

5Y mass comparators

APP 10.5Y.KO mass comparator

APP 10.5Y.KO mass comparator - with a self-centring chamber

OPERATING MANUAL

IMKO-06-07-12-23-EN



www.radwag.com

Thank you for choosing and purchasing the RADWAG mass comparator. The device has been designed and manufactured to serve you for many years.
Please read this manual to assure its reliable operation.

DECEMBER 2023

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1. GENERAL INFORMATION

1.1. Intended use

5Y mass comparators are intended to determine mass differences between a reference weight (A) and test weight (B).

Mass comparators are usually used in weight calibrating laboratories and national metrological institutes.

1.2. Safety precautions

- Before you use the device, please read this Operating Manual carefully and use the product as per intended use.
- Do not use sharp tools (e.g. knives, screwdrivers, etc.) to operate the touch panel.
- Place weights in the centre of the mass comparator weighing pan.
- Load the weighing pan with weights whose gross mass is lower than the maximum loading capacity of the mass comparator.
- In case of a failure, unplug the comparator immediately.
- If the device is to be decommissioned, dispose of the product in accordance with currently applicable rules of law.
- Do not use the comparator in the explosive atmosphere. The comparator is not intended to be used in hazardous zones.

1.3. Guarantee terms

- A. RADWAG undertakes to repair or replace any elements that prove to have manufacturing or structural defects.
- B. It is allowed to specify defects of unclear origin and establish methods of eliminating these defects only in cooperation with representatives of the manufacturer and operator.
- C. RADWAG shall not be held responsible for any damage or losses arising from unauthorised or incorrect production works or servicing works.
- D. This guarantee does not cover the following:
 - mechanical damage arising from wrong operation of the mass comparator as well as thermal and chemical damage caused by atmospheric discharge, overvoltage of the power network or other random events,
 - damage to the mass comparator when it is used at variance with intended use,
 - damage to the mass comparator when the service technician identifies violation or damage to the label that secures the mass comparator against opening,
 - damage caused by liquids and natural wear,
 - damage to the mass comparator due to wrong adaptation or power system defect,
 - damage arising from overloading of the measuring mechanism,
 - maintenance works (mass comparator cleaning).
- E. The guarantee cover is lost when:
 - the repair is made out of the authorised service centre,
 - the service technician claims that unauthorised people interfered in the mechanical or electronic structure of the mass comparator,
 - other version of the operating system has been installed,
 - the mass comparator does not hold company's securing marks.
- F. Detailed guarantee terms can be accessed in the service sheet.

1.4. Mass comparator metrological parameters supervision

Metrological properties of the mass comparator must be checked by the operator at predefined time intervals. The frequency of checking is determined by the ambient conditions that the mass comparator operates in, types of comparison processes as well as quality management system.

1.5. Information in the operating manual

Please read this manual carefully before switching on and activating the mass comparator, even if you are experienced in working with such devices. The manual contains all information required for proper operation of the product; adherence to guidelines specified in the manual guarantees correct and reliable operation of the mass comparator.

1.6. Personnel training

The mass comparator must be operated and supervised only by trained operators that are experienced in using such devices.

2. TRANSPORTATION AND STORAGE

2.1. Delivery inspection

Inspect the packaging and device shortly after the delivery to check for any exterior signs of damage. If you identify any, contact the manufacturer's representative.

2.2. Packaging

Please keep all pieces of the packaging in order to be able to use them to ship the mass comparator in the future. Only original packaging of the mass comparator can be used for shipping. Before you pack the device, unplug all cables and remove moving parts (i.e. weighing pan, covers, inserts). All components of the mass comparator must be placed in the original box and secured against damage during transportation.

3. UNPACKING AND INSTALLATION

3.1. Place of installation, place of use

- The mass comparator must be stored and operated in rooms that are free from vibrations, shocks, draughts and dust.
- The ambient air temperature must range from +15 °C to +30 °C and its fluctuations must not exceed 0,5°C/12h.
- The relative humidity must be 40%+60% and its fluctuations must not exceed 2%/4h.
- The mass comparator must be positioned on a wall bracket or stable table that is free from vibrations and away from sources of heat.
- Special attention must be paid to magnetic properties of test weights because a strong magnet is an integral part of the mass comparator. Their magnetic value must be zero.

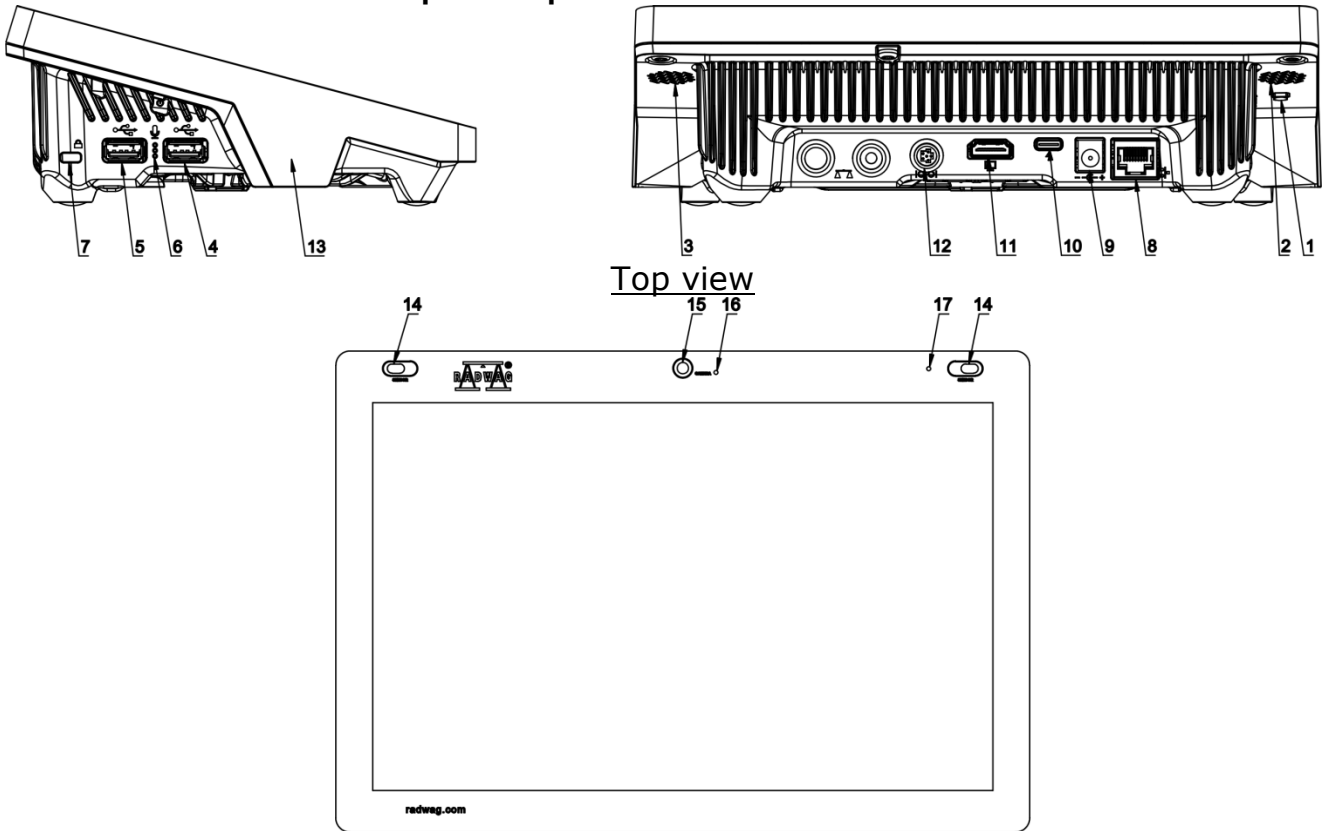
3.2. Unpacking

Slash a protective tape. Take the mass comparator out of the factory box. Remove all elements of the device from the box.

3.3. The list of standard delivery items

- Mas comparator with weighing chamber
- Ballast knob
- Masking plate
- Draft shield with weighing pan shield
- Weighing pan
- Supplementary weight set
- Weighing indicator
- Anti-draft chamber
- Power adapter

3.4. Description of ports



1	Hard restart or on/off key	10	Port port – USB-C
2	Left speaker	11	HDMI port
3	Right speaker	12	Media box port
4	USB-A port	13	RFID sensor
5	USB-A port	14	Reflective sensors
6	Microphone	15	Camera
7	Kensington Lock	16	Camera light
8	Ethernet port	17	Signal light
9	Power port		

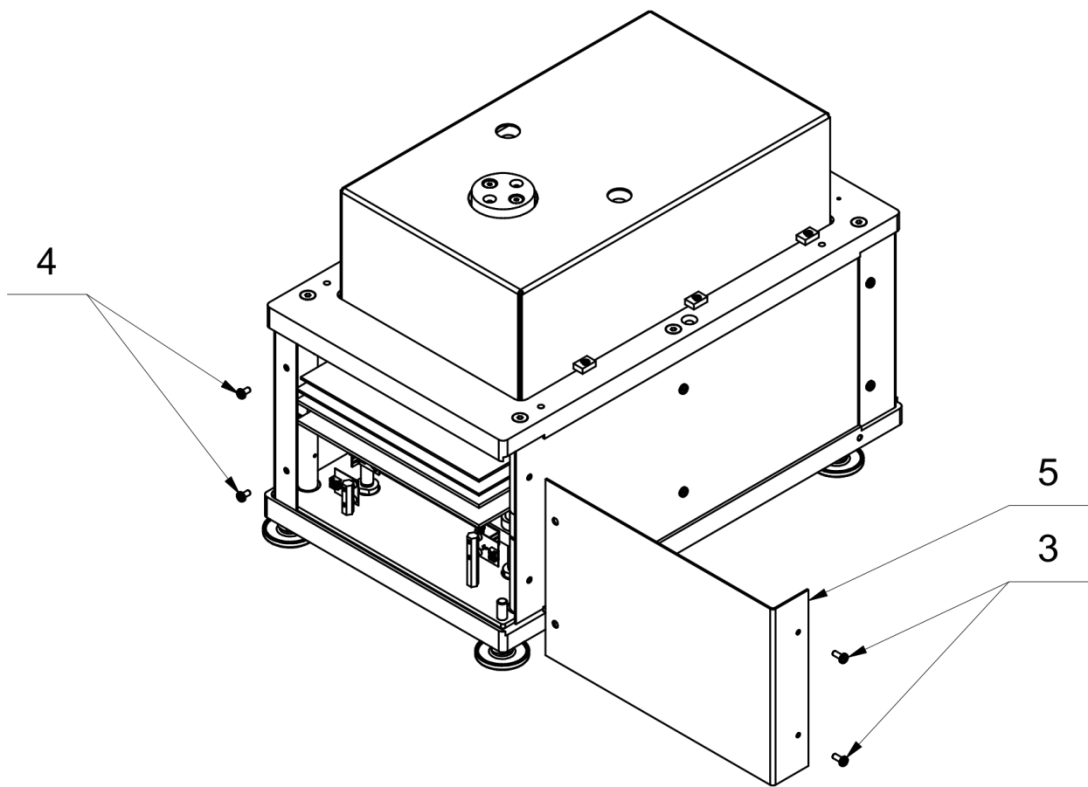
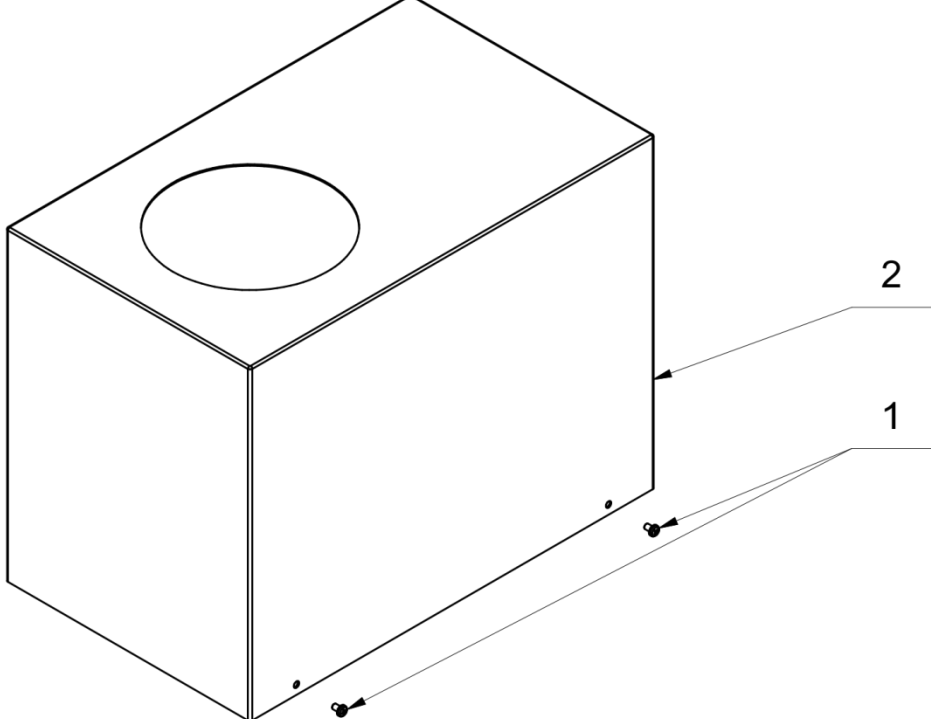
3.5. Comparator installation

Before you start installing the mass comparator, read the manual carefully to prepare the device for correct operation in accordance with steps presented therein.

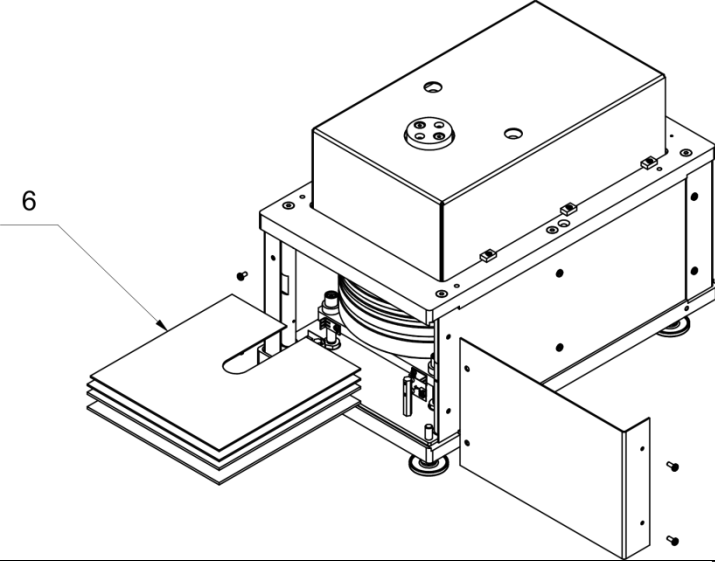
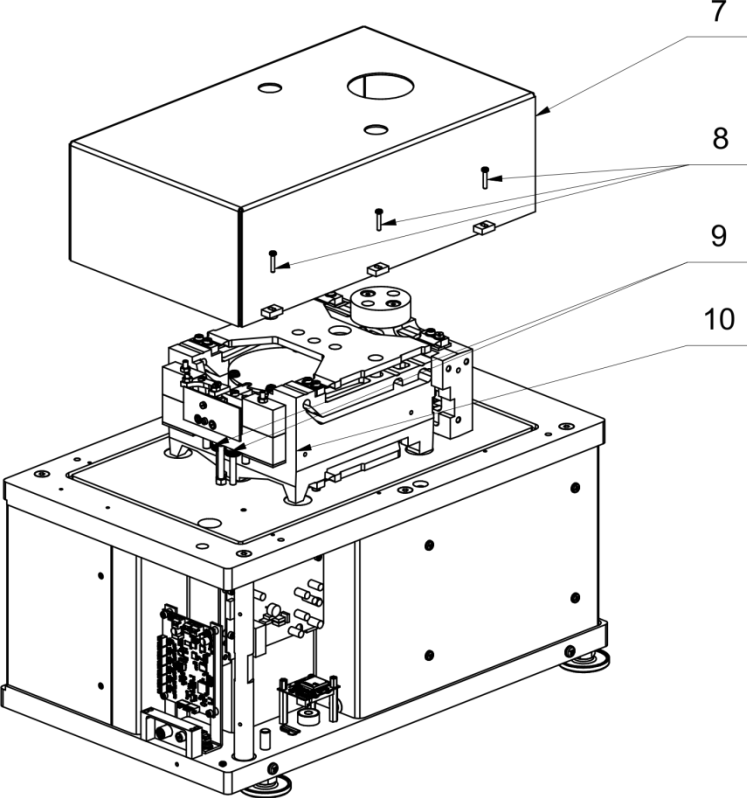
Note:

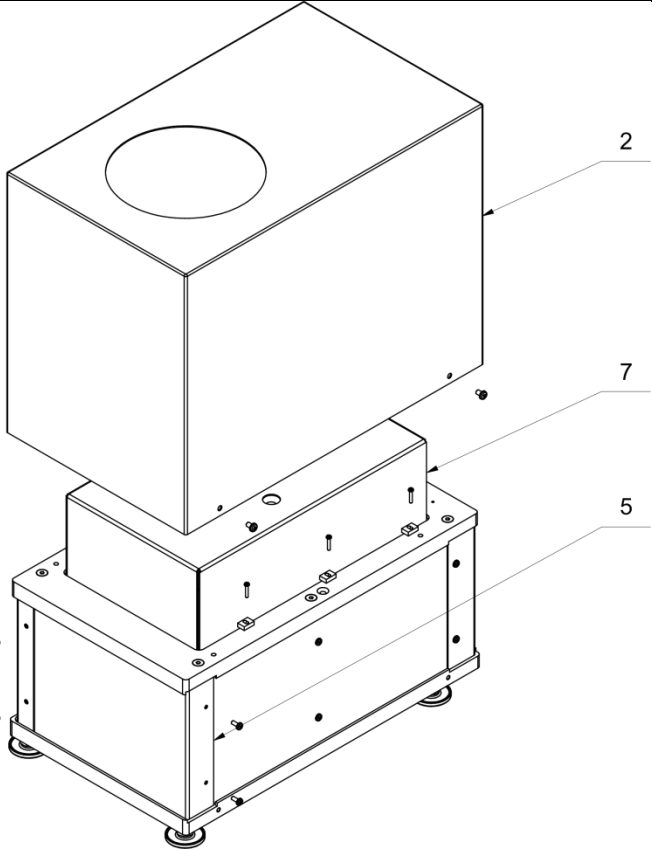
All steps must be taken carefully and gently in order not to damage the mass comparator mechanism.

Step 1	Comparator installation	APP 10.5Y.KO	*APP 10.5Y.KO*
1.1	Unscrew 4 M5 bolts (1) and carefully remove the housing (2)	↙	↙
2.1	Unscrew 2 M4 bolts (3) and 2 M4 bolts (4) and pull the cover (5) out	↙	↙

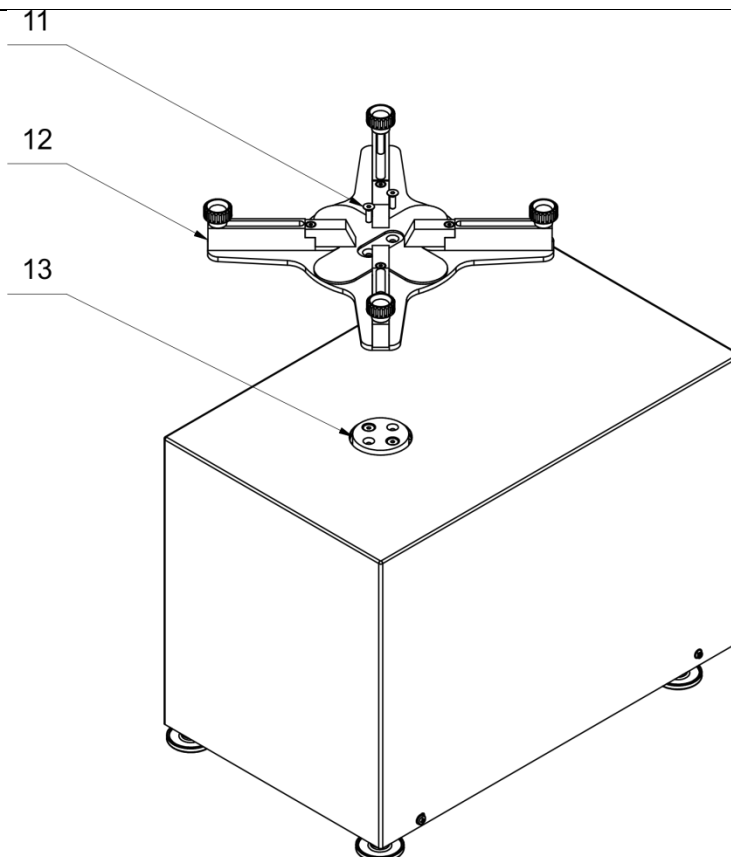


Step 1

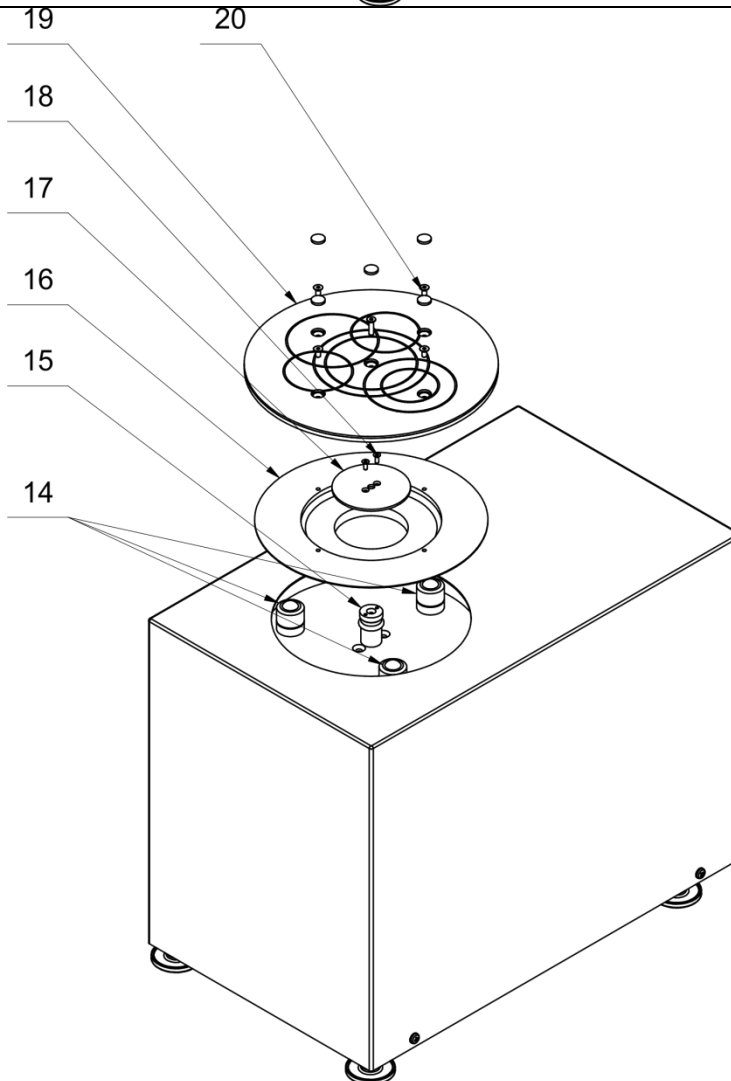
<p>Step 2</p>	<p>Comparator installation</p>	<p>APP 10.5Y.KO</p>	<p>*APP 10.5Y.KO*</p>
<p>1.2 Remove ballast weight separators.</p>		<p>◀</p>	<p>◀</p>
<p>2.2 Unscrew 6 M3 bolts (8) and remove the mechanism cover (7)</p> <p>3.2 Unscrew 2 knobs (9) to unlock the comparator mechanism (18)</p>		<p>◀</p>	<p>◀</p>

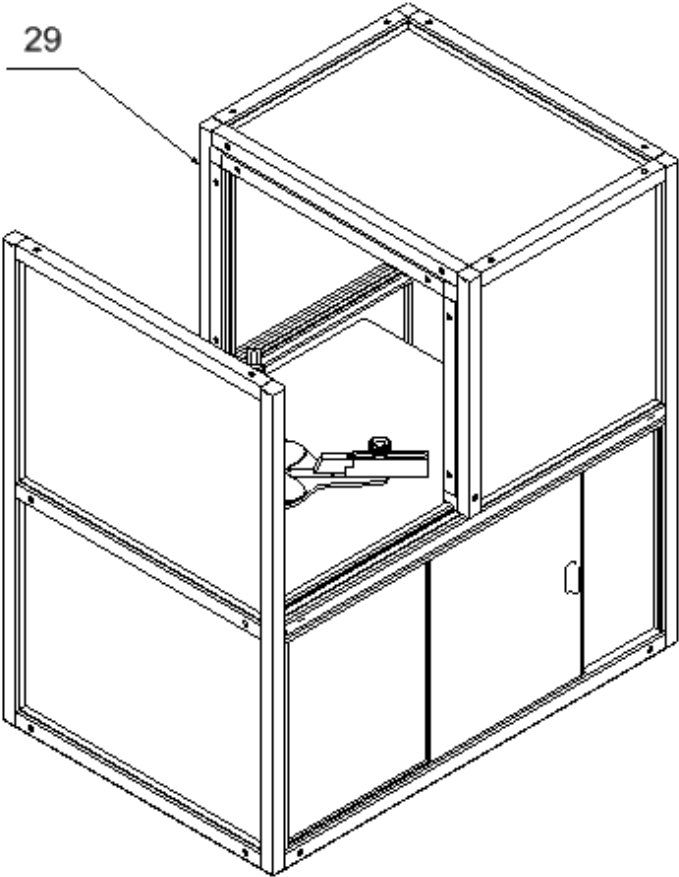
<p>Step 3</p>	<p>Comparator installation</p>	<p>APP 10.5Y.KO</p>	<p>*APP 10.5Y.KO*</p>
<p>1.3 Slide and screw the cover (5) in</p>		<p>↙</p>	<p>↙</p>
<p>2.3 Screw the cover to the mechanism (7)</p>		<p>↙</p>	<p>↙</p>
<p>3.3 Screw the housing (2) in</p>		<p>↙</p>	<p>↙</p>

4.3 Screw the cabinet unit (12) to the ring (13) using M5 bolts (12)



4.3* Put the track (15) onto rolling shanks (14). Next screw the lock (17) to the stopper (15) using M3 bolts (18) and screw the weighing pan (19) to the track (15) using M4 screws (20)



5.3 Connect the terminal and power adapter		✓	✓
6.3 Fix the anti-draft chamber (29)		✓	✓

APP 10.5Y.KO - special design with a self-centring chamber .

