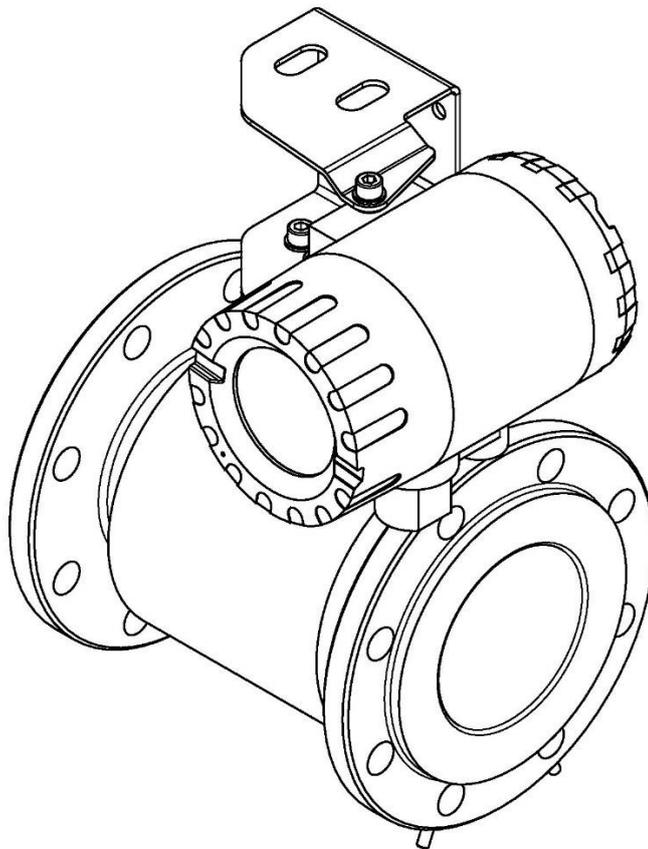


APLISENS[®]

CONFIGURATION MANUAL

ELECTROMAGNETIC FLOWMETER **PEM-1000**



Used markings

Symbol	Description
	Warning signifying that it is necessary to follow the information in the documentation precisely in order to ensure device safety and complete functionality.
	Information particularly useful during device installation and operation.

BASIC REQUIREMENTS AND SAFETY OF OPERATION



- The manufacturer is not responsible for damage caused by improper installation of the device, not maintaining the device in good technical condition and operating the device contrary to its intended use.
- Installation should be carried out by qualified personnel authorized to install electrical devices and control and measuring equipment. The installer is responsible for carrying out the installation in accordance with this manual as well as safety and electromagnetic compatibility standards and regulations applicable to a given type of installation.
- In case of an installation with control and measuring equipment, in the event of a leak, medium under pressure causes a risk to the personnel. During device installation, operation and inspection all safety and precautionary requirements must be taken into account.
- If the device malfunctions, it should be disconnected and handed over to the manufacturer or to a body authorized by the manufacturer for repairs.



- In order to minimize probability of failure and resultant danger to personnel, avoid installing the device under particularly unfavourable conditions when the following dangers are present:
- Danger of mechanical impacts, excessive shocks and vibrations.
 - Excessive temperature variations.
 - Vapour condensation, dust, icing.

Changes in product manufacture may precede an update to the user's paper documentation. Up-to-date operating manuals can be found on manufacturer's website at www.aplisens.com.

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1. INTRODUCTION

This manual concerns electromagnetic flowmeters, manufactured in two versions:

- A compact version designated **PEM-1000ALW** – with transmitter placed directly on the measuring sensor.
- A separable version designated **PEM-1000NW** – with transmitter connected via cable and placed up to 50 m from measuring sensor.

This manual contains data, guidelines and recommendations concerning configuration of flowmeters. Before starting configuration it is necessary to read the User's Manual EN.IO.PEM.1000 available on the manufacturer's website www.aplisens.com.

2. SAFETY



- Installation and start-up of the device, as well as any actions related to operation, should be carried out only after carefully reading this manual.
- Installation and maintenance should be carried out by qualified personnel authorized to install electrical devices and control and measuring equipment.
- Device should be used in accordance with intended use and within permissible parameters.
- Protections ensuring device safety utilized by the manufacturer may be less effective if the device is operated contrary to its intended use.
- Before installing or removing the device make absolutely sure that it is disconnected from power source.
- Repairing or otherwise tampering with the electronic system of the device is not permitted. Only the manufacturer or a body authorized by the manufacturer may carry out damage assessment and necessary repairs.
- Do not use damaged equipment. In case of malfunction, the device should be removed from operation.

3. CONFIGURATION

3.1. User interface

Operation of the flowmeter is performed locally using three buttons and a display located under the screwed-off cover of the display.

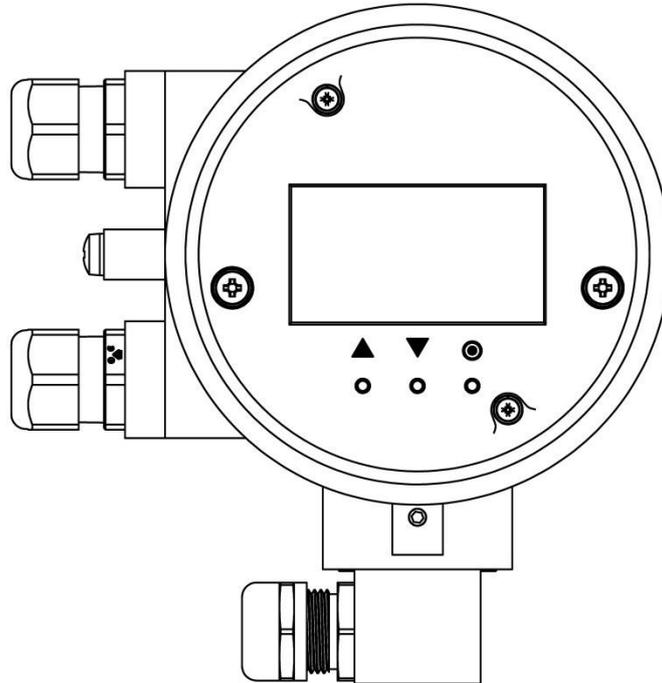


Figure 1. View of local user interface after unscrewing cover with a glass

Buttons (marked with symbols) have the following actions assigned:

Left button [↑] usually is used to move level up, to the left or decrease value.

Central button [↓] usually is used to move level down, to the right or increase value.

Right button [●] usually is used to select/confirm (*Enter*) possible changes of value.

3.2. Structure of local menu

Abbreviations applying to the buttons and display used in the description:

- PL – left button,
- PS – central button,
- PP – right button,
- L1 – first line of LCD display,
- L2 – the second line of the LCD display,
- L3 – the third line of the LCD display,
- L4 – the fourth line of the LCD display.

Assigned button operation functions (depending on menu item):

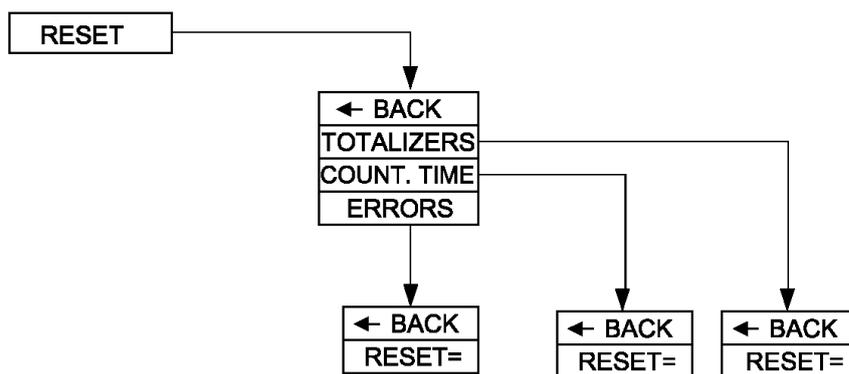
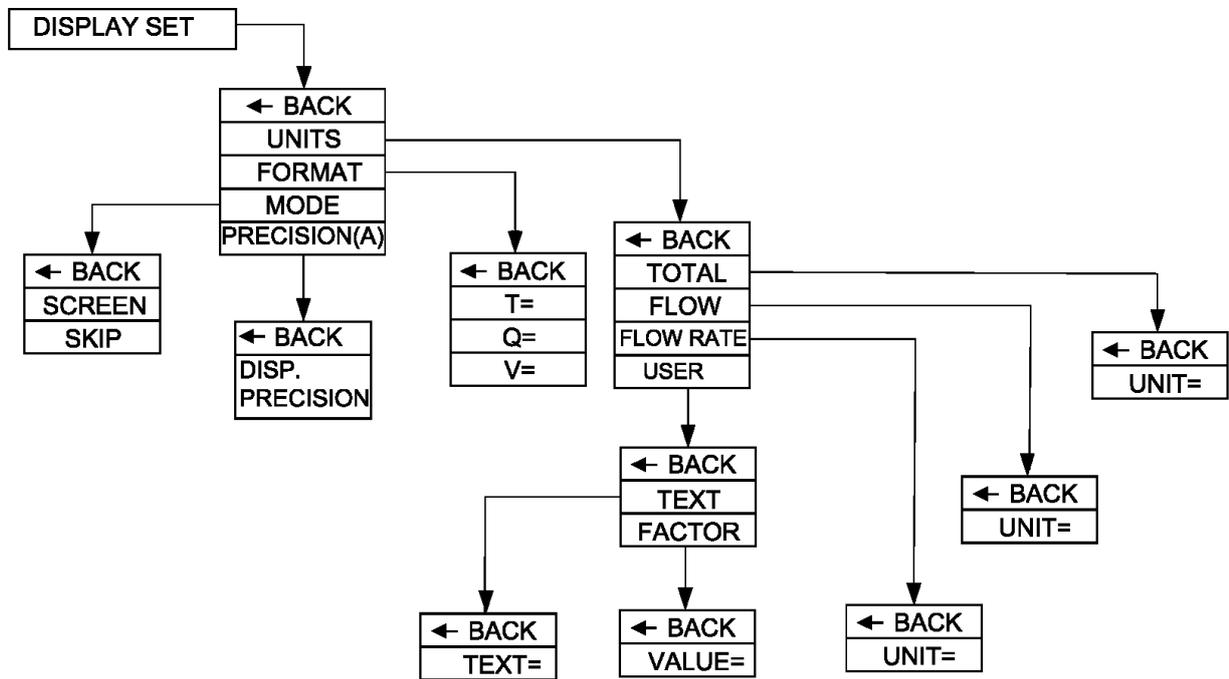
- PL usually performs the function of moving up, moving left or decreasing value.
- PS usually performs the function of moving down, moving right or increasing value.
- PP usually performs the function of confirming a selection or allowing a change.
- Pressing both of PL and PP buttons simultaneously for at least 1 second results “quick exit” from each menu level directly to the main screen.

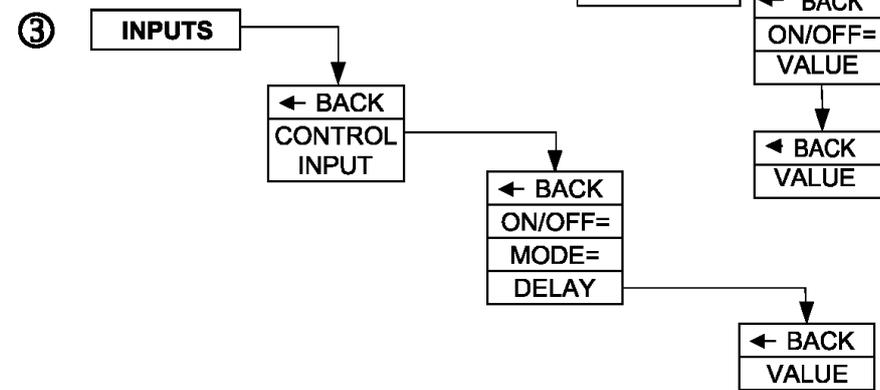
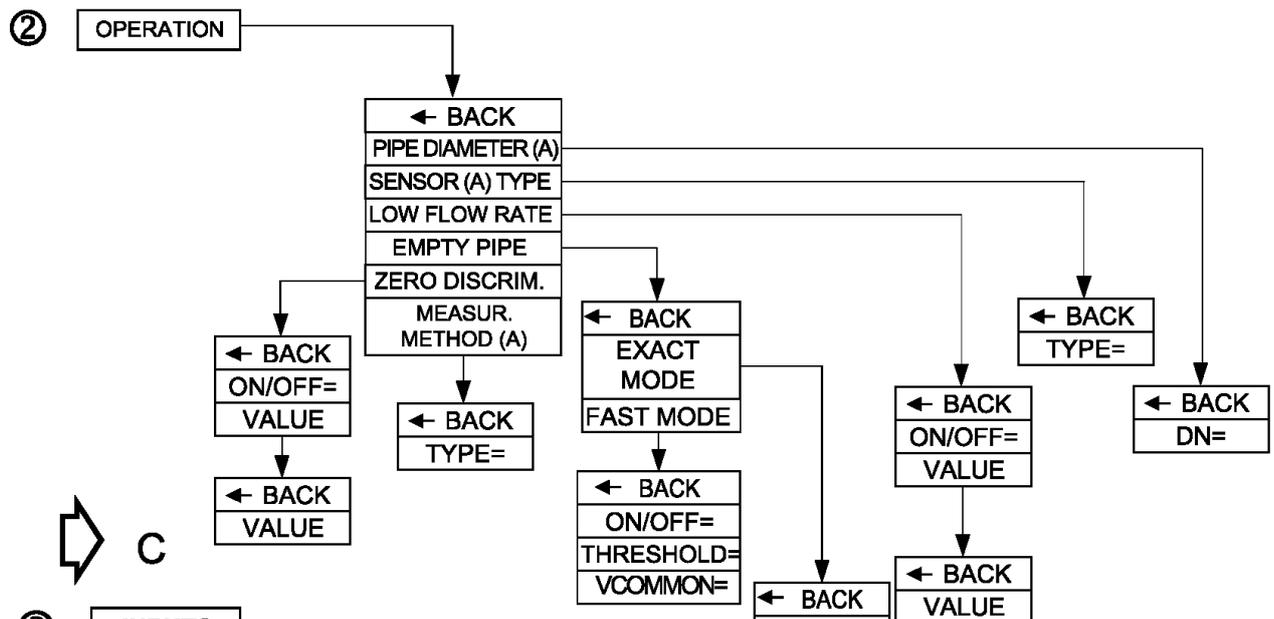
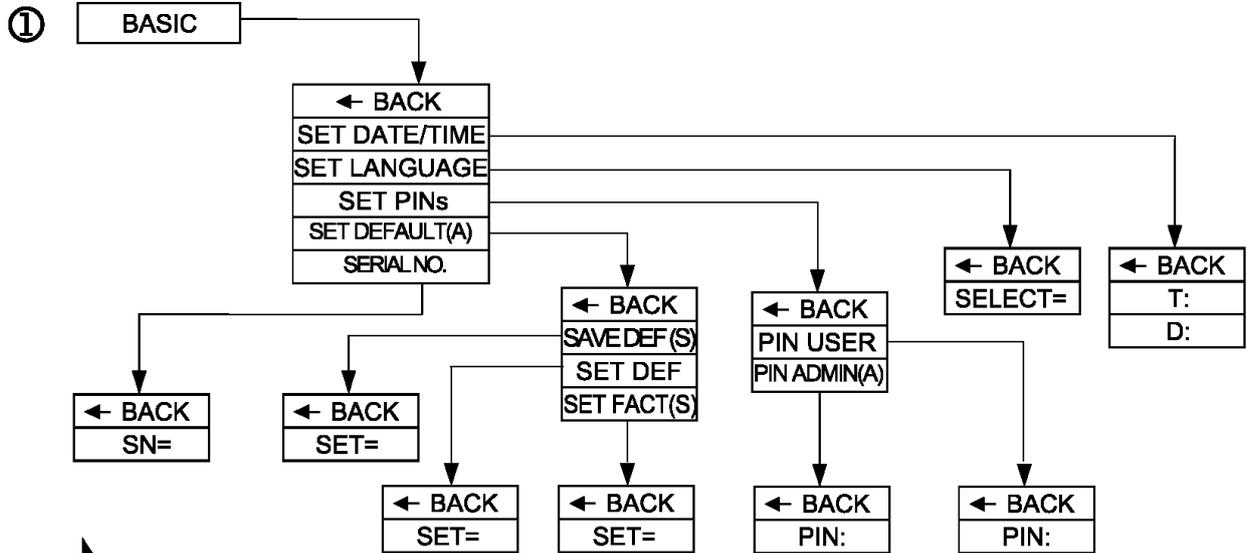
Login to flowmeter menu with various authorization level for functions takes place after entering four digit PIN:

- USER – user with limited functionality, without access to selected menu items, PIN factory set to "1000".
- ADMIN (A) – administrator with full functionality, without restriction in access to menu items, PIN factory set to "1020".

After logging in to flowmeter menu as USER and attempt to select function, to which access is restricted, the following message will be displayed on the screen: *"LACK OF ACCESS TO THIS OPTION"*.

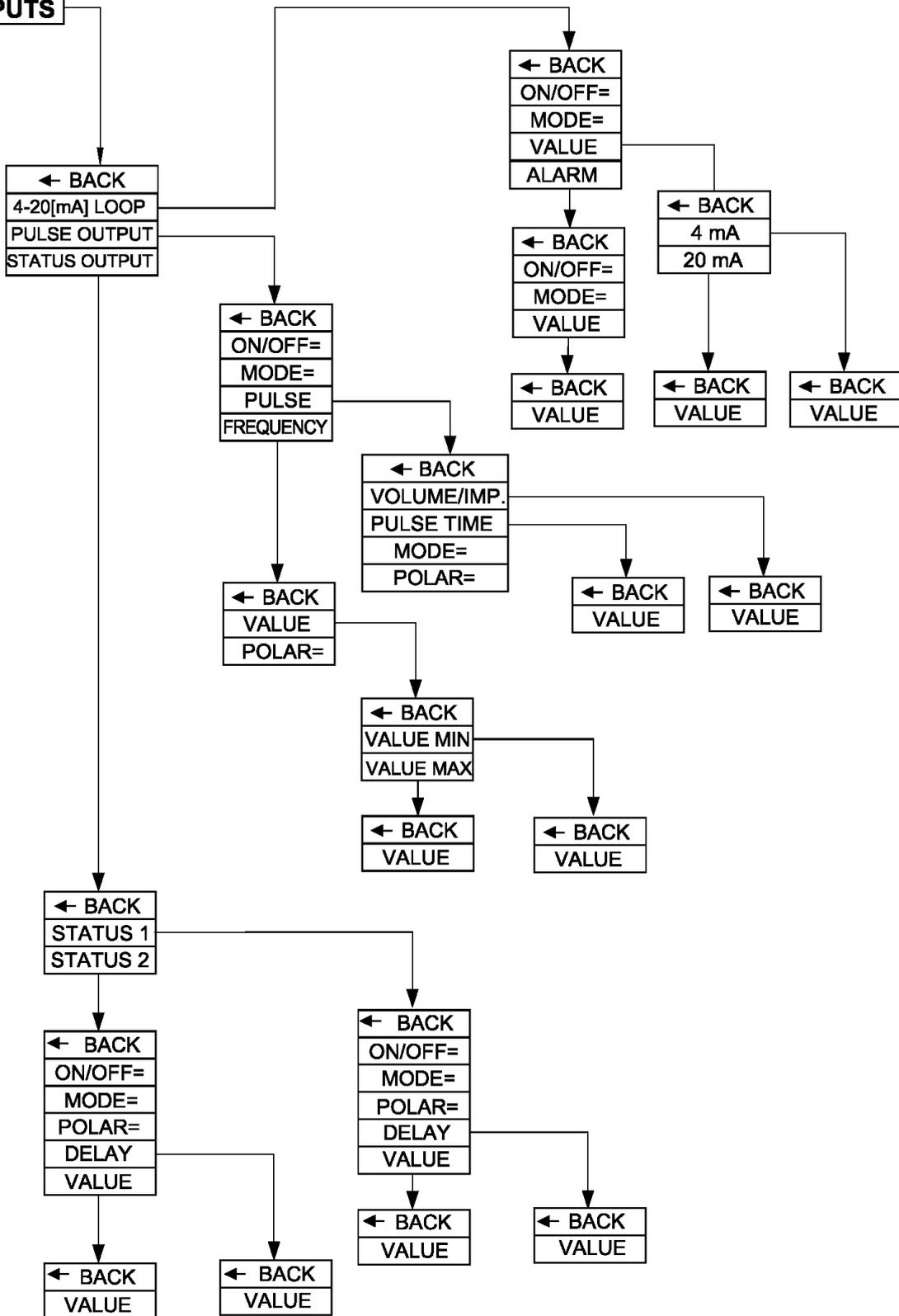
Navigation through the menu of local flowmeter PEM-1000 is presented on the diagrams.

