USER GUIDE

WTC 3000

Radwag

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WTC

WTC 200 Precision Scale
WTC 600 Precision Scale
WTC 2000 Precision Scale
WTC 3000 Precision Scale

SOFTWARE MANUAL

ITKU-37-02-04-22-EN

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"The drawings, photos and graphics used are for illustrative purposes only."

CONTENTS

1. INTENDED USE 5
2. OPERATION PANEL 5
3. START-UP 6
4. OPERATING THE MENU 6
4.1. Return to the Weighing Mode 7
5. PROGRAM STRUCTURE 7
5.1. Function Groups 7
6. WEIGHING 7
6.1. Zeroing 8
6.2. Taring 8
6.3. Entering Tare Value Manually 8
6.4. Dual Range Devices 9
6.5. Units 9
6.5.1. Start Unit 9
6.5.2. Temporary Unit 10
7. ADJUSTMENT 10
7.1. External Adjustment 11
7.2. User Adjustment 11
7.3. Adjustment Report 12
8. SCALE PARAMETERS 12
8.1. Filter 12
8.2. Value Release 13
8.3. Ambient Conditions 13
8.4. Autozero Function 13
8.5. Tare Function 14
8.6. Tare: Enter Mode 14
8.7. Tare: Values Memory 14
8.7.1. Entering Tare Value to the Weighing Device Memory 15
8.7.2. Selecting Tare Value from the Weighing Device Memory 15
8.8. Last Digit 15
8.9. Manual multi-range 16
9. COMMUNICATION 16
9.1. RS232 Port 16
9.2. USB A Port 17
9.3. USB B Port 17
10. PERIPHERAL DEVICES 19
10.1. Computer 20
10.1.1. Computer Port 20
10.1.2. Continuous Transmission 20
10.1.3. Printout Interval for Continuous Transmission 20
10.2. Printer 21
10.2.1. Printer Port 21
10.3. Additional Display 21
10.3.1. Additional Display Port 21
10.3.2. Additional Display Type 21
11. PRINTOUTS 22
11.1. Adjustment Report 22
11.2. GLP Printout 22
12. MISCELLANEOUS PARAMETERS 23
12.1. Automatic Backlight Switch-Off 23
12.2. Display Brightness 24
12.3. 'Beep' Sound 24
12.4. Automatic Shutdown 24
12.5. Date and Time 25
12.6. Default User Settings 25
13. SCALE DATA 25
14. WORKING MODES – General Information 26
14.1. Running Working Mode 26
14.2. Working Modes Local Settings 26
14.2.1. Working Mode Accessibility 27
14.2.2. Save Mode 27
14.2.3. Automatic Printout Time Interval 28

14.2.4. Lo Threshold 28
15. WORKING MODE – WEIGHING 28
15.1. Local Settings 28
16. WORKING MODE – PARTS COUNTING 29
16.1. Local Settings 29
16.1.1. Selecting Operation Mode 29
16.2. Setting Sample Mass by Entering Mass of a Single Part 29
16.3. Setting Sample Mass by Determining Mass of a Single Part 30
17. WORKING MODE – +/- CONTROL 31
17.1. Local Settings 31
17.2. Declaring Checkweighing Thresholds 31
18. WORKING MODE - PERCENT WEIGHING 31
18.1. Local Settings 32
18.1.1. Selecting Operation Mode 32
18.2. Reference Sample Mass Determined by Weighing 32
18.3. Reference Sample Mass Determined by Entering the Mass Value 33
19. WORKING MODE – PEAK HOLD 33
19.1. Local Settings 33
19.2. Peak Hold Operation 33
20. WORKING MODE – TOTALIZING 34
20.1. Local Settings 34
20.2. Totalizing Operation 34
21. WORKING MODE – ANIMAL WEIGHING 35
21.1. Local Settings 35
21.2. Animal Weighing Operation 36
22. IMPORT / EXPORT 36
22.1. Weighing Records Export 36
22.2. ALIBI Weighings Export 37
22.3. Parameters Export / Import 37
23. REPORTS 37
24. TROUBLESHOOTING 38
25. ERROR MESSAGES 39

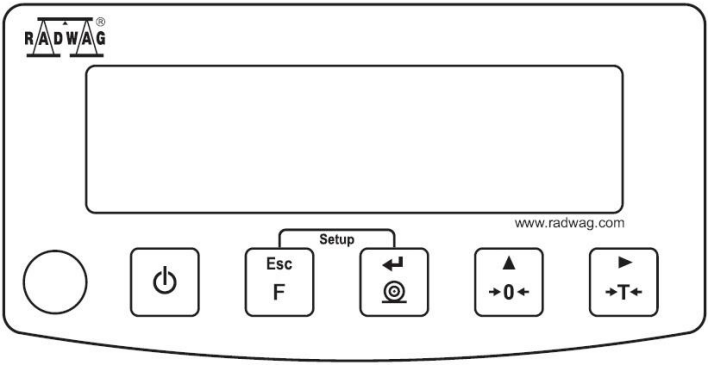
1. INTENDED USE

WTC precision scale enables fast and accurate mass measurements under laboratory conditions. The weighing pan, made of stainless steel and equipped with an anti-draft shield, is an integral part of the WTC scale. Due to a backlit LCD display the measurement result is clearly visible. The scale is equipped with an internal battery which allows its operation in places where there is no access to the mains.

WTC scale is equipped with the following interfaces: RS 232, USB type A, USB type B. The interfaces enable cooperation between the scale and peripheral devices (e.g. printer, computer, flash drive).

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

2. OPERATION PANEL



Operation panel of WTC series scales

Keys:

⏻	Press to switch the weighing device on/off – hold the key for about 1 second.
Esc F	Function key, press to change the working mode.
↵ ◎	Press to send the weighing result to a printer or computer.
▲ →0←	Press to zero the scale.

▶ →T←	Press to tare the scale.

⚠	***Upon pressing Esc F + ↵ keys combination, functions of given keys change. Detailed information concerning use of Esc F + ↵ keys combination is to be found further down this manual.***

3. START-UP

- Connect the power supply to the mains. Plug it to the power supply socket (back side of the scale housing).
- Press ⏻ key. The key is also used to switch the scale on/off.
- Display test proceeds (all symbols are backlit for a moment), program name and number is displayed first, ZERO indication with reading unit next (displayed reading unit is conditioned by scale type).
- In case the weighing result is not zero after indication stabilisation, press ▲ →0← key.
- The scale is ready for operation.

4. OPERATING THE MENU

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

Esc F + ↵	Press to enter the main menu.
▲ →0← + ▶ →T←	Press to enter tare manually. Press to enter tare from tare database. Press to change value by 1 digit up. Press to scroll the menu up.
Esc F + ▶ →T←	Press to check battery/accumulator state.
Esc F + ▲ →0←	Press to view date/time.
▲ →0←	Press to scroll the menu down. Press to change current parameter value.