3.4. Mass comparator cleaning

Note:

If you clean the weighing pan while it is installed, you may damage the mass comparator.

1. Disassemble the weighing pan and other moving elements of the mass comparator. Take these steps carefully in order not to damage the mass comparator mechanism.
2. If possible, use a small keypad vacuum cleaner to remove dust from the weighing chamber.

Glass element cleaning:

Depending on the type of dirt, a suitable dissolvent must be used. Never immerse glass in strong alkaline solutions as the glass may be damaged by these solutions. It is forbidden to use abrasive agents.

With regard to organic residues, use acetone in the first place, and water and detergent afterwards. In the case of non-organic residues, use diluted acid solutions (soluble salts of hydrochloric or nitric acid) or base solutions (mostly sodium or ammonium base).

ACIDS must be removed through basic solvents (sodium carbonate), while BASES through acidic solvents (mineral acids of various concentration).

When it comes to stubborn dirt, use a brush and detergent. Avoid the detergents whose molecules are large and hard, and may therefore scratch the glass.

Before the procedure is finished, carefully rinse the glass with distilled water.

Always use soft brushes with a wooden or plastic grip to avoid scratching. Do not use wire brushes or brushes with a wire core.

The rinsing procedure is required to make sure all residues of soap, detergents and other cleaning liquids are removed from glass products before they are repositioned on the balance.

After initial cleaning, glass elements must be rinsed under running water and eventually distilled water.

It is not advisable to dry glass with a paper towel or stream of forced air as fibres or other pollutants may penetrate the glass pieces and eventually lead to erroneous weighing results.

Do not use electric dryers for measuring glassware.

As a rule, washed glass elements must be positioned on a shelf for free drying.

Powder-coated element cleaning:

At first clean elements with a humid large-pore sponge in order to remove loose and major dirt.

Do not use abrasive agents.

If it is insufficient, use a suitable cloth together with water-cleaning agent solution (soap, dishwashing liquid) to clean the surface. Use a regular pressure of the cloth against the surface of elements in question.

Never use a detergent without water, otherwise you may damage the coating. Use a large amount of water or water together with cleaning agent.

Aluminium element cleaning

To clean aluminium, use products rich in natural acids. The following agents will be perfect: synthetic vinegar, lemon. It is forbidden to use abrasive agents. Avoid using rough brushes that may easily scratch the surface of aluminium. A soft microfibre cloth will be the best choice.

Polished surfaces must be cleaned by making circular movements. Once you have removed dirt from the surface, polish the surface with a dry cloth to dry the surface off and make it glow.

Stainless steel element cleaning:

While cleaning stainless steel elements, follow the table below. The table shows types of pollutants and methods of removing them.

Fingerprints	Wash with a spirit or thinner. Wash with pure water and wipe it dry.
Oils,fats, greases	Wash with organic solvents, and then wash with warm water and soap or soft detergent. Rinse with pure water and wipe it dry.
Stains and heat tints	Wash with a soft scouring detergent. Make movements following the direction of the surface structure. Rinse with pure water and wipe it dry.
Strong discolouration	Clean gently, following the direction marked by the surface structure. Rinse with pure water and wipe it dry.
Traces of rust	Moisten with a oxalic acid solution and leave it for about 15-20 minutes. Then wash with warm water and soap or soft detergent. Rinse with pure water and wipe it dry.
Paints	Wash with a paint thinner and then wash with warm water and soap or soft detergent. Rinse with pure water and wipe it dry.
Surface scratches	Gently polish with an (iron-free) unwoven cloth, following the direction of the surface structure, and then wash with a soft scouring detergent. Rinse with pure water and wipe it dry.

ABS element cleaning:

To clean dry surfaces, clean cellulose or cotton clothes are used. They must not leave streaks or must not dye. You can also use water and cleaning agent (soap, dishwashing liquid, window cleaner). To clean the surface, apply a regular pressure of the cloth against the surface. Wipe the surface when it is already cleaned and then dry it off. Clean again if necessary.

In case of hard-to-remove dirt, such as glue, rubber, tar, polyurethane foam residues, etc., you can use special cleaning agents based on aliphatic hydrocarbon mix that do not solve the material. Before you use the cleaning agent, it is advisable to conduct a usability test. Do not use abrasive agents.

3.7. Connection to the mains

You can plug the mass comparator in only with the use of the original power adapter supplied. The power adapter rated voltage (specified in the rating plate) must correspond to the rated voltage of the mains.

To supply power to the mass comparator, plug the power adapter into the socket and then put the power adapter connector to the port at the back of the mass comparator housing.

3.8. Mass comparator temperature stabilisation time

Before you start measuring, wait for the mass comparator to stabilise thermally.

With regard to mass comparators that have been stored at a way lower temperature (e.g. in winter) before connection to the mains, they need around 12 hours to adjust and warm up properly. While the mass comparator is stabilising thermally, the display may show various values. It is advisable to make sure potential fluctuations of the ambient temperature in the place of using the mass comparator are minor and slow.

3.9. Connection of the additional equipment

Only the additional equipment that has been recommended by the mass comparator manufacturer can be connected. Before you connect the additional equipment or change it (printer, PC, PC USB-type keyboard or additional display unit), unplug the comparator from the socket. After connecting devices, you can supply power to the comparator again.

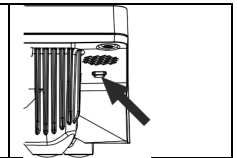
4. MASS COMPARATOR START-UP

- Supply power to the product.

Note: The mass comparator is supplied with two ports for the power adapter. One port is located in the readout head and the other at the back of the weighing unit. The device can be supplied with power both from the readout head and weighing unit, but it is forbidden to do so from both sides at a time, using two power adapters. Such a connection may damage the device and power adapters.

- The operating system and RADWAG software start loading after a while. While the program is being launched, a signal light and LED lights will flash in the lower frontal part of the readout head.
- Once the start-up procedure is finished, the home screen will show up.
- The device activates with the unlogged operator (no operator). To start working, log in (the login procedure is described further in the manual).

If the software crashes while operating, perform the so-called hard reset. To do so, press and hold the head key for about 5 seconds. The program will restart and the device will reactivate.



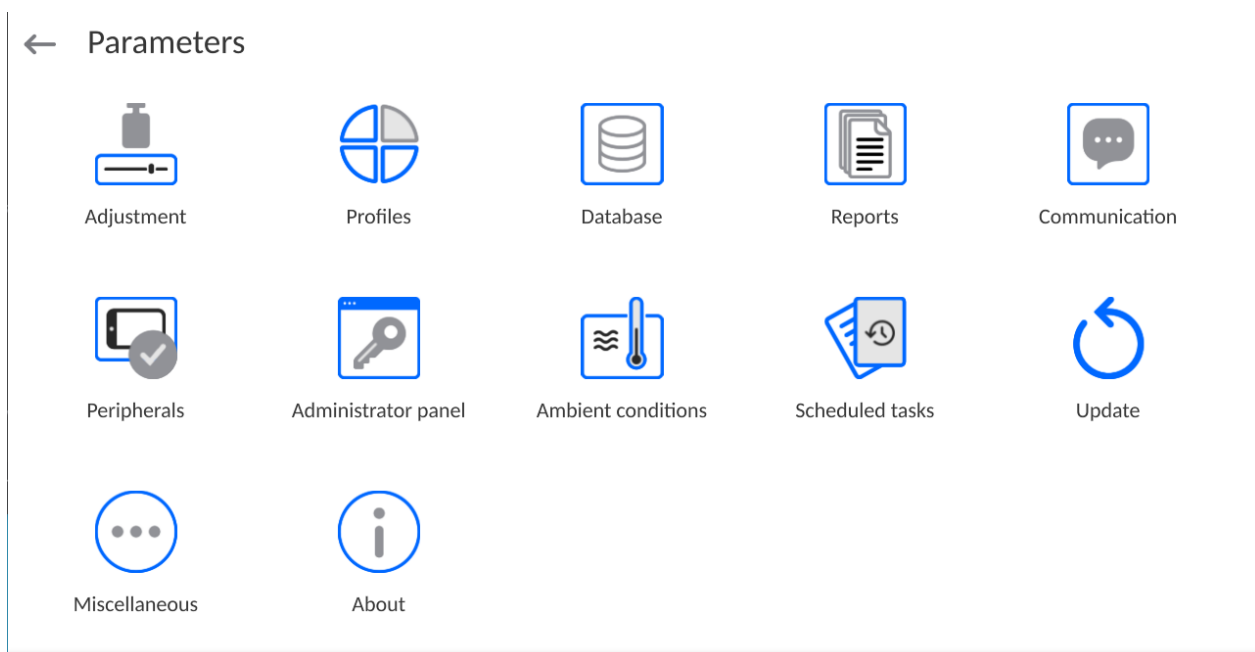
5. PROGRAM STRUCTURE

The home screen of the program is divided into functional groups. Each group holds parameters divided by themes. The description of each group can be accessed further in the manual.

List of menu groups - Parameters

To gain access to the main menu, press  in the lower bar of the screen.

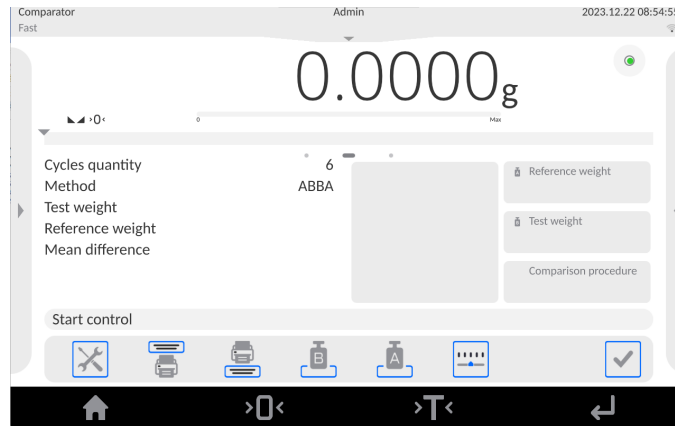
The menu contains parameters related to settings, functions and profiles.



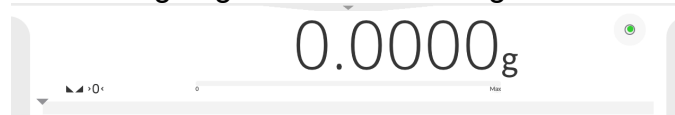
6. WEIGHING WINDOW

The home screen of the application can be divided into 5 fields:

- At the top of the screen you can find information on a currently used working mode, logged operator, date, time, active connection to the computer.



- Below is a box with a weighing result and levelling status.



- The field contains additional information related to ongoing operations.



Note:

The information in this field is freely programmable. The method of defining it is described further in the manual.

- The on-screen functional keys are showed below:



Note:

You can define on-screen functional keys. The method of defining them is described further in the manual.

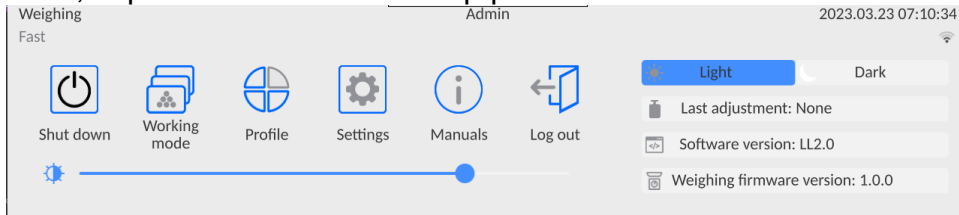
- Fixed functional keys are at the bottom of the screen:



7. LOGIN

To gain full access to operator's parameters and database edition, you must log in as **<Administrator>**.

To do so, expand the menu in the top part of the screen.



First login:

- After expanding the top menu, press **<Log in>** field and the operator base window with **<Admin>** item will show up.

← Operators



- By default this operator is not assigned any password. Select the password to automatically go to the home screen of the program.

NOTE: Once the first login procedure has been completed, at first enter operators and assign them with relevant permission levels and unique access passwords (procedures are described further in the manual, see point 9 and 28.2).

When you log in next time, select the operator from the list and enter password to start working with the specific permission level.

Logout:











- Expand the menu in the top part of the screen and press **<Log out>** field.

After collapsing the top menu in the top bar of the screen, the **<Not logged>** inscription will show up in the place of the logged operator name.

8. NAVIGATION IN THE MASS COMPARATOR MENU

It is very intuitive and simple to navigate in the menu. Thanks to a display with a touch panel, operation of the program is very easy. Press the on-screen key or field on the screen to activate the assigned operation or function.

8.1. Mass comparator keypad

	Go to main menu
	Confirm changes
	Return to previous window and do not change parameter
	Add item to database
	Search item in weighing base by date
	Search item in database by name
	Search item in database by code
	Print items from database
	Select variables for printout template from list
	Return to previous menu level

8.2. Voice commands

The mass comparator allows performing several operations through voice commands. These are the following operations: tarring, zeroing, measurement printout/saving. The commands must be expressed in English, in a suitable sequence. The structure of particular commands can be accessed below.


Tarring: **ellipsis** [please] (tare | tar | terre) [the] device

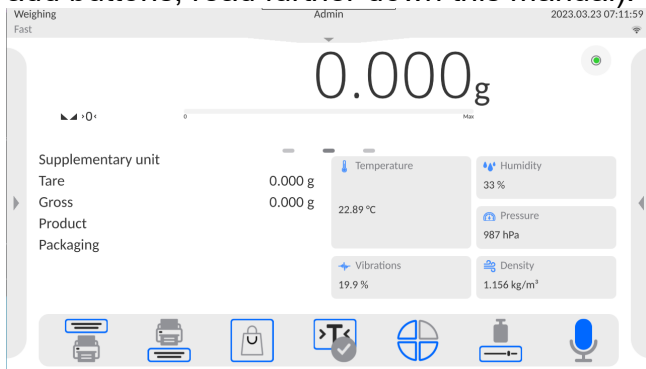
Zeroing: **ellipsis** [please] zero [the] device


Printout/Saving: **ellipsis** [please] save [the] (mass | measurement | mass measurement)

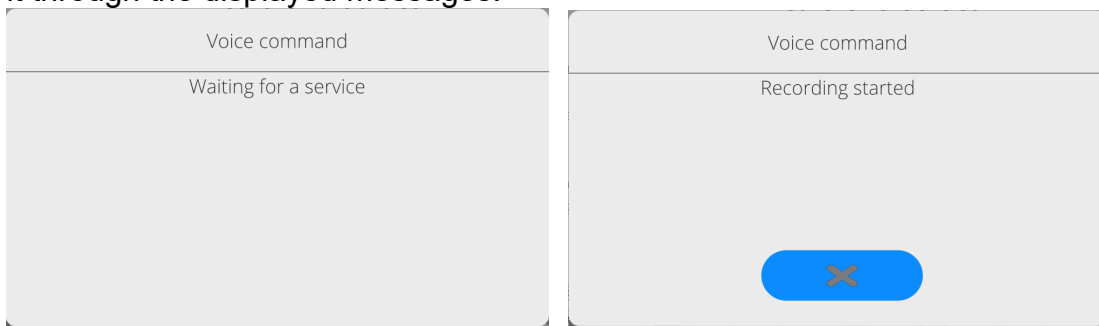
The method of expressing the command: black text - obligatory, green - optional, and red – one of them is obligatory, e.g. for Print command: **ellipsis save mass**.

Procedure:

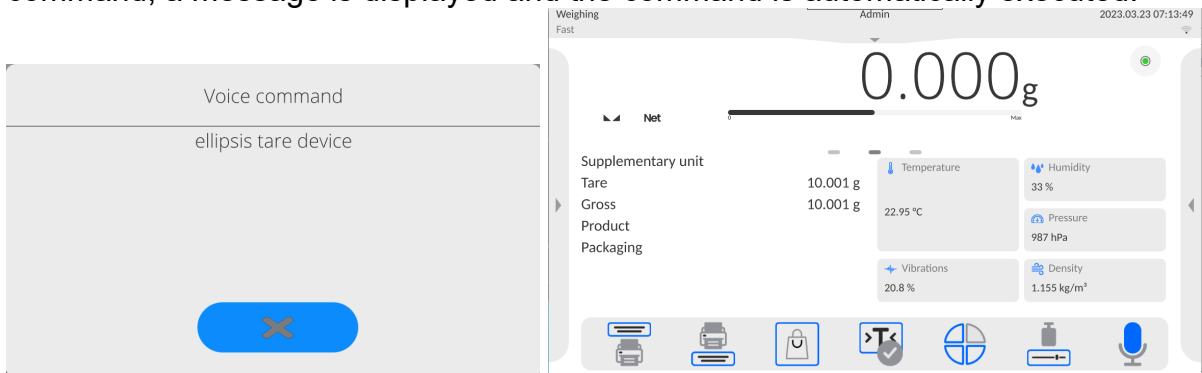
1. Place the  button for activating voice commands on the button bar (for how to add buttons, read further down this manual).



2. Press .
3. The voice command recognition procedure is initiated and the user is informed about it through the displayed messages.





4. Say the command as described above.
5. If the command is spoken correctly and the balance program recognizes the command, a message is displayed and the command is automatically executed.



8.3. Return to Weighing

Modifications introduced into balance memory are automatically saved upon return to weighing operation.

Procedure:

- Press  button repeatedly, keep pressing it until you see the home screen.
- Press  button (top bar), the home screen is displayed immediately.

9. COMPARISON

Place the test weight on the weighing pan of the mass comparator. When ▲ marker shows up on the left side of the screen, you can read the weighing result.

To save/print the weighing record out, press <PRINT> key:

- in verified mass comparators – only a stable weighing result (▲ marker)

9.1. Selection of comparison unit

To change the comparison unit, press the unit in the screen, next to the measurement result. Click the unit to display a list of available units. Select one of them to make the program automatically calculate the value for a specific unit.

Options:

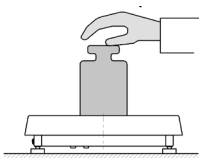
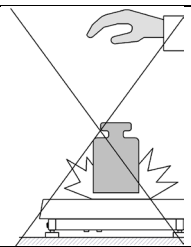
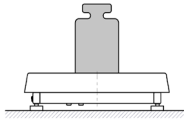
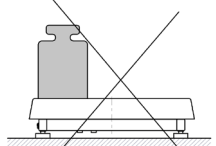
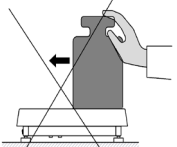
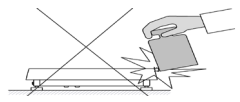
unit	designation	verified comparator	unit	designation	verified comparator
gram	[g]	yes	Taele Hong kong	[tlh]	no
milligram	[mg]	yes*	Taele Singapore	[tls]	no
carat	[ct]	yes*	Taele Taiwan	[tlt]	no
pound	[lb]	no	Taele China	[tlc]	no
ounce	[oz]	no	Momme	[mom]	no
ounce troy	[ozt]	no	Grain	[gr]	no
pennyweight	[dwt]	no	Newton	[N]	no
			Tical	[ti]	no


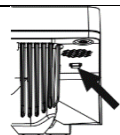
* - Available units depending on the type of mass comparator.

9.2. Correct comparison principles

To assure a long-term use and correct mass measurements of weights in question, do as follows:

- Activate the mass comparator without any loads on the weighing pan




▪ YES		NO		YES		NO	
							
Load the weighing pan steadily avoiding shocks: Go to Setup/Misc./Vibrations detection parameter and enable control of weighing pan loading (for detailed information, read section 18.8).				Place weighed loads centrally on the weighing pan.			
NO		NO					
							
Avoid side loading, in particular side shocks.							

Do not unplug the balance from the mains between measurement series. It is recommended to turn off the display by pressing the button located in the top menu.	
To turn the balance on, press the button on the indicator. Once the start-up procedure is complete, the balance is ready for next weighings.	

9.3. Levelling



The mass comparator has been equipped with the AutoLEVEL System that is responsible for monitoring the mass comparator level. Thanks to this solution, you can constantly keep track of the mass comparator level while it is operating, which is signalled in the top right corner of the screen. If the level changes, the system informs you about it in the screen by changing the position of the level indicator and/or activating the alarm and entering the mass comparator level settings box.

Mass comparator levelling procedure:



- Press <  > levelling icon in the top right corner of the screen.
- The control panel of the levelling function will be displayed.
- Level the device by turning its legs as showed in the screen through pictograms <  >
– level point will move towards the centre of the circle.
- When the point reaches the inner circle of the „level view”, the colour will turn from red into green  – which represents correct levelling.

Note: The mass comparator is equipped with the Automatic Level Control unit. The description of its operation can be found further in the manual.

9.4. Zeroing

To zero the mass indication, press  key. The screen will show a zero value and the following symbols: ± 0 and . Zeroing is tantamount to determination of a new zero point, treated by the mass comparator as a precise zero. It is possible to zero the value only if displayed values are stable and when the weighing pan is loaded.

9.5. Tarring

To determine the net mass, put the load packaging on. When the value stabilises, press  key. The screen will show the zero value of the mass and the following symbols: **Net** and . After removing the load and packaging, the screen will show the value that is a total of tarred masses with a minus sign. You can also assign the tare value to the product in the database. If you do so, the mass comparator will download the tare value from the database automatically when you select the product.

Note: Tarring a negative value is disallowed. An attempt to tare the negative value will cause the error message to pop up. If this is the case, zero the mass comparator and tare again.

How to enter tare manually

Procedure:



- Irrespective of the working mode, press quick-access key.
- A numerical keypad will be displayed.
- Enter tare and press key.
- The comparator will return to the comparison mode and the value of the tare with a minus sign will be displayed in the screen.

How to delete tare

The tare value displayed in the screen can be deleted by pressing the ZERO key on the mass comparator housing or by using <Disable tare> programmable key.

Procedure 1 – after removing the tarred load from the weighing pan:

- press ZERO key,
- NET marker will be deleted. A new zero point of the mass comparator has been determined.

Procedure 2 – when the tarred load is on the weighing pan:

- press ZERO key,
- NET marker will be deleted. A new zero point of the mass comparator has been determined,
- when the tare value exceeds 2% of the maximum load, the message – Err (unfeasible operation) – will be displayed.

Procedure 3 – when the tarred load is on the weighing pan or is removed from the weighing pan:



- press <Disable tare> programmable key,
- NET marker will be deleted,
- the tare value will be displayed,

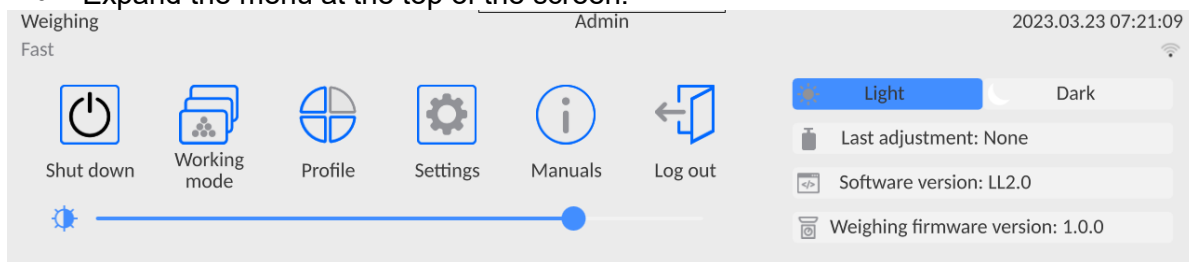


- press <Restore tare> key to restore the last tare value.

9.6. Working mode activation

To change the working mode, follow the steps below:

- Expand the menu at the top of the screen.

