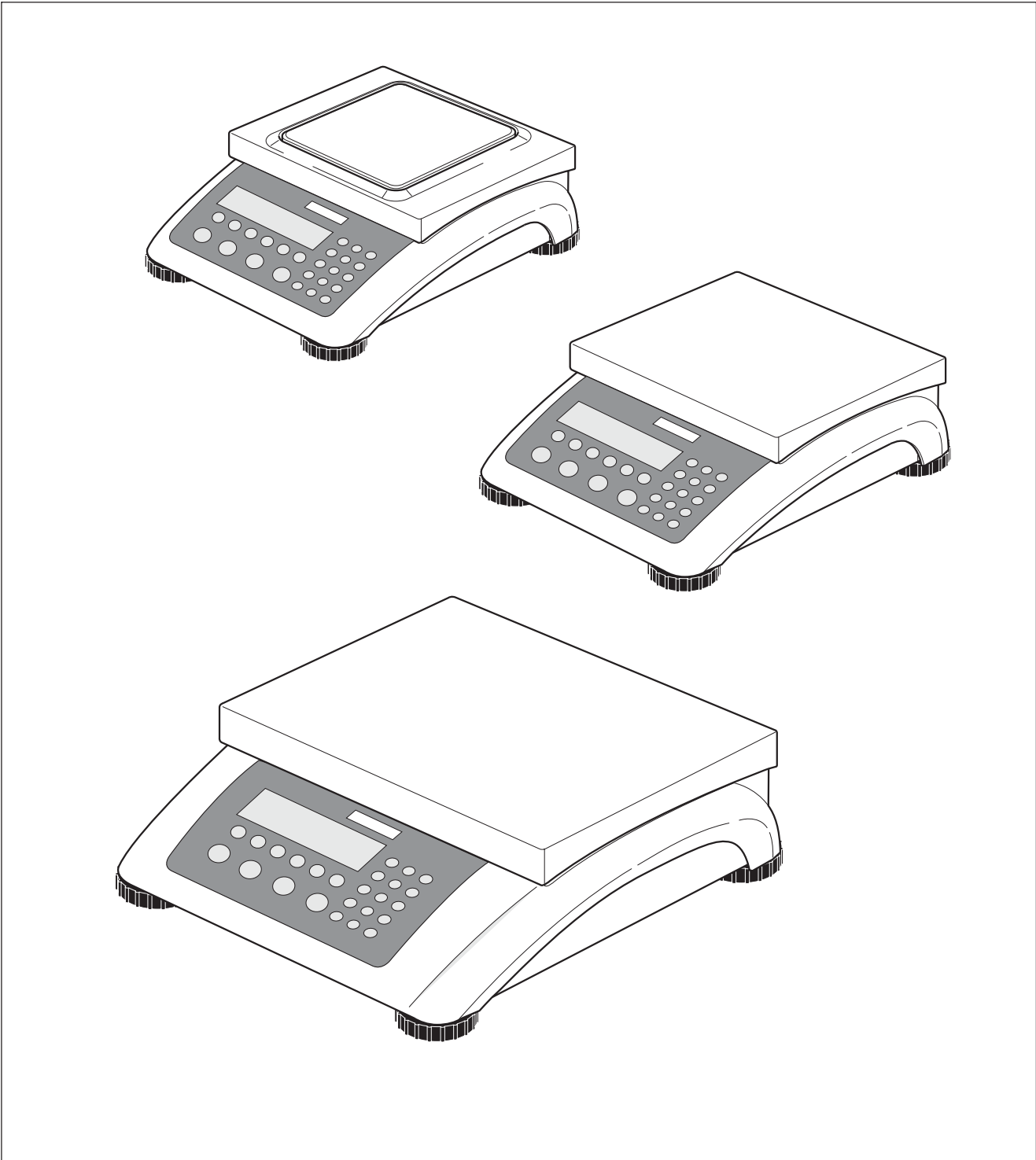




**Ranger RP Compact Scales**  
**Instruction Manual**





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# 1 Introduction

## 1.1 Safety instructions

**CAUTION!**

Do not use Ranger RP in hazardous areas!

Our product range includes special devices for hazardous areas.

**DANGER!**

Electric shock hazard!

▲ Always pull out the mains plug before any work on the device.

**DANGER!**

Electric shock hazard if the mains cable is damaged!

▲ Check the mains cable for damage regularly and replace it immediately if it is damaged.

▲ On the rear side of the device, maintain a clearance of at least 3 cm in order to prevent the mains cable bending too much.

**CAUTION!**

On no account open the device!

The warranty is void if this stipulation is ignored. The device may only be opened by authorized persons.

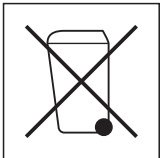
▲ Call OHAUS Service.

**CAUTION!**

Handle the compact scale with care.

The scale is a precision instrument.

- ▲ When the weighing pan has been removed, never clean the area under the load plate holder with a solid object!
- ▲ Do not put excessive loads on the scale.
- ▲ Avoid banging the weighing pan.

**Disposal**

→ Observe the valid environmental regulations when disposing of the scale.

If the device has a rechargeable battery:

The battery contains heavy metals and therefore must not be disposed of with normal waste.

→ Observe the local regulations for disposing of environmentally hazardous materials.

**Note Use with foodstuffs**

Parts coming into contact with foodstuffs have smooth surfaces and are easy to clean. The materials used do not splinter and are free of harmful substances.

With foodstuffs, it is recommended to use the supplied protective cover.

- Clean the protective cover regularly and carefully.
- Replace damaged or very dirty protective cover immediately.

## 1.2 Description

This user manual applies to the following types of compact scales:

- Compact scale RP..S with strain gauge weighing cell
- Compact scale RP..M with Monobloc

The compact scales are available in a small and large size in various capacities and resolutions.

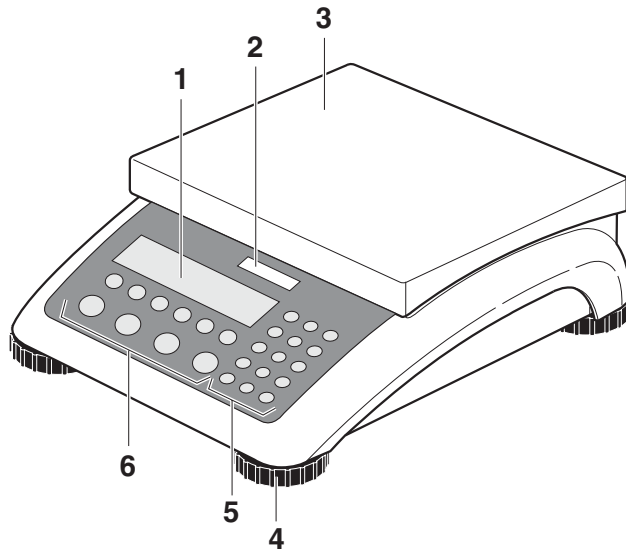
The power supply is carried out via a built-in power supply device, an internal rechargeable battery with an external mains adapter or an external battery.

One of the following options can also be ordered:

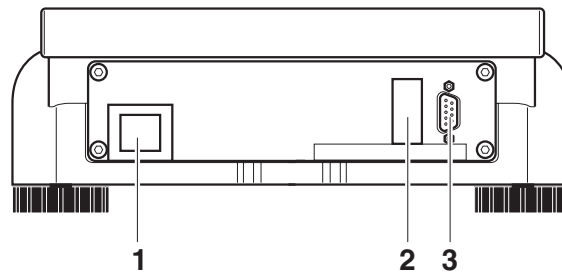
- Additional interface RS232 or RS485
- Ethernet interface
- USB interface
- Digital I/O
- Analog second scale interface

### 1.2.1 Overview

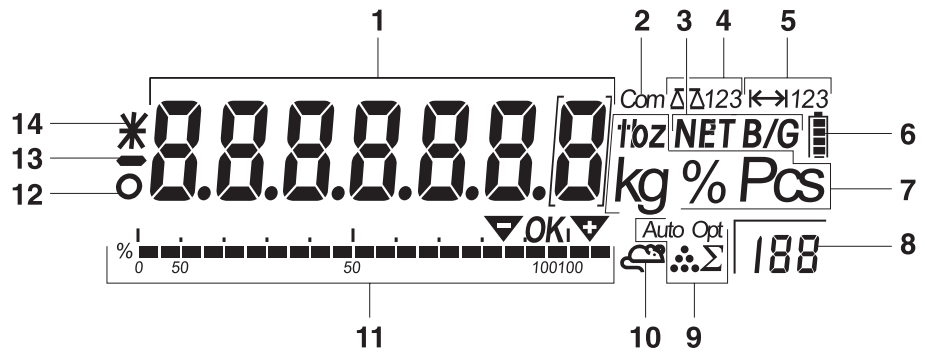
- 1 Display
- 2 Scale specifications
- 3 Load plate
- 4 Adjustable foot
- 5 Numerical keys
- 6 Function keys



- 1 Power supply connection
- 2 Optional interface
- 3 RS232 interface




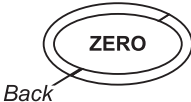


## 1.2.2 Display













- 1** 7-segment display, 7 digits, with decimal point
- 2** Active interface
- 3** Symbol for displaying gross and net values
- 4** Active scale
- 5** Weighing range display
- 6** Battery charge level; only present on scales with a battery
- 7** Weight units
- 8** Selected reference quantity
- 9** Symbols for optimizing the average piece weight and accumulating
- 10** Symbol for dynamic weighing
- 11** Graphic display of the weighing range, display for checkweighing
- 12** Stability monitor (goes out when a stable weight value is reached)
- 13** Sign
- 14** Identification for changed or calculated weight values, e.g. higher resolution, minimum weight not reached

### 1.2.3 Keypad

#### Main functions

| Key   | Function in operating mode                      | Function in the menu                               |
|---|---|--|
|  | Switching device on / off, abort                | To the last menu item –End–                        |
|  | Setting scale to zero                           | Scrolling back                                     |
|  | Taring scale                                    | Scrolling forward                                  |
|  | Transfer key<br>Long key press: Calling up menu | Activating menu item<br>Accepting selected setting |

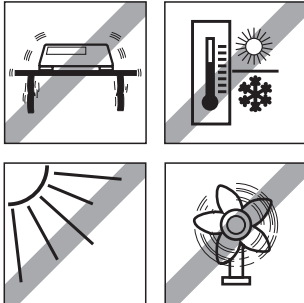
#### Additional functions

| Key   | Function  |
|---|---|
|  | Info key: Calling up additional information, e.g. gross weight, average piece weight, higher resolution ... |
|  | Switching the scale   |
|  | Switching between weight value and number of pieces   |
|  | Weighing in reference or defining average piece weight numerically  |
|  | Determining average piece weight from 10 pieces   |
|  | Determining average piece weight from any number of pieces  |
|  | Entering identification   |
|  | Memory  |
|  | Sign; adding/subtracting  |
|  | Clear key   |
| Keys 0 ... 9 and decimal point  | Numerical keys for entering weight values, identifications ...  |

## 1.3 Putting into operation

### 1.3.1 Selecting or changing the location

The correct location is crucial to the accuracy of the weighing results!

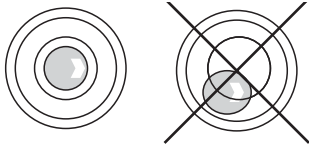


→ Select a stable, vibration-free and if possible a horizontal location.

The ground must be able to safely bear the weight of the fully loaded scale.

Observe the following environmental conditions:

- No direct sunlight
- No strong drafts
- No excessive temperature fluctuations



#### Aligning the scale

Only scales that have been aligned precisely horizontally provide accurate weighing results. The certified scales have a spirit level to simplify alignment.

→ Turn the adjustable feet of the scale until the spirit level's air bubble is inside the inner circle.

#### Major geographical location changes

The manufacturer adjusts each scale to the local gravity conditions (GEO value). In the event of major geographical location changes, this setting must be adjusted by a service technician. Certified scales must also be recertified observing the national certification regulations. These steps are not necessary for scales with an internal calibration weight.

### 1.3.2 Connecting the power supply



#### CAUTION!

Before connecting the scale to the mains, check whether the voltage value printed on the rating plate corresponds with the local mains voltage.

▲ Never connect the device if the voltage value printed on the rating plate is different to the local mains voltage.

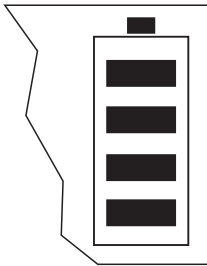
→ Plug the mains plug into the socket.

After connection, the device performs a self-test. When the zero display appears, the device is ready to weigh.

→ Calibrate the device in order to obtain the greatest possible precision, see Section 4.3.2.

**Note** Partially certified scales (scales with first-level certification) must be certified by an authorised body or by the OHAUS Service.

→ Call OHAUS Service.



Scales with a built-in battery can work independently from the mains for approximately 30 hours in normal operation. A prerequisite for this is that the background lighting is switched off and that no peripheral devices are connected.

The device automatically switches to battery operation as soon as the mains supply is interrupted. When the mains supply is restored, the device automatically switches back to mains operation.

The battery symbol indicates the present charging level of the battery. 1 segment corresponds to approx. 25 % capacity. When the symbol flashes the battery must be charged (min. 4 hours). The charging period is extended if work is continued during charging. The battery is protected against overcharging.

**Note** The battery's charging capacity can be reduced under continuous mains operation.

→ To maintain the charging capacity, after a maximum of 4 weeks discharge the battery completely before recharging it.

## 2 Operation

### 2.1 Switching on and off

**Switching on** → Press **ON/OFF**.

The scale conducts a display test. When the weight display appears, the scale is ready to weigh.

**Switching off** → Press **ON/OFF**.

Before the display goes out, **-OFF-** appears briefly.

### 2.2 Zeroing / Zero point correction

Zeroing corrects the influence of slight changes on the load plate.

- Manual**
1. Unload scale.
  2. Press **ZERO**.

The zero display appears.

**Automatic** In the case of scales that cannot be certified, the automatic zero point correction can be deactivated in the menu or the amount can be changed.

As standard, the zero point of the scale is automatically corrected when the scale is unloaded.

### 2.3 Simple weighing

1. Place weighing sample on scale.
2. Wait until the stability monitor **○** goes out.
3. Read weighing result.

## 2.4 Weighing with tare

### 2.4.1 Taring

→ Place the empty container on the scale and press **TARE**.

The zero display and the symbol **NET** appear.

The tare weight remains saved until it is cleared.

### 2.4.2 Clearing the tare

→ Unload scale and press **TARE**.

The symbol **NET** goes out, the zero display appears.

or

→ Press **C**.

The symbol **NET** goes out, the gross weight appears in the display.

If **A.CL-tr** is activated in the menu, the tare weight is automatically cleared as soon as the scale is unloaded.

### 2.4.3 Automatic taring

#### Prerequisite

**A-tARE** is activated in the menu, the symbol **T** flashes in the display.

→ Place the container or packaging material on the scale.