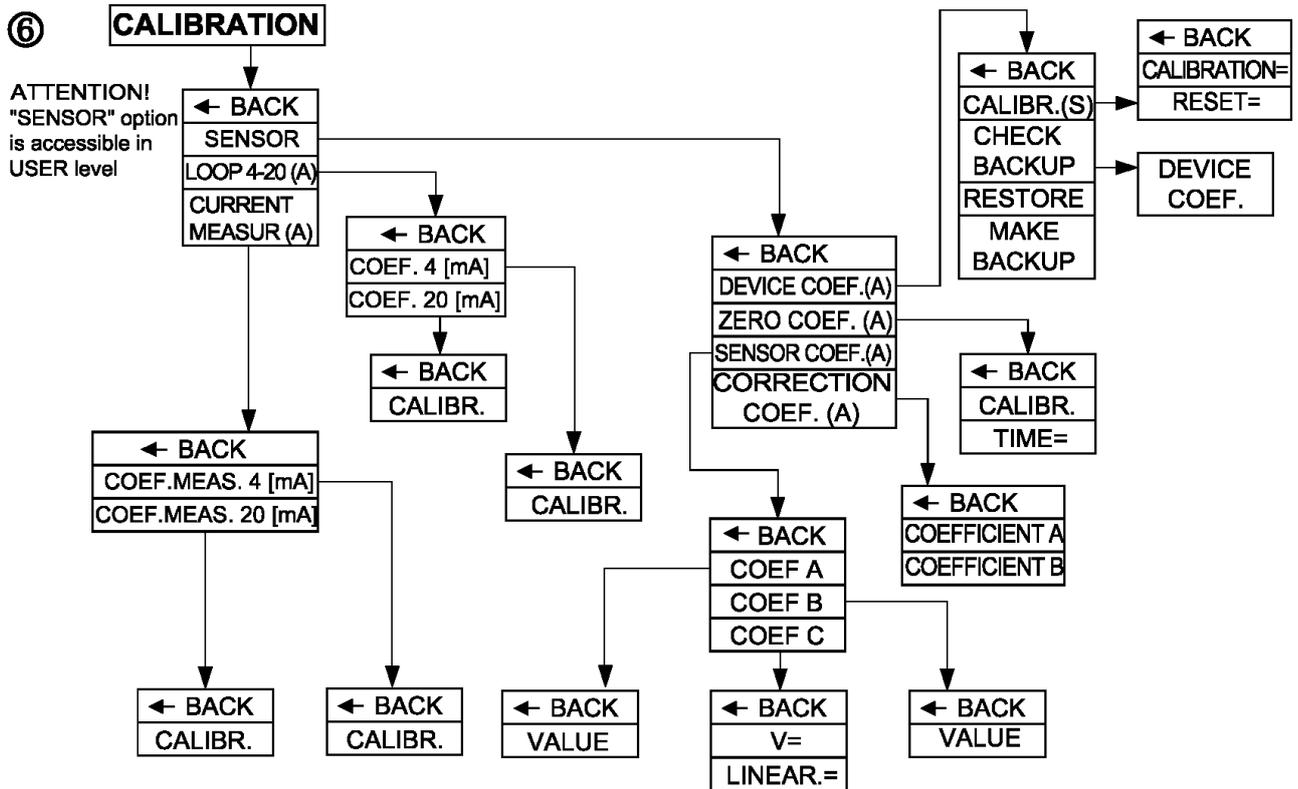
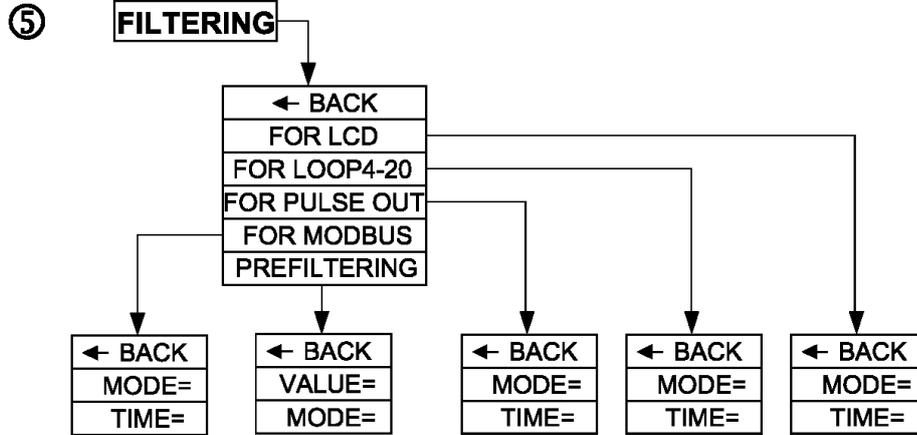


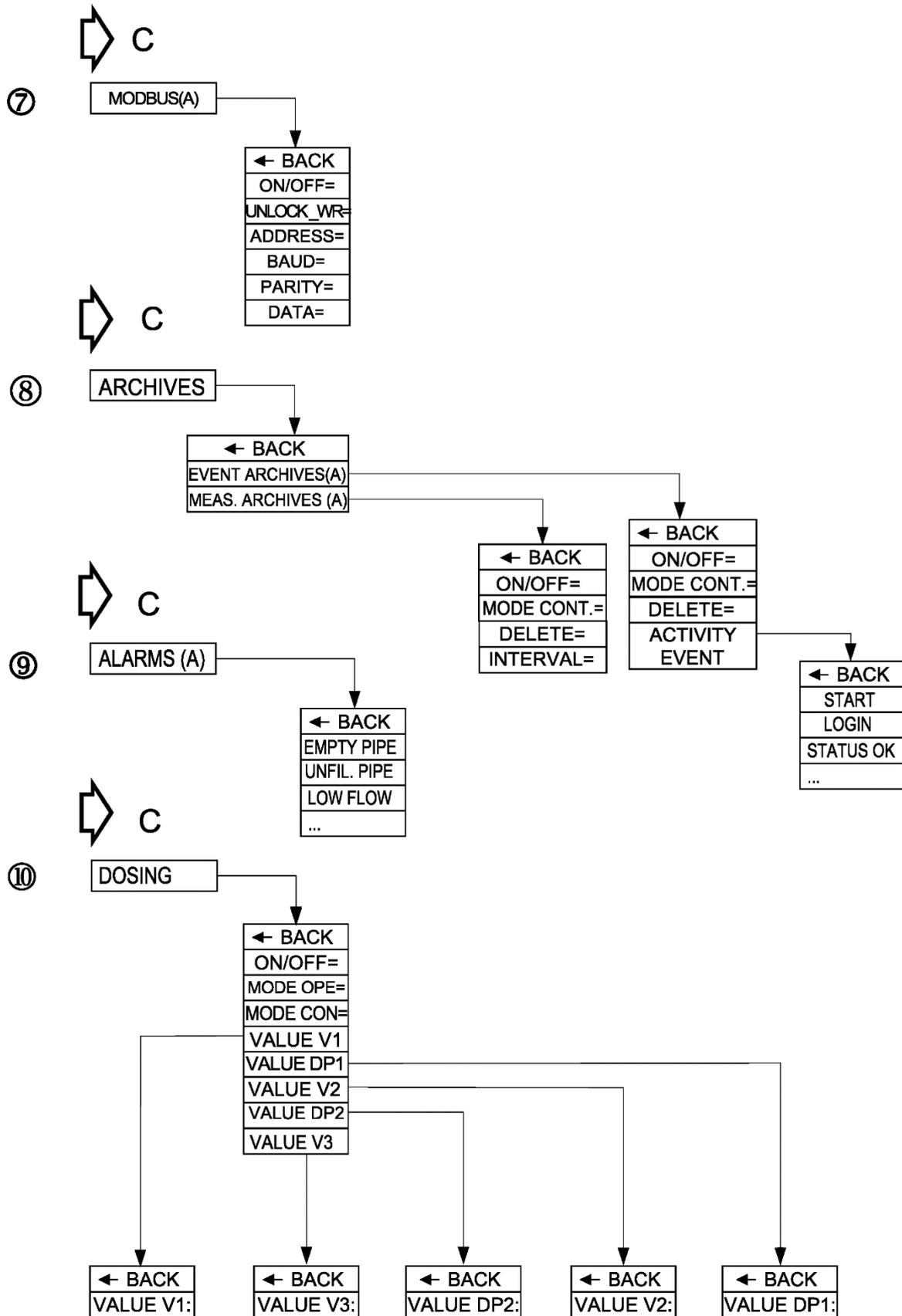


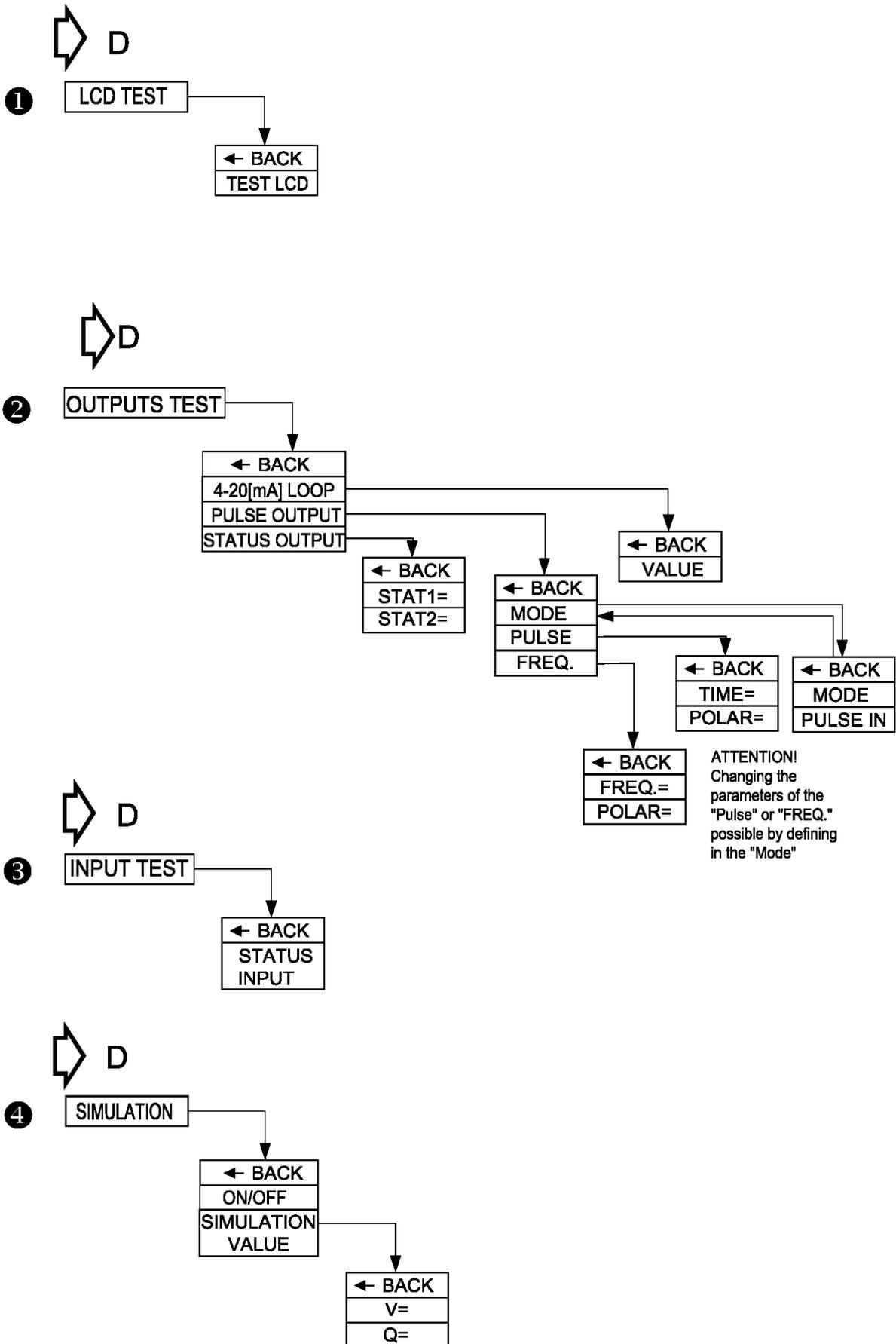


④ OUTPUTS









3.3. Description of the individual items in the local menu

Basic screens not requiring user logon:

SCREEN M1

It consists of:

L1 – Q flow value with a sign expressed in the given units (m^3/h by default) and displayed in set format. For floating type format, in case of number not containing on the screen the symbol "-----" is displayed. In the case of a lack of communication with the frontend then the symbol "*****" is shown.

L2 – value of main totalizer T with a sign expressed in the given units (m^3 by default) and displayed in format set. For *floating* type format, in case of number not containing on the screen the symbol "-----" is displayed.

L3 – current device status:

- OK;
- XX / E_FE_XX – frontend error with code;
- XX / E_SENS_XX – sensor error with code;
- EMPTY – empty pipe;
- UNFILLED – unfilled pipe,

and states:

- NO CALIBR – equipment with non-calibrated electronics;
- SIMUL – device operating in measurements simulation mode;
- LOCK – menu access blocked;
- UNLOCK – user logged in;
- E_COIL – error of sensor's coil resistance;
- Q_LOW – low flow level;
- I_SATL – bottom limit of saturation of current loop;
- I_SATH – upper limit of saturation of current loop;
- I_AL_L – alarm current, upper limit;
- I_AL_H – alarm current, upper limit;
- I_AL_C – alarm current, user limit;
- I_AL_V – alarm current, limit equal to the last valid value;
- PO_SAT – the device is in state of supersaturated pulse output, quantity of pulses exceeds the upper limit of output range.

L4 – current system date and time.

Buttons:

PS – switch to the second main screen.

PP – login screen (when user is not logged in) or menu screen (when user is logged in) is displayed after pressing for 2 seconds.

SCREEN M2

It consists of:

L1 – value of positive totalizer TP expressed in the given units (m^3 by default) and displayed in set format. For *floating* type format, in case of number not containing on the screen the symbol "-----" is displayed.

L2 – value of negative totalizer TM expressed in the given units (m^3/h by default) and displayed in set format. For *floating* type format, in case of number not containing on the screen the symbol "-----" is displayed.

L3 – value of linear flow V with a sign expressed in the given units (m^3 by default) and displayed in format set. For *floating* type format, in case of number not containing on the screen the symbol "-----" is displayed. In the case of a lack of communication with the frontend then the symbol "*****" is shown.

L4 – device operation time meter CT (time display format: *days:hours:minutes:seconds*).

Buttons:

PL – switch to the first main screen.

PS – switch to the third main screen.

SCREEN M3

It consists of:

L1 – *USER SCREEN*: message.

L2 – value of positive totalizer (resettable) TP expressed in the given units (m^3 by default) and displayed in set format. For *floating* type format, in case of number not containing on the screen the symbol "-----" is displayed.

L3 – value of negative totalizer (resettable) TM expressed in the given units (m^3/h by default) and displayed in set format. For *floating* type format, in case of number not containing on the screen the symbol "-----" is displayed.

L4 – device operation time meter (resettable) CT (time display format: *days:hours:minutes:seconds*).

Buttons:

PL – switch to the second main screen.

PS – switch to fourth main screen (optionally to screen with information concerning dosing for enabled functionality).

SCREEN D

Optional screen containing information on dosing on basic screen levels not requiring user login, displayed only if dosing function is activated in the given menu.

It consists of:

L1 – current value of counter for first dosing channel $D1=$ counting down and counting dosed amount of substances ($V1$ value set in the given menu) and possible further flow (when counted dose with negative sign is completed), expressed in the given units (m^3 by default) and displayed in the set format. For *floating* type format, in case of a number not containing on the screen the symbol "-----" is displayed.

L2 – current value of the counter for second dosing channel $D2=$ counting down and counting dosed amount of substances ($V2$ value set in the given menu) and possible further flow (when counted dose with negative sign is completed), expressed in the given units (m^3 by default) and displayed in the set format. For *floating* type format, in case of a number not containing on the screen the symbol "-----" is displayed. In case of dosing set in the dependent operation mode of both channels, the counter $D2=$ shows constant value ($V3$ value set in the corresponding menu) of threshold deciding on deceleration of dosing speed.

L3 – dosing status $Dosing=$

- *READY* – function readiness status and "overloading" of dosing counters;
- *START* – dosing function activated;
- *STOP* – dosing function stopped;
- dosing function operation mode set X/Y where:
 - X can be set to:
 - I – independent operation of both dosing channels;
 - D – operation of both channels connected with each other;
 - Y can be set to:
 - I – control using binary input;
 - B – control using device keyboard;
 - M – control using MODBUS.

L4 – status of both binary status outputs, which can be used in dosing function $ST1=$ and $ST2=$

- "–" – output switched off or set in other operation mode;
- *ON* – controlled output that is dosing activated;
- *OFF* – uncontrolled output, that is dosing stopped.

Buttons:

PL – switch to the third main screen.

PS – switch to the fourth main screen.

PP – control of dosing for dosing control mode set using a keyboard. Pressing the button results in the alternate start and stop of dosing, while continuous pressing of the key for approx. 3 seconds results in "overloading" of dosing counters and setting the function into standby.

SCREEN M4
<p>The fourth basic screen not requiring user to logon.</p> <p>It consists of:</p> <p>L1 – device hardware version in X.Y.ZZZZ format where ZZZZ are four youngest figures of the device serial number.</p> <p>L2 – software version.</p> <p>L3 – device sensor version.</p> <p>L4 – checksum (32-bit CRC displayed in format XX-XX-XX-XX) counted from memory space containing functions responsible for metrology of the flowmeter. Current value <i>CRC</i>: 9E-C9-5E-9D.</p> <p>Buttons:</p> <p>PL – switch to the third main screen (optional screen containing information on dosing if this functionality is enabled).</p>

EXEMPLARY SCREEN FOR DN50

SCREEN M1

```

Q=+20.0000  m3/h
T=+4575998.00 m3
  OK          LOCK
14:07:34    08-12
    
```

SCREEN M2

```

TP=4575998.00 m3
TM=2.1524      m3
V=2.8213      m/s
CT=0007:09:35:09
    
```

SCREEN M3

```

USER SCREEN:
TP=4575998.0  m3
TM=2.1647    m3
CT=0007:09:18:57
    
```

SCREEN M4

```

Hard.: 0.1
Soft.: 0.3.0520
FEv: B2/000101FD
CRC: 9E-C9-5E-9D
    
```

3.4. Description of the configuration software

Explanations of menu items available from SCREEN M1

1

LOGIN – the screen which lets the user log into the device menu.