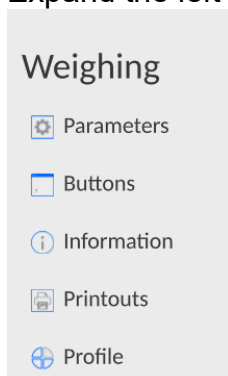


- Press <Working mode> item.
- You will see a list of modes.
- Select **<Comparator>** mode to return to the home screen. The top bar will show a name of the specific working mode.
- At the same time the following message will be showed in the working window: **<Start control>**.
- Select the internal and external load (depending on the type of comparator) suitable for the mass of the weight in question.
- Load the weighing pan with a relevant reference weight.
- Zero/tare the comparator indication

9.7. Working mode parameters

Each working mode is related to programmable parameters that determine its operation. To access these parameters, follow the steps below:

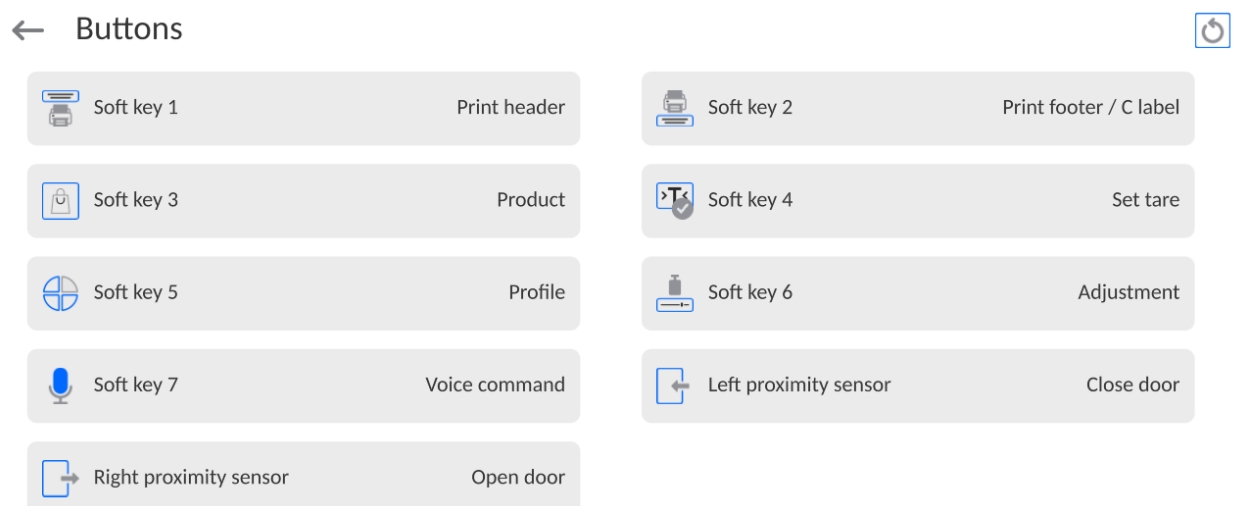
1. Expand the left side menu.




2. The following menu items will be displayed:
 - <Parameters> - additional mode-related options.
 - <Keys> - quick-access keys to be defined.
 - <Information> - selection of information that will be showed in the Info field.
 - <Printouts> - selection of type and content of printout.
 - <Profiles> - working profiles to be defined
3. Press a relevant menu and select the item that is to be modified.

The description of basic parameters available in <Settings> menu can be accessed further in the manual. *Additional weighing parameters.* Other parameters related to specific modes are described in sections dedicated to presentation of these modes.

9.8. Quick-access keys, proximity sensors

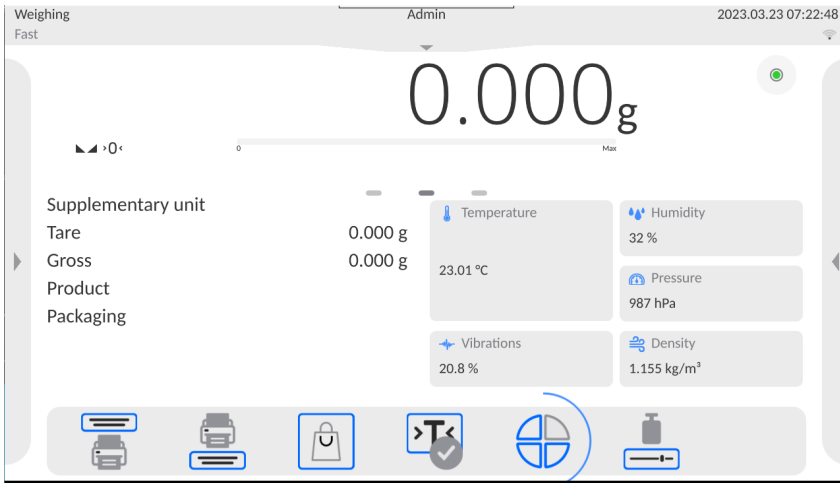


You can quickly restore default key arrangement in the bottom bar of the display, to do it click  button (top right-hand corner).

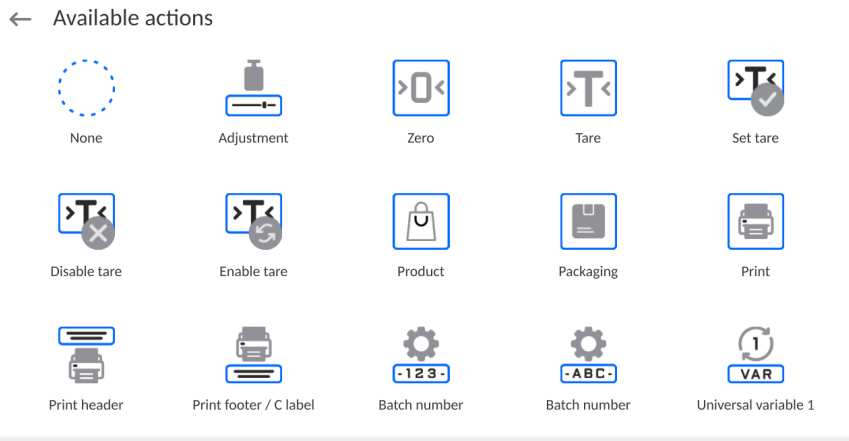
You can define 7 keys that will be displayed in the lower bar of the screen. After assigning a function to the key, a relevant icon shows up in the lower navigation bar of the home screen. Availability of keys depends on the working mode. The list of keys can be

found in the ATTACHMENT B to the manual. It is the so-called quick-access key for the most frequent operations.

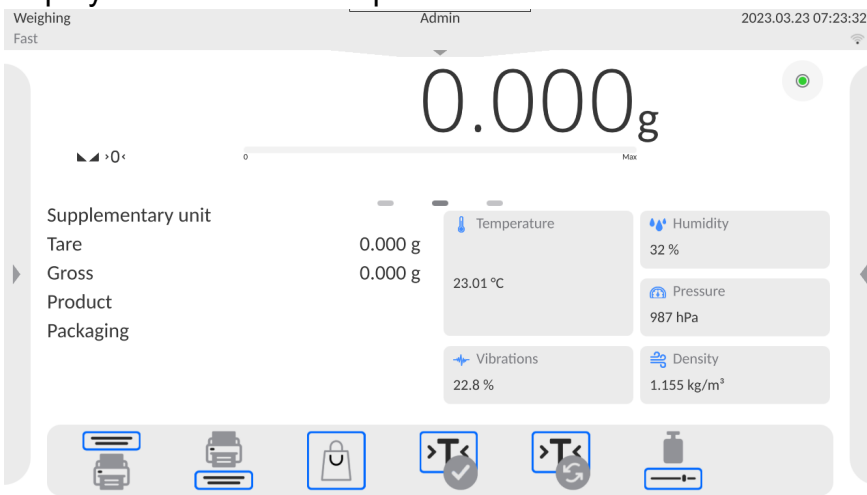
Another way of adding or changing the key is to press and hold the key bar field for about 3 seconds.



The program will automatically display the available keys box



Click the key to be added and you will return to the home screen. The specific key will be displayed in the activated place.



9.8.1. Proximity sensors

The mass comparator is equipped with two proximity sensors that allow controlling the device with no need to press keys on the housing or touch screen.

There are four motions near sensors that the program can detect:

1. Putting the palm close to the left sensor <Left proximity sensor>.
2. Putting the palm close to the right sensor <Right proximity sensor>.

9.9. Working mode - Comparator

With the <Comparator> working mode, you can determine the standard deviation for a series of measurements. The standard deviation can be determined on the basis of ABBA, ABA or AB measurement series, where:

A – (reference) mass standard

B – test mass standard

The number of measurements for the series and ABBA, ABA or AB method are determined by the operator in the <Working modes> parameters group in <Comparator> submenu.

Results are counted by the program as per tables and templates below:

For ABBA series

Item	A	B	B	A	$D = B_{sr} - A_{sr}$
1					D_1
2					D_2
3					D_3
4					D_4
5					D_5
.....					...
n					D_n

For ABA series

Item	A	B	A	$D = B - A_{sr}$
1				D_1
2				D_2
3				D_3
4				D_4
5				D_5
.....				...
n				D_n

For AB series

Item	A	B	$D = B - A$
1			D_1
2			D_2
3			D_3
4			D_4
5			D_5
.....			...
n			D_n

The standard deviation can be calculated by determining the following:

- differences in ABBA or ABA indications for each group of measurements:
- the average value of differences in ABBA or ABA indications:

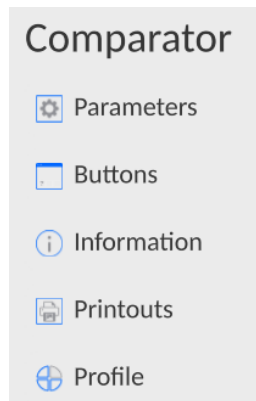
$$\bar{D}\bar{X}_i = \frac{1}{n} \sum_{i=1}^n D_i$$

- standard deviation:

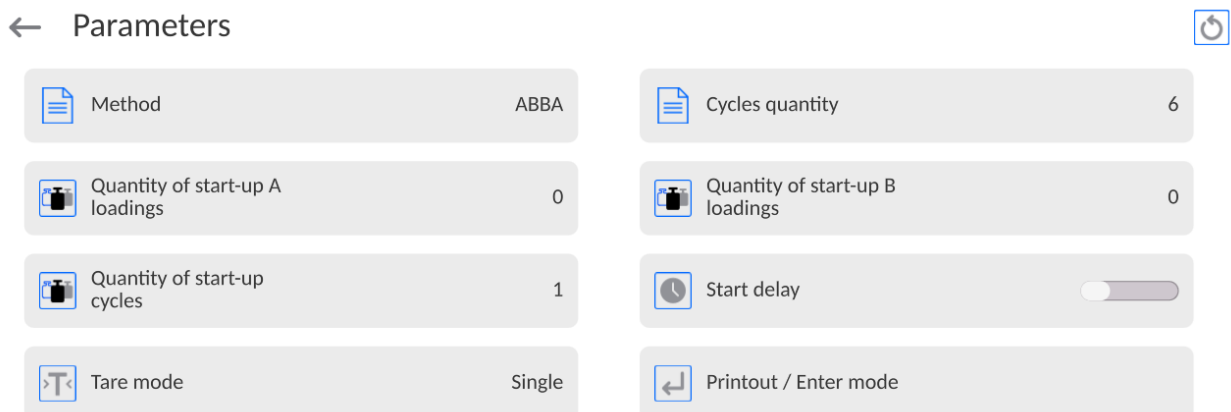
$$s = \sqrt{\frac{1}{n} \sum_{i=1}^n (D_i - \bar{D}\bar{X}_i)^2}$$

9.10. Selection of measurement method in mass comparator

The mass comparator working mode settings contain special functions adapted to clients' individual needs. The working modes can be configured in **<Working modes>** submenu. To enter **<Working modes>** submenu, expand the right side menu.



Next click **<Settings>** key to see a working mode edition window in the screen:




To change the type of weight calibration method, press **<Method>** key and select the desired method:

- ABBA
- ABA
- AB
- B


9.11. Declaration of cycle number

Procedure:

- Select **<Comparator>** and press **<Parameters>**
- Press **<Number of cycles>** key and enter the number of measurement cycles, then press  key to confirm.


9.12. Declaration of A standard start-up placements

Procedure:

- Select **<Comparator>** and press **<Parameters>**
- Press **<Number of A standard start-up placements>** key and enter the desired number of measurement cycles, then press  key to confirm.


9.13. Declaration of B standard start-up placements

Procedure:

- Select **<Comparator>** and press **<Parameters>**
- Press **<Number of B standard start-up placements>** key and enter the desired number of measurement cycles, then press  to confirm.

9.14. Declaration of the number of start-up weighing cycles

Procedure

- Enter **<Working modes>** parameters group,
- Select: **<Comparator>**, then **<Settings>** and **<Number of start-up weighing cycles>** to open **<The number of start-up weighing cycles>** edition box with an on-screen keypad,
- Enter the desired value and press  to confirm.

9.15. Start delay

- Enter **<Working modes>** parameters group,
- Select: **<Comparator>** and then **<Parameters >** and **<Start delay>** to open the settings edition box,
- Enter the desired value: YES – when the comparison procedure starts, a window will open and you will be required to enter the period of time corresponding to the delay. When the preset period of time expires, the comparison procedure will start. NO – the procedure starts instantly after its initiation. After selecting the suitable option, the selection box will close and the description in the parameter will be modified.

9.16. Tare mode

- SINGLE,
the value is saved when you single click the TARE key. Click again to set a new tare value. Selecting the product or packaging which the tare value has been assigned to causes the previous tare to be deleted
- SUM OF CURRENT,
currently entered tare value for the product and packaging are summed up (as arises from the selection of the product and packaging from the database) and it is possible to add the manually entered tare value to this sum. When you set the tare value for the product or packaging again, the tare value that has been entered manually will be deactivated,
- SUM OF ALL,
all previously entered tare value are summed up,
- AUTOTARE
Principle of operation:
Every first measurement is tarred when the value is stable. The NET inscription will be

displayed. Now you can specify the net mass. After unloading and returning to the autozero zone, the program automatically deletes the Tare value.

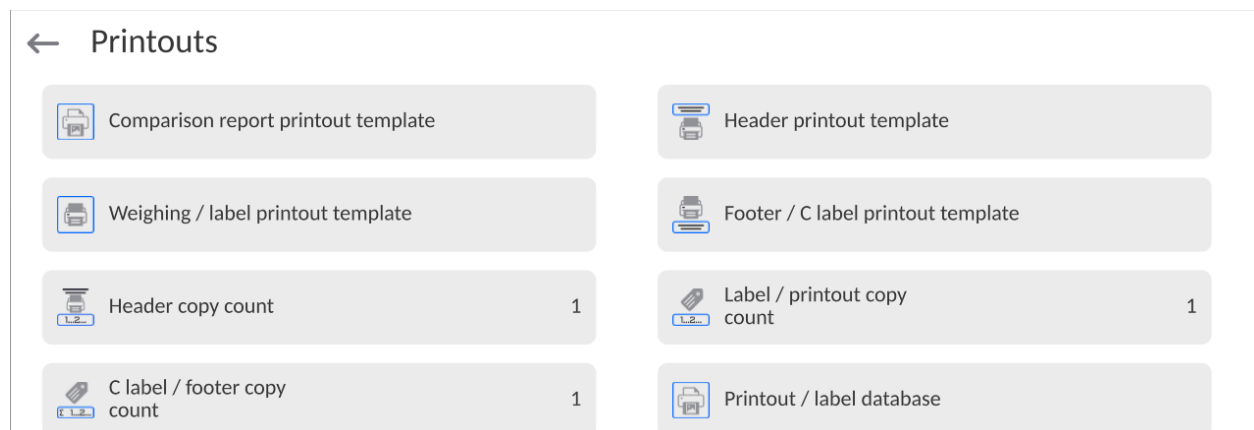
- EVERY MEASUREMENT:
it is possible to tare before every measurement in the series.



9.17. Printout/approval mode

- PRINTOUT/APPROVE KEY
 - Never – inactive printout
 - First stable – first stable measurement is recorded
 - Every stable – all stable measurements are accepted
 - Every – printing all measurements (stable and unstable), for verified comparator only stable results (as in <Every stable>)
- AUTOMATIC MODE
 - None – inactive printout
 - First stable – the first stable measurement is recorded after loading the weighing pan, another stable measurement is recorded after unloading the weighing pan and after the value drops below the preset threshold and after loading the weighing pan again
 - Last stable – only the last stable measurement is accepted, the last stable measurement that occurred before unloading the pan is recorded. The record is made after unloading the weighing pan and after the value drops below the preset threshold.
 - With interval – this option specifies how often the result is to be sent for printing
- THRESHOLD
mass value for automatic printout, set in grams.
- INTERVAL
time unit value for weighing result printout.
- PRINT REPORT
Yes – automatic printout of the report after the end of calibration
No- report printout blocked
- PRINT INDIRECT RESULTS ON ONGOING BASIS
Yes – automatic printout of every indirect measurement
No- blocked printout

9.18. Printouts

<Printouts> menu consists of three setting units. The first is standard printouts: <Header printout template>, <Weighing record/label printout template>, <Footer/C label printout template>, and the second is non-standard printouts: <Printout/label base>, and third is dedicated to parameters that allow setting the printed quantities: header, weighing record and footer and single clicking the particular printouts call key.



Standard printouts consist of three units with various variables. For each variable, you need to set  – if it is to be printed out or  – if it is not to be printed out. You can quickly change selections of variables for printout using keys in the top right corner of the screen.




	Unselect all variables.
	Select all variables.
	Restore default selection.



Procedure:

1. Press the editable template name field (Header – Weighing record – Footer) and select variables to be printed out.
2. **If you select the non-standard printout, create it.**

<u>HEAER PRINTOUT TEMPLATE</u>	<u>WEIGHING RECORD/LABEL PRINTOUT TEMPLATE</u>	<u>FOOTER/C LABEL PRINTOUT TEMPLATE</u>
<ul style="list-style-type: none"> – Non-standard printout – Dashes – Working mode – Date – Time – Comparator type – Comparator ID – Operator – Full name – Levelling – Client – Warehouse – Product – Packaging – Universal variable 1...5 – Empty line – GLP report – Non-standard printout 	<ul style="list-style-type: none"> – Non-standard printout – N (measurement number) – Date – Time – Levelling – Client – Warehouse – Product – Packaging – Series number – Batch number – Universal variable 1...5 – Net – Tare – Gross – Current result – Additional unit – Mass – MN-Method – Reference tare – Minimum sample – Minimum sample status – Mass for titrator – ID – Non-standard printout 	<ul style="list-style-type: none"> – Non-standard printout – Working mode – Date – Time – Comparator type – Comparator ID – Operator – Full name – Levelling – Client – Warehouse – Product – Packaging – Universal variable 1...5 – Dashes – Empty line – GLP report – Signature – Non-standard printout

HOW TO OPERATE PRINTOUTS – BASIC RULES

1. Press  key on the housing to print out variables showed in WEIGHING field of the standard printout if the have the attribute =  (see: list of variables above).
2. The variables with the attribute = , showed in the HEADER or FOOTER will be printed out **ONLY** when you press **Print Header** or **Print Footer** icon. These icons must be placed in the lower bar of the screen as quick-access keys. (To get familiar with the icon placement procedure, see point 9.8 of the manual)

	
Print information from the header	Print information from the footer

Note:


Units for mass printout:

- *Net – main (adjustment) unit*
- *Tare – main (adjustment)unit*
- *Gross – main (adjustment) unit*
- *Current result – currently displayed unit*
- *Additional unit – additional unit*
- *Mass – main (adjustment) unit*

Non-standard printout

The printout may contain TEXTS and VARIABLES (that are downloaded from the program upon printout). Every printout is a separate template, has its unique name that identifies it and is saved in the database.

Procedure:

1. Press <Non-standard printout> field.
2. Press <Add>  key to open another box with the following data:
Name/Code/Template.
3. Enter the name and code for the printout.
4. Press <Template> key.
5. You will see a keypad box that allows you to edit the printout.
6. Use the keypad to design the printout; the printout may include texts and variables.

Note:

- *You can add printouts from the external memory stick by importing already configured texts, using a USB port.*
- *The printout name is a ONLY NAME and does not represent its content.*
- *The method of designing the non-standard printout is described in point 13.10 <Printouts>.*

9.19. Report on comparison processes

After the end of every comparison procedure, a report is generated. It is saved in **<Comparison reports>** database. The name of the report file takes a form of date and time for the density determination procedure.

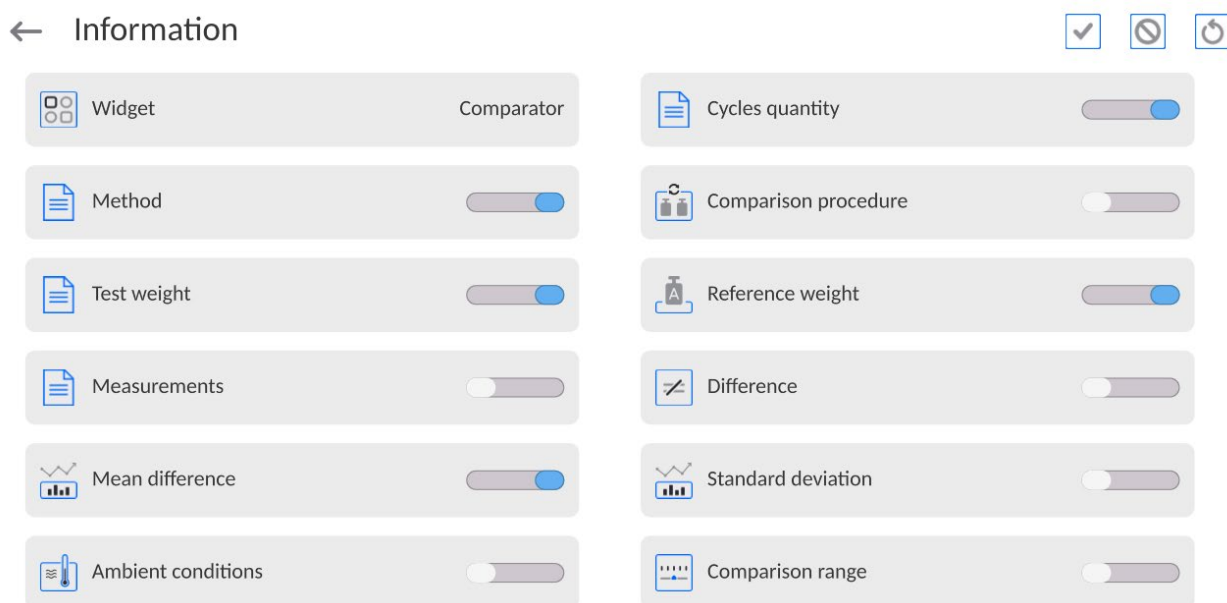
Example of the report:

<i>Report no.</i>	<i>C/31/10/11/11/43</i>			
<i>End date</i>	<i>2017.05.28 11:44:46</i>			
<i>n</i>	<i> A</i>	<i> B</i>	<i> A</i>	<i> D</i>
<i>1</i>	<i> 0.000</i>	<i> 0.131</i>	<i> 0.001</i>	<i> 0.1305</i>
<i>2</i>	<i> 0.002</i>	<i> 0.130</i>	<i> 0.003</i>	<i> 0.1275</i>
<i>3</i>	<i> 0.004</i>	<i> 0.131</i>	<i> 0.004</i>	<i> 0.127</i>
<i>Average difference</i>		<i>0.12833 g</i>		
<i>Standard deviation</i>		<i>0.00189 g</i>		
<i>Method</i>		<i>ABA</i>		




Signature

.....

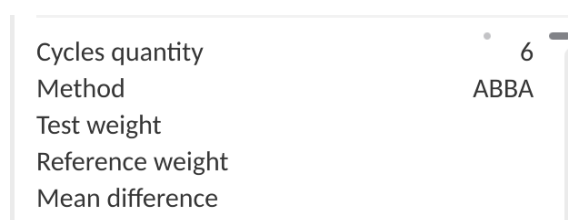
9.20. Information and shortcut key management



You can quickly change selections of information to be displayed using keys in the top right corner of the screen.



	Unselect all information.
	Select all information.
	Restore default selection of information.

The weighing-related information is showed on the left side of the central part of the screen.




You can put 6 pieces of information at the most there. If you select more, the first 6 will be showed.











For each piece of information, you can choose either of these two options:

-  – visible information.
-  – invisible information.

9.21. Comparison – basic procedure

Before you start calibrating, set such comparison parameters as method, number of cycles, etc., and define reference weights <A> and test weights . To make sure the operation with the device is easy, you can set comparison plans.

1. In the home screen, press  key in the bottom left corner of the screen.

2. Select  databases.
3. Enter  reference weights and define reference weights
4. Return to the Database, enter  test weights and define test weights
5. Return to the Database and define  comparison plans
6. Return to the home screen, press  comparison plans in the functional key bar, and then select a relevant comparison plan or select the relevant reference weight <A> and test weight .
7. To start the comparison procedure, press  key in the home screen to automatically initiate the procedure as per preassigned parameters.
8. Follow the messages displayed in the information bar.
9. The following information will be displayed: **<Number of cycles 1/n>** - the first cycle with „n” cycles.
<Put A1-1> - put **A1** weight first time in the cycle
10. Position **A1** weight on the weighing pan and confirm the measurement by pressing  key when the result is stable.
11. **<Position B1-1>** message will show up in the information bar.
12. Remove **A1** weight
13. **<-Wait->** message will be displayed in the screen. It means that the comparator is waiting for the **B1** weight on the weighing pan for the first time (description in the information bar)
14. Put **B1** weight on the weighing pan and confirm the measurement by pressing  key when the result is stable.
15. **<Position B1-2>** message will appear in the information bar.
16. Remove **B1** weight
17. **<-Wait->** message will be displayed in the screen. It means that the comparator is waiting for the **B1** weight on the weighing pan for the second time (description in the information bar) – only if ABBA method has been selected
18. Reposition **B1** weight on the weighing pan and confirm the measurement with  key when the result is stable.
19. **<Put A1-2>** message will show up in the information bar.
20. Remove **B1** weight
21. **<-Wait->** message will be displayed in the screen. It means that the comparator is waiting for the **A1** weight on the weighing pan for the second time (description in the information bar)
22. Put **A1** weight on the weighing pan and confirm the measurement by pressing  key when the result is stable.
23. The description in the information field will turn into **<Number of cycles 2/n>** - it suggests going into another cycle
24. Follow the steps as in the first cycle and finish the entire procedure
25. The procedure ends automatically with a calibration report printout. The report will be saved in the report base.

You can finish calibration or repeat the procedure.

9.21.1. Comparison scope change


Thanks to the structure of the mass comparator, you can compare weights of a specific mass, depending on the scope the device operates in. The mass of the weight that is subject to comparison can be defined by changing the range of comparison (ballast load) and selection of external weights.

