

5Y series comparators

AKM-2/10 automatic mass comparator
AKM-2/20 automatic mass comparator

USER MANUAL

IMKO-09-07-08-23-EN



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

JULY 2023

Contents

1. BASIC INFORMATION	7
1.1. Intended use	7
1.2. Precautions	7
1.3. Terms of guarantee	7
1.4. Supervision of mass comparator metrological parameters	7
1.5. Information in the manual	8
1.6. Personnel training	8
2. TRANSPORTATION AND STORAGE	8
2.1. Delivery inspection	8
2.2. Packaging	8
3. UNPACKING AND INSTALLATION.....	9
3.1. Installation place, place of use	9
3.2. Unpacking	9
3.3. List of standard delivery items	9
3.4. Mass comparator cleaning	18
3.5. Connection to the network	19
3.6. Mass comparator temperature stabilisation time.	20
3.7. Connection of additional equipment	20
4. ACTIVATION OF THE MASS COMPARATOR	20
5. PROGRAM STRUCTURE.....	21
6. PROGRAM WEIGHING WINDOW	22
7. LOGIN.....	23
8. NAVIGATION IN THE MASS COMPARATOR MENU	23
8.1. Balance keyboard.....	24
8.2. Voice commands.....	24
8.3. Return to weighing function.....	25
9. COMPARISON	26
9.1. Selection of comparison unit.....	26
9.2. Principles of correct comparison	26
9.3. Mass comparator levelling	27
9.4. Mass comparator zeroing	27
9.5. Mass comparator tarring	27
9.6. Working mode activation procedure.....	29
9.7. Parameters related to working mode	29
9.8. Quick-access keys, proximity sensors	30
9.8.1. Proximity sensors	31
9.9. Information	32
9.10. Working mode - Comparator	32
9.11. Selection of the comparison method in the mass comparator.....	34
9.12. Declaration of the number of cycles.....	34
9.13. Declaration of the number of test weights	34
9.14. Declaration of the number of test run cycles.....	35
9.15. Start delay	35
9.16. Tare mode	35
9.17. Printout/approval mode	35

9.18.	Printouts	36
9.19.	Report in previous comparison processes	38
9.20.	Comparison – basic procedure	39
9.20.1.	Use of the automatic comparator.....	39
9.20.2.	Initiation of comparison in the automatic comparator.....	41
10.	CALIBRATION	42
10.1.	Internal calibration	42
10.2.	External calibration	42
10.3.	Calibration test	42
10.4.	Automatic calibration	42
10.5.	Automatic calibration time.....	43
10.6.	Report printout	43
10.7.	GLP template.....	43
10.8.	Calibration history	43
11.	ADMINISTRATOR PANEL	45
11.1.	Password settings	45
11.2.	Operator’s accounts setting	45
11.3.	Permission management	46
12.	PROFILES.....	47
12.1.	Profile creation.....	48
12.2.	Profile structure	49
12.2.1.	Settings	50
12.2.2.	Working modes.....	50
12.2.3.	Readout	50
12.2.4.	Units.....	51
13.	DATABASES.....	53
13.1.	Operations in databases.....	53
13.2.	Operators.....	54
13.3.	Products	59
13.4.	Customers.....	60
13.5.	Reference weights.....	60
13.6.	Test weights.....	61
13.7.	Comparison plans.....	61
13.8.	Packaging	62
13.9.	Warehouses	62
13.10.	Printouts / Labels	63
13.11.	Universal variables	65
13.12.	Databases management.....	65
13.12.1.	Delete databases	65
14.	REPORTS.....	67
14.1.	Operations in databases.....	67
14.2.	Weighing records	67
14.3.	Comparison reports.....	68
14.4.	Weight adjustment reports.....	68
14.5.	Environmental conditions	69
14.6.	Reports management	69
14.6.1.	Export weighing base to file.....	70
14.6.2.	Delete weighing records and reports	71

15.	COMMUNICATION	73
15.1.	RS 232 ports settings	73
15.2.	ETHERNET port settings	73
15.3.	Wi-Fi port settings.....	74
15.3.1.	General information on Hot Spot service	75
15.3.2.	Activation of Hot Spot service	75
15.4.	TCP protocol settings	77
16.	DEVICES	78
16.1.	Computer.....	78
17.1.1.	Computer address	79
17.1.2.	Permanent transmission.....	79
17.1.3.	Interval.....	79
17.1.4.	Weighing printout template	80
17.1.5.	Cooperation with E2R System	80
16.2.	Printer	80
16.3.	Barcode scanner	83
16.3.1.	Port	83
16.3.2.	Prefix / Suffix.....	83
16.3.3.	Field selection	84
16.3.4.	Test.....	85
16.4.	Environmental module	85
17.2.	IM02 communication module	85
17.2.1.	Activation of IM02-to-scale connection	85
18.	INPUTS / OUTPUTS.....	86
18.1.	Input Setup.....	86
18.2.	Output Setup.....	86
17.	OTHER PARAMETERS.....	87
17.1.	Interface language selection	87
17.2.	Date and time settings.....	87
17.3.	Extension module.....	89
17.4.	Sound.....	89
18.3.	Visual printout cofirmation	89
17.5.	Screen saving	89
17.6.	Screen brightness	90
17.7.	Vibration detection	90
17.8.	Level control.....	90
17.9.	Decimal point	91
17.10.	Sensors sensitivity	91
17.11.	Door opening.....	91
17.12.	Automatic ionisation	91
17.13.	Autotest.....	92
17.14.	Start-up logo	95
17.15.	System events export.....	95
17.16.	Text-to-speech conversion	95
18.	SCHEDULED TASKS	96
18.1.	Balance calibration	96
18.4.	Message.....	97
19.	ENVIRONMENT.....	99

20.	UPDATE.....	100
21.	SYSTEM INFO.....	101
22.	COMMUNICATION PROTOCOL	102
19.	23.1. Manual Printout/Automatic Printout.....	102
23.	CONNECTION OF PERIPHERALS	102
24.	ERROR MESSAGES.....	103
25.	ADDITIONAL EQUIPMENT	104

1. BASIC INFORMATION

1.1. Intended use

5Y-series 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. Precautions

- Before use, please read this Operating Manual carefully and use the device as per intended use.
- Do not use sharp tools (e.g. knife, screwdriver, etc.) to operate the touch panel.
- The loads that are compared must be placed in the centre of the weighing pan.
- Load the weighing pan with weights whose gross weight is lower than the maximum loading capacity.
- In case of a failure, unplug the comparator immediately.
- The device that is to be withdrawn from use must be disposed of in accordance with currently applicable rules of law.
- Do not use the comparator in an explosive atmosphere. It is not suitable for operation in hazardous zones.

1.3. Terms of guarantee

- A. RADWAG undertakes to repair or replace the components that prove defective in terms of manufacture or design.
- B. Specification of defects of unclear origin and determination of elimination methods can only be done in cooperation with representatives of the manufacturer and operator.
- C. RADWAG does not take responsibility for any damage or loss arising from unauthorised or wrong performance of production or servicing processes.
- D. The guarantee does not cover the following:
 - mechanical damage arising from wrong operation of the mass comparator as well as thermal, chemical damage, or damage caused by atmospheric discharge, overvoltage in the power network or other random event,
 - damage to the mass comparator, when used at variance with intended use,
 - damage to the mass comparator when the service centre declares violation or damage to the mark that secures structure of the mass comparator against opening,
 - damage caused by liquids and natural wear,
 - damage to the mass comparator due to wrong adaptation or power network defects,
 - damage arising from measuring mechanism overloading,
 - maintenance works (mass comparator cleaning works).
- E. The guarantee cover is lost when:
 - repair is entrusted to an unauthorised service centre,
 - the service centre finds interference of unauthorised people into mechanical or electronic structure of the mass comparator,
 - other version of the operating system is installed,
 - the mass comparator does not have company securing marks,
- F. Detailed terms of the guarantee can be accessed in the maintenance sheet.

1.4. Supervision of mass comparator metrological parameters

The metrological properties of the mass comparator must be checked by the operator at prearranged time intervals. The frequency of checking depends on environmental factors which the mass comparator is operating in, types of comparisons, their frequency and the quality control system.

1.5. Information in the manual

Carefully read the manual before you plug in and switch the mass comparator on, even if you are experienced in working with such devices. The manual contains all information required for proper use of the device; adherence to these guidelines is a guarantee of correct and reliable operation of the mass comparator.

1.6. Personnel training

The mass comparator must be operated and supervised only by people trained on its use and experienced in using such devices.

2. TRANSPORTATION AND STORAGE

2.1. Delivery inspection

Inspect the packaging and device for any signs of exterior damage immediately after the delivery. If you have found any damage, contact the manufacturer's representative.

2.2. Packaging

Please keep all elements of the packaging in order to use them in case it is potentially necessary to transport the mass comparator in the future. Only the original packaging of the mass comparator can be used for shipping. Before you pack the product, disconnect all cables and remove moving parts (weighing pan, covers, inserts). Put all elements of the mass comparator into the original box and secure against transport damage.

3. UNPACKING AND INSTALLATION

3.1. Installation place, place of use

- Use the mass comparator in rooms that are free from vibrations and shocks, draughts and dust.
- The air temperature in the room 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 change must not exceed 2%/4h.
- The mass comparator must be positioned on the wall bracket or stable table that is not exposed to vibrations, away from sources of heat.
- Pay special attention to magnetic properties of test weights because a strong magnet is an integral part of the mass comparator. Their magnetic power *must not exceed the permissible value for a specific standard accuracy class.*

3.2. Unpacking

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

3.3. List of standard delivery items

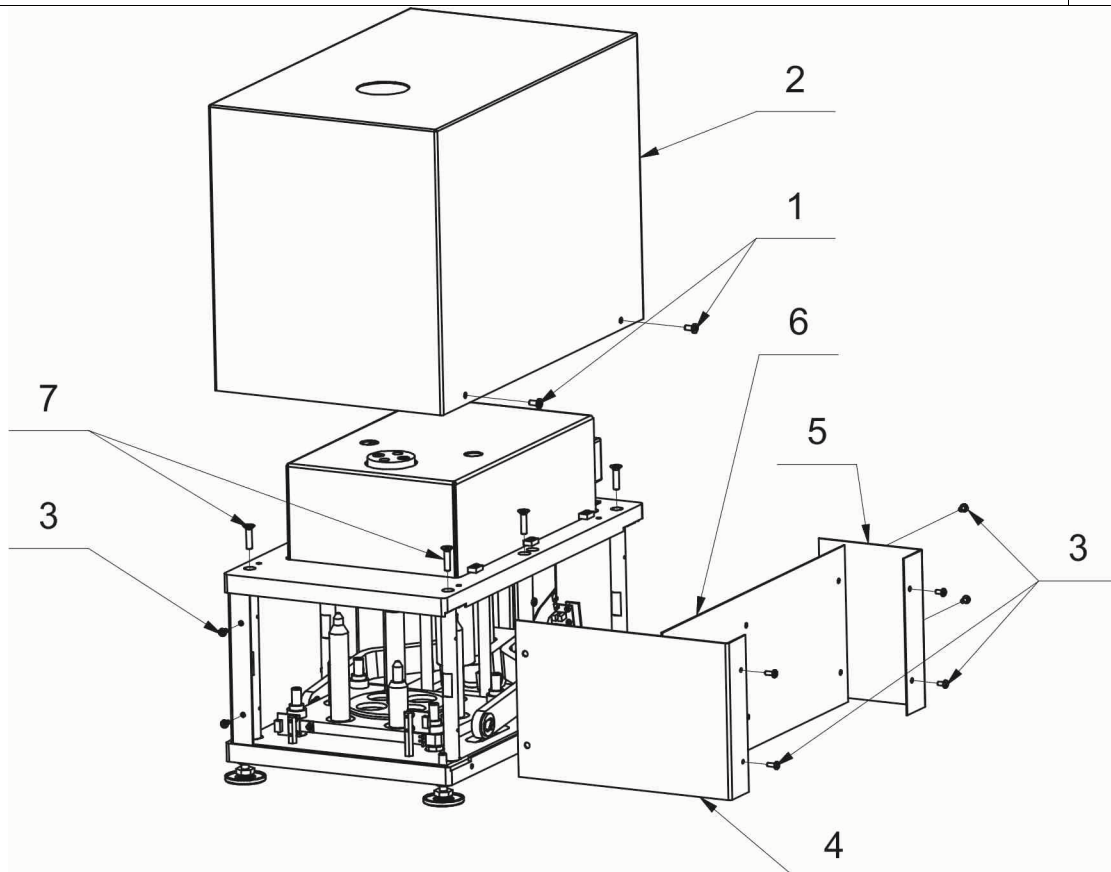
- Mass comparator
- Ballast change knob
- Weighing pan
- Weighing indicator
- Power adapter

Before you start installing the mass comparator, read the manual carefully and follow steps described there in order to properly prepare the device for work.

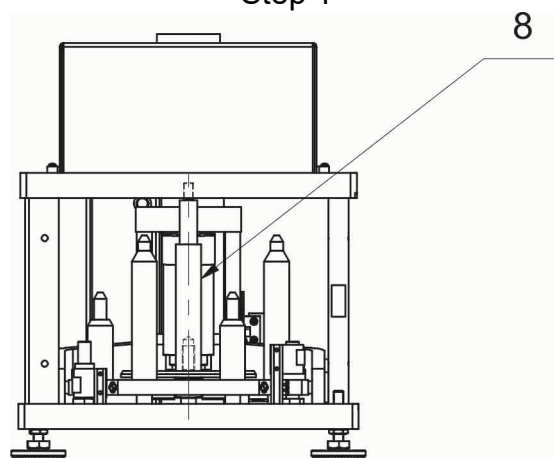
Note:

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

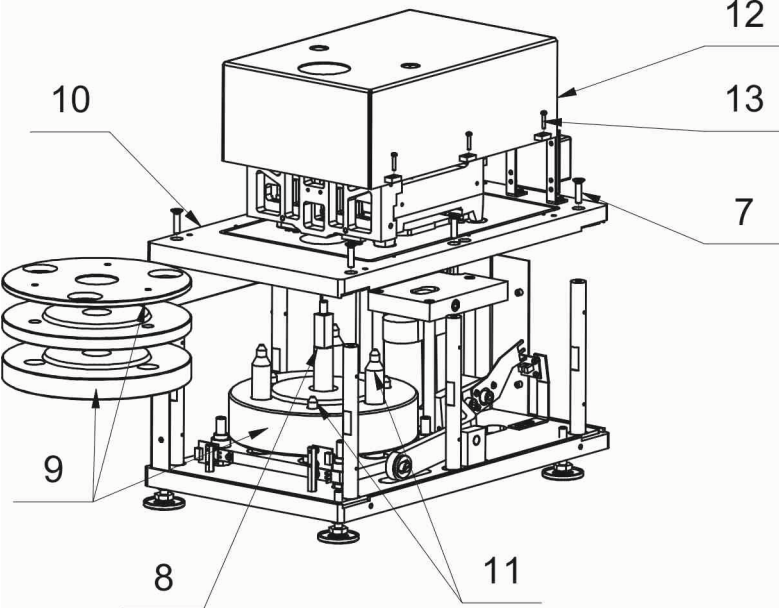
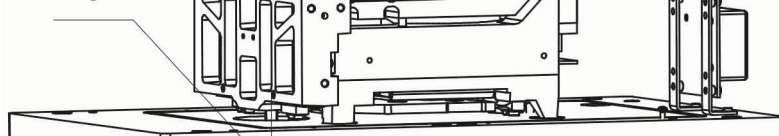
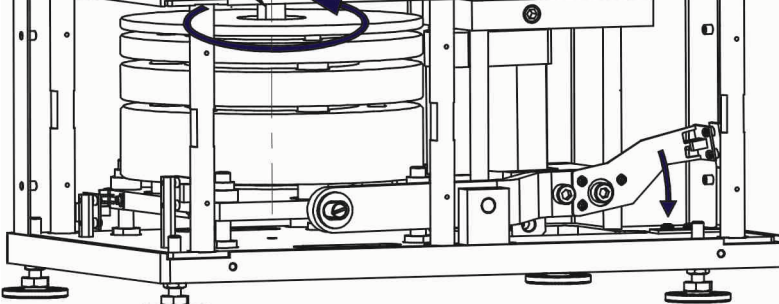
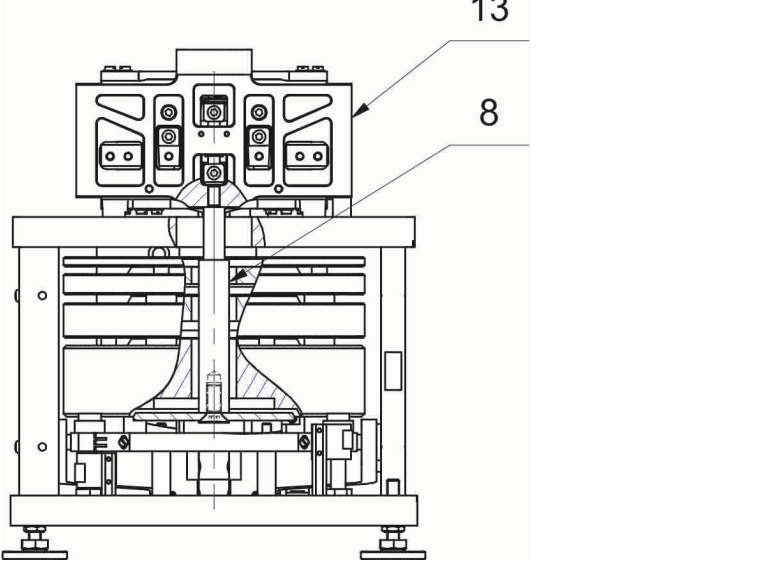
Step 1 Comparator installation steps	AKM-2/10	AKM-2/20
1.1 Unscrew 4 M5 bolts (1) and carefully remove the housing (2).	✓	✓
2.1 Unscrew 6 M4 bolts (3) and pull covers (4), (5) and (6) out.	✓	✓
4.1 Use a flat wrench to unscrew the lower weighing pan connector (8).	✓	✓
5.1 Unscrew 6 M6 bolts (7)	✓	✓

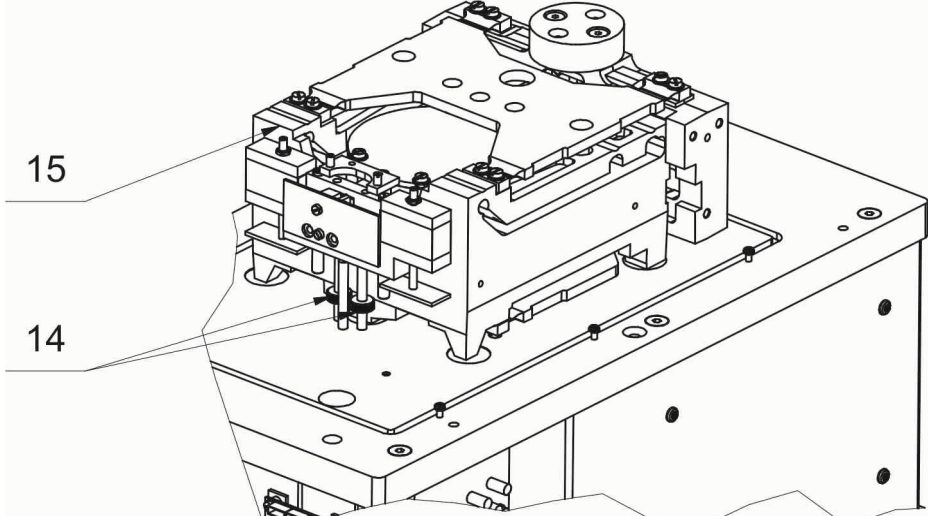
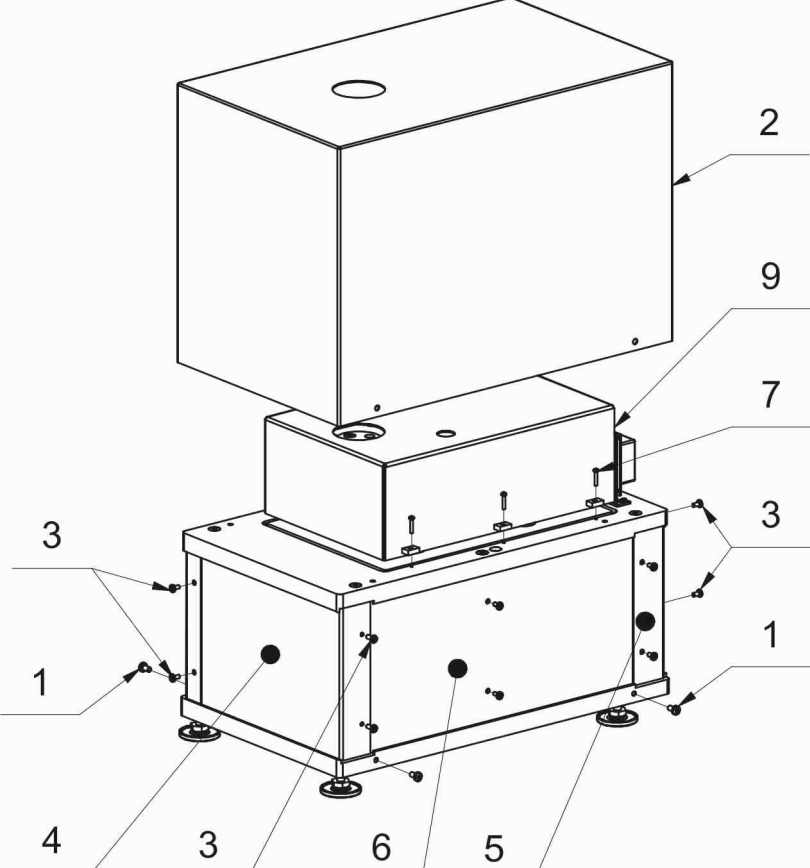


Step 1



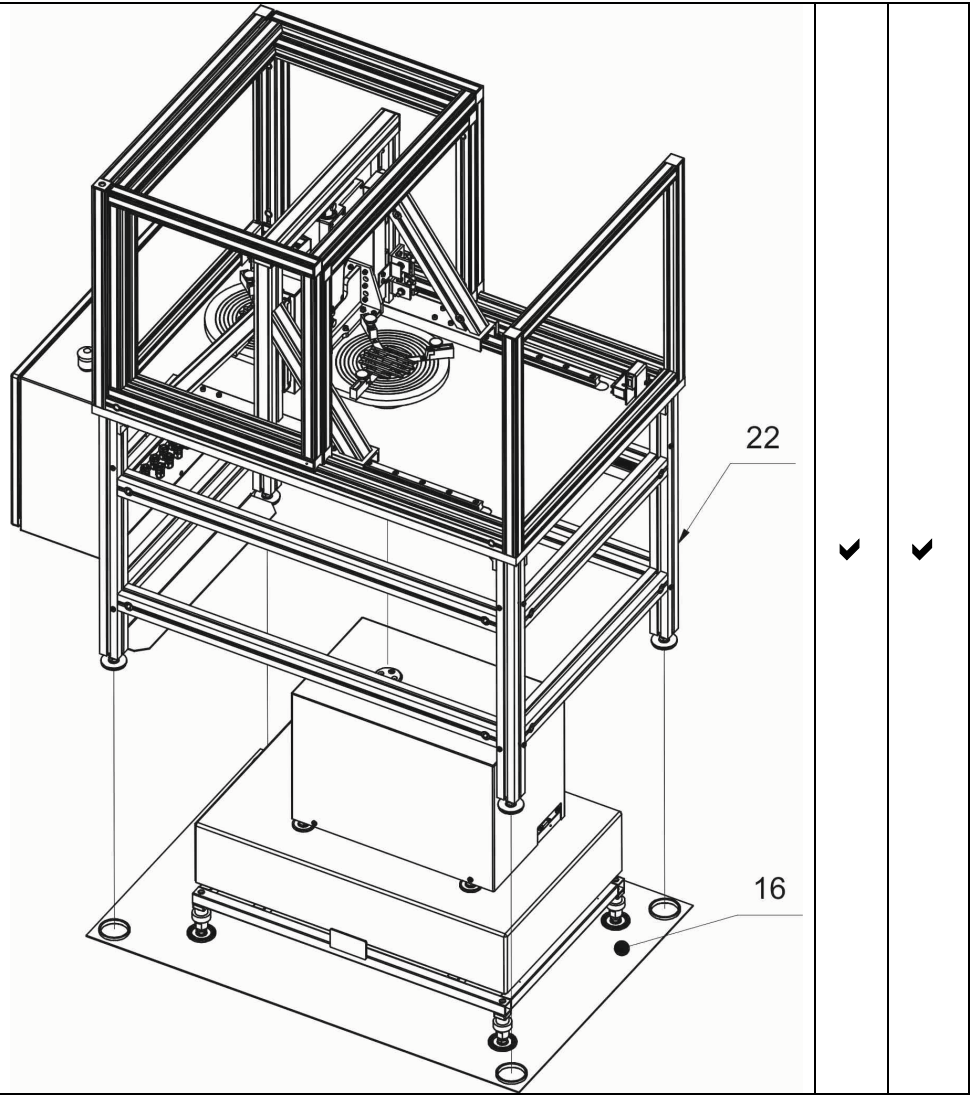
Step 1

Step 2	Comparator installation steps		AKM-2/10	AKM-2/20
<p>1.2 Lift the plate (10), use the space between the plate (10) and lower weighing pan connector (8) to put weights (9) onto pushers (11).</p> <p>Note: While lifting the plate, make sure you do not damage its wires and electronics.</p>		▼	▼	
<p>2.2 Screw the plate (10) in, using M6 bolts (7)</p>		▼	▼	
<p>3.2 Unscrew 6 M3 bolts (16) and remove the mechanism cover (12)</p>		▼	▼	
<p>4.2 Screw the lower weighing pan connector (8) in the vertical rocker (13).</p> <p>Note: While taking this action, screw the lower weighing pan connector (8) in and lift weights (9) at the same time. Make sure the lower weighing</p>		▼	▼	

