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Operating instruction

Analytical and precision balances

KERN ALT/PLT

Version 2.1

11/2007

GB



ALT/PLT-BA-e-0721



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Version 2.1 11/2007

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Analytical and precision balances

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1 Technical data

| KERN | ALT 160-4NM | ALT 220-4NM |
|---|-----------------------------------|--------------------|
| <i>Readability (d)</i> | 0,1mg | 0,1 mg |
| <i>Weighing range (Max)</i> | 160 g | 220 g |
| <i>Minimum load (Min)</i> | 10 mg | 10 mg |
| <i>Reproducibility</i> | 0,1mg | 0,1mg |
| <i>Linearity</i> | ± 0,2mg | ± 0,2mg |
| <i>Minimum piece weight for counting function</i> | >0,1 mg | >0,1 mg |
| <i>Warming up time (operating temperature)</i> | 8 h | |
| <i>Adjusting weight</i> | intern | |
| <i>Verifiable</i> | yes | |
| <i>Verification value (e)</i> | 1 mg | |
| <i>Verification class</i> | I | |
| <i>Reference piece numbers for parts counting</i> | 10, 20, 50,100, freely selectable | |
| <i>Weighing Units</i> | mg, g, ct | |
| <i>Stabilization time (typically)</i> | 4 sec. | |
| <i>Permissible ambient temperature</i> | + 18° C + 30° C | |
| <i>Humidity of air</i> | max. 80 % (not condensing) | |
| <i>Under floor weighing device</i> | On-hook eyelets, serial | |
| <i>Weighing plate mm</i> | 85 | |
| <i>Housing (W x D x H) mm</i> | 206 x 330 x 335 | |
| <i>Weight kg (net)</i> | 174x165x225 | |
| <i>Stabilization time (typically)</i> | 6,3 | |

| KERN | ALT 100-5AM | ALT 220-5DAM | ALT 310-4AM |
|--|------------------------------------|---------------------|--------------------|
| Readability (d) | 0,01 mg | 0,01mg/0,1mg | 0,1 mg |
| Weighing range (Max) | 100 g | 60 g/220 g | 310 g |
| Minimum load (Min) | 10 mg | 1 mg | 10 mg |
| Reproducibility | 0,03 mg | 0,02 mg/0,1mg | 0,1 mg |
| Linearity | ± 0,1 mg | ± 0,1 mg/0,2 mg | ± 0,3 mg |
| Minimum piece weight for counting function | >0,1 mg | >0,1 mg | 0,2 mg |
| Warming up time (operating temperature) | 8 h | | |
| Adjusting weight | internal | | |
| Verifiable | yes | | |
| Verification value (e) | 1 mg | | |
| Verification class | I | | |
| Reference piece numbers for parts counting | 10, 20, 50, 100, freely selectable | | |
| Weighing Units | mg, g, ct | | |
| Stabilization time (typically) | 15 sec. | 13 sec./5sec. | 4 sec. |
| Permissible ambient temperature | + 18° C + 30° C | | |
| Humidity of air | max. 80 % (not condensing) | | |
| Under floor weighing device | On-hook eyelets, serial | | |
| Weighing plate mm | 80 | | 100 |
| Housing (W x D x H) mm | 205 x 500 x 290 | | |
| Weight kg (net) | 170x170x232 | | |
| Stabilization time (typically) | 8,9 | | |

| KERN | PLT 450-3M | PLT 650-3M | PLT 2000-3DM |
|---|---|-------------------|---------------------|
| Readability (d) | 0,001 g | 0,001 g | 0,001/0,01 g |
| Weighing range (Max) | 450 g | 650 g | 200/2000 g |
| Minimum load (Min) | 0,02 g | 0,02 g | 0,02 g/0,5 g |
| Verification value (e) | 0,01 g | 0,01 g | 0,01/0,1 g |
| Verification class | II | II | II |
| Reproducibility | 0,002 g | 0,002 g | 0,002/0,02 g |
| Linearity | ± 0,002 g | ± 0,002 g | ± 0,002/0,02 g |
| Warming up time (operating temperature) | 4 h | 4 h | 2 h |
| Stabilization time (typically) | 4 sec | | |
| Adjusting weight | internal | | |
| Weighing Units (verified) | g, ct | | |
| Weighing Units (not verified) | mg, g, ct, lb, oz, ozt, dwt, t {h}, t {S}, t {t}, mom, GN, N, t, freely selectable | | |
| Minimum piece weight for counting function | > 1 mg | | |
| Reference quantities at piece counting | 10, 20, 50, 100, freely selectable | | |
| Weighing plate, stainless steel | 128 x 128 mm | | |
| Dimensions of the housing (W x D x H) | 206 x 330 x 160 (without windscreen) | | |
| Dimensions Glass wind screen [mm] | 150 x 150 x 80 (Weighing room 140 x 140 x 65) | | |
| Net weight (kg) | 5,5 | | |
| Permitted environmental condition | 15° C bis 30° C | | |
| Humidity of air | max. 80 % relative (not condensing) | | |
| Voltage | 230 V/50Hz | | |

| KERN | PLT 2500-2M | PLT 4500-2M | PLT 6000-3D |
|--|---|--------------------|----------------------|
| Readability (d) | 0,01 g | 0,01 g | 0,001/0,01 g |
| Weighing range (Max) | 2500 g | 4500 g | 600 g/6 kg |
| Minimum load (Min) | 0,5 g | 0,5 g | - |
| Verification value (e) | 0,1 g | 0,1 g | - |
| Verification class | II | II | - |
| Reproducibility | 0,02 g | 0,02 g | 0,003 g/ 0,03 g |
| Linearity | ± 0,02 g | ± 0,02 g | 0,003 g/ 0,03 g |
| Warming up time (operating temperature) | 2 h | 4 h | 4 h |
| Stabilization time (typically) | 4 sec. | 4 sec. | 3 sec. |
| Adjusting weight | <i>internal</i> | | |
| Weighing Units (verified) | g, ct | | - |
| Weighing Units (not verified) | <i>mg, g, ct, lb, oz, ozt, dwt, t {h}, t {S}, t {t}, mom, GN, N, t, freely selectable</i> | | <i>ct, g, kg, lb</i> |
| Reference quantities at piece counting | > 10 mg | | 5 mg |
| Referenzstückzahlen bei Stückzählung | 10, 20, 50, 100, freely selectable | | |
| Weighing plate, stainless steel | 165 x 165 mm | | 128 x 128 mm |
| Dimensions of the housing (W x D x H) (without wind- screen) | 206 x 330 x 80 | | |
| Dimensions of the housing (W x D x H) (with wind- screen) | 206 x 330 x 80 | | 206 x 330 x 160 |
| Net weight (kg) | 5,7 | | |
| Permitted environmental condition | 15° C bis 30° C | | |
| Humidity of air | <i>max. 80 % relativ (not condensing)</i> | | |
| Voltage | 230 V/50Hz | | |

| KERN | PLT 450-3M | PLT 650-3M | PLT 2000-3DM |
|---|--|-------------------|---------------------|
| <i>Readability (d)</i> | 0.001 g | 0.001 g | 0.001/0.01 g |
| <i>Weighing range (max)</i> | 450 g | 650 g | 200/2,000 g |
| <i>Minimum load</i> | 0.02 g | 0.02 g | 0.02 g/0,5 g |
| <i>Verification value</i> | 0.01 g | 0.01 g | 0.01/0.1 g |
| <i>Verification class</i> | II | II | II |
| <i>Reproducibility</i> | 0.002 g | 0.002 g | 0.002/0.02 g |
| <i>Linearity</i> | ± 0.002 g | ± 0.002 g | ± 0.002/0.02 g |
| <i>Stabilization time</i> | 4 sec. | | |
| <i>Adjustment weight</i> | internal | | |
| <i>Weighing Units</i> | mg, g, ct | | |
| <i>Minimum piece weight for counting function</i> | > 1 mg | | |
| <i>Reference quantities at piece counting</i> | 10, 20, 50, 100, freely selectable | | |
| <i>Weighing plate, stainless steel</i> | 128 x 128 mm | | |
| <i>Dimensions of the housing (B x D x H)</i> | 206 x 330 x 160 (with wind screen) | | |
| <i>Dimensions Glass wind screen [mm]</i> | 150 x 150 x 80 (Weighing room 140 x 140 x 65) | | |
| <i>Net weight (kg)</i> | 5,5 | | |
| <i>Permitted environmental condition</i> | 15° C to 30° C | | |
| <i>Humidity of air</i> | max. 80 % relative (not condensing) | | |
| <i>Voltage</i> | 230 V/50Hz | | |

| KERN | PLT 2500-2M | PLT 4500-2M |
|---|-------------------------------------|--------------------|
| <i>Readability (d)</i> | 0.01 g | 0.01 g |
| <i>Weighing range (max)</i> | 2,500 g | 4,500 g |
| <i>Minimum load</i> | 0.5 g | 0.5 g |
| <i>Verification value</i> | 0.1 g | 0.1 g |
| <i>Verification class</i> | II | II |
| <i>Reproducibility</i> | 0.02 g | 0.02 g |
| <i>Linearity</i> | ± 0.02 g | ± 0.02 g |
| <i>Stabilization time</i> | 4 sec. | |
| <i>Adjustment weight</i> | internal | |
| <i>Weighing Units</i> | mg, g, ct | |
| <i>Minimum piece weight for counting function</i> | > 10 mg | |
| <i>Reference quantities at piece counting</i> | 10, 20, 50, 100, freely selectable | |
| <i>Weighing plate, stainless steel</i> | 165 x 165 mm | |
| <i>Dimensions of the housing (B x D x H)</i> | 206 x 330 x 80 (without windscreen) | |
| <i>Net weight (kg)</i> | 5,7 | |
| <i>Permitted environmental condition</i> | 15° C to 30° C | |
| <i>Humidity of air</i> | max. 80 % relative (not condensing) | |
| <i>Voltage</i> | 230 V/50Hz | |

2 Declaration of conformity



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Konformitätserklärung

Declaration of conformity for apparatus with CE mark

Konformitätserklärung für Geräte mit CE-Zeichen

Déclaration de conformité pour appareils portant la marque CE

Declaración de conformidad para aparatos con marca CE

Dichiarazione di conformità per apparecchi contrassegnati con la marcatura CE

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

Electronic Balance: KERN ALT/PLT

| Mark applied | EU Directive | Standards |
|--------------|-----------------------|--------------------|
| CE | 89/336/EEC EMC | EN45501 EN55022 |
| | 73/23/EEC Low Voltage | EN60950 |

Date: 18.01.2005

Signature: 

Gottl. KERN & Sohn GmbH
Management

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Konformitätserklärung

Declaration of conformity for apparatus with CE mark

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Déclaration de conformité pour appareils portant la marque CE

Declaración de conformidad para aparatos con marca CE

Dichiarazione di conformità per apparecchi contrassegnati con la marcatura CE

- English** We hereby declare that the product to which this declaration refers conforms with the following standards.
This declaration is only valid with the certificate of conformity by a notified body.
- Deutsch** Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.
Diese Erklärung gilt nur in Verbindung mit der Konformitätsbescheinigung einer benannten Stelle.
- Français** Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.
Cette déclaration est valide seulement avec un certificat de conformité d'un organisme notifié.
- Español** Manifestamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes.
Esta declaración solo será válida acompañada del certificado de conformidad de conformidad de la parte nominal.
- Italiano** Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.
Questa dichiarazione sarà valida solo se accompagnata dal certificato di conformità della parte nominale.

| | |
|---------------|---------------------|
| Model: | KERN ALT/PLT |
|---------------|---------------------|

| EU Directive | Standards | Issued by | EC-type-approval certificate no. | Model |
|--------------|-----------|-----------|----------------------------------|--|
| 90/384/EEC | EN 45501 | NMI | T7036 | ALT 100-5AM ALT 220-5DAM ALT 310-4AM |
| | | | T6843 | PLT 450-3M PLT 650-3M PLT 2500-2M PLT 4500-2M |
| | | CMI | TCM 128/06-4438 | ALT 160-4NM ALT 220-4NM |
| | | | TCM 128/05-4315 | PLT 2000-3DM |

Date: 18.09.2006

Signature: 

Gottl. KERN & Sohn GmbH
Management

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3 Appliance overview

Models PLT:

Air bubble



Underfloor weighing device



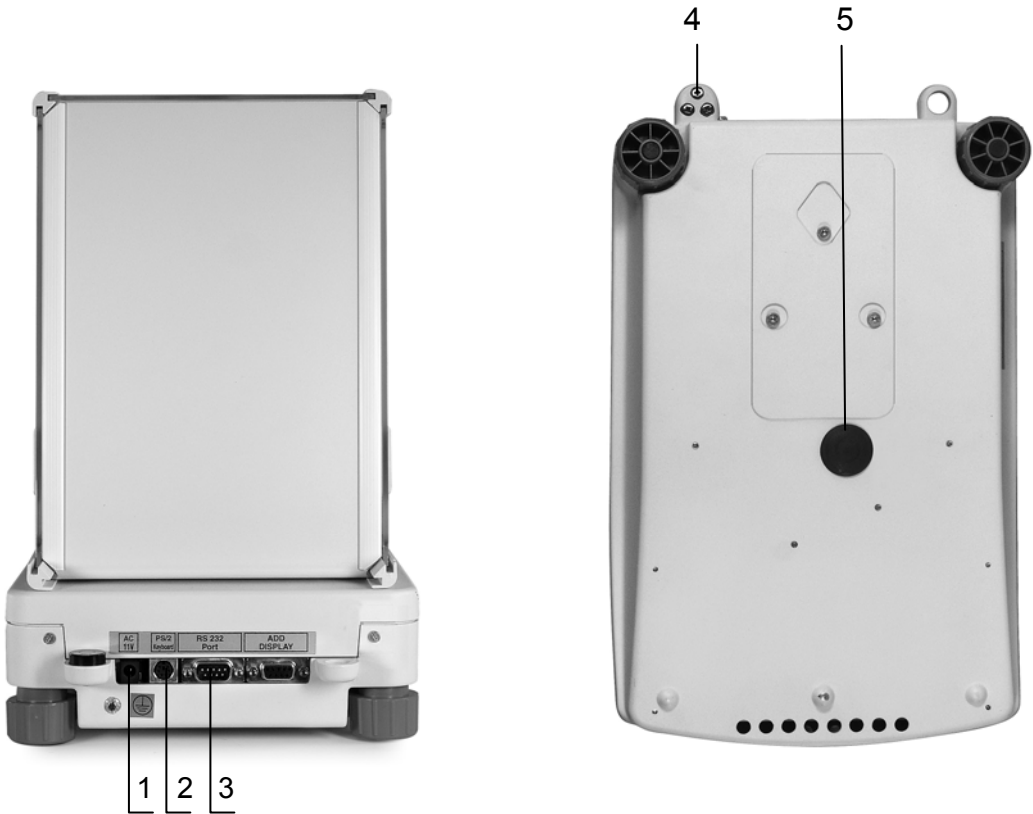
Mod.: PLT 450-3M, PLT 650-3M,
PLT 2000-3DM with glass windshield,
PLT 6000-3D with glass windshield

Mod.: PLT 2500-2M, PLT 4500-2M



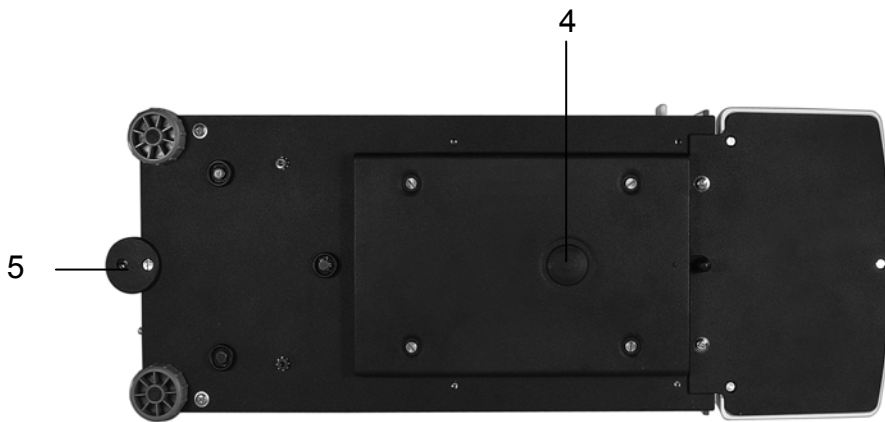
1. Mains connection
2. PS/2 keyboard
3. RS 232 interface

Models ALT...-NM:



- 1. Mains connection
- 2. PS/2 keyboard
- 3. RS 232 interface
- 4. Air bubble
- 5. Underfloor weighing device

Models ALT...-AM:



1. Mains connection
2. PS/2 keyboard
3. RS 232 interface
4. Underfloor weighing device
5. Air bubble

4 Basic Information (General)

4.1 Proper use

The balance you purchased is intended to determine the weighing value of material to be weighed. It is intended to be used as a “non-automatic“ balance, i.e. the material to be weighed is manually and carefully placed in the centre of the weighing plate. As soon as a stable weighing value is reached the weighing value can be read.

