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Applicable standards: LST EN ISO 4064-1:2017, LST EN ISO 4064-2:2017, LST EN ISO 4064-4:2014, LST EN ISO 4064-5:2017.

Additionally documents applied:

OIML R 49-1:2013, OIML R 49-2:2013.

WELMEC 7.2 – Software guide (Issue 6).

The measuring instrument must correspond with the following specifications:

1 Design of the instrument

1.1 Construction

Electronic single-jet dry type water meter QALCOMATIC C (temperature class T30) and QALCOMATIC H (temperature class T30/90), consisting of the brass body with the measuring chamber and rotating impeller and calculator with integrated LCD indicator. Indicating device is permanently connected to the meter body with protective cap.

The meter is powered by 3,6 V non-replaceable internal battery.



a) Water meter QALCOMATIC C



b) Water meter QALCOMATIC H

Fig. 1. Water meter QALCOMATIC C and QALCOMATIC H



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Type number combination of the water meter

QALCOMATIC		□ -	□*□*	□*	□*	□*	□*	□*
Type and temperature class:								
Temperature class T30		QALCOMATIC C						
Temperature class T30/90		QALCOMATIC H						
The communication interface:		none	0					
		Radio (RF) 868 MHz	1					
		M-Bus	2					
Overall length and end connections:		80 mm, G ¾ B	1					
		110 mm, G ¾ B	2					
		130 mm, G 1 B	3					
Permanent flowrate Q_3 :		1,6 m³/h	1					
		2,5 m³/h	2					
		4,0 m³/h	3					
The ratio Q_3/Q_1 (R), horizontal mounting:		R50-H	2					
		R63-H	3					
		R80-H	4					
		R100-H	5					
		R125-H	6					
		R160-H	7					
		R200-H	8					
The ratio Q_3/Q_1 (R), vertical mounting:		R50-V	2					
		R63-V	3					
		R80-V	4					
		R100-V	5					
Mounting set:								
With mounting set								1
Without mounting set		(or omitted)						0

Remark:* - marked code number are used only for order coding (no used for type marking).

1.2 Measurand sensor

Single-jet water flow sensor consists of the measuring chamber with impeller rotating inside. Water flows through the meter and rotates impeller which rotational frequency is proportional to volume of water passing through the meter.

1.3 Measurand processing

Water flow passing through the meter rotates impeller with asymmetric metallic plate, which rotational periodicity changes the decrement of the measuring coils. The electronic block measures this decrement, counts the rev of the impeller and calculates the volume of water passing through the meter. This volume is displayed on the LCD indicator. The function diagram of the electronic block is presented in Fig. 2.

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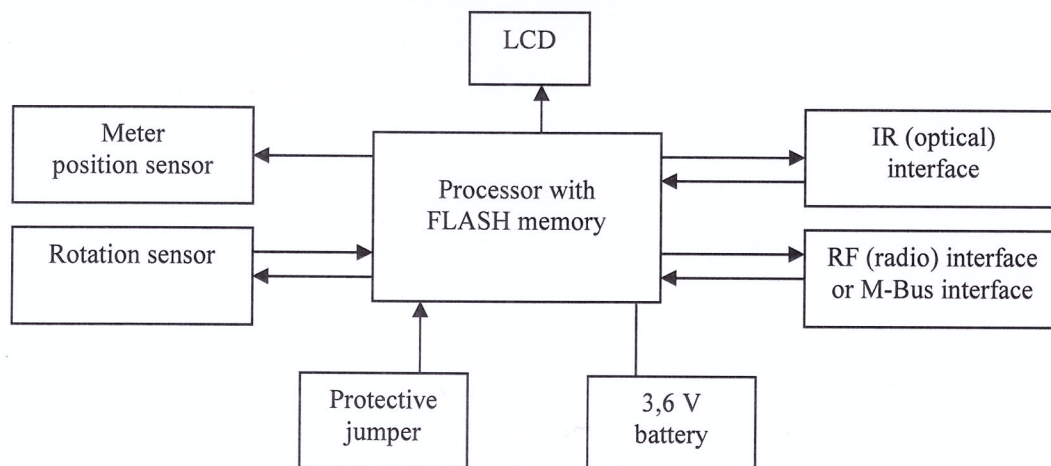


Fig.2. Function diagram of the electronic block

1.4 Indication of the measurement results

Measured volume of water is indicated on the 8-line LCD indicator, in cubic meters.

Indication in operating mode : m³, with three decimal places.

Indication in TEST mode : ml.

1.5 Optional equipment and functions subject to MID requirements

None.

1.6 Technical documentation

Water meters QALCOMATIC C, QALCOMATIC H. Technical description, user manual PLFCH1V02, 21-11-2017.

Service software **EVsconfig** for the water meters QALCOMATIC FLOW C and QALCOMATIC FLOW H. User manual SIMFV01, 21-06-2016.

Other reference documents on which basis this certificate is issued, are stored in a file LEI-12-MP-063.17.