► →T←	Press to enter given submenu. Press to modify given parameter.
↵ ◎	Press to confirm modification.
Esc F	Press to exit, function remains unmodified. Press to move one menu level up.

4.1. Return to the Weighing Mode

Introduced menu modifications are automatically saved to scale memory upon return to the home screen. To return to the home screen press Esc F key repeatedly.

5. PROGRAM STRUCTURE

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

5.1. Function Groups

Function group number	Function group name	Description
P1	**CAL**	User Adjustment
P2	**rEAd**	Readout parameters
P3	**Func**	Working modes
P4	**Conn**	Communication
P5	**ducE**	Peripheral devices
P6	**Prnt**	Printouts
P7	**Othr**	Operation-related functions
P8	**InFo**	Scale data
P9	**Unit**	Units
IE	**-**	Import / Export

6. WEIGHING

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

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

6.1. Zeroing

To zero mass indication press [▲ →0←] key. Zero indication and the following pictograms are displayed: →0← and ◣◢. The instrument can be zeroed only when the indication is stable.

⚠	***Indication can be zeroed only within ±2% range of maximum capacity. If the zeroed value is greater than ±2% of the maximum capacity, then the software displays message <Err2>, and short sound signal is heard.***

6.2. Taring

To determine net weight value, load the weighing pan with a packaging, wait for a stable indication and press [► →T←] key. Zero indication and the following pictograms are displayed: **Net** and ◣◢. The weighing device has been tarred. Upon loading, net mass is displayed. Taring can be carried out repeatedly within the whole weighing range. Remember not to exceed the maximum capacity, i.e. sum of tare weight value and load weight value must be lower than the maximum capacity value. Upon unloading the weighing pan, the sum of tared masses with minus sign is displayed.

⚠	***It is impossible to tare zero or negative values. When you tare zero or negative values, message <Err3> is displayed, short sound signal is heard.***

6.3. Entering Tare Value Manually

- Press [▲ →0←] and [► →T←] keys combination, tare value edit box is displayed.
- Enter tare value, to do it press [▲ →0←] and [► →T←] keys:

[► →T←]	Press to select digit that is to be edited.
[▲ →0←]	Press to set digit value, 0 - 9.

- Press key to confirm, the scale returns to the weighing mode, modified tare value with **'–'** sign is displayed.
- You can enter tare value at any time during the weighing operation.

6.4. Dual Range Devices

N/A in case of single range scales

Switching from weighing with the accuracy of the **I weighing range** to weighing with the accuracy of the **II weighing range** takes place automatically upon exceeding Max of the **I weighing range**. Upon switching to weighing with the accuracy of the **II weighing range**, respective pictogram/marker →|2|← is displayed in the top left hand corner. The return to weighing with the accuracy of the I weighing range can be done in two modes:

Manual mode	Manual transition from a higher weighing range to a lower one, when the mass is in autozero (pictograms →0← and ◣◢) after pressing ▲ →0←.
Automatic mode	Automatic transition from a higher weighing range to a lower weighing range, when the mass is in autozero (pictograms →0← an ◣◢).

To select the transition mode, go to **<P2.9.nnrH>** (see section 8.9 of the user manual).

6.5. Units

<P9.Unit> parameter group enables change of start unit and temporary unit. Unit change can be performed in the course of weighing or during operation of other modes. 'Parts counting' and 'Percent weighing' modes are exceptions.

6.5.1. Start Unit

Parameter for setting unit that is displayed and used after device start-up.

Procedure:

- Enter **<P9.Unit / 9.1.UnSt>** submenu.
- Press ▲ →0← key, available units are displayed successively one by one.

Options in case when the main unit is [kg]: kg (kilogram), g (gram), lb (pound)*, N (Newton).

***) –** *unit disabled for verified weighing devices.*

Options in case when the main unit is [g]: g (gram), kg (kilogram), ct (carat), lb (pound)*.

***) –** *unit disabled for verified weighing devices.*

- Select start unit and press key, next go back to the home screen, to do it press Esc F key.
- Upon next start-up the scale runs with set start unit.

6.5.2. Temporary Unit

Temporary unit runs from the moment it is set to the scale shut-down and restart.

Procedure:

- Enter **<P9.Unit / 9.2.Unin>** submenu.
- Press key, available units are displayed successively one by one.

Options in case when the main unit is [kg]: kg (kilogram), g (gram), lb (pound)*, N (Newton).

***) –** *unit disabled for verified weighing devices.*

Options in case when the main unit is [g]: g (gram), kg (kilogram), ct (carat), lb (pound)*.

***) –** *unit disabled for verified weighing devices.*

- Select temporary unit and press key, next go back to the home screen.

7. ADJUSTMENT

option available for non-verified scales exclusively

In order to ensure the highest weighing accuracy, it is recommended to periodically introduce corrective factor of indications to scale memory, the said factor must be referred to a reference weight. This is so called adjustment.

Adjustment has to be carried out:

- prior weighing,
- if long breaks between successive measuring series occur,
- if the ambient temperature has changed dynamically,

- if the scale has been relocated.

Adjustment types:

- external adjustment, **<1.1.CA-E>**, performed using an external weight of declared mass, i.e. mass that cannot be modified,
- user adjustment, **<1.2.CA-u>**, performed using an external weight of mass of any value comprised within the weighing range, however not lower than 30% of the maximum capacity value.

7.1. External Adjustment

External adjustment must be carried out using an external adjustment weight of class F_1.

Procedure:

- Enter **<P1.CAL / 1.1.CA-E>** submenu, text **<UnLoAd>** (remove weight) is displayed.
- Remove the load from the weighing pan and press key.
- Mass of an empty weighing pan is determined, this is signalled with display of 'dash', **< - >**. Next, text **<LoAd>** (load weight) and mass value that is to be loaded, e.g. **200g** (conditioned by scale type), are displayed.
- Load the weighing pan with weight of specified mass value and press key.
- Weight mass is determined, this is signalled with display of 'dash', **< - >**. Next, text **<UnLoAd>** (remove weight) is displayed.
- Remove the load form the weighing pan, **<1.1.CA-E>** submenu is displayed.

7.2. User Adjustment

User adjustment must be carried out using an external adjustment weight of class F_1.

Procedure:

- Enter **<P1.CAL / 1.2.CA-u>** submenu, edit box for declaring weight mass is displayed (the mass value must be ≥ 30% of the maximum capacity value).

