User Manual

PUE HY Indicators

Manual number:
ITKU-63-05-01-13-A

RADWAG

MANUFACTURER OF ELECTRONIC WEIGHING INSTRUMENTS

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1. INTENDED USE

Weighing terminals PUE HY are devices intended for tensometer based scales mostly for industry. They are enclosed in stainless steel casings. They can operate in high humidity and wide temperature range from -10°C to +40°C. TFT 5.7” colour graphic displays with touch panels allows for intuitive operation without using keys.

The standard weighing indicator is equipped with USB sockets, RS232 interfaces, Ethernet and digital inputs-outputs 3I/3O. The device can be expanded by connecting 3 additional weighing platforms. Additionally it can work with barcode scanners, receipt printers, label printers, transponder card readers, and some PC equipment (mouse, keyboard, pendrive).

2. PRECAUTIONARY MEASURES

2.1. Precautions

A. Please, read carefully this user manual before and use the device according to its intended use;

B. Weighed loads should be placed in possibly central part of scale pan;

C. Do not clean the device with agents causing corrosion;

D. Weighing pan should be loaded with goods having gross mass lower than maximal capacity of the scale;

E. Do not leave loads on the pan for longer period of time ;

F. In case of failure, immediately disconnect scale power supply;

G. Devices that are to be withdrawn from usage should be utilized according to the law.

2.2. Operation in a strong electrostatic field

If the device is about to operate in a strong electrostatic field (e.g. printing houses etc.) it should be connected to the earthing. Connect it to the clamp terminal signed ⏚.

3. WARRANTY CONDITIONS

A. RADWAG is obliged to repair or change those elements that appears to be faulty because of production and construction reason,

B. Defining defects of unclear origin and outlining methods of elimination can be settled only in participation of a user and the manufacturer representatives,

C. RADWAG does not take any responsibility connected with destructions or losses derives from non-authorized or inappropriate (not adequate to manuals) production or service procedures,

D. Warranty does not cover:

- Mechanical failures caused by inappropriate maintenance of the device or failures of thermal or chemical origin or caused by atmospheric discharge, overvoltage in mains or other random event,
- Inappropriate cleaning.

E. Forfeiture of warranty appears after:

- Access by an unauthorized service,
- Intrusion into mechanical or electronic construction of unauthorized people,
- Installing another operating system,
- Removing or destroying protection stickers.

F. The detailed warranty conditions one can find in warranty certificate.

G. Contact with the central authorized service:
+48 48 384 88 00 ext. 106 or 107.

4. UNPACKING AND MOUNTING

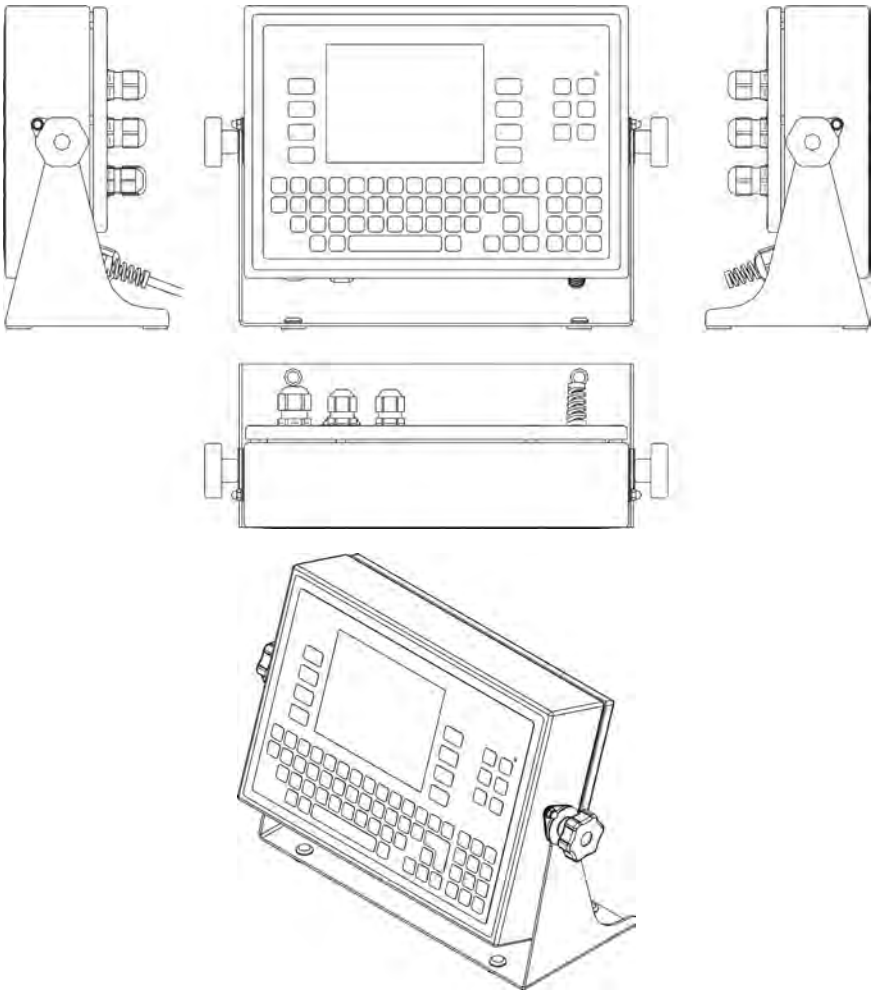
A. Take out the device from the original package,

B. After a weighing platform has been connected the device should be placed on the operation stand on an even and stable ground far away from heat sources,

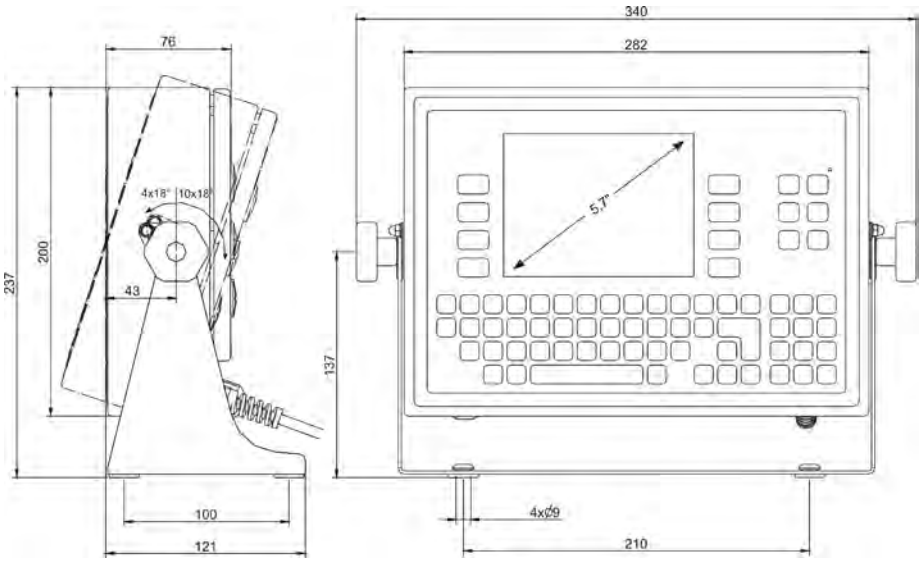
C. Scale should be levelled by turning regulation feet.
Levelling is correct if air bubble is in central position:

5. WEIGHING INDICATOR STRUCTURE

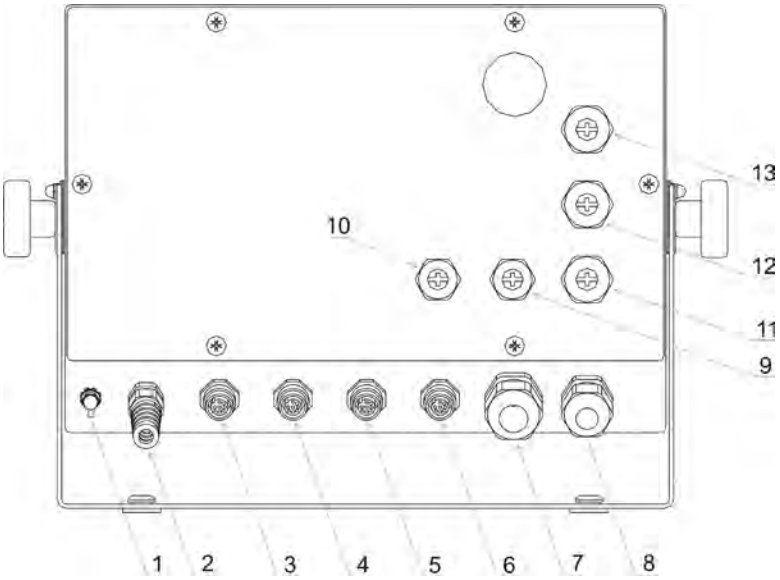
5.1. External view



5.2. Main dimensions

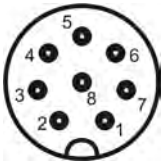
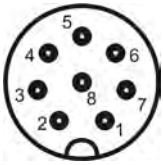
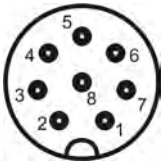


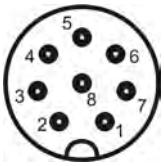
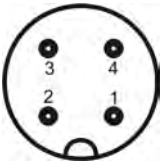
5.3. Description of connectors



1- Earth terminal ground
2- Power cable gland
3- Ethernet connector
4- 3IN/3OUT connector
5- RS232 connector
6- USB connector
7- Gland for optional equipment (8IN/8OUT, etc)
8- Gland for Load cell cable
9- Gland for optional equipment
10- Gland for optional equipment
11- Gland for second load cell cable
12- Gland for 3-thr load cell cable
13- Gland for 4-thr load cell cable

5.4. Sockets descriptions

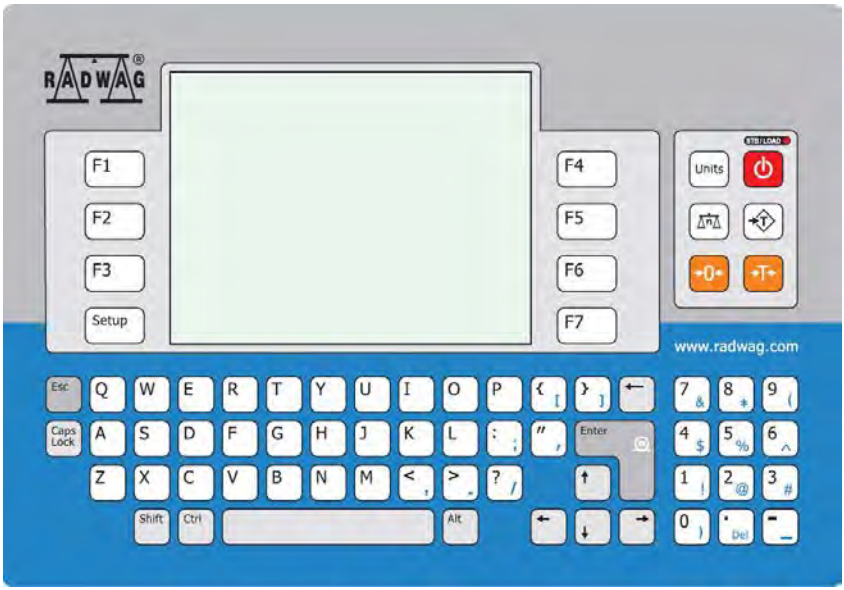
RS232 and optional BUS modules		Pin1 – B Pin2 – RxD Pin3 – TxD Pin4 – A Pin5 – GND Pin6 - +5VDC
Additional RS232		Pin1 – NC Pin2 – RxD Pin3 – TxD Pin4 – NC Pin5 – GND Pin6 - +5VDC
3IN/3OUT		Pin1 – OUT3 Pin2 – OUT2 Pin3 – OUT1 Pin4 – COMM Pin5 – IN3 Pin6 – IN2 Pin7 – IN1 Pin8 – GNDWE

4INPUTS		Pin1 – NC Pin2 – NC Pin3 – NC Pin4 – +24VDC Pin5 – IN3 Pin6 – IN2 Pin7 – IN1 Pin8 – IN4
Ethernet		Pin1 – Rx+ Pin2 – Tx+ Pin3 – Rx- Pin4 – Tx-
USB		Pin1 – Vcc Pin2 – D- Pin3 – D+ Pin4 – GND

6. GETTING STARTED

- After the terminal is connected to power the STB/LOAD  diode starts to light.
- Press  to start the operating system loading procedure. Windows CE together with RADWAG software loading is signalled by blinking the red diode ON/LOAD.
- When the loading procedure is completed the main software window appears.

7. KEYPAD OVERLAY



8. FUNCTIONS OF KEYS

Key	Description
	Turning on/off the scale
Units	Toggling between weight units
	Changing active platform
	Inscribing tare value
	Zeroing
	Tarring
Enter	Printing out the result or confirming some entered data

Function key (entering the menu)

Programmable key

9. PROGRAM STRUCTURE

The main menu has been divided into twelve functional groups.
In every group there are parameters of similar use.

9.1. Main menu items

Pictogram	Description
	Scale
	Databases
	Working Modes
	Communication
	Devices
	Display
	Inputs / Outputs
	Authorization
	Units
	Other
	User Adjustment
	Info
	Update

9.2. Inventory of parameters

9.2.1. Scale parameters - weighing

Pictogram	Description	Value
	Median Filter	0.5
	Filter	Fast
	Autozero	
	LO threshold	0.1
	Last digit	Always

9.2.2. Working modes

Pictogram				Description	Value
				Accessibility	-
				Weighing	
				Parts counting	
				Percent setup	
				Dosing	
				Formulation	
				Animal weighing	
				Density	
				CPG	
				Weighing	-
				Save Mode	Manual, each stable
				Down-weighing	

				Checkweighing	✓
				Tare mode	Single
				Labelling mode	-
				Number of labels	1
				No. of cumulative labels	1
				No. of CC labels	1
				C label automatic triggering	-
				Mode	None
				Threshold	100
				CC label automatic triggering	-
				Mode	None
				Threshold	100
				Statistics	Global
				Peak hold	✓
				Parts counting	-
				Automatic correction of reference mass	✓
				Minimum reference mass	10d
				Save Mode	Manual, each stable
				Down-weighing	✓
				Checkweighing	✓
				Tare mode	Single
				Labelling mode	-

				Number of labels	1
				No. of cumulative labels	1
				No. of CC labels	1
				C label automatic triggering	-
				Mode	None
				Threshold	100
				CC label automatic triggering	-
				Mode	None
				Threshold	100
				Statistics	Global
				Percent setup	-
				Save Mode	Manual, each stable
				Down-weighing	
				Checkweighing	
				Tare mode	Single
				Labelling mode	-
				Number of labels	1
				No. of cumulative labels	1
				No. of CC labels	1
				C label automatic triggering	-
				Mode	None
				Threshold	100

				CC label automatic triggering	-
				Mode	None
				Threshold	100
				Statistics	Global
				Dosing	-
				Ask for multiplier	
				Ask for number of cycles	
				Confirm batching ingredients manually	
				No. of weighings for calculating the correction	0
				Global	-
				Batching outputs	-
				Output 1	0
				Output 2	0
				Output 3	0
				Output 4	0
				Output 5	0
				Output 6	0
				Output 7	0
				Output 8	0
				Output 9	0
				Output 10	0
				Output 11	0
				Output 12	0

				Bulk batching output	-
				Output 1	0
				Output 2	0
				Output 3	0
				Output 4	0
				Output 5	0
				Output 6	0
				Output 7	0
				Output 8	0
				Output 9	0
				Output 10	0
				Output 11	0
				Output 12	0
				Correction	0
		MAX		Maximum correctional value	0
				Formulation	-
				Ask for multiplier	✓
				Ask for number of cycles	✓
				Confirm batching ingredients manually	✓
				Automatic tare	✓
				Ingredient control	✓
				Portion weighing	✓
				Report printout	✓
				Animal weighing	-

				Averaging time	5
				Automatic mode	✓
				Checkweighing	✓
				Tare mode	Single
				Labelling mode	-
				Number of labels	1
				No. of cumulative labels	1
				No. of CC labels	1
				C label automatic triggering	-
				Mode	None
				Threshold	100
				CC label automatic triggering	-
				Mode	None
				Threshold	100
				Statistics	Global
				Density	-
				Standard liquid	Water
				Temperature	21
				Standard liquid density	1
				Sinker volume	0
				Ask abort sample number	✓
				Pycnometer mass	0
				Pycnometer density	0

				Unit	g/cm^3
				Save Mode	Manual, each stable
				Checkweighing	
				Tare mode	Single
				Statistics	Global
				CPG	-
				Save Mode	Manual, each stable
				Number of accessible controls	1
				Ask for batch number	
				Password required	

9.2.3. Communication

Pictogram		Description	Value
		RS 232 (1)	-
		Baud Rate	9600
		Data bits	8
		Stop bits	1
		Parity	None
		RS 232 (2)	-
		Baud Rate	9600
		Data bits	8
		Stop bits	1

		Parity	None
		Ethernet	-
		DHCP	
		IP Address	192.168.0.2
		Subnet mask	255.255.255.0
		Gateway	192.168.0.1
		DNS	192.168.0.1
		MAC Address	-
		Tcp	-
		Port	4001

9.2.4. Devices

Pictogram			Description	Value
			Computer	
			Port	None
			Address	1
			Continuous transmission	
			Weighing Printout Template	-
			E2R System	-
			System is active	
			Lock selecting products	
			Printer	-

			Port	RS 232 (1)
			Code page	1250
			Printouts	-
			Weighing printout template	See ch. 16.2.3
			Cumulative printout template	See ch. 16.2.3
			Cumulative printout template for cumulative data	See ch. 16.2.3
			Adjustment report printout template	See ch. 22.3
			Dosing report printout template	See ch. 28.7
			Formulation report printout template	See ch. 29.5
			Printout Template of an Ingredient in a Formulation	See ch. 16.2.3
			CPG report printout pattern (Control of Packacked Goods)	See ch. 30.14
			Average tare report printout pattern (Control of Packacked Goods)	See ch. 30.13
			Density printout template	See ch. 31.4
			Product printout template	See ch. 16.2.3
			Operator printout template	See ch. 16.2.3
			Client printout template	See ch. 16.2.3
			Warehouse printout template	See ch. 16.2.3
			Package printout template	See ch. 16.2.3
			Barcode reader	-
			Port	None
			Prefix	01

			Suffix	0d
			Field selection	See ch. 16.3.3
			Test	See ch. 16.3.4
			Transponder card reader	-
			Port	None
			Additional display	-
			Port	None
			Template	See ch. 16.5.2

9.2.5. Display

Pictogram			Description	Value
			Text information	-
			Displaying template	See ch. 17.1.1
			Left displaying template	See ch. 17.1.1
			Right displaying template	See ch. 17.1.1
			Font	-
			Type	Courier
			Font size	Small
			Bold	
			Tilt	
			Colour	Black
			Background colour	Light grey

			Set Default	-
			Button functions	See ch. 17.2
			Show all platforms	
			Bargraph	-
			Bargraph type	None
			Fast weighing	-
			MIN, MAX thresholds working mode	Unstable
			OK threshold working mode	Unstable
			Min threshold signalling colour	Red
			OK threshold signalling colour	Intense green
			Max threshold signalling colour	Red
			Gradient	
			Background colour	Black
			Frame colour	White
			Signalling checkweighing ranges	-
			MIN, MAX thresholds working mode	Unstable
			OK threshold working mode	Unstable
			Min threshold signalling colour	Red
			OK threshold signalling colour	Intense green
			Max threshold signalling colour	Red
			Gradient	
			Background colour	Black
			Frame colour	White

			Linear	-
			Min threshold signalling colour	Red
			OK threshold signalling colour	Green
			Max threshold signalling colour	Red
			Min Max range background colour	Turquoise
			OK range signalling colour	Turquoise
			Gradient	

9.2.6. Inputs / Outputs

Pictogram		Description	Value
		Inputs	-
		Input 1	None
		Input 2	None
		Input 3	None
		Input 4	None
		Input 5	None
		Input 6	None
		Input 7	None
		Input 8	None
		Input 9	None
		Input 10	None
		Input 11	None
		Input 12	None

		Outputs	-
		Output 1	None
		Output 2	None
		Output 3	None
		Output 4	None
		Output 5	None
		Output 6	None
		Output 7	None
		Output 8	None
		Output 9	None
		Output 10	None
		Output 11	None
		Output 12	None

9.2.7. Authorization

Pictogram		Description	Value
		Anonymous operator	Operator
		Date & Time	Administrator
		Printouts	Administrator
		Databases	
		Products	Administrator
		Clients	Administrator
		Dosing processes	Administrator

		Formulations	Administrator
		Packages	Administrator
		Warehouses	Administrator
		Labels	Administrator
		Weighing counter	Administrator
		Delete older data	Advanced Operator

9.2.8. Units

Pictogram		Description	Value
		Accessibility	-
		g	
		ct	
		lb	
		oz	
		N	
		Start unit	None
		Defined unit 1	-
		Multiplier	0
		Name	-
		Defined unit 1	-
		Multiplier	0
		Name	-
		Acceleration of gravity	9.80665

9.2.9. Other

Pictogram	Description	Value
	Language	Polish
	Date & Time	-
	Beep	Yes
	Touch screen calibration	-
	Screen brightness	-
	Cursor	

9.2.10. User Adjustment

An option only for non-verified scale

Pictogram	Description	Value
	Setting of start mass	-
	Adjustment	-
	Report printout	
	Adjustment track record	-

9.2.11. Info

Submenu <  **Info>** is for viewing information:

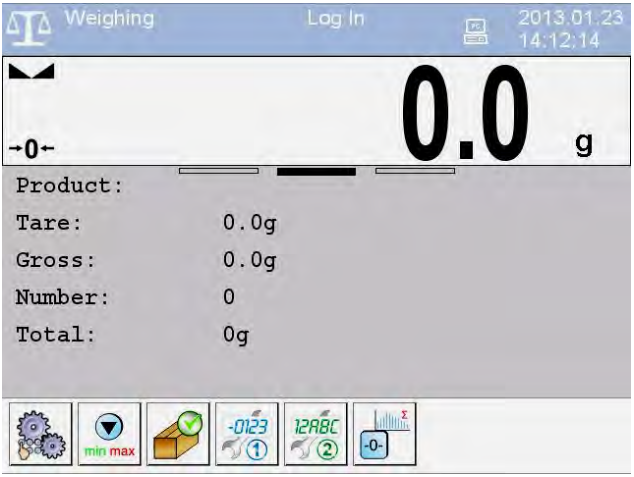
- Scale factory number,
- Program version,
- Scale program version.

9.2.12. Update

Pictogram	Description	Value
	Software version on server	Check version
	Update from server	-
	Update from pendrive	-
	Changes in software	-

10. INDICATING WINDOW

Main view:

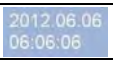


In the main application window one can see four separate parts:

- Upper bar,
- Weighing window,
- Workspace,
- Function keys.

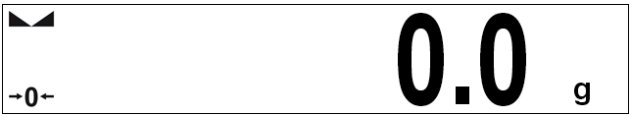
10.1. Upper bar

The upper bar on the display contains the following data:

	Pictogram and name of an active working mode
	Logged user
	Pictogram of an active connection with a computer
	Date and time

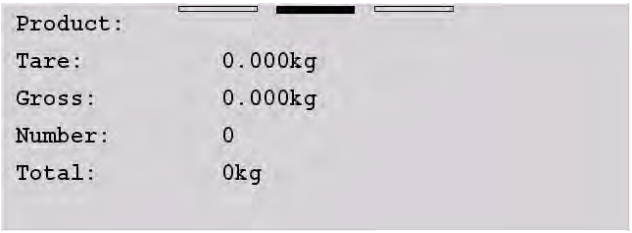
10.2. Weighing window

The weighing window contains data on carried out weighing process:



10.3. Workspace

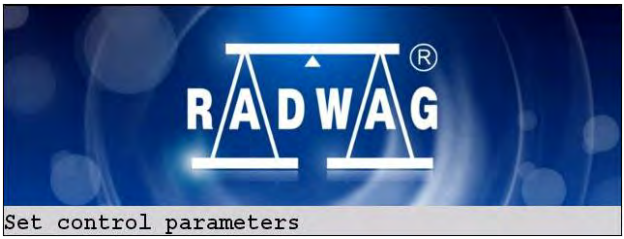
The workspace is located under the weighing window:



The workspace features three displaying templates. The upper section of the workspace comprises a graphic information on which of the three templates is enabled. Changing of the template is carried out by draging the workspace to the right or left.

The data conatined in the workspace is optionally programmable for each of the working modes. The default template format is described in point 17.1.1 of this user manual.

Notice:
An exception is an "initial workspace window" in the CPG mode, containing a logo and non-editable anvigating line:



10.4. Function keys

Below the workspace area there is a set of on-screen function keys:

The on-screen function keys are editable in each of the wavailable working modes. The procedure of enabling/disabling function keys is desribed in point 17.2 of this user manual.

11. LOGGING IN

In order to have full access to user parameters and databases, the user should log in as an **<Administrator>**.

11.1. Logging in procedure

- While in the main window press **<log in>** text located in the upper bar of the display and the window with operators attributed to **<Admin>** will appear,

- After entering **<**  **Admin>** a screen keyboard runs with editing window for inscribing a password,
- Type password **„1111”** and confirm by pressing  ,
- The program returns to the main window and in the title bar you will see **<Admin>** instead of **<log in>**.

11.2. Logging out procedure

- While in the main applilcation window press the name of a logged in operator in the upper bar on the screen to open the database of operators,
- Press logging out button situated in the top bar of the operators' database window:

- The program returns to the main window and in the upper bar the operators name is substituted by **<Log in>**.

11.3. Authorization access levels

Weighing software uses four access levels: administrator, advanced operator, operator, none. Every user with any attributed access level can perform weighings and select data from in databases to be used during weighing.

Access to user parameters, databases and working modes depending on the authorization access level attributed:

Operator type	Access level description
None	No access to user parameters. No weighing can be confirmed. Cannot start procedure „CPG”. Cannot enter the reference mass unit and estimate the reference mase unit by weiging in „Counting Pieces” and „Deviations”, density determination, carrying out dosing and formulation making processes. No access to <Export the weighing database to a file> in menu <Databases>[2)].

Operator	Access to parameters in submenu: <Weighing>, <Display>[1] (excluding the group <Actions>), <Others>[1]. Can start and perform all weighing procedures. Access to <Export the weighing database to a file> in menu <Databases>[2].
Advanced Operator	Access to parameters in submenus: <Weighing>, <Working modes>, <Communication>, <Devices>[1], <Display>[1], <Others>[1]. Can start and perform all weighing procedures. Access to <Export the weighing database to a file> in menu <Databases>[2].
Administrator	Access to all user parameters, functions and databases[2]. Can start and perform all weighing procedures.

1. Authorization level for editing functions:

   - **<Printouts>** in submenu **„Devices / Printer”**,
   - **<Sample>** in submenu **„Devices / Additional display”**,
   - **<Displaying template>** in submenu **„Display / Text information”**,
   - **<Date and Time>** in submenu **<Others>**,

   The functions are declared in submenu **<Authorizations>**, which is accessable only for users with the **<Administrator>** authorization level (see ch. 19 of this manual).

2. A user logged in as **<Administrator>** in submenu **<Authorizations>** (see ch. 19 of this manual) can change authorization levels for accessing different databases and functions: **<Delete older data>**, **<Weighing counter>**. The exception are database **<Weighings / Alibi>**, that have the status **„Read only”**.

12. NAVIGATING WITHIN THE MENU

Owing to the colour display with the touch panel navigating within the menu is simple and intuitive.

12.1. Keys

Entering the main menu

Menu list „up”

Menu list „down”

Menu list „top”

Menu list „end”

Scrolling „up-down”


or


Enter (OK)


or


Abort

Add a new item in a database

Disabeling the formerly selected record e.g. logging out the operator

Searching a database according to a date

Searching a database according to a name

Searching a database according to a code

Printing on item from a database

Clearing an editing field

Screen keyboard on / off

Reading a printout template from a *.lb file
(active after connecting a pendrive)

*Saving printout template in a file format *.lb (option enabled on plugging a portable data storage device to scale port)*

Variables for a printout template


or 

One level up

Immediate exit to the main window

12.2. Return to weighing

Chnages made to the scale's settings are automatically saved in the memory on returning to the main software window. The scale provides two ways of returning to the main window:

- By pressing  or  key for a few times until returning to the main window,
- By pressing  key in the upper bar, which causes immediate returning to displaying the main window.

13. WEIGHING

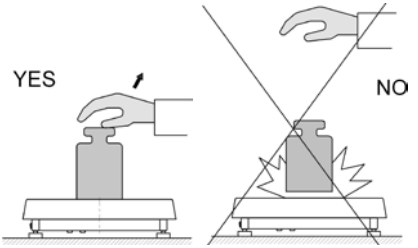
Put a load on the weight pan. When pictogram ◣◢ is displayed the indication is ready to read.

Notice:
A weighing can be saved after stabilising a measurement (pictogram ◣◢).

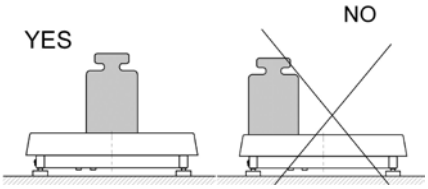
13.1. Conditions of operational use

In order to assure a long term operating period with appropriate measurements following principles should be adhered to:

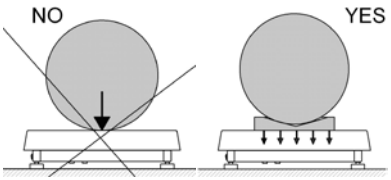
- Avoid applying mechanical shocks to the weight pan:



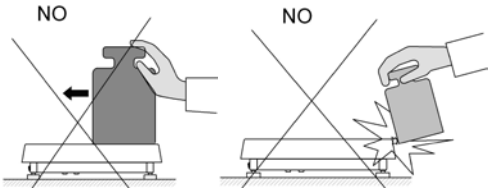
- Loads should be placed in the centre of the pan (eccentric errors are outlined in PN-EN 45501 chapter 3.5 and 3.6.2):



- Do not apply concentrated forces (all load in one point):



- Avoid side loads, particularly side strokes:

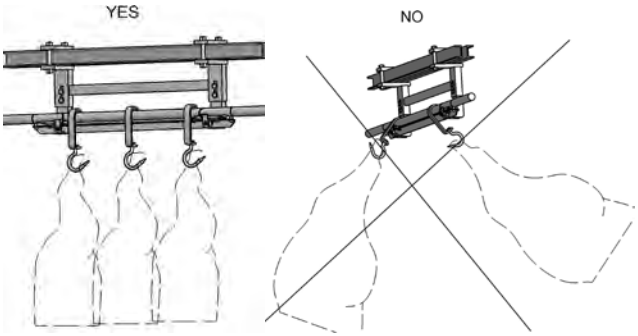


Special line scales should be loaded with intended loads:

- For ramp scales (hand trucks used in meat industry) the platform should be matched to the trucks with maximum weight and the wheels were close to the load-bearing sections:

- For livestock scales – swine, cattle:
  - platforms with low railing for swine,
  - platforms with high railing reinforced connecting links at the top edge.

- For overhead scales (goods hung on hooks) adapted to underslung tracks:
  - Hooks appropriate for the track and scale,
  - Smooth travelling along the load cell without jerks and movements aside,
  - Tensometer (load cell) loaded uniformly.



13.2. Zeroing

In order to zero the indication choose a platform on the touch panel and press  . After zeroing is performed the indication is equal zero and following symbols usually appear: →0← and ◣◢.

Zeroing is possible only when the indication is stable.

Notice:
*Zeroing is possible only within **±2%** of full range around zero. If the zeroed value is beyond the interval of **±2%, Err2** is displayed.*

13.3. Tarring

In order to tare the scale choose a platform on the touch panel if necessary, put a package on the pan and press  . You will see the indication equal zero and following symbols usually appear: ***Net*** and ◣◢.

After placing a load on the weight pan net mass will be shown. Tarring is possible within the whole range of the scale. After unloading the pan the display shows the tarred value with minus sign.

You can also inscribe tare values to the product database. Every product has a field “Tare”. In that case tare is automatically set to this value after selecting the product.

Notice:
*Tarring cannot be performer when a negative or zero value is being displayed. In such case **Err3** appears on the display.*

13.4. Inscribing tare

It is possible to inscribe a tare value.

Procedure:

- While in any work mode press  , then the screen keyboard is displayed,
- Inscribe tare and press  ,

- The program returns to weighing and the and the display shows the entered value with the **„–”** sign provided there was zero before on the display.

13.5. Weighing for dual range scales

Switching between the **I range** and the **II range** happens automatically (exceeding Max of the **I range**).

Weighings in the second range is signalled by a pictogram in the top left corner of the display →|2|← . Then weighings is done with the accuracy of the **II range** to the moment of returning to zero (autozero range →0←) where the scale switches back to the **I range**.

Switching between the **II range** and **I range** is automatic both in the switching point the autozero zone. While in AUTOZERO – pictogram →0← appears. Then pictogram →|2|← is off and a scale returns to weighing in the **I range**.

13.6. Toggling between weighing units

Operators can change the weight unit in two ways:

- Pressing the unit symbol on the screen,
- Pressing formerly defined button **<** kg lb **Change unit>**.

Possible selection:

- gram [g]
- kilogram [kg]
- carat [ct]
- pound [lb]
- ounce [oz] *
- Newton [N] *

***) –** weighing unit inaccessible in a verified scale

Notice:

1. *The user can also declare the start unit and determine two custom weighing units (user defined) – see point 20 of this user manual;*
2. *The procedure of attributing functions to buttons is described in ch. 17.2 of this manual.*

14. SCALE PARAMETERS

Users can set the scale according to the ambient conditions (filtering level) or own needs (autozero) and set the LO threshold for minimum load that enables operation of some functions. This parameters are placed in **<** **Weighing>**.

In order to enter submenu **<** **Weighing>,** press Setup and then: **„** **Weighing”**.

Notice:
Weighing parameters are directly related to a specific weighing platform, so at the beginning the weighing platform should be selected for which we want to set parameters.

