KERN & Sohn GmbH
Ziegelei 1
D-72336 Balingen
E-Mail: info@kern-sohn.com
Phone: +49-[0]7433- 9933-0
Fax: +49-[0]7433-9933-149
Internet: www.kern-sohn.com

Operating instructions

Personal balance, wheel chair balance / Transporting stretcher balance

KERN

MPS / MWS

MPS 200K100NM
MPS 200K100PNM
MWS 300K100NM
MWS 400K100DNM
MWS 300K1LNM

Version 4.0
2026-06
GB

CE 0122 0297

D	Weitere Sprachversionen finden Sie online unter www.kern-sohn.com/manuals
BG	Други езикови версии ще намерите в сайта www.kern-sohn.com/manuals
DK	Flere sprogudgaver findes på websiden www.kern-sohn.com/manuals
EST	Muud keeleversioonid leiate Te leheküljel www.kern-sohn.com/manuals
E	Más versiones de idiomas se encuentran online bajo www.kern-sohn.com/manuals
GR	Άλλες γλωσσικές αποδόσεις θα βρείτε στην ιστοσελίδα www.kern-sohn.com/manuals
F	Vous trouverez d'autres versions de langue online sous www.kern-sohn.com/manuals
LV	Citas valodu versijas atradīsiet vietnē www.kern-sohn.com/manuals
FIN	Muut kieliversiot löytyvät osoitteesta www.kern-sohn.com/manuals
LT	Kitas kalbines versijas rasite svetainėje www.kern-sohn.com/manuals
GB	Further language versions you will find online under www.kern-sohn.com/manuals
RO	Alte versiuni lingvistice veţi găţi pe site-ul www.kern-sohn.com/manuals
I	Trovate altre versioni di lingue online in www.kern-sohn.com/manuals
SK	Iné jazykové verzie nájdete na stránke www.kern-sohn.com/manuals
NL	Bijkomende taalversies vindt u online op www.kern-sohn.com/manuals
SLO	Druge jezikovne različice na voljo na spletni strani www.kern-sohn.com/manuals
P	Encontram-se online mais versões de línguas em www.kern-sohn.com/manuals
CZ	Jiné jazykové verze najdete na stránkách www.kern-sohn.com/manuals
PL	Inne wersje językowe znajdą Państwo na stronie www.kern-sohn.com/manuals
SE	Övriga språkversioner finns här: www.kern-sohn.com/manuals
H	A tovbbi nyelvi vltozatok a kvetkező oldalon találhatók: www.kern-sohn.com/manuals
HR	Druge jezične verzije su dostupne na stranici: www.kern-sohn.com/manuals
NO	Andre sprkversjoner finnes det p www.kern-sohn.com/manuals

GB

KERN MPS / MWS

Version 4.0 2026-06

Operating instructions
Personal balance without / with stand,
Wheel chair / Transport stretcher balance

Contents

1 Technical data 5
1.1 Tolerances optional body height measuring rod MSF 200 7

2 Declaration of conformity 8
2.1 Explanation of the graphic symbols for medical products 8

3 Basic Information (General) 11
3.1 Specific function 11
3.1.1 Indication 11
3.1.2 Contraindication 11
3.2 Proper use 11
3.3 Non-intended product use / contraindications 13
3.4 Warranty 14
3.5 Monitoring of Test Resources 14
3.6 Plausibility check 14
3.7 Reporting serious incidents 14

4 Basic Safety Precautions 15
4.1 Pay attention to the instructions in the Operation Manual 15
4.2 Personnel training 15
4.3 Preventing contamination 15
4.4 Preparation for use 15

5 Electromagnetic compatibility (EMC) 16
5.1 General hints 16
5.2 Electromagnetic interferences 17
5.2.1 Drop in performance 17
5.3 Electromagnetic noise immunity 18
5.3.1 Crucial features of performance 20
5.4 Minimum distances 20

6 Transport and storage 21
6.1 Testing upon acceptance 21
6.2 Packaging / return transport 21

7 Unpacking, Installation and Commissioning 22
7.1 Installation Site, Location of Use 22
7.2 Unpacking 22
7.3 Balance assembly and installation 23
7.3.1 Scope of delivery 34
7.3.2 Assembly instructions for models with wall fixture 35
7.4 Magnets display unit MWS 35
7.4.1 Transportation of balance 36
7.5 Mains connection 36
7.6 Operation using a rechargeable battery (optional) 37
7.6.1 Battery operation 37

7.6.2 Rechargeable battery operation (optional) ... 40
7.7 Initial Commissioning ... 42
7.8 Menu overview of verified balances ... 42

8 Operation ... 43
8.1 Display ... 43
8.2 Overview of displays ... 44
8.3 Keyboard overview ... 45

9 Using the balance ... 46
9.1 Weighing ... 46
9.1.1 Weighing with MWS ... 46
9.2 Taring ... 47
9.3 Hold function (Standstill function) ... 47
9.4 Mother-Child-Function ... 48
9.5 Calculation of the Body Mass Index ... 48
9.5.1 Classification of BMI values ... 49
9.6 PRE-TARE function ... 49
9.6.1 PRE-TARE function with 5 memories ... 50
9.7 Print function ... 51
9.7.1 Interface parameters for RS232 ... 51

10 Error messages ... 52

11 Servicing, maintenance, disposal ... 53
11.1 Cleaning ... 53
11.2 Cleaning / disinfecting ... 53
11.3 Sterilisation ... 53
11.4 Servicing, maintenance ... 53
11.5 Disposal ... 53

12 Instant help for troubleshooting ... 54

13 Verification ... 55
13.1 Verification validity period (current status in D) ... 56

14 Adjustment ... 57
14.1 Adjustment switch and seal marks ... 59
14.2 Checking the balance verification settings ... 60
14.2.1 Menu overview in service mode (adjustment switch in adjustment position) ... 60
14.3 Menu overview ... 61

15 Accessories (optional) ... 63

1 Technical data

KERN (type)	MPS 200K100NM/PNM
Model	MPS 200K100M/PM
Display	6-digit
Weighing range (max)	200 kg
Minimum load (Min)	2 kg
Verification value (e)	100 g
Accuracy for conformity assessment (first verification)	till to 50 kg = 0.5 e >50 kg-200 kg = 1 e
Display	LCD with 25mm high digits
Recommended adjustment weight, (Category)	200 kg (M1)
Stabilization time (typical)	2 - 3 sec.
Warm-up time	10 min
Operating temperature	+ 5° C …. + 35° C
Storage temperature	- 20°C … + 60°C
Humidity of air	max. 80 % (not condensing)
Electric Supply	Mains adapter 12V / 500 mA or 15 V / 300 mA
	Battery operation 6 x 1.5V, size AA Service life 50 h
Auto Off	After 3 min without load change (adjustable)
Terminal (B x D x H) mm	210 x 110 x 50
Balance ready for operation (B x D x H) mm	275 x 295 x 58 with stand: 275 x 460 x 1010
Weighing plate (B x D x H) mm	275 x 295 x 58
Weight kg (net)	4.1
Verification in accordance with 2014/31/EU	Category III
Medical product as per (EU) 2017/745	Category I with measuring function
Rechargeable battery operation (optional)	Loading time: 14 h; operating time: 35 h; 7.2 V / 2000 mA

