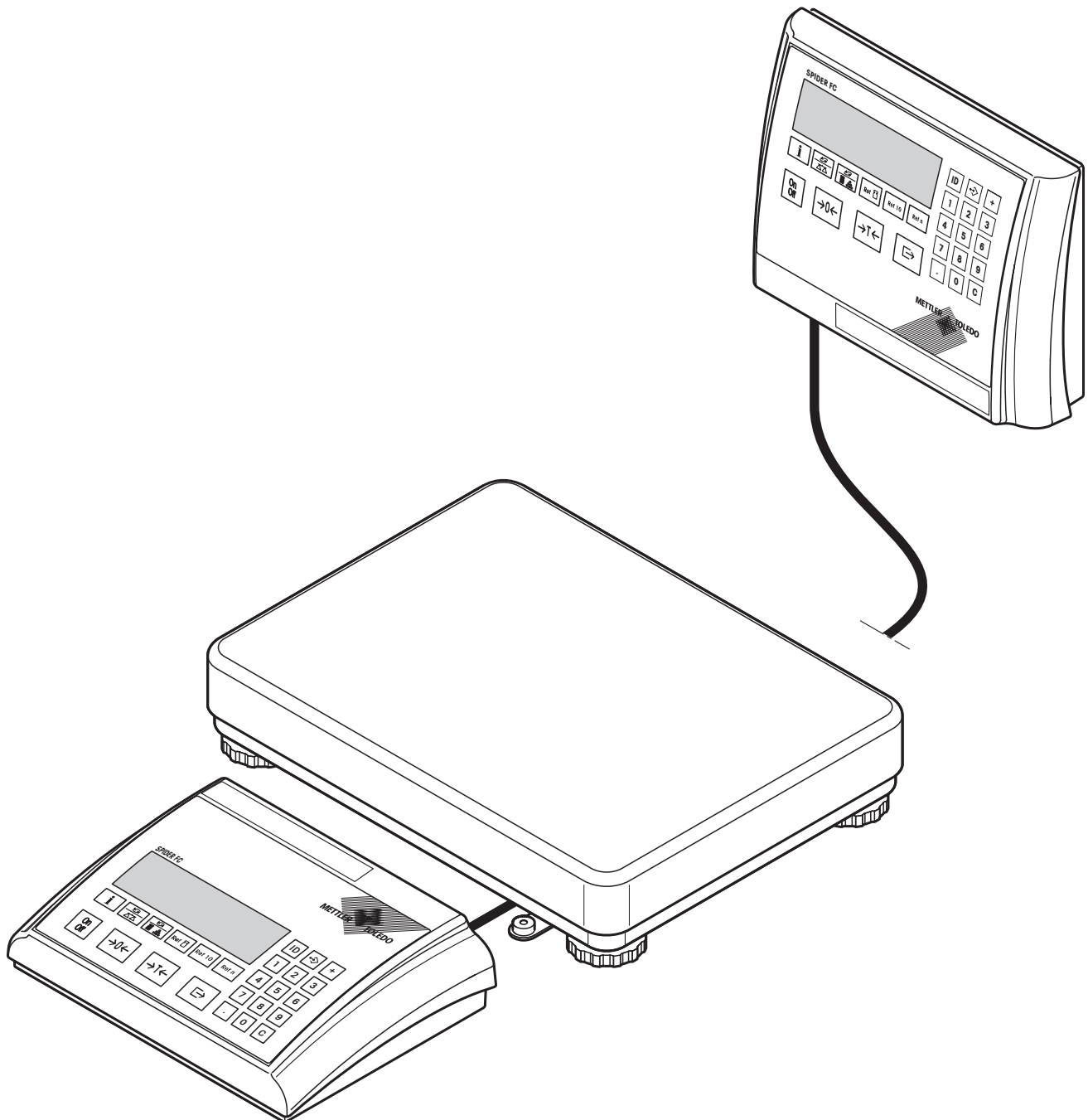METTLER TOLEDO

Operating Instructions
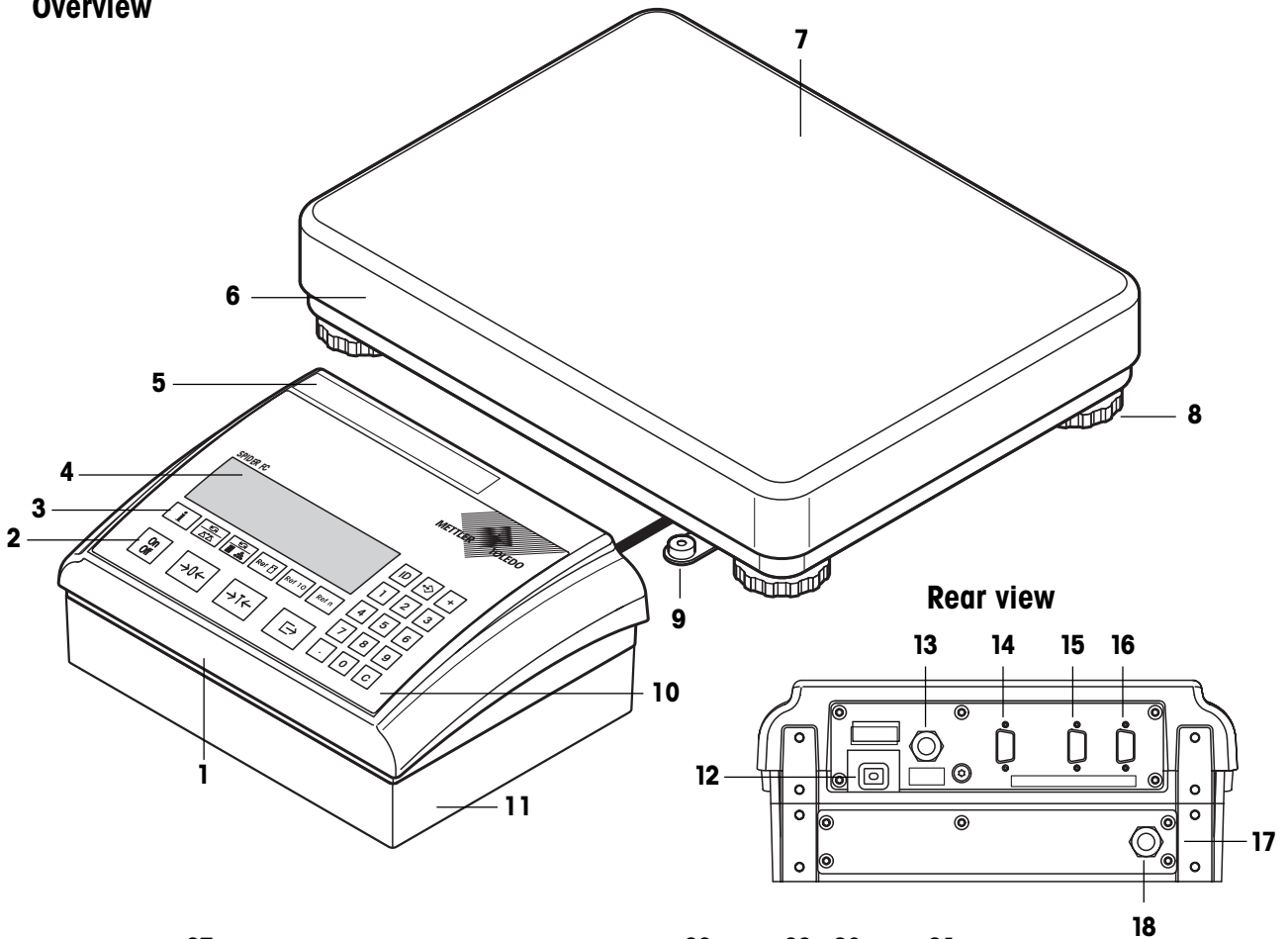
METTLER TOLEDO
Spider FC Convenient Counting and Weighing

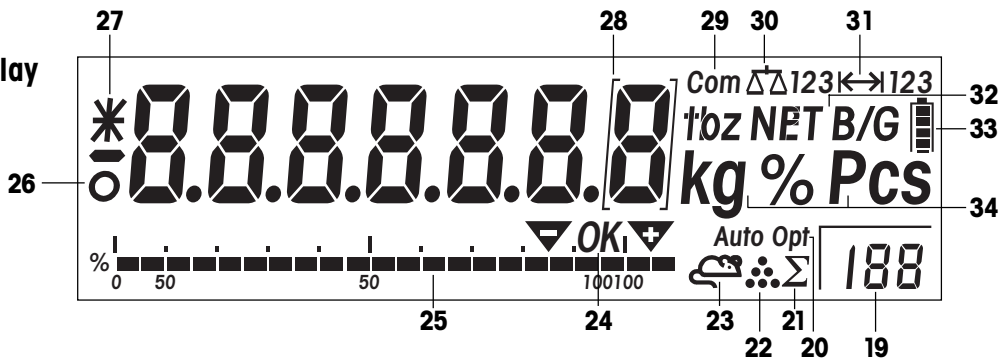# Overview of your Spider FC scale

Overview
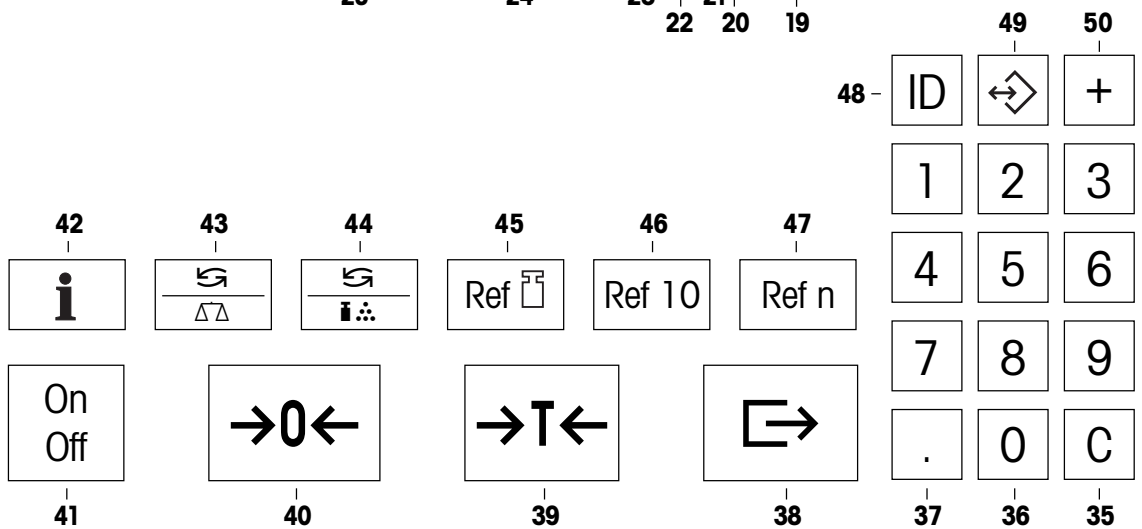

Rear view

Display

Keypad

Overview

1 Terminal (benchtop version)

2 Operating keys (see detailed illustration)

3 Function keys (see detailed illustration)

4 Display (see detailed illustration)

5 Type plate

6 Weighing platform

7 Weighing pan

8 Leveling feet

9 Level indicator (certified scales only)

10 Numerical keypad and special keys
(see detailed illustration)

11 OptionPac (optional)

Rear view

12 Power supply cable

13 Connector cable to weighing platform

14 Third RS232C interface (option)

15 Second interface RS232C or RS422/485 (option)

16 RS232C interface (standard)

17 OptionPac (option)

18 Analog interface (option)

Display

19 Variable reference piece count

20 Automatic reference optimization

21 Totalization symbol

22 Piece counting symbol

23 Dynamic weighing display

24 Symbols for weighing/counting in to target value

25 Bargraph of weighing range

26 Stability detector

27 Changed resolution (certified scales only)

28 Certification brackets
(only on certified scales with e = 10d)

29 Active interface (only displayed if more than one
interface is installed)

30 Active scale (on 2-scale systems)

Display (continued)

31 Weighing range

32 Net/gross weight and tare preset symbols

33 Storage battery charge status (only on scales with
storage battery)

34 Weighing unit

Keypad

35 Clear key

36 Numeric keys (0 - 9)

37 Decimal point

38 Transfer key

39 Tare key

40 Zeroing key

41 On/off key

42 Info key

43 Scale 1/scale 2 (reference scale/quantity scale)
switchover for two-scale operation

44 Piece counting/weight display and weighing unit 1/
weighing unit 2 switchover

45 Manual input and display of the reference piece weight

46 Reference determination with 10 pieces

47 Reference determination with variable number of pieces

48 Identification key

49 Store key

50 Total key

4

Contents

1   Setting up the scale

Please read these operating instructions carefully and follow them exactly! If you find that any items are missing or incorrect, or if you have any other problems with your scale, please contact your authorized METTLER TOLEDO representative.

1.1   Important

Various different models of the Spider scale **terminal** are available. Only the **benchtop** model is described in these instructions. If you ordered a **wall- or stand-mount terminal**, please refer to the installation instructions delivered separately. The **OptionPac** (special equipment) can contain a number of options, such as additional interfaces or a storage battery. If you ordered an OptionPac it will have been configured at the factory with the options you requested and fastened below the terminal.

1.2   Unpacking and checking the delivered items

Remove the scale and accessories from the packaging and check the delivered items:

– Terminal and weighing plaform with installed weighing pan and level indicator (certified scales only)

– Open-end wrench for leveling the weighing platform

– Operating instructions (this document)

– Special accessories (if any) as per packing list

1.3   Safety and environment

For safe and environmentally harmless operation of your scale, observe the following instructions:

Do not use the scale in **hazardous environments** (unless it is specially marked).

Although the Spider scale is protected to **IP65**, it must not be used in environments where there is a **corrosion hazard**. Never flood the scale or immerse it in liquids!

If the **power supply cable** is damaged, the scale must not be used. Check the cable regularly.

Do not open the weighing platform or terminal since this will void the guarantee. Do not use rigid objects to clean inside the weighing platform.

Treat the scale with care, it is a precision instrument. Avoid knocking the weighing pan or placing excessively heavy loads on it.

If the Spider scale will be used in **food processing areas**: Those parts of the scale which may come into contact with food have a smooth surface and are easy to clean. The materials used do not shatter and contain no harmful substances. In food processing areas, it is advisable to use the **protective cover** (accessory). This must be regularly cleaned like the scale itself. A damaged or heavily soiled protective cover must be replaced immediately.
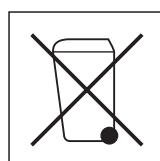
When **disposing of the scale**, observe the applicable environmental regulations. If the scale is fitted with a **storage battery**, note that the battery contains heavy metals and must therfore not be disposed of as normal waste! Observe local regulations for disposal of environmentally harmful substances.

