



radwag.com

Scan the QR code to view additional scientific material that may be of interest to you.
There you will find more useful information in an accessible format!

Operating manual









ITKU-128-04-10-24-EN

MWMH-Manager

Computer program

OCTOBER 2024

WARNINGS

	If you want to install the program on the computer with the older version of „MWMH-Manager“, you need to uninstall the older version.
	The manual complies with „MWMH Manager“ version 3.0.0.3 or newer.
	The manual complies with the MW-01-A mass converter software version 201201 MW-01 and newer.
	To make sure the program operates correctly, you need to have Microsoft .NET Framework 4.0 or newer.
	To make sure the program operates correctly, you need to have the operating system with the latest ServicePack updates provided by Microsoft.
	In view of program updates, insignificant discrepancies between this manual and facts cannot be excluded.
	RADWAG shall not be held responsible for effects of using the program and potential errors arising from misuse of the program.
	RADWAG shall not be held responsible for security and loss of data arising from misuse of the program or computer.

CONTENTS

1. INTENDED USE	6
2. „MWMH-Manager“ SOFTWARE INSTALLATION	6
2.1. Hardware requirements	6
2.2. Installation steps	6
3. MWMH-Manager STRUCTURE.....	8
3.1. Program activation	9
3.2. Parameter edition	10
3.3. Settings saving	10
4. CONNECTION SETTINGS	11
5. COOPERATION WITH STATISTICAL MODULE	13
5.1. Weighing window	13
5.2. Application settings	14
5.2.1. Language	14
5.2.2. Other.....	14
5.3. Parameters	14
5.3.1. User parameters.....	15
5.3.2. Communication settings.....	16
5.3.2.1. Ethernet	16
5.3.2.2. RS 232/485	17
5.3.2.3. Devices	17
5.3.2.4. Continuous transmission	19
5.3.3. In/Out functions	20
5.4. Features	22
5.4.1. Dosing	22
5.4.2. Checkweighing.....	29
5.4.2.1. LO Threshold	30
5.4.2.2. MIN/MAX Threshold	30
5.4.3. Input/Output status.....	30
5.5. Reports	31
5.5.1. Weighing base.....	31
5.6. Weighing.....	33
5.6.1. Use conditions.....	33
5.6.2. Balance calibration.....	34
5.6.3. Balance zeroing.....	35
5.6.4. Balance tarring	36
5.6.5. Weighing for multi-range balances	36
5.6.6. Weighing unit change.....	37
5.7. Weighing parameters	37
5.7.1. Autozero function	37
5.7.2. Automatic calibration	38
5.7.3. Internal calibration	38
5.7.4. External calibration.....	38
5.7.5. Determine start mass	39
5.7.6. Filter type.....	39
6. COOPERATION WITH DYNAMIC MODULE	40
6.1. Weighing window	40
6.2. Application settings	40
6.2.1. Language	40
6.2.2. Other.....	41
6.3. Parameters	41
6.3.1. User parameters.....	41
6.3.2. Communication settings.....	42
6.3.2.1. Ethernet	42
6.3.2.2. RS 232/485	43
6.3.2.3. Profinet	43
6.3.3. In/Out functions	44
6.3.4. Dynamic weighing parameters.....	47
6.3.4.1. Measurement.....	47
6.3.4.2. Calibration.....	48
6.3.4.3. Filters	50
6.3.4.4. Autozero.....	51

6.3.4.5. Other	52
6.4. Functions	52
6.4.1. Input/output status	52
6.5. Statistics	53
6.5.1. Chart	53
6.6. Weighing	56
6.6.1. Balance zeroing	56
6.6.2. Balance tarring	56
6.6.3. Weighing unit change	57
6.7. Weighing parameters	57
6.7.1. Autozero function	57

1. INTENDED USE

„**MWMH-Manager**” is a computer program operating in the MS Windows, designed for using and configuring parameters of **HRP** platforms as well as **MWSH**, **MWMH**, **MWLH** magnetolectric weighing modules in variants for static and dynamic balances. The program can automatically detect the module it deals with.

In the program, it is possible to read mass, tare, zero, set weighing filters, calibrate, set communication parameters, simulate operation of digital inputs and outputs.

„**MWMH-Manager**” allows communication with modules using RS232, RS485 and TCP/IP.

2. „MWMH-Manager” SOFTWARE INSTALLATION

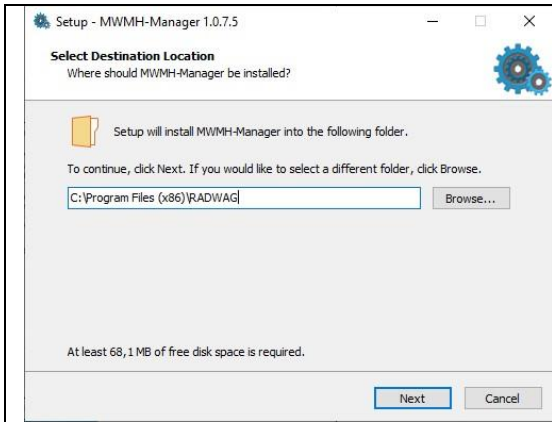
2.1. Hardware requirements

The following are required for correct operation of the program:

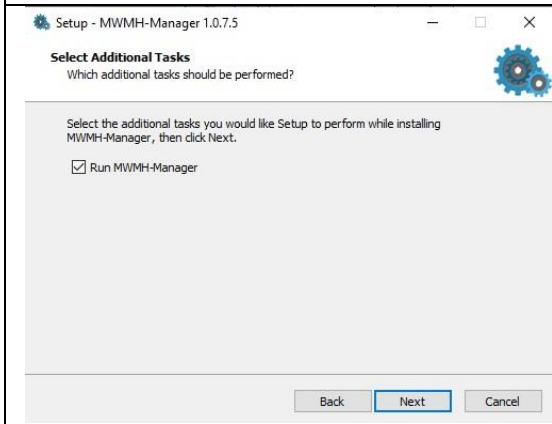
- The computer working in the Windows 10/11 operating system.
- Processor 2,4 GHz or faster.
- Operating memory of 512 MB or more (recommended at least 1GB).
- At least 1 GB of free disk space.
- Display unit with a resolution of at least 800x600 px.

2.2. Installation steps

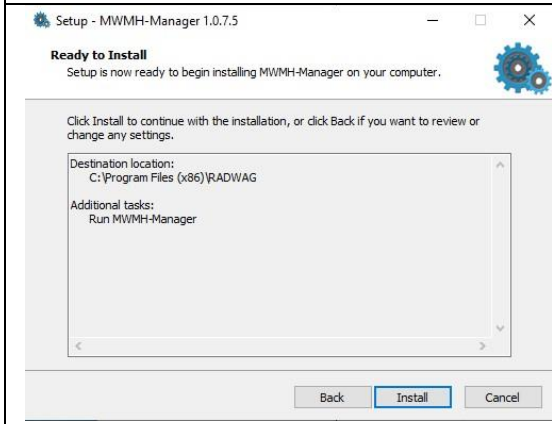
	<p>After obtaining the installation version, run MWMH-Manager x.x.x.x.exe, select the language and press <OK> to confirm your choice.</p>
---	---





In the installation path selection box, select the location (do not change the path by default) and press „**Next**” key.



In the task selection box, select/unselect the item and press „**Next**” key.



In the ready to install box, press „**Install**” key.

	<p>In the installation end box, press „Finish” key.</p>
	<p>The program shortcut will be created in the desktop.</p>



3. MWMH-Manager STRUCTURE

Using „**MWMH-Manager**”, you can change working parameters of HRP platforms and **MWSH, MWMH, MWLH** magnetolectric weighing modules.

To navigate in the menu of „**MWMH-Manager**”, use a mouse and PC keyboard, or alternatively a finger in case of the active touch interface (cooperation of MW-04 mass converter with PUE 5.15, PUE 5.19 weighing meters).

All temporary parameters (not saved in the mass converter memory) are displayed in red. To confirm entered parameter values, press **<ENTER>** key in the PC keyboard.

Key functions:

 Refresh	<p>Parameters structure readout. If there are no unsaved changes, the following message will be displayed for parameter structure readout: <Readout has been successful>. If there are unsaved changes, the following caution will be displayed for parameter structure readout: <Unsaved changes will be lost. Are you sure you want to continue?> (where: <Yes> - parameter structure readout with loss of unsaved changes; <No> - return to program menu).</p>
 Save	<p>Parameter values changes saving. Press the key and you will see the following message: <Save parameters?> (where: <Yes> - parameters will be saved and the message will be displayed: <Changes have been saved>; <No> - return to program menu).</p>



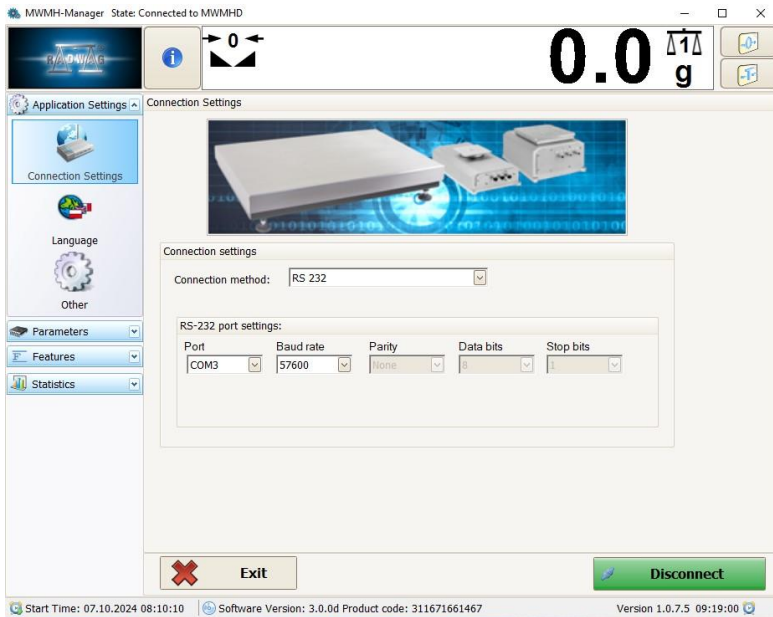
The manual complies with „MWMH-Manager” from version 1.0.6.5 and weighing module program from version 3.1.8. In older programs of the weighing module, some of the functions displayed in the computer program may not be supported.