Depending on the entered correct PIN, it is possible to login with different privilege levels allowing access to functions of the flowmeter, i.e. as a regular user (USER with limited privileges) or as an administrator (ADMIN with full privileges).

It consists of:

L1 – *LOGIN*: message.

L2 – the four-digit PIN which is being entered (digits which are not being currently edited are masked with a "*" symbol).

L3 – a "^" marker indicating the edited digit.

L4 – *Enter* message (confirmation of entering the PIN) after placing the cursor in the extreme right position.

L5 – symbols indicating the function of PL and PS buttons.

Buttons:

PL – shift to editing PIN digit to the left of the currently edited digit.

PS – shift to editing PIN digit to the right of the currently edited digit.

PP – change the edited digit or confirm the entered PIN.

1 **LOGIN**

MENU – main menu screen of the device.

It consists of:

L1 – message depending on the privilege level: *MENU (USER)*: for a regular user and *MENU (ADMIN)*: for an administrator.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select the indicated menu item (to select *Exit* the button must be pressed for 1 second, while to select *Logout* it must be pressed for 2 seconds).

1 **LOGIN-MENU**

EXIT – exit the main menu of the device and return to the basic screen level.

2 **LOGIN-MENU**

LOGOUT – log off the user from the main menu of the device and exit to the basic screen level.

3 LOGIN-MENU

STATUS – extended description of the status of the device.

It consists of:

L1 – *STATUS = XX* message, where *XX* is the error number in case of an error and *00* if the status is *OK*.

L2 – *Back* menu item, indicated by a ">" marker.

L3 – description of the status, i.e. *Device is OK* message if there are no errors or *Device ERROR* message in case of errors.

L4 – *Description* --> message in case of errors.

Buttons:

PL – in case of errors, exit the screens describing each error.

PS – in case of errors, move to screens describing each error.

PP – select indicated menu item.

1 LOGIN-MENU-STATUS

BACK – return to previous menu level.

2 LOGIN-MENU-STATUS

STATUS ERROR – description of current errors.

It consists of:

L1 – message with a description of the error (*Error FrontEnd / Error Sensor / Error Memory / Empty pipe / Unfilled pipe*).

L2 – message with code of the error (*Error code = XX*).

L3 – in case of SRAM errors, *SRAM error* message.

L4 – in case of EEPROM errors, *EEPROM error* message.

Buttons:

PL – return to the first status screen.

PS – move to next screen with error description.

4 LOGIN-MENU

DISPLAY – setting display options for the device.

It consists of:

L1 – *DISPLAY:* message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DISPLAY

BACK – return to previous menu level.

2 LOGIN-MENU-DISPLAY

UNITS – setting units for measured values.

It consists of:

L1 – *UNITS DIS.:* message

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DISPLAY-UNITS

BACK – return to previous menu level.

2 LOGIN-MENU-DISPLAY-UNITS

TOTALIZERS – setting units for totalizers.

It consists of:

L1 – *TOTALIZERS UNIT:* message.

L2 – selectable *Back* menu item.

L3 – selectable *Unit=* menu item, along with currently set unit.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DISPLAY-UNITS-TOTALIZERS

BACK – return to previous menu level.

2 LOGIN-MENU-DISPLAY-UNITS-TOTALIZERS

UNIT – unit selection.

Buttons:

PL – scroll the list of units up.

PS – scroll the list of units down.

PP – select unit change mode (marker changes from ">" to "**") and confirm selected unit (marker changes from "**" to ">").

List of units:

– **metric:**

m3 – cubic meters

dm3 – cubic decimeters

cm3 – cubic centimeters

MI – megaliters

hl – hectoliters

l – liters

ml – milliliters

– **non-metric:**

in3 – cubic inches

ft3 – cubic feet

af – acre-foot (1 acre of surface area to a depth of 1 foot)

ozf – fluid ounce

gUS (galUS) – US gallon equal to 231 in3

MgS (MgalUS) – mega US gallon

bbs (bblUS) – US standard fluid barrel equal to 31.5 US gallons

gUK (galUK) – imperial gallon equal to 4.54609 liters

MgK (MgalUK) – mega imperial gallon

bbk (bblUK) – imperial standard fluid barrel equal to 36 imperial gallons.

– **user-defined:**

--- (User) – unit which can be defined by the user whose value and description are set in a separate menu item.

3 LOGIN-MENU-DISPLAY-UNITS

FLOW – setting flow units.

It consists of:

L1 – *FLOW UNIT*: message.

L2 – selectable *Back* menu item.

L3 – selectable *Unit=* menu item, along with currently set unit.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DISPLAY-UNITS-FLOW

BACK – return to previous menu level.

2 LOGIN-MENU-DISPLAY-UNITS-FLOW

UNIT – unit selection.

Buttons:

PL – scroll the list of units up.

PS – scroll the list of units down.

PP – select unit change mode (marker changes from ">" to "**") and confirm selected unit (marker changes from "**" to ">").

List of units:

metric:

m³/h – cubic meters per hour

m³/sec – cubic meters per second

m³/min – cubic meters per minute

m³/day – cubic meters per day

dm³/h

dm³/sec

dm³/min

dm³/day

cm³/h

cm³/sec

cm³/min

cm³/day

l/h

l/sec

l/min

l/day

hl/h

hl/sec

hl/min

hl/day

l/h

l/sec

l/min

l/day

ml/h

ml/sec

ml/min

ml/day

non-metric:

in³/h

in³/sec

in³/min

in³/day

ft³/h

ft³/sec

ft³/min

ft3/day
af/h
af/sec
af/min
af/day
ozf/h
ozf/sec
ozf/min
ozf/day
gUS/h
gUS/sec
gUS/min
gUS/day
MgS/h
MgS/sec
MgS/min
MgS/day
bbS/h
bbS/sec
bbS/min
bbS/day
gUK/h
gUK/sec
gUK/min
gUK/day
MgK/h
MgK/sec
MgK/min
MgK/day
bbK/h
bbK/sec
bbK/min
bbK/day

user-defined:

--- /h – unit per hour which can be defined by the user whose value and description are set in a separate menu item.

--- /sec – unit per second which can be defined by the user whose value and description are set in a separate menu item.

--- /min – unit per minute which can be defined by the user whose value and description are set in a separate menu item.

--- /day – unit per day which can be defined by the user whose value and description are set in a separate menu item.

4 LOGIN-MENU-DISPLAY-UNITS

FLOW RATE – setting linear flow rate units.

It consists of:

L1 – *FLOW RATE UNIT*: message.

L2 – selectable *Back* menu item.

L3 – selectable *Unit=* menu item, along with currently set unit.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DISPLAY-UNITS-FLOW RATE

BACK – return to previous menu level.

2 LOGIN-MENU-DISPLAY-UNITS-FLOW RATE

UNIT – unit selection.

Buttons:

PL – scroll the list of units up.

PS – scroll the list of units down.

PP – select unit change mode (marker changes from ">" to "**") and confirm selected unit (marker changes from "**" to ">").

List of units:

m/s – meters per second

m/min – meters per minute

m/h – meters per hour

m/day – meters per day

cm/s

cm/min

cm/h

cm/day

5 LOGIN-MENU-DISPLAY-UNITS

USER DEFINIT. – setting user-defined unit.

It consists of:

L1 – *USER UNIT*: message.

L2 – *Back* menu item.

L3 – *Text unit* menu item (setting displayed text description of the user-defined unit).

L4 – *Factor unit* menu item (setting the factor used to convert measurements to the user-defined unit).

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1	LOGIN-MENU-DISPLAY-UNITS-USER DEFINIT. BACK – return to previous menu level.
2	LOGIN-MENU-DISPLAY-UNITS-USER DEFINIT. TEXT UNIT – setting displayed text description of the user-defined unit. It consists of: L1 – <i>TEXT UNIT</i> : message. L2 – <i>Back</i> menu item. L3 – <i>Text=</i> menu item and currently set three-character description of the user-defined unit. L4 – in edit mode, indicator of the character which is being entered. Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.
1	LOGIN-MENU-DISPLAY-UNITS-USER DEFINIT.-TEXT UNIT BACK – return to previous menu level.
2	LOGIN-MENU-DISPLAY-UNITS-USER DEFINIT.-TEXT UNIT TEXT= – entered three-character unit description. Buttons: PL – move the indicator of the character which is currently being entered to the left (moving the indicator to the leftmost end (" <i>Exit</i> " message in L4) allows to exit the function without saving). PS – move the indicator of the character which is currently being entered to the right (moving the indicator to the rightmost end (" <i>Set</i> " message in L4) allows to save the entered unit description). PP – select (marker changes from ">" to "*") and exit the description setting function (marker changes from "*" to ">") and change the character indicated by the marker (in ascending order).
3	LOGIN-MENU-DISPLAY-UNITS-USER DEFINIT FACTOR UNIT – setting the factor of the user-defined unit used to convert measurements. It consists of: L1 – <i>FACTOR UNIT</i> : message. L2 – <i>Back</i> menu item. L3 – <i>Val=</i> menu item and currently set factor expressed in cubic meters (a floating-point number). L4 – in edit mode, indicator of the digit which is being entered. Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.

1 LOGIN-MENU-DISPLAY-UNITS-USER DEFINIT-FACTOR UNIT

BACK – return to previous menu level.

2 LOGIN-MENU-DISPLAY-UNITS-USER DEFINIT-FACTOR UNIT

VAL= – entered user-defined unit factor defining how many cubic meters correspond to the defined unit (entered floating-point number is limited to values between 0.00001 – 9999999; it is not possible to set a value of 0 - a value of 0 is replaced with a factor of 1).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered factor).

PP – select (marker changes from ">" to "*") and exit the factor setting function (marker changes from "*" to ">") and change the digit indicated by the marker (in ascending order).

3 LOGIN-MENU-DISPLAY

FORMAT – setting the display format of measured values.

It consists of:

L1 – *FORMAT DIS.:* message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DISPLAY-FORMAT

BACK – return to previous menu level.

2 LOGIN-MENU-DISPLAY-FORMAT

T= – selecting display format for totalizers, indicates currently set format.

Buttons:

PL – change the format to *floating* (normal floating-point notation displayed using a maximum of 8 characters).

PS – change the format to *scientific* (scientific notation X.XXXXEYY).

PP – select format change mode (marker changes from ">" to "*") and confirm selected format (marker changes from "*" to ">").

3	LOGIN-MENU-DISPLAY-FORMAT
<p>Q= – selecting display format for flow, indicates currently set format.</p> <p>Buttons: PL – change the format to <i>floating</i> (normal floating-point notation displayed using a maximum of 8 characters). PS – change the format to <i>scientific</i> (scientific notation X.XXXXEYY). PP – select format change mode (marker changes from ">" to "**") and confirm selected format (marker changes from "*" to ">").</p>	
4	LOGIN-MENU-DISPLAY-FORMAT
<p>V= – selecting display format for linear flow rate, indicates currently set format.</p> <p>Buttons: PL – change the format to <i>floating</i> (normal floating-point notation displayed using a maximum of 8 characters). PS – change the format to <i>scientific</i> (scientific notation X.XXXXEYY). PP – select format change mode (marker changes from ">" to "**") and confirm selected format (marker changes from "*" to ">").</p>	
4	LOGIN-MENU-DISPLAY
<p>MODE – setting the display mode for main screen. (which of the basic screens M1, M2, M3 is to be displayed as the main screen and automatic screen change mode).</p> <p>It consists of: L1 – <i>MODE DIS.:</i> message. L2 – <i>Back</i> menu item. L3 – <i>Screen No</i> menu item (setting as main screen). L4 – <i>Skip</i> menu item (setting mode for automatic "cycling" of main screens).</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>	
1	LOGIN-MENU-DISPLAY-MODE
<p>BACK – return to previous menu level.</p>	
2	LOGIN-MENU-DISPLAY-MODE
<p>SCREEN No.= – selecting main screen (MAIN / COUN / USER).</p> <p>Buttons: PL – decrease screen number. PS – increase screen number. PP – select screen change mode (marker changes from ">" to "**") and confirm selected screen (marker changes from "*" to ">").</p>	

3 LOGIN-MENU-DISPLAY -MODE

SKIP= – setting automatic "cycling" of main screens (time between screen changes expressed in seconds, 0 means the function is turned off, adjustable between 0 – 120 seconds).

Buttons:

PL – decrease time between screen changes.

PS – increase time between screen changes.

PP – select time change mode (marker changes from ">" to "**") and confirm selected time (marker changes from "**" to ">").

5 LOGIN-MENU-DISPLAY

PRECISION – setting the precision of displaying measurement results on main screen.

Menu item available only with administrator privileges.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DISPLAY-PRECISION

DISP. PRECISION – displaying precision, it is possible to set indicated precision of displaying the measurement results on the main screen. These values will be specify the number of significant figures. Excessive number of digits in decimal expansion will be limited. The set value will be automatically corrected if selected unit and pipe diameter require it.

Example:

For pipe diameter DN=50 and indicated value of precision equal to 4, the result of measurement „21,3542m³/h” will be presented as „21,35m³/h”.

For indicated value of precision equal to 1, the precision value will be corrected to 2 and the result of measurement will be presented as „21m³/h”.

It consists of:

L1 – *DISP. PRECISION*: message.

L2 – value of precision item possible to choose and indicated by marker „>”.

L3 – *Back* menu item.

Buttons:

PL – move to menu item above the current item / increase precision value.

PS – move to menu item below the current item / decrease precision value.

PP – select indicated menu item / start selecting value / confirm selected value.

5	LOGIN-MENU
<p>RESET – resetting the values of user's counters.</p> <p>It consists of:</p> <p>L1 – <i>RESET</i>: message.</p> <p>L2 – menu item which can be selected, indicated by a ">" marker.</p> <p>L3 – subsequent menu items.</p> <p>L4 – subsequent menu items.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>	
1	LOGIN-MENU-RESET
<p>BACK – return to previous menu level.</p>	
2	LOGIN-MENU-RESET
<p>TOTALIZERS U – resetting user's totalizers.</p> <p>It consists of:</p> <p>L1 – <i>USER TOTALIZERS</i>: message.</p> <p>L2 – <i>Back</i> menu item.</p> <p>L3 – <i>Reset</i> menu item.</p> <p>L4 – value of positive user's totalizer.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>	
1	LOGIN-MENU-RESET-TOTALIZERS U
<p>BACK – return to previous menu level.</p>	
2	LOGIN-MENU-RESET-TOTALIZERS U
<p>RESET= – resetting values set by default to <i>OFF</i>.</p> <p>Buttons:</p> <p>PL – set assigned function to <i>OFF</i>.</p> <p>PS – set assigned function to <i>ENTER</i>.</p> <p>PP – select (marker changes from ">" to "*") and execute set function (marker changes from "*" to ">"), successful reset is indicated by an <i>OK</i> message.</p>	

3 LOGIN-MENU-RESET

COUNTER TIME U – resetting (user's) operating time counter.

It consists of:

- L1 – *USER COUNTER TI*: message.
- L2 – *Back* menu item.
- L3 – *Reset* menu item.
- L4 – value of (user's) operating time counter.

Buttons:

- PL – move to menu item above the current item.
- PS – move to menu item below the current item.
- PP – select indicated menu item.

1 LOGIN-MENU-RESET-COUNTER TIME U

BACK – return to previous menu level.

2 LOGIN-MENU-RESET-COUNTER TIME U

RESET= – resetting values set by default to *OFF*.

Buttons:

- PL – set assigned function to *OFF*.
- PS – set assigned function to *ENTER*.
- PP – select (marker changes from ">" to "**") and execute set function (marker changes from "**" to ">"), successful reset is indicated by an *OK* message.

4 LOGIN-MENU-RESET

ERRORS – resetting device status errors

It consists of:

- L1 – *RESET ERRORS*: message.
- L2 – *Back* menu item.
- L3 – *Reset* menu item.
- L4 – *STATUS = XX* message, where *XX* is the error number in case of an error and *00* if the status is *OK*.

Buttons:

- PL – move to menu item above the current item.
- PS – move to menu item below the current item.
- PP – select indicated menu item.

1 LOGIN-MENU-RESET-ERRORS

BACK – return to previous menu level.

2 LOGIN-MENU-RESET-ERRORS

RESET= – resetting values set by default to *OFF*.

Buttons:

- PL – set assigned function to *OFF*.
- PS – set assigned function to *ENTER*.
- PP – select (marker changes from ">" to "**") and execute set function (marker changes from "**" to ">"), successful reset is indicated by an *OK* message.

6	LOGIN-MENU
ARCHIVE MEAS. – browsing measurement archive.	
<p>It consists of:</p> <p>L1 – <i>Back</i> menu item and <i>MEAS.:</i> message.</p> <p>L2 – <i>No.:</i> menu item and number of measurements stored in memory <i>XXXX</i> and number of full memory records <i>YY</i> (if circular recording function is on) displayed as <i>XXXX/YY</i> (maximum number of records in memory is 8128).</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>	
1	LOGIN-MENU-ARCHIVE MEAS.
BACK – return to previous menu level.	
2	LOGIN-MENU-ARCHIVE MEAS.
<p>NO.: – displaying selected archive item.</p> <p>(average value of measurements of flow <i>Q</i>)</p> <p>It consists of:</p> <p>L2 – In edit mode (archive browsing), number of currently displayed archive item <i>ZZZZ</i> and total number of all stored items <i>XXXX</i> are shown, displayed as <i>ZZZZ/XXXX</i>.</p> <p>L3 – in edit mode (archive browsing), stored average flow <i>Q</i> (for a period set in archive configuration menu) is displayed, expressed in units of flow configured in the menu (a floating-point number). If there are no records in the archive, message <i>Lack of records</i> is displayed. If an error occurs while reading a record from memory, message <i>Incorrect record</i> is displayed.</p> <p>L4 – in edit mode (archive browsing), time and date when a given archive item was recorded is displayed (as month-day hour:minute). If there are no records in the archive, message <i>Memory Empty</i> is displayed. If an error occurs while reading a record from memory, message <i>Memory Error</i> is displayed.</p> <p>Buttons:</p> <p>PL – select previous archive item for display (after reaching the first item, move to last stored item).</p> <p>PS – select next archive item for display (after reaching the final item, move to first stored item).</p> <p>PP – select (marker changes from ">" to "**") and exit the measurement archive records browsing function (marker changes from "**" to ">").</p>	

7 LOGIN-MENU

ARCHIVE EVENTS – browsing event archive.

It consists of:

L1 – *Back* menu item and *EVENTS:* message.

L2 – *No.:* menu item and number of events stored in memory *XXXX* and number of full memory records *YY* (if circular recording function is on) displayed as *XXXX/YY* (maximum number of records in memory is 8128).

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-ARCHIVE EVENTS

BACK – return to previous menu level.

2 LOGIN-MENU-ARCHIVE EVENTS

NO.: – display selected archive item.

(name of event and possibly a parameter)

It consists of:

L2 – In edit mode (archive browsing), number of currently displayed archive item *ZZZZ* and total number of all stored items *XXXX* are shown, displayed as *ZZZZ/XXXX*.

L3 – in edit mode (archive browsing), name of recorded event is displayed; a parameter may also be displayed following a "/". If there are no records in the archive, message *Lack of records* is displayed. If an error occurs while reading a record from memory, message *Incorrect record* is displayed.

L4 – in edit mode (archive browsing), time and date when a given archive item was recorded is displayed (as month-day hour:minute:second). If there are no records in the archive, message *Memory Empty* is displayed. If an error occurs while reading a record from memory, message *Memory Error* is displayed.

Buttons:

PL – select previous archive item for display (after reaching the first item, move to last stored item).

PS – select next archive item for display (after reaching the final item, move to first stored item).