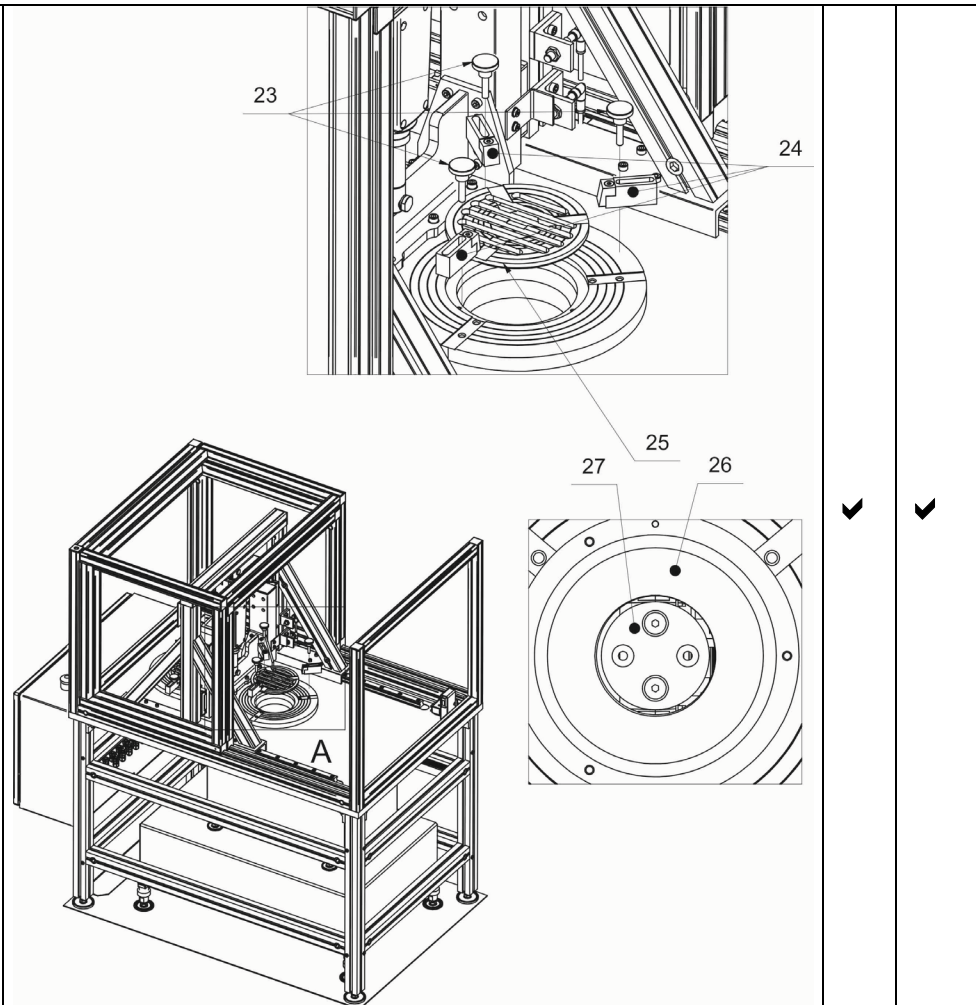
<p>pan connector (8) does not press against the vertical rocker (13).</p>			
<p>5.2 Unscrew 2 knobs (14) to unlock the comparator mechanism (15).</p>		<p>✓</p>	<p>✓</p>
<p>5.6 Pull in and screw covers (4), (5) and (6) in.</p>		<p>✓</p>	<p>✓</p>
<p>5.7 Screw the mechanism cover (9) in.</p>			
<p>5.8 Screw the housing (2) in.</p>			

Step 3 Comparator installation steps		AKM-2/10	AKM-2/20
1.3 Set the positioning plate (16)		↙	↙
2.3 Put the frame (17) on so that its legs fit the positioning plate holes (16). Level the frame in 2 directions and insert vibration isolators (19) into frame ports (18).		↙	↙
3.3 Put the stone (20) onto vibration isolators (19), check levelling (correct levelling, if necessary) and set the comparator (21) on the stone (20).		↙	↙

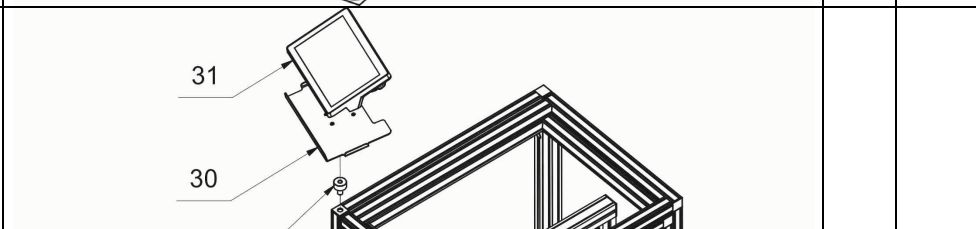
5.3 Put the comparator robot (22) onto the positioning plate (16) which the comparator with a stone are located on, so that the robot legs fit the positioning plate holes (16).



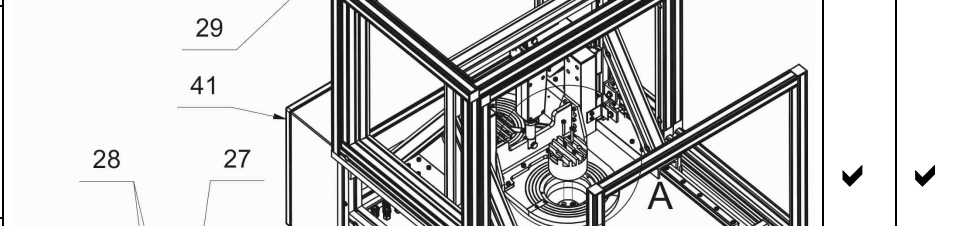
6.3 Unscrew bolts (23), remove sliders (24) and weighing pan cover plate (25). Set the comparator (21) in relation to the robot (22) so that the hole of the weight grip (26) is in the centre of the comparator weighing pan ring (27).



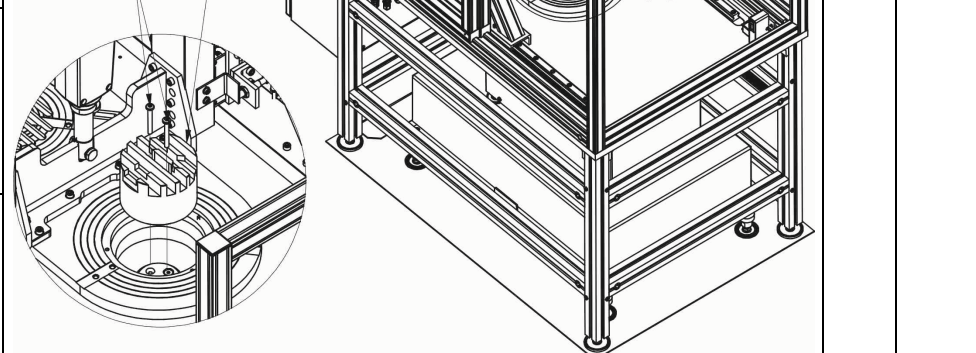
7.3 Connect the control box (41). Use cables supplied.



9.3 Put the sleeve (29), grip (30) and terminal (31) in. Connect the terminal to the comparator (21).



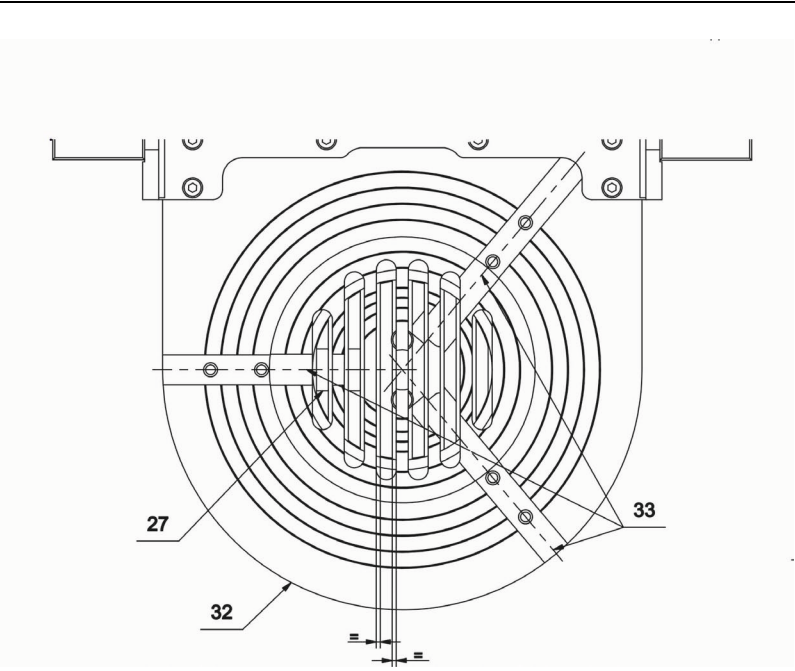
10.3 Screw the weighing pan (27) in, using M5x40 bolts (28).



11.3 Supply power and start the device.

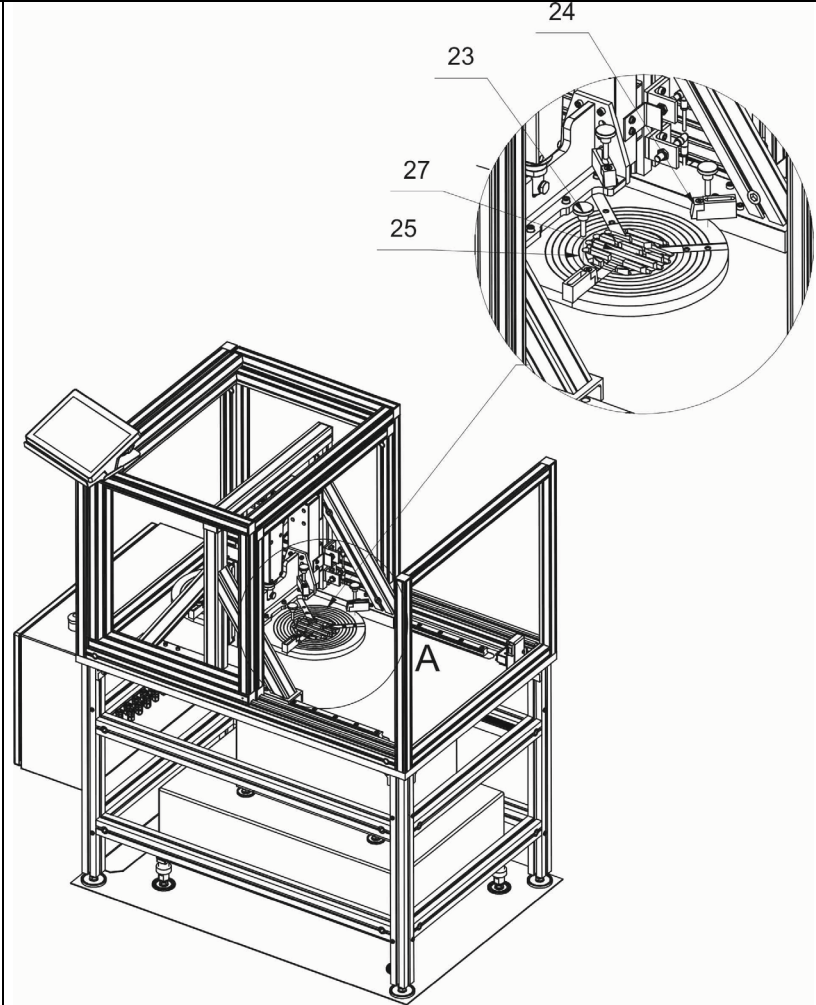
12.3 Put the weighing pan cover plate (32) on. Set the comparator in relation to the weighing pan cover plate so that the distance between ribs of the weighing pan and walls of slits in the cover plate are identical. Additionally make sure the deepening axes (33) of the weighing pan cover plate overlap with their equivalents in the weighing pan.

Repeat the procedure for the second grip (32) – choose the upper position of the robot, change the robot position, unscrew bolts (23), disassemble sliders (24), remove the weighing pan cover plate (25), choose the lower position of the robot, put the weighing pan cover plate on (25) and make sure the distance between ribs of the weighing pan and walls of slits in the cover plate is identical.

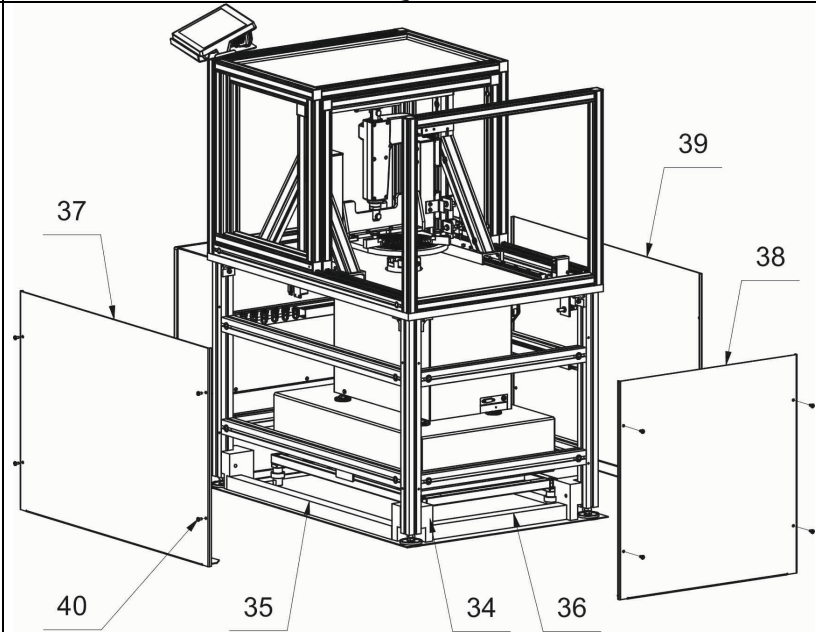


✓ ✓

13.3 Make sure there is no collision on both positions of the comparator between the weighing pan (27) and weighing pan cover plates (25). Insert sliders (24) into grooves (33) and screw them in with bolts (23).



14.3 Screw covers (37) (38) (39) in.



3.4. Mass comparator cleaning

Note:

If you clean the weighing pan after it has been installed, you may damage the mass comparator.

1. Disassemble the weighing pan and other moving pieces of the mass comparator. Be careful when taking these actions in order not to damage the mass comparator mechanism.
2. Use a small keyboard cleaner to remove dust from the weighing chamber, as much as possible.

Glass elements cleaning

Depending on the type of dirt, a suitable solvent must be chosen. Never immerse glass in strong alkaline solutions as it may get damaged under their influence. It is forbidden to use abrasive agents.

In case of any organic residues, use acetone. You can use water and detergent in another step. In case of non-organic residues, use diluted acid solutions (soluble salts of the hydrochloric acid or nitric acid) or bases (mostly sodium base, ammonium base).

ACIDS are removed with basic solvents (sodium carbonate), while BASES with acid solvents (mineral acids of various concentration).

In case of stubborn dirt, use a brush and detergent. Avoid detergents whose molecules are large and hard and likely to scratch the glass.

To finish with, 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.

Rinsing is necessary to make sure all residues of soap, detergents and other cleaning agents are removed from the glass produce before their are reinstalled on the balance.

After initial cleaning, glass elements must be washed under running water, and distilled water at the end.

It is not advisable to dry the glass with a paper towel or under a stream of forced air because it may supply the glass elements with fibres or other dirt, and eventually result in wrong weighing indication.

Do not use electric driers for measuring glassware.

After washing, glass elements are usually put on the shelf for drying.

Powder-coated elements cleaning

The first step must be to clean with a slightly wetted large-pore sponge to remove loose and major dirt.

Do not use abrasive agents.

If that proves insufficient, use a suitable cloth and water-cleaning agent solution (soap, dishwashing liquid) to clean the surface. When doing so, apply a regular pressure of the cloth against the surface.

Never dry clean with a detergent itself as it may damage the coating – use a large amount of water or water-cleaning agent solution.

Aluminium elements cleaning

To clean aluminium, use products that contain natural acids. Feel free to choose distilled vinegar or lemon. It is forbidden to use abrasive agents. Avoid rough brushes as they may easily scratch the aluminium surface. A soft microfibre cloth will be the best choice.

While cleaning polished surfaces, make circular movements. After removing dirt, polish the surface with a dry cloth to dry it off and make it glow.

Stainless steel elements cleaning

While cleaning stainless steel elements, follow the table below. The table shows types of pollution and pollutant elimination methods.

Fingerprints	Wash with a spirit or solvent. Wash with pure water and wipe it dry.
Oils, fats, greases	Wash with organic solvents and then with warm water and soap or soft detergent. Rinse with pure water and wipe it dry.
Stains and temperature decomposition	Wash with a soft scrubbing detergent. Gently clean as per the direction of the surface structure. Rinse with pure water and wipe it dry.
Strong discolouration	Gently clean as per direction of the surface structure. Rinse with pure water and wipe it dry.
Traces of rust	Moisten with an oxalic acid solution and leave for about 15-20 minutes. Next wash with warm water and soap or soft detergent. Rinse with pure water and wipe it dry.
Paints	Wash with a paint solvent, and then with warm water and soap or soft detergent. Rinse with pure water and wipe it dry.
Scratches on the surface	Gently polish with an unwoven fabric (iron-free) as per direction of the surface structure. Then wash with soft scrubbing detergent. Rinse with pure water and wipe it dry.

ABS elements cleaning

To clean dry surfaces, it is necessary to use clean cellulose or cotton cloths that do not leave streaks and do not dye. You can also use a solution based on water and cleaning agent (soap, dishwashing liquid, window washing agent). While cleaning the surface, apply a regular pressure of the cloth against the surface. Wipe the surface in question and dry it off. Cleaning can be repeated, if necessary.

In case of hard-to-remove dirt, such as residues of glue, tar, polyurethane foam, etc., you can use special cleaning agents based on mixture of aliphatic hydrocarbons that does not dissolve materials. Before you use the cleaning agent, it is advisable to perform usability tests covering all surfaces. Do not use abrasive agents.

3.5. Connection to the network

The mass comparator can be connected to the network only with the use of the original power adapter (supplied). The rated voltage of the power adapter (given on its rated plate) must comply with the rated voltage of the network.

To power the mass comparator, insert the power adapter into the mains socket while the pin of the power adapter into the port located at the back of the mass comparator housing.

3.6. Mass comparator temperature stabilisation time.

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

With regard to mass comparators that before connection to the network were stored at a substantially lower temperature (e.g. in winter), the acclimatisation and heating time is about 12 hours. While the mass comparator is stabilising thermally, the indication displayed may change. It is advisable to make sure the potential surrounding temperature fluctuations are minor and slow in the place of using the mass comparator.

3.7. Connection of additional equipment

Only the additional equipment that is recommended by the mass comparator manufacturer can be connected. Before you connect the additional equipment or change the aforesaid equipment (e.g. printer, PC, USB-type computer keyboard or additional display unit), unplug the comparator. After connecting devices, repower the comparator.

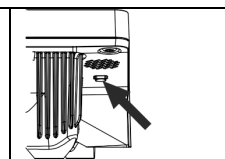
4. ACTIVATION OF THE MASS COMPARATOR

- Supply power to the balance.

NOTE: The balance is equipped with two ports for a power adapter. One port is located in the readout head, and the other at the back of the weighing mechanism housing. The balance can be supplied with power from both the head and balance mechanism, but it is forbidden to do it from both at a time, with the use of two power adapters. Otherwise you may damage the balance and power adapters.

- After a while the operating system and RADWAG software will start loading. The start-up procedure will be accompanied by a flashing signalling light and LED lights at the lower frontal part of the readout head.
- Once the start-up procedure has ended, the program home screen will automatically open.
- The balance activates with the unlogged operator (no user) to initiate operation. You must log in (login procedure will be described further in the manual).


If the program crashes during operation, perform the so-called hard reset. To do so, press the balance head button and keep it pressed for about 5 seconds. The program will restart and the device will reactivate.



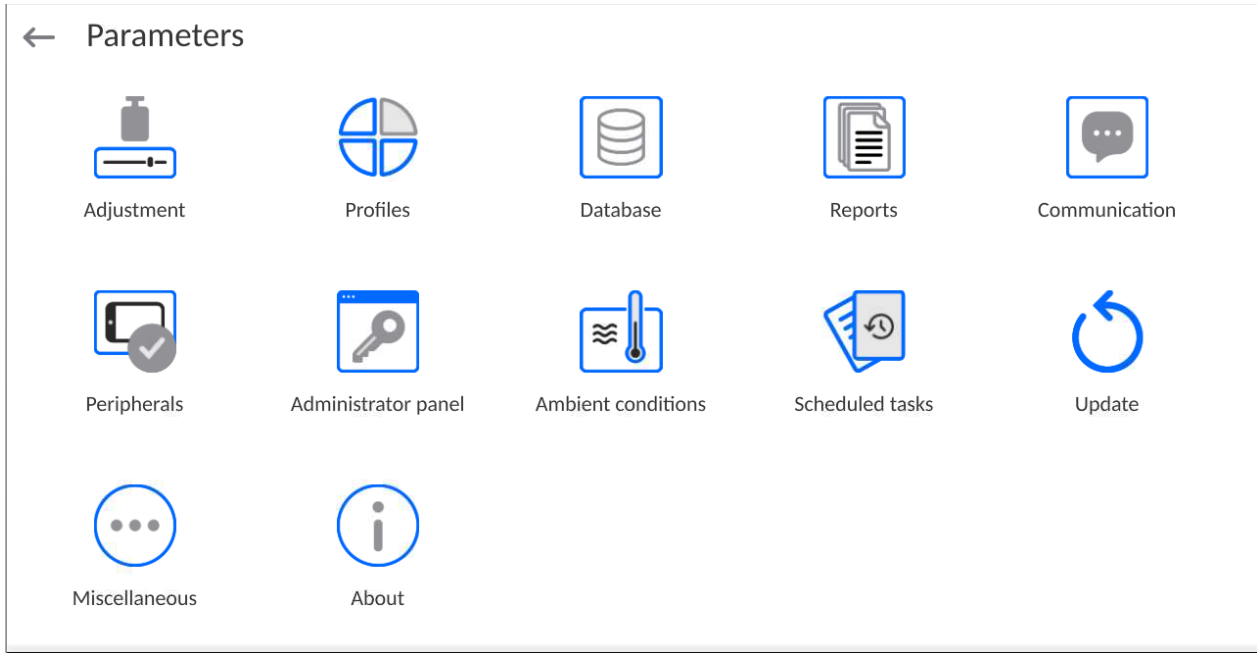
5. PROGRAM STRUCTURE

The main menu of the program has been divided into functional groups. Each group includes parameters grouped by themes. The description of each group can be found further in the manual.

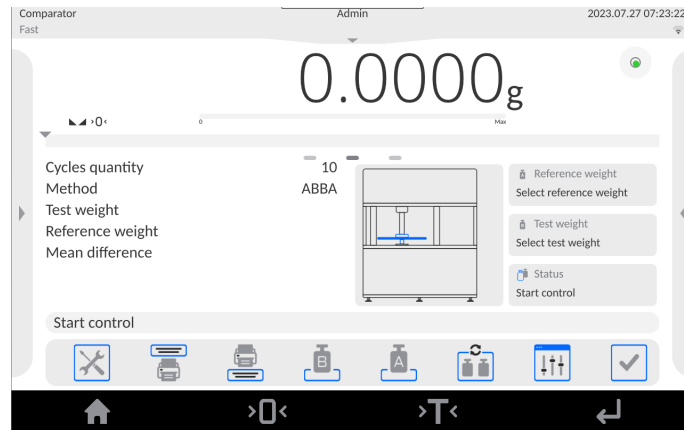
List of menu groups - Parameters

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

The menu includes parameters related to balance settings, functions and profiles.