The packaging weight is automatically saved as the tare weight, the zero display and the symbol **NET** appear.

### 2.4.4 Numerical tare weight entry

1. Enter the known tare weight numerically and press **TARE**.

The entered weight is automatically saved as the tare weight, the symbol **NET** and the tare weight with a minus sign appear.

2. Place the filled container on the scale.

The net weight appears in the display.

### 2.4.5 Taring by calling up a saved tare value

Ranger RP have a total of 100 memory locations for frequently used tare values, average piece weights, target weights and target quantities. In the factory setting, the memory locations 01 to 40 are reserved for tare values. The saved tare values are also preserved when the scale is switched off.

#### Saving tare weights

1. Determine the tare weight in one of the ways described earlier.
2. Enter the memory location number (factory setting: 1 ... 40) and keep **Mem** pressed until the confirmation appears in the display, e.g. `tArE.12`.

**Note** If a tare weight had already been saved under the selected memory location, the message `rEPLACE` appears in the display.

- To save the new tare weight, press **Yes**. The old tare weight is overwritten.
- To abort the save process, press **No**. The previous memory location assignment remains valid.

#### Calling up tare weights

→ Enter the number of the memory location with the required tare weight (factory setting: 1 ... 40) and press **Mem** briefly.

The selected tare value is loaded from the memory and appears briefly in the display. The scale tares with the selected tare value and then displays the current net weight.

#### Clearing saved tare weights

1. Enter the number of the memory location with the tare weight to be cleared (factory setting: 1 ... 40) and press **Mem** briefly.

The saved tare value is displayed.

2. Press **C** within 2 seconds.

`CLEAReD` briefly appears in the display. The saved tare value is cleared.

### 2.4.6 Chain tare

#### Prerequisite

The tare function `CHAIN.tr` is activated in the menu.

With this function it is possible to tare several times if, for example, cardboard is placed between individual layers in a container.

1. Place the first container or packaging material on the scale and press **TARE**.

The packaging weight is automatically saved as the tare weight, the zero display and the symbol **NET** appear.

2. Weigh the weighing sample and read/print out the result.

3. Place the second container or packaging material on the scale and press **TARE** again.

The total weight on the scale is saved as the new tare weight. The zero display appears.

4. Weigh the weighing sample in the second container and read/print the result.


5. Repeat the last two steps for other containers.

## 2.5 Displaying the capacity available



The scale has a graphic display of the scale capacity available. The bar indicates how many per cent of the scale capacity is already occupied and what capacity is still available. In the example, approx. 65 % of the scale capacity is occupied.

## 2.6 Dynamic weighing

With the dynamic weighing function, it is possible to weigh restless weighing samples such as live animals. If this function is activated, the symbol  appears in the display.

With dynamic weighing, the scale calculates the mean value from 56 weighing operations within 4 seconds.

#### With manual start Prerequisite

`AVERAGE -> MANUAL` is selected in the menu.

The weighing sample must be heavier than 5 scale divisions.

1. Place the weighing sample on the scale and wait until it has stabilized.

2. Press **PRINT** to start dynamic weighing.

During dynamic weighing, horizontal segments appear in the display, and the dynamic result is then displayed with the symbol **\***.

3. Unload the scale to be able to start a new dynamic weighing operation.

**With automatic start Prerequisite**

AVERAGE → AUTO is selected in the menu.

The weighing sample must be heavier than 5 scale divisions.

1. Place the weighing sample on the scale.

The scale starts the dynamic weighing automatically.

During dynamic weighing, horizontal segments appear in the display, and the dynamic result is then displayed with the symbol \*.

2. Unload the scale to be able to perform a new dynamic weighing operation.

**2.7 Weighing-in to a target weight and checkweighing**

The compact scales Ranger RP allow the weighing-in of goods to a particular target weight within defined tolerances. With this function it is possible to check whether weighing samples are within a defined tolerance range.

The compact scales Ranger RP have a total of 100 memory locations for frequently used tare values, average piece weights, target weights and target quantities. In the factory setting, the memory locations 81 to 90 are reserved for target weights. The saved target weights are also preserved when the scales are switched off.

**2.7.1 Saving target weights**

1. Enter the memory location number (factory setting: 81 ... 90) and keep **Mem** pressed until the confirmation tARGET appears in the display.

2. Enter the target weight in the defined unit, e.g. 1.5 kg, and confirm with **Yes**.

The display tOLER appears and + flashes.

3. Enter the upper tolerance in the displayed weight unit, e.g. 0.1 kg, and confirm with **Yes**

-or-

- Press **Yes**, enter the upper tolerance range in percent and confirm with **Yes**.

The display tOLER appears and – flashes.

4. Enter the lower tolerance accordingly.

The scale returns to weighing mode.

**Note** If a target weight had already been saved under the selected memory location, the message rEPLACE appears in the display.

- To save the new target weight, press **Yes**. The old target weight is overwritten.
- To abort the save process, press **No**. The previous memory location assignment remains valid.

### 2.7.2 Calling up target weights

- Enter the number of the memory location with the required target weight (factory setting: 81 ... 90) and press **Mem** briefly.

The selected target weight and the tolerances are loaded from the memory and appear briefly in the display. The scale is now ready for weighing-in or checkweighing.

### 2.7.3 Weighing-in

1. Place the empty container on the scale and tare.
2. Fill the container with the weighing sample.



The dispensing process can be followed in the graphic display. The 50 % marking is on the far left here, so that more display segments are available for precise filling between 50 % and 100 %.

As long as the lower tolerance is not reached, the minus tolerance mark is displayed.



If the weight of the weighing sample is within the defined tolerance, the mark **OK** is visible and a short beep sounds if activated in the menu.



When the plus tolerance mark appears, the weight is above the permissible tolerance.

### 2.7.4 Checkweighing

1. Place the weighing sample on the scale.
2. Use the displayed mark to check whether the weighing sample is below, within or above the defined tolerance.



### 2.7.5 Clearing the saved target weights

1. Enter the number of the memory location with the target weight to be cleared (factory setting: 81 ... 90) and press **Mem** briefly.

The saved target weight is displayed.

2. Press **C** within 2 seconds.

**CLEAR**ED briefly appears in the display. The saved target weight is cleared.

## 2.8 Working with identifications

Weighing series can be assigned 2 identification numbers ID1 and ID2 with up to 40 characters that are also printed out on the protocols.

If for example a customer number and an article number are assigned, it can be clearly seen on the protocol which article was weighed for which customer.

### 2.8.1 Entering identification

1. Enter identification and press **ID**.

`IdENT 1` appears in the display.

2. If the entered identification is to be saved as ID1, press **Yes**. If the entered identification is to be saved as ID2, first press **No**, and then press **Yes**.

The scale returns to weighing mode.

### 2.8.2 Displaying identification

- Displaying ID1: Briefly press **ID** once.

The number currently assigned to the ID1 appears in the display. If no ID1 was assigned, `no Id` appears.

- Displaying ID2: Briefly press **ID** twice.

The number currently assigned to the ID2 appears in the display. If no ID2 was assigned, `no Id` appears.

### 2.8.3 Clearing identifications

1. Briefly press **ID** once to display ID1 or briefly press **ID** twice to display ID2.
2. Press **C** for as long as the identification is displayed.

The clearing is briefly confirmed with the message `CLearEd`.

## 2.9 Printing results

If a printer or computer is connected to the scale, the weighing results can be printed out or sent to a computer.

- Press **PRINT**.

The display contents are printed out and transferred to the computer. See Section 8.4 for sample protocols.

## 2.10 Displaying info

Up to 13 different values to be displayed can be configured in the menu for the key **Info**.

Depending on the configuration in the menu, see Section 4.4.5, the following values can be stored in any order (for example):

- Net quantity
- Gross weight
- Average piece weight
- Average piece weight, higher resolution
- Counting accuracy

1. Press **Info**.

The first value is displayed.

2. Press **Info** again.

The next value is displayed.

3. Repeat as often as necessary until the weight display appears again.

**Note** If **Info** is not pressed again within 5 seconds, the scale automatically changes to the weight display, even if all information has not yet been queried.

## 2.11 Switching scales

If a second scale or a weighing platform is connected, e. g. via the optional analog second scale interface, the currently active scale is shown in the display.

The second scale can be operated in exactly the same way as the first scale.

→ Press **Scale Select**.

The display changes from one scale to the other.

## 2.12 Totalising

The compact scales Ranger RP can totalise weight values or pieces. Individual items can also be subtracted.

A connected printer offers you the possibility of generating a printout for each individual item and/or a complete printout. For settings in the menu, see Section 4.4.2.

### 2.12.1 Totalising items

1. Place the first item on the scale and press **+/-**.

The weight value or the number of pieces are saved and, if necessary, printed out.

2. Unload scale.

3. Place the next item on the scale and press **+/-** again.

The weight value and the number of pieces of the next item are added to those of the previous one.

4. Unload scale.

5. Repeat steps 3 and 4 for all other items.

### 2.12.2 Subtracting items

1. Place the item on the scale, press and hold down **+/-**.

The weight value or the number of pieces are subtracted and, if necessary, printed out.

2. Unload scale.

### 2.12.3 Completing totalising

- When the last item has been totalised, press **C**.

The "Final Printout" is produced. The sum memory and the item counter are cleared. The scale is ready for the next totalising process.

### 2.12.4 Calling up sum information

If the key **Info** is assigned accordingly, the number of items, the net sum, the gross sum and the number of pieces of the current item can be called up via this key, see Section 4.4.5.

## 2.13 Cleaning



### CAUTION!

Electric shock hazard!

- ▲ Before cleaning with a damp cloth, pull out the mains plug to disconnect the unit from the power supply.



### CAUTION!

When the weighing pan has been removed, never clean the area under the load plate holder with a solid object!

This could damage the weighing cell.

Other cleaning information:

- Use damp cloths.
- Do not use any acids, alkalis or strong solvents.
- Do not clean using a high-pressure cleaning unit or under running water.
- If very dirty, remove the weighing pan, protective cover (if present) and adjustable feet and clean these items separately.
- Follow all the relevant instructions regarding cleaning intervals and permissible cleaning agents.

## 3 Counting

The compact scales Ranger RP have additional functions for piece counting. The relevant settings in the menu are described in Section 4.4.1.

### 3.1 Counting parts into a container

1. Place the empty container on the scale and press **TARE**.

The container is tared and the zero display appears.

2. Place **10** reference parts on the scale and press **Sample 10**.

-or-

- Place the number of pieces displayed above the key **Sample Size** on the scale and press **Sample Size**

The scale determines the average piece weight and then shows the number of pieces.

3. Add more parts to the container until the required number of pieces is reached.
4. When the piece counting is completed, press the key **C** to clear the result.

The scale is ready for the next weighing or counting.

- Note**
- The average piece weight remains saved in the factory setting until a new average piece weight is determined.
  - With **Count Weight** it is possible to switch between the number of pieces and the weighing units preset.
  - Depending on the assignment, it is possible to display the average piece weight, i. e. the weight of an individual reference unit, with **Info**.
  - If **A.CL-APW ON** is set in the menu, the average piece weight is automatically cleared after each counting operation. The average piece weight must be determined again for the next counting operation.
  - If **ACCURCY ON** is set in the menu, the accuracy achieved is briefly shown after the number of pieces is determined.

### 3.2 Counting parts out of a container

1. Place the full container on the scale and press **TARE**.

The container is tared and the zero display appears.

2. Remove **10** reference parts and press **Sample 10**.

-or-

- Remove the number of pieces displayed above the key **Sample Size** and press **Sample Size**.

The scale determines the average piece weight and then shows the number of pieces removed, together with a minus sign.

3. Remove more parts from the container until the required number of pieces is reached.

### 3.3 Counting with variable reference quantity

#### Prerequisite

VAR-SPL ON must be set in the menu.

1. Place any number of reference parts on the scale.
2. Enter the number of reference parts with the numerical keypad and press **Sample Size**

The scale determines the average piece weight and then shows the number of pieces.

The rest of the counting process is as described earlier.

### 3.4 Counting with minimum accuracy

The item `Min.rEFW` in the menu allows to preset a minimum accuracy of 97.5 %, 99.0 % or 99.5 %. On the basis of this, the scale calculates the minimum reference weight necessary to reach the defined accuracy.

1. Place the reference parts on the scale and press **Sample 10** or **Sample Size**.
2. If the average piece weight is not sufficient to ensure the desired accuracy, `Add x PCS` appears.
3. Add the displayed number of pieces.

The scale then automatically determines the average piece weight with the larger reference quantity.

The rest of the counting process is as described earlier.

## 3.5 Reference optimization

The greater the reference quantity, the more accurately the scale determines the number of pieces.

### 3.5.1 Automatic reference optimization

rEF.OPT -> AUTO must be set in the menu for this. The symbol **Auto Opt** appears in the display.

1. Place the reference parts on the scale and press **Sample 10** or **Sample Size**.
2. Place additional reference parts, max. the same number as for the first reference determination, on the scale.

The scale automatically optimises the average piece weight with the larger number of reference parts.

The rest of the counting process is as described earlier.

**Note** The reference optimization can be performed several times.

## 3.6 Counting with automatic reference determination

### Prerequisite

A-SMPL ON is set in the menu.

→ Place the number of pieces displayed above the key **Sample Size** into the container.

The scale automatically determines the average piece weight and then shows the quantity.

The rest of the counting process is as described earlier.

## 3.7 Counting with a known average piece weight

→ Enter the known average piece weight via the numerical keypad and press **Manual Set**.

The scale changes the unit to PCS.

The rest of the counting process is as described earlier.

## 3.8 Counting by calling up a saved average piece weight

The compact scales Ranger RP have a total of 100 memory locations for frequently used tare values, average piece weights, target weights and target quantities. In the factory setting, the memory locations 41 to 80 are reserved for average piece weights. The saved average piece weights are also preserved when the scale is switched off.

### 3.8.1 Saving average piece weights

1. Determine the average piece weight in one of the ways described earlier.
2. Enter the memory location number (factory setting: 41 ... 80) and keep **Mem** pressed until the confirmation appears in the display, e.g. `APW. 41`.

**Note** If an average piece weight had already been saved under the selected memory location, the message `rEPLACE` appears in the display.

- To save the new average piece weight, press **Yes**. The old average piece weight is overwritten.
- To abort the save process, press **No**. The previous memory location assignment remains valid.

### 3.8.2 Calling up average piece weights

→ Enter the number of the memory location with the required average piece weight (factory setting: 41 ... 80) and press **Mem** briefly.

The selected reference value is loaded from the memory and appears briefly in the display. The scale determines the number of pieces with the selected reference value.

### 3.8.3 Clearing saved average piece weights

1. Enter the number of the memory location with the average piece weight to be cleared (factory setting: 41 ... 80) and press **Mem** briefly.

The saved average piece weight is displayed.

