

User Manual

TD-Series Balance Series



01-16-17 REV03

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1. GENERAL INFORMATION

1.1 INTENDED USE

The balances are designed to provide accurate measurement of weighed loads, performed under laboratory conditions.

1.2 PRECAUTIONS

- Prior to first use, it is highly recommended to carefully read this User Manual, and operate the balance as intended.
- Do not operate the touch panel using sharp-edged tools (knife, screwdriver, etc.).
- While loading the balance make sure that load is placed in the very center of the weighing pan.
- Make sure the load does not exceed instrument's measuring range (maximum capacity).
- Do not leave heavy loads on the weighing pan for a long period of time.
- In case of failure, immediately unplug the instrument.
- Balances to be decommissioned, should be decommissioned in accordance with valid legal regulations.
- Do not use the balance in areas endangered with explosion. The balance is not designed to operate in EX zones.

1.3 SUPERVISION OVER METROLOGICAL PARAMETERS

Metrological parameters of a balance need to be checked by an authorized user. Inspection frequency is qualified by the ambient conditions in which a balance is used, processes carried out and adopted quality management system.

1.4 WARRANTY CONDITIONS

- A. Schuler Scientific will exchange, replace or repair the existing balance for any damage that appears to be faulty by production or by construction within the 5-year warranty period.
- B. Warranty is voided if:
- mechanical defects caused by inappropriate use:
 - defects of thermal and chemical origin,
 - defects caused by lightning, overvoltage in the power network
 - defects caused by water damage
 - or other random event
 - overloading the mechanical measuring system
 - installing another version of the operating system
 - utilizing the balance contrary to its intended use
 - repairs carried out by non-authorized service centers
 - removing or destroying protective stickers which secure the balance's housing against unauthorized access
- C. Warranty card must be filled out for warranty to be valid.

2. UNPACKING AND INSTALLATION

2.1 PLACE OF USE AND ASSEMBLING

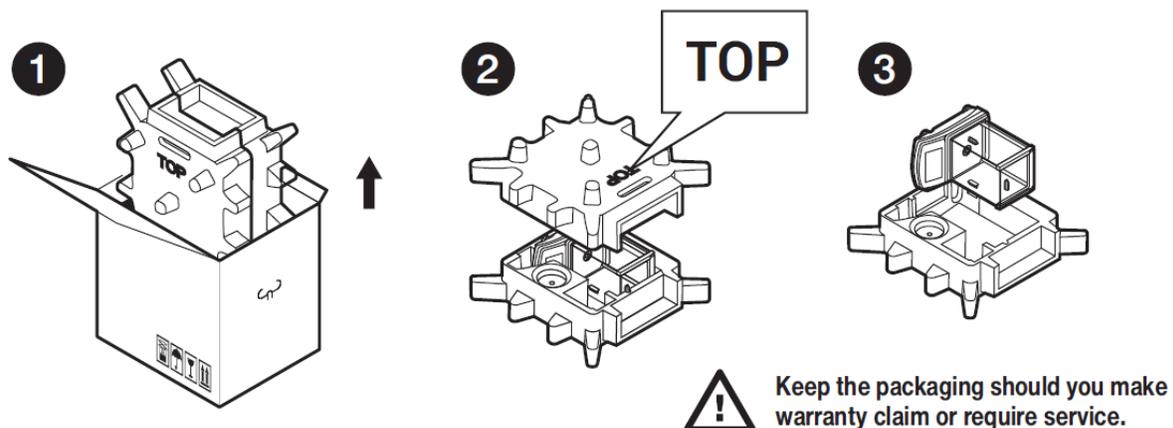
- The balance should be stored and used in locations free of vibrations and shakes, free of air movement and dust.
- Ambient air temperature should not exceed the range of: +10 °C ÷ +40 °C.
- Ambient relative humidity should not exceed 80%.
- During balance operation, ambient temperature in the weighing room should not change rapidly.
- The balance should be located on a stable wall console desk or a stable working table which is not affected by vibrations and distant from heat sources.
- Take special precaution when weighing magnetic objects, as part of the balance is a strong magnet. Should such loads be weighed, use under-pan weighing option, which removes the weighed load from area influenced by the balance's magnet. The hook for under-pan weighing is installed in balance's base.
- Keep all package element should your device be transported in the future. Remember that only original packaging can be used for shipping purposes. Prior to packing, uncouple any cables, remove any separable components (weighing pan, shields, inserts). Pack the device components into an original packaging. The original packaging protects the equipment against potential damage during transportation.

2.2 STANDARD DELIVERY COMPONENTS LIST

- Balance and components shown in Section 2.4 depending on balance model
- Warranty Card
- USB
 - User Manual
 - Balance USB Driver
 - RLAB Software
 - RLAB Software Manual

2.3 UNPACKING

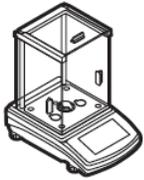
To unpack the system, follow the diagram below-



2.4 BALANCE ASSEMBLY

Model: SAS-225.TD

Components:



Balance
x 1



Weighing pan
x 1



Draft shield
x 1



Centering ring
x 1



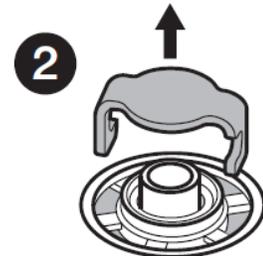
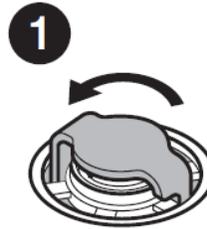
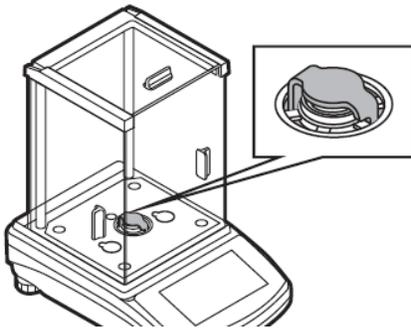
Bottom insert
x 1



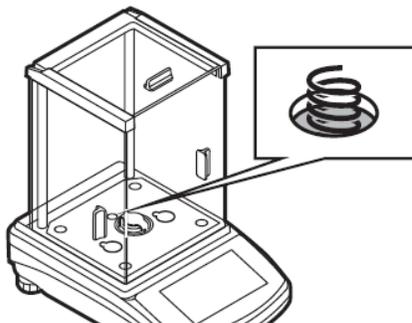
Power adapter
x 1

Installation:

- 1) Remove the transport lock– gently press the transport lock and turn it accordingly to <OPEN>, keep the transport lock should your balance be transported in the future.

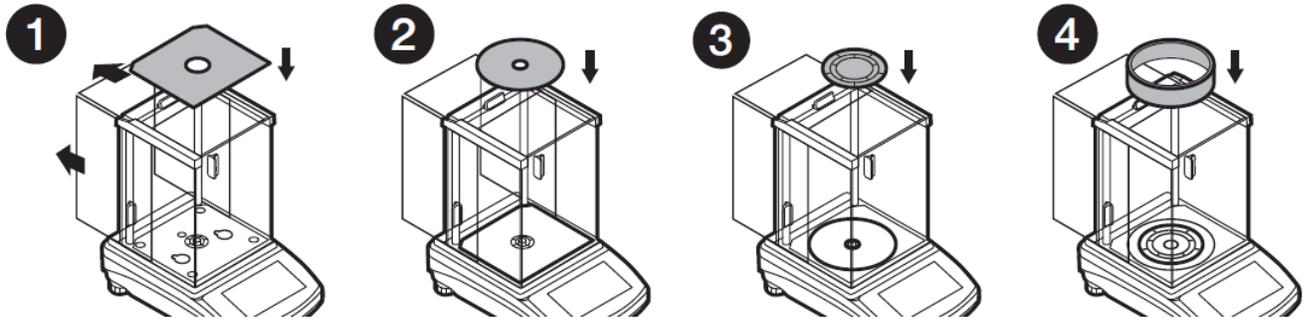


- 2) Check grounding spring to insure it is in the appropriate location. Make sure that the grounding spring juts slightly out of the hole.



3) Install components following diagram below:

- i. Bottom insert
- ii. Centering ring [embossment side up]
- iii. Weighing pan
- iv. Draft shield



Model: SAS-124.TD, SAS-224.TD

Componets:



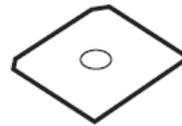
Balance
x 1



Weighing pan
x 1



Draft shield
x 1



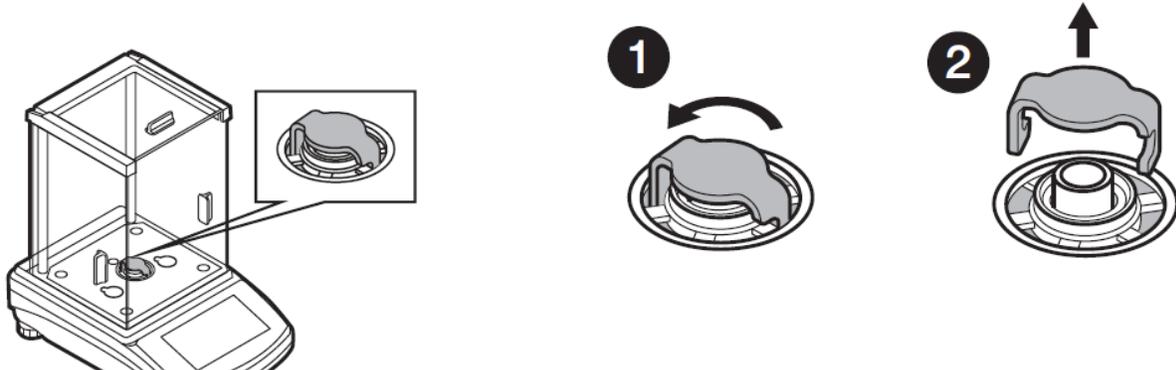
Bottom insert
x 1



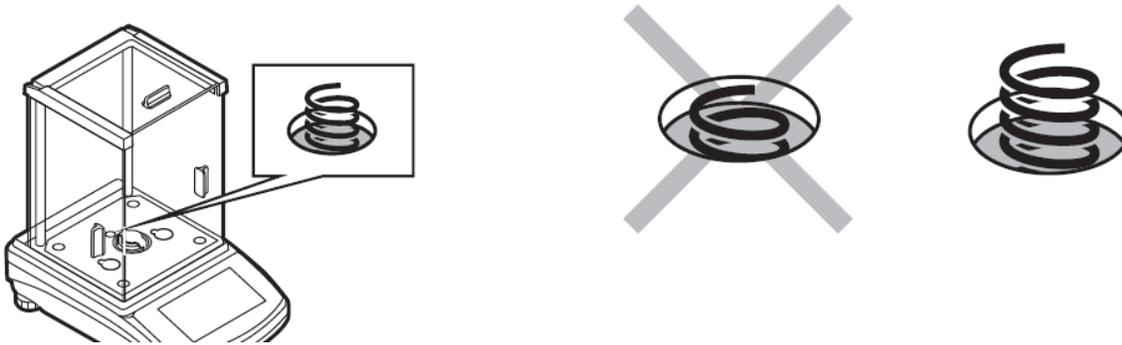
Power adapter
x 1

Installation:

- 1) Remove the transport lock– gently press the transport lock and turn it accordingly to <OPEN>, keep the transport lock should your balance be transported in the future.

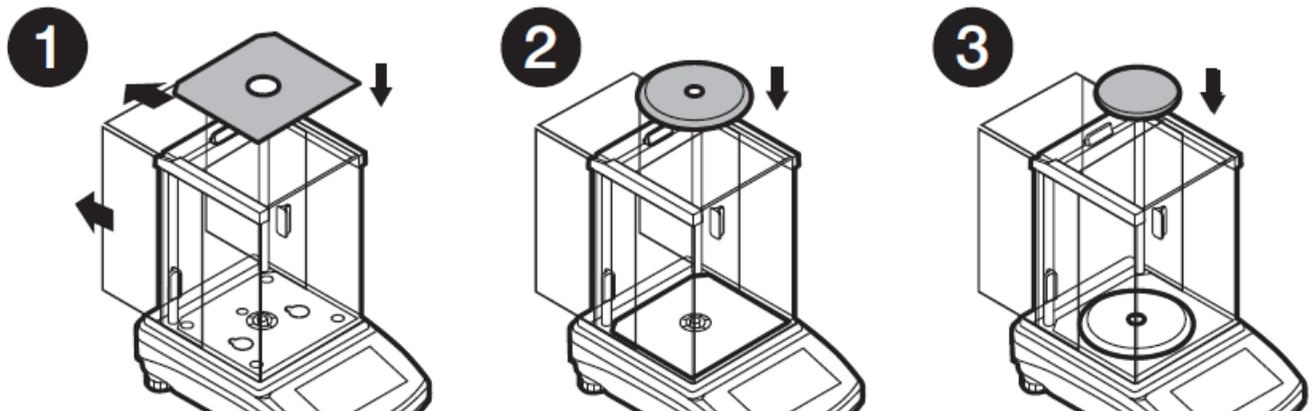


- 2) Check grounding spring to insure it is in the appropriate location. Make sure that the grounding spring juts slightly out of the hole.



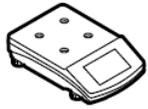
- 3) Install components following the diagram below:

- i. Bottom insert
- ii. Centering ring [embossment side up]
- iii. Weighing pan



Model: SPS-363.TD, SPS-1003.TD

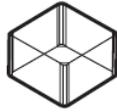
Components:



Balance
x 1



Weighing pan
x 1



Draft shield
x 1



Grounding foot
x 1



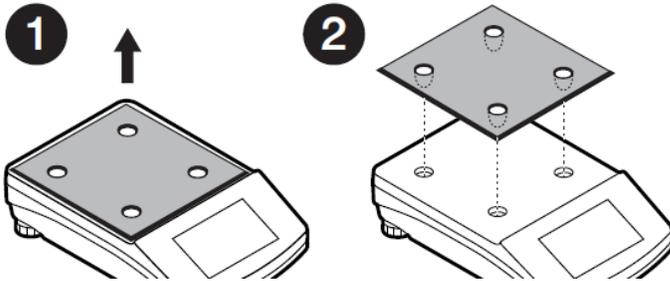
Foot
x 3



Power adapter
x 1

Installation:

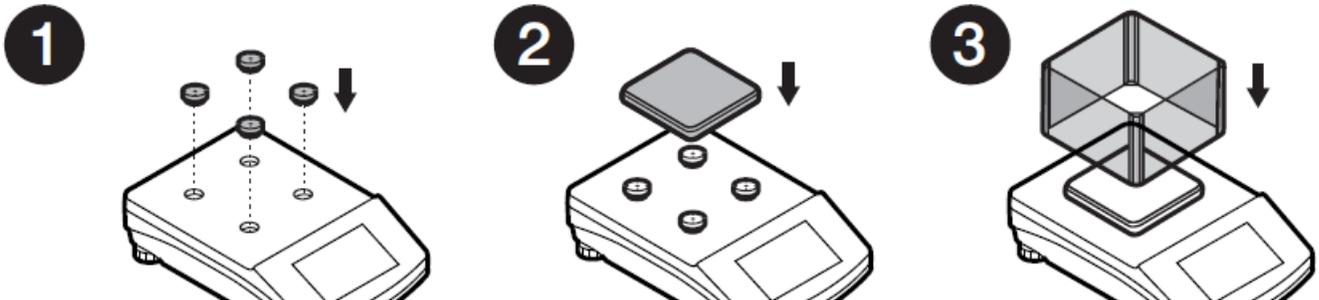
- 1) Remove transport lock, keep the transport lock should your balance be transported in the future.



- 2) Check that the grounding spring is in the correct location, the spring juts slightly out of the hole.

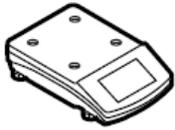


- 3) Install components following the diagram below:
 - i. Rubber feet (grounding foot can be in any location on the balance)
 - ii. Weighing pan
 - iii. Glass draft shield



Model: SPS-4502.TD

Components:



**Balance
x 1**



**Weighing pan
x 1**



**Grounding
foot x 1**



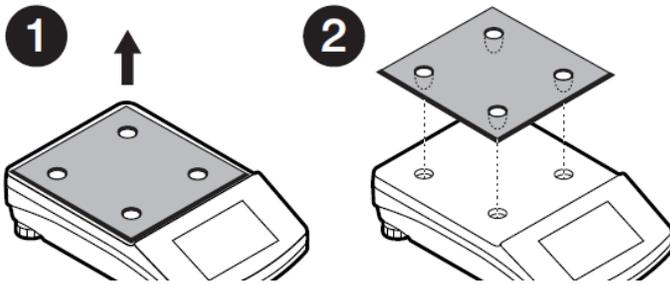
**Foot
x 3**



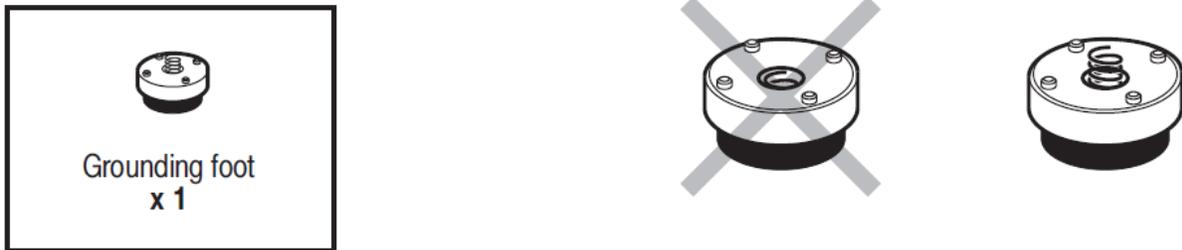
**Power
adapter x 1**

Installation:

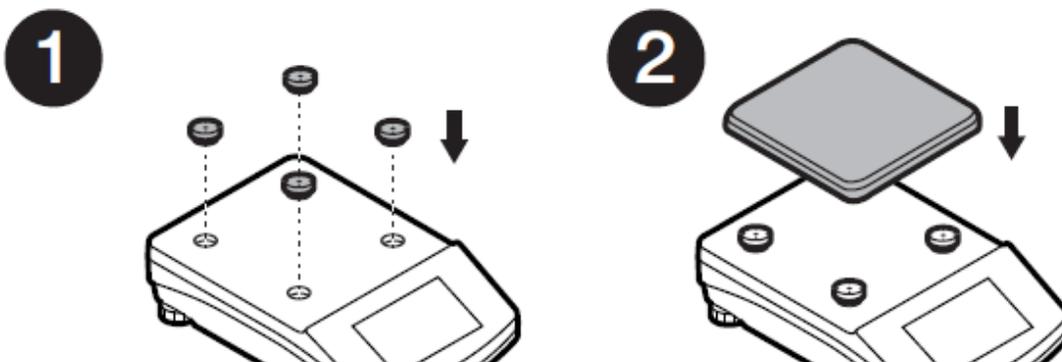
- 1) Remove transport lock, keep the transport lock should your balance be transported in the future.



- 2) Check that the grounding spring is in the correct location, the spring juts slightly out of the hole.

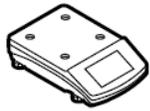


- 3) Install components following the diagram below:
 - i. Rubber feet (grounding foot can be in any location on the balance)
 - ii. Weighing pan



Model: SPS-6002.TD

Components:



Balance
x 1



Weighing pan
x 1



Draft shield
x 1



Grounding foot
x 1



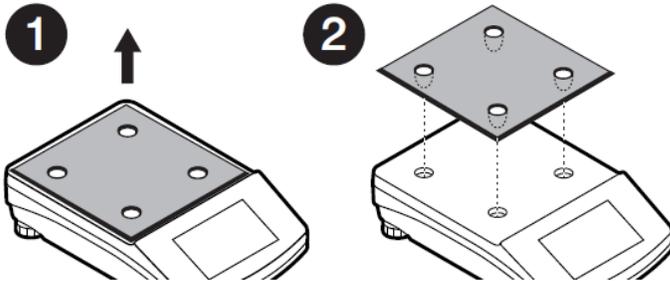
Foot
x 1



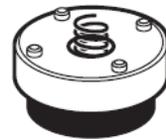
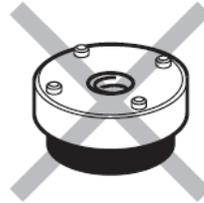
Power adapter
x 1

Installation:

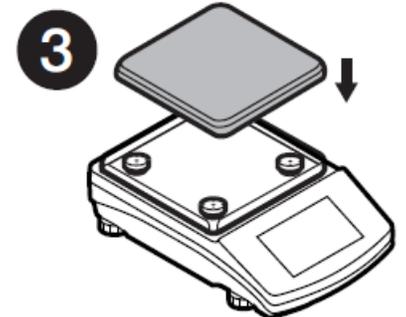
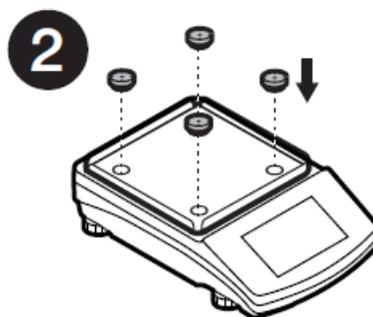
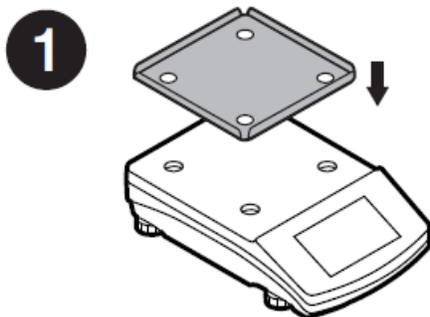
- 1) Remove transport lock, keep the transport lock should your balance be transported in the future.



- 2) Check that the grounding spring is in the correct location, the spring juts slightly out of the hole.

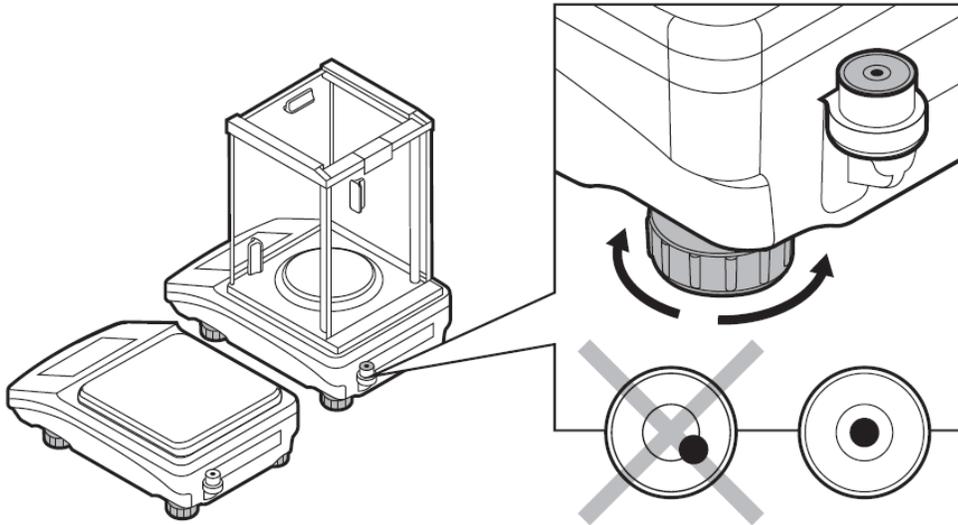


- 3) Install components following the diagram below:
 - i. Draft shield
 - ii. Rubber feet (grounding foot can be in any location on the balance)
 - iii. Weighing pan



2.5 BALANCE LEVELING

It is necessary to level the balance prior to plugging it in. To level the balance, turn its feet until the air bubble is in the center position.



