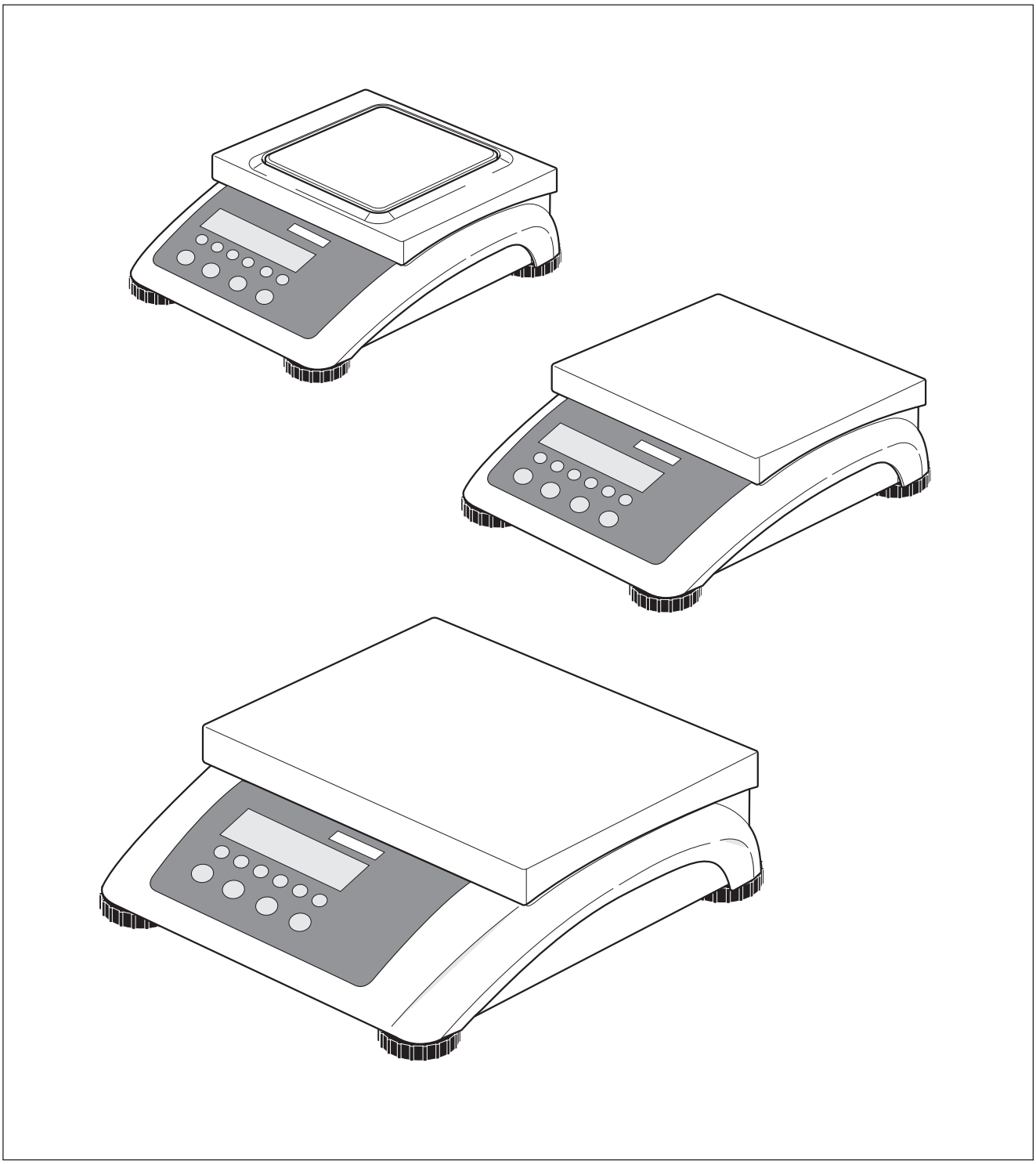
Ranger RC Compact Scales
Instruction Manual



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1 Introduction

1.1 Safety instructions

CAUTION!