KERN (type)	MWS 300K1LNM	MWS 300K100NM	MWS 400K100DNM
Model	MWS 300K1LM	MWS 300K100M	MWS 400K100DM
Display	6-digit		
Weighing range (max)	300 kg	300 kg	300kg; 400kg
Minimum load (Min)	2 kg	2 kg	2 kg
Verification value (e)	100 g	100 g	100 g; 200g
Accuracy for conformity assessment (first verification)	till to 50 kg = 0.5 e >50 kg-200 kg = 1 e >200 kg-300 kg = 1,5 e	till to 50 kg = 0.5 e >50 kg-200 kg = 1 e >200 kg-300 kg = 1,5 e	till to 50 kg = 0.5 e >50 kg-200 kg = 1 e >200 kg-400 kg = 1,5 e
Display	LCD with 25mm high digits		
Recommended adjustment weight, (Category)	300 kg (M1)	300 kg (M1)	400 kg (M1)
Stabilization time (typical)	2 - 3 sec.		
Warm-up time	10 min		
Operating temperature	+ 5° C …. + 35° C		
Storage temperature	- 20°C … + 60°C		
Humidity of air	max. 80 % (not condensing)		
Electric Supply	Mains adapter 12V / 500 mA or 15 V / 300 mA		
	Battery operation 6 x 1.5V, size AA Service life 50 h		
Auto Off	After 3 min without load change (adjustable)		
Terminal (B x D x H) mm	210 x 110 x 45		
Balance ready for operation (B x D x H) mm	1500 x 860 x 68	1155 x 830 x 65	1255 x 1060 x 69
Weighing plate (B x D) mm	800 x 1200	910 x 740	1000 x 1000
Weight kg (net)	42	28.6	42.2
Verification in accordance with 2014/31/EU	Category III		
Medical product as per (EU) 2017/745	Category I with measuring function		
Rechargeable battery operation (optional)	Loading time: 14 h; operating time: 45 h; 7.2 V / 2000 mA	Loading time: 14 h; operating time: 45 h; 7.2 V / 2000 mA	Loading time: 14 h; operating time: 45 h; 7.2 V / 2000 mA

1.1 Tolerances optional body height measuring rod MSF 200

For assembly to balance MPS200K100PM or for wall mounting.

Measured value (cm)	Tolerance (cm)
60 - 100	± 0.5
100-205	± 1.0

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

CE M18 0122 0297

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

UDI

Unique product identification

MD

Is a medical device

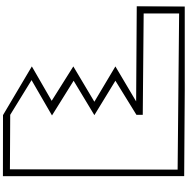
III

Balances which carry this mark, are conformity-evaluated as per accuracy class III of the EC-guideline 2014/31/EU.

WF 1734331

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

Number here as example



2022-06

Identification of the manufacturing date of the medical product.

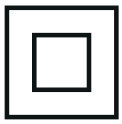
Year and month here as example

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

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.

15 V DC / 300 mA or
12 V DC / 500 mA

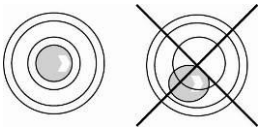
Display of supply voltage for scales with polarity display

Mains connection

Sealing mark KERN SEAL

Supply voltage direct current

Information



Level balance before use

Electrostatically endangered structural components

When installing or transporting balances with large and heavy platforms (weighing plate folded upwards), ensure that the balance does not fall over or gets damaged.

3 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.”

3.1 Specific function

3.1.1 Indication

Medical scales:
Indication:

- These scales are used to determine the weight of people in medical treatment facilities. The scales are suitable for the detection, prevention, and monitoring of diseases.

Use:

- When using bodyweight scales and handrail scales, the person to be weighed should stand carefully in the middle of the weighing plate and remain still.
- When weighing with a wheelchair / stretcher, the wheelchair or stretcher carrying the person is pushed over the ramp onto the middle of the weighing plate, or in the case of electric wheelchairs, it is driven automatically onto the weighing plate.
  When weighing persons who can stand safely, the person should position themselves carefully and centrally on the weighing plate.

After reaching a stable weighing value, the weighing value can be read.

The scale is designed for continuous operation.

3.1.2 Contraindication

No contraindication known.

3.2 Proper use

This weighing scale is designed for determining the weight of a person whilst standing,
sitting and lying (with transporting stretcher), as well as of babies in prone position (according to model) in medical treatment rooms. The balance is suitable for recognising, preventing and controlling illnesses.

Scales fitted with a serial interface may only be connected to appliances in compliance with Directive EN60601-1.

- On personal weighing scales, the person should step onto the center of the weighing platform and remain standing without moving. The person to be

weighed should carefully sit down on the center of the seat of the chair scales and remain seated quietly.

- For wheel chair scales, the wheel chair together with the person sitting in it is pushed completely into the center of the weighing plate and/or the electric wheel chair is moved automatically driven onto the weighing plate. For weighing, the wheels must be blocked.
- For weighing persons on transporting stretcher, push the transporting stretcher completely on the center of the weighing plate. For weighing, the wheels must be blocked.

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

The weighing platform may only be stepped on by persons capable of standing on both feet on the weighing platform or who can sit quietly (chair scales and wheelchair scales).

- The weighing platform is fitted with an anti-slip surface that must not be removed or covered during weighing a person.
- The balance should be checked for correct condition prior to each utilisation by a person familiar with proper operation of the balance.
- When using balances with mounted 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.

3.3 Non-intended product use / contraindications

	• Do not use these scales for dynamic weighing processes. • Do not leave permanent load on the weighing plate. This may damage the measuring system. • Impacts and overloading exceeding the stated maximum load (max) of the weighing plate, minus a possibly existing tare load, must be strictly avoided. This could cause damage to the balance. • 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. • 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.
	Non-intended use of the optional body height measuring rod • The body height measuring rod 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 body height measuring rod may only be used according to the described conditions. Other areas of use must be released by KERN in writing. For more details please see the user manuals of the body height measuring rod.

3.4 Warranty

Warranty claims shall be voided in case:

- Our conditions in the operation manual are ignored
- The appliance is used beyond the described uses
- The appliance is modified or opened
- Mechanical damage and damage caused by media, liquids,
- Natural wear and tear
- The appliance is improperly set up or incorrectly electrically connected
- The measuring system is overloaded
- Dropping the balance

3.5 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 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.

For personal balances with height measuring rods, we recommend a metrological examination of the accuracy of the height measuring rod, however, this is not mandatory as the determination of human body height involves rather large, intrinsic inaccuracies.

3.6 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.

3.7 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.

4 Basic Safety Precautions

4.1 Pay attention to the instructions in the Operation Manual

	⇨ Carefully read this operation manual before setup and commissioning, even if you are already familiar with KERN balances.	

4.2 Personnel training

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

The balance must be installed via the interfaces only by experienced administrators or hospital technicians.

4.3 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).

4.4 Preparation for use

- Check the balance for damage before any use
- Maintenance and reverification (in Germany MTK): 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 balances only when a qualified person is present

5 Electromagnetic compatibility (EMC)

5.1 General hints

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 in radio-frequency-screened rooms of a ME system for magnetic resonance reproduction where high intensity of electro-magnetic occurs.

Please avoid to operate the appliance beside or stacked on other devices, as this may cause incorrect measuring results. If such use should be required, this appliance and the other devices should be observed, in order to ensure that they work normally.

Using accessories, transformers and other cables than the specified ones or delivered by the manufacturer together with the appliance, could have as consequence reinforced electromagnetic radiation or reduced electromagnetic immunity to interference and by that way reduced functionability.

Electromagnetic compatibility (EMC) describes a device's ability to perform reliably within an electromagnetic environment without causing there 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 balance 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 interferences.
- Install or use the personal balance at another location.
- Connect the balance to another power source
- For further questions please contact our customer service.

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 authorisation relating to the use of the device.

Devices emitting high frequency signals (mobile telephones, radio transmitters, radio receivers) may cause interference in the medical device. For that reason do not use them near the medical device. Chapter 5.4 contains details about recommended minimum distances.

