



OIML Member State
SLOVAKIA

OIML Certificate No.
R49/2013-A-SK1-2023.04 Rev. 1

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: **Slovak Legal Metrology (SLM)**
Address: Geologická 9966/1,
821 06 Bratislava-Podunajské Biskupice, Slovakia
Product Certification Body
Hviezdoslavova 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)*

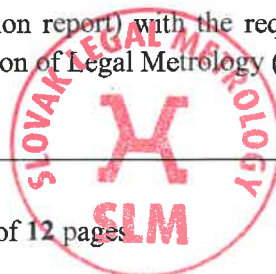
Water meter type **U-WR2 series**

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. Rev.1

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/CV005/312.15 dated 17th August 2023 that includes 63 pages;
- OIML Test report No. 2024/CV046/312.15 dated 4th November 2024 that includes 63 pages;
- OIML Type Evaluation Report No. 2023/ER005/SK1 dated 18th August 2023 that includes 16 pages;
- OIML Type Evaluation Report No. 2024/ER046/SK1 dated 12th November 2024 that includes 17 pages.

The technical documentation relating to the identified type is contained in documentation file name: „Technical documentation file Viewshine_U-WR2_00 to 01“ dated 12th November 2024 that includes a sum of documents 53 pages.

OIML Certificate History

Revision No.	Date	Description of the modification
0	18 th August 2023	Certificate first issued
1	12 th November 2024	Added: <ul style="list-style-type: none">- transparent cover;- R500, DN25, all positions;- R800, DN15/20, H position;- pressure sensor selectable. Changed: address of OIML Issuing Authority

Identification, signature and stamp



The OIML Issuing Authority

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Dušan Šmigura

Date: 12th November 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 **U-WR2 series** (types U-WR2-15, U-WR2-20 and U-WR2-25) 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 (R500) and H position (R800). 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 of the water meters U-WR2 series:

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 of the water meters:

- 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;
- pressure sensor selectable.

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;
- pressure value (selectable).

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

Table 1: DN15, DN20, DN25, R500

Water meter type		U-WR2-15	U-WR2-20	U-WR2-25
Characteristics	Unit			
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	0,005	0,008	0,0126
Transitional flowrate Q_2	m ³ /h	0,008	0,0128	0,02016
Overload flowrate Q_4	m ³ /h	3,125	5	7,875
Ratio Q_3/Q_1	R	500		
Ratio Q_2/Q_1	-	1,6		
Connection thread	mm	G ¾ B	G1 B	G1 B
Construction length L	mm	110/115/130/165/170	110/115/130/190/195	150/200/225/260
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		
Accuracy class	-	2		
Mechanical class	-	M1		
Climatic class	°C	- 25 to + 55		
Electromagnetic class	-	E1		
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 12 years		



Table 2: DN15, DN20, R800

Water meter type		U-WR2-15	U-WR2-20
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	0,003125	0,005
Transitional flowrate Q_2	m ³ /h	0,005	0,008
Overload flowrate Q_4	m ³ /h	3,125	5
Ratio Q_3/Q_1	R	800	
Ratio Q_2/Q_1	-	1,6	
Connection thread	mm	G ¾ B	G1 B
Construction length L	mm	110/115/130/165/170	110/115/130/190/195
Installation orientation	-	H	
Water temperature range (temperature class)	°C	0,1 to 50 (T50)	
Maximum admissible pressure MAP	bar	16	
Pressure loss class Δp	bar	0,40	0,25
	-	Δp 40	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	
Accuracy class	-	2	
Mechanical class	-	M1	
Climatic class	°C	- 25 to + 55	
Electromagnetic class	-	E1	
Climatic and mechanical environmental conditions (class) according to EN ISO 4064-	-	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) unit of measurement (m³);
- 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) the flow direction shall be marked on a water meter's body in form of an arrow;
- h) maximum admissible pressure (MAP);
- i) temperature class (T);
- j) pressure loss class (Δp);
- k) letter H, if the meter can only be operated in the horizontal position, letter V, if the meter can only be operated in the vertical position;
- l) the latest date by which the meter shall be replaced;
- m) environmental classification (can be given on a document supplied separately);
- n) electromagnetic environmental class (can be given on a document supplied separately);
- o) type approval sign according to national regulations.

Manufacturer uses the following trademarks on the water meter:



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).