1.7 Integrated equipment and functions not subject to MID

Optical interface according to the requirements of LST EN 62056-21, integrated in the meter, is intended for data reading, meter parameters setting and TEST mode control.

The meter can be equipped with one of the following communication modules for remote data reading:

- 868 MHz (RF) radio module;
- wired M-Bus module.

2 Technical data

2.1 Rated operating conditions

2.1.1 Measurand

The volume of water passing through the meter.

2.1.2 Measurement range

Measurement range of the water meter and basic technical characteristics are presented in table 1 and table 2.



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Table 1. Technical data of the water meter with end connections G ¾ B

Permanent flowrate Q_3 , m³/h	1,6					2,5				
Ratio Q_3/Q_1 (R)	125	100	80	63	50	200	160	125	100	80
Minimum flowrate Q_1 , m³/h	0,0128	0,016	0,020	0,025	0,032	0,0125	0,015	0,020	0,025	0,031
Transitional flowrate Q_2 , m³/h	0,020	0,025	0,032	0,040	0,051	0,020	0,025	0,032	0,040	0,050
Overload flowrate Q_4 , m³/h	2,0	2,0	2,0	2,0	2,0	3,125	3,125	3,125	3,125	3,125
Mounting position	H	H	H, V	H, V	H, V	H	H	H	H, V	H, V
Pressure class (max.admiss. working pressure, bar)	MAP 16 (16)									
Pressure-loss class (pressure loss by Q_3 , bar)	ΔP 25 (0,25)					ΔP 63 (0,63)				
Overall length L , mm	110 or 80									
Meter height H , mm	69									
End connections	G $\frac{3}{4}$ B									

Table 2. Technical data of the water meter with end connections G 1 B

Permanent flowrate Q_3 , m³/h	2,5					4,0				
Ratio Q_3/Q_1 (R)	125	100	80	63	50	200	160	125	100	80
Minimum flowrate Q_1 , m³/h	0,020	0,025	0,031	0,040	0,050	0,020	0,025	0,032	0,040	0,050
Transitional flowrate Q_2 , m³/h	0,032	0,040	0,050	0,063	0,080	0,032	0,040	0,051	0,064	0,080
Overload flowrate Q_4 , m³/h	3,125	3,125	3,125	3,125	3,125	5,0	5,0	5,0	5,0	5,0
Mounting position	H	H	H, V	H,V	H,V	H	H	H	H, V	H,V
Pressure class (max.admiss. working pressure, bar)	MAP 16 (16)									
Pressure-loss class (pressure loss by Q_3 , bar)	ΔP 25 (0,25)					ΔP 63 (0,63)				
Overall length L , mm	130									
Meter height H , mm	70									
End connections	G 1 B									

Working temperature range of the meter:

for meters QALCOMATIC C: between 0,1 °C and 30 °C (temperature class T30);
for meters QALCOMATIC H: between 30 °C and 90 °C (temperature class T30/T90).

2.1.3 Maximum permissible error

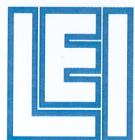
The maximum permissible error of the meter is presented in table 3

Table 3. Maximum permissible error

Modification of the meter (temperature class)	Maximum permissible error
QALCOMATIC C (T30)	± 5 % in flow range $Q_1 \leq Q < Q_2$ ± 2 % in flow range $Q_2 \leq Q \leq Q_4$
QALCOMATIC H (T30/90)	± 5 % in flow range $Q_1 \leq Q < Q_2$ ± 3 % in flow range $Q_2 \leq Q \leq Q_4$

2.1.4 Environmental conditions/ Influence quantities

Climatic and mechanical environment : class B according to LST EN ISO 4064-1;
Ambient temperature : 5 °C to 55 °C;
Humidity : non-condensing;
Installations : indoor;
Mechanical environment : class M1;
Electromagnetic environment : class E1.



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2.2 Other operating conditions

2.2.1 Mounting position of the meter

Water meter can be mounted either horizontally (indicating device positioned at the top or at the side) or vertically.

Remark: the ratio of the flow rates Q_3/Q_1 for the meter rotated about horizontal axis is the same as for vertically mounted meter.

3 Interfaces and compatibility conditions

Communication interfaces are presented in section 1.7 of this appendix.

4 Requirements on production, putting into use and utilization

4.1 Requirements on production

At the end of the manufacturing and adjustment process the water meters shall be tested according to the requirements of the LST EN 4064-2, section 10.1. Errors of water meters shall not exceed the maximum permissible errors described in Annex III (MI-001) of the Directive 2014/32/EU.

The meters shall be tested at the following flow rates:

between Q_1 and $1,1Q_1$;
between Q_2 and $1,1Q_2$;
between $0,9Q_3$ and Q_3 .

For meters class T30 (QALCOMATIC C): water temperature of tests $20\text{ °C} \pm 10\text{ °C}$.