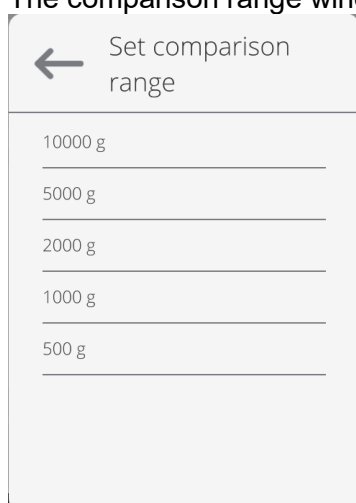
Note:

Comparison scope values differ, depending on the maximum range of the specific comparator. See below for the example of window for one RADWAG comparator.

To change the scope of comparison in the application, do as follows:

Procedure:

- Unload the weighing pan
- Press  key in the lower bar of the home screen
- The comparison range window will be displayed



- Change the comparison range value
- The device will instantly change the ballast load mass adapted to the specific scope.

Note:

In case of any problems related to calibration results, remove the weight from the weighing pan, change the ballast load into the maximum value and return to the compared mass.

10. ADJUSTMENT

Mass comparators are equipped with the automatic adjustment (calibration) system which guarantees suitable measuring accuracy. To gain access to adjustment control functions, go to <ADJUSTMENT> menu.

10.1. Internal adjustment

The internal adjustment adopts the mass inside the mass comparator. <Internal adjustment> key is used to activate the adjustment procedure instantly. When it is finished, the mass comparator screen shows the message on the end of the procedure and its status.




Note:

The mass comparator adjustment requires stable conditions (no air blows, no floor vibrations), the adjustment procedure must be performed when the weighing pan is empty.

10.2. External adjustment

The external adjustment is made with the use of an external weight of a suitable precision and mass dependent upon the type and load capacity of the mass comparator. The procedure is semi-automatic and further stages are signalled through messages in the screen.

Procedure:

- Enter <Adjustment> submenu and then press: <External adjustment>.
- The mass comparator screen will show a relevant message. Unload the weighing pan and press  key. While determining the start mass, you will see the following message: **Start mass determination.**
- Once the start mass determination procedure is finished, the mass comparator screen will show another message; follow the message and put the required weight on the weighing pan, and then press  key.
- When the procedure is finished, unload the weighing pan and press  key to confirm. The mass comparator will return to the comparison procedure.

10.3. Adjustment test

<Adjustment test> function is used to compare external adjustment results with the value entered in factory parameters. Such a comparison allows specifying mass comparator sensitivity drifts in time.

10.4. Automatic adjustment

In this menu, declare the factor that determines the time of initiating the automatic adjustment. The following options are available:

- None – automatic adjustment is inactive.
- Time – adjustment takes place at time intervals declared in <Automatic adjustment time> menu.
- Temperature – adjustment occurs when the temperature changes.
- Both – temperature change and time determine the moment of initiating the automatic adjustment.

10.5. Automatic adjustment time

<Automatic adjustment time> parameter specifies time intervals applicable to the automatic internal adjustment of the mass comparator. This period of time is defined in hours, from 1 to 12 hours.

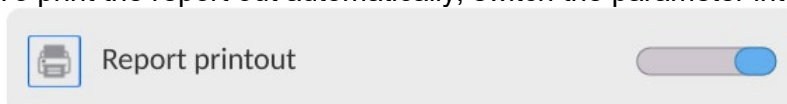
To set the automatic adjustment time, take the following steps:

- Press <Automatic adjustment time> key.
- In the menu, select time (given in hours) from the last adjustment to another internal adjustment.

10.6. Report printout

<Report printout> parameter specifies if the adjustment report is to be printed out automatically after the end of the procedure.

To print the report out automatically, switch the parameter into active printout.



10.7. GLP project

GLP is one of the methods of documenting work as per the adopted quality system. The information to be printed will be printed out together with every mass comparator adjustment report.

You can use the following information and marks:

- Adjustment
- Working mode
- Date
- Time
- Comparator type
- Comparator ID
- Operator
- Full name
- Levelling
- Nominal mass
- Current mass
- Difference
- Temperature
- Dashes
- Empty line
- Signature
- Non-standard printout

10.8. Adjustment history

It contains all mass comparator adjustments. They are saved automatically. Every saved adjustment contains basic data on the procedure. In this menu, you can display a list of saved adjustments. Every report can be printed out.

To print the adjustment report out, enter <Adjustment> submenu and then in <Adjustment history>



select the adjustment that is to be printed out and when details are showed, press <[printer icon]> printed icon in the top bar.


Note:

If the mass comparator memory is full, the oldest record in the list will be deleted automatically.

If internal procedures require complete documentation for all adjustments, the list of these records must be printed out and archived periodically.

Searching for adjustments



It is possible to search for information on completed adjustment: press  key and enter the completion date.

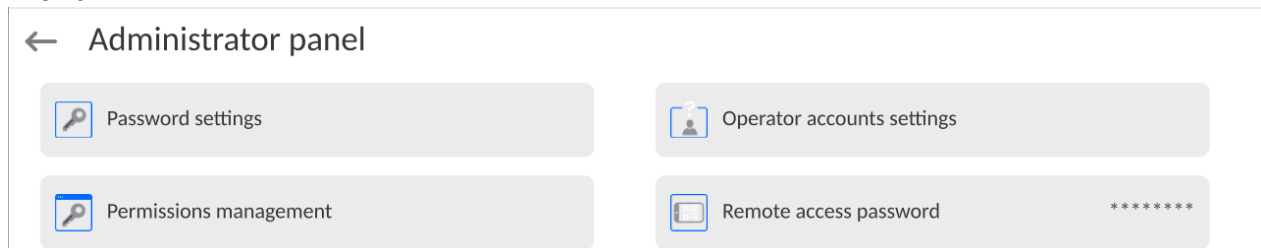
Exporting information on completed adjustments

To export information on completed adjustments, insert the USB mass memory stick into the mass comparator port. Next press <Export data> key in the top right corner of the screen. The procedure is automatic. After the end of the procedure, the file with **.tdb** extension is saved. You can edit the aforesaid file e.g. in Excel sheet or text editor.

11. ADMINISTRATOR PANEL

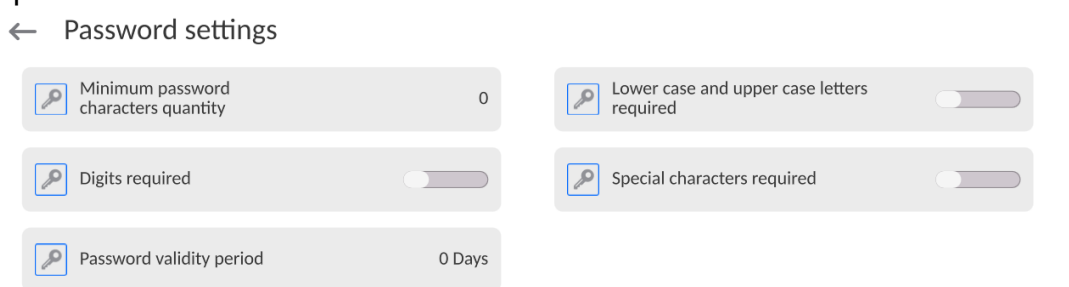
In this menu group, you can specify the range of actions that the operator with specific permission level can take, password protection level and permissions for the unlogged operator.

NOTE: Only the operator with <Administrator> permission level can modify this menu.



11.1. Password settings

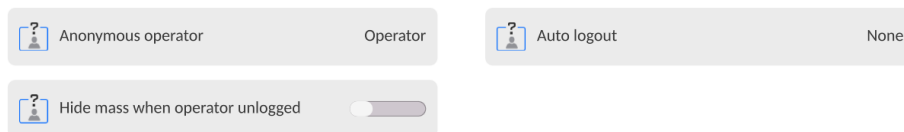
This menu group allows you to specify the complexity of password for mass comparator operators.



Minimum password length	Specify the minimum number of characters in the password. For „0” value, you can set any number of characters.
Require lower- and upper-case letters	Specify requirements related to the number of characters in passwords.
Require digits	
Require special characters	
Password validity period	Specify the period of time, in days, which when expires requires you to change the password. For „0” value, the program does not require you to change the password.

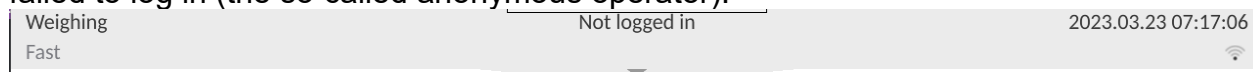
11.2. Operator account settings

← Operator accounts settings



Unlogged operator permission

The administrator can assign a permission level to the mass comparator operator who has failed to log in (the so-called anonymous operator).



Procedure:

Enter <Operator account settings> parameters group and select <Unlogged operator permissions> variant, and then select one of the following options: Guest, Operator, Advanced Operator, Administrator.

Note: If you set <Guest>, the unlogged operator will not be authorised to change any settings in the program.

Automatic logout

This option allows you to activate automatic logout after a specific period of time, given in minutes, if the mass comparator is not used. By default this option is disabled in the mass comparator (<None> setting).

Procedure:

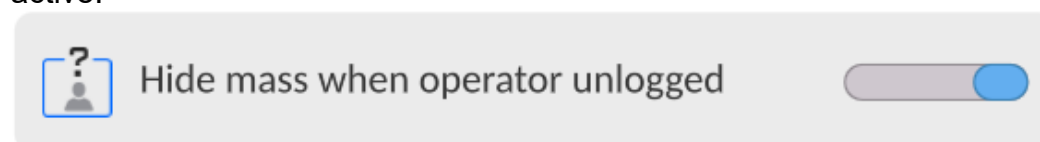
Enter <Operator account settings> parameters group, select <Automatic logout> option and then select one of the following variants: none/3/5/15/30/60. Time is given in [min].

Hide mass when operator not logged in

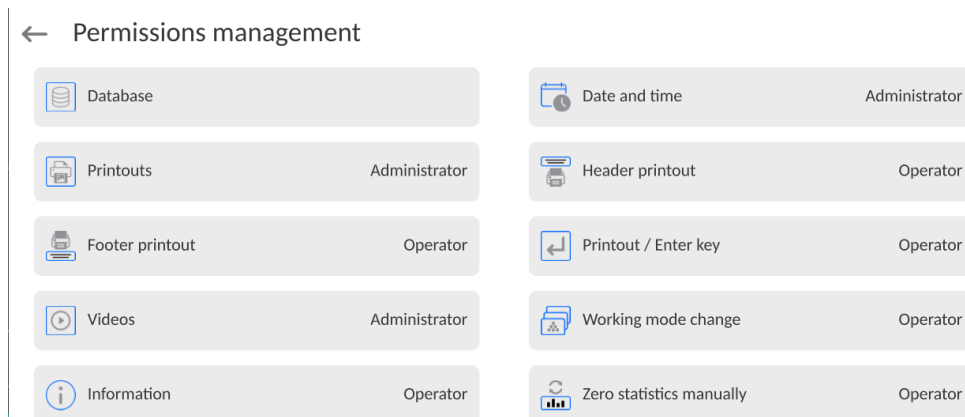
Here you can disable mass display if the operator is not logged in. By default this option is disabled in the mass comparator.

Procedure:

Enter <Hide mass when operator not logged in> option and then switch the value into active.

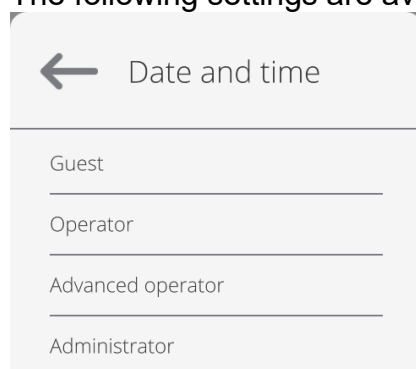


11.3. Permission management

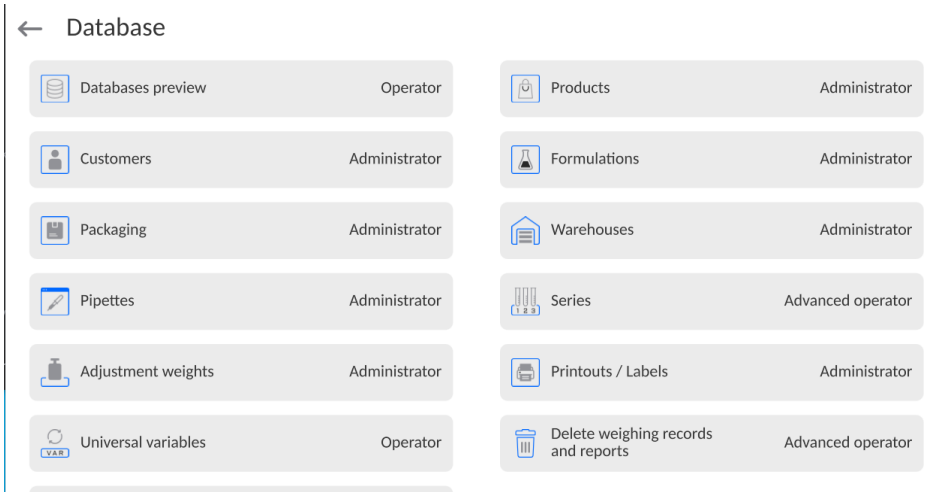


Note: If you set **<Guest>** value for particular parameters, the access to settings will be open (no need to log in).

For each option, you can assign the permission level for edition.
The following settings are available:



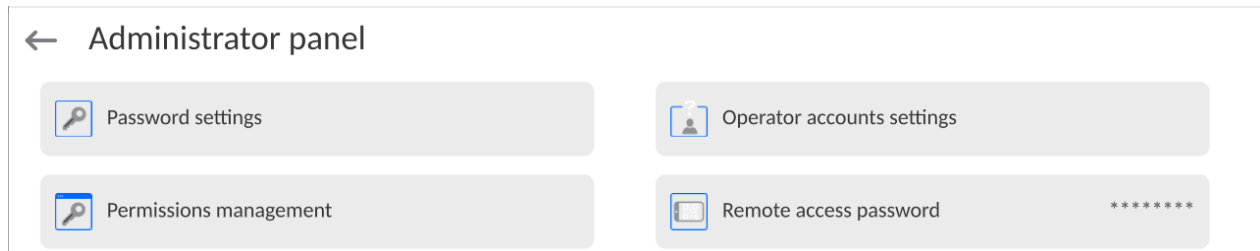
Databases



Default mass comparator settings allow the operator logged as **Administrator** to change settings in particular databases. Depending on requirements, these permission levels can be modified.

Similarly, you can change permissions for edition of other options available in this menu.

11.4. Remote access password



The mass comparator can be accessed remotely using connection to the local Internet network that a computer is connected to. In this respect **VNC Viewer** application can be used.

A default password set in the program is a sequence of the following characters: **radwag1234**. If you do not wish to use the default password, you must set your unique access password in the aforesaid parameter.

Note: remember a new password in order not to lose remote access to the mass comparator.



12. PROFILES

The mass comparator administrator can create new profiles by:

- copying the existing profile and modifying it afterwards,
- creating a new profile.




How to copy the existing profile

Procedure:

- Enter the main menu by pressing  key.
- Next go to  > submenu.
- Press and hold the name of the profile that is to be copied.
- You will see a menu in which you have to select <Copy> item.
- A profile called <Copy name> will be created and all settings will be identical to the base profile.
- After copying, change the data that must be modified: (name, etc.).

How to add a new profile

Procedure:

- Enter the main menu by pressing  key.
- Next go to  > submenu.
- Press  key.
- A new profile will be added automatically and ready for edition.



Settings



Working modes






Readout



Units

How to delete the profile

Procedure:

- Enter the main menu by pressing  key.
- Next go to  submenu.
- Press and hold the name of the profile that is to be deleted.
- You will see a menu, select <Delete> item from the list.
- Next, the following message will be displayed: <Are you sure you want to delete?>.
- Press  key to confirm the message. The profile will be deleted.

Note: Profile operations are possible after you have logged in as Administrator beforehand.

12.1. Profile structure

Each profile contains the following items:

Settings	This menu allows you to assign a unique profile name (a sequence of alphanumerical characters) and declare a default mode (the selected mode will always be loaded as a start-up mode when you select the profile).
Working modes	This option allows you to set specific options for particular working modes. It contains the following submenu: <ul style="list-style-type: none"> ▪ Mode-related additional settings ▪ Keys ▪ Information ▪ Printouts
Readout	It contains the following submenus: <ul style="list-style-type: none"> ▪ Filter ▪ Result approval ▪ Autozero ▪ Autozero: Dosing ▪ Last digit ▪ Number of last digits ▪ Ambient conditions
Units	This menu allows you to declare a start unit, additional unit, 2 custom units, and to enter gravitational acceleration value in the place of using the mass comparator, and to declare availability of particular units.

12.1.2. Settings

Name

Enter this item to display a keypad box in the screen. Enter the profile name and press



to confirm. The assigned name will apply to the profile.

Default working mode

Enter this item to select a specific working mode as a start mode for the profile. In case of <None> option, select the profile to keep the mass comparator in the lately used mode.

12.1.3. Working modes

Enter this item to open the window with all available working modes. You can enter your own setting for each of them. These settings will be called after selecting a specific profile.

The following parameters are available for each working mode:

- Settings:
here are specific settings related to the working mode and universal settings, such as result control, tare mode, automatic footer printout, printout mode, printout.
- Quick-access key functions:
here you can declare keys that will be visible in the lower part of the screen.
- Information:
here you can select information to be displayed in the grey info field.
- Printouts:
here you can select the type of printout or define a non-standard printout.

12.1.4. Readout

You can adapt the mass comparator to external ambient conditions (filter level) or own needs. <Readout> menu consists of the following items:

FILTER (unavailable to the following profiles: Fast, Fast dosing, Precision)

Before it is displayed, every measuring signal is electronically processed in order to achieve correct parameters typical of a stable signal, that is ready for readout.

To a certain extent you can influence the range of processing by choosing a suitable FILTER.

The range of options:

- very fast, fast, average, slow, very slow.

While choosing the filtering level, consider real conditions of work of the mass comparator.

For very good conditions, you can set an average or fast filter while for unfavourable conditions – slow or very slow filter.

Note:

- *for precise devices, it is advisable to choose very fast ÷ average filters,*
- *for analytical balances and microscales, average ÷ very slow filters are recommended.*

Result approval (unavailable to the following profiles: Fast, Fast dosing, Precision)


It determines the time of displaying a stability mark for measurement result.

You can set one of 3 result approval variants:

- fast, fast + precise, precise.

Note: *How fast the stable result can be achieved depends on the type of filter and selected result approval.*

Autozero function

The task of this function is to automatically control and correct the zero value of the mass comparator. When this function is active, further results are compared at fixed time intervals. If these results differ by fewer than the value of the declared AUTOZERO range, e.g. 1 readout unit, the device will instantly zero and stability result markers –  and zero markers – **→0←** will be displayed. When the AUTOZERO function is enabled, every measurement always starts from a precise zero. There are special cases in which this function hinders measuring. The example can be a very slow placement of the weight on the weighing pan (e.g. pouring the load on); this being the case, the zero indication correction unit may also correct real load mass indication.

Available values: **NO** - autozero disabled.
 YES - autozero enabled.

Autozero function: Dosing (unavailable to the following profiles: Fast, Fast dosing, Precision)

The task of this function is to set the autozero in dosing function by default.

Available values are the following:

NO - autozero disabled automatically after entering the Dosing mode.

YES - autozero enabled automatically after entering the Dosing mode.

Last digit

Using this function, you can disable visibility of the last decimal place in the exposed weighing result. There are three setting variants in this function:

- **Always:** all digits are visible.
- **Never:** last result digit is disabled and is not showed.
- **When stable:** last digit is displayed only when the result is stable.

Number of last digits

Using this function, you can declare the number of hidden last result digits. There are three settings in this function and operate in connection with <Last digit> item:

- **1:** last result digit.
- **2:** last two result digits.
- **3:** last three result digits.

Ambient conditions

This parameter refers to the surrounding and conditions which the mass comparator operates in. If the ambient conditions are unstable, it is advisable to change the parameter into Unstable. By default this parameter is set into Stable.





The stable setting makes the mass comparator to operate a way faster. This means that weighing time is much shorter when compared to the Unstable parameter.

- **Unstable; Stable.**

12.1.5. Units

You can declare a start unit and additional unit as well as two custom units for a specific profile.

← Units




 Available units	 Start unit
 Supplementary unit None	 Custom unit 1
 Custom unit 2	 G-core value

Here you can also enter the gravitational acceleration value in the place of using the mass comparator. It is required for using the mass value in [N].

The custom unit has the following:

- Formula (*custom unit calculation formula*): Factor * Mass or Factor / Mass.
- Factor (*declare a factor for calculation of the custom unit as per the specific formula*)
- Name (*unique unit name that will be displayed next to the result – max. 3 characters*)

← Custom unit 1

 Formula Factor * Mass	 Coefficient
 Name	

If such a unit is designed, its name will be visible in the list of available units, this option is available to non-verified devices only.

13. DATABASES

The software offers the following databases:

← Database



Operators



Products



Customers



Reference weights



Test weights



Comparisons procedures



Packaging



Warehouses



Printouts / Labels



Universal variables



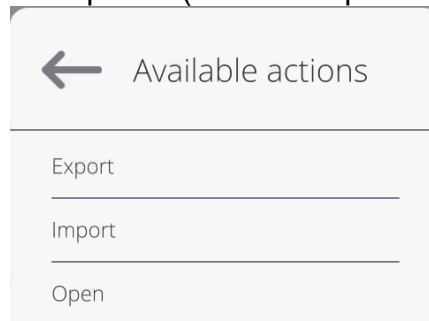
Manage the database

13.1. Database operations

Database operations are available only to the authorised operator.

To edit the bases, follow the steps below:

- Press and hold the database icon field.
- The menu related to this item will be displayed.
- Select one of the available options (available options depend on the type of base).



Selection of variants:

- **EXPORT** – this item allows you to export data saved in the database into the pendrive memory. Before selecting this item, plug the memory connector into any USB port. If the program can detect the memory, it will initiate the copying procedure instantly. When copying is finished, you will see a window with <Done> message and name of the file that data from the base have been saved in. Confirm the process.
- **IMPORT** – this item allows you to import data from the pendrive memory. Before selecting this item, plug the memory connector into any USB port. If the program can detect the memory, it will display a window with saved files. Specify the file with data to be imported. Selection of the file triggers the copying procedure automatically. When copying is finished, a window with <Done> message will be displayed. Confirm the process.
- **OPEN** – this item allows you to enter the specific database (as a single click of the base field).

After entering the specific database, you can perform any of the following operations (depending on the type of database):

1. Add item to database.
2. Search item in database by name.
3. Search item in database by code.
4. Search item in database by date.
5. Export data from database to USB memory stick.
6. Print information on record in database.

The aforementioned operations can be initiated using keys in the top right corner of the screen. Follow messages showed in the screen.

13.2. Operators


This menu contains a list of operators that can operate the mass comparator.

You can define the following information for each operator:

Name	Code
Password	First and last name
Permission	Active account
Language	Default profile
Card number	Fingerprint (<i>parameter is visible only after connecting the fingerprint scanner</i>)
Face profile	Motif

NOTE: Only the Administrator-operator can add new operators or delete them from the database.

To add a new operator, do as follows:

- In <Operators> menu, press <Add>  key.
- Define required fields for a newly created operator.

Note: You can browse through the operator database by code or operator's name.

Logging via transponder card reader:

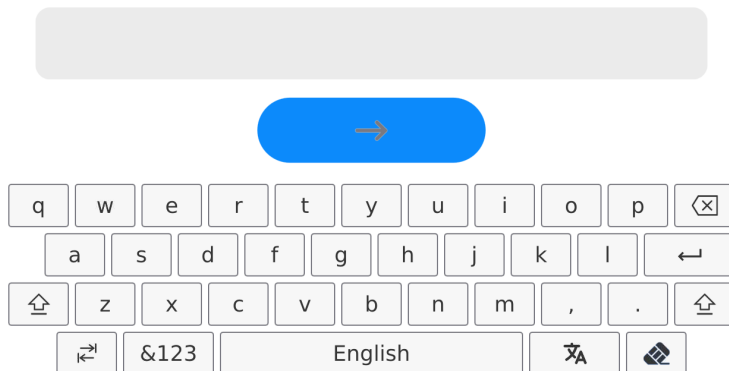
Note: A RFID reader installed in the head operates at the frequency of 13.56MHz and complies with ISO/IEC 14443 Type A.

Only cards in such a standard can be recognised by the reader.

- Enter Operator settings.

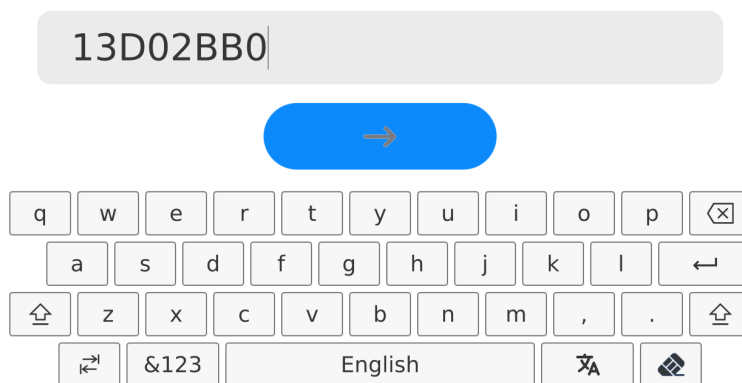
- Select <Card no.>


← Card no.