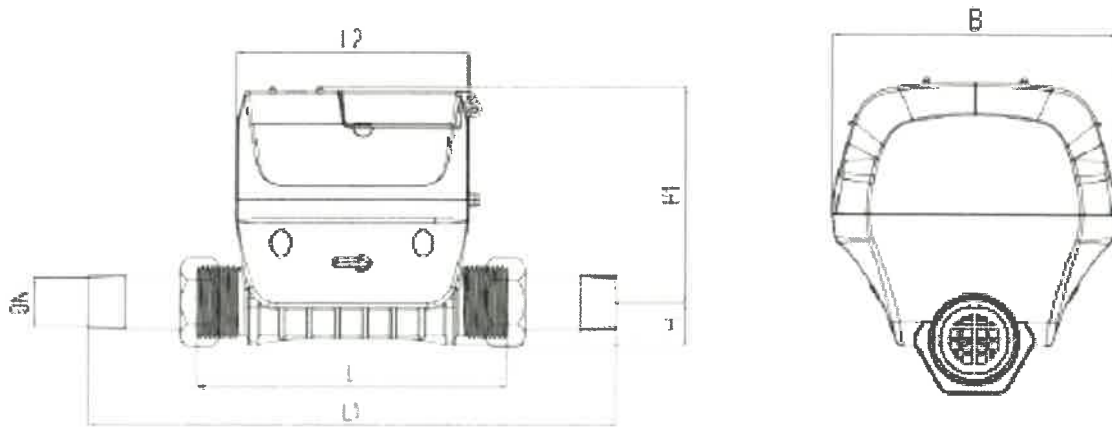


8. Figures



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





Dimensions in mm

DN	L	L1	L2	H	H1	B	Meter Thread
15	110	203	82	16	82.2	85	G3/4 B
	115	208	82	16	82.2	85	G3/4 B
	130	223	82	16	82.2	85	G3/4 B
	165	258	82	16	82.2	85	G3/4 B
	170	263	82	16	82.2	85	G3/4 B
20	110	208	82	18.5	83.2	85	G1B
	115	213	82	18.5	83.2	85	G1B
	130	228	82	18.5	83.2	85	G1B
	190	288	82	18.5	83.2	85	G1B
	195	293	82	18.5	83.2	85	G1B
25	150	270	82	21.8	83.2	85	G1B
	200	320	82	21.8	83.2	85	G1B
	225	345	82	21.8	83.2	85	G1B
	260	380	82	21.8	83.2	85	G1B

