OIML Member State	OIML Certificate No.
SLOVAKIA	R49/2013-A-SK1-2024.04

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: Dušan Šmigura, Director of PCB

Applicant

Name: **Hunan Winmeter Energy Technology Co., Ltd.**
Address: 468 # West Tongzipo Road, Hi-Tech Industrial Development Zone, Changsha, Hunan, P.R.China

Manufacturer

Name: **Hunan Winmeter Energy Technology Co., Ltd.**
Address: 468 # West Tongzipo Road, Hi-Tech Industrial Development Zone, Changsha, Hunan, P.R.China

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

Water meter type **LXC-15, LXC-20**

Designation of the module *(if applicable)*

Ultrasonic water meter

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

SLOVAK LEGAL METROLOGY SLM

OIML Certificate No.
R49/2013-A-SK1-2024.04

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. 2022/ER022/SK1 dated 5th June 2024 that includes 16 pages.

The technical documentation relating to the identified type is contained in documentation file name:

„Technical documentation file Hunan_LXC-15-20_00“ dated 5th June 2024 that includes a sum of documents 49 pages.

OIML Certificate History

Revision No.	Date	Description of the modification
0	5th June 2024	Certificate first issued
-	-	-

Identification, signature and stamp

The OIML Issuing Authority

SLOVAK LEGAL METROLOGY SLM

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Dušan Šmigura

Date: 5th June 2024

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 meters **LXC-15 and LXC-20** are designed to measuring, memorizing 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 LXC-15 and LXC-20 are compact ultrasonic water meters 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 meters LXC-15 and LXC-20 can be installed to operate in horizontal and vertical positions. The water meters are not designed to measure the reverse flow.

2. Description

Essential parts of the water meters LXC-15 and LXC-20:

Flow sensor:
- the copper cylindrical body with inlet and outlet;
- the inner plastic elements-measuring support (pipe support-down and pipe support-up) placed in the cylindrical copper body;
- two reflectors (Inlet, Outlet) installed in the centre of the water meter body (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 PCBA:
  - measuring PCBA located on the water meter body above the transducers;
  - main PCBA located under LCD display;
- the electronic scrolling LCD display (by touch sensor) with 9 digits and indication range of 999999,999 m^3. The sub-multiples of a cubic meter are indicated on the LCD display with a line above the three digits after the decimal point;
- one non-replaceable lithium battery for metering, lifetime 10 years.

Non-essential parts of the water meters:

- the valve drive mechanism - consists of a DC motor, a reduction gear box and a position sensor;
- ball valve;
- strainer;
- the optical port for communication;
- one replaceable battery for communication.

2.1 Metrological functions

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

2.2 Operation and presentation of legal data

User mode - on the scroll display are visible:

- display test (an "eights" test);
- display test (a "blanks" test);
- code 004 the total measured volume (m^3);
- code 048 forward water consumption (m^3);
- code 049 reverse water consumption (m^3);
- code 157 water meter serial number / ID;
- code 009 date (YYYYMMDD);
- code 010 time (HH:MM:SS);
- code 011 software version;
- code 012 software date (YY-MM-DD);
- code 175 current instantaneous flow rate (m^3/h)
- code 176 current water temperature (°C);
- code 181 software checksum.

Test mode - on the scroll display are visible:

- code 174 indicated volume measured by water meter during test (m^3);
- code 175 instantaneous flow rate measured by water meter during test (m^3/h);
- code 176 water temperature measured by water meter during test (°C).

