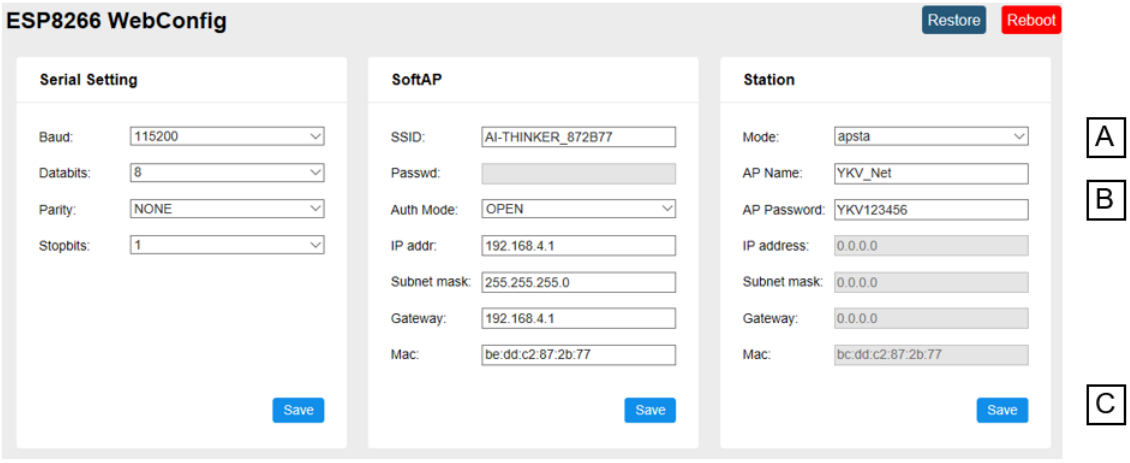
FormAt ➡ short	FormAt ➡ LonG
N: S S 2.0000 kg T: 0.5000 kg G: 2.5000 kg	N: S D 2.0000 kg Tara weight after x: 0.5000 kg Gross weight: 2.5000 kg

10.6 WLAN

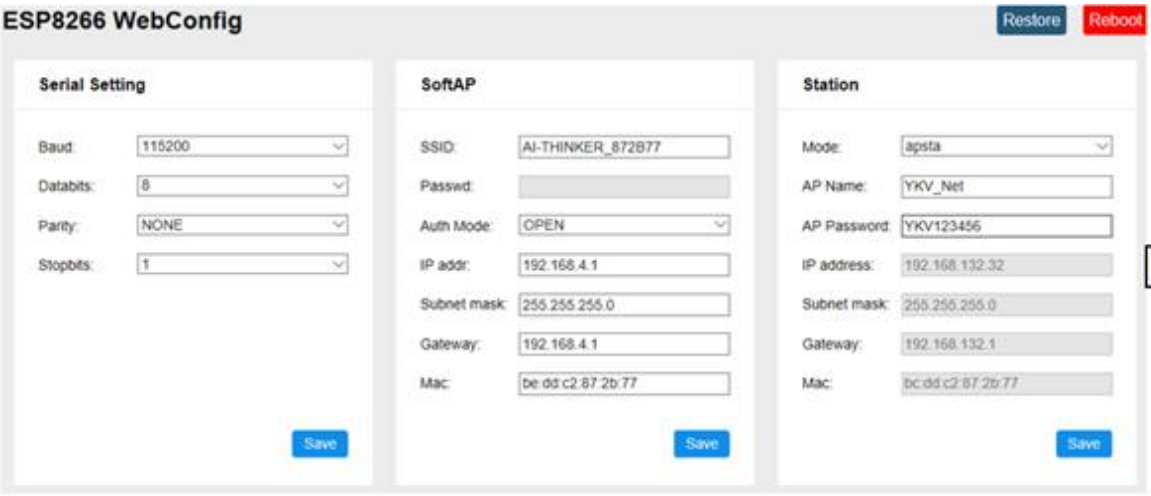
- W-LAN standard: IEEE 802.11 b/g/n (Wi-Fi)
- Network log: TCP/IP with DHCP
- Supported encryption methods: WPA, WPA2
- Transmission frequency: 2412 - 2472 MHz
- Maximum transmission performance: < 20dBm
- Application log: KCP (KERN Communications Protocol):

Set up WIFI connections:

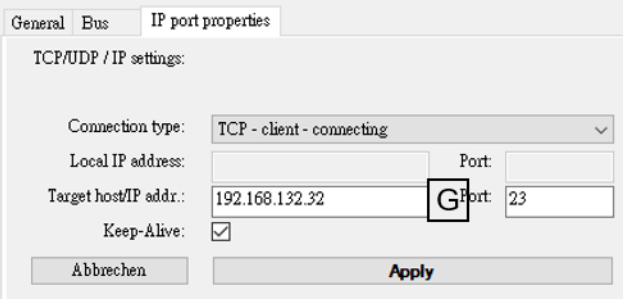
1. The balance creates a WIFI access point as soon as it has started up (WLAN symbol in the balance display appears).
   Use your computer to connect to this access point.
   The SSID (name of the balance's access point) is „AI_THINKER_xxxxxx"
2. Using a web browser visit the website http://192.168.4.1/ .
   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



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



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



10.7 Print function

After a correct connection of the software and the balance, the weighing data can be transferred using the button PRINT on the balance.

