PUE C32

WEIGHING INDICATOR

USER MANUAL

ITKU-97-15-03-20-EN

R A D W A G®

RADWAG BALANCES AND SCALES
ADVANCED WEIGHING TECHNOLOGIES

MARCH 2020

Contents

1. INTENDED USE

PUE C32 weighing indicator is a part of construction of industrial scales operating on the basis of load cells. The indicator features ABS plastic housing and 5'' colour graphic display ensuring perfect readability. It is operated using 22-key membrane keypad equipped with programmable function keys.

Standard design offers two RS232 interfaces, USB type A, USB type B, Ethernet, wireless communication, 2 proximity sensors, 4 I/O. Optionally the indicator can be equipped with an internal battery, this allows its operation in places where there is no access to the mains. The device integrates with receipt and label printers, barcode scanners and PC accessories (mouse, keyboard, USB flash drive).

⚠	***The C32 indicator must not be operated in hazardous areas endangered with explosion of gases, and in dusty environments.***
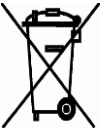
2. PRECAUTIONS

2.1. Operation

   A. Prior to the first use, carefully read this user manual. Use the weighing device only as intended.
   B. Place weighed loads in the centre of the weighing pan.
   C. Load the weighing pan with loads of gross weight which does not exceed the maximum capacity.
   D. Mind not to leave heavy loads on the weighing pan for longer periods of time.
   E. Protect the indicator against:
       - considerable temperature variation,
       - solar and UV radiation,
       - substances causing chemical reactions.
   F. The indicator is not intended to be operated in hazardous areas.
   G. In case of damage, immediately unplug the device from the mains.
   H. Weighing instruments to be decommissioned must be decommissioned in accordance with valid legal regulations.

2.2. Battery Power Supply

The PUE C32 indicator can optionally be supplied by **NiMH** battery (*nickel metal hydride*) of **1800** - **2800 mAh** capacity.

	Do not let battery discharge in case of prolonged storage of the device in low temperature.
	A worn out battery can be replaced only by the manufacturer or by the authorized service.
	The equipment including accumulators does not belong to regular household waste. The European legislation requires electric and electronic equipment to be collected and disposed separately from other communal waste with the aim of being recycled. Dear user, you are obliged to dispose of the worn out battery as regulated.

Notice: Symbols on batteries identify harmful compounds: Pb = lead, Cd = cadmium, Hg = mercury.

3. MAINTENANCE

In order to ensure safety in the course of cleaning, it is necessary to disconnect the device from the mains. With this condition met, uninstall the weighing pan and other detachable components.

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

3.1. Cleaning ABS Components

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

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

3.2. Cleaning Stainless Steel Components

Avoid using cleansers containing any corrosive chemicals, e.g. bleach (including chlorine). Do not use cleansers containing abrasive substances. Always remove the dirt using microfiber cloth to avoid damage of protective coating.

In case of a daily maintenance:
1. Remove the dirt using cloth dipped in warm water.
2. For best results, add a little dishwashing detergent.

4. WARRANTY CONDITIONS

A. RADWAG feels obliged to repair or exchange all elements that appear to be faulty by production or by construction.
B. Defining defects of unclear origin and means of their elimination can only be realized with the assistance of the manufacturer and user representatives.
C. RADWAG does not bear any responsibility for damage or losses resulting from unauthorized or inadequate performing of production or service processes.
D. The warranty does not cover:
    *   mechanical damage caused by product exploitation other than intended, damage of thermal and chemical origin, damage caused by lightning, overvoltage in the power network or other random event,
    *   inappropriate cleaning habits.
E. Loss of warranty takes place if:
    *   a repair is carried out outside RADWAG authorized service point,
    *   service claims intrusion into mechanical or electronic construction by unauthorized people,
    *   the scale does not bear security stickers.
F. Warranty conditions outline the warranty period for rechargeable batteries attached to the device for 12 months.
G. For detailed warranty conditions read the warranty certificate.
H. Contact with the central authorized service: +48 (48) 386 63 30.

5. MECHANICAL DESIGN

5.1. Dimensions
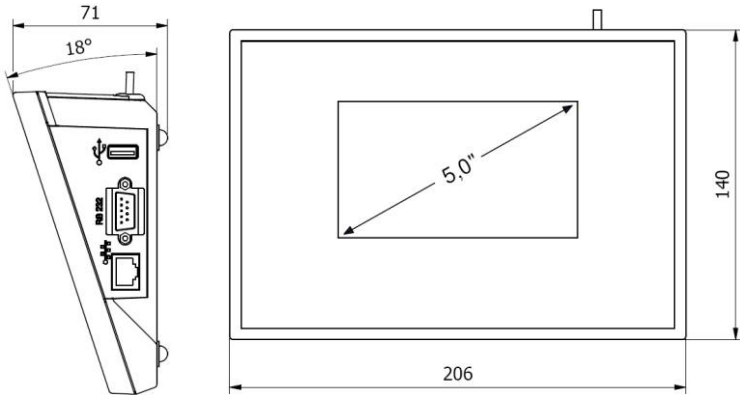
PUE C32 overall dimensions

5.2. Connectors Arrangement

1 – RJ45 Ethernet connector	*1 – power supply socket*
2 – RS232 (COM1) connector	*2 – I/O, RS232 (COM2) connector*
3 – USB type A connector	*3 – USB type B connector*

5.3. RS232 Connectors

RS232 - DB9/M connector (male), front:

Pin2 - RxD
Pin3 – TxD
Pin4 - 5VDC
Pin5 - GND

	RS232 - DSUB15/F connector (female), front:
	Pin8 - TxD2
	Pin9 - 5VDC
	Pin10 - GND
	Pin13 - RxD2
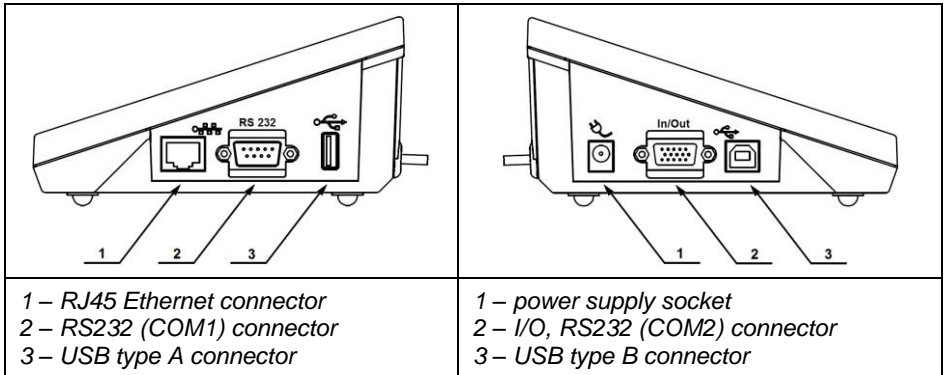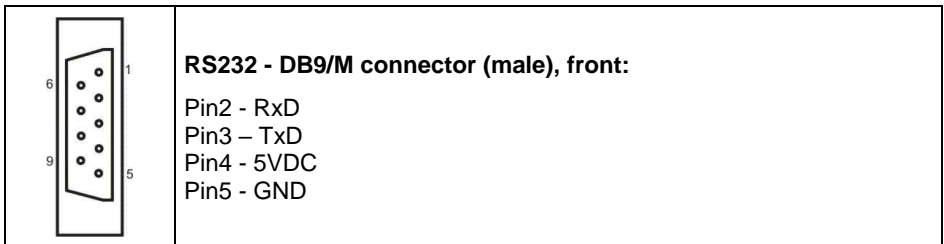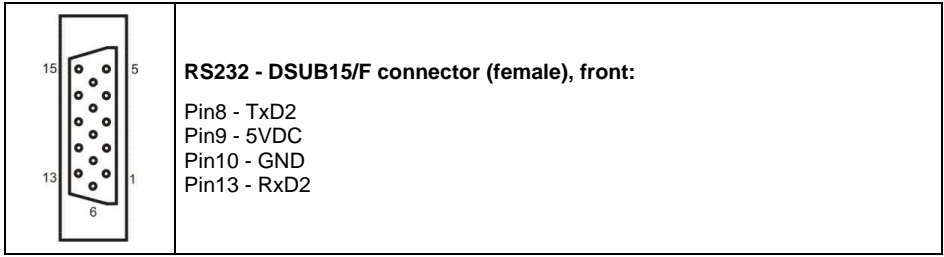
5.4. Inputs / Outputs

Standard PUE C32 indicator is equipped with 4 optoisolated inputs and 4 semiconductor outputs (solid-state relays). The signals are fed through DSUB15/F connector.

	I/O, RS232 DSUB15/F (female) connector, front:
	Pin1 – GNDWE
	Pin2 - OUT1
	Pin3 - OUT2
	Pin4 – COMM
	Pin6 - IN4
	Pin7 - IN3
	Pin11 - IN2
	Pin12 - IN1
	Pin14 - OUT4
	Pin15 - OUT3
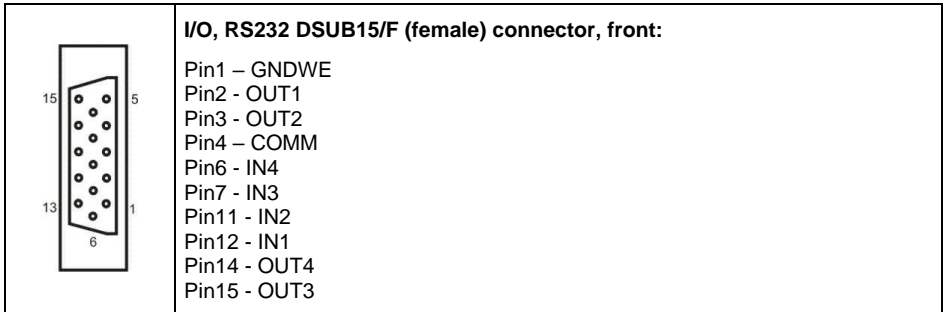
5.4.1. Technical Specifications

Output parameters	
Output quantity	4
Output type	Solid-state relay
Cable cross-section	0.14 - 0.5mm^2
Maximum output current	0.5A DC
Maximum voltage	30VDC
Input parameters	
Input quantity	4
Input type	Optoisolated
Cable cross-section	0.14 – 0.5mm^2
Voltage range	5÷24VDC

5.4.2. I/O Schematic Diagrams

4 inputs	4 outputs
COMM IN4 IN3 IN2 IN1	OUT4 OUT3 OUT2 OUT1 COMM
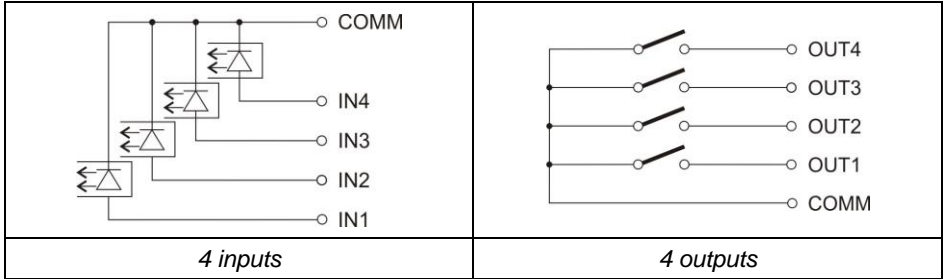
6. UNPACKING AND INSTALLATION

A. Take the indicator out of the packaging.
B. Connect the indicator to a weighing platform, next place the weighing device on a flat and even surface. Keep it far away from any sources of heat.

7. START-UP AND OPERATION

7.1. Levelling

It is necessary to level the scale, do it by turning its feet. Keep turning the feet until the air bubble takes central position.

level - OK   level incorrect
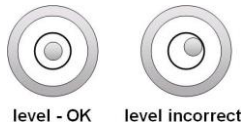
7.2. Connecting the Weighing Instrument to the Mains

The weighing device can be connected to the mains only with a power supply that comes standard with a particular model. Nominal voltage of the power supply (specified on the power supply data plate) has to be compatible with the mains nominal voltage.

Procedure:

- Connect the power supply to the mains. Plug it to the power supply socket that is located on the scale's side.
- Press ⏻ key, it is to be found at the top of the operation panel.
- Upon completed start-up, the home screen is displayed automatically.

7.3. Battery Status

Optional scale design features an internal battery. ▭▭▭▭ pictogram, displayed at the top of the screen, either signals battery status or informs that battery charging process is in progress:

- ▭▭▭▭ pictogram displayed in a cyclic manner: battery charging.
- ▭▭▭▭ pictogram displayed continuously: battery charged within 75% - 100% range of permissible voltage,
- ▭▭▭ pictogram displayed continuously: battery charged within 50% - 75% range of permissible voltage,
- ▭▭ pictogram displayed continuously: battery charged within 25% - 50% range of permissible voltage,
- ▭ pictogram displayed continuously: battery discharged (charge level below 25% of the permissible voltage), connect the scale to the mains in order to charge it,
- blinking ▭ pictogram: damaged battery or battery lack,
- no ▭▭▭▭ pictogram: scale not equipped with the battery.

⚠	*Battery discharge is signalled by the following message: <Excessively discharged battery. Scale shutdown is to occur>. Upon scale shutdown, connect it to the mains in order to charge the battery.*

8. OPERATION PANEL
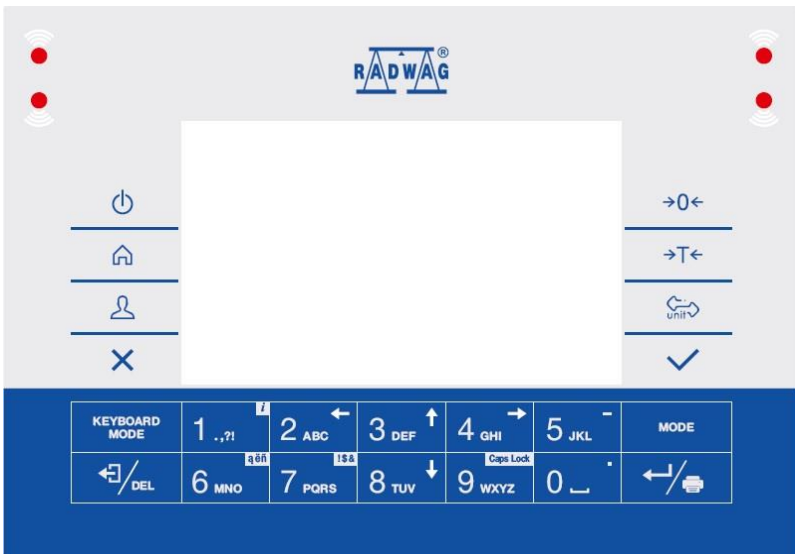
Keys:

⏻	Press to switch the indicator on / off.
⌂	Press to enter the main menu.
⚖	Press to log in.
✕	Press to cancel the message.
→0←	Press to zero the scale.
→T←	Press to tare the scale.
⇆unit	Press to change the weighing unit.
✓	Press to confirm the message.
↵/🖶	Press to confirm the weighing result (PRINT). Press to confirm the message (ENTER).
↵/DEL	Press to cancel the message.
MODE	Press to change the working mode.
1 .,?! *i*	Programmable key assigned to an on-screen button. *i* key – press it for a longer period of time to get scale info.
2 ABC ←	Programmable key assigned to an on-screen button.
3 DEF ↑	Programmable key assigned to an on-screen button.
4 GHI →	Programmable key assigned to an on-screen button.
5 JKL ‾	Programmable key assigned to an on-screen button.

9. HOME SCREEN

The home screen features 4 sections: a top bar, a weighing result window, workspace, pictograms.

Home screen view:

9.1. Top Bar

The top bar displays the following information:

Weighing	Working mode name and symbol.
PUE C32	Device name.
	Wireless communication on.
	USB flash drive connected.
	PC keyboard connected.
	Printer connected.
	Battery charge status.
	PC connected.
E2R	Communication with the E2R SYSTEM on.

