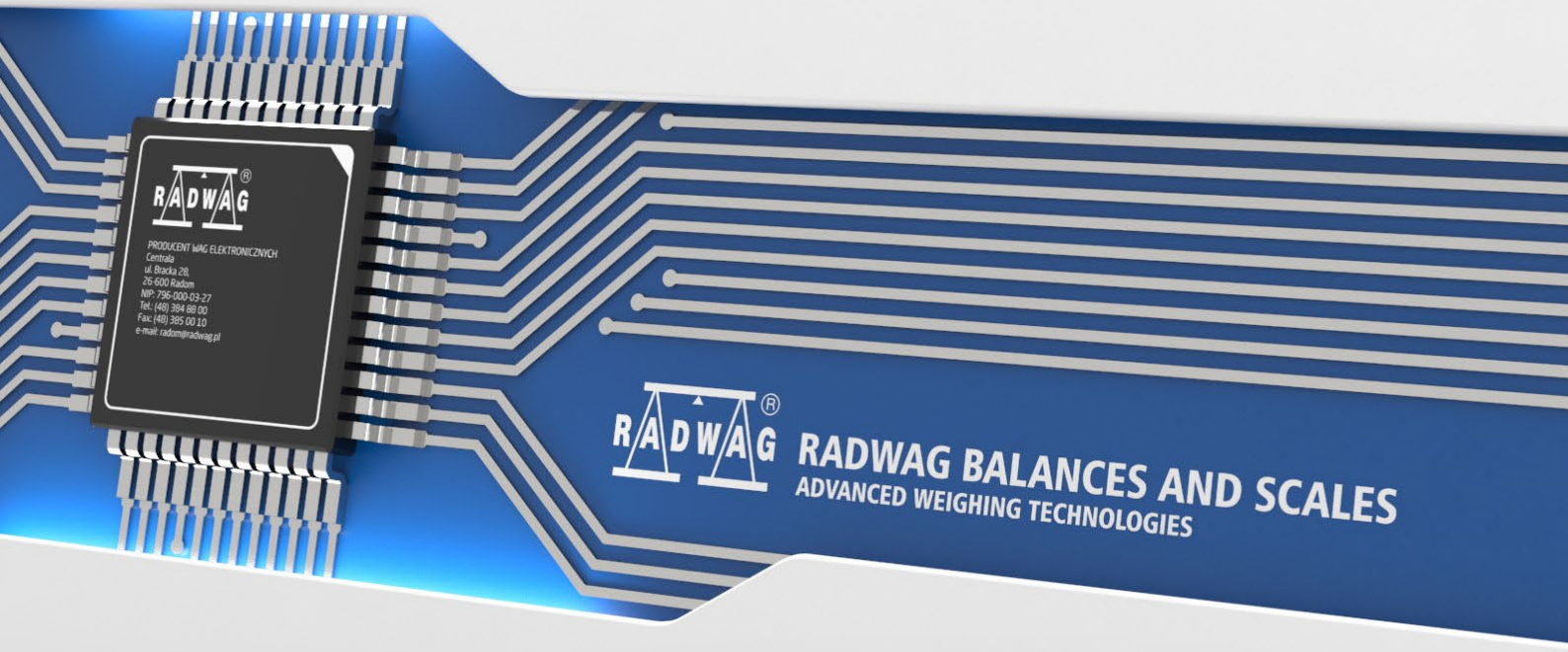
5Y Mass Comparators

HRP 150.1.5Y.KO Mass Comparator
*** HRP 150.1.5Y.KO * Mass Comparator - with self-centring weighing pan**
HRP 200.5Y.KO Mass Comparator
*** HRP 200.5Y.KO * Mass Comparator - with self-centring weighing pan**
HRP 500.5Y.KO Mass Comparator
*** HRP 500.5Y.KO * Mass Comparator - with self-centring weighing pan**
*** HRP 500.1.5Y.KO * Mass Comparator - with self-centring weighing pan**
HRP 1000.5Y.KO Mass Comparator
*** HRP 1000.5Y.KO * Mass Comparator - with self-centring weighing pan**
*** HRP 1000.1.5Y.KO * Mass Comparator - with self-centring weighing pan HRP 1000.5Y.KB Mass Comparator**
HRP 2000.5Y.KO Mass Comparator
HRP 2000.1.5Y.KO Mass Comparator
*** HRP 2000.5Y.KO * Mass Comparator - with self-centring weighing pan**

USER MANUAL

IMKO-08-09-09-24-ENG



If you are reading this, it means that you are bound to achieve success.
You have purchased a device that was designed and manufactured to give you years of service.
Congratulations and thank you for selecting RADWAG product.

September 2024

Contents

1. GENERAL INFORMATION

1.1. Intended Use

5Y mass comparators enable determining difference between mass of a test weight (B) and known reference weight (A) during calibration process.
Mass comparators are widely applied in laboratories and in national metrological institutes for mass standards and weights calibration.

1.2. Precautions

- Prior first use, carefully read this User Manual. Use the comparator only as intended.
- Do not operate the touch panel using sharp-edged tools (knife, screwdriver, etc.).
- While loading the balance make sure that loads are placed in the very centre of the weighing pan.
- Load the weighing pan with loads gross weight of which does not exceed instrument's measuring range (maximum capacity).
- In case of damage, immediately unplug the instrument from the mains.
- Mass comparator to be decommissioned, should be decommissioned in accordance with valid legal regulations.
- Not intended for usage within EX zones. Mass comparator is not designed to operate in EX zones.

1.3. Warranty Conditions

A. RADWAG feels obliged to repair or exchange all elements that appear to be faulty by production or by construction,
B. Defining defects of unclear origin and means of their elimination can only be realized with assistance of manufacturer and user representatives,
C. RADWAG does not bear any responsibility for damage or losses resulting from unauthorized or inadequate performing of production or service processes,
D. Warranty does not cover:
   - mechanical damage caused by product exploitation other than intended, defects of thermal and chemical origin, defects caused by lightning, overvoltage in the power network or other random event,
   - mechanical damage caused by mass comparator exploitation other than intended,
   - mass comparator damage, if service claims removing or destroying protective stickers which secure its housing against unauthorized access,
   - damage caused by liquids, water and natural wear,
   - mass comparator damage caused by inappropriate setting or by electrical wiring failures,
   - damage caused by overloading of the mechanical measuring system,
   - maintenance activities (mass comparator cleaning).
E. Loss of warranty takes place if:
   - a repair is carried out outside RADWAG authorized service point,
   - service claims intrusion into mechanical or electronic construction by unauthorized people,
   - other version of the operating system is installed in a mass comparator,
   - mass comparator does not bear company protective stickers.
F. Detailed warranty conditions are listed on a service card.

1.4. Supervision over Metrological Parameters

Metrological parameters of mass comparator need to be checked in determined time intervals. Inspection frequency depends on ambient conditions in which the mass comparator is used, types of performed processes and accepted quality management system in organization.

1.5. User Manual Significance

It is very important to read the user manual carefully before switching on and starting up mass comparator operation, even if you are experienced and have worked with this type of comparator

before. This user manual contains crucial information for correct operation of the mass comparator; following the guidelines guarantees trouble-free operation of the comparator.

1.6. Operator Training

Mass comparator has to be utilized and supervised only by operators who are trained and experienced in using such type of weighing instruments.

2. TRANSPORT AND STORAGE

2.1. Delivery Checklist

Upon delivery it is necessary to check the package and the device, make sure that your package bears no signs of damage. If it does contact the manufacturer's representative.

2.2. Packaging

Keep all package elements should your device be transported in the future. Remember that only original packaging can be used for shipping purposes. Prior packing, uncouple any cables, remove any separable components (weighing pan, shields, inserts). The mass comparator components shall be packed into an original packaging, thus being protected against potential damage during transportation.

Caution:
While preparing the mass comparator to be packed, disassemble the comparator in reverse order to the comparator installation presented in section 3. Make sure the mechanism interlocks are reassembled to prevent damage of the comparator.

3. UNPACKING AND INSTALLATION

3.1. Workstation

- Mass comparator has to be stored and used in locations free of vibrations and shakes, free of air movement and dust.
- Ambient air temperature cannot exceed the range of: +15 °C ÷ +30 °C and its change cannot exceed 0.5°C/12h.
- Relative humidity range: 40%÷60% and its change cannot exceed 2%/4h.
- Mass comparator has to be located on the floor that is not affected by vibrations and distant from heat sources.
- Take special precaution when calibrating magnetic weights, as part of the comparator is a strong magnet. Weights magnetic cannot exceed the values presented in the table below:

Susceptibility, χ

Weight class	E_1	E_2	F_1	F_2
m ≤ 1 g	0,25	0,9	10	-
2 g ≤ m ≤ 10 g	0,06	0,18	0,7	4
20 g ≤ m	0,02	0,07	0,2	0,8

3.2. Unpacking

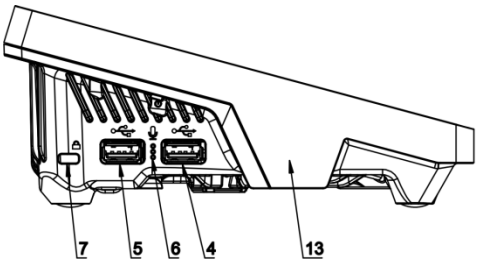
Cut the adhesive tape. Take the device out of the packaging. Open the accessory box, take the device components out of it.

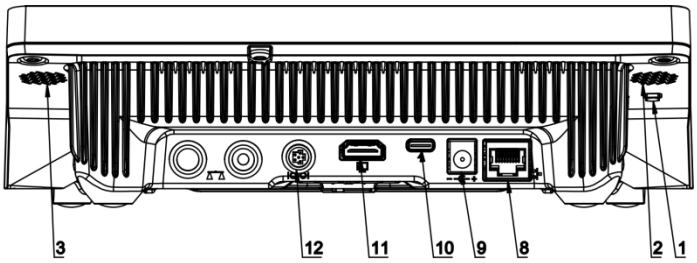
Standard delivery components list

- Mass comparator
- Weighing pan
- Indicator
- Power supply
- Set of screws

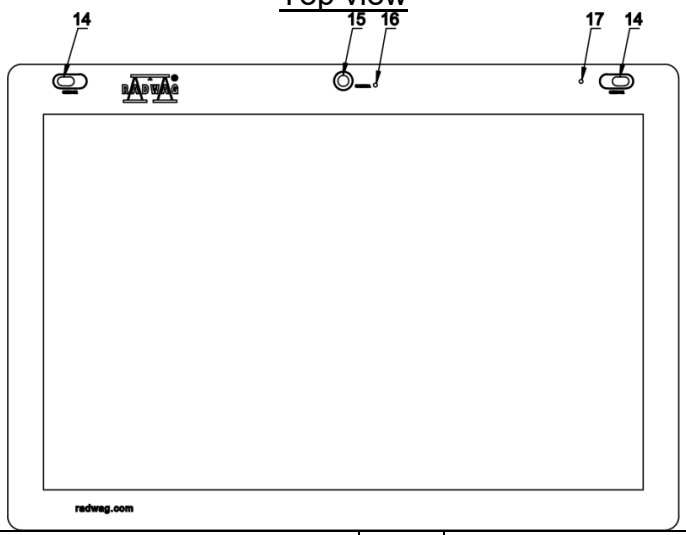
Prior mass comparator installation, read this user manual in order to correctly prepare the device for operation. Install the mass comparator at the workstation.
***Caution**: Be careful so as not to damage the mechanism. At least 2 people are required for mass comparator installation.*

3.3. Connectors





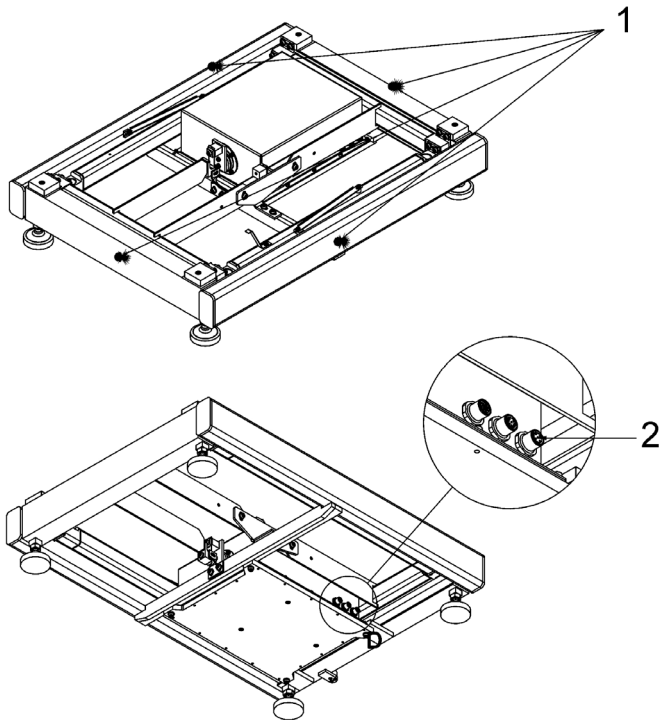
Top view



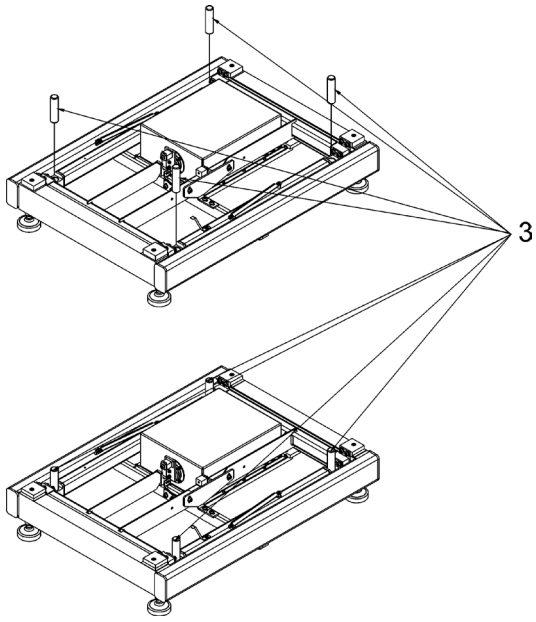
1	Button used to hard restart or to switch the balance off/on.	***10***	Power supply socket – USB type C
2	Left speaker	***11***	HDMI socket
3	Right speaker	***12***	Media box socket
4	USB type A	***13***	RFID sensor
5	USB type A	***14***	Proximity sensors
6	Microphone	***15***	Camera
7	Kensington Lock	***16***	Camera diode
8	Ethernet socket	***17***	Signalling diode
9	Power supply socket		

3.3.1. HRP 150.1, HRP 200 and HRP 500 Mass Comparators Unpacking

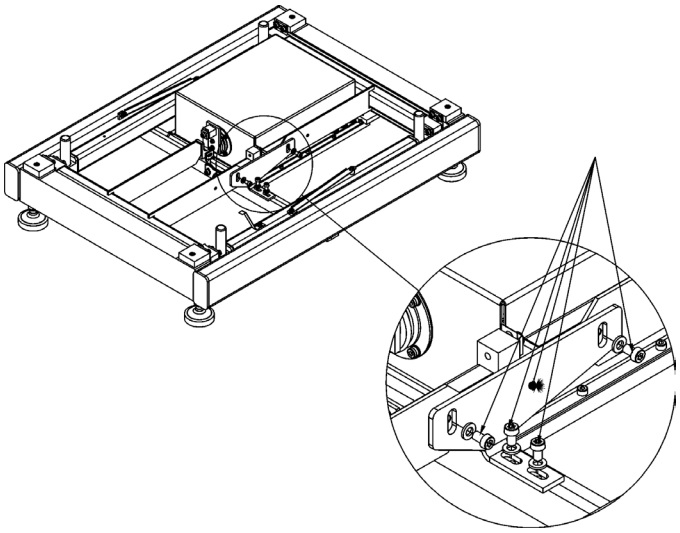
1. Take the platform out of the packaging. Hold only the 'EXTERNAL FRAME'.



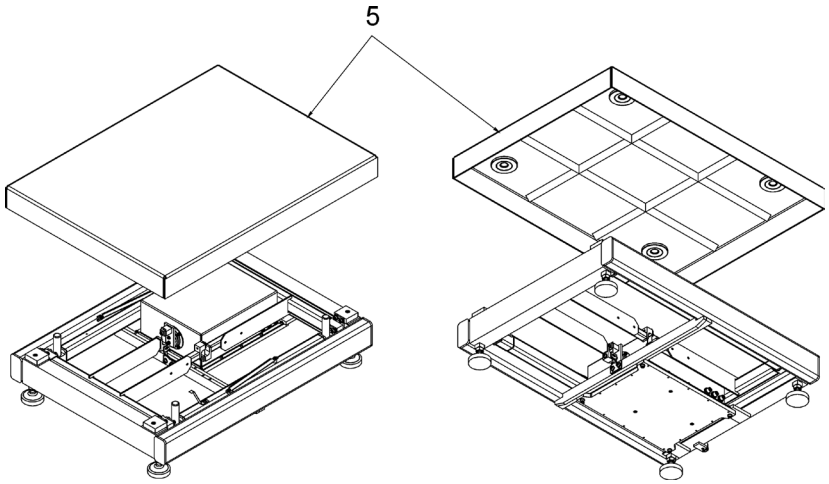
2. Connect the terminal or computer to the weighing module.
3. Install weighing pan receivers, fit them into lever seats.



4. Disassemble transport lock by undoing screws and removing fixing washers.



5. Install the weighing pan.

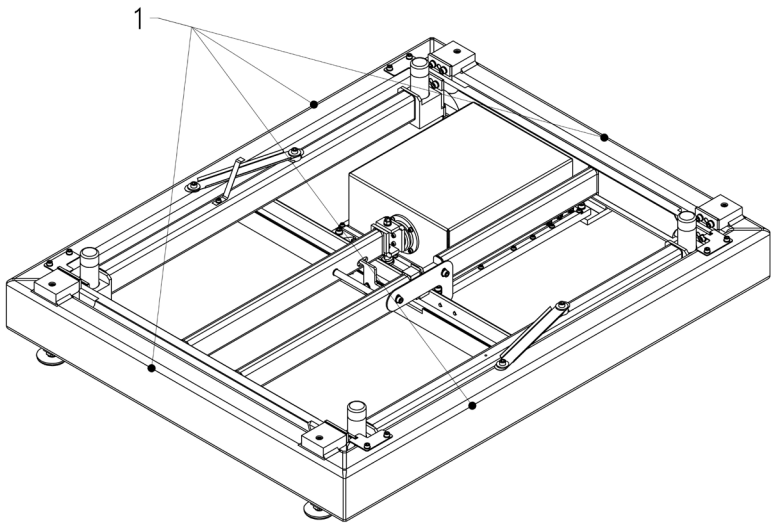


6. Place the device on a flat and even surface. Keep it far away from any sources of heat.

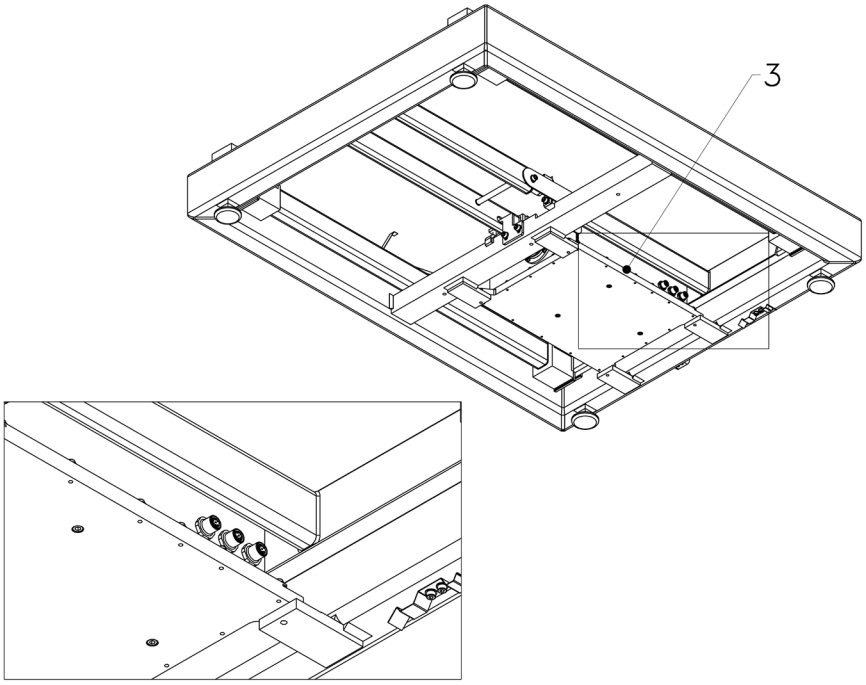
7. Level the device, to do it turn its feet left/right. Keep turning the feet until the air bubble takes central position.

3.3.2. HRP 1000 and HRP 1000.1 Mass Comparator Unpacking

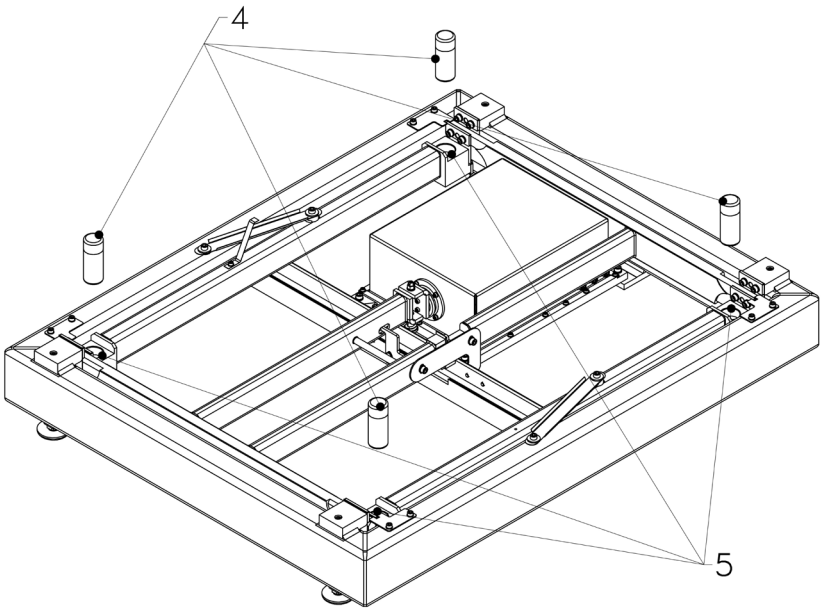
1.Take the platform out of the packaging. Hold only the 'EXTERNAL FRAME'.



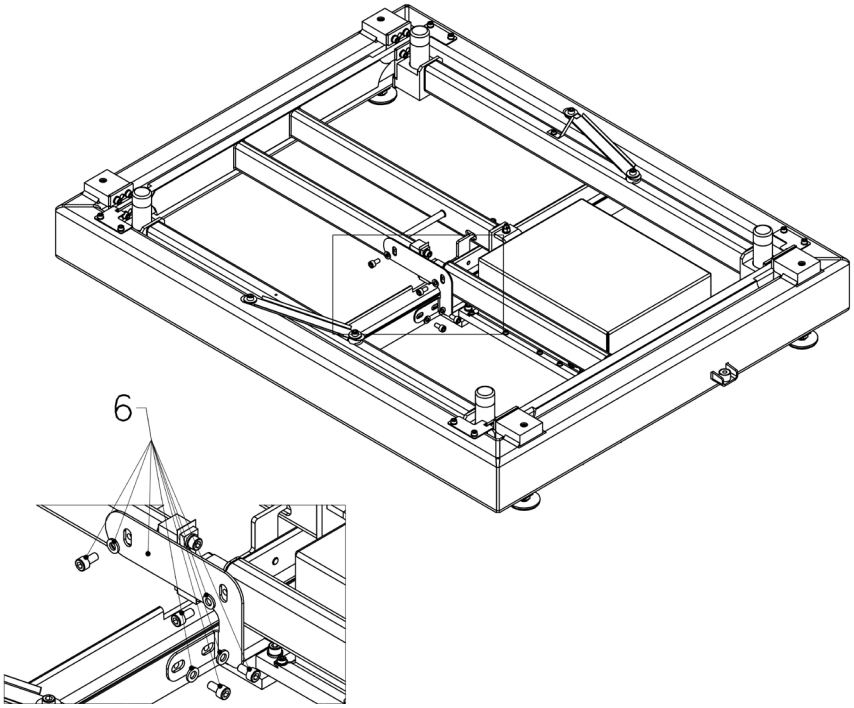
2.Connect the terminal or computer to the weighing module (3).



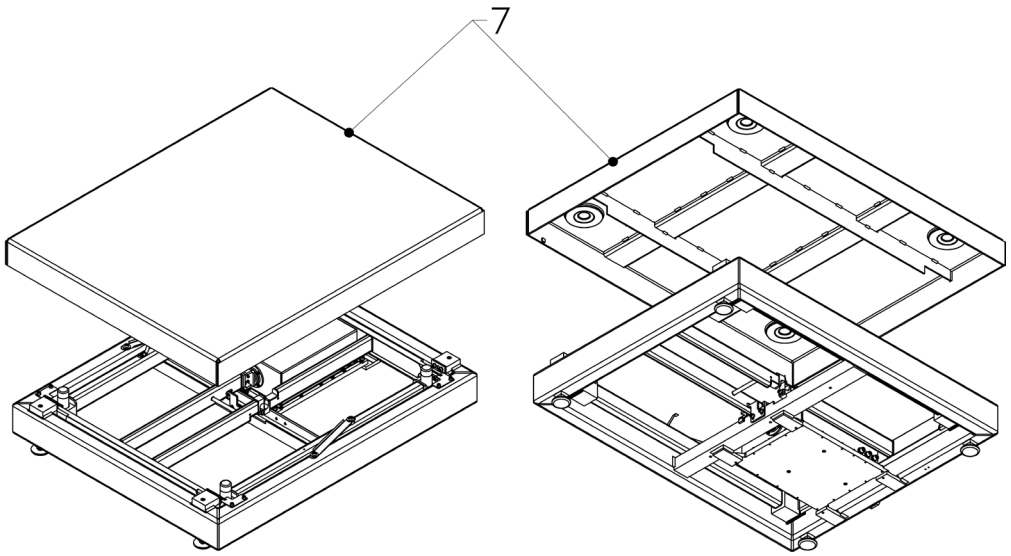
3.Install weighing pan receivers (4), fit them into lever seats (5).



4.Disassemble transport lock by undoing screws and removing fixing washers (6).



5.Install the weighing pan (7).

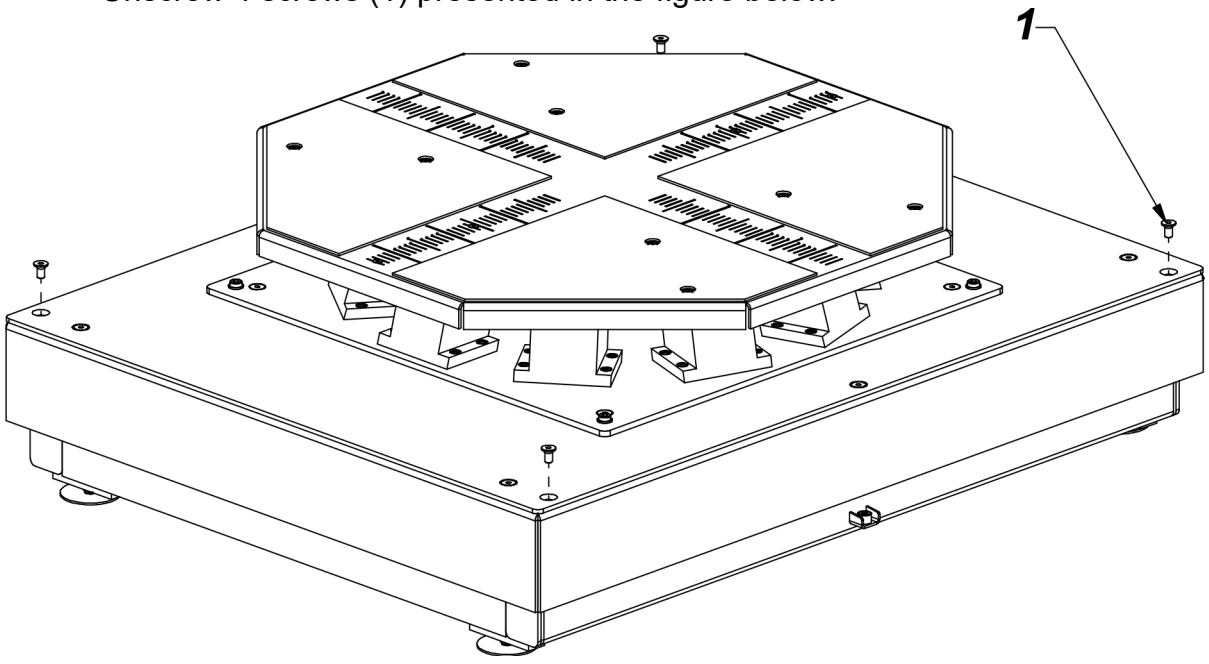


6.Place the device on a flat and even surface. Keep it far away from any sources of heat.