Do not use Ranger RC 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 RC..S with strain gauge weighing cell
- Compact scale RC..M with Monobloc

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

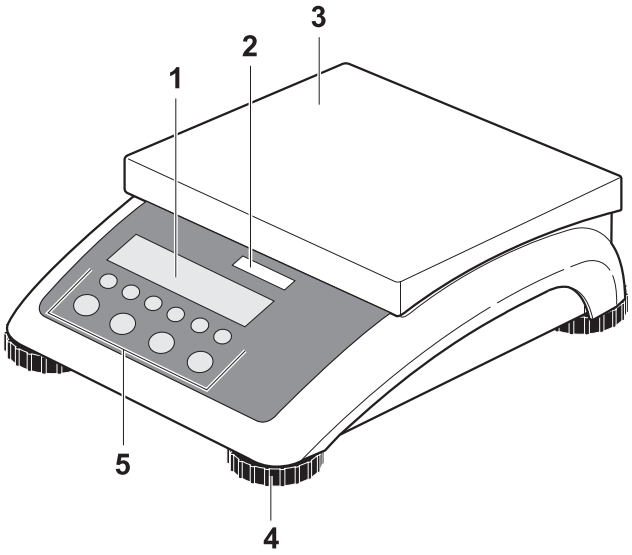
The power supply is carried out via a built-in power supply device, an internal rechargeable battery with an external mains adapter or an external battery.

One of the following options can also be ordered:

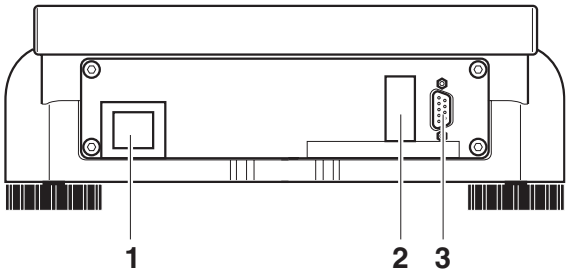
- Additional interface RS232 or RS485
- Ethernet interface
- USB interface
- Digital I/O
- Analog second scale interface

1.2.1 Overview

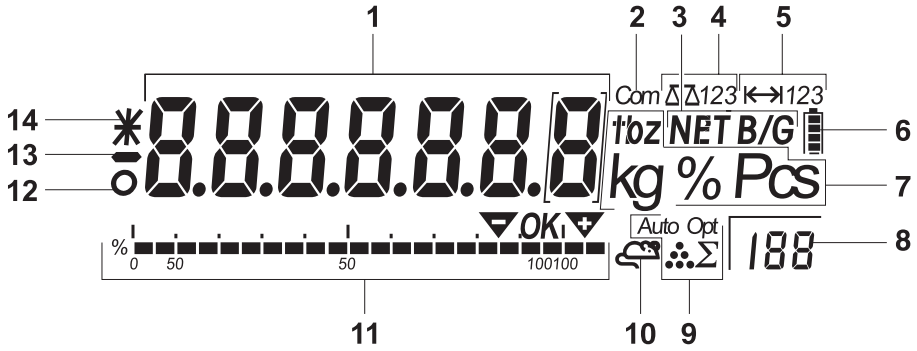
1 Display
2 Scale specifications
3 Load plate
4 Adjustable foot
5 Keys



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

10 Symbol for dynamic weighing

11 Graphic display of the weighing range

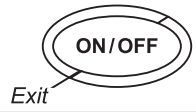
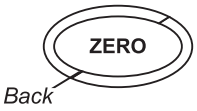
12 Stability monitor (goes out when a stable weight value is reached)

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 Long key press: Calling up menu	Activating menu item Accepting selected setting

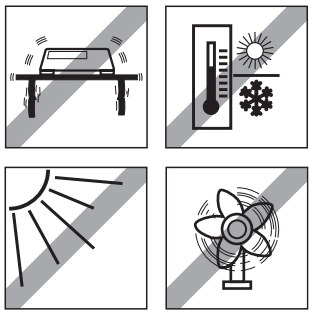
Additional functions

Key	Function
	Switching between gross and net weight; displaying tare specification
	Calling up additional information, e.g. gross weight, average piece weight, higher resolution …
	Switching the scale
	Switching between weight value and number of pieces
	Determining average piece weight from 10 pieces
	Determining average piece weight from any number of pieces

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!