9.2. Weighing Result Window

Weighing result window provides all weighing-related data.

9.3. Workspace

The workspace is to be found underneath the weighing result window.

Product:	Tare: 0.000 kg
User:	Sum: 0.000 kg

The workspace comprises 4 programmable widgets. Each working mode features default home screen widget set. You can customize the screen. For detailed information concerning the workspace read section 'Display'.

9.4. Pictograms

The pictograms assigned to operation panel keys are to be found underneath the workspace.

You can define on-screen pictograms individually for each working mode. For detailed procedure informing you how to define on-screen pictograms read section 'Display'.

10. OPERATING THE MENU

In order to navigate the program menu, use the operation panel.

10.1. Entering the Menu

In order to enter the menu press ⌂ key. Background colour of the first menu entry differs from the remaining ones. In order to navigate the program menu use the keys that operate as arrow keys.

Menu view
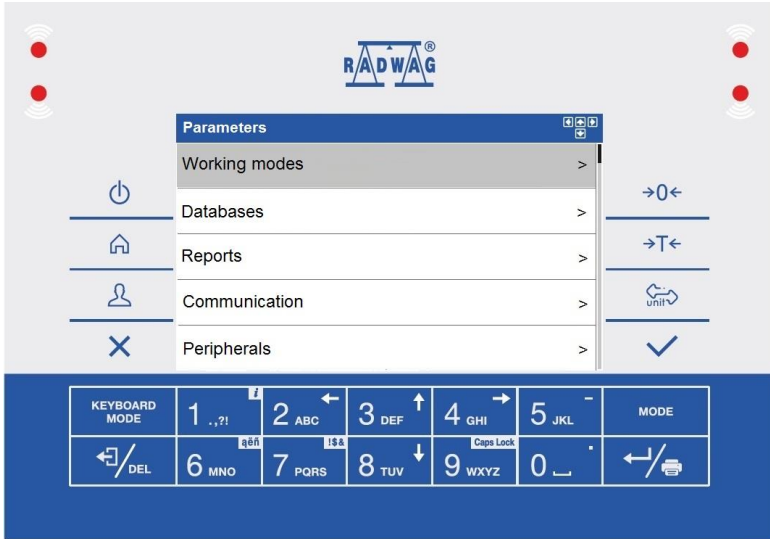
10.2. Menu Keys

⌂	Press to enter the main menu. Press to go to the home screen.
✕	Press to go back, or to discard entering parameter modifications.
↵/DEL	Press to go back. Press to delete a character when editing numeric and text values.
KEYBOARD MODE	Press to change keyboard mode when editing numeric and text values.
MODE	Press to select/change working mode.
↵/🖨	Press to confirm/accept modifications.
2 ABC ←	Press to go back, or to discard entering parameter modifications.
3 DEF ↑	Press to go up the menu, or to edit parameter value and change it by one digit up.
4 GHI →	Press to select parameter group that you want to operate. The first parameter of the selected parameter group is displayed.
8 TUV ↓	Press to go down the menu, or to edit parameter value and change it by one digit down.

10.3. Entering Numbers / Text

The software features two different edit boxes:
- numerical box (for entering part mass values, tare values, etc.), and
- text box (for entering printout template, universal variable value, etc.).

Button functions change depending on the edit box.

10.3.1. Numerical Box

Where:

123	Digit mode. To change keyboard working mode press [KEYBOARD MODE] key. Keyboard working mode options: **123** - digit mode, [arrows] - arrow keys operation, **Fn** - bottom line operation.
✎	Press to clear box content.

Keys:

1 .,?!	Press to enter digit **1**.
2 ABC	Press to enter digit **2**.
3 DEF	Press to enter digit **3**.

4 GHI →	Press to enter digit **4**.
5 JKL -	Press to enter digit **5**. Press to enter „-" (minus) sign, hold the key for a few seconds.
6 MNO ąêñ	Press to enter digit **6**.
7 PQRS !$&	Press to enter digit **7**.
8 TUV ↓	Press to enter digit **8**.
9 WXYZ Caps Lock	Press to enter digit **9**.
0 ␣ ·	Press to enter digit **0**. Press to enter „." sign (dot), hold the key for a few seconds. (dot) sign.
⬕/DEL	Press to delete one character.
✕	Press to exit, the edit box content remains unmodified.
✓	Press to confirm the modifications.
KEYBOARD MODE	Press to change keyboard working mode.

10.3.2. Text Box

Where:

ABC	Upper-case character mode. To change keyboard working mode press **KEYBOARD MODE** key. Keyboard working mode options: **ABC** - upper-case character mode, **abc** - lower-case character mode, **123** - digit mode, **⊞** - arrow keys operation, **Fn** - bottom bar operation.
🖳→	Press to save the project to *.lb file on a USB flash drive.
🖳←	Press to read the project saved to *.lb file on a USB flash drive.
◇	Press to clear box content.
🖨	Press to print the project using a printer connected to the scale.
📄	Press to view list of variables that can be used in the project.

Keys:

1 .,?!	Press to enter **. , { } : ° -** .
2 ABC ←	Press to enter **a b c**. Press to move the cursor to the left – long press.
3 DEF ↑	Press to enter **d e f**. Press to move the cursor up – long press.
4 GHI →	Press to enter **g h i**. Press to move the cursor to the right – long press.
5 JKL -	Press to enter **j k l**. Press to enter „ **-** " sign – long press.
6 MNO ąëñ	Press to enter **m n o**. Press to activate **"ąëñ"** function (diacritical sign table) – long press.
7 PQRS !$&	Press to enter **p q r s**. Press to activate **"!$&"** function (special sign table) – long press.
8 TUV ↓	Press to enter **t u v**. Press to move the cursor down – long press.
9 WXYZ Caps Lock	Press to enter **w x y z**. Press to activate **"Caps Lock"** function – long press.
0 ␣ .	Press to enter ␣ (space) sign. Press to enter „ **.** " sign (dot) – long press.
↵/🖨	Press to go to the next line in the edit box.
⌫/DEL	Press to delete one character.

✕	Press to exit, the edit box content remains unmodified.
✓	Press to confirm the modifications.
KEYBOARD MODE	Press to change keyboard working mode.

10.3.3. Diacritical Sign Table

In order to activate the diacritical sign table while editing a text box, it is necessary to press and hold down 6 MNO key. Diacritical signs characteristic for a particular interface language are automatically added to the table when the given language gets selected.

Diacritical sign table: Polish.											Diacritical sign table: English, German, French, Spanish.										
ą	ć	ę	ł	ń	ó	ś	ź	ż	á	č	ä	ö	ü	à	â	æ	œ	ç	è	é	ê
đ	é	ě	í	ň	ř	š	ú	ů	ý	ž	ë	î	ï	ô	ù	û	ü	ÿ	ñ	á	ã
â	ă	ä	İ	î	ď	ô	ô	ö	ŕ	ş	å	ì	í	ð	ò	ó	õ	ú	ý	þ	š
⬆	!$&	ű	ü	ť	ţ	å	ø	æ			⬆	!$&	ž	ğ	ş	ø	¿	ß			

Where:

⬆	Press to activate **"Caps Lock"** function.
!$&	Press to switch to special sign keyboard.

10.3.4. Special Sign Table

In order to activate the special sign table while editing a text box, it is necessary to press and hold down 7 PQRS key.

,	.	?	'	!	"	–	(	)	@	/
:	_	;	+	&	%	*	=	<	>	£
€	§	¥	°	[	]	{	}	\	~	^
⬆	ąëñ	#	$	|	µ	ß	©	®	™	`

Where:

⬆	Function inactive.
ąëñ	Press to switch to diacritical sign keyboard.

10.4. 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 ⌂ key, the home screen is displayed immediately.

11. PROGRAM

Program menu is divided into function groups. Function group is a group of interrelated parameters.
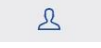
Function groups: Working modes, Databases, Reports, Communication, Peripherals, Printouts, Inputs / Outputs, Display, Permissions, Units, Adjustment, Misc, Scale data.

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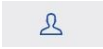
In order to access operator-related parameters and to edit databases, you need to log in as an operator with **<Administrator>** permission level.

⚠	***<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.***

12.1. Log In Procedure

- Go to the home screen, press 👤 key, wait for the operators database to open.
- Select 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.

12.2. Log Out Procedure

- Go to the home screen, press ⚖ key, wait for the operators database to open.
- Click **<Log out>** entry, the home screen is displayed.

12.3. Permission Levels

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

Access to operator-related parameters and program functions is conditioned by a 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, dosing, making formulations, weighing vehicles.
Operator	Operator can edit <Readout>, <Misc> parameter groups (operation of <Date and time> parameter and <Restore operator's default settings> function excluded). Operator can run and carry out all weighing operations.
Advanced operator	Operator can edit all operator-related parameters excluding <Date and time> parameter. Operator can run and carry out all weighing operations.
Administrator	Operator can edit all operator-related parameters and all databases, and use all functions. Operator can run and carry out all weighing operations.

13. WEIGHING

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

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

13.1. Good Weighing Practice

To assure long-term operation and correct mass measurements, follow the rules presented below:

Load the weighing pan steadily avoiding mechanical shocks.	
Place the loads centrally on the weighing pan (eccentricity errors are specified by PN-EN 45501 standard, point 3.6.2).	
Do not apply concentrated force (total load in one point).	
Avoid side loading, in particular side shocks.	

13.2. Zeroing

To zero mass indication press →0← key. Zero indication and the following pictograms are displayed: **0** and **><** .

Zeroing means determination of a new zero point, recognized by the weighing device as the precise zero. The instrument 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 tarring button or restart the scale>.

13.3. Taring

To determine net weight value, load the weighing pan with a packaging, wait for a stable indication and press →T← 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 weighing pan unloading, 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 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: <Tarring out of range. Press zeroing button or restart the scale>.*

13.4. Dual Range Devices

N/A in case of single range scales

Switching from weighing with the accuracy of the **I weighing range** to weighing with the accuracy of the **II weighing range** takes place automatically upon exceeding Max of the **I weighing range**.

In case of dual range scales:

- upon switching to weighing with the accuracy of the I weighing range, **I** pictogram/marker is displayed on the left,
- upon switching to weighing with the accuracy of the II weighing range, **II** 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 unloading of the weighing pan and returning to AUTOZERO – (**0** pictogram/marker is displayed).

13.5. Weighing Unit Change

You can change the weighing unit, to do it press ⇆unit key.

Options in case when the main unit is [g]: g (gram), kg (kilogram), ct (carat), lb (pound)*, oz (ounce)*, N (Newton)*, u1 (custom unit 1)*, u2 (custom unit 2)*.

) – *unit disabled for verified scales.*

Options in case when the main unit is [kg]: kg (kilogram), lb (pound)*, N (Newton)*, u1 (custom unit 1)*, u2 (custom unit 2)*.

) – *unit disabled for verified scales.*

⚠️	*You can declare start unit and two custom units – for detailed information read section 20, „UNITS".*

13.6. Setting MIN, MAX Thresholds

MIN, MAX thresholds are used:
- to control mass of the weighed loads (read section 25.5 of this user manual),
- for graphic visualization informing you how much of the weighing device capacity is used (read section 18.1.3 of this user manual),
- to control the external automation systems using digital outputs of the indicator (read section 17.2 of this user manual).

The mass is considered to be correct if it is comprised within MIN and MAX threshold values. You can set MIN, MAX thresholds by:
- a programmable **<MIN MAX Set MIN, MAX>** button,
- selecting a product with set thresholds,
- a proximity sensor,
- a digital input.

⚠️	*MAX threshold value has to be greater than MIN threshold value.*

13.6.1. Setting MIN, MAX Threshold Using a Programmable Button

- Enter **<Display / Button functions>** submenu.
- Edit a given button.
- Select **<Set MIN and MAX>** parameter from the list.
- Exit to the home screen.
- Press previously programmed button, **<Min>** numerical box is opened.
- Enter respective value and press ✓ key to confirm changes, **<Max>** numerical box is opened.
- Enter respective value and press ✓ key to confirm changes.

13.6.2. Setting MIN, MAX Thresholds by Product Selection

- Enter **<Databases / Products>** submenu.
- Edit a given product and enter respective threshold values.
- Exit to the home screen and press ⬆️ button to select product with set thresholds.

13.6.3. Setting MIN, MAX Threshold Using a Proximity Sensor

- Enter **<Working modes>** menu and select respective working mode.
- Edit a given proximity sensor (left or right).
- Select **<Set MIN and MAX>** parameter from the list.
- Exit to the home screen.
- Move your hand near the previously programmed proximity sensor, **<Min>** numerical box is opened.
- Enter respective value and press ✓ key to confirm changes, **<Max>** numerical box is opened.
- Enter respective value and press ✓ key to confirm changes.

13.6.4. Setting MIN, MAX Threshold Using a Digital Input

- Enter **<Inputs / Outputs>** menu, next enter **<Inputs>** submenu.
- Edit a given input.
- Select **<Set MIN and MAX>** parameter from the list.
- Exit to the home screen.
- Activate the previously set input signal, **<Min>** numerical box is opened.
- Enter respective value and press ✓ key to confirm changes, **<Max>** numerical box is opened.
- Enter respective value and press ✓ key to confirm changes.

14. COMMUNICATION

The indicator can communicate with peripheral devices, the communication is established via the following ports: RS232 (1), RS232 (2), USB A, USB B, Ethernet, Wireless communication.

To set the ports go to **< 🏠 / Communication>** menu.

14.1. RS 232

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

Baud rate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bit/s.
Data bits	7, 8
Stop bits	1, 2
Parity	None, Odd, Even.

14.2. Ethernet

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

DHCP	✔ Yes, ✔ No
IP Address	0.0.0.0
Subnet mask	0.0.0.0
Default gateway	0.0.0.0
MAC address	---

⚠	*Set the transmission parameters in accordance with your local network.*
⚠	*<MAC address> parameter is automatically assigned to the weighing device with <Read-only> attribute.*
⚠	*If you set ✔ option for <DHCP> parameter, the remaining transmission parameters are given <Read-only> attribute.*

14.3. Wireless Communication

Scales equipped with wireless communication module display ◆ pictogram at the top of the screen, provided that the module is active. The pictogram indicates the following connection statuses:

No.	Pictogram	Description
1	◆	The weighing device is connected, very strong signal.
2	◆	The weighing device is connected, strong signal.
3	◆	The weighing device is connected, poor signal.
4	▾	The weighing device is connected, very poor signal.
5	◇	No connection (signal too poor, selected network unavailable, connection parameters invalid – password, IP etc.).

⚠	*Set the transmission parameters in accordance with your local network.*
⚠	*In order to provide correct communication between the computer and the weighing device via <Wireless communication> port, you must set computer port parameter in your scale to <Wireless communication> value. You must also set wireless communication parameters, to do it correctly follow the below procedure.*

Procedure:

- Enter **<Activation>** parameter and activate wireless communication.
- Enter **<Network configuration>** submenu and set respective values:

Network scanning	Enter this parameter to trigger automatic search for available networks.
DHCP	✔ - select this option to make the program automatically read and display data assigned by a Router to which the weighing device is to be connected; ✔ - select this option to enter manually data such as: <IP Address>; <Subnet mask>; <Default gateway>.
IP Address	Enter this parameter to set weighing device IP address.
Subnet mask	Enter this parameter to set subnet mask.
Default gateway	Enter this parameter to set default gateway.

- When you run **<Network scanning>** function, the scanning starts and message **"Network scanning. Please wait…"** is displayed, next you see a list of networks detected by the weighing device along with signal strength and network channel number.
- Select network and enter the access password (if required).
- **<Wireless communication>** submenu is displayed, connection procedure runs automatically.
- When the communication gets established, **<Connected>** status is displayed.
- If you are waiting too long for the communication to be established it means that incorrect parameters must have been entered (e.g. password). Check the settings and try to establish communication again.
- If you fail to establish the communication, contact RADWAG service team.