1.4 Selecting a location and leveling the scale

The proper location can influence the accuracy of the weighing results!
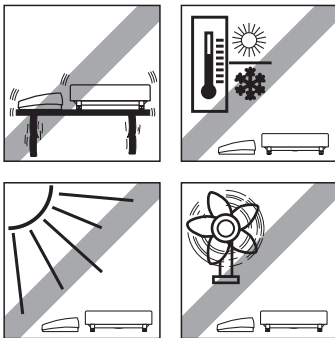
Choose a stable, vibration-free flat surface. The surface must be able to bear the weight of the fully loaded scale safely.

Pay attention to environmental conditions:

– No direct sunlight

– No strong drafts (e.g. from fans or air conditioning)

– No excessive temperature fluctuations
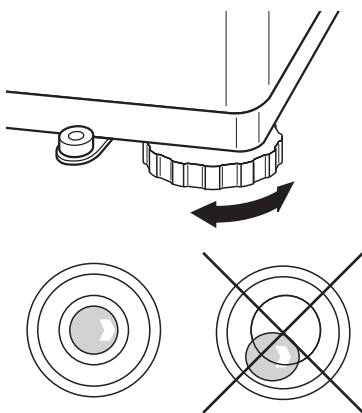
Adjust the scale horizontally by turning the leveling feet, then use the open-end wrench supplied to tighten the locknuts of all the leveling feet so as to prevent unintentional movement.

On certified scales, the weighing platform has a level indicator. The air bubble must lie within the inner circle of the indicator.

Note: The level indicator can be mounted in a different position. Undo the two fastening screws and move the level indicator to one of the positions provided (drilled holes in the weighing platform).

Major changes of geographical location

Each scale is adjusted by the manufacturer for the local gravitational conditions (geo value). If there is a major change of geographical location, this adjustment must be corrected by a service technician. Certified scales must also be recertified in accordance with local national regulations for certification.

1.5 Connecting the power supply
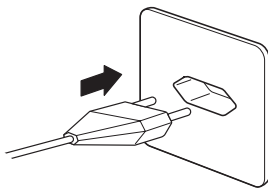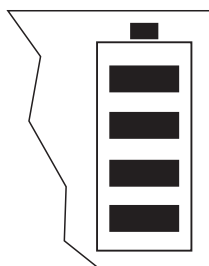
Before connecting the power supply, check that the voltage printed on the back of the scale is the same as the local power supply. If it is not, do not connect the scale, and contact your authorized METTLER TOLEDO representative.

If the voltage is correct, connect the plug on the power cable to the power supply.

After the scale has been connected, it performs a display test. When the display shows zero, the scale is ready for operation. For maximum precision, after installing the scale carry out an adjustment/calibration (Chapter 4.4.1). **Important**: Certified scales must be adjusted by an authorized laboratory. Ask your authorized representative.

Scales which have an **OptionPac with built-in storage battery** can operate under normal conditions for approx. 30 hours disconnected from the power supply (with backlighting turned off and no accessories connected). As soon as the power supply is interrupted, the scale automatically switches over to battery operation. When power is restored, the scale automatically switches back to power supply operation. The battery symbol indicates the current charge status of the storage battery (1 segment = approx. 25% capacity). If the symbol flashes, the storage battery must be recharged (approx. 6 hours). If work continues while recharging, it takes longer. The storage battery is protected against ovecharging, so the scale can be permanently connected to the power supply without problem.

8

2 Weighing

This chapter explains how you switch the scale on and off, adjust the zero setting, tare the scale, carry out weighings, and record weighing results.

2.1 Switching on/off and setting to zero

On
Off
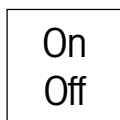
You switch the scale on and off by pressing the «**On/Off**» key.

After it has been switched on, the scale carries out a display test. When the weight display appears, the scale is ready for weighing and is automatically set to zero. **Note**: The «→0←» key can be used to set the scale to zero at any time.

2.2 Simple weighing
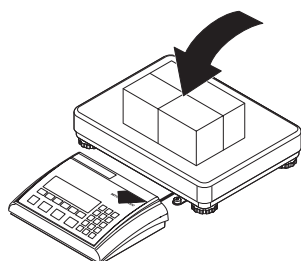
Place the weighing sample on the pan.
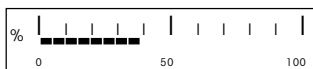
The bar graph in the lower part of the display shows how much of the weighing range is already used and how much is still available (in % of the nominal capacity of the scale).

$$8.65 \, kg$$
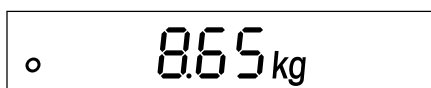
Wait until the stability detector (small ring at left-hand edge of display) goes off and then read the weighing result. **Note**: The «⇆ 🛈 ⸬» key can be used to switch back and forth between the two weighing units defined in the menu (Chapter 4.4.2).

You can use the «⇨» key to transmit the weighing result via the interface to a peripheral device (printer, computer) (see Chapter 5.3 for sample report).

2.3 Weighing with tare

The tare can be specified by placing the weighing container on the scale, entering the tare weight numerically, or calling up a stored tare value. The 3 possibilities are described below.

2.3.1 Taring by placing the weighing container on the scale
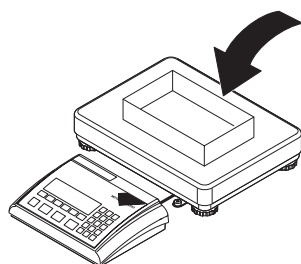
Place the **empty** weighing container or the packaging material on the weighing pan and press the «→T←» key to tare the scale.

$$0.00 \text{ kg} \quad NET$$

The zero display and the "**NET**" (net weight) symbol appear. **Note**: If the **automatic tare function** is active (Chapter 4.4.3), you need not press the «→T←» key, since the first weight added is taken to be the tare ("**T**" flashes in the display until the tare is added).
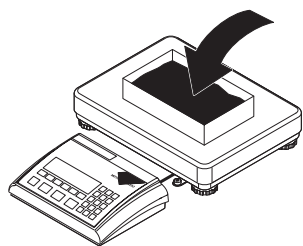
Place the weighing sample on the weighing pan and …

$$2.46 \text{ kg} \quad NET$$

… read the result (net weight of the weighing sample).

Note: The tare weight is retained until either a new tare is determined, or the scale is set to zero or switched off. If the automatic taring function is active, the tare is automatically cleared when weighing is completed and the weighing pan emptied; the scale is then ready for the next taring and weighing.

2.3.2 Entering the tare weight numerically

| . | 1 | 5 | →T← |
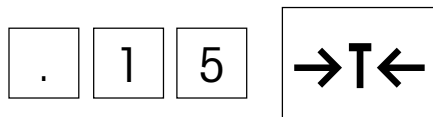
Use the numeric keypad to enter the **known tare weight** in the current weighing unit and confirm with the «→T←» key. Incorrect inputs can be deleted digit by digit with the «**C**» key.

$$-0.15 \text{ kg} \quad NET$$

The tare values entered appear in the display with a negative sign and the symbol "**NET**" (net weight).

As soon as the weighing container with the corresponding weight is placed on the scale, the zero display appears.

2.3.3 Taring by calling up a stored tare value
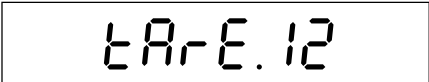
The scale has a memory in which 40 tare values (factory setting) can be stored and called up again at any time (the number of memory locations can be changed in the menu, see Chapter 4.5.2). **The values remain in the tare memory even if the scale is turned off**.

Storing tare values

Determine the tare by placing the weighing container on the scale, or by entering a numerical value, as described in the two preceding chapters.

| 1 | 2 | ⟨→⟩ |
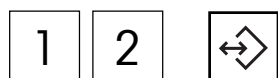
Enter the number of the memory location (1 – 40) in which the current tare should be stored, and then **press and hold down** the Store key …

$$tArE.12$$

… until the confirmation appears in the display that the tare value has been stored in the desired memory location.

$$rEPLACE$$

Note: If the selected memory location already contains a tare value, the display shows "Replace". Pressing the «⊏→» key overwrites the stored value, whereas touching «→T←» terminates the procedure. **Tip**: Make a note of the stored tare values and their storage locations, or make a printout of the memory contents (Chapter 4.8.5).
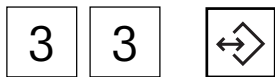
Calling up stored tare values

$\boxed{3}\ \boxed{3}\quad\boxed{\Leftrightarrow}$

Enter the number of the memory location (1 – 40) in which the desired tare value is stored, and then press the Store key **briefly**.

$-0.22_{\textbf{kg}}\ ^{NET}$
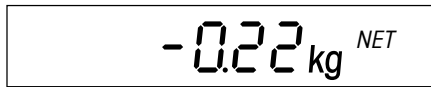
The selected tare value is loaded from memory and appears briefly in the display. The tare is then subtracted from the current weight value, and the current net weight is shown in the display.

Clearing tare values from memory

$\boxed{2}\ \boxed{6}\quad\boxed{\Leftrightarrow}\quad\boxed{C}$
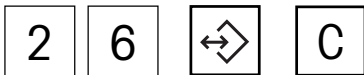
Call up the memory location (1 – 40) in which the tare value to be cleared is stored, and then **within 2 seconds** press the clear key «**C**». The message "Cleared" appears briefly for confirmation.

2.4   Using the info key while weighing

$\boxed{\textbf{i}}$

Use the info key «**i**» to call up additional information about the current weighing. The menu can be used to specify which info fields can be called up with the info key «**i**» (Chapter 4.5.3). To indicate the difference from the normal display, all info fields are marked with a star symbol. When the scale leaves the factory, the following info fields are available:

$*\qquad 8.22_{\textbf{kg}}\qquad ^{B/G}$
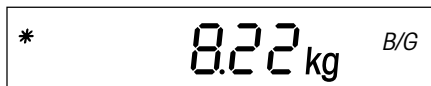
After the first keystroke, the **gross weight** appears with the symbol "**B/G**".

$*\qquad 8.0813_{\textbf{kg}}\ ^{NET}$
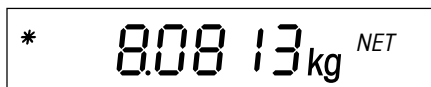
If the info key is pressed again, the result of the current weighing (net weight) is displayed in **high resolution**.
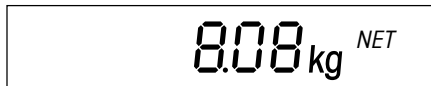
$8.08_{\textbf{kg}}\ ^{NET}$

Pressing the «**i**» key again returns the scale to **normal display**. **Note**: After 10 seconds, the scale automatically returns to normal display.

2.5   Totaling weighings

You can do several weighings and then determine the total weight and number of lots. To be able to print a report of the totals, a printer has to be connected.

$0.00_{\textbf{kg}}\ ^{NET}$
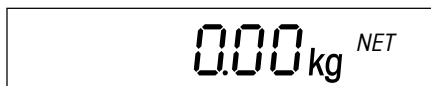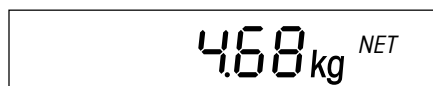
If a weighing container is used it, it must be tared (by placing on the scale, entering the numerical value of the tare, or calling up a stored tare value, see Chapter 2.3).

$2.31_{\textbf{kg}}\ ^{NET}$
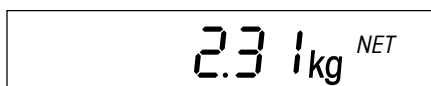
Place the desired number of the **first lot** in the container.

$\boxed{+}$

Press the total key «**+**» briefly to store the weight. After the weight has been stored, the weight of the first lot is printed out. **Now remove the weight from the scale;** otherwise when the next lot is weighed, the error message "Unload" will appear.

4.68 kg *NET*

Place the desired quantity of the **second lot** in the container and store the weight with the total key «**+**». The weight of the second lot is printed on the printer. **Note:** If a new weighing container is used for the second lot and has a different weight than the first, it must be tared before the second lot is weighed.

Weigh further lots as described above. **Always unload the scale between weighing and the individual lots!**
Note: Instead of placing a lot on the scale, its weight can be entered numerically and stored with the «**+**» key.

`+`

As soon as all lots have been weighed, press the «**+**» key and hold it down. The result of the totaling is printed out (you will find a sample printout in Chapter 5.3).
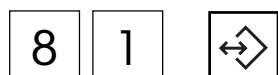
Note: If no printer is available, you can activate three additional **info fields for the totaling** (Chapter 4.5.3). The following information can be displayed by pressing the info key «**i**»: number of lots weighed, total gross weight, and total net weight.

`C`

To terminate the totaling, unload the scale and then press the clear key «**C**» until the scale returns to weighing mode (if the scale is not unloaded, the error message "CLR.SCL" (= clear scale), appears to prompt you to remove the weighing lots). When totaling is complete, the total memory is cleared, and the printout is completed.
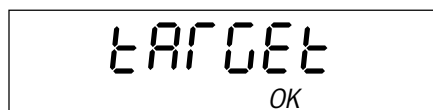
2.6   Weighing to a target value and checkweighing

The scale permits weighing samples to a specified target value within defined tolerances. This function can be used to check whether weighing samples are within a predefined tolerance range. The scale has a memory, in which 10 target weights (factory setting) and the associated tolerances can be stored, and called up again at any time (the number of memory locations can be changed in the menu, see Chapter 4.5.2). **The values remain in the target weight memory even if the scale is switched off**.

Target weight and tolerances

`8` `1` `⟷`
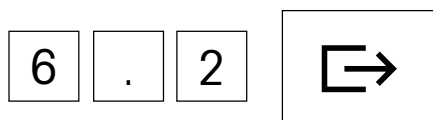
Enter the number of the memory location (81 – 90) in which the target weight and tolerances should be stored, and then press the Store key and **hold it down** …
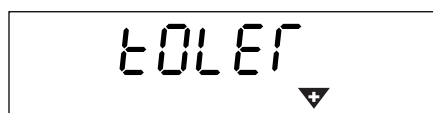
tArGEt
OK

… until the dialog for the **target weight** (nominal weight) appears in the display. The "**OK**" symbol also flashes in the graphical display of the weighing range.

Note: If the selected storage location already contains a target weight and tolerances, the display first shows "Replace": Touch the «⮕» key if you wish to replace the stored values, or «→T←» to terminate the procedure.