PP – select (marker changes from ">" to "*") and exit the measurement archive records browsing function (marker changes from "*" to ">").

List of events recorded in the archive:

– **Start** – device start-up:

Event parameters:

- no parameter.

– **Login** – logged into the device menu:

Event parameters:

- **User** – operator with user privileges logged in,
- **Admin** – operator with administrator privileges logged in,
- **Off** – operator logged off.

- **Status OK** – device status changed to the correct value:
Event parameters:
 - no parameter.
- **Error FE** – FrontEnd error:
Event parameters:
 - =XX – error code (a one-byte number store in hexadecimal format).
- **Error Sen** – measuring sensor error:
Event parameters:
 - =XX – error code (a one-byte number store in hexadecimal format).
- **Error Mem** – device memory error:
Event parameters:
 - **EEPROM** – EEPROM error,
 - **SRAM** – SRAM error.
- **Empty** – empty pipe detected:
Event parameters:
 - no parameter.
- **Unfilled** – unfilled pipe detected:
Event parameters:
 - no parameter.
- **Reset** – user's counters reset:
Event parameters:
 - **Total.** – user's totalizers reset,
 - **Count.** – user's counter reset,
 - **Error.** – errors reset,
 - **Tot.in** – user's totalizers reset via binary input.
- **Default** – device parameters set to default values:
Event parameters:
 - no parameter.
- **Factory** – device parameters set to factory values:
Event parameters:
 - no parameter.
- **Calibrat.** – device calibration parameters saved:
Event parameters:
 - **Device** – calibration of electronics (using artificial head sensor),
 - **Zero** – sensor zero point calibration,
 - **Sensor** – sensor calibration (coefficients A, B i C).
- **Coil Err** – flowmeter coil error:
Event parameters:
 - no parameter.
- **Low Flow** – low flow rate detected:
Event parameters:
 - no parameter.

8 LOGIN-MENU

CONFIG. – device configuration.

It consists of:

L1 – *CONFIGURATION*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION

BASIC – configuring basic device functions.

It consists of:

L1 – *BASIC CONFIG*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-BASIC

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-BASIC

SET DATE/TIME – setting time and date of the internal clock of the device.

It consists of:

L1 – *Back* menu item.

L2 – *T*: menu item (setting time).

L3 – *D*: menu item (setting date).

L4 – indicator of item which is being set.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-BASIC-SET DATE/TIME

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-BASIC-SET DATE/TIME

T: – setting the time of the internal clock of the device.

Buttons:

PL – move the indicator of the time digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the time digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered values).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value indicated by the marker (in ascending order within a limited range appropriate to the digit being changed).

3 LOGIN-MENU-CONFIGURATION-BASIC-SET DATE/TIME

D: – setting the date of the internal clock of the device.

Buttons:

PL – move the indicator of the time digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the time digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered values).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value indicated by the marker (in ascending order within a limited range appropriate to the digit being changed).

3 LOGIN-MENU-CONFIGURATION-BASIC

SET LANGUAGE – selecting the language of the flowmeter menu.

It consists of:

L1 – *LANG.SELECTION*: message.

L2 – *Back* menu item.

L3 – *Select=* menu item (selecting the menu language from a defined list).

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-BASIC-SET LANGUAGE

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-BASIC-SET LANGUAGE

SELECT – selecting the language of operation.

Buttons:

PL – scroll the list of defined languages up.

PS – scroll the list of defined languages down.

PP – select language change mode (marker changes from ">" to "**") and confirm selected language (marker changes from "**" to ">").

List of defined languages:

English

Polish

4 LOGIN-MENU-CONFIGURATION-BASIC

SET PINS – setting PINs securing access to the device menu.

It consists of:

L1 – *SETTING PINS*: message.

L2 – *Back* menu item.

L3 – *Pin User* menu item (setting PIN for a regular user).

L4 – *Pin Admin* menu item (setting PIN for an administrator).

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-BASIC-SET PINS

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-BASIC-SET PINS

PIN USER – setting PIN securing access to the device menu for a regular user.

It consists of:

L1 – *USER PIN*: message.

L2 – *Back* menu item.

L3 – *PIN*: menu item (setting PIN).

L4 – indicator of PIN digit currently being set.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-BASIC-SET PINS-PIN USER

BACK – return to previous menu level.

	<p>2 LOGIN-MENU-CONFIGURATION-BASIC-SET PINS-PIN USER</p> <p>PIN: – setting PIN for a regular user (digits not being currently edited are masked with a "*").</p> <p>Buttons:</p> <p>PL – move the indicator of the PIN digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).</p> <p>PS – move the indicator of the PIN digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered PIN).</p> <p>PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).</p>
	<p>3 LOGIN-MENU-CONFIGURATION-BASIC-SET PINS</p> <p>PIN ADMIN – setting PIN securing access to the device menu for an administrator. <i>Menu item available only with administrator privileges.</i></p> <p>It consists of:</p> <p>L1 – ADMIN PIN: message.</p> <p>L2 – Back menu item.</p> <p>L3 – PIN: menu item (setting PIN).</p> <p>L4 – indicator of PIN digit currently being set.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>
	<p>1 LOGIN-MENU-CONFIGURATION-BASIC-SET PINS-PIN ADMIN</p> <p>BACK – return to previous menu level.</p>
	<p>2 LOGIN-MENU-CONFIGURATION-BASIC-SET PINS-PIN ADMIN</p> <p>PIN: – setting PIN for an administrator (digits not being currently edited are masked with a "*").</p> <p>Buttons:</p> <p>PL – move the indicator of the PIN digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).</p> <p>PS – move the indicator of the PIN digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered PIN).</p> <p>PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).</p>

5 LOGIN-MENU-CONFIGURATION-BASIC

SET DEFAULT – default and factory settings of the device. *Menu item available only with administrator privileges.*

It consists of:

L1 – *DEFAULT CONFIG*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT

SAVE DEFAULT – store current device configuration as default configuration. *Menu item available only to service personnel.*

It consists of:

L1 – *DEFAULT PARAM.:* message.

L2 – *Back* menu item.

L3 – *Save=* menu item (allows to save current configuration as default).

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT-SAVE DEFAULT

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT-SAVE DEFAULT

SAVE= – saving configuration.

Buttons:

PL – switch default configuration saving function to *OFF*.

PS – switch default configuration saving function to *ENTER*.

PP – select (marker changes from ">" to "**") and execute set function, i.e. save configuration or cancel saving (marker changes from "**" to ">"), successful save is indicated by an *OK* message.

3	<p>LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT-SET DEFAULT</p> <p>SET DEFAULT – setting default device parameters (device restarts automatically after parameter setting is complete).</p> <p>It consists of:</p> <p>L1 – <i>DEFAULT PARAM.:</i> message.</p> <p>L2 – <i>Back</i> menu item, and after default configuration has been "loaded", message "<i>WAIT FOR RESTART</i>" is displayed.</p> <p>L3 – <i>Set=</i> menu item (enables setting default parameters).</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT-SET DEFAULT</p> <p>BACK – return to previous menu level.</p>
2	<p>LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT-SET DEFAULT</p> <p>SET= – setting default configuration.</p> <p>Buttons:</p> <p>PL – switch default configuration setting function to <i>OFF</i>.</p> <p>PS – switch default configuration setting function to <i>ENTER</i>.</p> <p>PP – select (marker changes from ">" to "**") and execute set function, i.e. "load" default configuration and restart the device or cancel loading (marker changes from "*" to ">").</p>
4	<p>LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT</p> <p>SET FACTORY – setting factory device parameters (non-modifiable parameters permanently stored in memory; device restarts automatically after parameter setting is complete). Menu item available only to service personnel.</p> <p>It consists of:</p> <p>L1 – <i>FACTORY PARAM.:</i> message.</p> <p>L2 – <i>Back</i> menu item, and after factory configuration has been "loaded", message "<i>WAIT FOR RESTART</i>" is displayed.</p> <p>L3 – <i>Set=</i> menu item (enables setting factory parameters).</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT-SET FACTORY</p> <p>BACK – return to previous menu level.</p>

2	LOGIN-MENU-CONFIGURATION-BASIC-SET DEFAULT-SET FACTORY
SET= – setting factory configuration.	
Buttons:	
PL – switch factory configuration setting function to <i>OFF</i> .	
PS – switch factory configuration setting function to <i>ENTER</i> .	
PP – select (marker changes from ">" to "**") and execute set function, i.e. "load" factory configuration and restart the device or cancel loading (marker changes from "**" to ">").	
6	LOGIN-MENU-CONFIGURATION-BASIC
SERIAL NUMBER – reading serial number of the device.	
It consists of:	
L1 – <i>SERIAL NUMBER</i> : message.	
L2 – <i>Back</i> menu item.	
L3 – <i>SN=</i> menu item containing serial number of the device.	
Buttons:	
PL – move to menu item above the current item.	
PS – move to menu item below the current item.	
PP – select indicated menu item.	
1	LOGIN-MENU-CONFIGURATION-BASIC- SERIAL NUMBER
BACK – return to previous menu level.	
2	LOGIN-MENU-CONFIGURATION-BASIC- SERIAL NUMBER
SN= – eight-digit serial number of the device.	
Buttons:	
PL – move the indicator of the PIN digit which is currently being entered to the left and up (moving the indicator to the leftmost end (" <i>Exit</i> " message in L4) allows to exit the function without saving).	
PS – move the indicator of the PIN digit which is currently being entered to the right and down (moving the indicator to the rightmost end (" <i>Set</i> " message in L4) allows to save the entered PIN).	
PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).	

3 LOGIN-MENU-CONFIGURATION

OPERATION – setting operating parameters of the device.

It consists of:

L1 – *OPERAT. message CONFIG:*

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OPERATION

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OPERATION

PIPE DIAMETER – setting diameter of the pipe on which the device is installed.
Menu item available only with administrator privileges.

It consists of:

L1 – *PIPE DIAMETER:* message.

L2 – *Back* menu item.

L3 – *DN=* menu item (selecting pipe diameter in [mm] or [in] from a defined list).

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OPERATION-PIPE DIAMETER

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OPERATION-PIPE DIAMETER

DN= – selecting the diameter of the pipe.

Buttons:

PL – scroll the list of defined diameters up.

PS – scroll the list of defined diameters down.

PP – select diameter change mode (marker changes from ">" to "**") and confirm selected diameter (marker changes from "**" to ">").

List of defined diameters:

2.5 [mm]

4 [mm]

6 [mm]

10 [mm]

15 [mm]

20 [mm]

25 [mm]

32 [mm]

40 [mm]

50 [mm]

65 [mm]

80 [mm]

100 [mm]

125 [mm]

150 [mm]

200 [mm]

250 [mm]

300 [mm]

350 [mm]

400 [mm]

450 [mm]

500 [mm]

600 [mm]

700 [mm]

800 [mm]

900 [mm]

1000 [mm]

1/8 [in]

1/4 [in]

3/8 [in]

1/2 [in]

3/4 [in]

1 [in]

1-1/4 [in]

1-1/2 [in]

2 [in]

2-1/2 [in]

3 [in]

4 [in]

5 [in]

					<p>6 [in] 8 [in] 10 [in] 12 [in] 14 [in] 16 [in] 18 [in] 20 [in] 24 [in] 26 [in] 28 [in] 32 [in] 40 [in]</p>
					<p>3 LOGIN-MENU-CONFIGURATION-OPERATION</p> <p>SENSOR TYPE – setting type of sensor used. Menu item available only with administrator privileges.</p> <p>It consists of: L1 – <i>SENSOR TYPE</i>: message. L2 – <i>Back</i> menu item. L3 – <i>TYPE=</i> menu item (selecting sensor type – with two or three active electrodes).</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>
					<p>1 LOGIN-MENU-CONFIGURATION-OPERATION-SENSOR TYPE</p> <p>BACK – return to previous menu level.</p>
					<p>2 LOGIN-MENU-CONFIGURATION-OPERATION-SENSOR TYPE</p> <p>TYPE= – sensor type selection.</p> <p>Buttons: PL – switch to type with two active electrodes. PL – switch to type with three active electrodes. PP – select (marker changes from ">" to "***") and confirm set type (marker changes from "***" to ">").</p>

4 LOGIN-MENU-CONFIGURATION-OPERATION

LOW FLOW RATE – setting low flow rate.

It consists of:

L1 – *LOW FLOW RATE*: message.

L2 – *Back* menu item.

L3 – *On/Off=* menu item (turning the low flow rate function on and off).

L4 – *Value* menu item.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OPERATION-LOW FLOW RATE

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OPERATION-LOW FLOW RATE

ON/OFF= – on and off the function.

Buttons:

PL – turn the low flow rate function *OFF*.

PS – turn the low flow rate function *ON*.

PP – select (marker changes from ">" to "*") and confirm set mode (marker changes from "*" to ">").

3 LOGIN-MENU-CONFIGURATION-OPERATION-LOW FLOW RATE

VALUE – setting threshold value for low flow rate function.

It consists of:

L1 – *Back* menu item and *FLOW VALUE* message.

L2 – set low flow rate threshold value expressed in units of flow configured in the menu (a floating-point number).

L3 – in edit mode, entering the low flow rate threshold value.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

	<p>1 LOGIN-MENU-CONFIGURATION-OPERATION-LOW FLOW RATE-VALUE</p> <p>> – entered low flow rate threshold value expressed in units of flow (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).</p> <p>Buttons:</p> <p>PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).</p> <p>PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered low flow rate threshold value).</p> <p>PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).</p>
	<p>5 LOGIN-MENU-CONFIGURATION-OPERATION</p> <p>EMPTY PIPE – setting empty pipe detection.</p> <p>It consists of:</p> <p>L1 – <i>EMPTY PIPE</i>: message.</p> <p>L2 – <i>Back</i> menu item.</p> <p>L3 – <i>Exact mode</i> menu item (exact/slower empty pipe detection function).</p> <p>L4 – <i>Fast mode</i> menu item (fast empty pipe detection function).</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>
	<p>1 LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE</p> <p>BACK – return to previous menu level.</p>
	<p>2 LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE</p> <p>EXACT MODE – setting exact empty pipe detection (function responds to the empty pipe detection in time up to about 30 seconds).</p> <p>It consists of:</p> <p>L1 – <i>EXACT MODE</i>: message.</p> <p>L2 – <i>Back</i> menu item.</p> <p>L3 – <i>On/Off=</i> menu item (turning the detection function on and off).</p> <p>L4 – <i>Value</i> menu item.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>

1	LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE- EXACT MODE BACK – return to previous menu level.
2	LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE- EXACT MODE ON/OFF= – turning the function on and off. Buttons: PL – turn the exact empty pipe detection function <i>OFF</i> . PS – turn the exact empty pipe detection function <i>ON</i> . PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").
3	LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE - EXACT MODE VALUE – setting empty pipe detection threshold value. It consists of: L1 – <i>Back</i> menu item and <i>R ELECTROD</i> . L2 – set resistance threshold value (a fixed-point number). L3 – in edit mode, entering the resistance value. L4 – in edit mode, indicator of the digit which is being entered. Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.
1	LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE- EXACT MODE -VALUE > – entered resistance value (entered fixed-point number is limited to values between 0 – 999999999). Buttons: PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end (" <i>Exit</i> " message in L4) allows to exit the function without saving). PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end (" <i>Set</i> " message in L4) allows to save the entered resistance value). PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

3	<p>LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE</p> <p>FAST MODE – setting fast detection of an empty pipe (function respond to the empty pipe detection in about 2 seconds).</p> <p>It consists of: L1 – <i>FAST MODE</i>: message. L2 – indicated by the ">" marker the menu item is selectable. L3 – more menu items. L4 – more menu items.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE-FAST MODE</p> <p>BACK – return to previous menu level.</p>
2	<p>LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE-FAST MODE</p> <p>ON/OFF= – turn the function ON and OFF.</p> <p>Buttons: PL – turn fast detection of an empty tube OFF PS – turn fast detection of an empty tube ON PP – select (changes the marker from ">" to "**") and confirm the set mode (changes the marker from "**" to ">"). If the operating mode is changed, the Wait message is displayed after confirmation until the operation is done.</p>
3	<p>LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE-FAST MODE</p> <p>THRESHOLD= – setting the threshold parameter for fast detection of an empty pipe algorithm. The parameter can have a value in the range from 0.10 to 1.50 with a step equal to 0.05.</p> <p>Buttons: PL – decreasing the parameter value in increments of 0.05. PS – increasing the parameter value in increments of 0.05. PP – select (changing the marker from ">" to "**") and confirm the set parameter value (changing the marker from "**" to ">").</p>
4	<p>LOGIN-MENU-CONFIGURATION-OPERATION-EMPTY PIPE-FAST MODE</p> <p>VCOMMON= – setting the "base" parameter for the fast detection of an empty pipe algorithm. The parameter can have a value in the range from 0.10 to 1.50 with a step equal to 0.05.</p> <p>Buttons: PL – decreasing the parameter value in increments of 0.05. PS – increasing the parameter value in increments of 0.05 PP – select (changing the marker from ">" to "**") and confirm the set parameter value (changing the marker from "**" to ">").</p>

6 LOGIN-MENU-CONFIGURATION-OPERATION

ZERO DISCRIM. – setting zero discrimination.

It consists of:

L1 – *ZERO DISCRIM.*: message.

L2 – *Back* menu item.

L3 – *On/Off=* menu item (turning the discrimination function on and off).

L4 – *Value* menu item.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OPERATION-ZERO DISCRIM.

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OPERATION-ZERO DISCRIM.

ON/OFF= – on and off the function.

Buttons:

PL – turn zero discrimination *OFF*.

PS – turn zero discrimination *ON*.

PP – select (marker changes from ">" to "*") and confirm set mode (marker changes from "*" to ">").

3 LOGIN-MENU-CONFIGURATION-OPERATION-ZERO DISCRIM.

VALUE – setting zero discrimination threshold value.

It consists of:

L1 – *Back* menu item and *ZERO THRE* message.

L2 – set zero discrimination threshold value expressed in units of flow configured in the menu (a floating-point number).

L3 – in edit mode, entering the zero discrimination threshold value.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

					<p>1 LOGIN-MENU-CONFIGURATION-OPERATION-ZERO DISCRIM.-VALUE</p> <p>> – entered zero discrimination threshold value expressed in units of flow (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).</p> <p>Buttons:</p> <p>PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).</p> <p>PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered discrimination threshold value).</p> <p>PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).</p>
				<p>7 LOGIN-MENU-CONFIGURATION-OPERATION</p> <p>MEASUREMENT METHOD – measurement method configuration. Menu item available only with administrator privileges.</p> <p>It consists of:</p> <p>L1 – <i>MEASUR. METHOD: message.</i></p> <p>L2 – <i>Back</i> menu item.</p> <p>L3 – menu item TYPE = (select of the measuring method - neutral or aggressive).</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>	
				<p>1 LOGIN-MENU-CONFIGURATION-OPERATION- MEASUREMENT METHOD</p> <p>BACK – return to previous menu level.</p>	
				<p>2 LOGIN-MENU-CONFIGURATION-OPERATION-MEASUREMENT METHOD</p> <p>TYPE= – selection of the measurement method.</p> <p>Buttons:</p> <p>PL – conversion to a neutral measurement method.</p> <p>PS – conversion to the aggressive measurement method.</p> <p>PP – selection (change of marker from ">" to "**") and confirmation of the set measurement method (change of marker from "**" to ">").</p> <p>In case of measurement method change, after confirmation, the Wait message is displayed until the operation is performed.</p>	

4 LOGIN-MENU-CONFIGURATION

INPUTS – setting of inputs parameters.

It consists of:

L1 – *INPUTS CONFIG*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-INPUTS

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-INPUTS

CONTROL INPUT – setting operating mode of binary input.