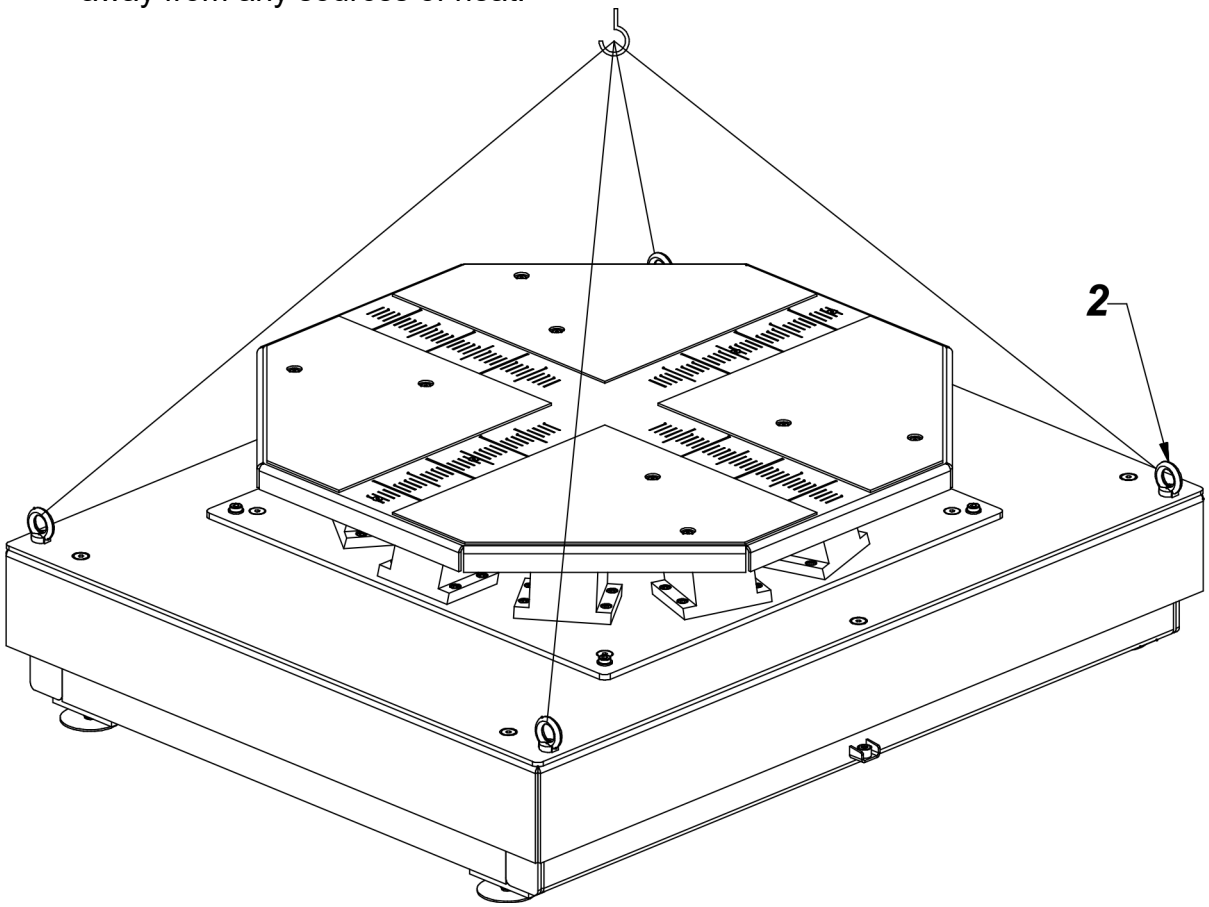
7.Level the device, to do it turn its feet left/right. Keep turning the feet until the air bubble takes central position.

3.3.3. HRP 2000 and HRP 2000.1 Mass Comparator Unpacking

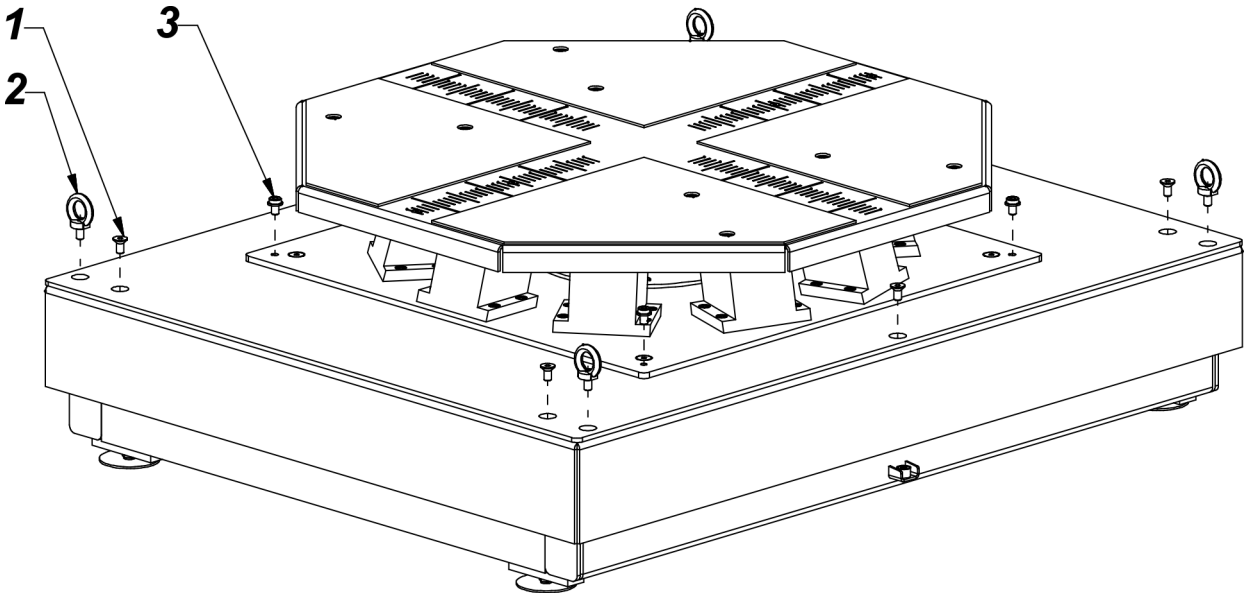
1. Take the mass comparator out of the packaging using hoist. Procedure:
   • Unscrew 4 screws (1) presented in the figure below.



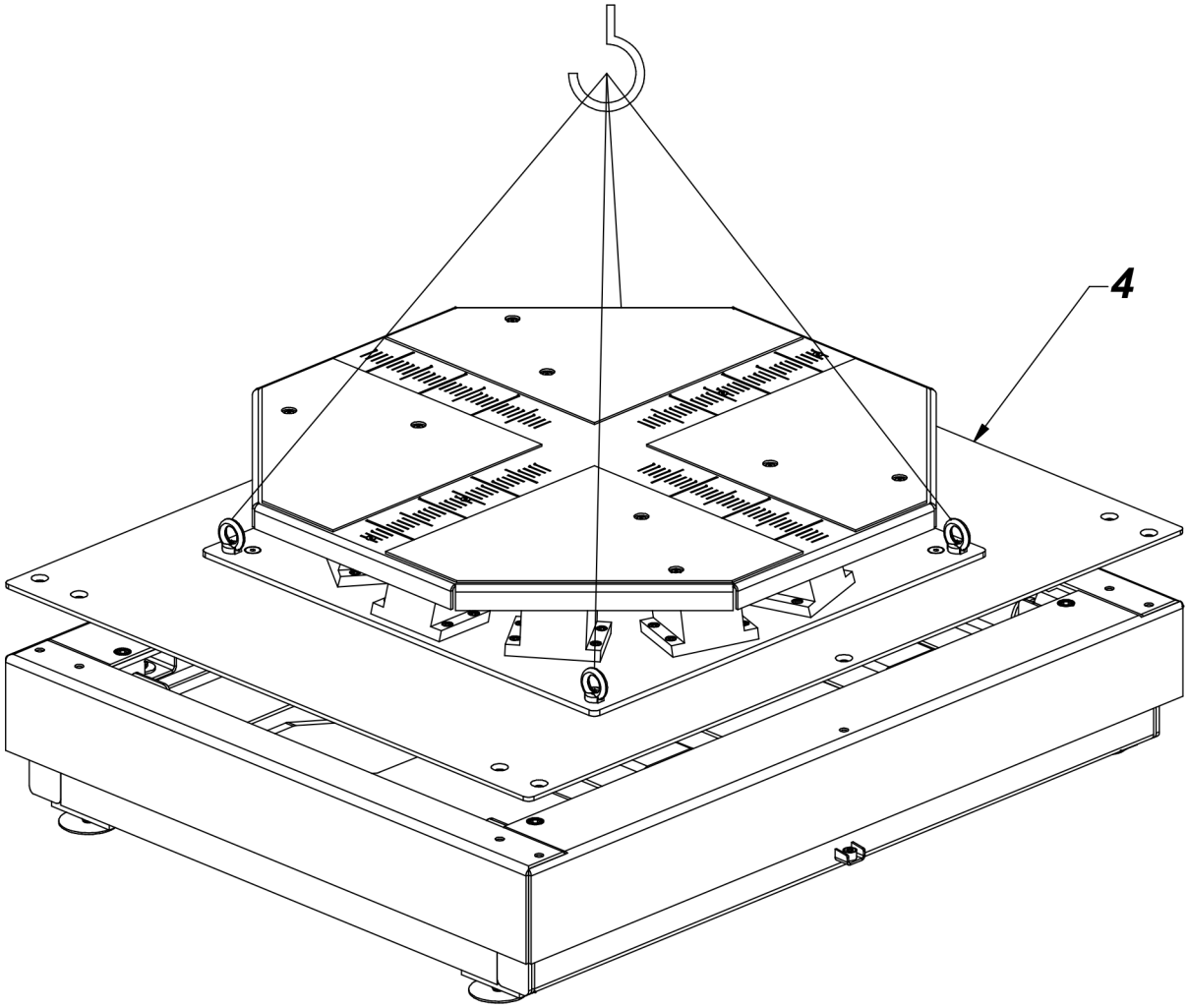
• Screw 4 screws with eyelets (2). Using cords and hoist take the mass comparator out of the packaging and place in the place of use on a flat and even surface. Keep it far away from any sources of heat.



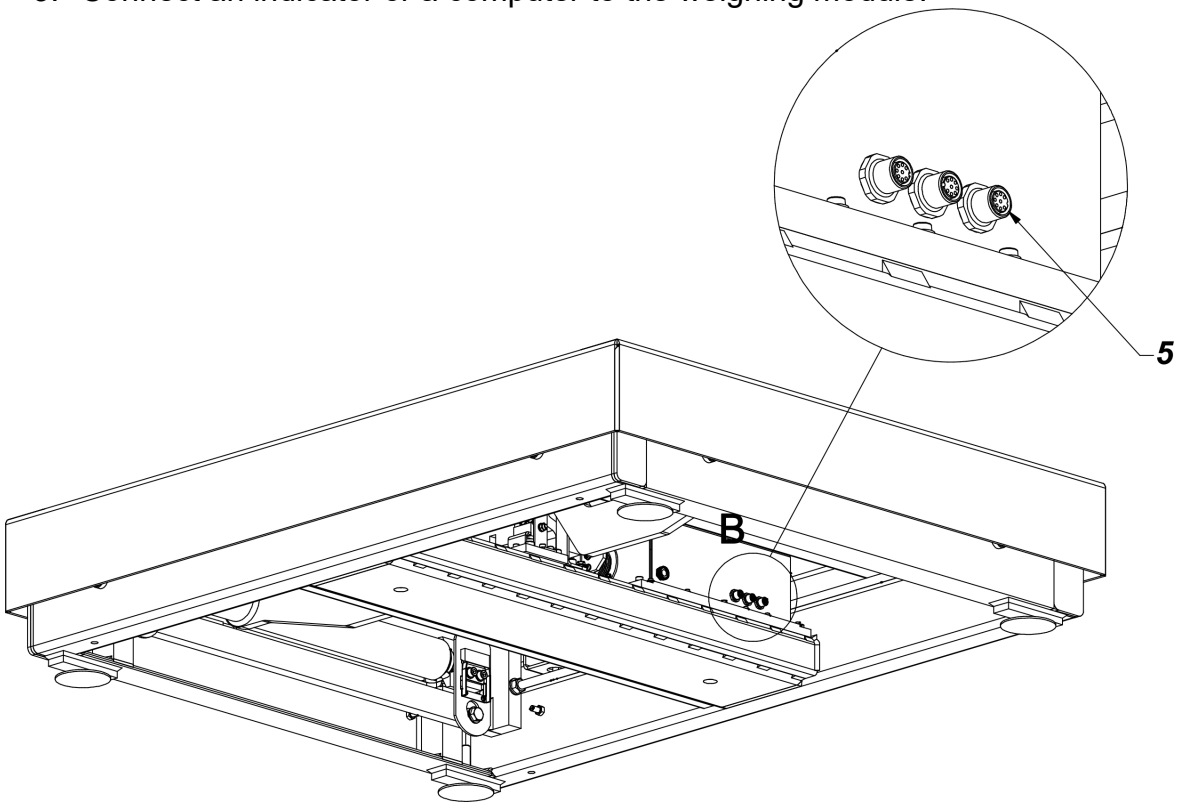
• Upon locating the mass comparator in the place of use, unscrew the screws with eyelets (1), (2) and (3).



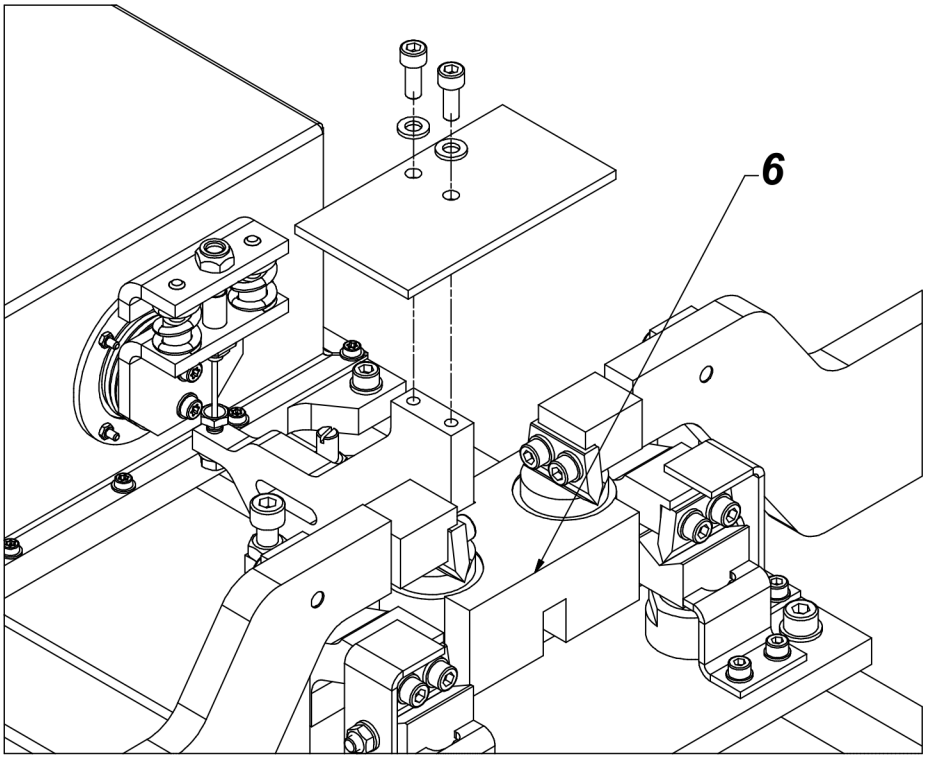
2. Replace the screws (3) with screws with eyelets (2) and using hoist cords disassemble the weighing pan plate (4).


4

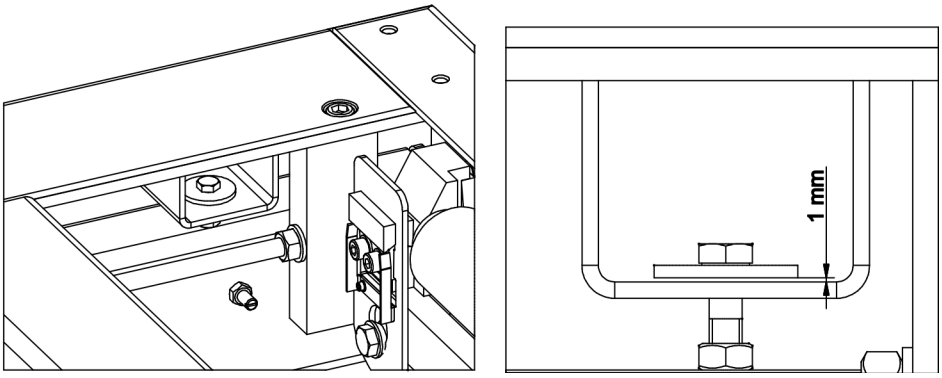
3. Connect an indicator or a computer to the weighing module.



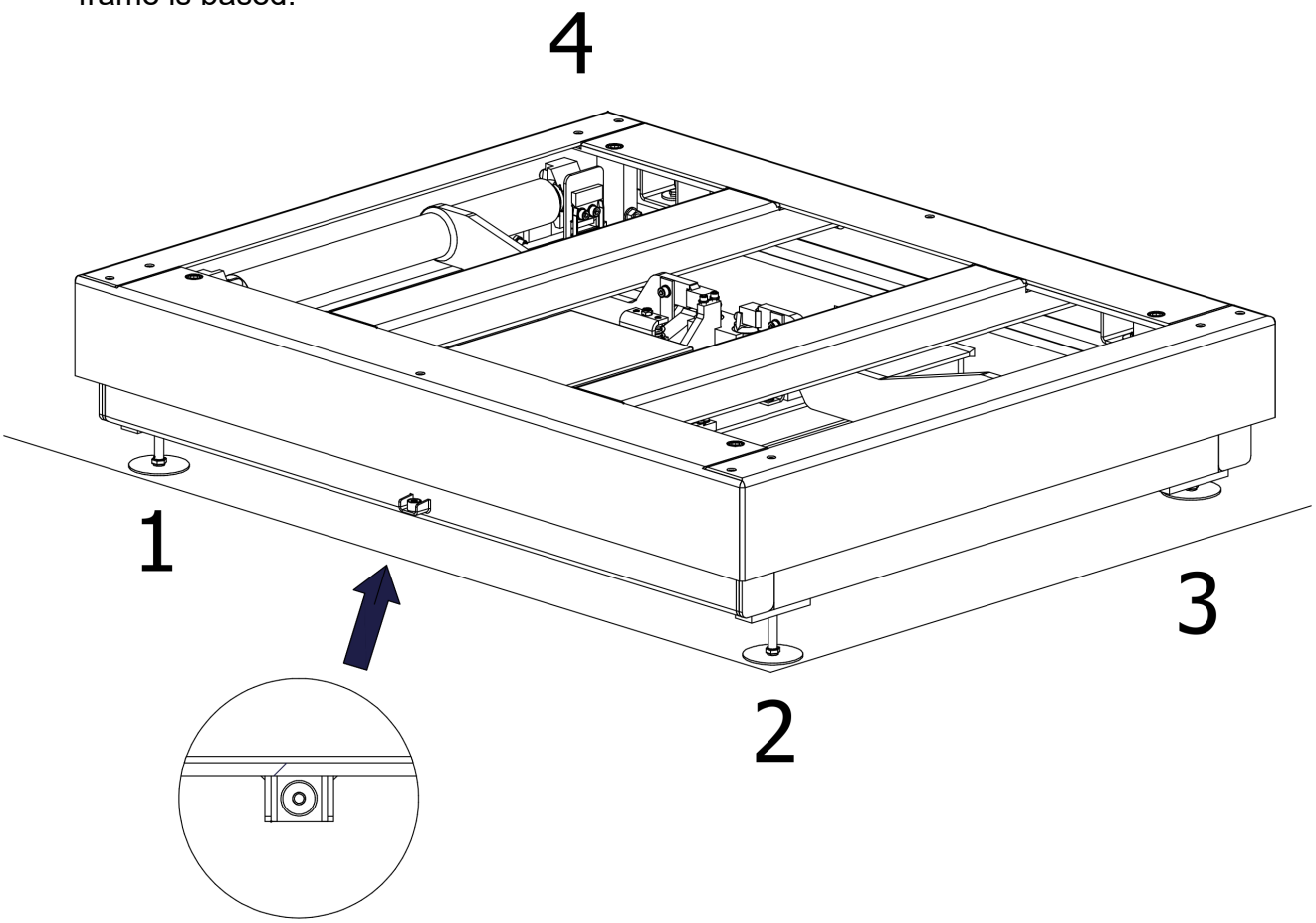
4. Disassemble transport interlocks.



5. Set the bumpers. Loosen the nuts in all four corners. Unscrew the screws and set 1 mm gap. Tighten the nuts.



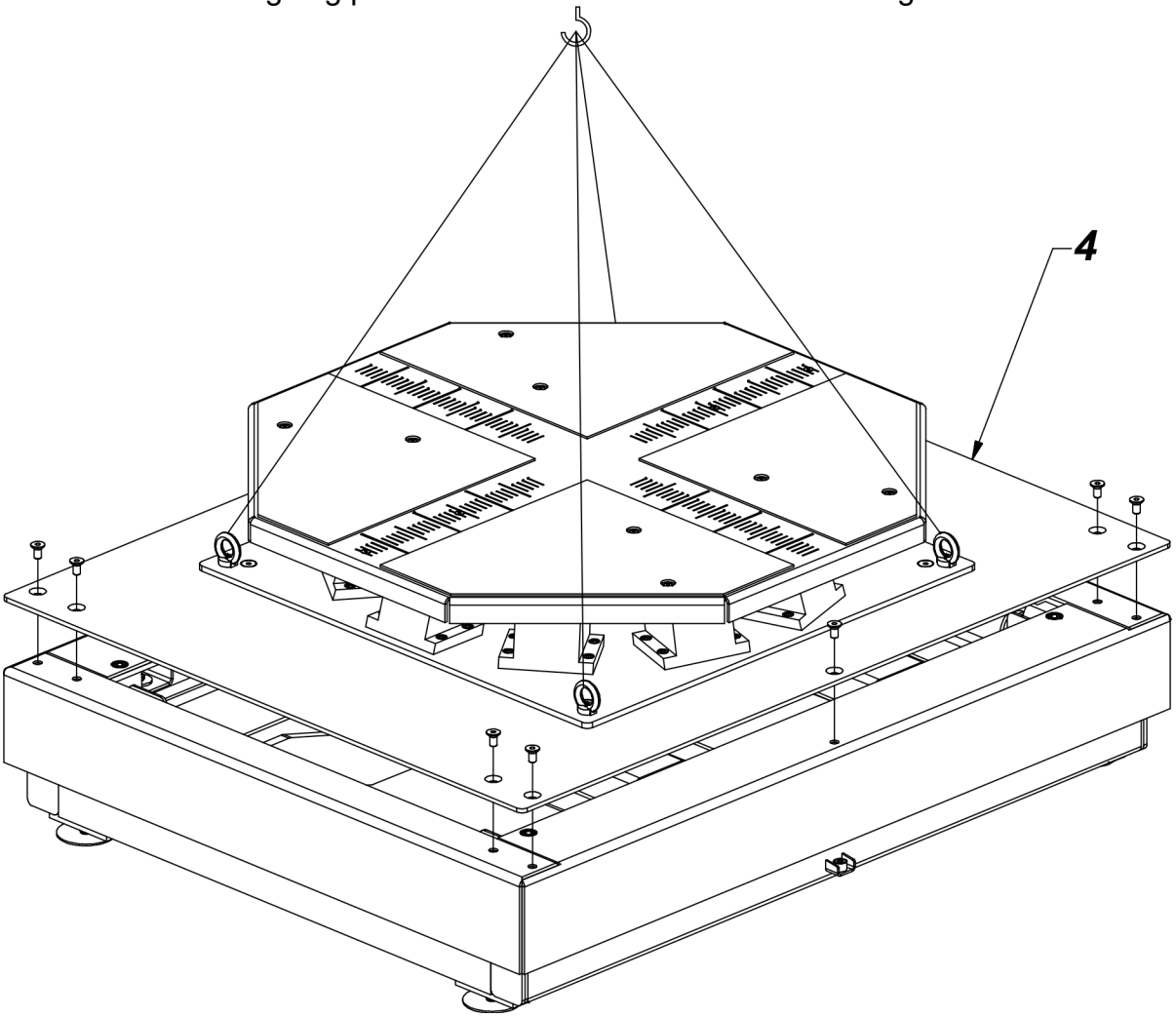
6. Level the mass comparator:
   Screw foot no. 3 so that feet no. 1, 2, 4 form a plain surface on which mass comparator frame is based.



Level the platform using feet no. 1, 2 and 4 until the air bubble takes central position.

Unscrew foot no. 3 so that it rests on the ground. Do not exert stress on platform frame. Do not change the level of the mass comparator (the air bubble has to remain in central position).

7. Install the weighing pan and screw it to the mechanical design.



10. Turn on the power.

3.4. Maintenance Activities

Caution:
Cleaning weighing pan while still installed may cause damage of the measuring system.

1. Disassembly a weighing pan and other detachable components. Be careful so as not to damage the mechanism.
2. Using handheld vacuum cleaner remove dust from the weighing pan.

Cleaning powder-coated components:

For preliminary cleaning stage you need running water or wet sponge featuring large holes, this will help you to remove loose, heavy dirt.

Do not use cleansers containing abrasive substances.

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

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

Cleaning aluminium components:

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

While polishing the surface use circular movements. Use clean, dry cloth to make the surface shine.

Cleaning stainless steel components
When cleaning stainless steel components, the following table should be followed, which lists the types of contamination and ways of removing it.

Fingerprints	Clean with alcohol or dilutant. Rinse with clean water and wipe dry.
Oils, fats, greases	Wash with organic solvents and then clean with warm water with soap or mild detergent. Rinse with clean water and wipe dry.
Temperature stains and discolorations	Wash with a gentle abrasive cleaner, clean lightly according to the direction of the surface structure. Rinse with clean water and wipe dry.
Strong discoloration	Clean lightly according to the direction of the surface structure. Rinse with clean water and wipe dry.
Traces of rust	Moisten with oxalic acid solution and leave for about 15-20 minutes, then wash with warm water with soap or mild detergent. Rinse with clean water and wipe dry.
Paints	Wash with paint solvent and then rinse with warm water with soap or mild detergent. Rinse with clean water and wipe dry.
Scratches on the surface	Gently polish the surface with a non-woven fabric (iron-free) according to the direction of the surface structure. Wash with a gentle abrasive cleaner. Rinse with clean water and wipe dry.

Cleaning ABS components:

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

In the case of hard to remove contamination, e.g.: residues of adhesive, rubber, resin, polyurethane foam etc., you can use a special cleaning agents based on a mixture of aliphatic hydrocarbons that do not dissolve plastics. Before using the cleanser for all surfaces we recommend carrying out tests. Do not use cleansers containing abrasive substances.

3.5. Connecting the Weighing Instrument to the Mains

The mass comparator can be connected to the mains only with a power supply that comes standard with a particular model. Nominal voltage of the power supply (specified on the power supply data plate) has to be compatible with the power from the mains.
Plug the mass comparator to the mains, i.e. connect the power supply to the socket first, next connect its connector to a port located at the back of the comparator housing.

3.6. Temperature Stabilization Time

Before start of the measuring processes, it is necessary to wait until the mass comparator reaches thermal stabilisation.
For mass comparators that were stored in much lower temperatures than the workroom temperature, before being plugged to the mains must be subjected to thermal stabilisation that shall take at least 12 hours. During the thermal stabilization, the indications on the screen can change. Potential workroom temperature change shall occur gradually and slowly in the course of the weighing instrument operation.

3.7. Connecting Additional Hardware

Use only accessories and peripheral equipment recommended by the manufacturer. The mass comparator must be disconnected from the mains before connecting or disconnecting any peripherals (printer, PC computer, computer keyboard). Upon connecting the peripherals, plug the comparator to the mains.

4. START-UP

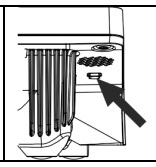
- Power the balance.

CAUTION: There are two sockets on the balance for connecting to the power supply. The indicator has one socket, and the weighing mechanism housing has the other. The balance can be powered from both the indicator and the weighing mechanism, but not simultaneously from both sides, using two power supplies. Such a connection may result in damage to the balance and power supplies.

- After a while, the procedure of loading the operating system with RADWAG software gets started. During start-up, the signalling diodes and LEDs at the front of the indicator start blinking.
- Upon balance start-up, the home screen is displayed
- Upon completed start-up of the remaining balance series, the home screen is displayed automatically.
- The balance runs with no user logged in. In order to start operation, it is necessary to log in (for detailed login procedure, read later sections of this user manual).