6. PROGRAM WEIGHING WINDOW

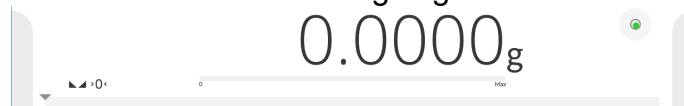


The home screen of the application can be divided into 5 fields:

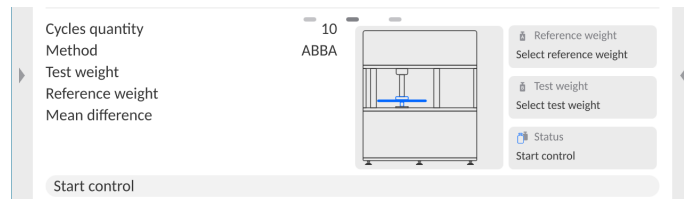
- The upper part of the screen shows information on a currently used working mode, logged user, date, time, active connection to PC.



- Below is a window that shows the weighing result and balance levelling status.



- The field contains additional information related to current activities.



Note:

The information included in this field is freely programmable. The way of defining will be described further in the manual.

- The on-screen functional keys are presented below:



Note:

The balance operator is allowed to define on-screen functional keys. The way of defining will be described further in the manual.

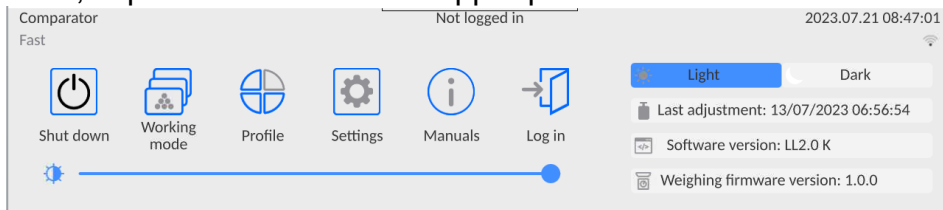
- Fixed functional keys can be found at the bottom of the screen:



7. LOGIN

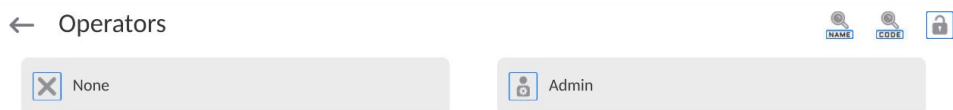
In order to gain full access to user parameters and database edition, the balance operator must log in as **<Administrator>**.

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



First login:

- After you have expanded the top menu, press the field with **<Log in>** inscription. The operator base window with **<Admin>** item will pop up.




- By default this operator is not assigned any access password. If you select it, the program home screen will be automatically displayed.

NOTE: After the first logging, at first enter operators and assign them relevant permission levels and unique access passwords (procedures will be described further in the manual, see point 9 and 28.2).

During another login, select the operator from the list, enter the password to make the program work for the specific operator as per its permission level.











Logout:

- Expand the menu in the upper part of the screen and press the field with .
- After collapsing the main menu in the upper bar of the screen, the logged operator's name will turn into **<Not logged in>**.

8. NAVIGATION IN THE MASS COMPARATOR MENU

It is very intuitive and easy to navigate in the menu of the weighing program. Thanks to the display with a touch panel, you can easily use the program. When you press the on-screen button or field in the screen, you activate the assigned operation or function.

8.1. Balance keyboard

	Press to enter the main menu.
	Press to confirm modification.
	Press to return to the previous view without changing the parameter value.
	Press to add a database record.
	Press to search for a particular database entry by date.
	Press to search for a particular database entry by name.
	Press to search for a particular database entry by code.
	Press to print database entries.
	Press to select printout template variables from the list.
	Press to go back.

8.2. Voice commands

The balance program allows performing several operations via voice commands. These are the following operations: tarring, zeroing, print/save measurement. The commands must be expressed in English, in a suitable sequence. See below for the structure of particular commands.

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

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


Print/Save: **ellipsis** [please] save [the] (mass | measurement | mass measurement)

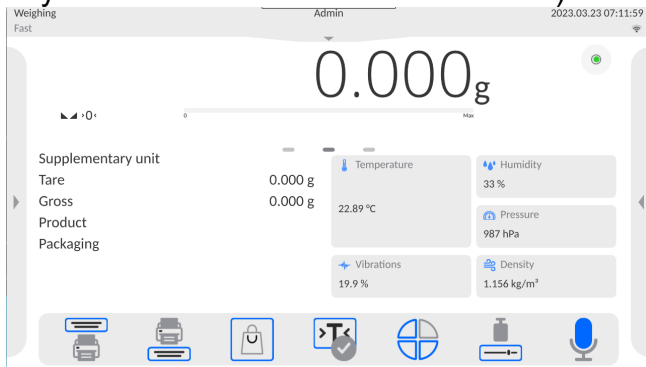
Open automatic door: **ellipsis** open door


Close automatic door: **ellipsis** close door

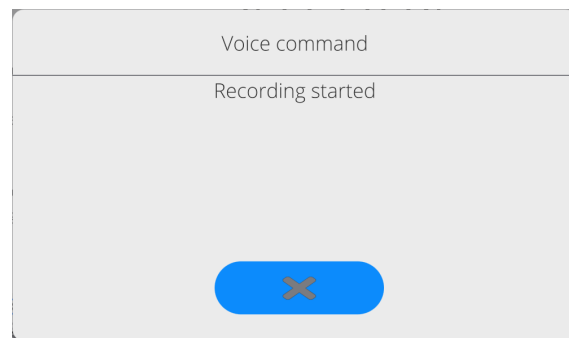
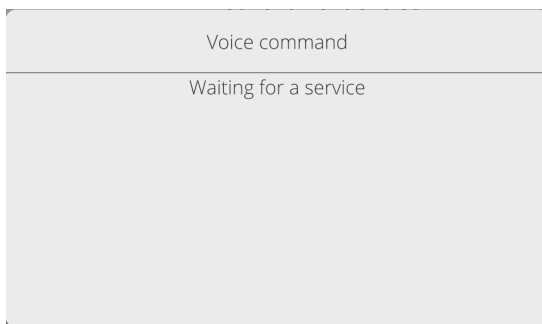
*The method of expressing the command: black text is obligatory, green text may be expressed but does not need to, red text – one of them must be obligatorily expressed e.g.: for the Print command: **ellipsis** save **mass**.*

Procedure:

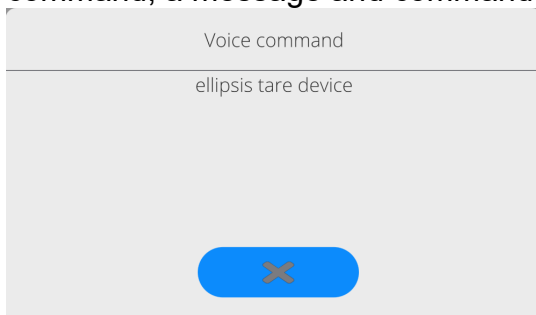
1. Place  voice command activation key on the button bar (the method of adding keys is described further in the manual).



2. Press  key.
3. The voice command recognition procedure will be initiated and the operator will be informed about it through messages.





4. Express the command as per the description above.
5. If the command is expressed correctly and the balance program can recognise the command, a message and command will be automatically executed.




8.3. Return to weighing function

Any changes entered into the balance memory are automatically saved in the menu after returning to the home screen.


Procedure:

- Press  a couple of times to return to the home screen of the balance.
- Press  in the upper bar to return to the home screen instantly.

9. COMPARISON

The comparison of weights with the use of RADWAG AKM comparators is automatic. The operator's task is to design the comparison plan in the comparator menu and to position reference weights and test weights on the loading pan as per the pre-designed comparison plan. Once these actions have been completed, the operator must initiate the comparison procedure that is automatic. While comparing,  marker on the left side of the screen informs about stable result.

To save/print comparison out, press <PRINT> key:

- in verified mass comparators – only stable comparison result ( marker),

9.1. Selection of comparison unit

It is possible to change the comparison unit by pressing the unit displayed in the weighing window, just next to the measurement result. Click the unit to display a list of available units. Select any of the units to make the program automatically recalculate the value of the unit you have chosen.

Selection variants:

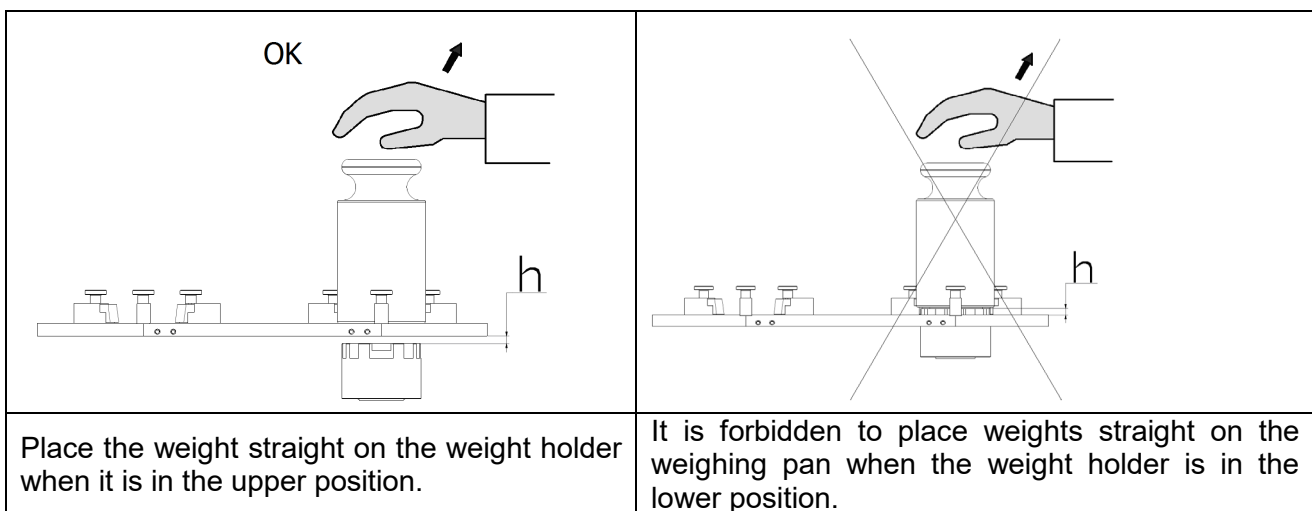
<i>unit</i>	<i>designatio n</i>	<i>verified comparator</i>	<i>unit</i>	<i>designation</i>	<i>verified comparator</i>
gram	[g]	yes	Taele Hong Kong	[tlh]	no
milligram	[mg]	yes*	Taele Singapore	[tls]	no
kilogram	[kg]	yes*	Taele Taiwan	[tlt]	no
carat	[ct]	yes*	Taele China	[tlc]	no
pound	[lb]	no	Momme	[mom]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

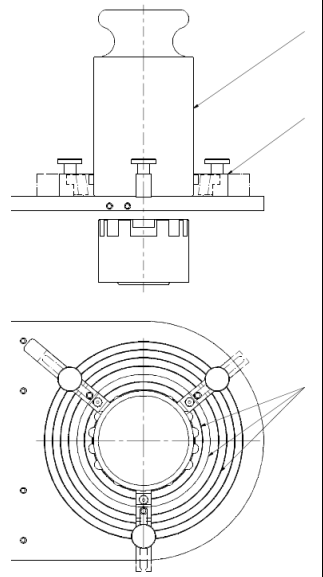
* - Units available depending on the type of mass comparator.

9.2. Principles of correct comparison

To guarantee a long-term use and correct measurements of masses of compared weights, please do as follows:

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






	<p>Weight</p> <p>Slider</p> <p>Centering grooves</p>	
<p>Place the weight in the centre in relation to centering grooves and secure with sliders.</p>		

9.3. Mass comparator levelling

The mass comparator has been equipped with the AutoLEVEL System that allows monitoring the mass comparator level. Thanks to this solution, you can continuously keep track of the mass comparator level while it is operating, which is signalled in the top right corner of the screen. In case the level changes, the system informs you about it in the display: by changing the position of the level indicator and/or by sounding the alarm and showing the mass comparator level setting window.

Mass comparator levelling procedure:


- Press  levelling icon in the top right corner of the screen.
- The display of the balance will show the levelling control panel. A balance view is displayed next to the level view.
- Level the balance by turning its legs in the way showed in the screen with pulsing pictograms  – the level point will move towards the centre of the circle.
- When the point gets into the inner circle of the ‘level view’, its colour will change from red into green  – the balance has been levelled correctly.


Note: The balance is equipped with the Automatic Level Control unit. You can see how it works further in the manual.

9.4. Mass comparator zeroing

In order to zero the mass value, press  button. The screen will show the zero value of the mass, together with the following symbols: ± 0 and \blacktriangleleft . Zeroing is tantamount to determination of a new zero point which is treated by the mass comparator as zero. Zeroing is possible only when the screen values are stable and when the weighing pan is loaded.

9.5. Mass comparator tarring

In order to determine the net mass, put the load box and wait for the readout to stabilise – then press  button. The screen will show a zero value in the mass field, together with the following

symbols: **Net** and . After you take the load and box away, the screen will show the total value 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 collect the information on the tare from the base automatically, when you select a product.



Note:

It is impossible to tare the negative value. An attempt to tare the negative value will cause the error message to pop up. This being the case, zero the mass comparator and tare again.

Manual tarring

Procedure:



- Press the quick-access button -  - in any working mode.
- A numerical keyboard will be displayed.
- Enter tare and press .
- The device will return to the weighing mode and the screen will show the tare value with '—'.

Tare deleting

You can delete the tare showed in the screen by pressing the ZERO key in the mass comparator housing or by using <Disable tare> programmable key.


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



- Press ,
- NET marker will be deleted, a new zero point has been determined.


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




- press ,
- NET marker will be deleted, a new zero point has been determined.
- when the tare value is higher than 2% of the maximum load, the screen will show the following message: Err- (operation unfeasible).

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



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

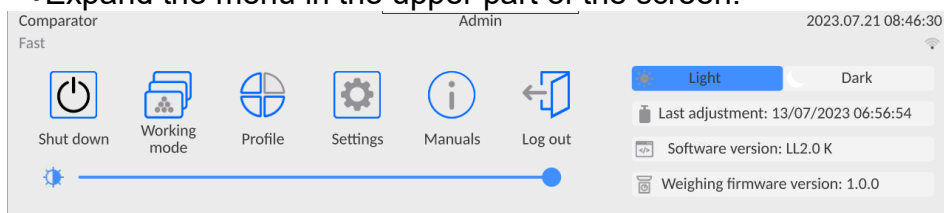


- press <Restore tare>  key to restore the recently used tare value.

9.6. Working mode activation procedure

To change the working mode:

- Expand the menu in the upper part of the screen.

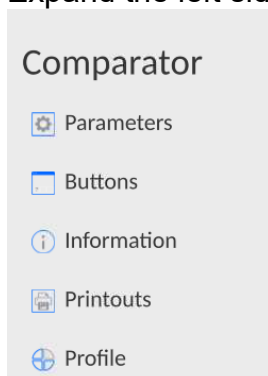


- Press <Working mode>
- The list of modes will be displayed.
- Select <Comparator> mode and the program will automatically return to the home screen, displaying the name of the working mode you have selected in the upper bar.
- <Start control> message will be displayed in the area of the working box.
- Select internal and external load (depending on the type of comparator) suitable for the mass of the calibrated standard
- Position the control weight on the weighing pan.
- Zero/tare the comparator indication

9.7. Parameters related to working mode

Every working mode is related to programmable parameters that determine its operation. How to access these parameters:

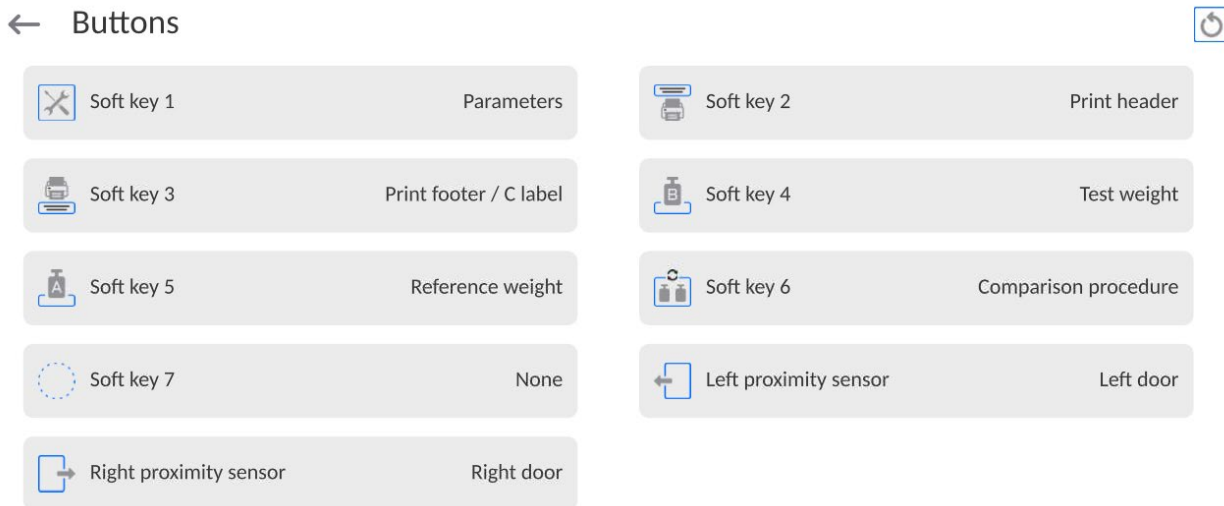
1. Expand the left side menu.




2. The following menu will be showed in the screen:
 - <Settings> - additional options related to the mode.
 - <Keys> - defining quick-access keys.
 - <Information> - selection of information to be showed in the Info field.
 - <Printouts> - selection of the type and content of printout.
 - <Profile> - settings for the profile
3. Press a relevant menu and select the element to be modified.

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

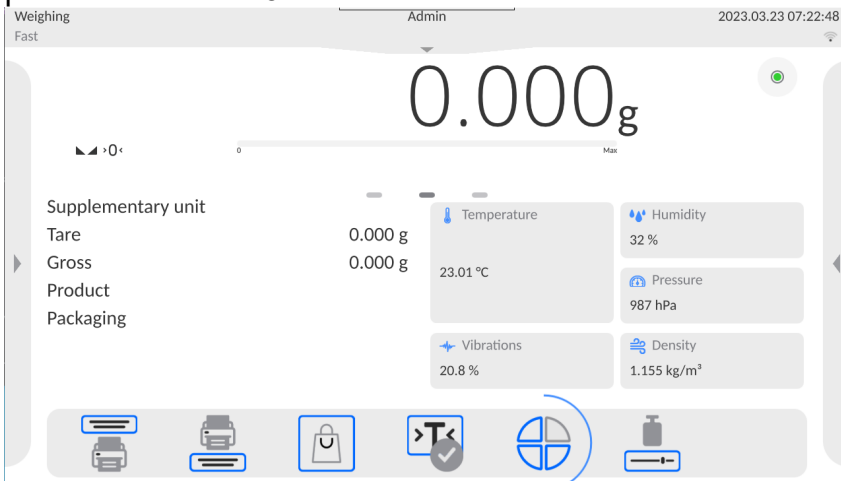
9.8. Quick-access keys, proximity sensors



The operator can quickly return to the default arrangement of keys in the lower bar of the screen by pressing  key in the top right corner of the screen.

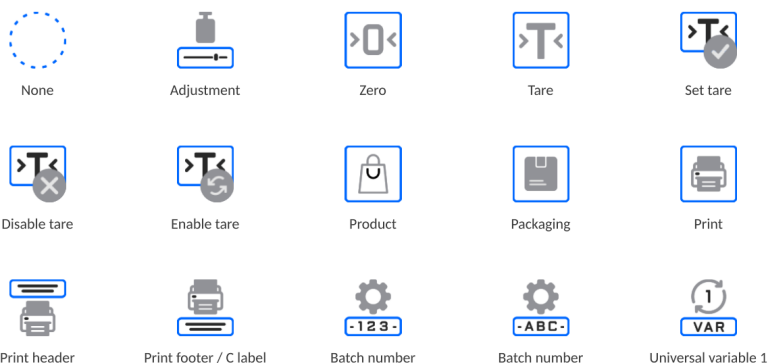
The operator can define 7 keys that can be visible in the lower bar of the screen. Assignment of the function to the key causes a relevant icon to show up. The icon is displayed in the lower navigation bar of the home screen. Availability of keys depends on the working mode. The list of keys can be accessed in the SUPPLEMENT 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 the field in the key bar and keep it pressed for about 3 seconds.

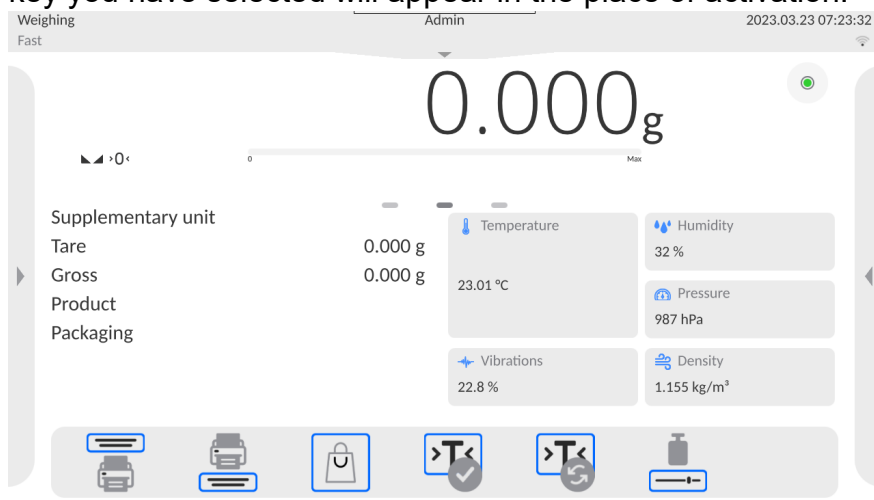


The program will display the window with the following keys automatically.

← Available actions



Press the key that is to be added and the program will display the home screen again. The key you have selected will appear in the place of activation.



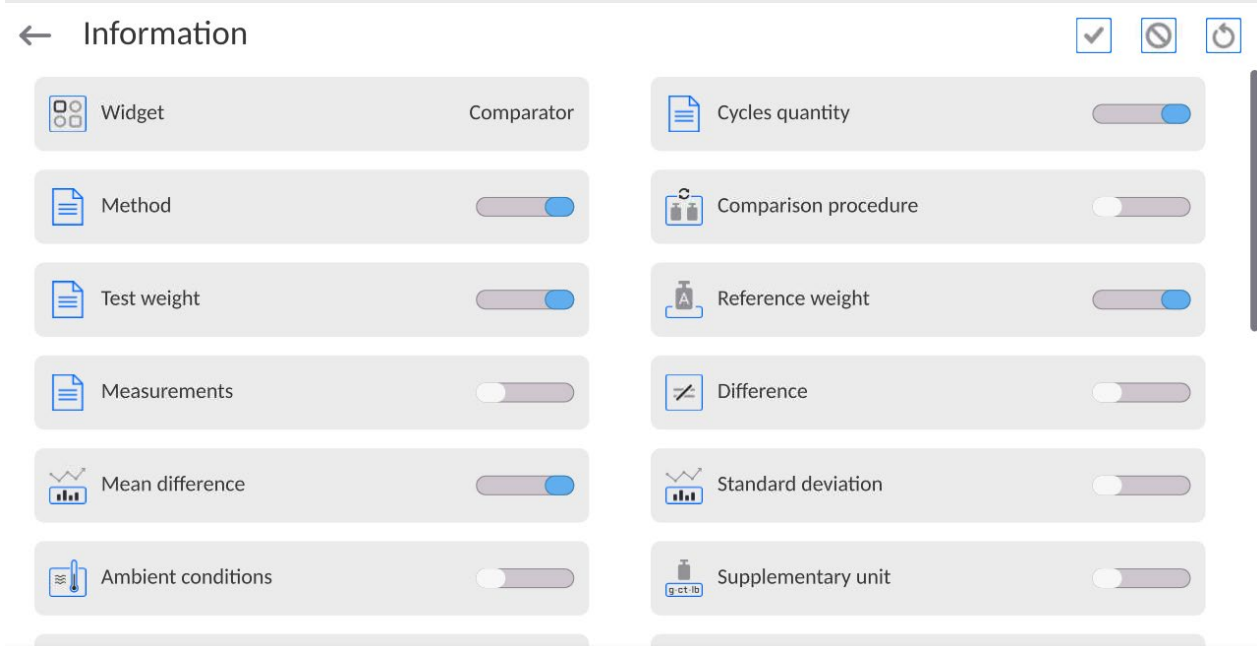
9.8.1. Proximity sensors

The balance is equipped with two proximity sensors that allow controlling the operation of the balance with no need to press buttons on the housing or touch screen.