5.2 Electromagnetic interferences

Directives and manufacturer's declaration - Electromagnetic emissions		
The MPS-NM, MWS-NM are provided for the use in electromagnetic environment, as described below. The customer or the user of the MPS-NM, MWS-NM must ensure that the use takes place in the respective environment.		
Emission test	**Conformity**	**Electromagnetic environment - Directive**
RF-emissions CISPR 11	Assembly 1	The MPS-NM, MWS-NM use the RF energy only for its internal function. For this reason their RF emissions are very low and probably cannot cause any disturbance on the electronic equipment standing nearby.
RF-emissions CISPR 11	Class B	The MPS-NM, MWS-NM are designed for use in all installations including those in living areas and those connected directly to the public power grid that also supplies buildings used for living purposes.
Harmonic distortion emissions IEC 61000-3-2	Category A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Conformity	

5.2.1 Drop in performance

Powerful fields with electromagnetic interferences which e.g. are arising from electric motors or inductive charging devices, may cause drop down of performance if they are located near the personal balance, wheel chair balance or transporting stretcher balance. Drop down of performance may cause instably displayed weighing values.

5.3 Electromagnetic noise immunity

Directives and manufacturer's declaration - Electromagnetic immunity			
The MPS-NM, MWS-NM are provided for the use in electromagnetic environment, as described below. The customer or the user of the MPS-NM, MWS-NM must ensure that the use takes place in the respective environment.			
Immunity test	**IEC 60601 Test level**	**Compliance level**	**Electromagnetic environment - Directive**
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floor coverings should consist of wood, concrete or ceramic tiles. If the floor covering consists of synthetic material, the relative air humidity must be at least 30%
Electrical quick transient oscillation / bursting IEC 61000-4-4	± 2kV for power lines + 1kV for input/output lines	± 2kV for power lines. Not applicable	The quality of the supply voltage should match that of the usual business or hospital environment.
Surge IEC 61000-4-5	± 1kV line(s) to line(s) ± 2kV line(s) to earth	± 1kV differential mode Not applicable	The quality of the supply voltage should match that of the usual business or hospital environment.
Drop of voltage, short interruptions and voltage fluctuations on the power supply lines IEC 61000-4-11	<5% UT(>95% drop in UT) für 0,5 cycl 40% UT(60% drop in UT) for 5 cycl. 70% UT(30% drop in UT) for 25 cycl. <5% UT(>95% drop in UT) for 5 s	<5% UT(>95% drop in UT) für 0,5 cycl 40% UT(60% drop in UT) for 5 cycl. 70% UT(30% drop in UT) for 25 cycl. <5% UT(>95% drop in UT) for 5 s	The quality of the supply voltage should match that of the usual business or hospital environment. If the user of the MPS-NM, MWS-NM demands continuous operation even during disruptions to the power supply, we recommend powering the MPS-NM, MWS-NM by no-break power supply or a battery.
Current frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	The magnetic fields of the current frequency of the MPS-NM, MWS-NM must be as strong as usual in a typical business or hospital environment.
NOTE: UT that ist the A.C. supply voltage before using the test level.			

<table>
<tr><th colspan="4">Directives and manufacturer’s declaration - Electromagnetic immunity</th></tr>
<tr><td colspan="4">The MPS-NM, MWS-NM are provided for the use in electromagnetic environment, as described below.
The customer or the user of the MPS-NM, MWS-NM must ensure that the use takes place in the respective environment.</td></tr>
<tr><th>Immunity test</th><th>IEC 60601 Test level</th><th>Matching level</th><th>Electromagnetic environment - Directive</th></tr>
<tr><td>Directed RF
IEC 61000-4-6</td><td>3 Vrms
150 kHz to 80 MHz</td><td>3 Vrms</td><td rowspan="2">A portable and mobile RF-communication device may not be used closer to a part of the MPS-NM, MWS-NM including the cables than the recommended separation distance, which has been calculated with the help of the transmitter frequency equation.

Recommended separation distance
d = 1,2 √P
d = 1.2 √P 80MHz to 800 MHz
d = 2.3 √P 800MHz to 2.5 GHz

Where according to manufacturer’s declaration P the maximum output current value is in Watt (W), and d is the recommended separation distance in meters (m).

Field strengths of fixed RF transmitters, as determined by an electromagnetic location overview[a], should be less than the compensation value in any frequency range[b].

Possibility of failure near devices with the following symbol:
 </td></tr>
<tr><td>Irradiated RF IEC 61000-4-3</td><td>3 V/m 80MHz to 2.5 GHz</td><td>3 V/m</td></tr>
<tr><td colspan="4">OBSERVE1 Higher frequency range applies to 80 MHz and 800 MHz.
OBSERVE2 These directives maybe are not valid in any situation. Electromagnetic transmission is influenced by the absorption and reflection from buildings, objects and persons.</td></tr>
</table>

a Field strengths of fixed transmitters, such as basic stations for radio transmission (cellular/wireless) phones and mobile terrestric radio equipment, amateur radio equipment, AM and FM broadcast emitters and television emitters theoretically cannot be predicted. To evaluate the electromagnetic environment due to fixed RF transmitters, an electromagnetic location overview mus be consulted. If the measured field strength in the location where the MPS-NM, MWS-NM are used, exceeds the above mentioned valid RF matching height, the MPS-NM, MWS-NM must be controlled to check the normal operation. If an abnormal performance has been found, other measures will be necessary, such as e.g. a re-alignment or shifting of the MPS-NM, MWS-NM

b In the frequency range 150 kHz to 80 MHz, the field strengths must be less than 3 V/m.

5.3.1 Crucial features of performance

The personal balance, wheel chair / transporting stretcher 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.

5.4 Minimum distances

Recommended separation distance between movable and wheel-supported RF communication device and the MPS-NM, MWS-NM

The MPS-NM, MWS-NM are designed for use in an electromagnetic environment, where irradiated RF interferences are monitored. The customer or user of the MPS-NM, MWS-NM can help to avoid electromagnetic interferences, by keeping a minimum distance between the movable and wheel-supported RF-communication devices (transmitters) and the MPS-NM, MWS-NM, as recommended below, according to the maximum output performance of the communication device.

Nominal maximum output performance of the transmitter W	**Separation distance according to the transmitter frequency m**		
	150 kHz to 80 MHz d =1,2√*P*	**80 MHz to 800 MHz** d =1,2√*P*	**800 MHz to 2.5 GHz** d =2,3√*P*
Nominal maximum output performance of the transmitter W	0.12	0.12	0.23
	0.38	0.38	0.73
0.01	1.2	1.2	2.3
0.1	3.8	3.8	7.3
1	12	12	23

For transmitters with a maximum output performance which has not been mentioned above, the recommended separation distance d in meters (m) can be estimated, using the equation which is valid for the frequency of the transmitter, where the maximum output performance level of the transmitter is in Watt (W) according to manufacturer's specification p.

NOTE1 For 80 MHz and 800 MHz, the separation distance is valid for the higher frequency range.
OBSERVE2 These directives maybe are not valid in any situation. Electromagnetic transmission is influenced by the absorption and reflection from buildings, objects and persons.

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, vapors 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.

7.2 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.