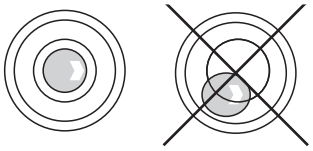


➜ Select a stable, vibration-free and if possible a horizontal location.

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.

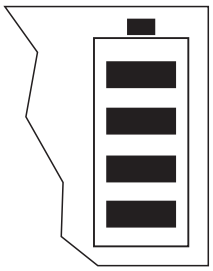
➜ Plug the mains plug into the socket.

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.

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 Calling up the gross weight and tare value

1. Press **G/N/T**.

   The gross weight is displayed for 2 seconds.

2. Press **G/N/T** again while the gross weight is displayed.

   The tare value is displayed. After a few seconds, the scale changes back to the net weight display.

2.6 Displaying weight values with a higher resolution

➜ Press **Info**.

The current weight value is displayed for 2 seconds in a higher resolution. The scale then changes back to the normal resolution.

2.7 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.

2.8 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.

2.9 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 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.

2.11 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 Ranger RC compact scales 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.

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 weight.
- When the number of pieces is displayed, it is possible to display the average piece weight with **Info**, i. e. the weight of a single reference part, for 2 seconds.
- 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

If `VAr-SPL ON` is set in the menu, it is possible to select from 5 preset reference quantities via **Sample Size**.

➜ Press **Sample Size** as often as necessary until th e display above the key has changed to the desired reference quantity.

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 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.

3.7.1 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.

3.7.2 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.

3.7.3 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.

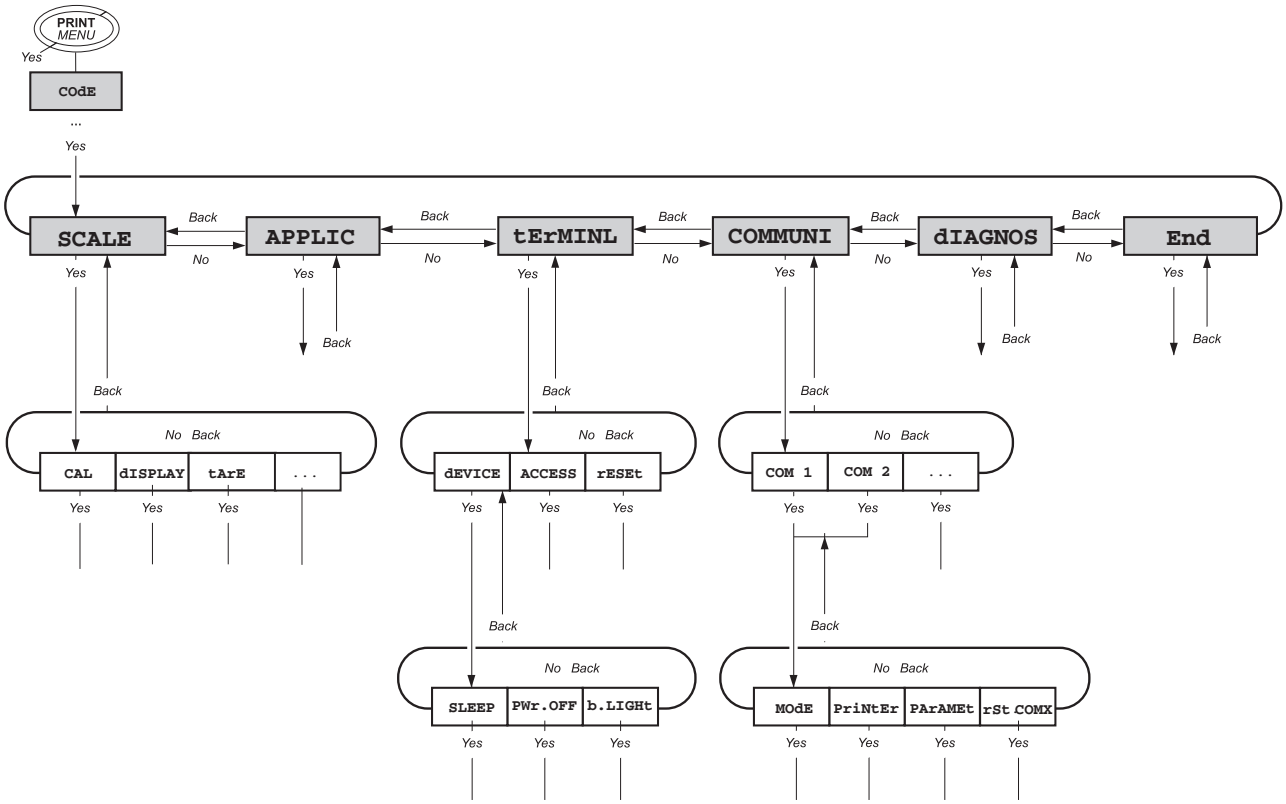
If a password has still not been entered after a few seconds, the scale returns to weighing mode.

