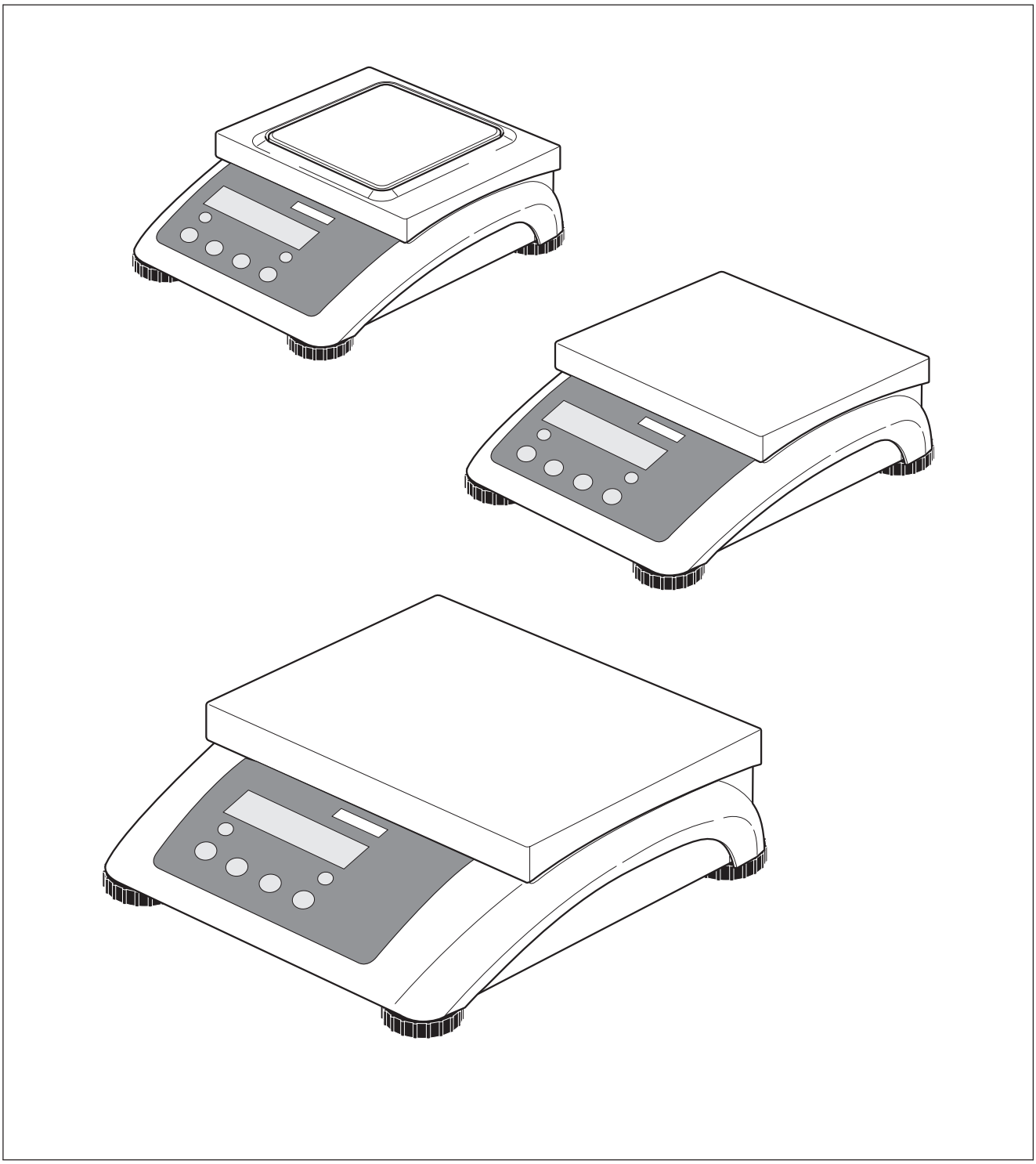
OHAUS®

# Ranger RD Compact Scales

## Instruction Manual



# Table of contents

# 1 Introduction

## 1.1 Safety instructions

**CAUTION!**

Do not use RD..S / RD..S IP65 / RD..M in hazardous areas!

Our product range includes special devices for hazardous areas.


**CAUTION!**

Use only scales with Protection Class IP65, if:

- the scale is used in wet areas
- wet cleaning is necessary
- the scale is used in a dusty environment

Even with Protection Class IP65, the scale must not be used in environments with corrosion risk.

▲ Never flood the scale or immerse it in liquid.

**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.

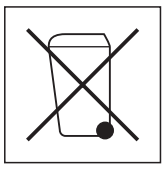
▲ Call OHAUS Service.

**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:

- Ranger RD..S with strain gauge weighing cell, Protection Class IP43
- Ranger RD..S IP with strain gauge weighing cell, Protection Class IP65
- Ranger RD..M with MonoBloc, Protection Class IP43

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

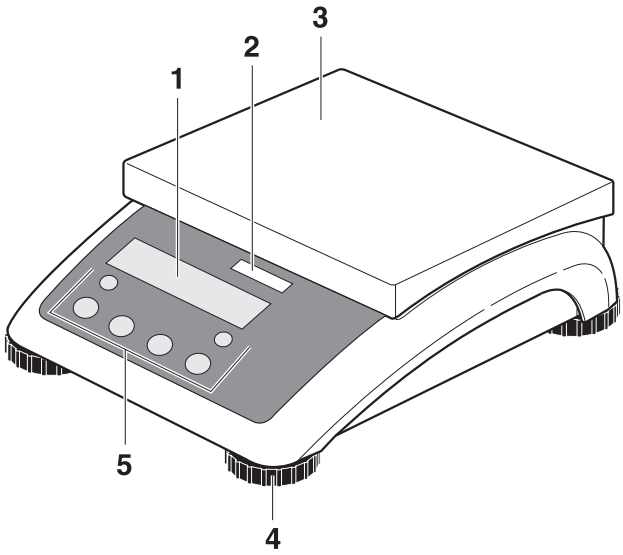
The power supply is carried out via a built-in power supply device, an internal rechargeable battery with an external mains adapter or an external battery.