The selected network and settings of parameters for connection are stored in a scale memory. The scale connects to the network in accordance with these settings each time it is switched on. To disconnect the network go to **<Activation>** parameter.

14.4. USB A

USB port of type A is intended for:
- connecting a USB flash drive in order to enable:
  - printout of measurement data (set <Printer/Port> parameter to <Pendrive> value),
  - database export/import,
  - operator parameters export/import,
  - Alibi and weighing reports export,
- connecting a scale to a PCL printer,
- connecting EPSON TM-T20 printer (with USB).

⚠	*The USB flash drive must support FAT files system.*

14.5. USB B

USB port of type B is intended for connecting the scale to a computer. In order to make connection of scale and computer possible, it is necessary to install virtual COM port in a computer. To carry out this procedure, you need a respective driver installer which may be either downloaded from **www.radwag.com** website or taken from a CD with manuals: **RADWAG USB DRIVER x.x.x.exe.**

Steps:

1. Run the driver installer and follow the commands.

Select Setup Language [dialog box with "Select the language to use during the installation:", English dropdown, OK and Cancel buttons]	Select language version and press **"OK"** button to confirm.

	In order to continue press **„Next"** button.
	Select directory and press **„Next"** button.
	In order to start installation process, press **„Next"** button.
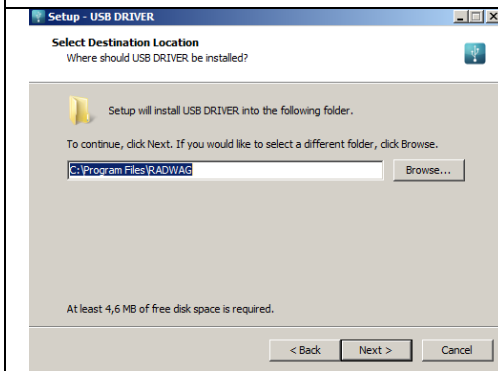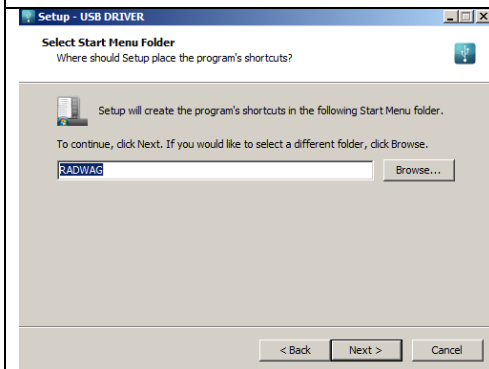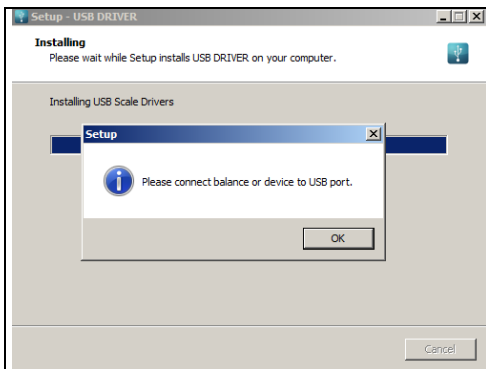
	Connect the scale to a computer, use 1.8-meter long USB A/B cable maximum (in case of an already connected scale, it is necessary to disconnect it and reconnect using USB cable). Respective message box is displayed, press **OK** button to confirm.
	Press **"Finish"** button.
	Connect the scale to a computer again, use 1.8-meter long USB A/B cable maximum. Respective message box is displayed, press **OK** button to confirm.
	"COM ports Screen" automatically displays number of installed COM port. In this very case it is COM8.
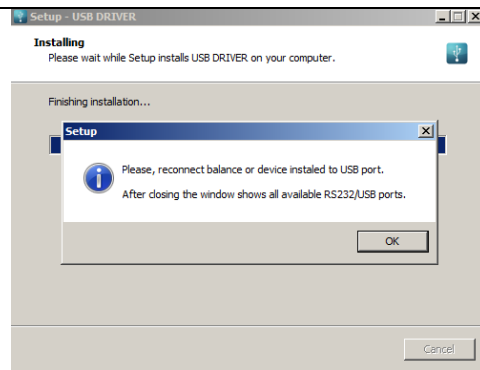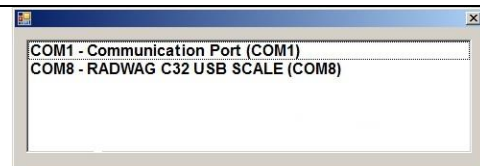
2. Enter **<Peripherals / Computer / Port>** submenu and set **USB B** option.
3. Run program for measurement readout.
4. Set communication parameters – select COM port that was installed in the course of drivers installation (in this very case it is COM8).
5. Start cooperation.

15. PERIPHERAL DEVICES

15.1. Computer

The weighing device 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.

15.1.1. Port

Parameter allowing you to set port for communication between the weighing device and the computer. Available ports:

RS232 (1)	RS232 port (DB9/M connector).
RS232 (2)	RS232 port (DSUB15/F connector).
USB B	USB port of type B.
Ethernet	Ethernet port (RJ45 connector).
Wireless communication	Port for sending data to a computer via wireless network.

Procedure:

- Enter **<Peripherals / Computer / Port>** submenu and select respective port, **<Port settings>** submenu differs depending on the selected port:

Port	Settings
RS232 (1)	Baud rate: 2400 - 115200 bit/s. Data bits: 7, 8
RS232 (2)	Stop bits: 1, 2 Parity: None, Odd, Even.
USB B	-
Ethernet	IP Address: IP address of the scale. Port: number of port for transmission protocol.
Wireless communication	Timeout [ms]: time delay - time interval for disconnection, counted from the moment of the most recent command sent from the peripheral device to which the weighing device is connected.

15.1.2. Address

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

Procedure:

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

15.1.3. Weighing Printout Template

Parameter allowing you to make a template of an individual printout (from the scale to a computer).

Procedure:

- Enter **<Peripherals / Computer / Weighing printout template>** submenu, **<Weighing printout template>** edit box is displayed.
- Modify the template and press ✓ key to confirm changes.

15.1.4. 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 value (✓ - Continuous transmission disabled; ✓- Continuous transmission enabled).

15.1.5. Interval

Parameter allowing you to set frequency of print of **<Weighing printout template>** when continuous transmission is activated. Interval for printouts is set in seconds with 0.1 [s] accuracy within 0.1 - 1 000 [s] range.

Procedure:

- Enter **<Peripherals / Computer / Interval>** submenu, **<Interval>** edit box is displayed.
- Enter respective value and press ✓ key to confirm changes.

15.1.6. 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> can be activated exclusively by the <Administrator> user. In case of integration of the scale with <E2R System> software, editing of databases on scales is disabled.***

Procedure:
- Enter **<Peripherals / Computer / E2R>** submenu and set respective option.

Options:

✔	Connection with **E2R System** inactive.
✔	Connection with **E2R System** active.

15.2. Printer

<Printer> submenu allows you to:
- set port for establishing communication with a printer,
- select printer code page,
- define print start - <Prefix> parameter,
- define print end - <Suffix> parameter.

To set 'scale' - 'printer' communication parameters go to **< ⌂ / Peripherals / Printer>** submenu.

15.2.1. Port

Parameter allowing you to set port for communication between the scale and the printer. Available ports:

RS232 (1)	RS232 port (DB9/M connector).
RS232 (2)	RS232 port (DSUB15/F connector).
USB A	USB port of type A.
USB B	USB port of type B, used for connecting a computer with RADWAG-designed program, e.g. RAD KEY.
Ethernet	Ethernet port (RJ45 connector), used for connecting a network printer or a computer with RADWAG-designed program, e.g. RAD KEY.

Pendrive	USB port of type A, used for connecting a USB flash drive in order to print weighings to a text file.
Wireless communication	Port for sending data to a computer or a network printer via a wireless network.

Procedure:

- Enter **<Peripherals / Printer / Port>** submenu and set respective option. **<Port settings>** submenu differs depending on the selected port:

Port	Settings
RS232 (1)	Baud rate: 2400 - 115200 bit/s. Data bits: 7, 8.
RS232 (2)	Stop bits: 1, 2. Parity: None, Odd, Even.
USB A	-
Pendrive	-
USB B	-
Ethernet	IP Address: IP address of the scale. Port: number of port for transmission protocol.
Wireless communication	Timeout [ms]: time delay - time interval for disconnection, counted from the moment of the most recent command sent from the peripheral device to which the weighing device is connected.

15.2.2. Code Page

In order to provide correct integration 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. There are two methods for obtaining code page accordance:

- by setting the right code page in the settings of a printer (read the user manual of the printer) – it must be accordant with the printout code page of a weighing device:

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

- by sending the control code from the weighing device, which automatically sets the right code page of the printer (i.e. code page accordant with the one of a weighing device).

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

Exemplary weighing device settings for correct printout of Polish signs with use of EPSON printer connected to RS232 port:

	EPSON TM-U220D	EPSON TM-T20	EPSON TM-T20
Baud rate	9600 bit/s	38400 bit/s	38400 bit/s
Parity	None	None	None
Code page	852	1250	852
Prefix	-	1B742D	1B7412

15.2.3. Prefix, Suffix

Prefix and suffix are controlling codes (given in a hexadecimal format) sent to a printer at print start - **<Prefix>** parameter, and at print end - **<Suffix>** parameter. Sending these codes allows to control globally information and actions carried out at the beginning and/or at the end of each printout sent from a scale to a printer. Most frequent usage:

- **Prefix** - sending info on print code page.
- **Suffix** - sending paper crop command in EPSON printers (in case of printer equipped with an auto-cutter blade). *Paper crop in EPSON printer – code **1D564108**.*

Settings of **<Prefix>** and **<Suffix>** parameters are valid for all printouts sent via the weighing device, e.g.: adjustment reports, statistics and header, footer and GLP printouts.

15.2.4. Record of Measurement Data Onto a USB Flash Drive

Scale program enables record of measurement data onto an external flash drive.

Procedure:

- Plug a USB flash drive into the **USB type A** port.
- Enter **<Peripherals / Printer / Port>** submenu and set **<Pendrive>** value. Return to weighing.
- Now the measurement data is saved to a text file on a USB flash drive whenever you press 🔄 key. The file is generated automatically by a scale software under **printout.txt** name.

⚠	*Remove the USB flash drive from the USB port after about 10s counting from the last measurement record, only after this time the data is saved. Next plug the USB flash drive to a computer and read the saved text file.*

New data is recorded to an existing file therefore it is possible to continue recording the measurement data to the file once created.

⚠	*USB flash drive must comprise <FAT files system>.*

15.3. Barcode Scanner

The scale can connect 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 02 manual.*

15.3.1. Port

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

Procedure:

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

15.3.2. Offset

Parameter allowing you to set the first significant code's character, characters preceding the first significant character are skipped during comparison search.

Procedure:

- Enter **<Peripherals / Barcode Scanner / Offset>** submenu and, using the on-screen keyboard, enter a required value.

15.3.3. Code Length

Parameter allowing you to set the number of code's characters to be taken into account during search procedure.

Procedure:

- Enter **<Peripherals / Barcode Scanner / Code length>** submenu and, using the on-screen keyboard, enter a required value.

15.3.4. 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.*

Procedure:

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

15.3.5. 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: None, Product, Operator, Customer, Packaging, Lot number, Batch number.

15.3.6. Filtering

Parameter allowing you to declare search criteria.

Procedure:

- Enter **<Peripherals / Barcode Scanner / Filtering>** submenu, list of search criteria is displayed.

Filtering criteria conditioned by the field type:

Field selection	Filtering
None	*
Product	Name, Code, Name 2, Code 2.
Operator	Name, Code.
Customer	Name, Code.
Packaging	Name, Code.
Lot number	**
Batch number	**

*) - <Filtering> submenu hidden. Function inactive.
**) - <Filtering> submenu hidden. Function active.

15.3.7. 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>**.

15.4. Additional Display

Settings of connection between a scale and an external additional display.

15.4.1. Port

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

Procedure:
- Enter **<Peripherals / Additional display / Port>** submenu and select respective port.

<table>
<tr>
<td>⚠</td>
<td>Enter <Communication> submenu and set baud rate, mind that the set value must be accordant with the additional display (9600b/s).</td>
</tr>
</table>

15.4.2. Display Type

The device integrates with the following additional displays: WD-4, WD-6, WWG-2.

Procedure:

- Enter **<Peripherals / Additional display / Display type>** submenu and select a given display type out of the list.

15.4.3. Bottom Text Area Template

Concerns WD-6 display exclusively

Additional display features text area for extra information such as date, tare value etc. Displayed data content is set using the scale.

Procedure:

- Enter **<Peripherals / Additional display / Bottom text area template>** submenu, **<Bottom text area template>** edit box is displayed.
- Modify the template and press ✓ key to confirm changes. The template can comprise 30 characters maximum.

15.5. Modbus RTU

Indicator-implemented **Modbus RTU** protocol may be applied using serial RS232 interface (connection 1 master – 1 slave).

<table>
<tr>
<td>⚠</td>
<td>Detailed description of memory map and variables of Modbus RTU protocol are to be found in „MODBUS RTU - Communication Protocol of PUE C32" manual.</td>
</tr>
</table>

15.5.1. Protocol Type

- Enter **<Peripherals / Modbus** / **Type>** submenu and set a respective value.

Values:

RTU	Modbus RTU protocol

15.5.2. Communication Port

Modbus RTU protocol may be applied using the following interfaces:

RS 232 (1)	RS232 port (DB9/M connector).
RS 232 (2)	RS232 port (DSUB15/F connector).
Ethernet	Ethernet port (RJ45 connector).

Procedure:

- Enter **<Peripherals / Modbus / Port>** submenu and select respective port. **<Port settings>** submenu differs depending on the selected port:

Port	Settings
RS232 (1)	Baud rate: 2400 - 115200 bit/s. Data bits - 7, 8.
RS 232 (2)	Stop bits - 1, 2. Parity: None, Even, Odd.
Ethernet	IP Address: IP address of the scale. Port: number of port for transmission protocol. Timeout [ms]: time delay - time interval for disconnection, counted from the moment of the most recent command sent from the peripheral device to which the weighing device is connected.

15.5.3. Address

- Enter **<Peripherals / Modbus** / **Address>** submenu, **<Address>** edit box with the on-screen keyboard opens.
- Enter the address and press $\checkmark$ key to confirm.

16. PRINTOUTS

<Printouts> submenu allows you to:
- define template for header, GLP and footer printout,
- define report templates: adjustment, dosing, formulations, vehicle weighing.
- create 10 non-standard printouts.

16.1. Print Mode: Header – GLP Printout – Footer

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 data printing.

Printout variables:

HEADER	GLP printout	FOOTER
Dashes *	Date	Working mode
Working mode *	Time	Date
Date *	Operator	Time
Time *	Product	Scale type
Scale type	Customer	Scale S/N
Scale S/N	Packaging	Operator
Operator *	Universal variable 1	Product
Product *	Universal variable 2	Customer
Customer	Universal variable 3	Universal variable 1
Universal variable 1	Net	Universal variable 2
Universal variable 2	Tare	Universal variable 3
Universal variable 3	Gross	Dashes *
Empty line *	Current result *	Empty line *
Adjustment report	Adjustment report	Adjustment report
Non-standard printout	Non-standard printout	Signature *
		Non-standard printout

*) – *Data accessible by default (marked with* ✔ *pictogram).*

How to Operate Printouts

1. To print data comprised within **GLP printout** section which are enabled for printing and marked with ✔ pictogram, press `↵/🖨` key located on the weighing device panel.
2. To print data comprised within **Header** and/or **Footer** section which are enabled for printing and marked with ✔ pictogram, press respective programmable button: <⊞ **Header printout>** and/or <⊞ **Footer printout>**.

⚠	***For detailed procedure informing you how to program buttons, read section 18.2.***

Data preview:

Working mode	Working mode name.
Scale type	Declared scale type.
Scale S/N	Serial number of the scale.