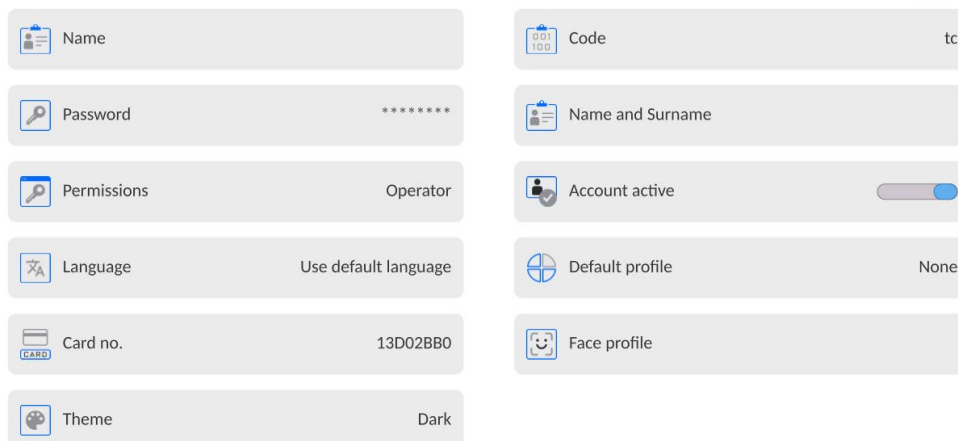
- Apply the card to the RFID reader.
 - The card number is automatically entered in the editing field.

← Card no.



- Press  button, the card number is added to the operator settings.

← Edit record

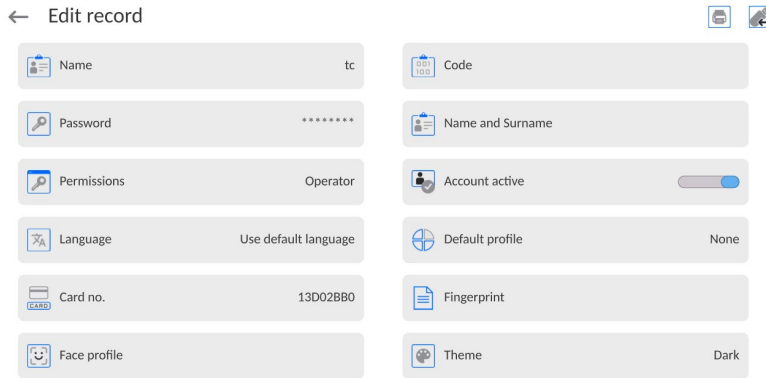


- Exit to the home screen. From now on, applying this card to the RFID reader will automatically log the user in.

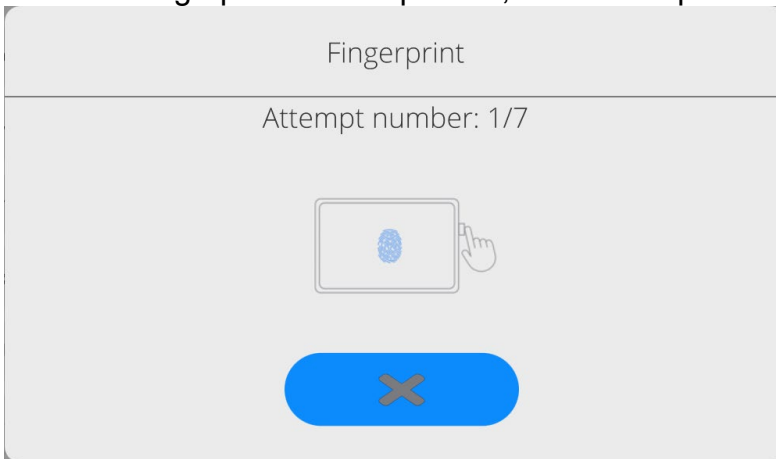
Log in using a fingerprint:

Caution: Only the fingerprint reader listed as a dedicated accessory for these balances can be connected to the balance. A list of accessories can be found on RADWAG website.

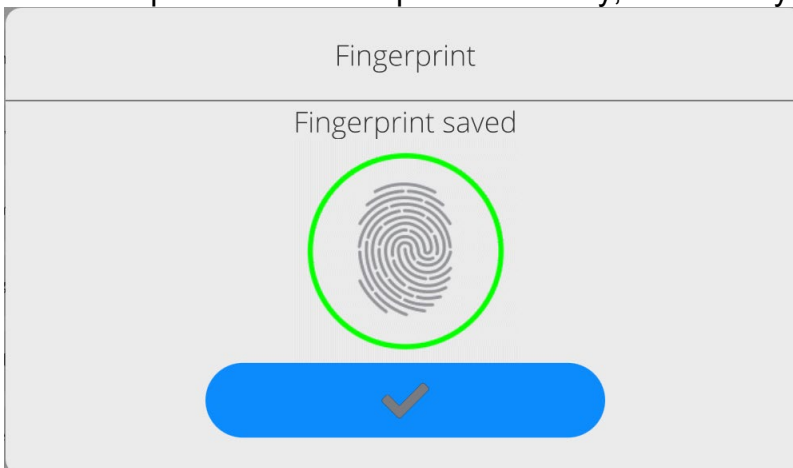
- When the fingerprint reader is connected to the USB type A socket, the <Fingerprint> option appears in the operator settings menu.




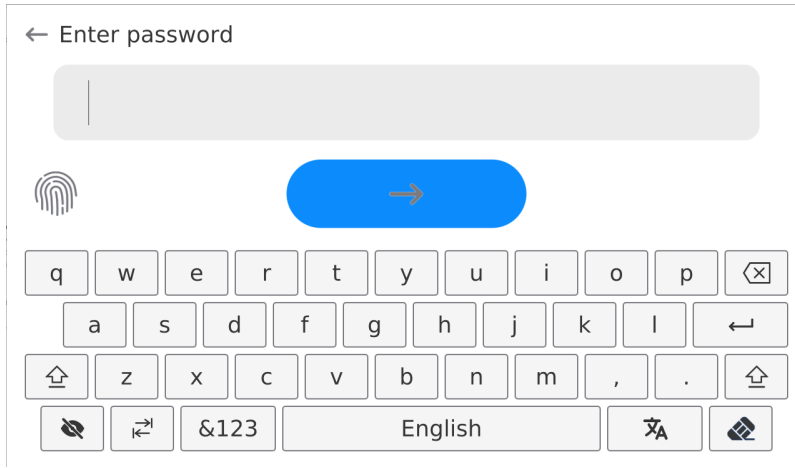
- To add a fingerprint for an operator, enter this option.



- Scan the fingerprint and repeat the procedure 7 times (as described in the message box).
- When the procedure is completed correctly, a summary window is displayed.



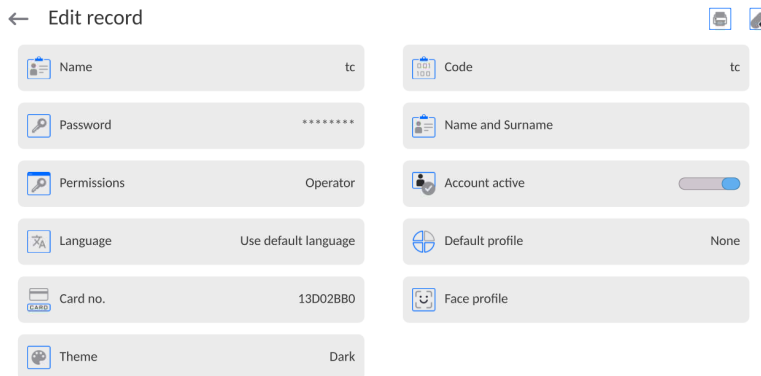
- Confirm the procedure by pressing  button.
- From now on, if a fingerprint reader is connected to the USB port, a pictogram of the active fingerprint login option is displayed in the login window.



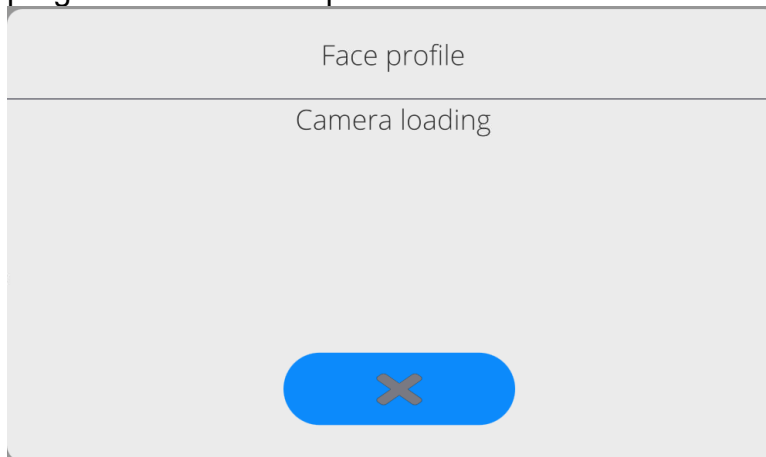
- After placing a finger on the reader and confirming the correctness of the fingerprint with the stored pattern, the pictogram briefly turns green, the user is automatically logged in, and the software switches to the home screen. The name of the logged-in user is displayed in the top bar of the window.
- If the scanned fingerprint does not match the stored pattern, the pictogram briefly turns red, the user is not logged in, and the software displays the login window.

Log in using a face profile:

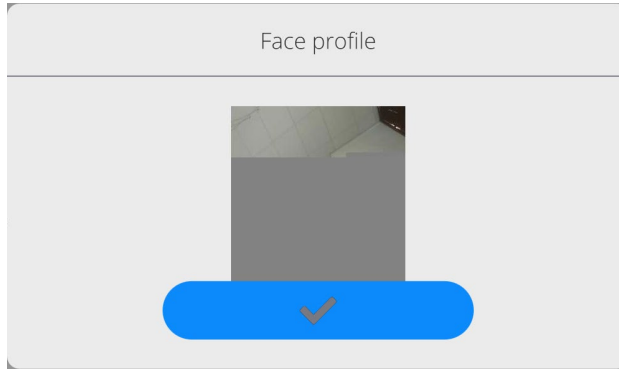
- To add a face profile for a user, go to the option presented below




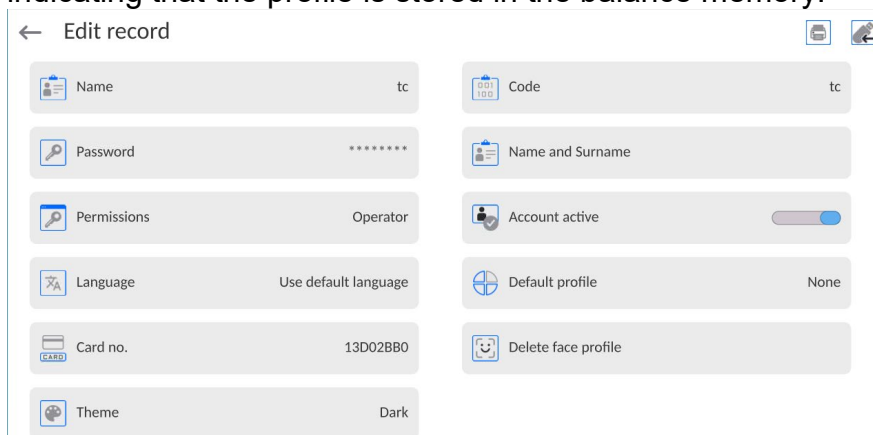
- After starting the option, a message is displayed and the face profile is read; you must position yourself correctly in relation to the camera so that the program can save the profile.



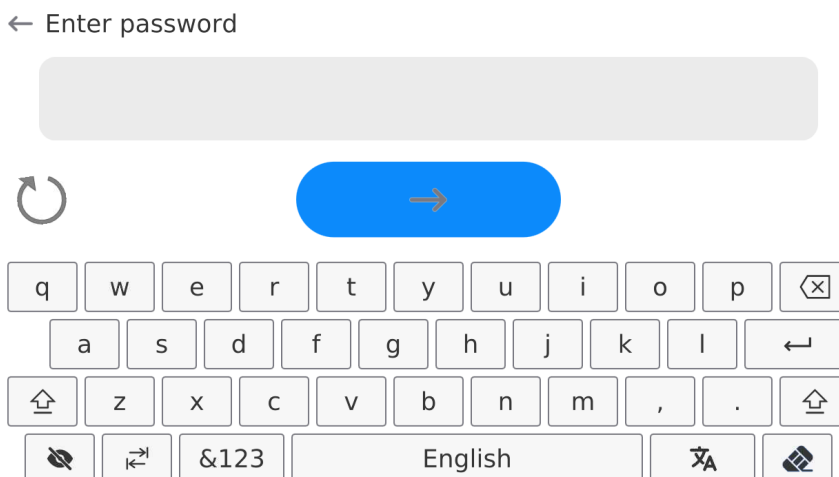
- Once the profile has been saved, a message is displayed along with a picture from the camera.



- Press  button to close the window.
- The option description in the user settings changes to <Delete face profile>, indicating that the profile is stored in the balance memory.



- From now on, if the user for whom the face profile was added logs in, after entering the logging window, the program will automatically read the profile, which will be signalled by the pictogram on the left side of the window



- The program automatically reads a photo of the user's face profile, and after the photo is read, the camera turns on (which is indicated by the lighting of a diode next to the camera) and compares the saved photo with the profile read by the camera. If these images match, the main program window will open and the name of the logged-in user is displayed in the top bar of the window.

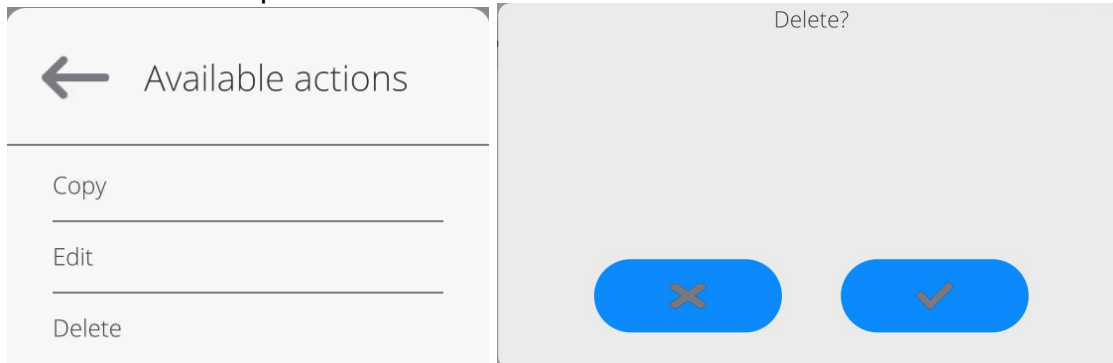
Editing data on an operator:

- Press field with operator name.
- Data on a specific operator is displayed.

- Select and change necessary data.

To delete an operator:

- Press and hold operator name.
- Database menu is displayed.
- Select <Delete> parameter and confirm.



13.3. Products

The product database contains names of all items that can be weighed, counted, controlled.

Procedure:

- Enter <Databases> submenu and press <Products> field.
- Press <Add> key if a new product is to be added.
- If the product already exists, press the product name field.

The list of information defined for the product:

1. Name [product name]
2. Description [product description]
3. Code [product code]
4. EAN code [product EAN code]
5. Mass [nominal/unit mass of the product]
6. Min [minimum mass while weighing the product in result control thresholds – LO. <T1→ error value for <Mass control> mode is defined as nominal mass percent]
7. Max [maximum mass for weighing the product in result control thresholds – HI. <T1+> error value for <Mass control> mode, defined as nominal mass percent]
8. Tolerance [% value counted in relation to mass (5), shows the field in which the measurement is considered as correct]
9. Tare [product tare value, set automatically when selecting the product from the base]
10. Price [product unit price]
11. Density [product density, used for compensation of air buoyancy as a sample density] - [g/cm³]
12. Shelf-life time in days [shelf-life time given in days]
13. Date [permanent product date]
14. VAT [VAT tax related to the product]
15. Ingredients [edition box in which you can enter names of ingredients which the product is made of, e.g. when it is a mixture, or additional description of properties or application]
16. Printout [printout template assigned to the product]

Note: Please remember to make sure products are assigned to relevant functions. Values will be automatically adapted to the function used by the operator to enter the database.

13.4. Clients

The Clients database contains names of Recipients that weighing is performed for.

Procedure:

- Enter <Databases> submenu and press <Clients> item.
- Press <Add> key>.
- If the Client field already exists, press the relevant name field.

The list of information defined for clients:

1. Client's name
2. Client's code [client's internal identification code]
3. NIP [taxpayer's ID]
4. Address
5. Postal code
6. City/town
7. Discount
8. Printout [type of printout, label related to client]

13.5. Reference weights

The reference weights database contains a list of reference weights used in the weight comparison procedure. These reference weights are used to define comparison plans.

Procedure:

- Enter <Databases> submenu and press <Reference weights> field.
- Press <Add> key if a new reference weight is to be designed.
- If the reference weight already exists, press the relevant name field.

Note:

You can use <Search by name>, <Search by code> <Export data> items.

The list of information defined for reference weights:

1. Name
2. Code
3. Class
4. Factory number
5. Mass
6. Set number

13.6. Test weights

The test weights database contains a list of test weights used in the weight comparison procedure. Test weights are used to define comparison plans.

Procedure:

- Enter <Databases> submenu and press <Test weights> field.
- Press <Add> key if a new test weight is to be designed.
- If the test weight already exists, press the relevant name field.

Note:

You can use <Search by name>, <Search by code> <Export data> items.

The list of information defined for test weights:


1. Name
2. Code
3. Class

4. Mass
5. Order number
6. Test weight number

13.7. Comparison plans

The comparison plan base contains a list of defined comparison plans. These comparison plans are created to automatically compare weights after reference weights and test weights have been previously defined.

Procedure:

- Enter <Databases> submenu and press <  Comparison plans > field.
- Press <Add> key if a new comparison plan is to be designed.
- If the comparison plan already exists, press the relevant name field.

Note:

You can use <Search by name>, <Search by code> <Export data> items.

The list of information defined for comparison plans:

1. Name
2. Code
3. Comparison plan template (always YES if it is to be remembered)
4. Start delay
5. Start time
6. Clear start time
7. Comparisons

After entering information from point 1-6, enter Comparison field, add a new comparison and assign it with relevant features:

1. Reference weight
2. Test weight
3. Number of cycles
4. Method
5. Number of start-up weighing cycles
6. Number of repetitions

Next you can analogically assign another comparison to the same comparison plan. The number of comparisons in one comparison plan is determined by the number of test weights and reference weights that the specific comparator supports.

13.8. Packaging

It is a list of packaging which you need to give a name, code and mass value for. While weighing, select the name to call the tare value automatically. This value will be displayed with a minus sign.

Procedure:

- Enter <Databases> submenu and press <Packaging> field.
- Press <Add> key if a new packaging is to be added.
- If the packaging already exists, press the relevant name field and enter packaging-related data.

Note:

You can search by name or code.

13.9. Warehouses

Depending on the work organisation, warehouses database contains a list of places which the sample has been collected for weighing, or places which the sample has been delivered to. For each warehouse, enter the name, code and description. While weighing, select the warehouse name to automatically assign it to the result.

Procedure:

- Enter <Databases> submenu and press <Warehouses> field.
- Press <Add> key if a new warehouse is to be added.
- If the warehouse already exists, press the relevant name field and enter identification data.

Note:

You can search by name or code.

13.10. Printouts

The printout database contains all NON-STANDARD printouts. Each of them has its unique name, code and the so-called template.

Procedure:

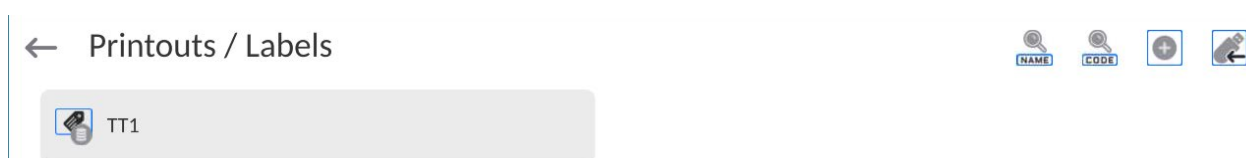
- Enter <Database> submenu and press <Printouts> field.
- Press <Add> key if a new printout is to be added.
- If the non-standard printout already exists, press the relevant name field and enter identification data.

Note: *You can search by name or code.*

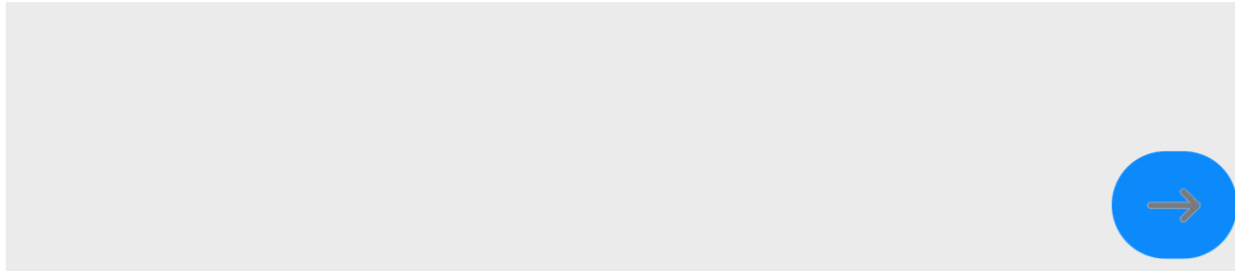
How to design a new printout.

Procedure:

- Enter <Databases> submenu and press <Printouts> entry.
- Press <Add> button to create a new printout, or edit the already existing one.



- Edit box opens, press <Project> entry.
- Respective box with an on-screen keyboard is displayed.
- To design a printout, you can use an external USB keyboard connected to the head or a touch keypad that has the same functions as a typical PC keyboard.



The touch keypad does not have some characters, such as a colon or diacritical letters typical of a specific menu language (menu language is signalled with description on 'SPACE' key). To use such characters or letters in the designed printout, press and hold the specific letter on the keyboard. It will cause additional keys with assigned characters to display. Click them to add to text. After entering the character, press 'X' to disable displayed characters. The example of available characters for Polish keyboard.

Letter on the keyboard	Additional characters	Letter on the keyboard	Additional characters	Letter on the keyboard	Additional characters
„t”	€ × t y	„u”	μ × u i	„a”	~ × a s
„x”	’ × x c	„c”	\ × c v	„v”	[{ × v b
„b”] } × b n i	””	: < = × , . ↵	””	; > × . ↵

- Save the designed printout.

Example of Printout no. 1 – large edit box

```
BALANCE NO: {32}
Max=220 g
d={33}

PRODUCT: {50}
DATE: {2}
TIME: {3}
-----
WORKING MODE: {5}
```



Project

```
Balance no. 400015
Balance parameters:
Max = 220 g
d= 0.001 g
```

```
Product name:
Date: 2011.10.24
Time: 11:48:06
```

Working mode: Weighing

Net weight: 94.147


Carried out by: Admin





Printout template

Example of Printout no. 2 – printout from a file

All printout templates can be designed in a form of external files, that are imported to a balance; file extension: *.txt or *.lb. External file shall contain all constant and variable data. Upon importing, the content of a printout template can be modified.

Procedure:

- Design a *.txt or *.lb file in an optional editor.
- Copy the file to a USB flash drive.
- Connect the USB flash drive to the balance USB port.
- Press [4] < Download a printout from a file> button,
- Balance display shows data stored on the USB flash drive connected to the USB port.
- Select file with a printout template and press its name.
- The printout template is automatically copied to an editing field.

	<i>The user may add printouts from external memory via import of already configured texts, using USB port.</i>
	<i>Printout name is not the content of a printout.</i>
	<i>List of variables intended for printouts is to be found in ‘ANNEX 03’.</i>
	<i>Example of how to create and send label template to the balance memory is to be found in ‘ANNEX 03’.</i>

13.11. Universal variables

Universal variables are alphanumeric information that can be related to printouts, product or other information concerning comparison. For each variable, enter the name, code and value.

Procedure:

- Enter <Databases> submenu and press <Universal variables> field.
- Press <Add> key if a new variable is to be added.
- If the variable already exists, press the relevant name field and modify the following fields: code, name, value.

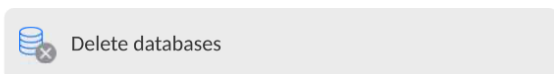
Note:

You can search by name or code.

