



OIML Member State  
SLOVAKIA

OIML Certificate No.  
R49/2013-A-SK1-2021.01

**OIML CERTIFICATE ISSUED UNDER SCHEME A**

**OIML Issuing Authority**

Name: **Slovak Legal Metrology (SLM)**  
Address: Hviezdoslavova 1124/31, 974 01 Banská Bystrica, Slovakia  
Person responsible: Jaromír Markovič, Director General

**Applicant**

Name: **Qingdao iESLab Electronic Co., Ltd.**  
Address: No.116, Lingong Road  
Economic & Technological Development Zone  
Linyi City, Shandong Province, China

**Manufacturer**

Name: **Qingdao iESLab Electronic Co., Ltd.**  
Address: No.116, Lingong Road  
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Linyi City, Shandong Province, China

**Identification of the certified type** (*the detailed characteristics are defined in the additional pages*)

Water meter type iES-UW400

**Designation of the module** (*if applicable*)

Ultrasonic water meter intended for the metering of cold potable water

This OIML Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML type evaluation report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

OIML R 49, Edition (year): 2013  
For accuracy class (if applicable): 2



This OIML Certificate relates only to metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML Recommendation identified above.

This OIML Certificate does not bestow any form of legal international approval.

The conformity was established by the results of tests and examinations provided in the associated OIML type evaluation report:

No. 2021/ER017/SK1 dated 11 January 2021 that includes 16 pages.

The technical documentation relating to the identified type is contained in documentation file name: „Technical documentation file iESLab\_iES-UW400\_00“ dated 11<sup>th</sup> January 2021 that includes 103 pages.

**OIML Certificate History**

Revision No.	Date	Description of the modification
0	11 <sup>th</sup> January 2021	Certificate first issued
-	-	-

Identification, signature and stamp

The OIML Issuing Authority



Jaromír Markovič

Date: 11<sup>th</sup> January 2021

*Important note:* Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated OIML type evaluation report(s) is not permitted, although either may be reproduced in full.

## 1. Designation

The ultrasonic water meter type iES-UW400 is designed to measure, memorise and display the volume of water passing through the measurement transducer at metering conditions. The water meter is intended for the measurement of volume of clean water in residential use and is intended for non-resettable measurements between two constant partners.

The water meter type iES-UW400 is compact ultrasonic water meter with electronic indication device. The measurement is based on ultrasonic bidirectional transit-time principle. The water meter type iES-UW400 can be installed to operate in horizontal or vertical position and is not designed to measure the reverse flow.

## 2. Description

### 2.1 Parts of the water meter type iES-UW400

Essential parts of the water meter:

- Flow sensor:
  - the cylindrical brass body with inlet and outlet threaded connections;
  - the inner plastic element with two mirrors (sound path) placed in the cylindrical brass body;
  - two ultrasonic sensors placed on the upside of the cylindrical brass body;
  - the flow straightener placed directly in the cylindrical brass body on the inlet side.
- Calculator and indication device:
  - the plastic housing of the calculator with indication device directly mounted on the flow sensor;
  - the PCB boards - user PCB, module PCB and temperature detection module PCB;
  - the electronic LCD display and a finger optical infrared sensor for the scrolling of the LCD menu placed on the user PCB;
  - the electronic LCD display with 8 digits and indication range of 99999.999 m<sup>3</sup>. The sub-multiples of a cubic meter are indicated on the LCD display by the comma and on the plastic cover by the comma and three dash lines directly placed below the LCD display. When the maximum indication range of the volume totalization is reached, the indication range will continue measuring starting from zero cubic meter;
  - non-replaceable lithium battery. The end of battery life indicator is activated based on pre-calculated power consumption.

Non-essential parts of the water meter type iES-UW400:

- none

### 2.2 Metrological functions

- measuring, memorizing and displaying the volume of water passing through the water meter.