The program can recognise four motions near sensors:

- Putting the hand close to the left sensor <Left proximity sensor>.
- Putting the hand close to the right sensor <Right proximity sensor>.

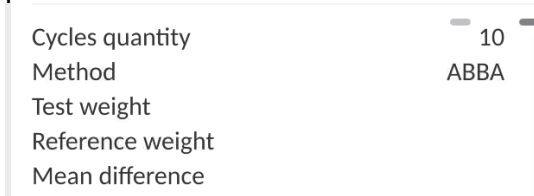
9.9. Information



The operator can quickly change selected information to be displayed by using keys in the top right corner of the screen.



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

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



You can put up to 6 pieces of information there. If you have chosen more, the first 6 will be showed.

For each piece of information, there are two options:

-  – visible information.
-  – invisible information.

9.10. Working mode - Comparator

The **<Comparator>** working mode lets the operator determine standard deviation for a series of measurements. The standard deviation is determined on the basis of a series of ABBA, ABA or AB measurements, where:

- A – control mass standard (reference weight)
- B – test mass weight

The number of measurements for the series and ABBA, ABA or AB method is set by the

operator in **<Working Modes>** parameters group in **<Comparator>** submenu.

Results are calculated by the program as per the tables and equations 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 is calculated subsequently by determining:

- differences of ABBA or ABA for each group of measurements:

$$D_i = \bar{B} - \bar{A}$$

- average value of difference of ABBA or ABA:

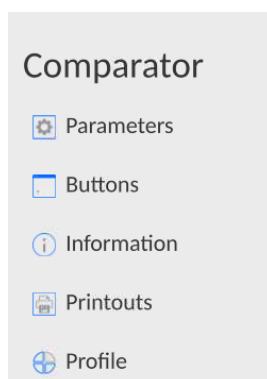
$$\overline{DX}_i = \frac{1}{n} \sum_{i=1}^n D_i$$

- Standard deviation:

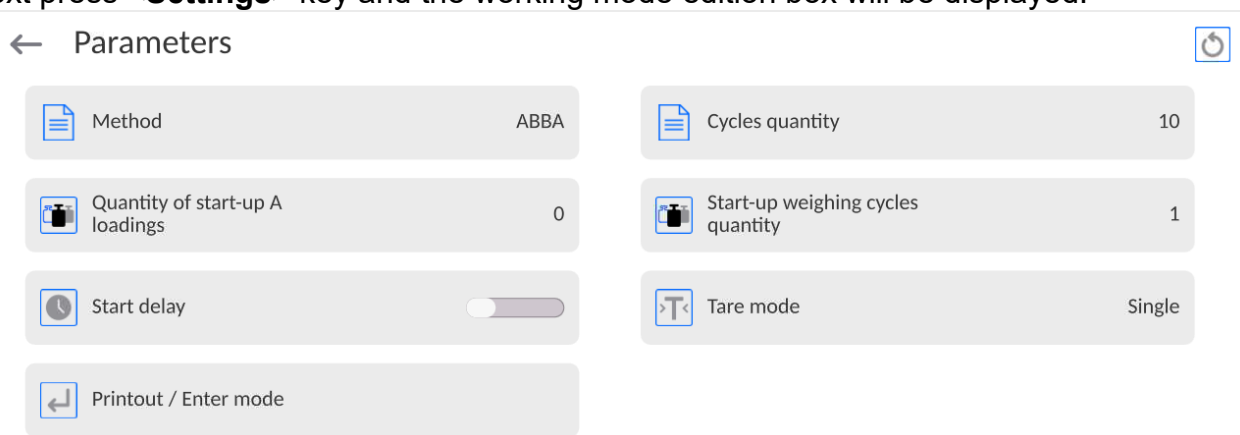
$$s = \sqrt{\frac{1}{n} \sum_{i=1}^n (D_i - \overline{DX}_i)^2}$$

9.11. Selection of the comparison method in the mass comparator

The settings of the working modes of the mass comparator have special functions adapted to the customer's specific needs. The working modes can be configured in **<Working modes>** submenu. To gain access to **<Working modes>** submenu, expand the right side menu.



Next press **<Settings>** key and the working mode edition box will be displayed:




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

- ABBA
- ABA
- AB

9.12. Declaration of the number of cycles


Procedure:

- Press **<Setup>**, and then **<Profiles>**
- Enter **<Working modes>** submenu
- Select **<Comparator>** and press **<Settings>**
- Press **<Number of cycles>** and enter the desired number of measuring cycles and press  to confirm.

9.13. Declaration of the number of test weights


Procedure:

- Press **<Setup>**, and then **<Profiles>**
- Enter **<Working modes>** submenu
- Select **<Comparator>** and press **<Settings>**

- Press **<Number of test weights>**, enter the desired number of test weights and press  to confirm.

9.14. Declaration of the number of test run cycles

Procedure:

- Enter **<Working Modes>** parameters group,
- Select: **<Comparator>**, then **<Settings>** and **<Number of test run cycles>**. Then the **<Number of test run cycles>** edition box with the on-screen keyboard will be displayed.
- Enter the desired value and press  key to confirm.

9.15. Start delay

- Enter **<Working Modes>** parameters group,
- Select: **<Comparator>**, then **<Settings>** and **<Start delay>**. The setting selection edition window will be displayed afterwards,
- Enter: YES – when comparison starts, the window will be displayed. You need to enter the time by which the start is to be delayed. When the period of time has passed, the comparison procedure will be initiated automatically, NO – the procedure starts instantly after initiation. After selecting the relevant option, the selection window will be closed automatically and the description by the parameter will be modified.

9.16. Tare mode

- SINGLE:
the value remembered after you press the TARE key once. If you press again, you set a new tare value. Selection of the product or box which the tare value is assigned to causes the previous tare to be deleted.
- TOTAL OF CURRENT:
summing up currently entered tare values for the product and box (arising from selection of the product and box from the database), with a possibility of adding the manually entered tare value to the total. After you set the tare value for the product or box again, the manually entered tare value will be disabled.
- TOTAL OF ALL:
summing up all subsequently entered tare values.
- AUTOTARE:
Principle of operation:
Every first measurement is tarred when the stable value is obtained. The screen will show the NET inscription and then you can specify the net mass. After removing the load and returning to the autozero zone, the program will delete the tare value automatically.

9.17. Printout/approval mode

- PRINTOUT/ APPROVAL KEY

Never	– inactive printout.
First stable	– the first stable measurement is recorded.
Every stable	– all stable measurements are accepted.
Every	– printout of all measurements (stable and unstable), in verified balances only stable results (as in the <Every stable> setting).
- AUTOMATIC MODE

None	– inactive printout
------	---------------------

- First stable – the first stable measurement is recorded after the load being put on the weighing pan, another stable measurement will be recorded only after removing the load from the weighing pan, when the readout value ‘drops’ below the threshold value and another load is placed on the weighing pan.
- Last stable – the last stable measurement that occurred before the load was removed is recorded. It is recorded after removing the load from the weighing pan and after the readout value ‘drops’ below the threshold value.
- With interval – this option specifies the time interval for sending the result to the printout,









- THRESHOLD
the mass value for automatic printout is set in grams.
- INTERVAL
Time unit value for weighing result printout.
- PRINT REPORT
Yes – automatic report printout after the end of calibration
No- report printout blocked

9.18. Printouts

The Printouts menu consists of two separate units. The first unit is standard printouts, while the second – non-standard printouts.




Standard printout

← Printouts

 Comparison report printout template	 Header printout template
 Weighing / label printout template	 Footer / C label printout template
 Header copy count 1	 Label / printout copy count 1
 C label / footer copy count 1	 Printout / label database

It consists of four internal units with various variables. For each variable, it is necessary to set – if it is to be printed out or – if not.

The operator can quickly change selection of printout variables, using the keys in the top right corner of the screen.

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

Procedure:

1. Press the field with the name of template to be edited (Header – Weighing – Footer) and select variables to be printed out.

2. If you have selected the non-standard printout, create it.

COMPARISON PRINTOUT TEMPLATE
<ul style="list-style-type: none"> -Non-standard printout -Working mode -Operator -First and last name -Report number -Start date -End date -Test weight -Order number -Test weight number -Test weight position -Reference weight -Mass -Reference weight class -Reference weight position -Measurements -Average difference -Standard deviation -Number of cycles -Method -Min temperature during procedure -Max temperature during procedure -Min water temperature during procedure -Max water temperature during procedure -Min humidity during procedure -Max humidity during procedure -Min pressure during procedure -Max pressure during procedure -Task -Empty line -Dashes -Signature -Non-standard printout

<u>HEADER</u>	<u>WEIGHING</u>	<u>FOOTER</u>
<ul style="list-style-type: none"> - Non-standard printout - Dashes - Working mode - Date - Time - Balance type - Balance ID - Operator - First and last name - Levelling - Client - Warehouse 	<ul style="list-style-type: none"> - Non-standard printout - N (measurement number) - Date - Time - Levelling - Client - Warehouse - Product - Packaging - Universal variable 1...5 - Net - Tare - Gross 	<ul style="list-style-type: none"> - Non-standard printout - Working mode - Date - Time - Balance type - Balance ID - Operator - First and last name - Levelling - Client - Warehouse - Product

<ul style="list-style-type: none"> - Product - Packaging - Universal variable 1...5 - Empty line - GLP report - Non-standard printout 	<ul style="list-style-type: none"> - Current result - Additional unit - Mass - MN-Method - Reference tare - Minimum sample - Minimum sample status - Mass value for titrator - ID - Non-standard printout 	<ul style="list-style-type: none"> - Packaging - Universal variable 1...5 - Dashes - Empty line - GLP report - Signature - Non-standard printout
---	---	---

9.19. Report in previous comparison processes

Completion of every comparison results in generation of a report. The report is recorded in **<Comparison reports>** database. The name of the report file takes a form of a date and time of the density determination.

The example of the report:

```




Report no.          C/31/10/11/11/43
End date           2017.05.28 11:44:46
n |A      |B      |A      |D
1 |0.000  |0.131  |0.001  |0.1305
2 |0.002  |0.130  |0.003  |0.1275
3 |0.004  |0.131  |0.004  |0.127



Average difference      0.12833 g
Standard deviation     0.00189 g

Method                  ABA
-----
Signature
.....

```

BASIC PRINCIPLES OF USING PRINTOUTS

1. Press  key on the balance housing to print out variables showed in the WEIGHING RECORD in standard printout, if they are assigned the attribute =  (see: list of variables above).
2. The variables with  attribute showed in the HEADER or FOOTER will be printed out **ONLY** after pressing **Print Header** or **Print Footer** icon. These icons must be placed in the lower bar of the screen as quick-access keys.
(The procedure of placing the icon will be described further in the manual, see point 9.8)

	
Printout of information in the header	Printout of information in the footer

Note:

Units for mass printout:


1. Net – main unit (adjustment)
2. Tare – main unit (adjustment)

3. Gross – main unit (adjustment)
4. Current result – currently displayed unit
5. Additional unit– extra unit
6. Mass – main unit (adjustment)

Non-standard printout

The printout can contain: TEXTS and VARIABLES (that are collected from the program upon printout). Every printout is a separate template, has its unique name for identification purposes, and is recorded in the database.



Procedure:

1. Press <Non-standard printout> field.
2. Press <Add>  key to open another window with the following data:
Name/Code/Template.
3. Enter the name and code for the printout.
4. Press <Template> key.
5. The screen will show the field with keyboard for edition of the printout.
6. Using the keyboard, design the printout; the printout can include texts and variables.


Note:

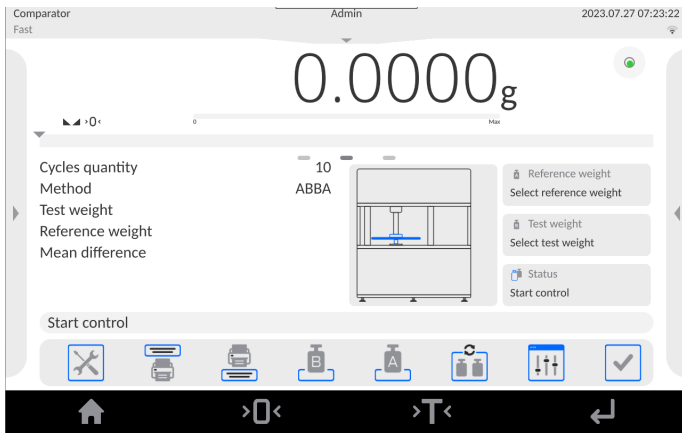
- The operator can add printouts from the external memory by importing already configured texts with the use of a USB port.
- The name of the printout is ONLY NAME and does not represent its content.
- The method of designing a non-standard printout has been described in the point: <Printouts>.

9.20. Comparison – basic procedure

1. In the home screen, press  key in the bottom left corner of the housing.
2. Select Databases.
3. Enter Reference weights, define reference weights (point 14.5)
4. Return to the Database, enter Test weights, defined test weights (point 4.6).
5. Return to the Database, define Comparison plans (point 14.7).
6. Return to the home screen, in the functional key bar press Comparison plans. Then select the comparison plan.
7. Place reference and test weights on the loading pan.
8. To start comparison while in the home screen, press  - the procedure will be automatically activated as per pre-assigned parameters.

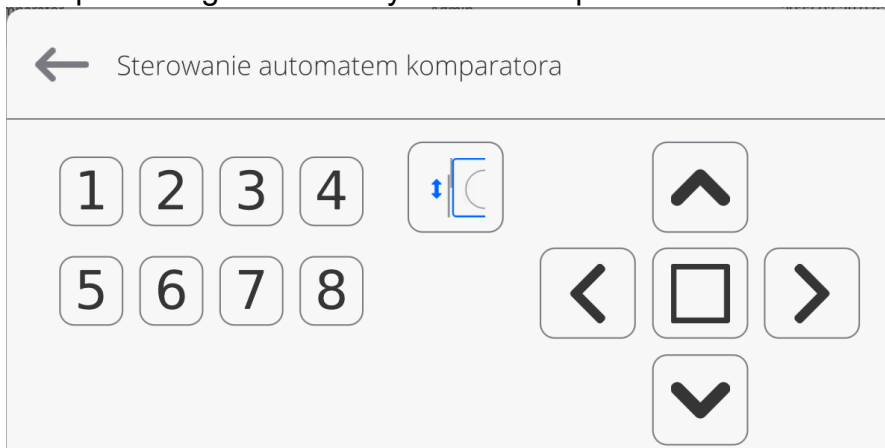
9.20.1. Use of the automatic comparator

To change position of weights in the automatic comparator, press < **Automatic comparator control**>. This key can be found in the lower field of the screen, in the screen button bar.



After selecting **< Automatic comparator control >**, you will see a control box. The box will contain keys.

Depending on the type of automatic comparator, the view of number of functional keys changes. The example arrangement of keys in the comparator can be found below.



keys forcing the travel to specific position



up key



down key



anti-clockwise movement key



clockwise movement key



stop key



acceptance key that ends operation in the automatic comparator control box

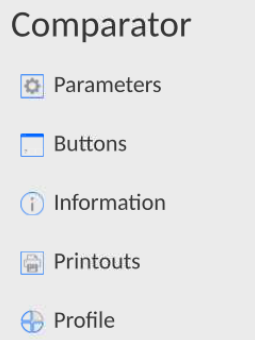


open/close key for weighing chamber door



If **<Automatic comparator control>** key is invisible, you can activate it in the following way:

1. Expand the side left menu.



2. Select **<Keys>** menu – quick-access keys defining
3. Next select **Automatic comparator control**.

9.20.2. Initiation of comparison in the automatic comparator

To activate the automatic testing of weights, you need to use the approval key in the bottom right corner of the screen, in the software keys bar.



10. CALIBRATION

Mass comparators are equipped with an automatic calibration (adjustment) system so that suitable measuring accuracy is guaranteed. The access to calibration control functions is given in <CALIBRATION> menu.

10.1. Internal calibration

The internal calibration utilises the mass inside the mass comparator. The <Internal calibration> key causes the calibration procedure to start instantly. When it is over, the mass comparator displays a message on the end of the process and its status.




Note:

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

10.2. External calibration

The external calibration is performed with the use of an external standard of a suitable precision and mass, dependent upon the type and loading capacity of the mass comparator. The procedure is semi-automatic while further stages signalled with messages in the screen.

Course of the procedure:

1. Enter <Calibration> submenu and press: <External calibration> key.
2. The mass comparator will show a relevant message in the screen. Now you need to remove the load from the weighing pan and press  key. While determining the start mass, you will see the following message: **Determination of the start mass**.
3. Once the start mass determination procedure is finished, the mass comparator screen will show another message; following the message, you need to place the desired mass on the weighing pan and press  key.
4. After the end of the procedure, remove the weight from the weighing pan, press  key to confirm your action, and the mass comparator will return to the comparison process.

10.3. Calibration test

The <Calibration test> function allows comparing external calibration results with the value entered in the factory parameters. Such a comparison allows specifying mass comparator sensitivity drifts in time.

10.4. Automatic calibration

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

- None – automatic calibration is inactive.
- Time – calibration is performed at intervals declared in <Automatic calibration time> menu.
- Temperature – calibration is performed only when the temperature changes.

- Both – temperature change and time determine when the automatic calibration is to begin.

10.5. Automatic calibration time

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

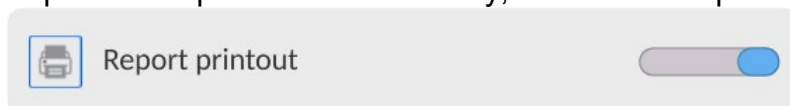
To set the automatic calibration time, please do as follows:

- Press <Automatic calibration time> key.
- Based on the menu, select the period of time (given in hours) that is to pass from the last calibration to perform another internal calibration.

10.6. Report printout

The <Report printout> parameter specifies if the calibration report is to be printed out automatically after the calibration is finished.

To print the report out automatically, set the active printout function of the parameter.




10.7. GLP template

GLP is one of the ways of documenting work in accordance with the quality system in place. The information selected for printout will be printed out together with every mass comparator calibration report. The operator can use the following information and marks:

- Calibration
- Working mode
- Date
- Time
- Balance type
- Balance ID
- Operator
- First and last name
- Levelling
- Nominal mass
- Current mass
- Difference
- Temperature
- Dashes
- Empty line
- Signature
- Non-standard printout

10.8. Calibration history

It contains all mass comparator calibrations. The record is automatic. Every recorded calibration contains basic data on the process. From this menu, you can display a list of calibrations recorded. Every report can be printed out.


To print the calibration report out, enter <Calibration> submenu and then <Calibration history>. Select the calibration you wish to print out and press < > printer icon in the upper 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 calibrations, the list with records must be periodically printed out and archived.

Searching for the completed calibration

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

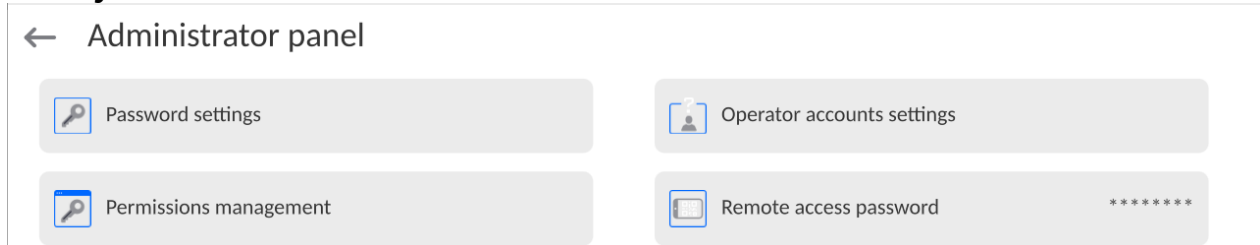
Exporting information on completed calibrations

To export information on completed calibrations, insert a USB mass memory into the mass comparator port. Next press <Export data> key located in the top right corner of the screen. The procedure is automatic. Once it has ended, a file with **.tdb** extension is saved and you can edit it, for example in the Excel program or text editor.

11. ADMINISTRATOR PANEL

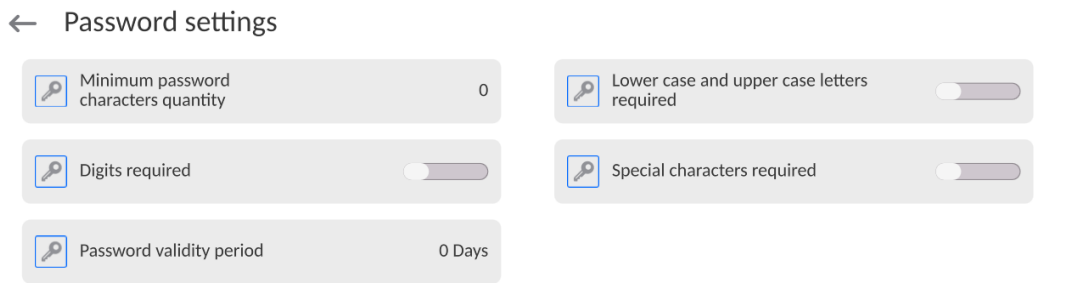
This menu group specifies a range of actions that may be taken by the operator with specific permission level, password protection level and permission for unlogged operator.

NOTE: Only the operator with <Administrator> permission level is authorised to modify this menu.



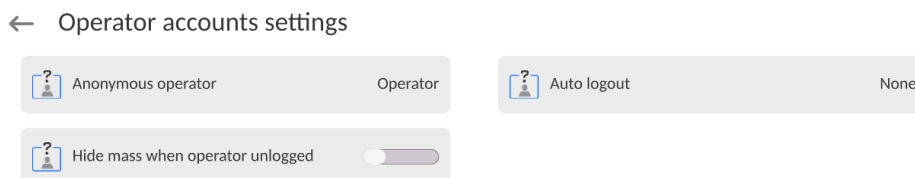
11.1. Password settings

The menu group allowing you to specify the password complexity for balance operators.



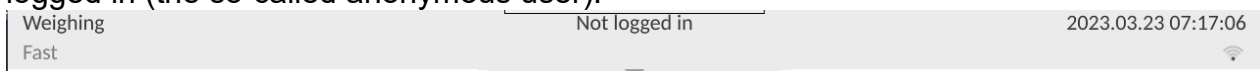
Minimum password length	Specification of the minimum number of characters in the operator's password. For '0' value, you can set any number of characters.
Require lower-case and upper-case letters	Specification of requirements concerning characters in operators' passwords.
Require digits	
Require special characters	
Password validity period	Specification of a period of time, in days, which when expired requires you to change the password. For '0' value, the change of password is not required by the balance program.

11.2. Operator's accounts setting



Unlogged operator's permission

The administrator can assign permission levels to the balance operator who has not logged in (the so-called anonymous user).



Procedure:

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

Note: If <Guest> is chosen, the unlogged operator will not be entitled to change settings of the program.

Automatic logout

The option allowing you to activate the automatic logout upon expiration of the specific period of time, given in minutes, if the balance is not used. By default this option is inactive in the balance (setting: <None>).

Procedure:

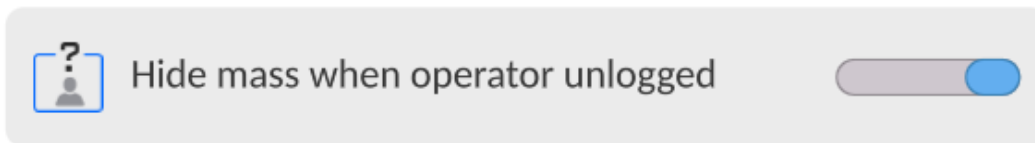
Enter <Operator accounts settings> parameters group, select <Automatic logout> option and then select any of the following: none/3/5/15/30/60. Time is given in [min].