4.2 Improper Use

Do not use balance for dynamic add-on weighing procedures, if small amounts of goods to be weighed are removed or added. The “stability compensation“ installed in the balance may result in displaying an incorrect measuring value! (Example: Slowly draining fluids from a container on the balance.)

Do not leave permanent load on the weighing plate. This may damage the measuring system.

Impacts and overloading exceeding the stated maximum load (max) of the balance, minus a possibly existing tare load, must be strictly avoided. Balance may be damaged by this.

Never operate balance in explosive environment. The serial version is not explosion protected.

The structure of the balance may not be modified. This may lead to incorrect weighing results, safety-related faults and destruction of the balance.

The balance may only be used according to the described conditions. Other areas of use must be released by KERN in writing.

4.3 Warranty

Warranty claims shall be voided in case

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

4.4 Monitoring of Test Resources

In the framework of quality assurance the measuring-related properties of the balance and, if applicable, the testing weight, must be checked regularly. The responsible user must define a suitable interval as well as type and scope of this test. Information is available on KERN's home page (www.kern-sohn.com) with regard to the monitoring of balance test substances and the test weights required for this. In KERN's accredited DKD calibration laboratory test weights and balances may be calibrated (return to the national standard) fast and at moderate cost.

5 Basic Safety Precautions

5.1 Pay attention to the instructions in the Operation Manual

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

5.2 Personnel training

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

6 Transport and storage

6.1 Testing upon acceptance

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

6.2 Packaging

Keep all parts of the original packaging in case you need to return the appliance. Only use original packaging for returning.

Before sending, disconnect all connected cables and loose/movable parts.

Attach possibly existing transport safeguards. Secure all parts, e.g. weighing plate, power unit etc., to prevent slipping and damage.

7 Unpacking, Setup and Commissioning

7.1 Installation Site, Location of Use

The balances are designed in a way that reliable weighing results are achieved in common conditions of use.

You will work accurately and fast, if you select the right location for your balance.

Therefore, observe the following for the installation site:

- Place the balance on a firm, level surface;
- Avoid extreme heat as well as temperature fluctuation caused by installing next to a radiator or in the direct sunlight;
- Protect the balance against direct draughts due to open windows and doors;
- Avoid jarring during weighing;
- Protect the balance against high humidity, vapours and dust;
- Do not expose the device to extreme dampness for longer periods of time. Non-permitted condensation (condensation of air humidity on the appliance) may occur if a cold appliance is taken to a considerably warmer environment. In this case, acclimatize the disconnected appliance for ca. 2 hours at room temperature.
- Avoid static charge of goods to be weighed or weighing container.

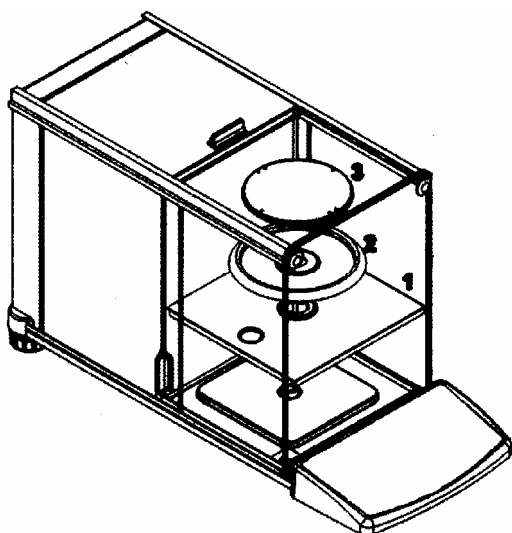
Major display deviations (incorrect weighing results) are possible if electromagnetic fields occur as well as due to static charging, currents and instable power supply (e.g. due to cellular telephones or wireless equipment). It is then necessary to change the location.

7.2 Unpacking

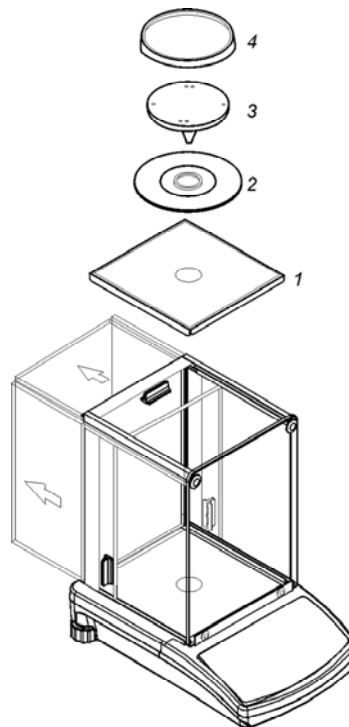
Carefully remove the balance from the packaging, remove plastic cover and setup balance at the intended workstation.

7.2.1 Setup

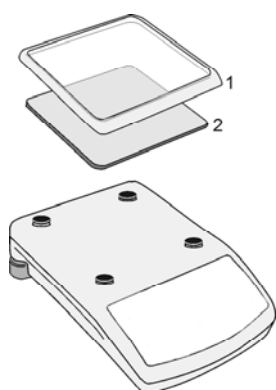
Models ALT 100-5AM, ALT 220-5DAM,
ALT 310-4AM



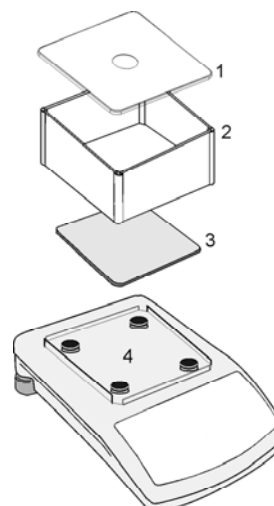
Models ALT 160-4NM, ALT 220-4NM



Models PLT 2500-2M, PLT 4500-2M



Models PLT 450-3M, PLT 650-3M,
PLT 2300-3DM, PLT 6000-3D



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

7.2.2 Scope of delivery

Serial accessories:

- Balance
- Weighing plate
- Mains power supply
- Operating Manual
- Glass wind screen (excl. Modell PLT 2500-2M, PLT 4500-2M)

7.3 Mains connection

Power is supplied via the external mains power supply. The stated voltage value must be the same as the local voltage.

Only use original KERN mains power supplies. Using other makes requires consent by KERN.

7.4 Connection of peripheral devices

Before connecting or disconnecting of additional devices (printer, PC) to the data interface, always disconnect the balance from the power supply.

With your balance, only use accessories and peripheral devices by KERN, as they are ideally tuned to your balance.

7.5 Initial Commissioning

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

The accuracy of the balance depends on the local acceleration of the fall.

Please be sure to observe the information in the chapter on adjusting.

8 User menu

The user menu has nine main menus (P1 - P9), arranged in the following sub-menus:

| | | | |
|-----------|-------------------------|-------|---------------|
| P1 | Calibration | | |
| | 01 Internal Calibration | ***** | Function |
| | 02 External Calibration | ***** | Function |
| | 03 User Calibration | ***** | Function |
| | 04 Calibration Test | ***** | Function |
| | 05 Weight corr. | | 0.0 |
| | 06 Autom. Calibration | | 3 both |
| | 07 Autom. cal. time | | 3 3 hours |
| | 08 Print report | | 1 on |
| P2 | GLP | | |
| | 01 User | | |
| | 02 Project | | |
| | 03 Time print | | 1 on |
| | 04 Date print | | 1 on |
| | 05 User print | | 1 on |
| | 06 Project print | | 1 on |
| | 07 Id print | | 1 on |
| | 08 Last cal. print | | 1 on |
| P3 | Date/time | | |
| | 01 Date format | | 0 D/M/Y |
| | 02 Time format | | 0 24 hour |
| | 03 Time | ***** | Function |
| | 04 Date | ***** | Function |
| | 05 Display time | | 1 on |
| | 06 Display date | | 1 on |
| P4 | Readout | | |
| | 01 Filter | | 3 normal |
| | 02 Value release | | 1 Fast + rel. |
| | 03 Disp. refresh | | 1 0.08 s |
| | 04 Autozero | | 1 on |
| | 05 Last digit | | 1 always |
| | 06 Negative | | 0 disabled |

| | | | |
|-----------|-------------------|---|----------|
| P5 | RS-232 | | |
| | 01 Baud rate | 1 | 4800 |
| | 02 Parity | 0 | non |
| | 03 Data bits | 2 | 8 bit |
| | 04 Stop bits | 1 | 1 bit |
| | 05 Handshake | 0 | none |
| | 06 Auto print | 0 | none |
| | 07 Intervall | 1 | * 0.1 s |
| | 08 Min. mass | 4 | 10 d |
| | 09 Print on stab. | 1 | enabled |
| | 10 Printout to | 1 | computer |
| | 11 Printer ttype | 0 | Standard |
| | 12 Cut paper | 1 | enabled |

| | | | |
|-----------|---------------------|-------|----------|
| P6 | Printouts | | |
| | 01 Printout no. | 0 | Standard |
| | 02 Printout 1 start | 1 | |
| | 03 Printout 1 stop | 1 | |
| | 04 Printout 2 start | 1 | |
| | 05 Printout 2 stop | 1 | |
| | | | |
| | 10 Printout. edit. | ***** | Function |
| | 11 string 1 | | |
| | 12 string 2 | | |
| | | | |
| | 90 80. string | | |

| | | | |
|-----------|------------------|-----|----------|
| P7 | Units | | |
| | 01 Gram | 1 | enabled |
| | 02 Milligram | 0 | disabled |
| | 03 Carat | 0 | disabled |
| | 04 Pound | 0 | disabled |
| | 05 Ounce | 0 | disabled |
| | 06 Ounce troy | 0 | disabled |
| | 07 Dwt | 0 | disabled |
| | 08 Teal Hk. | 0 | disabled |
| | 09 Teal S. | 0 | disabled |
| | 10 Teal T. | 0 | disabled |
| | 11 Momme | 0 | disabled |
| | 12 Grain | 0 | disabled |
| | 13 Newton | 0 | disabled |
| | 14 Tical | 0 | disabled |
| | 15 Custom | 0 | disabled |
| | 16 Custum Factor | 0.1 | |

| | | | |
|-----------|-------------------|-----------|----------|
| P8 | Modes | | |
| | 01 Parts Count | 1 | enabled |
| | 02 Checkweighing | 1 | enabled |
| | 03 Filling | 1 | enabled |
| | 04 Percent | 1 | enabled |
| | 05 Animal | 1 | enabled |
| | 06 Density | 1 | enabled |
| | 07 Formulation | 1 | enabled |
| | 08 Statistics | 1 | enabled |
| | | | |
| P9 | Globals | | |
| | 01 ID setting | ***** | Function |
| | 02 ID autoprint | 0 | off |
| | 03 Beep | 1 | on |
| | 04 Language | ***** | Function |
| | 05 Backlight | 1 | on |
| | 06 Contrast | ***** | Function |
| | 07 Screensaver | 1 | on |
| | 08 Temperature | ***** | Function |
| | 09 Balance ID | 141475 | |
| | 10 Software rev. | MBA p. 32 | |
| | 11 Par. printout | ***** | Function |
| | 12 Par. receive | ***** | Function |
| | 13 Password prot. | ***** | Function |

Main menu:

| | |
|--|--|
| | <ol style="list-style-type: none"> 1. Menu number (P1 - P9) 2. Menu designation 3. Cursor (►) indicates the current menu item |
|--|--|

Submenu:

| | |
|--|---|
| | <ol style="list-style-type: none"> 1. Main menu number (P1 – P9) 2. Sub-menu number and designation 3. Parameter value or ***** i.e. this menu item is stored as function 4. Description of function 5. Cursor (►) shows the current menu item (e.g. P1). 6. Cursor (►) shows the current setting (e.g. 06). 7. Status 8. Use the arrow key to modify the parameter value, the active parameter blinks. |
|--|---|

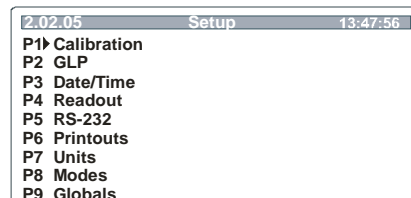
8.1 User principle of the menu control


In the menu the settings of the balance can be modified and functions can be activated.




This way, the balance can be adjusted to individual weighing requirements. Proceed as follows:


⇒ Switch on the balance using the  key

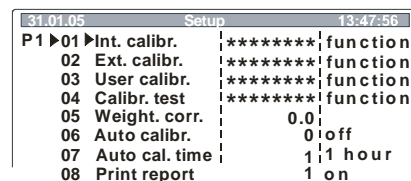
⇒ After actuating the  key the display shows the main menus that can be set



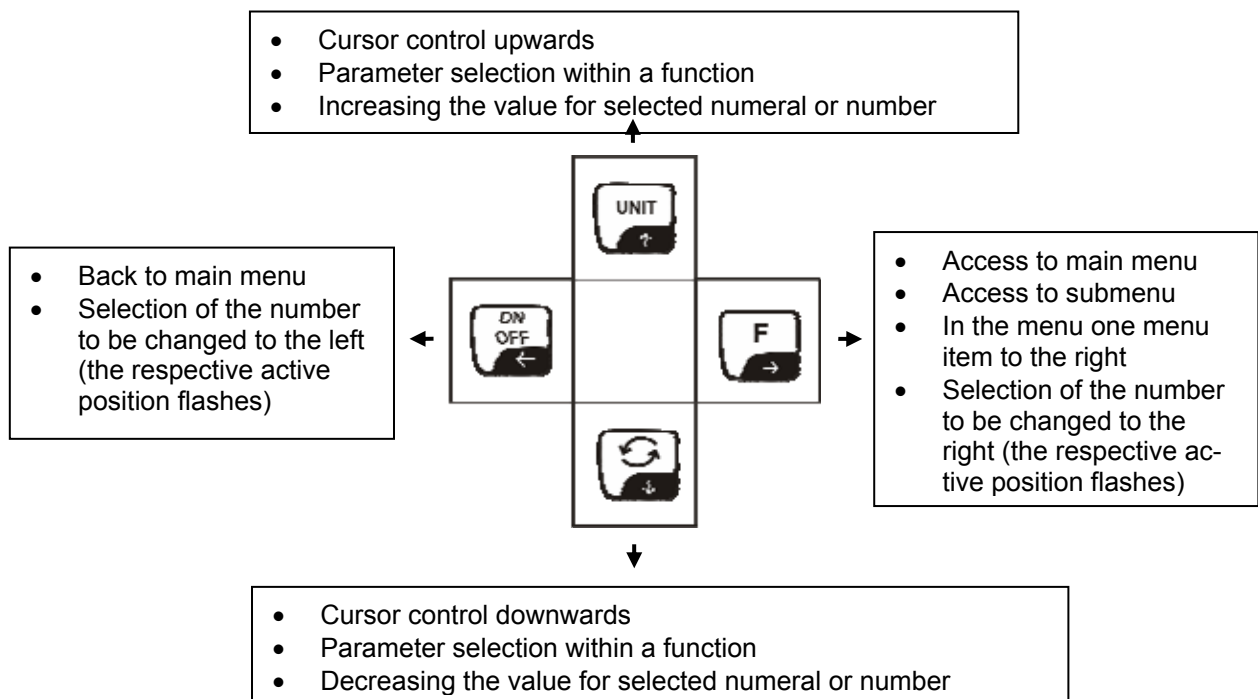
⇒ Use the cursor () to select your setting





Use the  key to move the cursor () down, the  key to move it up

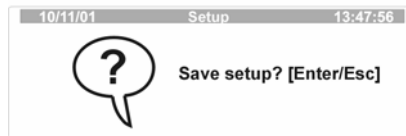
⇒ The  key confirms your selected setting, the display shows the sub-menu or the active menu item blinks:





⇒ Use the arrow keys to move within and enter into the menu:



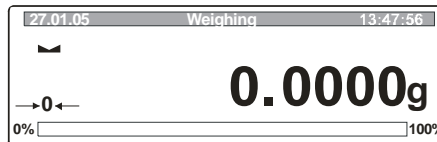
- ⇒ Actuating the  key will confirm your setting; to interrupt use the  key
- ⇒ Use the  key to return to the menu
- ⇒ Actuate  key again, a message will inquire whether you want to save the changes you made.