3. Accountable alarms

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

4. Software specification

The legally relevant software version and checksum for water meters LXC-15 and LXC-20:

Software versions	Checksum	Remarks
Ed-301	09E3	-

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

5. Technical and metrological data

Water meter type		LXC-15	LXC-20
Characteristics	Unit		
Nominal diameter DN	mm	15	20
Permanent flowrate Q_3	m^3/h	2,5	4
Minimum flowrate Q_1	m^3/h	0,00625	0,010
Transitional flowrate Q_2	m^3/h	0,010	0,016
Overload flowrate Q_4	m^3/h	3,125	5
Ratio Q_3/Q_1	R	400	
Ratio Q_2/Q_1	-	1,6	
Connection thread	mm	G ¾	G 1
Construction length L	mm	165	190

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 $\Theta \leq 30°C$) ± 3 (at $\Theta > 30°C$)
Maximum permissible error in lower flowrates range $Q_1 \leq Q < Q_2$	%	± 5
Capacity of calculator	m^3	999999,999
Scale interval (normal resolution)	m^3	0,001
Scale interval (high resolution)	m^3	0.000001
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	-	B/O
Flow profile sensitivity class	-	U0D0
Battery	-	non-replaceable li-battery min: 2,9 V, max: 3,8 V life time 10 years

6. Marking and inscriptions

The following data shall be marked on the water meter:

a) unit of measurement (m^3);
b) flowrate Q_3 and ratio Q_3/Q_1 (R);
c) type of water meter;
d) manufacturers name or trademark;
e) year of manufacture or the month and year of manufacture;
f) serial number;
g) 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);
h) maximum admissible pressure (MAP);
i) letter V or H, if the meter can only be operated in the vertical or horizontal position;
j) temperature class (T);
k) pressure loss class (Δp);
l) the installation sensitivity class where it different from U0D0;
m) for a non-replaceable battery, the latest date by which the water meter shall be replaced;
n) environmental classification (can be given on a document supplied separately);
o) electromagnetic environmental class (can be given on a document supplied separately);
p) type approval sign according to national regulations.

7. Security measures

The water meters LXC-15 and LXC-20 shall be protected against unauthorized manipulation and opening by:

- six plastic seals and one lead seal with the wire ensuring the connection of the upper cover (prevents access to the PCBA and software) with the lower part of the water meter (contains the body of the water meter) ;
- three plastic seals ensuring the opening lower plastic cover;
- one lead seal with the wire ensuring the opening replaceable battery plastic cover and communication module plastic cover (Fig. 4).