The balance should firmly rest on a surface, each of the feet must be supported.

2.6 POWERING THE DEVICE

Before plugging in your balance, it is imperative to wait until the balance reaches thermal stabilization.

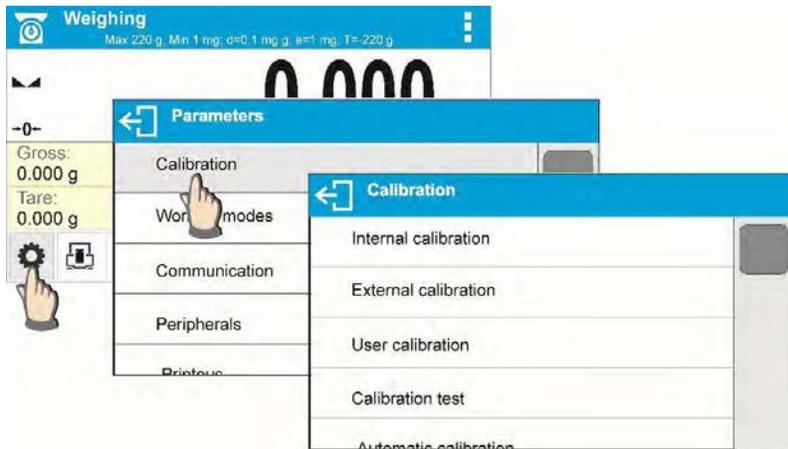
For balances that were stored in much lower temperatures (e.g. during winter period), thermal stabilization period will take at least 4 hours for Precision balances, and 8 hours for Analytical balances.

- Balance should be plugged in only with the power adapter that comes standard with the model. Nominal power supply of the power adapter (specified on the power adapter data plate) should be compatible to the power supply.
- Plug the balance in – connect the power adapter to the socket, next connect its connector to port located at the back of the balance housing.
- Press  button located in the top right hand corner of the key pad.
! Remember to start the balance with no load on the weighing pan
- Wait until the start-up procedure is completed. The home screen of balance software is displayed automatically.
- If the indication is different than zero, please press  button

3.3 ENTERING BALANCE MENU

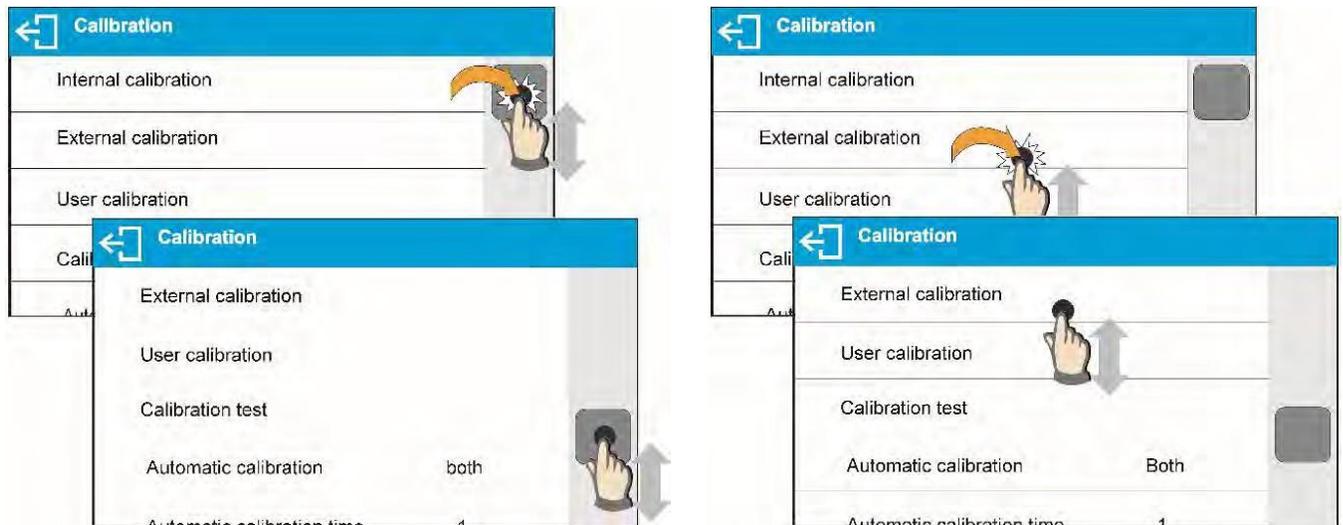
Operation of the balance menu is intuitive and easy to use. The touch panel makes the software operation easy. Pressing a function key, a soft key or an area on the display initiates an assigned function or process

To enter balance main menu, press  <PARAMETERS> button. Clicking any button within this section, or clicking any button with a parameter name, results in a change of color. This is for signaling purposes. If a given area has any function or action assigned, then it is performed automatically upon clicking (e.g. adjustment procedure), respectively a window with parameters or a list of appropriate settings is displayed.



3.4 SCREEN SCROLLING

There are two methods for scrolling the screen of parameters window. The first one requires pressing, holding down and scrolling up or down the scrollbar located on the left. The second one requires pressing, holding down and scrolling up or down on any point of the displayed window.



3.5 SOFT KEYS LIST

	Press to enter the main menu.		Press to clear the editing field.
	Press to scroll the menu “up”, or “down”.		Press to enable / disable an on-screen keyboard.
	Press to confirm changes.		Press to export databases (key active upon plugging a USB flash drive).
	Press to resign form introducing function modifications.		Press to import databases (key active upon plugging a USB flash drive).
	Press to add a new record to a database.		Press to select variables, out of the list, for a printout.
	Press to search for a record in a database.		Press to move (exit) one level up.
	Press to print out a record from a database.		

4. WEIGHING MODE

Load an object on the balance weighing pan. The stabilization of weighing result is indicated by a stability marker  visible on the left side of balance display, read the measurement result.


Weighing
Max 220 g; Min 1 mg; d=0.1 mg g; e=1 mg; T=-220 g



0.0000

g

Gross:
0.000 g

Tare:
0.000 g

Product:
Test product 01

User:
Kowalski Jan





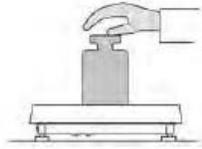



4.1 GOOD WEIGHING PRACTICE

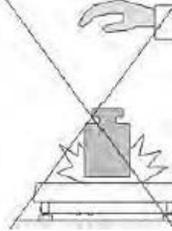
To ensure long lasting use of a balance with correct and reliable measurements of weighed loads, follow the procedures below:

- Start the balance with no load on the weighing pan.
- Load the weighing pan carefully and avoid dropping it:

YES

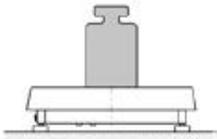


NO

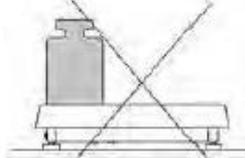


- Place weighed load in the center of the weighing pan:

YES

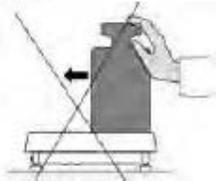


NO

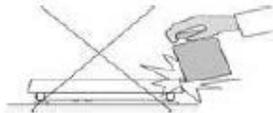


- Avoid side loading, in particular side shocks:

NO

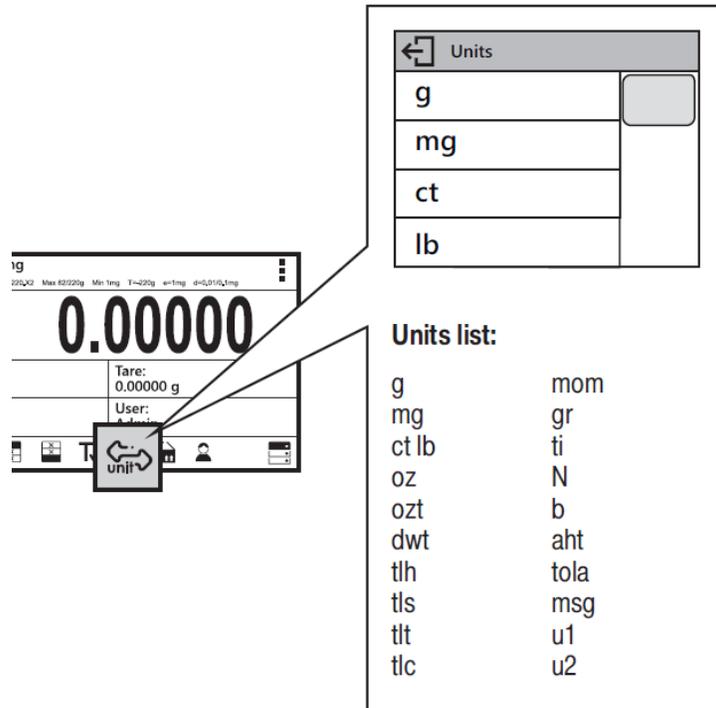


NO



4.2 UNITS

To change the weighing unit, press the weighing unit icon. This brings up the available unit's list, choose new unit from the list displayed.

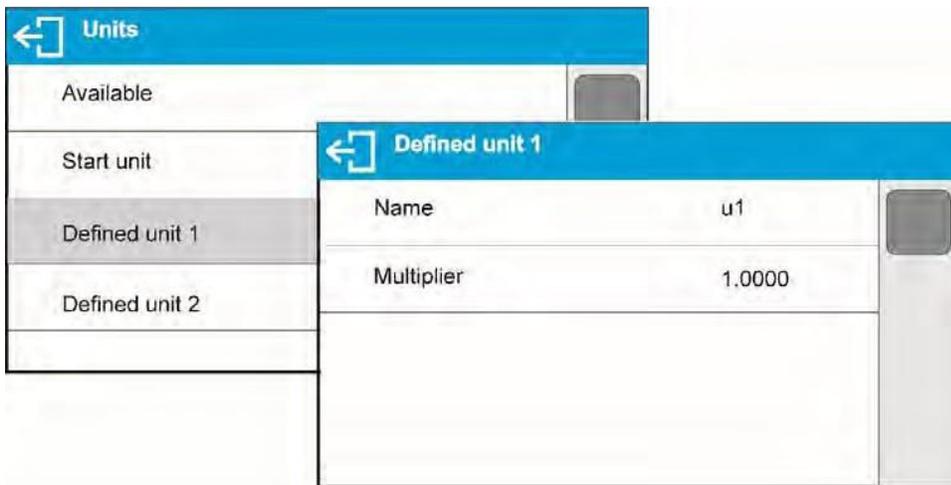


Units List:

Unit	Denotation	Unit	Denotation
gram	[g]	Taele China	[tlc]
milligram	[mg]	Momme	[mom]
kilogram	[kg]	Grain	[gr]
carat	[ct]	Newton	[N]
pound	[lb]	Tical	[ti]
ounce	[oz]	baht	[baht]
ounce Troy	[ozt]	tola	[tola]
pennyweight	[dwt]	mesghal	[msg]
Taele Hongkong	[tlh]	User unit 1	[u1]
Taele Singapore	[tls]	User unit 2	[u2]
Taele Taiwan	[tlt]		

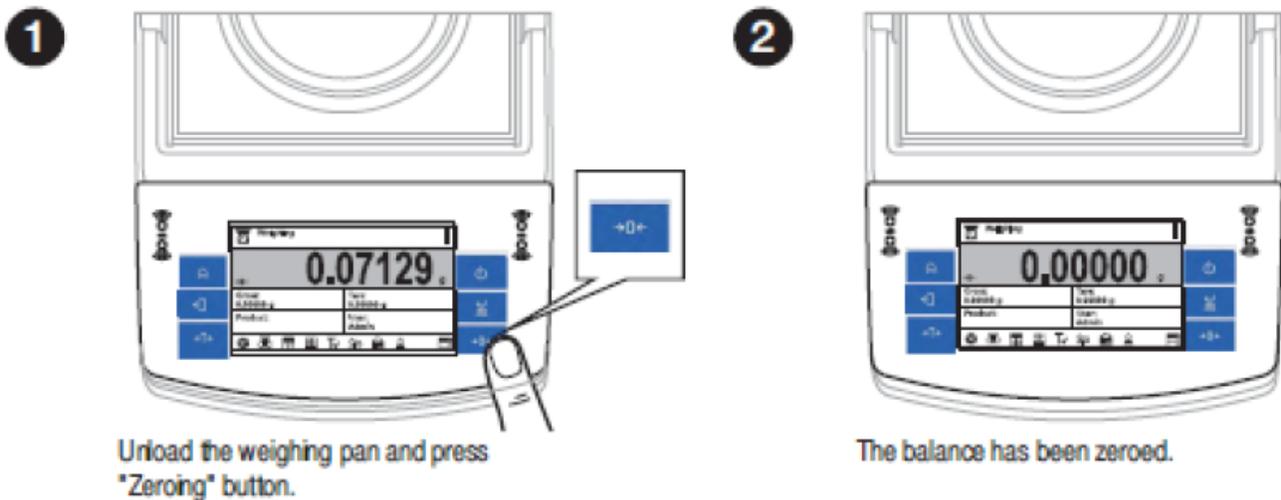
4.3 USER-DEFINED UNIT

You may create two custom user-defined units. Displayed value of a user-defined unit is a multiplication of measured mass value and a coefficient specified for the user-defined unit. The units can be freely named with use of 3 characters' maximum. By default, the names are displayed as **[u1]** – user unit 1, and **[u2]** – user unit 2.



4.4 BALANCE ZEROING

Zeroing is a function allowing to zero mass indication.



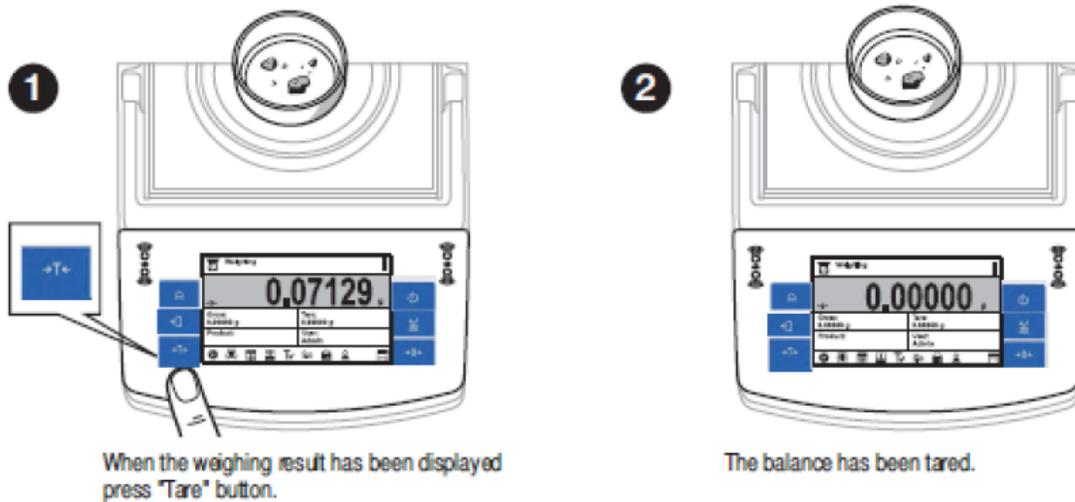
The Zeroing process is an equivalent for determining new zero point, recognized by the balance as precise zero. Zeroing is possible only for stable status of display indication.

! CAUTION

Zeroing the display indication is possible only within $\pm 2\%$ range of instrument's maximum capacity. If the zeroed value is above $\pm 2\%$ of the maximum capacity, then the balance indicates a respective error message.

4.5 BALANCE TARING

Taring is a function allowing to determine net weight of a measured object. To determine net weight of the object, place object's container (packaging) on the weighing pan, and on stabilization of measurement result press $\rightarrow T \leftarrow$ key.



The balance enables assigning tare value to a database-stored product. Using this option, the software automatically uploads data on tare value for a product upon its selection from the database.

! CAUTION

Taring negative values is impossible. On taring negative values, the balance responds with an error message. In such case, zero balance indication and repeat taring procedure.

Manual tare determination

- Press quick access key $T \checkmark$
- An on-screen numeric keyboard is displayed
- Enter tare value and press \checkmark key
- The balance returns to the weighing mode, and the display indicates entered tare value with minus '-' sign

Deleting tare

The tare value indicated on balance display can be deleted by pressing $\rightarrow 0 \leftarrow$ key on balance overlay.

Procedure 1 - on taking the tared load off the weighing pan

- Press $\rightarrow 0 \leftarrow$ key.
- The NET marker is deleted, and new zero point of the balance is determined.

Procedure 2 – with tared load on the weighing pan

- Press $\rightarrow 0 \leftarrow$ key.
- The NET marker is deleted, and new zero point of the balance is determined.
- When tare value exceeds 2% of the maximum capacity, respective message is displayed to inform a user about the fact.

Selecting tare value out of TARE DATABASE Procedure:

- While in optional mode, press  button located in a top right hand corner of the mass display.
- Wait for a respective window to open, next select  <PACKAGING>.
- Window with a list of tare values recorded into tare database opens.
- Select the packaging that is to be used.
- The balance returns to the weighing mode, and the display indicates selected tare value with a minus ‘-’ sign.

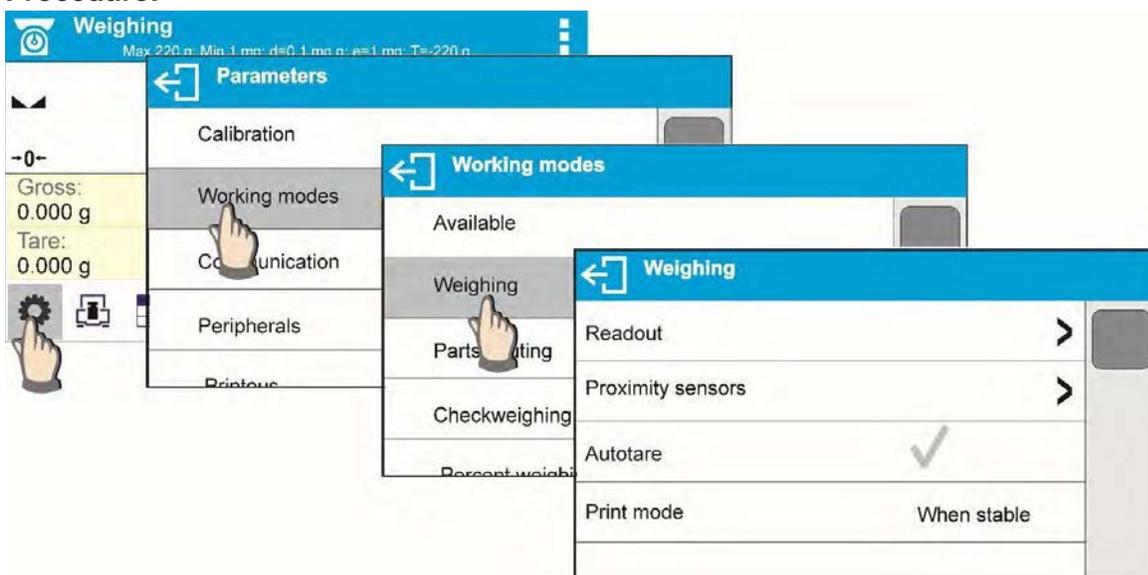
OR

- While in optional mode, press  button (if displayed on the screen),
- Window with a list of tare values recorded into tare database opens.
- Select the packaging that is to be used.
- The balance returns to the weighing mode, and the display indicates selected tare value with a minus ‘-’ sign.

4.6 WEIGH MODE SETTINGS

The balance allows setup of operating parameters (filters, value release and autozero function, deleting the last digit and other settings) separately for each working mode.

Procedure:





Filter level setting

Filter settings adjustment depends on the working environment. For the best possible conditions the filter can work in a very fast mode (V.FAST value for Filter parameter); however, if the conditions are poor (shakes, drafts), the filter should be set to slow or very slow option (SLOW or V. SLOW value for Filter parameter). The effectiveness of the filter is different throughout the weighing range. The filter works slower when “approaching” the weighed mass, it works more quickly for weighed mass within the set range of the filter (parameter for setting filter range is accessible only from the service menu – the user does not have any access to it).

Depending on the filter, the weighing time is shorter (V.FAST and FAST) or longer (SLOW and V. SLOW).



CAUTION!

The higher filter level, the longer the weighing time.

Value release

Since ambient conditions at a workplace vary, it is necessary to determine the value release parameter that are best for your working environment, parameter options are: FAST.+REL., FAST or RELIABLE. Depending on the selected option, weighing time is either shorter or longer.

Autozero function

The balance features an autozero function (Auto). This function automatically controls and corrects the zero reading. When Autozero is enabled, it compares balance readings at declared time interval e.g. 1s, if weighing pan is unloaded and display indication is close to zero. If results vary less than declared AUTOZERO range e.g. one division, balance zeroes automatically, marker of stable measurement result , and precise zero marker  are displayed.

If AUTOZERO function is enabled, then each weighing process starts from precise zero point. There are, however, some instances when this function can be a disturbing factor for the measuring process; e.g. very slow placing of a load on the weighing pan (load adding). Here, zero reading correction can also correct the actual reading of loaded mass.

Last digit display

Function enables displaying the last digit of decimal place for a weighing result. There are three available options:

- Always: all digits visible
- Never: last digit is not displayed
- When stable: last digit is displayed only for a stable weighing result

Balance ambient conditions

Parameter relating to ambient and environmental conditions in which the balance operates. There are two options: STABLE and UNSTABLE. Selecting STABLE mode makes the balance work much faster, i.e. weighing takes much less time than for UNSBABLE mode. If the ambient conditions are unstable it is recommended to use UNSTABLE mode. By default, the parameter is set to STABLE option.

5. ADJUSTMENT

To ensure the highest weighing accuracy, it is recommended to periodically introduce a corrective factor of indications to balance memory, the said factor must be referred to a mass standard. In other words, balance adjustment shall be performed from time to time.

Adjustment should be carried out:

- Before the beginning of weighing procedure
- If long breaks between following measuring series occur
- If temperature inside the balance changes more than: 1°C or 2°C for Analytical balances or 2°C for Precision series balances.

Types of adjustment:

- Internal automatic adjustment
- Manual internal adjustment
- Adjustment with an external weight of declared mass which cannot be modified or of any mass, but not lower than 30% of maximum range.