Hide mass when the operator is not logged in

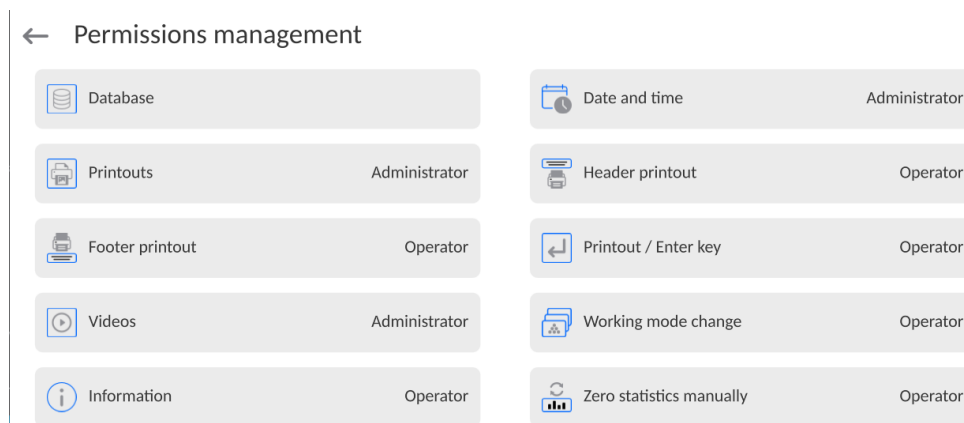
The option allowing you to deactivate the mass display if the operator is not logged in. By default this option is inactive in the balance.

Procedure:

Enter <Hide mass when operator is not logged in> option an then turn the value into active.



11.3. Permission management



Note: If you set the permission level as <Guest> 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 purposes. The following settings are available:

← Date and time

Guest













Operator

Advanced operator

Administrator

Databases

← Database

 Databases preview	Operator	 Products	Administrator
 Customers	Administrator	 Packaging	Administrator
 Warehouses	Administrator	 Reference weights	Administrator
 Test weights	Administrator	 Comparisons procedures	Administrator
 Adjustment weights	Administrator	 Printouts / Labels	Administrator
 Universal variables	Operator	 Delete weighing records and reports	Advanced operator

Default balance settings allow the operator logged as an **Administrator** to make changes to settings of particular databases. Depending on requirements, these permission levels can be changed.

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

12. PROFILES

The profile is a set of information describing:

- how a function is to work; e.g. counting details, deviations %, etc.,
- what information will be displayed during operation,
- what keys will be active,
- which units will be available,
- what criteria apply to balance speed and result stabilisation.

The balance program allows you to create numerous profiles, which in reality means that:

- every operator can create its own working environment,
- it is possible to design the mode of balance operation through keys and information that are required (work ergonomics).

To make the work with the balance easier, there are 4 default profiles in the program. The settings have been selected and saved for these profiles to make sure the weighing is optimal for specific expectations and conditions.

The following profiles are available:

- **Fast** – the profile that allows you to quickly weigh any masses, regardless of the working mode. Upon the first activation, the balance launches this profile automatically. For this profile, parameters have been selected to make sure the final result of the measurement is achieved as quickly as possible,
- **Fast dosing** – the profile dedicated to dosing and allowing quick mass dosage. The selection of this profile leads to automatic activation of the DOSING mode,
- **Precision** – the profile dedicated to precise weighing of any masses, regardless of the working mode. For this profile, the weighing procedure is the longest but the final result is the most precise and accurate,
- **User** – the basic profile whose filter settings have been selected to make sure weighing is relatively fast and precise. Selection of this profile leads to automatic activation of the WEIGHING mode.

Note: the operator can modify profile settings comprehensively, only in User profile. With regard to other default profiles (Fast, Fast dosing and Precision), modifications are limited. Every additional profile created by the operator can be modified thoroughly.

12.1. Profile creation

The balance administrator can create new profiles by:

- copying an already existing profile and modifying it,
- creating a new profile.




Copying the existing profile

Procedure:

- Enter the main menu. To do so, press .
- Next enter <  > submenu.
- Press and hold the key with the profile name that is to be copied.
- A menu will be displayed. Press <Copy>.
- A profile called <Copy name> will be created. All settings will be identical to the settings for the basic profile.
- After copying, change data that must be modified: (name, etc.).

Adding a new profile

Procedure:

- Enter the main menu. To do so, press .
- Next enter <  > submenu.
- Press  key.
- The program will add a new profile and enter the edition box automatically.



Settings



Working modes



Readout



Units

Deleting a profile

Procedure:

- Enter the main menu. To do so, press .
- Next enter <> submenu.
- Press and hold the key with the profile name that is to be deleted.
- A menu will be displayed. Select <Delete> 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.

12.2. Profile structure

The following items are available in each profile:

Settings The menu allowing you to assign a unique profile name (a sequence of alphanumerical characters) and declare which mode is to be a default mode (the selected mode will always be loaded as a default mode after selecting the profile).

Working modes The option allowing you to set options specific for particular working modes. There are such submenus as:

- Additional settings related to the mode
- Keys
- Information
- Printouts


Readout It contains such submenus as:

- Filter
- Result approval
- Autozero
- Autozero: Dosing
- Last digit
- Number of last digits
- Environment

Units The menu allowing you to declare the start unit, additional unit, 2 defined units, and to introduce the gravitational acceleration value in the place of using balance as well as declaring availability of particular units.

12.2.1. Settings

Name

After entering this option, the screen will show a window with a keyboard. Enter the profile name and press  key to confirm. The new name will apply to the profile.

Default working mode

Enter this option and select a specific working mode as a starting mode for the profile. In case of <None> option, select the profile and the balance will keep a recently used mode.

12.2.2. Working modes

After entering this option, a window will be displayed with all available working modes. The operator can introduce his own settings for each mode. They will be called after selecting a specific mode.

The following parameters are available for each of the working modes:

- Settings:
they contain 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:
declaration of keys that will be visible in the lower part of the screen.
- Information:
selection of information to be displayed in the grey information field.
- Printouts:
selection of a type of printout or defining of the non-standard printout.

12.2.3. Readout

The operator can adapt the balance to external environmental conditions (filters degree) or own needs. The <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 the stable signal, that is ready for readout.

To a certain extent the operator can influence processing by selecting a suitable FILTER.

Scope of selection:

- very fast, fast, medium, slow, very slow.

Choosing the filtering level, you need to consider real working conditions of the balance. For very good conditions, you can set the medium or fast filter, and for unfavourable: slow or very slow filter.

Note:

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

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


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

You can set one of three result approval options:

- G. fast, fast + precise, precise.

Note: How quickly the stable result is achieved depends on the type of filter used and specific result approval.

Autozero function

The task of this function is automatic control and correction of the zero readout. When the function is active, subsequent results are compared in fixed time intervals. If these results differ by the value smaller than the declared scope of AUTOZERO, e.g. 1 unit, the balance will automatically reset itself and stable result marker -  and zero marker $\rightarrow 0 \leftarrow$ will be displayed. When the AUTOZERO function is active, every measurement always starts from zero. There are special cases in which this function is an obstacle to measuring. The example can be a very slow placement of the load on the weighing pan (e.g. pouring the load in); this being the case, zero indication correction unit can also correct real mass of the load.

Available values: **NO** - autozero function inactive.
 YES - autozero function active.

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

The task of this function is default setting of the autozero in the dosing function.

Available values:

NO - autozero becomes inactive automatically after entering the Dosing mode.
YES - autozero becomes active 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. The function offers three settings:

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

Number of last digits

Using this function, you can declare the number of hidden last result digits. The function offers three settings and works in connection with <Last digit> option:

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

Environment

This parameter refers to the environment and conditions which the balance is working in. If environmental conditions are unstable, it is advisable to change the parameter into Unstable. By default this parameter is set as Stable.







The Stable setting causes the balance to work much faster. In effect the weighing time is a way shorter when compared to the Unstable parameter.

– **Unstable; Stable.**

12.2.4. Units

The operator can declare a start unit and additional unit as well as two defined units for the specific profile.

← Units




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

Here, it is also possible to enter the gravitational acceleration value in the place of using the balance. It is required for using the mass value in [N].

The defined unit has the following:

- Pattern (*defined unit calculation pattern*): Coefficient * Mass or Coefficient / Mass.
- Coefficient (*declaration of the defined unit calculation coefficient as per the specific pattern*)
- Name (unique unit name displayed by the result
- *max. 3 characters*)

← Custom unit 1

 Formula Factor * Mass	 Coefficient 123
 Name	

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

13. DATABASES

The balance software offers the following databases:

← Database



Operators



Products



Customers



Reference weights



Test weights



Comparisons
procedures



Packaging



Warehouses



Printouts / Labels



Universal variables



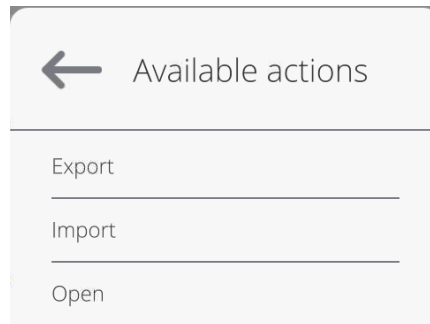
Manage the
database

13.1. Operations in databases

The operations in databases are only available to the authorised operator.

To edit Bases, follow the steps below:

- Press and hold the icon field applicable to the specific base.
- The relevant menu will be showed in the screen.
- Select one of the available options (available options depend on the type of base you choose).



Selection of options:

- EXPORT – the option allowing you to export data saved in the database to the pendrive external memory. Before you select the option, connect the memory to any USB port. If the program can detect the memory, it will initiate the copying procedure automatically. Once the copying procedure has been completed, you will see the window with the <Ended> message and name of the file which the data from the base have been saved on. Now you need to approve it.
- IMPORT – the option allowing you to import data from the pendrive external memory. Before you select the option, connect the memory to any USB port. If the program can detect memory, a window with saved files will be displayed. Specify the file with data to be imported. Selection of the file initiates the copying procedure automatically. Once the copying procedure has been completed, you will see the window with <Ended> message. Now you need to approve it.

- OPEN – the option allowing you to enter the specific database (similar when you single click the field of the base).

After entering the base you have selected, the following operations are possible (depending on the type of base):

- Adding items to database.
- Searching for an item in the base by name
- Searching for an item in the base by code.
- Searching for an item in the database by date.
- Exporting data from the base to USB mass memory.
- Printing information on record in the database.

The above-stated actions are initiated through buttons located in the top right corner of the screen. Follow the messages displayed in the screen.

13.2. Operators


The menu contains a list of operators who can use the balance.

For each operator, you can define the following information:

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

NOTE: Only the operator logged as Administrator can add new operators or delete operators from the base.

To add a new operator, you need to do as follows:

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

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

Logging via a transponder card:

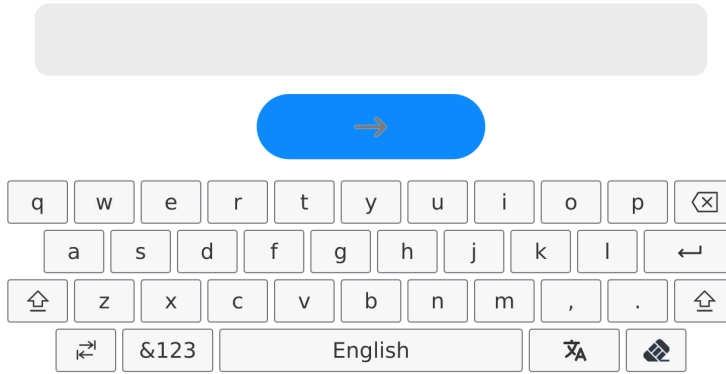
Note: A RFID scanner mounted in the head works at a frequency of 13.56MHz and complies with ISO/IEC 14443 Type A.

Only cards in this standard will be recognised by the scanner.

- Enter the operator's settings

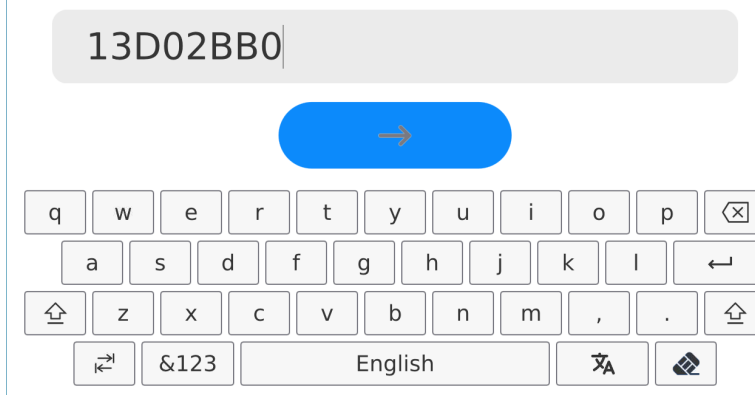
- Select <Card number> option

← Card no.



- Put the card against the RFID scanner
- The card number will be automatically entered into the edition field












← Card no.



- Press  key and the card number will be added to the operator's settings

← Edit record



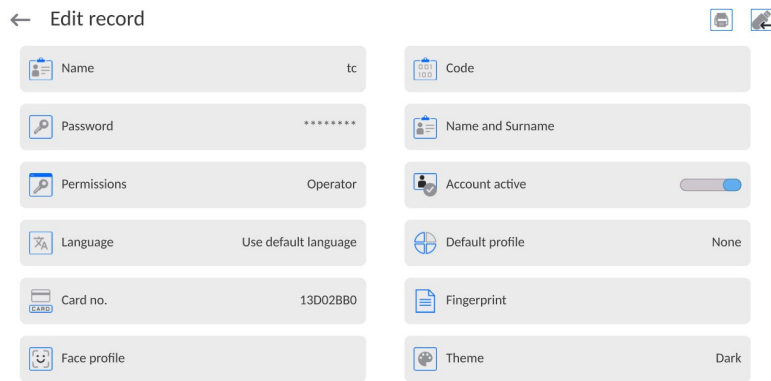
 Name	 Code tc
 Password *****	 Name and Surname
 Permissions Operator	 Account active <input checked="" type="checkbox"/>
 Language Use default language	 Default profile None
 Card no. 13D02BB0	 Face profile
 Theme Dark	

- Go to the main menu. From this moment on, you only need to put the card against the RFID scanner to log in.

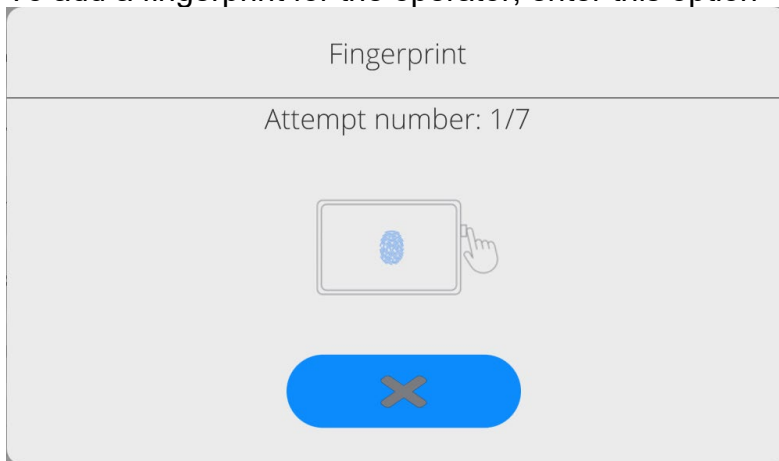
Logging via fingerprint:

Note: It is only possible to connect the fingerprint scanner listed as a dedicated product for such balances. The list of accessories can be accessed on the RADWAG's website.

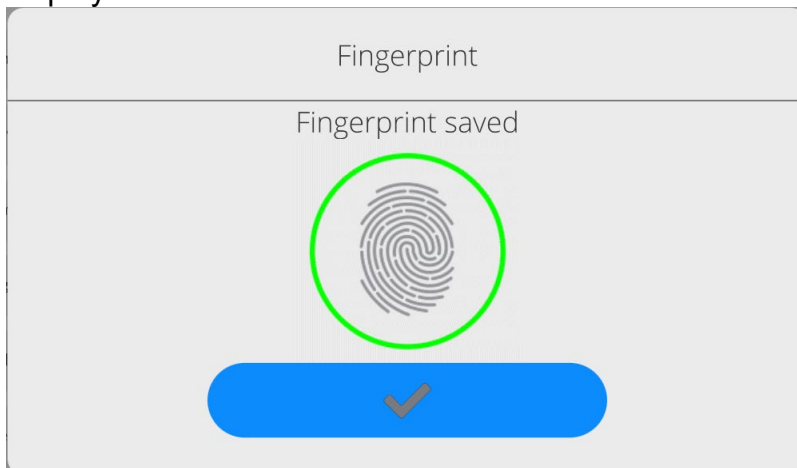
- Connect the fingerprint scanner to the USB type-A port and the <Fingerprint> option will become visible in the operator's settings menu



- To add a fingerprint for the operator, enter this option



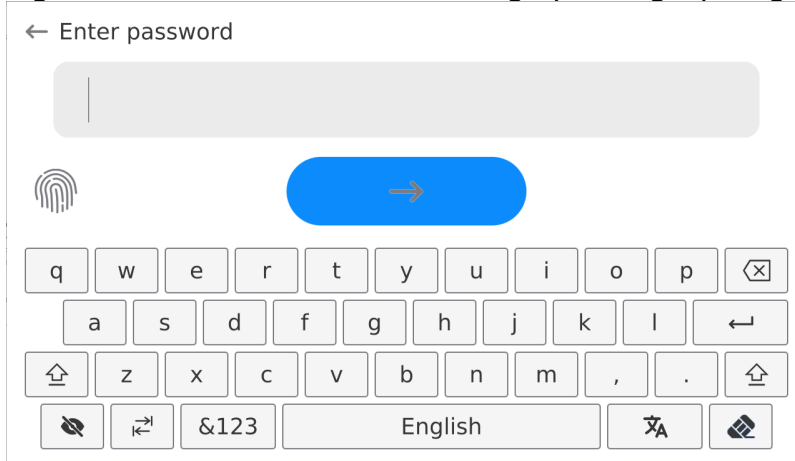
- Scan a fingerprint and repeat the procedure 7 times (as per the message in the box).
- Once the procedure has been successfully completed, a summary box will be displayed.



- Now confirm the operator fingerprint assignment procedure by pressing



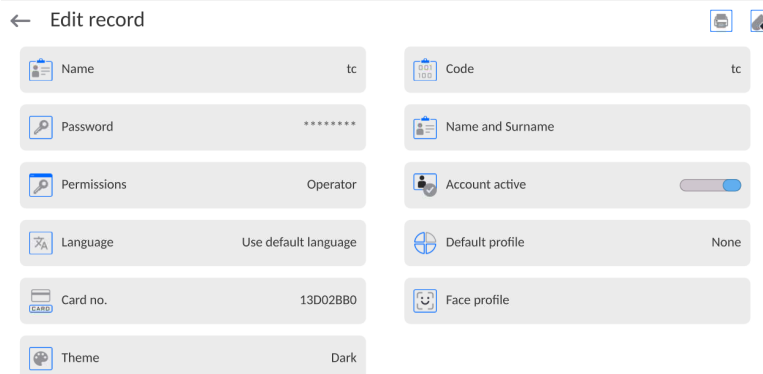
- From now on, if the fingerprint scanner is connected to the USB port, the operator login window will show an active fingerprint login pictogram.



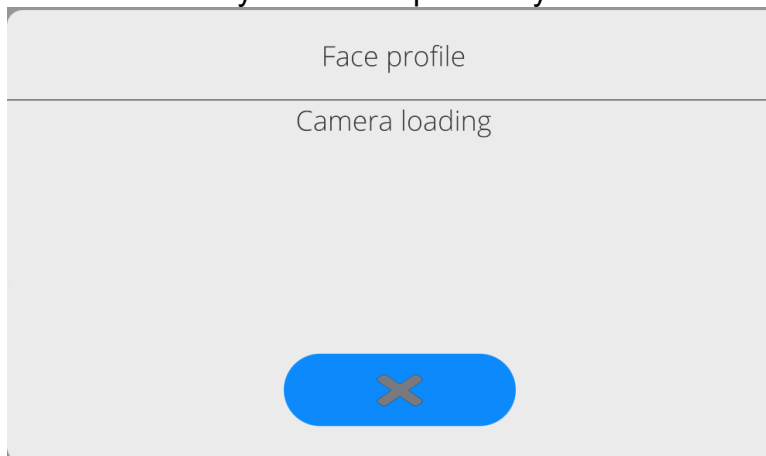
- After putting the finger against the scanner and confirming the match between the fingerprint and pattern, the pictogram will turn green for a while and the operator will be automatically logged in. The program will show the home screen, and the name of the operator will be visible in the upper bar.
- If the scanned fingerprint does not comply with the pattern, the pictogram will turn red for a while and the operator will not be logged in. A login box will remain visible.

Login via face profile:

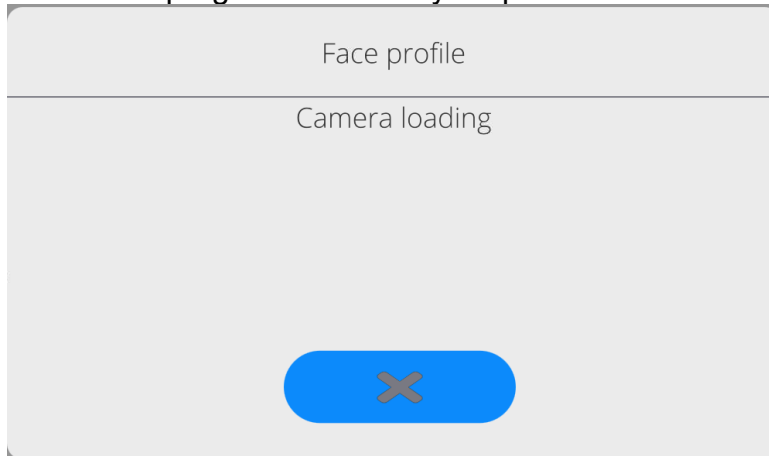
- To add a face profile to the operator, enter this option



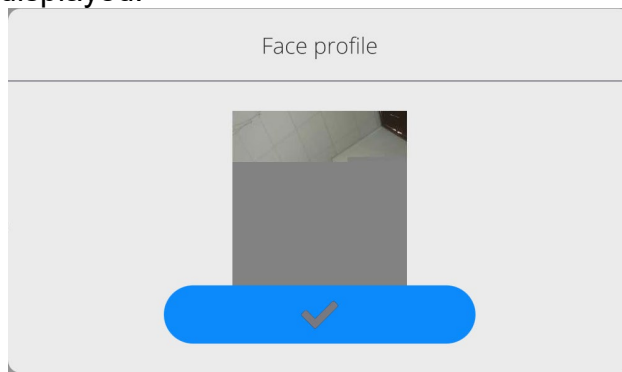
- After activating the option, you will see a message and the face profile will be read. Therefore you need to position yourself in front of the camera properly




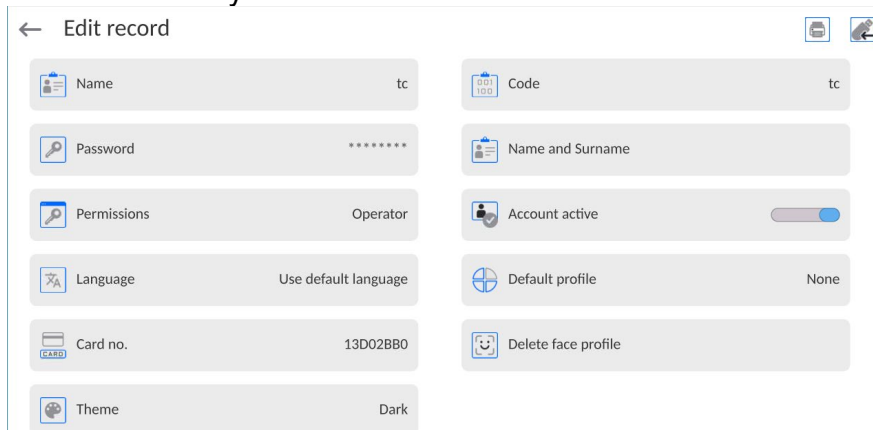
- so that the program can save your profile in the memory.



- After saving the profile, the message together with the camera photo will be displayed.



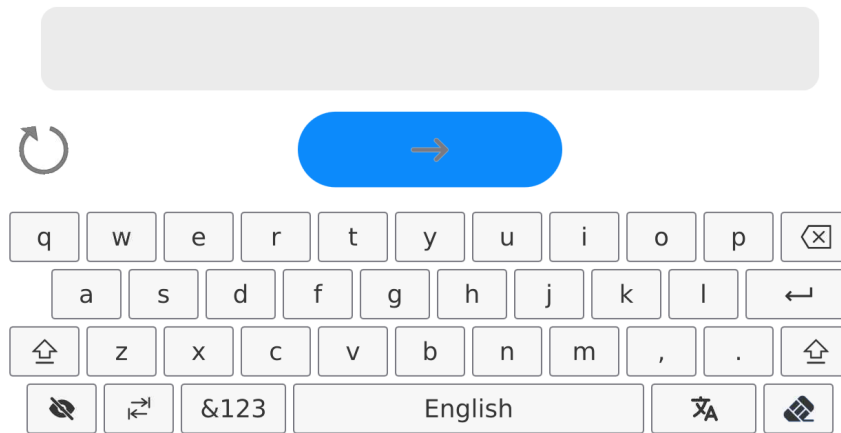
- Close the window by pressing  key.
- In the operator's settings box, the description of the option will turn into <Delete face profile>, which means that the profile has been saved in the balance memory.