7.3 Balance assembly and installation

Personal balance MPS with wall fixture:

Scope of delivery:

Personal balance MPS-PM with stand:

Scope of delivery:

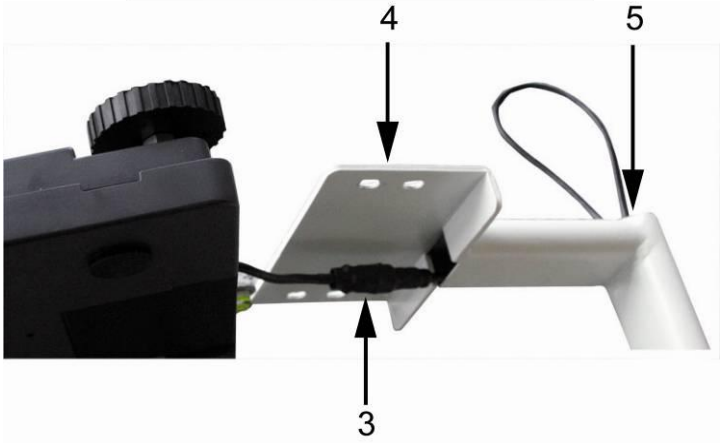
- Balance with display unit and stand
- Mains adapter
- 4 Screws

Assembling Procedure:

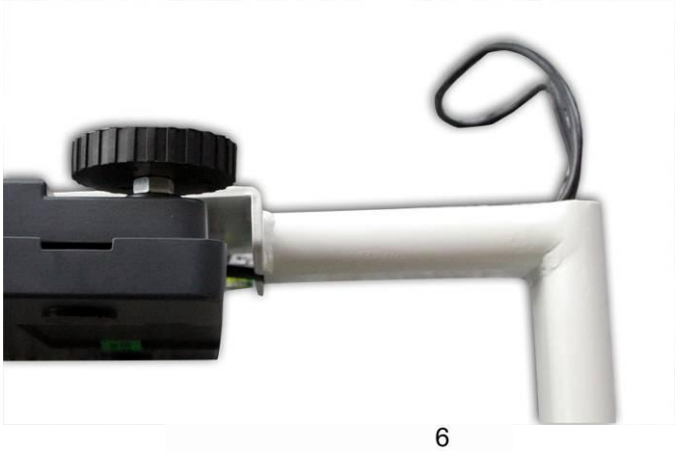
⇨ Remove cap (1)

⇨ Unscrew the screw (2)

⇨ Pull cable with Plug-in connection (3) through the supporting foot (4) and pull it out at the end (5)



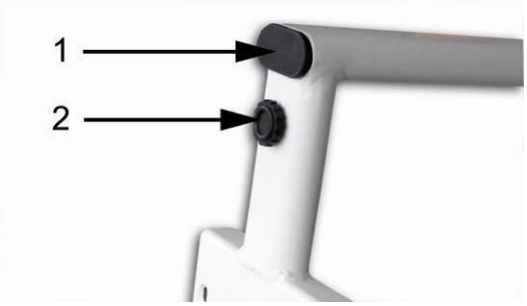
⇨ Place supporting foot next to the balance



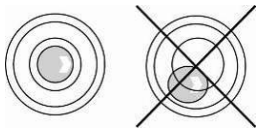
⇨ Introduce cable completely into the stand tube (6)

⇨ Reinsert cap (1)
⇨ Screw-in screw again (2)

When screwing the screw ensure that the plug-in connector inside the stand foot is not squeezed.



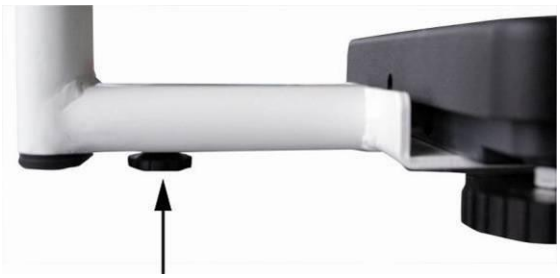
⇨ Use the 4 screws to attach the stand to the bottom of the balance



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

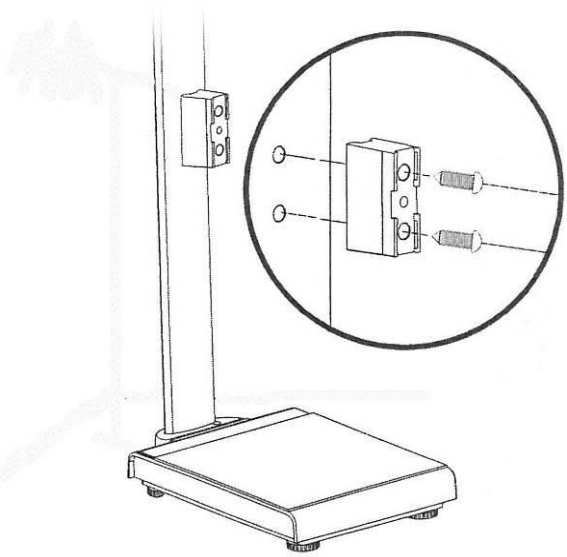
⇨ Check levelling regularly.

⇨ Adjust foot screw of the stand in a way that the stand has a safe base and is not loose.

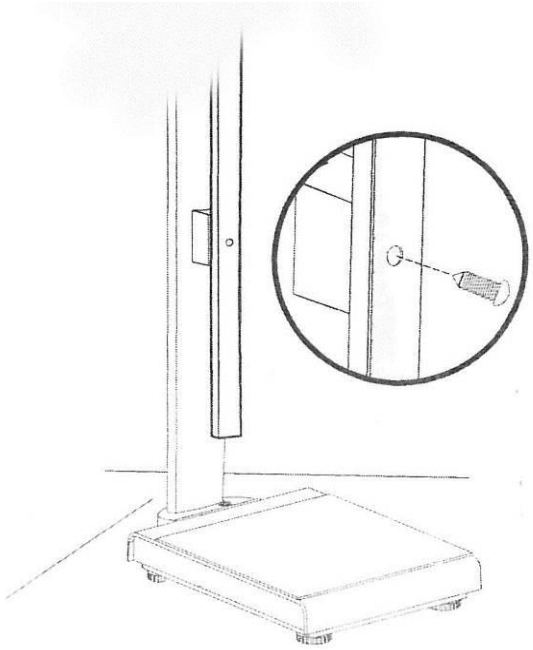


Assembly body height measuring rod MSF 200:

How to attach to KERN scale



Use the 2 screws for screwing the bracket into the supplied insert nuts on the stand of the scales.



Extend the body height measuring rod and tighten it in the lower hole of the bracket with the help of the appertaining screw.

⚠	**The body height measuring rod can be assembled on the backside of the stand in the same way.**

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

Wheelchair scales MWS and Transporting stretcher balance MWS-L

MWS	MWS-L

Scope of delivery:

Instructions for attaching an external stand and to the models MPS without stand and model MXS.

- Secure circular plate with screws on the aluminium section

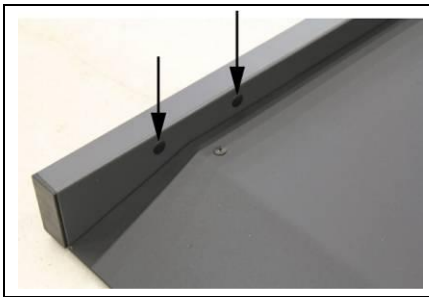
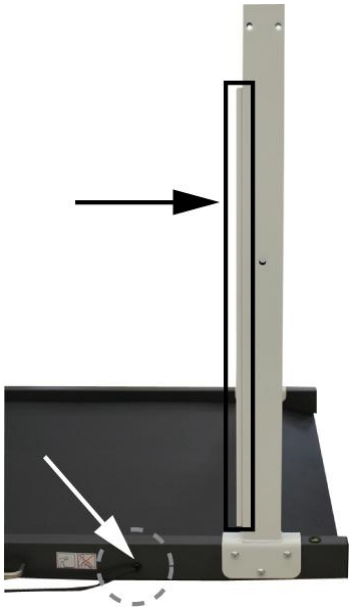
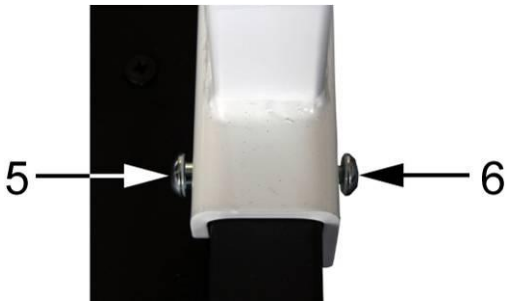
- Secure wall fixture with screws at the top on the aluminium section