Caution: *Prior to the balance start, make sure that there is no load on the weighing pan.*
In accordance with the EN 45501 standard, verified balances cannot display mass value below -20e. If the indication value is below -20e, <Lo mass> information is displayed.

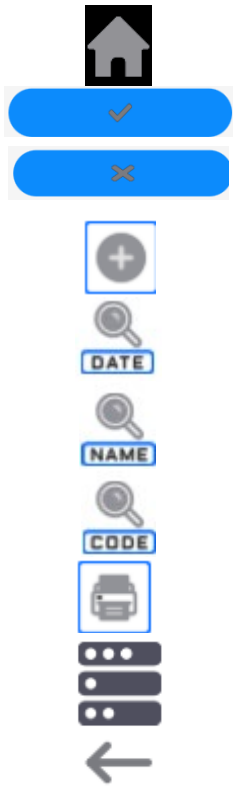
Press  key to zero the balance*.*

If the software crashes during operation, carry out a hard reset. To do this, press and hold for about 5s the button on the indicator. The software will reset and restart.	

5. OPERATION PANEL

Operation of the program menu is intuitive. The touch panel makes the software operation easy. Pressing a function button or an area on the display initiates an assigned function or a process.

5.1. Operation Panel



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.

5.2. Voice Commands

The balance software allows several operations to be performed using voice commands. These are: tare, zero, print/save measurement. The commands must be spoken in English, in the correct sequence. Below is the structure of the individual commands.

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

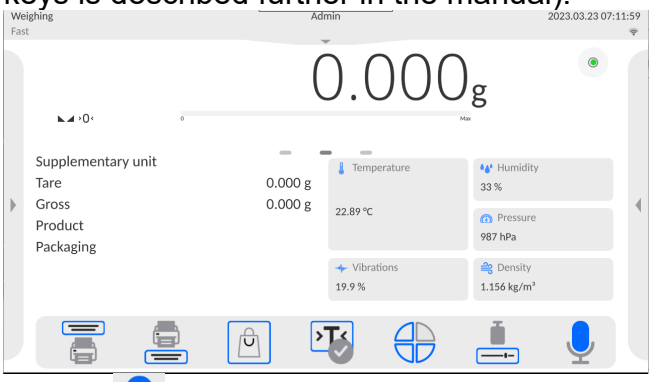
Zero: **ellipsis [please] zero [the] device**

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

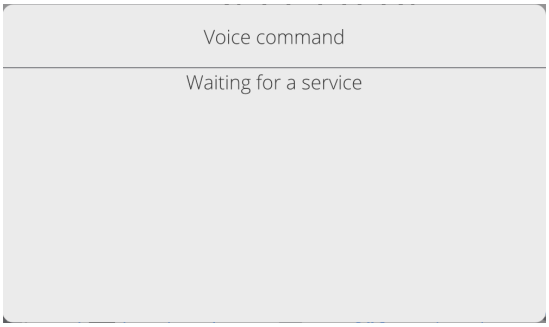
How to say the command: black text is mandatory, green - may or may not be spoken, red - one of the texts is mandatory to be spoken
e.g: for Print command: ***ellipsis save mass.***

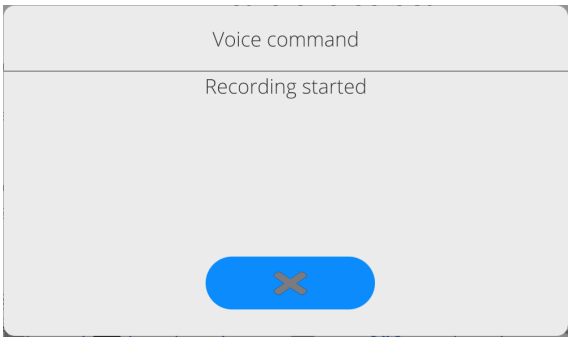
Procedure:

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

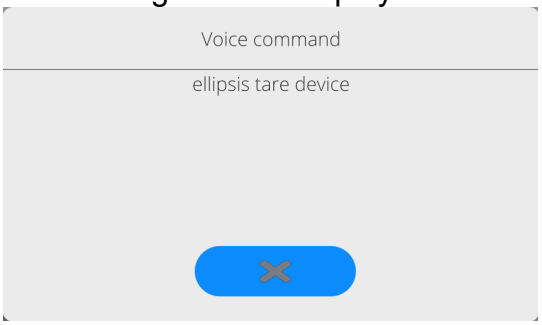


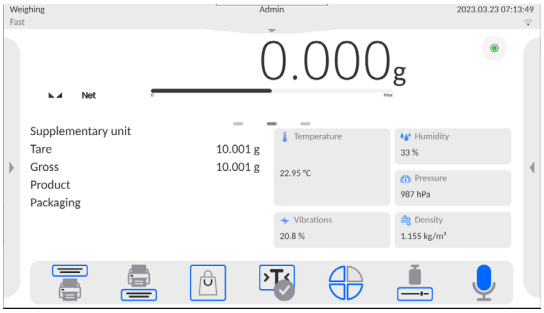
2. Press < > key.
3. The voice command identification procedure will be initiated. The operator will be informed about it through messages in the screen.





4. Express the command as described above.
5. If the command is correctly expressed and the program can detect the command, the message will be displayed and the command will be executed instantly.





Return to weighing

Any modifications made in the memory are automatically recorded upon return to the home screen.

Procedure:

- Press repeatedly until you see the home screen.
- Press field in the top bar to return to the home screen instantly.

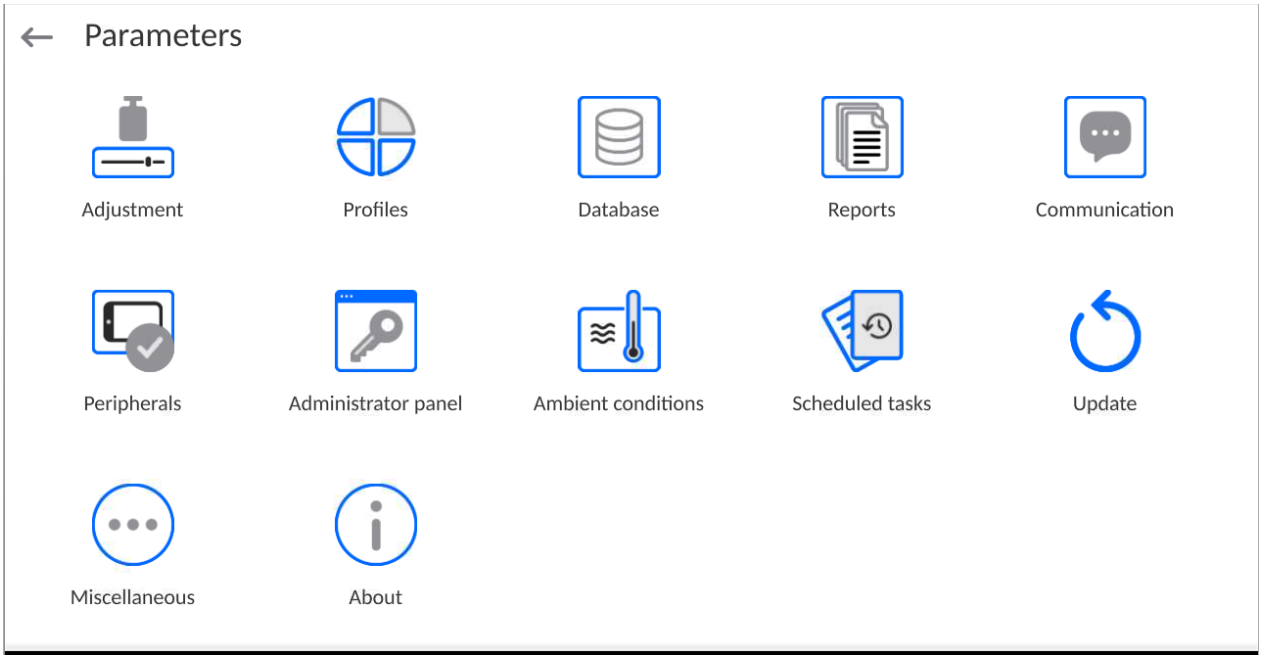
6. PROGRAM

The main menu structure has been divided into function groups. Each group is home to parameters grouped by themes. The description of each group can be accessed further in the manual

List of menu groups - Parameters

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

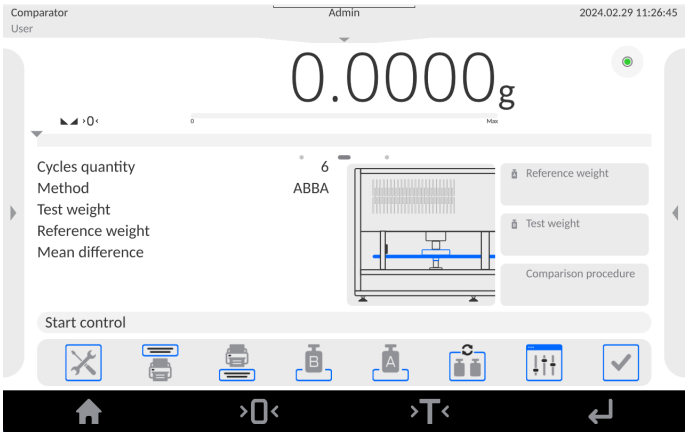
The menu contains parameters related to settings, functions and profiles.



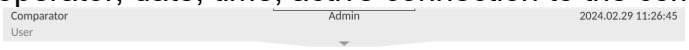
7. WEIGHING RESULT WINDOW

	*Some screen views showed in the manual are for reference and do not reflect a real design of the comparator screen.*

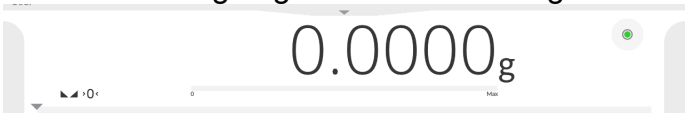
The main window can be divided into 5 fields:



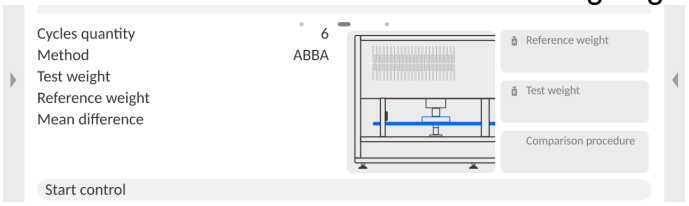
- At the top of the screen you can see information on the currently used working mode, logged operator, date, time, active connection to the computer.



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

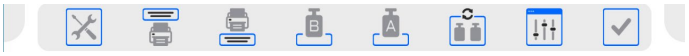


- This field contains additional information related to ongoing operations.



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

- Below are on-screen functional keys:



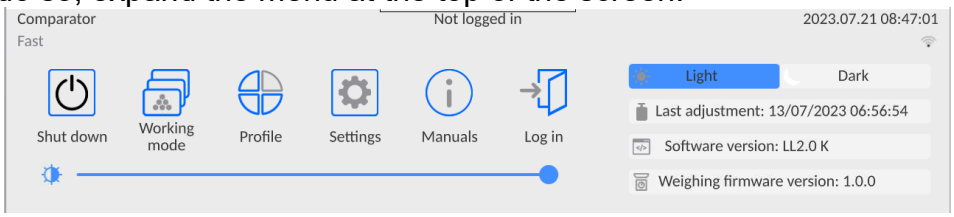
Note:
The operator can define on-screen functional keys. The method of defining them is described further in the manual.

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

8. LOG IN OPERATION

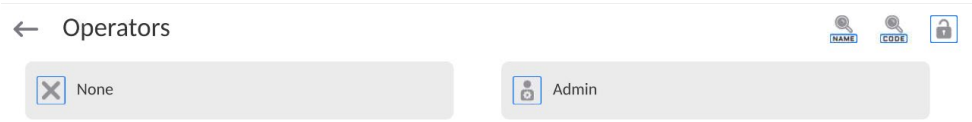
To gain full access to operator's parameters and be able to edit databases, the operator must log in as **<Administrator>.**

To do so, expand the menu at the top of the screen.



First login:

- Expand the top menu and press **<Log in>** field. You will see operator base window with **<Admin>** item.



- By default this operator is not assigned an access password. Therefore, the operator is automatically redirected into the home screen after selecting it.

NOTE: After the first login, the first step is to add operators and assign them relevant permission levels and unique access passwords (the procedures described further in the manual, see point 11 and 13.2).
When you log in again, select operator and enter password to make the program operate with specific operator's permission level.

Logout:

- Expand the menu at the top of the screen and press **<**  **>**.

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

9. COMPARISON

Load the weighing pan with test weight. Upon displaying ◣◢ marker on the left, you can read weighing result.

9.1. Selecting Comparison Unit

Change of comparison unit is carried out by pressing the weighing unit pictogram visible next to the value of measurement result. Upon pressing the weighing unit, list of available units is displayed. Select the unit you need, the software automatically recalculates indicated value.

Options:

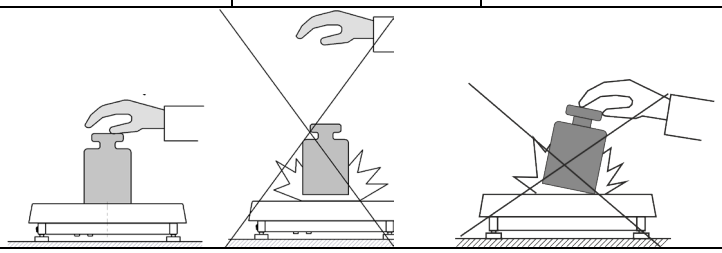
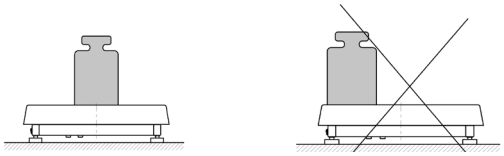
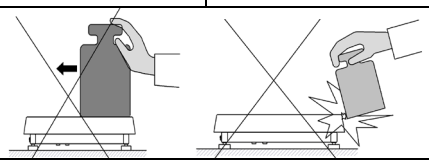
unit	*denotation*	*unit*	*denotation*
gram	[g]	Taele Singapore	[tls]
milligram	[mg]	Taele Taiwan	[tlt]
carat	[ct]	Taele China	[tlc]
pound	[lb]	Momme	[mom]
ounce	[oz]	Grain	[gr]

ounce Troy	[ozt]	Newton	[N]
pennyweight	[dwt]	Tical	[ti]
Taele Hongkong	[tlh]		

9.2. Correct Comparison Principles

To assure long-term operation and correct comparison of the weights, follow the rules presented below:

- Remember to run the mass comparator with unloaded weighing pan

YES	NO	NO	YES	NO
				
Avoid applying mechanical shocks to the weighing pan.			Place weighed loads centrally on the weighing pan:	
NO	NO			
				
Avoid side loading, in particular side shocks:				

9.3. Mass Comparator Levelling

The mass comparator features AutoLEVEL System, which continuously monitors its level status. The level status is signalled on the top of the display and on detecting any change it indicates appropriate information and/or starts an alarm. As a result, a window for adjusting the level is displayed.

Procedure:

- Press level status <  > pictogram located on the top of the display.
- Control panel of levelling function is displayed. It features level status and an image of mass comparator.
- Level the mass comparator, to do it turn the feet in a way indicated by blinking pictograms on the display – the level point moves towards the centre of the level circle.
- As the level point takes central position, its colour changes from red to green – which is a confirmation for correct level status.

9.4. Zeroing

To zero mass indication, press  key. Zero indication and the following pictograms are displayed: →0← and ◣◢. Zeroing operation means determining a new zero point, recognized by the balance as precise zero. The balance can be zeroed only when the indication is stable.

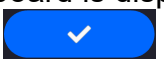
Caution: *Indication can be zeroed only within* ***±2%*** range of *the maximum capacity. If the zeroed value is above* ***±2%*** *of the maximum capacity, then the software indicates a respective error message.*

9.5. Taring

To determine net weight value, load the weighing pan with a packaging, wait for a stable indication and press  key. Zero indication and the following pictograms are displayed: ***Net*** and ◣◢. Upon weighing pan unloading, the sum of tared masses with minus sign is displayed. You can assign a tare value to a particular product stored in the database. In such a case, the assigned tare value is automatically acquired upon selection of the given product.

Caution: *It is impossible to tare negative values. When you try to tare negative values, the weighing instrument responds with an error message. In such a case, zero the indication and repeat taring procedure.*

Entering Tare Value Manually
Procedure:

- Press  quick access button. The button is available regardless of the working mode you operate.
- An on-screen numeric keyboard is displayed.
- Enter tare value and press  button.
- The balance returns to weighing mode. Tare value with „**–**" sign is displayed.

Deleting Tare
The displayed tare value can be deleted by pressing ZERO key on the operation panel, or by using programmable <Deactivate tare> function button.

Procedure 1 - upon taking the tared load off the weighing pan:

- Press  button,
- the <Net> marker gets deleted, a new zero point is determined.

Procedure 2 - with tared load resting on the weighing pan:

- Press  button,
- the <Net> marker gets deleted, a new zero point is determined.
- when the tare value exceeds 2% of the maximum capacity, -Err- message is displayed in order to inform you about the fact that operation cannot be carried out.

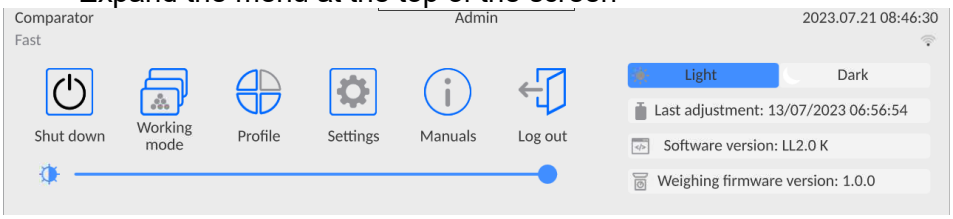
Procedure 3 - when the tared load is on the weighing pan or upon taking the tared load off the weighing pan:

- press  Deactivate tare> programmable button,
- the NET marker is deleted,
- the display indicates tare value,
- to restore the last tare value press  Restore tare> button.

9.6. Running Working Mode

To change the working mode, do as follows:

- Expand the menu at the top of the screen

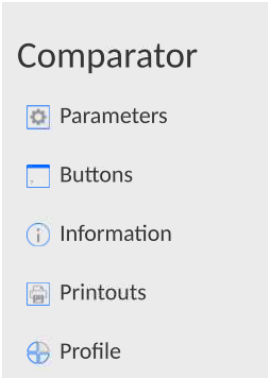


- Press <Working mode>
- A list of modes will be displayed.
- Select **<Comparator>** mode to make the program return to the home screen and display the name of the working mode in the top bar,
- At this time the following message will be displayed in the working box: **<Start control>,**
- Select internal and external load (depending on the type of comparator) that is suitable for the mass of the calibrated weight,
- Position a suitable control weight on the weighing pan,
- Zero/tare the value showed by the comparator.

9.7. Working Mode Parameters

Each working mode has programmable parameters determining its functioning.
To access particular working mode parameters:

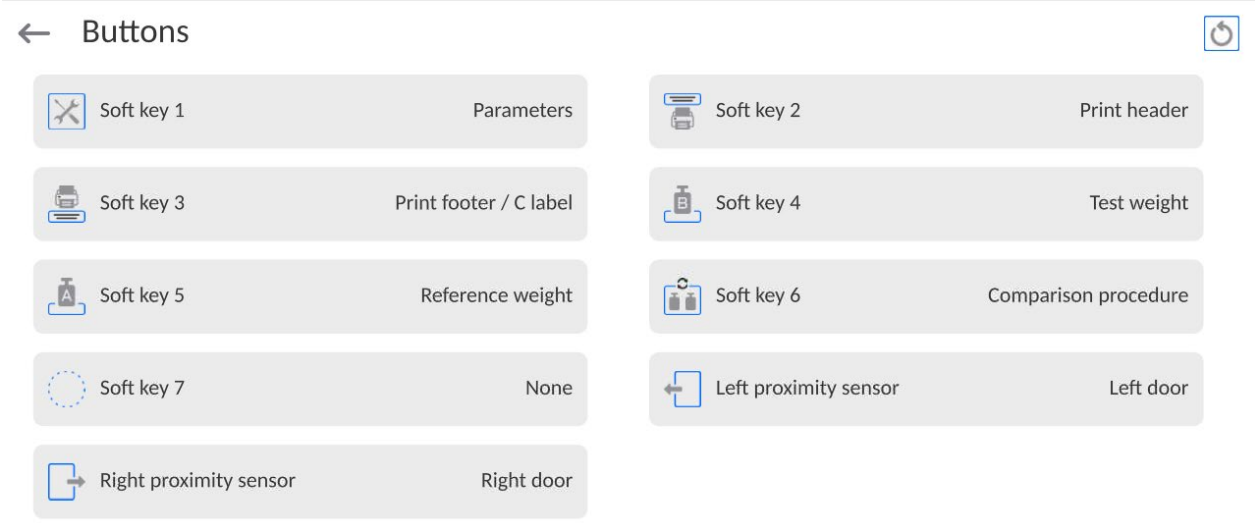
1. Slide out the menu on the left.



2. The following menu is displayed:
   - <Settings> - additional options.
   - <Buttons> - quick access buttons configuration.
   - <Information> - setting data that is to be displayed in the workspace.
   - <Printouts> - setting printout type and content.
3. Enter particular submenu and select the component that is to be modified.

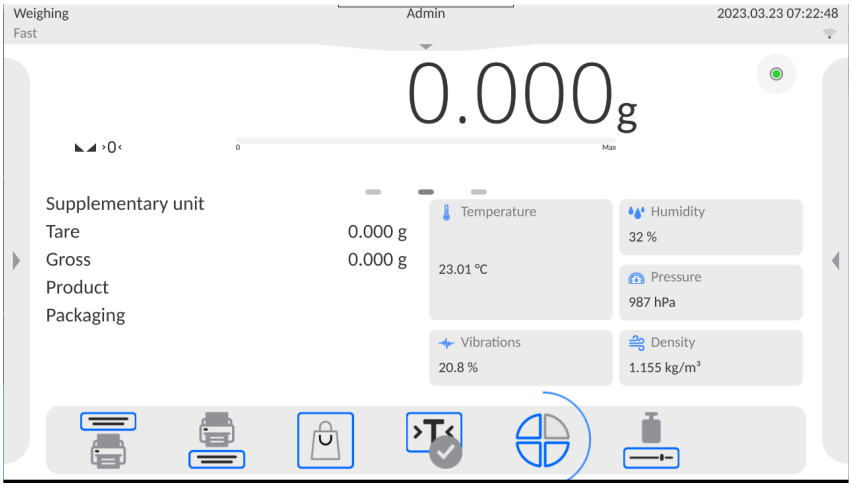
Description of basic parameters of <Settings> menu is to be found in section 14.7, *Additional Parameters of the Weighing Mode*. For detailed information on all but basic parameters of particular working modes, read given working mode section.

9.8. Quick Access Buttons, Proximity Sensors

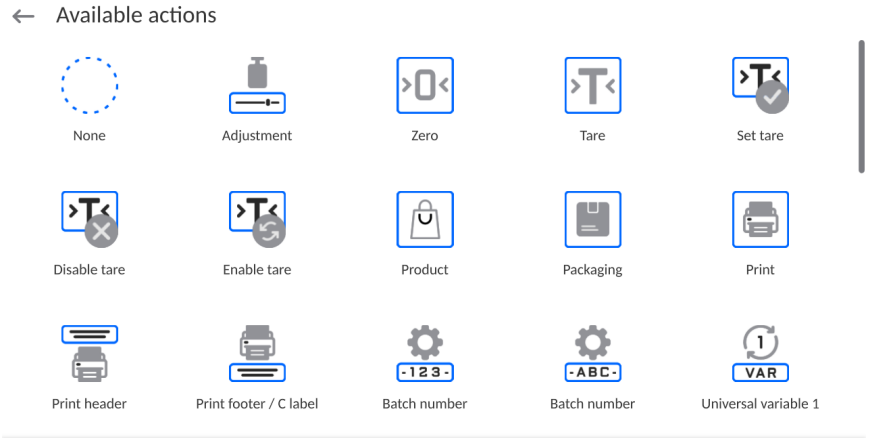


You can define up to 7 quick access buttons, which are to be displayed in the bottom bar. Upon assigning a function to a button a corresponding pictogram is displayed in the bottom navigation bar of the home screen. Each working mode features customized set of buttons. For complete buttons list, read Annex B. These are so called quick access buttons for triggering the most often performed operations.

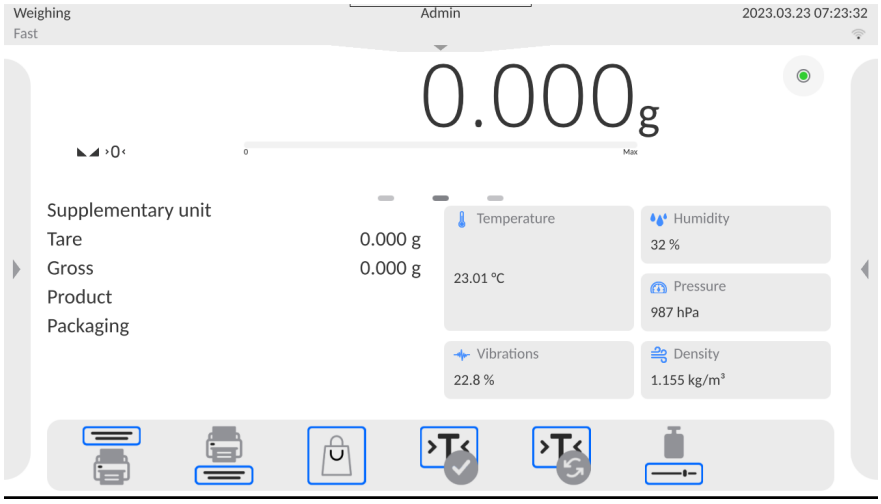
Another method of adding or changing the key is to press and hold the field in the buttons bar for about 3 seconds.



The window with available keys will be displayed instantly.



Press the key you wish to add and the program will go back to the home screen. The selected key will be showed in the activated place.



9.8.1. Proximity Sensors

The balance is equipped with two proximity sensors which enable touch free control. The program detects four motions performed around the sensors:

1. Hand in a close vicinity to the <**Left proximity sensor**>.
2. Hand in a close vicinity to the right sensor <**Right proximity sensor**>.

List of operations to be assigned: None; Profile; Adjustment; Zero; Tare; Set tare; Disable tare; Enable tare; Packaging; Print; Header printout; Footer printout; Unit; Universal variable 1; Universal variable 2; Universal variable 3; Universal variable 4; Universal variable 5; Accept; Abort; Operator; Left door; Right door; Open/close door; Parameters; Product; Warehouse; Customer. Upon completed configuration procedure, the software runs function assigned to a particular proximity sensor, having detected motion around it. To provide correct operation, it is necessary to set respective proximity sensors sensitivity and delay (read section 33 of this user manual).

9.9. Working Mode – Comparator

<Comparator> working mode enables determining standard deviation for series of measurements. Standard deviation is determined based on ABBA, ABA or AB series of measurements, where:

A – reference weight
B – test weight

You can determine quantity of measurements in a series and ABBA, ABA or AB method. To do that, enter **<Working modes>** menu and  **Comparator>** submenu.