5.1 INTERNAL AUTOMATIC ADJUSTMENT

This menu is for declaring a value initiating an automatic internal adjustment. Accessible options:

- None – automatic adjustment disabled
- Time – adjustment takes place in time intervals declared in menu <Automatic adjustment time>. The time interval is declared in hours and ranges between 0.5 and 12 hours.
- Temperature – adjustment is triggered by temperature change only
- Both – adjustment is triggered by both, temperature changes and time.

CAUTION!

Parameter settings can be modified only for balances that are not a subject to conformity assessment (verification).

5.2 MANUAL INTERNAL ADJUSTMENT

Internal adjustment is carried out with of an internal adjustment weight.  button, when pressed, automatically triggers adjustment process. Upon adjustment process completion, respective message informing about process end and about its status is displayed.

CAUTION!

Adjustment procedure requires stable environmental conditions (no air drafts or ground vibrations). The process must be carried out with an empty weighing pan.

5.3 EXTERNAL ADJUSTMENT

External adjustment is carried out by means of an external mass standard of specified accuracy class and weight. Both, accuracy class and mass standard weight depend on balance type and max capacity. The process takes semi-automatic form; successive stages are signaled with prompts.

Process stages:

- Enter <Adjustment> submenu, next select “External adjustment” option,
- “Remove weight” prompt is displayed.
- Take the weight off the weighing pan and press  button. Whereas balance determines start mass, “Adjustment; Please wait...” prompt is displayed,
- Upon completed start mass determination procedure “Put weight ...” prompt is displayed along with particular mass standard value.
- Put the required weigh on a pan and press  button,
- Upon completed procedure “Remove weight” prompt is displayed.
- Take the weight off the weighing pan, wait for <Adjustment> window to be displayed again.

5.4 ADJUSTMENT TEST

<Adjustment test> function enables comparing the result of an internal automatic adjustment with the value recorded in balance factory parameters. The comparison is used for determining balance sensitivity drift over time.

6. WORKING MODES- GENERAL INFORMATION

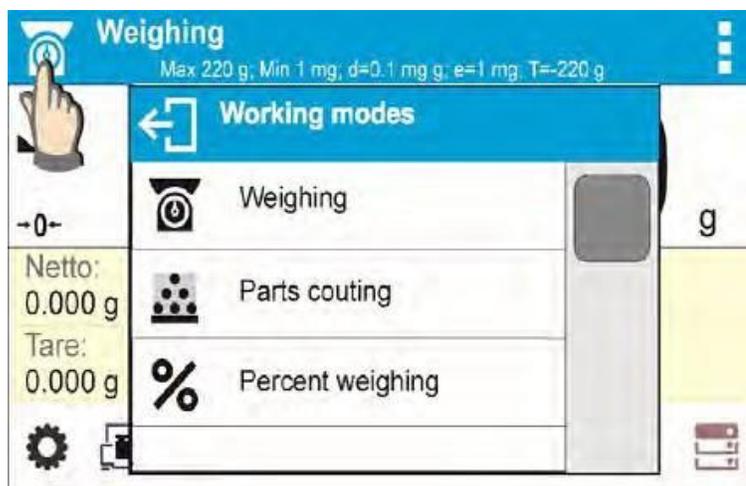
The balance features the following working modes:

	<p>Weighing Means of operation: weight of a load is determined through an indirect measurement. A balance measures gravitational force which attracts the load. An obtained result is processed to a digital format and displayed in a form of measurement result. More information found in Section 4.</p>
	<p>Parts Counting Means of operation: based on a determined mass of a single part it is possible to count another part, if the mass of the single part is determined with sufficient accuracy, and that the following parts are equal in mass. More information found in Section 7.</p>
	<p>Check Weighing Means of operation: control of sample mass with applied thresholds. A user should specify the value of min threshold <LO> and max threshold <HI>. More information found in Section 8.</p>
	<p>Dosing Means of operation: a user should specify sample's target mass to be obtained by pouring. More information found in Section 9.</p>
	<p>Percent Weighing Means of operation: control of percent ratio of a sample in relation to a standard (reference). Obtained data provides percent ratio on how test sample differs from the accepted standard (reference). More information found in Section 10.</p>
	<p>Density of solids Means of operation: based on Archimedes principle, a balance determines density of solids. The mode requires an optional density determination kit. More information found in Section 11.</p>
	<p>Density of liquids Means of operation: based on Archimedes principle, a balance determines density of liquids. The mode requires an optional density determination kit. More information found in Section 12.</p>
	<p>Animal Weighing Means of operation: mass measurement takes place with application of filters dampening animal moves on a weighing pan, thus enabling obtaining a correct measurement result. More information found in Section 13.</p>
	<p>Statistics Means of operation: carried out measurements are used to calculate statistical data, such as Min, Max, deviation, etc. More information found in Section 14.</p>
	<p>Peak Hold Means of operation: max temporary indication occurring in course of the weighing process is hold on a display. More information found in Section 15.</p>
	<p>Formulations Means of operation: by mixing specified ingredients you can obtain particular mixture, in order to program given formulation you have to specify weight of particular ingredients. More information found in Section 16.</p>

6.1 RUNNING WORKING MODE

To run working mode other than the one currently operating:

- Press pictogram of currently used working mode, the pictogram is in the top left hand corner

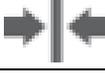


- Wait for the available working modes list to be displayed
- Select the working mode you need to operate.

6.2 QUICK ACCESS KEYS FOR EACH WORKING MODE

Key	Function	Modes featuring the key
	Accept/Print	All modes
	Print header	All modes
	Print footer	All modes
	Zero	All modes
	Tare	All modes
	Change unit	All modes (Parts Counting and Percent Weighing modes excluded)
	Select unit	All modes (Parts Counting and Percent Weighing modes excluded)
	Parameters	All modes
	Databases	All modes

	User	All modes
	Product	All modes
	Customer	All modes
	Packaging	All modes
	Adjustment	All modes
	Variable 1	All modes
	Variable 2	All modes
	Variable 3	All modes
	Hide/show last digit	All modes (Parts Counting and Percent Weighing modes excluded)
	Working mode parameters	All modes
	Set part mass	Parts Counting mode exclusively
	Determine part mass	Parts Counting mode exclusively
	Determine mass using 5 parts	Parts Counting mode exclusively
	Determine mass using 10 parts	Parts Counting mode exclusively
	Determine mass using 20 parts	Parts Counting mode exclusively
	Determine mass using 50 parts	Parts Counting mode exclusively
	Determine mass using 100 parts	Parts Counting mode exclusively
	Thresholds	Check weighing mode exclusively

	Min threshold	Check weighing mode exclusively
	Max threshold	Check weighing mode exclusively
	Target value	Dosing mode exclusively
	Set reference mass	Percent Weighing mode exclusively
	Determine reference mass (set as 100%)	Percent Weighing mode exclusively
	Start	Solids and Liquids Density modes and Formulations mode
	Results	Statistics mode exclusively
	Finish	Statistics mode exclusively
	Finish	Peak Hold mode exclusively
	Formulation	Formulations mode exclusively

7. PARTS COUNTING

 **Parts counting** is a working mode which enables determination of quantity of small parts with equal weight. Determined mass of a single part is used for the counting procedure. The single part mass may be:

- Determined from a reference quantity of parts subjected to weighing,
- Acquired from database of products,
- Entered manually as a numeric value.

Procedure for activation of Parts Counting mode

Select  **Parts counting** mode, home screen featuring parts counting pictogram  in a top bar is automatically displayed.



Info field provides the following information:

- Gross weight
- Tare weight
- Net weight
- Part mass
- Product
- User

7.1 SUPPLEMENTARY SETTINGS FOR PARTS COUNTING MODE

The supplementary settings enable adjusting the working mode to your needs and requirements.

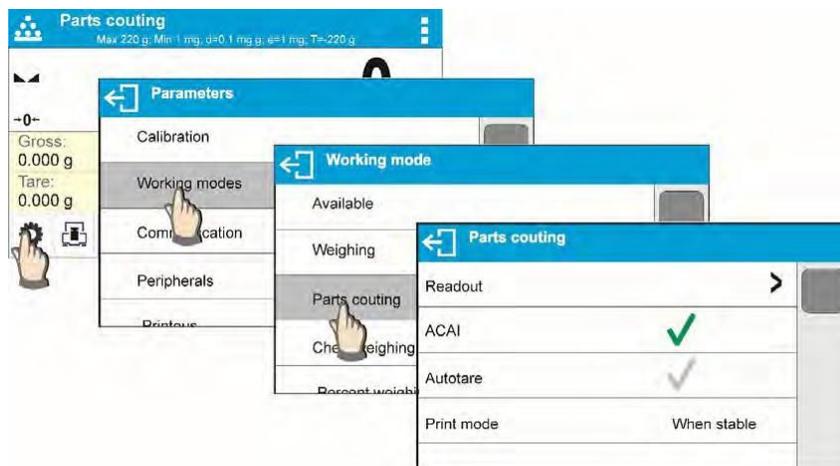
ACAI, Automatic Accuracy Correction, provides the following options:

- YES, single part mass is updated
- NO, single part mass is not updated

Means of operation of ACAI function:

1. Number of pieces (on adding) on balance weighing pan has to be greater than before.
2. Number of pieces (on adding) on balance weighing pan must be less than twice the amount displayed before adding the pieces.
3. Current quantity of parts must be within $\pm 0,3$ tolerance of the total value.
4. Measurement result has to be stabilized.

Procedure:



7.2 PARTS COUNTING – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default quick access keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Access Keys: parameters, adjustment, print header, print footer, set part mass, determine part mass (from a reference quantity of parts), determine mass using 10 parts, product, user, databases.

7.3 PARTS COUNTING PROCEDURE

The first step for Parts Counting mode is obtaining data on mass of a single part. Select one of available options:

- Give weight value of a single part and put parts to be counted on the weighing pan, balance displays totalized parts.
- Determine mass of a single part from a given quantity of parts. Put parts to be counted on the weighing pan, the balance displays totalized parts. In course of calculation, ACAI function pictogram  is displayed (providing the function is active).
- Acquire mass of a single part from database of products by selecting a desired product record. Put parts to be counted on the weighing pan, the balance displays totalized parts.

CAUTION!

Any additional elements (packaging) shall be tared prior to counting process start.

With single part mass set, put parts to be counted into tare container weight of which has been stored by balance memory.

Number of weighed pieces is displayed on a screen.



Stable measurement (stability pictogram displayed) can be printed. To do it press  button, please note a printer must be connected to perform this action.

7.4 SETTING REFERENCE BY ENTERING DETERMINED PART MASS

Procedure:

- Press  Set part mass> key or the label **Part mass: 0.000g**, <Part mass> editing window featuring an on-screen keyboard is displayed,



- Enter the requested value and confirm by pressing  key, <Parts counting> mode is run with automatically specified part mass.



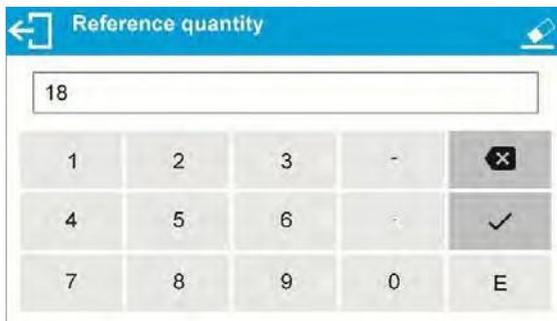
CAUTION!

If you enter weight of value that is lower than 0.1 reading unit, then <Value too low> message is displayed.

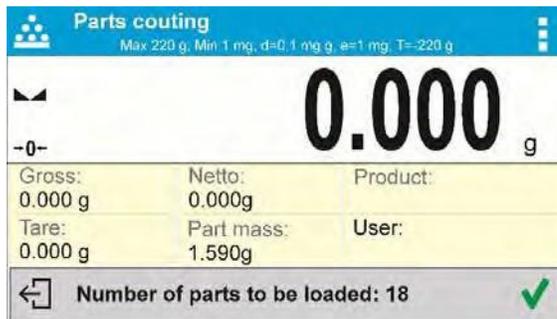
7.5 SETTING REFERENCE MASS BY DETERMINING PART MASS

Procedure:

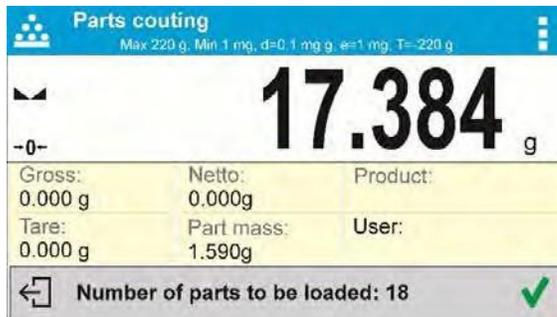
- Put a container on a weighing pan, tare its mass,
- Press  Determine part mass> button, <Reference quantity> editing window featuring an on-screen keyboard is displayed,
- Enter the requested value and confirm by pressing  key,



- Message on number of parts to be loaded is displayed: **<Number of parts to be loaded: 18>**,



- Put specified number of pieces on the weighing pan, when the result is stable ( stability pictogram displayed) press  key to confirm



- The balance automatically recalculates single part mass, next it moves to <Parts counting> mode displaying number of parts loaded on the weighing pan (**pcs** marking).



CAUTION!

It is important to remember the following:

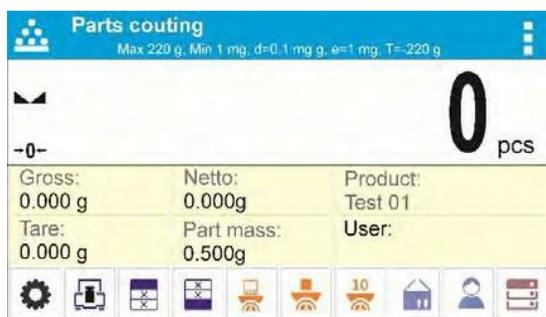
- Total mass of all parts loaded on the weighing pan must not exceed the maximum capacity (weighing range) of the balance;
- Total mass of all parts loaded on the weighing pan must not be lower than value declared in parameter “**Minimal reference mass**”. Unless this condition is met, the balance displays a message: **<Sample mass too low>**;
- Mass of a single part must not be lower than **0,1** of balance reading unit. Unless this condition is met, the balance displays a message: **<Single part mass too low>**.

7.6 ACQUIRING PART MASS FROM A DATABASE

Each product recorded in a database of products features a set of information which allows it to be identified by. Among the information there is mass value used during part counting process.

Procedure:

Operating <Parts counting> mode, press <  Product> button and using the list select a particular product. The program returns to <Parts counting> mode with single part weigh value set automatically on the basis of data recorded for a selected product.



Entering reference mass to balance memory

Procedure for entering single part mass to products database:

- Press  Databases> button,
- While in database press <Products> button,
- Press **+** button (add product), located in the top bar,
- Fill in fields referring to product (Name, Code, EAN, Mass – for Parts Counting mode it is single part weight),
- Return to <Parts counting> mode.

8. CHECKWEIGHING

< Checkweighing> is a working mode using two thresholds (Min and Max) for control of samples weight. Usually the weight is considered to be correct if it is comprised within threshold values.

Procedure for activation of checkweighing mode

Select  Checkweighing> mode, home screen featuring checkweighing pictogram  in a top bar is automatically displayed.



Info field provides the following information:

- Bar graph with checkweighing thresholds
- Gross weight
- Tare weight
- User

8.1 SUPPLEMENTARY SETTINGS FOR CHECKWEIGHING MODE

The supplementary settings enable adjusting the working mode to your needs and requirements. For means of operation of these functions read section 4.6 “WEIGH MODE SETTINGS”.

You can place the bar graph within information field area. Below the bar graph, Min and Max threshold values are displayed.

8.2 CHECKWEIGHING – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Keys: parameters, adjustment, print header, print footer, specify checkweighing thresholds, product, user, databases.

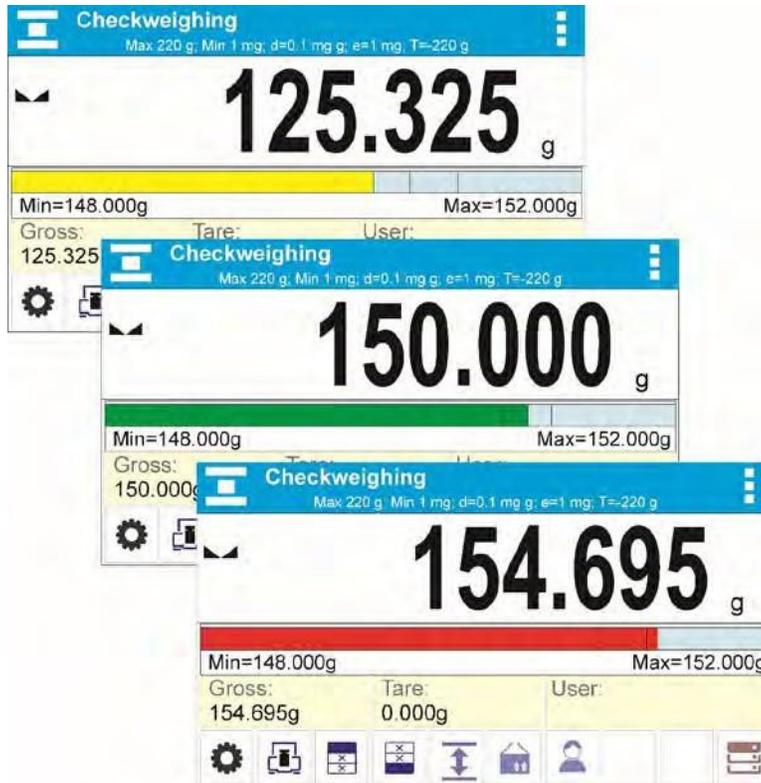
8.3 MAKING USE OF CHECKWEIGHING THRESHOLDS

In order to use checkweighing thresholds:

- Select product  > with Min and Max threshold declared
- Enter numerical value for the thresholds using  > or  > or  > button, in this case thresholds do not refer to any product.

PROCEDURE 1 – selecting product from Products Database

- Press  Products Database> key.
- Using product list, select the product that is to be weighed.
- The balance displays threshold values under the bar graph within INFO area. Bar graph color corresponds to the current status of weight:
 - Yellow color: weight value below Min threshold value
 - Green color: weight value within set threshold values
 - Red color: weight value above Max threshold value



PROCEDURE 2 – entering checkweighing thresholds manually

- Press  Checkweighing Thresholds> button,
- Window with an on-screen numeric keyboard is displayed, use it to enter Min threshold value,
- Press  > button for confirmation,
- Window with an on-screen numeric keyboard is displayed, use it to enter Max threshold value,
- Press  > button for confirmation,
- Home screen of the mode is displayed with entered threshold values.

CAUTION!

Max threshold value has to be greater than Min threshold value.

For thresholds value modification the following buttons are used:

-  - Min threshold value modification, enter the new value using an on-screen numeric keyboard, next press  > button for confirmation. Upon confirmation, home screen of checkweighing mode is automatically displayed.
-  - Max threshold value modification, enter the new value using an on-screen numeric keyboard, next press  > button for confirmation. Upon confirmation, home screen of checkweighing mode is automatically displayed.

9. DOSING

 **Dosing**> is a working mode for performance of sampling process, wherein the sampling takes as long as it is necessary to obtain pre-defined target weight.

Procedure for activation of dosing mode

Select  Dosing> mode, home screen featuring dosing pictogram  in a top bar is automatically displayed.



Info field provides the following information:

- Bar graph with target value
- Net weight
- Tare weight
- User

9.1. SUPPLEMENTARY SETTINGS FOR DOSING MODE

The supplementary settings enable adjusting the working mode to your needs and requirements. For means of operation of these functions read section 4.6 “WEIGH MODE SETTINGS”.

You can place the bar graph within information field area. Below the bar graph, Min and Max threshold values are displayed.

9.2 DOSING – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Access Keys: parameters, adjustment, print header, print footer, specify target value, product, user, databases

9.3 MAKING USE OF PRODUCTS DATABASE FOR DOSING OPERATION

The operator can use target value assigned to a product or values recorded in Product Database. Additionally, option of user-defined temporary target values is at user disposal. Mass field is the target value for Product Database.

PROCEDURE 1 – selecting product from Products Database

- Press  Products Database> button.
- Using product list, select the product that is to be weighed.
- Target and tolerance values are displayed automatically within bar graph area.
- Target value with minus sign is displayed
- The balance displays threshold values under the bar graph within INFO area.



- Bar graph color corresponds to the current status of weight:
 - Yellow color: weight value below Target Value - Tolerance
 - Green color: weight value within tolerance, Target Value +/- Tolerance
 - Red color: weight value above Target Value + Tolerance



PROCEDURE 2 – target value entered manually

- Press <  |  Target Value > button,
- Window with an on-screen numeric keyboard is displayed, use it to enter the target value,
- Confirm the entered value,
- Window with an on-screen numeric keyboard is displayed again, use it to enter the sampling tolerance value,
- Confirm the entered value, home screen of the mode is displayed.

10. PERCENT WEIGHING

<  **Percent weighing** > is a working mode for comparison of a measured sample with the reference mass. The result is expressed in [%].

Procedure for activation of Percent Weighing mode

Select  **Percent Weighing** > mode, home screen featuring percent weighing pictogram  in a top bar is automatically displayed.



Info field provides the following information:

- Gross weight
- Tare weight
- Net weight
- Reference mass
- Product
- User

10.1. SUPPLEMENTARY SETTINGS FOR PERCENT WEIGHING

The supplementary settings enable adjusting the working mode to your needs and requirements. For means of operation of these functions read section 4.6 “WEIGH MODE SETTINGS”.

You can place the bar graph within information field area. Below the bar graph, Min and Max threshold values are displayed.

10.2 PERCENT WEIGHING – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Access Keys: parameters, adjustment, print header, print footer, set reference mass, determine reference mass (set as 100%), product, user, databases.

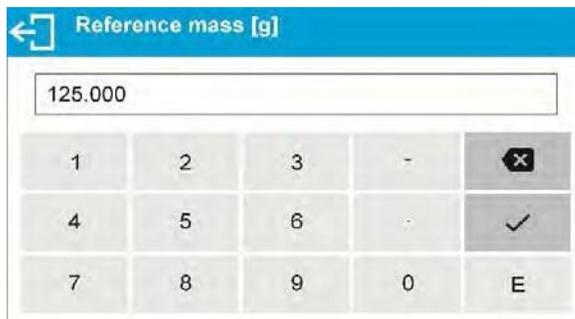
10.2 COMPARISON OF SAMPLE OF REFERENCE MASS

Comparison of samples and reference mass can be carried out by means of:

- <  Set reference mass> button used for entering reference mass value
- <  Determine reference mass (set as 100%)> button used for accepting current mass loaded on a weighing pan as a reference mass,
- <Product> button used for selecting a product, out of products database, for which mass parameter has been defined.

PROCEDURE 1 – determining reference mass manually

- Press <  Set reference mass > button.
- Using an on-screen keyboard of a displayed window, enter reference mass value and press <  > button for confirmation.



- Mass of all weighed products is compared to reference mass, the weight difference is displayed in [%].