Inventory of scale parameters:

- Median Filter
- Filter
- Autozero
- LO Threshold
- Last digit

14.1. Median filter

The median filter is intended for eliminating short-lasting mechanical shocks.

Procedure:

- Enter <  **Weighing>** according to ch. 14 of the manual, select <  **Median Filter>** and then set an appropriate value.

Accessible settings:

None - median filter is off
0.5, 1, 1.5, 2, 2.5 - filtering level to choose

14.2. Filter

This filter is intended to suppress continuous mechanical vibrations at the cost of stabilization time.

Procedure:

- Enter <  **Weighing>** according to ch. 14 of the manual, select <  **Filter>** and then set an appropriate value.

Accessible settings:

None, V.Fast, Fast, Average, Slow.

Notice:
The higher filtering level the longer stabilization time.

14.3. Autozero

The autozero function has been implemented in order to assure precise indications. This function controls and corrects **„0”** indication.

While the function is active it compares the results continuously with constant frequency. If two sequentional results differ less than the declared value of autozero range, so the scale will be automatically zeroed and the pictograms and will be displayed.

If AUTOZERO is disabled zero is not corrected automatically. However, in particular cases, this function can disrupt the measurement process e.g. slow pouring of liquid or powder on the weighing pan. In this case, it is advisable to disable the autozero function.

Procedure:

- Enter  **Weighing>** according to ch. 14 of the manual, select  **Autozero>** and then set an appropriate value.

Accessible settings:

 - Autozero off
- Autozero on

14.4. Minimum weight for different functions (LO)

Parameter **<LO THRESHOLD>** is associated with automatic weighing. Next weighing will not be saved until the indication goes under the **THRESHOLD LO** (net).

Procedure:

- After entering  **Threshold Lo>** according to ch. 14 of this manual a keyboard is displayed,
- Inscribe LO and confirm by pressing  .

14.5. Last digit

The last digit option  **Last digit>** is to switch off the last digit of measured mass indication – the measurement is carried out with decreased accuracy.

Procedure:

- Enter group of parameters  **Weighing>** in accordance with ch. 14 of this user manual, select parameter  **Last digit>** and set its desired value.

Accessible settings:

Always	-	Last digit always visible
Never	-	Last digit always switched off
When stable	-	Last digit visible only on stable indication of mass

15. COMMUNICATION

The scale can communicate with external devices via different ports:

- RS232 (1),
- RS232 (2),
- Ethernet,
- Tcp.

The communication can be configured in parameters' group **<Communication>**.

In order to enter **<Communication>**, press Setup and then: **„Communication"**.

15.1. RS 232 settings

Procedure:

- Enter **<Communication>** according to ch.15 of the manual, select **<RS232 (1)>** or **<RS232 (1)>**, and then set an appropriate value.

For RS 232 following parameters are accessible:

- Baud Rate - 4800, 9600, 19200, 38400, 57600, 115200 bit/s
- Data bits - 5, 6, 7, 8
- Stop Bit - No, 1, 1.5, 2
- Parity - No – Odd – Even – Mark – Space

15.2. ETHERNET setting

Procedure:

- Enter **<**  **Communication>** according to ch.15 of the manual, select **<**  **Ethernet>** and then set an appropriate value.

Following settings are accessible for Ethernet:

- DHCP -  Yes –  No
- IP Address - 192.168.0.2
- Subnet Mask - 255.255.255.0
- Default gateway - 192.168.0.1
- DNS - 192.168.0.1
- MAC Address - ---

Notice:

1. *The above settings are presented for information purpose only. Transmission parameters have to be selected in accordance with client's local network settings.*
2. *Parameter* ***<MAC Address>*** *is automatically assigned to a device and it is has* ***<Read only>*** *Attribute.*
3. *In case of declaring the* ***<DHCP>*** *parameter to value*  *and on device restart, the other transmission parameters have* ***<Read only>*** *attribute.*

- After making changes press  key, then a new message is displayed: **<Restart to apply the changes>**,

- Go back to weighing and restart the device.

15.3. TCP protocol setting

TCP *(Transmission Control Protocol)* is a protocol for communication between two computers. It operates in mode client-server. Server awaits on connection iniciation on a specified port while client initiates connection to the server. Scale software allows setting the port for the **„Tcp"** protocol.

Procedure:

- Enter **<** **Communication>** parameter group as described in chapter 16 of the manual,
- Select: **„Tcp / Port”** then you will see window **<Port>** with the screen keyboard,
- Enter the required number and press .

Notice:
*The number of **TCP** port in **RADWAG** instruments is set to default value: **4001**.*

16. DEVICES

16.1. Computer

The scale can cooperate with a computer. Active connection **scale-computer** is signalled by icon in the top bar of the main window. In submenu **<Computer>** some settings needs to be configured for cooperation with computers.

Enter submenu **<Computer>**, press Setup and then: **„Devices / Computer”**.

16.1.1. Computer port

Procedure:

- Enter parameters' group **<Devices>** according to ch. 16 of this manual,
- Select **„Computer** / **Port”** and then set the appropriate option.

The scale can communicate with a computer via following ports:

- RS232 (1),
- RS232 (2),
- Tcp.

16.1.2. Computer address

Procedure:

- Enter **<** **Devices>** parameter group as described in chapter 16 of the manual,
- Choose **„Computer** / **Address”** then the window **<Address>** with the screen keyboard appears,
- Enter the required address and confirm it by pressing .

16.1.3. Continuous transmission

Users can enable continuous transmission from the scale to a computer. Setting parameter **< Continuous transmission>** starts subsequent sending data from **<Weighing Printout Template>** set in submenu: **„Setup / Devices / Computer / Weighing Printout Template”**.

Procedure:

- Enter parameters' group **<** **Devices>** according to ch. 16 of this manual,
- Choose **„Computer** / **Continuous transmission”** and then set an appropriate value.

Accessible settings:

- Continuous transmission off
- Continuous transmission on

16.1.4. Weighing printout template

Users in parameter **<Weighing Printout Template>** can define variables included in the printout from the scale to a computer.

Procedure:

- Enter **<** **Devices>** parameter group as described in chapter 16 of the manual,
- Choose **„** **Computer** / **Weighing Printout Template”** then the editing field **<Weighing Printout Template>** with the screen keyboard appears,
- Modify the template if necessary and confirm the changes by pressing .

Notice:

There are additional buttons in the bottom line of the screen keyboard. They can be used while modifying a printout template.:

Screen keyboard on/off

*Reading a printout template from a *.lb file (button active while connecting a USB pendrive)*

*Saving printout template in a file format *.lb (option enabled on plugging a portable data storage device to scale port)*

List of variables for printout templates (see the list in APPENDIX A of this manual)

Clear the editing field

16.1.5. Cooperation with “E2R System”

Scales can cooperate with computer software **„E2R System”** that is a modular system for complex production supervising by monitoring of weighings processes. In order to allow the cooperation with **„E2R System”** enable parameter **<** **E2R System>**.

Notice:

The parameter < ***E2R System>*** *can be activated by an authorized service or the manufacturer.*

Procedure:

- Enter **<** **Devices>** parameter group as described in chapter 16 of the manual,
- Choose **„Computer** / **E2R System** / **System is active”** and then set an appropriate value.

Accessible settings:

- System is not active
- System is active

- If during cooperation with **<E2R System>** product selection lock is required for operators, go to parameter **<Lock selecting products>** and set its value to .
- Active connection with the computer software is indicated by additional information displayed in the upper bar of the software:

Where:

- parameter active **<System is active>**


- active connection with a computer software

16.2. Printer

In **<Printer>** submenu users can:

- Setting communication with a printer,
- Setting code page of a printer,
- Setting templates of printouts.

To enter **<Printer>**, press Setup and then: **„Printer”**

16.2.1. Printer port

Procedure:

- Enter **<**  **Devices>** parameter group as described in chapter 16 of the manual, choose **„**  **Printer** /  **Port”** and then select an appropriate option.

Printers can be attached to:

- RS232 (1),
- RS232 (2),
- USB,
- Tcp.

16.2.2. Printer code page

Procedure:

- Enter parameters **<**  **Devices>** as described in chapter 16 of the manual,
- Choose **„**  **Printer /**  **Code Page”** then the screen keyboard will be displayed,
- Write the required code page and confirm by pressing  .

  Notice:
  The default value is 1250 – code page for Middle-East Europe.

16.2.3. Templates for printouts

Enter **<**  **Printouts>** to define printout templates.

Procedure:

- Enter parameter group **<**  **Devices>** as described in chapter 16 of the manual, then choose **„**  **Printer /**  **Printouts”**,

- After editing a template a memo box with the default content and the screen keyboard,
- Modify the template according to your requirements and confirm it by pressing  .

Notice:

There are additional buttons in the bottom line of the screen keyboard. They can be used while modifying a printout template.:

Screen keyboard on/off

*Reading a printout template from a *.lb file (button active while connecting a USB pendrive)*

*Saving printout template in a file format *.lb (option enabled on plugging a portable data storage device to scale port)*

List of variables for printout templates (see the list in APPENDIX A of this manual)

Clear the editing field

Default printouts' settings:

	Weighing Printout Template	{0}
	Cumulative Printout Template	N={15} SUM={16}
	Cumulative of Cumulative Printout Template	N2={20} SUM2={21}
	Dosing report printout template	See ch. 28.7
	Formulation report printout template	See ch. 29.5
	Printout Template of an Ingredient in a Formulation	-
	CPG report printout pattern (Control of Packaed Goods)	See ch. 30.14
	Average tare report printout pattern (Control of Packaed Goods)	See ch. 30.13
	Density printout template	See ch. 31.4

	Product Printout Template	{50} {51}
	Operator Printout Template	{75} {76}
	Client Printout Template	{85} {86}
	Warehouse Printout Template	{130} {131}
	Package Printout Template	{80} {81} {82}
	Adjustment report printout template	See ch. 22.3

16.3. Barcode scanner

The balance allows for cooperation with a barcode scanner. The scanner can be used for quick search of:

- Products,
- Clients,
- Packages,
- Warehouses,
- Dosing process,
- Formulation,
- Universal variables,
- Lot number,
- Batch number.

Configuration of communication can be configured in:
“ 

/  **Devices /**  **Barcode reader”**.

Notice:

In submenu <  ***Communication>*** *set the baud rate (default 9600b/sec). The detailed description of cooperation scale – barcode scanner can be found in* ***APPENDIX F*** *in this manual.*

16.3.1. Port for barcode scanner

Procedure:

- Enter **<**  **Devices>** according to ch.16 of the manual, choose **„**  **Barcode reader** /  **Port”** and then set the appropriate value.

Barcode scanners can be connected to:

- RS232 (1),
- RS232 (2).

16.3.2. Prefix / Suffix

Users can edit a prefix **<**  **Prefix>** or / and suffix **<**  **Suffix>** in order to adjust the program to accept transmission frames from the scanner.

Notice:
*A special protocol is required in order the code be received by RADWAG equipment. It is required to program an appropriate prefix and suffix. Prefix – one byte 01 hexadecimally, suffix one byte 0D hexadecimally. The detailed description of cooperation scale – barcode scanner can be found in **APPENDIX F** in this manual.*

Procedure:

- Enter **<**  **Barcode Scanner>** according to ch.16.3 of the manual,
- Chose parameter **<**  **Prefix>** and then enter, using the screen keyboard, a required value (hexadecimal) and confirm it by pressing  .
- Chose parameter **<**  **Suffix>** and then enter, using the screen keyboard, a required value (hexadecimal) and confirm it by pressing  .

16.3.3. Field selection

This option is connected with selecting data which the program will search after reading a barcode.

Procedure:

- Enter **<**  **Devices>** according to ch.16 of the manual,
- Chose **„**  **Barcode Scanner** /  **Field selection”** and then the following list will be displayed:

 Product

 Client

 Package

 Source warehouse

 Destination warehouse

 Dosing process

 Formulation

 Universal variable

 Lot number

 Batch number

- Select an item and then you can edit following parameters:

	**Filtering**	Declaring an item, according to which searching is supposed to be performed
	**Offset**	Setting the first significant character in code from which the comparison with items is performed during searching. All preceding characters are skipped
	**Code length**	Setting the number of characters to be taken for the search procedure counting form Offset
	**Start marker**	Start marker declaration
	**End marker**	End marker declaration

Notice:

An exception from the above is < ***Formulation>****, which features an additional submenu <* ***Ingredient>*** *containing the following parameters:*

	Filtering	Declaring an item, according to which searching is supposed to be performed (options: **None**, **Code**)
	Offset	Setting the first significant character in code from which the comparison with items is performed during searching. All preceding characters are skipped
	Code length	Setting the number of characters to be taken for the search procedure counting form Offset
	Start marker	Start marker declaration
	End marker	End marker declaration

Inventory of items to be selected for filtering:

Record	**Item for filtering**
Product	None, Name, Code, EAN Code
Client	None, Name, Code
Package	None, Name, Code
Source warehouse	None, Name, Code
Destination warehouse	None, Name, Code
Dosing process	None, Name, Code
Formulation	None, Name, Code
Universal variable	None, Code
Lot number	No, Yes
Batch number	No, Yes

16.3.4. Test

Operators, using parameter <TEST **Test>,** can verify if a barcode connected to the scale works properly.

Procedure:

- Enter submenu **<** **Barcode Scanner>** according to ch. 16.3 of this manual,
- After entering parameter **<** **Test>** window **<Test>** is opened with an ASCII text box and HEX (hexadecimal) field,
- After scanning the code is entered to the ASCII field and HEX filed and at the bottom of the window a test result is displayed.

When:

- **<Prefix>** and **<Suffix>** declared in settings are the same as **<Prefix>** and **<Suffix>** in the read code then the test result is **<Positive>**,
- **<Prefix>** and **<Suffix>** declared in settings are not the same as **<Prefix>** and **<Suffix>** in the read code then the test result is **<Negative>**.

16.4. Transponder card reader

Selecting operator (logging in) can be done in two ways:

- Typing a password on a keyboard,
- Approaching a transponder card to the reader.
  The card needs to be registerd first.

Notice:

In case of problems with reading transponder cards check the submenu ***<Communication>*** *and set appropriate baud rate (default 9600b/s).*

16.4.1. Com port for transponder card readers

Procedure:

- Enter group of parameters **<** **Devices>** according to ch. 16 of this manula, select **„** **Transponder cards reader** / **Port”** and set appropriate option.

The scale can communicate with the reader via following ports:

- RS232 (1),
- RS232 (2).

16.4.2. Procedure of attributing the card number to an operator

To use a transponder card to log on an operator the card needs to be ascribed to the operator in the database of operators.

Procedure:

- Connect the transponder card reader to the required communication port (RS 232 (1) or RS 232 (2)),
- Choose a communication port for the reader (see ch. 16.4.1 in this manual),
- In submenu **<**  **Communication>** set the baud rate to the same as in the reader (default 9600b/s),
- Enter the database of operators and edit the selected operator going to the field **<**  **Card Number>**,
- After entering the field **<**  **Card Number>** you will see the editing field **<Card Number>** with the screen keyboard,
- Having approached the card to the reader the program automatically displays in editing field **<Card Number>** the number of read card,
- Confirm the number by pressing  and return to weighing.

16.5. Additional display

16.5.1. Additional display port

Procedure:

- Enter parameters group **<**  **Devices>** according to ch. 16 of this manual, select **„**  **Additional display** /  **Port”** and then choose an appropriate option from the list.

Communication with additional displays can be performed via following ports:

- RS232 (1),
- RS232 (2),
- Tcp.

16.5.2. Communication protocol frame

PUE HY weighing indicator with following displays:

- WD display,
- WWG display.

To start cooperation of PUE HY with displays go to parameter **<Sample>** and define an appropriate communication protocol.

Procedure:

- Enter parameters' group **<Devices>** according to ch. 16 of this manual,
- Choose **„Additional display** / **Sample"** then the editing field **<Sample>** with the screen keyboard appears,
- Inscribe the required frame template using the screen keyboard or choose the it from the list after pressing .

  Specified templates for displays:

  {141} - Protocol template for WD displays
  {142} - Protocol template for WWG display

- Confirm the changes by pressing .

Notice:

In default settings parameter ***<Sample>*** *has ascribed* ***{141}*** *(display WD series).*

17. DISPLAY

Users can adapt the main display and visible information to their needs. All parameters of the display can be found in the parameters' group <**Display>**. Entering <**Display>** can be made in two ways:

- Pressing Setup and then: „**Display"**,
- Direct pressing the workspace area of the main display (does not apply to the "home screen" and "settings display" of the CPG (Control of Prepacked Goods mode).

Inventory of parameters of the main display:

- Text information
- Buton functions *
- Show all platforms
- Bargraph

***) –** In case of the working mode **CPG**, the function keys are separately defined for:

- Home screen,
- Settings screen,
- Process screen.

17.1. Text strings

In <**Text information>** users can set:

		Display template	Data displayed in the workspace. Detailed description in point 17.1.1.
		Left displaying template	
		Right displaying template	
		Font	Submenu on font settings.

		Type	Changing font type for text data displayed in the workspace. Available fonts: **Arial**, **Courier**.
		Font size	Declaring font size of text data displayed in the workspace. Available font size: **Small**, **Medium**, **Large**.
		Bold font	Bolded font for text data displayed in the worspace.
		Tilt	Text data in the workspace in italics.
		Colour	Font colour for text data in the workspace. Available in 18 colours palette.
		Background colour	Colour of the workspace background. Available in 18 colours palette.
		Set Default	Default settings for “Text data” submenu.

17.1.1. Display templates

The main window contains a workspace which displays optionally configured data specified for each working mode.

The workspace comprises three displaying templates:

- Displaying template,
- Left displaying template,
- Right displaying template.

The upper section of the workspace comprises a graphic information on which of the three templates is enabled. Changing of the template is carried out by draging the workspace to the right or left.

Change of the displaying template is carried out in submenu:
“ 

/  **Display /**  **Text information”**.

Procedure:

- While in an optional weighing mode enter submenu **<**  **Display>** in accordance with point 17 of this user manual,

- Seelct option **<** **Text information>** and then a desired displaying template, which is followed by displaying an editing field with is default content and an on-screen keyboard,
- Edit the content of the selected displaying template and accept it by pressing key.

Notice:

There are additional buttons in the bottom line of the screen keyboard. They can be used while modifying a display template. :

Screen keyboard on/off

*Reading a template from a file with format *.lb (option enabled on plugging a portable data storage device to scale port)*

*Saving printout template in a file format *.lb (option enabled on plugging a portable data storage device to scale port)*

Selecting variables for a template from a list (list of variables is provided in the APPENDIX A of this user manual)

Clear the editing field

Default settings of a displaying template in each of the working modes:

CPG	**Product: {50} Code:{51}**
Weighing:	**{40:Product:,-15}{50}** **{40:Tare:,-15}{9}{11}** **{40:Gross:,-15}{8}{11}** **{40:Number:,-15}{15}** **{40:Total:,-15}{16}{11}**
Parts counting:	**{40:Product:,-15}{50}** **{40:Sample weight:,-15}{35}{11}** **{40:Net:,-15}{7}{11}** **{40:Tare:,-15}{9}{11}**
Percent setup:	**{40:Product:,-15}{50}** **{40:Sample weight:,-15}{36}{11}** **{40:Net:,-15}{7}{11}** **{40:Tare:,-15}{9}{11}**

Dosing:	`Dosing process: {175}`

Formulation:	`{220}`
	`{40:Ingredient:,-12}{230}/{231}[{226}]`
	`{40:Portion:,-12}{228}{11}/{227}{11}`
	`{40:Charge:,-12}{232}/{233}`
	`{40:Completed:,-12}{225:F0}`

Density:	`Product: {50}`
Animal weighing:	`{40:Tare:,-15}{9}{11}` `{40:Gross:,-15}{8}{11}`

17.2. Function keys

In submenu **<** **Actions>** users can set actions following keys:

- function keys,
- screen keys,

Function keys and proximity sensors are programmable specifically for each working mode. If a button has been attributed then it is equal to activating a function. If no function is assigned to a button or sensor then it remains inactive.

Procedure:

- While in optional working mode go to submenu **<** **Display>** in accordance with point 17 of this user manual,
- Choose **<** **Buton functions>** and choose a required setting for a choosen button: F1 - F7, or 9 screen buttons.

Default functions of buttons for working mode CPG:

Home screen		F1 Button	- Choose product
		F2 Button	- Choose client
		F3 Button	- Set tare

		Screen button 1	- Set control
Settings screen		F1 Button	- Choose product
		F2 Button	- Choose client
		F3 Button	- Set tare
		Screen button 1	- Local parameters
		Screen button 7	- Return to home screen
		Screen button 8	- Start
		Screen button 9	- Start
Process screen		F1 Button	- Choose product
		F2 Button	- Choose client
		F3 Button	- Set tare
		Screen button 6	- Data on control in progress
		Screen button 7	- Change: Workspace / chart
		Screen button 8	- Stop
		Screen button 9	- Stop

Default functions of buttons for other working modes:

Weighing:		F1 Button	- Choose product
		F2 Button	- Choose client
		F3 Button	- Set tare
		Screen button 1	- Local parameters
		Screen button 2	- Set MIN and MAX
		Screen button 3	- Choose package

		Screen button 4	- Edit lot number
		Screen button 5	- Edit batch number
		Screen button 6	- C Statistics : Zero
Parts counting:		F1 Button	- Choose product
		F2 Button	- Choose client
		F3 Button	- Set tare
		Screen button 1	- Local parameters
		Screen button 2	- Choose package
		Screen button 3	- Insert unit mass
		Screen button 4	- Estimate unit mass
		Screen button 5	- Ascribe standard
Percent setup:		F1 Button	- Choose product
		F2 Button	- Choose client
		F3 Button	- Set tare
		Screen button 1	- Local parameters
		Screen button 2	- Choose package
		Screen button 3	- Insert mass of sample
		Screen button 4	- Estimate mass of sample
Dosing:		F1 Button	- Select dosing process
		F2 Button	- Choose client
		F3 Button	- Set tare
		Screen button 1	- Local parameters
		Screen button 2	- Select dosing process

		Screen button 3	- Start
		Screen button 4	- Stop
		Screen button 5	- Emergency stop
Recipes:		F1 Button	- Select formulation
		F2 Button	- Choose client
		F3 Button	- Set tare
		Screen button 1	- Local parameters
		Screen button 2	- Select formulation
		Screen button 3	- Start
		Screen button 4	- Stop
		Screen button 5	- Emergency stop
		Screen button 6	- Previous component
		Screen button 7	- Next component
		Screen button 8	- Give mass
		Screen button 9	- Edit lot number
Density:		F1 Button	- Choose product
		F2 Button	- Choose client
		F3 Button	- Set tare
		Screen button 1	- Local parameters
		Screen button 2	- Determine liquid density
		Screen button 3	- Determine solid density
		Screen button 4	- Stop

Animal weighing:		F1 Button	- Choose product
		F2 Button	- Choose client
		F3 Button	- Set tare
		Screen button 1	- Local parameters
		Screen button 2	- Start

Notice:
*The list of functions that can be attributed to keys or buttons is listed in **APPENDIX B** of this manual.*

17.3. Displaying platforms

If a scale is equipped with two platforms users can switch between platforms in three ways:

- By pressing the platform number on the scale screen,
- By pressing a formerly defined button **<  Change platform>**.
- By activating in parameters all platforms that will be separately placed in the main window of the program. In that case platforms can be activated by pressing the area of this platform.

Notice:
The procedure of attributing functions to buttons is described in ch. 17.2 of this manual.

To activate all platforms press  , choose: **„**  **Display /**  **Show all platforms”**, and set appropriately.


- Displaying all platforms disabled
- Displaying all platforms enabled

17.4. Bargraph

A bargraph is a typical visualisation procedure. It helps in quick weighing. It requires less concentration to read if a weighing is between minimum and maximum thresholds.

17.4.1. Bargraph type

To see the bargraph on the screen enable it in parameters.

Procedure:

- Enter submenu **“Display / Bargraph”** in accordance with point 17 of this user manual,
- Seelct option **<Bargraph type>** and set desired bargraph type.

Accessible bargraphs:

- Quick weighing,
- None (Bargraph is not displayed),
- Signalling checkweighing ranges,
- Linear,
- Control *.

***) –** Applies to the **CPG** mode only. In the **CPG** mode other bargraph types are not accessible.

17.4.2. Bargraph “Quick weighing”

Setting of bargraph type **“Quick weighing”** are accessible in submenu **„Display / Bargraph / Quick weighing”**:

	MIN, MAX thresholds working mode	**Stable** – signalling of MIN, MAX thresholds is previewed on exceeding LO threshold and reaching stable measurment result; **Unstable** – signalling of MIN, MAX thresholds is previewed on exceeding LO threshold
	OK threshold working mode	**Stable** – signalling of OK thresholds is previewed on exceeding LO threshold and reaching stable measurment result; **Unstable** – signalling of OK thresholds is previewed on exceeding LO threshold

	Min threshold signalling colour	Colour selection for signaling MIN threshold. 18 colours palette available.
	OK threshold signalling colour	Colour selection for signaling OK threshold. 18 colours palette available.
	Max threshold signalling colour	Colour selection for signaling MAX threshold. 18 colours palette available.
	Gradient	Enabling / Disabling filling effect “Gradient” type.
	Background colour	Colour selection of a bargraph background. 18 colours palette available.
	Frame colour	Colour selection of bargraph frame. 18 colours palette available.

Means of operation:

- The bargraph consists of 8 red fields and three green fields.

- The green fields signal weighings between MIN and MAX threshold, where:

  MIN = the minimum threshold of acceptable weighing - LO
  MAX = the maximum threshold of acceptable weighing - HI

- If a measurement is over the MIN (to the value of 1/3 of MIN-MAX) the green field with a triangle on the left is visible. If the measurement is between 1/3 and 2/3 of MIN-MAX the rectangular green field is visible. If the measurement is between 2/3 of MIN-MAX and MAX a green field with a triangle on the right is visible.
- If the mass value is below the MIN threshold red fields with red arrows on the left are visible. The lower mass value the more red arrows are visible.
- If the mass value is over the MAX threshold red fields with red arrows on the right are visible. The higher mass value the more red arrows are visible.

Thresholds MIN and MAX are on the borders between red and green fields.

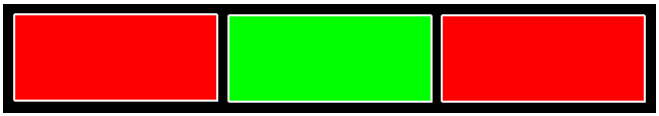
17.4.3. Bargraph “Signalling of checkweighing ranges”

Settings of **“Signalling checkweighing ranges”** bargraph are accessible in submenu “ **Display /** **Bargraph /** **“Signalling checkweighing ranges”**:

	MIN, MAX thresholds working mode	**Stable** – signalling of MIN, MAX thresholds is previewed on exceeding LO threshold and reaching stable measurment result; **Unstable** – signalling of MIN, MAX thresholds is previewed on exceeding LO threshold
	OK threshold working mode	**Stable** – signalling of OK thresholds is previewed on exceeding LO threshold and reaching stable measurment result; **Unstable** – signalling of OK thresholds is previewed on exceeding LO threshold
	Min threshold signalling colour	Colour selection for signaling MIN threshold. 18 colours palette available.
	OK threshold signalling colour	Colour selection for signaling OK threshold. 18 colours palette available.
	Max threshold signalling colour	Colour selection for signaling MAX threshold. 18 colours palette available.
	Gradient	Enabling / Disabling filling effect “Gradient” type.
	Background colour	Colour selection of a bargraph background. 18 colours palette available.
	Frame colour	Colour selection of bargraph frame. 18 colours palette available.

Means of operation:

- This type of bargraph comprises one green and 2 red fields.



- **The left red field –** signals that the load on the pan is lower than the minimum weighing threshold (**Min** threshold);
- **The central green field –** signals that the load on the pan is within the set required interval for the weighed product (**OK** value between **Min** and **Max** thresholds);

- **The right red field –** signals that the load on the pan is greater than the maximum weighing threshold (**Max** threshold).

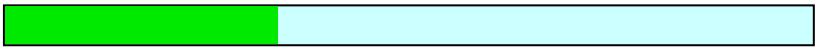
17.4.4. Bargraph type: „Linear”

Settings of “Linear” bargraph are accessible in submenu “**Display / Bargraph / Linear”**:

MIN	Min threshold signalling colour	Colour selection for signaling MIN threshold. 18 colours palette available.
OK	OK threshold signalling colour	Colour selection for signaling OK threshold. 18 colours palette available.
MAX	Max threshold signalling colour	Colour selection for signaling MAX threshold. 18 colours palette available.
	Min Max range background colour	Background colour selection for MIN, MAX range of the bargraph. 17 colours palette available.
	OK range signalling colour	Background colour selection for OK range of the bargraph. 18 colours palette available.
	Gradient	Enabling / Disabling filling effect “Gradient” type.

Means of operation:

The bar graph represents in a linear way the measuring range of a scale.



In addition, the bar graph can indicate weighing thresholds MIN, MAX, if they have been determined:

- Signalization of mass below the value set in MIN threshold:

- Signalization of mass within MIN and MAX values of thresholds:

- Signalization of mass exceeding the value set in MAX threshold:

17.4.5. “Control” bargraph

The **“Control”** bargraph is operated only in the working mode **<CPG>**.

Means of operation:

The bargraph features signalization points of:

- Nominal mass **Qn** declated for a product,
- **MIN**, **MAX** thresholds – if such are declared,
- Mass value for **Qn-T**,
- Mass value for **Qn-2T**,
- Mass value for **Qn+T**,
- Mass value for **Qn+2T**.

Where:

Qn – nominal mass
T – T error
2T – double T error

- Signalling mass below set value of **Qn-2T**:

- Signalling mass between the values of **Qn-2T** and **Qn-T**:

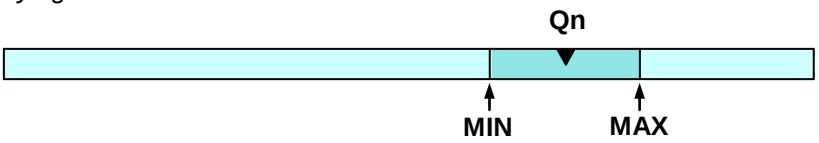
- Signaling mass between the value of **Qn-T** and **Qn+T**:

The bargraph field between the above values gets automatically rescaled and it is additonally marked by a **"magnifier"** pictogram visible in graph's left corner.

- Signaling mass btween the value of **Qn+T** and **Qn-2T**:

- Signalling mass above the set value of **Qn+2T**:

Caution:
*In case of additional declaring the values for **MIN**, **MAX** limits, the **"control"** bargraph refers to the **MIN**, **MAX** limits and the nominal mass, but without displaying the errors for **T** and **2T**.*



18. INPUTS / OUTPUTS

PUE HY weighing indicators are equipped STANDARD with 3 inputs / 3 outputs. To adjust software to the users needs configure inputs outputs in the submenu **<Inputs / Outputs>**:

- indicator inputs,
- indicator outputs.

In order to enter submenu **<Inputs / Outputs>**, press Setup and then: **„Inputs / Outputs"**.

18.1. Configuration of inputs

Procedure:

- Enter **<Inputs / Outputs>** according to ch. 18 of this manual,

- Choose <  **Inputs>** and enter the selected input you will see a list of functions to ascribe,
- Choose the required function from the list and return to weighing saving the changes according to ch. 12.2 of this manual.

Notice:
*The list of functions to ascribe to inputs are described in **APPENDIX B** of this manual. By default inputs have no ascribed functions **<None>**.*

18.2. Configuration of outputs

Ascribing a function to the output enables the output at the same time. If an output has no ascribed function it is disabled.

Procedure:

- Enter <  **Inputs / Outputs>** according to ch. 18 of this manual,
- Choose <  **Outputs>** and enter the required output, then you will see the list of functions:

None	Output disabled
Stabile	Stable weighing result over LO threshold value
MIN stable	Stable weighing result below the MIN threshold
MIN non-stable	Non-stable weighing result below the MIN threshold
OK stable	Stable weighing result between MIN and MAX thresholds
OK non-stable	Non-stable weighing result between MIN and MAX thresholds
MAX stable	Stable weighing result over the MAX threshold
MAX non-stable	Non-stable weighing result over the MAX threshold
Zero	Stable weighing result zero net
Confirmation of cycle completion *	Signal that confirms that a cycle of dosing has been completed (the defined amount)

***)** Not applicable to **„Standard”** software.

- Choose the required function from the list and return to weighing saving the changes according to ch. 12.2 of this manual.

Notice:
By default all outputs have no function attributed – setting ***<None>.***

19. AUTHORIZATION

The submenu **<**  **Authorization>** is accessible only while being logged in as the **Administrator**. In this group of parameters access levels can be outlined.

To enter submenu **<**  **Authorization>**, press 

and then:

„  **Authorization”**.

19.1. Anonymous Operator

The program allows to attribute the authorization access level to an operator who does not perform the log-in procedure (anonymous operator).

Procedure:

- Enter **<**  **Authorization>** according to ch. 19 of this manual, choose **<**  **Anonymous Operator>**, and then set the authorization access level.

Accessible authorization levels:

None, Operator, Advanced Operator, Administrator.

19.2. Date and time

Default settings allow a logged-in **Administrator** to change settings of date and time. Software however allows to change the access level to this option:
<  **Date and time>**.

Procedure:

- Enter parameters' group **<**  **Authorization>** according to ch. 19 of the manual, choose **<**  **Date and time>**, and then set the parameter.

Accessible authorization levels:

None, Operator, Advanced Operator, Administrator.

Notice:
Setting ***<None>*** *allows free access to settings of date and time (without the need of logging in).*

19.3. Printouts

Default settings of the scale allows a logged on **Administrator** to edit printout templates. Software allows to change the access level to option **<**  **Printouts>**.

Procedure:

- Enter parameter group **<**  **Authorization>** according to ch. 19 of this manual, choose **<**  **Printouts>**, and set appropreately.

Access levels to printouts that can be set:

None, Operator, Advanced Operator, Administrator.

Notice:
When you choose setting ***<None>*** *printout templates can be changed even without logging on.*

19.4. Databases

It is possible to set the access levels to the following databases:

- Database of Products,
- Database of Clients,

- Database of Formulations,
- Database of Dosing processes,
- Database of Packages,
- Database of Warehouses,
- Database of Labels,
- Weighing counter.

