



OIML Member State
SLOVAKIA

OIML Certificate No.
R49/2013-A-SK1-2023.04

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: **Viewshine Metering Ltd.**
Address: Building 6, Moganshan Road 1418-41
Hangzhou, Zhejiang
China

Manufacturer

Name: **Viewshine Metering Ltd.**
Address: Building 6, Moganshan Road 1418-41
Hangzhou, Zhejiang
China

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

Water meter type **U-WR2 series**

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



**OIML Certificate No.
R49/2013-A-SK1-2023.04**

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. 2023/ER005/SK1 dated 18th August 2023 that includes 16 pages.

The technical documentation relating to the identified type is contained in documentation file name: „Technical documentation file Viewshine_U-WR2_00“ dated 18th August 2023 that includes a sum of documents 55 pages.


OIML Certificate History

Revision No.	Date	Description of the modification
0	18 th August 2023	Certificate first issued
-	-	-

Identification, signature and stamp

~~The OIML Issuing Authority~~




Dušan Šmigura

Date: 18th August 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 meters **U-WR2 series** (types U-WR2-15 and U-WR2-20) are designed to measuring, memorizing and displaying the volume of water passing through the measurement transducers at metering conditions. The water meters are intended for the measurement of volume of clean water in residential use.

The water meters U-WR2 series are residential 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 U-WR2 series can be installed to operate in all positions. The water meters are not designed to measure the reverse flow.

2. Description

2.1 Parts of the water meters U-WR2 series

Essential parts:

Flow sensor:

- the plastic cylindrical 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 cylindrical plastic body;
- two reflection sheeds 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;
- the PCB board;
- the electronic scrolling LCD display with 9 digits and indication range of 999999.999 m³. The sub-multiples of a cubic meter are indicated on the LCD display by three smaller digits after decimal point;
- 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 12 years.

Non-essential parts:

- filter;
- the local optical port for communication types: LoRaWAN Class A, NB-IoT Standard, two-wire pulse output, three-wire pulse output, WM-Bus, M-Bus (optionally);
- antenna (optionally);
- one battery for communication.

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 (m³);
- b) flow rate (m³/h).

The following displays are available on the automatic scroll display:

- accumulated volume (m³);
- instantaneous flow rate (m³/h);
- accumulated volume with high resolution (L);
- temperature (C°);
- display test (an “eights” test);
- display test (a “blanks” test);
- checksum and software version;
- diagnostic.

3. Software specification

Legally relevant software version and checksum for water meters U-WR2 series:

Software versions	Checksum	Remarks
11	04238	

The checksum and software version can be checked using the scrolling display in the form:

- Checksum - first larger numbers: 04238
- Software version - second little numbers: 11.

4. Accountable alarms

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



5. Technical and metrological data

Tab. 1

Water meter type		<i>U-WR2-15</i>	<i>U-WR2-20</i>
Accuracy class		2	2
Nominal diameter DN	mm	15	20
Permanent flowrate Q_3	m ³ /h	2,5	4
Minimum flowrate Q_1	m ³ /h	0,005	0,008
Transitional flowrate Q_2	m ³ /h	0,008	0,0128
Overload flowrate Q_4	m ³ /h	3,125	5
Ratio Q_3/Q_1	R	500	
Ratio Q_2/Q_1	-	1,6	
Connection thread	mm	G ¾ B	G1 B
Construction length L	mm	110/115/165	110/115/190
Installation orientation	-	All positions	
Water temperature range (temperature class)	°C	0,1 to 50 T50	
Maximum admissible pressure MAP	bar	16	
Pressure loss class Δp	bar -	0,40 Δp 40	0,25 Δp 25
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	999999,999	
Scale interval (normal resolution of the indicating device)	m ³	0,001	
Scale interval (high resolution)	L	0,001	
Mechanical class	-	M1	
Climatic class	°C	- 25 to + 55	
Electromagnetic class	-	E1	
Environmental classification	-	O (fixed meters installed outdoors)	
Flow profile sensitivity class	-	U0D0	
Battery	-	non-replaceable li-battery 3,6 V, life time 12 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 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 (*R500*) followed by the ratio value;
- h) maximum admissible pressure (*MAP16*);
- i) temperature class (*T50*);
- j) pressure loss class (*Δp 40* and *Δp 25*);
- 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 U-WR2 series shall be protected against unauthorized manipulation and opening by:

- one plastic seal 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);
- four plastic seals for the four holes for the screws that connect the lower plastic part of the water meter to the calculator cover of the water meter. (Fig: 3).