It consists of:

L1 – *CONTROL INPUT*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-INPUTS-CONTROL INPUT

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-INPUTS-CONTROL INPUT

ON/OFF= – on and off the input.

Buttons:

PL – turn the input *OFF*.

PL – turn the input *ON*.

PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").

3 LOGIN-MENU-CONFIGURATION-INPUTS-CONTROL INPUT

MODE= – selecting operating mode of input.

Buttons:

PL – scroll the list of defined functions up.

PS – scroll the list of defined functions down.

PP – select function change mode (marker changes from ">" to "**") and confirm selected function (marker changes from "**" to ">").

List of defined operating modes:

Reset – function to delete values of user's totalizers and user's operating time counter through the input.

Dosing – dosing function that allow to control dosing process via the input, that is triggering input with duration of 0,5 to 1 second results in alternate start and stop of dosing, while triggering for at least min. 3 seconds results in "overloading" of dosing counters and setting the function into standby.

4 LOGIN-MENU-CONFIGURATION-INPUTS-CONTROL INPUT

DELAY – setting delay of the input.

It consists of:

L1 – *Back* menu item and *DELAY [sec]* message.

L2 – set delay time value (a fixed-point number).

L3 – in edit mode, entering delay time value.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-INPUTS-CONTROL INPUT-DELAY

> – entered value of delay time within the range from 0 to 3600 seconds.

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("*Exit*" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("*Set*" message in L4) allows to save the entered delay time value).

PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

5 LOGIN-MENU-CONFIGURATION

OUTPUTS – setting of output parameters.

It consists of:

L1 – *OUTPUTS CONFIG*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OUTPUTS

4-20[mA] LOOP – setting operating parameters of current loop output (minimum current loop saturation threshold is 3.9 [mA], while maximum current loop saturation threshold is 20.8 [mA]).

It consists of:

L1 – *LOOP CONFIG*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP

ON/OFF= – on and off the output.

Buttons:

PL – turn the output *OFF*.

PS – turn the output *ON*.

PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").

3 LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP

MODE= – output operation mode selection.

Buttons:

PL – scroll the list of defined modes up.

PS – scroll the list of defined modes down.

PP – select operating mode change mode (marker changes from ">" to "**") and confirm selected operating mode (marker changes from "**" to ">").

List of defined operating modes of 4-20 [mA] output:

NORMAL – normal current output operating mode (currents proportional to set flow values).

INVERTED – inverted current output operating mode (currents proportional to flow multiplied by -1).

MODULO –absolute value current output operating mode (currents proportional to absolute value of the flow).

4 LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP

VALUE – setting flow value corresponding to 4 mA and 20 mA currents.

It consists of:

L1 – *LOOP VALUE:* message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-VALUE

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-VALUE

4[mA] – setting flow value for 4 mA current.

It consists of:

L1 – *Back* menu item and *LOOP4mA* message.

L2 – set flow value expressed in units configured in the menu corresponding to 4 mA current (a floating-point number).

L3 – in edit mode, entering flow value.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1	LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-VALUE-4[mA]
<p>> – entered flow value (entered floating-point number is limited to values between 0.0000001 – 9999999 and -0.0000001 – -9999999; it is possible to set a value of 0).</p> <p>Buttons:</p> <p>PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).</p> <p>PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered flow value).</p> <p>PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).</p>	
3	LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-VALUE
<p>20[mA] – setting flow value for 20 mA current.</p> <p>It consists of:</p> <p>L1 – <i>Back</i> menu item and <i>LOOP20mA</i> message.</p> <p>L2 – set flow value expressed in units configured in the menu corresponding to 20 mA current (a floating-point number).</p> <p>L3 – in edit mode, entering flow value.</p> <p>L4 – in edit mode, indicator of the digit which is being entered.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>	
1	LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-VALUE-20[mA]
<p>> – entered flow value (entered floating-point number is limited to values between 0.0000001 – 9999999 and -0.0000001 – -9999999; it is possible to set a value of 0).</p> <p>Buttons:</p> <p>PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).</p> <p>PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered flow value).</p> <p>PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).</p>	

5	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP</p> <p>ALARM – setting mode for alarm signaled by the current loop (alarm is signaled if device reports an error – status other than OK).</p> <p>It consists of: L1 – <i>ALARM CONFIG</i>: message. L2 – menu item which can be selected, indicated by a ">" marker. L3 – subsequent menu items. L4 – subsequent menu items.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-ALARM</p> <p>BACK – return to previous menu level.</p>
2	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-ALARM</p> <p>ON/OFF= – on and off alarm current function.</p> <p>Buttons: PL – turn alarm function <i>OFF</i>. PS – turn alarm function <i>ON</i>. PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").</p>
3	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-ALARM</p> <p>MODE= – selecting alarm current type.</p> <p>Buttons: PL – scroll the list of defined current types up. PS – scroll the list of defined current types down. PP – select current type change mode (marker changes from ">" to "**") and confirm selected alarm current type (marker changes from "**" to ">").</p> <p>List of defined alarm current types: LOW – low alarm current (3.75 [mA]). HIGH – high alarm current (21.6 [mA]). CUSTOM – user-defined alarm current (defined in menu by the user within the range of 3.6 [mA] to 23.0 [mA]). LAST VAL alarm current equal to the current value for the last correct measurement.</p>

4 LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-ALARM VALUE (CUSTOM) – setting alarm current for user-defined type.

It consists of:

- L1 – *Back* menu item and *ALARM [mA]* message.
- L2 – set user-defined alarm current (a floating-point number).
- L3 – in edit mode, entering the current.
- L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

- PL – move to menu item above the current item.
- PS – move to menu item below the current item.
- PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-4-20[mA] LOOP-ALARM-VALUE

> – entered user-defined alarm current within the range of 3.6 [mA] – 23.0 [mA].

Buttons:

- PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("*Exit*" message in L4) allows to exit the function without saving).
- PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("*Set*" message in L4) allows to save the entered alarm current).
- PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

3 LOGIN-MENU-CONFIGURATION-OUTPUTS

PULSE OUTPUT – setting operating parameters of pulse output.

It consists of:

- L1 – *PULSE CONFIG:* message.
- L2 – menu item which can be selected, indicated by a ">" marker.
- L3 – subsequent menu items.
- L4 – subsequent menu items.

Buttons:

- PL – move to menu item above the current item.
- PS – move to menu item below the current item.
- PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT

BACK – return to previous menu level.

2	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT</p> <p>ON/OFF= – enable or disable the output.</p> <p>Buttons: PL – turn the output <i>OFF</i>. PS – turn the output <i>ON</i>. PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "*" to ">").</p>
3	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT</p> <p>MODE= – output operation mode selection.</p> <p>Buttons: PL – set the output to <i>PULSE</i> operating mode. PS – set the output to <i>frequency</i> operating mode. PP – select operating mode change mode (marker changes from ">" to "**") and confirm selected operating mode (marker changes from "*" to ">").</p>
4	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT</p> <p>PULSE – setting operating parameters of the output in pulse operating mode.</p> <p>It consists of: L1 – <i>PULSE</i>: message. L2 – menu item which can be selected, indicated by a ">" marker. L3 – subsequent menu items. L4 – subsequent menu items.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT-PULSE</p> <p>BACK – return to previous menu level.</p>
2	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT-PULSE</p> <p>VOLUME/IMP. – setting fluid volume for which a pulse is generated.</p> <p>It consists of: L1 – <i>Back</i> menu item and <i>VALUE</i> message. L2 – set fluid volume expressed in units configured in the menu (a floating-point number). L3 – in edit mode, entering the fluid volume. L4 – in edit mode, indicator of the digit which is being entered.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT-PULSE-VOLUME/IMP.

> – entered fluid volume (entered floating-point number is limited to values between 0.0000001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered fluid volume).

PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

3 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT-PULSE

PULSE TIME – setting pulse time in ms (within the permissible range of 1 – 10000 ms).

It consists of:

L1 – *Back* menu item and *TIME [ms]* message.

L2 – set pulse time (a fixed-point number).

L3 – in edit mode, entering pulse time.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT-PULSE-PULSE TIME

> – entered pulse time (entered fixed-point number is limited to values between 1 – 10000; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered pulse duration).

PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

4	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT-PULSE</p> <p>MODE= – selection of output-pulse operating mode</p> <p>Buttons:</p> <p><i>PL</i> – move defined list of modes up</p> <p><i>PS</i> – move defined list of modes down</p> <p><i>PP</i> – select type of mode change (marker changes from ">" to "**") and confirm selected mode (marker changes from "**" to ">").</p> <p>List of defined output-pulse modes:</p> <ul style="list-style-type: none"> – <i>POSITIVE</i> – generating pulses by output only for forward flow direction – <i>NEGATIVE</i> – generating pulses by output only for reverse flow direction – <i>MODULO</i> – generating pulses by output in either for forward and reverse flow directions (the distinction between forward and reverse flow direction can be obtain by status outputs set into "<i>Pulse dir.</i>" operating mode).
5	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT-PULSE</p> <p>POLAR= – selection of pulse output polarity.</p> <p>Buttons:</p> <p><i>PL</i> – set the output in <i>NEGATIVE</i> polarity.</p> <p><i>PS</i> – set the output in <i>POSITIVE</i> polarity.</p> <p><i>PP</i> – select polarity change mode (marker changes from ">" to "**") and confirm selected polarity (marker changes from "**" to ">").</p>
5	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT</p> <p>FREQUENCY – setting operating parameters of the output in frequency operating mode. This option is available after set frequency mode in pulse outputs configuration.</p> <p>It consists of:</p> <p>L1 – <i>Frequency</i>: message.</p> <p>L2 – <i>Back</i> menu item.</p> <p>L3 – option <i>value</i>.</p> <p>L4 – option <i>Polar=</i> – selecting polarity, press <i>PP</i> button to activate select possibility, press again to confirm selection.</p> <p>Buttons:</p> <p><i>PL</i> – move to menu item above the current item.</p> <p><i>PS</i> – move to menu item below the current item.</p> <p><i>PP</i> – select indicated menu item, set output operating parameters in frequency operating mode.</p>
1	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSE OUTPUT-FREQUENCY</p> <p>BACK – return to previous menu level.</p>

2 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSEOUTPUT-FREQUENCY

VALUE – setting the minimum and maximum frequency for frequency operating mode.

It consists of:

L1 – *Back* menu item.

L2 – value min.

L3 – value max.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSEOUTPUT-FREQUENCY-VALUE

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSEOUTPUT-FREQUENCY-VALUE

VALUE MIN. – setting minimum flow value that determinates resolution degrees of frequency mode.

It consists of:

L1 – *Back* menu item and *MIN (1Hz)* message.

L2 – field for changing the minimum flow value.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSEOUTPUT-FREQUENCY-VALUE-VALUE MIN

> – entered flow value (entered floating-point number is limited to values between 0.0000001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("*Exit*" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("*Set*" message in L4) allows to save the entered flow value).

PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

3 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSEOUTPUT-FREQUENCY-VALUE

VALUE MAX. – setting maximum flow value that determinates resolution degrees of frequency mode.

It consists of:

L1 – *Back* menu item and *MAX (2kHz)* message.

L2 – field for changing the maximum flow value.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSEOUTPUT-FREQUENCY-VALUE-VALUE MAX

> – entered flow value (entered floating-point number is limited to values between 0.0000001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("*Exit*" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("*Set*" message in L4) allows to save the entered flow value).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).

6 LOGIN-MENU-CONFIGURATION-OUTPUTS-PULSEOUTPUT-FREQUENCY

POLAR= – selection of pulse output polarity.

Buttons:

PL – set the output in *NEGATIVE* polarity.

PS – set the output in *POSITIVE* polarity.

PP – select polarity change mode (marker changes from ">" to "*") and confirm selected polarity (marker changes from "*" to ">").

4 LOGIN-MENU-CONFIGURATION-OUTPUTS

STATUS OUTPUTS – setting the operating parameters of the status outputs.

It consists of:

L1 – *STATUS CONFIG*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS

STATUS 1 – setting the parameters of the first status output.

It consists of:

L1 – *STATUS 1 CONFIG*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1

ON/OFF= – on and off the output.

Buttons:

PL – turn the output *OFF*.

PS – turn the output *ON*.

PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").

3 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1

MODE= – output operation mode selection.

Buttons:

PL – scroll the list of defined modes up.

PS – scroll the list of defined modes down.

PP – select operating mode change mode (marker changes from ">" to "**") and confirm selected operating mode (marker changes from "**" to ">").

List of defined operating modes of status output 1:

- **Empty pipe** – empty pipe signalling;
- **Low flow** – low flow signalling;
- **Unfil. Pipe** – not filled pipe signalling;
- **Errors all** – errors signalling (FrontEnd, sensor, memory);
- **Coil error** – coil error signalling;
- **I saturat.** – current loop saturation signalling;
- **Direction** – signaling of liquid flow direction (output setpoint for positive flow);
- **Q > value** – signalling of flow bigger than assumed value;
- **Q < value** – signaling of flow lower than assumed value;
- **TP > value** – signaling that the user's positive totalizer exceeded assumed flow volume (in units of flow configured in the menu);
- **TM > value** – signaling that the user's negative totalizer exceeded assumed flow volume (in units of flow configured in the menu);
- **Dosing** – dosing function, output controlled to for counting time for the set value of flow;
- **Pulse dir.** – signaling of liquid flow direction for both directions pulse output mode (output setpoint for positive flow), in that operating mode status output works with pulse output without delays (*DELAY* mode).

4 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1

POLAR= – selection of status output polarity.

Buttons:

PL – set the output in *NEGATIVE* polarity.

PS – set the output in *POSITIVE* polarity.

PP – select polarity change mode (marker changes from ">" to "**") and confirm selected polarity (marker changes from "**" to ">").

5 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1

DELAY – setting the delay of status output.

It consists of:

L1 – *Back* menu item and *DELAY [s]* message.

L2 – set delay time value (a fixed-point number).

L3 – in edit mode, entering delay time value.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1-DELAY

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1-DELAY

> – entered value of delay time within the range from 0 to 3600 seconds.

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("*Exit*" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("*Set*" message in L4) allows to save the entered delay time value).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).

6 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1

VALUE – setting of value for status output.

It consists of:

L1 – *Back* menu item and *VALUE* message.

L2 – set value (floating point number).

L3 – in edit mode, entering value.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

							<p>1 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1-VALUE BACK – return to previous menu level.</p> <p>2 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 1-VALUE > – entered value for the output expressed in units depending on setting of MODE item (entered floating-point number is limited to values between 0.0000001 – 9999999; it is possible to set a value of 0). Buttons: PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving). PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered value). PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).</p>
						<p>3 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS STATUS 2 – setting the parameters of the second status output. It consists of: L1 – STATUS 2 CONFIG: message. L2 – menu item which can be selected, indicated by a ">" marker. L3 – subsequent menu items. L4 – subsequent menu items. Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>	
						<p>1 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2 BACK – return to previous menu level.</p> <p>2 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2 ON/OFF= – on and off the output. Buttons: PL – turn the output OFF. PS – turn the output ON. PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").</p>	

3 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2

MODE= – output operation mode selection.

Buttons:

PL – scroll the list of defined modes up.

PS – scroll the list of defined modes down.

PP – select operating mode change mode (marker changes from ">" to "**") and confirm selected operating mode (marker changes from "**" to ">").

List of defined operating modes of status output 2:

- **Empty pipe** – empty pipe signalling;
- **Low flow** – low flow signalling;
- **Unfil. Pipe** – not filled pipe signalling;
- **Errors all** – errors signalling (FrontEnd, sensor, memory);
- **Coil error** – coil error signalling;
- **I saturat.** – current loop saturation signalling;
- **Direction** – signaling of liquid flow direction (output setpoint for positive flow);
- **Q > value** – signalling of flow bigger than assumed value;
- **Q < value** – signaling of flow lower than assumed value;
- **TP > value** – signaling that the user's positive totalizer exceeded assumed flow volume (in units of flow configured in the menu);
- **TM > value** – signaling that the user's negative totalizer exceeded assumed flow volume (in units of flow configured in the menu);
- **Dosing** – dosing function, output controlled to for counting time for the set value of flow.;
- **Pulse dir.** – signaling of liquid flow direction for both directions pulse output mode (output setpoint for positive flow), in that operating mode status output works with pulse output without delays (*DELAY* mode).

4 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2

POLAR= – selection of status output polarity.

Buttons:

PL – set the output in *NEGATIVE* polarity.

PS – set the output in *POSITIVE* polarity.

PP – select polarity change mode (marker changes from ">" to "**") and confirm selected polarity (marker changes from "**" to ">").

5	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2 DELAY – setting the delay of status output.</p> <p>It consists of:</p> <p>L1 – <i>Back</i> menu item and <i>DELAY [s]</i> message. L2 – set delay time value (a fixed-point number). L3 – in edit mode, entering delay time value. L4 – in edit mode, indicator of the digit which is being entered.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2-DELAY</p> <p>BACK – return to previous menu level.</p>
2	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2-DELAY</p> <p>> – entered delay time value within the range of 0 to 3600 seconds.</p> <p>Buttons:</p> <p>PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("<i>Exit</i>" message in L4) allows to exit the function without saving). PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("<i>Set</i>" message in L4) allows to save the entered delay time value). PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).</p>
6	<p>LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2 VALUE – setting of value for status output.</p> <p>It consists of:</p> <p>L1 – <i>Back</i> menu item and <i>VALUE</i> message. L2 – set value (floating point number). L3 – in edit mode, entering value. L4 – in edit mode, indicator of the digit which is being entered.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>

							<p>1 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2-VALUE BACK – return to previous menu level.</p> <p>2 LOGIN-MENU-CONFIGURATION-OUTPUTS-STATUS OUTPUTS-STATUS 2-VALUE > – entered value for the output expressed in units depending on setting of MODE item (entered floating-point number is limited to values between 0.0000001 – 9999999; it is possible to set a value of 0).</p> <p>Buttons: PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving). PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered value). PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).</p>
							<p>6 LOGIN-MENU-CONFIGURATION FILTERING – set the parameters for filtering.</p> <p>It consists of: L1 – <i>FILTERS CONFIG</i>: message. L2 – menu item which can be selected, indicated by a ">" marker. L3 – subsequent menu items. L4 – subsequent menu items.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>
							<p>1 LOGIN-MENU-CONFIGURATION-FILTERING BACK – return to previous menu level.</p> <p>2 LOGIN-MENU-CONFIGURATION-FILTERING FOR LCD – setting filtering for data displayed on the LCD.</p> <p>It consists of: L1 – <i>FILTER LCD</i>: message. L2 – <i>Back</i> menu item. L3 – <i>Mode</i> menu item. L4 – <i>Time</i> menu item.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>

1	LOGIN-MENU-CONFIGURATION-FILTERING-FOR LCD BACK – return to previous menu level.
2	LOGIN-MENU-CONFIGURATION-FILTERING-FOR LCD Mode= – selecting used filter type (<i>AVERAGE</i> – average for time period or <i>DAMPING</i> – filter taking into account previous values). Buttons: PL – select <i>AVERAGE</i> type. PS – select <i>DAMPING</i> type. PP – select (marker changes from ">" to "**") and confirm set type (marker changes from "**" to ">").
3	LOGIN-MENU-CONFIGURATION-FILTERING-FOR LCD Time= – setting filter time in seconds (range 0 – 60 sec. where 0 means filter disabled). Buttons: PL – decrease time. PS – increase time. PP – select (marker changes from ">" to "**") and confirm set time (marker changes from "**" to ">").
3	LOGIN-MENU-CONFIGURATION-FILTERING FOR LOOP 4-20 – setting filtering for data used by the current loop. It consists of: L1 – <i>FILTER 4-20</i> : message. L2 – <i>Back</i> menu item. L3 – <i>Mode</i> menu item. L4 – <i>Time</i> menu item. Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.
1	LOGIN-MENU-CONFIGURATION-FILTERING-FOR LOOP 4-20 BACK – return to previous menu level.
2	LOGIN-MENU-CONFIGURATION-FILTERING-FOR LOOP 4-20 Mode= – selecting used filter type (<i>AVERAGE</i> – average for time period or <i>DAMPING</i> – filter taking into account previous values). Buttons: PL – select <i>AVERAGE</i> type. PS – select <i>DAMPING</i> type. PP – select (marker changes from ">" to "**") and confirm set type (marker changes from "**" to ">").