2. Press **C** within 2 seconds.

`CLEARED` briefly appears in the display. The saved average piece weight is cleared.

### 3.9 Counting by calling up a saved target quantity

The compact scales Ranger RP have a total of 100 memory locations for frequently used tare values, average piece weights, target weights and target quantities. In the factory setting, the memory locations 91 to 100 are reserved for target quantities. The saved target quantities are also preserved when the scale is switched off.

#### 3.9.1 Saving target quantities

1. Enter the memory location number (factory setting: 91 ... 100) and keep **Mem** pressed until the confirmation  $\tau$ TARGET appears in the display.
2. Enter the target quantity and confirm with **Yes**.  
The display  $\tau$ OLER appears and + flashes.
3. Enter the upper tolerance in pieces and confirm with **Yes**.  
The display  $\tau$ OLER appears and – flashes.
4. Enter the lower tolerance accordingly.  
The scale returns to weighing mode.

**Note** If a target quantity had already been saved under the selected memory location, the message  $\tau$ REPLACE appears in the display.

- To save the new target quantity, press **Yes**. The old target quantity is overwritten.
- To abort the save process, press **No**. The previous memory location assignment remains valid.

#### 3.9.2 Calling up target quantities

- Enter the number of the memory location with the required target quantity (factory setting: 91 ... 100) and press **Mem** briefly.

The selected target quantity and the associated tolerances are loaded from the memory and appear briefly in the display.

#### 3.9.3 Counting in to target quantities

1. Place the empty container on the scale and tare.
2. Specify a reference.
3. Fill the container with the material being counted.



The counting-in process can be followed in the graphic display. The 50 % marking is on the far left here, so that more display segments are available for precise filling between 50 % and 100 %.

As long as the lower tolerance is not reached, the minus tolerance mark is displayed.



If the counted-in number of pieces is within the defined tolerance, the mark **OK** is visible and a short beep sounds if activated in the menu.



When the plus tolerance mark appears, the number of pieces is above the permissible tolerance.

### 3.9.4 Clearing saved target quantities

1. Enter the number of the memory location with the target quantity to be cleared (factory setting: 91 ... 100) and press **Mem** briefly.

The saved target quantity with tolerances is displayed.

2. Press **C** within 2 seconds.

CLEAR<sub>ED</sub> briefly appears in the display. The saved target quantity is cleared.

## 3.10 Counting with two scales

For piece counting, it is possible to connect a second scale or weighing platform, e. g. a floor scale for counting a large number of pieces via the optional analog second scale interface.

The necessary settings for the application and interface parameters are described in the Sections 4.4.1, 4.6.1 and 4.6.4.

### 3.10.1 Counting with a reference scale

#### Prerequisite

The connected second scale is configured as reference scale.

1. Place the reference parts on the reference scale and press **Sample 10** or **Sample Size**.

The scale determines the average piece weight and changes to the display in pieces (PCS).

2. Place the parts to be counted on the first scale.

The total quantity is displayed.

- Note**
- If `tOTAL-Ct -> bULK` is set in the menu, only the number of pieces on the bulk scale is displayed.
  - If `tOTAL-Ct -> bOTH` is set in the menu, the reference quantity is added to the bulk quantity.

### 3.10.2 Counting with a bulk scale

#### Prerequisite

The connected second scale is configured as bulk scale.

1. Place the reference parts on the first scale and press **Sample 10** or **Sample Size**.  
The scale determines the average piece weight and changes to the display in pieces (PCS).
2. Place the parts to be counted on the bulk scale.  
The total quantity is displayed.

- Note**
- If `tOTAL-Ct -> bULK` is set in the menu, only the number of pieces on the bulk scale is displayed on the bulk scale.
  - If `tOTAL-Ct -> bOTH` is set in the menu, the reference quantity is added to the bulk quantity.

### 3.10.3 Counting with an auxiliary scale

- Note** This configuration allows counting of diverse parts, for example very small parts on one scale and large parts on the other scale.

#### Prerequisite

The connected second scale is configured as an auxiliary scale. The scale doesn't change automatically but only after pressing the **Scale Select** key.

1. Activate the appropriate scale.
2. Place the reference parts on this scale and press **Sample 10** or **Sample Size**.  
The scale determines the average piece weight and changes to the display in pieces (PCS).
3. Place the parts to be counted on the same scale.  
The number of pieces is displayed.

## 4 Settings in the menu

Settings can be changed and functions can be activated in the menu. This enables adaptation to individual weighing requirements.

The menu consists of 6 main blocks containing various submenus on several levels.

### 4.1 Operating the menu

#### 4.1.1 Calling up the menu and entering the password

The menu differentiates between 2 operating levels: Operator and Supervisor. The Supervisor level can be protected by a password. When the device is delivered, both levels are accessible without a password.

##### Operator menu

1. Press **MENU** and keep it pressed until `COdE` appears.
2. Press **MENU** again.

The menu item `tErMINL` appears. Only the submenu `dEVICE` is accessible.

##### Supervisor menu

1. Press **MENU** and keep it pressed until `COdE` appears.
2. Enter the password and confirm with **Yes**.

The first menu item `SCALE` appears.

##### Note

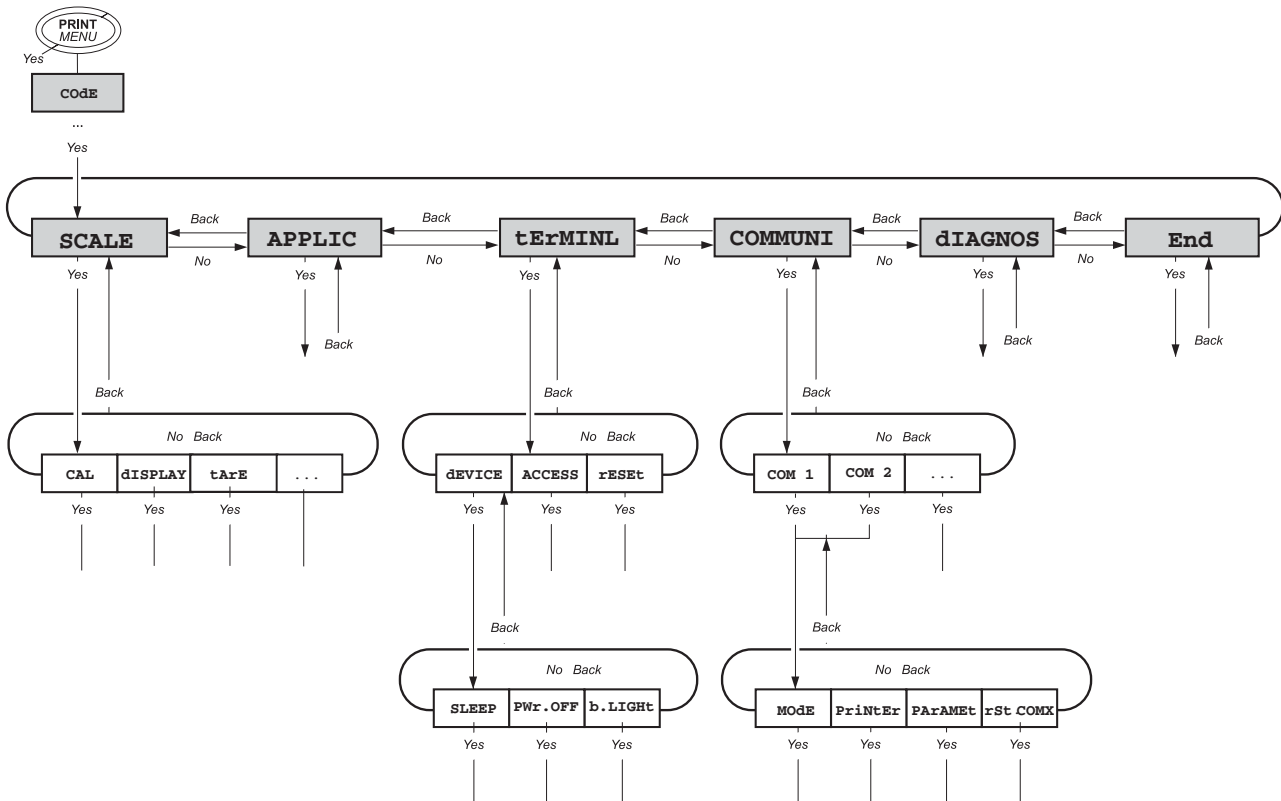
No supervisor password has been defined when the device is first delivered. Therefore respond to the password inquiry with **MENU** when you call up the menu for the first time. If a password has still not been entered after a few seconds, the scale returns to weighing mode.

##### Emergency password for Supervisor access to the menu

If a password has been issued for Supervisor access to the menu and you have forgotten it, you can still enter the menu:

- Press **ZERO** 3 times and confirm with **Yes**.

### 4.1.2 Selecting and setting parameters



**Scrolling on one level** → Scroll forward: Press **No**.  
 → Scroll back: Press **Back**.

**Activating menu items/ accepting selection** → Press **Yes**.

- Exiting menu**
1. Press **Exit**.  
The last menu item END appears.
  2. Press **Yes**.  
The inquiry SAVE appears.
  3. Confirm inquiry with **Yes** to save the settings and return to weighing mode.
- or-
- Press **No** to discard changes and return to weighing mode.

## 4.2 Overview

| Level 1       | Level 2         | Level 3         | Level 4                          | Level 5  | Level 6 | Page |    |
|---------------|-----------------|-----------------|----------------------------------|----------|---------|------|----|
| <b>SCALE</b>  | SCALE1 / SCALE2 |                 |                                  |          |         | 34   |    |
|               | CAL             |                 |                                  |          |         | 34   |    |
|               | dISPLAY         | UNIt1           | g, <b>kg</b> , oz, lb, t         |          |         | 35   |    |
|               |                 | UNIt2           | <b>g</b> , kg, oz, lb, t         |          |         |      |    |
|               |                 | rESOLU          |                                  |          |         |      |    |
|               |                 | UNt.rOLL        | ON, <b>OFF</b>                   |          |         |      |    |
|               | tArE            | A-tArE          | ON, <b>OFF</b>                   |          |         | 35   |    |
|               |                 | ChAIn.tr        | <b>ON</b> , OFF                  |          |         |      |    |
|               |                 | A.CL-tr         | ON, <b>OFF</b>                   |          |         |      |    |
|               | ZErO            | AZM             | OFF; 0.5 d; 1 d; 2 d; 5 d; 10 d  |          |         | 35   |    |
|               | rEStArt         | ON/ <b>OFF</b>  |                                  |          |         |      | 35 |
|               | FILtEr          | VibrAt          | LOW, <b>Med</b> , HIGH,          |          |         | 35   |    |
|               |                 | PrOCeSS         | <b>UNIVER</b> , dOSING           |          |         |      |    |
|               |                 | StABILi         | FASt, <b>StAndrd</b> , PrECISE   |          |         |      |    |
|               | FAcT            | tEMP            | OFF, 1K, 2K, 3K, <b>5K</b>       |          |         | 36   |    |
|               |                 | dAY.tIM         | OFF, dAY, tIME                   |          |         |      |    |
| Min.WEiG      | ON/OFF          | ON, <b>OFF</b>  |                                  |          | 36      |      |    |
| rESEt         | SUrE?           |                 |                                  |          |         | 37   |    |
| <b>APPLIC</b> | COUnT           | VAr-SPL         | ON, <b>OFF</b>                   |          |         | 37   |    |
|               |                 | SPL-qtY         | Sq1 ... Sq5                      |          |         |      |    |
|               |                 | Min.reFW        | <b>OFF</b> , 97.5%, 99.0%, 99.5% |          |         |      |    |
|               |                 | rEF OPT         | <b>OFF</b> , AUtO                |          |         |      |    |
|               |                 | A-SMPL          | ON, <b>OFF</b>                   |          |         |      |    |
|               |                 | A.CL-APW        | ON, <b>OFF</b>                   |          |         |      |    |
|               |                 | ACCurCY         | ON, <b>OFF</b>                   |          |         |      |    |
|               |                 | tOtAL.Ct        | <b>bULK</b> , bOth               |          |         |      |    |
|               | ACCUMUL         | Print           | COM1, COM2                       | Lot.PrNt |         | 38   |    |
|               |                 |                 |                                  | FIN.PrNt |         |      |    |
|               |                 |                 |                                  | SUMMArY  |         |      |    |
|               |                 | rEACH Z         | ON, <b>OFF</b>                   |          |         |      |    |
|               | CHECKW          | bEEPEr          | ON, <b>OFF</b>                   |          |         | 38   |    |
| SP.tOL-       |                 |                 |                                  |          |         |      |    |
| SEnd.MOd      |                 | CONtINU, StAbLE |                                  |          |         |      |    |

| Level 1        | Level 2     | Level 3                   | Level 4   | Level 5 | Level 6 | Page |  |
|----------------|-------------|---------------------------|---|---------|---------|------|--|
|                | MEMOrY      | CONFIG                    |   |         |         | 39   |  |
|                |             | CLEAr.M                   | SUrE?   |         |         |      |  |
|                | inFO.KEY    | INFO 1 ...<br>INFO 13     | Not.USEd, PCS NEt, GrOSS, tArE,<br>APW, HIGHrES, ACCurCY,n, G tOtAL,<br>N tOtAL, PCS.tOtL, tArGEt, dAtE, timE |         |         | 40   |  |
|                | AVERAGE     | <b>OFF</b> , AUtO, MAnuAL |   |         |         | 40   |  |
|                | rESEt       | SUrE?                     |   |         |         | 40   |  |
| <b>tERMINL</b> | dEVICE      | SLEEP                     | <b>OFF</b> , 1 min, 3 min, 5 min  |         |         | 41   |  |
|                |             | PWr OFF                   | <b>YES</b> , NO   |         |         |      |  |
|                |             | b.LIGHT                   | ON, <b>OFF</b>  |         |         |      |  |
|                |             | dAtE.tim                  | dAtE.FOr, dAtE, timE, AM.PM   |         |         |      |  |
|                |             | bEEP                      | ON, <b>OFF</b>  |         |         |      |  |
|                | ACCESS      | SUPErVI                   |   |         |         | 41   |  |
|                | rESEt       | SUrE?                     |   |         |         | 42   |  |
| <b>COMMUNI</b> | COM 1/COM 2 | MOdE                      | <b>Print</b>  |         |         | 42   |  |
|                |             |                           | A.Print   |         |         |      |  |
|                |             |                           | CONTINU   |         |         |      |  |
|                |             |                           | dIALOG  |         |         |      |  |
|                |             |                           | CONT.Old  |         |         |      |  |
|                |             |                           | dIAL.Old  |         |         |      |  |
|                |             |                           | dt-b  | GrOSS   | ON, OFF |      |  |
|                |             |                           |   | tArE    | ON, OFF |      |  |
|                |             |                           |   | nEt     | ON, OFF |      |  |
|                |             |                           | dt-G  | GrOSS   | ON, OFF |      |  |
|                |             |                           |   | tArE    | ON, OFF |      |  |
|                |             |                           |   | nEt     | ON, OFF |      |  |
|                |             |                           | COnt-Wt   |         |         |      |  |
|                |             |                           | COnt-Ct   |         |         |      |  |
|                |             |                           | bArc.rd   |         |         |      |  |
|                |             |                           | 2nd.dISP  |         |         |      |  |
|                |             |                           | rEF   |         |         |      |  |
| bULK           |             |                           |   |         |         |      |  |
| AuXILIA        |             |                           |   |         |         |      |  |