3.1. Program activation


To run the program, use the following:

- shortcut in the desktop,
- menu START/PROGRAMS/RADWAG/MWMH-Manager, systemWindows.

After running the program, the main window of the program will be displayed.



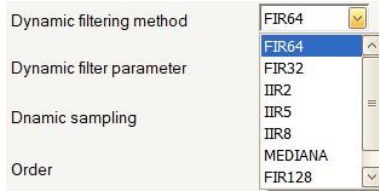
Main window of the program


To check the current version of your program, click  icon.

3.2. Parameter edition

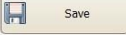
The method of editing parameters depends on the type of the program.

- Press  key to select the desired item from the list.



- Click  parameter box and then enter the value using the keypad.

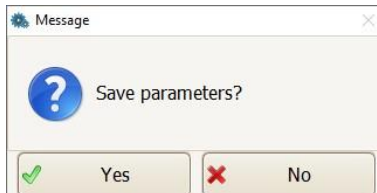
3.3. Settings saving

All changes are saved in the weighing module after you have pressed  key. All temporary parameters that have not been permanently saved in the module are displayed in red.

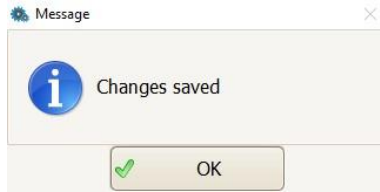


Procedure:


- Press  key.
- Press **<YES>** item in the dialogue box.




- The following message will confirm that changes have been saved:

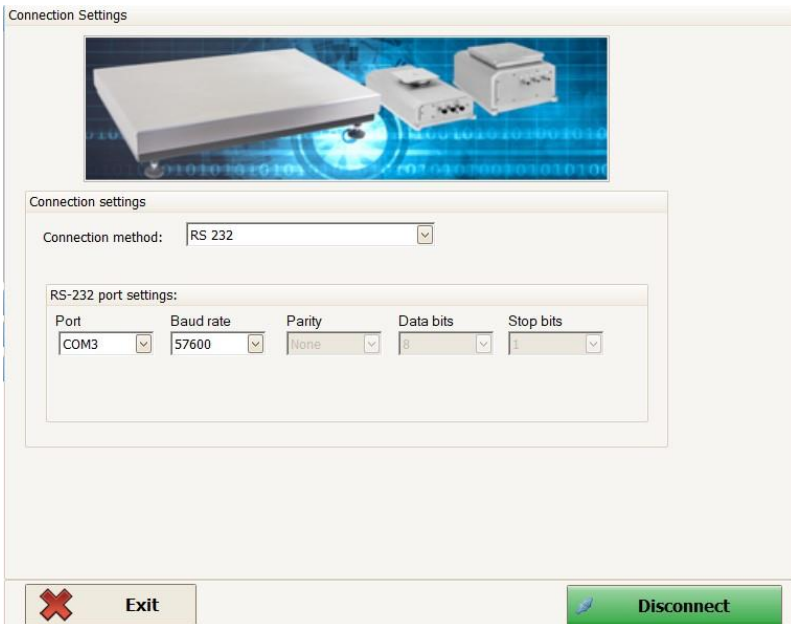


- Press **<OK>**.
- The changes have been introduced into the permanent memory of the weighing module.

If settings have been changed but not saved, you can read current settings using  Refresh key.




4. CONNECTION SETTINGS

In  Application Settings tab, press **<Connection settings>** key to activate the connection to weighing module settings.



Connection settings box

Where:

	The program is deactivated. Press the key to see the message: <Deactivate application?> (where: <Yes> - program is deactivated; <No> - return to the program menu).
	Connection to the module. After connecting, the key changes its function into <Disconnect> and turns green.
	Disconnection from the module. In case communication is terminated, the key changes its function into <Connect> and turns red.

How to establish connection:

- In **<Connection settings / Device selection>** tab, select the desired device.
- In **<Connection method settings>** tab, select the method of connection: RS232, TCP/IP*, RS485, Offline.
- Set transmission parameters for the specific port:

*) – does not apply to the MW-02 mass converter.

RS232

Port	The number of the port which the module is physically connected to.
Speed	Transmission rate. By default - 57600 bit/s .
Parity	Parity status. Default value – none (non-editable value).
Data bits	Number of data bits. By default – 8 bits (non-editable value).
Stop bits	Number of stop bits. By default – 1 stop bit (non-editable value).

TCP/IP

IP address	IP address of the device. By default - 192.168.0.2 .
Port	The port set in the device. By default - 4001 .



RS485

Port	The number of the port which the module is physically connected to.
Speed	Transmission rate. By default - 57600 bit/s .
Parity	Parity status. Default value – none (non-editable value).
Data bits	Number of data bits. By default – 8 bits (non-editable value).
Stop bits	Number of stop bits. By default – 1 stop bit (non-editable value).
Address	The mass converter address in the network. By default - 1 .

Offline

The **Offline** mode allows you to activate specific program options when the module is not directly connected. This method of connection in the program has been created to save and edit all required parameters in the configuration file. How to save parameter configuration into the file has been described in greater detail further in the manual.

- Press **<Connect>** key.
- After the end of the connection procedure, the mass value will be displayed in the weighing box and **<Connect>** key will switch into **<Disconnect>** and will turn green.

	<p><i>In case of unsuccessful connection, the following message will be displayed: <Attempt to connect to the device has failed>. Confirm the message by pressing <OK> key. Check cables and transmission parameters settings, and try again.</i></p>
	<p><i>In case of termination of the active connection of the mass converter to the computer program, the following message will be displayed: <Connection to the device has been terminated>, (where: <Close application> - computer program exit; <Reconnect> - another attempt to connect; <Show connection variants> - return to <Connection settings> box).</i></p>





5. COOPERATION WITH STATISTICAL MODULE

5.1. Weighing window





Program weighing window view


Once the start-up procedure in the weighing window has ended, the following symbols will be displayed:

	<p>Zero indication.</p>
	<p>Measurement result is stable.</p>
	<p>Weighing unit.</p>
	<p>Weighing platform number.</p>

Key functions:

	Zeroing
	Tarring

5.2. Application settings

The  Application Settings tab contains settings for the method of connecting to the mass converter (see point 4 in the manual), interface language selection and other program options.

5.2.1. Language


In  Application Settings tab, **<Language>** key activates the language selection box.




Language selection box

Press **<Apply>** key to confirm selection of the language. In this version of the program, the following languages are available: German, English, Polish.

5.2.2. Other

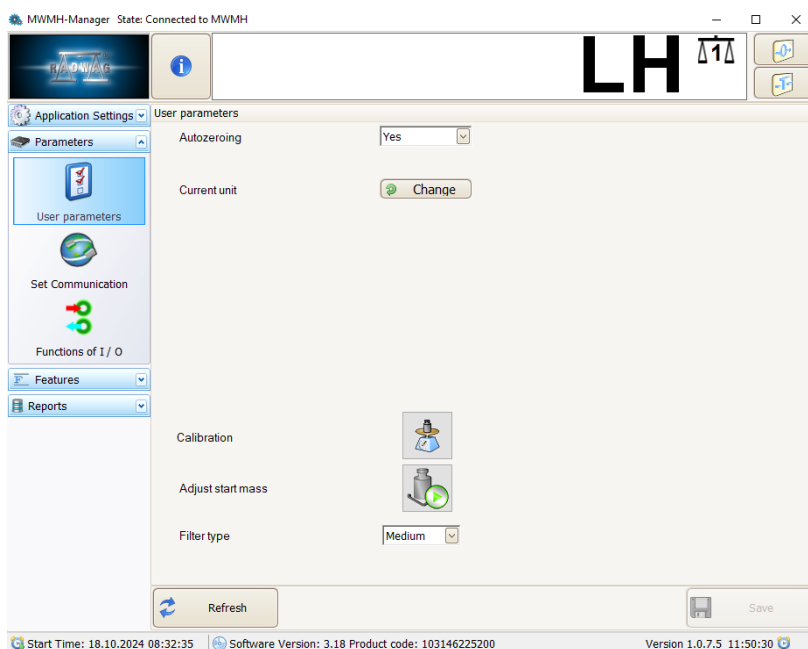
In  Application Settings tab, **<Other>** key activates other program options. After selecting **<Attempt to connect during application start-up>**, the program, when activated, instantly connects to the weighing module, as per the default or latest method of connection. After setting the option, press **<Save>** key in order to save changes.

5.3. Parameters

The  Parameters tab contains weighing parameters available for the operator, weighing module communication parameters, output/input functions together with their status preview, and checkweighing and dosing function simulation.

5.3.1. User parameters

In **Parameters** tab, **<User parameters>** key activates the weighing module operator parameters window. These parameters are visible for a currently selected (active) platform and may be edited by every program user.





User parameters box


Where:

<p>Autozeroing</p>	<p>The automatic control and zero indication correction function. There are however special cases in which this function hinders measuring. The example is a very slow positioning of the load on the weighing pan (e.g. pouring the load in). This being the case, it is advisable to disable the function. Available values: No – function disabled, Yes – function enabled.</p>
<p>Current unit</p>	<p>The change of a weighing unit of the currently selected platform by pressing <Change> key. Available options:</p> <ul style="list-style-type: none"> • When <kg> is the main unit, the operator can select the following units: [kg, lb, oz, ct, N, g]. For verified balances, [lb, oz, N] are unavailable. • When [g] is the main unit, the operator can select the following units: [g, kg, lb, oz, ct, N]. For verified balances, [lb, oz, N] are unavailable.
<p>Automatic calibration</p>	<p>Activation/deactivation of automatic calibration.</p>
<p>Internal calibration</p>	<p>Execution of internal calibration.</p>

External calibration	Execution of the platform calibration using the external standard with a mass saved in factory settings.
Determine start mass *	Determination of a new start mass value by the operator (see point 5.6 of the manual).
Filter	Adaptation of the balance to ambient conditions. The faster the filtering, the longer the weighing result stabilisation time. Available values: None – median filter disabled, Very fast , Fast , Medium , Slow .

