User manual

IMMU-132-01-07-26-EN

Weighing module MAS.xxx.Y

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JULY 2026

PRECAUTIONS

Before installation, use or conservation of the device it is mandatory to get familiarized with this User Manual and follow its recommendations.

	Before use please familiarize yourself with this User Manual and use the device as intended.
	The device must be protected from excessive temperature fluctuations, sunlight, ultraviolet radiation and substances that cause chemical reactions.
	The device cannot be used in an atmosphere where there is a risk of gas or dust explosion.
	In case of failure disconnect the device from power supply immediately.
	Dispose of equipment intended for decommissioning in accordance with applicable laws.
	If the device is to be operated in an environment with severe electrostatic conditions (e.g. printing plants, packaging facilities, etc.), a grounding wire must be connected to it. For this purpose, the device is equipped with a functional grounding terminal marked with the symbol ⏚.

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1. INTENDED USE

Weighing module operates using a magneto-electric force transducer. It is designed for installation in production lines or laboratory equipment that require high-precision mass measurements. Communication with the module is carried out directly via an RS-232 or Ethernet interface. It is also possible to use an optional operator panel. The module can be equipped with an internal calibration system triggered by temperature changes and a definable interval.

The weighing module is operated from a PC using the **"RConfig Studio"** software, a detailed description of this software can be found in its user manual.

2. WARRANTY TERMS AND CONDITIONS

A. RADWAG undertakes to repair or replace any components found to be defective in manufacture or design.
B. Identification of defects of unclear origin and the determination of methods to eliminate them may only be carried out with the participation of representatives of the manufacturer and the user.
C. RADWAG assumes no liability whatsoever for damage or loss resulting from unauthorized or improper performance of manufacturing or maintenance processes.
D. Warranty does not cover:
   - mechanical damage caused by improper use of the scale, as well as thermal or chemical damage, damage caused by lightning strikes, power outages, or other fortuitous events,
   - maintenance activities (cleaning the scale).
E. The warranty is void if:
   - repairs are performed outside an authorized service center,
   - the service center determines that unauthorized people have tampered with the mechanical or electronic components of the scale,
   - the scale lacks the manufacturer's security markings.
F. Warranty coverage for batteries included with the devices is valid for period of 12 months.
G. Detailed warranty terms and conditions are provided in the service manual.
H. Contact the Authorized Service Center by phone: +48 48 386 60 00.

3. CLEANING

To clean the scale safely, follow these steps in order listed:

1. Remove the weighing pan and other movable elements of the module; depending on the model (see the description in the section: UNPACKING AND ASSEMBLY). Perform these steps very carefully to avoid damaging the scale mechanism.

Warning:
Cleaning the weighing pan, when it is assembled on the scale can cause mechanism damage.

Cleaning the stainless steel elements:

When cleaning stainless steel elements, follow the guidelines in the table below, which lists the types of contaminants and how to remove them.

Fingerprints	Wash with rubbing alcohol or paint thinner. Rinse with clean water and wipe dry.
Oils, Fats and Lubricants	Wash with organic solvents, then wash with warm water and soap or a mild detergent. Rinse with clean water and wipe dry.
Temperature-related stains and deposits	Wash with a mild scrubbing detergent, cleaning gently in the direction of the surface texture. Rinse with clean water and wipe dry.
Severe discoloration	Clean gently in the direction of the surface texture. Rinse with clean water and wipe dry.
Rust spots	Moisten with oxalic acid solution and let it sit for about 15–20 minutes, then wash with warm water and soap or a mild detergent. Rinse with clean water and wipe dry.
Paint	Wash with paint thinner, then wash with warm water and soap or a mild detergent. Rinse with clean water and wipe dry.
Surface scratches	Gently sand with a non-iron abrasive cloth, following the direction of the surface grain, then wash with a mild scrubbing detergent. Rinse with clean water and wipe dry.

Cleaning Powder-Coated Parts:
The first step should be to pre-clean the parts with running water or a porous sponge saturated with plenty of water to remove loose and larger debris.
Do not use products containing abrasive substances. Next, using a suitable cloth and a solution of water and cleaning detergent, clean the surface while applying normal pressure with the cloth against the surface of the components.

Never clean with detergent alone without water, as this may damage the coating – use plenty of water or a solution of water and cleaning agent.

