USER GUIDE

HY10.150.HRP

Radwag

Distributed by AKRIBIS

Software manual

ITKP-13-05-08-26-EN

Weighing Terminal

PUE HY10

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!

AKRIBIS www.akribis.info contacto@akribis.info

AUGUST 2026

Contents

1. INTENDED USE 8
2. OPERATION PANEL 8
3. START-UP 9
4. HOME SCREEN 9
4.1. Top Bar 10
4.2. Workspace 10
5. OPERATING THE MENU 11
5.1. Operation Panel 11
5.2. Return to Weighing 12
6. PROGRAM STRUCTURE 12
7. LOG IN OPERATION 12
7.1. Log In Procedure 12
7.2. Log Out Procedure 13
7.3. Permission Levels 13
8. WEIGHING 14
8.1. Zeroing 14
8.2. Taring 14
8.3. Entering Tare Value Manually 15
8.4. Dual Range Devices 15
8.5. Weighing Unit Change 16
9. SCALE PARAMETERS 16
10. COMMUNICATION 17
10.1. RS 232 Settings 17
10.2. ETHERNET Settings 17
10.3. TCP Settings 18
10.4. Wi-Fi® Settings 18
10.4.1. Network Status 18
10.4.2. Available Networks 19
10.4.3. Transmission Parameters 19
11. PERIPHERAL DEVICES 20
11.1. Computer 20
11.1.1. Port 20
11.1.2. Address 20
11.1.3. Continuous Transmission 20
11.1.4. Weighing Printout Template 21
11.1.5. E2R 21
11.1.6. Established Connections 21
11.1.7. Authorization Password 22
11.2. Printer 22
11.2.1. Port 22
11.2.2. Code Page 23
11.2.3. Printout Templates 23
11.2.4. Printouts Activation 23
11.2.5. Redirect to PC 24
11.3. Radwag Print Studio 24
11.3.1. Radwag Print Studio Activation 24
11.3.2. Search for Printout Servers 24
11.3.3. IP Address 25
11.3.4. IP port 25
11.3.5. Use Server Printer 25
11.3.6. Share Printers 26
11.3.7. Server Printer 26
11.4. Barcode Scanner 26
11.4.1. Port 26
11.4.2. Prefix/Suffix 27
11.4.3. Field Selection 27
11.4.4. Test 29
11.4.5. Delete Markers 29
11.4.6. Auto Measurement-Record 29
11.4.7. J S 30
11.5. Transponder Card Scanner 30
11.5.1. Transponder Card Scanner Port 30

AKRIBIS · www.akribis.info · contacto@akribis.info

11.5.2. Assigning Card Number to the Operator 30
11.6. Additional Display 31
11.6.1. Port 31
11.6.2. Communication Protocol Template 31
11.7. Modbus 32
11.7.1. Communication Port 32
11.7.2. Address 32
11.8. Advanced Settings 32
12. DISPLAY 33
12.1. Screen Components 33
12.2. Mass 35
12.3. Text Data 36
12.3.1. Display Template 36
12.4. Button functions 37
12.5. Bar Graph 38
12.5.1. Bar Graph Type 38
12.5.2. 'Fast Weighing' Bar Graph 38
12.5.3. 'Weighing Threshold Signalling' Bar Graph 40
12.5.4. 'Linear' Bar Graph 41
12.5.5. 'Control' Bar Graph 41
12.5.6. 'Workspace' Bar Graph 43
13. INPUTS/OUTPUTS 45
13.1. Input Setup 45
13.2. Output Setup 45
13.3. Input/Output Service 46
14. PERMISSIONS 46
15. UNITS 48
15.1. Units Accessibility 48
15.2. Start Unit 48
15.3. Custom Units 48
15.4. Gravitational Acceleration 49
16. MISCELLANEOUS PARAMETERS 49
16.1. Interface Language 49
16.2. Date and Time 50
16.3. Extension Modules 51
16.3.1. Audit Trail 51
16.3.2. RDA Data Access Module 51
16.3.3. SI RES Module 52
16.3.4. Workflow 52
16.4. 'Beep' Sound 52
16.5. Display Brightness 52
16.6. Touch Panel Calibration 53
16.7. Log Out Automatically 53
16.8. Logging in Required 54
16.9. Workflow 54
16.10. Start Logo 54
16.11. Error Information Preview Time 55
16.12. Settings Export/Import 55
17. ADJUSTMENT 56
17.1. Adjustment Process 56
17.2. Start Mass Determination 56
17.3. Adjustment Report 57
17.4. Adjustment History 57
18. SOFTWARE UPDATE 58
19. REMOTE DESKTOP 58
20. WORKING MODES – General Information 59
20.1. Working Mode Accessibility 60
20.2. Save Mode 60
20.3. Dispensing 61
20.4. Result Control 61
20.5. Tare Mode 62
20.6. Delete Tare 62
20.7. Remove after Weighing 63
20.8. Labelling Mode 63
20.8.1. Setting To-Be-Printed Label Quantity 63

20.8.2. Setting To-Be-Printed C Label Quantity 64
20.8.3. Setting To-Be-Printed CC Label Quantity 64
20.8.4. Automatic C Label Triggering 64
20.8.5. Automatic CC Label Triggering 65
20.9. Allow Measurement Record 66
20.10. Statistics 67
20.11. Mass Rounding for Statistics 67
20.12. Differential Weighing 68
20.12.1. Local Settings 68
20.12.2. Reporting of Completed Differential Weighing Processes 68
20.13. Smart Select 69
20.14. Min 2, Max 2 Thresholds Active 69
20.15. Recorded Weighing Info 70
20.16. Recorded Weighing Info – Signal Duration 70
20.17. Packaging Selection Settings 71
20.17.1. Request Packaging Quantity 71
20.17.2. Many Packages Selection 71
20.17.3. Close Selection Window 71
20.18. Non-Standard Printouts 72
21. WORKING MODE – WEIGHING 73
21.1. Weighing Mode Start-Up 73
21.2. Local Settings 73
22. WORKING MODE – PARTS COUNTING 74
22.1. Parts Counting Mode Start-Up 74
22.2. Local Settings 75
22.2.1. Function of Automatic Correction of Reference Sample Mass 75
22.2.2. Minimum Reference Sample Mass 76
22.3. Setting Reference Sample Mass by Entering Mass of a Single Part 77
22.4. Setting Reference Sample Mass by Determining Mass of a Single Part 77
22.5. Setting Reference Sample Mass by Acquiring Mass of a Single Part from the Database 78
22.6. Entering Reference Sample Mass to the Scale Memory 78
23. WORKING MODE – PERCENT WEIGHING 78
23.1. Percent Weighing Mode Start-Up 79
23.2. Local Settings 79
23.3. Reference Mass Determined by Weighing 80
23.4. Reference Sample Mass Entered to the Scale Memory 80
24. WORKING MODE – DOSING 80
24.1. Dosing Mode Start-Up 80
24.2. Dosing Process Structure 81
24.3. Local Settings 81
24.4. Dosing Process Settings and Functions 82
24.5. New Dosing Process 84
24.6. Examples of Dosing Processes 85
24.6.1. Example 1 – Manual Dosing of 4 Ingredients on 2 Platforms 85
24.6.2. Example 2 – Automatic Dosing of 2 Ingredients on 2 Platforms 87
24.6.3. Example 3 – Manual and Automatic Dosing 89
24.7. Reporting of Completed Dosing Processes 91
25. WORKING MODE – FORMULATIONS 92
25.1. Dosing Mode Start-Up 92
25.2. Local Settings 92
25.3. New Formulation 94
25.4. Formulation Procedure 96
25.5. Completed Formulation Processes Reporting 98
26. WORKING MODE – FORMULATION ORDERS 99
26.1. Formulation Orders Mode Start-Up 99
26.2. Local Settings 99
26.3. New Formulation Order 100
26.4. Formulation Procedure 100
27. WORKING MODE – PGC 102
27.1. PGC Mode Start-Up 102
27.2. Control Settings Edit Box 103
27.3. Local Settings 104
27.4. Product Editing 105
27.5. Control Start Procedure 107
27.6. Control Abort Procedure 108

27.7. Logging out During an Ongoing Control 108
27.8. Non-Destructive Average Tare Control 109
27.9. Non-Destructive Empty-Full Control 114
27.10. Destructive Full-Empty, Empty-Full Control 116
27.11. Control Accordant with Internal Criteria 116
27.11.1. Control Abort Procedure 118
27.11.2. Control Termination Procedure 119
27.12. Average Tare Determination Report 119
27.13. Product Control Report 120
28. WORKING MODE – DENSITY 122
28.1. Density Mode Start-Up 123
28.2. Local Settings 123
28.3. Density Determination Process 124
28.3.1. Liquid Density Determination 124
28.3.2. Solid Body Density Determination 125
28.3.3. Density Determination, Pycnometer Method 126
28.3.4. Porous Body Density Determination 127
28.4. Density Determination Reports 129
28.5. Density Table: Water 129
28.6. Density Table: Ethanol 130
29. WORKING MODE – ANIMAL WEIGHING 130
29.1. Animal Weighing Mode Start-Up 130
29.2. Local Settings 131
29.3. Animal Weighing Procedure 131
30. WORKING MODE - VEHICLE SCALE 132
30.1. Vehicle Scale Mode Start-Up 132
30.2. Local Settings 133
30.3. Vehicle Transaction Process 133
30.3.1. Entry/Exit Transaction 133
30.3.2. Control Weighing Transaction 136
30.4. Ongoing Transactions Table 138
30.5. Ongoing Transaction Printout Templates 138
30.6. Completed Transactions Reporting 139
31. WORKING MODE - TRANSACTIONS 140
31.1. Transactions Mode Start-Up 140
31.2. Selecting Transaction Data 141
31.3. Transaction Process 142
31.4. Completed Transactions Reporting 143
32. WORKING MODE - SQC 144
32.1. SQC Mode Start-Up 144
32.2. Control Settings Edit Box 145
32.3. Local Settings 146
32.4. Product Editing 147
32.5. Control Start Procedure 149
32.6. Control Procedure 150
32.7. Control Abort Procedure 153
32.8. Control Termination Procedure 154
32.9. Logging out During an Ongoing Control 154
32.10. Product Control Report 155
33. DATABASES 157
33.1. Database Configuration 157
33.1.1. SQL Connection 158
33.1.2. Databases Accessibility 159
33.1.3. Categories 159
33.1.4. Database Variables 160
33.1.5. Change of Extra Variable Database Name 160
33.1.6. Database Records View 160
33.1.7. Database Export/Import 160
33.2. Database Record Search 161
33.2.1. Search by Name 161
33.2.2. Search by Code 161
33.3. Adding Database Records 161
33.4. Deleting Database Records 162
33.5. Printing Database Record 162
33.6. Context menu 163

33.7. Database Editing 163
33.7.1. Operator Database 164
33.7.2. Product Database 164
33.7.3. Customers database 166
33.7.4. Dosing Processes Database 167
33.7.5. Formulation Database 167
33.7.6. PGC Schedules Database 168
33.7.7. Vehicle Database 168
33.7.8. Workflow Database 168
33.7.9. Packaging Database 169
33.7.10. Warehouse Database 169
33.7.11. Label Database 169
33.7.12. Universal Variable Database 169
33.7.13. Extra Variable Database 170
33.7.14. Image Database 170
33.7.15. User's Translation Database 171
34. REPORTS 171
34.1. Reports Configuration 171
34.1.1. Reports Accessibility 172
34.1.2. Lot Number Configuration 172
34.1.3. Batch Number Configuration 172
34.1.4. Request To-Be-Deleted Weighings Quantity 172
34.2. Deleting Older Data 173
34.3. Quick Search by Date 173
34.4. Weighing Reports 173
34.4.1. Filtering 174
34.4.2. Report Printout 174
34.4.3. Weighing Graph 175
34.4.4. Export of Weighing Database to File 175
34.4.5. Weighing Counter 177
34.5. Report Preview 178
34.5.1. Weighings 178
34.5.2. Dosing Reports 179
34.5.3. Formulation Reports 180
34.5.4. Density reports 181
34.5.5. Control Reports 181
34.5.6. Average Tare Reports 183
34.5.7. Vehicle Scale Reports 184
34.5.8. Transaction Reports 184
34.5.9. Differential Weighing Reports 185
35. WORKFLOW 186
35.1. Workflow Creation 186
35.2. Workflow Functions 187
35.3. Workflow Activation 191
35.3.1. Activation via a Programmable Button 191
35.3.2. Activation via Logging Operation 191
35.3.3. Activation via a Product Selection 192
35.3.4. Activation via Formulation Selection 192
35.3.5. Activation via Ingredient Selection 192
35.3.6. Activation Upon Scale Start 193
35.3.7. Example 1 - Workflow Design and Realisation 193
35.3.8. Example 2 - Workflow Design and Realisation 194
35.3.9. Aborting Workflow 196
35.3.10. Getting Back to a Previous Workflow Step 197
35.3.11. Pausing and Restarting Workflow 197
36. ERROR MESSAGES 199

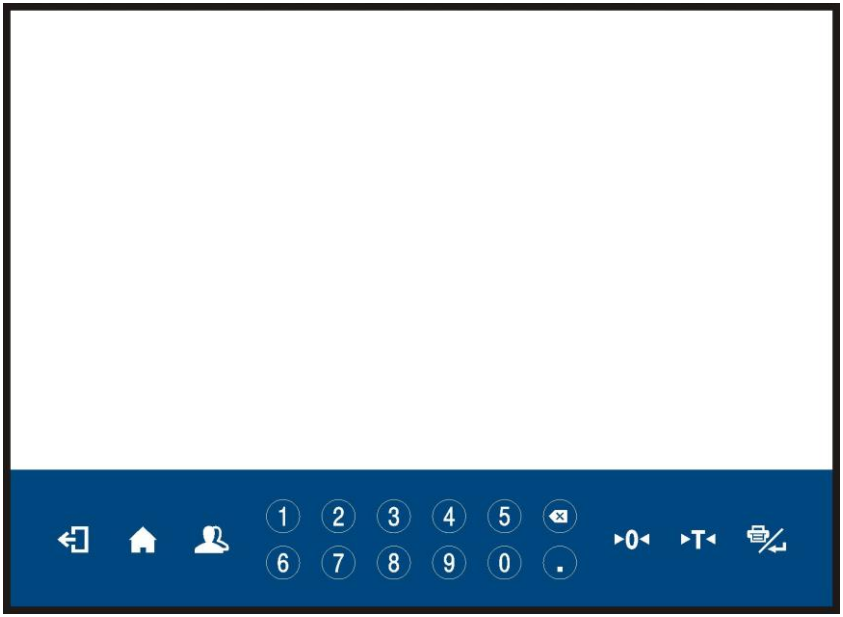
1. INTENDED USE

The scales are a response to growing market demands for an instrument offering simplicity of operation and weighing process automated to the maximum. Due to use of a multifunctional PUE HY10 indicator, the scales are a perfect solution for numerous industry applications. The PUE HY10 is equipped with a stainless steel housing of IP 68/69 ingress protection. It can be operated in places where there is high humidity and wide temperature range: -10°C - +40°C. Colour 10.1" capacitive screen with touch panel enables intuitive operation, making use of keyboard unnecessary.

Standard HY10 indicator is equipped with RS232, 2 USB, 4In/Out connectors and Ethernet port. It can connect up to 6 weighing platforms (2 x internal weighing module + 4 x external weighing module). It cooperates with barcode scanners, receipt printers, label printers, RFID readers and PC accessories (mouse, keyboard, USB flash drive).

⚠	***The indicator must not be operated in hazardous areas endangered with explosion of gases, and in dusty environments.***

2. OPERATION PANEL



Keys

	Press to go back
	Press to enter the menu. Press to go to the home screen.
	Press to log in.
	Press to zero the scale.
	Press to tare the scale.
	Press to send the weighing result to a printer or a computer.
	Press to delete the last character.
	Dot character.
1 … 0	Numeric keys.

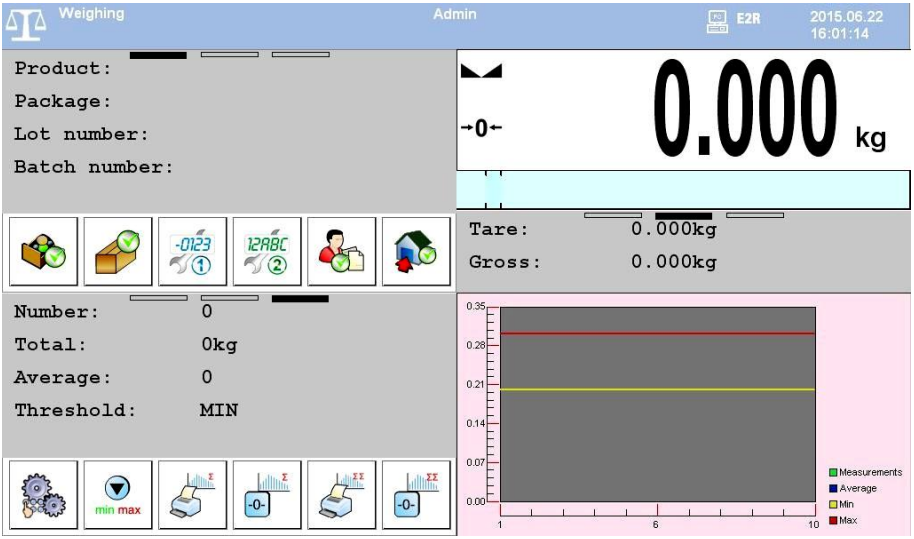
3. START-UP

- Turn the power on, do it by pressing **ON/OFF** switch located at the back of the terminal housing. Operating system loading begins.
- Upon completed start-up, the home screen is displayed automatically.
- The device is ready for operation.

4. HOME SCREEN

The home screen can be divided into 2 sections: a top bar, a workspace.

General layout:



4.1. Top Bar

The top bar displays the following information:

Weighing	Working mode name and symbol.
Log In	Login entry.
PC	Symbol informing that communication with a PC computer is on.
E2R	Symbol informing that communication with E2R SYSTEM is on.
PUE HY 10	Weighing device name.
2012.06.06 06:06:06	Date and time.

4.2. Workspace

The workspace is placed under the top bar, it features 4 screens, programmable for each working mode. Detailed information regarding screen components is to be found in section 12.1 of this manual.

5. OPERATING THE MENU

Due to a colour display and a touch panel, operation of the HY10 menu is intuitive and simple.

5.1. Operation Panel

	Press to go to the menu. Press to go to the home screen directly.
	Press to go to the home screen directly.
	Press to go back.
	Press to go back.
	Press to scroll the menu up.
	Press to scroll the menu down.
	Press to scroll the menu up-down.
	Press to confirm modifications.
	Press to exit, the parameter remains unmodified.
	Press to add a database record.
	Press to disable the selected record. User logout.
D	Press to search a particular database record by date.
N	Press to search a particular database record by name.
C	Press to search a particular database record by code.
	Press to print a database record.
	Press to export control and average tare reports for PGC and SQC modes.
	Press to clear edit box content.
	Press to enable/disable the on-screen keyboard.
	Press to read printout template saved to *.lb file (the button becomes active upon connecting the USB flash drive).
	Press to save the template to *.lb file (the button becomes active upon connecting a USB flash drive).
	Press to select printout template variables out of the list.

5.2. Return to Weighing

Introduced modifications are automatically recorded upon return to the home screen. To return to the home screen:

- press key repeatedly, keep pressing the key until you see the home screen,
- press either button or field, both located in the top bar, the home screen is displayed immediately.

6. PROGRAM STRUCTURE

Program menu is divided into 12 function groups. Function group is a group of interrelated parameters.

Function groups: Weighing, Databases, Reports, Working modes, Communication, Peripherals, Display, Inputs/Outputs, Permissions, Units, Miscellaneous, User adjustment, Info, Update, Remote desktop.

7. LOG IN OPERATION

In order to access operator-related parameters and to edit databases, you need to log in as an operator with **<Administrator>** permission level.

⚠	***<Admin> is a default operator set on each brand new scale. The default operator is assigned with <Administrator> permission level. <Admin> account is not protected by password. Logging of default operator is carried out automatically upon scale start-up. In case of modification of default operator data or upon adding new operators, it is necessary to log in manually.***

7.1. Log In Procedure

- Go to the home screen, press key, wait for the operators database to open.
- Select a particular operator, wait for the on-screen keyboard with a password box to open.
- Enter the password and press key to confirm.
- The home screen is displayed, logged operator name replaces **<Log In>** entry.

7.2. Log Out Procedure

- Go to the home screen, press key, wait for the operators database to open.
- Press log out button (top bar of the user database window):

- The home screen is displayed, logged operator name is replaced with **<Log In>** entry.

7.3. Permission Levels

There are 4 permission levels: Administrator, Advanced Operator, Operator, None.

Access to operator-related parameters, databases and program functions is conditioned by permission level:

Permissions	**Available parameters and functions**
None	Permission to edit operator-related parameters not granted. Operator can neither accept the weighing result nor start the following operations: entering reference sample mass and determining reference sample quantity in <Parts counting> mode, entering reference sample mass and determining reference sample in <Percent weighing> mode, determining density, carrying out dispensing processes and formulations, performing PGC control, SQC control, transactions and vehicle transactions.
Operator	Operator can edit the following submenus: <Weighing>, <Display>[1)] (excluding <Button functions> parameter), <Miscellaneous> [1)]. Operator can run and carry out all weighing operations. Operator can use <Export weighing database to a file> function in <Reports>[2)] menu.
Advanced operator	Operator can edit the following submenus: <Weighing>, <Working modes>; <Communication>; <Peripherals>[1)], <Display>[1)]; <Miscellaneous> [1)]. Operator can run and carry out all weighing operations. Operator can use <Export weighing database to a file> function in <Reports>[2)] menu.
Administrator	Operator can edit all operator-related parameters and all databases[2)], and use all functions. Operator can run and carry out all weighing operations.

1) Functions permitted for edition:

- **<Printouts>** in **<Peripherals / Printer>** submenu.
- **<Template>*** in **<Peripherals / Additional display>** submenu.

- **<Display template>** in **<Display / Text data>** submenu.
- **<Date and Time**> in **<Miscellaneous>** submenu.

2) Operator logged as **<Administrator>** is permitted to change permission levels in **<Permissions>** submenu, and thus restrict/allow editing of particular databases and use of given functions: **<Delete older data>**, **<Weighing counter>**. **<Weighings>** database is an exception, it features **<Read-only>** status.

***)** - *alternatively named as 'sample'.*

8. WEIGHING

Load the weighing pan. Read the result when stability marker is displayed.

⚠	***Only stable weighing results can be recorded (stability marker).***

8.1.Zeroing

To zero mass indication first select respective platform, do it using the touch screen, next press key. Zero indication and the following pictograms are displayed: →0← and .

Zeroing operation means determining new zero point, recognized by the scale as precise zero. The scale can be zeroed only when the indication is stable.

⚠	***Indication can be zeroed only within ±2% range of the maximum capacity. If the zeroed value is greater than ±2% of the maximum capacity, then the software displays a respective error message: <Zeroing out of range. Press taring button or restart the scale>.***

8.2.Taring

To determine net weight value, load the weighing pan with a packaging, wait for a stable indication and press key. Zero indication and the following pictograms are displayed: ***Net*** and . The scale has been tared.

Remember not to exceed the maximum capacity, i.e. sum of tare weight value and load weight value must be lower than the maximum capacity value. Upon unloading of the weighing pan, the sum of tared masses with minus sign is displayed.

You can assign tare value to a particular product stored in the database. In such a case the assigned tare value is automatically acquired upon selection of the given product.

⚠	***It is impossible to tare zero or negative values. When you tare zero or negative values the scale responds with the following message: <Taring out of range. Press zeroing button or restart the scale>.***

8.3. Entering Tare Value Manually

- Go to the home screen, press the previously defined on-screen key, , an on-screen keyboard is displayed.
- Enter tare value and press button.
- Weighing mode is on. The entered tare value with '**-**' sign and ***Net*** and symbols are displayed.

8.4. Dual Range Devices

Switching from weighing with the accuracy of the **I weighing range** to weighing with the accuracy of the **II weighing range** takes place automatically when Max of the **I weighing range** gets exceeded.

In case of dual range scales:

- upon switching to weighing with the accuracy of the I weighing range, →|1|← pictogram/marker is displayed on the left,
- upon switching to weighing with the accuracy of the II weighing range, →|2|← pictogram/marker is displayed on the left.

Switching from weighing with the accuracy of the **II weighing range** to weighing with the accuracy of the **I weighing range** takes place automatically upon pan unloading and returning to AUTOZERO (→0← pictogram/marker is displayed).

8.5. Weighing Unit Change

You can change the weighing unit, to do it:

- press unit displayed in the weighing result window, or
- press programmable button to which **<** kg lb **Unit change>** function has been assigned.

Unit values: g (gram), kg (kilogram), ct (carat), lb (pound), oz (ounce)*, N (Newton)*.

***) –** *unit disabled for verified scales.*

⚠	***You can declare start unit and two custom units – for detailed information read section 15.***

9. SCALE PARAMETERS

You can adjust the scale to ambient conditions (filter level) or to your own needs (Autozero), additionally you can specify minimum mass value.

Access path: **<** / **Readout>**.

⚠	***Weighing parameters concern particular platform therefore prior to setting their values it is necessary to select the platform.***

Weighing parameters:

Median filter	Enter this parameter to eliminate short impulse interferences (e.g. mechanical shocks). Values: **None** - median filter disabled; **0.5, 1, 1.5, 2, 2.5** - median filter enabled.
Filter	Enter this parameter to adjust your weighing device to ambient conditions. The higher filter level, the longer the indication takes to stabilise. Values: **None**, **Very fast**, **Fast**, **Average**, **Slow**.
LO threshold	Enter this parameter to configure the function of automatic operation. The next measurement is saved only when mass indication gets below the set net value of **Lo threshold** parameter.
Autozero	Enter this parameter to enable automatic control and correction of zero indication. There are, however, some cases when this function can be a disturbing factor for the measuring process, e.g. very slow placing of a load on the weighing pan (load adding, e.g. pouring, filling). In such a case, it is recommended to disable the function. Options: ✓ - function disabled, ✓ - function enabled.
Last digit	Enter this parameter to enable/disable display of the last digit (placed on the right of the decimal point) of the weighing result. Values: **Always:** all digits displayed; **Never:** last digit disabled; **When stable:** last digit displayed only when the result is stable.

10. COMMUNICATION

Communication between the indicator and the peripheral devices is established via the following ports: RS232 (1), RS232 (2), Ethernet, TCP, Wireless communication (option). To set the ports go to **<** / **Communication>** menu.

10.1. RS 232 Settings

- Select **<RS232 (1)>** or **<RS232 (2)>** port.
- Set transmission parameters:

Baud rate	4800, 9600, 19200, 38400, 57600, 115200 bit/s.
Data bits	5, 6, 7, 8.
Stop bits	None, 1, 1.5, 2.
Parity	None, Odd, Even, Marker, Space.

10.2. ETHERNET Settings

- Select **<Ethernet>** port.
- Set transmission parameters:

DHCP	Yes, No
IP Address	192.168.0.2
Subnet mask	255.255.255.0
Default gateway	192.168.0.1
DNS	192.168.0.1
MAC address	- - -

	The above presented values serve informative purposes only. Set the transmission parameters in accordance with your local network.
	<MAC address> parameter with <Read-only> attribute is automatically assigned to the weighing device.
	If you select option for <DHCP> parameter then the remaining transmission parameters upon restart are given <Read-only> attribute.

10.3. TCP Settings

TCP, *Transmission Control Protocol*, is a stream protocol of communication between two computers. **TCP** operates in client – server mode.

Server is waiting for a connection request form a specified port, whereas client initiates connection to a server. Scale program enables setting port number for **TCP** protocol.

Procedure:

- Select **<Tcp / Port>**, **<Port>** edit box with an on-screen keyboard is displayed.
- Enter required port number and press button to confirm.

	For RADWAG-manufactured devices, the default TCP port number is 4001.

10.4. Wi-Fi® Settings

Optional design

	Wi-Fi® is a registered trademark of Wi-Fi Alliance The trademark used in this document serves informative purposes, it does not stand for compliance of any products with products certified by Wi-Fi® Alliance organisation.

10.4.1. Network Status

- Press **<Network status>** field and check selected network parameters.
- Respective window with network parameters is displayed:

Name	Value	Description
Network	-	Network name.
Network Status	Connected	Network status values: connected, disconnected.
RSSI	- dbm - %	Network signal strength.
Forget network	-	Disconnecting current network.

The selected network and parameters for connection are stored by the scale program. The program connects to the network in accordance with the stored parameters each time the scale is switched on.

10.4.2. Available Networks

You can use **<Available networks>** parameter to view the list of networks detected by the scale.

Procedure:

- Enter **< Wi-Fi® / Available networks>** submenu and select required network.
- Press **<Refresh>** button to search for available networks.

	Pictogram with a padlock means that the password is required.

10.4.3. Transmission Parameters

- Select **< Wi-Fi®>** parameter.
- Set transmission parameters:

DHCP	Yes, No
IP Address	192.168.0.2
Subnet mask	255.255.255.0
Default gateway	192.168.0.1
DNS	192.168.0.1
MAC address	---

	The above presented values serve informative purposes only. Set the transmission parameters in accordance with your local network.
	<MAC address> parameter with <Read-only> attribute is automatically assigned to the weighing device.
	If you select option for <DHCP> parameter then the remaining transmission parameters upon restart are given <Read-only> attribute.

- Upon modifications, press button, the following message is displayed: **<Restart to implement changes>** is displayed.
- Return to the weighing mode and restart the device.

11. PERIPHERAL DEVICES

11.1. Computer

The scale can connect with a computer. Active **scale – computer** connection is signalled by pictogram (top bar of the home screen). To configure 'scale' - 'computer' connection settings go to **<** / **Peripherals** / **Computer>** submenu.

11.1.1. Port

Parameter allowing you to set port for communication between the scale and the computer. Available ports: RS232 (1), RS232 (2), TCP.

Procedure:

- Enter **<** **Peripherals** / **Computer** / **Port>** submenu and select respective port.

11.1.2. Address

Parameter allowing you to set address of a scale connected with the computer.

Procedure:

- Enter **<** **Peripherals** / **Computer** / **Address>** submenu, **<Address>** edit box with an on-screen keyboard is displayed.
- Enter the address and press key to confirm changes.

11.1.3. Continuous Transmission

Parameter allowing you to activate 'scale' - 'computer' continuous transmission. In order to send the content of **<** **Weighing printout template>** to a computer continuously, you must activate **<Continuous transmission>** parameter.

Procedure:

- Enter **<** **Peripherals** / **Computer** / **Continuous transmission>** submenu and set respective option.

Options:

	Continuous transmission disabled.
	Continuous transmission enabled.

11.1.4. Weighing Printout Template

Parameter allowing you to edit a printout template, the template is designed using scale and sent to a computer.

Procedure:

- Enter **<Peripherals / Computer / Weighing printout template>** submenu, **<Weighing printout template>** edit box with an on-screen keyboard is displayed.
- Modify the template and press button to confirm changes.

11.1.5. E2R

Parameter allowing you to establish connection between the scale and the **E2R System** PC software. **E2R System** is a modular solution designed to comprehensively manage production processes, some stages of which consist in weighing.

	<E2R System> parameter can be activated only by an operator granted with <Administrator> permission level.

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

<E2R System> submenu parameters:

System active	Enter to activate connection with **E2R System** PC software: - connection not established, - connection established. Successfully established connection is signalled with display of E2R pictogram on a top bar of the home screen.
Lock product change	Enter to prevent product change: - lock disabled, - lock enabled.
Force product selection	Enter to enforce selection of a product prior to weighing: - lock disabled, - lock enabled.
Delete sent reports	Enter to cause PGC report deletion upon it is sent to E2R: - lock disabled, - lock enabled.

11.1.6. Established Connections

List of all connections established with other instruments, generated automatically. Each connection contains the following information: IP address, port number and connection time.

Queue time for establishing the connection is 15 minutes maximum. After 15 minutes, connection data is removed from the list of connections.

	The parameter is available after setting computer port to <Tcp> value.
	In case of more than one connection, pictogram (top bar of the home screen) turns red.

11.1.7. Authorization Password

Additional security against unauthorized connection with the scale. Password is not required. Access path: **<** **/** **Peripherals / Computer / Authorization password>**.

	'Authorization password' parameter is available after setting computer port to <Tcp> value.

11.2. Printer

<Printer> submenu allows you to:

- set port for establishing communication with a printer,
- select printer code page,
- define printout templates,
- enable/disable given template printout.
- redirect (copy) the printout to a PC port.

11.2.1. Port

Parameter allowing you to set port for communication between the scale and the printer. Available ports: RS232 (1), RS232 (2), USB, TCP.

Procedure:

- Enter **<** **Peripherals /** **Printer /** **Port>** submenu and set respective option.

11.2.2. Code Page

In order to provide correct cooperation of the weighing device with the printer (correct printout of diacritical signs of a given language) it is necessary to make sure that the code page of a sent printout is accordant with a code page of a printer.

Procedure:

- Enter **<Peripherals / Printer / Code page>** submenu, an on-screen keyboard is displayed.
- Enter respective value and press key for confirmation.

	Default code page value of the printer is 1250 – Central European code page.

11.2.3. Printout Templates

Parameter allowing you to define individual printout templates.

Procedure:

- Enter **<Peripherals / Printer / Printouts>** submenu.
- Select and edit respective template, edit box with default value and an on-screen keyboard is displayed.
- Modify the address and press button to confirm changes.

	Printout template list is conditioned by a working mode.

11.2.4. Printouts Activation

Parameter enabling/disabling print of selected templates via scale-connected printer.

Procedure:

- Enter **<Peripherals / Printer / Printouts activation>** submenu and enable/disable particular template that is to be printed (- Template enabled, - Template disabled).

11.2.5. Redirect to PC

Parameter allowing you to redirect (duplicate) the printout to a set PC port.

Procedure:

- Enter **<Peripherals / Printer / Redirect to PC>** submenu and set respective option (- Redirection enabled, - Redirection disabled).

11.3. Radwag Print Studio

The scale can connect with a printout server, the Radwag Print Studio. Radwag Print Studio is a PC software integrated with **Label Editor R02**, designed to print labels via different printer types.

To configure 'scale' - 'printout server' connection settings go to **< / Peripherals / Radwag Print Studio>** submenu.

11.3.1. Radwag Print Studio Activation

Activated Radwag Print Studio allows you to print labels stored on a printout server. All server-connected scales use common label database.

Procedure:

- Enter **<Peripherals / Radwag Print Studio>** submenu and enable/disable Radwag Print Studio (- option enabled, - option disabled).

	In case of activated Radwag Print Studio, local database labels (stored on a scale) are unavailable.

11.3.2. Search for Printout Servers

Parameter allowing you to search printout servers that run in local network.

Procedure:

- Enter **<Peripherals / Radwag Print Studio / Search for printout servers>** submenu, list of servers is displayed.
- Select a particular server.

	If the printout server you are looking for has not been found, make sure that it is activated.

11.3.3. IP Address

IP address of a computer on which the printout server is run.

Procedure:

- Enter **<** **Peripherals /** **Radwag Print Studio /** **IP Address>** submenu.
- Edit box with a default IP address and an on-screen keyboard is displayed.
- Modify the address and press button to confirm changes.

	In case of unknown IP address of the computer with the server, use search option.

11.3.4. IP port

Printout server connects via a specified port, the scale initiates connection to the server. Scale program enables setting port number for **TCP** protocol.

Procedure:

- Enter **<** **Peripherals / Radwag Print Studio /** **IP Port>** submenu, **<IP Port>** edit box with an on-screen keyboard is displayed.
- Enter the required port number and press button to confirm.