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
SCALE	SCALE1/SCALE2					26
	CAL					26
	dISPLAY	UNIt1	g, **kg**, oz, lb, t			26
		UNIt2	**g**, kg, oz, lb, t			
		rESOLU				
		UNt.rOLL	ON, **OFF**			
	tArE	A-tArE	ON, **OFF**			27
		ChAIn.tr	**ON**, OFF			
		A.CL-tr	ON, **OFF**			
	ZErO	AZM	OFF; 0.5 d; 1 d; 2 d; 5 d; 10 d			27
	rEStArt	ON/**OFF**				27
	FILtEr	VibrAt	LOW, **MEd**, HIGH,			27
		PrOCESS	**UNIVEr**, dOSING			
		StABILI	FASt, **StAndrd**, PrECISE			
	FACt	tEMP	OFF, 1K, 2K, 3K, **5K**			28
	Min.WEiG	ON/OFF	ON, **OFF**			28
	rESEt	SUrE?				28
APPLIC	COUNt	VAr-SPL	ON, **OFF**			28
		SPL-qtY	Sq1 ... Sq5			
		Min.reFW	**OFF**, 97.5%, 99.0%, 99.5%			
		rEF OPt	**OFF**, AUtO			
		A-SMPL	ON, **OFF**			
		A.CL-APW	ON, **OFF**			
		ACCurCY	ON, **OFF**			
		tOtAL.Ct	**bULK**, bOth			
	AVErAGE	**OFF**, AUtO, MAnuAL				29
	rESEt	SUrE?				29
tERMINL	dEVICE	SLEEP	**OFF**, 1 min, 3 min, 5 min			30
		PWr OFF	**YES**, NO			
		b.LIGHt	ON, **OFF**			
	ACCESS	SUPErVI				30
	rESEt	SUrE?				30

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Page
COMMUNI	COM 1/COM 2	MOdE	**Print**			31
			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			
			2nd.dISP			
			rEF			
			bULK			
			AuXILIA			
		PriNtEr	tEmPLat	**StdArd**, tEMPLt1, tEMPLt2		31
			ASCi.Fmt	LINE.FMt	**MULtI** SINGLE	
				LENGtH	1 … 100	
				SEPArAt	, ;…	
				Add LF	0 … 9	
		PArAMEt	bAUd	300 … 38400		32
			PAritY	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?			32

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Page
COMMUNI	OPtION	EtH.NEt	IP.AddrS, SUbNEt, GAtEWAY			32
		USb	USb tESt			32
		diGitAL	IN 1 … 4	**OFF**, ZErO, tArE, Print, rEF 10, rEF n, SCALE, Unit		32
			OUT 1 … 4	**OFF**, StAbLE, bEL.Min, AbV.Min, UndErLd, OVErLd, StAr		
		ANALOG	Mode	**rEF**, bULK, AuXILIA, bYPASS		32
	dEF.PrN	tEMPLt1/ tEMPLt2	LINE 1 ... LINE 20	**NOt.USEd**, HEAdEr, SCALE.NO, GrOSS, tArE, nEt, APW, rEF Ct, PCS, StArLN, CrLF, F FEEd		33
dIAGNOS	tESt SC	intErN/ExtErN				34
	KboArd					
	dISPLAY					
	SNr					
	SNr2					
	LiSt					
	LiSt2					
	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	For scales **with** an internal calibration weight: 1. Unload scale. 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: 1. Unload scale. 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. 3. If necessary, change the weight value displayed with **No**. 4. Place the calibration weight on the scale and confirm with **Yes**. 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.