| Level 1        | Level 2 | Level 3  | Level 4                   | Level 5  | Level 6   | Page |    |
|----------------|---------|----------|---------------------------|--|---|------|----|
|                |         | PrINtEr  | tEmPLat                   | StdArd, tEMPLt1,<br>tEMPLt2  |   | 43   |    |
|                |         |          | ASci.Fmt                  | LINE.FMt   | <b>MULTI</b><br>SINGLE  |      |    |
|                |         |          |                           | LENGtH   | 1 ... 100   |      |    |
|                |         |          |                           | SEPArAt  | , ; ...   |      |    |
|                |         |          |                           | Add LF   | 0 ... 9   |      |    |
|                |         | PARAMet  | bAUd                      | 300 ... 38400  |   | 43   |    |
|                |         |          | PARity                    | 7 nonE, 8 nonE, 7 odd,<br>8 odd, <b>7 EVEN</b> , 8 EVEN  |   |      |    |
|                |         |          | H.SHAKE                   | NO, <b>XONXOFF</b> , nEt 422,<br>nEt 485   |   |      |    |
|                |         |          | NEt.Addr                  | 0 ... 31   |   |      |    |
|                |         |          | ChECsUM                   | ON, <b>OFF</b>   |   |      |    |
|                |         |          | Vcc                       | ON, <b>OFF</b>   |   |      |    |
|                |         | rSt.COMx | SURe?                     |  |   | 43   |    |
| <b>COMMUNI</b> | OPTION  | EtH.NET  | IP.AddrS, SUBnEt, GAtEWAY |  |   | 43   |    |
|                |         | USb      | USb tEst                  |  |   | 43   |    |
|                |         | diGitAL  | IN 1 ... 4                | <b>OFF</b> , ZERo, tArE,<br>Print, CLEAR, rEF 10,<br>rEF n, SCALE, inFO,<br>Unit, tOtAL+, tOtAL- |   |      | 43 |
|                |         |          | OUT 1 ... 4               | <b>OFF</b> , StAbLE, bEL.Min,<br>AbV.Min, bEL.tOL-,<br>AbV.tOL+, GOOD,<br>UndErLd, OvErLd, StAr  |   |      |    |
|                |         | ANALOG   | Mode                      | <b>rEF</b> , bULK, AuXILIA,<br>bYPASS  |   | 43   |    |
|                |         | dEF.PrN  | tEMPLt1/<br>tEMPLt2       | LINE 1 ...<br>LINE 20  | <b>Not.USEd</b> , HEAdEr,<br>dAtE, timE, Id1, Id2,<br>SCALE.NO, GrOSS, tArE,<br>nEt, APW, rEF Ct, PCS,<br>tArGET, dEVIAt,<br>ACC NEt, ACC GrS,<br>ACC PCS, ACC Lot,<br>StArLN, CrLF, F FEED |      | 45 |

| Level 1        | Level 2  | Level 3       | Level 4  | Level 5 | Level 6 | Page |
|----------------|----------|---------------|----------|---------|---------|------|
| <b>dIAGNOS</b> | tEst SC  | intErN/ExtErN |          |         |         | 46   |
|                | KboArđ   |               |          |         |         |      |
|                | dISPLAY  |               |          |         |         |      |
|                | SNr      |               |          |         |         |      |
|                | SNr2     |               |          |         |         |      |
|                | LiSt     |               |          |         |         |      |
|                | LiSt2    |               |          |         |         |      |
|                | LiSt.M   |               |          |         |         |      |
|                | WOrK.tim | time          | SHOW.tIM |         |         |      |
|                |          | WEIGH         | SHOW.WGH |         |         |      |
| rESet.AL       | SUrE?    |               |          |         |         |      |

### 4.3 Scale settings (SCALE)

#### 4.3.1 SCALE1/SCALE2 – Selecting scale

This menu item only appears if an analog second scale or a weighing platform is connected.

#### 4.3.2 CAL – calibration (adjustment)

This menu item is not available for certified scales without internal calibration weight.

|          |   |
|----------|---|
| Internal | <p>For scales <b>with</b> an internal calibration weight:</p> <ol style="list-style-type: none"> <li>1. Unload scale.</li> <li>2. Activate menu item <b>CAL</b> with <b>Yes</b>. The scale calibrates with the internal calibration weight. <b>-Int CAL-</b> appears in the display. After calibration is completed, <b>-donE-</b> appears briefly in the display, and the scale automatically returns to weighing mode.</li> </ol>   |
| External | <p>For scales <b>without</b> an internal calibration weight:</p> <ol style="list-style-type: none"> <li>1. Unload scale.</li> <li>2. Activate menu item <b>CAL</b> with <b>Yes</b>. The scale determines the zero point. <b>-0-</b> appears in the display. The calibration weight to be placed on the scale then flashes in the display.</li> <li>3. If necessary, change the weight value displayed with <b>No</b>.</li> <li>4. Place the calibration weight on the scale and confirm with <b>Yes</b>.</li> </ol> <p>The scale calibrates with the calibration weight loaded. After calibration is completed, <b>-donE-</b> appears briefly in the display, and the scale automatically returns to weighing mode.</p> |

### 4.3.3 DISPLAY – weighing unit and display accuracy

|                 |  |
|-----------------|--|
| <b>UNIt1</b>    | Select weighing unit 1: g, kg, oz, lb, t   |
| <b>UNIt2</b>    | Select weighing unit 2: g, kg, oz, lb, t   |
| <b>rESOLU</b>   | Select readability (resolution), model-dependent   |
| <b>UNt.rOLL</b> | When <b>UNt.rOLL</b> is switched on, the weight value can be displayed in all available units and as pieces with <b>Count Weight</b> .   |
| Notes           | <ul style="list-style-type: none"> <li>On certified scales, the weighing units oz and lb are displayed with the symbol *.</li> <li>On certified scales, resolutions that deviate from the scale definition are displayed without a weighing unit and with the symbol *.</li> <li>On dual-range/dual interval scales, resolutions marked with <b>l&lt;-&gt; 1/2l</b> are divided up into 2 weighing ranges / intervals, e.g. 2 x 3000 d.</li> </ul> |

### 4.3.4 TARE – tare function

|                  |  |
|------------------|--|
| <b>A-tArE</b>    | Switching on/off automatic taring  |
| <b>CHAIIn.tr</b> | Switching on/off chain tare  |
| <b>A.CL-tr</b>   | Switching on/off automatic taring with automatic clearing of the tare weight when the load is removed from scale |

### 4.3.5 ZERO – automatic zero update

|            |  |
|------------|--|
| <b>AZM</b> | <p>On certified scales, this menu item does not appear.</p> <p>Switching on/off automatic zero update and selecting zeroing range.</p> <p>Possible settings: OFF; 0.5 d; 1 d; 2 d; 5 d; 10 d</p> |
|------------|--|

### 4.3.6 RESTART – automatic saving of zero point and tare value

|               |  |
|---------------|--|
| <b>ON/OFF</b> | <p>When the Restart function is activated, the last zero point and tare value are saved.</p> <p>After switching off / on or after a power interruption, the device continues to work with the saved zero point and tare value.</p> |
|---------------|--|

### 4.3.7 FILTER – adaptation to the ambient conditions and the weighing type

|               |   |
|---------------|---|
| <b>VIbrAt</b> | Adaptation to the ambient conditions  |
| LOW           | <ul style="list-style-type: none"> <li>Very steady and stable environment. The scale works very quickly, but is very sensitive to external influences.</li> </ul> |
| MEd           | <ul style="list-style-type: none"> <li>Normal environment. The scale operates at medium speed.</li> </ul>   |
| HIGH          | <ul style="list-style-type: none"> <li>Restless environment. The scale works more slowly, but is insensitive to external influences.</li> </ul>                   |

|  |  |
|--|--|
| <b>PrOCESS</b><br>UNIVER<br>dOSING           | Adaptation to the weighing process <ul style="list-style-type: none"> <li>• Universal setting for all weighing samples and normal weighing goods</li> <li>• Dispensing liquid or powdery weighing samples</li> </ul>   |
| <b>StAbILI</b><br>FASt<br>StAndrd<br>PrECISE | Adjusting the weighing speed <ul style="list-style-type: none"> <li>• The scale operates very fast.</li> <li>• The scale operates at medium speed.</li> <li>• The scale operates with the greatest possible reproducibility.</li> </ul> The slower the scale works, the greater the reproducibility of the weighing results. |

#### 4.3.8 **FACT – automatic temperature-dependent adjustment**

This menu item appears only on scales with an internal calibration weight.

|  |   |
|--|---|
| <b>TEMP</b><br>OFF<br>1K/2K/3K/5K      | Defining the temperature difference for automatic calibration <ul style="list-style-type: none"> <li>• Switching off automatic calibration in the case of a temperature difference</li> <li>• Automatic calibration in the case of a temperature change of 1 K, 2 K, 3 K or 5 K since the last adjustment</li> </ul>  |
| <b>dAY.tim</b><br>dAY<br><br>time1...3 | Defining up to 7 days of the week and up to 3 times for automatic adjustment. <ul style="list-style-type: none"> <li>• Select day of the week for the adjustment.</li> </ul> 7 zeros appear in the display after pressing the key <b>Yes</b> . The first zero stands for Monday, the second for Tuesday, the third for Wednesday etc. <p>→ Use the key <b>No</b> to go to the desired day of the week and enter 1.</p> The display 0100100 means that Tuesday and Friday are selected as calibration days. <p>→ Press <b>Yes</b>.</p> time1 appears in the display. <ul style="list-style-type: none"> <li>• Enter the time(s) for the calibration (hours, minutes).</li> </ul> |
| Note                                   | The format for entering the time (EU or US) depends on the settings in the menu item TERMINAL-> Device, see section 4.5.1.  |

#### 4.3.9 **MIN.WEIG – minimum weight**

This menu item appears only if the service technician has saved a minimum weight.

|               |   |
|---------------|---|
| <b>ON/OFF</b> | Switching minimum weight function on/off <p>If the weight on the scale falls below the stored minimum weight, an * appears on the display in front of the weight indicator.</p> |
|---------------|---|

#### 4.3.10 RESET – resetting scale settings to factory settings

|              |   |
|--------------|---|
| <b>SURe?</b> | Confirmation inquiry <ul style="list-style-type: none"> <li>Reset the scale settings to factory settings with <b>Yes</b></li> <li>Do not reset scale settings with <b>No</b></li> </ul> |
|--------------|---|

### 4.4 Application settings (APPLICATION)

#### 4.4.1 COUNT – settings for counting

|   |  |
|---|--|
| <b>VAR-SPL</b><br>ON<br>OFF                   | Adaptation of the reference quantity <ul style="list-style-type: none"> <li>The reference quantity can be changed in operating mode</li> <li>Counting only with defined reference quantities</li> </ul>  |
| <b>Min.reFW</b><br>OFF<br>97.5, 99.0,<br>99.5 | Monitoring the minimum reference weight <ul style="list-style-type: none"> <li>No monitoring of the minimum reference weight</li> <li>Monitoring the minimum reference weight so that a counting accuracy of 97.5 %, 99.0 % or 99.5 % is achieved</li> </ul>   |
| <b>rEF.Opt</b><br>OFF<br>AUtO                 | Optimizing the average piece weight <ul style="list-style-type: none"> <li>No reference optimization</li> <li>Automatic reference optimization</li> </ul>  |
| <b>A-SMPL</b><br>ON<br>OFF                    | Automatic determination of the average piece weight <ul style="list-style-type: none"> <li>After taring, the average piece weight is determined with the next weight placed on the scale and the displayed reference quantity</li> <li>No automatic determination of the average piece weight</li> </ul>   |
| <b>A.CL-APW</b><br>ON<br>OFF                  | Automatic clearing of the average piece weight <ul style="list-style-type: none"> <li>When the load is taken off the scale after a counting operation, the average piece weight is automatically cleared. The next counting operation begins with determining the average piece weight again.</li> <li>The average piece weight must be cleared manually by pressing <b>C</b></li> </ul> |
| <b>ACCuRcY</b><br>ON<br>OFF                   | Displaying the counting accuracy <ul style="list-style-type: none"> <li>After the average piece weight is determined, the counting accuracy that can be achieved is shown briefly in the display.</li> <li>No counting accuracy display</li> </ul>   |
| <b>tOtAl.Ct</b><br>bULK<br>bOth               | Counting on two scales <ul style="list-style-type: none"> <li>Display number of pieces for the parts on the bulk scale only</li> <li>Display number of pieces for all parts on the bulk and the reference scale</li> </ul>   |

#### 4.4.2 ACCUMULATION – totalising

|  |   |
|--|---|
| <b>PrINt</b><br>COM 1/COM 2<br>LOt.PrINt<br>FIN.PrINt<br>SUMMArY | Configure printout for accumulation<br>Select interface for the connected printer / computer<br><ul style="list-style-type: none"> <li>• Printout for each individual item</li> <li>• Printout only at the end of accumulation</li> <li>• Additional printout of the individual items after completion of accumulation</li> </ul> |
| <b>rEACH Z</b><br>ON<br>OFF                                      | Reach a stable zero point between two items<br><ul style="list-style-type: none"> <li>• All load must first be removed from the scale before accumulation of the next item is possible</li> <li>• No load removal requested between two items</li> </ul>  |

#### 4.4.3 CHECKWEIGHING

|                                       |   |
|---------------------------------------|---|
| <b>bEEPER</b><br>ON<br>OFF            | Setting the beep for checkweighing<br><ul style="list-style-type: none"> <li>• A short beep sounds when the target value is reached</li> <li>• No beep</li> </ul>   |
| <b>SP.tOL-</b>                        | Limit for activation of the I/O relay box. The value to be entered is the percentage proportion of the lower tolerance of the target weight / target quantity.<br>EXAMPLE<br>Target weight:2000 g<br>tOLER+ : 2010 g<br>tOLER- : 1990 g<br>SP.tOL- : 010 (%)<br>The relay box is not activated until 199 g (= 10 % of 1990 g) is reached. |
| <b>SEnd .Mod</b><br>CONtINU<br>StAbLE | Defines the form in which the scale sends information to the I/O relay box<br><ul style="list-style-type: none"> <li>• Information is permanently sent</li> <li>• Information is only sent if the weight value is stable</li> </ul>   |



