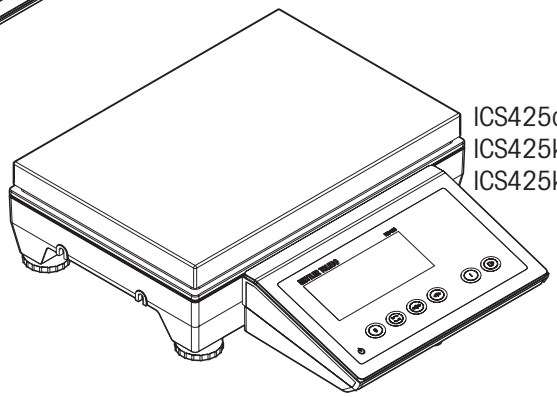
User manual

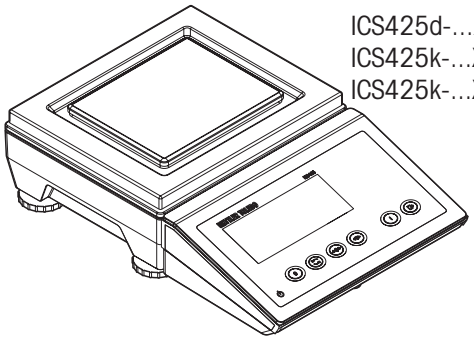
ICS425

Weighing terminals
Compact scales

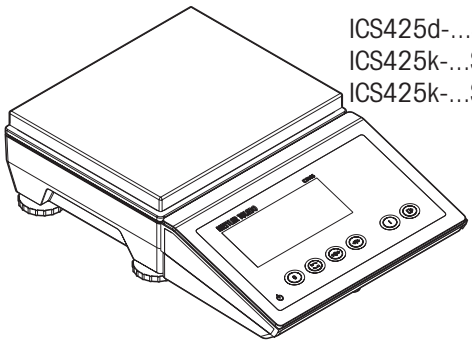
ICS425a
ICS425d



ICS425d-...LA/f
ICS425k-...LA/f
ICS425k-...LA/DR/f



ICS425d-...XS/f
ICS425k-...XS/f
ICS425k-...XS/DR/f



ICS425d-...SM/f
ICS425k-...SM/f
ICS425k-...SM/DR/f

METTLER TOLEDO

METTLER TOLEDO Service

Congratulations on choosing the quality and precision of METTLER TOLEDO. Proper use according to these instructions and regular calibration and maintenance by our factory-trained service team ensure dependable and accurate operation to protect your investment. Contact us about a ServiceXXL agreement tailored to your needs and budget.

We invite you to register your product at

www.mt.com/productregistration

so we can contact you about enhancements, updates and important notifications concerning your METTLER TOLEDO product.

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1 Introduction

1.1 Safety instructions

General

- ▲ Do not use the device in a hazardous environment. Special devices are available in our range of products for hazardous environments.
- ▲ The safety of the device cannot be ensured if it is not operated in accordance with these operating instructions.
- ▲ Only authorised personnel may open the device.

Devices with protection level IP65

Devices with protection level IP65 are dust-tight and protected from water jets according to EN 60529. They are suitable for use in dusty environment and brief contact with liquids.

- ▲ Ensure that the device is dried off again after coming into contact with liquid.
- ▲ Do not use the device in environments with a risk of corrosion.
- ▲ Do not flood the device or submerge it in liquid.

Devices with built-in power supply unit

- ▲ Ensure that the power socket outlet for the device is earthed and easily accessible, so that it can be de-energised rapidly in emergencies.
- ▲ Ensure that the supply voltage at the installation site lies within the range of 100 V to 240 V.
- ▲ Check the power cable regularly for damage. If it is damaged, immediately disconnect the device from the power supply unit.

Devices with built-in storage battery

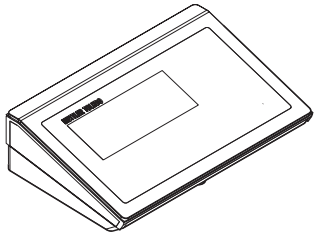
- ▲ Only use storage batteries from the manufacturer.
- ▲ Do not use the battery charger in humid or dusty rooms or below 0 °C (32 °F) ambient temperature.
- ▲ After the storage battery has been charged, the cover cap of the charging socket at the device must be closed.

Compact scales

- ▲ Avoid falling loads, shock loads as well as impacts from the side.

1.2 Presentation

1.2.1 Weighing terminals



There are two versions of the ICS425 weighing terminal:

ICS425a with **analog** scale interface:
to connect analog weighing platforms

ICS425d with **digital** scale interface SICSpro, which is based on RS422:
to connect METTLER TOLEDO weighing platforms with digital scale interface SICSpro, e.g., PBD 655

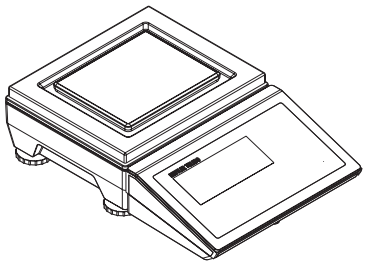
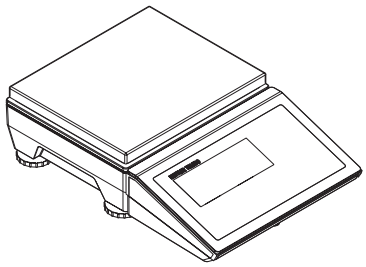
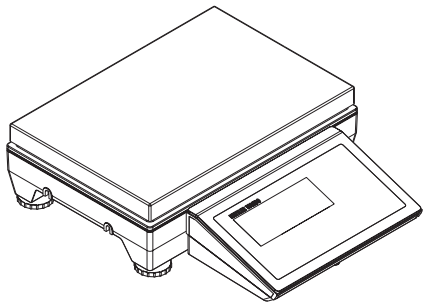
1.2.2 Compact scales

A compact scale consists of a weighing terminal with digital scale interface SICSpro and a weighing platform which are fixed together.

Depending on the connected weighing platform there are two basic versions of the ICS425 compact scales:

ICS425d-.../f ICS425 compact scale with strain gauge load cell
ICS425k-.../f ICS425 compact scale with MonoBloc® load cell

The weighing platforms are available in three different sizes as shown below.

ICS425d-...XS/f **ICS425k-...XS/f** **ICS425k-...XS/DR/f**	**ICS425d-...SM/f** **ICS425k-...SM/f** **ICS425k-...SM/DR/f**	**ICS425d-...LA/f** **ICS425k-...LA/f** **ICS425k-...LA/DR/f**
		
extra small weighing platform	small weighing platform	large weighing platform

Naming

The complete name of a compact scale also indicates the type, size and capacity of the connected weighing platform. E.g., ICS425k-6SM/DR/M/f stands for

ICS425k	ICS425 terminal, weighing platform with MonoBloc® load cell
6	weighing capacity in kg
SM	size of the weighing platform
DR	if present: Delta Range weighing platform
M	if present: weighing platform verified by the manufacturer
/f	mechanical design: fixed connection

1.2.3 Options

Interfaces

Default equipment

ICS425a / ICS425d weighing terminals

- 1 serial interface RS232
- 1 analog scale interface resp. digital scale interface SICSpro

ICS425d.../f / ICS425k.../f compact scales

- 1 serial interface RS232
- 1 digital scale interface SICSpro

An additional communication interface is possible.

- RS232
- RS422/485
- USB Device
- USB Host
- Ethernet
- WLAN
- Digital I/O

Weighing platform resolutions for compact scales

	Default	Optional
ICS425d-.../f	1 x 6,000 d, non-approved	1 x 30,000 d, non-approved 1 x 60,000 d, non-approved 1 x 6,000 d, approved, e = d
ICS425k-.../f	up to 1 x 610,000 d, non-approved	up to 1 x 61,000 d, approved, e = 10d

Further options

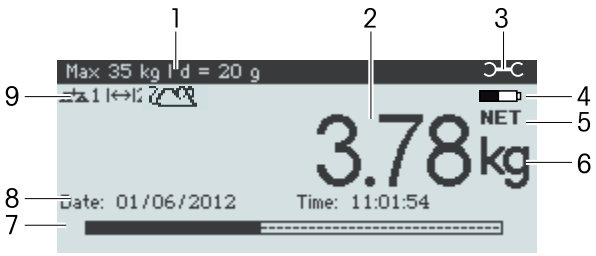
- Exchangeable storage battery (IP54)
- Built-in storage battery (IP65)

1.2.4 Display

To meet your special requirements different display layouts are available in the Terminal menu.

Straight weighing display

Default layout



1 Metrological data – for details see following table
2 Weight value with star, sign and stability monitor – for details see following table
3 Spanner icon: service needed – for details see Event and error messages
4 Battery symbol
5 Net/Gross
6 Unit
7 Bargraph
8 Auxiliary data line – the contents is defined in the menu
9 Symbol and info line – for details see following table

Weight values in 3-line mode

Bargraph

The device offers a bargraph indicating the scale capacity available.

The bargraph indicates roughly which part of the scale capacity is already occupied and what capacity is still available.
In the example, approx. 3/4 of the scale capacity is occupied, although the applied net weight isn't really high. The reason therefore could be a high tare weight.

Metrological data line

The metrological data are stored in the weighing platform. The weighing terminal only serves as indicator.