4.3.3 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 and as pieces with **Count Weight**.
Notes	• On certified scales, the weighing units oz and lb are displayed with the symbol *. • On certified scales, resolutions that deviate from the scale definition are displayed without a weighing unit and with the symbol *****. • 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.

4.3.4 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

4.3.5 ZERO – automatic zero update

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

4.3.6 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.

4.3.7 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. 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.

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

4.3.9 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 If the weight on the scale falls below the stored minimum weight, an * appears on the display in front of the weight indicator.

4.3.10 RESET – resetting scale settings to factory settings

SUrE?	Confirmation inquiry • Reset the scale settings to factory settings with **Yes** • Do not reset scale settings with **No**

4.4 Application settings (APPLICATION)

4.4.1 COUNT – settings for counting

VAr-SPL ON OFF	Adaptation of the reference quantity • The reference quantity can be changed in operating mode • Counting only with defined reference quantities
SPL-qtY Sq1 ... Sq5	Reference quantity • Define 5 fixed reference quantities
Min.reFW OFF 97.5, 99.0, 99.5	Monitoring the minimum reference weight • No monitoring of the minimum reference weight • Monitoring the minimum reference weight so that a counting accuracy of 97.5 %, 99.0 % or 99.5 % is achieved
rEF.OPt OFF AUtO	Optimizing the average piece weight • No reference optimization • Automatic reference optimization

A-SMPL	Automatic determination of the average piece weight
ON	• After taring, the average piece weight is determined with the next weight placed on the scale and the displayed reference quantity
OFF	• No automatic determination of the average piece weight
A.CL-APW	Automatic clearing of the average piece weight
ON	• 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.
OFF	• The average piece weight is maintained until a new average piece weight is determined
ACCurCY	Displaying the counting accuracy
ON	• After the average piece weight is determined, the counting accuracy that can be achieved is shown briefly in the display.
OFF	• No counting accuracy display
tOtAl.Ct	Counting on two scales
bULK	• Display number of pieces for the parts on the bulk scale only
bOth	• Display number of pieces for all parts on the bulk and the reference scale

4.4.2 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**

4.4.3 RESET – resetting application settings to factory settings

SUrE?	Confirmation inquiry • Reset the application settings to factory settings with **Yes** • Do not reset the application settings with **No**

4.5 Terminal settings (TERMINAL)

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

SLEEP	This menu item only appears on devices in mains operation. 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. Possible settings: OFF, 1 min, 3 min, 5 min
PWr OFF	This menu item only appears on devices in battery operation. 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. 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.

4.5.2 ACCESS – password for Supervisor menu access

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

4.5.3 RESET – resetting terminal settings to the factory settings

SUrE?	Confirmation inquiry • Reset terminal settings to the factory settings with **Yes** • Do not reset the terminal settings with **No**

4.6 Configuring interfaces (COMMUNICATION)

4.6.1 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
COnt-Ct	TOLEDO Continuous mode, transfer of the number of pieces
2nd.dISP	For connecting a second display (automatically activates the 5-V voltage supply at Pin 9)
rEF	Data transfer from the reference scale (automatic switchover)
bULK	Data transfer from the quantity scale (automatic switchover)
AuXILIA	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.

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

4.6.3 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

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

SUrE?	Confirmation inquiry • Reset interface settings to factory settings with **Yes** • Do not reset the interface settings with **No**

4.6.5 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
rEF 10	• **Sample 10** Key
rEF n	• **Sample Size** Key
SCALE	• **Scale Select** Key
UNIt	• **Count Weight** 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
ANALOG	Configuration of the analog second scale interface
Mode	Operating mode of the second scale
rEF	• Second scale can only be used to determine the average piece weight
bULK	• Second scale can only be used as bulk scale
AuXILIA	• No difference between reference and bulk scale, all functions available on the scale selected
BYPASS	• Second scale interface not assigned