PROCEDURE 2 – accepting currently loaded mass as reference mass

- Put the sample on a weighing pan.
- On measurement result stabilization, press  Determine reference mass (set as 100%)> button, dialog bar with prompts is displayed at the bottom, follow the prompts.



- Load the part to be weighed and upon measurement stabilization press  button for confirmation,



- 100.000% indication is displayed, loaded part weight is accepted as a reference mass, it is automatically recorded and displayed in reference mass field.



- Remove the sample from the weighing pan.
- All samples weighed afterwards are compared with the reference mass, and the display indicates the difference, expressed in [%], for each weighed sample in relation to the reference mass

PROCEDURE 3 – selecting product from Products Database

- Press  Product> button, using displayed product list select the product that is to be weighed.

- Info” field automatically displays new information on reference mass and product.



- Reference mass relating to the product is recorded automatically and displayed in reference mass field.
- 0.000 % indication is displayed (for unloaded pan).
- All samples weighed afterwards are compared with the reference mass, and the display indicates the difference, expressed in [%], for each weighed sample in relation to the reference mass

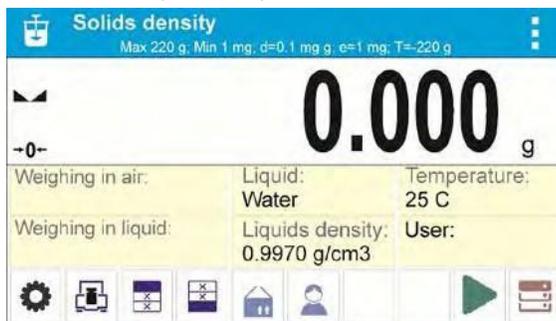
11. DENSITY OF SOLIDS

<  Solids density> is a working mode enabling determination of density of a representative sample material.

In order to operate this mode, an optional Density Determination Kit (additional information located in Section 25.1) is available for purchase. For the measurement an appropriate model of the kit is used for the balance depending on pan configuration. Prior to installing the kit, it is necessary to remove the weighing pan and a draft shield.

Procedure for activation of Solids Density mode

Select  Solids Density> mode, home screen featuring solids density pictogram  in a top bar is automatically displayed.



Info field provides the following information:

- Weighing in air
- Weighing in liquid
- Liquid
- Liquid density
- Temperature
- User

11.1 SUPPLEMENTARY SETTINGS FOR SOLIDS DENSITY MODE

The supplementary settings enable adjusting the working mode to your needs and requirements.

- **Liquid**
Parameter allowing to specify liquid used for measurement performance:
Water/Ethanol/Other.
- **Liquid density**
Parameter allowing to enter density of liquid used for measurement performance. This parameter is operable only when OTHER option for LIQUID parameter has been selected.
- **Temperature**
Parameter allowing to enter temperature of liquid used for measurement performance. Temperature value is necessary in order to take the right liquid density value needed for density calculation.

Balance stores tables with density of water and ethanol in relation to temperature.

11.2. SOLIDS DENSITY – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Access Keys: parameters, adjustment, print header, print footer, product, user, start, databases.

11.3 SOLIDS DENSITY DETERMINATION

Prior to procedure start, it is necessary to set process-related parameters:

- Liquid type
 - Distilled water
 - Ethanol
 - Other liquid with determined density
- Liquid temperature
(required if either distilled water or ethanol is used as liquid for measurement performance)
- Liquid density
The parameter is set automatically, after the temperature has been entered, if either distilled water or ethanol is used as liquid. In case of using liquid other than distilled water or ethanol, it is necessary to enter its density manually.

The density of solids is calculated using the following formula:

$$\rho = \frac{A}{A - B} \rho^0$$

ρ - density of a sample

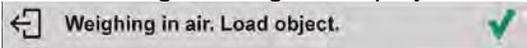
A - sample's mass measured in the air

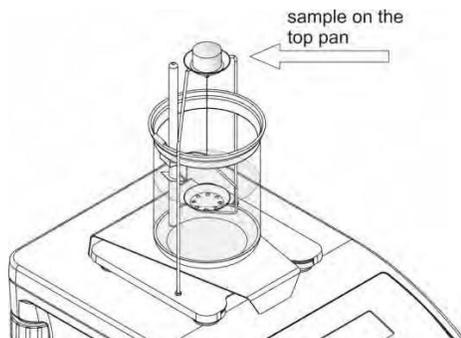
B - sample mass measured in liquid

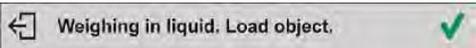
ρ^0 - liquid density

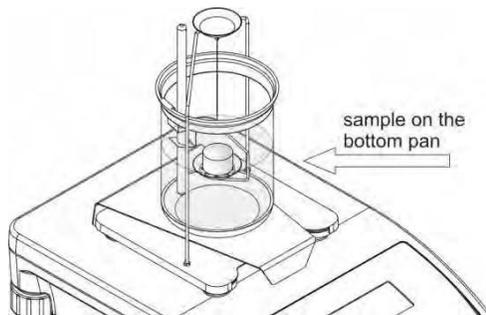
Determination of density for a particular solid consists in weighing the solid in the air first (using a top weighing pan of the density determination kit), and in the liquid next (using a bottom weighing pan of the density determination kit). Upon completed procedure the result is displayed automatically.

Procedure:

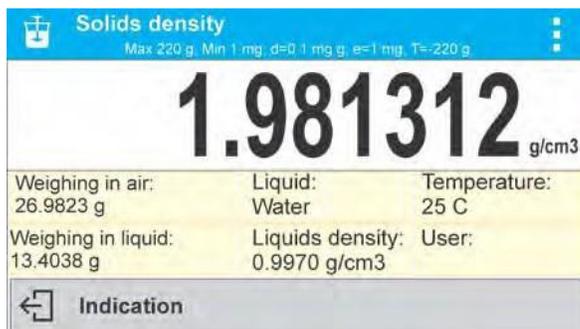
1. Install density determination kit (Instructions found in Section 25.1)
2. Enter <SOLIDS DENSITY> function.
3. Prepare sample that is to be measured.
4. Start the process by pressing  Start> button.
5. Select liquid type intended for the test performance.
6. Enter the liquid temperature (the program displays the most recently operated temperature value).
7. If liquid assigned to OTHER parameter is used, enter its density for measurement temperature.
8. The following message is displayed in a bottom bar:

9. Put your sample on a top weighing pan (sample weight measurement carried out in the air), confirm the indication upon stabilization.



10. The following message is displayed in a bottom bar: 
11. Now put your sample on a bottom weighing pan (sample weight measurement carried out in the liquid), confirm the indication upon stabilization.

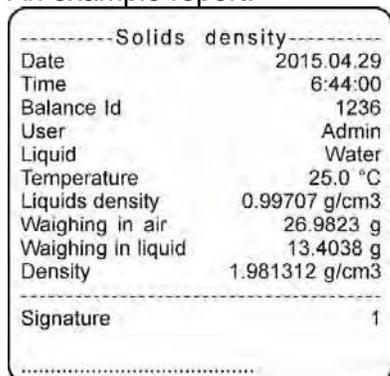


12. Upon confirmation of the second indication, the balance automatically calculates measured solid density, which is next displayed together with a respective message.



A report of the measurement can be printed through the attachment of a printer to the balance. To print the report, press the  button.

An example report:



To finish density determination process, press  key. The home screen for solid density mode is displayed. The next measurement can be started now. The balance operates with previously entered settings (liquid, temperature) thus providing quicker start of the very measurement.

12. DENSITY OF LIQUIDS

 **Liquids density** is a working mode enabling determination of density of liquid with use of representative sample of a given liquid.

In order to operate this mode, an optional Density Determination Kit (additional information located in Section 25.1) is available for purchase. For the measurement an appropriate model of the kit is used for the balance depending on pan configuration. Prior to installing the kit, it is necessary to remove the weighing pan and a draft shield. Density determination kit is the same for solids and for liquids.

The density of liquids is calculated using the following formula:

$$\rho = \frac{A - B}{V} + d$$

ρ - density of liquid

A - sinker weight measured in the air

B - sinker weight measured in water

V - volume of the sinker

d - air density (max 0.001 g/cm³)

Procedure for activation of Solids Density mode

Select  Liquids Density> mode, home screen featuring liquids density pictogram  in a top bar is automatically displayed.



Info field provides the following information:

- Weighing in air
- Weighing in liquid
- Sinker volume
- User

12.1 SUPPLEMENTARY SETTINGS FOR LIQUIDS DENSITY MODE

The supplementary settings enable adjusting the working mode to your needs and requirements.

Sinker volume

Parameter allowing to enter volume of the sinker.

12.2 LIQUIDS DENSITY – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Access Keys: parameters, adjustment, print header, print footer, product, user, start, databases.

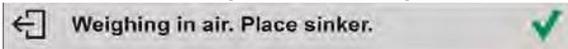
12.3 LIQUIDS DENSITY DETERMINATION

Glass-made sinker is a basic component for liquid density determination. Its volume, given on a sinker hanger, is precisely calculated. Prior to determination, enter the sinker volume value into balance memory.

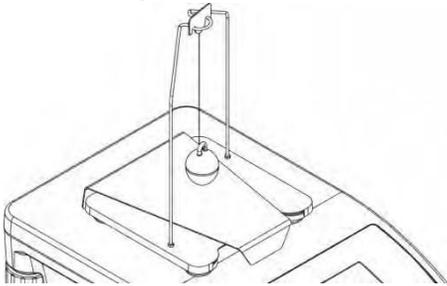
Determination of density for a particular solid consists in weighing the sinker in the air first, and in the liquid next. Upon completed procedure the result is displayed automatically.

Procedure:

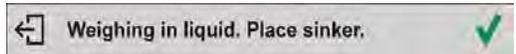
1. Install density determination kit (Instructions found in Section 25.1)
2. Enter <LIQUIDS DENSITY> function.
3. Prepare sample that is to be measured (pour tested liquid to the beaker).
4. Start the process by pressing  Start> key.
5. Enter the sinker volume (the program displays volume of the most recently used sinker).
6. The following message is displayed in a bottom bar:



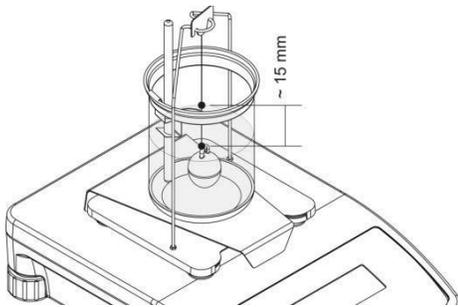
7. Hang the sinker on a stand (sinker weight measurement carried out in the air), confirm the indication upon stabilization.



8. The following message is displayed in a bottom bar:



9. Now take the sinker out of the stand and put a beaker on the beaker basis (the beaker cannot be in contact with the stand), gently hang the sinker on the stand making sure that it is completely immersed in the liquid (measurement carried out in the liquid), confirm the indication upon stabilization.

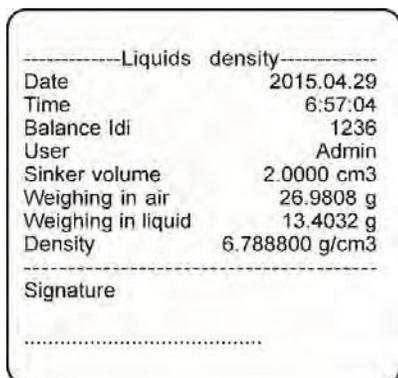


10. Upon confirmation of the second indication, the software automatically calculates measured liquid density, which is next displayed together with a respective message.



A report of the measurement can be printed through the attachment of printer to the balance. To print the report, press the  button.

An example report:



To finish density determination process, press  key. The home screen for liquid density mode is displayed. The next measurement can be started now. The balance operates with previously entered settings (sink volume) thus providing quicker start of the very measurement.

13. ANIMAL WEIGHING

 **Animal weighing** is a working mode allowing reliable determination of mass of weighed objects in motion. In principle, this type of object generates unstable measurement, thus it requires using a different filtering method of measurement signal.

Procedure for activation of Animal Weighing mode

Select  Animal Weighing mode, home screen featuring animal weighing pictogram  in a top bar is automatically displayed.



Info field provides the following information:

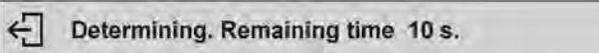
- Gross weight,
- Tare weight,
- Product,
- User,

13.1 SUPPLEMENTARY SETTINGS FOR ANIMAL WEIGHING MODE

The supplementary settings enable adjusting the working mode to your needs and requirements.

- **Averaging time**
Time interval within which measurements are analyzed. Obtained data is used for calculation of measurement result. The result is given in [s].
- **Autostart**
Parameter determining whether the measurement is to be carried out manually (on pressing  key) or automatically:
 - YES: automatically performed operation,
 - NO: manually performed operation.

Automatic operation basis: the object is measured automatically when put on a weighing pan and when the indication exceeds pre-set threshold value (respective message is displayed).



On completed measurement procedure the following message is displayed.



Measurement of the next object can be carried out when: previous load has been removed and

 key pressed. Now the new object can be loaded. The next measurement starts when the pre-set threshold value is exceeded.

Auto threshold

Value expressed in mass units.

In order to start the measurement, the indicated value has to be greater than the threshold value.

13.2. ANIMAL WEIGHING – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Access Keys: parameters, adjustment, print header, print footer, product, user, databases.

13.3 ANIMAL WEIGHING PROCEDURE

- Set the function parameters (averaging time, autostart, autothres).
- Load the object that is to be weighed on a weighing pan, press <  > key; for automatic operation, mass determination process starts when the pre-set auto threshold mass is exceeded.



- On completed mass determination process, “freezed” weighing result is displayed, the mass is automatically printed using the printer.



- The next measurement can be carried out when <  > key is pressed:
 - for manual operation press <  > key,
 - for automatic operation, remove weighed object from the weighing pan and load the new object.

14. STATISTICS

<  **Statistics** > is a working mode allowing to acquire data from series of measurements and to produce statistics using the acquired data. Settings of this function determine which data is displayed.

Procedure for activation of Statistics mode

Select  **Statistics** > mode, home screen featuring statistics pictogram  in a top bar is automatically displayed.



Info field provides the following information:

- N (number of samples)
- Sum (total weight of samples within a series)
- Min (minimum value in a series)
- Max (maximum values in a series)
- SDV (standard deviation)
- User

14.1. SUPPLEMENTARY SETTINGS FOR STATISTICS MODE

The supplementary settings enable adjusting the working mode to your needs and requirements. For means of operation of these functions read section 4.6 "WEIGH MODE SETTINGS".

14.2. STATISTICS – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Access Keys: parameters, adjustment, print header, print footer, statistics, delete statistics, product, user, databases.

14.3 PARAMETERS FOR SERIES OF MEASUREMENT

For each series of measurements, it is possible to overview the results, print a report, delete results of all statistics.

Procedure 1:

- Press  Results> button



- Results of performed measurements are displayed, top bar features delete and print options.
- Select:
 -  , if you want to print a report

----- Statistics -----	
Number	9
Sum	455.600 g
Average	50.6222 g
Min	49.939 g
Max	51.380 g
Difference	1.441 g
SDV	0.39605 g
RDV	0.78 %

-  , if you want to delete all information on statistics

Procedure 2:

- Press  Finish> button, statistical data is printed and deleted automatically.

15. PEAK HOLD

 **< ↑ Peak Hold >** is a working mode allowing you to snap value of maximum force applied to the weighing pan during one loading. Apart from standard settings for this mode (described in the weighing mode), additional parameter has been introduced, it sets threshold value determining function activation.

Procedure for activation of Peak Hold mode

Select <Peak Hold> mode, home screen featuring peak hold pictogram  in a top bar is automatically displayed.



Info field provides the following information:

- Net
- Gross
- Tare
- Threshold
- Product
- User

15.1 SUPPLEMENTARY SETTINGS FOR PEAK HOLD MODE

The supplementary settings enable adjusting the working mode to your needs and requirements.

THRESHOLD – function determining start point for peak hold control performed by the balance software. Remember to set this threshold prior to the measuring process.

15.2. PEAK HOLD – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Access Keys: parameters, adjustment, print header, print footer, product, user, delete, databases.

15.3 MEANS OF OPERATION

- Enter <PEAK HOLD> mode
- Once you select the mode, the function is active. In order to provide proper operation, set the threshold in grams determining point beyond which the function starts to register maximum force applied.
- From now on the balance registers and holds every single weighment which is above the threshold, and which is higher than the result of the previous peak hold. If the software detects mass above the threshold, the highest detected indication is held on the main display and the pictogram <Max> is shown on the right over the measuring unit.



- Press  button in order to print the result. Please note, a printer must be connected to perform this operation.
- The start of the next process of peak hold measurement is possible only after removing the load from the weighing pan and pressing  button. This causes returning to the home screen of <PEAK HOLD> mode, pictogram <Max> is automatically deleted.



16. FORMULATIONS

<   Formulations > is a working mode allowing you to prepare multi-ingredient mixture. The whole process is performed automatically.

While making mixtures you can:

- Use formulations database, the program helps you dose particular ingredients, you are prompted with messages providing you with respective instruction,
- Make mixture on your own, without using formulations database, with this option you control ingredients dosing, sequence and quantity by yourself.

If you want to use formulations database, first you have to make formulation, next apply it. Making

formulations is possible using Formulation Database option.

Procedure for activation of Formulations mode

Select  Formulations> mode, home screen featuring animal weighing pictogram  in a top bar is automatically displayed.



Info field provides the following information:

- Bar graph
- Formulation
- Target value
- Sum

CAUTION!

Information area may contain bar graph – a graphic interpretation of ingredient weight which informs if the weight stays within correct thresholds and specified +/- tolerance.

16.1 SUPPLEMENTARY SETTINGS FOR FORMULATIONS MODE

The supplementary settings enable adjusting the working mode to your needs and requirements.

Multiplier

Option designed to allow preparation of respectively larger amount of particular mixture, made in accordance with selected formulation, within one weighing process:

- **YES**, on selecting a formulation for processing, the software asks you to specify multiplier value, each ingredient is next multiplied by this value in course of weighing, i.e. entered multiplier value is valid for all the ingredients.
- **NO**, entering multiplier value is disabled, by default the value is set to <1>.

16.2. FORMULATIONS – QUICK ACCESS KEYS

Each working mode features automatically displayed set of default keys. The set can be modified by assigning out-of-list quick access keys to on-screen keys. Such operation requires particular permissions level.

Default Quick Access Keys: parameters, adjustment, print header, print footer, product, user, formulation, start, databases.

16.3 ADDING FORMULATION TO FORMULATIONS DATABASE

Formulation database menu has been designed to enable adding formulations. You can add up to 100 formulations consisting of 25 ingredients maximally.

Formulation database contains formulations names, ingredients names and their weight. For formulation you can use a database-recorded product or product with unspecified name. For each used product enter weight value determining how much of the ingredient is to be added to mixture, next specify tolerance thresholds for dosing. Weight value and tolerance enable display of bar graph providing information on amount of dosed ingredient (read Dosing section for detailed description of bar graph).

While adding formulation, first it is necessary to name products required for the formulation. In course of adding, specify ingredients and their weight.

Particular procedure steps are displayed in a form of prompts.

Make sure you know complete recipe as it is necessary to specify name and weight of each mixture ingredient.

Procedure:

- Enter <Databases> submenu, press <Formulations> key.
- Press < Add> key for adding a new formulation.

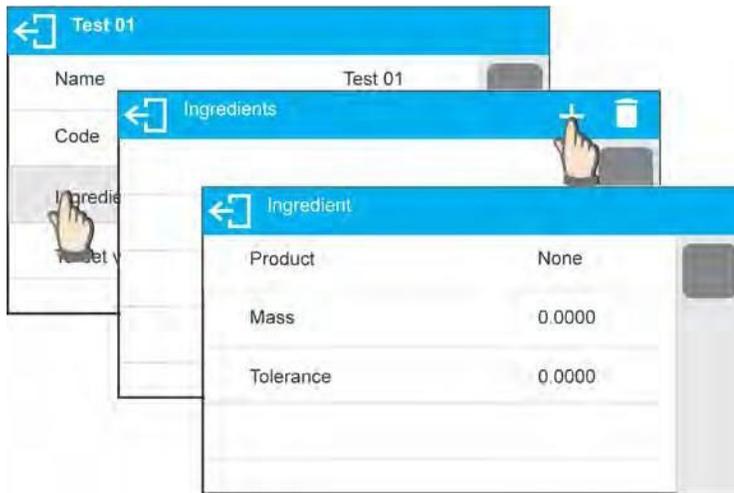
New record is added and edited automatically. Enter necessary data.

List of information defined for formulation:

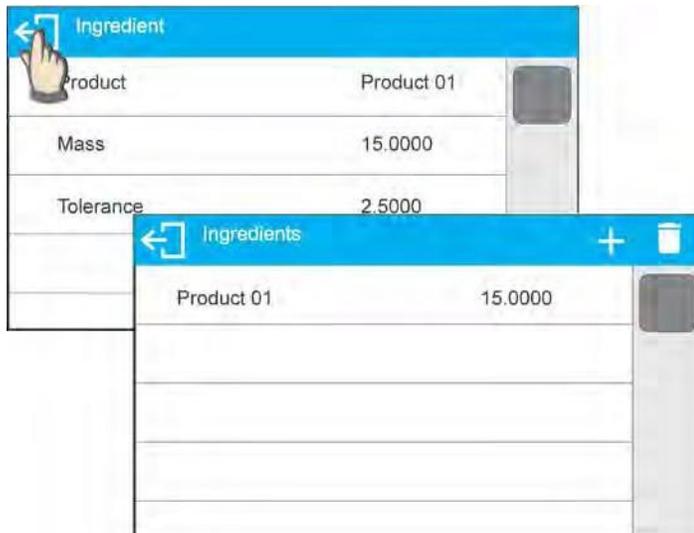
- Name: click Name button, new window opens, go to the window and enter formulation name.



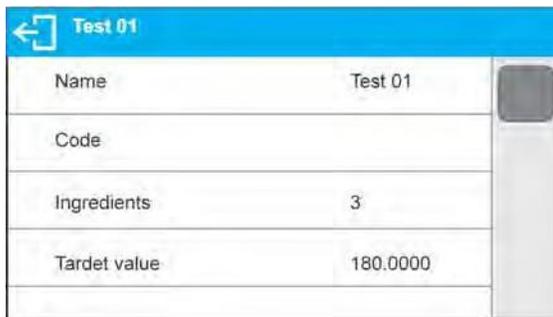
- Code: click code button, new window opens, go to the window and enter code number.
- Ingredients: click ingredients button, list of formulation ingredients is displayed (for new formulation the list is empty), add the ingredients:
 - press < **+** Add> button,



- New record is added and edited automatically, enter respective ingredient data,
- Press  button to go one level up,



- Enter remaining formulation ingredients.
- Target value – target weight, total mass of all the ingredients, non-editable option, it is updated automatically by the program upon each ingredient adding.



- Go back to the home screen.

16.4 USING FORMULATIONS FOR WEIGHING

With FORMULATIONS function launched, you can prepare mixture either manually or by selecting formulation out of database.

