OIML Member State SLOVAKIA	OIML Certificate No. R49/2013-A-SK1-25.11

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: **Slovak Legal Metrology (SLM)**
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Person responsible: Ing. Dušan Šmigura, PhD., 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 **UWM 2401**

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: 2

OIML Certificate No.
R49/2013-A-SK1-25.11

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. 2025/ER008/SK1 dated 31st July 2025 that includes 16 pages.

The technical documentation relating to the identified type is contained in documentation file name:
"Technical documentation files_ EEICo_UWM2401_00" dated 31st July 2025 that include 39 pages.

OIML Certificate History

Revision No.	Date	Description of the modification
0	31st July 2025	Certificate first issued

Identification, signature and stamp

The OIML Issuing Authority

SLOVAK LEGAL METROLOGY SLM

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Dušan Šmigura

Date: 31st July 2025

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 **UWM 2401-15** to **UWM 2401-50** (UWM 2401-15, UWM 2401-20, UWM 2401-25, UWM 2401-32, UWM 2401-40, UWM 2401-50) 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 UWM 2401-15 to UWM 2401-50 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 UWM 2401-15 to UWM 2401-50 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 UWM 2401-15 to UWM 2401-50:

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 with 10 digits and a display range of 9999999,999 m^3. Partial multiples of a cubic meter are displayed on the LCD display with three smaller numbers after the decimal point;
- one non-replaceable lithium battery for metering, Umax=3,66 V, life time 12 years;
- the touch button for activation and scrolling of display.

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;
- communication interfaces: RS485, Wired M-Bus, Wireless M-Bus, LoRaWAN, Sigfox, GPRS, NB-1oT, Pulse output.

2.1 Metrological functions

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

User mode - on the scroll display are visible:

Code	Description
-	display test (an "eights" test)
-	display test (a "blanks" test)
03	the total water consumption measured volume (m^3)
16	Firmware version
17	Firmware version date
57	Firmware CRC
65	Measurement firmware version
66	Measurement firmware date
67	Measurement firmware CRC

Test mode - on the scroll display are visible:

Code	Description
58	indicated volume measured by water meter during error test (m^3)
59	instantaneous flow rate measured by water meter during error test (m^3/h)
60	water temperature measured by water meter during error test (°C)

2.2 Accountable alarms

If a fault condition occurs and the measurement stops, follow Table 1 and the User manual issued by the manufacturer.

Table 1 Special display information

Special information	Prompt	Comment
Valve action	oPEn---	Valve is opening
	CLoSE--	Valve is closing
Valve closing because of battery	 CLoSE—	Valve is closing because battery is very low or battery remove.
Display voltage of main battery	bAtt- X.XX	After valve actions, LCD will display current battery voltage. X.XX is the voltage of main battery
Need to change main battery	 bAtt- F	
Error code description	NO.50	Open cover
	NO.51	Battery cover removes
	NO.56	Sampling abnormal
	NO.61	Valve failure
Long-pressing button definition	--- XX	XX: indicates an extended button press time, with a range of 3~14 secs. Extended button press times functions: 08~09 secs: Enter/Quit test mode 10~11 secs: Activate optical function. More than 14 secs: Invalid action.

2.3 Software specification

The legally relevant software version and checksum for water meters UWM 2401-15 to UWM 2401-50:

Table 2

Software versions	Checksum	Remarks
AF00	CAC9C806	-

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

3. Technical and metrological data

Table 3.1 Water meters DN15 to DN25

Water meter type		UWM 2401-15	UWM 2401-20	UWM 2401-25
Accuracy class		2		
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	0,00625	0,01	0,01575
Transitional flowrate Q_2	m^3/h	0,01	0,016	0,0252
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	165	190	260
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 (normal resolution)	m^3	9999999,999		
Capacity of calculator (high resolution for TEST)	m^3	9999,999999		
Scale interval (normal resolution)	m^3	0,001		
Scale interval (high resolution for TEST)	L	0,000001		
Mechanical class	-	M1		
Climatic class	°C	- 25 to + 55		
Electromagnetic class	-	E1		
Environmental classification	-	O		
Flow profile sensitivity class	-	U0D0		
Battery	-	non-replaceable li-battery Umax=3,66 V, life time 12 years		