Operator	Logged-in operator name.
Product	Currently selected product name.
Customer	Currently selected customer name.
Packaging	Currently selected packaging names.
Date	Current date.
Time	Current time.
Net	Net weight value in a basic unit (calibration/adjustment unit).
Tare	Tare weight value in a current unit.
Gross	Gross weight value in a current unit.
Universal variable 1	Value of universal variable 1.
Universal variable 2	Value of universal variable 2.
Universal variable 3	Value of universal variable 3.
Current result	Measurement result in a current unit.
Adjustment report	Adjustment report printed according to the settings declared for the adjustment report printout.
Dashes	Dashes separating printout data.
Empty line	Blank line.
Signature	An area for the signature of an operator carrying out the measurement.
Non-standard printout	One of 10 non-standard printouts.

Printout examples:

Header	GLP printout	Footer

```
------------------------------
Working modes        Weighing
Date               24.07.2013
Time                   7:37:30
ScaleType                   AS
Balance ID            10353870
User               ADMIN ENG
Product                 Tablet
```
Header

```
Date               04.06.2013
Time              11:11:24 AM
Product                 NAZWA
    0.000 g
```
GLP printout

```
------------------------------
Date               24.07.2013
Time                   7:41:10
User              ADMIN ENG

Signature

.............................
```
Footer

16.2. Non-Standard Printouts

The program allows to design 10 non-standard printouts. Each of them can consist of approximately 1900 characters (letters, digits, special signs, spaces), including:
- fixed texts,
- variables conditioned by a particular working mode and operator needs (mass, date, checkweighing thresholds).

⚠	*For list of printout variables read APPENDICES 02 manual.*

Procedure for adding a non-standard printout:

- Enter **<Printouts / Non-standard printouts>** submenu.
- Press ✚ button (add record) assigned to `3 DEF ↑` panel key, a new record is created, it is defined by the following data:

Name	Non-standard printout name (43 characters maximum).
Code	Non-standard printout code (15 characters maximum).
Project	Text editor of a printout template (1900 characters maximum).

⚠	*For detailed information regarding text box read section 10.3.*

16.3. Dosing Report Printouts

Group of parameters allowing you to declare data that is to be printed on a dosing report printout. Dosing report is generated automatically after either completion or abortion of each process.

Data preview:

Dosing process	Completed dosing process name.
Start date	Dosing process start date.
End date	Dosing process end date.
Operator	Operator carrying out the dosing process.
Customer	Customer for whom the dosing process is carried out.
Preset mass	Declared dosing net weight.
Sum	Net value of mass that is to be dosed, given in an adjustment unit.
Difference	Difference between the net value of mass that is to be dosed and a value of automatic dosing threshold.
Dosing correction	Dosing correction value.
Status	Status of the dosing process, values: **Ongoing**, **Completed**, **Aborted**.
Dashes	Dashed line separating printout data and signature fields.
Signature	An area for the signature of an operator carrying out the dosing process.
Non-standard printout	One of 10 non-standard printouts.

16.4. Formulation Report Printouts

Group of parameters allowing you to declare data that is to be printed on a formulation report printout. Formulation report is generated automatically after either completion or abortion of each process.

Data preview:

Status	Formulation status. Status values: **Ongoing**, **Aborted**, **Completed**.
Start date	Formulation start date.
End date	Formulation end date.
Formulation	Formulation name.
Operator	Operator performing formulation process.
Customer	Customer for whom the formulation is carried out.
Ingredient quantity	Number of formulation ingredients.
Measurement quantity	Number of weighings performed within the formulation cycle.
Lot number	Lot number assigned to a formulation.
Measurements	List of weighings performed within the formulation cycle.
Preset mass	Sum of declared nominal masses of the ingredients.
Sum	Total weight value of the performed formulation.
Difference	Difference between the sum and the value of expected target weight.

16.5. Vehicle Weighing Report Printouts

Group of parameters allowing you to declare data that is to be printed on a vehicle weighing report printout. Vehicle weighing report is generated automatically after either completion or abortion of each transaction.

Vehicle Weighing Report Printouts: Weighing 1 ticket, Weighing 2 ticket, Control weighing ticket, Vehicle weighing report.

Weighing 1 ticket data:

Date and time	Date and time of weighing 1.
Vehicle	Vehicle name (registration number).
Weighing 1 mass	Weight value of weighing 1.
Operator	Operator carrying out the transaction.
Product	Transaction-assigned product.
Customer	Customer for whom the transaction is carried out.
Dashes	Dashed line separating printout data and signature fields.
Signature	An area for the signature of an operator carrying out the vehicle weighing process.

Non-standard printout	One of 10 non-standard printouts.

Weighing 2 ticket data:

Date and time	Date and time of weighing 2.
Vehicle	Vehicle name (registration number).
Weighing 2 mass	Weight value of weighing 2.
Operator	Operator carrying out the transaction.
Product	Transaction-assigned product.
Customer	Customer for whom the transaction is carried out.
Dashes	Dashed line separating printout data and signature fields.
Signature	An area for the signature of an operator carrying out the vehicle weighing process.
Non-standard printout	One of 10 non-standard printouts.

Control weighing ticket data:

Date and time	Date and time of control weighing.
Vehicle	Vehicle name (registration number).
Mass	Weight value of control weighing.
Operator	Operator carrying out the transaction.
Product	Transaction-assigned product.
Customer	Customer for whom the transaction is carried out.
Dashes	Dashed line separating printout data and signature fields.
Signature	An area for the signature of an operator carrying out the vehicle weighing process.
Non-standard printout	One of 10 non-standard printouts.

Vehicle weighing report data:

Start date	Date and time of transaction start.
End date	Date and time of transaction end.
Vehicle	Vehicle name (registration number).
Weighing 1 mass	Weight value of weighing 1.
Weighing 2 mass	Weight value of weighing 2.
Load mass	Weight value of vehicle load.
Operator	Operator carrying out the transaction.
Product	Transaction-assigned product.
Customer	Customer for whom the transaction is carried out.

Status	Transaction status. Values: Completed, Ongoing, Aborted.
Dashes	Dashed line separating printout data and signature fields.
Signature	An area for the signature of an operator carrying out the vehicle weighing process.
Non-standard printout	One of 10 non-standard printouts.

16.6. Adjustment Report Printouts

Group of parameters allowing you to declare data that is to be printed on an adjustment report printout. Adjustment report is automatically generated at the end of each adjustment process.

Data preview:

Project	Project name (31 characters maximum).
Adjustment type	Performed adjustment type.
Operator	Logged-in operator name.
Project	Project name printout.
Date	Adjustment performance date.
Time	Adjustment performance time.
Scale S/N	Serial number of the scale.
Adjustment result difference	Difference between the mass of the adjustment weight measured during the last adjustment and the mass of a currently measured adjustment weight.
Dashes	Dashed line separating printout data and signature fields.
Signature	An area for the signature of an operator carrying out the adjustment.

17. INPUTS / OUTPUTS

Standard version of the PUE C32 indicator is equipped with 4 inputs and 4 outputs. In order to set inputs and outputs enter: **< ⌂ / Inputs / Outputs>**.

17.1. Input Setup

- Enter **<Inputs / Outputs>** submenu.
- Select **<Inputs>** parameter and edit respective input, list of functions that can be assigned to the input is displayed. Input functions list is identical like key functions list, read section 18.2.
- Select the function you want to assign to the input, next go back to the home screen.

⚠	*By default all functions are assigned with <None> value.*

17.2. Output Setup

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

Procedure:

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

None	Output inactive.
Stable	Stable weighing result over LO threshold value.
MIN stable	Stable weighing result below the MIN threshold.
MIN unstable	Unstable weighing result below the MIN threshold.
OK stable	Stable weighing result between MIN and MAX thresholds.
OK unstable	Unstable weighing result between MIN and MAX thresholds.
MAX stable	Stable weighing result over the MAX threshold.
MAX unstable	Unstable weighing result over the MAX threshold.
Zero	Zero weighing result („zero" marker).
! OK unstable	Unstable weighing result out of OK threshold.
! OK stable	Stable weighing result out of OK threshold.
MIN	MIN threshold signalling.
OK	OK threshold signalling.
MAX	MAX threshold signalling.
Active process	Ongoing process signalling.
Measurement saved	Signal confirming record of measurement value - output activated for 1 [s].

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

⚠	*By default all functions are assigned with <None> value.*

18. DISPLAY

You can customize the home screen and the displayed data. Customization concerns the workspace (fields 1, 2, 3, 4) and the bottom area (5) featuring programmable buttons with functions assigned to numeric keys of the operation panel:

In order to customize the screen go to **< ⌂ / Display>** submenu.

18.1. Workspace

Workspace of your weighing device can comprise the following widgets: label, text box, bar graph. Each working mode features default home screen widget set. Available field **(widget)** dimensions (width x height):
- Label – 1x1; 2x1.
- Text box - 1x1; 2x1.
- Bar graph – 1x1; 2x1.

2x1 field size equals size of two 1x1 fields (1 and 2 or 3 and 4). The program automatically detects suitable widget size matching particular area. The widgets are displayed in declared fields upon data setup completion and exiting 'Settings' menu.

18.1.1. Label

Field displaying information updated in real time in the course of scale operation (selected product name, gross weight value, etc.). **<Workspace components>** submenu for a field comprising **<Label>** widget features the following options:

Information	Enter to read info on selected widget type and dimensions.
Settings	Enter to specify which widget-assigned data is to be displayed.
Delete	Enter to delete the widget. Upon entering, a respective warning is displayed: **<Delete?>**. Press ✓ key to confirm.
Add	Option available only if the widget has not been added yet. Upon entering **<Add>** submenu you can select **<Label>** widget of particular dimensions.

Label data list (data accessibility is conditioned by a working mode).

	⚖	⣿	%	🧪	📋	🚚
Net	✔	✔	✔	✔	✔	✔
Tare	✔	✔	✔	✔	✔	✔
Gross	✔	✔	✔	✔	✔	✔
Operator	✔	✔	✔	✔	✔	✔
Product	✔	✔	✔	✔	✔	✔
Packaging	✔	✔	✔	✔	✔	✔
Customer	✔	✔	✔	✔	✔	✔
Lot number	✔	✔	✔	✔	✔	✔
Batch number	✔	✔	✔	✔	✔	✔
Universal variable 1	✔	✔	✔	✔	✔	✔
Universal variable 2	✔	✔	✔	✔	✔	✔
Universal variable 3	✔	✔	✔	✔	✔	✔
Date	✔	✔	✔	✔	✔	✔
Time	✔	✔	✔	✔	✔	✔
Date and time	✔	✔	✔	✔	✔	✔
Thresholds	✔	✔	✔			
MIN threshold	✔	✔	✔			
MAX threshold	✔	✔	✔			
Number	✔	✔	✔			
Sum	✔	✔	✔			
Gross sum	✔	✔	✔			
Average	✔	✔	✔			
Min	✔	✔	✔			
Max	✔	✔	✔			
SDV	✔	✔	✔			
Net value	✔	✔	✔			
Gross value	✔	✔	✔			
Part mass		✔				
Reference mass			✔			
Formulation					✔	
Dosing process				✔		
Ingredient					✔	
Vehicle						✔

✔ *- Default label settings.*

18.1.2. Text Box

Field displaying weighing-related information. As an operator you can freely program the field content (texts and variables of line 1 and line 2).

⚠	*For detailed information regarding text box read section 10.3.2. For list of printout variables read APPENDICES 02 manual.*

<Workspace components> submenu for a field comprising **<Text box>** widget features the following parameters:

Information	Enter to read info on selected widget type and dimensions.
Settings	Enter to specify which widget-assigned data is to be displayed. Upon entering this parameter **line 1** and **line 2** settings are displayed. Lines 1, 2 can comprise 45 characters maximum.
Delete	Enter to delete the widget. Upon entering, a respective warning is displayed: **<Delete?>**. Press ✓ key to confirm.
Add	Option available only if the widget has not been added yet. Upon entering **<Add>** submenu you can select **<Text field>** widget of particular dimensions.

18.1.3. Bar Graph

Bar graph is available for all working modes. It is a graphic visualisation informing you how much of the weighing device capacity is used. It allows to observe whether the load stays within the specified Max capacity or is out of it. Additionally it shows:

- position of **Min** and **Max** thresholds in **<Weighing>**, **<Parts Counting>**, **<Percent weighing>** working modes,
- position of **dosing thresholds** in dosing process (read section 29.4.2 of this manual),
- position of **percent weighing** range in formulation process (read section 30.4 of this manual).

<Workspace components> submenu for a field comprising **<Bar graph>** widget features the following parameters:

Information	Enter to read info on selected widget type and dimensions.
Settings	This submenu allows you to choose between two functions: **1. Bar graph type**: Linear (linear presentation of the weighing range); **2. Zoom**: Enabling/disabling bar graph zoom in order to provide more clear visualisation of the 'Min threshold' - 'Max threshold' range.
Delete	Enter to delete the widget. Upon entering, a respective warning is displayed: **<Delete?>**. Press ✓ key to confirm.

| **Add** | Option available only if the widget has not been added yet. Upon entering **<Add>** submenu you can select **<Bar graph>** widget of particular dimensions. |

Bar graph operation, MIN and MAX thresholds displayed:

The bar graph provides a linear presentation of the weighing range.

Min=0g   Max=0g
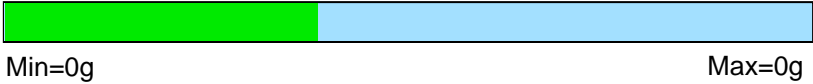
Additionally it shows where Min and Max thresholds are (providing that they have been declared).

- Visualisation of mass value lower than MIN value:
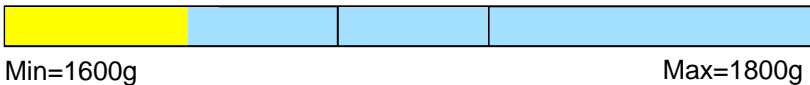
Min=1600g   Max=1800g

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

Min=1600g   Max=1800g
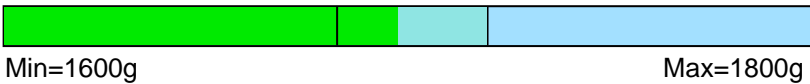
- Visualisation of mass value higher than MIN value and lower than MAX value, **<Zoom>** option on:
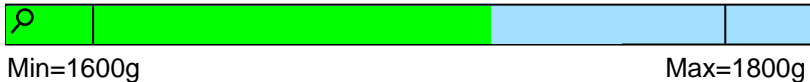
Min=1600g   Max=1800g

- Visualisation of mass value higher than MAX value:

Min=1600g   Max=1800g

| ⚠ | *MAX threshold value has to be greater than MIN threshold value.* |
| ⚠ | *For detailed description on how to set MIN, MAX thresholds refer to section 13.6.* |

18.2. Button Functions

Programmable numeric keys (0 - 9). These are so called quick access keys for triggering the most often performed operations.

Numeric keys 1 - 5 are additionally provided with graphic symbol which you can see in the bottom bar of the display.

Procedure:

- Enter **<Display / Button functions>** submenu, edit a respective key.
- Select the function you want to assign to the key, next go back to the home screen.

Key functions (function accessibility is conditioned by a working mode).

