USER MANUAL

4BA(N), 4BANA(N), 4BAF(N) , 4BAPZ(N) and 4BAPA(N) SERIES

Table of contents:

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1. *General description*

This manual describes scales produces by AXIS Sp. z o.o. and their basic functions. Standard execution scales are equipped with ME-01/A/LED meter and stainless steel scales with ME-01/N/LED. In case of using these meters or special meter for eg. batching meter it is essential to use proper user manual for individual meter type.

All balances are tested in respect of metrology. According to order, balances may be verified or calibrated.

EC verification (conformity assessment) of balances is required for special applications (trade, tariffs, pharmacy recipes, medical and pharmaceutical analysis, packing of goods). For other applications it is recommended to replace verification with calibration.

Verified balances have the following verification features:

- protection stamps, located on balance meter and converters connection box (installed under the bearing surface).

- Office of Measures marks and green metrological mark, located on the rating plate.

Balances classification (PKWiU code) 29.24.23.

Certificates:

Certificate
of type approval
no. T7950
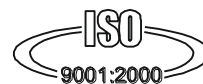
ISO Certificate
PN-EN ISO 9001:2009
no. AC 090/1141/2245/2011
(AXIS management system)

2. Meters

Depending on scale's application it can be equipped with following meter:

ME-01/A/LED - **Standard** universal ME-01 meter in aluminium (A) housing and LED display (18mm digits height). Full set of special functions (chapter 15) and standard set of keys.

ME-01/A/LCD - **Standard** universal ME-01 meter in aluminium (A) housing and LCD display (18mm digits height). Full set of special functions (chapter 15) and standard set of keys.

*ME-01/N/LED – **Standard** universal ME-01 meter in stainless steel housing and LED* display (18mm digits height). Full set of special functions (chapter 15) and standard set of keys.

*ME-01/N/LCD - **Standard** universal ME-01 meter in stainless steel housing and LCD display* (18mm digits height). Full set of special functions (chapter 15) and standard set of keys.

ME-01/N/25 – Universal meter with LED display (25mm digits height) in stainless steel housing. Full set of special functions (chapter 15) and standard set of keys.

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ME-11/N/LCD (surcharge) – meter with numerical keyboard designed to operate special functions that need inscribing data (e.g. product code, unitary mass), stainless steel housing.

ME-02/N/LCD (surcharge) – designed for one-ingredient or multi-ingredient batching, numerical keys, stainless steel housing.

SE-03/N/LCD (surcharge) – designed to cooperate with label printer, numerical keys, stainless steel housing.

SE-12/N/2xLCD (surcharge) - designed to operate with computer through RS485 or LAN network, with possibility to connect scanner and label printer (options), 2 displays: digit – weight indication and text - menu and data, stainless steel housing.

SE-22/N/2xLCD meter (surcharge) – one-ingredient or multi-ingredient batching, 2 displays: digit – mass indication and text – recipe ingredients names etc., stainless steel housing.

ATTENTION:

In order to get acquainted with special functions and other functionality use proper meter user manuals.

3. Completation

Basic set includes:

1. The scale
2. RS232C connector (only 4BA/N, 4BA/FN, 4BA/PAN, 4BA/PZN scales)
3. CD with user manuals
4. Warranty

4. Technical data

Platform scales 4BA and 4BA/N

Scale type	4BA300(N)	4BA600(N)	4BA1500(N)	4BA2000(N)	4BA3000(N)	4BA6000(N)
Maximum load (Max)	300kg	600kg	1500kg	2000kg	3000kg	6000kg
Reading graduation (d)	100g	200g	500g	1kg	1kg	2kg
Verification graduation (e)	100g	200g	500g	1kg	1kg	2kg
Minimum load (Min)	2kg	4kg	10kg	20kg	20kg	40kg
Tare set range	-300kg	-600kg	-1500kg	-2000kg	-3000kg	-6000kg
Precision class	III					
Operational temperature	-10÷40°C					
Weighing time	<3s					
Platform dimensions: Balance weight:						
1000x1000x80(85)mm 60kg	●	●	●			
1250x1250x80(85)mm 100kg	●	●	●	●		
1500x1500x80(85)mm 140kg			●	●		
1500x1500x112(110)mm 150kg					●	
1500x2000x112(110)mm 190kg					●	●
Display cable length	4m					
Power supply	~230V, 50Hz, 8VA					
Internal supply (option)	NIMH (size AA) – 4 pcs					
Accumulator working time	About 6 h with display backlighting and 16h without					
Indicator protection rating	4B – lack of IP 4B/N (stainless scales) - IP65					
Sensors protection rating	4B - IP67 4B/N (stainless scales)- IP68					

Overrun scales 4BA/NA and 4BA/NAN:

Scale type	4BA300NA (N)	4BA600NA (N)	4BA1000NA (N)	4BA1500NA (N)	4BA2000NA (N)
Maximum load (Max)	300kg	600kg	1000kg	1500kg	2000kg
Reading graduation (d)	100g	200g	500g	500g	1kg
Verification graduation (e)	100g	200g	500g	500g	1kg
Minimum load (Min)	2kg	4kg	10kg	10kg	20kg
Tare set range	-300kg	-600kg	-1000kg	-1500kg	-2000kg
Precision class	III				
Operational temperature	-10÷40°C				
Weighing time	<4s				
Platform dimension (max exter. tread x lenght)	860x1000mm		1000x1250 mm	1250x1500mm	
Overrun dimensions (szer. x dł. x wysokość)	1100 x 355 x 50mm		1250x415x50 mm	1500 x 470 x 60mm	
Scale weight	160kg		250kg	350kg	
Supply	~230V, 50Hz, 8VA				
Internal supply (option)	NIMH (size AA) – 4 pcs				
Accumulator working time	About 6 h with display backlighting and 16h without				
Indicator protection rating	4BA/NA - no IP, 4BA/NAN (stainless scales) - IP65				
Sensors protection rating	4BA/NA - IP67, 4BA/NAN (stainless scales)- IP68				

Pallet scales 4BA/PA oraz 4BA/PAN:

Scale type	4BA300 PA(N)	4BA600 PA(N)	4BA1000 PA(N)	4BA1500 PA(N)	4BA2000 PA(N)	4BA3000 PA(N)
Maximum load (Max)	300kg	600kg	1000kg	1500kg	2000kg	3000kg
Reading graduation (d)	0,1kg	0,2kg	0,5kg	0,5kg	1kg	1kg
Verification graduation (e)	0,1kg	0,2kg	0,5kg	0,5kg	1kg	1kg
Minimum load (Min)	2kg	4kg	10kg	10kg	20kg	20kg
Tare set range	-300kg	-600kg	-1000kg	-1500kg	-2000kg	-3000kg
Precision class	III					
Operational temperature	-10÷40°C					
Weighing time	<4s					
Bearing surface internal dimensions (width.x lenght.x height.)	600x1135x78mm					
Bearing surface external dimensions (width.x lenght.x height.)	840x1260 x78mm					
Drive (entry) width	600mm					
Display lenght to indicator	4m					
Supply	~230V, 50Hz, 8VA					
Internal supply (option)	NIMH (AA size) – 4 pcs.					
Accumulator working time	About 6 h with display backlighting and 16h without					
Scale weight	70kg					
Indicator protection rating	4BA/PA - no IP 4BA/PAN (stainless steel) - IP65					
Sensors protection rating	4BA/PA - IP67 4BA/PAN (stainless steel)- IP68					

Skid scales 4BA/PZ and 4BA/PZN:

Scale type	4BA300 PZ(N)	4BA600 PZ(N)	4BA1000 P(N)	4BA1500 PZ(N)	4BA2000 PZ (N)	4BA3000 PZ(N)
Maximum load (Max)	300kg	600kg	1000kg	1500kg	2000kg	3000kg
Reading graduation (d)	0,1kg	0,2kg	0,5kg	0,5kg	1kg	1kg
Verification graduation (e)	0,1kg	0,2kg	0,5kg	0,5kg	1kg	1kg
Minimum load (Min)	2kg	4kg	10kg	10kg	20kg	20kg
Tare set range	-300kg	-600kg	-1000kg	-1500kg	-2000kg	-3000kg
Precision class	III					
Operational temperature	-10÷40°C					
Weighing time	<4s					
Skid dim. (width.× lenght.× height.)	120×1260×75mm					
Wire lenght beetwen skids	5m					
Wire lenght to meter	5m					
Supply	~230V, 50Hz, 8VA					
Internal supply (option)	NIMH (AA size) – 4 pcs.					
Accumulator working time	About 6 h with display backlighting and 16h without					
Scale weight	40kg					
Indicator protection rating	4BA/PA - no IP 4BA/PAN (stainless steel) - IP65					
Sensors protection rating	4BA/PA - IP67 4BA/PAN (stainless steel)- IP68					

Foundation scales 4BA/F and 4BA/FN:

Balance type	4BA300F(N)	4BA600F(N)	4BA1500F(N)	4BA2000F(N)	4BA3000F(N)
Maximum load (Max)	300kg	600kg	1500kg	2000kg	3000kg
Reading graduation (d)	100g	200g	500g	1kg	1kg
Verification graduation (e)	100g	200g	500g	1kg	1kg
Minimum load (Min)	2kg	4kg	10kg	20kg	20kg
Tare set range	-300kg	-600kg	-1500kg	-2000kg	-3000kg
Precision class	III				
Operational temperature	-10÷40°C				
Weighing time	<3s				
Foundation depth	128mm				
Platform dimensions: Balance weight:					
1000x1000mm 140kg	●	●	●		
1250x1250mm 170kg	●	●	●	●	
1500x1500mm 210kg		●	●	●	●
1500x2000mm 300kg					●
Display cable length	4m				
Power supply	~230V, 50Hz, 8VA				
Internal supply (option)	NIMH (AA size) – 4 pcs.				
Accumulator working time	About 6 h with display backlighting and 16h without				
Meter protection rating	ME-01/A/18 - no IP, ME-01/N/18 - IP65				
Sensors protection rating	IP68				

5. Meter ME-01 balance keys and indicators

Version with LED display:
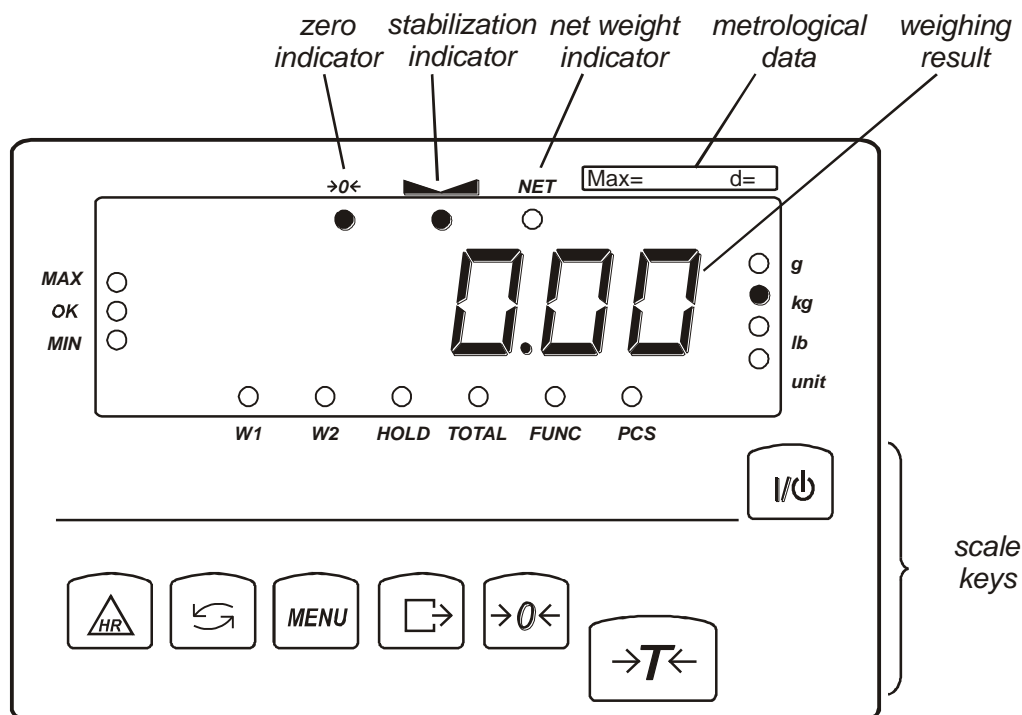
| key	I/⏻	-	switch-on / switch-off (standby),
key	→T←	-	tare (subtract package weight from weighed mass),
key	→0←	-	zeroing (when the platform is empty),
key	⤷	-	result printout,
key	MENU	-	special function menu,
key	↻	-	switch: special function/weighing
key	HR	-	high resolution,
indicator	→0←	-	zero indicator,
indicator		-	result stabilization indicator,
indicator	NET	-	net weight indicator (after using →T← key),
indicator	W1	-	first range of two-range scale is on,
indicator	W2	-	second range of two-range scale is on,
indicator	HOLD	-	indication 'hold'(function *LOC* and *UP*),
indicator	FUNC	-	special function on,
indicator	PCS	-	pieces counting,
indicator	g, kg, lb, unit	-	mass unit indication
indicator	MIN	-	weighing result under threshold I,
indicator	OK	-	weighing result between threshold I and II,
indicator	MAX	-	weighing result above threshold II.

Version with LCD display:

key	I/⏻	-	switch-on / switch-off (standby),
key	→T←	-	tare (subtract package weight from weighed mass),
key	→0←	-	zeroing (when the platform is empty),
key	⮕	-	result printout,
key	MENU	-	special function menu,
key	B/G	-	gross mass indication,
key	HR	-	high resolution,
indicator	→0←	-	zero indicator,
indicator	◣◢	-	result stabilization indicator,
indicator	NET	-	net weight indicator (after using →T← key),
indicator	MODE	-	special function on indicator,
indicator	B/G	-	gross weight (after using TARE function and ↻ key),
indicator	AUT	-	autotare function on,
indicator	T	-	tare memory function on,
indicator	TOTAL FILTER, SUM	-	special functions indicators,
indicator	%, ct, n, g/m2, lb,mg	-	weight result units indications,
indicator	PCS	-	pieces counting,
indicator	n	-	measurement quantity indications (total function),
indicator	OFF	-	turning off the scale by using I/⏻,
indicator	MIN	-	weighing result under threshold I,
indicator	OK	-	weighing result between threshold I and II,
indicator	MAX	-	weighing result above threshold II,
indicator	BAT	-	wskaźnik rozładowania baterii,
indicator	Δ, O	-	ACTIV function indicator.
indicator	bar	-	scale load indicator (0-100%)

Inserting numerical
values:

$\rightarrow 0 \leftarrow$ - increasing the value of digit,

⌐→   - dot,

$\rightarrow T \leftarrow$ - next digit,

MENU   - end of inscribing.