Cleaning aluminum parts:
Use products containing natural acids to clean aluminum. Distilled vinegar and lemon are excellent choices. Do not use products containing abrasive substances. Avoid using stiff brushes for cleaning, as they can easily scratch the aluminum surface. A soft microfiber cloth is the best option here.
Clean polished surfaces using circular motions. After removing dirt from the surface, polish it with a dry cloth to dry the surface and restore shine.

4. SERVICE AND REPAIRS

	***If any damage is visible, disconnect the device from power supply immediately. The damaged component must be replaced or repaired immediately by RADWAG's service department.***

If you experience any problems with the proper operation of the device, please contact the manufacturer's nearest service center.

In the event of a malfunction, the user should take the defective device to the manufacturer's service center or, if this is not possible, report the malfunction to the service department to arrange the scope and method of repair.

	***Any repairs performed by the user are strictly prohibited. Any tampering (modifications, repairs, etc.) by people not authorized by RADWAG will void the manufacturer's certificates, declarations and warranties.***

5. DISPOSAL

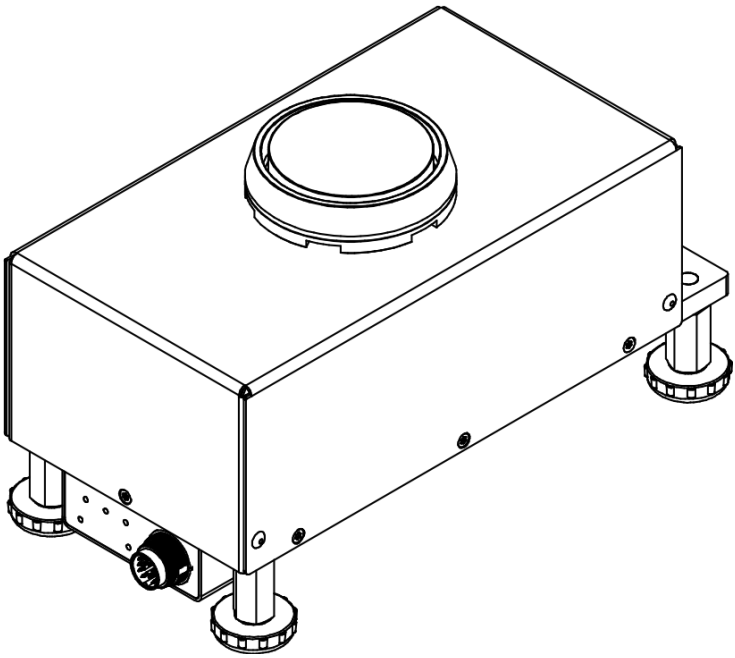
Weighing modules should be recycled and are not considered household waste. The product must be disposed of at the end of its service life in accordance with applicable laws and regulations.



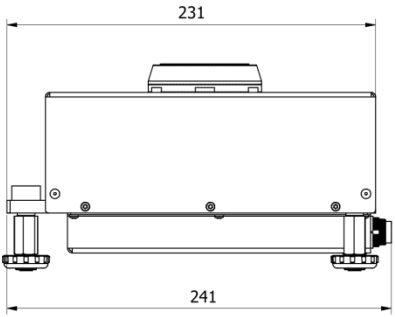
6. CONSTRUCTION

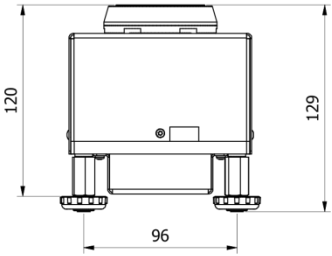
The weighing module has a metal housing. Communication with external devices is via an RS232 or Ethernet interface. It is equipped with 3 isolated inputs and 3 digital outputs. It is powered by 12-24V DC, max 200mA.