The results are calculated on the basis of the following tables and formulas:

For ABBA series

No.	A	B	B	A	$D = B_{mean} - A_{mean}$
1					D_1
2					D_2
3					D_3
4					D_4
5					D_5
…..					…
n					D_n

For ABA series

No.	A	B	A	D = B – A_{mean}
1				D_1
2				D_2
3				D_3
4				D_4
5				D_5
…..				…
n				D_n

For ABA series

No.	A	B	D = B – A
1			D_1
2			D_2
3			D_3
4			D_4
5			D_5
…..			…
n			D_n

Standard deviation is calculated by determining:

- ABBA and ABA differences for each measurement group:

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

- Mean value of difference between ABBA and ABA:

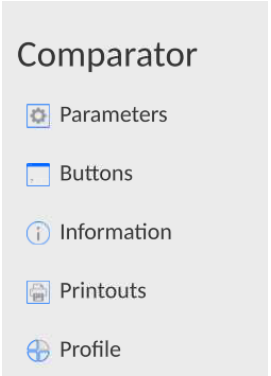
$$\overline{DX_i} \frac{1}{n} \sum_{i=1}^{n} D_i$$

- Standard deviation:

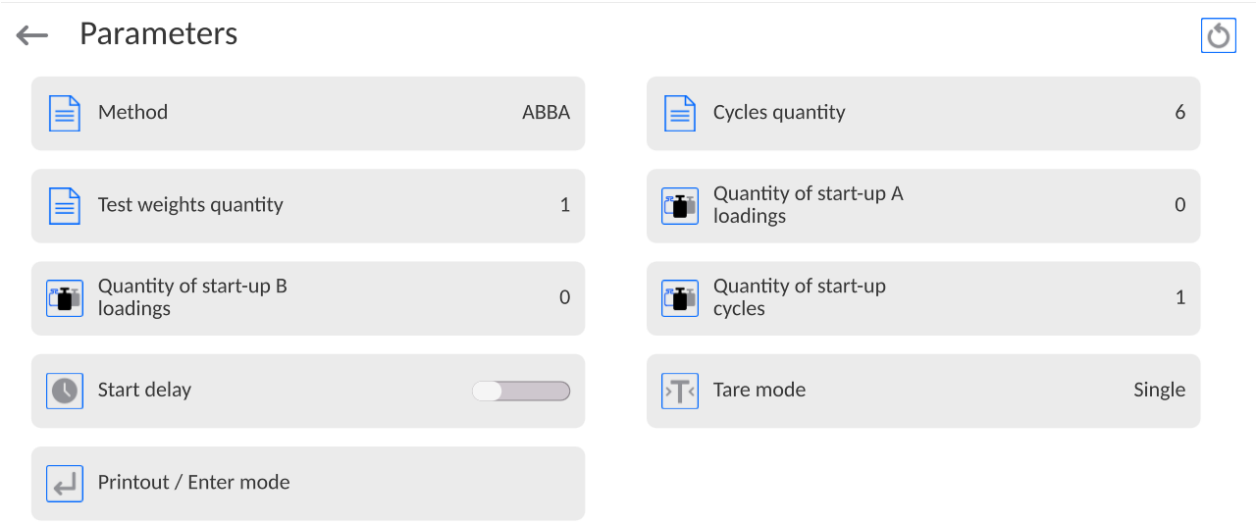
$$s = \sqrt{\frac{1}{n} \sum_{i=1}^{n} \left(D_i - \overline{DX_i}\right)^2}$$

9.10. Selection of measurement method in the mass comparator

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



Next click **<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
- B
- ABABA

9.11. Declaration of the number of cycles

Procedure:

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

9.12. Declaration of the number of A standard start-up placements

Procedure:

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

9.13. Declaration of the number of B standard start-up placements

Procedure:

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

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

Procedure

- Enter **<Working Modes>** parameters group,
- Select: **<Comparator>**, then **<Settings>** and <**Number of start-up weighing cycles>** to see **<Number of start-up weighing cycles>** edition box and an on-screen keypad,
- Enter the desired value and press ✓ key to confirm.

9.15. Start delay

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

9.16. Tare mode

- SINGLE,
  the value is saved when you single click the TARE key. Click again to set a new tare value. Selecting the product or packaging which the tare value has been assigned to causes the previous tare to be deleted
- SUM OF CURRENT,
  currently entered tare values for the product and packaging are summed up (as arises from the selection of the product and packaging from the database) and it is possible to add the manually entered tare value to this sum. When you set the tare value for the product or packaging again, the tare value that has been entered manually will be deactivated.
- SUM OF ALL,
  all previously entered tare values are summed up.
- AUTOTARE
  Principles of operation:
  Every first measurement is tarred when the value is stable. The NET inscription will be displayed. Now you can specify the net mass. After unloading and returning to the autozero zone, the program automatically deletes the Tare value.
- EVERY MEASUREMENT:
  it is possible to tare before every measurement in the series.

9.17. Printout/approval mode

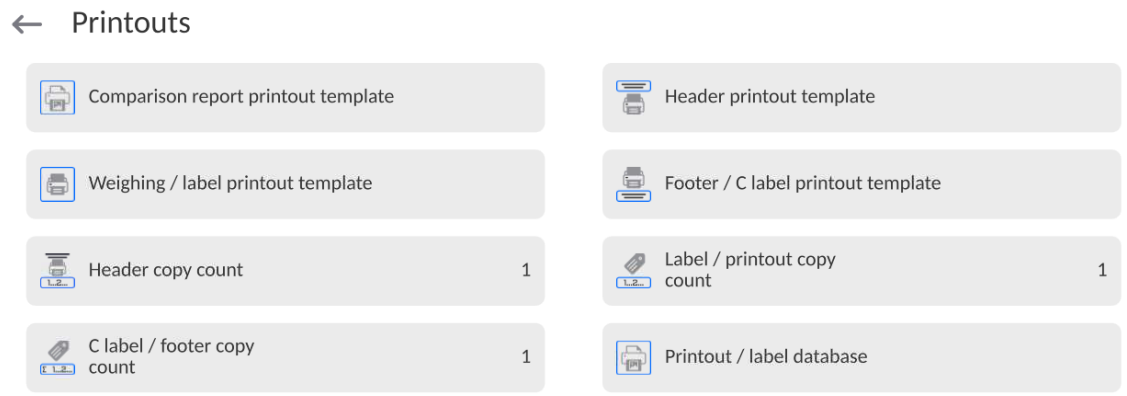
- PRINTOUT / APPROVAL KEY
  Never – inactive printout
  First stable – first stable measurement is recorded
  Every stable – all stable measurements are accepted
  Every – printing all measurements (stable and unstable), for verified comparator only stable results (as in <Every stable>)
- AUTOMATIC MODE
  None – inactive printout
  First stable – the first stable measurement is recorded after loading the weighing pan, another stable measurement is recorded after unloading the weighing pan and after the value drops below the preset threshold and after loading the weighing pan again
  Last stable – only the last stable measurement is accepted, the last stable measurement that occurred before unloading the pan is recorded. The record is made after unloading the weighing pan and after the value drops below the preset threshold.
  With interval – this option specifies how often the result is to be sent for printing
- THRESHOLD
  mass value for automatic printout, set in grams.
- INTERVAL
  time unit value for weighing result printout.
- PRINT REPORT
  Yes – automatic printout of the report after the end of calibration

No- report printout blocked

- PRINT INDIRECT RESULTS ON ONGOING BASIS
  Yes – automatic printout of every indirect measurement
  No- blocked printout

9.18. Printouts

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



Standard printouts consist of three units that contain 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 variables for printout, using keys in the top right corner of the window.

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

Procedure:

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

HEADER PRINTOUT TEMPLATE	WEIGHING RECORD/LABEL PRINTOUT TEMPLATE	FOOTER/C LABEL PRINTOUT TEMPLATE
– Non-standard printout – Dashes – Working mode – Date – Time – Comparator type – Comparator ID – Operator – Full name – Levelling – Client	– Non-standard printout – N (measurement number) – Date – Time – Levelling – Client – Warehouse – Product – Packaging – Series number – Batch number	– Non-standard printout – Working mode – Date – Time – Comparator type – Comparator ID – Operator – Full name – Levelling – Client – Warehouse

– Warehouse – Product – Packaging – Universal variable 1…5 – Empty line – GLP report – Non-standard printout	– Universal variable 1…5 – Net – Tare – Gross – Current result – Additional unit – Mass – MN-Method – Reference tare – Minimum sample – Minimum sample status – Mass for titrator – ID – Non-standard printout	– Product – Packaging – Universal variable 1…5 – Dashes – Empty line – GLP report – Signature – Non-standard printout

HOW TO OPERATE PRINTOUTS – BASIC RULES

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

	
Print information from the header	Print information from the footer

Note:
Units for mass printout:

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

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

Procedure:

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

Note:

- *You can add printouts from the external memory stick by importing already configured texts, using a USB port.*

- *The printout name is a ONLY NAME and does not represent its content.*
- *The method of designing the non-standard printout is described in point 13.10 <Printouts>.*

9.19. Report on comparison processes

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

Example of the report:

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*

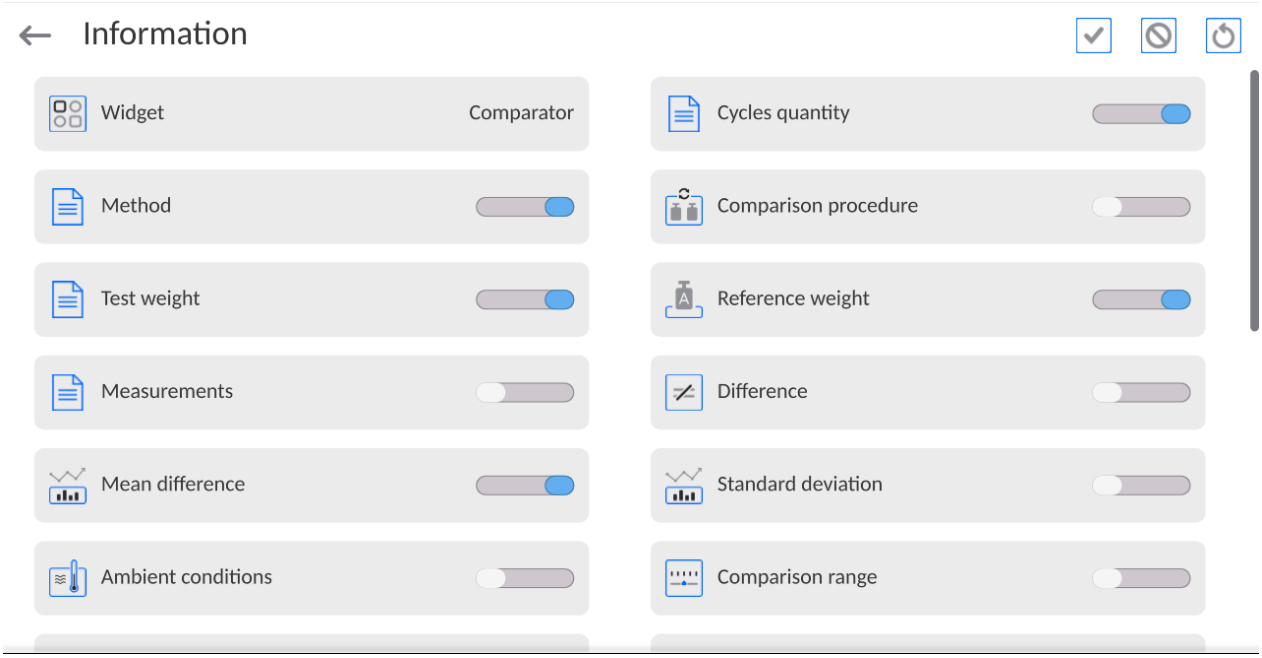
Average difference *0.12833 g*
Standard deviation *0.00189 g*

Method *ABA*

Signature

.....

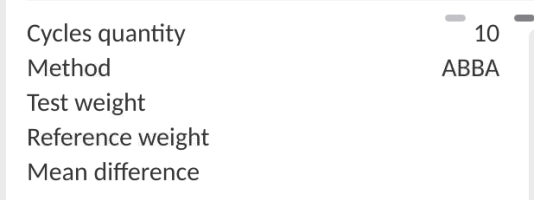
9.20. Information and shortcut key management



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

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

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



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

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

-  – visible information.
-  – invisible information.

9.21. Comparison – basic procedure

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

1. In the home screen, press  key in the bottom left corner of the screen.
2. Select  databases.
3. Enter  reference weights and define reference weights
4. Return to the Database, enter  test weights and define test weights
5. Return to the Database and define  comparison plans
6. Return to the home screen, press  comparison plans in the functional key bar, and then select a relevant comparison plan or select the relevant reference weight <A> and test weight <B>.
7. To start the comparison procedure, press  key in the home screen to automatically initiate the procedure as per preassigned parameters.
8. Follow the messages displayed in the information bar.
9. The following information will be displayed: **<Number of cycles 1/n>** - the first cycle with **„n”** cycles.
   <Put A1-1> - put **A1** weight first time in the cycle
10. Position **A1** weight on the weighing pan and confirm the measurement by pressing  key when the result is stable.
11. **<Position B1-1>** message will show up in the information bar.
12. Remove **A1** weight
13. **<-Wait->** message will be displayed in the screen. It means that the comparator is waiting for the **B1** weight on the weighing pan for the first time (description in the information bar)
14. Put **B1** weight on the weighing pan and confirm the measurement by pressing  key when the result is stable.
15. **<Position B1-2>** message will appear in the information bar.
16. Remove **B1** weight

17. <**-Wait-**> message will be displayed in the screen. It means that the comparator is waiting for the **B1** weight on the weighing pan for the second time (description in the information bar) – only if ABBA method has been selected
18. Reposition **B1** weight on the weighing pan and confirm the measurement with  key when the result is stable.
19. <**Put A1-2**> message will show up in the information bar.
20. Remove **B1** weight
21. <**-Wait-**> message will be displayed in the screen. It means that the comparator is waiting for the **A1** weight on the weighing pan for the second time (description in the information bar)
22. Put **A1** weight on the weighing pan and confirm the measurement by pressing  key when the result is stable.
23. The description in the information field with turn into <**Number of cycles 2/n**> - it suggests going into another cycle
24. Follow the steps as in the first cycle and finish the entire procedure
25. The procedure ends automatically with a calibration report printout. The report will be saved in the report base.

You can finish calibration or repeat the procedure.

10. ADJUSTMENT

The 5Y series balances feature automatic internal adjustment system which ensures correct measurement accuracy. <ADJUSTMENT> menu contains functions controlling operation of module adjustment process.

10.1. Internal Adjustment

Internal adjustment is carried out by means of an internal adjustment weight. <Internal adjustment> button, when pressed, automatically triggers adjustment process. Upon adjustment process completion, a respective message, informing about process end and its status, is displayed.
Each time before the internal adjustment, the balance level is checked. When the balance is not levelled, the internal adjustment takes place only upon prior levelling.

Caution: *Balance adjustment procedure requires stable conditions (no air drafts, no vibrations). In the course of adjustment the weighing pan must be unloaded.*

10.2. External Adjustment

External adjustment is carried out using external mass standards of the right accuracy and weight value, which value depends on balance model and capacity. The process is carried out semi-automatically, successive process stages are signalled with prompts.

Caution: *External adjustment is possible for balances that are not subject to the conformity assessment (verification).*

Procedure:

- Enter <Adjustment> submenu, next select <External adjustment> option.
- Message to remove weight is displayed. Unload the weighing pan and press  button. The balance determines start mass, message: **Start mass determination** is displayed.
- Upon completed start mass determination, message ordering you to load the weighing pan is displayed. Load the weighing pan with weight of respective mass value, and press  button.
- For some balance types, the next message is displayed. Load the weighing pan with weight of subsequent mass value, and press  button.
- Upon completed procedure, unload the weighing pan and press  button to confirm. Balance returns to the weighing process.

10.3. Adjustment Test

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

10.4. Automatic Adjustment

Enter this menu to specify conditions initiating an automatic adjustment. Options:

- None – automatic adjustment inactive.
- Time – adjustment takes place in time intervals declared in <Automatic adjustment time> menu
- Temperature – adjustment is triggered by temperature change.
- Both – adjustment is triggered by both, temperature changes and time.

Caution: *This parameter's settings can be modified only for balances that are not subject to the conformity assessment (verification).*

10.5. Automatic Adjustment Time

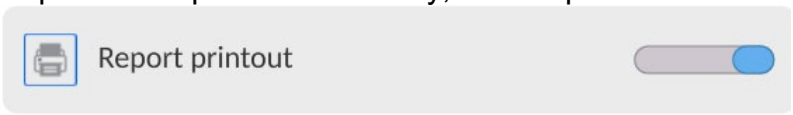
<Automatic adjustment time> parameter determines time interval between successive automatic internal adjustments. The time interval is declared in hours and ranges between 1 and 12 hours.
To set time interval for automatic adjustment:

- enter <Automatic adjustment time> parameter,
- using the displayed menu, select the appropriate time interval (given in hours), which is to elapse between the most recent adjustment and activation of the following automatic internal adjustment.

Caution: *This parameter's settings can be modified only for balances that are not subject to the conformity assessment (verification).*

10.6. Report Printout

<Report printout> parameter determines whether or not an adjustment report is to be automatically printed upon adjustment process completion.
To print the report automatically, set the parameter as active.



10.7. GLP Project

GLP is one of many methods for documenting work in accordance with adopted quality system. Data selected for printing is printed on each release of an adjustment report. Information and signs to be used in a GLP report:

adjustment (adjustment type)	working mode (working mode name)
date	time
balance type	balance S/N
operator	first and last name
level status	nominal mass
current mass	difference
nominal mass 2	current mass 2
difference 2	temperature
dashes	empty line
signature	non-standard printout

10.8. Adjustment History

Adjustment history contains data on all carried out adjustment processes. The record is carried out automatically. Each adjustment record comprises basic data on completed process. This menu enables displaying the list of completed adjustment processes. Each report is printable.
In order to print an adjustment report, enter <Adjustment> submenu, next enter <Adjustment history> parameter, select adjustment to be printed. Record details are displayed, press <  > print button.

Caution: *If the balance memory is full, then the oldest record gets automatically deleted.*

If internal procedures of an organization require maintaining complete documentation concerning all carried out adjustment processes, then the list with adjustment records has to be printed and archived periodically.

Searching for adjustment record
It is possible to search for a specific completed adjustment record. To do that, press < 

> button and enter date of an adjustment process that is to be found.

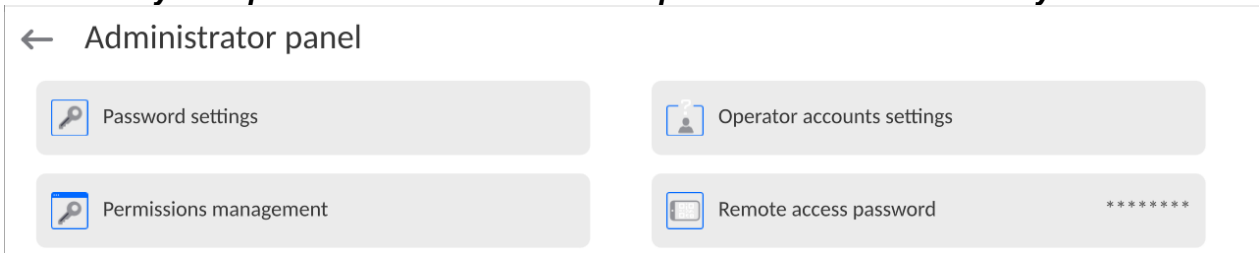
Exporting data on completed adjustment process

Connect a USB flash drive to the balance USB port. Press <  > button located in the upper right corner of the display. The process is fully automatic and on its completion a file with ***.db.*** extension is saved to a USB flash drive connected to the USB port.

11. ADMINISTRATOR PANEL

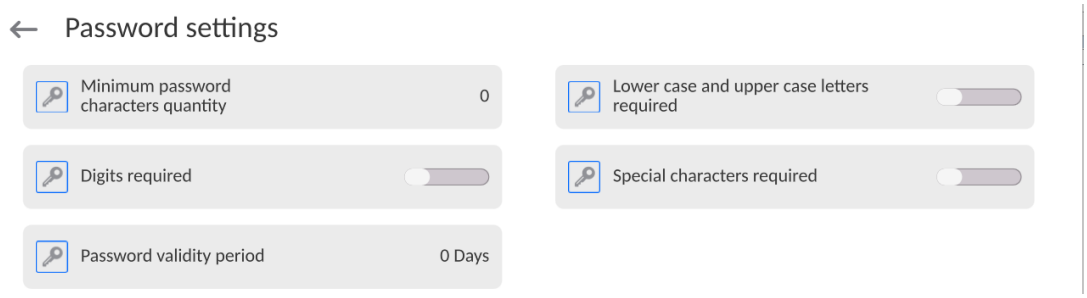
In this menu group, you can specify the range of actions that the operator with specific permission level can take, password protection level and permissions for the unlogged operator.

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



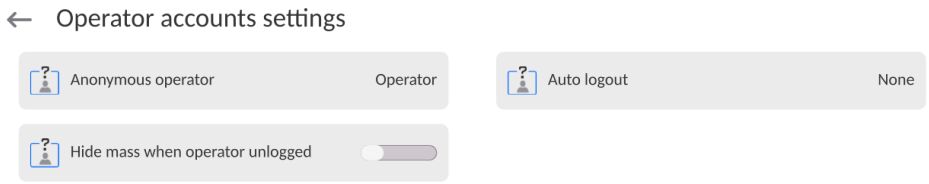
11.1. Password settings

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



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

11.2. Operator account settings



Unlogged operator permission

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

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

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

Automatic logout

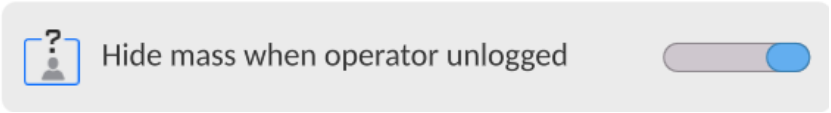
This option allows you to activate automatic logout after a specific period of time, given in minutes, if the mass comparator is not used. By default this option is disabled in the mass comparator (<None> setting).

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

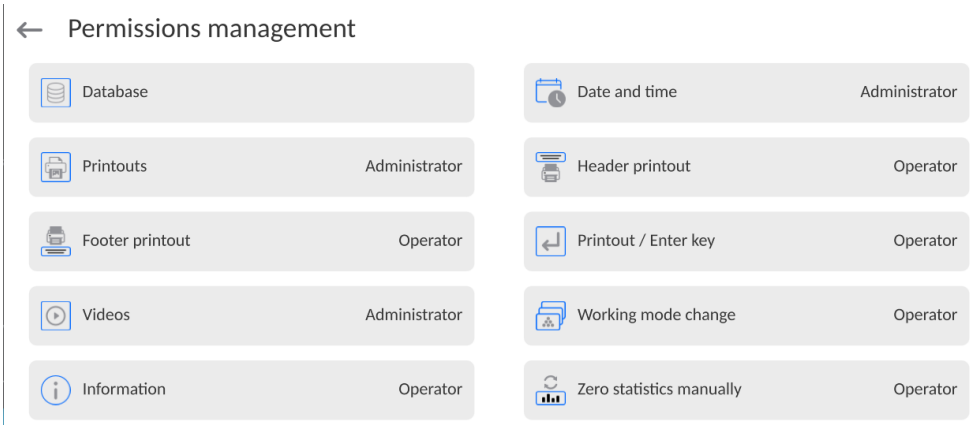
Hide mass when operator not logged in

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

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

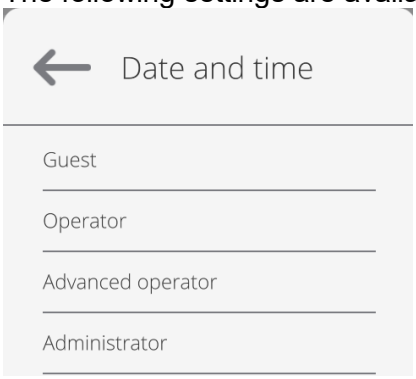


11.3. Permission management

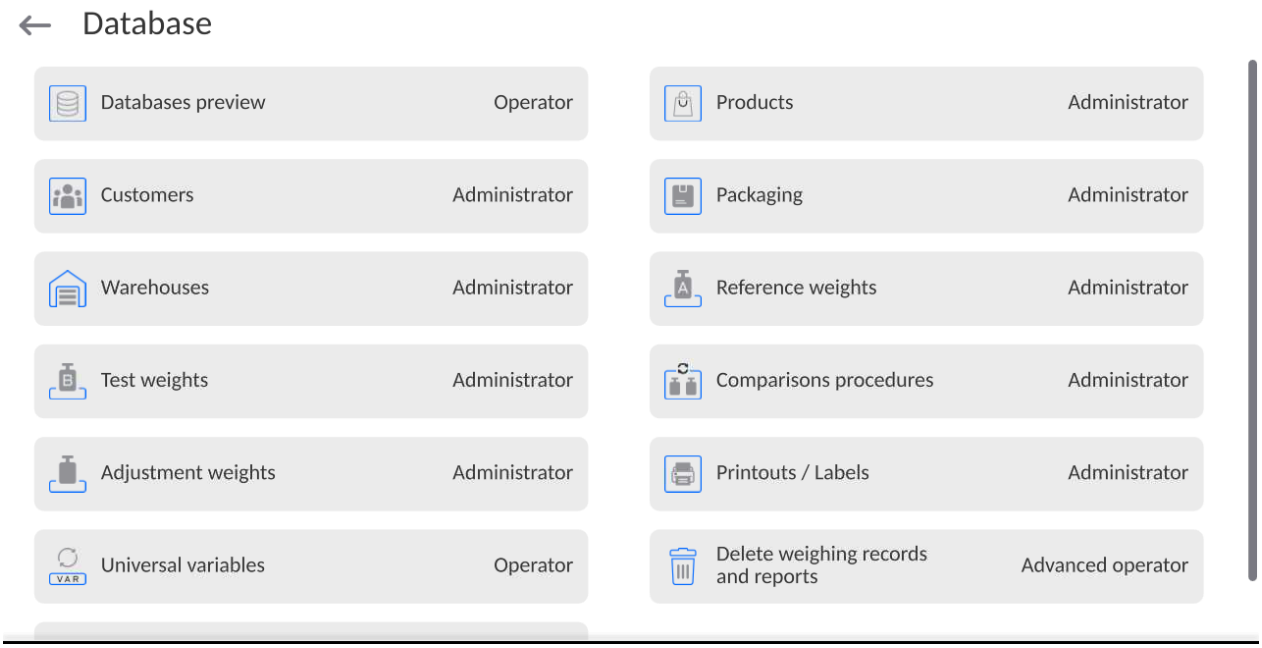


***Note:** If you set **<Guest>** value for particular parameters, the access to settings will be open (no need to log in).*

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



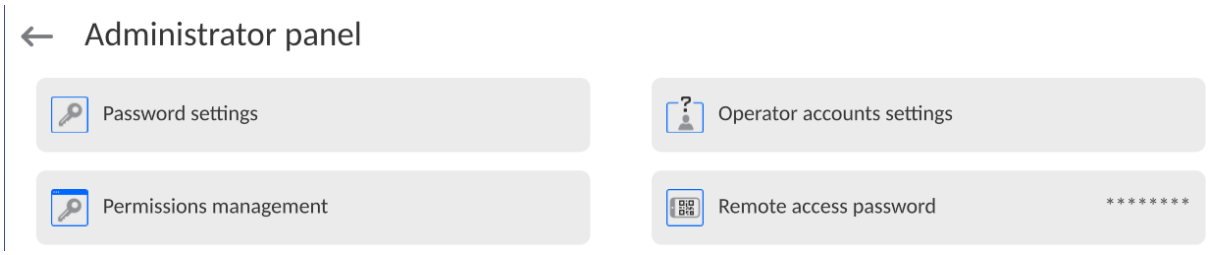
Databases



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

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

11.4. Remote access password



The mass comparator can be accessed remotely using connection to the local Internet network that a computer is connected to. In this respect **VNC Viewer** application can be used.
A default password set in the program is a sequence of the following characters: ***radwag1234***. If you do not wish to use the default password, you must set your unique access password in the aforesaid parameter.

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

12. PROFILES

The mass comparator administrator can create new profiles by:

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

How to copy the existing profile

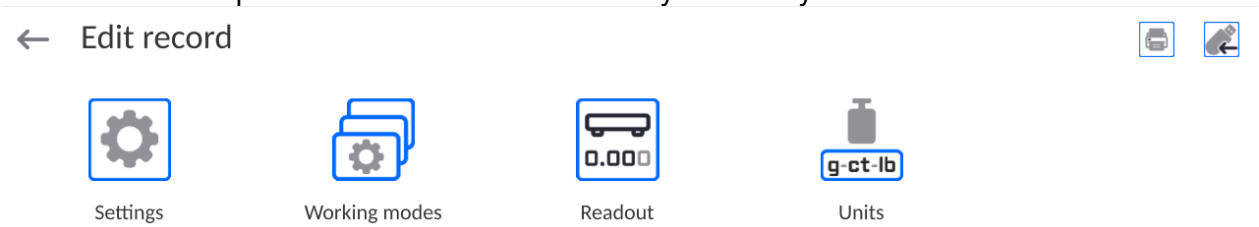
Procedure:

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

How to add a new profile

Procedure:

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



How to delete the profile

Procedure:

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

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

12.1. Profile structure

Each profile contains the following items:

Settings This menu allows you to assign a unique profile name (a sequence of alphanumerical characters) and declare a default mode (the selected mode will always be loaded as a start-up mode when you select the profile).

Working modes This option allows you to set specific options for particular working modes. It contains the following submenu:

- Mode-related additional settings
- Keys
- Information
- Printouts

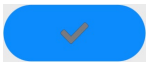
Readout It contains the following submenus:

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

Units This menu allows you to declare a start unit, additional unit, 2 custom units, and to enter gravitational acceleration value in the place of using the mass comparator, and to declare availability of particular units.

12.1.1. Settings

Name

Enter this item to display a keypad box in the screen. Enter the profile name and press  to confirm. The assigned name will apply to the profile.

