



OIML Member State
SLOVAKIA

OIML Certificate No.
R49/2013-A-SK1-2022.02

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.**
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Science Park (STSP), Tainan City 741, Taiwan

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

Water meter type WT...

Designation of the module (*if applicable*)

Mechanical turbine water meters (Woltmann design) 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-SK1-2022.02**

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/ER009/SK1 dated 27th June 2022 that includes 17 pages.

The technical documentation relating to the identified type is contained in documentation file name: „Technical documentation file EMS_WT_00“ dated 27th June 2022 that includes 159 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




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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 WT... (models WT50, WT80, WT100, WT150, WT200) 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 WT... are mechanical turbine water meters with turbine's axis in the flow direction (Woltmann design).

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

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

a) Mechanical part

- the measuring mechanism - consists of the plastic support frame with impeller with a stainless-steel shaft placed horizontally on the flow direction. The rotating movement of the impeller is transferred through a screw wheel on the magnetic clutch onto the calculator. The plastic support frame is connected to the iron flange cover. The flange cover with a rubber o – ring is connected to the water meter body;
- iron body with flanged inlet and outlet connections and with front rectifier and back rectifier;
- magnetic coupling and sensing elements for the detecting rotation and sending signals to electronic register.

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 99999,9999 (WT50, WT80), 999999,999 (WT100, WT150, WT200). 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 with analog signal process connector;
- non-replaceable lithium battery. The end of battery life indicator is activated based on pre-calculated power consumption.

2.1 Metrological functions

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

2.2 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
9212	0x120598CB	-

The software version is indicated on the data plate in the form SV: 9212.
The checksum is indicated on the data plate in the form CS: 0x120598CB.

4. Technical and metrological data

Meter type	-	WT50	WT80	WT100	WT150	WT200
Nominal diameter DN	mm	50	80	100	150	200
Permanent flowrate Q_3	m ³ /h	25	63	100	250	400
Minimum flowrate Q_1	m ³ /h	0,125	0,315	0,5	1,25	2
Transitional flowrate Q_2	m ³ /h	0,2	0,504	0,8	2	3,2
Overload flowrate Q_4	m ³ /h	31,25	78,75	125	312,5	500
Ratio Q_3/Q_1	R	200				
Ratio Q_2/Q_1	-	1,6				
Connection thread	-	Flange connection				
Construction length L	mm	200	200	250	300	350
Installation orientation	-	H with the indication device at the top				
Water temperature range θ	°C	0,1 to 30 (T30)				
Maximum admissible pressure	bar	16				
Pressure loss	bar	0,4				
Pressure loss class Δp	-	Δp 40				
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 calculator)	m ³	0,0001			0,001	
Capacity of calculator	m ³	99999,9999			999999,999	
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 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);
- 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 WT... shall be protected against unauthorised manipulation by two seals:

- 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;
- one seal with wire securing the connection of the water meter body and flange.

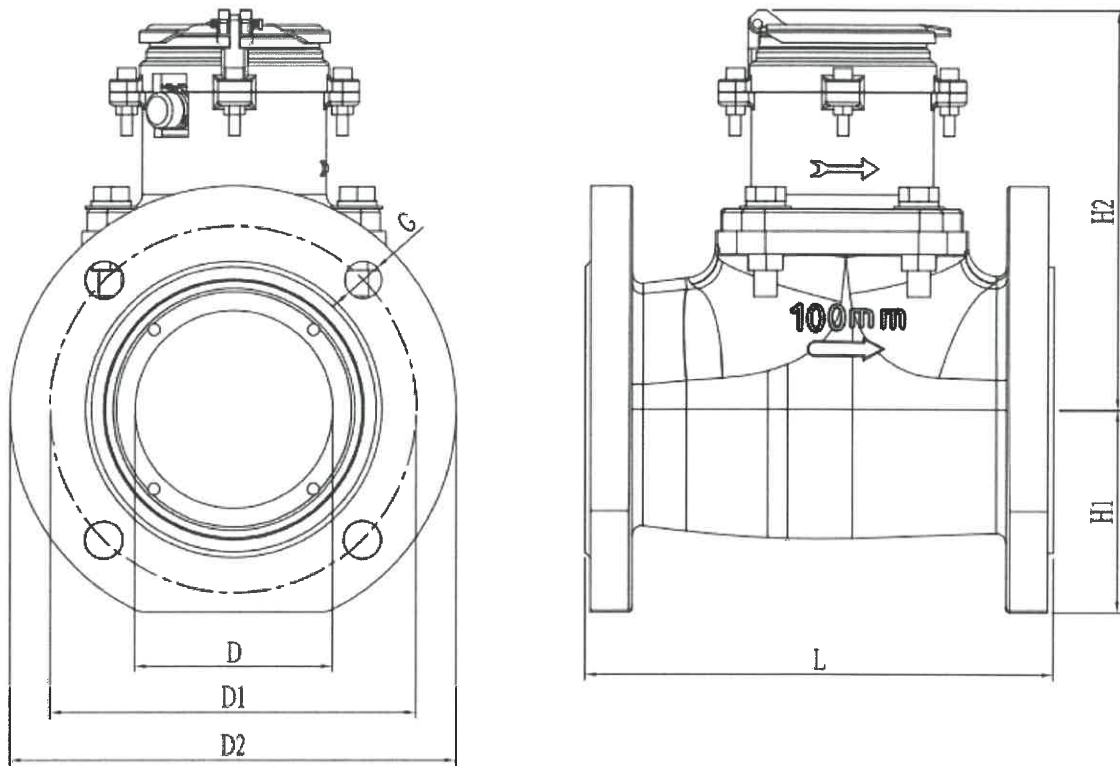


7. Figures



Fig. 1: Illustrative view of water meters type WT...





Dimensions in mm

DN (D)	Flange Center Range (D1)	Width (D2)	Length (L)	From Bottom to Flange Center (H1)	From Cover to Flange Center (H2)	Flange Hole Diameter (G)	Hole Number (n)
50	125	165	200	77.5	202.5	19	4
80	160	200	200	90	210	6-19 2-M16	8
100	180	220	250	108	210	19	8
150	240	285	300	136	248	23	8
200	295	340	350	163	248	23	12

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

