OIML Member State SLOVAKIA	**OIML Certificate No.** **R49/2013-A-SK1-2023.01**

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: Peter Vook, Director

Applicant

Name: **Huizhong Instrumentation Co., Ltd.**
Address: No.126 West Gaoxin Road, High-Tech Industrial Development Zone Tangshan 063020, China

Manufacturer

Name: **Huizhong Instrumentation Co., Ltd.**
Address: No.126 West Gaoxin Road, High-Tech Industrial Development Zone Tangshan 063020, China

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

Water meter type **100E / SCL-61H-100** (two alternative names type)

Designation of the module *(if applicable)*

Ultrasonic water meter 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): 2

SLOVAK LEGAL METROLOGY SLM

OIML Certificate No.
R49/2013-A-SK1-2023.01

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. 2023/ER001/SK1 dated 13th January 2023 that includes 17 pages.

The technical documentation relating to the identified type is contained in documentation file name: „Technical documentation file Huizhong_100E_00" dated 13th January 2023 that includes 150 pages.

OIML Certificate History

Revision No.	Date	Description of the modification
0	13th January 2023	Certificate first issued
-	-	-

Identification, signature and stamp

The OIML Issuing Authority

SLOVAK LEGAL METROLOGY SLM

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Peter Vook

Date: 13th January 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 water meter type 100E / SCL-61H-100 (two alternative names type) are designed to measure, memorise and display the volume of water passing through the measurement transducer at metering conditions. The water meters are intended for the measurement of volume of clean water in residential use.

The water meters type 100E / SCL-61H-100 is compact ultrasonic water meter with electronic indication device. The measurement is based on ultrasonic bidirectional transit-time principle.

The water meters type 100E / SCL-61H-100 can be installed to operate in the horizontal position with indication device on the top or vertical position. The water meter is not designed to measure the reverse flow.

2. Description

2.1 Parts of the water meter type 100E / SCL-61H-100:

Essential parts of the water meters:

- Flow sensor:
  - cylindrical brass body with inlet and outlet threaded connections;
  - the inner plastic element (casing pipe) placed in the cylindrical brass body;
  - two reflection sheets installed in the centre of the pipe at an ange of 45 degrees with the axis of the pipe section;
  - two ultrasonic transducers at the upstream and downstream of the measurement channel (pipe section) to transmit and receive ultrasonic signals.

The flow is measured by the difference in time-of-flight of ultrasonic pulses with flow (downstream) and opposite to flow (upstream).

- Calculator and indication device:
  - plastic housing of the calculator with indication device directly mounted on the flow sensor;
  - main PCB board with LCD display and optical sensor;
  - electronic LCD display (scrolling with using of optical sensor) with 10 digits and indication range of 99999.99999 m^3. The sub-multiples of a cubic meter are indicated on the display by the comma under numbers and above the numbers. 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 when the battery voltage is below 3,6 V, battery lifetime 13 years.

Non-essential parts of the water meters:

- pressure sensor;
- thermistor.

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^3) 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^3);
- flow rate (m^3/h);
- water temperature (°C);
- cumulative effective running time;
- date (day-month-year);
- time (hour-minute-second);
- meter ID;
- display test (an "eights" test);
- display test (a "blanks" test);
- checksum
- software version number.

2.4 Software specification

Software version and checksum of legally relevant software:

Software versions	Checksum	Remarks
V1-1.1	3651	NB-IoT
	10200	NB-IoT with pressure sensor
	65167	RS 485

The software version and checksum can be checked through the scrolling display.

2.5 Accountable alarms

If a fault condition occurs and the measurement stops, follow the user manual issued by the manufacturer.

3. Technical and metrological data

Table 1

Characteristics	Unit	100E / SCL-61H-100		
Nominal diameter DN	mm	15	20	25
Permanent flowrate Q_3	m^3/h	2,5	4	6,3
Minimum flowrate Q_1	m^3/h	0,006	0,01	0,016
Transitional flowrate Q_2	m^3/h	0,01	0,016	0,025
Overload flowrate Q_4	m^3/h	3,125	5	7,875
Ratio Q_3/Q_1	R	400		
Ratio Q_2/Q_1	-	1,6		
Connection thread	mm	G ¾ B	G1 B	G1 ¼ B
Construction length L	mm	110/165	130/154/190/195	160/225/260
Installation orientation	-	H/V with indication device on top		

Characteristics	Unit	100E / SCL-61H-100
Water temperature range (temperature class)	°C	0,1 to 50 (T30, 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 $\Theta \leq 30°C$) ± 3 (at $\Theta > 30°C$)
Maximum permissible error in lower flowrates range $Q_1 \leq Q < Q_2$	%	± 5
Capacity of calculator	m^3	99999,99999
Scale interval (resolution of the indicating device)	m^3	0,00001
Accuracy class	-	2
Mechanical class	-	M1
Climatic class	°C	- 25 to + 70
Electromagnetic class	-	E2
Climatic and mechanical environmental conditions (class) according to EN ISO 4064-1/OIML R 49-1	-	O (fixed meters installed outdoors)
Flow profile sensitivity class	-	U0D0
Battery	-	non-replaceable li-battery 3,6 V, life time 13 years

