



OIML Member State
SLOVAKIA

OIML Certificate No.
R49/2013-A-SK1-2023.05

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: **Slovak Legal Metrology (SLM)**
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Person responsible: Dušan Šmigura, Director of PCB

Applicant

Name: **Elite Experts Industry Company**
Address: Al Kharj Industrial City
Building Number 4163
Saudi Arabia

Manufacturer

Name: **Elite Experts Industry Company**
Address: Al Kharj Industrial City
Building Number 4163
Saudi Arabia

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

Water meter type **EEICO-UWM2201**

Designation of the module (*if applicable*)

Ultrasonic water meters with electronic indication device

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): 1 and 2



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R49/2013-A-SK1-2023.05**

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 Test report No: 2023/CV014/312.15 dated 22nd September 2023 that includes 105 pages
OIML Type Evaluation Report No. 2023/ER014/SK1 dated 25th September 2023 that includes 17 pages.

The technical documentation relating to the identified type is contained in documentation file name:
„Technical documentation file EEICo_EEICO-UWM2201_00“ dated 25th September 2023 that includes a sum of documents 97 pages.

OIML Certificate History

Revision No.	Date	Description of the modification
0	4 th October 2023	Certificate first issued
-	-	-

Identification, signature and stamp

The OIML Issuing Authority



Dušan Šmigura

Date: 4th October 2023

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 **EEICO-UWM2201** is designed to measuring, storing and displaying the volume of water passing through the measurement transducers at metering conditions. The water meter is intended for the measurement of volume of clean water in residential use.

The water meters EEICO-UWM2201 is residential compact ultrasonic water meter with electronic indication device. The measurement is based on ultrasonic bidirectional transit-time principle. The flow is measured by the difference in time-of-flight of ultrasonic pulses with flow (downstream) and opposite to flow (upstream).

The water meter EEICO-UWM2201 can be installed to operate in horizontal and vertical positions. The water meter is not designed to measure the reverse flow but have a reverse flow warning.

2. Description

2.1 Parts of the water meter EEICO-UWM2201

Essential parts:

Flow sensor:

- the brass body with inlet and outlet firmly connected with the plastic housing for the calculator;
- the inner plastic elements (pipe support-down and pipe support-up) placed in the brass body;
- two mirrors installed in the centre of the pipe;
- two ultrasonic transducers at the upstream and downstream of the measurement channel (pipe section) to transmit and receive ultrasonic signals.

Calculator and indication device:

- the plastic housing of the calculator with indication device directly mounted on the flow sensor;
- two PCB boards (one for measurement, one for communication);
- the electronic LCD display with 10 digits and indication range of 99999,99999 m³. The sub-multiples of a cubic meter are indicated on the LCD display after decimal point and are marked with a frame;
- one non-replaceable lithium battery for metering. The end of battery life indicator is activated when the battery voltage is below 3,6 V, lifetime 15 years.

Non-essential parts:

- filter;
- the local optical sensor for communication type NB-IoT module;
- magnet as a key to switch the LCD interface;
- NB-IoT antenna;
- two temperature sensors;
- an integral stop valve option.

2.2 Metrological functions

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



2.3 Operation and presentation of legal data

- a) the total measured volume (m³);
- b) flow rate (m³/h).

The following displays are available on the scroll display placing a magnet on the sensor point above LCD display or by finger touch as directed in the User Manual:

A1:

- cumulative volume (m³);
- reverse cumulative volume (m³);
- instantaneous flow rate (m³/h);
- cumulative working time (h);
- display test (an “eights” test);
- display test (a “blanks” test);

A2:

- current date (year_month-day);
- current time (h-min-s);
- nominal diameter (DN15, 20, 25, 32, 40);
- software version;
- meter address;
- serial number;
- flow coefficients (positions 7 to 11);
- hardware version;
- boot version;
- software checksum;

A3:

- warning mark (3 positions);
- fault mark (4 positions);

A4:

- cumulative volume with high resolution for testing (0,00000 m³);
- instantaneous flow rate with high resolution for testing (0,00000 m³/h);
- ultrasonic time -differences (three positions) (h);
- temperature of water (°C).