	The default IP port number is 4100.

11.3.5. Use Server Printer

Parameter enabling print of labels via a connected to the printout server.

Procedure:

- Enter **<** **Peripherals / Radwag Print Studio /** **Use server printer>** submenu and set respective option (- option enabled, - option disabled).

11.3.6. Share Printers

Parameter enabling remaining printout-server-connected scales to print via printers connected to the RADWAG scale.

Procedure:

- Enter **<Peripherals / Radwag Print Studio / Share printers>** submenu and set respective option (- option enabled, - option disabled).

11.3.7. Server Printer

Parameter enabling selection of a server-connected printer.

Procedure:

- Enter **<Peripherals / Radwag Print Studio / Server printer>** submenu, list of printers is displayed.
- Select a respective printer.

	Shall the list of printers be empty, check if the printers have been added to the printout server. To do it, run Radwag Printer Studio wizard on a computer with a printout server.

11.4. Barcode Scanner

The scale enables communication with a barcode scanner. The barcode scanner is used to facilitate quick search for database records.

	Enter <Communication> submenu and set baud rate for a barcode scanner (by default 9600b/s). For a detailed description of 'scale' - 'barcode scanner' communication, read APPENDICES 01 manual.

11.4.1. Port

Communication between the weighing device and the barcode scanner can be established via the following ports: RS232 (1), RS232 (2), TCP, USB.

Procedure:

- Enter **<Peripherals / Barcode Scanner / Port>** submenu and set respective port.

11.4.2. Prefix/Suffix

Parameter allowing you to edit **<Prefix>** and **<Suffix>** in order to provide synchronization of the scale program with a barcode scanner.

	In RADWAG-adopted standard, the prefix is 01 sign (byte) hexadecimal format, the suffix is 0D sign (byte) hexadecimal format. For a detailed description of 'scale' - 'barcode scanner' communication, read APPENDICES 01 manual.

Procedure:

- Enter **< Barcode Scanner / Prefix>** submenu and, using the on-screen keyboard, enter a required value (hexadecimal format). Press button to confirm.
- Select **<Suffix>** parameter and enter hexadecimal value using the on-screen keyboard. Press button to confirm.

11.4.3. Field Selection

Parameter allowing you to specify, for which field the search is to be carried out in particular databases.

Procedure:

- Enter **< Peripherals / Barcode Scanner / Field selection>** submenu, list of fields for search is displayed.

Values: Product, Operator, Customer, Packaging, Source Warehouse, Target Warehouse, Dosing Process, Formulation, Universal Variable 1, Universal Variable 2, Universal Variable 3, Lot number, Batch number, Mass / Quantity, Workflow.

- Enter selected option, the following list of parameters is displayed:

	Filtering	Parameter allowing you to declare search criteria.
	Offset	Parameter allowing you to set the first significant code's character, characters preceding the first significant character are skipped during comparison search.
	Code Length	Parameter allowing you to set the number of code's characters to be taken into account during search procedure.
	Start marker	Parameter allowing you to declare scanned code start (either one digit or digits set can be declared).
	End marker	Parameter allowing you to declare scanned code end (either one digit or digits set can be declared).

- **<Formulation>** field is an exception, it features additional submenu, **<Ingredients>**, comprising the following parameters:

	Filtering	Parameter allowing you to declare search criteria (values: **None**, **Code**).
	Offset	Parameter allowing you to set the first significant code's character, characters preceding the first significant character are skipped during comparison search.
	Code Length	Parameter allowing you to set the number of code's characters to be taken into account during search procedure.
	Start marker	Parameter allowing you to declare scanned code start (either one digit or digits set can be declared).
	End marker	Parameter allowing you to declare scanned code end (either one digit or digits set can be declared).

Filtering criteria conditioned by the field type:

Field Selection	**Filtering**
Product	None, Name, Code, EAN code
Operator [1)]	None, Name, Code, Card no.
Customer	None, Name, Code.
Packaging	None, Name, Code.
Source warehouse	None, Name, Code.
Target warehouse	None, Name, Code.
Dosing process	None, Name, Code.
Formulation	None, Name, Code.
Ingredient	None, Code
Universal variable 1	None, Code
Universal variable 2	None, Code
Universal variable 3	None, Code
Lot number	✓ No, ✓ Yes
Batch number	✓ No, ✓ Yes
Mass / Quantity [2)]	✓ No, ✓ Yes
Workflow	None, Name, Code.

1	Scanning user name or code results with user selection, password is required. Scanning user card number results with user log in, password is not required.

2	Option enabling weighing to be done using the barcode scanner. Available for Weighing, Parts counting, Percent weighing and Formulations modes. If the barcode comprises number 100 then upon scanning, mass 100 x (where x stands for the current unit) is saved. If the bar code comprises unit supported in a particular working mode, placed after the space (e.g. 100 g, 100 kg, 100 pcs), then upon scanning, value of mass with the unit is saved. In case of Formulations and Formulation Orders it is not possible to select product and save weighing with one scan. Two codes with markers are required for the above.

11.4.4. Test

Parameter allowing you to verify if operation of a barcode scanner connected to the scale is correct.

Procedure:

- Enter **< Barcode Scanner / Test>** submenu, **<Test>** edit box is displayed, it features ASCII field and HEX field.
- The code is scanned and entered to the ASCII field and HEX filed, next the test result is displayed in the bottom part.

When:

- **<Prefix>** and **<Suffix>** declared in scale settings comply with **<Prefix>** and **<Suffix>** of the scanned code, the test result is **<Positive>**.
- **<Prefix>** and **<Suffix>** declared in scale settings do NOT comply with **<Prefix>** and **<Suffix>** of the scanned code, the test result is **<Negative>**.

11.4.5. Delete Markers

Enabling/disabling **<88... Start marker>** and **<...99 End Marker>** in scale-generated barcodes.

Procedure:

- Enter **< Barcode scanner / Delete markers>** submenu and set respective value.

Where:

	Markers enabled.
	Markers disabled.

11.4.6. Auto Measurement-Record

Parameter enabling automatic record of measurement result at the moment when a particular database record is selected via the barcode scanner.

Procedure:

- Enter **< Barcode scanner / Auto measurement-record>** submenu and set a respective option.

Where:

	Auto measurement-record disabled.
	Auto measurement-record enabled.

11.4.7. J S

Use of barcode scanner activates script written in Java Script language.

Procedure:

- Enter **< Barcode Scanner / JS>** submenu and set a respective Java Script code.

11.5. Transponder Card Scanner

You can log in to the device by means of a transponder card scanner, to do it hold your card near the scanner.

	For correct 'balance' - 'transponder card scanner' cooperation set appropriate baud rate value in < Communication> submenu (by default 9600b/s).

11.5.1. Transponder Card Scanner Port

Communication between the weighing device and the transponder card scanner can be established via the following ports:RS232 (1), RS232 (2).

Procedure:

- Enter **< Peripherals / Transponder card scanner / Port>** submenu and set respective port.

11.5.2. Assigning Card Number to the Operator

In order to enable operator to log in via a transponder card scanner, first it is necessary to assign a number of an already registered card to the selected operator (database of operators).

Procedure:

- Connect the transponder card scanner to RS232 (1) or RS232(2) port.
- Select 'scale' - ' transponder card scanner' communication port.
- Go to **<** **Communication>** submenu and set baud rate value compatible with transponder card scanner (by default: 9600b/s).
- Enter operator database and edit a particular user.
- Enter **<**RFID **Card no.>** parameter, **<Card no.>** edit box with an on-screen keyboard is displayed.
- Place the card close to the transponder card scanner, scale program displays registered card number automatically in **<Card no.>** edit box.
- Press button to confirm and return to weighing.

11.6. Additional Display

Group of parameters allowing you to set connection with external additional displays.

11.6.1. Port

Parameter allowing you to set port for communication between the scale and the additional display. Available ports: RS232 (1), RS232 (2), TCP.

Procedure:

- Enter **<** **Peripherals / Additional display / Port>** submenu and set a respective port.

11.6.2. Communication Protocol Template

The scale connects with WD or WWG displays. In order to establish connection between the scale and the additional display it is necessary to define respective communication protocol template.

Procedure:

- Enter **<** **Peripherals / Additional display / Template>*** submenu, **<Template>*** edit box with an on-screen keyboard is displayed.
- Enter demanded template value (to do it use an on-screen keyboard) or select respective value from the list (to do it press button).

Template variable values:

{141}	Template for connection with WD display.
{142}	Template for connection with WWG display.

- Press button to confirm.

	By default <Template>* parameter value is set to {141} variable.

***)** - *alternatively named as 'sample'.*

11.7. Modbus

Modbus is a standard communication protocol specifying terms of exchange of data between two or more devices. **Modbus** enables quick data transfer and simultaneous control aiming to check if the data is correct.

	For detailed information concerning Modbus protocol read „MODBUS - PUE 7.1 PUE HY10 Communication Protocol" manual.

11.7.1. Communication Port

- Enter **<Peripherals / Modbus / Port>** submenu and set respective port.

Values: None, RS232 (1), RS232 (2), Tcp.

11.7.2. Address

- Enter **<Peripherals / Modbus / Address>** submenu, **<Address>** edit box with an on-screen keyboard is displayed.
- Enter the address and press button to confirm changes.

11.8. Advanced Settings

Group of additional parameters for communication with peripherals. To set these parameters go to **< / Peripherals / Advanced settings>** submenu:

Printer quantity	Parameter allowing to declare operation of 3 printers. Values: **1**, **2** or **3**.
Barcode scanner quantity	Parameter allowing to declare operation of 3 barcode scanners. Values: **1**, **2** or **3**.

< **Peripherals>** group of parameters gets automatically expanded with declared printers and barcode scanners quantity.

12. DISPLAY

You can customize the home screen and the displayed data. To enter **<** **Display>** submenu:

- press key, next select **<** **Display>** button.
- press workspace of the home screen (PGC, SQC modes excluded).

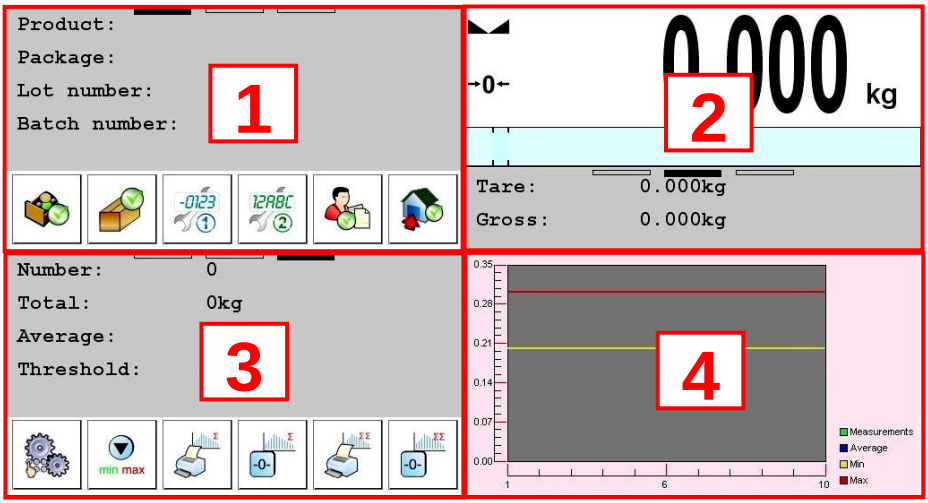
Home screen parameters:

	Screen components
	Text data
	Button functions
	Bar graph
	Measurement graph

***)** – *For **PGC** and **SQC** working modes, the button functions are programmed separately for: the home screen, settings screen, process screen.*

12.1. Screen Components

The workspace comprises 4 programmable screens for particular working modes:



⚠	***Exceptions are PGC, SQC, Vehicle scale modes, in case of these modes exclusively screen components 2 and 4 are programmable.***

<Screen components> submenu comprises the following components:

	Screen 1 components
	Screen 2 components
	Screen 3 components
	Screen 4 components
	Set default

Each programmable screen comprises the following: mass, bar graph, workspace, buttons, graph, databases*.

***)** - *Component available exclusively for screen 1 and 2, where:*

- *component declared for screen 1 takes space of screen 1 and 3 automatically,*
- *component declared for screen 2 takes space of screen 2 and 4 automatically.*

<Set default> function allows to set default values of screen components for a given working mode.

Space size is declared for each component therefore the scale program automatically reduces list of components to be selected for a particular programmable screen, see the below table:

	Mass	Bar graph	Workspace	Buttons	Graph	Databases
1	✔	✔	✔	-	-	-
2	✔	✔	-	✔	-	-
3	✔	-	✔	✔	-	-
4	-	✔	✔	✔	-	-
5	-	-	-	-	✔	-
6	-	-	-	-	-	✔

Screen components can connect between programmable screens (scaling option enabled) wherein:

Screen component	Screens to be connected
Mass	Programmable screens 1 and 2. Programmable screens 3 and 4.
Bar graph	
Graph	
Workspace	Programmable screens 1 and 2. Programmable screens 3 and 4. Programmable screens 1 and 3. Programmable screens 2 and 4.
Databases	Programmable screens 1 and 3. Programmable screens 2 and 4.

Screens connect on particular conditions:

- In case of **<Mass>** component it is necessary to declare the same platform number.
- In case of **<Bar graph>** component it is necessary to declare the same platform number.
- In case of **<Workspace>** component it is necessary to declare the same display template.

12.2. Mass

<Mass> screen component is a weighing result window providing weighing-related data:

Procedure:

- Enter **<Display / Screen components>** submenu and select a particular screen component.
- Enable **<Mass>** screen component.

12.3. Text Data

< **Text data>** submenu allows you to set the following components:

		Display Template	Workspace data. For detailed description read section 12.3.1.
		Left display template	
		Right display template	
		Font	Font settings.
		Type	Parameter allowing you to change font face of text data displayed in the workspace. Values: **Arial**, **Courier**.
		Size	Parameter allowing you to change font size of text data displayed in the workspace. Values: **Small**, **Medium**, **Large**.
		Bold	Parameter allowing you to apply bold font for text data displayed in the workspace.
		Italics	Parameter allowing you to apply italic font for text data displayed in the workspace.
		Colour	Parameter allowing you to change font colour of text data displayed in the workspace. 18-colour palette.
		Background colour	Parameter allowing you to set workspace background colour. 18-colour palette.
		Set default	Default settings of **<Text data>** submenu.

12.3.1. Display Template

The home screen features workspace; the workspace content can be customized freely and independently for each working mode.

The workspace comprises 3 display templates: display template, left display template, right display template.

Graphics at the top inform which of the 3 templates is currently displayed. In order to switch to a different template drag the workspace screen to the left/right respectively.

Procedure:

- Enter **<** **Display /** **Text data>** submenu, select and edit respective template, edit box with default value and an on-screen keyboard is displayed.
- Modify the template and press button to confirm changes.

Default values of display template for particular working modes:

Weighing:	{40:Product:,-15}{50} {40:Tare:,-15}{9}{11} {40:Gross:,-15}{8}{11} {40:Number:,-15}{15} {40:Sum:,-15}{16}{11}
Parts counting:	{40:Product:,-15}{50} {40:Reference sample mass:,-15}{35}{11} {40:Net:,-15}{7}{11} {40:Tare:,-15}{9}{11}
Percent weighing:	{40:Product:,-15}{50} {40:Reference sample mass:,-15}{36}{11} {40:Net:,-15}{7}{11} {40:Tare:,-15}{9}{11}
Dosing:	Dosing process {175}
Formulations:	{220} {40:Ingredient:,-12}{230}/{231}[{226}] {40:Portion:,-12}{228}{11}/{227}{11} {40:Batch portion:,-12}{232}/{233} {40:Completed:,-12}{225:F0}
PGC	Product: {50} Code: {51}
SQC	Product: {50} Code: {51}
Density:	Product: {50}
Animal weighing:	{40:Tare:,-15}{9}{11} {40:Gross:,-15}{8}{11}
Transactions:	{40:Transaction:,-16}{384} {40:Product:,-16}{50} {40:Product No:,-16}{390} {40:Program Sum:,-16}{391}{11}

12.4. Button functions

Parameter allowing to program on-screen buttons. On-screen buttons are programmed individually for each programmable screen and for each weighing mode. A given button gets activated at the moment when it is assigned with a particular function. Unassigned buttons remain inactive.

Procedure:

- Enter **<Display / Button functions>** submenu, go to a particular screen submenu (1, 2, 3 or 4).
- Set a respective option for a particular on-screen button.

<Set default> function allows to set default values of programmable buttons for a given working mode.

⚠	***List of all available functions that can be assigned to programmable buttons is to be found in APPENDICES 01 manual.***

12.5. Bar Graph

Bar graph is a graphic visualisation used in the course of weighing operation. It allows to check if the expected weight value of measured load has been reached, and whether the weight value is not out of tolerance threshold.

12.5.1. Bar Graph Type

- Enter **<Display / Bar graph / Bar graph type>** submenu and set a respective bar graph type.

Available bar graph types: none (no bar graph displayed), fast weighing, weighing threshold signalling, linear, workspace, control*.

***) – PGC** and **SQC** working modes exclusively. The remaining bar graph types are not available for **PGC** and **SQC** working modes.*

12.5.2. 'Fast Weighing' Bar Graph

Settings of **Fast Weighing** bar graph are to be found in **<Display / Bar graph / Fast weighing>** submenu:

MIN MAX	**MIN, MAX thresholds working mode**	**Stable** – MIN, MAX thresholds signalling lights up when LO threshold gets exceeded, and when stable weighing result is obtained. **Unstable** – MIN, MAX thresholds signalling lights up when LO threshold gets exceeded.
OK	**OK threshold working mode**	**Stable** – OK threshold signalling lights up when LO threshold gets exceeded, and when stable weighing result is obtained. **Unstable** – OK threshold signalling lights up when LO threshold gets exceeded.
MIN	**MIN threshold signalling colour**	Enter to select colour for MIN threshold signalling; 18-colour palette.
OK	**OK threshold signalling colour**	Enter to select colour for OK threshold signalling; 18-colour palette.
MAX	**MAX threshold signalling colour**	Enter to select colour for MAX threshold signalling; 18-colour palette.
	Gradient	Enter to enable/disable 'Gradient' fill effect.

	Background colour	Enter to select bar graph background colour; 18-colour palette.
	Border colour	Enter to select bar graph border colour; 18-colour palette.

Operation description:

- Bar graph consists of 8 red fields and 3 green fields.

- Green fields signal weighings comprised within MIN and MAX thresholds.

  MIN = low limit of correct weighing LO.
  MAX = high limit of correct weighing HI.

- If the weighing result value is greater than MIN value (but lower than 1/3 of MIN - MAX range), green square-shaped field and green triangle-shaped field on the left light up.
  If the weighing result value is greater than 1/3 of MIN - MAX range and lower than 2/3 of MIN - MAX range, green square-shaped field lights up.
  If the weighing result value is greater than 2/3 of MIN - MAX range and lower than MAX value, green square-shaped field and green triangle-shaped field on the right light up.
- If the weighing result value is lower than MIN value, red arrow-shaped fields on the left light up. The lower the value the more red fields on the left are lit up.
- If the weighing result value is greater than MAX value, red arrow-shaped fields on the right light up. The greater the value the more red fields on the right are lit up.

MIN value is on the left, on the border between red arrow-shaped field and green triangle-shaped field; MAX value is on the right, on the border between green triangle-shaped field and red arrow-shaped field.

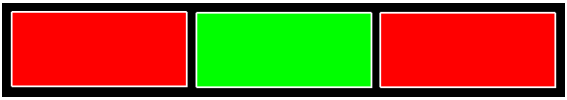
12.5.3. 'Weighing Threshold Signalling' Bar Graph

Settings of **<Weighing threshold signalling>** bar graph are to be found in **<Display / Bar graph / Weighing threshold signalling>** submenu:

MIN MAX	**MIN, MAX thresholds working mode**	**Stable** – MIN, MAX thresholds signalling lights up when LO threshold gets exceeded, and when stable weighing result is obtained. **Unstable** – MIN, MAX thresholds signalling lights up when LO threshold gets exceeded.
OK	**OK threshold working mode**	**Stable** – OK threshold signalling lights up when LO threshold gets exceeded, and when stable weighing result is obtained. **Unstable** – OK threshold signalling lights up when LO threshold gets exceeded.
MIN	**MIN threshold signalling colour**	Enter to select colour for MIN threshold signalling; 18-colour palette.
OK	**OK threshold signalling colour**	Enter to select colour for OK threshold signalling; 18-colour palette.
MAX	**MAX threshold signalling colour**	Enter to select colour for MAX threshold signalling; 18-colour palette.
	Gradient	Enter to enable/disable 'Gradient' fill effect.
	Background colour	Enter to select bar graph background colour; 18-colour palette.
	Border colour	Enter to select bar graph border colour; 18-colour palette.

Operation description:

- Bar graph consists of 2 red fields and 1 green field.



- **Left red field –** the field lights up when the weight value of a measured load is lower than MIN value (**Min** threshold).
- **Middle green field –** the field lights up when the weight value of a measured load is comprised within tolerance low threshold and tolerance high threshold set for a given product (**OK** threshold).
- **Right red field –** the field lights up when the weight value of a measured load is greater than MAX value (**Max** threshold).

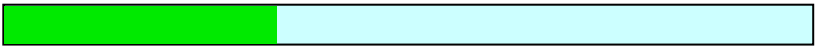
12.5.4. 'Linear' Bar Graph

Settings of **<Linear>** bar graph are to be found in **<Display / Bar graph / Linear>** submenu:

MIN	**MIN threshold signalling colour**	Enter to select colour for MIN threshold signalling; 18-colour palette.
OK	**OK threshold signalling colour**	Enter to select colour for OK threshold signalling; 18-colour palette.
MAX	**MAX threshold signalling colour**	Enter to select colour for MAX threshold signalling; 18-colour palette.
	MIN, MAX range background colour	Enter to select MIN, MAX range background colour. 17-colour palette.
	OK range background colour	Enter to select OK range background colour. 18-colour palette.
	Gradient	Enter to enable/disable 'Gradient' fill effect.

Operation description:

Bar graph of this type provides you with a linear presentation of the weighing range.



Additionally it shows where Min and Max thresholds are (providing that they have been declared).

- Visualisation of mass value lower than MIN value:

- Visualisation of mass value higher than MIN value and lower than MAX value:

- Visualisation of mass value higher than MAX value:

12.5.5. 'Control' Bar Graph

<Control> bar graph is enabled in **<PGC>** working mode.

Operation description:

Bar graph signals:

- **Qn** nominal mass, declared for a selected product,
- **MIN** and **MAX** thresholds - providing that they have been declared,
- **Qn-T** mass values,
- **Qn-2T** mass values,
- **Qn+T** mass values,
- **Qn+2T** mass values.

Where:

Qn - nominal mass
T - T error
2T - double T error

- Visualisation of mass value lower than **Qn-2T** value:

- Visualisation of mass value higher than **Qn-2T** and lower than **Qn-T** value:

- Visualisation of mass value higher than **Qn-T** and lower than **Qn+T** value:

The field between Qn-T and Qn+T values gets zoomed automatically, **magnifying glass** icon is displayed.

- Visualisation of mass value higher than **Qn+T** and lower than **Qn-2T** value:

- Visualisation of mass value higher than **Qn+2T** value:

Operation: <SQC> working mode

Bar graph signals:

- **Qn** nominal mass, declared for a selected product,
- **Qn-T** mass values,
- **Qn-T2** mass values,
- **Qn+T** mass values,
- **Qn+T2** mass values.

Where:

Qn - nominal mass
T - T error
T2 - T2 error

- Visualisation of mass value lower than **Qn-T2** value:

- Visualisation of mass value higher than **Qn-T2** and lower than **Qn-T** value:

- Visualisation of mass value higher than **Qn-T** and lower than **Qn+T** value:

The field between Qn-T and Qn+T values gets zoomed automatically.

- Visualisation of mass value higher than **Qn+T** and lower than **Qn+T2** value:

- Visualisation of mass value higher than **Qn+2T** value:

12.5.6. 'Workspace' Bar Graph

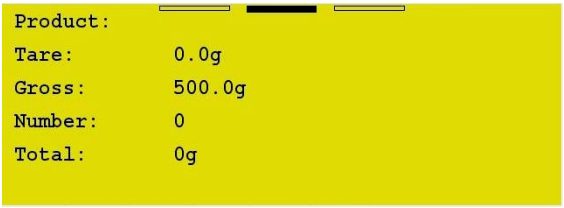
Settings of **<Workspace>** bar graph are to be found in **<Display / Bar graph / Workspace>** submenu:

MIN	**MIN threshold signalling colour**	Enter to select colour for MIN threshold signalling; 18-colour palette.
OK	**OK threshold signalling colour**	Enter to select colour for OK threshold signalling; 18-colour palette.
MAX	**MAX threshold signalling colour**	Enter to select colour for MAX threshold signalling; 18-colour palette.

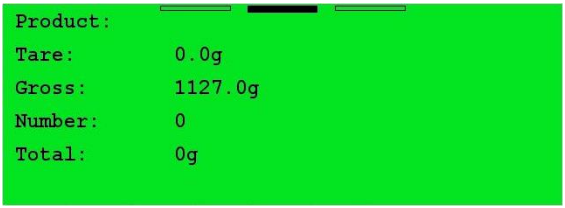
Operation description:

Color-coded background of the workspace signals the MIN, MAX thresholds if they have been declared:

- Visualisation of mass value lower than MIN value:



- Visualisation of mass value higher than MIN value and lower than MAX value:



- Visualisation of mass value higher than MAX value:

13. INPUTS/OUTPUTS

The PUE 7.1 series scale is equipped with 4 inputs and 4 outputs. Access path: **<** / **Inputs/Outputs>** submenu.

13.1. Input Setup

- Enter **< Inputs/Outputs / Inputs>** submenu and edit selected input, list of functions that can be assigned to the input is displayed.
- Select the function you want to assign to the intput, next go back to the home screen.

⚠	***List of functions that can be assigned to inputs is to be found in APPENDICES 01 manual. By default all functions are assigned with <None> option.***

13.2. Output Setup

A given output gets activated at the moment when it is assigned with a particular function. Unassigned outputs remain inactive.

Procedure:

- Enter **< Inputs/Outputs / Outputs>** submenu and edit selected output, the list of functions that can be assigned to the output is displayed automatically.

None	Output inactive.
Stable	Stable weighing result over LO threshold value.
MIN stable	Stable weighing result below MIN threshold.
MIN unstable	Unstable weighing result below MIN threshold.
OK stable	Stable weighing result between MIN and MAX thresholds.
OK unstable	Unstable weighing result between MIN and MAX thresholds.
MAX stable	Stable weighing result over MAX threshold.
MAX unstable	Unstable weighing result over MAX threshold.
Cycle completion confirmation *	Signal confirming dosing cycle completion (dispensing of particular quantity of portions).
Zero	Zero weighing result („zero” marker).
! OK unstable	Unstable weighing result out of OK threshold.
! OK stable	Stable weighing result out of OK threshold.
Measurement saved	Signal confirming record of measurement value - output activated for 500 [ms].

Taring completed	Signal confirming taring operation completion - output activated for 500 [ms].
Zeroing completed	Signal confirming zeroing operation completion - output activated for 500 [ms].
Error	Message informing on error occurrence.
PGC – pending weighing	Signal informing on pending weighing in PGC control process.
PGC – pending control	Signal informing on pending PGC control process.

***)** *- N/A in case of **Standard** program version.*

- - Select given function from the list and return to weighing.

	By default all functions are assigned with <None> option.

13.3. Input/Output Service

<Service> parameter allows you to test whether inputs and outputs operate as expected/set.

Procedure:

- Enter **< Inputs/Outputs / Service>** submenu.
- Send signal to an input, as a result the input colour changes, it turns to green.
- Click output, it gets activated (signal value: high; output on), as a result the output colour changes, it turns to green.

Where:

1	Input/output off.
1	Input/output on.

14. PERMISSIONS

< Permissions> submenu is available for operators logged as **Administrator**. This group of parameters allows you to determine permission level for particular operators. There are 4 permission levels: **None**, **User**, **Advanced user**, **Administrator**.

	When <None> option is set, all unlogged operators can configure settings and/or access databases.

Access path: **<** / **Permissions>**.

<Permissions> submenu parameters:

Anonymous operator	Parameter allowing to assign an unlogged operator (so called anonymous operator) with a permission level.
Date and time	Parameter allowing to set permission levels enabling particular operators to edit **<Date and time>** submenu parameters.
Printouts	Parameter allowing to set permission levels enabling particular operators to edit printout templates.
Display	Parameter allowing to set permission levels enabling particular operators to edit **<Display>** submenu parameters.
Miscellaneous	Parameter allowing to set permission levels enabling particular operators to edit **<Misc.>** submenu parameters.
Units	Parameter allowing to set permission levels enabling particular operators to edit **<Units>** submenu parameters.
Parameters	Parameter allowing to set permission levels enabling particular operators to edit **<Parameters>** submenu parameters.
Result control	Parameter allowing to set permission levels enabling particular operators to edit **<Result control>** submenu parameters.
Database Editing	Parameter allowing to set permission levels enabling particular operators to edit the following databases: products, customers, formulations, dosing processes, labels, packaging, warehouses, vehicles, images, weighing counter, workflow, delete older data.
Select database record	Parameter allowing to set permission levels enabling particular operators to select given database records: products, customers, formulations, dosing processes, packaging, warehouses, vehicles, workflow, lot number, batch number.
PGC	Parameter allowing to set permission levels enabling particular operators to modify values of the following parameters and/or functions of **<PGC>** working mode: batch number, batch quantity, sample quantity, average tare determining, tare, density, control performance.
Password settings	Parameter allowing to configure password settings: • Minimum password characters quantity • Lowercase and uppercase letters required • Digits required • Special characters required • Temporary password – set for new users and for an existing user after password change; it is to be replaced with a permanent password by the user at first logging. • Password validity period – function enforcing periodic password change. • Permissible log-in attempt quantity – possibility to define permissible number of unsuccessful log-in attempts upon exceeding of which the user account is blocked. The account can be unblocked by the administrator in Operators database.

15. UNITS

< [ct] [lb] [g] Units> submenu allows you to: set particular units accessibility, set start unit, define two custom units and change gravitational acceleration value.

Access path: **< / [ct] [lb] [g] Units>**.

15.1. Units Accessibility

Parameter allowing you to declare which units are to be accessible upon pressing unit symbol.

Procedure:

- Enter **< [ct] [lb] [g] Units / [g] [ct] Accessibility>** submenu, unit list is displayed (- unit enabled, - unit disabled).
- Mark units of your choice as available.

15.2. Start Unit

Parameter allowing you to set start unit. Upon setting the start unit, the scale activates with the set start unit for these modes where change of the unit is possible.

Procedure:

- Enter **< [ct] [lb] [g] Units / [g] [ct] Start unit>** submenu, select start unit out of the list.

Unit values: none, g (gram), kg (kilogram), ct (carat), lb (pound), oz (ounce)*, N (Newton).

***) –** *unit disabled for verified scales.*

- Go to the home screen.
- After restart, the weighing device runs with the declared start unit.

15.3. Custom Units

Option available for non-verified scales exclusively

Parameter allowing you to declare two custom units. Displayed custom unit value is a result of calculation, where obtained in the course of measurement weight value is multiplied by a multiplier determined for this particular custom unit.

Procedure:

- Enter **<** [ct] [lb] [g] **Units /** [g] [ct] **Custom unit 1>** submenu, set the following parameters:

00285	**Multiplier**	Adjustment unit multiplier.
N	**Name**	Unit name (3 characters maximum).

- Go to the home screen.
- Press unit symbol, list of available units is displayed, custom unit takes the last position on the list.

⚠	***Procedure for declaring <*** [g] [ct] ***Custom unit 2> is analogous.***

15.4. Gravitational Acceleration

< [g] [ct] **Gravitational acceleration>** parameter compensates changes of gravity force being a result of different latitude and altitude when the selected unit is „Newton" [N].

Procedure:

- Enter **<** [ct] [lb] [g] **Units /** [g] [ct] **Gravitational acceleration>** submenu, **<Gravitational acceleration>** edit box with an on-screen keyboard is displayed.
- Enter gravitational acceleration value respective for the particular place of use and press ✔ button to confirm changes.
- Go to the home screen.

16. MISCELLANEOUS PARAMETERS

Parameters facilitating scale operation. Access path:
< 🏠 **/** 👆 **Miscellaneous>**.

16.1. Interface Language

- Enter **<** 👆 **Misc /** 🌐 **Language>** submenu and set the interface language.

Available languages: Polish, English, German, French, Russian, Spanish, Czech, Hungarian, Estonian, Latvian, Italian, Greek, Turkish, Thai, Chinese, Romanian.

16.2. Date and Time

Parameter allowing to set current date and time and to specify date and time format. There are two ways to edit date and time settings:

- by pressing **<Date and time>** entry located on the top bar of the home screen,
- by entering **< Miscellaneous / Date and time / Set date and time>** submenu.

Edit date and time parameter, an on-screen keyboard is displayed. Set date and time: year, month, day, hour, minute. Press button to confirm.

Additional functions of **< Miscellaneous / Date and time>** submenu:

	Name	Value	Description
	Date format	yyyy.MM.dd *	Enter this parameter to set date format. Values: d.M.yy, d.M.yyyy, d/M/yy, dd.MM.yy, dd.MM.yyyy, dd.MMM.yyyy, dd/MM/yy, dd/MM/yyyy, dd-MMM-yy, dd-MM-yy, M/d/yy, M/d/yyyy, MM/dd/yy, MM/dd/yyyy, yy/MM/dd, yy-M-dd, yy-MM-dd, yyyy.MM.dd, yyyy-M-dd, yyyy-MM-dd.
	Time format	HH:mm:ss **	Enter this parameter to set time format. Values: H.mm.ss, H:mm:ss, H-mm-ss, HH.mm.ss, HH:mm:ss, HH-mm-ss, H.mm.ss tt, H:mm:ss tt, H-mm-ss tt, HH.mm.ss tt, HH:mm:ss tt, HH-mm-ss tt, h.mm.ss tt, h:mm:ss tt, h-mm-ss tt, hh.mm.ss tt, hh:mm:ss tt, hh-mm-ss tt.
	2013.03.29	14:32:09	Enter this parameter to preview declared date and time formats.

***)** *- where: y – year, M – month, d – day.*
****)** *- where: H – hour, m – minute, s – second.*

	< Date and time> parameter availability is conditioned by the set permission level.

16.3. Extension Modules

The scale features additional modules, in order to activate the additional modules you need a licence key.

Procedure:

- Enter **<Miscellaneous / Extension modules>** submenu, window with the list of additional modules is displayed.
- In order to activate the module either plug the USB flash drive storing licence file to the respective port or enter the code manually.
- Should the activation fail, 12-sign code is displayed (XX-XX-XX-XX-XX-XX), send the displayed code to a distributor in order to be provided with a licence.

Where:

	Module enabled.
	Module disabled.

16.3.1. Audit Trail

With Audit trail function on, each change and modification made in scale's database is logged. Detailed data (date, initial value, modified value, operator introducing modification) allows to trace back the whole activity and undo the modifications if necessary. Report (in a form of a text file) can be exported using the USB flash drive.

Procedure:

- Enter **<Miscellaneous / Extension modules>** submenu,
- Activate **<Audit trail>** option.
- Enter **<Reports / Export audit trail / Export audit trail>** submenu.
- The report is saved to a scale-connected USB flash drive.

16.3.2. RDA Data Access Module

RDA data access module enables exchange of data between an external system and a weighing terminal. Communication with the indicator is done via WebSocket. Set connection via WebSocket protocol on 4101 port (4101 - default port), and send all data in JSON format.