- ⇒ Actuating the  key will save the selected setting.
- ⇒ If you do not want to save your selected setting, press the  key
























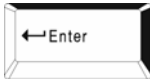

- ⇒ The balance returns automatically into weighing mode.



8.2 Operation of the balance with PS/2-keyboard

Using a PS/2 keyboard will help you to enter numbers and texts faster and easier.

Key allocation:

|  |  |  |  |  |  | Balance keyboard |
|---|---|---|---|---|---|---|
|  |  |  |  |  |  | PS keyboard |
|  |  |  |  |  |  |  |
| | |  |  | | |  |
| | | | | | |  |


8.3 Menu selection

8.3.1 P1 Calibration (adjustment)

As the acceleration value due to gravity is not the same at every location on earth, each balance must be coordinated - in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the balance has not already been adjusted to the location in the factory). This adjustment process must be carried out 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 balance periodically in weighing operation.

Using the inbuilt adjusting weight the balance automatically carries out an adjustment after any temperature change of 3 °C or any time it was disconnected from the power supply.

Of course it is also possible to check the accuracy of the balance manually any time. You can choose between two options:


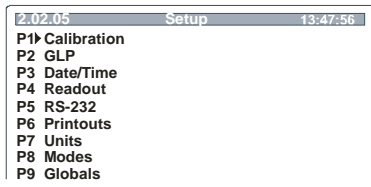

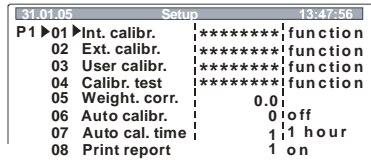
1. Adjustment is started by pressing the -key three times.
After successful adjustment the balance automatically returns to weighing mode.
2. Under menu item **"P1 01 Adjustment with internal weight"** (see table below)


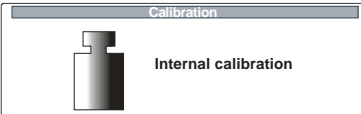
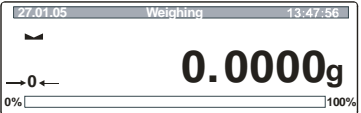

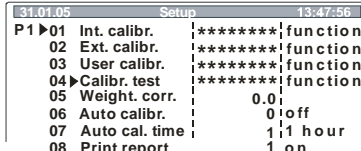

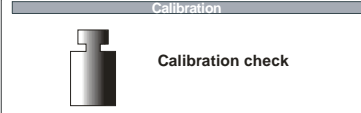
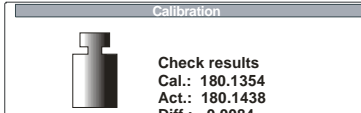


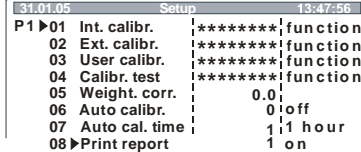

Procedure when adjusting:

Observe stable environmental conditions. A warming up time of ca. 1 hour is required for stabilization.

Note!

During the adjustment process no objects should be on the weighing plate.

| Operation | Display |
|---|--|
| <p>⇒ Call up menu item "P1 Calibration" (see chapt. 8.1)</p> <p>⇒ Press  button</p> |  <pre> 2.02.05 Setup 13:47:56 P1▶ Calibration P2 GLP P3 Date/Time P4 Readout P5 RS-232 P6 Printouts P7 Units P8 Modes P9 Globals </pre> |
| <h3>01 Int. cal. - Adjustment with internal weight</h3> | |
| <p>⇒ Use the cursor () to select "01 Int. cal."</p> |  <pre> 31.01.05 Setup 13:47:56 P1 ▶01 ▶Int. calibr. ***** function 02 Ext. calibr. ***** function 03 User calibr. ***** function 04 Calibr. test ***** function 05 Weight. corr. 0.0 06 Auto calibr. 0 off 07 Auto cal. time 1 hour 08 Print report 1 on </pre> |

| | |
|---|---|
| <p>⇒ Press the  key; the adjustment with internal adjustment weight is made.</p> |  |
| <p>⇒ After successful adjustment the balance automatically returns to weighing mode. In case of an adjustment error (e.g. objects on the weighing plate) the display will show an error message, repeat adjustment.</p> |  |
| <p>02 Ext. Cal adjustment with external weight - locked for verifiable devices</p> | |
| <p>03 User cal. - locked for verifiable appliances</p> | |
| <p>04 Cal. test Here, deviation from the last adjustment is determined. This is only a check, i.e. no values are changed.</p> | |
| <p>⇒ Use the cursor () to select "04 Cal. test"</p> |  |
| <p>⇒ Press  key; calibration test will be executed automatically</p> |  |
| <p>⇒ The result is displayed</p> |  |
| <p>05 Weight corr. - Locked for verifiable appliances</p> | |
| <p>06 Autom. cal. - locked for verifiable appliances</p> | |
| <p>07 Auto. Cal.time – locked for verifiable appliances</p> | |
| <p>08 Print report - printout of the adjustment data</p> | |
| <p>⇒ Use the cursor () to select "08 Print report"</p> <p>⇒ Press  key, the current menu item blinks With the arrow keys save your settings</p> <p>0 Print report deactivated 1 Print report activated</p> |  |
| <p>⇒ Confirm by pressing the  key</p> | |

⇒ With "**Print report**" activated, you will receive a printout of your adjustment data after each adjustment (example):

```
***Print report of internal calibration***  
  
Calibrate      :      internal  
  
Diff..         :      0.0038 g  
  
Signature.....
```

8.3.1.1 Verification

General introduction:

According to EU directive 90/384/EEC balances must be officially verified if they are used as follows (legally controlled area):

- a) For commercial transactions if the price of goods is determined by weighing
- b) For the production of medicines in pharmacies as well as for analyses in the medical and pharmaceutical laboratory
- c) For official purposes.
- d) For manufacturing final packages.

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

Verification instructions

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

Re-verification of a balance is carried out according to the respective national regulations. The validity for verification of balances in Germany is e.g. 2 years.

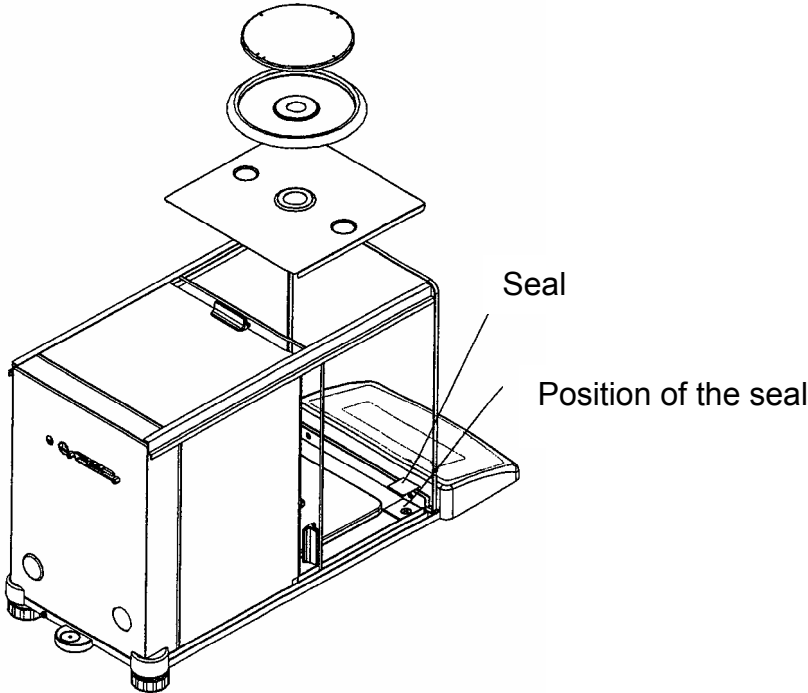
The legal regulation of the country where the balance is used must be observed!

After verification the balance is sealed at the indicated positions.

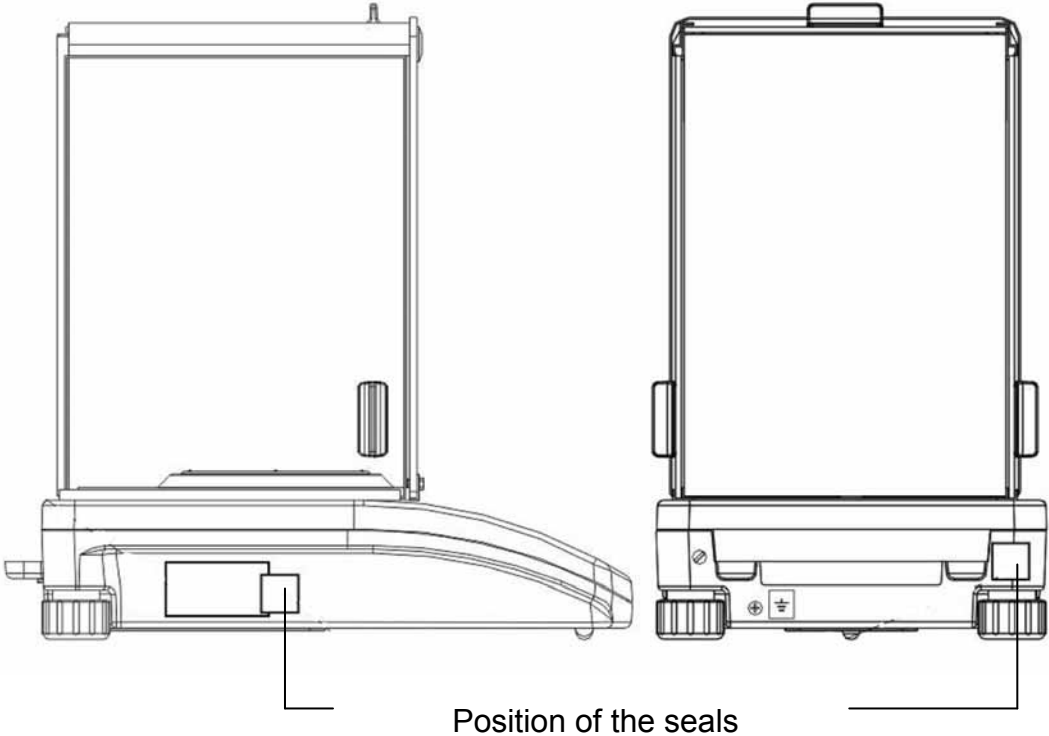
Verification of the balance is invalid without the "seal".

Position of the "official seals":

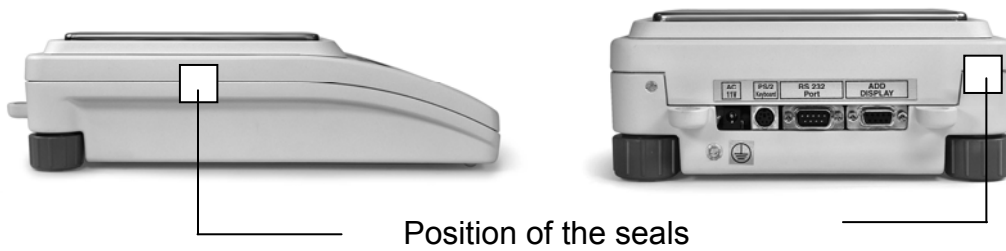
Models ALT 100-5AM, ALT 220-5DAM, ALT 310-4AM:



Models ALT 160-4NM, ALT 220-4NM:



Models PLT:




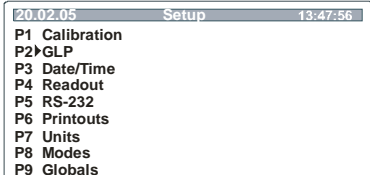

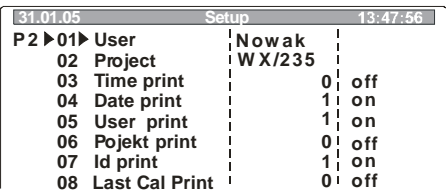


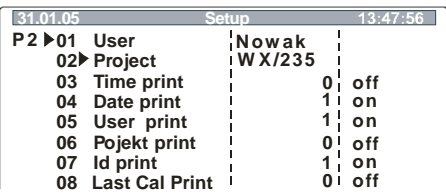

Balances with obligation to verify must be taken out of operation if:

- **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.**

8.3.2 P2 GLP (Good laboratory practice)

Quality assurance systems require printouts of weighing results as well as of correct adjustment of the balance stating date and time and balance identification. The easiest way is to have a printer connected.

Definition of a standard log:

| Operation | Display |
|--|---|
| <p>⇒ Call up menu item "P2 GLP" (see chapt. 8.1)</p> <p>⇒ Press  button</p> |  <pre> 20.02.05 Setup 13:47:56 P1 Calibration P2>GLP P3 Date/Time P4 Readout P5 RS-232 P6 Printouts P7 Units P8 Modes P9 Globals </pre> |
| 01 User | |
| <p>⇒ Use the cursor (►) to select "01 User"</p> <p>⇒ Press  button, the current menu item blinks. Use the arrow keys to enter user name or number (max. 8 characters).</p> |  <pre> 31.01.05 Setup 13:47:56 P2>01>User Nowak 02 Project WX/235 03 Time print 0 off 04 Date print 1 on 05 User print 1 on 06 Pojekt print 0 off 07 Id print 1 on 08 Last Cal Print 0 off </pre> |
| <p>⇒ Confirm by pressing the  key</p> | |
| 02 Project | |
| <p>⇒ Use the cursor (►) to select "02 Project"</p> <p>⇒ Press  key, the current menu item blinks. Use the arrow keys to enter project name or number (max. 8 characters)</p> |  <pre> 31.01.05 Setup 13:47:56 P2>01 User Nowak 02>Project WX/235 03 Time print 0 off 04 Date print 1 on 05 User print 1 on 06 Pojekt print 0 off 07 Id print 1 on 08 Last Cal Print 0 off </pre> |
| <p>⇒ Confirm by pressing the  key</p> | |
| All other settings (03 - 08) are executed | |

All settings that are supposed to be printed must be activated with "1 / yes"

Example 1:

Setting

Printout

| | | | | |
|-----------|-----------|-------------------------|----------|------------|
| P2 | 03 | Printout time | 1 | yes |
| P2 | 04 | Printout date | 1 | yes |
| P2 | 05 | User printout | 1 | yes |
| P2 | 06 | Project printout | 1 | yes |
| P2 | 07 | ID-printout | 1 | yes |
| P2 | 08 | Cal. printout | 1 | yes |

| | |
|------------------------------|--------------------|
| Date | : 18.01.05 |
| Time | : 10:41:05 |
| User | : Miller |
| Projec | : AB/007 |
| Balance no. | : WL 041078 |
| ----- | |
| 18.01.05 | 07:48 |
| | |
| Automatic calibration | |
| Devi.: | 0.003[5] g |
| ----- | |
| 10.429[0] g | |

Example 2:

Setting


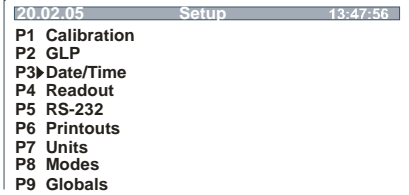


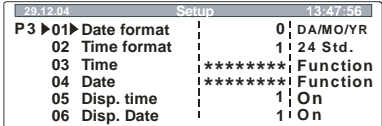



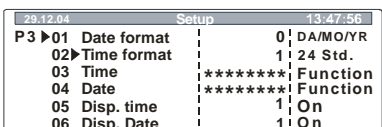

Printout

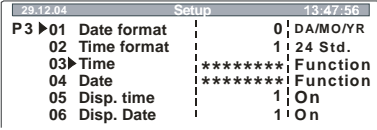

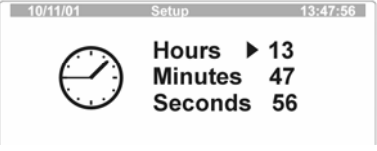









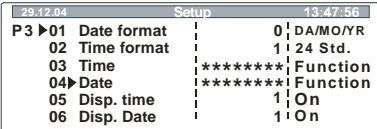

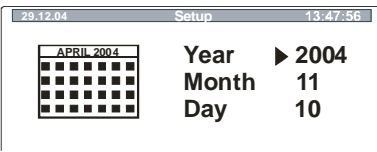
| | | | | |
|-----------|-----------|-------------------------|----------|------------|
| P2 | 03 | Printout time | 0 | no |
| P2 | 04 | Printout date | 1 | yes |
| P2 | 05 | User printout | 1 | yes |
| P2 | 06 | Project printout | 0 | no |
| P2 | 07 | ID-printout | 1 | yes |
| P2 | 08 | Cal. printout | 0 | no |

| | |
|---------------------|-------------------|
| Date: | 22/10/2004 |
| User: | Miller |
| Balance no.: | 10 |
| ----- | |
| 13.0521 g | |