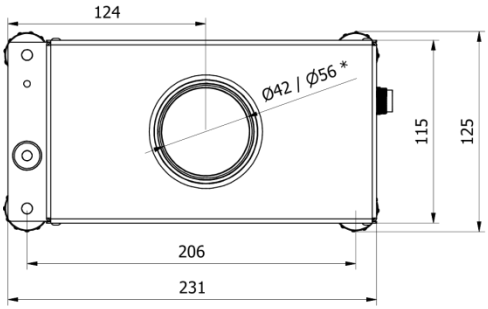
6.1. External view



6.2. Overall dimensions

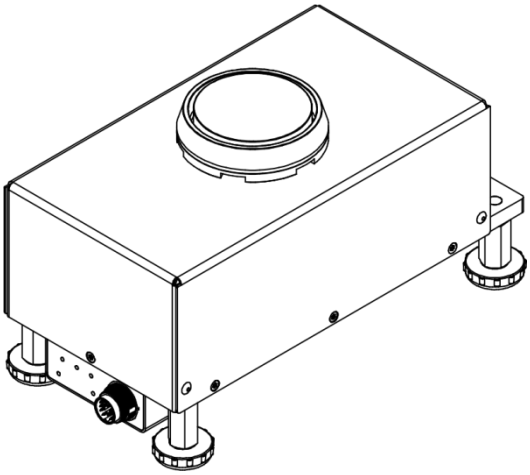




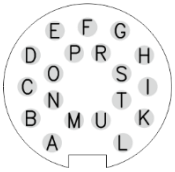


6.3. Connector description

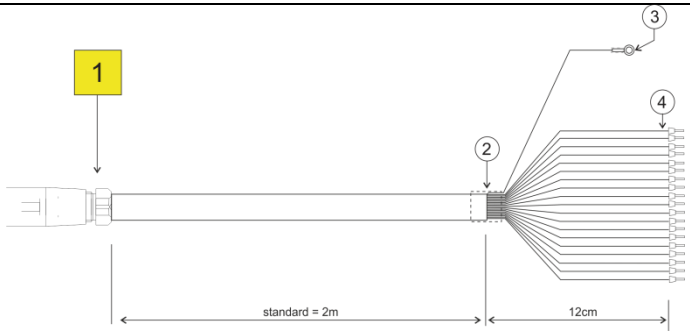
Weighing module 5Y (PUE 10.M).



Port topology:

Port (male)		Pin A – Vcc Pin B – GND Pin C – Ethernet TX+ Pin D – Ethernet TX- Pin E – Ethernet RX+ Pin F – Ethernet RX- Pin G – RS232 GND Pin H – RS232 Rx Pin I – RS232 Tx Pin K – COMOON OUTPUTS Pin L – GND INPUTS Pin M – OUT1 Pin N – OUT2 Pin O – OUT3 Pin P – IN1 Pin R – IN2 Pin S – IN3 Pin T – RS485 A Pin U – RS485 B

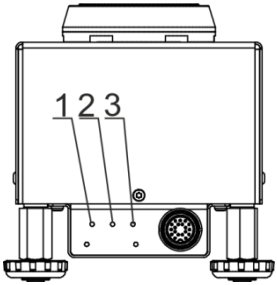
6.4. Cable schematics



PT0495 Cable

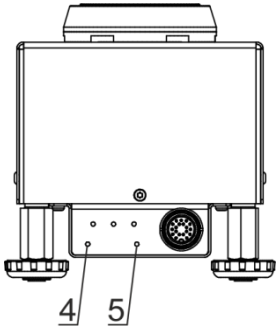
yellow– Vcc
green – GND
gray– Ethernet TX+
pink– Ethernet TX-
brown – Ethernet RX+
white– Ethernet RX-
gray-brown – RS232 GND
white-pink – RS232 Rx
white-gray – RS232 Tx
pink-brown – COMOON OUTPUTS
blue – GND INPUTS
red – OUT1
brown-green – OUT2
black – OTP3
violet – IN1
gray-pink – IN2
white-yellow – IN3
white-green – RS485 A
yellow-brown – RS485 B

6.5. Signal LEDs



1. **SCALE** LED – scale status: green - OK, red - error e.g. calibration error
2. **COMM** LED – communication status: green – correct communication, red – no communication
3. **PWR** LED – green - module power supply is correct and it is working.

6.6. Module control buttons



1. **FACTORY** Button – access to factory settings.
2. **DEFAULT** Button – resetting the default communication settings (RS and ETHERNET) using the **RConfig Studio** program.