Table 3.2 Water meters DN32 to DN50

Water meter type		UWM 2401-32	UWM 2401-40	UWM 2401-50
Accuracy class		2		
Nominal diameter DN	mm	32	40	50
Permanent flowrate Q_3	m^3/h	10	16	25
Minimum flowrate Q_1	m^3/h	0,025	0,040	0,0625
Transitional flowrate Q_2	m^3/h	0,040	0,064	0,100
Overload flowrate Q_4	m^3/h	12,5	20	31,25
Ratio Q_3/Q_1	R	400		
Ratio Q_2/Q_1	-	1,6		
Connection thread	mm	G1 ½ B	G2B	flange
Construction length L	mm	260	300	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 $\Theta \leq 30°C$) ± 3 (at $\Theta > 30°C$)		
Maximum permissible error in lower flowrates range $Q_1 \leq Q < Q_2$	%	± 5		
Capacity of calculator (normal resolution)	m^3	9999999,999		
Capacity of calculator (high resolution for TEST)	m^3	9999,999999		
Scale interval (normal resolution)	m^3	0,001		
Scale interval (high resolution for TEST)	L	0,000001		
Mechanical class	-	M1		
Climatic class	°C	- 25 to + 55		
Electromagnetic class	-	E1		
Environmental classification	-	O		
Flow profile sensitivity class	-	U0D0		
Battery	-	non-replaceable li-battery Umax=3,66 V, life time 12 years		

4. 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.

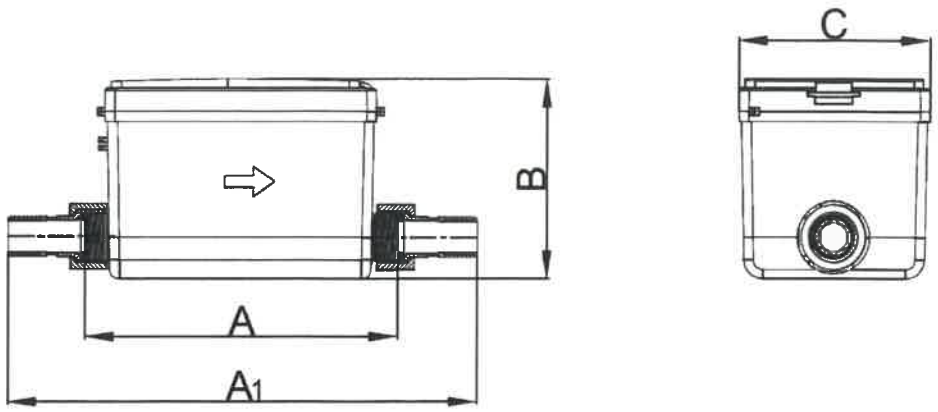
5. Security measures

The water meters UWM 2401-15 to UWM 2401-50 shall be protected against unauthorized manipulation and opening by:

- six plastic seals and two lead seals 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);
- four plastic seals ensuring the opening lower plastic cover (Fig. 3).