8. Figures

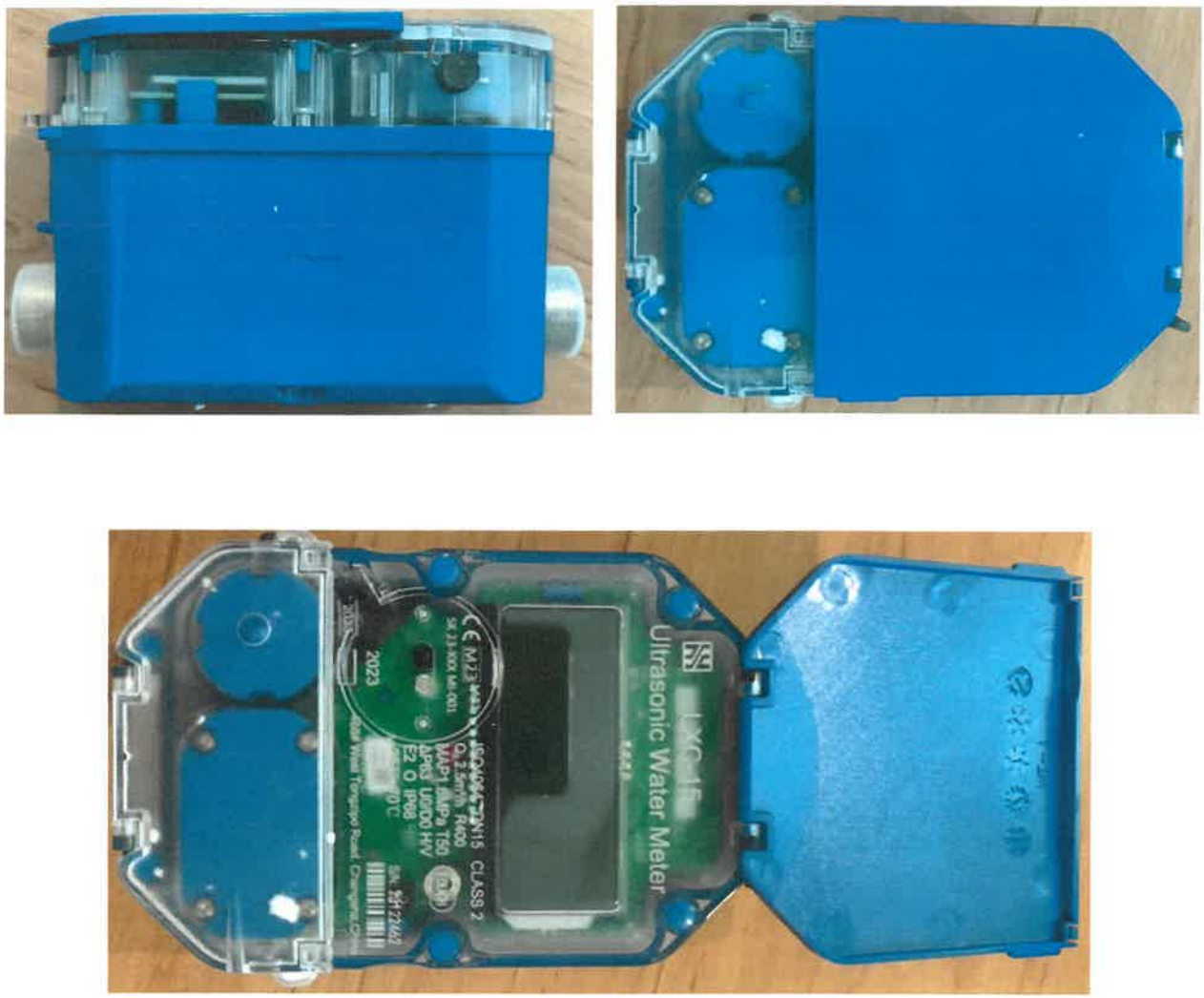
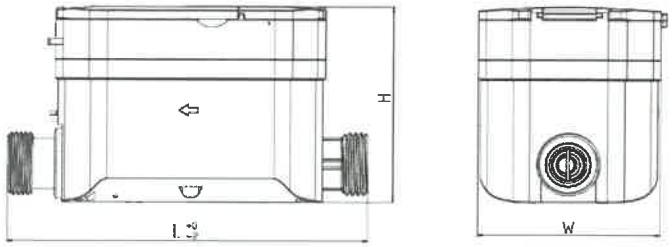


Fig. 1: Illustrative views of the water meter type LXC-15



Type	Dimension (mm)			
	L	W	H	Thread
DN15	165	95	103	G3/4"
DN20	190	95	103	G1"