Procedure:

- Enter parameters' group **<**  **Authorization>** according to ch. 19 of the manual, choose **<**  **Databases>**, and then set the parameter.

Accessible authorization levels:

None, Operator, Advanced Operator, Administrator.

Notice:
Setting ***<None>*** *allows free access to settings of date and time (without the need of logging in).*

19.5. Delete older data

Default settings allow a logged-in **Advanced Operator** to delete older data from the **<**  **Weighings / Alibi>** database. Software however allows to change the access level to this option: **<**  **Delete older data>**.

Procedure:

- Enter parameters' group **<**  **Authorization>** according to ch. 19 of the manual, choose: **„**  **Databases /**  **Delete older data"**, and then set the parameter.

Accessible authorization levels:

None, Operator, Advanced Operator, Administrator.

20. UNITS

Scale, in submenu **< Units>** enables selecting:

- Declaring accessibility of the weighing untis,
- Declaring the start unit,
- Determining two user defined units (custom units),
- Changing the value of g-cor (the value of gravitational acceleration force).

To enter submenu **< Units>**, press Setup and then: **„ Units”**.

20.1. Units accessibility

Submenu **< Accessibility>** enables declaring weighing units that should be accessible for selecting in the weighing window after pressing the weighing unit pictogram.

Procedure:

- Enter submenu **< Units>** in accordance with ch. 20 of this user manual,
- Select option **< Accessibility>** which opens a window with a list of available weighing units with their accessibility attribute.

where:

- Weighing unit enabled
- Weighing unit disabled

- Set required accessibility criterion for the weighing units and exit to weighing mode.

20.2. Start unit

Procedure:

- Enter submenu **< Units>** in accordance with ch. 20 of this user manual,

- Select option **<** **Start units>** and choose a start unit from displayed list of available weighing units.

Possible selection:

- none
- gram [g]
- kilogram [kg]
- carat [ct]
- pound [lb]
- ounce [oz] *
- Newton [N] *

***)** – weighing unit inaccessible in a verified scale

- Exit to main manu with procedure of saving changes,
- On restarting the scale, the instrument operates with enabled start unit.

20.3. User defined units

An option only for non-verified scale

Procedure:

- Enter submenu **<** **Units>** in accordance with ch. 20 of this user manual,
- Select option **<** **Defined unit 1>** and determine the values of the following parameters:

00285	**Multiplier**	Multiplier of scale's adjustment unit
N	**Name**	Unit name (Max 3 characters)

- Exit to main manu with procedure of saving changes,
- Press symbol of the new weighing unit visible in the weighing window, which activates list of available weighing units with new custom unit added at the end of the list.

Notice:

The procedure of defining the second custom unit ***<*** ***Defined unit 2>*** *is equal to the procedure described above.*

20.4. Acceleration of gravity

Parameter **<** **Acceleration of gravity>** eliminates the changes of gravitational acceleration force at different latitudes and altitudes in case of weighing process with application of “Newton” [N] weighing unit.

Procedure:

- Enter submenu **<** **Units>** in accordance with ch. 20 of this user manual,
- Select option **<** **Acceleration of gravity>** which opens an editing window **< Acceleration of gravity>** with a numeric keyboard,
- Insert the new value of acceleration of gravity for the place of use and accept it by pressing key,
- Exit to main manu.

21. OTHER PARAMETERS

There is a group of parameters different from others which influence the operation of the scale. They are gathered in group **<** **Others>** e.g. language, beep etc. To enter **<** **Others>**, press Setup and then: **„** **Others”**.

21.1. Languages

Procedure:

- Enter submenu **<** **Others>** according to ch. 21 of this manual, choose **<** **Language>** and set the parameter.

Accessible languages:

- Polish, English, German, French, Russian, Spanish, Czech, Hungarian, Estonian, Latvian, Italian, Greek, Turkish, Thai, China.

21.2. Setting date and time

Users can set date and time that are visible in the main window of the display. Entering the edition of date and time can be made in two ways:

- Pressing the field **„date and time”** in the top bar of the main screen,
- Pressing button 

and then: **„**  **Others /**  **Date and Time”**.

After entering the setting of date and time the screen keyboard appears. Set year, month, day, hour, minutes and confirm by pressing  .

Notice:

Parameter **<**  ***Date and Time>*** *is accessible in the scale menu depending on the authorization access level set in the related parameter.*

21.3. Sound signal

Procedure:

- Enter **<**  **Others>** according to ch. 21 of this manual, **<**  **Beep>** and set accordingly.

Settings:

No	-	Beep disabled
Yes	-	Beep enabled

21.4. Touch panel calibration

Touch panel calibration is required when inappropriate operation is recognized. E.g. the reaction in a different place than the touching point.

Procedure:

- Enter submenu **<**  **Others>** according to ch. 21 of this manual,
- Select **<**  **Touch Screen Calibration>** and then an editing field appears,

- Using a thin and soft pointer press (keep pressed for some time) in the point where the cross appears, after indicating the 4th place confirm changes by pressing **ENTER/PRINT**.

21.5. Screen brightness

Scale user can change brightness of the screen in the range between **0%** and **100%**.

Notice:
*The default screen brightness is set to **90%**.*

Procedure:

- Enter submenu **<**  **Other>** in accordance with point 21 of this user manual,
- Select parameter **<**  **Screen brightness>** which opens an editing window **<Screen brightness>** with a visible **"slider"** and percent value of set brightness,
- Use the **"slider"** to set required brightness value and accept it by pressing  key.

21.6. Cursor

In order to start working with a computer mouse enable parameter **<Cursor>**.

Procedure:

- Enter **<**  **Others>** according to ch. 21 of this manual, choose parameter **<**  C**ursor>** and set an option.

Settings:

 - Cursor disabled
 - Cursor enabled

22. USER ADJUSTMENT

An option only for non-verified scale

Scales require to recalculate internal divisions to more suitable ones (e.g. g, kg etc.). In order to do this they require an adjustment factor. It is adjusted during the adjustment procedure using a mass standard. Adjustment should be carried out if weighing a standard mass shows a different mass value.

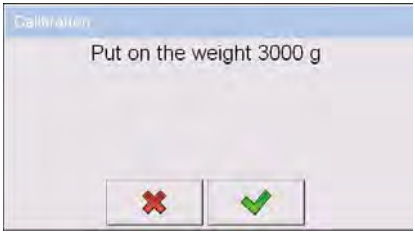
To enter **<User Adjustment>**, press Setup key and then:

„User Adjustment”.

22.1. Adjusting procedure

- Enter submenu **<User Adjustment >** according to ch. 22 and select: **“Adjustment”**,
- After entering the parameter the following message box appears:

- Take the load off the pan of platform 1,
- Press button . The following message appears during adjusting start mass: **„Evaluation of starting mass”**,
- After the procedure has been completed the following message box appears:



- Place determined mass on pan of platform 1 and then select  ,
- After the procedure of adjustment factor determination following command appears:

- Accept the message box by pressing  key and return to weighing mode.

 **<Setting of start mass> parameter allows to adjust start mass of platform 1.**

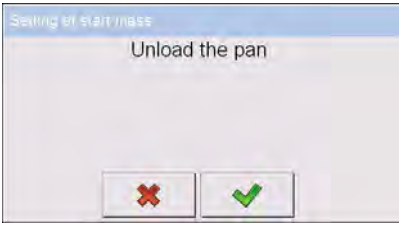
Notice:
The factory adjustment process for platforms 2, 3, 4 is analogical to the one described above.

22.2. Start mass adjustment

It is possible to adjust only a start mass, it helps to correct the start zero when the span does not change.

Procedure:

- Enter submenu **<User Adjustment >** according to ch. 22 and select: **"Setting of start mass"**,
- After entering the parameter the following message box appears:



- Take the load off the pan of platform 1,
- Press button . The following message appears during adjusting start mass: **„Evaluation of starting mass”**,
- After the procedure has been completed the following message box appears:

- Accept the message box by pressing key and return to weighing mode.

22.3. Report from adjustment process

Parameter **<** **Report printout>** enables activating the function of automatic printout of a report from adjustment process on a printer plugged to the scale.

Procedure:

- Enter submenu **<** **User Adjustment>** in accordance with ch. 22 of this user manual, select parameter **<** **Report printout>** and set its appropriate value.

Where:

- Automatic report printout switched off
- Automatic report printout switched on

Notice:

Submenu: “ ***Devices /*** ***Printer /*** ***Printouts / Adjustment report Printout template”*** *enables optional modification of report template (see ch. 16.2.3 of this user manual).*

22.4. Adjustment track record

Each completed adjustment process is automatically saved in scale's database in submenu **<Adjustment track record>**.

In order to enter submenu **<Adjustment track record >**, press Setup key, and: **„User Adjustment / Adjustment track record"**. Files comprising reports have names with time and date when the process was performed.

List of data for a carried out adjustment process:

	Date	Data of carried out operation
	Operator	Operator name
	Nominal Mass	Mass of adjustment weight
	Platform number	Platform number on which an operation was performed

The user can print data on a specific entry by pressing key, located in the upper bar of software's window.

23. SOFTWARE UPDATE

A user of the terminal PUE HY series can carry out ON-LINE updating of the software version using Ethernet network or an external data storage device connectable to the USB port of the terminal.

Enter the submenu **<Update>** by pressing Setup key, and next press : **"Update"**.

23.1. ON-LINE updating

Notice:

1. ***ON-LINE*** *updating requires access to a global* ***INTRANET*** *network.*

2. *Before updating the software, go to scale's submenu: "* ***Communication*** */* ***Ethernet"*** *and set transmission parameters for compatible with the client's local network.*

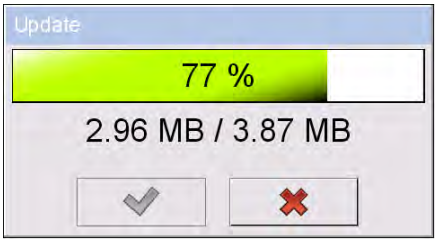
Procedure:

- Enter submenu **<** **Update>** in accordance with point 23 of this user manual,
- Select parameter **<** **Software version on server>** which reads software version and its availability date on RADWAG server.

  Notice:
  In case of no connection with the global network ***Intranet*** *or incorrect settings of Ethernet parameters, the scale displays the following message:* ***"No connection"****.*

- Go to parameter **<** **Update From server>** which displays the following message:

- Accept the message by pressing key which is followed by displaying the updating progress window:



- After downloading the update press an active key which is followed by displaying a message:

- Accept the message by pressing  key. The terminal shall restart with update installing procedure.

23.2. Update from pendrive

Procedure:

- Copy file **"update.pue7"** containing the current software version onto the external data storage device (to the main catalogue),
- Connect the data storage device to terminal's USB port,
- Go to submenu **<**  **Update>** in accordance with point 23 of this user manual,
- Go to parameter **<**  **Update From pendrive>** which displays the following message: **"Update?"**,

  Notice:
  *In case the data storage device is not connected to the terminal's USB port and/or there is no **„update.pue7"** file in the main catalogue of the pendrive, the software displays the following message **"Update error"**.*

- Accept the message by pressing  key which automatically starts the updating process. On its completion the terminal displays the following message:

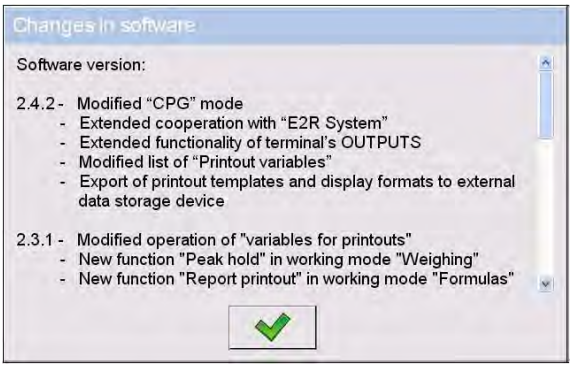
- Accept the message by pressing  key. The terminal shall restart with update installing procedure.

23.3. Changes in software

Parameter **<Changes in software>** enables acquiring data on changes present in the updated software version.

Procedure:

On completing the software updating procedure go to parameter **<Changes in software>** which opens an information window **<Changes in software>**:



24. SPECIAL FUNCTIONS OF WORKING MODES

Weighing terminals PUE HY can operate in following work modes:

- Weighing
- Counting pieces
- Deviations
- Dosing

 Formulation

 CPG

 Weighing animals

 Density

Work modes can be configured in **<**  **Working Modes>**.

To enter submenu **<**  **Working Modes>**, press Setup and then:

„  **Working Modes”**.

The settings of specific working modes provide access to special functions adjusting operation of the instruments to client's individual needs.

Notice:

1. *First left screen button*  *(local settings) in the main window of every working mode is ascribed to access settings of current mode.*
2. *The change in on mode results in the same change for other working modes working modes.*

Part of the special functions have global effect, i.e. they are applicable to most of accessible working modes (except for working modes: Formulation, Dosing), as presented on below table:

	Weighing	Parts counting	Percent setup	Weighing animals	Density	CPG
Save Mode	+	+	+	-	+	+
Down-weighing	+	+	+	-	-	-
Checkweighing	+	+	+	+	+	-
Tare mode	+	+	+	+	+	-
Labelling mode	+	+	+	+	-	-
Statistics	+	+	+	+	+	+
Peak hold	+	-	-	-	-	-

Other special funcions are related directly to a specific working mode, and they are described in further part of this user manual.

24.1. Working modes accessibility

Submenu <**Accessibility>** enables declaring presence of scale's working modes in the user menu after pressing a pictogram with a working mode located in the left corner of the upper bar in the main window.

Procedure:

- Enter group of parameters <**Working modes>** in accordance with point 24 of the user manual,
- Select option <**Accessibility>** which opens a list with available working modes and their accessibility attribute.

Where:

- Working mode enabled
- Working mode disabled

- Set accessibility attribute for each of the working modes and return to weighing mode.

24.2. Recording mode

Depending on setting parameter <**Save Mode>** users can send data from the scale to an external device.

Procedure:

- Enter parameters group <**Working modes>** according to ch. 24 of this manual,
- Enter the required mode and choose <**Save Mode>** then choose the required mode.

Accessible options:

- Manual every stable,
- Manual first stable,
- Automatic first stable,
- Automatic last stable.

24.3. Down-weighing

Software allows to weigh in the “down-weighing” mode. It consist in putting the load on the pan and taking off/removing portions of it with concurrent saving weighings equal to the portions taken off the pan.

Procedure:

- Enter parameters group **<**  **Working Modes>** according to ch. 24 of this manual,
- Enter the required working mode and choose **<**  **Down-weighing>** and then set the required option.

Accessible options:

- Traditional weighing
- Down-weighing mode

24.4. Checkweighing

In case of enabling the checkweighing mode, printouts are performed only when a weighing is between **MIN** and **MAX** thresholds that have been defined before.

Procedure:

- Enter parameters group **<**  **Working Modes>** according to ch. 24 of this manual,
- Enter the required working mode and choose **<**  **Checkweighing>** then set the required option.

Options:

- Every weighing is recorded
- Only weighings between MIN, MAX are recorded.

24.5. Tare mode

This function enables users to set parameters for tarring.

Procedure:

- Enter parameters group **<**  **Working Modes>** according to ch. 24 of this manual,
- Enter the required working mode and choose **<**  **Tare mode>** and then set the required option.

Options:

Single	-	Basic tare mode. The set (chooden) tare value is overwritten after entering a new value
Current sum	-	Summing up tare values of product and package together with manually inscribed tare. After next setting of product or package tare the entered tare value is disabled
Total sum	-	Summing up all subsequently entered tare values
Autotare	-	Automatic tare mode together with mode **<Sum of all>**
Each measurement	-	Automatic tarring for each accepted measurement result.

24.6. Labelling mode

Labelling mode can be initiated together with every working mode. The labelling system is intended to print labels for marking weighed goods e.g. a packing process. The program can print standard labels for single products, cumulative labels for sticking to bulk containers and cumulative labels for cumulative labels for sticking to the large transport containers holding bulk containers.

In submenu **<**  **Labelling mode>** there are accessible following special functions:

 Number of labels

 No. of cumulative labels

 No. of CC labels

C label automatic triggering

CC label automatic triggering

24.6.1. Setting of the number of labels to print

In the parameter **<** **Number of labels>** user defines the amount of labels. They are printed on the printer connected to the weight.

Procedure:

- Enter parameters group **<** **Working Modes>** according to ch. 24 of this manual,
- Enter the required working mode and choose: **„** **Labelling mode / Number of labels”** then the editing field **<Number of labels>** with the screen keyboard is opened,
- Choose the required number of labels and confirm by pressing .

24.6.2. Setting of the number of cumulative labels to print

In the parameter **<** **No. of cumulative labels>** define the amount of sum labels. They are printed on connected printer.

Procedure:

- Enter parameters group **<** **Working Modes>** according to ch. 24 of this manual,
- Enter the required working mode and choose: **„** **Labelling mode / No. of cumulative labels”**, then the editing field **<No. of cumulative labels>** with the screen keyboard is opened,
- Enter the required number od cumularive labels and confirm by pressing .

24.6.3. Setting of the number of CC labels to print

In the parameter **<** **No. of CC labels>** define the amount of total sum labels to print. They are printed on connected printer.

Procedure:

- Enter parameters group **<**  **Working Modes>** according to ch. 24 of this manual,
- Enter the required working mode and choose: **„**  **Labelling mode /**  **No. of CC labels”**, then the editing field **<No. of CC labels>** with the screen keyboard is opened,
- Enter the required number od cumularive labels and confirm by pressing  .

24.6.4. Automatic triggering of cumulative labels

Users have access to the function of automatic triggering of printing cumulative labels after setting parameters **<**  **Mode>** and **<**  **Threshold>**.

Procedure:

- Enter **<**  **Working modes>** parameter group as described in chapter 24 of the manual,
- Enter the required working mode and choose: **„**  **Labelling mode /**  **C label automatic triggering /**  **Mode”** and then set the required option:

  None - Cumulative label printout is initiated by pressing  or  *,

  Mass - Cumulative label printout is initiated by exceeding the value set in parameter **<**  **Threshold>**. The value is treated as the total from single weighings,

  Number - Cumulative label printout is initiated by exceeding the value set in parameter **<**  **Threshold>**. The value is treated as the number of single weighings.

***)** Manual printing of cumulative labels can be done in two ways depending on the button used:

 Printing followed by zeroing label counter or the total mass

 Printing without zeroing label counter or the total mass

By default setting button  is accessible in the bottom part of the display but activating the button  can be done in submenu: „  /  **Display /**  **Actions”** (see ch. 17.2 of the manual).

For automatic printout of cumulative labels counters and total mass variables are always zeroed.

- Confirm the changes by pressing  and go to parameter  **Threshold>** then **<Threshold>** window appears with the screen keyboard,
- Set the appropriate value for automatic triggering cumulative labels:
  - If parameter  **Mode>** is set to **<Mass>** then enter the required value of total mass to exceed in order to print the C label,
  - If parameter  **Mode>** is set to **<Number>** use the screen keyboard to enter the required counter value as a threshold to trigger off printing C labels.
- Confirm the changes introduced by pressing  .

24.6.5. Automatic triggering cumulative labels of cumulative labels

Users have access to the function of automatic triggering of printing cumulative labels of cumulative labels after setting parameters  **Mode>** and  **Threshold>**.

Procedure:

- Enter  **Working modes>** parameter group as described in chapter 24 of the manual,

- Enter the required working mode and choose: „  **Labelling mode /**  **CC label automatic triggering /**  **Mode”** and then set the required option:

  None - Cumulative label of cumulative labels printout is initiated by pressing  or  *,

  Mass - Cumulative label of cumulative labels printout is initiated by exceeding the value set in parameter **<**  **Threshold>**. The value is treated as the total from single weighings,

  Number - Cumulative label of cumulative labels printout is initiated by exceeding the value set in parameter **<**  **Threshold>**. The value is treated as the number of single weighings,

***)** Manual printing of cumulative labels can be done in two ways depending on the button used:

 Printing followed by zeroing label counter or the total mass

 Printing without zeroing label counter or the total mass

By default setting button  is accessible in the bottom part of the display but activating the button  can be done in submenu: „  **/**  **Display /**  **Actions”** (see ch. 17.2).

For automatic printout cumulative labels of cumulative (CC) labels counters and total mass variables are always zeroed.

- Confirm the changes by pressing  and go to parameter **<**  **Threshold>** then **<Threshold>** window appears with the screen keyboard,

- Set the appropriate value for automatic triggering CC labels:
  - If parameter **<**  **Mode>** is set to **<Mass>** then enter the required value of total mass to exceed in order to print the CC label,

– If parameter <007 **Mode>** is set to **<Number>** use the screen keyboard to enter the required counter value as a threshold to trigger off printing CC labels.

- Confirm the changes introduced by pressing  .

24.7. Statistics

All statistics are continuously updated after each measurement is saved in the scale memory. Statistics can be calculated globally (does not depend on the selected product) or separately for every product from the product database. It can be set in parameters <**Statistics>**.

Procedure:

- Enter <**Working modes>** parameter group as described in chapter 24 of the manual,
- Enter the required working mode and choose <**Statistics>** and then set the required option.

Options:

Global - global statistics,
Product - statistics for every product.

Notice:

*In case of operation with <**Statistics>** set to **<Product>** bare in mind that after restarting only statisics of the last weighed product are recovered.*

24.8. Peak hold

The scale enables measuring the maximum force influencing the weighing pan.

Procedure:

- Enter <**Working modes>** parameter group as described in chapter 24 of the manual,

- Enter the required working mode and choose **<**  **Peak hold>** and then set the required option.

Where:

- Scale operates in standard weighing mode
- Scale operates with mode forcing lock of maximum indication on the display, i.e. peak hold.

- On loading the weighing pan with changeable force, the displays locks the indication of the maximum measured force. The locked value is signalled by red colour of the displayed value.
- Remove load from the weighing pan.
- Before carrying out the following measurement press  button.

25. WORKING MODE - WEIGHING

The **<**  **Weighing>** mode is the standard working mode allowing to perform weighings and saving them in the database **<**  **Weighings / Alibi>**.

25.1. Starting the working mode

The **<**  **Weighing>** mode is the standard working mode. If a user has changed the operating mode to another follow the actions below:

- While in the main window press the icon with mode name placed on the top bar on the left then submenu comprising all accessible working modes **<Working Modes>** opens,
- Choose **<**  **Weighing>**, program automatically returns to the main window displaying icon  in the top bar.

25.2. Local setting of a working mode

Local setting of a working mode <**Weighing>** are accessible on pressing a hot key <**Local parameters>**:

	Save Mode	Detailed description in ch. 24.2 of the user manual
	Down-weighing	Detailed description in ch. 24.3 of the user manual
	Checkweighing	Detailed description in ch. 24.4 of the user manual
	Tare mode	Detailed description in ch. 24.5 of the user manual
	Labelling mode	Detailed description in ch. 24.6 of the user manual
	Statistics	Detailed description in ch. 24.7 of the user manual
	Peak hold	Detailed description in ch. 24.8 of the user manual

26. WORKING MODES – PARTS COUNTING

Parts counting is working mode allowing to count pieces on the basis of the standard unit mass of a single piece set on the scale or fetched from the database.

Notice:
If parts counting is performed in an additional container it should be tarred.

26.1. Starting the working mode

Procedure:

- While in the main window press  in the top bar, then you will see a submenu **<Working Modes>** comprising a list of modes,
- Choose <**Parts counting >**, program automatically returns to the main window displaying icon  in the top bar,
- The weight unit is automatically changed to **„pcs”** and two screen buttons on the right side appear:

 Enter part mass

 Estimate part mass

26.2. Local settings of the working mode

Local settings of the working mode **<Parts counting >** are accessible on pressing a hot key **<Local parameters>**:

	Save Mode	Detailed description in ch. 24.2 of the user manual
	Down-weighing	Detailed description in ch. 24.3 of the user manual
	Checkweighing	Detailed description in ch. 24.4 of the user manual
	Tare mode	Detailed description in ch. 24.5 of the user manual
	Labelling mode	Detailed description in ch. 24.6 of the user manual
	Statistics	Detailed description in ch. 24.7 of the user manual
SMP	Automatic correction of reference mass	Detailed description in ch. 25.2.1 of the user manual
MIN	Minimum reference mass	Detailed description in ch. 25.2.2 of the user manual

26.2.1. Automatic correction of reference mass

It concerns the <Parts counting> working mode

Working mode **<Parts counting>** comprises a special function **<SMP Automatic correction of reference mass>**, that can be used for correcting the unit mass **<SMP>**. To enable the function in parameters you need to:

- Enter parameter group **<Working modes>** according to ch. 24 of this manual, choose: **„Parts counting / SMP Automatic correction of reference mass”** and set appropriate option.

Options:

- Automatic correction of reference mass disabled
- Automatic correction of reference mass enabled

Function **<SMP Automatic correction of reference mass>** in mode **< Parts counting >** is enabled at the moment of estimating the sample quantity and signalled by displaying **<PCS>** and **<SMP>** (single part/piece mass) on the top part of the display.

There are four criteris of working "Automatic correction of reference mass" function:

1. equilibrium should be reached,
2. quantity of parts/pieces should be increased,
3. added quantity of parts/pieces should not be greater than double number of parts/pieces on the pan,
4. the new sample can be different from the old sample by ± 0.3 of pcs (absolute value),

If a user recognises that the sample quantity is adequate the unit mass (single piece mass) can be saved (see ch. 26.6 of this manual) and disable the function by pressing **ENTER/PRINT**.

Notice:
While the parts counting function is active the functionality of **ENTER/PRINT** *button is changed. Pressing* **ENTER/PRINT** *does not result in printing and saving weighings.*

26.2.2. Minimum reference mass

It concerns the < *Parts counting* *> working mode*

Users before beginning the procedure of single piese mass evaluation can declare **"minimum reference mass"** i.e. minimum total weight of all pieces put on the scale pan expressed in reading divisions.

Procedure:

- Enter parameter group **<** **Working modes>** according to ch. 24 of this manual,

- Choose „ **Parts counting /** **Minimum reference mass”** and then set an appropriate value.

Accessible settings: 1 d, 2 d, 5 d, 10 d.

Notice:
While the procedure of evaluation the mass of single piece the the mass of all pieces put on the pan is lower than the value declared in parameter „ ***Minimum reference mass”****, the following warning message will be displayed:* ***< Too low sample mass>.***

26.3. Setting a reference unit by entering known piece mass

Procedure:

- Enter mode **<** **Parts counting>** according to ch. 26.1 of this manual,
- Press (enter piece mass), then an editing field is displayed **<Reference Unit>** with the screen keyboard,
- Enter a value and confirm it by pressing , which causes starting **<** **Parts counting >** with automatic setting the reference unit.

Notice:

1. *In case of entering a reference unit higher then the maximum weighing range of the main scale the program will display a message box:* ***<Value too high>****,*
2. *In case of entering the single piece mass lower than 0.1 d, the program will display a message box:* ***<Value to small>****.*

26.4. Setting a reference unit by weighing a sample

Procedure:

- Enter mode **<** **Parts counting>** according to ch. 26.1 of this manual,
- If pieces are weighed in a container it needs to be put on the pan and tarred,

- Press  (estimate piece mass), then the editing field is displayed **<Reference Quantity>** together with the screen keyboard,
- Enter a value and confirm it by pressing  , then the following message is displayed: **<Put pieces: xx>** (where **xx** – the value entered before),
- Put the declared quantity of pieces on the pan and when the result is stable (symbol ◣◢) confirm it by pressing  .
- The program automatically calculates reference unit mass and causes starting **<**  **Parts counting >**.

Notice:

- *The total mass of all pieces put on the weight pan cannot be greater than the weighing range;*
- *The total mass of all pieves put on the weight pan cannot be less than the value declared in parameter **„Minimum reference mass”** (see section 26.2.2). If the condition above is not fulfilled the scale dispalays the message **<Too low sample mass>**;*
- *The mass of one unit may not be less than **0.1 of reading division** of the scale. If this condition is not fulfilled the scale dispalays the message: **<Too low piece mass>**.*

26.5. Setting the reference mass by entering single piece mass directly to the database

After selecting a product from the product database a mass of single piece from the field **<Mass>** is used.

Procedure:

- While in **<**  **Parts counting >** press  ,
- Using  or  choose a product and confirm it by pressing  .

Notice:
The selected product has to have declared unit mass (single piece mass).

26.6. Inscribing the unit mass to the database

The unit mass can be described a unit mass the following way:

a) Estimate the unit mass (see 26.2 and 26.3),

b) Enter the products database F1,

c) Keep the finger pressed on the required position then a context menu is displayed,

d) Choose option **<Ascribe standard>**, then the standard unit mass is attributed to the product in the field **<Mass>**.

Notice:
Attributing a standard to a selected product is also possible by programmable button. Setting programmable buttons is described in ch. 17.2 of this manual The list of functions is described in ***APPENDIX B*** *of this manual.*

27. WORKING MODES – PERCENT SETUP (DEVIATIONS)

The program allows to check weighings in deviations (in %) around an outlined standard mass. The standard mass can be outlined by weighing or entering it by a user.

27.1. Starting the operating mode

Procedure:

- While in the main window press  in the top bar of the window then you will see a submenu **<Working Modes>** comprising a list of modes,
- Choose mode **<**  **Deviations>**, the program will automatically returns to the main window displaying icon  in the top bar,
- The weight unit is automatically changed to **„%”** and two screen buttons on the right side appear:

 Enter reference mass

 Estimate reference mass

27.2. Local settings of the working mode

Local settings of the working mode <**Deviations>** are accessible on pressing a hot key <**Local parameters>**:

	Save Mode	Detailed description in ch. 24.2 of the user manual
	Down-weighing	Detailed description in ch. 24.3 of the user manual
	Checkweighing	Detailed description in ch. 24.4 of the user manual
	Tare mode	Detailed description in ch. 24.5 of the user manual
	Labelling mode	Detailed description in ch. 24.6 of the user manual
	Statistics	Detailed description in ch. 24.7 of the user manual

27.3. Reference unit mass estimated by weighing

Procedure:

- Enter <**Deviations>** according to ch. 27.1 of this manual,
- If the standard is to be weighed in a container, the container needs to be put on the pan and tarred,
- Press  (Estimate standard mass), then a message is displayed: **<Put standard>**,
- Put the load on the pan. After stabilization the result is taken as a standard (symbol ◣◢). Confirm it by pressing  ,
- At the same time the weight unit is changed to (w %).

27.4. Rederence unit mass inscribing into the memory

Procedure:

- Enter <**Deviations>** according to ch. 27.1 of this manual,

- Press  (Give piece mass), then an editing field is displayed **<Give piece mass>** together with the screen keyboard,
- Enter a value and confirm by pressing  ,
- At the same time the weight unit is changed to (w %).

28. WORKING MODES - DOSING

< **Dosing>** mode enables carrying out filling and dosing processes of goods on scales featuring a terminal PUE HY series. The working mode enables manual and automatic dosing on a single or simultaneously on many weighing platforms.

28.1. Starting the working mode

Procedure:

- While in main window of the software, press  on-screen key, located in the upper bar of the window, which opens submenu **<Working Modes>** containing the list of available working modes,
- Select working mode **<** **Dosing>**, the software automatically returns to displaying the main window, and the upper bar indicates the pictogram of a selected working mode  ,
- Automatically the following on-screen key are enabled:

 Local parameters

 Select dosing process

 Start dosing process

 Stop dosing process

 Emergency stop

28.2. Dosing process structure

All activities related to the dosing process can be carried out from the level of scale. Each dosing process <  > contains:

- Its name <  >,
- code <  >,
- assigned weighing platforms <  > defined on a terminal.

Each of the weighing platforms can have its specific dosing process. The database of dosing processes has the same searching mechanisms for a specific record in a database as other terminal databases.

A dosing process can be searched in a database by:

- the name of a dosing process <  >
- the code of a dosing process <  >

Processes carried out on different weighing platforms operated by the same terminal, can also be dependant on each other, e.g.: dosing on weighing platform 2 can be initiated only on completing dosing on weighing platform 1, which is confirmed by a signal from appropriate sensor.

28.3. Local setting of a working mode

Local settings for the working mode <  **Dosing>** are accessible on pressing a hot key <  **Local parameters>**:

		Ask for multiplier	Causes setting a question for dosing process multiplier, i.e. the number which is used to multiply the values of mass of all components.
		Ask for number of cycles	Causes setting a question on number of dosing process cycles, i.e. number of repetitions of the same process.
		Confirm batching ingredients manually	Causes enabling manual confirmation by pressing “Enter/Print” key on terminal’s keyboard for each weighing process.
		No. of weighings for calculating the correction	Determines the number of recent measurements which are analyzed for calculating automatic correction in dosing

		Global	Global settings of doisng process
		Batching outputs	Enables setting the outputs for dosing (fine dosing in case of two-step dosing process)
		Bulk batching output	Enables setting outputs for bulk dosing in case of two-step dosing process
		Correction	Enables determining global value of correction for all weighing platforms
		Maximum correctional value	Enables detemining maximal value of correction, which can be automatically determined for all weighing platforms

<Global> settings are dedicated for the process of creating simple dosing processes, e.g.: dosing a single ingredient on all weighing platforms.