#### 4.4.5 INFO-KEY – assignment of the Info key

|                         |   |
|-------------------------|---|
| <b>INFO1</b>            | Up to 13 additional values can be displayed via the key <b>Info</b> . |
| NOt.USEd                | • Info space not occupied   |
| PCS NEt                 | • Displays net weight in counting                                     |
| GrOSS                   | • Displays gross weight   |
| tArE                    | • Displays tare weight  |
| APW                     | • Displays average piece weight                                       |
| HIGHrES                 | • Shows display with a higher resolution                              |
| ACCURCY                 | • Displays counting accuracy  |
| n                       | • Displays number of totalised items                                  |
| G tOtAL                 | • Displays gross sum  |
| N tOtAL                 | • Displays net sum  |
| PCS.tOtL                | • Displays sum of pieces  |
| tArGEt                  | • Displays target value and tolerances                                |
| dAtE                    | • Displays date   |
| timE                    | • Displays time   |
| <b>INFO2 ... INFO13</b> | As per INFO1  |

#### 4.4.6 AVERAGE – determining the average weight for an unstable load

|               |   |
|---------------|---|
| <b>OFF</b>    | Calculating average weight switched off   |
| <b>AUto</b>   | Calculating average weight with automatic start of the weighing cycle               |
| <b>MANuAL</b> | Calculating average weight with manual start of the weighing cycle via <b>PRINT</b> |

#### 4.4.7 RESET – resetting application settings to factory settings

|              |   |
|--------------|---|
| <b>SURe?</b> | Confirmation inquiry <ul style="list-style-type: none"> <li>• Reset the application settings to factory settings with <b>Yes</b></li> <li>• Do not reset the application settings with <b>No</b></li> </ul> |
|--------------|---|

## 4.5 Terminal settings (TERMINAL)

### 4.5.1 DEVICE – Sleep mode, energy-saving mode and display backlighting

|  |   |
|--|---|
| <b>SLEEP</b>   | <p>This menu item only appears on devices in mains operation.</p> <p>When <b>SLEEP</b> is activated, the scale switches off display and backlighting after the time period set when not in use. The display and backlighting are switched on again at the press of a key or if the weight changes.</p> <p>Possible settings: OFF, 1 min, 3 min, 5 min</p> |
| <b>Pwr OFF</b>                                       | <p>This menu item only appears on devices in battery operation.</p> <p>When <b>Pwr OFF</b> is activated, the device switches itself off automatically after approx. 3 minutes when not in use.</p>  |
| <b>b.LIGHT</b>                                       | <p>Switching the display backlighting on/off.</p> <p>On scales with a battery, the background lighting switches itself off automatically if there has been no activity on the scale for 5 seconds.</p>  |
| <b>DAte.tim</b><br>DAte.FOr<br>DAte<br>tIME<br>AM.PM | <p>Setting date and time</p> <ul style="list-style-type: none"> <li>• Select type of date setting: EU or US</li> <li>• Enter the date in the selected format</li> <li>• Enter the time</li> <li>• Select AM/PM</li> </ul>   |
| <b>bEEP</b><br>ON<br>OFF                             | <p>Switching beep on/off</p> <p>Switching on beep on each key press</p> <p>Switching off beep on each key press</p>   |
| Note   | This menu item is accessible without a Supervisor password.   |

### 4.5.2 ACCESS – password for Supervisor menu access

|                                       |   |
|---------------------------------------|---|
| <b>SUPeRVI</b><br>ENtER.C<br>rEtYPE.C | <p>Password entry for Supervisor menu access</p> <p>Request to enter password</p> <p>→ Enter the password and confirm with <b>Yes</b></p> <p>Request to repeat the password entry</p> <p>→ Enter the password again and confirm with <b>Yes</b></p>   |
| Notes                                 | <ul style="list-style-type: none"> <li>• The password can consist of up to 4 characters.</li> <li>• The key <b>Yes</b> must not be part of the password. It is required for confirming the password.</li> <li>• The key <b>No</b> may only be used in combination with another key.</li> <li>• If you enter an impermissible code or make a typing error in the repetition, <b>COde.Err.</b> appears in the display.</li> </ul> |

### 4.5.3 RESET – resetting terminal settings to the factory settings

|              |   |
|--------------|---|
| <b>SUrE?</b> | Confirmation inquiry <ul style="list-style-type: none"> <li>Reset terminal settings to the factory settings with <b>Yes</b></li> <li>Do not reset the terminal settings with <b>No</b></li> </ul> |
|--------------|---|

## 4.6 Configuring interfaces (COMMUNICATION)

### 4.6.1 COM1/COM2 -> MODE – operating mode of the serial interface

|                                     |   |
|-------------------------------------|---|
| <b>Print</b>                        | Manual data output to the printer with <b>PRINT</b>   |
| <b>A.Print</b>                      | Automatic output of stable results to the printer (e. g. for series weighing operations)  |
| <b>CONtINU</b>                      | Ongoing output of all weight values via the interface   |
| <b>dIALOG</b>                       | Bi-directional communication via OHAUS or MT-SICS commands, control of the scale via PC   |
| <b>CONt.OLd</b>                     | As per <b>CONtINU</b> , see above, but with 2 fixed blanks in front of the unit (compatible with Spider 1/2/3)  |
| <b>dIAL.OLd</b>                     | As per <b>dIALOG</b> , see above, but with 2 fixed blanks in front of the unit (compatible with Spider 1/2/3)   |
| <b>dt-b</b><br>GROSS<br>tArE<br>nEt | DigiTOL-compatible format. <ul style="list-style-type: none"> <li>Transfer of the gross weight, identified with "G"</li> <li>Transfer of the tare weight</li> <li>Transfer of the net weight</li> </ul> |
| <b>dt-G</b>                         | As per <b>dt-b</b> , see above, gross weight identified with "G"  |
| <b>COnt-Wt</b>                      | TOLEDO Continuous mode  |
| <b>COnt-Ct</b>                      | TOLEDO Continuous mode, transfer of the number of pieces  |
| <b>bArc.rd</b>                      | For connecting a serial bar code reader (automatically activates the 5-V voltage supply at Pin 9)   |
| <b>2nd.dISP</b>                     | For connecting a second display (automatically activates the 5-V voltage supply at Pin 9)   |
| <b>rEF</b>                          | Data transfer from the reference scale (automatic switchover)   |
| <b>bULK</b>                         | Data transfer from the quantity scale (automatic switchover)  |
| <b>AuXILIA</b>                      | Data transfer from the reference or quantity scale (manual switchover)  |

#### 4.6.2 COM1/COM2 -> PRINTER – settings for protocol printout

This menu item only appears if the mode "Print" or "A.Print" is selected.

|                  |   |
|------------------|---|
| <b>tEmPLat</b>   | Selecting protocol printout   |
| StdArD           | • Standard printout   |
| tEmPLt1          | • Printout in accordance with Template 1  |
| tEmPLt2          | • Printout in accordance with Template 2  |
| <b>ASci.FmtT</b> | Selecting formats for the protocol printout   |
| LINE.Fmt         | • Line format: <code>MULTI</code> (multi-line) or <code>SINGLE</code> (single-line)   |
| LENGtH           | • Line length: 0 ... 100 characters, appears only with line format <code>MULTI</code> |
| SEPArAt          | • Separator: , ; . / \ _ and space; appears only with line format <code>SINGLE</code> |
| Add LF           | • Line feed: 0 ... 9  |

#### 4.6.3 COM1/COM2 -> PARAMET – communication parameter

|                 |   |
|-----------------|---|
| <b>bAUd</b>     | Selecting baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 baud  |
| <b>PARity</b>   | Selecting parity: 7 none, 8 none, 7 odd, 8 odd, 7 even, 8 even  |
| <b>H.SHAKE</b>  | Selecting Handshake: <code>NO</code> , <code>XONXOFF</code> , <code>nEt422</code> , <code>nEt485</code> (network operation as per RS485 standard via the optional RS422/RS485 interface, only for COM1) |
| <b>NET.Addr</b> | Assigning network address: 0 ... 31, only for NET 485   |
| <b>ChECsUm</b>  | Activating checksum byte (appears only in TOLEDO Continuous mode)   |
| <b>Vcc</b>      | Switching 5V voltage, e.g. for a bar code reader, on / off  |

#### 4.6.4 COM1/COM2 -> RESET COM1/RESET COM2 – resetting serial interface to factory settings

|              |  |
|--------------|--|
| <b>SURe?</b> | Confirmation inquiry   |
|              | • Reset interface settings to factory settings with <b>Yes</b> |
|              | • Do not reset the interface settings with <b>No</b>           |

#### 4.6.5 OPTION – configuring options

If no option is installed or is not yet configured, `N.A.` appears in the display.

|                |   |
|----------------|---|
| <b>EtH.NET</b> | Configuration of the Ethernet interface   |
| IP.AddrS       | • Enter IP address  |
| SUBNEt         | • Enter Subnet address  |
| GAtEWAY        | • Enter Gateway address   |
| <b>USb</b>     | Configuration of the USB interface  |
| USb TEST       | • Test of the USB interface. After the test has been passed, <code>rEAdY</code> appears in the display. |

|   |  |
|---|--|
| <p><b>digital</b></p> <p>IN 1 ... 4</p> <p>OFF</p> <p>ZErO</p> <p>tArE</p> <p>PriNt</p> <p>CLEAr</p> <p>rEF 10</p> <p>rEF n</p> <p>SCALE</p> <p>inFO</p> <p>UNIT</p> <p>totAL+</p> <p>totAL-</p> <p>OUT 1 ... 4</p> <p>OFF</p> <p>StAbLE</p> <p>bEL.MIN</p> <p>AbV.MIN</p> <p>bEL.tOL</p> <p>AbV.tOL</p> <p>GOOd</p> <p>UNdErLd</p> <p>OVErLd</p> <p>StAr</p> | <p>Configuration of the digital inputs/outputs</p> <p>Configuring inputs 1 ... 4</p> <ul style="list-style-type: none"> <li>• Input not assigned</li> <li>• <b>ZERO</b> Key</li> <li>• <b>TARE</b> Key</li> <li>• <b>PRINT</b> Key</li> <li>• <b>C</b> Key</li> <li>• <b>Sample 10</b> Key</li> <li>• <b>Sample Size</b> Key</li> <li>• <b>Scale Select</b> Key</li> <li>• <b>Info</b> Key</li> <li>• <b>Count Weight</b> Key</li> <li>• <b>+/-</b> Key, short press of key</li> <li>• <b>+/-</b> Key, long press of key</li> </ul> <p>Configuring outputs 1 ... 4</p> <ul style="list-style-type: none"> <li>• Output not assigned</li> <li>• Stable weight value</li> <li>• Minimum weight not reached</li> <li>• Minimum weight reached or exceeded</li> <li>• Tolerance not reached</li> <li>• Tolerance exceeded</li> <li>• Weight within the tolerance</li> <li>• Insufficient load</li> <li>• Overload</li> <li>• Changed/calculated value</li> </ul> |
| <p><b>ANALOG</b></p> <p>Mode</p> <p>rEF</p> <p>bULK</p> <p>AuXILIA</p> <p>BYPASS</p>  | <p>Configuration of the analog second scale interface</p> <p>Operating mode of the second scale</p> <ul style="list-style-type: none"> <li>• Second scale can only be used to determine the average piece weight</li> <li>• Second scale can only be used as bulk scale</li> <li>• No difference between reference and bulk scale, all functions available on the scale selected</li> <li>• Second scale interface not assigned</li> </ul>   |

#### 4.6.6 DEF.PRN – configuring templates

|                        |   |
|------------------------|---|
| <b>tEMPLt1/tEMPLt2</b> | Selecting Template 1 or Template 2  |
| LINE 1 ... 20          | Select line   |
| NOt.USEd               | <ul style="list-style-type: none"> <li>• Line not used</li> </ul>   |
| HEAdEr                 | <ul style="list-style-type: none"> <li>• Line as header. The contents of the header must be defined via an interface command, see Section 5.1.</li> </ul> |
| dAtE                   | <ul style="list-style-type: none"> <li>• Date</li> </ul>  |
| timE                   | <ul style="list-style-type: none"> <li>• Time</li> </ul>  |
| SCALE.NO               | <ul style="list-style-type: none"> <li>• Scale number</li> </ul>  |
| GROSS                  | <ul style="list-style-type: none"> <li>• Gross weight</li> </ul>  |
| tArE                   | <ul style="list-style-type: none"> <li>• Tare weight</li> </ul>   |
| nEt                    | <ul style="list-style-type: none"> <li>• Net weight</li> </ul>  |
| APW                    | <ul style="list-style-type: none"> <li>• Average piece weight</li> </ul>  |
| rEF Ct                 | <ul style="list-style-type: none"> <li>• Reference quantity</li> </ul>  |
| PCS                    | <ul style="list-style-type: none"> <li>• Pieces</li> </ul>  |
| tArGEt                 | <ul style="list-style-type: none"> <li>• Target value</li> </ul>  |
| dEVIAt                 | <ul style="list-style-type: none"> <li>• Deviation from the target value</li> </ul>   |
| ACC.NET                | <ul style="list-style-type: none"> <li>• Totalised net weight</li> </ul>  |
| ACC.GrS                | <ul style="list-style-type: none"> <li>• Totalised gross weight</li> </ul>  |
| ACC.PCS                | <ul style="list-style-type: none"> <li>• Totalised number of pieces</li> </ul>  |
| ACC.LOt                | <ul style="list-style-type: none"> <li>• Totalised no. of items</li> </ul>  |
| StARLN                 | <ul style="list-style-type: none"> <li>• Line with ***</li> </ul>   |
| CrLF                   | <ul style="list-style-type: none"> <li>• Line feed (blank line)</li> </ul>  |
| F FEEd                 | <ul style="list-style-type: none"> <li>• Page feed</li> </ul>   |

## 4.7 Diagnosis and printing out of the menu settings (DIAGNOS)

|   |  |
|---|--|
| <p><b>tEst SC</b></p> <p>Internal</p> <p>External</p> | <p>Testing scale with internal calibration weight</p> <ul style="list-style-type: none"> <li>• -Int CAL- appears in the display during the test.</li> <li>• After completion of the test, ideally *d=0.0g briefly appears in the display, after which the scale changes to the next menu item KboArđ.</li> </ul> <p>Testing scale with external calibration weight</p> <ol style="list-style-type: none"> <li>1. The scale checks the zero point. -0- appears in the display. The test weight flashes in the display.</li> <li>2. If necessary, change the weight value displayed with <b>No</b>.</li> <li>3. Put the calibration weight on the scale and confirm with <b>Yes</b>.</li> <li>4. The scale checks the calibration weight put on them.</li> <li>5. After the test is completed, the deviation from the last calibration briefly appears in the display, ideally *d=0.0g, after which the scale changes to the next menu item KboArđ.</li> </ol> |
| <p><b>KboArđ</b></p> <p>PUSH 1 ... 25</p>             | <p>Keyboard test</p> <ul style="list-style-type: none"> <li>• Press the keys in the following order:</li> </ul> <div style="text-align: center;"> </div> <p>If the key works, the scale changes to the next key.</p> <p><b>Note</b></p> <p>You cannot abort the keyboard test!</p> <p>If you have selected the menu item KboArđ, you must press all keys.</p>  |
| <p><b>dISPLAY</b></p>                                 | <p>Display test: The scale displays all functioning segments</p>   |
| <p><b>SNr</b></p>                                     | <p>Display of the serial number</p>  |
| <p><b>SNr2</b></p>                                    | <p>Display of the serial number of scale 2. This menu item only appears if an analog second scale is connected.</p>  |
| <p><b>List</b></p>                                    | <p>Printout of a list of all menu settings</p>   |
| <p><b>List2</b></p>                                   | <p>Printout of a list of all menu settings of scale 2. This menu item only appears if an analog second scale is connected.</p>   |
| <p><b>List.M</b></p>                                  | <p>Printout of a list of all values and settings in the memory</p>   |

|   |   |
|---|---|
| <p><b>WOrK.tim</b></p> <p>timE</p> <p>SHOW.tim</p> <p>WEIGH</p> <p>SHOW.WGH</p> | <p>Display of the operating time of the scale and the number of weighing operations performed</p> <ul style="list-style-type: none"> <li>• Operating time in hours, e.g. 56 h</li> <li>• Number of weighing operations, e. g. 135</li> </ul>                        |
| <p><b>rESEt.AL</b></p> <p>SUrE?</p>   | <p>Resetting all menu settings to the factory settings</p> <p>Confirmation inquiry</p> <ul style="list-style-type: none"> <li>• Reset all menu settings to the factory settings with <b>Yes</b></li> <li>• Do not reset the menu settings with <b>No</b></li> </ul> |

## 5 Interface description

### 5.1 OHAUS interface commands

The Ranger RD scales support the OHAUS command set. With OHAUS commands, it is possible to configure, query and operate the scale from a PC.