Mixture preparation options:

- formulation that is not saved in the Formulation Database – i.e. “manually”,
- formulation that is saved in the Formulation Database,
- formulation that is saved in the Formulation Database – using multiplier function.

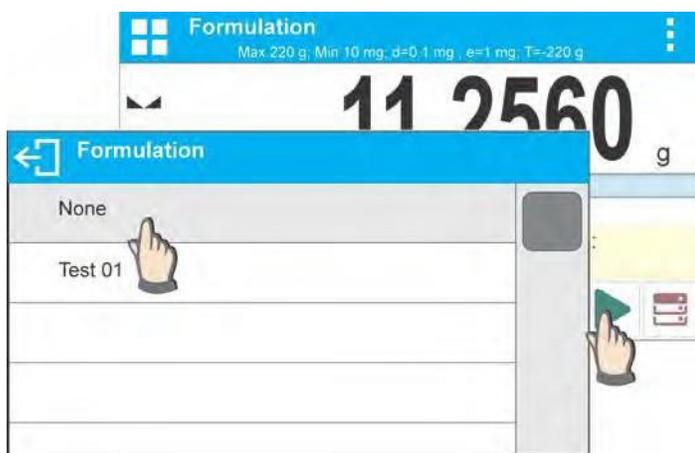
Select a particular formulation, weigh each of its ingredients. Wait for the indication to stabilize next press  > button, with this weight of each ingredient is tared, i.e. it is accepted for the total mass of the formulation.

Press  > button to cancel the formulation making process. Now you can prepare a different formulation.

PROCEDURE 1 – Preparing formulation that is not saved in the Formulation Database – i.e. “manually”.

Following the prompts:

- Load container intended for the ingredients
- Go to quick access bar and press Start  > button
- List of formulations is displayed
- Press <None> button



- Home screen is displayed, container weight is tared automatically, navigation bar with messages for ease of operation is shown



- Pour specified amount of ingredient no. 1
- Press  > button to confirm, ingredient weight 1 is recorded into balance memory (Sum field provides weight of dosed ingredient no.1), indication is tared
- Repeat the steps for remaining mixture ingredients
- Having completed dosing press  button, wait to see the following message: “Weigh to reach specified weight?”, press  button in order to boost mixture weight to a specified value
- Main window displays net weight of already weighed ingredients, respective message is provided at the bottom bar,



- Boost mixture weight, weigh as much as required to provide specified weight value



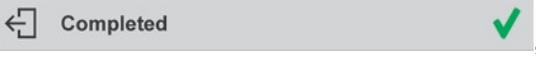
- Press  button to confirm, mixture dosing ends, formulation report is printed and recorded in a database (read next section of this manual to view an example of the report), the following message is displayed: “Completed”

- Press  button in order to proceed to other operations.

or:

- With the last ingredient dosed and weighed, press  button,
- Wait to see the following message: “Weigh to reach specified weight?”
press  button again in order to resign from boosting mixture weight to a specified value, if there is such a need,

- Wait to see the following message: ,

- Press  button to confirm, mixture dosing ends, formulation report is printed and recorded in a database (read next section of this manual for an example of the report), the following message is displayed: ,

- Press  button in order to proceed to other operations.

PROCEDURE 2 – Preparing formulation that is saved in the Formulation Database. Basic option for creating recipes.

Following the prompts:

- Load container intended for the ingredients,
- Go to quick access bar and press Start  > button,
- List of formulations is displayed, select the formulation that is to be carried out,



- Home screen is displayed, container weight is tared automatically, <Formulation> field provides formulation name, <Target value> field provides total weight value for a selected formulation, navigation bar with messages for ease of operation and with names of particular mixture ingredients is shown,



At the top of information area there is a bar graph, underneath the bar graph weight value that is to be dosed is displayed. Bar graph color changes gradually depending on the ingredient weight (read Dosing section for detailed description of bar graph).

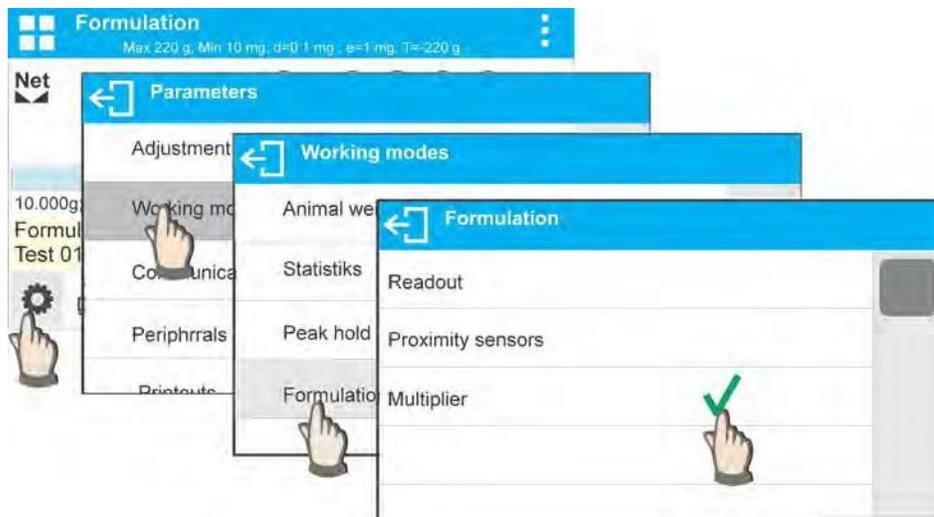
- Pour specified amount of ingredient no. 1
- Press  > button to confirm
- Weight of ingredient 1 is recorded into balance memory (Sum field provides weight of dosed ingredient no.1), indication is tared,



- Repeat the steps for remaining mixture ingredients,
- When dosing is completed formulation report is printed and recorded in a database (read next section of this manual to view an example of the report), the following message is displayed: “Completed”
- Press  button in order to proceed to other operations
- Press  button to abort formulation any time you need.

PROCEDURE 3 – Preparing formulation that is saved in the Formulation Database – using multiplier function.

Go to Formulation mode settings and set <Multiplier> parameter to <YES> value, next follow the below procedure.



- With <YES> value selected, the program asks you to specify multiplier value prior to each process start.

Following the prompts:

- Load container intended for the ingredients
- Go to quick access bar and press Start  > button
- List of formulations is displayed, select the formulation that is to be carried out



- Window with numeric keyboard is displayed, enter the multiplier value



- Home screen is displayed, container weight is tared automatically, <Formulation> field provides formulation name, <Target value> field provides total weight value for a selected formulation, navigation bar with messages for ease of operation and with names of particular mixture ingredients is shown



16.5 PERFORMED FORMULATIONS REPORT

Upon each completed formulation process the program generates a report. The report is recorded in <Formulations reports> database. Report file name contains date and time of particular process performance.

Report example:

```

----- Formulation Report -----
User                Nowak Jan
Formulation name    Test 1

Start date          2015.07.10 13:21:40
End date            2015.07.10 13:22:28

Ingredients quantity 5
Measurements quantity 5
----- Ingredient 1 -----
Name                Product 01
Weight              19.994 g
----- Ingredient 2 -----
Name                Product 02
Weight              49.993 g
----- Ingredient 3 -----
Name                Product 03
Weight              9.999 g
----- Ingredient 4 -----
Name                Product 04
Masa                1.001 g
----- Ingredient 5 -----
Name                Product 05
Weight              19.995 g

Sum                 100.982 g
Target value        101.000 g
Difference           -0.018 g

```

Status

Completed

Signature

17. DATABASES



Balance software features the following databases >:

- Products (5,000 products)
- Users (100 users)
- Packaging (100 packaging types)
- Customers (1,000 customers)
- Formulations (100 formulations consisting of 25 ingredients maximally)
- Formulations reports (500 reports)
- Ambient Conditions (10,000 records)
- Weighings (50,000 records)
- Alibi (512,000 records)

17.1 DATABASE CONNECTED OPERATIONS

The program enables the user with appropriate access level to carry out the following operations: adding new record, exporting data from databases, importing data to databases, deleting one record from the database, deleting all records from database, printing data saved in a record.

ADD NEW RECORD

Procedure:

- Enter a database and press **+** (Add) button located in the top bar.
- Define fields for the new record (data content depends on the database).
- On returning to the databases window a new record is displayed on the list.

EXPORT

Procedure:

- Insert USB flash drive.
- Open the database that is to be exported.
- Press  icon located in the top bar.
- The program automatically saves exported data to a USB flash drive file, respective prompts are displayed for confirmation of successfully completed operation.
- The name of a file depends on the database.

Database	File name and extension
Operators database	users.x2
Products database	products.x2
Packaging database	packaging.x2
Customers database	customers.x2
Formulations database	formulas.x2
Non-standard printouts	non_standard_printouts.x2

IMPORT

Procedure:

- Save the file with database content that is to be imported to a flash drive. Only files exported from other balance that have proper names and extensions can be imported – see table above.
- Insert USB flash drive.
- Enter database that is to be imported.
- Press  icon located in the top bar.
- The program automatically reads the file and the data is imported to the balance. Respective prompts are displayed for confirmation of successfully completed operation.

DELETE A RECORD

Procedure:

- Press the record and hold it.
- A message: <Confirm to delete> is displayed.
- Press  > to confirm, the record is deleted from the list.

DELETE A DATABASE

Procedure:

- Enter selected database and press  (Delete everything) pictogram located in the top bar.
- A message: <Confirm to delete all records> is displayed.
- Press  > to confirm, the database is deleted.

FORMULATIONS REPORTS, WEIGHING REPORTS and ALIBI cannot be imported. ALIBI database cannot be deleted. The databases content can only be exported and saved to a flash drive. Names of files with exported data consist of serial number and proper extension (see table below).

<i>Database</i>	<i>File name and extension</i>
Formulations Reports	123456.for
Weighing Reports	123456.wei
Alibi	123456.ali

Files can be read using ALIBI Reader that can be downloaded from the USB drive included with balance.

AMBIENT CONDITIONS database serves informative purposes only. Using records preview option, you can check ambient conditions and observe how they changed over time. The data

saved to records can be printed by pressing  pictogram located in the top bar when connected to a printer. Records' names contain date and time of saving the record's data to balance memory.

17.2 PRODUCTS

Product database stores names of all products that can be weighed, counted, controlled.

Procedure:

- Enter <  Databases> submenu, press <Products> key.
- Press <  Add> key for adding a new product.
- For operating an already introduced product press the product field.

List of parameters defined for a product:

1. Name
2. Code [product code]
3. EAN [EAN code for a product]
4. Mass [nominal mass/single product mass]
5. Tare [tare value, set automatically when the product is selected out of the database]
6. Min [low limit for product weighing in CHECKWEIGHING mode]
7. Max [high limit for product weighing in CHECKWEIGHING mode]
8. Tolerance [% value calculated in relation to mass, the parameter determines measuring area for which the measurement is recognized as correct for DOSING mode.]

CAUTION!

Remember to assign product to particular mode, as some of data values are adopted to the particular mode functions, e.g. mass in <Percent Weighing> mode is accepted as reference mass, whereas mass in <Parts Counting> mode is accepted as single part mass. When a particular product is used for different modes then its weight, taken from product data, is associated with different data for these modes.

17.3 OPERATORS

Users database features list of operators permissioned to operate the balance. List of parameters defined for a user:

1. Name
2. Code
3. Password
4. Permissions level
5. Language

Adding a new operator – operation to be carried out by an Administrator exclusively. In order to add a new user:

- Enter Operators menu and press  Add> key,
- Fill in the new record fields,
- Return to window displaying operators list, the new record has been added.

Editing information - relating to an operator:

- Press selected operator name
- The selected operator parameters are displayed
- Select data that is to be modified, introduce changes.

Deleting an operator - operation to be carried out by an Administrator exclusively. In order to delete a user:

- Press and hold selected user,
- Message <Confirm to delete> is displayed,
- Press  > key,
- Selected user is deleted.

17.4 PACKAGING

List of used packaging with parameters such as name, code and weight value specified. When carrying out weighing process, upon selection of packaging, a respective tare value is operated automatically. The tare value is displayed with minus sign.

Procedure:

- Enter <  Databases> menu, press <Packaging> key,
- Press <  Add> key for adding new packaging,
- For operating already introduced packaging press the packaging field, fill in respective data.

List of parameters defined for packaging:

1. Name
2. Code [internal code providing packaging identification]
3. Tare [packaging weight]

17.5 CUSTOMERS

Customers database features a list of names of customers for whom the measurements are carried out.

Procedure:

- Enter <  Databases> menu, press <Customers> key
- Press <  Add> button for adding a new customer,
- For operating an already introduced customer, press the customer field, fill in respective data.

List of parameters defined for a customer:

1. Name
2. Code [internal code providing customer identification]
3. VAT no. [tax identification no.]
4. Address
5. Postal code
6. City

17.6 FORMULATIONS

Formulations database contains all added formulations. They can be carried out automatically.

Procedure:

- Enter <  Databases> submenu, press <Formulations> key
- Press <  Add> button to design a new formulation, or
- Select already existing formulation button and press it

List of parameters defined for a formulation:

1. Name
2. Code
3. Ingredients
4. Target value

17.7 FORMULATIONS REPORTS

Reports on formulations database stores information on carried out formulations. Each report can be previewed and printed.

Procedure:

- Enter <  Databases> submenu, press <Formulation Reports> key,
- Select particular report button out of the list, use scroll buttons to find the report you need,
- Report's name consists of date and time of its creation, e.g.: 2011.10.12 15:12:15.

Information provided by the Formulation Report:

- User
- Formulation
- Start date
- End date
- Ingredients quantity
- Measurements
- Sum
- Target value
- Difference
- Status

17.8 AMBIENT CONDITIONS

Ambient Conditions database comprises ambient conditions related information. Depending on the setup, the ambient conditions record may comprise data such as temperature, humidity, atmospheric pressure.

Procedure:

- Enter  Databases> submenu, press <Ambient conditions> key.
- Press the required record, if not visible scroll the records list down.
- Record name comprises date and time.
- To print the record press printer pictogram

CAUTION!

The software saves ambient conditions record in a so-called loop, i.e. when the measurement 10,001 is saved, the measurement 1 is automatically deleted from the balance's memory. **Records saved to balance memory cannot be deleted.**

17.9 WEIGHING RECORDS

Each measurement result sent from a balance to a printer or a computer is saved in the database of weighing records. Balance user can preview data from each weighing record.

Procedure:

- Enter  Databases> submenu.
- Enter <Weighing records> database and press selected record.

Information defined for a weighing record:

- Measurement date
- Measurement time
- Measurement result
- Weight
- Tare value
- User
- Product name
- Customer, Customer name
- Packaging, tare name applied during product measurement
- Working mode name
- Warehouse, source warehouse name
- Result control, information specifying within which threshold limit the obtained result is:
 - MIN – below min threshold (possible only if <Result control> is set to <NO> value)
 - OK – within min and max threshold,
 - MAX – above max threshold (possible only if <Result control> is set to <NO> value)
- Variable 1
- Variable 2
- Variable 3

17.10 ALIBI

Each measurement result sent from a balance to a printer or a computer is saved in ALIBI database. Balance user can preview data from each weighing record.

Procedure:

- Enter  Databases> submenu.
- Enter <Alibi> database and press selected record.

Information defined for a particular measurement recorded into a database:

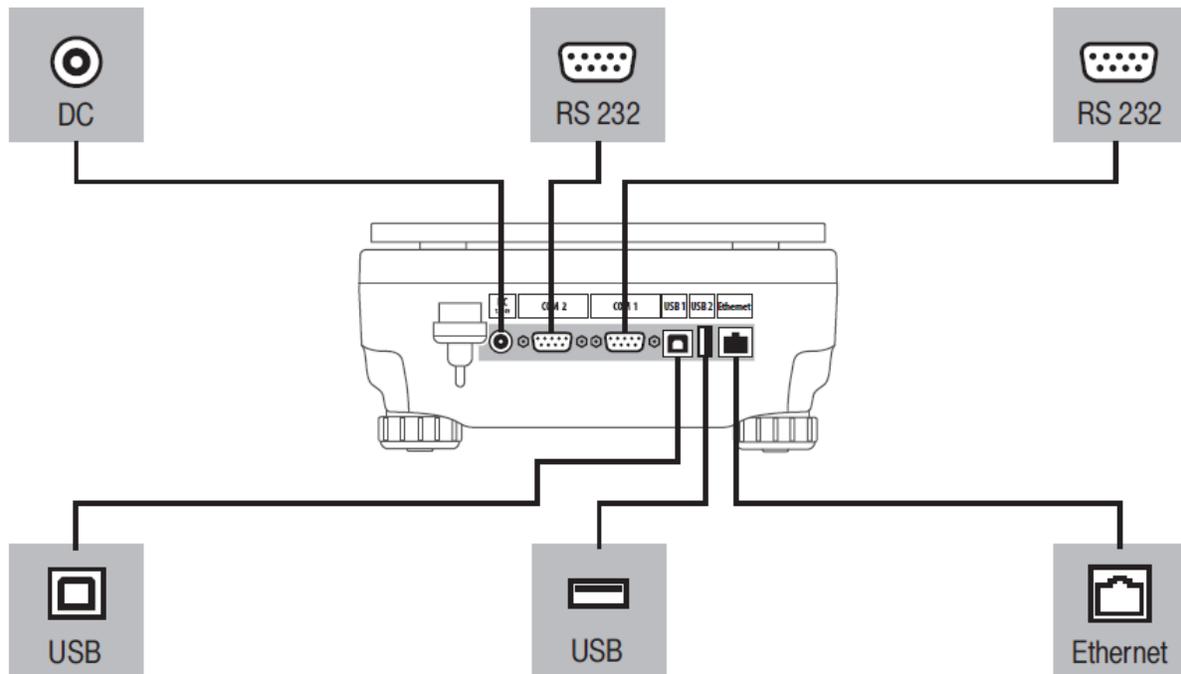
- Measurement date
- Measurement time
- Measurement result
- Weight

- Tare value
- User
- Product name

18. COMMUNICATION

COMMUNICATION menu is comprised within Parameters menu. It is accessed by pressing  key. The balance can communicate with a peripheral device, wherein the communication is established via the following ports:

- COM 1 (RS232)
- COM 2 (RS232)
- USB 1, type A
- USB 2, type B
- Ethernet
- Wi-Fi



The ports can be configured using <Communication> parameter group. To enter this submenu, press  key, next press “Communication” key.

18.1 RS 232 PORTS SETTING

Procedure:

- Select communication port <COM1> or <COM2>
- Set appropriate values

The RS 232 ports enable the following setting of transmission parameters:

- Baud rate - 2400, 4800, 9600, 19200, 38400, 57600, 115200 bit/s
- Parity - None, Even, Odd

18.2 ETHERNET PORT SETTINGS

Procedure:

Select  Ethernet> communication port, next set appropriate values:

- DHCP - Yes – No
- IP - 192.168.0.2
- Subnet - 255.255.255.0
- Default - 192.168.0.1

CAUTION!

Above settings serve information purposes only. Transmission parameters should be selected in accordance with the settings of customer's local network.

Return to weighing mode and restart the device.

18.3 WI-FI PORT SETTINGS

CAUTION!

1. *Make sure that transmission parameters are accordant for your local network settings,*
2. *For correct communication via Wi-Fi, set port parameter for computer to <WIFI> value: <PERIPHERALS/COMPUTER/PORT/WIFI>, next set the parameters as follows:*

Balances equipped with Wi-Fi module features a respective pictogram at the home screen in the top right-hand corner:



Pictogram for Wi-Fi network connection status:

No.	Pictogram	Overview
1		Balance connected, very strong signal
2		Balance connected, strong signal
3		Balance connected, poor signal
4		Balance connected, very poor signal
5		No connection (too poor signal or inaccessible selected network or invalid connection parameters – password, IP, etc.)

Example settings for Wi-Fi port:

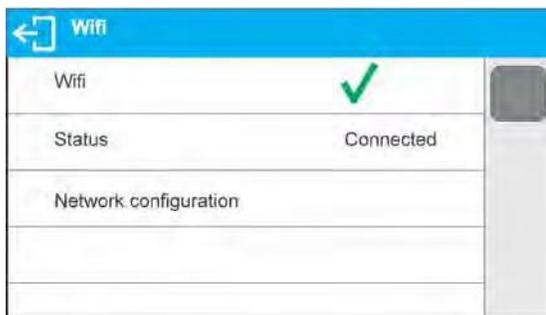


CAUTION!

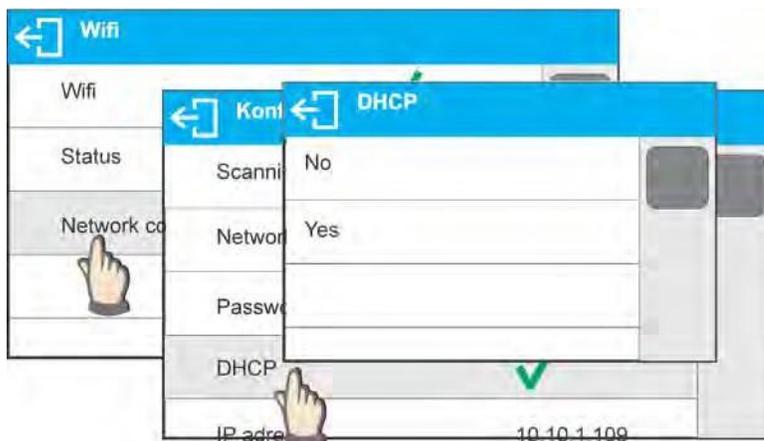
The above presented settings serve informative purposes exclusively

Procedure:

- Select <WIFI> communication port,

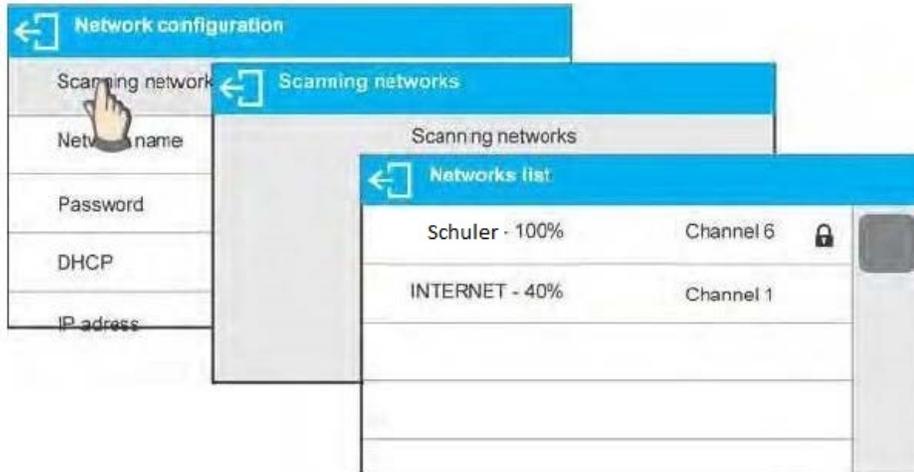


- Enter <NETWORK CONFIGURATION> parameter and set DHCP parameter value:



- With DHCP set to NO value, enter manually IP; MASK; DEFAULT GATE parameters, with DHCP set to YES value, the balance software automatically reads and displays data assigned by Wi-Fi router by means of which the balance is to be connected

- Enter <SCANNING NETWORKS> parameter and start network searching procedure, upon completion, list of detected networks is displayed along with information on signal strength and channel number



- Select network of your choice
- Password window is displayed, using an on-screen keyboard enter the password



- <NETWORK CONFIGURATION> window is displayed, connection procedure starts automatically
- Press  button to go one level up, <STATUS> parameter features <CONNECTING> sign informing on the fact that the balance tries to connect the network
- For successfully established connection <CONNECTING> status turns to <CONNECTED> status, respective pictogram is displayed (see pictogram overview above)
- If it takes too long to establish connection it may be concluded that connection parameters are invalid (password etc.), check the parameters and try to reestablish connection

The selected network and parameters for connection are stored in the balance program. The program connects to the network using the stored parameters each time the balance is activated.

