



OIML Member State  
SLOVAKIA

OIML Certificate No.  
R49/2013-A-SK1-2023.03

### 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: **ITRON FRANCE**  
Address: 9 Rue Ampère  
71031 Macon  
France

#### Manufacturer

Name: **ITRON FRANCE**  
Address: 9 Rue Ampère  
71031 Macon  
France

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

Water meter type IW2

**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-SK1-2023.03**

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/ER020/SK1 dated 13<sup>th</sup> March 2023 that includes 17 pages.

The technical documentation relating to the identified type is contained in documentation file name: „Technical documentation file ITRON\_IW2\_00“ dated 13<sup>th</sup> March 2023 that includes a sum of documents 123 pages.

**OIML Certificate History**

Revision No.	Date	Description of the modification
0	13 <sup>th</sup> March 2023	Certificate first issued
-	-	-

Identification, signature and stamp

**The OIML Issuing Authority**



*System*  
Peter Vook

Date: 13<sup>th</sup> March 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 meter type IW2 is designed to measure, memorise and display the volume of water passing through the measurement transducer at metering conditions. The water meter is intended for the measurement of volume of clean water in residential use and is intended for non-resettable measurements between two constant partners.

The water meter type IW2 is compact ultrasonic water meter with electronic indication device. The measurement is based on ultrasonic measurement method, bidirectional transit-time principle. Ultrasonic signal moves along the measuring section many times and the flow downstream between the ultrasonic sensors have to perform transmitter and receiver functions. From the results of time difference the flow rate is calculated and indicated in display.

The water meter type IW2 can be installed to operate in all positions and is not designed to measure the reverse flow.

## 2. Description

### 2.1 Parts of the water meter type IW2

Essential parts of the water meter:

- Flow sensor:
  - the hydraulic brass body with inlet and outlet threaded connections;
  - the inner plastic element (US channel) is placed in the brass body;
  - mirrors set to create an ultrasound path in the flow meter body;
  - 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;
  - two versions of the electronic LCD display with 2-lines:
    - o upper line with 9 digits and indication range of 999999.999 m<sup>3</sup>.  
The sub-multiples of a cubic meter are indicated on the LCD display:
      - either by three smaller digits after decimal point;
      - either by three digits after the decimal point (the same numbers size after decimal point. Numbers before the decimal point are marked with a line above);
    - o bottom line with 5 digits to display the current flow rate in m<sup>3</sup>/h.
  - two or three non-replaceable lithium batteries, with a maximum lifetime of 22 years. The end of batteries life is visible on display menu.

Non-essential parts of the water meter:

- non return valve – optionally;
- filter;
- interfaces and compatibility conditions (pulse output, NFC communication, radio 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

In normal Mode, LCD displays 3 main areas:

- a) the total measured volume (m<sup>3</sup>);
- b) flow rate (m<sup>3</sup>/h);
- c) alarms.

The following display are available by the configuration program "Itron NFC Field Tool":

The Check mode features the following display screens:

- a) Test display - all segments on;
- b) Test display – all segments off;
- c) Firmware version;
- d) Checksum;
- e) Batteries end of life date.

The test mode - maximum of 6 digits after the coma position. (Fig.: 3 – Display, display modes).

### 2.4 Software specification

Software versions	Checksum	Remarks
03.02	0xF3EC	-

The software version is indicated on the display in the form: SOFt: 03.02

The checksum is indicated on the display in the form: METro: 0xF3EC

### 2.5 Accountable alarms

During the measuring process the calculator and indication device detects automatically if a fault condition occurs and eventually stops the measurement reporting an alarm indication on the display. See user manual issued by the manufacturer.