One of the following options can also be ordered:

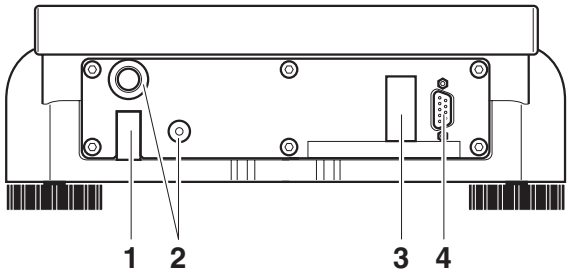
- Additional interface RS232 or RS485
- Ethernet interface
- USB interface
- Digital I/O

### 1.2.1 Overview

**1** Display
**2** Scale specifications
**3** Load plate
**4** Adjustable foot
**5** Keys




**1** Power supply connection
**2** Fast and fine pressure equalization, only with Protection Class IP65
**3** Optional interface
**4** RS232 interface



### 1.2.2 Display


**1** Active interface

**2** Weighing range display

**3** Battery charge level; only present on scales with a battery

**4** Symbol for displaying net values

**5** Symbol for dynamic weighing

**6** Weight units

**7** 7-segment display, 7 digits, with decimal point

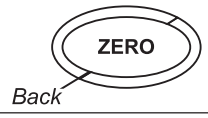
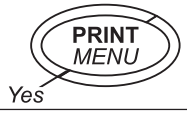
**8** Stability monitor (goes out when a stable weight value is reached)

**9** Sign

**10** 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 |

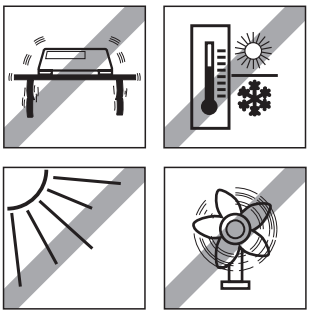
#### Additional functions

| Key | Function |
|---|---|
|  | Switching weight unit |
|  | Clear key |

## 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!

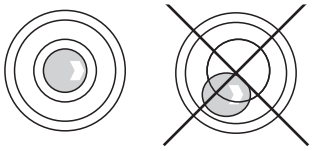


➜ Select a stable, vibration-free and if possible a horizontal location.

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.

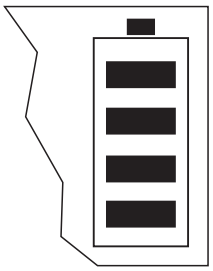
➜ Plug the mains plug into the socket.

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 3.3.1.

**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 **Clear**.

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 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 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.

## 2.6 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 7.4 for sample protocols.

## 2.7 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 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.

## 3.1 Operating the menu

### 3.1.1 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.

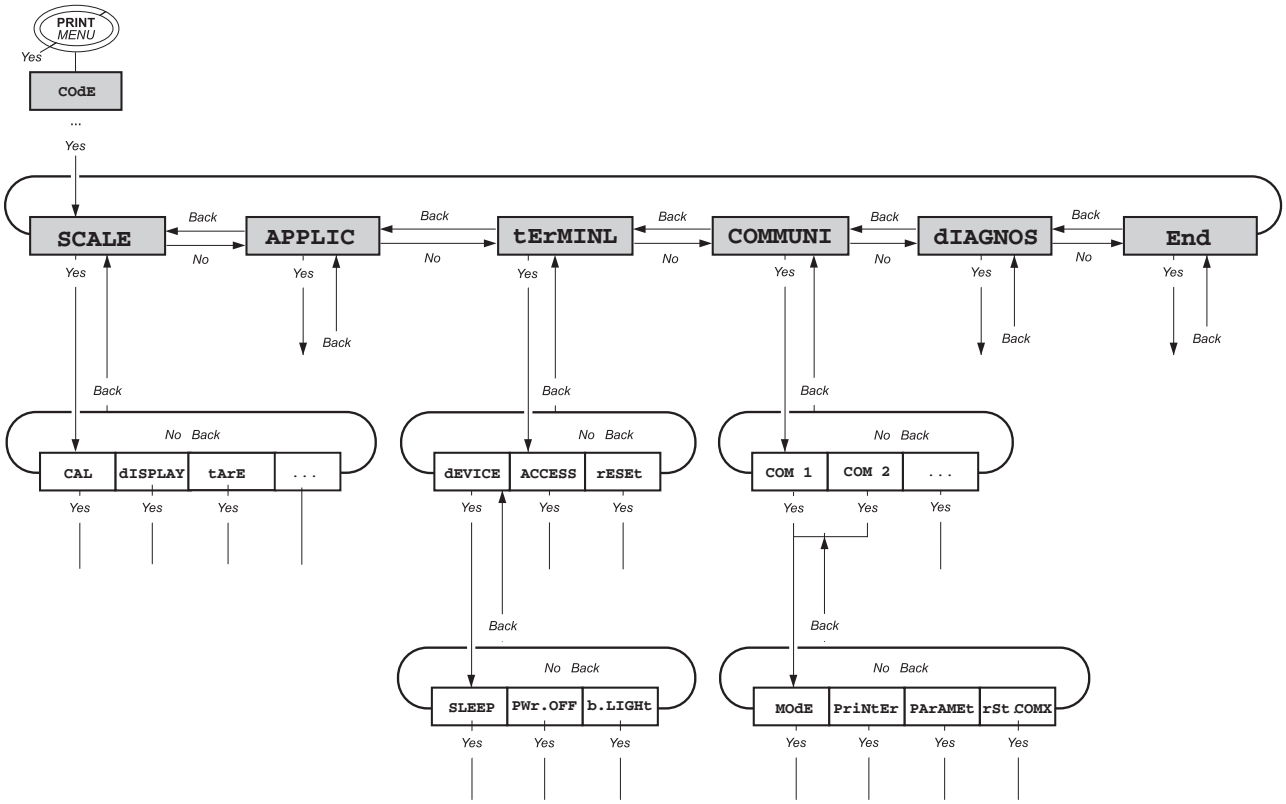
If a password has still not been entered after a few seconds, the scale returns to weighing mode.