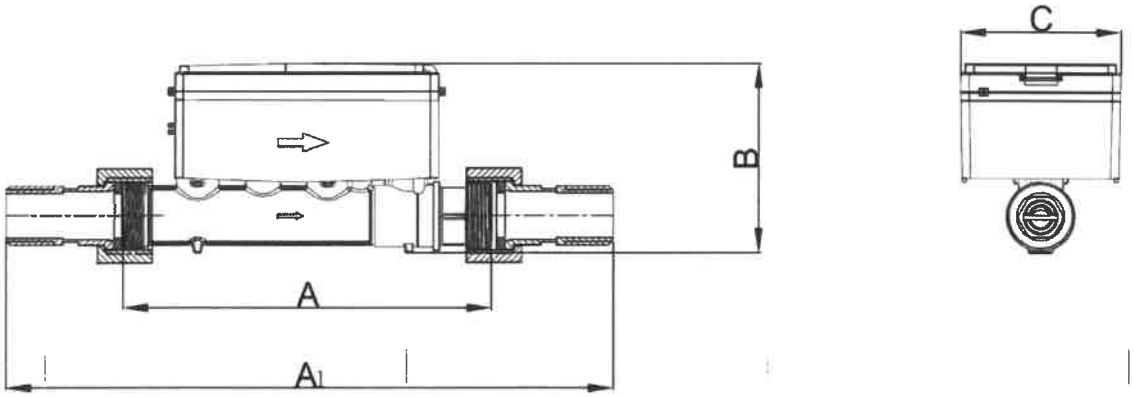
6. Figures

Fig. 1: Illustrative view of the water meter type UWM 2401



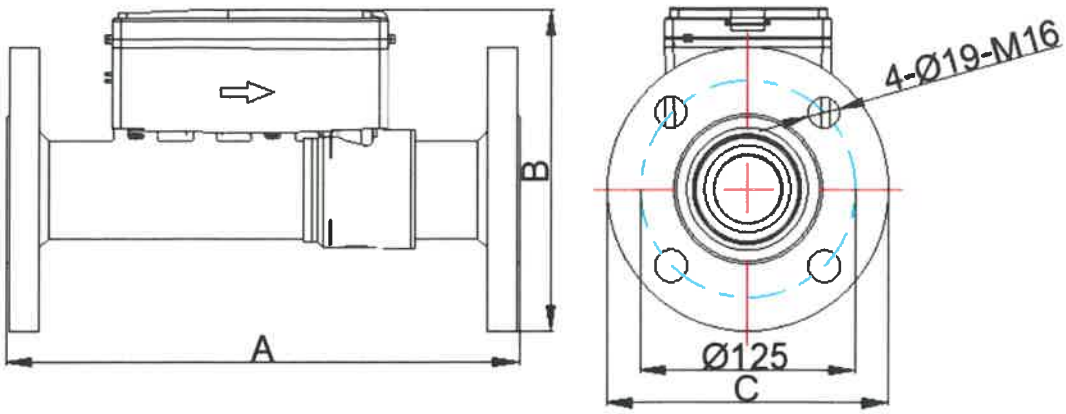
Dimension(mm)				
	A1	A	B	C
DN15	261	165	104	100
DN20	296	190	104	100

Fig. 2a: Dimension of water meters type UWM 2401-15 and UWM 2401-20



Dimension(mm)				
	A1	A	B	C
DN25	382	260	131	105
DN32	386	260	137	105
DN40	430	300	146	105