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

12.1.2. Working modes

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

The following parameters are available for each working mode:

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

12.1.3. Readout

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

FILTER (unavailable to the following profiles: Fast, Fast dosing, Precision)
Before it is displayed, every measuring signal is electronically processed in order to achieve correct parameters typical of a stable signal, that is ready for readout.
To a certain extent you can influence the range of processing by choosing a suitable FILTER.
The range of options:

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

While choosing the filtering level, consider real conditions of work of the mass comparator. For very good conditions, you can set an average or fast filter while for unfavourable conditions – slow or very slow filter.

Note:

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

Result approval (unavailable to the following profiles: Fast, Fast dosing, Precision)
It determines the time of displaying a stability mark for measurement result.

You can set one of 3 result approval variants:

- fast, fast + precise, precise.

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

Autozero function
The task of this function is to automatically control and correct the zero value of the mass comparator. When this function is active, further results are compared at fixed time intervals. If these results differ by fewer than the value of the declared AUTOZERO range, e.g. 1 readout unit, the

device will instantly zero and stability result markers – ◣◢ and zero markers – →0← will be displayed. When the AUTOZERO function is enabled, every measurement always starts from a precise zero. There are special cases in which this function hinders measuring. The example can be a very slow placement of the weight on the weighing pan (e.g. pouring the load on); this being the case, the zero indication correction unit may also correct real load mass indication.

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

Autozero function: Dosing (unavailable to the following profiles: Fast, Fast dosing, Precision)
The task of this function is to set the autozero in dosing function by default.

Available values are the following:
NO - autozero disabled automatically after entering the Dosing mode.
YES - autozero enabled automatically after entering the Dosing mode.

Last digit
Using this function, you can disable visibility of the last decimal place in the exposed weighing result.

There are three setting variants in this function:

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

Number of last digits
Using this function, you can declare the number of hidden last result digits.

There are three settings in this function and operate in connection with <Last digit> item:

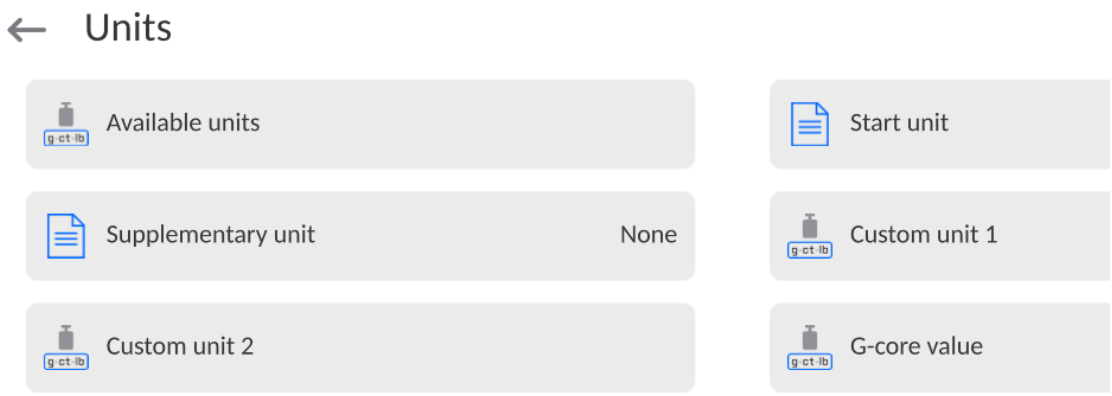
- **1:** last result digit.
- **2:** last two result digits.
- **3:** last three result digits.

Ambient conditions
This parameter refers to the surrounding and conditions which the mass comparator operates in. If the ambient conditions are unstable, it is advisable to change the parameter into Unstable. By default this parameter is set into Stable.
The stable setting makes the mass comparator to operate a way faster. This means that weighing time is much shorter when compared to the Unstable parameter.

- **Unstable**
- **Stable.**

12.1.4. Units

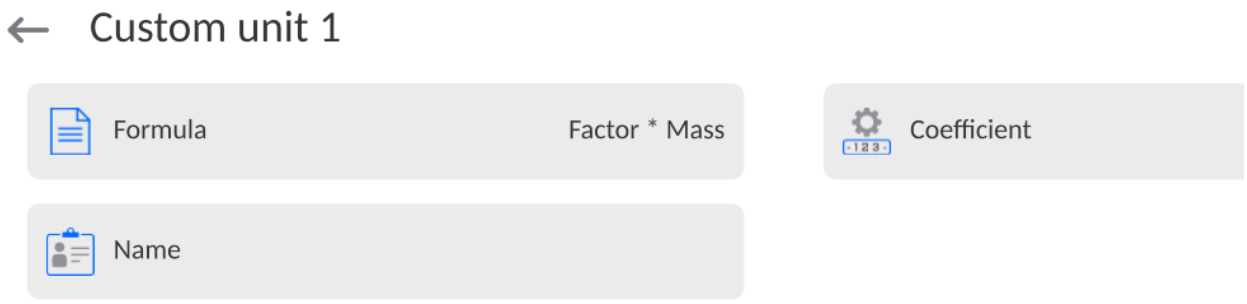
You can declare a start unit and additional unit as well as two custom units for a specific profile.



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

The custom unit has the following:

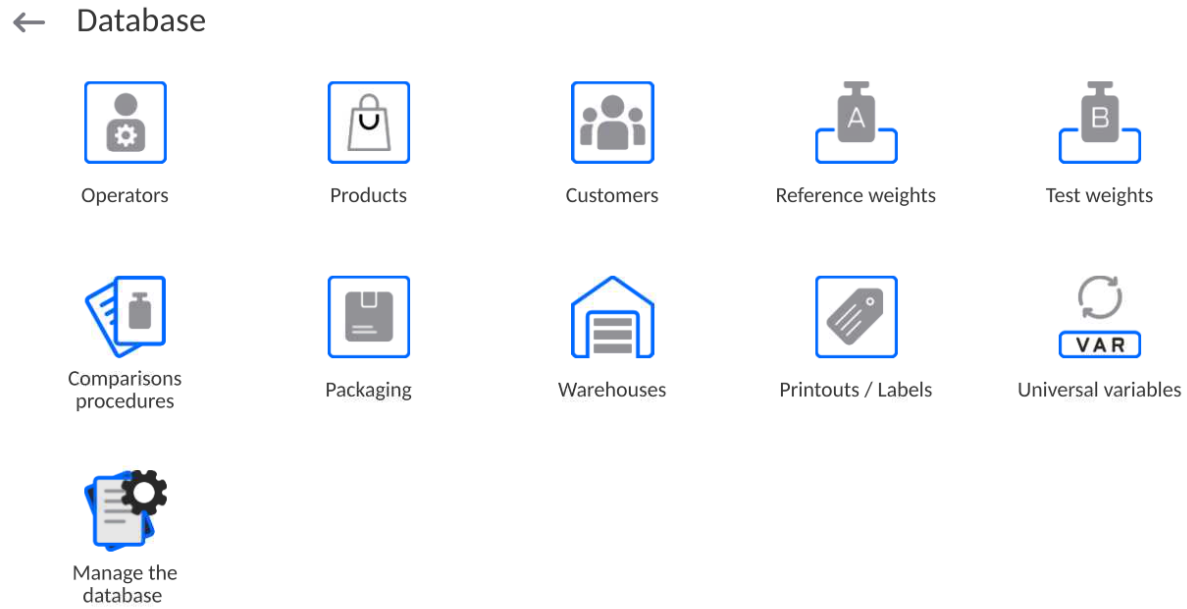
- Formula (*custom unit calculation formula*): Factor * Mass or Factor / Mass.
- Factor (*declare a factor for calculation of the custom unit as per the specific formula*)
- Name (*unique unit name that will be displayed next to the result – max. 3 characters*)



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

13. DATABASES

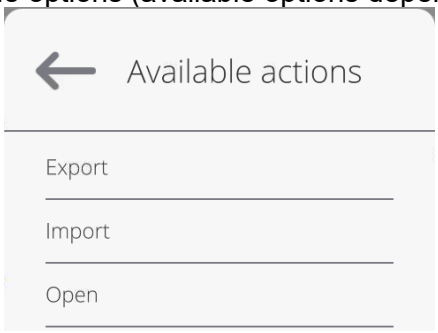
The software offers the following databases:



13.1. Database operations

Database operations are available only to the authorised operator.
To edit the bases, follow the steps below:

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



Selection of variants:

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

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

1. Add item to database.
2. Search item in database by name.

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

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

13.2. Operators

This menu contains a list of operators that can operate the mass comparator.
You can define the following information for each operator:

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

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

To add a new operator, do as follows:

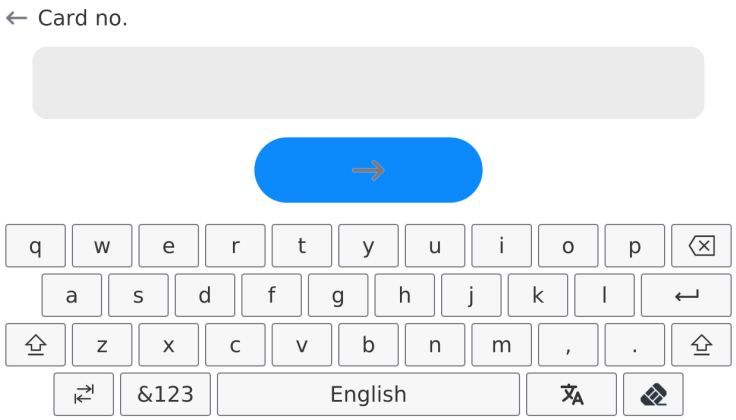
- In <Operators> menu, press <Add>  key.
- Define required fields for a newly created operator.

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

Logging via transponder card reader:

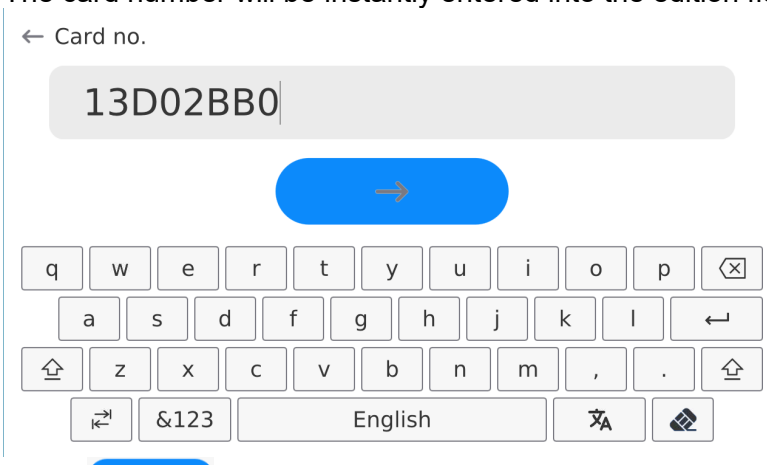
Note: *A RFID reader installed in the head operates at the frequency of 13.56MHz and complies with ISO/IEC 14443 Type A.*
Only cards in such a standard can be recognised by the reader.

- Enter operator's settings
- Select <Card number> item

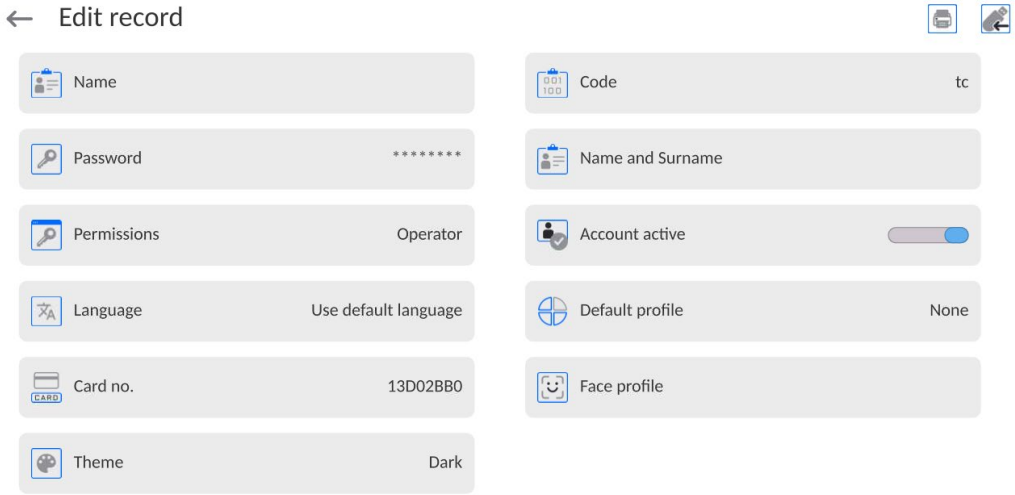


- Swipe the card at the RFID reader

- The card number will be instantly entered into the edition field



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

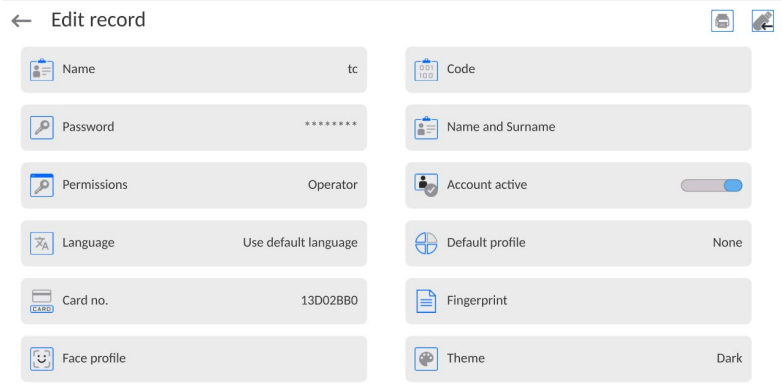


- Enter the main menu. From now on, when you swipe the card at the RFID reader, you will automatically log in.

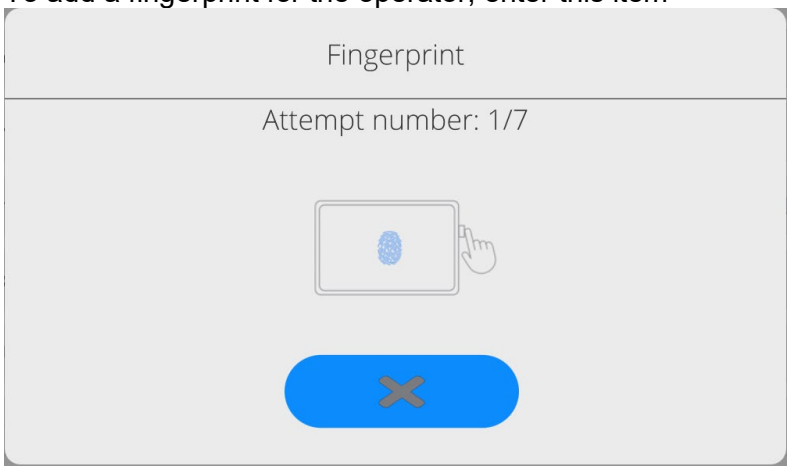
Logging via fingerprint:

Note: *You can connect the mass comparator only to the fingerprint scanner listed as an item dedicated to these devices. The list of accessories can be found on RADWAG's website.*

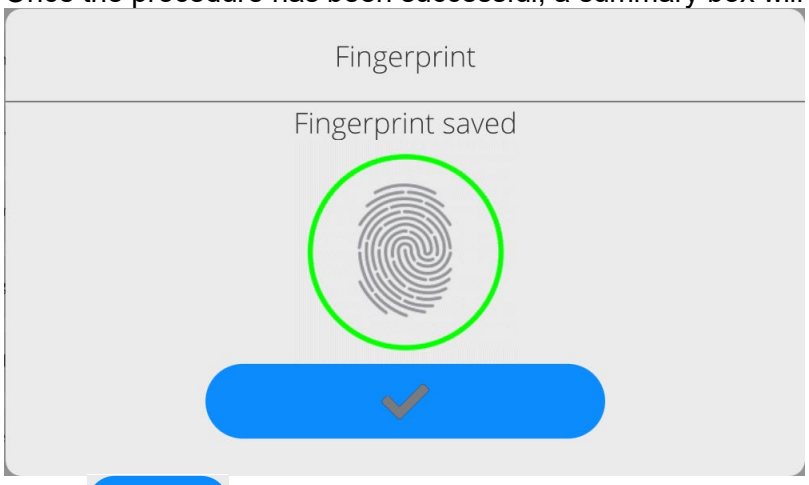
- After plugging the fingerprint scanner into the USB-A port, you will see <Fingerprint> item in the operator's settings menu.



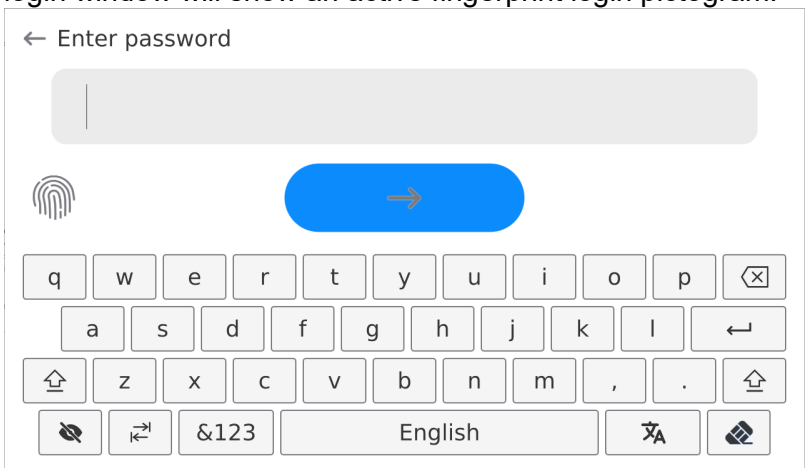
- To add a fingerprint for the operator, enter this item



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



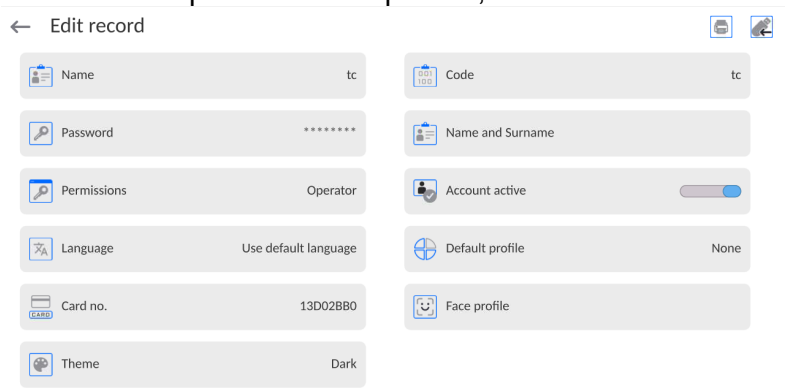
- Press  key to confirm the fingerprint assignment procedure.
- From now on, if the fingerprint scanner is connected to the USB port, the operator's login window will show an active fingerprint login pictogram.



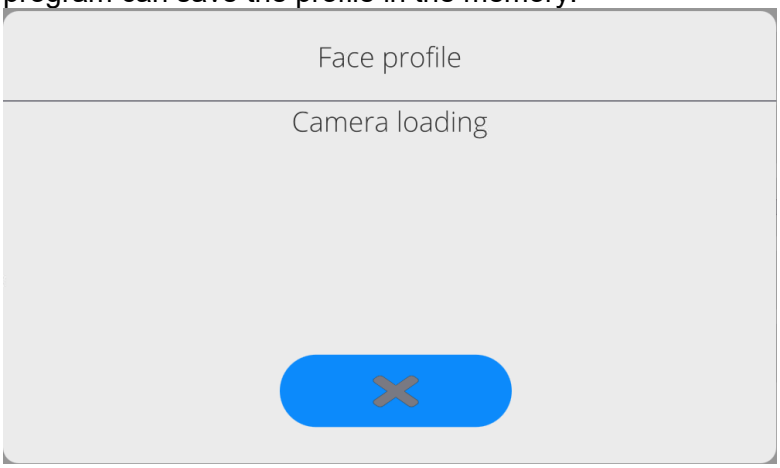
- When you put your finger against the scanner and your finger matches the saved pattern, the pictogram will turn green for a while. The operator will be automatically logged in and the program will go to the home screen of the program. The name of the logged operator will be displayed in the top bar of the screen.
- If the scanned fingerprint does not match the pattern, the pictogram will turn red for a while and the operator will not log in. A login box will still be displayed.

Logging via face profile:

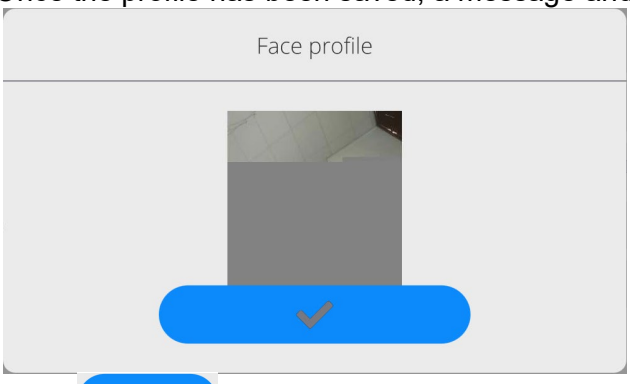
- To add a face profile for the operator, enter this item

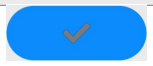


- After running this item, you will see a message and the face profile will be scanned. At this time you need to position yourself in front of the camera correctly so that the program can save the profile in the memory.

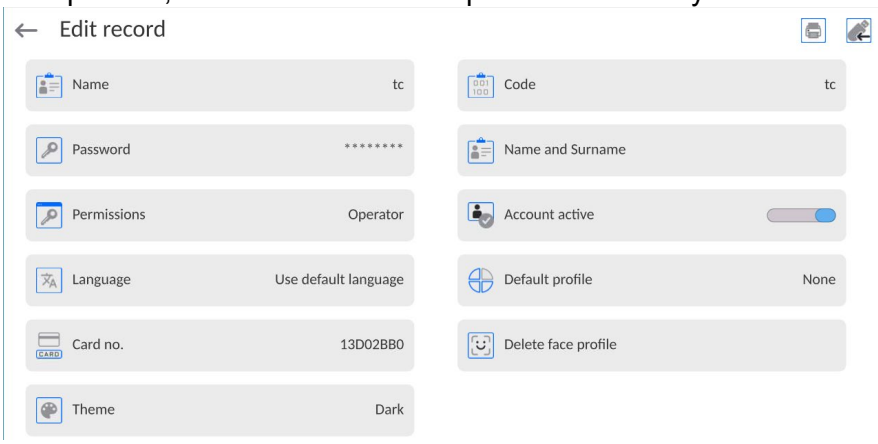


- Once the profile has been saved, a message and camera photo will be displayed.

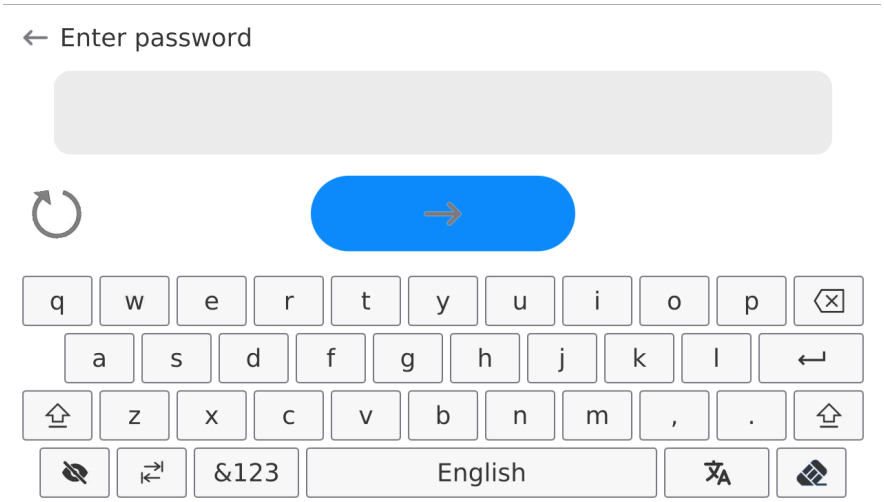


- Press  key to close the window.

- In the operator's settings window, the description of the item will change into <Delete face profile>, which means that the profile has already been saved in the memory.



- From now on, if you have added the face profile, when you log in and enter the login box, the program will instantly load the profile, signalled through a pictogram on the left side of the window.



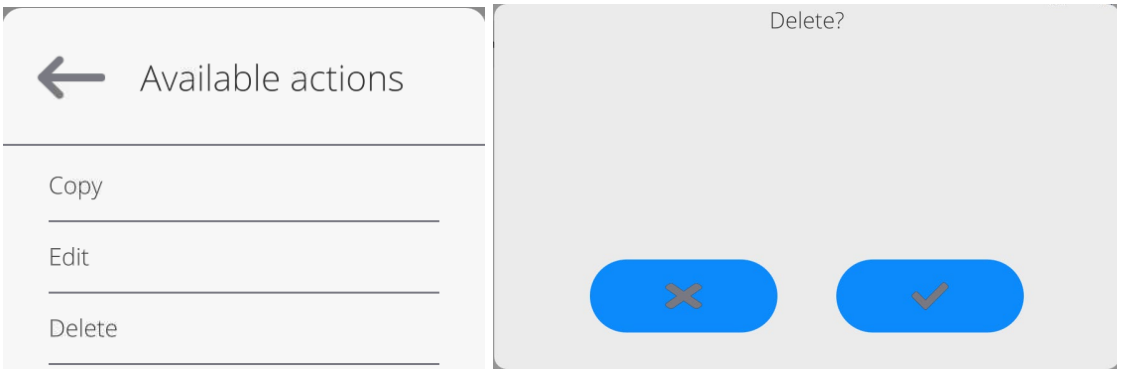
- The program automatically scans the operator face profile photo and loads the photo. The camera activates (which is signalled through a glowing light by the camera) and the saved photo is compared with the profile scanned by the camera. If these photos match, you will go to the home screen of the program and the name of the operator will be displayed in the top bar of the screen.

Edition of information related to the operator:

- Press the operator's name field.
- Properties related to the operator will be displayed.
- Select and modify required data.

To delete the operator, follow the steps below:

- Press and hold the operator's name.
- The menu related to this item will be displayed.
- Select <Delete> item and confirm your choice.



13.3. Products

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

Procedure:

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

The list of information defined for the product:

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

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

13.4. Clients

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

Procedure:

- Enter <Databases> submenu and press <Clients> item.

- Press <Add> key>.
- If the Client field already exists, press the relevant name field.

The list of information defined for clients:

- Client's name
- Client's code [client's internal identification code]
- NIP [taxpayer's ID]
- Address
- Postal code
- City/town
- Discount
- Printout [type of printout, label related to client]

13.5. Reference weights

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

Procedure:

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

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

The list of information defined for reference weights:

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

13.6. Test weights

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

Procedure:

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

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

The list of information defined for test weights:

1. Name
2. Code
3. Class
4. Mass
5. Order number
6. Test weight number

13.7. Comparison plans

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

Procedure:

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

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

The list of information defined for comparison plans:

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

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

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

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

13.8. Packaging

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

Procedure:

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

Note:
You can search by name or code.

13.9. Warehouses

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

Procedure:

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

Note:
You can search by name or code.

13.10. Printouts

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

Procedure:

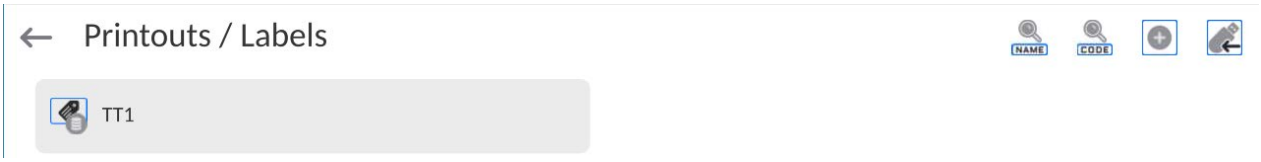
- Enter <Database> submenu and press <Printouts> field.
- Press <Add> key if a new printout is to be added.
- If the non-standard printout already exists, press the relevant name field and enter identification data.