- From now on, if the operator assigned a face profile tries to log in, the program will automatically scan the profile after entering the login box, which

will be signalled by the pictogram on the left side of the window.

← Enter password



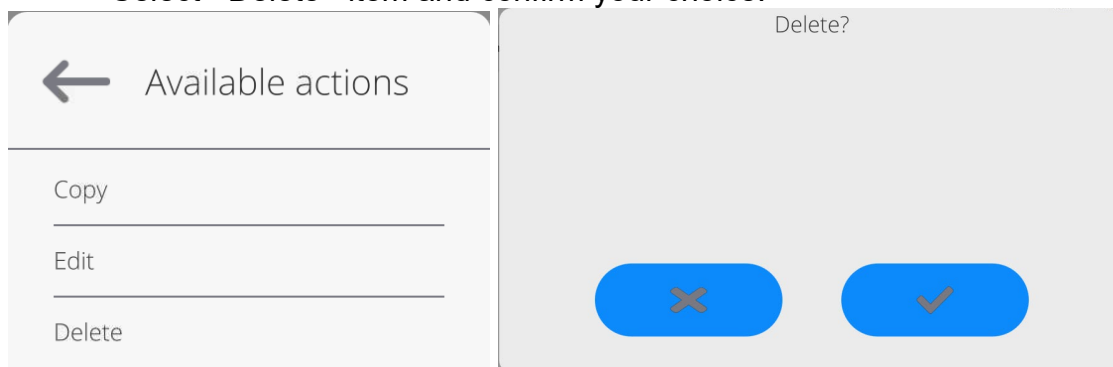
- The program automatically reads the photo of the operator's face profile and loads the photo. Then the camera is turned on (it is heralded by the LED light glowing next to the camera) and the saved photo is compared with the one read by the camera. If these images match, the home screen of the program will be displayed and the name of the logged operator will be visible in the upper bar of the screen.

Edition of information related to the operator:

- Press the field with the operator's name.
- The screen will show properties related to the operator.
- Select and modify required data.

To delete the operator, do as follows:

- Press and hold the operator's name.
- The screen will show the relevant menu.
- Select <Delete> item and confirm your choice.



13.3. Products

The product base contains names of all elements that can be weighed, counted, controlled.

Procedure:

- Enter <Database> submenu and press <Products> item.
- Press <Add> key if you wish to add a new product.
- If the product already exists, press the field with product name.

The list of information defined for the product:

1. Name	[product name]
2. Description	[product description]
3. Code	[produce code]
4. EAN code	[product EAN code]
5. Mass	[nominal/unit mass of the product]
6. Min	[minimum mass during product weighing in sections of result control – LO. Error value <T1-> for <Mass control> mode, defined in percent of the nominal mass]
7. Max	[maximum mass for product weighing in section of result control – HI. Error value <T1+> for <Mass control> mode, defined in percent of the nominal mass]
8. Tolerance	[% value in relation to the mass (5), shows the field in which the measurement is considered as correct]
9. Tare	[value of the product tare, set automatically for selection of the product from the base]
10. Price	[product unit price]
11. Density	[product density used for compensation of air displacement as a sample density] - [g/cm ³]
12. Validity days number	[number of days of validity]
13. Date	[fixed product date]
14. VAT	[VAT tax related to the product]
15. Ingredients	[edition box for names of ingredients which the product is made of, e.g. when it is a mixture or additional description concerning properties or application]
16. Printout	[printout template assigned to the product]

Note

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

13.4. Customers

The Customers database contains names of Recipients which weighing is performed for.

Procedure:

- Enter <Databases> submenu and press <Customers> item.
- Press <Add> key.
- If the Customer field already exists, press the field with a relevant name.

The list of information defined for customers:

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

13.5. Reference weights

The Reference weight base contains a list of reference weights used for comparison of weights. The reference weights are used for defining comparison plans.

Procedure:

- Enter <Databases> submenu and press <Reference weights> item.
- Press <Add> key if you want to design a new reference weight.

If the reference weight already exists, press the field with its name.

Note:

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

The list of information defined for reference weights:

- Name
- Code
- Class
- Factory number
- Mass
- Set number

13.6. Test weights

The test weights base contains a list of test weights used for comparison of weights. Test weights are used for defining comparison plans.

Procedure:

- Enter <Databases> submenu and press <Test weights> field.
- Press <Add> key if you want to design a new test weight.
- If the test weight already exists, press the field with its name.

Note

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


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. Comparison plans are created to automatically compare weights after prior definition of reference weights and test weights.

Procedure:

- Enter <Databases> submenu and press < Comparison plans> field.
- Press <Add> key if you want to design a new comparison plan.
- If the comparison plan already exists, press the field with its name.

Note:

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

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 points 1-6, enter the Comparison field, add a new comparison, and then assign relevant features to it:

1. Reference weight
2. Test weight
3. Number of cycles
4. Method
5. Number of test runs
6. Number of repetitions

Next you can analogically assign another comparison to the same comparison plan. The number of comparisons in one comparison plan depends on the number of test weights and reference weights handled by the comparator.

13.8. Packaging

This is a list of packaging to which you need to assign a name, code and mass value. During weighing, after selecting a name, a tare value will be automatically called. The screen will show the value with a minus sign.

Procedure:

- Enter <Databases> submenu and press <Packaging> field.
- Press <Add> key if you want to add a new packaging.
- If the packaging already exists, press the field with its name, enter information related to the packaging.

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

13.9. Warehouses

Depending on the organisation of work, Warehouses contain a list of places which the sample for weighing has been collected from, or places which the sample has been delivered to. For each warehouse, please enter the name, code and description. During weight, after selecting the name of the warehouse, it is automatically assigned to the result.

Procedure:

- Enter <Databases> submenu and press <Warehouses> field.
- Press <Add> key if you want to add a new warehouse.
- If the warehouse already exists, press the field with its name and enter identification data.

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

13.10. Printouts / Labels

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

Procedure:

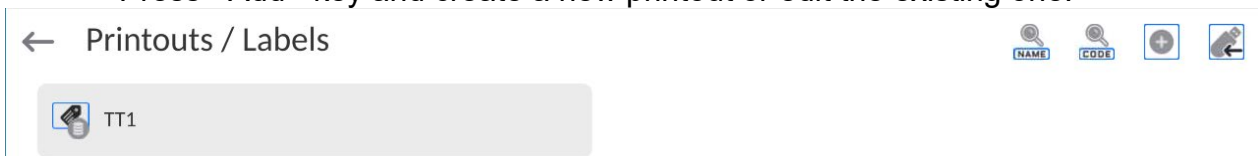
- Enter <Databases> submenu and press <Printouts> field.
- Press <Add> key if you want to add a new printout.
- If the non-standard printout already exists, press the field with its name and enter identification data.

Note: You can also search by name or code.

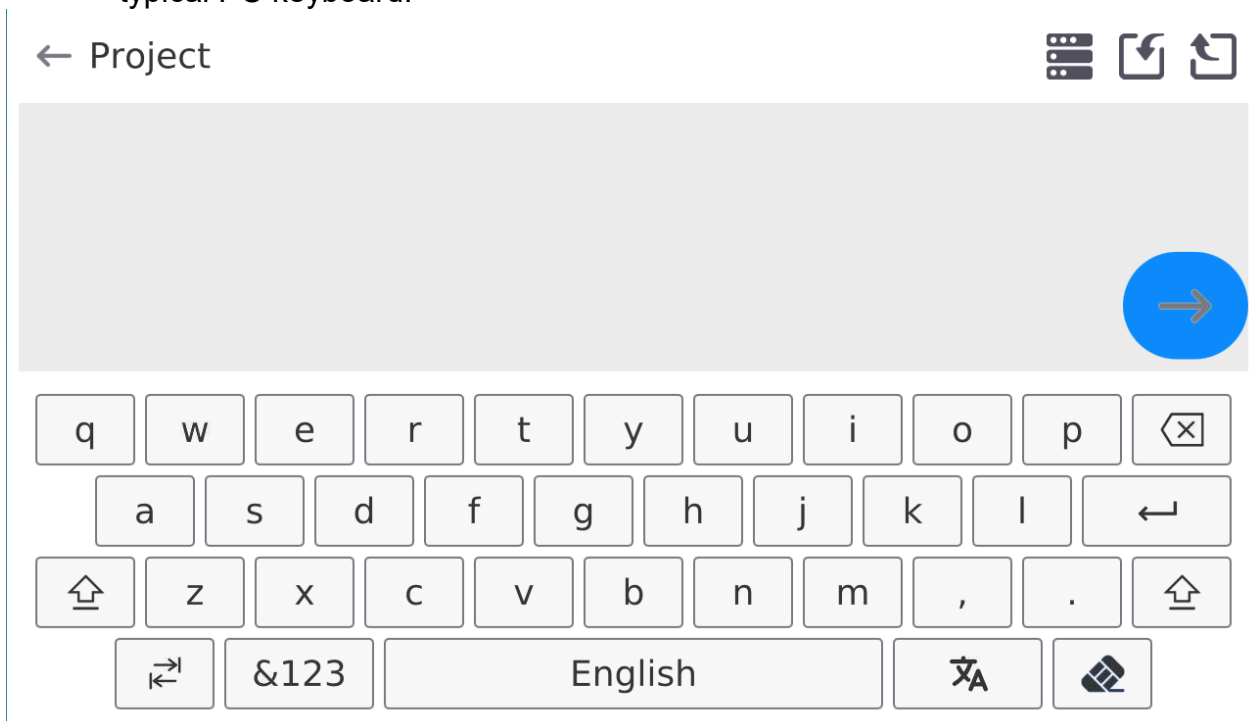
Designing a new printout.

Procedure:

- Enter <Databases> submenu and press <Printouts> field.
- Press <Add> key and create a new printout or edit the existing one.



- In <Record edition> field, press <Template> key.
- The screen will show the window for creation of any printout.
- While creating a printout, use a touch keypad that offers 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”	ı ` × x c	„c”	\ × c v	„v”	[{ × v b
„b”] } × b n i	„”	: < = × , . ⏏	„”	; > × . ⏏

- Save the printout you have created.

The example of the printout 1 – use of large edition box

← Project

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

PRODUCT: {50}
DATE: {2}
TIME: {3}

WORKING MODE: {5}

Template

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

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

Balance working mode: Weighing

Net mass: 94.147


Measured by: Admin




Template printout

The example of printout 2 – printout from the file

All printout templates can be prepared as external files that can be imported to the balance. Such a file must come with *.txt or *.lb extension and contain all permanent and variable information. The content of such a file can be modified after importing.

Procedure:

- create a *.txt or *.lb file in any editor,
- copy the file to the external USB memory,
- insert the USB memory into the balance port,
- press [4] <  download printout from file> key,
- the balance screen will show the content of USB memory,
- search for the file with printout 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>



Example of how to create and send label template to the balance memory is to be found in 'ANNEX 03'.

13.11. Universal variables

Universal variables are alphanumerical information that can be associated with printouts, product or other comparison-related information. For each variable, you need to enter name, code and value.

Procedure:


- Enter <Databases> submenu and press <Universal variables> field.
- Press <Add> key if you want to add a new variable.
- If the variable already exists, press the field with name and make relevant modifications to fields: code, name, value.

Note: You can also search by name or code.

13.12. Databases management

The function allowing you to manage data in bases. There are three options: Export weighing base to file, Delete databases and Delete weighing and reports.


← Manage the database

 Delete databases

13.12.1. Delete databases

The function allowing you to delete data from databases. After activating the function, you will see a box in which you need to select the base which data must be deleted from.

← Delete databases

 Products

 Customers

 Formulations

 Pipettes


 Series

 Packaging

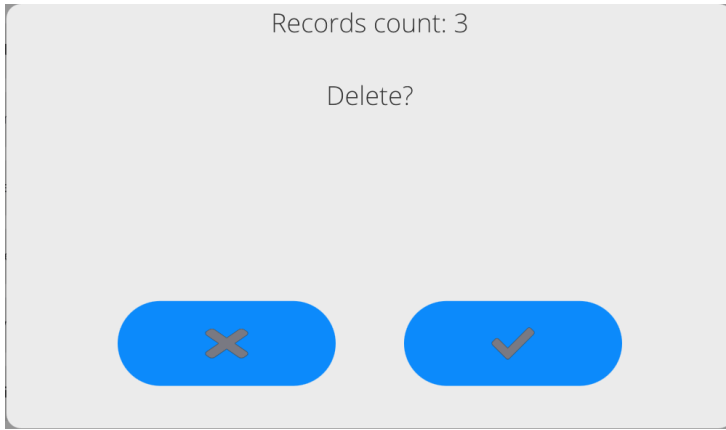
 Warehouses

 Printouts / Labels

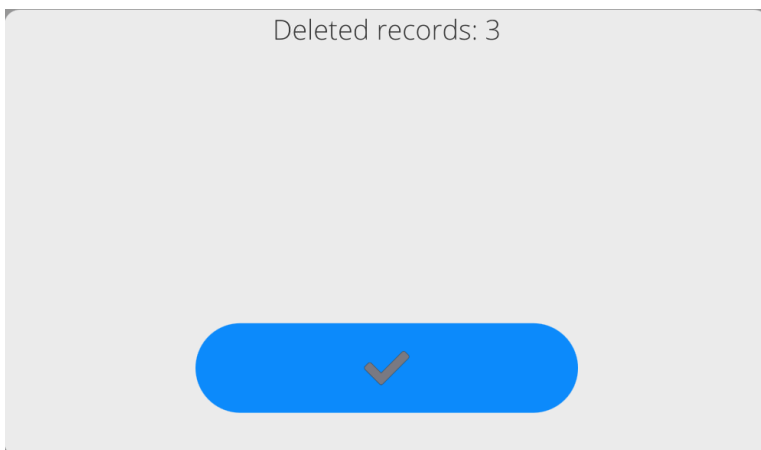
 Universal variables

 Operators

 Profiles



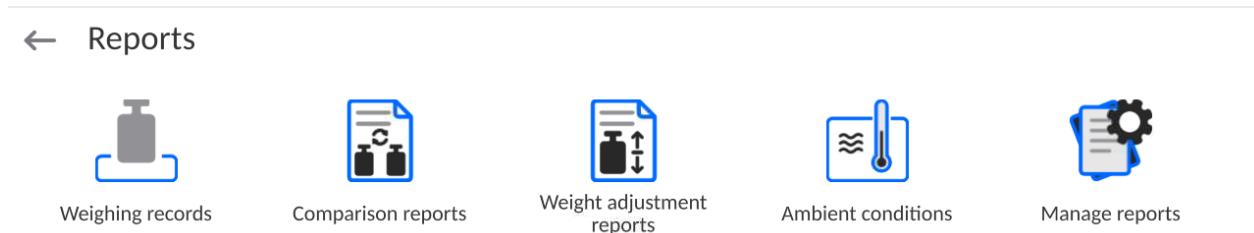
After confirming the operation, the program deletes data and shows a summary box:



After confirming information, the program will return to the previous box. The operator can perform further operations or return to weighing.

14. REPORTS

The weighing software offers the following databases:

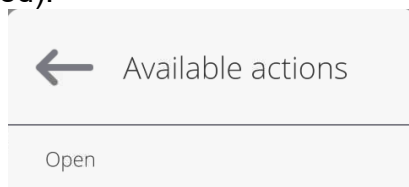


14.1. Operations in databases

Database operations are available only to the authorised operator.

To edit Bases, follow the steps below:

- Press and hold the field with base icon.
- A relevant menu will be showed in the screen.
- Select one of the available options (available options depend on the type of the base you have selected).



Selection of options:

- OPEN – the option allowing you to enter the specific database (identical to single clicking the base field).

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

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

The above-stated actions can be initiated through keys located 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 balance to the printer or PC is saved in the weighing base.

The operator can preview data for particular weighing.

Procedure:

- Enter **<Reports>** submenu.
- Enter **<Weighing>** base and press the desired item.

The list of information in the database for a specific weighing:

1. Weighing date.
2. Weighing result.

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

14.3. Comparison reports

The comparison reports base contains information on 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 field with its name.

The list of information included 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 base contains information on weight adjustment procedures. For each report, you can preview, search by date, export and print out.

Procedure:

- Press <Database> submenu and press <Comparison reports> field.

- Press the field with its name.

The list of information included 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. Environmental conditions

It contains information related to the environmental parameters. Depending on the balance configuration, such a list may include temperature, humidity, atmospheric pressure values. When a THB environmental module is connected to the balance, the information on its readouts will be recorded too.

Procedure:

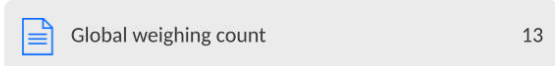
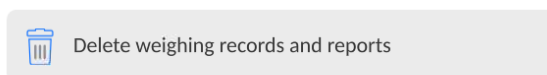
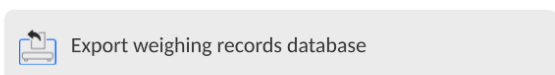
- Enter <Reports> submenu and press <Environmental conditions> field.
- Press the field with a specific report if it is invisible, scroll the list of reports via navigation keys.
- The name of the report consists of the date and time.

Note: You can also search for the report.

14.6. Reports management

The function allowing you to manage data in the reports base. The following three options are available: Export weighing base to file, Delete databases and Delete weighing records and reports.

← Manage reports

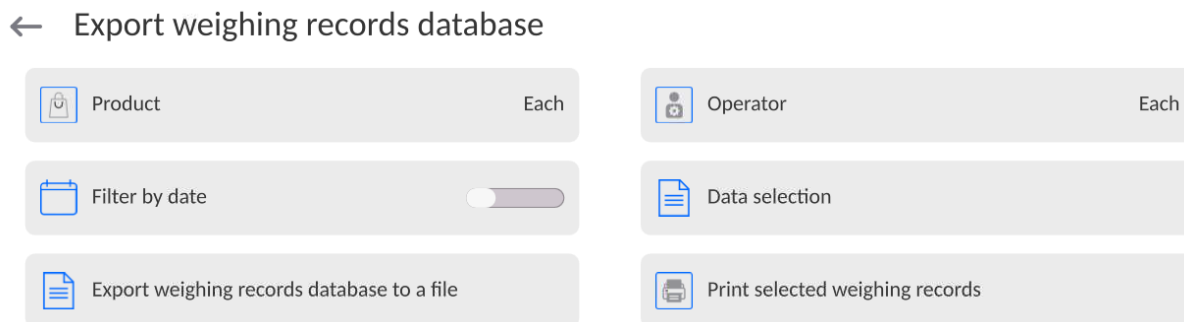


14.6.1. Export weighing base to file

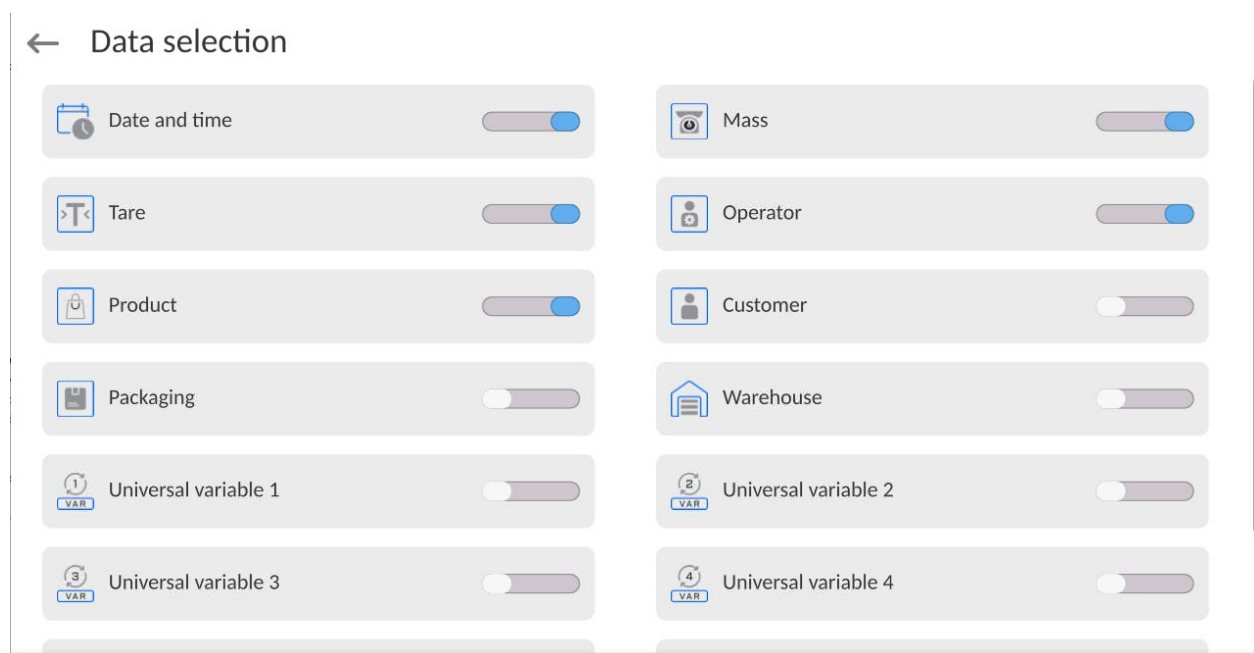
All completed weighing records are saved in the Weighing database. This information can be exported to the file with the use of the pendrive mass memory.

Procedure:

- Insert the pendrive mass memory into the USB port.
- Press <Export weighing base to file> field and the program will move to another window in which you have to enter export settings.

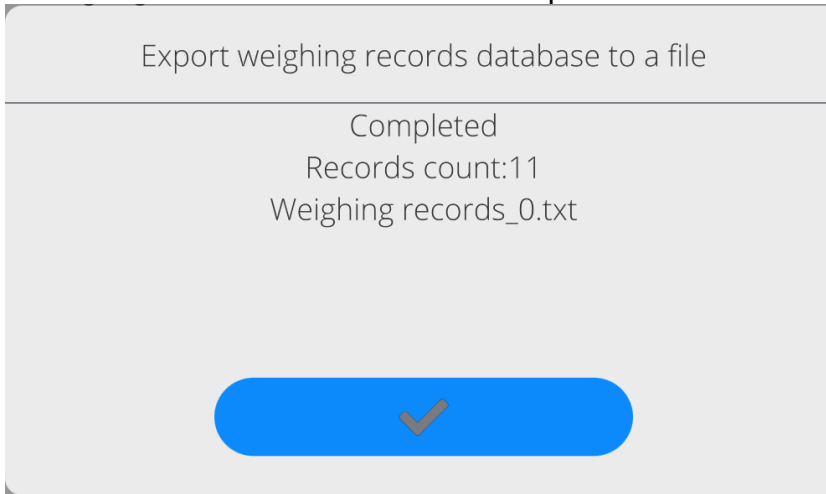


In <Data selection> field, the operator can define data related to measurements to be exported.



- Once you have set the option, click <Export weighing base to file> field and the program will start exporting the weighing base automatically.
- After you have finished exporting, you will see <Done> message together with the information on the number of data exported and file name (with *.txt extension),

and then the balance will return to the previous window.



- You can return to weighing or move to further menu settings.

Note: If the balance fails to recognise the pendrive mass memory, enter <Export weighing base to file> option and the following message will be displayed: <Operation error>.

- The name of the file you have created is composed of the database name and factory number of the balance, e.g. <Weighing_364080.txt>.
- Disconnect the pendrive mass memory from the USB port of the balance.

File template:

The template of the file you create takes a form of a table whose column are separated with a <Tab> mark in order to allow direct export of the file to <Excel> sheet. The table contains all information on the weighing, such as date and time, mass and mass unit, tare and tare unit, series number, operator's name, business partner's name, packaging name, source warehouse name, target warehouse name, result control name.

14.6.2. Delete weighing records and reports

This field is used to clear the content of the database of weighing records and reports. After activating the function, the program will display a box with numerical keypad in which you need to enter a limit date. The date specifies the limit for data deletion – older than the date you have entered. Give a year, month and day.