In the metrological data line the following information is displayed:

Symbol	Information	Remark
I, II, III, IIII	Accuracy classes	Displayed only if the scale is approved according to the Weights and Measures guidelines
W1, W2, W3	Weighing range information	For multi range devices only, displayed only if the scale is approved according to the Weights and Measures guidelines
Max, cap	Maximum capacity	–
Min	Minimum capacity	Displayed only if the scale is approved according to the OIML Weights and Measures guidelines
e =	Approved resolution	OIML: Displayed only if the scale is approved NTEP: Displayed only if the scale is approved and d is different from e
d =	Display resolution	Please note for approved scales: OIML: Displayed only if d is different from e NTEP: Displayed always
Approved scale	Approved weighing device	Metrology display disabled, Weights and Measures data must be indicated on a label near the weight display

Weight value
The weight value can be marked with the following symbols:

Symbol	Information	Remark
*	Calculated weight value	E.g., for average weighing results
–	Sign	For negative weight values
O	Stability monitor	For unstable weight values
1.234$_3$ kg	Non-approved last digit with e > d	For approved scales only The example shows the weight value for a scale with e = 1 g and d = 0.1 g The last, smaller digit is not approved

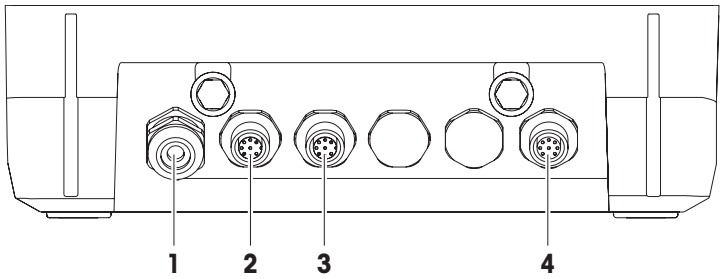
Symbols and info line
In the symbols and info line the following information can be displayed:

Symbol	Information	Remark
I<–>I 1	Weighing range	For multi range or multi interval scales only
	Scale number	–
	Weight below minimum weight	`MinWeigh` must be activated in the menu
	Average weighing	`Average` must be activated in the menu
	Automatic taring	`Auto Tare` must be activated in the menu
	Automatic clearing of the tare weight	`A-Clear Tare` must be activated in the menu
>0<	Center of zero indication	Availability depending on local Weights and Measures regulations

1.2.5 Function keys

Key	Name	Function in the operating mode	Function in the menu
⏻	Power	• Switching on and off • Cancel editing	• Cancel editing • Exit menu
C	Clear	• Clear tare • Leave info page	• Clear value • To the next higher menu level (scroll left, ⬅) • In numeric entries: clear digit (⬅)
↻	Switch	• Switch over weight unit	• Re-edit • Scroll up (⬆) • In numeric entries: increment value (⬆)
→0←	Zero	• Set scale to zero • Clear tare	• Scroll down (⬇) • In numeric entries: decrement value (⬇)
→T←	Tare	• Tare scale • Clear tare	• Enter menu item (scroll right, ➡) • In numeric entries: to the next digit to the right (➡)
i	Info	• Activate info screen • Proceed to next info line / info page • Freeze and release startup screen	–
⎆	Transfer	• Transfer data to a printer or computer	• Confirm entry / selection

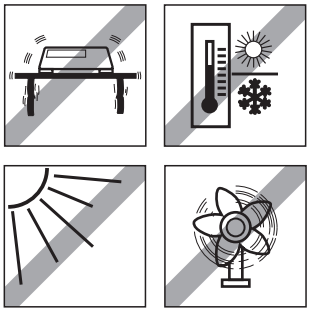
1.2.6 Connections



1 Power supply or battery charging
2 Standard interface COM1 (RS232)
3 Optional interface COM2
4 Digital weighing platform connection SCALE
The SCALE connection for analog scales is without plug, but with cable exit.

1.3 Commissioning

1.3.1 Selecting the location

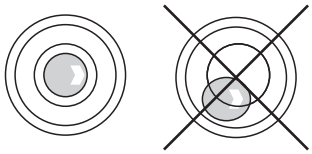


The correct location is crucial to the accuracy of the weighing results.

➜ Select a stable, vibration-free and, if possible, a horizontal location for the weighing platform.
The ground must be able to safely bear the weight of the fully loaded weighing platform.

➜ Observe the following environmental conditions:
- No direct sunlight
- No strong drafts
- No excessive temperature fluctuations

1.3.2 Levelling the weighing platform



Only weighing platforms that have been levelled precisely horizontally provide accurate weighing results. Weights and Measures approved weighing platforms have a spirit level to simplify levelling.

➜ Turn the adjustable feet of the weighing platform until the spirit level's air bubble is inside the inner circle.

Levelling of compact scales

On compact scales levelling can be done in an easier way.

1. Turn the compact scale upside down.
2. Unscrew the plastic screw in the middle of the terminal front side far enough that it does support the terminal.
3. Screw in the 2 adjustable feet on the side facing the terminal.
4. Turn over the compact scale into its normal position.
5. Level the compact scale by turning the other 2 adjustable feet of the weighing platform until the spirit level's air bubble is inside the inner circle.

1.3.3 Weighing platform connection

Analog weighing platforms

➜ Call the METTLER TOLEDO service technician to connect an analog weighing platform to the ICS425a weighing terminal.

Weighing platforms with digital scale interface SICSpro

➜ Connect the weighing platform connector to the ICS425d weighing terminal.

- If you have ordered an approved weighing system consisting of an ICS425d weighing terminal and an approved PBD... weighing platform, the approval was done in the factory.
- Due to the new digital scale interface SICSpro, you can disconnect the weighing platform from the weighing terminal of an approved weighing system without violating the approval.
  - If another weighing platform is connected to the weighing terminal, the system is not approved.
  - If the weighing platform of the approved system is connected again, the approval is valid again.
- If you have connected a non-approved weighing platform and want to approve the system, call the METTLER TOLEDO service technician.

1.3.4 Power supply connection

CAUTION
Risk of electric shock!

- ▲ Before connecting the power supply, check whether the voltage value printed on the rating plate corresponds to your local system voltage.
- ▲ Do not under any circumstances connect the device if the voltage value on the rating plate deviates from the local system voltage.
- ▲ Make sure the weighing platform has reached room temperature before switching on the power supply.

➜ Plug the power plug into the power socket.
After it has been connected, the device runs a self-test. The device is ready to operate when zero appears on the display.

1.3.5 Handling of the storage battery

Note the following when operating a device with a built-in storage battery:

- The operating life depends on the intensity of use, the configuration and the connected scale. For details see the technical data.
- The battery symbol shows the current state of charge of the storage battery.
  - One segment corresponds with approx. 25 % capacity.
  - If the symbol flashes, the storage battery has to be charged.
  - During charging the segments are "running" until the battery is fully charged and all segments light up continuously.
- The charging time of the storage battery amounts to approx. 6 hours.
  The storage battery is protected against overcharging.
- The storage battery has a service life of approx. 2 years or 500 to 1,000 charging/discharging cycles.

CAUTION
No success in charging the storage battery due to low temperatures!

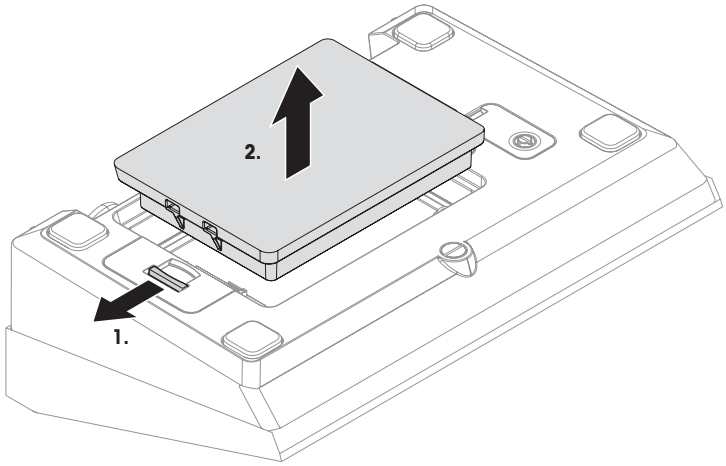
- ▲ Do not charge the battery if the battery temperature is below 0 °C (32 °F). Charging is not possible in this temperature range.
- ▲ Do not operate the battery charger outside its temperature range of 0 °C to 40 °C (32 °F to 104 °F).

Recommended use of the storage battery

The characteristics mentioned above are only valid if the following recommendations are observed:

- Change the battery as soon as the warning message "Low battery" appears and the battery symbol starts flashing. When the message appeares you still have enough time (at least 10 minutes) to complete your current task.
- For optimum battery performance operate the device with built-in storage battery at an ambient temperature in the range of 10 °C to 30 °C (50 °F to 86 °F). This applies to discharging as well as charging the battery.
- If you plan to put the scale out of operation for a longer period, charge the battery completely.
- Even if you do not use the instrument, charge the battery at least every 3 months to avoid deep discharge.
- On devices with removable battery, remove the battery prior to long term storage.

Changing battery



1. Unlock the battery by moving the slider to the outside and remove the discharged battery.
2. Insert the fully charged battery and secure it by moving the slider to the inside.

With optional IP65 protection, the battery is not accessible from the outside. Please call the METTLER TOLEDO service technician.

2 Operation

2.1 Switching on and off

2.1.1 Switching on/off

Switching on

➜ Press ⏻.
For a few seconds the device shows a start-up screen with device name, software version, serial number of the weighing terminal and the Geo value (not for MonoBloc® weighing platforms).

- You can freeze the start-up screen by pressing i.
- When you start a compact scale, the metrology line shows whether it is approved or not. If you have ordered an approved compact scale, approval has been done in the factory already.
- When user management is active, you are asked to select your name and enter the corresponding password.

Switching off

➜ Press ⏻.
Before the display goes out, `-OFF-` appears briefly.

2.1.2 Resetting

➜ Press and hold ⏻ for approx. 5 seconds.
The device is reset and will operate with the last saved settings.

2.2 Simple weighing

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

2.3 Switching units

The weight value can be displayed in a second weight unit.

➜ Press ↻.
The weight value is displayed in the second weight unit until the key is pressed again.