6. Scale external outputs
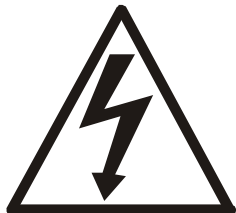
ME-01 Meter in aluminium housing:
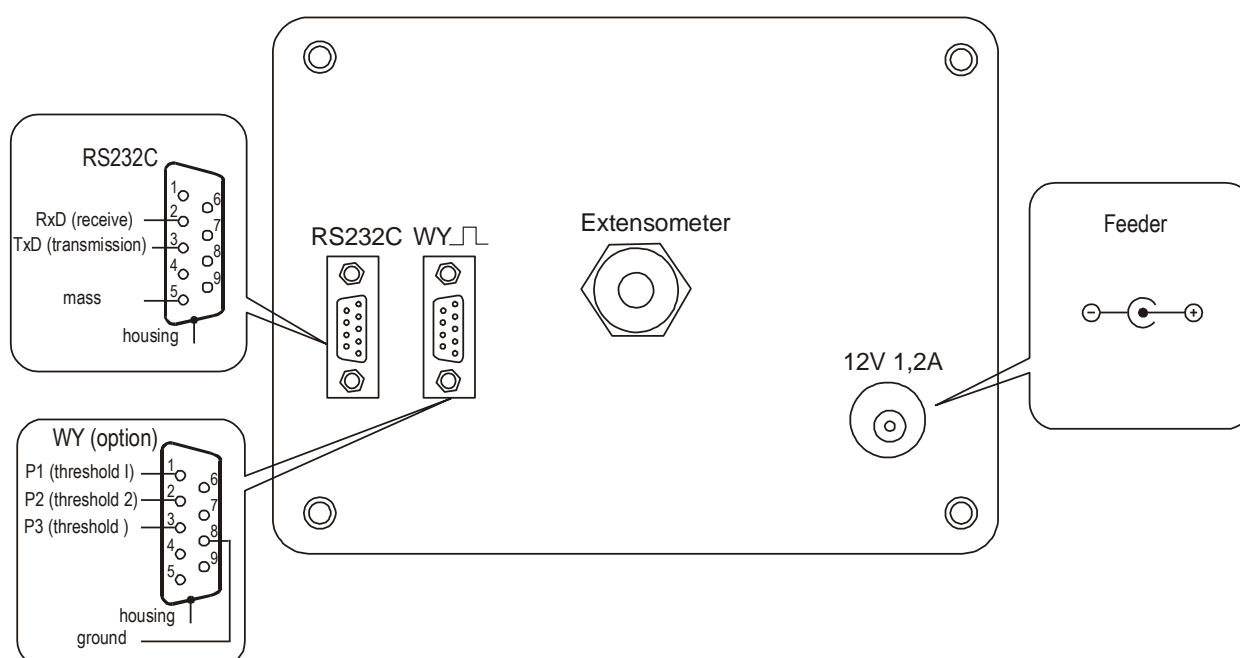
ME-01 meter in stainless steel housing:
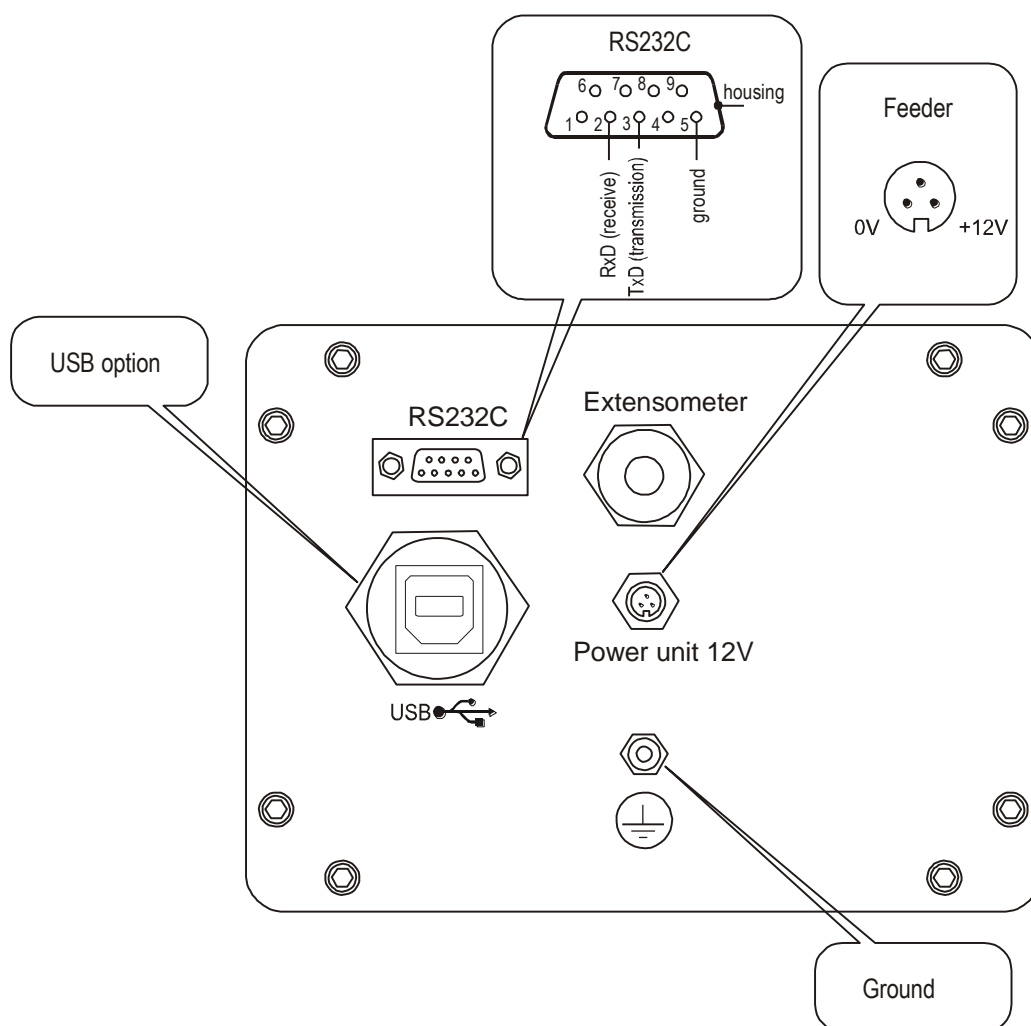
Separate ground connection (scales in stainless steel version) must be connected using additional conductor.
Extensometers are connected permanently.

7. Safety principles

It is necessary to become familiar with safety principles shown below, which are necessary to avoid electric shock and damage of balance or connected devices.

- Repairs and necessary adjustments must be performed by qualified personnel only.
- To avoid fire hazard, use only typical supply cable, and supply voltage must be consistent with technical data.
- For the balance supply use the socket with protective contact.
- Do not use balance when the cover is removed.
- Do not use balance in explosive atmosphere.
- Do not use balance in locations with high humidity, when the cover does not have special protections for N type.
- In case of damage suspicion, switch the balance off and do not use it until it is tested in professional service company.

According to valid regulations regarding natural environment protection do not place used electronic devices in containers with common waste.

- Used balance after operation period may be transferred to units authorized for collection of used electronic equipment, or to place of purchase.
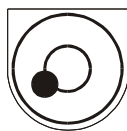
8. Balance preparation to work

8.1 Preparing platform, pallet and skid scales

1. Unpack balance, remove protective foils.
2. Place balance on flat, horizontal foundation, in place not subjected to mechanical vibrations and strong air movements.
3. Air bubble in level should be located in the middle position.
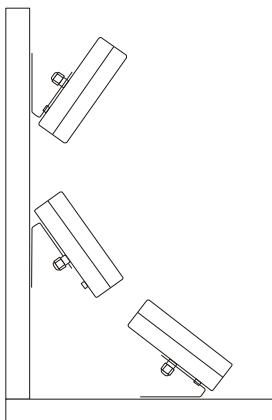
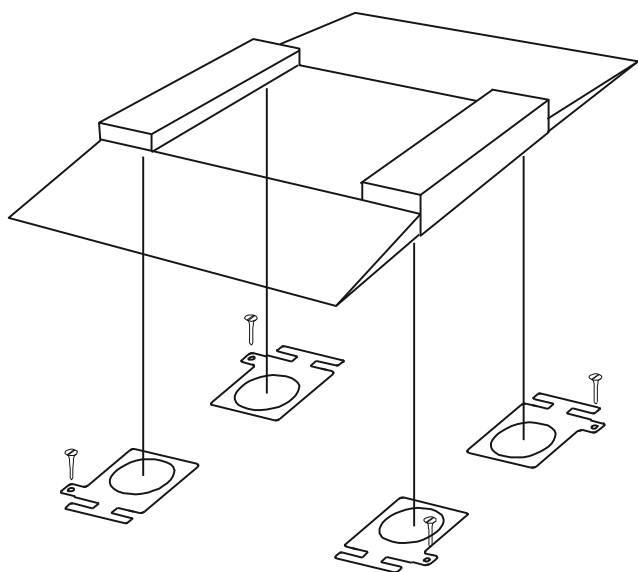Good   Bad

4. Attach meter to the wall, desktop or tripod (option), choosing one of three methods.

5. Connect the supply cable plug to socket with protective contact, when balance is unloaded.

8.2 Preparing overrun scales
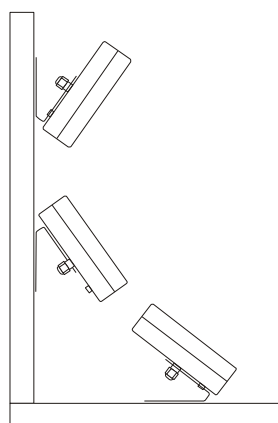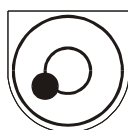
1. Unpack balance, removing protective foils.

2. Place balance on flat, horizontal foundation, in place not subjected to mechanical vibrations and strong air movements. Take care if the scale stays on all four legs.

Good   Bad

3. Air bubble in level should be located in the middle position.

4. Lift scale corners up and put locks under in such way that scale legs go into prepared holes.

5. Mount locks permanently to the ground using $\phi10$ holes.

6. Put balance approaches (drives) on settling them into locks.

7. Unscrew transport handles (mounted for transport).

8. In hermetic scales plug not used joints with supplied caps. Attach meter to the wall, desktop or tripod (option), choosing one of three methods.

9. Connect the supply cable plug to socket with protective contact, when balance is unloaded.

8.3 Preparing foundation scales

8.3.1 Preparing foundation

CAUTION!
Decision of substrate reinforcing and density is taken by building works designer.
All dimensions are in millimetres.

During foundation preparation follow the principles below:

1. Foundation and feet under balance legs should be made from concrete. Foundation bottom thickness should not be smaller than 100 mm.
2. Foundation bottom inclination angle (shown in fig. 1 on page 8) should be at least 3%.
3. Keep the same level for all feet.
4. Level the foundation frame, keeping perpendicularity of sides and equality of diagonals.
5. Diameter of PVC pipe for cables to connection box should be at least 50 mm.
6. Keep the area free from reinforcing bars as shown in fig. 2 on page 8.
7. Foundation external and internal dimensions, proper for various platform dimensions are shown in table below.

Balance type	Platform dimensions [mm]	Foundation internal dimensions (WxLxH) [mm]	Foundation enternal dimensions (WxL) [mm]
4B300FN	800x800	820x820x128	1220x1220
4B300FN	1000x1000	1020x1020x128	1420x1420
4B300FN	1250x1250	1270x1270x128	1670x1670
4B600FN	800x800	820x820x128	1220x1220
4B600FN	1000x1000	1020x1020x128	1420x1420
4B600FN	1250x1250	1270x1270x128	1670x1670
4B1500FN	1250x1250	1270x1270x128	1670x1670
4B1500FN	1500x1500	1520x1520x128	1920x1920
4B2000FN	1250x1250	1270x1270x128	1670x1670
4B2000FN	1500x1500	1520x1520x128	1920x1920
4B3000FN	1500x1500	1520x1520x128	1920x1920
4B3000FN	1500x2000	1520x2020x128	1920x2420

⚠ *Keep all dimensions, shown in drawings and table.*

⚠ *Careless and inaccurate foundation preparation may make balance installation impossible or cause its improper operation!*

Foundation frame
with anchors

200

Feet under balance legs

60

Water collector

PCV pipe for cable
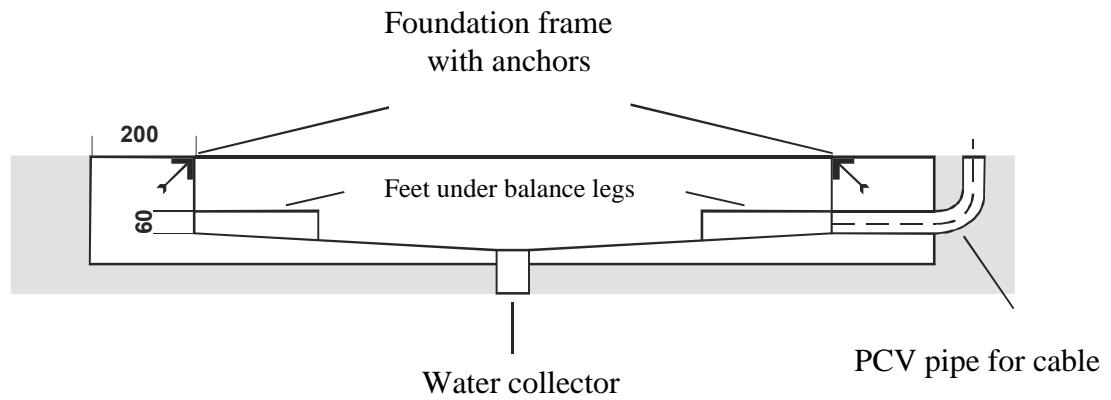
Fig.1 Foundation – crosssection

Places for frame anchors

210

210

65

180

Area
reinforcement
bar free

180   **65**

Foundation
frame with
anchors

70

300

300

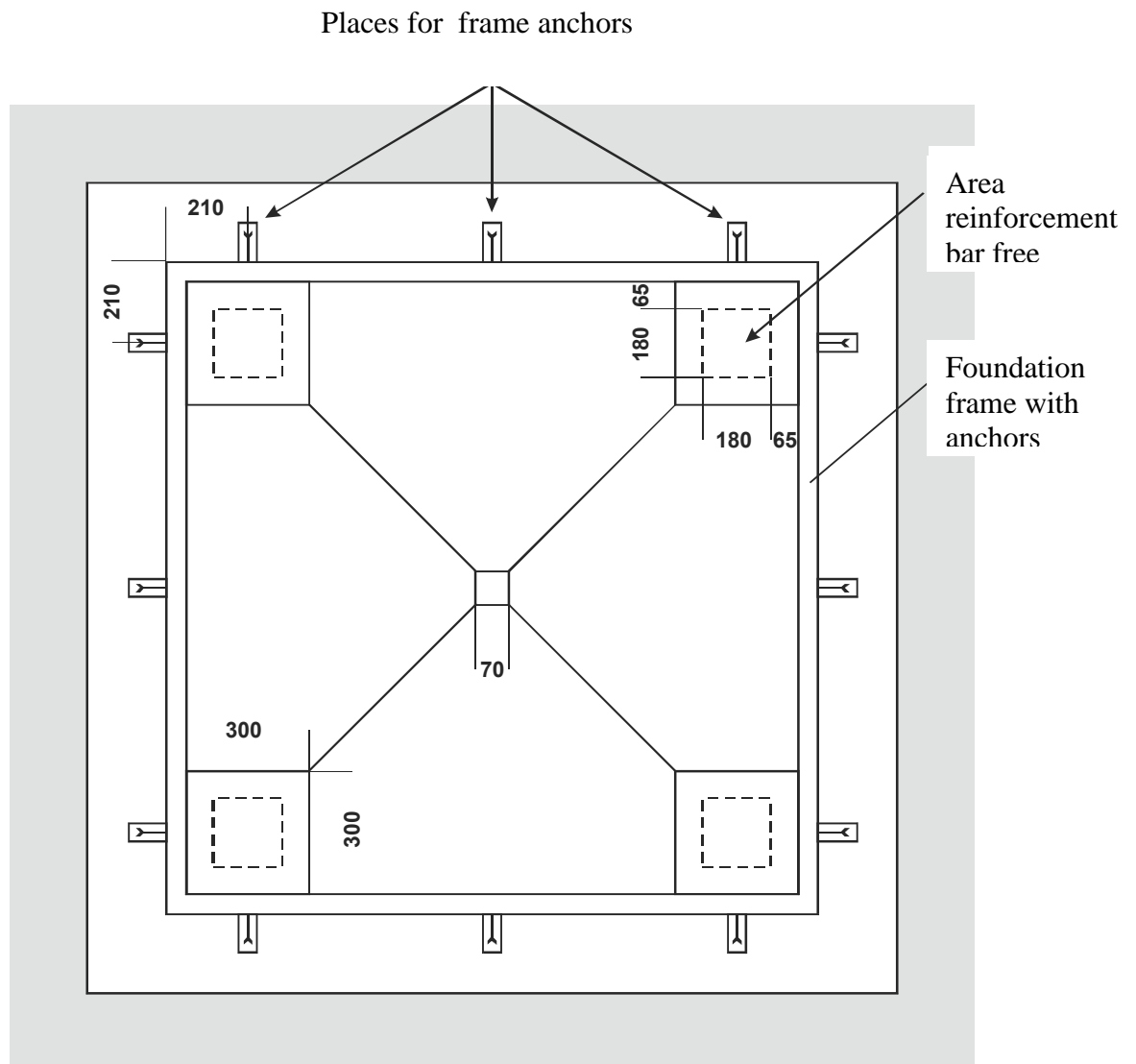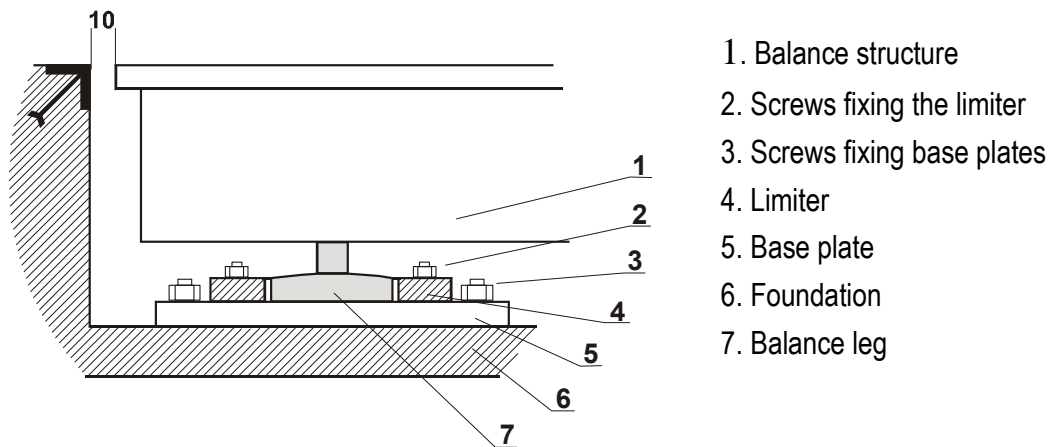*Fig. 2 Foundation – view from above*

8.3.2 Scale installation

1. Balance structure
2. Screws fixing the limiter
3. Screws fixing base plates
4. Limiter
5. Base plate
6. Foundation
7. Balance leg

1. Prepare the foundation (7) according to guidelines (section 6) and engineering technique principles.
2. Put the balances base plates (5) freely in the foundation.
3. Place limiters plates (4) on plates (5). Connect both plates with M8 screws (2) so they cannot move in respect to each other, but to allow for limiters (4) manoeuvring.
4. Unscrew screws fixing the balance upper plate.
5. Put the balance structure (1) in the foundation, so legs (7) fit vertically in the limiters (4) holes.
6. Place upper plate on balance structure and lightly screw in the fixing screws.
7. Check the upper plate location in the foundation – level in relation to foundation edge and distance from the edges (fig. 1).
8. When needed, shift the plates (5) or put spacers beneath them, made from sheet with dimensions of plate.
9. If the position of upper plate is correct, carefully remove it to not move plates (5). Check if legs (7) are straight.
10. Carefully remove balance structure (1) from foundation to not move plates (5).
11. Fix plates (5) with supplied screws with steel pins.
12. Adjust possible displacements with plates (4) position, so legs are located centrally and vertically in plates (4) holes. Tightly screw plates (5) and (4).
13. Put balance structure (1) in place.
14. Place the upper plate and fix it with screws, beginning from holes in the upper plate centre.