	<i>„Internal calibration” and „Automatic calibration” will be invisible if the platform or module is devoid of the internal calibration mechanism.</i>
	<i>„External calibration” and „Determine start mass” are not available to verified modules and platforms.</i>

5.3.2. Communication settings

In  Parameters tab, **<Communication>** key is used to open the weighing module communication parameters box. These parameters are visible and editable for every operator who has established communication with the weighing module.

5.3.2.1. Ethernet



Communication



Ethernet | RS 232/485 | Devices | Continuous transmission

IP Address

Subnet Mask

Default Gateway

Port  

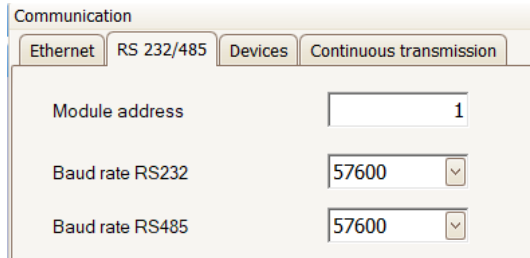
Timeout   [s]

<Ethernet> port communication parameters

Where:

IP address	The device IP address, by default - 192.168.0.2
Subnet mask	Ethernet subnet mask, by default - 255.255.255.0
Default gateway	Ethernet default gateway, by default - 192.168.0.1
Port	TCP communication port, by default - 4001 .
Timeout	Inactivity time which when expired causes the device to terminate connection in seconds, range from 0 to 300 [s].

5.3.2.2. RS 232/485



<RS 232/485> port communication parameters

Where:

Module address	The weighing module address in the RS485 network (a different address is set in the network for each device). By default – 1. The range from 1 to 254.
RS232 speed	Here you can set the RS232 communication interface transmission rate. By default - 57600 bit/s .
RS485 speed	Here you can set the RS485 communication interface transmission rate. By default - 57600 bit/s .

5.3.2.3. Devices

The **<Devices>** item in communication parameters allows you to select the communication protocol and configure external connection parameters. The operator can configure such devices as Profinet, Modbus RTU over TCP and Modbus TCP, defining required network settings for each protocol.

- **Profinet**

Communication

Ethernet RS 232/485 Devices Continuous transmission

Communication protocol: Profinet

IP Address: 192.168.0.3

Subnet Mask: 255.255.255.0

NetName: PROFINET

Default Gateway: 192.168.0.1

<Profinet> communication parameters

Where:

IP address	The IP address of the balance in the Profinet network may be configured by the operator, depending on the network.
Subnet mask	The subnet mask for the balance in the Profinet network usually complies with the Profinet network configuration.
NetName	The module name in the Profinet network. 20 characters at the most. Used to identify the device in the network.
Default gateway	The default gateway in the Profinet network. It allows communication outside the local subnetwork, if required.

- **Modbus RTU over TCP**

Communication

Ethernet RS 232/485 Devices Continuous transmission

Communication protocol: ModBus RTU over TCP Port: 502

ModBus Offset: 0

<ModBus RTU over TCP> communication parameters

Where:

Port	TCP port number, by default - 502, used for Modbus communication.
Modbus Offset	Setting the offset as part of Modbus data transmission allows offsetting the readouts or savings in relation to the default value. It allows adjusting transmitted data to requirements of the specific configuration.

- **Modbus TCP**

The screenshot shows a 'Communication' configuration window with four tabs: 'Ethernet', 'RS 232/485', 'Devices', and 'Continuous transmission'. The 'Continuous transmission' tab is active. Below the tabs, there are three fields: 'Communication protocol' is a dropdown menu with 'ModBus TCP' selected; 'Port' is a text box containing '502'; and 'ModBus Offset' is a text box containing '0'.

<ModBus TCP> communication parameters

Where:

Port	Similar to Modbus RTU over TCP, a port number which allows communication, with a default port – 502.
Modbus Offset	Setting the offset as part of Modbus data transmission allows offsetting the readouts or savings in relation to the default value. It allows adjusting transmitted data to requirements of the specific configuration.

5.3.2.4. Continuous transmission



The **<Continuous transmission>** item in application communication parameters allows configuration of automatic data transmission from the balance at regular time intervals. This option is used when it is necessary to regularly monitor the weighing values and send them to the external system in real time.

The screenshot shows the 'Communication' configuration window with the 'Continuous transmission' tab selected. Below the tabs, there is an 'Activation' checkbox which is currently unchecked. Below that is an 'Interval' label followed by a spin box containing the value '100'.

Communication parameters for continuous transmission


Where:

Activation	If you select this option, you enable the continuous data transmission function. When activated, the application will send measurement results automatically, with no need to initiate the transmission manually.
Interval	In this parameter, you can specify the time interval in milliseconds (ms) at which data are sent to the recipient. The operator can set a suitable interval by adjusting the data transmission frequency to the application needs or recipient's device.

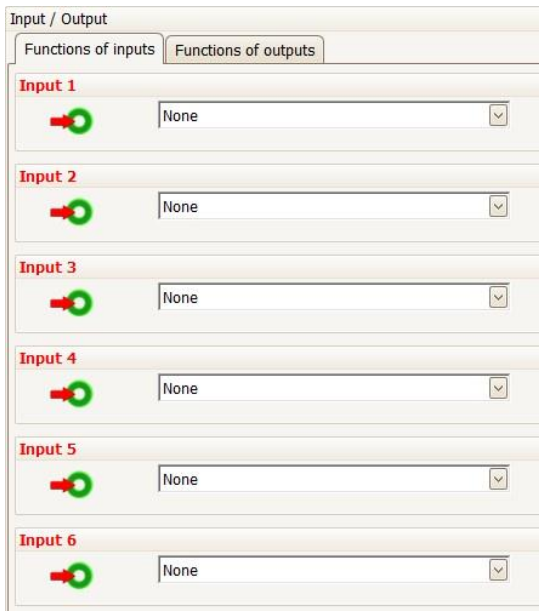
	<p><i>After changing communication parameters, you save changes and restart the weighing module power to make the changes effective</i></p>
	<p><i>Please remember that new parameters must be entered in the weighing module connection settings box</i></p>

5.3.3. In/Out functions

Depending on their version, HRP platforms and magnetoelectric weighing modules are equipped with inputs and outputs that may be assigned specific functions.

In  Parameters tab, **<In/Out functions>** item activates the settings box in which the operator may configure input and output functions of the weighing module.

Input configuration:

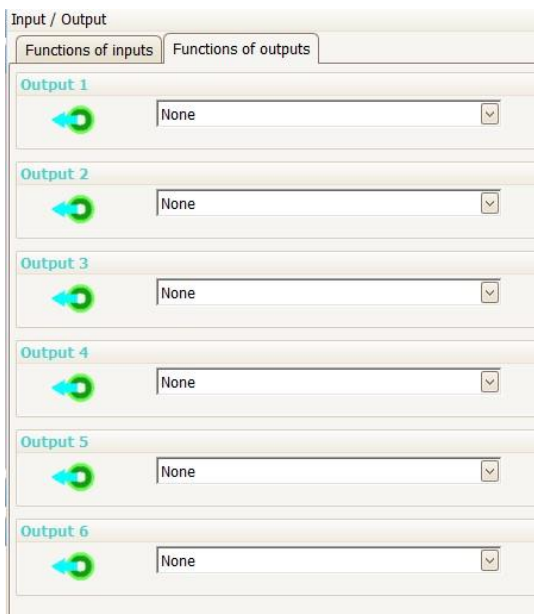


The screenshot displays the 'Input / Output' configuration window. At the top, there are two tabs: 'Functions of inputs' (selected) and 'Functions of outputs'. Below the tabs, there are six rows, each representing an input channel. Each row is labeled 'Input 1' through 'Input 6' in red text. To the left of each label is a red arrow icon pointing to a green circle. To the right of each icon is a dropdown menu with 'None' selected.

Input configuration box

None	Inactive input.
Tarring	Platform tarring.
Zeroing	Platform zeroing.
Dosing start	Dosing start.
Dosing stop	Dosing stop.
Start permission	Permission for dosing START.
Suspension	Suspension of dosing.
Pouring permission	Permission for pouring start.


Output configuration:




Output configuration box

None	Inactive output.
Stable	Stable weighing result above LO mass, on specific platform.
MIN stable	Stable weighing result above LO mass and below MIN threshold, on specific platform.
MIN	Unstable weighing result above LO mass and below MIN threshold, on specific platform.
OK stable	Stable weighing result between MIN, MAX thresholds, on specific platform.


OK	Unstable weighing result between MIN, MAX thresholds, on specific platform.
MAX stable	Stable weighing result above MAX threshold, on specific platform.
MAX	Unstable weighing result above MAX threshold, on specific platform.
Pour	Weighed product is poured, active until the mass drops below LO threshold.
Cycle end	Information on end of dosing cycle, impulse 0,5s.
Zero	Stable weighing result – zero net
Min or Max	Unstable weighing result below MIN threshold and above MAX threshold.
Min or Max stable	Stable weighing result below MIN threshold and above MAX threshold.

	<p><i>If you set a function for a specific output, and at the same time a dosing function is set on the same output, then during the initiation and execution of the dosing procedure, the outputs will be activated according to the dosing parameter settings. The end of the dosing procedure will cause the set functions to switch into outputs.</i></p>
---	--

5.4. Features

The  Features tab contains dosing, checkweighing functions as well as status and digital input/output simulations.

5.4.1. Dosing

In  Features tab, **<Dosing>** key is used to open the dosing settings box for a currently selected platform in the weighing window.

Dosing allows precise measurement of the load in relation to the preset value. This procedure is executed by the balance that uses digital outputs for controlling external devices responsible for providing such elements as valves and feeders.

Magnetolectric weighing modules and HRP platforms offer two methods of dosing: „**Standard**” and „**With flow control**”. Both of these types allow two dosing modes: „**Mass growth**”, when the product is supplied onto the platform and „**Mass loss**” when the product is weighed from the platform. It is also possible to tare the container or packaging positioned on the platform before the dosing procedure after setting the „**Tarring**” parameter.

- **Dosing type**

There are two feeder working modes that can be used. They are defined in „**Dosing method**” parameter. Further dosing parameters are displayed, depending on the specific type.