8. Figures



Fig. 1: Illustrative views of the water meters types U-WR2-15 and U-WR2-20



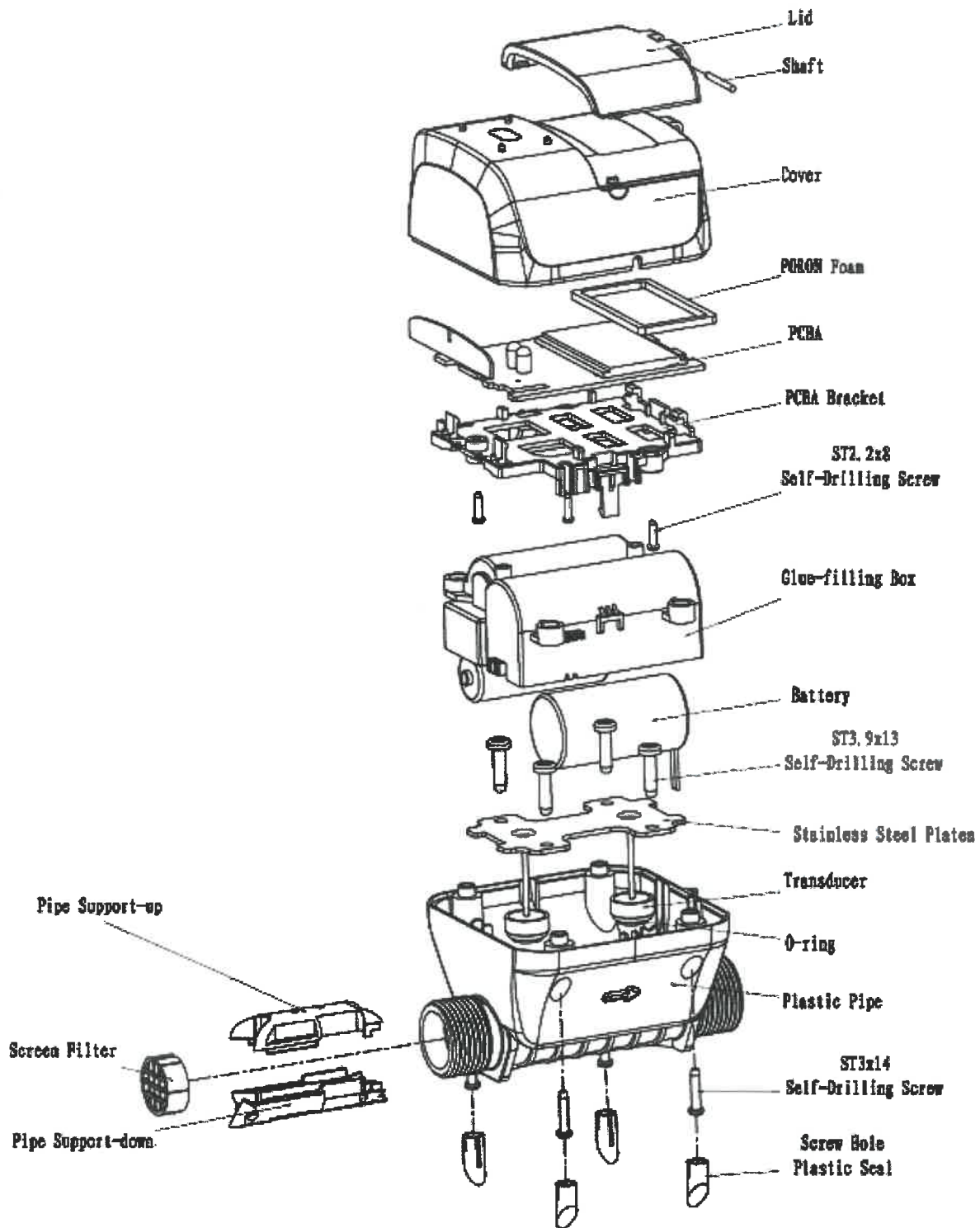


Fig. 2: Exploded view of water meters U-WR2 series



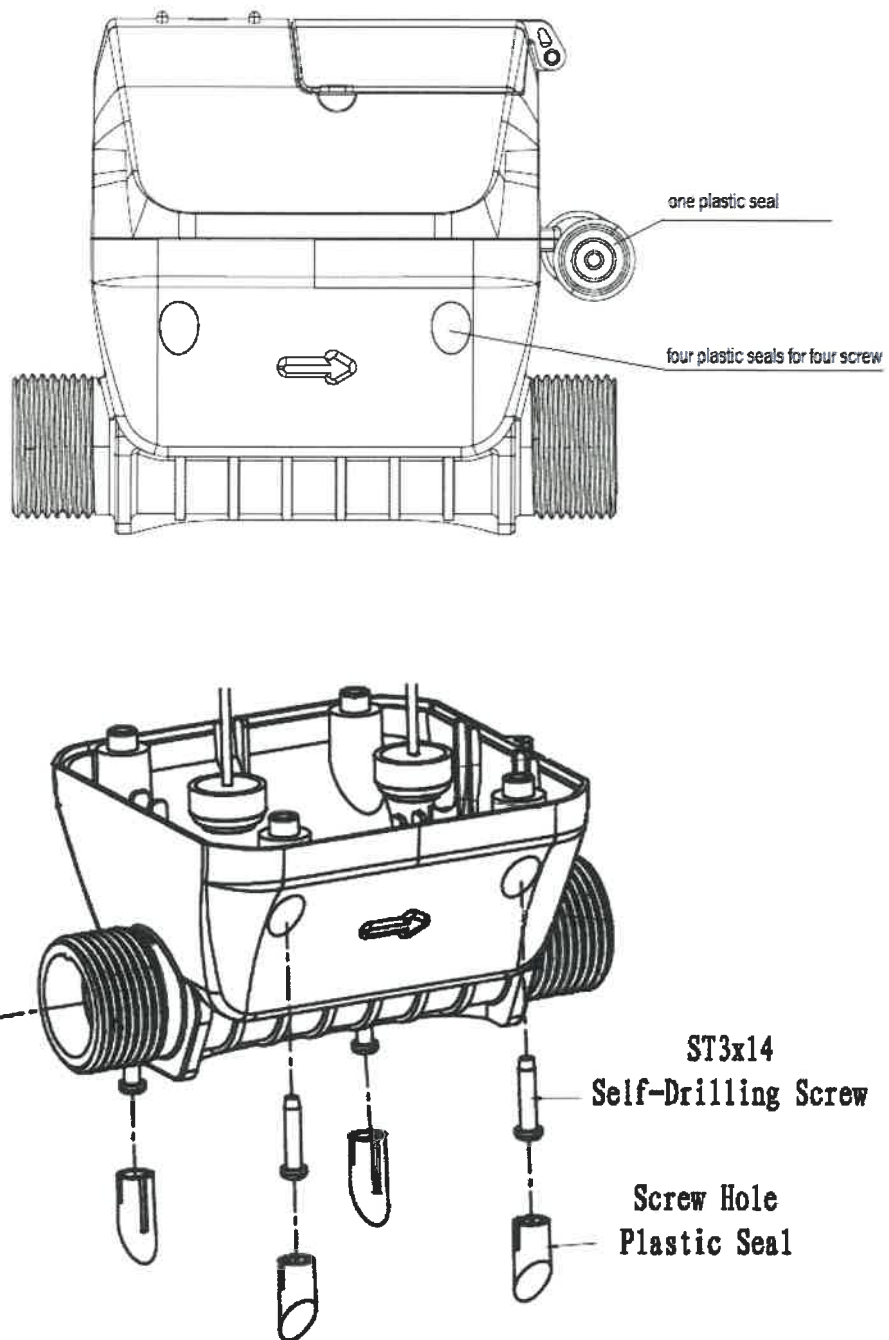
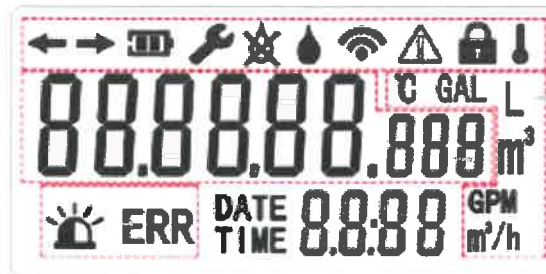


Fig. 3: The sealing of water meters U-WR2 series





Icons and alarms field

ICON	NAME	SPEC	DESCRIPTION
	FORWARD FLOW	Continuously on	Forward flow is detected
	REVERSE FLOW	Flashing	Reverse flow is detected
	AIR IN PIPE	Flashing	Air is Detected in the Pipe
	LEAKAGE	Flashing	Leakage is Detected
	BATTERY STATUS	Continuously on	Battery is Low
	SIGNAL	Continuously on	Communication Module Activated
	ABNORMAL TEMPERATURE	Flashing	Water temperature < 0 °C
	ABNORMAL FLOW RATE	Continuously on	T50: > 50 °C / T30: > 30 °C
		Flashing	Flow Rate Q3 < Q ≤ Q4
		Continuously on	Flow Rate Q > Q4

Units of measurement field

ICON	DESCRIPTION
°C	Temperature Unit
GPM	Gallon per Minute
m³	Metrological Volume
L	High Resolution Volume
m³/h	Flow Rate
GAL	British Volume Unit

Fig. 4: Display symbols description




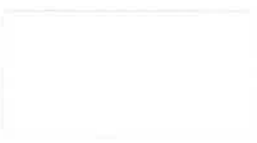





LCD Display	Description	Unit/Note	Duration time in seconds(Default)
	Full Display	-	1
	Blank	-	1
	Checksum & Software Version	-	2
	Accumulated Volume Instantaneous Flowrate	m ³ m ³ /h	10
	Accumulated Volume with high resolution Instantaneous Flowrate	L m ³ /h	10
	Temperature Instantaneous Flowrate	°C m ³ /h	5
	Diagnostics	-	2

Fig. 5: The scrolling sequence of electronic LCD display of water meters U-WR2 series