4.6.6 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 5.1.
SCALE.NO	• Scale number
GROSS	• Gross weight
tArE	• Tare weight
nEt	• Net weight
APW	• Average piece weight
rEF Ct	• Reference quantity
PCS	• Pieces
StARLN	• Line with ***
CrLF	• Line feed (blank line)
F FEEd	• Page feed

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

tESt SC	
Internal	Testing scale with internal calibration weight • `-Int CAL-` appears in the display during the test. • 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 1. The scale checks the zero point. `-0-` appears in the display. The test weight flashes in the display. 2. If necessary, change the weight value displayed with **No**. 3. Put the calibration weight on the scale and confirm with **Yes**. 4. The scale checks the calibration weight put on them. 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 ... 10`	• First press the large keys on the bottom row in order: **ON/OFF**, **ZERO**, **TARE**, **PRINT** • Then press the smaller keys in the top row: **G/N/T**, **Info**, **Scale Select**, **Count Weight**, **Sample 10**, **Sample Size** If the key works, the scale changes to the next key. **Note** You cannot abort the keyboard test! 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
SNr2	Display of the serial number of scale 2. This menu item only appears if an analog second scale is connected.
LiSt	Printout of a list of all menu settings
LiSt2	Printout of a list of all menu settings of scale 2. This menu item only appears if an analog second scale is connected.
rESEt.AL	Resetting all menu settings to the factory settings
`SUrE?`	Confirmation inquiry • Reset all menu settings to the factory settings with **Yes** • Do not reset the menu settings with **No**

5 Interface description

5.1 OHAUS interface commands

The Ranger RC 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 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>

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 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 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.

5.1.4 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	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	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	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 RC 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**
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 3	PW	Average piece weight
LEVEL SPECIAL	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
	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 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 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.

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>

5.3 TOLEDO Continuous mode

5.3.1 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
Tx.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:

	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

6 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 L - - - - J	• Load plate not on the scale	➜ Place load plate on the scale
	• Weighing range not reached	➜ Set to zero
Overload 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 L - no - J	• Zeroing not possible with overload or insufficient load	➜ Unload scale
Err 4	• Average piece weight too low	➜ Select and place larger number of reference parts on the scale
Err 5	• No valid value from the reference scale	➜ Check cable connection between the units
		➜ Check interface settings
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 7	• Average piece weight too low	➜ Counting is not possible on this scale with this average piece weight

Error	Cause	Remedy
Err 9	• Unstable weight value when referencing	➜ Ensure stable surroundings ➜ Ensure that the weighing pan is freely movable ➜ Adjust vibration adapter
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
Weight display unstable	• Restless installation location • Draft • Restless weighing sample • Contact between weighing pan and/or weighing sample and surroundings • Mains fault	➜ Adjust vibration adapter ➜ Avoid drafts ➜ Dynamic weighing ➜ Remedy contact ➜ Check mains
Incorrect weight display	• Incorrect zeroing • Incorrect tare value • Contact between weighing pan and/or weighing sample and surroundings • Scale tilted	➜ Unload scale, set to zero and repeat weighing operation ➜ Clear tare ➜ Remedy contact ➜ Level scale

7 Technical data and accessories

7.1 Technical data

7.1.1 Type key

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

Example

RC6RS	compact scale with capacity **6 kg** and **small platform**
RC35LM	compact scale with capacity **35 kg** and **large platform**
RC3SM	compact scale with capacity **3 kg** and **extra-small platform**

7.1.2 General data

RC..S, RC..M	
Applications	• Weighing • Dynamic weighing • Counting with fixed or variable reference quantity • Counting with reference and bulk scale
Settings	• Resolution selectable • Weighing unit selectable: g, kg, oz, lb, t • Taring function: manual, automatic, chain tare • Automatic zero point correction when the scale is switched on and during operation • Filter for adapting to the ambient conditions (vibration adapter) • Filter for adapting to the weighing type, e.g. dispensing (weighing process adapter) • Switch-off function, sleep mode for mains-operated devices, energy-saving mode for battery operation • Display lighting • Add mode for determining the piece weight when counting • Reference optimization • Graphic display of the weighing range
Accuracy class OIML/NTEP	• RC..S III • RC..M II
Display	• LCD (liquid crystal display), digits 16 mm high, with back lighting
Keypad	• Pressure point membrane keypad • Scratch-proof labeling