13.12. Database management

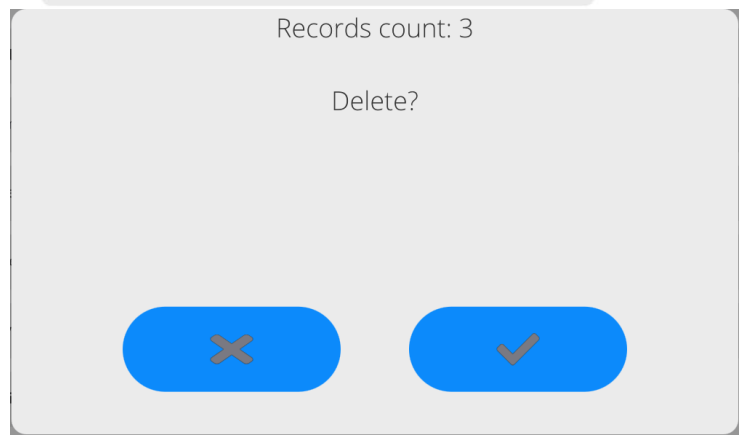
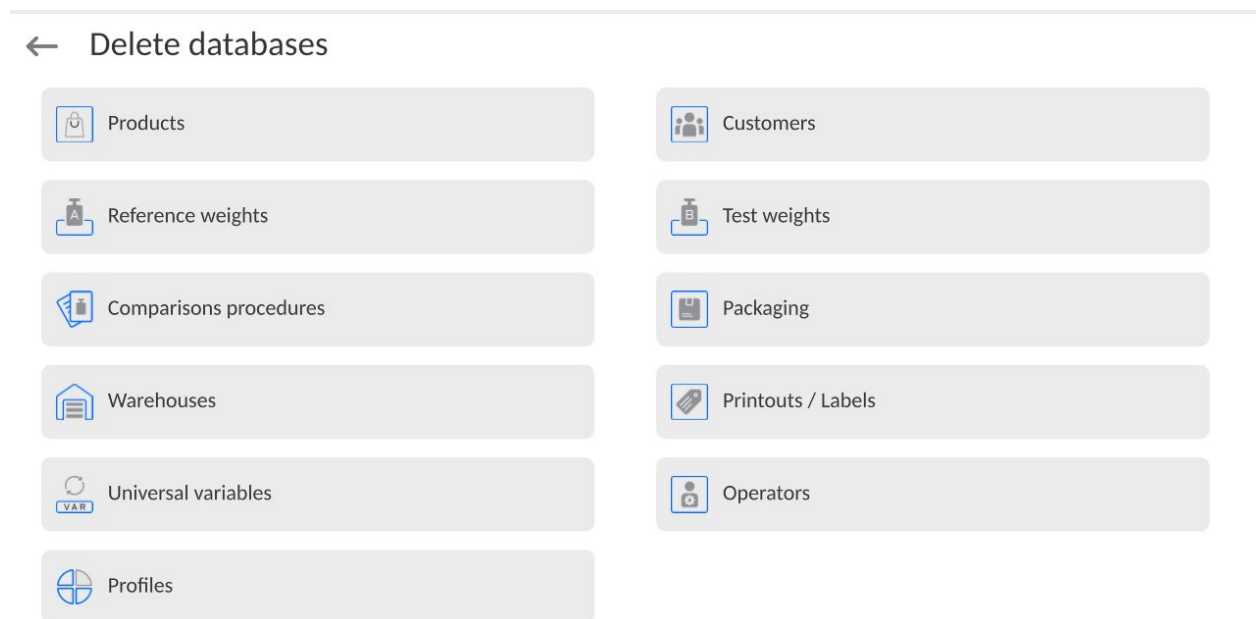
This function allows you to manage data in databases.

← Manage the database

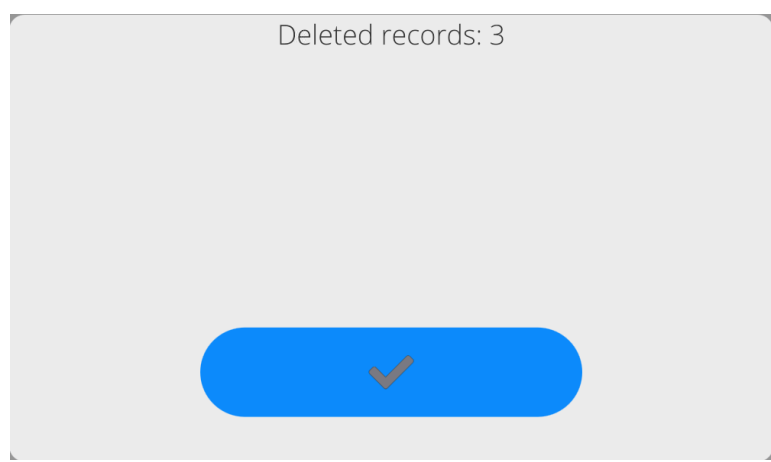


13.12.1. Delete Databases

Function allowing to delete data of selected database. Procedure
Activate <Delete database> function; a window with database list is displayed.
Select a database, delete respective data.



Confirm, data is deleted, the following message is displayed:



Confirm, a previous window is displayed; you may continue weighing or proceed to other operations.

14. REPORTS

In the reports menu, you can find all result bases in which measurements and reports on measuring processes are saved.

← Reports



Weighing records



Comparison reports



Weight adjustment reports



Ambient conditions



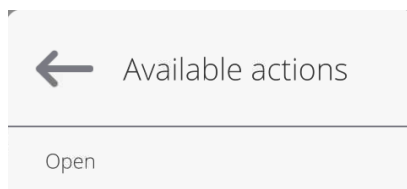
Manage reports

14.1. Operations in databases

The operations in the reports base are available only to the authorised operator.

To edit the databases, follow the steps below:

- Press and hold the base icon field.
- A menu related to this item will be displayed.
- Select one of the available options (available options depend on the type of base you choose).



Selection of items:

- OPEN – this item allows you to enter the specific database (identical to single click of the base field).

After entering the specific database, you can perform the following operations (depending on the type of base):

1. Search item in database by name.
2. Search item in database by code.
3. Search item in database by date.
4. Export data from database to USB memory stick.
5. Print information on record in database.

The aforesaid operations can be initiated through keys in the top right corner of the screen. Follow the messages displayed in the screen.

14.2. Weighing records

Every weighing result sent from the mass comparator to the printer or computer is saved in the weighing database (see: exception in point - result control).

You can preview data for particular weighing records.

Procedure:

- Enter **<Reports>** submenu.
- Enter **<Weighing records/Alibii>** submenu and press the desired item.

The list of information in database for the weighing record:

1. Weighing date.

2. Weighing result.
3. Tare value.
4. Specification if the measurement was stable.
5. Specification if the air buoyancy control option was enabled
6. Product name.
7. Operator.
8. Client, business partner's name.
9. Working mode name.
10. Warehouse, source warehouse name.
11. Packaging, name of tare used while weighing a product.
12. Result control, information on the field which the result was in:
MIN – below threshold (possible only when <Result control –NO>),
OK – between thresholds,
MAX – above thresholds (possible only when <Result control –NO>).
13. Platform number, the field shows the number of the platform which the weighing was made on.
14. Levelling, shows if the level was maintained during measurement.
15. Environmental conditions alerts show if the temperature and humidity were stable during measurement.

14.3. Comparison reports

The comparison reports database contains information on completed weight comparison procedures. For each report, you can preview, search by date, export and print out.

Procedure:

- Enter <Databases> submenu and press <Comparison reports> field.
- Press the relevant name field.

The list of information in the comparison report:

1. Order number
2. Start date
3. End date
4. Operator
5. Diameter
6. Standard deviation
7. Number of cycles
8. Reference weight
9. Test weight number
10. Task
11. Method

14.4. Weight adjustment reports

The weight adjustment report database contains information on completed weight adjustments. For each report you can preview, search by date, export and print out.

Procedure:

- Enter <Databases> submenu and press <Comparison reports> field.
- Press the relevant name field.

The list of information in the comparison report:

1. Order number
2. Start date
3. End date
4. Operator

5. Diameter
6. Standard deviation
7. Number of cycles
8. Reference weight
9. Test weight number
10. Task
11. Method

14.5. Ambient conditions

It contains information related to ambient parameters. Depending on the configuration of the mass comparator, such a list may include temperature, humidity and atmospheric pressure. When a THB environmental module is connected to the mass comparator, the information on its readout will be recorded too.

Procedure:

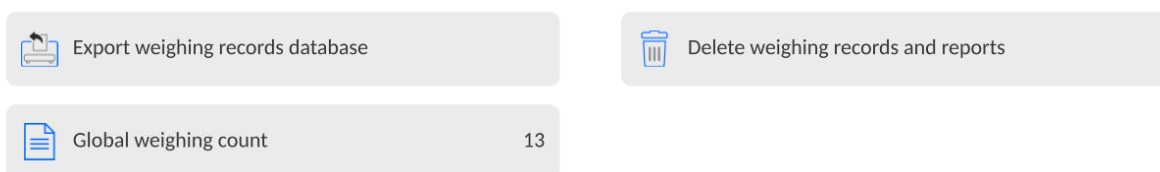
- Enter <Reports> submenu and press <Ambient conditions> field.
- Press the relevant port field. If it is invisible, scroll the list of reports using navigation keys.
- The name of the report consists of a date and time.

Note: You can use a report searching feature.

14.6. Manage reports

Function allowing to manage databases data. It comprises three options: Export weighing database, Delete databases and Delete weighings and reports.

← Manage reports



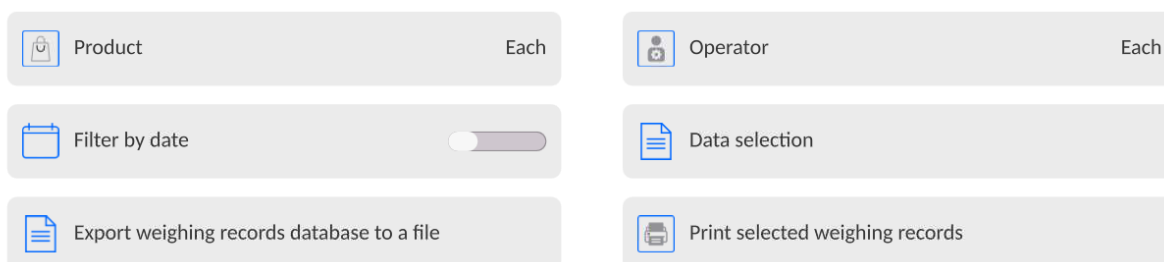
Export Weighing Database to a File

All measurements are saved to the <Weighing records> database and can be exported to a file using a USB flash drive.

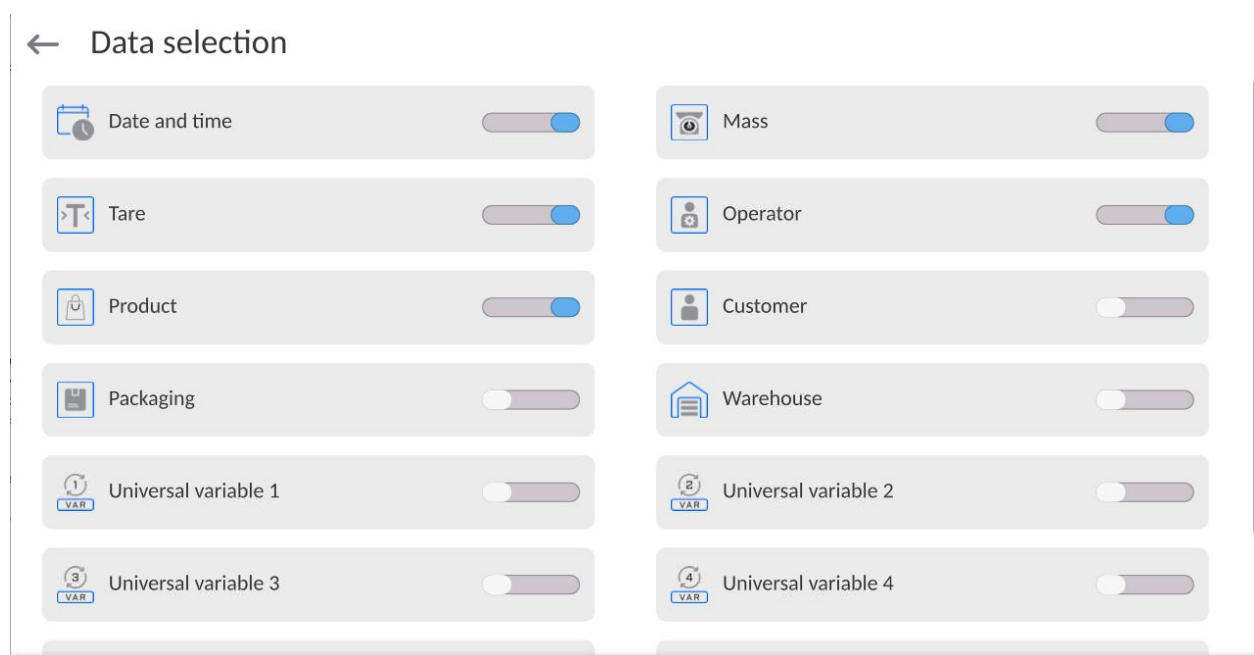
Procedure:

- Connect the USB flash drive to the USB port.
- Press <Export weighing records database to a file> entry; a window for setting export options is opened.

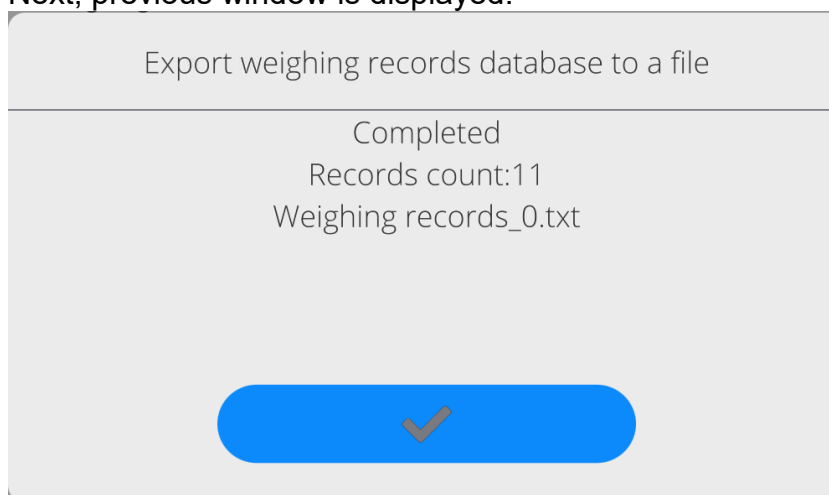
← Export weighing records database



<Data selection> parameter allows you to specify which measurement-related data are to be exported.



- Set respective data and press <Export weighing records database to a file> entry; weighing database is automatically exported.
- Upon export completion, the message <Completed> is displayed along with information on the number of exported data and with the file name (*.txt extension). Next, previous window is displayed.



- You may return to the weighing procedure or proceed to other settings.

Caution: If balance software cannot identify the USB flash drive, then upon pressing <Export weighings database to a file> entry, <Operation failed> message is displayed.

- A name of created file consists of database name and balance serial number, e.g. <Weighing data_364080.txt>.
- Unplug the USB flash drive from the USB port.

Template of a created file:

The file is created in the form of a table, columns of which are separated by <Tab>. This allows for direct export of the file to <Excel> spreadsheet document. The table contains the following data: date and time, mass and mass unit, tare and tare unit, serial number, operator name, customer name, packaging name, source warehouse name, target warehouse name, control result name.

Delete Weighings and Reports

Function allowing to delete weighings and reports of a given database.

Procedure:

Activate <Delete weighing records and reports> parameter; a window with a numeric keyboard is displayed.

Enter a date specifying which data is to be removed. Date is given in the following form: year-month-day.

← Delete older than

16.03.2023

marzec 2023						
pon.	wt.	śr.	czw.	pt.	sob.	niedz.
27	28	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9

→

Confirm the date, all weighings and reports older than those specified by the date are removed. Quantity of deleted weighings and reports is displayed.

15. COMMUNICATION

The Communication menu is included in the Parameters menu. To gain access to this menu, press <Setup> key or icon.

The mass comparator can communicate with an external device through the following ports:

← Communication

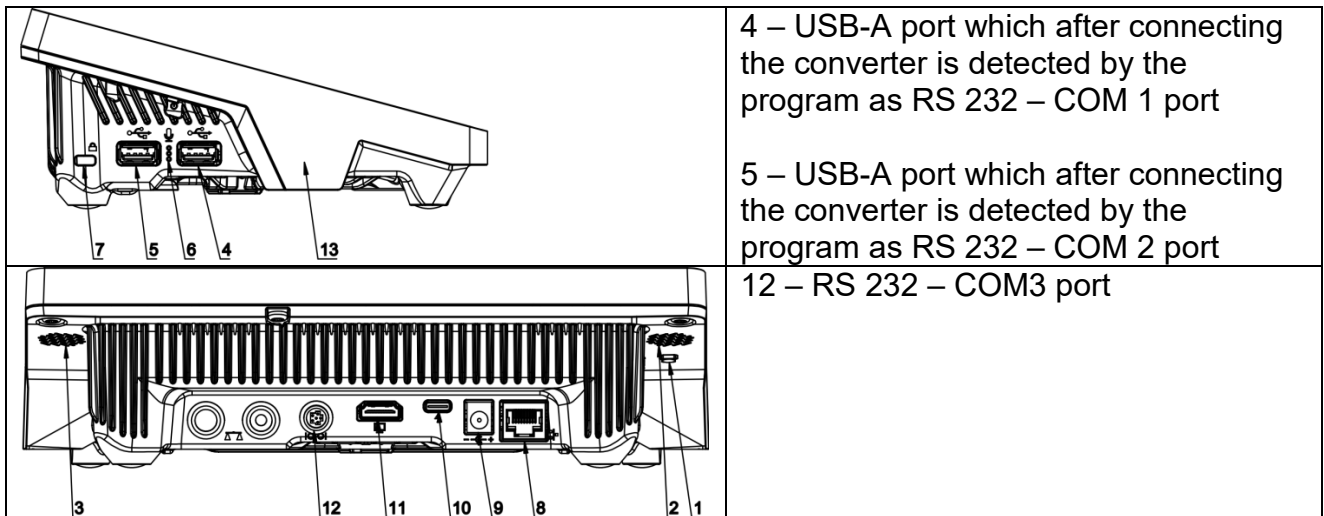
COM 1	COM 2
COM 3	Ethernet
Wi-Fi	Tcp

The parameters of each of the ports can be configured as required.

The meter allows connecting the IM02 communication module. The IM02 communication module in its standard design expands the range of interfaces to include RS 232 IM02, Virtual COM, 4WE/4WY.

15.1. RS 232 settings

NOTE: to assure correct cooperation with external devices using RS 232 ports, use a USB-to-RS232 converter.



Procedure:

- Select <COM1>, <COM2> or <COM3> communication port.
- Set relevant values.

For RS 232 port settings, the program offers the following transmission parameters:

- Baud rate: 4800, 9600, 19200, 38400, 57600, 115200 bit/s, 921600 bit/s*
- Data bits: 5, 6, 7, 8
- Stop bits: None, 1, 1.5, 2
- Parity: None, Odd, Even, Marker, Distance


*) - The rate of 921600 bit/s applies only to COM3 port and cooperation with MediaBox IM02 communication module.

15.2. ETHERNET settings

Procedure:

- Select <Ethernet> communication port and then set relevant values:
 - DHCP: Yes – No
 - IP address: 192.168.0.2
 - Subnet mask: 255.255.255.0
 - Default gate: 192.168.0.1

Note: The above-stated settings are for reference only. The transmission parameters must be selected in accordance with client's local network settings.

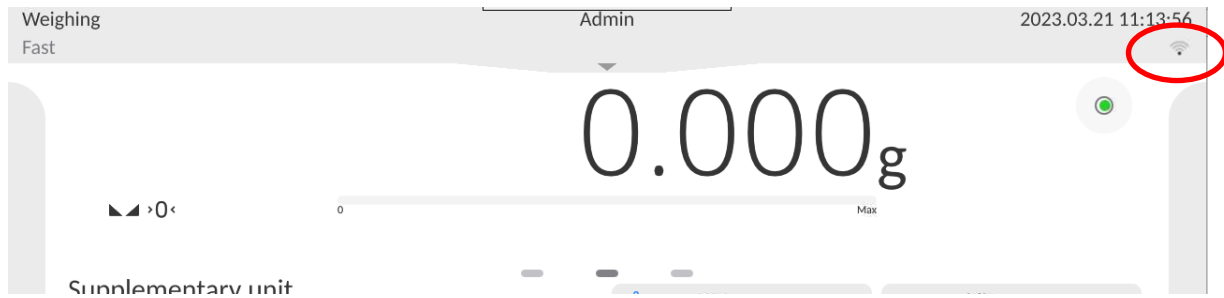
After making changes, press  key to display a message:

<Restart mass comparator to implement changes>.

Return to the weighing mode and restart the device.

15.3. Wi-Fi settings


If the mass comparator is equipped with a Wi-Fi module, a special icon will be displayed in the top bar of the home screen.



Procedure:

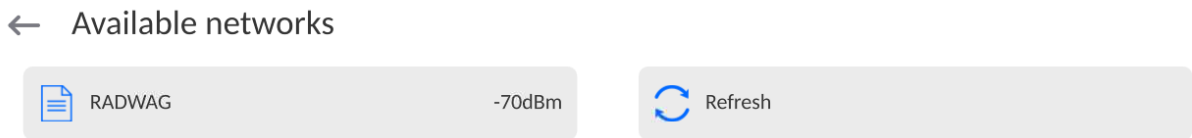
- Select <Wifi> communication port and then set relevant values:
 - DHCP: Yes – No
 - IP address: 10.10.9.155
 - Subnet mask: 255.255.255.0
 - Default gate: 10.10.8.244

Note: The above-stated settings are for reference only. The transmission parameters must be selected in accordance with client’s local network settings.

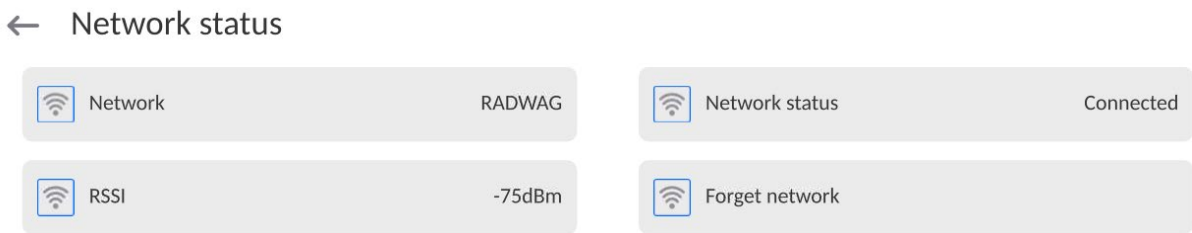
After making changes, press  key to display the message: <Restart the mass comparator to implement changes>.

Return to the weighing mode and restart the device.

Additionally you can check <Available networks> detected by the mass comparator:



The icon by the name of the network informs you if the network requires a password (icon with a lock). To find available networks, select <Refresh> item. To check parameters of the specific network, click <Network status> field and network parameters will be displayed in the box:



The selected network and connection parameters are remembered by the program and called every time you activate the program and connect to the network. To disable this function, select <Forget network> item. It will terminate the connection to the specific network.

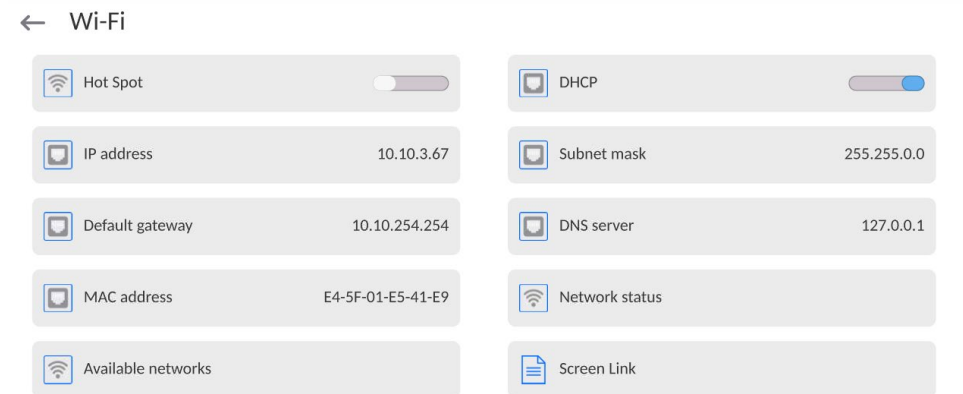
15.3.1. General information on Hot Spot service

Hot Spot – an open access point that allows wireless connection to the mass comparator with the use of other device – e.g. laptop, tablet or mobile phone – on the basis of the Wi-fi network.

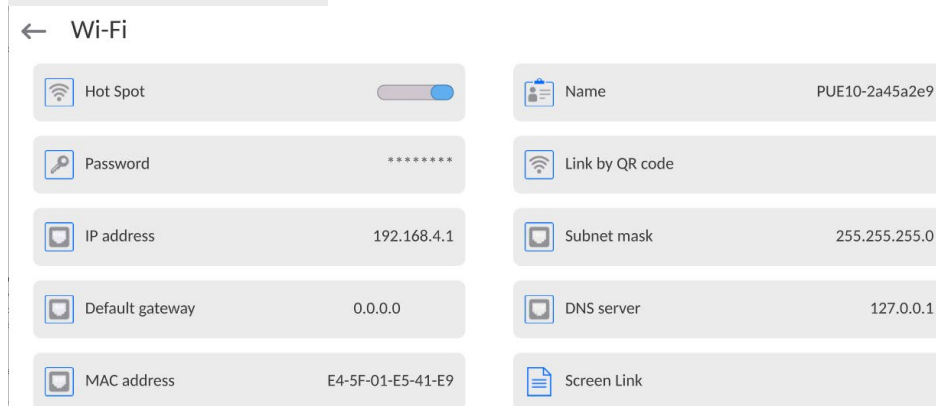
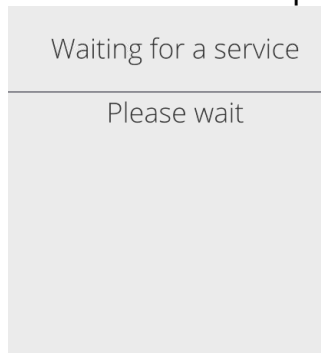
The hot spot owner decides how, to whom and on what terms to share his connection via login which requires a unique operator's name and password (these data are assigned while activating the service and stored in the device memory).