When in the `Terminal` menu `Unit roll` is set to `On`, the weight value can be displayed in all available weight units by repeatedly pressing ↻.

2.4 Zeroing / Zero point correction

Zeroing corrects the influence of slight changes on the load plate or minor deviations from the zero point.

Manual

1. Unload scale.
2. Press →0←.
   Zero appears in the display.

Automatic

In case of non-verified scales, the automatic zero point correction can be deactivated in the menu or the zero range can be changed. Approved scales are set fixed to 0.5 d.
By default, the zero point of the scale is automatically corrected when the scale is unloaded.

- The zero function is only available within a limited weighing range.
- After zeroing the scale, the whole weighing range is still available.
- A successful zeroing will always delete a tare weight.

2.5 Weighing with tare

2.5.1 Taring

➜ Place the empty container on the scale and press →T←.
The zero display and the symbol **NET** appear.
The tare weight remains stored until it is cleared.

2.5.2 Clearing the tare

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

If the symbol ⊠ is displayed, i.e., the `A-Clear Tare` function is activated in the menu under `Scale -> Tare`, the tare weight is automatically cleared as soon as the scale is unloaded.

2.5.3 Automatic clearing of the tare

A tare weight is automatically cleared when the scale is unloaded.

Prerequisite

✓ The symbol ⊠ is displayed, i.e., the tare function `A-Clear Tare` is activated in the `Scale` menu.

2.5.4 Automatic taring

If you place a weight on an empty scale, the scale tares automatically and the symbol **NET** is displayed.

Prerequisite

✓ The symbol [T] is displayed, i.e., the tare function `Auto Tare` is activated in the `Scale` menu.

The weight to be tared automatically, e.g., packaging material, must be heavier than 9 display steps of the scale.

2.5.5 Chain tare

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

Prerequisite

✓ The tare function `Chain tare` is activated in the `Scale` menu.

1. Place the first container or packaging material on the scale and press →T←.
   The packaging weight is automatically saved as the tare weight, the zero display and the symbol **NET** appear.
2. Weigh the weighing sample and read/print out the result.
3. Place the second container or packaging material on the scale and press →T← again.
   The total weight on the scale is saved as the new tare weight. The zero display appears.
4. Weigh the weighing sample in the second container and read/print the result.
5. Repeat steps 3 and 4 for other containers.

2.5.6 Tare preset

If you know the weight of your containers, you can enter the tare weight via barcode or SICS command. Thus you do not have to tare the empty container.

Prerequisite

✓ For barcode use `Tare preset` is selected as destination for external input.

1. Enter the known tare weight via barcode or SICS command.
   The weight display shows the negative tare weight and the symbol **NET** appears.
2. Place the full container on the weighing platform.
   The net weight is displayed.

The entered tare weight is valid until a new tare weight is entered or the tare weight is clared.

2.6 Displaying information

Up to 5 different items for display can be configured in the menu for the info key. Depending on the configuration in the `Terminal` menu, the following data can be assigned in a free order, e.g.,

- Date & Time
- Weight values
- Identifications
- Device information
- Serial numbers and software versions

On the second and third info page, system and contact information can be displayed.

1. Press **i**.
   The (first) info page is displayed.
2. Press **i** again.
   The next info screen is displayed.
3. To leave the info screens, press **C**.

An info screen is displayed until **i** is pressed again or **C** is pressed.

2.7 Printing results

If a printer or computer is connected, weighing results and other information can be printed or transferred to a computer.

➜ Press ⮆.
The defined data is printed or transferred to the computer.

The printout content can be defined in the `Templates` menu.

2.8 Average (dynamic) weighing

With the average weighing function, it is possible to weigh restless weighing samples such as living animals. If this function is activated, is displayed in the info line.
With average weighing, the scale calculates the mean value from weighing operations within a certain time interval. The time interval for calculation can be set in the `Application` menu.

With manual start (factory setting)

- ✓ `Application -> Average -> Mode -> Print key` (factory setting), `Info key` or `Switch key` is selected in the menu.
- ✓ Weighing sample heavier than 9 scale divisions.

1. Place the weighing sample on the scale.
2. Press the selected key to start average weighing.
3. During average weighing, stars appear in the display, and the average result will be displayed with the symbol ✱.
4. Unload the scale to be able to start a new average weighing operation.

With automatic start

- ✓ `Application -> Average -> Mode -> Auto` is selected in the menu.
- ✓ Weighing sample heavier than 9 scale divisions.

1. Place the weighing sample on the scale.
   Average weighing starts automatically.
   During average weighing, stars appear in the display, and the average result will be displayed with the symbol ✱.
2. Unload the scale to be able to perform a new average weighing operation.

2.9 Working with identifications

Weighing series can be assigned 3 identification numbers ID1, ID2 and ID3 with up to 40 characters which are also printed out in the protocols. If, for example, a customer number and an article number are assigned, it can be clearly seen in the protocol which article was weighed for which customer.

Barcode use (for one identification only)

- ✓ `ID1`, `ID2` or `ID3` is selected as destination for external input in the `Communication` menu.
- ✓ To display the identification, in the `Terminal` menu `ID1`, `ID2` or `ID3` is activated for the auxiliary line.

Using SICS command set (up to 3 identifications)

- ✓ To display the identification(s), in the `Terminal` menu `ID1`, `ID2` or `ID3` is activated for the auxiliary line.

2.10 Cleaning

Risk of electric shock

▲ Before cleaning, unplug the power plug in order to disconnect the terminal from the power supply.

▲ Cover open connectors with protective caps.

- Clean the protective cover separately. The protective cover is dishwasher-safe.
- Take off the load plate and remove any dirt and foreign substances which may have collected underneath. Do not use any hard objects to do so.
- Do not disassemble the weighing device.
- Remove any possibly remaining detergent by rinsing with clear water.
- Observe all the existing regulations on cleaning intervals and permissible cleaning agents.

Cleaning of other weighing platforms than described in this user manual

➜ Make sure to observe the cleaning instructions for the connected weighing platform. The weighing platform may not be designed for the environments and cleaning procedures described above.

2.11 Verification test

The weighing instrument is verified if

- the accuracy class is displayed in the metrological line,
- the approval readability is shown with "e = readability",
- it bears an official verification mark, e.g., the green M sticker (OIML),
- the validity is not expired.

The weighing instrument is also verified if

- the metrological line shows "Approved scale",
- labels with the metrological data are placed near the weight display,
- the securing seal is not tampered with,
- it bears an official verification mark, e.g., the green M sticker (OIML),
- the validity is not expired.

The period of validity is country-specific. It is in the responsibility of the owner to renew verification in due time.

Strain gauge weighing platforms

Strain gauge weighing platforms use a Geo Code to compensate gravitational influence.
The manufacturer of the weighing instrument uses a defined Geo Code value for verification.

➜ Check if the Geo Code in the instrument corresponds with the Geo Code value defined for your location.
The Geo Code value is displayed when you switch on the instrument.
The Geo Code for your location is shown in the Appendix.

➜ Call the METTLER TOLEDO service technician if the Geo Code values do not match.

3 Settings in the menu

In the menu, settings can be changed and functions can be activated. This enables adaptation to individual weighing requirements.
The menu consists of the following 5 main blocks containing various submenus on several levels.

`Scale`	see section 3.2
`Application`	see section 3.3
`Terminal`	see section 3.4
`Communication`	see section 3.5
`Maintenance`	see section 3.6

3.1 Operating the menu

3.1.1 Calling up the menu and entering the password

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

Operator menu

1. Press ⮆ and keep it pressed until `Enter code` appears.
2. Press ⮆ again.
   The menu item `Terminal` is displayed. Only parts of the submenu `Device` are accessible.

Supervisor menu

1. Press ⮆ and keep it pressed until `Enter code` appears.
2. Enter the password and confirm with ⮆
   The first menu item `Scale` is highlighted.

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

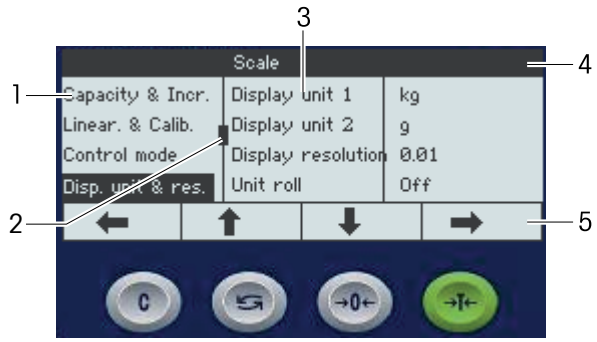
Emergency password for Supervisor access to the menu

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

➜ Press →**0**← 3 times and confirm with ⮆.

3.1.2 Display presentation in the menu

Menu items are displayed together with their context.



1 Menu items; the selected menu item is highlighted
2 Scroll flag, like the scroll bar of your PC
3 Sub-menu items
4 Menu info line, i.e., menu path of the current menu item
5 Navigation info line: use the keys below to navigate the menu as indicated

Exiting the menu

1. Press ⏻.
   "Save settings ?" is displayed.
2. Press **OK**.
   The menu changes are saved and the terminal returns to the weighing mode.

– or –

➜ Press **ESC** for further menu settings.

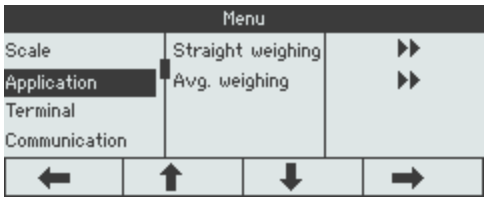
– or –

➜ Press **NO** to discard changes and return to the weighing mode.