Pictogram	Function	Working mode					
		⏱	⚛	%	🧪	📋	🚚
🔧	Working mode parameters	✓	✓	✓	✓	✓	✓
⬆	Select product	✓	✓	✓	✓	✓	✓
📋	Select formulation					✓	
🧪	Select dosing process				✓		
🚚	Select vehicle						✓
📑	Select ongoing transaction						✓
⬆⬆	Select packaging	✓	✓	✓	✓	✓	✓
👥	Select customer	✓	✓	✓	✓	✓	✓
T✓	Set tare	✓	✓	✓	✓	✓	✓
MIN MAX	Set MIN and MAX	✓	✓	✓	✓	✓	✓
✕	Print header	✓	✓	✓	✓	✓	✓
✕	Print footer	✓	✓	✓	✓	✓	✓
-0-	Statistics: Zero	✓	✓	✓	✓	✓	✓
🖨	Statistics: Print	✓	✓	✓	✓	✓	✓
🖨-0-	Statistics: Print and zero	✓	✓	✓	✓	✓	✓
📰 n...	Edit labels quantity	✓	✓	✓	✓	✓	✓
📰 n...Σ	Edit C labels quantity	✓	✓	✓	✓	✓	✓
▓	Edit lot number	✓	✓	✓	✓	✓	✓

Icon	Function	1	2	3	4	5	6
	Edit batch number	✓	✓	✓	✓	✓	✓
V_1	Edit universal variable 1	✓	✓	✓	✓	✓	✓
V_2	Edit universal variable 2	✓	✓	✓	✓	✓	✓
V_3	Edit universal variable 3	✓	✓	✓	✓	✓	✓
	Databases	✓	✓	✓	✓	✓	✓
	Reports	✓	✓	✓	✓	✓	✓
	Select operator	✓	✓	✓	✓	✓	✓
	Print	✓	✓	✓	✓	✓	✓
	Zero	✓	✓	✓	✓	✓	✓
	Tare	✓	✓	✓	✓	✓	✓
	Parameters	✓	✓	✓	✓	✓	✓
MODE	Change working mode	✓	✓	✓	✓	✓	✓
	Change unit	✓					
	Last digit	✓					
	Set date	✓	✓	✓	✓	✓	✓
	Set time	✓	✓	✓	✓	✓	✓
	Set part mass		✓				
	Determine part mass		✓				
	Assign reference sample		✓				
	Reference sample quantity - 5 pcs		✓				
	Reference sample quantity – 10 pcs		✓				
	Reference sample quantity – 20 pcs		✓				
	Reference sample quantity – 50 pcs		✓				
	Reference sample quantity – 100 pcs		✓				
	Set reference sample mass			✓			
	Determine reference sample mass			✓			

▶	Process start				✔	✔	
✕	Process stop				✔	✔	✔
❚❚	Process pause					✔	
⊘	Breakdown				✔		
☐	None	✔	✔	✔	✔	✔	✔

✔ *- Default key settings.*

18.3. Default Screen Settings

Function allowing you to set default workspace values and default function keys for a particular working mode.

Procedure:

- Enter **<Display / Default screen settings>** submenu, a respective warning is displayed: **<Continue?>**.
- Press ✓ key to confirm.
- Default workspace values and default function keys for a particular working mode are set. Next, **<Display>** submenu is shown automatically.

19. PERMISSIONS

<Permissions> submenu is available for operators logged as **Administrator**. This group of parameters allows you to determine access rights for particular operators. In order to set permission levels enter **< ⌂   / Permissions>** submenu.

19.1. Anonymous Operator

Parameter allowing you to assign unlogged scale operator (so called anonymous operator) with a permission level.

Procedure:

- Enter **<Permissions / Anonymous operator>** submenu.
- Set one of four options: None, Operator, Advanced operator, Administrator.

19.2. Date and Time

Default scale settings enable operator who is logged as **Administrator** to modify date and time parameter but the software allows to change permission level, and as a result authorize other operators to access **<Date and time>** parameter.

Procedure:

- Enter **<Permissions / Date and time>** submenu.
- Set one of four options: None, Operator, Advanced operator, Administrator.

> ⚠ *When <None> option is set, all unlogged operators can set date and time.*

19.3. Printouts

Default scale settings enable operator who is logged as **Administrator** to edit printouts but the software allows to change permission level, and as a result authorize other operators to access **<Printouts>** parameter.

Procedure:

- Enter **<Permissions / Printouts>** submenu.
- Set one of four options: None, Operator, Advanced operator, Administrator.

> ⚠ *When <None> option is set, all unlogged operators can edit printouts.*

19.4. Database Editing

Parameter allowing you to set permission levels enabling particular operators to edit the following databases: products, formulations, dosing processes, packaging, customers, universal variables, vehicles.

Procedure:

- Enter **<Permissions / Databases edition>** submenu.
- Select respective database and set one of four options: None, Operator, Advanced operator, Administrator.

⚠	*When <None> option is set, all unlogged operators can edit particular database.*

19.5. Select Database Record

Parameter allowing you to set permission levels enabling particular operators to select given database entries. 'Select database record' parameter is enabled for the following databases: products, formulations, dosing processes, packaging, customers, universal variables, vehicles.

Procedure:

- Enter **<Permissions / Select database record>** submenu.
- Select respective database and set one of four options: None, Operator, Advanced operator, Administrator.

⚠	*When <None> option is set, all unlogged operators can select particular database records.*

20. UNITS

Option available for the Weighing mode exclusively

<Units> submenu allows you to:
- set particular units accessibility,
- set start unit,
- define two custom units,
- change gravitational acceleration value.

In order to set units enter **< ⌂   / Units>** submenu.

⚠	*Accessibility of particular units is conditioned by weighing device status; i.e. it depends on the fact whether the given scale is verified or not.*

20.1. Units Availability

Parameter allowing to declare which units are to be accessible upon pressing

⟳ key.

Procedure:

- Enter **<Units / Availability>** submenu.

- Unit list is displayed, mark units of your choice as available.
  (✔ - Unit enabled; ✔ - Unit disabled).

20.2. 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 **<Units>** submenu, next enter **<Start unit activation>** parameter.
- Go to **<Start unit>** submenu and select start unit from the list.
- Go back to the home screen and restart the weighing device.
- After restart, the weighing device runs with the declared start unit.

20.3. Gravitational Acceleration

<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 **<Units / Gravitational acceleration>** submenu, **<Gravitational acceleration>** edit box is displayed.
- Enter gravitational acceleration value respective for the particular place of use and press ⎓✓ key to confirm changes.

20.4. 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. By default the custom units are marked as: **[u1]** – custom unit 1 and **[u2]** – custom unit 2.

Procedure:

- Enter **<Units / Custom unit 1>** submenu, set the following parameters:

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

- Go to the home screen.
- Now you can use the custom unit, to do it press ⇆ key.

⚠	*Procedure for declaring <Custom unit 2> is analogous.*

---

21. MISCELLANEOUS PARAMETERS

Parameters facilitating scale operation. To set these parameters go to:

< ⌂ / Misc> submenu.

21.1. Interface Language

Parameter allowing you to set program menu language.

Procedure:

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

Available languages: Polish, English, German, French, Spanish, Czech.

21.2. 'Beep' Sound

Parameter allowing you to enable/disable sound signal informing about panel key(s) pressing.

Procedure:

- Enter **<Misc / Sounds>** submenu and set respective option (✔ - Sound signal enabled; ✔ - Sound signal disabled).

21.3. Display Brightness

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

Procedure:

- Enter **<Misc / Display brightness>** submenu and set respective value.

Values: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, **100%** (set by default).

21.4. Proximity Sensors Sensitivity

Parameter allowing you to adjust distance within which the proximity sensors are to be operated. The distance can be adjusted within 0% - 100% range, for lower values the proximity sensors operate at a shorter distance.

Procedure:

- Enter **<Misc / Proximity sensors sensitivity>** submenu and set respective value.

Values: 0%, 10%, 20%, 30%, 40%, **50%** (set by default), 60%, 70%, 80%, 90%, 100%.

21.5. Date and Time

Parameter allowing you to set current date and time and to specify date and time format.

Procedure:

- Enter **<Misc / Date and time>** submenu and change the settings. Refer to the below table:

Parameter	Description
Date	Enter this parameter to set current date.
Time	Enter this parameter to set current time.
Date format *	Enter this parameter to set date format. Values: **YYYY.MM.DD** (set by default), YYYY.DD.MM, DD.MM.YYYY, MM.DD.YYYY, YYYY/MM/DD, YYYY/DD/MM, DD/MM/YYYY, MM/DD/YYYY, YYYY-MM-DD, YYYY-DD-MM, DD-MM-YYYY, MM-DD-YYYY.
Time format **	Enter this parameter to set time format. Values: **HH:mm:ss 24H** (set by default), HH:mm:ss 12H, HH-mm-ss 24H, HH-mm-ss 12H, HH.mm.ss 24H, HH.mm.ss 12H.

*) - Date format symbols: Y – year, M – month, D – day.
*) - Time format symbols: HH – hour, mm – minute, ss – second, 24H – 24-hour mode, 12H – 12-hour mode.

21.6. Backlight Standby Time

Parameter allowing you to set time interval, in [min], after which the screen goes black.

Procedure:

- Enter **<Misc / Backlight standby time>** submenu and set respective value.

Values: None (set by default), 0.5, 1, 2, 3, 5.

21.7. Automatic Shutdown

Parameter allowing you to set time interval, in [min], after which the weighing device shuts down automatically. If the indication is stable during the declared time interval, the automatic shutdown occurs. Shutdown function is inactive and the device cannot be turned off when any of the processes is ongoing or when the menu is operated.

Procedure:

• Enter **<Misc / Automatic shutdown>** submenu and set respective value.

Values: None (set by default), 1, 2, 3, 5, 10.

21.8. Default Operator Settings

Parameter allowing you to restore default operator settings.

Procedure:

• Enter **<Misc / Restore default operator settings>** submenu, a respective warning is displayed: **<Continue?>**.
• Press ✓ key to confirm. Message **<Please wait...>** is displayed, the operation is in progress.
• After completed operation **<Misc>** submenu is displayed.

22. 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 weighing device 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.

22.1. External Adjustment

External adjustment is carried out using an external mass standard of the right accuracy and weight value, which value depends on scale type and capacity. Correction is carried out semi-automatically, successive process stages are signalled with prompts.

Procedure:

- Enter **<Adjustment / External adjustment>** submenu. Message **<Remove weight>** is displayed.
- Unload the weighing pan and press ✓ key, message **<Adjustment; Please wait...>** is displayed.
- Upon completed start mass determination, message **<Put weight>** is displayed along with a particular value of mass standard assigned to the scale.
- Load the weighing pan with the required adjustment weight and press ✓ key.
- Upon completed procedure, message **<Remove weight>** is displayed.
- Take the weight off the weighing pan, the scale displays the **<Adjustment>** submenu.

22.2. User Adjustment

User adjustment can be carried out using any adjustment weight, mass of which ranges between: **0.3 Max – Max**.

To run user adjustment procedure enter **<Adjustment / User adjustment>** submenu. User adjustment and external adjustment procedures are likewise with one exception, before user adjustment start, an edit box for entering mass of the used adjustment weight is opened.

22.3. 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 **<Adjustment / Start mass determination>** submenu. Message **<Remove weight>** is displayed.
- Unload the weighing pan and press ✓ key, message **<Start mass determination; Please wait...>** is displayed.
- Upon completion of start mass determination procedure, the scale displays the **<Adjustment>** submenu.

22.4. Adjustment Report

Adjustment report is automatically generated at the end of each adjustment process, next it is sent to port selected for **<Peripherals / Printer>**. To declare report content go to **<Printouts / Adjustment report>** submenu.

For instruction on how to declare adjustment report settings read section 'Printouts'.

Report example:

```
-----------Adjustment report-----------
Adjustment type                External
Operator                      Nowak Jan
Date                         2018.04.10
Time                           13:22:28
Scale S/N                        123456
Adjustment result difference     0.0 g
--------------------------------------
Signature

.......................................
```

23. SCALE DATA

Scale data menu provides information on the weighing device and its program. The parameters serve informative purposes: scale S/N, scale type, software version, product code, settings printout. In order to send weighing device settings (all parameters) to printer port, select **<Settings printout>** parameter.

24. WORKING MODES – General Information

The scale features the following working modes:

🌀	Weighing
🔺	Parts counting
%	Percent weighing
🧪	Dosing
📋	Formulations
🚚	Vehicle weighing

24.1. Running Working Mode

- Go to the home screen and press ▭ᴹᴼᴰᴱ key, **<Working modes>** submenu providing list of available working modes is displayed.
- Select the working mode you need to operate, the home screen is displayed automatically, wherein the top bar of the screen features pictogram of the selected mode.

24.2. Working Mode Accessibility

Parameter allowing to declare which units are to be accessible upon pressing
[MODE] key.

Procedure:

- Enter **<Working modes / Accessibility>** submenu and make given working modes accessible (✔-Working mode accessible; ✔- Working mode inaccessible).

25. WORKING MODES - Local Settings

In order to set working mode parameters enter **< ⌂ / Working Modes>** submenu. 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 accessible working modes, refer to the table below:

	⏲	⣿	%	🧪	📑	🚚
Readout	✔	✔	✔	✔	✔	✔
Proximity sensors	✔	✔	✔	✔	✔	✔
Save mode	✔	✔	✔	-	-	-
Auto threshold	✔	✔	✔	-	-	-
Result control	✔	✔	✔	-	-	-
Dispensing	✔	✔	✔	✔	✔	-
Tare mode	✔	✔	✔	-	-	-
Labeling mode	✔	✔	✔	-	-	-
Statistics	✔	✔	✔	-	-	-

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

⚠	*An on-screen button 🔧 (working mode parameters) that is to be found in each working mode's home screen, provides direct access to settings of the given working mode.*

25.1. Readout

Readout submenu comprises functions allowing you to adjust your weighing device to ambient conditions of a given workstation.

Filter	Enter this parameter to adjust your weighing device to ambient conditions. The higher filter level, the longer the indication takes to stabilise. Values: **Very fast**, **Fast**, **Average**, **Slow**, **Very slow**.
Value release	Enter this parameter to adjust rate of stabilisation of the measurement result. Depending on the value, the weighing time is either shorter or longer. Values: **Fast**, **Fast plus reliable**, **Reliable**.
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 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.
Ambient conditions	Parameter relating to ambient and environmental conditions of the workstation. Enter this parameter and set 'unstable' value if the ambient conditions are unfavourable (air drafts, vibrations). Values: **Stable**, **Unstable**.

25.2. Proximity Sensors

The weighing device is equipped with two proximity sensors which enable touch free control. The program detects two motions performed around the sensors:
1. Hand in a close vicinity to the left sensor **<Left sensor>**.
2. Hand in a close vicinity to the right sensor **<Right sensor>**.

Each motion can trigger any optional weighing device function. For a list of available functions read section 18.2. Upon completed configuration procedure, the software runs function assigned to a particular proximity sensor, having detected motion around it. To provide correct operation, it is necessary to set respective proximity sensors sensitivity (read section 21.4).

25.3. Save Mode

Parameter allowing you to set mode of sending data from the scale to a peripheral device.

Procedure:

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

Save mode options:

Manual each stable	Manual printout of each stable weighing result above **<Auto threshold>**.
Manual first stable	Manual printout of the first stable weighing result above **<Auto threshold>**.
Automatic first stable	Automatic printout of the first stable weighing result above **<Auto threshold>**.
Automatic last stable	Automatic printout of the last stable weighing result detected upon the weight value gets below **<Auto 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.

25.4. Auto Threshold

<Auto threshold> parameter allows you to configure the function of automatic operation. The next measurement is saved only when the mass indication gets below the set net value of **<Auto threshold>** parameter.

Procedure:

- Enter **<Working modes>** submenu and select respective working mode.
- Enter **<Auto threshold>** submenu and provide respective value, next press ✓ key to confirm changes.

25.5. Result Control

When your weighing device operates with 'result control' mode on, the printout is carried out only when mass of the load placed on the weighing pan is comprised within **MIN**, **MAX** thresholds. If the 'Result control' mode is on, respective pictograms are displayed on the right of the weighing result window, MIN, OK, MAX.

Procedure:

- Enter **<Working modes>** menu 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.

	For detailed description on how to set MIN, MAX thresholds refer to section 13.6.
	For MIN=0 and MAX=0 the *,* *,* *pictograms are inactive.*

25.6. Dispensing

Weighing in „dispensing" mode (subtract weighing). To carry out the subtract weighing it is necessary to load the weighing pan with the total amount of the load, tare the load mass and dispense particular load portions with the record of the weighing results to the weighing database.