### 2.3 Operation and presentation of legal data

- a) the total measured volume (m<sup>3</sup>) is presented by means of the electronic LCD display;
- b) the following displays are available by means of short overlaps of the optical infrared sensor by the finger:
  - total measured volume (m<sup>3</sup>);
  - flow rate (m<sup>3</sup>/h);
  - software version number.

The total measured volume displays automatically after one minute, if there is no activity.



- c) the following automatic scrolling of displays (one sequence) is available by means of long overlap of the optical infrared sensor by the finger:
- display test (an “eights” test);
  - display test (a “blanks” test);
  - test mode (higher resolution).

In the test mode, the short overlap of the optical infrared sensor by the finger allows to change the display between the volume (L) and the flow (m<sup>3</sup>/h).

In the test mode, the total measured volume displays automatically after two hours, if there is no activity or by means of long overlap of the optical sensor by the finger.

## 2.4 Software specification

Table 1: Software version and checksum of legally relevant software

Software versions	Checksum	Remarks
SW2.01	0x006F2681	-

The software version is indicated on the electronic LCD display (see section 2.3 b) in the form „1- b 2.01“. The software version is indicated also on the data plate in the form SW2. 01. The checksum is indicated on the data plate in the form 6F2681.

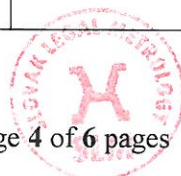
## 2.5 Accountable alarms

During the measuring process the calculator and indication device detects automatically if a fault condition occurs and eventually stops the measurement reporting an alarm indication on the display. See user manual issued by the manufacturer.

## 3. Technical and metrological data

Table 2: Technical and metrological data of the water meter type iES-UW400

Characteristics	Unit	<i>iES-UW400</i>		
Nominal diameter DN	mm	15	20	25
Permanent flowrate $Q_3$	m <sup>3</sup> /h	2,5	4,0	6,3
Minimum flowrate $Q_1$	m <sup>3</sup> /h	0,00625	0,01	0,01575
Transitional flowrate $Q_2$	m <sup>3</sup> /h	0,01	0,016	0,0252
Overload flowrate $Q_4$	m <sup>3</sup> /h	3,125	5,0	7,875
Ratio $Q_3/Q_1$	R	400		
Ratio $Q_2/Q_1$	-	1,6		
Connection thread	inch	G $\frac{3}{4}$ B	G1B	G1-1/4 B
Construction length $L$	mm	165	195	225
Installation orientation	-	horizontal, vertical		
Water temperature range (temperature class)	°C	0,1 to 50 (T50)		
Maximum admissible pressure MAP	bar	16		
Pressure loss class $\Delta p$	bar	0,63		
Maximum permissible error in upper flowrates range $Q_2 \leq Q \leq Q_4$	%	± 2 (at $\theta \leq 30^\circ\text{C}$ ) ± 3 (at $\theta > 30^\circ\text{C}$ )		
Maximum permissible error in lower flowrates range $Q_1 \leq Q < Q_2$	%	± 5		
Indication range	m <sup>3</sup>	99999,999		



Characteristics	Unit	<i>iES-UW400</i>
Verification scale interval (resolution of the indicating device)	L	0,001
Accuracy class	-	2
Electromagnetic environmental class	-	E1
Environmental classification	-	B/O
Flow profile sensitivity class	-	U10 D5
Battery	-	li-battery 3,6 V, life time 12 years

#### 4. Marking and inscriptions

The following data shall be marked on the water meter:

- a) name or trademark of the manufacturer;
- b) type name of the water meter;
- c) unit of measurement  $m^3$ ;
- d) year of manufacture, the last two digits of the year of manufacture, or the month and year of manufacture;
- e) serial number (as near as possible to the indicating device);
- f) direction of flow, by means of an arrow (shown on both sides of the body or on one side only provided the direction of flow arrow is easily visible under all circumstances);
- g) flowrate  $Q_3$  and ratio  $Q_3/Q_1$  indicated as (R) followed by the ratio value;
- h) maximum admissible pressure (MAP);
- i) operated position (V, H)
- j) temperature class;
- k) pressure loss class;
- l) the latest date by which the meter shall be replaced;
- m) environmental classification;
- n) installation sensitivity class;
- o) electromagnetic environmental class;
- p) type approval sign according to national regulations.

