

Standards and documents applied:

LST EN ISO 4064-1:2025;
LST EN ISO 4064-2:2025;
LST EN ISO 4064-4:2025;
LST EN ISO 4064-5:2025;
OIML R 49-1:2024;
OIML R 49-2:2024;
WELMEC 7.2:2025.

The measuring instrument must correspond with the following specifications:

1 Design of the instrument

1.1 Construction

Ultrasonic complete water meter QALCOSONIC W2 consists of a measurement transducer with a primary flow sensor, an electronic calculator and a smart shut-off valve.

The meter body, which can be made of plastic or brass, contains plastic measuring section inserts with two ultrasonic transducers. The meter's electronic calculator, liquid crystal indicating device and smart valve electric motor are installed in the same body (in the case of a plastic body) or in a separate chamber (in the case of a brass body). A filter strainer can be installed in the meter inlet. A smart shut-off valve is installed in the meter outlet.

The meter, depending on the modification, is designed to measure forward flow or forward and reverse flow. The volume passed during reverse flow is registered in a separate register and additionally can be subtracted from the volume of the forward flow.

The meter is powered by a non-replaceable 3,6 V DC lithium battery (one or two).



a) Meter with plastic body

b) Meter with brass body

Fig.1. Water meter QALCOSONIC W2

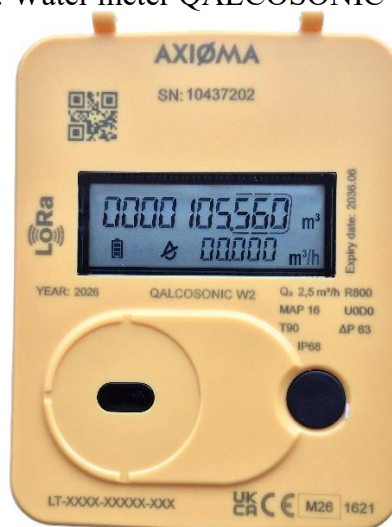


Fig.2. Meter label

1.2 Sensor

Ultrasonic flow sensor.

1.3 Measurement value processing

The flow measurement principle is based on the measurement of ultrasonic signal propagation time on the downstream and upstream of water flow. The difference between the measuring times is proportional to the water flow through the meter, which is calculated by the meter calculator.

1.4 Indication of the measurement results

Measured volume of water is indicated on the two-line LCD indicating device.

Upper line: 10 digits, intended for volume of water, passing through the meter.

Indications in operating mode: m^3 , three digits after decimal point.

Indications in TEST mode : m^3 , six digits after decimal point.

Lower line: for displaying current flow (5 columns) in m^3/h and information symbols.

1.5 Optional equipment and functions subject to MID requirements

None.

1.6 Technical documentation

Ultrasonic water meter QALCASONIC W2. Technical description, installation manual and user guide: QW2_V01.1_EN, 05-05-2026.

Other reference documents on which the basis of this certificate is issued are stored in file No. LEI-12-MP-005.26.

1.7 Integrated equipment and functions not subject to MID

The ultrasonic water meter is equipped with an integrated electromotor-operated shut-off ball valve that can be remotely controlled by commands received from the utility management system or server. Depending on the command received, the valve can be moved to the open, closed, or, where applicable, partially open position.

The integrated valve allows the water utility to manage and control the water supply without requiring physical access to the installation site.

Checking the valve's opening position (fully open, partially open, fully closed), performing its diagnostics and controlling the valve can be done locally via NFC or optical interface, as well as remotely via LoRa WAN or NB-IoT network.

NFC (near-field communication) interface is integrated in the meter, intended for data reading. The optical interface according to requirements of EN 62056-21 is integrated in the meter, intended for data reading via M-Bus protocol, for meter parameters setting and for optical pulses output.

The meter is equipped with one of the following wireless communication interfaces:

- RF 868 MHz;
- RF 433 MHz;
- RF 915 MHz;
- NB-IoT, frequency bands B1, B3, B5, B8, B20, B28;

Data via RF communication interfaces may be transmitted using the following protocols:

- wM-Bus-T1;

- wM-Bus-T2;
- LoRa WAN;
- CoAP.

There is a special button on the top of the meter that is designed to immediately initiate data reading on demand.

Technical data

2.1 Rated operating conditions

2.1.1 Measurand

The volume of water passing through the meter, indicated on the LCD indicator.