8.3.3 P3 Date/time


Under this menu item you can set output and formatting of date and time in the status bar.

| Operation | Display |
|---|--|
| <p>⇒ Call up menu item "P3 Date/time" (see chap. 8.1)</p> <p>⇒ Press  button</p> |  <pre> 20.02.05 Setup 13:47:56 P1 Calibration P2 GLP P3▶Date/Time P4 Readout P5 RS-232 P6 Printouts P7 Units P8 Modes P9 Globals </pre> |
| 01 Date format | |
| <p>⇒ Use the cursor (▶) to select "01 Date format"</p> <p>⇒ Press the  key; the current menu item blinks.</p> <p>⇒ Use the  button to choose between the following settings:</p> <p style="margin-left: 40px;">1 Month/Day/Year</p> <p style="margin-left: 40px;">0 Day/Month/Year</p> |  <pre> 29.12.04 Setup 13:47:56 P3 ▶01▶ Date format 0 DAMO/YR 02▶ Time format 1 24 Std. 03 Time ***** Function 04 Date ***** Function 05 Disp. time 1 On 06 Disp. Date 1 On </pre> |
| <p>⇒ Confirm by pressing the  key</p> | |
| 02 Time format | |
| <p>⇒ Use the cursor (▶) to select "02 Time format"</p> <p>⇒ Press the  key; the current menu item blinks.</p> <p>⇒ Use the  button to choose between the following settings:</p> <p style="margin-left: 40px;">0 24 hours</p> <p style="margin-left: 40px;">1 12 hours (PM/AM)</p> |  <pre> 29.12.04 Setup 13:47:56 P3 ▶01▶ Date format 0 DAMO/YR 02▶ Time format 1 24 Std. 03 Time ***** Function 04 Date ***** Function 05 Disp. time 1 On 06 Disp. Date 1 On </pre> |
| <p>⇒ Confirm by pressing the  key</p> | |

| | |
|---|---|
| 03 Time | |
| ⇒ Use the cursor (►) to select "03 Time" |  |
| ⇒ Press  button |  |
| ⇒ Use the  or  key to control your selection | |
| ⇒ Use the  key to confirm your selection (e.g. hours), the current menu item blinks | |
| ⇒ Use the  key to increase the value, the  key to decrease. | |
| ⇒ Use the  and  keys to select the place to be changed (the respective active place blinks) | |
| ⇒ Use the  key to confirm your selection (e.g. hours). | |
| ⇒ To change minutes and seconds proceed in the same way. | |
| ⇒ Confirm by pressing the  key | |
| 04 Date | |
| ⇒ Use the cursor (►) to select "04 Date" |  |
| ⇒ Press  button |  |
| ⇒ All other settings are made in the same way as time (03 Time). | |

02 Value release

⇒ Use the cursor (►) to select "02 Value release "

⇒ Press the -key; the current menu item blinks.

⇒ Use the  - and -keys to select between the following settings:


- 0 Stability control fast
- 1 Stability control fast + reliable
- 2 Stability control reliable



| 29.12.05 Setup 13:47:56 | |
|-------------------------|--------------------------|
| P4 ▶ 01 | Filter 5 Slowest. |
| 02 ▶ | Value release 1 fast+rel |
| 03 | Disp refresh 1 0.08 s |
| 04 | Autozero 1 On |
| 05 | Last digit 1 Always |
| 06 | Negative 0 disabled |

⇒ Confirm by pressing the  key

03 Disp.refresh

⇒ Use the cursor (►) to select "03 Disp.refresh"

⇒ Press the  key; the current menu item blinks

⇒ Use the  and  keys to set the time it takes before the display is updated after the weight value has changed.


| | |
|---|---------|
| 1 | 0.08/ s |
| ↓ | ↓ |
| 5 | 1.0 s |



| 29.12.05 Setup 13:47:56 | |
|-------------------------|--------------------------|
| P4 ▶ 01 | Filter 5 Slowest. |
| 02 | Value release 1 fast+rel |
| 03 ▶ | Disp refresh 1 0.08 s |
| 04 | Autozero 1 On |
| 05 | Last digit 1 Always |
| 06 | Negative 0 disabled |

⇒ Confirm by pressing the  key

04 Autozero

⇒ Use the cursor (►) to select "04 Autozero"

⇒ Press the  key; the current menu item blinks




⇒ Use the  and  keys to select between the following settings:

- 0 Deviations from the Zero display are **not** automatically tared.
- 1 Deviations from the Zero display are automatically tared.

| 29.12.05 Setup 13:47:56 | |
|-------------------------|--------------------------|
| P4 ▶ 01 | Filter 5 Slowest. |
| 02 | Value release 1 fast+rel |
| 03 | Disp refresh 1 0.08 s |
| 04 ▶ | Autozero 1 On |
| 05 | Last digit 1 Always |
| 06 | Negative 0 disabled |

⇒ Confirm by pressing the  key




05 Last digit

- ⇒ Use the cursor (►) to select “**05 Last digit**”
- ⇒ Press the  key; the current menu item blinks
- ⇒ Use the  and  keys to select between the following settings:
 - 0** Last fractional digits are omitted
 - 1** All fractional digits

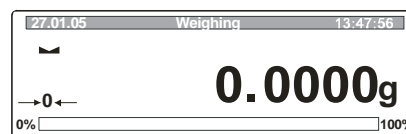
| 29.12.05 Setup 13:47:56 | |
|-------------------------|------------|
| P4▶ 01 Filter | 5 Slowest. |
| 02 Value release | 1 fast+rel |
| 03 Disp refresh | 1 0.08 s |
| 04 Autozero | 1 On |
| 05▶ Last digit | 1 Always |
| 06 Negative | 0 disabled |

- ⇒ Confirm by pressing the  key

06 Negativ

- ⇒ Use the cursor (►) to select “**06 Negativ**”
- ⇒ Press the  key; the current menu item blinks
- ⇒ Use the  and  key to invert the colour settings of the display
 - 0** blocked
 - 1** active


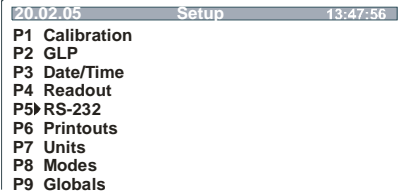

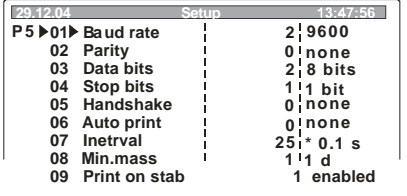
| 29.12.05 Setup 13:47:56 | |
|-------------------------|------------|
| P4▶ 01 Filter | 5 Slowest. |
| 02 Value release | 1 fast+rel |
| 03 Disp refresh | 1 0.08 s |
| 04 Autozero | 1 On |
| 05 Last digit | 1 Always |
| 06▶ Negative | 0 disabled |





- ⇒ Confirm by pressing the  key

8.3.5 P5 RS-232


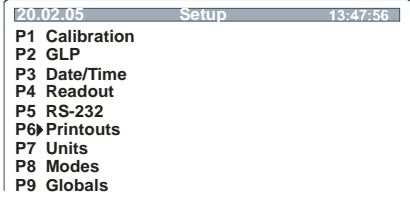



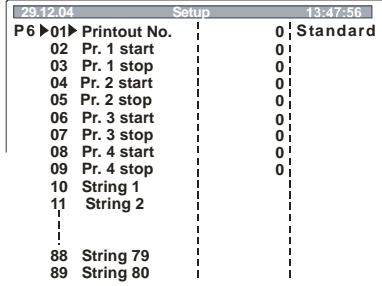

In this menu item you can save your settings for the interface.

| Operation | | Display | |
|--|----------|--|--|
| <p>⇒ Call up menu item "P5 RS-232" (see chapt. 8.1)</p> <p>⇒ Press  button</p> | |  | |
| 01 -10 Parameter selection | | | |
| <p>⇒ Use the cursor () to select your parameters (01 - 10)</p> | |  | |
| 01 Baud rate | 0 | 2400 | |
| | 1 | 4800 | |
| | 2 | 9600 | |
| | 3 | 19200 | |
| 02 Parity | 0 | none | |
| | 1 | even | |
| | 2 | uneven | |
| 03 Data bits | 1 | 7 Bit | |
| | 2 | 8 Bit | |
| 04 Stop bits | 1 | 1 Stop bit | |
| | 2 | 2 Stop bit | |
| 05 Handshake | 0 | None | |
| | 1 | RTS/CTS | |
| | 2 | XON/XOFF | |
| 06 Autom. Printout | 0 | None | No data output |
| | 1 | steady | Continuous serial data output |
| | 2 | interval (discrete) | Serial data output after a certain interval, defined in parameter „ 07 Interval “ |
| | 3 | at resting | Unique autom. Data output for steady weighing value. New output only after removing the weight and new loading |


| | | | |
|--|---|---|---|
| 07 Interval | 1 – 9999 (Enter via arrow keys) | Definition of an interval after which data output is executed. Pulse = parameter value x 0.1 sec | |
| 08 Min. measuring value | 1 | 1 d | Definition of a minimum measuring value from which serial data output is executed |
| | 2 | 2 d | |
| | 3 | 5 d | |
| | ↓ 13 | ↓ 10000 d | |
| 09 Print on stab. | 0 | disabled | Data output for steady weighing value. |
| | 1 | enabled | |
| 10 Printer type | Epson | | Not documented |
| | Standard | | |
| 11 Paper cut | yes | | Not documented |
| | no | | |
| <p>⇒ Press  key, the current menu item blinks With the arrow keys (see chap. 8.1) save your settings</p> <p>⇒ Confirm by pressing the  key</p> | | | |

8.3.6 P6 Printouts

In this menu item you can select between 5 different types of data output:

| Operation | Display |
|---|--|
| <p>⇒ Call up menu item "P6 Printouts " (see chapt. 8.1)</p> <p>⇒ Press  button</p> |  |
| <p>01 Printout no.</p> | |
| <p>⇒ Use the cursor (►) to select "01 Printout no." ⇒ Press the  key; the current menu item blinks ⇒ Use the  and  keys to select between the following settings:</p> <p>0 standard 1 1. Printout ↓ ↓ 4 4. Printout</p> |  |
| <p>⇒ Use the  key to confirm your selection</p> | |

8.3.6.1 Standard data output (0 standard)

Data output is carried out by actuating the  key.

Definition of the log header is executed in menu item "P2 GLP".

Examples.

| | |
|----------|------------|
| Date: | 22/10/2004 |
| Time: | 13.04.23 |
| User: | Mustermann |
| Project: | XW/456 |
| | 0.008 g |

| | |
|----------|------------|
| Date: | 22/10/2004 |
| Time: | 13.16.49 |
| User: | Mustermann |
| Project: | XW/456 |
| Balance: | 10 |
| ? | 62.685 g * |

*: ? = instable measuring value

8.3.6.2 User-defined data output (1. Printout - 4. Printout)

Here you can define 4 different types of data output.

⇒ The content of the data output is defined as follows.

First line **1. Printout start - 1**, i.e. text begins at line 1 (1. Text)

Last line **1. Printout stop - 20**, i.e. text ends at line 20 (20. Text)

⇒ Text input per line is carried out via the arrow keys (see chapter 8.1) in the respective strings.


| | |
|-----------------|---------------------|
| 1. Text | Start of text input |
| 20. Text | End of text input |


During text input lines may overlap, e.g.:

| |
|-------------------------------|
| 1. Printout start - 1 |
| 1. Printout stop - 40 |
| 2. Printout start - 20 |
| 2. Printout stop - 40 |

Text input:

- Max. 640 characters
- 80 lines
- 8 characters per line

⇒ After each line confirm your text input using the  key.

⇒ After completely entering the text use the  key to confirm (see chapt. 8.1).

Apart from flow text (characters, numbers and numerals) the following variables are stored in the menu:

| General variables | |
|--------------------------|--|
| %% | Printout of 1 character “%” (i.e. in order to print out 1 character %, two %% must be entered) |
| %N | Net weight |
| %d | Current date |
| %t | Current time |
| %i | Balance ID-no. |
| %R | Program no. |
| %P | Project number. |
| %U | User no. |
| %F | Current function (operating mode) |
| %C | Date and time of last adjustment |
| %K | Type of last adjustment |
| %I | Deviation from last adjustment |
| %1-6 | Code 1-6 |

| Print related variables | |
|--------------------------------|--|
| // | Printout of 1 character “/” (i.e. in order to print out 1 character /, two // must be entered) |
| lc | CRLF (carriage return line feed) line beginning next line |
| vr | CR (carriage return) line beginning |
| vn | LF (line feed) next line |
| lt | Tabulator |
| ls | Next "Text" |
| lo | End of data output |

| Variables in the various operating modes | | |
|---|--------------------|---------------------------------------|
| Variable | Description | Operating mode |
| %W | Reference quantity | Parts counting |
| %H | Lower limit | Weighing with tolerance range |
| %L | Upper limit | |
| %Z | Nominal value | Filling |
| %B | Reference mass | Percent weighing |
| %A | Sensitivity | Dynamic weighing (animal weighing) |
| %b | Mean Value | |
| %l | Liquid | Density determination |
| %p | Method | |
| %c | Temperature | |
| %a | Density liquid | |
| %v | Sinker | |

| Variable for statistics | |
|--------------------------------|------------------------------|
| %n | Number weighing processes |
| %x | Mean Value |
| %S | Sum of all measuring values |
| %m | Min value |
| %M | Max value |
| %D | Difference min and max value |
| %s | Standard Deviation |
| %r | Variance |

Examples for text input:

Example 1: *Max mass can not exceed 11.250 g!*

| Parameter Nr. | Text | | | | | | | |
|---------------|----------|----------|----------|----------|----------|----------|----------|----------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 20 string 10 | M | a | x | | m | a | s | s |
| 21 string 11 | | c | a | n | | n | o | t |
| 22 string 12 | | e | x | c | e | e | d | |
| 23 string 13 | 1 | 1 | . | 2 | 5 | 0 | | g |
| 24 string 14 | | ! | | | | | | |
| 25 string 15 | | | | | | | | |

Example 2: *Kern & Sohn GmbH*

Date:

Time:

Weight:


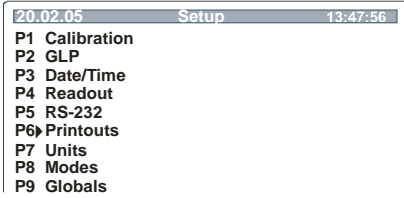







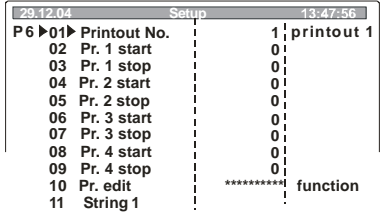
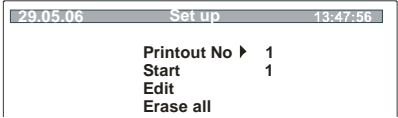



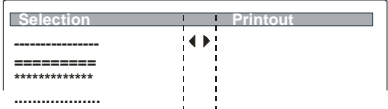
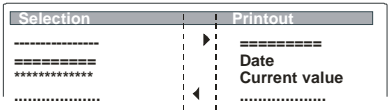
*****Signature:.....*






**** Weighing with tolerance range ****

| Parameter Nr. | Text | | | | | | | |
|---------------|----------|----------|----------|----------|----------|--------------|----------|----------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 26 string 16 | K | e | r | n | | & | | S |
| 27 string 17 | o | h | n | | G | m | b | H |
| 28 string 18 | \ | c | D | a | t | u | m | : |
| 29 string 19 | % | d | \ | c | Z | e | i | t |
| 30 string 20 | : | % | t | \ | r | \ | n | G |
| 31 string 21 | e | w | i | c | h | t | : | % |
| 32 string 22 | N | \ | c | \ | c | * | * | * |
| 33 string 23 | * | * | U | n | t | e | r | s |
| 34 string 24 | c | h | r | i | f | t | : | . |
| 35 string 25 | . | . | . | . | . | | . | . |
| 36 string 26 | . | . | \ | c | * | * | % | F |
| 37 string 27 | * | * | * | * | | | | |