6.6.1. Default TCP interface settings

IP address	192.168.0.10
Gateway	192.168.0.1
Subnet mask	255.255.255.0
Port	4001
Device address	1

6.6.2. Default RS-232 interface settings

Transmission speed	115 200
Data bits	8
Parity	none
Device address	2

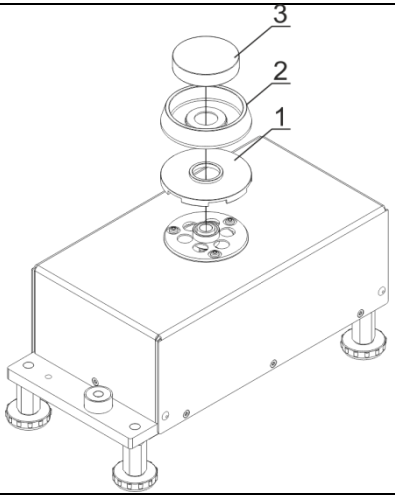
6.7. Technical parameters

MODEL	**MAS.xxx.Y**
Interface	RS232, RS485, Ethernet
Power supply	Adapter: 100 – 240V AC 50/60Hz; 12V DC 1,2A Module: 12V DC
Case	metal
Ingress protection	IP 43
Work temperature	-10°C ÷ 40°C
Relative humidity	40% - 80%
Weighing pan dimensions	ø42 mm or ø56 mm
Reading range	0,01 mg or 0,1 mg
Adjustment	internal

7. INSTALATION

7.1. Unpacking and assembly

A. Remove the weighing module from its original packaging.
B. Place the device at its intended location on a level, hard surface, away from heat sources.
C. Install the weighing pan and other components according to the diagram below.



- ring (1)
- weighing pan shield (2)
- weighing pan (3)

D. Level the module.





Before turning on the power, level the module by adjusting its feet so that the air bubble in the spirit level is centered.

Module should stand securely on the floor, with each of its legs resting on it.

7.2. Power on

- Plug the power supply into a power outlet.
- Once the load has established communication with the **„RConfig Studio"** software, you can configure the device and read the weighing result.

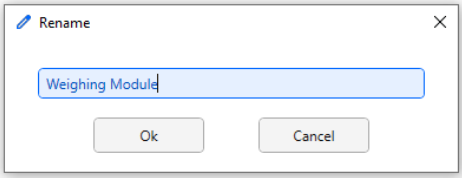


The procedure for establishing a connection and detailed description of how the scale works with the "RConfig Studio" software can be found in the software user manual.

8. MODULE MANAGEMENT

8.1. From within the RConfig Studio program

To add a new module to the program, you must create a slot for the module. From the top bar, select **<Add device>** . Then enter a name for the device.



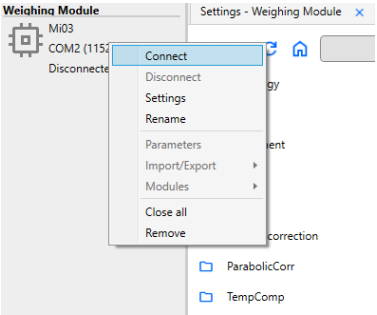
Once the name has been confirmed, a tab for defining connection parameters will open.

8.1.1. Connecting with module via TCP interface

After selecting TCP as the connecting interface, the settings tab has those options:

IP Address	Weighing module web address
Port	Communication port
Device address	Address of the device
Automatically exit bootloader	Toggle of the option

After entering correct settings, to initiate a connection, right-click on the module you created and select the **<Connect>** option. You can also start the connection by double-clicking on the module with the left mouse button.

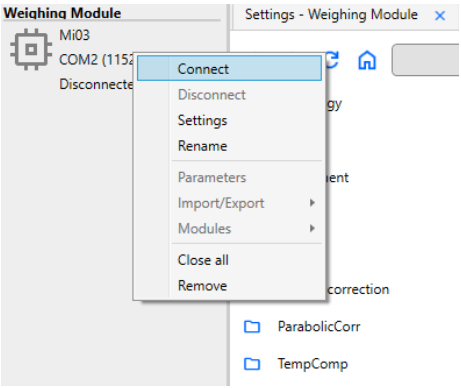


8.1.2. Connecting with the module via RS-232 interface

After selecting RS-232 as the connecting interface, the settings tab has those options:

Serial Port	The parameter where you must specify the port to which the module is connected to the computer
Transmission speed	The speed at which the computer is to communicate with the module
Data bits	The number of bits used to encode a single character
Parity	A simple error-checking method that verifies whether the received data is correct.
Device address	Address of the device
Automatically exit bootloader	Toggle of the option

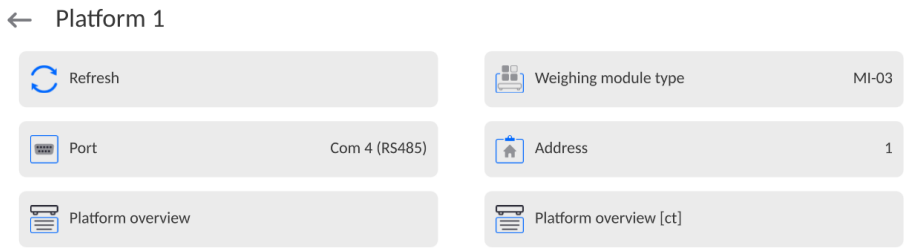
After entering correct settings, to initiate a connection, right-click on the module you created and select the **<Connect>** option. You can also start the connection by double-clicking on the module with the left mouse button.