To disconnect the network, turn the communication off: COMMUNICATION/WIFI/WIFI – NO



18.4 USB PORT

USB port of type A is intended for:

- Connecting a USB flash drive storing <FAT files system>
- Connecting balance to printer

USB flash drive may be used for printout of data on measurements (setting PRINTER/PORT parameter to PENDRIVE value). Additionally, databases and user's parameters settings can be copied balance to balance. On inserting USB flash drive an Export/Import group of parameters opens automatically.

If you are authorized, you can:

- Export: databases, user's parameters
- Import: databases, user's parameters

During export the program saves files with databases and parameters content on a flash drive.

USB port of type B is intended for:

- Connecting balance to a PC computer

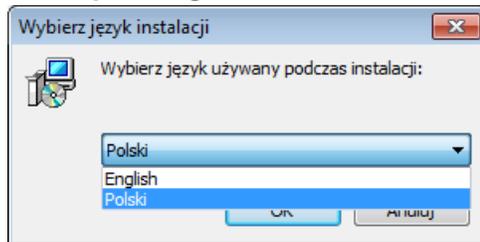
To make connection of balance and computer possible, it is necessary to install virtual COM port in a computer.

To carry out this procedure, you need to utilize the respective USB driver installer which is located on the USB included with the balance.

Steps:

1. Run driver installer

Startup dialog window:

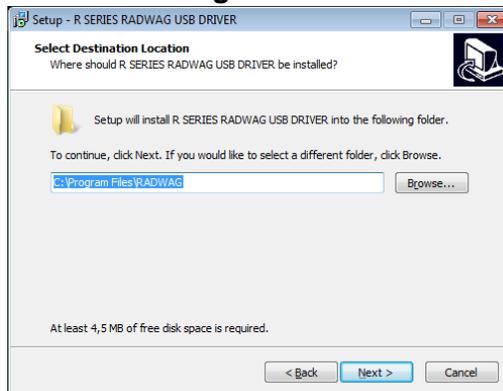


Select language version.



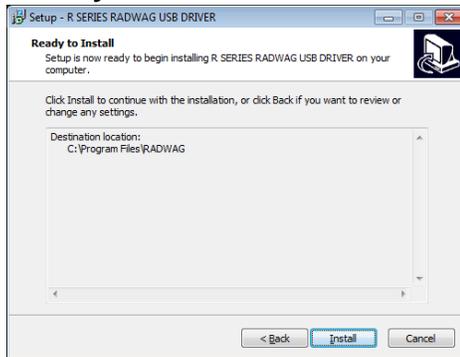
To continue, press “**Next**” button.

Window for target folder selection:

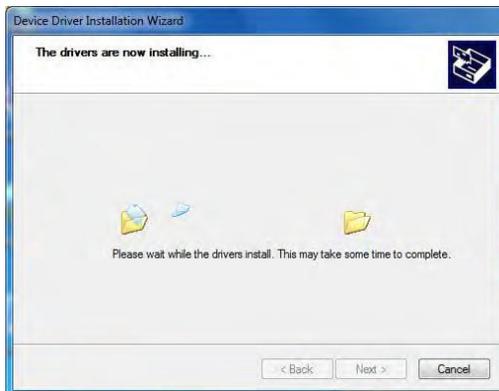


Select a respective folder and click “**Next**” key to proceed.

“Ready to Install” window:



To run installation process, press “Install” key and clicking respective keys, follow the install wizard.





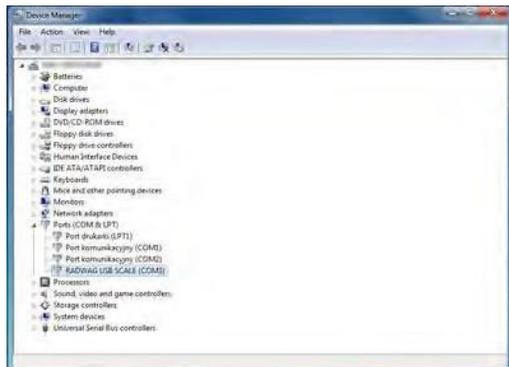
2.



Having completed driver installation, connect balance to a computer, use USB A/B cable (in case of already connected balance, it is necessary to disconnect it and using USB cable connect the balance again).

3. The system detects the new USB device and automatically starts searching a respective driver

4.



Go to Device Manager and check number assigned to virtual COM port.

For this very case it is STMicroelectronics Virtual COM Port (COM8).

5. Set balance parameters: select USB value for parameter COMPUTER/PORT.

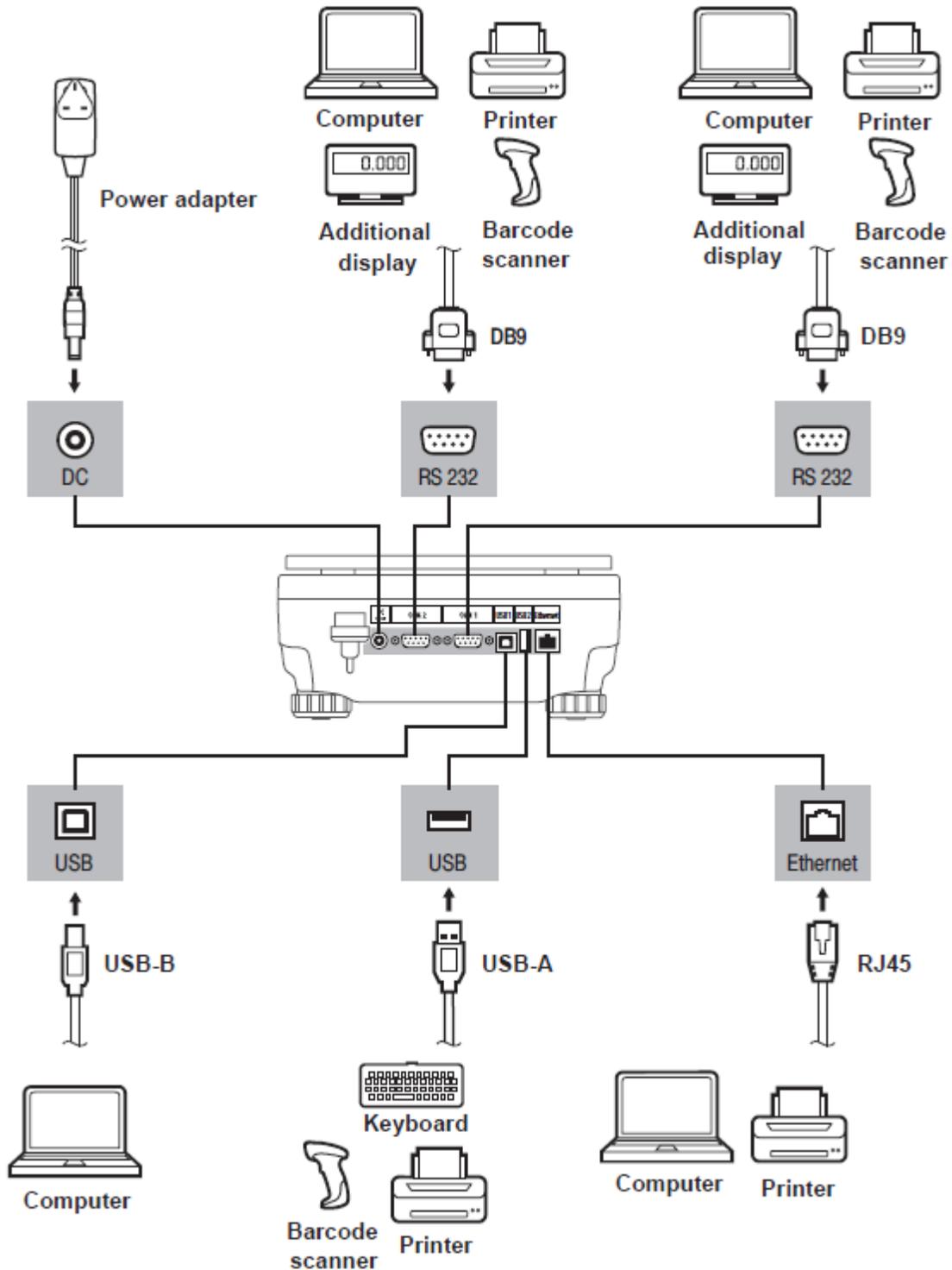
6. Run software for measurement readout.

7. Use the program to set parameters for communication – select respective COM port (for the very case it is COM8), i.e. the one which has been formed while installing drivers.

8. Start cooperation.

19. PERIPHERAL DEVICES

PERIPHERAL DEVICES menu is comprised within Parameters menu. It is accessed by pressing  key. The menu features list of devices that can cooperate with the balance.



19.1 COMPUTER

Carry out configuration using <Computer> submenu.

Procedure:

- Press  key, next press: <Peripherals / Computer>
- Set parameters related to cooperation with a computer
- Computer port
 - available options: none, COM 1, COM 2, USB, Ethernet, Wi-Fi
- Port settings
 - settings related to a port selected for computer connection
CAUTION: for Ethernet and Wi-Fi port Timeout parameter is on. The parameter specifies time delay – time interval for disconnection, counted from the moment of the most recent command sent from the device to which the balance is connected. Timeout parameter value has to be entered in milliseconds [ms].
- Address
 - parameter for setting address of balance connected with a computer
- Weighing operation printout template
 - parameter enabling you to design customized printout, for this use window with printout template.
- Continuous transmission, parameter enabling to turn on/off continuous transmission of a weighing result, available options:
 - continuous transmission in calibration unit, indications are transmitted in a main unit (calibration) independently from currently selected weight unit,
 - continuous transmission in current unit, indications are transmitted in a currently selected weight unit, the transmitted unit changes along with the current unit change (Units key),
 - continuous transmission turned off <NONE>,
CAUTION!
 - Continuous transmission can be turned on/off by a respective message sent from a computer (read COMMUNICATION PROTOCOL).
- Interval

Parameter enables setting frequency of printouts for continuous transmission. Frequency of printouts is set in seconds, wherein the accuracy is 0.1s. You may set any time value ranging from 1000 to 0.1 s.

The setting is valid for continuous transmission in calibration unit and in current unit activated by means of the balance, it is also valid for continuous transmission activated by command sent from a computer.

19.2 PRINTER

Submenu <Printer> enables you to select a port to which data is sent upon pressing  key of a balance keyboard. Content of sent data is set in <PRINTOUTS/GLP PRINTOUTS> parameter.

Procedure:

- Press  key
- Enter <PERIPHERALS> menu
- Next enter <PRINTER> menu
 - Set balance parameters related to cooperation with the printer; i.e. <PORT> to which a printer is to be connected upon pressing  button (printer connected), options:
 - COM 1 or COM 2 – RS 232 port, the one to which a printer is connected
 - USB type A – USB port, the one to which a printer is connected
 - Ethernet – port sending data to a dedicated software, operated on a computer connected to a balance via network.
 - PENDRIVE – USB port type A for connecting USB flash drive.
 - WIFI – port intended to enable sending data to software (opened on computer connected to balance via Wi-Fi), to printer featuring Wi-Fi port or to network printer.
 - USB PC – port USB type B, intended for connection of computer with PC software.

Example balance settings for correct cooperation with Schuler Scientific printer (10100-85) connected to RS232 port:

1. With impact printer, **EPSON TM-U220D (10100-85)**

Communication parameters for port to which the printer is connected:

- baud rate - 9600 bit/s
- parity - none

Printer parameters for PERIPHERALS group:

- port - COM 1 or COM 2 (the one to which the printer is connected)

19.3 SAVE MEASUREMENT DATA ONTO USB FLASHDRIVE

The balance software enables record of measurement data on an external flash drive. To perform the operation:

- Plug a USB flash drive into USB 1 port, type A.
- Set <PENDRIVE> option for <PERIPHERALS/PRINTER/PORT>.
- Return to weighing procedure.
-  key, when pressed, provides record of measurement data (specified for GLP PRINTOUT), wherein the data is saved in a form of a text file, created automatically by balance software; the file name is: *printout.txt*.
- Remove the USB flash drive from a balance USB port after about 10s counting from the last measurement record, only after this time the data is saved. Next plug the USB flash drive to a computer and read the saved text file.

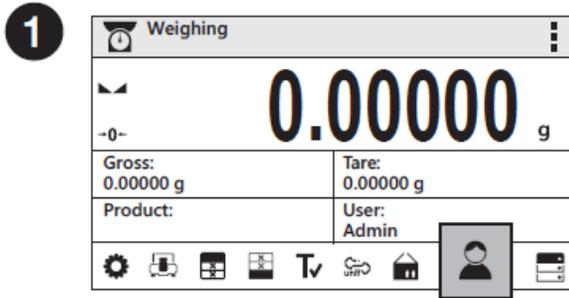
CAUTION!

USB flash drive shall comprise <FAT file system>.

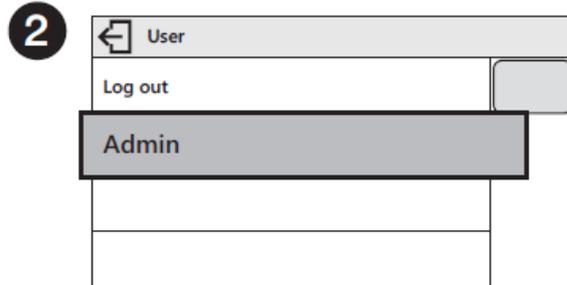
20. USER

Full access to user parameters and to editing databases requires logging in as an operator with <Administrator> permission. The logging in procedure should be carried out each time the balance is turned on.

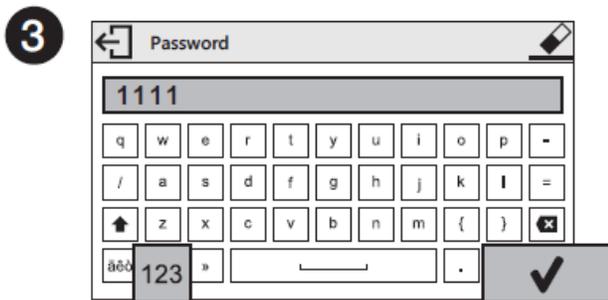
First Log In Operation Procedure:



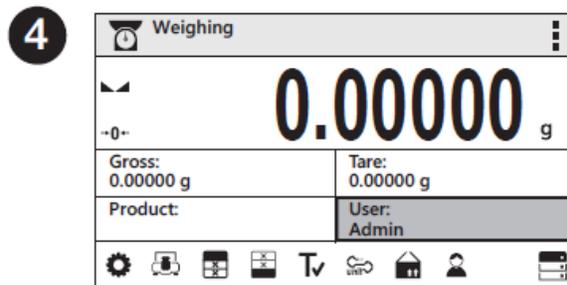
Press Operators button.



Users list is displayed, select Admin option.



Press **123** button to activate numeric keyboard. Enter "1111" password and press **✓** button to confirm.



You have logged in as the administrator.

On future Logging In, select a user from the list and enter the password, the software initiates operation with permissions set for the selected user.

Log out operation – procedure:

- Run the home screen and press  button, operator's database window opens,
- Press <Log out> soft key (located as position no. 1 in the list of operators),
- Home screen of the software is displayed again automatically.

Permissions levels

Balance software comprises of three permission levels: administrator, advanced operator, user. Permission level dependent access to edition of user parameters, databases and software functions.

Permissions	Enabled operations
User	Free editing of parameters of <Readout> submenu. Modification of settings for <Misc.> parameter group, except for settings for <Date and Time>. The operator can start and carry out all weighing processes. The operator can preview information recorded in <Databases>, (s)he can define universal variables.
Advanced User	Free editing of parameters for the following submenus: <Readout>; <Working modes>; <Communication>; <Peripherals>; <Misc.>. Access to <Date and Time> submenu denied.
Administrator	Access to all user parameters and functions, editing databases enabled.

21. PRINT MODE

Function designed to enable print mode setting, it activates  key.

Print mode options:

- <WHEN STAB>, for this option stable measurement result, along with the settings for parameter
- <GLP PRINTOUT>, is sent to the printer port. On pressing  key, when the result is not stable (no marker on a display), the balance software sends the measurement result to the port after reaching stability for the measurement.
- <EACH>, for this option every time that the  button is pressed, it results in sending the reading to the printer port along with the settings for <GLP PRINTOUT> parameter. Every single reading is sent (stable and unstable). For unstable readings <?> character appears at the beginning of the printing frame.
- <AUTO> - select this option to enable automatic printing of measurements. If this option has been selected, remember to set <AUTO THRES> parameter to suit your needs.

Automatic operation procedure:

- Press  button to zero the balance (marker of stable measurement  and zero marker  are shown on a display)
- Deposit load, the balance sends the first stable measurement to the printer port,
- Remove the load from the pan,
- Next measurement is possible when the indication is lower than the set value of <AUTO THRES.> parameter (next measurement does not require zero value).

For automatic operation adjust the threshold value. For automatic operation, the measurement will not be sent from the computer to the printer if the mass measurement stays within the set value range <AUTO THRES.>.

<**AUTO THRES**> parameter relates to the following functions:

- automatic tare
- automatic operation
- auto with interval

<**AUTO+INT.**> select this option to start automatic printout and record of indications in the Weighings database and Alibi database, carried out in a cyclic manner in a specified time interval. The interval is set in minutes. Interval range is 1-9999 min.

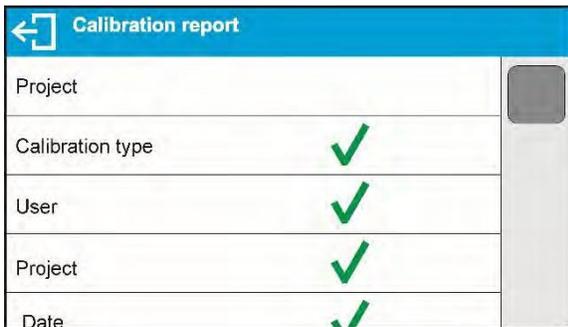
CAUTION!

Each result is printed and recorded. Automatic operation with interval starts when the switching function is turned on and it lasts until it is switched off. The first stable weighing result of value greater than AUTO THRES value is printed as a first measurement. The following measurements are printed with frequency set in INTERVAL parameter. Automatic operation with interval stops when the option is off.

On switching the function of auto print with interval, PRINT button becomes inoperative (no indication is printed when pressed).

21.1 ADJUSTMENT PRINTOUT REPORT

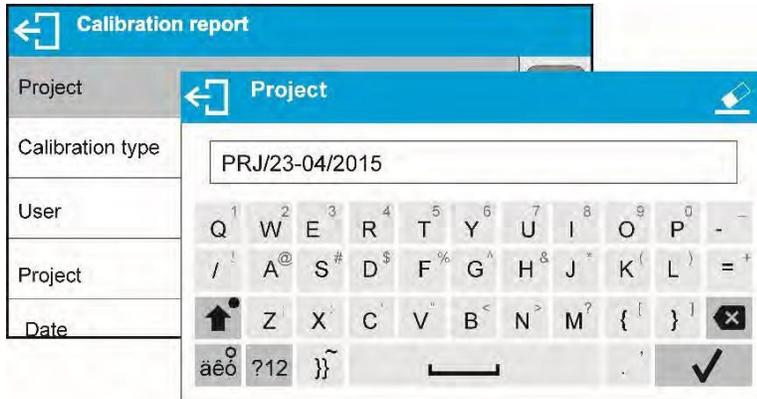
ADJUSTMENT REPORT is a group of parameters enabling data to be printed on a printout.



Variable	Overview
PROJECT	Option enables naming the project (name associated with a weighing). The name may consist of maximum 31 characters.
CALIB TYPE	Option enables printing out the type of the adjustment being carried out.
USER	Option enables printing out the name of a logged-in user.
PROJECT	Option enables printing out the name of the project (see parameter Project).
DATE	Option enables printing out the date of the carried-out adjustment.
TIME	Option enables printing out the time of the carried-out adjustment.
BALANCE ID	Option enables printing out the balance ID number.
CAL. DIFFER	Option enables printing out the difference between mass of an adjustment weight measured during the last adjustment and the current measured mass of this weight.
DASHES	Option enables printing out dashes that separate the date of a printout from a signature.

SIGNATURE	Option enables providing an area for the signature of a user performing the adjustment.
-----------	---

Procedure for naming the project

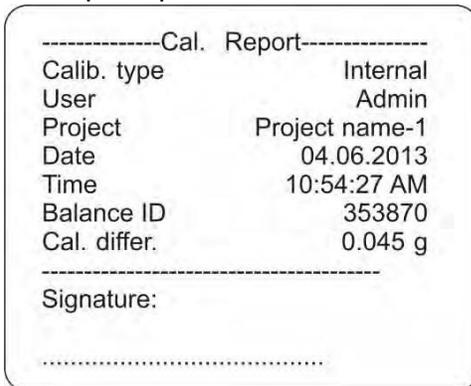


For the parameters described above, one of these values must be selected:

NO - do not print

YES - print

An example report:



21.2 ADJUSTMENT PRINTOUT REPORT

HEADER group of parameters enabling to declare data that is to be printed on a header printout.