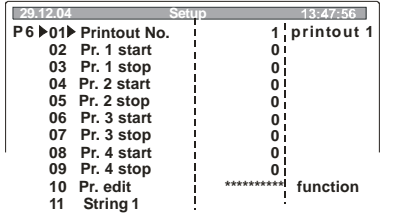
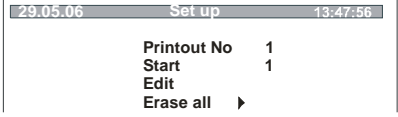
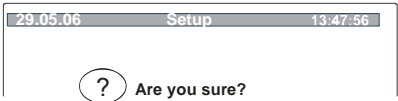

In addition to the manual text input, you can select more comfortably from a list of text elements in the menu item „**P6 10 Printout edition**“:

- **Printout**

| Operation | Display |
|---|---|
| <p>⇒ Call up menu item "P6 Printouts" (see chapt. 8.1)</p> <p>⇒ Press  button</p> |  <pre> 20.02.05 Setup 13:47:56 P1 Calibration P2 GLP P3 Date/Time P4 Readout P5 RS-232 P6 Printouts P7 Units P8 Modes P9 Globals </pre> |
| <p>10 Printout edition</p> | |
| <p>⇒ With the cursor (▶) select „10 Printout edition“</p> <p>⇒ Press  button</p> <p>⇒ With the cursor (▶) select „Printout No“ or „Start“ (text beginning)</p> <p>⇒ Press the  key; the current menu item blinks</p> <p>⇒ Use the  key, to increase and the  key to decrease the number value</p> <p>⇒ Use the  and  keys to select the place to be changed (the respective active place blinks)</p> <p>⇒ Use the  key to confirm your selection</p> |  <pre> 29.12.04 Setup 13:47:56 P6 ▶01▶ Printout No. 1 printout 1 02 Pr. 1 start 0 03 Pr. 1 stop 0 04 Pr. 2 start 0 05 Pr. 2 stop 0 06 Pr. 3 start 0 07 Pr. 3 stop 0 08 Pr. 4 start 0 09 Pr. 4 stop 0 10 Pr. edit ***** function 11 String 1 </pre>  <pre> 29.05.06 Set up 13:47:56 Printout No ▶ 1 Start 1 Edit Erase all </pre> |
| <p>⇒ Use the cursor (▶) to select "Edit"</p> <p>⇒ Press the  key; the overview of the text elements is displayed:</p> <p>⇒ Use the cursor (▶) to make your selection</p> <p>⇒ Using the  key, your selected setting is displayed right in the display</p> |  <pre> 29.05.06 Set up 13:47:56 Printout No 1 Start 1 Edit ▶ Erase all </pre>  <pre> Selection Printout ----- ----- ***** ***** </pre>  <pre> Selection Printout ----- ----- ***** ***** </pre> |

| | |
|--|---|
| <p>⇒ Confirm your selection with the  key</p> <p>⇒ After the query confirm again using the  key</p> |  |
| <p>⇒ Press the  key several times, you get back to the menu/query "save" / weighing mode (see chpt. 8.1)</p> | |
| <p>The printout set by you now is edited pressing the  key (see also "example for text input")</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <pre> ***** Date 16/05/2006 Balance Id WL051977 19.4405 9 ***** </pre> </div> | |

• **Delete printout**

| | |
|---|---|
| <p>⇒ Use the cursor (▶) to select „10 Printout edition "</p> <p>⇒ Press  button</p> <p>⇒ Use the cursor (▶) to select "Erase all"</p> <p>⇒ Press  button</p> <p>⇒ After the query confirm using the  key or cancel using the  key</p> |    |
| <p>⇒ Press the  key several times, you get back to the menu/query "save" / weighing mode (see chapt. 8.1)</p> | |

- **Examples for text input:**

1. Printout created by text elements

Input: **Printout:**

29.05.06 Setup 13:47:56

Printout No ▶ 1

Start 1

Edit

Erase all

↓

| Selection | Printout |
|-----------|---------------|
| ----- | ----- |
| ===== | Date |
| ***** | Balance Id |
| ----- | Current value |
| | Blank line |
| | |

Date 16/05/2006

Balance Id WL051977

 19.4405 g

2. Adding more text elements

Setting: **Printout:**

29.12.04 Setup 13:47:56

| | | |
|----------------------|----|------------|
| P 6 ▶01▶Printout No. | 1 | printout 1 |
| 02 Pr. 1 start | 1 | |
| 03 Pr. 1 stop | 15 | |
| 04 Pr. 2 start | 1 | |
| 04 Pr. 2 stop | 1 | |

Date 16/05/2006

Balance Id WL051977

 19.4405 g

Text end is the 15th text. Every printout of this option has at the end the sign \0, i.e. end of printout. In order to add more text, this sign must be removed first:



29.12.04 Setup 13:47:56

| | | |
|--------------------|--------|--|
| P 6 ▶24▶ String 14 | ***** | |
| 25 String 15 | **\c\0 | |


⇒

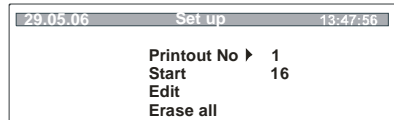
29.12.04 Setup 13:47:56



| | | |
|--------------------|-------|--|
| P 6 ▶24▶ String 14 | ***** | |
| 25 String 15 | **\c | |

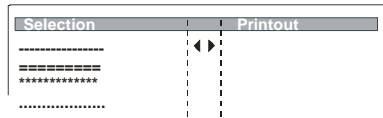
- ⇒ Use the cursor (▶) to select the 15th text
- ⇒ Press the  key; the current menu item blinks
- ⇒ Use the arrow keys to erase \0 (see chapt. 8.1).
- ⇒ Confirm with  key


More over, for a new text you must increase the printout range. i.e. enter the position of the new text elements:

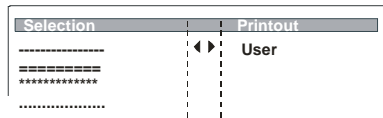
- ⇒ Use the cursor (▶) select "**10 Printout edition**"
- ⇒ Press  button
- ⇒ Use the arrow keys enter "**Start**" of the new text elements



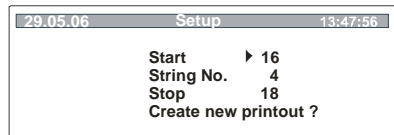
- ⇒ Confirm with  key
- ⇒ Use the cursor (▶) to select "Edit"
- ⇒ Press the  key; the overview of the text elements is displayed:



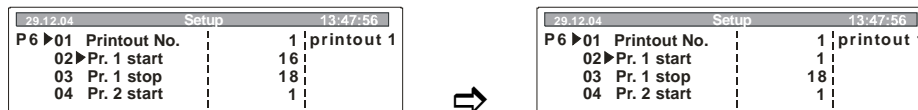
- ⇒ Use the cursor (▶) to make your selection
- ⇒ Using the  key, your selected setting is displayed right in the display





- ⇒ Confirm your selection with the  key




- ⇒ After the query confirm again using the  key



- ⇒ Use the arrow keys to reset "Printout start" to "1" and confirm with the  key

- ⇒ Press the  key several times, you get back to the menu/query "save" / weighing mode (see chapter 8.1)

In the weighing mode the enhanced printout is done by pressing the  key

```

*****
Date           17/05/2006
Balance Id    WL051977
              0.00379 g

*****
User
    
```

3. Adding flow text

Setting:

| 29.12.04 | Setup | 13:47:56 |
|----------|--------------|----------------|
| P6 ▶01▶ | Printout No. | 1 printout 1 |
| 02 | Pr. 1 start | 1 |
| 03 | Pr. 1 stop | 15 |
| 04 | Pr. 2 start | 1 |
| 04 | Pr. 2 stop | 1 |



Printout:

```

*****
Date           16/05/2006
Balance Id    WL051977
              19.4405 g

*****
    
```

In order to add flow text you must have inserted before "empty lines" as a dummy from the text elements.

- ⇒ Use the cursor (▶) to go to the line of the "Blank line"
- ⇒ Press the  key; the current menu item blinks
- ⇒ Use the arrow keys to enter the flow text (e.g. Kern)
- ⇒ Confirm with  key

In the weighing mode the enhanced printout is edited by pressing the  key

```

*****
Date           16/05/2006
Balance Id    WL051977
              19.4405 g
Kern
*****
    
```


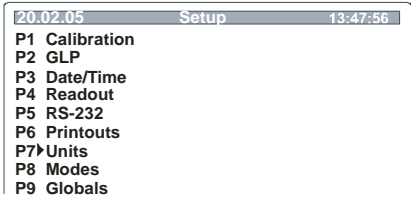

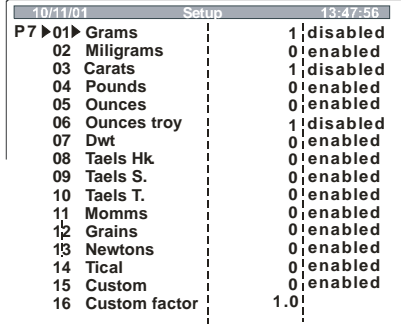

8.3.7 P7 Units

In this menu item you can activate various different weighing units (see chapter 1 "Technical data").

Remark:

All weighing units in a verified balance are locked except ,“mg, g, ct“.


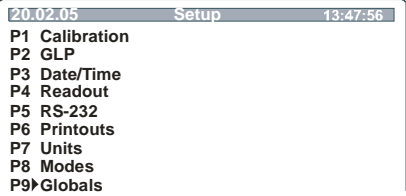


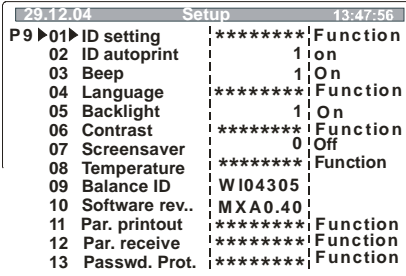




Switching into the activated units happens by multiple pressing the  key.

| Operation | Display |
|---|--|
| <p>⇒ Call up menu item "P7 Weighing units" (see chapt. 8.1)</p> <p>⇒ Press  button</p> |  <pre> 20.02.05 Setup 13:47:56 P1 Calibration P2 GLP P3 Date/Time P4 Readout P5 RS-232 P6 Printouts P7>Units P8 Modes P9 Globals </pre> |
| <p>01 -16 Parameter selection</p> | |
| <p>⇒ Use the cursor (►) to select your setting (01 -16)</p> <p>⇒ Press  key, the current menu item blinks With the arrow keys (see chap. 8.1) save your settings</p> <p>0 Weighing unit deactivated 1 Weighing unit activated</p> |  <pre> 10/11/01 Setup 13:47:56 P7 ▶01▶ Grams 1 disabled 02 Milligrams 0 enabled 03 Carats 1 disabled 04 Pounds 0 enabled 05 Ounces 0 enabled 06 Ounces troy 1 disabled 07 Dwt 0 enabled 08 Taels Hk 0 enabled 09 Taels S. 0 enabled 10 Taels T. 0 enabled 11 Momms 0 enabled 12 Grains 0 enabled 13 Newtons 0 enabled 14 Tical 0 enabled 15 Custom 0 enabled 16 Custom factor 1.0 </pre> |
| <p>⇒ Use the  key to confirm your selection</p> <p>⇒ Save (see chapter 8.1)</p> | |

8.3.8 P8 Operating modes

See Chapter 9.1

8.3.9 P9 Global functions

| Operation | Display |
|--|---|
| <p>⇒ Call up menu item "P9 Globals" (see chapt. 8.1)</p> <p>⇒ Press  button</p> |  |
| <h4>01 -13 Parameter selection</h4> | |
| <p>⇒ Use the  and  keys to select parameter "01 - 13"</p> |  |
| <p>01 Set ID</p> <p>02 Auto ID printout</p> <p>03 Acoust. Signal</p> <p>04 Language</p> <p>05 Illumination</p> <p>06 Contrast</p> <p>07 Screensaver</p> <p>08 Temperature</p> <p>09 Balance no.</p> <p>10 Program no.</p> <p>11 Par. Printout</p> <p>12 Par. receiving</p> <p>13 Password protection</p> | <p>Entering a user code</p> <p>User code can also be printed</p> <p>Tone on/off</p> <p>User guidance selectable in German, English and Spanish</p> <p>Back lighting of the display on/off</p> <p>Contrast of the display</p> <p>Back lighting automatically switches off as soon as a stable measuring value is reached (Condition: Backlight on)</p> <p>Temperature indicator</p> <p>Balance identification no.</p> <p>Software issue</p> <p>Balance parameters are printed out</p> <p>Not documented</p> <p>Password protection</p> |
| <p>⇒ Press the  key; the current menu item blinks.</p> <p>⇒ Use the  and  keys to activate/deactivate parameters</p> <p>⇒ Confirm your selection with the  key</p> | |

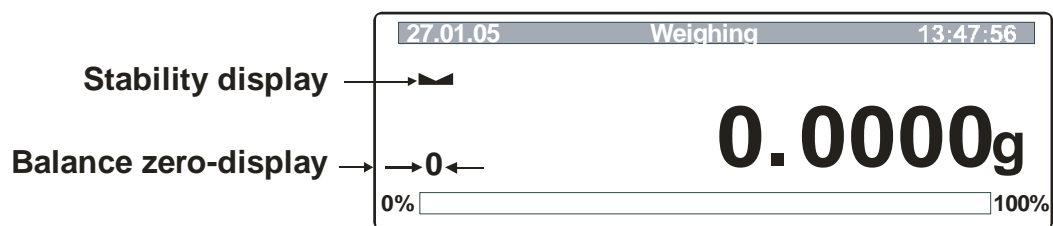
9 Operation

Operating elements


- Display:



- Overview of display:



Balance zero display:

If the balance does not show exactly zero although the pan scale is unloaded, press the  -button and the balance will be reset to zero. (Display [a])

Stability display:

If the display shows the stability display [] the balance is in a stable status. If the status is instable the [] display disappears.



1. Weight display
2. Balance zero display
3. Stability display
4. Capacity display
5. Operating mode (status)
6. Current date
7. Current time

• **Keyboard overview:**

| Key | Function |
|-----|--|
| | <ul style="list-style-type: none"> • Turn on/off • Menu item to the left |
| | <ul style="list-style-type: none"> • Access to the user menu • Menu item to the right |
| | <ul style="list-style-type: none"> • Switch-over key into operating modes • Decreasing the value for selected numeral or number • Parameter selection (cursor control down) |
| | <ul style="list-style-type: none"> • Switching-over to other weighing units • Parameter selection (cursor control up) • Increasing the value for selected numeral or number |
| | <ul style="list-style-type: none"> • Printout of the weighed value on an external appliance (printer or PC) • Confirm/save settings |
| | <ul style="list-style-type: none"> • Taring • Leave menu • Set weight display at zero |


9.1 Operating modes (P8)

Under this menu item you can activate or test weigh the following operating modes of the balance


- P8 01: Counting
- P8 02: Checkweighing
- P8 03: Filling
- P8 04: Percent weighing
- P8 05: Animal weighing
- P8 06: Density
- P8 07: Formulation
- P8 08: Statistics:


Notice: Some operating modes may be combined (e.g. statistics/counting, statistics/Percent determination). Further details are described in the respective chapters.

Activation/deactivation of the operating modes:


- ⇒ In main menu call up menu item P8 "Operating mode" (see chapt. 8.1)
- ⇒ Press the  key; the overview of the operating modes is displayed:

| 20.02.05 | Mode | 13:47:56 |
|----------|---------------|------------|
| P8 ▶01▶ | Parts Count | 1 disabled |
| 02 | Checkweighing | 0 enabled |
| 03 | Filling | 1 disabled |
| 04 | Percent | 1 disabled |
| 05 | Animal | 0 enabled |
| 06 | Density | 1 disabled |
| 07 | Formulation | 0 enabled |
| 08 | Statistics | |


- ⇒ Use the arrow keys (see chapt. 8.1) to activate (1) or deactivate (0) the desired operating modes.
- ⇒ Confirm your selection with the  key.
- ⇒ Save (see chapter 8.1)

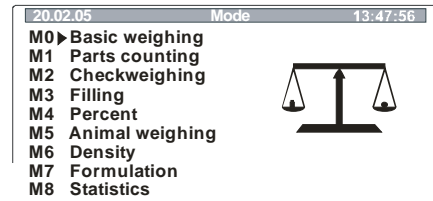
All activated operating modes are now stored in a sub-menu (M0 - M8) and can be directly called up directly with the  key:




| 20.02.05 | Mode | 13:47:56 |
|----------|-----------------|----------|
| M0▶ | Basic weighing | |
| M1 | Parts counting | |
| M2 | Checkweighing | |
| M3 | Filling | |
| M4 | Percent | |
| M5 | Animal weighing | |
| M6 | Density | |
| M7 | Formulation | |
| M8 | Statistics | |




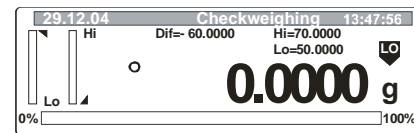
Navigating in operating modes mode:

- ⇒ Press the -key
- ⇒ Use the cursor (▶) to select your operating mode




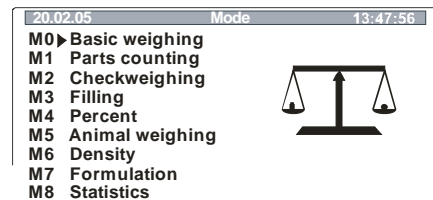
- ⇒ Press the -key; the parameter selection appears
- ⇒ Use the cursor (▶) to select parameter
- ⇒ Press the -key; the current menu item blinks
- ⇒ Use the arrow keys (see chapter 8.1) to save your settings. All settings possible are described in the chapters of the respective operating mode
- ⇒ Confirm your setting with the -key

- ⇒ Press -key again, the graphic display of the respective operating mode appears. You are now in the operating mode.