#### 5.1.1 Available OHAUS commands

| Command | Meaning   |
|---------|---|
| OS      | Set to print weight value immediately (stable or unstable) after P command  |
| 1S      | Set to print stable weight value after P command  |
| SA      | Set to print stable weight value automatically  |
| CA      | Set to print weight value continuously  |
| xA      | Set to print weight value at specified interval, where x = 1 to 3600 (seconds)  |
| P       | Print displayed weight value  |
| Z       | Zero the scale  |
| T       | Tare the scale  |
| xT      | Define the Preset Tare, where x = tare weight in grams  |
| H x "y" | Define the Header H<space>x<space>"y", where x = 1, 2, 3, 4, 5 (line number) and "y" = header text in quotes (up to 24 characters). |
| PSI     | Change to MT-SICS command set   |
| POH     | Return to OHAUS command set   |

**NOTE:** All commands must be followed by a carriage return, line feed <CR><LF>

#### 5.1.2 Requirements for communication between scale and PC

- The scale must be connected to the RS232, RS485, USB or Ethernet interface of a PC with a suitable cable.
- The interface of the scale must be set to "Dialog" mode, see Section 4.6.1.
- A terminal program must be available on the PC, e.g. HyperTerminal.
- The communication parameters baud rate and parity must be set in the terminal program and on the scale to the same values, see Section 4.6.3.

#### 5.1.3 Notes on network operation via the optional interface RS422/485

Up to 32 scales can be networked with the optional RS422/485 interface. In network operation, the scales must be addressed from the computer before commands can be sent and weighing results received.

### 4.1.4 Output format

| Response to the P command |    |    |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |
|---------------------------|----|----|---|---|---|---|---|---|----|----|----|----|----|----|----|---|---|---|----|----|
| Field                     |    |    |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |
| 1                         | 2  | 3  | 4 | 5 | 6 | 7 | 8 | 9 | 10 |    |    |    |    |    |    |   |   |   |    |    |
| POL                       | SP | SP | W | W | W | W | W | W | W  | SP | UN | UN | SP | ST | SP | N | N | N | CR | LF |

Field 1: POL = polarity, space if positive, - if negative  
 Fields 2, 4, 6, 8: SP = space  
 Field 3: W = weight up to 6 digits plus the decimal point  
 Field 5: UN = unit of measure 1 or 2 characters  
 Field 7: ST = stability status, space when stable, ? when unstable,  
 Field 9: N = NET or B/G  
 Field 10: CR LF = carriage return, line feed

| Response to the Print key |       |    |    |    |    |    |    |    |    |    |    |    |    |     |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |   |  |   |  |
|---------------------------|-------|----|----|----|----|----|----|----|----|----|----|----|----|-----|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|---|--|---|--|
| Line                      | Field |    |    |    |    |    |    |    |    |    |    |    |    |     |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |   |  |   |  |
| 1                         | 1     |    |    |    |    |    | 2  |    | 3  |    |    |    |    |     |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |   |  |   |  |
|                           | S     | C  | A  | L  | E  | :  | SP | SC | CR | LF |    |    |    |     |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |   |  |   |  |
| 2                         | 1     |    |    |    |    |    |    |    |    |    |    |    |    | 2   |   |   |   | 3 |   |   | 4 |    |    | 5  |    | 6  |    | 7  |    | 8 |  | 9 |  |
|                           | G     | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | POL | W | W | W | W | W | W | W | W  | SP | UN | UN | SP | ST | CR | LF |   |  |   |  |
| 3                         | T     | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | POL | W | W | W | W | W | W | W | SP | UN | UN | SP |    | CR | LF |    |   |  |   |  |
| 4                         | N     | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | POL | W | W | W | W | W | W | W | SP | UN | UN | SP | ST | CR | LF |    |   |  |   |  |

Line 1  
 Field 1: SCALE:SP = heading and space  
 Field 2: SC = scale identifier, 1 = scale 1, 2 = scale 2  
 Field 3: CR LF = carriage return, line feed

Lines 2, 3, 4  
 Field 1: G = Gross, T = Tare, N = Net  
 Field 2: SP = space, up to 13  
 Field 3: POL = polarity, space if positive, - if negative  
 Field 4: W = weight, up to 6 digits plus the decimal point  
 Field 5, 7: SP = space  
 Field 6: UN = unit of measure, 1 or 2 characters  
 Field 8: ST = stability status, space when stable, ? when unstable, does not apply to Line 3  
 Field 9: CR LF =:carriage return, line feed

## 5.2 SICS interface commands

The Ranger RP compact scales support the command set MT-SICS (METTLER TOLEDO **S**tandard **I**nterface **C**ommand **S**et). With SICS commands, it is possible to configure, query and operate the scales from a PC. SICS commands are divided up into various levels.

To use the MT-SICS commands, first send the OHAUS command PSI. To return to the OHAUS command set, send the OHAUS command POH.

### 5.2.1 Available SICS commands

|                | Command | Meaning                                 |
|----------------|---------|---|
| <b>LEVEL 0</b> | @       | Reset the scale                         |
|                | I0      | Inquiry of all available SICS commands  |
|                | I1      | Inquiry of SICS level and SICS versions |
|                | I2      | Inquiry of scale data                   |
|                | I3      | Inquiry of scale software version       |
|                | I4      | Inquiry of serial number                |
|                | S       | Send stable weight value                |
|                | SI      | Send weight value immediately           |
|                | SIR     | Send weight value repeatedly            |
|                | Z       | Zero the scale                          |
|                | ZI      | Zero immediately                        |
| <b>LEVEL 1</b> | D       | Write text into display                 |
|                | DW      | Weight display                          |
|                | K       | Keyboard check                          |
|                | SR      | Send and repeat stable weight value     |
|                | T       | Tare                                    |
|                | TA      | Tare value                              |
|                | TAC     | Clear tare                              |
|                | TI      | Tare immediately                        |

|                      | <b>Command</b> | <b>Meaning</b>  |
|----------------------|----------------|---|
| <b>LEVEL 2</b>       | C2             | Calibrate with the external calibration weight                                    |
|                      | C3             | Calibrate with the internal calibration weight                                    |
|                      | I10            | Inquire or set scale ID   |
|                      | DAT            | Inquire or set current date   |
|                      | I11            | Inquiry of scale type   |
|                      | P100           | Print out on the printer  |
|                      | P101           | Print out stable weight value   |
|                      | P102           | Print out current weight value immediately  |
|                      | PWR            | Power On/Off  |
|                      | SIRU           | Send weight value in the current unit immediately and repeat                      |
|                      | SIU            | Send weight value in the current unit immediately                                 |
|                      | SNR            | Send stable weight value and repeat after every weight change                     |
|                      | SNRU           | Send stable weight value in the current unit and repeat after every weight change |
|                      | SRU            | Send weight value in the current unit and repeat                                  |
|                      | ST             | After pressing the Transfer key, send the stable weight value                     |
|                      | SU             | Send stable weight value in the current unit                                      |
|                      | TIM            | Inquire or set the time   |
|                      | TST2           | Start test function with external weight  |
|                      | TST3           | Start test function with internal weight  |
|                      | <b>LEVEL 3</b> | I12   |
| I13                  |                | ID2   |
| PW                   |                | Average piece weight  |
| <b>LEVEL SPECIAL</b> | CLR            | Clear   |
|                      | DS             | Short beep  |
|                      | I31            | Header for the printout   |
|                      | ICP            | Send configuration of the printout  |
|                      | LST            | Send menu settings  |
|                      | M01            | Weighing mode   |
|                      | M02            | Stability setting   |
|                      | M03            | Autozero function   |
|                      | M19            | Send calibration weight   |
|                      | M21            | Inquire/set weight unit   |
|                      | P              | Print text  |
|                      | P130           | Weight value, unit and price  |
|                      | PCS            | Number of pieces  |

|  | <b>Command</b> | <b>Meaning</b>                                   |
|--|----------------|--|
|  | PM             | Set values for checkweighing                     |
|  | PRN            | Print out at every printer interface             |
|  | REF            | Average piece weight                             |
|  | RST            | Restart  |
|  | SFIR           | Send weight value immediately and repeat quickly |
|  | SIH            | Send weight value immediately in high resolution |
|  | SWU            | Switch weight unit                               |
|  | SX             | Send stable data record                          |
|  | SXI            | Send data record immediately                     |
|  | SXIR           | Send data record immediately and repeat          |
|  | U              | Switch weight unit                               |

### 5.2.2 Requirements for communication between scale and PC

- The scale must be connected to the RS232, RS485, USB or Ethernet interface of a PC with a suitable cable.
- The interface of the scale must be set to "Dialog" mode, see Section 4.6.1.
- A terminal program must be available on the PC, e.g. HyperTerminal.
- The communication parameters baud rate and parity must be set in the terminal program and on the scale to the same values, see Section 4.6.3.

### 5.2.3 Notes on network operation via the optional interface RS422/485

Up to 32 scales can be networked with the optional RS422/485 interface. In network operation, the scales must be addressed from the computer before commands can be sent and weighing results received.

| <b>Description of the steps</b>   | <b>Host</b> | <b>Direction</b> | <b>Scale</b>             |
|---|-------------|------------------|--------------------------|
| 1. Host addresses the scale, e.g. with the address 3A hex.                      | <ESC> 3A    | —>               |                          |
| 2. Host sends a SICS command, e.g. SI   | SI <CRLF>   | —>               |                          |
| 3. The scale confirms receipt of the command and sends the address back         |             | <—               | <ESC> 3A                 |
| 4. The scale responds to the command and returns control of the bus to the host |             | <—               | S_S___45.02_kg<br><CRLF> |

### 5.3 TOLEDO Continuous mode

#### 5.3.1 TOLEDO Continuous commands

The scale supports the following input commands in TOLEDO Continuous mode:

| Command                 | Meaning                      |
|-------------------------|------------------------------|
| <b>P</b> <CR><LF>       | Print out the current result |
| <b>T</b> <CR><LF>       | Tare the scale               |
| <b>Z</b> <CR><LF>       | Zero the display             |
| <b>C</b> <CR><LF>       | Clear the current value      |
| <b>T</b> x.xxx <CR><LF> | Define tare                  |

#### 5.3.2 Output format in TOLEDO Continuous mode

Weight values are always sent in the following format in TOLEDO Continuous mode:

| 1             | Status   |     |     | Field 1 |   |   |   |   |     | Field 2 |    |    |    |    |     | 17 | 18  |
|---------------|--|-----|-----|---------|---|---|---|---|-----|---------|----|----|----|----|-----|----|-----|
|               | 2  | 3   | 4   | 5       | 6 | 7 | 8 | 9 | 10  | 11      | 12 | 13 | 14 | 15 | 16  |    |     |
| STX           | SWA  | SWB | SWC | MSD     | - | - | - | - | LSD | MSD     | -  | -  | -  | -  | LSD | CR | CHK |
| Field 1       | 6 digits for the weight value that is sent without a decimal point and unit  |     |     |         |   |   |   |   |     |         |    |    |    |    |     |    |     |
| Field 2       | 6 digits for the tare weight that is sent without a decimal point and unit   |     |     |         |   |   |   |   |     |         |    |    |    |    |     |    |     |
| STX           | ASCII characters 02 hex, characters for "start of text"  |     |     |         |   |   |   |   |     |         |    |    |    |    |     |    |     |
| SWA, SWB, SWC | Status words A, B, C, see below  |     |     |         |   |   |   |   |     |         |    |    |    |    |     |    |     |
| MSD           | Most significant digit   |     |     |         |   |   |   |   |     |         |    |    |    |    |     |    |     |
| LSD           | Least significant digit  |     |     |         |   |   |   |   |     |         |    |    |    |    |     |    |     |
| CR            | Carriage Return, ASCII characters 0D hex   |     |     |         |   |   |   |   |     |         |    |    |    |    |     |    |     |
| CHK           | Checksum (2-part complement of the binary sum of the 7 lower bits of all previously sent characters, incl. STX and CR) |     |     |         |   |   |   |   |     |         |    |    |    |    |     |    |     |

| Status word A       |           |            |   |   |   |   |   |   |
|---------------------|-----------|------------|---|---|---|---|---|---|
| Function            | Selection | Status Bit |   |   |   |   |   |   |
|                     |           | 6          | 5 | 4 | 3 | 2 | 1 | 0 |
| Decimal position    | X00       | 0          | 1 |   |   | 0 | 0 | 0 |
|                     | X0        |            |   |   |   | 0 | 0 | 1 |
|                     | X         |            |   |   |   | 0 | 1 | 0 |
|                     | 0.X       |            |   |   |   | 0 | 1 | 1 |
|                     | 0.0X      |            |   |   |   | 1 | 0 | 0 |
|                     | 0.00X     |            |   |   |   | 1 | 0 | 1 |
|                     | 0.000X    |            |   |   |   | 1 | 1 | 0 |
|                     | 0.0000X   |            |   |   |   | 1 | 1 | 1 |
| Numerical increment | X1        |            |   | 0 | 1 |   |   |   |
|                     | X2        |            |   | 1 | 0 |   |   |   |
|                     | X5        |            |   | 1 | 1 |   |   |   |

| Status word B        |     |
|----------------------|-----|
| Function / value     | Bit |
| Gross / net: Net = 1 | 0   |
| Sign: Negative = 1   | 1   |
| Overload = 1         | 2   |
| Movement = 1         | 3   |
| lb/kg: kg = 1        | 4   |
| 1                    | 5   |
| Powerup = 1          | 6   |

| Status word C              |     |
|----------------------------|-----|
| Function / value           | Bit |
| 0                          | 0   |
| 0                          | 1   |
| 0                          | 2   |
| Print request = 1          | 3   |
| Extended = 1               | 4   |
| 1                          | 5   |
| Manual taring, only kg = 1 | 6   |