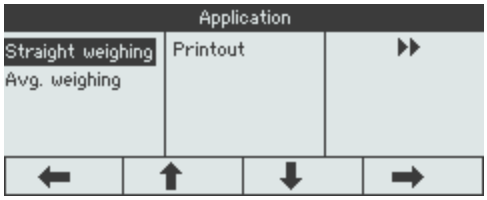
3.1.3 Selecting and setting parameters in the menu

Example: Setting of the average weighing mode to automatic

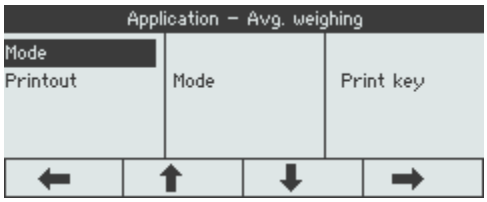
1. In the menu start screen use ↓ to select (highlight) the `Application` menu.
   The submenus are displayed in the middle column.



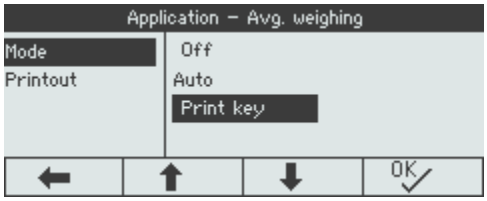
2. Press → to enter the `Application` menu.



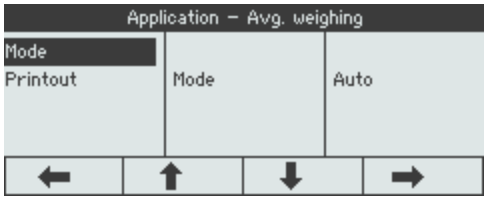
3. Press ↓ and then press → to open the `Avg. weighing` submenu.
   The current setting of the highlighted menu item is displayed in the right column.



4. Press → to enter the `Mode` submenu.
   The possible settings of the selected menu item are displayed on the right side.



5. Press ↑ to select (highlight) `Auto` and confirm selection with **OK**.
   The setting of the average weighing mode has changed.



If all the settings of a menu item cannot be displayed on one page (e.g., all the info items), just use ↓ to proceed to the hidden items.

3.2 Scale menu block

Factory settings are printed in **bold** in the following overview.

3.2.1 Overview

After selecting SCALE 1, the following menu is available.

Level 1	Level 2	Level 3	Level 4
Identification	Scale location		
	Scale ident.		
Linear. & Calib.	Linearisation		
	Calibration		
	Auto print calib.	**On**, Off	
Disp. unit & res.	Display unit 1	g, **kg**, oz, lb, lb-oz, t	
	Display unit 2	**g**, kg, oz, lb, lb-oz, t	
	Disp. resolution	Off, ...	
	Unit roll	On, **Off**	
Zero	AZM	Off, **0.5d**, 1d, 2d, 5d, 10d	
Tare	Auto tare	On, **Off**	
	Chain tare	**On**, Off	
	Auto clear tare	On, **Off**	
Restart	On, **Off**		
Filter	Vibration	Low, **Medium**, High	
	Process	**Universal**, Dosing	
	Stability	Fast, **Standard**, Precise	
MinWeigh	Function	On, **Off**	
FACT *	Temperature	Off, 1K, 2K, 3K	
	Time	Time 1, Time 2, Time 3	
	Days	Monday, ... Sunday	**Off**, On
Reset	Perform reset ?		

* for MonoBloc® load cells only

3.2.2 Scale –> Identification

Scale location	Entering the scale location, e.g., floor and room
Scale ident.	Entering the scale identification, e.g., inventory number
Note	• Scale location and scale identification can be displayed in the auxiliary or info lines or printed out. • Scale location and scale identification can consist of up to 12 characters (0 … 9 and decimal point)

3.2.3 Scale –> Linearisation & Calibration

This menu item is not available for verified scales.

Last calibration	Shows the date of the last calibration.
Autoprint calib.	When set to `On`, a protocol is printed out automatically for each calibration process.
Perform calib. `------` blinking `Preload` blinking `xx kg` blinking	1. Unload the scale. 2. Apply preload and confirm with **OK**. 3. If necessary, change the calibration weight value displayed using ⬇ / ⬆. 4. Apply the indicated calibration weight on the weighing platform and confirm with **OK**. `Passed` is displayed briefly.
Note	In order to achieve a particularly high precision, calibrate under full load. The calibration process can be aborted using ⏻.

3.2.4 Scale –> Display units & resolution

Display unit 1	Selecting weighing unit 1
Display unit 2	Selecting weighing unit 2, different from unit 1
Display resolution	Selecting readability (resolution), the possible settings depend on the connected scale. When set to `Off`, only the default resolution of the weighing platform is available.
Unit roll	When unit roll is switched on, the weight value can be displayed in all available units with ⟳.
Notes	• In case of verified scales, individual sub-items of the `Display/Units & Resolution` menu item may not be available or only to a limited extent, depending on the respective country. • On dual-range/dual interval scales, resolutions marked with **I<–>I 1/2** are divided up into 2 weighing ranges/intervals, e.g., 2 x 3000 d.

3.2.5 Scale –> Zero – Automatic zero update

AZM	On verified scales, this menu item does not appear. Switching on/off automatic zero update and selecting zeroing range.

3.2.6 Scale –> Tare – Tare function

Auto tare	Configuring automatic taring
On, Off	Switching automatic taring on/off When a load is placed on the scale and the gross weight exceeds 9 d, the weight is tared automatically.
Chain tare	Switching on/off chain tare
Auto clear tare	Configuring automatic clearing of the tare weight
On, Off	Switching automatic clearing of the tare weight on/off When the load is removed and the weight drops below 9 d, the tare weight is cleared automatically

3.2.7 Scale –> Restart – Automatic saving of zero point and tare value

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

3.2.8 Scale –> Filter – Adaptation of the ambient conditions and the weighing type

Vibration	Adaptation to ambient conditions
Low	• Very steady and stable environment. The scale works very rapidly, but is very sensitive to external influences.
Medium	• Normal environment. The scale operates at medium speed.
High	• Restless environment. The scale works more slowly, but is insensitive to external influences.
Process	Adaptation to the weighing process
Universal	• Universal setting for all weighing samples and normal weighing goods.
Dosing	• Dispensing liquid or powdery weighing samples.
Stability	Adjusting the stability detector
Fast	• The scale operates very fast.
Standard	• The scale operates at medium speed.
Precise	• The scale operates with the greatest possible reproducibility. The slower the scale works, the greater the reproducibility of the weighing results.

3.2.9 Scale –> MinWeigh – Minimum weight value

Before you can use this function, the METTLER TOLEDO service technician has to determine and enter a minimum weight value.

Function	
On/Off	Switching MinWeigh function on/off When set to On and if the weight on the scale drops below the stored minimum weight, < will appear in the symbols and info line.

3.2.10 Scale –> FACT – automatic temperature-dependent adjustment

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

Temperature	Setting the temperature difference for automatic adjustment.
Off	Switching off automatic adjustment in the case of a temperature difference.
1K, 2K, 3K	Automatic adjustment in case of the selected temperature change.
Time	Setting up to 3 times per day for the automatic adjustment.
Time 1 ... Time 3	Entering the times for the automatic adjustment (hours, minutes in 24 h format). If you do not want 3 times per day, just set all the times to the same value.
Days	Setting the days of the week for the automatic adjustment.
Monday ... Sunday	On all days which are set to On, the automatic adjustment will be performed.

3.2.11 Scale –> Reset – Resetting scale settings to factory settings

Perform reset ?	Confirmation inquiry • Reset the scale settings to factory settings with **OK**.

3.3 Application menu block

Factory settings are printed in **bold** in the following overview.

3.3.1 Application –> Straight weighing

Printout	**Defining printer and template in the straight weighing application**
COM1 ... COM2	Selecting the COM port for the desired printer. E.g., COM1 for printout to a PC and the optional COM2 for printout on an office (ASCII) printer
Off	No printout on this COM port
Standard	Printout with the standard template on the selected printer
Template 1 ... Template 5	Assigning a customer template to the selected printer
Note	Templates can be defined under Communication -> Define templates

3.3.2 Application –> Average weighing

Mode	**Selecting mode for determining the average weight for an unstable load (dynamic weighing)**
Off	Average weighing disabled
Auto	Calculating average weight with automatic start of the weighing cycle
Print key Info key Switch key	Calculating average weight with manual start of the weighing cycle via the selected key. Print key Info key Switch key
Printout	**Defining printer and template in the average weighing application**
	See "Straight weighing"

3.4 Terminal menu block

The Terminal menu block consists of the following main subblocks, which are described in detail in the following.

- Device
- Access

Factory settings are printed in **bold** in the following overview.