Table 2

Characteristics	Unit	100E / SCL-61H-100	
Nominal diameter DN	mm	32	40
Permanent flowrate Q_3	m^3/h	10	16
Minimum flowrate Q_1	m^3/h	0,025	0,040
Transitional flowrate Q_2	m^3/h	0,040	0,064
Overload flowrate Q_4	m^3/h	12,5	20
Ratio Q_3/Q_1	R	400	
Ratio Q_2/Q_1	-	1,6	
Connection thread	mm	G 1 ½ B	G2 B
Construction length L	mm	180	200/245/300
Installation orientation	-	H/V with indication device on top	

Characteristics	Unit	100E / SCL-61H-100
Water temperature range (temperature class)	°C	0,1 to 50 (T30, 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 $\Theta \leq 30°C$) ± 3 (at $\Theta > 30°C$)
Maximum permissible error in lower flowrates range $Q_1 \leq Q < Q_2$	%	± 5
Capacity of calculator	m^3	99999,99999
Scale interval (resolution of the indicating device)	m^3	0,00001
Accuracy class	-	2
Mechanical class	-	M1
Climatic class	°C	- 25 to + 70
Electromagnetic class	-	E2
Climatic and mechanical environmental conditions (class) according to EN ISO 4064-1/OIML R 49-1	-	O (fixed meters installed outdoors)
Flow profile sensitivity class	-	U0D0
Battery	-	non-replaceable li-battery 3,6 V, life time 13 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 (H / V);
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.

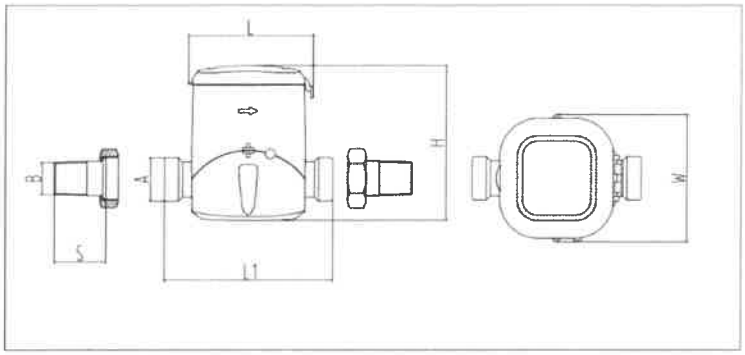
5. Security measures

The water meter type series 100E / SCL-61H-100 shall be protected against unauthorized manipulation and opening by:

- two lead seals 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).

6. Figures

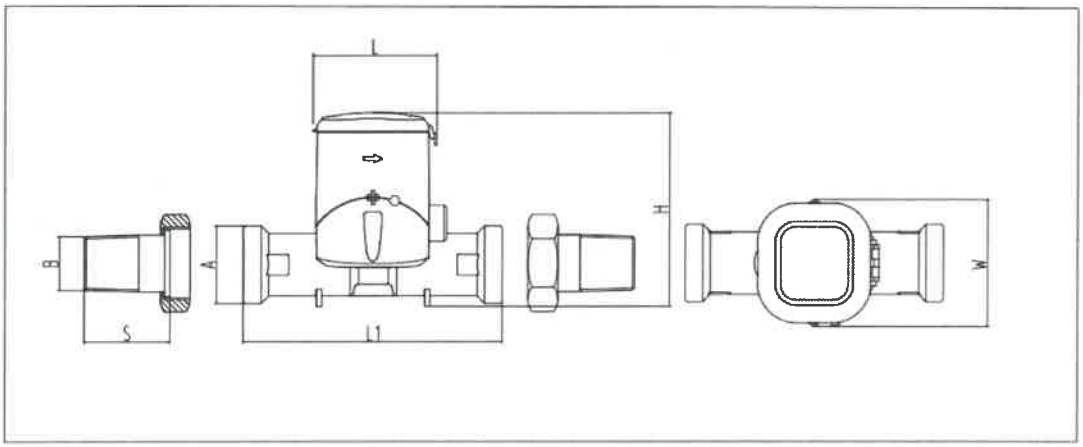
Fig. 1: Illustrative views of the water meters type 100E / SCL-61H-100



Dimensions in mm

Type	DN	L1	L	H	W	A
100E / SCL-61H-100	15	110/165	97	119	98	G ¾ B
	20	130/154/190/195				G 1B
	25	160/225/260				G1 ¼ B

Fig. 2a: Dimensions of the water meter 100E / SCL-61H-100
(DN15, DN20, DN25)



Dimensions in mm

Type	DN	L1	L	H	W	A
100E / SCL-61H-100	32	180	97	145	98	G 1 ½ B
	40	200/245/300		153		G 2B

Fig. 2b: Dimensions of the water meter 100E / SCL-61H-100
(DN32, DN40)