- Enter weight mass value and press key to confirm, text **<UnLoAd>** (remove weight) is displayed.
- Remove the load from the weighing pan and press key.
- Mass of an empty weighing pan is determined, this is signalled with display of 'dash', **< - >**. Next, text **<LoAd>** (load weight) and mass value that is to be loaded, e.g. **100 g**, are displayed.
- Load the weighing pan with weight of specified mass value and press key.
- Weight mass is determined, this is signalled with display of 'dash', **< - >**. Next, text **<UnLoAd>** (remove weight) is displayed.
- Remove the load from the weighing pan, **<1.2.CA-u>** submenu is displayed.

7.3. Adjustment Report

Adjustment report is automatically printed (using scale-connected printer) at the end of each adjustment process. To declare report content go to **<P6.1.CrEP>** submenu. For detailed information concerning report content read later sections of this manual.

8. SCALE PARAMETERS

Scale parameters are set to adjust the weighing device to ambient conditions (filters) or individual needs (autozero on/off, tare values memory). These parameters are to be found in **<P2.rEAd>** submenu. **<P2.rEAd>** submenu comprises functions allowing you to adjust your weighing device to ambient conditions of given workstation.

8.1. Filter

- Enter **<P2.rEAd / 2.1.FiL>** submenu.
- Press key, filter values are displayed successively one by one: **1** - Fast, **2** - Average, **3** – Slow.
- Set respective value and press key to confirm, next go to the home screen.

⚠	***The higher filter value, the longer the weighing takes.***

8.2. Value Release

Enter this parameter to adjust rate of stabilisation of the measurement result. Depending on the selected option, weighing time is either shorter or longer.

Procedure:

- Enter **<P2.rEAd / 2.2.APPr>** submenu.
- Press key, available values are displayed successively one by one: **F_P** - fast and reliable, **PrEc** – reliable, **FASt** – fast.
- Press key to confirm, next go to the home screen.

8.3. Ambient Conditions

Parameter relating to ambient and environmental conditions of the workstation. Enter this parameter and set 'nStAb' value if the ambient conditions are unfavourable (air drafts, vibrations).

Procedure:

- Enter **<P2.rEAd / 2.3.Enut>** submenu.
- Press key, parameter values are displayed successively one by one: **nStAb** – unstable, **StAb** – stable.
- Press key to confirm, next go to the home screen.

8.4. Autozero Function

'Autozero' function has been designed to enable automatic control and correction of zero indication. This guarantees precise weighing results. There are, however, some cases when this function can be a disturbing factor for the measuring process, e.g. very slow placing of a load on the weighing pan (load adding, e.g. pouring, filling). In such case, it is recommended to disable the function.

Procedure:

- Enter **<P2.rEAd / 2.4.Aut>** submenu.
- Press key, parameter values are displayed successively one by one: **YES** – autozero function enabled, **no** – autozero function disabled.
- Press key to confirm, next go to the home screen.

8.5. Tare Function

'Tare' function has been designed to enable setup of appropriate parameters for tare operation.

Procedure:

- Enter **<P2.rEAd / 2.5.tArE>** submenu.
- Press [▲ →0←] key, available values are displayed successively one by one:

no	Regular tare mode. Select this parameter to make the scale overwrite the set (selected) tare value with the most recently entered one.
tArF	Select this parameter to make the scale store the latest tare value in memory. The latest tare value is displayed after scale restart.
AtAr	Automatic tare mode.
EAcH	Select this parameter to make the scale automatically tare each accepted measurement.

- Press [↵ ◎] key to confirm, next go to the home screen.

8.6. Tare: Enter Mode

The tare is entered using [▲ →0←] + [► →T←] keys combination from the home screen level. There are two enter modes.

Procedure:

- Enter **<P2.rEAd / 2.6.ttr>** submenu.
- Press [▲ →0←] key, parameter values are displayed successively one by one:

tArEH	Select to enter tare value manually by means of [▲ →0←] + [► →T←] keys combination.
tArnn	Select to enter tare value that is stored in scale memory, use [▲ →0←] + [► →T←] keys combination.

- Press [↵ ◎] key to confirm, next go to the home screen.

8.7. Tare: Values Memory

It is possible to store 10 tare values in scale memory.

8.7.1. Entering Tare Value to the Weighing Device Memory

- Enter **<P2.rEAd / 2.7.tArn>** submenu, name of tare no. 1 from tares database is displayed (**<tArE 0>**), to select a different record press ▲ →0← key.
- Select respective entry and press ► →T← key, tare value edit box is displayed.
- Enter tare value, to do it press ▲ →0← and ► →T← keys:

► →T←	Press to select digit that is to be edited.
▲ →0←	Press to set digit value, 0 - 9.

- Press ↵ key to confirm, **<tArE 0>** window is displayed.
- Now press Esc F key to go to the home screen.

8.7.2. Selecting Tare Value from the Weighing Device Memory

- Enter **<P2.rEAd / 2.7.tArn>** submenu, name of tare no. 1 from tares database is displayed (**<tArE 0>**), to select a different record press ▲ →0← key.
- To set the selected tare press ↵ key.
- The set tare value is displayed with minus sign, **Net** symbol is shown in the upper-left corner of the screen.

⚠	***The tare value acquired from the weighing device memory is not remembered upon the weighing device restart.***

8.8. Last Digit

Function designed to disable display of the last weighing indication digit, this results with less accurate measurement.

Procedure:

- Enter **<P2.rEAd / 2.8.LdiG>** submenu.

- Press key, available values are displayed successively one by one:

ALAS	Select to make the last digit always on.
nEur	Select to make the last digit always off.
uuSt	Select to make the last digit on only when the weighing indication is stable.

- Press key to confirm, next go to the home screen.

8.9. Manual multi-range

N/A in the case of single range scales

Transition mode from a higher weighing range to a lower weighing range.

Procedure:

- Enter **<P2.rEAd / 2.9.nnrH>** submenu and set a respective option (- Automatic multi-range; - Manual multi-range).

For a description of the transition modes from a higher to a lower weighing range, refer to section 6.4 of the user manual.

9. COMMUNICATION

Communication between the scale and the peripheral devices is established via the following ports: RS232, USB type A, USB type B. To set the ports go to **<P4.Conn>** submenu.

9.1. RS232 Port

- Enter **<P4.Conn / 4.1.rS1>** submenu and set respective transmission parameters:

4.1.1.bAd	Baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 115200 bit/s.
4.1.2.dtb	Data bits: 7, 8.
4.1.3.Stb	Stop bits: 1, 2
4.1.4.Par *	Parity: **nonE** – none; **EuEn** – even; **Odd** – odd.

***)** *– for RS232, 7 bit data setting requires activation of parity control (<nonE> parity value disabled).*

- Press key to confirm, next go to the home screen.

9.2. USB A Port

USB port of type A is intended for:

- Connecting a USB flash drive in order to enable:
  - operator's parameters export/import,
  - weighing reports export,
  - Alibi reports export.
- Connecting scale to PCL printer.
- Connecting EPSON TM-T20 printer (featuring USB port).