3.4.1 Terminal –> Device – General device settings

Overview

Level 1	Level 2	Level 3	Level 4	Level 5
Region	Laguage	**English**, Deutsch, Français, Italiano, Español, Chinese, ...		
	Date format	MM/DD/YY, MM/DD/YYYY, MMM/DD/YYYY, DD/MM/YY, DD/MMM/YYYY, YY/MM/DD, YYYY/MMM/DD, YYYY/MM/DD, **DD/MM/YYYY**		
	Set date	Set year		
		Set month		
		Set day		
	Time format	24:MM, 12:MM tt, **24:MM:SS**, 12:MM:SS tt		
	Set time	Set hour		
		Set minutes		
Sleep / Power off	**Off**, 1 minute, 3 minutes, 5 minutes, 15 minutes, 30 minutes			
Identification	Terminal location			
	Terminal identification			
Display	Display layout	**Default**, 3-line mode		
	Contrast	1 ... **10**		
	Brightness	1 ... **10**		
	Weight hold	**0 s** ... 10 s		
	Auxiliary line	Not used, **Date & Time**, Gross, Net, Tare, High resolution (not available for approved scales), ID1, ID2, ID3, Bargraph, Temperature (for scales with MonBloc® load cell only)		

Level 1	Level 2	Level 3	Level 4	Level 5
Keyboard	Hard keys	Power, Clear, Switch, Info, Transfer	**On**, Off	
	Info key	Page 1	Item 1 ... Item 5	Not used, Date & Time, Gross, Net, Tare, ID1, ID2, ID3, Terminal ID, Terminal location, Terminal model, Snr Terminal, Snr. Scale, Firmware Vers., HighRes, Temperature (for scales with MonBloc® load cell only), MinWeigh, Scale model, Scale location, Scale ID
		Page 2 & 3	Info page 2	Off, **System info**, Contact info
			Info page 3	**Off**, System info, Contact info
	Beeper	**On**, Off		
Timeout	Mode	**Off**, Rental, Screensaver		
	Days			

Description

Region	Country specific settings
Language	Selecting the language of the operator interface. We will expand the available languages continuously.
Date format	Selecting the date format
Set date	
Set year	Entering the year in the selected format
Set month	Entering the month in the selected format
Set day	Entering the day in the selected format
Time format	Selecting the time format
Set time	
Set hour	Entering the hour in the selected format
Set minutes	Entering the minutes

Sleep (Operator access)	**Setting the sleep mode**
Off 1 minute ... 30 minutes	This menu item only appears on devices in **mains operation**. When Sleep is activated, the device switches off display and backlighting after the time period set when not in use and gross weight is 0. Display and backlighting are switched on again by pressing a key or if the weight changes.
Power off (Operator access)	**Setting the power off mode**
Off 1 minute ... 30 minutes	This menu item only appears on devices in **battery operation**. When Power off is activated, the device switches itself off automatically after the time period set when not in use. After this, it must be switched on again using ⏻.

Identification	**Setting terminal identification data**
Terminal location	Entering the terminal location, e.g., floor and room
Terminal ident.	Entering the terminal identification, e.g., inventory number
Note	• Terminal location and terminal identification can be displayed in the auxiliary or info lines or printed out. • Terminal location and terminal identification can consist of up to 12 characters (0 ... 9 and decimal point)

Display	**Setting the display according to your specific task**
Display Layout	Selecting the presentation of the weight value.
Contrast (Operator access)	Setting the contrast of the display. This menu item is accessible with Operator access rights.
Brightness (Operator access)	Setting the brightness of the display. This menu item is accessible with Operator access rights.
Weight hold	Setting how long the weighing result is frozen in the display after the transfer key ⇨ has been pressed or auto print was generated.
Auxiliary line	Selecting the contents of the auxiliary display line.

Keyboard	**Setting the keyboard according to your specific task**
Hard keys	Locking/unlocking keys. Possible keys Power (⏻), Clear (C), Switch (⟳), Info (i), Transfer (⇥)
Info key	Configuring the items to be displayed using the info key (i)
Page 1	On the first page of the info key up to 5 information items on the weighing process can be configured. 1. Select item number 2. Assign information
Page 2, Page 3	On pages 2 and 3 system and contact information will be displayed. In case of a problem, here you will find your contact data and the system information the service technician will ask for. System information is set by the manufacturer, contact information is set by your sales representative.
Beeper	When set to On, each keystroke will be confirmed by a short beep.

Time out	**Setting the behaviour when no action takes place on the terminal**
Mode	Setting the time out mode.
Off	No time out setting.
Rental	The scale can be used for a set time interval, e.g., when the scale is rented for a special event like a fair or a market.
Screensaver	When there is no action on the scale for the set time, the display will show the screensaver.
Days	Entering the number of days the scale will be active in rental mode.

3.4.2 Terminal –> Access – Password for Supervisor menu access

Supervisor	**Password for Supervisor menu access**
Password	Enter password for Supervisor menu access.
Retype Password	Repeat the password entry.
Note	The password can consist of up to 6 characters.

3.4.3 Terminal –> Reset

Perform reset ?	**Confirmation inquiry**
	• Reset the terminal settings to factory settings with **OK**.

3.5 Communication menu block

For detailed information on interface protocols and commands refer to the SICS Reference manual.

The Communication menu block consists of the following subblocks:

`Overview`	Showing the interfaces installed
`COM1`	Parameter settings for the standard RS232 interface COM1.
`COM2`	Parameter settings for the optional second interface COM2.
`Define templates`	Defining templates to be assigned to the application specific printouts

The interfaces identify themselves. Therefore only those menu settings appear which are relevant for the individual interface.
If no optional interface is installed, the COM2 menu will not appear.

3.5.1 Overview of the communication menu blocks for serial interfaces

Possible settings for serial interfaces

		COM1	COM2					
		RS232	**RS232**	**RS422 / RS485**	**Ethernet**	**WLAN**	**USB Device**	**USB Host**
Mode	Print Auto print Continuous (Dialog) *	✔	✔	✔	✔	✔	✔	✔
	Dialog *	Factory setting						
	External input	✔	✔	✔	✔	✔	–	✔
	Toledo Cont.-weight Second display Digitol B Digitol G	✔	✔	✔	✔	✔	✔	✔
Printer		✔	✔	✔	✔	✔	–	✔
External input		✔	✔	✔	✔	✔	–	✔
Parameter	Baud (factory setting)	9600	9600	9600	–	–	–	–
	Parity (factory setting)	8 none	8 none	8 none	–	–	–	–
	Handshake	✔	✔	✔	–	–	–	–
	Checksum	✔	✔	✔	✔	✔	–	✔
	STX	✔	✔	✔	✔	✔	–	–
	RS Type Net Address Load resistor	–	–	✔	–	–	–	–
	DHCP IP address Subnet mask Gateway	–	–	–	✔	✔	–	–
TCP settings		–	–	–	✔	✔	–	–
Wireless settings		–	–	–	–	✔	–	–

* for more information see Reference manual "MT-SICS for ICS4xx / ICS6xx"

Overview RS232 menu block (COM1 / COM2)

Level 1	Level 2	Level 3	Level 4
Mode	Print, Auto print, Continuous (Dialog), **Dialog**, External input, Toledo Cont.-weight, Second display		
	Digitol B, Digitol G	Net Gross Tare	On, **Off**
Printer	Type	**ASCII printer**, Label printer	
	ACII Format	Line format	**Multiple**, Single, Fixed
		Line length	1 ... **24** ... 100
		Separator	. , : ; - _ / \ Space
		Expanded	On, **Off**
		Add line feed	**0** ... 9
External input	Preamble length		
	Data length		
	Postamble length		
	Termination char.	CR, LF, EOT, ...	
	Destination	**Off**, Tare preset, ID1 ... ID3	
Parameter	Baud	300, 600, ... **9600**, ... 115200 baud	
	Parity	7 none, **8 none**, 7 odd, 8 odd, 7 even, 8 even	
	Handshake	**Off**, Xon - Xoff	
	Checksum	**Off**, On	
Reset RS232	Perform Reset ?		

Overview RS422 / RS485 menu block (COM2)

Level 1	Level 2	Level 3
Mode	see RS232	
Printer		
External input		
Parameter	Baud	300, 600, ... **9600**, ... 115200 baud
	Parity	7 none, **8 none**, 7 odd, 8 odd, 7 even, 8 even
	Handshake	**Off**, Xon - Xoff
	RS-Type	**RS422**, RS485
	Net address	**0** ... 31
	Checksum	**Off**, On
	Load resistor	**Off**, On
Reset RS4xx	Perform Reset ?	

Overview Ethernet menu block (COM2)

Level 1	Level 2	Level 3
Mode	see RS232	
Printer		
External input		
Parameter	DHCP	**Off**, On
	Local IP	
	Subnet mask	
	Gateway	
	Checksum	**Off**, On
TCP Mode	TCP Mode	**Server**, Client, Both
	Local Port	
	Remote IP	
	Remote Port	
	Connect Timeout	
	Disconnect Timeout	
Reset Ethernet	Perform Reset ?	

Overview WLAN menu block (COM2)

Level 1	Level 2	Level 3
Mode	see RS232	
Printer		
External input		
Parameter	see Ethernet	
TCP Mode	see Ethernet	
Wireless setting	SSID	Enter SSID
	Encryption	Off, WEP, WPA
	WEP settings	64 Bit, 128 Bit
	WEP key	Key 1, Key 2, Key 3, Key 4
	WPA settings	WPA-TKIP, WPA2-AES
	Password	Enter password
Status	Display the current status, e.g., connection status, signal strength.	
Reset WLAN	Perform Reset ?	

Overview USB Device and USB Host menu blocks (COM2)

Level 1	Level 2	Level 3	Level 4
Mode	Continuous (Dialog), **Dialog**, External input *, Toledo Cont.-weight, Second display		
	Digitol B, Digitol G	Net Gross Tare	On, **Off**
Printer *	see RS232		
External input *			
Parameter *	Checksum	**Off**, On	
Reset USB	Perform Reset ?		