⚠ *Connecting cable must be laid freely!*

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15. Unpack the balance. Attach meter to the wall or desktop, choosing one of three methods.
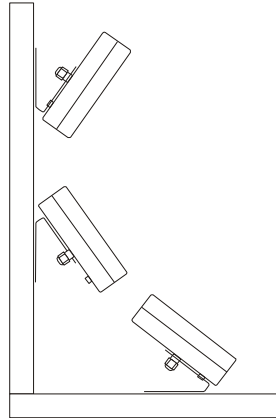
16. Connect the supply cable plug to socket with protective contact with unloaded balance, which will cause autotests performing and after indication stabilization displaying of sero indication

9. Balance start

Connecting of supply plug to socket of ~230V/50Hz installation with unloaded balance will cause the following sequence of actions:
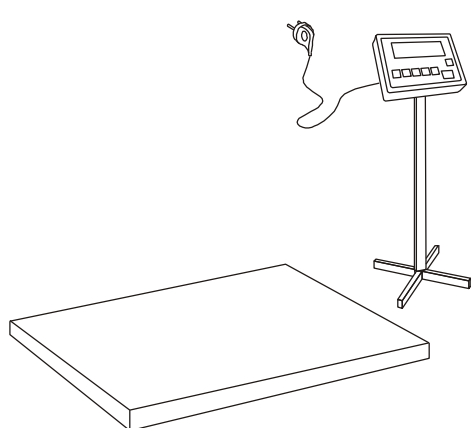
Display	Description
8888888	Display test
C - 1 ...	Tests of basic electronic subassemblies, ended with messages: *C1, C-2, ... C-6*.
C - 3	Displaying of meter type
PПE - 01	Displaying of software version.
b . . .	Ready for operation.
→0← ⊾ 0.00	

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10.   *Operation principles*

1. Before each measurement the balance should be properly zeroed, which is signalled by "→0←" indicator. If the zero indication is not shown when the balance is unloaded, or "----" is displayed, press the "→0←" key.

2. The balance enables tare setting in the whole measuring range. It is performed by pressing "→T←" key.

3. Weighed mass should be placed in the platform centre.

   ⚠ ***Do not drop weighed objects on the platform.***

   ⚠ ***Do not overload the balance over 20% of maximum load.***

4. The weighing result should be read during the "⌣" indicator lighting, which indicates the result stabilization.

5. When there is no weighing, but the balance should be ready for operation, it may be switched off by I/⏻ key. It causes the balance reading system deactivation end entering the standby mode. Balance turning on is performed by pressing " I/⏻" key.

6. Protect the balance from dust, aggressive dusts and liquids. For cleaning purposes use water and dry it.

11.   Balance test

During balance operation, in order to confirm its efficiency, it is recommended to check the weighing precision by putting and object of exactly known weight before and after series of measurements.

For testing of verified balances use weight standard, having valid standardization certificates. In case of allowable measurement error exceeding contact authorized service company to perform balance adjustment.

⚠️ Balance adjustment must be performed by authorized service company only, as it is connected with necessity of seals breaching, required for warranty purposes.
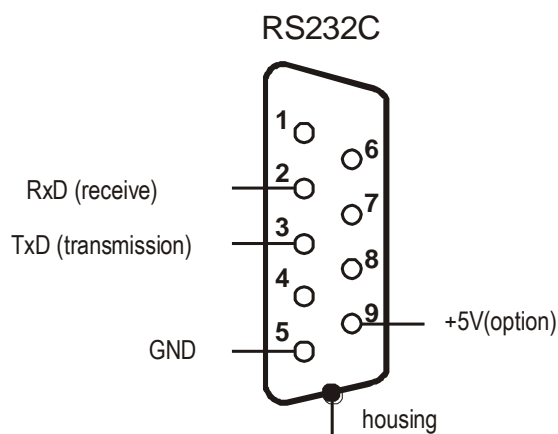
12.   Accumulator change (ME-01 option)
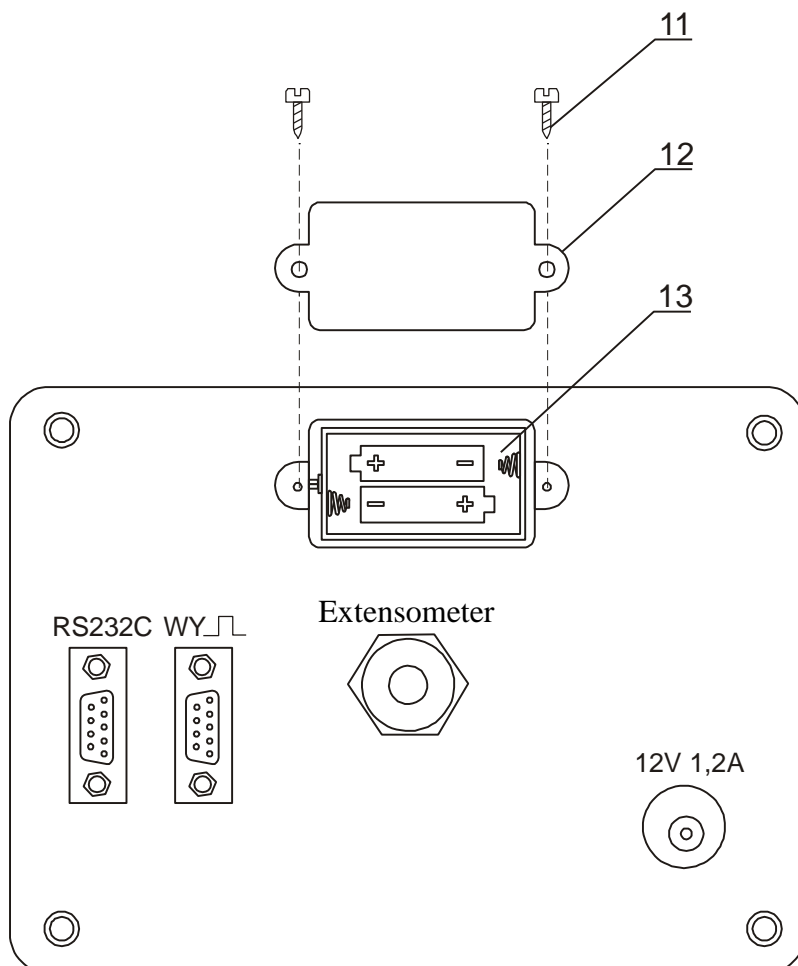
1. Remove screws *11* holding plate *12*, remove the plate.

2. Take out container with accumulators *13* and place 4 AA format accumulators. The way of packing accumulators into the container is shown on the figure on the left and is also shown on the container.

13.   *Connection with computer, printer or label printer*

RS232C

The scale is equipped with RS232C, which can be used to connect external devices such as computer or a printer.

When cooperating with computer, the scale sends weighing result after initialize signal from computer or after pressing ⊑→ key on the scale.
When cooperating with a printer data is send automatically after result stabilisation, but next transmission is possible after removing previously weighted sample.

When cooperating with label printer after pressing ⊑→ key, the scale sends instructions set for the label printer. Label number 0001, hour, data (if the clock is installed and on) and nett weight. During transmission *LabEL* communicate is displayed.
The way of sending data and transmission parameters is set using *SErIAL* special function.

Set of send data is set using special function *PrInt*.

The following data can be send:

- Header (scale type, Max, d, e, serial number),
- Operator identification number,
- Successive printout number (measurement),
- Identification number or product bar code,
- Number of pcs (PCS function only),
- Single detail mass (PCS function only),
- Nett weight,
- Tare (package mass),
- Gross weight,
- Total mass (Total function only).

If the scale is equipped with two serial joints *Print* function is set independently for both interfaces.
Computer must have a special program for cooperation with data from a scale.
Dedicated programs are also offered by AXIS.

Except RS232C joint, the scale can be equipped with USB or Wi-Fi interface.
Needed controllers and instruction can be found on a CD supplied with Axis scales.

Detailed protocol description
LonG protocol

Communication parameters: 8 bits, 1 stop bit, no parity, baud rate 4800bps,

- initialising signal (data send order) – correspond to press ⤷ key
  Computer→Scale: S I CR LF (53h 49h 0Dh 0Ah),
  Scale→Computer: scale response according to description below (16 bytes):

 | Byte | 1 | - | sign „-" or space |
  |------|------|---|--------------------------------|
  | Byte | 2 | - | space |
  | Byte | 3÷4 | - | digit or space |
  | Byte | 5÷9 | - | digit, decimal point or space |
  | Byte | 10 | - | digit |
  | Byte | 11 | - | space |
  | Byte | 12 | - | k, l, c, p or space |
  | Byte | 13 | - | g, b, t, c or % |
  | Byte | 14 | - | space |
  | Byte | 15 | - | CR |
  | Byte | 16 | - | LF |

Attention:
Network number different than zero (*Port/nr* function) changes scale working mode: communication with a computer is possible after logging the scale in with 02h scale number command. To log the scale out use 03h command.
For example: Using a program to test RS232 interface (program is available in www.axis.pl / programy komputerowe) for scale number 1 please write: *$0201* to log in, then *SI*, and write: *$03* to close communication.

- Asking about scale presence in system (testing scale connection with computer):
  Computer→Scale: S J CR LF (53h 4Ah 0Dh 0Ah),
  Scale→Computer: M J CR LF (4Dh 4Ah 0Dh 0Ah),

- Displaying a inscription on scale's display (text communicate from computer):
  Computer→Scale: S N n n X X X X X X CR LF,   nn-displaying time in seconds; XXXXXX-6 signs to display
  Scale→Computer: M N CR LF (4Dh 4Eh 0Dh 0Ah),

- Scale tarring (calling →T← key press) :
  Computer→Scale: S T CR LF (53h 54h 0Dh 0Ah),
  Scale→Computer: without response,

- Scale zeroing (calling →0← key press):
  Computer→ Scale: S Z CR LF (53h 5Ah 0Dh 0Ah),
  Scale →Computer: without response,

- Scale turning on / off (calling I/⏻ key press):
  Computer→ Scale: S S CR LF (53h 53h 0Dh 0Ah),
  Scale →Computer: without response,

- Entering to special function menu (calling *MENU* key press):
  Computer→ Scale: S F CR LF (53h 46h 0Dh 0Ah),
  Scale →Computer: without response,

- Setting low threshold value (option):
  Computer→ Scale: S L *D1...DN* CR LF (53h 4Ch *D1...DN* 0Dh 0Ah)
  D1...DN – threshold value, maximum 8 characters („-" – negative value, digits, dot – decimal separator), number of digits after dot should be the same as on scale display,
  Scale →Computer: without response,
  Example:
  · in order to set low threshold 1000g in scale B1.5 (d=0.5g) the following order should be sent:
     S L 1 0 0 0 . 0 CR LF (53h 4Ch 31h 30h 30h 30h 2Eh 30h 0Dh 0Ah),
  · in order to set low threshold 100kg in scale B150 (d=50g) the following order should be sent:
     S L 1 0 0 . 0 0 CR LF (53h 4Ch 31h 30h 30h 2Eh 30h 30h 0Dh 0Ah),),

- Setting high threshold value (option):
  Computer→ Scale: S H *D1...DN* CR LF (53h 48h *D1...DN* 0Dh 0Ah),
  D1...DN – threshold value (see)
  Scale →Computer: without response.

Connecting cable WK-1 *(scale – computer / 9-pin interface):*
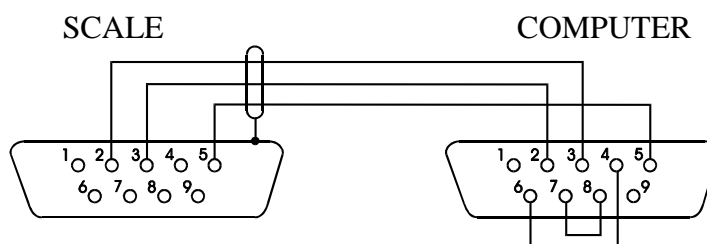
Connection cable WD-1 *(connects scale with AXIS printer):*
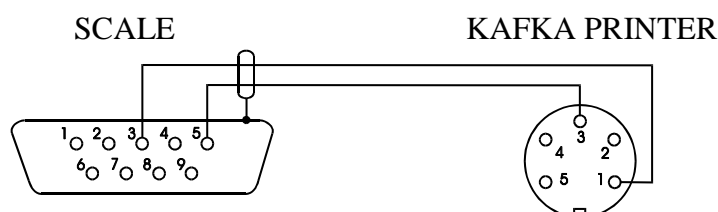
Setting of internal switches of AXIS printer:

SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8
on	off	on	off	off	on	off	off

ELtron protocol

Transmission parameters: 8 bits, 1 stop bit, no parity, baud rate 9600bps,

- After using ⤷ key in scale:
- Scale→Label printer : set of instruction in EPL-2 language that initialize label printing:

US	-	Steering instruction
FR"0001"	-	Label number define instruction
?	-	Instruction that starts list of variable signs
mm:gg	-	5 signs: minutes:hour
rrrr.mm.dd	-	10 signs: year.month.day
masa	-	10 signs: scale indication+ mass unit
P1	-	Steering instruction

Attention:

1. Except variable signs constant signs also can be inscribed for example factory name, product name and so on.
2. In standard one label pattern is possible to prinout (number 0001). Using bigger amount of patterns (other label numbers) is possible thanks to *LAbEL* special function.
3. To achieve label printout, label printer must have inscribed label pattern (label pattern is created on computer and using computer it is saved to label printer memory). Label pattern is designed by ZEBRA DESIGNER program which is supplied together with label printer.
4. Scales parameters and transmission protocol must corespond to label printer type.

_____

14.   Basic function

To make clear how to manage with each function, in further part of instruction descriptions are replaced with pictures.
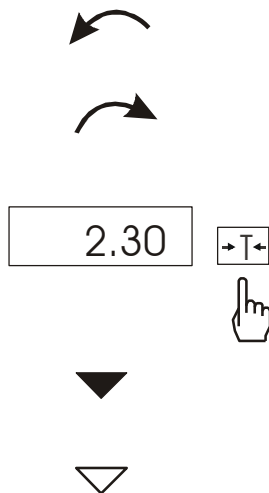
(arrow)	- put a load on the pan
(arrow)	- remove the load from the pan
2.30 →T←	- press the key when indication is displayed
▼	- forced change
▽	- automatic change

14.1 Normal weighing

0.00 →0←
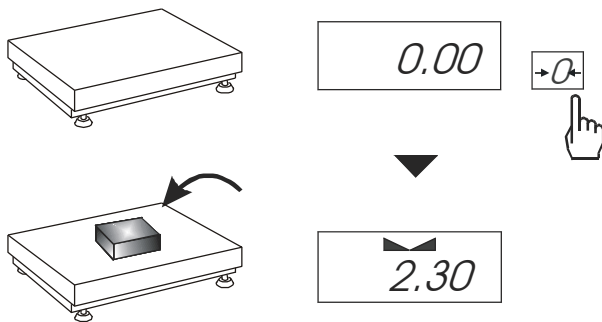
Press →0← key (→T← key in non-legalized scales), which zeros the scale, operates only when the pan is empty .

▼

2.30

Weighing result should be read when the indicator " ⌣ " lights.

14.2 Weighing with tare
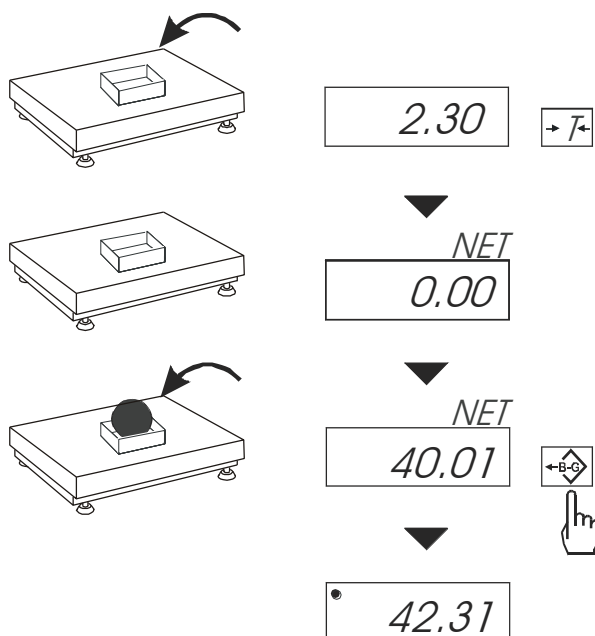
2.30 → T←	The scale is equipped with tare equal to its range.
▼ NET *0.00*	Joint value tare and mass net can not cross a maximum of scale.
▼ NET *40.01* ←B-G	To display gross weight press *B/G* key.
▼ • *42.31*	***Note:*** Press *B/G* key to return to net weight indication.