← Delete older than

21.07.2023

July 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
25	26	27	28	29	30	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

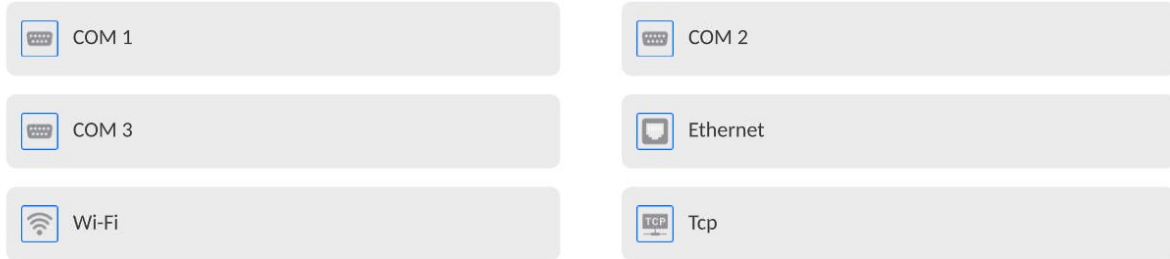


After confirming the data you have entered, all weighing records and reports collected in the specific period of time will be deleted. The quantity of deleted data will be displayed.

15. COMMUNICATION

The communication menu can be found in the parameters menu. To gain access, you need to press <Setup> key or icon. The balance can communicate with the external device through the following ports:

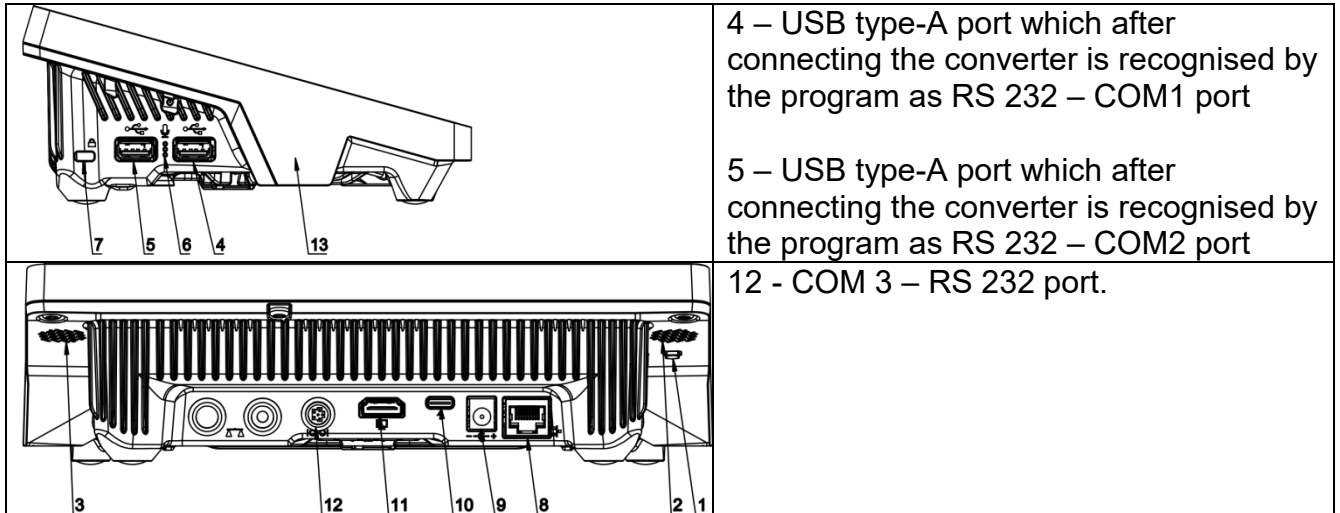
← Communication



Parameters of each port can be configured as per your needs.

15.1. RS 232 ports settings

NOTE: to assure a correct cooperation with external devices, via RS 232 ports, please use a USB-to-RS2323 converter.



Procedure:

- Select communication port: <COM1>, <COM2> or <COM3>.
- Set respective parameters.

Transmission parameters for RS 232 ports:

- 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, Space

*) – Speed value available only to the COM3 port for cooperation with IM02 communication module.


15.2. ETHERNET port settings

Procedure:

- Select <Ethernet> communication port and then set relevant values:
 - DHCP: Yes – No
 - IP address: 192.168.0.2

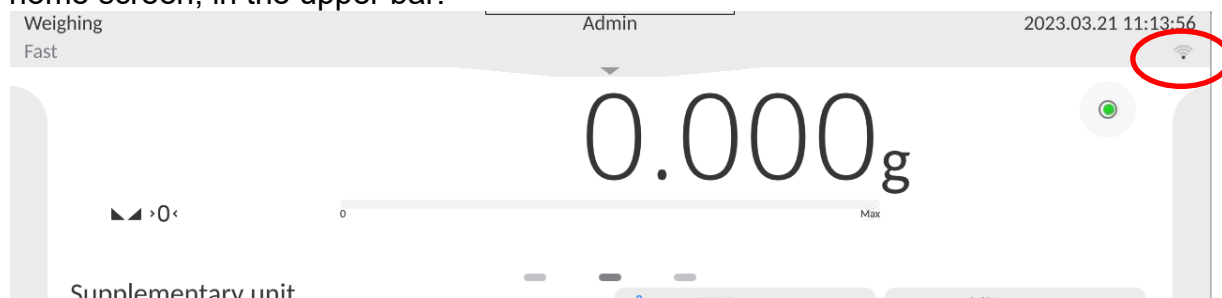
- Subnetwork mask: 255.255.255.0
- Default gateway: 192.168.0.1

Note: The above-stated settings are for reference only. The transmission parameters must be selected as per the settings of the local network of the client.

After making changes, press  key. The following message will be displayed: <To make changes effective, restart the balance>. Return to weighing and restart the device.

15.3. Wi-Fi port settings


If the balance is equipped with a Wi-Fi module, a special icon will be displayed in the home screen, in the upper bar.



Procedure:

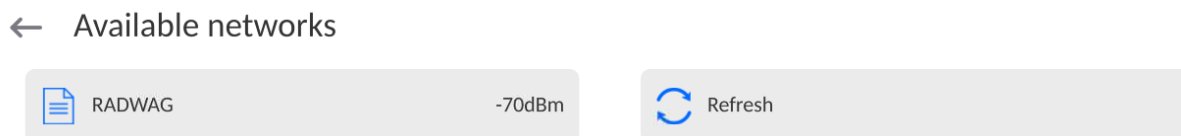
- Select <Wifi> communication port and then set relevant values:
 - DHCP: Yes – No
 - IP address: 10.10.9.155
 - Subnetwork mask: 255.255.255.0
 - Default gateway: 10.10.8.244

Note: The above-stated settings are for reference only. The transmission parameters must be selected as per the settings of the local network of the client.

After making changes, press  key. The following message will be displayed: <To make changes effective, restart the balance>.

Return to weighing and restart the device.

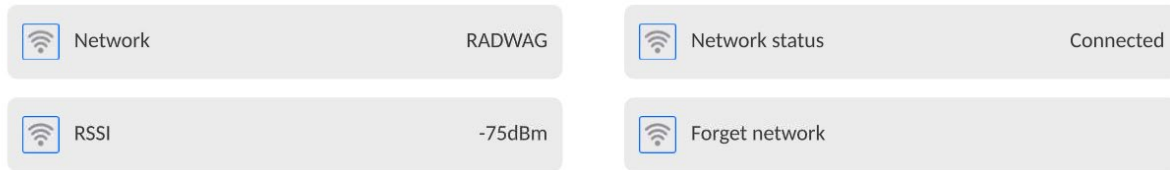
Additionally the operator can check <Available networks> detected by the balance:



The icon next to the network name shows if the network requires a password (the icon with a lock). To find available networks, select <Refresh> option.

To check parameters of the network, press <Network status> field. The network parameters will be given in the window:

← Network status



The selected network and connection parameters are remembered by the balance program. Every time you turn the balance on, the program connects to the network as per your preset parameters. To disable this function, select <Forget network> item. It will cause the connection to the specific network to be terminated.

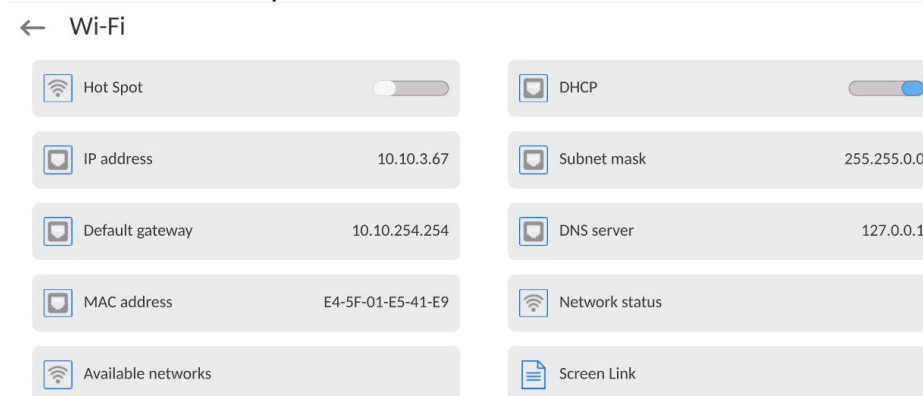
15.3.1. General information on Hot Spot service

Hot Spot – an open access point that allows a wireless connection to the balance with the use of other device, e.g. laptop, tablet or mobile phone, via the Wi-Fi wireless network.

The Hot Spot owner decides about the method, people and terms of making his connection available through logging, which requires a unique username and password (these data are assigned while starting the balance and then stored in its memory).

15.3.2. Activation of Hot Spot service

1. Enter Wi-Fi options



2. Activate the Hot Spot service and the balance will switch into service settings after a while.

Waiting for a service

Please wait

← Wi-Fi

<input checked="" type="checkbox"/> Hot Spot	<input type="checkbox"/> Name	PUE10-2a45a2e9
<input type="checkbox"/> Password	<input type="checkbox"/> Link by QR code	
<input type="checkbox"/> IP address	<input type="checkbox"/> Subnet mask	255.255.255.0
<input type="checkbox"/> Default gateway	<input type="checkbox"/> DNS server	127.0.0.1
<input type="checkbox"/> MAC address	<input type="checkbox"/> Screen Link	

3. Enter the unique name and password (the password must contain at least 8 characters).

← Name

ELIPSIS1234



q w e r t y u i o p [X]
 a s d f g h j k l [↩]
 [↵] z x c v b n m , . [↵]
 [↩] &123 English [A] [📎]

Waiting for a service

Please wait

← New password



q w e r t y u i o p [X]
 a s d f g h j k l [↩]
 [↵] z x c v b n m , . [↵]
 [🔇] [↩] &123 English [A] [📎]

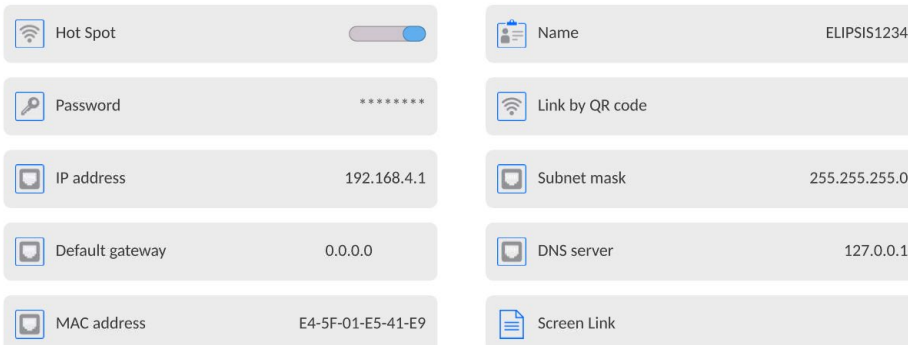
← Repeat the new password



Waiting for a service

Please wait

← Wi-Fi




4. From now on, the Hot Spot service will be active and the created subnetwork will be recognised by other devices, such as a smartphone, under the aforesaid name, and it will be possible to connect to it with the password.

15.4. TCP protocol settings

TCP (*Transmission Control Protocol*) is a streaming communication protocol between two PCs. TCP is based on the client-service mode. The server awaits 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> box with an on-screen keypad.
- Enter the desired port number and press  to confirm.

16. DEVICES

The DEVICES menu is included in the parameters menu. To gain access, you need to press <Setup> icon. The menu contains a list of devices that can cooperate with the balance.

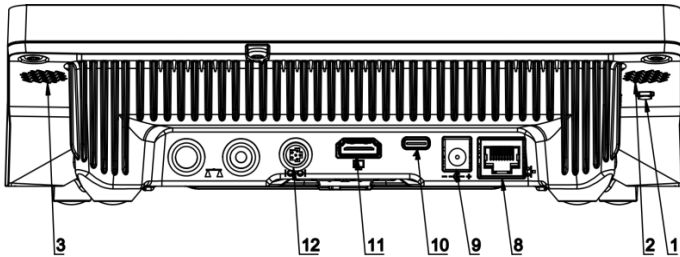
16.1. Computer

The active connection of **balance – computer** is signalled with  icon in the upper bar of the home screen. Configure settings in <Computer> submenu.

Procedure:

- Press the Setup key and then <Devices / Computer>.
- Set balance parameters related to cooperation with PC:
 - computer port
available options: none, COM 1, COM 2, Tcp, USB Free Link

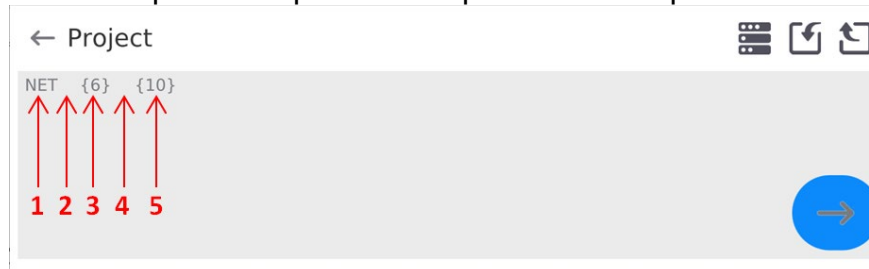
USB Free Link is a USB type-C port (port no. 10 at the back of the readout head) which the PC is connected to via the USB type-A/type-C cable.



The tool used to enter data for peripherals serving as a keyboard. Thanks to this, after relevant modification of the standard or non-standard printout and sending the relevant command from the Pc or pressing ENTER key on the balance keyboard, the data included in the non-standard printout are directly transferred from the balance to such PC programs as Excel, Word, Notebook, etc.

To assure a correct cooperation with Excel, you need to configure the non-standard printout properly by inserting printout formatting marks into the printout design, for example Tab, Key keys or diacritical signs typical of a specific language. Please remember to set a correct decimal point (dot or comma) that will be accepted by our Excel program. It can be set in: *Setup/Other/Decimal point*.

The example of the printout template and final 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

Y39							
	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		

17.1.1. Computer address

Setting a balance address which computer is connected to.



Procedure:

- Enter **<Devices / Computer / Address>** submenu and you will see **<Address>** box with on-screen keyboard.
- Enter address and press  to confirm changes.

17.1.2. Permanent transmission

Activation of balance-computer permanent transmission. After enabling **<Permanent transmission>** parameter, the content of **<Weighing Printout Template>** is continuously sent to the PC.


Procedure:

- Enter **<Devices / Computer / Permanent transmission>** submenu and set relevant value ( - Permanent transmission disabled;  - Permanent transmission enabled).

17.1.3. Interval

Setting frequency of **<Weighing Printout Template>** printout for permanent transmission. Printing frequency can be set in seconds, with an accuracy of 0.1sec. and the range from 0.1 to 1000 seconds.


Procedure:

- Enter **<Devices / Computer / Interval>** submenu and you will see **<Interval>** edition window.
- Enter desired value and confirm by pressing .

17.1.4. Weighing printout template


A unique template for printing from balance to PC.

Procedure:

- Enter **<Devices / Computer / Weighing Printout Template>** submenu. You will see **<Weighing Printout Template>** window with an on-screen keyboard
- Modify the template and confirm changes by pressing .






17.1.5. Cooperation with E2R System

Activation of cooperation between the balance and **E2R System**. **E2R System** software is a modular system that comprehensively supports production processes related to weighing at various stages.

	Only <Administrator> is allowed to activate <E2R> parameter. In case of cooperating with the <E2R System> software, database edition in the balance is blocked.
---	--

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

List of options in <E2R System> submenu:

Active system	Activation of connection to E2R System :  - connection disabled,  - connection enabled. If the connection is enabled, the  icon in the top bar of the home screen will be visible.
Block product selection	Activation of product selection lock for balance operator:  - lock disabled,  - lock enabled.
Databases	Submenu with configuration of databases that cooperate with E2R System.
Info	List of database events that occur during active connection to E2R System.

16.2. Printer

<Printer> submenu allows you to:

- set port for establishing communication with a printer: COM 1, COM 2, COM3, USB, Tcp Client, USB Free Link*, RS 232 IM02**,
- define printer's code page (default: 1250),
- define control codes for PCL printer or receipt printer.
Caution: Codes must be entered in a hexadecimal form!
- define printout templates.

*) - for port description, read section COMMUNICATION of the manual.

**) - Communication ports of the scale-connected IM02 communication module.

To ensure correct balance – printer operation (correct printout of diacritical signs of a given language), respective baud rate, obligatory for a given printer, must be chosen (see



the printer settings). Additionally, the code page of a sent printout must be accordant with the code page of a printer.

There are two methods for obtaining code page accordance:

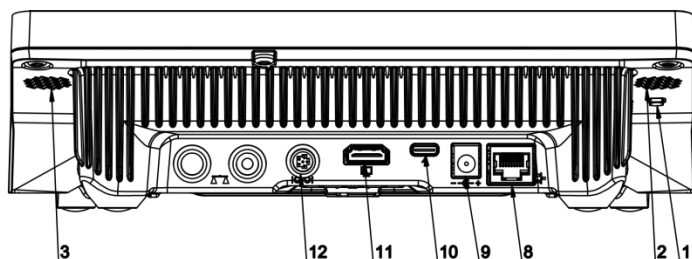
- by setting the right code page in printer settings (read the printer manual) – respective to the printout code page set in the balance;

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

- by sending a control code from the balance to the printer, which automatically sets the right code page (respective to the code page set in the balance) before the data printout – it is possible only for printers equipped with this option.

	Default value of printer code page is 1250 – central European code page.
	Detailed description of communication between the balance and the labeller is to be found in 'ANNEX 03'.

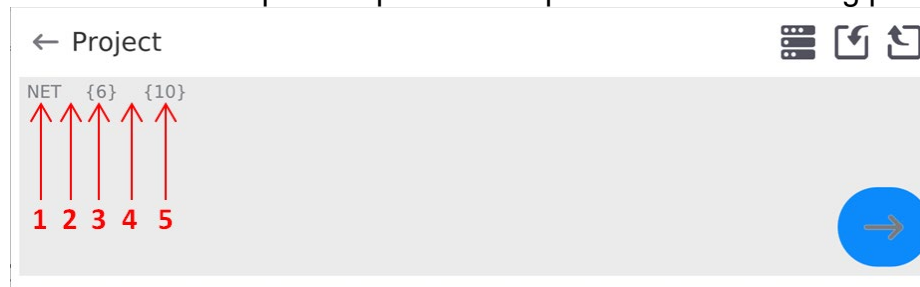
USB FREE LINK - USB type C port (socket no. 10 on the back of the indicator), to which the computer is connected using a USB type A/type C cable.



Tool for entering data, it functions as a keyboard. Upon proper modification of the standard or non-standard printout and sending a proper command from the computer, or upon pressing ENTER key located on the operation panel, the data from the non-standard printout are entered directly to computer programs, e.g. Excel, Word, Notepad etc.

To ensure proper operation with Excel-type program, the non-standard printout must be properly configured by inserting the print formatting characters, such as Tab, Enter and language-specific diacritics, into the designed printout. Also remember to set the correct decimal separator (full stop or comma) that the Excel-type program will accept. It can be set in: *Setup/Misc./Decimal point*.

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 data with a high information content, such as the SQC report, is to be printed using Free Link, it is imperative that the parameter <Receipt printer speed [character/second]> is set to 15.

← Printer

 Port	COM 1	 Code page	1250
 Control codes		 Receipt printer speed [character/second]	0
 Printouts			

A printout template describes how to print information from databases.

The template can be modified. In order to check the format of a printout template, print the data related to e.g. product parameters. To do it, go to <Products/Edit product> submenu and press printer pictogram.

Default values for particular templates:

- Product printout template {50}
- {51}
- Operator printout template {75}
- {76}
- Customer printout template {85}
- {86}
- Warehouse printout template {130}
- {131}
- Package printout template {80}
- {81}
- {82}

Ambient conditions printout template

```

----- AMBIENT CONDITIONS-----
{275}
IS T1: {278} °C
IS T2: {279} °C
THB T: {276} °C
THB H: {277} %
-----

```

Formulation printout template

```
----- Formulation -----  
Formulation name:      {165}  
Ingredients quantity:  {167}  
Target mass:          {168} g  
Formulation ingredients: {169}  
-----
```

16.3. Barcode scanner

The balance can cooperate with a barcode scanner. The scanner can be used for quick search of the following:

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

You can configure the barcode scanner in the submenu:
'Setup / Devices / Barcode Scanner'.

16.3.1. Port

Procedure:

- Enter **<Devices>** parameters group and select **<Barcode Scanner / Port>**, and then set a suitable option.

The balance can communicate with the scanner via the port:

3. USB



–

16.3.2. Prefix / Suffix

The operator can edit the value of **<Prefix>** prefix and **<Suffix>** suffix in order to synchronise the weighing program with the barcode scanner.

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

Procedure:

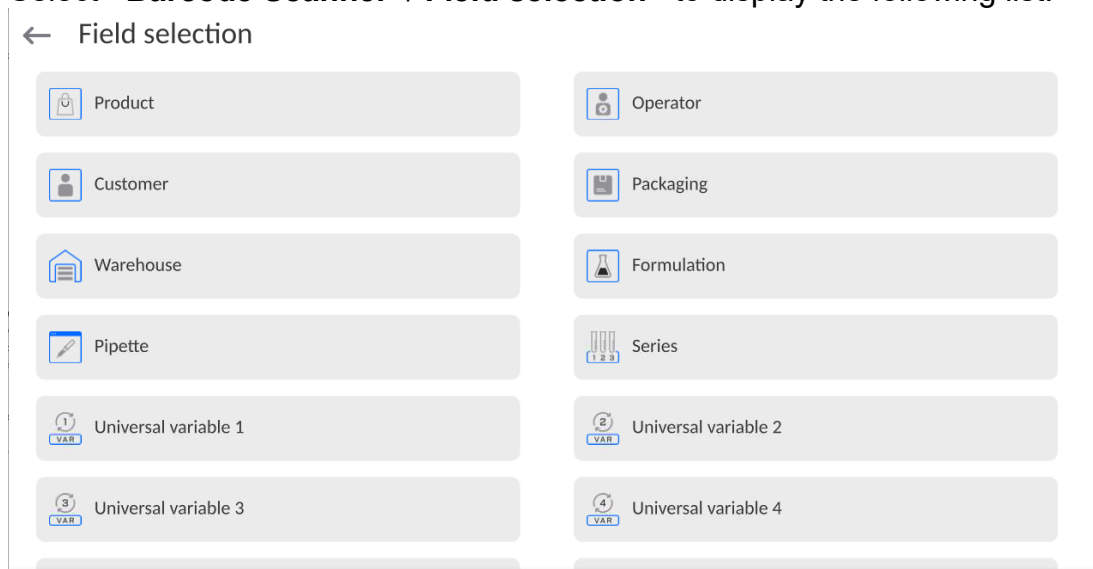
- Enter **<Barcode Scanner>** submenu,
 - Enter **<Prefix>** parameter and use the on-screen keyboard to enter the desired value (hexadecimally) and then press  key to confirm changes.
- Enter **<Suffix>** parameter and use the on-screen keyboard to enter the desired value (hexadecimally) and then press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

16.3.3. Field selection

The operator can configure the field selection in particular databases, which the search is to apply to.

Procedure:

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



- Enter the desired item to be able to edit the following parameters:

Filtering	Declare the item in which the search is to apply to (see table below)
Offset	Set the first significant code mark from which you wish to start searching. All preceding marks are skipped
Code Length	Set the number of code characters considered for searching
Start Marker	Declare the start of the scanned code that will be considered for searching
End Marker	Declare the end of the scanned code that will be considered for searching
Skip Marker	Declare if you wish to include start and end markers while comparing the scanned code with the balance code.

The list of filtering items, depending on the field selection:

Field selection	Filtering
Product	None, Name, Code, EAN Code,
Operator	None, Name, Code
Customer	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

Using **<Test>** function, the operator can verify the correct operation of the barcode scanner connected to the balance.

Procedure:

- Enter **<Barcode Scanner>** submenu,
- Enter **<Test>** parameter and you will see **<Test>** window with the ASCII and HEX windows,
- After scanning the code, it will appear in ASCII and HEX fields. The test result will be displayed in the lower part of the box.

When:

- **<Prefix>** and **<Suffix>** declared in the balance settings comply with **<Prefix>** and **<Suffix>** in the scanned code, the test result will be **<Positive>**,
- **<Prefix>** and **<Suffix>** declared in the balance 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 balance through UDP or USB ports. In order to assure correct cooperation, you need to select a suitable environmental module connection port.