#### 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**.

### 3.1.2 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.

## 3.2 Overview

| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | Page |
|---|---|---|---|---|---|---|
| **SCALE** | CAL | | | | | 19 |
| | dISPLAY | UNIt1 | g, **kg**, oz, lb, t | | | 19 |
| | | UNIt2 | **g**, kg, oz, lb, t | | | |
| | | rESOLU | | | | |
| | | UNt.rOLL | ON, **OFF** | | | |
| | tArE | A-tArE | ON, **OFF** | | | 19 |
| | | ChAIn.tr | **ON**, OFF | | | |
| | | A.CL-tr | ON, **OFF** | | | |
| | ZErO | AZM | OFF; 0.5 d; 1 d; 2 d; 5 d; 10 d | | | 20 |
| | rEStArt | ON/**OFF** | | | | 20 |
| | FILtEr | VibrAt | LOW, **MEd**, HIGH, | | | 20 |
| | | PrOCESS | **UNIVEr**, dOSING | | | |
| | | StABILI | FASt, **StAndrd**, PrECISE | | | |
| | FACt | tEMP | OFF, 1K, 2K, 3K, **5K** | | | 20 |
| | Min.WEiG | ON/OFF | ON, **OFF** | | | 21 |
| | rESEt | SUrE? | | | | 21 |
| **APPLIC** | AVErAGE | **OFF**, AUtO, MAnuAL | | | | 21 |
| | rESEt | SUrE? | | | | 21 |
| **tERMINL** | dEVICE | SLEEP | **OFF**, 1 min, 3 min, 5 min | | | 22 |
| | | PWr OFF | **YES**, NO | | | |
| | | b.LIGHt | ON, **OFF** | | | |
| | ACCESS | SUPErVI | | | | 22 |
| | rESEt | SUrE? | | | | 22 |
| **COMMUNI** | COM 1/COM 2 | MOdE | **Print** | | | 23 |
| | | | A.Print | | | |
| | | | CONtINU | | | |
| | | | dIALOG | | | |
| | | | CONt.OLd | | | |
| | | | dIAL.OLd | | | |
| | | | dt-b | GrOSS | ON, OFF | |
| | | | | tArE | ON, OFF | |
| | | | | nEt | ON, OFF | |

| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | Page |
|---|---|---|---|---|---|---|
| | | | dt-G | GrOSS | ON, OFF | |
| | | | | tArE | ON, OFF | |
| | | | | nEt | ON, OFF | |
| | | | COnt-Wt | | | |
| | | | 2nd.dISP | | | |
| | | PriNtEr | tEmPLat | **StdArd**, tEMPLt1, tEMPLt2 | | 23 |
| | | | ASCi.Fmt | LINE.FMt | **MULtI** SINGLE | |
| | | | | LENGtH | 1 … 100 | |
| | | | | SEPArAt | , ;… | |
| | | | | Add LF | 0 … 9 | |
| | | PArAMEt | bAUd | 300 … 38400 | | 23 |
| | | | PArityY | 7 nonE, 8 nonE, 7 odd, 8 odd, **7 EVEN**, 8 EVEN | | |
| | | | H.SHAKE | NO, **XONXOFF**, nEt 422, nEt 485 | | |
| | | | NEt.Addr | 0 … 31 | | |
| | | | ChECSuM | ON, **OFF** | | |
| | | | Vcc | ON, **OFF** | | |
| | | rSt.COMx | SUrE? | | | 24 |
| **COMMUNI** | OPtION | EtH.NEt | IP.AddrS, SUbNEt, GAtEWAY | | | 24 |
| | | USb | USb tESt | | | 24 |
| | | diGitAL | IN 1 … 4 | **OFF**, ZErO, tArE, Print, CLEAr, Unit | | 24 |
| | | | OUT 1 … 4 | **OFF**, StAbLE, bEL.Min, AbV.Min, UndErLd, OVErLd, StAr | | |
| | dEF.PrN | tEmPLt1/ tEMPLt2 | LINE 1 … LINE 20 | **NOt.USEd**, HEAdEr, GrOSS, tArE, nEt, StArLN, CrLF, F FEEd | | 25 |
| **dIAGNOS** | tESt SC | intErN/ExtErN | | | | 26 |
| | KboArd | | | | | |
| | dISPLAY | | | | | |
| | SNr | | | | | |
| | LiSt | | | | | |
| | rESEt.AL | SUrE? | | | | |

