



OIML Member State
SLOVAKIA

OIML Certificate No.
R49/2013-A-SK1-2022.01

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: **Energy Management System Co., Ltd.**
Address: No. 8 Dali 3rd Rd., Shanhua Dist.,
Southern Taiwan
Science Park (STSP), Tainan City 741, Taiwan

Manufacturer

Name: **Energy Management System Co., Ltd.**
Address: No. 8 Dali 3rd Rd., Shanhua Dist.,
Southern Taiwan
Science Park (STSP), Tainan City 741, Taiwan

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

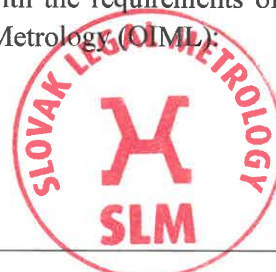
Water meter type TH...

Designation of the module *(if applicable)*

Mechanical multi-jet 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): 2



**OIML Certificate No.
R49/2013-A-SK1-2022.01**

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/ER008/SK1 dated 17th June 2022 that includes 17 pages.

The technical documentation relating to the identified type is contained in documentation file name: „Technical documentation file EMS_TH_00“ dated 17th June 2022 that includes 130 pages.

OIML Certificate History

Revision No.	Date	Description of the modification
0	27 th June 2022	Certificate first issued
-	-	-

Identification, signature and stamp

The OIML Issuing Authority



.....
Lubor Tencer

Date: 27th June 2022

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 water meter type series **TH...** (models TH15, TH20, TH25, TH40, TH50) are designed to measure, memorise and display the volume of water passing through the measurement transducer at metering conditions. The water meters are intended for the measurement of volumes of clean water in residential use.

The water meter type series TH... are multi-jet rotary vane wheel water meters with electronic indication device.

They shall be installed to operate in the horizontal position only with the indication device positioned at the top. They are not designed to measure the reverse flow.

2. Description

2.1 Parts of the water meter type series TH...:

Essential parts of the water meter type series TH...

a) Mechanical part

- measuring mechanism – consisting of the measuring chamber and the rotary vane wheel (impeller) with an axle perpendicular to the flow direction;
- brass housing of water meter with inlet and outlet connections;
- magnetic coupling and sensing elements for the detecting rotation and sending signals to electronic register;
- internal filter.

b) Electronic part:

- plastic housing of the calculator with indication device directly mounted on the mechanical part;
- PCB upper board - flow calculator board with LCD display;
- electronic LCD non-permanent (automatic scrolling) display with 9 digits and indication range of 9999,99999 (TH15, TH20, TH25) and 99999,9999 (TH40, TH50). The sub-multiples of a cubic meter are indicated on the display the red frame. The measured volume is displayed for 30 s. When the maximum indication range of the volume totalization is reached, the indication range will continue measuring starting from zero;
- PCB lower board - analog signal process;
- non-replaceable lithium battery. The end of battery life indicator is activated based on pre-calculated power consumption.

Non-essential parts of the water meter type series TH...

- interfaces: signal ground, TX (Transmitter), RX (Receiver), NC (not connected).

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

The following automatic scrolling of displays (one sequence) is available:

- total measured volume (m³);
- flow rate (m³/h);
- display test (an “eights” test);
- display test (a “blanks” test).



3. Software specification

Table 1: Software version and checksum of legally relevant software

Software versions	Checksum	Remarks
9512	0x10D30E4F	-

The software version is indicated on the data plate in the form SV: 9512.
The checksum is indicated on the data plate in the form CS: 0x10D30E4F.

4. Technical and metrological data

Table 2: Technical and metrological data of the water meter type TH-15, TH-20, TH-25

Meter type	-	TH15	TH20	TH25
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	0,0125	0,02	0,0315
Transitional flowrate Q_2	m ³ /h	0,02	0,032	0,0504
Overload flowrate Q_4	m ³ /h	3,125	5	7,875
Ratio Q_3/Q_1	R	200		
Ratio Q_2/Q_1	-	1,6		
Connection thread ISO228-1	-	G ¾ B	G1 B	G1 ¼ B
Construction length L	mm	165	190	210
Installation orientation	-	H with the indication device at the top		
Water temperature range Θ (temperature class)	°C	0,1 to 30 (T30)		
Maximum admissible pressure MAP	bar	16		
Pressure loss	bar	0,63		
Pressure loss class Δp	-	Δp 63		
Maximum permissible error in upper flowrates range $Q_2 \leq Q \leq Q_4$	%	± 2 (at $\Theta \leq 30^\circ\text{C}$)		
Maximum permissible error in lower flowrates range $Q_1 \leq Q < Q_2$	%	± 5		
Scale interval (resolution of the indicating device)	m ³	0,00001		
Capacity of calculator	m ³	9999,99999		
Mechanical class	-	M1		
Climatic class	°C	+ 5 to + 55		
Electromagnetic class	-	E1		
Flow profile sensitivity class	-	U0 D0		