`6` `.` `2` `⮕`

Type in the target weight (incorrect entries can be deleted digit by digit with the «**C**» key). Confirm the input with the «⮕» key and …

tOLEr

… in the display the dialog appears for the **plus tolerance** (represented by the flashing plus tolerance symbol "**+**").
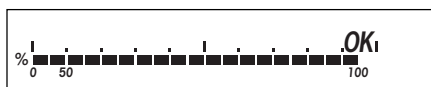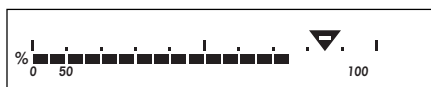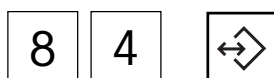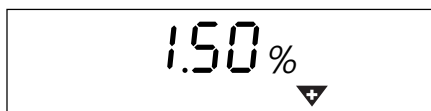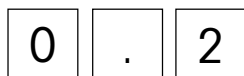
The tolerances can be entered either in the current weighing unit or as a percentage of the target weight:

$$\boxed{0} \; \boxed{.} \; \boxed{2}$$

– **Entry in the current weighing unit**: type in the plus tolerance and confirm with the «⊏→» key.

1.50 %
▽

– **Entry as percentage**: Press the «⊏→» key to call up the input field. Type in the plus tolerance as a percentage of the target weight (factory setting is 2.00 %). Confirm the input with the «⊏→» key.

tOLEr
▽

After the plus tolerance has been confirmed, an identical dialog appears to enter the **minus tolerance** (represented by the flashing minus tolerance mark "–"). The minus tolerance can also be specified either in the current weighing unit or as a percentage of the target weight. Input the minus tolerance and confirm with the «⊏→» key. The scale returns to the weighing mode and is ready for weighing in to the target value just entered.

Calling up stored target weights

$$\boxed{8} \; \boxed{4} \; \boxed{\leftrightarrow}$$

Enter the number of the memory location (81 – 90) in which the desired target weight and the associated tolerances are stored, and then press the Store key **briefly**.

The target weight and the tolerances are loaded from memory and briefly displayed. The scale is now ready for weighing or checkweighing.

Weighing or checkweighing

If necessary, tare the scale. Fill the weighing sample into the container. The dispensing process can be followed on the graphical display. As long as the minimum weight is not reached, the **minus tolerance** is displayed. **Note**: The 50% mark is positioned far to the left so that more display segments (between 50% and 100%) are available for precise dispensing.

If the weight of the weighing sample is within the prescribed tolerance, the "**OK**" mark is visible. As soon as the weight reaches the permissbile range, a short signal tone sounds (if it is activated in the menu, see Chapter 4.6.1).

As soon as the **plus tolerance symbol** appears, the weight is above the specified tolerance.

To do the **checkweighing**, the weighing sample to be checked has to be placed on the scale. From the markings it can be seen whether the weighing sample is below, within, or above the specified tolerance.

2.7   Working with identifications

Two identification numbers can be defined which are printed out on the reports. For example, the two IDs can be used for a customer number and an article number. It can then be seen clearly on the report which article was weighed for which customer.
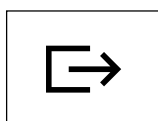
Entering the identification numbers

Type in the identification number (maximum 40 characters, incorrect inputs can be deleted digit by digit with the «**C**» key) and then press the «**ID**» key.

The scale asks which ID should be used to store the the number you have entered. If it should not be stored as ID1 (default), press the «→T←» or «**ID**» key and the display will show "ID2".

Press the «⇥» key to store the number as the selected ID. The scale then returns to weighing mode.

Display identification numbers

To check what number ID1 currently contains, press the «**ID**» key briefly (press twice for ID2) and …

… the display shows for a few seconds the number contained in the ID. If no number is contained in the selected ID, a corresponding message ("No ID") is briefly displayed.

Deleting identification numbers

Press the «**ID**» key briefly (press twice for ID2). The number contained in the selected ID appears in the display.

While the number is displayed, press the clear key «**C**». The message "Cleared" appears briefly as confirmation.

2.8   Weighing with 2-scale systems

If a second scale is connected, the weighing can be carried out on either the Spider or the second scale.
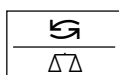
The scale symbol in the upper right corner of the display indicates the currently active scale (△△1 or △△2).

The «↩ △△» key switches between the two scales.

All the keys of the Spider terminal act on the currently active scale. Second scales which support MT-SICS (Levels 0, 1 and 2) can be set to zero and tared from the Spider terminal.

2.9   Dynamic weighing

```
 *          28.55 kg
                  🐁
```
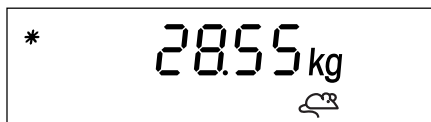
For unstable weighing objects (e.g. animals) the dynamic weighing function with automatic or manual start can be activated (section 4.5.4). If the dynamic weighing function is active, the mouse symbol appears at the bottom edge of the display.

With dynamic weighing the scale measures 56 weighing values in 4 seconds and calculates their mean value.

With dynamic weighing and **automatic start** the measurement begins automatically as soon as there is a change in weight.

With dynamic weighing and **manual start** the measurement is started by touching the «�» key.

During dynamic weighing, horizontal segments appear in the display, after which the calculated mean value is displayed. The star symbol at the left-hand edge indicates that the result is a calculated one. To start a new weighing cycle, the scale must be unloaded.

Note: Only activate the dynamic weighing function to weigh unstable goods. In normal operation the standard weighing function yields more accurate results more rapidly.

3   Piece counting

Your scale has a number of powerful piece counting functions which can be activated in the menu (see Chapter 4.5.1). This chapter describes the functions which have been activated at the factory.

3.1   Counting pieces into a container
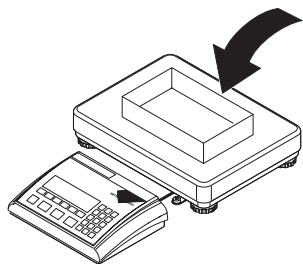
Place the **empty** container on the scale and tare with the «→T←» key.

Note: If the **automatic taring** function is active (Chapter 4.4.3), you need not press the «→T←» key, because the scale registers the tare weight automatically as soon as the container is placed on the weighing pan.

Before your scale can be used for counting parts, it must know the average piece weight (the so-called **reference**). The reference is then used to do the counting. The reference can be determined by placing a certain number of pieces on the scale. If the piece weight is known, it can be input and used as the reference.

Determining the reference by placing pieces on the scale:

–   If exactly **10 pieces** have been placed on the scale, press the «**Ref 10**» key.

Ref 10

–   If a **different number of pieces** has been placed on the scale, type in the corresponding number and then press the «**Ref n**» key. The selected number of pieces appears in the display above the key. The reference number of pieces remains stored until you change it again.

7	Ref n

When the «**Ref 10**» or «**Ref n**» key is released, the scale determines the reference (average piece weight) and then displays the selected number of pieces.

$$10 \;\; ^{NET}_{Pcs}$$

Entering the reference when the piece weight is known

Type in the known piece weight and confirm it with the piece weight key. The weight entered will be used as reference. If there are no pieces on the scale, the display then shows zero; otherwise, the scale uses the specified piece weight to calculate the number of pieces and then displays this number.

2	.	7	Ref

Note: If Weighing Unit 1 is set to **kilogram** (factory setting), the piece weight must be entered in grams. If the weighing unit is "g" (gram"), "lb" (pound), or "oz" (ounce), the piece weight must be entered in this unit.

Checking the reference

To check the reference, the piece weight key can be pressed at any time …

Ref

… and the current reference piece weight appears for a few seconds in the display.

$$* \;\; 2.70000 \;\; g/Pc$$
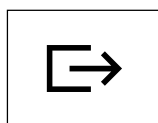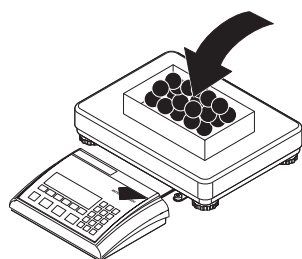
Counting the pieces

Put pieces into the container up to the desired number of pieces.

Once a reference has been determined, you can use the «↰ i ∴» key to switch back and forth between the number of pieces and the weight display at any time.

You can use the «↳» key to transmit the piece counting result via the interface to a peripheral device (printer, computer) (for sample report see Chapter 5.3).

3.2   Counting pieces out of a container

There are only a few points of difference between counting pieces out of a weighing container and counting them in.
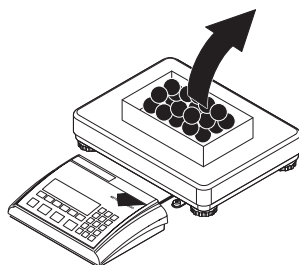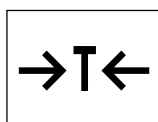
Place the **full** container on the weighing pan and then press the «→T←» key to tare the scale.

Determine reference by removing pieces:

Remove the reference number of pieces from the weighing container and then press the «**Ref 10**» or «**Ref n**» key to determine the reference, as described in the previous chapter.
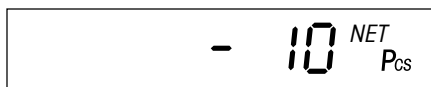
The scale displays the number of pieces removed, preceded by a minus sign.

Determining the reference if the piece weight is known:

Type in the known piece weight and confirm it with the piece weight key as described in the previous chapter. The display shows the number of pieces on the scale.

3.3   Saving and calling up reference piece weights

The scale has a memory in which 40 reference piece wieghts (factory setting) can be stored and called up again at any time (the number of memory locations can be changed in the menu, see Chapter 4.5.2). **The values remain in the memory even if the scale is turned off**.
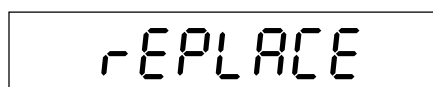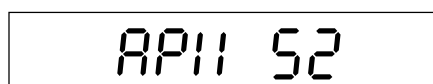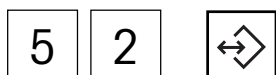
Storing reference piece weights

$\boxed{5}$ $\boxed{2}$ $\boxed{\Leftrightarrow}$

$$\boxed{\text{AP11 } 52}$$

$$\boxed{\text{rEPLACE}}$$

Determine the reference by placing pieces on the scale, or by numerical input, as described in the previous two chapters.

Enter the number of the memory location (41 – 80), in which the current reference piece weight should be stored, and then press the Store key and **hold it down** …

… until confirmation appears in the display, that the reference piece weight has been stored under the desired memory location number.

Note: If the selected memory location already contains a reference piece weight, the display shows "Replace": Touching the «⇥» key overwrites the stored value, whereas touching «→T←» terminates the procedure.

Tip: Make a note of the stored reference piece weights and their storage locations, or make a printout of the memory contents (Chapter 4.8.5).
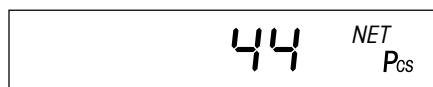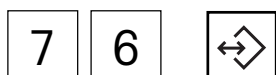
Calling up stored reference piece weights

$\boxed{7}$ $\boxed{6}$ $\boxed{\Leftrightarrow}$

$$\boxed{\text{44} \quad {}^{NET}_{Pcs}}$$

Enter the number of the memory location (41 – 80) in which the desired reference piece weight is stored, and then press the Store key **briefly**.

The stored reference piece weight is displayed briefly and is immediately active. The display shows the number of pieces on the weighing platform (if you are working with a weighing container, it must be tared before the piece weight is called up from memory).

3.4   Automatic reference optimization

Piece counting with automatic reference optimization gives more accurate results. This function can be switched on and off in the menu (Chapter 4.5.1). Automatic reference optimization is switched on at the factory.

$$\boxed{\hspace{3cm} \textit{Auto Opt}}$$

$$\boxed{\text{rEFOPt}}$$
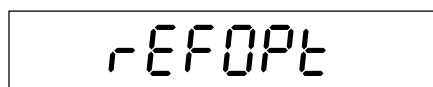
No action is required during operation for automatic reference optimization and it functions both when "Counting in" (Chapter 3.1) and when "Counting out" (Chapter 3.2). The "**Auto Opt**" symbol in the display indicates that automatic reference optimization is switched on.

Each time you place additional parts on the scale, it optimizes automatically. You do not have to press a key to perform optimization. At each optimization the message "Ref Opt" appears briefly and the new total number of pieces is then displayed.

Note: At each automatic reference optimization the average piece weight (reference) is re-calculated. Since the additional pieces increase the basis for the calculation, the reference also becomes more accurate. However, automatic optimization only functions if the number of additional pieces placed on the scale is not greater than the number already on the weighing pan.

3.5   Adding mode

Adding mode ensures that the reference number of pieces used for piece counting is not too small, because this could lead to inaccurate results. This function can be switched on and off in the menu (Chapter 4.5.1). Adding mode is switched off at the factory. **Note**: Adding mode does not function in two-scale operation!

$$Add \ 5$$

If adding mode is active and the number of pieces placed on the scale is too small to determine the reference correctly, you will be prompted to place more pieces on the scale (e.g. 5 pieces).

Place the prompted number of additional pieces on the weighing pan. Each time a part is added, the scale dynamically shows the number of pieces still missing. As soon as all the additional pieces have been loaded, the scale calculates the reference.

3.6   Using the info key while piece counting

i

Use the info key «**i**» to call up additional information about the current piece counting. The menu can be used to specify which info fields can be called up with the info key «**i**» (Chapter 4.5.3). To indicate the difference from the normal display, all the info fields are marked with a star symbol. When the scale leaves the factory, the following info fields are available:

*   8.081 kg   NET

The first time the «**i**» key is pressed, the **net weight** of the pieces on the scale appears with the "**NET**" symbol.

*   8.224 kg   B/G

The second time the key is pressed, the **gross weight** of the pieces on the scale appears with the symbol "**B/G**".

*   7.41368   g/Pc

The next time the «**i**» key is pressed, the **reference piece weight** for the current piece weighing appears.

*   8.0813 kg   NET

When the info key is pressed again, the **net weight of the pieces on the scale** is displayed **in high resolution.**

*   99.91   %

The next time the «**i**» key is pressed, the **accuracy of the piece counting** appears in the display. This value is not to be taken as the absolute accuracy, but as an approximation. The accuracy of the piece counting depends on the number of reference pieces, their weight, and other, scale-specific, parameters. The accuracy should increase with each reference optimization.

37   NET Pcs

Pressing the «**i**» key again returns the scale to **normal display**. **Note**: After 10 seconds, the scale returns to normal display automatically.
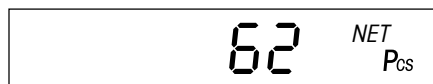
3.7   Totaling piece counts

You can do several piece counts and then determine the total number of pieces weighed and their total weight. To print reports of piece countings, a printer should be connected.

0.00 kg   NET
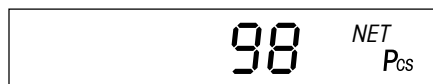
If a weighing container is used, it must be tared.

Determine the reference (see Chapter 3.1).

$$62 \quad \underset{Pcs}{NET}$$

Put pieces of the **first lot** in the container up to the desired number of pieces.