28.4. Description of functions and setting dosing process

While creating dosing process, the user has acces sto the following functions:

Icon	Short cut	Function	Description
	**[DH]**	Dose manually	Function recalling manual weighing of dosing process ingredient (manual dosing)
		Mass	Mass of an ingredient to be dosed
		Min	MIN threshold for dosing process ingredient
		Max	MAX threshold for dosing process ingredient
		Product	Dosing process ingredient uploaded from Products database
		Down-weighing	Enables switching on checkweiging mode (weighing on minus)
	**[DA]**	Automatic batching	Function enabling automatic weighing (automatic dosing). The function enables controlling outputs dedicated for dosing process.
		Mass	Mass of an ingredient to be dosed
		Mass for fast dosing	Mass of an ingredient for bulk dosing (in case of two-step dosing process)

		Product	Dosing process ingredient uploaded from Products database
		Down-weighing	Enables switching on checkweiging mode (weighing on minus)
	**[O]**	Outputs	Function enabling setting the status of terminal's outputs for controlling peripheral devices plugged to those outputs. Accessible settings: None – output disabled; "0" – output with low status; "1" – output with high status.
	**[TI]**	Delay	Function determining interval between carrying out the following dosing process steps. The function determines pending time for the following step counted in seconds.
		Time	Determination of pending time counted in seconds
		Description	Text description of an interval displayed on terminal's touch panel
	**[Z]**	Zero	Zeroing the weighing platform, equal to operation of the →0← function key on the terminal's front panel
	**[T]**	Tare	Tarring the weighing platform, equal to operation of the →T← function key on the terminal's front panel
	**[ST]**	Set Tare	Tare setting function, equal to operation of the <Set tare> function key on the terminal's front panel
	**[CM]**	Weight condition	Weight condition function determining time in which the following step of dosing process ona weighing platform should be carried out, e.g.: the following step is carried out if mass (net or gross) placed on the weighing platform is below the value set in threshold.
		Threshold	Value of mass set in threshold for the condition
		Mass	Kind of determined mass for threshold (net or gross)
		Weight condition	Weight condition – "**>=**" or "**<**"
	**[CI]**	Input condition	Conditional function, determining when the followwing step should be carried out, depending on status of terminal's intput. Each input can take the following status: None – input disabled; „0" – input with low status; „1" – input with high status; „/" – input with increasing tendency (status change from low to high, e.g.: the moment of pressing a key); „\" – input with decreasing tendency (status change from high to low, e.g.: the moment of releasing a key)

	**[EM]**	Give mass	Function activating a so called: “mass in hand” – ingredient’s mass of a dosing process supplied in ready packages with precisely determined mass. The given mass is added to weighed ingredient’s mass, e.g.: ingredient to be weighed = 21,8 kg, weighed amount 1,8 kg placed on the scale, and 20 kg inserted manually.
	**[ET]**	Give number of batching repetitions	Function determining quantity of batches of weighed ingredient, that is added to a dosing process. Mass of a single batch is determined in a product selected from the database (Products database – field Mass). Product’s mass is multiplied by a specific value, and such determined mass is added to weighing process. The function is applicable for weighing products in batches.
	**[F]**	Set flags	Function determining a condition (characteristic point) in dosing process. The funtion enables conditional carrying out another step in dosing process. Setting the characteristic point (signal flags) in connection with condition flags enables mutual conditioning different processes on different weighing platforms.
	**[CF]**	Flags condition	Conditional function determining criteria for events, which have to occur in order to carry out the following step in dosing process.

28.5. Creating a new dosing process

Creating a new dosing process is initiated by specifying its name and code, followed by determining processes on each of the weighing platforms.

Procedure:

- Press 

key and select option **<**  **Databases>** from main menu → then select **<**  **Dosing processes>**,
- In order to create a dosing process, press **<**  **Add>** key, and confirm creating a new record in dosing process database,
- Specify name **<**  **>** and code **<**  **>** by pressing corresponding hot keys, and inserting a name and a code using an on-screen keyboard,

- Select weighing platform on which the dosing process is created, e.g.: **< Platform 1>**.
- By pressing **<Add>** key design a sequence of the dosing process to be carried out on a weighing platform no. 1, and next select one of available process functions (se table in point 28.4).
- There is a possibility of modifying an already designed process – adding or deleting a single step in a process, e.g.: in order to add an element in a process, press and hold for 4 seconds an element before which a new step should be added. Drop-down menu with available options is displayed

  Edit
  Add
  Delete
  Cancel

- Press **"Add"** and define new element of the process.

28.6. Instances of dosing processes

28.6.1. Instance 1 – Manual dosing process of 4 ingredients on 2 weighing platforms

Description:

A dosing process contains 4 ingredients, which are weighed on two weighing platforms:

- Weighing Platform 1: ingredients: Flour and Sugar
- Weighing Platform 2: ingredients: Seasoning and Water

Dosing process includes a condition, according to which before adding an ingredient "Water", all other ingredients have to be dosed. The condition is marked with signal flags, which determine dosing process between the weighing platforms, in a way which orders dosing Water ingredient as the last one. The whole process is described below in tables, separately for each weighing platform.

Dosing process name: Instance 1
Dosing process code: 1111

Dosing process from a termial level:

Platform 1:

Icon	Step	Value	Description
	1. [TI] Delay	[5s] Place empty container	Pending for loading an empty container for the first product
	2. [CI] Input condition	Input 1 – „/”	Input 1 has to take increasing tendency – press function key confirming loading a container
	3. [T] Tare	Tare	Tarring the weighing platform no. 1
	4. [DH] Dose manually	1 kg [Flour]	Manual weighing product “Flour” to obtain 1 kg mass
	5. [TI] Delay	[5s] Unload container with product	Pending for unloading the container with weighed product from the weighing platform
	6. [CI] Input condition	Input 4 – „/”	Input 4 has to take increasing tendency – press function key confirming unloading a container from the weighing platform
	7. [Z] Zero	Zero	Zeroing the weighing platform no. 1
	8. [TI] Delay	[5s] Place empty container	Pending for loading an empty container for the second product
	9. [CI] Input condition	Input 1 – „/”	Input 1 has to take increasing tendency – press function key confirming loading a container
	10. [T] Tare	Tare	Tarring the weighing platform no. 1
	11. [DH] Dose manually	0,2 kg [Sugar]	Manual weighing product “Sugar” to obtain 0,2 kg mass
	12. [TI] Delay	[5s] Unload container with product	Pending for unloading the container with weighed product from the weighing platform
	13. [CI] Input condition	Input 4 – „/”	Input 4 has to take increasing tendency – press function key confirming unloading a container from the weighing platform
	14. [Z] Zero	Zero	Zeroing the weighing platform no. 1
	15. [F] Set flags	Set signal flag 1	Setting the characteristic point of the process, which is a condition for carrying out part of the process on the second weighing platform
	16. [O] Outputs	Output 1 – „1”	Input 1 takes the high status (“1”) – signal confirming carrying out the dosing process on the weighing platform no. 1 is lit up

Platform 2:

Icon	Step	Value	Description
	1. [TI] Delay	[5s] Place empty container	Pending for loading an empty container for the third product (the first product on the 2 weighing platform)
	2. [CI] Input condition	Input 9 – „/”	Input 9 has to take increasing tendency – press function key confirming loading a container
	3. [T] Tare	Tare	Tarring the weighing platform no. 2
	4. [DH] Dose manually	0,2 kg [Seasoning]	Manual weighing product “Seasoning” to obtain 0,2 kg mass
	5. [TI] Delay	[5s] Unload container with product	Pending for unloading the container with weighed product from the weighing platform
	6. [CI] Input condition	Input 12 – „/”	Input 12 has to take increasing tendency – press function key confirming unloading a container from the weighing platform
	7. [Z] Zero	Zero	Zeroing the weighing platform no. 2
	8. [CF] Flags condition	Signal flag 1 – „1”	Checking condition, whether signal flag 1 is set to value “1” – i.e. checking whether desired part of the process has been already realized on the weighing platform no. 1. If Yes, then dosing process on the second weighing platform shall continue.
	9. [O] Outputs	Output 1 – „0”, Output 12 – „1”	Output 1 is set to low status – the signal for completing dosing process on the weighing platfofrm no. 1 is switched off; output 12 takes the high status – the main water valve is opened, for manual dosing of water ingredient.
	10. [DH] Dose manually	2 kg [Water]	Manual weighing product “Water” to obtain 2kg mass
	11. [O] Outputs	Output 12 – „0”	Output 12 is set to low status – the main water valve is closed
	12. [TI] Delay	[5s] Unload container with product	Pending for unloading the container with weighed product from the weighing platform
	13. [CI] Input condition	Input 12 – „/”	Input 12 can take increasing tendency – press function key confirming unloading a container from the weighing platform
	14. [O] Outputs	Output 9 – „1”	Output 9 is set to high status („1”) – signal confirming carrying out the dosing process on the weighing platform no. 2 is lit up
	15. [TI] Delay	[5s] Dosing process completed	Displaying a text message on the terminal confirming completion of dosing process.

Completing dosing process causes switching off all outputs of the terminal.

28.6.2. Instance 2 – Automatic dosing of 2 ingredients on 2 weighing platforms

Description:

The dosing process consists of 2 ngredients which will be weighed on 2 weighing platforms:

- Weighing Platform 1: ingredient Flour
- Weighing Platform 2: ingredient Water

The dosing process is carried out automatically, and includes a condition, that the dosing sequence is strictly determined – dosing of “Water” ingredient can be initiated only on completing the dosing process of ingredient “Flour”. The condition is marked with signal flags, which determine formulation making process between the weighing platforms, in a way which orders dosing Water ingredient as the second one. The whole process is described below in tables, separately for each weighing platform.

Dosing process name: Instance 2
Dosing process code: 2222

<u>Dosing process from a termial level:</u>

Platform 1

Icon	Step	Value	Description
	1. [CM] Weight condition	Gross<0.1 kg	Condition checking, unless the weighing platform is loaded with a mass exceeding 100 g
	2. [Z] Zero	Zero	Zeroing the weighing platform no. 1
	3. [TI] Delay	[5s] Open valve Flour	Pending for opening main valve of the container with “Flour”
	4. [DA] Automatic batching	1,2 kg [Flour]	Automtic dosing of product „Flour” to obtain 1 kg mass in bulk dosing mode (bulk dosing and fine dosing valves are opened – Outputs 1 and 2), and 0,2 kg mass is dosed using fine dosing valcve only –fine dosing valve is opened on Output 1 (for two-step dosing process)

	5. [TI] Delay	[3s] Close valve „Flour ”	Pending for closing the main valve of the container “Flour”
	6. [O] Outputs	Output 11 – „1”	Output 11 takes high status („1”) – signal confirming carrying out the dosing making process on the weighing platform no. 1 is lit up
	7. [F] Set flags	Signal flag 1 – „1”	Setting the characteristic point of the process, which is a condition for carrying out part of the process on the second weighing platform

Dosing on the first weighing platform is carried out in two-steps, as for ingredient „Flour” the outputs are set for two-step dosing – see Products database.

Platform 2

Icon	Step	Value	Description
	1. [CF] Flags condition	Signal flag 1 – „1”	Checking condition, whether signal flag 1 is set to value “1” – i.e. checking whether desired part of the process has been already realized on the weighing platform no. 1. If Yes, then dosing process on the weighing platform no. 2 shall start.
	2. [CM] Weight condition	Gross<0.1 kg	Condition checking, unless the weighing platform is loaded with a mass exceeding 100 g
	3. [Z] Zero	Zero	Zeroing the weighing platform no. 2
	4. [TI] Delay	[5s] Open valve Water	Pending for opening main valve of the container with “Water”
	5. [DA] Automatic batching	2,2 kg [Water]	Automatic dosing of ingredient “Water” to obtain 2,2 kg mass in single-step dosing mode – Output 6 controls the dosing valve
	6. [TI] Delay	[5s] Close valve Water	Pending for closing the main valve of the container “Water”
	7. [O] Outputs	Output 12 – „1”	Output 12 takes high status (“1”) – signal confirming carrying out the dosing process on the weighing platform no. 2 is lit up
	8. [TI] Delay	[5s] Dosing process completed	Displaying a text message on the terminal confirming completion of dosing process.

Additionally, in automatic dosing process, additional setting of dosing outputs for dosed ingredients have to be made – see Products database settings.

28.6.3. Instance 3 – Mixed dosing process

Description:

A dosing process contains 4 ingredients, which are weighed on two weighing platforms:

- Weighing Platform 1: ingredients Flour, Sugar and Seasoning,
- Weighing Platform 2: ingredients: Water

Dosing process is carried out manually and automatically, and it incudes a condition that the dosing sequence is strictly determined – dosing of “Water” ingredient can be initiated only on completing the dosing process of ingredient “Flour” and “Sugar”. Ingredient “Seasoning” will be added as the last one to the dosing process.

The condition is marked with signal flags, which determine formulation making process between the weighing platforms, in a way which orders dosing “Water” ingredient is dosed in an appropriate time. The whole process is described below in tables, separately for each weighing platform.

Dosing process name: Instance 3
Dosing process code: 3333

<u>Dosing process from a termial level:</u>

Platform 1:

Icon	Step	Value	Description
	1. [TI] Delay	[5s] Place container Flour on the weighing platform	Pending for loading container “Flour” on the weighing platform no. 1
	2. [CI] Input condition	Input 1 – „/”	Input 1 has to take increasing tendency – press function key confirming loading a container
	3. [T] Tare	Tare	Tarring the weighing platform no. 1
	4. [DH] Dose manually	1 kg [Flour]	Manual weighing product Flour to obtain 1 kg mass
	5. [TI] Delay	[7s] Unload container with product	Pending for unloading the container with “Flour”
	6. [CI] Input condition	Input 4 – „/”	Input 4 has to take increasing tendency – press function key confirming unloading a container from the weighing platform
	7. [O] Outputs	Output 1 – „1”	Signal on completing dosing ingredient “Flour”

	8. [Z] Zero	Zero	Zeroing the weighing platform no. 1
	9. [TI] Delay	[5s] Place container Sugar on the weighing platform	Pending for loading container “Sugar” on the weighing platform no. 1
	10. [CI] Input condition	Input 1 – „/”	Confirm loading of container “Sugar”
	11. [T] Tare	Tare	Tarring the weighing platform no. 1
	12. [DH] Dose manually	0,4 kg [Sugar]	Manual weighing product Sugar to obtain 0,4 kg mass
	13. [TI] Delay	[5s] Unload container with product	Pending for unloading the container with “Sugar”
	14. [CI] Input condition	Input 4 – „/”	Input 4 has to take increasing tendency – press function key confirming unloading a container from the weighing platform
	15. [O] Outputs	Output 2 – „1”	Signal on completing dosing ingredient “Sugar”
	16. [Z] Zero	Zero	Zeroing the weighing platform no. 1
	17. [CI] Input condition	Input 5 – „1”	Confirm pouring ingredients to a mixer
	18. [F] Set flags	Signal flag 1 – „1”	Setting the characteristic point of the process, which is a condition for carrying out part of the process on the weighing platform no. 2
	19. [O] Outputs	Output 5 – „1”	Lighting up a signalling device confirming pouring the ingredients to the mixer
	20. [CF] Flags condition	Signal flag 1 – „1” Signal flag 2 – „1”	Pending for automatic dosing of water on the weighing platform no. 2
	21. [TI] Delay	[5s] Place container Seasoning on the weighing platform	Pending for loading container “Seasoning” on the weighing platform no. 1
	22. [CI] Input condition	Input 1 – „/”	Confirm loading of container “Seasoning”
	23. [T] Tare	Tare	Tarring the weighing platform no. 1
	24. [DH] Dose manually	0,25 kg [Seasoning]	Manual weighing product Seasoning to obtain 0,25 kg mass
	25. [TI] Delay	[5s] Unload container with product	Pending for unloading the container with “Seasoning”
	26. [CI] Input condition	Input 4 – „/”	Input 4 has to take increasing tendency – press function key confirming unloading a container from the weighing platform
	27. [O] Outputs	Output 3 – „1”	Signal on completing dosing ingredient “Seasoning”
	28. [TI] Delay	[10s] Dosing completed	Displaying a text message on the terminal confirming completion of dosing process

Platform 2:

Icon	Step	Value	Description
	1. [CF] Flags condition	Signal flag 1 – „1”	Checking condition, whether signal flag 1 is set to value “1” – i.e. checking whether desired part of the process has been already realized on the weighing platform no. 1. If Yes, then dosing process on the weighing platform no. 2 shall start.
	2. [T] Tare	Tare	Tarring the weighing platform no. 2
	3. [TI] Delay	[5s] Open valve Water	Pending for opening main valve of the container with “Water”
	4. [DA] Automatic batching	2 kg [Water]	Automatic dosing of ingredient “Water” to obtain 2 kg mass in single-step dosing mode – Output 6 controls the dosing valve (set for Water in Products database)
	6. [TI] Delay	[5s] Close valve Water	Pending for closing the main valve of the container “Water”
	7. [O] Outputs	Output 12 – „1”	Output 12 akes high status (“1”) – signal confirming carrying out the dosing process on the weighing platform no. 2 is lit up
	8. [F] Set flags	Signal flag 1 – „1” Signal flag 2 – „1”	Setting the characteristic point of the process, which is a condition for carrying out part of the process on the weighing platform no. 1
	8. [TI] Delay	[10s] Dosing completed	Displaying a text message on the terminal confirming completion of dosing process

An instance of mixed dosing (manual and automatic) has been extended by signalling its corresponding phases to present the possibilities of the working mode **<Dosing>**.

28.7. Reporting of completed dosing processes

On completing each dosing process, the terminal automatically generates a report on that process.

Notice:

Submenu: “  ***Devices /***  ***Printer /***  ***Printouts /***  ***Dosing report printout template”*** *enables optional modifying of the report template (see ch. 16.2.3 of this user manual).*

Default form of the report from dosing template:

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

The report from each completed process is simultaneously saved in the database of **<Report from dosing>**, where the files are named by their date and hour of process execution and dosing process status. List of data for the dosing process – see ch. 32.7.6 of this user manual.

29. WORKING MODES – FORMULATION

<Formulation> is a working mode designed for creating formulations of products on a scale.

29.1. Starting the working mode

Procedure:

- While in main window of the software, press on-screen key, located in the upper bar of the window, which opens submenu **< Working Modes>** containing list of available working modes,
- Select working mode **<Formulation >**, the software automatically returns to displaying the main window, and the upper bar indicates the icon of selected working mode ,
- Automatically the following on-screen keys are enabled:

 Local parameters

 Select formulation

 Start formula making process

 Stop formula making process

 Select formulation ingredient from the list

 Select previous formulation ingredient to to be processed

 Select net formulation ingredient to be processed

 Set “mass from hand” – mass of an ingredient supplied in ready packaged and with determined mass

 Edit lot number of an ingredient and/or sample of a formulation ingredient

29.2. Local setting of a working mode

Local settings for the working mode **< Formulation >** are accessible on pressing a hot key **< Local parameters>**:

	**Ask for multiplier**	Causes setting a question for formulation multiplier, i.e. the number which is used to multiply the values of mass of all formulation components.
	**Ask for number of cycles**	Causes setting a question on number of formulation cycles, i.e. number of repetitions of the same formulation.
	**Confirm batching ingredients manually**	Causes enabling manual confirmation by pressing “Enter/Print” key on terminal’s keyboard for each weighing process.
	**Automatic tare**	Enable automatic tarring of mass at the moment of process start and mass of each following ingredient after the sampling process.
	**Ingredient control**	Enable control mode of an ingredient being part of a formulation. The “**Ingredient control**” mode orders giving correct ingredient code before its weighing process.

	Portion weighing	Enable portion weighing mode of a formulation for a random number of portions (samples) until obtaining a target mass.
	Report printout	Enable automatic prontout of a formulation report after completing the formula ma king process

29.3. Creating a new formulation

Procedure:

- Press Setup key and select option <**Databases>** from main menu → then select <**Formulation>**,
- In order to create a formulation, press <**Add>** key, and confirm creating a new record in formulation database.

List of data specified for a new formulation:

	Name	Formulation name
	Code	Formulation code
	Ingredients	Defining formulation ingredients
	Number of ingredients	Previewing number of ingredients in a formulation
	Formulation mass	Previewing total mass of a formulation
	Type of charge *	Type of a measuring series for a formulation
	Charge	A measuring series of a formulation

***)** – the charge type is definable as one of three values:

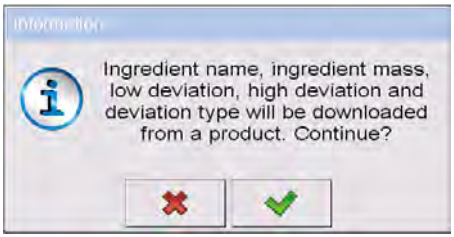
None	Function disabled
Global	Charge is carried out globally for the complete formulation
By ingredient	Charge is carried out sequantially for each ingredient

- After entering a selected weighing platform add the formulation ingredients one by one by pressing **<Add>** key.

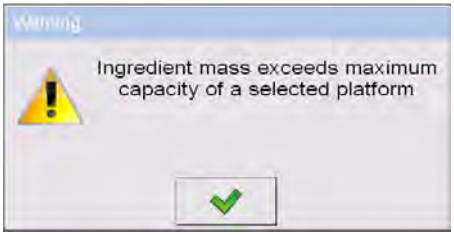
List of data created for an ingredient of a formulation:

	Name	Name of an ingredient in a formulation
	Code	Code of an ingredient in a formulation
	Product	An ingredient of a formulation selected from the database of products
	Mass	Mass of an ingredient
	Deviation type	Declaring the deviation type: the measuring unit fo an active weighing platform or the value in [%]
	Low deviation	Low deviation of an ingredient's mass
	High deviation	High deviation of an ingredient's mass
	Dispensing	Enabling down-weighing (weighing to minus) mode
	Platform	Assigning weighing platform number to an ingredient
	Dispensing	Enabling down-weighing (weighing to minus)mode

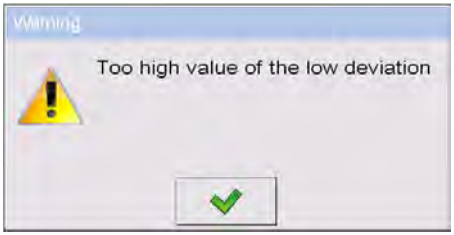
1) – In case of selectng an ingredient from the database of products the software displays the following message:



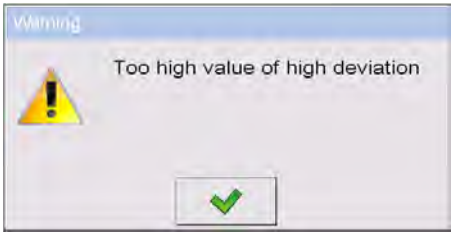
2) – in case of declaring mass of an ingredient, and when the mass exceeds the maximum capacity of a weighing platform, the software displays the following message:



3) – in case of declaring the value of the low deviation as greater than the declared ingredient mass, the software displays the following message:



4) – in case the sum of ingredients mass and the value of high deviation are exceeding the maximum capacity of a weighing platform, the software displays the following message:



- On entering the required data press  key which is equal to creating a new ingredient and adding it to the formulation composition.
- A created entry on the list comprises: the folowing number on the list, ingredient's name (selected from the database of products) and mass to be weighed.
- The software enables modifying an existing list of ingredients, i.e. adding or deleting an ingredient, e.g. in order to add an ingredient press and hold for about 4 seconds an entry on the list before which the ingredient should be added. The following menu with below content is displayed:

Edit
Add
Delete
Cancel

- Press **"Add"** and define a new ingredient of a formulation.
- After specifying all ingredients of a formulation go back to the main window

  by pressing  key.

29.4. Formula making process

Starting the formula making process requires that the authoriztion (access level) of the logged user is sufficient to start the process.

Notice:

1. *Starting the process requires that the logged user has access level at least of an* ***<operator>****. If the logged user or anonymous operator have access level set to* ***<none>*** *then on process start the software displays a message:* ***<Unauthorized access >****.*
2. *The logging procedure is described in point 11 of this user manual, and the procedure of determining the acess level for scale users is described in point 19 of this user manual.*

- Press an on-screen button  to select a required formulation.
- Enter to scale's memory gerenal parameters on the working mode (in accordance with point 29.2of this user manual),
- After returning to the main window of the **<**  **Formulation>** mode press the on-screen function key  (process start),
- If the ingredient control mode is enabled, then the scale software opens an editing window **<Ingredient control>** with a numeric keyboard and an editing field for entering a correct code of the weighed ingredient using a barcode scanner. Weighing of each following ingredient requires giving its corresponding code.

In case when:

1. The inserted code of the current ingredient is incorrect, and the ingredient is in formulation composition, the software displays the following message: **<Incorrect Ingredient Code. Ingredient already in formulation content. Go to this ingredient?>**. Accept this message by pressing  key. The software goes to the weighing process of the ingredient. If  key is pressed, the software returns to displaying the editing window **<Ingredient control >** featuring the numeric keyboard for entering the correct code of an ingredient.

2. The inserted code of the current ingredient is incorrect, and the ingredient is not in the formulation composition. The software displays a message: **<No ingredient with specified code. Abort?>**. On accepting the message by pressing  key the software goes to another ingredient on the list. If  key is pressed then the software returns to displaying the editing window **<Ingredient control>** featuring the numeric keyboard for entering the correct code of an ingredient.

3. If the inserted code of the current ingredient is correct, then the software displays a message: **<Correct Ingredient code>** and goes to ingredient's weighing process.

- The workspace on the display indicates a bargraph denoting mass of a weighed ingredient of a formulation and the following information:

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

Where:

Process in progress:	Process status
Test formulation	Name of prepared formulation
Ingredient: 1 / 3	Number of weighed ingredient / Total number of ingredients in a formulation
[Ingredient 1]	Name of the weighed ingredient
Portion: 0 g	Current mass of the weighed ingredient

Portion: -500.0 g	Current deviation fro mthe reference mass
Charge: 1 / 10	Number of weighed charge / Total number of charges
Completed: 0%	Process progress

Notice:

- *If on process start the weighing platform is loaded, the software will indicate message* ***<Load appropriate product>*** *while trying to accept a measurement****.***
- *If a user tries to accept the following weighed mass wihtout chaging mass of the load placed on the weighing platform, the software displayes a message* ***<Load appropriate product>****,*
- *If a user tries to accept mass of a portion while the parameter* ***<Portion weighing>*** *is disabled then the software displays the following message* ***<Load appropriate product>****,*
- *If a user tries to accept an exceeded value of permissible ingredient mass, then the software displays the following message* ***<Permissible value of ingredient mass exceeded. Recalculate ingredients?>****. On rejecting the message by pressing*  *key the software returns to the previous step. On accepting the message by pressing*  *key the software automatically recalculates mass of the ingredients proportionally to the exceeded value of mass and returns to formulation making process.*
- *If a user tries to accept an unstable mass indication, the software displays a message* ***<Measurements unstable>****.*

A user can abort the formula making process at optional moment by pressing an on-screen function key  (process stop) located in the bottom bar of the terminal's display.

29.5. Reporting from completed formula making processes

On completing each formula making process, the terminal automatically generates a report on that process.

Notice:

Submenu: " ***Devices /*** ***Printer /*** ***Printouts /*** ***Formulation report printout template"*** *enables optional modifying of the report template (see ch. 16.2.3 of this user manual).*

Default form of the report template from formula making process:

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

The report from each completed formula making process is simultaneously saved in the database of **<Reports From Formulation>**, where the files are named by their date and hour of process execution and formulation status. List of data for the formula making process – see ch. 32.7.8 of this user manual.

30. WORKING MODE – CPG (CONTROL OF PREPACKED GOODS)

Working mode **<CPG>** enables carrying out a control of prepacked goods (single stand of network) that is supported by database containing list of products and operators. A control started from a scale is completed automatically after checking an appropriate quantity of packages (samples).

The scale allows for connecting it with a PC computer featuring computer software **E2R SYSTEM** and thus forming a multiposition (network) system. Each scale in the network system is an independent weighing stand, and data on the control process is sent to the computer software on the real time basis.

The computer software enables real time acquiring data from each connected scale. The system allows for starting a control process from the scale or from the level of computer software.

The acquired data allow for carrying out a quality control of manufactured packaged goods for:

- Compatibility with the Regulation by the Central Office of Measures of 3 April 1997 on the requirements for a quality control of preapcked goods – by random selecting measurement results and sending them to the procedure of **control of prepacked goods**,
- Compatibility with an internal quality control system of an organization.

Notice:

Establishing a connection of a scale with the < ***E2R System>*** *is described in ch. 16.1.5 of this manual.*

30.1. Starting the working mode

Procedure:

- While in main window of the software, press on-screen key, located in the upper bar of the window, which opens submenu **<Working Modes>** containing the list of available working modes,
- Select working mode **<CPG>**, the software switches to displaying the home screen of the enabled working mode:

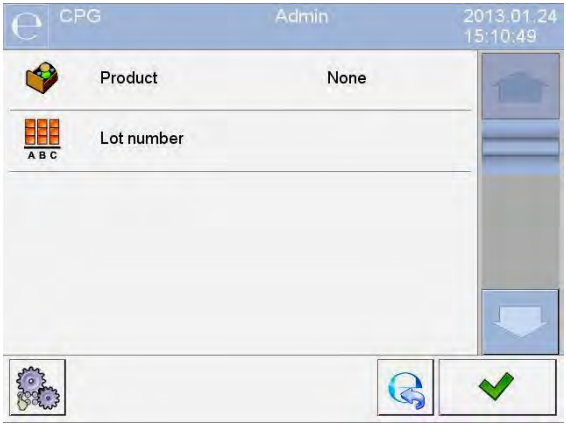
Where:

Entering control settings window

30.2. Control settings mode window

Notice:
Before entering the control settings mode carry out logging procedure, as described in ch. 11.1 of this manual.

Press buton located at the bottom of the **<CPG>** mode home screen which opens control settings window:



Where:

Selecting product from the database

Declaring number of the controlled batch

Working mode local settings

Returning to the working mode home screen

Control start

30.3. Local setting of a working mode

Local settings of the working mode <CPG> are accessible on pressing a hot-key <Local parameters> in the control settings window:

	Save mode	Detailed description in ch. 24.1 of the user manual
1 2	Number of accessible controls	Enabling simultaneous carrying out two control processes (see ch. 30.12 of the manual)
12ABC	Ask for batch number	Function trigerring providing batch number before the start of control
	Password required	Enabling the parameter requires logging in to the scale before each entering the mode settings window

30.4. Editing a product to be controlled

A product is edited in submenu "Setup / Databases".

Notice:

In case the scale cooperates with a computer software <E2R System> editing the databases from the scale level is blocked. Editing and exporting product records to the scales is carried out from the level of computer software.

Procedure:

- Enter submenu "Setup / Databases",
- Enter database <Products> and press required product record.

List of data definable for a control:

Pictogram		Data name	Description
N		**Name**	Product name
C		**Code**	Product code

		**Mass**	Product nominal mass
		**Tare**	Product tare value (set automaticallz on selecting a product from the database)
		**CPG**	-
		**CPG mode**	Control type: Non-destructive Average Tare, Non-destructive Empty-Full, Destructive Full-Empty, Destructive Empty-Full
		**Lot size**	Declaring quantity of a controlled batch
		**Charge**	Measuring series to be controlled: Non-destructive Empty-Full, Destructive Full-Empty, Destructive Empty-Full
		**Unit**	Product's weighing unit: [g] or [ml]
		**Density**	Product density (range of entered values has to contain between 0,1g/cm^3 and 5g/cm^3)
		**Quantity of packages**	Declaring quantity of packages to be controlled for determining average tare (for control type "non-destructive average tare")
		**Internal control**	Submenu for defining internal criteria of a control (see table below)

- **List of data for internal criteria**

Internal control	Enabling ✓ / disabling ✓ internal control criteria
Sample quantity	Quantity of a product sample
Erro value [- T]	Value of negative permissible error **–T**, set in a weighing unit determined for the product. Measurements below the **Qn-T** value will be comprehended as defective.
Erro value [+ T]	Value of positive permissible error **+T** set in a weighing unit determined for the product. Measurements above the **Qn+T** value will be comprehended as defective.
Quantity of disqualifying samples [Qn – 2T]	Number of recorded negative errors **-2T** in a tested sample that disqualifies a control
Quantity of disqualifying samples [Qn + 2T]	Number of recorded positive errors **+2T** in a tested sample that disqualifies a control

Quantity of disqualifying samples [Qn – T]	Number of recorded negative errors **-T** in a tested sample that disqualifies a control
Quantity of disqualifying samples [Qn + T]	Number of recorded positive errors **+T** in a tested sample that disqualifies a control
Average limit value	Mode for calculating the average limit value (constant or automatic)
Average limit value [-]	Average limit value (negative) for a tested sample (refers to averge limit value as a “constant”)
Average limit value [+]	Average limit value (positive) for a tested sample (refers to averge limit value as a “constant”)
Factor value [- Wk]	Standard deviation multiplier for the average limit value (negative) determined in the automatic mode
Factor value [+ Wk]	Standard deviation multiplier for the average limit value (postive) determined in the automatic mode

30.5. Control start procedure

To start testing:

- An operator needs to be logged on with the authorization access level high enough to perform testing.

  Caution:
  The logging on procedure is described in ch. 11. The procedure of outlining the authorization level is described in ch. 19 of this manual.

- Select a product to be tested with correctly determined data for the control process,
- Enter to scale memory general parameters on control mode (in accordance with ch. 30.2 and 30.3 of the manual),
- Remove load fro mthe weighing pan,
- Press function hot-key  (control start) located in the bottom bar of the settings window, which opens an information window on entered data:

where:

	Abort control start
	Control start

Notice:

If before control start the operator:

- *Does not remove a load from the weighing pan or other criteria for zeroing are failed (e.g. unstable weighing result) the scale displays a message:* ***<Unable to start control. Zeroing error >****,*
- *Does not log in or the logged operator is not authorized to carry out the control, the scale displays a message:* ***<No authorization >****,*
- *Does not select a product from the database, the scale displays a message:* ***<Product not selected >****,*
- *Does not declare batch quantity, the scale displays a message:* ***<Batch quantity not entered >****.*

30.6. Control aborting procedure

After control start an operator can abort the contol process in an optional moment by pressing a function hot-key  (control stop) located in the bottom bar of the control process window.

Pressing the  (control stop) key is followed by displaying a message:

Pressing  key causes reutining to the control process in progress.
Pressing  key causes terminating the control and returning to settings of the **CPG** mode.

Simultaneously, a control report with status **<Terminated>** is added to the database of **<Controls>**.

30.7. Logging out from a control process in progress

Procedure:

- While in control mode perss pictogram with name of the logged operator located in the bottom bar of the display,
- The operator is automatically logged out and simultaneously a window **<Insert Password>** for logging in is displayed with the name of the previously logged operator:

- Enter correct password and press  key to automatically return to the control process in progress,
- Pressing  key causes returning to the home screen of the **CPG** mode:

where:

Restart control - information for an operator on a possibility to resume a control process in progress

 - Control resuming button

- Pressing the  button causes displaying a logging in window **<Insert Password>** with the name of previously logged operator.
- After entering a correct password and accepting it by pressing  keym the scale automatically returns to the control process in progress.