* USB Host only

3.5.2 Description of the communication menu blocks for serial interfaces

Communication –> COMx –> Mode – Operating mode of the serial interface

Print	Manual data output to the printer with ⇨.
Auto print	Automatic output of stable results to the printer (e.g., for series weighing operations).
Continuous (Dialog)	Ongoing output of all weight values via the interface.
Dialog	Bi-directional communication via MT-SICS commands, control of the device via PC.
External input	Input other than via terminal keypad. What the input is used for is defined in the `Destination` menu block.
Toledo Cont.-weight	TOLEDO Continuous mode
Second Display	On the selected interface port a second display is installed
Digitol B **Digitol G** `Net, Gross, Tare`	DigiTOL-compatible format, gross weight identified by "B" DigiTOL-compatible format, gross weight identified by "G" Selecting the weight value to be transferred
Note	Printing conditions for `Auto print` and `Demand m auto`: • The weight must be heavier than 9 display increments. • A weight change of at least 9 display increments is required to initiate the next printout

Communication –> COMx –> Printer – Settings for protocol printout

Type	**Selecting printer type**
`ASCII printer` `Label printer`	**Note** If Label printer is selected, the transmitted data does not include the name of the variable, e.g., date, gross, ID1, but the value and, if apropriate, the unit as a separate line. This allows the label printer to fill its template with the required data.
ASCII Format	**Selecting formats for the protocol printout**
`Line format`	Selecting line format:
`Multiple`	Mutiple lines
`Single`	Single line
`Fixed`	Fixed (Records output in single lines; every record includes the number of characters that was defined under `Line length`)
`Line length`	Setting line length This item is only displayed for the line formats `Multiple` and `Fixed`
`Separator`	Selecting the separator This item is only displayed for the line format `Single`
`Add line feed`	Adding line feeds

Communication –> COMx –> External input – Configuring barcode input

Preamble length	The barcode may contain additional data ahead of the relevant data (preamble) and behind (postamble). ➜ Enter the number of characters of preamble, (relevant) data and postamble
Data length	
Postamble length	
Termination char.	Selecting the termination character which is used by the connected barcode scanner
Destination	Selecting the item to be entered via barcode scanner

Communication –> COMx –> Parameter – Communication parameters

Not all parameters are available on all serial interfaces. Refer to the overviews of the interfaces to check which parameters are available.

Baud	Selecting baud rate
Parity	Selecting parity
Handshake	Selecting handshake
Checksum	Activating/deactivating checksum byte
STX	Activating/deactivating STX If STX is enabled, the STX signal (0x02) is sent at the beginning of each output string that is sent via the interface.
RS Type	Selecting type of the optional RS422/RS485 interface
Net Address	Assigning network address
Load resistor	To avoid reflexions on a network, we recommend to make a defined termination. For this purpose the load resistor within the terminal can be used. When set to "On", a resistor of approx. 100 Ω between the signal lines is enabled
DHCP	If DHCP is set to "On", the device will receive the IP address automatically. Then IP address, Subnet mask and Gateway are read-only fields
Local IP	Displaying/entering the local IP address
Subnet mask	Displaying/entering subnet mask
Gateway	Displaying/entering gateway address

Communication –> COM2 –> TCP Mode – Transmission control protocol settings

TCP Mode	
Server	ICS425 acting as server
Client	ICS425 acting as client
Both	ICS425 acting as both, server or client
Local Port	Displaying/entering the local port
Remote IP	Displaying/entering the remote IP address
Remote Port	Displaying/entering the remote port
Connect timeout	Setting timeout for connecting
Disconnect timeout	Setting timeout for disconnecting

3.5.3 Communication –> Digital I/O (COM2)

Level 1	Level 2	Level 3
Input	Input pin 1 ... Input pin 4	Off, Zero, Tare, Transfer, Switch, Clear, Info, Start
Output	Ready, Stable, Tare, Zero, < Min weigh, >= Min weigh, Underload, Overload, <= Setpoint 1, > Setpoint 1, <= Setpoint 2, > Setpoint 2, Star	**Off**, Output pin 1 ... Output pin 4
Setpoints	Setpoint 1, Setpoint 2	
Output mode	Continuous, Stable	

Configuring inputs

1. Select an input pin.
2. Assign an input signal to the selected input pin.

Configuring outputs

1. Select an output signal.
2. Assign an output pin.

Configuring setpoints

➜ Enter values for the setpoints.

Setting output mode

Continuous	Digital outputs are updated continuously
Stable	Digital outputs are updated only when the weight is stable

3.5.4 Communication –> Define templates

Level 1	Level 2	Level 3
Template 1 ... Template 5	Line 1 ... Line 30	Not used, Header *, Date, Time, Gross, Net, Tare, High resolution, ID1 ... ID3 *, Terminal ID, Terminal location, SNR Terminal, SNR Scale, Star line, New line, Form feed, Weight position

* The content of these items has to be entered via SICS command.

Configuring templates

1. Select a template.
2. Select a line.
3. Assign an item.

3.6 Maintenance menu block

3.6.1 Overview

Level 1	Level 2	Level 3	Level 4
Scale test	Scale	Internal test	Perform test?
		External test	Perform test?
		Conf. ext. test	Test weight
			Weight name
			Tolerance
	Auto print	On, **Off**	
Keyboard test	Perform test?		
Display test	Perform test?		
Serial No.	SNR scale		
	SNR terminal		
Print setup	Print menu settings?		
Reset all	Perform reset?		

3.6.2 Description

Scale test	**Testing the scale**
Internal test	For scales with an internal test weight
Perform test?	➜ Press **OK** to start the test The deviation of test weight value and actually weighed value is displayed.
External test	For scales without an internal test weight
Perform test?	1. Press **OK** to start the test Preload is displayed. 2. If applicable, load the preload, and press **OK**. The test weight is blinking. 3. Load the requested test weight and press **OK**. The deviation of test weight value and actually weighed value is displayed.
Conf. ext. test	Configuring the external test weight
Test weight	Setting the test weight value
Weight name	Entering the test weight name
Tolerance	Setting the test tolerance
Auto print	When set to On, a protocol is printed for each scale test.

Keyboard test	**Testing the keyboard**
Perform test?	1. Press **OK** to start the keyboard test. 2. Press the keys in the displayed order. If the key works, the device switches to the next key. The keyboard test is terminated by pressing ⏻.

Display test	**Testing the display**
Perform test?	1. Press **OK** to start the display test. A checkerboard pattern is displayed. 2. Press any key to invert the checkerboard pattern. 3. Press ⏻ to leave the display test. The display is working properly if the black and white fields are displayed without missing pixels.

Serial number	**Displaying serial numbers**
SNo. scale	Displaying the serial number of the connected weighing platform.
SNo. terminal	Displaying the serial number of the weighing terminal.

Print Setup	**Printout of a list of all menu settings**
Print menu settings	➜ Press **OK** to start the printout.

Reset All	**Reset all settings to factory settings**
Perform reset ?	Confirmation inquiry • Reset all settings to factory settings with **OK**.

4 Event and error messages

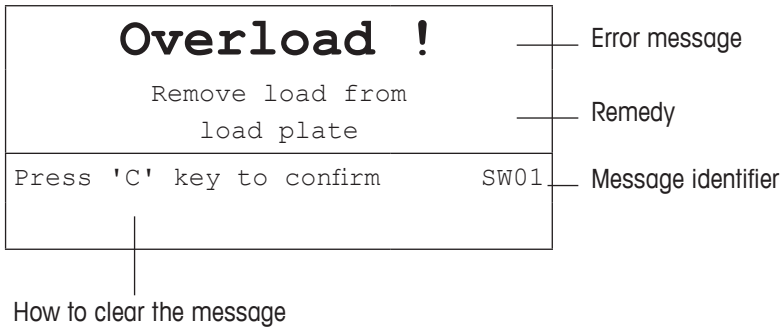
4.1 Error conditions

Error	Cause	Remedy
Display dark	• Backlighting set too dark	➜ Set backlighting brighter.
	• No mains voltage	➜ Check mains.
	• Unit switched off	➜ Switch on unit.
	• Mains cable not plugged in	➜ Plug in mains cable.
	• Brief fault	➜ Switch device off and on again.
Weight display unstable	• Restless installation location	➜ Adjust vibration adapter.
	• Draft	➜ Avoid draft.
	• Restless weighing sample	➜ Dynamic weighing.
	• Contact between weighing pan and/or weighing sample and surroundings	➜ Remedy contact.
	• Mains fault	➜ Check mains.
Incorrect weight display	• Incorrect zeroing	➜ Unload scale, set to zero and repeat weighing operation.
	• Incorrect tare value	➜ Clear tare.
	• Contact between weighing pan and/or weighing sample and surroundings	➜ Remedy contact.
	• Weighing platform tilted	➜ Level weighing platform.
[_____]	• Load plate not on the scale • Weighing range not reached	➜ Place load plate on the scale. ➜ Set to zero.
[‾‾‾‾‾]	• Weighing range exceeded	➜ Unload scale. ➜ Reduce preload.
‾‾‾‾‾	• Result not yet stable	➜ If necessary, adjust vibration adapter.
"Attention: Approval invalid" alternating with metrological data	• Approval was tampered with	➜ Call METTLER TOLEDO service technician.

4.2 Errors and warnings

4.2.1 Error messages

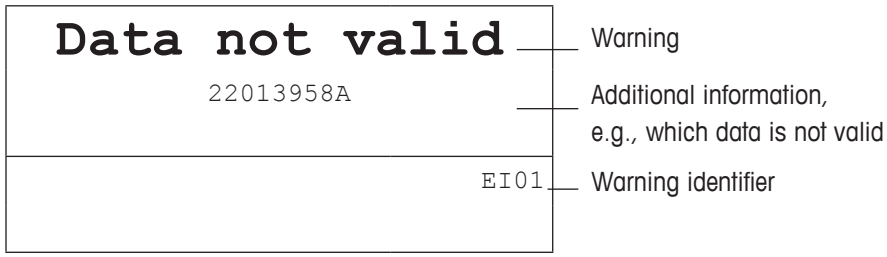
Error messages contain the following information:



4.2.2 Warnings

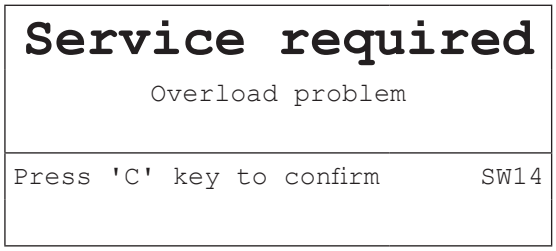
Warnings are displayed briefly and then disappear automatically.