## 3.3 Scale settings (SCALE)

### 3.3.1 CAL – calibration (adjustment)

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

| | |
|---|---|
| Internal | For scales **with** an internal calibration weight:<br>1. Unload scale.<br>2. Activate menu item `CAL` with **Yes**. The scale calibrates with the internal calibration weight. `-Int CAL-` appears in the display. After calibration is completed, `-donE-` appears briefly in the display, and the scale automatically returns to weighing mode. |
| External | For scales **without** an internal calibration weight:<br>1. Unload scale.<br>2. Activate menu item `CAL` with **Yes**. The scale determines the zero point. `-0-` appears in the display. The calibration weight to be placed on the scale then flashes in the display.<br>3. If necessary, change the weight value displayed with **No**.<br>4. Place the calibration weight on the scale and confirm with **Yes**.<br>The scale calibrates with the calibration weight loaded. After calibration is completed, `-donE-` appears briefly in the display, and the scale automatically returns to weighing mode. |

### 3.3.2 DISPLAY – weighing unit and display accuracy

| | |
|---|---|
| **`UNIt1`** | Select weighing unit 1: g, kg, oz, lb, t |
| **`UNIt2`** | Select weighing unit 2: g, kg, oz, lb, t |
| **`rESOLU`** | Select readability (resolution), model-dependent |
| **`UNt.rOLL`** | When `UNT.rOLL` is switched on, the weight value can be displayed in all available units with **Units**. |
| Notes | • On certified scales, the weighing units oz and lb are displayed with the symbol *.<br>• On certified scales, resolutions that deviate from the scale definition are displayed without a weighing unit and with the symbol *****.<br>• On dual-range/dual interval scales, resolutions marked with **I<–> 1/2I** are divided up into 2 weighing ranges / intervals, e.g. 2 x 3000 d. |

### 3.3.3 TARE – tare function

| | |
|---|---|
| **`A-tArE`** | Switching on/off automatic taring |
| **`CHAIn.tr`** | Switching on/off chain tare |
| **`A.CL-tr`** | Switching on/off automatic taring with automatic clearing of the tare weight when the load is removed from scale |

### 3.3.4 ZERO – automatic zero update

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

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

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

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

| | |
|---|---|
| **VIbrAt** | Adaptation to the ambient conditions |
| LOW | • Very steady and stable environment. The scale works very quickly, but is very sensitive to external influences. |
| MEd | • Normal environment. The scale operates at medium speed. |
| HIGH | • Restless environment. The scale works more slowly, but is insensitive to external influences. |
| **PrOCESS** | Adaptation to the weighing process |
| UNIVEr | • Universal setting for all weighing samples and normal weighing goods |
| dOSING | • Dispensing liquid or powdery weighing samples |
| **StAbILI** | Adjusting the weighing speed |
| FASt | • The scale operates very fast. |
| StAndrd | • The scale operates at medium speed. |
| PrECISE | • The scale operates with the greatest possible reproducibility.<br>The slower the scale works, the greater the reproducibility of the weighing results. |

### 3.3.7 FACT – automatic temperature-dependent adjustment

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

| | |
|---|---|
| **TEMP** | Defining the temperature difference for automatic calibration |
| OFF | • Switching off automatic calibration in the case of a temperature difference |
| 1K/2K/3K/5K | • Automatic calibration in the case of a temperature change of 1 K, 2 K, 3 K or 5 K since the last adjustment |

### 3.3.8 MIN.WEIG – minimum weight

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

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

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

| | |
|---|---|
| **SUrE?** | Confirmation inquiry<br>• Reset the scale settings to factory settings with **Yes**<br>• Do not reset scale settings with **No** |

## 3.4 Application settings (APPLICATION)

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

| | |
|---|---|
| **OFF** | Calculating average weight switched off |
| **AUtO** | Calculating average weight with automatic start of the weighing cycle |
| **MAnuAL** | Calculating average weight with manual start of the weighing cycle via **PRINT** |

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

| | |
|---|---|
| **SUrE?** | Confirmation inquiry<br>• Reset the application settings to factory settings with **Yes**<br>• Do not reset the application settings with **No** |

## 3.5 Terminal settings (TERMINAL)

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

| | |
|---|---|
| **SLEEP** | This menu item only appears on devices in mains operation.<br>When SLEEP 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.<br>Possible settings: OFF, 1 min, 3 min, 5 min |
| **PWr OFF** | This menu item only appears on devices in battery operation.<br>When PWr OFF is activated, the device switches itself off automatically after approx. 3 minutes when not in use. |
| **b.LIGHt** | Switching the display backlighting on/off.<br>On scales with a battery, the background lighting switches itself off automatically if there has been no activity on the scale for 5 seconds. |
| Note | This menu item is accessible without a Supervisor password. |

### 3.5.2 ACCESS – password for Supervisor menu access

| | |
|---|---|
| **SUPErVI** | Password entry for Supervisor menu access |
| ENtER.C | Request to enter password<br>➜ Enter the password and confirm with **Yes** |
| rEtYPE.C | Request to repeat the password entry<br>➜ Enter the password again and confirm with **Yes** |
| Notes | • The password can consist of up to 4 characters.<br>• The **PRINT** key must not be part of the password. It is required for confirming the password.<br>• The key **ZERO** may only be used in combination with another key.<br>• If you enter an impermissible code or make a typing error in the repetition, COdE.Err. appears in the display. |

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

| | |
|---|---|
| **SUrE?** | Confirmation inquiry<br>• Reset terminal settings to the factory settings with **Yes**<br>• Do not reset the terminal settings with **No** |