RC..S, RC..M		
Housing	• Diecast aluminum housing; chromium nickel steel weighing pan • Dimensions, see Page 47	
Protection Class (IEC 529, DIN 40050, EN60529)	• IP43 (not with Ethernet interface)	
Mains connection	Direct connection to the mains (MAINS supply voltage fluctuations up to ±10% of the nominal voltage): • 230 V, 50 Hz, 70 mA • 240 V, 50 Hz, 70 mA • 120 V, 60 Hz, 90 mA • 100 V, 50/60 Hz, 90 mA For battery operation: • Connection via mains adapter: 90 – 264 V, 47 – 63 Hz, 300 mA • 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 RC..S	–10 .. +40 °C / 14 .. 104 °F
	• Temperature range RC..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 • 1 other optional interface possible	
Resolution of the analog second scale interface	• 300000 points in noncertified configuration • 7000 points in certified configuration	
Supply of the weighing cell	• 8.2 V	

7.1.3 Weighing ranges and readability RC..S

The RC..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.

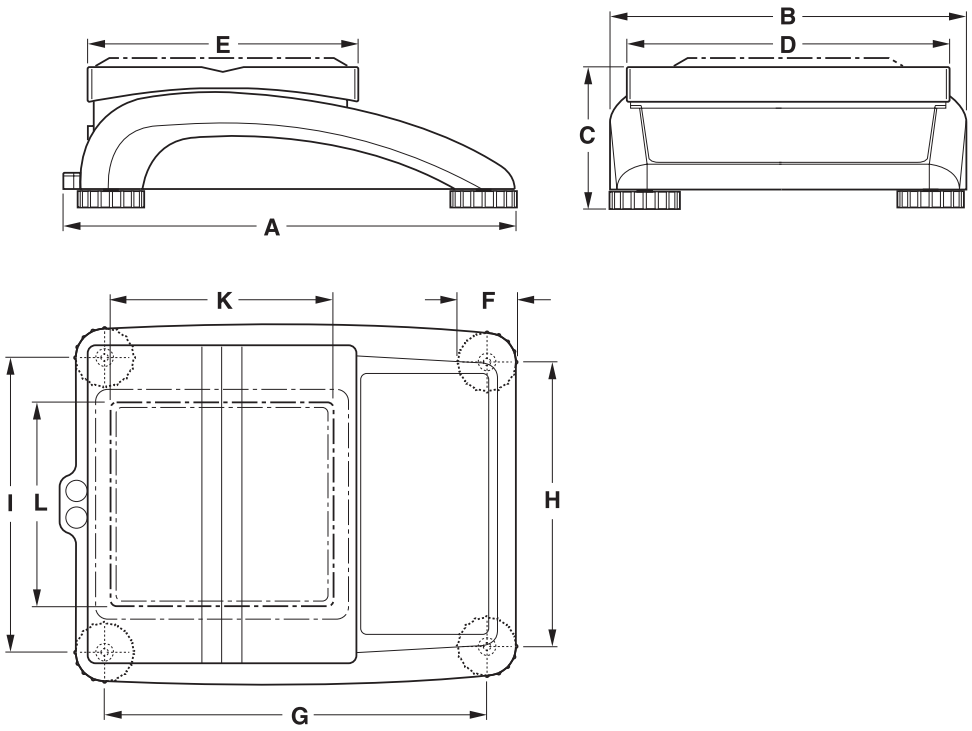
Capacity	**Configuration**			
	2 x 3000 d (standard)		**1 x 6000 d (with optional "Premium" weighing cells**	
	Weighing ranges	**Readability (certified)**	**Weighing range**	**Readability (certified)**
3 kg	1.5 kg / 3 kg	0.5 g / 1 g	3 kg	0.5 g
6 kg	3 kg / 6 kg	1 g / 2 g	6 kg	1 g
15 kg	6 kg / 15 kg	2 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 RC..M