Fig. 2b: Dimension of water meters type UWM 2401-25 to UWM 2401-40



Dimension(mm)			
	A	B	C
DN50	300	200	165

Fig. 2c: Dimension of water meter UWM 2401-50 with flange

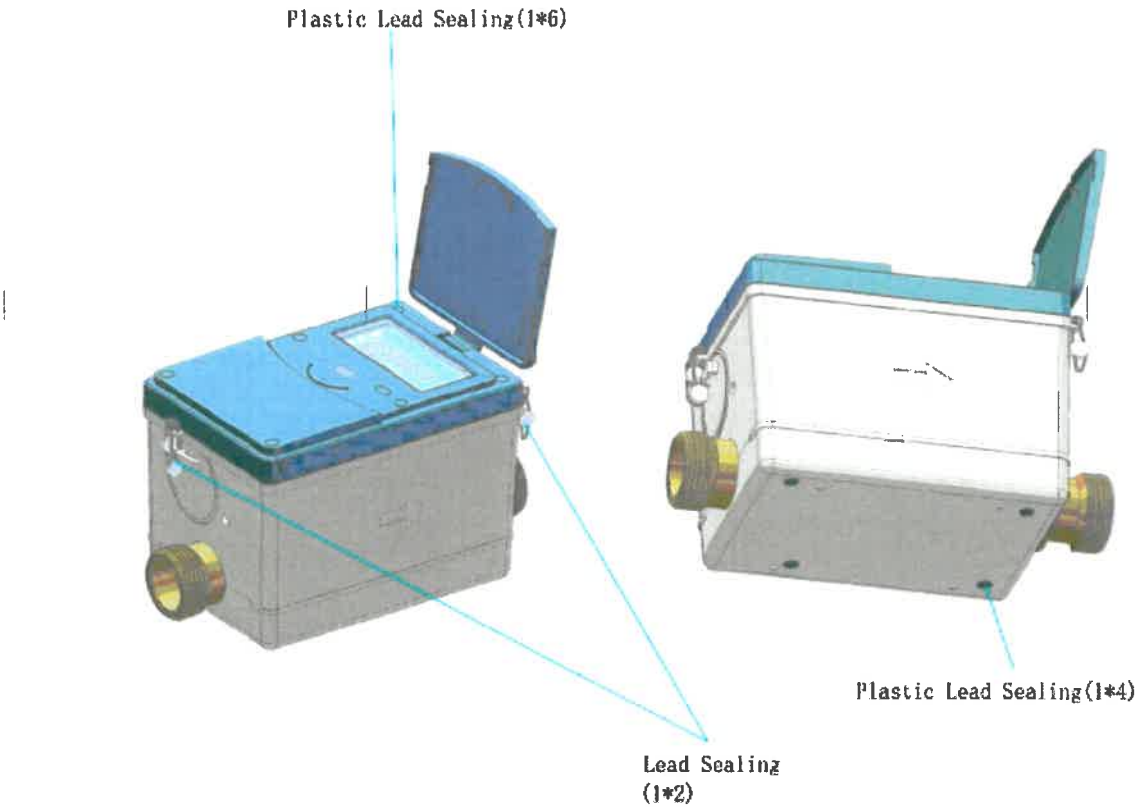
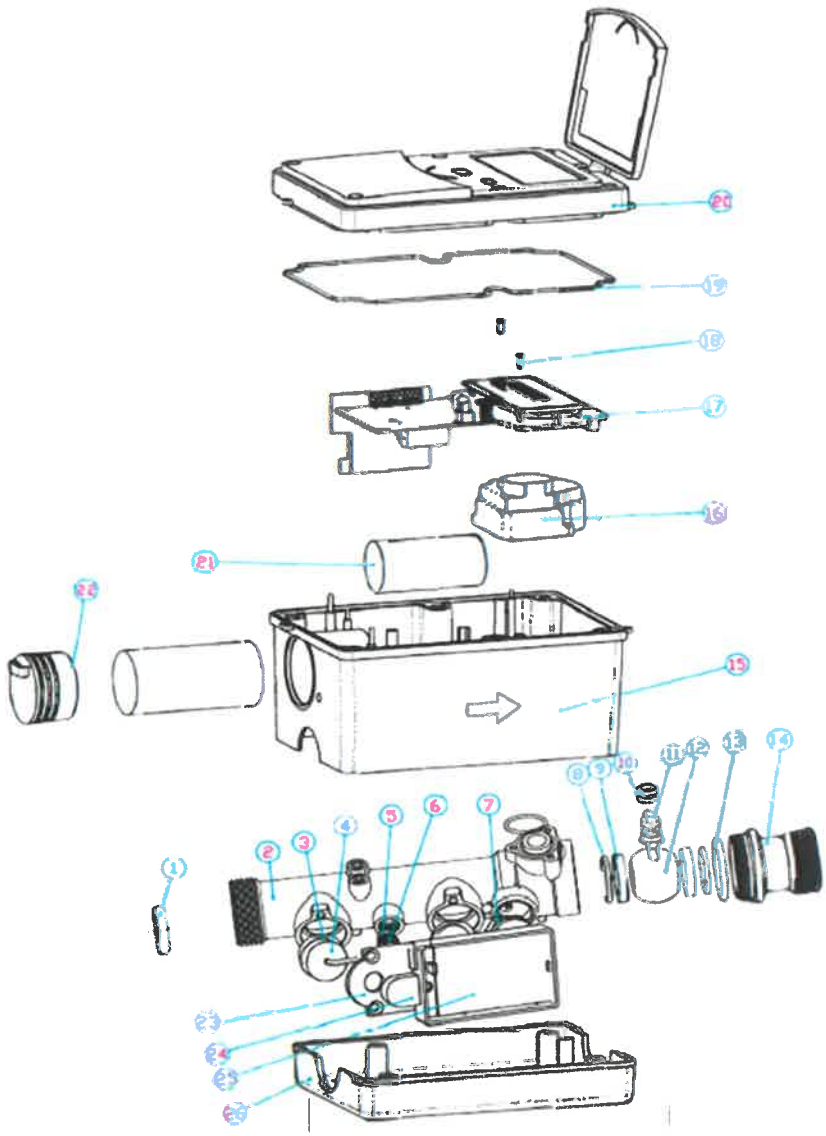
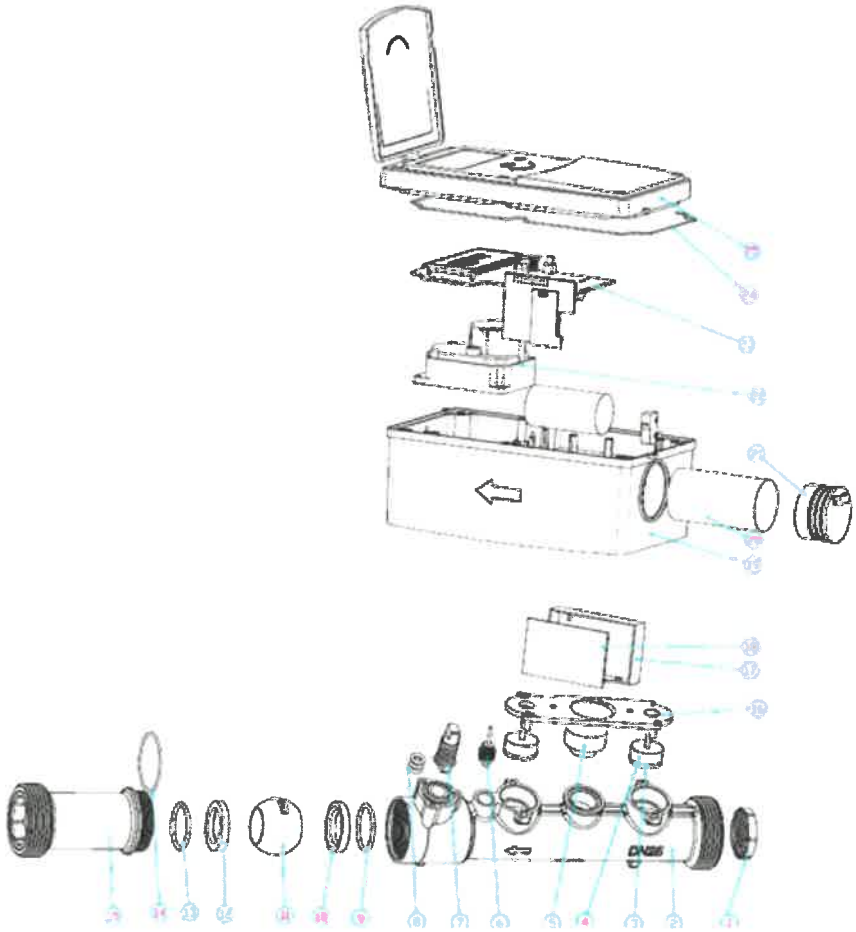