Procedure:

- Enter **<Working modes>** menu and select a respective working mode.
- Select **<Dispensing>** function and set respective option (- Regular weighing mode; - Dispensing (subtract weighing) mode).

25.7. Tare Mode

Parameter allowing you to set taring function parameters.

Procedure:

- Enter **<Working modes>** menu and select a respective working mode.
- Go to **<Tare mode>** submenu and set 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.
Current sum	Select this parameter to sum currently entered product and packaging tare values, and tare value entered manually (if given). Upon determining tare value for a product or a packaging again, the tare value entered manually is deleted. To overwrite total tare value, tare the scale using $\rightarrow$T$\leftarrow$ key.
Total sum	Total value of all entered tare values. To overwrite total tare value, tare the scale using $\rightarrow$T$\leftarrow$ key.
Autotare	Select this parameter to run autotare mode.
Each measurement	Select this parameter to make the scale automatically tare each accepted measurement.

25.8. Labeling Mode

Labeling system is designed to print labels for product marking. The program generates standard labels, for single products, and cumulative labels, for bulk boxes.

Custom functions of <Labeling mode> submenu:

Labels quantity	Parameter for declaring number of labels to be printed on a scale-connected printer.
C labels quantity	Parameter for declaring number of C labels to be printed on a scale-connected printer.
Automatic C label triggering	For detailed description read section 25.8.1.

25.8.1. 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 respective working mode.
- Go to **<Labeling mode / Automatic C label triggering / Mode>** parameter and set respective option, where:

None	**Manual** printout of C label *, performed upon pressing 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.
Number	Automatic printout of C label, triggered upon exceeding single labels quantity, set in **<Threshold>** parameter.

*) Manual printout of C labels is carried out using one of the two below programmable buttons:

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

	In case of automatic printout of C labels, counter zeroing function is always on (weighings qty. and total mass values are always zeroed).

- To confirm introduced modifications, press key and go to **<Threshold>** parameter, **<Threshold>** edit box opens.

- Set the value that is to trigger C label printout, mind that:
  - in case of **<Mode>** parameter set to **<Mass>** value, you must provide total mass value, upon obtaining of which you want the C label printout to be triggered,
  - in case of **<Mode>** parameter set to **<Counter>** value, you must provide quantity value, upon obtaining of which you want the C label printout to be triggered.
- To confirm introduced modifications, press ✓ key.

25.9. 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 that is either weighed or selected from the database.

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

Where:

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

26. WORKING MODE – WEIGHING

<Weighing> is a standard working mode enabling you to carry out the weighing operation, and record of the result to the database.

26.1. Home Screen

26.2. Local Settings

In order to access local settings, press an operation panel key to which **<✦ Working mode parameters>** pictogram is assigned:

Readout	For detailed description read section 25.1.
Proximity sensors	For detailed description read section 25.2.
Save mode	For detailed description read section 25.3.
Auto threshold	For detailed description read section 25.4.
Result control	For detailed description read section 25.5.
Dispensing	For detailed description read section 25.6.
Tare mode	For detailed description read section 25.7.
Labeling mode	For detailed description read section 25.8.
Statistics	For detailed description read section 25.9.

27. 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.

27.1. Home Screen
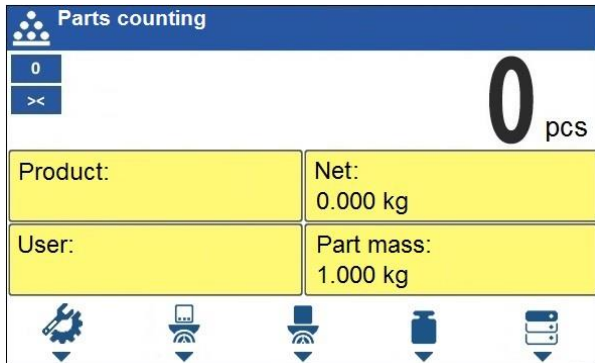
27.2. Local Settings

In order to access local settings, press an operation panel key to which **<✦ Working mode parameters>** pictogram is assigned:

ACAI	For detailed description read section 27.2.1.
Minimum reference sample mass	For detailed description read section 27.2.2.
Readout	For detailed description read section 25.1.
Proximity sensors	For detailed description read section 25.2.
Save mode	For detailed description read section 25.3.
Auto threshold	For detailed description read section 25.4.
Result control	For detailed description read section 25.5.
Dispensing	For detailed description read section 25.6.
Tare mode	For detailed description read section 25.7.
Labeling mode	For detailed description read section 25.8.
Statistics	For detailed description read section 25.9.

27.2.1. Function of Automatic Correction of Reference Sample Mass

<ACAI> is a specific function enabling you to correct weight value of a single piece by means of the weighing device program.

Procedure:

- Enter **<Working modes / Parts counting / ACAI>** submenu and set respective option (✔- function enabled, ✔- function disabled).

<ACAI> function gets activated for **<Parts counting>** mode at the moment of determination of reference sample quantity, it is signalled by display of $\mathcal{A}$ pictogram at the home screen top bar.

Four conditions of ACAI function operation have been implemented into the weighing device 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 a weighing device memory and deactivate the function by pressing × key.

27.2.2. Minimum Reference Sample Mass

Prior to determining single piece weight value you can declare **"Minimum reference sample mass**, i.e. minimum weight value for the total mass of all pieces loaded onto the weighing pan, expressed in reading units.

Procedure:

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

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 "Minimum reference sample mass" parameter. Unless this condition is met, the weighing device displays a message: <Sample mass too low>.*

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

- Press 🔳 button (Set part mass), **<Reference sample mass>** edit box featuring an on-screen keyboard is displayed.
- Enter respective value and press ✓ key 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>.*

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

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 featuring an on-screen keyboard is displayed.
- Enter respective value and press ✓ key to confirm, the following message is displayed: **<Number of parts to be loaded: xx>** (where **xx** – previously entered value).

- Load the weighing pan with a declared amount of parts. When the indication is stable (>< pictogram is displayed) press ✓ key 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 greater than the max capacity value.*
⚠	*Total weight value of all parts loaded onto the weighing pan cannot be lower than the value determined by „Minimum reference sample mass" parameter. Unless this condition is met, the weighing device displays a message: <Sample mass too low>.*
⚠	*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>.*

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

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

Procedure:

- Enter **<Parts counting>** mode and press an operation panel key to which 🛖 pictogram (product database) is assigned, next select a given product from the list.

⚠	*Weight value of a single part must be declared for the selected product. To declare weight value of a single part, enter product database and edit the selected product.*

27.6. Entering Reference Sample Mass to the Scale Memory

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

Procedure:

- Press 🛖 button, select the given product.

- Determine reference sample mass (read sections 27.3 and 27.4 of this user manual).
- Press ▯ button (Assign reference sample), reference sample mass for the product is recorded in **<Part mass>** entry.

28. 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.

28.1. Home Screen

28.2. Local Settings

In order to access local settings, press an operation panel key to which

<⚙ Working mode parameters> pictogram is assigned:

Readout	For detailed description read section 25.1.
Proximity sensors	For detailed description read section 25.2.
Save mode	For detailed description read section 25.3.
Auto threshold	For detailed description read section 25.4.
Result control	For detailed description read section 25.5.
Dispensing	For detailed description read section 25.6.
Tare mode	For detailed description read section 25.7.
Labeling mode	For detailed description read section 25.8.
Statistics	For detailed description read section 25.9.

28.3. Reference Sample Mass Determined by Weighing

If the reference sample is to be weighed in a container, first put the container on a weighing pan and tare it.

- Press ![icon] button (Determine reference sample mass), the following message is displayed: **<Put reference sample>**.
- Load the weighing pan with the reference mass. When the indication is stable (![>< pictogram] pictogram is displayed) press ![✓] key to confirm the value.
- Now (instead of weight value of the measured load) difference between values of loaded mass and reference mass is displayed in [%].

28.4. Reference Sample Mass Entered to the Scale Memory

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

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

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

Procedure:

- Enter **<Percent weighing>** mode and press an operation panel key to which ![icon] pictogram (product database) is assigned, next select a given product from the list.
- Difference between values of loaded mass and reference mass assigned to a selected product is displayed in [%].

29. WORKING MODE – DOSING

Dosing is a working mode enabling you to dose product. Two options are available, manual and automated dosing.

29.1. Home Screen

29.2. Local Settings

In order to access local settings, press an operation panel key to which < **Working mode parameters>** pictogram is assigned:

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.
Fast dosing output	Enter to declare outputs for rough dosing in case of automatic 2-stage dispensing.
Dosing outputs	Enter to declare outputs for precise dosing in case of automatic 2-stage dispensing.
Dosing correction	Enter to correct the dosed mass, this function allows to optimise the dosing process, change of pressure of dosed material in the silos is accounted for. Parameters: **Constant correction** – specifying global (constant) value of correction to be applied during each process; **Maximum correction** – specifying maximum value of correction, which can be determined automatically during the process; **Measurements quantity for correction calculation** – specifying how many of the most recent measurements is to be analysed in order to automatically calculate the correction during the process.
Readout	For detailed description read section 25.1.
Proximity sensors	For detailed description read section 25.2.

29.3. New Dosing Process

- Enter **< ⌂ Databases / Dosing processes>** submenu.
- Press an operation panel key to which ➕ pictogram (add) is assigned. The new record is automatically edited.

- Name the dosing process, provide its code, go to a **<Dosing process step>** submenu.
- Add the steps one by one in performance order, do it by pressing a key to which ✚ pictogram (add) is assigned.

Dosing process steps:

Abbrev.	Function	Description
[DH]	**Dose manually**	Enter to enforce manual weighing of the ingredient (manual dosing).
	Min	Enter to set the value of low threshold of manual dosing.
	Max	Enter to set the value of max threshold of manual dosing.
	Product	Ingredient selected from the product database.
	Confirm ingredients manually	Mark to enforce manual confirmation of dosed mass by means of pressing ↵/⬤ key (the function is enabled for manual dosing mode).
	Dispensing	Enter to enable/ disable subtract weighing.
[DA]	**Dose automatically**	Enter to enforce automatic weighing of the ingredient (automatic dosing). The function allows to activate outputs controlling dosing.
	Fast dosing threshold [DT1]	Enter to set value of mass for rough dosing in case of an automatic 2-stage dispensing.
	Dosing threshold [DT2]	Enter to set target mass value to be dosed in case of an automatic dispensing.
	Product	Ingredient selected from the product database.
	Request mass	Enter to force query regarding value of mass that is to be dosed after process start.
	Dispensing	Enter to enable/ disable subtract 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.
[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 ⊤∨ key placed on the indicator.

[CM]	Mass condition	Condition-based function. Enter to determine mass-related conditions for performance of the successive steps, e.g.: the next step is to be performed when the net mass value of the product on the platform is lower than the threshold value.
	Threshold	Value of threshold mass for the condition.
	Mass condition	Threshold condition – „>=" or „<".
[CI]	Input condition	Condition-based function. Enter to determine 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).
[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.

- It is possible to modify created process steps using keys that correspond with pictograms of the bottom display bar:

Symbol	Description
🗑	Delete all process steps.
🗑1	Delete one (marked) process step.
╋	Add new process step at the list end.
⤒	Add new process step prior the marked list entry.

29.4. Dosing Procedure

- Select dosing process, do it by pressing a key to which ⚗ pictogram is assigned.
- Save general parameters of 'Dosing' mode to a scale memory, the parameters are to be found upon pressing a key to which ⚙ pictogram is assigned.
- Press the key to which ▶ pictogram (process start) is assigned, now scale keypad is locked except for ✕ - stop, ▮▮ - pause, ⓘ - breakdown buttons.
- The process starts, it is signalled by a blinking ▶ symbol displayed in the top bar of the screen.

When:

1. Dosing outputs are declared incorrectly (e.g. lack of active dosing output) the following message is displayed: **<Dosing outputs determined incorrectly>**, next the process is cancelled.
2. Dosing thresholds are declared incorrectly (e.g. 0 values) the following message is displayed: **<Incorrect dosing threshold values>**, next the process is cancelled.
3. The weighing result is unstable then the following message is displayed: **<Unstable weighing result>**. The process status changes to **<Pause>** and remains so until a stable weighing result is obtained.

- Upon process start, bar graph of dosed material mass is displayed with the dosing status.

Workspace data:

DT1	Rough (fast0 dosing threshold value.
DT2	Dosing threshold value.
Dosing process:	Ongoing dosing process name.
Tare	Tare value (mass of a container, silos, etc.).
P1 1/10 DA -3.000kg [---]	Dosing status. For detailed description read section 29.4.1.

Buttons that are assigned to operation panel keys:

🛠	Local parameters (button inactive during the ongoing process).
🧪	Select a dosing process.
▶	Process start.
✕	Process stop.
ⓘ	Breakdown stop.

- All process steps are performed, **<Completed>** status is displayed (dosing process has been carried out). Blinking pictogram is turned off.

29.4.1. Dosing Status

Dosing status provides information regarding the ongoing process step and is comprised of 4 sections:

$$\underbrace{\texttt{P1}}_{1} \quad \underbrace{\texttt{1/10}}_{2} \quad \underbrace{\texttt{DH}}_{3} \quad \underbrace{\texttt{-500g} \;\; \texttt{<} \;\; \texttt{[- - -]}}_{4}$$
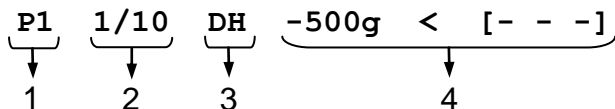
1. Number of platform on which the process is carried out.
2. Information regarding the ongoing process step and quantity of all process steps.
3. Abbreviation of process step type (for list of dosing process steps read section 29.3), or global information regarding the process.
4. Detailed information regarding particular process step, where:

Step	Information	Description
[DH]	-3.000kg < [Product 1]	-**3.000kg** - mass left to be dosed (in case of unstable mass value at the step start, „?" status is returned). **<** - mass status values: < - mass value lower than MIN threshold value; > - mass value higher than MAX threshold value; OK - mass between MIN, MAX thresholds pending the record; RECORD – dosed mass record. **[Product 1]** - dosed product name (lack of product is signalled by [---] status).
[DA]	-3.000kg < [Product 1]	-**3.000kg** - mass left to be dosed (in case of unstable mass value at the step start, „?" status is returned). **<** - mass status values: < - mass value lower than the dosing threshold value; OK - mass value higher than the dosing threshold value, and pending the record; RECORD – dosed mass record. **[Product 1]** - dosed product name (lack of product is signalled by [---] status).
[O]	0111	Mask of set outputs: output 1 – high state, output 2 – high state, output 3 – high state, output 4 – low state.
[TI]	00:00:05	Queue time for the next process step. Time given in format HH:mm:ss (H – hour, m – minute, s – second).
[CM]	Net >=1	Mass condition. The next step is to be performed when the net mass value of the product on the platform is greater than or equal to 1kg.

Global information regarding the process:

Information	Description
PAUSE	Dosing process inhibited by ▌▌ (pause) button.
COMPLETED	Dosing process completed.
ABORTED	Dosing process aborted by ✕ (stop) or ❗ (breakdown) button.

29.4.2. Dosing Bar Graph

Dosing bar graph operation differs depending on the following dosing modes:
- automatic 1-stage dosing,
- automatic 2-stage dosing,
- manual dosing.

Automatic 1-stage dosing:

- Visualisation of mass value lower than the value of **[DT2]** threshold:

DT1=0.000kg   DT2=1.800kg

- Visualisation of mass value higher than the value of **[DT2]** threshold:

DT1=0.000kg   DT2=1.800kg

Automatic 2-stage dosing:

- Visualisation of mass value lower than the value of **[DT1]** threshold:

DT1=1.600kg   DT2=1.800kg

- Visualisation of mass value higher than the value of **[DT1]** threshold and lower than the value of **[DT2]** threshold:

DT1=1.600kg   DT2=1.800kg

- Visualisation of mass value higher than the value of **[DT2]** threshold:

DT1=1.600kg   DT2=1.800kg

- Upon exceeding the value of fast (rough) dosing threshold, fast dosing outputs are activated.
- Upon exceeding the value of dosing threshold, dosing outputs are activated and **OK** process status is displayed.
- Upon stability of the weighing result, the process is assigned with **Completed** status (process completed). Blinking pictogram ▶ is turned off.