Example



4.3 Smart weighing counter / spanner icon

This weighing instrument features several control functions to monitor the condition of the device.
The METTLER TOLEDO service technician can setup and enable these functions.
This helps the user and the METTLER TOLEDO service technician to detemine how the device is treated and what measures are needed to keep it in a good shape.
If the control functions triggers an alert, a message is shown.
You can confirm the message and continue to work with the weighing instrument. The spanner icon lights up.



In case of an alert we strongly recommend calling the METTLER TOLEDO service technician

- to replace parts which are at the end of lifetime,
- to correct wrong settings,
- to educate operators about proper handling,
- to perform routine service work,
- to reset the alert.

The control functions monitor the following conditions:

- number of weighings
- number of overloads
- maximum weight
- zero commands and zero failures
- battery charging cycles
- power-on time
- date for the next service inspection

4.4 Service information

In case you need the METTLER TOLEDO service technician, you can read the necessary system and contact information from the device.

1. Press **i** twice.
   System information data are displayed.
2. Press **i** again.
   Your contact data are displayed.

5 Technical data and accessories

5.1 Technical data weighing terminal

Housing	• Aluminium diecast
Display	• LCD liquid crystal graphical display, with backlighting
Keyboard	• Tactile-touch membrane keypad (PET) • Scratch-resistant labelling
Protection type	• With power supply connection IP65 • With built-in storage battery IP65 • With exchangeable battery IP54 • Weighing platform IP54 / IP65 (option, not for XS)
Net weight	• Weighing terminal 2.0 kg / 4.4 lb
Mains connection	• Direct connection to power supply (supply voltage fluctuation not exceeding ±10 % of the rated voltage) • Rated voltage 100 ... 240 VAC / 50 ... 60 Hz / 300 mA • Power cord approx. 2.5 m / 8.2 ft
Storage battery operation	• Supply of device: 12 V ⎓ / 2.5 A • If the supply voltage is interrupted, the device automatically switches over to storage battery operation
9-28 VDC power supply	• Rated voltage: 9 ... 28 V ⎓ / max. 2.5 A • Power cord approx. 5 m / 16 ft, open ends
Battery charger	• Ambient conditions: 0 ... 40 °C / 32 ... 104 °F, dry environment
Ambient conditions	• Application indoor use only • Altitude up to 2,000 m • Temperature range Class III –10 ... 40 °C / 14 ... 104 °F • Temperature range Class II 10 ... 30 °C / 50 ... 86 °F • Overvoltage category II • Pollution degree 2 • Humidity: Max. rel. humidity 85 % for temperatures up to 40 °C
Interfaces	• 1 interface RS232 and 1 scale interface integrated • 1 additional optional communication interface possible
W & M approvals	• OIML Class II, III, IIII • NTEP Class II, III

Applications

- Weighing
- Average weighing

Operating life with storage battery

The operating life during storage battery operation varies depending on the intensity of use, the configuration and the connected scale.
The following approximate values apply with standard RS232 interface and the brightness set to 5.

Weighing platform	Conditions	Duration
With strain gauge weighing platform, e.g., ICS425a-...SM/f	WLAN, continuous operation	8 h
	USB host, continuous operation	13 h
With MonoBloc® weighing platform, e.g., ICS425k-...SM/f	WLAN, continuous operation	7 h
	USB host, continuous operation	11 h

Analog scale interface

Impedance	• ≥ 80 Ω
Excitation	• 3.3 V
Sensitivity	• 2 to 3 mV/V
Max. resolution	• 7500 e (OIML • 300,000 d (non approvable)
Min. verification interval	• 0.5 µV/e

5.2 Technical data weighing platforms

5.2.1 Strain gauge weighing platforms

ICS425d-.../f compact scales use a weighing platform with strain gauge load cell.

- Approved resolution of 1 x 6,000 e (OIML, NTEP)
- Non-approved resolutions up to 60,000 d

ICS425d-.../f	3SM	6SM	15LA	35LA
Capacity	3 kg	6 kg	15 kg	35 kg
	6 lb	12 lb	30 lb	70 lb
Readability				
Standard resolution: 6,000 d	0.5 g	1 g	2 g	5 g
	0.001 lb	0.002 lb	0.005 lb	0.01 lb
Optional resolution: 30,000 d	0.1 g	0.2 g	0.5 g	1 g
	0.0002 lb	0.0005 lb	0.001 lb	0.002 lb
Optional resolution: 60,000 d	0.05 g	0.1 g	0.2 g	0.5 g
	0.0001 lb	0.0002 lb	0.0005 lb	0.001 lb
Approved resolution: 6,000 e	0.5 g	1 g	2 g	5 g e
	0.001 lb	0.002 lb	0.005 lb	0.01 lb
Repeatability (sd)	0.05 g	0.1 g	0.2 g	0.5 g
	0.0001 lb	0.0002 lb	0.0005 lb	0.001 lb
Linearity	0.1 g	0.2 g	0.5 g	1 g
	0.0002 lb	0.0005 lb	0.001 lb	0.002 lb
Weight	5.5 kg	5.5 kg	7.7 kg	7.7 kg
	12.1 lb	12.1 lb	17.0 lb	17.0 lb

5.2.2 MonoBloc® weighing platforms

ICS425k-.../f and **ICS425k-.../DR/f** compact scales use a weighing platform with MonoBloc® load cell.

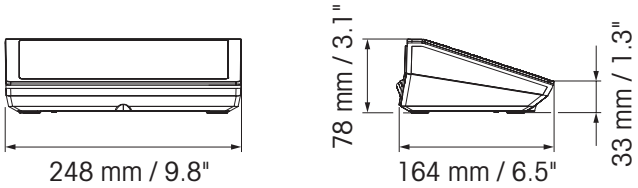
- Approved resolution of up to 61,000 e (OIML, NTEP)
- Non-approved resolutions up to 610,000 d
- FACT function (Fully Automatic Calibration Technology) calibrates the scale according to temperature changes thus increasing weighing accuracy
- **ICS425k-.../DR/f** provide a range with higher resolution.

ICS425k-.../f	0.6XS	3XS	6XS	6SM	15LA7	35LA
Capacity	0.6 kg	3 kg	6 kg	6 kg	15 kg	35 kg
	1.2 lb	6 lb	12 lb	12 lb	30 lb	70 lb
Readability						
Standard resolution	0.001 g	0.01 g	0.01 g	0.1 g	0.1 g	0.1 g
	0.000002 lb	0.00002 lb	0.00002 lb	0.0002 lb	0.0002 lb	0.0002 lb
Approved resolution	0.01 g	0.1 g	0.1 g	1 g	1 g	1 g
	0.00002 lb	0.0002 lb	0.0002 lb	0.002 lb	0.002 lb	0.002 lb
Repeatability (sd)	0.001 g	0.01 g	0.01 g	0.1 g	0.1 g	0.1 g
	0.00002 lb	0.00002 lb	0.00002 lb	0.0002 lb	0.0002 lb	0.0002 lb
Linearity	0.002 g	0.02 g	0.02 g	0.2 g	0.2 g	0.3 g
	0.000005 lb	0.00005 lb	0.00005 lb	0.0005 lb	0.0005 lb	0.0005 lb
Weight	5.7 kg	5.7 kg	5.7 kg	5.7 kg	9.0 kg	9.0 kg
	12.6 lb	12.6 lb	12.6 lb	12.6 lb	19.8 lb	19.8 lb

ICS425k-.../DR/f	0.6XS	3XS	6XS	6SM	15LA	35LA
Capacity	0.12 kg / 0.6 kg	0.6 kg / 3 kg	1.2 kg / 6 kg	1.2 kg / 6 kg	3 kg / 15 kg	7 kg / 35 kg
Readability						
Standard resolution	0.001 g / 0.01 g	0.01 g / 0.1 g	0.01 g / 0.1 g	0.1 g / 1 g	0.1 g / 1 g	0.1 g / 1 g
Approved resolution	0.01 g / 0.1 g	0.1 g / 1 g	0.1 g / 1 g	1 g / 10 g	1 g / 10 g	1 g / 10 g
Repeatability (sd)	0.001 g	0.01 g	0.01 g	0.1 g	0.1 g	0.1 g
Linearity	0.002 g	0.02 g	0.02 g	0.2 g	0.2 g	0.3 g
Weight	5.7 kg	5.7 kg	5.7 kg	5.7 kg	9.0 kg	9.0 kg