For correct communication, initial configuration of the indicator is required.

Procedure:

- Enter **<Miscellaneous / Extension modules>** submenu, activate **<RDA data access module**.
- Enter **<Peripherals / Computer / Port>** submenu and select TCP port.

16.3.3. SI RES Module

RES module expands the SI protocol enabling connection of the indicator to external systems.

Procedure:

- Enter **<Miscellaneous / Extension modules>** submenu, activate **<SI RES module>**.

16.3.4. Workflow

The module allows you to add new workflows and edit existing ones (Workflows – read section 35).

Procedure:

- Enter **<Miscellaneous / Extension modules>** submenu, activate **<Workflows>**.

16.4. 'Beep' Sound

- Enter **<Miscellaneous / Beep>** submenu and set a respective option
  (- Sound signal enabled; - Sound signal disabled).

16.5. Display Brightness

Parameter allowing you to change display brightness, the brightness can be changed within **0%** - **100%** range. The default value is **90 %**.

Procedure:

- Enter **<Miscellaneous / Display brightness>** submenu, **<Display brightness>** edit box with an on-screen keyboard is displayed.
- Enter respective value, in [%], and press button to confirm changes.

16.6. Touch Panel Calibration

Display calibration is required if the touch panel does not react correctly during operation.

Procedure:

- Enter **<Miscellaneous / Touch screen calibration>** submenu, an edit box is displayed.
- Use a thin, soft (not sharp-edged) stylus to press and hold a screen area with displayed cross, having calibrated 4 crosses, press key to confirm.

16.7. Log Out Automatically

'Log out automatically in' parameter activates automatic logout after specified time interval given in minutes. The default value is **0 [min]** (parameter disabled).

Procedure:

- Enter **<Miscellaneous / Log out automatically in>** parameter, **<Log out automatically in>** edit box with an on-screen keyboard is displayed.
- Enter respective value in **[min]** and press button to confirm.

	In order to enable the function after declared time, the following conditions must be met: home screen and zero indication displayed. With all the above conditions met, the user is automatically logged out which is signalled by message: <Operator logged out automatically>.

16.8. Logging in Required

Parameter forcing the operator to log in upon scale start-up.

Procedure:

- Enter **<Miscellaneous / Logging in required>** submenu and set respective option (- 'Logging in required' enabled, - 'Logging in required' disabled).

16.9. Workflow

- Enter **<Miscellaneous / Workflow>** submenu, set respective option.

Where:

Workflow at system start-up	Select to run workflow at start.
Workflow after logout	Select to run workflow after operator logout.
Workflow before weighing saving	Select to run workflow prior to record of weighing.
Workflow after weighing saving	Select to run workflow after record of weighing.
Finish workflow by opening menu	Select to cause abortion of the ongoing process upon menu entering.
Finish workflow by changing the operator	Select to cause abortion of the ongoing process upon operator logout, or logout and login.
Finish workflow by changing the product	Select to cause abortion of the ongoing process upon product selection.

16.10. Start Logo

Parameter allowing to change start logo image using a USB flash drive.

Procedure:

- Connect the USB flash drive to the USB port.
- Enter **<Miscellaneous / Start logo / Start logo>** submenu, the main folder of the USB flash drive is opened, its content displayed.
- Select particular image, **<Start logo>** submenu with selected image is displayed automatically.

It is possible to restore default **Start logo**, to do it use **<Set default>** option.

⚠	***Supported file formats: *.jpg, *.png, optimal resolution of 640x480 pixels (maximum).***

16.11. Error Information Preview Time

Parameter allowing to declare how long messages informing about errors are to be displayed, the time is declared in [s].

Procedure:

- Enter **<Miscellaneous / Error information preview time>** submenu and set respective value.

Where:

1 [s]	Select to display error message for 1 [s].
3 [s]	Select to display error message for 3 [s].
5 [s]	Select to display error message for 5 [s].
10 [s]	Select to display error message for 10 [s].
Max	Select to display error message until button is pressed.

16.12. Settings Export/Import

Parameter allowing to export/import settings (printouts templates, user parameters) using a USB flash drive.

Export procedure:

- Connect the USB flash drive to the USB port.
- Enter **<Miscellaneous / Export>** submenu, the settings are automatically exported to the USB flash drive plugged to the scale.
- Upon export completion, message **<Operation completed successfully>** is displayed.

Import procedure:

- Connect the USB flash drive to the USB port.
- Enter **<Miscellaneous / Import>** submenu, the settings are automatically imported from the USB flash drive plugged to the scale.
- Upon import completion, message **<Operation completed successfully>** is displayed.

17. ADJUSTMENT

Option available for non-verified scales exclusively

In order to ensure the highest weighing accuracy, it is recommended to periodically introduce a corrective factor of indications to the scale memory, the said factor must be referred to the reference mass. Adjustment has to be carried out prior to the first weighing or if the ambient temperature has changed dynamically. Prior to the adjustment, unload the weighing pan.

Access path: **<** / **User adjustment>**.

17.1. Adjustment Process

- Enter **<User adjustment / Adjustment>** submenu, **<Adjustment>** box with message **<Unload the platform>** is displayed.
- Unload the platform, next press button. Start mass is determined, message **<Start mass determination>** is displayed.
- Upon completed start mass determination, **<Adjustment>** box with message **<Load 2000 g>** is displayed.
- Load the weighing pan with the required adjustment weight and press button.
- Upon completed adjustment coefficient determination, **<Adjustment>** box with message **<Operation completed successfully>** is displayed.
- Press button to confirm and return to weighing.

	<Start mass determination> parameter allows to determine start mass of the platform.
	Adjustment of remaining platforms is analogous.

17.2. Start Mass Determination

If the scale does not require adjustment or you do not have suitable amount of adjustment weights, you can determine start mass only.

Procedure:

- Enter **<User adjustment / Start mass determination>** submenu, **<Start mass determination>** box with message **<Unload the platform>** is displayed.

- Unload the platform, next press button. Start mass is determined, message **<Start mass determination>** is displayed.
- Upon completed start mass determination, **<Start mass determination>** box with message **<Operation completed successfully>** is displayed.
- Press button to confirm and return to weighing.

17.3. Adjustment Report

Parameter allowing to activate function of automatic printout of adjustment report using scale-connected printer.

Procedure:

- Enter **<User adjustment / Report printout>** submenu and set a respective option.

Where:

	Automatic report printout disabled.
	Automatic report printout enabled.

Default value of adjustment report printout template:

```
----------------------------------------
Adjustment
----------------------------------------
{40:Date:,-25}{2}
{40:Time:,-25}{3}
{40:User:,-25}{75}
{40:Nominal mass:,-25}{211}{11}
{40:Platform No.:,-25}{206}
----------------------------------------
```

Template modification - read section 11.2.3.

17.4. Adjustment History

Each completed adjustment process is automatically saved to scale's database, to **<Adjustment history>** submenu.

To enter **<Adjustment history>** submenu press key, next go to: **<User adjustment / Adjustment history>** submenu. The report files are named by the date and time (hour) of adjustment process performance.

Adjustment process data:

	Date	Performed operation date.
	Operator	Operator name.
	Nominal mass	Adjustment weight mass.
	Platform number	Number of platform using which the operation has been carried out.

It is possible to print information on particular record, to do it press button, it is to be found on the top bar.

18. SOFTWARE UPDATE

	<Update> function is disabled for verified scales (i.e. scales subjected to legal metrological control).

It is possible to update the software via scale.

Procedure:

- Plug the USB flash drive with update file (update.hy10) to the USB port.
- Log in as a user granted with administrator permissions.
- Enter **<Update / Update from pendrive>** submenu.
- Press button to confirm.
- Scale restart proceeds. The scale updates upon restart.

19. REMOTE DESKTOP

The scale can communicate with **<RADWAG Remote Desktop>** software. Connection between the scale and the software enables **remote access** to the scale.

For more information on **RADWAG Remote Desktop** software visit http://www.radwag.com/**, <Products / Software>** tab.

	<Remote desktop> function is disabled when the scale-computer connection is established via RS232 port.

20. WORKING MODES – General Information

The scale features the following working modes:

	Weighing
	Parts counting
	Percent weighing
	Dosing
	Formulations
	Formulation orders*
	Pre-packaged goods control
	Density
	Animal weighing
	Vehicle scale
	Transactions
	SQC

***)** – *mode enabled upon connection to E2R SYSTEM software.*

Access path: **<** / **Working modes>**.

Particular working modes feature specific functions. The functions enable adapting mode operation to your individual needs. Some of the specific functions are global, i.e. they are applied for all working modes, excluding: Formulations, Dosing processes, Vehicle scale. Refer to the table below.

Save mode	+	+	+	-	+	+	+	+
Dispensing	+	+	+	-	-	-	+	-
Result control	+	+	+	+	+	-	+	-
Tare mode	+	+	+	+	+	-	+	-
Delete tare	+	+	+	+	+	-	+	-
Labeling mode	+	+	+	+	-	-	+	-
Allow measurement record>	+	+	+	+	+	-	+	-
Statistics	+	+	+	+	+	-	+	-
Mass rounding for statistics	+	+	+	+	+	-	+	-

Differential weighing	+	-	-	-	-	-	-	-
Min 2, Max 2 thresholds active	+	-	-	-	-	-	-	-
Smart Select	+	-	-	-	-	-	-	-
Recorded weighing info	+	+	+	-	-	+	-	+
Recorded weighing info – signal duration	+	+	+	-	-	+	-	+
Request packaging quantity	+	+	+	-	-	-	-	-
Packaging selection settings	+	-	-	-	-	-	-	-
Standard printout	+	+	+	+	-	-	-	-

Remaining specific functions referring directly to a given working mode are described further down this user manual.

	An on-screen button is to be found in each working mode home screen, it provides direct access to settings of the given working mode.
	Change of values for particular functions in one of the working modes causes change of values for these functions in remaining working modes.

20.1. Working Mode Accessibility

It is possible to declare which working modes are to be accessible for an operator upon pressing a pictogram with the working mode name, the pictogram is to be found on the left of the home screen top bar.

Procedure:

- Enter **<Working modes / Accessibility>** submenu, working mode list is displayed (- working mode enabled, - working mode disabled).
- Mark working modes of your choice as available, go back to the home screen.

20.2. Save Mode

Parameter allowing to set method of sending information from the scale to the peripheral device.

Procedure:

- Enter **<Working modes>** submenu and select a particular working mode.

- Select **<Save mode>** function and set a respective mode.

Save mode options:

Manual each stable	Manual printout of each stable weighing result above **-LO-** threshold.
Manual first stable	Manual printout of the first stable weighing result above **-LO-** threshold.
Automatic first stable	Automatic printout of the first stable weighing result above **-LO-** threshold.
Automatic last stable	Automatic printout of the last stable weighing result detected after the weight value gets below **-LO-** threshold.
Semi-automatic each stable	Manual printout of each weighing result, where the weight value is above **-LO-** threshold; this option requires awaiting for the stable weighing result.
Semi-automatic first stable	Manual printout of the first weighing result, where the weight value is above **-LO-** threshold; this option requires awaiting for the stable weighing result.

20.3. Dispensing

Weighing in „dispensing" mode (subtract weighing). Place the load on the weighing pan, tare the scale, subtract particular load portions saving the weighing results, subtract weighing values will be saved to the database.

Procedure:

- Enter **<Working modes>** submenu and select a respective working mode.
- Select **<Dispensing>** function and set a respective option.

Where:

	Regular weighing mode.
	Dispensing (subtract weighing) mode.

20.4. Result Control

When your weighing device operates with 'result control' mode on, the printout is carried out only when mass of load placed on the weighing pan is comprised within **MIN**, **MAX** thresholds.

Procedure:

- Enter **<Working modes>** submenu and select a respective working mode.

- Enter **<Result control>** submenu and set a respective option.

Where:

	Each weighing is recorded.
	Weighings between MIN, MAX thresholds are recorded.

20.5. Tare Mode

Parameter allowing you to set taring function parameters.

Procedure:

- Enter **<Working modes>** submenu and select a respective working mode.
- Select **<Tare mode>** function and set a respective option.

Where:

Single	Regular tare mode, select this parameter to make the scale overwrite the set (selected) tare value with the most recently entered one.
Sum of current	Select this parameter to sum currently entered product and packaging tare values, and tare value that is entered manually (if given). When tare value for a product or packaging is set again, the tare value entered manually gets deactivated.
Sum of all	Total value of all entered tare values.
Autotare	Select this parameter to use combination of automatic tare mode and **<Sum-of-all>** mode.
Each measurement	Select this parameter to make the scale automatically tare each accepted measurement.

20.6. Delete Tare

Parameter allowing to delete tare value upon pan unloading. Tare value is zeroed when mass indication gets below the set net value of LO threshold parameter.

Procedure:

- Enter **<Working modes>** submenu and select a respective working mode.
- Select **<Delete tare>** entry and set a respective option (- Tare not-to-be deleted; - Tare to-be deleted).

20.7. Remove after Weighing

Parameter allowing you to delete product, user, customer etc. after completed weighing.

Procedure:

- Enter **<** **Working modes>** submenu and select a respective working mode.
- Enter **<** **Remove after weighing>** function and set a respective option (- record not deleted - record deleted).

20.8. Labelling Mode

For each working mode it is possible to switch labelling mode on. Labelling system is designed to print labels for product marking. The program generates standard labels (to be stuck onto single products), cumulative labels, i.e. C labels (to be stuck onto cumulative packaging), and cumulative label for cumulative labels, i.e. CC labels (to be stuck onto boxes containing cumulative packaging).

Custom functions of **<** **Labelling mode>** submenu:

	Labels quantity
	C labels quantity
	CC labels quantity
AUTO	Automatic C label triggering
AUTO	Automatic CC label triggering

20.8.1. Setting To-Be-Printed Label Quantity

Parameter for declaring number of labels to be printed on a scale-connected printer.

Procedure:

- Enter **<** **Working modes>** submenu and select a respective working mode.
- Go to **<** **Labelling mode / Label quantity>**, **<Label quantity>** edit box with an on-screen keyboard is displayed.
- Enter respective number and press button to confirm.

20.8.2. Setting To-Be-Printed C Label Quantity

Parameter for declaring number of C labels to be printed on a scale-connected printer.

Procedure:

- Enter **<** **Working modes>** submenu and select a respective working mode.
- Go to **<** **Labelling mode /** **C label quantity>**, **<C label quantity>** edit box with an on-screen keyboard is displayed.
- Enter respective number and press button to confirm.

20.8.3. Setting To-Be-Printed CC Label Quantity

Parameter for declaring number of CC labels to be printed on a scale-connected printer.

Procedure:

- Enter **<** **Working modes>** submenu and select a respective working mode.
- Go to **<** **Labelling mode /** **CC label quantity>**, **<CC label quantity>** edit box with an on-screen keyboard is displayed.
- Enter respective number and press button to confirm.

20.8.4. Automatic C Label Triggering

Automatic C Label Triggering function allows to trigger printout of C label, to do it you must define **<** **Mode>** and **<** **Threshold>** parameters.

Procedure:

- Enter **<** **Working modes>** submenu and select a respective working mode.
- Go to **<** **Labelling mode /** **Automatic C label triggering /** **Mode>** parameter and set a respective option, where:

None	Manual printout of C label, performed upon pressing of either or button *.
Mass	Automatic printout of C label, triggered upon exceeding of the total mass value of all single labels, set in **<** **Threshold>** parameter.

***)** - To print C labels manually use programmable buttons:

	Printout with zeroing (weighing qty. and total mass values are zeroed).
	Printout without zeroing (weighing qty. and total mass values are not zeroed).

By default the button is displayed in the bottom of the screen, in order to activate button go to**<** / **Display /** **Button functions>** submenu. In case of automatic printout of C labels, counter zeroing function is always on (weighing qty. and total mass values are always zeroed).

- Confirm introduced modifications, to do it press button and go to **<** **Threshold>** parameter, **<Threshold>** edit box with an on-screen keyboard is displayed.
- Set the value that is to trigger C label printout, mind that:
  - in case of **<** 007 **Mode>** parameter set to **<Mass>** value, you must provide total mass value (using the on-screen keyboard), upon obtaining of which you want the C label printout to be triggered,
  - in case of **<** 007 **Mode>** parameter set to **<Counter>** value, you must provide quantity value (using the on-screen keyboard), upon obtaining of which you want the C label printout to be triggered.
- Confirm introduced modifications, to do it press button.

20.8.5. Automatic CC Label Triggering

Automatic CC Label Triggering function allows to trigger printout of CC label, to do it you must define **<** 007 **Mode>** and **<** **Threshold>** parameters.

Procedure:

- Enter **<** **Working modes>** submenu and select a respective working mode.
- Go to **<** **Labelling mode /** AUTO **Automatic CC label triggering /** 007 **Mode>** parameter and set a respective option, where:

None	Manual printout of CC label, performed upon pressing either or * button.
Mass	Automatic printout of CC label, triggered upon exceeding the value of total mass of single labels, set in **<** **Threshold>** parameter.

Number	Automatic printout of CC label, triggered upon exceeding the value of single label quantity, set in **<Threshold>** parameter.

***)** - To print CC labels manually use programmable buttons:

	Printout with zeroing (weighing qty. and total mass values are zeroed).
	Printout without zeroing (weighing qty. and total mass values are not zeroed).

By default the button is displayed in the bottom of the screen, in order to activate button go to **< / Display / Button functions>** submenu. In case of automatic printout of CC labels, counter zeroing function is always on (weighing qty. and total mass values are always zeroed).

- Confirm introduced modifications, to do it press button and go to **<Threshold>** parameter, **<Threshold>** edit box with an on-screen keyboard is displayed.
- Set the value that is to trigger CC label printout, mind that:
  - in case of **< Mode>** parameter set to **<Mass>** value, you must provide total mass value (using the on-screen keyboard), upon obtaining of which you want the CC label printout to be triggered,
  - in case of **< Mode>** parameter set to **<Counter>** value, you must provide quantity value (using the on-screen keyboard), upon obtaining of which you want the CC label printout to be triggered.
- Confirm introduced modifications, to do it press button.

20.9. Allow Measurement Record

Parameter allowing to lock record of the measurements, in order to enable the record again it is necessary to unlock the function. Upon record of one measurement, the lock activates. Lock deactivation is carried out using either an on-screen button or an input.

Procedure:

- Enter **< Working modes>** submenu and select a respective working mode.
- Enter **< Allow measurement record>** parameter and set respective option (- function enabled, - function disabled).

- Add the on-screen button, to do it enter **<Display / Button functions>** submenu and add **<Allow measurement record>** button; or
- configure input, to do it enter **<Inputs/Outputs / Inputs>** submenu and edit a respective input, list of functions that can be assigned to the input is displayed, find and select **<Allow measurement record>** function.
- Now, upon measurement record, in order to unlock record of the next measurement, it is necessary to press either an on-screen button, **<Allow measurement record>**, or an external key connected to the input.

20.10. Statistics

All statistical data is updated in an ongoing manner. The statistical data can be updated globally (regardless of the weighted product) or individually for each product selected from the database.

Procedure:

- Enter **<Working modes>** submenu and select a respective working mode.
- Go to **<Statistics>** parameter and set a respective option.

Where:

Global	Update of statistical data carried out globally.
Product	Update of statistical data carried out individually for each product selected from the database.

	Mind that in case of <Statistics> parameter set to <Product> value, upon scale restart, exclusively statistical data of the most recently weighed product are remembered.

20.11. Mass Rounding for Statistics

Parameter allowing to round weight value in statistics data.

Procedure:

- Enter **<Working modes>** submenu and select a respective working mode.
- Go to **<Mass rounding for statistics>** entry and set rounding value.

20.12. Differential Weighing

Differential weighing is a working mode enabling you to analyse changes of mass of a single sample or multiple samples. The process is carried out by determining sample's initial mass, next the sample is subjected to different processes, as a result some sample's ingredients are either removed or added. The sample is weighed again (differential weighing). After the final weighing, the scale determines the difference between those two mass values (weighing I and weighing II).

20.12.1. Local Settings

To go to local settings enter **<Working modes / Weighing / Differential weighing>** submenu:

	Activation	Select to enable / disable differential weighing (- function enabled, - function disabled).
	Batch portion type	Select to specify type of batch portion for differential weighing: **Value** – differential weighing performed with reference to batch portion value declared as measuring series; **Filter** – differential weighing performed with reference to filter and batch portion value declared as measuring series.
	Filtering	Declaring type of filter being a criterion of the differential weighing. **Values:** Product, Customer, Batch number, Lot number, Source Warehouse, Target Warehouse, Packaging. In case of setting **<Batch portion type>** parameter to **<Value>** value, the **<Filtering>** parameter is disabled.
	Batch portion	Select to specify value of the measuring series for differential weighing.

20.12.2. Reporting of Completed Differential Weighing Processes

Upon each completed differential weighing process, a report is generated automatically.

Default value of the differential weighing report template:

```
Differential weighing
---------------------------------------
{40:Start date:,-20}{330}
{40:End date:,-20}{331}

Weighings
{333: (7)(11)
}---------------------------------------
```

For info regarding report template modification read section 11.2.3.

Report on each completed differential weighing process is saved to **<Differential weighing reports>** database, the file name is a combination of date and hour of process completion (for differential weighing process data read section 34.5.9).

20.13. Smart Select

Function allowing automatic selection of a product on the basis of mass. If there are Min and Max thresholds set for a product, and if mass loaded onto the weighing pan is comprised within these thresholds then the product gets automatically selected. If mass loaded onto the weighing pan is comprised within thresholds of numerous products, then list of the given products is displayed, the respective product must be selected manually.

Procedure:

- Enter **<Working modes>** submenu and select a respective working mode.
- Enter **<Smart Select>** function and set a respective option.

Where:

Activation - confirmation box	Enter to enable/disable basic operation mode of Smart Select function. The program analyses database products and checks for which one the set min and max threshold values match the mass value loaded onto the weighing pan. If the condition is met for one product only then this product is selected automatically. If the condition is met for numerous products then list of the matching products is displayed, the particular product must be selected manually.
Selection in all categories*	Enter to activate/deactivate analysis of all database products. Deactivation results with analysis of selected category products exclusively.
Activation – list	Additional Smart Select mode. The mode operates on permanently displayed list of products. Upon pan loading, exclusively products with respectively set min and max threshold are displayed. If the list includes one product only then this product is selected automatically. If the list includes more than one product, then it is necessary to select the respective one manually.

***)** *– option available upon category activation (activation described in section 33.1.3).*

20.14. Min 2, Max 2 Thresholds Active

Function enabling to declare additional **Min 2**, **Max 2** thresholds (alerts). The function:

- allows declaring **Min 2**, **Max 2** thresholds using a programmable **<Set MIN, MAX>** button,
- activates **Min 2**, **Max 2** thresholds in product record,

- activates visualisation of **Min 2**, **Max 2** thresholds on **<** **Weighing threshold signalling>** bar graph,
- saves **Min 2**, **Max 2** thresholds in a weighing record.

Procedure:

- Enter **<** **Working modes /** **Weighing>** submenu.
- Activate **<Min 2, Max 2 thresholds active>** option.

20.15. Recorded Weighing Info

Parameter enabling/disabling message informing on weighing saved to database each time after the measurement is carried out.

Procedure:

- Enter **<** **Working modes /** **Weighing>** submenu.
- Activate **<Recorded weighing info>** option.
- Upon each completed measurement, **<Measurement saved>** message is displayed.

⚠	***Message display duration is set in <*** ***Error message preview time> parameter (read section 16.11).***

20.16. Recorded Weighing Info – Signal Duration

Parameter allowing to set duration of activation of the output informing on saved weighing; activation time range: 0 - 10000 ms (0 -10s).

Procedure:

- Enter **<** **Working modes /** **Weighing>** submenu.
- Activate **<** **Recorded weighing info - signal duration>** option, respective edit box with an on-screen keyboard is displayed. Enter the appropriate value.
- Enter **<** **Inputs/Outputs /** **Outputs>** submenu and edit selected output, the list of functions that can be assigned to the output is displayed automatically.
- Select **<Measurement saved>** function and return to weighing.
- Upon each measurement, the selected output gets activated for a determined time.

20.17. Packaging Selection Settings

Group of parameters for packaging.

20.17.1. Request Packaging Quantity

Function of packaging mass multiplier.

Procedure:

- Enter **<Working modes / Weighing / Packaging selection settings / Request packaging quantity>** submenu and set a respective option (- function enabled, - function disabled).
- In case of an active function, open the database and select a respective packaging record, each time you do it, **<Request packaging quantity>** edit box with a numeric keyboard is displayed.
- Enter given quantity value, the multiplied mass value for the selected packaging is displayed along with the following pictograms: ***Net*** and .

20.17.2. Many Packages Selection

Function allowing to select more than one packaging item. Click the packaging to select it, click again to deselect.

Procedure:

- Enter **<Working modes / Weighing / Packaging selection settings / Many packages selection>** submenu and set respective option (- function enabled, - function disabled).
- In case of an active function, each time when you open the database and select respective packaging record, the record is marked. When you select the packaging record again it gets unmarked.
- Enter given quantity value, total mass value for selected packaging items is displayed along with the following pictograms: ***Net*** and .

20.17.3. Close Selection Window

Function allowing to automatically close packaging record window upon record selection.

Procedure:

- Enter **<Working modes / Weighing / Packaging selection settings / Many packages selection>** submenu and set respective option (- function enabled, - function disabled).

- In case of an active function, open the database and select a respective packaging record, each time you do it the selection window is closed.

20.18. Non-Standard Printouts

Printout comprises 3 basic sections:

Header	Group of parameters allowing you to declare variables that are to be printed on a header printout.
GLP printout	Group of parameters allowing you to declare variables that are to be printed on a measurement printout.
Footer	Group of parameters allowing you to declare variables that are to be printed on a footer printout.

For each section a customised list of printout variables has been specified. You must set respective option either enabling or disabling particular variable printing.

Where:

✓	Variable enabled for printing.
✓	Variable disabled for printing.

Printout Variables

HEADER	WEIGHING	FOOTER
Dashes	Measurement quantity	Working mode
Working mode	Date	Date
Date	Time	Time
Time	Customer	Scale type
Scale type	Target warehouse	Serial number
Serial number	Source warehouse	Operator
Operator	Product	Customer
Customer	Packaging	Target warehouse
Target warehouse	Lot number	Source warehouse
Source warehouse	Batch number	Product
Product	Universal variable 1	Packaging
Packaging	Universal variable 2	Lot number
Lot number	Universal variable 3	Batch number
Batch number	Net	Universal variable 1
Universal variable 1	Tare	Universal variable 2
Universal variable 2	Gross	Universal variable 3
Universal variable 3	Mass *	Measurement quantity
Empty line	Weighing printout template	Sum
		Average
		Min
		Max
		Standard deviation
		Dashes
		Empty line
		Signature

***)** – *Variable accessible by default (marked with ✓ pictogram).*

How to Operate Printouts

1. To print variables comprised within **Weighing** section, enabled for printing and marked with ✔ pictogram, press **Print** key located on the weighing device panel.
2. To print variables comprised within **Header** and/or **Footer** section, enabled for printing and marked with ✔ pictogram, press respective programmable button: **<Header printout>** and/or **<Footer printout>**.

⚠	***For a procedure regarding button programming read section 12.4.***

21. WORKING MODE – WEIGHING

Weighing is a standard working mode enabling you to carry out the weighing operation along with record of the result to the database.

21.1. Weighing Mode Start-Up

In order to run Weighing working mode:

- Go to the home screen and press working mode pictogram, **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<Weighing>** working mode, the home screen with pictogram is displayed automatically.

21.2. Local Settings

In order to access local settings of **<Weighing>** working mode, press the **<Local settings>** on-screen button:

	Save mode	For detailed description read section 20.2.
	Dispensing	For detailed description read section 20.3.
	Result control	For detailed description read section 20.4.
	Tare mode	For detailed description read section 20.5.
	Delete tare	For detailed description read section 20.6.
	Remove after weighing	For detailed description read section 20.7.
	Labelling mode	For detailed description read section 20.8.

	Allow measurement record	For detailed description read section 20.9.
	Statistics	For detailed description read section 20.10.
	Mass rounding for statistics	For detailed description read section 20.11.
	Differential weighing	For detailed description read section 20.12.
	Smart Select	For detailed description read section 20.13.
	Min 2, Max 2 thresholds active	For detailed description read section 20.14.
	Recorded weighing info	For detailed description read section 20.15.
	Recorded weighing info – signal duration	For detailed description read section 20.16.
	Packaging selection settings	For detailed description read section 20.17.
	Standard printouts	For detailed description read section 20.18.

22. WORKING MODE – PARTS COUNTING

<Parts counting> is a working mode enabling you to determine quantity of small pieces of the same mass, which determination is done on the basis of reference weight value of a single piece, either determined using the weighing device or taken form the database.

	If the parts counting is to be performed in a container, first put the container on a weighing pan and tare it (container mass is saved to the memory).

22.1. Parts Counting Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<Parts counting>** mode, the home screen is displayed automatically, it features pictogram.
- Weighing unit changes to **pcs** value, two on-screen buttons are activated and displayed on the right:

	Press to set part mass.
	Press to determine part mass.
	Press to assign reference sample mass to the product

22.2. Local Settings

In order to access local settings of **<Parts counting>** working mode, press the **<Local settings>** on-screen button.

SMP	**Automatic correction of reference sample mass**	For detailed description read section 22.2.1.
MIN	**Minimum reference sample mass**	For detailed description read section 22.2.2.
	Save mode	For detailed description read section 20.2.
	Dispensing	For detailed description read section 20.3.
	Result control	For detailed description read section 20.4.
	Tare mode	For detailed description read section 20.5.
	Delete tare	For detailed description read section 20.6.
	Remove after weighing	For detailed description read section 20.7.
	Labelling mode	For detailed description read section 20.8.
	Allow measurement record	For detailed description read section 20.9.
	Statistics	For detailed description read section 20.10.
	Recorded weighing info	For detailed description read section 20.15.
	Recorded weighing info – signal duration	For detailed description read section 20.16.
	Request packaging quantity	For detailed description read section 20.17.
	Standard printouts	For detailed description read section 20.18.

22.2.1. Function of Automatic Correction of Reference Sample Mass

Function allowing to correct mass of a single part, **<SMP>**, via the scale program.

Procedure:

- Enter **<Working modes / Parts counting / SMP Automatic correction of reference sample mass>** and set respective option (- function disabled, - function enabled).

The function of **<SMP Automatic correction of reference sample mass>** activates at the moment of determination of reference sample quantity, it is signalled with display of **<PCS>** (reference sample quantity) and **<SMP>** (single part mass) values in the top bar.

There are 4 function operation conditions implemented into the scale program:

1. the weighing result must be stable,
2. pieces quantity must increase,
3. pieces quantity upon adding cannot increase more than twice,
4. pieces quantity upon adding must be comprised within ± 0.3 tolerance of the total value.

If you decide that the reference sample features the right amount of pieces, you can record weight value of a single piece to the weighing device memory (read section 22.6) and deactivate the function by pressing key.

⚠	***In case of active function, the functionality of key changes. It is impossible to either print weighings or confirm the weighing result using it.***

22.2.2. Minimum Reference Sample Mass

Parameter allowing to declare total mass of all parts loaded onto the weighing pan, which mass is expressed in reading units.

Procedure:

- Enter **< Working modes / Parts counting / MIN Minimum reference sample mass>** submenu and set a respective value.

Values: 1 d, 2 d, 5 d, 10 d.

⚠	***Total mass of all the pieces loaded onto the weighing pan must not be lower than the value declared in < MIN Minimum reference sample mass> parameter. Unless this condition is met, the weighing device displays a message: <Sample mass too low>.***

22.3. Setting Reference Sample Mass by Entering Mass of a Single Part

- Enter **<Parts counting>** mode and press button (Set part mass), **<Reference sample mass>** edit box with an on-screen keyboard is displayed.
- Enter respective value and press button to confirm, **<Parts counting>** working mode is run with automatically set mass of a single part.

	If the value of the entered single part mass is greater than the max capacity value, then the following message is displayed: <Value too high>.

	If the value of the entered single part mass is lower than 0.1 of the reading unit, then the following message is displayed: <Value too low>.

22.4. Setting Reference Sample Mass by Determining Mass of a Single Part

- Enter **<Parts counting>** mode.
- If the parts are to be weighed in a container, first put the container on a weighing pan and tare it.
- Press button (Determine part mass), **<Reference sample quantity>** edit box with an on-screen keyboard is displayed.
- Enter respective value and press button to confirm, the following message is displayed: **<Number of parts-to-be-loaded: xx>** (where **xx** – previously entered value).
- Load the weighing pan with the declared amount of parts. When the indication is stable (pictogram is displayed), press button to confirm the mass.
- Single part mass is calculated automatically, **<Parts counting>** working mode is run and the weighing device displays quantity of single parts (**pcs**).

	Total weight value of all parts loaded onto the weighing pan cannot be lower than the value determined by <Minimum reference sample mass> parameter (read section 22.2.2). Unless this condition is met, the weighing device displays a message: <Sample mass too low>.

	Total weight value of all parts loaded onto the weighing pan cannot be greater than the max capacity value.
	Single part mass value must be equal to or greater than 0.1 of the reading unit. Unless this condition is met, the weighing device displays a message: <Single part mass too low>.

22.5. Setting Reference Sample Mass by Acquiring Mass of a Single Part from the Database

Upon selecting a product from a database, single part mass assigned to the product (**<Part mass>** entry) is entered automatically.

Procedure:

- Enter **<Parts counting>** mode, select product with declared mass of a single part from the **<Product>** list.

22.6. Entering Reference Sample Mass to the Scale Memory

Reference sample mass of a single part can be entered to the product database.
Procedure:

- Determine reference sample mass (read sections 22.2 and 22.3).
- Press and hold a selected record of the **<Product>** list, context menu is displayed.
- Select **<Assign reference sample>** option, reference sample mass for the product is recorded in **<Mass>** entry.

	It is possible to assign determined reference sample to a selected (weighed) product using a programmable button. For a procedure regarding button programming read section 12.24, for list of button functions read APPENDICES 01 manual.

23. WORKING MODE – PERCENT WEIGHING

Percent weighing is a working mode enabling you to compare the measured sample with the reference mass. The result is expressed in [%]. Reference mass can be either determined by weighing or entered to the scale memory by an operator.

23.1. Percent Weighing Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<% Percent weighing>** working mode, the home screen with % pictogram is displayed automatically.
- Weighing unit changes to **%** value, two on-screen buttons are activated and displayed on the right:

%	Press to set reference sample mass.
%	Press to determine reference sample mass.

23.2. Local Settings

In order to access local settings of <% Percent weighing> working mode, press the **<Local settings>** on-screen button.

	Save mode	For detailed description read section 20.2.
	Dispensing	For detailed description read section 20.3.
	Result control	For detailed description read section 20.4.
	Tare mode	For detailed description read section 20.5.
	Delete tare	For detailed description read section 20.6.
	Remove after weighing	For detailed description read section 20.7.
	Labelling mode	For detailed description read section 20.8.
	Allow measurement record	For detailed description read section 20.9.
	Statistics	For detailed description read section 20.10.
	Mass rounding for statistics	For detailed description read section 20.11.
	Recorded weighing info	For detailed description read section 20.15.
	Recorded weighing info – signal duration	For detailed description read section 20.16.
	Request packaging quantity	For detailed description read section 20.17.
	Standard printouts	For detailed description read section 20.18.

23.3. Reference Mass Determined by Weighing

- Enter **<Percent weighing>** mode.
- If the reference sample is to be weighed in a container, first put the container on a weighing pan and tare it.
- Press button (Determine reference sample mass), the following message is displayed: **<Load reference sample>**.
- Load the weighing pan with the reference mass. When the indication is stable (pictogram is displayed) press button to confirm the value.
- Now (instead of a weight value of the measured load) difference between values of loaded mass and reference mass is displayed in [%].