Return to weighing mode:





- ⇒ Press -key
- ⇒ Cursor (▶) to **M0 Basic weighing**



- ⇒ Press the  or the -key





9.1.1 Simple weighing

| Operation: | Display: |
|--|-------------------|
| ⇒ Switch on the balance using the  key | |
| or | |
| ⇒ Use the  key to call the menu item „ M0 Weighing “ (chap.9.1) | |
| ⇒ Your balance is ready to weigh as soon as the “ 0.000 ” display appears. | 0,0000 |
| ⇒ Put on items to be weighed; after stability time the measuring value is displayed. | 19.6879 g |
| ⇒ Pressing the  key provides option to switch to a different weighing unit, e.g. ct (see chapt. 8.3.7 " P7 Weighing units") | 98.4380 ct |
| ⇒ To turn off the balance press the  -key | |

9.1.1.1 Taring

The dead weight of any weighing container may be tared away by pressing a button, so that the following weighings show the net weight of the goods to be weighed.

| Operation: | Display: |
|--|------------------|
| ⇒ Switch on the balance using the  key | |
| ⇒ Your balance is ready to weigh as soon as the “ 0.0000 ” display appears. | 0.0000 g |
| ⇒ Put on items to be weighed, weighed value is displayed. | 19.6879 g |
| ⇒ Press the  key to start the tare procedure. The weight of the container is now saved internally. | 0.0000 g |
| ⇒ Place the goods to be weighed into the tare container. Read the weight of the goods on the display. | 53.2587 g |

The taring process can be repeated any number of times, e.g. when adding several components for a mixture (adding).

The limit is reached when the whole weighing range is exhausted.

After removing the taring container the total weight is displayed as negative display.

9.1.1.2 Underfloor weighing

Underfloor weighing enables you to weigh objects that cannot be placed on the weighing plate due to their size or shape.

Proceed as follows:

- Switch off balance.
- Open the closing lid on the bottom of your balance.
- Suspend hook for underfloor weighing carefully and completely.
- Place your balance over an opening.
- Suspend the goods to be weighed from the hook and carry out the weighing.



CAUTION

- **Always ensure that all suspended objects are stable enough to hold the desired goods to be weighed safely (danger of breaking).**
- **Never suspend loads that exceed the stated maximum load (max) (danger of breaking)**

Always ensure that there are no persons, animals or objects that might be damaged underneath the load.



NOTICE

After completing the underfloor weighing the opening on the bottom of the balance must always be closed (dust protection).

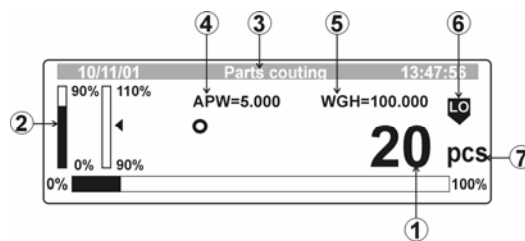
9.1.2 Parts Counting

Before the balance can count parts, it must know the average part weight (i.e. reference). This is either entered manually or determined by weighing. Proceed by putting on a certain number of the parts to be counted. The balance determines the total weight and divides it by the number of parts (the so-called reference quantity). Counting is then carried out on the basis of the calculated average piece weight.

As a rule:

The higher the reference quantity the higher the counting exactness.

Display overview for parts counting operation:


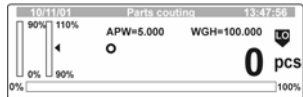

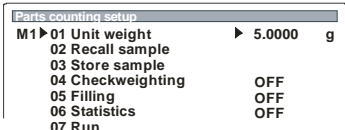
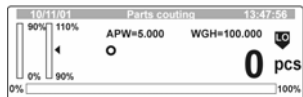


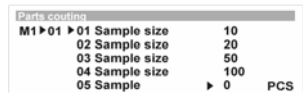


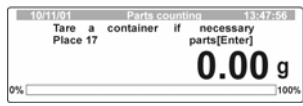


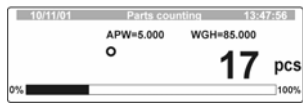

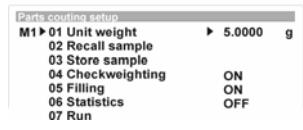

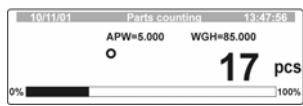


1. Number of all parts on the weighing plate
2. Weighing assistance coarse/fine (only displayed for active dispensing)
3. Operating mode (status bar)
4. Reference weight
5. Weight of all parts on the weighing plate
6. Tolerance marker (only displayed for active tolerance weighing)

| | |
|--|---------------|
| | too light |
| | Nominal value |
| | too heavy |

7. Display for parts counting operation


| Operation | Display |
|--|---------|
| <p>⇒ Call up menu item "P1 Parts Counting" (see chap. 9.1)</p> <p>⇒ Press button</p> | |
| <p>⇒ Use the cursor () to select your setting (01 - 07)</p> | |
| <h3>01 Reference weight – manual entering of the reference weight</h3> | |
| <p>⇒ Press the key; the current menu item blinks. Use the arrow keys (see chapter 9.1) to enter the reference weight for a unit. Confirm by pressing the key</p> | |

| | |
|--|--|
| <p>⇒ Press  key; the display changes into parts counting operation</p> |  |
| <p>⇒ The balance is now in parts counting mode counting all units on the weighing plate</p> | |
| <p>01 Reference weight – determination of reference weight through weighing</p> | |
| <p>⇒ Press  key; display changes to counting mode</p> |   |
| <p>⇒ Press the  key; use arrow keys to select reference quantity (factory-defined are quantities of 10, 20, 50, 100, or freely selectable), use the  key to confirm</p> |  |
| <p>⇒ Place as many counting parts on the balance as the set reference quantity requires, confirm by pressing the  key. If you are using a weighing container first tare your balance pressing the  key.</p> |  |
| <p>⇒ Press  button The symbol () in the display indicates that automatic reference optimization is switched on. Every time more pieces are added the balance carries out optimization automatically. It is not necessary to press another key to start the optimization process. For each reference optimization the average piece weight (reference) is newly calculated. As the additional pieces increase the base for the calculation, the reference also becomes more exact.</p> |  |
| <p>⇒ Operate the  key. The reference quantity is saved under "01 Unit weight".</p> |  |
| <p>⇒ Press the  key; the balance is now in parts counting mode counting all units on the weighing plate.</p> |  |

02 Recall sample – calling up a reference weight from the data base

⇒ Use the cursor (►) to select "02 Recall sample"


| Parts counting setup | | | |
|----------------------|----------------|----------|---|
| M1 ▶ 01 | Unit weight | ▶ 5.0000 | g |
| 02 | Recall sample | | |
| 03 | Store sample | | |
| 04 | Checkweighting | ON | |
| 05 | Filling | ON | |
| 06 | Statistics | OFF | |
| 07 | Run | | |

⇒ Press  key; the sub-menu "02 Recall sample" is displayed.


| Parts counting setup | | | |
|----------------------|---------|--------|---|
| M1 ▶ 02 ▶ 01 | BBBB 01 | 1.5000 | g |
| 02 | BBBB 02 | 0.4520 | g |
| 03 | CCCC 03 | 1.0032 | g |
| ⋮ | ⋮ | ⋮ | ⋮ |
| 49 | AAAA 49 | 0.0015 | g |
| 50 | AAAA 50 | 2.0300 | g |

⇒ Use the arrow keys to select the desired reference weight

| Parts counting setup | | | |
|----------------------|---------|--------|---|
| M1 ▶ 02 ▶ 01 | BBBB 01 | 1.5000 | g |
| 02 | BBBB 02 | 0.4520 | g |
| 03 | CCCC 03 | 1.0032 | g |
| ⋮ | ⋮ | ⋮ | ⋮ |
| 49 | AAAA 49 | 0.0015 | g |
| 50 | AAAA 50 | 2.0300 | g |

⇒ Use the  key to confirm; the selected reference weight appears under "01 Unit weight".

| Parts counting setup | | | |
|----------------------|----------------|----------|---|
| M1 ▶ 01 | Unit weight | ▶ 1.0032 | g |
| 02 | Recall sample | | |
| 03 | Store sample | | |
| 04 | Checkweighting | ON | |
| 05 | Filling | ON | |
| 06 | Statistics | OFF | |
| 07 | Run | | |

⇒ Press the  key; the balance is now in parts counting mode counting all units on the weighing plate.

| 10/11/01 | | Parts counting | | 13:47:56 | |
|-----------|--|----------------|--|----------|--|
| APW=5.000 | | WGH=85.000 | | | |
| ○ | | | | 17 pcs | |
| 0% | | 100% | | | |


03 Store sample - saving a reference weight in the database

The reference weight stored in menu item "01 Reference weight" can be saved in the data base as follows (max. 200 parameters):

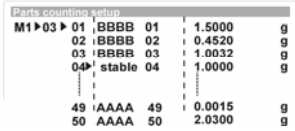

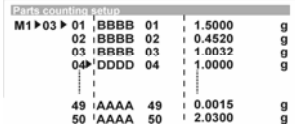

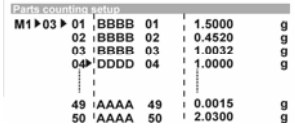

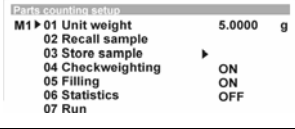

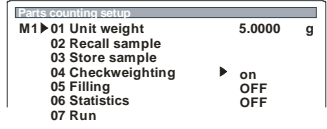

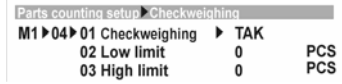


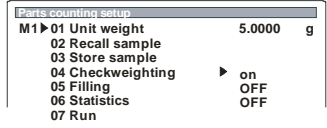
⇒ Use the cursor (►) to select "03 Store sample"

| Parts counting setup | | | |
|----------------------|----------------|----------|---|
| M1 ▶ 01 | Unit weight | ▶ 5.0000 | g |
| 02 | Recall sample | | |
| 03 | Store sample | | |
| 04 | Checkweighting | ON | |
| 05 | Filling | ON | |
| 06 | Statistics | OFF | |
| 07 | Run | | |

| Parts counting setup | | | |
|----------------------|----------------|--------|---|
| M1 ▶ 01 | Unit weight | 5.0000 | g |
| 02 | Recall sample | | |
| 03 | Store sample | ▶ | |
| 04 | Checkweighting | ON | |
| 05 | Filling | ON | |
| 06 | Statistics | OFF | |
| 07 | Run | | |

⇒ Press  key; the sub-menu "03 Store sample" is displayed.

| Parts counting setup | | | |
|----------------------|---------|--------|---|
| M1 ▶ 02 ▶ 01 | BBBB 01 | 1.5000 | g |
| 02 | BBBB 02 | 0.4520 | g |
| 03 | CCCC 03 | 1.0032 | g |
| ⋮ | ⋮ | ⋮ | ⋮ |
| 49 | AAAA 49 | 0.0015 | g |
| 50 | AAAA 50 | 2.0300 | g |

| | |
|---|---|
| <p>⇒ Use the arrow keys to select parameter no.</p> |  <pre> Parts counting setup M1▶03▶01 BBBB 01 1.5000 g 02 BBBB 02 0.4520 g 03 BBBB 03 1.0032 g 04▶ stable 04 1.0000 g 49 AAAA 49 0.0015 g 50 AAAA 50 2.0300 g </pre> |
| <p>⇒ Press the  key; use the arrow keys to enter parameter name (max. 10 characters)</p> |  <pre> Parts counting setup M1▶03▶01 BBBB 01 1.5000 g 02 BBBB 02 0.4520 g 03 BBBB 03 1.0032 g 04▶ BBBB 04 1.0000 g 49 AAAA 49 0.0015 g 50 AAAA 50 2.0300 g </pre> |
| <p>⇒ Use the  key to confirm, the blinking stops</p> |  <pre> Parts counting setup M1▶03▶01 BBBB 01 1.5000 g 02 BBBB 02 0.4520 g 03 BBBB 03 1.0032 g 04▶ BBBB 04 1.0000 g 49 AAAA 49 0.0015 g 50 AAAA 50 2.0300 g </pre> |
| <p>⇒ By pressing the  key you will return to the menu</p> |  <pre> Parts counting setup M1▶01 Unit weight 5.0000 g 02 Recall sample 03 Store sample 04 Checkweighing ON 05 Filling ON 06 Statistics OFF 07 Run </pre> |
| <p>04 Checkweighing The combination Counting / Checkweighing enables you to check whether your reference weight is within your set tolerance</p> | |
| <p>⇒ Use the cursor (▶) to select "04 Checkweighing". ⇒ Press  button</p> |  <pre> Parts counting setup M1▶01 Unit weight 5.0000 g 02 Recall sample 03 Store sample 04 Checkweighing ▶ on 05 Filling OFF 06 Statistics OFF 07 Run </pre> |
| <p>⇒ Press the  key; the current menu item blinks ⇒ Activate operating mode „Checkweighing“ via the arrow keys (yes). ⇒ Set tolerance markers</p> |  <pre> Parts counting setup▶Checkweighing M1▶04▶01 Checkweighing ▶ TAK 02 Low limit 0 PCS 03 High limit 0 PCS </pre> |
| <p>⇒ Confirm each with  key</p> | |
| <p>⇒ By pressing the  key you will return to the menu</p> |  <pre> Parts counting setup M1▶01 Unit weight 5.0000 g 02 Recall sample 03 Store sample 04 Checkweighing ▶ on 05 Filling OFF 06 Statistics OFF 07 Run </pre> |


05 Filling

The combination Counting/Filling enables you to define a target quantity

⇒ Use the cursor (▶) to select "05 Filling"

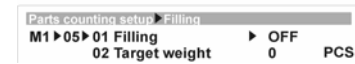
⇒ Press  button





⇒ Press the  key; the current menu item blinks

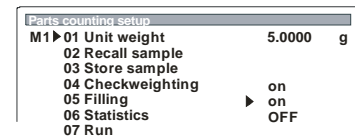
⇒ Activate operating mode "Filling" via arrow keys

⇒ Enter value for target weight




⇒ Confirm each with  key

⇒ By pressing the  key you will return to the menu

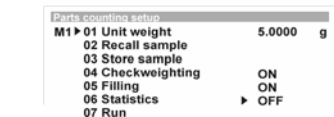



06 Statistics

When combining parts counting /statistics the displayed value is accepted by pressing the  key.