14.3 Increased readability
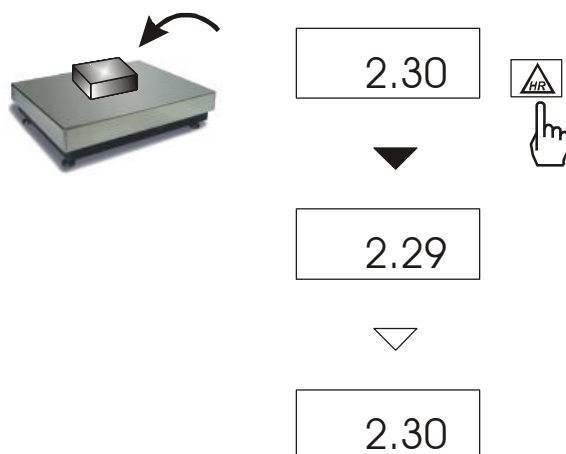
2.30 HR	Press *HR* key to display the weighing result (for 5s.) with the highest readability possible. This function is especially helpful in scales with legal verification with d=e.
▼ 2.29	
▽ 2.30	The weighing result with increased readability can be used for informational purposes only and cannot be printed or sent to a computer with ⌐→ key.

_____

15.   *Special function description*

All scales besides basic metrological functions: weighing and taring, have a set of special functions. Depending on meter type functions set differs. Below a list of functions available in standard ME-01 type meters:

❑   menu customization function (*ACtIV*),
❑   removal of all function from menu (*dEFAUL*).
❑   autozeroing function (*AutotAr*),
❑   pieces counting function (*PCS*),
❑   change of mass unit (*UnIt*),
❑   percentage weighing function (*PErC*),
❑   recipe weighing function (*rECIPE*),
❑   extended calibration function (*CALIb*),
❑   selecting label number function (*LabEL*),
❑   function for setting serial port working (*PrInt*),
❑   function for setting serial port (*SErIAL*),
❑   weighing large animals function (*LOC*),
❑   entering tare function (*tArE*),
❑   maximum value indication function (*UP*)
❑   force measuring function (*nEWto)*
❑   anti-disturbance filter function (*FILtEr*)
❑   entering reference zero (*ZErO*)
❑   setting backlight (*b-LIGht*) – *only for scales with LCD*
❑   statistical calculations *(StAt)*
❑   paperweight calculation function *(PAPEr)*
❑   main mass unit change *(lb_bAL) - option*

and functions that require additional equipment to be completely functional:

▪   option with accumulator supply:
-       Setting accumulators charging (*bAttErY)*
-       Automatic switching off scale function (*AutoOFF)*
▪   options with the clock:
-       setting current date and time function (*dAtE)*
-       total weight function (*totAL)*
▪   options with the transoptors connectors:
-    checkweighing function (*thr)*
▪   option with *USB*:
-    function for setting additional serial port (*SErIAL/Port-2)*
▪   option with radio connection:
-    function of choosing communication channel (*rF Chn)*

User creates his own menu by activating functions in *ACtIV* function (described in chapter 15.1). In scales with LCD display some special functions have additional marks on display and names of some functions are extended.

15.1 Menu customization function (ACtIV and dEFAUL)
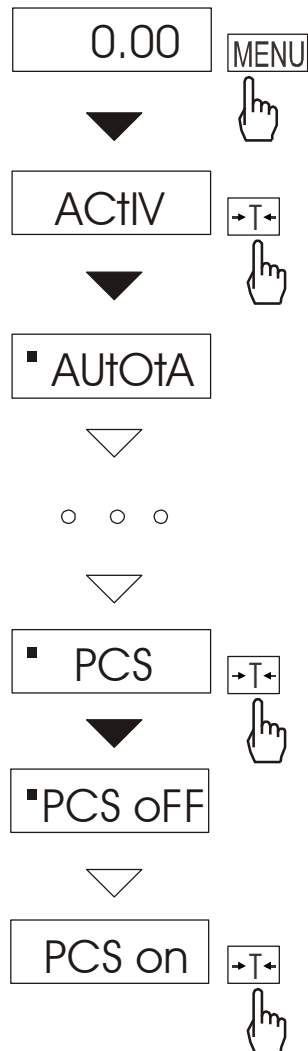
Among available user functions it is possible to select these, which should be displayed after pressing *MENU* key. It allows avoiding displaying whole list of available functions, which makes operation time longer.

After switching on *ACTIV* function a dot is displayed on the right side (to distinguish from regular menu). Chosen functions are displayed with a dot on the left side.

Operation sequence shown in the pictures on the left causes adding function for setting serial interface RS232C parameters (*Port*) to function menu.

In every moment, it is possible to restore primary (manufacture) settings choosing *dEFAULt* special function.

In order to remove function from menu in the last operation in place of selecting *PCS on* choose *PCS oFF*.

15.2 Autotare function (AutotAr)
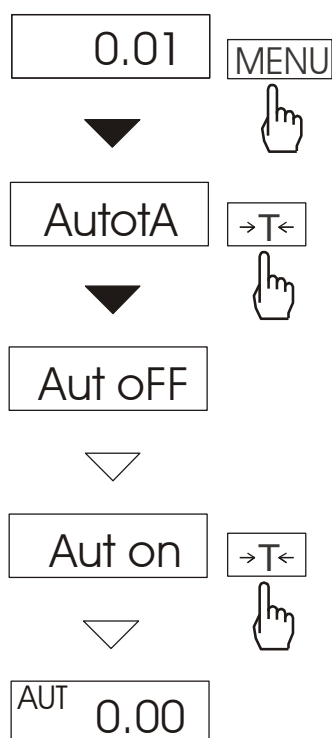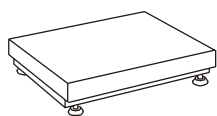
When the function is activated, the scale automatically ensures stable zero indication if the pan is empty or if zero indication was acquired by pressing →T← key.

To leave the function press *MENU* key, then with →T← key chose *AutotA* and *Aut oFF*.

Note:

1. AUt sign occurs only in scales with LCD display.

2. In scales with →0← key active function changes name into AutoZE (autozeroing) and works only when the scales is unbiased.

15.3 Pieces counting (PCS)
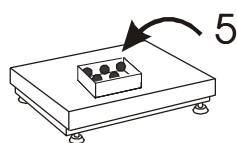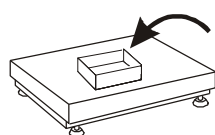
0.00	→T←	
▼		
23.40	MENU	
▼		
PCS	→T←	
▼		
PCS oFF		
▽		
PCS on	→T←	
▼		
PCS ..		
▽		
PCS 5	→T←	
▼		
WAIt		
▽		
■ 5		
▼		
■ 0		
▼		
■ 12		
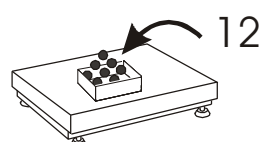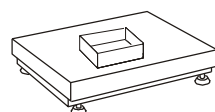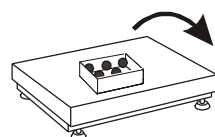
This function enables to count identical pieces, e.g. turnbuckles or buttons.

A measurement is performed in two phases:
- first phase - single piece weight calculation on the basis of defined pieces amount (*5, 10, 20, 50, 100, 200* or *500* pieces),
- second phase – pieces counting.

First phase options:

- *PCS . .* – recalling of a value inserted earlier (this quantity must be inscribed earlier),

-*PCS SEt* – set any amount of pieces in a sample,

-*PCS uM* – set unitary mass directly,

-*PCS rS* – inserting number of details in a sample and receiving of their mass from other scale connected by RS-232C.

It is advised that single piece weight is not less than one reading unit and sample weight used in first phase is bigger than 100 reading units.

To leave function press *MENU* key and then using →T← key chose *PCS* and *PCS oFF*.

Note:
1. PCS Err communicate signalises that a sample was not put on the pan or if single piece weight is less than one reading unit (it is possible to count pieces but measuring error is bigger).
4.In scales equipped with LCD display, weighing unit is visible and "□" sign is replaced with "pcs ".

15.4 Function for changing mass unit (UnIt)

```
  1.60g      MENU
     ▼
   UnIt       →T←
     ▼
  CArAt       →T←
     ▽
  8.00 ᶜᵗ
```
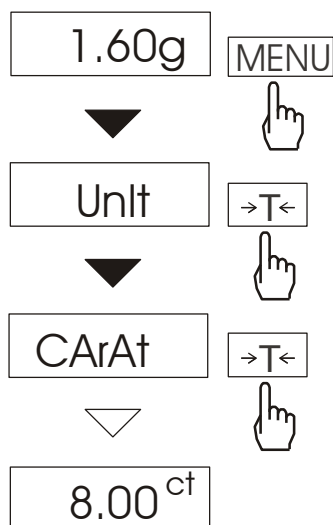
The function allows selecting weighing unit:
- CarAt (1 ct= 0,2 g) - carat,
- MGrAM (1mg=0,001g) milligram,
- KGrAM (1kg=1000g) kilogram,
- Pound (1 lb=453,592374g) English pound,
- OunCE (1oz=28,349523g) - ounce,
- OunCEt(1ozt=31,1034763g) pharmaceutical ounce,
- GrAIn (1gr=0,06479891g) - grain
- PennYW (1dwt=1,55517384g) jewellery mass unit,
- GrAM (1g) - gram.

The way of choosing carats as weighing unit is shown on the example.

Attention:
In scale with LCD, sign "▪" is replaced by designations of mass units: lb, kg, oz, ozt, ct.

15.5 Percentage weighing function (PErC)

100%

```
   0.00
     ▼
   19.00      MENU
     ▼          👆
   PErC       →T←
     ▼          👆
   PEr oFF
     ▽
   PEr on      →T←
     ▼          👆
 ▪ 100.00
     ▼
 ▪ 50.00
```

50%
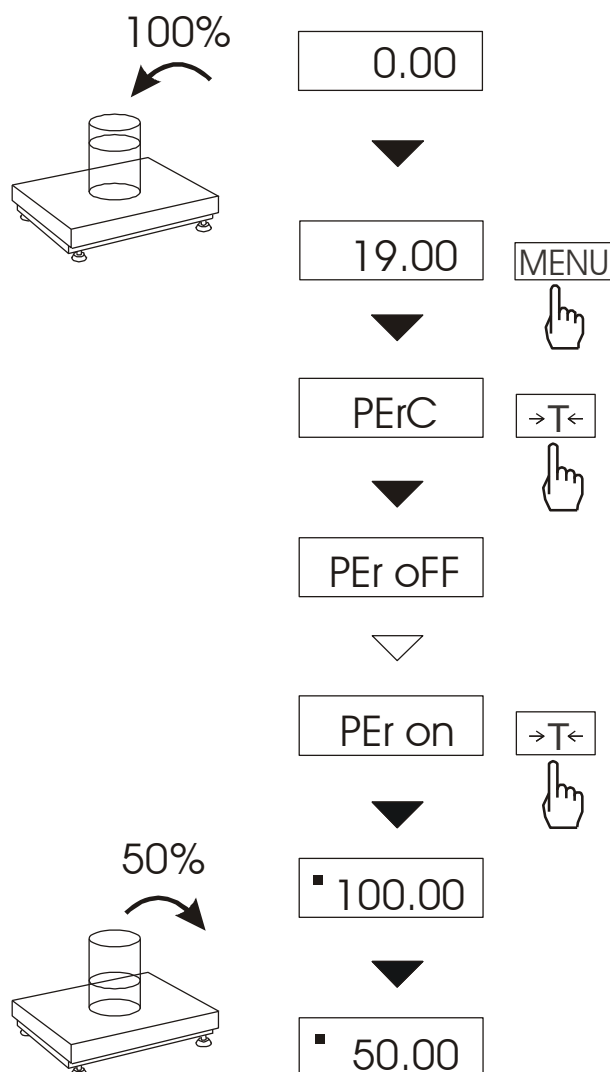
This function allows displaying weighing result in percents.

A measurement is performed in two phases:

- first phase – weighing a reference sample (100%),

- second phase – measuring specific sample as a percentage of the reference sample.

Weighing result is displayed in different format, depending on the weight value of reference sample. For weight values of reference sample 0÷3,5% of weighing range result is displayed in format *100*, for range 3,5÷35% - in format *100.0*, and above 35% - in format *100.00*.

The function has the following options:
- *PEr oFF* – disable the function,
- *PEr on*– set current scale indication as 100% and activate percentage weighing,
- *out*- exit without changing settings.

Note:
1. *PEr Err* message informs that reference 100% mass is less than 0,5⬚Min or was not defined.
2. In scales with LCD display sign "▪" is replaced with %.

15.6 Recipe weighing function (RECIPE)

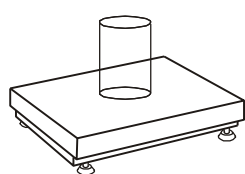| Display	Key
0.00	MENU
rECIPE	→T←
▽	
rEC on	→T←
0.11	→T←
0.00	
0.12	→T←
0.00	
0.13	→T←
0.00	MENU
rECIPE	→T←
rEC oFF	→T←
☰ 0.36	→T←

This function allows for separate weighing of several ingredients in one container with a possibility of control total weight of all weighed components.
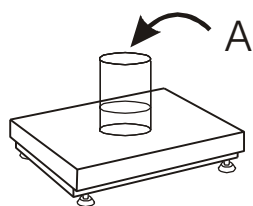
The function has the following options:

- *rEC oFF* – leave the function with possibility of reading to read total weight,

- *rEC on* – start recipe weighing

-*rEC Con* – continue previous recipe.
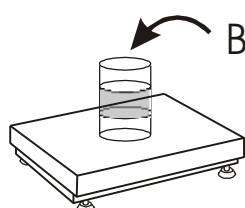
When preparing a recipe successive ingredients (A, B, C, etc.) are weighed each time starting from zero indication. In order to allow this after weighing of each ingredient tare the scale.
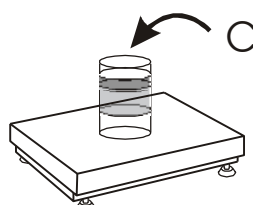
After weighing of several ingredients reading total weight is possible (despite scale taring). In order to do that press *MENU* key, select *rECIPE* function once more and use *rEC oFF* option.

Sign „☰" signals total weight indication. Recipe is finished when →T← key is pressed.
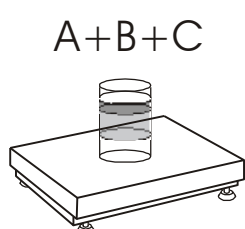
When „☰" sign is displayed recipe continuing is possible. *rEC Con* option is used for that.

Note:

Sign „☰" on the left side of display informs about *rECIPE* function activity.

A

B

C

A+B+C

15.7 Function for calibration with external weight (CALIb)

Calibration with external weight should be performed if scale accuracy is not satisfactory. Calibration weight stated in technical data table for the scale (or of better accuracy) should be used then.