Dosing method	Standard – One- or two-phase dosing for preset thresholds. With flow control – Dosing for preset threshold with flow measurement.
Dosing mode	Mass loss – dosing from vessel or tank in the balance. Mass growth – dosing into vessel or tank in the balance.
Tarring	Activation/deactivation of automatic tarring before dosing.

- **Standard Dosage**

Based on this method, dosing may be one-phased with the use of one or several active outputs, from initiation of the procedure until the preset mass value is reached. It is also possible to adopt two-phased dosing (fast/slow) with entered switch point. This being the case, when the switch point value is reached (end of fast dosing), the dosing outputs switch into the ones responsible for slow dosing for preset mass.

Switch point	Output No
<input type="text" value="0,1"/> [g]	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Preset mass	Output No
<input type="text" value="140"/> [g]	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4

Dosing parameter settings box

Description of fields:

Switch point	Output no.
Mass value at which the first phase of dosing is finished. (Shift into the second dosing phase. Enter „0” to activate one-phase dosage).	Selection of the number of output or several outputs, active during the first dosing phase until the switch point is reached (Fast dosage).

Set mass	Output no.
Mass value at which the dosing procedure is finished.	Selection of the number of output or several outputs, active during the second dosing phase (Slow dosage) or active throughout the dosage procedure for one-phase dosage.

Threshold correction	<input type="text" value="0, [g]"/>	<input checked="" type="checkbox"/> Auto	Auto correction	<input type="text" value="0,000 [g]"/>
Correction limit +/-	<input type="text" value="0, [g]"/>			
Number of cycles averaging	<input type="text" value="10"/>			

Dosing parameter settings box

Threshold correction	The permanent correction value, added or subtracted to/from the preset mass.
Auto	If you select this option, you enable the automatic dosage correction function together with parameters described below.
Auto correction	Displayed value of dosing correction calculated by the balance.
Correction limit +/-	Limit for the value of correction calculated by the balance, expressed in reading units of the balance.
Number of averaging cycles	The number of dosing cycles used to calculate the average correction value. To enable the automatic correction function, set the value from 1 to 10.

The **<Switch point>** parameter means the net mass value below which one or several outputs responsible for fast dosage is/are active. When this threshold is exceeded, dosing enters the stage of precise dosing to preset mass.

<Preset mass> parameter is a net mass value that the dosing procedure aims to. Below this value, one or several outputs assigned to this phase of the procedure is/are active. With regard to one-phase dosing, these outputs will become active upon initiation of dosing. As for two-phase dosing (Fast/slow with entered „**Switch point**“ value), the outputs will become active when the value specified in the switch point has been exceeded. After reaching the preset mass, the dosing procedure is finished. The outputs assigned to this phase of the procedure are deactivated.

If you activate **<Auto>** parameter, you enable the automatic dosing correction function as determined by the balance throughout subsequent procedures. After enabling this option, the balance aims to obtain the lowest dosing error on its own. The parameters responsible for operation of this function are the following:

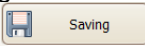
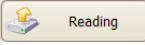
The **<Auto correction>** field displays the current value of dosing correction, calculated by the balance.

The **<Correction limit>** parameter serves as the mass value entered by the operator and simultaneously is the maximum value that the balance may accept while determining the dosing correction.

The **<Number of averaging cycles>** parameter represents the number of subsequent dosing cycles used to average the value of automatic correction established by the balance.

The dosing procedure may consist of one or two phases (fast/slow), depending on needs.

Procedure:

- Click **<Preset mass>** or **<Switch point>** parameter box.
- Enter the value.
- Save changes made into the permanent memory of the module by pressing  key.
- The changes will be confirmed through the following message: **<Changes saved>**.
- If you make any changes to threshold values but fail to save them, you can read current settings using  key.
- The readout will be confirming through the following message: **<Readout has been successful>**.

- **Dosage with flow control**

It is the operating algorithm in which the flow is measured during dosage, which allows precise measurement of the preset mass. This procedure is performed in two stages. At the first stage, the product is dosed as per percent amount (preset mass) specified in the dosing percent parameter. Once this value has been reached, the dosing procedure stops, measurement stabilises and flow is calculated. The second stage is concerned with reactivation of dosing for the time (calculated on the basis of the flow) required to reach the preset mass. At both stages, the dosing procedure is based on the same balance output.

Preset mass	Output No
<input type="text" value="140"/> [g]	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Taring	Dosing percent
<input type="text" value="No"/> ▼	<input type="text" value="0"/> [%]
Threshold correction	Minimum flow
<input type="text" value="0,"/> [g] <input type="checkbox"/> Auto	<input type="text" value="0,"/> [g/s]
	Insensitivity threshold
	<input type="text" value="1,555441E-4"/> [%]
	Extra dosing time
	<input type="text" value="5"/> [ms]

Dosing parameter settings with flow control box

Preset mass	The value of mass to be dosed.
Output no.	Selection of the number of output or several outputs, active during dosage.
Threshold correction	The value of correction expressed in reading units, considered when dosing is below the minimum flow.
Dosing percent	Mass threshold [%] up to which automatic dosing is executed.
Minimum flow	The value of minimum flow in the balance reading unit for initiation of dosing algorithm with flow control.
Insensitivity threshold	Permissible error \pm in [%] of dosed mass.
Extra dosing time	Time correction \pm in [ms] of output during the dosage procedure.

The **<Preset mass>** parameter is a net mass value that is to be reached in the dosing procedure. Below this value one or several outputs assigned to the procedure is/are active.

The **<Dosing percent>** parameter is a percent value of the preset mass at which the first phase of dosing ends. The product mass that is measured in this phase is used to calculate the flow and time of activation of dosing output in the second phase.

The **<Minimum flow>** parameter is a minimum flow value that is required to initiate the flow control algorithm. If the flow is below this value, dosing is default.

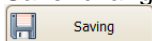
The **<Insensitivity threshold>** parameter is a permissible dosing error \pm in [%] of set mass.

The **<Extra dosing time>** parameter is a time correction \pm in [ms] of output operation during the dosing procedure. It allows shortening or extending the time of operation and therefore correct the dosing result. To shorten the operation time, you need to make sure the numerical value is preceded by a minus sign.

The **<Threshold correction>** parameter is a correction \pm expressed in reading units in relation to the preset mass. This correction is considered when dosing is below the minimum flow. To make sure the entered value lowers the mass of the dosed product, the value must be preceded by a minus sign.

Procedure:

- Click the **<Preset mass>** box or other parameter box.
- Enter the value.
- Save changes to the permanent memory of the module by pressing

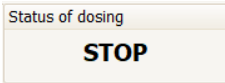


key.

- The changes will be confirmed through the following message: **<Changes saved>**.

- **Dosing status**

The dosing status box informs you about current dosing procedure on the specific platform in the weighing window.



Description:

Dosing status	DOSING – dosing is going on ABORTED – dosing is aborted after the dosing stop key is pressed. STOP – dosing is stopped, DONE – dosing is done.
----------------------	---

- **Input simulation**

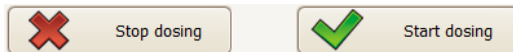
The input simulation allows simulating the operation of the function assigned to specific input.



Keys for simulation of functions assigned to inputs 1-5

- **Dosing simulation**

At the bottom of the window are start and stop dosing keys. Regardless of functions assigned to outputs, these keys allow starting and stopping the dosage procedure.



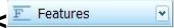
5.4.2. Checkweighing

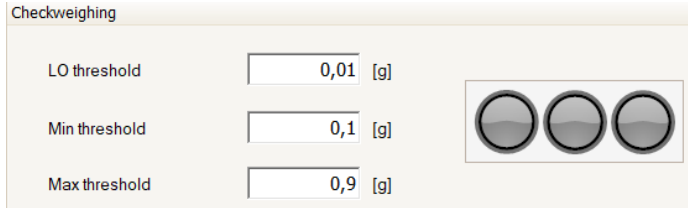
Checkweighing as a function allows entering checkweighing threshold values (**Min**, **Max**). LO – sample mass too low, HI – sample mass too high, OK – sample mass correct.

Such a solution allows quick assessment of the test sample mass with no need to supervise the weighing result on a continuous basis. Threshold values are showed through light signals or external device unit control.



Status range for checkweighing functions figure

The checkweighing settings box is available in  / **Checkweighing** submenu.



Checkweighing function box

Description of fields:

Lo threshold	The net mass value above which the checkweighing function is active.
Min threshold	- Below Min Threshold value, MIN threshold is signalled.
Max threshold	- Between Min Threshold – Max Threshold values, OK threshold is signalled.
	- Above Max Threshold value, MAX threshold is signalled.

Function signalling in thresholds:



MIN



OK

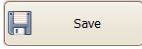


MAX

	The checkweighing signalling in the program is available after you set functions for outputs.
---	--

5.4.2.1. LO Threshold

- Click **<LO Threshold>** parameter box.
- Enter the **LO threshold** value.
- Save changes in the permanent memory of the module by pressing



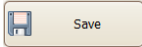
key.

5.4.2.2. MIN/MAX Threshold

Output signalling is activated above the preset value of the net LO THRESHOLD.


Procedure:

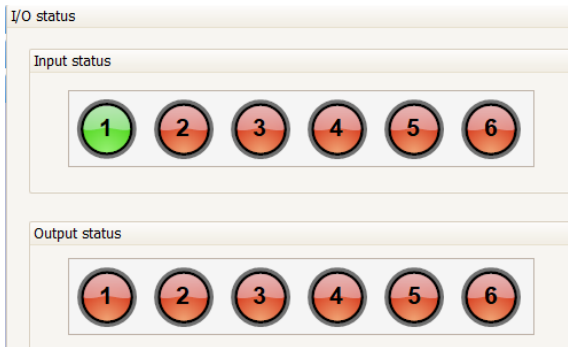
- Click **<Min Threshold>** or **<Max Threshold>** parameter box.
- Enter the threshold value.
- Save changes into the permanent memory of the module by pressing



key.



5.4.3. Input/Output status

After activating  item and pressing **<I/O status>** item, the input status signalling and test output status setting box is displayed.



Input/output status box


Input/output numbers in the program comply with the numbers in the module.

	Active input/output.
	Inactive input/output.

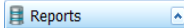
The output simulation is feasible after pressing the number of the output that is instantly activated, provided that no function has been assigned to this output.