30.8. Non-destructive average tare control mode

Before starting the control process the user can determine average tare by weighing packages. The option is enabled by activating a function **<**  **Average Tare Estimation>** in the **CPG** mode settings.

Tare control process is accompanied by below window:

Where:

Product - Product name

Code - Product code

0,25T - **0,25T** criterion value in [g]

$\bar{x}_{op}$ - Average tare of a packaging in [g]

s - Standard deviation

T LO - Characterisitcs of negative errors **T1** in a sample

2T LO - Characterisitcs of negative errors **2T1** in a sample

Net - Net mass of the controlled package

Tare - Packaging tare

Status - Packaging control status

Place packaging - Command on control process with quantity of all packages to be weighed

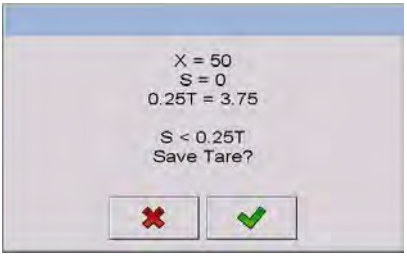
- Data on a control in progress

- Converting the workspace into a chart

- Control completion

Notice:
In order to carry out a product control using ***"non-destructive average tare"*** *mode, in accordance with the regulation on standard deviation "**S**", the mass of packages is determined from at least **10** measurements, and the standard deviation can not be greater than **0.25** of the maximum permissible negative error **T** for nominal mass of a package.*

If an operator carries out the last measurement of the packaging mass, the software displays a summary of the process. Automatically, the system generates a report is saved in the scale database:



Pressing  key causes moving to the control process without saving the determined average mass of a packaging in product record in the database.

Pressing  key causes moving to the control process with simultaneous saving the determined average mass of a packaging in product record in the database.

During the control process in progress the software carries out real-time updating of measurement results and displays them in the corresponding fields for informing an operator on control result:

Where:

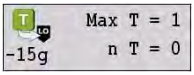
Product - Name of the controlled product

Code - Code of the controlled product

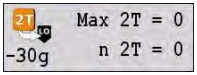
 - Nominal value of the controlled product

 - Average mass of the controlled product

 - Value of the disqualifying average



- Characteristics of negative errors **T** in a sample:
-15g – value of the negative error **T**,
Max T – permissible number of the negative errors **T**,
n T – acutal number of the negative errors **T**



- Characteristics of negative errors **2T** in a sample:
-30g - value of the negative error **2T**,
Max 2T - permissible number of the negative errors **2T**,
n 2T - acutal number of the negative errors **2T**

Net - Net mass of the controlled product

Tare - Tare of the packaging

Status - Control status: positive, negative

Put full - Commands on control process with quantity of all measurements in a batch

 - Data on a control process in progress

 - Change of the workspace: numerical data / chart

 - Control compeltion

- **Control status**

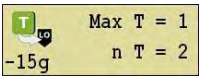
  Control status features a corresponding graphic interpretation:

   - positive,

   - negative (permitted to control sample 2)

   - negative

In case of status marked with pictogram  a corresponding workspace field changes its colour to yellow:



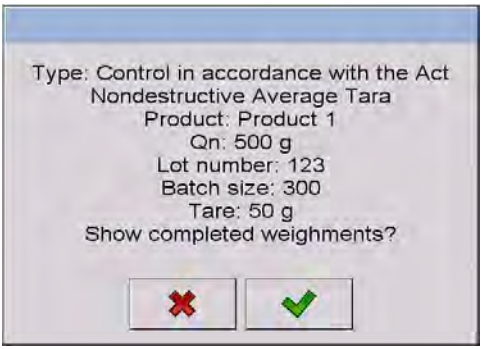
- Permissible number of netagive errors **T1** exceeded, but control of sample 2 permitted

In case of status marked with pictogram  a corresponding workspace field changes its colour to red:

- Average mass of the controlled product below the value of the disqualifying average

- **Data on control process in progress**

Pressing  key displays data on a control process in progress:



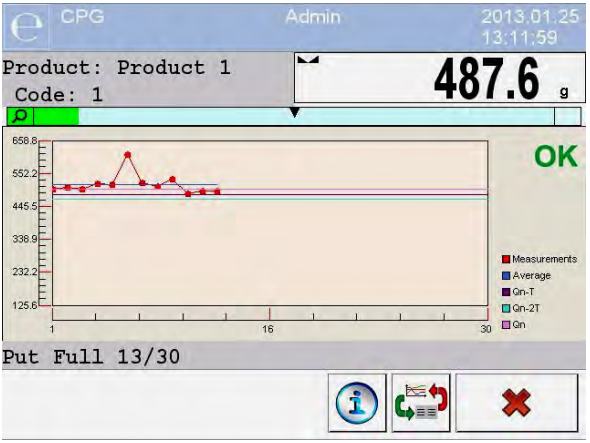
Pressing  key causes returning to the control process in progress.

Pressing  key causes moving to displaying a list of completed weighments:

In order to return to the control process in progress press  key.

- **Change of the workspace**

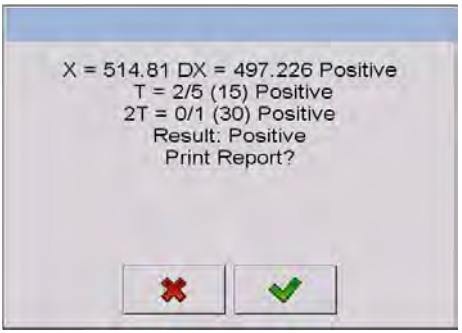
Pressing  key causes dissplayign the workspace in a form of chart with measurement results:



Additionally, pressing the workspace area enables an operator to change its format (from a line chart to a bar chart):

In order to disable the chart press  key for the second time.

After completing the control the scale generates a process summary, and the accomplished control is automatically saved in the scale database:



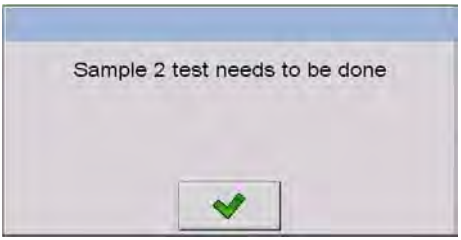
Pressing  key causes printing a report on a printer connected to the scale.

Pressing  key causes returning to settings window of the working mode **<CPG>** without printing a report.

Notice:

In case the scale cooeprates with the computer software < ***E2R System>*** *the message on process summary does not contain a option for printing a report. The data on a control is automatically sent to the computer software with possibility of printing the report from the computer level.*

If the test result is that the number of errors **T,** according to the regulations, requires expanding the sample. Operator is informed about it it the following message box:



Press  and then some descriptions and boundary criteria are changed. After the test has been comleted the test is summarised and the results are automatically saved in the database and the report can be printed on an attached printer.

Notice:
A pattern and example of the report from testing products are described in ch. 30.14 of this manual. A pattern and example of the report from estimating average tare are described in ch. 30.13 of this manual.

30.9. Performing non-distructive testing in mode Empty-Full

For mode **„Non-destructive Empty-Full”** a user sets the measurement **“charge”** in the product data. According to the set **„charge”** a message is shown that informs about putting empty packages first and then the same packages after they have been filled up in the same sequence:

Where:

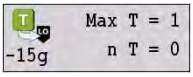
Product - Name of the controlled product

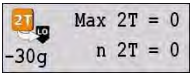
Code - Code of the controlled product

 - Nominal value of the controlled product

 - Average mass of the controlled product

 - Value of the disqualifying average

 - Characteristics of negative errors **T1** in a sample (in accordance with ch. 30.6 of the manual)

 - Characteristics of negative errors **2T1** in a sample (in accordance with ch. 30.6 of the manual)

Net - Net mass of the controlled product

Tare - Tare of the packaging

Status - Control status (in accordance with ch. 30.6)

Put Empty 1/10 - Commands on control process

(1/3) Value of the measuring lot

 - Data on a control process in progress (in accordance with ch. 30.6 of the manual)

 - Change of the workspace: numerical data / chart (in accordance with ch. 30.6 of the manual)

 - Control compeltion

After the test has been comleted the test is summarised (see ch. 30.8) and the results are automatically saved in the database.

Notice:
A pattern and example of the report from estimating average tare are described in ch. 30.14 of this manual.

30.10. Performing distructive testing in modes Empty-Full and Full-Empty

"**Destructive**" control process complying with the resulation, and independently on the batch size that exceeds 100 pcs., the size of a sample accepted by the software for control process is 20 pcs. Other control criteria are accepted as specified in the regulation.

After selecting from a list a product with set options for the destructive control with determined measuring **"lot"**, and starting the control process, the software will display messages facilitating the control process (as in the case of control process described above).

Depending on the set control mode, the scale orders the following sequence of weighing products: **"empty-full"** or **"full-empty"**.

Notice:
Remember to maintin the order for weighing products with packages and empty packages. It is important to the software that carries out mass calculations of products placed in a specific packaging.

After the test has been comleted the test is summarised (see ch. 30.8) and the results are automatically saved in the database.

Notice:
A pattern and example of the report from estimating average tare are described in ch. 30.14 of this manual.

30.11. Control in accordance with internal criteria

Select a product with correctly determined parameters for carrying out the control in accordance with the internal criteria (see ch. 30.4 of this manual).

After entering to scale memory general parameters of the working mode (in accordance with ch. 30.2 and ch. 30.3 of this manual), start control process by pressing  key (control start) located in the bottom bar of the mode settings window.

The scale automatically displays a window with data on set control parameters:

Accept the message box by pressing  key which causes moving to the control process. During control process the software carries out real-time monitoring of the measurement results and displays them it the coresponding fields of the display for informing the operator on control result:

Where:

Product - Name of the controlled product

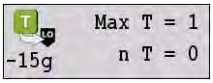
Code - Code of the controlled product

Qn - Nominal value of the controlled product

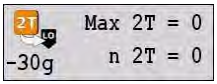
x̄ - Average mass of the controlled product

x̄ LIM - Value of the negative disqualifying average

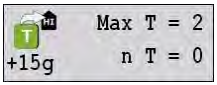
LIM x̄ - Value of the positive disqualifying average



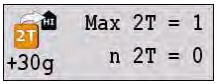
- Characteristics of negative errors **T** in a sample (in accordance with ch. 30.6 of the manual)



- Characteristics of negative errors **2T** in a sample (in accordance with ch. 30.6 of the manual)



- Characteristics of positive errors **T** in a sample:
  +15g - value of the positive error **T**,
  Max T - permissible number of the positive errors **T**,
  n T - acutal number of the positive errors **T**



- Characteristics of positive errors **2T** in a sample:
  +30g - value of the positive error **2T**,
  Max 2T - permissible number of the positive errors **2T**,
  n 2T - acutal number of the positive errors **2T**

Put Full 1/30 - Command on control process

Net - Net mass of the controlled product

- Data on a control process in progress (in accordance with ch. 30.6 of the manual)

- Change of the workspace: numerical data / chart (in accordance with ch. 30.6 of the manual)

- Control compeltion

After the test has been comleted the test is summarised (see ch. 30.8) and the results are automatically saved in the database.

Notice:
A pattern and example of the report from estimating average tare are described in ch. 30.14 of this manual.

30.12. Simultaneous carrying out two control processes

The scale enables carrying out two control processes at the same time. The option is enabled in:

- Go to local mode settings and set parameter <**Number of accessible controls**> to value **2** (dtwo controls),
- Change functions of the hot-keys for the following screens: home screen, settings and process screens. Enable hot-keys: <**Set control 1**> and <**Set control 2**> for the above screens.

Entering the **“settings window”** of a control causes displaying data on a control identifying number of the enabled control:

Notice:

With a multiplatform scale, an operator using the parameter ***<Platform>*** *ma has the option of assigning platform number to the current control.*

After entering required data on a control and starting the control process, the scale also displays data identifying the number of the enabled control:

Notice:

Processes:

- *Control carrying out,*
- *Logging out during control in progress,*
- *Control termination,*

are the same as in case of the above parts of the manual.

30.13. Report from estimating average tare

Report example:

```
Average Tare Report U/26/09/09/10/56/T
--------------------------------------

RADWAG Wagi Elektroniczne
Balance Type:       HTY KTP
Max:                1.5/3 kg
d=e:                0.5/1 g
Factory Number:     123589
Date:               2009.09.26 10:56:30
Product:            AQUABA SAUCE
Tare:               7.9 g
Value 0.25T1:       3.75 g
Number of measurements: 10
Standard Deviation:
0.3162278

Test reault: Positive

Weighings:
1. 8.5 g
2. 7.5 g
3. 8.0 g
4. 8.0 g
5. 8.0 g
6. 7.5 g
7. 7.5 g
8. 8.0 g
9. 8.0 g
10. 8.0 g


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

Report pattern:

In submenu **<**  **Printouts>** users can edit the pattern of the average tare report (see ch. 16.2.3). The default pattern is shown below:

```
Average Tare Report {301}
--------------------------------------

RADWAG Wagi Elektroniczne
{40:Balance type:,-20}{44}
{40:Max:,-20}{34}
{40:d=e:,-20}{33}
{40:Factory number:,-20}{32}
{40:Date:,-20}{295}
{40:Product:,-20}{50}
{40:Tare:,-20}{54} g
{40:Value 0.25T1:,-20}{298} g
{40:Number of measurements:,-20}{299}
{40:Standard deviation:,-20}
{297}

{40:Result:,0}{296}

{40:Measurements:,-20}
{300}

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

30.14. Report from product testing

Report example:

```
CPG Report U/26/09/09/10/59
----------------------------------------

RADWAG Wagi Elektroniczne
Balance Type:       HTY KTP
Max:                1.5/3 kg
d=e:                0.5/1 g
Factory Number:     123589
Start date:         2009.09.26 10:55:28
End date:           2009.09.26 10:59:53
Operator:           Jan Kowalski
Product:            AQUABA SAUCE
Batch Number:       123/09
```

Nominal Mass: 520 g
Tare: 7.9 g
T1 error border: 15 g
2T1 error border: 30 g
Batch quantity: 100
Number of measurements: 30
Number of T1 errors: 0
Number of 2T1 errors: 0
Min: 518 g
Max: 529.5 g
Average: 519.9833 g
Total: 15599.5 g
Limit of the average: 518.9138 g
Standard Deviation: 2.159515
CPG mode:
Nondestructive Average Tare

Result: Positive

Measurements:

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

.....

Report pattern:

In submenu **<**  **Printouts>** users can edit the pattern of the average tare report (see ch. 16.2.3). The default pattern is shown below:

```
CPG Report {279}
---------------------------------------

RADWAG Wagi Elektroniczne
{40:Balance type:,-20}{44}
{40:Max:,-20}{34}
{40:d=e:,-20}{33}
{40:Factory number:,-20}{32}
{40:Start date:,-20}{261}
{40:End date:,-20}{262}
{40:Operator:,-20}{75}
{40:Product:,-20}{50}
{40:Batch number:,-20}{260}
{40:Nominal Mass:,-20}{53}{278}
{40:Tare:,-20}{54}g
{40:T1 error border:,-20}{266}{278}
{40:2T1 error border:,-20}{267}{278}
{40:Batch quantity:,-20}{264}
{40:Number of measurements:,-20}{265}
{40:Number of T1 errors:,-20}{268}
{40:Number of 2T1 errors:,-20}{270}
{40:Min:,-20}{272}{278}
{40:Max:,-20}{273}{278}
{40:Average:,-20}{274}{278}
{40:Total:,-20}{271}{278}
{40:Limit of the average:,-20}{275}{278}
{40:Standard deviation:,-20}{276}
{40:CPG mode:,-20}
{58}

{40:Result:,0}{263}

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

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

31. WORKING MODES – DENSITY

Working mode **<Density>** enables determining density of solids, liquids and materials of high viscosity. The density is determined on basis of Archimedes principle, according to which any floating object displaces its own weight of fluid. The density mode also enables utilizing a pycnometer for determining density of liquids.

31.1. Starting the working mode

Procedure:

- While in main window of the software, press on-screen key, located in the upper bar of the window, which opens submenu **<Working Modes>** containing list of available working modes,
- Select working mode **<Density>**, the software automatically returns to displaying the main window, and the upper bar indicates the icon of selected working mode,
- Simultaneously, the workspace of the display indicates a message: **<Start estimating density>**.

31.2. Local setting of a working mode

Local settings for the working mode **<Density>** are accessible on pressing a hot key **<Local parameters>**:

	Standard liquid	Function dedicated for determining the standard liquid. There are three options: water, alcohol and other. If option “other” is selected, then its density should be specified. In case of the other two types of liquids, their ensity values are implemented in the software
	Temperature	Parameter of the standard liquid inserted by the scale user. Declared temperature of the standard liquid automatically determines its density based on a table of liquid densities. In case of the liquid type “Other”, the temperature parameter is not applicable, the density value is inserted manually
	Standard liquid density	Parameter designed for manual determining the density of standard liquid in [g/cm^3]
	Sinker volume	Parameter implemented for manual determining the volume of a sinker expressed [cm^3]

00285	Ask about sample number	Function ordering inserting number of a sample before initaining the test procedure
	Pycnometer mass	Parameter designed for manual determining mass of a pycnometer expressed in [g]. If inserted value is equal to „0” then on test procedure start, the pycnometer mass shall be measured.
	Pycnometer density	Parameter intended for manual determining volume of the pycnometer expressed in [cm^3]
	Unit	Weighing unit set to read the measurement result. This weighing unit is used for presenting measurement result, data in reports, databases and summaries.
	Save mode	Detailed description in ch. 24.2 of the user manual
	Checkweighing	Detailed description in ch. 24.4 of the user manual
	Tare mode	Detailed description in ch. 24.5 of the user manual
	Statistics	Detailed description in ch. 24.7 of the user manual

31.3. Carrying out density determination procedure

Working mode **<**  **Density>** enables determining density in 4 different methods, depending on material which density should be measured.

Methods of density determination: Liquid, Solids, Pycnometer, Porous material.

31.3.1. Determining density of liquids

Density of liquid is determined by measuring mass of a sinker with determined volume. First, the sinker has to be weighed in the air, and then in liquid of which the density should be measured.

The difference between the two measurements is displacement weight, which is used by scale software to calculate the density of tested liquid. Before starting the measurement, the sinker’s volume should be inserted to scale’s memory. The sinker’s volume is given on its hook.

Process course:

- Press **<**  **Local parameters>** key to enter the setting of local parameters in density mode.
- Press **<**  **Sinker volume>** in order to insert the volume of the sinker (given in [cm^3]) which is immersed in the tested liquid.
- On specifying the parameters exit to main menu of the density mode by pressing  key.
- In order to start density determination of liquid, press **<**  **Determine liquid density>** key, using a pre-defined hot keys on terminal's display.

Caution:

If in the local parameters, **<**  ***Ask about sample number>*** *function is enabled, then on initiating the process, the system asks for inserting the number of tested sample. The inserted sample number is linked to the process data and saved in the database.*

- The first phase of the density determination of liquid is measurement of sinker's mass in the air. Place the sinker on the scale's weighing platform. On obtaining stable measurement result, accept it by pressing **ENTER/PRINT** key.
- Next, place on scale's weighing platform tested liquid with immersed sinker. On obtaining stable measurement result, carry out the measuring process, and accept it by pressing **ENTER/PRINT** key.
- On carrying out the second measurement, the scale determines density of tested liquid and indicates the result on terminal's display. If the user needs a report from the density determination process, it can be printed on a plugged printer by pressing  key. The density determination process is then completed.
- A report from density determination of liquid is saved in **<**  **Density>** database. The report is named by process date.

31.3.2. Determining density of solids

Density of solids is determined by weighing a solid object in two different medium: in the air and in auxiliary liquid with determined density. The difference between the two measurements is displacement weight, which is used by scale software to calculate the density of tested solid.

Before starting the measurement select **<Local parameters>** menu and choose **<Standard liquid>** to be utilized in the density determination process. Also determine the temperature of the auxiliary liquid. Declaring the temperature of the auxuliary liquid enables matching its density to a table of liquid densities. In case of selecting liquid type “Other”, its density value should be specified in parameter **<Standard liquid density>**. Here, the **< Temperature>** parameter is specified only for information purpose o f the report.

Process course:

- Press **<Local parameters>** key to enter the setting of local parameters in density mode.
- Press **<Standard liquid>** key to select the auxiliary liquid used for the density determination procedure. If the auxiliary liquid is other than “Water” or “Alcohol”, then select “Other” from the available list.
- Press **< Temperature>** key and specify the temperature of the auxiliary liquid [°C]. Accept inserted value by pressing  key.
- If „Other” liquid has been selected, then press **<Standard liquid density>** and insert the density value of the auxiliary liquid expressed in **[g/cm^3]** for the specified temperature of the measurement.
- On specifying the parameters exit to main menu of the density mode by pressing  key.
- In order to start density determination of a solid, press **<Determine solid density>** key, using a pre-defined hot keys on terminal’s display.

Caution:

If in the local parameters, < 00285 ***Ask about sample number>*** *function is enabled, then on initiating the process, the system asks for inserting the number of tested sample. The inserted sample number is linked to the process data and saved in the database.*

- The first phase of the density determination of solid, is measurement of the solid object in the air. Place the object on the scale's weighing platform. On obtaining stable measurement result, accept it by pressing **ENTER/PRINT** key,
- Next, in the auxiliary liquid place scale's weighing platform with immersed tested solid object. On obtaining stable measurement result, carry out the measuring process, and accept it by pressing **ENTER/PRINT** key,
- On carrying out the second measurement, the scale determines density of tested solid and indicates the result on terminal's display. If the user needs a report from the density determination process, it can be printed on a plugged printer by pressing  key. The density determination process is then completed.
- A report from density determination of solids is saved in **<**  **Density>** database. The report is named by process date.

31.3.3. Determining density of pycnometer

Pycnometer- it is a glass vessel which enables precise measurement of liquid mass at a precisely determined volume. A measurement method applying a pycnometer is one of the simplest means of determining density of liquids (densimetric method).

The key component of a pycnometer is a ground-in stopper with dumped capillary tube, which allows easy observation of the level of liquid contained in the vessel. Before the measurement process, the pycnometer is intentionally overfilled with tested liquid, then it is closed tightly with a stopper and thermally stabilized.

The excess of liquid pouring through the capillary tube is removed with an absorbent paper. Then, the vessel is immediately placed on a scale, and its mass is determined as quickly as possible. During the mass measurement, due to contraction of the volume of liquid its level usually noticeably decreases in the capillary tube, but this does not matter if at the time of placing instrument on the scale, it was completely filled and had correct temperature. Small diameter of the capillary tube prevents evapouration of the liquid from the vessel, and therefore it does not affect the measurement result.

Before starting the density determination using a pycnometer, data on its volume and mass should be inserted to scale's memory. If pycnometer's mass is not specified in the local parameters, than the process starts with determining mass of an empty pycnometer.

Process course:

- Press <  **Local parameters>** key to enter the setting of local parameters in density mode.
- Press <  **Pycnometer mass>** key to insert the mass of a pycnometer used for determining density of tested liquid. Pycnometer's mass is expressed in grams [g]. Accept inserted value by pressing  key.
- Press <  **Pycnometer volume>** to specify the volume of the pycnometer used for determining density of tested liquid. The volume is expressed in grams [cm^3]. Accept inserted value by pressing  key.
- Press <  **Temperature>** key and specify the temperature in which the test of liquid density determination is carried out. The temperature value is expressed in [°C]. Accept inserted value by pressing  key. The temperature serves here for information purpose, and it is placed on reports from carried out processes.
- On specifying the parameters exit to main menu of the density mode by pressing  key.
- In order to start density determination using a pycnometer, press <  **Determine pycnometer density>** key, using a pre-defined hot keys on terminal's display.

Caution:

If in the local parameters, **<** 00285 ***Ask about sample number>*** *function is enabled, then on initiating the process, the system asks for inserting the number of tested sample. The inserted sample number is linked to the process data and saved in the database.*

- The first phase of density determination process is weighing a pycnometer (if its mass has been determined as "**0**" in the local parameters) – place an empty pycnometer on scale's weighing platform. On obtaining stable measurement result, accept it by pressing **ENTER/PRINT** key. If mass of a pycnometer has been determined in parameter **<** **Pycnometer mass>,** then this phase of the process is omitted,
- Then place on the scale's weighing platform a pycnometer filled with liquid. On obtaining stable measurement result, carry out the measuring process, and accept it by pressing **ENTER/PRINT** key,
- On carrying out the measurement of the pycnometer with tested liquid, the scale determines the density of the liquid, and the density determination result is indicated on terminal's display. If the user needs a report from the density determination process, it can be printed on a plugged printer by pressing  key. The density determination process is then completed,
- A report from density determination using a pycnometer is saved in **<** **Density>** database. The report is named by process date.

31.3.4. Determining density of a porous body

Determining density of a porous body is carried out in three phases:

- Weighing a porous body in the air,
- Weighing in the air of a porous body impregnated with oil,
- Weighing in auxiliary liquid of a porous body impregnated with oil.

In case of porous objects, it is necessary to carry out an oil bath, which fills and closes the pores of the material before its acutal weighing in the auxiliary liquid.

Process course:

- Press **<**  **Local parameters>** key to enter the setting of local parameters in density mode.
- Press **<**  **Standard liquid>** key to select the auxiliary liquid used for the density determination procedure. If the auxiliary liquid is other than “Water” or “Alcohol”, then select “Other” from the available list.
- Press **<**  **Temperature>** i key and specify the temperature of the auxiliary liquid [°C]. Accept inserted value by pressing  key.
- If „Other” liquid has been selected, then press **<**  **Standard liquid density>** insert the density value of the auxiliary liquid expressed in **[g/cm^3]** for the specified temperature of the measurement.
- On specifying the parameters exit to main menu of the density mode by pressing  key.
- In order to start density determination of porous body, press **<**  **Determine porous body density>** key, using a pre-defined hot keys on terminal’s display.

Caution:

If in the local parameters, **<**  ***Ask about sample number>*** *function is enabled, then on initiating the process, the system asks for inserting the number of tested sample. The inserted sample number is linked to the process data and saved in the database.*

- The first phase of the density determination of a porous body in the air. Place the object on the scale’s weighing platform. On obtaining stable measurement result, accept it by pressing **ENTER/PRINT** key,
- Then immerse the tested porous body in oil to fill its pores. Place the tested porous body impregnated with oil on scale’s weighing platform. On obtaining stable measurement result, carry out the measuring process, and accept it by pressing **ENTER/PRINT** key,
- In the third step, weight the tested porous object impregnated with oil in the auxiliary liquid. Place the tested object in the auxiliary liquid, on scale’s weighing platform and immerse both in the auxiliaty liquid. On obtaining stable measurement result, carry out the measuring process, and accept it by pressing **ENTER/PRINT** key,

- On carrying out the third measurement, the scale automatically determines the density of the porous body, and indicates the result on terminal's display. If the user needs a report from the density determination process, it can be printed on a plugged printer by pressing  key. The density determination process is then completed,
- A report from density determination of a porous body is saved in **<** **Density>** database. The report is named by process date.

31.4. Reporting from completed density determination processes

On completing each density determination process, the scale's software automatically generates a report.

Caution:

*Submenu: "****Devices /*** ***Printer /*** ***Printouts /*** ***Density printout template"*** *enables optional configuration of report template (see ch. 16.2.3 of this user manual).*

Default form of the report from density determination template:

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

The report from each completed density determination process is simultaneously saved in the database of **<** **Density>**, where the files are named by their date and hour of process execution. List of data for the density determination precess – see ch. 32.7.9 of this user manual.

31.5. Table of density parameter for water

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

31.6. Table of density parameter for ethyl alcohol

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

32. WORKING MODES – ANIMAL WEIGHING

Working mode **<Animal weighing>** enables weighing objects which do not stabilize if placed on scale's weighing platform and while carrying out weighing process. Weighing process is achieved by implementing parameter of time for stability of measurement, which is set in global parameters of the working mode. This working mode is mainly utilized for weighing different kids of animals. The mode may be controlled automatically or manually – i.e. the weighing process is triggered manually or automatically.

32.1. Starting the operating mode

Procedure:

- While in main window of the software, press on-screen key, located in the upper bar of the window, which opens submenu **<Working Modes>** containing list of available working modes,
- Select working mode **<Animal weighing >**, the software automatically returns to displaying the main window, and the upper bar indicates the icon of selected working mode,
- Simulataneously, an additional hot key is activated on the far right side of the bottom tool bar:

Start animal weighing process

32.2. Local setting of a working mode

Local settings for the working mode **<Animal weighing>** are accessible on pressing a hot key **<Local parameters>**:

	Checkweighing	Detailed description in ch. 24.4 of the user manual
	Tare mode	Detailed description in ch. 24.5 of the user manual
	Labelling mode	Detailed description in ch. 24.6 of the user manual
	Statistics	Detailed description in ch. 24.7 of the user manual

	Averaging time	Declaration of process duration in seconds (from 1s to 90s) – measurements carried out in set time interval are used to calculate mean value, which is the result of the measurement
	Automatic mode	Operation mode, in which the scale automatically begins the following measuring process, if the load placed on scale's weighing platform exceeds value of mass set in **LO** threshold.

32.3. Carrying out animals weighing procedure

- Enter the working mode **<**  **Animal weighing>** according to ch. 32.1 of this user manual,
- Should the tested animal be weighed in a container, load the container of scale's weighing platform and tare its mass,
- On placing the tested animal on the scale's weighing platform (in the tarred container), press  key (Process start), which displays a message box indicating course of the process,
- The message box contains data on:
  - o Progress bar indicated in %,
  - o Value of averaging time interval, set in loacal parameters,
  - o  key enabling aborting the process,
- On completing the measuring process, the value of measured result is locked in the message box,
- Confirm completing the process by pressing  key.

33. DATABASES

PUE HY databases hold different data:

 Products

 Operators

 Weighings / Alibi

 Clients

 Dosing processes

 Reports From dosing

 Formulations

 Reports from formulations

 Density

 Controls

 Average tare values

 Packages

 Warehouses

 Labels

 Universal variables

 Weighing counter

In order to enter <  **Databases>**, press Setup and choose <  **Databases>**.

33.1. Searching databases

Users can quickly search databases according to the following criteria:

-  Name,
-  Code.

The quick search according to the criteria above is applicable for databases of: operators, products, clients, packages, warehouses and labels.

Additionally users can search the weighing database according to <  **weighing date>**.

33.1.1. Quick name search

Procedure:

- Enter  **Databases>** according to ch. 33 of the manual,
- Enter  **Products>**,
- Press  , then an editing field appears **<Search by name>** with the screen keyboard,
- Inscribe the name of a product or its part and press  .
- The program will automatically edit the required product.

33.1.2. Quick code search

Procedure:

- Enter  **Databases>** according to ch. 33 of the manual,
- Enter  **Products>**,
- Press  , then an editing field appears **<Search by code>** with the screen keyboard,
- Inscribe the name of a product or its part and press  .
- The program will automatically edit the required product.

33.1.3. Weighing date search

Procedure:

- Enter  **Databases>** according to ch. 33 of the manual,
- Enter  **Weighings>**,
- Press  , then an editing field appears **<Specify year>** with the screen keyboard,
- Inscribe: year, month, day, hour, minute of weighing and confirm it by pressing  .
- The program will automatically display the list of weighings putting at the top the position with the entered date.

33.2. Adding new items in databases

Procedure:

- Enter **<Databases>** according to ch. 33 of this manual,
- Enter database **<Products>**,
- Press  , then the message is displayed: **<Create new record?>**,
- Confirm it by pressing  , the program automatically enters edition of new record.

Notice:
Adding new records in databases is possible only by logged-in administrators. It does not concern the database of weighings.

33.3. Deleting items in databases

Procedure:

- Enter **<Databases>** according to ch. 33 of the manual,
- Enter **<Products>**,
- Give a long press to the item, then the context menu is displayed,
- Press **<Delete>**, then a message is displayed:
  <Are you sure you want to delete?>,
- Confirm it by pressing  .

Caution:
Deleting records in databases is possible only by logged-in administrators. It does not concern the database of weighings.

33.4. Deleting older data

A user after logging on as **administrator** can delete older position in the database of weinghings **<Weighing / Alibi>**.

Caution:
Factory settings prevent users from deleting weighings that are up to one year old. Because of incompatible regulations in different countries concerning the time of protecting data this period can be modified by distributors.

Procedure:

- Enter the submenu **<Databases>** according to ch. 33 of the manual,
- Enter **<Delete older data>**, then an editing field is displayed **<Give year>** with the screen keyboard,
- Give a date before which data need to be removed and confirm it by pressing ,

  Caution:
  If a user enters a date from the protected period the program displays a message box: ***<Wrong value>****.*

- After entering a date beside protected period the program displays a message box: **<Are you sure you want to delete?>**,
- After it is confirmed by the program will start removing data and after completing it displays the number of deleted records,
- Press to leave.

33.5. Printing items from databases

Users can print any record in databases.

Procedure:

- Enter the submenu **<Databases>** according to ch. 33 of the manual,
- Enter **<Products>** and press the required item,
- After editing the required record press in the top bar of the display,
- If a printer is connected information about the selected product is printed.

Notice:
Default printout templates for printing records from different databases are described in ch. 16.2.3 of this manual.

33.6. Export a database to a file

An operator after a series of weighings can export a database to a file using a pendrive. Additionally, a user can select data to be exported.

Procedure:

- Connect a pendrive to USB,
- Enter submenu **<Databases>** according to ch. 33 of this manual,
- Enter submenu: **"Export database of weighings to a file / Data selection"**, which contains the following options:

Icon	Option	Default value
	Automatically *	✓
	Date and Time	✓
	Mass	✓
	Tare	✓
00285	Lot number	✓
12ABC	Batch number	✓
	Operator	✓
	Product	✓
	Client	✓
	Package	✓
	Source warehouse	✓
	Destination warehouse	✓

	Checkweighing	
	Platform number	
	Statistics: Number of measurements	
	Weighing counter	

***) –** Automatic selection of data to be exported (unfilled fields are omitted)

- After declaring data to be exported go back to the submenu **<**  **Export database of weighings to a file>** and select option **<**  **Export>**. The software automatically initiates exporting of the database of weighings.

Notice:

In case a pendrive is not recognized after entering **<**  **Export database of weighings to a file>** *a message is displayed:* ***<Operation failed>****.*

- After the operation has been completed: **„Operation finished successfully”** is displayed together with the file name (with extention *.txt) created on the pendrive,

  Notice:
  The file name consists of a database name and scale factory number, e.g. ***<Weighings_239800.txt>****.*

- Disconnect the pendrive to USB.

File template:

The created file comprises a table with columns separated by tabulation characters **<Tab>** in case to allow direct export to a spreadsheet **<Excel>**. The table features all data on a completed weighing record declared in the submenu: **„**  **Export database of weighings to a file /**  **Data selection”**.

33.7. Database edition

The database edition can be performed by an administrator.

33.7.1. Operators' database

Procedure:

- Enter <**Databases>** according to ch. 33 of this manual,
- Enter <**Operators>** and press the required position.

Record of operator:

		Name	Operator name
		Code	Operator code
		Password	Password to log on (max. 16 characters)
		Access level	Authorization access level
1,2..n RFID		**Card number**	Transponder card reader for logging on
		Working modes	Assigning a working mode to an operator
	auto	**Automatically**	Automatic mode: logging of a user automatically enables a working mode recently enabled by this user
		Change working mode	Permanent assigning a specific working mode to a logged operator. Setting "None" disables the function.

33.7.2. Database of products

Procedure:

- Enter <**Databases>** according to ch. 33 of this manual,
- Enter <**Products>**and press the required position.

Product record:

	**Name**	Product name
	**Code**	Product code
	**EAN code**	Product barcode
	**Mass** [1]	Nominal product mass
	**Batching outputs** [2]	Declaring numbers of outputs for fine dosing
	**Bulk batching output** [2]	Declaring numbers of outputs for bulk dosing
	**Correction 1** [2]	Value of dosing correction for weighing platform no. 1
	**Correction 2** [2]	Value of dosing correction for weighing platform no. 2
	**Correction 3** [2]	Value of dosing correction for weighing platform no. 3
	**Correction 4** [2]	Value of dosing correction for weighing platform no. 4
	**Maximum correction value** [2]	Maximal value of dosing correction
	**Min** [3]	Minimum mass for checkweighing
	**Max** [3]	Maximum mass for checkweighing
	**Deviation type** [4]	Declaring deviation type: measuring unit of a value in [%]
	**Low deviation** [4]	Low deviation from mass (mass of an ingredient in a formulation)
	**High deviation** [4]	High devition from mass (mass of an ingredient in a formulation)
	**Tare**	Tare value (it is preset automatically after selecting a product)
	**Price**	Unit price
	**CPG mode** [5]	Submenu with data delcated i nthe working mode CPG (see ch. 30.4 of the manual)

	**Number of validity dates**	Number of days to calculate expiery date
	**Date**	Constant product date
	**VAT**	Value Added Tax in [%]
	**Ingredients**	Dialogue box for entering ingredients
	**Label**	Basic label template attributed to a product
	**C Label**	Cumulative label template attributed to a product
	**CC Label**	Cumulative of cumulative label template attributed to a product

1) – Variable name dependant on an enabled working mode. In case of working modes: Weighing, Dosing, Formulation, Density, Animal weighing the variable takes the name: **"Mass"**. In case of the working mode "Parts counting" the variable takes the name: **"Part mass"**. In case of the working mode "Percent setup (Deviations)" the variable takes the name **"Standard mass"**.
2) – The variables accessible only in the working mode **"Dosing"**.
3) – The variable inaccessible for a product in the working mode **"Formulation"**.
4) – The variables accessible for a product only in the working mode **"Formulation"**.
5) – The variables accessible for a product only in the working mode **"CPG"**.

33.7.3. Database of Weighings / Alibi

Every weighing sent from a scale to a printer or a computer is saved in the database of **<Weighings / Alibi>**. Users can view the data afterwards.

Procedure:

- Enter **<Databases>** according to ch. 33 of this manual,
- Enter **<Weighings / Alibi>** and press the required position.

Weighing record:

	**Date**	Weighing date
	**Mass**	Weighing result
	**Tare**	Tare value
	**Product**	Product name
	**Operator**	Operator name
	**Client**	Client name
	**Lot number**	Number of produced lot
	**Batch number**	Number of produced batch
	**Source warehouse**	Source warehouse name
	**Destination warehouse**	Destination warehouse name
	**Package**	Package name
	**Checkweighing**	A weighing threshold (MIN, OK or MAX)
	**Platform number**	Platform number to perform weighings
	**Statistics: Number of measurements**	Statistics: Current numer of measurements
	**Weighing counter**	Gloabl counter of weighing records

33.7.4. Database of clients

Procedure:

- Enter **<**  **Databases>** according to ch. 33 of this manual,
- Enter **<**  **Client>** and press the required position.

Client records:

	Name	Client's name
	Code	Client's code
	Tax ID	Client's tax ID
	Address	Client's address
	Postal code	Client's postal code
	City	Client's Town/City
	Discount	Client's discount
	Label	Client's label template

33.7.5. Databse of dosing processes

Procedure:

- Enter <**Databases>** according to ch. 33 of this manual,
- Enter <**Dosing processes>** and press the required position.

List of data for a selected dosing process:

	Name	Dosing process name
	Code	Dosing process code
	Platform 1	Weighing platform no. 1 determined for a specific terminal
	Platform 2 *	Weighing platform no. 2 determined for a specific terminal
	Platform 3 *	Weighing platform no. 3 determined for a specific terminal
	Platform 4 *	Weighing platform no. 4 determined for a specific terminal

***) –** inumber of weighing platforms depends on determined data in the terminal settings

33.7.6. Database of reports from dosing

Procedure:

- Enter  **Databases>** according to ch. 33 of this manual,
- Enter  **Reports from dosing>** and press the required position.

List of data for a selected report from dosing:

	**Status**	Status of correctness for a completed dosing process
	**Start date**	Start date of dosing process
	**End date**	End date of dosing process
	**Dosing process**	Name of completed dosing process
	**Operator**	Operator preparing a dosing process
	**Client**	Client for which the dosing process is prepared
	**Number of Measurements**	Number of measurements within a completed dosing process

33.7.7. Database of formulations

Procedure:

- Enter  **Databases>** according to ch. 33 of this manual,
- Enter  **Formulations>** and press the required position.

List of data for a specific formulations:

	**Name**	Formulation name
	**Code**	Formulation code
	**Ingredients**	Defining ingredients of a formulation

	Number of ingredients	Previewing number of created ingredients in a formulation
	Formulation mass	Previewing total mass of a formulation
	Type of charge	Type of measuring charge of a formulation
	Charge	Measuring chanrge of a formulation

33.7.8. Database of reports from formulation

Procedure:

- Enter **<Databases>** according to ch. 33 of this manual,
- Enter **<Report from formulation>** and press the required position.

List of data for a specific report from a formulation:

	Status	Status of correctness for a completed formulation
	Start date	Start date of formula making process
	End date	End date of formula making process
	Formulation	Name of completed formulation
	Operator	Operator preparing a formulation
	Client	Client for which the formulation is prepared
	Number of Measurements	Number of measurements within a completed formulation making process

33.7.9. Database of density

Procedure:

- Enter **<Databases>** according to ch. 33 of this manual,

- Enter <  **Density>** and press the required position.

List of data for a specific report from density determination process:

00285	**Sample number**	Number of sample for which the density is determined