Table 3: Technical and metrological data of the water meter type TH-40, TH-50

Meter type	-	TH40	TH50
Nominal diameter DN	mm	40	50
Permanent flowrate Q_3	m ³ /h	16	25
Minimum flowrate Q_1	m ³ /h	0,08	0,125
Transitional flowrate Q_2	m ³ /h	0,128	0,2
Overload flowrate Q_4	m ³ /h	20	31,25
Ratio Q_3/Q_1	R	200	
Ratio Q_2/Q_1	-	1,6	
Connection thread ISO228-1	-	G 2B	G 2 ½ B
Construction length L	mm	245	270
Installation orientation	-	H Horizontal with the indication device at the top	
Water temperature range θ (temperature class)	°C	0,1 to 30 (T30)	
Maximum admissible pressure MAP	bar	16	
Pressure loss	bar	0,63	
Pressure loss class Δp	-	Δp 63	
Maximum permissible error in upper flowrates range $Q_2 \leq Q < Q_4$	%	± 2 (at $\theta \leq 30^\circ\text{C}$)	
Maximum permissible error in lower flowrates range $Q_1 \leq Q < Q_2$	%	± 5	
Scale interval (resolution of the indicating)	m ³	0,0001	
Capacity of calculator	m ³	99999,9999	
Mechanical class	-	M1	
Climatic class	°C	+ 5 to + 55	
Electromagnetic class	-	E1	
Flow profile sensitivity class	-	U0 D0	

5. 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 m³;
- 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);
- i) operated position (H);
- j) temperature class;
- k) pressure loss class;
- l) the latest date by which the meter shall be replaced;

- m) environmental classification;
- n) installation sensitivity class;
- o) electromagnetic environmental class;
- p) type approval sign according to national regulations.

6. Security measures

The water meter type series TH... shall be protected against unauthorised manipulation by:

- one seal with the wire securing the connection of the water meter body which contains the mechanical part of the water meter and the head of the water meter, which contains the electronic part of the water meter.

7. Figures

TH15, TH20, TH25



TH40, TH50

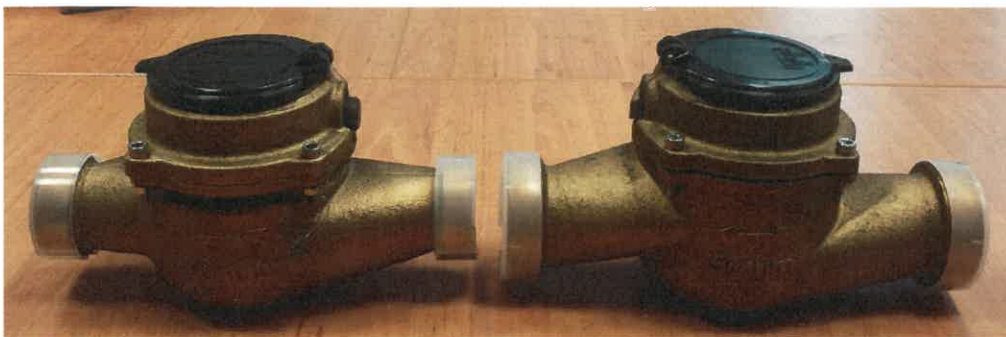
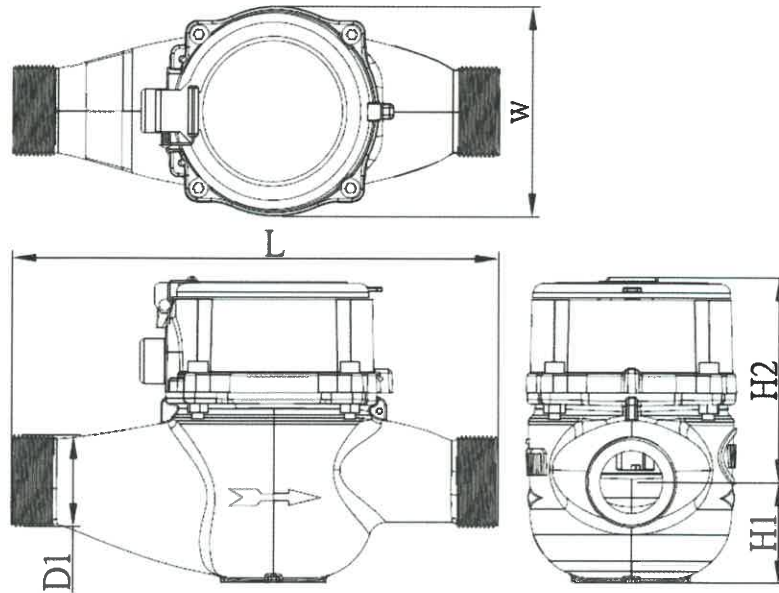


Fig. 1: Illustrative views of water meter type series TH...



Dimensions in mm

DN	Length(L)	Width(W)	H1	H2	D1
15	165	90	40	80	26.4
20	190	90	37	86	33.2
25	210	90	42	91	41.9
40	245	124	50	93.8	59.6
50	270	123	58	138	75.2

Fig. 2: Dimensions of the water meter type series TH...