Fig. 2: Dimension of water meters type LXC-15 and LXC-20

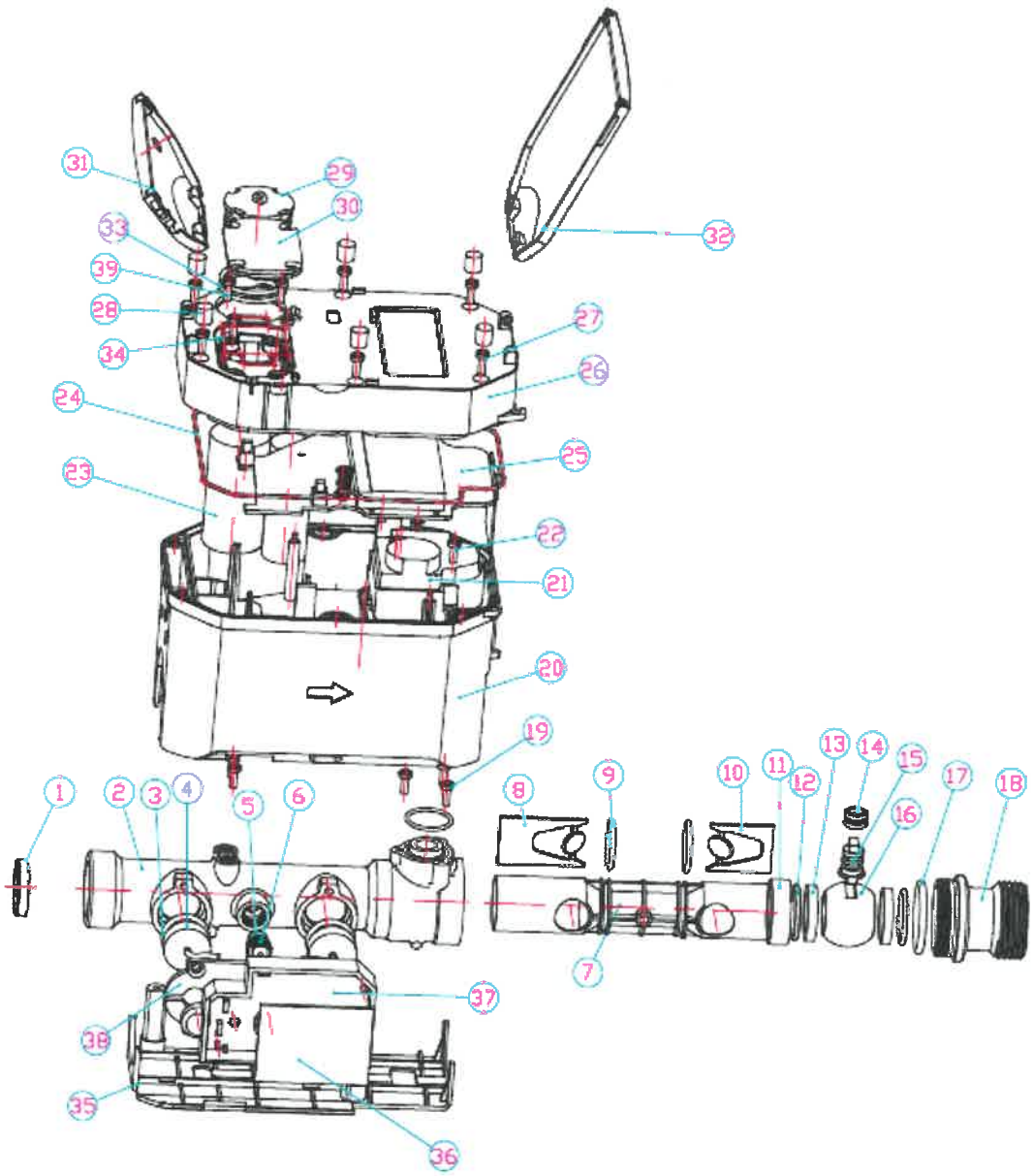


Fig. 3a: Exploded view of water meters type LXC-15 and LXC-20

Position No	Name
1	Strainer
2	Meter body
3	O-ring
4	Ultrasonic sensor
5	O-ring
6	Pin
7	Measuring chamber
8	Revlector (Inlet)
9	O-ring
10	Reflector (Outlet)
11	Threaded sleeve
12	O-ring
13	Valce seat
14	O-ring
15	Valve stem
16	Valve ball
17	O-ring
18	Valve plug
19	Screw
20	Lower Shell
21	Motor and actuator
22	Screw
23	Lithium Battery
24	Seal ring
25	Main PCBA
26	Upper shell
27	Screw
28	Plastic lead seal
29	Battery cover
30	Module cover
31	Lead seal flip
32	Main window flip
33	Seal ring
34	Seal ring
35	Bottom cover
36	Measuring PCBA unit
37	Measuring unit box
38	Pressing plate
39	Screw

Fig. 3b: Description of positions for exploded view of water meters type LXC-15 and LXC-20