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

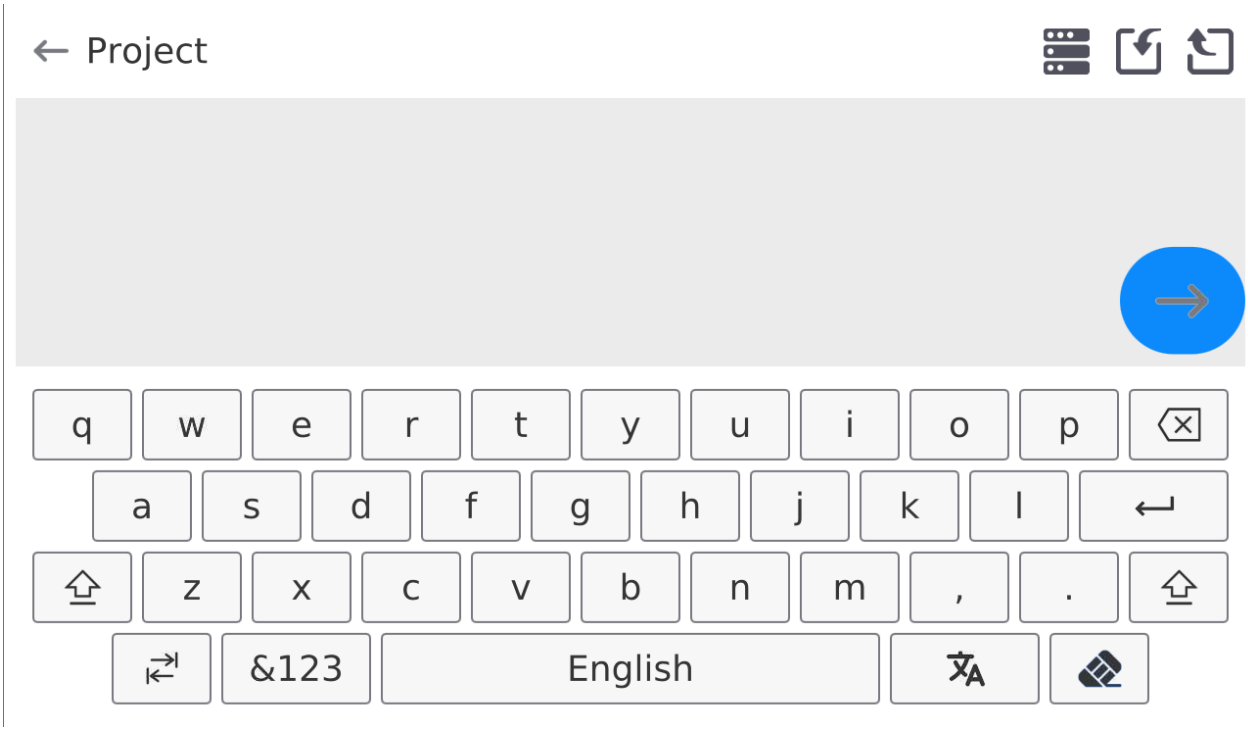
How to design a new printout.

Procedure:

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



- In <Record edition> field, press <Template> key.
- A window allowing you to create any printout will be showed.
- While creating a printout, you can use an external USB keypad connected to the head, or a touch keypad that offers the same functions as a typical PC keyboard.



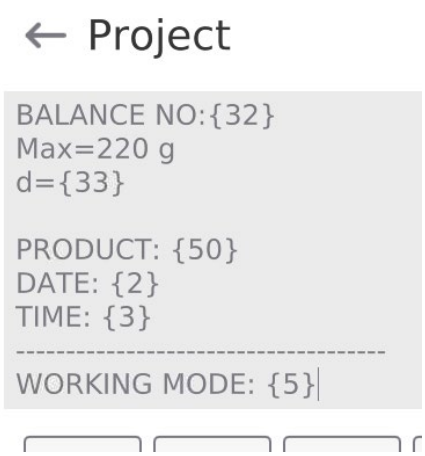
The displayed keypad does not provide some characters, such as colon or diacritical marks typical of the specific menu language (menu language is signalled with a description on „SPACE” key). To use such marks in the designed printout, **press and hold** a specific letter on the keypad **for a while.** This way you will display additional keys with assigned marks which when clicked can be added into the text. After you have entered the mark, press the key with „X” mark to disable displayed marks.

The example of marks for the Polish keypad.

Letter on the keyboard	Additional characters	Letter on the keyboard	Additional characters	Letter on the keyboard	Additional characters
„**t**”		„**u**”		„**a**”	
„**x**”		„**c**”		„**v**”	
„**b**”		„,”		„.”	

- Save the printout you have created.

The example of printout 1 – use of large edition field



Template

Mass comparator no. 400015
Parameters:
Max = 220 g
d= 0.001 g

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

Working mode: Weighing

Net mass: 94.147

Measured by: Admin

Template printout

The example of printout 2 – printout from file

All printout templates can be executed as external files that can be imported to the mass comparator. Such a file must come in *.txt or *.lb format and contain all fixed and variable information. The content of such a file can be modified, if imported.

Procedure:

- create a *.txt or *.lb file in any editor,
- copy this file to the external USB memory stick,
- insert the USB memory stick into the mass comparator port,
- press [4] <  download printout from file> key,
- the content of USB memory stick will be displayed in the screen,
- find the printout file and press its name,
- the printout will be instantly copied into the edition box.

	***You can add printouts from the external memory by importing already configured texts, using a USB port.***
	***The name of the printout does not represent the content of printout.***
	***The list of variables intended for printouts can be accessed in „ATTACHMENTS 03” manual.***
	***The example of creating and sending the label template to the mass comparator memory can be accessed in the „ATTACHMENT 03” manual.***

13.11. Universal variables

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

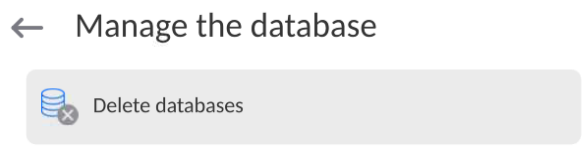
Procedure:

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

Note:
You can search by name or code.

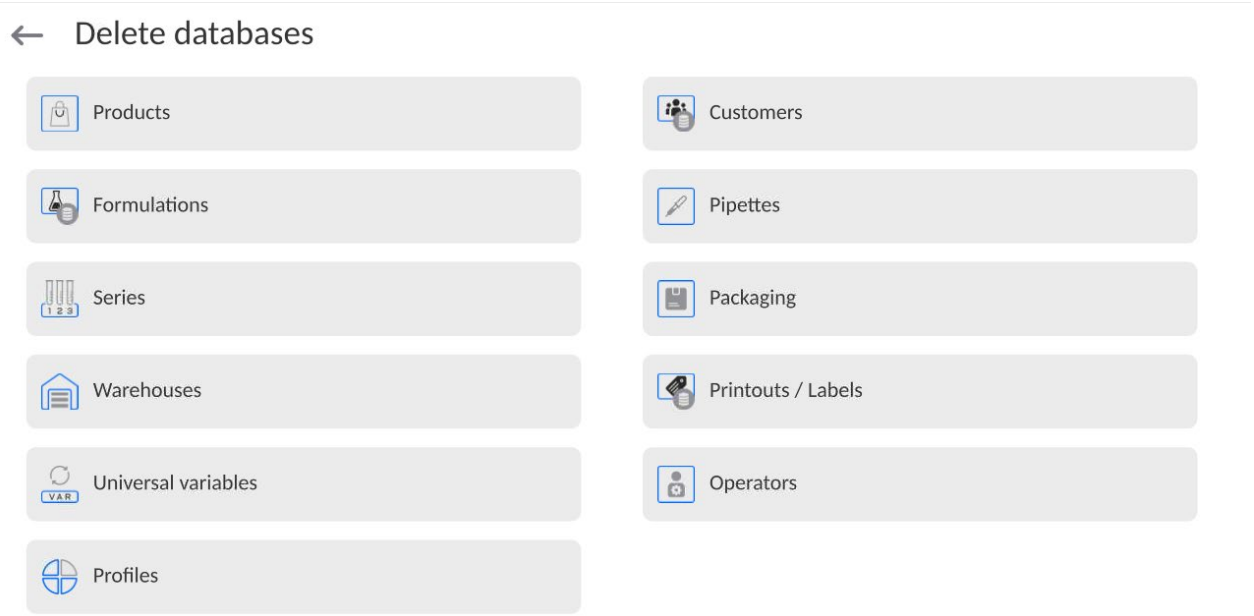
13.12. Database management

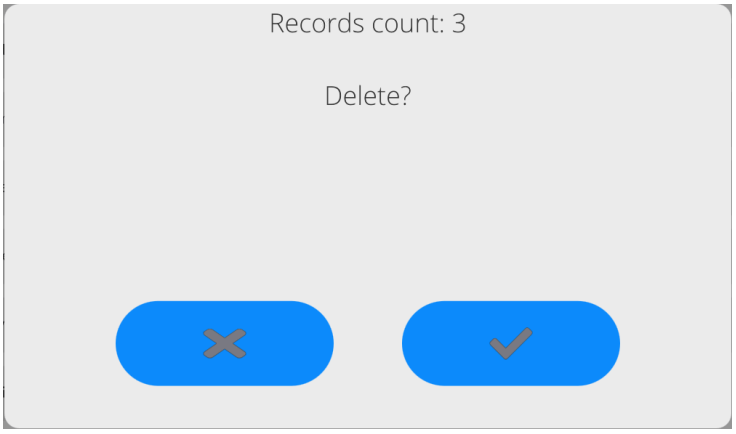
Function allowing to manage databases data. It comprises three options: Export weighing database, Delete databases and Delete weighings and reports.



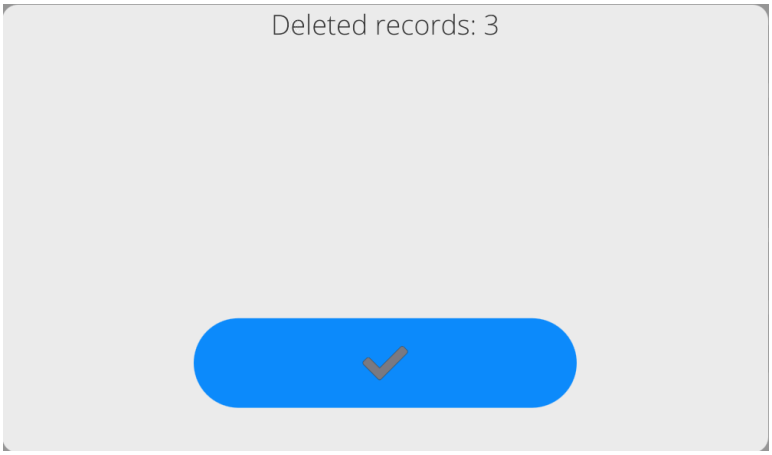
13.12.1. Delete Databases

Function allows you to delete data of selected database. Upon function activation, window for selecting a database data of which is to be deleted is displayed.





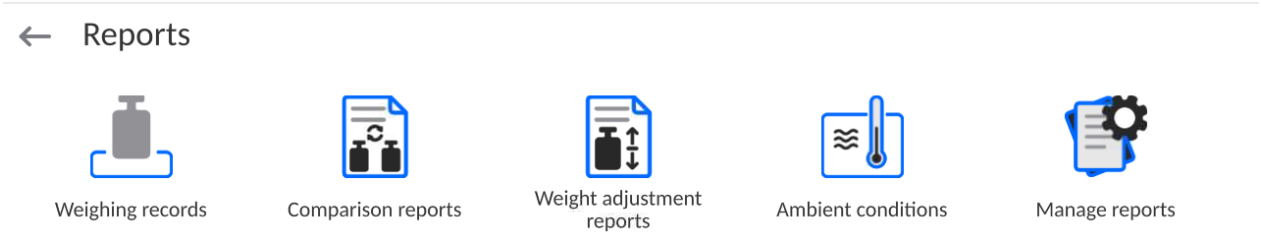
Upon confirmation, data is deleted and the following message is displayed:



Upon confirmation the software returns to a previous window; you may continue a weighing procedure or proceed to other operations.

14. REPORTS

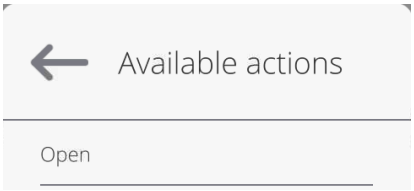
In the reports menu, you can find all result bases in which measurements and reports on measuring processes are saved.



14.1. Operations in databases

The operations in the reports base are available only to the authorised operator.
To edit the databases, follow the steps below:

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



Selection of items:

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

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

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

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

14.2. Weighing records

Every weighing result sent from the mass comparator to the printer or computer is saved in the weighing database (see: exception in point - result control).
You can preview data for particular weighing records.

Procedure:

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

The list of information in database for the weighing record:

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

14.3. Comparison reports

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

Procedure:

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

The list of information in the comparison report:

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

14.4. Weight adjustment reports

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

Procedure:

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

The list of information in the comparison report:

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

14.5. Ambient conditions

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

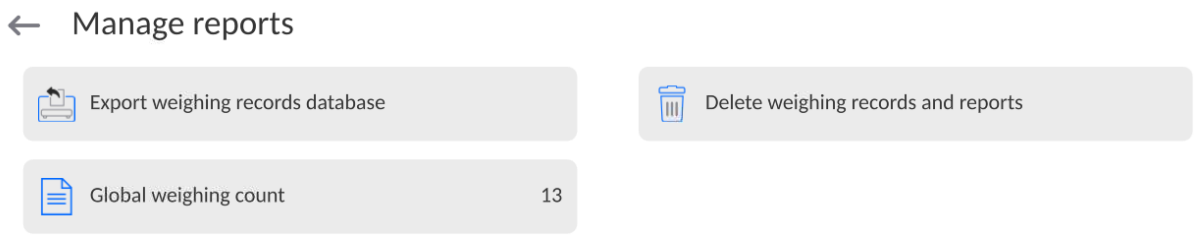
Procedure:

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

Note: *You can use a report searching feature.*

14.6. Manage reports

This function allows you to manage data in reports database. The following options are available: Export weighing database to file and Delete weighing records and reports.

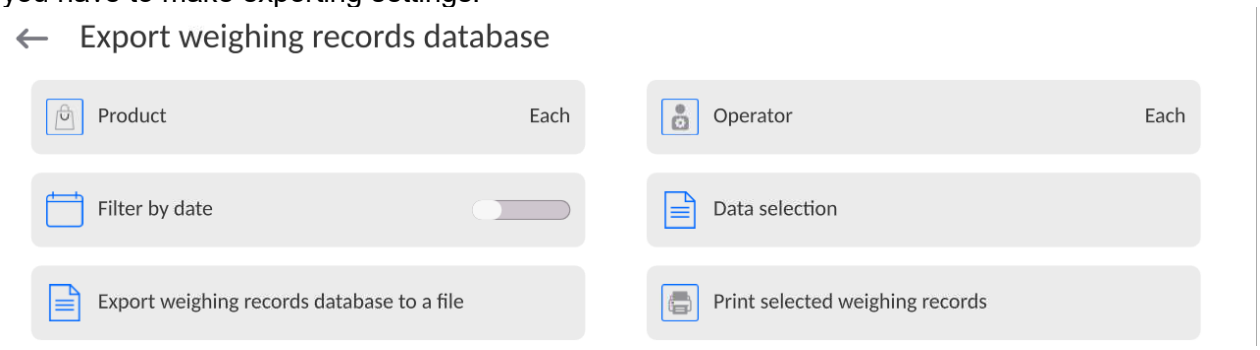


14.6.1. Export weighing database to file

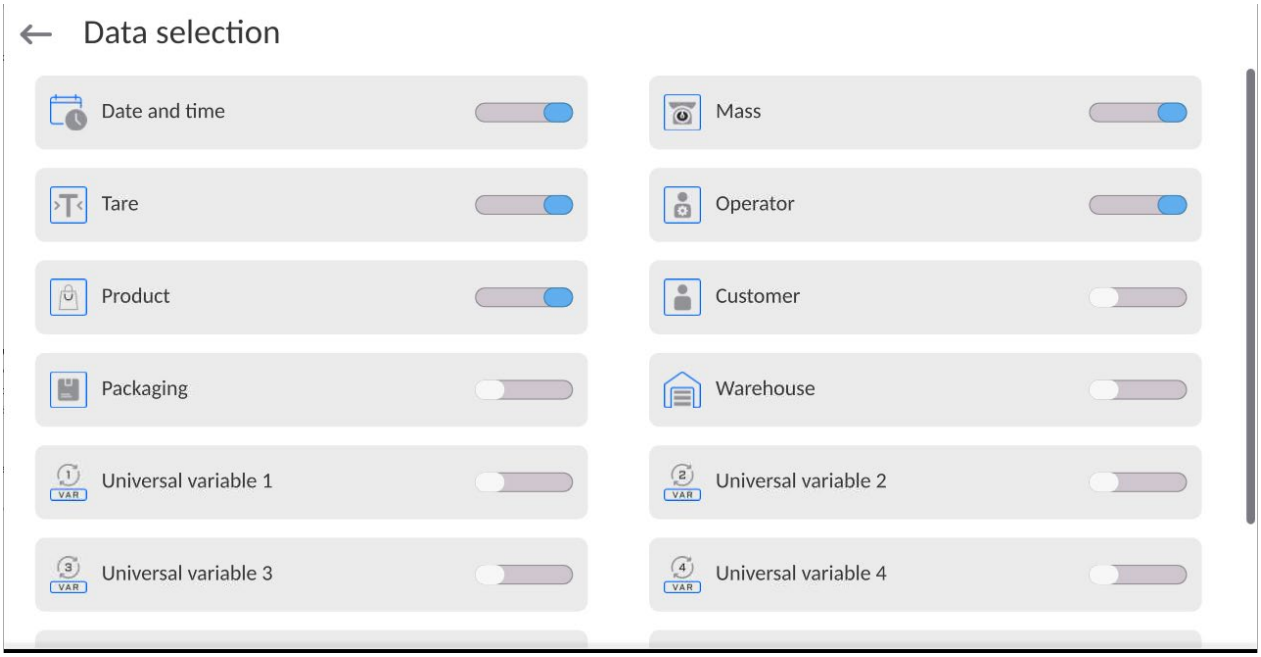
All weighing records are saved in the weighing database. This information can be exported to the file using a pendrive memory stick.

Procedure:

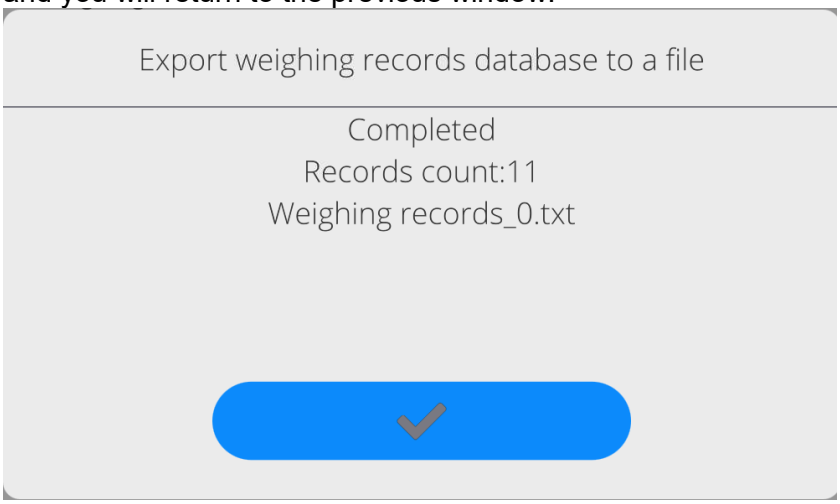
- Insert the pendrive memory stick into the USB port of the mass comparator.
- Press <Export weighing database to file> field and you will go to another window in which you have to make exporting settings.



In <Data selection> item, you can define measuring data that are to be exported.



- After setting this option, click <Export weighing database to file> field and the program will start exporting the weighing database instantly.
- Once the exporting procedure is finished, **<Done>** message will be displayed together with the information on the number of data exported and file name (with *.txt extension), and you will return to the previous window.



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

Note: *If the mass comparator cannot recognise the pendrive memory stick, the following message <Operation error> will be displayed after entering <Export weighing database to file> item.*

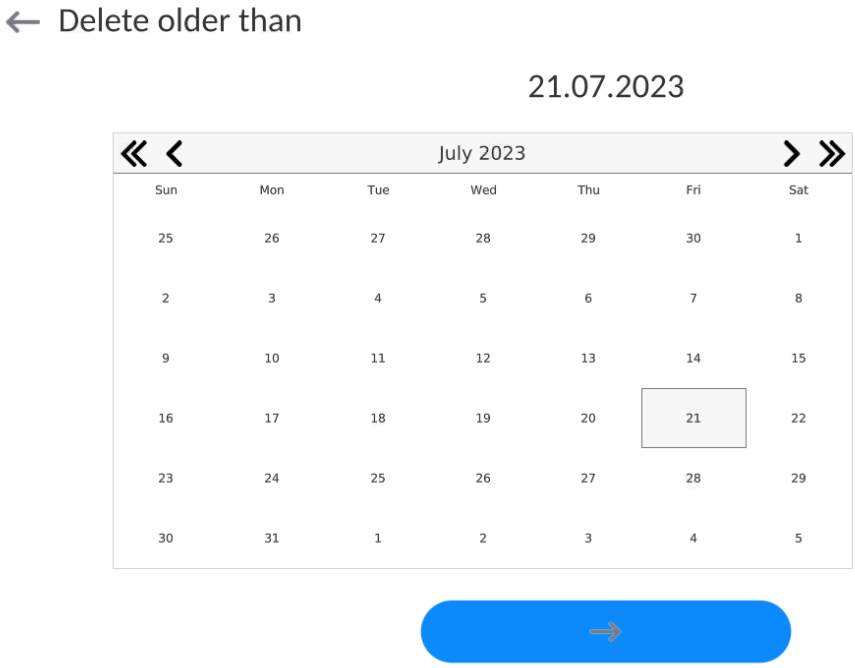
- The name of the file consists of the database name and mass comparator factory number, e.g. <Weighing records_364080.txt>.
- Disconnect the pendrive memory stick from the USB port.

File template:

The file template takes a form of a table whose columns are separated with <Tab> mark in order to directly export the file into the <Excel> sheet, if necessary. The table contains all information on 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

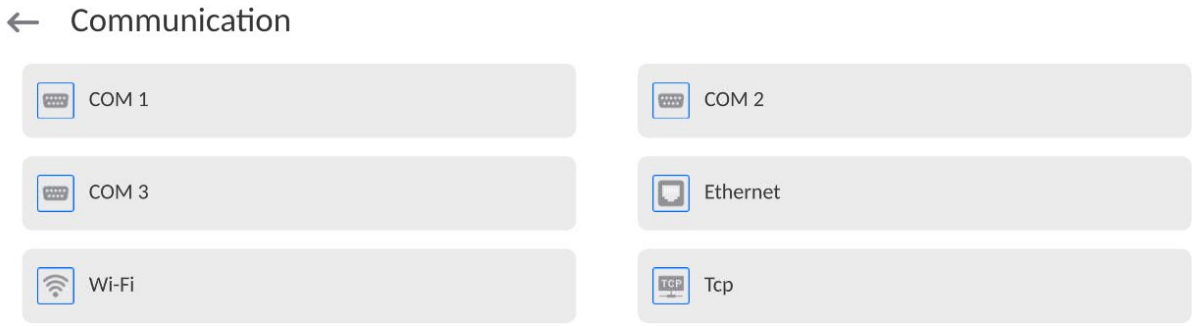
This field is used to clear the content of database of weighing records and reports. After running the function, a numerical keypad box is displayed. In the box, enter the limit date. This date specifies when the data older than the date entered are to be deleted. Enter year, month, day.



Once you have confirmed the date, all weighing records and reports collected in the specific period of time will be deleted. The quantity of deleted data will be showed.

15. COMMUNICATION

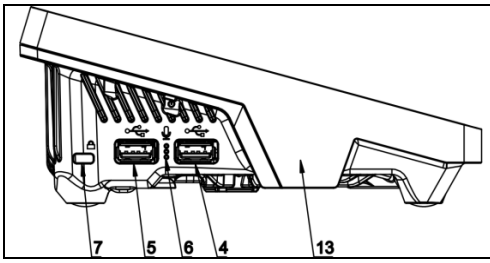
The Communication menu is included in the Parameters menu. To gain access to this menu, press <Setup> key or icon.
The mass comparator can communicate with an external device through the following ports:

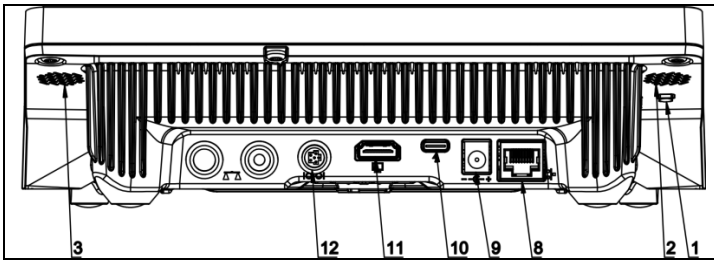


The parameters of each of the ports can be configured as required.
The meter allows connecting the IM02 communication module. The IM02 communication module in its standard design expands the range of interfaces to include RS 232 IM02, Virtual COM, 4WE/4WY.

15.1. RS 232 settings

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

	4 – USB-A port which after connecting the converter is detected by the program as RS 232 – COM 1 port 5 – USB-A port which after connecting the converter is detected by the program as RS 232 – COM 2 port

	12 – RS 232 – COM3 port

Procedure:

– Select <COM1>, <COM2> or <COM3> communication port.

– Set relevant values.

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

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

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

15.2. ETHERNET settings

Procedure:

– Select <Ethernet> communication port and then set relevant values:

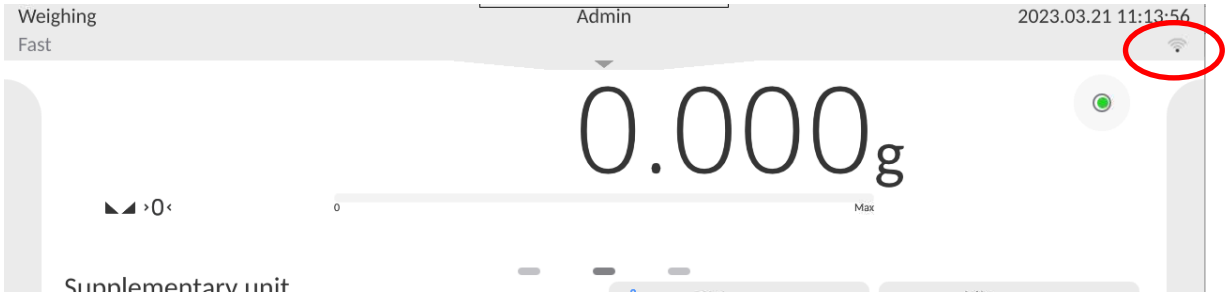
- DHCP: Yes – No
- IP address: 192.168.0.2
- Subnet mask: 255.255.255.0
- Default gate: 192.168.0.1

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

After making changes, press → key to display a message:
<Restart mass comparator to implement changes>.
Return to the weighing mode and restart the device.

15.3. Wi-Fi settings

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



Procedure:

– Select <Wifi> communication port and then set relevant values:

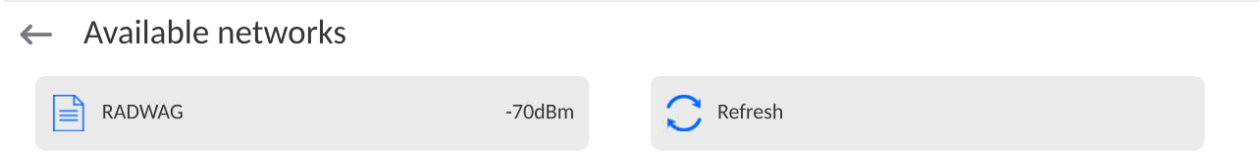
- DHCP: Yes – No
- IP address: 10.10.9.155
- Subnet mask: 255.255.255.0
- Default gate: 10.10.8.244

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

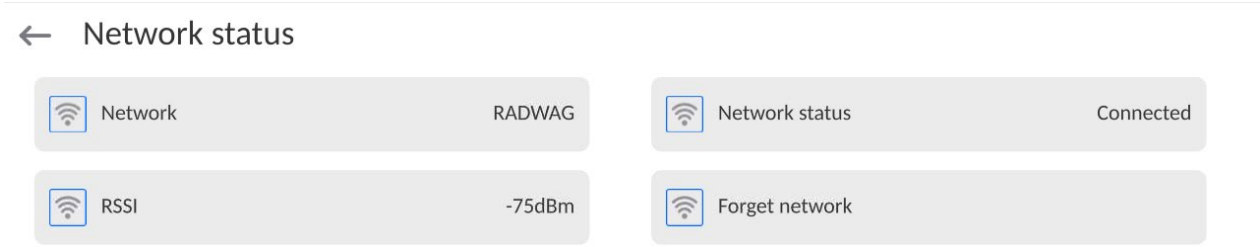
After making changes, press → key to display the message:
<Restart the mass comparator to implement changes>.

Return to the weighing mode and restart the device.