- Remove the two lateral rubber plugs from the display unit.
- Secure the display unit with the two rotary knobs to the fixture.
- Position display unit with the rotary knobs.
- Secure cable with cable clips

Assembly of holding bracket set MWS-A02 at the models MWS

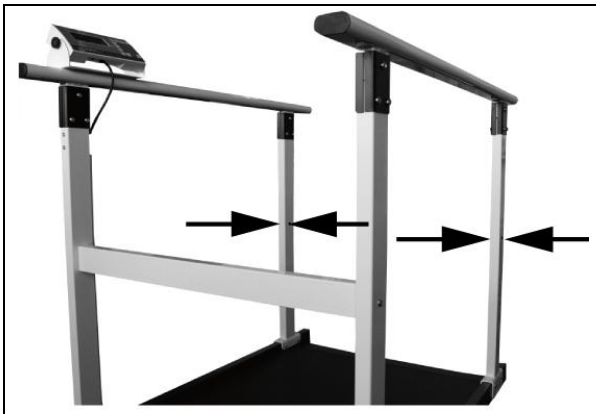
	1 **Hand rail**		**6** **Screw**
	2 **Handrail butts**		**7** **Hexagonal socket wrench**
	3 **Cross strut**		**8** **Screw** (for installation cross strut)
	4 **Retainer**		**9** **Screw** (for installation display unit)
	5 **Threaded bushing**		

	For assembly we recommend to call a second person for help.

	Carefully remove the plastic covers from the weighing scale, ensuring that the weighing scale does not get scratched in the process.
	Mount all 4 handrail butts (**2**) on the weighing scale frame. **i** Ensure that the handrail butt and cable conduit are positioned to the right of the power unit supply point. (s. fig.)
	Take the two Allen keys (**7**) and fix all handrail butts with the help of the screws **6** (3x) and the tapped bushes **5** (2x) as shown on the illustration. **i** Make sure that all screws are tightened properly.

	Ensuring perfect fit, put the handrail (**1**) containing three holes for the display unit on the handrail butt and cable conduit. (see illustration)
	Using the holders **4** (2x) fasten the handrail to the handrail butts. Once again, use screws **6** (3x) and tapped bushes **5** (3x). Carry out same sequence of operations for second handrail.
	Use the two screws (**8**) to fasten the cross strut (**3**).
	Use the three screws to fasten the mounting plate to the handrail.

	Take a screw driver and remove the plastic covers from both sides of the display unit.
	Screw the display unit to the holding bracket, using the synthetic screws included in the delivery,
The reading direction of the display unit is optional and can be adapted during the installation of the application.	
Display unit facing inward 	**Display unit facing outward**

	Using the synthetic covers, seal both holes in the two handrail butts without cross struts.

⚠	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 balances

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 center.

⚠	 When installing or transporting balances with large and heavy platforms (weighing plate folded upwards), ensure that the balance does not fall over or gets damaged.

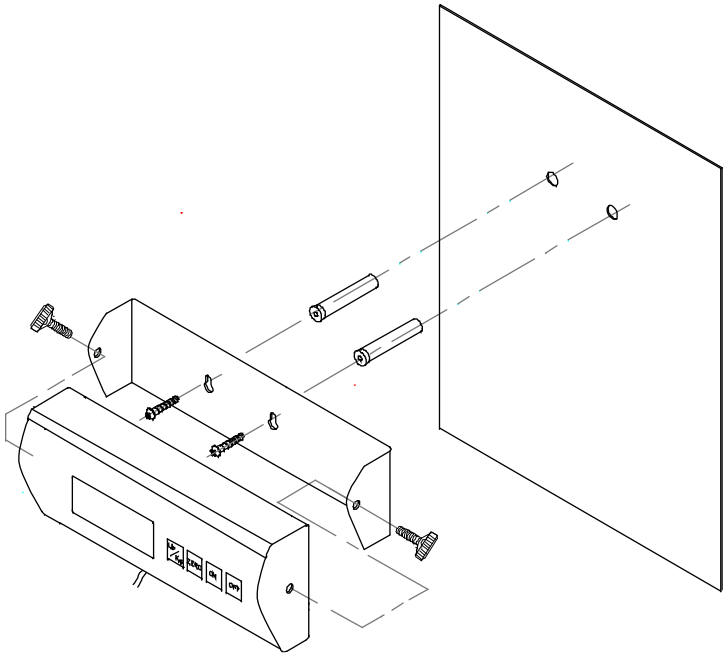
7.3.1 Scope of delivery

Serial accessories:

- Mains adapter (in conformity with EN 60601-1)
- Operating instructions

7.3.2 Assembly instructions for models with wall fixture

(personal balance, wheel chair balance, transporting stretcher balance)



7.4 Magnets display unit MWS

The display unit of the MWS has two magnets on the rear side, use these magnets to fix the display unit on metallic surfaces.

7.4.1 Transportation of balance

There exists the possibility to fix the display unit at the platform using the two magnets on the rear side, whereby the balance and the display unit can be transported together without problems (see fig. below).

7.5 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 balance may only be operated via the delivered power supply unit. Power supply from a PC is not allowed.

7.6 Operation using a rechargeable battery (optional)
(only for devices with rechargeable battery and battery function)

Connection **CN 4** for batteries (AA x 6) Connection **CN 3** for rechargeable battery

7.6.1 Battery operation

On models where the back of the display unit is not directly accessible, remove the two black rotary knobs from both sides of the display unit in order to open the battery compartment and remove the display unit from the holder.

⇨ Lift-off the battery compartment lid on the lower side of the balance

⇨ Carefully take out the battery holder (1)

⇨ Insert 6 batteries (AA).
Ensure that the batteries are inserted in the correct direction

⇨ Insert battery holder with the inserted batteries into the display unit
Ensure that the cables are not squeezed

⇨ Close the battery compartment lid

If the batteries are run down, "**LO**" appears in the display. To turn off, press the ON/OFF button and immediately change the batteries. 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.

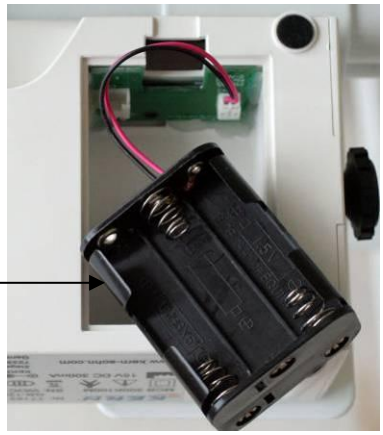
7.6.2 Rechargeable battery operation (optional)

When an optional rechargeable battery is used, proceed as follows:

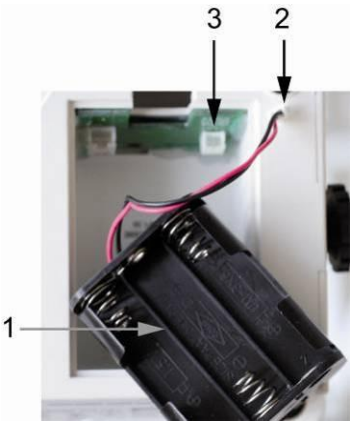
On models where the back of the display unit is not directly accessible, remove the two black rotary knobs from both sides of the display unit in order to open the battery compartment and remove the display unit from the holder.

⇨ Lift-off the battery compartment lid on the lower side of the balance

⇨ Carefully take out the battery holder (1)



⇨ Carefully pull-out plug (2) from the connection **CN 4** (3)



⇨ Carefully insert the rechargeable battery block and insert plug into connection **CN 3**
Ensure that the cables are not squeezed

⇨ Close the battery compartment lid

If the rechargeable battery is exhausted, „**LO**“ is displayed. The rechargeable battery is charged via the provided plug-in power supply unit (charging time 14 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.