	Start date	Start date of density determination process
	End date	End date of density determination process
	Density	Value of determined density
	Volume	Value of determined volume
	Determination metod	Method used in process of determining density
	Operator	Operator carrying out density determination process
	Product	Product for which density is determined
	Standard liquid	Standard liquid utilized during density determination process
	Standard liquid density	Density value assigned to the standard liquid
	Temperature	Temperature of the density determination process
	Sinker volume	Value of sinker's volume immersed in tested liquid
	Weighing 1	Mass value of the 1 measurement
	Weighing 2	Mass value of the 2 measurement
	Weighing 3	Mass value of the 3 measurement
	Pycnometer mass	Value of pycnometer's mass utilized during density determination process
	Pycnometer density	Value of pycnometer's volume utilized during density determination process

33.7.10. Database of controls

Every control procedure performed on the scale is sent to a printer and saved in database <**Controls>**. Every saved control has its unique number given at the moment it is completed.

Control number pattern:

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

X - Controle mode:

U – regulation compliant control,
Z – control terminated by an operator,

yy – the last two digits of year,
MM - month,
dd - day,
HH - hour,
mm - minute of control complation.

Users can view data from subsequent controls.

Procedure:

- Enter submenu <**Databases>** according to ch. 33 of this manual,
- Enter database <**Controls>** and choose a required one.

Inventory of fields in every control:

	Batch number	Batch number of tested goods
	Status	Control Status/Result
	Start Date	Control beginning date
	End Date	Control finishing date
	Product	Tested product name
	Operator	Operator performing the test

	**X**	Average value of weighings
	**DX**	Disqualifying average value
	**S**	Standard deviation
	**Batch quantity**	Number of products in a batch for which a sample quantity is calculated
	**Sample quantity**	Number of weighings to be performed

33.7.11. Database of average tares

Before starting control **<Nondestructive Average Tare>** it is possible to perform the procedure of estimating average tare that consist in weighing empty packages. Every such procedure is automatically saved in database **<**  **Average Tares>**. Every report saved in the database is given a unique number given after the procedure has been completed.

Report number pattern:

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

X - Test mode:
U – regulation compliant test,
Z – test terminated by an operator,
yy – the last two digits of year,
MM - month,
dd - day,
HH - hour,
mm - minute of test complation.
T – average tare estimation

Users can view data from subsequent average tare tests.

Procedure:

- Enter submenu **<**  **Databases>** according to ch. 33 of this manual,
- Enter database **<**  **Average Tares>** and choose a required one.

Inventory of fields in the average tare database:

	Product	Product name which packages are tested
	Status	Test Status/Result
	Date	Date of performing procedure
	Tare	The result
	S	Standard deviation
	0.25 T1	Condition to fulfill
	Number of measurements	Number of measurements of subsequent packages
	Operator	An operator name

33.7.12. Database of packages

Procedure:

- Enter <**Databases>** according to ch. 33 of this manual,
- Enter <**Packages>** and press the required position.

Package record:

	Name	Package name
	Code	Package code
	Mass	Package weight (set automatically after choosing after choosing a package from the database)

33.7.13. Database of warehouses

Procedure:

- Enter <**Databases>** according to ch. 33 of this manual,

- Enter <  **Warehouses>** and press the required position.

Warehouse record:

	**Name**	Warehouse name
	**Code**	Warehouse code
	**Description**	Additional warehouse description

33.7.14. Database of labels

The database comprises templates of labels which users can attribute to products or clients to operate in labelling mode.

Procedure of editing databases:

- Enter <  **Databases>** according to ch. 33 of this manual,
- Enter <  **Labels>** and press the required position.

Label record:

	**Name**	Label name
	**Code**	Label code
	**Label template***	Label printout template

***)** *Ways of designing and sending templates to a scale can be found in **APPENDIX C** of this manual.*

33.7.15. Database of universal variables

The database include templates of general purpose variables which users can attribute to screen function buttons 

in order to enter any alphanumeric text intended to be printed.

Notice:
The procedure of attributing functions to buttons is described in ch. 17.2 of this manual.

Procedure of editing databases:

- Enter <  **Databases>** according to ch. 33 of this manual,
- Enter <  **Universal variables>** and press the required position.

Universal variable record:

	**Code**	Universal variable code
	**Value to pay**	Universal variable value intended to be printed

33.7.16. Counter of weighing records

The counter of weighing records contains global numer of completed weighing records carried out on the scale. The user can edit the counter of weighing records.

Notice:

*Access to the editing of the <  **Weighing counter>** is conditioned by the accessibility settings for this parameter.*

Editing procedure:

- Enter submenu <  **Databases>** in accordance with point 33 of the user manual,
- Enter option <  **Weighing counter>** which opens an editing window with the value of the counter of weighing records and an on-screen numeric keyboard.
- Insert desired value and accept it by pressing  key.

34. COMMUNICATION PROTOCOL

34.1. General information

A. A character protocol scale-terminal has been designed for communication between RADWAG scales and external devices via RS-232 interface.
B. It consists of commands sent from an external device to the scale and a responses from a scale.
C. Responses are sent every time after receiving a command (reaction for any command).
D. Using commands allows users to receive some information about the state of scale and/or influence the operation e.g.: Requesting weighing results, display control.

34.2. List of RS commands

Commands	Description of commands
Z	Zeroing
T	Tarring
OT	Get tare value
UT	Set tare value
S	Send the stable result in basic unit
SI	Send the result immediately in basic unit
SIA	Send immediate results from all platforms in basic units
SU	Send the stable result in current unit
SUI	Send the result immediately in current unit
C1	Switch on continuous transmission in basic unit
C0	Switch off continuous transmission in basic unit
CU1	Switch on continuous transmission in current unit
CU0	Switch off continuous transmission in current unit
DH	Set lower threshold
UH	Set upper threshold
ODH	Read lower threshold
OUH	Read upper threshold
SS	Simulation of pressing ENTER/PRINT key
P	Change platform
PC	Send all implemented commands

Notice:

1. *Each command have to be terminated in CR LF;*
2. *The best Policy for communication is not sending another command until the former answer has been received.*

34.3. Respond message format

After sending a request message you can receive:

XX_A CR LF	command accepted and in progress
XX_D CR LF	command completed (appears only after XX_A)
XX_I CR LF	command comprehended but cannot be executed
XX _ ^ CR LF	command comprehended but time overflow error appeared
XX _ v CR LF	command comprehended but the indication below the
XX _ OK CR LF	Command done
ES_CR LF	Command not comprehended
XX _ E CR LF	error while executing command – time limit for stable result exceeded (limit time is a descriptive parameter of the scale)

XX - command name
_ - substitutes spaces

34.4. Command's description

34.4.1. Zeroing

Syntax **Z CR LF**

Possible answers:

Z_A CR LF - command accepted and in progress
Z_D CR LF - command completed

Z_A CR LF - command accepted and in progress
Z_^ CR LF - command comprehended but zero range overflow appeared

Z_A CR LF - command accepted and in progress
Z_E CR LF - time limit for stable result exceeded

Z_I CR LF - command comprehended but cannot be executed

34.4.2. Tarring

Syntax: **T CR LF**

Possible answers:

T_A CR LF - command accepted and in progress
T_D CR LF - command completed

T_A CR LF - command accepted and in progress
T_v CR LF - command comprehended but tare range overflow appeared

T_A CR LF - command accepted and in progress
T_E CR LF - time limit for stable result exceeded

T_I CR LF - command comprehended but cannot be executed

34.4.3. Get tare value

Syntax: **OT CR LF**

Reply: **OT_TARA CR LF** – command executed

Frame format:

1	2	3	4-12	13	14	15	16	17	18	19
O	T	space	tare	space	unit			space	CR	LF

Tare - 9 characters justified to the right
Unit - 3 characters justified to the left

Notice:
Tare values are always send in adjustment unit.

34.4.4. Set tare value

Syntax: **UT_TARE CR LF**, where **TARE** – tare value

Possible replies:

UT_OK CR LF - command completed
UT_I CR LF - command correct, but not accessible at the moment
ES CR LF - command incorrect (e.g. incorrect tare format)

Notice:
Use dots as decimal points in tare values.

34.4.5. Send the stable result in basic unit

Syntax: **S CR LF**

Possible answers:

S_A CR LF - command accepted and in progress
S_E CR LF - time limit for stable result exceeded
S_I CR LF - command comprehended but cannot be executed
S_A CR LF - command accepted and in progress
MASS FRAME - mass value in basic unit is returned

Frame format:

1	2-3	4	5	6	7-15	16	17	18	19	20	21
S	space	stability	space	sign	mass	space	unit			CR	LF

Example:

S CR LF – computer command
S _ A CR LF - command accepted and in progress
S _ _ _ _ - _ _ _ _ _ _ 8 . 5 _ g _ _ CR LF – command done, mass value in basic unit is returned.

34.4.6. Send the result immediately in basic unit

Syntax: **SI CR LF**

Possible answers:

SI_I CR LF - command comprehended but cannot be executed at the moment
MASS FRAME - mass value in basic unit is returned

Frame format:

1	2	3	4	5	6	7-15	16	17	18	19	20	21
S	I	space	stability	space	sign	mass	space	unit			CR	LF

Example:

S I CR LF – computer command
S I _ ? _ _ _ _ _ _ _ 1 8 . 5 _ k g _ CR LF - command done, mass value in basic unit is returned immediately.

34.4.7. Send immediate results from all platforms in basic units

Syntax: **SIA CR LF**

Possible answers:

SIA_I CR LF - command comprehended but cannot be executed at the moment

MASS FRAME „P1" CR LF
MASS FRAME „P2" CR LF - mass values are immediately returned from all platforms in basic units

Frame format with mass from subsequent platforms as indicator reply:

1	2	3	4	5	6	7-15	16	17	18	19	20	21
P	n	space	stability	space	sign	mass	space	unit			CR	LF

n - weighing platform number
mass - 9 characters justified to the right
unit - 3 characters justified to the left

Example:

Let us assume that both platforms are connected to scale.
S I A CR LF – computer command
P 1 _ ? _ _ _ _ _ _ 1 1 8 . 5 _ g _ _ CR LF
P 2 _ _ _ _ _ _ _ _ 3 6 . 2 _ k g _ CR LF - command done, mass values from both platforms are returned in basic units

34.4.8. Send the stable result in current unit

Syntax: **SU CR LF**

Possible answers:

SU_A CR LF - command accepted and in progress
SU_E CR LF - timeout while waiting for stable results

SU_I CR LF - command comprehended but cannot be executed
SU_A CR LF - command accepted and in progress
MASS FRAME - mass value in current unit is returned

Frame format:

1	2	3	4	5	6	7-15	16	17	18	19	20	21
S	U	space	stability	space	sign	mass	space	unit			CR	LF

Example:

S U CR LF – computer command
S U _ A CR LF - command accepted and in progress
S U _ _ _ - _ _ 1 7 2 . 1 3 5 _ N _ _ CR LF - command done, mass value in current unit is returned.

34.4.9. Send the result immediately in current unit

Syntax: **SUI CR LF**

Possible answers:

SUI_I CR LF - command comprehended but cannot be executed
MASS FRAME - mass value in current unit is returned immediately

Frame format:

1	2	3	4	5	6	7-15	16	17	18	19	20	21
S	U	I	stability	space	sign	mass	space	unit			CR	LF

Example:

S U I CR LF – computer command
S U I ? _ - _ _ _ 5 8 . 2 3 7 _ k g _ CR LF - command executed and mass returned

34.4.10. Switch on continuous transmission in basic unit

Syntax: **C1 CR LF**

Possible answers:

C1_I CR LF - command comprehended but cannot be executed

C1_A CR LF - command comprehended and in progress
MASS FRAME - mass value in basic unit is returned

Frame format:

1	2	3	4	5	6	7-15	16	17	18	19	20	21
S	I	space	stability	space	sign	mass	space	unit			CR	LF

34.4.11. Switch off continuous transmission in basic unit

Syntax: **C0 CR LF**

Possible answers answers:

C0_I CR LF - command comprehended but cannot be executed

C0_A CR LF - command comprehended and executed

34.4.12. Switch on continuous transmission in current unit

Syntax: **CU1 CR LF**

Possible answers:

CU1_I CR LF - command comprehended but cannot be executed

CU1_A CR LF - command comprehended and in progress
MASS FRAME - mass value in current unit is returned

Frame format:

1	2	3	4	5	6	7-15	16	17	18	19	20	21
S	U	I	stability	space	sign	mass	space	unit			CR	LF

34.4.13. Switch off continuous transmission in current unit

Syntax: **CU0 CR LF**

Possible answers:

CU0_I CR LF - command comprehended but cannot be executed
CU0_A CR LF - command comprehended and executed

34.4.14. Set lower threshold

Syntax: **DH_XXXXX CR LF**, where: **XXXXX** – mass format

Possible answers:

DH_OK CR LF - command executed
ES CR LF - command not comprehended (wrong mass format)

34.4.15. Set upper threshold

Syntax: **UH_XXXXX CR LF**, where: **XXXXX** – mass format

Possible answers:

UH_OK CR LF - command executed
ES CR LF - command not comprehended (wrong mass format)

34.4.16. Read lower threshold

Syntax: **ODH CR LF**

Possible answers: **DH_MASA CR LF** - command executed

Frame format:

1	2	3	4-12	13	14	15	16	17	18	19
D	H	space	mass	space	unit			space	CR	LF

Mass - 9 characters justified to the right
Unit - 3 characters justified to the left

34.4.17. Read upper threshold

Syntax: **OUH CR LF**

Possible answers: **UH_MASA CR LF** - command executed

Frame format:

1	2	3	4-12	13	14	15	16	17	18	19
U	H	space	mass	space	unit			space	CR	LF

Mass - 9 characters justified to the right
Unit - 3 characters justified to the left

34.4.18. Simulation of pressing ENTER/PRINT key

Syntax: **SS CR LF**

Sending a command **S S CR LF** to a scale causes automatic saving of a weighing record in the database and simultaneous activating a declated printout template.

Notice:
While sending the command to a scale, all criteria for successful measurement execution have to be met, i.e. result control, stable mass indication, etc.

34.4.19. Change platform

Syntax: **PN CR LF**, where **N** – number of platforms (1 to 4)

Possible answers:

PN_OK CR LF - command completed
PN_I CR LF - command correct, but not accessible at the moment
ES CR LF - command incorrect (e.g. incorrect number of platforms)

34.4.20. Send all implemented commands

Syntax: **PC CR LF**

Possible answers:

PC A "Z,T,S,SI,SU,SUI,C1,C0,CU1,CU0,DH,ODH,UH,OUH,OT,UT,SIA,SS, PC" – command executed, the indicator have sent all the implemented commands.

34.5. Manual printouts / automatic printouts

Users can general manual or automatic printouts from the scale.

- Manual printouts can be performed after loading the pan and stabilizing indication by pressing **ENTER/PRINT**.
- Automatic printouts can be performed only after loading the pan and stabilizing indication.

Format frame:

1	2	3	4 -12	13	14	15	16	17	18
stability	space	sign	mass	space	unit			CR	LF

Stability character	[space] if stable [?] if not stable [^] if an indication over the range [v] if fan indication below the range
sign	[space] for positive values or [-] for negative values
mass	9 characters justified to the right
unit	3 characters justified to the left
command	3 characters justified to the left

Example:

_ _ _ _ _ _ 1 8 3 2 . 0 _ g _ _ CR LF – the printout generated from the scale after pressing **ENTER/PRINT**.

35. COOPERATION WITH PERIPHERAL DEVICES

Weighing terminals PUE HY can cooperate with the following devices:

- Computer,
- Receipt printer,
- Label printer,
- Additional display,
- Barcode scanner,
- Any peripheral device with the compatible ASCII protocol.

36. PROFIBUS COMMUNICATION MODULE

Profibus Communication Module ensures data exchange between a supervising controlling device (master) and a terminal PUE HY series (Slave) in accordance with the Profibus DP protocol.

The supervising unit enables:

- Cyclic reading in input signals from a terminal PUE HY series,
- Cyclic saving outputs status to a terminal PUE HY series.

Profibus communication functionality with the terminal PUE HY enables:

- Operation of four weighing platforms,
- Tarring,
- Zeroing,
- Setting tare value,
- Setting the value of LO limit,
- Setting the value of Min threshold,
- Setting the value of Max threshold,
- Reading inputs status,
- Setting outputs,
- Selecting an operator,
- Selecting a product,
- Selecting a client,
- Selecting a packaging,
- Selecting a source warehouse,
- Selecting a destination warehouse,
- Selecting a formulation,
- Setting lot number,
- Process stopping,
- Process starting,
- Saving / Printing,
- Statistics zeroing.

36.1. Memory map

36.1.1. Output address

Address / Offset	0	1	2	3	4	5	6	7	8	9
0	M 1	M 1	M 1	M 1	T 1	T 1	T 1	T 1	J 1	J 1
1	S 1	S 1	LO 1	LO 1	LO 1	LO1	M 2	M 2	M 2	M 2
2	T 2	T 2	T 2	T 2	J 2	J 2	S 2	S 2	LO 2	LO 2
3	LO 2	LO 2	M 3	M 3	M 3	M 3	T 3	T 3	T 3	T 3
4	J 3	J 3	S 3	S 3	LO 3	LO 3	LO 3	LO 3	M 4	M 4
5	M 4	M4	T 4	T 4	T 4	T 4	J 4	J 4	S 4	S 4
6	LO 4	LO 4	LO 4	LO 4	ST	ST	SW	SW	MIN	MIN
7	MIN	MIN	MAX	MAX	MAX	MAX	-	-	-	-
8	-	-	-	-	LOT	LOT	LOT	LOT	O	O
9	A	A	K	K	OK	OK	MZ	MZ	MD	MD
10	RC	RC	-	-	-	-	-	-	-	-

Where:

M - Mass of a weighing platform, 4 bytes, float
T - Tare of a weighing platform, 4 bytes, float
J - Measuring unit of a weighing platform, 2 bytes, word
S - Status of a weighing platform, 2 bytes, word
LO - Lo limit of a weighing platform, 4 bytes, float
MIN - MIN threshold, 4 bytes, float
MAX - MAX threshold, 4 bytes, float
LOT - Lot, 4 bytes, dword
O - Operator, 2 bytes, word
A - Product, 2 bytes, word
K - Client, 2 bytes, word
OK - Packages, 2 bytes, word
MZ - Source warehouse, 2 bytes, word
MD - Destination warehouse, 2 bytes, word
RC - Formulation, 2 bytes, word

36.1.2. Input address

Address / Offset	0	1	2	3	4	5	6	7	8	9
0	C	C	CP	CP	P	P	T	T	T	T
1	LO	LO	LO	LO	SW	SW	MIN	MIN	MIN	MIN
2	MAX	MAX	MAX	MAX	-	-	-	-	-	-
3	-	-	LOT	LOT	LOT	LOT	O	O	A	A
4	K	K	OK	OK	MZ	MZ	MD	MD	RC	RC

Where:

C - Command, 2 bytes, word
CP - Command with a parameter, 2 bytes, word
P - Active weighing platform, 2 bytes, word
T - Tare of a weighing platform, 4 bytes, float
LO - Lo limit of a weighing platform, 4 bytes, float
SW - Inputs/Outputs statuses, 2 bytes, word
MIN - MIN threshold, 4 bytes, float
MAX - MAX threshold, 4 bytes, float
LOT - Lot, 4 bytes, dword
O - Operator, 2 bytes, word
A - Product, 2 bytes, word
K - Client, 2 bytes, word
OK - Packages, 2 bytes, word
MZ - Source warehouse, 2 bytes, word
MD - Destination warehouse, 2 bytes, word
RC - Formulation, 2 bytes, word

36.2. Description of variables

36.2.1. Output variables

Reading the output variables enables obtaining data on device status.

List of output variables:

Variable	Address	Length [word]	Data type
Mass of platform 1	0	2	float
Tare of platform 1	4	2	float
Measuring unit of platform 1	8	1	word
Status of platform 1	10	1	word
Lo limit of platform 1	12	2	float
Mass of platform 2	16	2	float
Tare of platform 2	20	2	float
Measuring unit of platform 2	24	1	word
Status of platform 2	26	1	word
Lo limit of platform 2	28	2	float
Mass of platform 3	32	2	float
Tare of platform 3	36	2	float
Measuring unit of platform 3	40	1	word
Status of platform 3	42	1	word
Lo limit of platform 3	44	2	float
Mass of platform 4	48	2	float
Tare of platform 4	52	2	float
Measuring unit of platform 4	56	1	word
Status of platform 4	58	1	word
Lo limit of platform 4	60	2	float
Process status (Stop, Start)	64	1	word
Inputs status	66	1	word
Min	68	2	float
Max	72	2	float
Lot number	84	2	dword
Operator	88	1	word
Product	90	1	word
Client	92	1	word
Packaging	94	1	word
Source warehouse	96	1	word
Destination warehouse	98	1	word
Formulation	100	1	word

- **Mass of platform** – response is mass on a weighing platform in current measuring unit.
- **Tare of platform** – response is the value of tare on a weighing platform in adjustment unit.
- **Measuring unit of a platform** – determines current (displayed) measuring unit set for a weighing platform.

  Measuring unit bits:

  0 - gram [g]
  1 - kilogram [kg]
  2 - carat [ct]
  3 - pound [lb]
  4 - ounce [oz]
  5 - Newton [N]

  Example:

Bit no.	**B5**	**B4**	**B3**	**B2**	**B1**	**B0**
Value	0	0	0	0	1	0

  The scale measures with a unit: kilogram [kg].

- **Status of a platform** – determines status of a weighing platform

  Status bits:

  0 - correct measurement (the scale does not report an error)
  1 - stable measurement
  2 - scale in precise zero
  3 - scale tarred
  4 - scale in 2nd measuring range
  5 - scale in 3rd measuring range
  6 - scale reports NULL error
  7 - scale reports LH error
  8 - scale reports FULL error

Example:

Bit no.	**B8**	**B7**	**B6**	**B5**	**B4**	**B3**	**B2**	**B1**	**B0**
Value	0	0	0	0	1	0	0	1	1

The scale does not report an error, the measurement is stabilized in the 2nd measuring range.

- **LO** – response is the value of **LO** limit in an adjustment unit of a given weighing platform.
- **Process status** – determines status of a process

Decimal value of a variable	**Process status**	**Bit no.**	
		B1	**B0**
0	Process inactive	0	0
1	Process start	0	1
2	Process stop	1	0
3	Process end	1	1

- **Inputs status** – response is the status of set inputs

Input no.	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
OFF	0	0	0	0	0	0	0	0	0	0	0	0
ON	1	1	1	1	1	1	1	1	1	1	1	1

Example:

Mask of set inputs 2 and 4: 0000 0000 0000 1010

- **MIN** – response is the value of set **MIN** threshold (in a measuring unit of an enabled working mode).
- **MAX** - response is the value of set **MAX** threshold (in a measuring unit of an enabled working mode).
- **Lot number** – response is the value of lot number.
- **Operator** – response is the value of a logged operator.

- **Product** – response is the value of a selected product.
- **Client** – response is the value of a code of a selected client.
- **Packaging** – response is the value of a code of a selected packaging.
- **Source warehouse** – response is the value of a code of a source warehouse.
- **Destination warehouse** – response is the value of a code of a destination warehouse.
- **Formulation** – response is the value of a code of a selected formulation.

36.3. Input variables

Saving input variables in a terminal PUE HY series enables influencing its operation.

List of input variables:

Variable	Address	Length [word]	Data type
Command	0	1	word
Command with a parameter	2	1	word

List of parameters of a complex command:

Parameter	Address	Length [word]	Data type
Platform	4	1	word
Tare	6	2	float
LO limit	10	2	float
Output status	14	1	word
Min	16	2	float
Max	20	2	float
Lot number	32	2	dword

Operator	36	1	word
Product	38	1	word
Client	40	1	word
Packaging	42	1	word
Source warehouse	44	1	word
Destination warehouse	46	1	word
Formulation	48	1	word

- **basic command** – Setting a bit causes carrying out a task as specified in a below table:

Command bit	Command
0	Zero platform
1	Tare platform
3	Clear statistics
4	Save / Print
5	Start
6	Stop

Example:

0000 0000 0010 0000 – the command carries out process start

- **complex command** - Setting a bit causes carrying out a task as specified in a below table:

Command bit	Command
0	Setting tare value of a weighing platform
1	Setting the value of LO limit of a weighing platform
2	Setting outputs status
3	Setting the value of MIN threshold
4	Setting the value of MAX threshold

Notice:
A complex command requires setting an appropriate parameter (addresses from 4 to 48. – see table "List of parameters in a complex command").

Example:

0000 0000 0000 0010 – a command carries out setting of the LO limit for a value given in parameter LO (address 10 – see table “List of parameters in a complex command”).

- **Platform** – complex command parameter: number of a weighing platform.
- **Tare** – complex command parameter: tare value (in an adjustment unit).
- **LO** – complex command parameter: the value of LO limit (in an adjustment unit).
- **Outputs status** – complex command parameter: determines outputs status of a terminal PUE HY series.

Output no.	12	11	10	9	8	7	6	5	4	3	2	1
OFF	0	0	0	0	0	0	0	0	0	0	0	0
ON	1	1	1	1	1	1	1	1	1	1	1	1

Example:

Mask of active outputs 2 and 4: 0000 0000 0000 1010

- **MIN** - complex command parameter: the value of MIN threshold (in a measuring unit of an enabled working mode).
- **MAX** - complex command parameter: the value of MAX threshold (in a measuring unit of an enabled working mode).
- **Lot number** - complex command parameter: the value of lot number.
- **Operator** - complex command parameter: the value of a code of a logged operator.
- **Product** - complex command parameter: the value of a code of a selected product.
- **Client** - complex command parameter: he value of a code of a selected client.

- **Packaging** - complex command parameter: he value of a code of a selected packaging.
- **Source warehouse** - complex command parameter: he value of a code of a selected source warehouse.
- **Destination warehouse** - complex command parameter: he value of a code of a selected destination warehouse.
- **Formulation** - complex command parameter: response is the value of a code of a selected formulation.

Notice:
A command or a a command with a parameter is carried out once on detecting the setting of a corresponding bit. If it is necessary to repeat a command with the same bit, then first it has to be zeroed.

Example:

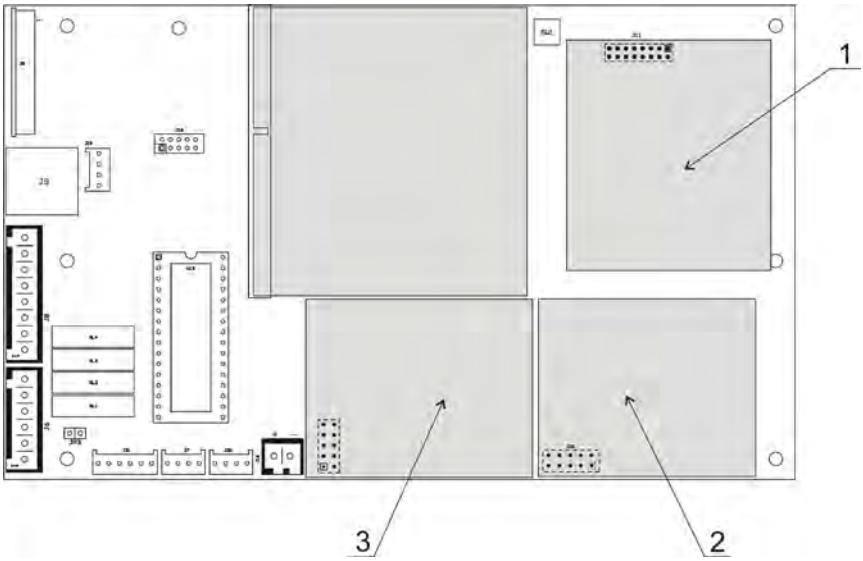
Command	**address 1**	**address 0**
Tarring	0000 0000	0000 0010
Zeroing command bits	0000 0000	0000 0000
Tarring	0000 0000	0000 0010

37. SPECIFICATION OF ADDITIONAL MODULES

Apart from standard interface, it is possible to equip terminals with additional module increasing functionality of devices:

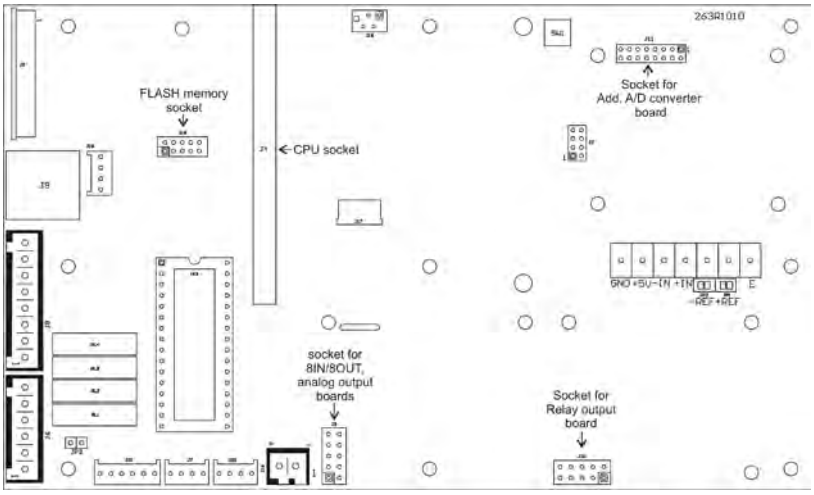
- **AN -** analogue outputs module,
- **PK 1 -** relay outputs module,
- **WE 8 -** 8 inputs / 8 outputs module,
- **DP-2** module for an additional platform.

Main board view with some additional modules being installed:



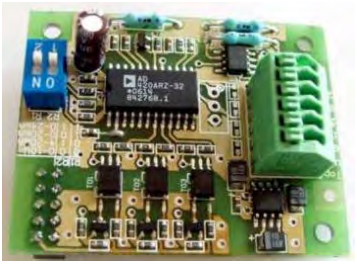
1 - additional A/D module,
2 - relay outputs module,
3 - analogue output module.

Main board view with connectors for additional modules:



J3 – WE 8 module
J3 – AN module
J10 – PK1 Relay module
J11 – DP2 module

37.1. Module of Analogue Outputs



Module of analogue outputs

Module accessible in three configurations:

- Voltage output **AN 0-10V**
- Current output **AN 4-20mA**
- Current output **AN 0-20mA**

37.1.1. Technical specification

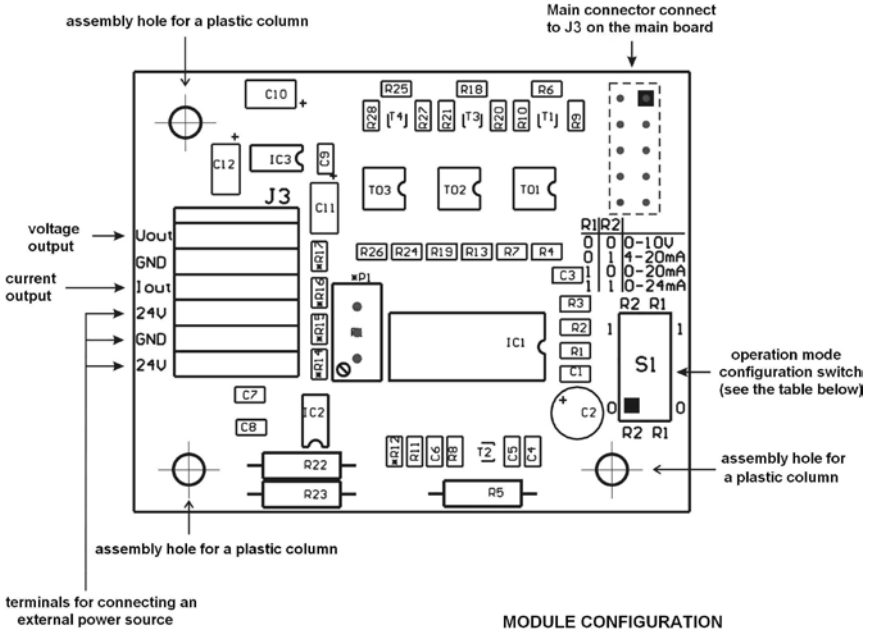
Work modes	4 - 20mA , 0 - 20mA, 0 - 10V
Resolution	16 bit
Current output resistance	<500Ω
Voltage output resistance	>400Ω
Power supply	24V DC (12 - 30V DC) max 40mA

37.1.2. The way of installing inside PUE HY

These modules are intended to mount inside PUE HY. They need to be connected to the 10-pin **J3** connector. For all configurations of **AN**, there is a gland installed on the back wall of the housing. A 3-meter shielded cables are led out via the gland. Wires should be free from insulation.

Installation procedure:

1. Unplug the scale from mains;
2. Unscrew and take off the back wall of the housing;
3. Install your module in **J3** on the main board;
4. During installation turn your attention to plastic columns. They should be placed one side in mounting holes in the main board and the other side in the mounted module;
5. Led the **PT0015** cable through one of the free glands;
6. Connect the **PT0015** cable to **J3** on the analogue module according to the description below;
7. Connect the **PT0015** cable shield to the housing (screwed terminator, 4mm diameter);
8. Screw down the back wall.



MODULE CONFIGURATION

R1	R2	Operation mode
0	0	0-10V
0	1	4-20mA
1	0	0-20mA
1	1	0-24mA

ANALOGUE OUTPUTS' MODULE CURRENT LOOP 4-20 mA SET AS DEFAULT

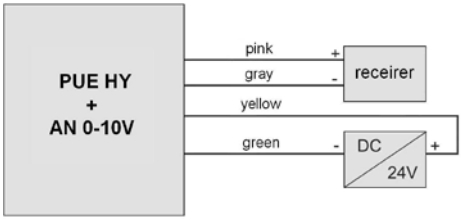
*Mounting of **AN** module on the main board of PUE HY*

37.1.3. Configuration of work modes of analogue modules

A work mode of analogue modules can be set using **S1** switch according to the drawings above (table „*configuration of analogue modules* "). Near the **S1** switch on the PCB you can find a description.

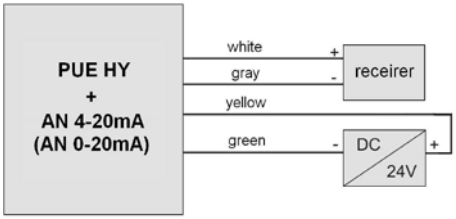
37.1.4. Connections to AN module

Drawing of connections of voltage output:



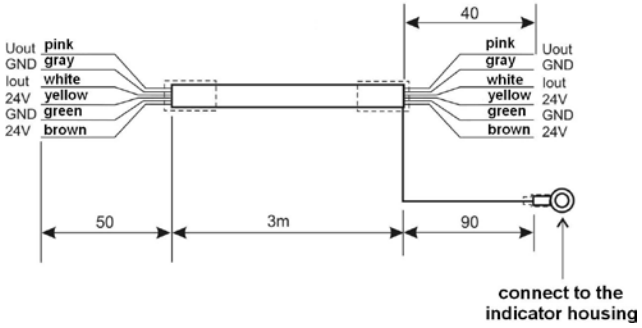
COLOURS OF WIRES	
Colour	**Signal**
Pink	U_{OUT} +
Gray	GND
Yellow	+24V DC
Green	GND

Drawing of connections of current loop:



COLOURS OF WIRES	
Colour	**Signal**
White	I_{OUT} +
Gray	GND
Yellow	+24V DC
Green	GND

PT0015
Analogue outputs' cable



Cable for analogue output

37.2. Relay module - PK1

Relay module PCB - PK1

This is an alternative solution for reed relay outputs present on the main board in the standard solution. The usage of this module excludes the usage of standard reed relay outputs. The advantage of using this module are the electrical parameters of contacts. All outputs can be freely configured (from the level of parameters). The cable is led out via a gland on the back wall of the housing (3m length).

Caution:
PK1 *modules constitutes an alternative solution for reed relays present on board. Using this module disables reed relays' outputs.*

37.2.1. Technical specification

Quantity of relays	4
Wire diameter	0,14 ÷ 0,5mm^2
Current-carrying capacity of contacts	230V AC - 2A, 30V DC - 2A

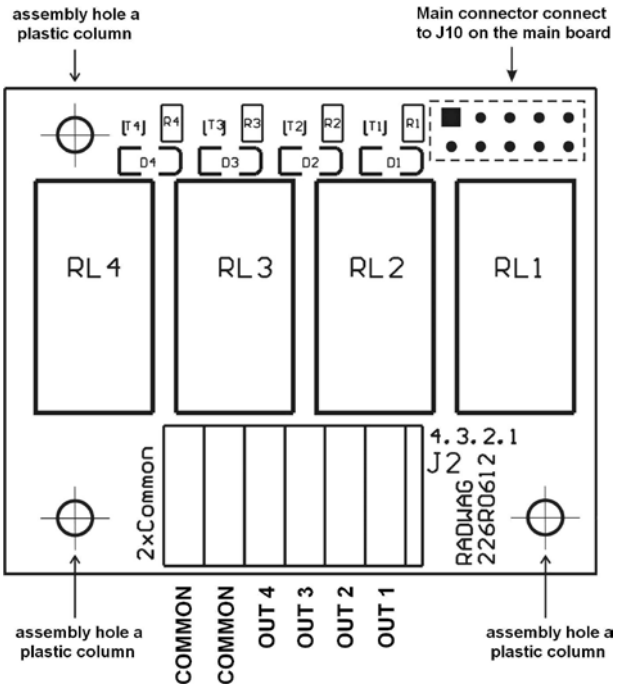
Caution:
When inductive load it is advisable to use a suppression circuit (LC or voltage-dependent resistors) installed next to the receptor. Parameters of these circuits are determined by clients.

37.2.2. Installing in PUE HY indicators

These module are intended to mount inside PUE HY indicators. It is mounted to the main board to the 10-pin **J10** connector. An additional gland is installed on the back wall and a 3m cable is led out through it Wires should be free from insulation.

Installing procedure:

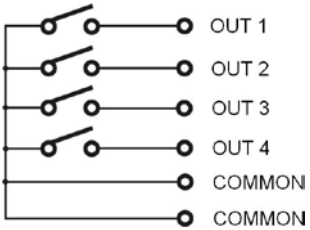
1. Unplug the scale from mains;
2. Unscrew and take off the back wall of the housing;
3. Install your module in **J10** on the main board;
4. During installation turn your attention to plastic columns. They should be placed one side in mounting holes in the main board and the other side in the mounted module PK1;
5. Led the **PT0016** cable through one of plugged glands;
6. Connect the **PT0016** cable to **J2** connector on the PCB according to the description below;
7. Screw down the back wall.



Installing a PK1 module on the main board of PUE HY

37.2.3. Drawing of cables and outputs

Relay outputs diagram:



SIGNALS AND DESIGNATIONS OF CONDUCTORS	
Wire number	**Description**
1	OUT 1
2	OUT 2
3	OUT 3
4	OUT 4
5 (yellow - green)	Common

37.3. WE 4 - 4 inputs / 4 outputs module

WE 4 module comprises 4 optoinsulated inputs and 4 optoinsulated outputs of reed relays. The input / output wires are led out via a gland on the back wall of the housing (3m length).

Caution:
As standard indicator is equipped with 3 in and 3 out sockets.

37.3.1. Technical specification

Parameters of outputs	
Quantity of outputs	4
Type of outputs	Reed operation contacts
Wire diameter	0,14 - 0,5mm^2
Maximal load-current contact capacity	0,2A DC
Maximal forward voltage	50V DC
Parameters of inputs	
Quantity of inputs	4
Input type	Optoinsulated
Wire diameter	0,14 – 0,5mm^2
Control voltage range	5 -24V DC

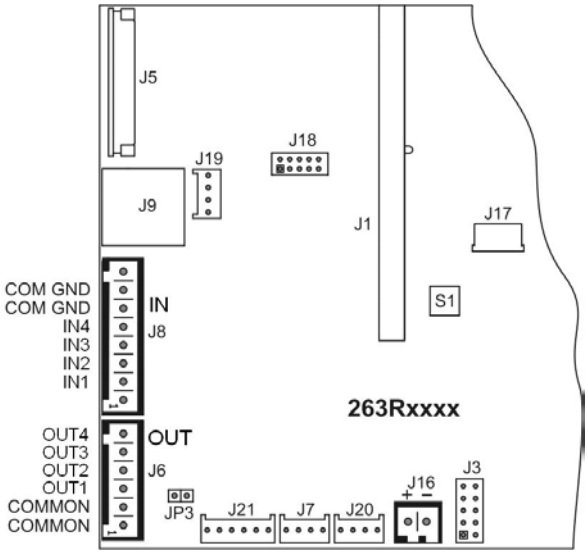
37.3.2. Colours of cables for I/O

INPUTS		OUTPUTS	
wire number	**description**	**wire number**	**description**
1	IN 1	6	OUT 1
2	IN 2	7	OUT 2
3	IN 3	8	OUT 3
4	IN 4	9	OUT 4
5	COM GND	10 (yellow - green)	COMMON

37.3.3. Installing method in PUE HY indicators

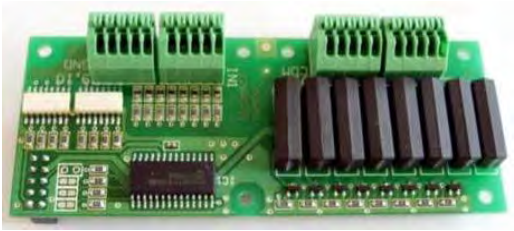
Installing procedure:

1. Unplug the scale from mains;
2. Unscrew and take off the back wall of the housing;
3. Dismount I/O socket and install a gland instead. LED the **PT0016** cable through it;
4. Connect the **PT0016** cable to the **J8** connector for inputs or to the **J6** for outputs, on the main board of PUE HY;
5. Screw down the back wall.



Installing WE4 modules on the main board of PUE HY

37.4. WE 8 - 8 inputs / 8 outputs module



8 inputs / 8 outputs PCB - WE 8

WE 8 modules can be connected as an alternative to the module of analogue output and relay module. Its task is to expand the functionality of an indicator for 8 inputs and 8 outputs freely configurable. It expands functionality of terminals. It comprises on board optoinsulated inputs and outputs freely configurable from the level of indicator.