Manual dosing:

- Visualisation of mass value lower than MIN value:
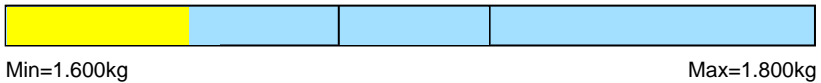
Min=1.600kg   Max=1.800kg

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

Min=1.600kg   Max=1.800kg

- Visualisation of mass value higher than MAX value:

Min=1.600kg   Max=1.800kg

29.5. Dosing Process Report

Dosing report is automatically generated at the end of each dosing process, next it is sent to port selected for **<Peripherals / Printer>**. To declare report content go to **<Printouts / Dosing report>** submenu. For instruction on how to declare adjustment report settings read section 'Printouts'.

Report example:

```
-------Dosing Process Report-------
Start date       2018.07.10 13:21:40
End date         2018.07.10 13:23:28
Operator                 Nowak Jan
Sum                      3.018 kg
Difference               0.018 kg
Status                   Completed
----------------------------------

Signature

...................................
```

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 (list of dosing report data – read section 33.3.3).

30. WORKING MODE – FORMULATIONS

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

30.1. Home Screen

30.2. Local Settings

In order to access local settings, press an operation panel key to which **< Working mode parameters>** pictogram is assigned:

Request multiplier	Enter to force query regarding formulation multiplier, i.e. value by which the weight, high deviation and low deviation values of <mass> type are to be multiplied for each ingredient.
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.
Request lot number	Enter to provide series number for formulation.
Confirm ingredients manually	Enter to enforce manual confirmation for each weighing by pressing ↵ key.
Automatic taring	Enter to enable automatic taring at the moment of formulation start, and after weighing of each ingredient.
Dispensing	For detailed description read section 25.6.
Readout	For detailed description read section 25.1.
Proximity sensors	For detailed description read section 25.2.

30.3. New Formulation

- Enter **< ⌂ / Databases / Formulations>** submenu.
- Press the key to which ✚ pictogram (add) is assigned. The new record is automatically edited. For list of new formulation data read section 32.6.5 of this manual.
- Enter **<Ingredients>** submenu, add formulation ingredients one by one, do it by pressing the key to which ✚ (add) pictogram is assigned.

Ingredient data:

Name	Ingredient name (43 characters maximum).
Code	Ingredient code (16 characters maximum).
Mass	Target mass of the ingredient.
Deviation type	Declared deviation type: unit of mass or value in [%].
High deviation	High deviation of ingredient mass in 'Formulations' mode.
Low deviation	Low deviation of ingredient mass in 'Formulations' mode.
Weight entered manually	Manual mode for entering ingredient mass (ingredient is not weighed).

⚠	*Formulation ingredients are acquired from <Products> database.*

- Modification of ingredient settings is possible upon editing of the selected ingredient, to do it press the key to which 🔧 pictogram (edit) is assigned.

When

1. You declare low deviation of value greater than the declared ingredient mass then the following message is displayed: **<Value too high>**; enter correct low deviation value.
2. You declare high deviation of value greater than the declared ingredient mass then the following message is displayed: **<Value too high>**; enter correct high deviation value.

- Enter the required data and press ✕ button, the new ingredient is added to the formulation.
- Enter the last ingredient and go to the home screen, do it by pressing ⌂ key.

30.4. Formulation Procedure

- Select the formulation, do it by pressing the key to which 📇 pictogram (select formulation) is assigned.
- Save general parameters of 'Formulations' mode to scale memory, the parameters are to be found upon pressing the key to which 🔧 pictogram is assigned.
- Press the key to which ▶ pictogram (process start) is assigned.

When:

1. The declared value of formulation multiplier causes exceeding of the max capacity value, then the following message is displayed: **<Formulation multiplier value too high>**. The process gets cancelled.
2. The declared value of ingredient mass exceeds the max capacity value, then the following message is displayed: **<Ingredient mass value higher than max capacity value>**. The process gets cancelled.
3. Sum of ingredient mass and high deviation values exceeds the max capacity value, then the following message is displayed: **<High deviation value too high>**. The process gets cancelled.
4. The weighing result is unstable then the following message is displayed: **<Unstable weighing result>**. The process status changes to **PS=Pause** and remains so until stable weighing result is obtained.

- Upon process start, bar graph of weighed ingredient mass is displayed with the following data:

Top bar pictograms:

▷	Process in progress (blinking pictogram).

Workspace data:

LD	Low deviation value.
HD	High deviation value.
PS	Process status, the status takes the following values: **-3.000kg** – amount left to be weighed; **[1/3]** – cycle 1 of 3; **OK** – target mass obtained; **Pause** – process inhibited: **a)** by means of **II** (pause) button, to restart the process press ▶ button, **b)** stable weighing result is awaited for, **Taring** – taring process in progress; **Completed** – formulation process completed; **Aborted** – formulation process aborted.
Formulation	Formulation name.
Ingredient	Information regarding weighed formulation ingredient: **1** – ingredient no., **4** – ingredients quantity, **[Ingredient 1]** – ingredient name.

Buttons that are assigned to operation panel keys:

🛠	Local parameters (button inactive during the ongoing process).
📋	Select formulation (button inactive during the ongoing process).
▶	Process start (button inactive during the ongoing process).
✖	Process stop.
II	Process pause.

Bar graph operation:

- Visualisation of mass value lower than the value of **[LD]**, low deviation:

LD=1.600kg   HD=1.800kg

- Visualisation of mass value higher than the value of **[LD]**, low deviation, and lower than the value of **[HD]**, high deviation:

LD=1.600kg   HD=1.800kg

- Visualisation of mass value higher than the value of **[HD]**, high deviation:

LD=1.600kg   HD=1.800kg

- Now weigh expected amount of each ingredient.

- After weighing of the last ingredient, **PS=Completed** status is displayed (process completed).
- New formulation process may begin.

30.5. Formulation Report

Formulation report is automatically generated at the end of each formulation process, next it is sent to port selected for **<Peripherals / Printer>**. To declare report content go to **<Printouts / Formulation report>** submenu. For instruction on how to declare adjustment report settings read section 'Printouts'.

Report example:

```
-----------Formulation report-----------
Start date          2018.07.10 13:21:40
End date            2018.07.10 13:23:28
Operator                     Nowak Jan
Preset mass                  3.000 kg
Sum                          3.018 kg
Difference                   0.018 kg
Status                       Completed
--------------------------------------

Signature

......................................
```

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 process status (for the list of dosing report data read section 33.3.4).

31. WORKING MODE – VEHICLE WEIGHING

The **<Vehicle weighing>** working mode enables to weigh lorries and calculate mass of the load on the basis of lorry weighing carried out on the entry and at the exit.

31.1. Home Screen
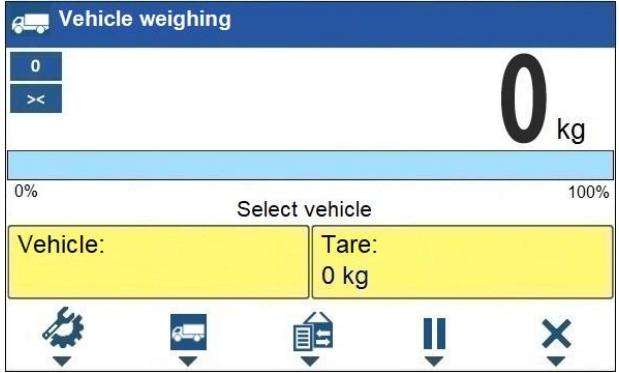
Workspace data:

Select vehicle	Process status with messages for the user.
Vehicle	Widget with a registration number of a selected vehicle.
Tare	Widget with the entered tare value (driver weight value, etc.).

Buttons that are assigned to operation panel keys:

🔧	Local parameters.
🚐	Select a vehicle.
📑	Select the ongoing transaction.
▐▐	Ongoing transaction pause. Paused transaction is automatically recorded onto the list of the ongoing transactions.
✕	Ongoing transaction stop.

31.2. Local Settings

In order to access local settings, press an operation panel key to which

<🔧 Working mode parameters> pictogram is assigned:

Transaction type	Enter to set default transaction type. Options: Entry\Exit, Control weighing.
Vehicle selection	Enter to declare vehicle selection method. Options: From a list, Manually (Vehicle of known name gets recorded into the "Vehicle" database automatically).
Proximity sensors	For detailed description read section 25.2.
Readout	For detailed description read section 25.1.

31.3. Vehicle Weighing Transaction

Vehicle weighing mode offers 2 transaction types: Entry\Exit and Control weighing. Transaction starts the very moment a vehicle gets selected from the database by pressing a key to which 🚚 pictogram is assigned.

⚠️	*It is possible to assign a transaction with a product and/or a customer. The product and/or the customer must be selected prior to the vehicle selection.*
⚠️	*Upon transaction start some keys get locked. In order to access all program functions pause the transaction using* **II** *(pause) button.*

31.3.1. Entry\Exit Transaction

- Save general parameters of 'Vehicle weighing' mode to scale memory, the parameters are to be found upon pressing a key to which 🔧 pictogram is assigned.

- Select vehicle, do it by pressing a key to which 🚚 pictogram is assigned, the following box is displayed:
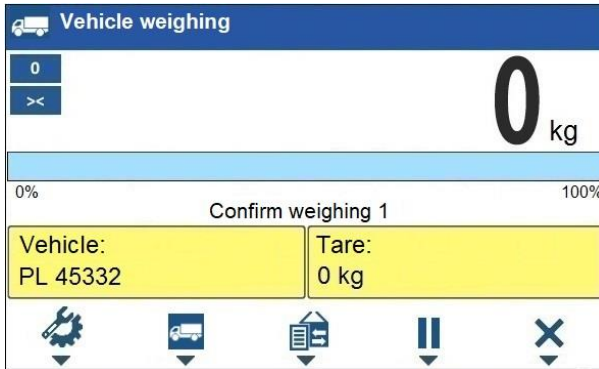
Where:

Vehicle	Vehicle with a recorded registration number.
Tare	Tare value (driver mass, etc.).
Confirm weighing 1	Message. The scale awaits for confirmation of weighing 1.

⚠️	*In case a vehicle for which the transaction is in progress gets selected, the following message is displayed: <For the selected vehicle there is already a transaction in progress. Continue?>.*

- Wait for the vehicle to enter the weighing bridge, next wait for a stable indication, press ![button] button to confirm the indication, the following window gets displayed:

Where:

Vehicle	Vehicle with a recorded registration number.
Tare	Tare value (driver mass, etc.).
Confirm weighing 2	Message. The scale awaits for confirmation of weighing 2.
8880kg / 0kg	Confirmed mass of weighing 1 / Load mass.

- On a scale-connected printer **"Weighing 1 ticket"** is printed.
- Wait for the vehicle to re-enter the weighing bridge (weighing 2), next wait for a stable indication, press ![button] button to confirm the indication.
- On a scale-connected printer **"Weighing 2 ticket"** is printed first, **"Vehicle weighing report"** next.
- Process summary is displayed:
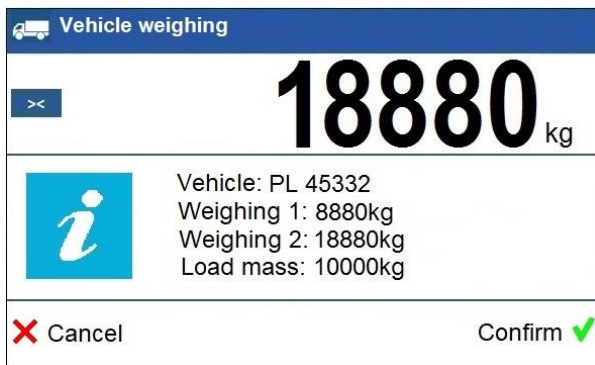
- Press **<Confirm>** button.

31.3.2. Control Weighing Transaction

- Save general parameters of 'Control weighing' mode to scale memory, the parameters are to be found upon pressing a key to which 🔧 pictogram is assigned.

- Select vehicle, do it by pressing a key to which 🚚 pictogram is assigned, the following box is displayed:
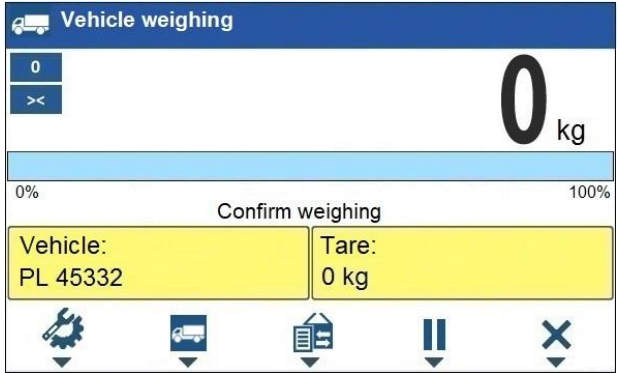
Where:

Vehicle	Vehicle with a recorded registration number.
Tare	Tare value (driver mass, etc.).
Confirm weighing	Message. The scale awaits for confirmation of the weighing.

- Wait for the vehicle to enter the weighing bridge, next wait for a stable indication, press ↵/🖨 button to confirm the indication.
- On a scale-connected printer **„Control weighing ticket"** is printed.
- Process summary is displayed:

- Press **<Confirm>** button.

31.4. Ongoing Transactions Table

It is possible to start any number of **Entry/Exit** transactions at the same time. All ongoing transactions are temporarily saved to an **ongoing transactions table**. To access the ongoing transaction list press a key to which ⬚ pictogram is assigned.

> ⚠️ *If any transaction is in progress, then access to ongoing transactions is disabled. Pause the ongoing transaction by pressing* ▌▌ *(pause) button.*

Ongoing transaction number:

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

X	Vehicle registration number.
yy	Transaction start year.
MM	Transaction start month.
dd	Transaction start day.
HH	Transaction start hour.
mm	Transaction start minute.
ss	Transaction start second.

31.5. Vehicle Weighing Report

Vehicle weighing report is automatically generated at the end of each vehicle weighing process, next it is sent to port selected for **<Peripherals / Printer>**. To declare report content go to **<Printouts / Vehicle weighing report printout>** submenu. For instruction on how to declare data for printouts read section 'Printouts'.

Each completed vehicle weighing transaction is automatically recorded into **<Vehicle weighing reports>** database. For detailed vehicle weighing transaction data read section 33.3.5 of this user manual.

32. DATABASES

Scale software comprises the following databases:

Database name	Max records qty
Products	15000
Operators	500
Formulations	500
Dosing processes	100
Vehicles	500
Packaging	500
Customers	500
Labels	500
Universal variables	100

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

⚠	***Databases editing is available for operators logged as Administrator.***

32.1. Database Export

Export of weighing device databases carried out using a USB flash drive.

Procedure:

- Enter the selected database.
- Activate function keys, to do it press **KEYBOARD MODE** key.
- Connect the USB flash drive to the USB A port.
- Press the key to which $\boxed{\Rightarrow}$ pictogram (export) is assigned.
- The program automatically saves exported data to a USB flash drive file, respective messages are displayed to confirm successfully completed operation.
- The file name is correlated with the name of the exported database:

Databases	File name and extension
Operators	Users.idb32
Products	Products.idb32
Formulations	Formulas.idb32
Dosing processes	Dosing Process. idb32

Packaging	Packages.idb32
Customers	Customers.idb32
Labels	Labels.idb32
Vehicles	Vehicles.idb32
Universal variables	Universal variables.idb32
Non-standard printouts	Non standard printouts.idb32

32.2. Database Import

Import of weighing device databases carried out using a USB flash drive.