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



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



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

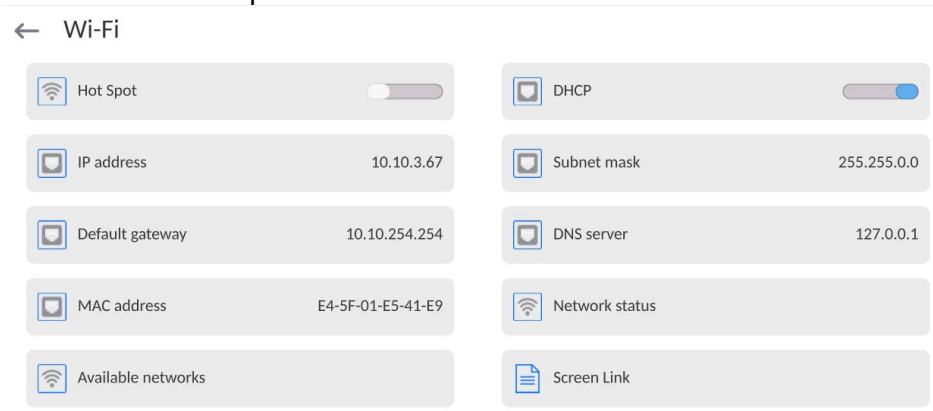
15.3.1. General information on Hot Spot service

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

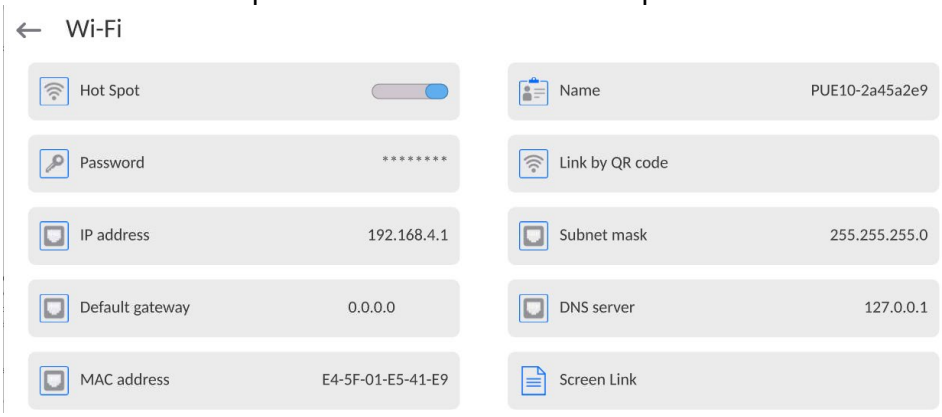
The hot spot owner decides how, to whom and on what terms to share his connection via login which requires a unique operator's name and password (these data are assigned while activating the service and stored in the device memory).

15.3.2. Activation of Hot Spot service

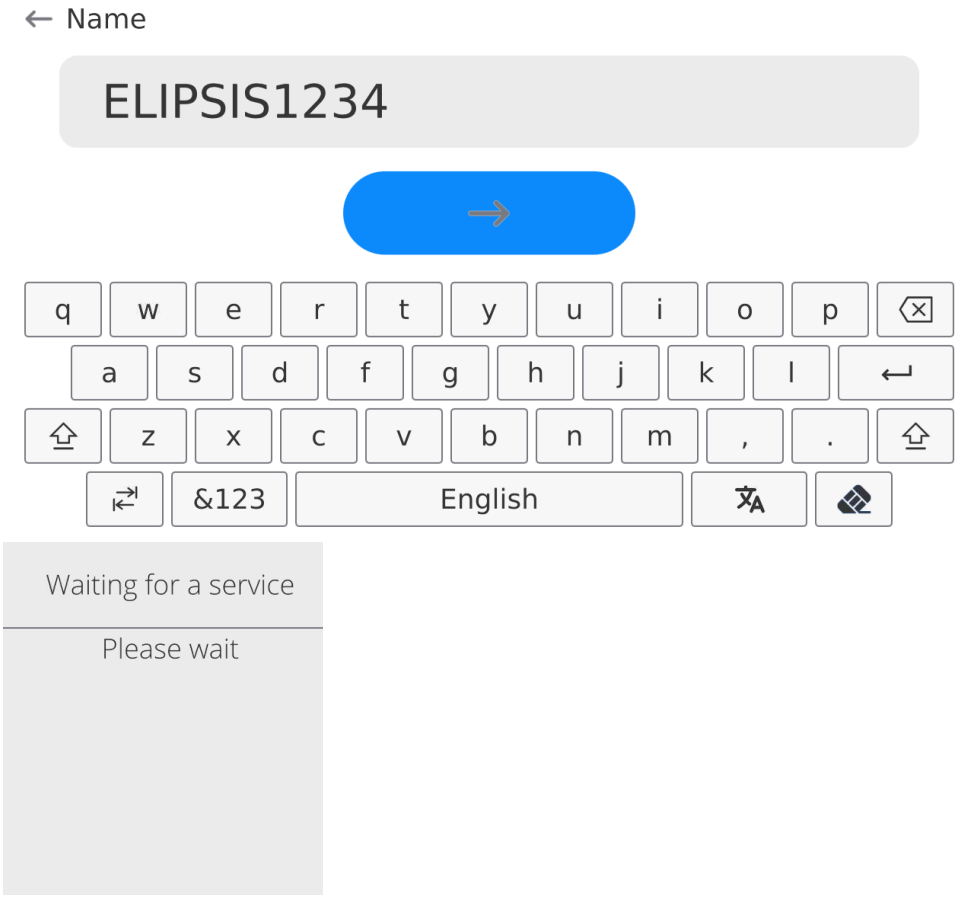
1. Enter Wi-Fi options

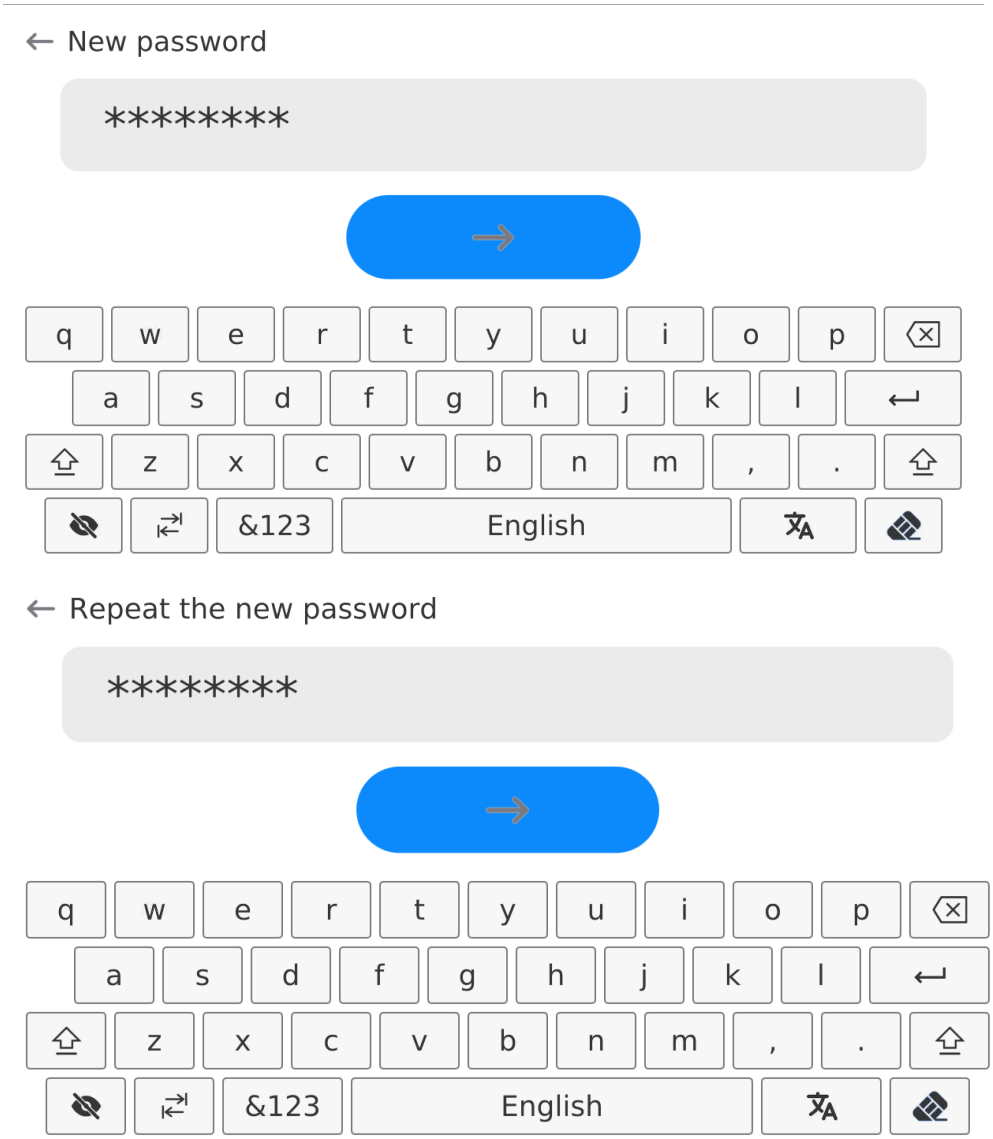


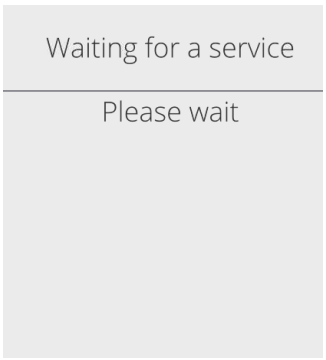
2. Enable Hot Spot service and the mass comparator will enter service settings.

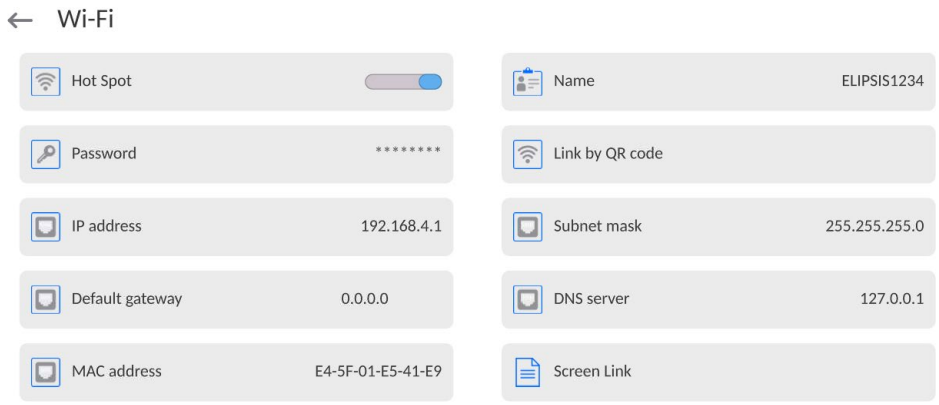


3. Enter a unique name and password (the password must be at least 8 characters long).




← New password
****
q w e r t y u i o p
a s d f g h j k l
z x c v b n m , .
&123
English
← Repeat the new password
****
q w e r t y u i o p
a s d f g h j k l
z x c v b n m , .
&123
English


Waiting for a service
Please wait



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

15.4. TCP settings

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

How to set the port number for TCP:

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

15.5. Virtual COM settings

Applies to the active IM02 communication module

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

The order of steps:

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

16. PERIPHERALS

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

16.1. Computer

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

16.1.1. Computer port

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

Procedure:

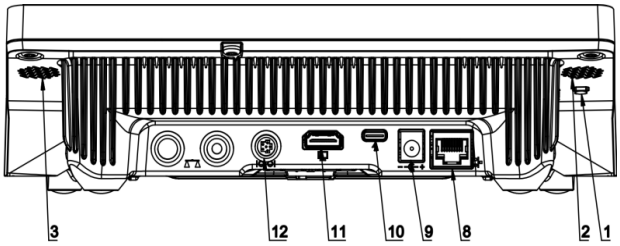
- Enter **<Peripherals / Computer / Port>** submenu and select the desired port from the list.

*) – Description of the port can be accessed in the COMMUNICATION point of the manual.
**) - IM02 communication module port connected to the mass comparator.

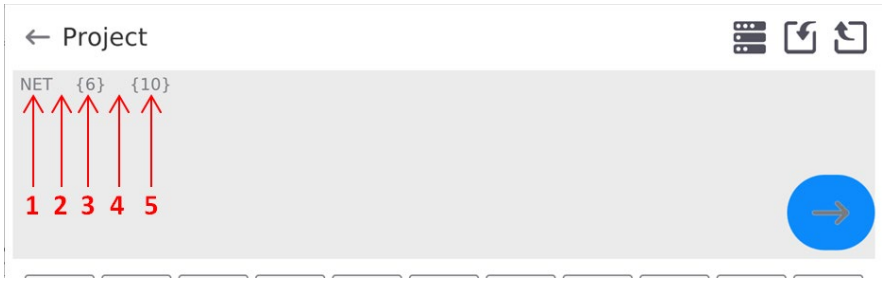
16.1.2. USB Free Link

The tool used to enter data for peripherals that serve as keypads. Thanks to this, when you properly modify the standard or non-standard printout and send the suitable command from the computer or press the ENTER key on the keypad, the data in the non-standard printout will be directly entered from the mass comparator into such computer programs as Excel, Word, Notebook, etc.
To assure correct cooperation with Excel program, configure the non-standard printout by inserting printout formatting marks into the draft printout, for example Tab, Enter and diacritical marks typical of the language. Remember to set a correct decimal place mark (dot or comma) that will be accepted by our Excel program (see: **<**  **/ Miscellaneous / Decimal point>** submenu).

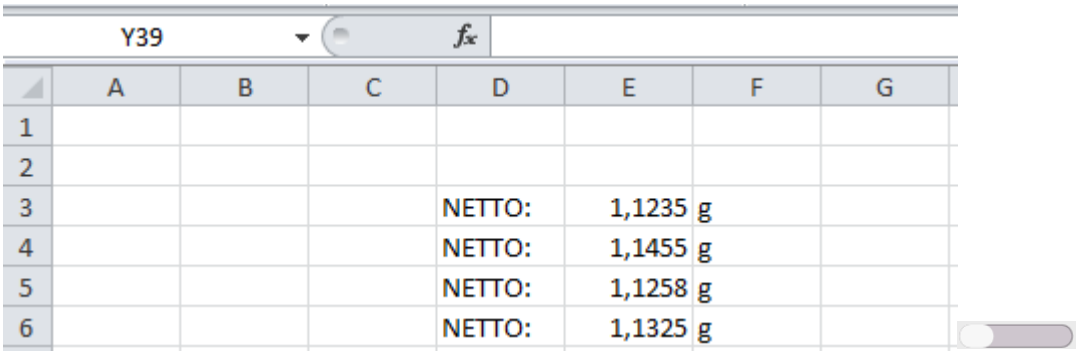
USB Free Link is a USB-C port (port no. 10 at the back of the readout head) that a computer is connected to via the USB-A/C cable.



The example of the printout template and final result in the Excel:



1	fixed text
2	tabulator (jump to next column)
3	variable {6}, net mass in adjustment unit
4	tabulator (jump to next column)
5	variable {10}, mass unit



16.1.3. Computer address

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

Procedure:

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

16.1.4. Continuous transmission

Activation of 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).

16.1.5. Interval

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

Procedure:

- Enter **<Peripherals / Computer / Interval>** and you will see **<Interval>** edition box.

Enter the desired value and press → to confirm changes.

16.1.6. Weighing printout template

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

Procedure:

- Enter **<Peripherals / Computer / Weighing Printout Template>** submenu to open **<Weighing Printout Template>** edition box with an on-screen keypad.

Modify the template and press → to confirm changes.

16.2. Printer

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

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

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

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

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

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

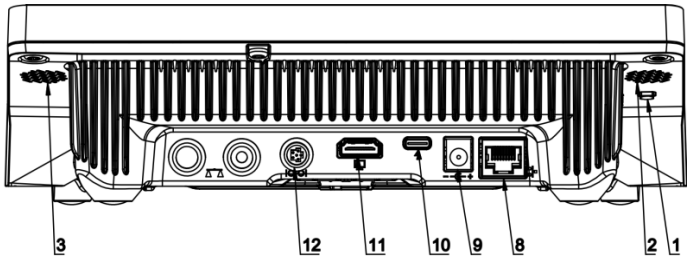
- by setting the suitable code page in the printer settings (see: Printer manual)
- by setting the same code page as the code page of the printout in the printer,

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

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

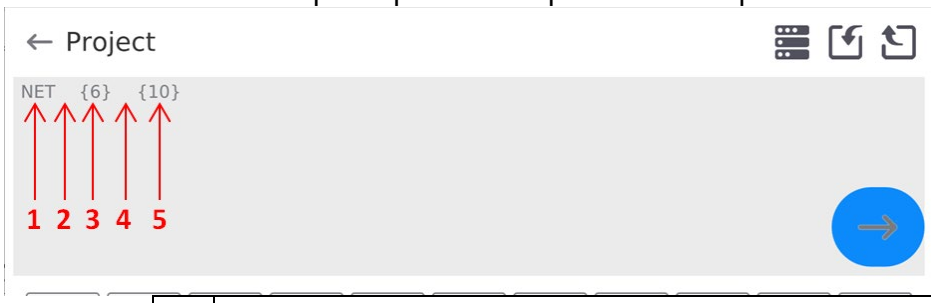
⚠	***The default value of the printer code page is 1250 – Central-European code page.***
⚠	***A detailed description of the communication between the mass comparator and receipt printer can be accessed in „ATTACHMENTS 03”. manual.***

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

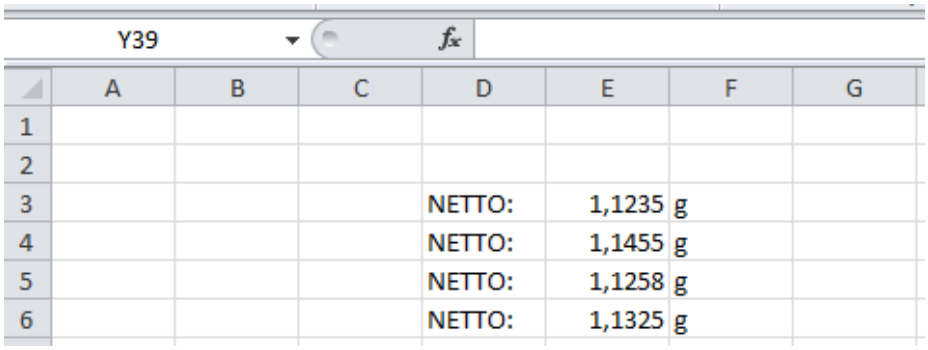


The tool used to enter data for peripherals that serve as keypads. Thanks to this, when you properly modify the standard or non-standard printout and send the suitable command from the computer or press the ENTER key on the keypad, the data in the non-standard printout will be directly entered from the mass comparator into such computer programs as Excel, Word, Notebook, etc.
To assure correct cooperation with Excel program, configure the non-standard printout by inserting printout formatting marks into the draft printout, for example Tab, Enter and diacritical marks typical of the language. Remember to set a correct decimal place mark (dot or comma) that will be accepted by our Excel program. It can be set in the following parameters: *Setup/Miscellaneous/Decimal separator.*

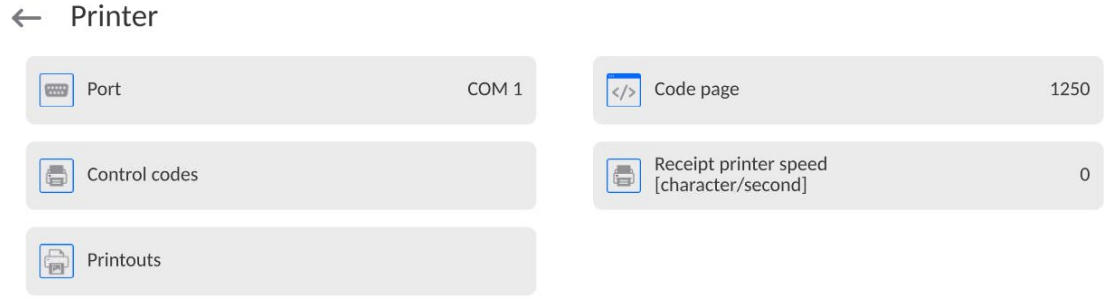
See below for the example of printout template and final printout in Excel:



1	fixed text
2	tabulator (jump to next column)
3	variable {6}, net mass in adjustment unit
4	tabulator (jump to next column)
5	variable {10}, mass unit



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



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

Default values for particular templates:

Product Printout Template:

{50}
{51}

Operator Printout Template:

{75}
{76}

Client Printout Template:

{85}
{86}

Warehouse Printout Template:

{130}
{131}

Packaging Printout Template:

{80}
{81}
{82}

Ambient Conditions Printout Template:

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

16.3. Barcode scanner

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

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

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

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

16.3.1. Barcode scanner port

Procedure:

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

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

- USB

16.3.2. Prefix / Suffix

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

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

Procedure:

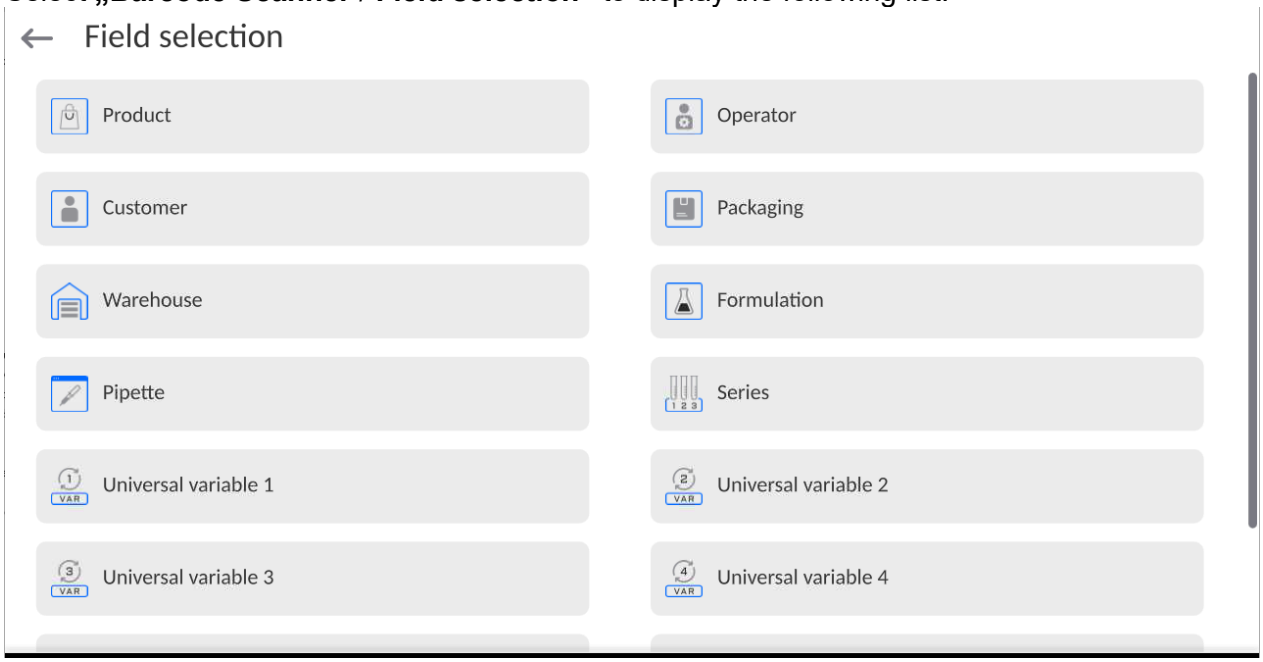
- Enter **<Barcode Scanner>** submenu,
- Enter **<Prefix>** parameter and use an on-screen keypad to enter the desired value (hexadecimally), and then press → key to confirm changes.
- Enter **<Suffix>** parameter and use an on-screen keypad to enter the desired value (hexadecimally) and then press →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

16.3.3. Field selection

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

Procedure:

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



- Enter the desired item to edit the following parameters:

Filtering	Declare the item which searching is to be based on (see table below)
Offset	Set the first significant code character which searching is to start from. All preceding characters are ignored
Code length	Set the number of code characters taken into account while searching
Start marker	Declare the starting point of the code to be taken into account while searching
End marker	Declare the ending point of the code to be taken into account while searching
Skip marker	Declare if code start and end markers are to be considered or ignored when comparing the code read with the code in the mass comparator.

The list of filtering items depending on the field selection:

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

16.3.4.Test

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

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

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

16.4. Environmental module

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

16.5. IM02 communication module

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

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

16.5.1. Activation of connection between IM02 and mass comparator

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

Status	Active connection status with the following values: Connected, Not connected.

Program version	IM02 communication module software version.
Manufacture version	IM02 communication module manufacture version.

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

17. INPUTS / OUTPUTS

Applies to the active IM02 communication module

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

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

17.1. Input configuration

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

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

17.2. Output configuration

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

Procedure:

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

None	Output is inactive
Stable	Stable weighing result above LO mass.
MIN stable	Stable weighing result below MIN threshold
MIN unstable	Unstable weighing result below MIN threshold
OK stable	Stable weighing result between MIN and MAX thresholds
OK unstable	Unstable weighing result between MIN and MAX thresholds
MAX stable	Stable weighing result above MAX threshold
MAX unstable	Unstable weighing result above MAX threshold
! OK stable	Stable weighing result out of OK threshold
! OK unstable	Unstable weighing result out of OK threshold
MIN	MIN threshold signalling
OK	OK threshold signalling
MAX	MAX threshold signalling
! OK	Out-of-OK threshold weighing result signalling
Zero	Zero weighing result (zero indicator).

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

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

18. MISCELLANEOUS

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

18.1. Interface language selection

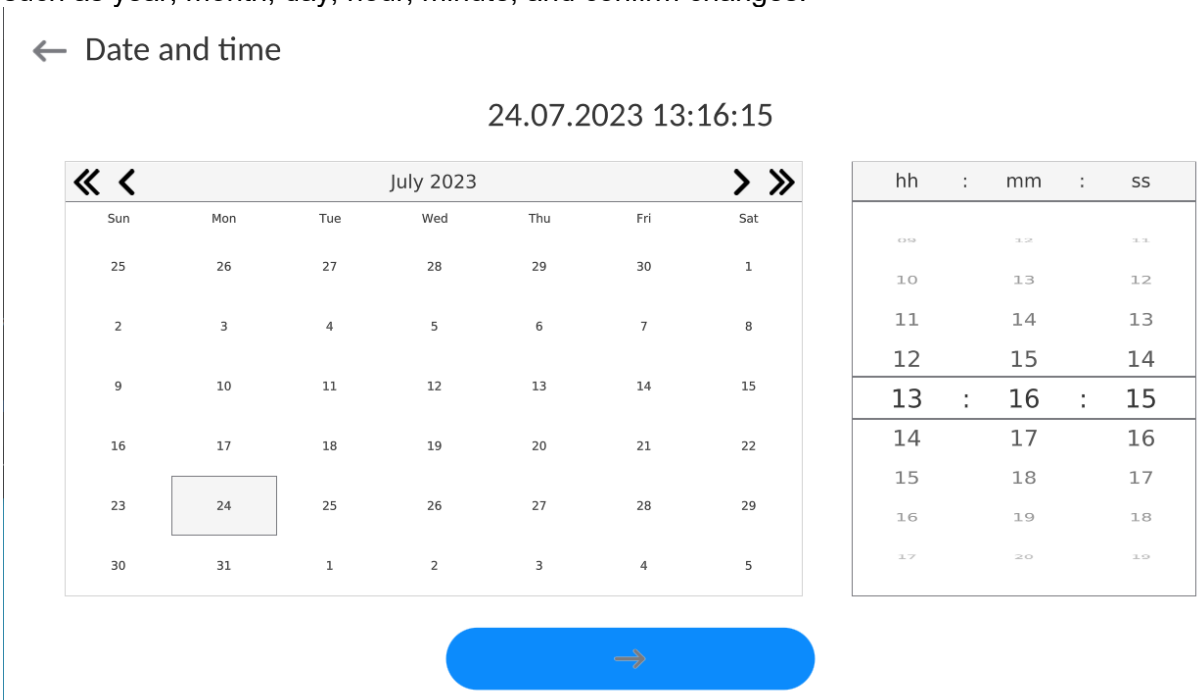
Procedure:
Enter <Miscellaneous> submenu, select <Language> item and choose the mass comparator communication interface language.
Available languages: Polish, English, German, French, Spanish, Korean, Turkish, Chinese, Italian, Czech, Romanian, Hungarian, Russian, Serbian.