23.4. Reference Sample Mass Entered to the Scale Memory

- Enter **<Percent weighing>** mode.
- Press button (Set part mass), **<Set reference sample mass>** edit box with an on-screen keyboard is displayed.
- Enter respective value and press button to confirm.
- Now (instead of weight value of the measured load) difference between values of loaded mass and reference mass is displayed in [%].

24. WORKING MODE – DOSING

Dosing is a working mode enabling you to dispense product using a scale equipped with PUE HY10. indicator. The mode allows manual and automated dispensing on one or many platforms concurrently.

24.1. Dosing Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **< Dosing>** working mode, the home screen with pictogram is displayed automatically.
- Additional on-screen buttons are activated automatically:

	Press to view/set local parameters.
	Press to select dosing process.
	Press to start the process.

	Press to stop the process.
STOP	Breakdown (emergency stop).

24.2. Dosing Process Structure

All dosing-related operations can be realised via scale. Each dosing process is described by a name and a code, it features **<Platform>** submenu. Platform quantity is conditioned by configuration of the weighing indicator. It is possible to create separate dosing process for each platform. The processes are carried out on various platforms, they can be related one to another, e.g.: dosing realised using platform 2 may start upon completion of dosing realised via platform 1, confirmed by a signal sent form a sensor.

24.3. Local Settings

In order to access local settings of **<** **Dosing>** working mode, press the **<** **Local settings>** on-screen button:

		Request multiplier	Enter to force request for a dosing process multiplier, i.e value by which masses of particular ingredients are to be multiplied.
		Request cycles quantity	Enter to force query regarding number of dosing process cycles, i.e. to specify how many times the whole process is to be repeated.
		Confirm ingredients manually	Enter to enforce manual confirmation for each weighing by pressing Enter/Print key.
		Measurements quantity for correction calculation	Enter to specify how many of the most recent measurements is to be analysed in order to automatically calculate the correction during the process.
		Automatic cycle	Enter to enforce performance of the ongoing process in a cyclic manner.
		Global	Global settings of dosing.
		Dosing outputs	Enter to declare outputs for precise dosing in case of automatic 2-stage dispensing.
		Fast dosing outputs	Enter to declare outputs for rough dosing in case of automatic 2-stage dispensing.
		Correction	Enter to specify global (constant) value of correction to be applied for all platforms.
	MAX	**Maximum correction**	Enter to specify maximum value of correction, which can be determined automatically for all weighing platforms.

<Global> settings are useful in case of simple dosing processes, e.g. dosing of one ingredient on all platforms.

24.4. Dosing Process Settings and Functions

Dosing process functions:

Pictogram	Abbrev.	Function	Description
	[DH]	**Dose manually**	Enter to enforce manual weighing of the ingredient (manual dosing).
		Mass	Mass of an ingredient that is to be dosed.
	min	**Min**	Low threshold for an ingredient.
	max	**Max**	High threshold for an ingredient.
		Product	Ingredient selected from the product database.
		Dispensing	Subtract weighing mode (minus weighing).
		Mass: Sample	Sample of to-be-dosed ingredient mass using printout-intended variables.
	min	**Min: Sample**	Sample of low threshold using printout-intended variables.
	max	**Max: Sample**	Sample of high threshold using printout-intended variables.
	[DA]	**Dose automatically**	Enter to enforce automatic weighing of the ingredient (automatic dosing). The function allows to activate outputs controlling dosing.
		Mass	Mass of an ingredient that is to be dosed.
	F→S	**Fast dosing mass**	Mass of an ingredient that is to be dosed fast (2-stage dosing).
		Mass: Sample	Sample of to-be-dosed ingredient mass using printout-intended variables.
	F→S	**Fast dosing mass: Sample**	Sample of to-be-dosed-fast ingredient mass (2-stage dosing) using printout-intended variables.
		Product	Ingredient selected from the product database.
		Dispensing	Subtract weighing mode (minus weighing).
	[O]	**Outputs**	Enter to set state of indicator outputs for activation of external devices that are connected to these outputs. Values: None – output inactive; „0” – LO state (output off); „1” – HI state (output on).

	[TI]	**Delay**	Enter to determine time interval between successive steps of the dosing process. The function defines queue time for the next process step, given in seconds.
		Time	Queue time given in seconds.
		Description	Pause description displayed on the indicator.
	[Z]	**Zero**	Enter to zero the platform, the function operates like pressing of the →0← key placed on the indicator.
	[T]	**Tare**	Enter to tare the platform, the function operates like pressing of the →T← key placed on the indicator.
	[ST]	**Set tare**	Enter to set tare, the function operates like pressing of the **<Set tare>** key placed on the indicator.
	[CM]	**Mass condition**	Enter to specify mass-related conditions for performance of the successive steps, e.g.: the next step is to be performed when the mass value (net or gross) of the product on the platform is lower than the threshold value.
		Threshold	Value of threshold mass for the condition.
		Mass	Threshold mass type (net or gross).
		Mass condition	Threshold condition – „**>=**" or „**<**".
	[CI]	**Input condition**	Enter to specify conditions for performance of successive steps. Input states: none – input inactive; „0" – LO state (input off); „1" – HI state (input on); „/" – rising edge on the input (state change from LO to HI, e.g.: the moment of button pressing); „\" – trailing edge on the input (state change from HI to LO, e.g.: the moment of button release).
	[EM]	**Set mass**	Enter to enforce the operator to give manually mass of an ingredient supplied in packaging of known weight value. The entered mass is added to the weighed mass of the ingredient, e.g.: ingredient to be weighed = 21.8 kg, 1.8 kg is weighed on the scale, 20 kg is entered manually.
	[ET]	**Give batch portions quantity**	Enter to determine quantity of portions of the weighed ingredient that is to be added within the dosing process. Mass of a single portion is defined in a record of the selected product (products database – Mass field). Single portion mass is multiplied by the portion quantity, the obtained product mass is added as the weighing result. Applied for products in batch portions.

	[F]	**Set flags**	Enter to define dosing process condition (characteristic point) which is to regulate performance of a new process step. Settings of characteristic points (flags) and flag conditions allow to correlate processes carried out on various platforms, one with another.
	[CF]	**Flag condition**	Enter to determine conditions for events that must take place in order the next dosing process step could be performed.
	[DG]	**Gravitational dosing**	Enter to enforce automatic dispensing (automatic dosing) with measurement of dosed mass flow. The mass is dosed in two stages. The first stage ends when the mass threshold in percent is reached. Dosing output gets temporarily deactivated, time required for completion of dosing of the remaining mass is calculated. The second stage starts, dosing output activates and remains on for the calculated time interval.
		Mass	Mass of an ingredient that is to be dosed.
		Percent	Mass threshold in [%], specified for an automatic dosing, the automatic dosing is realised until the particular value is obtained. Next the dosing output is activated for the calculated time interval.
		Product	Ingredient selected from the product database.
		Time correction	± time correction in [ms] for valve closing during the dosing process.
		Insensitivity threshold	Permissible ± error given in [%] of dosed mass. Threshold exceeding ends the dosing process. The correction is not taken into account.
		Minimum flow	Value of the minimum flow in [g/s] or [kg/s] for initiation of the gravitational dosing algorithm. If the flow value gets below the minimum, then the gravitational dosing mode is deactivated. Dosing output gets deactivated when the value of mass threshold is obtained, not after passage of the calculated time interval.
		Dispensing	Subtract weighing mode (minus weighing).

24.5. New Dosing Process

- Enter **<Databases / Dosing processes>** submenu.
- Press **<Add>** button, confirm new record adding.
- Name the process, provide code, select platform for which the dosing process is to be set, e.g. **<Platform 1>**.

- Set the dosing process, to do it press **<Add>** button and select one of the functions. Mind that each step must be added in a performance order.
- It is possible to modify an existing process - you can add or delete particular process steps, to add a process step, press and hold for ca. 4 seconds the step which is to be proceeded by the newly added one. A pop-up menu is displayed:

Edit
Add
Delete
Cancel

- Press **<Add>** entry and define new process step.

24.6. Examples of Dosing Processes

24.6.1. Example 1 – Manual Dosing of 4 Ingredients on 2 Platforms

Example of a dosing process where 4 ingredients are dispensed on 2 platforms:

- Platform 1 ingredients: Flour and Sugar.
- Platform 2 ingredients: Spices and Water.

Dosing process is to be carried out with the condition that Flour, Sugar and Spices must be dosed before the Water ingredient is added. In order to fulfil the condition, flags are used. The flags respectively configure the dosing on two platforms. The settings result with water ingredient dosed as the last one. The process has been presented in tables, separately for each platform.

Dosing performed via an indicator:

Dosing process name: Example 1
Dosing process code: 1111

Platform 1

Step	Value	Description
1. [TI] Delay	[5s] Load an empty container	Pending the loading of an empty container intended for the first product.
2. [CI] Input condition	Input 1 – „/”	Rising edge is to be applied to input 1 – pressing of a button confirming loading of the weighing pan with a container.
3. [T] Tare	Tare	Taring of platform 1.
4. [DH] Dose manually	1 kg [Flour]	Dispensing 1 kg of 'Flour' manually.
5. [TI] Delay	[5s] Unload the weighing pan, remove the container with a product.	Pending the removal of the container with a product from a weighing platform.

6. [CI] Input condition	Input 4 – „/”	Rising edge is to be applied to input 4 – pressing of a button confirming container removal.
7. [Z] Zero	Zero	Zeroing of platform 1.
8. [TI] Delay	[5s] Load an empty container	Pending the loading of an empty container intended for the second product.
9. [CI] Input condition	Input 1 – „/”	Rising edge is to be applied to input 1 – pressing of a button confirming loading of the weighing pan with a container.
10. [T] Tare	Tare	Taring of platform 1.
11. [DH] Dose manually	0.2 kg [Sugar]	Dispensing 0.2 kg of 'Sugar' manually.
12. [TI] Delay	[5s] Unload the weighing pan, remove the container with a product.	Pending the removal of the container with a product from a weighing platform.
13. [CI] Input condition	Input 4 – „/”	Rising edge is to be applied to input 4 – pressing of a button confirming container removal.
14. [Z] Zero	Zero	Zeroing of platform 1.
15. [F] Set flags	Set flag 1	Setting a characteristic point for the process, the set point is a condition for performance of part of the process on platform 2.
16. [O] Outputs	Output 1 – „1”	On output 1 high state activates („1”) - signalling informing on completion of the dosing process on platform 1 switches on.

Platform 2

Step	Value	Description
1. [TI] Delay	[5s] Load an empty container	Pending the loading of an empty container intended for the third product (the first product to be weighed on platform 2).
2. [CI] Input condition	Input 9 – „/”	Rising edge is to be applied to input 9 – pressing of a button confirming loading of a weighing pan with a container.
3. [T] Tare	Tare	Taring of platform 2.
4. [DH] Dose manually	0.2 kg [Spices]	Dispensing 0.2 kg of 'Spices' manually.
5. [TI] Delay	[5s] Unload the weighing pan, remove the container with a product.	Pending the removal of the container with a product from a weighing platform.
6. [CI] Input condition	Input 12 – „/”	Rising edge is to be applied to input 12 – pressing of a button confirming container removal.
7. [Z] Zero	Zero	Zeroing of platform 2.

8. [CF] Flag condition	Flag 1 – „1”	Condition check, checking whether flag 1 is set to value „1” – i.e. checking whether respective process part has already been performed on platform 1. In case of the condition met, dosing on platform 2 continues.
9. [O] Outputs	Output 1 – „0”, Output 12 – „1”	On output 1 low state is set („0”) - signalling informing on completion of the dosing process on platform 1 switches off; On output 12 high state is set – the main valve for water dispensing gets opened in order to allow manual water dosing.
10. [DH] Dose manually	2 kg [Water]	Dispensing 2 kg of 'Water' manually.
11. [O] Outputs	Output 12 – „0”	On output 12 low state is set – the main valve for water dispensing gets closed.
12. [TI] Delay	[5s] Unload the weighing pan, remove the container with a product.	Pending the removal of the container with a product from a weighing platform.
13. [CI] Input condition	Input 12 – „/”	Rising edge is to be applied to input 12 – pressing button confirming container removal.
14. [O] Outputs	Output 9 – „1”	On output 9 high state activates („1”) - signalling of dosing process performance on platform 2 switches on.
15. [TI] Delay	[5s] Dosing process completed	Display of text information about completion of the dosing process on an indicator.

Dosing process completion causes deactivation of all indicator outputs.

24.6.2. Example 2 – Automatic Dosing of 2 Ingredients on 2 Platforms

Example of a dosing process where 2 ingredients are dispensed on 2 platforms:

- Platform 1 ingredients: Flour.
- Platform 2 ingredients: Water.

Dosing process is to be carried out automatically with the condition that the ingredients are dosed in a particular order – dosing of 'Water' may start only when dosing of 'Flour' has been completed. In order to fulfil the condition, flags are used. The flags respectively configure the dosing on two platforms. The settings result with water ingredient dosed as the second one. The process has been presented in tables, separately for each platform.

Dosing performed via an indicator:

Dosing process name: Example 2
Dosing process code: 2222

Platform 1

Step	Value	Description
1. [CM] Mass condition	Gross < 0.1 kg	Condition checking whether the platform is loaded with load of value lower than 100 g.
2. [Z] Zero	Zero	Zeroing of platform 1.
3. [TI] Delay	[5s] Flour valve opening	Pending the opening of the main valve of „Flour” silos.
4. [DA] Dose automatically	1.2 kg [Flour]	Automatic dispensing of 1 kg 'Flour' in rough dosing mode (rough and precise dosing valves open – Outputs 1 and 2), next dispensing of 0.2 kg in precise dosing mode (only precise dosing valve open – Output 1 (2-stage dosing).
5. [TI] Delay	[3s] Flour valve closing	Pending the closing of the main valve of „Flour” silos.
6. [O] Outputs	Output 11 – „1”	On output 11 high state activates („1”) - signalling informing on completion of dosing process performance on platform 1 switches on.
7. [F] Set flags	Flag 1 – „1”	Setting a characteristic point for the process, the set point is a condition for performance of part of the process on platform 2.

Since for 'Flour' product, the outputs of 2-stage dosing have been set then dosing on platform 1 is a 2-stage process.

Platform 2

Step	Value	Description
1. [CF] Flag condition	Flag 1 – „1”	Condition check, checking whether flag 1 is set to value „1” – i.e. checking whether respective process part has already been performed on platform 1. In case of the condition met, dosing on platform 2 starts.
2. [CM] Mass condition	Gross < 0.1 kg	Condition checking whether the platform is loaded with load of value lower than 100 g.
3. [Z] Zero	Zero	Zeroing of platform 2.
4. [TI] Delay	[5s] Water valve opening	Pending the opening of the main valve of „Water” silos.
5. [DA] Dose automatically	2.2 kg [Water]	Automatic dispensing of 2.2 kg 'Water' in 1-stage dosing mode – Output 6 controlling the dosing valve.
6. [TI] Delay	[5s] Water valve closing	Pending the closing of the main valve of „Water” silos.
7. [O] Outputs	Output 12 – „1”	On output 12 high state activates („1”) - signalling informing on completion of the dosing process on platform 2 switches on.
8. [TI] Delay	[5s] Dosing completion	Display of text information about completion of the dosing process on an indicator.

In case of an automatic dosing, additional settings must be configured for dosed ingredients' dosing outputs – **<Products>** database settings.

24.6.3. Example 3 – Manual and Automatic Dosing

Example of a dosing process where 4 ingredients are dispensed on 2 platforms:

- Platform 1 ingredients: Flour, Sugar, Spices.
- Platform 2 ingredients: Water.

Dosing process is to be carried out manually and automatically, with the condition that the ingredients are dosed in a particular order – dosing of 'Water' may start only when dosing of 'Flour' and 'Sugar' has been completed. „Spices" ingredient is dispensed as the last one. In order to fulfil the condition, flags are used. The flags respectively configure the dosing on two platforms. The settings result with water ingredient dosed at a respective time. The process has been presented in tables, separately for each platform.

Dosing performed via an indicator:

Dosing process name: Example 3
Dosing process code: 3333
Platform 1

Step	Value	Description
1. [TI] Delay	[5s] Load the weighing pan with Flour container	Pending the loading of platform 1 with Flour container.
2. [CI] Input condition	Input 1 – „/"	Rising edge is to be applied to input 1 – pressing of a button confirming loading of the weighing pan with a container.
3. [T] Tare	Tare	Taring of platform 1.
4. [DH] Dose manually	1 kg [Flour]	Dispensing 1 kg of 'Flour' manually.
5. [TI] Delay	[7s] Unload the weighing pan	Pending the removal of the container with 'Flour'.
6. [CI] Input condition	Input 4 – „/"	Rising edge is to be applied to input 4 – pressing of a button confirming container removal.
7. [O] Outputs	Output 1 – „1"	Signalling of 'Flour' dosing.
8. [Z] Zero	Zero	Zeroing of platform 1.
9. [TI] Delay	[5s] Load the weighing pan with Sugar container	Pending the loading of platform 1 with Sugar container.
10. [CI] Input condition	Input 1 – „/"	Confirmation of loading of the weighing pan with 'Sugar' container.
11. [T] Tare	Tare	Taring of platform 1.

12. [DH] Dose manually	0.4 kg [Sugar]	Dispensing 0.4 kg of 'Sugar' manually.
13. [TI] Delay	[5s] Unload the weighing pan	Pending the removal of the container with 'Sugar'.
14. [CI] Input condition	Input 4 – „/”	Rising edge is to be applied to input 4 – pressing of a button confirming container removal.
15. [O] Outputs	Output 2 – „1”	Signalling of 'Sugar' dosing.
16. [Z] Zero	Zero	Zeroing of platform 1.
17. [CI] Input condition	Input 1 – „/”	Confirming of pouring the mixer with ingredients.
18. [F] Set flags	Flag 1 – „1”	Setting a characteristic point for the process, the set point is a condition for performance of part of the process on platform 2.
19. [O] Outputs	Output 5 – „1”	Switching on the signalling informing that the ingredients have been added to the mixer.
20. [CF] Flag condition	Flag 1 – „1” Flag 2 – „1”	Pending the „Water” to be dosed automatically on platform 2.
21. [TI] Delay	[5s] Load the weighing pan with Spices container	Pending the loading of platform 1 with Spice container.
22. [CI] Input condition	Input 1 – „/”	Confirming loading of the weighing pan with Spice container.
23. [T] Tare	Tare	Taring of platform 1.
24. [DH] Dose manually	0.25 kg [Spices]	Dispensing 0.25 kg of 'Spices' manually.
25. [TI] Delay	[5s] Unload the weighing pan	Pending the removal of the container with 'Spices'.
26. [CI] Input condition	Input 4 – „/”	Rising edge is to be applied to input 4 – pressing of a button confirming container removal.
27. [O] Outputs	Output 3 – „1”	Signalling of 'Spices' dosing.
28. [TI] Delay	[10s] Dosing completion	Display of text information about completion of the dosing process on an indicator.

Platform 2

Pictogram	Step	Value	Description
	1. [CF] Flag condition	Flag 1 – „1”	Condition check, checking whether flag 1 is set to value „1” – i.e. checking whether respective process part has already been performed on platform 1. In case of the condition met, dosing on platform 2 starts.
	2. [T] Tare	Tare	Taring of platform 2.
	3. [TI] Delay	[5s] Water valve opening	Pending the opening of the main valve of „Water” silos.

	4. [DA] Dose automatically	2 kg [Water]	Automatic dispensing of 2 kg 'Water' in 1-stage dosing mode – Output 6 controlling the dosing valve (set for 'Water' in Products database).
	6. [TI] Delay	[5s] Water valve closing	Pending the closing of the main valve of „Water" silos.
	7. [O] Outputs	Output 12 – „1"	On output 12 high state activates („1") - signalling informing on completion of the dosing process on platform 2 switches on.
	8. [F] Set flags	Flag 1 – „1" Flag 2 – „1"	Setting a characteristic point for the process, the set point is a condition for performance of part of the process on platform 1.
	8. [TI] Delay	[10s] Dosing completion	Display of text information about completion of the dosing process on an indicator.

The example of mixed dosing (manual and automatic) has been expanded with signalling of particular stages, this is to present **<Dosing>** mode options.

24.7. Reporting of Completed Dosing Processes

Upon each completed dosing process, a report is generated automatically.

Default value of the dosing report template:

```
---------------------------------------------
Dosing process
---------------------------------------------
{40:Start date:,-25}{180}
{40:End date:,-25}{181}
{40:Name:,-25}{175}
{40:Code:,-25}{176}
{40:Status:,-25}{182}
{40:Measurements:,-25}
---------------------------------------------
{185:(50,-20)     (7)(11)
(40:Nominal mass:,-25)(186)(11)
(40:Difference:,-25)(187)(11)
---------------------------------------------
}{40:Mass:,-25}{184}{11}
---------------------------------------------
```

Template modification - read section 11.2.3.

Report on each completed process is saved to **<** **Dosing reports>** database, the file name is a combination of date and hour of process completion and of process status (for dosing report data read section 34.5.2).

25. WORKING MODE – FORMULATIONS

Formulations is a working mode enabling you to make multi-ingredient mixture.

25.1. Dosing Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<Formulations>** working mode, the home screen with pictogram is displayed automatically.
- Additional on-screen buttons are activated automatically:

	Press to view/set local parameters.
	Press to select formulation.
	Press to start formulation.
	Press to stop formulation.
	Press to select an ingredient form the list.
	Press to set mass of the formulation ingredient that is delivered as a pre-packaged product of known mass.

25.2. Local Settings

In order to access local settings of **<Formulations>** working mode, press the **<Local settings>** on-screen button:

		Formulation mass recalculation mode	Enter to select formulation recalculation mode (one of three) each time directly prior to formulation start.
		Multiplier	Enter to force query regarding formulation multiplier, i.e. value by which masses of particular ingredients are to be multiplied.
		Ingredient	Enter to force query regarding ingredient mass. Upon change of mass of one ingredient, mass of the remaining ones gets recalculated with regard to a respective ratio.
		Mass	Enter to force query regarding formulation mass. Upon change of formulation mass, mass of all the ingredients gets recalculated.
		All	Enter to open window for selection of formulation mass recalculation mode (one of three).

		Request cycles quantity	Enter to force query regarding number of formulation process cycles, i.e. to specify how many times the whole process is to be repeated.
		Batch portion recalculation mode	Enter to select batch portion recalculation mode (one of three) each time directly prior to formulation start.
		Number	Enter to force query regarding quantity of batch portions into which the formulation is to be divided.
		Percent	Enter to force query making the user to specify percent value of batch portion, i.e. how many percent of the formulation one batch portion takes.
		Mass	Enter to force query making the user to specify mass value of batch portion, i.e. how much of the formulation mass one batch portion takes.
		All	Enter to open window for selection of batch portion recalculation mode (one of three).
		Request batch number	Enter to trigger opening of a window for inserting batch number prior to weighing of each ingredient.
		Request lot number	Enter to trigger opening of a window for inserting lot number prior to formulation start.
		Confirm ingredients dosed manually	Enter to enforce manual confirmation for each weighing by pressing Enter/Print key.
		Confirm ingredients dosed automatically	Enter to enforce manual confirmation, by pressing Enter/Print key, of a completed automatic dosing.
		Delay auto-dosing record	Enter to delay record of the measurement, the record takes place after specified time interval upon automatic dosing completion.
		Automatic tare	Enter to activate automatic taring of mass at the process start, and of mass of each successive ingredient upon weighing.
		Tare mode *	Enter to configure respective parameters for tare set in a product.
		Single *	Regular tare mode. The set (selected) tare value is overwritten upon selection of an ingredient for weighing.
		Sum of all *	Total value of all entered tare values.
		Request tare *	Opening of a window prior to weighing of each ingredient with a query: Add product tare?
		Portion weighing	Enter to activate weighing of the ingredient in portions until the set mass is obtained. Should more ingredients than required be weighed it is possible to recalculate the formulation.
		Report Printout	Enter to activate function of an automatic printout of a report upon process completion.
		Note	Template of a note that can be used on the report.

***)** *- Settings for a formulation ingredient selected from product database. Tare value must be set in product record.*

25.3. New Formulation

- Enter **<Databases / Formulations>** submenu.
- Press **<Add>** button, confirm new record adding.

Newly created formulation data:

	Name	Formulation name.
	Code	Formulation code.
	Ingredients	Defining formulation ingredients.
	Ingredient quantity	Preview of created formulation ingredients quantity.
	Formulation mass	Preview of total mass of formulation.
	Batch portion type	Type of the measuring series for a formulation.
	Product	Product being an outcome of the completed formulation. Inventory of the product gets increased.
	Target warehouse	Warehouse for which outcome product inventory gets increased.
	Workflow: Start	Assigning workflow that is to proceed prior to formulation start.
	Workflow: End	Assigning workflow that is to proceed after formulation start.

1) Batch portion type can be defined as one of the following values:

None	Function inactive.
Global	Batch portion carried out globally for the whole formulation.
By ingredient	Batch portion carried out successively for each ingredient one by one.

2) Data used in E2R software.
3) For detailed Workflow description read section 35.

- Enter **<Ingredients>** submenu, add formulation ingredients one by one, do it by pressing **<Add>** button.

Ingredient data:

		Name	Ingredient name.
		Code	Ingredient code.

		Product	Formulation ingredient selected from Products database.
		Mass	Ingredient mass.
		Deviation type	Declared deviation type: Unit mass for a selected platform, or value in [%].
		Low deviation	Low deviation of ingredient mass.
		High deviation	High deviation of ingredient mass.
		Platform	Assigning platform number to an ingredient.
		Dispensing	Subtract weighing mode (minus weighing).
		Set mass	Activation of ingredient mass record during weighing by pressing button.
		Ingredient control	Activation of control of formulation ingredient. **Ingredient control** mode enforces providing a correct ingredient code prior to weighing.
[g] [ct]		**Unit**	Ingredient mass unit.
		Dose automatically	Setting of respective dosing options.
		Dose automatically	Dosing starts once the ingredient is selected. Shall the function be inactive then the dosing starts upon ingredient selection and button pressing (Start dosing automatically).
		Dosing outputs	Declaring outputs for precise dosing.
		Fast dosing output	Declaring outputs for rough dosing.
		Correction	Numerical value of dosing correction.
	PRINT	**Threshold**	Threshold for switching the outputs during 2-threshold dosing.
		Source warehouse	Warehouse where ingredient stock decreases.
		Workflow: Start	Assigning workflow that is to proceed prior to ingredient weighing.
		Workflow: End	Assigning workflow that is to proceed after ingredient weighing.
A B C		**Stage**	Assigning an ingredient to a phase (group).
1 2 3		**Order**	Assigning the ingredient with weighing order.

When

1. You select an ingredient form the database, then the following message is displayed: **<Ingredient name, ingredient mass, low deviation, high deviation and deviation type will be downloaded from a product, continue?>**.
2. You declare mass of value greater than the max capacity value of the selected platform, then the following message is displayed: **<Ingredient mass exceeds maximum capacity of a selected platform>**.
3. You declare low deviation of value greater than the declared ingredient mass then the following message is displayed: **<Low deviation value too high>**.
4. Sum of ingredient mass and high deviation value exceeds the max capacity value of the selected platform, then the following message is displayed: **<High deviation value too high>**.

- Enter the required data and press button, the new ingredient is added to the formulation. The newly created entry on the list contains: entry number, ingredient name and mass value to be weighed.
- It is possible to modify an existing ingredient list, e.g. add a new ingredient, to do it press and hold the ingredient prior to which the new ingredient is to be added, hold the button for about 4 seconds. A pop-up menu is displayed:

Edit
Add
Delete
Cancel

- Press **<Add>** entry and define a new formulation ingredient.
- Enter the last ingredient and go to the home screen, do it by pressing key.

25.4. Formulation Procedure

	To start formulation process, it is necessary to log as an operator granted with respective permissions – read section 7.3.

Procedure:

- Select the formulation, to do it press on-screen button.
- Save general parameters of 'Formulation' mode to scale memory (read section 25.2).

- Press the on-screen function button, ✔ (process start).
- In case of an active ingredient control mode, **<Ingredient control>** edit box with an on-screen keypad is displayed, the edit box features a field for entering the weighed ingredient code using a barcode scanner.
- Weighing of each successive ingredient requires providing a correct ingredient code.

When:

1. The entered code of a current ingredient is incorrect, and the ingredient is comprised within the formulation ingredient list, then the following message is displayed: **<Incorrect ingredient code. Ingredient already comprised within formulation ingredient list. Advance to this ingredient?>** (✔ - press to start ingredient weighing, ✖ - press to return to **<Ingredient control>** edit box with an on-screen keypad for entering of the correct ingredient code).
2. The entered code of a current ingredient is incorrect, and the ingredient is NOT comprised within the formulation ingredient list, then the following message is displayed: **<Ingredient of the specified code does not exist. Omit?>** (✔ - press to proceed to the next ingredient, ✖ - press to return to **<Ingredient control>** edit box with an on-screen keypad for entering of the correct ingredient code).
3. The entered code of a current ingredient is correct, then the following message is displayed: **<Correct ingredient code>**, ingredient weighing proceeds.

- Bar graph of weighed ingredient mass is displayed with the following data:

  Process in progress: Test formulation
  Ingredient: 1 / 3 [Ingredient 1]
  Portion: 0g / -500.0g
  Batch portion: 1 / 10
  Completed:0%

Where:

Process in progress:	Process status.
Test formulation	Formulation name.
Ingredient1 / 3	Weighed ingredient number / formulation ingredients quantity.
[Ingredient 1]	Weighed ingredient name.
Portion: 0 g	Current ingredient mass.
Portion: -500.0g	Current deviation from the reference mass.
Batch portion: 1 / 10	Ongoing batch portion number / declared batch portions quantity.
0%	Process progress.

When:

- Upon process start the weighing pan is loaded, during an attempt of measurement confirmation the following message is displayed **<Load appropriate product>**.
- You attempt to confirm the next mass portion without prior change of weighing pan load then the following message is displayed **<Load appropriate product>**.
- You attempt to confirm the next mass portion in case of inactive **<Portion weighing>** parameter, then the following message is displayed **<Load appropriate product>**.
- You attempt to confirm unstable mass indication, then the following message is displayed **<Measurement unstable>**.
- You attempt to confirm exceeded value of permissible ingredient mass, then the following message is displayed **<Maximum mass value of the Ingredient exceeded. Recalculate ingredients?>** (- press to go backwards, press to recalculate mass of the ingredients proportionally with regard to the exceeded mass value and to continue carrying out formulation.

You can abort the process at any time by pressing (process stop) button, the button is to be found at the bottom of the display.

25.5. Completed Formulation Processes Reporting

Formulation report is generated automatically after completion of each formulation process.

Default value of the formulation report template:

```
---------------------------------------------
Formulation
---------------------------------------------
{40:Start date:,-25}{240}
{40:End date:,-25}{241}
{40:Name:,-25}{220}
{40:Code:,-25}{221}
{40:Status:,-25}{242}
{40:Measurements:,-25}
---------------------------------------------
{245:(50,-20)    (7)(11)
(40:Nominal mass:,-25)(246)(11)
(40:Difference:,-25)(247)(11)
---------------------------------------------
}
---------------------------------------------
{40:Mass:,-25}{244}
---------------------------------------------
```

Template modification - read section 11.2.3.

Report on each completed process is saved to **<Formulation reports>** database, the file name is a combination of date and hour of process completion and of formulation status (for formulation report data read section 34.5.3).

26. WORKING MODE – FORMULATION ORDERS

Formulation Orders is a working mode enabled only upon establishing of connection between the scale and the E2R Formulations software. During regular operation the Formulation Orders mode is disabled. The mode allows to carry out formulations ordered in E2R Formulations software.

26.1. Formulation Orders Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<Formulation orders>** working mode, the home screen with pictogram is displayed automatically.
- Additional on-screen buttons are activated automatically:

	Press to view/set local parameters.
	Press to select formulation.
	Press to pause formulation.
	Press to abort formulation.
	Press to select an ingredient form the list.
	Press to set mass of the formulation ingredient that is delivered as a pre-packaged product of known mass.

26.2. Local Settings

In order to access local settings of <Formulation orders> working mode, press the **<Local settings>** on-screen button. For detailed information read section 25.2.

26.3. New Formulation Order

Formulation orders are created in E2R Formulations software. For detailed description regarding creation of formulation orders read the user manual of E2R Formulations software.

26.4. Formulation Procedure

⚠	***To start formulation process, it is necessary to log as an operator granted with respective permissions – read section 7.3.***

Procedure:

- Select formulation order from the list.
- Prompt providing formulation name, batch portions quantity and preset mass value is displayed. Press ✔ button to confirm.
- In case of an active ingredient control mode, **<Ingredient control>** edit box with an on-screen keypad is displayed, the edit box features a field for entering the weighed ingredient code using a barcode scanner. Weighing of each successive ingredient requires providing a correct ingredient code.

When:

1. The entered code of a current ingredient is incorrect, and the ingredient is comprised within the formulation ingredient list, then the following message is displayed: **<Incorrect ingredient code. Ingredient already comprised within formulation ingredients list. Advance to this ingredient?>** (✔ - press to start ingredient weighing, ✖ - press to return to **<Ingredient control>** edit box with an on-screen keypad for entering of the correct ingredient code).
2. The entered code of a current ingredient is incorrect, and the ingredient is NOT comprised within the formulation ingredient list, then the following message is displayed: **<Ingredient of the specified code does not exist. Omit?>** (✔ - press to proceed to the next ingredient, ✖ - press to return to **<Ingredient control>** edit box with an on-screen keypad for entering of the correct ingredient code).
3. The entered code of a current ingredient is correct, then the following message is displayed: **<Correct ingredient code>**, ingredient weighing proceeds.

- Bar graph of weighed ingredient mass is displayed with the following data:

  Order: ZL-1/2018-06-27
  Ingredient: 1 / 2 [Ingredient 1]
  Weighed mass: 0 g
  To-be-weighed mass: 100 g
  Thresholds: 95g / 110g
  Batch portion: 1/10

Where:

Order:	Completed order
ZL-1/2018-06-27	Completed order name
Ingredient: 1 / 2	Weighed ingredient number / formulation ingredients quantity.
[Ingredient 1]	Weighed ingredient name.
Weighed mass: 0 g	Current ingredient mass.
To-be-weighed mass: 100g	Mass of an ingredient that is to be weighed.
Thresholds: 95g/110g	Tolerance thresholds.
Batch portion: 1 / 10	Ongoing batch portion number / declared batch portions quantity.

When:

1. Upon process start the weighing pan is loaded, during an attempt of measurement confirmation the following message is displayed **<Load appropriate product>**.
2. You attempt to confirm the next mass portion without prior change of weighing pan load then the following message is displayed **<Load appropriate product>**.
3. You attempt to confirm the next mass portion in case of inactive **<Portion weighing>** parameter, then the following message is displayed **<Load appropriate product>**.
4. You attempt to confirm exceeded value of permissible ingredient mass, then the following message is displayed **<Maximum mass value of the Ingredient exceeded. Recalculate ingredients?>** (- press to go backwards, press to recalculate mass of the ingredients proportionally with regard to the exceeded mass value and to continue carrying out formulation.
5. You attempt to confirm unstable mass indication, then the following message is displayed **<Measurement unstable>**.

You can either pause or abort the process at any time by pressing (Process pause) or (Process stop) button, the buttons are to be found at the bottom of the display.