7.7 Initial Commissioning

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

7.8 Menu overview of verified balances

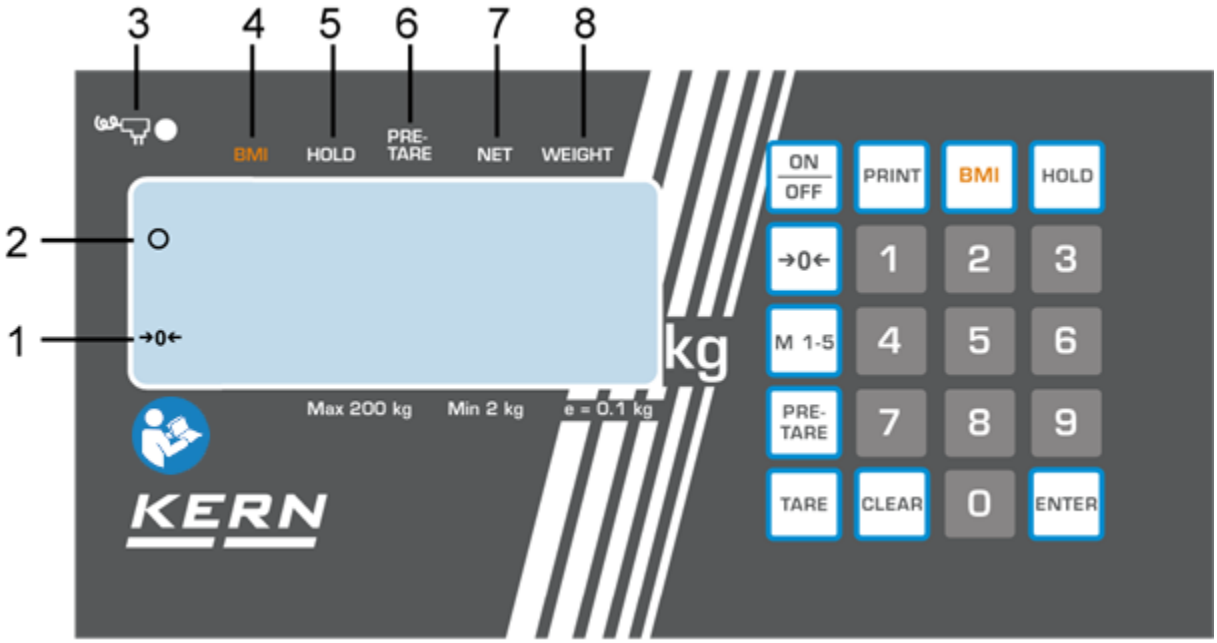
With the balance switched on, keep the **[→0←]** button depressed for approx. 3 sec until "**SETUP**" is displayed followed by "**A.OFF**".

Press the **[TARE]** ⟶ and **[HOLD]**-button ↓ to select parameters

Function	**Settings**	**Description**
SEtuP		
A. oFF Automatic shutdown Auto Off	180 s	Automatic shutdown after 3 min
	240 s	Automatic shutdown after 4 min
	300 s	Automatic shutdown after 5 min
	oFF	Automatic shutdown off
	120 s	Automatic shutdown after 2 min
burr Acoustic signal	On	Acoustic signal on
	oFF	Acoustic signal off
End	Exit menu by pressing HOLD	

8 Operation

8.1 Display

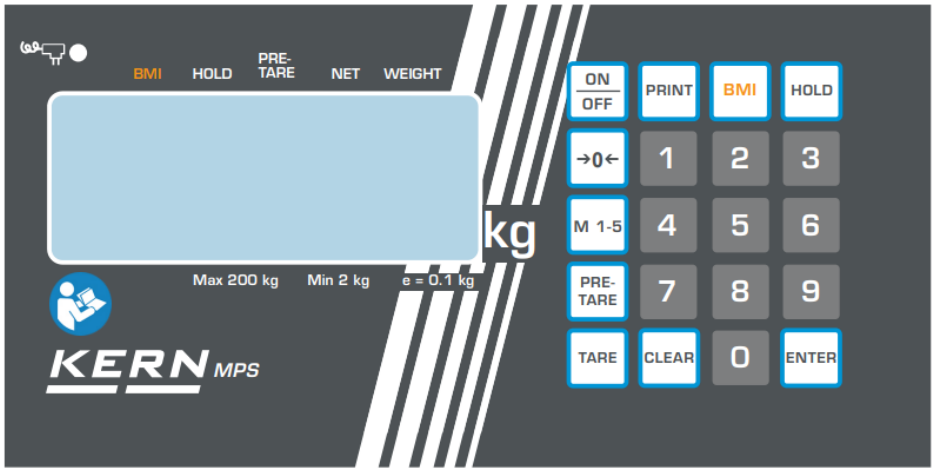


MPS 200K100NM
MPS 200K100PNM

8.2 Overview of displays

No.	Display	Description
1	**[→0←]**	Balance zero display: Should the balance not display exactly zero despite an empty scale pan, press the **[→0←]** button. Your balance will be set to zero after a short standby time.
2	**[o]**	Stability display: If the stability display **[o]** appears on the screen, the balance is in a stable status. The **[o]** indication disappears if the condition is unstable.
3		Illuminates in the event of power supply via mains adaptor
4	BMI ▲	Calculated BMI value
5	HOLD ▲	Hold/Save function active
6	PRE-TARE ▲	Preset tare value is enabled
7	NET ▲	Net weight will be displayed
8	WEIGHT ▲	Current weight value will be displayed

8.3 Keyboard overview



Type MPS 200K100NM / PNM

Button	Description
ON/OFF	Turn on/off balance
PRINT	Data transfer via interface
BMI	Calculation of the Body Mass Index
HOLD	Hold function/Calculation of a stable weight value
→0←	Balance will be reset to 0.0 kg. Possible up to max. 2% of maximum load for verified scales or 2 % or 100% of maximum load for all other scales (selectable via menu)
M 1-5	Memories 1-5 are called up
PRE-TARE	Call tare function with defined values
TARE	Tare balance
CLEAR	This deletes manual number entry
0..9	Digit input
ENTER	Taking over the digit input

9 Using the balance

9.1 Weighing

⇨ Turn on balance by pressing the [ON/OFF] key. The balance carry out a segment test, then the program version is displayed. Your balance is ready to weigh as soon as the "**0.00 kg**" weight display appears. **Note**: The **[→0←]** key can be used to set the balance to zero at any time.

⇨ Have person stand in the center of the scales. Wait until the standstill display (**o**) appears, then read the weighing result.

Note:
If the person is heavier than the weighing range, "**Err**" (=overload) will appear in the display.

9.1.1 Weighing with MWS

- Due to the great dimensions and the big weighing range especially suitable for weighing of immobile patients on transporting stretchers, wheelchairs or overweight patients in the adiposity range

9.1.1.1 Weighing with transportation stretcher or wheelchair

⇨ Place transportation stretcher/wheelchair with patient on the center of the scales

⇨ Arrest the brakes of the transportation stretcher/of the wheelchair

⚠	Do not leave the patient unattended

⇨ When the patient is lying/sitting quietly, read weighing value 1

⇨ Loosen the brakes and carefully pull off the transportation stretcher/wheelchair with patient

⇨ After that weigh the transportation stretcher/wheelchair without patient and subduct this weight from weighing value 1, from there results the patient's weight.

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.

- ⇨ The balance will not display 0 if, for example, a rubber mat has been placed on the weighing plate.
- ⇨ To start the taring process press the **[TARE]** key. The weight will now be saved internally and **0.0 kg** will be displayed.
- ⇨ Place the person in the middle of the weighing plate.
- ⇨ Now read the weight from the display.