Operations sequence:
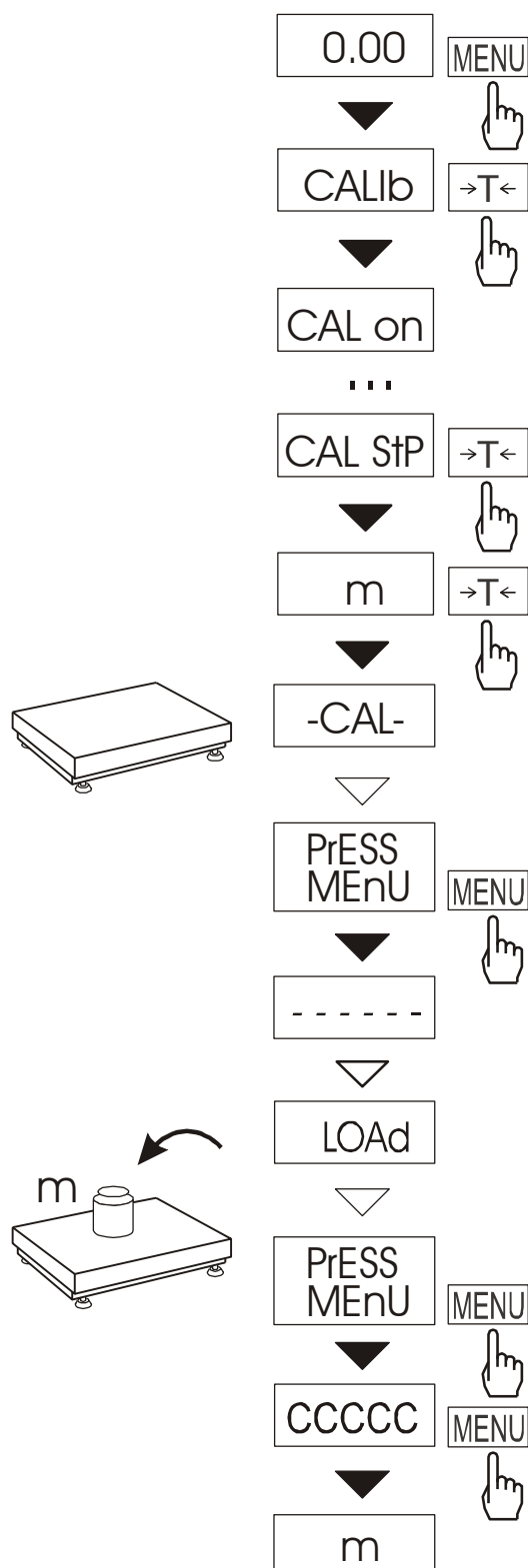
0.00 MENU	Press *MENU* key to display user functions, shown one by one in loop.
▼	
CALIb →T←	Press →*T*← key when *CALIb* function appears.
▼	
CAL on	The following options will be displayed:
...	-*CAL on* – calibration with external recommended value weight (see technical data).
CAL StP →T←	-*CAL StP* – calibration with external weight, confirmation of next steps - *MENU* key, *out* – leave without changes
▼	
m →T←	Press →*T*← key when *CAL StP* option appears (calibration in two steps).
▼	
-CAL-	Press *MENU* and wait for writing zero to the scale.
▽	
PrESS MEnU MENU	When *LOAD* message appears put standard of mass on the pan. Press *MENU* key (*CAL on* doesn't need pressing *MENU* key).
▼	
- - - - -	
▽	Wait until internal calibration is finished and zero indication is displayed.
LOAd	
▽	
PrESS MEnU MENU	
▼	
CCCCC MENU	
▼	
m	

Sequence of actions during calibration with chosen value of standard of mass:
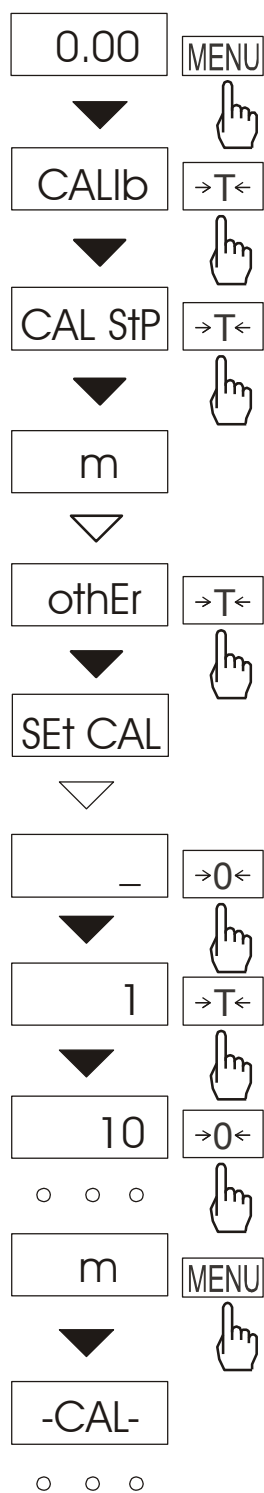
0.00 MENU	Press *MENU* key to display user functions.
▼	
CALIb →T←	Press →T← key during displaying *CALIb*.
▼	
CAL StP →T←	Press →T← key during displaying *CAL StP*.
▼	
m	Following options will be displayed:
▽	-*Pt on* – calibration with chosen mass value,
othEr →T←	-*Pt StP* – calibration with chosen mass value with confirmation of successive steps using *MENU* key,
▼	*out* – out of calibration.
SEt CAL	Press →T← key during displaying *othEr*.
▽	Using keys inscribe values of standard of mass:
_ →0←	→*0*← - increasing digit,
▼	⤶ - dot,
1 →T←	→*T*← - next digit,
▼	*MENU* - end of inscribing.
10 →0←	
o o o	Further calibration process instructions are made analogically as mentioned on previous side.
m MENU	
▼	
-CAL-	
o o o	

15.8 Label choosing function (LAbEL)

This function is used in scale with *ELTRON* (*SErIAL* function) data protocol. This protocol enables label printout with actual scale indication and chosen data from *PrInt* special function (variable data), for example date and time. Other data, for example company address, product name, barcode can appear on label as a constant text. Label patterns with number (4 digit) used by user should be saved in scale memory according to printer manual. Label pattern choice is made by inscribing label number using *LAbEL* function.
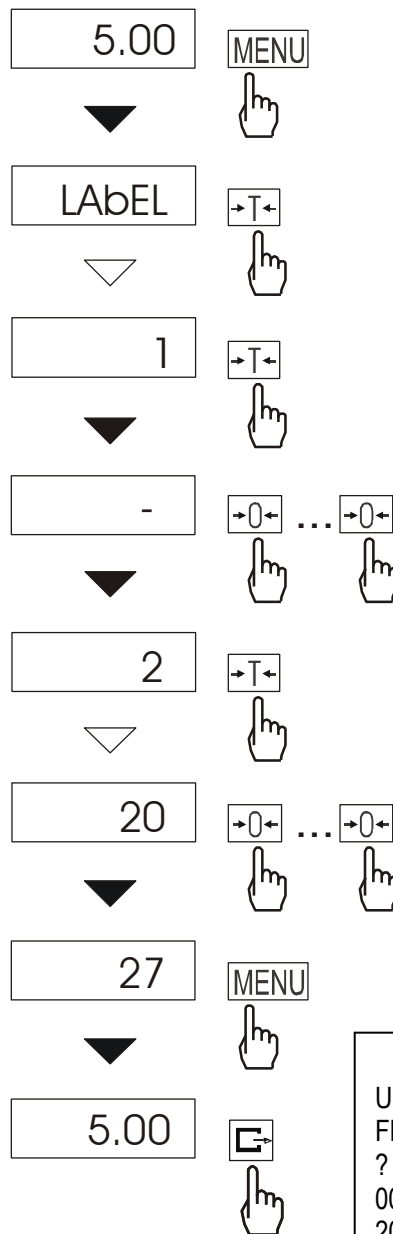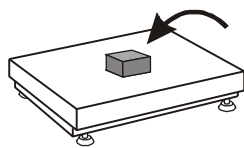
Press *MENU* button.
When *LAbEL* is displayed press →T← key.
Actual label number will show.
To enter new label number press →T← key, to exit function without number change press *MENU*.

To inscribe label number use keys:

→0← - digit increase,

→T← - next digit,

MENU – end.

After entering label number, putting load and pressing ⏏ key will cause sending data to label printer.

Data format sent to label printer (label nr 1, language EPL-2):

```
US            (55 53 0D 0A)
FR"0001"      (46 52 22 30  30 30 31 22  0D 0A)
?             (3F 0D 0A)
00:00         (30 30 3A 30  30 0D 0A)
2000.00.00    (32 30 30 30  2E 30 30 2E  30 30 0D 0A)
    10  g     (20 20 20 20  20 31 30 20  20 67 0D 0A)
P1            (50 31 0D 0A)
```

15.9 Serial port parameters setting (SErIAL)

0.00g MENU

▼

SErIAL →T←

▼

baud →T←

▼

-4800

▽

-9600 →T←

▼

baud

...

out →T←

▼

0.00g
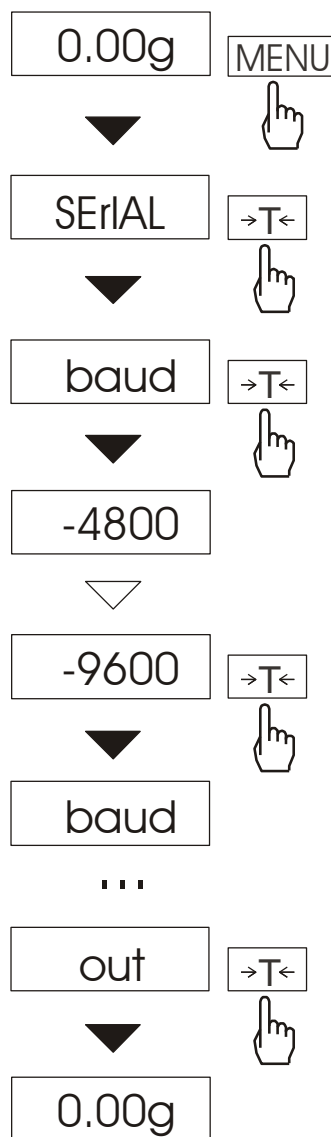
The function allows setting the following communication parameters of serial interface:

- transfer protocol *(Prot):*

  LonG – printer, computer

  Eltron – label printer

- baud rate *(bAud):* (*4800, 9600, 19200, 38400, 57600bps*),
- number of bits in single char. *(bitS): 7, 8,*
- parity control *(PArItY):*

  nonE – no control

  Odd –nonparity

  Even – parity control,

- scale number in network *(nr):*

  (if the scale doesn't work in network the number must be 0),

- result transmission kind through serial interface *(SendInG)* :

  ⮕ *stb* – transmission after ⮕ key is used and result is stable,

  ⮕ – transmission after ⮕ key is pressed without need of stabilisation,

- automatic transmission after load is put on and result is stable *(Auto),*

- continuous transmission, about 10 results per second (*Cont.)*

Default parameter values:
Long, 9600 bps, 8 bits, none, ⮕stb

In order to set needed parameters choose *Port-1* function, select appropriate parameter and press ⮕T⮕ key when required option or parameter value is displayed.
The way of setting baud rate of 9600 bps is shown as example in the pictures on the left, setting other parameters is performed similarly.
In scales with an additional serial port appear *Port-1* and *Port-2*, for the independent setting of both ports.

15.10 Printout configuration   (PrInt)

Function is used for printing additional information stored in scale memory, weighed product identification data and scale operator inscribed using scale keys and scanner.
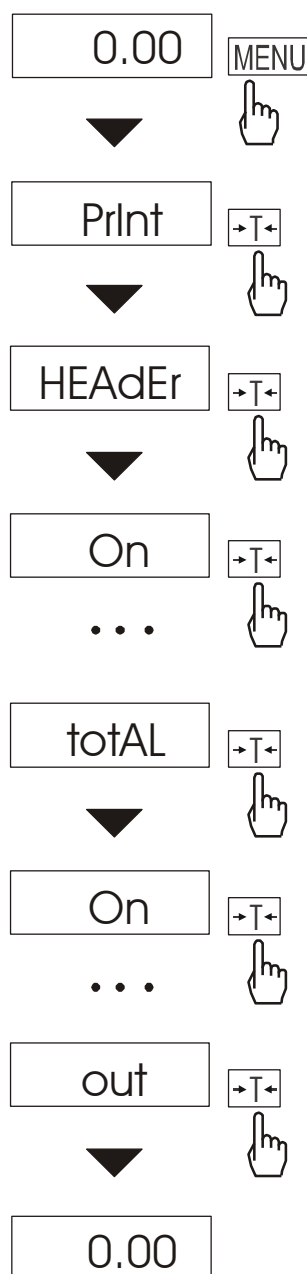
The function allows switch on/off the following positions on printout:

- *HEAdEr* – header: name, model and scale number,
- *Id OPEr* – operator code (max 6 digits),
- *Prn no* – successive printout number (choose this option to zero counter),
- *Id Prod* – product number (13 digits),
- *Count* – counting result,
- *totAL* – result sum,
- *APW* – unitary mass,
- *netto* – net mass
- *tArE* – current tare value,
- *brutto* – gross mass
- *totAL* – total mass (*totAL* function)

If *Id Prod* or *Id OPEr* is chosen, it is possible to inscribe quickly their new values (with omission of main menu).

In order to do that hold (about 3 seconds) *MENU* key and release when *Id Prod* or *Id OPEr* indicates. Inscribe new value using keys:

→*0*← - increasing digit,
⬡ - decimal point,
→*T*← - next digit,
MENU - end.

While inscribing *Id Prod* user can use scanner connected to RS232C interface.

If the scale is equipped with two serial joints after choosing *Print* function user can independently configure both interfaces *Port-1* and *Port-2*.

Sample printout during normal weighing (all printout positions deactivated):

```
20.07 kg
20.04 kg
20.04 kg
```

Sample printout during normal weighing with clock option (all printout positions deactivated):

```
20.07 kg  2012-11-08   10:01
20.04 kg  2012-11-08   10:01
20.04 kg  2012-11-08   10:01
```

Sample printout during normal weighing (all printout positions activated):

```
BA30
MAX: 30kg    e=d=0.01kg
S/N    :

ID OPER.      : 000001
DATE          : 2012-11-08
TIME          : 12:26
NO            :        3
ID PROD.      : 01
COUNT         : 0 PCS
APW           : 0.000 g
NET           : 3.08 kg
TARE          : 0.00 kg
GROSS         : 3.08 kg
TOTAL         : 0.00 kg
```

15.11 Function for weighing large animals (LOC)

The function allows weighing animal moving on the scale.

0.00	MENU	Press *MENU* key.
▼		
LOC	→T←	When *LOC* function is displayed press →T← key. The following options appear on display successively:
▼		- *LOC oFF* – leave the function,
LOC oFF		- *LOC on* – automatic weighing after loading the scale,
▽		- *LOC Prn* – the measurement initiated manually by pressing ⌐→ key.
LOC on	→T←	When *LOC on* is displayed press →T← key.
▼		Tare the scale using →T← key if necessary and place the animal on the pan.
▪ 0.00		
▽		Wait until the weighing result is averaged – scale display will be blinking. Then scale will show stable averaged result and will send it through serial port. Final result is displayed on the display and send via serial port to computer or printer.
LOC		
▼		The result remains on display for about 30 second.
0.25		
▼		
PrInt		
▼		
▪ 0.25		

Important notes:

1. The loads less than Min are not averaged.

2. In the case when placing the animal takes more than 5s, it is advised to use LOC Prn (measurement initiated manually). It will allow performing measurement in right moment pressing ⌐→ key.

15.12 Constant tare (tArE)

This function enables to measure gross weight of a sample placed in a container of a known weigh value (stored in the memory) and to display calculated net weight of the sample. Tare value is recalled from the memory with →0← or →T← key when the pan is empty. Tare value may be entered using the keypad or by sampling container weight from the pan.

Operation sequence:

37g	MENU
tArE	→T←
tAr SEt	→T←
tArE 01	→T←
MAnUAL	→T←
-	→0← ... →0←
3	→T←
30	→0← ... →0←
37	MENU
0g	
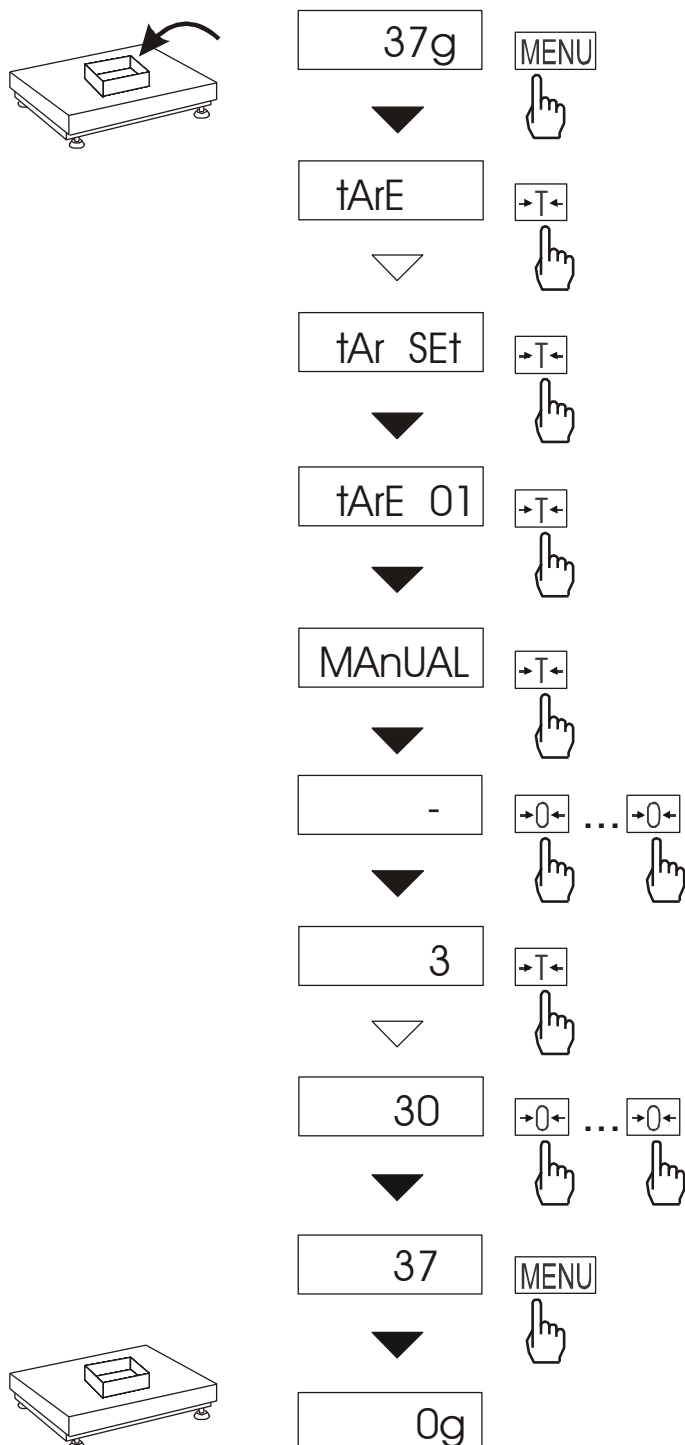
The following options are possible:
- *tAr 0FF* – leave the function,
- *tAr on* – activate the function with the previous tare value,
- *tAr ..* – sample tare value from the pan,
- *tAr SEt*– enter tare value with keys: →0←, ⤷, →T← and *MENU*
- *out* – printout a setting value of tare.

Press →T← key during *tAr Set* displaying.
By pressing →T← key choose proper memory cell where tare will be stored: *tAr 01, 02, ... , 10.*
Choose inscribing method :
- *MAnUAL* – inscribing using keys: →0←, ⤷, →T← and MENU,
- *Pan* – inscribing mass value that is on the pan.