## 3.6 Configuring interfaces (COMMUNICATION)

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

| | |
|---|---|
| **Print** | Manual data output to the printer with **PRINT** |
| **A.Print** | Automatic output of stable results to the printer (e. g. for series weighing operations) |
| **CONtINU** | Ongoing output of all weight values via the interface |
| **dIALOG** | Bi-directional communication via OHAUS or MT-SICS commands, control of the scale via PC |
| **CONt.OLd** | As per CONtINU, see above, but with 2 fixed blanks in front of the unit (compatible with Spider 1/2/3) |
| **dIAL.OLd** | As per dIALOG, see above, but with 2 fixed blanks in front of the unit (compatible with Spider 1/2/3) |
| **dt-b** | DigiTOL-compatible format. |
| GROSS | • Transfer of the gross weight, identified with "G" |
| tArE | • Transfer of the tare weight |
| nEt | • Transfer of the net weight |
| **dt-G** | As per dt-b, see above, gross weight identified with "G" |
| **COnt-Wt** | TOLEDO Continuous mode |
| **2nd.dISP** | For connecting a second display (automatically activates the 5-V voltage supply at Pin 9) |

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

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

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

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

| | |
|---|---|
| **bAUd** | Selecting baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 baud |
| **PAritY** | Selecting parity: 7 none, 8 none, 7 odd, 8 odd, 7 even, 8 even |
| **H.SHAKE** | Selecting Handshake: NO, XONXOFF, nEt422, nEt485 (network operation as per RS485 standard via the optional RS422/RS485 interface, only for COM1) |

| | |
|---|---|
| **NET.Addr** | Assigning network address: 0 ... 31, only for NET 485 |
| **ChECSuM** | Activating checksum byte (appears only in TOLEDO Continuous mode) |
| **Vcc** | Switching 5V voltage, e.g. for a bar code reader, on / off |

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

| | |
|---|---|
| **SUrE?** | Confirmation inquiry<br>• Reset interface settings to factory settings with **Yes**<br>• Do not reset the interface settings with **No** |

### 3.6.5 OPTION – configuring options

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

| | |
|---|---|
| **EtH.NEt** | Configuration of the Ethernet interface |
| IP.AddrS | • Enter IP address |
| SUBNEt | • Enter Subnet address |
| GAtEWAY | • Enter Gateway address |
| **USb** | Configuration of the USB interface |
| USb TEST | • Test of the USB interface. After the test has been passed, `rEAdY` appears in the display. |
| **diGitAL** | Configuration of the digital inputs/outputs |
| IN 1 ... 4 | Configuring inputs 1 ... 4 |
| OFF | • Input not assigned |
| ZErO | • **ZERO** Key |
| tArE | • **TARE** Key |
| PriNt | • **PRINT** Key |
| CLEAr | • **Clear** Key |
| UNIt | • **Units** Key |
| OUT 1 ... 4 | • Configuring outputs 1 ... 4 |
| OFF | • Output not assigned |
| StAbLE | • Stable weight value |
| bEL.MIN | • Minimum weight not reached |
| AbV.MIN | • Minimum weight reached or exceeded |
| UNdErLd | • Insufficient load |
| OVErLd | • Overload |
| StAr | • Changed/calculated value |

### 3.6.6 DEF.PRN – configuring templates

| | |
|---|---|
| **tEMPLt1/tEMPLt2** | Selecting Template 1 or Template 2 |
| LINE 1 ... 20 | Select line |
| NOt.USEd | • Line not used |
| HEAdEr | • Line as header. The contents of the header must be defined via an interface command, see Section 4.1. |
| GROSS | • Gross weight |
| tArE | • Tare weight |
| nEt | • Net weight |
| StARLN | • Line with *** |
| CrLF | • Line feed (blank line) |
| F FEEd | • Page feed |

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

| | |
|---|---|
| **tESt SC** | |
| Internal | Testing scale with internal calibration weight<br>• `-Int CAL-` appears in the display during the test.<br>• After completion of the test, ideally `*d=0.0g` briefly appears in the display, after which the scale changes to the next menu item `KboArd`. |
| External | Testing scale with external calibration weight<br>1. The scale checks the zero point. `-0-` appears in the display. The test weight flashes in the display.<br>2. If necessary, change the weight value displayed with **No**.<br>3. Put the calibration weight on the scale and confirm with **Yes**.<br>4. The scale checks the calibration weight put on them.<br>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 `KboArd`. |
| **KboArd** | Keyboard test |
| `PUSH 1 ... 6` | • Press the keys **ON/OFF**, **ZERO**, **TARE**, **PRINT**, **Units**, **Clear** keys in order. If the key works, the scale changes to the next key.<br>**Note**<br>You cannot abort the keyboard test!<br>If you have selected the menu item `KboArd`, you must press all keys. |
| **dISPLAY** | Display test: The scale displays all functioning segments |
| **SNr** | Display of the serial number |
| **LiSt** | Printout of a list of all menu settings |
| **rESEt.AL** | Resetting all menu settings to the factory settings |
| `SUrE?` | Confirmation inquiry<br>• Reset all menu settings to the factory settings with **Yes**<br>• Do not reset the menu settings with **No** |

# 4 Interface description

## 4.1 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.

### 4.1.1 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 continuosly |
| 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>

### 4.1.2 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 3.6.1.
- A terminal progam 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 3.6.3.

### 4.1.3 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** | | | | | | | **2** | **3** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **1** | S | C | A | L | E | : | SP | SC | CR | LF | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **1** | **2** | | | | | | | | | | | | | | | | | | | | | | | **3** | **4** | | | | | | | **5** | **6** | | | **7** | **8** | **9** | |
| **2** | G | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | 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 |
| **3** | T | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | 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 | 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

## 4.2 SICS interface commands

The Ranger RD compact scales support the command set MT-SICS (METTLER TOLEDO Standard Interface Command Set). With MT-SICS it is possible to configure, query and operate the scale 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.