GLP PRINTOUT

group of parameters enabling to declare data that is to be printed on a measurement result printout

Parameter	Status
Date	✓
Time	✓
User	✓
Product	✓
Customer	✓

FOOTER

group of parameters enabling to declare data that is to be printed on a footer printout

Parameter	Status
Working mode	✓
Date	✓
Time	✓
Balance type	✓
Balance Id	✓

Printout variables list

Variable	Overview	Active for
WORKING MODE	Option enables printing out the name of a working mode.	Header Footer
BALANCE TYPE	Option enables printing out the balance type.	Header Footer
BALANCE ID	Option enables printing out the balance ID number.	Header Footer
USER	Option enables printing out the name of a logged- in user.	Header GLP printout Footer
PRODUCT	Option enables printing out the name of a currently selected product.	Header GLP printout Footer
CUSTOMER	Option enables printing out the name of a currently selected Customer.	Header GLP printout Footer
PACKAGING	Option enables printing out the name of a currently selected packaging.	GLP printout
DATE	Option enables printing out the date of the carried out adjustment.	Header GLP printout Footer

TIME	Option enables printing out the time of the carried out adjustment.	Header GLP printout Footer
VARIABLE 1	Option enables printing out the value of VARIABLE 1.	Header GLP printout Footer
VARIABLE 2	Option enables printing out the value of VARIABLE 2.	Header GLP printout
VARIABLE 3	Option enables printing out the value of VARIABLE 3.	Header GLP printout
NET	Option enables printing out net weight value in a basic unit (calibration unit).	GLP printout
TARE	Option enables printing out the tare value in the current unit.	GLP printout
GROSS	Option enables printing out the gross mass value in the current unit.	GLP printout
CURR.RES	Option enables printing out the current measurement result (NET weight) in a current unit.	GLP printout
CAL.REPORT	Option enables printing out a report from the last adjustment, according to the settings declared for the adjustment report printout.	Header GLP printout Footer
DASHES	Option enables printing out separating dashes.	Header Footer
EMPTY LINE	Option enables printing out an empty separating line.	Header Footer
SIGNATURE	Option enables providing an area for the signature of a user performing the adjustment.	Footer
NSTD. PRNT.	Option enables printing out one of 100 non- standard printouts on the footer printout. You can choose one of the following options: NONE / non- standard printout name. The way of entering non- standard printouts is described further down this user manual.	Header GLP printout Footer

For the parameters described above, one of these values must be selected:

NO- do not print

YES- print

Example reports:

Header

Working modes	Weighing
Date	24.07.2013
Time	7:37:30
ScaleType	AS
Balance ID	10353870
User	ADMIN ENG
Product	Tablet

GLP printout

Date	04.06.2013
Time	11:11:24 AM
Product	NAZWA
	0.000 g

Footer

Date	24.07.2013
Time	7:41:10
User	ADMIN ENG
Signature	

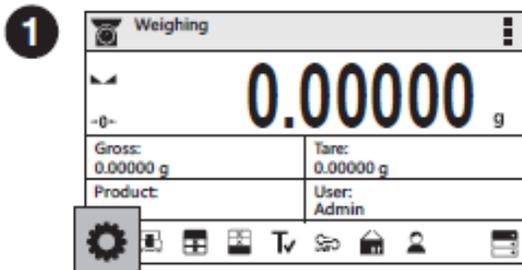
22. PROXIMITY SENSORS

The balance features two proximity sensors enabling touch-free balance control. The software detects two motions performed around the sensors:

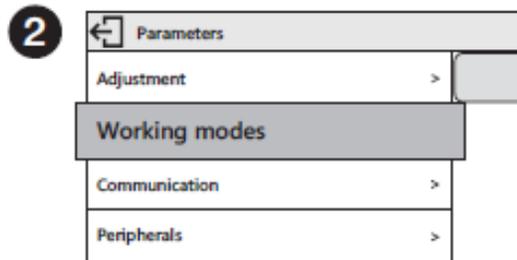
1. hand in close vicinity to the left sensor <Left sensor>,
2. hand in close vicinity to the right sensor <Right sensor>.

Each motion can trigger optional balance functions. You can assign the proximity sensors with different functions for each working mode. Upon completed configuration procedure, the software runs the function that is assigned to the proximity sensor after having detected motion around it.

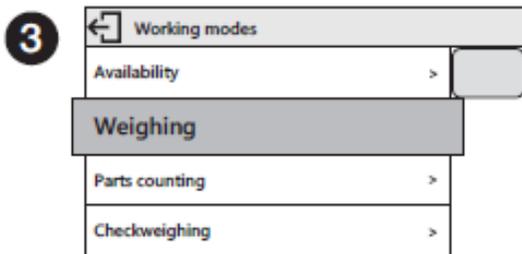
Procedure for setting up proximity sensors-



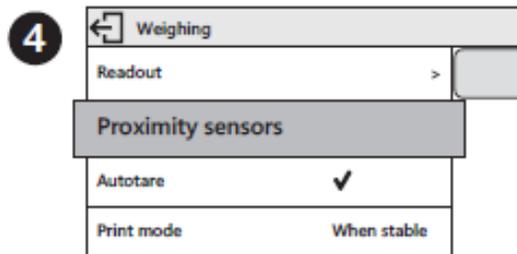
Press "Parameters" button.



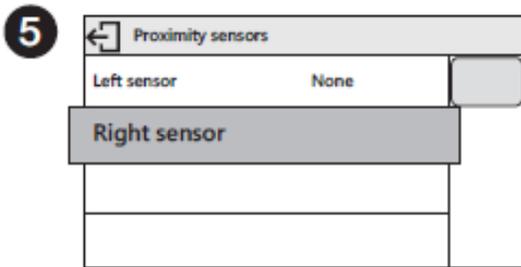
Parameters list is displayed, select Working Modes parameter.



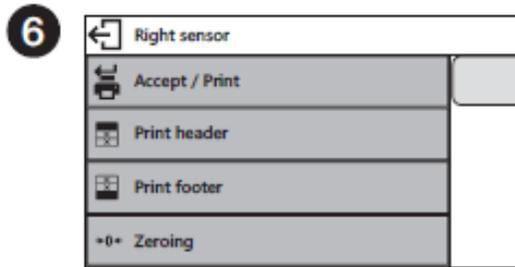
Select Weighing parameter.



Select Proximity Sensors parameter.



Select Right Sensor parameter.



Select function that is to be assigned to the right proximity sensor.

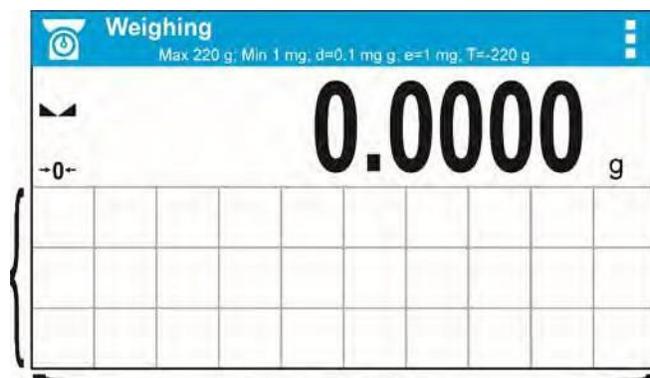
In order to set left sensor function repeat steps 5 and 6, this time select Left Sensor parameter.

Following the above procedure you can also set sensors for remaining working modes.

23. ADVANCED FEATURES

23.1 BUTTON, LABELS AND TEXT FIELDS CONFIGURATION

Area beneath weight indication section can be freely programmed. It is divided into active fields taking the form of a table with 3 rows and 10 columns.



The division lines presented above are not visible on the balance screen, they serve only for informative purposes.

This section is designed to explain user-selected widgets: buttons, labels, text fields, bar graphs.

- **button** – pictogram to which a function is assigned, the function is triggered upon pressing the pictogram;
- **label** – field for information, its content is stable. The content depends on displayed option, wherein the options change in course of balance operation. The label may be active or passive. Active label, when pressed, triggers function that is assigned to it, e.g. selecting product out of products database. Passive label provides you with information on current state, no function is assigned to it;

- **text field** - field for information, both content (text and variables of line 1 and 2) and function assigned to text field are programmable. The field may be active or passive. Its operation is likewise as for label; the only difference is that for the text field it is the user who specifies which function is to be assigned to it. The function does not have to refer to displayed information,
 - e.g. the text field displaying date and time may trigger balance calibration upon being pressed;
- **bar graph** – option available for *Check weighing* and *Dosing* modes, field providing information on Min and Max threshold – *Check weighing* mode, and target weight - *Dosing* mode, the given information is presented in a graphic form, bar graph color informs whether weight stays within the specified tolerance or is out of it.

The section may be set up freely to match your needs. Each of the modes may be configured independently.

Set up rules:

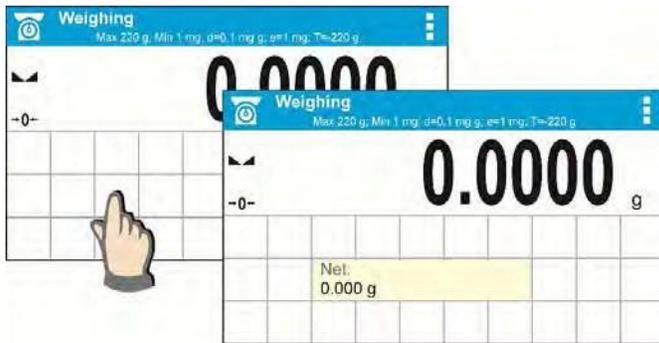
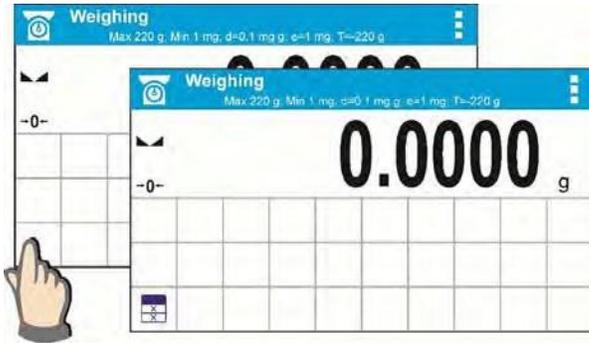
1. Widgets dimensions (width x height)
 - button – 1x1
 - label – 2x1; 3x1; 4x1; 5x1
 - text field – 2x1; 3x1; 4x1; 5x1; 6x1; 7x1; 8x1; 9x1; 10x1
 - bar graph – 5x1; 10x1

To quickly restore the default widgets layout press any widget and hold it until a window with available options is displayed. Select **<Default screen settings>** and confirm.

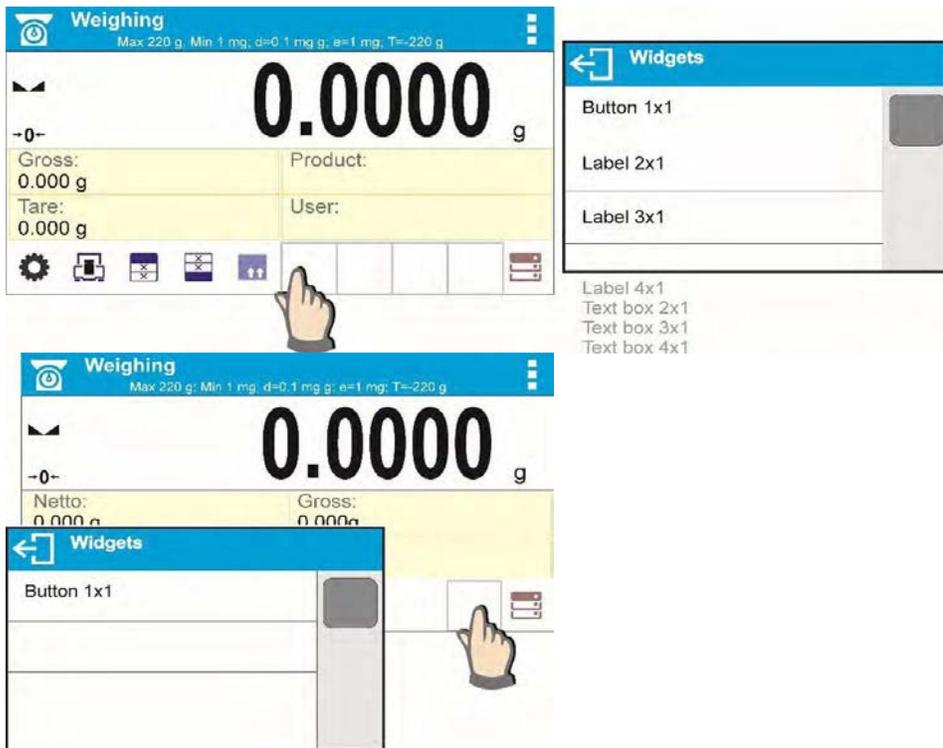
Example arrangement and dimensions of labels and text fields.



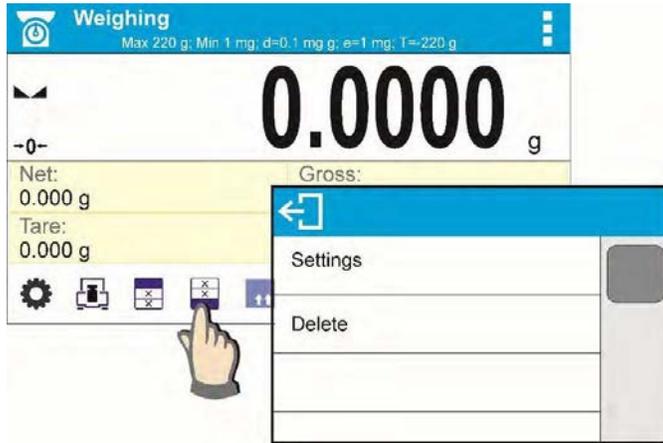
2. Always click the far left side of a field to hold a selected widget.



3. A new widget can only be applied to an area that holds no other widgets. The balance automatically detects which widgets can be applied to an area, this is conditioned by the widget dimensions.



- It is possible to change functions assigned to an already applied widget. The applied widget, if not needed, can be removed.



- To rearrange widgets layout, it is required to delete an already applied widgets first, and define new arrangement of buttons, labels and text fields next.

23.2 LABELS

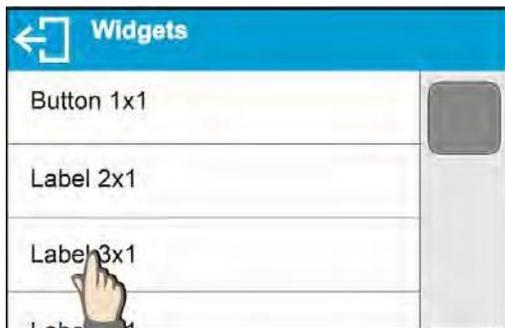
You can select label size and type of information to be displayed for a label.

To select a label, use the list of available labels. Upon label selection, specify the type of information to be displayed on the label. The selected label is displayed automatically on a specified home screen spot.

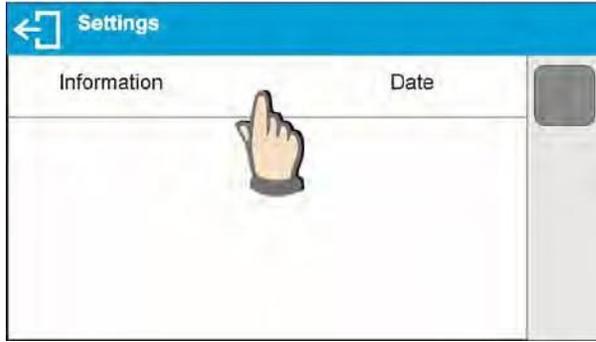
Procedure:



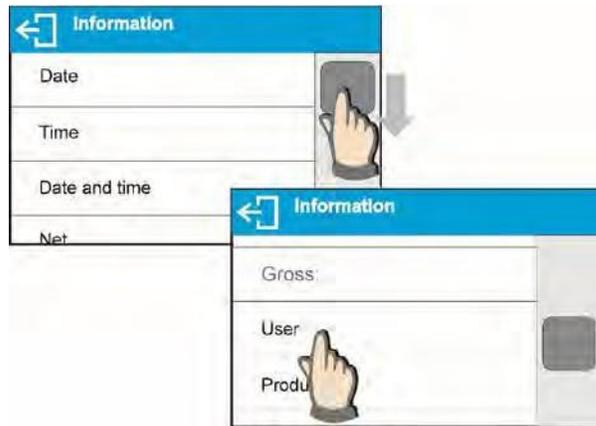
Press and hold the spot where the label is to be placed.



Select a label and its size.



Label settings window opens, click INFORMATION field to see a list of information type available for the selected label.



Select data to be displayed.



The selected label is displayed automatically on the home screen.

Information type:

Label information type	Modes featuring the information
Date	All modes
Time	All modes
Date and time	All modes
Net weight	All modes
Tare	All modes
Gross weight	All modes
User	All modes
Product	All modes

Packaging	All modes
Customer	All modes
Variable 1	All modes
Variable 2	All modes
Variable 3	All modes
MSW value	Weighing mode only
MSW tare	Weighing mode only
MSW status	Weighing mode only
Part mass	Parts Counting mode only
Thresholds	Check weighing mode only
Min threshold	Check weighing mode only
Max threshold	Check weighing mode only
Target value	Dosing mode only
Reference mass	Percent Weighing mode only
Weighing in air	Solids and Liquids Density Determination modes only
Weighing in liquid	Solids and Liquids Density Determination modes only
Liquid	Solids Density Determination mode only
Temperature	Solids Density Determination mode only
Liquid density	Solids Density Determination mode only
Sinker volume	Liquids Density Determination mode only
Number	Statistics mode only
Sum	Statistics mode only
Mean	Statistics mode only
Min	Statistics mode only
Max	Statistics mode only
Difference	Statistics mode only
SDV	Statistics mode only
RDV	Statistics mode only
Threshold	Peak Hold mode only
Formulation	Formulation mode only
Sum	Formulation mode only
Target value	Formulation mode only

23.3 TEXT FIELDS

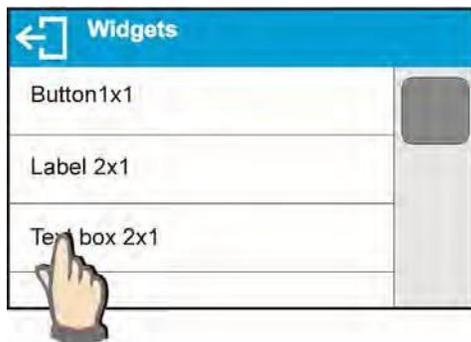
You can select text field size and type of information to be displayed in the first and the second line of the field, plus you can decide on a function and assign it to a text field.

Upon completed setup operation, the selected text field is displayed automatically on a specified home screen spot.

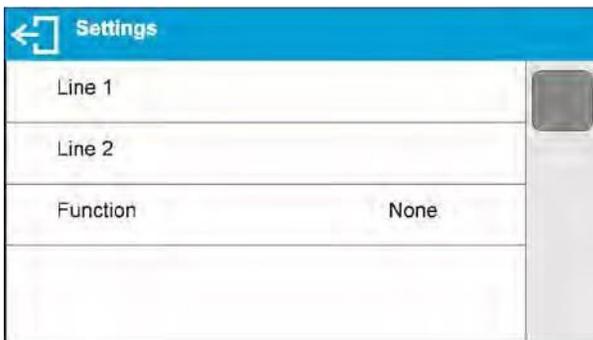
Procedure:



Press and hold the spot where the key is to be placed.



Select text field and its size.



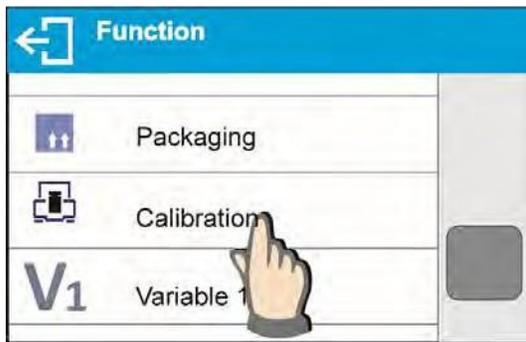
Text field settings window opens. Define text field parameters:



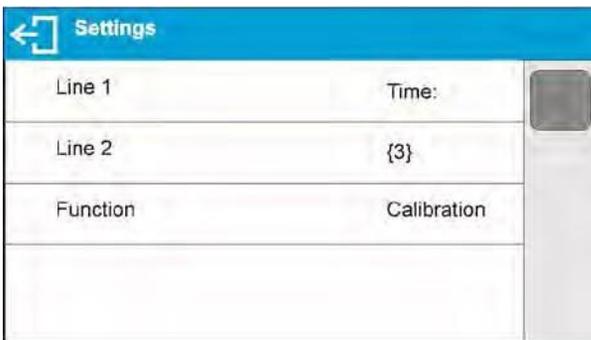
Line 1: e.g. text <Time:>,



Line 2: e.g. variable {3}, variable for current time displaying (other variables refer to point for non- standard printouts).



function: e.g. adjustment.



When all text field parameters have been defined, the window displays respective values.



The defined text field is displayed automatically on the home screen.

23.4 BAR GRAPHS

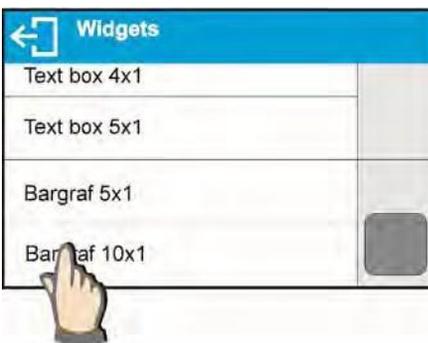
The bar graph function is accessible for all weighing modes. The bar graph presents in a graphic form how much of balance capacity is in use. Additionally, it shows Min and Max thresholds positions for the Check weighing mode, and for Dosing mode it shows target weight value along with permissible tolerance.

You can select bar graph size and turn on/off <Zoom> function. This function rescales bar graph to improve visualization of indication.

Procedure:



Press and hold the spot where bar graph is to be placed.



Select bar graph and its size.



Bar graph settings window opens.



The selected bar graph is displayed automatically on the home screen.

Example for bar graph with <Zoom> function on:



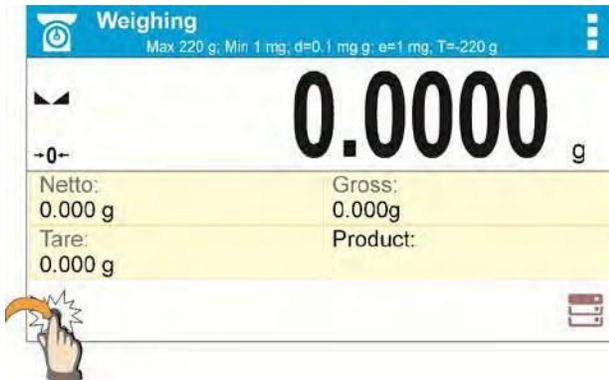
Example for bar graph with <Zoom> function off:



23.5 QUICK ACCESS KEYS CUSTOMIZATION

You can define quick access keys; the keys are displayed underneath weight indication section. Quick access keys provide direct access to the most frequently operated functions, it is selected from a list of available keys.

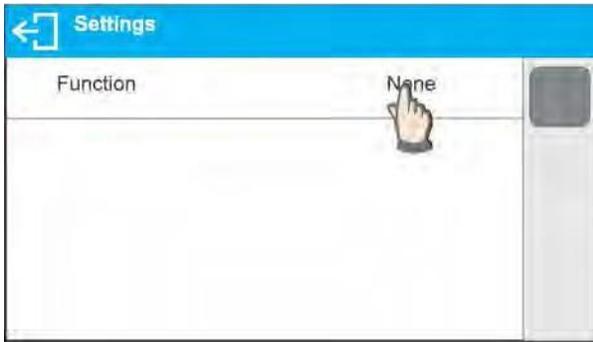
Procedure:



Press and hold the spot where the key is to be placed.



Select option: key 1x1



Enter key setup.



Select the key.



The selected key is displayed automatically on a home screen.