8.2. From within the 5Y (PUE 10.M) terminal

After connecting terminal to the weighing module, there is a need to set terminal parameters, to ensure correct communication and ability to read and change module parameters. To do this, unlock access to the service menu in the terminal and set the following parameters:

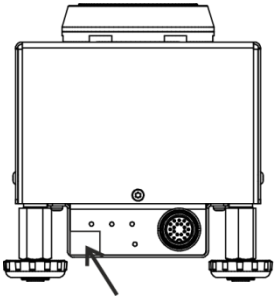
1. Setup/Factory/Platform 1/Weighing module type/**MI-03**.
2. Setup/Factory/Platform 1/Port/**Com 4 (RS485)**.
3. Setup/Factory/Platform 1/Address/**1**.

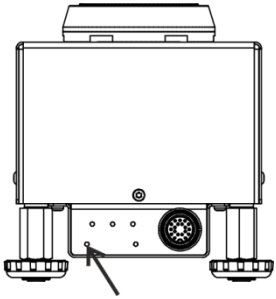


After configuring the parameters above, restart the terminal. Once the terminal has restarted, the user can view the weighing result and can view and edit the weighing module's parameters.

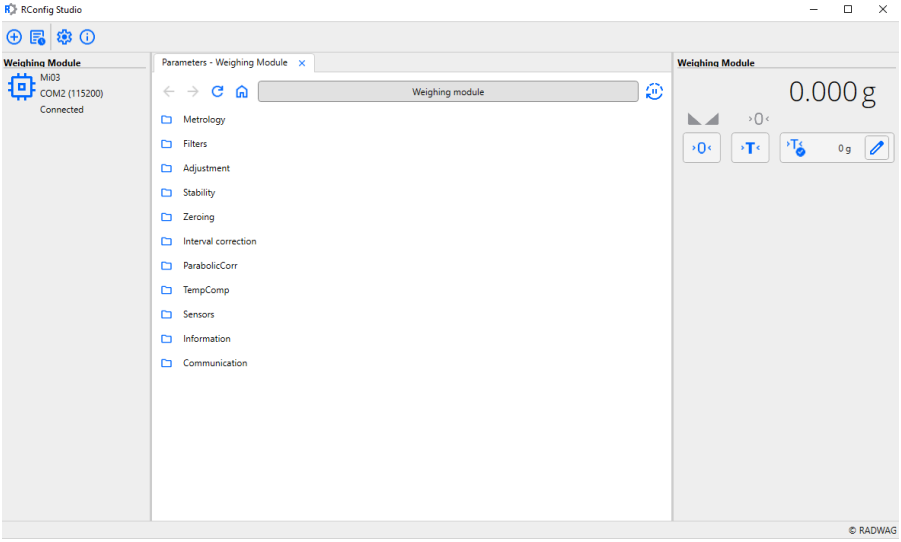
9. FACTORY PARAMETERS

To gain an ability of editing and saving factory parameters to module's memory, remove the protective sticker and press the factory parameters access button.





- Once the module is connected to the **„RConfig Studio"**, go to the **<Parameters>** submenu**.**



Once successfully connected to the module, the user can proceed to configure its parameters.

After selecting the **<Parameters>** tab from the menu, the user will see all the parameters that can be changed, or the categories into which they are grouped.

9.1. Metrology

NAME	DEFAULT	SCOPE	NOTES
Adc Count	-	-	Signals from the mass transducer before the main filters
FilteredAdc Count	-	-	Filtered signals from the mass flow transducer
Reading unit: range 1	0,001	0,00000001 ÷ 50	Rounding of the last digit and the position of the decimal point in the first weight range.
Verification unit: range 1	none	0,001 ÷ 50	Scope of legalization for in the first weight range.
Reading unit: range 2	0,001	0,00000001 ÷ 50	Rounding of the last digit and the position of the decimal point in the second weight range.
Verification unit: range 1	none	0,001 ÷ 50	Scope of legalization for in the second weight range.
Range	220.9	-	Range of weighing + 9e (9 reading units).
Range 2	0	-	Second weight range switch point. For single-range scales, set this value to 0.
AdjMotorChangePos			Changing the position of the internal adjustment weight.