### 4.2.1 Available SICS commands

| | Command | Meaning |
|---|---|---|
| **LEVEL 0** | @ | 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 |
| **LEVEL 1** | 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 |
| **LEVEL 2** | C2 | Calibrate with the external calibration weight |
| | C3 | Calibrate with the internal calibration weight |
| | I10 | Inquire or set scale ID |
| | I11 | Inquiry of scale type |
| | P100 | Print out on the printer |

| | Command | Meaning |
|---|---|---|
| | 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 |
| | TST2 | Start test function with external weight |
| | TST3 | Start test function with internal weight |
| **LEVEL SPECIAL** | CLR | Clear |
| | 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 |
| | PRN | Print out at every printer interface |
| | 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 |

### 4.2.2 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 3.6.1.
- A terminal progam 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 3.6.3.

### 4.2.3 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.

| Description of the steps | Host | Direction | Scale |
|---|---|---|---|
| 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 <CRLF> |

## 4.3 TOLEDO Continuous mode

### 4.3.1 TOLEDO Continuous commands

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

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

### 4.3.2 Output format in TOLEDO Continuous mode

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

| | **Status** | | | **Field 1** | | | | | | **Field 2** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** |
| 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** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **Status Bit** | | | | | | |
| **Function** | **Selection** | **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 |

# 5 Event and error messages

| Error | Cause | Remedy |
|---|---|---|
| Display Dark | • Back lighting set too dark | ➜ Set back lighting (`b.LIGHt`) brighter |
| | • No mains voltage | ➜ Check mains |
| | • Unit switched off | ➜ Switch on unit |
| | • Mains cable not plugged in | ➜ Plug in mains plug |
| | • Brief fault | ➜ Switch device off and back on again |
| Insufficient load<br>L - - - - J | • Load plate not on the scale | ➜ Place load plate on the scale |
| | • Weighing range not reached | ➜ Set to zero |
| Overload<br>r - - - - 7 | • Weighing range exceeded | ➜ Unload scale |
| | | ➜ Reduce preload |
| - - - - - - | • Result not yet stable | ➜ If necessary adjust vibration adapter or weigh dynamically |
| - - no - - | • Function not permissible | ➜ Unload scale and set to zero |
| r - no - 7<br>L - no - J | • Zeroing not possible with overload or insufficient load | ➜ Unload scale |
| Err 6 | • No calibration | ➜ Unplug the mains plug then plug it back in; switch unit off and then back on in battery mode |
| | | ➜ Calibrate scale |
| | | ➜ Call OHAUS Service |
| Err 17 | • Printout not yet ended | ➜ End printout |
| | | ➜ Repeat required action |
| Err 18 | • Switching the weighing unit impermissible during dynamic weighing | ➜ End dynamic weighing |
| | | ➜ Switch weighing unit |
| Err 53 | • EAROM checksum error | ➜ Unplug the mains plug then plug it back in; switch unit off and then back on in battery mode |
| | | ➜ Call OHAUS Service |

| Error | Cause | Remedy |
|---|---|---|
| Weight display unstable | • Restless installation location | ➜ Adjust vibration adapter |
| | • Draft | ➜ Avoid drafts |
| | • Restless weighing sample | ➜ Dynamic weighing |
| | • Contact between weighing pan and/or weighing sample and surroundings | ➜ Remedy contact |
| | • Mains fault | ➜ Check mains |
| Incorrect weight display | • Incorrect zeroing | ➜ Unload scale, set to zero and repeat weighing operation |
| | • Incorrect tare value | ➜ Clear tare |
| | • Contact between weighing pan and/or weighing sample and surroundings | ➜ Remedy contact |
| | • Scale tilted | ➜ Level scale |

# 6 Technical data and accessories

## 6.1 Technical data

### 6.1.1 Type key

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

**Example**

| | |
|---|---|
| RD6RS | compact scale with capacity **6 kg** and **small platform** |
| RD35LM | compact scale with capacity **35 kg** and **large platform** |
| RD3SM | compact scale with capacity **3 kg** and **extra-small platform** |

### 6.1.2 General data

| **RD..S, RD..S IP, RD..M** | | |
|---|---|---|
| Applications | • Weighing<br>• Dynamic weighing | |
| Settings | • Resolution selectable<br>• Weighing unit selectable: g, kg, oz, lb, t<br>• Taring function: manual, automatic, chain tare<br>• Automatic zero point correction when the scale is switched on and during operation<br>• Filter for adapting to the ambient conditions (vibration adapter)<br>• Filter for adapting to the weighing type, e.g. dispensing (weighing process adapter)<br>• Switch-off function, sleep mode for mains-operated devices, energy-saving mode for battery operation<br>• Display lighting | |
| Accuracy class OIML/NTEP | • RD..S<br>• RD..M | III<br>II |
| Display | • LCD (liquid crystal display), digits 16 mm high, with back lighting | |
| Keypad | • Pressure point membrane keypad<br>• Scratch-proof labeling | |
| Housing | • Diecast aluminum housing; chromium nickel steel weighing pan<br>• Dimensions, see Page 37 | |
| Protection Class (IEC 529, DIN 40050, EN60529) | • RD..S, RD..M<br>• RD..S IP | IP43 (not with Ethernet interface)<br>IP65 |

| **RD..S, RD..S IP, RD..M** | | |
|---|---|---|
| Mains connection | Direct connection to the mains (MAINS supply voltage fluctuations up to ±10% of the nominal voltage):<br>• 230 V, 50 Hz, 70 mA<br>• 240 V, 50 Hz, 70 mA<br>• 120 V, 60 Hz, 90 mA<br>• 100 V, 50/60 Hz, 90 mA<br>For battery operation:<br>• Connection via mains adapter: 90 – 264 V, 47 – 63 Hz, 300 mA<br>• Infeed on the unit: 24 V, 1.3 A | |
| Battery operation | If the voltage supply is interrupted, the unit automatically switches over to battery operation | |
| Ambient conditions | • Use | Indoor use only |
| | • Altitude | up to 2000 m |
| | • Temperature range RD..S | –10 .. +40 °C / 14 .. 104 °F |
| | • Temperature range RD..M | +10 .. +30 °C / 50 .. 86 °F |
| | • Overvoltage category | II |
| | • Contamination level | 2 |
| | • Relative humidity | Maximum relative humidity 80 % for temperatures up to 31 °C / 88 °F, decreasing linearly to 50 % relative humidity at 40 °C / 104 °F |
| Interfaces | • 1 RS232 interface integrated<br>• 1 other optional interface possible | |