Caution:
*If **WE 8** module is installed in it does not allow to install **AN** analogue output module and/or **PK 1** module of relays*.

37.4.1. Technical specification

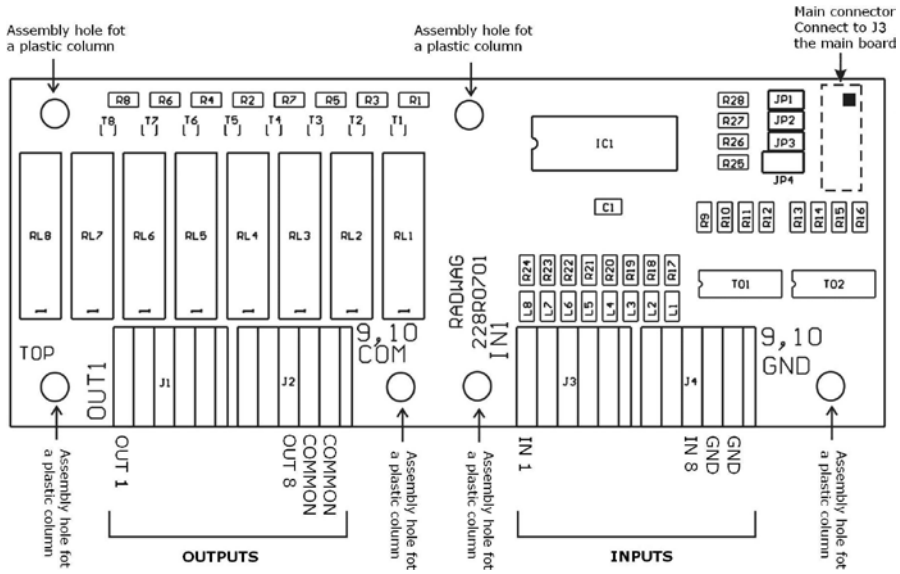
Parameters of outputs	
Quantity of outputs	8
Type of outputs	Reed operation contacts
Wire diameter	0,14 - 0,5mm^2
Maximal load-current contact capacity	0,2A DC
Maximal forward voltage	50V DC
Parameters of inputs	
Quantity of inputs	8
Input type	Optoinsulated
Wire diameter	0,14 – 0,5mm^2
Control voltage range	5 -24V DC

37.4.2. Installing method in PUE HY indicators

Module is designated for assembly inside indicator PUE HY. Module is assembled to main board of indicator to 10-pin **J3** connector. For module WE8, there are installed two additional glands on the back wall of the housing for leasing out 3m cables with insulation removed from wires' endings.

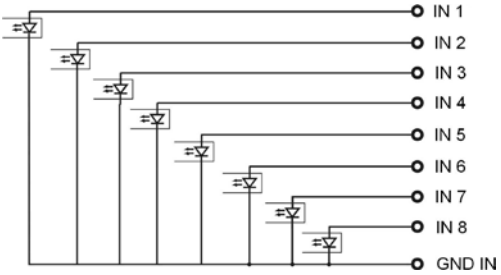
Installing procedure:

1. Unplug the indicator (remove the plug from socket 230V);
2. Unscrew the casing lid (back part of indicator casing);
3. Install the module in connector **J3** on main board;
4. While installing module pay attention to plastic posts fastening to main board. They should be placed in assembly holes in main board and in assembly holes in module WE 8,
5. Led cable PT0166 through gland M20,
6. Connect the cable IN/OUT to joint **J1**, **J2** for outputs and **J3**, **J4** for inputs on module 8IN/8OUT according to description given in table;
7. Assembly cover of indicator casing.

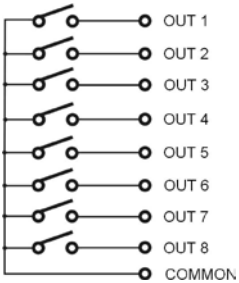


A WE 8 module placement on the main board of PUE HY

37.4.3. I/O diagram



WE8 inputs diagram



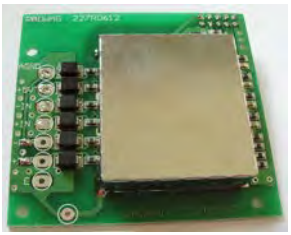
WE8 outputs diagram

37.4.4. Description of input output wires

Signals led out with two cables18x0,5mm^2 with numbered conductors.

INPUTS		OUTPUTS	
Wire number	**description**	**Wire number**	**description**
1	IN 1	10	OUT1
2	IN 2	11	OUT2
3	IN 3	12	OUT3
4	IN 4	13	OUT4
5	IN 5	14	OUT5
6	IN 6	15	OUT6
7	IN 7	16	OUT7
8	IN 8	17	OUT8
9	GND IN	18	COMMON

37.5. DP2 – module for an additional platform



DP2 PCB

DP2 modules increase functionality of PUE HY indicators by possibility of adding an additional platforms. It is intended to mount inside the indicator. DP2 modules require an additional gland to led in the platform cable.

37.5.1. Technical specification

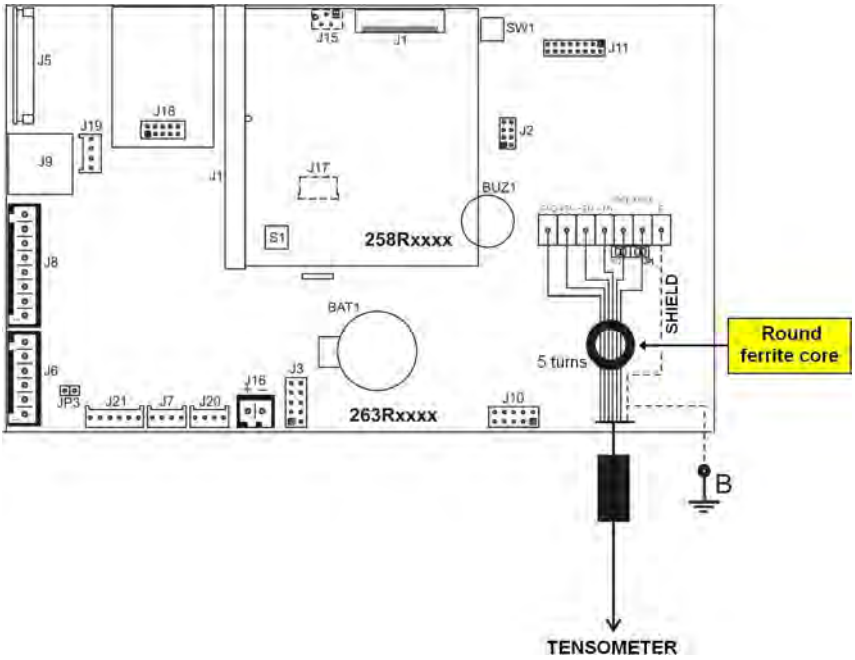
Operation Temperature	-10°C ÷ 40°C
OIML class	III
Number of verification divisions	6 000
Maximal change of input signal	19mV
Maximal voltage per verification divisions	3,25 µV
Minimal voltage per verification divisions	0,5µV
Minimal tensometer impedance	80Ω
Maximal tensometer impedance	1200Ω
Tensometer excitation voltage	5V
Types of tensometers	4 or 6 wires + shield
Number of platform	Max. 4
Multi range possibility	YES

37.5.2. Colours of wires

RADWAG Designation	Colour	Designation of soldering pads on PCB's.
+INPUT	brown	+ 5V
-INPUT	green	AGND
+OUTPUT	yellow	+ IN
- OUTPUT	white	- IN
+SENSE	grey	+ REF
- SENSE	pink	- REF
EKRAN	yellow-green	(according to the rule of connecting shields)

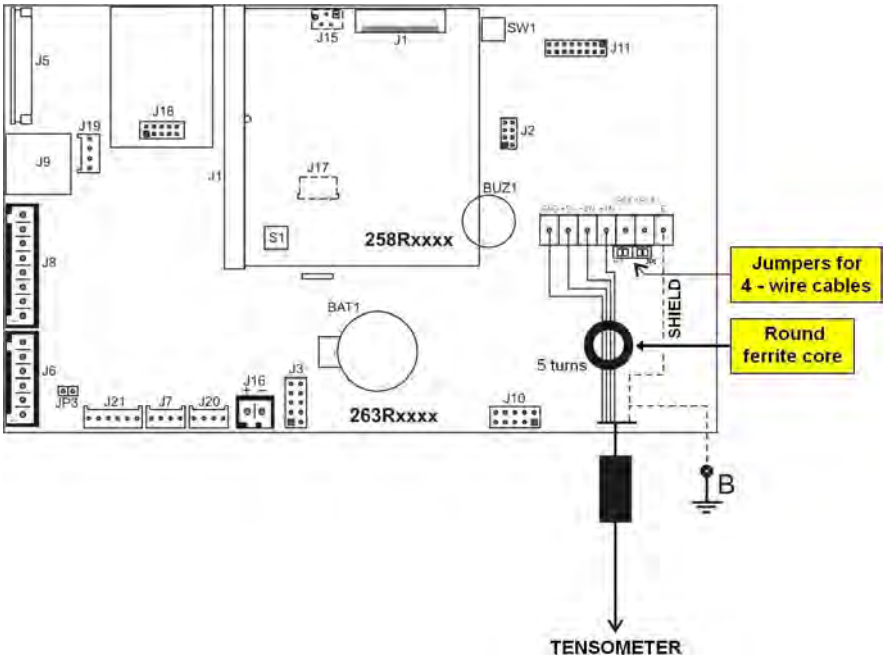
37.5.3. Connecting additional platforms

Connecting 6-wire tensometers



Radwag A/D converter PCB	Signals description in tensometers	REMARKS
E	SHIELD	
REF+	SENSE +	JP1 not soldered
REF-	SENSE -	JP2 not soldered
IN+	OUTPUT+	
IN-	OUTPUT-	
+5V	INPUT+	
AGND	INPUT-	

Connecting 4-wire tensometers



Radwag A/D converter PCB	Signals description in tensometers	REMARKS
E	SHIELD	
REF+	-	solder jumper JP1
REF-	-	solder jumper JP2
IN+	OUTPUT+	
IN-	OUTPUT-	
+5V	INPUT+	
AGND	INPUT-	

The rules of connecting shields from tensometer cable

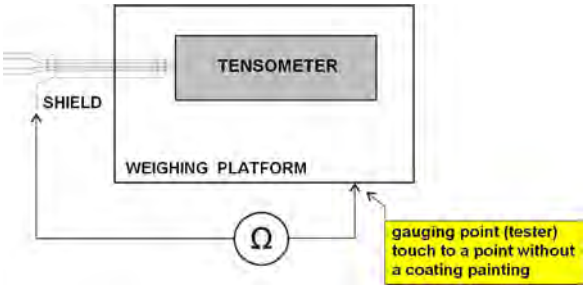
For assuring appropriate operation use the description below to connect the shield of the tensometer properly. In both cases (6- and 4-wire cables) the same way rule are valid:

	platforms connected to indicators in metal housing via a cable only	platforms electrically connected to indicators' metal housings e.g. pillars, racks
Load cells without internal shield connection to the tensometer body	**POINT B**	**E**
Load cells with internal shield connection to the tensometer body	**POINT B**	**POINT B**

Point B – screwed terminal electrically connected to the metal housing of the indicator (possible using of soldering eye).
E – soldering pad on a **DP2** PCB.

The way of checking connection between the shield and the tensometer body

Use an ohmmeter for this purpose.



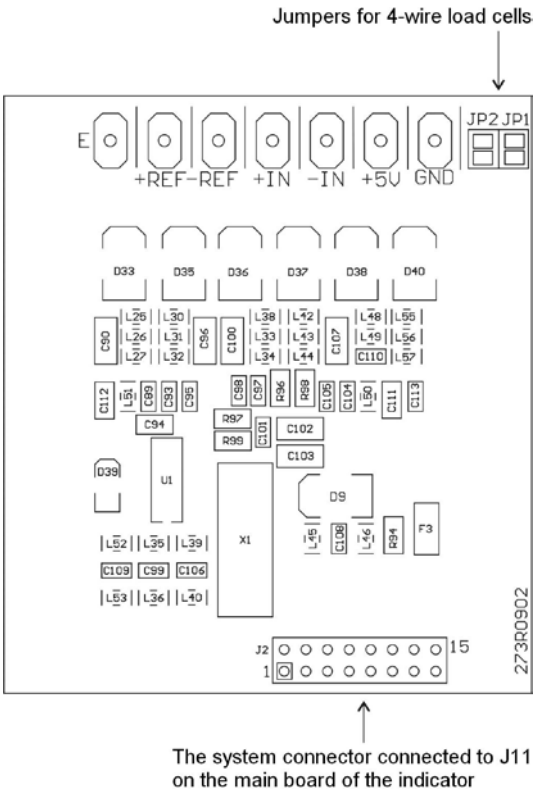
37.5.4. Installing in PUE HY housing

DP2 modules are intended to mount inside PUE HY housings. It is mounted to the main board to the 10-pin **J11** connector. For **DP2** module an additional gland is installed on the back wall of the housing.

Installing procedure:

1. Unplug the scale from mains;
2. Unscrew and take off the back wall of the housing;

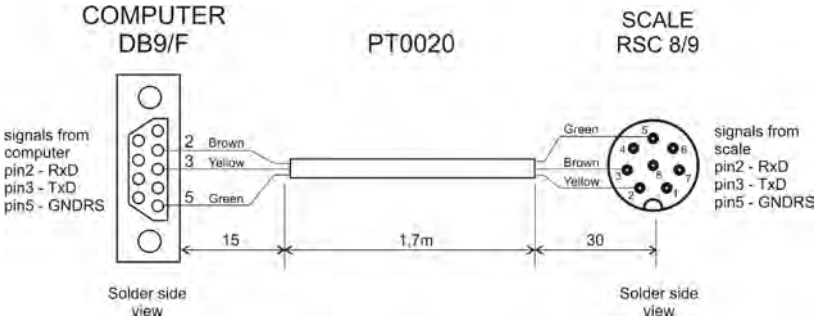
3. Install your module in **J11** on the main board:



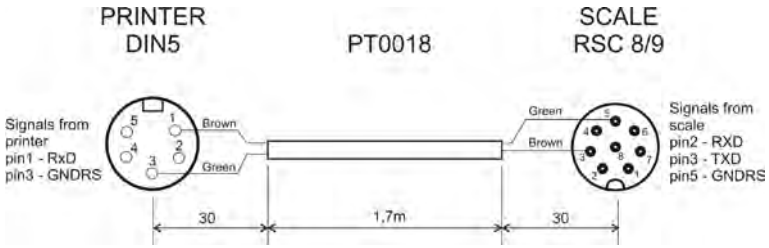
Installing DP2 module on the main board of PUE HY

4. During installation turn your attention to plastic columns. They should be placed one side in mounting holes in the main board and the other side in the mounted module **DP2**;
5. Led a tensometer cable through the gland next to the gland of main platform;
6. Put on a ferrite core on the cable (core of appropriate internal diameter);
7. Turn the wires on the ferrite core (5 turns);
8. The wires of signal cable from the load cell connect to the therminals on module DP2;
9. Fasten the cable to the housing using a band clip (to the screwed terminal on the back wall of the housing);
10. Screw down the back wall.

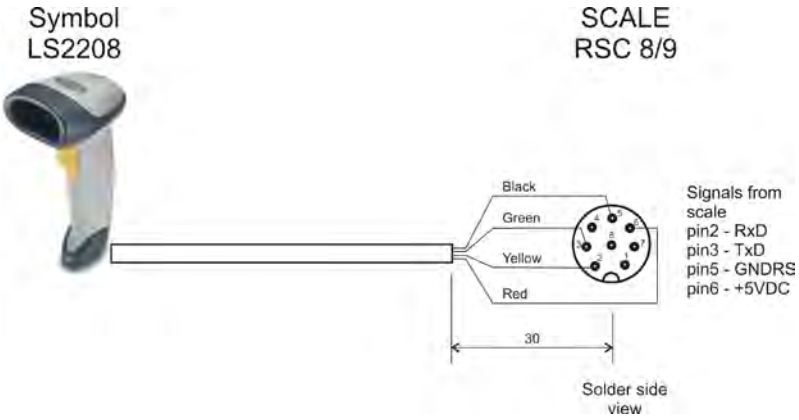
38. DIAGRAMS OF CONNECTION CABLES



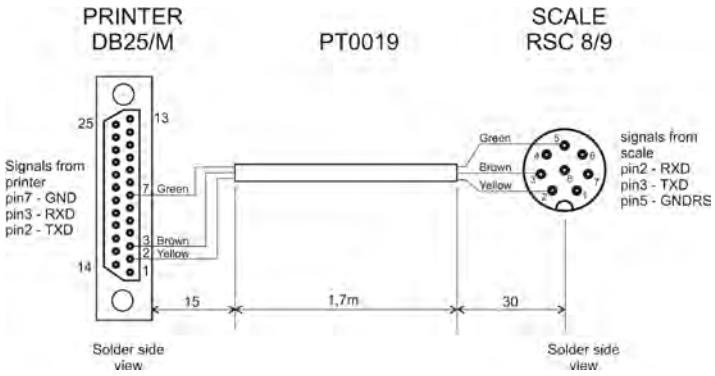
Indicator – computer cable



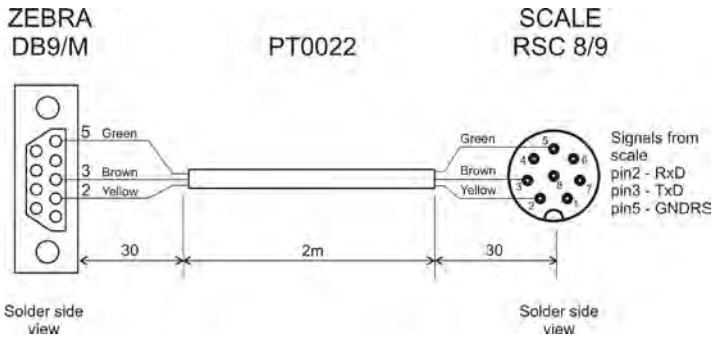
Indicator – KAFKA printer cable



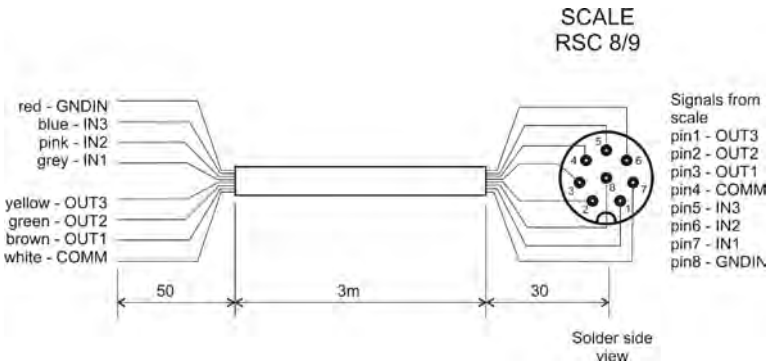
Indicator – barcode scanner (LS2208) cable



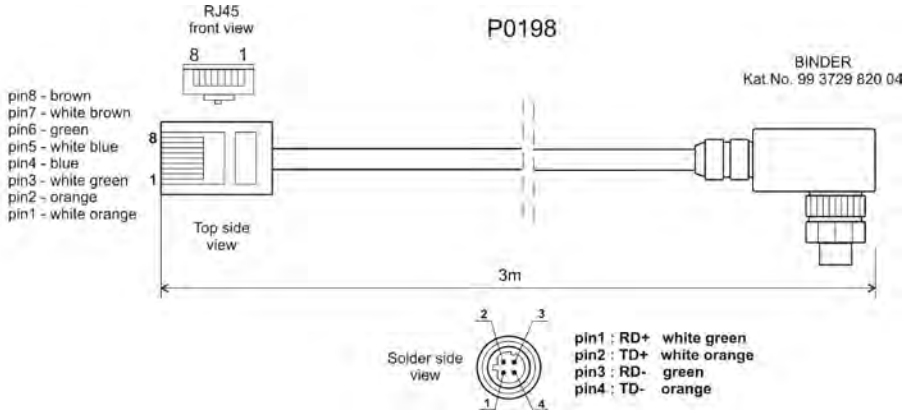
Indicator – printer (CITIZEN, EPSON) cable



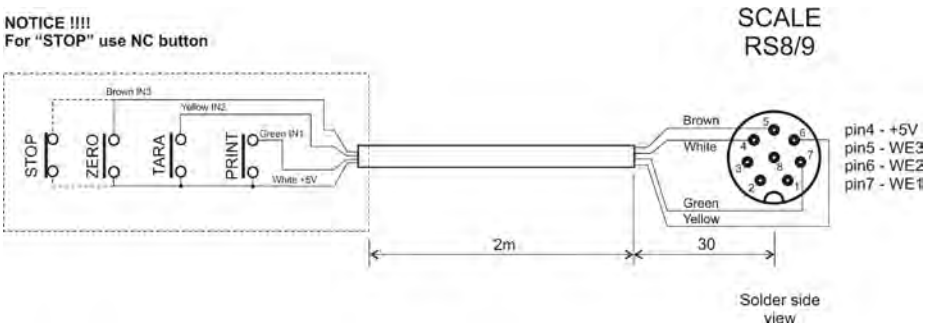
Indicator – ZEBRA printer cable



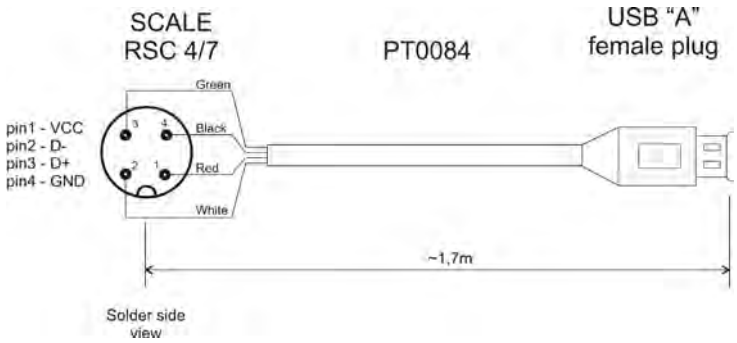
Indicator – I/O cable



Indicator – Ethernet (P0198) cable



PRINT, TARA, ZERO external buttons cable



USB cable (adapter)

39. TECHNICAL PARAMETERS

	PUE HY
Housing	stainless steel
Display	5,7” with resistive touch panel
Power Supply	100-240VAC 50-60Hz
Optional power supply	External 10-24VDC 2A
Operation Temperature	-10°C to 40°C
OIML class	III
Number of verification intervals	6000
Max. change of input signal	19.5mV
Max. Voltage per verification interval	3.25µV
Min. Voltage per verification division	0.5µV
Min. impedance of tensometer	80 Ω
Max. impedance of tensometer	1200 Ω
Tensometer excitation voltage	5V
Load cell connectivity	4 or 6 wires + shield
Number of platform	Max. 4
RS232	Standard
USB	Standard
Ethernet	Standard
3IN/3OUT (inputs/outputs)	Standard
Multi-range possibility	yes

40. ERROR MESSAGES

Err2 - Value beyond the zero range,

Err3 - Value beyond the tare range,

Err8 - Tarring / zeroing operation time exceeded,

NULL - Zero value from the AD converter,

FULL - Measurement range overflow,

HI Display range overflow,

LH - Start mass error, the mass on the weighing platform is beyond the acceptable range (-5% to +15% of start mass)

41. APPENDIX A – Variables for printouts

41.1. Inventory of variables

Notice:
Every variable needs to be included in brace brackets e.g. {x}, where x – variable number.

A list of variables accessible in the system for defining printout templates and data displayed in the workspace of scale's screen:

Symbol	Description
{0} [1)]	Standard printout in adjustment unit
{1} [1)]	Standard printout in current unit
{2}	Date
{3}	Time
{4}	Date & Time
{5}	Mathematical function
{6}	Net mass in current unit
{7}	Net mass in adjustment unit
{8}	Gross mass
{9}	Tare
{10}	Current unit
{11}	Adjustment unit
{12}	Minimum threshold
{13}	Maximum threshold
{14}	Lot number
{15}	Statistics: Number
{16}	Statistics: Sum
{17}	Statistics: Average
{18}	Statistics: Minimum
{19}	Statistics: Maximum
{20}	Cumulative of Cumulative Statistics: Quantity
{21}	Cumulative of Cumulative Statistics: Sum
{22}	Cumulative of Cumulative Statistics: Average
{23}	Cumulative of Cumulative Statistics: Min
{24}	Cumulative of Cumulative Statistics: Max
{25}	Mass: lb
{26}	Checkweighing
{27}	Value to pay
{28}	C Value (cumulative amount to pay)

{29}	CC value (cumulative of cumulatives amount to pay)
{30}	Gross (amount to pay + VAT)
{31}	Platform number
{32}	Factory Number
{33}	Scale division
{34}	Range
{35}	Counting pieces: Sample weight
{36}	Deviations: Sample weight
{37}	Statistics: Standard deviation
{38}	CC Statistics: Standard deviation
{39} [2)]	Universal variable
{40}	Text information
{41}	Batch number
{42}	Statistics: Weighing counter
{43}	Platform mass
{44}	Balance type
{45}	Parts counting: Sample size
{50}	Product: Name
{51}	Product: Code
{52}	Product: EAN Code
{53}	Product: Mass
{54}	Product: Tare
{55}	Product: Unit price
{56}	Product: Min
{57}	Product: Max
{58} [3)]	Product: Testing Prepackages mode (CPG)
{59}	Product: Number of validity days
{60}	Product: VAT
{61}	Product: Date
{62}	Product: Expiry Date
{63} [3)]	Product: Density
{64} [4)]	Product: Ingredients
{65}	Product: Description
{75}	Operator: Name
{76}	Operator: Code
{77}	Operator: Access level
{80}	Package: Name
{81}	Package: Code
{82}	Package: Mass
{85}	Client: Name
{86}	Client: Code
{87}	Client: Tax ID

{88}	Client: Address
{89}	Client: Postal code
{90}	Client: City
{91}	Client: Discount
{130}	Source Warehouse: Name
{131}	Source Warehouse: Code
{132}	Source Warehouse: Description
{135}	Destination Warehouse: Name
{136}	Destination Warehouse: Code
{137}	Destination Warehouse: Description
{140}	Net mass in adjustment unit: Total
{141}	Additional display: WD
{142}	Additional display: WWG
{143}	Hex
{144}	Hex UTF8
{145}	Partial mass
{146}	Gross mass in current unit
{147}	Tare in current unit
{148}	Additional display: PUE7
{149}	IP Adress
{155}	Density: Start date
{156}	Density: End date
{157}	Density: Method
{158}	Density: Standard liquid
{159}	Density: Standard liquid density
{160}	Density: Temperature
{161}	Density: Sinker volume
{162}	Density
{163}	Density: Unit
{164}	Density: Sample number
{165}	Density: Weighing 1
{166}	Density: Weighing 2
{167}	Density: Weighing 3
{168}	Density: Volume
{169}	Density: Pycnometer mass
{170}	Density: Pycnometer density
{175}	Dosing process: Name
{176}	Dosing process: Code
{177}	Dosing process: Cycle number
{178}	Dosing process: Number of cycles
{180}	Dosing report: Start date
{181}	Dosing report: End date

{182}	Dosing report: Result
{183}	Dosing report: Number of measurements
{184}	Dosing report: Total
{185}	Dosing report: Measurements
{186}	Measurements: Nominal mass
{187}	Measurements: Difference
{205}	Adjustment track record: Nominal Mass
{206}	Adjustment track record: Platform number
{220}	Formulation: Name
{221}	Formulation: Code
{222}	Formulation: Cycle number
{223}	Formulation: Number of cycles
{224}	Formulation: Process progress
{225}	Formulation: Process progress in %
{226}	Formulation: Ingredient name
{227}	Formulation: Difference
{228}	Formulation: Portion
{229}	Formulation: Nominal mass
{230}	Formulation: Number of current ingredient
{231}	Formulation: Number of ingredient
{232}	Formulation: Number of current manufacturing unit
{233}	Formulation: Number of manufacturing unit
{234}	Formulation: Status
{235}	Formulation: Min
{236}	Formulation: Max
{237}	Formulation: Ingredient code
{240}	Formulation report: Start Date
{241}	Formulation report: End Date
{242}	Formulation report: Result
{243}	Formulation report: Number of measurements
{244}	Formulation report: Total
{245}	Formulation report: Measurements
{246}	Measurements: Nominal mass
{247}	Measurements: Difference
{248}	Formulation report: Ingredient code
{260}	CPG Report: Batch Number
{261}	CPG Report: Start date
{262}	CPG Report: End date
{263}	CPG Report: Result
{264}	CPG Report: Lot quantity
{265}	CPG Report: Number of Measurements
{266}	CPG Report: T1 error border

{267}	CPG Report: 2T1 error border
{268}	CPG Report: Number of T1 errors
{269}	CPG Report: Acceptable number of T1 errors
{270}	CPG Report: Number of 2T1 errors
{271}	CPG Report: Total
{272}	CPG Report: Min
{273}	CPG Report: Max
{274}	CPG Report: Average
{275}	CPG Report: Limit of the average
{276}	CPG Report: Standard deviation
{277}	CPG Report: Measurements
{278}	CPG Report: Unit
{279}	CPG Report: Report Number
{280}	CPG Report: Value of T1 error [+]
{281}	CPG Report: Value of 2T1 error [+]
{282}	CPG Report: Number of T1 errors [+]
{283}	CPG Report: Permissible number of T1 errors [+]
{284}	CPG Report: Number of 2T1 errors [+]
{285}	CPG Report: Permissible number of 2T1 errors
{286}	CPG Report: Permissible number of 2T1 errors [+]
{287}	CPG Report: Navigating bar
{288}	CPG Report: Qualifying number of T1 errors
{289}	CPG Report: Tare
{290}	CPG Report: Average limit value [+]
{295}	Average Tare Report: Date
{296}	Average Tare Report: Result
{297}	Average Tare Report: Standard deviation
{298}	Average Tare Report: 0.25T1
{299}	Average Tare Report: Number of Measurements
{300}	Average Tare Report: Measurements
{301}	Average Tare Report: Report Number
{302}	Average Tare Report: Average Tare

Notice:

1) *Variables {0} and {1} is terminated by CR LF, i.e. the cursor is moved to the beginning of the next line by default,*

2) *In case of variable {39}, each position from the database (1,2-n) is formated as follows: Position 1 - {39:1}, Position 2 - {39:2}, etc.*

3) *In case of variable {64}, each line (L1-Ln) is formatted according to the template: Line 1 - {64:L1}, Line 2 - {64:L2}, etc.*

41.2. Formatting variables

Users can format numeric, text and date variables intended for displaying or printing out.

Different format commands:

- Justification to the left,
- Justification to the right,
- Setting the number of characters for printout / display,
- Declaration of the number of digital places for numeric variables,
- Date&Time formatting,
- Formatting numeric variables for EAN13 codes,
- Formatting numeric variables and dates for EAN128/GS1-128 codes.

Format characters:

Character	Description	Example
,	Separates veriables from format strings	**{7,10}** – Net mass in adjustment unit situated in 10-character string justified to the right.
-	Minus sign or justification to the left	**{7,-10}** - Net mass in adjustment unit situated in 10-character string justified to the left
:	Precides formatting or sepatates hours, minutes and seconds	**{7:0.000}** - Net mass in adjustment unit always with three decimal places ; **{3:hh:mm:ss}** – Present time in the format : hours : minutes : seconds
.	The first dot in the format string determines the location of the decimal separator in the formatted value; any additional dot characters are ignored.	**{55:0.00}** – Unit price always with two decimal places; **{17:0.0000}** – Average value form weighings with four decimal places;
F	The number is converted to a string of the form "-ddd.ddd…" where each 'd' indicates a digit (0-9). The string starts with a minus sign if the number is negative.	**{7:F2}** - Net mass in adjustment unit always with two decimal places. **{7,9:F2}** - Net mass in adjustment unit always with two decimal places in 9-character string justified to the right.
V	Formatting mass and derivatives for EAN13 codes	**{7:V6.3}** - Net mass for EAN13 (6-character code) with three decimal characters
T	Formatowanie masy i wielkości pochodnych do masy w kodzie EAN128	**{7:T6.3}** – Net mass for EAN128/GS1-128 with two decimal places.

/	Date separator between days, months and years	**{2:yy/MM/dd}** – Present date formatted as: year - month - day, where **yy** represents two less significant digits of year.
****	„Escape" character removing formatting function form next character to allow it to be used as a character in a text string.	**{2:yy\/MM\/dd}** – Present date formatted as yesr / month / day; **{2:yy\:MM\:dd}** –Present date formatted as: year : month : day. In case of necessity of using **„\"** as literal it should be preceded by another escape characterj "\\".

Format examples:

Symbol	Description
{7:V6.3}	Net mass for EAN 13 (6-character code)
{7:V7.3}	Net mass for EAN 13 (7-character code)
{27:V6.3}	Net amount to pay for EAN 13 (6-character code)
{27:V7.3}	Net amount to pay for EAN 13 (7-character code)
{7:T6.3}	Net mass for EAN 128/GS1-128
{16:T6.3}	Cumulative net mass for EAN 128/GS1-128
{21:T6.3}	Cumulative of cumulative net mass for EAN 128/GS1-128
{25:T6.3}	Net mass in lb for EAN 128/GS1-128
{8:T6.3}	Gross mass for EAN 128/GS1-128
{55:T6}	Product price for EAN 128/GS1-128
{2:yyMMdd}	Date for EAN 128/GS1-128
{61:yyMMdd}	Product date for EAN 128/GS1-128
{62:yyMMdd}	Expiary date for EAN 128/GS1-128
{16:V6.3}	Cumulative net mass for EAN 13 (6-character code)
{16:V7.3}	Cumulative net mass for EAN 13 (7-character code)
{28:V6.3}	Total/cumulative amount to pay for EAN 13 (6-character code)
{28:V7.3}	Total/cumulative amount to pay for EAN 13 (7-character code)
{21:V6.3}	Cumulative of cumulative net mass EAN 13 (6-character code)
{21:V7.3}	Cumulative of cumulative net mass EAN 13 (7-character code)
{29:V6.3}	Total/cumulative of cumulative amount to pay EAN 13 (6-character code)
{29:V7.3}	Total/cumulative of cumulative amount to pay EAN 13 (7-character code)

41.3. Mathematical function

Extended functionality of the mathematical functions with use of a variable **<{5} Mathematical function>** enables carrying out an optional operation on numbers and variables available on the list. The basic available mathematical functions are:

- Adding (+)
- Subtracting (-)
- Multiplying (*)
- Dividing (/)

The additional functionality provides using in the calculation the existing variables, thus enabling acquiring mass from a specified weighing platform, and its processing in a desired way.

An example:

{5: ([43:1] + [43:2]) / 2}

The above application of a variable **<{43} Platform mass>** causes acquiring mass from a weighing platform determined in the formatter (:1 and :2), and their dividing by 2 which enables taking the average mass from both weighing platforms. Use of the brackets enables carrying out the operation in an appropriate sequence and in accordance with basic matjematical principles.

Notice:
*Variables in the structure of the mathematical operations are noted insquare brackets **[ ]** and not as previously in **{ }** brackets.*

Additionally, a operator can use the advanced functions enabling extended means of data modification. The advanced functions are used in a form of text marker and arguments in brackets:

- round (numeric value, rounding precision (number)) - rounding
- abs (numeric value) – absolute value
- sin (numeric value) - sine
- cos (numeric value) - cosine
- tan (numeric value) - tangent
- sqrt (numeric value) - radical
- pow (numeric value, power base (number)) - power
- log (numeric value) – logarithm
- log10 (numeric value) – logarithm base 10

Notice:
A numeric value is comprehended as an optional number or an optional mathematical operation that returns a numeric value.

There are additional functions that modify the text values, and they can also operate on numbers that are coverted to text:

- remove (“text value”, initial place (number), quantity of characters to be removed (number)) – a return is a residue after deleting a part of the text value, from the initial point to a determined quantity of characters. In case the third parameter is not specified the text value will be deleted till its end.
- substring (“text value”, initial place (number), quantity of characers to be copied (number)) – a return is copied text value from the initial point to a quantity of characters to be copied. In case the third parameter is not specified the text value will be copied till the end.
- tolower (“text value”) – a return is a complete text value in small letters.
- toupper (“text value”) – a return is a complete text value in capital letters.
- replace (“text value”, old text, new text) – a return is a text with replaced letters of parts of the text, determined in the second and their parameter.

Notice:
*The text values are put in quotation marks **“ ”**.*

Examples:

remove (“Text sample”,11) – the operation causes returning a text value: “Text sample”.

toupper (“Text sample”) – the operation causes returning a text value “TEXT SAMPLE”.

replace (“Text sample”, “text ”, “text”) - the operation causes returning a text value “Text sample”.

replace (”2.000”,”0”,”1”) - the operation causes returning a text value “2.111”. The value can be used for standard mathematical calculations, where it will be converted “on the fly” in case the operation requires it.

42. APPENDIX B – Functions of programmable buttons

Icon	Function name
	ENTER
	Zero
	Tare
	Enter tare
	Parameters
	Local Parameters
	Set MIN and MAX
	Statistics (cumulative) : Print and zero
	Statistics (cumulative) : Print
	Statistics (cumulative) : zero
	Statistics (cumulative of cumulative) : Print and zero
	Statistics (cumulative of cumulative) : Print
	Statistics (cumulative of cumulative) : zero
	Edit lot number
	Edit batch number

	Start
	Stop
	Choose an operator
	Choose an operator by name
	Choose an operator by code
	Choose a product
	Choose a product by name
	Choose a product by code
	Choose a package
	Choose a package by name
	Choose a package by code
	Choose a client
	Choose a client by name
	Choose a client by code
	Choose a source warehouse
	Choose a source warehouse by code
	Choose a destination warehouse

	Choose a destination warehouse by name
	Choose a destination warehouse by code
	Change working mode
	Counting pieces: Specify piece mass
	Counting pieces: Estimate piece mass
	Counting pieces: Ascribe standard
	Deviations: Specify sample mass
	Deviations: Estimate sample mass
	Emergency stop
	Chute permission
	Disable tare
	Restore tare
	Change unit
	Change platform
	Edit universal variable 1
	Edit universal variable 2
	Edit universal variable 3

	Edit universal variable 4
	Edit universal variable 5
	Selekt dosing process
	Selekt dosing process by name
	Selekt dosing process by code
	Select formulation
	Select formulation by name
	Select formulation by code
	Ingredients
	Determine liquid density
	Determine solid density
	Determine pycnometer density
	Determine porous body density
	Edit number of labels
	Edit number of C labels
	Edit number of CC labels
	Print Screen

43. APPENDIX C – Label template

A label template can be created in 2 ways:

- From the terminal level using variables,
- Using PC software **EDYTOR ETYKIET R02**. A created project needs to be saved as an **„lb”** file then copied on a pendrive that can be connected to the terminal. Finally transfer the file to the database in the scale.

While a label is in the database of labels it can be ascribed to products or/and clients in order to work in labelling mode.

43.1. Designing a label from the terminal level

Procedure:

- Enter **<**  **Databases>** according to ch. 33 of this manual,
- Enter **<**  **Labels>** and press on the required position.
- After entering **<**  **Label template>** an editing field with the screen keyboard appears
- Modify the existing template using the list of variables accessible after pressing  ,
- Confirm changes by pressing  .

Notice:

In the bottom line of the screen keyboard there are additional buttons that help to modify a label template:

 *On-screen keyboard on / off*

 *Read label templates from *.lb files (see – ch. 42.3)*

 *Saving printout template in a file format *.lb (option enabled on plugging a portable data storage device to scale port)*

 *Select variables for the display template (inventory of variables can be found in APPENDIX A)*

 *Clearing the editing field*

43.2. Designing a label on a computer

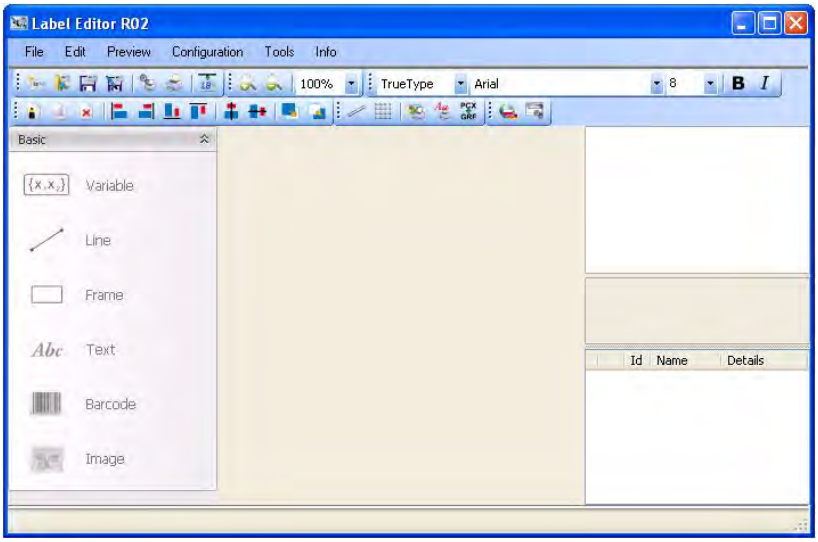
Example:

Let us create a label template for the label below:

Notice:
*The installer of **EDYTOR ETYKIET R02** is accessible to download on website: **www.radwag.com.** on the overlap: Products / Measuring indicators / PUE 7.*

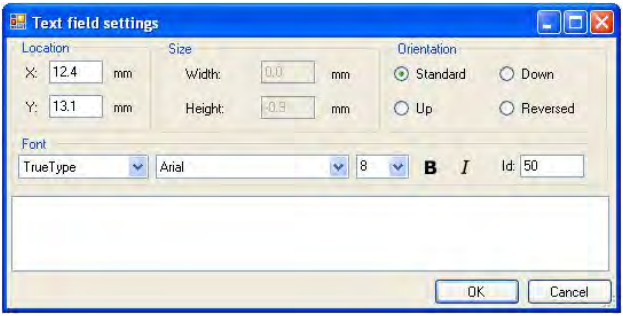
Procedure:

1. Run computer program **LABEL EDITOR R02**, then the main window of the program is displayed:



Notice:
Prior to designing a label a new project needs to be created with initial printer and label settings. A description of creating new projects can be found in instruction manual „Label Editor R02" accessible in the program menu: „Info / User manual".

2. In order to add a text to the label chose **<Abc Text>** from the list of objects and then click on the workspace of label, then window **<Text field settings>** opens:



3. Type the required text in the box at the bottom of the window: PORK CHARCUTERIE SMITH&SMITH Ltd and press OK to confirm, then the text is put automatically on the label,

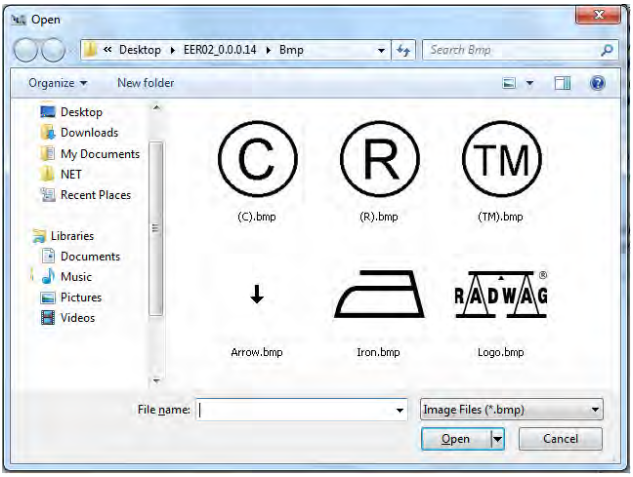
4. In order to add a variable to the label chose **<{x1x2} Variable>** from the list of objects and then click on the workspace of label, then window **<Variable settings>** opens:

5. From list **<Variable>** chose variable type **„4 Date and time”** and press Insert, then the variable is placed in the table of variables show below.

6. Confirm it by pressing OK, then the variable is automatically placed on the label.

7. Place the rest of variables and constant texts on the label in the same way,

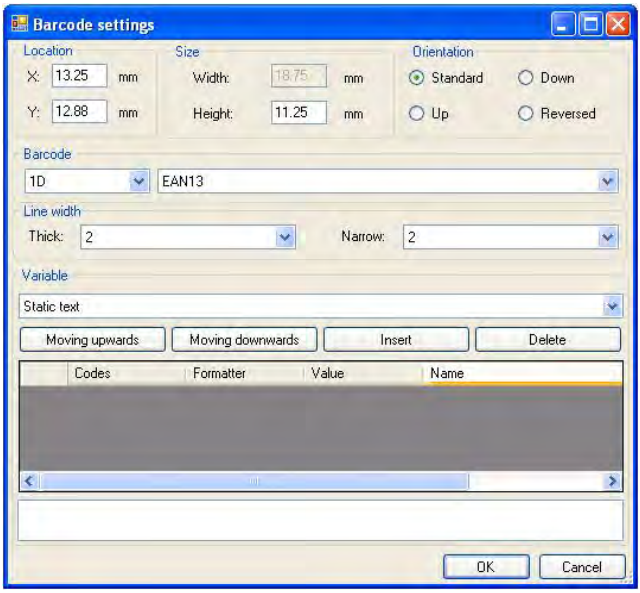
8. In order to put an image on the label chose **<Image>** from the list of objects and then click on the workspace of label, then window **<Open>** opens:



9. Chose one and press **<Open>**, then the image is placed on the label.

Notice:
Graphic images placed on the label can be printed only when they are downoladed to the printer memory. It is described in the instruction manual „Label Editor R02” accessible in the program menu on the overlap: „Info / User manual”.

10. In order to add a barcode to the label chose **<Barcode>** and then click on the workspace of label, then window **<Barcode settings>** opens:



11. Chose **<Barcode>** from the list e.g. **EAN-13**.

12. Chose from list **<Variable>** item **„7 Net mass in adjustment unit”** and press Insert, then the variable is placed in the table of variables show below.

13. In column **<Formatter>** type**:V6.3** (mass in EAN13 as a 6-digit code with 3 decimal places).

14. Confirm the entered item by pressing OK, then the barcode is automatically placed on the label.

15. Save the created pattern chosing from the menu **„File / Export *.lb”**.

Notice:
*Recorded templates of labels in files with ***.lb** extension are not editable. This is advisable to record designs of labels in files with ***.lab** extension as well (software menu: File / Save as…) to use/edit the designs of labels in the future.*

43.3. Saving label templates in the scale

Procedure:

- A label template ***.lb** created in **EDYTOR ETYKIET R02** needs to be copied to a pendrive,
- Connect the pendrive to USB in the scale,
- Enter: **„** 

/  **Databases /**  **Labels”** and press the required item,
- Enter **<**  **Label templates>**, then an editing field and the screen keyboard appears,
- Press  , to open a window showing files on the pendrive,
- Select the required ***.lb** file. It is automatically copied to the editing field,
- Confirm the changes by pressing  .

Notice:

If a pendrive is not recognized by the system button  *will remain inactive.*

43.4. Attributing a label to a product

Procedure:

- Enter **<**  **Databases>** according to ch. 33 of this manual,
- Enter **<**  **Products>** and press the required item,
- Enter **<**  **Label>**, then the database of labels is open with the list of all labels,
- Choose the required label. The program automatically ascribes the label to the product.

43.5. Attributing a label to a client

Procedure:

- Enter <  **Databases>** according to ch. 33 of this manual,
- Enter <  **Clients>** and press the required item,
- Enter <  **Label>**, then the database of labels is open with the list of all labels,
- Choose the required label. The program automatically ascribes the label to the client.

43.6. Printing labels

Procedure:

- While in the main window choose a product (button F1) or a client (button F2) that has attributed a label,
- Place a load on the pan and wait for ◣◢ then press **ENTER/PRINT**,
- The label is printed on a printer connected to the scale.

Notice:

1. *Labels can be attributed to products or/and clients. After pressing* **ENTER/PRINT** *a label is printed on a connected printer, provided a selected client or product has an ascribed label.*
2. *Users can perform the test label printout – see ch. 33.5 of this manual.*

44. APPENDIX D - CITIZEN printer setting

Baud rate	**: 9600b/sec**
Parity control	**: No**
Number of data bits	**: 8bit**
Number of stop bits	**: 1 bit**
Flow control	**: No**
IEEE 1284	**: ON**

Information printed by the printer via RS232:

[Interface Menu]
RS-232C Baud rate : **9600bps**
RS-232C Parity : **None**
RS-232C Length : **8 bit**
RS-232C Stop bit : **1 bit**
RS-232C X-ON : **No**
IEEE 1284 : **On**

The way of generating the setup printout and setting CITIZEN printers are described in manuals attached to printers or present on the website of the manufacturer.

45. APPENDIX E - ZEBRA printer setting

Baud rate – 9600b/sec
Parity control – none
No of data bits – 8bit
No of stop bits – 1 bit

Information printed by the printer via RS232:

Serial port : **96, N, 8, 1**

The way of generating the setup printout and setting ZEBRA (Eltron) printers are described in manuals attached to printers or present on the website of the manufacturer.

46. APPENDIX F - Communication with barcode scanners

1. For communication with barcode scanners RADWAG scales use RS232 interfaces and simplex transmission (one direction) without handshaking. Only two wires are required for assuring such a transmission. Used scanners should be equipped in such interface with disabled both hardware and software handshaking.
2. Both scales and scanners have the possibility of setting of transmission parameters. Both devices are required to have the same parameters set : baud rate, number of data bits, parity control, stop bits. e.g. 9600,8,N,1 – baud rate 9600 bit/s, data 8-bits, no parity control, 1 stop bit.

3. Barcode scanners can send additional information apart from the expected barcode e.g. symbology (type of barcode). It is advisable to disable such information because RADWAG devices and software do not use it.
4. Some RADWAG systems can omit unnecessary information by using parameters that mark the beginning and the length of the code required to analyse.
5. A special protocol is required in order the code be received by RADWAG equipment. It is required to program an appropriate *prefix and suffix*. Prefix – one byte 01 hexadecimally, suffix one byte 0D hexadecimally.
6. Most barcode scanners allow to enable/disable different symbologies (barcode types).
7. Programming of scanners is usually performed by reading special barcodes or by using an external software tool.
8. Scanners marketed together with RADWAG systems are always configured according to the rules above.

Barcode with required prefix and suffix in hexadecimal format	**Barcode without required –fixes in ASCII format**	**Code type**
01 30 30 32 31 30 31 32 36 0D	00210126	EAN-8
01 30 31 32 33 34 35 36 37 38 39 0D	0123456789	2 of 5
01 43 4F 44 45 20 33 39 20 54 45 53 54 0D	CODE 39 TEST	CODE 39
01 31 31 30 31 32 33 34 35 36 37 38 39 31 0D	1101234567891	EAN-13
01 43 6F 64 65 20 31 32 38 20 54 65 73 74 0D	CODE 128 Test	CODE 128

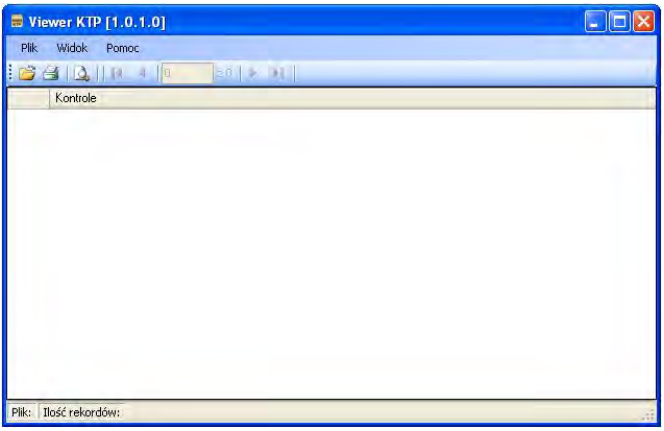
47. APPENDIX G – Computer Program „ViewerKTP”

Computer program **„ViewerKTP”** is intended for viewing and printing reports from controls and average tare tests.

Notice:
*Installation program **„ViewerKTP”** is recorded on the CD connected to this product.*

Operation description:

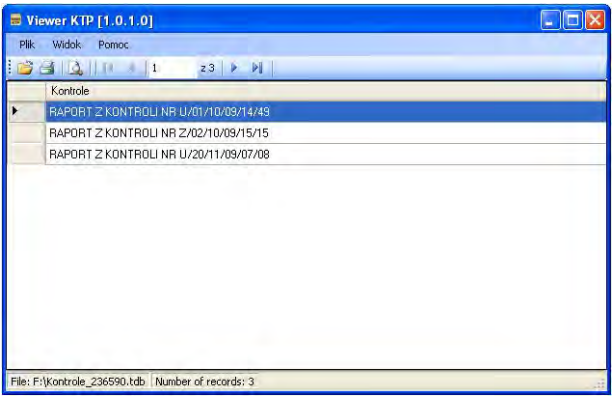
- Run computer program **„ViewerKTP”**. It starts with opening the following window:



Button functions:

	Open a controls or average tares database
	Print a report
	View a report
	Scroll the list of reports one position down
	Scroll the list of reports one position up
	Go to the last report
	Go to the first report

- Press  , then window **<Open>** appears in which the wanted database can be located (extention *.tdb),
- Mark a report and click on  ,
- The program automatically returns to the main window and in the field **<Tests>** the list of reports is displayed:



- Print the marked report on a conneted printer by pressing ,
- Using button view the selected report.

MANUFACTURER

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