27. WORKING MODE – PGC

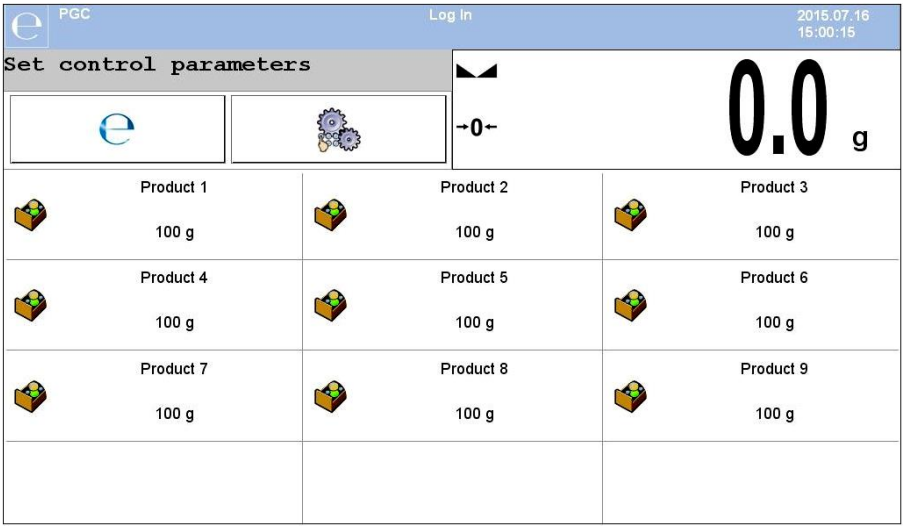
<e PGC> is a working mode enabling performance of pre-packaged goods controls (single stand control or multi-stand control), supported by a database containing products and operators. The control run via scale ends automatically when respective quantity of pre-packaged products is checked (sample).

The scales can connect with **E2R SYSTEM** software and make a multi-workstation system (network). Each scale is an independent workstation, and info regarding the course of control is sent to the computer program in real time. The computer software enables collecting real-time data from each connected scale. The system allows to start control process using the instrument or computer software. Collected data allows to assess the quality of pre-packaged products and their conformity with:

- the Regulation by the Central Office of Measures of 3 April 1997, on the requirements concerning quantity inspection of **pre-packaged goods control**, which inspection is to be carried out by means of random selection of the measurement results and sending those results to pre-packaged goods control procedure (FOR EUROPEAN UNION).
- a company quality control system (internal audit).

27.1. PGC Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<e PGC>** mode, the mode's home screen is displayed.



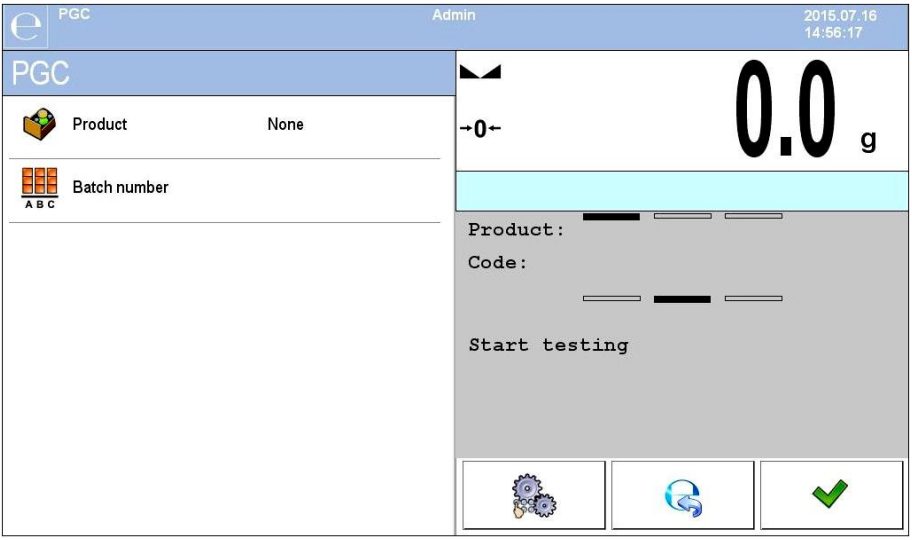
Where:

	Control settings.
	Press to view local settings.
Product 1 100 g	Product record entry from database (Product name and nominal value).

27.2. Control Settings Edit Box

	Entering control settings edit box requires logging.

Press button displayed in **<PGC>** mode home screen, control settings edit box opens.



Where:

	Press to select product from the database.
	Press to declare controlled batch number.
	Press to view local settings.

	Press to return to the home screen.
	Press to start the control.

27.3. Local Settings

In order to access local settings of **<PGC>** working mode, press the **<Local settings>** on-screen button:

	Gross weight on the display	Enter to enable/disable gross weight value on the home screen.
	Save mode	For detailed description read section 20.2.
12ABC	**Request batch number**	Enter this function to enforce batch number “to be entered prior to control start.
	Request density value	Enter this function to enforce density to be entered prior to control start.
	Auto print of average tare report	Enter to print average tare report upon control completion.
1 2 3	**Request batch quantity**	Enter this function to enforce batch quantity “to be entered prior to control start.
1 2 3	**Request sample quantity**	Enter this function to enforce sample quantity to be entered prior to control start.
	Password required	Enter this function to enforce logging each time the settings edit box is opened.
	Record control: mass < 100% Qn disabled	Prevention against record of erroneous measurements of controlled product. Value expressed as low deviation in [%] referred to nominal mass value of the controlled product.
	Record control: mass > 100% Qn disabled	Prevention against record of erroneous measurements of controlled product. Value expressed as high deviation in [%] referred to nominal mass value of the controlled product.
	Recorded weighing info	For detailed description read section 20.15.

27.4. Product Editing

⚠	***In case of communication of the scale with <E2R System> software, editing of databases on scales is disabled. To edit and export products to scales, it is necessary to use a computer program.***

Procedure:

- Enter **<Databases / Products>** submenu and select a respective entry.

Control data:

Pictogram		Name	Description
		Name	Product name.
		Code	Product code.
		Mass	Product nominal mass.
		Tare	Product tare value (set automatically while selecting a product from the database).
		PGC	-
		PGC mode	Control type: Non-destructive average tare, Non-Destructive Empty–Full, Destructive Full-Empty, Destructive Empty–Full.
		Batch quantity	Declaring quantity of pieces in the controlled batch (999999 pieces maximum).
		Batch portion	Measurement series for control: Non-destructive Empty-Full, Destructive Full-Empty, Destructive Empty-Full.
		Unit	Unit of a product: [g] or [ml].
		Density	Enter to set product density (permissible values range: 0.1g/cm^3 - 5g/cm^3).
		Packaging quantity	Enter to declare quantity of packaging items subjected to average tare determination process (for Non-destructive Average Tare control).
		Cyclic average tare determination	✔ Enabling / ✔ disabling cyclic determination of the average tare for a product.
		Interval of average tare determination [h]	Enter to specify time value specifying how frequently the tare is to be checked in the course of product control. As a result the determination of average tare value is enforced in accordance with the declared interval.
		Remind about measurement every [min]	Activation of message reminding about the necessity to carry out the successive measurement.

		Maximum standard deviation of packaging	Maximum value of standard deviation of packaging in tare control.
		MIN tare	Prevention against record of erroneous measurements of controlled tare. Value expressed as low threshold.
		MAX tare	Prevention against record of erroneous measurements of controlled tare. Value expressed as high threshold.
		Internal control	Submenu with parameters for defining the criteria of an internal control (see the below table).

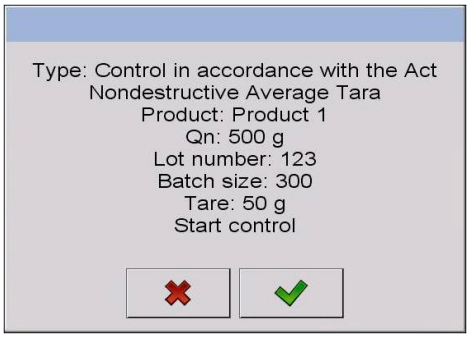
- **Internal criteria data:**

Internal control	Enabling / disabling internal control criteria.
Sample quantity	Product sample quantity value.
[- T] error value	Max permissible value of **–T** error, given in mass unit set for a product. Measurement values lower than **Qn-T** value are considered to be incorrect.
[+ T] error value	Max permissible value of **+T** error, given in mass unit set for a product. Measurement values higher than **Qn+T** value are considered to be incorrect.
Quantity of disqualifying samples [Qn – 2T]	Number of negative errors **-2T** in tested sample that disqualify the control.
Quantity of disqualifying samples [Qn + 2T]	Number of positive errors **+2T** in a tested sample that disqualify the control.
Quantity of disqualifying samples [Qn - T]	Number of negative errors **- T** in a tested sample that disqualify the control.
Quantity of disqualifying samples [Qn + T]	Number of positive errors **+T** in tested sample that disqualify the control.
Average limit value	Mode for determination of an average limit value (constant or automatic).
Average limit value [-]	Average limit value (negative) for tested sample (refers to average limit value as a “constant”).
Average limit value [+]	Average limit value (positive) for tested sample (refers to average limit value as a “constant”).
Factor value [- Wk]	Standard deviation multiplier for the average limit value (negative) determined in the automatic mode.
Factor value [+ Wk]	Standard deviation multiplier for the average limit value (positive) determined in the automatic mode.
Ignore errors [+]	Exceeding the positive error quantity does not result with negative control result.

27.5. Control Start Procedure

⚠	***To start PGC process, it is necessary to log as an operator granted with respective permissions – read section 7.3.***

- Select a product with correctly entered control process data.
- Save general parameters of PGC mode to scale memory (read section 27.2 and 27.3).
- Unload the weighing pan.
- Press ✔ on-screen button (control start), info box with the entered data is displayed:



Where:

✖	Press to abort control start.
✔	Press to start the control.

If prior to control start:

- The weighing pan remains loaded or any of the zeroing criteria is not met (e.g. unstable weighing result), then the following message is displayed: **<Unable to start control. Zeroing error>**.
- The operator neither logs in nor is granted with permissions allowing him to carry out the control then the following message is displayed: **<Access denied>**.
- The product is not selected from a database, then the following message is displayed:
  <Product not selected>.
- The batch quantity is not declared then the following message is displayed: **<Batch quantity not specified>**.

27.6. Control Abort Procedure

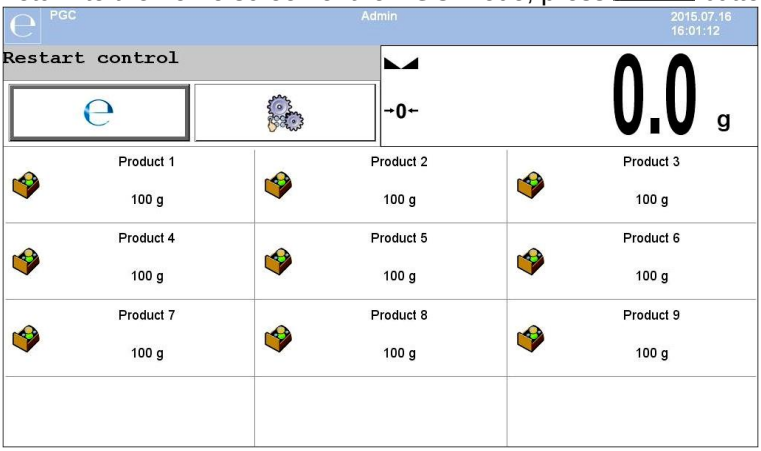
The control can be aborted at any time, it is done by pressing on-screen button (control stop).Pressing of button (control stop) results with display of the following box:

Where:

	Press to return to the ongoing control.
	Press to abort the ongoing control and return to **PGC** settings. In **<Controls>** database, a control report with **<Terminated>** status is saved.

27.7. Logging out During an Ongoing Control

- During the ongoing control press an entry with the logged operator name, the entry is to be found at the top bar.
- Logging out proceeds automatically, **<Insert Password>** edit box with a name of the previously logged operator is displayed.
- Enter the password, to return to the ongoing control process automatically press button.
- To return to the home screen of the **PGC** mode, press button.



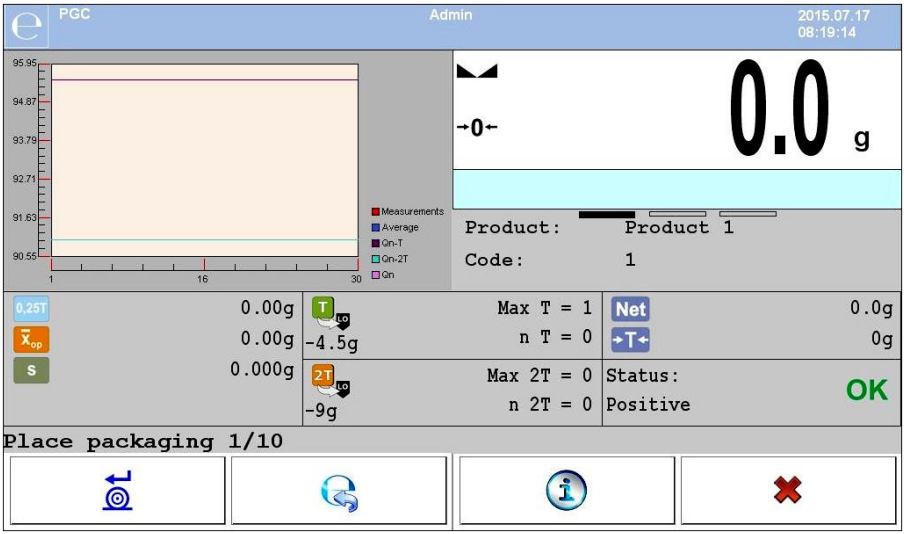
Where:

Restart control	Information on a possibility to resume the ongoing control.
	Control resuming button.

- Pressing button causes display of **<Insert Password>** edit box with a name of the previously logged operator.
- Enter the password, to return to the ongoing control process automatically press button.

27.8. Non-Destructive Average Tare Control

Prior to control start it is possible to determine the average tare, the determination is done by packaging weighing. To do it, activate **< Average tare determination>** function in **PGC** mode settings. During tare control the following window is displayed:



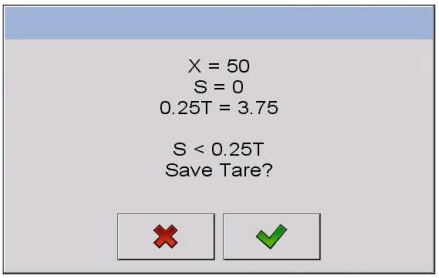
Where:

Product	Product name.
Code	Product code.
0,25T	**0.25T** criterion value in [g].
$\bar{x}_{op}$	Average packaging mass in [g].

S	Standard deviation.
T LO	Characteristics of negative errors **T1** in a sample.
2T LO	Characteristics of negative errors **2T1** in a sample.
Net	Net weight of controlled packaging.
→T←	Packaging tare.
Status	Packaging control status.
Load packaging	Command concerning process course, it specifies quantity of packaging items to be weighed.
	Confirm mass..
	Auto logout.
	Ongoing-control info.
	Control completion.

⚠	***In order to control the product in the "Non-destructive average tare" mode in accordance with the law regulations, the standard deviation S of packaging mass, determined on the basis of 10 measurements minimum, cannot be greater than 0.25 of the maximum permissible negative error T for a nominal mass of the packaging.***

Upon measurement of the last packaging mass, the summary of the process is displayed and the report is automatically saved to the scale database:

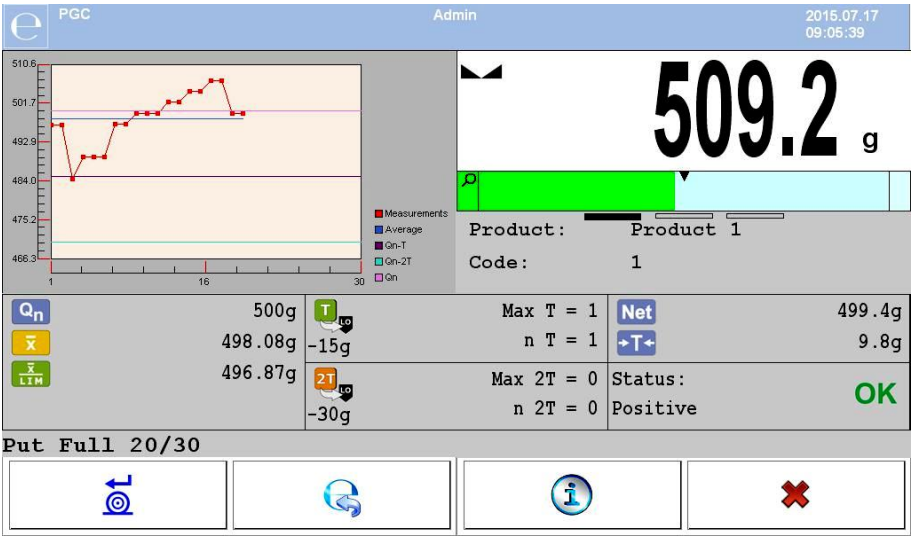


Where:

✖	Press to proceed to control without record of the newly determined average mass of the packaging in product data.
✔	Press to proceed to control with record of the newly determined average mass of the packaging in product data.

AKRIBIS – www.akribis.info – contacto@akribis.info

During control the measurement results are analysed in real time, and displayed in respective fields:



Where:

Product	Controlled product name.
Code	Controlled product code.
Qn	Nominal value of the controlled product.
x̄	Average mass of the controlled product.
x̄ LIM	Disqualifying average value.
T -15g Max T = 1 n T = 0	Characteristics of negative errors **T** in a sample:**-15g** - value of a negative error **T**; **Max T** - permissible quantity of negative errors **T**; **n T** - real quantity of negative errors **T**.
2T -30g Max 2T = 0 n 2T = 0	Characteristics of negative errors **2T** in a sample. **-30g** - value of a negative error **2T**; **Max 2T** - permissible quantity of negative errors **2T**; **n 2T** - real quantity of negative errors **2T**.
Net	Net weight of the controlled product.
→T←	Packaging tare.
Status	Control status: positive, negative.
Load full	Command concerning process course, it specifies quantity of measurements to be done for a particular batch.

Control status:

Graphic interpretation of the control status:

OK	positive,
!	negative (control of sample 2 allowed),
✗	negative.

In case of ! status, colour of the respective workspace turns to yellow:

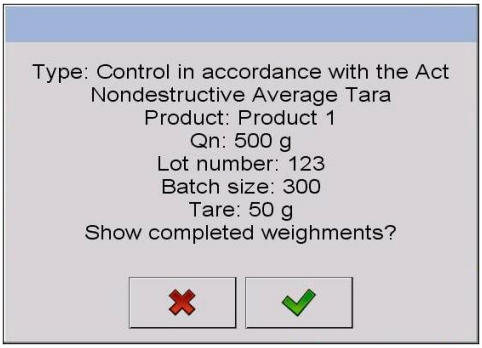
T -15g Max T = 1 n T = 2	Permissible quantity of negative errors **T1** exceeded, control of sample 2 allowed.

In case of ✗ status, colour of the respective workspace turns to red:

Qn 500g x̄ 499.40g LIM 500.00g	Average mass of the controlled product lower than the value of disqualifying average.

Ongoing-control info

Pressing of button results with display of info concerning the ongoing control:



Where:

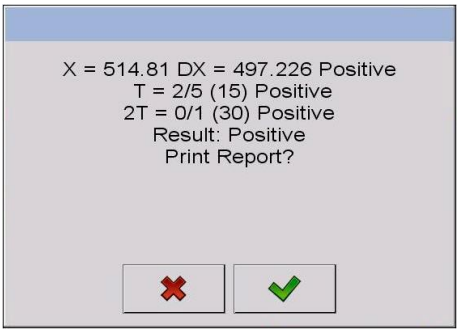
✗	Press to return to the ongoing control.
✓	Press to enter the list of completed weighings.

List of completed weighings

To return to an ongoing control process, press button.

It is possible to change the graph type (linear graph - bar graph), to do it press the graph area:

Upon control completion a summary of the process is generated, and the control is recorded to the database automatically:



Where:

✖	Press to return to PGC settings without report printout.
✔	Press to print the report using scale-connected printer.

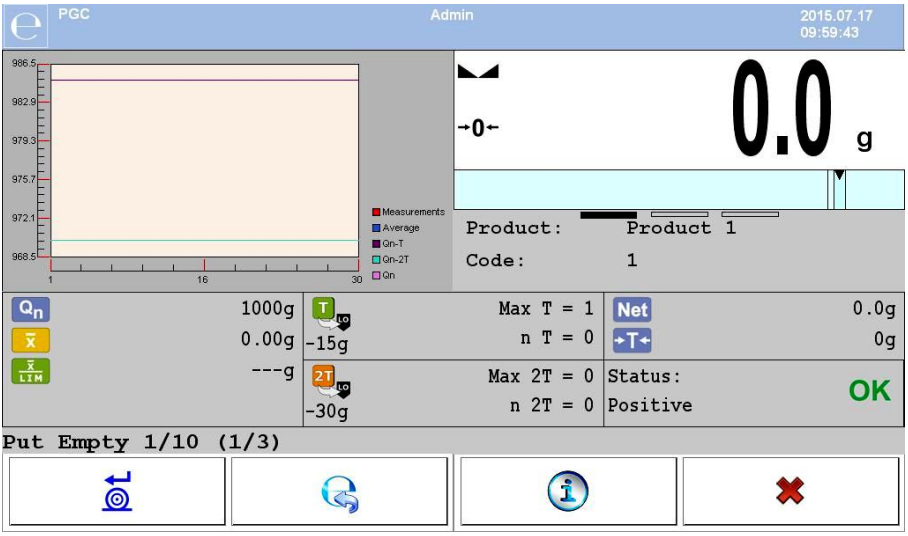
⚠	***In case of communication of the scale with <E2R System> software, the summary box does not display 'Print report?' question. All data is automatically sent to a computer program, which enables the printout of a report via a computer.***

Shall the recorded quantity of negative errors **T** (tolerable negative errors quantity is specified by a respective law regulations) require control of sample 2, then upon completed measurement of sample 1, the message **<Carry out control of sample 2>** is displayed. Press ✔ button to confirm, descriptions and quantity of permissible errors in control box change. Upon completed control of sample 2 the program summary of the process is generated, and the report can be printed on a scale-connected printer.

⚠	***For a template and an example of a report on product control read section 27.14. For a template and an example of a report on determination of an average tare of the packaging read section 27.13.***

27.9. Non-Destructive Empty-Full Control

Non-destructive Empty-Full control requires setting of **batch portion**, the value must be set is product data. With reference to the set **batch portion** value, the respective message is displayed, it prompts you to weigh empty packaging first, full next (upon filling them with the product), mind to weight the full packaging in the same order as empty.



Where:

Product	Controlled product name.
Code	Controlled product code.
Qn	Nominal value of the controlled product.
x̄	Average mass of the controlled product.
x̄ LIM	Disqualifying average value.
T LO -15g Max T = 1 n T = 0	Characteristics of negative errors **T1** in a sample (in accordance with section 27.8).
2T LO -30g Max 2T = 0 n 2T = 0	Characteristics of negative errors **2T1** in a sample (in accordance with section 27.8).
Net	Net weight of the controlled product.
→T←	Packaging tare.
Status	Control status (in accordance with section 27.8).
Put empty 1/10	Command concerning process course.
(1/3)	Command specifying value of batch portion.
	Ongoing-control info (in accordance with section 27.8).
	Aborting the control.

Upon control completion a summary of the process is generated (read section 27.8), and the control is recorded to the database automatically.

⚠	***For a template and an example of a control report read section 27.13.***

27.10. Destructive Full-Empty, Empty-Full Control

Destructive control, in case of product series comprising more than 100 pieces, takes 20 pieces as a sample for control. Remaining conditions for assessment of control results are accordant with the law regulation.

Upon selection of a product for which **Destructive** control options are set and **batch portion** is specified, the program displays messages guiding the operator through the process (analogously like in case of the above described case). Depending on the selected control mode, a respective sequence of weighing is given: **Empty-Full** or **Full-Empty**.

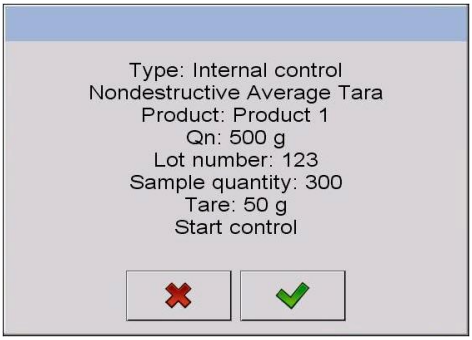
⚠	***It is necessary to keep the same weighing order when weighing a product with packaging and when weighing empty packaging. This is required for correct calculations of mass of a particular product packed into a particular packaging.***

Upon control completion a summary of the process is generated (read section 27.8), and the control is recorded to the database automatically.

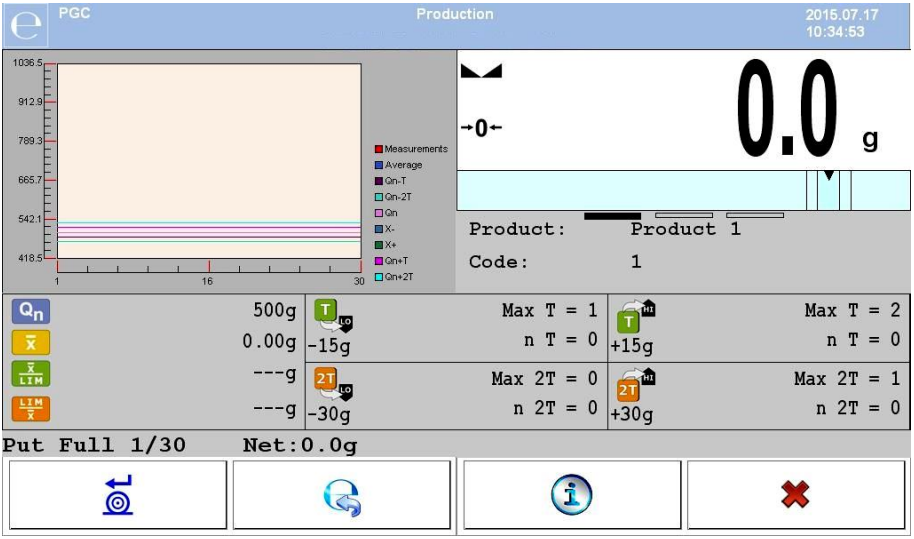
⚠	***For a template and an example of a control report read section 27.13.***

27.11. Control Accordant with Internal Criteria

- Select a product with respective control-required data entered correctly in accordance with the internal criteria (read section 27.4).
- Save general parameters of 'PGC' mode to the scale memory.
- Start the control, to do it press button (control start), the button is to be found at the bottom of the settings window. Box with info on the entered data is displayed automatically:



- Press button to confirm, the control starts.
- During control the measurement results are analysed in real time, and displayed in respective fields:



Where:

Product	Controlled product name.
Code	Controlled product code.
Qn	Nominal value of the controlled product.
$\bar{x}$	Average mass of the controlled product.
$\bar{x}$ LIM	Negative disqualifying average value.
LIM $\bar{x}$	Positive disqualifying average value.

T LO -15g Max T = 1 n T = 0	Characteristics of negative errors **T** in a sample (in accordance with section 27.8).
2T LO -30g Max 2T = 0 n 2T = 0	Characteristics of negative errors **2T** in a sample (in accordance with section 27.8.
T HI +15g Max T = 2 n T = 0	Characteristics of positive errors **T** in a sample: **+15g** - value of a positive error **T**; **Max T** - permissible quantity of positive errors **T**; **n T** - real quantity of positive errors **T**.
2T HI +30g Max 2T = 1 n 2T = 0	Characteristics of positive errors **2T** in a sample: **+30g** - value of a positive error **2T**; **Max 2T** - permissible quantity of positive errors **2T**; **n 2T** - real quantity of positive errors **2T**.
Put full 1/30	Command concerning process course.
Net	Net weight of the controlled product.
	Ongoing-control info (in accordance with section 27.8).
	Aborting the control.

27.11.1. Control Abort Procedure

The control carried out in accordance with the internal criteria can be aborted at any time, it is done by pressing on-screen button (control stop). Pressing of button (control stop) results with display of the following box:

Where:

	Press to return to the ongoing control.
	Press to abort the ongoing control and return to **PGC** settings. In **<Controls>** database, a control report with **<Terminated>** status is saved.

27.11.2. Control Termination Procedure

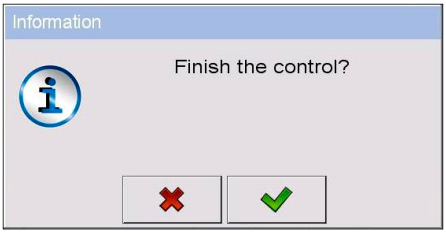
Control carried out in accordance with the internal criteria can be ended both automatically and manually.

Control ended automatically

Control of all the samples where the sample quantity is declared in **<Sample quantity>** parameter. Upon control completion a summary of the process is generated, and the control is recorded to the database automatically:

Control ended manually

In order to end the control manually, press a previously defined on-screen button, (control end). The following message is displayed:



Where:

	Press to return to the ongoing control.
	Press to end the ongoing control and return to **PGC** settings.

	For a template and an example of a control report read section 27.13.

27.12. Average Tare Determination Report

Report example:

```
Average Tare Report U/26/09/09/10/56/T
Scale type:                 WPY PGC
Max:                       1.5/3 kg
d=e:                        0.5/1 g
Serial no.:                 123589
Date:          2009.09.26 10:56:30
Product:                  Product 2
Tare:                         7.9 g
Value 0.25T1:               3.75 g
Measurements quantity:          10
Control result:           Positive
Standard deviation:      0.3162278

Measurements:
1. 8.5 g
```

```
2. 7.5 g
3. 8.0 g
4. 8.0 g
5. 8.0 g
6. 7.5 g
7. 7.5 g
8. 8.0 g
9. 8.0 g
10. 8.0 g

.....................................
-------------------------------------
```

Report example:

It is possible to edit a template of the Average Tare Value Determination Report, to do it go to **<** **Printouts>** submenu (read section 11.2.3). Default report template:

```
Average Tare Report {301}
-------------------------------------
{40:Scale type:,-20}{44}
{40:Max:,-20}{34}
{40:d=e:,-20}{33}
{40:Serial no.:,-20}{32}
{40:Date:,-20}{295}
{40:Product:,-20}{50}
{40:Tare:,-20}{54} g

{40:Value 0.25T1:,-20}{298} g
{40:Measurements quantity:,-20}{299}
{40:Standard deviation:,-20}{297}
{40:Result:,0}{296}
{40:Measurements:,-20}

{300}

.....................................
-------------------------------------
{143:0c}
```

27.13. Product Control Report

Report example:

```
PGC Report U/26/09/09/10/59
----------------------------------------
Scale type:          WPY PGC
Max:                 1.5/3 kg
d=e:                 0.5/1 g
Serial no.:          123589
Start date:          2009.09.26 10:55:28
End date:            2009.09.26 10:59:53
Operator:            Jan Kowalski
Product:             Product 2
Batch no.:           123/09
Nominal mass:        520 g
Tare:                7.9 g
T1 error value:      15 g
2T1 error value:     30 g
Batch qty:           100
Measurements qty:    30
```

```
T1 errors qty:       0
2T1 errors qty:      0
Min:                 518 g
Max:                 529.5 g
Average:             519.9833 g
Sum:                 15599.5 g
Average limit:       518.9138 g
Standard deviation:  2.159515
PGC mode:
Non-destructive Average Tare

Result: Positive

Measurements:

1. 518.0 g    16. 518.0 g
2. 520.5 g    17. 518.0 g
3. 529.5 g    18. 518.0 g
4. 520.0 g    19. 518.5 g
5. 521.0 g    20. 518.5 g
6. 518.0 g    21. 518.5 g
7. 519.0 g    22. 519.0 g
8. 519.0 g    23. 519.0 g
9. 519.0 g   24. 519.0 g
10. 521.0 g   25. 519.0 g
11. 521.0 g   26. 521.0 g
12. 521.0 g   27. 521.0 g
13. 521.0 g   28. 521.0 g
14. 520.0 g   29. 521.0 g
15. 521.0 g   30. 521.0 g

.......................................
---------------------------------------
```

Report example:

It is possible to edit a template of the Product Control Report, to do it go to **<Printouts>** submenu (read section 11.2.3). Default report template:

```
PGC Report {279}
---------------------------------------
{40:Scale type:,-20}{44}
{40:Max:,-20}{34}
{40:d=e:,-20}{33}
{40:Serial no.:,-20}{32}
{40:Start date:,-20}{261}
{40:End date:,-20}{262}
{40:Operator:,-25}{75}
{40:Product:,-20}{50}
{40:Batch no.:,-20}{260}
{40:Nominal mass:,-20}{53}{278}
{40:Tare:,-20}{54} g
{40:T1 error value:,-20}{266}{278}
{40:2T1 error value:,-20}{267}{278}
{40:Batch quantity:,-20}{264}
{40:Measurements quantity:,-20}{265}
{40:T1 errors quantity:,-20}{268}
{40:2T1 errors quantity:,-20}{270}
{40:Min:,-20}{272}{278}
{40:Max:,-20}{273}{278}
{40:Average:,-20}{274}{278}
{40:Sum:,-20}{271}{278}
{40:Average limit:,-20}{275}{278}
{40:Standard deviation:,-20}{276}
{40:PGC mode:,-20}
{58}

{40:Result:,0}{263}

{40:Measurements:,-20}
{277}

.....................................
---------------------------------------
{143:0c}
```

28. WORKING MODE – DENSITY

<Density> is a working mode enabling to determine density of solids, liquids and substances of high viscosity. The density is determined on the basis of Archimedes' principle stating that the upward buoyant force that is exerted on a body immersed in a fluid is equal to the weight of the fluid that the body displaces. Density mode allows to use pycnometer for the purpose of determination of the density of liquid.

28.1. Density Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<Density>** working mode, the home screen with the name of the mode is displayed automatically.
- Message: **<Start density determination>** is displayed within the workspace.

28.2. Local Settings

In order to access local settings of **<Density>** working mode, press the <**Local settings>** on-screen button:

	Reference liquid	Enter to determine reference liquid (3 options): water, ethanol, other. In case of 'other' liquid it is necessary to provide reference liquid density. In case of water and ethanol, the density is entered automatically.
	Temperature	Enter to specify temperature value for the reference liquid. On the basis of the declared liquid temperature, the liquid density is automatically selected form the density table. In case of 'other' liquid the parameter is disabled – liquid density is entered manually.
	Reference liquid density	Enter to determine reference liquid density manually, provide the value in [g/cm^3].
	Sinker volume	Enter to determine sinker volume manually, provide the value in [cm^3].
00285	**Request sample no.**	Enter to enforce sample number to be entered prior to test start.
	Pycnometer mass	Enter to determine pycnometer mass manually, provide the value in [g]. In case of „0" value entered, the process starts with weighing of the pycnometer in order to determine pycnometer mass.
	Pycnometer volume	Enter to determine pycnometer volume manually, provide the value in [cm^3].
[ct] [lb] [g]	**Unit**	Measurement result unit, presented on reports, in databases and on the summaries.
	Save mode	For detailed description read section 20.2.
	Result control	For detailed description read section 20.4.
	Tare mode	For detailed description read section 20.5.
	Delete tare	For detailed description read section 20.6.

	Allow measurement record	For detailed description read section 20.9.
	Statistics	For detailed description read section 20.10.
	Mass rounding for statistics	For detailed description read section 20.11.

28.3. Density Determination Process

< Density> mode offers 4 methods of density determination, method selection is conditioned by the material, density of which is to be determined.