### 3. Technical and metrological data

Tab. 1

Type /model		<i>IW2</i>			
Accuracy class		<b>2</b>		<b>1</b>	
Nominal diameter DN	mm	15			
Permanent flowrate $Q_3$	m <sup>3</sup> /h	1,6	2,5	1,6	2,5
Minimum flowrate $Q_1$	m <sup>3</sup> /h	0,00254	0,0025	0,005079	0,005
Transitional flowrate $Q_2$	m <sup>3</sup> /h	0,004064	0,004	0,008	0,008
Overload flowrate $Q_4$	m <sup>3</sup> /h	2	3,125	2	3,125
Ratio $Q_3/Q_1$	-	630	1000	315	500
Ratio $Q_2/Q_1$	-	1,6			
Connection thread	-	G 3/4" / G 7/8"			
Construction length L	mm	105 to 170			
Installation position	-	All positions			
Water temperature range	°C	0,1 to 50			
Meter temperature class	-	T50			
Maximum working pressure MAP	bar	16			
Pressure loss class $\Delta P$	-	25	40	25	40
Maximum permissible error in upper flowrates range $Q_2 \leq Q \leq Q_4$	%	$\pm 2$ (at $\theta \leq 30^\circ\text{C}$ ) $\pm 3$ (at $\theta > 30^\circ\text{C}$ )		$\pm 1$ (at $\theta \leq 30^\circ\text{C}$ ) $\pm 2$ (at $\theta > 30^\circ\text{C}$ )	
Maximum permissible error in lower flowrates ranges $Q_1 \leq Q < Q_2$	%	$\pm 5$		$\pm 3$	
Scale interval	m <sup>3</sup>	0,001			
Scale interval in test mode	m <sup>3</sup>	0,000001			
Capacity of calculator	m <sup>3</sup>	999999,999			
Mechanical class	-	M1			
Climatic class	°C	-25 to +70			
Electromagnetic class	-	E2			
Environmental classification	-	B/O			
Flow profile sensitivity class	-	U0D0			
Battery	-	li-battery 3 V, maximum lifetime 22 years			



Tab. 2

Type /model		<i>IW2</i>			
Accuracy class		<b>2</b>		<b>1</b>	
Nominal diameter DN	mm	20			
Permanent flowrate $Q_3$	m <sup>3</sup> /h	2,5	4	2,5	4
Minimum flowrate $Q_1$	m <sup>3</sup> /h	0,003968	0,004	0,0079	0,008
Transitional flowrate $Q_2$	m <sup>3</sup> /h	0,00635	0,0064	0,01264	0,0128
Overload flowrate $Q_4$	m <sup>3</sup> /h	3,125	5	3,125	5
Ratio $Q_3/Q_1$	-	630	1000	315	500
Ratio $Q_2/Q_1$	-	1,6			
Connection thread	-	G 1" + custom threads Ball Seat / Gasket Seat			
Construction length L	mm	105 to 190			
Installation position	-	All positions			
Water temperature range	°C	0,1 to 50			
Meter temperature class	-	T50			
Maximum working pressure MAP	bar	16			
Pressure loss class $\Delta P$	-	25	63	25	63
Maximum permissible error in upper flowrates range $Q_2 \leq Q \leq Q_4$	%	$\pm 2$ (at $\theta \leq 30^\circ\text{C}$ ) $\pm 3$ (at $\theta > 30^\circ\text{C}$ )		$\pm 1$ (at $\theta \leq 30^\circ\text{C}$ ) $\pm 2$ (at $\theta > 30^\circ\text{C}$ )	
Maximum permissible error in lower flowrates ranges $Q_1 \leq Q < Q_2$	%	$\pm 5$		$\pm 3$	
Scale interval	m <sup>3</sup>	0,001			
Scale interval in test mode	m <sup>3</sup>	0,000001			
Capacity of calculator	m <sup>3</sup>	999999,999			
Mechanical class	-	M1			
Climatic class	°C	-25 to +70			
Electromagnetic class	-	E2			
Environmental classification	-	B/O			
Flow profile sensitivity class	-	U0D0			
Battery	-	li-battery 3 V, maximum lifetime 22 years			



Tab. 3

Type /model		<i>IW2</i>		
Accuracy class		2		
Nominal diameter DN	mm	25		32
Permanent flowrate $Q_3$	m <sup>3</sup> /h	6,3	10	10
Minimum flowrate $Q_1$	m <sup>3</sup> /h	0,0063	0,01	0,01
Transitional flowrate $Q_2$	m <sup>3</sup> /h	0,01008	0,016	0,016
Overload flowrate $Q_4$	m <sup>3</sup> /h	7,875	12,5	12,5
Ratio $Q_3/Q_1$	-	1000		1000
Ratio $Q_2/Q_1$	-	1,6		
Connection thread	-	G 1" ¼ + custom threads Ball Seat / Gasket Seat		G1" ½ + Oval flanges w/w groove
Construction length L	mm	178 to 260		190 to 260
Installation position	-	All positions		
Water temperature range	°C	0,1 to 50		
Meter temperature class	-	T50		
Maximum working pressure MAP	bar	16		
Pressure loss class $\Delta P$	-	40	63	63
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 ranges $Q_1 \leq Q < Q_2$	%	± 5		
Scale interval	m <sup>3</sup>	0,001		
Scale interval in test mode		0,000001		
Capacity of calculator	m <sup>3</sup>	999999,999		
Mechanical class	-	M1		
Climatic class	°C	-25 to +70		
Electromagnetic class	-	E2		
Environmental classification	-	B/O		
Flow profile sensitivity class	-	U0D0		
Battery	-	li-battery 3 V, maximum lifetime 22 years		