+

Press the totaling key «**+**» briefly to save the piece count. When it has been saved, the weight and number of pieces of the first lot are printed out. Now **remove the container from the scale**, otherwise when the next lot is weighed, the error message "Unload" will appear.

$$98 \quad \underset{Pcs}{NET}$$

Place the desired quantity of the **second lot** in the container and store the weight with the total key «**+**». The result for the second lot is printed out. **Note**: If a new weighing container is used for the second lot and has a different weight than the first, it must be tared before the second lot is counted.

Count further lots as described above. **Always unload the scale between counting the individual lots!**

+

When all lots have been counted, press the «**+**» key and hold it down. The result of the piece counting will be printed out (you will find a sample printout in Chapter 5.3).
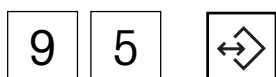
Note: If no printer is available, you can activate four additional **info fields for totaling** (Chapter 4.5.3). The following information can be displayed by pressing the info key «**i**»: number of lots weighed, total number of pieces weighed, total gross weight, and total net weight.

C

To terminate the totaling, unload the scale and then press the clear key «**C**» until the scale returns to weighing mode (if the scale is not unloaded, the error message "CLR.SCL" (= clear scale) appears, to prompt you to remove the weighing sample). When totaling is complete, the total memory is cleared, and the printout is completed.
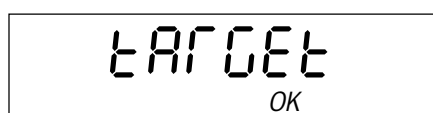
3.8   Counting to a target number of pieces

The scale can be used to count pieces to a specified target value within defined tolerances. This function can also be used to check whether piece counts lie within a pre-defined tolerance range. The scale has a memory, in which 10 target numbers of pieces (factory setting) and the associated tolerances can be saved, and called up again at any time (the number of memory locations can be changed in the menu, see Chapter 4.5.2). **The values remain in memory even if the scale is switched off**.

Defining target number of pieces and tolerances

9	5	⟷

Enter the number of the memory location (91 – 100) in which the target number of pieces and tolerances should be stored and then press the Store key and **hold it down** …

$$tArGEt$$
$$OK$$

… until the dialog for the **target number of pieces** appears in the display. The "**OK**" symbol also flashes in the graphical display of the weighing range.

Note: If the selected storage location already contains a target weight and tolerances, the display first shows "Replace": Press the «⤳» key if you wish to replace the stored values, or «→T←» to terminate the procedure.

| 1 | 5 | 0 | ⇨ |
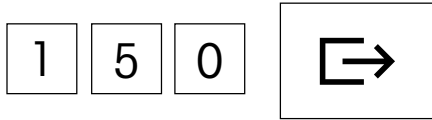
Type in the target number of pieces (incorrect entries can be deleted digit by digit with the «**C**» key). Confirm the input with the «⇨» key and …

tOLEr ▼

… in the display the dialog appears for the **plus tolerance** (represented by the flashing plus tolerance symbol "**+**").

3 ▼
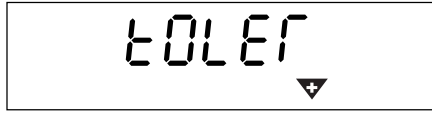
Type in the **number of pieces** permitted for overfilling (factory setting is "0 PCS"). Confirm the input with the «⇨» key and …

2 ▼

… an identical dialog appears to input the **minus tolerance** (represented by the flashing minus tolerance symbol "**–**"). The scale proposes the same value as for the plus tolerance. Input the **number of pieces** permitted for underfilling, and confirm with the «⇨» key. The scale returns to weighing mode, and is ready for weighing in to the target number of pieces just defined.
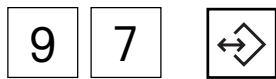
Calling up stored target piece counts

| 9 | 7 | ⟷ |

Enter the number of the memory location (91 – 100) in which the desired piece count and the associated tolerances are stored, and then press the Store key **briefly.**

The target piece count and the tolerances are loaded from memory and displayed briefly. The scale is now ready for counting in.

Counting in to the target piece count

Tare the scale and determine the reference. Fill parts into the container. The counting-in process can be observed on the graphical display. As long as the minimum piece count is not reached, the **minus tolerance symbol** is displayed. **Note**: The 50% mark is positioned far to the left so that more display segments (between 50% and 100%) are available for precise dispensing.
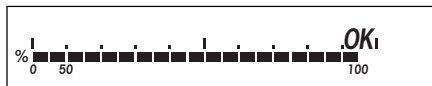
If the number of pieces is within the prescribed tolerance, the "**OK**" symbol is visible. As soon as the piece count reaches the permissible range, a short signal tone sounds (if it is activated in the menu, see Chapter 4.6.1).

As soon as the **plus tolerance symbol** appears, the piece count is above the specified tolerance.

Clearing stored target piece counts

| 9 | 2 | ⟷ | C |
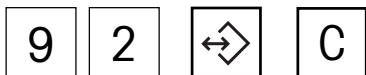
Call up the memory location (91 – 100) in which the target weight to be cleared is stored, and then **within 2 seconds** press the clear key «**C**». The message "Cleared" appears briefly as confirmation.

3.9   Piece counting with two-scale systems

The Spider scale can be combined with a second scale, e.g. a floor scale, to count large numbers of pieces. With this system the reference is determined on the Spider scale, while the second scale serves as the counting scale. If the Spider scale is combined with a high-resolution scale (e.g. Viper MonoBloc) this becomes the reference scale and the Spider scale then serves as the counting scale. To set up a two-scale system the second scale has to be connected to an interface on the Spider scale (either the standard or an optional RS232C interface, or the optional anlog interface). If the second scale is connected via an RS232C interface, the communication parameters on the two scales must be identical (9600 baud, 8 bits, no parity, XOn/XOff protocol). The operating mode for the interface of the second scale must be set to "Dialog" or "Host" depending on the model of the second scale. Information for configuring the interfaces of the Spider scale is contained in Chapter 4.7. Information for setting the interface parameters of the second scale will be found in the respective operating instructions.

You can specify in the menu of the Spider scale whether the second scale should be used as the reference or counting scale (Chapter 4.7.1).

The basic procedure for piece counting is the same as with a single-scale system, except for the following differences:

The «⇆ △△» key can be used at any time to switch between the two scales.

The scale symbol at the top right of the display indicates the active scale:

△△ 1 = Spider scale

△△ 2 = second scale

The operating steps for piece counting always refer to the active scale.

With the second scale active, the «→0←» and «→T←» keys can be used for zero setting and taring (second scales connected via an RS232C interface must support the MT-SICS command set).

4   The menu

The menu can be used to change the settings for the scale and to activate functions, thereby allowing the scale to be adapted to individual weighing neeeds.

Important: To avoid incorrect operation of the scale in normal use, the menu can be protected with a password. The scale differentiates between a user and a supervisor. When the scale leaves the factory, the entire menu can be accessed by both user and supervisor. **We therefore recommend you to define your own supervisor password as soon as you set up the scale** (**Chapter 4.6.2**). This limits access by the user to a small number of menu items (calibration, and settings for energy-saving mode and backlighting).

4.1   Overview and operation
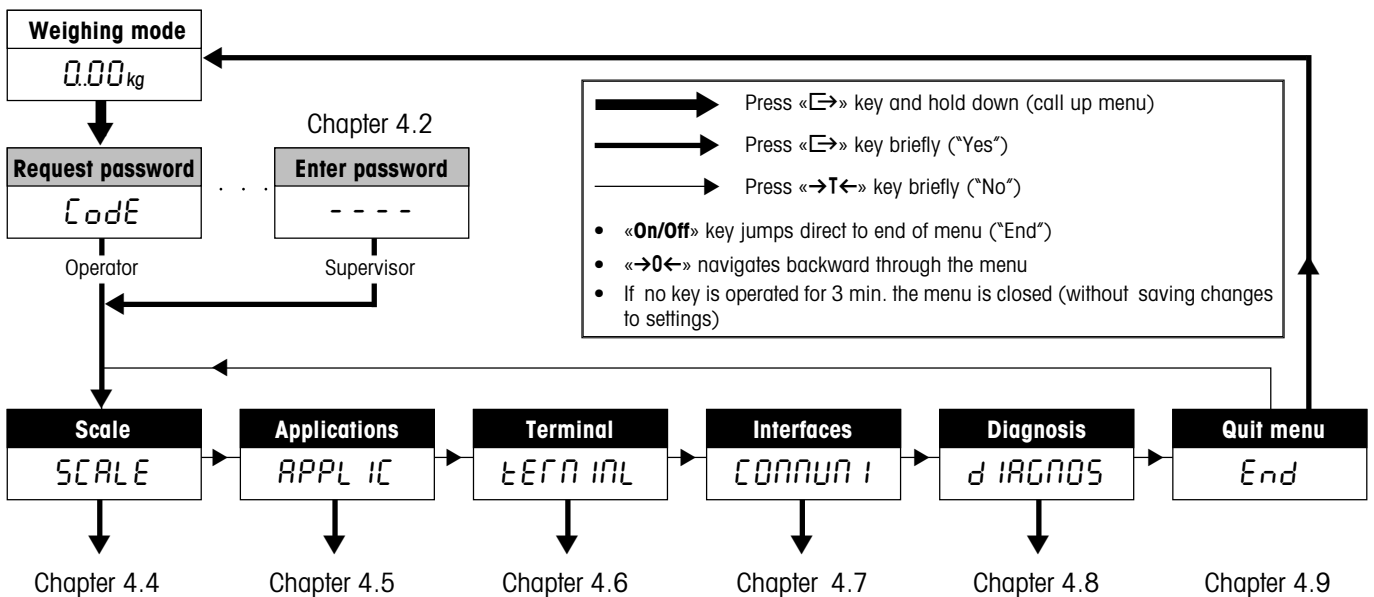
Chapter 4.3 contains a complete overview of the menu and all the possible settings.

4.2   Calling up the menu and entering the password
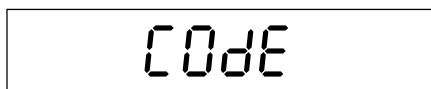
Press the «⇨» key and hold it down until the prompt to enter the password appears.
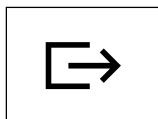
User: No password required, just press the «⇨» key.

Supervisor: Enter password (sequence of keystrokes, Chapter 4.6.2) **immediately** and confirm with the «⇨» key, otherwise after a few seconds the scale returns to weighing mode. If an incorrect password is entered, the menu cannot be called up.

Note: When the scale leaves the factory no supervisor password is defined, so when the password is requested, just press the «⇨» key.

If the password entered is correct, the first block of the menu appears ("SCALE").

4.3 Menu overview

Operation

━━━━━ Press «⊡→» key ("Yes")

───── Press «→T←» key ("No")

«**On/Off**» key jumps direct to the end of the menu ("End")

«→0←» navigates backward through the menu

Menu (continued)

Applications — APPL IC

COUNT
Add.NOdE
OFF *
ON
rEF OPt
On *
OFF

NENOrY
CONF IG
40-40-10
CLEArN
SurE?
0.00 kg

I NFO.rEY
I NFO 1
⋮
I NFO 13
NOt USEd
PCS NEt
GrOSS
tArE
AP I I
H IGHrES
ACCUrCY
n
G totAL
N totAL
PCStOtL
tArGEt
dAtE
t INE

dYNAN IC
OFF *
AUtO
NAnuAL

AL Ib In
trAnSFr
OFF *
On
NEN-rEY
On *
OFF
SCANNEr
On *
OFF
IdENt I
On *
OFF
S.And.Sr
On *
OFF
HOSt
On *
OFF

rESEt
SurE?

Terminal — tErN INL

dEU ICE
SLEEP [4]
OFF *
On
P II.OFF [5]
YES *
NO
bL IGHt [5]
On
OFF
dAtE.t In
dAtE.FOr
EU *
US
dAtE
5-6-2000
t INE
15-05-22
bEEP
OFF *
On

ACCESS
SUPErU I
ENtErC
----
rEtYPEC
----

rESEt
SurE?

Menu (continued)

* Factory setting

1) Available settings depend on model.
2) Factory setting depends on model.
3) Not available on certified scales.
4) Not available on scales with storage battery.
5) Not available on scales driven from power supply (without storage battery).
6) Not available for analog option and if transfer function for alibi memory is activated.
7) Only available for COM2 if analog option is not installed or is deactivated.
8) For second scale connected to a COM interface, only available if analog option is not installed or is deactivated.
9) Only available for analog option.
10) Only available for "Print" and "AutoPrint" operating modes.
11) Only available for COM1.
12) Only available if "Handshake" is set to "Net 422" or "Net 485".
13) Only available if analog option is installed and active.
14) COM3 can also be set to 57,600 or 115,200 baud.
15) Only available if transfer function for alibi memory is activated.
16) In DigiTOL operating modes "dt–b" and "dt–g" the weights to be transmitted can also be specified (tare, net, gross).
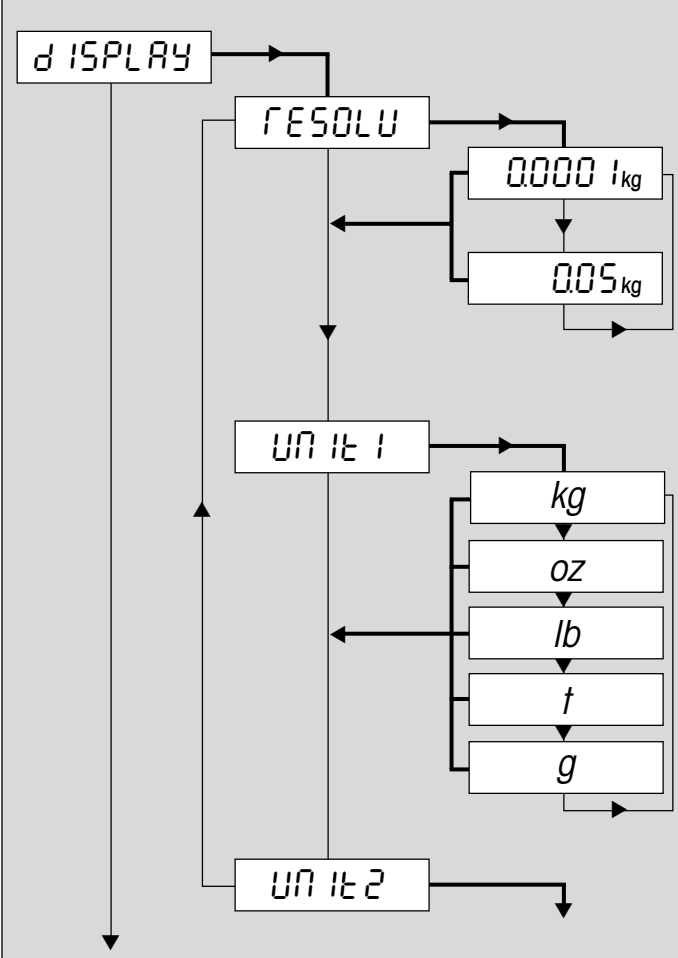
4.4   Scale settings (*SCALE*)

Display	Explanation
`SCALE` → `SCALE 1` `SCALE 2`	Scale settings: Settings and functions for Spider scale Settings and functions for second scale **Note**: The "*SCALE 1/SCALE 2*" selection only appears if the analog option is installed. **Functions and settings**: Adjust/calibrate scale —> Chapter 4.4.1 Display accuracy and weighing unit —> Chapter 4.4.2 Automatic taring —> Chapter 4.4.3 Automatic zero point correction —> Chapter 4.4.4 Automatic storage of tare and zero values —> Chapter 4.4.5 Adaptation to environmental conditions/weighing mode —> Chapter 4.4.6 Reset scale settings to factory settings —> Chapter 4.4.7
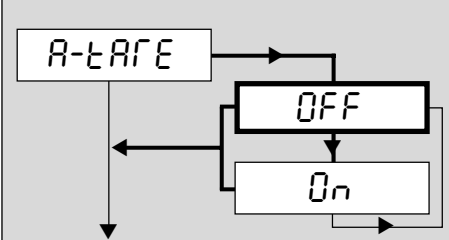
4.4.1   Adjust/calibrate scale (*SCALE –> Cal*)

Display	Explanation
`CAL`	Calibrating/adjusting the scale (weighing pan must be empty). **Not available on certified scales!**
`- 0 -`	Scale determines the zero point, display flashes (no confirmation required).
`6.000 kg`	Scale prompts for calibration weight.
`5.000 kg`	Change calibration weight if desired (available values depend on scale).
`2.000 kg`	
	Place selected weight on pan and confirm with the «⮕» key.
`donE`	Calibration is successfully completed….
`0.00 kg`	… scale returns automatically to weighing mode.