9.2. Filters

NAME	DEFAULT	SCOPE	NOTES
FilterName			Names of the implemented filter settings and parameters
UnstabEnvCoeffs			Unstable Environment Coefficient
Filter	Normal	Very fast, fast, normal, slow, very slow	The filter currently in use during weighing.
Ambient conditions	Stable	Stable, Unstable	The settings currently in use for the module's working environment
Adc Count	-	-	Signals from the mass transducer before the main filters
Filtered Adc Count	-	-	Filtered signals from the mass flow transducer
CurrFltrLen			
CurrAlphaFltrVal			
FltrLowRng			

AdjMotorChangePos			Changing the position of the internal adjustment weight.
AdjMotorChangePos			Changing the position of the internal adjustment weight.
PreStabTime			
ADC			
Very fast			Settings group for the <Very Fast> filter
Fast			Settings group for the <Fast> filter
Normal			Settings group for the <Normal> filter
Slow			Settings group for the <Slow> filter
Very slow			Settings group for the <Very Slow> filter

9.3. Adjustment

Factory start mass determination			Factory start mass determination (look at 9.13.1 of this manual).
External factory adjustment			External factory adjustment
Internal factory adjustment			Internal factory adjustment (look at 9.13.3 of this manual).
IntAdjMassDeterm			Procedure for determining the mass of the internal adjustment weight.
AdjMotorChangePos			Changing the position of the internal adjustment weight.
Start mass			Starting mass in plots from the mass transducer
Adjustment factor			Current adjustment factor
Factory start mass			Factory starting mass in plots from the mass transducer
Factory adjustment factor			Factory adjustment factor
Adjustment unit	g	g, kg, lb	Adjustment unit.
ExtAdjMass1	200	-	Mass of the external adjustment weight.
IntAdjMass1	150	-	Mass of the internal adjustment weight.
Gcore	1		Gravity correction factor
AdjStabRange	1000	-	Permissible plot noise during the module adjustment procedure, measured over a 10-second period.
DifferenceAdcCount		-	Current module channel noise measured over a 1-second period.

9.4. Stability

Value release	Reliable	Predefined, Fast, Fast and Reliable, Reliable	The currently used type of result confirmation (display of the measurement stability symbol).
Ambient conditions	Stable	Stable, Unstable	The settings currently in use for the module's working environment
Filter	Normal	Very fast, Fast, Normal, Slow, Very slow	The filter currently in use during weighing.
Stability range	1	0,1 - 10	
Stability time	1	0,2 - 20	
PreStabTime	0		
StabCoefs			

9.5. Zeroing

Start mass control	Yes	Yes, No	
Autozero	Yes	Yes, No	
Autozero range	1	0,1 - 10	
Autozero time	1	0,2 - 10	

9.6. Interval correction

Corrections			Interval correction (look at 9.15 of this manual).

9.7. Parabolic correction

ParabolicCorrDeterm			Parabolic correction (look at 9.16 of this manual).
ParabolicRngCoefA			
ParabolicRngCoefB			
ParabolicRngCoefC			

9.8. Temperature correction

ExtTempComp			
IntTempComp			
T1-MagnetTempCounts			
T1-MagnetTemp			
Z1TempCoef			
S1TempCoef			

9.9. Sensors

T1-MagnetTempCounts			Data from the temperature sensor mounted inside the actuator.
T1-MagnetTemp			Temperature in Celsius degrees
AmbientTempCounts			
AmbientTemp			
HumidityCounts			
Humidity			
PressureCounts			
Pressure			
VibrationX			
VibrationY			
VibrationZ			

9.10. Information

Software rev.			Weighing module program version
FilterName			Names of the implemented filter settings and parameters

9.11. Communication

IP address			Current Ethernet communication parameters between the module and the RConfig Studio software.
DefGateway			
SubnetMask			
TcpPort			

9.12. Changing parameter value

- Input / change value of the selected parameter.
- Confirm the changes by the refresh  button in the upper bar.