After storing tare, the scale starts working with inscribed tare value.

Note:
Tare value is stored in memory also after unplugging the scale from the mains.

Weighing with constant tare:

0g	MENU	
▼		
tArE	→T←	
▽		
tAr on	→T←	
▼		
▪ tArE 01	→T←	
▼		
-3g		
▼		
3g		
0g		
▼		
50g		
50g		
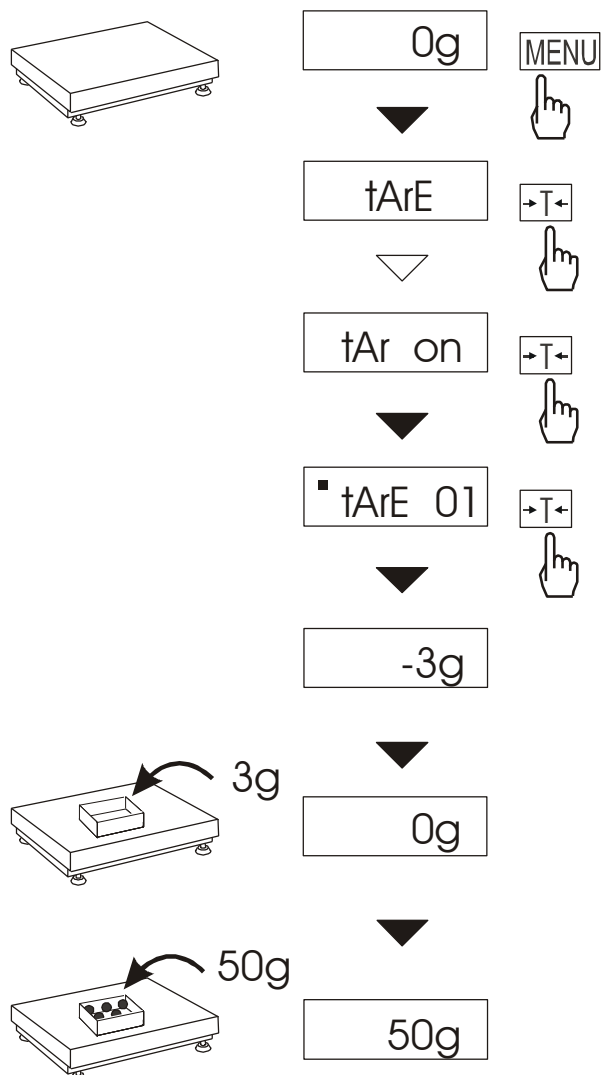
In order to use tare value that is located in memory, choose from menu *tArE* function and then *tAr on* option.
A list of memory cells will show up:
tAr 01, 02, ... , 10.
Cells with inscribed value are marked with "▪" sign.

ATTENTION: In scales with LCD display, cells with inscribed value are marked with **o** sign on the left side. Active value is marked with ▼ sign.

Choose proper memory cell using →*T*← key.

tArE function is activated with chosen tare value. Moreover the scale will indicate nett weight (weight on the pan minus tare values). Using →*T*← key (or →*0*←, while empty pan) causes scale zeroing and then substraction of recalled tare. Minus indication will show up.

15.13 Function for maximum value indication (UP)

This function allows holding maximum (or minimum) value indication shown by the scale at the moment.
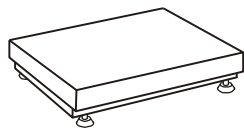
0.00 MENU	Before measurement scale should be tared.
	Function has following options:
UP →T←	-*UP oFF* – function off, -*HIGH* – holding maximum value, -*LOW* – holding minimum value. Pressing →T← key will cause result zeroing.
UP oFF	
	Note: *Autozeroing function and the stabilisation indicator are deactivated when UP function is running. Weighing result is continuously averaged from 5 measurements.*
HIGH →T←	
1.00	
10.00	
10.00	
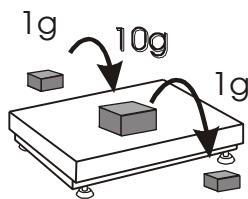
15.14 Force measuring function (nEWto)

```
   0.00    MENU
     ▼       👆

  nEWto    →T←
     ▼       👆

  nW oF
     ▽

  nW on    →T←
     ▼       👆

  0.000
```
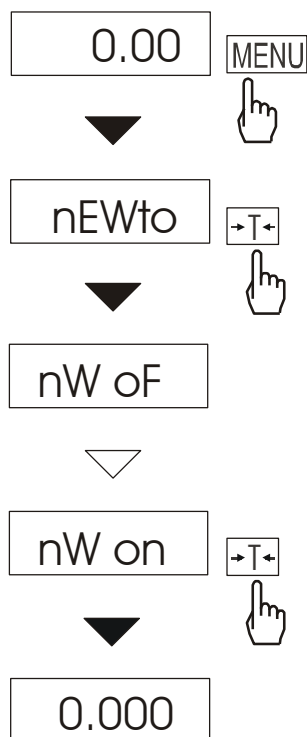
Function activation causes displaying result in force units (N).

Press MENU key.

Using →T← key choose NEWto function, and then NW on.

Attention:
Units converting from mass (kg) to force (N) is made for acceleration of gravity (g=9,80665m/s2)

Note: 1N≈ 0,1019kg

15.15 Anti-disturbance filter function (FILtEr)

0.00	MENU

▼

FILtEr	→T←

▼

FIL oFF

▽

FIL 10

▽

FIL 20

• • •

FIL 40	→T←

▼

0.00
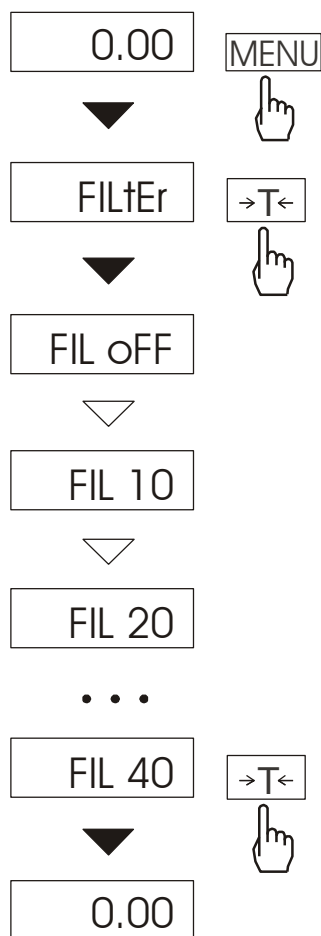
This function allows using digital filter with selected intensivity during weighing. Filter reduces the influence of mechanical vibrations (air blasts, base vibrations) on measurement result.

Press *MENU* key and select *FILtEr* by pressing →T← key.
The following options will be shown successively on display:
- *FIL oFF* – work without filter,
- *FIL 10* - filter I (weak),
- *FIL 20* - filter II (medium),
- *FIL 30* - filter III (sharp),
- *FIL 40* - filter IV (very sharp).
Select on of four filters. This will cause starting weighing with selected filter.
In order to return to normal scale work use *MENU* key and choose *FIL oFF*.

15.16 Total weight function (totAL)

The function allows calculating total weight for series of measurements, which can be greater than scale

capacity. It allows calculating total weight as well as average value.
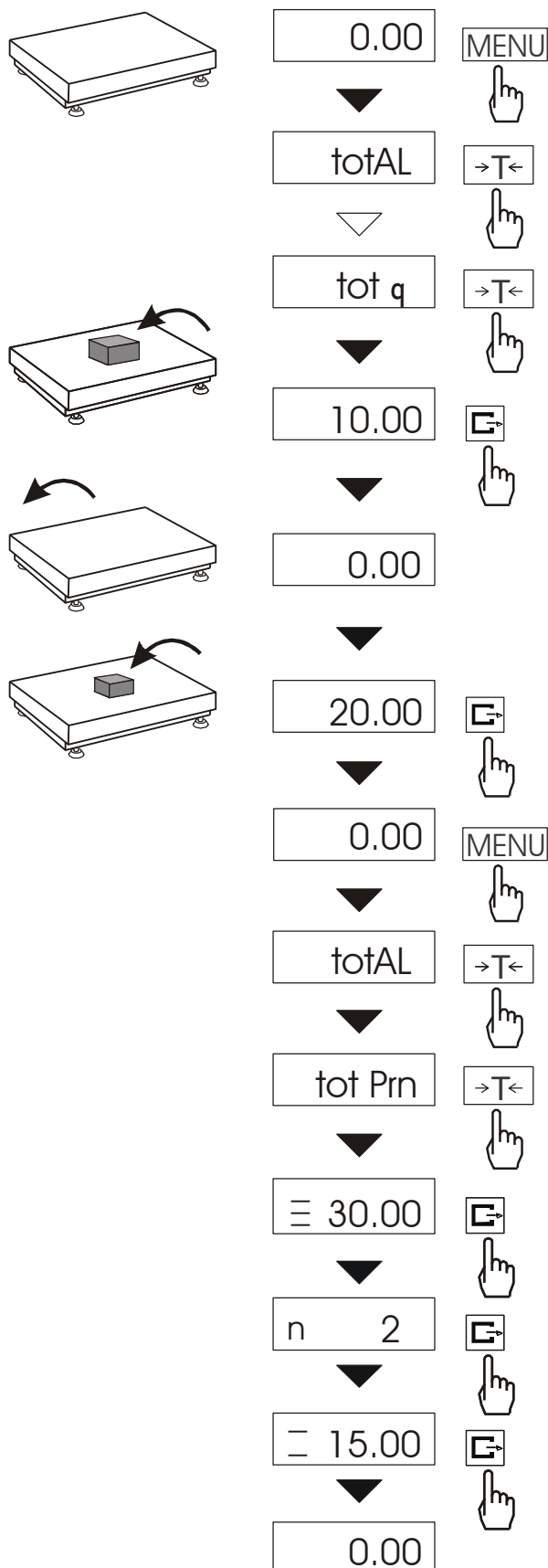
Press *MENU* key.
When *totAL* is displayed press →T← key.

The following options will appear successively:
- *tot Prn* - report printout without clearing total register,
- *tot oFF* - clearing total register, report printout and leaving the function,
- *tot □* - working with receipt printout after each measurement,
- *tot -* working without receipt printout,
- *tot CFG* – saving measurement mode (using ⌐→ key: *Manual*, after taking off the load : *auto*).

Press →T← key when *tot □* is displayed.
Perform measurement series by pressing ⌐→ key for storing results into total register.

In order to print and display results enter the function by choosing *totAL* and *tot Prn* option from menu.

The results are display in the following sequence:
- total weight (≡)
- number of registered measurements (n),
- average value (=),
regarding that moving to display successive result is performed after pressing ⌐→ key.

In order to go back to total weighing without zeroing total register press ⌐→ key third time.

_____

To leave the function with clearing total register, select *totAL* function from menu and choose *tot oFF* option. When It will cause the scale prints the communicate informing about clearing registers.

The form of receipt after each measurement:

```
Date:        ...      Time.  ...
measurement no     weight
measurement no     weight
```

Report form:

```
Date:        ...      Time.  ...
TOTAL WEIGHT        =
NUMBER OF SAMPLES  =
AVERAGE VALUE       =
```

Note:
When the scale doesn't have an internal clock, Date and Time do not appear on printout.
Maximum number of measurements is 99 999.
Maximum total load 99 999 000d.
The weighing unit of the total value from the register (Total) is the same as the weighing unit stated on the keypad or is 1000 times greater, what is signalled by "o" indicator at the left of the display.
If the registered value is too big to be displayed, "E" communicate appears on the display. If the number of series is too high and cannot be displayed, "Err1"communicate appears on the display.

15.17 Checkweighing function (thr)

This function allows comparing weighing result with two programmed reference values: lower and upper threshold. Comparison result is signalled with indicators (MIN, OK, MAX) and sound signal generated when threshold values are exceeded.

If comparison result is:
- smaller than lower threshold – the scale signals MIN (yellow colour),
- between threshold values - the scale signals OK (green colour, with the short sound signal),
- greater than upper threshold - the scale signals MAX (red colour, long sound signal).

The checkweighing results can be use to control:
- optical indicator (*Indication* mode),
- batching devices (*Batching* mode).
-

Standard scale is set for cooperation with optical indicator.

On outputs P1-P3 (*Relays* socket) short-circuit states appear as result of comparison scale indication with threshold values.

On the chart below output states are shown during increasing load on the scale for both working modes:
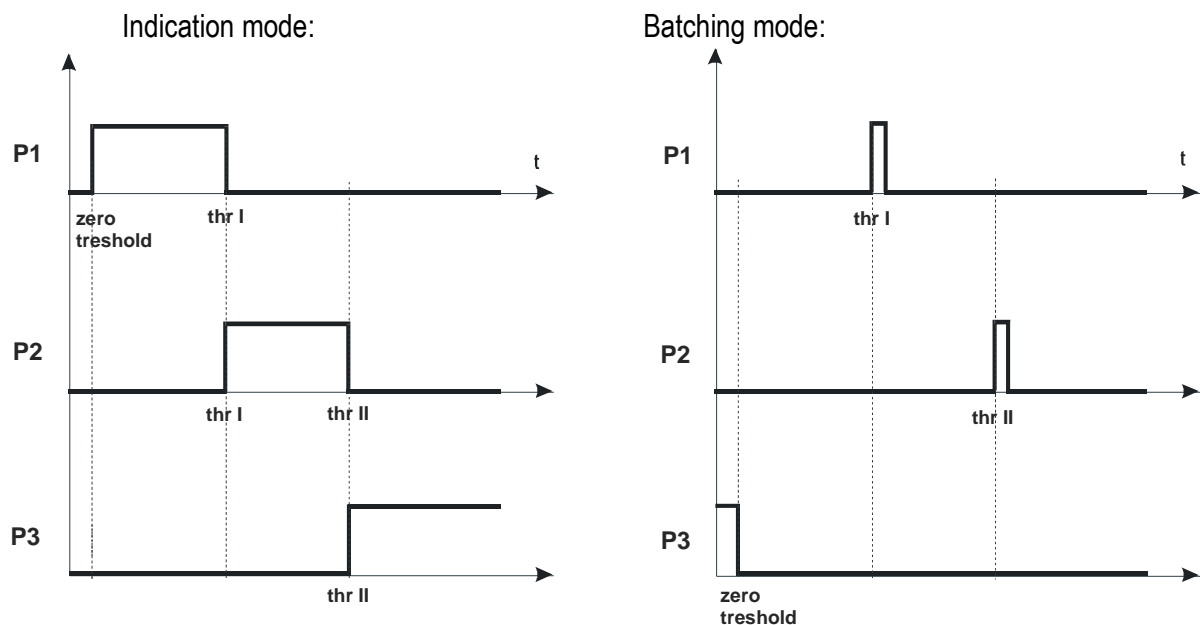
In *Batching* mode on P1 (thr I) and P2 (thr II) outputs short-circuit impulses appears for time of 0,5s. On P3 (zero) output short-circuit state appears when indication does not exceed threshold value signalling zero load.

_____

Relays connection diagram:
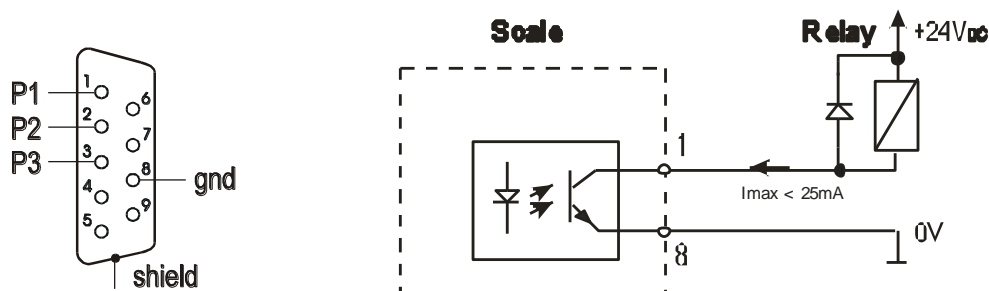
Relays output is the open collector transoptor output with load capacity 25mA / 24V. Transmitter inputs must be protected with diodes, e.g. 1N4148.
It is advised to use MS3K/P electronic board (sold separately), consisting of RM96P transmitters, with DC24V input voltage and AC250V, 3A output.

Important notes:
1. After switching the scale on, both thresholds are set to maximum values.
2. When setting upper threshold value, pay attention that its value is not below lower threshold value.
3. Setting lower and upper threshold value is possible after sending appropriate orders from computer, what is described in scale user manual.