15.3.2. Activation of Hot Spot service

1. Enter Wi-Fi options



2. Enable Hot Spot service and the mass comparator will enter service settings.



3. Enter a unique name and password (the password must be at least 8 characters long).

← Name

ELIPSIS1234



Waiting for a service

Please wait

← New password



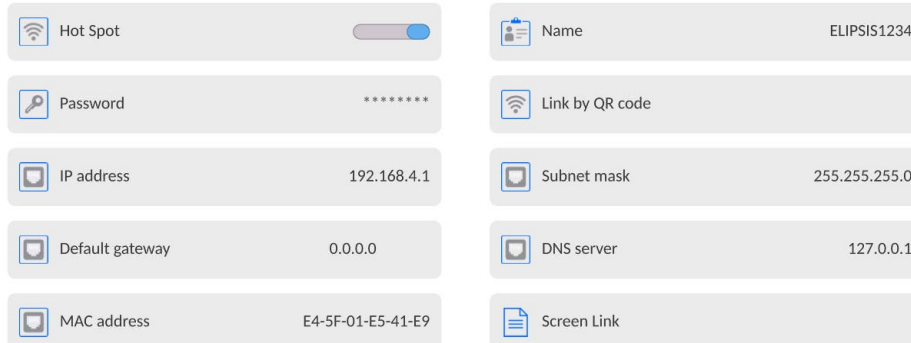
← Repeat the new password



Waiting for a service

Please wait

← Wi-Fi




4. From now on, the Hot Spot service will be active and the subnet will be detected by other smartphone devices as the subnet under the aforesaid name, and it will be possible to connect to it via the password.

15.4. TCP settings

TCP (*Transmission Control Protocol*) is a communication protocol between two computers. TCP operates in the client-server mode. The server awaits the connection in the specific port, while the client initiates the connection to the server.

How to set the port number for TCP:

- Enter <Communication> parameters group.
- Select <Tcp / Port> and you will see <Port> window with an on-screen keypad.
- Enter the desired port number and press  to confirm.

15.5. Virtual COM settings

Applies to the active IM02 communication module

The Virtual COM port is used to connect the mass comparator to the computer.


Order of steps:

1. In **<Peripherals / Computer / Port>** submenu, set **Virtual COM**.
2. Run the computer program in which measurements will be read.
3. Set communication parameters in the program, i.e. COM port, transmission parameters.
4. Start cooperation.

16. PERIPHERALS

The PERIPHERALS menu is included in the parameters menu. To gain access to the menu, press **<Setup>** icon. The menu contains a list of devices that can cooperate with the mass comparator.

16.1. Computer

The active **mass comparator-computer** connection is signalled through  icon in the top bar of the home screen.

16.1.1. Computer port

The mass comparator can communicate with the computer through the following ports: COM 1, COM 2, Tcp, USB Free Link*, RS 232 IM02**, Virtual COM**.

Procedure:


- Enter **<Peripherals / Computer / Port>** submenu and select the desired port from the list.

*) – Description of the port can be accessed in the COMMUNICATION point of the manual.

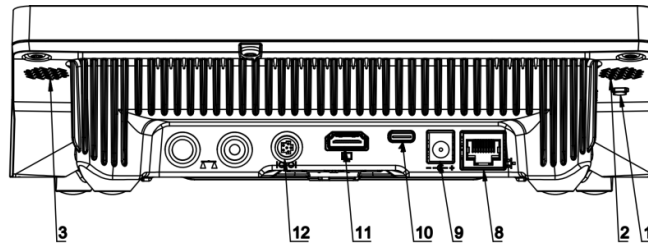
**) - IM02 communication module port connected to the mass comparator.

16.1.2. USB Free Link

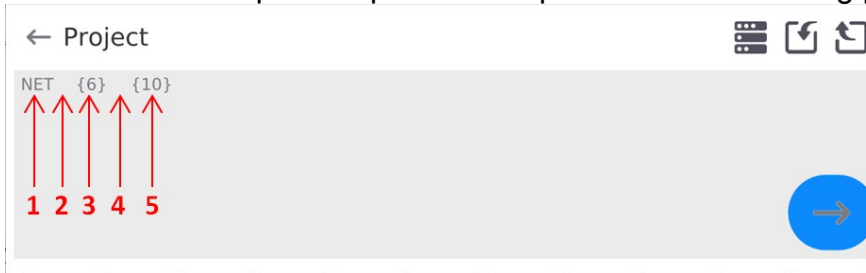
The tool used to enter data for peripherals that serve as keypads. Thanks to this, when you properly modify the standard or non-standard printout and send the suitable command from the computer or press the ENTER key on the keypad, the data in the non-standard printout will be directly entered from the mass comparator into such computer programs as Excel, Word, Notebook, etc.

To assure correct cooperation with Excel program, configure the non-standard printout by inserting printout formatting marks into the draft printout, for example Tab, Enter and diacritical marks typical of the language. Remember to set a correct decimal place mark (dot or comma) that will be accepted by our Excel program (see: **<  / Miscellaneous / Decimal point>** submenu).

USB Free Link is a USB-C port (port no. 10 at the back of the readout head) that a computer is connected to via the USB-A/C cable.



Below is an example of a printout template and the resulting printout in Excel:




- 1 – fixed text
- 2 – tab key (skip to the next column)
- 3 – variable {6}, net weight in an adjustment unit
- 4 – tab key (skip to the next column)
- 5 – variable {10}, mass unit

	A	B	C	D	E	F	G
1							
2							
3				NETTO:	1,1235 g		
4				NETTO:	1,1455 g		
5				NETTO:	1,1258 g		
6				NETTO:	1,1325 g		

16.1.3. Computer address

Here you can set the address of the mass comparator that a computer is connected to.



Procedure:

- Enter **<Peripherals / Computer / Address>** submenu and you will see **<Address>** window with an on-screen keypad.
- Enter the desired address and press  key to confirm changes.

16.1.4. Continuous transmission

Activation of continuous transmission, mass comparator – computer. Activation of **<Continuous transmission>** parameter causes the content of **<Weighing Printout Template>** to be continuously sent to the computer.

Procedure:

- Enter **<Peripherals / Computer / Continuous transmission>** and set a relevant value: ( - Continuous transmission disabled;  - Continuous transmission enabled).

16.1.5. Interval

Setting the frequency of **<Weighing Printout Template>** printout for continuous transmission. The printout frequency is set in seconds, with an accuracy of 0.1 sec., in the range from 0.1 sec. to 1000 sec.


Procedure:

- Enter **<Peripherals / Computer / Interval>** and you will see **<Interval>** edition box.
- Enter the desired value and press  to confirm changes.

16.1.6. Weighing printout template


The customised printout template for printout from the mass comparator to the computer.

Procedure:

- Enter **<Peripherals / Computer / Weighing Printout Template>** submenu to open **<Weighing Printout Template>** edition box with an on-screen keypad.
- Modify the template and press  to confirm changes.






16.1.7. Cooperation with E2R System

Activation of cooperation between the mass comparator and **E2R System** software. **E2R System** is a module system that handles production processes related to weighing at various stages.

	<E2R> parameter can be activated only by the operator with <Administrator> permission level. In case of cooperating with the <E2R System> software, the database edition in the mass comparator is blocked.
---	--

Access path:  / **<Peripherals / Computer / E2R System>**.

The list of <E2R System> submenu options:

Active system	Activation of the connection to E2R System :  - connection disabled,  - connection enabled. When the connection is activated,  icon shows up in the top bar of the home screen.
Block product selection	Activation of the product selection lock for the mass comparator operator:  - lock disabled,  - lock enabled.
Databases	The submenu containing configuration of databases that cooperate with E2R System.
Info	The list of database events that occur during active connection to E2R System.

16.2. Printer

The mass comparator operator can do the following in <Printer> submenu:

- set the printer communication port: COM 1, COM 2, USB, Tcp Client, USB Free Link*, RS 232 IM02**,
- define the printout code page (by default: 1250),
- define control codes for PCL6-supporting printer or receipt printer.
- define printout templates.

*) – Description of the port is analogical to description of the computer port.

**)- The IM02 communication module port connected to the mass comparator.



To assure correct cooperation between the mass comparator and printer (correct print of letters with diacritical marks for a specific interface language), select suitable baudrate in the device – the one that applies to the printer (see: Printer settings) and make sure the code page of the printout complies with the code page of the printer.

It is possible to make sure the code page is compliant in two ways:

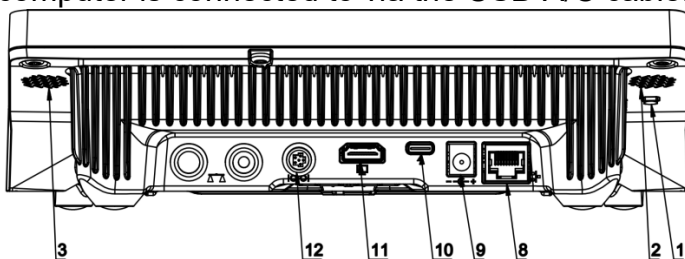
- by setting the suitable code page in the printer settings (see: Printer manual)
- by setting the same code page as the code page of the printout in the printer,

Code page	Language
1250	Polish, Czech, Hungarian
1252	English, German, Spanish, French, Italian.
1254	Turkish.

- By sending the control code from the mass comparator, and the aforesaid control code automatically sets the suitable code page of the printer before printout (identical to code page of the printout set in the mass comparator) before printing data from the mass comparator (only when the mass comparator allows so).

	<i>The default value of the printer code page is 1250 – Central-European code page.</i>
	<i>A detailed description of the communication between the mass comparator and receipt printer can be accessed in „ATTACHMENTS 03”. manual.</i>

USB FREE LINK – USB-C port (port no. 10 at the back of the readout head) which the computer is connected to via the USB-A/C cable.

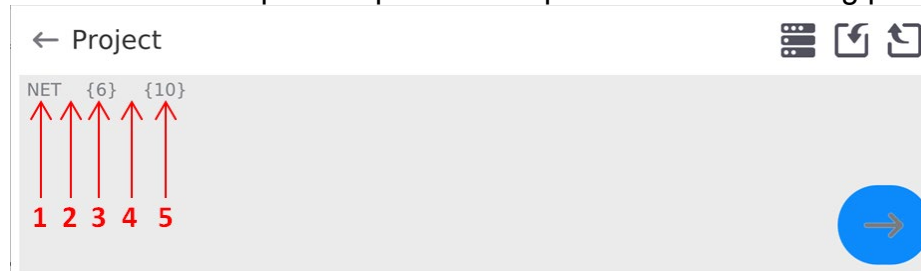


The tool used to enter data for peripherals that serve as keypads. Thanks to this, when you properly modify the standard or non-standard printout and send the suitable command from the computer or press the ENTER key on the keypad, the data in the non-standard printout will be directly entered from the mass comparator into such computer programs as Excel, Word, Notebook, etc.

To assure correct cooperation with Excel program, configure the non-standard printout by inserting printout formatting marks into the draft printout, for example Tab, Enter and


diacritical marks typical of the language. Remember to set a correct decimal place mark (dot or comma) that will be accepted by our Excel program. It can be set in the following parameters: *Setup/Miscellaneous/Decimal separator*.

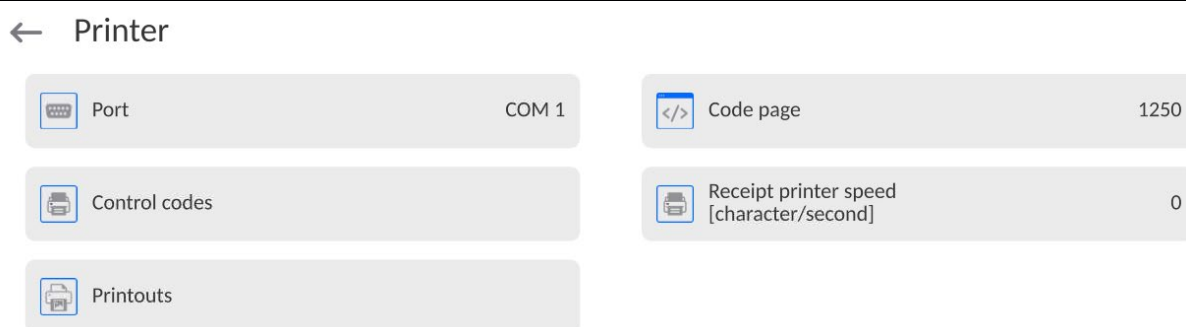
Below is an example of a printout template and the resulting printout in Excel:



- 1 – fixed text
- 2 – tab key (skip to the next column)
- 3 – variable {6}, net weight in an adjustment unit
- 4 – tab key (skip to the next column)
- 5 – variable {10}, mass unit

	A	B	C	D	E	F	G
1							
2							
3				NETTO:	1,1235 g		
4				NETTO:	1,1455 g		
5				NETTO:	1,1258 g		
6				NETTO:	1,1325 g		

 ***If you use Free Link to print big data, you have to switch <Receipt printer speed [marks/second]> parameter into 15.***



The printout template describes how information from the database is to be printed out. If it is insufficient, modify it. To check if the template is correct, print product-related parameters, for instance. You can do so when you go to <Products/Product edition> database. Press the printer icon there.

Default values for particular templates:

Product Printout Template:

{50}
{51}

Operator Printout Template: {75}
 {76}

Client Printout Template: {85}
 {86}

Warehouse Printout Template: {130}
 {131}


Packaging Printout Template: {80}
 {81}
 {82}

Ambient Conditions Printout Template: {275}
 IS T1: {278} °C
 IS T2: {279} °C
 THB T: {276} °C
 THB H: {277} %

16.3. Barcode scanner

The mass comparator can cooperate with a barcode scanner. The scanner can be used to quickly search for the following:

- Products,
- Operators,
- Clients
- Packaging,
- Warehouses,
- Formulas,
- Pipettes
- Series in differential weighing
- Universal variables,

	<p><i>In <Communication> submenu, set the baudrate in accordance with the barcode scanner (by default: 9600b/s). A detailed description of communication between the mass comparator and barcode scanner can be accessed in the „ATTACHMENTS 03” manual.</i></p>
---	---

To configure the barcode scanner, go to the submenu:
„Setup / Peripherals / Barcode Scanner”.

16.3.1. Barcode scanner port

Procedure:

- Enter **<Peripherals>** parameters group and select **„Barcode Scanner / Port”**, and then set relevant options.

The mass comparator can communicate with the scanner through the port:



- USB

16.3.2. Prefix / Suffix

You can edit <Prefix> value and <Suffix> value in order to synchronise the device with the barcode scanner.

Note: In the standard adopted by RADWAG, a prefix is a mark (byte) 01 hexadecimally and suffix is a mark (byte) 0D hexadecimally. A detailed description of communication between the mass comparator and barcode scanners can be found in **ATTACHMENT E** to the manual.

Procedure:

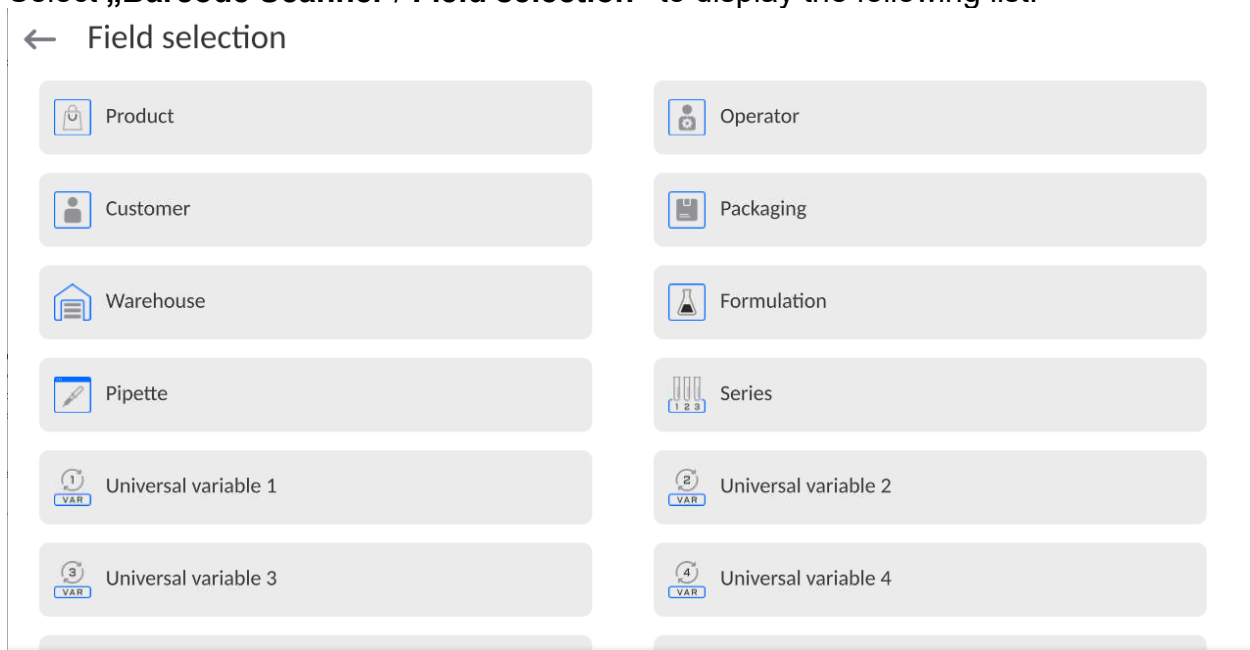
- Enter <Barcode Scanner> submenu,
- Enter <Prefix> parameter and use an on-screen keypad to enter the desired value (hexadecimally), and then press  key to confirm changes.
- Enter <Suffix> parameter and use an on-screen keypad to enter the desired value (hexadecimally) and then press  key to confirm changes.

16.3.3. Field selection

You can configure the field selection in particular databases which searching is to be based on.

Procedure:

- Enter <Peripherals> parameters group,
- Select „Barcode Scanner / Field selection” to display the following list:



- Enter the desired item to edit the following parameters:

Filtering	Declare the item which searching is to be based on (see table below)
Offset	Set the first significant code character which searching is to start from. All preceding characters are ignored
Code length	Set the number of code characters taken into account while searching

Start marker	Declare the starting point of the code to be taken into account while searching
End marker	Declare the ending point of the code to be taken into account while searching
Skip marker	Declare if code start and end markers are to be considered or ignored when comparing the code read with the code in the mass comparator.

The list of filtering items depending on the field selection:

Field selection	Filtering
Product	None, Name, Code, EAN code,
Operator	None, Name, Code
Client	None, Name, Code
Packaging	None, Name, Code
Warehouse	None, Name, Code
Formula	None, Name, Code
Pipette	None, Name, Code
Series	None, Name, Code
Universal variables	None, Active

16.3.4. Test

You can use **<Test>** function to check correct operation of the barcode scanner connected to the mass comparator.

Procedure:

- Enter **<Barcode Scanner>** submenu,
- Enter **<Test>** parameter to open **<Test>** window with ASCII and HEX fields,
- Scan the code to make it enter ASCII field and HEX field. The test result will be displayed in the lower part of the screen.

When:

- **<Prefix>** and **<Suffix>** declared in the mass comparator settings comply with **<Prefix>** and **<Suffix>** in the scanned code, the test result will be **<Positive>**,
- **<Prefix>** and **<Suffix>** declared in the mass comparator settings do not comply with **<Prefix>** and **<Suffix>** in the scanned code, the test result will be **<Negative>**.

16.4. Environmental module

It is possible to connect the THB environmental module to the mass comparator using UDP or USB ports. To assure proper cooperation, select the suitable environmental module connection port.



16.5. IM02 communication module

The IM02 communication module allows the mass comparator to cooperate with such accessories as printers, control keys, lights, buzzers, PLC controllers and other control-signalling devices, as well as PCs.



The procedure of connecting the IM02 communication module to the power network and mass comparator has been presented in great detail in „IM02 communication module” manual.

16.5.1. Activation of connection between IM02 and mass comparator

- Connect IOIOI connector of the IM02 communication module to COM 3 (IOIOI) connector of the mass comparator using a dedicated PT0454 cable.
- Enter **<Peripherals / IM02 communication module / Active>** submenu and activate the IM02 communication module ( - module enabled,  - module disabled).
- When the IM02 communication module has connected to the mass comparator, the following information will be displayed:

Status	Active connection status with the following values: Connected, Not connected.
Program version	IM02 communication module software version.
Manufacture version	IM02 communication module manufacture version.

- At the same time, the mass comparator menu will be extended to include **<Inputs/Outputs>** submenu and a list of available communication ports in **<Communication>** submenu.

17. INPUTS/OUTPUTS

Applies to the active IM02 communication module

The device can support **4 inputs / 4 outputs** by connecting to the IM02 communication module.

Access path: **<  / Inputs/Outputs>**.

17.1. How to configure inputs

- Enter **<Inputs / Outputs>** submenu.
- Select **<Inputs>** item to display a list of available inputs.
- Start editing the desired input. You will see a list of functions to be assigned. The list of functions is analogical to the list of key functions for a specific mode.
- Select the desired function from the list and return to the home screen.



For factory settings, functions of all inputs are supplied with <None> item.

17.2. How to configure outputs

When you assign a function to the specific output, you also activate it. If the output has not been assigned any function, it remains inactive.

Procedure:

- Enter **<Inputs / Outputs>** submenu.
- Select **<Outputs>** item to display a list of available outputs.
- Start editing the desired output. You will see a list of functions to be assigned:

None	Output is inactive
Stable	Stable weighing result above LO mass.
MIN stable	Stable weighing result below MIN threshold
MIN unstable	Unstable weighing result below MIN threshold
OK stable	Stable weighing result between MIN and MAX thresholds

OK unstable	Unstable weighing result between MIN and MAX thresholds
MAX stable	Stable weighing result above MAX threshold
MAX unstable	Unstable weighing result above MAX threshold
! OK stable	Stable weighing result out of OK threshold
! OK unstable	Unstable weighing result out of OK threshold
MIN	MIN threshold signalling
OK	OK threshold signalling
MAX	MAX threshold signalling
! OK	Out-of-OK threshold weighing result signalling
Zero	Zero weighing result (zero indicator).

- Select the desired function from the list and return to the home screen.



For factory settings, functions of all output are supplied with <None> item.

18. MISCELLANEOUS

This menu contains global information on operation of the mass comparator, such as language, date – time, acoustic signal, screen calibration, level control. To enter <Miscellaneous> submenu, press the Setup key and then <Miscellaneous> key.

18.1. Interface language selection

Procedure:

Enter <Miscellaneous> submenu, select <Language> item and choose the mass comparator communication interface language.

Available languages: Polish, English, German, French, Spanish, Korean, Turkish, Chinese, Italian, Czech, Romanian, Hungarian, Russian, Serbian.

18.2. Date and time setting

You can set the date and time as well as select the display format and data printout.

You can start editing the date and time in two ways:

- click **<Date and time>** field in the top bar of the home screen,
- enter: **<Setup / Miscellaneous/ Date and Time>** submenu.

When you enter date and time setting box, you will see an on-screen keypad. Set relevant values, such as year, month, day, hour, minute, and confirm changes.

← Date and time

24.07.2023 13:16:15

The screenshot shows a date and time selection interface. On the left is a calendar for July 2023 with the 24th highlighted. On the right is a time selection grid with columns for hours (hh), minutes (mm), and seconds (ss). The current time 13:16:15 is highlighted in the grid. Below the calendar and time grid is a blue button with a right-pointing arrow.

The submenu: **<Setup / Miscellaneous/ Date and Time>** contains additional functions used to define the date and time format:

Name	Value	Description
Time zone	Europe, Warsaw	This parameter shows: zone name/country. The specific name of the zone/country is associated with the information whether the winter time changes into summer time (and the other way round), and specific day of the year which the change takes place on.
Date and time	2016.04.04 08:00:00	Here you can set the date and time for the internal clock in the mass comparator
Date format	yyyy.MM.dd *	Date format selection. Available values: d.M.yy, d/M/yy, d.M.yyyy, dd.MM.yy, dd/MM/yy, dd-MM-yy, dd.MM.yyyy, dd/MM/yyyy, dd-MMM-yy, dd.MMM.yyyy, M/d/yy, M/d/yyyy, MM/dd/yy, MM/dd/yyyy, yy-M-dd, yy/MM/dd, yy-MM-dd, yyyy-M-dd, yyyy.MM.dd, yyyy-MM-dd.
Time format	HH:mm:ss **	Time format selection. Available values: H.mm.ss, H:mm:ss, H-mm-ss, HH.mm.ss, HH:mm:ss, HH-mm-ss, H.mm.ss tt, H:mm:ss tt, H-mm-ss tt, HH.mm.ss tt, HH:mm:ss tt, HH-mm-ss tt, h.mm.ss tt, h:mm:ss tt, h-mm-ss tt, hh.mm.ss tt, hh:mm:ss tt, hh-mm-ss tt

Hide time	No	Enable/disable date and time visibility in the home screen.
Internet time	Yes	If the mass comparator is connected to the Internet, this option allows you to update the time and date from the web.
Synchronised with Internet	Yes	This parameter informs you about whether time and date in the device have been synchronised with data from the Internet.

*) - For date format: y – year, M – month, d – day

***) - For time format: H – hour, m – minute, s – second

Preview of date and time with special regard to declared formats is visible in <Date and Time> field.

← Date and time

Note: To gain access to <Date and Time> parameters, you need to have relevant permission level. The permission level can be modified by the administrator in <Permission levels> menu.

18.3. Extension module

This item allows you to activate device compliance for FDA 21 CFR procedures, and to extend the communication protocol and deactivate the standard license of the device (the so-called demo comparator).

To activate it, you need to know the license number for particular options. To obtain this number, please contact the device manufacturer.

Procedure:

Enter <Miscellaneous> submenu, select <Extension module> parameter and follow messages in the screen.


18.4. Sound

Procedure:

Enter <Miscellaneous> submenu, select <Sound> parameter and set as desired:

Result approval sound	– Yes/No
Touch screen sound	– Yes/No
Sensors	– Yes/No
Volume	– up to 100%

18.5. Visual result approval

This item allows you to visually confirm the measurement record in the weighing database. After setting the item into <  >, every saved measurement will be communicated to the operator through a temporary mass display in blue.



18.6. Screensaving

You can initiate the screensaving procedure.

To do so:

Press the Setup key and then: <Miscellaneous/Screensaving>.