## 6 Event and error messages

| Error                            | Cause  | Remedy   |
|----------------------------------|--|--|
| Display Dark                     | <ul style="list-style-type: none"> <li>• Back lighting set too dark</li> <li>• No mains voltage</li> <li>• Unit switched off</li> <li>• Mains cable not plugged in</li> <li>• Brief fault</li> </ul> | <ul style="list-style-type: none"> <li>→ Set back lighting (b.LIGHT) brighter</li> <li>→ Check mains</li> <li>→ Switch on unit</li> <li>→ Plug in mains plug</li> <li>→ Switch device off and back on again</li> </ul> |
| Insufficient load<br>L _ _ _ _ J | <ul style="list-style-type: none"> <li>• Load plate not on the scale</li> <li>• Weighing range not reached</li> </ul>  | <ul style="list-style-type: none"> <li>→ Place load plate on the scale</li> <li>→ Set to zero</li> </ul>   |
| Overload<br>r _ _ _ _ 7          | <ul style="list-style-type: none"> <li>• Weighing range exceeded</li> </ul>  | <ul style="list-style-type: none"> <li>→ Unload scale</li> <li>→ Reduce preload</li> </ul>   |
| _ _ _ _ _                        | <ul style="list-style-type: none"> <li>• Result not yet stable</li> </ul>  | <ul style="list-style-type: none"> <li>→ If necessary adjust vibration adapter or weigh dynamically</li> </ul>   |
| _ _ n 0 _ _                      | <ul style="list-style-type: none"> <li>• Function not permissible</li> </ul>   | <ul style="list-style-type: none"> <li>→ Unload scale and set to zero</li> </ul>   |
| r _ _ n 0 _ 7<br>L _ _ n 0 _ J   | <ul style="list-style-type: none"> <li>• Zeroing not possible with overload or insufficient load</li> </ul>  | <ul style="list-style-type: none"> <li>→ Unload scale</li> </ul>   |
| Err 4                            | <ul style="list-style-type: none"> <li>• Average piece weight too low</li> </ul>   | <ul style="list-style-type: none"> <li>→ Select and place larger number of reference parts on the scale</li> </ul>   |
| Err 5                            | <ul style="list-style-type: none"> <li>• No valid value from the reference scale</li> </ul>  | <ul style="list-style-type: none"> <li>→ Check cable connection between the units</li> <li>→ Check interface settings</li> </ul>   |
| Err 6                            | <ul style="list-style-type: none"> <li>• No calibration</li> </ul>   | <ul style="list-style-type: none"> <li>→ Unplug the mains plug then plug it back in; switch unit off and then back on in battery mode</li> <li>→ Calibrate scale</li> <li>→ Call OHAUS Service</li> </ul>              |
| Err 7                            | <ul style="list-style-type: none"> <li>• Average piece weight too low</li> </ul>   | <ul style="list-style-type: none"> <li>→ Counting is not possible on this scale with this average piece weight</li> </ul>  |

| <b>Error</b>             | <b>Cause</b>   | <b>Remedy</b>  |
|--------------------------|--|--|
| <b>E r r 9</b>           | <ul style="list-style-type: none"> <li>• Unstable weight value when referencing</li> </ul>   | <ul style="list-style-type: none"> <li>→ Ensure stable surroundings</li> <li>→ Ensure that the weighing pan is freely movable</li> <li>→ Adjust vibration adapter</li> </ul>       |
| <b>E r r 14</b>          | <ul style="list-style-type: none"> <li>• Impermissible target value or impermissible tolerance</li> </ul>  | <ul style="list-style-type: none"> <li>→ Repeat input with permissible values</li> </ul>   |
| <b>E r r 15</b>          | <ul style="list-style-type: none"> <li>• Setting the average piece weight impermissible during weight accumulating</li> </ul>  | <ul style="list-style-type: none"> <li>→ End weight accumulating</li> <li>→ Reset average piece weight</li> </ul>  |
| <b>E r r 16</b>          | <ul style="list-style-type: none"> <li>• Switching the weighing unit impermissible during weight accumulating</li> </ul>   | <ul style="list-style-type: none"> <li>→ End weight accumulating</li> <li>→ Switch weighing unit</li> </ul>  |
| <b>E r r 17</b>          | <ul style="list-style-type: none"> <li>• Printout not yet ended</li> </ul>   | <ul style="list-style-type: none"> <li>→ End printout</li> <li>→ Repeat required action</li> </ul>   |
| <b>E r r 18</b>          | <ul style="list-style-type: none"> <li>• Switching the weighing unit impermissible during dynamic weighing</li> </ul>  | <ul style="list-style-type: none"> <li>→ End dynamic weighing</li> <li>→ Switch weighing unit</li> </ul>   |
| <b>E r r 53</b>          | <ul style="list-style-type: none"> <li>• EAROM checksum error</li> </ul>   | <ul style="list-style-type: none"> <li>→ Unplug the mains plug then plug it back in; switch unit off and then back on in battery mode</li> <li>→ Call OHAUS Service</li> </ul>     |
| Weight display unstable  | <ul style="list-style-type: none"> <li>• Restless installation location</li> <li>• Draft</li> <li>• Restless weighing sample</li> <li>• Contact between weighing pan and/or weighing sample and surroundings</li> <li>• Mains fault</li> </ul> | <ul style="list-style-type: none"> <li>→ Adjust vibration adapter</li> <li>→ Avoid drafts</li> <li>→ Dynamic weighing</li> <li>→ Remedy contact</li> <li>→ Check mains</li> </ul>  |
| Incorrect weight display | <ul style="list-style-type: none"> <li>• Incorrect zeroing</li> <li>• Incorrect tare value</li> <li>• Contact between weighing pan and/or weighing sample and surroundings</li> <li>• Scale tilted</li> </ul>                                  | <ul style="list-style-type: none"> <li>→ Unload scale, set to zero and repeat weighing operation</li> <li>→ Clear tare</li> <li>→ Remedy contact</li> <li>→ Level scale</li> </ul> |

## 7 Technical data and accessories

### 7.1 Technical data

#### 7.1.1 Type key

The Ranger RP are available with various capacities and platforms that can be seen from the complete type designation.

#### Example

RP6RS compact scale with capacity **6 kg** and **small platform**

RP35LM compact scale with capacity **35 kg** and **large platform**

RP3SM compact scale with capacity **3 kg** and **extra-small platform**

**7.1.2 General data**

| <b>RP..S, RP..M</b>                            |   |
|--|---|
| Applications                                   | <ul style="list-style-type: none"> <li>• Weighing</li> <li>• Dynamic weighing</li> <li>• Counting with fixed or variable reference quantity</li> <li>• Counting with reference and bulk scale</li> <li>• Accumulating</li> <li>• Numerical definition of tare weights, average piece weights and reference quantities</li> <li>• 100 memory locations for tare weights, average piece weights, target weights and target quantities</li> <li>• Checkweighing and weighing-in to target weight/target quantity</li> </ul>  |
| Settings                                       | <ul style="list-style-type: none"> <li>• Resolution selectable</li> <li>• Weighing unit selectable: g, kg, oz, lb, t</li> <li>• Taring function: manual, automatic, chain tare</li> <li>• Automatic zero point correction when the scale is switched on and during operation</li> <li>• Filter for adapting to the ambient conditions (vibration adapter)</li> <li>• Filter for adapting to the weighing type, e.g. dispensing (weighing process adapter)</li> <li>• Switch-off function, sleep mode for mains-operated devices, energy-saving mode for battery operation</li> <li>• Display lighting</li> <li>• Add mode for determining the piece weight when counting</li> <li>• Reference optimization</li> <li>• Programmable memories and identifications</li> <li>• Date and time</li> <li>• Signal tone</li> <li>• Graphic display of the weighing range</li> </ul> |
| Accuracy class OIML/NTEP                       | <ul style="list-style-type: none"> <li>• RP..S III</li> <li>• RP..M II</li> </ul>   |
| Display  | <ul style="list-style-type: none"> <li>• LCD (liquid crystal display), digits 16 mm high, with back lighting</li> </ul>   |
| Keypad   | <ul style="list-style-type: none"> <li>• Pressure point membrane keypad</li> <li>• Scratch-proof labeling</li> </ul>  |
| Housing  | <ul style="list-style-type: none"> <li>• Diecast aluminum housing; chromium nickel steel weighing pan</li> <li>• Dimensions, see Page 59</li> </ul>   |
| Protection Class (IEC 529, DIN 40050, EN60529) | <ul style="list-style-type: none"> <li>• IP43 (not with Ethernet interface)</li> </ul>  |

| <b>RP..S, RP..M</b>                             |   |
|---|---|
| Mains connection                                | <p>Direct connection to the mains (MAINS supply voltage fluctuations up to <math>\pm 10\%</math> of the nominal voltage):</p> <ul style="list-style-type: none"> <li>• 230 V, 50 Hz, 70 mA</li> <li>• 240 V, 50 Hz, 70 mA</li> <li>• 120 V, 60 Hz, 90 mA</li> <li>• 100 V, 50/60 Hz, 90 mA</li> </ul> <p>For battery operation:</p> <ul style="list-style-type: none"> <li>• Connection via mains adapter: 90 – 264 V, 47 – 63 Hz, 300 mA</li> <li>• Infeed on the unit: 24 V, 1.3 A</li> </ul>   |
| Battery operation                               | If the voltage supply is interrupted, the unit automatically switches over to battery operation   |
| Ambient conditions                              | <ul style="list-style-type: none"> <li>• Use Indoor use only</li> <li>• Altitude up to 2000 m</li> <li>• Temperature range RP..S <math>-10 \dots +40 \text{ }^\circ\text{C} / 14 \dots 104 \text{ }^\circ\text{F}</math></li> <li>• Temperature range RP..M <math>+10 \dots +30 \text{ }^\circ\text{C} / 50 \dots 86 \text{ }^\circ\text{F}</math></li> <li>• Overvoltage category II</li> <li>• Contamination level 2</li> <li>• Relative humidity Maximum relative humidity 80 % for temperatures up to <math>31 \text{ }^\circ\text{C} / 88 \text{ }^\circ\text{F}</math>, decreasing linearly to 50 % relative humidity at <math>40 \text{ }^\circ\text{C} / 104 \text{ }^\circ\text{F}</math></li> </ul> |
| Interfaces                                      | <ul style="list-style-type: none"> <li>• 1 RS232 interface integrated</li> <li>• 1 other optional interface possible</li> </ul>   |
| Resolution of the analog second scale interface | <ul style="list-style-type: none"> <li>• 300000 points in noncertified configuration</li> <li>• 7000 points in certified configuration</li> </ul>   |
| Supply of the weighing cell                     | <ul style="list-style-type: none"> <li>• 8.2 V</li> </ul>   |

**7.1.3 Weighing ranges and readability RP..S**

The RP..S compact scales with strain gauge weighing cells are supplied in the configuration 2 x 3000 d. Higher legibilities are available from the factory with the optional "Premium" weighing cells.

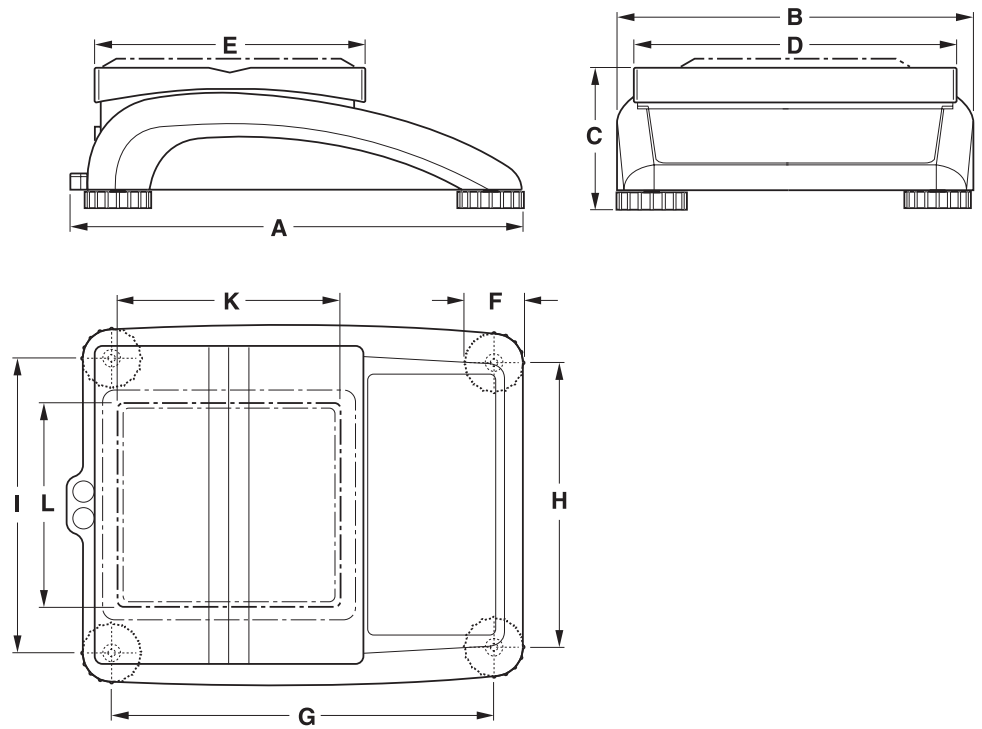
| Capacity | Configuration         |                         |   |                         |
|----------|-----------------------|-------------------------|---|-------------------------|
|          | 2 x 3000 d (standard) |                         | 1 x 6000 d (with optional "Premium" weighing cells) |                         |
|          | Weighing ranges       | Readability (certified) | Weighing range                                      | Readability (certified) |
| 3 kg     | 1.5 kg / 3 kg         | 0.5 g / 1 g             | 3 kg  | 0.5 g                   |
| 6 kg     | 3 kg / 6 kg           | 1 g / 2 g               | 6 kg  | 1 g                     |
| 15 kg    | 6 kg / 15 kg          | 2 g / 5 g               | 15 kg   | 2 g                     |
| 35 kg    | 15 kg / 35 kg         | 5 g / 10 g              | 35 kg   | 5 g                     |
| 60 kg    | 30 kg / 60 kg         | 10 g / 20 g             | 60 kg   | 10 g                    |