Operation sequence:

0.00	MENU
▼	👆
thr	→T←
▽	👆
thr on	→T←
▼	👆
SEt-1	→T←
▼	👆
-	→0←
• • •	👆
5	→T←
▼	👆
5 -	→0←
▼	👆
50	MENU
	👆
SEt-2	→T←
• • •	👆
100	MENU
• • •	👆
SEt-3	→T←
• • •	👆
5	MENU
▽	👆
SEt-0	→T←
▼	👆
⌐ 62.00	
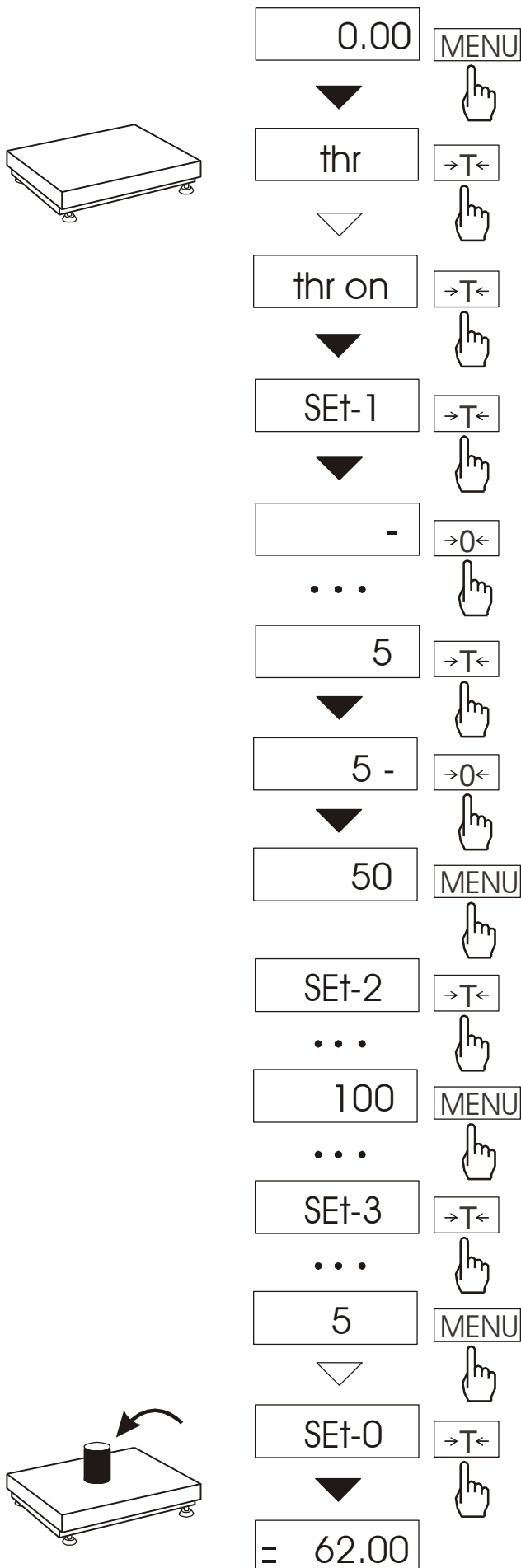
Press *MENU* key and choose *thr* pressing →T← key.
The following options are displayed successively:

- *thr oFF* – deactivate the function,
- *thr on* – activate the function,
- *thr Prn* – check last threshold values (press ⌐→ key several times),
- *thr CFG* – choose *Relays* socket mode:
    - *0* – exit to weighing
    - *1* – *Batching* mode
    - *2* – *Indication* mode.

Choose *thr-on* option using →T← key. The following options for entering thresholds are displayed:
- *SEt-0* - go to weighing with signalling threshold excess,
- *SEt-1* - set lower threshold value,
- *SEt-2* - set upper threshold value,
- *SEt-3* - set zero signalisation threshold.

Using →T← key select *SEt-1* option.
Set lower threshold value using the following keys:
  →0←   - digit increase,
  ⌐→   - decimal point,
  →T←   - move to next digit,
MENU   - finish.

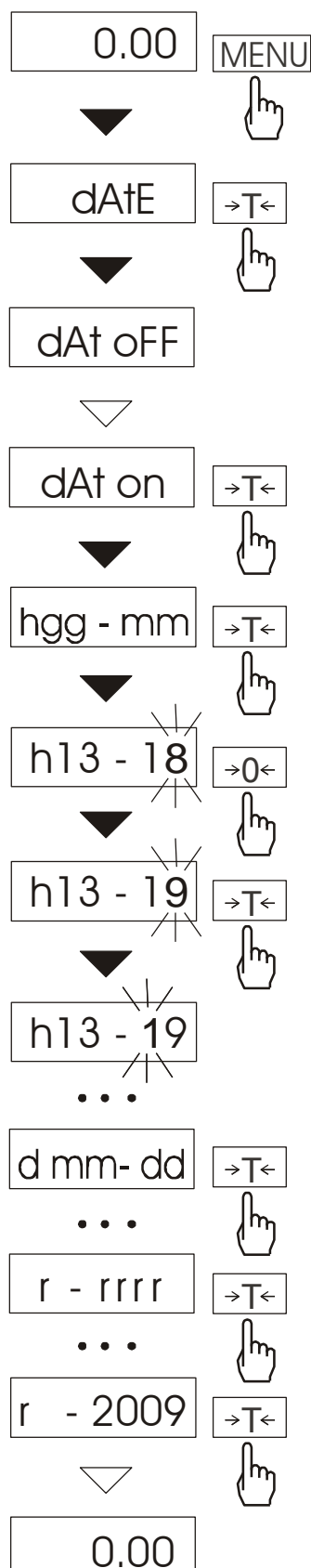Then select *SEt-2* option and enter upper threshold value.

Choosing *SEt-0* option will cause starting work with signalisation of exceeding thresholds and zero.

To change *Relays* socket mode use *thr CFG* option. Default option is *Indication*.

To leave the function, press *MENU* key and then choose *thr* and *thr oFF* options.

15.18 Function for setting date and time (dAtE)

0.00	MENU 👆
▼	
dAtE	→T← 👆
▼	
dAt oFF	
▽	
dAt on	→T← 👆
▼	
hgg - mm	→T← 👆
▼	
h13 - 18	→0← 👆
▼	
h13 - 19	→T← 👆
▼	
h13 - 19	
• • •	
d mm- dd	→T← 👆
• • •	
r - rrrr	→T← 👆
• • •	
r - 2009	→T← 👆
▽	
0.00	

The function allows setting current date and time of scale internal clock and mode of its use.

The function has the following options:

- *dAt oFF* – deactivate date and time during printout of current weighing result,
- *dAt on* – activate date and time during printout of current indication (⤶ key),
- *dAt SEt* - change current date and time,
- *dAt PIn* – data and time secure password (to prevent from changing date and time by unauthorized personel),
- *dAt For* – data printout in *USA* or *EU* format.

The example at the left presents how to set current date and time using *dAt SEt* option.

On successive positions digits are changing automatically or manually using →0← key several times.

In order to choose appropriate digit and move to the next position use →T← key.

After setting proper date and time it should be activated with *dAt on* option.

UE: rrrr-mm-dd gg:mm
USA: mm-dd-rrrr gg:mm AM/PM

(gg – hours, mm – minutes, AM – before noon, PM – after noon, mm - month, dd - day, rrrr - year).

Attention: Inscribing non-zero *PIN* value causes showing *PIN* sign during next date and time changing and inscribing 4 digit code is necessarily. (using key →0←).

15.19 Radio communication channel choice function (rF CHn)

Function enables choosing radio communication channel beetwen the scale and a pilot. In scale and in pilot the same radio channels must be chosen. Function should be used when communication is disturbed by other devices that use the same communication channel.

0.00	MENU 👆
▼	
rF CHn	→T← 👆
▼	
· CHn 01	
▽	
CHn 02	
· · ·	
CHn 16	→T← 👆
▼	
0.00	
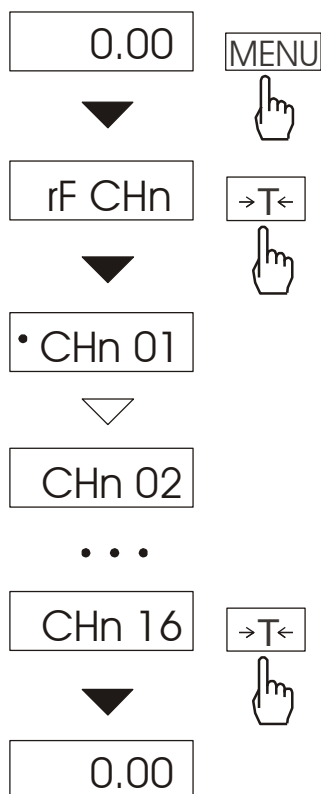
Press *MENU* key and choose *rF CHn* by pressing →*T*← key.

The following communicates will appear on display:Na wyświetlaczu pojawią się kolejno:
- *CHn 01* – channel 1,
- *CHn 02-* – channel 2

   ...
- *CHn 16 -* – channel 16
- *out* – out without changing channel.

In default setting channel 01 is on.

15.20 Entering reference zero function (ZErO)

Note: This function is enabled in non legalized scales only.

ZEr0 function allows entering new value of reference zero (value referred to empty pan) without need of contacting with authorised service centre.

Err-b	MENU	
↓		
ZErO	→T←	
↓		
ZEr Cod		
▽		
-	→0← ... →0←	
↓		
1	→T←	
↓		
12	→0← ... →0←	
↓		
12	→T←	
o o o		
1234	MENU	
↓		
35007	→0←	
↓		
0.00		
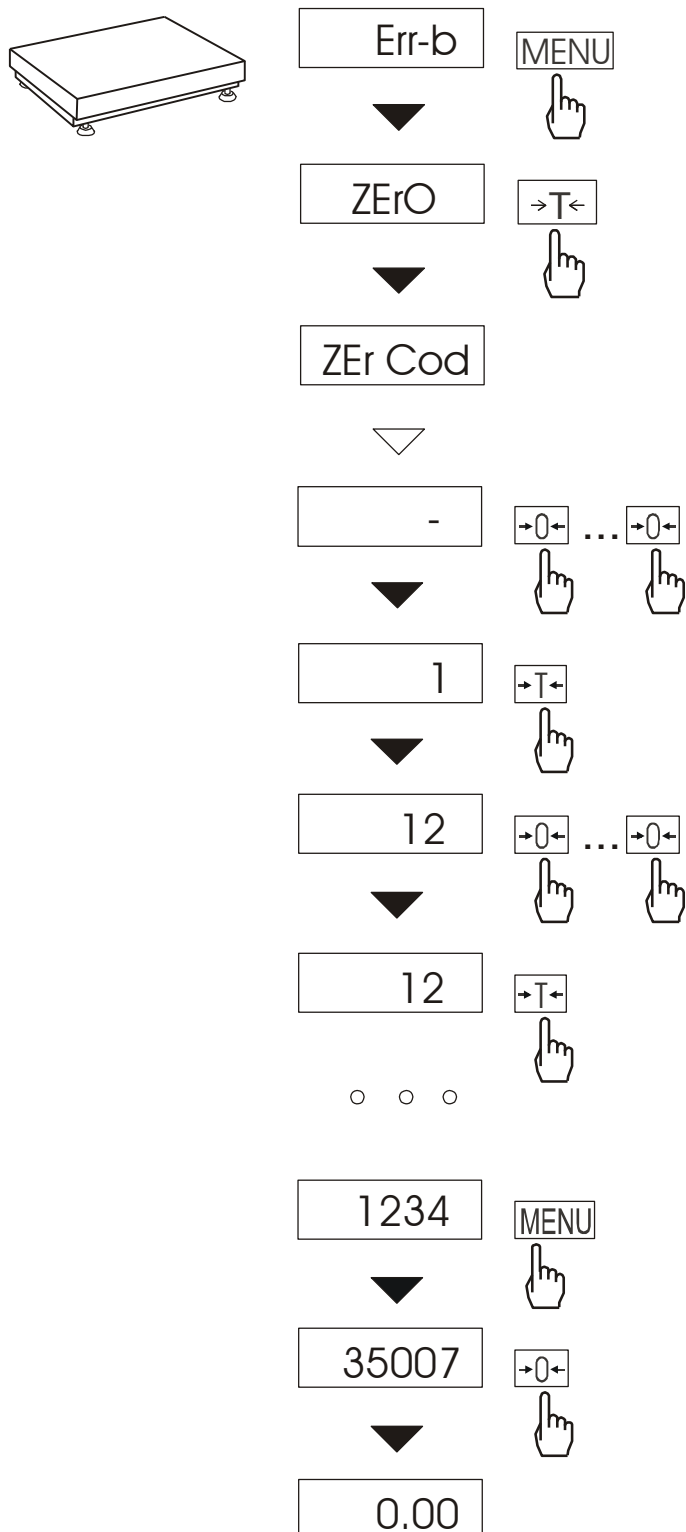
Press *MENU* key.
When *ZErO* is displayed press →T← key.
On the display a sign *ZEr Cod* will show up momentary and the a dash on last digit position.

To enter code (in new scale: 1234) use keys:
→0← - increasing digit,
→T← - next digit,
Menu – end of inscribing.
The following options appear successively on display:
ZEr Cod – enter new secure code value,
ZEr SEt – enter new zero value

Using →T← key, choose *ZEr Set*. Direct result from A/C converter will appear on scale display.
When the pan is empty press →0← key.
Wait for finishing zeroing process.

In order to change access code use
ZEr Cod option (as mentioned earlier).

15.21 Setting backlight function (b_LIGHt)

```
┌──────────┐   ┌──────┐
│  0.00g   │   │ MENU │
└──────────┘   └──────┘
                  ┃ (hand)
     ▼
┌──────────┐   ┌──────┐
│ b_LIGHt  │   │ →T← │
└──────────┘   └──────┘
                  ┃ (hand)
     ▼
┌──────────┐   ┌──────┐
│ b_L on   │   │ →T← │
└──────────┘   └──────┘
     ▽            ┃ (hand)
┌──────────┐
│  0.00g   │
└──────────┘
```
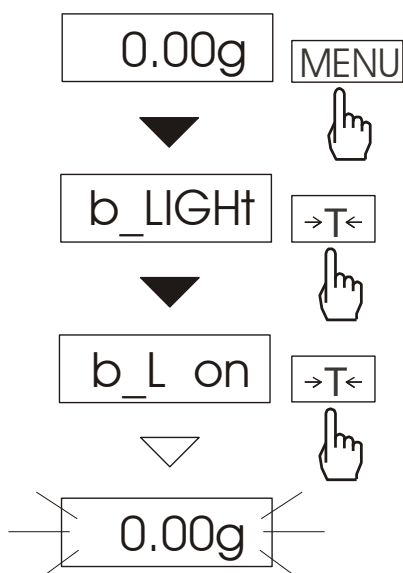
The function is used for choosing the work mode of scale display backlight:

- *b_L OFF* – switch backlight off,
- *b_L on* – switch backlight permanently on,
- *b_L ECO* – switch off after 30 seconds of inactivity (no load changes and no key operation),
- *b_L bAt* – like above, but when powering from accumulators only,
- *out* – out without changes.

Switching backlight off causes decrease of energy consumption by the scale, what is important during powering from accumulators.

_____

15.22 Charging accumulators function (bAttErY)- option

```
┌─────────┐
│  0.00g  │  [MENU]
└─────────┘    👆
     ▼
┌─────────┐
│ bAtterY │  [→T←]
└─────────┘    👆
     ▼
┌─────────┐
│ bAt OFF │
└─────────┘
     ▽
┌─────────┐
│ bAt  on │  [→T←]
└─────────┘    👆
     ▼
┌─────────┐
│  0.00g  │
└─────────┘
```
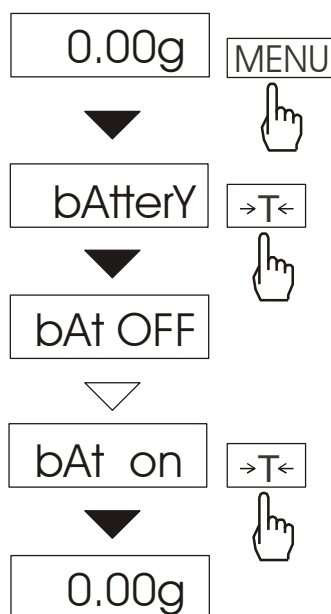
bAttErY function allows switching on or off charging accumulators during work with feeder and checking their power level.

The function has the following options:

- *bAt OFF* – charging off (option required if ordinary batteries are used !!!),
- *bAt on* – charging on, accumulators are being charged even after switching scale off using I/ ⏻ key,
- *bAt VoL* – reading power level of accumulators in % (go back to mass indication pressing *MENU* key),
- *out* – leave without changes

⚠ An attempt of charging ordinary batteries can cause serious damage of the scale.

15.23 Automatic switching off the scale function (AutoOF)

The function is helpful in scales supplied from accumulator. The function causes scale to switch off automatically.

0.00g MENU

▼

Auto OFF →T←

▼

AOF on →T←

▼

0.00g

5min.

OFF
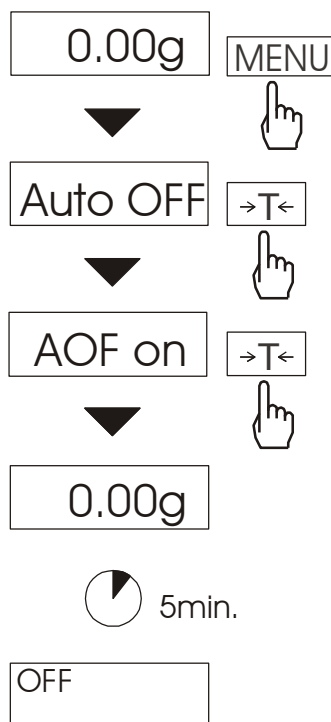
Press *MENU* key.
When *AutoOFF* is displayed press →*T*← key.

The following options appear successively on display:
AOF oFF – deactivate function,
AOF on – activate function- scale turns off after 5 minutes of not making any actions,
AOF bAt – as above but only when supplied from accumulators.
Out – out without changes.