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

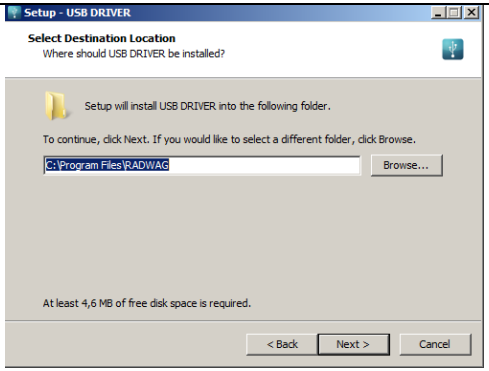
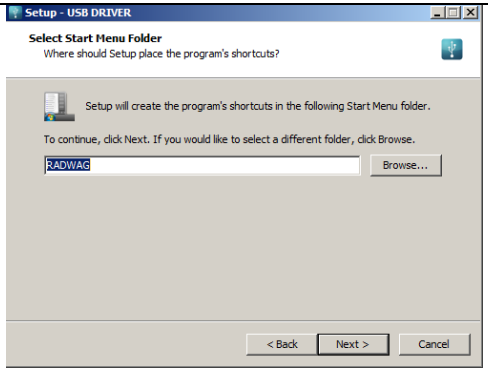
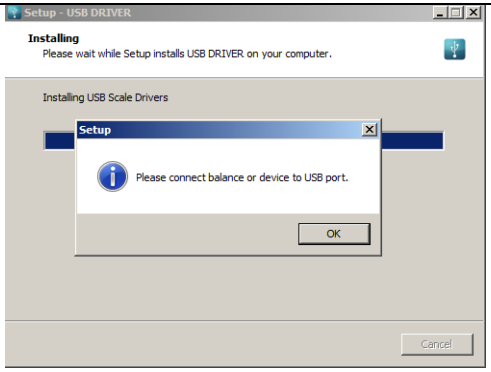
9.3. USB B Port

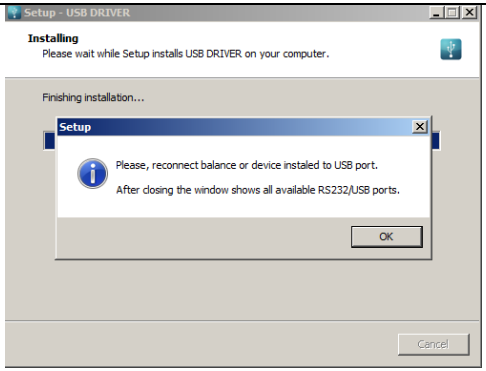
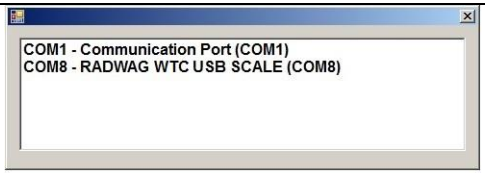
USB port of type B is intended for connecting the scale to a computer. In order to make connection of scale and computer possible, it is necessary to install virtual COM port in a computer. To carry out this procedure, you need a respective driver installer which may be either downloaded from www.radwag.pl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

Procedure:

1. Run the driver installer and follow the commands.

	Select language version and press **„OK”** button for confirmation.
	In order to continue press **„Next”** button.

	Select directory and press **„Next"** button.
	In order to start installation process press **„Next"** button.
	Connect the scale to a computer, use 1.8-meter long USB A/B cable maximum (in case of already connected scale, it is necessary to disconnect it and reconnect using USB cable). Respective message box is displayed, press **OK** button for confirmation.

	Press **„Finish”** button.
	Connect the scale to a computer again, use 1.8-meter long USB A/B cable maximum. Respective message box is displayed, press **OK** button for confirmation.
	**„COM ports Screen”** automatically displays number of installed COM port. In this very case it is COM8.

2. Enter **< P5.ducE / 5.1.PC / 5.1.1.Prt>** submenu and set **<USbb>** value.
3. Run program for measurements readout.
4. Set communication parameters – select COM port that was installed in the course of drivers installation (in this very case it is COM8).
5. Start cooperation.

10. PERIPHERAL DEVICES

<P5.ducE> menu contains list of devices cooperating with scale.

10.1. Computer

<5.1.PC> submenu allows you to:

- select port to which the computer is connected,
- enable/disable continuous transmission,
- set frequency of printouts for continuous transmission.

10.1.1. Computer Port

- Enter **<5.1.PC / 5.1.1.Prt>** submenu.
- Press key, parameter values are displayed successively one by one: **nonE** – none; **rS1** – RS232, **USbb** – USB type B.
- Press key to confirm, next go to the home screen.

10.1.2. Continuous Transmission

- Enter **<5.1.PC / 5.1.2.Cnt>** submenu.
- Press key, parameter values are displayed successively one by one:

nonE	Continuous transmission disabled.
CntA	Continuous transmission in basic unit.
Cntb	Continuous transmission in current/temporary unit.

- Press key to confirm, next go to the home screen.

10.1.3. Printout Interval for Continuous Transmission

Parameter enabling you to set frequency of printout for continuous transmission. Printout interval is set in seconds with 0.1 [s] accuracy within 0.1 [s] - 3600 [s] range.

Procedure:

- Enter **<5.1.PC / 5.1.3.Int>** submenu, window for entering interval value is displayed.
- Press key to confirm, next go to the home screen.

10.2. Printer

10.2.1. Printer Port

Parameter enabling you to select port to which data is to be sent upon pressing key.

Procedure:

- Enter **<5.2.Prtr / 5.2.1.Prt>** submenu.
- Press key, parameter values are displayed successively one by one: **nonE** – none; **rS1** – RS232; **USbA** – USB type A*, **USbb** – USB type B**.

***)** - *USB port of type A, to which printer can be connected.*
****)** - *USB port of type A, to which computer can be connected.*

- Press key to confirm, next go to the home screen.

***)** - *Option*

10.3. Additional Display

The weighing instrument can connect with additional displays: WD-4, WWG-2.

10.3.1. Additional Display Port

- Enter **<5.3.AdSP / 5.3.1.Prt>** submenu.
- Press key, parameter values are displayed successively one by one: **nonE** – none; **rS1** – RS232.
- Press key to confirm, next go to the home screen.

10.3.2. Additional Display Type

- Enter **<5.3.AdSP / 5.3.2.tYP>** submenu and select respective type.

Where:

Ud-4	WD-4-type additional display (set by default).
UUG-2	WWG-2-type additional display.

11. PRINTOUTS

It is possible to define adjustment report printout template and GLP printout template. To set the printouts go to **<P6.Prnt>** submenu.

11.1. Adjustment Report

<P6.1.CrEP> is a group of parameters allowing you to declare variables that are to be printed on an adjustment report printout. Each variable features accessibility attribute: **YES** – print, **no** – do not print. Adjustment report is automatically generated at the end of each adjustment process.