For meters class T30/90 (QALCOMATIC H): water temperature of tests $50\text{ °C} \pm 10\text{ °C}$.

4.2 Requirements on putting into use

The water meters must be installed in accordance with the requirements of technical description listed in section 1.6.

The straight pipelines installation in upstream and downstream is not necessary (flow profile sensitivity class U0 D0).

4.3 Requirements for consistent utilization

No special requirements identified.

5 Control of the measuring process after tasks of the instrument in use

5.1 Documentation of the procedure

Service software **EVsconfig** for the water meters QALCOMATIC FLOW C and QALCOMATIC FLOW H. User manual SIMFV01, 21-06-2016.

5.2 Special equipment of hardware or software

- optical reading head;
- service software **EVsconfig**.

5.3 Identification of hardware and software

Identification of hardware: see Fig. 1 of this appendix.

Identification of software: version number of the software is **1.01**. This number is shown on the meter label (marked SW:1.01).

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5.4 Calibration-adjustment procedure

Water meter errors determination test shall be carried out, when the TEST mode is activated. The TEST mode is activated using a personal computer with an installed meter service software **EVScnfig** and special optical head, connected to the RS232 interface of the computer (user manual of the service **EVScnfig** software should be used).

The errors determination test shall be carried out using hydrodynamic test bench within each of the flow rate ranges appointed in section 4.1 of this appendix. The output of the optical interface of the meter and optical head are used for the volume pulse reading (see connection diagram Fig. 3). The volume pulse value in TEST mode – 0,002 l/pulse. After the test the **EVScnfig** software is used to get out from the TEST mode. If the TEST mode is not turn off, after 12 hours meter automatically switches to the operating mode.

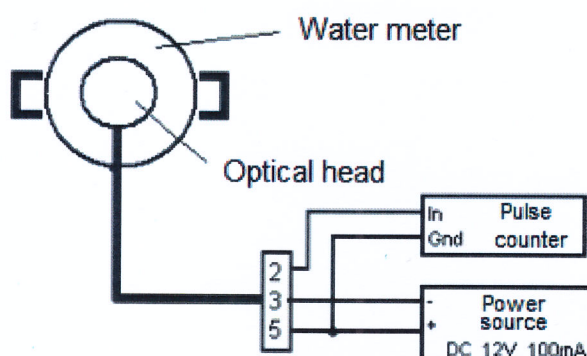


Fig. 3. Connection diagram for the test of the water meter

6 Security measures

6.1 Sealing

Indicating device is permanently connected to the meter body with protective cap which can't be removed without breaking.

6.2 Data logger

Total volume of the consumed water, monthly and yearly values of the consumed water are stored in a non-volatile meter memory.

7 Marking and inscriptions

7.1 Information to be borne by and to accompany the measuring instrument

The following information shall appear on the label of the water meter calculator:

- EU-type examination certificate number (LT-1621-MI001-024 rev. 2);
- name of the manufacturer or this trade mark;
- type designation;
- year of manufacture and serial number;
- unit of measurement: m³;
- permanent flowrate Q_3 ;
- the ratio Q_3/Q_1 , preceded by „R“;
- mounting position H or V, which is marked to this corresponding ratio Q_3/Q_1 ;
- temperature class, where it differs from T30;
- the maximum admissible working pressure (MAP);



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- pressure loss class, where it differs from ΔP 63;
- volume pulse output value via optical interface;
- the latest date that the meter is to be replaced;
- version number of the meter software.

Arrow to indicate the direction of the flow appears on water meter body.

7.2. Conformity marking

In addition, inscriptions on label of the water meter calculator should contain the following marking:

- "CE" marking;
- metrology marking, consisting of the capital letter "M" and the last two digits of the year of its affixing, surrounded by a rectangle;
- identification number of the notified body, which carried out the conformity assessment.

8 List of the drawings attached to the certificate

Drawings are not added.

9 Certificate history

Issue	Date and reference No.	Description
LT-1621-MI001-024	29-07-2016, No. LEI-12-MP-036.15	Type examination certificate first issued
LT-1621-MI001-024 Revision 1	23-02-2017, No. LEI-12-MP-056.17	1. Manufacturer's trade mark QALCO in the meter label is changed into the manufacturer's name AB AXIS INDUSTRIES. 2. Document PLMATICF01, issued 06-11-2015, is replaced by document PLMATICF02, issued 13-02-2017.
LT-1621-MI001-024 Revision 2	30-11-2017, No. LEI-12-MP-063.17	1. Type designation QALCOMATIC FLOW C, QALCOMATIC FLOW H is changed into QALCOMATIC C, QALCOMATIC H. 2. Water meter manufacturer's name from AB „Axis Industries“ is changed into UAB „Axioma LEZ“. 3. Manufacturer's trade mark AB AXIS INDUSTRIES in the meter label is changed into AXIOMA. 4. Document PLMATICF02, issued 13-02-2017, is replaced by document PLFCH1V02, issued 21-11-2017.