15.24 Statistical calculations function (StAt)

Attention: Function available on demand. It replaces other special functions.

This function evaluates from series of measurements (max 1000) statistical parameters of weighting process.
Adding successively measurements to register is automatic and it occur after the scale is loaded and its indications stabilize.
After each loading printout is made with: number of measurements, result, date and time (if clock is installed and the function is activated).

For the obtained measurements series the scale evaluates:

- n   -number of samples

- sum x   -sum of all samples $sum\_x = \sum x_n$

- $\bar{x}$ -average value (sum x)/n

- min   -minimal value from n samples

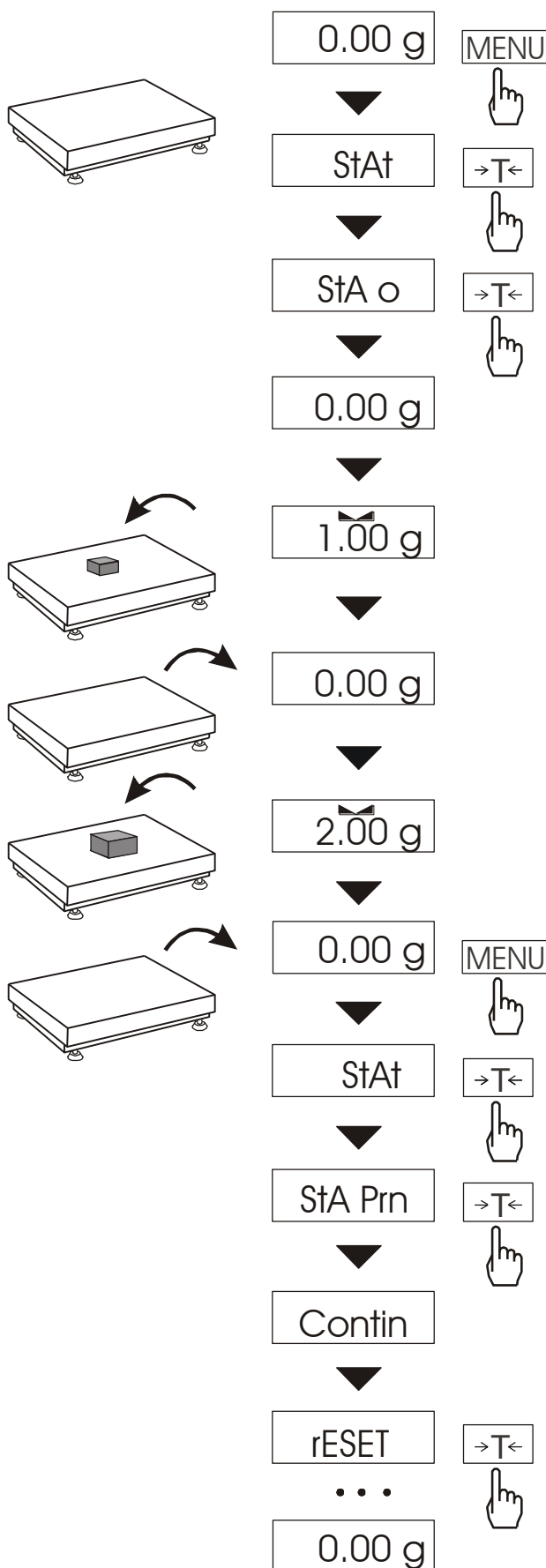- max   -maximal value from n samples

- max-min   -maximal value minus minima value

- S   -standard deviation $S = \sqrt{\dfrac{1}{(n-1)} \sum_n (x_n - \bar{x})^2}$

- srel   -variance factor $srel = \dfrac{S}{\bar{x}}$

Statistical calculations results can be printed.

Order of operations:

0.00 g | MENU

StAt | →T←

StA o | →T←

0.00 g

1.00 g

0.00 g

2.00 g

0.00 g | MENU

StAt | →T←

StA Prn | →T←

Contin

rESET | →T←

· · ·

0.00 g

Press MENU *key*.
When *StAt* is displayed press →*T*← key.
The following options are displayed:

- *StA Prn* – monitoring and printout of statistical data,
- *StA oFF* – deactivate function,
- *StA o* – activate function, work with printout of chosen weighting results,
- *StA -* – activate function, work without printout,
- *StA n* – maximal samples value,
- *Sta nM* – inscribing nominal value for statistics,
- *Sta tOL* – inscribing tolerance in %,
- *Sta tAr* – *automatic tare on/off*
- *StA CFG* – function configuration:
  -Auto – Automatic work (samples are confirmed after loading the scale and indication stabilization.),
  -ManuAL – manual work (confirmation is made by pressing ⬏ key).
- *out* – exit from function.
-

Remember first to inscribe nominal weight value and tolerance (mentioned above).

After that, push →*T*← key when *StA o* is displayed.

Put on successively objects on the pan (remove after indication stabilization) in order to add them to measurements register.

In order to obtain printed statistical results from measurements series press *MENU* key and →*T*← key when *StAt* is displayed and later *StA Prn*.
After printout two options are enabled:
- rESET – erasing results,
- Contin – continuation.

_____

Pressing ⌐→ key printouts estimated values and histogram :

Nominal - nominal value,	
Tolerance - accepted value in percentage.	
N - number of sample	
IN TOL. – number of samples in toleranc	
-TOL – amount of measurements	
under allowable lower value	
+TOL – amount of measurements above	
allowable upper value	
TOTAL - sum of weights of all n samples	
AVERAGE – average weight as (Total)/n	
MIN – minimum weight in n samples	

MAX– maximum weight in n samples

ST. DEV. – standard deviation

ST. DEV.% – standard deviation percentage

To finish work with this function and
zeroing result register press MENU
key and then when StAt. and Sta oFF is
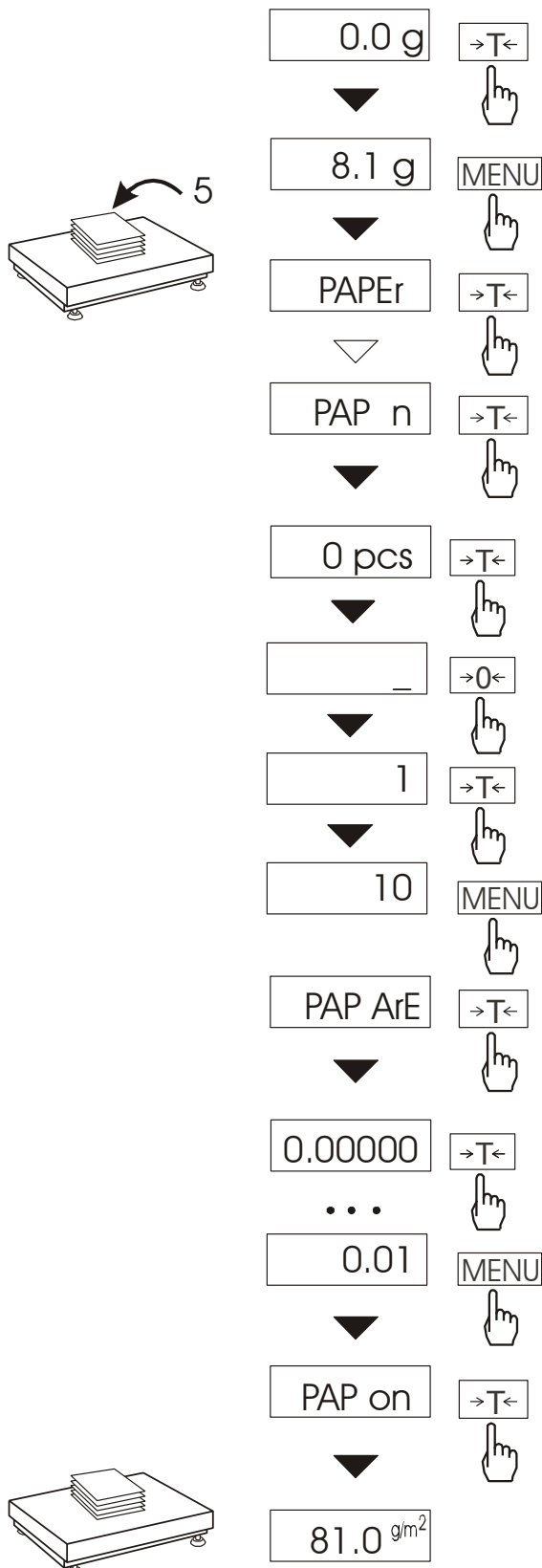displayed press →T← button.

Statistics function cooperation with computer and
Printer. Scale can be equipped with two serial ports
marked as RS232C-I (computer) and RS232C-II
(printer). After each data printout by printer identical
set of data is sent to computer. After sending by
computer initialization signal S A CR LF
(53h 49h 0Dh 0Ah) the scale sends to computer
statistic data enclosed in histogram.

```
--------------------------- STATISTICS ----------------
-----------
NOMINAL      :        50.000 g
TOLERANCE    :        100 %
MAX. N       :         500

NO.    SAMPLE             TOL-   NOM
       TOL+
1      10.007 g         :   *                  :
2      20.125 g         :     *                :
3      20.126 g         :     *                :
4      30.205 g         :        *             :
5      30.284 g         :        *             :
6      30.201 g         :        *             :
7      40.557 g         :            *
        :

              . . .
N       :    25
IN TOL. :    25
< TOL-  :     0
> TOL+  :     0
TOTAL   :    1264.664 g
AVERAGE :    50.587 g
MAX     :    91.131 g
MIN     :    10.007 g
MAX-MIN :    81.124 g
ST. DEV. :   20.6480 g
ST.DEV. % :   40.82 %

------------------------ HISTOGRAM -------------------
------------<TOL-0
      0
      1
      2
      3
      4
      5
      4
      3
      2
      0
      1
>TOL+ 0
```

15.25 Paperweight calculation (PAP)

This function enables to calculate paperweight of $1m^2$ of paper basing on samples of known area. For quick access, the function is accessible directly by pressing *MENU* key.

The balance must be tared just before the measurement.
Place the specific sample quantity of the same area (possible values: 1, 2, 5, 10, 20, 50, 100).

Press *MENU* key to access Function Menu. To enter the function press →T← key when *PAPEr* is displayed.
Press →T← key when *PAP n* is displayed.
Enter number of samples using:
  →0← -increasing digit,
→T← - next digit,
MENU – end of inscribing.

Press →T← key when *PAP ArE* is displayed. Enter area of a single sample (as above).
The result of paperweight measurement is finished with "=" mark pointing g/m^2 unit.
In order to finish work with function press *MENU* and then using →T← key choose *PAPEr* and *PAP oFF*

Note:
1. "PAP Err" communicate marks that wrong values were inscribed in PAP n or PAP ArE.

_____

15.26 Main mass unit change function (lb_bAL) – option

0.00   [MENU]

▼

lb_baL   [→T←]

▼

lb oFF

▽

lb on   [→T←]

▼

0.00
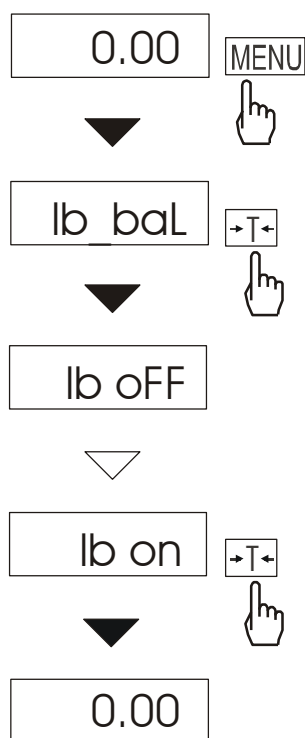
lb_bAL function is available only in scales assigned for foreign buyers, from countries where English pound is used. *lb_bAL* function enables choosing measurement main unit, used for current indications and used by other special functions like *tArE* function.

Option functions:
- *lb on* - lb (English pound),
- *lb OFF* – kg or g (dependent on scale type).

Attention:
In scales with lb_bAL function, the list of available units in UnIt function changes. (lack of English pound and milligram).

16. Maintenance and repairs of small defects

1. The scale should be kept clean.

2. Take care that no dirt gets between the platform and the scale base. If found any, remove the pan (lift it up), remove dirt and then replace the pan.

3. In case of improper operation caused by short-lasting power supply decay, unplug the scale from the mains and then plug it again after few seconds.

4. If the scale is switched on with empty pan and "Err-b" communicate appears, the load cell has been mechanically damaged.

5. It is forbidden to make any repairs by unauthorised persons.

6. To repair the scale, please contact our nearest service.

Error communicates:

Communicate	Possible cause	Remedy
C-1 ... 6 (over 1 min.)	selftests failed	if displayed more than 1 minute, contact an authorised service
unLOAd */ SErvic(e)*	the scale was switched on with loaded pan	remove a load from the pan
	mechanical damage of the load cell	contact an authorised service
L	pan missing	put the pan on
	mechanical damage	contact an authorised service
H	overloading	remove the load from the pan
	mechanical damage	contact an authorised service
►◄ indicator does not appear	unstable ground vibrations air flows	place the scale on a stable ground not affected by mechanical vibrations and airflows
	scale is damaged	contact an authorised service
- - - - - -	taring in progress	as above
- -	taring could not be finished (the load is too small or B\G key was used)	zero the scale or press B\G key again
- -	the load is too big to be zeroed	tare the scale (→T←)

_____

Declaration of Conformity

We:

AXIS Spółka z o.o. 80-125 Gdańsk, ul. Kartuska 375B

confirm with all responsibility that scales:

4BA300, 4BA600, 4BA1500, 4BA2000, 4BA3000 i 4BA6000
4BA300N, 4BA600N, 4BA1500N, 4BA2000N, 4BA3000N and 4BA6000N

4BA300NA, 4BA600NA, 4BA1000NA, 4BA1500NA i 4BA2000NA
4BA300NAN, 4BA600NAN, 4BA1000NAN, 4BA1500NAN and 4BA2000NAN,

4BA300PA, 4BA600PA, 4BA1000PA, 4BA1500PA, 4BA2000PA, 4BA3000PA,
4BA300PAN, 4BA600PAN, 4BA1000PAN, 4BA1500PAN, 4BA2000PAN and 4BA3000PAN

4BA300PZ, 4BA600PZ, 4BA1000PZ, 4BA1500PZ, 4BA2000PZ, 4BA3000PZ
4BA300PZN, 4BA600PZN, 4BA1000PZN, 4BA1500PZN, 4BA2000PZN and 4BA3000PZN

4BA300F, 4BA600F, 4BA1500F, 4BA2000F,4BA3000F i 4BA6000F
4BA300FN, 4BA600FN, 4BA1500FN, 4BA2000FN,4BA3000FN i4BA6000F

marked with CE mark comply with the following:

1. Directive 2004/108/EWG (electromagnetic compatibility) and harmonized norms:

- EN 61000-4-3+A1:2008+A2:2011
- EN 61000-6-3:2008+A1:2011

2. Directive 2006/95/WE (low voltage) and harmonized norm:
- EN 61010-1:2004

Moreover scales with the following markings on the name plate:

- the number of the Notified Body responsible for EC verification

- two-digit number of the year of EC verification

- a green metrology sticker with "M" mark

- a protective seal affixed by the Notified Body

CExx $\boxed{M}$
1443

comply with the requirements on the Type-Approval Certificate WE No. T7950R0 and are verified to comply with:

- EN 45501:1999

Additional information:
- Conformity evaluation for the Directive 2006/95/WE and 2004/108/WE was carried out
  by Research Laboratory of Electrotechnology Institute Division Gdańsk, accredited by PCA,
- Conformity T7950R0 evaluation was carried out by NMI Certin B.V. (Notified Body No. 0122).

Per pro Director of AXIS Sp. z o.o.:

Production Manager   Jan Kończak   _____ Date: 25-04-2012

Appendix A

Information's concerning double-range scale (options)

1. General description

Double-range scale's have capability of work with greatest accuracy in bottom measuring range part. Weighing of smallest mass is more precise.

This type of scale's have two measurement range:
- Max_1 - 50 % of maximum load (mostly),
- Max_2 – 100% of maximum load,

and adequate reads digit: d_1 i d_2 ($d_1 < d_2$).

Double-range options causes change of scale's operation:

- after turn on (in small mass range 0- Max_1) scale displays result with reading unit d_1,
- when the load pass the Max_1 scale changes reading unit on d_2; from this moment scale displays result with reading unit d2 on all measure range (0- Max_2),
- return to unit d_1 is succeed after zeroing the scale ($\rightarrow 0 \leftarrow$ key), or when all mass is removed from pan (indicator "$\rightarrow 0 \leftarrow$").
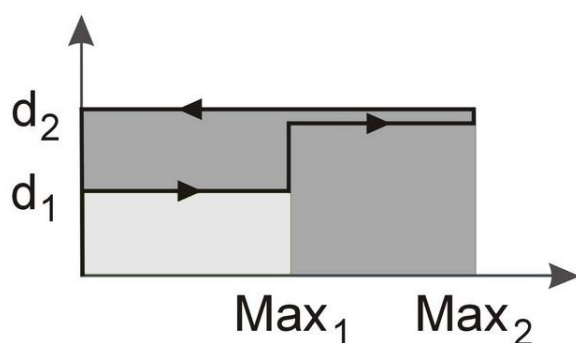
2. Double-range scale parameters
Range and graduation values are represented on nominal table on the scale.