4.4.2 Display accuracy and weighing unit (*SCALE –> Display*)

Display	Explanation

`d ISPLAY` → `rESOLU` → `0.000 1ₖg` / `0.05ₖg`
 	
 `Un It 1` → `kg` / `oz` / `lb` / `t` / `g`
 	
 `Un It2`
	Block can only be accessed by supervisor.
	
	Display accuracy (resolution):
	Setting values and factory setting depend on model.
	On certified scales, resolutions which deviate from the scale definition are displayed without the weighing unit and with a star symbol (weighing result does not correspond to calibrated resolution). On dual-range balances resolutions marked with "l<–>l 1/2" are spread over two weighing ranges (e.g. B 2 x 3,000d).
	
	Weighing unit 1 (factory setting according to type plate):
	Kilogram
	Ounce (not availble on certified scales)
	Pound (not available on certified scales)
	Ton (metric ton)
	Gram
	
	Weighing unit 2
	Same setting possibilities as for weighing unit 1.

4.4.3 Automatic taring (*SCALE –> A-Tare*)

Display	Explanation
`A-tArE` → `OFF` / `On`	Block can only be accessed by supervisor. Automatic taring function switched off (**factory setting**). Automatic taring function switched on. The first weight placed on the scale is interpreted as the tare.

4.4.4   Automatic zero point correction *(SCALE –> A-Zero)*

	Explanation
A-2Er0 → **On** → **OFF**	Can only be accessed by supervisor. **Not available on certified scales**. Auto zero switched on (**factory setting**). Auto zero switched off (display can be set to zero manually with the «→0←» key).

4.4.5   Automatic save of tare and zero values *(SCALE –> Restart)*

Display	Explanation
rEStArt → **OFF** → **On**	Block can only be accessed by supervisor. **Not available on certified scales**. Automatic save switched off (**factory setting**). Automatic save switched on, last tare and zero values are saved and are available again after a power outage or switching off.

4.4.6   Aadaptation to environmental conditions and weighing mode *(SCALE –> Filter)*

Display	Explanation
FiLtEr → **UIbrAt** → **nEd** / **HIGH** / **LOII** **PrOCESS** → **UnIUEr** / **dOSInG**	Block can only be accessed by supervisor. **Environmental conditions (vibration adapter)**: Normal environmental conditions ("medium"): scale operates at medium speed (**factory setting**). Unstable environment ("high"): scale operates more slowly but is less sensitive to external influences. Very stable and stable enviroment ("low"): scale operates very quickly but is more sensitive to external influences. **Weighing mode (weighing process adapter)**: Universal setting for all weighing types and normal weighing goods (**factory setting**). Dispensing liquids or powdery substances.

4.4.7   Reset scale settings to factory settings (*SCALE –> Reset*)

Display	Explanation
reset → ↓ *SureP* ←	Resets all scale settings to the factory settings (applies only to selected scale, "SCALE 1" or "SCALE 2"). This block can only be accessed by the supervisor. Confirm resetting or cancel.

4.5   Application settings (*APPLICATION*)

Display	Explanation
APPL IC	**Application settings**: can only be accessed by supervisor!
COUNt →	Settings for piece counting —> Chapter 4.5.1
nEnOrY →	Memory management —> Chapter 4.5.2
InFO.hEY →	Define designation of info key —> Chapter 4.5.3
dYnAnI C →	Activate dynamic weighing function —> Chapter 4.5.4
AL Ib I.n →	Settings for the optional alibi memory —> Chapter 4.5.5
reset →	Reset application settings to factory settings —> Chapter 4.5.6

4.5.1 **Settings for piece counting** (*APPLICATION –> Count*)

Display	Explanation
$\fbox{Count}$ $\fbox{Add.NOdE}$ $\fbox{OFF}$ $\fbox{On}$ $\fbox{rEF OPt}$ $\fbox{On}$ $\fbox{OFF}$	**Adding mode** (does not function in two-scale operation): Adding mode switched off (**factory setting**). Adding mode switched on (when piece counting, ensures that the reference quantity used is not too small, see Chapter 3.5). **Reference optimization**: Reference optimization switched on (**factory setting**), increases piece counting accuracy (see Chapter 3.4). Reference optimization switched off.

4.5.2 **Memory management** (*APPLICATION –> Memory*)

	Explanation
$\fbox{nEnOry}$ $\fbox{COnFIG}$ $\fbox{40-40-10}$ $\fbox{CLEAr.n}$ $\fbox{SUrE?}$ $\fbox{0.00\,kg}$	**Memory allocations** (total 100 memory locations): **Factory setting**: 40 locations for tare values (01 – 40) 40 locations for reference piece weights (41 – 80) 10 locations for target weights (81 – 90) 10 locations for target piece number of pieces (91 – 100) Enter new allocations, e.g.: "20–30–20" (note: enter as "20**.**30**.**20"!) and confirm with «⇨». **Note**: The number of storage locations for target numbers of pieces does not have to be entered, because the scale automatically allocates them from the remaining memory. In this example, 30 locations (71 to 100) remain for target piece counts. The «→T←» key can be used to move the display, because not all values are visible. **Caution**: Stored values remain in their original memory locations and must be checked after the new allocation. **Clear memory** Confirm deletion or cancel. If you confirm the deletion, the content of all 100 memories is deleted, and the memory allocations made at the factory are restored. The scale then returns to weighing mode.

4.5.3 Define designation of info key (*APPLICATION –> Info Key*)

Display	Explanation
`INFO.KEY`	Define which info fields can be called up with the «**i**» key (maximum 13 info fields).
`INFO 1` `INFO 13`	Selects the info field to be defined (1 – 13).
	Each info field can be assigned one of the following information items:
`PCS NET`	Net weight of the pieces on the scale (for piece counting only).
`Gross`	Gross weight
`tArE`	Tare weight
`APII`	Reference piece weight (for piece counting only)
`HIGHrES`	Current weight at high resolution
`ACCUrCY`	Accuracy (for piece counting only)
`n`	Number of lots weighed (for totaling only)
`G tOtAL`	Total gross weight (for totaling only)
`N tOtAL`	Total net weight (for totaling only)
`PCS.tOtL`	Total piece count (for totaling piece counts only)
`tArGEt`	Target value (for weighing or counting to a target value)
`dAtE`	Date
`t.nE`	Time
`nOt.USEd`	Info field not assigned

4.5.4 Activating the dynamic weighing function (*APPLICATION –> Dynamic*)
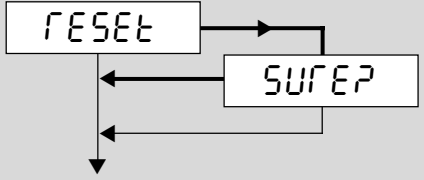
Display	Explanation
`dYNAN IC`	This function facilitates weighing unstable weighing goods (e.g. animals).
`OFF`	Dynamic weighing function switched off (**factory setting**).
`AUtO`	Dynamic weighing function with **automatic start** switched on (for notes on use, see Chapter 2.9).
`NAnuAL`	Dynamic weighing function with **manual start** switched on (for notes on use, see Chapter 2.9).

4.5.5 Settings for the optional alibi memory (*APPLICATION –> Alibi.M*)
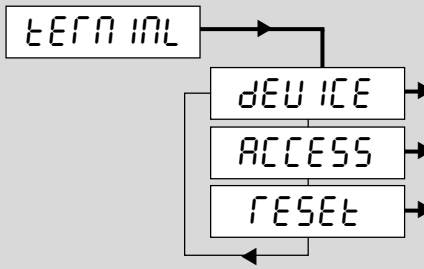
Display	Explanation
`AL Ib I.M`	This function allows configuration of data transfer to the optional alibi memory. Instructions for using the alibi memory are contained in the separate operating instructions.
`trANSFr` `OFF` `On`	**Data transfer to alibi memory**: Data transfer switched off (**factory setting**). No data is transferred to the alibi memory. Data transfer to alibi memory switched on. First interface (COM1) is fixed in "Alibi" mode.
`MEM-KEY` `On` `OFF`	**Manual data transfer with Store key**: Manual start of data transfer to alibi memory by touching the save button. The Store key is not used for saving transaction data.
`SCANNEr` `On` `OFF`	**Automatic data transfer with barcode scanner** (scanner only reads ID1): The data is automatically transferred to alibi memory as soon as the scanner reads the ID1. Barcode scanning does not start data transfer.
`IdENt  1` `On` `OFF`	**Manual data transfer after entering ID1**: The data is transferred to alibi memory after ID1 has been entered manually. No data transfer takes place when ID1 is entered.
`S.And.Sr` `On` `OFF`	**Automatic data transfer with host command**: The data is transferred to alibi memory as soon as an "S" or "SR" command is received from the host computer. Host command mode switched off.
`HOSt` `On` `OFF`	**Data transfer to host**: The data is also transferred to the host computer (via the first interface which operates in "Dialog" mode). No data transfer to the host.

4.5.6 Reset application settings to factory settings (*APPLICATION –> Reset*)

Display	Explanation
`reset` `SurE?`	Resets all application settings to the factory settings. Confirm resetting or cancel. **Note**: The contents and allocation of the memory locations (Chapter 4.5.2) are not deleted or reset!
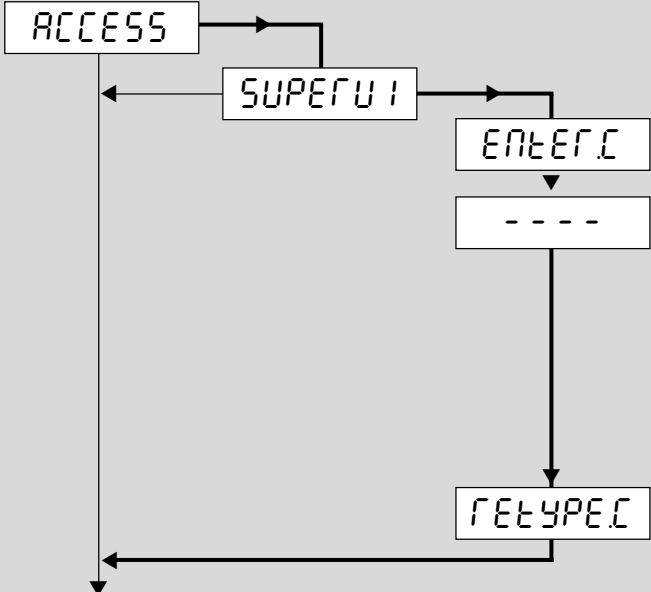
4.6 Terminal settings (*TERMINAL*)

Display	Explanation	
`terminl`	Only the "Device" block is available to the user!	
`dEUICE`	Settings for energy saving, date/time, signal tone	—> Chapter 4.6.1
`ACCESS`	Password for menu access	—> Chapter 4.6.2
`reset`	Reset terminal settings to factory settings	—> Chapter 4.6.3
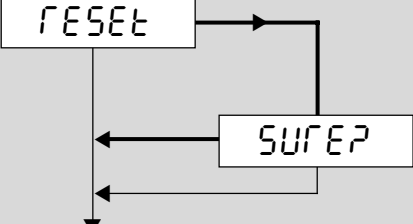
4.6.1 Settings for energy saving, data/time, and signal tone (*TERMINAL –> Device*)

Display	Explanation
`dEU ICE` → `SLEEP` → `OFF` / `On`	Can be accessed by user! **Standby** (only for scales operated from power supply): Standby switched off, display permanently activated (**factory setting**). Standby switched on. If there is no activity for 3 minutes, the display and backlighting are deactivated ("SLEEP"). They are reactivated when a key is pressed or the weight is changed.
`PIIrOFF` → `YES` / `nO`	**Energy saving mode** (for battery-operated scales only): Energy saving mode active. If there is no activity for 3 minutes, the scale is switched off (**factory setting**). Energy saving mode inactive, scale does not switch off automatically.
`b.L IGHt` → `On` / `OFF`	**Display backlighting**: Backlighting switched on (**factory setting**). Battery-operated scales: switches off automatically after 5 seconds. Backlighting switched off.
`dAtE.t in` → `dAtE.FOr` → `EU` / `US` `dAtE` `t iME`	**Date and time**: Select date format: European date format (DD/MM/YYYY) American date format (MM/DD/YYYY) Set date (example input: "11.10.2000") Set time (example input: "10.09.00").
`bEEP` → `OFF` / `On`	**Signal tone**: Signal tone switched off (**factory setting**). Signal tone switched on (sounds when keys are operated and when target values are reached).
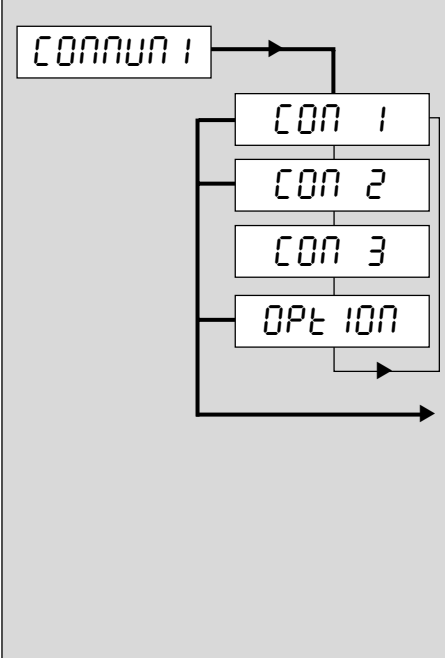
4.6.2 **Password for menu access** (*TERMINAL –> Access*)