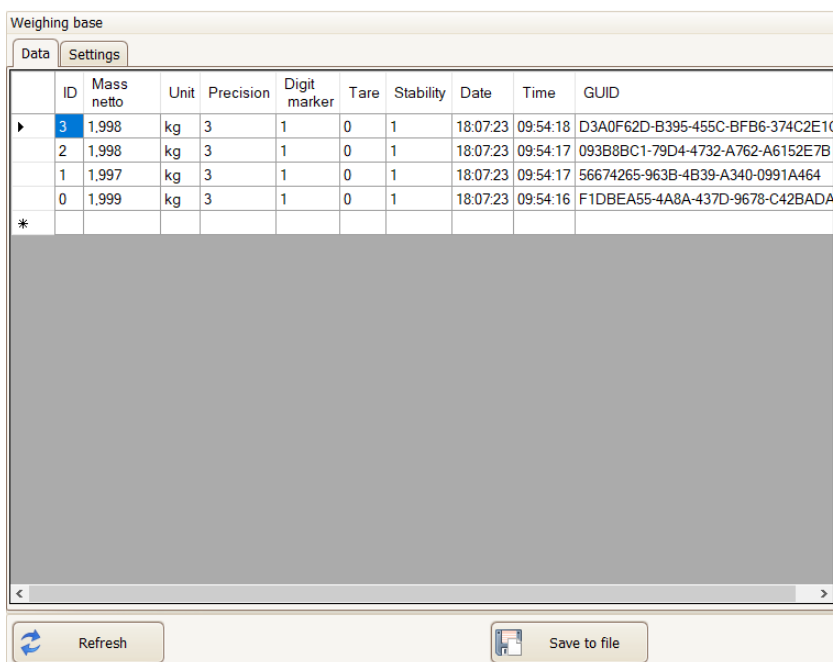
The output simulation is available in the dosage window.

5.5. Reports

In  tab, the weighing result display settings can be found.

5.5.1. Weighing base

In  tab, **<Weighing base>** key opens the weighing result box in the form of a table. The table allows managing and browsing weighing data. It gives an access to saved records and allows exporting them to the file. The interface of this tab has been divided into two parts: **<Data>** and **<Settings>**.



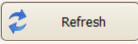
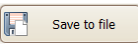
	ID	Mass netto	Unit	Precision	Digit marker	Tare	Stability	Date	Time	GUID
▶	3	1.998	kg	3	1	0	1	18:07:23	09:54:18	D3A0F62D-B395-455C-BFB6-374C2E10
	2	1.998	kg	3	1	0	1	18:07:23	09:54:17	093B8BC1-79D4-4732-A762-A6152E7B
	1	1.997	kg	3	1	0	1	18:07:23	09:54:17	56674265-963B-4B39-A340-0991A464
	0	1.999	kg	3	1	0	1	18:07:23	09:54:16	F1DBEA55-4A8A-437D-9678-C42BADA
*										

Refresh Save to file

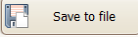
Weighing table preview box

The „Data” tab shows information on weighing records saved in the module database. It is possible to display detailed data and exporting them to the file using the <Save to file> key. This is how the operator can save weighing records in his device for further review.

Keys:

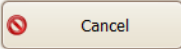
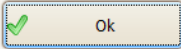
 Refresh	It is used to update data displayed in the Weighing Base box. When it is used, the program reloads and displays the latest data saved in the base.
 Save to file	It allows exporting collected weighing data to file. After pressing this key, the operator can save data in the specific file format in his device.

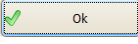
Procedure:

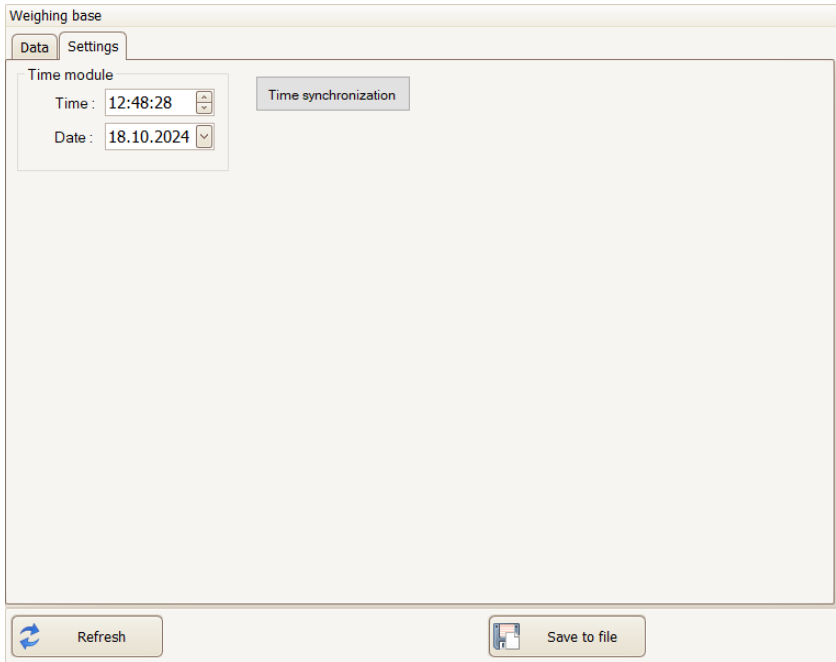
- Click  key.
- A dialogue box will be displayed. In the box, specify the range of data (as per date or indices).

Export data

<input checked="" type="checkbox"/> Date	Data from:	18.07.2023	Data to:	18.07.2023
<input checked="" type="checkbox"/> Index	Index from:	0	Index to:	3

- Click  key to continue.
- The Windows system window will show up and there you need to select the save location, file name and its extension.
- Click <Save> key to save the file on the PC hard drive.



Time settings box

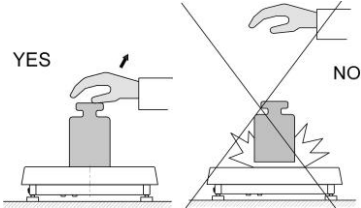
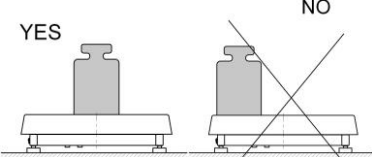
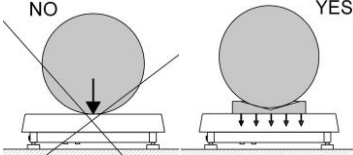
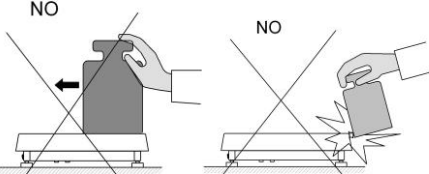
The „**Settings**” tab is used to synchronise the module time. It lets you manually set the current time and date as well as allows automatic synchronisation through the **<Time synchronisation>** key. This option is essential to ensure compliance of the module systemic time with the real time, as this is crucial for correct recording of weighing results in the database.

5.6. Weighing

Place a load on the weighing pan. When a marker is displayed, you can read the weighing result.

5.6.1. Use conditions

In order to assure a long-lasting use and correct load mass measurements, do as follows:

<p>Be gentle and avoid shocks while loading the weighing pan.</p>	
<p>Place loads in the centre of the weighing pan (non-centric weighing errors are specified in the PN-EN 45501 point 3.6.2).</p>	
<p>Do not use concentrated force to load the weighing pan.</p>	
<p>Avoid side loading of the balance, especially side strokes.</p>	

5.6.2. Balance calibration

To make sure weighing is highly accurate, it is necessary to enter the correcting factor into the balance memory in reference to the mass standard on a periodical basis; it is the so-called balance calibration.

- Calibration must be performed when you start the weighing procedure, after a long break between series of measurements, or when the step change of ambient temperature has occurred.
- Calibration must be performed when there is no load on the weighing pan and in case of stable working conditions (no blows and vibrations).

If any of these conditions is not met, the error message will be displayed. This being the case, remove the load from the weighing pan or eliminate other disturbing factors, and then repeat the calibration procedure.

Until the end of calibration, it is forbidden to take any actions on the balance, except for calibration steps specified by the program. With respect to balances equipped with an internal weight, the calibration may involve the use of this weight or external weight. The balances that are devoid of the internal weight may be calibrated using the external weight only.

	<i>Verified balances do not allow calibration with the external weight.</i>
---	--

There are three calibration modes available in the **<Parameters>** menu in the **<User parameters>** tab:

- calibration with external weight.
- automatic internal calibration initiated by the balance.
- manual internal calibration initiated by the operator.

If the balance triggers the automatic calibration procedure, it is possible to defer or abort it. If you do so, the balance will return to the weighing mode, showing the previously weighing result, and after about 3 minutes will display the message on initiation of automatic calibration. The calibration procedure may be deferred many times but you must consider the fact that repeatable delay may lead to increased weighing errors.


5.6.3. Balance zeroing

In order to zero the mass value in the currently selected platform, you need to go to „**MWMH-Manager**” weighing box (in the top right corner) and press





key or call the zeroing function defined for the specific output.


The screen will show the zero mass value and the following symbols: **+0+** and **▲▼**. Zeroing is tantamount to determination of a new zero point that the balance treats as precise zero. Zeroing is possible only when the mass value is stable.

	<i>It is possible to zero the displayed value only up to $\pm 2\%$ of the maximum loading capacity of the balance. If the zeroed value is higher than $\pm 2\%$ of the maximum loading capacity, the screen will show <Err2> message.</i>
---	--

5.6.4. Balance tarring


To determine the net mass in the currently selected platform, place the load packaging and, when the value is stable, press  key to call the tarring function defined for the specific output. The screen will show the zero mass value and the following symbols: **Net** and . The balance has now been tarred.

Using the tarring function, make sure you do not exceed the maximum measuring range. After removing the load and packaging, the screen will show the value that is a total of tarred masses with a minus sign.

	<p><i>It is not possible to perform the tarring procedure when the balance screen shows a negative mass value or zero mass value. If it does, the <Err3> message will be displayed.</i></p>
---	--


5.6.5. Weighing for multi-range balances

Weighing in the **I range** turns into weighing in the **II range** automatically, with no operator's intervention (after Max in the **I range** is exceeded).