9.13. Factory adjustment

9.13.1. Start mass determination

- Take off the weight from the weighing pan.
- In **<Adjustment>** tab press **<Execute>** for **<Factory start mass determination>** parameter, after that information window will show:: **<Unload the weighing pan>**.
- Confirm the message by pressing **<OK>**, that will start the start mass determination process.
- After finishing the process, message will tell: **<Completed>**.
- Confirm this message by pressing **<OK>**.

9.13.2. External factory adjustment

- Take off the weight from the weighing pan.
- In **<Adjustment>** tab press **<Execute>** for **<External factory adjustment>** parameter, after that information window will show:: **<Unload the weighing pan>**.
- Confirm the message by pressing **<OK>**, that will start the start mass determination process.
- After finishing the process, message will tell: **<Load xxx>** (where: xxx – declared mass of adjustment weight).
- Place the weight on the weighing pan and press **<OK>**.
- After finishing the adjustment process, message will tell: **<Completed>**.
- Confirm this message by pressing **<OK>**.

9.13.3. Internal factory adjustment

- Take off the weight from the weighing pan.
- In **<Adjustment>** tab press **<Execute>** for **<Internal factory adjustment>** parameter, after that information window will show:: **<Unload the weighing pan>**.
- Confirm the message by pressing **<OK>**, that will start the start mass determination process and new adjustment coefficient.
- After finishing the adjustment process, message will tell: **<Completed>**.
- Confirm this message by pressing **<OK>**.

9.14. Gravity coefficient

Gravity coefficient function compensates for variations in Earth's gravitational force at different latitudes. It allows the scale to be properly calibrated away from its intended location of use. The gravity correction should be entered based on the tables provided by „RADWAG Electronic Scales" or calculated using the formula:

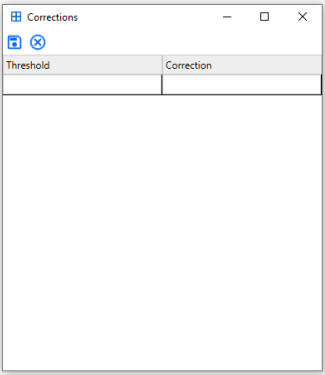
$$Gcor = \frac{g_{user}}{g_{adj.}}$$

The permissible range of correction values accepted by the program is 0.90000 to 1.99999.

	***When calibrating the scale at its place of use, the <gcor factor> parameter should be set to 1.00000. When calibrating the scale away from its intended place of use, always apply the gravity correction.***

9.15. Interval correction

In **„Corrections”** tab user gains access to interval thresholds and corrections.



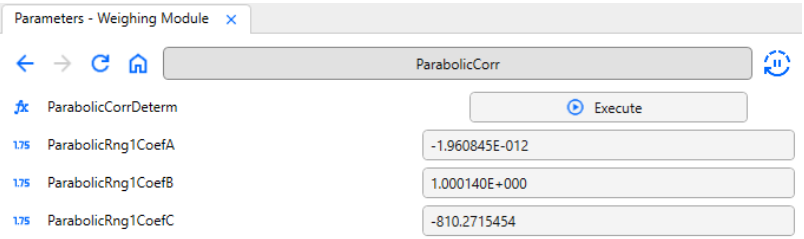
Window for entering linearity correction adjustments for individual points within the module's weighing range

Procedure:

- Enter values of interval thresholds.
- Input corrections for the thresholds.
- Save the data to modules memory by pressing .

9.16. Parabolic correction

In **„ParabolicCorr”** tab user gains access to the determination for the parabolic correction.



Procedure:

- Take off the weight from the weighing pan.
- Press **<Execute>** for **<ParabolicCorrDeterm>** parameter, after that information window will show:: **<Unload the weighing pan>**.
- Confirm the message by pressing **<OK>**, that will start the start mass determination process.
- After finishing the process, message will tell: **<Load xxx>** (where: xxx – half of max load capacity of the module).
- Load the weight of set mass and press **<OK>** after that module will start another mass determination process.
- Another message will appear: **<Load xxx>** (where: xxx – max load capacity of the module).
- Load the weight of set mass and press **<OK>** after that module will start the last mass determination process.
- At completion of the correction determination message will tell: **<Completed>**.
- Confirm this message by pressing **<OK>.**

10. ERROR MESSAGES

Error messages that could be seen while working with 5Y (PUE 10.M) weighing terminal.