Display	Explanation
ACCESS → SUPErU1 → ENtEr.C → - - - - → rEtYPE.C	Can only be accessed by supervisor! **Define supervisor password**: Prompt to enter password. Enter password (min. 1, max. 4 characters) and confirm with «⇥». Important: The «⇥» key cannot be used as part of the password because it terminates the input! If «⇥» is pressed immediately after the entry prompt, the existing password is cleared. The user then has complete access to the menu again. The «→0←» key can only be used in combination with at least one other key! Re-enter the password and confirm with «⇥».
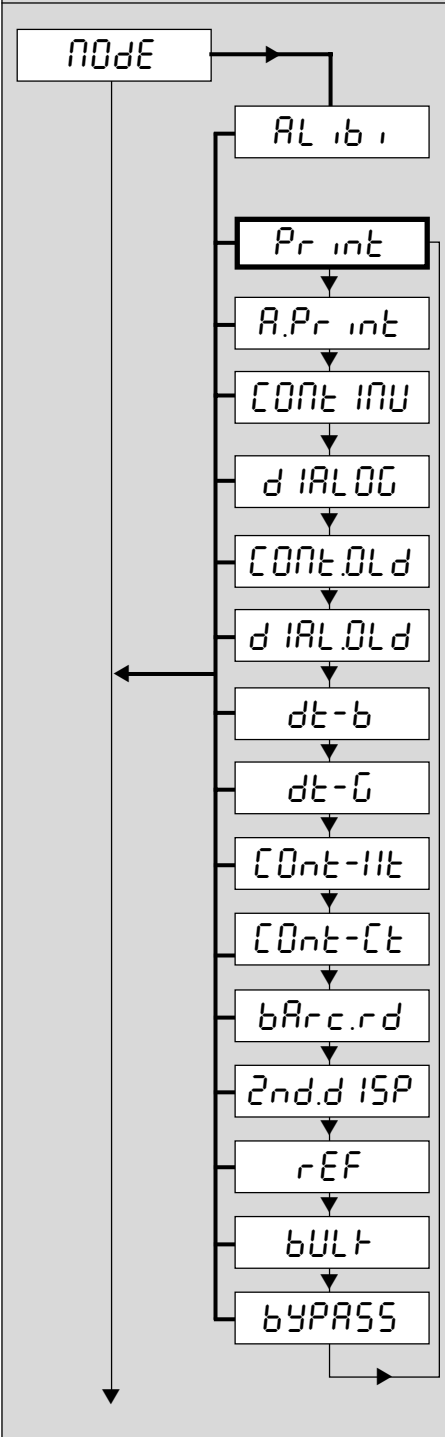
4.6.3 **Reset terminal settings to factory settings** (*TERMINAL –> Reset*)

Display	Explanation
rESEt → SUrE?	Resets all terminal settings to the factory settings. Only the settings in the "Device" block are reset, not the password for menu access. Confirm resetting or cancel.

4.7 Configure interfaces (*COMMUNICATION*)

Display	Explanation
`COMMUN 1`	Configures the scale interfaces: can only be accessed by supervisor!
`COM 1`	Standard interface COM1 (RS232C or RS422/485)
`COM 2`	Optional interface COM2 (RS232C)
`COM 3`	Optional interface COM3 (RS232C)
`OPT ION`	Analog option (only if analog option installed)
	Settings:
	Operating mode of interface —> Chapter 4.7.1
	Communication parameters —> Chapter 4.7.2
	Settings for printed reports —> Chapter 4.7.3
	Insert line feeds into printed reports —> Chapter 4.7.4
	Reset interface settings to factory settings —> Chapter 4.7.5

4.7.1 Operating mode of interface (*COMMUNICATION –> Mode*)

Display	Explanation
NOdE	
AL ib i	Alibi memory only appears when data transfer to the alibi memory is activated ("APPLIC" –> "Alibi.M" –> "Transfer" –> "ON"). Fixed setting (other operating modes only accessible if transfer function is deactivated).
Pr int	Manual data output on printer («⇨» key). **Factory setting**.
A.Pr int	Automatic output of stable results on printer (for series weighings).
CONt INU	Continuous output of all weight values via the interace. Not available for COM2 if analog option active!
d IALOG	Bidirectional communication using MT-SICS commands (to control scale from a PC). Not available for COM2 if analog option active!
CONt.OLd	Same as "Continuous" (see above), but with 2 fixed blanks before the unit (compatible with Spider 1/2/3).
d IAL.OLd	Same as "Dialog" (see above), but scale sends 2 fixed blanks before the unit (compatible with Spider 1/2/3).
dt-b	DigiTOL-compatible format. Weights for transfer can be selected: tare, net, gross (gross weight is marked with "**B**").
dt-G	Same as "dt–b" mode (see above) but gross weight is marked with "**G**".
COnt-llt	"TOLEDO Continuous Weight" mode.
COnt-Ct	"TOLEDO Continuous Count" mode.
bArc.rd	Connection of a barcode reader.
2nd.d ISP	Connects a second display. Not available for COM2 if analog option active!
rEF	Second scale serves as reference scale.
bULt	Second scale serves as counting scale.
bYPASS	**For analog option only**: Deactivates the analog option. If the analog option is not deactivated, the "Ref" and "Bulk" settings are no longer available for COM1 and COM3, and only the "Print" and "A. Print" operating modes are available for COM2!

4.7.2 **Communication parameters** (*COMMUNICATION –> Parameters*)

Display	Explanation
PArAMEt	Not available for analog option. The values set here must match those of the connected peripheral devices (printer, PC).
bAUd	**Interface data transmission rate**:
300 — 115200	300 baud – 115'200 baud. Factory setting depends on operating mode of interface. **Note**: The baud rates 57,600 and 115,200 are only available on COM3.
PArity	**Number of data bits and parity**:
7 EUEN	7 data bits, even parity (**factory setting**)
8 odd	8 data bits, odd parity
8 EUEN	8 data bits, even parity
7 nonE	7 data bits, no parity
8 nonE	8 data bits, no parity
7 odd	7 data bits, odd parity
	Factory setting depends on operating mode of interface.
H.SHAtE	**Transmission protocol**:
HONHOFF	Xon/Xoff protocol (**factory setting**).
nEt 422	Network operation according to RS422 standard via optional RS422/485 interface (COM1). Not available for COM2/COM3.
nEt 485	Network operation according to RS485 standard via optional RS422/485 interface (COM1). Not available for COM2/COM3.
NO	No communication protocol.
nEt.Addr	**Network address** (only available for "Net 422" and "Net 485", see Chapter 5.1.5 for notes on network operation).
0 — 31	Available network addresses 0 – 31.

4.7.3 Settings for printed reports (COMMUNICATION –> Definition String)

Display	Explanation
dEFStr	Only available for "Print" and "A.Print" operating modes (Chapter 4.7.1).
LINE.FNt	**Report formatting**:
MULtI	Each value on the report is printed on a separate line (**factory setting**).
SINGLE	Several values are printed on one line.
FOrMAt	**Data to be reported**:
StdArd	Standard report (**factory setting**) containing report header, gross, net, and tare weight (if present). For piece counting, also reference piece weight, number of reference pieces, and result of piece counting.
CUStOM	Defines customized report:
LINE 1	Defines the values to be reported on up to 20 report lines.
LINE 20	The following settings are available for each line:
nOt.USEd	Report line not used (**factory setting**)
HEAdEr	Report header (Chapter 5.1.3)
dAtE	Date
tIME	Time
Id1	Identification 1 (ID 1)
Id2	Identification 2 (ID 2)
SCALE.nO	Scale number (for two-scale systems only)
GrOSS	Gross weight
tArE	Tare weight
nEt	Net weight
APII	Average piece weight
rEF Ct	Reference quantity
PCS	Piece counting result ("Pieces")
tArGEt	Target value for weighing or counting
StArLn	Line of stars ("Starline")
CrLF	Line feed (for empty line)
F FEEd	Form feed for label printer.

4.7.4   Inserting line feeds into the report (*COMMUNICATION –> Add Line Feed*)

Display	Explanation
`Add LF` → `0` ↕ `9`	Inserts 0 to 9 additional line feeds at the end of the report. On printers with tear-off edge (e.g. "Sprinter" printer) the paper can be fed forward far enough for the report to be torn off. Only available for "Print" and "A.Print" operating modes (Chapter 4.7.1):

4.7.5   Reset interface settings to factory settings (*COMMUNICATION –> Reset*)
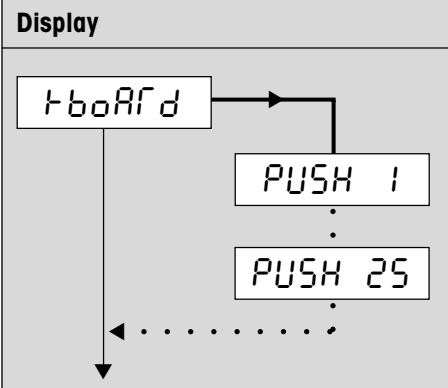
Display	Explanation
`rSt.COM1` `rSt.COM2` `rSt.COM3` `SurE?`	Resets all settings in the "COMMUNICATION" menu block to the factory settings. Resetting only affects the selected interface (COM1. COM2 or COM3). Not available for analog option. Confirms or cancels resetting. After confirmation the scale uses the factory settings again.

4.8   Diagnosis and printout of menu settings (*DIAGNOSTICS*)
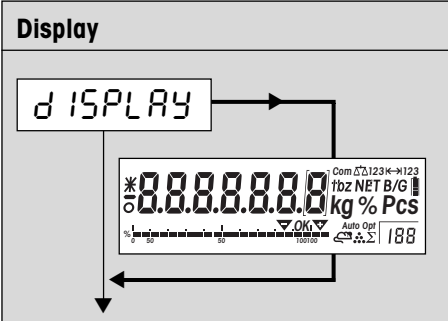
Display	Explanation	
`dIAGNOS`	Can only be accessed by supervisor!	
`HboArd`	Check keyboard	—> Chapter 4.8.1
`dISPLAY`	Check display	—> Chapter 4.8.2
`SNr`	Display serial number	—> Chapter 4.8.3
`LiSt`	Print menu settings	—> Chapter 4.8.4
`LiSt.N`	Printout of memory	—> Chapter 4.8.5
`rESEt.AL`	Reset all menu settings to factory settings	—> Chapter 4.8.6
	Note: If a second weighing platform is connected via the analog option, separate menu blocks are displayed for its serial number ("SNR $\triangle 2$") and to print out its menu settings ("List $\triangle 2$").	
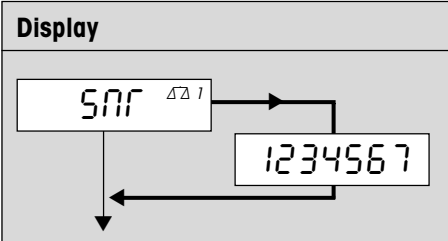
4.8.1 Checking the keyboard (*DIAGNOSTICS –> Keyboard*)

Display	Explanation
⌐boAГd PUSH 1 ． ． PUSH 25 ◄ · · · · · · · · ▸	Press all 25 keys in sequence. If a key is functioning, the scale jumps to the next key. The keys are numbered as follows: \[11\] \[12\] \[13\] \[14\] \[15\] \[16\] \[5\] \[6\] \[7\] \[8\] \[9\] \[10\] \[17\] \[18\] \[19\] \[20\] \[21\] \[22\] \[1\] \[2\] \[3\] \[4\] \[23\] \[24\] \[25\]

4.8.2 Checking the display (*DIAGNOSTICS –> Display*)

Display	Explanation
d ISPLAY *8.8.8.8.8.8.8* kg % Pcs	The scale displays the functioning segments. Check whether all segments are visible (compare with illustration on first inside page of these instructions).
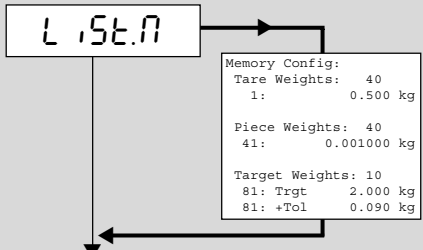
4.8.3 Display serial number (*DIAGNOSTICS –> SNR*)

Display	Explanation
SNГ △△1 1234567	Serial number of Spider scale (max. 7 characters). If a second weighing platform is connected to the analog option, an additional menu block ("SNR △△2") appears with its serial number.
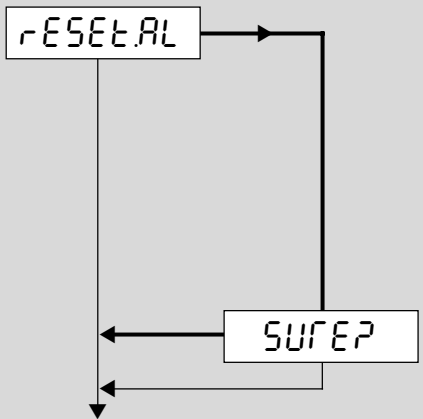
4.8.4 Printing the menu settings (*DIAGNOSTICS –> List*)