3 LOGIN-MENU-CONFIGURATION-FILTERING-FOR LOOP 4-20

Time= – setting filter time in seconds (range 0 – 60 sec. where 0 means filter disabled).

Buttons:

PL – decrease time.

PS – increase time.

PP – select (marker changes from ">" to "**") and confirm set time (marker changes from "**" to ">").

4 LOGIN-MENU-CONFIGURATION-FILTERING

FOR PULSE OUT – setting filtering for data used by the pulse output (in frequency operating mode).

It consists of:

L1 – *FILTER PULSE*: message.

L2 – *Back* menu item.

L3 – *Mode* menu item.

L4 – *Time* menu item.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-FILTERING-FOR PULSE OUT

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-FILTERING-FOR PULSE OUT

Mode= – selecting used filter type (*AVERAGE* – average for time period or *DAMPING* – filter taking into account previous values).

Buttons:

PL – select *AVERAGE* type.

PS – select *DAMPING* type.

PP – select (marker changes from ">" to "**") and confirm set type (marker changes from "**" to ">").

3 LOGIN-MENU-CONFIGURATION-FILTERING-FOR PULSE OUT

Time= – setting filter time in seconds (range 0 – 60 sec. where 0 means filter disabled).

Buttons:

PL – decrease time.

PS – increase time.

PP – select (marker changes from ">" to "**") and confirm set time (marker changes from "**" to ">").

5	<p>LOGIN-MENU-CONFIGURATION-FILTERING FOR MODBUS – setting of filtering for data used by Modbus output.</p> <p>It consists of: L1 – <i>FILTER MODBUS</i>: message. L2 – <i>Back</i> menu item. L3 – <i>Mode</i> menu item. L4 – <i>Time</i> menu item.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-CONFIGURATION-FILTERING-FOR MODBUS BACK – return to previous menu level.</p>
2	<p>LOGIN-MENU-CONFIGURATION-FILTERING-FOR MODBUS Mode= – selecting used filter type (<i>AVERAGE</i> – average for time period or <i>DAMPING</i> – filter taking into account previous values).</p> <p>Buttons: PL – select <i>AVERAGE</i> type. PS – select <i>DAMPING</i> type. PP – select (marker changes from ">" to "*") and confirm set type (marker changes from "*" to ">").</p>
3	<p>LOGIN-MENU-CONFIGURATION-FILTERING-FOR MODBUS Time= – setting filter time in seconds (range 0 – 60 sec. where 0 means filter disabled).</p> <p>Buttons: PL – decrease time. PS – increase time. PP – select (marker changes from ">" to "*") and confirm set time (marker changes from "*" to ">").</p>
6	<p>LOGIN-MENU-CONFIGURATION-FILTERING PREFILTER – setting pre-filtering of measurements obtained from FrontEnd.</p> <p>It consists of: L1 – <i>PREFILTER</i>: message. L2 – <i>Back</i> menu item. L3 – <i>Mode</i> menu item. L4 – <i>Value</i> menu item.</p> <p>Buttons: PL –move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>

1 LOGIN-MENU-CONFIGURATION-FILTERING-PREFILTER

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-FILTERING-PREFILTER

MODE= – selecting prefilter mode from the list of predefined modes.

Values from 0 to 31 can be entered.

Within this number, the measurement outliers detection values and the digital filter are configured separately. Both settings are summed up and entered as the value of the MODE parameter.

Part of the MODE related to outliers detection:

0 - simplified outliers detection based on percentages, no statistical analysis, variant A (medium sensitivity);

1 - simplified outliers detection based on percentages, no statistical analysis, variant B (high sensitivity);

2 - simplified outliers detection based on percentages, no statistical analysis, variant C (low sensitivity);

3 - outliers detection based on percentages, step envelope, no statistical analysis;

4 - outliers detection based on statistical analysis, 1-pass, (high sensitivity);

5 - outliers detection based on statistical analysis, 1-pass, (medium sensitivity);

6 - outliers detection based on statistical analysis, 2-pass, (medium sensitivity);

7 - no outliers detection.

Part of the MODE related to additional digital filtering:

0 - no filtering;

8 - digital low-pass FIR filter (low order);

16 - digital low-pass filter "moving-average" (low order);

24 - digital low-pass FIR filter (medium order).

Example of use:

Disable filtering and outliers detection - value $7 + 0 = 7$.

Outliers detection based on statistical analysis, 2-pass, medium sensitivity, and digital low-pass FIR filter (medium order) - value $6 + 24 = 30$.

NOTE: The recommended setting for difficult media is MODE=30 and VALUE=5. Prefilter settings do not dependent on filter settings in the menu. Prefiltering occurs before other filtrations.

Buttons:

PL – move up the mode option.

PS – move down the mode option.

PP – select indicated mode option / start selecting mode option.

3 LOGIN-MENU-CONFIGURATION-FILTERING-PREFILTER

VALUE= – selecting prefilter parameters from the list of predefined parameters

Modification of the *VALUE*:

Adjust the extreme outliers eliminator sensitivity.

Buttons:

PL – move up the value option.

PS – move down the value option.

PP – select indicated value option / start selecting value option.

7 LOGIN-MENU-CONFIGURATION

CALIBRATION – performing calibration of the device.

It consists of:

L1 – *CALIBRATION*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-CALIBRATION

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-CALIBRATION

SENSOR – calibration of device sensor.

It consists of:

L1 – *SENSOR CALIBR.:* message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1	LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR
	BACK – return to previous menu level.
2	LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR
	DEVICE COEF. – calibration of the electronics using “artificial” sensor. Menu item available only with administrator privileges.
	It consists of: L1 – Back menu item and DEVICE COEF message. L2 – = value of coefficient saved in the device memory (a floating-point number). L3 – Calibration menu item, and during calibration current status of the procedure <i>Calib.=</i> , i.e. <i>Stop/Start</i> before the procedure starts, <i>Wait</i> while calibration data is being collected, <i>Error</i> if an error occurs during the procedure, <i>Finish</i> after the data collection procedure has been completed and a new coefficient has been calculated and <i>Save</i> for saving the newly obtained coefficient in memory. L4 – <i>Reset</i> menu item, and during calibration counter <i>No.=</i> counting down collected data samples, and the newly calculated coefficient after all data has been collected.
	Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.
1	LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-DEVICE COEF.
	BACK – return to previous menu level.
2	LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-DEVICE COEF.
	CALIBR.= – operating calibration procedure. Menu item available only to service personnel.
	It consists of: L1 – <i>Back COEF [--]</i> – return to previous screen. L2 – = value of coefficient saved in the device memory (a floating-point number). L3 – <i>Calibration</i> menu item, and during calibration current status of the procedure <i>Calib.=</i> , i.e. <i>Stop/Start</i> before the procedure starts, <i>Wait</i> while calibration data is being collected, <i>Error</i> if an error occurs during the procedure, <i>Finish</i> after the data collection procedure has been completed and a new coefficient has been calculated and <i>Save</i> for saving the newly obtained coefficient in memory. L4 – <i>Reset</i> menu item which is the coefficient delete option, number of MODBUS terminal device during the calibration procedure, newly calculated coefficient after collecting all the data.
	Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.

<p>1</p>	<p>LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-DEVICE COEF.-CALIBRATION</p>
<p>BACK – return to previous menu level.</p>	
<p>2</p>	<p>LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-DEVICE COEF.-CALIBRATION</p>
<p>CALIBRATION= [START/STOP] – access to change the calibration status.</p>	
<p>Buttons:</p>	
<p>PL – select <i>Stop</i> option before calibration begins and <i>Finish</i> after data collection has been completed.</p>	
<p>PS – select <i>Start</i> option before calibration begins and <i>Save</i> after data collection has been completed.</p>	
<p>PP – confirm selection</p>	
<p>3</p>	<p>LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-DEVICE COEF.-CALIBRATION</p>
<p>RESET = ON/OFF – option for resetting (setting to $1,1 \cdot 10^{-5}$) the device coefficient.</p>	
<p>Buttons:</p>	
<p>PL – select <i>OFF</i> option.</p>	
<p>PS – select <i>ON</i> option.</p>	
<p>PP – confirm selection.</p>	
<p>3</p>	<p>LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-DEVICE COEF.</p>
<p>CHECK BACKUP – insight to the device coefficient stored in device memory.</p>	
<p>It consists of:</p>	
<p>L1 – <i>Back</i> menu item.</p>	
<p>L2 – <i>Device Coef.</i> Message</p>	
<p>L3 – = current device coefficient value stored in backup.</p>	
<p>Buttons:</p>	
<p>PP – <i>Back</i>.</p>	
<p>1</p>	<p>LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-DEVICE COEF.-CHECK BACKUP</p>
<p>DEVICE COEF. – option for insight to the device coefficient backup.</p>	
<p>Buttons:</p>	
<p>PP – return to previous menu level.</p>	
<p>4</p>	<p>LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-DEVICE COEF.</p>
<p>RESTORE – option for restoring the device coefficient.</p>	
<p>It consists of:</p>	
<p>L1 – <i>Back</i>.</p>	
<p>L2 – <i>Restore coef. ?</i> message.</p>	
<p>L3 – options to select : yes, no.</p>	
<p>Buttons :</p>	
<p>PL – set the option to <i>YES/NO</i>.</p>	
<p>PS – set the option to <i>YES/NO</i>.</p>	
<p>PP – confirm seleted option.</p>	

5 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-DEVICE COEF.

MAKE BACKUP – option for making device coefficient.

It consists of:

L1 – *Back*.

L2 – *Make coef. ?* message.

L3 – options to select : *yes, no*.

Buttons :

PL – set option for making coefficient to *OFF*.

PS – set option for making coefficient to *START*.

PP – exit *MAKE BACKUP* mode without executing (for *OFF* option) or save new coefficient (for *START* option).

3 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR

ZERO COEF. – calibrating sensor zero point.

Menu item available only with administrator privileges.

It consists of:

L1 – Back menu item and COEF message. ZERO.

L2 – = value of coefficient stored in device memory (a floating-point number) expressed in m/s.

L3 – Calibration menu item, and during calibration current status of the procedure Calib.=, i.e. Stop/Start before the procedure starts, Wait while calibration data is being collected, Error if an error occurs during the procedure, Finish/Overflow after the data collection procedure has been completed (overflow error message for values exceeding 0.3 m/s) and a new coefficient has been calculated and Save for saving the newly obtained coefficient in memory if it is below 0.3 m/s (threshold protecting against zeroing during flow).

L4 – Time menu item containing zeroing duration in minutes, and during calibration a counter counting down time in seconds until completion of the data collection procedure for xxxx [sec], and after all data has been collected, newly calculated coefficient in m/s.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR ZERO COEF.

BACK – return to previous menu level.

					<p>2 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR ZERO COEF. CALIB.= – operating zero point calibration procedure.</p> <p>Buttons: PL – select <i>Stop</i> option before calibration begins and <i>Finish</i> after data collection has been completed. PS – select <i>Start</i> option before calibration begins and <i>Save</i> after data collection has been completed. PP – for <i>Stop</i>, <i>Error</i> or <i>Overflow</i> – exit calibration mode without performing calibration, for <i>Start</i> – begin calibration data collection procedure, for <i>Finish</i> – leave calibration procedure without saving the newly calculated coefficient and for <i>Save</i> – save the new coefficient.</p> <p>3 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR ZERO COEF. TIME= – setting duration of zeroing procedure between 1 – 60 minutes.</p> <p>Buttons: PL – decrease time at one-minute steps. PS – increase time at one-minute steps. PP – enter or exit the zeroing time setting mode.</p> <p>4 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR SENSOR COEF. – entering sensor calibration coefficients (A, B and C calibration line and “deflection”). Menu item available only with administrator privileges.</p> <p>It consists of: L1 – <i>SENSOR COEF.:</i> message. L2 – menu item which can be selected, indicated by a “>” marker. L3 – subsequent menu items. L4 – subsequent menu items.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p> <p>1 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-SENSOR COEF. BACK – return to previous menu level.</p>
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2 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-SENSOR COEF.
COEFFICIENT A – entering calibration coefficient A.

It consists of:

- L1 – *Back* menu item and *COEF A[--]* message.
- L2 – set coefficient value (a floating-point number).
- L3 – in edit mode, entering value.
- L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

- PL – move to menu item above the current item.
- PS – move to menu item below the current item.
- PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-SENSOR COEF.-COEFFICIENT A

= – entered value of calibration coefficient A (modulus of entered floating-point number is limited to values between 0.0000001 – 9999999; it is not possible to set a value of 0 – a value of 0 is replaced with a coefficient of 1).

Buttons:

- PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end (“*Exit*” message in L4) allows to exit the function without saving).
- PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end (“*Set*” message in L4) allows to save the entered value).
- PP – select (marker changes from “>” to “*”) and exit the value setting function (marker changes from “*” to “>”) and change the value of the digit indicated by the marker (in ascending order).

3 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-SENSOR COEF.
COEFFICIENT B – entering calibration coefficient B.

It consists of:

- L1 – menu item *Back* and message *COEF B*
- L2 – set coefficient value (a floating-point number) in m/s.
- L3 – in edit mode, entering value.
- L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

- PL – move to menu item above the current item.
- PS – move to menu item below the current item.
- PP – select indicated menu item.

1	<p>LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-SENSOR COEF.-COEFFICIENT B</p> <p>= – entered value of calibration coefficient B (modulus of entered floating-point number is limited to values between 0.0000001 – 9999999; it is possible to set a value of 0) in m/s.</p> <p>Buttons:</p> <p>PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end (“Exit” message in L4) allows to exit the function without saving).</p> <p>PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end (“Set” message in L4) allows to save the entered value).</p> <p>PP – select (marker changes from “>” to “*”) and exit the value setting function (marker changes from “*” to “>”) and change the value of the digit indicated by the marker (in ascending order).</p>
4	<p>LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-SENSOR COEF. COEFFICIENT C – entering calibration coefficient V in m/s and percent characteristics deflection coefficient.</p> <p>It consists of:</p> <p>L1 – <i>Back</i> menu item and <i>COEF C</i> message.</p> <p>L2 – set value of coefficient V in [m/s] (a floating-point number).</p> <p>L3 – <i>Linear.=</i> menu item, containing percentage of characteristics deflection for V point, while in edit mode, entering value of coefficient V.</p> <p>L4 –in V coefficient edit mode, indicator of digit being entered.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-SENSOR COEF.-COEFFICIENT C</p> <p>BACK – return to previous menu level.</p>

**2 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-SENSOR
COEF.-COEFFICIENT C**

V= – entered value of calibration coefficient V (modulus of entered floating-point number is limited to values between 0.0000001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end (“Exit” message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end (“Set” message in L4) allows to save the entered value).

PP – select (marker changes from “>” to “*”) and exit the value setting function (marker changes from “*” to “>”) and change the value of the digit indicated by the marker (in ascending order).

**3 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-SENSOR
COEF.-COEFFICIENT C**

Linear.= – setting percent characteristics “deflection” coefficient within +/- 10% for the point defined by coefficient V.

Buttons:

PL – decrease the value of “deflection” with 0.1% increment.

PS – increase the value of “deflection” with 0.1% increment.

PP – enter or exit the “deflection” coefficient setting mode.

5 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR

CORRECTION COEF. – processing results according to line $y=Ax+B$. **Menu item available only with administrator privileges.** Coefficient A is dimensionless, coefficient B owns “m/s” dimension.

It consists of:

L1 – *CORRECTION COEF.* message.

L2 – menu item possible to select, indicated by “>” marker.

L3 – next menu items.

L4 – next menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

**1 LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-CORRECTION
COEF.**

BACK – return to previous menu level.

2	LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-CORRECTION COEF.
<p>COEFFICIENT A – entering correction coefficient A.</p>	
<p>It consists of:</p>	
<p>L1 – <i>Back</i> menu item and <i>COEF. A</i> message.</p>	
<p>L2 – set coefficient value, editable.</p>	
<p>Buttons:</p>	
<p>PL – move to menu item above the current item.</p>	
<p>PS – move to menu item below the current item.</p>	
<p>PP – select indicated menu item.</p>	
3	LOGIN-MENU-CONFIGURATION-CALIBRATION-SENSOR-CORRECTION COEF.
<p>COEFFICIENT B – entering correction coefficient B.</p>	
<p>It consists of:</p>	
<p>L1 – <i>Back</i> menu item and <i>COEF. B</i> message.</p>	
<p>L2 – set coefficient value, editable.</p>	
<p>Buttons:</p>	
<p>PL – move to menu item above the current item.</p>	
<p>PS – move to menu item below the current item.</p>	
<p>PP – select indicated menu item.</p>	
3	LOGIN-MENU-CONFIGURATION-CALIBRATION
<p>LOOP 4-20 – calibration of current loop output 4-20 [mA]. <i>Menu item available only with administrator privileges.</i></p>	
<p>It consists of:</p>	
<p>L1 – <i>LOOP CALIBR.:</i> message.</p>	
<p>L2 – <i>Back</i> menu item.</p>	
<p>L3 – <i>Coef menu item. 4 [mA]</i> - calibration of current loop for value 4 mA.</p>	
<p>L4 – menu item <i>Coef. 20 [mA]</i> - calibration of current loop for value 20 mA.</p>	
<p>Buttons:</p>	
<p>PL – move to menu item above the current item.</p>	
<p>PS – move to menu item below the current item.</p>	
<p>PP – select indicated menu item.</p>	
1	LOGIN-MENU-CONFIGURATION-CALIBRATION-LOOP 4-20
<p>BACK – return to previous menu level.</p>	

2	LOGIN-MENU-CONFIGURATION-CALIBRATION-LOOP 4-20
<p>COEF. 4mA – calibration of current loop to value 4 mA with requirement to use external reference current measurement.</p> <p>It consists of:</p> <p>L1 – menu item <i>Back</i> and message <i>COEF4mA</i>.</p> <p>L2 – value of coefficient saved in the device memory (a fixed-point number).</p> <p>L3 – in current value measurement mode <i>I=</i> for current loop measured by internal system in [mA] (during calibration may be used as auxiliary value indicator and not as reference measurement due to limited accuracy).</p> <p>L4 – in calibration mode <i>DAC Value=</i> value set for analog-digital converter as a hexadecimal number.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>	
1	LOGIN-MENU-CONFIGURATION-CALIBRATION-LOOP 4-20-COEF.4[mA]
<p>> – calibration of current loop value to 4 mA.</p> <p>Buttons:</p> <p>PL – decrease of value set for DAC converter.</p> <p>PS – increase of value set for DAC converter.</p> <p>PP – selection (change of ">" tag to "*"") and exit and saving calibration coefficient (change of "*" tag to ">").</p>	
3	LOGIN-MENU-CONFIGURATION-CALIBRATION-LOOP 4-20
<p>COEF. 20mA – calibration of current loop to value 20 mA with requirement to use external reference current measurement.</p> <p>It consists of:</p> <p>L1 – menu item <i>Back</i> and message <i>COEF20</i>.</p> <p>L2 – value of coefficient saved in the device memory (a fixed-point number).</p> <p>L3 – in current value measurement mode <i>I=</i> for current loop measured by internal system in [mA] (during calibration may be used as auxiliary value indicator and not as reference measurement due to limited accuracy).</p> <p>L4 – in calibration mode <i>DAC Value=</i> value set for analog-digital converter as a hexadecimal number.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>	

				<p>1 LOGIN-MENU-CONFIGURATION-CALIBRATION-LOOP 4-20-COEF.20[mA] > – calibration of value of current for loop to 20 mA.</p> <p>Buttons: PL – decrease of value set for DAC converter. PS – increase of value set for DAC converter. PP – selection (change of ">" tag to "*"") and exit and saving calibration coefficient (change of "*" tag to ">").</p>
			<p>4 LOGIN-MENU-CONFIGURATION-CALIBRATION CURRENT MEASUR – calibration of internal measurement of loop current 4-20 [mA]. <i>Menu item available only with administrator privileges.</i></p> <p>It consists of: L1 – <i>MEAS./ CALIBR.:</i> message. L2 – <i>Back</i> menu item. L3 – menu item <i>Coef.meas. 4mA</i> – calibration of value of current for 4 mA. L4 – menu item <i>Coef.meas.20mA</i> – calibration of value of current for 20 mA.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>	
			<p>1 LOGIN-MENU-CONFIGURATION-CALIBRATION-CURRENT MEASUR BACK – return to previous menu level.</p>	
			<p>2 LOGIN-MENU-CONFIGURATION-CALIBRATION-CURRENT MEASUR COEF.meas. 4mA – calibration of current measurement for value 4 mA with requirement to use external reference current measurement.</p> <p>It consists of: L1 – menu item <i>Back</i> and message <i>COEF4.mA</i>. L2 – calibration value of current saved in device memory in [mA] (floating point number). L3 – in current value measurement mode <i>I=</i> for current loop measured by internal system in [mA] (during calibration may be used as auxiliary value indicator and not as reference measurement due to limited accuracy). L4 – in calibration mode <i>DAC Value=</i> value set for analog-digital converter as a hexadecimal number.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>	

1 LOGIN-MENU-CONFIGURATION-CALIBRATION-CURRENT MEASUR-COEF.MEAS.4mA

> – calibration of value of current for loop to 4 mA.