23.6 WEIGHING UNIT ACCESSIBILITY

You may declare which units shall be accessible while selecting a temporary unit by means of

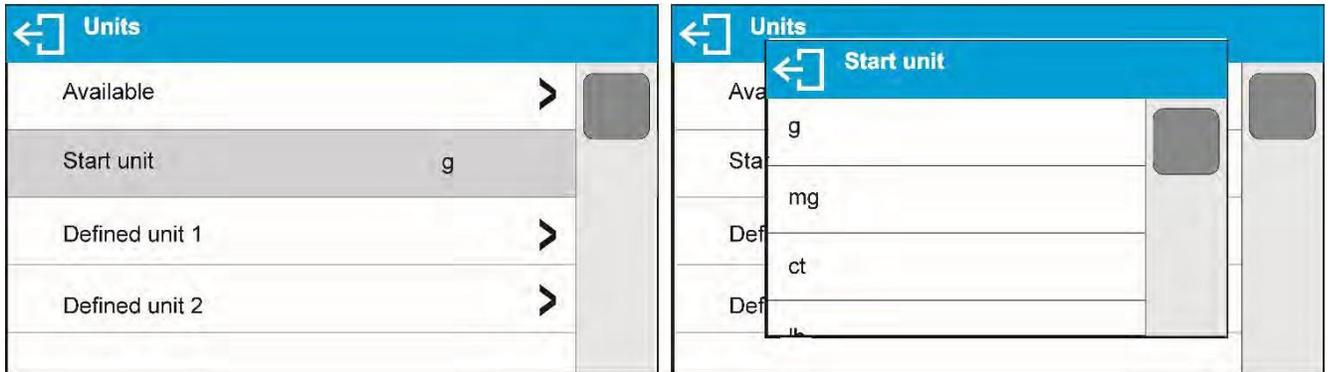
unit key. Units with parameter value set to <Yes ✓> option are available for selection in working modes, i.e. modes facilitating units change.



Units with parameter value set to <No ✓> option will not be accessible while operating the balance.

23.7 START UNIT SELECTION

Upon selection of start unit, the balance activates with the specified start unit for these modes where change of the unit is possible.



23.8 BALANCE SETTINGS

A user can set up parameters which influence balance operation. These parameters are to be found in parameters group **MISC**.

Menu language

Language parameter enables selecting the language of the balance menu descriptions. Available languages: POLISH, ENGLISH, RUSSIAN, SPANISH, FRENCH, GERMAN, ITALIAN, CZECH, CHINESE, ARABIC, TURKISH, KOREAN.

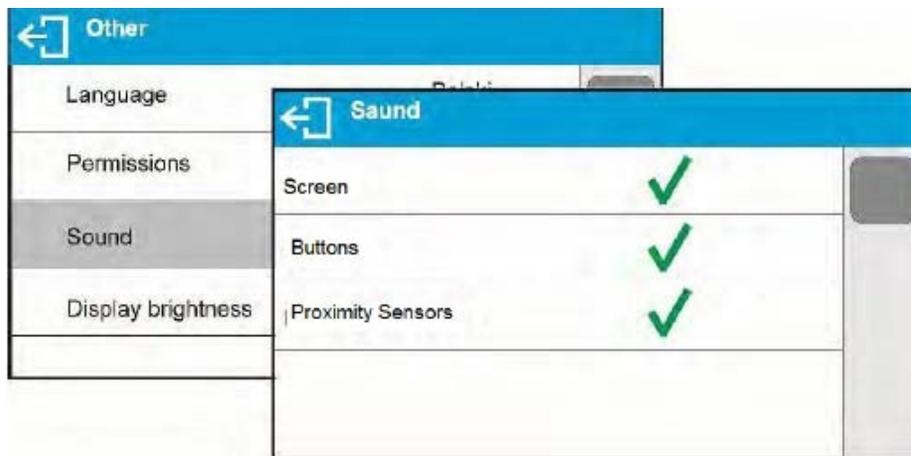
Permissions

Permissions parameter enables choosing access level for a particular user, one that is not logged in. Available access levels: ADMIN. / USER. / ADV.

Depending on selected permissions level, you can enter balance parameters and modify the settings, as far as possible for a particular level.

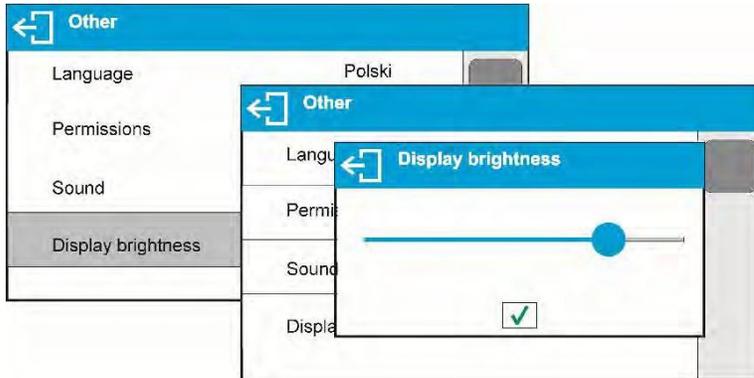
“Beep” sound – reaction to operation of pressing a key

Sound parameter enables switching on/off a ‘beep’ sound responsible for informing a user about pressing any key of balance overlay or display, or about proximity sensors response.



Backlight and adjusting display brightness

Display brightness parameter enables setting the brightness of the backlight or switching off the display brightness completely.



Proximity sensors sensitivity adjustment

Proximity sensors sensitivity parameter specifies distance within which the sensors can be operated, its scale is expressed in percent and it ranges from 0% to 100%. For lower percent value the proximity sensors operate at a shorter distance.

Usually the sensitivity value is comprised within 50%-70% limits.

Date

Date parameter enables setting the current date.



Time

Time parameter enables setting the current time. Procedures for change of time settings and date settings are likewise.

Date format

Date form. parameter enables altering the date format on the printout [YYYY.MM.DD / YYYY.DD.MM / DD.MM.YYYY / MM.DD.YYYY], where: YYYY – year; MM – month; DD – day.

Time format

Time form. parameter enables specifying time format for a printout [12h / 24h].

For [12h] option selected, <A> or <P> letter is displayed next to presented time value, where: **A** stands for hours before noon; **P** stands for hours after noon.

Backlight turn-off time

<BACKLIGHT OFF> parameter enables activation of display stand-by mode, the stand-by mode is activated when no weighing process is carried out (stable indication is a necessary condition for activation of the stand-by mode).

- **NONE** – backlit turn-off time not activated.
- **0.5; 1; 2; 3; 5** – time given in minutes.

If the balance registers stable indication for a specified time interval, set in parameter <BACKLIGHT OFF>, then the display goes out immediately. The backlight activates upon change of indication (no stability pictogram on the display) or pressing any key on the balance keypad. The display remains blank also when balance menu is entered.

Auto switch-off

<AUTO OFF> parameter enables automatic display deactivation (the parameter functioning is

likewise to  button functioning). Upon display deactivation the other subassemblies are powered and the balance turns to stand-by mode.

- **NONE** – auto switch-off not activated.
- **0.5; 1; 2; 3; 5** – time given in minutes.

If the balance registers stable indication for a specified time interval, set in parameter <AUTO OFF>, then the display is turned-off immediately.

To start-up the balance, it is necessary to press  button located on the balance keypad. The balance automatically returns to weighing operation.

Balance cannot be turned off if any process is started or if balance menu is entered.

Autotest GLP

AUTOTEST GLP function is designed to aid a user in assessing balance's operation and diagnosing the reasons for occurrence of errors in weighing which exceed the maximum permissible values for a given balance model.

By means of a simple, repeatable and fully documented way, the function enables optimizing balance's settings to maintain the best possible repeatability and weighing time at workstation. The main purpose of the function is the possibility of monitoring the above-mentioned parameters at optional moment and saving records from the carried-out tests in the form of printed reports of the tests that are automatically generated at the end of examination. Up to 50 reports can be recorded.

The test controls repeatability of placing the interval weight and determining error of indication with reference to balance's maximum capacity.

Testing procedure:

- deposit internal weight twice,
- deposit internal weight ten times, calculate the value of standard deviation,
- perform balance adjustment,
- print a report.

Test results provide balance data, calculated error for Max capacity and value of repeatability of indication expressed as standard deviation.

An example report:

```
.....  
----- Autotest GLP: Report -----  
Balance type  
Balance ID          400010  
User                Admin  
Software rev.       v.0.4.9  
Date  
20130716  
Time                09:17:16  
-----  
Number of measurements  10  
Reading unit           0.001/0.01 g  
Internal weight mass 1402.094 g  
Filter                 Average  
Value release          Fast &Reliable  
-----  
Deviation for Max.     -0.118 g  
Repeatability          0.0088 g  
Signature  
.....
```

Enter <OTHER> parameters' group, start <AUTOTEST GLP> parameter.

Press <Start> field. Autotest GLP procedure starts, it is carried out automatically. Autotest procedure progress bar is displayed.

Press  or  button to abort the procedure, you can do it at any time.

On completing procedure, the parameter screen is displayed, value informing on recorded autotest number, to be found in <RESULT> field, is increased by <1>. To view results press

<RESULTS> field and select the given autotest.

To print a report, go to <Details> window and press printer pictogram. The software can store up to 50 reports.

24. MAITENANCE

Disassemble the balance weighing pan and other detachable components (the components differ depending on a balance type – see Unpacking and Installation, Section 2). Be careful while detaching the components so as not to cause any damages to the balance mechanism.

- Using handheld vacuum cleaner remove dust from the weighing chamber.
- Using a dry flannel cloth to clean glass parts (mild cleanser may be applied if it does not contain any abrasive substances) – for draft shield disassembly instruction go to the next end of this section.
- Using a dry flannel cloth to clean disassembled components (mild cleanser may be applied if it does not contain any abrasive substances).

CAUTION!

Cleaning draft shield while still installed may cause damage of the measuring system.

Cleaning ABS components:

To clean dry surfaces and avoid smudges, use clean non-colored cloths made of cellulose or cotton. You can use a solution of water and detergent (soap, dishwashing detergent, glass cleaner) if needed. Gently clean the intended surface and let it dry. Repeat cleaning process if needed.

In the case when contamination is hard to remove, e.g. adhesive, rubber, resin, polyurethane foam residues etc., you can use a special cleaning agent based on a mixture of aliphatic hydrocarbons that do not dissolve plastics. Before using the cleanser for all surfaces, we recommend spot test and small area first. Do not use products containing abrasive substances.

Cleaning stainless steel components:

Avoid using cleansers containing any corrosive chemicals, e.g. bleach (containing chlorine). Do not use abrasive substances. Always remove the dirt using microfiber cloth to avoid damage of the protective coating.

Daily maintenance:

1. Remove the dirt using cloth dipped in warm water.
2. For best results, add a little dishwashing detergent.

Cleaning powder-coated components:

For the first cleaning stage, you need running water or wet sponge to help remove loose, heavy dirt. Do not use cleansers containing abrasive substances.

Next using cloth and cleanser-water solution (soap, dishwashing liquid) gently rub the cleaned surface.

Avoid using cleanser without water since it may result in damage of the cleaned surface, please keep in mind that large amount of water mixed with cleanser is desired.

Cleaning aluminum components:

While cleaning aluminum components use products that are acidic by nature, e.g. spirit vinegar, lemon. Do not use abrasive substances. Avoid using hard brush as this may cause scratches. It is recommended to use microfiber cloth.

Polishing the surface using circular movements. Use a clean, dry cloth.

Cleaning draft shield panes:

Select dissolvent depending on a dirt. Never soak the glass panes in alkaline solutions since they interact with glass and may cause damage. Do not use abrasive substances.

For organic dirt use acetone first, next use water or detergent. For other than organic dirt use diluted acid solutions (soluble salts of hydrochloric or nitric acid) or base solutions (ammonium or sodium base).

To remove ACIDS use protophilic solvent (sodium carbonate), to remove BASE use protogenic solvent (mineral acid of various concentration).

In case of heavy contamination use brush or detergent and avoid detergents containing large and hard molecules which could potentially scratch glass panes.

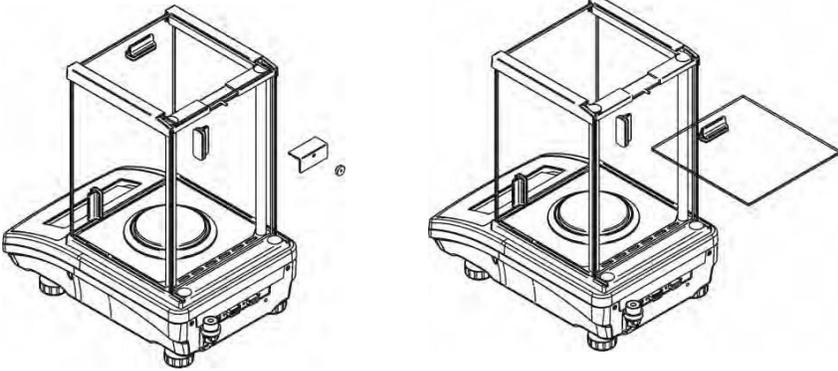
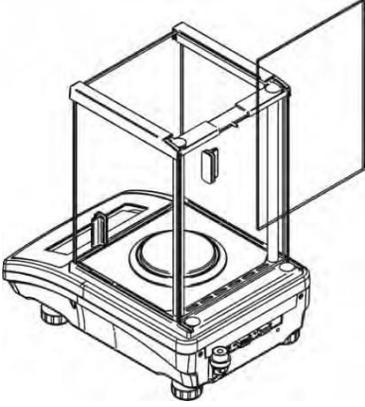
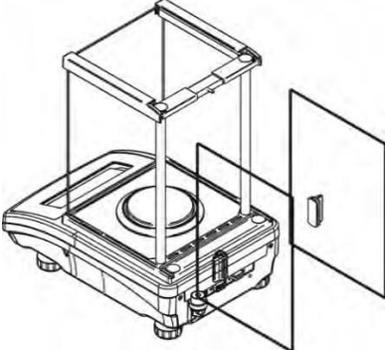
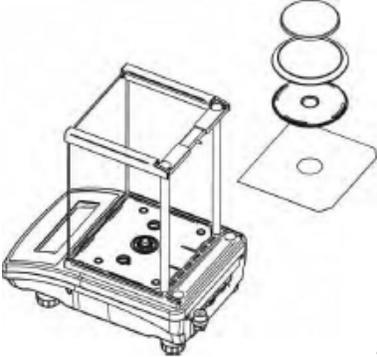
Only use a soft brush with wooden or plastic handle to avoid risk of scratches. Do not use a wire brush.

At the end of the cleaning process rinse the pane using running water first, and then distilled.

Rinsing is a necessary cleaning process, allowing to remove remaining soap, detergents and other cleansers from the panes prior their reinstallation.

Avoid drying the panes either using paper towel or forced air circulation since some fibers, grains or contamination of other type could permeate into the panes thus causing weighing errors. Do not use dryers when drying glassware, leave glass components on a rack to dry.

Glass Pane Removal Process:

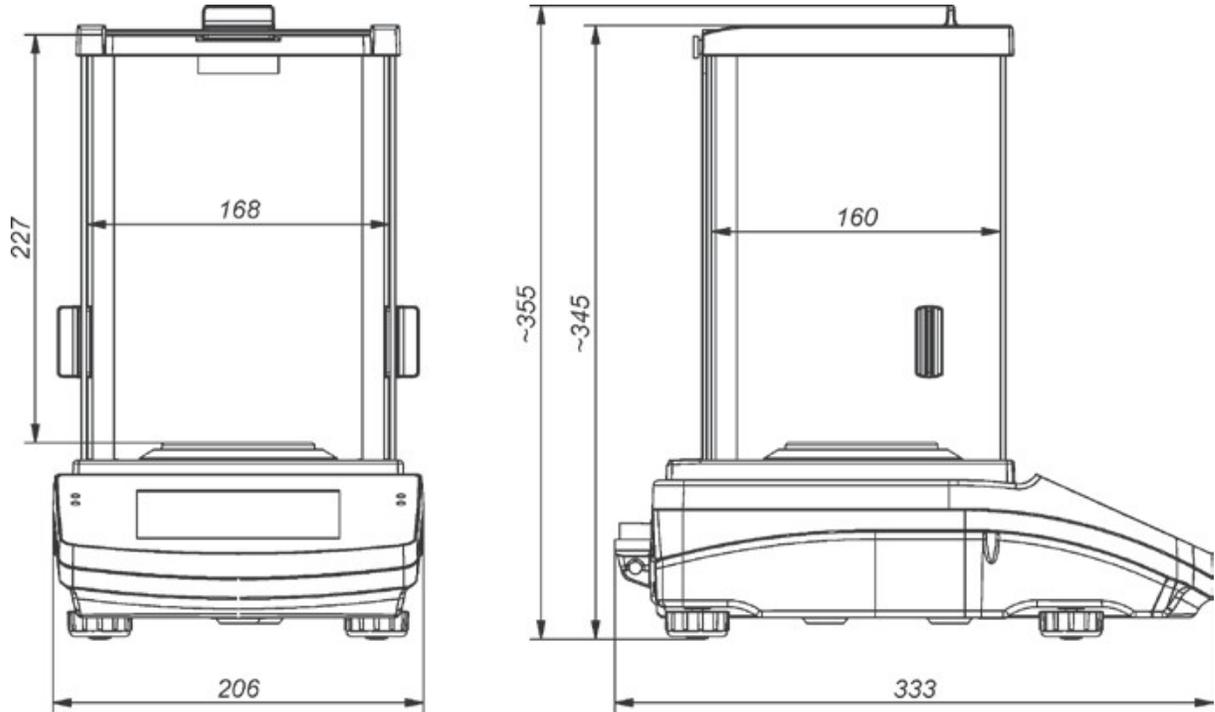
	<p>Undo and remove top pane protection, next slide the pane out of guide bar.</p>
	<p>Remove back pane.</p>
	<p>Remove side panes.</p> <p>Side panes shall not be swapped therefore it is necessary to remember which one is right, and which one is left to install them back properly.</p> <p><i>CAUTION! Do not remove the front pane!</i></p>
	<p>Remove the weighing pan and the draft shield bottom insert prior to cleaning. Clean the components after removed to ensure your balance mechanism is protected against accidental damage.</p>

All the operations should be done carefully. Pay special ATTENTION to the spot where the weighing pan was installed: dirt and other small elements might enter the balance construction through this opening, which might negatively influence the balance parameters.

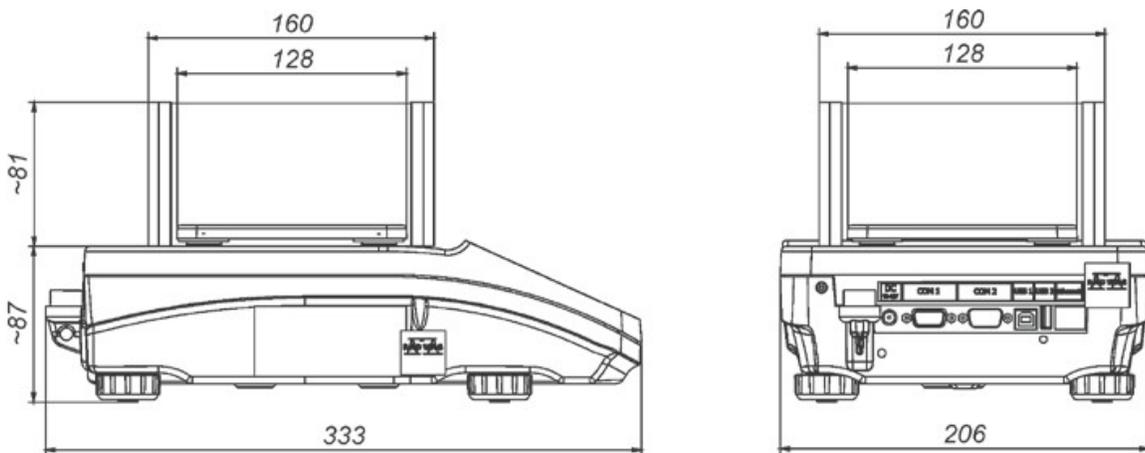
25. APPENDIX

25.1 DIMENSIONS

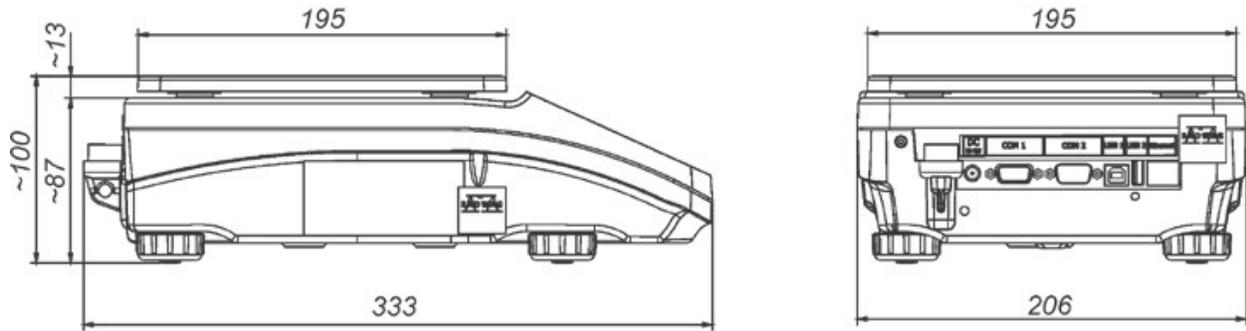
SAS.TD Series



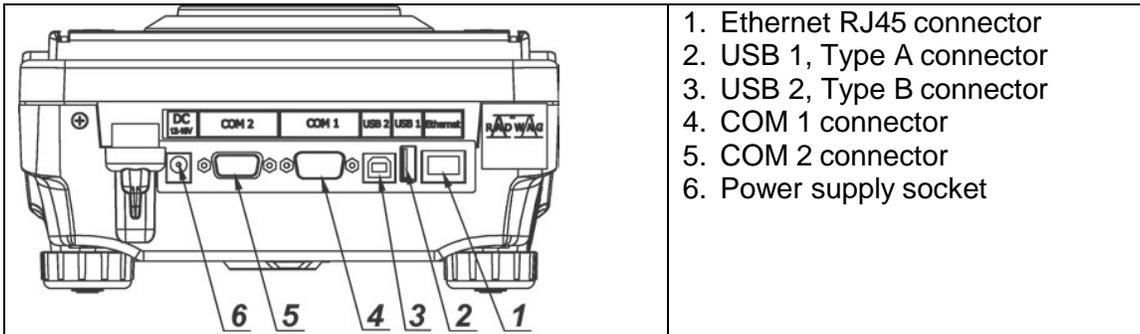
SPS.TD Series



SPS.TD Series



25.2 CONNECTORS



25.3 ERROR MESSAGES



Max weighing threshold exceeded
Unload the weighing pan



Min weighing threshold exceeded
Install weighing pan



Zeroing out of range
Press tarring button or restart the balance



Display capacity out of range
Unload the weighing pan



Tarring out of range
Press zeroing button or restart the balance



Zeroing/tarring time out of range
Weighing indication unstable



Start mass out of range
Install weighing pan