17.2. IM02 communication module

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



The procedure of connecting the IM02 communication module to the supply network and scale has been described in detail in the 'IM02 communication module' manual.

17.2.1. Activation of IM02-to-scale connection

- Connect the IM02 communication module to the COM3 port of the scale.
- Connect the IM02 communication module to the supply network.
- Enter **<Peripherals / IM02 communication module / Active>** submenu and enable IM02 communication module (- module active, - module inactive).
- Once the IM02 communication module has connected to the scale, the following information will be automatically displayed:

Status	Active connection status, the status takes the following values: Connected, Not connected.
Software rev.	Software version of the IM02 communication module.
Manufacture variant	IM02 communication module manufacture version.

- Simultaneously the scale menu is extended to include **<Inputs / Outputs>** submenu and list of available communication ports in the **<Communication>** submenu.

18. INPUTS / OUTPUTS

Applicable in the case of an active IM02 communication module

The PUE CY10 meter can support **4 inputs / 4 outputs** via connection to the IM02 communication module.

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

18.1. Input Setup

- Enter <**Inputs/Outputs**> submenu.
- Select <**Inputs**> parameter, list of available inputs is displayed.
- Edit selected input, list of functions to be assigned is displayed. Input functions list is identical like key functions list, read section 21.2.
- Select the function you want to assign to the input, next go back to the home screen.

	<i>By default all functions are assigned with <None> value.</i>
---	--

18.2. Output Setup


Output gets activated at the moment of assigning it with a given function. Unassigned outputs remain inactive.

Procedure:

- Enter <**Inputs/Outputs**> submenu.
- Select <**Outputs**> parameter, list of available outputs is displayed.
- Edit selected output, list of functions to be assigned is displayed.

None	Output inactive.
Stable	Stable weighing result over LO threshold value.
MIN stable	Stable weighing result below the MIN threshold.
MIN unstable	Unstable weighing result below the 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 over the MAX threshold.
MAX unstable	Unstable weighing result over the 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	Signalling of weighing result out of OK threshold.
Zero	Zero weighing result („zero” marker).

- Select the function you want to assign to the output, next go back to the home screen.

	<i>By default all functions are assigned with <None> value.</i>
---	--

17. OTHER PARAMETERS

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

17.1. Interface language selection

Procedure:

Enter <Other> submenu, select <Language> and choose the communication interface language of the balance.

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

17.2. Date and time settings

The operator can set the date and time as well as select the data display and printout format. You can edit date and time settings in two ways:

- press <Date and time> field, available in the upper bar of the home screen,
- enter <Setup / Other/ Date and Time> submenu.

After entering the date and time settings edition box, you will see an on-screen keypad. Set relevant values: year, month, day, hour, minute and confirm changes.

← Date and time

24.07.2023 13:16:15

July 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
25	26	27	28	29	30	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

hh	:	mm	:	ss
09	:	10	:	11
10	:	13	:	12
11	:	14	:	13
12	:	15	:	14
13	:	16	:	15
14	:	17	:	16
15	:	18	:	17
16	:	19	:	18
17	:	20	:	19

→

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

Name	Value	Description
Time zone	Europe, Warsaw	The parameter for the value: name of zone/country. The specific name of the zone/country is related to the information whether the time changes from the winter to summer (and the other way round), and specific day of the year in which the change occurs.

Date and time	2016.04.04 08:00:00	Here you can set the date and time of the internal clock of the balance.
Date format	yyyy.MM.dd *	Select the date format. 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 **	Select the time format. 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 the date and time visibility in the home screen.
Internet time	Yes	If the balance is connected to the web network, this option allows updating the time and date from the network.
Synchronised with Internet	Yes	This parameter informs the operator if the time and date in the balance have been synchronised with the data in the online network.

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

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

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

← Date and time

Time zone Europe/Warsaw

Date and time 2023.03.23 10:17:45

Date format yyyy.MM.dd

Time format HH:mm:ss

Hide time

Time from the Internet

Synchronized with the Internet

Note: The access to <Date and Time> parameters settings is given only to the operator assigned a relevant permission level. The permission level can be modified by the administrator in <Permission> menu.

17.3. Extension module

The option allowing you to activate the device compliance for FDA 21 CFR procedures, extension of the communication protocol in the balance and deactivation of the standard balance license (the so-called demo balance).

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

Procedure:

Enter <Other> submenu, select <Extension module> parameter and follow the messages displayed.


17.4. Sound

Procedure:

Enter <Other> submenu, select <Sound> parameter and set a relevant option:

- | | |
|-----------------------|---------------------------|
| Result approval sound | – Yes/No |
| Touch screen sound | – Yes/No |
| Sensors | – Yes/No |
| Volume | – volume range up to 100% |

18.3. Visual printout cofirmation

The option that allows you to visually confirm the measurement and record it in the weighing record base. After entering < > value, every saved measurement will be communicated to the operator through temporary illumination of the mass display in blue.



17.5. Screen saving

The operator can activate the screen saving procedure.

To do so:

Press the Setup key and then: <Other/Screen saving>.

After entering the edition box, you can select one of the following values: [None; 1; 2; 3; 5; 10; 15]. Digital values are set in minutes. Selection of one of the values causes automatic selection of this specific value and return to the previous menu.

Note:

The screen is saved only when the balance is not used (no changes to the mass in the screen). Return to weighing after the screen is saved occurs automatically when the program can detect any change to the mass or when you press the screen or the button on the housing.

17.6. Screen brightness

The screen brightness has an impact on the length of balance operating time in case of battery powering. If you wish to prolong the time between subsequent battery charging cycles as much as possible, you can reduce the screen brightness.

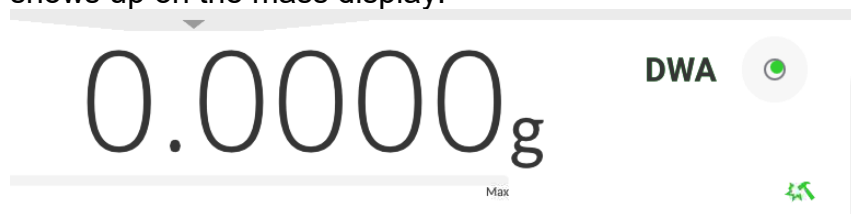
In so doing:


Press the Setup key and then: <Other/Screen brightness>.

After entering the edition box, enter the value in the following range: [0% - 100%]. When you enter a relevant value, you instantly change the screen brightness and return to the previous menu.

17.7. Vibration detection

The balance program allows detecting wrong placement of the sample on the weighing pan, which may lead to increased value errors. The function is active when the relevant icon shows up on the mass display.



If the balance program can detect wrong placement of the sample on the weighing pan, the icon turns red . This means that the result can be subject to a greater margin of error.

Procedure:

- Enter <Other> submenu.
- Select <Vibration detection> parameter,
- Select one of the options:
 - Yes – active function
 - No – inactive function

17.8. Level control

The balance is equipped with the Automatic Level Control function.

In the case of non-verified balances, you can define the method of its operation.

In the case of verified balances, settings are invisible and comply with the factory set values, that is: <Active with lock>, weighing is possible only when the balance is levelled.

Procedure:

- Enter <Other> submenu.
- Select <Level control> parameter and the edition box will be displayed.
- Select one of the following options:
 - None – the level indicator is not displayed, the balance does not control level,
 - Active – the level indicator is displayed, the balance shows the level change through a change of colour (green → OK, red → level is lost),
 - Active with lock – the level indicator is displayed, the balance shows the change of the level through a change of colour (green → OK, red → level is

lost; when the indicator is red, the display shows the following message – no Level -, weighing is not possible).

Note: *The method of levelling is described in the point 9.3 of the manual.*

17.9. Decimal point

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

Procedure:

- Enter <Other> submenu.
- Select <Decimal point> parameter and the edition box will open.
- Select one of the following options:
 - Dot
 - Comma

Select the value to return to the submenu box.

17.10. Sensors sensitivity

This parameter ranges from 0 to 9 and determines the distance of reaction of the sensors.

By default the value ranges from 5 to 7.

Procedure:

- Enter <Other> submenu.
- Select <Sensors sensitivity> parameter and the edition box will be displayed.
- Select one of the values. Select the value to return to the menu window.

17.11. Door opening

This parameter allows you to set the range of door opening in case of automatic operation. By default this value is <100%>, which means that the door is fully open.

Procedure:

- Enter <Other> submenu.
- Select <Door opening degree> parameter and the settings selection box will pop up.
- Select the desired value <75%>.
- Next confirm the settings to return to the menu window.

17.12. Automatic ionisation

This parameter allows you to disable ionisation or select its level. The values you can choose: None/Low/High/Continuous operation.

Procedure:

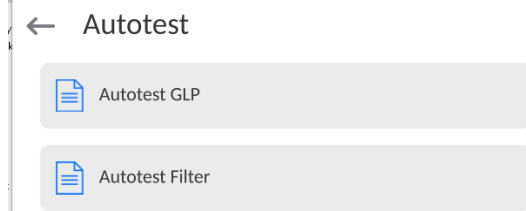
- Enter <Other> submenu.
- Select <Automatic ionisation> parameter and the settings selection box will pop up.
- Enter the desired value <Low>.
- Next confirm your settings to return to the menu window.

17.13. Autotest

The <AUTOTEST> function is used to help the operator evaluate work and diagnose causes of weighing errors that exceed permissible values for the specific type of balance. AUTOTEST allows regular optimisation of the balance settings in order to obtain the best repeatability parameters and weighing time in the specific working environment. The function also lets you check the above-stated parameters at any time, as well as archive the test you have completed.

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

Before any test is carried out, the balance checks levelling, temperature and humidity.



AUTOTEST FILTER

In this procedure, the internal weight is applied and removed 10 times for all possible filter set points and result is confirmed. 2 parameters are checked under the procedure: Repeatability and Weighing Result Stabilisation Time.

The entire test takes about 1 hour. Once the test has been conducted for all potential set points, the display shows results.

The operator is informed which settings in the specific environment are the most optimal for the balance parameters.

This function proves very useful and allows you to obtain the best possible accuracy of weighing and the shortest weighing time with the repeatability value that is accepted by the customer.

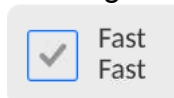
The results are remembered by the balance upon its activation.

The function allows printout through printers available in the system and quick selection of the most optimal settings directly from the options level.

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

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

- settings with the fastest measurement (the shortest measuring time).
- settings with the most accuracy measurement (the smallest deviation for 10 measurements).
- settings with the optimal measurement (the lowest product of time and deviation).



- current filter settings.

Measurement results:

- *Type of filter.
- * Parameter value <Result approval>.
- * The value of result repeatability expressed as a standard deviation.
- * Average time for result stabilisation

The example view of the results window can be found below:



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

The example of the report:

```

----- Autotest Filter: Report -----
Balance type      XA 5Y
Balance ID       442566
Operator         Hubert
Application version NL1.6.5 S
Date            2015.05.07
Time            09:34:48

-----
Readout 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  Accurate
Repeatability    0.0207 g
Stabilisation time 5.015 s

Signature
.....
    
```

Procedure:

After activating the function, the program instantly initiates the procedure and the window show up on the screen. The window informs the operator about the progress. When the autotest is finished, the program displays the summary together with current filter settings. The operator is allowed to print it out.



At any time the operator can abort the procedure by pressing <X> key in the window.

AUTOTEST GLP

This test checks repeatability of applying the internal weight and determining the balance readout error with reference to its maximum loading capacity.

Under the procedure, the following happens:

- the internal weight is applied twice, and then this weight is applied ten times,
- the balance is calibrated,
- the standard deviation is calculated and remembered,
- the door test is also carried out in balances with automatically opened doors.

The function also allows displaying and printing the report through printers available in the system and archiving the report which contains basic balance data, information on environmental conditions and test results.

Test results:

*The deviation for the maximum load.

*The value of result repeatability expressed as a standard deviation.

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

The example of the report:

```

.....
----- Autotest GLP: Report -----
Balance type           XA 5Y
Balance ID             400010
Operator               Admin
Application version    LLx.x S
Date                   2021.01.16
Time                   09:17:16
-----
Number of measurements  10
Balance readout 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 field with the name and the program will display a dialogue box.

From here, you can take the following actions:

- Start another AUTOTEST GLP.
- Preview autotest results and export all saved results into a *.csv file.
- Delete all saved results.

At any time the operator can abort the procedure by pressing <X> key in the window.

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

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

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

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

17.14. Start-up logo

(The option is available to the authorised operator only).

This parameter allows you to change the image showed in the screen while launching the device system.

17.15. System events export

(The option is available to the authorised operator only).

This option allows you to generate a special file which is saved automatically, after you run the option, to the external memory (pendrive) inserted in the USB port. This file is used to diagnose potential problems related to operation of the device by RADWAG service technicians.

Procedure:

- Insert the pendrive memory stick into the USB port.
- Next enter <Other> submenu.
- Select <System events export> parameter.
- The program will generate a special file and save it automatically on the pendrive stick.
- Such a file must be sent to RADWAG.

17.16. Text-to-speech conversion



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







The voice that is emitted is available in English only.

18. SCHEDULED TASKS

This menu contains settings that allow you to schedule recurring tasks, such as balance calibration or display of a special message.

18.1. Balance calibration

← 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 calibrations> parameter lets you declare the exact time and interval for call of balance calibration. This option is independent of automatic calibration and call criteria (time, temperature). You can schedule the internal and external calibration. To make sure the external calibrations are scheduled, you can also export standard weights to the balance memory and use them for the purposes of calibration.

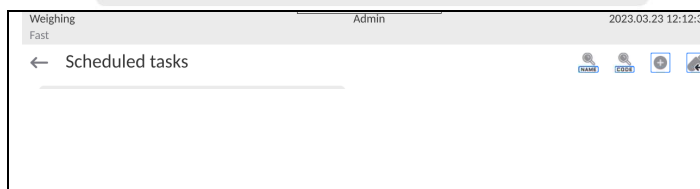
Setting:

Before you schedule the calibration, you need to enter standard weights together with their data for external calibrations.

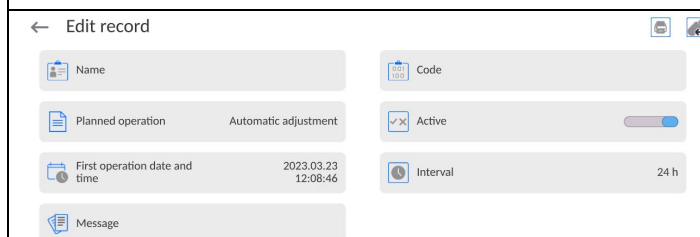
To do so, enter the operator's menu, and <Calibration> parameters group and find <Calibration weights> and enter the weight by giving its data:


← Edit record  

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



Go to the operator's menu, to <Scheduled tasks> parameters group. The window will be displayed. In the window, the authorised operator (Administrator) can add items with scheduled calibrations.



To do so, click  key and the box with the scheduled balance calibration data will be displayed.

Select the scheduled task: automatic (internal) calibration or external calibration.


	<p>If you have selected the automatic calibration, you need to enter its data and its operation schedule.</p>
	<p>If you have selected the external calibration, you need to enter the calibration data, standard weight used to make it and its operation schedule.</p>
	<p>After entering the data, return to the previous window. An item with the schedule balance calibration will be added.</p>

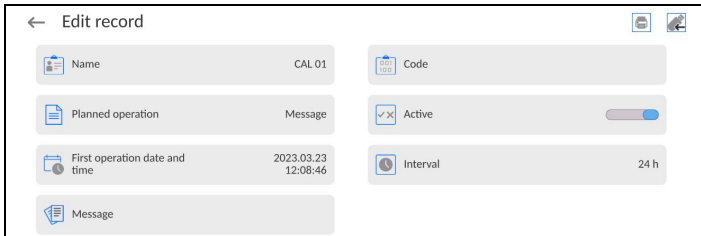
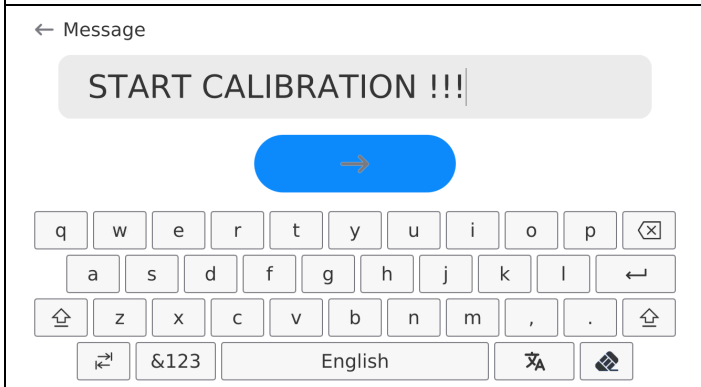

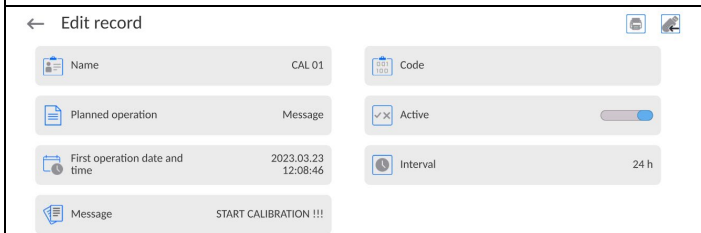
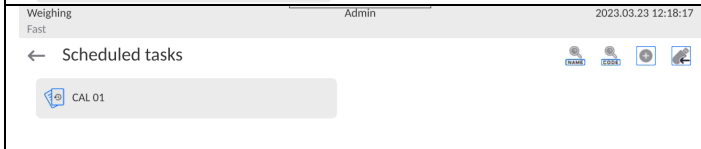
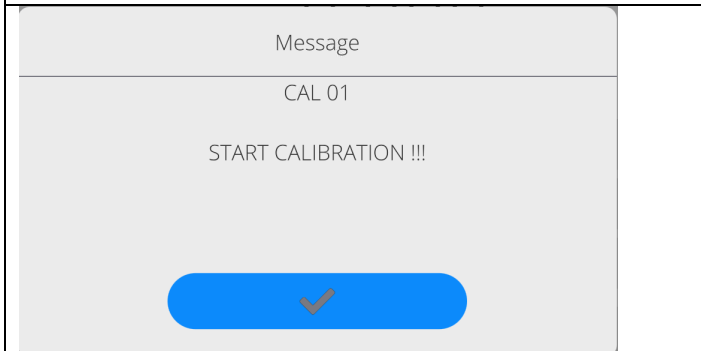

Once all data have been entered, leave the menu.

From now on, calibrations will be performed automatically: at a schedule time and with intervals entered.

18.4. Message

This parameter allows you to declare the exact time and interval for displaying a special message that informs the operator about a need to take some action at a specific time.

	<p>Enter the operator's menu and go to <Scheduled tasks> submenu.</p> <p>To add a task, you need to press  key in the upper information bar.</p>
	<p>The window will be displayed. In the window, select <Scheduled tasks> field. The option selection box will pop up.</p>
	<p>Select <Message> item.</p>

	<p>The program will return to the message settings window. After setting the message display frequency options (the first display, interval), enter the content of the message after selecting <Message> parameter.</p>
	<p>After you have entered the content, confirm the entry by pressing <  >.</p>
	<p>After approving, the program will return to the previous box.</p>
	<p>In the submenu window you will see a field with the scheduled task. Leave the menu and go to the home screen.</p>
	<p>When the message display criteria (time) have been met, the window with a message will pop up instantly. Press <  > key to close the window and perform the scheduled task.</p>

19. ENVIRONMENT

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

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

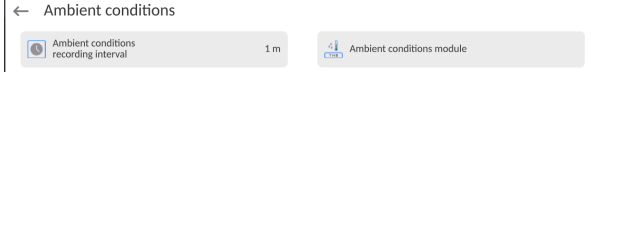
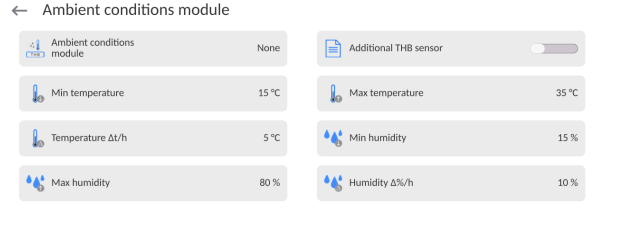
*The external sensor is delivered upon the customer's special order.

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

- Conditions record frequency
- Environmental module

Procedure

Enter <Parameters> and select <Environment> group.

<p>Enter <Conditions record frequency> and specify the interval time for environmental conditions recording.</p> <p>The operator can browse the environmental conditions record history. All these records can be found in <Database> in <Environment> base.</p>	
<p>Enter <Environmental module> item and assign it environmental conditions parameters.</p> <p><Environmental module> Thermo-Hygro-Barometer (THB) records 2 types of environmental conditions:</p> <ul style="list-style-type: none"> • Temperature • Humidity 	

Note:

The environmental conditions for the mass comparator, set by the operator, should not deviate from the device operation tolerance specified in the product catalogue sheet. If the environmental conditions of the device differ from the ones recorded in the catalogue sheet, the device may operate in a wrong way.



20. UPDATE

It contains the following module which you can use to update the following:

- The field related to the operator: APPLICATION.
- Motherboard (administrator only).

The update is automatic and involves collection of the information from the USB external memory.

Procedure:












- Prepare the pendrive external memory with an update file. The file must come with *.lab4 extension.
- Insert the pendrive into the USB port of the readout head.
- Log in as an Administrator.
- Enter the balance menu. Press  key.
- Select <Update>  item.
- Select <Application> field.
- The screen will show the content of the USB memory, search for the update file and click the field with its name.
- The balance will restart automatically and its application will update instantly.
- If the balance does not restart, you need to force it by switching the balance off and back on.

The motherboard file update is similar to the Application update. The only difference is that files must come with suitable extensions (*.cm4mbu).

21. SYSTEM INFO

This menu contains information on the balance and installed programs. Most of the parameters are for reference only.

← About

 Balance S/N	0	 Balance type	XAM 3Y
 Network balance name	PUE10-2a45a2e9	 Software version	LL2.0
 Product code	000700404070	 Weighing firmware version	1.0.0
 Product code 2	429048443000	 Software rev. MB	1.1.3
 System version	LX-23.03.21	 CPU Id:	48560360
 Licence Id:	E4-5F-01-E5-41-E8	 Memory status	FLASH: 57 % RAM: 16 %

In <Environment> parameter, you can see the environmental parameters: temperature, humidity, pressure (when the balance is supplied with relevant sensors).

After selecting <Settings printout> parameter, you will send the balance settings (all parameters) to the printer.


22. COMMUNICATION PROTOCOL



Detailed description of protocol of communication between the balance and the computer is to be found in 'CBCP-07' manual.

19.23.1. Manual Printout/Automatic Printout

The mass comparator enables generating manual and automatic printouts.

- Manual printout: upon indication stabilization press  key.
- Automatic printout is generated automatically in accordance with the settings for automatic printout (read section 14.5 of this user manual).

The content of printout depends on settings of <Standard printout> - <Weighing printout template> menu (read: section 14.5 of this user manual).

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 mode is enabled
 [^] if high limit is out of range
 [v] if low limit is out of range

Character [space] for positive values
 [-] for negative values

Mass 9 characters with decimal point, right justification

Unit 3 characters, left justification

Example:

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

upon pressing  key, according to settings of <Weighing printout template>:

N (measurements quantity)	NO	Universal variable 1 ... 5	NO
Date	NO	Net	NO
Time	NO	Tare	NO
Level status	NO	Gross	NO
Customer	NO	Current result	NO
Warehouse	NO	Supplementary unit	NO
Product	NO	Mass	YES
Packaging	NO	Non-standard printout	NO

23. CONNECTION OF PERIPHERALS

Mass comparator can cooperate with the following peripheral devices:

- computer,
- receipt printer: EPSON,
- PCL6 printer,
- barcode scanner,
- fingerprint reader,
- an optional peripheral device operating ASCII communication protocol.

24. 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)

25. ADDITIONAL EQUIPMENT

Type	Name
RTP-UEW80 lub RTP-RU80	Dot printer
	PCL6 Printer
LS2208	Barcode scanner
SAL	Anti-vibration table for XA series balances
	PC keyboard

PC software:

- 'EDYTOR ETYKIET' [LABEL EDITOR] software



RADWAG WAGI ELEKTRONICZNE
ZAAWANSOWANE TECHNOLOGIE WAGOWE