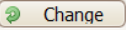
Weighing in the **II range** is signalled by the balance via  marker in the top left corner of the screen. After removing the load, the balance returns to zero. Weighing precision corresponds to **II range** until it has returned to zero.

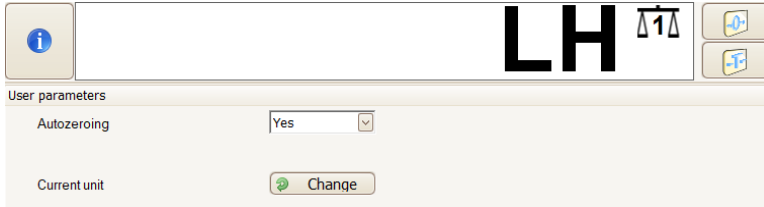


Weighing window in the second range

Weighing returns from the **II range** to **I range** automatically after removing the load from the weighing pan and when the balance enters the AUTOZERO zone – it is accompanied by the  sign. At this time the second range symbol will be disabled and the balance will return to the weighing in **I range**.

5.6.6. Weighing unit change

To change the weighing unit in the currently selected platform, you need to go to the weighing window of „MWMH-Manager” and press  key in the user parameters.



Box with modified current unit

Options:

- When the main unit is [g], the operator may choose the following units: [g, kg, lb, oz, ct, N]. *For verified balances, [lb, oz, N] are unavailable.*

5.7. Weighing parameters

The operator may adjust the operation of the balance to external ambient conditions (filter degree) or own needs (autozero). These parameters can be accessed in the **<Parameters/User parameters>** tab.


The list of parameters:

- Autozeroing.
- Automatic calibration.
- Internal calibration.
- Determine calibration factor.
- Determine start mass.
- Filter type.

5.7.1. Autozero function

In order to assure precise balance indications, the „AUTOZERO” function has been implemented. The purpose of this function is automatic control and correction of the zero value.

When the function is active, further results are compared at regular time intervals.

If these results differ by the value that is lower than the declared range of AUTOZERO, e.g. 1 reading unit, the balance will reset instantly, and stable result marker –  and zero value – $\rightarrow 0 \leftarrow$ will be displayed.

When the AUTOZERO function is enabled, every measurement starts with exact zero. There are however situations in which this function hinders measurements. The example of such a situation may be very slow placement of the load on the weighing pan (e.g. pouring the load in). If this is the case, the zero correction system may correct values of the real load mass.

Procedure:

- Enter **<User parameters>** box.
- Select one of the **<Autozeroing>** options (**Yes** - autozero enabled, **No** – autozero disabled).

5.7.2. Automatic calibration

In this parameter, you need to decide if the internal calibration (using the internal built-in weight) is to be performed automatically by the program when conditions triggering this procedure occur, that is a change of temperature by 3°C, time countdown (3h) from the previous calibration, and supply of power (for verified balances).

Procedure:

- Enter **<User parameters>** box.
- Select one of the **<Automatic calibration>** options: (**Yes** – automatic calibration enabled, **No** – automatic calibration disabled).

5.7.3. Internal calibration

This function calls the calibration with the internal weight that is built into the balance.


Procedure:

- Enter **<User parameters>** box.
- In **<Internal calibration>** item, press **<Calibrate>** key.

5.7.4. External calibration

This function calls the calibration with the external mass standard whose value is declared in the factory parameters.

Procedure:


- Enter <User parameters> box.
- In <External calibration> item, press  key.

	<i>The „External calibration” function is not available to verified modules and platforms.</i>
---	---

5.7.5. Determine start mass

HRP platforms and magnetoelectric weighing modules allow the operator to determine the zero point of the balance. This option is adopted in case of using an additional conveyor or container that permanently loads the balance. Determination of the start mass with additional load does not lead to reduction of the measuring range. By default this procedure is feasible in the range of $\pm 10\%$ of the maximum loading capacity of the balance.

Procedure:


- Enter <User parameters> box.
- In <Determine start mass> item, select  key.
- Follow the messages displayed in the screen.

	<i>The „Determine start mass” function is not available to verified modules and platforms.</i>
---	---


5.7.6. Filter type

The task of the moving average filter is to adapt the balance to external ambient conditions.

Procedure:

- Enter <User parameters> box.
- Select <Filter type> parameter and press  key.
- Select the desired setting from the list.

Available values: fast, medium, slow.

	<i>The higher the filtering degree, the longer the weighing result stabilisation.</i>
---	--

6. COOPERATION WITH DYNAMIC MODULE

6.1. Weighing window



Weighing window view

Once the start-up procedure has ended, the weighing window will display the following symbols:

	Zero indication.
	Measurement result is stable.
	Weighing unit.
	Weighing platform number.

Key functions:

	Zeroing
	Tarring

6.2. Application settings

In Application Settings tab, you can set the method of connecting to the mass converter (see point 4 of the manual), select the interface language and other program options.

6.2.1. Language

In Application Settings tab, the **<Language>** key opens the language selection box.



Language selection box

Confirm selection of the language by pressing **<Apply>**. The following languages are available in the current version of the program: German, English, Polish.


6.2.2. Other

In  Application Settings tab, the **<Other>** key activates other program options.

After selecting the **<Attempt to connect during application start-up>** item, the activated program will connect to the weighing module instantly, as per the default or previously selected connection method.

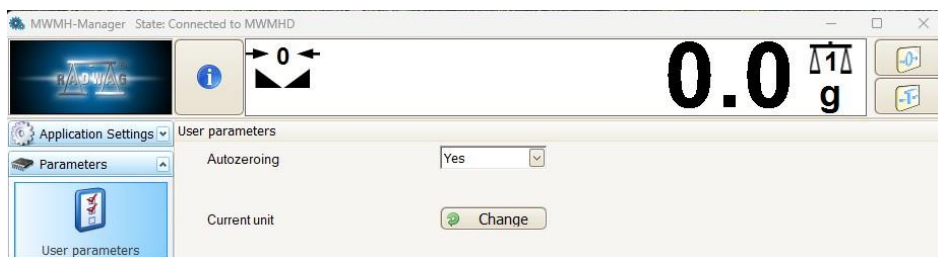
After setting the item, press **<Save>** key to save changes.

6.3. Parameters

In  Parameters tab, it is possible to access balance parameters available to the operator, weighing module communication parameters, input/output functions with their status preview, as well as dynamic weighing parameters.

6.3.1. User parameters

In  Parameters tab, the **<User parameters>** key is used to open the weighing module operator parameters box. These parameters are visible to the currently selected (active) platform and may be edited by any program operator.



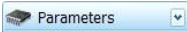
User parameters box

Where:

Autozeroing	This function refers to automatic control and correction of zero value. There are however special situations in which this function hinders measurements. The example may be very slow placement of the load on the weighing pan (e.g. pouring the load in). If this is the case, it is advisable to disable the function. Available values: No – function disabled, Yes – function enabled.
--------------------	--

Current unit	<p>Here you can change the weighing unit of the currently selected platform by pressing the <Change> key. Options:</p> <ul style="list-style-type: none"> • When the main unit is [kg], the operator can choose one of the following units: [kg, lb, oz, ct, N, g]. For verified balances, [lb, oz, N] are unavailable. • When the main unit is [g], the operator can choose one of the following units: [g, kg, lb, oz, ct, N]. For verified balances, [lb, oz, N] are unavailable.
---------------------	---

6.3.2. Communication settings

In  tab, the **<Communication>** key is used to open the weighing module communication parameters box. These parameters are visible and can be edited by any program operator who has established communication with the weighing module.

6.3.2.1. Ethernet

The screenshot shows a 'Communication' dialog box with three tabs: 'Ethernet', 'RS 232/485', and 'Profinet'. The 'Ethernet' tab is active. It contains the following fields:

- IP Address: 192.168.0.2
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.0.1
- Port: 4001 (with up/down arrows)
- Timeout: 60 [s] (with up/down arrows)

<Ethernet> port communication parameters

Where:

IP address	Device IP address, by default - 192.168.0.2
Subnet mask	Ethernet subnet mask, by default - 255.255.255.0
Default gateway	Ethernet default gateway, by default - 192.168.0.1
Port	TCP communication port, by default - 4001 .
Timeout	Inactivity time after which the device terminates the connection in seconds, rang from 0 to 300 [s].

6.3.2.2. RS 232/485

<RS 232/485> port communication parameters

Where:



Module address	The weighing module address in the RS485 network (a different address is set in the network for each device). By default – 1. Range from 1 to 254.
RS232 speed	Here you can set the RS232 communication interface transmission rate. By default - 57600 bit/s .
RS485 speed	Here you can set the RS485 communication interface transmission rate. By default - 57600 bit/s .

6.3.2.3. Profinet

<Profinet> port communication parameters


Where:

IP address	The balance IP address in the Profinet network, may be configured by the operator, depending on the network.
Subnet mask	The subnet mask for the balance in the Profinet network, usually complies with the Profinet network configuration.
NetName	The module name in the Profinet network. 20 characters at the most. Used to identify the device in the network.
Default gateway	The default gateway in the Profinet network. It allows communication outside the local subnet, if necessary.
Activation	Activation/deactivation of the Profinet communication in the balance. Logical value that specifies if the device is active in the Profinet network.
Start/Stop	The parameter that controls the Profinet connection status, used to initiate or suspend communication, as per needs.

	<i>After changing communication parameters, you need to save changes and restart the weighing module power to make changes effective.</i>
	<i>Remember that new parameters must be entered in the weighing module connection settings box.</i>

6.3.3. In/Out functions

Depending on their version, HRP platforms and magnetolectric weighing modules are equipped with inputs and outputs that may be assigned specific functions.


In  tab, the **<In/Out functions>** key is used to open the settings box in which the program operator gains access and is allowed to configure weighing module input and output functions.