Tab. 4

Type /model		<i>IW2</i>		
Accuracy class		2		
Nominal diameter DN	mm	40	50	
Permanent flowrate $Q_3$	m <sup>3</sup> /h	16	16	25
Minimum flowrate $Q_1$	m <sup>3</sup> /h	0,016	0,0254	0,025
Transitional flowrate $Q_2$	m <sup>3</sup> /h	0,0256	0,04064	0,04
Overload flowrate $Q_4$	m <sup>3</sup> /h	20	20	31,25
Ratio $Q_3/Q_1$	-	1000	630	1000
Ratio $Q_2/Q_1$	-	1,6		
Connection thread	-	G 2" + Oval flanges w/wo groove	G 2" ½ + Oval & Round flanges	
Construction length L	mm	200 to 300	200 to 311	
Installation position	-	All positions		
Water temperature range	°C	0,1 to 50		
Meter temperature class	-	T50		
Maximum working pressure MAP	bar	16		
Pressure loss class $\Delta P$	-	40	25	63
Maximum permissible error in upper flowrates range $Q_2 \leq Q \leq Q_4$	%	$\pm 2$ (at $\vartheta \leq 30^\circ\text{C}$ ) $\pm 3$ (at $\vartheta > 30^\circ\text{C}$ )		
Maximum permissible error in lower flowrates ranges $Q_1 \leq Q < Q_2$	%	$\pm 5$		
Scale interval	m <sup>3</sup>	0,001		
Scale interval in test mode		0,000001		
Capacity of calculator	m <sup>3</sup>	999999,999		
Mechanical class	-	M1		
Climatic class	°C	-25 to +70		
Electromagnetic class	-	E2		
Environmental classification	-	B/O		
Flow profile sensitivity class	-	U0D0		
Battery	-	li-battery 3 V, maximum lifetime 22 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) if it exceeds MAP10;
- i) temperature class;
- j) pressure loss class where it differs from  $\Delta p 63 (\Delta p)$ ;
- 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) installation sensitivity class (where it differs from U0/D0);
- n) electromagnetic environmental class (can be given on a document supplied separately);
- o) type approval sign according to national regulations.

#### 5. Security measures

The water meter shall be protected against unauthorised manipulation and opening as follows:

- by four screws securing the connection between the register and hydraulic area (2 out of the 4 are secured by plastic seals) which must be damaged for removal;
- the PCBA cannot be disassembled without removing the cover. The cover is designed to make the dismantling impossible without any visible damage;
- if the cover is removed, an alarm is generated when the over moulded magnet is not anymore detected by the "hall effect sensor" placed on the PCBA. (Fig.: 2)