18.2. Date and time setting

You can set the date and time as well as select the display format and data printout.
You can start editing the date and time in two ways:

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

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

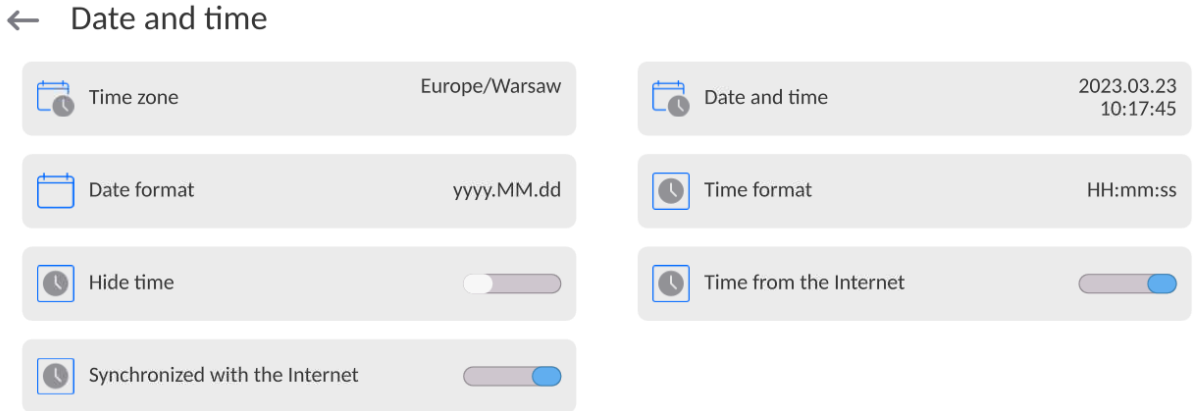


The submenu: **<Setup / Miscellaneous/ Date and Time>** contains additional functions used to define the date and time format:

Name	***Value***	***Description***
Time zone	Europe, Warsaw	This parameter shows: zone name/country. The specific name of the zone/country is associated with the information whether the winter time changes into summer time (and the other way round), and specific day of the year which the change takes place on.
Date and time	2016.04.04 08:00:00	Here you can set the date and time for the internal clock in the mass comparator

Date format	yyyy.MM.dd *	Date format selection. Available values: d.M.yy, d/M/yy, d.M.yyyy, dd.MM.yy, dd/MM/yy, dd-MM-yy, dd.MM.yyyy, dd/MM/yyyy, dd-MMM-yy, dd.MMM.yyyy, M/d/yy, M/d/yyyy, MM/dd/yy, MM/dd/yyyy, yy-M-dd, yy/MM/dd, yy-MM-dd, yyyy-M-dd, yyyy.MM.dd, yyyy-MM-dd.
Time format	HH:mm:ss **	Time format selection. Available values: H.mm.ss, H:mm:ss, H-mm-ss, HH.mm.ss, HH:mm:ss, HH-mm-ss, H.mm.ss tt, H:mm:ss tt, H-mm-ss tt, HH.mm.ss tt, HH:mm:ss tt, HH-mm-ss tt, h.mm.ss tt, h:mm:ss tt, h-mm-ss tt, hh.mm.ss tt, hh:mm:ss tt, hh-mm-ss tt
Hide time	No	Enable/disable date and time visibility in the home screen.
Internet time	Yes	If the mass comparator is connected to the Internet, this option allows you to update the time and date from the web.
Synchronised with Internet	Yes	This parameter informs you about whether time and date in the device have been synchronised with data from the Internet.

*) - For date format: y – year, M – month, d – day
**) - For time format: H – hour, m – minute, s – second
Preview of date and time with special regard to declared formats is visible in <Date and Time> field.



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

18.3. Extension module

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

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

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

18.4. Sound

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

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

18.5. Visual result approval

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

18.6. Screen saving

You can initiate the screensaving procedure.
To do so:
Press the Setup key and then: <Miscellaneous/Screensaving>.
When you start editing it, select of the values: [None; 1; 2; 3; 5; 10; 15]. Numerical values are set in minutes. When you click one of the values, you automatically select it and return to the previous menu.

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

18.7. Display brightness

The display brightness determines how long the mass comparator can operate on a battery.
If you wish to prolong the cycle between subsequent battery charging procedures as much as possible, lower the brightness.
To do so:
Press the Setup key and then: <Miscellaneous/Display brightness>.
When you start editing, enter the value in the following range: [0% - 100%]. Once you have entered the value, you instantly change the display brightness and return to the previous menu.

18.8. Vibration detection

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

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

Procedure:

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

18.9. Level control

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

Procedure:

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

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

18.10. Decimal point

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

Procedure:

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

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

18.11. Sensors sensitivity

In this parameter, you can choose the value from 0 to 9 to determine the distance at which sensors are going to react.
By default this value ranges from 5 to 7.

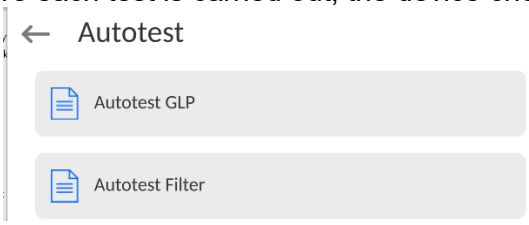
Procedure:

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

18.12. Autotest

<AUTOTEST> function has been created to support the operator in the process of assessing work and diagnosing causes of weighing errors, exceeding permissible values for this kind of mass comparator.
AUTOTEST can simply let you optimise mass comparator settings on a regular basis in order to obtain the best repeatability performance and weighing time in the specific working conditions. Thanks to this function, you can also check the above-stated parameters at any time, and archive completed tests.

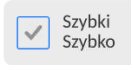
The function is divided into two modules:
AUTOTEST FILTER; AUTOTEST GLP.
Before each test is carried out, the device checks the levelling, temperature and humidity.



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

The entire test takes about 1 hour. Once it is finished, the results are displayed for all possible settings.
You are notified of optimal settings for a specific working conditions of the device.
This function proves very useful and allows you to assure top precision of weighing and the shortest weighing time at the acceptable repeatability value.
The results are remembered by the mass comparator until it is turned off.
This function allows printout via printers available in the system and quick selection of the most optimal settings directly in the options level.

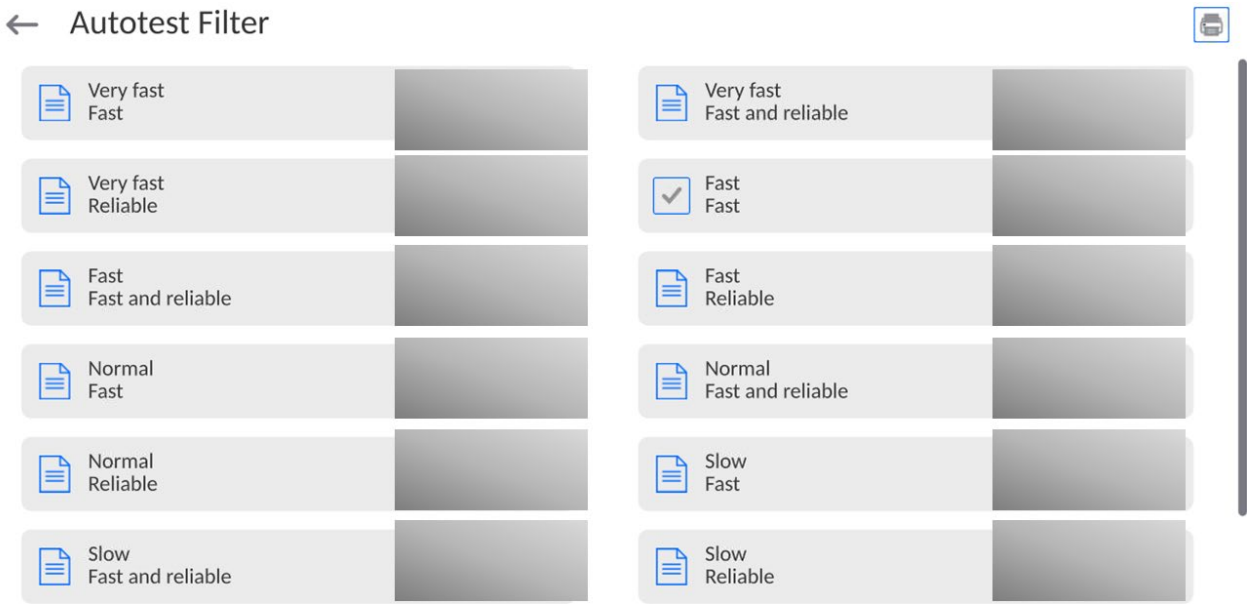
After the end of the autotest, the summary and results are displayed.
The program automatically selects filter settings by displaying a suitable icon by results:
- settings which the fastest measurement has been obtained for (shortest measuring time).
- settings which the most precise measurement has been obtained for (smallest deviation for 10 measurements)
- settings which the optimal measurement has been obtained for (the lowest product of time and deviation).



- current filter settings.

Measurement results:
*Filter type.
*Value of <Result approval> parameter.
*Value of indication repeatability expressed as standard deviation.
*Average result stabilisation time.

The example of the result window view below:



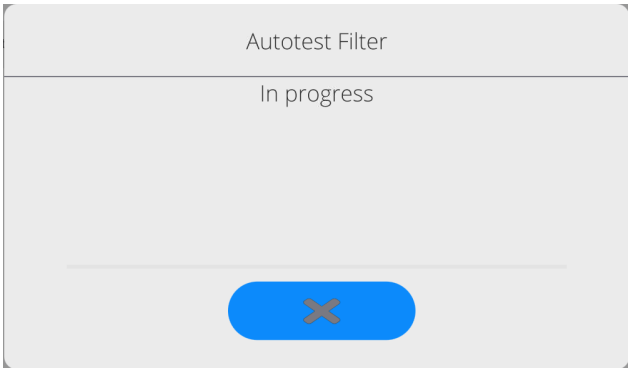
Example of the report:

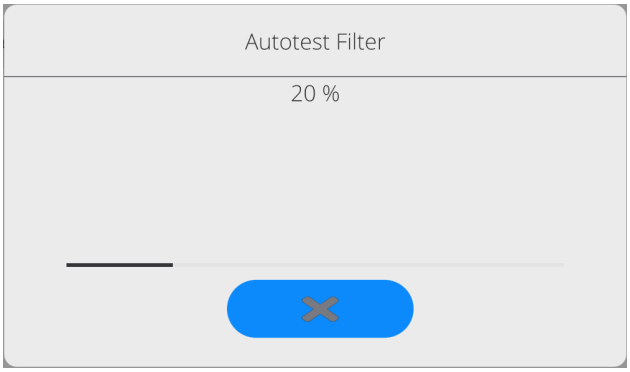
-------- Autotest Filter: Report --------
Device type XA 5Y
Device ID 442566
Operator Hubert
Application version NL1.6.5 S
Date 2015.05.07
Time 09:34:48
*---------- *
Reading unit 0.0001/0.0001 g
Internal weight mass 148.9390 g
Temperature: Start 25.26 °C
Temperature: Stop 25.66 °C
*---------- *
Filter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

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

Signature
.....

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





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

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

Procedure:

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

This function allows you to display and print the report using printers available in the system and to archive the report with basic data, information on ambient conditions and test results.
Test results:
*Deviation for the maximum load.
*Indication repeatability value expressed as a standard deviation.
*Door assessment (positive/negative) – if the device is equipped with the door opening mechanism.

Example of the report:

.....
--------- Autotest GLP: Report ---------
Device type XA 5Y
Device ID 400010
Operator Admin
Application version LLx.x S
Date 2021.01.16
Time 09:17:16

Number of measurements 10
Reading unit 0.0001 g
Internal weight mass 140.094 g
Filter Average
Result approval Fast and precise

Deviation for Max. -0.0118 g
Repeatability 0.00088 g
Signature
.....

Procedure:

Press the name field to display a dialogue box.
Here you can do the following:

- Initiate another AUTOTEST GLP.

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

You can terminate the procedure at any time by pressing <X> key in the box.
The autotest results are displayed in the form of a table (every line contains the autotest date and time as well as results).
To display the autotest data, press the table line with results.
To print single autotest results out, enter the results with all data on the autotest and generate the content printout by pressing <Printout> key in the top bar.
You can export the results by pressing the export field in the window with all saved autotests. The data will be sent to he external memory (pendrive stick) as a *.csv file.

18.13. Start-up logo

(Available only to the authorised operator).

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

18.14. Exporting system events

(Available only to the authorised operator).

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

Procedure:

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

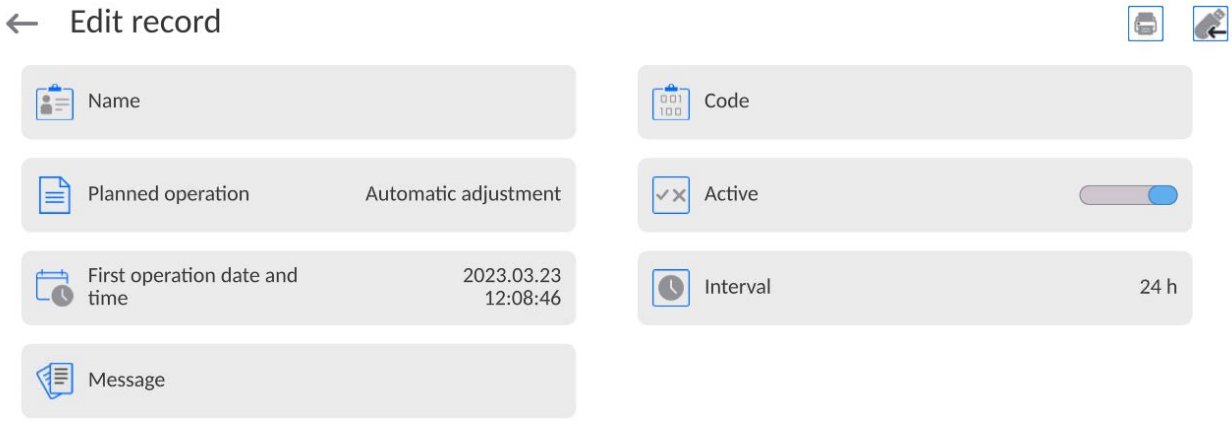
18.15. Text-to-speech conversion

This parameter allows you to activate conversion of names of particular groups and menu parameters into speed emitted from the measuring head speakers.
The voice is emitted in English only.

19. SCHEDULED TASKS

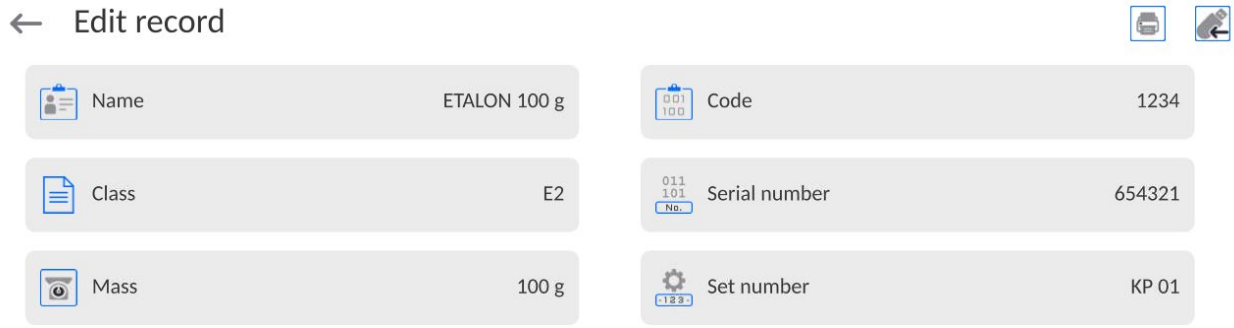
This menu contains settings that allow you to schedule systematically recurring tasks, such as mass comparator adjustment or special message display.

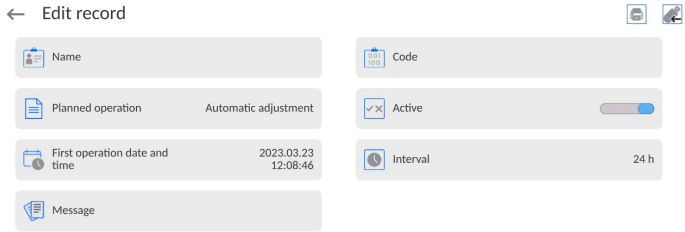
1.1. Adjustment

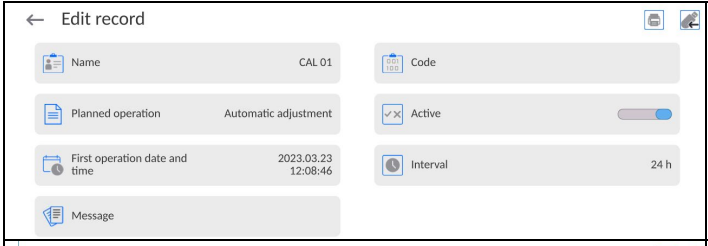
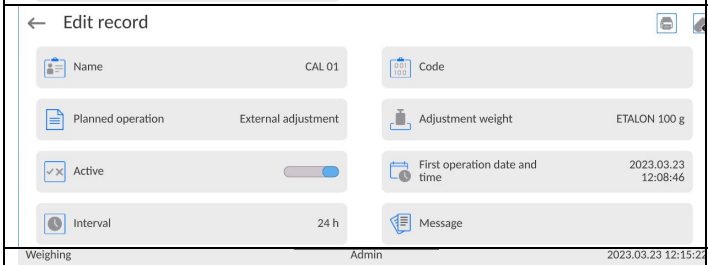
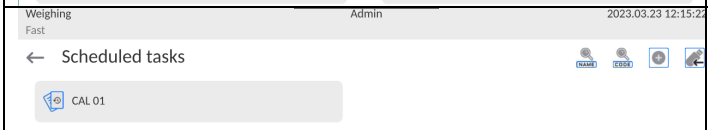


<Scheduled adjustments> parameter allows you to declare the exact time and interval applicable to calling the mass comparator adjustment. This option is independent of the automatic adjustment and calling criteria (time, temperature). You can schedule the internal and external adjustment. To make sure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

Setting:
Before you set the adjustment schedule, enter reference weights and their data for external adjustments.
To do so, enter the operator's menu, then <Adjustment> parameters group and find <Adjustment weights> parameter, and enter weight data:



	Enter the operator's menu, then <Scheduled tasks> parameters group. You will see a window in which the authorised operator (Administrator) will be allowed to add items with scheduled adjustments.
	To do so, click  key. A window with data on scheduled adjustment will pop up.
	Select the scheduled task: automatic (internal) or external adjustment.

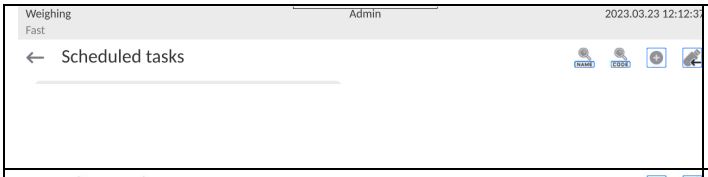
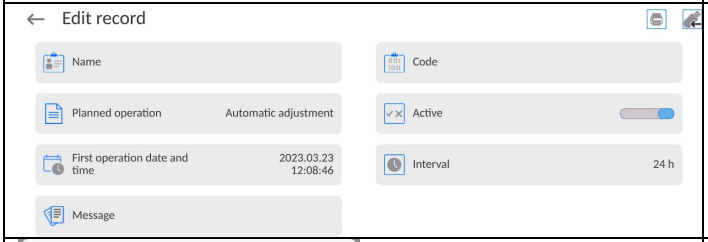
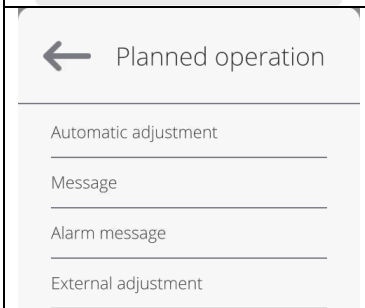
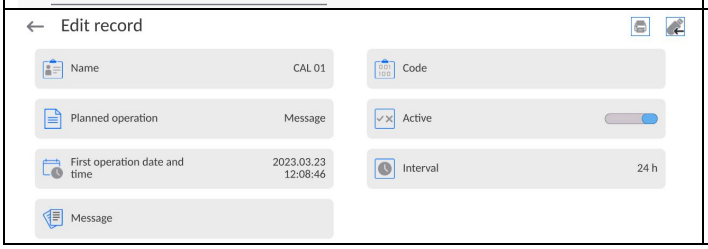
	If you have chosen the automatic adjustment, enter data on the adjustment and its schedule.
	If you have chosen the external adjustment, enter data on the adjustment, reference weight used to make the adjustment and its schedule.
	Once you have entered these data, return to the previous window. The item with scheduled adjustment will be added.

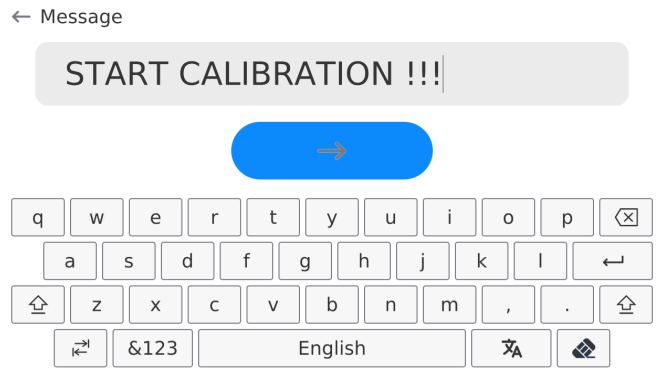
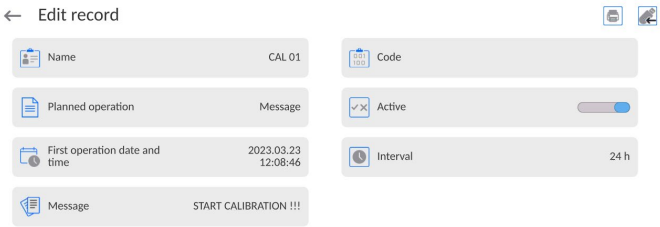
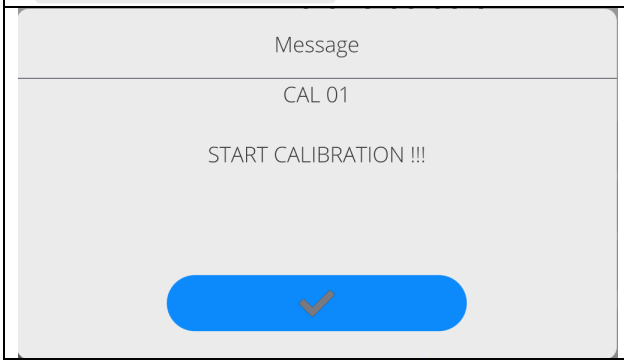
Leave the menu once all data have been entered.

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

1.2. Message

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

	Enter the operator's menu and go to <Scheduled tasks> submenu. To add a task, click <  > key in the top information bar.
	You will see a window in which you need to select <Scheduled tasks> field. The selection box will be displayed.
	Select <Message> item.
	The message settings box will be restored. Once you have set message display frequency items (first occurrence, interval), enter the content of <Message> parameter lb <Message with alarm>.

	After entering the content, press <→> key to confirm the entry.
	Now you will return to the previous window.
	In the submenu box, you will see a scheduled task field. Leave the menu to enter the home screen.
	After meeting the message display criteria (time), you will see the message box. Press <✓> key to save the screen and perform the scheduled task.

20. AMBIENT CONDITIONS

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

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

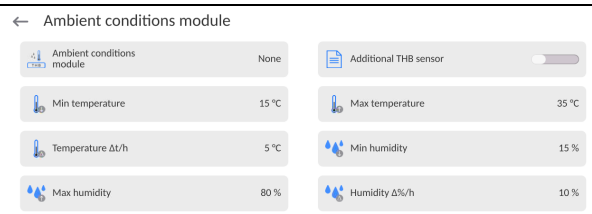
*The external sensor is delivered upon the client's special request.

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

- Conditions recording frequency
- Environmental module

Procedure

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

Enter <Conditions recording frequency> and specify the time interval for recording the ambient conditions. You can preview the ambient conditions record history. All records can be accessed in <Database> in <Ambient conditions> base.	
Enter <Environmental module> and assign it with ambient conditions parameters. <Environmental module> Thermo-Hygro-Barometer (THB) records 2 types of ambient conditions: • Temperature • Humidity	

Note*:*

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

21. UPDATE

The function enables updating:

- Area of an operator: APPLICATION.
- Metrological parameters: main board (only administrator).

Updating process takes place automatically by loading data from a USB flash drive connected to mass comparator's USB port.

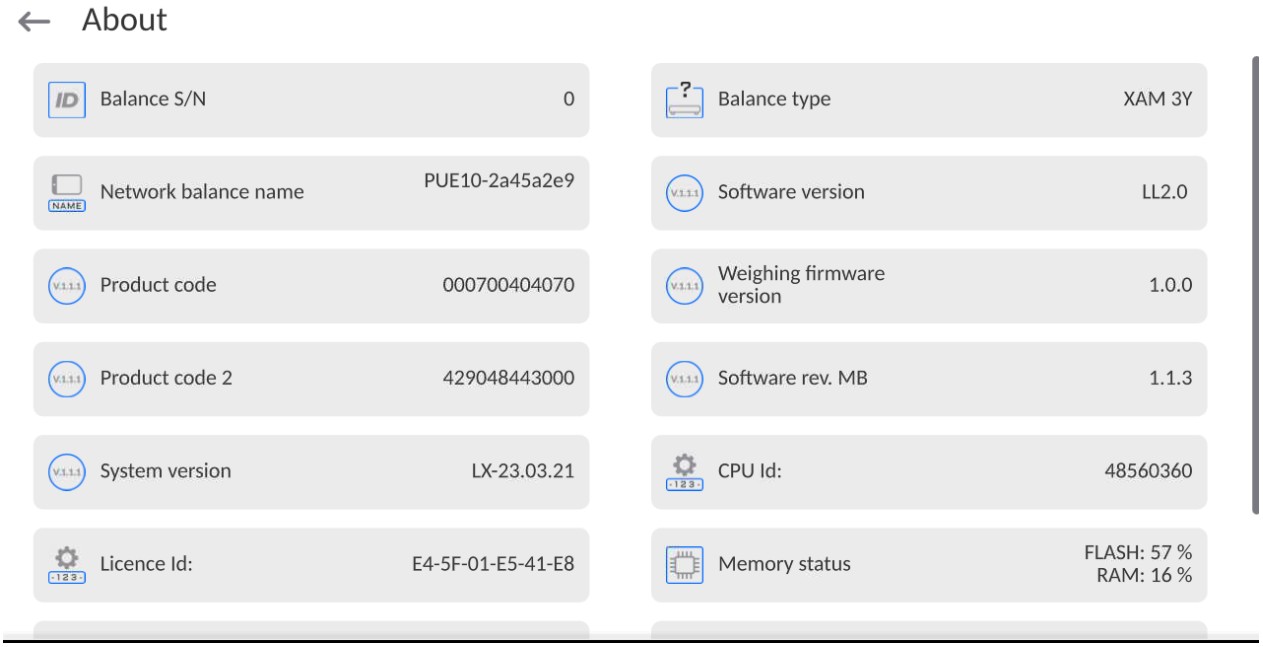
Procedure:

- Prepare a USB flash drive with update file. Required file extension: **.lab4.*
- Connect the USB flash drive to mass comparator's USB port.
- Log in as an Administrator
- Enter the balance menu, to do it press  key
- Select <Update> option,  .
- Select <Application> entry.
- The content of the USB flash drive is displayed, search for the update file, click the file.
- Balance restart proceeds, application update takes place automatically.
- Shall the restart fail, turn the balance off and on.

The process of updating the main board files takes places analogously to the above described procedure, but the required extension of the update file is: *.cm4mbu.

22. ABOUT (system info)

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



In <Ambient conditions> parameter, you can see available ambient conditions parameters: temperature, humidity, pressure (when the mass comparator is equipped with relevant sensors).
After selecting <Settings printout> parameter, the mass comparator settings (all parameters) will be sent to the printer.

23. COMMUNICATION PROTOCOL

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

23.1. Manual/automatic printout

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

- Manual printout: press  key when the value has stabilised.
- The automatic printout is generated automatically, as per settings, as in automatic printout (see point 12.5).
- The content of the printout depends on the settings for <Standard printout> - <Weighing printout template> (see point 12.5).

Mass printout format:

1	2	3	4 -12	13	14	15	16	17	18
Stability marker	space	character	mass	space	unit			CR	LF

Stability marker	[space] if stable [?] if unstable [!] if air buoyancy compensation function is enabled [^] if high limit is out of range [v] if low limit is out of range
Mark	[space] for positive values or [-] for negative values
Mass	9 characters with dot and right alignment
Unit	3 characters and left alignment

Example:

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

after pressing  key in <Weighing printout template> settings:

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

24. CONNECTION OF PERIPHERALS

5Y mass comparator can cooperate with the following devices:

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

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

25. ERROR MESSAGES

Max weighing threshold exceeded Unload the weighing pan
Min weighing threshold exceeded Install weighing pan
Zeroing out of range Press tarring button or restart the balance
Display capacity out of range Unload the weighing pan
Tarring out of range Press zeroing button or restart the balance
Start mass out of range Install weighing pan
Zeroing/tarring time out of range Weighing indication unstable

-no level- Balance not levelled
-Err 100- Weighing module restart
In process An ongoing process in the course of which the indication may be unstable (or mass comparator – the process of load change)

26. ADDITIONAL EQUIPMENT

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

Computer software:
„EDYTOR ETYKIET” software

RADWAG BALANCES AND SCALES
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