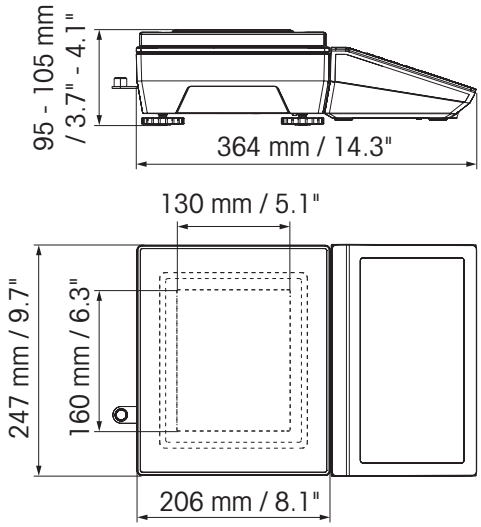
5.3 Dimensional drawings

5.3.1 Weighing terminal

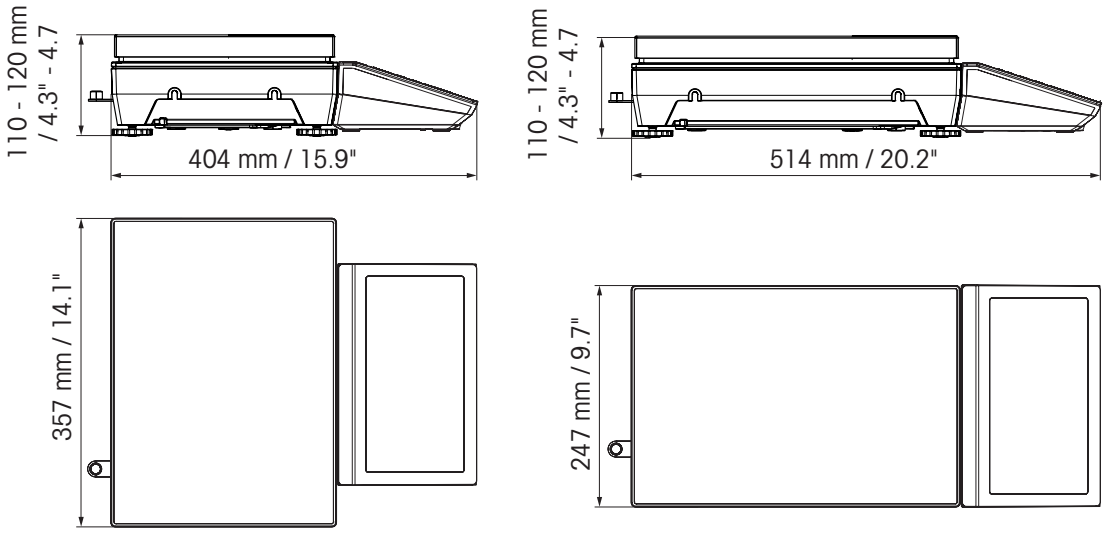


5.3.2 Compact scales

Compact scale with **XS** or **SM** weighing platform



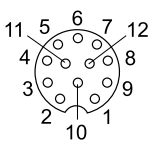
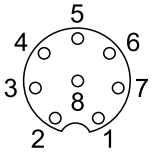
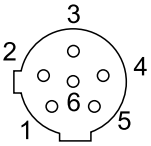
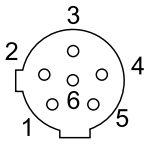
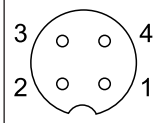
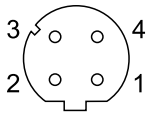
Compact scale with **LA** weighing platform



5.4 Accessories

Accessories	Order no.
Printer RS-P25/02 Printer USB-P25/02 Printer RS-P26/02 Printer RS-P28/02	11 124 310 11 124 311 11 124 313 11 124 314
Protective cover for the weighing terminal, set of 5 pieces	30 032 638
Auxiliary display AD-RS-M7	12 122 381
Power supply 9-28 V (conversion kit)	22 023 504
Charging station	30 035 339
Battery pack	30 032 647
Windshield for ...XS weighing platforms	72 262 929
Wall bracket	30 032 637
Support for wheeled bench stand	22 023 460
Column for PBA330, PBA655, PBD655 (requires wall bracket 30 032 637) Height 330 mm / 13 ft Height 660 mm / 26 ft	 72 198 699 72 198 700
Floor stand, height 1000 mm / 3,3 ft Painted steel Stainless steel	 22 023 451 22 023 503
Relaybox 4, for Digital I/O	22 011 967
Power supply for Relaybox 4	00 505 544
Cables	**Order no.**
Cable M12 USB Female Type A, USB host 0.2 m / 0.7 ft, 3 m / 10 ft	 22 017 604 22 017 608
Cable M12 USB Male Type A, USB device, 3 m / 10 ft	22 018 967
Cable M12 RS232 Female Sub D 9 pin (crossed; used for PC)	22 017 601
Cable M12 RS232 Male Sub D 9 pin (not crossed; used for SICS scale)	22 017 602
Cable M12 RS422/485, open ends	22 017 603
Cable M12 Digital I/O, open ends	22 018 969
Cable M12 Ethernet RJ45 5 m / 16 ft, 20 m / 66 ft	 22 017 610 22 017 614
Cable for auxiliary display AD-RS-M7	30 041 060

5.5 Assignment of the interface connections

	Digital I/O	RS232	RS422	RS485	USB Device USB Host	Ethernet	Power
Socket							
Pin 1	In 0	CTS	TxD+	T/RxD+	+5 V	TD+	+12 V
Pin 2	In 1	TxD	TxD–	T/RxD–	D–	RD+	+12 V
Pin 3	In 2	RTS	RxD+	–	GND	TD–	GND
Pin 4	In 3	RxD	+12 V	+12 V	D+	RD–	GND
Pin 5	In_GND	+12 V	GND	GND			
Pin 6	Out 0	+5 V	RxD–	–			
Pin 7	Out 1	–					
Pin 8	Out 2	GND					
Pin 9	Out 3						
Pin 10	Out_GND						
Pin 11	+12 V						
Pin 12	GND						

6 Appendix

6.1 Notice for verified instruments in EC countries

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.

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 Weights and Measures authorities. Please contact your METTLER TOLEDO organisation. The first step of the verification has been carried out at the manufacturing plant.
If national regulations in individual countries limit the period of validity of the verification, the operator of such a weighing instrument is himself responsible for its timely re-verification.

6.2 Tables of Geo Code values

For weighing instruments verified at the manufacturer's, the Geo Code value indicates the country or geographical zone for which the instrument is verified. The Geo Code value set in the instrument (e.g.,"Geo 18") appears briefly after switching on.
Table "Geo Code values 3000e" shows the Geo Code values for European countries.
Table "Geo Code values 6000e/7500e" shows the Geo Code values for different gravitation zones.

6.2.1 Geo Code values 3000e, OIML Class III (European Countries)

Country	Geographical latitude	Geo Code value
Austria	46°22′ – 49°01′	18
Belgium	49°30′ – 51°30′	21
Bulgaria	41°41′ – 44°13′	16
Croatia	42°24′ – 46°32′	18
Czechia	48°34′ – 51°03′	20
Denmark	54°34′ – 57°45′	23
Estonia	57°30′ – 59°40′	24
Finland	59°48′ – 64°00′	25*
	64°00′ – 70°05′	26
France	41°20′ – 45°00′	17
	45°00′ – 51°00′	19*
Germany	47°00′ – 55°00′	20
Greece	34°48′ – 41°45′	15
Hungary	45°45′ – 48°35′	19
Iceland	63°17′ – 67°09′	26
Ireland	51°05′ – 55°05′	22
Italy	35°47′ – 47°05′	17
Latvia	55°30′ – 58°04′	23

Country	Geographical latitude	Geo Code value
Liechtenstein	47°03′ – 47°14′	18
Lithuania	53°54′ – 56°24′	22
Luxemburg	49°27′ – 50°11′	20
Netherlands	50°46′ – 53°32′	21
Norway	57°57′ – 64°00′	24*
	64°00′ – 71°11′	26
Poland	49°00′ – 54°30′	21
Portugal	36°58′ – 42°10′	15
Romania	43°37′ – 48°15′	18
Slovakia	47°44′ – 49°46′	19
Slovenia	45°26′ – 46°35′	18
Spain	36°00′ – 43°47′	15
Sweden	55°20′ – 62°00′	24*
	62°00′ – 69°04′	26
Switzerland	45°49′ – 47°49′	18
Turkey	35°51′ – 42°06′	16
United Kingdom	49°00′ – 55°00′	21*
	55°00′ – 62°00′	23

* factory setting

6.2.2 Geo Code values 6000e/75000e OIML Class III (Height ≤ 1000 m)

Geographical latitude	Geo Code value
00°00′ – 12°44′	18
05°46′ – 17°10′	21
12°44′ – 20°45′	16
17°10′ – 23°54′	18
20°45′ – 26°45′	20
23°54′ – 29°25′	23
26°45′ – 31°56′	24
29°25′ – 34°21′	25*, 26
31°56′ – 36°41′	17, 19*
34°21′ – 38°58′	20
36°41′ – 41°12′	15
38°58′ – 43°26′	19
41°12′ – 45°38′	26

Geographical latitude	Geo Code value
43°26′ – 47°51′	18
45°38' – 50°06'	22
47°51′ – 52°22′	20
50°06′ – 54°41′	21
52°22′ – 57°04′	24*, 26
54°41′ – 59°32′	21
57°04′ – 62°09′	15
59°32′ – 64°55′	18
62°09′ – 67°57′	19
64°55′ – 71°21′	18
67°57′ – 75°24′	15
71°21′ – 80°56′	24*, 26
75°24′ – 90°00′	18

* factory setting

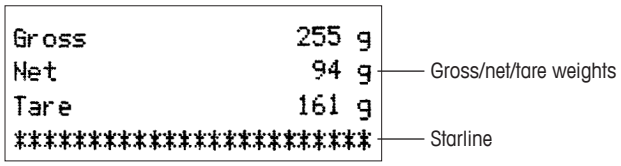
6.3 Disposal

In conformance with the European Directive 2002/96 EC on Waste Electrical and Electronic Equipment (WEEE), this device may not be disposed of with domestic waste. This also applies to countries outside the EU, according to their specific requirements.
Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.
If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.
Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.
Thank you for your contribution to environmental protection.

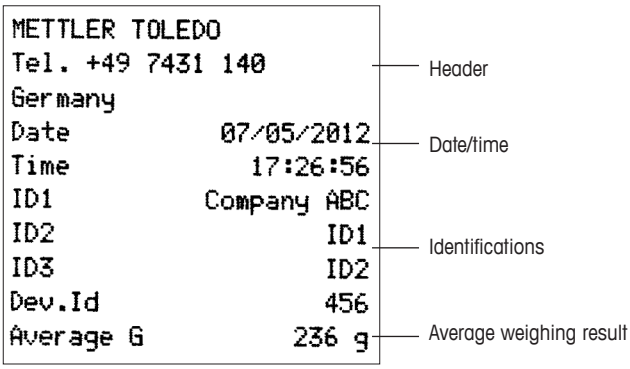
6.4 Protocol printouts

P25 printouts, in English

Straight weighing – standard template



Average weighing with header and identification data



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Order number 22023391A