Variables list:

No.	Name	Description
6.1.1.	CtP	Performed adjustment type.
6.1.2.	dAt	Adjustment date.
6.1.3.	tin	Adjustment time.
6.1.4.	Idb	Serial number of the scale.
6.1.5.	CdF	Difference between mass of adjustment weight that was measured during last adjustment and mass of currently measured adjustment weight.
6.1.6.	dSh	Dashed line separating printout data and signature fields.
6.1.7.	SiG	An area for the signature of an operator carrying out the adjustment.

Printouts are generated exclusively in English.

Report example:

```
-----------Calibration Report-----------
Calibration type                External
Date                          2016.10.15
Time                            12:39:23
Balance ID                        123456
Difference                         -0.02g
----------------------------------------
Signature

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

11.2. GLP Printout

<P6.2.GLP> is a group of parameters allowing you to declare variables that are to be printed on a weighing printout. Each variable features accessibility attribute: **YES** – print, **no** – do not print.

Variables list:

No.	Name	Description
6.2.1.	dAt	Performed weighing date.
6.2.2.	tin	Performed weighing time.
6.2.3.	Idb	Serial number of the scale.
6.2.4.	n	Net weight value of performed weighing in basic measuring unit.
6.2.5.	t	Tare weight value in the current unit.
6.2.6.	b	Gross weight value in the current unit.
6.2.7.	CrS	Current weighing result (net weight) in a current unit.
6.2.8.	CrP	The last adjustment report generated in accordance with settings declared for the adjustment report printout.

Printouts are generated exclusively in English.

Report example:

```
Date                    2016.10.15
Time                      12:04:17
Net                         49.98g
Tare                        17.20g
Gross                       67.18g
```

12. MISCELLANEOUS PARAMETERS

<P7.Othr> is a group of parameters enabling you to adapt the scale to individual needs.

12.1. Automatic Backlight Switch-Off

Parameter allowing to set time interval, in [min], after which display backlight goes off. If the indication is stable during the declared time interval, the screen backlight goes off automatically.

Procedure:

- Enter **<P7.Othr / 7.1.bl>** submenu.
- Press ▲ →0← key, parameter values are displayed successively one by one: **nonE** – function disabled, **0.5**, **1**, **2**, **3**, **5**.
- Press ↵ ◎ key to confirm, next go to the home screen.

12.2. Display Brightness

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

Procedure:

- Enter **<P7.Othr / 7.2.bLbt>** submenu.
- Press key, parameter values are displayed successively one by one, where:

nonE	Backlight off.
10	Display brightness low limit value in [%].
100	Display brightness high limit value in [%].

- Set the respective value, press key to confirm, next go to the home screen.

12.3. 'Beep' Sound

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

Procedure:

- Enter **<P7.Othr / 7.3.bEEP>** submenu.
- Press key, parameter values are displayed successively one by one: **no** – sound signal disabled, **YES** - sound signal enabled.
- Press key to confirm, next go to the home screen.

12.4. Automatic Shutdown

Parameter allowing you to set time interval, in [min], after which the weighing device shuts down automatically. If the indication is stable during the declared time interval, the device is shut down automatically. Shutdown function is inactive and the device cannot be turned off if any process is started or if you operate the menu.

Procedure:

- Enter **<P7.Othr / 7.4.t1>** submenu.

- Press key, parameter values are displayed successively one by one: **nonE** – function disabled, **1**, **2**, **3**, **5**, **10**.
- Press key to confirm, next go to the home screen.

12.5. Date and Time

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

Procedure:

- Enter **<P7.Othr>** submenu and change the settings. Refer to the below table:

Parameter	Description
<7.5.SdAt>	Enter this parameter to set current date, where the date format is **YYYY.MM.DD***.
<7.6.Stnn>	Enter this parameter to set current time, where the time format is **24H****.
<7.7.FdAt>	Enter this parameter to set date format. Values: **1** - DD.MM.YYYY, **2** - MM.DD.YYYY, **3** - YYYY.MM.DD* (set by default), **4** - YYYY.DD.MM.
<7.8.Ftin>	Enter this parameter to set time format. Values: **24H**** (set by default), **12H****.

***)** *- Date format: Y – year, M – month, D – day.*
****)** *- Time format: 12H – 12-hour format, 24H - 24-hour format.*

12.6. Default User Settings

Parameter allowing you to restore default operator settings.

Procedure:

- Enter **<P7.Othr / 7.9.dFLu>** submenu, text **<Cont?>** is displayed (Continue?).
- Press key to confirm. The process of restoring default settings starts, this is signalled with display of 'dash', **< - >**.
- Upon process completion **<7.9.dFLu>** submenu is displayed. Go to home screen.

13. SCALE DATA

Scale data menu **<P8.InFo>**, provides information on the weighing device and its program. The parameters serve informative purposes:

Parameter	Description
<8.1.Idb>	Serial number of the scale.
<8.2.PurS>	Program version.
<8.3.PStP>	Settings printout. Enter the parameter to send scale settings to printer port (all parameters).

14. WORKING MODES – General Information

The scale features the following working modes: Weighing, Parts counting, +/- control, Percent weighing %, Peak Hold, Totalizing, Animal weighing.

14.1. Running Working Mode

- Go to home screen, press [Esc F] key, name of the first available working mode is displayed.
- Press [▲ →0←] key, names of available working modes are displayed successively one by one.
- Enter selected working mode, to do it press [↵ ◎] key.

⚠	***The weighing device program has been designed to make the scale run, upon restart, with the latest operated working mode on.***

14.2. Working Modes Local Settings

Each working mode features specific (local) functions which enable adapting device operation to individual needs. The functions are to be found in local settings. To go to local settings of each working mode enter **<P3.Func>** submenu. Some special functions are available for all working modes, refer to the table below:

	Accessibility	Save mode	Time interval	Lo threshold
Weighing	3.1.1.Acc	3.1.2.Snn	3.1.3.Int	3.1.4.Lo
Parts counting	3.2.1.Acc	3.2.3.Snn	3.2.4.Int	3.2.5.Lo
+/- control	3.3.1.Acc	3.3.2.Snn	3.3.3.Int	3.3.4.Lo
Percent weighing %	3.4.1.Acc	3.4.3.Snn	3.4.4.Int	3.4.5.Lo
Peak Hold	3.5.1.Acc	-	-	3.5.2.Lo
Totalizing	3.6.1.Acc	3.6.2.Snn	3.6.3.Int	3.6.4.Lo

Animal weighing	3.7.1.Acc	-	-	3.7.3.Lo

The table presents special function number and name for each of the working modes. Remaining specific functions referring directly to a given working mode are described further down this user manual.

14.2.1. Working Mode Accessibility

To enable/disable given working mode, press [Esc F] key.

Procedure:

- Enter **<P3.Func>** menu and select given working mode.
- Go to **<Acc>** function.
- Press [▲ →0←] key, parameter values are displayed successively one by one: **YES** – working mode enabled, **no** – working mode disabled.
- Press [↵ ◎] key to confirm, next go to the home screen.

14.2.2. Save Mode

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

Procedure:

- Enter **<P3.Func>** menu and select given working mode.
- Go to **<Snn>** function.
- Press [▲ →0←] key, parameter values are displayed successively one by one:

StAb	Manual printout of stable weighing result. Upon pressing [↵ ◎] key at the moment when the result is unstable (no ◣◢ pictogram displayed), the program first waits for the stability condition to be met, only then printout is carried out.
rEPL	Automatic printout of the first stable weighing result above **<Lo>** threshold (to set **<Lo>** threshold go to **<Lo>** parameter).
rEPLi	Automatic printout with time interval set in **[min]** (to set the interval go to **<Int>** parameter).
nStAb	Manual printout of each weighing result. In case of unstable indication, **<?>** sign is displayed in front of the 'mass frame'. **Function available for non-verified scales exclusively**.

- Press key to confirm, next go to the home screen.

14.2.3. Automatic Printout Time Interval

Parameter enabling you to set frequency of automatic printout. Printout interval is set in minutes with 1 [min] accuracy within 1 [min] - 1440 [min] range.

Procedure:

- Enter **<P3.Func>** menu and select given working mode.
- Enter **<Int>** function, window for entering **time interval** value is displayed.
- Press key to confirm, next go to the home screen.

14.2.4. Lo Threshold

<Lo> parameter allows you to configure the function of automatic operation. In order to save the next measurement, before carrying it out the mass indication must get below the set net value of Lo threshold.

Procedure:

- Enter **<P3.Func>** menu and select given working mode.
- Enter **<Lo>** function, window for entering **Lo threshold** value is displayed.
- Enter respective value and press key to confirm, then continue weighing.

15. WORKING MODE – WEIGHING

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

15.1. Local Settings

To go to local settings enter **<3.1.UUGG>** submenu.

3.1.1.Acc	**Working mode accessibility**	For detailed description read section 14.2.1.
3.1.2.Snn	**Save mode**	For detailed description read section 14.2.2.
3.1.3.Int	**Time interval**	For detailed description read section 14.2.3.
3.1.4.Lo	**Lo threshold**	For detailed description read section 14.2.4.

16. WORKING MODE – PARTS COUNTING

Parts Counting is a working mode enabling you to determine quantity of small pieces of the same mass, which determination is done on the basis of mass of sample piece (single part), and where the sample piece mass (single part mass) is determined using the weighing device.

16.1. Local Settings

To go to local settings enter **<3.2.PcS>** submenu.

3.2.1.Acc	**Working mode accessibility**	For detailed description read section 14.2.1.
3.2.2.UUt	**Operation mode**	For detailed description read section 16.1.1.
3.2.3.Snn	**Save mode**	For detailed description read section 14.2.2.
3.2.4.Int	**Time interval**	For detailed description read section 14.2.3.
3.2.5.Lo	**Lo threshold**	For detailed description read section 14.2.4.

16.1.1. Selecting Operation Mode

Parameter allowing you to select method of determination of sample piece mass.