2.1.2 Measurement range

The measurement range of the water meter QALCOSONIC W2 and other technical characteristics are presented in table 1:

Table 1

Q_3	Flowrate, m ³ /h			The ratio $R, Q_3/Q_1$	End connections/ Body material	Overall length L , mm	Pressure loss class: without filter/ with filter strainer
	Q_4	Q_1	Q_2				
1,6	2,0	0,0200	0,0320	80	G 3/4 Plastic or brass body	110; 165	For forward and reverse flow: Δp 40 / Δp 40
		0,0100	0,0160	160			
		0,0064	0,0102	250			
		0,0051	0,0081	315			
		0,0040	0,0064	400			
2,5	3,125	0,0313	0,0500	80	G 3/4 Plastic or brass body	110; 165	For forward and reverse flow: Δp 63 / Δp 63
		0,0156	0,0250	160			
		0,0100	0,0160	250			
		0,0063	0,0100	400			
		0,0050	0,0080	500			
2,5	3,125	0,0031	0,0050	800	G 1 Plastic or brass body	130 ¹ ; 165 ² ; 190 ³	For forward and reverse flow: Δp 25 / Δp 25
		0,0313	0,0500	80			
		0,0156	0,0250	160			
		0,0100	0,0160	250			
		0,0063	0,0100	400			
4,0	5,0	0,0500	0,0800	80	G 1 Plastic or brass body	130 ¹ ; 165 ² ; 190 ³	For forward and reverse flow: Δp 40 / Δp 40
		0,0250	0,0400	160			
		0,0160	0,0256	250			
		0,0100	0,0160	400			
		0,0080	0,0128	500			
		0,0050	0,0080	800			

Notes:

¹ – meter 130 mm is produced only with brass body.

² – meter 165 mm is produced only with plastic body.

³ – meter 190 mm is produced with plastic, or with brass body.

2.1.3 Meter temperature classes and maximum permissible errors

Meter temperature classes and maximum permissible errors are presented in table 2:

Table 2

Meter temperature class	Water temperature ranges	Maximum permissible errors
T30	between 0,1 °C and 30 °C	$\pm 5 \%$ in flow range $Q_1 \leq Q < Q_2$ $\pm 2 \%$ in flow range $Q_2 \leq Q \leq Q_4$ (for water temperature between 0,1 °C and 30 °C)
T50	between 0,1 °C and 50 °C	
T90	between 0,1 °C and 90 °C	
T30/90	between 30 °C and 90 °C	$\pm 5 \%$ in flow range $Q_1 \leq Q < Q_2$ $\pm 3 \%$ in flow range $Q_2 \leq Q \leq Q_4$

2.1.4 Environmental conditions / Influence quantities

Ambient working temperature	:	-15 °C to 70 °C;
Humidity level	:	condensing;
Installations	:	indoor or outdoor;
Electromagnetic environment	:	class E2;
Mechanical environment	:	class M1;
Degree of protection	:	IP65 or IP68.

2.2 Other operating conditions

2.2.1 Maximum admissible working pressure

The maximum admissible working pressure of a water meter is 1,6 MPa (MAP 16).

2.2.2 Mounting position of the water meter

Water meter can be mounted either horizontally, vertically or inclined.

3 Interfaces and compatibility conditions

The communication interfaces of the meter are described in section 1.7 of this appendix.

4 Requirements on production, putting into use and utilization

4.1 Requirements for production

At the end of the manufacturing and adjustment process the water meters shall be tested according to the requirements of the EN ISO 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 within each of the following flowrates:

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 and T50: water temperature of tests $20 \text{ °C} \pm 10 \text{ °C}$.

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

For meters class T90: water temperature of tests $20 \text{ °C} \pm 10 \text{ °C}$ and $50 \text{ °C} \pm 10 \text{ °C}$.

4.2 Requirements for putting into use

The water meter QALCOSONIC W2 must be installed in accordance with the requirements of technical description specified in section 1.6.

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

4.3 Requirements for consistent utilization

No special requirements identified.

5 Checking of instruments which are in operation

5.1 Documented procedure

None.

5.2 Special equipment or software

- optical reading head according to standard LST EN 62056-21, with special holder;
- service software **Meter Configurator**, **W2 CRC Reader**.

5.3 Identification of hardware and software

5.3.1 Identification of hardware

- see Fig.1– Fig. 3 of this appendix.

5.3.2 Identification of software

The software version and CRC checksum, depending on the meter configuration, may be periodically displayed on the meter's LCD indicating device. If the software version and CRC checksum are not displayed on the meter display, the **W2 CRC Reader** software and optical head are used to read these values. The meter software versions and their corresponding CRC checksums are given in Table 3.

Table 3

Software version	CRC*	Description	Note
5.1.0-11+se	6789C232	LoRa	Software update option (WELMEC 7.2, Extension D)
5.1.0-11+sf	7037191A	NB-IoT	

5.4 Calibration/adjustment procedure

Using an optical head and a computer with Windows based software – **Meter Configurator** platform, the meter verification mode (TEST) is activated. Optical head should be connected to the computer USB interface. A computer must be connected to the Internet to use the platform.