11 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:

Service UUID
0000fff0-0000-1000-8000-00805f9b34fb

Read characteristic UUID
0000fff1-0000-1000-8000-00805f9b34fb

Write characteristic UUID
0000fff2-0000-1000-8000-00805f9b34fb

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

12 Alibi memory optional

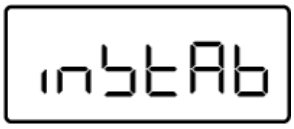
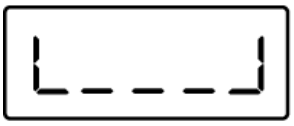
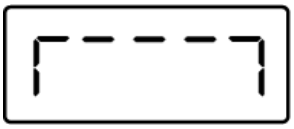
For weighings where verification is mandatory and which are to be analysed and processed by a PC electronic archiving is required by the metrological authorities by a verifiable data memory which cannot be manipulated. These stored data strings can be retrieved & displayed at any time via a connected 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:
    - MEMQID 15 → The data record which is stored under ID 15 is returned.
    - 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).

i	- Protection of stored legally relevant data: 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. o There is checksum protection stored in every record. o All information on a printout is read from the memory with checksum verification, instead of direct from buffer. - Data loss prevention measures: o The memory is write-disabled upon power-up. o A write enable procedure is performed before writing a record to the memory. o After a record is stored, a write disable procedure will be performed immediately (before verification). o The memory has a data retention period longer than 20 years.

13 Error messages

Display	Description
	**Battery capacity exhausted**
	**Battery capacity soon exhausted**
	**Zero setting range exceeded**
	**Zero setting range not achieved**
	**Adjustment error**
	**Load instable**
	**Underload**
	**Overload**

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

14 Servicing, maintenance, disposal

14.1 Cleaning

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

14.2 Cleaning / disinfecting

Clean weighing platform (such as the seat) as well as the 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.

14.3 Sterilisation

Sterilisation of the appliance not allowed.

14.4 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) by a qualified expert.
Disconnect scales from mains before opening.

14.5 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.

15 Instant help for troubleshooting

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

Fault	Possible cause
The weight display 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 rechargeable battery / the batteries is/ are inserted incorrectly or empty • No rechargeable battery / no battery is/ are inserted
The displayed weight is permanently changing	• Draught/air movement • Table/floor vibrations • The weighing plate is in contact with foreign bodies or is not correctly positioned. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)
The weighing result is obviously incorrect	• The display of the balance is not at zero • Adjustment is no longer correct • Great fluctuations in temperature. • Warm-up time was ignored. • Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)
No data can be transferred to the WIFI interface	• The mains signal is not stable or too weak • Wrong interface configuration

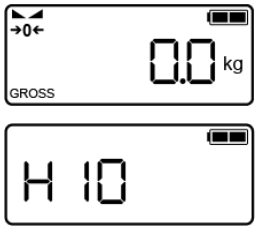
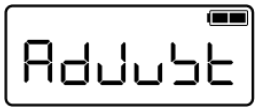
Should other error messages occur, switch balance off and then on again. If the error message remains inform manufacturer.

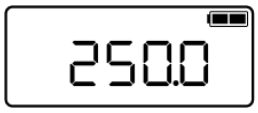
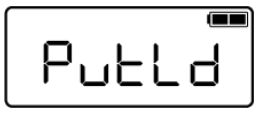
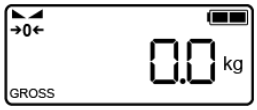
16 Adjustment

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.

Procedure:

	⇨ In weighing mode **Actuate adjustment switch**. The service menu is called up. The first menu item “X10“ appears.
	⇨ Press  , the next menu item “AdJuSt” appears
	⇨ Acknowledge by  „cAL“ is displayed.

	⇨ Press TARE →0← again , „cALEXt“ is displayed. (should this not be displayed, press HOLD PRINT repeatedly until „cALEXt“ is displayed
	⇨ Press TARE →0←, the required adjustment weight is shown ⇨ Acknowledge by TARE →0←, „Zero“ is shortly displayed: Ensure that there are no objects on the weighing plate.
	⇨ „PutLd“ is displayed. During this display place the required adjustment weight on the weighing plate
 	⇨ Press TARE →0←, „rEMVLd“ is displayed. Remove the adjustment weight. The balance changes automatically into the weighing mode, the adjustment is concluded now.

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