Procedure:

- Enter **<3.2.PcS / 3.2.2.UUt>** submenu.
- Press ▲ →0← key, parameter values are displayed successively one by one:

S_S	Select to set sample mass by determining mass of a single part.
Suu	Select to set sample mass by entering mass of a single part.

- Enter respective value and press ↵ key to confirm, then continue weighing.

16.2. Setting Sample Mass by Entering Mass of a Single Part

- Enter **<3.2.PcS / 3.2.2.UUt>** submenu, set **<Suu>** value.
- Enter **<PcS>** working mode (parts counting), first, text **<SEt_Ut>** is displayed for 1 s, next, window for entering mass value of a single part.
- Enter respective value and press ↵ key to confirm, home screen is displayed automatically along with quantity of parts loaded onto the weighing pan (pcs).

⚠	***If the value of entered single part mass is greater than max capacity value, then message <Err Hi> is displayed.***

16.3. Setting Sample Mass by Determining Mass of a Single Part

- Enter **<3.2.PcS / 3.2.2.UUt>** submenu, set **<S_S>** value.
- Enter **<PcS>** working mode (parts counting), blinking value of sample quantity is displayed.
- Press [▲ →0←] key to select one of the following options:

10	Reference sample quantity: 10 pcs.
20	Reference sample quantity: 20 pcs.
50	Reference sample quantity: 50 pcs.
100	Reference sample quantity: 100 pcs.
0000	Custom reference sample quantity - enter the required value yourself.

- Select respective option and press [↵ ◎] key to confirm, first, text **<LoAd>** is displayed for 1 second, then the weighing window.
- If the parts are to be weighed in a container, first put the container on a weighing pan and tare it.
- Load the weighing pan with declared amount of parts. When the indication is stable (◣◢ pictogram is displayed), press [↵ ◎] key to confirm the mass.
- Single part mass is calculated automatically, next quantity of parts (pcs) is displayed.

⚠	***Total weight value of all parts loaded onto the weighing pan cannot be greater than the max capacity value.***
⚠	***Single part mass value must be equal or greater than 0.1 of the reading unit. Unless this condition is met, the weighing device displays a message <Err Lo>.***
⚠	***In the course of parts quantity determination before confirming the declared quantity value it is necessary to wait for a stable measurement ◣◢.***

17. WORKING MODE – +/- CONTROL

+/- control is a working mode enabling you to enter checkweighing thresholds values (**Min**, **Max**).

17.1. Local Settings

To go to local settings enter **<3.3.HiLo>** submenu.

3.3.1.Acc	**Working mode accessibility**	For detailed description read section 14.2.1.
3.3.2.Snn	**Save mode**	For detailed description read section 14.2.2.
3.3.3.Int	**Time interval**	For detailed description read section 14.2.3.
3.3.4.Lo	**Lo threshold**	For detailed description read section 14.2.4.

17.2. Declaring Checkweighing Thresholds

- Enter **<HiLo>** working mode (+/- control), first, text **<SEt Lo>** is displayed for 1 s, next, window for declaring low weighing threshold (Min).
- Enter respective value and press key to confirm, first, text **<SEt Hi>** is displayed for 1 second, next, window for declaring high weighing threshold (Max).
- Enter respective value and press key for confirmation, working mode's home screen is displayed along with declared threshold value, where:

Min	Load mass lower than low weighing threshold.
Ok	Load mass within weighing thresholds.
Max	Load mass greater than high weighing threshold.

⚠	***If the entered low threshold value (Min) is greater than high threshold value (Max), <Err Lo> error is displayed.***
⚠	***If the entered high threshold value (Max) is greater than the maximum capacity value, <Err Hi> error is displayed.***

18. WORKING MODE - PERCENT WEIGHING

Percent weighing is a working mode enabling you to compare measured load mass with the reference sample mass. The result is expressed in [**%**].

Reference sample mass can be either determined by weighing or entered to weighing device memory by an operator.

18.1. Local Settings

To go to local settings enter **<3.4.dEu>** submenu.

3.4.1.Acc	**Working mode accessibility**	For detailed description read section 14.2.1.
3.4.2.UUt	**Operation mode**	For detailed description read section 18.1.1.
3.4.3.Snn	**Save mode**	For detailed description read section 14.2.2.
3.4.4.Int	**Time interval**	For detailed description read section 14.2.3.
3.4.5.Lo	**Lo threshold**	For detailed description read section 14.2.4.

18.1.1. Selecting Operation Mode

Parameter allowing you to select method of determination of reference sample mass.

Procedure:

- Enter **<3.4.dEu / 3.4.2.UUt>** submenu.
- Press key, parameter values are displayed successively one by one:

S_S	Select to set reference sample mass by determining the mass value.
Suu	Select to set reference sample mass by entering the mass value.

- Set respective value and press key to confirm, next go to the home screen.

18.2. Reference Sample Mass Determined by Weighing

- Enter **<3.4.dEu / 3.4.2.UUt>** submenu, set **<S_S>** value.
- Enter **<dEu>** working mode (Percent weighing), first, text **<LoAd>** is displayed for 1 second, then the weighing window.
- Load the weighing pan with the reference sample. When the indication is stable (pictogram is displayed), press key to confirm the mass.
- Mass of the weighed load is automatically set as reference sample mass, the home screen is displayed along with **100.000%** value.

18.3. Reference Sample Mass Determined by Entering the Mass Value

- Enter **<3.4.dEu / 3.4.2.UUt>** submenu, set **<Suu>** value.
- Enter **<dEu>** working mode (Percent weighing).
- Text **<SEt_Ut>** is displayed for 1 s, next, window for declaring mass of reference sample.
- Enter respective value and press key to confirm. The home screen is displayed automatically with **0.000%** value.

⚠	***If the value of entered reference sample mass is greater than max capacity value, then message <Err Hi> is displayed.***

19. WORKING MODE – PEAK HOLD

Peak Hold is a working mode allowing you to snap value of maximum force applied to the weighing pan during one weighing process.

19.1. Local Settings

To go to local settings enter **<3.5.toP>** submenu.

3.5.1.Acc	**Working mode accessibility**	For detailed description read section 14.2.1.
3.5.2.Lo	**Lo threshold**	For detailed description read section 14.2.4.

19.2. Peak Hold Operation

- Enter **<3.5.toP / 3.5.2.Lo>** submenu, set **<Lo>** parameter value (Lo threshold) after exceeding of which maximum force is to be registered.
- Enter **<toP>** working mode (Peak Hold). From now on the scale registers and holds every single weighing which is above the **Lo threshold**, and which is higher than the result of the previous peak hold. Snapped peak hold value is signalled by **<Max>** pictogram displayed at the top of the screen.
- The start of the next process of peak hold measurement is possible only after removing the load from the weighing pan and pressing Esc F key.
- This causes returning to the home screen of **<toP>** mode. Pictogram **<Max>** is automatically deleted.

20. WORKING MODE – TOTALIZING

Totalizing is a working mode enabling you to sum mass of all weighed ingredients, and to print (via scale-connected printer) the total mass value. The program allows you to sum up to 30 weighings (ingredients) maximum within one process.

20.1. Local Settings

To go to local settings enter **<3.6.Add>** submenu.

3.6.1.Acc	**Working mode accessibility**	For detailed description read section 14.2.1.
3.6.2.Snn	**Save mode**	For detailed description read section 14.2.2.
3.6.3.Int	**Time interval**	For detailed description read section 14.2.3.
3.6.4.Lo	**Lo threshold**	For detailed description read section 14.2.4.

20.2. Totalizing Operation

- Enter **<Add>** working mode (Totalizing), blinking „▲” pictogram is displayed.
- If the ingredients are to be weighed in a container, first put the container on a weighing pan and tare it.
- Load the weighing pan with the ingredient no.1. When the indication is stable (◣◢ pictogram is displayed), press [↵ ◎] key to confirm the mass.
- Total mass value is displayed, now the „▲” pictogram is displayed continuously.
- Unload the weighing pan, **ZERO** is displayed, „▲” marker starts blinking again.
- Load the weighing pan with the ingredient no.2, wait for a stable weighing result and press [↵ ◎] key.
- Total mass value of ingredient no. 1 and 2 is displayed, now the „▲” pictogram is displayed continuously.
- In order to finish the process, press [Esc F] key, text **<Prnt?>** (Print?) is displayed.
- Press [↵ ◎] key, total mass value of all recorded weighings is printed on a scale-connected printer.

Report example:

```
(1)                          13.500 g
(2)                          14.400 g
(3)                           9.700 g
(4)                         100.500 g
(5)                           4.000 g
(6)                           8.200 g
(7)                          20.800 g
(8)                           5.800 g
----------------------------------
Total:                      176.900 g
```

- In order to print the report once again press key.
- To exit "report printout mode" press key. As a result home screen of **<Add>** working mode is displayed and all the data get zeroed automatically.

	If the display capacity is exceeded (i.e. there is not enough space for all the digits of the weighing result) <Hi> error is displayed. In such a case either remove the ingredient from a weighing pan and finish the totalizing process or place load of a lower weight value on the weighing pan.

21. WORKING MODE – ANIMAL WEIGHING

Animal Weighing is a working mode enabling you to weigh products that disrupt efficient establishing of stability. It is mostly intended to measure weight of animals.

21.1. Local Settings

To go to local settings enter **<3.7.AnLS>** submenu.

3.7.1.Acc	**Working mode accessibility**	For detailed description read section 14.2.1.
3.7.2.Aut	**Averaging time**	Enter this parameter to declare duration of the process in seconds (5s, 10s, 20s, 30s, 40s, 50s, 60s) - on the basis of indications recorded within the set time interval the scale calculates the weighing result, i.e. an average weight value.
3.7.3.Lo	**Lo threshold**	For detailed description read section 14.2.4.

21.2. Animal Weighing Operation

- Enter **<AnLS>** working mode (Animal Weighing).
- First text **<tinnE>** is displayed for 1 s, next, window for setting duration (in seconds) of animal weighing.
- Press [▲ →0←] key, parameter values are displayed successively one by one: 5[s], 10[s], 20[s], 30[s], 40[s], 50[s], 60[s].
- Set the respective value, press [↵ ◎] key to confirm, weighing window with **A** letter is displayed.
- Load the weighing pan with an animal.
- On exceeding the set mass value of **<Lo> threshold** parameter, animal weighing starts, this is signalled with display of 'dash', **< - >**.
- Upon process completion mass value of an animal is snapped and displayed together with **OK** pictogram in the upper part of the display. The snapped mass value is sent to a scale-connected printer.
- Press [Esc F] key to restart animal weighing.
- Press [↵ ◎] key to reprint the snapped mass value.
- Upon unloading of the weighing platform, the weighing window with letter **A** is displayed. The scale can be loaded with an animal again.

22. IMPORT / EXPORT

Function enabling you to archive weighing reports and Alibi reports, and to copy parameters between weighing devices of the same series. Import/export operation can be carried out by means of USB flash drive comprising **<FAT files system>**.

Upon connection of the USB flash drive to the USB A port, the drive gets detected automatically, as a result **<IE>** submenu is created. Since extensions of exported weighing reports and Alibi reports files are specific, and the file-stored data is encoded, therefore the files content is not readable for standard computer programs. These files can be read using **ALIBI Reader**, PC software designed by RADWAG. You can download the software from RADWAG website: www.radwag.pl.

22.1. Weighing Records Export

Option enabling you to export weighings to a USB flash drive. Weighing device program offers option of record of 5000 weighings.

Procedure:

- Connect the USB flash drive to USB A port.
- Enter **<IE / IE1.UUE>** submenu.
- The program automatically saves exported data to a USB flash drive file.

File name and extension: xxxxxx.wei, where xxxxxx – serial number.

22.2. ALIBI Weighings Export

Option enabling you to export ALIBI weighings to a USB flash drive. Weighing device program offers option of record of 100 000 weighings.

Procedure:

- Connect the USB flash drive to USB A port.
- Enter **<IE / IE2.ALE>** submenu.
- The program automatically saves exported data to a USB flash drive file.

File name and extension: xxxxxx.ali, where xxxxxx – serial number.

22.3. Parameters Export / Import

Export / import of all user parameters between weighing devices of the same series carried out using USB flash drive.

Export procedure:

- Connect the USB flash drive to USB A port.
- Enter **<IE / IE3.SPE>** submenu.
- The program automatically saves exported data to a USB flash drive file.

File name and extension: xxxxxx.par, where xxxxxx – serial number.

Import procedure:

- Connect the USB flash drive to USB A port, make sure that the drive stores parameters file in the main directory (file name: **xxxxxx.par**, where xxxxxx – serial number).
- Enter **<IE / IE4.SPI>** submenu.
- User parameters are automatically imported from **xxxxxx.par** file.

23. REPORTS

Weighing device software comprises the following reports:

Report name	Max record qty
Weighings	5 000
Alibi	100 000

To enable archiving of weighing and Alibi reports, a special PC software has been developed by RADWAG Wagi Elektroniczne, **SCALES EDITOR 2.1**. Archiving is carried out via RS232 port of the scale, it requires setting **<5.1.1.Prt>** parameter to **rS1** value.

	A detailed procedure of report synchronization is to be found in user manual of SCALES EDITOR 2.1.
	Set RS232 port parameters in accordance with settings of SCALES EDITOR 2.1.

24. TROUBLESHOOTING

Problem	Cause	Solution
Scale start-up fail.	Power supply disconnected.	Connect the power supply to the scale.
	Battery discharged.	Connect the power supply to the mains, charge the battery.
	No battery (not installed or installed incorrectly).	Check if the battery is installed correctly (polarization).
The scale switches off automatically.	<7.4.t1> parameter set to value enforcing scale shut-down after particular time interval.	Go to <P7.Othr> menu, set <7.4.t1> parameter to 'nonE' value.
During the start-up, message 'LH' is displayed.	Weighing pan loaded during the start-up.	Unload the weighing pan. Zero indication is displayed.
Communication with the computer not established.	Incorrect computer port set in parameter <5.1.1.Prt>.	Enter < P5.ducE / 5.1.PC> submenu and set correct <5.1.1.Prt> parameter value.
	Incorrect transmission parameters for the selected computer port.	Enter <P4.Conn> menu and set correct transmission parameters for the selected computer port.
	Incorrect printout frequency for continuous transmission.	Enter < P5.ducE / 5.1.PC> submenu and set correct <5.1.3.Int> parameter value.

No printout on a scale-connected printer.	Incorrect printer port set in <5.2.1.Prt> parameter.	Enter < P5.ducE / 5.2.Prtr> submenu and set correct <5.2.1.Prt> parameter value.
	Incorrect transmission parameters for the selected printer port.	Enter <P4.Conn> menu and set correct transmission parameters for the selected printer port.
	No variable declared in weighing printout project.	Enter <P6.Prnt / 6.2.GLP> submenu and declare variables that are to be printed.
Communication with the additional display not established..	Incorrect additional display port set in <5.3.1.Prt> parameter.	Enter < P5.ducE / 5.3.AdSP> submenu and set correct <5.3.1.Prt> parameter value.
	Incorrect transmission parameters for the selected computer port.	Enter <P4.Conn> menu and set correct transmission parameters for the selected additional display port.
Displayed mass unit does not comply with the scale data plate.	Changed scale start unit in <9.1.UnSt> parameter.	Enter <P9.Unit / 9.1.UnSt> submenu and set unit complying with the scale data plate.
	Changed custom unit in <9.2.Unin> parameter.	Enter <P9.Unit / 9.2.Unin> submenu and set unit complying with the scale data plate.

25. ERROR MESSAGES

- E r r 2 -	Value beyond zero range.
- E r r 3 -	Value beyond tare range.
- E r r 4 -	Adjustment weight or start mass out of range (±1% for adjustment weight, ±10 for start mass).
- E r r 5 -	Battery error. Battery is damaged.
- E r r 8 -	Time of the following operations exceeded: taring, zeroing, start mass determining, adjustment process.
- n u l l -	Zero value from converter.
- F U L L -	Weighing range exceeded.
- L H -	Start mass error, indication out of range (±10% of start mass).
- H i -	Display range of total mass on scale display exceeded in 'Totalizing' mode.
- u L o -	Too low battery charge. The scale is about to shut down.
- E r r L o -	- Determined mass of single part in 'Parts counting' mode too small. - Value of 'Min' threshold is greater than value of 'Max' threshold in '+/- control' mode.
- E r r H i -	- Entered value of single part greater than maximum capacity in 'Parts counting' working mode. - Entered value of 'Max' threshold greater than maximum capacity in '+/- control' mode. - Entered reference mass greater than maximum capacity in 'Percent weighing' mode.

RADWAG BALANCES AND SCALES
ADVANCED WEIGHING TECHNOLOGIES