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

Model	**Weighing interval(s)**	**Readability d**	**Verification value e**
RC3DSM	600 g / 3,100 g	0.01 g / 0.1 g	0.1 g
RC3SM	3,100 g	0.01	0.1 g
RC6DSM	1,200 g / 6,100 g	0.01 g / 0.1 g	0.1 g
RC6SM	6,100 g	0.01	0.1 g
RC6DRM	1,200 g / 6,100 g	0.1 g / 1 g	1 g
RC6RM	6,100 g	0.2 g	0.2 g
RC15DLM	3,500 g / 15,100 g	0.1 g / 1 g	1 g
RC15LM	15,100 g	0.5 g	0.5 g
RC35DLM	7,000 g / 35,100 g	0.1 g / 1 g	1 g
RC35LM	35,100 g	0.1 g	1 g

7.1.5 Dimensions



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

1) Dimenions in mm

7.1.6 Net weights

Model	without battery	with battery	with internal calibration weight (without battery)
RC..RS	4.6 kg	5.3 kg	–
RC..LS	8.2 kg	8.9 kg	–
RC..SM	4.9 kg	5.6 kg	5.4 kg
RC..RM	4.7 kg	5.4 kg	5.2 kg
RC..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 (COM1/ COM2)	RS422 (4-wire, COM1)	RS485 (2-wire, COM1)	Digital I/O (COM2)	Analog 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

Designation	Order number
In Use Cover for RC..R..	21203719
In Use Cover for RC..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 RC..R..	80850083
Carrying Case for RC..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 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.

8.2 Safety checks

The compact scales of the Ranger RC 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 USA	C US	CAN/CSA-C22.2 No. 1010.1-92 UL Std. No. 61010A-1
Other countries	**CB Scheme** (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' 64°00' – 70°05'	25* 26	Finland
41°20' – 45°00' 45°00' – 51°00'	17 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' 64°00' – 71°11'	24* 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' 62°00' – 69°04'	24* 26	Sweden
45°49' – 47°49'	18	Switzerland
35°51' – 42°06'	16	Turkey
49°00' – 55°00' 55°00' – 62°00'	21* 23	United Kingdom

* factory setting

8.3.2 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

8.4 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 34)

```
SOFTWARE VER 16-1-1.04

SCALE
-------------
METROLO       :NO APPr
SNR           :0000000
Scale Build
 SCAL.TYP     :SINGLE.R
 BAS.UNIT     :g
 SCL.CAP      :6100.00
 RESOL.       :0.01 g
GEO           :19
DISPLAY
 UNIt1        :g
 UNIt2        :kg
 RESOLU       :0.01 g
 UNt.rOLL     :OFF
tArE
 A-TArE       :OFF
 CHAIn.tr     :ON
 A.CL-tr      :OFF
 PB.TArE      :ON
ZERO
 Z-CAPT        :-2 18
 AZM          :0.5 d
RESTART       :OFF
FILTER
 VIBRAT       :MED
 PROCESS      :UNIVEr
 StABILI      :StAnDrD
Min.WEiG
 SEt.VAL   :0.000 g
 ONOFF     :OFF
```

```
APPLICATION
-------------
COUNT
 VAr-SPL
 Spl-Qty
  SQ1       :5
  SQ2       :10
  SQ3       :25
  SQ4       :50
  SQ5       :100
 Min.RefW   :99
 REF OPT    :OFF
 A-SMPL     :ON
 A.CL-APW   :OFF
 ACCurCy    :ON
 tOtAL.Ct   :BULK
DYNAMIC     :OFF

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

```
COMMUNICATION
--------------
COM 1
 MODE      1:Print
 PriNtEr
  tEmPLat 1:StdArd
  ASCi.Fmt
   LINE.FMT1:MULTI
   LENGtH 1:24
   ADD LF 1:0
 PARAMET
  BAUD     1:2400
  PAriTY   1:8 odd
  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.
 ANALOG     :N.A.
 DiGitAL    :N.A.
DEF.PrN
 tEmPLt1
 tEmPLt2
```

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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
19A Chapin Road
P.O. Box 2033
Pine Brook, NJ 07058 USA
Tel: (973) 377-9000
Fax: (973) 844-7177
www.ohaus.com

with offices worldwide

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