Display	Explanation
| L iSt △△1<br><br>```
SOFTWARE VER 22-2.00
SNR       :1234567
METROLO   :NO APPr
SCAL.TYP  :2MULT.RN
BAS.UNIT  :kg
SCL.CAP1  :30.00 kg
RESOL.1   :0.01 kg
SCL.CAP2  :60.00 kg
RESOL.2   :0.02 kg
``` | Menu settings for the Spider scale are output on a printer (see sample printout in Chapter 5.3). If a second weighing platform is connected to the analog option, an additional menu block ("List △△2") appears for printing the settings of the second scale. |

4.8.5 Printout of memory (*DIAGNOSTICS –> List Memory*)

Display	Explanation

`L iSt.N`
 	
``
Memory Config:
 Tare Weights: 40
   1:        0.500 kg
 	
 Piece Weights: 40
  41:      0.001000 kg
 	
 Target Weights: 10
  81: Trgt   2.000 kg
  81: +Tol   0.090 kg
``
	The memory locations, as well as the contents of all memory locations (tare values, reference piece weights, target values for weighing and counting), are printed out on a printer (see sample printout in Chapter 5.3).

4.8.6 Reset all menu settings to the factory settings (*DIAGNOSTICS –> Reset All*)

Display	Explanation

`rESEt.AL`
 	
`SUrE?`
	Resets all menu settings to the factory settings. **Caution: All the individual settings are lost, except the following data which are retained:**
	
	Menu block "SCALE": calibration data
	Menu block "APPLICATION": memory configuration and content
	Menu block "TERMINAL": supervisor password
	Menu block "COMMUNICATION": all settings
	
	Confirm resetting or cancel.

4.9 Saving the settings and quitting the menu (*End*)

Display	Explanation

`End`
 	
`SAVE`
 	
`0.00 kg`
	You can go directly to this menu block from any point in the menu by using the «**On/Off**» key!
	
	Save the changed settings or cancel.

5 Additional important information

In this chapter you will find information about the interface commands, error messages, and cleaning your scale.

5.1 SICS interface commands

The Spider scale supports the **M**ETTLER **T**OLEDO **S**tandard **I**nterface **C**ommand **S**et **(MT-SICS)**. You can use MT-SICS commands to configure, interrogate, and operate the scale from a PC via the RS232C or optional RS422/485 interface.

5.1.1 Preconditions for communication between scale and PC

– The scale must be connected to the RS232C interface of a PC by a suitable cable (Chapter 6.6).

– The interface of the scale must be set to "Dialog" mode (Chapter 4.7.1).

– The PC must have a terminal program (e.g. "Hyper Terminal") installed on it.

– The communication parameters (data transmission rate, bits, and parity) in the terminal program must be set to the same values as on the scale (Chapter 4.7.2).

5.1.2 SICS commands supported by the scale

– All **SICS Level 0** ("**I0**", "**I1**", "**I2**", "**I3**", "**I4**", "**S**", "**SI**", "**SIR**", "**Z**", "**ZI**", "**@**") and **SICS Level 1** ("**D**", "**DW**", "**K**", "**SR**", "**T**", "**TA**", "**TAC**", "**TI**") commands. The additional "**SFIR**" command corresponds to the SICS Level 0 "SIR" command but transmits a greater number of data records per unit of time (while doing so, the display of the Spider scale is no longer active).

– The following commands from **SICS Level 2R Standard** are implemented: "**C2**", "**DAT**", "**I10**", "**I11**", "**PWR**", "**P100**", "**P101**", "**P102**", "**ST**", "**SU**", "**SIU**", "**SIRU**", "**SRU**" and "**TIM**".

– The following commands from **SICS Level 3R Standard** are supported: "**I12**", "**I13**", and "**PW**".

– Special command "**P130**" for price display in auxiliary display (for details refer to document no. 21300758).

– SQC14 command "**XD12**" switches operating mode of interface between "Print" and "Dialog".

The "**I0**" command can be used to inquire the supported commands.

You will find detailed information about the interface commands in the "**MT SICS Reference Manual**" (ME-705184).

Besides the standard commands, there are also **scale-specific SICS commands** which support specific characteristics of the product. These commands are not listed in the "MT SICS Reference Manual" but in the documentation of the specific scale. Your Spider scale currently supports two scale-specific SICS commands: one for specifying the report header and one for specifying target values and tolerances. These two commands are described below.

5.1.3 Scale-specific SICS command for defining the report header

The report header can contain up to 5 lines each with a maximum of 24 characters (see sample report in Chapter 5.3).

The command for defining the report header is **I31_x**. Example:

I31_1_"**Mettler-Toledo GmbH**"   <CR><LF>
I31_2_"**Heuwinkelstrasse**"   <CR><LF>
I31_3_"**CH-8606 Naenikon**"   <CR><LF>
I31_4_"**Telephone 01 944 22 11**" <CR><LF>
I31_5_"**Internet www.mt.com**"   <CR><LF>

– Each SICS command line must be terminated with **<CR><LF>**. The command is executed immediately. To make corrections, re-enter the entire line.

– "**_**" represents a blank. The quotation marks must also be entered. They indicate to the scale that text is being input.

– To insert blank lines, input a blank instead of text.
– To inquire line: **I31_x <CR><LF>;** delete line: **I31_x_"" <CR><LF>** (x = line number).
– Important: The "Header" setting must be activated for the report header to be printed (Chapter 4.7.3).

5.1.4 Scale-specific SICS command for specifying target values and tolerances

The "PM" command can be used to inquire and specify target values and tolerances for the weighing application (weighing in to target weight and checkweighing) as well as for piececounting (counting in to target piececount).

Important notes:

– The PM command always relates to the active application on the scale (weighing or piececounting). Before issuing the PM command always check that the desired application is activated in the menu!
– All parameters must always be specified!

Weighing application (weighing in to target weight and checkweighing)

PM_x1_x2_x3_x4_x5_x6	$x1$ Target weight
	$x2$ Weight unit for target weight ("kg", "g", "t" and "lb")
Example:	$x3$ Upper tolerance
	$x4$ Weight unit for upper tolerance
PM_1.4_kg_0.2_kg_0.1_kg	$x5$ Lower tolerance
	$x6$ Weight unit for lower tolerance

Piececounting (weighing in to target piece count)

PM_x1_x2_x3_x4_x5_x6	$x1$ Target piececount
	$x2$ Unit for target piece count (only "PCS" allowed)
Example:	$x3$ Upper tolerance in pieces
	$x4$ Weight unit for upper tolerance (only "PCS" allowed)
PM_96_PCS_2_PCS_1_PCS	$x5$ Upper tolerance in pieces
	$x6$ Weight unit for lower tolerance (only "PCS" allowed)

PM_A

This **message** confirms that **all parameters have been set**.

PM_L

This **error message** (instead of the confirmation PM_A) results from a plausibility error (e.g. lower tolerance ≥ target piece count).

PM

Command for **inquiring the current "PM" parameters**

PM_A_x1_x2......

Reply to the "PM" inquiry command. The reply format conforms to the command format for parameter input described above (PM_1_2....).
All parameters are displayed in the current weighing unit (or in pieces) irrespective of the unit in which they were entered.

5.1.5 Network operation via the optional RS422/485 interface

You can use the optional RS422/485 interface to network up to 32 scales. In network operation the scale must be addressed by the host computer before commands can be transmitted and weighing results received. Addressing is done with the control character <**ESC**> (hex. 1B) followed by the address (in the range from hex. 30... 3F). Following this, the desired SICS command is transmitted and terminated with <**CR**> (hex. 0D) and <**LF**> (hex. 0A). This transfers control of the bus to the scale, which then sends its address to the host as confirmation. After that, the scale sends the answer to the command, followed by <**CRLF**>. By doing this it returns control of the bus to the host.

<ESC> 3A	–>	**Scale**
SI <CRLF>	–>	**Scale**
Host	<–	<ESC> 3A
Host	<–	S S___45.02_kg <CRLF>

Example: The host addresses the scale with hex address 3A.

The host transmits command (e.g. "SI"). The command is terminated with <**CRLF**> and control of the bus is transferred to the scale. Note: <**ESC**> deletes a command already issued.

The scale confirms receipt of the command by sending its address (3A) to the host.

The scale transmits the answer to the command received from the host and with <**CRLF**> returns control of the bus to the host.

5.2 Warning and error messages

```
┌ ─ ─ ─ ─ ┐
```
Overload: Reduce the load on the scale or reduce the preload.

```
└ ─ ─ ─ ─ ┘
```
Underload: Place the weighing pan on the scale and ensure it can move freely.

```
─ ─ ─ ─ ─ ─
```
Result not stable: Always appears when not stable (when zeroing, taring, etc.). If the scale still does not become stable after a long time, check the environmental conditions. If necessary, change the setting of the vibration adapter (Chapter 4.4.6) or use the dynamic weighing function (Chapter 2.9/4.5.4).

```
─ ─no─ ─
```
Function not allowed: The requested function cannot be executed because it is not allowed at the time of the request.

```
┌ ─no─ ┐
```
```
└ ─no─ ┘
```
Zeroing not possible: Make sure that zeroing is being performed in the allowed range and not with overload or underload. Note: The message "└ ─no─ ┘" also appears if it is attempted to tare certified scales with minus values (this is not allowed).

```
Err 4
```
Reference weight too low: The weight on the pan is too low to use as a valid reference for piece counting. Place a larger number of reference pieces on the weighing pan.

```
Err 5
```
No valid value from reference scale: Only occurs when piece counting on a 2-scale system. Check cable connecting the scales and check interface settings.

```
Err 6
```
Not calibrated/adjusted: Disconnect the power supply plug and reconnect it (or if the scale is battery-operated, switch it off and then on again). If the message appears again, calibrate/adjust scale (Chapter 4.4.1). If message still appears, contact your authorized METTLER TOLEDO representative.

```
Err 7
```
Reference piece weight too low: When determining the reference, the resulting weight of a single piece is below the allowable limit. Piece counting is not possible for such pieces.

```
Err 9
```
Unstable weight value when determining reference: When determining the reference for piece counting, the weight value did not become stable and the scale cannot determine the reference piece weight. Check the environmental conditions. If necessary, change the setting of the vibration adapter (Chapter 4.4.6).

```
Err 14
```
Input error for target value or tolerances: The value entered is invalid, enter another value.

```
Err 15
```
Setting the reference piece weight is not allowed: Do not define a reference piece weight while a weight totaling is in process.

$Err \ 16$	**Switching over the weighing unit is not allowed (totaling)**: Do not switch over the weighing unit while a weight totaling is in process.
$Err \ 17$	**Printout not yet complete**: Repeat the desired action after the current printout is complete.
$Err \ 18$	**Changing the weighing unit not allowed (dynamic weighing)**: Do not change the weighing unit while you are dynamic weighing.
$Err \ 53$	**EAROM checksum error**: Disconnect the power supply plug and reconnect it (or if the scale is battery-operated, switch the scale off and then on again). If the message re-appears, contact your authorized METTLER TOLEDO representative.

5.3   Sample reports

Weighing with tare

```
G           4.876 kg
T           0.223 kg
N           4.653 kg
```

G   =   gross weight
N   =   net weight
T   =   tare
Dyn WT   =   dynamically determined weight
SCALE 1 =   scale (only on two-scale systems)
PIECE WT =   average piece weight (piece counting)
REF PCS =   reference piece weight (piece counting)
QUANTITY =   number of pieces (result of piece counting)
COMP WT =   net weight of a lot (totaling)

Dynamic weighing

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

Piece counting

```
SCALE: 1
G           4.876 kg
T           0.223 kg
N           4.653 kg

PIECE WT  48.468 g
REF PCS        10

QUANTITY     96 PCS
```

Printout with report header

```
Mettler-Toledo GmbH
Heuwinkelstrasse
CH-8606 Naenikon
Telefon 01/944 22 11
Internet www.mt.com

G           4.876 kg
T           0.223 kg
N           4.653 kg
```

Total weighings

```
ID1:           42465
Date      30.11.2000
Time        14:41:28

ID2:            3987
n                  1

G          1.270 kg
T          0.252 kg
N          1.018 kg

COMP WT    1.018 kg
*******************
ID2:            3987
n                  2

G          0.252
T          0.252 kg
N

COMP WT
*******************
ID1:           42465
n TOTAL        2

G TOTAL    1.52 kg
N TOTAL    1.02 kg
*******************
```

Total piece countings

```
ID2:          982347
n                  1

G          1.224 kg
T          0.206 kg
N          1.018 kg

             500 PCS
*******************
ID2:          982347
n                  2

G          1.632 kg
T          0.206 kg
N          1.426 kg

             701 PCS
*******************
ID1:            0085
n TOTAL        2

G TOTAL    2.86 kg
N TOTAL    2.44 kg

QUANTITY  1201 PCS
*******************
```

Print out memory ("List Memory", Chapter 4.8.5)

```
Memory Config:
 Tare Weights:   40
   1:         0.500 kg
   4:         0.135 kg
  22:         1.454 kg
  40:         0.240 kg

 Piece Weights:  40
  41:       0.008000 kg
  54:       0.042770 kg
  78:       0.084536 kg

 Target Weights: 10
  81: Trgt    2.000 kg
  81: +Tol    0.090 kg
  81: -Tol    0.060 kg
  85: Trgt    2.400 kg
  85: +Tol    0.400 kg
  85: -Tol    0.300 kg

 Target Pieces:  9
  91: Trgt     100 PCS
  91: +Tol       4 PCS
  91: -Tol       2 PCS
  96: Trgt     450 PCS
  96: +Tol      12 PCS
  96: -Tol       4 PCS
```

Printout of scale settings ("List", Chapter 4.8.4)

```
SOFTWARE VER 23-2.00                      RS232
SNR        :1234567                        MODE      1:Print
METROLO    :NO APPr                        BAUD      1:2400
SCAL.TYP   :2MULT.RN                       PAriTY    1:7 EVEN
BAS.UNIT   :kg                             H.SHAKE   1:XONXOFF
SCL.CAP1   :30.00 kg                       LINE.FMT  1:MULTI
RESOL.1    :0.01 kg                        FORMAT    1:StdArd
SCL.CAP2   :60.00 kg                       ADD LF    1:1
RESOL.2    :0.02 kg
GEO        :18                             MODE      2:Print
DISPLAY                                    BAUD      2:2400
 RESOLU    :0.01 kg                        PAriTY    2:7 EVEN
 UNIT1     :kg                             H.SHAKE   2:XONXOFF
 UNIT2     :kg                             LINE.FMT  2:MULTI
A-TARE     :OFF                            FORMAT    2:StdArd
A-ZERO     :ON                             ADD LF    2:1
RESTART    :OFF
VIBRAT     :MID                            MODE      3:Print
PROCESS    :UNIVEr                         BAUD      3:2400
ADD.MODE   :OFF                            PAriTY    3:7 EVEN
REF OPT    :ON                             H.SHAKE   3:XONXOFF
DYNAMIC    :OFF                            LINE.FMT  3:MULTI
SLEEP      :ON                             FORMAT    3:StdArd
B.LIGHt    :ON                             ADD LF    3:1