With the help of a special holder, after placing the optical head on the meter and opening the login window of the application, enter the username and password provided by the Axioma Metering's technical support. Clicking the „**Login**“ button opens the „**Pick a product**“ window, where „**QW1**“ is selected. When the „**Optical Communication Settings (QW1)**“ window opens, in the „**Serial Port**“ field, enter the number of the computer port to which the optical head is connected (if the connection does not occur automatically). Click the „**Confirm**“ button and the „**Meter Information (QW1)**“ window opens. After clicking the „**Enable Test Mode**“ button, the meter enters the TEST mode, in which the resolution of the meter volume readings is 1 ml.

The meter volume readings are read directly on the LCD or using the meter's optical interface output. The volume pulse value in TEST mode is presented in table 4.

Table 4

Permanent flowrate Q_3 of the meter, m ³ /h	Volume pulse value in verification mode (TEST), litre/pulse
1,6	0,001
2,5	0,002
4	0,004

The meter is put into operating mode by pressing the „**Disable Test Mode**“ button in the „**Meter Information (QW1)**“ window.

The meter returns to its operating mode itself, 24 hours after activation of the TEST mode.

The TEST mode in the meter can also be enabled/disabled using an Android smartphone with the **Meter Configurator** platform installed. The platform can be downloaded from the Google Play Store. In this case, the optical head is not needed, communication is ensured through the NFC interface.

6 Security measures

6.1 Sealing

The meter casing is imperceptibly closed. Any unauthorized opening of the housing is impossible without damaging. When the top cover of the body is opened, the safety button that is installed in the meter body is activated and the error code appears on the meter display, with the first digit „4“.

Holes in the meter body are provided for sealing after installation (Fig. 3 a and b).

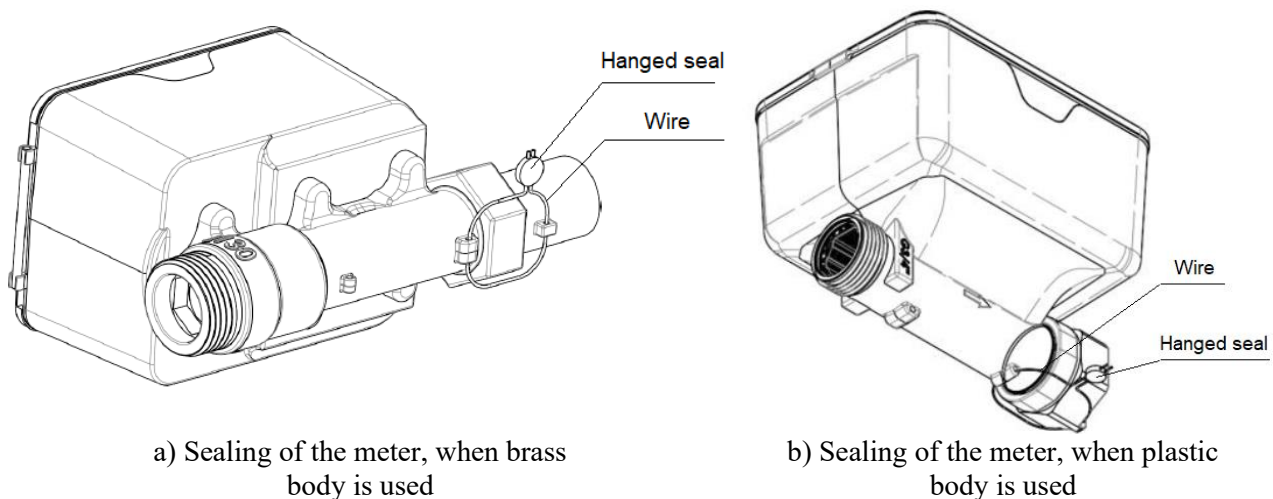


Fig. 3. Sealing of the water meter QALCOSONIC W2 after installation

7 Marking and inscriptions

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

The water meter housing cover contains the following information:

- EU-type examination certificate number;
- trademark of the manufacturer;
- distributor's logo (if applicable);
- type designation of the meter;

- year of manufacture and serial number;
- unit of measurement: m³ (on LCD display);
- permanent flowrate Q_3 ;
- the ratio Q_3/Q_1 , preceded by „R“;
- the temperature class;
- the maximum admissible working pressure (MAP);
- pressure loss class;
- the installation sensitivity class of the meter;
- the latest date by which the meter shall be replaced;
- IP code;
- QR code or barcode;
- communication interface NB-IoT (optional, if installed in the meter).
- LoRa (optional, when using the LoRa WAN data transfer protocol);
- UKCA mark (optional).

Arrow to indicate the direction of the flow shall appear on flow sensor body.

7.2 Conformity marking

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

- „CE” marking;
- supplementary metrology marking, consisting of the capital letter „M” and the last two digits of the year of its affixing, surrounded by a rectangle;
- the number of the notified body that 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-MI001-050	31-07-2026, No. LEI-12-MP-005.26	Type examination certificate first issued.