#### 5. Security measures

The water meter type iES-UW400 (DN 15 and DN 20) shall be protected against unauthorised manipulation and opening as follows:

- the connection of the plastic top cover of the calculator with his bottom part as well as the connection between calculator and flow sensor is sealed by the epoxy (the bottom side of the calculator is completely filled by the epoxide). The plastic top cover of the calculator cannot be removed without his destruction;
- the connection between the flow sensor and calculator cover is sealed by the wire with a plastic or lead seal;
- the detachable screw placed on the bottom of the flow sensor is sealed by the waterproof sticker seal;

The water meter type iES-UW400 (DN 25) shall be protected against unauthorised manipulation and opening as follows:

- by the wire with a seal securing the connection between the upper and lower part of plastic housing of the calculator.

6. Figures



DN 15



DN 25

Figure 1: Illustrative views of the water meter type iES-UW400

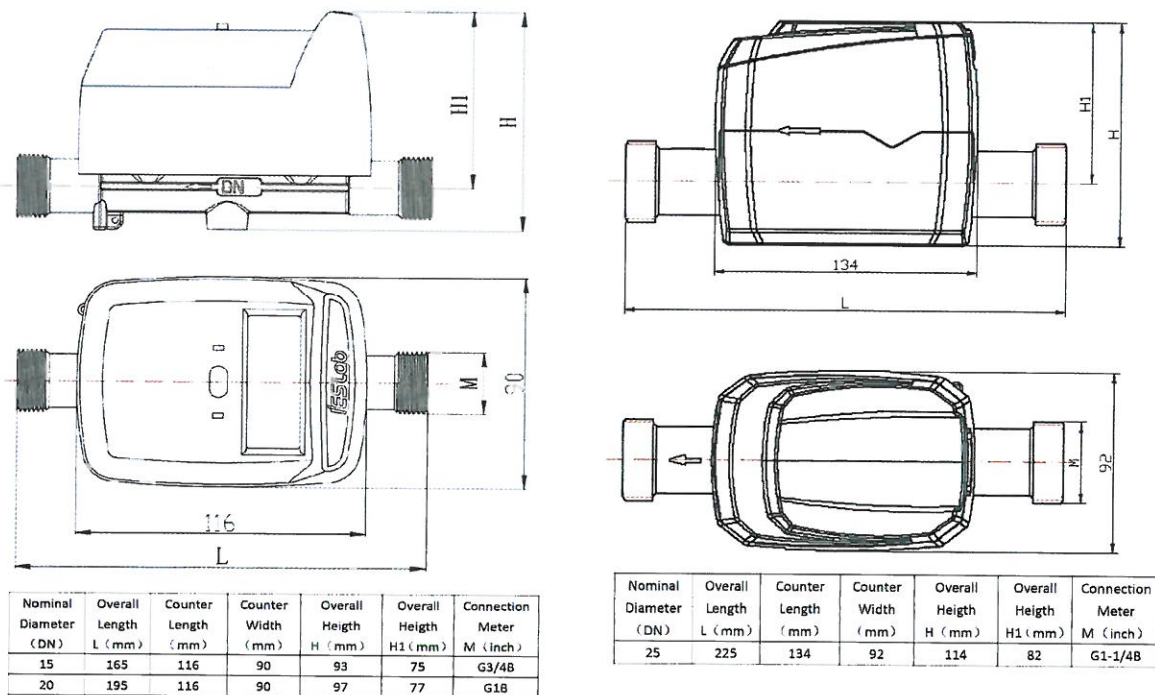


Figure 2: Basic dimensions of the water meter iES-UW400