3. Software specification

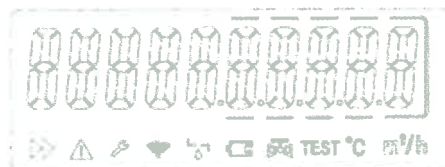
The legally relevant software version and checksum for water meters EEICO-UWM2201 can be checked using the scrolling the display in the LCD interface.

Software versions	Checksum	Remarks
b3.22	013D74B3	DN15
b3.22	013C6AA1	DN20
b3.22	013F52CC	DN25
b3.22	014210AB	DN32
b3.22	013EEAF0	DN40



4. Accountable alarms

If a fault occurs or error in the communication or software the fault/error icon on the display will show and the meter can be interrogated by the LCD interface according to the user manual issued by the manufacturer.



	Accumulated value of reverse flow		Battery Low
	Empty Pipe OR Reverse Flow OR Temperature out of range		Valve Close (UVM Meter only)
	Hardware Fault		Meter in Test Mode
	Wireless Communication active		Temperature
	Flow Rate too low		Display Unit

5. Technical and metrological data

Water meter type		EEICO-UWM2201				
Accuracy class		2				
Nominal diameter DN	mm	15	20	25	32	40
Permanent flowrate Q_3	m ³ /h	2,5	4	6,3	10	16
Minimum flowrate Q_1	m ³ /h	0,00625	0,01	0,01575	0,025	0,040
Transitional flowrate Q_2	m ³ /h	0,01	0,016	0,0252	0,040	0,064
Overload flowrate Q_4	m ³ /h	3,125	5	7,875	12,5	20
Ratio Q_3/Q_1	R	400				
Ratio Q_2/Q_1	-	1,6				
Connection thread	mm	G ¾ B	G1 B	G1 ½ B	G1½ B	G2 B
Construction length L	mm	165	195	225	260	300
Installation orientation	-	H/V				
Water temperature range (temperature class)	°C	0,1 to 50 T50				
Maximum admissible pressure MAP	bar	16				
Pressure loss class Δp	bar	0,63 Δp 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				
Capacity of calculator	m ³	99999,999				

Water meter type		<i>EEICO-UWM2201</i>
Capacity of calculator (high resolution for TEST)	m ³	99999,99999
Scale interval (normal resolution of the indicating device)	m ³	0,001
Scale interval (high resolution for TEST)	L	0,00001
Mechanical class	-	M1
Climatic class	°C	- 25 to + 55
Electromagnetic class	-	E1
Environmental classification	-	B/O
Flow profile sensitivity class	-	U0D0
Protektion class	-	IP68
Battery	-	non-replaceable li-battery 3,6 V, life time 15 years

6. 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 m³;
- 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 Q₃ and ratio Q₃/Q₁ indicated as (*R400*) followed by the ratio value;
- h) maximum admissible pressure (*MAP16*);
- i) temperature class (*T50*);
- j) pressure loss class (*Δp 63*);
- k) the latest date by which the meter shall be replaced (given in the check mode sequence in the display);
- l) environmental classification (can be given on a document supplied separately);
- m) electromagnetic environmental class (can be given on a document supplied separately);
- n) type approval sign according to national regulations.