**7.1.4 Weighing ranges and readability RP..M**

Configurations up to 1 x 60.000 e are possible with the RP..M compact scales with MonoBloc technology. Certified RP..M compact scales are supplied as standard with an internal calibration weight.

| Model   | Weighing interval(s) | Readability d  | Verification value e |
|---------|----------------------|----------------|----------------------|
| RP3DSM  | 600 g / 3,100 g      | 0.01 g / 0.1 g | 0.1 g                |
| RP3SM   | 3,100 g              | 0.01           | 0.1 g                |
| RP6DSM  | 1,200 g / 6,100 g    | 0.01 g / 0.1 g | 0.1 g                |
| RP6SM   | 6,100 g              | 0.01           | 0.1 g                |
| RP6DRM  | 1,200 g / 6,100 g    | 0.1 g / 1 g    | 1 g                  |
| RP6RM   | 6,100 g              | 0.2 g          | 0.2 g                |
| RP15DLM | 3,500 g / 15,100 g   | 0.1 g / 1 g    | 1 g                  |
| RP15LM  | 15,100 g             | 0.5 g          | 0.5 g                |
| RP35DLM | 7,000 g / 35,100 g   | 0.1 g / 1 g    | 1 g                  |
| RP35LM  | 35,100 g             | 0.1 g          | 1 g                  |

**7.1.5 Dimensions**



|                      | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> | <b>F</b> | <b>G</b> | <b>H</b> | <b>I</b> | <b>K</b> | <b>L</b> |
|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| RP..S. <sup>1)</sup> | 335      | 265      | 100      | 240      | 200      | 46       | 276      | 208      | 216      | 165      | 165      |
| RP..R. <sup>1)</sup> | 335      | 265      | 100      | 240      | 200      | 46       | 276      | 208      | 216      | –        | –        |
| RP..L. <sup>1)</sup> | 370      | 360      | 115      | 350      | 240      | 52       | 310      | 304      | 310      | –        | –        |

<sup>1)</sup> Dimensions in mm

**7.1.6 Net weights**

| <b>Model</b> | <b>without battery</b> | <b>with battery</b> | <b>with internal calibration weight (without battery)</b> |
|--------------|------------------------|---------------------|---|
| RP..RS       | 4.6 kg                 | 5.3 kg              | –   |
| RP..LS       | 8.2 kg                 | 8.9 kg              | –   |
| RP..SM       | 4.9 kg                 | 5.6 kg              | 5.4 kg  |
| RP..RM       | 4.7 kg                 | 5.4 kg              | 5.2 kg  |
| RP..LM       | 10.5 kg                | 11.2 kg             | 11.7 kg   |

### 7.1.7 Interface connections

The compact scale can be fitted with a maximum of 2 interfaces. The following combinations are possible:

| COM1  | COM2                          | Note  |
|-------|-------------------------------|---|
| RS232 | –                             |   |
| RS232 | RS232                         |   |
| RS485 | RS232                         | COM1 can be optionally operated as RS422 or RS485 |
| RS232 | Ethernet                      |   |
| RS232 | USB                           |   |
| RS232 | Digital I/O                   |   |
| RS232 | Analog second scale interface |   |

### 7.1.8 Assignment of the interface connections

| Pin | RS232<br>(COM1/<br>COM2) | RS422<br>(4-wire,<br>COM1) | RS485<br>(2-wire,<br>COM1) | Digital I/O<br>(COM2) | Analog<br>Interface     |
|-----|--------------------------|----------------------------|----------------------------|-----------------------|-------------------------|
| 1   | –                        | –                          | –                          | GND                   | + Excitation (+8.2 VDC) |
| 2   | TxD1/2                   | TxD1–                      | TxD1–/RxD1–                | OUT0                  | + Sense                 |
| 3   | RxD1/2                   | RxD1–                      | –                          | OUT1                  | Shield                  |
| 4   | –                        | –                          | –                          | OUT2                  | – Sense                 |
| 5   | GND                      | GND                        | GND                        | OUT3                  | – Excitation (GND)      |
| 6   | –                        | –                          | –                          | IN0                   | –                       |
| 7   | –                        | TxD1+                      | TxD1+/RxD1+                | IN1                   | + Signal                |
| 8   | –                        | RxD1+                      | –                          | IN2                   | – Signal                |
| 9   | VCC                      | VCC                        | VCC                        | IN3                   | –                       |

## 7.2 Accessories

| <b>Designation</b>           | <b>Order number</b> |
|------------------------------|---------------------|
| In Use Cover for RP..R..     | 21203719            |
| In Use Cover for RP..L..     | 21203720            |
| RS232 Cable for PC           | 80500525            |
| RS232 Cable for Second Scale | 80500526            |
| RS232 Cable for SF42 Printer | 80500571            |
| Anti-theft Device            | 80850000            |
| Carrying Case for RP..R..    | 80850083            |
| Carrying Case for RP..L..    | 80850084            |
| Printer                      | SF42                |

## 8 Appendix

### 8.1 Information for certified scales in EC countries



Weighing instruments verified at the place of manufacture bear the preceding mark on the packing label and green "M" sticker on the descriptive plate. They may be set to work immediately.




Weighing instruments which are verified in two steps have no green "M" on the descriptive plate and bear the preceding identification mark on the packing label. The second step of the verification must be carried out by the approved OHAUS Service or by the W&M authorities. Please contact OHAUS Customer Service.

The first calibration step of the verification has been carried out at the manufacturing plant. It comprises all tests according to EN45501-8.2.2. Scales with analog connection to the weighing platform require an additional test according to EN45501-3.5.3.3. However, this test is not mandatory if the terminal bears the same serial number as the weighing platform.

If national regulations in individual countries limit the period of validity of the certification, the operator of such a scale is himself responsible for its timely re-certification.

### 8.2 Safety checks

The compact scales of the series Ranger RP have been checked by accredited testing institutions. They have passed the safety checks listed below and carry the relevant test symbols. Production is subject to production monitoring by the inspection offices.

| Country         | Test symbol   | Standard  |
|-----------------|---|---|
| Canada<br>USA   |  | CAN/CSA-C22.2 No. 1010.1-92<br>UL Std. No. 61010A-1 |
| Other countries | <b>CB Scheme</b><br>(no identification)   | IEC/EN61010-1:2001                                  |

### 8.3 Table of Geo Values

For weighing instruments verified at the manufacturer's, the geo value indicates the country or geographical zone for which the instrument is verified. The geo value set in the instrument (e.g. "Geo 18") appears briefly after switch-on or is specified on a label.

Table **GEO VALUES 3000e** shows the geo values for European countries.

Table **GEO VALUES 6000e/7500e** shows the geo values for different gravitation zones.

#### 8.3.1 GEO VALUES 3000e, OIML Class III (European Countries)

| Geographical latitude | Geo value | Country       |
|-----------------------|-----------|---------------|
| 46°22' – 49°01'       | 18        | Austria       |
| 49°30' – 51°30'       | 21        | Belgium       |
| 41°41' – 44°13'       | 16        | Bulgaria      |
| 42°24' – 46°32'       | 18        | Croatia       |
| 48°34' – 51°03'       | 20        | Czechia       |
| 54°34' – 57°45'       | 23        | Denmark       |
| 57°30' – 59°40'       | 24        | Estonia       |
| 59°48' – 64°00'       | 25*       | Finland       |
| 64°00' – 70°05'       | 26        |               |
| 41°20' – 45°00'       | 17        | France        |
| 45°00' – 51°00'       | 19*       |               |
| 47°00' – 55°00'       | 20        | Germany       |
| 34°48' – 41°45'       | 15        | Greece        |
| 45°45' – 48°35'       | 19        | Hungary       |
| 63°17' – 67°09'       | 26        | Iceland       |
| 51°05' – 55°05'       | 22        | Ireland       |
| 35°47' – 47°05'       | 17        | Italy         |
| 55°30' – 58°04'       | 23        | Latvia        |
| 47°03' – 47°14'       | 18        | Liechtenstein |
| 53°54' – 56°24'       | 22        | Lithuania     |
| 49°27' – 50°11'       | 20        | Luxemburg     |
| 50°46' – 53°32'       | 21        | Netherlands   |
| 57°57' – 64°00'       | 24*       | Norway        |
| 64°00' – 71°11'       | 26        |               |
| 49°00' – 54°30'       | 21        | Poland        |
| 36°58' – 42°10'       | 15        | Portugal      |
| 43°37' – 48°15'       | 18        | Romania       |

| <b>Geographical latitude</b> | <b>Geo value</b> | <b>Country</b> |
|------------------------------|------------------|----------------|
| 47°44' – 49°46'              | 19               | Slovakia       |
| 45°26' – 46°35'              | 18               | Slovenia       |
| 36°00' – 43°47'              | 15               | Spain          |
| 55°20' – 62°00'              | 24*              | Sweden         |
| 62°00' – 69°04'              | 26               |                |
| 45°49' – 47°49'              | 18               | Switzerland    |
| 35°51' – 42°06'              | 16               | Turkey         |
| 49°00' – 55°00'              | 21*              | United Kingdom |
| 55°00' – 62°00'              | 23               |                |

\* factory setting

**8.3.2 GEO VALUES 6000e/7500e OIML Class III (Height  $\leq$ 1000 m)**

| <b>Geographical latitude</b> | <b>Geo value</b> |
|------------------------------|------------------|
| 00°00' – 12°44'              | 5                |
| 05°46' – 17°10'              | 6                |
| 12°44' – 20°45'              | 7                |
| 17°10' – 23°54'              | 8                |
| 20°45' – 26°45'              | 9                |
| 23°54' – 29°25'              | 10               |
| 26°45' – 31°56'              | 11               |
| 29°25' – 34°21'              | 12               |
| 31°56' – 36°41'              | 13               |
| 34°21' – 38°58'              | 14               |
| 36°41' – 41°12'              | 15               |
| 38°58' – 43°26'              | 16               |
| 41°12' – 45°38'              | 17               |
| 43°26' – 47°51'              | 18               |
| 45°38' – 50°06'              | 19               |
| 47°51' – 52°22'              | 20               |
| 50°06' – 54°41'              | 21               |
| 52°22' – 57°04'              | 22               |
| 54°41' – 59°32'              | 23               |
| 57°04' – 62°09'              | 24               |
| 59°32' – 64°55'              | 25               |
| 62°09' – 67°57'              | 26               |
| 64°55' – 71°21'              | 27               |
| 67°57' – 75°24'              | 28               |
| 71°21' – 80°56'              | 29               |
| 75°24' – 90°00'              | 30               |

## 8.4 Sample protocols

### Weighing with tare

|   |           |
|---|-----------|
| G | 0.1085 kg |
| T | 0.0145 kg |
| N | 0.0940 kg |

G = Gross weight

N = Net weight

T = Tare

Dyn WT = dynamically determined weight

### Dynamic weighing

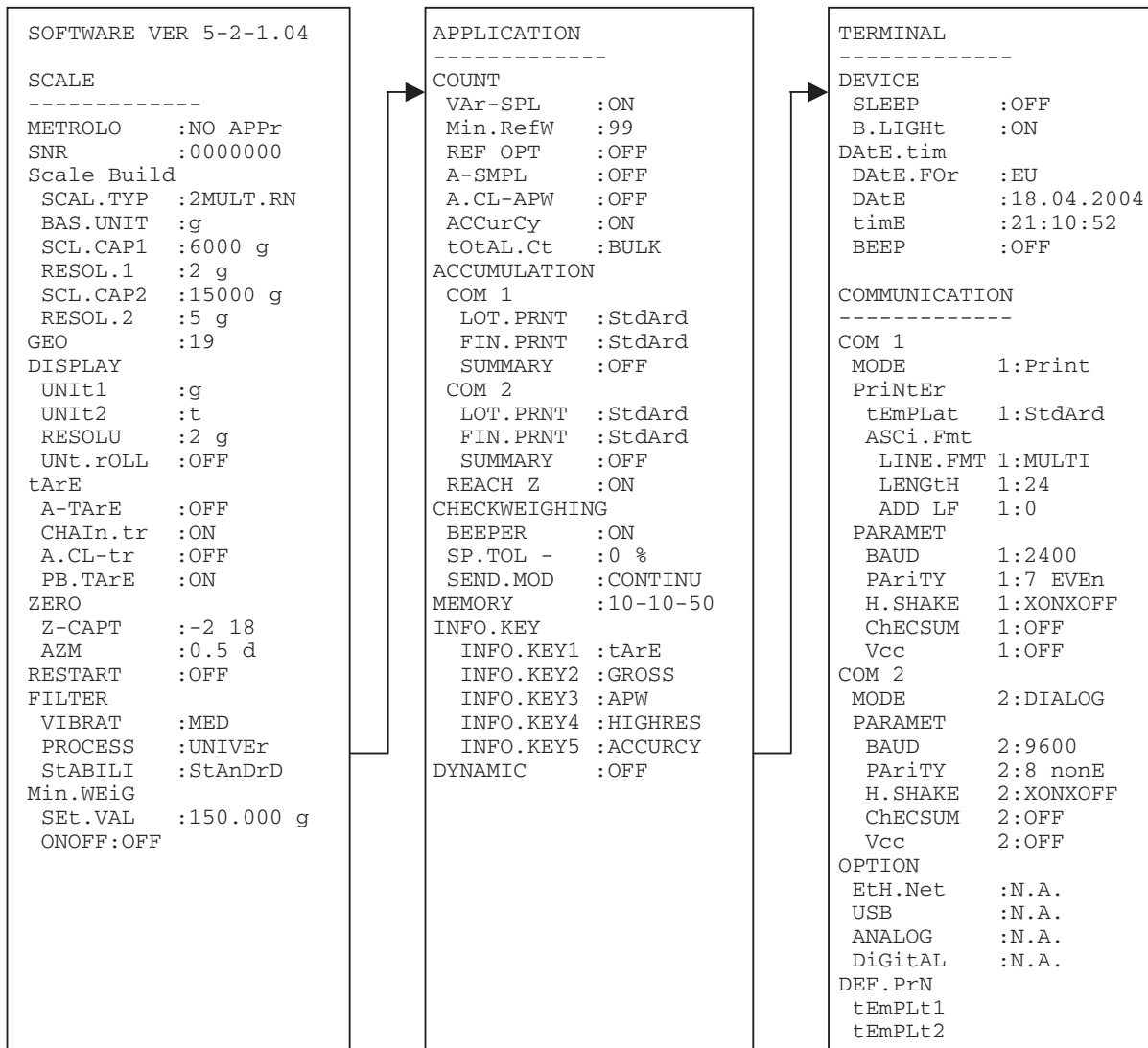
|        |          |
|--------|----------|
| Dyn WT | 43.52 kg |
| T      | 3.78 kg  |

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|   |           |
|---|-----------|
| G | 0.1085 kg |
| T | 0.0145 kg |
| N | 0.0940 kg |

### Protocol of the scale settings (menu point List, see page 46)



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