Density determination methods: liquid, solid body, pycnometer, porous body.

For description of particular methods read the following subsections.

28.3.1. Liquid Density Determination

In order to determine liquid density, mass of a sinker of known volume is measured. First the sinker is weighed in the air, next in the liquid for which the density is determined.

The difference in weight value is mass of the liquid displaced by the sinker, the program calculates tested liquid density on the basis of the displaced liquid mass. Prior to the measurement, enter the value of the sinker volume – see sinker hook.

Procedure:

- Enter **< Local settings / Sinker volume>** submenu.
- Provide the value of sinker volume in **[cm^3]**.
- Go to the home screen, to do it press button.
- Press **< Determine liquid density>** on-screen button.

	In case of enabled <Request sample no.> function (to enable the function go to the local settings), the edit box for entering the tested sample number is displayed upon process start. The number is linked with process data and recorded in a database.

- Weighing in air – load the weighing pan with the sinker, wait for a stable indication and press key to confirm.

- Weighing in liquid – load the weighing pan with a sinker immersed in the tested liquid, wait for a stable indication and press key to confirm.
- The scale determines liquid density, the result is displayed on the screen. In order to print density determination report on a scale-connected printer, and to end the process, press button. Density determination process ends.
-
- Liquid density determination report is saved to **<Density>** database. The report is named by process performance date.

28.3.2. Solid Body Density Determination

Determination of solid object density is done by weighing the solid body in the air and in auxiliary liquid of determined density. The difference in weight value is mass of the liquid displaced by the body, the program determines solid body density on the basis of the displaced liquid mass.

Procedure:

- Enter **<Local settings / Reference liquid>** submenu and select the reference liquid that is to be used as the auxiliary liquid. If the auxiliary liquid is neither **„Water”** nor **„Ethanol”**, select option **„Other”**.
- Enter **< Temperature>** parameter and provide the temperature value of the auxiliary liquid, expressed in **[°C]**. Press button to confirm.
- In case of **„Other”** liquid set, enter **<Reference liquid density>** parameter and give the value of the auxiliary liquid density, in **[g/cm^3]**, for the determined measurement temperature.
- Go to the home screen, to do it press button.
- Press **<Determine solid density>** on-screen button.

⚠	***In case of enabled <Request sample no.> function (to enable the function go to the local settings), the edit box for entering the tested sample number is displayed upon process start. The number is linked with process data and recorded in a database.***

- Weighing in the air – load the weighing pan with the tested solid body, wait for a stable indication and press key to confirm.

- Weighing in the auxiliary liquid – load the weighing pan with a solid body immersed in the auxiliary liquid, wait for a stable indication and press key to confirm.
- The scale determines solid body density, the result is displayed on the screen. In order to print density determination report on a scale-connected printer, and to end the process, press button. Density determination process ends.
- Solid body density determination report is saved to **<Density>** database. The report is named by process performance date.

28.3.3. Density Determination, Pycnometer Method

Pycnometer is a glass vessel enabling precise liquid mass measurement at a precisely determined volume. Pycnometer method is a simple method of liquid density determination (densimetric method).

The key pycnometer component is a ground-in stopper with a capillary tube, the tube enables observation of level of container liquid. Prior to the measurement, the pycnometer is intentionally overfilled with the test liquid, next it is tightly plugged using the stopper and thermally stabilized.

The excess of liquid, pouring out through the capillary tube, is removed using absorbent paper. Next the pycnometer is put on the weighing pan and measured. During the mass measurement, due to liquid volume decrease, the liquid level drops in a capillary tube, this is of no significance providing that at the moment of placing the device on a scale it is filled and of the right temperature. By cause of a small diameter of the capillary tube the evaporation of the liquid form the capillary tube does not affect the weighing result.

Prior to determination of density via pycnometer, it is necessary to enter pycnometer mass and volume to the scale. If there is no pycnometer mass in local parameters, then at start an additional weighing is carried out in order to determine mass of an empty pycnometer.

Procedure:

- Enter **<Local settings / Pycnometer mass>** submenu, provide mass of a pycnometer that is to be used to determine the test liquid density. Mass unit is **[g]**.
- Press button to confirm.
- Go to **<Pycnometer volume>** parameter and provide volume of a pycnometer that is to be used to determine the test liquid density. Volume unit is **[cm^3]**. Press button to confirm.

- Go to **< Temperature>** parameter and provide temperature value in which the process of liquid density determination is to be carried out. Temperature unit is **[°C]**.
- Press button to confirm. The temperature serves informative purposes, it is displayed in reports.
- Go to the home screen, to do it press button.
- Press an on-screen button, **< Determine density via pycnometer>**.

	In case of enabled <Request sample no.> function (to enable the function go to the local settings), the edit box for entering the tested sample number is displayed upon process start. The number is linked with process data and recorded in a database.

- In case of „**0**" mass value entered for a pycnometer, first the pycnometer mass is measured – load the weighing pan with an empty pycnometer, wait for a stable indication, press key to confirm. If **< Pycnometer mass>** parameter provides value other than "0", this process step is omitted.
- Load the weighing pan with a pycnometer filled with a test liquid, wait for a stable indication and press key to confirm.
- The scale determines liquid density, the result is displayed on the screen. In order to print density determination report on a scale-connected printer, and to end the process, press button. Density determination process ends.
- Liquid density determination report (determination carried out via pycnometer) is saved to **< Density>** database. The report is named by process performance date.

28.3.4. Porous Body Density Determination

There are 3 stages of porous body density determination:

- weighing of porous body in the air,
- weighing of oil-impregnated porous body in the air,
- weighing of oil-impregnated porous body in an auxiliary liquid.

In case of porous bodies, oil bath is necessary. The aim of such a bath is to fill and close the pores of the porous bodies prior to weighing in an auxiliary liquid.

Procedure:

- Enter **<Local settings / Reference liquid>** submenu and select the reference liquid that is to be used as the auxiliary liquid. If the auxiliary liquid is neither **„Water”** nor **„Ethanol”**, select option **„Other”**.
- Enter **< Temperature>** parameter and provide the temperature value of the auxiliary liquid, expressed in **[°C]**. Press button to confirm.
- In case of **„Other”** liquid set, enter **<Reference liquid density>** parameter and give the value of the auxiliary liquid density, in **[g/cm^3]**, for the determined measurement temperature.
- Go to the home screen, to do it press button.
- Press **<Determine porous body density>** on-screen button.

⚠	***In case of enabled <Request sample no.> function (to enable the function go to the local settings), the edit box for entering the tested sample number is displayed upon process start. The number is linked with process data and recorded in a database.***

- Weighing of porous body in the air – load the weighing pan with the tested porous body, wait for a stable indication and press key to confirm.
- Weighing of oil-impregnated porous body in the air – immerse the porous body in the oil, do it in order to fill in the pores, next load the weighing pan with thus prepared porous body. Wait for a stable indication and press key to confirm.
- Weighing of oil-impregnated porous body in an auxiliary liquid – load the weighing pan with a porous body immersed in the auxiliary liquid, wait for a stable indication and press key to confirm.
- The scale determines porous body density, the result is displayed on the screen. In order to print density determination report on a scale-connected printer, and to end the process, press button. Density determination process ends.
- Porous body density determination report is saved to **<Density>** database. The report is named by process performance date.

28.4. Density Determination Reports

Upon each completed density determination process, a report is generated automatically.

Default value of the density report template:

```
-------------------------------------------
Density
-------------------------------------------
{40:User:,-25}{75}
{40:Start date:,-25}{155}
{40:End date:,-25}{156}
{40:Reference liquid:,-25}{158}
{40:Method:,-25}{157}
{40:Weighing 1:,-25}{165}
{40:Weighing 2:,-25}{166}
{40:Density:,-25}{162}{163}
-------------------------------------------
```

Template modification - read section 11.2.3.

Report on each completed process is saved to **<** **Density reports>** database, the file name is a combination of date and hour of process completion (for density determination report data read section 34.5.4).

28.5. Density Table: Water

T/°C	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
10.	0.99973	0.99972	0.99971	0.99970	0.99969	0.99968	0.99967	0.99966	0.99965	0.99964
11.	0.99963	0.99962	0.99961	0.99960	0.99959	0.99958	0.99957	0.99956	0.99955	0.99954
12.	0.99953	0.99951	0.99950	0.99949	0.99948	0.99947	0.99946	0.99944	0.99943	0.99942
13.	0.99941	0.99939	0.99938	0.99937	0.99935	0.99934	0.99933	0.99931	0.99930	0.99929
14.	0.99927	0.99926	0.99924	0.99923	0.99922	0.99920	0.99919	0.99917	0.99916	0.99914
15.	0.99913	0.99911	0.99910	0.99908	0.99907	0.99905	0.99904	0.99902	0.99900	0.99899
16.	0.99897	0.99896	0.99894	0.99892	0.99891	0.99889	0.99887	0.99885	0.99884	0.99882
17.	0.99880	0.99879	0.99877	0.99875	0.99873	0.99871	0.99870	0.99868	0.99866	0.99864
18.	0.99862	0.99860	0.99859	0.99857	0.99855	0.99853	0.99851	0.99849	0.99847	0.99845
19.	0.99843	0.99841	0.99839	0.99837	0.99835	0.99833	0.99831	0.99829	0.99827	0.99825
20.	0.99823	0.99821	0.99819	0.99817	0.99815	0.99813	0.99811	0.99808	0.99806	0.99804
21.	0.99802	0.99800	0.99798	0.99795	0.99793	0.99791	0.99789	0.99786	0.99784	0.99782
22.	0.99780	0.99777	0.99775	0.99773	0.99771	0.99768	0.99766	0.99764	0.99761	0.99759
23.	0.99756	0.99754	0.99752	0.99749	0.99747	0.99744	0.99742	0.99740	0.99737	0.99735
24.	0.99732	0.99730	0.99727	0.99725	0.99722	0.99720	0.99717	0.99715	0.99712	0.99710
25.	0.99707	0.99704	0.99702	0.99699	0.99697	0.99694	0.99691	0.99689	0.99686	0.99684
26.	0.99681	0.99678	0.99676	0.99673	0.99670	0.99668	0.99665	0.99662	0.99659	0.99657
27.	0.99654	0.99651	0.99648	0.99646	0.99643	0.99640	0.99637	0.99634	0.99632	0.99629
28.	0.99626	0.99623	0.99620	0.99617	0.99614	0.99612	0.99609	0.99606	0.99603	0.99600
29.	0.99597	0.99594	0.99591	0.99588	0.99585	0.99582	0.99579	0.99576	0.99573	0.99570
30.	0.99567	0.99564	0.99561	0.99558	0.99555	0.99552	0.99549	0.99546	0.99543	0.99540

28.6. Density Table: Ethanol

T/°C	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
10.	0.79784	0.79775	0.79767	0.79758	0.79750	0.79741	0.79733	0.79725	0.79716	0.79708
11.	0.79699	0.79691	0.79682	0.79674	0.79665	0.79657	0.79648	0.79640	0.79631	0.79623
12.	0.79614	0.79606	0.79598	0.79589	0.79581	0.79572	0.79564	0.79555	0.79547	0.79538
13.	0.79530	0.79521	0.79513	0.79504	0.79496	0.79487	0.79479	0.79470	0.79462	0.79453
14.	0.79445	0.79436	0.79428	0.79419	0.79411	0.79402	0.79394	0.79385	0.79377	0.79368
15.	0.79360	0.79352	0.79343	0.79335	0.79326	0.79318	0.79309	0.79301	0.79292	0.79284
16.	0.79275	0.79267	0.79258	0.79250	0.79241	0.79232	0.79224	0.79215	0.79207	0.79198
17.	0.79190	0.79181	0.79173	0.79164	0.79156	0.79147	0.79139	0.79130	0.79122	0.79113
18.	0.79105	0.79096	0.79088	0.79079	0.79071	0.79062	0.79054	0.79045	0.79037	0.79028
19.	0.79020	0.79011	0.79002	0.78994	0.78985	0.78977	0.78968	0.78960	0.78951	0.78943
20.	0.78934	0.78926	0.78917	0.78909	0.78900	0.78892	0.78883	0.78874	0.78866	0.78857
21.	0.78849	0.78840	0.78832	0.78823	0.78815	0.78806	0.78797	0.78789	0.78780	0.78772
22.	0.78763	0.78755	0.78746	0.78738	0.78729	0.78720	0.78712	0.78703	0.78695	0.78686
23.	0.78678	0.78669	0.78660	0.78652	0.78643	0.78635	0.78626	0.78618	0.78609	0.78600
24.	0.78592	0.78583	0.78575	0.78566	0.78558	0.78549	0.78540	0.78532	0.78523	0.78515
25.	0.78506	0.78497	0.78489	0.78480	0.78472	0.78463	0.78454	0.78446	0.78437	0.78429
26.	0.78420	0.78411	0.78403	0.78394	0.78386	0.78377	0.78368	0.78360	0.78351	0.78343
27.	0.78334	0.78325	0.78317	0.78308	0.78299	0.78291	0.78282	0.78274	0.78265	0.78256
28.	0.78248	0.78239	0.78230	0.78222	0.78213	0.78205	0.78196	0.78187	0.78179	0.78170
29.	0.78161	0.78153	0.78144	0.78136	0.78127	0.78118	0.78110	0.78101	0.78092	0.78084
30.	0.78075	0.78066	0.78058	0.78049	0.78040	0.78032	0.78023	0.78014	0.78006	0.77997

29. WORKING MODE – ANIMAL WEIGHING

<Animal weighing> is a working mode enabling to reliably determine mass of objects in motion. Objects in motion generate unstable measurement and make display of stable indication impossible, which requires use of a different filtering method of measurement signal. Animal weighing is used to determine mass of different types of animals. The mode can be run both automatically and manually.

29.1. Animal Weighing Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<Animal weighing>** working mode, the home screen with pictogram is displayed automatically.
- A new on-screen pictogram, (start animal weighing), is displayed automatically too.

29.2. Local Settings

In order to access local settings of **<** Animal weighing> working mode, press the **<** **Local settings>** on-screen button.

	Result control	For detailed description read section 20.4.
	Tare mode	For detailed description read section 20.5.
	Delete tare	For detailed description read section 20.6.
	Remove after weighing	For detailed description read section 20.7.
	Labeling mode	For detailed description read section 20.8.
	Allow measurement record	For detailed description read section 20.9.
	Statistics	For detailed description read section 20.10.
	Mass rounding for statistics	For detailed description read section 20.11.
	Standard printout	For detailed description read section 20.18.
	Averaging time	Enter to set process duration in seconds (range: 1 - 90) – weighing result value is calculated on the basis of all measurements carried out within the specified time interval.
	Automatic operation	Enter to trigger automatic start of successive weighing when pressure of value greater than the set **LO** threshold value is exerted on the weighing pan.

29.3. Animal Weighing Procedure

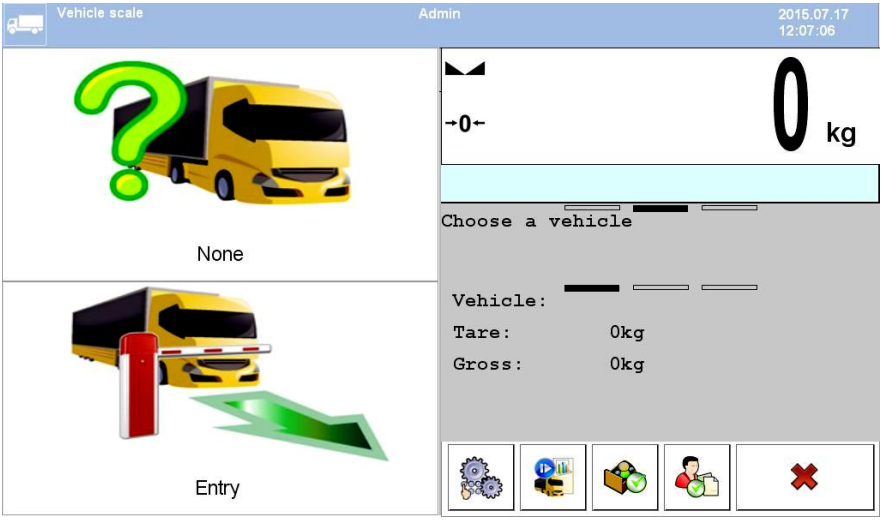
- Enter **<** **Animal weighing>** working mode.
- If the animal is weighed in a container, load the weighing pan with the container, press tare key.
- Put an animal into the container or onto the weighing pan, press button (process start), info box is displayed.
- Info box data:
  - process progress bar, value expressed in %,
  - averaging time value, set in local parameters,
  - button allowing to abort the process.
- Upon process completion, the ‘frozen’ value of animal mass is displayed in an info box.
- Press button to confirm.

30. WORKING MODE - VEHICLE SCALE

<Vehicle scale> is a working mode enabling to weigh lorries and calculate mass of the load on the basis of weighing carried out on the entry and at the exit.

30.1. Vehicle Scale Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<Vehicle scale>** working mode, the home screen is displayed automatically.



Where:

	Press to select vehicle.
	Press to run default transaction type.
	Press to view/set local parameters of the 'Vehicle scale' mode.
	Press to select an open transaction.

	Press to select a product.
	Press to select a customer.
	Press to abort the ongoing control.

30.2. Local Settings

In order to access local settings of **<** Vehicle scale> working mode, press the **<Local settings>** on-screen button:

	Default transaction type	Enter to set default transaction type. Options: Entry, Exit, Control weighing.
	Select vehicle	Enter to declare vehicle selection method. Options: From a list, Manually, By name, By code.
	Report printout	Enter to activate automatic printout of a report upon vehicle transaction completion.
	Allow measurement record	For detailed description read section 20.9.

30.3. Vehicle Transaction Process

There are three transaction types: Entry, Exit, Control weighing.

	To start vehicle transaction process, it is necessary to log as an operator granted with respective permissions – read section 7.3.

30.3.1. Entry/Exit Transaction

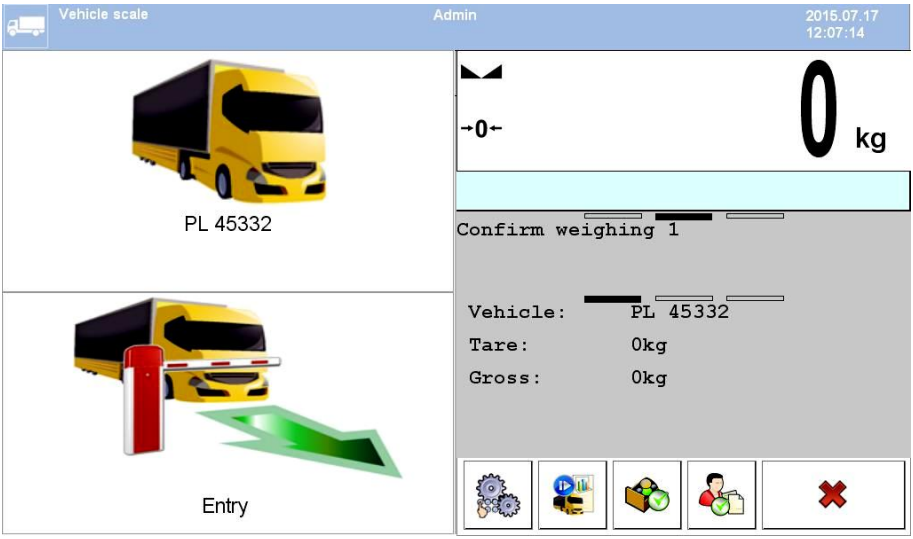
To swap between transaction types press button, where:

	Entry transaction.
	Exit transaction.

Entry and exit transaction procedures are analogous therefore only Entry transaction process is described further down this manual.

Procedure:

- Select the vehicle, to do it press on-screen button, the following box is displayed:

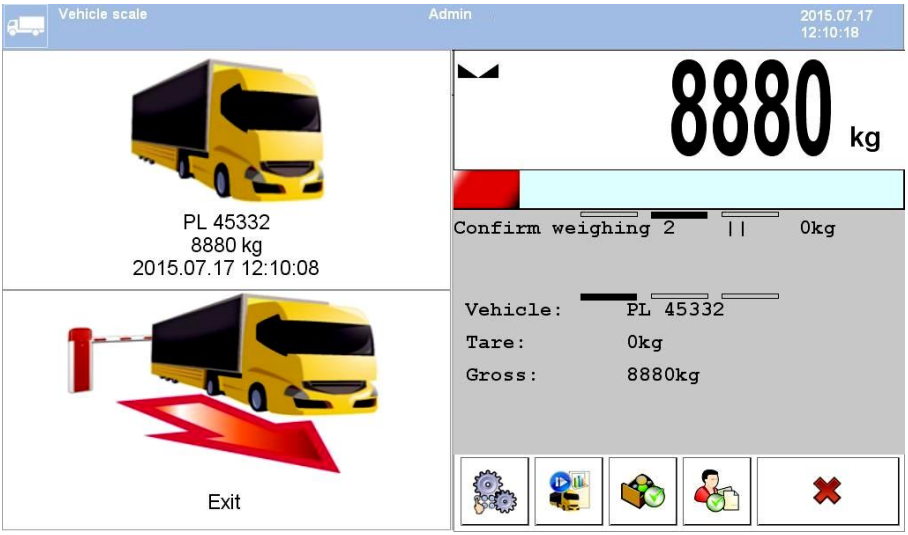


Where:

PL 45332	Vehicle with a registration number.
Entry	Transaction type (entry).
Confirm weighing 1	Screen-displayed message. The scale awaits for confirmation of entry weighing.

⚠	***It is possible to assign a product (*** ***button) and/or a customer (*** ***button) to a transaction.***
⚠	***Prior to transaction start, first select the vehicle. If no vehicle is selected then the following message is displayed: <*** ***Vehicle not selected>.***

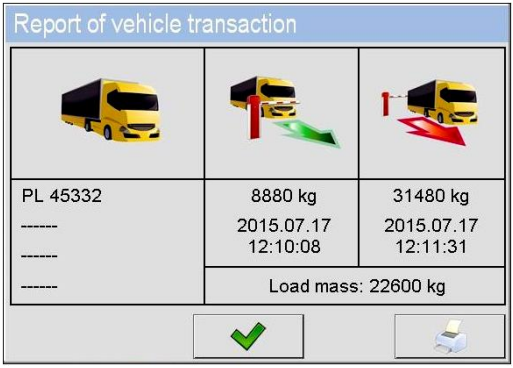
- When the vehicle enters the weighbridge (entry) wait for a stable indication and press key, The following box is displayed:



Where:

PL 45332 **8880 kg** **2015.07.14 10:53:10**	Vehicle with a registration number, entry mass, entry weighing date and time.
Exit	Transaction type (exit).
Confirm weighing 2	Screen-displayed message. The scale awaits for confirmation of exit weighing.
0 kg	Load mass.

- On the scale-connected printer **„Entry ticket”** is printed.
- When the vehicle enters the weighbridge (exit) wait for a stable indication and press key. The following box with process summary is displayed:



	Non-declared transaction items are presented in a form of dashes which stand for: • ***missing code (vehicle not assigned with a code),*** • ***missing product (transaction not assigned with a product),*** • ***missing customer (transaction not assigned with a customer).***

- On the scale-connected printer **„Exit ticket"** is printed.

	Should an automatic printout of a report on a vehicle transaction completion be declared, then the "Vehicle Scale Report" is printed together with the "Exit ticket".
	For default printout templates of „Entry ticket", „Exit ticket" and „Vehicle scale report" read section 30.5 of this manual.

- Confirm summary of the vehicle transaction report, the home screen is displayed.

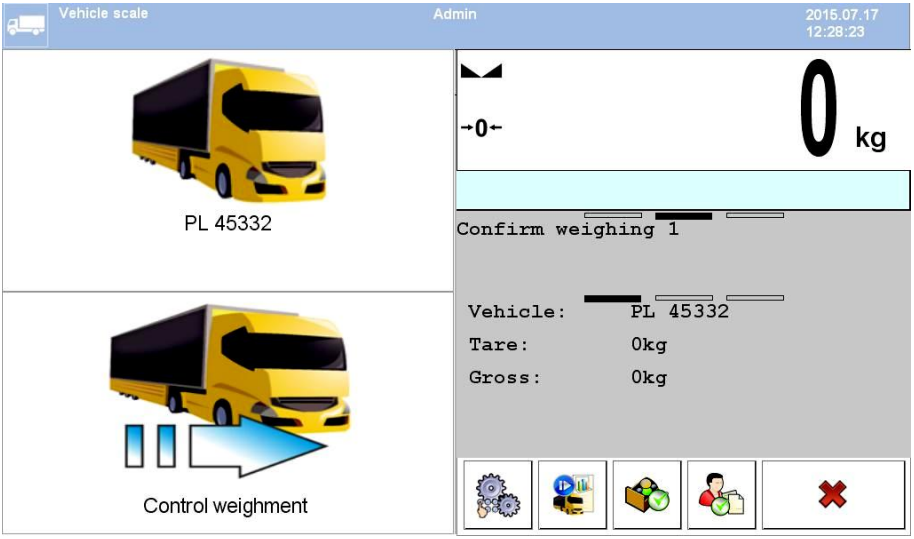
30.3.2. Control Weighing Transaction

To swap between transaction types press button, where:

	Entry
	Exit
	Control weighing

Procedure:

- Select the vehicle, to do it press on-screen button, the following box is displayed:

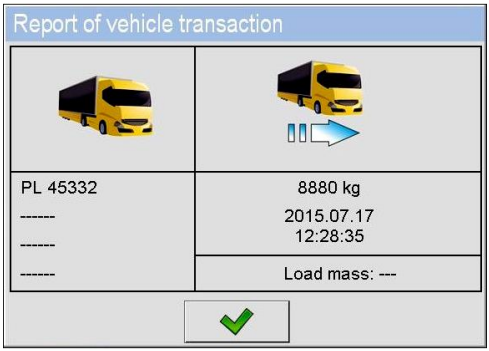


Where:

PL 45332	Vehicle with a registration number.
Control weighing	Transaction type (control weighing).
Confirm weighing 1	Screen-displayed message. The scale awaits for confirmation of control weighing.

	It is possible to assign • ***a product (*** ***button) and/or*** • ***a customer (*** ***button) to a transaction.***

- When the vehicle enters the weighbridge (control weighing) wait for a stable indication and press key, The following box is displayed:



⚠	***Non-declared transaction items are presented in a form of dashes which stand for:*** • ***missing code (vehicle not assigned with a code),*** • ***missing product (transaction not assigned with a product),*** • ***missing customer (transaction not assigned with a customer),*** • ***missing load mass value.***

- On the scale-connected printer **„Control weighing ticket"** is printed.
- Confirm summary of the vehicle transaction report, the home screen is displayed.

30.4. Ongoing Transactions Table

It is possible to start numerous concurrent transactions. All ongoing transactions (not completed) are temporarily saved to an **ongoing transactions table**. In order to access the list of ongoing transactions that are to be completed press button.

⚠	***If you try to select a vehicle for which a transaction has already been opened, then the following message is displayed: <There is a transaction in progress for this car. Continue?>.***

30.5. Ongoing Transaction Printout Templates

List of printout templates for **<Vehicle scale>** mode:

- Entry ticket printout template,
- Exit ticket printout template,
- Control weighing ticket printout template,
- Vehicle scale report printout template.

Default printout templates

Entry ticket printout template	---------- Entry ticket ---------- {40:Date:,-20}{4} {40:Vehicle:,-20}{210} {40:Entry mass:,-20}{7}{11} Signature..... ----------
Exit ticket printout template	---------- Exit ticket ---------- {40:Date:,-20}{4} {40:Vehicle:,-20}{210} {40:Exit mass:,-20}{7}{11} Signature..... ----------
Control weighing ticket printout template	---------- Control weighing ticket ---------- {40:Date:,-20}{4} {40:Vehicle:,-20}{210} }{40:Mass:,-20}{7}{11} Signature..... ----------
Vehicle scale report printout template	---------- Vehicle scale report ---------- {40:Start date:,-20}{213} {40:End date:,-20}{214} {40:Vehicle:,-20}{210} {40:Entry mass:,-20}{215}{11} {40:Exit mass:,-20}{216}{11} {40:Load mass:,-20}{217}{11} Signature..... ----------

Template modification - read section 11.2.3.

30.6. Completed Transactions Reporting

Each completed transaction is automatically recorded to **<** **Vehicle scale reports>** database.

Each database record provides the following data:

- vehicle registration number,
- transaction type (entry, exit, control weighing),
- transaction status (loading, unloading).

Transaction status and type are colour marked:

Green	Transaction completed successfully.
Blue	Transaction not completed.
Red	Transaction aborted.

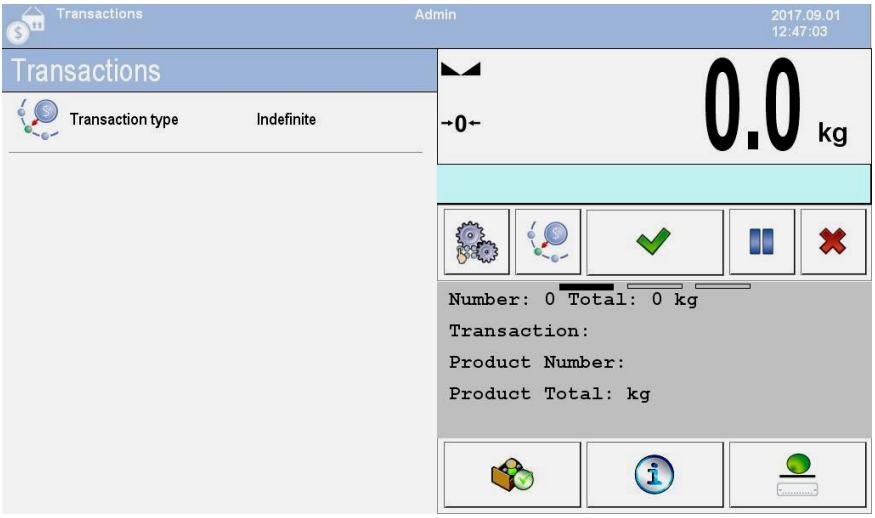
For detailed list of completed vehicle transaction data read section 34.5.7.

31. WORKING MODE - TRANSACTIONS

'Transactions' is a working mode enabling record of weighings of products that are a part of sales, purchase and warehouse transfer transactions. Every newly created transaction can be temporarily aborted or closed.

31.1. Transactions Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<Transactions>** mode, the mode's home screen is displayed.



Where:

Transaction type	Press to select transaction type: acceptance, shift, release.
	Press to view/set local parameters of the 'Vehicle scale' mode.
	Press to view the selected transaction type: acceptance, shift, release.
	Press to select a product.
	Press to view information regarding carried out transaction and weighings.
	Press to manually enter mass of a product of known weight value, delivered as a pre-packed product.
	Press to start transaction.
	Press to pause transaction.
	Press to abort (terminate) transaction.

31.2. Selecting Transaction Data

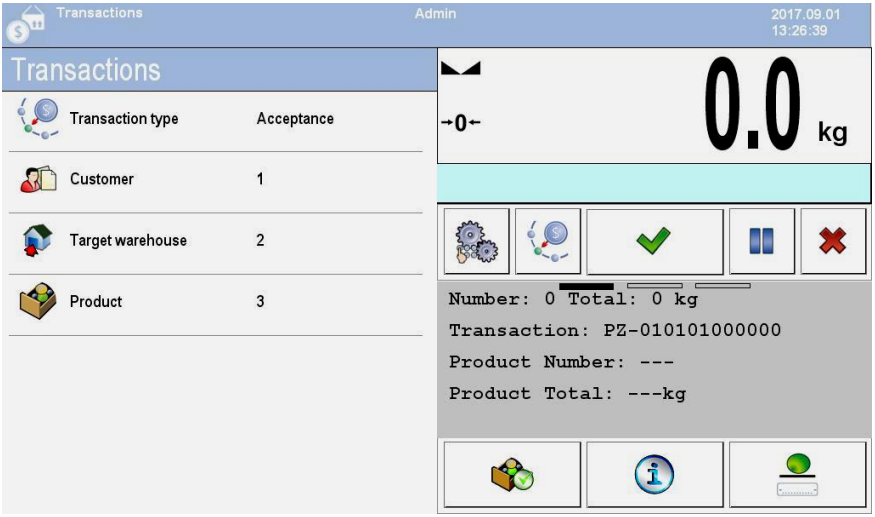
In order to record weighings, select a respective transaction mode and set all crucial data.

Procedure:

- Press button, **<Transaction type>** box opens, options to be selected: acceptance, shift, release.
- The scale software automatically proceeds to the next window in accordance with the following table:

Acceptance	Shift	Release
1. Customer	1. Source warehouse	1. Source warehouse
2. Target warehouse	2. Target warehouse	2. Customer
3. Product	3. Product	3. Product

- Set respective data, start transaction:



31.3. Transaction Process

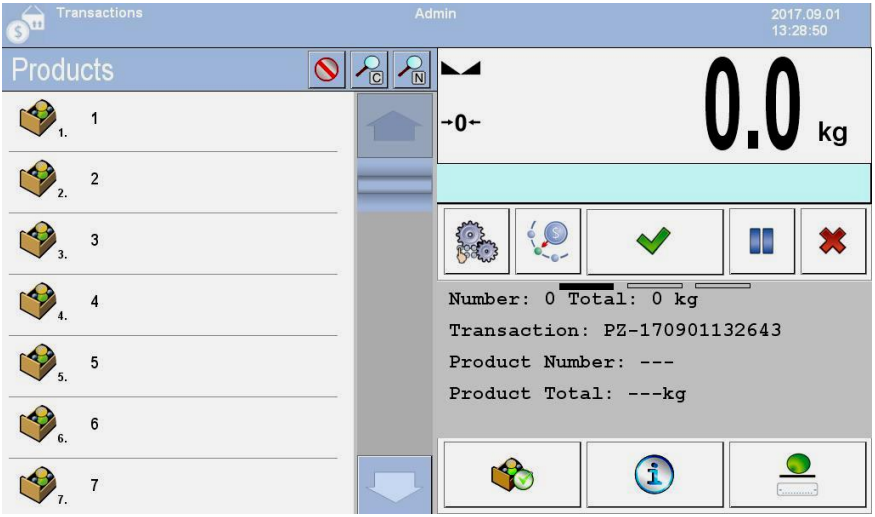
Set required data and press button, **<Process in progress>** is displayed for about 3 seconds along with a transaction number.

Transaction number format:

XX / d d / M M / y y / H H / m m / s s, where:

XX	Transaction type, and values: PZ – acceptance; MM – shift; WZ – release.
dd	Transaction start day.
MM	Transaction start month.
yy	Transaction start year.
HH	Transaction start hour.
mm	Transaction start minute.
ss	Transaction start second.

Upon transaction start the home screen is displayed.



The ongoing transaction can be aborted or stopped any time.

Transaction aborting:

- Press button, the following message is displayed: **<Abort transaction?>**.
- Press button to confirm, the given transaction is automatically displayed on the list of aborted transactions.
- Aborting the transaction enables postponing it until it is re-selected from the list. Once the transaction is aborted you can create new transactions as well as continue and finish other transactions.

Transaction closing:

- Weighing of products for closed transaction is disabled.
- In order to close the ongoing transaction, press button, the following message is displayed: **<Finish transaction?>**.
- Press button to confirm.

31.4. Completed Transactions Reporting

Upon each completed transaction, a report is generated automatically.

Default value of the transaction report template:

```
-----------------------------------------------
Transaction {370}
-----------------------------------------------
{40:Transaction type:,-20}{373}
{40:Start date:,-20}{371}
{40:End date:,-20}{372}
{40:Operator starting transaction:,-20}{377}
{40:Operator finishing transaction:,-20}{378}
{40:Target warehouse:,-20}{135}
{40:Source warehouse:,-20}{130}
{40:Customer:,-20}{85}
{40:Measurements quantity:,-20}{374}
{40:Sum:,-20}{375}
{40:Measurements:,-20}
{376}

-----------------------------------------------
```

Template modification - read section 11.2.3.