### 6.1.3 Weighing ranges and readability RD..S

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

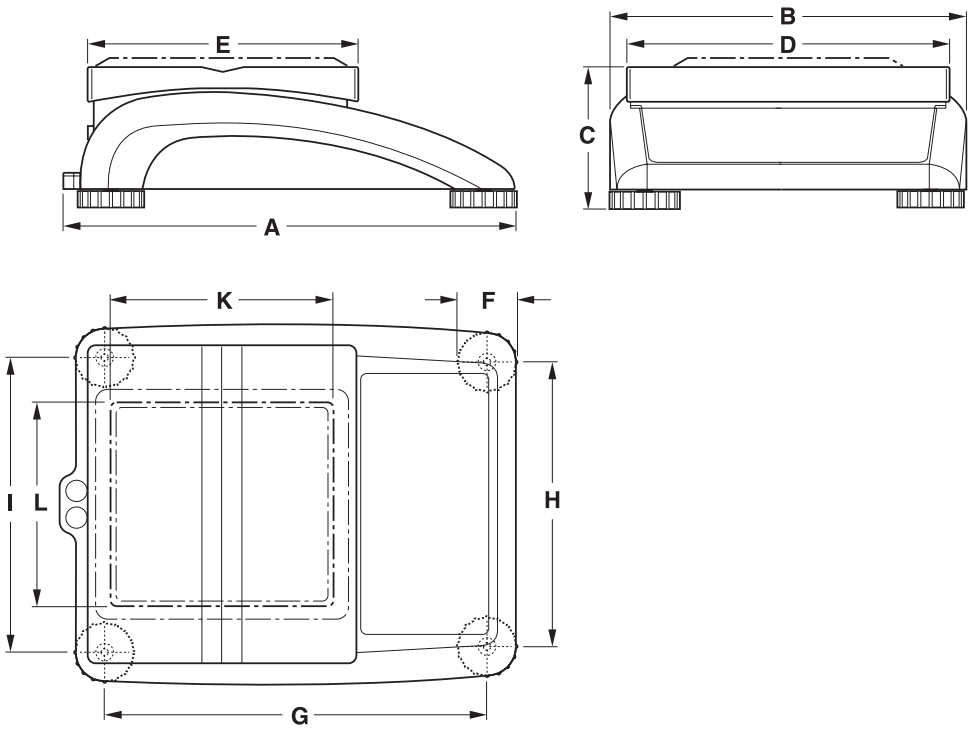
| **Capacity** | **Configuration** | | | |
|---|---|---|---|---|
| | **2 x 3000 d (standard)** | | **1 x 6000 d (with optional "Premium" weighing cells** | |
| | **Weighing ranges** | **Readability (certified)** | **Weighing range** | **Readability (certified)** |
| 3 kg | 1.5 kg / 3 kg | 0.5 g / 1 g | 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 |

### 6.1.4 Weighing ranges and readability RD..M

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

| **Model** | **Weighing interval(s)** | **Readability d** | **Verification value e** |
|---|---|---|---|
| RD3DSM | 600 g / 3,100 g | 0.01 g / 0.1 g | 0.1 g |
| RD3SM | 3,100 g | 0.01 | 0.1 g |
| RD6DSM | 1,200 g / 6,100 g | 0.01 g / 0.1 g | 0.1 g |
| RD6SM | 6,100 g | 0.01 | 0.1 g |
| RD6DRM | 1,200 g / 6,100 g | 0.1 g / 1 g | 1 g |
| RD6RM | 6,100 g | 0.2 g | 0.2 g |
| RD15DLM | 3,500 g / 15,100 g | 0.1 g / 1 g | 1 g |
| RD15LM | 15,100 g | 0.5 g | 0.5 g |
| RD35DLM | 7,000 g / 35,100 g | 0.1 g / 1 g | 1 g |
| RD35LM | 35,100 g | 0.1 g | 1 g |

### 6.1.5 Dimensions




| | A | B | C | D | E | F | G | H | I | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RD..S.. [1] | 335 | 265 | 100 | 240 | 200 | 46 | 276 | 208 | 216 | 165 | 165 |
| RD..R.. [1] | 335 | 265 | 100 | 240 | 200 | 46 | 276 | 208 | 216 | – | – |
| RD..L.. [1] | 370 | 360 | 115 | 350 | 240 | 52 | 310 | 304 | 310 | – | – |

[1] Dimenions in mm

### 6.1.6 Net weights

| Model | without battery | with battery | with internal calibration weight (without battery) |
|---|---|---|---|
| RD..RS | 4.6 kg | 5.3 kg | – |
| RD..RS IP | 4.7 kg | 5.4 kg | – |
| RD..LS | 8.2 kg | 8.9 kg | – |
| RD..LS IP | 8.3 kg | 9.0 kg | – |
| RD..SM | 4.9 kg | 5.6 kg | 5.4 kg |
| RD..RM | 4.7 kg | 5.4 kg | 5.2 kg |
| RD..LM | 10.5 kg | 11.2 kg | 11.7 kg |