When you start editing it, select of the values: [None; 1; 2; 3; 5; 10; 15]. Numerical values are set in minutes. When you click one of the values, you automatically select it and return to the previous menu.

Note:

The screen is saved only when the mass comparator is not used (no changes to mass value in the screen). When the screen is saved, you return to the weighing mode automatically when the program can detect any changes to the mass or when you press the screen or key on the housing.

18.7. Display brightness

The display brightness determines how long the mass comparator can operate on a battery. If you wish to prolong the cycle between subsequent battery charging procedures as much as possible, lower the brightness.

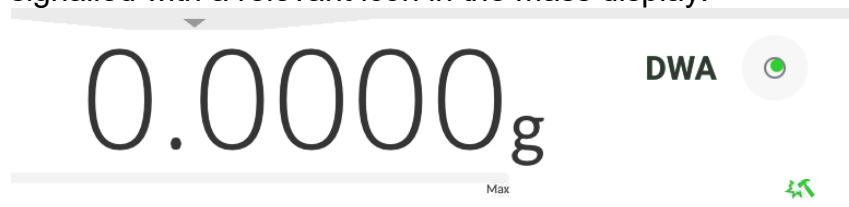
To do so:

Press the Setup key and then: <Miscellaneous/Display brightness>.

When you start editing, enter the value in the following range: [0% - 100%]. Once you have entered the value, you instantly change the display brightness and return to the previous menu.

18.8. Vibration detection

The mass comparator program allows you to detect wrong placement of the sample on the weighing pan that may contribute to erroneous measurements. Activation of this function is signalled with a relevant icon in the mass display.





If the program can detect improper placement of the sample, the icon will turn red .
This means that your result can be subject to a more substantial error.

Procedure:

- Enter <Miscellaneous> submenu.
- Select <Vibration detection> parameter,
- Select either of the following:
 - Yes – function enabled
 - No – function disabled

18.9. Level control

The mass comparator is equipped with the Automatic Level Control mechanism. With regard to non-verified devices, you can define its method of operation. With regard to verified equivalents, settings remain invisible and follow the factory preset values, that is <Active with lock>, weighing is possible only when the device is levelled.

Procedure:

- Enter <Miscellaneous> submenu.
- Select <Level control> parameter and an edition box will pop up.
- Select any of the following variants:
 - None – level indicator is not displayed, level is not controlled,
 - Active – level indicator is displayed, level change is showed through colours (green → level is OK, red → level is lost),
 - Active with lock – level indicator is displayed, level change is showed through colours (green → level is OK, red → level is lost; when the indicator is red, the message – no Level – is displayed, weighing is not possible)

Note: *The levelling method has been described in point 13.3 of the manual.*

18.10. Decimal point

This parameter allows you to select the decimal point for mass printout.

Procedure:

- Enter <Miscellaneous> submenu.
- Select <Decimal point> parameter and you will see an edition box.
- Select either of the following variants:
 - Dot
 - Comma

When you select the value, you will return to the submenu box.

18.11. Sensors sensitivity

In this parameter, you can choose the value from 0 to 9 to determine the distance at which sensors are going to react.

By default this value ranges from 5 to 7.

Procedure:

- Enter <Miscellaneous> submenu.
- Select <Sensors sensitivity> parameter and you will see an edition box.
- Select one of the values. Select to return to the menu window.

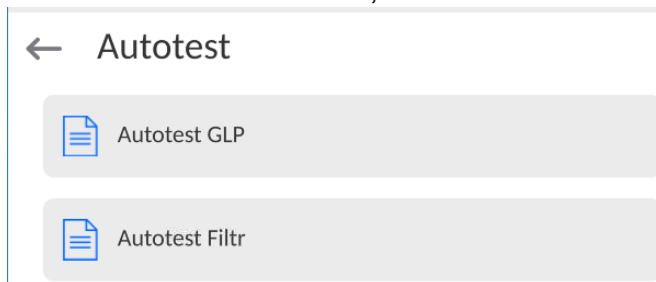
18.12. Autotest

<AUTOTEST> function has been created to support the operator in the process of assessing work and diagnosing causes of weighing errors, exceeding permissible values for this kind of mass comparator.

AUTOTEST can simply let you optimise mass comparator settings on a regular basis in order to obtain the best repeatability performance and weighing time in the specific working conditions. Thanks to this function, you can also check the above-stated parameters at any time, and archive completed tests.

The function is divided into two modules:
AUTOTEST FILTER; AUTOTEST GLP.

Before each test is carried out, the device checks the levelling, temperature and humidity.



AUTOTEST FILTER

In this procedure, the external weighing is placed and removed 10 times for all possible filter settings and result approval when 2 parameters are checked: Repeatability and Weighing result stabilisation time.

The entire test takes about 1 hour. Once it is finished, the results are displayed for all possible settings.

You are notified of optimal settings for a specific working conditions of the device.

This function proves very useful and allows you to assure top precision of weighing and the shortest weighing time at the acceptable repeatability value.

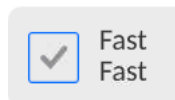
The results are remembered by the mass comparator until it is turned off.

This function allows printout via printers available in the system and quick selection of the most optimal settings directly in the options level.

After the end of the autotest, the summary and results are displayed.

The program automatically selects filter settings by displaying a suitable icon by results:

- settings which the fastest measurement has been obtained for (shortest measuring time).
- settings which the most precise measurement has been obtained for (smallest deviation for 10 measurements)
- settings which the optimal measurement has been obtained for (the lowest product of time and deviation).



- current filter settings.

Measurement results:

*Filter type.

*Value of <Result approval> parameter.

*Value of indication repeatability expressed as standard deviation.

*Average result stabilisation time.

The example of the result window view below:

← Autotest Filter



Very fast Fast	Very fast Fast and reliable
Very fast Reliable	<input checked="" type="checkbox"/> Fast Fast
Fast Fast and reliable	Fast Reliable
Normal Fast	Normal Fast and reliable
Normal Reliable	Slow Fast
Slow Fast and reliable	Slow Reliable

Example of the report:

```

----- Autotest Filter: Report -----
Device type           XA 5Y
Device ID             442566
Operator              Hubert
Application version   NL1.6.5 S
Date                  2015.05.07
Time                  09:34:48
-----
Reading unit          0.0001/0.0001 g
Internal weight mass  148.9390 g
Temperature: Start    25.26 °C
Temperature: Stop     25.66 °C
-----
Filter                Very fast
Result approval       Fast
Repeatability         0.0042 g
Stabilisation time    4.505 s

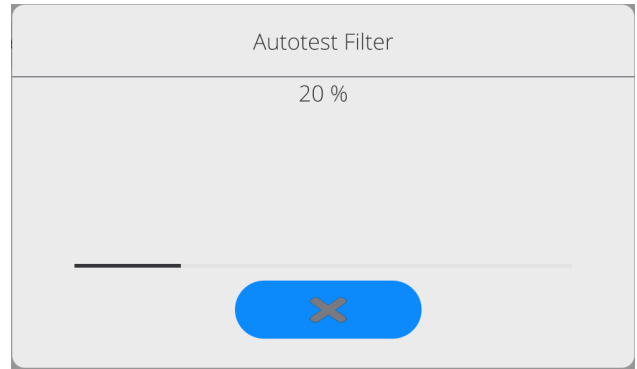
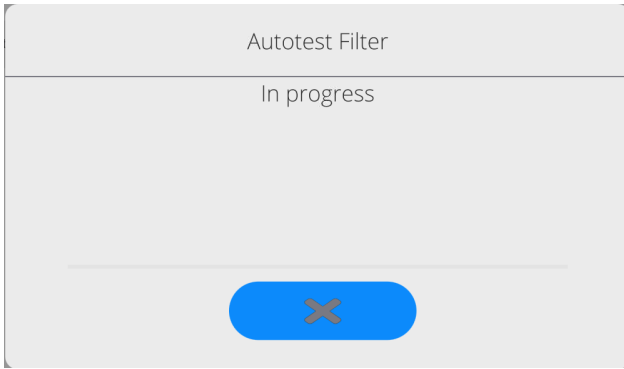
Filter                Very slow
Result approval       Precise
Repeatability         0.0207 g
Stabilisation time    5.015 s

Signature
.....

```

Procedure:

When you activate the function, the procedure is initiated instantly and the screen shows a window in which the operator is notified of the progress. When the autotest is finished, a summary will be displayed together with current filter settings. You can print it out.



You can feel free to abort the procedure at any time by pressing <X> key in the box.

AUTOTEST GLP

This test is concerned with checking repeatability of placing the internal weight and determining the indication error in relation to the maximum load capacity.

Procedure:

- Place the internal weight on twice, and then put this weight on 10 times,
- Adjust the mass comparator,
- Calculate and remember the standard deviation,
- In devices with automatically opening doors, a door test will be performed too.

This function allows you to display and print the report using printers available in the system and to archive the report with basic data, information on ambient conditions and test results.

Test results:

*Deviation for the maximum load.

*Indication repeatability value expressed as a standard deviation.

*Door assessment (positive/negative) – if the device is equipped with the door opening mechanism.

Example of the report:

```

----- Autotest GLP: Report -----
Device type      XA 5Y
Device ID       400010
Operator        Admin
Application version LLx.x S
Date           2021.01.16
Time           09:17:16
-----
Number of measurements  10
Reading unit           0.0001 g
Internal weight mass  140.094 g
Filter                 Average
Result approval       Fast and precise
-----
Deviation for Max.    -0.0118 g
Repeatability        0.00088 g
Signature
-----

```

Procedure:

Press the name field to display a dialogue box.

Here you can do the following:

- Initiate another AUTOTEST GLP.
- Preview autotest results and possibly export all saved results into the *.csv file.
- Delete all saved results.

You can terminate the procedure at any time by pressing <X> key in the box.

The autotest results are displayed in the form of a table (every line contains the autotest date and time as well as results).

To display the autotest data, press the table line with results.

To print single autotest results out, enter the results with all data on the autotest and generate the content printout by pressing <Printout> key in the top bar.

You can export the results by pressing the export field in the window with all saved autotests. The data will be sent to the external memory (pendrive stick) as a *.csv file.

18.13. Start-up logo

(Available only to the authorised operator).

This parameter allows you to change the image that shows up in the screen while launching the system.

18.14. Export system events

(Available only to the authorised operator).

This option allows you to generate a special file that is saved automatically after activating this option in the external memory (pendrive stick) inserted into the USB port. This file is used to let RADWAG service technicians diagnose potential problems related to operation of the device.

Procedure:

- Insert the pendrive memory stick into the USB port.
- Next enter <Miscellaneous> submenu.
- Select <Export system events> parameter.
- A special file will be generated by the program and saved on the pendrive stick.
- Such a file must be sent to RADWAG.

18.15. Text-to-speed conversion



This parameter allows you to activate conversion of names of particular groups and menu parameters into speed emitted from the measuring head speakers.







The voice is emitted in English only.

19. SCHEDULED TASKS

This menu contains settings that allow you to schedule systematically recurring tasks, such as mass comparator adjustment or special message display.

19.1. Adjustment

← Edit record  



 Name	 Code
 Planned operation Automatic adjustment	<input checked="" type="checkbox"/> Active <input type="checkbox"/>
 First operation date and time 2023.03.23 12:08:46	 Interval 24 h
 Message	







<Scheduled adjustments> parameter allows you to declare the exact time and interval applicable to calling the mass comparator adjustment. This option is independent of the automatic adjustment and calling criteria (time, temperature). You can schedule the internal and external adjustment. To make sure external adjustments can be scheduled, enter reference weights used to make these adjustments into the memory.

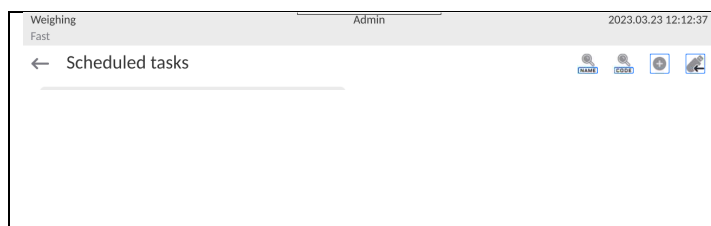
Setting:

Before you set the adjustment schedule, enter reference weights and their data for external adjustments.

To do so, enter the operator's menu, then <Adjustment> parameters group and find <Adjustment weights> parameter, and enter weight data:


← Edit record  

 Name ETALON 100 g	 Code 1234
 Class E2	 Serial number 654321
 Mass 100 g	 Set number KP 01



Enter operator menu, select <Scheduled tasks> parameter.

A window opens in which an authorised user (Administrator) can add entries with scheduled adjustments.


	<p>In order to add a new entry, press  button, wait for a window with data on the scheduled adjustment to open.</p>
	<p>Select task: automatic adjustment (internal or external).</p>
	<p>For automatic adjustment option, enter data on the adjustment and its schedule.</p>
	<p>For external adjustment option, enter data on the adjustment, mass standard used for the adjustment performance and its schedule.</p>
	<p>When all necessary data has been introduced, return to the previous window. The window features newly added entry.</p>

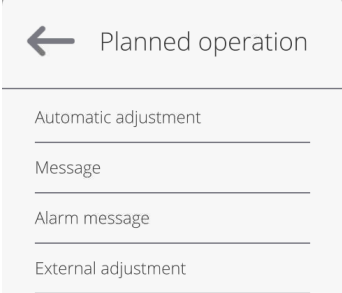
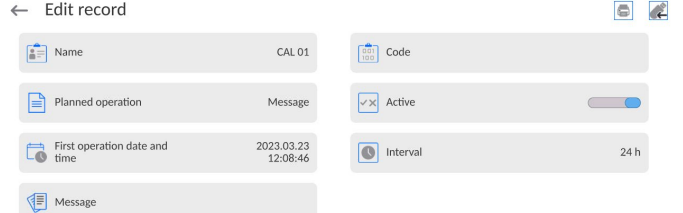
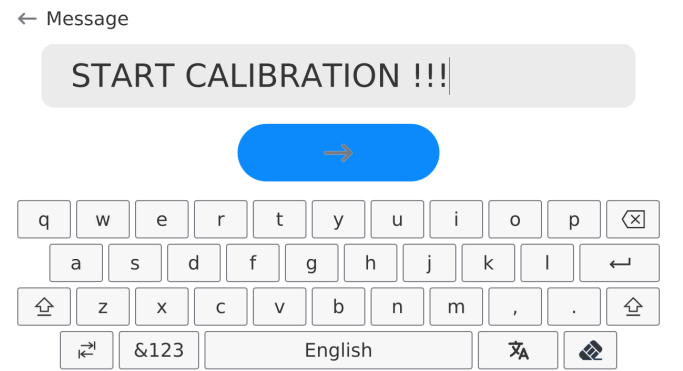

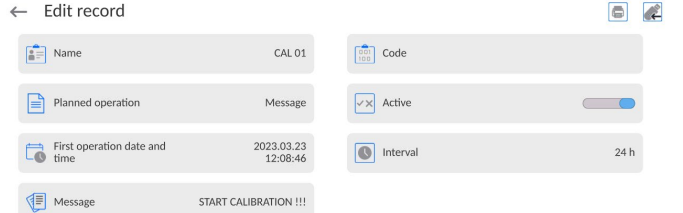
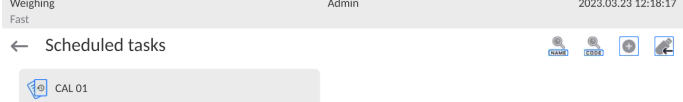
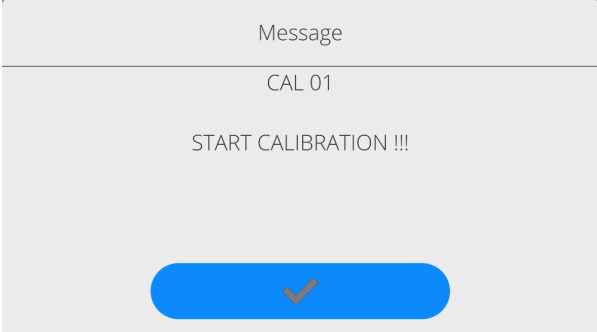

Upon entering all data, exit the menu.

From now on, adjustments will be automatic: at a specific time and at intervals given.

19.2. Message

This parameter enables to declare precise time and time interval for display of a special prompt informing the user on the necessity to take up a particular action.

	<p>Enter user menu, next enter <Scheduled tasks> submenu. In order to add an operation, press  button placed in a toolbar.</p>
	<p><Edit record> box is displayed, press <Scheduled tasks> field. <Scheduled tasks> box is displayed.</p>

	<p>Select <Message> option.</p>
	<p>Message settings box is displayed. Set message display frequency (first display, time interval), select <Message> parameter and enter message text.</p>
	<p>Press <  > button to confirm.</p>
	<p>A previous window is displayed.</p>
	<p>In <Scheduled tasks> box, a newly added operation is displayed. Go to the home screen.</p>
	<p>When message display criterion is met (time), message box is displayed automatically. Press <  > button, the message box gets closed, perform the operation.</p>

20. AMBIENT CONDITIONS

Mass comparators are always equipped with internal ambient conditions sensors that record ambient conditions inside the comparator and optionally in an external sensor – THB environmental module that records ambient conditions of the mass comparator weighing chamber space:

- Internal sensor: Temperature 1
- Internal sensor: Temperature 2
- Internal sensor: Humidity
- *External sensor: THB environmental module

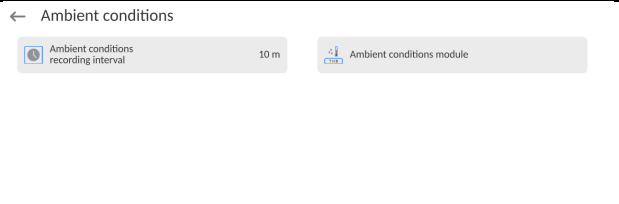
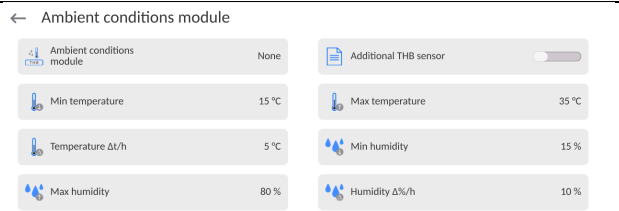
*The external sensor is delivered upon the client's special request.

In the ambient conditions group, you can modify the following parameters of ambient conditions:

- Conditions recording frequency
- Environmental module

Procedure

Enter <Parameters> and select <Ambient conditions> group.

<p>Enter <Conditions recording frequency> and specify the time interval for recording the ambient conditions. You can preview the ambient conditions record history. All records can be accessed in <Database> in <Ambient conditions> base.</p>	
<p>Enter <Environmental module> and assign it with ambient conditions parameters. <Environmental module> Thermo-Hygro-Barometer (THB) records 2 types of ambient conditions:</p> <ul style="list-style-type: none"> • Temperature • Humidity 	

Note:

The ambient conditions for the mass comparator, as set by the operator, must not go out of the device operating range specified in the device specification sheet. If the ambient conditions deviate from the ones stipulated in the aforesaid sheet, the device may malfunction.



21. UPDATE

This item includes modules that you can use to update the following:

- Operator's field: APPLICATION.
- Motherboard (administrator only).

The updating procedure is based on downloading of the information from the external USB memory.

Procedure:

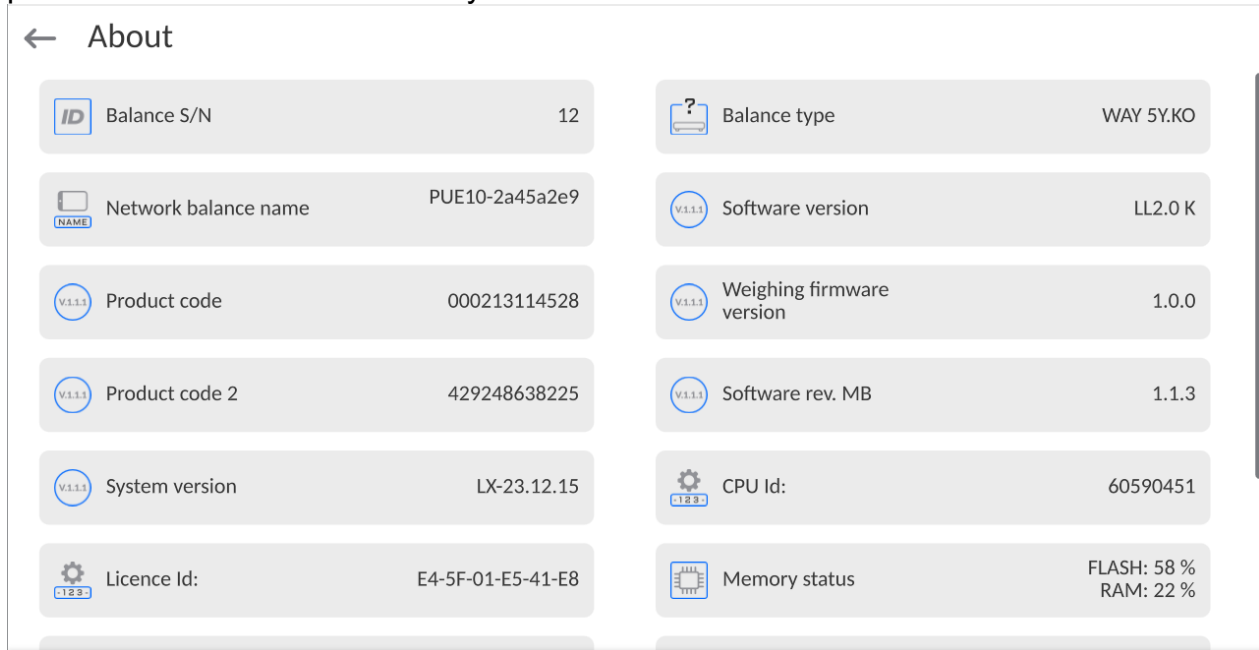
- Prepare the Pendrive external memory with an update file; the file must come with *.lab4 extension.
- Insert the pendrive stick into the USB port of the readout head.
- Log in as an Administrator.
- Press  key to enter the mass comparator menu.
 - Select <Updated>  key.
- Select <Application> field.

- The content of the USB memory will be displayed. Find the update file and click its name field.
- The mass comparator will restart and the application will be updated automatically.
- If the mass comparator fails to restart, reboot it by unplugging and plugging in.

Motherboard file update is similar to the application update. The only difference is that files must come with relevant extensions (*.cm4mbu).

22. SYSTEM INFO

This menu contains information on the mass comparator and installed software. Most parameters are for reference only.



In <Ambient conditions> parameter, you can see available ambient conditions parameters: temperature, humidity, pressure (when the mass comparator is equipped with relevant sensors).

After selecting <Settings printout> parameter, the mass comparator settings (all parameters) will be sent to the printer.


23. COMMUNICATION PROTOCOL



A detailed description of the mass comparator-computer communication protocol can be accessed in „CBCP-07” manual.

23.1. Manual/automatic printout

You can generate manual or automatic printouts in the mass comparator:

- Manual printout: press  key when the value has stabilised.
- The automatic printout is generated automatically, as per settings, as in automatic printout (see point 12.5).

The content of the printout depends on the settings for <Standard printout> - <Weighing printout template> (see point 12.5).

Mass printout format:

1	2	3	4 -12	13	14	15	16	17	18
Stability marker	Space	Character	Mass	Space	Unit	CR	LF		
Stability marker	[space] if stable [?] if unstable [!] if air buoyancy compensation function is enabled [^] if high limit is out of range [v] if low limit is out of range								
Mark	[space] for positive values or [-] for negative values								
Mass	9 characters with dot and right alignment								
Unit	3 characters and left alignment								

Example:

----- 1 8 3 2 . 0 _ g _ _ CR LF – printout generated from the mass comparator

after pressing  key in <Weighing printout template> settings:

N (number of measurements)	NO	Universal variable 1 ... 5	NO
Date	NO	Net	NO
Time	NO	Tare	NO
Levelling	NO	Gross	NO
Client	NO	Current result	NO
Warehouse	NO	Additional unit	NO
Product	NO	Mass	YES
Packaging	NO	Non-standard printout	NO

24. CONNECTION OF PERIPHERALS

5Y mass comparator can cooperate with the following devices:

- computer,
- receipt printer,
- PCL6-supporting printer,
- barcode scanner,
- fingerprint reader,
- any peripheral that supports ASCII protocol.

Note: Only accessories listed on RADWAG's website can be connected to the mass comparator.

25. 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

Start mass out of range
Install weighing pan

Zeroing/tarring time out of range
Weighing indication unstable

-no level- Balance not levelled
-Err 100- Weighing module restart





















In process An ongoing process in the course of which the indication may be unstable (automatic feeder – the process of feeding a pill, or mass comparator – the process of load change)



26. ADDITIONAL EQUIPMENT

Type	Name
RTP-UEW80 or RTP-RU80	Receipt printer
	PCL6-supporting printers – connected with the use of USB port
LS2208	Barcode scanner
SAL	Anti-vibration table for XA devices
	PC keyboard.

Computer software:
„EDYTOR ETYKIET” software

27. ATTACHMENT B – The list of programmable keys

Icon	Function name	Icon	Function name
	Select profile		Parameters
	Adjust		Select product
	Zero		Select warehouse
	Tarring		Select client
	Set tare		Help
	Disable tare		Edit universal variable 1
	Restore tare		Edit universal variable 2
	Select packaging		Edit universal variable 3
	Print		Edit universal variable 4
	Print header		Edit universal variable 5

	Print footer		Select working mode
	Select unit		Select operator
	Statistics		Abort
	Add measurement to statistics		Confirm
	Disable last digit		Disable three last digits display
	Disable two last digits display		Control robot
	Reference weight		Test weight
	Comparison plan		Weight positioning assistant
	Quick comparison		



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