Procedure:

- Enter the selected database.
- Activate function keys, to do it press ![KEYBOARD MODE] key.
- Connect the USB flash drive to the USB A port.
- Press the key to which 📥 pictogram (import) is assigned. Databases stored on the USB flash drive are imported to the scale memory automatically.
- Respective messages are displayed to confirm successfully completed operation.

32.3. Adding Database Record

- Enter selected database.
- Activate function keys, to do it press ![KEYBOARD MODE] key.
- Press the key to which ➕ pictogram (add) is assigned. The new record is automatically edited.

32.4. Deleting Database Record

- Enter selected database.
- Activate function keys, to do it press ![KEYBOARD MODE] key.
- Press the key to which 🗑 pictogram (delete one by one) is assigned. Message **<Delete record?>** is displayed.
- Press ✓ key to confirm. The selected record gets deleted.

32.5. Deleting Database Content

- Enter selected database.
- Activate function keys, to do it press ![KEYBOARD MODE] key.
- Press the key to which ![trash] pictogram (delete all database records) is assigned. Message **<Delete all records?>** is displayed.
- Press ![✓] key to confirm. All database records get deleted.

32.6. Database Editing

32.6.1. Operators

Operators database stores list of users permissioned to operate the weighing device.

List of parameters defined for an operator:

Name	Operator name (43 characters maximum).
Code	Operator code (15 characters maximum).
Password	Operator password, used in the course of logging-in operation (15 characters maximum).
Permissions	Operator's permission levels (Administrator, Advanced Operator, Operator, None).

32.6.2. Products

Product database stores lists of all products that can be weighed, counted, controlled.

List of parameters defined for a product:

Name	Product name (43 characters maximum).
Code	Product code (15 characters maximum).
Name 2	Additional name (43 characters maximum).
Code 2	Additional code (15 characters maximum).
Min [3]	Low limit of weighing within ranges (Result control).
Max [3]	High limit of weighing within ranges (Result control).
Tare	Tare value (set automatically when the product is selected).
Mass [1]	Product mass.
Deviation type [4]	Declared deviation type: unit of mass or value in [%].
Low deviation [4]	Low deviation of ingredient mass in 'Formulations' mode.
High deviation [4]	High deviation of ingredient mass in 'Formulations' mode.

Fast dosing threshold [2]	Mass value for rough dosing in case of an automatic 2-stage dispensing.
Dosing threshold [2]	Target mass value to be dosed.
Dosing outputs [2]	Outputs for precise dosing in case of an automatic 2-stage dispensing.
Fast dosing outputs [2]	Outputs for rough dosing in case of an automatic 2-stage dispensing.
Dosing correction [2]	Constant dosing correction value.
Price	Unit price of a product.
VAT	VAT value given in [%].
Shelf-life in days	Shelf-life time of a product (number of days).
Label	Template of a single label assigned to a product.
C Label	Template of a cumulative label assigned to a product.
Weight entered manually [4]	Manual mode for entering ingredient mass (ingredient is not weighed).

1)	Variable name is conditioned by the working mode. For Weighing and Dosing 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.

32.6.3. Packaging

Packaging database features list of product containers. When carrying out weighing, upon selection of particular packaging, a respective tare value is triggered automatically. The tare value is displayed with minus sign.

List of parameters defined for a packaging:

Name	Packaging name (43 characters maximum).
Code	Packaging code (15 characters maximum).
Mass	Packaging weight value (set automatically when the packaging is selected).

32.6.4. Customers

Customers database features a list of names of customers for whom the measurements are carried out.

List of parameters defined for a customer:

Name	Customer name (43 characters maximum).
Code	Customer code (15 characters maximum).
TIN	Tax identification number (15 characters maximum).
Address	Customer address (43 characters maximum).
Postal code	Customer postal code (7 characters maximum).
City	Customer city (43 characters maximum).
Discount	Discount for a customer given in [%].
Label	Template of a label assigned to a customer.

32.6.5. Formulations

Formulations database stores all created recipes. The recipes can be carried out automatically by weighing of particular ingredients.

List of parameters defined for a formulation:

Name	Formulation name (43 characters maximum).
Code	Formulation code (15 characters maximum).
Ingredients	Defining formulation ingredients, and preview of formulation ingredient quantity.
Target value	Preview of total mass of formulation.

32.6.6. Dosing Processes

Dosing Processes database features list of dosing processes that can be realised through successive process steps performance.

List of parameters defined for a dosing process:

Name	Dosing process name (43 characters maximum).
Code	Dosing process code (15 characters maximum).
Process steps	Defining dosing process steps (20 steps maximum).

32.6.7. Vehicles

List of parameters defined for a vehicle:

Name *	Vehicle name (44 characters maximum).
Code	Vehicle code (16 characters maximum).
Tare	Tare value (set automatically when the product is selected).

Description	Supplementary vehicle info (44 characters maximum).

) - In case of the vehicle type to be selected manually, entering a new registration number causes automatic adding of a new vehicle record to the database with a name and a code corresponding to the registration number.

32.6.8. Labels

Labels database features a list of label templates that can be assigned to a product or a customer in order to activate operation in labeling mode.

List of parameters defined for a label:

Name	Label name.
Code	Label code.
Project *	Label project.

*) - An example of how to make and send label template to a scale memory is to be found in **APPENDICES 02** manual.*

32.6.9. Universal Variables

Universal variable database comprises universal variable templates. You can assign the templates to function keys. This allows you to easily enter any text/number/letter that you want to print, to a weighing device memory.

Values of 3 universal variables V_1, V_2, V_3, entered to the weighing device memory will be saved to a completed weighing record.

List of parameters defined for a universal variable:

Code	Universal variable code (15 characters maximum).
Name	Universal variable name (43 characters maximum).
Value	Universal variable value, it is to be printed and/or saved to a weighing record (32 characters maximum).

33. REPORTS

Weighing device software comprises the following reports:

Report name	Max records qty
Weighings	50000
Alibi	500000
Dosing reports	5000
Formulation reports	5000
Vehicle weighing reports	5000

In order to preview, export and delete reports, enter **< ⌂ / Reports>** submenu.

⚠	*Database of Alibi reports is protected against deletion.*

33.1. Export

Export of reports carried out using the USB flash drive.

Procedure:
- Enter the selected reports database.
- Activate function keys, to do it press [KEYBOARD MODE] key.
- Connect the USB flash drive to the USB A port.
- Press the key to which ⤓ pictogram (export) is assigned.
- The program automatically saves exported data to a USB flash drive file, respective messages are displayed to confirm successfully completed operation.
- The file name is correlated with the name of exported reports database:

Reports database	File name and extension
Weighings	xxxxxx.wei
Alibi	xxxxxx.ali
Dosing reports	xxxxxx.dos
Formulation reports	xxxxxx.for
Vehicle weighing reports	xxxxxx.veh

Where: xxxxxx – scale serial number.

Files can be read using **ALIBI Reader**, PC software designed by RADWAG. You can download the software from RADWAG website: www.radwag.com.

33.2. Deletion

N/a in case of Alibi reports database

- Enter reports database.
- Activate function keys, to do it press [KEYBOARD MODE] key.
- Press the key to which 🗑 pictogram (delete all records of report database) is assigned. Message **<Delete all records?>** is displayed.
- Press ✓ key to confirm. All database records get deleted.

33.3. Preview

33.3.1. Weighing Reports

Each weighing result sent from the weighing device to a printer is saved to a weighing report. You can preview data of particular weighings.

List of parameters defined for a completed weighing

Date	Weighing date.
Time	Weighing time.
Stable	Stable weighing result marker.
Result	Weighing result given in a specific unit (%, pcs).
Mass	Net weight.
Tare	Tare value.
Operator	Operator name.
Product	Product name.
Customer	Customer name.
Lot number	Lot number (16 characters maximum).
Batch number	Batch number (16 characters maximum).
Result control	Weighing result range.
Min	Minimum weighing result threshold (result control).
Max	Maximum weighing result threshold (result control).
Universal variable 1	Value of universal variable 1.
Universal variable 2	Value of universal variable 2.
Universal variable 3	Value of universal variable 3.

33.3.2. Alibi Reports

Each weighing result sent from the weighing device to a printer is saved to an Alibi report. You can preview data of particular weighings.

List of parameters defined for a completed weighing

Date	Weighing date.
Time	Weighing time.
Result	Weighing result given in a specific unit (%, pcs).
Mass	Net weight.
Tare	Tare value.

33.3.3. Dosing Reports

Dosing report is generated automatically after completion of each dosing process. You can preview data of particular reports.

Status	Information regarding correctness of dosing process realisation. Status values: **Aborted**, **Completed**.
Start date	Date of dosing process start.
End date	Date of dosing process end.
Dosing process	Completed dosing process name.
Operator	Operator carrying out the dosing process.
Customer	Customer for whom the dosing process is carried out.
Preset mass	Declared dosing net weight.
Sum	Dosed net weight in an adjustment unit.
Difference	Difference between the net value of mass that is to be dosed and a value of automatic dosing threshold.
Dosing correction	Dosing correction value.
Measurement quantity	Number of weighings performed within the dosing process.
Measurements	List of weighings performed within the dosing process.

33.3.4. Formulation Reports

Formulation report is generated automatically after completion of each formulation process. You can preview data for particular reports.

Status	Formulation performance status. Status values: **Ongoing**, **Aborted**, **Completed**.
Start date	Formulation start date.
End date	Formulation end date.
Formulation	Formulation name.
Operator	Operator performing formulation process.
Customer	Customer for whom the formulation is carried out.
Ingredient quantity	Number of formulation ingredients.
Measurement quantity	Number of weighings performed within the formulation cycle.
Lot number	Lot number assigned to a formulation.
Measurements	List of weighings performed within the formulation cycle.
Preset mass	Sum of declared nominal masses of the ingredients.
Sum	Total weight value of the performed formulation.
Difference	Difference between the sum and the value of expected target weight.

33.3.5. Vehicle Weighing Reports

At the end of each vehicle weighing transaction, a vehicle weighing report is generated automatically. You can preview data for particular reports.

Vehicle weighing report number:

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

X	Transaction type, and values: EE – Entry/Exit; CW – control weighing.
yy	Transaction end year.
MM	Transaction end month.
dd	Transaction end day.
HH	Transaction end hour.
mm	Transaction end minute.
ss	Transaction end second.

List of parameters defined for „Entry/Exit" transaction

Status	Transaction status. Values: Completed, Aborted.
Vehicle	Vehicle registration number.
Transaction type	Performed transaction type (Entry/Exit).
Start date	Transaction start date.
End date	Transaction end date.
Load mass	Weight value of vehicle load.
Weighing 1 mass	Weight value of weighing 1.
Weighing 2 mass	Weight value of weighing 2.
Operator	Operator carrying out the transaction.
Product	Transaction-assigned product.
Customer	Transaction-assigned customer.

List of parameters defined for „Control weighing" transaction

Vehicle	Vehicle registration number.
Transaction type	Performed transaction type (Control weighing).
Date and time	Date and time of the performed transaction.
Mass	Weighed vehicle mass.
Operator	Operator carrying out the transaction.
Product	Transaction-assigned product.
Customer	Transaction-assigned customer.

34. IMPORT / EXPORT

Import/export option facilitates the following:
- archiving of reports,
- copying databases between weighing devices of the same series,
- copying parameters between weighing devices of the same series.

Import/export operation can be carried out by means of a USB flash drive comprising **<FAT files system>**.

Procedure:
- Connect the USB flash drive to the USB A port.
- The weighing device detects the USB flash drive automatically, as a result **<Import / Export>** box is displayed.

34.1. Data Export

Function designed to allow export of databases and/or user parameters. **<Export>** submenu functions: All databases, Products, Operators, Formulations, Dosing processes, Vehicles, Packaging, Customers, Non-standard printouts, Universal variables, Weighings, Alibi, Formulations reports, Dosing reports, Vehicle weighing reports, Parameters.

When you run **<All databases>** function, files storing particular database data are saved to the USB flash drive, the file names are correlated with database names.

The file extensions are specific, file-stored data is encoded therefore the file content is not readable for standard computer programs. Data stored in files of weighings and Alibi reports can be read using special RADWAG-designed PC software.

34.2. Data Import

<Import> function allows you to copy databases and operator's parameters between weighing devices of the same series. It is both quick and reliable method of entering data error-free. **<Import>** submenu functions: All databases, Products, Operators, Formulations, Dosing processes, Vehicles, Packaging, Customers, Non-standard printouts, Universal variables, Parameters.
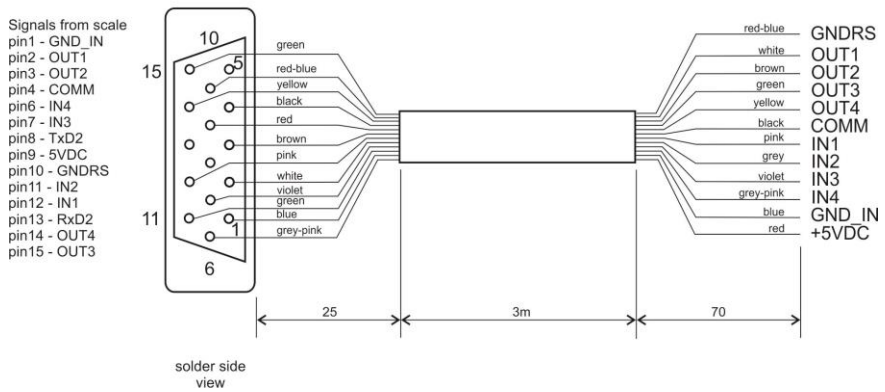
⚠	*Report data cannot be imported.*

35. DIAGRAMS OF CONNECTION CABLES

Scale - computer cable (RS232)

Scale - printer cable (ZEBRA)

Scale - printer cable (EPSON)

SCALE
DSUB15/M

PT0128

Signals from scale
pin1 - GND_IN
pin2 - OUT1
pin3 - OUT2
pin4 - COMM
pin6 - IN4
pin7 - IN3
pin8 - TxD2
pin9 - 5VDC
pin10 - GNDRS
pin11 - IN2
pin12 - IN1
pin13 - RxD2
pin14 - OUT4
pin15 - OUT3

green	
red-blue	red-blue — GNDRS
yellow	white — OUT1
black	brown — OUT2
red	green — OUT3
brown	yellow — OUT4
pink	black — COMM
white	pink — IN1
violet	grey — IN2
green	violet — IN3
blue	grey-pink — IN4
grey-pink	blue — GND_IN
	red — +5VDC

25   3m   70

solder side view

I/O cable

⚠	**„Scale-Ethernet" cable is a standard network cable terminated with RJ45 connectors on both ends.**

36. TECHNICAL SPECIFICATIONS

Maximum quantity of verification units	6000
Maximum impedance of load cell	1200 Ω
Minimum impedance of load cell	50 Ω
Maximum voltage per verification unit	3.25 µV
Minimum voltage per verification unit	0.4 µV
Load cell connection	4 or 6 wires + shield
Load cell excitation voltage	5V DC
Maximum signal gain	19.5 mV
Display	5" colour graphic display
Ingress protection	IP43
Housing	ABS plastic
Maximum number of connected platforms	1
Power supply	10 ÷ 16VDC
Operating temperature	0°C ÷ 40°C
Communication interfaces	2xRS232, USB A, USB B, Ethernet, wireless communication, 4I/O (option)
Multi range option	YES

37. ERROR MESSAGES

⚠	Start mass out of range. Unload the weighing pan.

⚠	High limit of weighing range exceeded. Unload the weighing pan.

⚠	Low limit of weighing range exceeded. Install weighing pan.

⚠	Zeroing out of range. Press tarring button or restart the scale.

⚠	Tarring out of range. Press zeroing button or restart the scale.

⚠	Zeroing/tarring time out of range. Weighing indication unstable.

⚠	Display capacity out of range Unload the weighing pan