⇒ Use the cursor (▶) to select "06 Statistics"

⇒ Press  button



⇒ Press the  key; the current menu item blinks



⇒ Use the cursor (▶) to select menu item "03 Delete"


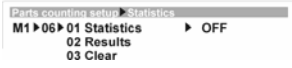



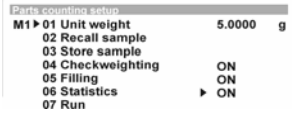

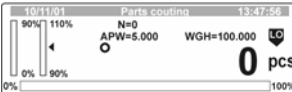

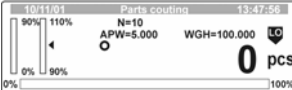

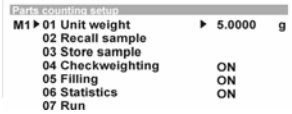
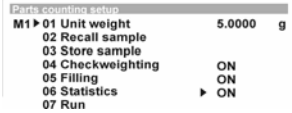




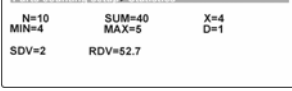



⇒ Press  button



⇒ Confirm using the  key; data will be deleted




| | |
|--|---|
| <p>⇒ Use the cursor (▶) to select "01 Statistics"</p> <p>⇒ Press  button</p> |  |
| <p>⇒ Activate operating mode „Statistics“ via the arrow keys, confirm with  key</p> |  |
| <p>⇒ By pressing the  key you will return to the menu</p> |  |
| <p>⇒ Press  key; display changes into parts counting mode</p> |  |
| <p>⇒ After each measuring (stable measuring value) press the  key; the displayed value will be saved and added to the saved number of values (N).</p> |  |
| <p>⇒ Call the statistical results after e.g. 10 measurements (N=10) Call-up menu via the  key</p> |  |
| <p>⇒ Use the cursor (▶) to select menu item "06 Statistics"</p> |  |
| <p>⇒ Confirm by pressing the  key</p> |  |
| <p>⇒ Use the cursor (▶) to select menu item "02 Results"</p> |  |
| <p>⇒ Use the  key to confirm; the display will show your statistical results.</p> |  |

⇒ By actuating the  key you can print your statistical results on a connected printer (see example).

| | | | |
|------------|-----|---|---------------------|
| N : 10 | | → | Number of weighings |
| SUM: 40 | pcs | → | Total of weighings |
| X : 4 | pcs | → | Mean value |
| MIN : 4 | pcs | → | Min. value |
| MAX: 5 | pcs | → | Max. value |
| D : 1 | pcs | → | MAX – MIN |
| SDV : 2 | pcs | → | Standard deviation |
| RDV : 52,7 | % | → | Variance |


⇒ Press  button

```
Parts counting setup Statistics
M1 ▶ 06 ▶ 01 Statistics      ON
      02 Results           ▶
      03 Clear
```

⇒ The  key will take you back to the menu


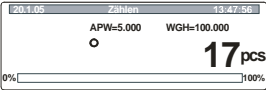

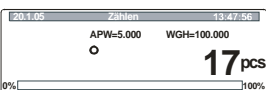
```
Parts counting setup
M1 ▶ 01 Unit weight      5.0000 g
      02 Recall sample
      03 Store sample
      04 Checkweighting   ON
      05 Filling          ON
      06 Statistics       ▶ ON
      07 Run
```

07 Run


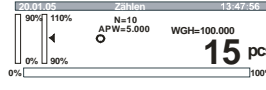
With parameter selection "**M1 07 Run**" (confirm with  key) you will get directly into counting mode.

9.1.2.1 Data output in counting mode

Standard data output:

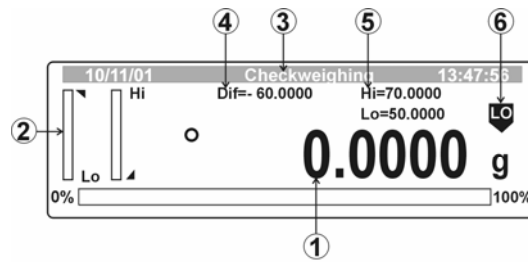
| Key | Display | GLP parameter | Data output |
|---|---|---|--|
|  |  | <p>P2 03 Printout Time 0: no P2 04 Printout Date 0: no P2 05 User printout 0: no P2 06 Proj. Printout 0: no P2 07 ID- printout 0: no P2 08 Cal. printout 0: no</p> | 17 pcs |
|  |  | <p>P2 03 Printout Time 1: yes P2 04 Printout Date 1: yes P2 05 User printout 1: yes P2 06 Proj. Printout 1: yes P2 07 ID- printout 1: yes P2 08 Cal. printout 1: yes</p> | <p>Date: 16/01/2004 Time: 13:12:30 User: Maier Project: Checking. Weight: 11111111 Last calibration: ----- 16/01/2004 13:02 External calibration: 0.0001 g ----- 17 pcs</p> |

User-defined data output

| Key | Display | Variable selection | Data output |
|---|---|---|---|
|  |  | <p>%d %t; %i; %R; %P; %U; %F; %V; %N; %W; %n; %X; %S; %m; %M; %D; %s; %r; %C; %K; %l;</p> | <p>17/01/2004 08:16:09 11111111 MBA 0.01 Checking. Mustermann. Pieces 15 pcs 15.048 g 5.30000 g 13 15 pcs 195 pcs 15 pcs 17 pcs 2 pcs 0 pcs 0.00 % 16/01/2004 13:02 External calibration 0.01 g</p> |

9.1.3 Checkweighing (weighing with tolerance range)




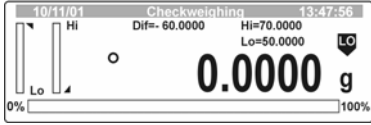
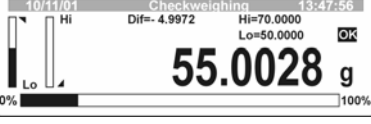
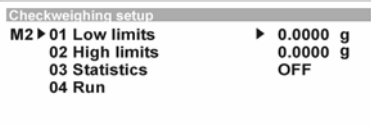
Overview of display:



1. Current weighing value
2. Weighing assistance
3. Operating mode
4. Nominal value
5. Upper limit (Hi), lower limit (Lo)
6. Tolerance marker

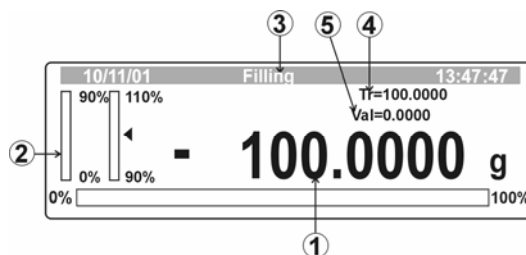
| | |
|-----------|---------------|
| LO | too light |
| OK | Nominal value |
| HI | too heavy |

| Operation | Display |
|---|---------|
| <p>⇒ Call up menu item "M2 Checkweighing" (see chap. 9.1)</p> <p>⇒ Press button</p> | |
| <p>01 - 02 Lower/upper limit – entering limit values</p> | |
| <p>⇒ Use the cursor () to select „01 Lower limit or 02 Upper limit“</p> | |
| <p>⇒ Press the key; the current menu item blinks. Use the arrow keys to enter limit values and confirm with the key. Notice: First enter upper limit.</p> | |

| | |
|--|---|
| <p>⇒ Use the cursor (►) to select „04 Start“ or press the  key once more. Confirm by pressing the  key</p> |  |
| <p>⇒ The balance is now in checkweighing mode</p> |  |
| <p>⇒ Put on goods to be weighed, tolerance control is started</p> |  |
| <p>03 Statistics - combination Checkweighing/Statistics</p> | |
| <p>⇒ Use the cursor (►) to select “03 Statistics”,</p> |  |
| <p>⇒ All other steps are the same as for combination Parts counting /Statistics (Chapt. 9.1.2)</p> | |

9.1.4 Filling

Display overview for dispensing operation:



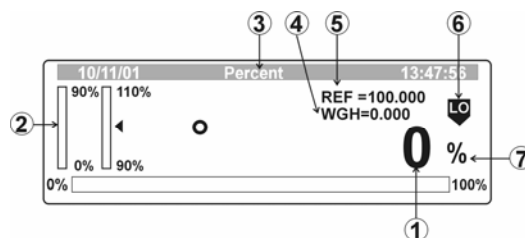
1. Residue filling quantity
2. Weighing assistance coarse /fine
3. Operating mode
4. Target weight
5. Current net weight

| Operation | Display |
|---|---------|
| <p>⇒ Call up menu item "M3 Filling" (see chap. 9.1)</p> <p>⇒ Press button</p> | |
| <p>⇒ Use the cursor (►) to select menu item "01 Target weight"</p> | |
| <p>⇒ Press the key; the current menu item blinks. Use the arrow keys to enter target quantity</p> | |
| <p>⇒ Confirm by pressing the key</p> | |
| <p>⇒ Use the cursor (►) to select menu item "03 Run"; confirm with key. The balance is now in filling mode</p> | |
| <p>02 Statistics - combination Filling/Statistics</p> | |
| <p>⇒ Use the cursor (►) to select menu item "02 Statistics"</p> | |
| <p>⇒ All other steps are the same as for combination Parts counting /Statistics (Chapt. 9.1.2)</p> | |

9.1.5 Percent weighing

Percent determination allows weight display in percent, in relation to a reference weight.


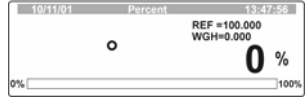

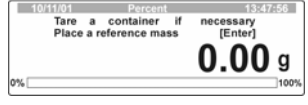

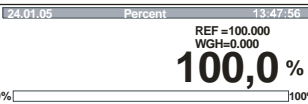
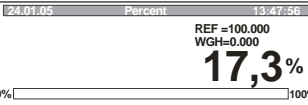
Display overview for percent determination operation:




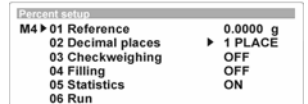



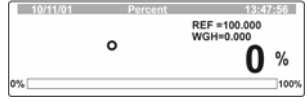
1. % - deviation to reference weight
2. Weighing assistance (is only displayed if dispensing is activated)
3. Operating mode
4. Current net weight
5. Reference weight
6. Tolerance marker (only displayed for active tolerance weighing)
7. Percent determination mode

| Operation | Display |
|---|---------|
| <p>⇒ Call up menu item "M4 Percent weighing" (see chap. 9.1)</p> <p>⇒ Press button</p> | |
| <p>01 Reference weight – numeric entering of the reference weight</p> | |
| <p>⇒ Use the cursor () to select menu item "01 Reference weight"</p> | |
| <p>⇒ Press the key; the current menu item blinks. Use the arrow keys to enter reference weight and confirm with the key.</p> | |
| <p>⇒ Press the key; the balance is now in percent determination mode.</p> | |
| <p>⇒ Now you can place the test objects onto the weighing plate; the percentage in regards to the reference object is displayed</p> | |


01 Reference weight – determination of reference weight through weighing

| | |
|--|--|
| <p>⇒ Call up Percent weighing mode</p> |   |
| <p>⇒ Press  button. Put on reference weight; if necessary, tare first</p> |  |
| <p>⇒ Press  key, the weight is taken as reference (100%).</p> |  |
| <p>⇒ Now you can place the test objects onto the weighing plate; the percentage is displayed</p> |  |

02 Decimal digits

| | |
|---|---|
| <p>⇒ Use the cursor () to select menu item "02 Decimal digits"</p> |  |
| <p>⇒ Press the  key; the current menu item blinks. Use the arrow keys to enter fractional digits; confirm with the  key</p> | |
| <p>⇒ Press the  key; the balance is now in percent determination mode.</p> |  |

03 Check weighing 04 Filling 05 Statistics 06 Run


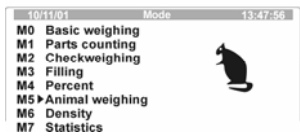



| | |
|---|--|
| <p>⇒ Use the cursor () to select menu item "03 - 06"</p> | |
| <p>⇒ All other steps are the same as for combination Parts counting /Statistics (Chapt. 9.1.2)</p> | |

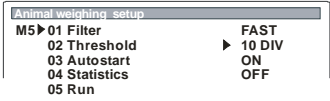


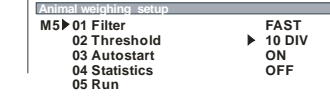

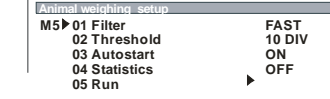

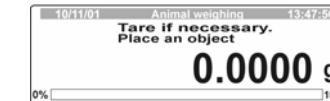
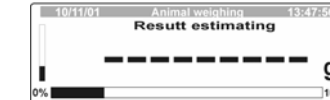
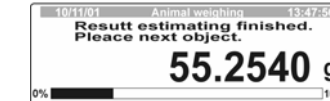

9.1.6 Animal weighing (dynamic weighing)

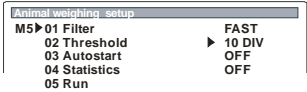



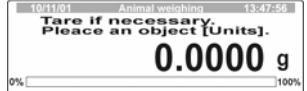

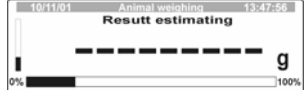
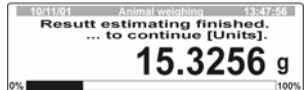


For unsteady items to be weighed (e.g. animals) or strong vibrations you can activate the dynamic weighing function with automatic or manual start. During a certain period of time the balance determines weight values and calculates an average.

In **automatic start** measuring starts automatically as soon as the weight changes.

In **manual start** you trigger measuring by actuating the -key.

| Operation | Display |
|--|--|
| <p>⇒ Call up menu item "M5 Animal weighing" (see chap. 9.1)</p> <p>⇒ Press  button</p> |  |
| <p>01 Filter – filter for adjustment to the environmental conditions Vibrations are filtered out by increasing the number of measuring cycles.</p> | |
| <p>⇒ Use the cursor (►) to select menu item "01 Filter"</p> |  |
| <p>⇒ Press the  key; the current menu item blinks. Use the arrow keys to enter the sensitivity of the filter and confirm with the  key.</p> <p style="text-align: center;"> Very slow (Insensitive, very busy setup location) slow standard fast very fast (Sensitive, very quiet setup location) </p> <p style="text-align: center;">↓</p> | |

| | |
|---|---|
| <p>02 Threshold (precondition: 03 - Auto start activated)</p> | |
| <p>⇒ Use the cursor (►) to select menu item “02 Threshold value”</p> |  |
| <p>⇒ Press the  key; the current menu item blinks. Use the arrow keys to set the number of measurements used for averaging. Confirm by pressing the  key</p> <p style="text-align: center;">10 DIV ↓ 1000 DIV</p> | |
| <p>03 Weighing with automatic start After selecting your parameters and with 03 Auto start activated, carry out weighing as follows:</p> |  |
| <p>⇒ Use the cursor (►) to select menu item “05 Run”; confirm with the  key</p> |  |
| <p>⇒ If you are using a weighing container use the  key for taring</p> |  |
| <p>⇒ Put goods to be weighed on weighing plate</p> | |
| <p>⇒ Dynamic weighing is started automatically.</p> |  |
| <p>⇒ When weighing is complete the weight is shown in the display</p> |  |
| <p>⇒ To start a new weighing cycle relieve the balance</p> | |
| <p>⇒ The  key will take you back to the menu</p> | |

| | |
|--|---|
| <p>03 Weighing with automatic start After selecting your parameters and with 03 Auto start activated, carry out weighing as follows:</p> |  |
| <p>⇒ Use the cursor (▶) to select menu item “05 Run”; confirm with the  key</p> |  |
| <p>⇒ If you are using a weighing container use the  key for taring</p> |  |
| <p>⇒ Put goods to be weighed on weighing plate</p> | |
| <p>⇒ The dynamic weighing is started by pressing the  key</p> |  |
| <p>⇒ When weighing is complete the weight is shown in the display</p> |  |
| <p>⇒ To start a new weighing cycle relieve the balance and press the  key</p> | |
| <p>⇒ The  key will take you back to the menu</p> | |

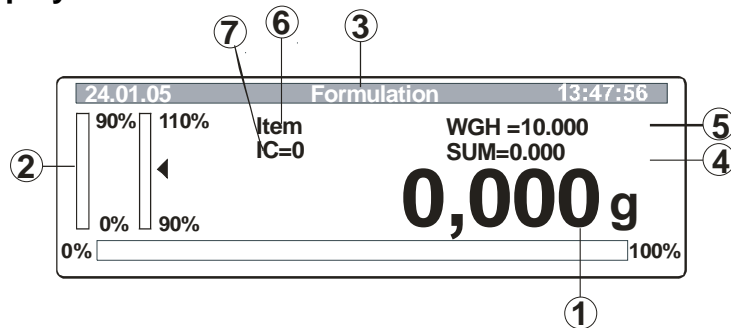
9.1.7 Density determination

Density determination of solids and liquids see operating manual "Density set".

9.1.8 Formulation

The formula function allows to add on various components of a mixture. To check, the overall weight of all components can be called up.