### 6.1.7 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 | not for RD..S IP |
| RS232 | USB | |
| RS232 | Digital I/O | |

### 6.1.8 Assignment of the interface connections

| Pin | RS232 (COM1/COM2) | RS422 (4-wire, COM1) | RS485 (2-wire, COM1) | Digital I/O (COM2) |
|---|---|---|---|---|
| 1 | – | – | – | GND |
| 2 | TxD1/2 | TxD1– | TxD1–/RxD1– | OUT0 |
| 3 | RxD1/2 | RxD1– | – | OUT1 |
| 4 | – | – | – | OUT2 |
| 5 | GND | GND | GND | OUT3 |
| 6 | – | – | – | IN0 |
| 7 | – | TxD1+ | TxD1+/RxD1+ | IN1 |
| 8 | – | RxD1+ | – | IN2 |
| 9 | VCC | VCC | VCC | IN3 |

## 6.2 Accessories

| Designation | Order number |
|---|---|
| In Use Cover for RD..R.. | 21203719 |
| In Use Cover for RD..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 RD..R.. | 80850083 |
| Carrying Case for RD..L.. | 80850084 |
| Printer | SF42 |

# 7 Appendix

## 7.1 Information for certified scales in EC countries

M 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.

M Weighing instruments which are verified in two steps have no green "M" on the descriptive plate and bear the preceding identifaction 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.

## 7.2 Safety checks

The compact scales of the Ranger RD series 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 | C US | CAN/CSA-C22.2 No. 1010.1-92<br>UL Std. No. 61010A-1 |
| Other countries | **CB Scheme**<br>(no identification) | IEC/EN61010-1:2001 |

## 7.3 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.

### 7.3.1 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'<br>64°00' – 70°05' | 25*<br>26 | Finland |
| 41°20' – 45°00'<br>45°00' – 51°00' | 17<br>19* | France |
| 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 | Lithuiania |
| 49°27' – 50°11' | 20 | Luxemburg |
| 50°46' – 53°32' | 21 | Netherlands |
| 57°57' – 64°00'<br>64°00' – 71°11' | 24*<br>26 | Norway |
| 49°00' – 54°30' | 21 | Poland |
| 36°58' – 42°10' | 15 | Portugal |
| 43°37' – 48°15' | 18 | Romania |

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

* factory setting

### 7.3.2 GEO VALUES 6000e/7500e OIML Class III (Height ≤1000 m)

| Geograhical latitude | Geo value |
|---|---|
| 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 |

## 7.4 Sample protocols

**Weighing with tare**

```
G          0.1085 kg
T          0.0145 kg
N          0.0940 kg
```

**Dynamic weighing**

```
Dyn WT     43.52 kg
T           3.78 kg
```

**Printout with header**

```
OHAUS CORP.
www.ohaus.com


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

**Protocol of the scale settings** (menu point `List`, see page 26)

```
SOFTWARE VER 7-0-1.01b

SCALE
-------------
METROLO     :NO APPr
SNR         :0000000
Scale Build
 SCAL.TYP   :2MULT.RN
 BAS.UNIT   :kg
 SCL.CAP1   :1.5000 kg
 RESOL.1    :0.0005 kg
 SCL.CAP2   :3.000 kg
 RESOL.2    :0.001 kg
GEO         :19
DISPLAY
 UNIt1      :kg
 UNIt2      :g
 RESOLU     :0.0005 kg
 UNt.rOLL   :ON
tArE
 A-TArE     :OFF
 CHAIn.tr   :OFF
 A.CL-tr    :OFF
 PB.TArE    :ON
ZERO
 Z-CAPT     :-2 18
 AZM        :2 d
RESTART     :ON
FILTER
 VIBRAT     :MED
 PROCESS    :UNIVEr
 StABILI    :FASt
Min.WEiG
 SEt.VAL    :0.200 kg
 ONOFF      :OFF

APPLICATION
-------------
DYNAMIC     :OFF

TERMINAL
-------------
DEVICE
 SLEEP      :OFF
 B.LIGHt    :OFF
```

```
COMMUNICATION
-------------
COM 1
 MODE      1:Print
 PriNtEr
  tEmPLat  1:StdArd
  ASCi.Fmt
   LINE.FMT1:MULTI
   LENGtH  1:0
   ADD LF  1:0
 PARAMET
  BAUD     1:9600
  PAriTY   1:8 nonE
  H.SHAKE  1:XONXOFF
  ChECSUM  1:OFF
  Vcc      1:OFF
COM 2
 MODE      2:DIALOG
 PARAMET
  BAUD     2:9600
  PAriTY   2:8 nonE
  H.SHAKE  2:XONXOFF
  ChECSUM  2:OFF
  Vcc      2:OFF
OPTION
 EtH.NEt    :N.A.
 USB        :N.A.
DEF.PrN
 tEmPLt1
  LINE 1    :HEAdEr
  LINE 2    :CrLF
  LINE 3    :GROSS
  LINE 4    :tArE
  LINE 5    :nEt
  LINE 6    :F FEEd
  LINE 7    :STARLN
  LINE 8    :CrLF
 tEmPLt2
```

# 8 Index

## LIMITED WARRANTY

Ohaus products are warranted against defects in materials and workmanship from the date of delivery through the duration of the warranty period. During the warranty period Ohaus will repair, or, at its option, replace any component(s) that proves to be defective at no charge, provided that the product is returned, freight prepaid, to Ohaus.

This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than Ohaus. In lieu of a properly returned warranty registration card, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by Ohaus Corporation. Ohaus Corporation shall not be liable for any consequential damages.

As warranty legislation differs from state to state and country to country, please contact Ohaus or your local Ohaus dealer for further details.

Ohaus Corporation

with offices worldwide



Printed in Germany