Input configuration:


Input / Output

Functions of inputs Functions of outputs


Input 1

 None


Input 2

 None


Input 3

 None


Input 4

 None

Input 5

 None

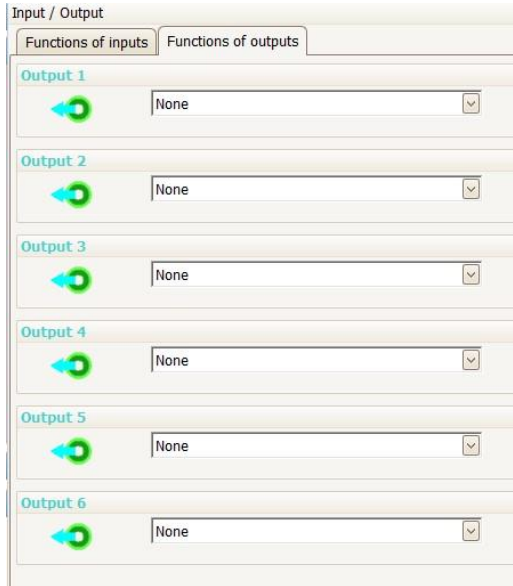
Input 6

 None

Input configuration box


None	Inactive input.
Tarring	Platform tarring.
Zeroing	Platform zeroing.
Dosing start	Dosing start.
Dosing stop	Dosing stop.

Output configuration:




Output configuration box

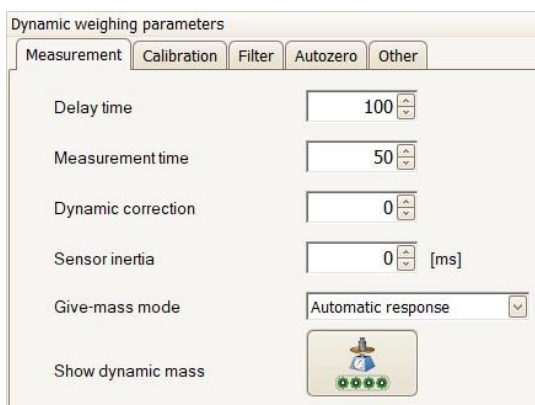
None	Inactive output.
Stable	Stable weighing result above LO mass, on specific platform.
MIN stable	Stable weighing result above LO mass and below MIN threshold, on specific platform.
MIN	Unstable weighing result above LO mass and below MIN threshold, on specific platform.
OK stable	Stable weighing result between MIN, MAX thresholds, on specific platform.
OK	Unstable weighing result between MIN, MAX thresholds, on specific platform.
MAX stable	Stable weighing result above MAX threshold, on specific platform.
MAX	Unstable weighing result above MAX threshold, on specific platform.

	<p><i>If you set a function for a specific output, and at the same time a dosing function is set on the same output, then during the initiation and execution of the dosing procedure, the outputs will be activated according to the dosing parameter settings. The end of the dosing procedure will cause the set functions to switch into outputs.</i></p>
---	--

6.3.4. Dynamic weighing parameters

In  Parameters tab, <Dynamic weighing parameters> key is used to open the weighing module dynamic parameters box. These parameters serve to configure settings that influence the way the balance deals with dynamic items while weighing. It is highly important when the item mass may fluctuate during the measurement or when unstable items are weighed, such as liquids and living animals. In this box, the operator can adjust parameters influencing the balance reaction time, measuring precision and the way they are interpreted and filtered to assure as reliable results in difficult dynamic weighing conditions as possible.

6.3.4.1. Measurement




Dynamic weighing configuration box

Delay time	This parameter specifies the waiting time before initiation of actual measurement after putting the item on the weighing pan. Setting this parameter in milliseconds is supportive to stabilisation of load before weighing is initiated.
Measurement time	The period of time in which the system performs the real measurement of the load. The longer the measuring time, the more stable and precise the result, but also the longer the weighing procedure.
Dynamic correction	This parameter is used to enter automatic balance correction during dynamic weighing, compensating vibrations or movements on the balance. The value is entered in percent.
Sensor inertia	It defines the delay in sensor reaction to changes of load, expressed in milliseconds. The higher the inertia, the easier to stabilise the measurement in difficult conditions.

<p>Give-mass mode</p>	<p>This parameter determines the way the system communicates the measuring result.</p> <ul style="list-style-type: none"> • In the automatic response mode, the balance communicates the measuring result instantly after it has stabilised and is considered as ready. The operator does not need to perform any additional operations or send any queries to the device. It is convenient when weighing procedures are performed fast and the balance must communicate results on its own, without any intervention. • In the response to queries mode, the balance does not send results instantly. Instead, the measuring result is communicated only after receiving the query from the external system (e.g. computer or communication interface). This solution may be useful when the balance is part of a more complex system, where control over the data readout must be taken over by other devices or software.
------------------------------	--



After pressing  key, a new box will be displayed. In this box, a dynamic mas will be showed. The screen shows a dynamic result of the measurement in real time before a stable final result is obtained.

6.3.4.2. Calibration

Dynamic weighing parameters


Delay time factor [%]


Measurement time factor [%]

the required part of process [%]

Max. std. deviation increase [%]


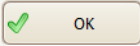
MAx. calibration deviation [d]


Kalibracja dynamiczna 

 Set defaults

Calibration parameters configuration box

Delay time factor	It determines how fast the system must react to changes of mass during the calibration procedure. 100% means default reaction speed while increase or decrease of this value leads to prolonged or shortened response time.
Measurement time factor	It controls the duration of a single measurement in the calibration procedure. Longer measuring may improve calibration precision but also prolongs the entire procedure.
Required part of process	It defines the part (in percent) of the full mass scope that must be used during calibration. For example, 30% means that the balance must be loaded with at least 30% of its maximum value to make sure the calibration is deemed valid.
Max. std. deviation increase	This parameter allows increasing the permissible standard deviation value during calibration. If it is set as 0%, calibration must be conducted with utmost precision. The higher the value, the higher deviation tolerance, which may be useful in unstable conditions.
Max. calibration deviation	It specifies the maximum deviation that may be accepted during the calibration procedure. The lower the value, the stricter the calibration procedure. Higher values may accelerate the procedure, yet affecting the precision.

After pressing  key, a dialogue box will be displayed. In the box, the operator is asked to place the product on the weighing pan. To start calibrating, press  key. Next further dialogue boxes with messages will be showed. To perform a full dynamic calibration procedure, follow further guidelines displayed by the balance.

Press  key to reset all modified parameter values and restore default settings.

6.3.4.3. Filters

Dynamic weighing parameters

Measurement Calibration **Filter** Autozero Other

Dynamic filtering method

Dynamic filter parameter

Dnamic sampling

Order

Omega 0

Omega Infinity

NAlpha

Result probe number

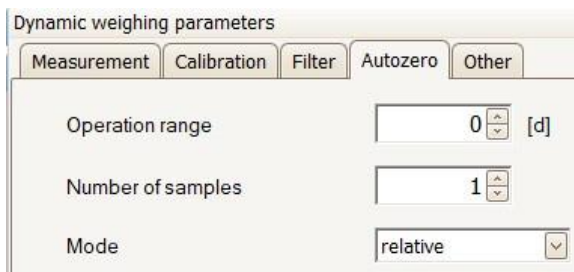
Filter configuration box

Dynamic filter type	Selection of type of filter that is used in the dynamic weighing. The dynamic filter reduces interference and noises to obtain as stable results as possible. There are various filtration algorithms that may be used, for example FIR64, FIR32, IIR2 and MEDIAN .
Dynamic filter parameter	This parameter defines precision of the specific dynamic filter. The lower the value, the more dampened the measurement, which may raise stability at the expense of reaction speed. Available parameters: 0,02Cfs, 0,015Cfs, 0,01Kfs, 0,008Rfs .
Dynamic sampling	The number of samples collected during dynamic weighing. The higher the number of samples (e.g. 200), the more accurate and precise the results, yet longer the measuring time.
Row	The filter row refers to complexity of the filter (number of factors). The higher the filter row, the more advanced data processing, which may improve the quality of measurement but also extend the calculation time.
Omega 0	The parameter dedicated to the filter algorithm, responsible for filter low-pass frequency at the outset of the measuring range. Its value has an impact on how fast the filter reacts to changes in loading.
Omega Infinity	It defines the filter low-pass frequency at the end of the measuring range. The change of this value allows adjusting the signal damping of higher interference frequency.
NAlpha	The parameter that controls the speed of filter response to variable loads. The higher the value, the more aggressive the filtration, which may be useful in unstable conditions but may lead to increased delay in balance reaction.

Result sample	This parameter specifies the number of samples considered in the calculation of the final measuring result. The higher the number of samples, the better the result stability but also the longer the waiting time for final result.
----------------------	--

The parameters marked in red cannot be modified.

6.3.4.4. Autozero



„Autozero” function configuration box

Operation range	The parameter specifying the range in which autozero function (automatic zero correction) will be active. „0 [d]” value means that the autozero will operate only in the zero tolerance, which allows automatic correction of minor deviations from zero with no need to calibrate manually.
Number of samples	This parameter defines the number of samples used by the system to correct zero. „1” value means that zero will be corrected after every weighing attempt, which may be sufficient in case of precise measurements.
Mode	<p>This parameter specifies operation of the autozero function.</p> <ul style="list-style-type: none"> • „Relative” mode – here the system adjusts the zero value automatically, taking into account previous changes and deviations. It proves useful when there may be minor and repeatable changes of loads that must be corrected automatically. • „Absolute” mode – in this mode, autozero is more direct in its operation, without reference to previous measurements. The balance sets the zero value on the basis of current conditions upon calibration or system startup. Every deviation from this initial value is corrected automatically with no regard to previous changes. This mode is useful when it is important that the balance starts from the specific zero point, regardless of previous changes.

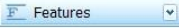
6.3.4.5. Other



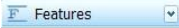
Other parameters configuration box

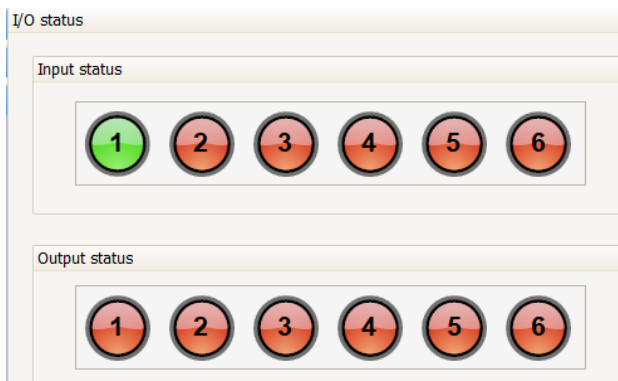
Input 2 function	<p>This parameter refers to the function assigned to the second signal output in the system.</p> <ul style="list-style-type: none">• „Automatic operation start” function means that the signal supplied into this input (e.g. from the external device or key) will initiate the automatic dynamic weighing procedure launch. Such a function may be used in automated production systems or quality control systems, where weighing is part of a broader automation procedure.• ”Tarring” may be an alternative for the second output. In this case supplying signal to this input will cause the balance to zero automatically (the so-called tarring), which means that the mass on the weighing pan will be considered as a zero value. This function is useful when containers or other items on the balance change frequently and must be ignored during another weighing procedure.
-------------------------	--

6.4. Functions

In  tab, you can access such functions as dosing, checkweighing and digital input/output status and simulations.