Report on each carried out transaction is saved to **<Transaction reports>** database (for list of transaction data read section 34.5.8).

32. WORKING MODE - SQC

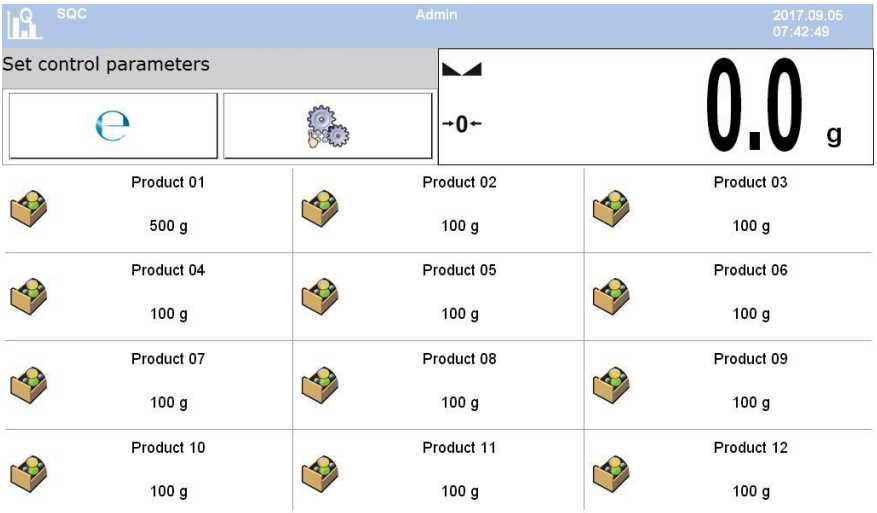
SQC Statistical Quality Control guarantees stable production and uncomplicated monitoring. In SQC mode the control is performed with reference to declared errors which results with limited losses due to overflow.

The **SQC** mode guarantees:

- Product control processes carried out in accordance with individual criteria.
- Operation based on products and operators declared in the database.
- Record of weighings, and reports on carried out controls.
- Communication with **E2R SYSTEM** PC software.

32.1. SQC Mode Start-Up

- Go to the home screen and press pictogram (top bar), **<Working modes>** submenu providing list of available working modes is displayed.
- Select **<SQC>** mode, the mode's home screen is displayed.



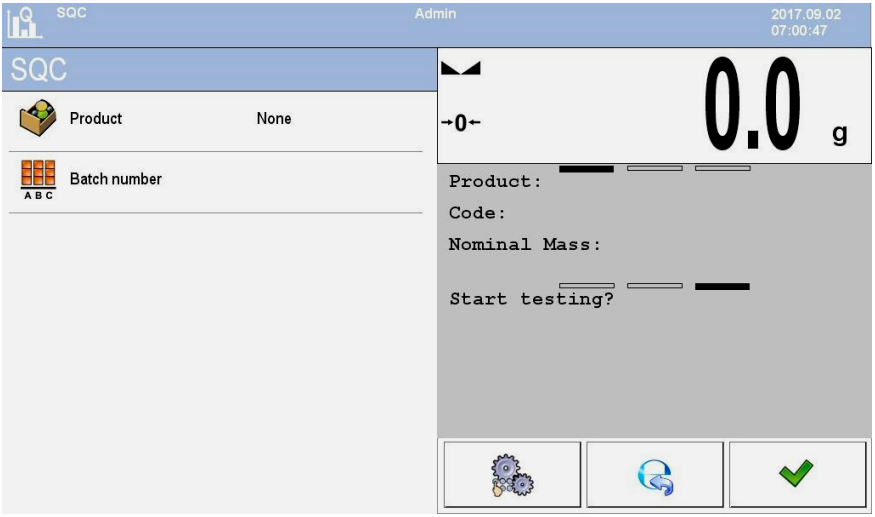
Where:

	Press to enter control settings.
	Database product record entry (product name and nominal value).

32.2. Control Settings Edit Box

	In order to enter control settings edit box it is necessary to log in, read section 7.1.

Press button, control settings edit box opens in the home screen of **<** **SQC>** mode.



Where:

	Press to select product from the database.
ABC	Press to declare controlled batch number.
	Press to view local settings.
	Press to return to the home screen.
	Press to start the control.

32.3. Local Settings

In order to access local settings of **<SQC>** working mode, press the **<Local settings>** on-screen button:

	Gross weight on the display	Enter to enable/disable gross weight value on the home screen.
	Save mode	For detailed description read section 20.2.
12ABC	**Request batch number**	Enter this function to enforce batch number to be entered prior to control start.

	Request extra variable	Enter this function to enforce selection of extra variable prior to control start.
	Request customer	Enter this function to enforce customer to be selected prior to control start.
	Request universal variable	Enter this function to enforce setting the value of universal variable prior to control start.
	Request density value	Enter this function to enforce density to be entered prior to control start.
	Request batch quantity	Enter this function to enforce batch quantity to be entered prior to control start.
	Request sample quantity	Enter this function to enforce sample quantity to be entered prior to control start.
	Password required	Enter this function to enforce logging each time the settings edit box is opened.
	Record control: mass < 100% Qn disabled	Prevention against record of erroneous measurements of controlled product. Value expressed as low deviation in [%] referred to nominal mass value of the controlled product.
	Record control: mass > 100% Qn disabled	Prevention against record of erroneous measurements of controlled product. Value expressed as high deviation in [%] referred to nominal mass value of the controlled product.
	Recorded weighing info	For detailed description read section 20.15.

32.4. Product Editing

	In case of communication of the scale with <E2R System> software, editing of databases on scales is disabled. To edit and export products to scales, it is necessary to use a computer program.

Procedure:

- Enter **<** **Databases /** **Products>** submenu and select a respective entry.

Control data:

Pictogram		Name	Description
		Name	Product name.
		Code	Product code.
		Mass	Product nominal mass.
		Tare	Product tare value (set automatically while selecting a product).
		SQC	-
		Batch quantity	Declaring quantity of pieces in the controlled batch (999999 pieces maximum).
		Remind about measurement every [min]	Activation of message reminding about the necessity to carry out the successive measurement.
		Sample quantity	Product sample quantity value.
		[- T1] error value	Max permissible value of **–T1** error, given in mass unit set for a product. Measurement values lower than **Qn-T1** value are considered to be incorrect.
		[+ T1] error value	Max permissible value of **+T1** error, given in mass unit set for a product. Measurement values higher than **Qn+T1** value are considered to be incorrect.
		[- T2] error value	Max permissible value of **–T2** error, given in mass unit set for a product. Measurement values lower than **Qn-T2** value are considered to be incorrect.
		[+ T2] error value	Max permissible value of **+T2** error, given in mass unit set for a product. Measurement values higher than **Qn+T2** value are considered to be incorrect.
		Quantity of disqualifying samples [Qn – T2]	Number of negative errors **–T2** in a tested sample that disqualify the control.
		Quantity of disqualifying samples [Qn + T2]	Number of positive errors **+T2** in a tested sample that disqualify the control.
		Quantity of disqualifying samples [Qn – T1]	Number of negative errors **–T1** in a tested sample that disqualify the control.
		Quantity of disqualifying samples [Qn + T1]	Number of positive errors **+T1** in a tested sample that disqualify the control.
		T1 [-] error record lock	Disabling record of measurement comprised within **–T1** error range.

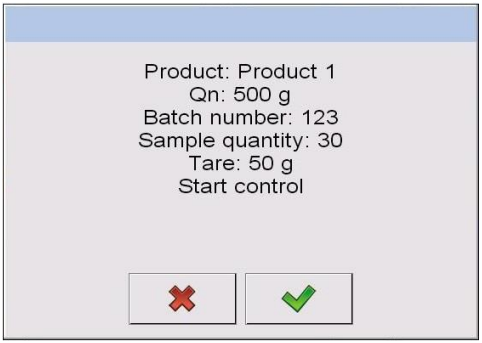
		T1 [+] error record lock	Disabling record of measurement comprised within **+T1** error range.
		T2 [-] error record lock	Disabling record of measurement comprised within **–T2** error range.
		T2 [+] error record lock	Disabling record of measurement comprised within **+T2** error range.

32.5. Control Start Procedure

	To start SQC control, it is necessary to log as an operator granted with respective permissions – read section 7.3.

Procedure:

- Select a product with correctly entered control process data.
- Save general parameters of 'SQC' mode to the scale memory, read sections 32.2 and 32.3.
- Unload the weighing pan.
- Press on-screen button (control start), the button is to be found at the bottom of the settings window, info box with the entered data is displayed:



Where:

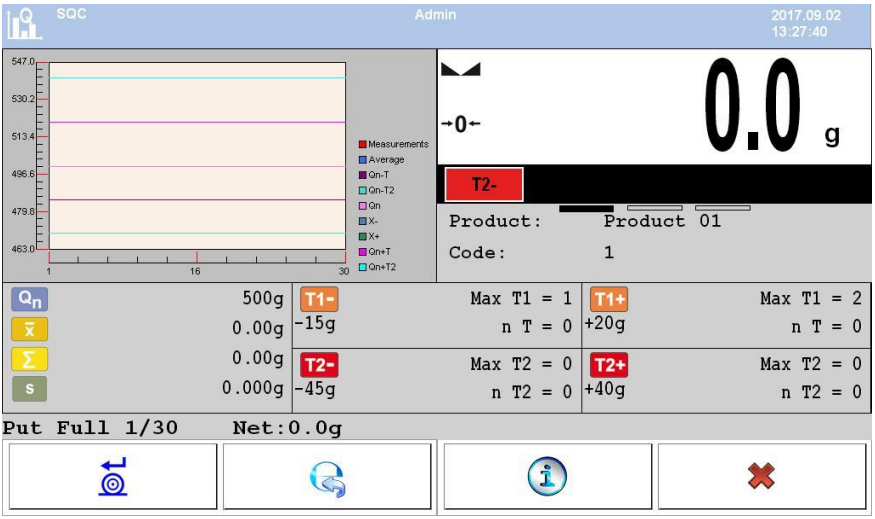
	Press to abort control start.
	Press to start the control.

If prior to control start:

- The operator neither logs in nor is granted with permissions allowing him to carry out the control then the following message is displayed: **<Access denied>**.
- The product is not selected from a database, then the following message is displayed:
  <Product not selected>.
- The batch quantity is not declared then the following message is displayed: **<Batch quantity not specified>**.

32.6. Control Procedure

Start the control process, read section 32.5. During control the measurement results are analysed in real time, and displayed in respective fields:



Product	Controlled product name.
Code	Controlled product code.
Q_n	Nominal value of the controlled product.
$\bar{x}$	Average mass of the controlled product.
Σ	Sum of carried out measurements.
s	Standard deviation value.

T1- Max T1 = 1 -15g n T = 0	Characteristics of negative errors **T1** in a sample: **-15g** - value of a negative error **T1**; **Max T1** - permissible quantity of negative errors **T1**; **n T** - real quantity of negative errors **T1**.
T2- Max T2 = 0 -45g n T2 = 0	Characteristics of negative errors **T2** in a sample: **-45g** - value of a negative error **T2**; **Max T2** - permissible quantity of negative errors **T2**; **n T2** - real quantity of negative errors **T2**.
T1+ Max T1 = 2 +20g n T = 0	Characteristics of positive errors **T1** in a sample: **+20g** - value of a positive error **T1**; **Max T1** - permissible quantity of positive errors **T1**; **n T** - real quantity of positive errors **T1**.
T2+ Max T2 = 0 +40g n T2 = 0	Characteristics of positive errors **T2** in a sample: **+40g** - value of a positive error **T2**; **Max T2** - permissible quantity of positive errors **T2**; **n T2** - real quantity of positive errors **T2**.
Put full 1/30	Command concerning process course.
Net	Net weight of the controlled product.
	Ongoing-control info.
	Exiting the control with auto logout.
	Aborting the control.
	Confirming the measurement.

Control status:

During the control process, **Control status** is active, there are 3 graphic visualisations of the control status.

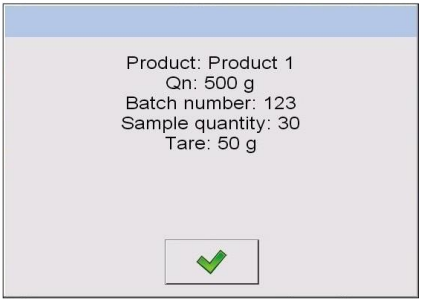
Where:

Positive	Workspace colour remains unchanged.
Warning	Workspace turns to yellow.
Negative	Workspace turns to red.

T1+ Max T1 = 2 +20g n T = 1	**Warning** status – positive error **T1** has occurred, the declared permissible error quantity has not been exceeded.
T2- Max T2 = 0 -45g n T2 = 2	**Negative** status – real amount of negative errors **T2** is greater than the declared permissible error quantity.

Ongoing-control info

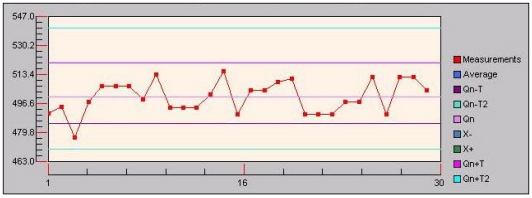
Press button, ongoing control data is displayed:



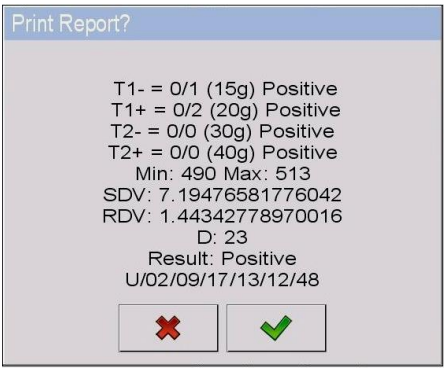
Press button and return to the ongoing control.

Measurement result graph

Measurement results are automatically marked on the graph:



Upon control completion, a summary of the process is generated, and the control is recorded to the database automatically:



Where:

✖	Press to return to SQC settings without report printout.
✔	Press to print the report using scale-connected printer.

⚠	***In case of communication of the scale with <E2R System> software, the summary box does not display 'Print report?' question. All data is automatically sent to a computer program, which enables the printout of a report via a computer.***
⚠	***For a template and an example of a control report read section 32.10.***

32.7. Control Abort Procedure

The control can be aborted at any time, it is done by pressing ✖ on-screen button (control stop), the button is to be found at the bottom of the SQC process window. Pressing of ✖ button (control stop) results with display of the following box:

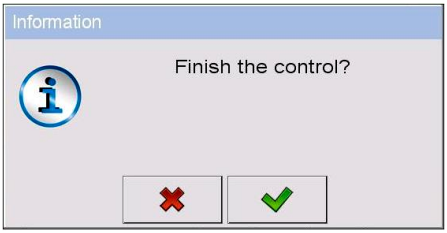
Where:

✖	Press to return to the ongoing control.
✔	Press to abort the ongoing control and return to **SQC** settings. In **<** **Control reports>** database, a control report with **<Terminated>** status is saved.

32.8. Control Termination Procedure

Completion of product control can be carried out:

- **Automatically**. Control of all samples of quantity declared in **<Sample quantity>** parameter. Upon control completion a summary of the process is generated (read section 32.10), and the control is recorded to the database automatically.
- **Manually**. In order to end the control manually, press a previously defined on-screen button, ✖ (control end). The following message is displayed:



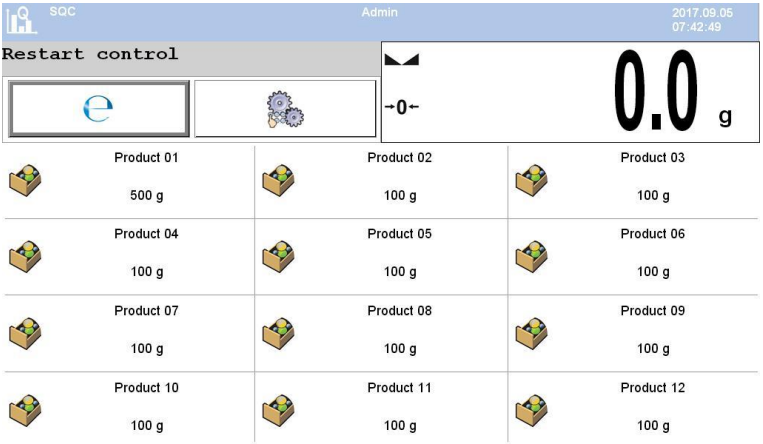
Where:

✖	Press to return to the ongoing control.
✔	Press to end the ongoing control and return to **SQC** settings.

!	***For a template and an example of a control report read section 32.10.***

32.9. Logging out During an Ongoing Control

- During the ongoing control press entry with the logged operator name, the entry is to be found at the top bar.
- Logging out proceeds automatically, **<Insert Password>** edit box with a name of the previously logged operator is displayed.
- Enter the password and press ✔ button to confirm, return to the ongoing control proceeds automatically.
- To return to the home screen of the **SQC** mode, press ✖ button.



Where:

Restart control	Information on a possibility to resume the ongoing control.
	Control resuming button. Pressing the button causes display of **<Insert Password>** edit box with a name of the previously logged operator. Enter the password and press button to confirm, return to the ongoing control proceeds automatically.

32.10. Product Control Report

Report example:

```
Control report W/12/02/16/08/12/29
----------------------------------------

Scale type:          WLY
Max:                 3 kg
d=e:                 1 g
Serial no.:          112233
Start date:          2016.02.12 08:08:25
End date:            2016.02.12 08:12:29
Operator:            Jan Kowalski
Product:             Product 1
Batch no.            123
Nominal mass:        500 g
Tare:                10 g
[- T1] error value:  15 g
[- T2] error value:  30 g
[+ T1] error value:  20 g
[+ T2] error value:  40 g
Batch quantity:      5000
Measurements qty:    15
[-T1] errors qty:    1
[-T2] errors qty:    0
[+T1] errors qty:    0
[+T2] errors qty:    0
Min:                 477 g
Max:                 513 g
Average:             502.4 g
Sum:                 7536 g
```

```
Standard deviation:  8.22713281075

Result:              Positive

Measurements:
1. 513 g      9. 505 g
2. 477 g      10. 507 g
3. 492 g      11. 507 g
4. 503 g      12. 503 g
5. 503 g      13. 504 g
6. 504 g      14. 503 g
7. 506 g      15. 503 g
8. 506 g

.......................................
----------------------------------------
```

Report example:

It is possible to edit a template of the Product Control Report, to do it go to **<Printouts>** submenu (read section 11.2.3). Default report template:

```
Control report {279}
----------------------------------------

{40:Scale type:,-20}{44}
{40:Max:,-20}{34}
{40:d=e:,-20}{33}
{40:Serial no.:,-20}{32}
{40:Start date:,-20}{261}
{40:End date:,-20}{262}
{40:Operator:,-25}{75}
{40:Product:,-20}{50}
{40:Batch no.:,-20}{260}
{40:Nominal mass:,-20}{53}{278}
{40:Tare:,-20}{54} g
{40:[-T1] error value:,-20}{266}{278}
{40:[-T2] error value:,-20}{267}{278}
{40:[+T1] error value:,-20}{280}{278}
{40:[+T2] error value:,-20}{281}{278}
{40:Batch quantity:,-20}{264}
{40:Measurements quantity:,-20}{265}
{40:[-T1] errors quantity:,-20}{268}
{40:[-T2] errors quantity:,-20}{270}
{40:[+T1] errors quantity:,-20}{282}
{40:[+T2] errors quantity:,-20}{284}
{40:Min:,-20}{272}{278}
{40:Max:,-20}{273}{278}
{40:Average:,-20}{274}{278}

{40:Sum:,-20}{271}{278}
{40:Standard deviation:,-20}
{276}
{40:Mode:,20}
{58}

{40:Result:,0}{263}

{40:Measurements:,-20}
{277}
.......................................
----------------------------------------
{143:0c}
```

33. DATABASES

Scale program comprises the following databases:

	Products
	Operators
	Customers
	Dosing processes
	Formulations
	Vehicles
	Workflow
	PGC schedules
	Packaging
	Warehouses
	Labels
	Universal variables
	Extra variables
	Images

In order to configure databases, enter **<** / **Databases>** submenu.

33.1. Database Configuration

< **Database configuration>** submenu enables to:

- configure connection with SQL database,
- make databases accessible,
- assign category to a product,
- declare data for databases of products, operators, customers, extra variables,
- change record preview,
- import databases from the USB flash drive to the scale,
- export databases to the USB flash drive.
- set options for management of an internal Squlite database.

	Only operators granted with "Administrator" permission level can configure the databases.

33.1.1. SQL Connection

Configuration of connection with the external SQL database.

Procedure:

- Enter **<Databases / SQL connection / Databases accessibility>** submenu, parameters required for connection to the external SQL database are displayed.

SQL database data

	Name	Description
	Search for servers	Enter the parameter to search for all available SQL servers in the local network.
	Server	Enter the parameter to provide IP or name of a server on which the SQL server runs (shall the database have instance declared, provide it too). Format: SERVER\INSTANCE. By default: **(server IP)\bazaradwag2012**.
	Search for databases	Enter the parameter to search for server databases.
	Database	Enter the parameter to name the SQL database, by default: **E2R**.
	Login	Enter the parameter to name the operator, by default: **sa**.
	Password	Enter the parameter to provide the password, by default: **Radwag99**. The password is encoded and hidden.
	Connect	Enter the parameter to test connection with the database.
	Mode	Enter the parameter to set connection with the database: directly or via Api.
	Tables synchronisation (import)	Enter the parameter to enforce complete synchronisation with the database. All database data is deleted and replaced with new data.
	DbUpdate*	Enter the parameter to update the database to which the indicator is connected.

***)** *- Option enabled for Radwag service exclusively.*

	DbUpdate option is to be used exclusively in case of problems with synchronisation. Unauthorised use of this function may result with database damage.

33.1.2. Databases Accessibility

It is possible to declare which databases are to be accessible for an operator.

Procedure:

- Enter **<Databases / Database configuration / Database accessibility>** submenu, list of databases with respectively assigned attributes is displayed (- enabled; - disabled).

33.1.3. Categories

Categories parameter serves to divide product database into folders (categories), this is to allow operators optimally group particular records. To activate this option go to **<Product categories>** parameter, enter **<Database configuration / Categories>** submenu.

Procedure for creation of database of categories

- Enter **<Database configuration / Categories / Category database>** submenu and press button, the following message is displayed: **<Create new record?>**.
- Press button to confirm, new entry is edited automatically.
- Enter **<Name>** entry and name the category.
- Enter **<Code>** entry and provide the code.

Procedure for assigning a category to a product

- Enter **<Databases / Products>**, press selected record.
- Go to **<Category>** entry, database of previously created categories opens.
- Select appropriate entry and go back to weighing.

!	***Products that have not been assigned with any category are automatically placed in <Unassigned> folder.***

33.1.4. Database Variables

Enabling / disabling database variables for products, operators, customers databases.

Procedure:

- Enter **<Database configuration>** submenu and select a database, list of variables with accessibility attribute is displayed (- variable enabled, - variable disabled).
- Set the attributes respectively and go back to weighing.

33.1.5. Change of Extra Variable Database Name

It is possible to change the name of extra variable database, you can do it using:

- **<Select extra variable>** programmable buttons,
- **<Extra variable>** option of **<Select record from database>** function in the course of workflow.

Procedure:

- Enter **<Database configuration / Extra variables>** submenu.
- Assign a given variable with database name that is to be visible when using the above function.

33.1.6. Database Records View

It is possible to change record view format from **list** to **tiles**.

Procedure:

- Enter **<Database configuration / Record preview>** submenu and change the view format for a selected database.

Where:

	List.
	Tiles.

33.1.7. Database Export/Import

It is possible to export/import weighing device databases using a USB flash drive.

Database export procedure:

- Connect the USB flash drive to the USB port.
- Enter **<Database configuration / Export>** submenu, databases are automatically exported to the plugged USB flash drive.
- Upon export completion, message **<Operation completed successfully>** is displayed.

Database import procedure:

- Connect the USB flash drive to the USB port.
- Enter **<Database configuration / Import>** submenu, databases are automatically imported from the plugged USB flash drive.
- Upon import completion, message **<Operation completed successfully>** is displayed.

33.2. Database Record Search

It is possible to quickly find a particular database record, use one of the following criteria: **Search by name**, **Search by code**.

33.2.1. Search by Name

- Enter **<Databases / Products>** submenu and press button, **<Search by name>** edit box with an on-screen keyboard is displayed.
- Enter product name and press button to confirm.
- The required product is automatically edited.

33.2.2. Search by Code

- Enter **<Databases / Products>** submenu and press button, **<Search by code>** edit box with an on-screen keyboard is displayed.
- Enter product code and press button to confirm.
- The required product is automatically edited.

33.3. Adding Database Records

- Enter **<Databases / Products>** submenu and press button, the following message is displayed: **<Create new record?>**.
- Press button to confirm, the new record is automatically edited.

	Records can be added only by an operator granted with "Administrator" permission level.

33.4. Deleting Database Records

- Enter **<Databases / Products>** submenu, next press and hold a selected record, context menu is displayed.
- Press **<Delete>** entry, the following message is displayed: **<Delete?>**.
- Press button to confirm.

	Records can be added only by an operator granted with "Administrator" permission level.

33.5. Printing Database Record

Printout of information regarding particular database record.

Procedure:

- Enter **<Databases / Products>** submenu and select a respective entry.
- Press button, it is to be found in the top bar of the screen.
- On a scale-connected printer, information regarding the selected product is printed.

Default values of templates:

Product printout template	{50} {51}
Operator printout template	{75} {76}
Customer printout template	{85} {86}
Warehouse printout template	{130} {131}
Packaging printout template	{80} {81} {82}
Vehicle printout template	{210} {211}

33.6. Context menu

Context menu allows quick access to database functions. To open the context menu press and hold particular database submenu for ca. 2 seconds. **<Database>** context menu features the following functions:

Open
Import
Export
Delete all
Rename
Cancel

Where:

Open	Select to open folder content.
Import	Select to import databases from the USB flash drive to the scale.
Export	Select to export databases to the external USB flash drive.
Delete all	Select to delete all database records.
Rename	Select to rename the database.
Cancel	Select to cancel (disable) the context menu.

Record's context menu features the following functions:

Edit
Delete
Print
Copy
Cancel

Where:

Edit	Select to edit the record.
Delete	Select to delete the record.
Print	Select to print record info.
Copy	Select to copy the record.
Cancel	Select to cancel (disable) the context menu.

33.7. Database Editing

⚠	***Databases can be edited by operators logged as Administrator.***

33.7.1. Operator Database

Operator data:

		Name	Operator name.
		Code	Operator code.
		Name and surname	Operatos name and surname.
		Password	Sign-in password (16 characters maximum).
		Permissions	Operator permission level.
1,2..n RFID		**Card number**	Transponder card number for logging via a transponder card scanner or a barcode scanner.
		Working modes	Assigning working mode to an operator.
	auto	**Automatically**	Auto mode: upon operator logging, the most recently operated by him/her mode is run.
		Change working mode	Assigning the operator with a particular working mode permanently. Select <None> option to disable the function.
		Workflow	Assigning the operator with a workflow. The assigned workflow is performed each time upon operator logging.
min		**Min**	Deviation in percent from low limit of product weight (result control).
max		**Max**	Deviation in percent from high limit of product weight (result control).
		Active account	It is impossible to log in to an account when deactivated (- account active, - account inactive).

33.7.2. Product Database

Product data:

	Name	Product name.
	Description	Additional product description.
	Code	Product code.
	EAN code	Product EAN code (20 digits maximum).
	Mass [1)]	Product mass.
	Weight loss	Weight loss given in [%].

F→S	**Bulk dosing mass**	Mass of an ingredient for fast dosing (in case of 2-threshold dosing).
	Dosing outputs	Declaring outputs for precise dosing.
	Fast dosing output	Declaring outputs for rough dosing.
	Correction 1 [2)]	Dosing correction value for platform 1.
	Correction 2 [2)]	Dosing correction value for platform 2.
	Correction 3 [2)]	Dosing correction value for platform 3.
	Correction 4 [2)]	Dosing correction value for platform 4.
MAX	**Maximum correction value** [2)]	Value of the maximum dosing correction.
min	**Min** [3)]	Minimum mass, i.e. low limit of product weight for weighing within ranges (result control).
max	**Max** [3)]	Maximum mass, i.e. high limit of product weight for weighing within ranges (result control).
min	**Min 2** [3)]	Additional low limit of product weight for weighing within ranges (result control).
max	**Max 2** [3)]	Additional high limit of product weight for weighing within ranges (result control).
%	**Deviation type** [4)]	Declared deviation type: unit of mass or value in [%].
- 20	**Low deviation** [4)]	Low deviation from ingredient mass in 'Formulations' mode.
+ 20	**High deviation** [4)]	High deviation from ingredient mass in 'Formulations' mode.
T 4 8 3	**Tare**	Product tare (set automatically upon selecting a product from the database).
	Price	Unit price of a product.
£ $ €	**Currency**	Currency assigned to the product price.
	PGC [5)]	Data declared for PGC mode.
	SQC [6)]	Data declared for SQC mode.
	Shelf-life time in days	Number of days until the expiry date.
	Additional shelf-life time	Offset of shelf-life time in days.
	Date	Constant product date.
VAT	**VAT**	VAT value given in [%].

	Ingredients	Edit box for ingredients.
	Label	Template of a single label assigned to a product.
	C Label	Template of a cumulative label (C label) assigned to a product.
	CC Label	Template of a cumulative label for C labels, assigned to a product.
	Category	Category assigned to a product.
	Image	Pictogram assigned to a product.
	Workflow	Workflow assigned to a product.
	Portion size	Energy value of portion, printed in the energy value table.
	Nutritional value	Values printed in the energy value table.

1	Variable name is conditioned by the working mode. For Weighing, Dosing, Formulations, Density, Animal Weighing modes the variable name is **„Mass”**. For Parts Counting mode the variable name is **„Part mass”**. For Percent Weighing mode the variable name is **„Reference sample mass”**.
2	Variables available for a product exclusively in **Dosing** working mode.
3	Variables NOT available for a product in **Formulations** working mode.
4	Variables available for a product exclusively in **Formulations** working mode.
5	Variables available for a product exclusively in **PGC** working mode.
6	Variables available for a product exclusively in **SQC** working mode.

33.7.3. Customers database

Customer data:

	Name	Customer name.
	Code	Customer code.
	TIN	Customer Tax identification number.
	Address	Customer address.
	Postal code	Customer postal code.
	City	Customer city.
	Discount	Customer discount.
	Label	Template of a label assigned to a customer.

33.7.4. Dosing Processes Database

Dosing process data:

	Name	Dosing process name.
	Code	Dosing process code.
	Platform 1	Platform 1 defined for a particular indicator.
	Platform 2 *	Platform 2 defined for a particular indicator.
	Platform 3 *	Platform 3 defined for a particular indicator.
	Platform 4 *	Platform 4 defined for a particular indicator.

***)** – *Platform quantity is conditioned by the number of platforms defined in an indicator.*

33.7.5. Formulation Database

Formulation data:

	Name	Formulation name.
	Code	Formulation code.
	Ingredients	Defining formulation ingredients.
	Ingredient quantity	Preview of created formulation ingredient quantity.
	Formulation mass	Preview of total formulation mass.
	Batch portion type	Type of the measuring series for a formulation.
	Batch portion	Measuring series for a formulation.
	Product	Outcome product inventory of which increases upon formulation completion.
	Target warehouse	Warehouse for which outcome product inventory gets increased.
	Workflow: Start*	Selected workflow is carried out prior to formulation start.
	Workflow: End*	Selected workflow is carried out upon formulation end.

***)** - *For a detailed workflow creation procedure read section 35.*

33.7.6. PGC Schedules Database

PGC schedule data:

	Product	Assigning a PGC schedule with a product.
	Batch quantity	Declaring quantity of pieces in the controlled batch in PGC schedule.
	Date	Declaring start date for a PGC schedule.
	Cyclic control	Enabling/disabling cyclic control.
	Interval [min]	Declaring interval in [min] for cyclic control.

33.7.7. Vehicle Database

Vehicle data:

	Name *	Vehicle name.
	Code	Vehicle code (registration number).
	Tare	Vehicle tare value (the value is set automatically when the vehicle is selected from the database).
	Card number	Transponder card number for driver logging.
	Description	Additional vehicle description.

***)** *- In case of declaration that the vehicle type is to be selected manually, entering a new registration number causes automatic adding of a new vehicle record to the database with a name corresponding to the registration number.*

33.7.8. Workflow Database

Workflow data:

	Name	Workflow name.
	Code	Workflow code.
	Repeat process	Performance of the ongoing process in a cyclic manner.
	Workflow wizard	Workflow defining (creating).
	Weighing report	Defining report to be generated after process completion.

33.7.9. Packaging Database

Packaging data:

	Name	Packaging name.
	Code	Packaging code.
	Mass	Packaging mass (set automatically when the packaging is selected).

33.7.10. Warehouse Database

Warehouse data:

	Name	Warehouse name.
	Code	Warehouse code.
	Description	Additional warehouse description.

33.7.11. Label Database

Label database features a list of label templates that can be assigned to a product or a customer in order to activate operation in labelling mode.

Label data:

	Name	Label name.
	Code	Label code.
	Label template *	Label template.
	Printer 1, 2, 3	Printer via which the label is to be printed.

)** *- An example of how to make and send a label template to a scale memory is to be found in* ***APPENDICES 01 *manual.*

33.7.12. Universal Variable Database

Universal variable database comprises universal variable templates. You can assign the templates to the on-screen function buttons: Var 1, Var 2, Var 3. This allows you to easily enter any text/number/letter, that you want to print, to the weighing device memory. Values of 3 universal variables, entered to the weighing device memory, and edited, will be saved to a completed weighing record.

Universal variable data:

	Code	Code.
	Name	Universal variable name, to be printed and/or saved to a weighing record.
	Value	Universal variable value, to be printed and/or saved to a weighing record. It is possible to use variables intended for printout.

33.7.13. Extra Variable Database

Extra variable database comprises universal variable templates. You can assign the templates to the on-screen function buttons: , , , , . This allows you to easily enter any text/number/letter, that you want to print, to weighing device memory.

33.7.14. Image Database

Image database stores images that can be assigned to particular records of **<Products>** database.

New record creation procedure:

- Connect the USB flash drive to the USB port.
- Enter **<Databases / Images>** submenu and press button, the following message is displayed:**<Create new record?>**.
- Press button to confirm, the new record is automatically edited.
- Enter **<Name>** entry and name the image.
- Go to **<Image>** option, content of the main folder stored on the USB flash drive opens.
- Select a particular image, the previous submenu with the selected image and file name is displayed automatically in the **<Image>** field.

	Supported file formats are *.jpg, *.jpeg, *.png, with the maximum resolution of 150x150 pixels, wherein the optimum resolution is: • ***57x57 pixels for list view,*** • ***133x133 pixels for tile view.***

33.7.15. User's Translation Database

You can change database name. New database names are automatically saved to **<** **User translations>** database.

Each record created in the **<** **User translations>** database contains a factory name of a given database and its translation. When you delete a record from the database, its translation is also automatically deleted.

34. REPORTS

Scale program comprises the following reports:

	Weighing reports
	Dosing reports
	Formulation reports
	Control reports
	Average tare reports
	Vehicle scale reports
	Transaction reports
	Density reports
	Differential Weighing Reports

In order to preview, export and delete reports, enter **<** SETUP **/** **Reports>** submenu.