Note:
The balance is able to only store one taring value at a time.
When the balance is unloaded the saved taring value is displayed with negative sign.
Remove all items from the weighing plate in order to delete the stored tare value and subsequently press the **[TARE]** key.

9.3 Hold function (Standstill 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.

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

- ⇨ Turn on balance by pressing the **[ON/OFF]** key. The balance will carry out a self-test The balance is ready to weigh as soon as the **0.0 kg** weight display appears.
- ⇨ Place the person in the middle of the weighing plate.
- ⇨ Press the **[HOLD]** button. A triangle starts to flash in the display, during this time the balance will record several measuring values and will then display the calculated average value.
- ⇨ Press the **[HOLD]** button repeatedly to reset the balance to normal Weighing mode.
- ⇨ Press the **[HOLD]** button once more to repeat this function as often as required.

9.4 Mother-Child-Function

The mother-child function allows to find out the body weight of toddlers and babies, whilst the child is held on the arm of an adult person.

- ⇨ Turn on balance by pressing the **[ON/OFF]** key. The balance will carry out a self-test The balance is ready to weigh as soon as the **0.0 kg** weight display appears.
- ⇨ Place the adult person on the center of the weighing plate; when the stability indication appears, the weight of the person will be shown. Under „WEIGHT“ the triangle appears.
- ⇨ Press the **[TARE]**-button, the display goes to **0.0 kg**
- ⇨ Put the baby to be weighed in the arms of the person. After the stability display the baby’s weight appears, now the triangle appears under „NET“.
- ⇨ Press the **[TARE]**-button anew, the display goes again to **0.0 kg**
- ⇨ After unloading the balance, the total weight of the person and the baby is shown as negative value.
- ⇨ Press the **[TARE]**-button again, the stored tare value is deleted and the nexts weighing can be carried out.

9.5 Calculation of the Body Mass Index

After the balance have displayed **0.0 kg** at standstill, the person should stand in the middle of the weighing plate. Wait until the weighing value has stabilised. Then press the **BMI-**button. Now enter the body height.
It should be noted that a reliable calculation of the BMI is only possible with a body height of between 100cm and 250cm and a weight >10kg.

In the display flashes the body height entered as last. Go to the numeric keypad and enter a different value. Press the **ENTER** button to confirm the input and then the BMI of the person will be displayed.

When the BMI value is displayed, it is presented in the display with an arrow pointing to **BMI.** To return to weighing mode, press the **BMI** button once more and the arrow pointing to **BMI** will disappear.

9.5.1 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^2)	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

9.6 PRE-TARE function

This value can be entered manually if the tare weight is known (rubber mat, clothing, ...).

If the **PRE-TARE** button is pressed shortly, a flashing display appears.
A small arrow will appear on the display under "**PRE-TARE**" as long as the PRE-Tare function is enabled.

The value used last will be displayed. If another value is required, use the numeric keypad to enter a new weight value. The value is confirmed and taken over by **ENTER**. The entered value appears on the display with a minus in front.

If now a person steps on the weighing plate, the weight value, reduced by the previously entered value, is shown on the display.

Press once more the **PRE-TARE** button to return to the normal weighing mode.

9.6.1 PRE-TARE function with 5 memories

This gives the option of storing 5 different Pre-Tare values (e.g. of different wheel chairs) that can be retrieved when required.

Saving PPE-TARE values:
To invoke values from a memory, they must be stored in the memory first. The procedure is as follows:

Weighing platform is unloaded and indicates **0.0 kg**.

Place the weight to be saved in the memory on the weighing platform (e.g. an empty wheel chair) and wait until the weight display is steady.
Keep pressing the **M1- 5** button until **"ni"** (**M**) appears on the display screen.

Briefly press the **numeric key (1..5)** that you wish to use for saving the value. The weight value displayed beforehand will be flashing for approx. 3 seconds.
When flashing finishes, press once more the **numeric key** operated before, now the weighing value is transferred to the memory (short acoustic signal).

Operate the **CLEAR**-button for returning to weighing mode without saving.

The current weighing value of the weight on the weighing plate is displayed. When removed, **0.0 kg** will be displayed.

Retrieving PPE-TARE values from the memory:
For that purpose keep the **PRE-Tare**-button pressed until **„ni" (M)** appears on the display.

A subsequent pressing on a **numeric key (1..5)** shows the stored weight value flashing. Also a small arrow pointing to „**PRE-TARE**" is displayed. Pressing another **numeric key (1..5)** the corresponding weight value is also shown flashing. Pressing the **ENTER**-button, the value is taken over and shown in the display as PRE-Tare value with negative sign.

For example now the person in wheelchair or on the transporting stretcher can be pushed on the balance and only the person's weight will be displayed.

To return to the normal weighing mode, unload the weighing plate and press once more the PRE-Tare-button shortly. Now the small arrow pointing to „**PRE-TARE**" disappears.

Printout from Pre-Tare memories:
For this purpose keep the **PRE-Tare**-button pressed until **„ni“ (M)** appears on the display.

To issue the values saved to the 5 memories, briefly press the **PRINT** button.

M1	0.0kg
M2	7.0kg
M3	10.0kg
M4	30.0kg
M5	50.0kg

9.7 Print function

This action requires the RS232 interface cable available as an accessory which has to be connected via the round plug to the rear end of the terminal.

Attention: In a medical context only auxiliary equipment in compliance with Directive EN 60601-1 may be connected to the interface.

Pressing the **PRINT** key whilst the scales are in weighing mode will trigger a printout of the determined data via the interface, as described in the following. This is a standard output that cannot be modified.

G	88.8	kg	Gross weight
T	2.0	kg	Taring weight
N	86.8	kg	Net weight
	180.0	cm	Patient height
	24.4	BMI	BMI value

9.7.1 Interface parameters for RS232

The interface parameters of the scales have to be set at the connected appliance. It is not possible to change the parameters inside the scales.
Baud rate 9600 bps
Parity Check: none
Data Length: 8 Bit
Stop Bit : 1 Bit
Handshake: None or Xon/Xoff
Data Code: ASCII

10 Error messages

Messages can be displayed when the balance are switched on or in operation.

ERRL : The balance detects underload

ooooo: The weighing plate was loaded during switch-on, empty the weighing plate.

ERR: Overload, too high load on weighing plate

11 Servicing, maintenance, disposal

11.1 Cleaning

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

11.2 Cleaning / disinfecting

Clean the weighing platform (e.g. seat pan) and the housing with household detergent or commercially available disinfectant, 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.

11.3 Sterilisation

Sterilisation of the appliance not allowed.

11.4 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.

11.5 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.

12 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 displayed weight does not glow.	• The balance is not switched on. • The mains supply connection has been interrupted (mains cable not plugged in/faulty). • Check fuse of adapter / glowing green LED next to fuse • Power supply interrupted. • (Rechargeable) batteries are inserted incorrectly or empty • No (rechargeable) batteries inserted
The displayed weight is permanently changing	• Draught/air movement • Table/floor vibrations • 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)

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

13 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. Validity period of verification, see chap. 13.1.
The legal regulations 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 looses 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.

13.1 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 surgeries 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“}

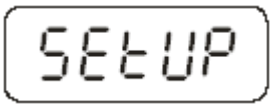
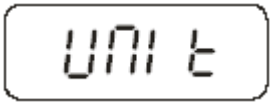
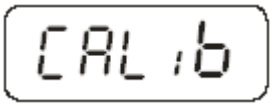
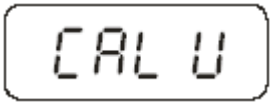
14 Adjustment

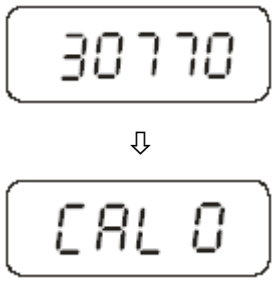
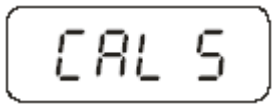
As the acceleration value due to gravity is not the same at every location on earth, each display unit with connected weighing pan must be coordinated - in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the weighing 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.