Fig. 2: Dimension of water meters U-WR2 series

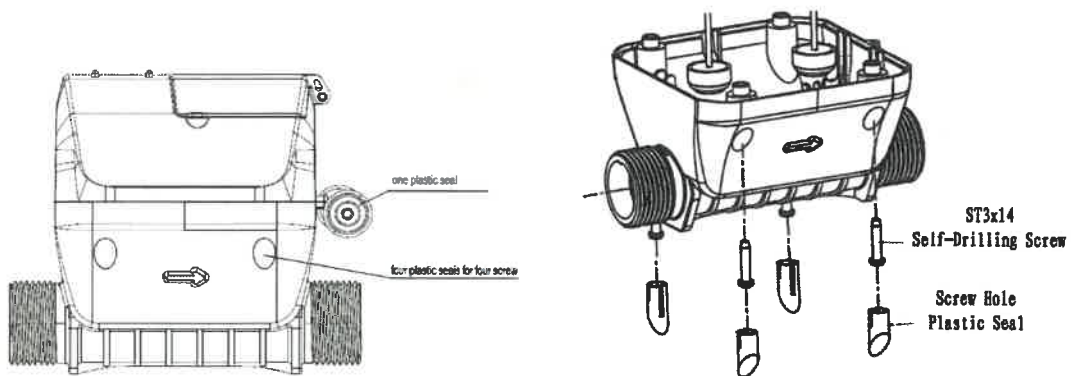


Fig. 3: The sealing of water meters U-WR2 series



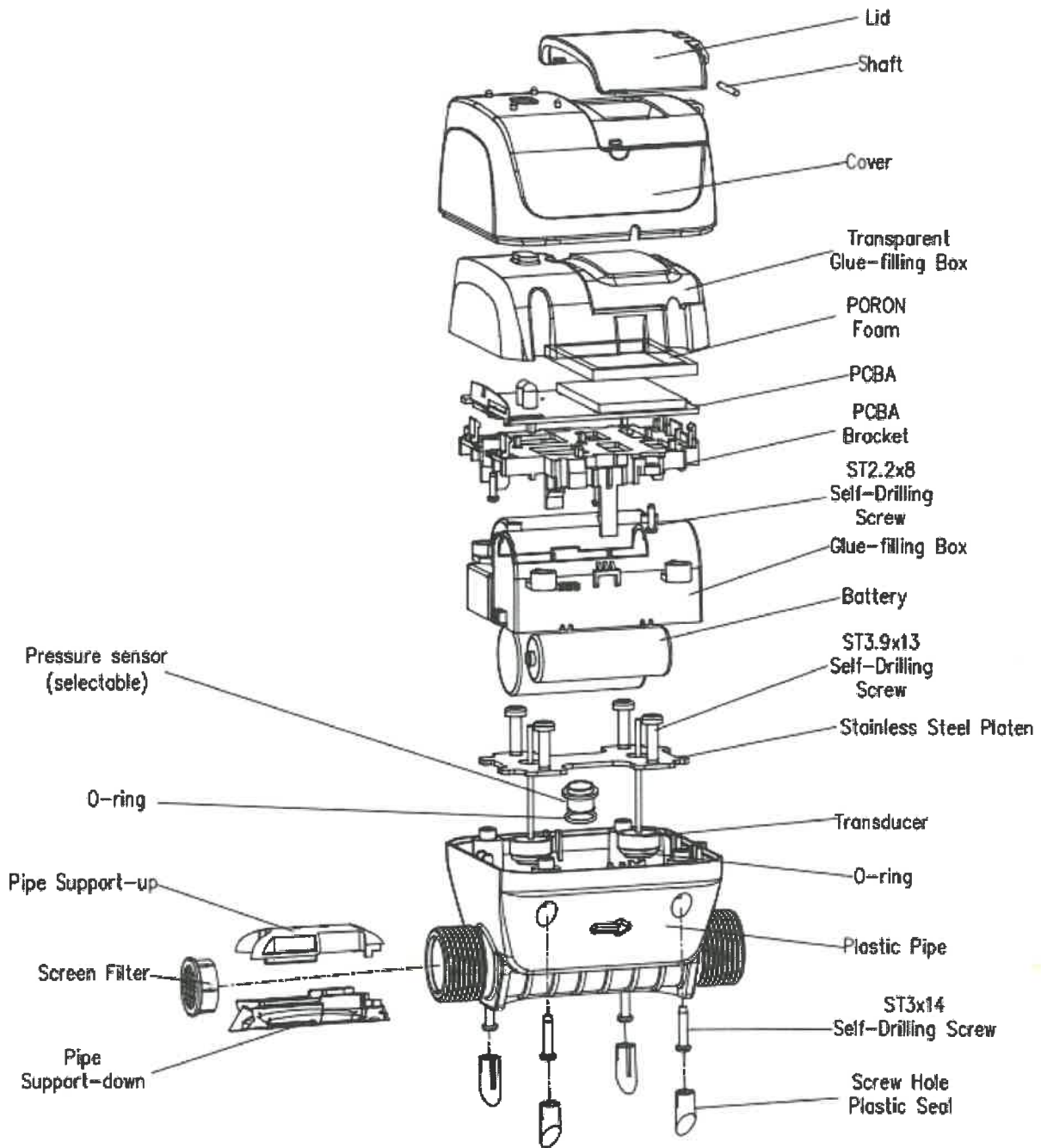
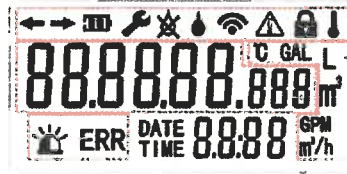


Fig: 4: Exploded view of water meters U-WR2 series





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
		Continuously on	T50: > 50 °C / T30: > 30 °C
		Flashing	Flow Rate Q3<Q≤Q4
	ABNORMAL FLOW RATE	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. 5: Display symbols









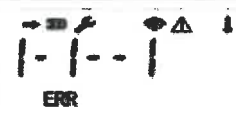

LCD Display	Description	Unit/Note	Duration time in seconds(Default)
	Full Display	-	1
	Blank	-	1
	Checksum & Software Version	-	2
	Accumulated Volume Instantaneous Flowrate	m ³ m ³ /h	10
	Accumulated Volume with high resolution Instantaneous Flowrate	L m ³ /h	10
	Temperature Instantaneous Flowrate	°C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

Fig. 6: The scrolling sequence of electronic LCD display of water meters U-WR2 series