34.1. Reports Configuration

< **Reports configuration>** submenu enables you to:

- declare reports that are to be made available for an operator,
- configure lot number and batch number,
- declare quantity of weighings to be deleted.

34.1.1. Reports Accessibility

- Enter **<Reports / Reports accessibility>** submenu, report list is displayed (- report enabled, - report disabled).
- Mark reports of your choice as available.

34.1.2. Lot Number Configuration

- Enter **<Reports / Reports Configuration / 00285 Lot no.>** submenu and configure the number.

Lot number data:

N	**Name**	Lot number name change.
C	**Sample**	Sample of lot number using printout-intended variables.

34.1.3. Batch Number Configuration

- Enter **<Reports / Reports configuration / 12ABC Batch number>** submenu and configure the number.

Batch number data:

N	**Name**	Batch number name change.
C	**Sample**	Sample of batch number using printout-intended variables.

34.1.4. Request To-Be-Deleted Weighings Quantity

Operator granted with Administrator permission level can delete (undo) the most recently performed weighings, he/she can declare how many weighings are to be deleted.

Procedure:

- **<Reports / Report configuration>** submenu and activate **<Request to-be-deleted weighings quantity>** option.
- Go to the home screen and press **<Undo weighing>** button **<To-be-deleted weighings quantity>** box with a numeric keyboard is displayed.
- Enter respective value (1 - 10) and press button to confirm, **<Deleted weighings quantity: x>** message is displayed, where **x** – deleted weighings quantity.

	Should part of the to-be-deleted weighings be related to a report (dosing, formulations, PGC control, SQC control, vehicle scale, density, differential weighing), then the following message is displayed <Deleted weighings quantity: x. Remaining weighings are report-related>.
	Should all of the to-be-deleted weighings be related to a report (dosing, formulations, PGC control, SQC control, vehicle scale, density, differential weighing), then the following message is displayed <Operation not allowed. Weighings are report-related>.

34.2. Deleting Older Data

It is possible to delete older records (weighings) from **<Weighings>** database. To delete the records you must be granted with **Advanced Operator** permission level at least.

Procedure:

- Enter **<Reports / Delete older data>** submenu, **<Set year>** edit box with an on-screen keyboard is displayed.
- Provide date bearing in mind that all data recorded earlier than the specified date are deleted, next press button to confirm.
- The following message is displayed: **<Delete?>**.
- Press button to confirm, data deletion starts, information on deleted records quantity is displayed.
- Exit the function, to do it press button to confirm.

34.3. Quick Search by Date

- Enter **<Reports / Weighings>** submenu and press button, **<Set year>** edit box with an on-screen keyboard is displayed.
- Enter: year, month, day, hour, minute and press button to confirm.
- Weighing list is displayed, the first entry on the list is the specified date.

34.4. Weighing Reports

Each weighing result sent from the scale either to a printer or a computer is saved to weighing reports. You can preview data of particular weighings. You can also filter data, print weighing report, preview and print weighing graph, export weighing database to file and preview and edit weighing counter.

34.4.1. Filtering

It is possible to filter weighing reports that are to be printed on a scale-connected printer. Weighing reports can be filtered by: start date, end date, operator name, product name, customer name, packaging name, MIN value, MAX value, lot number, batch number, source warehouse name, target warehouse name, result control, platform number.

Procedure:

- Enter **<Reports / Weighing reports / Filtering>** submenu.
- Enter respective filter entry and enable **<Filtering>** option (- filtering enabled, - filtering disabled).

34.4.2. Report Printout

It is possible to print weighing series report, the report is printed on a scale-connected printer.

Procedure:

- Enter **<Reports / Weighing reports / Report printout>** submenu, weighing report is printed automatically.

	In case of printout of too great quantity of data (weighings), message <Process progress> with value expressed in % is displayed.

Default value of the weighing report template:

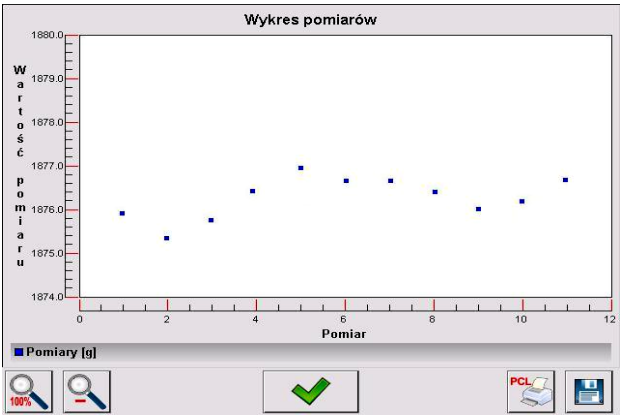
```
----------------------------------------
Weighing report
----------------------------------------
{40:Start date:,-20}{101}
{40:End date:,-20}{102}

Weighings
{100:
    (40:Date:,-10)(4)
    (40:Mass:,-10)(6) (10)
}----------------------------------------
{40:Weighings quantity:,-20}{116}
{40:Weighings sum:,-20}{116}{11}
```

Template modification - read section 11.2.3.

34.4.3. Weighing Graph

For a completed series of measurements it is possible to generate and display graph of distribution of measurements in **measurement value** vs **measurement** coordinate system.

Graph example



Graph buttons

	Press to display full graph view.
	Press to zoom out.
	Press to go back to the previous window.
	Press to print the graph on a PCL-type printer.
	Press to save the graph as ***.bmp** file to the USB flash drive, connected to the USB port.

34.4.4. Export of Weighing Database to File

It is possible to export either the whole database of weighings or some selected data to file via the USB flash drive.

Procedure:

- Connect the USB flash drive to the USB port.
- Enter **<Reports / Weighing reports / Export the weighing database to a file / Data selection>** submenu, list of the following data is displayed (- option enabled, - option disabled):

Pictogram	Option	By default
	Automatically *	✓
	Date and time	✓
	Mass	✓
	Tare	✓
00285	Lot number	✓
12ABC	Batch number	✓
	Operator	✓
	Product	✓
	Customer	✓
	Packaging	✓
	Source warehouse	✓
	Target warehouse	✓
	Result control	✓
	Platform number	✓
-00257-	Statistics: Measurement quantity	✓
-02478-	Weighing counter	✓
	Vehicle	✓
	Trade settlement	✓
Var	Universal variable	✓
Var	Extra variable	✓
Var	Custom variable: Value	✓
Var	Custom variable: Name	✓
min	Min	✓
max	Max	✓
min	Min 2	✓
max	Max 2	✓

***) –** *Automatic selection of data for export (unfilled boxes are neglected).*

- Declare data that is to be exported, go back to **<** **Export weighing database to a file**> submenu and select either **<** **Export [txt]>** or **<** **Export [csv]>** parameter, weighing database export starts automatically.

	If the scale does not recognize the USB flash drive, then entering the < ***Export weighing database to a file> option results with display of the following message:<Operation failed>.***

- Upon export completion, message **<Operation completed successfully>** is displayed with the name of the file (*.txt or *csv) created on the USB flash drive.

	The file name consists of a database name and scale SN, e.g. <Weighings_239800.txt>.

- Disconnect the USB flash drive from the USB port.

Template of a created file:

The exported file takes table form, table columns are separated by **<Tab>** sign, this facilitates direct export of the file to **<Excel>** spreadsheet.

The table contains all weighing related data, declared in **<** **Export weighing database to a file /** **Data selection>** submenu.

34.4.5. Weighing Counter

Weighing counter contains global number of measurements performed by the scale. It is possible to edit the weighing counter value, the value can be edited by a user granted with Administrator permission level.

	Access to < ***Weighing counter> is conditioned by permission levels set for this parameter.***

Procedure:

- Enter **<Reports / Weighing counter>** submenu, edit box with the weighing counter value and a numeric on-screen keyboard is displayed.
- Enter respective value and press button to confirm.

34.5. Report Preview

34.5.1. Weighings

Completed weighing data

	Date	Weighing date.
	Mass	Measured weight value.
	Mass minus weight loss	Measured weight value minus the weight loss value.
	Weight loss	Weight loss given in [%].
	Tare	Tare value.
	Product	Product name.
	Operator	Operator name.
	Customer	Customer name.
00285	**Lot number**	Lot number.
12ABC	**Batch number**	Batch number.
	Source warehouse	Source warehouse name.
	Target warehouse	Target warehouse name.
	Packaging	Packaging name.
	Result control	Weighing threshold (MIN, OK or MAX).
min	**Min**	Minimum weighing threshold (result control).
max	**Max**	Maximum weighing threshold (result control).
min	**Min 2**	Additional minimum weighing threshold (alert).
max	**Max 2**	Additional maximum weighing threshold (alert).

	Platform number	Number of platform using which the weighing was carried out.
	Statistics: Measurement quantity	Statistics: Current measurement quantity.
	Weighing counter	Global weighing counter.

When weighing a particular product, **<Trade settlements>** submenu is created automatically in a weighing record.

Trade settlement data:

	Mass	Measured weight value.
	Unit mass	Weight value per product unit..
	Price	Unit price of a product.
	VAT	VAT value given in [%].
	Discount	Customer discount in [%].
	Value	Net amount due.
	Gross	Gross amount due.

34.5.2. Dosing Reports

Dosing report data:

	Status	Information regarding correctness of dosing process realisation.
	Start date	Dosing process start date.
	End date	Dosing process end date.
	Dosing process	Completed dosing process name.
	Operator	Operator carrying out the dosing process.
	Customer	Customer for whom the dosing process is carried out.
	Measurement quantity	Dosing process weighings quantity.

34.5.3. Formulation Reports

Formulation report data:

	Status	Formulation performance status.
	Start date	Formulation start date.
	End date	Formulation end date.
	Formulation	Performed formulation name.
	Operator	Operator performing formulation process.
	Customer	Customer for whom the formulation is carried out.
	Measurement quantity	Number of weighings performed within the formulation cycle.
	Target warehouse	Warehouse for which outcome product inventory gets increased.
	Product	Outcome product, inventory of which increases upon formulation completion.
	Note	Remarks added upon formulation completion.
	Synchronization status	Status of synchronisation of a report with E2R system (- sent to E2R, - not sent to E2R).
	Resynchronize	Resent the report to E2R. Should the report be previously sent to E2R, it is duplicated.
	Weighings	Preview of all weighings performed within the formulation.
	Ingredients	Preview of weighings, division by ingredients.
	Sign	Option of report signing.
	Report signed	Report signature status (- signed, - not signed).
	Electronic signatures	List of electronic signatures.

34.5.4. Density reports

Density report data:

00285	**Sample no.**	Number of a sample for which the density is determined.
	Start date	Process start date.
	End date	Process end date.
	Density	Determined density value.
	Volume	Determined volume value.
	Determination method	Density determination method.
	Operator	Operator carrying out the process.
	Product	Product for which the density is determined.
	Reference liquid	Reference liquid used for density determination.
	Reference liquid density	Density value assigned to the reference liquid.
	Temperature	Density determination process temperature.
	Sinker volume	Volume of a sinker immersed in the test liquid.
	Weighing 1	Weigh value of weighing 1.
	Weighing 2	Weigh value of weighing 2.
	Weighing 3	Weigh value of weighing 3.
	Pycnometer mass	Mass of a pycnometer used for density determination.
	Pycnometer volume	Volume of a pycnometer used for density determination.

34.5.5. Control Reports

Each control performed via the scale is sent to the printer and saved in **<e Control reports>** submenu. To each report-saved control an individual number is assigned at the process end.

Control number format

X / y y / M M / d d / H H / m m / s s, where:

X	Control type, values: U – act regulated control; W – internal control; Z – operator-terminated control.
yy	Year of control termination.
MM	Month of control termination.
dd	Day of control termination.
HH	Hour of control termination.
mm	Minute of control termination.
ss	Second of control termination.

Control report data:

	Batch number	Controlled product batch number.
	Status	Control status (result).
	Start date	Control start date.
	End date	Control end date.
	Product	Controlled product name.
	Operator	Operator carrying out control.
	X	Average value of carried out measurements.
	DX	Disqualifying average value.
	S	Average standard deviation.
	Batch quantity	Batch size, i.e. number of products in a batch, with reference to which test sample quantity, accordant with PGC regulation, is calculated.
	Measurement quantity	Number of carried out measurements.
	Weighings	Preview of all weighings performed within the control.
	Synchronization status	Status of synchronisation of a report with E2R system (- sent to E2R, - not sent to E2R).
	Sign	Option of report signing.
	Report signed	Report signature status (- signed, - not signed).
	Electronic signatures	List of electronic signatures.

	Resynchronize	Resent the report to E2R. Should the report be previously sent to E2R, it is duplicated.
	Metrology	Scale parameters: Max, Min, d, e.

34.5.6. Average Tare Reports

Prior to start of **Non-destructive average tare** control it is possible to determine the average tare, the determination is done by packaging weighing. Each process is automatically recorded in **<X̄ Average tare reports>** submenu. Each report-recorded control of average tare determination is given a unique number at the procedure end.

Control number format:

X / y y / M M / d d / H H / m m / s s / T, where:

X	Control type, values: U – act regulated control; Z – operator-terminated control.
yy	Year of control termination.
MM	Month of control termination.
dd	Day of control termination.
HH	Hour of control termination.
mm	Minute of control termination.
ss	Second of control termination.
T	Control of average tare determination.

Average tare report data:

	Product	Name of a product, packaging of which is subjected to average tare determination process.
	Status	Process status.
	Date	Process date.
	Tare	Determined packaging tare value.
	S	Average standard deviation.
	0.25 T1	Process result condition.
	Measurement quantity	Number of carried out tare value measurements.
	Operator	Operator carrying out the process.

34.5.7. Vehicle Scale Reports

Vehicle scale report data:

	Vehicle	Vehicle registration number.
	Status	Transaction status. Values: Loading, Unloading.
	Transaction type	Carried out transaction type. Values: Entry, Exit, Control weighing.
	Start date	Transaction start date.
	End date	Transaction end date.
	Load mass	Vehicle load mass.
	Entry mass	Vehicle mass on entry.
	Exit mass	Vehicle mass on exit.
	Operator	Operator carrying out the transaction.
	Customer	Transaction-assigned customer.
	Product	Transaction-assigned product.

34.5.8. Transaction Reports

Each transaction report is sent to the printer and saved in **< Transaction reports>** submenu. Each recorded transaction report is given a unique number at the procedure start.

Transaction number format:

XX / y y / M M / d d / H H / m m / s s, where:

XX	Declared transaction type, values: PZ – acceptance, MM – shift; WZ – release,
yy	Transaction start year.
MM	Transaction start month.
dd	Transaction start day.
HH	Transaction start hour.
mm	Transaction start minute.
ss	Transaction start second.

Transaction report data:

	Transaction type	Declared transaction type. Values: acceptance, shift, release.
	Start date	Transaction start date.
	End date	Transaction end date.
	Operator starting transaction	Name of the operator starting the transaction.
	Operator finishing transaction	Name of the operator finishing the transaction.
	Customer	Transaction-assigned customer.
	Source warehouse	Source warehouse assigned to the transaction.
	Target warehouse	Target warehouse assigned to the transaction.
	Measurement quantity	Number of carried out measurements.
	Weighings	Preview of all weighings performed within the transaction.

34.5.9. Differential Weighing Reports

Differential weighing report data:

	Start date	Differential weighing process start date.
	End date	Differential weighing process end date.
	Weighing 1 *	Completed weighing 1 data.
	Weighing 2 *	Completed weighing 2 data.
	Difference	Difference (absolute value) between weighing 1 and weighing 2. Value disabled in case of process consisting of more than 2 weighings.
	Statistics	Statistic data. Submenu enabled in case of process consisting of more than 2 weighings.

)** *- In case of process consisting of more than 2 weighings the data is grouped in* ***<Weighings> *folder.*

35. WORKFLOW

It is possible to make one's own algorithm of scale operation, this allows to customize the device to production plant needs, characteristics of the production line, etc. The customization allows to register complex weighing report with unique data collected during the process. Through this, it is possible to identify and trace faulty products (product batches) in a production process chain.

Workflow is enabled for weighing, parts counting, percent weighing modes.
Workflow can be activated by programmable button, logging operation, product selection.

	In order to create workflow it is necessary to activate Workflow extension module. Read section 16.3.4.

35.1. Workflow Creation

	Editing and search mechanisms for workflow database are the same like in case of other databases.

- Enter **<Databases / Workflow>** submenu and press button, the following message is displayed: **<Create new record?>**.
- Press button to confirm, the new record is automatically edited.
- Fill in the fields and go to **<Workflow wizard>** submenu.
- Workflow algorithm is set by pressing **<Add>** button, press the button, next select a respective process function (see table in section 35.2). Mind that each step must be added in a performance order.

It is possible to modify an existing process - you can add or delete particular process steps. To add a process step, press and hold for ca. 2 seconds the step which is to be proceeded by the newly added one. A pop-up menu is displayed:

Edit
Add
Delete
Cancel

35.2. Workflow Functions

List of workflow functions (process steps):

Pictogram		Function	Description
		Select record from database	Function triggering selection of record from a declared database.
		Databases	Declaring database for record selection: Product, Operator, Customer, Packaging, Source Warehouse, Target Warehouse, Extra Variable.
		Selection mode	Declaring entry by which the search is to be carried out. Options: standard, name, code. Function disabled for Extra Variables database.
		Assign to extra variable	Assigning extra variable, selected during the process, to a respective extra variable in reports (weighing database). Values: 1 - 5. Function enabled exclusively for Extra Variables database.
		Start record	Declaring start record displayed during the record search.
		End record	Declaring end record displayed during the record search. 0 value results with display of the whole database.
		Set record from database	Function setting particular record from a given database (automatic selection).
		Databases	Declaring database for record setting: Product, Operator, Customer, Packaging, Source Warehouse, Target Warehouse, Lot number, Batch number, Universal variable, Extra variable, Formulation.
		Product	Selection of a demanded record from product database (default database). Function conditioned by a declared database.
		Carry out weighing series	Function enforcing performance of a particular weighing series.
		Mode	Operation mode. **Quantity** – weighing until particular quantity of weighings is done. **Mass** – weighing until particular amount of mass is weighed. **None** – weighing quantity and mass limits disabled.
		Threshold	Declaring either mass value or quantity of weighings, depending on the set weighing series mode.
		Sample [1)]	Threshold sample using printout-intended variables.
		Set MIN and MAX	Function triggering setting the MIN, MAX thresholds.
		Zero	Function for platform zeroing, the function operates like pressing of the →0← key placed on the indicator.
		Tare	Function for platform taring, the function operates like pressing of the →T← key placed on the indicator.
		Set tare	Function setting the declared tare value.

		Request tare	Function for tare value setting (editing).
00285		**Edit lot number**	Function for lot number editing.
12ABC		**Edit batch number**	Function for batch number editing.
		Information window	Function for display and editing of freely designed information window.
		Name	Information window name, to be found at the title bar.
		Description	Information window description.
		Image	Image to be displayed in the info box. Options: **<Information>**, **<Warning>**, **<Error>**.
		Button	Declaring info box buttons. Options: **<Ok>** or **<Ok | Cancel>**, **<Cancel>** or **<None>**.
		Step list	Declaring step that is to be triggered upon pressing of cancel button.
		Platform	Declaring number of platform to which value of **<Threshold [1]>, <Threshold [2]>** parameter refers.
		Type	Type of mass (stable or unstable) to which the value of **<Threshold [1]>, <Threshold [2]>** parameter is referred.
		Mass	Defined threshold mass type (net or gross weight) for info box display.
		Threshold [1] [1)]	Value of threshold mass for condition 1 which controls info box display.
		Mass condition [1]	Threshold condition 1 for info box display: – „**>=**" or „**<**".
		Sample [1] [1)]	Threshold 1 sample using printout-intended variables.
		Threshold [2] [1)]	Value of threshold mass for condition 2 which controls info box display.
		Mass condition [2]	Threshold condition 2 for info box display: – „**>=**" or „**<**".
		Sample [2] [1)]	Threshold 2 sample using printout-intended variables.
		JS	JavaScript language script that activates after condition 1 and condition 2 are met.
		Add custom variable	Function triggering new custom variable. Upon process completion the variable is automatically recorded on a report (database).
		Variable type	Declaring custom variable type. Options: text variable, numeric variable.
		Assign to custom variable	Assigning custom variable to a respective custom variable in reports (weighing database). Values: 1 - 255.

		Name	Custom variable name.
		Edit product	Function for changing (editing) variables for a selected product. The function is neglected during the process if the product has not been selected previously.
		Variable type	Declaring product variable for editing. Options: mass, price, shelf-life time in days, additional shelf-life time.
		Outputs	Function setting state of indicator outputs for control of external devices. Values: None – output inactive; 0 – LO state (output off); 1 – HI state (output on).
	[TI]	**Delay**	Function determining time interval between successive steps of the dosing process. The function defines queue time for the next process step, given in [s].
		Input condition	Function specifying conditions with regard to the indicator input state for performance of the successive steps. Input states: none – input inactive; 0 – LO state (input off); 1 – HI state (input on); / – rising edge on the input (state change from LO to HI, e.g.: the moment of button pressing); / – trailing edge on the input (state change from HI to LO, e.g.: the moment of button release).
		Edit universal variable	Function for universal variable editing.
		Assign to universal variable	Assigning a universal variable to a respective universal variable in reports (weighing database). Values: 1 - 3.
		Button functions	Option triggering declared button function.
		Operation	Declaring button function.
		Mass condition	Function specifying mass-related conditions for performance of the successive steps, e.g.: the next step is to be performed when the mass value (net or gross) of the product on the platform is lower than the threshold value.
		Platform	Declaring number of platform to which value of **<Threshold>** parameter refers.
		Type	Threshold working mode: stable, unstable.
		Mass	Threshold mass type (net or gross).
		Threshold [1] [1)]	Value of threshold mass for condition 1.
		Mass condition [1]	Threshold condition 1 – „**>=**" or „**<**".
		Sample [1] [1)]	Threshold 1 sample using printout-intended variables.
		Threshold [2] [1)]	Value of threshold mass for condition 2.
		Mass condition [2]	Threshold condition 2 – „**>=**" or „**<**".

		Sample [2] [1)]	Threshold 2 sample using printout-intended variables.
		Iteration	Function enforcing performance of a selected group of steps in a loop.
		Step list	Declaring the first loop step. The step must be a step preceding the loop. All in-between steps will be carried out in one loop.
		Threshold	Loop quantity.
		Printouts	Function for sending the printout to a device connected to a selected port.
		Port	Declaring port to which the printout is to be sent. Ports: RS232 (1), RS232 (2), TCP or None.
		Sample	Printout template. The template can be either set manually or imported using the connected USB flash drive.
		Enforce weighing	Function enforcing weighing.
		Mass	Number of platform on which the weighing is to be carried out.
		Type	Mass mode: stable, unstable.
		Comparison	Function for comparing values of two thresholds. If the condition is met then the selected step is triggered, if not then the next step is triggered.
		Step list	Declaring step that is to be triggered when the condition is met.
		Condition	Options: ≠, <, ≤, =, ≥, >.
		Value 1	Comparison value 1.
		Value 2	Comparison value 2.
		Save register [2)]	Record of alphanumeric value to variable {325}, that can be printed on a printout.
		Name	Variable name (register) {325:name}
		Value	Value sample using printout-intended variables.
		Go to	Function enabling to move to a different workflow.
		Name	Workflow name.
		Set text template	Function enabling text sample change.
		Name	Sample name.
		Value	New text sample
00285		**Set variable**	Function enabling change of set variable value.
		Variable type	Declaring variable value of which is to be changed.

		Value	New value of the variable.
		JS	Function enabling activation of JavaScript language script.
		JS	JavaScript code
		Bash	Function enabling realisation of Bash script.
		Text variable	Bash code.
		End [3)]	Function for workflow termination.

1	In case of both threshold and sample values provided, only sample value is taken into account.
2	Value not saved to the weighing record. Upon indicator shutdown the value is zeroed. To print the value on the printout enter {325:Name}.
3	The step does not have to end the workflow. If the step is followed by subsequent steps, they can be referred to by an information window, upon pressing 'Cancel' button, or by a conditional function, when the condition criterion is met.

35.3. Workflow Activation

Workflow can be activated by programmable button, logging operation, product selection, formulation or ingredient activation, scale start.

35.3.1. Activation via a Programmable Button

Activation of workflow using the programmable button.

Procedure:

- Select button and set one of the 3 functions: select workflow, select workflow by name, select workflow by code.
- Go to the home screen, press the programmable button and select the respective workflow, it gets activated.

35.3.2. Activation via Logging Operation

It is possible to assign the operator with a workflow to make it run automatically upon logging.

Procedure:

- Enter **<Databases / Operators / Workflow>** submenu.
- Select the given workflow process and go to the home screen.
- Log in as previously edited operator, workflow assigned to this operator activates automatically.

35.3.3. Activation via a Product Selection

It is possible to assign the product with a workflow to make it run automatically upon selection of a product form the database.

Procedure:

- Enter **<Databases / Products / Workflow>** submenu.
- Select the given workflow process and go to the home screen.
- Enter the database and select the previously edited product, workflow assigned to this product activates automatically.

35.3.4. Activation via Formulation Selection

It is possible to assign the formulation start and end with a workflow to make it run automatically upon formulation start and formulation end.

Procedure:

- Enter **<Databases / Formulations / Ingredient / Workflow: Start>** submenu.
- Select workflow that is to be carried out prior to formulation start.
- Enter **<Databases / Formulations / Ingredient / Workflow: End>** submenu.
- Select workflow that is to be carried out upon formulation end.
- Run the previously edited formulation, workflow assigned to this formulation activates automatically. Upon formulation end, the second process runs.

35.3.5. Activation via Ingredient Selection

It is possible to assign the ingredient with a workflow to make it run automatically upon ingredient selection and weighing.

Procedure:

- Enter **<Databases / Formulations / Workflow: Start>** submenu.
- Select workflow that is to be carried out upon ingredient selection.
- Enter **<Databases / Formulations / Workflow: End>** submenu.
- Select workflow that is to be carried out upon ingredient weighing.
- Run the formulation and select the previously selected ingredient, workflow assigned to this ingredient activates automatically. Upon ingredient weighing the second process runs.

35.3.6. Activation Upon Scale Start

It is possible to assign the system start-up with a workflow to make it run automatically upon scale start-up.

Procedure:

- Enter **< Misc. / Workflow / Workflow at system start-up>** submenu.
- Select workflow that is to be carried out upon system start-up.
- Restart scale. Upon scale start-up the assigned workflow is carried out.

35.3.7. Example 1 - Workflow Design and Realisation

Scale operation algorithm requires the operator to:
1. Log via transponder card.
2. Enter shift number.
3. Zero scale.
4. Read message box <Prepare the product to be weighed> (message 60 [s]).
5. Select product by EAN code using the barcode scanner.
6. Provide current product price.
7. Select <Country of origin> from the list.
8. Select <Customer code>.
9. Select <Supplier country> from the list.
10. Enter lot number.
11. Enter batch number.
12. Read message box <Start the weighing process>.

Workflow Creation:

- Create a new **< Workflow>** record, do it following section 35.1.
- Successive process steps are created in **< Workflow wizard>**:

Step	Value	Description
1. Add custom variable	Variable type: Numeric variable; name: Shift number; Assign to custom variable 1.	Display of <Shift number> edit box with an alphanumeric keyboard.
2. Zero	Zero	Auto scale zeroing.
3. Delay	Time: 60s; Description: Prepare product for weighing.	Display of message <Prepare the product to be weighed> for 60s.
4. Select record from database	Databases: Product; Selection mode: Standard; Start record: 1; End record: 0.	Display of the whole list of products. For description of configuration and selection of data via barcode scanner read section 11.4.

5. Edit product	Variable type: Price.	Display of <Record edition: Product/Price> edit box with an on-screen keyboard.
6. Select record from database	Databases: Extra variable; Assign to extra variable: 2; Start record: 1; End record: 20.	Display of extra variable table, records 1 - 20. Naming table: <Country of origin> – read section 33.1.5.
7. Select record from database	Databases: Customer; Selection mode: Code; Start record: 1; End record: 0.	Display of <Search by code> edit box.
8. Select record from database	Databases: Extra variable; Assign to extra variable: 3; Start record: 21; End record: 40.	Display of extra variable table, records 21 - 40. Naming table: <Country of origin> – read section 33.1.5.
9. Edit lot number	Edit lot number.	Display of <Lot number> edit box with a numeric keyboard.
10. Edit batch number	Edit batch number.	Display of <Batch number> edit box with a numeric keyboard.
11. Information window	Name: Information; Description: Start weighing process; Image: Information; Button: OK.	Display of info box: <Start the weighing process>.

- Assign an operator with a transponder card number, do it following section 11.5.2.
- Assign an operator with a workflow, do it following section 35.3.2.
- Log in via a transponder card, workflow assigned to this operator activates automatically.
- Upon weighing, all unique data edited during the process is recorded in the weighing report: Weighing mass, Shift number, Product number, Product price, Country of origin, Customer name, Customer country, Lot number, Batch number.

You can abort workflow any time, you can get back to a previous process step.

35.3.8. Example 2 - Workflow Design and Realisation

Parts counting system based on the scale equipped with 2 platforms. For each product, the frequency of average weight value determination for a single part and the number of platform on which the value is to be determined are specified.

Scale operation algorithm requires the operator to:

1. Select a product.
2. Determine part mass on an additional platform.
3. Assign determined mass value to a product.
4. Carry out weighings on the main platform.
5. Read message "Determine part mass", the message is displayed upon registering of particular quantity of weighings (weighing quantity depends on the product).

6. Confirm the message, the process is carried out again starting from the step 2 of the algorithm.

Workflow Creation:

- Create a new **<Workflow>** record, do it following section 35.1.
- Successive process steps are created in **<Workflow wizard>**:

Step	Value	Description
1. Button functions	Operation: C Statistics: Zero	Summary statistics zeroing. The operator gets info about quantity of weighings performed from the moment of part mass determination.
2. Information window	Name: Information; Description: Determine part mass for a new item {50}; Image: Info; Button: OK.	Message: Determine part mass for a new item {50} on platform 2, current part mass {53:0.000}{11}. Where {50} - name of currently selected product; {53:0.000} – current part mass; {11} – unit.
3. Button functions	Operation: Select platform 2	Setting the second platform as active. The platform is intended to determine part mass.
4. Button functions	Operation: Parts counting: Determine mass	Running part mass determination procedure.
5. Button functions	Operation: Parts counting: Assign reference sample	Assigning determined part mass to a currently selected product.
6. Button functions	Operation: Select platform 1	Setting the first platform as active. The platform is intended to perform regular weighing.
7. Information window	Name: Information; Description: Mass of {53:0.000}{11} part assigned to {50}, Carry out weighing on platform 1 – {65} parts; Image: Info; Button: OK.	Message: Mass of {53:0.000} part assigned to {50}, Carry out weighing on platform 1 – {65} parts. Where {53:0.000} – current part mass; {11} – unit; {50} - name of currently selected product; {65} – quantity of weighings to be performed.
8. Carry out weighing series	Mode: Quantity Threshold: 0; Sample: {65}.	Carrying out weighings. Quantity is determined in variable {65} – Product: Description.
9. Button functions	Operation: C Statistics: Zero	Summary statistics zeroing.
10. Iteration	Step list: 1. Button functions Threshold: 10000.	Return to step 1. Iteration is repeated 10000 times.

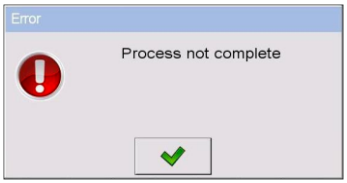
- Create product database. Go to 'description' field and enter value specifying weighing quantity, upon performance of which part mass is to be determined.
- Assign the workflow to all products, do it following section 35.3.3.

- Enter **<Misc. / Workflow>** submenu, run **<Finish workflow by changing the product>** option.
- Upon product selection the workflow runs automatically, the operator is guided through the process in accordance with the set algorithm. Upon product change the current process is aborted, new process runs.

You can abort workflow any time, you can get back to a previous process step.

35.3.9. Aborting Workflow

In order to abort workflow follow the below procedure:

In case of display of workflow home screen, press key, the following message is displayed:	
Press button, the following box is displayed:	
Press **<Abort>** button.	-
In case of display of edit box or info box, press button, in case of display of database press button. The following box is displayed:	
Press **<Abort>** button.	-

	For additional workflow deactivation options read section 16.9.

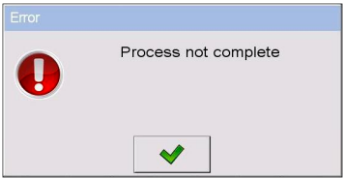
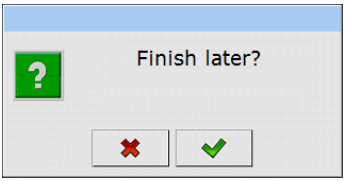
35.3.10. Getting Back to a Previous Workflow Step

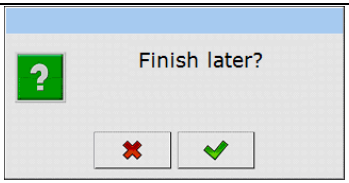
In order to go back to the previous process step follow the below procedure:

In case of display of edit box or info box, press button, in case of display of database press button. The following box is displayed:	
Press **<Step list>** button, list of performed process steps is displayed.	-
Select particular step, It is automatically repeated.	-

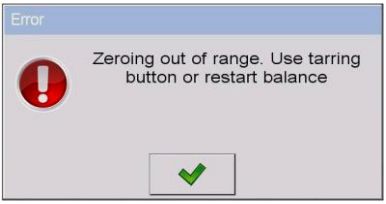
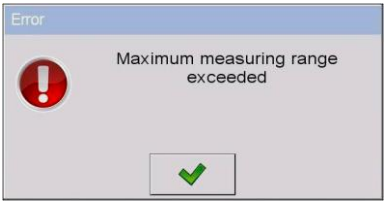
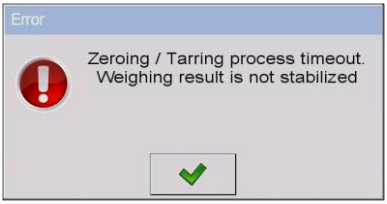
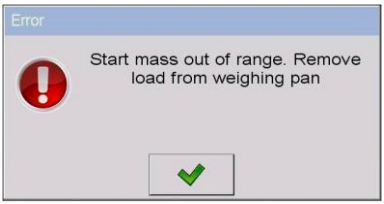
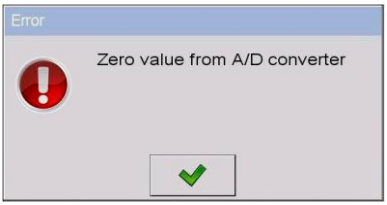
35.3.11. Pausing and Restarting Workflow

In order to pause workflow follow the below procedure:

In case of display of workflow home screen, press key, the following message is displayed:	
Press button, the following box is displayed:	
Press **<Abort>** button, message: 'Finish later?' is displayed	

Press button, the process gets aborted.	-
In case of display of edit box or info box, press button, in case of display of database press button. The following box is displayed:	
Press **<Abort>** button, message: 'Finish later?' is displayed?	
Press button, the process gets aborted.	-

In order to restart workflow follow the below procedure:

- Enter **<Display / Button functions>** submenu, go to a particular screen submenu (1, 2, 3 or 4).
- Set **<Continue workflow>** option for a particular on-screen button.
- Go to the home screen and press previously edited button.
- List of aborted workflow processes is displayed. Select a respective process, it is restarted.

36. ERROR MESSAGES