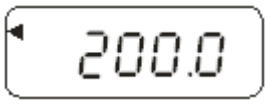
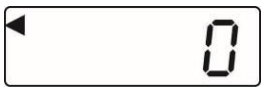
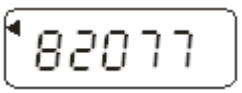
	• Prepare the required adjustment weight. The adjustment weight to be applied depends on the capacity of the balance, see chap. 1. Carry out adjustment as closely as possible to admissible maximum load of the balance. Info about test weights can be found on the Internet at: http://www.kern-sohn.com.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

	Access to service menu „tCH“ 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. 14.1 **Attention**: After destruction of the seal mark the weighing system must be re-verified by an authorized agency and a new seal mark fitted before it can be reused for applications subject to verification.

Procedure:

Operation	Display
Turn on balance by pressing the **[ON/OFF]** key	
Keep the **[→0←]** button depressed for approx. 3 sec until "**SETUP**" is displayed followed by "**UNIT**"	 ⇩ 
Press the **[TARE]** button as often as required until "**CAL ib**" is displayed	
Press the **[HOLD]** button.	

Press the **[TARE]** key. The appeared triangle ◀ must be located in the upper left part of the display. If this is this not the case, press the **[TARE]** key.	
Press the **[HOLD]** button until "CAL 0" is displayed.	
Press the **[TARE]** button, in the display appears a numeric value. After that press the **[ENTER]** button.	
Press the **[HOLD]** button.	

Press the **[TARE]** button. Enter the required size of the adjustment weight (See Section 1, "Technical Data"): Press the **[HOLD]** button to select the item to be changed and press the **[TARE]** button to select the numerical value.	
Confirm with **[ENTER]** button	
Place the adjustment weight carefully in the center of the weighing plate and a numerical value will appear in the display. Press the **[ENTER]**-button. The adjustment process is started.	
The balance will automatically return to Weighing mode upon successful completion of the adjustment and will display the weight of the adjustment weight. Take away adjustment weight.	
Remark: For verified scales, turn off the scales and move the adjustment switch back to verification position.	

14.1 Adjustment switch and seal marks

After a verification the balance is sealed at the indicated positions.

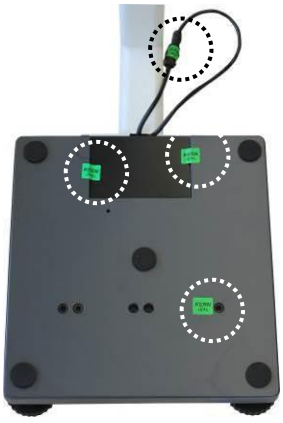
Verification of the balance is invalid without the seal mark.

Position of the official seals:

1. Rear side

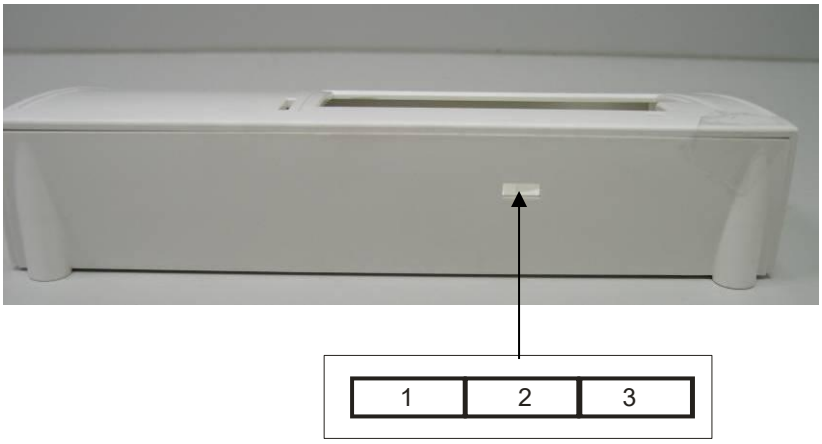
2. Battery compartment

3. MPS



4. MWS

Position of the adjustment switch:



Position of the adjustment switch	Status
1. to left	Not documented
2. concentric	Adjustment position – adjustment possible
3. to right	Verification position - adjustment locked

14.2 Checking the balance verification settings

For the adjustment function, the balance must be switched over to service mode. To achieve the effect, turn the adjustment switch to adjustment position (see chap.14.1).

In service mode all parameters of the balance can be modified. The service parameters may not be modified, as this could damage the balance settings.

14.2.1 Menu overview in service mode (adjustment switch in adjustment position)

This overview is merely for checking the parameters set by the appropriate Bureau of Standards.

Changes may only be made to the parameters for the automatic shut-off function "**A.OFF**" and the audio signal "**BURR** ".

Navigation in the menu:

- With the balance switched on, keep the **[→0←]** button depressed for approx. 3 sec until "SETUP" is displayed followed by "UNIT".
- Press the **[TARE]** button as often as necessary until the required function is displayed.
- Press the **[HOLD]** button to confirm the selected function. The first parameter will be displayed. Press the **[HOLD]** button to select the required parameter and confirm by pressing the **[TARE]** button.

To exit the Menu and save, press the **[TARE]** button as often as required until "**END**" is displayed and then confirm by pressing the **[HOLD]** button. The balance returns automatically into weighing mode.

Press the **[HOLD]** ⟶ and **[TARE]** button ↓ to make the selection

14.3 Menu overview

Function	Settings	Description
SEtuP		
Unit	on - off	Weighing unit kg
Degrees	3000 d – 6000 d – 10000 d – 500 d – 1000 d – 1500 d - 2500 d - 2000 d	Partition steps, weighing range (max.) and readout (d)
Ut.-d	Full – S-Ut	Selection Single-range (Full)- / Multiple-range balance (S-Ut)
FillE	Fast – Nor. - SLo	Filter: fast - normal - slow
Auto 0	0.25 d – 0.5 d – 1 d – 3 d - OFF	Auto-Zero Tracking
Stab	0.25 d – 0.5 d – 1 d – 3 d - off	Stabilisation range
Orang	2 Pct – 100 Pct.	Zero range: 2 % / 100 %
Ould	9 d – 2 Pct.	Overload range: 9 d / 2 %

CALib	CAL-U – CAL–0 CAL-5	Adjustment
A.Off	120s/180s/240s/ 300s/off	Automatic switch-on function
burr	on/off	Acoustic signal
default		Reset to default setting
End	Exit menu by pressing	

Description:

Unit	Weighing unit: Kg
grAd.	Partition steps, weighing range (max.) and readout (d)
Mt.-d.	Multi-range balance/ single-range balance selection
FuLL	Single-range balance
S-Mt	Multi-range balance
FiLtE	Filter: fast/ normal/ slow
AutoO	Auto-Zero Tracking 0.25d/ 0.5d/ 1d/ 3d/ OFF
StAb.	Stabilisation range: 0.25d/ 0.5d/ 1d/ 3d/ OFF
OrAng	Zero range: 2% / 100%
OuLd	Overload range: 9d / 2%
CALib	Adjustment
AOFF	Auto off 120 sec/ 180 sec/ 240 sec/ 300 sec/ OFF
bUrr	Acoustic signal: ON/OFF
dEFLt	Resetting to factory setting (Default setup)
End	Exit menu

15 Accessories (optional)

Item number	**Product**
MWS-A01	Stand
MWS-A02	Holding bracket set