7. Security measures

The water meters EEICO-UWM2201 shall be protected against unauthorized manipulation and opening by:

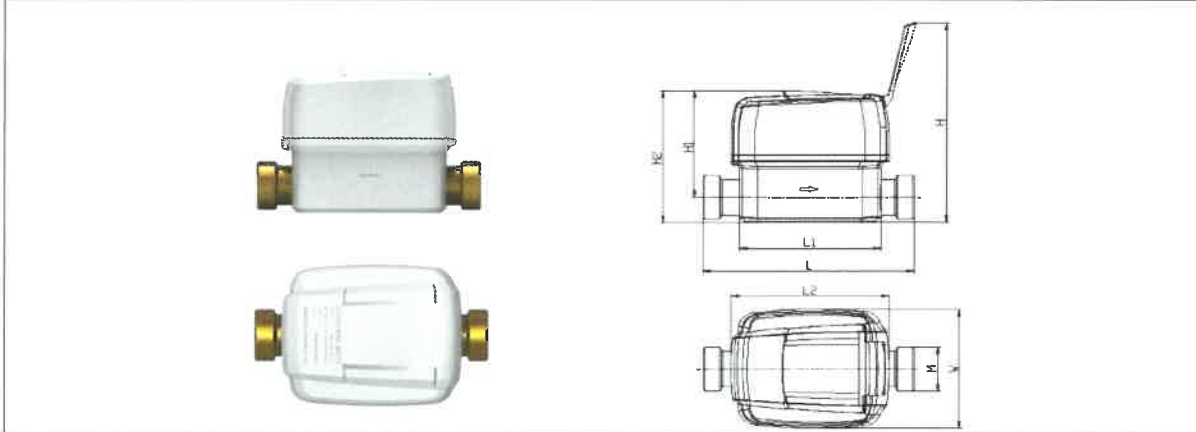
- one plastic seal with the wire ensuring the connection of the upper cover (prevents access to the PCB and software) with the lower part of the water meter (contains the body of the water meter);
- plastic seals for the holes for the screws that connect the lower plastic part of the water meter to the calculator cover of the water meter.



8. Figures

DN15~DN20

Nominal Diameter (DN)	Overall Length L(mm)	Counter Length L1(mm)	Counter Length L2(mm)	Counter Width W(mm)	Total Height H(mm)	Total Height H1(mm)	Overall Height H2(mm)	Connection Thread M
15	165	90	104	90	148	78	97	G3/4 B
20	190	93	104	90	150	80	99	G1 B



DN25~DN40

Nominal Diameter (DN)	Overall Length L(mm)	Counter Length L1(mm)	Counter Width W(mm)	Total Height H(mm)	Total Height H1(mm)	Overall Height H2(mm)	Connection Thread M
25	260	135	90	221	83	115	G1¼ B
32	260	135	90	221	85	115	G1½ B
40	300	135	90	225	88	117	G2 B

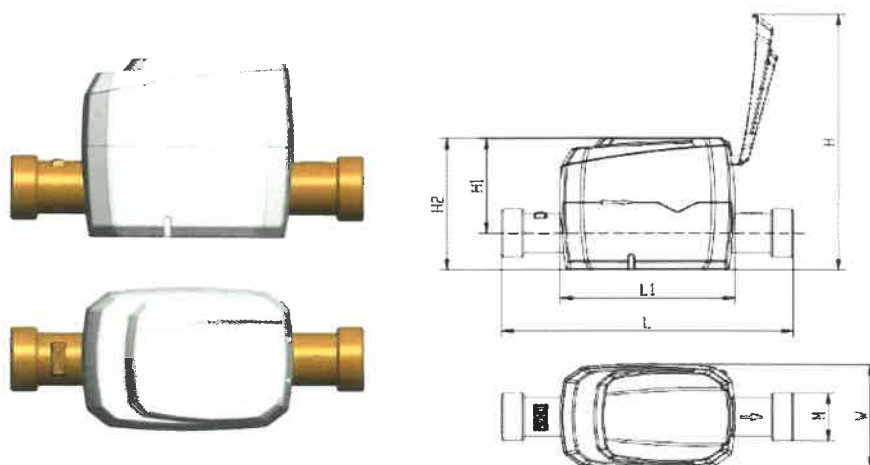


Fig. 1: Illustrative views and dimensions of the water meter EEICO-UWM2201