6.4.1. Input/output status

After running  item and pressing **<In/Out status>** key, the input status signalling and output test status setting box will be displayed.



Input/output status box

The input/output numbers in the program comply with the numbers in the module.


	Input/output enabled.
	Input/output disabled.

The output simulation is possible if you press the output number that is instantly enabled, provided no function has been assigned to this output. The input simulation is available in the dosage box.

6.5. Statistics

The  Statistics tab contains weighing result display settings.

6.5.1. Chart

In  Statistics tab, **<Chart>** key opens the box with weighing results in the graphic form, which allows analysing samples in real time or retrospectively.

The chart function lets you monitor and analyse weighing result stability, and identify deviations or trends that may be essential in applications that require precise mass control (e.g. in production processes or quality controls).

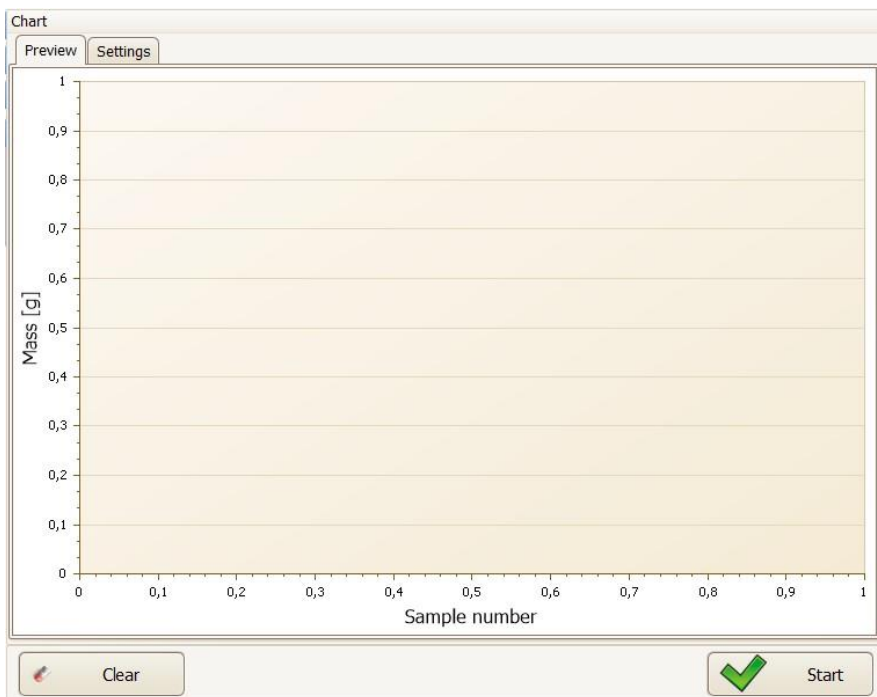




Chart preview box

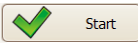
Main chart box:

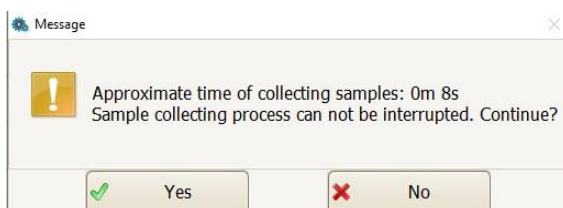
- **X axis (Sample number)** – shows the order of samples that are recorded by the balance. Every sample represents the measurement made at preset time interval.
- **Y axis (Mass [g])** – shows the mass value in grams for each sample. The visualisation allows you to easily notice mass changes and stability of weighing result.

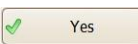
Keys:

 Clear	Used to delete currently displayed data from the chart to be able to start a new sampling session with no impact on previous results.
 Start	Pressing the Start key leads to initiation of sampling and registering samples in the chart. This procedure complies with settings specified in the „Settings” tab.

Procedure:

- Click  key.
- You will see a message with anticipated waiting time – this is the time you need to collect all samples.



- Click  key to initiate the sampling procedure.
- After a specific period of time, the chart based on collected samples will be displayed.

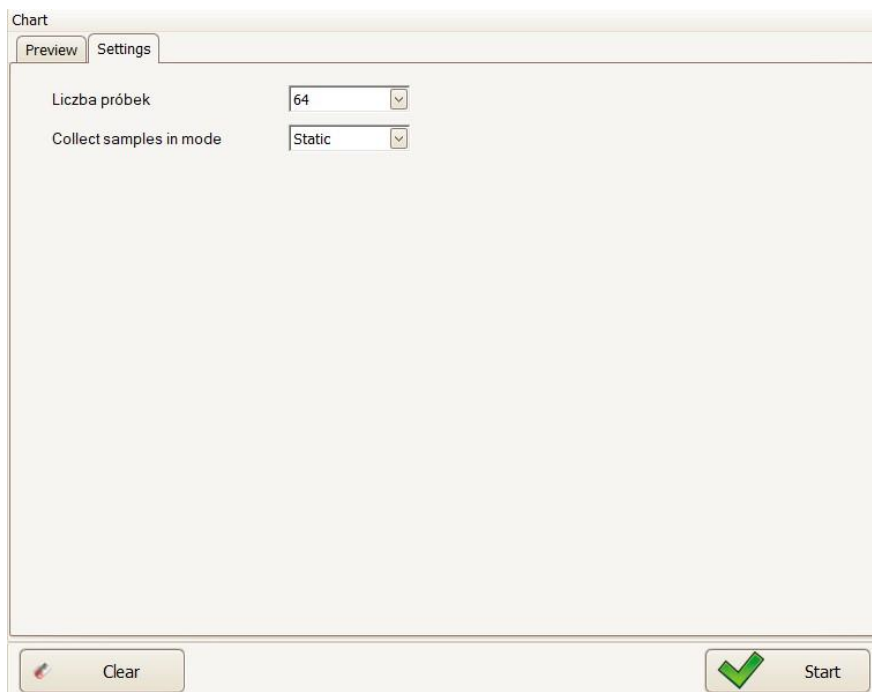


Chart settings box

Number of samples	You can select the number of samples that are to be collected and displayed in the chart. There are various options available, for example 32, 64, 128, etc., depending on analysis requirements.
Collect samples in mode	It defines the sampling mode. It is possible to choose static and dynamic sampling mode.

Sampling mode:

- **Static** – the balance collects samples in a static mode, which means that samples are collected at preset time intervals and the load on the balance must be stable during the procedure.
- **Dynamic** – the balance records changes in real time, which is useful when the load on the balance may change dynamically (e.g. while weighing unstable items).

6.6. Weighing

6.6.1. Balance zeroing

In order to zero the mass value in the currently selected platform, you need to go to „MWMH-Manager” weighing box (in the top right corner) and press




key or call the zeroing function defined for the specific output.

The screen will show the zero mass value and the following symbols: $\rightarrow 0 \leftarrow$ and $\blacktriangle \blacktriangleleft$. Zeroing is tantamount to determination of a new zero point that the balance treats as precise zero. Zeroing is possible only when the mass value is stable.

	<p><i>It is possible to zero the displayed value only up to $\pm 2\%$ of the maximum loading capacity of the balance. If the zeroed value is higher than $\pm 2\%$ of the maximum loading capacity, the screen will show <Err2> message.</i></p>
--	---

6.6.2. Balance tarring

To determine the net mass in the currently selected platform, place the load


packaging and when the value is stable press the  key to call the tarring function defined for the specific output. The screen will show the zero mass value and the following symbols: Net and $\blacktriangle \blacktriangleleft$. The balance has now been tarred.

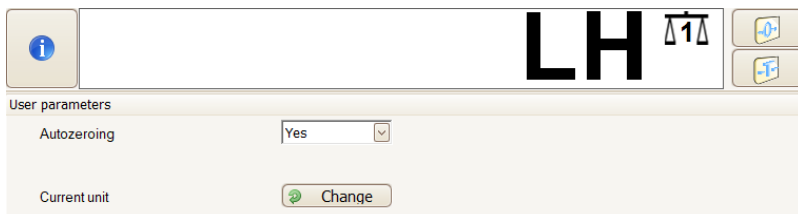
Using the tarring function, make sure you do not exceed the maximum measuring range. After removing the load and packaging, the screen will show the value that is a total of tarred masses with a minus sign.



It is not possible to perform the tarring procedure when the balance screen shows a negative mass value or zero mass value. If it does, the <Err3> message will be displayed.

6.6.3. Weighing unit change

To change the weighing unit in the currently selected platform, you need to go to the weighing window of „MWMH-Manager” and press  Change key in the user parameters.



Box with modified current unit

Options:



- When the main unit is [g], the operator may choose the following units: [g, kg, lb, oz, ct, N]. *For verified balances, [lb, oz, N] are unavailable.*

6.7. Weighing parameters

The operator may adjust the operation of the balance to his own needs (autozero). These parameters can be accessed in **<Parameters/User parameters>** tab.

6.7.1. Autozero function

In order to assure precise balance indications, the „AUTOZERO” function has been implemented. The purpose of this function is automatic control and correction of the zero value.

When the function is active, further results are compared at regular time intervals. If these results differ by the value that is lower than the declared range of AUTOZERO, e.g. 1 reading unit, the balance will zero instantly, and stable result marker –  and zero value –  will be displayed.

When the AUTOZERO function is enabled, every measurement starts with exact zero. There are however situations in which this function hinders measurements.

The example of such a situation may be very slow placement of the load on the weighing pan (e.g. pouring the load in). If this is the case, the zero correction system may correct values of the real load mass.

Procedure:

- Enter **<User parameters>** box.
- Select one of the **<Autozeroing>** options (**Yes** - autozero enabled, **No** – autozero disabled).