Buttons:

PL – decrease of value set for DAC converter.

PS – increase of value set for DAC converter.

PP – selection (change of ">" tag to "**") and exit and saving calibration current (change of "**" tag to ">").

3 LOGIN-MENU-CONFIGURATION-CALIBRATION-CURRENT MEASUR

COEF.meas.20mA – calibration of current measurement for 20 mA with requirement to use external reference current measurement.

It consists of:

L1 – menu item *Back* and message *COEF20mA*.

L2 – calibration value of current saved in device memory in [mA] (floating point number).

L3 – in current value measurement mode *I=* for current loop measured by internal system in [mA] (during calibration may be used as auxiliary value indicator and not as reference measurement due to limited accuracy).

L4 – in calibration mode *DAC Value=* value set for analog-digital converter as a hexadecimal number.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-CALIBRATION-CURRENT MEASUR-COEF.MEAS.20mA

> – calibration of value of current for loop to 20 mA.

Buttons:

PL – decrease of value set for DAC converter.

PS – increase of value set for DAC converter.

PP – selection (change of ">" tag to "**") and exit and saving calibration current (change of "**" tag to ">").

<p>8</p>	<p>LOGIN-MENU-CONFIGURATION</p> <p>MODBUS – setting of configuration parameters for MODBUS.</p> <p>Menu item available only with administrator privileges.</p> <p>It consists of:</p> <p>L1 – <i>MODBUS CONFIG</i>: message.</p> <p>L2 – menu item which can be selected, indicated by a ">" marker.</p> <p>L3 – subsequent menu items.</p> <p>L4 – subsequent menu items.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>
<p>1</p>	<p>LOGIN-MENU-CONFIGURATION-MODBUS</p> <p>BACK – return to previous menu level.</p>
<p>2</p>	<p>LOGIN-MENU-CONFIGURATION-MODBUS</p> <p>ON/OFF= – to on and off the bus.</p> <p>Buttons:</p> <p>PL – to disable the bus <i>OFF</i>.</p> <p>PS – to enable the bus <i>ON</i>.</p> <p>PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").</p>
<p>3</p>	<p>LOGIN-MENU-CONFIGURATION-MODBUS</p> <p>UNLOCK WR= – enabling and disabling of data saving option using the MODBUS interface in the device.</p> <p>Buttons:</p> <p>PL – setting data saving option in the device to <i>OFF</i>.</p> <p>PS – setting the data saving option in the device to <i>ON</i>.</p> <p>PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").</p>
<p>4</p>	<p>LOGIN-MENU-CONFIGURATION-MODBUS</p> <p>ADDRESS= – setting of device address in defined range 1 – 247.</p> <p>Buttons:</p> <p>PL – decrease address.</p> <p>PS – increase address.</p> <p>PP – selection (change of ">" tag to "**") and exit and saving address set (change of "**" tag to ">").</p>

5 LOGIN-MENU-CONFIGURATION-MODBUS

BAUD= – selection of bus baud rate.

Buttons:

PL – scroll the list of defined rates down.

PS – scroll the list of defined diameters up.

PP – selection (change of ">" tag to "*"") and exit and saving rate set (change of "*" tag to ">").

List of defined baud rates for MODBUS:

- 4800
- 9600
- 19200
- 38400
- 57600
- 115200.

6 LOGIN-MENU-CONFIGURATION-MODBUS

PARITY= – selection of bus parameters.

Buttons:

PL – scroll the list of defined parameters down.

PS – scroll the list of defined parameters up.

PP – selection (change of ">" tag to "*"") and exit and saving parameters set (change of "*" tag to ">").

List of defined parameters for MODBUS:

- EVEN_1S (EVEN 1 STOP) – with parity, one stop bit
- ODD_1S (ODD 1 STOP) – with parity, one stop bit
- NOPA_2S (NOPAR 2 STOP) – without parity, two stop bits.

7 LOGIN-MENU-CONFIGURATION-MODBUS

DATA= – selection of data bytes format ("order") sent via the MODBUS.

Buttons:

PL – scroll the list of defined formats down.

PS – scroll the list of defined formats up.

PP – selection (change of ">" tag to "*"") and exit and saving formats set (change of "*" tag to ">").

List of defined formats (bytes "order") to be sent via the MODBUS:

- AABCCDD – „Little Endian” format (the simplest "order" for bytes transmission, because data are saved in this format in the RAM of the device)
- DDCCBBAA – „Big Endian” format (natural "order" for bytes transmission compatible with 32-bit hexadecimal numbers representation.
- BBAADDCC – "reversed" type format ("order" for sending of bytes analogous to "Big Endian" type, but with substituted halves of 32-bit hexadecimal number)
- CCDDAABB – the least used format (the least intuitive) for bytes transmission via the MODBUS.

9 LOGIN-MENU-CONFIGURATION

ARCHIVES – setting the parameters for flowmeter archive.

It consists of:

- L1 – *ARCHIVES CONFIG*: message.
- L2 – menu item which can be selected, indicated by a ">" marker.
- L3 – subsequent menu items.
- L4 – subsequent menu items.

Buttons:

- PL – move to menu item above the current item.
- PS – move to menu item below the current item.
- PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-ARCHIVES

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-ARCHIVES

EVENT ARCHIVES – setting of parameters for events archiving. *Menu item available only with administrator privileges.*

It consists of:

- L1 – *ARCHIVES EVENTS*: message.
- L2 – menu item which can be selected, indicated by a ">" marker.
- L3 – subsequent menu items.
- L4 – subsequent menu items.

Buttons:

- PL – move to menu item above the current item.
- PS – move to menu item below the current item.
- PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-ARCHIVES-EVENT ARCHIVES

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-ARCHIVES-EVENT ARCHIVES

ON/OFF= – on and off option to save events occurring during operation of the device in the memory.

Buttons:

- PL – events saving disabled *OFF*.
- PS – events saving enabled *ON*.
- PP – select (marker changes from ">" to "***") and confirm set mode (marker changes from "***" to ">").

3	LOGIN-MENU-CONFIGURATION-ARCHIVES-EVENT ARCHIVES
<p>MODE CONT.= – enable or disable the function of circular recording to event memory (after saving all the memory, i.e. 8128 items, the oldest entries are overwritten with new entries).</p> <p>Buttons:</p> <p>PL – turn circular recording <i>OFF</i>.</p> <p>PS – turn circular recording <i>ON</i>.</p> <p>PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").</p>	
4	LOGIN-MENU-CONFIGURATION-ARCHIVES-EVENT ARCHIVES
<p>DELETE= – deleting events saved in the device memory.</p> <p>Buttons:</p> <p>PL – disable deleting event archive (<i>OFF</i>).</p> <p>PS – enable deleting event archive (<i>ENTER</i>).</p> <p>PP – select (marker changes from ">" to "**") and confirm set mode, i.e. leave the function without erasing events for <i>OFF</i> or erase event memory for <i>ENTER</i> (marker changes from "**" to ">"), successful erasing is indicated by an <i>OK</i> message.</p>	
5	LOGIN-MENU-CONFIGURATION-ARCHIVES-EVENT ARCHIVES
<p>ACTIVITY EVENT – setting activity (saving option) for the individual events registered in the device. Saving of all events is active after restoring the device to the factory settings.</p> <p>It consists of:</p> <p>L1 – <i>ACTIVITY EVENTS</i>: message.</p> <p>L2 – menu item which can be selected, indicated by a ">" marker.</p> <p>L3 – subsequent menu items.</p> <p>L4 – subsequent menu items.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>	
1	LOGIN-MENU-CONFIGURATION-ARCHIVES-EVENT ARCHIVES-ACTIVITY EVENT
<p>BACK – return to previous menu level.</p>	
2	LOGIN-MENU-CONFIGURATION-ARCHIVES-EVENT ARCHIVES-ACTIVITY EVENT
<p>SELECTION:</p> <p>START= – enabling and disabling activity of the event giving information about start-up of the device.</p> <p>Buttons:</p> <p>PL – turn event activity <i>OFF</i>.</p> <p>PS – turn event activity <i>ON</i>.</p> <p>PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").</p>	

UNFILLED= – enabling and disabling activity of the event giving information about detection of non-filled pipe by the flowmeter.

Buttons:

PL – turn event activity *OFF*.

PS – turn event activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

RESET= – enabling and disabling activity of the event giving information about erasing the totalizers or counter user timer and errors of the device.

Buttons:

PL – turn event activity *OFF*.

PS – turn event activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

DEFAULT= – enabling and disabling activity of the event giving information about restoring of default settings in the flowmeter.

Buttons:

PL – turn event activity *OFF*.

PS – turn event activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

FACTORY= – enabling and disabling activity of the event giving information about restoring factory settings in the flowmeter.

Buttons:

PL – turn event activity *OFF*.

PS – turn event activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

CALIBRAT.= – enabling and disabling activity of the event giving information about saving of new calibration coefficient of the flowmeter.

Buttons:

PL – turn event activity *OFF*.

PS – turn event activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

COIL ERROR= – enabling and disabling activity of the event giving information about error of measuring coil.

Buttons:

PL – turn event activity *OFF*.

PS – turn event activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

				<p>LOW FLOW= – enabling and disabling activity of the event giving information about detection of low flow in flowmeter.</p> <p>Buttons: PL – turn event activity <i>OFF</i>. PS – turn event activity <i>ON</i>. PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").</p>
			<p>3 LOGIN-MENU-CONFIGURATION-ARCHIVES</p> <p>MEAS. ARCHIVES – setting of parameters for measurement archiving. <i>Menu item available only with administrator privileges.</i></p> <p>It consists of: L1 – <i>ARCHIVES MEAS.:</i> message. L2 – menu item which can be selected, indicated by a ">" marker. L3 – subsequent menu items. L4 – subsequent menu items.</p> <p>Buttons: PL – move to menu item above the current item. PS – move to menu item below the current item. PP – select indicated menu item.</p>	
			<p>1 LOGIN-MENU-CONFIGURATION-ARCHIVES-MEAS. ARCHIVES</p> <p>BACK – return to previous menu level.</p>	
			<p>2 LOGIN-MENU-CONFIGURATION-ARCHIVES-MEAS. ARCHIVES</p> <p>ON/OFF= – on and off of saving of measurements of average flow values in the memory.</p> <p>Buttons: PL – events saving disabled <i>OFF</i>. PS – events saving enabled <i>ON</i>. PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").</p>	
			<p>3 LOGIN-MENU-CONFIGURATION-ARCHIVES-MEAS. ARCHIVES</p> <p>MODE CONT.= – enable or disable the function of circular recording to measurement memory (after saving all the memory, i.e. 8128 items, the oldest entries are overwritten with new entries).</p> <p>Buttons: PL – turn circular recording <i>OFF</i>. PS – turn circular recording <i>ON</i>. PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").</p>	

4 LOGIN-MENU-CONFIGURATION-ARCHIVES-MEAS. ARCHIVES

DELETE= – deleting measurements saved in the device memory.

Buttons:

PL – disable deleting measurement archives (*OFF*).

PS – enable deleting measurement archives (*ENTER*).

PP – select (marker changes from ">" to "**") and confirm set mode, i.e. leave the function without erasing measurements for *OFF* or erase measurement memory for *ENTER* (marker changes from "**" to ">"), successful erasing is indicated by an *OK* message.

5 LOGIN-MENU-CONFIGURATION-ARCHIVES-MEAS. ARCHIVES

INTERVAL= – setting time period expressed in minutes to saving average flow value in the memory. Time period for saving expressed in minutes can be set from 10 minutes to 24 hours with 10-minute increments.

Buttons:

PL – decreasing value of time period for measurements saving in 10-minute increments.

PS – increasing value of time period for measurements saving in 10-minute increments.

PP – select (marker changes from ">" to "**") and confirm set time value (marker changes from "**" to ">").

10 LOGIN-MENU-CONFIGURATION

ALARMS – setting activity of alarms for the flowmeter.

Menu item available only with administrator privileges.

It consists of:

L1 – *ACTIVITY ALARMS*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-ALARMS

BACK – return to previous menu level.

2 LOGIN-MENU-CONFIGURATION-ALARMS

SELECTION:

EMPTY PIPE= – enabling and disabling activity of alarm for empty pipe detection.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

UNFIL. PIPE= – enabling and disabling activity of alarm for non-filled pipe detection.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

LOW FLOW= – enabling and disabling activity of alarm for detection of low flow.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

ERR FRONTE= – enabling and disabling activity of alarm for FrontEnd error.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

ERR SENSOR= – enabling and disabling activity of alarm for error of sensor.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

ERR MEMORY= – enabling and disabling activity of alarm for internal memory of the flowmeter.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

ERR COIL= – enabling and disabling activity of alarm for coil error.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

Q > VALUE= – enabling and disabling activity of alarm for flow greater than value set as a parameters.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "**" to ">").

Q < VALUE= – enabling and disabling activity of alarm for flow smaller than value set as a parameter.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "*" to ">").

V > VALUE= – enabling and disabling activity of alarm for linear velocity of flow greater than value set as a parameter.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "*" to ">").

V < VALUE= – enabling and disabling activity of alarm for linear velocity of flow smaller than value set as a parameter.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "*" to ">").

TPU > VALUE= – enabling and disabling activity of alarm for exceeding value set as a parameter by absolute value of user's positive totalizer.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "*" to ">").

TMU > VALUE= – enabling and disabling activity of alarm for exceeding value set as a parameter by absolute value of user's negative totalizer.

Buttons:

PL – turn alarm activity *OFF*.

PS – turn alarm activity *ON*.

PP – select (marker changes from ">" to "**") and confirm set activity (marker changes from "*" to ">").

VALUE QMAX – setting of value of maximum flow as a parameter for exceeding the set limit.

It consists of:

L1 – menu item *Back* and message *VALUE QMAX*.

L2 – maximum flow threshold value set, expressed in units of flow configured in the menu (a floating-point number).

L3 – in edit mode, entering the value of maximum flow threshold.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-ALARMS-VALUE QMAX

> – entered maximum flow threshold value expressed in units of flow (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("*Exit*" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("*Set*" message in L4) allows to save the entered maximum flow threshold value).

PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

VALUE QMIN – setting of value of minimum flow as a parameter for exceeding the set limit.

It consists of:

L1 – menu item *Back* and message *VALUE QMIN*.

L2 – minimum flow threshold value set, expressed in units of flow configured in the menu (a floating-point number).

L3 – in edit mode, entering the value of minimum flow threshold.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-ALARMS-VALUE QMIN

> – entered minimum flow threshold value expressed in units of flow (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered minimum flow threshold value).

PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

VALUE VMAX – setting of value of maximum linear velocity as a parameter for exceeding the set limit.

It consists of:

L1 – menu item *Back* and message *VALUE VMAX*.

L2 – minimum value of maximum linear velocity of flow set, expressed in units of configured in the menu (a floating-point number).

L3 – in edit mode, entering value of maximum linear velocity of flow.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-ALARMS-VALUE VMAX

> – entered value of maximum linear velocity of flow expressed in units set (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered maximum linear velocity of flow threshold value).

PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

VALUE VMIN – setting minimum value of flow linear velocity as a parameter for alarm indicating exceeding threshold set.

It consists of:

L1 – menu item *Back* and message *VALUE VMIN*.

L2 – minimum value of minimum linear velocity of flow set, expressed in units of configured in the menu (a floating-point number).

L3 – in edit mode, entering value of minimum linear velocity of flow.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-ALARMS-VALUE VMIN

> – entered value of minimum linear velocity of flow expressed in units set (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("*Exit*" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("*Set*" message in L4) allows to save the entered value of threshold for minimum linear velocity of flow set).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).

VALUE TP USER – setting of threshold value for user's positive totalizer as a parameter for alarm indicating exceeding threshold set.

It consists of:

L1 – menu item *Back* and message *VALUE TP:*.

L2 – value set in totalizer limit in volume unit configured in the menu (floating point number).

L3 – entering value of totalizer limit in edit mode.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-ALARMS-VALUE TP USER

> – entered totalizer limit value expressed in volume units (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered totalizer threshold value).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).

VALUE TM USER – setting of threshold value for user's negative totalizer as a parameter for alarm indicating exceeding threshold.

It consists of:

L1 – menu item *Back* and message *VALUE TM*.

L2 – value set in totalizer limit in volume unit configured in the menu (floating point number).

L3 – entering value of totalizer limit in edit mode.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-ALARMS-VALUE TM USER

> – entered totalizer limit value expressed in volume units (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered totalizer threshold value).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).

11	<p>LOGIN-MENU-CONFIGURATION</p> <p>DOSING – setting configuration parameters for dosing function.</p> <p>Contains:</p> <p>L1 – <i>DOSING CONFIG</i>: message.</p> <p>L2 – menu item which can be selected, indicated by a ">" marker.</p> <p>L3 – subsequent menu items.</p> <p>L4 – subsequent menu items.</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-CONFIGURATION-DOSING</p> <p>BACK – return to previous menu level.</p>
2	<p>LOGIN-MENU-CONFIGURATION-DOSING</p> <p>ON/OFF= – enable or disable the dosing function.</p> <p>Buttons:</p> <p>PL – turn dosing dunction <i>OFF</i>.</p> <p>PS – turn dosing function <i>ON</i>.</p> <p>PP – select (marker changes from ">" to "**") and confirm set mode (marker changes from "**" to ">").</p>
3	<p>LOGIN-MENU-CONFIGURATION-DOSING</p> <p>MODE_OPE= – dosing function operating mode selection</p> <p>Buttons:</p> <p>PL – scroll the list of defined modes down.</p> <p>PS – scroll the list of defined modes up.</p> <p>PP – selection (change of ">" tag to "**") and exit and saving modes set (change of "**" tag to ">").</p> <p>List of defined dosing modes:</p> <ul style="list-style-type: none"> – INDEPE – independent operation mode for both dosing channels (counters for measured volumes of dose are operating independently in both channels and depending on their zeroing the corresponding binary outputs are controlled) – DEPEND – operation mode of both dosing channels (dose volume is counted only by the counter of the first channel, while counter of the second channel determines a threshold, set in the menu, for two-stage dosing control, first binary output is controlled with zeroing of the first counter, while second binary output is controlled when first counter exceeds a threshold determined by the second counter).