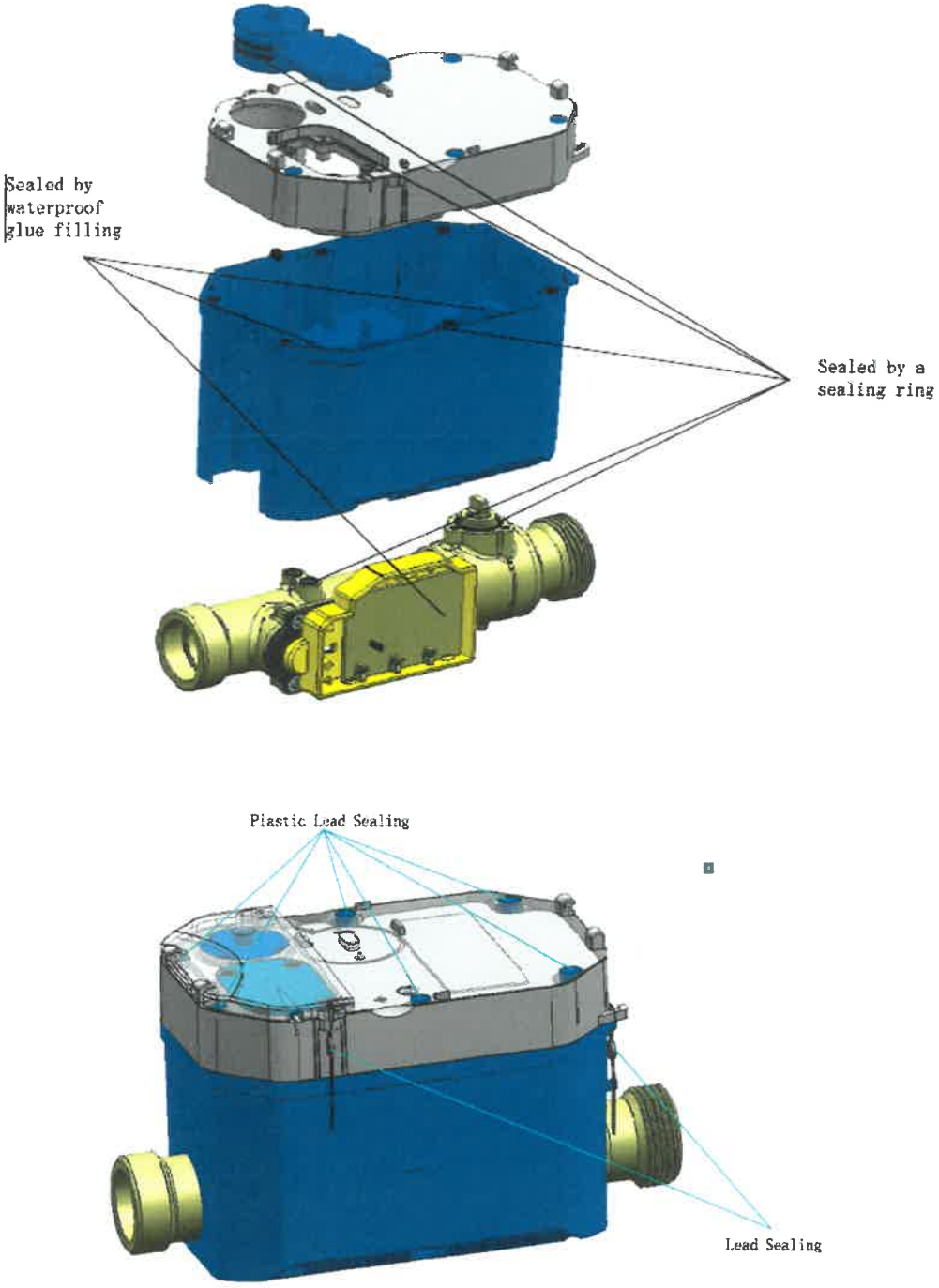


Fig. 4: Sealing of water meters type LXC-15 and LXC-20