Fig. 3: Sealing of water meters type UWM 2401



26	Botton Cover
25	Measuring PVBA Unit
24	Measuring Unit Box
23	Pressing Plate
22	Battery Cover
21	Lithium Battery
20	Upper Shell
19	Seal ring
18	Screw
17	Main PCB
16	Motor and Actuator
15	Lower Shell
14	Valve Plug
13	O-ring
12	Valve Ball
11	Valve Stem
10	O-ring
9	Valve Seat
8	O-ring
7	Pin
6	Pin
5	O-ring
4	Ultrasonic Sensor
3	O-ring
2	Meter Body
1	Strainer

Fig. 4a: Exploded view of water meters type UWM 2401-15 and UWM 2401-20



25	Upper Shell
24	Seal Ring
23	Main PCBA
22	Motor and Actuator
21	Battery Cover
20	Lithium Battery
19	Lower Shell
18	Measuring PCBA Unit
17	Measuring Unit Box
16	Pressing Plate
15	Valve Plug
14	O-ring
13	O-ribg
12	Valve Seat
11	Valve Ball
10	Valve Seat
9	O-ring
8	O-ring
7	Valve Stem
6	Pin
5	Pin
4	Ultrasonic Sensor
3	O-ring
2	Meter Body
1	Strainer

Fig. 4b: Exploded view of water meters type UWM 2401-25 and UWM 2401-40

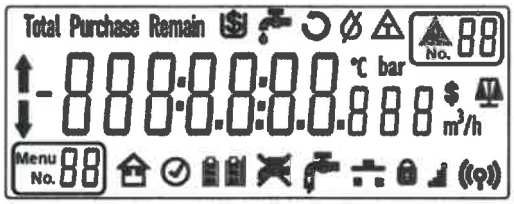


Fig. 5a: Display

Icons	Definition	Description
888:8.8:8.8.888		Main Digits LCD display, Maximum 7 integer +3 decimal
	Not Used	1. Remain credit less than alarm limit1, the symbol display on LCD 2.Remain credit less than alarm limit1, the symbol flash on LCD
	Leakage indication	When meter detect there is leakage, the symbol will display
	Flow reverse indication	When meter detect flow reverse, the symbol will display
	Empty pipe indication	When meter detect empty pipe, the symbol will display
	Temperature sensor abnormal indication	When meter detect temperature sensor abnormal, the symbol will display
No. 88	Error code indication	When meter detect abnormal, the corresponding error code will display.
	Water flow direction indication	Forward Reverse
	Minus indication	Display with the main data area to show minus value.
℃ bar $ m³/h	Units indication	Display with the main data area to show temperature, pressure, credit, water value.
Menu No. 88	Menu No. indication	Display with the main data area.
	Working mode indication	Factory mode display Decommission mode flash Commission mode disappear
	Some function enable indication	Enable fault detection Enable Mbus communication Enable uplink report
	Battery indication	battery for display and communication battery for measurement
	Battery no power indication	Need replace battery
	Valve status	When valve closed, the symbol will display
	Valve status	When valve completely open, the symbol will display When valve open partially, the symbol will flash
	Optical enable indication	When optical is enable, the symbol will display
Total Purchase Remain	Not Used	Display with the main data area to show total consumption, total purchase, remain credit.

Fig. 5b: Display description