4 LOGIN-MENU-CONFIGURATION-DOSING

MODE_CON = – Selects the dosing mode control.

Buttons:

PL – scroll the list of defined modes down.

PS – scroll the list of defined modes up.

PP – selection (change of ">" tag to "**") and exit and saving modes set (change of "**" tag to ">").

List of defined control modes for dosing:

– **INPUT** – control mode using binary input (applying signal with the appropriate duration to binary input you can control dosing that is release of input with duration from 0,5 to 1 second results in alternate start and stop of dosing, while release for at least 3 seconds results in "overloading" of the dosing counters and setting the function to standby).

– **BUTTON** – control mode with keyboard (during the selection of the main screen with information on current dosing you can use a right extreme button to control dosing. Pressing of the button results in alternate start and stop of dosing while continuous pressing of the button for 3 seconds results in "overloading" of dosing counters and setting the function in standby mode).

– **MODBUS** – control mode using MODBUS (dosing control can be carried out using entries to the corresponding registers described in the user's manual for the MODBUS).

5 LOGIN-MENU-CONFIGURATION-DOSING

VALUE V1 – setting the value of V1 dose for the first channel assigned to the D1 counter with the countdown.

Contains:

L1 – *Back* menu item and *VALUE V1*: message.

L2 – value set for V1 dose in volume units configured in the menu (floating point number).

L3 – in edit mode, entering dose value.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-DOSING-VALUE V1

> – entered value of V1 dose expressed in volume units (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered dose value).

PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

6 LOGIN-MENU-CONFIGURATION-DOSING

VALUE DP1 – setting of advance value for switching off the binary output 1 for first channel.

Contains:

L1 – Back menu item and VALUE DP1: message.

L2 – set advance value for deactivation of the DP1 output in volumetric units configured in the menu (floating point number).

L3 – entering advance value for output deactivation in edit mode.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-DOSING-VALUE DP1

> – entered an advance value for switching off the binary output DP1 expressed in volume units (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered advance value).

PP – select (marker changes from ">" to "**") and exit the value setting function (marker changes from "**" to ">") and change the value of the digit indicated by the marker (in ascending order).

7 LOGIN-MENU-CONFIGURATION-DOSING

VALUE V2 – setting of value of V2 dose for the second channel assigned to the D2 counter with a back-counting function.

Contains:

L1 – Back menu item and VALUE V2: message.

L2 – value set for V2 dose in volume units configured in the menu (floating point number).

L3 – in edit mode, entering dose value.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-DOSING-VALUE V2

> – entered value of V2 dose expressed in volume units (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered dose value).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).

8 LOGIN-MENU-CONFIGURATION-DOSING

VALUE DP2 – setting of advance value for switching off the binary output 2 for second channel.

Contains:

L1 – Back menu item and VALUE DP2: message.

L2 – set advance value for deactivation of the DP2 output in volumetric units configured in the menu (floating point number).

L3 – entering advance value for output deactivation in edit mode.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-DOSING-VALUE DP2

> – entered value of advance for switching off the binary output DP2 expressed in volume units (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – moving the indicator for set digit to the left (setting of the indicator in extreme left position ("Exit" message" in L4) allows leaving the function without saving.

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered advance value).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).

9 LOGIN-MENU-CONFIGURATION-DOSING

VALUE V3 – setting of V3 dose value for the associated operation mode of both dosing channels (it is dosing threshold when e.g. dosing speed can be reduced).

Contains:

L1 – Back menu item and VALUE V3: message.

L2 – value set for V3 dose in volume units configured in the menu (floating point number).

L3 – in edit mode, entering dose value.

L4 – in edit mode, indicator of the digit which is being entered.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-CONFIGURATION-DOSING-VALUE V3

> – entered value of V3 dose expressed in volume units (entered floating-point number is limited to values between 0.00001 – 9999999; it is possible to set a value of 0).

Buttons:

PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end ("Exit" message in L4) allows to exit the function without saving).

PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end ("Set" message in L4) allows to save the entered dose value).

PP – select (marker changes from ">" to "*") and exit the value setting function (marker changes from "*" to ">") and change the value of the digit indicated by the marker (in ascending order).

9 LOGIN-MENU

DIAGNOSTICS – device diagnostics.

Contains:

L1 – *DIAGNOSTICS*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DIAGNOSTICS

BACK – return to previous menu level.

2 LOGIN-MENU-DIAGNOSTICS

LCD TEST – LCD display test.

Systematic filling of all display items with figures.

It consists of:

L1 – menu item *Back*.

L2 – message about test status *Test LCD = OFF / ON*.

L4 – test service message <- *OFF ON* ->.

Buttons:

PL – test disable.

PS – test enable.

PP – exit from test (equivalent to disable).

1 LOGIN-MENU-DIAGNOSTICS-LCD TEST

BACK – return to previous menu level.

3 LOGIN-MENU-DIAGNOSTICS

OUTPUTS TEST – test of device outputs.

It consists of:

L1 – *OUTPUTS DIAG*: message.

L2 – menu item which can be selected, indicated by a ">" marker.

L3 – subsequent menu items.

L4 – subsequent menu items.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST

BACK – return to previous menu level.

2	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST</p> <p>4-20[mA] LOOP – test of current loop output.</p> <p>It consists of:</p> <p>L1 – menu item <i>Back</i> and value of current loop 4-20 measured internally $I = \text{value}$ (in [mA]).</p> <p>L2 – message <i>DAC Value=</i> value set for analog-digital converter as a hexadecimal number.</p> <p>L3 – test service message for PL <--: <i>DAC -0x1</i>.</p> <p>L4 – test service message for PS -->: <i>DAC +0x1</i>.</p> <p>Buttons:</p> <p>PL – decrease of value set for DAC converter.</p> <p>PS – increase of value set for DAC converter.</p> <p>PP – exit from the test.</p>
1	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-4-20[mA] LOOP</p> <p>BACK – return to previous menu level.</p>
3	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST</p> <p>PULSE OUTPUT – pulse output test.</p> <p>It consists of:</p> <p>L1 – menu item <i>Back and PULSE</i> message.</p> <p>L2 – menu item <i>Mode</i> (frequency/pulse).</p> <p>L3 – menu item <i>Pulse</i> (unlock/lock).</p> <p>L4 – menu item <i>Frequency</i> (unlock/lock).</p> <p>Buttons:</p> <p>PL – move to menu item above the current item.</p> <p>PS – move to menu item below the current item.</p> <p>PP – select indicated menu item.</p>
1	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS</p> <p>BACK – return to previous menu level.</p>
2	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS</p> <p>Mode – enabling output into appropriate operation mode - as pulse or frequency output.</p> <p>It consists of:</p> <p>L1 – menu item <i>Back</i>.</p> <p>L2 – <i>Pulse Output:</i> message.</p> <p>L3 – test mode message = <i>ON Frequency / PULSE</i>.</p> <p>L4 – test service message <- <i>Frequency PULSE</i> ->.</p> <p>Buttons:</p> <p>PL – enabling output to frequency mode.</p> <p>PS – enabling output to <i>PULSE mode</i>.</p> <p>PP – exti from test item.</p>

1	LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS-MODE BACK – return to previous menu level.
3	LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS Pulse – output servicing in pulse operation mode- access only when PULSE mode from <i>Mode</i> overlap is set. It consists of: L1 – menu item <i>Back</i> , and <i>PULSE</i> message. L2 – menu item <i>Time= xxx[ms]</i> – setting of time for pulse generated systematically (tripping every 0.5s). L3 – menu item <i>Polar= POSITIVE/NEGATIVE</i> – setting polarity of generated pulses. L4 – test service message <-- -->. Buttons: PL – in <i>Time</i> item decrease of pulse time and in <i>Polar</i> item setting polarity to <i>NEGATIVE</i> . PS – in <i>Time</i> item increase of pulse time and in <i>Polar</i> item setting of polarity to <i>POSITIVE</i> . PP – selection (change of ">" tag to "**") and exiting from test item (change of "**" tag to ">") and exit from test in <i>Back</i> item.
1	LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS-PULSE BACK – return to previous menu level.
2	LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS-PULSE TIME= – setting of time of generated pulse with 1[ms] resolution.
3	LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS-PULSE POLAR= – setting of polarity of generated pulses.
4	LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS FREQUENCY – servicing of output in frequency operation mode – access only when frequency mode from <i>Mode</i> overlap is set. It consists of: L1 – menu item <i>Back</i> , and message <i>Frequency</i> . L2 – menu item <i>Freq= xxx.x[Hz]</i> – setting frequency of generated signal. L3 – menu item <i>Polar= POSITIVE/NEGATIVE</i> – setting polarity of generated signal. L4 – test service message <-- -->. Buttons: PL – in <i>Freq</i> item decreasing frequency, in <i>Polar</i> item setting polarity to <i>NEGATIVE</i> . PS – in <i>Freq</i> item increasing polarity, in <i>Polar</i> item setting polarity to <i>POSITIVE</i> . PP – selection (change of ">" tag to "**") and exiting from test item (change of "**" tag to ">") and exit from test in <i>Back</i> item.

<p>1</p>	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS-FREQUENCY BACK – return to previous menu level.</p>
<p>2</p>	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS-FREQUENCY FREQ= – setting of frequency of generated signal in the range from 1[Hz] to 2[kHz] with 0.1[Hz] resolution.</p>
<p>3</p>	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-PULSE OUTPUTS-FREQUENCY POLAR= – setting polarity of generated signal.</p>
<p>4</p>	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST STATUS OUTPUTS – test of binary status outputs.</p> <p>It consists of: L1 – <i>Back</i> menu item. And STATUS message L2 – menu item <i>Stat1= POSITIVE/NEGATIVE</i> – setting of required output polarity. L3 – menu item <i>Stat2= POSITIVE/NEGATIVE</i> – setting of required output polarity.</p> <p>Buttons: PL – scrolling up of menu items and in <i>Stat1 and Stat2</i> item and setting polarity of output to <i>NEGATIVE</i>. PS – scrolling down of menu items and in <i>Stat1 i Stat2</i> items setting of output polarity <i>POSITIVE</i>. PP – selection (change of ">" tag to "**") and exiting from test item (change of "**" tag to ">") and exit from test in <i>Back</i> item.</p>
<p>1</p>	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-STATUS OUTPUTS BACK – return to previous menu level.</p>
<p>2</p>	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-STATUS OUTPUTS STAT1= – setting of status output condition 1.</p>
<p>3</p>	<p>LOGIN-MENU-DIAGNOSTICS-OUTPUTS TEST-STATUS OUTPUTS STAT2= – setting of status output condition 2.</p>
<p>4</p>	<p>LOGIN-MENU-DIAGNOSTICS INPUT TEST – test of isolated inputs.</p> <p>Indicates current status of signal applied to input.</p> <p>It consists of: L1 – menu item <i>Back. And message INPUT</i> L2 – message <i>Status input.</i> L3 – current input status – <i>OFF</i> (no voltage applied to input or open terminals) or <i>ON</i> (voltage applied to input or closing of terminals).</p> <p>Buttons: PP – exit from test (equivalent to disable).</p>

1 LOGIN-MENU-DIAGNOSTICS-INPUT TEST

BACK – return to previous menu level.

5 LOGIN-MENU-DIAGNOSTICS

SIMULATION – measurements simulation.

Test based on operation of the flowmeter with set value of flow or linear velocity of flow I. The only difference in device operation is that the totalizers are not saved during the test.

It consists of:

L1 – message *SIMULATION MEAS.*

L2 – *Back* menu item.

L3 – menu item *On/Off*.

L4 – menu item *Simulation Val.*

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1 LOGIN-MENU-DIAGNOSTICS-SIMULATION

BACK – return to previous menu level.

2 LOGIN-MENU-DIAGNOSTICS-SIMULATION

ON/OFF= – on and off simulation of measurements test.

Buttons:

PL – disabling test *OFF*.

PS – enabling test *ON*.

PP – select (marker changes from ">" to "*") and confirm set mode (marker changes from "*" to ">").

3 LOGIN-MENU-DIAGNOSTICS-SIMULATION

SIMULATION VAL. - entering simulated value of flow or linear velocity of flow (option to enter values "interchangeably" that is after entering V value the Q value is calculated automatically, while after entering Q value the V value is automatically calculated).

It consists of:

L1 – message *VALUE SIMULATION*.

L2 – *Back* menu item.

L3 – menu item *V=* and currently set value of simulated linear velocity of flow expressed in the given units (floating point number).

L4 – menu item *Q=* and currently set value of simulated flow expressed in the given units (floating point number) and indicator of entered digit in edit mode.

Buttons:

PL – move to menu item above the current item.

PS – move to menu item below the current item.

PP – select indicated menu item.

1	<p>LOGIN-MENU-DIAGNOSTICS-SIMULATION-SIMULATION VAL.</p> <p>BACK – return to previous menu level.</p>
2	<p>LOGIN-MENU-DIAGNOSTICS-SIMULATION-SIMULATION VAL.</p> <p>V= – entered value of simulated linear velocity of flow expressed in units of linear velocity (entered floating point number is limited to absolute value in the range 0.0001 – 999999 with option to set 0 value).</p> <p>Buttons:</p> <p>PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end (“Exit” message in L4) allows to exit the function without saving).</p> <p>PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end (“Set” message in L4) allows to save the entered value).</p> <p>PP – selecting (change of tag from „>” to „*”) and exiting from setting of value of simulated linear velocity of flow (change of “*” tag to “>”) and change of digit indicated by the tag (increasing).</p>
3	<p>LOGIN-MENU-DIAGNOSTICS-SIMULATION-SIMULATION VAL.</p> <p>Q = – entered value of simulated flow expressed in units of flow (entered floating point number is limited to absolute value in the range 0.0001 – 999999 with option to set 0 value).</p> <p>Buttons:</p> <p>PL – move the indicator of the digit which is currently being entered to the left (moving the indicator to the leftmost end (“Exit” message in L4) allows to exit the function without saving).</p> <p>PS – move the indicator of the digit which is currently being entered to the right (moving the indicator to the rightmost end (“Set” message in L4) allows to save the entered value).</p> <p>PP – select (marker changes from “>” to “*”) and exit from the function intended for setting of simulated flow (marker changes from “*” to “>”) and change the digit indicated by the marker (in ascending order).</p>
6	<p>LOGIN-MENU-DIAGNOSTICS</p> <p>INFO DATA1 – first screen that displaying diagnostics parameters of the device.</p> <p>It consist of:</p> <p>L1 – Back menu item and INFO 1 message.</p> <p>L2 – Ue1= parameter – floating point value of the parameter.</p> <p>L3 – Ue2= parameter – floating point value of the parameter.</p> <p>L4 – Ue3= parameter – floating point value of the parameter.</p> <p>Buttons:</p> <p>PP – exit from menu item.</p>

7 LOGIN-MENU-DIAGNOSTICS

INFO DATA2 – second screen that displaying diagnostics parameters of the device.

It consist of:

L1 – *Back* menu item and *INFO 2* message.

L2 – *Re1*= parameter – fixed-point value of the parameter.

L3 – *Re2*= parameter – fixed-point value of the parameter.

L4 – *Re3*= parameter – fixed-point value of the parameter.

Buttons:

PP – exit from menu item.

8 LOGIN-MENU-DIAGNOSTICS

INFO DATA3 – thirth screen that displaying diagnostics parameters of the device.

It consist of:

L1 – *Back* menu item and *INFO 3* message.

L2 – *Rcoil*= parameter – floating point value of the parameter.

L3 – *Fd*= parameter – fixed-point value of the parameter.

L4 – *F/*= parameter – fixed-point value of the parameter.

Buttons:

PP – exit from menu item.

9 LOGIN-MENU-DIAGNOSTICS

INFO DATA4 – fourth screen that displaying diagnostics parameters of the device.

It consist of:

L1 – *Back* menu item and *INFO 4* message

L2 – *Uem1*= parameter – floating point value of the parameter.

L3 – *Uem2*= parameter – floating point value of the parameter.

L4 – *Uem12*= parameter – floating point value of the parameter.

Buttons:

PP – exit from menu item.

10 **LOGIN-MENU-DIAGNOSTICS**

DIAGS VALUES – screen displaying diagnostics parameters of the device.

It consists of:

- L1 – parameter min_Q.
- L2 – parameter max_Q.
- L3 – parameter PO_maxT.
- L4 – parameter PO_minT.
- L5 – parameter PO_dirC.
- L6 – PomaxTP.
- L7 – PominTP.
- L8 – App_crc.

Buttons:

- PL – move up the screen of value.
- PS – move down the screen of value.
- PP – exit from screen menu – diagnostics.

4. ADDITIONAL INFORMATION

4.1. Additional information

The manufacturer reserves the right to introduce design and process changes in the device not decreasing its performance parameters.



User manual for the flowmeter can be found on the manufacturer's website www.aplisens.com.

4.2. Revision log

No. of revision	Document edition	Description of review
1	02.A.0/06.04.17	Changes connected with introduction of software version 2.5: <ul style="list-style-type: none"> - Addition of screen for dosage function on main screen level. - Addition of possibility to preview serial number of the device in the menu. Changes connected with introduction of software version 2.6.(xxxx): <ul style="list-style-type: none"> - Addition of zeroing option in calibration function. - Addition of C coefficient in calibration function (coefficient of non-linearity).
2	02.A.1/25.05.17	Editorial changes.
3	02.A.2/07.07.17	Modbus communication: change of address column in table for registers in 5000-5030.
4	04.A.004/24.10.2017	Changes connected with introduction of software version 2.7: <ul style="list-style-type: none"> - Addition of subfunction UNLOCK WR and DATA in MODBUS function. - Addition of DOSING function in CONFIG function.
5	04.A005/28.03.2018	Changes connected with introduction of software version 2.8: <ul style="list-style-type: none"> - Addition of INFO DATA 1,INFO DATA 2 and INFO DATA 3 function.
6	04.A.006/20.04.2018	Changes connected with introduction of software version 2.8.0825.
7	04.A.007/01.08.2018	Editorial changes.
8	04.A.008/01.07.2019	Editorial changes. <ul style="list-style-type: none"> - Addition of INFO DATA4. - Addition of Exact mode and Fast mode. - Addition of Method(A).
9	05.A.009/31.10.2019	Editorial changes.

<p>10</p>	<p>05.A.010/01.12.2022</p>	<p>Editorial changes. Changes connected with introduction of software version 3.0.1009:</p> <ul style="list-style-type: none"> - Addition of possible state PO_SAT in screen M1 in line L3. - Addition of PRECISION function (login – menu – display). - Changing output operation mode from PWM to frequency. - Addition CHECK BACKUP, RESTORE, MAKE BACKUP functions (login – menu – configuration – calibration – sensor – device coef.). - Addition CORRECTION COEF. function (login – menu – configuration – calibration – sensor). - Addition DIAGS VALUES function (login – menu – diagnostics).
<p>11</p>	<p>05.A.011/31.07.2023</p>	<p>Editorial changes. Changes connected with introduction of software version 3.0.1015: Addition of PREFILTER function (login-menu-configuration-filtering).</p>