Overview of display:



1. Current net weight
2. Weighing assistance coarse /fine)
3. Operating mode
4. Sum memory
5. Target value of the ingredients (determined in parameter 04 Formula)
6. Designation of the ingredients (determined in parameter 04 Formula)
7. Number of the added on ingredients

| Operation | Display |
|---|---|
| <p>⇒ Call up menu item "M7 Formulation" (see chap. 9.1)</p> <p>⇒ Press button</p> | <pre> 10/11/01 Mode 13:47:56 M0 Basic weighing M1 Parts counting M2 Checkweighing M3 Filling M4 Percent M5 Animal weighing M6 Density M7 ►Formulation </pre> |
| 01 – 07 Parameter selection | |
| <p>⇒ Use the cursor (►) to select menu items "01 - 07"</p> | <pre> Formulation setup M7 ► 01 Hints ► OFF 02 Auto. print OFF 03 Number of item 1 04 Formula 05 Formula printout 06 Statistics OFF 07 Run </pre> |

⇒ Press the  key; the current menu item blinks.

01 Hints **yes:** Data of the individual ingredients of a formula are shown on Display

no: Setting for producing a mixture by weighing

02 Autom.

printout **yes:** Autom. Data output

no: no autom. Data output

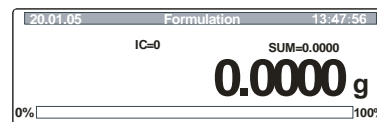
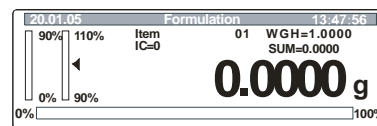
03 Number of ingredients Memory space for 20 ingredients

04 Formula Designation of the ingredients (max 10 characters) and quantity


05 Formula printout Printout of formula



06 Statistics Combination with statistics

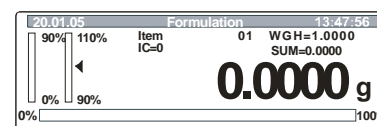
07 Run Call up of formula mode



| Formulation setup | | Formula | | |
|-------------------|----|---------|----|----------|
| M7 ▶ 04 ▶ | 01 | BBBB | 01 | 1.5000 g |
| | 02 | BBBB | 02 | 0.4520 g |
| | 03 | CCCC | 03 | 1.0032 g |
| | | | | |
| | 19 | AAAA | 49 | 0.0015 g |
| | 20 | AAAA | 50 | 2.0300 g |


⇒ Use the arrow keys to activate/deactivate parameters, confirm your selection with the  key

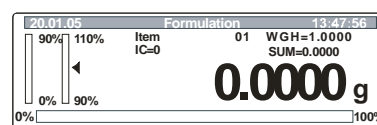
⇒ Use the cursor () to select menu item "05 Run"; confirm with the  key, the balance is now in formula mode.

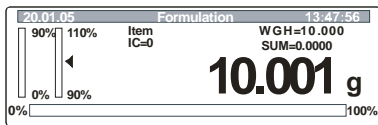

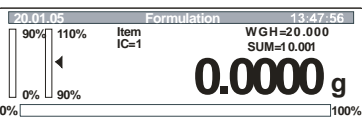

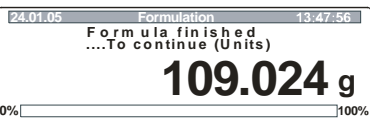




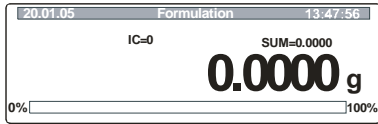

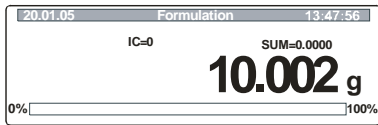

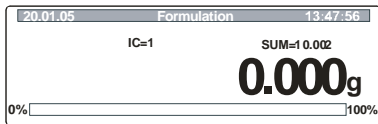



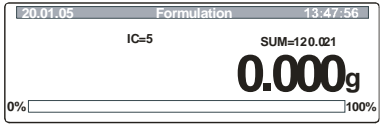


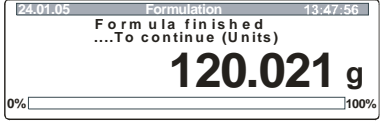

⇒ From here, you start adding on the various ingredients for a mixture:

Producing a mixture according to a defined formula


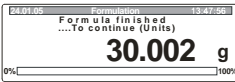

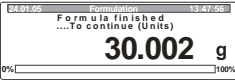
⇒ If you are using a weighing container use the  key for taring



| | |
|---|---|
| <p>⇒ Add on ingredient 1; see target value (WGH) on the display</p> |  |
| <p>⇒ As soon as the weighing value is stable, press  key, ingredient 1 is stored, the display shows the target value ingredient 2 (WGH), total of the saved ingredients (SUM), as well as the number of already poured ingredients (IC)</p> |  |
| <p>⇒ Add on ingredient 2; see target value (WGH) on the display</p> <p>⇒ Repeat these steps until you have added all ingredients.</p> | |
| <p>⇒ Press  button</p> |  |
| <p>⇒ Confirm completion of the mixture with the  key</p> | |
| <p>⇒ The  key will take you back to the menu</p> | |
| <p>Generating a mixture by adding on</p> | |
| <p>⇒ Parameter selection: 01 Hints no 02 Autom.printout yes – if formula printout desired Use the cursor () to select menu item "04 Formula", press the  key</p> |  |
| <p>⇒ If you are using a weighing container use the  key for taring</p> | |
| <p>⇒ Add on ingredient 1</p> |  |
| <p>⇒ As soon as the weighing value is stable, press  key, ingredient 1 is stored, the display shows the total of the saved ingredients (SUM), as well as the number of already poured ingredients (IC) The weight display returns to zero.</p> |  |


| | |
|---|--|
| <p>⇒ Add ingredient 2; as soon as the weighing value is stable, press  key</p> <p>⇒ Repeat this step until you have added all ingredients.</p> |  |
| <p>⇒ Enter last ingredient and confirm with  key</p> <p>⇒ Press  key; formula is printed out.</p> |  |
| <p>⇒ The  key will take you back to the menu</p> | |

Example for a data output (standard printout)

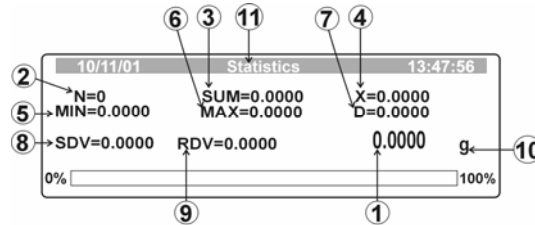
| Key | Display | GLP Parameters | Data output |
|---|---|---|--|
|  |  | <p><i>P2 03 Printout Time 0: no</i> <i>P2 04 Printout Date 0: no</i> <i>P2 05 User printout 0: no</i> <i>P2 06 Proj. Printout 0: no</i> <i>P2 07 ID- printout 0: no</i> <i>P2 08 Cal. printout 0: no</i></p> | <p>1 10,000 g 2 10,000 g 3 10,002 g ----- SUM 30,002 g</p> |
|  |  | <p><i>P2 03 Printout Time 1: yes</i> <i>P2 04 Printout Date 1: yes</i> <i>P2 05 User printout 1: yes</i> <i>P2 06 Proj. Printout 1: yes</i> <i>P2 07 ID- printout 1: yes</i> <i>P2 08 Cal. printout 1: yes</i></p> | <p>Date: 16/01/2004 Time: 13:12:30 User: Mustermann Project: xxxxx Balance no: :WL041055 Last calibration: ----- 16/01/2004 13:02 Automatic calibration Deviation: 0.0001 g ----- 1 10,000 g 2 10,000 g 3 10,002 g ----- SUM 30,002 g</p> |

9.1.9 Statistics:

The statistic function is possible for display values in g, piece or %.


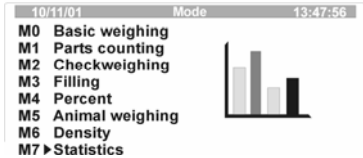

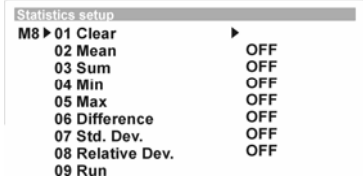
By actuating the  key the currently displayed value is saved for the statistics.


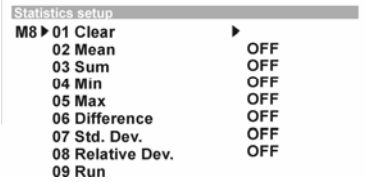



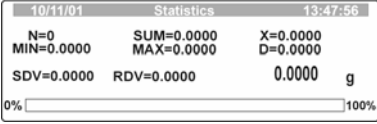


Overview of display:




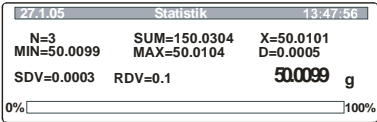

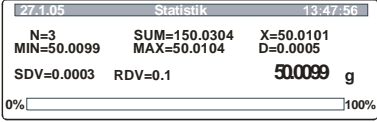

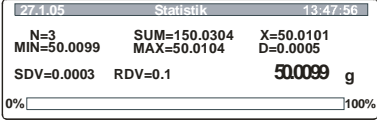
1. Current net weight
2. Number of all weighing procedures
3. Sum of all measuring values
4. Mean Value
5. Smallest value
6. Largest value
7. Difference max - MIN

8. Standard deviation SDV:
$$\sqrt{\frac{n \sum x^2 - (\sum x)^2}{n(n-1)}}$$
9. Variance RDV.: (SDV / average) * 100%
10. Weighing unit
11. Status bar

| Operation | Display |
|---|---|
| <p>⇒ Call up menu item "M8 Statistics" (see chap. 9.1)</p> <p>⇒ Press  button</p> |  |
| 01 – 08 Parameter selection | |
| <p>⇒ Use the cursor () to select menu items "01 - 08"</p> |  |

| | |
|--|--|
| <p>⇒ Press the -key; the current menu item blinks.</p> <p>01 Delete Delete data 02 Sum Sum of all weighing procedures 03 Mean value Mean Value 04 Min Minimum 05 Max Maximum 06 Difference Difference min/max 07 Stand. devi. Standard Deviation 08 Relative devi. Variance 09 Run Call up statistic mode</p> |  <pre> Statistics setup M8 ▶ 01 Clear ▶ 02 Mean OFF 03 Sum OFF 04 Min OFF 05 Max OFF 06 Difference OFF 07 Std. Dev. OFF 08 Relative Dev. OFF 09 Run </pre> |
| <p>⇒ Use the arrow keys to activate/deactivate the menu items, confirm your selection with the  key</p> | |
| <p>⇒ Press the  key; the balance is now in statistics mode. All your activated menu items are now shown in the display</p> <p>⇒ By actuating the  key the currently displayed value is saved for the statistics.</p> |  <pre> 10/11/01 Statistics 13:47:56 N=0 SUM=0.0000 X=0.0000 MIN=0.0000 MAX=0.0000 D=0.0000 SDV=0.0000 RDV=0.0000 0.0000 g 0% [] 100% </pre> |
| <p>⇒ By actuating the  key you can print your statistical results on a connected printer.</p> | <p>Printout (Example):</p> <pre> N : 5 SUM : 169,6880 g X : 33,9376 g Min : 0,0000 g MAX : 100,0012 g D : 100,0012 g SDV : 42,2166 g RDV : 124,4 % </pre> |
| <p>⇒ The  key will take you back to the menu</p> | |

Example for a data output during a measuring sequence:

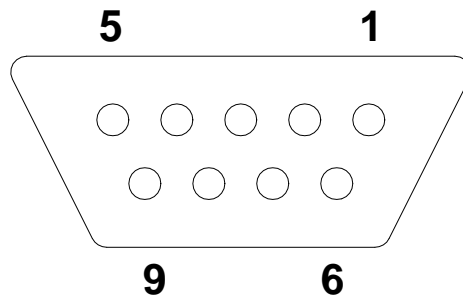
| Key | Display | GLP Parameters | Data output |
|---|---|---|--|
|  |  | <p><i>P2 03 Printout Time 0: no</i></p> <p><i>P2 04 Printout Date 0: no</i></p> <p><i>P2 05 User printout 0: no</i></p> <p><i>P2 06 Proj. Printout 0: no</i></p> <p><i>P2 07 ID- printout 0: no</i></p> <p><i>P2 08 Cal. printout 0: no</i></p> | <p>3 50,0099 g</p> |
|  |  | <p><i>P2 03 Printout Time 1: yes</i></p> <p><i>P2 04 Printout Date 1: yes</i></p> <p><i>P2 05 User printout 1: yes</i></p> <p><i>P2 06 Proj. Printout 1: yes</i></p> <p><i>P2 07 ID- printout 1: yes</i></p> <p><i>P2 08 Cal. printout 1: yes</i></p> | <p>Date: 16/01/2004</p> <p>Time: 13:12:30</p> <p>User: Mustermann</p> <p>Project: xxxxx</p> <p>Balance no: :WL041055</p> <p>Last calibration:</p> <p>-----</p> <p>16/01/2004 13:02</p> <p>External calibration:</p> <p> 0.0001g</p> <p>-----</p> <p>3 50.0099 g</p> |
|  |  | | <p>N : 3</p> <p>SUM : 150.0304 g</p> <p>X : 50.0101 g</p> <p>Min : 50.0099 g</p> <p>MAX : 50.0104 g</p> <p>D : 0.0005 g</p> <p>SDV : 0.0003 g</p> <p>RDV : 0.01 %</p> |

10 Data output

10.1 Technical data

- 8 data bits
- Baud rate selectable at 2400, 4800, 9600 and 19200 Baud
- Miniature plug-in necessary (9 pole D-Sub)
- For operation with interface faultless operation is only ensured with the correct KERN – interface cable (max. 2m)

10.2 Pin allocation of the balance output plug (front view)



| | |
|--------|-------|
| Pin 2: | Rxd |
| Pin 3: | Txd |
| Pin 4: | DTR |
| Pin 5: | GND |
| Pin 6: | Tara |
| Pin 7: | RTS |
| Pin 8: | CTS |
| Pin 9: | Print |

10.3 Remote control instructions

| Commands | Function |
|-----------|--|
| R CR LF | Reset to manufacturer setting - reset |
| PC CR LF | Command to call up the values of the balance |
| S CR LF | Measuring value stable |
| SI CR LF | Measuring value instable |
| SU CR LF | Last stable measuring value |
| SU CR LF | Current measuring value |
| Z CR LF | Zeroing stable value |
| ZI CR LF | Zeroing instable value |
| T CR LF | Taring stable value |
| TI CR LF | Taring instable value |
| C0 CR LF | Cancel continuous data output |
| C1 CR LF | Start continuous data output |
| CU0 CR LF | Cancel continuous data output (operating mode) |
| CU1 CR LF | Start continuous data output (operating mode) |
| NB CR LF | Serial no. of balance |
| FS CR LF | Weighing range max. |
| RV CR LF | Software issue |
| PD CR LF | Date display |
| PD CR LF | Time display |
| PMCR LF | Operating mode |
| PS CR LF | Balance parameters are printed out |
| B CR LF | Tone |
| ER CR LF | Call up error message |
| DS CR LF | Display check |
| CS CR LF | Delete display check |
| DH CR LF | Display check header |
| CH CR LF | Delete display check header |
| DF CR LF | Display check bar graph (footer) |
| CF CR LF | Delete display check bar graph (footer) |
| CL CR LF | Start internal adjustment from outside |
| KL CR LF | Lock keyboard |
| KU CR LF | Unlock keyboard |
| E0 CR LF | Keytone off |
| E1 CR LF | Keytone on |
| O0 CR LF | Balance off |
| O1 CR LF | Balance on |
| A0 CR LF | Auto zero off |
| A1 CR LF | Auto zero on |
| TC0 CR LF | Automatic adjustment off |
| TC1 CR LF | Automatic adjustment on |

11 Service, maintenance, disposal

11.1 Cleaning

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

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

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

Spilled weighing goods must be removed immediately.

11.2 Service, maintenance

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

Before opening, disconnect from power supply.

11.3 Disposal

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

12 Instant help

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

Help:

| <i>Fault</i> | <i>Possible cause</i> |
|---|--|
| <i>The displayed weight does not glow.</i> | <ul style="list-style-type: none">• <i>The balance is not switched on.</i>• <i>The mains supply connection has been interrupted (mains cable not plugged in/faulty).</i>• <i>Power supply interrupted.</i> |
| <i>The displayed weight is permanently changing</i> | <ul style="list-style-type: none">• <i>Draught/air movement</i>• <i>Table/floor vibrations</i>• <i>Weighing plate has contact with other objects.</i>• <i>Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)</i> |
| <i>The weighing result is obviously incorrect</i> | <ul style="list-style-type: none">• <i>The display of the balance is not at zero</i>• <i>Adjustment is no longer correct.</i>• <i>Great fluctuations in temperature.</i>• <i>Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)</i> |

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