                                          OPTION
                                           MODE      :rEF
```

5.4   Cleaning instructions

Before you start to clean your scale, disconnect it from the power supply!

Use a moist cloth (no acids, caustics, or strong solvents).

Do not use abrasive cleaning agents, they can scratch the display.

Do not clean the scale with a high-pressure cleaner or under running water.

If heavily soiled, remove the weighing pan, protective cover (if present), and leveling feet, and clean them separately.

Never use a rigid object to clean under the load plate support when the weighing pan is removed!

Observe the regulations of your company and industry with regard to cleaning intervals and permitted cleaning agents.

6   Technical data, interfaces, and accessories

In this chapter you will find technical specifications for your scale, information about standards and directives, and a list of currently available accessories.

6.1   General data and delivered items

Applications	Weighing / Dynamic weighing Piece counting / Piece counting with second scale Totaling weighings and piece countings Weighing to a target value (for weighing and piece counting)
Settings	Selectable resolution Selectable weighing unit Automatic taring function Automatic zeroing (at switchon and during operation) Filter for adaptation to environmental conditions (vibration adapter) Filter for adaptation to weighing mode, e.g. dispensing (weighing process adapter) Adding mode for reference determination (piece counting) Variable reference piece count (piece counting) Automatic reference optimization (piece counting) Switchoff function, standby and energy-saving modes 100 memory locations (selectable configuration) Programmable info fields and identifications Date and time Signal tone Display backlighting Graphical weighing range display
Display	Liquid crystal display (LCD), 37 mm high, backlit, with linear weighing range display
Interface	1 RS232C interface built in (for data s. Chapter 6.4), optional interfaces available
Environmental conditions	Accuracy is guaranteed in the following ranges: Temperature range: −10 ... +40 °C / 14 ... 104 °F Relative air humidity: 15 ... 85% rh (noncondensing) Overvoltage category: II Pollution degree: 2
Power supply	Direct connection to power supply (cable with country-specific plug): Scale without OptionPac: Scale with OptionPac: 120 V, 60 Hz, 90 mA 100 – 250 V / 47 – 63 Hz / 300 mA 100 V, 50/60 Hz, 90 mA 230 V, 50 Hz, 70 mA 240 V, 50 Hz, 70 mA
Weight and dimensions	See Chapter 6.3
Standard delivery package	Complete scale (terminal and weighing platform assembled) Operating instructions Open-end wrench (for leveling)

6.2   Type codes and model-specific data

6.2.1   Type codes

Spider FC XY

Scale capacity in kg (6, 15, 35, 60, 150, 300, 600, 1500, 3000)

Weighing platform (see table below)

Example: Spider FC CC60 = Spider FC 60 kg with weighing platform 600 x 800 mm

Weighing platforms

Designation	A	BB	B	BC	CC	DS	D	E	ES	F
Depth [mm]	240	300	400	500	600	1000	1250	1500	1500	Free size 1000 - 1500
Length [mm]	300	400	500	650	800	1000	1000	1250	1500	Free size 1000 - 1500

6.2.2   Model-specific data

	Max. capacity		Readability	
	Weighing range		**Weighing range**	
Scale capacity	**1**	**2**	**1**	**2**
6 kg	3 kg	6 kg	1 g	2 g
15 kg	6 kg	15 kg	2 g	5 g
35 kg	15 kg	35 kg	5 g	10 g
60 kg	30 kg	60 kg	10 g	20 g
150 kg	60 kg	150 kg	20 g	50 g
300 kg	150 kg	300 kg	50 g	100 g
600 kg	300 kg	600 kg	100 g	200 g
600 kg	600 kg	*	200 g	*
1500 kg	1500 kg	*	500 g	*
3000 kg	3000 kg	*	1000 g	*

 * Single-range scale

6.3   Dimensions and weights

6.3.1   Terminal

	A [1]	B	C	D	E (OptionPac) [1]
Dimensions	71 mm	36 mm	200 mm	277 mm	49 mm
Net weight	3.5 kg				

[1] Without fixed feet (with fixed feet: +4.5 mm)

6.3.2   Weighing platforms

Type	A [mm]	B [mm]	C [mm]	D [1] [mm]	E [mm]	F [mm]	G [mm]	Net weight [kg] [2]	Material
A	175	240	62	80	235	300	22	5.6	Chrome-nickel steel
BB	235	300	66	86	335	400	22	9.7	Chrome-nickel steel
B	335	400	66	86	435	500	22	20.2	Chrome-nickel steel
BC	435	500	85	100	587	650	22	24.8	Painted metal [3]
CC	503	600	97	115	724	800	21	29.0	Painted metal [3]
DS	–	1000	–	78	–	1000	–	116	Painted metal
D	–	1000	–	78	–	1250	–	140	Painted metal
E	–	1250	–	78	–	1500	–	185	Painted metal
ES	–	1500	–	78	–	1500	–	259	Painted metal
F	–	[4]	–	[4]	–	[4]	–	[4]	Painted metal

[1] With leveling feet fully screwed in
[2] Upper and lower parts of the weighing platform incl. weighing cell and weighing pan
[3] Also optionally available in chrome-nickel steel
[4] Free size of platform (1000 x 1000 mm to 1500 x 1500 mm)

6.4   RS232C and RS422/485 interfaces

Spider FC scales can be fitted with various different interfaces at the factory.

5   4   3   2   1

9   8   7   6

Standard Spider FC scales are fitted with one voltage interface according to EIA RS-232C/DIN 66020 (CCITT V24/V.28, maximum cable length 50 ft / 15 m). As an option, the terminal is also available with 2 or 3 interfaces. The corresponding interface boards replace the standard interface. All interfaces have a 9-pin sub-D socket (female).

The illustration at left shows the numbering of the individual pins (looking onto the socket). The pin designations for the different interfaces are shown in the following tables.

Standard interface

Interface type:	RS232C
Pin 1	VCC
Pin 2	TxD 1
Pin 3	RxD 1
Pin 4	Not available for connection
Pin 5	GND
Pin 6	Not available for connection
Pin 7	Not available for connection
Pin 8	Not available for connection
Pin 9	VCC

TxD: transmit data   RxD: receive data   GND: signal ground   VCC: supply voltage +5 V

Optional: 2 or 3 RS232C interfaces

Interface no./type:	Interface 1/RS232C	Interface 2/RS232C	Interface 3/RS232C
Pin 1	Not used	Not used	Not used
Pin 2	TxD 1	TxD 2	TxD 3
Pin 3	RxD 1	RxD 2	RxD 3
Pin 4	Not used	Not used	Not used
Pin 5	GND	GND	GND
Pin 6	Not used	Not used	Not used
Pin 7	Not used	Not used	Not used
Pin 8	Not used	Not used	Not used
Pin 9	VCC	VCC	VCC

TxD: transmit data   RxD: receive data   GND: signal ground   VCC: supply voltage +5 V

Optional: 1 RS422/485 and 1 or 2 RS232C interfaces

Interface no./type:	Interface 1		Interface 2	Interface 3
	RS422 (4-wire)	**RS485 (2-wire)**	**RS232C**	**RS232C**
Pin 1	Not used	Not used	Not used	Not used
Pin 2	TxD 1–	TxD 1–/RxD 1–	TxD 2	TxD 3
Pin 3	RxD 1–	—————	RxD 2	RxD 3
Pin 4	Not used	Not used	Not used	Not used
Pin 5	GND	GND	GND	GND
Pin 6	Not used	Not used	Not used	Not used
Pin 7	TxD 1+	TxD 1+/RxD 1+	Not used	Not used
Pin 8	RxD 1+	—————	Not used	Not used
Pin 9	VCC	VCC	VCC	VCC

TxD: transmit data   RxD: receive data   GND: signal ground   VCC: supply voltage +5 V

There is important information concerning networking via the RS422/485 interface in Chapter 5.1.5.

6.5   Analog option

The Spider FC can be fitted at the factory with an additional analog option which is built into the OptionPac. The analog option permits connection of a second weighing platform which delivers analog signals. This makes it possible to configure compact two-scale systems using only one terminal. After an analog weighing platform has been connected, its parameters must be entered in the menu. These are stored on the board of the analog option. This preparatory work is carried out by the service technician and is not described in these instructions. When the parameters have been input, the same settings are available in the "SCALE" menu block for the second scale as for the Spider scale itself (settings for resolution, taring, zeroing, filter). **Note**: In the "COMMUNICATION –> Option" menu the second weighing platform can be defined as the reference or bulk scale for piece counting, or it can be deactivated.

To connect a weighing platform to the analog option, the bottom plate of the OptionPac must be removed (8 screws Torx T20). The connecting cable of the weighing platform must be led through the bushing of the OptionPac and connected to the terminal strip on the board of the analog option as follows:

Terminal	Function
1	– Excitation (GND)
2	– Sense
3	– Signal
4	Shield
5	+ Signal
6	+ Sense
7	+ Excitation (+8.2 V)

6.6 Accessories

You can order the following accessories from your authorized METTLER TOLEDO representative:

Accessory	Art. no.
Protective cover for terminal	21255045
Wall mount for terminal	21255258
Mounting plate for fastening terminal to weighing platform	21255259
Second display	21250064
Sprinter 1 printer (Euro version)	21253399
Sprinter 1 printer (UK version)	21253745
Interface cable for Sprinter 1 printer	21253677
Interface cable for Spider–PC connection	00410024
Interface cable for Spider–Spider connection	21252588
Antitheft device	00229175
Stand 300 mm	21255254
Stand 400 mm	21255255
Stand 500 mm	21255256
Stand 650 mm	21255257
Floor stand	00506721
Stand base (for floor stand)	00503700
Roller track 300 x 400 mm	21253930
Roller track 400 x 500 mm	21253931
Roller track 500 x 650 mm	21253932
Roller track 600 x 800 mm	00504852
Roller top 300 x 400 mm	21254155
Roller top 400 x 500 mm	21254156
Roller top 500 x 650 mm	21254157
Roller top 600 x 800 mm	21254844
Approach ramp 1000 mm	00506548
Approach ramp 1250 mm	00506549
Approach ramp 1500 mm	00506550
Pit frame 1000 x 1000 mm	00506481
Pit frame 1000 x 1250 mm	00505315
Pit frame 1250 x 1500 mm	00505316
Pit frame 1500 x 1500 mm	00505379

6.7 Declaration of conformity

We, **Mettler-Toledo (Albstadt) GmbH**, **Unter dem Malesfelsen 34**, **D-72458 Albstadt** declare under our sole responsibility that the product

Spider FC from serial no. 2494000, to which this declaration relates

is in conformity with the following directives and standards.

Directive	Applicable standard
relating to electrical equipment designed for use within certain voltage limits (73/23/EEC; amended by directive 93/68/EEC)	EN61010-1 (Safety Regulations) EN60529 IP65 (IP degree of protection)
relating to electromagnetic compatibility (89/336/EEC; amended by directive 93/68/EEC; 92/31/EEC)	EN61326-1 Class B (Emission) EN61326-1 (Immunity) EN61000-3-2 (Harmonic Oscillations) EN61000-3-3 (Voltage Fluctuations)
relating to non-automatic weighing instruments (90/384/EEC; amended by directive 93/68/EEC) [1]	EN45501 [1] (Metrological Aspects) $C\epsilon$ **[year]** [1] **[code]** M

[1] applies only to certified scales (approval/test certificate no. TC5818 for terminals (without weighing platform) and T5819 for complete scales (terminal and weighing platform).

Albstadt, January 2002   Mettler-Toledo (Albstadt) GmbH

Roland Schmider, General Manager   Heiko Carls, Quality Manager

Important notice for verified weighing instruments in EC countries

| M |

Weighing instruments verified at the place of manufacture bear the preceding mark on the packing label and a 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 identification mark on the packing label. The second step of the verification must be carried out by the approved Mettler-Toledo service or by the W & M authorities. Please contact your Mettler-Toledo organization.

The first 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.

USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to both Part 15 of the FCC Rules and the radio interference regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Canada

ICES-001 Notice for Industrial, Scientific and Medical Radio Frequency Generators: This ISM apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Please note that this requirement is only for generators which operate at over 10 kHz.

Avis de l'ICES-001, générateurs de radiofréquences dans le domaine industriel, scientifique et médical: Cet appareil ISM (industriel, scientifique et médical) satisfait à toutes les exigences définies par la réglementation canadienne en matière d'équipements générant des perturbations radioélectriques. Veuillez noter qu'il s'agit d'une exigence concernant uniquement les générateurs fonctionnant au-delà de 10 kHz.

6.8   Safety tests

The terminals and scales of the Spider SW, BC, and FC series have been inspected by accredited testing laboratories. They have passed the **safety tests** stated below and bear the corresponding test marks. Their production takes place under the control of the testing authorities.

Country	Test Mark	Standard
Canada USA	CSA C US	CAN/CSA.C22.2 No. 1010.1-92 UL Std. No. 3101-1
Europe	ITS Testing & Certification GS geprüfte Sicherheit	EN61010-1:93 + A2:95 EN61326-1:97 + A1:98 Class B EN61326-1:97 + A1:98 Industry
Switzerland	(+ S)	EN61010-1:93 + A2:95 EN61326-1:97 + A1:98 Class B EN61326-1:97 + A1:98 Industry
Other countries	**CB Scheme** (no marking)	EN61010-1:93 + A2:95 EN61326-1:97 + A1:98 Class B EN61326-1:97 + A1:98 Industry

Emergency password for supervisor access to menu

Please cut out and keep in a safe place!

Use this emergency password if you have defined a supervisor password and then forgotten it.

| →0← | →0← | →0← | ⇥ | Press the «→**0**←» key 3 times, followed by «⇥». |

To preserve the value of your METTLER TOLEDO scale and protect its future: METTLER TOLEDO servicing assures the quality and measuring accuracy of your METTLER TOLEDO instrument for years to come. Please ask for full details of our attractive terms of service. Thank you.

P21255144

AT   **Mettler-Toledo Ges.m.b.H., A-1100 Wien**, Tel. (01) 604 19 80, Fax (01) 604 28 80
AU   **Mettler-Toledo Ltd., Port Melbourne, Victoria 3207**, Tel. (03) 9644 5700, Fax (03) 9645 3935
BE   **n.v. Mettler-Toledo s.a., B-1932 Zaventem**, Tel. (02) 334 02 11, Fax (02) 378 16 65
BR   **Mettler-Toledo Indústria e Comércio Ltda., São Paulo, CEP 06465-130**, Tel. (11) 421 5737, Fax (11) 725 1962
CH   **Mettler-Toledo (Schweiz) AG, CH-8606 Greifensee**, Tel. (01) 944 45 45, Fax (01) 944 45 10
CN   **Mettler-Toledo Changzhou Scale Ltd., Changzhou City, Jiangsu 213001**, Tel. (519) 664 20 40, Fax (519) 664 19 91
CZ   **Mettler-Toledo, s.r.o., CZ-100 00 Praha 10**, Tel. (2) 72 123 150, Fax (2) 72 123 170
DE   **Mettler-Toledo GmbH, D-35353 Giessen**, Tel. (0641) 50 70, Fax (0641) 52 951
DK   **Mettler-Toledo A/S, DK-2600 Glostrup**, Tel. (43) 27 08 00, Fax (43) 27 08 28
ES   **Mettler-Toledo S.A.E., E-08038 Barcelona**, Tel. (93) 223 76 00, Fax (93) 223 02 71
FR   **Mettler-Toledo s.a., F-78222 Viroflay**, Tél. (01) 309 717 17, Fax (01) 309 716 16
HK   **Mettler-Toledo (HK) Ltd., Kowloon HK**, Tel. (852) 2744 1221, Fax (852) 2744 6878
HR   **Mettler-Toledo, d.o.o., CR-10000 Zagreb**, Tel. (1) 29 20 633, Fax (1) 29 58 140
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