## 6. Figures



Figure 1: Illustrative view of the water meter type IW2

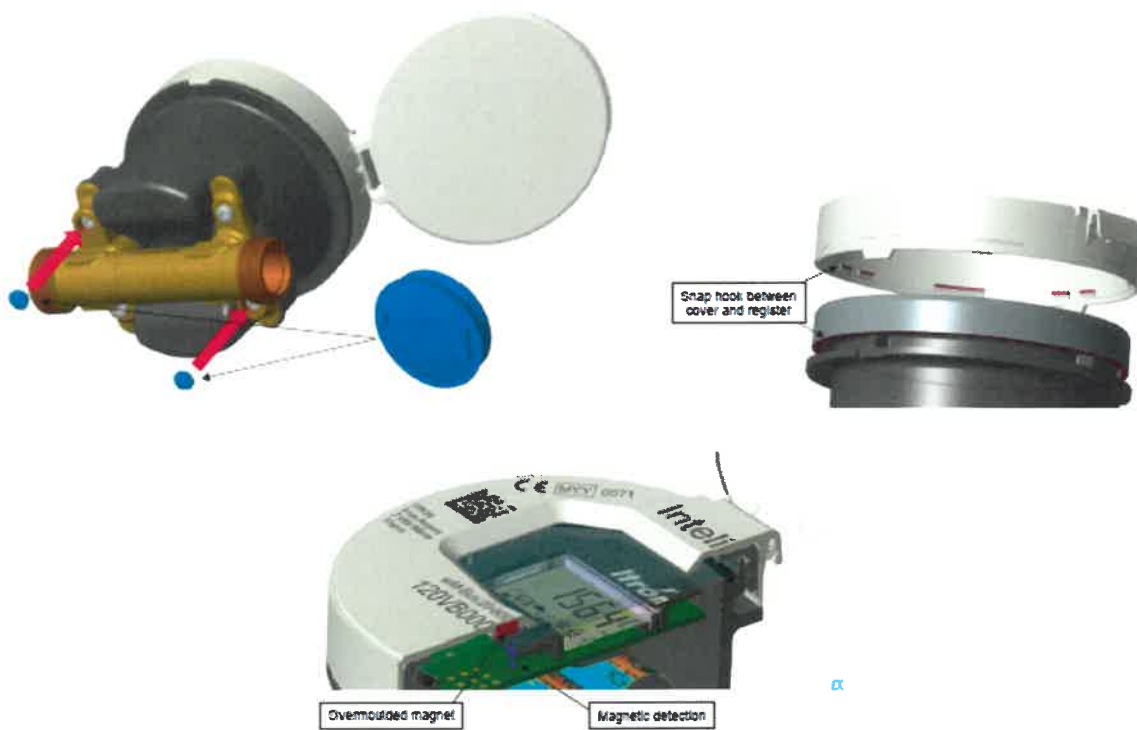
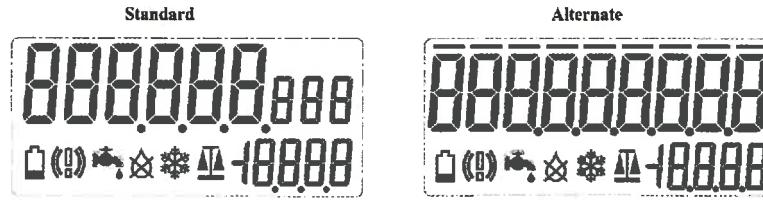


Fig. 2: Sealing of the water meter type IW2



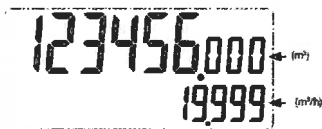


Icons	Information	Comments
000000.000 000000000	Main display 8/9 digits	--
	Battery level indicator	12 Months battery remaining (before the expected end of life date of the battery) or battery voltage level alarm
	System or application alarm indicator	General icon in case of unspecified critical alarm
	Leakage indicator	Leakage of previous day*
	Air in pipe indicator	Air in pipe for more than 10 seconds
	Freezing alarm	If temperature falls < 2°C during the previous day*
	Test mode indicator	Product in Test Mode*
	Flowrate indicator	Current flowrate, with minus sign in case of backflow

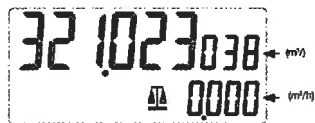
\* Configurable by NFC

Fig. 3: Display – two versions

**NORMAL MODE**



**TEST MODE**



**CHECK MODE**

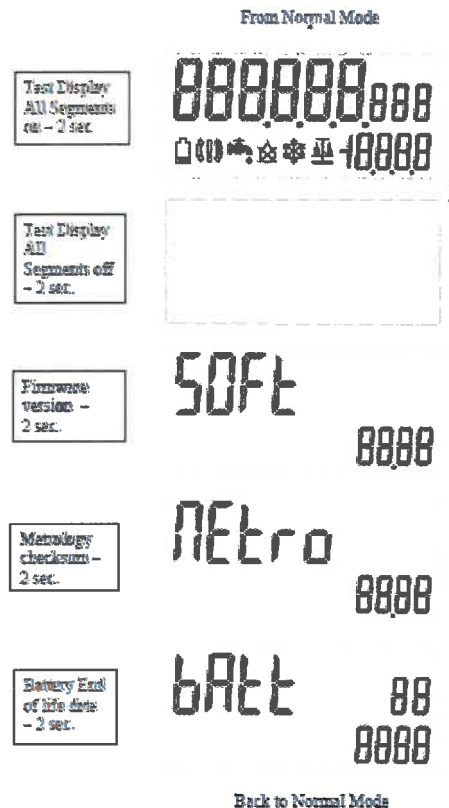


Fig. 4: Display modes – sample on standard display version